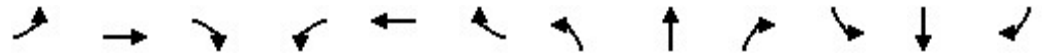


**Appendix III/IV.L**  
**Transportation**

III/IV.L-10: Synchro Output Reports -  
2033 Mitigation Conditions

Hudson Highlands Fjord Trail  
 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.

2033 With Action + Mitigation  
 Saturday Peak hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	124	122	87	178	251	162	379	116	115	246	45
Future Volume (vph)	46	124	122	87	178	251	162	379	116	115	246	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	12	12	11	12	12	11	12
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.83	0.74		0.72	0.66			0.91			0.93	
Frt		0.926			0.912			0.976			0.985	
Flt Protected	0.950			0.950				0.988			0.986	
Satd. Flow (prot)	1533	997	0	1564	844	0	0	1431	0	0	1602	0
Flt Permitted	0.277			0.482				0.745			0.649	
Satd. Flow (perm)	372	997	0	568	844	0	0	1032	0	0	1039	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		58						16			9	
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		299			289			346			546	
Travel Time (s)		8.2			6.6			7.9			12.4	
Confl. Peds. (#/hr)	338		222	222		338	188		96	96		188
Confl. Bikes (#/hr)			1						2			1
Peak Hour Factor	0.85	0.85	0.85	0.90	0.90	0.90	0.93	0.93	0.93	0.86	0.86	0.86
Heavy Vehicles (%)	3%	12%	17%	1%	4%	16%	1%	5%	0%	2%	7%	3%
Parking (#/hr)	5	5	5	5	5	5	5	5	5	5	5	5
Adj. Flow (vph)	54	146	144	97	198	279	174	408	125	134	286	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	290	0	97	477	0	0	707	0	0	472	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.00	1.19	1.29	1.00	1.00	1.24	1.00	1.00	1.04	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	55		20	55		20	55		20	55	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	25		20	25		20	25		20	25	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		30			30			30			30	
Detector 2 Size(ft)		25			25			25			25	

Hudson Highlands Fjord Trail  
 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.

2033 With Action + Mitigation  
 Saturday Peak hour

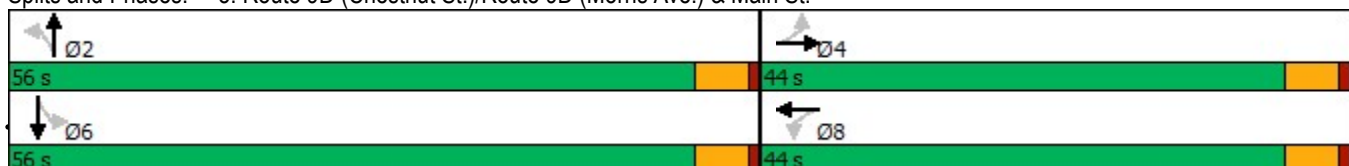


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	44.0	44.0		44.0	44.0		56.0	56.0		56.0	56.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Maximum Green (s)	39.0	39.0		39.0	39.0		51.0	51.0		51.0	51.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		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		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	10	10		10	10		10	10		10	10	
Act Effct Green (s)	39.0	39.0		39.0	39.0		51.0	51.0		51.0	51.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.51	0.51		0.51	0.51	
v/c Ratio	0.37	0.68		0.44	1.45		1.32	1.32		0.88	0.88	
Control Delay	31.2	29.7		30.3	246.2		183.2	183.2		42.2	42.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.2	29.7		30.3	246.2		183.2	183.2		42.2	42.2	
LOS	C	C		C	F		F	F		D	D	
Approach Delay	30.0			209.7			183.2			42.2		
Approach LOS	C			F			F			D		

Intersection Summary

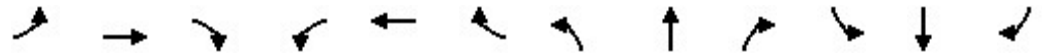
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Natural Cycle:	75
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	1.45
Intersection Signal Delay:	133.6
Intersection LOS:	F
Intersection Capacity Utilization:	97.5%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.



Hudson Highlands Fjord Trail  
 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.

2033 With Action + Mitigation  
 Sunday Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	86	66	75	173	127	203	391	73	106	262	65
Future Volume (vph)	36	86	66	75	173	127	203	391	73	106	262	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	10	12	12	11	12	12	11	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.81	0.86		0.77	0.83			0.96			0.96	
Fr <sub>t</sub>		0.935			0.936			0.985			0.980	
Fl <sub>t</sub> Protected	0.950			0.950				0.985			0.988	
Satd. Flow (prot)	1476	1183	0	1579	1208	0	0	1508	0	0	1666	0
Fl <sub>t</sub> Permitted	0.403			0.621				0.696			0.727	
Satd. Flow (perm)	504	1183	0	790	1208	0	0	1042	0	0	1226	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)		50						8			11	
Link Speed (mph)		25			30			30			30	
Link Distance (ft)		299			289			346			546	
Travel Time (s)		8.2			6.6			7.9			12.4	
Confl. Peds. (#/hr)	154		123	123		154	90		58	58		90
Confl. Bikes (#/hr)									2			1
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.99	0.99	0.99	0.85	0.85	0.85
Heavy Vehicles (%)	7%	0%	30%	0%	0%	0%	1%	2%	0%	0%	4%	2%
Parking (#/hr)	5	5	5	5	5	5	5	5	5	5	5	5
Adj. Flow (vph)	42	100	77	84	194	143	205	395	74	125	308	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	177	0	84	337	0	0	674	0	0	509	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.00	1.19	1.29	1.00	1.00	1.24	1.00	1.00	1.04	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	55		20	55		20	55		20	55	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	25		20	25		20	25		20	25	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		30			30			30			30	
Detector 2 Size(ft)		25			25			25			25	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Hudson Highlands Fjord Trail  
 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.

2033 With Action + Mitigation  
 Sunday Peak Hour

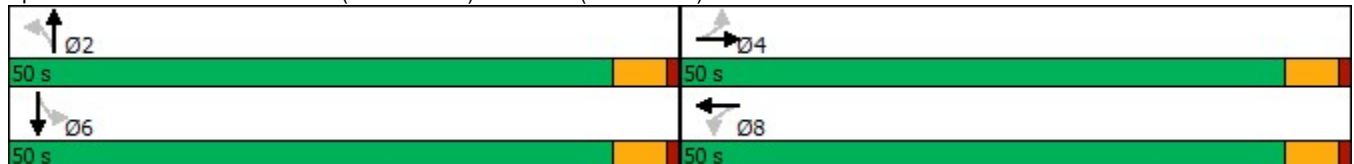


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.0	25.0		25.0	25.0		24.0	24.0		24.0	24.0	
Total Split (s)	50.0	50.0		50.0	50.0		50.0	50.0		50.0	50.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		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		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0		13.0	13.0		12.0	12.0		12.0	12.0	
Pedestrian Calls (#/hr)	10	10		10	10		10	10		10	10	
Act Effct Green (s)	28.2	28.2		28.2	28.2			45.6			45.6	
Actuated g/C Ratio	0.34	0.34		0.34	0.34			0.54			0.54	
v/c Ratio	0.25	0.41		0.32	0.83			1.18			0.76	
Control Delay	22.8	17.1		22.9	42.9			123.1			26.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	22.8	17.1		22.9	42.9			123.1			26.7	
LOS	C	B		C	D			F			C	
Approach Delay		18.2			38.9			123.1			26.7	
Approach LOS		B			D			F			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 83.9  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.18  
 Intersection Signal Delay: 64.2  
 Intersection LOS: E  
 Intersection Capacity Utilization 93.8%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 5: Route 9D (Chestnut St.)/Route 9D (Morris Ave.) & Main St.



Intersection				
Intersection Delay, s/veh	8.1			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	543	629	165	0
Demand Flow Rate, veh/h	584	660	171	0
Vehicles Circulating, veh/h	13	118	465	748
Vehicles Exiting, veh/h	735	518	132	30
Ped Vol Crossing Leg, #/h	45	11	61	0
Ped Cap Adj	0.994	0.998	0.992	1.000
Approach Delay, s/veh	7.2	9.4	6.5	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	584	660	171	0
Cap Entry Lane, veh/h	1362	1223	859	643
Entry HV Adj Factor	0.931	0.953	0.965	1.000
Flow Entry, veh/h	543	629	165	0
Cap Entry, veh/h	1259	1164	822	643
V/C Ratio	0.432	0.540	0.201	0.000
Control Delay, s/veh	7.2	9.4	6.5	5.6
LOS	A	A	A	A
95th %tile Queue, veh	2	3	1	0

Intersection				
Intersection Delay, s/veh	6.9			
Intersection LOS	A			
Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	533	519	145	0
Demand Flow Rate, veh/h	553	534	148	0
Vehicles Circulating, veh/h	18	102	412	606
Vehicles Exiting, veh/h	588	458	159	30
Ped Vol Crossing Leg, #/h	24	11	19	0
Ped Cap Adj	0.997	0.998	0.997	1.000
Approach Delay, s/veh	6.7	7.4	5.7	0.0
Approach LOS	A	A	A	-
Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	553	534	148	0
Cap Entry Lane, veh/h	1355	1244	906	744
Entry HV Adj Factor	0.964	0.973	0.980	1.000
Flow Entry, veh/h	533	519	145	0
Cap Entry, veh/h	1301	1208	886	744
V/C Ratio	0.410	0.430	0.164	0.000
Control Delay, s/veh	6.7	7.4	5.7	4.8
LOS	A	A	A	A
95th %tile Queue, veh	2	2	1	0