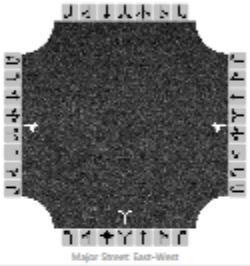
Scenario 1:

AM and PM

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	Site Entrance and US460
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	N Middletown
Analysis Year	2018	North/South Street	Site Entrance
Time Analyzed	AM Peak 2018 Build	Peak Hour Factor	0.82
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz Estate		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			145	4		5	201			15		11				
Percent Heavy Vehicles						9				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						251					31					
Capacity						1353					668					
v/c Ratio						0.19					0.05					
95% Queue Length						0.0					0.1					
Control Delay (s/veh)						7.7					10.6					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.2				10.6							
Approach LOS									B							

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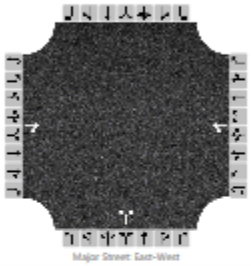
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	Site Entrance and US460
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	N Middletown
Analysis Year	2018	North/South Street	Site Entrance
Time Analyzed	AM Peak 2028 Build	Peak Hour Factor	0.82
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz Estate		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			174	5		6	241			18		13				
Percent Heavy Vehicles						9				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						301					38					
Capacity						1312					609					
v/c Ratio						0.23					0.06					
95% Queue Length						0.0					0.2					
Control Delay (s/veh)						7.8					11.3					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.2				11.3							
Approach LOS									B							

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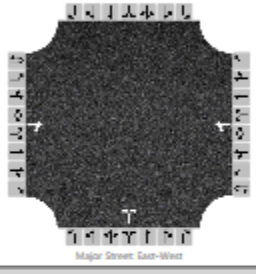
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	Site Entrance and US460
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	N Middletown
Analysis Year	2018	North/South Street	Site Entrance
Time Analyzed	PM Peak 2018 Build	Peak Hour Factor	0.79
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz Estate		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			187	15		15	198			9		8				
Percent Heavy Vehicles						9				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

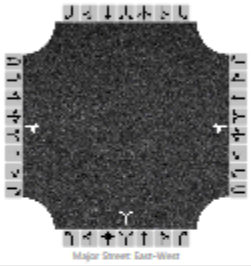
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						270					21					
Capacity						1270					605					
v/c Ratio						0.21					0.03					
95% Queue Length						0.8					0.1					
Control Delay (s/veh)						7.9					11.2					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.7				11.2							
Approach LOS									B							

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	Site Entrance and US460
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	N Middletown
Analysis Year	2018	North/South Street	Site Entrance
Time Analyzed	PM Peak 2028 Build	Peak Hour Factor	0.79
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz Estate		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	0	0
Configuration				TR		LT					LR					
Volume (veh/h)			224	18		18	238			11		10				
Percent Heavy Vehicles						9				2		2				
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)						324					27					
Capacity						1216					539					
v/c Ratio						0.27					0.05					
95% Queue Length						0.1					0.2					
Control Delay (s/veh)						8.0					12.0					
Level of Service (LOS)						A					B					
Approach Delay (s/veh)					0.7				12.0							
Approach LOS									B							

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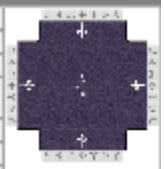
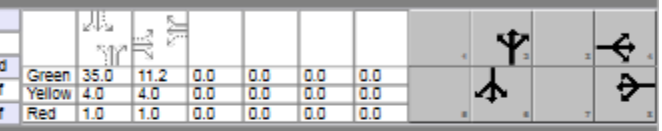
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2018 AM No Build.xus		
Project Description	2018 AM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	1	1	1	84	5	119	13	113	58	76	187	4

Signal Information			
Cycle, s	56.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	11.2	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

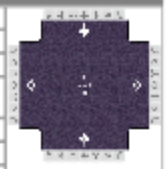
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		16.2		16.2		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.1		10.7		5.0		6.3
Green Extension Time (g_e), s		0.0		0.8		0.7		1.1
Phase Call Probability		0.97		0.97		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		3			231			204			297	
Adjusted Saturation Flow Rate (s), veh/h/ln		1632			1418			1635			1546	
Queue Service Time (g_s), s		0.0			6.9			0.0			0.0	
Cycle Queue Clearance Time (g_c), s		0.1			8.7			3.0			4.3	
Green Ratio (g/C)		0.20			0.20			0.62			0.62	
Capacity (c), veh/h		410			372			1087			1045	
Volume-to-Capacity Ratio (X)		0.008			0.621			0.188			0.284	
Back of Queue (Q), ft/ln (50 th percentile)		0.8			68.6			19.1			29.7	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			2.7			0.8			1.2	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.07			0.02			0.03	
Uniform Delay (d_1), s/veh		18.1			21.4			4.6			4.8	
Incremental Delay (d_2), s/veh		0.0			1.7			0.4			0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.1			23.1			4.9			5.5	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.1		B	23.1		C	4.9		A	5.5		A
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.8	A	1.0	A

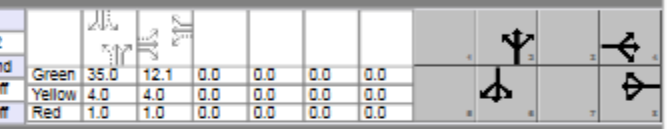
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2018 AM Build.xus		
Project Description	2018 AM Peak Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	1	2	1	90	6	128	13	113	60	78	187	4

Signal Information			
Cycle, s	57.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



	EB		WB			NB		SB		
Green	35.0	12.1	0.0	0.0	0.0	0.0				
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	1.0	1.0	0.0	0.0	0.0	0.0				

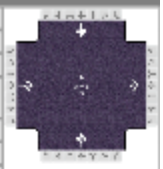
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.1		17.1		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.2		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.1		11.5		5.1		6.5
Green Extension Time (g_e), s		0.0		0.8		0.7		1.1
Phase Call Probability		0.98		0.98		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		4			249			207			299	
Adjusted Saturation Flow Rate (s), veh/h/ln		1692			1418			1634			1541	
Queue Service Time (g_s), s		0.0			7.7			0.0			0.0	
Cycle Queue Clearance Time (g_c), s		0.1			9.5			3.1			4.5	
Green Ratio (g/C)		0.21			0.21			0.61			0.61	
Capacity (c), veh/h		438			389			1068			1025	
Volume-to-Capacity Ratio (X)		0.010			0.639			0.193			0.292	
Back of Queue (Q), ft/ln (50 th percentile)		1.1			75.1			20.9			32.5	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			3.0			0.8			1.3	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.08			0.02			0.03	
Uniform Delay (d_1), s/veh		17.8			21.4			4.9			5.2	
Incremental Delay (d_2), s/veh		0.0			1.7			0.4			0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.8			23.1			5.3			5.9	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.8	B		23.1	C		5.3	A		5.9	A	
Intersection Delay, s/veh / LOS	11.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.8	A	1.0	A

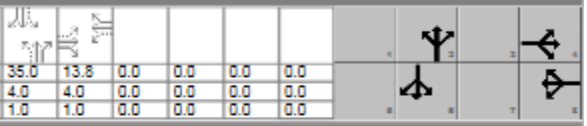
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2028 AM No Build.xus		
Project Description	2028 AM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	2	2	2	101	7	143	16	136	70	91	225	5

Signal Information			
Cycle, s	58.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	13.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

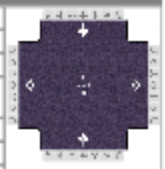
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		18.8		18.8		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.2		13.0		6.1		8.3
Green Extension Time (g_e), s		0.0		0.9		0.9		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		7			279			247			357	
Adjusted Saturation Flow Rate (s), veh/h/ln		1598			1415			1631			1529	
Queue Service Time (g_s), s		0.0			9.1			0.0			1.3	
Cycle Queue Clearance Time (g_c), s		0.2			11.0			4.1			6.3	
Green Ratio (g/C)		0.23			0.23			0.60			0.60	
Capacity (c), veh/h		456			418			1037			989	
Volume-to-Capacity Ratio (X)		0.015			0.668			0.238			0.361	
Back of Queue (Q), ft/ln (50 th percentile)		1.6			85.9			29.1			46.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.1			3.4			1.2			1.8	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.09			0.03			0.05	
Uniform Delay (d_1), s/veh		17.3			21.3			5.6			6.0	
Incremental Delay (d_2), s/veh		0.0			1.8			0.5			1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.3			23.2			6.2			7.1	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.3	B		23.2	C		6.2	A		7.1	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.9	A	1.1	A

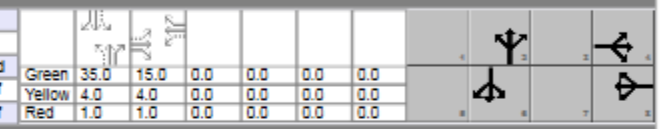
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2028 AM Build.xus		
Project Description	2028 AM Peak Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	2	3	2	108	8	154	16	136	72	94	225	5

Signal Information			
Cycle, s	60.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	15.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

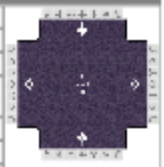
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		20.0		20.0		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.2		14.1		6.4		8.8
Green Extension Time (g_e), s		0.0		1.0		0.9		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		8			300			249			360	
Adjusted Saturation Flow Rate (s), veh/h/ln		1630			1414			1630			1522	
Queue Service Time (g_s), s		0.0			10.1			0.0			1.9	
Cycle Queue Clearance Time (g_c), s		0.2			12.1			4.4			6.8	
Green Ratio (g/C)		0.25			0.25			0.58			0.58	
Capacity (c), veh/h		484			437			1016			966	
Volume-to-Capacity Ratio (X)		0.016			0.687			0.245			0.373	
Back of Queue (Q), ft/ln (50 th percentile)		1.9			94.2			32.1			50.6	
Back of Queue (Q), veh/ln (50 th percentile)		0.1			3.8			1.3			2.0	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.10			0.03			0.05	
Uniform Delay (d_1), s/veh		17.0			21.3			6.1			6.6	
Incremental Delay (d_2), s/veh		0.0			1.9			0.6			1.1	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.0			23.2			6.7			7.7	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.0	B		23.2	C		6.7	A		7.7	A	
Intersection Delay, s/veh / LOS	12.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	1.0	A	0.9	A	1.1	A

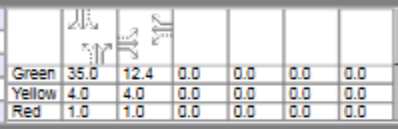
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2018 PM No Build.xus		
Project Description	2018 No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	11	25	105	0	124	6	220	77	100	207	0

Signal Information			
Cycle, s	57.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	12.4	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

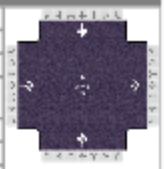
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.4		17.4		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.3
Queue Clearance Time (g_s), s		3.2		11.7		7.4		7.5
Green Extension Time (g_e), s		0.1		0.8		1.2		1.3
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		44			246			326			330	
Adjusted Saturation Flow Rate (s), veh/h/ln		1671			1383			1678			1450	
Queue Service Time (g_s), s		0.0			8.1			0.0			0.1	
Cycle Queue Clearance Time (g_c), s		1.2			9.7			5.4			5.5	
Green Ratio (g/C)		0.22			0.22			0.61			0.61	
Capacity (c), veh/h		431			390			1087			967	
Volume-to-Capacity Ratio (X)		0.102			0.631			0.300			0.341	
Back of Queue (Q), ft/ln (50 th percentile)		10.9			74			36.6			37.9	
Back of Queue (Q), veh/ln (50 th percentile)		0.4			3.0			1.5			1.5	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.08			0.04			0.04	
Uniform Delay (d_1), s/veh		18.1			21.3			5.4			5.4	
Incremental Delay (d_2), s/veh		0.1			1.7			0.7			1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.2			23.0			6.1			6.4	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.2		B	23.0		C	6.1		A	6.4		A
Intersection Delay, s/veh / LOS	11.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.6	A	0.9	A	1.0	A	1.0	A

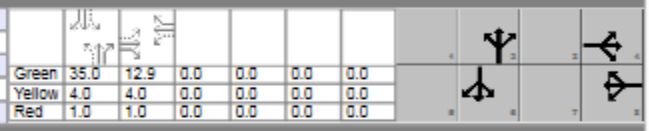
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl…	File Name	Signal 2018 PM Build.xus		
Project Description	2018 PM Peak Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	12	25	109	0	129	6	220	83	108	207	0

Signal Information			
Cycle, s	57.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	12.9	0.0	0.0	0.0	0.0		
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Red	1.0	1.0	0.0	0.0	0.0	0.0		

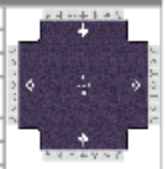
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.9		17.9		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.3
Queue Clearance Time (g_s), s		3.2		12.2		7.7		8.0
Green Extension Time (g_e), s		0.1		0.9		1.2		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		45			256			332			339	
Adjusted Saturation Flow Rate (s), veh/h/ln		1675			1382			1674			1431	
Queue Service Time (g_s), s		0.0			8.6			0.0			0.4	
Cycle Queue Clearance Time (g_c), s		1.2			10.2			5.7			6.0	
Green Ratio (g/C)		0.22			0.22			0.60			0.60	
Capacity (c), veh/h		443			399			1075			948	
Volume-to-Capacity Ratio (X)		0.102			0.641			0.309			0.357	
Back of Queue (Q), ft/ln (50 th percentile)		11.2			77.6			39.5			41.3	
Back of Queue (Q), veh/ln (50 th percentile)		0.4			3.1			1.6			1.7	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.08			0.04			0.04	
Uniform Delay (d_1), s/veh		18.0			21.3			5.7			5.7	
Incremental Delay (d_2), s/veh		0.1			1.7			0.7			1.1	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.1			23.1			6.4			6.7	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.1		B	23.1		C	6.4		A	6.7		A
Intersection Delay, s/veh / LOS	11.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.6	A	0.9	A	1.0	A	1.0	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2028 PM No Build.xus		
Project Description	2028 PM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	6	12	34	126	2	149	7	264	92	120	249	2

Signal Information					EB			WB			NB			SB		
Cycle, s	60.3	Reference Phase	2		L	T	R	L	T	R	L	T	R	L	T	R
Offset, s	0	Reference Point	End	Green	35.0	15.3	0.0	0.0	0.0	0.0						
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	Off	Red	1.0	1.0	0.0	0.0	0.0	0.0						

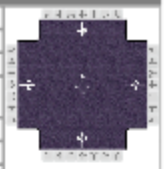
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		20.3		20.3		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.4
Queue Clearance Time (g_s), s		3.6		14.4		9.7		10.7
Green Extension Time (g_e), s		0.1		1.0		1.5		1.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		56			298			390			399	
Adjusted Saturation Flow Rate (s), veh/h/ln		1668			1375			1677			1418	
Queue Service Time (g_s), s		0.0			10.7			0.0			1.1	
Cycle Queue Clearance Time (g_c), s		1.6			12.4			7.7			8.7	
Green Ratio (g/C)		0.25			0.25			0.58			0.58	
Capacity (c), veh/h		490			436			1034			902	
Volume-to-Capacity Ratio (X)		0.114			0.683			0.378			0.442	
Back of Queue (Q), ft/ln (50 th percentile)		13.9			93.6			57.4			60.6	
Back of Queue (Q), veh/ln (50 th percentile)		0.6			3.7			2.3			2.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.10			0.06			0.06	
Uniform Delay (d_1), s/veh		17.4			21.3			6.9			7.0	
Incremental Delay (d_2), s/veh		0.1			1.9			1.1			1.6	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.5			23.2			8.0			8.6	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.5	B		23.2	C		8.0	A		8.6	A	
Intersection Delay, s/veh / LOS	12.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	1.1	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2028 PM Build.xus		
Project Description	2028 PM Peak Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	6	13	34	132	2	156	7	264	100	130	249	2

Signal Information			
Cycle, s	61.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	35.0	16.2	0.0	0.0	0.0	0.0		
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Red	1.0	1.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		21.2		21.2		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.4
Queue Clearance Time (g_s), s		3.6		15.2		10.2		11.7
Green Extension Time (g_e), s		0.2		1.0		1.5		1.8
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		57			312			399			410	
Adjusted Saturation Flow Rate (s), veh/h/ln		1672			1373			1672			1395	
Queue Service Time (g_s), s		0.0			11.5			0.0			1.6	
Cycle Queue Clearance Time (g_c), s		1.6			13.2			8.2			9.7	
Green Ratio (g/C)		0.26			0.26			0.57			0.57	
Capacity (c), veh/h		507			449			1017			877	
Volume-to-Capacity Ratio (X)		0.112			0.695			0.392			0.467	
Back of Queue (Q), ft/ln (50 th percentile)		14.2			99.2			62.3			67.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.6			4.0			2.5			2.7	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.11			0.07			0.07	
Uniform Delay (d_1), s/veh		17.1			21.3			7.3			7.5	
Incremental Delay (d_2), s/veh		0.1			2.0			1.1			1.8	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.2			23.2			8.5			9.3	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.2		B	23.2		C	8.5		A	9.3		A
Intersection Delay, s/veh / LOS	13.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	1.1	A	1.2	A

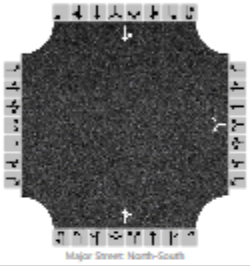
Scenario 2:

AM and PM

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2018	North/South Street	E Main
Time Analyzed	AM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						4		5			196	1		4	276	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							10							311		
Capacity							655							1343		
v/c Ratio							0.02							0.23		
95% Queue Length							0.0							0.0		
Control Delay (s/veh)							10.6							7.7		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.6								0.1			
Approach LOS					B											

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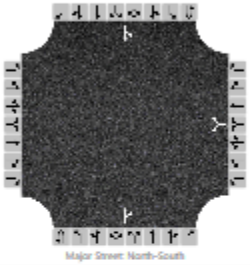
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2018	North/South Street	E Main
Time Analyzed	AM Peak	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						4		5			196	1		4	276	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							10							311		
Capacity							655							1343		
v/c Ratio							0.02							0.23		
95% Queue Length							0.0							0.0		
Control Delay (s/veh)							10.6							7.7		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					10.6								0.1			
Approach LOS					B											

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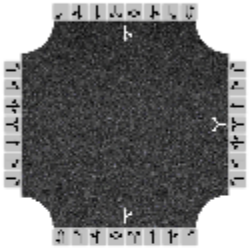
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2028	North/South Street	E Main
Time Analyzed	AM Peak No Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						5		6			235	2		5	331	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							13							374		
Capacity							569							1294		
v/c Ratio							0.02							0.29		
95% Queue Length							0.1							0.0		
Control Delay (s/veh)							11.5							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					11.5								0.2			
Approach LOS					B											

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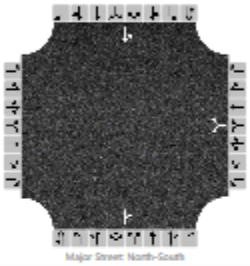
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2028	North/South Street	E Main
Time Analyzed	AM Peak Build	Peak Hour Factor	0.90
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						23		19			235	6		11	331	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							47							380		
Capacity							531							1288		
v/c Ratio							0.09							0.29		
95% Queue Length							0.3							0.0		
Control Delay (s/veh)							12.4							7.8		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					12.4								0.3			
Approach LOS					B											

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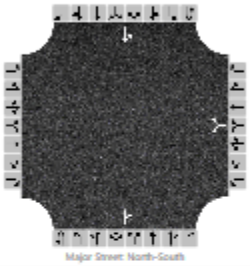
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2018	North/South Street	E Main
Time Analyzed	PM Peak	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						2		1			330	6		4	304	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							3							324		
Capacity							478							1199		
v/c Ratio							0.01							0.27		
95% Queue Length							0.0							0.0		
Control Delay (s/veh)							12.6							8.0		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					12.6								0.1			
Approach LOS					B											

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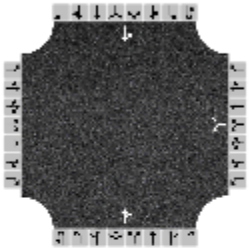
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2018	North/South Street	E Main
Time Analyzed	PM Peak Build	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			330	22		18	304	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

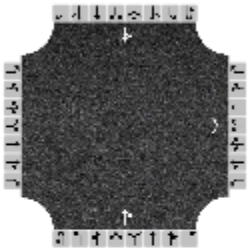
Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							22							339		
Capacity							496							1182		
v/c Ratio							0.04							0.29		
95% Queue Length							0.1							0.0		
Control Delay (s/veh)							12.6							8.1		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					12.6								0.6			
Approach LOS					B											

HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2018	North/South Street	E Main
Time Analyzed	PM Peak Build	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						10		10			330	22		18	304	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							22							339		
Capacity							496							1182		
v/c Ratio							0.04							0.29		
95% Queue Length							0.1							0.0		
Control Delay (s/veh)							12.6							8.1		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					12.6								0.6			
Approach LOS					B											

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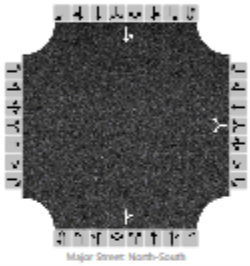
HCS 2010 Two-Way Stop Control Summary Report

General Information		Site Information	
Analyst	Dylan Durbin	Intersection	E Main and Hopewell Drive
Agency/Co.	Thoroughbred Engineering	Jurisdiction	
Date Performed	3/23/2018	East/West Street	Hopewell Drive
Analysis Year	2028	North/South Street	E Main
Time Analyzed	PM Peak Build	Peak Hour Factor	0.95
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Ed Franz		

Lanes



Vehicle Volumes and Adjustments

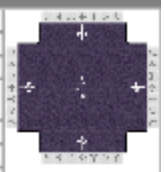
Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	0	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume (veh/h)						12		12			396	26		22	365	
Percent Heavy Vehicles						3		3						3		
Proportion Time Blocked																
Right Turn Channelized	No				No				No				No			
Median Type	Undivided															
Median Storage																

Delay, Queue Length, and Level of Service

Flow Rate (veh/h)							26							407		
Capacity							421							1110		
v/c Ratio							0.06							0.37		
95% Queue Length							0.2							0.1		
Control Delay (s/veh)							14.1							8.3		
Level of Service (LOS)							B							A		
Approach Delay (s/veh)					14.1								0.7			
Approach LOS					B											

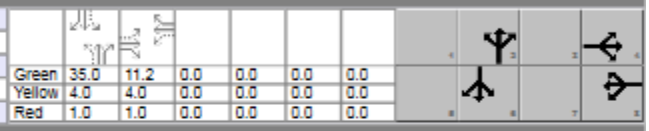
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2018 AM No Build.xus		
Project Description	2018 AM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	1	1	1	84	5	119	13	113	58	76	187	4

Signal Information			
Cycle, s	56.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	11.2	0.0	0.0	0.0	0.0		
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Red	1.0	1.0	0.0	0.0	0.0	0.0		

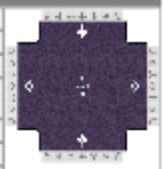
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		16.2		16.2		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.1		10.7		5.0		6.3
Green Extension Time (g_e), s		0.0		0.8		0.7		1.1
Phase Call Probability		0.97		0.97		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		3			231			204			297	
Adjusted Saturation Flow Rate (s), veh/h/ln		1632			1418			1635			1546	
Queue Service Time (g_s), s		0.0			6.9			0.0			0.0	
Cycle Queue Clearance Time (g_c), s		0.1			8.7			3.0			4.3	
Green Ratio (g/C)		0.20			0.20			0.62			0.62	
Capacity (c), veh/h		410			372			1087			1045	
Volume-to-Capacity Ratio (X)		0.008			0.621			0.188			0.284	
Back of Queue (Q), ft/ln (50 th percentile)		0.8			68.6			19.1			29.7	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			2.7			0.8			1.2	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.07			0.02			0.03	
Uniform Delay (d_1), s/veh		18.1			21.4			4.6			4.8	
Incremental Delay (d_2), s/veh		0.0			1.7			0.4			0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.1			23.1			4.9			5.5	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.1		B	23.1		C	4.9		A	5.5		A
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.8	A	1.0	A

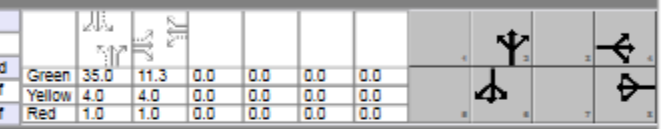
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2018 AM Build (Hopewell Entrance).xus		
Project Description	2018 AM Peak Build (Hopewell Entrance)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	1	1	1	86	5	119	14	120	62	76	190	4

Signal Information			
Cycle, s	56.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	11.3	0.0	0.0	0.0	0.0		
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Red	1.0	1.0	0.0	0.0	0.0	0.0		

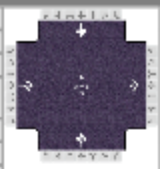
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		16.3		16.3		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.1		10.8		5.2		6.4
Green Extension Time (g_e), s		0.0		0.8		0.8		1.1
Phase Call Probability		0.98		0.98		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		3			233			218			300	
Adjusted Saturation Flow Rate (s), veh/h/ln		1632			1417			1634			1543	
Queue Service Time (g_s), s		0.0			7.1			0.0			0.0	
Cycle Queue Clearance Time (g_c), s		0.1			8.8			3.2			4.4	
Green Ratio (g/C)		0.20			0.20			0.62			0.62	
Capacity (c), veh/h		413			375			1084			1041	
Volume-to-Capacity Ratio (X)		0.008			0.623			0.201			0.288	
Back of Queue (Q), ft/ln (50 th percentile)		0.8			69.4			20.8			30.7	
Back of Queue (Q), veh/ln (50 th percentile)		0.0			2.8			0.8			1.2	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.07			0.02			0.03	
Uniform Delay (d_1), s/veh		18.0			21.4			4.6			4.9	
Incremental Delay (d_2), s/veh		0.0			1.7			0.4			0.7	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.0			23.1			5.1			5.6	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.0		B	23.1		C	5.1		A	5.6		A
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.8	A	1.0	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2028 AM No Build.xus		
Project Description	2028 AM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	2	2	2	101	7	143	16	136	70	91	225	5

Signal Information			
Cycle, s	58.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	35.0	13.8	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

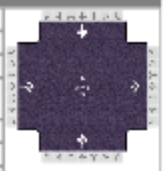
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		18.8		18.8		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.2		13.0		6.1		8.3
Green Extension Time (g_e), s		0.0		0.9		0.9		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		7			279			247			357	
Adjusted Saturation Flow Rate (s), veh/h/ln		1598			1415			1631			1529	
Queue Service Time (g_s), s		0.0			9.1			0.0			1.3	
Cycle Queue Clearance Time (g_c), s		0.2			11.0			4.1			6.3	
Green Ratio (g/C)		0.23			0.23			0.60			0.60	
Capacity (c), veh/h		456			418			1037			989	
Volume-to-Capacity Ratio (X)		0.015			0.668			0.238			0.361	
Back of Queue (Q), ft/ln (50 th percentile)		1.6			85.9			29.1			46.2	
Back of Queue (Q), veh/ln (50 th percentile)		0.1			3.4			1.2			1.8	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.09			0.03			0.05	
Uniform Delay (d_1), s/veh		17.3			21.3			5.6			6.0	
Incremental Delay (d_2), s/veh		0.0			1.8			0.5			1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.3			23.2			6.2			7.1	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.3	B		23.2	C		6.2	A		7.1	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	0.9	A	0.9	A	1.1	A

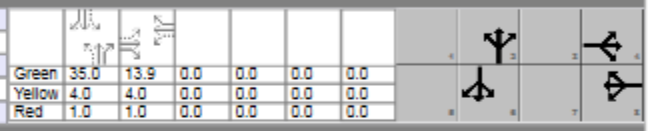
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	AM Peak (7:15 am to 8:15 am)	PHF	0.90
Urban Street		Analysis Year	2018	Analysis Period	1> 7:15
Intersection	E Main and North Middl...	File Name	Signal 2028 AM Build (Hopewell Entrance).xus		
Project Description	2028 AM Peak Build (Hopewell Entrance)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	2	2	2	103	7	143	17	144	74	91	228	5

Signal Information			
Cycle, s	58.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	35.0	13.9	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

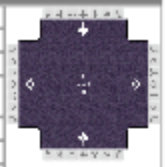
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		18.9		18.9		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.2		4.2		4.2
Queue Clearance Time (g_s), s		2.2		13.1		6.4		8.4
Green Extension Time (g_e), s		0.0		0.9		1.0		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		7			281			261			360	
Adjusted Saturation Flow Rate (s), veh/h/ln		1596			1414			1631			1525	
Queue Service Time (g_s), s		0.0			9.2			0.0			1.3	
Cycle Queue Clearance Time (g_c), s		0.2			11.1			4.4			6.4	
Green Ratio (g/C)		0.24			0.24			0.59			0.59	
Capacity (c), veh/h		458			420			1034			984	
Volume-to-Capacity Ratio (X)		0.015			0.669			0.252			0.366	
Back of Queue (Q), ft/ln (50 th percentile)		1.6			86.8			31.6			47.4	
Back of Queue (Q), veh/ln (50 th percentile)		0.1			3.5			1.3			1.9	
Queue Storage Ratio (RQ) (50 th percentile)		0.00			0.09			0.03			0.05	
Uniform Delay (d_1), s/veh		17.3			21.3			5.8			6.1	
Incremental Delay (d_2), s/veh		0.0			1.9			0.6			1.1	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.3			23.2			6.3			7.2	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.3	B		23.2	C		6.3	A		7.2	A	
Intersection Delay, s/veh / LOS	12.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.5	A	1.0	A	0.9	A	1.1	A

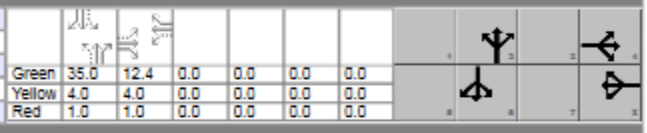
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2018 PM No Build.xus		
Project Description	2018 No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	5	11	25	105	0	124	6	220	77	100	207	0

Signal Information			
Cycle, s	57.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	12.4	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

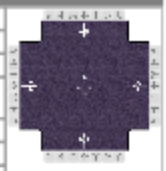
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.4		17.4		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.3
Queue Clearance Time (g_s), s		3.2		11.7		7.4		7.5
Green Extension Time (g_e), s		0.1		0.8		1.2		1.3
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		44			246			326			330	
Adjusted Saturation Flow Rate (s), veh/h/ln		1671			1383			1678			1450	
Queue Service Time (g_s), s		0.0			8.1			0.0			0.1	
Cycle Queue Clearance Time (g_c), s		1.2			9.7			5.4			5.5	
Green Ratio (g/C)		0.22			0.22			0.61			0.61	
Capacity (c), veh/h		431			390			1087			967	
Volume-to-Capacity Ratio (X)		0.102			0.631			0.300			0.341	
Back of Queue (Q), ft/ln (50 th percentile)		10.9			74			36.6			37.9	
Back of Queue (Q), veh/ln (50 th percentile)		0.4			3.0			1.5			1.5	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.08			0.04			0.04	
Uniform Delay (d_1), s/veh		18.1			21.3			5.4			5.4	
Incremental Delay (d_2), s/veh		0.1			1.7			0.7			1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.2			23.0			6.1			6.4	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.2		B	23.0		C	6.1		A	6.4		A
Intersection Delay, s/veh / LOS	11.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.6	A	0.9	A	1.0	A	1.0	A

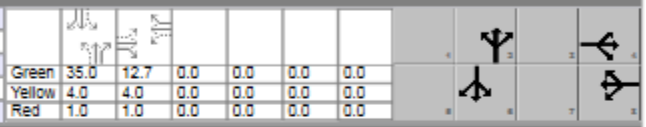
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2018 PM Build (Hopewell Entrance).xus		
Project Description	2018 PM Peak Build (Hopewell Entrance)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	6	11	26	110	0	124	7	226	79	100	215	0

Signal Information			
Cycle, s	57.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	12.7	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						

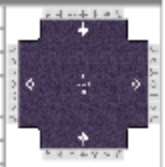
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.7		17.7		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.3
Queue Clearance Time (g_s), s		3.3		12.0		7.7		7.8
Green Extension Time (g_e), s		0.1		0.8		1.2		1.4
Phase Call Probability		0.99		0.99		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		46			252			335			339	
Adjusted Saturation Flow Rate (s), veh/h/ln		1671			1379			1677			1454	
Queue Service Time (g_s), s		0.0			8.5			0.0			0.1	
Cycle Queue Clearance Time (g_c), s		1.3			10.0			5.7			5.8	
Green Ratio (g/C)		0.22			0.22			0.61			0.61	
Capacity (c), veh/h		439			396			1081			964	
Volume-to-Capacity Ratio (X)		0.105			0.636			0.310			0.351	
Back of Queue (Q), ft/ln (50 th percentile)		11.5			76			39.2			40.4	
Back of Queue (Q), veh/ln (50 th percentile)		0.5			3.0			1.6			1.6	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.08			0.04			0.04	
Uniform Delay (d_1), s/veh		18.0			21.3			5.6			5.6	
Incremental Delay (d_2), s/veh		0.1			1.7			0.7			1.0	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		18.1			23.0			6.3			6.6	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	18.1		B	23.0		C	6.3		A	6.6		A
Intersection Delay, s/veh / LOS	11.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.0	B	2.0	B
Bicycle LOS Score / LOS	0.6	A	0.9	A	1.0	A	1.0	A

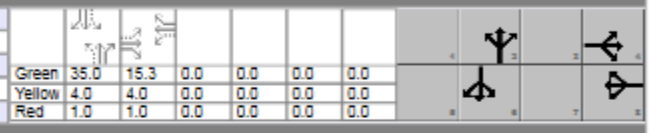
HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2028 PM No Build.xus		
Project Description	2028 PM Peak No Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	6	12	34	126	2	149	7	264	92	120	249	2

Signal Information			
Cycle, s	60.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off



Green	35.0	15.3	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	

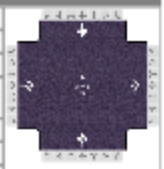
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		20.3		20.3		40.0		40.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (MAH), s		4.3		4.3		4.1		4.4
Queue Clearance Time (g_s), s		3.6		14.4		9.7		10.7
Green Extension Time (g_e), s		0.1		1.0		1.5		1.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		56			298			390			399	
Adjusted Saturation Flow Rate (s), veh/h/ln		1668			1375			1677			1418	
Queue Service Time (g_s), s		0.0			10.7			0.0			1.1	
Cycle Queue Clearance Time (g_c), s		1.6			12.4			7.7			8.7	
Green Ratio (g/C)		0.25			0.25			0.58			0.58	
Capacity (c), veh/h		490			436			1034			902	
Volume-to-Capacity Ratio (X)		0.114			0.683			0.378			0.442	
Back of Queue (Q), ft/ln (50 th percentile)		13.9			93.6			57.4			60.6	
Back of Queue (Q), veh/ln (50 th percentile)		0.6			3.7			2.3			2.4	
Queue Storage Ratio (RQ) (50 th percentile)		0.01			0.10			0.06			0.06	
Uniform Delay (d_1), s/veh		17.4			21.3			6.9			7.0	
Incremental Delay (d_2), s/veh		0.1			1.9			1.1			1.6	
Initial Queue Delay (d_3), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		17.5			23.2			8.0			8.6	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.5	B		23.2	C		8.0	A		8.6	A	
Intersection Delay, s/veh / LOS	12.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	1.1	A	1.1	A

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Thoroughbred Engineering			Duration, h	0.25
Analyst	Dylan Durbin	Analysis Date	3/23/2018	Area Type	Other
Jurisdiction		Time Period	PM Peak (4:30 pm to 5:30 pm)	PHF	0.93
Urban Street		Analysis Year	2018	Analysis Period	1> 16:30
Intersection	E Main and North Middl...	File Name	Signal 2028 PM Build (Hopewell Entrance).xus		
Project Description	2028 PM Peak Build (Hopewell Entrance)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	7	12	31	132	2	149	8	271	95	120	258	2

Signal Information			
Cycle, s	60.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	35.0	15.7	0.0	0.0	0.0	0.0		
Yellow	4.0	4.0	0.0	0.0	0.0	0.0		
Red	1.0	1.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		20.7		20.7		40.0		40.0
Change Period, (*Y+R_c*), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		4.3		4.3		4.1		4.4
Queue Clearance Time (*g_s*), s		3.5		14.8		10.1		11.2
Green Extension Time (*g_e*), s		0.1		1.0		1.5		1.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h		54			304			402			409	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1672			1373			1676			1421	
Queue Service Time (*g_s*), s		0.0			11.2			0.0			1.1	
Cycle Queue Clearance Time (*g_c*), s		1.5			12.8			8.1			9.2	
Green Ratio (*g/C*)		0.26			0.26			0.58			0.58	
Capacity (*c*), veh/h		500			443			1026			897	
Volume-to-Capacity Ratio (*X*)		0.107			0.688			0.392			0.456	
Back of Queue (*Q*), ft/ln (50 th percentile)		13.4			96.1			61.4			64.3	
Back of Queue (*Q*), veh/ln (50 th percentile)		0.5			3.8			2.5			2.6	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.01			0.10			0.07			0.07	
Uniform Delay (*d₁*), s/veh		17.2			21.3			7.2			7.2	
Incremental Delay (*d₂*), s/veh		0.1			1.9			1.1			1.7	
Initial Queue Delay (*d₃*), s/veh		0.0			0.0			0.0			0.0	
Control Delay (*d*), s/veh		17.3			23.2			8.3			8.9	
Level of Service (LOS)		B			C			A			A	
Approach Delay, s/veh / LOS	17.3	B		23.2	C		8.3	A		8.9	A	
Intersection Delay, s/veh / LOS	12.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.1	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.6	A	1.0	A	1.2	A	1.2	A