

## **2012 BUILD CONDITIONS**

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: AM52BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: WEEKDAY PEAK AM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	0	2	0	0	0	2	0	0	2	0
LGConfig	L			L				T			T	
Volume	678			454				1550			555	
Lane Width	12.0			12.0				12.0			12.0	
RTOR Vol												

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A						
Thru						A		
Right								
Peds								
WB Left		A						
Thru						A		
Right								
Peds								
NB Right								
SB Right								
Green		30.0				50.0		
Yellow		3.0				3.0		
All Red		2.0				2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	1168	3505	0.63	0.33	26.4	C	26.4	C
Westbound								
L	1168	3505	0.42	0.33	23.5	C	23.5	C
Northbound								
T	2010	3618	0.84	0.56	20.0-	B	20.0-	B
Southbound								
T	2010	3618	0.30	0.56	10.8	B	10.8	B

Intersection Delay = 20.2 (sec/veh) Intersection LOS = C

Phone: Fax:  
E-Mail:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM52BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	678			454			1550			555		
% Heavy Veh	0			0			0			0		
PHF	0.92			0.92			0.92			0.92		
PK 15 Vol	184			123			421			151		
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900			1900			1900			1900		
ParkExist												
NumPark												
No. Lanes	2	0	0	2	0	0	0	2	0	0	2	0
LGConfig	L			L			T			T		
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol												
Adj Flow	737			493			1685			603		
%InSharedLn												
Prop LTs							0.000			0.000		
Prop RTs							0.000			0.000		
Peds Bikes	0			0								
Buses	0			0			0			0		
%InProtPhase												
Duration	0.25											

Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0			0.0			0.0			0.0		
Arriv. Type	3			3			3			3		
Unit Ext.	3.0			3.0			3.0			3.0		
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0			2.0			2.0			2.0		
Ext of g	2.0			2.0			2.0			2.0		
Ped Min g		3.2			3.2							

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: AM53BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: WEEKDAY PEAK AM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig	LR						LT			T R		
Volume	445		51				38	1101		688	313	
Lane Width	15.0						15.0			12.0	12.0	
RTOR Vol	0									0		

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru					Thru	A		
Right	A				Right			
Peds	X				Peds	X		
WB Left					SB Left			
Thru					Thru	A		
Right					Right	A		
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	26.0				54.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LR 582 2013 0.93 0.29 52.1 D 52.1 D

Westbound

Northbound

LT 1200 2000 1.03 0.60 52.5 D 52.5 D

Southbound

T 1140 1900 0.66 0.60 13.3 B 12.1 B  
 R 949 1582 0.36 0.60 9.4 A

Intersection Delay = 37.0 (sec/veh) Intersection LOS = D

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM53BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	445		51				38	1101			688	313
% Heavy Veh	0		5				5	0			0	0
PHF	0.92		0.92				0.92	0.92			0.92	0.92
PK 15 Vol	121		14				10	299			187	85
Hi Ln Vol												
% Grade		-6						0			0	
Ideal Sat		1900						1900			1900	1900
ParkExist												
NumPark												
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig		LR						LT			T	R
Lane Width		15.0						15.0			12.0	12.0
RTOR Vol			0									0
Adj Flow		539						1238			748	340
%InSharedLn												
Prop LTs		0.898						0.033			0.000	
Prop RTs		0.102						0.000			0.000	1.000
Peds Bikes	25		0	0						25		0
Buses		0						0			0	0
%InProtPhase												
Duration	0.25			Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0			0.0	0.0
Arriv. Type		3						3			3	3
Unit Ext.		3.0						3.0			3.0	3.0
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0			2.0	2.0
Ext of g		2.0						2.0			2.0	2.0
Ped Min g		3.4			3.2						3.4	

Phone: Fax:  
 E-Mail:

-----ALL-WAY STOP CONTROL(AWSC) ANALYSIS-----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM54BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: SPRUCE STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE

-----Worksheet 2 - Volume Adjustments and Site Characteristics-----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	117	0	135	0	85	138	118	110	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		TR		LT	
PHF			0.92		0.92		0.92	
Flow Rate			273		241		247	
% Heavy Veh			5		5		5	
No. Lanes				1		1		1
Opposing-Lanes				0		1		1
Conflicting-lanes				1		1		1
Geometry group				1		1		1
Duration, T	0.25 hrs.							

-----Worksheet 3 - Saturation Headway Adjustment Worksheet-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			273		241		247	
Left-Turn			127		0		128	
Right-Turn			146		149		0	
Prop. Left-Turns			0.5		0.0		0.5	
Prop. Right-Turns			0.5		0.6		0.0	
Prop. Heavy Vehicle			0.0		0.0		0.0	
Geometry Group				1		1		1
Adjustments Exhibit 17-33:								
hLT-adj				0.2		0.2		0.2

hRT-adj	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7
hadj, computed	-0.1	-0.3	0.2

-----Worksheet 4 - Departure Headway and Service Time-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			273		241		247	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.24		0.21		0.22	
hd, final value			4.97		4.70		5.14	
x, final value			0.38		0.31		0.35	
Move-up time, m				2.0		2.0		2.0
Service Time			3.0		2.7		3.1	

-----Worksheet 5 - Capacity and Level of Service-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			273		241		247	
Service Time			3.0		2.7		3.1	
Utilization, x			0.38		0.31		0.35	
Dep. headway, hd			4.97		4.70		5.14	
Capacity			523		491		497	
Delay			10.94		9.85		10.92	
LOS			B		A		B	
Approach:								
Delay			10.94		9.85		10.92	
LOS			B		A		B	
Intersection Delay	10.59				Intersection LOS	B		

TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM55BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: ELM STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		111	140		16	154	
Peak-Hour Factor, PHF		0.92	0.92		0.92	0.92	
Hourly Flow Rate, HFR		120	152		17	167	
Percent Heavy Vehicles		--	--		5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR			LT	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		172		16			
Peak Hour Factor, PHF		0.92		0.92			
Hourly Flow Rate, HFR		186		17			
Percent Heavy Vehicles		5		5			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4 LT	7	8 LR	9	10	11
v (vph)		17		203				
C(m) (vph)		1274		609				
v/c		0.01		0.33				
95% queue length		0.04		1.46				
Control Delay		7.9		13.8				
LOS		A		B				
Approach Delay				13.8				
Approach LOS				B				



HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: AM56BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: CBD or Similar  
 Date: 4/30/2007 Jurisd:  
 Period: WEEKDAY PEAK AM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig	LTR			LTR			LTR			LTR		
Volume	64	161	11	11	230	85	11	58	27	64	42	53
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	0			0			0			0		

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		P			NB Left	P		
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
WB Left		P			SB Left	P		
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				40.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LTR 597 1343 0.43 0.44 19.4 B 19.4 B

Westbound

LTR 684 1540 0.52 0.44 20.8 C 20.8 C

Northbound

LTR 668 1502 0.16 0.44 15.4 B 15.4 B

Southbound

LTR 578 1301 0.30 0.44 17.4 B 17.4 B

Intersection Delay = 19.1 (sec/veh) Intersection LOS = B

Phone: Fax:  
 E-Mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM56BD  
 Area Type: CBD or Similar  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

----- VOLUME DATA -----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	64	161	11	11	230	85	11	58	27	64	42	53
% Heavy Veh	5	5	5	5	5	5	5	5	5	5	5	5
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
PK 15 Vol	17	44	3	3	62	23	3	16	7	17	11	14
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900			1900			1900	
ParkExist												
NumPark												
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0
Adj Flow		257			354			104			174	
%InSharedLn												
Prop LTs		0.272			0.034			0.115			0.402	
Prop RTs		0.047			0.260			0.279			0.333	
Peds Bikes	25		0	25		0	25		0	25		0
Buses		0			0			0			0	
%InProtPhase												
Duration	0.25	Area Type: CBD or Similar										

----- OPERATING PARAMETERS -----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0			0.0			0.0	
Arriv. Type		3			3			3			3	
Unit Ext.		3.0			3.0			3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0			2.0			2.0	
Ext of g		2.0			2.0			2.0			2.0	
Ped Min g		3.4			3.4			3.4			3.4	

HCS+: Unsignalized Intersections Release 5.2

Phone: Fax:  
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: JCE  
Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
Date Performed: 4/30/2007  
Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
Intersection: AM57BD  
Jurisdiction:  
Units: U. S. Customary  
Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
Project ID: 281  
East/West Street: ELM STREET  
North/South Street: LINDEN STREET

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	80	189	80	27	289	27	70	10	5	0	0	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR			
PHF	0.92		0.92		0.92			
Flow Rate	377		372		91			
% Heavy Veh	5		5		5			
No. Lanes		1		1		1		
Opposing-Lanes		1		1		0		
Conflicting-lanes		1		1		1		
Geometry group		1		1		1		
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	377		372		91			
Left-Turn	86		29		76			
Right-Turn	86		29		5			
Prop. Left-Turns	0.2		0.1		0.8			
Prop. Right-Turns	0.2		0.1		0.1			
Prop. Heavy Vehicle	0.0		0.0		0.0			
Geometry Group	1		1		1			
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2			





TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM59BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: PALMER ROAD  
 North/South Street: SAW MILL PKWY NB ON/OFF RAMP  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		178	322			502	111
Peak-Hour Factor, PHF		0.92	0.92			0.92	0.92
Hourly Flow Rate, HFR		193	349			545	120
Percent Heavy Vehicles		0	--	--		--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1			1	0
Configuration		LT				TR	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		396		249			
Peak Hour Factor, PHF		0.92		0.92			
Hourly Flow Rate, HFR		430		270			
Percent Heavy Vehicles		0		0			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound				
			1	4	7	8	9	10	11	12
Lane Config	LT				LR					
v (vph)	193				700					
C(m) (vph)	934				196					
v/c	0.21				3.57					
95% queue length	0.77				66.92					
Control Delay	9.9				1205					
LOS	A				F					
Approach Delay					1205					
Approach LOS					F					

Analyst: JCE Inter.: AM60BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/30/2007 Jurisd:  
 Period: WEEKDAY PEAK AM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Volume	77	685	183	118	929	41	312	337	154	83	250	44
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right				A	Right			A
Peds		X		X	Peds	X		X
WB Left		A			SB Left	A		
Thru				A	Thru		A	
Right					Right			A
Peds		X		X	Peds	X		X
NB Right					EB Right			
SB Right					WB Right			
Green		8.0		32.0		10.0		30.0
Yellow		3.0		3.0		3.0		3.0
All Red		2.0		2.0		2.0		2.0

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	211	1719	0.40	0.45	22.1	C		
T	1158	3618	0.64	0.32	30.3	C	29.0	C
R	492	1538	0.40	0.32	27.1	C		
Westbound								
L	271	1805	0.47	0.45	19.8	B		
TR	1150	3594	0.92	0.32	44.3	D	41.6	D
Northbound								
L	376	1719	0.90	0.45	53.6	D		
T	543	1810	0.67	0.30	34.0	C	40.4	D
R	485	1615	0.34	0.30	27.8	C		
Southbound								
L	358	1805	0.25	0.45	18.0	B		
TR	531	1769	0.60	0.30	31.8	C	28.8	C

Intersection Delay = 36.1 (sec/veh) Intersection LOS = D

Phone: Fax:  
 E-Mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK AM HIGHWAY HOUR  
 Intersection: AM60BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

----- VOLUME DATA -----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	77	685	183	118	929	41	312	337	154	83	250	44
% Heavy Veh	5	0	5	0	0	0	5	5	0	0	5	5
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
PK 15 Vol	21	186	50	32	252	11	85	92	42	23	68	12
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900	1900	1900	1900		1900	1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0
Adj Flow	84	745	199	128	1055		339	366	167	90	320	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs		0.000	1.000		0.043			0.000	1.000		0.150	
Peds Bikes	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0		0	0	0	0	0	
%InProtPhase	0.0			0.0			0.0			0.0		
Duration	0.25											
				Area Type: All other areas								

----- OPERATING PARAMETERS -----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Arriv. Type	3	3	3	3	3		3	3	3	3	3	
Unit Ext.	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext of g	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ped Min g		3.2			3.2			3.2			3.2	



HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: PM52BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: WEEKDAY PEAK PM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	0	2	0	0	0	2	0	0	2	0
LGConfig	L			L				T			T	
Volume	678			766				981			596	
Lane Width	12.0			12.0				12.0			12.0	
RTOR Vol												

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A						
Thru						A		
Right								
Peds								
WB Left		A						
Thru						A		
Right								
Peds								
NB Right								
SB Right								
Green		30.0				50.0		
Yellow		3.0				3.0		
All Red		2.0				2.0		
								Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	1168	3505	0.63	0.33	26.4	C	26.4	C
Westbound								
L	1168	3505	0.71	0.33	28.3	C	28.3	C
Northbound								
T	2010	3618	0.53	0.56	12.9	B	12.9	B
Southbound								
T	2010	3618	0.32	0.56	10.9	B	10.9	B

Intersection Delay = 19.5 (sec/veh) Intersection LOS = B

Phone: Fax:  
 E-Mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM52BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

----- VOLUME DATA -----

	Eastbound			Westbound			Northbound			Southbound			
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	678			766			981			596			
% Heavy Veh	0			0			0			0			
PHF	0.92			0.92			0.92			0.92			
PK 15 Vol	184			208			267			162			
Hi Ln Vol													
% Grade	0			0			0			0			
Ideal Sat	1900			1900			1900			1900			
ParkExist													
NumPark													
No. Lanes	2	0	0	2	0	0	0	2	0	0	0	2	0
LGConfig	L			L			T			T			
Lane Width	12.0			12.0			12.0			12.0			
RTOR Vol													
Adj Flow	737			833			1066			648			
%InSharedLn													
Prop LTs							0.000			0.000			
Prop RTs							0.000			0.000			
Peds Bikes	0			0			0			0			
Buses	0			0			0			0			
%InProtPhase													
Duration	0.25			Area Type: All other areas									

----- OPERATING PARAMETERS -----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0			0.0			0.0			0.0		
Arriv. Type	3			3			3			3		
Unit Ext.	3.0			3.0			3.0			3.0		
I Factor	1.000			1.000			1.000			1.000		
Lost Time	2.0			2.0			2.0			2.0		
Ext of g	2.0			2.0			2.0			2.0		
Ped Min g	3.2			3.2								

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: PM53BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: WEEKDAY PEAK PM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig	LR						LT			T R		
Volume	287		31				40	692		864	437	
Lane Width	15.0						15.0			12.0	12.0	
RTOR Vol	0									0		

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru					Thru	A		
Right		A			Right			
Peds		X			Peds	X		
WB Left					SB Left			
Thru					Thru	A		
Right					Right	A		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				50.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LR 672 2015 0.51 0.33 24.8 C 24.8 C

Westbound

Northbound

LT 990 1782 0.80 0.56 20.9 C 20.9 C

Southbound

T 1056 1900 0.89 0.56 27.1 C 22.5 C  
 R 877 1579 0.54 0.56 13.4 B

Intersection Delay = 22.3 (sec/veh) Intersection LOS = C

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM53BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	287		31				40	692			864	437
% Heavy Veh	0		5				5	0			0	0
PHF	0.92		0.92				0.92	0.92			0.92	0.92
PK 15 Vol	78		8				11	188			235	119
Hi Ln Vol												
% Grade		-6						0			0	
Ideal Sat		1900						1900			1900	1900
ParkExist												
NumPark												
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig		LR						LT			T	R
Lane Width		15.0						15.0			12.0	12.0
RTOR Vol			0									0
Adj Flow		346						795			939	475
%InSharedLn												
Prop LTs		0.902						0.054			0.000	
Prop RTs	0.098						0.000			0.000	1.000	
Peds Bikes	25	0		0						25	0	
Buses	0							0		0	0	
%InProtPhase												
Duration	0.25			Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0			0.0	0.0
Arriv. Type		3						3			3	3
Unit Ext.		3.0						3.0			3.0	3.0
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0			2.0	2.0
Ext of g		2.0						2.0			2.0	2.0
Ped Min g		3.4			3.2						3.4	

Phone: Fax:  
 E-Mail:

-----ALL-WAY STOP CONTROL(AWSC) ANALYSIS-----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM54BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: SPRUCE STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE

-----Worksheet 2 - Volume Adjustments and Site Characteristics-----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	211	0	180	0	74	132	204	85	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		TR		LT	
PHF			0.92		0.92		0.92	
Flow Rate			424		223		313	
% Heavy Veh			5		5		5	
No. Lanes				1		1		1
Opposing-Lanes				0		1		1
Conflicting-lanes				1		1		1
Geometry group				1		1		1
Duration, T	0.25 hrs.							

-----Worksheet 3 - Saturation Headway Adjustment Worksheet-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			424		223		313	
Left-Turn			229		0		221	
Right-Turn			195		143		0	
Prop. Left-Turns			0.5		0.0		0.7	
Prop. Right-Turns			0.5		0.6		0.0	
Prop. Heavy Vehicle			0.0		0.0		0.0	
Geometry Group				1		1		1
Adjustments Exhibit 17-33:								
hLT-adj				0.2		0.2		0.2

hRT-adj	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7
hadj, computed	-0.1	-0.3	0.2

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			424		223		313	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.38		0.20		0.28	
hd, final value			5.31		5.37		5.73	
x, final value			0.63		0.33		0.50	
Move-up time, m				2.0		2.0		2.0
Service Time			3.3		3.4		3.7	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			424		223		313	
Service Time			3.3		3.4		3.7	
Utilization, x			0.63		0.33		0.50	
Dep. headway, hd			5.31		5.37		5.73	
Capacity			652		473		563	
Delay			16.74		11.03		14.26	
LOS			C		B		B	
Approach:								
Delay			16.74		11.03		14.26	
LOS			C		B		B	
Intersection Delay	14.60							
					Intersection LOS	B		

TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM55BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: ELM STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		117	257		27	143	
Peak-Hour Factor, PHF		0.92	0.92		0.92	0.92	
Hourly Flow Rate, HFR		127	279		29	155	
Percent Heavy Vehicles		--	--		5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR			LT	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		239		21			
Peak Hour Factor, PHF		0.92		0.92			
Hourly Flow Rate, HFR		259		22			
Percent Heavy Vehicles		5		5			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4 LT	7	8 LR	9	10	11
v (vph)		29		281				
C(m) (vph)		1137		539				
v/c		0.03		0.52				
95% queue length		0.08		2.99				
Control Delay		8.2		18.7				
LOS		A		C				
Approach Delay				18.7				
Approach LOS				C				

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: PM56BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: CBD or Similar  
 Date: 4/30/2007 Jurisd:  
 Period: WEEKDAY PEAK PM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig	LTR			LTR			LTR			LTR		
Volume	53	273	27	32	292	58	16	85	37	64	95	122
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	0			0			0			0		

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		P			NB Left	P		
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
WB Left		P			SB Left	P		
Thru		P			Thru	P		
Right		P			Right	P		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				40.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LTR 638 1435 0.60 0.44 23.1 C 23.1 C

Westbound

LTR 667 1500 0.62 0.44 23.5 C 23.5 C

Northbound

LTR 658 1480 0.23 0.44 16.2 B 16.2 B

Southbound

LTR 601 1353 0.51 0.44 21.0 C 21.0 C

Intersection Delay = 21.9 (sec/veh) Intersection LOS = C



Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM56BD  
 Area Type: CBD or Similar  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	53	273	27	32	292	58	16	85	37	64	95	122
% Heavy Veh	5	5	5	5	5	5	5	5	5	5	5	5
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
PK 15 Vol	14	74	7	9	79	16	4	23	10	17	26	33
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900			1900			1900	
ParkExist												
NumPark												
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0
Adj Flow		384			415			149			306	
%InSharedLn												
Prop LTs		0.151			0.084			0.114			0.229	
Prop RTs		0.076			0.152			0.268			0.435	
Peds Bikes	25	0		25	0		25	0		25	0	
Buses		0			0			0			0	
%InProtPhase												
Duration	0.25											

Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0			0.0			0.0	
Arriv. Type		3			3			3			3	
Unit Ext.		3.0			3.0			3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0			2.0			2.0	
Ext of g		2.0			2.0			2.0			2.0	
Ped Min g		3.4			3.4			3.4			3.4	

Phone: Fax:  
 E-Mail:

-----ALL-WAY STOP CONTROL(AWSC) ANALYSIS-----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM57BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: ELM STREET  
 North/South Street: LINDEN STREET

-----Worksheet 2 - Volume Adjustments and Site Characteristics-----

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	60	318	105	36	305	30	68	15	24	0	0	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR			
PHF	0.92		0.92		0.92			
Flow Rate	524		402		115			
% Heavy Veh	5		5		5			
No. Lanes		1		1		1		
Opposing-Lanes		1		1		0		
Conflicting-lanes		1		1		1		
Geometry group		1		1		1		
Duration, T	0.25 hrs.							

-----Worksheet 3 - Saturation Headway Adjustment Worksheet-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	524		402		115			
Left-Turn	65		39		73			
Right-Turn	114		32		26			
Prop. Left-Turns	0.1		0.1		0.6			
Prop. Right-Turns	0.2		0.1		0.2			
Prop. Heavy Vehicle	0.0		0.0		0.0			
Geometry Group	1		1		1			
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2			



TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM58BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: LOCKWOOD AVENUE  
 North/South Street: SAW MILL PKWY SB ON/OFF RAMP  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		147	301			390	106
Peak-Hour Factor, PHF		0.92	0.92			0.92	0.92
Hourly Flow Rate, HFR		159	327			423	115
Percent Heavy Vehicles		0	--	--		--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1			1	0
Configuration		LT				TR	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume					111		220
Peak Hour Factor, PHF					0.92		0.92
Hourly Flow Rate, HFR					120		239
Percent Heavy Vehicles					0		0
Percent Grade (%)		0				0	
Flared Approach: Exists?/Storage					/		No /
Lanes					0		0
Configuration						LR	

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound						
			1	4	7	8	9	10	11	12		
Lane Config	LT											
v (vph)	159								359			
C(m) (vph)	1040								273			
v/c	0.15								1.32			
95% queue length	0.54								18.16			
Control Delay	9.1								202.3			
LOS	A								F			
Approach Delay									202.3			
Approach LOS									F			

HCS+: Unsignalized Intersections Release 5.2

Phone:  
E-Mail:

Fax:

-----TWO-WAY STOP CONTROL(TWSC) ANALYSIS-----

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM58BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: LOCKWOOD AVENUE  
 North/South Street: SAW MILL PKWY SB ON/OFF RAMP  
 Intersection Orientation: EW Study period (hrs): 0.25

-----Vehicle Volumes and Adjustments-----

Major Street Movements	1 L	2 T	3 R	4 L	5 T	6 R
Volume	147	301			390	106
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.92
Peak-15 Minute Volume	40	82			106	29
Hourly Flow Rate, HFR	159	327			423	115
Percent Heavy Vehicles	0	--	--		--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	
Minor Street Movements	7 L	8 T	9 R	10 L	11 T	12 R
Volume				111		220
Peak Hour Factor, PHF				0.92		0.92
Peak-15 Minute Volume				30		60
Hourly Flow Rate, HFR				120		239
Percent Heavy Vehicles				0		0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
RT Channelized?						
Lanes				0		0
Configuration					LR	

-----Pedestrian Volumes and Adjustments-----

Movements	13	14	15	16
Flow (ped/hr)	0	0	0	0

TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM59BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: PALMER ROAD  
 North/South Street: SAW MILL PKWY NB ON/OFF RAMP  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		205	338			353	138
Peak-Hour Factor, PHF		0.92	0.92			0.92	0.92
Hourly Flow Rate, HFR		222	367			383	149
Percent Heavy Vehicles		0	--	--		--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1			1	0
Configuration		LT				TR	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		368			175		
Peak Hour Factor, PHF		0.92			0.92		
Hourly Flow Rate, HFR		399			190		
Percent Heavy Vehicles		0			0		
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage		0			No	/	/
Lanes		0			0		
Configuration		LR					

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			1 LT	4 	7 	8 LR	9 	10 
v (vph)	222				589			
C(m) (vph)	1046				198			
v/c	0.21				2.97			
95% queue length	0.80				53.04			
Control Delay	9.4				938.4			
LOS	A				F			
Approach Delay					938.4			
Approach LOS					F			

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: PM6OBD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/30/2007 Jurisd:  
 Period: WEEKDAY PEAK PM HIGHWAY HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Volume	29	924	241	282	483	28	183	190	143	96	248	40
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru			A		Thru		A	
Right				A	Right			A
Peds		X		X	Peds	X		X
WB Left		A			SB Left	A		
Thru				A	Thru		A	
Right					Right			A
Peds		X		X	Peds	X		X
NB Right					EB Right			
SB Right					WB Right			
Green		15.0		30.0		8.0		27.0
Yellow		3.0		3.0		3.0		3.0
All Red		2.0		2.0		2.0		2.0

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	431	1719	0.07	0.50	13.8	B		
T	1085	3618	0.93	0.30	47.0	D	43.0	D
R	461	1538	0.57	0.30	31.2	C		
Westbound								
L	347	1805	0.88	0.50	49.4	D		
TR	1076	3588	0.52	0.30	29.4	C	36.6	D
Northbound								
L	310	1719	0.64	0.40	26.3	C		
T	489	1810	0.42	0.27	30.7	C	28.9	C
R	436	1615	0.36	0.27	30.0	C		
Southbound								
L	413	1805	0.25	0.40	19.9	B		
TR	478	1772	0.65	0.27	35.6	D	31.7	C

Intersection Delay = 37.2 (sec/veh) Intersection LOS = D

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: WEEKDAY PEAK PM HIGHWAY HOUR  
 Intersection: PM60BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	29	924	241	282	483	28	183	190	143	96	248	40
% Heavy Veh	5	0	5	0	0	0	5	5	0	0	5	5
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
PK 15 Vol	8	251	65	77	131	8	50	52	39	26	67	11
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900	1900	1900	1900		1900	1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0
Adj Flow	32	1004	262	307	555		199	207	155	104	313	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs		0.000	1.000		0.054			0.000	1.000		0.137	
Peds Bikes	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0		0	0	0	0	0	
%InProtPhase	0.0			0.0			0.0			0.0		
Duration	0.25											
				Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Arriv. Type	3	3	3	3	3		3	3	3	3	3	
Unit Ext.	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext of g	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ped Min g		3.2			3.2			3.2			3.2	



HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: SAT52BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: SATURDAY PEAK HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	2	0	0	2	0	0	0	2	0	0	2	0
LGConfig	L			L				T			T	
Volume	543			636			802			500		
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol												

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A						
Thru						A		
Right								
Peds								
WB Left		A						
Thru						A		
Right								
Peds								
NB Right								
SB Right								
Green		30.0				50.0		
Yellow		3.0				3.0		
All Red		2.0				2.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	1168	3505	0.51	0.33	24.4	C	24.4	C
Westbound								
L	1168	3505	0.59	0.33	25.7	C	25.7	C
Northbound								
T	2010	3618	0.43	0.56	11.9	B	11.9	B
Southbound								
T	2010	3618	0.27	0.56	10.5	B	10.5	B

Intersection Delay = 17.9 (sec/veh) Intersection LOS = B

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT52BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SAW MILL & CROSS COUNTY RAMPS N/S St: RUMSEY ROAD

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	543			636			802			500		
% Heavy Veh	0			0			0			0		
PHF	0.92			0.92			0.92			0.92		
PK 15 Vol	148			173			218			136		
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900			1900			1900			1900		
ParkExist												
NumPark												
No. Lanes	2	0	0	2	0	0	0	2	0	0	2	0
LGConfig	L			L			T			T		
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol												
Adj Flow	590			691			872			543		
%InSharedLn												
Prop LTs							0.000			0.000		
Prop RTs							0.000			0.000		
Peds Bikes	0			0						0		
Buses	0			0			0			0		
%InProtPhase												
Duration	0.25											

Area Type: All other areas

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0			0.0			0.0			0.0		
Arriv. Type	3			3			3			3		
Unit Ext.	3.0			3.0			3.0			3.0		
I Factor		1.000			1.000		1.000			1.000		
Lost Time	2.0			2.0			2.0			2.0		
Ext of g	2.0			2.0			2.0			2.0		
Ped Min g		3.2			3.2							

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: SAT53BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/27/2007 Jurisd:  
 Period: SATURDAY PEAK HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig	LR						LT			T R		
Volume	244		24				32	553		691	396	
Lane Width	15.0						15.0			12.0	12.0	
RTOR Vol	0									0		

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru					Thru	A		
Right		A			Right			
Peds		X			Peds	X		
WB Left					SB Left			
Thru					Thru	A		
Right					Right	A		
Peds		X			Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				50.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LR 673 2018 0.43 0.33 23.8 C 23.8 C

Westbound

Northbound

LT 1085 1953 0.59 0.56 14.0 B 14.0 B

Southbound

T 1056 1900 0.71 0.56 17.0 B 15.4 B  
 R 877 1579 0.49 0.56 12.7 B

Intersection Delay = 16.1 (sec/veh) Intersection LOS = B

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/27/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT53BD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: SPRUCE STREET/TRUESDALE PLACE N/S St: RUMSEY ROAD

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	244		24				32	553			691	396
% Heavy Veh	0		5				5	0			0	0
PHF	0.92		0.92				0.92	0.92			0.92	0.92
PK 15 Vol	66		7				9	150			188	108
Hi Ln Vol												
% Grade		-6						0			0	
Ideal Sat		1900						1900			1900	1900
ParkExist												
NumPark												
No. Lanes	0	0	0	0	0	0	0	1	0	0	1	1
LGConfig		LR						LT			T	R
Lane Width		15.0						15.0			12.0	12.0
RTOR Vol			0									0
Adj Flow		291						636			751	430
%InSharedLn												
Prop LTs		0.911						0.055			0.000	
Prop RTs		0.089						0.000			0.000	1.000
Peds Bikes	25		0		0					25		0
Buses		0						0			0	0
%InProtPhase												
Duration	0.25			Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0						0.0			0.0	0.0
Arriv. Type		3						3			3	3
Unit Ext.		3.0						3.0			3.0	3.0
I Factor		1.000						1.000			1.000	
Lost Time		2.0						2.0			2.0	2.0
Ext of g		2.0						2.0			2.0	2.0
Ped Min g		3.4			3.2						3.4	

Phone:  
E-Mail:

Fax:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT54BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: SPRUCE STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	0	0	0	165	0	191	0	59	106	179	68	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration			LR		TR		LT	
PHF			0.92		0.92		0.92	
Flow Rate			386		179		267	
% Heavy Veh			5		5		5	
No. Lanes				1		1		1
Opposing-Lanes				0		1		1
Conflicting-lanes				1		1		1
Geometry group				1		1		1
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane			386		179		267	
Left-Turn			179		0		194	
Right-Turn			207		115		0	
Prop. Left-Turns			0.5		0.0		0.7	
Prop. Right-Turns			0.5		0.6		0.0	
Prop. Heavy Vehicle			0.0		0.0		0.0	
Geometry Group				1		1		1
Adjustments Exhibit 17-33:								
hLT-adj				0.2		0.2		0.2

hRT-adj	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7
hadj, computed	-0.1	-0.3	0.2

-----Worksheet 4 - Departure Headway and Service Time-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate			386		179		267	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial			0.34		0.16		0.24	
hd, final value			4.95		5.07		5.44	
x, final value			0.53		0.25		0.40	
Move-up time, m				2.0		2.0		2.0
Service Time			2.9		3.1		3.4	

-----Worksheet 5 - Capacity and Level of Service-----

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate			386		179		267	
Service Time			2.9		3.1		3.4	
Utilization, x			0.53		0.25		0.40	
Dep. headway, hd			4.95		5.07		5.44	
Capacity			636		429		517	
Delay			13.40		9.76		12.08	
LOS			B		A		B	
Approach:								
Delay			13.40		9.76		12.08	
LOS			B		A		B	
Intersection Delay	12.19							
					Intersection LOS	B		

TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT55BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: ELM STREET  
 North/South Street: VAN CORTLANDT PARK AVENUE  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		93	221		21	115	
Peak-Hour Factor, PHF		0.92	0.92		0.92	0.92	
Hourly Flow Rate, HFR		101	240		22	124	
Percent Heavy Vehicles		--	--		5	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		1	0		0	1	
Configuration			TR			LT	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		237		17			
Peak Hour Factor, PHF		0.92		0.92			
Hourly Flow Rate, HFR		257		18			
Percent Heavy Vehicles		5		5			
Percent Grade (%)			0			0	
Flared Approach: Exists?/Storage				No	/		/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound		
			4 LT	7	8 LR	9	10	11
v (vph)	22				275			
C(m) (vph)	1202				608			
v/c	0.02				0.45			
95% queue length	0.06				2.35			
Control Delay	8.1				15.7			
LOS	A				C			
Approach Delay					15.7			
Approach LOS					C			

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: SAT56BD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: CBD or Similar  
 Date: 4/30/2007 Jurisd:  
 Period: SATURDAY PEAK HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig	LTR			LTR			LTR			LTR		
Volume	42	234	21	25	280	47	13	68	30	51	76	98
Lane Width	12.0			12.0			12.0			12.0		
RTOR Vol	0			0			0			0		

Duration 0.25 Area Type: CBD or Similar

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	P				NB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
WB Left	P				SB Left	P		
Thru	P				Thru	P		
Right	P				Right	P		
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				40.0			
Yellow	3.0				3.0			
All Red	2.0				2.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS

Eastbound

LTR 646 1454 0.50 0.44 20.6 C 20.6 C

Westbound

LTR 680 1531 0.56 0.44 21.8 C 21.8 C

Northbound

LTR 663 1491 0.18 0.44 15.7 B 15.7 B

Southbound

LTR 611 1375 0.40 0.44 18.9 B 18.9 B

Intersection Delay = 20.1 (sec/veh) Intersection LOS = C



Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT56BD  
 Area Type: CBD or Similar  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: ELM STREET N/S St: WALNUT STREET

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	42	234	21	25	280	47	13	68	30	51	76	98
% Heavy Veh	5	5	5	5	5	5	5	5	5	5	5	5
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
PK 15 Vol	11	64	6	7	76	13	4	18	8	14	21	27
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat		1900			1900			1900			1900	
ParkExist												
NumPark												
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Lane Width		12.0			12.0			12.0			12.0	
RTOR Vol			0			0			0			0
Adj Flow		323			382			121			245	
%InSharedLn												
Prop LTs		0.142			0.071			0.116			0.224	
Prop RTs		0.071			0.134			0.273			0.437	
Peds Bikes	25	0		25	0		25	0		25	0	
Buses	0			0			0			0		
%InProtPhase												
Duration	0.25											

Area Type: CBD or Similar

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet		0.0			0.0			0.0			0.0	
Arriv. Type		3			3			3			3	
Unit Ext.		3.0			3.0			3.0			3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time		2.0			2.0			2.0			2.0	
Ext of g		2.0			2.0			2.0			2.0	
Ped Min g		3.4			3.4			3.4			3.4	

HCS+: Unsignalized Intersections Release 5.2

Phone:  
E-Mail:

Fax:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT57BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: ELM STREET  
 North/South Street: LINDEN STREET

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	49	270	84	29	290	23	54	12	19	0	0	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR			
PHF	0.92		0.92		0.92			
Flow Rate	437		370		91			
% Heavy Veh	5		5		5			
No. Lanes		1		1		1		
Opposing-Lanes		1		1		0		
Conflicting-lanes		1		1		1		
Geometry group		1		1		1		
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	437		370		91			
Left-Turn	53		31		58			
Right-Turn	91		24		20			
Prop. Left-Turns	0.1		0.1		0.6			
Prop. Right-Turns	0.2		0.1		0.2			
Prop. Heavy Vehicle	0.0		0.0		0.0			
Geometry Group		1		1		1		
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2			

hRT-adj	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7
hadj, computed	-0.0	0.1	0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	437		370		91			
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.39		0.33		0.08			
hd, final value	4.61		4.75		5.82			
x, final value	0.56		0.49		0.15			
Move-up time, m		2.0		2.0		2.0		
Service Time	2.6		2.8		3.8			

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	437		370		91			
Service Time	2.6		2.8		3.8			
Utilization, x	0.56		0.49		0.15			
Dep. headway, hd	4.61		4.75		5.82			
Capacity	687		620		341			
Delay	13.29		12.20		9.83			
LOS	B		B		A			
Approach:								
Delay		13.29		12.20		9.83		
LOS		B		B		A		
Intersection Delay	12.49							
Intersection LOS					B			



TWO-WAY STOP CONTROL SUMMARY

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT59BD  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 East/West Street: PALMER ROAD  
 North/South Street: SAW MILL PKWY NB ON/OFF RAMP  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street:	Approach Movement	Eastbound			Westbound		
		1 L	2 T	3 R	4 L	5 T	6 R
Volume		168	274			310	110
Peak-Hour Factor, PHF		0.92	0.92			0.92	0.92
Hourly Flow Rate, HFR		182	297			336	119
Percent Heavy Vehicles		0	--	--		--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes		0	1			1	0
Configuration		LT				TR	
Upstream Signal?		No				No	

Minor Street:	Approach Movement	Northbound			Southbound		
		7 L	8 T	9 R	10 L	11 T	12 R
Volume		323			140		
Peak Hour Factor, PHF		0.92			0.92		
Hourly Flow Rate, HFR		351			152		
Percent Heavy Vehicles		0			0		
Percent Grade (%)		0			0		
Flared Approach: Exists?/Storage		0			No	/	/
Lanes		0			0		
Configuration		LR					

Delay, Queue Length, and Level of Service

Approach Movement	EB	WB	Northbound			Southbound			
			1 LT	4 	7 	8 LR	9 	10 	11 
v (vph)	182					503			
C(m) (vph)	1116					268			
v/c	0.16					1.88			
95% queue length	0.58					34.80			
Control Delay	8.9					439.9			
LOS	A					F			
Approach Delay						439.9			
Approach LOS						F			

HCS+: Signalized Intersections Release 5.2

Analyst: JCE Inter.: SAT6OBD  
 Agency: JOHN COLLINS ENGINEERS, P.C. Area Type: All other areas  
 Date: 4/30/2007 Jurisd:  
 Period: SATURDAY PEAK HOUR Year : 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Volume	23	740	193	226	387	22	146	157	115	77	227	32
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A	A	
Thru			A		Thru		A	
Right			A		Right		A	
Peds	X	X			Peds	X	X	
WB Left		A			SB Left	A	A	
Thru			A		Thru		A	
Right			A		Right		A	
Peds	X	X			Peds	X	X	
NB Right					EB Right			
SB Right					WB Right			
Green	12.0	30.0			8.0	30.0		
Yellow	3.0	3.0			3.0	3.0		
All Red	2.0	2.0			2.0	2.0		

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
			v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
L	426	1719	0.06	0.47	14.9	B		
T	1085	3618	0.74	0.30	34.3	C	32.8	C
R	461	1538	0.46	0.30	29.1	C		
Westbound								
L	307	1805	0.80	0.47	34.0	C		
TR	1076	3588	0.41	0.30	28.2	C	30.3	C
Northbound								
L	371	1719	0.43	0.43	19.7	B		
T	543	1810	0.31	0.30	27.4	C	24.5	C
R	485	1615	0.26	0.30	26.8	C		
Southbound								
L	485	1805	0.17	0.43	17.5	B		
TR	533	1776	0.53	0.30	30.1	C	27.2	C

Intersection Delay = 29.8 (sec/veh) Intersection LOS = C

Phone:  
E-Mail:

Fax:

OPERATIONAL ANALYSIS

Analyst: JCE  
 Agency/Co.: JOHN COLLINS ENGINEERS, P.C.  
 Date Performed: 4/30/2007  
 Analysis Time Period: SATURDAY PEAK HOUR  
 Intersection: SAT6OBD  
 Area Type: All other areas  
 Jurisdiction:  
 Analysis Year: 2012 BUILD TRAFFIC VOLUMES  
 Project ID: 281  
 E/W St: EXECUTIVE BOULEVARD N/S St: NEPPERHAN AVENUE

VOLUME DATA

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	23	740	193	226	387	22	146	157	115	77	227	32
% Heavy Veh	5	0	5	0	0	0	5	5	0	0	5	5
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
PK 15 Vol	6	201	52	61	105	6	40	43	31	21	62	9
Hi Ln Vol												
% Grade		0			0			0			0	
Ideal Sat	1900	1900	1900	1900	1900		1900	1900	1900	1900	1900	
ParkExist												
NumPark												
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	TR		L	T	R	L	TR	
Lane Width	12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	12.0	12.0	
RTOR Vol			0			0			0			0
Adj Flow	25	804	210	246	445		159	171	125	84	282	
%InSharedLn												
Prop LTs	1.000	0.000		1.000	0.000		1.000	0.000		1.000	0.000	
Prop RTs		0.000	1.000		0.054			0.000	1.000		0.124	
Peds Bikes	0	0	0	0	0	0	0	0	0	0	0	0
Buses	0	0	0	0	0		0	0	0	0	0	
%InProtPhase	0.0			0.0			0.0			0.0		
Duration	0.25											
				Area Type: All other areas								

OPERATING PARAMETERS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Init Unmet	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Arriv. Type	3	3	3	3	3		3	3	3	3	3	
Unit Ext.	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
I Factor		1.000			1.000			1.000			1.000	
Lost Time	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ext of g	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Ped Min g		3.2			3.2			3.2			3.2	