

APPENDIX B

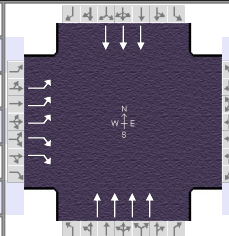
HIGHWAY CAPACITY ANALYSIS REPORTS



DRAFT NOVEMBER 2024
PRELIMINARY FEASIBILITY STUDY
U.S. 23 CORRIDOR STUDY, PID 112768

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 22, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	I-270 Eastbound Exit Ra...	File Name	101_US23-I270EB_AM.xus				
Project Description	Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	1788		657						1219			1351

Signal Information																	
Cycle, s	105.0	Reference Phase	2														
Offset, s	0	Reference Point	Begin														
Uncoordinated	No	Simult. Gap E/W	On	Green	47.5	45.5	0.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0							
				Red	2.0	2.0	0.0	0.0	0.0	0.0							

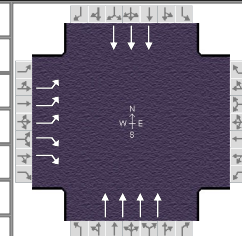
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		8.0
Phase Duration, s		51.5				53.5		53.5
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		38.1						
Green Extension Time (g _e), s		7.5				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.39						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2				6
Adjusted Flow Rate (v), veh/h	1943		714					1325				1468
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1392					1671				1671
Queue Service Time (g _s), s	36.1		20.5					14.2				23.8
Cycle Queue Clearance Time (g _c), s	36.1		20.5					14.2				23.8
Green Ratio (g/C)	0.43		0.43					0.45				0.45
Capacity (c), veh/h	2232		1207					3023				2267
Volume-to-Capacity Ratio (X)	0.871		0.592					0.438				0.648
Back of Queue (Q), ft/ln (95 th percentile)	518		265.6					231.8				355.8
Back of Queue (Q), veh/ln (95 th percentile)	20.2		10.4					9.0				13.8
Queue Storage Ratio (RQ) (95 th percentile)	0.86		0.53					0.00				0.00
Uniform Delay (d ₁), s/veh	27.1		22.7					19.7				22.3
Incremental Delay (d ₂), s/veh	2.9		0.2					0.5				1.4
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0				0.0
Control Delay (d), s/veh	30.0		22.9					20.1				23.7
Level of Service (LOS)	C		C					C				C
Approach Delay, s/veh / LOS	28.1		C	0.0				20.1		C	23.7	C
Intersection Delay, s/veh / LOS	25.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.61	C	0.71	A	2.27	B
Bicycle LOS Score / LOS		F			1.03	A	1.30	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 22, 2024	Area Type	CBD		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	I-270 Eastbound Exit Ra...	File Name	101_US23-I270EB_PM.xus				
Project Description	Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	2335		776						1373			1250

Signal Information																	
Cycle, s	115.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On	Green	45.0	58.0	0.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0							
				Red	2.0	2.0	0.0	0.0	0.0	0.0							

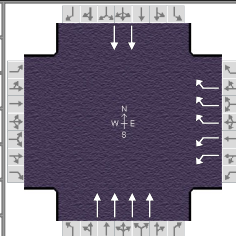
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		8.0
Phase Duration, s		64.0				51.0		51.0
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		60.0						
Green Extension Time (g _e), s		0.0				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		1.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2				6
Adjusted Flow Rate (v), veh/h	2538		843					1492				1359
Adjusted Saturation Flow Rate (s), veh/h/ln	1532		1252					1015				1504
Queue Service Time (g _s), s	58.0		28.9					40.7				30.2
Cycle Queue Clearance Time (g _c), s	58.0		28.9					40.7				30.2
Green Ratio (g/C)	0.50		0.50					0.39				0.39
Capacity (c), veh/h	2318		1263					1589				1766
Volume-to-Capacity Ratio (X)	1.095		0.668					0.939				0.769
Back of Queue (Q), ft/ln (95 th percentile)	1075.5		323.4					414.3				418.7
Back of Queue (Q), veh/ln (95 th percentile)	41.7		12.6					16.1				16.2
Queue Storage Ratio (RQ) (95 th percentile)	1.79		0.65					0.00				0.00
Uniform Delay (d ₁), s/veh	28.5		21.3					33.7				30.5
Incremental Delay (d ₂), s/veh	50.3		1.1					12.1				3.3
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0				0.0
Control Delay (d), s/veh	78.8		22.4					45.8				33.8
Level of Service (LOS)	F		C					D				C
Approach Delay, s/veh / LOS	64.7		E	0.0				45.8		D	33.8	C
Intersection Delay, s/veh / LOS			53.5									D

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.62	C	0.72	A	2.28	B
Bicycle LOS Score / LOS		F			1.10	A	1.23	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	I-270 Westbound Exit R...	File Name	102_US23-I270WB_AM.xus				
Project Description	Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				495		1693			3179			952

Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	60.0	58.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

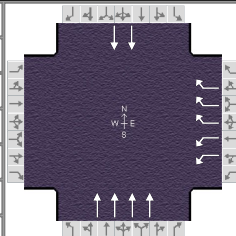
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				9.0		8.0		8.0
Phase Duration, s				64.0		66.0		66.0
Change Period, (Y+R _c), s				6.0		6.0		6.0
Max Allow Headway (MAH), s				3.2		0.0		0.0
Queue Clearance Time (g _s), s				60.0				
Green Extension Time (g _e), s				0.0		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				1.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2				6
Adjusted Flow Rate (v), veh/h				538		1840		3455				1035
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1358		1671				1752
Queue Service Time (g _s), s				13.4		58.0		60.0				29.3
Cycle Queue Clearance Time (g _c), s				13.4		58.0		60.0				29.3
Green Ratio (g/C)				0.45		0.45		0.46				0.46
Capacity (c), veh/h				1531		1818		3086				1618
Volume-to-Capacity Ratio (X)				0.351		1.012		1.120				0.640
Back of Queue (Q), ft/ln (95 th percentile)				230.6		786.5		1266.4				459.2
Back of Queue (Q), veh/ln (95 th percentile)				9.0		30.0		49.1				17.8
Queue Storage Ratio (RQ) (95 th percentile)				0.46		0.00		0.00				0.00
Uniform Delay (d ₁), s/veh				23.6		36.0		35.0				26.7
Incremental Delay (d ₂), s/veh				0.1		24.2		58.9				2.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0				0.0
Control Delay (d), s/veh				23.7		60.2		93.9				28.7
Level of Service (LOS)				C		F		F				C
Approach Delay, s/veh / LOS	0.0			51.9		D	93.9	F		28.7		C
Intersection Delay, s/veh / LOS				69.5				E				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.27	B	0.72	A
Bicycle LOS Score / LOS				F	1.91	B	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 23, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	I-270 Westbound Exit R...	File Name	102_US23-I270WB_PM.xus				
Project Description	Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				473		1499			3285			742

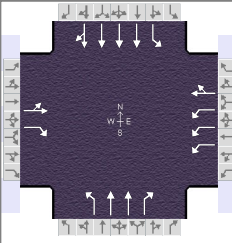
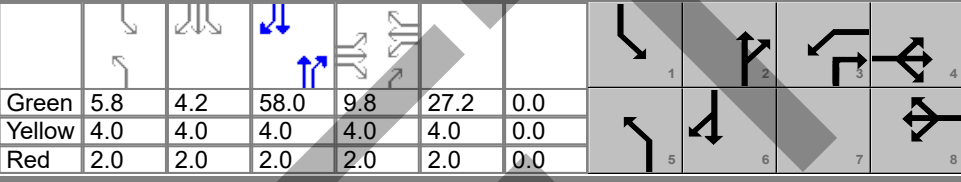
Signal Information													
Cycle, s	85.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	42.0	31.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				9.0		8.0		8.0
Phase Duration, s				37.0		48.0		48.0
Change Period, (Y+R _c), s				6.0		6.0		6.0
Max Allow Headway (MAH), s				3.2		0.0		0.0
Queue Clearance Time (g _s), s				33.0				
Green Extension Time (g _e), s				0.0		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				1.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2			6	
Adjusted Flow Rate (v), veh/h				514		1629		3571			807	
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1358		1671			1752	
Queue Service Time (g _s), s				9.5		31.0		42.0			12.9	
Cycle Queue Clearance Time (g _c), s				9.5		31.0		42.0			12.9	
Green Ratio (g/C)				0.36		0.36		0.49			0.49	
Capacity (c), veh/h				1252		1486		3303			1732	
Volume-to-Capacity Ratio (X)				0.411		1.096		1.081			0.466	
Back of Queue (Q), ft/ln (95 th percentile)				159.6		639.6		858.3			209.3	
Back of Queue (Q), veh/ln (95 th percentile)				6.2		24.4		33.3			8.1	
Queue Storage Ratio (RQ) (95 th percentile)				0.32		0.00		0.00			0.00	
Uniform Delay (d ₁), s/veh				20.2		27.0		21.5			14.1	
Incremental Delay (d ₂), s/veh				0.1		54.4		42.6			0.9	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0			0.0	
Control Delay (d), s/veh				20.3		81.4		64.1			15.0	
Level of Service (LOS)				C		F		F			B	
Approach Delay, s/veh / LOS	0.0			66.7		E	64.1	E	15.0		B	
Intersection Delay, s/veh / LOS				58.9				E				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.25	B	0.70	A
Bicycle LOS Score / LOS				F	1.96	B	1.15	A

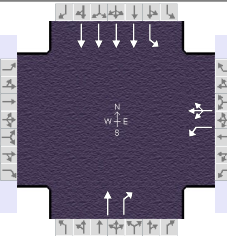
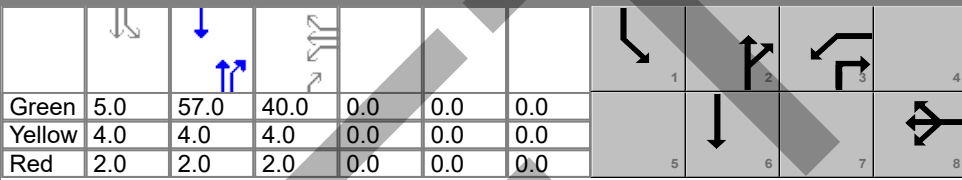
HCS Signalized Intersection Results Summary

General Information						Intersection Information																		
Agency	ms consultants					Duration, h	0.250																	
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other																	
Jurisdiction		Time Period	AM Peak			PHF	0.92																	
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00																	
Intersection	Campus View Blvd.		File Name	103_US23-CampusView_AM.xus																				
Project Description	Design Year (2030)																							
Demand Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				10	10	74	779	7	53	44	502	1175	256	3510	9									
Signal Information																								
Cycle, s	135.0	Reference Phase	2																					
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On	Green	5.8	4.2	58.0	9.8	27.2	0.0	Yellow	4.0	4.0	4.0	4.0	4.0	0.0	Red	2.0	2.0	2.0	2.0	2.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Assigned Phase					4		8	5	2	1	6													
Case Number					11.0		10.0	2.0	3.0	2.0	4.0													
Phase Duration, s					15.8		33.2	11.8	64.0	22.0	74.2													
Change Period, (Y+R _c), s					6.0		6.0	6.0	6.0	6.0	6.0													
Max Allow Headway (MAH), s					3.2		3.0	3.0	0.0	3.0	0.0													
Queue Clearance Time (g _s), s					8.8		29.2	5.6		18.0														
Green Extension Time (g _e), s					0.1		0.0	0.0	0.0	0.0	0.0													
Phase Call Probability					0.98		1.00	0.83		1.00														
Max Out Probability					0.26		1.00	0.00		1.00														
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				22	80	847	65		48	546	1277	278	2869	956										
Adjusted Saturation Flow Rate (s), veh/h/ln				1810	1572	1311	1601		1767	1752	1572	1767	1841	1837										
Queue Service Time (g _s), s				1.5	6.8	27.2	4.6		3.6	14.2	58.0	16.0	68.2	68.2										
Cycle Queue Clearance Time (g _c), s				1.5	6.8	27.2	4.6		3.6	14.2	58.0	16.0	68.2	68.2										
Green Ratio (g/C)				0.07	0.07	0.20	0.20		0.04	0.43	0.63	0.12	0.50	0.50										
Capacity (c), veh/h				131	114	793	323		76	1505	992	210	2788	928										
Volume-to-Capacity Ratio (X)				0.166	0.706	1.068	0.202		0.626	0.362	1.287	1.327	1.029	1.031										
Back of Queue (Q), ft/ln (95 th percentile)				32	129.2	485.1	83.1		76.3	255.3	2386.3	687.7	1169	1258.3										
Back of Queue (Q), veh/ln (95 th percentile)				1.3	5.0	19.0	3.2		3.0	9.9	93.2	26.9	45.3	49.2										
Queue Storage Ratio (RQ) (95 th percentile)				0.00	1.29	0.97	0.00		0.13	0.00	0.00	6.88	0.00	0.00										
Uniform Delay (d ₁), s/veh				58.8	61.2	53.9	44.9		63.5	26.0	24.9	59.5	33.4	33.4										
Incremental Delay (d ₂), s/veh				0.2	5.0	51.7	0.1		3.1	0.7	136.8	176.3	25.0	37.7										
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0										
Control Delay (d), s/veh				59.0	66.2	105.6	45.0		66.6	26.7	161.7	235.8	58.4	71.1										
Level of Service (LOS)				E	E	F	D		E	C	F	F	F	F										
Approach Delay, s/veh / LOS				64.7	E	101.2	F		119.9	F	73.4	E												
Intersection Delay, s/veh / LOS				89.3				F																
Multimodal Results				EB			WB			NB			SB											
Pedestrian LOS Score / LOS				2.73	C	2.62	C	2.28	B	1.91	B													
Bicycle LOS Score / LOS				0.66	A	1.99	B	2.03	B	2.18	B													

HCS Signalized Intersection Results Summary

General Information					Intersection Information															
Agency	ms consultants				Duration, h	0.250														
Analyst	JRH	Analysis Date	May 15, 2024		Area Type	Other														
Jurisdiction		Time Period	PM Peak		PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00														
Intersection	Campus View Blvd.		File Name	103_US23-CampusView_PM.xus																
Project Description	Design Year (2030)																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h					12	14	61	1358	8	61	83	657	771	217	2572	13				
Signal Information																				
Cycle, s	110.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On		Green	7.1	3.3	33.5	9.4	26.5	0.0									
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	4.0	4.0	0.0									
					Red	2.0	2.0	2.0	2.0	2.0	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							11.0				10.0		2.0		3.0		2.0		4.0	
Phase Duration, s							15.4				32.5		13.1		39.5		22.5		48.9	
Change Period, (Y+R _c), s							6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s							3.2				3.0		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s							6.4				28.5		7.5				16.4			
Green Extension Time (g _e), s							0.1				0.0		0.1		0.0		0.1		0.0	
Phase Call Probability							0.94				1.00		0.94				1.00			
Max Out Probability							0.00				1.00		0.00				1.00			
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					28	66	1476	75			90	714	838	236	1952	858				
Adjusted Saturation Flow Rate (s), veh/h/ln					1814	1572	1716	1601			1767	1752	1572	1767	1392	1835				
Queue Service Time (g _s), s					1.6	4.4	26.5	4.1			5.5	19.6	33.5	14.4	42.9	42.9				
Cycle Queue Clearance Time (g _c), s					1.6	4.4	26.5	4.1			5.5	19.6	33.5	14.4	42.9	42.9				
Green Ratio (g/C)					0.09	0.09	0.24	0.24			0.06	0.30	0.55	0.15	0.39	0.39				
Capacity (c), veh/h					156	135	1242	386			115	1069	859	265	1629	716				
Volume-to-Capacity Ratio (X)					0.181	0.491	1.189	0.194			0.788	0.668	0.976	0.891	1.198	1.199				
Back of Queue (Q), ft/ln (95 th percentile)					32.6	79.4	815.6	71.6			116.1	340.2	836.1	320.2	1057.8	1394.2				
Back of Queue (Q), veh/ln (95 th percentile)					1.3	3.1	31.9	2.8			4.5	13.2	32.7	12.5	41.0	54.5				
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.79	1.63	0.00			0.19	0.00	0.00	3.20	0.00	0.00				
Uniform Delay (d ₁), s/veh					46.7	48.0	41.7	33.2			50.7	33.4	24.2	45.9	33.6	33.6				
Incremental Delay (d ₂), s/veh					0.2	1.0	93.2	0.1			4.5	3.3	25.4	24.5	95.5	102.7				
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh					46.9	49.0	135.0	33.3			55.2	36.7	49.6	70.4	129.0	136.3				
Level of Service (LOS)					D	D	F	C			E	D	D	E	F	F				
Approach Delay, s/veh / LOS					48.4	D	130.0	F			44.3	D	126.5	F						
Intersection Delay, s/veh / LOS					104.9			F												
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.72	C	2.61	C			2.29	B	1.92	B						
Bicycle LOS Score / LOS					0.64	A	3.05	C			1.84	B	1.74	B						

HCS Signalized Intersection Results Summary

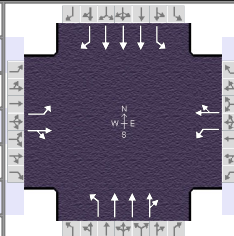
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Flint Road		File Name	104_US23-Flint_AM.xus												
Project Description	Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								1078	0	5	202	598	35	2780		
Signal Information								Cycle, s		120.0	Reference Phase	2				
Offset, s		0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green				5.0	57.0	40.0	0.0	0.0	0.0			
Force Mode				Fixed				Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Force Mode				Fixed				Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								10.0		7.3	2.0	4.0				
Phase Duration, s								46.0		63.0	11.0	74.0				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								42.0			4.5					
Green Extension Time (g _e), s								0.0		0.0	0.0	0.0				
Phase Call Probability								1.00			0.72					
Max Out Probability								1.00			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								3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h								644	533		220	650	38	3022		
Adjusted Saturation Flow Rate (s), veh/h/ln								1767	1765		1841	1572	1767	1421		
Queue Service Time (g _s), s								40.0	36.2		8.5	16.2	2.5	59.0		
Cycle Queue Clearance Time (g _c), s								40.0	36.2		8.5	16.2	2.5	59.0		
Green Ratio (g/C)								0.33	0.33		0.47	0.81	0.04	0.57		
Capacity (c), veh/h								589	588		874	1271	74	3222		
Volume-to-Capacity Ratio (X)								1.094	0.905		0.251	0.512	0.513	0.938		
Back of Queue (Q), ft/ln (95 th percentile)								971	715.6		169.2	169	52.8	675.9		
Back of Queue (Q), veh/ln (95 th percentile)								37.9	28.0		6.6	6.6	2.1	26.2		
Queue Storage Ratio (RQ) (95 th percentile)								2.43	0.00		0.00	0.00	0.53	0.00		
Uniform Delay (d ₁), s/veh								40.0	57.9		18.8	3.8	56.3	24.0		
Incremental Delay (d ₂), s/veh								65.3	17.2		0.7	1.5	2.0	6.8		
Initial Queue Delay (d ₃), s/veh								0.0	0.0		0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								105.3	75.1		19.5	5.2	58.3	30.8		
Level of Service (LOS)								F	E		B	A	E	C		
Approach Delay, s/veh / LOS					0.0			91.7	F		8.8	A		31.2	C	
Intersection Delay, s/veh / LOS								41.3						D		
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.47	B		1.91	B		1.38	A	
Bicycle LOS Score / LOS								2.43	B		1.92	B		1.75	B	

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	May 15, 2024		Area Type	Other											
Jurisdiction		Time Period	PM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00										
Intersection	Flint Road		File Name	104_US23-Flint_PM.xus													
Project Description	Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h								651	0	40	273	654	65	2182			
Signal Information																	
Cycle, s	80.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On		Green	5.5	36.5	19.9	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
					Red	2.0	2.0	2.0	0.0	0.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase								8		2	1	6					
Case Number								10.0		7.3	2.0	4.0					
Phase Duration, s								25.9		42.5	11.5	54.1					
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0					
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0					
Queue Clearance Time (g _s), s								19.4			5.1						
Green Extension Time (g _e), s								0.6		0.0	0.0	0.0					
Phase Call Probability								1.00			0.79						
Max Out Probability								1.00			0.05						
Movement Group Results					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement								3	8	18	2	12	1	6			
Adjusted Flow Rate (v), veh/h								396	355		297	711	71	2372			
Adjusted Saturation Flow Rate (s), veh/h/ln								1767	1743		1841	1572	1767	1255			
Queue Service Time (g _s), s								17.4	16.2		8.4	19.4	3.1	28.6			
Cycle Queue Clearance Time (g _c), s								17.4	16.2		8.4	19.4	3.1	28.6			
Green Ratio (g/C)								0.25	0.25		0.46	0.71	0.07	0.60			
Capacity (c), veh/h								440	434		840	1110	122	3017			
Volume-to-Capacity Ratio (X)								0.900	0.817		0.353	0.641	0.577	0.786			
Back of Queue (Q), ft/ln (95 th percentile)								351.2	347.8		152.7	212.6	60.6	272.6			
Back of Queue (Q), veh/ln (95 th percentile)								13.7	13.6		5.9	8.3	2.4	10.6			
Queue Storage Ratio (RQ) (95 th percentile)								0.88	0.00		0.00	0.00	0.61	0.00			
Uniform Delay (d ₁), s/veh								29.1	37.0		14.1	6.3	36.1	12.1			
Incremental Delay (d ₂), s/veh								17.5	8.7		1.2	2.8	1.6	2.1			
Initial Queue Delay (d ₃), s/veh								0.0	0.0		0.0	0.0	0.0	0.0			
Control Delay (d), s/veh								46.6	45.7		15.2	9.2	37.7	14.2			
Level of Service (LOS)								D	D		B	A	D	B			
Approach Delay, s/veh / LOS					0.0			46.2	D		11.0	B	14.9	B			
Intersection Delay, s/veh / LOS								19.5				B					
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.46	B		2.46	B		1.90	B		1.35	A		
Bicycle LOS Score / LOS								1.73	B		2.15	B		1.50	A		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 15, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard		File Name	105_US23-Northwoods_AM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	43	2	84	8	2	5	260	2126	8	41	2674	109

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.7	5.5	52.0	9.8	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

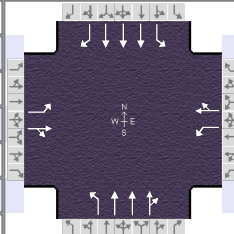
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		15.8		15.8	16.2	63.5	10.7	58.0
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		7.0		7.6	12.2		4.2	
Green Extension Time (g _e), s		0.1		0.1	0.0	0.0	0.0	0.0
Phase Call Probability		0.98		0.98	1.00		0.67	
Max Out Probability		1.00		1.00	1.00		0.18	

Movement Group Results	EB			WB			NB			SB		
	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	47	93		9	8		283	1547	773	45	2907	118
Adjusted Saturation Flow Rate (s), veh/h/ln	1397	1578		1292	1644		1767	1841	1837	1767	1671	1572
Queue Service Time (g _s), s	2.8	5.0		0.6	0.4		10.2	23.6	23.6	2.2	52.0	3.1
Cycle Queue Clearance Time (g _c), s	3.2	5.0		5.6	0.4		10.2	23.6	23.6	2.2	52.0	3.1
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.11	0.64	0.64	0.05	0.58	0.58
Capacity (c), veh/h	226	172		148	179		200	2352	1174	92	2897	909
Volume-to-Capacity Ratio (X)	0.207	0.544		0.059	0.042		1.411	0.658	0.658	0.483	1.003	0.130
Back of Queue (Q), ft/ln (95 th percentile)	42.4	89.5		8.2	6.7		653	319.5	332.2	44	728	44.7
Back of Queue (Q), veh/ln (95 th percentile)	1.7	3.5		0.3	0.3		25.5	12.4	13.0	1.7	28.2	1.7
Queue Storage Ratio (RQ) (95 th percentile)	0.42	0.00		0.11	0.00		1.09	0.00	0.00	0.18	0.00	0.13
Uniform Delay (d ₁), s/veh	37.3	38.0		40.6	35.9		39.9	10.1	10.1	41.5	19.0	8.7
Incremental Delay (d ₂), s/veh	0.2	1.7		0.1	0.0		211.9	1.5	2.9	1.4	17.5	0.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.5	39.7		40.7	35.9		251.8	11.6	13.0	42.9	36.5	9.0
Level of Service (LOS)	D	D		D	D		F	B	B	D	F	A
Approach Delay, s/veh / LOS	39.0		D	38.5		D	38.1		D	35.5		D
Intersection Delay, s/veh / LOS				36.8						D		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.73	C	1.87	B	1.88	B
Bicycle LOS Score / LOS	0.72	A	0.51	A	1.92	B	2.18	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 15, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard	File Name	105_US23-Northwoods_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	123	2	112	10	1	28	145	2998	6	10	2127	71

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.4	0.9	38.2	10.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0			
				Red	2.0	2.0	2.0	2.0	0.0	0.0			

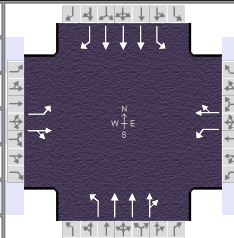
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		16.5		16.5	14.3	51.1	7.4	44.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		10.5		8.1	8.5		2.5	
Green Extension Time (g _e), s		0.0		0.2	0.1	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.96		0.20	
Max Out Probability		1.00		1.00	0.32		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	134	124		11	32		158	2177	1088	11	2312	77
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1577		1257	1581		1767	1841	1839	1767	1671	1572
Queue Service Time (g _s), s	7.1	5.5		0.6	1.3		6.5	43.3	43.4	0.5	31.5	1.9
Cycle Queue Clearance Time (g _c), s	8.5	5.5		6.1	1.3		6.5	43.3	43.4	0.5	31.5	1.9
Green Ratio (g/C)	0.14	0.14		0.14	0.14		0.11	0.60	0.60	0.02	0.51	0.51
Capacity (c), veh/h	263	220		179	221		195	2214	1106	33	2556	801
Volume-to-Capacity Ratio (X)	0.508	0.562		0.061	0.143		0.806	0.983	0.984	0.325	0.905	0.096
Back of Queue (Q), ft/ln (95 th percentile)	102.4	93.4		8.2	21.6		132.4	626.2	696.8	9.4	420.8	27.3
Back of Queue (Q), veh/ln (95 th percentile)	4.0	3.6		0.3	0.8		5.2	24.3	27.2	0.4	16.3	1.1
Queue Storage Ratio (RQ) (95 th percentile)	1.02	0.00		0.11	0.00		0.22	0.00	0.00	0.04	0.00	0.08
Uniform Delay (d ₁), s/veh	32.0	30.1		33.0	28.3		32.6	14.6	14.6	36.3	16.7	9.5
Incremental Delay (d ₂), s/veh	0.6	1.5		0.1	0.1		5.2	15.6	23.5	2.1	5.9	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	32.6	31.6		33.0	28.4		37.7	30.1	38.2	38.4	22.6	9.7
Level of Service (LOS)	C	C		C	C		D	C	D	D	C	A
Approach Delay, s/veh / LOS	32.1	C		29.6	C		33.0	C		22.3	C	
Intersection Delay, s/veh / LOS	28.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.58	C	2.72	C	1.87	B	1.89	B
Bicycle LOS Score / LOS	0.91	A	0.56	A	2.37	B	1.81	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Highbluffs Blvd./Windso...	File Name	106_US23-Highbluffs_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	82	2	239	38	3	8	21	2128	6	2	2467	33

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	2.7	49.3	19.7	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

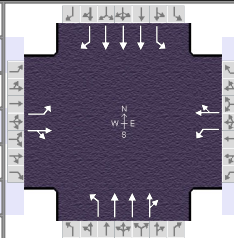
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		25.7		25.7	9.0	58.0	6.4	55.3
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		16.0		19.2	3.1		2.1	
Green Extension Time (g _e), s		0.6		0.4	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.43		0.05	
Max Out Probability		0.05		0.37	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	89	262		41	12		23	1547	773	2	2682	36
Adjusted Saturation Flow Rate (s), veh/h/ln	1391	1574		1109	1641		1767	1841	1838	1767	1671	1572
Queue Service Time (g _s), s	4.8	14.0		3.3	0.5		1.1	27.6	27.6	0.1	46.8	1.0
Cycle Queue Clearance Time (g _c), s	5.3	14.0		17.2	0.5		1.1	27.6	27.6	0.1	46.8	1.0
Green Ratio (g/C)	0.22	0.22		0.22	0.22		0.03	0.58	0.58	0.00	0.55	0.55
Capacity (c), veh/h	377	344		150	359		60	2126	1061	7	2746	861
Volume-to-Capacity Ratio (X)	0.237	0.761		0.275	0.033		0.382	0.728	0.728	0.298	0.977	0.042
Back of Queue (Q), ft/ln (95 th percentile)	71.2	238.9		39.9	8.9		23.1	391.9	409.7	2.9	646.9	14.1
Back of Queue (Q), veh/ln (95 th percentile)	2.8	9.3		1.6	0.3		0.9	15.2	16.0	0.1	25.1	0.6
Queue Storage Ratio (RQ) (95 th percentile)	0.71	0.00		0.53	0.00		0.06	0.00	0.00	0.01	0.00	0.04
Uniform Delay (d ₁), s/veh	29.8	33.0		41.0	27.7		42.6	13.9	13.9	44.7	19.8	9.4
Incremental Delay (d ₂), s/veh	0.1	4.9		0.4	0.0		1.5	2.2	4.4	8.2	12.5	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	29.9	37.9		41.4	27.7		44.0	16.1	18.3	52.9	32.3	9.5
Level of Service (LOS)	C	D		D	C		D	B	B	D	C	A
Approach Delay, s/veh / LOS	35.9		D	38.3		D	17.1		B	32.0		C
Intersection Delay, s/veh / LOS	25.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.58	C	2.72	C	1.88	B	1.89	B
Bicycle LOS Score / LOS	1.07	A	0.58	A	1.78	B	1.98	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Highbluffs Blvd./Windso...	File Name	106_US23-Highbluffs_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	74	1	62	16	1	9	103	2955	45	9	2075	41

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.3	5.0	40.9	9.8	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

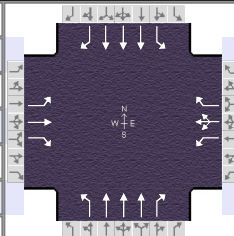
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		15.8		15.8	12.3	52.0	7.3	46.9
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		6.5		5.9	6.6		2.4	
Green Extension Time (g_e), s		0.1		0.1	0.1	0.0	0.0	0.0
Phase Call Probability		0.98		0.98	0.90		0.18	
Max Out Probability		0.23		0.12	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	80	68		17	11		112	2174	1087	10	2255	45
Adjusted Saturation Flow Rate (s), veh/h/ln	1393	1576		1322	1597		1767	1841	1826	1767	1671	1572
Queue Service Time (g_s), s	4.0	3.0		0.9	0.4		4.6	41.9	42.7	0.4	27.9	1.0
Cycle Queue Clearance Time (g_c), s	4.5	3.0		3.9	0.4		4.6	41.9	42.7	0.4	27.9	1.0
Green Ratio (g/C)	0.13	0.13		0.13	0.13		0.08	0.61	0.61	0.02	0.55	0.55
Capacity (c), veh/h	269	205		216	208		149	2256	1119	30	2736	858
Volume-to-Capacity Ratio (X)	0.299	0.334		0.081	0.052		0.752	0.964	0.971	0.322	0.824	0.052
Back of Queue (Q), ft/ln (95 th percentile)	58.5	49		12.7	7.4		90.7	575.6	657.9	8.5	353.7	13.7
Back of Queue (Q), veh/ln (95 th percentile)	2.3	1.9		0.5	0.3		3.5	22.3	25.7	0.3	13.7	0.5
Queue Storage Ratio (RQ) (95 th percentile)	0.59	0.00		0.17	0.00		0.23	0.00	0.00	0.03	0.00	0.04
Uniform Delay (d_1), s/veh	30.5	29.7		31.4	28.6		33.6	13.7	13.9	36.4	14.1	8.0
Incremental Delay (d_2), s/veh	0.2	0.4		0.1	0.0		2.9	12.1	20.9	2.2	3.0	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	30.8	30.0		31.5	28.6		36.4	25.9	34.8	38.7	17.0	8.1
Level of Service (LOS)	C	C		C	C		D	C	C	D	B	A
Approach Delay, s/veh / LOS	30.4	C		30.4	C		29.1	C		17.0	B	
Intersection Delay, s/veh / LOS	24.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.72	C	1.87	B	1.88	B
Bicycle LOS Score / LOS	0.73	A	0.53	A	2.34	B	1.76	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Lazelle Road	File Name	107_US23-Lazelle_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	17	32	336	55	96	80	1884	204	73	2171	77

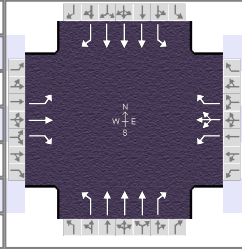
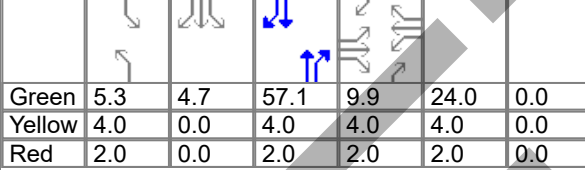
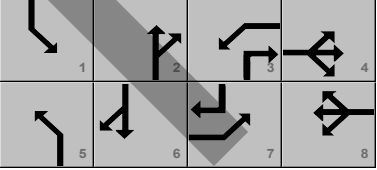
Signal Information				Signal Phases											
Cycle, s	125.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Float	Simult. Gap N/S	On												
		Green		7.2	0.5	59.9	9.5	24.0	0.0						
		Yellow		4.0	0.0	4.0	4.0	4.0	4.0						
		Red		2.0	0.0	2.0	2.0	2.0	2.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		9.0		9.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.5		30.0	13.7	66.4	13.2	65.9
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		4.6		26.0	8.1		7.5	
Green Extension Time (g _e), s		0.0		0.0	0.0	0.0	0.1	0.0
Phase Call Probability		0.95		1.00	0.95		0.94	
Max Out Probability		0.04		1.00	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	30	18	35	365	60	104	87	2048	222	79	2360	84
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1671	1572	1767	1671	1572
Queue Service Time (g _s), s	2.0	1.2	2.6	24.0	3.4	7.2	6.1	44.6	6.7	5.5	57.9	3.1
Cycle Queue Clearance Time (g _c), s	2.0	1.2	2.6	24.0	3.4	7.2	6.1	44.6	6.7	5.5	57.9	3.1
Green Ratio (g/C)	0.08	0.08	0.08	0.19	0.19	0.19	0.06	0.48	0.68	0.06	0.48	0.55
Capacity (c), veh/h	134	140	119	339	356	302	109	2422	1062	101	2402	872
Volume-to-Capacity Ratio (X)	0.228	0.132	0.292	1.076	0.168	0.346	0.801	0.845	0.209	0.784	0.983	0.096
Back of Queue (Q), ft/ln (95th percentile)	41.3	24.8	47.5	630.5	70	127.1	162.7	628.3	97.8	118.1	853	50.9
Back of Queue (Q), veh/ln (95th percentile)	1.6	1.0	1.9	24.6	2.7	5.0	6.4	24.4	3.8	4.6	33.1	2.0
Queue Storage Ratio (RQ) (95th percentile)	0.33	0.00	0.38	1.80	0.00	0.00	0.33	0.00	0.43	0.39	0.00	0.34
Uniform Delay (d ₁), s/veh	54.3	53.9	54.6	50.5	42.2	43.7	57.9	28.2	7.7	58.2	32.1	13.1
Incremental Delay (d ₂), s/veh	0.3	0.2	0.5	70.7	0.1	0.3	29.0	3.8	0.4	4.9	14.7	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	54.7	54.1	55.1	121.2	42.2	44.0	86.9	32.1	8.1	63.1	46.8	13.3
Level of Service (LOS)	D	D	E	F	D	D	F	C	A	E	D	B
Approach Delay, s/veh / LOS	54.7		D	97.1		F	31.8		C	46.2		D
Intersection Delay, s/veh / LOS	45.1						D					

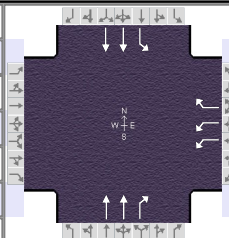
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.75	C	2.10	B	2.10	B
Bicycle LOS Score / LOS	0.63	A	1.36	A	1.78	B	1.88	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 15, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Lazelle Road		File Name	107_US23-Lazelle_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					49	29	38	469	32	131	37	2576	313	172	1696	61
Signal Information																
Cycle, s	125.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Float	Simult. Gap N/S	On		Green	5.3	4.7	57.1	9.9	24.0	0.0	0.0	0.0	0.0	0.0	
					Yellow	4.0	0.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	
					Red	2.0	0.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						9.0		9.0	2.0	3.0	2.0	3.0				
Phase Duration, s						15.9		30.0	11.3	63.1	16.0	67.9				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						5.6		26.0	4.8		12.0					
Green Extension Time (g _e), s						0.1		0.0	0.0	0.0	0.0	0.0				
Phase Call Probability						0.99		1.00	0.75		1.00					
Max Out Probability						0.00		1.00	0.00		1.00					
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					53	32	41	510	35	142	40	2800	340	187	1843	66
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1856	1572	1767	1671	1572	1767	1671	1572
Queue Service Time (g _s), s					3.6	2.0	3.1	24.0	1.9	10.1	2.8	57.1	12.1	10.0	36.7	2.3
Cycle Queue Clearance Time (g _c), s					3.6	2.0	3.1	24.0	1.9	10.1	2.8	57.1	12.1	10.0	36.7	2.3
Green Ratio (g/C)					0.08	0.08	0.08	0.19	0.19	0.19	0.04	0.46	0.65	0.08	0.49	0.57
Capacity (c), veh/h					140	147	124	339	356	302	74	2291	1021	141	2481	902
Volume-to-Capacity Ratio (X)					0.382	0.215	0.333	1.502	0.098	0.472	0.540	1.222	0.333	1.322	0.743	0.073
Back of Queue (Q), ft/ln (95 th percentile)					73	42.5	56.4	1295.4	40.2	178.3	58.5	1614.1	183.8	483.3	522	37.6
Back of Queue (Q), veh/ln (95 th percentile)					2.9	1.7	2.2	50.6	1.6	7.0	2.3	62.6	7.2	18.9	20.2	1.5
Queue Storage Ratio (RQ) (95 th percentile)					0.58	0.00	0.45	3.70	0.00	0.00	0.12	0.00	0.82	1.61	0.00	0.25
Uniform Delay (d ₁), s/veh					54.7	53.9	54.4	50.5	41.6	44.9	58.7	33.9	9.8	57.5	25.2	11.9
Incremental Delay (d ₂), s/veh					0.6	0.3	0.6	241.0	0.0	0.4	2.3	104.0	0.9	185.9	2.1	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					55.3	54.2	55.0	291.5	41.6	45.3	60.9	138.0	10.7	243.4	27.3	12.0
Level of Service (LOS)					E	D	E	F	D	D	E	F	B	F	C	B
Approach Delay, s/veh / LOS					54.9		D	227.8		F	123.4		F	46.1		D
Intersection Delay, s/veh / LOS					107.1					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.73		C	2.75		C	2.11		B	2.10		B
Bicycle LOS Score / LOS					0.70		A	1.62		B	2.24		B	1.64		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Olentangy Meadows Drive		File Name	108_US23-OlentangyMeadows_AM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				120		41	1929	33	59	2102		

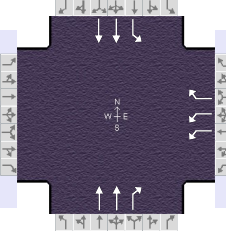
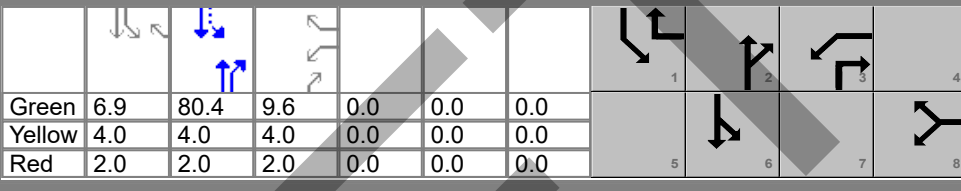
Signal Information				Signal Timing (s)													
Cycle, s	90.0	Reference Phase	2	Green	5.6	56.5	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On														

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				15.9		62.5	11.6	74.1
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				5.2			3.0	
Green Extension Time (g _e), s				0.3		0.0	0.1	0.0
Phase Call Probability				0.99			0.80	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h				130		45	2097	36	64	2285		
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572	1752	1572	1767	1752		
Queue Service Time (g _s), s				3.2		2.2	49.8	0.6	1.0	41.0		
Cycle Queue Clearance Time (g _c), s				3.2		2.2	49.8	0.6	1.0	41.0		
Green Ratio (g/C)				0.11		0.17	0.63	0.74	0.71	0.76		
Capacity (c), veh/h				377		270	2201	1160	204	2653		
Volume-to-Capacity Ratio (X)				0.346		0.165	0.952	0.031	0.314	0.861		
Back of Queue (Q), ft/ln (95 th percentile)				58.8		36.6	653.7	5.7	38.4	383.4		
Back of Queue (Q), veh/ln (95 th percentile)				2.3		1.4	25.3	0.2	1.5	14.9		
Queue Storage Ratio (RQ) (95 th percentile)				0.26		0.16	0.00	0.02	0.08	0.00		
Uniform Delay (d ₁), s/veh				37.1		31.8	15.5	3.2	22.1	7.6		
Incremental Delay (d ₂), s/veh				0.2		0.1	10.9	0.0	0.3	4.0		
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh				37.3		31.9	26.3	3.2	22.5	11.6		
Level of Service (LOS)				D		C	C	A	C	B		
Approach Delay, s/veh / LOS	0.0			35.9		D	26.0	C	11.9	B		
Intersection Delay, s/veh / LOS				19.2					B			

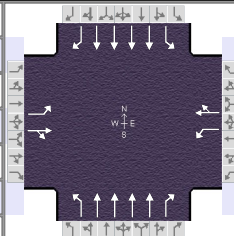
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	2.06	B	0.64	A
Bicycle LOS Score / LOS				F	2.25	B	2.43	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 15, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Olentangy Meadows Drive		File Name	108_US23-OlentangyMeadows_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								34		62		2582	103	129	1795	
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.9	80.4	9.6	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	1.0	4.0				
Phase Duration, s								15.6		86.4	12.9	99.4				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.2		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								6.4			6.9					
Green Extension Time (g _e), s								0.1		0.0	0.0	0.0				
Phase Call Probability								0.96			0.99					
Max Out Probability								0.57			1.00					
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h								37		67		2807	112	140	1951	
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572		1752	1572	1767	1752	
Queue Service Time (g _s), s								1.1		4.4		80.4	1.9	4.9	27.2	
Cycle Queue Clearance Time (g _c), s								1.1		4.4		80.4	1.9	4.9	27.2	
Green Ratio (g/C)								0.08		0.14		0.70	0.78	0.78	0.81	
Capacity (c), veh/h								288		226		2451	1232	169	2845	
Volume-to-Capacity Ratio (X)								0.128		0.298		1.145	0.091	0.830	0.686	
Back of Queue (Q), ft/ln (95 th percentile)								22.3		77.9		1741.7	20.9	222.3	257.1	
Back of Queue (Q), veh/ln (95 th percentile)								0.9		3.0		67.5	0.8	8.7	10.0	
Queue Storage Ratio (RQ) (95 th percentile)								0.10		0.35		0.00	0.08	0.44	0.00	
Uniform Delay (d ₁), s/veh								48.8		44.0		17.3	2.9	40.5	4.6	
Incremental Delay (d ₂), s/veh								0.1		0.3		70.6	0.1	24.7	1.4	
Initial Queue Delay (d ₃), s/veh								0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh								48.9		44.3		87.8	3.1	65.3	6.0	
Level of Service (LOS)								D		D		F	A	E	A	
Approach Delay, s/veh / LOS					0.0			45.9	D		84.6	F		9.9	A	
Intersection Delay, s/veh / LOS					53.3					D						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.32		B	2.32		B	2.05		B	0.63		A
Bicycle LOS Score / LOS										F	2.90		C	2.21	B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard		File Name	D105_US23-Northwoods_AM.xus			
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	125	2	84	8	2	5	260	2126	8	41	1967	109

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.7	4.4	46.0	10.9	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0			
				Red	2.0	2.0	2.0	2.0	0.0	0.0			

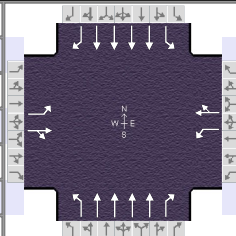
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		16.9		16.9	21.1	62.4	10.7	52.0
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		10.9		7.6	16.3		4.2	
Green Extension Time (g _e), s		0.0		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.67	
Max Out Probability		1.00		0.73	1.00		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	136	93		9	8		283	2311	9	45	2138	118
Adjusted Saturation Flow Rate (s), veh/h/ln	1397	1578		1292	1644		1767	1671	1572	1767	1671	1572
Queue Service Time (g _s), s	8.6	5.0		0.6	0.4		14.3	17.8	0.2	2.2	20.7	3.6
Cycle Queue Clearance Time (g _c), s	8.9	5.0		5.6	0.4		14.3	17.8	0.2	2.2	20.7	3.6
Green Ratio (g/C)	0.12	0.12		0.12	0.12		0.17	0.63	0.63	0.05	0.51	0.51
Capacity (c), veh/h	244	191		165	199		296	4188	985	92	3417	804
Volume-to-Capacity Ratio (X)	0.558	0.489		0.053	0.038		0.954	0.552	0.009	0.482	0.626	0.147
Back of Queue (Q), ft/ln (95 th percentile)	133.4	86		8.1	6.6		358.3	233.2	2.5	44	293.8	55.2
Back of Queue (Q), veh/ln (95 th percentile)	5.2	3.4		0.3	0.3		14.0	9.0	0.1	1.7	11.4	2.2
Queue Storage Ratio (RQ) (95 th percentile)	1.33	0.00		0.11	0.00		0.60	0.00	0.01	0.18	0.00	0.16
Uniform Delay (d ₁), s/veh	38.9	36.9		39.5	34.9		37.1	9.6	6.3	41.5	15.8	11.6
Incremental Delay (d ₂), s/veh	1.7	0.7		0.0	0.0		39.5	0.5	0.0	1.4	0.9	0.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.5	37.7		39.6	34.9		76.6	10.1	6.3	42.9	16.7	12.0
Level of Service (LOS)	D	D		D	C		E	B	A	D	B	B
Approach Delay, s/veh / LOS	39.4		D	37.4		D	17.3		B	17.0		B
Intersection Delay, s/veh / LOS	18.2						B					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.97		C	2.97		C	1.87		B	1.89		B
Bicycle LOS Score / LOS	0.87		A	0.51		A	1.56		B	1.44		A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard		File Name	D105_US23-Northwoods_PM.xus			
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	198	2	112	10	1	28	145	2998	6	10	2127	71

Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.7	2.6	48.0	18.6	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0			
				Red	2.0	2.0	2.0	2.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		24.6		24.6	16.3	62.6	7.7	54.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		18.1		9.2	10.3		2.6	
Green Extension Time (g_e), s		0.6		0.7	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.98		0.25	
Max Out Probability		0.01		0.00	0.00		0.00	

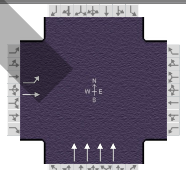
Movement Group Results	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h	215	124		11	32		158	3259	7	11	2312	77	
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1577		1257	1581		1767	1671	1572	1767	1671	1572	
Queue Service Time (g_s), s	14.5	6.5		0.7	1.6		8.3	36.5	0.2	0.6	24.9	2.4	
Cycle Queue Clearance Time (g_c), s	16.1	6.5		7.2	1.6		8.3	36.5	0.2	0.6	24.9	2.4	
Green Ratio (g/C)	0.20	0.20		0.20	0.20		0.11	0.60	0.60	0.02	0.51	0.51	
Capacity (c), veh/h	323	310		237	311		192	3982	937	32	3377	794	
Volume-to-Capacity Ratio (X)	0.667	0.400		0.046	0.101		0.819	0.818	0.007	0.335	0.685	0.097	
Back of Queue (Q), ft/ln (95 th percentile)	211	110.7		9.9	26.4		167.2	452.6	2.3	12.2	348.1	38	
Back of Queue (Q), veh/ln (95 th percentile)	8.2	4.3		0.4	1.0		6.5	17.5	0.1	0.5	13.5	1.5	
Queue Storage Ratio (RQ) (95 th percentile)	2.11	0.00		0.13	0.00		0.28	0.00	0.01	0.05	0.00	0.11	
Uniform Delay (d_1), s/veh	37.9	33.3		36.4	31.3		41.4	15.2	7.8	46.1	17.8	12.2	
Incremental Delay (d_2), s/veh	0.9	0.3		0.0	0.1		3.3	2.0	0.0	2.2	1.1	0.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	38.7	33.6		36.4	31.3		44.7	17.1	7.8	48.3	18.9	12.5	
Level of Service (LOS)	D	C		D	C		D	B	A	D	B	B	
Approach Delay, s/veh / LOS	36.9		D	32.6		C	18.4		B	18.9		B	
Intersection Delay, s/veh / LOS				19.7							B		

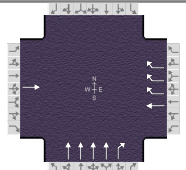
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.96	C	2.96	C	1.88	B	1.90	B
Bicycle LOS Score / LOS	1.05	A	0.56	A	1.90	B	1.48	A

HCS Alternative Intersections Results Summary

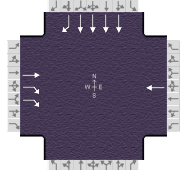
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	4/10/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	Lazelle Road	PHF	0.92		Arterial Direction	North-South	
File Name	D107_US23-Lazelle_AM_NB_NEW.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	45	0						2192				
Intersection Two Demand (v), veh/h		73			0	549		1936	221			
Intersection Three Demand (v), veh/h				453	0						2449	
Intersection Four Demand (v), veh/h		0	77		80						2697	132

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	70.9	7.1	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	43												
Uncoordinated	No	Green	61.8	16.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	8												
Uncoordinated	No	Green	17.4	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	86												
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

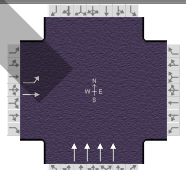
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	30	85.7	30.2	115.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	18	84.2	30.2	114.4	F
EBR	EBR(4)	35	36.8	--	36.8	D
WBL	WBR(2) + NBU(3) + SBT(4)	433	77.9	30.2	108.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	60	75.8	30.2	106.0	F
WBR	WBR(2)	104	36.1	--	36.1	D
NBL	NBT(1) + NBL(2)	87	41.2	--	41.2	D
NBT	NBT(1) + NBT(2)	2182	12.1	--	12.1	B
NBR	NBT(1) + NBR(2)	249	10.6	--	10.6	B
SBL	SBT(3) + SBL(4)	79	40.6	--	40.6	D
SBT	SBT(3) + SBT(4)	3007	15.1	--	15.1	B
SBR	SBT(3) + SBR(4)	147	13.0	--	13.0	B

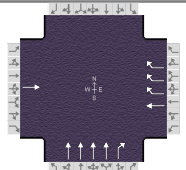
Overall Results		
Intersection ETT, s/veh LOS	23.9	C

HCS Alternative Intersections Results Summary

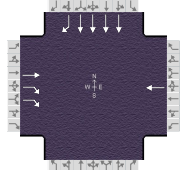
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Lazelle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D107_US23-Lazelle_PM_NB_NEW.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	78	0						2968				
Intersection Two Demand (v), veh/h		172			0	632		2667	342			
Intersection Three Demand (v), veh/h				501	0						2128	
Intersection Four Demand (v), veh/h		0	116		37						2364	93

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	69.2	8.8	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	45												
Uncoordinated	No	Green	59.6	18.4	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	8												
Uncoordinated	No	Green	19.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	87												
Uncoordinated	No	Green	9.8	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

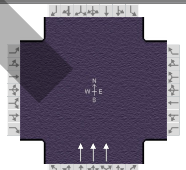
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	53	90.1	30.2	120.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	32	87.2	30.2	117.4	F
EBR	EBR(4)	41	37.7	--	37.7	D
WBL	WBR(2) + NBU(3) + SBT(4)	510	74.9	30.2	105.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	35	73.3	30.2	103.5	F
WBR	WBR(2)	142	34.7	--	34.7	C
NBL	NBT(1) + NBL(2)	40	41.9	--	41.9	D
NBT	NBT(1) + NBT(2)	2935	17.8	--	17.8	B
NBR	NBT(1) + NBR(2)	376	14.9	--	14.9	B
SBL	SBT(3) + SBL(4)	187	40.9	--	40.9	D
SBT	SBT(3) + SBT(4)	2749	14.4	--	14.4	B
SBR	SBT(3) + SBR(4)	108	12.8	--	12.8	B

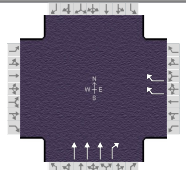
Overall Results		
Intersection ETT, s/veh LOS	26.7	C

HCS Alternative Intersections Results Summary

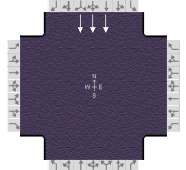
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Meadows Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D108_US23-OlentangyMeadows_AM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h								1993				
Intersection Two Demand (v), veh/h						161		1960	33			
Intersection Three Demand (v), veh/h				120								2226
Intersection Four Demand (v), veh/h												2287

Signal One Information													
Cycle, s	120.0									↑			
Offset, s	0									↑			
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0									↑			
Offset, s	0									↑			
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	120.0									↓			
Offset, s	0									↓			
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	0.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0									↓			
Offset, s	0									↓			
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	0.0	0.0	0.0	0.0	0.0	0.0					


Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	0	0	30.2	0	
EBT	EBR(4) + SBU(1) + NBR(2)	0	0	30.2	0	
EBR	EBR(4)	0	0	--	0	
WBL	WBR(2) + NBU(3) + SBT(4)	130	-1.4	30.2	28.8	C
WBT	WBR(2) + NBU(3) + SBR(4)	0	0	30.2	0	
WBR	WBR(2)	45		--	0.0	A
NBL	NBT(1) + NBL(2)			--		
NBT	NBT(1) + NBT(2)	2130	1.1	--	1.1	A
NBR	NBT(1) + NBR(2)	36	0.8	--	0.8	A
SBL	SBT(3) + SBL(4)			--		
SBT	SBT(3) + SBT(4)	2420	1.3	--	1.3	A
SBR	SBT(3) + SBR(4)			--		

Overall Results	
Intersection ETT, s/veh LOS	

HCS Alternative Intersections Results Summary

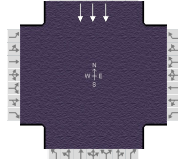
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Meadows Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D108_US23-OlentangyMeadows_PM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h								2713				
Intersection Two Demand (v), veh/h						96		2610	103			
Intersection Three Demand (v), veh/h				34							2067	
Intersection Four Demand (v), veh/h											1972	

Signal One Information													
Cycle, s	120.0									↑			
Offset, s	0									1 2 3 4			
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0									↑			
Offset, s	0									1 2 3 4			
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	120.0									↓			
Offset, s	0									1 2 3 4			
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	0.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0									↓			
Offset, s	0									1 2 3 4			
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	0.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	0	0	30.2	0	
EBT	EBR(4) + SBU(1) + NBR(2)	0	0	30.2	0	
EBR	EBR(4)	0	0	--	0	
WBL	WBR(2) + NBU(3) + SBT(4)	37	-1.4	30.2	28.8	C
WBT	WBR(2) + NBU(3) + SBR(4)	0	0	30.2	0	
WBR	WBR(2)	67		--	0.0	A
NBL	NBT(1) + NBL(2)			--		
NBT	NBT(1) + NBT(2)	2837	1.8	--	1.8	A
NBR	NBT(1) + NBR(2)	112	1.2	--	1.2	A
SBL	SBT(3) + SBL(4)			--		
SBT	SBT(3) + SBT(4)	2247	1.2	--	1.2	A
SBR	SBT(3) + SBR(4)			--		

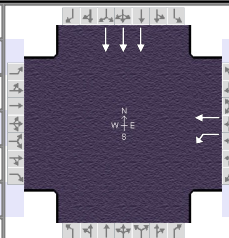
Overall Results	
Intersection ETT, s/veh LOS	

HCS Signalized Intersection Results Summary

General Information					Intersection Information										
Agency	ms consultants				Duration, h	0.250									
Analyst	JRH		Analysis Date	Apr 4, 2023		Area Type	Other								
Jurisdiction			Time Period	AM Peak		PHF	0.92								
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00								
Intersection	Olentangy Meadows Drive		File Name	C108_US23-OlentangyMeadows_AM.xus											
Project Description	Concept C Design Year (2030)														
Demand Information															
				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							200	0						2543	
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results															
				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8						6		
Case Number							10.0						8.0		
Phase Duration, s							19.1						70.9		
Change Period, (Y+R _c), s							6.0						6.0		
Max Allow Headway (MAH), s							3.0						0.0		
Queue Clearance Time (g _s), s							12.8								
Green Extension Time (g _e), s							0.4						0.0		
Phase Call Probability							1.00								
Max Out Probability							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							3	8						6	
Adjusted Flow Rate (v), veh/h							217	0					2764		
Adjusted Saturation Flow Rate (s), veh/h/ln							1767	1856					1671		
Queue Service Time (g _s), s							10.8	0.0					30.8		
Cycle Queue Clearance Time (g _c), s							10.8	0.0					30.8		
Green Ratio (g/C)							0.15	0.15					0.72		
Capacity (c), veh/h							257	270					3616		
Volume-to-Capacity Ratio (X)							0.845	0.000					0.764		
Back of Queue (Q), ft/ln (95 th percentile)							208.4	0					311.8		
Back of Queue (Q), veh/ln (95 th percentile)							8.1	0.0					12.1		
Queue Storage Ratio (RQ) (95 th percentile)							0.93	0.00					0.00		
Uniform Delay (d ₁), s/veh							37.5	0.0					7.8		
Incremental Delay (d ₂), s/veh							2.9	0.0					1.6		
Initial Queue Delay (d ₃), s/veh							0.0	0.0					0.0		
Control Delay (d), s/veh							40.4	0.0					9.4		
Level of Service (LOS)							D						A		
Approach Delay, s/veh / LOS				0.0			40.4	D			0.0		9.4	A	
Intersection Delay, s/veh / LOS				11.7					B						
Multimodal Results															
				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				1.95	B		1.95	B		1.72	B		1.33	A	
Bicycle LOS Score / LOS							0.85	A				2.01	B		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Olentangy Meadows Drive	File Name	C108_US23-OlentangyMeadows_PM.xus				
Project Description	Concept C Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				200	0							2259

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8				6
Case Number				10.0				8.0
Phase Duration, s				19.1				70.9
Change Period, (Y+R _c), s				6.0				6.0
Max Allow Headway (MAH), s				3.0				0.0
Queue Clearance Time (g _s), s				12.8				
Green Extension Time (g _e), s				0.4				0.0
Phase Call Probability				1.00				
Max Out Probability				0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8						6	
Adjusted Flow Rate (v), veh/h				217	0						2455	
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1856						1671	
Queue Service Time (g _s), s				10.8	0.0						24.1	
Cycle Queue Clearance Time (g _c), s				10.8	0.0						24.1	
Green Ratio (g/C)				0.15	0.15						0.72	
Capacity (c), veh/h				257	270						3616	
Volume-to-Capacity Ratio (X)				0.845	0.000						0.679	
Back of Queue (Q), ft/ln (95 th percentile)				208.4	0						254.1	
Back of Queue (Q), veh/ln (95 th percentile)				8.1	0.0						9.8	
Queue Storage Ratio (RQ) (95 th percentile)				0.93	0.00						0.00	
Uniform Delay (d ₁), s/veh				37.5	0.0						6.9	
Incremental Delay (d ₂), s/veh				2.9	0.0						1.0	
Initial Queue Delay (d ₃), s/veh				0.0	0.0						0.0	
Control Delay (d), s/veh				40.4	0.0						7.9	
Level of Service (LOS)				D							A	
Approach Delay, s/veh / LOS	0.0			40.4		D	0.0			7.9		A
Intersection Delay, s/veh / LOS				10.5						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	1.95	B	1.72	B	1.33	A
Bicycle LOS Score / LOS			0.85	A			1.84	B

HCS Signalized Intersection Results Summary

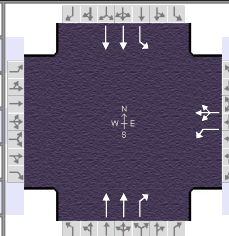
General Information					Intersection Information															
Agency	ms consultants				Duration, h	0.250														
Analyst	JRH	Analysis Date	Apr 8, 2024		Area Type	Other														
Jurisdiction		Time Period	AM Peak		PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00														
Intersection	Campus View Blvd.		File Name	1S-B_US23-CampusView_AM - REB.xus																
Project Description	Design Year (2030)																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h					10	10	74	779	7	53	44	588	1175	256	1046	9				
Signal Information																				
Cycle, s	120.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On		Green	5.6	0.4	55.0	9.7	19.3	0.0									
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	4.0	4.0	0.0									
					Red	2.0	2.0	2.0	2.0	2.0	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							11.0				10.0		1.1		3.0		1.1		4.0	
Phase Duration, s							15.7				25.3		11.6		61.0		18.0		67.4	
Change Period, (Y+R _c), s							6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s							3.2				3.0		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s							7.9				21.3		3.7				11.5			
Green Extension Time (g _e), s							0.0				0.0		0.1		0.0		0.5		0.0	
Phase Call Probability							0.97				1.00		0.80				1.00			
Max Out Probability							1.00				1.00		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					22	80	847	65			48	895	1022	278	574	573				
Adjusted Saturation Flow Rate (s), veh/h/ln					1810	1572	1716	1601			1767	1764	1572	1767	1841	1835				
Queue Service Time (g _s), s					1.3	5.9	19.3	4.3			1.7	22.1	55.0	9.5	26.6	26.6				
Cycle Queue Clearance Time (g _c), s					1.3	5.9	19.3	4.3			1.7	22.1	55.0	9.5	26.6	26.6				
Green Ratio (g/C)					0.08	0.08	0.16	0.16			0.50	0.46	0.62	0.58	0.51	0.51				
Capacity (c), veh/h					146	127	829	258			275	1617	974	452	942	939				
Volume-to-Capacity Ratio (X)					0.149	0.635	1.021	0.253			0.174	0.553	1.049	0.616	0.609	0.610				
Back of Queue (Q), ft/ln (95 th percentile)					27.8	113	420.5	77.1			29.6	358.9	1183.3	164	436.2	421.7				
Back of Queue (Q), veh/ln (95 th percentile)					1.1	4.4	16.4	3.0			1.2	13.9	46.2	6.4	16.9	16.9				
Queue Storage Ratio (RQ) (95 th percentile)					0.00	1.13	0.84	0.00			0.05	0.00	0.00	1.64	0.00	0.00				
Uniform Delay (d ₁), s/veh					51.3	53.5	50.3	44.0			17.4	23.6	22.8	16.6	20.8	20.8				
Incremental Delay (d ₂), s/veh					0.2	4.5	36.7	0.2			0.1	1.4	42.5	0.5	2.9	2.9				
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh					51.5	58.0	87.0	44.2			17.5	24.9	65.3	17.1	23.7	23.7				
Level of Service (LOS)					D	E	F	D			B	C	F	B	C	C				
Approach Delay, s/veh / LOS					56.6	E	84.0	F			45.8	D	22.4	C						
Intersection Delay, s/veh / LOS					46.4			D												
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.60	C	2.32	B			2.27	B	1.90	B						
Bicycle LOS Score / LOS					0.66	A	1.99	B			2.11	B	1.66	B						

HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency	ms consultants					Duration, h	0.250												
Analyst	JRH	Analysis Date	Apr 8, 2024			Area Type	Other												
Jurisdiction		Time Period	PM Peak			PHF	0.92												
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00												
Intersection	Campus View Blvd.		File Name	1S-B_US23-CampusView_PM - REB.xus															
Project Description	Design Year (2030)																		
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				12	14	61	1358	8	61	83	769	771	217	619	13				
Signal Information																			
Cycle, s	120.0	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	1.1	33.8	9.6	38.9	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0									
				Red	2.0	2.0	2.0	2.0	2.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8		5		2		1		6	
Case Number						11.0				10.0		1.1		3.0		1.1		4.0	
Phase Duration, s						15.6				44.9		12.7		39.8		19.8		46.9	
Change Period, (Y+R _c), s						6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s						3.2				3.0		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s						6.9				34.6		6.3				13.5			
Green Extension Time (g _e), s						0.1				4.3		0.1		0.0		0.3		0.0	
Phase Call Probability						0.96				1.00		0.95				1.00			
Max Out Probability						0.00				0.02		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				28	66		1476	75		90	1003	670	236	345	342				
Adjusted Saturation Flow Rate (s), veh/h/ln				1814	1572		1716	1601		1767	1796	1572	1767	1841	1827				
Queue Service Time (g _s), s				1.7	4.9		32.6	4.0		4.3	33.4	33.8	11.5	18.2	18.2				
Cycle Queue Clearance Time (g _c), s				1.7	4.9		32.6	4.0		4.3	33.4	33.8	11.5	18.2	18.2				
Green Ratio (g/C)				0.08	0.08		0.32	0.32		0.34	0.28	0.61	0.41	0.34	0.34				
Capacity (c), veh/h				145	125		1669	519		287	1011	952	265	627	622				
Volume-to-Capacity Ratio (X)				0.195	0.529		0.884	0.145		0.315	0.993	0.704	0.891	0.550	0.550				
Back of Queue (Q), ft/ln (95 th percentile)				36.3	88.5		499.8	69		81.9	642.1	463.7	236.7	339.8	327.9				
Back of Queue (Q), veh/ln (95 th percentile)				1.4	3.5		19.5	2.7		3.2	24.9	18.1	9.2	13.2	13.1				
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.88		1.00	0.00		0.14	0.00	0.00	2.37	0.00	0.00				
Uniform Delay (d ₁), s/veh				51.6	53.0		38.4	28.7		28.6	43.0	16.3	32.1	32.1	32.1				
Incremental Delay (d ₂), s/veh				0.2	1.3		2.7	0.0		0.2	26.6	4.4	10.3	3.4	3.5				
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh				51.9	54.3		41.1	28.8		28.9	69.6	20.6	42.3	35.5	35.6				
Level of Service (LOS)					D	D	D	C		C	E	C	D	D	D				
Approach Delay, s/veh / LOS				53.6		D	40.5		D	48.9		D	37.3		D				
Intersection Delay, s/veh / LOS				43.5					D										
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.58		C	2.32		B	2.29		B	1.93		B				
Bicycle LOS Score / LOS				0.64		A	3.05		C	1.94		B	1.25		A				

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	4/9/2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street		Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection		File Name	1S-B_US23-Flint_AM-REB.xus				
Project Description							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				1078	0	5	237	598	35	208		

Signal Information				Signal Timing (s)													
Cycle, s	120.0	Reference Phase	2														
Offset, s	0	Reference Point	End	Green	4.3	73.7	24.0	0.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0							

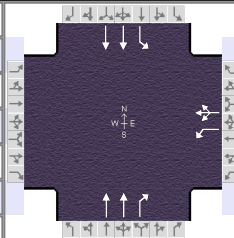
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				30.0		79.7	10.3	90.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				26.0			2.9	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				1.00			0.72	
Max Out Probability				1.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				644	533			258	650	38	226	
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1765			1766	1572	1767	1766	
Queue Service Time (g _s), s				24.0	24.0			3.6	32.6	0.9	2.5	
Cycle Queue Clearance Time (g _c), s				24.0	24.0			3.6	32.6	0.9	2.5	
Green Ratio (g/C)				0.20	0.20			0.61	0.61	0.67	0.70	
Capacity (c), veh/h				353	353			2169	966	773	2473	
Volume-to-Capacity Ratio (X)				1.823	1.509			0.119	0.673	0.049	0.091	
Back of Queue (Q), ft/ln (95 th percentile)				1901	1393			61.1	430.9	13.5	36.8	
Back of Queue (Q), veh/ln (95 th percentile)				74.3	54.4			2.4	16.8	0.5	1.4	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh				48.0	59.9			9.6	15.2	7.0	5.8	
Incremental Delay (d ₂), s/veh				381.5	243.2			0.1	3.7	0.0	0.1	
Initial Queue Delay (d ₃), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				429.5	303.1			9.8	19.0	7.0	5.8	
Level of Service (LOS)				F	F			A	B	A	A	
Approach Delay, s/veh / LOS	0.0			372.3		F	16.4		B	6.0		A
Intersection Delay, s/veh / LOS				193.6						F		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.89	B	1.35	A
Bicycle LOS Score / LOS			2.43	B	1.24	A	0.71	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	4/9/2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Flint Road		File Name	1S-B_US23-Flint_PM-REB.xus			
Project Description	Concept 1S - B						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				651	0	40	320	654	65	163		

Signal Information				Signal Timing (s)													
Cycle, s	70.0	Reference Phase	2														
Offset, s	0	Reference Point	End	Green	5.2	28.7	18.1	0.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0							

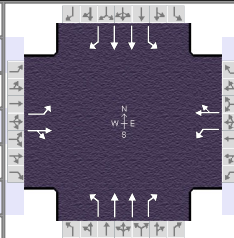
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	1.0	4.0
Phase Duration, s				24.1		34.7	11.2	45.9
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				16.7			3.4	
Green Extension Time (g _e), s				1.5		0.0	0.1	0.0
Phase Call Probability				1.00			0.75	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18		2	12	1	6	
Adjusted Flow Rate (v), veh/h				389	362			348	711	71	177	
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1748			1766	1572	1767	1766	
Queue Service Time (g _s), s				14.7	14.4			4.5	19.2	1.4	1.6	
Cycle Queue Clearance Time (g _c), s				14.7	14.4			4.5	19.2	1.4	1.6	
Green Ratio (g/C)				0.26	0.26			0.41	0.67	0.51	0.57	
Capacity (c), veh/h				457	452			1447	1051	588	2013	
Volume-to-Capacity Ratio (X)				0.851	0.800			0.240	0.677	0.120	0.088	
Back of Queue (Q), ft/ln (95 th percentile)				244.1	283.2			74.2	214.1	20.1	21.9	
Back of Queue (Q), veh/ln (95 th percentile)				9.5	11.3			2.9	8.4	0.8	0.9	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00			0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh				24.7	32.1			13.5	7.0	9.0	6.8	
Incremental Delay (d ₂), s/veh				1.8	1.3			0.4	3.5	0.0	0.1	
Initial Queue Delay (d ₃), s/veh				0.0	0.0			0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				26.4	33.4			13.9	10.5	9.0	6.9	
Level of Service (LOS)				C	C			B	B	A	A	
Approach Delay, s/veh / LOS	0.0			29.8		C	11.6		B	7.5		A
Intersection Delay, s/veh / LOS				17.8						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.30	B	1.90	B	1.36	A
Bicycle LOS Score / LOS			1.73	B	1.36	A	0.69	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Green Meadows Dr/Hig...	File Name	109_US23-GreenMeadows_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	1	1	1	123	3	8	13	1721	215	38	1967	14

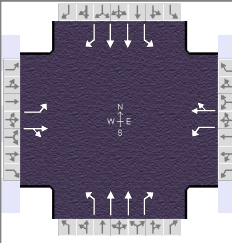
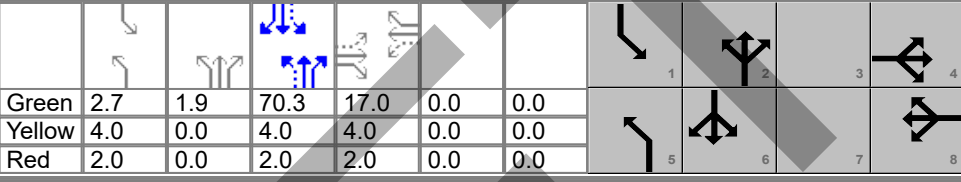
Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.8	2.3	43.4	9.6	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		15.6		15.6	7.8	49.4	10.0	51.7
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.0		3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.5		9.0	2.2		2.7	
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.96		0.96	0.26		0.58	
Max Out Probability		0.00		1.00	0.00		0.00	

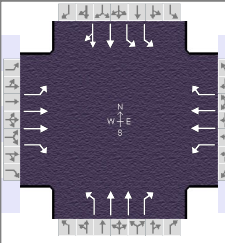
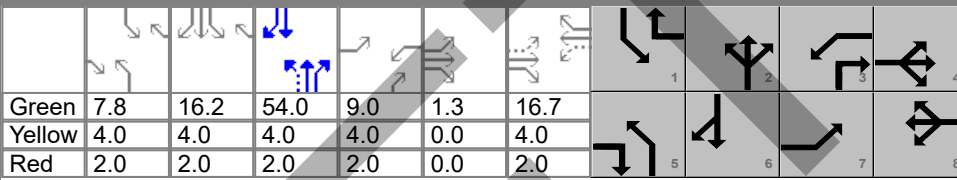
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	1	2		134	12		14	1871	234	41	2138	15
Adjusted Saturation Flow Rate (s), veh/h/ln	1391	1702		1404	1641		1767	1752	1572	1767	1752	1572
Queue Service Time (g _s), s	0.1	0.1		6.9	0.5		0.2	36.2	5.5	0.7	45.7	0.3
Cycle Queue Clearance Time (g _c), s	0.5	0.1		7.0	0.5		0.2	36.2	5.5	0.7	45.7	0.3
Green Ratio (g/C)	0.13	0.13		0.13	0.13		0.60	0.58	0.58	0.63	0.61	0.61
Capacity (c), veh/h	264	217		273	209		138	2029	910	215	2134	957
Volume-to-Capacity Ratio (X)	0.004	0.010		0.489	0.057		0.102	0.922	0.257	0.193	1.002	0.016
Back of Queue (Q), ft/ln (95 th percentile)	0.7	1.5		101.4	8.2		5.7	482.6	73.5	15.3	658.8	3.6
Back of Queue (Q), veh/ln (95 th percentile)	0.0	0.1		4.0	0.3		0.2	18.7	2.9	0.6	25.5	0.1
Queue Storage Ratio (RQ) (95 th percentile)	0.01	0.00		0.25	0.00		0.03	0.00	0.18	0.08	0.00	0.02
Uniform Delay (d ₁), s/veh	29.0	28.6		31.6	28.8		18.5	14.3	7.8	15.7	14.7	5.8
Incremental Delay (d ₂), s/veh	0.0	0.0		0.5	0.0		0.1	8.5	0.7	0.2	19.9	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	29.0	28.6		32.2	28.8		18.7	22.7	8.5	15.9	34.6	5.8
Level of Service (LOS)	C	C		C	C		B	C	A	B	F	A
Approach Delay, s/veh / LOS	28.7	C		31.9	C		21.1	C		34.1	C	
Intersection Delay, s/veh / LOS	27.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.49	A	0.73	A	2.24	B	2.30	B

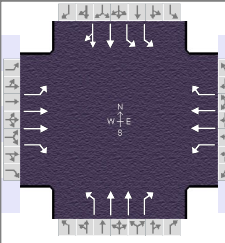
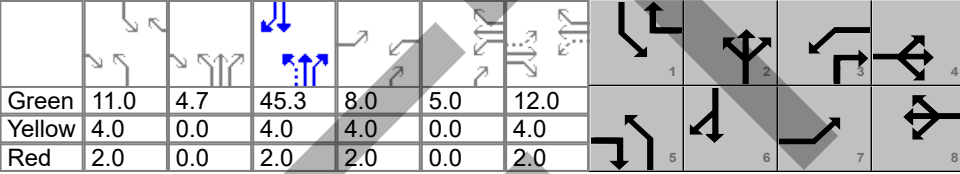
HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency		ms consultants				Duration, h		0.250											
Analyst		JRH		Analysis Date		Apr 2, 2024		Area Type		Other									
Jurisdiction				Time Period		PM Peak		PHF		0.92									
Urban Street		US 23 Corridor Study		Analysis Year		2030		Analysis Period		1 > 7:00									
Intersection		Green Meadows Dr/Hig...		File Name		109_US23-GreenMeadows_PM.xus													
Project Description		No Build Design Year (2030)																	
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				45	13	24	143	10	22	33	2344	221	15	1714	29				
Signal Information																			
Cycle, s		110.0		Reference Phase		2													
Offset, s		0		Reference Point		End													
Uncoordinated		No		Simult. Gap E/W		On													
Force Mode		Fixed		Simult. Gap N/S		On													
Green				2.7		1.9		70.3		17.0		0.0		0.0					
Yellow				4.0		0.0		4.0		4.0		0.0		0.0					
Red				2.0		0.0		2.0		2.0		0.0		0.0					
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8		5		2		1		6	
Case Number						6.0				6.0		1.1		3.0		1.1		3.0	
Phase Duration, s						23.0				23.0		10.7		78.2		8.7		76.3	
Change Period, (Y+R _c), s						6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s						3.1				3.1		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s						7.5				16.6		2.7				2.3			
Green Extension Time (g _e), s						0.5				0.4		0.0		0.0		0.0		0.0	
Phase Call Probability						1.00				1.00		0.67				0.39			
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				49	40		155	35		36	2548	240	16	1863	32				
Adjusted Saturation Flow Rate (s), veh/h/ln				1363	1662		1356	1651		1767	1752	1572	1767	1752	1572				
Queue Service Time (g _s), s				3.5	2.3		12.3	2.0		0.7	72.2	6.8	0.3	45.1	0.8				
Cycle Queue Clearance Time (g _c), s				5.5	2.3		14.6	2.0		0.7	72.2	6.8	0.3	45.1	0.8				
Green Ratio (g/C)				0.15	0.15		0.15	0.15		0.68	0.66	0.66	0.66	0.64	0.64				
Capacity (c), veh/h				253	258		248	257		196	2299	1032	110	2238	1004				
Volume-to-Capacity Ratio (X)				0.193	0.156		0.626	0.136		0.183	1.108	0.233	0.149	0.832	0.031				
Back of Queue (Q), ft/ln (95 th percentile)				53.7	42.6		187.9	36.8		17.9	1451.9	98	12.3	583.9	11.8				
Back of Queue (Q), veh/ln (95 th percentile)				2.1	1.7		7.3	1.4		0.7	56.3	3.8	0.5	22.6	0.5				
Queue Storage Ratio (RQ) (95 th percentile)				0.54	0.00		0.47	0.00		0.09	0.00	0.24	0.06	0.00	0.08				
Uniform Delay (d ₁), s/veh				42.4	40.2		46.5	40.1		16.6	18.9	7.7	28.7	15.3	7.3				
Incremental Delay (d ₂), s/veh				0.1	0.1		1.0	0.1		0.2	55.7	0.5	0.2	3.8	0.1				
Initial Queue Delay (d ₃), s/veh				0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh				42.6	40.3		47.5	40.2		16.8	74.6	8.2	28.9	19.1	7.4				
Level of Service (LOS)				D	D		D	D		B	F	A	C	B	A				
Approach Delay, s/veh / LOS				41.5		D	46.1		D	68.2		E	19.0		B				
Intersection Delay, s/veh / LOS				48.2						D									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.46		B	2.46		B	1.87		B	1.88		B				
Bicycle LOS Score / LOS				0.63		A	0.80		A	2.82		C	2.06		B				

HCS Signalized Intersection Results Summary

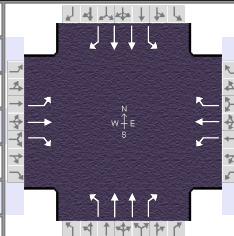
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	SR 750		File Name	110_US23-750_AM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					117	533	214	220	306	240	116	1448	219	635	1915	74
Signal Information																
Cycle, s	135.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	7.8	16.2	54.0	9.0	1.3	16.7										
Yellow	4.0	4.0	4.0	4.0	0.0	4.0										
Red	2.0	2.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	2.0	4.0				
Phase Duration, s					16.3	24.0	15.0	22.7	13.8	60.0	36.0	82.2				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					10.4	20.0	11.0	18.7	7.6		28.4					
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.2	0.0	1.5	0.0				
Phase Call Probability					0.99	1.00	1.00	1.00	0.99		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	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					127	579	233	239	333	261	126	1574	238	690	1081	1081
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1766	1572	1767	1766	1572	1767	1766	1572	1716	1856	1831
Queue Service Time (g _s), s					8.4	18.0	18.0	9.0	12.3	16.7	5.6	54.0	12.8	26.4	76.2	76.2
Cycle Queue Clearance Time (g _c), s					8.4	18.0	18.0	9.0	12.3	16.7	5.6	54.0	12.8	26.4	76.2	76.2
Green Ratio (g/C)					0.20	0.13	0.19	0.19	0.12	0.35	0.46	0.40	0.47	0.22	0.56	0.56
Capacity (c), veh/h					222	471	300	171	436	543	155	1414	734	761	1048	1034
Volume-to-Capacity Ratio (X)					0.572	1.230	0.775	1.397	0.762	0.480	0.814	1.113	0.324	0.906	1.032	1.045
Back of Queue (Q), ft/ln (95 th percentile)					169.2	622.1	330.9	477.3	249.6	276.8	112.5	1214.1	216.4	444.4	1362.8	1366.5
Back of Queue (Q), veh/ln (95 th percentile)					6.6	24.3	12.9	18.6	9.8	10.8	4.4	47.4	8.5	17.4	53.2	54.7
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					47.2	58.5	51.9	52.9	57.2	34.7	32.2	40.5	22.6	51.2	29.4	29.4
Incremental Delay (d ₂), s/veh					0.9	120.9	10.9	210.2	7.0	0.2	3.9	61.2	1.2	6.4	36.2	40.6
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					48.1	179.4	62.8	263.1	64.2	34.9	36.1	101.6	23.8	57.6	65.6	70.0
Level of Service (LOS)					D	F	E	F	E	C	D	F	C	E	F	F
Approach Delay, s/veh / LOS					132.8	F		112.2	F		87.8	F		65.3	E	
Intersection Delay, s/veh / LOS					87.6						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.47	B		2.44	B		2.41	B	
Bicycle LOS Score / LOS					1.26	A		1.17	A		2.09	B		2.84	C	

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other											
Jurisdiction		Time Period	PM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00											
Intersection	SR 750	File Name	110_US23-750_PM.xus														
Project Description	No Build Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					120	472	142	222	634	478	262	2052	194	391	1646	102	
Signal Information																	
Cycle, s	110.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	11.0	4.7	45.3	8.0	5.0	12.0						
		Yellow	4.0	0.0	4.0	4.0	0.0	4.0									
		Red	2.0	0.0	2.0	2.0	0.0	2.0									
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					7	4	3	8	5	2	1	6					
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	2.0	4.0					
Phase Duration, s					14.0	18.0	19.0	23.0	21.7	56.0	17.0	51.3					
Change Period, ($Y+R_c$), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Allow Headway (MAH), s					3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0					
Queue Clearance Time (g_s), s					9.2	14.0	15.0	19.0	15.3		13.0						
Green Extension Time (g_e), s					0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0					
Phase Call Probability					0.98	1.00	1.00	1.00	1.00		1.00						
Max Out Probability					1.00	1.00	1.00	1.00	0.00		1.00						
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					130	513	154	241	689	520	285	2230	211	425	951	949	
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1766	1572	1767	1766	1572	1767	1766	1572	1716	1856	1817	
Queue Service Time (g_s), s					7.2	12.0	9.0	13.0	17.0	17.0	13.3	50.0	7.3	11.0	45.3	45.3	
Cycle Queue Clearance Time (g_c), s					7.2	12.0	9.0	13.0	17.0	17.0	13.3	50.0	7.3	11.0	45.3	45.3	
Green Ratio (g/C)					0.18	0.11	0.25	0.24	0.15	0.25	0.56	0.45	0.57	0.10	0.41	0.41	
Capacity (c), veh/h					194	385	396	274	546	400	318	1606	901	343	764	749	
Volume-to-Capacity Ratio (X)					0.672	1.331	0.390	0.880	1.262	1.298	0.897	1.389	0.234	1.238	1.244	1.268	
Back of Queue (Q), ft/ln (95 th percentile)					156.8	571.8	153.3	305.4	680	1027.9	170.4	2264.5	113.4	445.6	1637.1	1654.9	
Back of Queue (Q), veh/ln (95 th percentile)					6.1	22.3	6.0	11.9	26.6	40.2	6.7	88.5	4.4	17.4	63.9	66.2	
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh					40.4	49.0	34.1	38.1	46.5	41.0	33.5	30.0	11.6	49.5	32.3	32.3	
Incremental Delay (d_2), s/veh					7.2	165.9	0.2	25.4	132.1	151.5	4.1	178.9	0.6	129.8	120.8	131.1	
Initial Queue Delay (d_3), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					47.6	214.9	34.4	63.5	178.6	192.5	37.6	208.9	12.2	179.3	153.2	163.4	
Level of Service (LOS)					D	F	C	E	F	F	D	F	B	F	F	F	
Approach Delay, s/veh / LOS					152.6	F		164.4	F		175.8	F		162.1	F		
Intersection Delay, s/veh / LOS					166.7						F						
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.46	B		2.46	B		2.42	B		2.43	B		
Bicycle LOS Score / LOS					1.15	A		1.68	B		2.74	C		2.41	B		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Meadow Park Drive	File Name	111_US23-MeadowPark_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	68	33	30	63	23	17	50	1776	111	90	2300	88

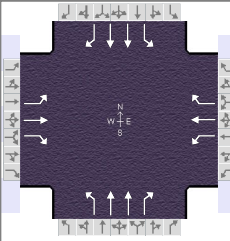
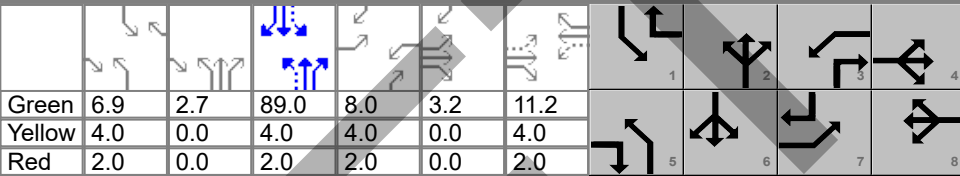
Signal Information				Signal Timing (s)													
Cycle, s	130.0	Reference Phase	2	Green	6.0	0.8	82.7	6.4	0.1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	4.0	0.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Force Mode	Fixed	Simult. Gap N/S	On														

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.5	16.1	12.4	16.0	12.0	88.7	12.8	89.5
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	7.0	4.4	6.6	3.6	3.3		4.4	
Green Extension Time (g _e), s	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0
Phase Call Probability	0.93	1.00	0.92	1.00	0.86		0.97	
Max Out Probability	1.00	0.00	1.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	74	36	33	68	25	18	54	1930	121	98	2500	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	5.0	2.4	2.4	4.6	1.6	1.3	1.3	57.0	3.4	2.4	83.5	2.5
Cycle Queue Clearance Time (g _c), s	5.0	2.4	2.4	4.6	1.6	1.3	1.3	57.0	3.4	2.4	83.5	2.5
Green Ratio (g/C)	0.13	0.08	0.12	0.13	0.08	0.13	0.68	0.64	0.69	0.69	0.64	0.69
Capacity (c), veh/h	232	144	195	203	143	203	137	2248	1078	193	2269	1115
Volume-to-Capacity Ratio (X)	0.318	0.249	0.167	0.338	0.175	0.091	0.396	0.859	0.112	0.507	1.102	0.086
Back of Queue (Q), ft/ln (95 th percentile)	100.1	50.8	43.4	92.7	35.1	24.2	49.9	753.2	49.7	89.4	1604.7	36.7
Back of Queue (Q), veh/ln (95 th percentile)	3.9	2.0	1.7	3.6	1.4	0.9	1.9	29.4	1.9	3.5	62.7	1.5
Queue Storage Ratio (RQ) (95 th percentile)	1.00	0.00	0.43	0.62	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	51.7	56.4	50.9	51.7	56.2	49.9	33.1	19.0	7.0	27.1	23.3	6.5
Incremental Delay (d ₂), s/veh	0.3	0.3	0.1	0.4	0.2	0.1	0.7	4.5	0.2	0.8	53.3	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.0	56.7	51.1	52.1	56.4	50.0	33.8	23.5	7.2	27.8	76.5	6.7
Level of Service (LOS)	D	E	D	D	E	D	C	C	A	C	F	A
Approach Delay, s/veh / LOS	53.0		D	52.7		D	22.8		C	72.3		E
Intersection Delay, s/veh / LOS	50.7						D					

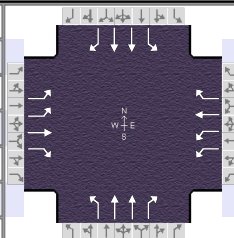
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	0.72	A	0.67	A	2.22	B	2.71	C

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other											
Jurisdiction		Time Period	PM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00											
Intersection	Meadow Park Drive	File Name	111_US23-MeadowPark_PM.xus														
Project Description	No Build Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					113	62	50	168	91	92	150	2436	176	100	1854	120	
Signal Information																	
Cycle, s	145.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
Green	6.9	2.7	89.0	8.0	3.2	11.2											
Yellow	4.0	0.0	4.0	4.0	0.0	4.0											
Red	2.0	0.0	2.0	2.0	0.0	2.0											
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					7	4	3	8	5	2	1	6					
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0					
Phase Duration, s					17.2	20.3	14.0	17.2	15.6	97.8	12.9	95.0					
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0					
Max Allow Headway (MAH), s					3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0					
Queue Clearance Time (g _s), s					11.2	6.9	10.0	10.6	9.4		6.7						
Green Extension Time (g _e), s					0.1	0.6	0.0	0.6	0.3	0.0	0.2	0.0					
Phase Call Probability					0.99	1.00	1.00	1.00	1.00		0.99						
Max Out Probability					0.10	0.00	1.00	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					123	67	54	183	99	100	163	2648	191	109	2015	130	
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1610	
Queue Service Time (g _s), s					9.2	4.9	4.3	8.0	7.5	8.6	7.4	91.8	6.3	4.7	74.3	4.0	
Cycle Queue Clearance Time (g _c), s					9.2	4.9	4.3	8.0	7.5	8.6	7.4	91.8	6.3	4.7	74.3	4.0	
Green Ratio (g/C)					0.15	0.10	0.17	0.13	0.08	0.12	0.68	0.63	0.69	0.66	0.61	0.69	
Capacity (c), veh/h					218	183	260	215	143	196	189	2236	1082	134	2169	1112	
Volume-to-Capacity Ratio (X)					0.564	0.368	0.209	0.850	0.692	0.510	0.865	1.184	0.177	0.812	0.929	0.117	
Back of Queue (Q), ft/ln (95 th percentile)					187.9	106.6	78.4	196.4	166	157.8	258.4	2186.4	95.1	187.2	1019	59.7	
Back of Queue (Q), veh/ln (95 th percentile)					7.3	4.2	3.1	7.7	6.5	6.2	10.1	85.4	3.7	7.3	39.8	2.4	
Queue Storage Ratio (RQ) (95 th percentile)					1.88	0.00	0.78	1.31	0.00	0.79	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh					56.0	61.1	52.3	63.0	65.2	59.3	44.0	26.6	8.0	44.5	25.2	7.5	
Incremental Delay (d ₂), s/veh					0.9	0.5	0.1	25.2	2.2	0.8	4.6	87.8	0.4	4.4	8.6	0.2	
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					56.8	61.6	52.4	88.2	67.5	60.1	48.5	114.4	8.4	48.9	33.8	7.8	
Level of Service (LOS)					E	E	D	F	E	E	D	F	A	D	C	A	
Approach Delay, s/veh / LOS					57.2	E	75.4	E	104.1	F	33.0	C					
Intersection Delay, s/veh / LOS					73.0					E							
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.47	B	2.48	B	2.08	B	2.08	B	2.08	B			
Bicycle LOS Score / LOS					0.89	A	1.12	A	2.96	C	2.35	B					

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Windbrush Drive	File Name	112_US23-Windbrush_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	56	10	50	75	10	29	51	1703	25	50	2374	75

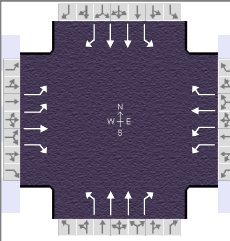
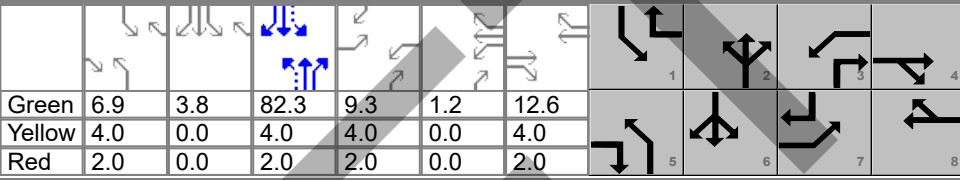
Signal Information				Signal Timing (s)													
Cycle, s	140.0	Reference Phase	2	Green	6.2	93.2	6.3	0.4	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	Begin	Yellow	4.0	4.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On														

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.3	16.0	12.7	16.3	12.2	99.2	12.2	99.1
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	4.4	6.4	5.2	4.5	3.3		3.3	
Green Extension Time (g _e), s	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0
Phase Call Probability	0.91	1.00	0.96	1.00	0.88		0.88	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	61	11	54	82	11	32	55	1851	27	54	2580	82
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	2.4	0.8	4.4	3.2	0.8	2.5	1.3	51.6	0.7	1.3	93.1	2.2
Cycle Queue Clearance Time (g _c), s	2.4	0.8	4.4	3.2	0.8	2.5	1.3	51.6	0.7	1.3	93.1	2.2
Green Ratio (g/C)	0.05	0.07	0.12	0.05	0.07	0.12	0.71	0.67	0.71	0.71	0.67	0.71
Capacity (c), veh/h	156	132	182	164	137	185	130	2351	1122	199	2350	1144
Volume-to-Capacity Ratio (X)	0.391	0.082	0.299	0.496	0.079	0.170	0.428	0.787	0.024	0.273	1.098	0.071
Back of Queue (Q), ft/ln (95 th percentile)	48.5	16.6	80.7	65.2	16.5	45.9	58.4	678.8	10.2	36.9	1711.6	31.4
Back of Queue (Q), veh/ln (95 th percentile)	1.9	0.6	3.2	2.5	0.6	1.8	2.3	26.5	0.4	1.4	66.9	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.24	0.00	0.40	0.65	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	65.0	60.7	56.7	65.0	60.4	55.6	37.1	16.5	5.9	19.2	23.4	6.2
Incremental Delay (d ₂), s/veh	0.6	0.1	0.3	0.9	0.1	0.2	0.8	2.8	0.0	0.3	51.5	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	65.5	60.8	57.1	65.9	60.5	55.7	37.9	19.2	5.9	19.5	74.9	6.3
Level of Service (LOS)	E	E	E	E	E	E	D	B	A	B	F	A
Approach Delay, s/veh / LOS	61.5	E		62.8	E		19.6	B		71.8	E	
Intersection Delay, s/veh / LOS	50.7						D					

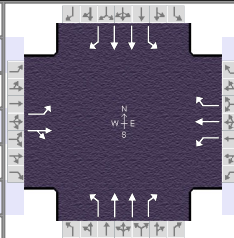
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.24	B	2.24	B
Bicycle LOS Score / LOS	0.70	A	0.69	A	2.08	B	2.73	C

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Windbrush Drive		File Name	112_US23-Windbrush_PM.xus												
Project Description	No Build Opening Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					165	43	201	191	43	118	109	2333	100	148	1709	125
Signal Information																
Cycle, s	140.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green					6.9	3.8	82.3	9.3	1.2	12.6						
Yellow					4.0	0.0	4.0	4.0	0.0	4.0						
Red					2.0	0.0	2.0	2.0	0.0	2.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					15.3	18.6	16.4	19.7	12.9	88.3	16.7	92.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					9.2	14.6	10.3	12.3	5.6		10.5					
Green Extension Time (g _e), s					0.1	0.0	0.1	0.2	0.2	0.0	0.3	0.0				
Phase Call Probability					1.00	1.00	1.00	1.00	0.99		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	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					179	47	218	208	47	128	118	2536	109	161	1858	136
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					7.2	3.3	12.6	8.3	3.3	10.3	3.6	82.3	3.5	8.5	59.8	4.1
Cycle Queue Clearance Time (g _c), s					7.2	3.3	12.6	8.3	3.3	10.3	3.6	82.3	3.5	8.5	59.8	4.1
Green Ratio (g/C)					0.07	0.09	0.14	0.07	0.10	0.17	0.64	0.59	0.66	0.66	0.61	0.68
Capacity (c), veh/h					227	167	219	255	182	275	181	2077	1041	187	2172	1096
Volume-to-Capacity Ratio (X)					0.790	0.280	0.997	0.813	0.257	0.467	0.653	1.221	0.104	0.862	0.855	0.124
Back of Queue (Q), ft/ln (95 th percentile)					157.8	71.1	428	185.2	70.3	185.3	108.8	2221.4	54	248.1	812.6	62.1
Back of Queue (Q), veh/ln (95 th percentile)					6.2	2.8	16.7	7.2	2.7	7.2	4.3	86.8	2.1	9.7	31.7	2.5
Queue Storage Ratio (RQ) (95 th percentile)					0.79	0.00	2.14	1.85	0.00	1.85	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					64.4	59.5	60.2	63.8	58.4	51.9	29.7	28.9	8.6	47.2	21.9	7.8
Incremental Delay (d ₂), s/veh					10.3	0.3	59.8	12.3	0.3	0.5	1.5	104.1	0.2	4.5	4.6	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					74.7	59.8	120.0	76.1	58.7	52.4	31.2	133.0	8.8	51.7	26.5	8.0
Level of Service (LOS)					E	E	F	E	E	D	C	F	A	D	C	A
Approach Delay, s/veh / LOS					95.4		F	66.0		E	123.7		F	27.2		C
Intersection Delay, s/veh / LOS					81.5					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.26		B	2.25		B
Bicycle LOS Score / LOS					1.22		A	1.12		A	2.77		C	2.26		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hidden Ravines		File Name	113_US23-HiddenRavines_AM.xus			
Project Description	No Build Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	100	10	25	25	10	50	25	1619	25	100	2428	50

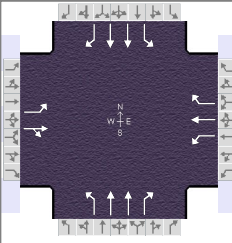

Signal Information				Phase Diagram											
Cycle, s	115.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		4.1	2.7	67.4	4.1	2.9	9.8						
		Yellow		4.0	0.0	4.0	4.0	0.0	4.0						
		Red		2.0	0.0	2.0	2.0	0.0	2.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	13.0	18.8	10.1	15.8	10.1	73.4	12.8	76.1
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	8.4	4.4	3.6	5.8	2.7		4.7	
Green Extension Time (g_e), s	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0
Phase Call Probability	0.97	1.00	0.58	0.98	0.58		0.97	
Max Out Probability	1.00	0.00	0.44	0.26	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	109	38		27	11	54	27	1760	27	109	2639	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1644		1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g_s), s	6.4	2.4		1.6	0.6	3.8	0.7	47.3	0.8	2.7	70.1	1.3
Cycle Queue Clearance Time (g_c), s	6.4	2.4		1.6	0.6	3.8	0.7	47.3	0.8	2.7	70.1	1.3
Green Ratio (g/C)	0.15	0.11		0.12	0.09	0.09	0.62	0.59	0.62	0.64	0.61	0.67
Capacity (c), veh/h	282	183		224	159	135	125	2070	977	214	2153	1079
Volume-to-Capacity Ratio (X)	0.386	0.208		0.121	0.068	0.404	0.217	0.850	0.028	0.508	1.226	0.050
Back of Queue (Q), ft/ln (95 th percentile)	127.4	45.1		31.4	13.1	67.8	19.5	648.5	11.5	77.9	2055.9	18.8
Back of Queue (Q), veh/ln (95 th percentile)	5.0	1.8		1.2	0.5	2.6	0.8	25.3	0.4	3.0	80.3	0.8
Queue Storage Ratio (RQ) (95 th percentile)	0.54	0.00		0.16	0.00	0.34	0.07	0.00	0.04	0.26	0.00	0.06
Uniform Delay (d_1), s/veh	44.6	46.5		45.1	48.4	49.8	28.1	19.7	8.4	23.1	22.5	6.5
Incremental Delay (d_2), s/veh	0.3	0.2		0.1	0.1	0.7	0.3	4.6	0.1	0.7	105.9	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.0	46.7		45.2	48.4	50.5	28.4	24.3	8.5	23.8	128.3	6.6
Level of Service (LOS)	D	D		D	D	D	C	C	A	C	F	A
Approach Delay, s/veh / LOS	45.4		D	48.7		D	24.1		C	121.9		F
Intersection Delay, s/veh / LOS	81.7						F					

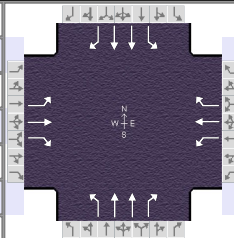
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.47	B	2.08	B	1.88	B
Bicycle LOS Score / LOS	0.73	A	0.64	A	1.98	B	2.80	C

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Hidden Ravines		File Name	113_US23-HiddenRavines_PM.xus												
Project Description	No Build Opening Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					121	27	17	71	8	119	50	2432	100	166	1828	44
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.9	4.4	68.8	6.5	0.5	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					13.0	16.5	12.5	16.0	11.9	74.8	16.2	79.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					9.0	5.1	6.7	11.9	3.4		9.9					
Green Extension Time (g _e), s					0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.0				
Phase Call Probability					0.99	1.00	0.92	1.00	0.84		1.00					
Max Out Probability					1.00	0.10	1.00	1.00	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					132	48		77	9	129	54	2643	109	180	1987	48
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1735		1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					7.0	3.1		4.7	0.5	9.9	1.4	68.8	3.3	7.9	60.2	1.2
Cycle Queue Clearance Time (g _c), s					7.0	3.1		4.7	0.5	9.9	1.4	68.8	3.3	7.9	60.2	1.2
Green Ratio (g/C)					0.14	0.09		0.14	0.08	0.08	0.62	0.57	0.63	0.66	0.61	0.67
Capacity (c), veh/h					273	152		216	155	131	166	2025	986	210	2153	1075
Volume-to-Capacity Ratio (X)					0.481	0.314		0.357	0.056	0.987	0.328	1.305	0.110	0.857	0.923	0.044
Back of Queue (Q), ft/ln (95 th percentile)					166.7	61.7		94.7	11	273.8	39.9	2432.1	50.4	236.1	817.7	17.7
Back of Queue (Q), veh/ln (95 th percentile)					6.5	2.4		3.7	0.4	10.7	1.6	95.0	2.0	9.2	31.9	0.7
Queue Storage Ratio (RQ) (95 th percentile)					0.71	0.00		0.47	0.00	1.37	0.13	0.00	0.17	0.79	0.00	0.06
Uniform Delay (d ₁), s/veh					47.9	51.3		46.8	50.7	54.9	26.6	25.6	9.0	39.0	20.9	6.8
Incremental Delay (d ₂), s/veh					0.5	0.4		0.4	0.1	74.3	0.4	141.1	0.2	3.9	8.1	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					48.3	51.8		47.2	50.7	129.3	27.0	166.7	9.2	42.9	29.0	6.9
Level of Service (LOS)					D	D		D	D	F	C	F	A	D	C	A
Approach Delay, s/veh / LOS					49.3		D	96.6		F	157.9		F	29.7		C
Intersection Delay, s/veh / LOS					99.4					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.89		B
Bicycle LOS Score / LOS					0.78		A	0.84		A	2.80		C	2.32		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Orange Road	File Name	114_US23-Orange_AM.xus				
Project Description	No Build Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	80	200	135	173	99	347	12	1569	192	161	2237	33

Signal Information				Signal Timing (s)										
Cycle, s	120.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	2.5	1.4	57.2	6.7	5.9	16.4				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0				
				Red	2.0	2.0	2.0	2.0	0.0	2.0				

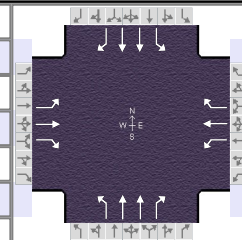
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.7	22.4	18.6	28.3	8.5	63.2	15.8	70.5
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	7.0	15.7	12.6	24.3	2.4		9.6	
Green Extension Time (g _e), s	0.1	0.2	0.0	0.0	0.0	0.0	0.3	0.0
Phase Call Probability	0.94	1.00	1.00	1.00	0.35		1.00	
Max Out Probability	0.00	1.00	1.00	1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	87	217	147	188	108	377	13	1705	209	175	2432	36
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	5.0	13.7	10.7	10.6	6.0	22.3	0.4	57.2	7.7	7.6	64.5	1.1
Cycle Queue Clearance Time (g _c), s	5.0	13.7	10.7	10.6	6.0	22.3	0.4	57.2	7.7	7.6	64.5	1.1
Green Ratio (g/C)	0.19	0.14	0.14	0.26	0.19	0.19	0.50	0.48	0.58	0.58	0.54	0.59
Capacity (c), veh/h	310	253	215	271	345	292	96	1683	914	205	1900	933
Volume-to-Capacity Ratio (X)	0.280	0.858	0.683	0.694	0.312	1.290	0.135	1.013	0.228	0.854	1.280	0.038
Back of Queue (Q), ft/ln (95 th percentile)	99.1	318.4	204.5	218.1	124.8	820.1	8.3	955.7	121.9	230.7	2177.4	17.8
Back of Queue (Q), veh/ln (95 th percentile)	3.9	12.4	8.0	8.5	4.9	32.0	0.3	37.3	4.8	9.0	85.1	0.7
Queue Storage Ratio (RQ) (95 th percentile)	0.42	0.00	2.05	0.55	0.00	0.00	0.02	0.00	1.22	0.46	0.00	0.12
Uniform Delay (d ₁), s/veh	41.2	50.7	49.3	38.2	42.2	48.8	28.9	31.4	12.1	35.3	27.7	10.1
Incremental Delay (d ₂), s/veh	0.2	23.2	7.2	5.9	0.2	153.8	0.2	25.3	0.6	3.9	130.1	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.4	73.8	56.5	44.2	42.4	202.6	29.1	56.7	12.7	39.2	157.8	10.2
Level of Service (LOS)	D	E	E	D	D	F	C	F	B	D	F	B
Approach Delay, s/veh / LOS	61.9		E	132.7		F	51.7		D	147.9		F
Intersection Delay, s/veh / LOS	106.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.10	B	2.09	B
Bicycle LOS Score / LOS	1.23	A	1.60	B	2.08	B	2.67	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Orange Road	File Name	114_US23-Orange_PM.xus				
Project Description	No-Build Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	313	292	271	481	308	365	372	2025	378	328	1387	116

Signal Information													
Cycle, s	145.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	20.0	5.2	44.8	14.0	8.0	17.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	4.0			
				Red	2.0	2.0	2.0	2.0	2.0	2.0			

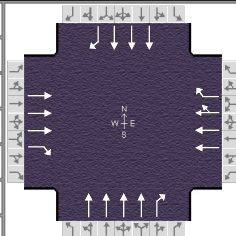
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	20.0	23.0	34.0	37.0	37.2	62.0	26.0	50.8
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	16.0	19.0	30.0	33.0	30.5		22.0	
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	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	340	317	295	523	335	397	404	2201	411	357	1508	126
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	14.0	17.0	17.0	28.0	25.1	31.0	28.5	56.0	21.6	20.0	44.8	7.3
Cycle Queue Clearance Time (g _c), s	14.0	17.0	17.0	28.0	25.1	31.0	28.5	56.0	21.6	20.0	44.8	7.3
Green Ratio (g/C)	0.21	0.12	0.33	0.32	0.21	0.21	0.54	0.39	0.58	0.45	0.31	0.41
Capacity (c), veh/h	248	218	523	391	397	336	430	1364	911	293	1092	653
Volume-to-Capacity Ratio (X)	1.371	1.459	0.564	1.337	0.844	1.180	0.941	1.613	0.451	1.215	1.381	0.193
Back of Queue (Q), ft/ln (95 th percentile)	622.2	865.5	342.6	1153.6	486.5	831.2	551.1	3007.1	318.6	784.7	1752.9	130.8
Back of Queue (Q), veh/ln (95 th percentile)	24.3	33.8	13.4	45.1	19.0	32.5	21.5	117.5	12.4	30.7	68.5	5.2
Queue Storage Ratio (RQ) (95 th percentile)	2.65	0.00	3.43	2.88	0.00	0.00	1.10	0.00	3.19	1.57	0.00	0.87
Uniform Delay (d ₁), s/veh	55.8	64.0	39.8	44.3	54.7	57.0	45.9	44.5	17.4	47.2	50.1	27.8
Incremental Delay (d ₂), s/veh	190.3	230.1	0.9	168.3	14.5	107.5	8.8	279.4	1.6	123.9	177.3	0.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	246.1	294.1	40.6	212.6	69.2	164.5	54.6	323.9	19.0	171.1	227.4	28.5
Level of Service (LOS)	F	F	D	F	E	F	D	F	B	F	F	C
Approach Delay, s/veh / LOS	198.6		F	159.1		F	246.2		F	204.7		F
Intersection Delay, s/veh / LOS	213.3						F					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.47	B	2.46	B	2.12	B	2.13
Bicycle LOS Score / LOS	2.06	B	2.56	C	2.98	C	2.13	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 750	File Name	D110_US23-750_AM.xus				
Project Description	Concept D Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		1323	227		548	240		1702	219		2383	74

Signal Information				Signal Timing (s)													
Cycle, s	105.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On	Green	55.9	37.1	0.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0							
				Red	2.0	2.0	0.0	0.0	0.0	0.0							

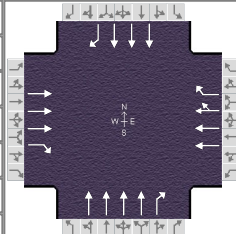
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		7.0		7.0
Phase Duration, s		43.1		43.1		61.9		61.9
Change Period, (Y+R _c), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g _s), s		29.0		15.5				
Green Extension Time (g _e), s		8.1		8.3		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.04		0.01				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18		2	12		6	16
Adjusted Flow Rate (v), veh/h		1438	247		596	261		1850	238		2590	80
Adjusted Saturation Flow Rate (s), veh/h/ln		1685	1572		1856	1572		1658	1572		1658	1610
Queue Service Time (g _s), s		27.0	12.6		8.1	13.5		19.0	8.8		53.3	2.6
Cycle Queue Clearance Time (g _c), s		27.0	12.6		8.1	13.5		19.0	8.8		53.3	2.6
Green Ratio (g/C)		0.35	0.35		0.35	0.35		0.53	0.53		0.53	0.53
Capacity (c), veh/h		1784	555		1965	555		3533	838		2649	858
Volume-to-Capacity Ratio (X)		0.806	0.444		0.303	0.470		0.524	0.284		0.978	0.094
Back of Queue (Q), ft/ln (95 th percentile)		398.7	204.8		157.3	215.5		280.7	138.9		751	40.7
Back of Queue (Q), veh/ln (95 th percentile)		15.6	8.0		6.1	8.4		10.8	5.4		28.9	1.6
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh		30.7	26.1		24.6	26.3		15.9	13.5		23.9	12.1
Incremental Delay (d ₂), s/veh		0.3	0.2		0.0	0.2		0.6	0.9		13.0	0.2
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh		31.0	26.3		24.6	26.6		16.5	14.4		36.9	12.3
Level of Service (LOS)		C	C		C	C		B	B		D	B
Approach Delay, s/veh / LOS	30.3	C		25.2	C		16.2	B		36.2	D	
Intersection Delay, s/veh / LOS		27.8							C			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.71	C	2.55	C	2.55	C
Bicycle LOS Score / LOS	1.41	A	0.96	A	1.35	A	1.96	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00
Intersection	SR 750	File Name	D110_US23-750_PM.xus		
Project Description	Concept D Opening Year (2030)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		1011	175		1049	478		2394	194		2108	102

Signal Information				Signal Timing (s)											
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	66.8	51.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
				Red	2.0	2.0	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		7.0		7.0		7.0		7.0
Phase Duration, s		57.2		57.2		72.8		72.8
Change Period, (Y+R _c), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g _s), s		23.9		40.9				
Green Extension Time (g _e), s		10.8		10.3		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.02		0.07				

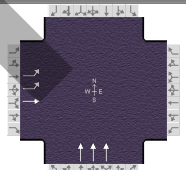
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18		2	12		6	16
Adjusted Flow Rate (v), veh/h		1099	190		1140	520		2602	211		2291	111
Adjusted Saturation Flow Rate (s), veh/h/ln		1685	1572		1856	1572		1658	1572		1658	1610
Queue Service Time (g _s), s		21.9	10.8		20.3	38.9		40.8	9.8		54.0	4.7
Cycle Queue Clearance Time (g _c), s		21.9	10.8		20.3	38.9		40.8	9.8		54.0	4.7
Green Ratio (g/C)		0.39	0.39		0.39	0.39		0.51	0.51		0.51	0.51
Capacity (c), veh/h		1991	620		2193	620		3407	808		2555	827
Volume-to-Capacity Ratio (X)		0.552	0.307		0.520	0.839		0.764	0.261		0.897	0.134
Back of Queue (Q), ft/ln (95 th percentile)		343.1	183.2		348.7	535.8		568.2	165.5		745.4	78.5
Back of Queue (Q), veh/ln (95 th percentile)		13.4	7.2		13.6	20.9		21.9	6.5		28.7	3.1
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh		30.5	27.2		30.0	35.7		25.3	17.8		28.5	16.5
Incremental Delay (d ₂), s/veh		0.1	0.1		0.1	2.5		1.7	0.8		5.5	0.3
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh		30.6	27.3		30.1	38.2		27.0	18.5		34.0	16.8
Level of Service (LOS)		C	C		C	D		C	B		C	B
Approach Delay, s/veh / LOS	30.1	C		32.6	C		26.3	C		33.2	C	
Intersection Delay, s/veh / LOS	30.2						C					

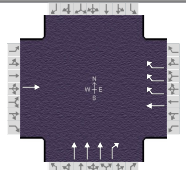
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.71	C	2.56	C	2.56	C
Bicycle LOS Score / LOS	1.20	A	1.40	A	1.65	B	1.81	B

HCS Alternative Intersections Results Summary

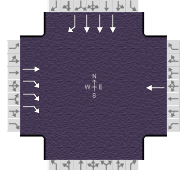
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/9/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Windbrush Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D112_US23-Windbrush_AM_NB_NEW.xus						
Project Description	Concept D Opening Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	277	0						2021				
Intersection Two Demand (v), veh/h		140			0	235		2104	68			
Intersection Three Demand (v), veh/h				206	0						2652	
Intersection Four Demand (v), veh/h		0	327		126						2600	118

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	70.6	11.4	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	78										
Uncoordinated	No	Green	71.9	10.1	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	20										
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	80										
Uncoordinated	No	Green	10.6	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

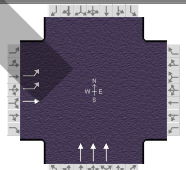
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	254	82.6	30.2	112.8	F
EBT	EBR(4) + SBU(1) + NBR(2)	47	80.3	30.2	110.5	F
EBR	EBR(4)	54	39.0	--	39.0	D
WBL	WBR(2) + NBU(3) + SBT(4)	177	84.3	30.2	114.5	F
WBT	WBR(2) + NBU(3) + SBR(4)	47	80.1	30.2	110.3	F
WBR	WBR(2)	32	38.2	--	38.2	D
NBL	NBT(1) + NBL(2)	137	43.5	--	43.5	D
NBT	NBT(1) + NBT(2)	2420	9.2	--	9.2	A
NBR	NBT(1) + NBR(2)	78	6.9	--	6.9	A
SBL	SBT(3) + SBL(4)	152	46.3	--	46.3	D
SBT	SBT(3) + SBT(4)	2972	12.7	--	12.7	B
SBR	SBT(3) + SBR(4)	135	8.5	--	8.5	A

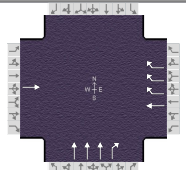
Overall Results		
Intersection ETT, s/veh LOS	22.6	C

HCS Alternative Intersections Results Summary

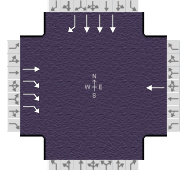
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	4/9/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Windbrush Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D112_US23-Windbrush_PM_NB_NEW.xus						
Project Description	No Build Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	471	0						3035				
Intersection Two Demand (v), veh/h		308			0	481		2965	232			
Intersection Three Demand (v), veh/h				363	0						2345	
Intersection Four Demand (v), veh/h		0	672		309						2224	176

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	64.0	18.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	15										
Uncoordinated	No	Green	63.1	18.9	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	14.4	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	45										
Uncoordinated	No	Green	20.2	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

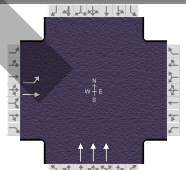
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	368	98.6	30.2	128.8	F
EBT	EBR(4) + SBU(1) + NBR(2)	143	70.6	30.2	100.8	F
EBR	EBR(4)	218	33.3	--	33.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	339	82.2	30.2	112.4	F
WBT	WBR(2) + NBU(3) + SBR(4)	55	76.2	30.2	106.4	F
WBR	WBR(2)	128	32.4	--	32.4	F
NBL	NBT(1) + NBL(2)	336	55.4	--	55.4	E
NBT	NBT(1) + NBT(2)	3534	51.0	--	51.0	F
NBR	NBT(1) + NBR(2)	277	23.0	--	23.0	C
SBL	SBT(3) + SBL(4)	335	52.5	--	52.5	D
SBT	SBT(3) + SBT(4)	2728	19.7	--	19.7	B
SBR	SBT(3) + SBR(4)	216	13.7	--	13.7	B

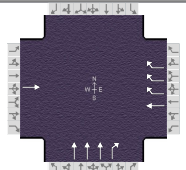
Overall Results		
Intersection ETT, s/veh LOS	48.5	D

HCS Alternative Intersections Results Summary

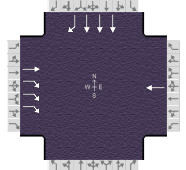
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	4/9/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	Orange Road	PHF	0.92		Arterial Direction	North-South	
File Name	D114_US23-Orange_AM_NB_NEW.xus						
Project Description	Concept D Opening Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	350	0						1798				
Intersection Two Demand (v), veh/h		261			0	619		1674	412			
Intersection Three Demand (v), veh/h				272	0						2447	
Intersection Four Demand (v), veh/h		0	515		62						2326	132

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	57.9	24.1	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	74										
Uncoordinated	No	Green	63.7	18.3	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	66										
Uncoordinated	No	Green	11.3	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	25										
Uncoordinated	No	Green	15.3	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	141	77.9	30.2	108.1	F
EBT	EBR(4) + SBU(1) + NBR(2)	239	78.7	30.2	108.9	F
EBR	EBR(4)	179	36.5	--	36.5	F
WBL	WBR(2) + NBU(3) + SBT(4)	188	82.8	30.2	113.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	108	77.9	30.2	108.1	F
WBR	WBR(2)	377	34.7	--	34.7	C
NBL	NBT(1) + NBL(2)	67	43.3	--	43.3	D
NBT	NBT(1) + NBT(2)	1874	19.0	--	19.0	B
NBR	NBT(1) + NBR(2)	461	19.8	--	19.8	F
SBL	SBT(3) + SBL(4)	284	40.7	--	40.7	D
SBT	SBT(3) + SBT(4)	2797	14.8	--	14.8	B
SBR	SBT(3) + SBR(4)	159	9.9	--	9.9	A

Overall Results		
Intersection ETT, s/veh LOS	30.7	C

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 11, 2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Concept D Orange Road	PHF	0.92	Arterial Direction	North-South		
File Name	D114_US23-Orange_PM_NB_NEW.xus						
Project Description	Opening Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	810	0						2794				
Intersection Two Demand (v), veh/h		494			0	1154		2362	750			
Intersection Three Demand (v), veh/h				869	0						1857	
Intersection Four Demand (v), veh/h		0	1201		492						1728	504

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	53.0	25.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Two Information													
Cycle, s	90.0												
Offset, s	14												
Uncoordinated	No	Green	46.8	31.2	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

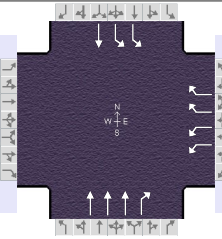
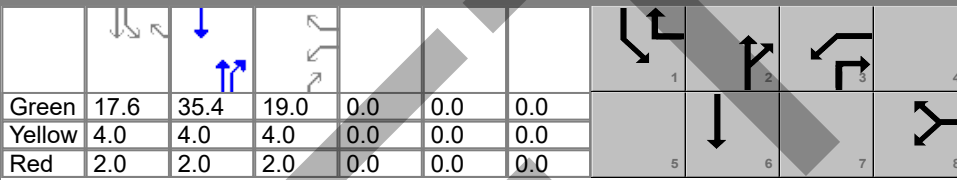
Signal Three Information													
Cycle, s	90.0												
Offset, s	20												
Uncoordinated	No	Green	31.2	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information													
Cycle, s	90.0												
Offset, s	1												
Uncoordinated	No	Green	33.6	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

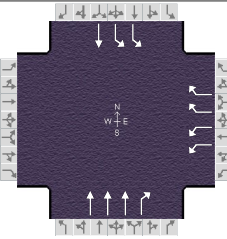
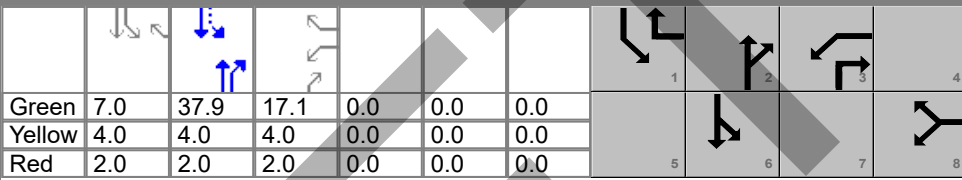
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	476	165.7	30.2	195.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	404	150.9	30.2	181.1	F
EBR	EBR(4)	425	26.2	--	26.2	F
WBL	WBR(2) + NBU(3) + SBT(4)	523	80.8	30.2	111.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	422	85.1	30.2	115.3	F
WBR	WBR(2)	310	28.1	--	28.1	C
NBL	NBT(1) + NBL(2)	535	80.5	--	80.5	F
NBT	NBT(1) + NBT(2)	2784	121.8	--	121.8	F
NBR	NBT(1) + NBR(2)	884	107.0	--	107.0	F
SBL	SBT(3) + SBL(4)	537	57.6	--	57.6	E
SBT	SBT(3) + SBT(4)	2294	46.5	--	46.5	D
SBR	SBT(3) + SBR(4)	669	50.8	--	50.8	F

Overall Results		
Intersection ETT, s/veh LOS	96.5	F

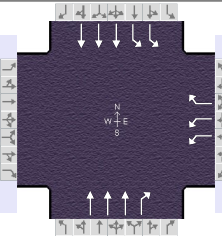
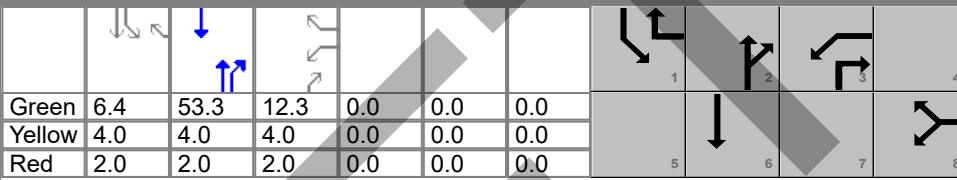
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Green Meadows Dr/Hig...	File Name	C109_US23-GreenMeadows_AM.xus													
Project Description	Concept C Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								558		191	1450	550	528	0		
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	17.6	35.4	19.0	0.0	0.0	0.0					
					Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
					Red	2.0	2.0	2.0	0.0	0.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	2.0	4.0				
Phase Duration, s								25.0		41.4	23.6	65.0				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								17.2			16.5					
Green Extension Time (g _e), s								1.7		0.0	1.1	0.0				
Phase Call Probability								1.00			1.00					
Max Out Probability								0.02			0.01					
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h								607		208	1576	598	574	0		
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1392	1671	1572	1716	1841		
Queue Service Time (g _s), s								15.2		4.3	25.0	21.9	14.5	0.0		
Cycle Queue Clearance Time (g _c), s								15.2		4.3	25.0	21.9	14.5	0.0		
Green Ratio (g/C)								0.21		0.41	0.39	0.60	0.20	0.66		
Capacity (c), veh/h								723		1132	1973	950	672	1207		
Volume-to-Capacity Ratio (X)								0.839		0.183	0.799	0.629	0.854	0.000		
Back of Queue (Q), ft/ln (95 th percentile)								262.5		58.4	375.9	288.5	255	0		
Back of Queue (Q), veh/ln (95 th percentile)								10.3		2.3	14.6	11.3	10.0	0.0		
Queue Storage Ratio (RQ) (95 th percentile)								0.66		0.00	0.00	0.72	1.28	0.00		
Uniform Delay (d ₁), s/veh								34.0		17.1	24.1	11.4	34.9	0.0		
Incremental Delay (d ₂), s/veh								2.1		0.0	3.5	3.2	2.8	0.0		
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								36.2		17.2	27.6	14.5	37.7	0.0		
Level of Service (LOS)								D		B	C	B	D			
Approach Delay, s/veh / LOS					0.0			31.3	C		24.0	C		37.7	D	
Intersection Delay, s/veh / LOS								27.9					C			
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.46		B	2.46		B	2.42		B	0.67		A
Bicycle LOS Score / LOS										F	1.68		B	1.43	A	

HCS7 Signalized Intersection Results Summary

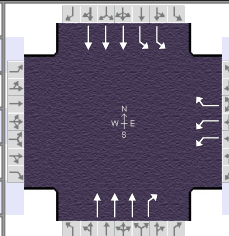
General Information						Intersection Information									
Agency	ms consultants					Duration, h	0.250								
Analyst	JRH		Analysis Date	Apr 2, 2024		Area Type	Other								
Jurisdiction			Time Period	PM Peak		PHF	0.92								
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00								
Intersection	Green Meadows Dr/Hig...		File Name	C109_US23-GreenMeadows_PM.xus											
Project Description	Concept C Opening Year (2030)														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							531		376	1988	677	337	0		
Signal Information															
Cycle, s	80.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On	Green	7.0	37.9	17.1	0.0	0.0	0.0					
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0						
		Red		2.0	2.0	2.0	0.0	0.0	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8		2	1	6				
Case Number							9.0		7.3	1.0	4.0				
Phase Duration, s							23.1		43.9	13.0	56.9				
Change Period, (Y+R _c), s							6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s							3.1		0.0	3.0	0.0				
Queue Clearance Time (g _s), s							14.7			6.0					
Green Extension Time (g _e), s							2.4		0.0	0.7	0.0				
Phase Call Probability							1.00			1.00					
Max Out Probability							0.01			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							3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h							577		409	2161	736	366	0		
Adjusted Saturation Flow Rate (s), veh/h/ln							1716		1392	1671	1572	1716	1841		
Queue Service Time (g _s), s							12.7		9.6	31.9	22.0	4.0	0.0		
Cycle Queue Clearance Time (g _c), s							12.7		9.6	31.9	22.0	4.0	0.0		
Green Ratio (g/C)							0.21		0.30	0.47	0.69	0.59	0.64		
Capacity (c), veh/h							733		838	2376	1081	508	1171		
Volume-to-Capacity Ratio (X)							0.787		0.488	0.909	0.681	0.721	0.000		
Back of Queue (Q), ft/ln (95 th percentile)							218.6		133	447.4	246.9	65.9	0		
Back of Queue (Q), veh/ln (95 th percentile)							8.5		5.2	17.3	9.6	2.6	0.0		
Queue Storage Ratio (RQ) (95 th percentile)							0.55		0.00	0.00	0.62	0.33	0.00		
Uniform Delay (d ₁), s/veh							29.7		22.9	19.5	7.3	17.4	0.0		
Incremental Delay (d ₂), s/veh							0.7		0.2	6.5	3.5	0.7	0.0		
Initial Queue Delay (d ₃), s/veh							0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh							30.5		23.1	26.0	10.8	18.1	0.0		
Level of Service (LOS)							C		C	C	B	B			
Approach Delay, s/veh / LOS				0.0			27.4	C		22.1	C	18.1	B		
Intersection Delay, s/veh / LOS				23.0						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.46		B	2.46		B	2.41		B	0.67		A
Bicycle LOS Score / LOS									F	2.08		B	1.09		A

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 2, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Meadow Park Drive	File Name	C111_US23-MeadowPark_AM.xus													
Project Description	Concept C Opening Year (2030)															
Demand Information					EB			WB			NB		SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								163		170	1776	111	90	2300		
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.4	53.3	12.3	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	2.0	4.0				
Phase Duration, s								18.3		59.3	12.4	71.7				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								11.5			4.5					
Green Extension Time (g _e), s								0.8		0.0	0.2	0.0				
Phase Call Probability								1.00			0.91					
Max Out Probability								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								3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h								177		185	1930	121	98	2500		
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572	1685	1572	1716	1685		
Queue Service Time (g _s), s								4.2		9.5	22.7	2.0	2.5	23.7		
Cycle Queue Clearance Time (g _c), s								4.2		9.5	22.7	2.0	2.5	23.7		
Green Ratio (g/C)								0.14		0.21	0.59	0.73	0.07	0.73		
Capacity (c), veh/h								468		326	2996	1146	244	3692		
Volume-to-Capacity Ratio (X)								0.379		0.567	0.644	0.105	0.401	0.677		
Back of Queue (Q), ft/ln (95 th percentile)								78.2		159.1	297	21.9	46.2	242.8		
Back of Queue (Q), veh/ln (95 th percentile)								3.1		6.2	11.6	0.9	1.8	9.5		
Queue Storage Ratio (RQ) (95 th percentile)								0.52		0.80	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh								35.4		32.0	12.1	3.6	40.0	6.5		
Incremental Delay (d ₂), s/veh								0.2		0.6	1.1	0.2	0.4	1.0		
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								35.6		32.6	13.2	3.8	40.4	7.5		
Level of Service (LOS)								D		C	B	A	D	A		
Approach Delay, s/veh / LOS					0.0			34.1		C	12.6		B	8.7		A
Intersection Delay, s/veh / LOS								12.1						B		
Multimodal Results					EB			WB			NB		SB			
Pedestrian LOS Score / LOS					2.60		C	2.74		C	2.24		B	0.65		A
Bicycle LOS Score / LOS										F	1.62		B	1.92		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Meadow Park Drive	File Name	C111_US23-MeadowPark_PM.xus				
Project Description	Concept C Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				430		465		2531	176	303	1647	

Signal Information				Signal Timing (s)											
Cycle, s	105.0	Reference Phase	2	Green	9.0	55.0	23.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On												

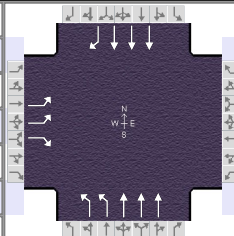
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				29.0		61.0	15.0	76.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.0	0.0
Queue Clearance Time (g _s), s				25.0			11.0	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				467		505		2751	191	329		1790
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1685	1572	1716		1685
Queue Service Time (g _s), s				12.9		23.0		55.0	3.7	9.0		19.2
Cycle Queue Clearance Time (g _c), s				12.9		23.0		55.0	3.7	9.0		19.2
Green Ratio (g/C)				0.22		0.30		0.52	0.74	0.09		0.67
Capacity (c), veh/h				752		479		2648	1168	294		3370
Volume-to-Capacity Ratio (X)				0.622		1.055		1.039	0.164	1.120		0.531
Back of Queue (Q), ft/ln (95 th percentile)				233.2		690.2		912.4	43.9	313.5		252.1
Back of Queue (Q), veh/ln (95 th percentile)				9.1		27.0		35.6	1.7	12.2		9.8
Queue Storage Ratio (RQ) (95 th percentile)				1.55		3.45		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				37.1		36.5		25.0	4.0	48.0		9.0
Incremental Delay (d ₂), s/veh				1.2		56.3		28.7	0.3	88.6		0.6
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				38.3		92.8		53.7	4.3	136.6		9.6
Level of Service (LOS)				D		F		F	A	F		A
Approach Delay, s/veh / LOS	0.0			66.6		E	50.5		D	29.4		C
Intersection Delay, s/veh / LOS				45.7						D		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.74	C	2.26	B	0.67	A
Bicycle LOS Score / LOS				F	2.11	B	1.65	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00
Intersection	Windbrush Drive	File Name	C112_US23-Windbrush_AM.xus		
Project Description	Concept C Opening Year (2030)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	293		93				159	1575			2291	149

Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	6.9	54.2	10.9	0.0	0.0	0.0				
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
		Red	2.0	2.0	2.0	0.0	0.0	0.0				

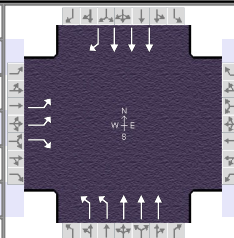
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		16.9			12.9	73.1		60.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		10.1			6.4			
Green Extension Time (g _e), s		0.9			0.4	0.0		0.0
Phase Call Probability		1.00			0.99			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	318		101				173	1712		2490		162
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1572				1716	1671		1671		1610
Queue Service Time (g _s), s	8.1		5.0				4.4	11.9		35.4		2.8
Cycle Queue Clearance Time (g _c), s	8.1		5.0				4.4	11.9		35.4		2.8
Green Ratio (g/C)	0.12		0.20				0.08	0.75		0.60		0.72
Capacity (c), veh/h	417		312				263	3736		3017		1165
Volume-to-Capacity Ratio (X)	0.763		0.324				0.656	0.458		0.825		0.139
Back of Queue (Q), ft/ln (95 th percentile)	151.7		82.8				83.6	119.9		433.7		30.8
Back of Queue (Q), veh/ln (95 th percentile)	5.9		3.2				3.3	4.6		16.8		1.2
Queue Storage Ratio (RQ) (95 th percentile)	0.76		0.41				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	38.3		30.9				40.4	4.4		14.2		3.8
Incremental Delay (d ₂), s/veh	1.1		0.2				1.0	0.4		2.7		0.2
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	39.4		31.1				41.4	4.8		16.9		4.1
Level of Service (LOS)	D		C				D	A		B		A
Approach Delay, s/veh / LOS	37.4		D		0.0		8.2	A		16.1		B
Intersection Delay, s/veh / LOS	14.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.60	C	0.64	A	2.24	B
Bicycle LOS Score / LOS		F			1.52	B	1.95	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 2, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Windbrush Drive	File Name	C112_US23-Windbrush_PM.xus				
Project Description	Concept C Opening Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	486		306				443	2401			1732	227

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		15.0	38.2	18.8	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

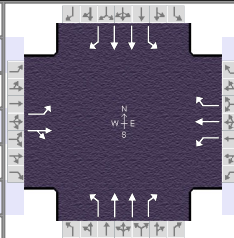
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		24.8			21.0	65.2		44.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		17.1			14.2			
Green Extension Time (g _e), s		1.8			0.7	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.02			0.06			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	528		333				482	2610		1883		247
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1572				1716	1671		1671		1610
Queue Service Time (g _s), s	12.9		15.1				12.2	33.5		31.2		6.0
Cycle Queue Clearance Time (g _c), s	12.9		15.1				12.2	33.5		31.2		6.0
Green Ratio (g/C)	0.21		0.38				0.17	0.66		0.42		0.63
Capacity (c), veh/h	719		591				571	3295		2127		1020
Volume-to-Capacity Ratio (X)	0.735		0.563				0.844	0.792		0.885		0.242
Back of Queue (Q), ft/ln (95 th percentile)	225.7		226.5				227.6	382.3		458.2		80.3
Back of Queue (Q), veh/ln (95 th percentile)	8.8		8.8				8.9	14.8		17.8		3.2
Queue Storage Ratio (RQ) (95 th percentile)	1.13		1.13				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	33.2		22.2				36.4	11.0		23.9		7.1
Incremental Delay (d ₂), s/veh	0.6		0.3				4.2	2.0		5.8		0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	33.8		22.6				40.5	13.1		29.7		7.7
Level of Service (LOS)	C		C				D	B		C		A
Approach Delay, s/veh / LOS	29.5		C	0.0			17.3	B		27.2		C
Intersection Delay, s/veh / LOS	22.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.60	C	0.67	A	2.27	B
Bicycle LOS Score / LOS		F			2.19	B	1.66	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Orange Point Drive	File Name	115_US23-OrangePoint_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	25	10	129	50	10	50	100	1756	100	120	2148	50

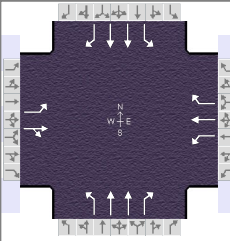
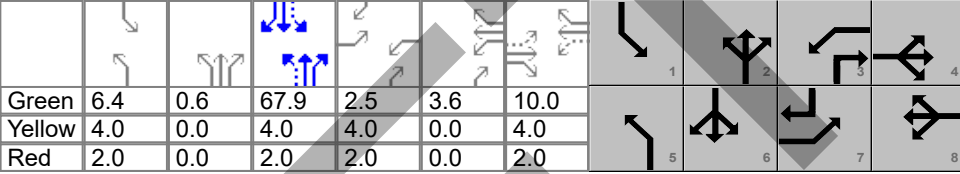
Signal Information				Signal Timing (s)											
Cycle, s	115.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	6.8	0.1	66.1	4.1	1.7	12.2					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	2.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	10.1	18.2	11.8	19.9	12.8	72.1	12.9	72.2
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	3.5	12.8	5.1	5.6	4.8		5.3	
Green Extension Time (g _e), s	0.0	0.0	0.0	0.3	0.2	0.0	0.2	0.0
Phase Call Probability	0.58	1.00	0.82	1.00	0.97		0.98	
Max Out Probability	0.05	1.00	1.00	0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	27	151		54	11	54	109	1909	109	130	2335	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1590		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	1.5	10.8		3.1	0.6	3.6	2.8	57.5	3.2	3.3	66.2	1.6
Cycle Queue Clearance Time (g _c), s	1.5	10.8		3.1	0.6	3.6	2.8	57.5	3.2	3.3	66.2	1.6
Green Ratio (g/C)	0.14	0.11		0.16	0.12	0.12	0.63	0.57	0.63	0.63	0.58	0.61
Capacity (c), veh/h	262	169		167	225	191	167	2031	983	186	2034	961
Volume-to-Capacity Ratio (X)	0.104	0.893		0.326	0.048	0.285	0.651	0.940	0.111	0.701	1.148	0.057
Back of Queue (Q), ft/ln (95 th percentile)	30.5	257.1		61.2	12.4	64.2	77.7	809.7	48.1	93.3	1583	24.3
Back of Queue (Q), veh/ln (95 th percentile)	1.2	10.0		2.4	0.5	2.5	3.0	31.6	1.9	3.6	61.8	1.0
Queue Storage Ratio (RQ) (95 th percentile)	0.12	0.00		0.24	0.00	0.00	0.16	0.00	0.19	0.19	0.00	0.08
Uniform Delay (d ₁), s/veh	43.0	50.7		42.7	44.7	46.0	27.2	22.6	8.7	26.7	24.4	9.0
Incremental Delay (d ₂), s/veh	0.1	39.4		0.4	0.0	0.3	1.6	10.1	0.2	1.8	72.8	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	43.1	90.1		43.2	44.7	46.3	28.8	32.7	8.9	28.5	97.1	9.1
Level of Service (LOS)	D	F		D	D	D	C	C	A	C	F	A
Approach Delay, s/veh / LOS	82.9	F		44.7	D		31.3	C		91.7	F	
Intersection Delay, s/veh / LOS	64.3						E					

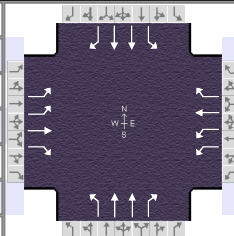
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.08	B	1.89	B
Bicycle LOS Score / LOS	0.78	A	0.68	A	2.24	B	2.57	C

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Orange Point Drive		File Name	115_US23-OrangePoint_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					13	7	86	61	34	112	164	2266	100	69	1569	50
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.4	0.6	67.9	2.5	3.6	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					8.5	16.0	12.2	19.6	13.0	74.5	12.4	73.9				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					2.8	9.1	5.9	10.5	6.5		3.8					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.2	0.3	0.0	0.0	0.0				
Phase Call Probability					0.36	1.00	0.88	1.00	1.00		0.91					
Max Out Probability					0.07	1.00	1.00	0.53	0.00		0.05					
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					14	101		66	37	122	178	2463	109	75	1705	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1591		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					0.8	7.1		3.9	2.1	8.5	4.5	68.5	3.0	1.8	44.0	1.6
Cycle Queue Clearance Time (g _c), s					0.8	7.1		3.9	2.1	8.5	4.5	68.5	3.0	1.8	44.0	1.6
Green Ratio (g/C)					0.11	0.09		0.14	0.12	0.12	0.65	0.60	0.65	0.65	0.59	0.61
Capacity (c), veh/h					215	138		189	220	186	229	2104	1021	160	2085	963
Volume-to-Capacity Ratio (X)					0.066	0.731		0.350	0.168	0.654	0.779	1.171	0.107	0.468	0.818	0.056
Back of Queue (Q), ft/ln (95 th percentile)					16.5	150.1		76.8	43.1	161.9	132.1	1735.9	43.8	54.5	603	24.2
Back of Queue (Q), veh/ln (95 th percentile)					0.6	5.9		3.0	1.7	6.3	5.2	67.8	1.7	2.1	23.6	0.9
Queue Storage Ratio (RQ) (95 th percentile)					0.07	0.00		0.31	0.00	0.00	0.26	0.00	0.18	0.11	0.00	0.08
Uniform Delay (d ₁), s/veh					46.0	51.2		44.4	45.6	48.4	23.9	23.3	7.6	27.6	18.7	9.0
Incremental Delay (d ₂), s/veh					0.0	12.8		0.4	0.1	5.2	2.2	82.3	0.2	0.8	3.7	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					46.1	64.0		44.8	45.7	53.6	26.1	105.6	7.8	28.4	22.4	9.1
Level of Service (LOS)					D	E		D	D	D	C	F	A	C	C	A
Approach Delay, s/veh / LOS					61.8	E		49.7	D		96.6	F		22.2	C	
Intersection Delay, s/veh / LOS					65.9					E						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.46	B		2.08	B		1.89	B	
Bicycle LOS Score / LOS					0.68	A		0.86	A		2.76	C		2.00	B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Corduroy Road		File Name	116_US23-Corduroy_AM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	127	20	50	75	20	75	50	1738	100	100	2182	50

Signal Information				Signal Timing (s)																		
Cycle, s	120.0	Reference Phase	2	Green	5.9	1.0	72.3	6.5	0.4	10.0	Yellow	4.0	0.0	4.0	4.0	4.0	Red	2.0	0.0	2.0	2.0	2.0
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On																			
Force Mode	Fixed	Simult. Gap N/S	On																			

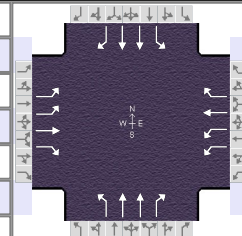
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.9	16.4	12.5	16.0	11.9	78.3	12.8	79.2
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	6.7	5.7	4.8	7.6	3.3		4.7	
Green Extension Time (g _e), s	0.1	0.2	0.0	0.1	0.0	0.0	0.2	0.0
Phase Call Probability	0.99	1.00	0.93	1.00	0.84		0.97	
Max Out Probability	1.00	0.02	0.12	0.27	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	138	22	54	82	22	82	54	1889	109	109	2372	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	4.7	1.3	3.7	2.8	1.3	5.6	1.3	54.9	3.1	2.7	73.2	1.4
Cycle Queue Clearance Time (g _c), s	4.7	1.3	3.7	2.8	1.3	5.6	1.3	54.9	3.1	2.7	73.2	1.4
Green Ratio (g/C)	0.06	0.09	0.14	0.05	0.08	0.14	0.65	0.60	0.66	0.66	0.61	0.67
Capacity (c), veh/h	198	161	213	187	155	220	146	2127	1033	195	2156	1050
Volume-to-Capacity Ratio (X)	0.697	0.135	0.255	0.436	0.141	0.370	0.372	0.888	0.105	0.558	1.100	0.052
Back of Queue (Q), ft/ln (95 th percentile)	96.1	27.6	66.1	54.5	27.7	100.4	42.5	744.4	45.1	85.1	1458.1	20.7
Back of Queue (Q), veh/ln (95 th percentile)	3.8	1.1	2.6	2.1	1.1	3.9	1.7	29.1	1.8	3.3	57.0	0.8
Queue Storage Ratio (RQ) (95 th percentile)	0.96	0.00	0.66	0.22	0.00	0.25	0.11	0.00	0.06	0.17	0.00	0.04
Uniform Delay (d ₁), s/veh	55.5	50.7	46.5	54.9	51.0	46.8	29.3	20.4	7.6	26.4	23.4	6.9
Incremental Delay (d ₂), s/veh	3.0	0.1	0.2	0.6	0.2	0.4	0.6	6.0	0.2	0.9	52.9	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	58.5	50.8	46.7	55.5	51.2	47.2	29.9	26.4	7.8	27.4	76.3	6.9
Level of Service (LOS)	E	D	D	E	D	D	C	C	A	C	F	A
Approach Delay, s/veh / LOS	54.7		D	51.3		D	25.5		C	72.7		E
Intersection Delay, s/veh / LOS	51.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.25	B	2.25	B
Bicycle LOS Score / LOS	0.84	A	0.79	A	2.18	B	2.58	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other	
Jurisdiction		Time Period	PM Peak		PHF	0.92	
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00
Intersection	Corduroy Road		File Name	116_US23-Corduroy_PM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	93	25	24	150	25	150	50	2157	150	150	1640	79

Signal Information				Phase Timings (s)															
Cycle, s	140.0	Reference Phase	2	Green	6.2	4.7	82.9	6.9	1.8	13.6	Yellow	4.0	0.0	4.0	4.0	4.0	2.0	0.0	2.0
Offset, s	0	Reference Point	End	Red	2.0	0.0	2.0	2.0	0.0	2.0	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On	

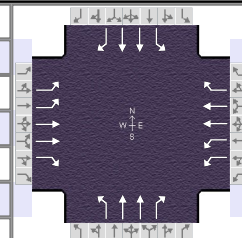
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.9	19.6	14.7	21.4	12.2	88.9	16.9	93.6
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	6.0	4.0	8.6	15.2	3.6		10.6	
Green Extension Time (g_e), s	0.1	0.4	0.1	0.2	0.1	0.0	0.3	0.0
Phase Call Probability	0.98	1.00	1.00	1.00	0.88		1.00	
Max Out Probability	0.00	0.00	0.04	0.20	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	101	27	26	163	27	163	54	2345	163	163	1783	86
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g_s), s	4.0	1.9	2.0	6.6	1.9	13.2	1.6	82.9	5.6	8.6	53.4	2.6
Cycle Queue Clearance Time (g_c), s	4.0	1.9	2.0	6.6	1.9	13.2	1.6	82.9	5.6	8.6	53.4	2.6
Green Ratio (g/C)	0.05	0.10	0.14	0.06	0.11	0.19	0.64	0.59	0.65	0.67	0.63	0.67
Capacity (c), veh/h	168	180	221	213	204	295	190	2091	1028	189	2211	1061
Volume-to-Capacity Ratio (X)	0.601	0.151	0.118	0.766	0.133	0.553	0.286	1.121	0.159	0.863	0.806	0.081
Back of Queue (Q), ft/ln (95 th percentile)	81.5	40.4	36.7	132.8	39.8	227	33.9	1715.6	87.2	250.8	723.5	39.9
Back of Queue (Q), veh/ln (95 th percentile)	3.2	1.6	1.4	5.2	1.6	8.9	1.3	67.0	3.4	9.8	28.3	1.6
Queue Storage Ratio (RQ) (95 th percentile)	0.82	0.00	0.37	0.53	0.00	0.57	0.08	0.00	0.11	0.50	0.00	0.08
Uniform Delay (d_1), s/veh	65.2	57.9	52.5	64.7	56.3	51.5	21.1	28.6	9.3	47.8	19.8	7.8
Incremental Delay (d_2), s/veh	1.3	0.1	0.1	2.2	0.1	0.6	0.3	61.5	0.3	4.5	3.3	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	66.5	58.1	52.6	66.8	56.4	52.2	21.4	90.1	9.7	52.3	23.1	8.0
Level of Service (LOS)	E	E	D	E	E	D	C	F	A	D	C	A
Approach Delay, s/veh / LOS	62.7	E		59.3	E		83.5	F		24.8	C	
Intersection Delay, s/veh / LOS	57.8						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.26	B	2.25	B
Bicycle LOS Score / LOS	0.74	A	1.07	A	2.60	C	2.16	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Home Road	File Name	117_US23-Home_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	230	680	430	400	800	70	400	1460	77	260	1642	390

Signal Information				Signal Phases											
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		18.5	0.5	51.0	11.0	5.0	20.0						
		Yellow		4.0	0.0	4.0	4.0	0.0	4.0						
		Red		2.0	0.0	2.0	2.0	0.0	2.0						

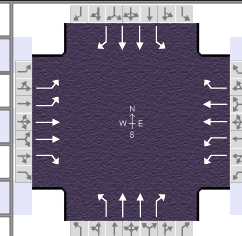
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	17.0	26.0	22.0	31.0	25.0	57.5	24.5	57.0
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	11.3	22.0	18.0	27.0	21.0		18.4	
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	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	250	739	467	435	870	76	435	1587	84	283	1785	424
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1766	1572	1716	1766	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	9.3	20.0	20.0	16.0	25.0	4.4	19.0	51.5	3.5	16.4	51.0	24.3
Cycle Queue Clearance Time (g _c), s	9.3	20.0	20.0	16.0	25.0	4.4	19.0	51.5	3.5	16.4	51.0	24.3
Green Ratio (g/C)	0.08	0.15	0.30	0.12	0.19	0.33	0.54	0.40	0.52	0.53	0.39	0.48
Capacity (c), veh/h	290	544	472	422	679	526	314	1399	816	307	1386	768
Volume-to-Capacity Ratio (X)	0.861	1.360	0.991	1.029	1.280	0.145	1.386	1.134	0.103	0.920	1.288	0.552
Back of Queue (Q), ft/ln (95 th percentile)	216.1	857.5	685.5	386.7	912.8	75.6	878.6	1240.8	58.8	280.9	1750.8	361.6
Back of Queue (Q), veh/ln (95 th percentile)	8.4	33.5	26.8	15.1	35.7	3.0	34.3	48.5	2.3	11.0	68.4	14.5
Queue Storage Ratio (RQ) (95 th percentile)	0.43	0.00	1.37	0.77	0.00	0.15	1.46	0.00	0.07	0.80	0.00	1.03
Uniform Delay (d ₁), s/veh	58.7	55.0	45.3	57.0	52.5	30.2	43.2	39.3	15.9	41.4	39.5	24.1
Incremental Delay (d ₂), s/veh	21.3	173.6	38.9	51.5	137.1	0.0	192.4	69.8	0.3	26.6	135.0	2.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	80.0	228.6	84.2	108.5	189.6	30.3	235.6	109.1	16.1	68.0	174.5	27.0
Level of Service (LOS)	F	F	F	F	F	C	F	F	B	E	F	C
Approach Delay, s/veh / LOS	156.8		F	155.3		F	131.5		F	137.3		F
Intersection Delay, s/veh / LOS	142.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.69	B	1.63	B	2.22	B	2.54	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other	
Jurisdiction		Time Period	PM Peak		PHF	0.92	
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00
Intersection	No Build Home Road		File Name	117_US23-Home_PM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	200	500	250	390	600	100	370	1844	350	50	1404	100

Signal Information															
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		6.0	15.2	45.7	10.4	2.6	20.0						
		Yellow		4.0	4.0	4.0	4.0	0.0	4.0						
		Red		2.0	2.0	2.0	2.0	0.0	2.0						

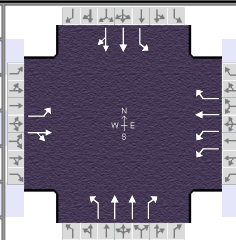
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	16.4	26.0	19.0	28.6	33.3	73.0	12.0	51.7
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	10.1	22.0	15.0	24.6	27.0		4.5	
Green Extension Time (g_e), s	0.3	0.0	0.0	0.0	0.3	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		0.86	
Max Out Probability	0.00	1.00	1.00	1.00	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	217	543	272	424	652	109	402	2004	380	54	1526	109
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1766	1572	1716	1766	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g_s), s	8.1	20.0	17.3	13.0	22.6	7.5	25.0	67.0	16.0	2.5	45.7	5.3
Cycle Queue Clearance Time (g_c), s	8.1	20.0	17.3	13.0	22.6	7.5	25.0	67.0	16.0	2.5	45.7	5.3
Green Ratio (g/C)	0.08	0.15	0.36	0.10	0.17	0.22	0.58	0.52	0.62	0.40	0.35	0.43
Capacity (c), veh/h	275	544	572	343	614	346	426	1820	967	137	1243	695
Volume-to-Capacity Ratio (X)	0.791	1.000	0.475	1.235	1.062	0.314	0.944	1.101	0.393	0.396	1.228	0.156
Back of Queue (Q), ft/ln (95 th percentile)	162	439.2	270.6	476.4	543.4	133.1	563.4	1391.1	239.4	48	1402	93
Back of Queue (Q), veh/ln (95 th percentile)	6.3	17.2	10.6	18.6	21.2	5.2	22.0	54.3	9.3	1.9	54.8	3.7
Queue Storage Ratio (RQ) (95 th percentile)	0.32	0.00	0.54	0.95	0.00	0.27	0.94	0.00	0.30	0.14	0.00	0.27
Uniform Delay (d_1), s/veh	58.7	55.0	31.8	58.5	53.7	42.5	41.2	31.5	12.7	32.3	42.1	22.5
Incremental Delay (d_2), s/veh	2.0	38.6	0.2	128.5	53.9	0.2	26.4	54.5	1.2	0.7	109.8	0.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.7	93.6	32.1	187.0	107.6	42.7	67.5	86.0	13.9	33.0	152.0	23.0
Level of Service (LOS)	E	F	C	F	F	D	E	F	B	C	F	C
Approach Delay, s/veh / LOS	70.5	E		130.1	F		73.5	E		139.8	F	
Intersection Delay, s/veh / LOS	99.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.56	C	2.58	C
Bicycle LOS Score / LOS	1.34	A	1.47	A	2.79	C	1.88	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Lewis Center Road	File Name	118_US23-LewisCenter_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	50	50	50	100	50	82	50	1387	392	81	1993	30

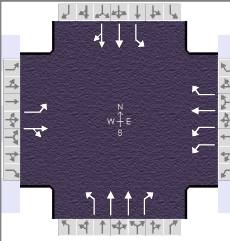
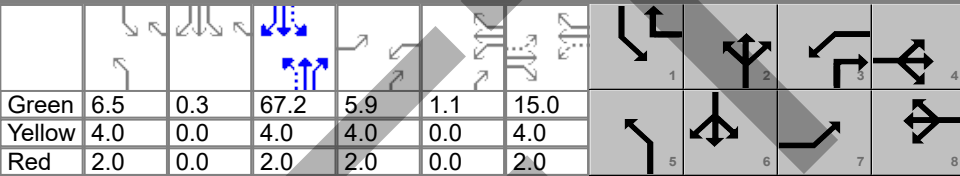
Signal Information				Signal Timing (s)									
Cycle, s	115.0	Reference Phase	2	Green	5.8	0.8	67.6	5.8	1.0	10.0	10.0	10.0	10.0
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	4.0	0.0	4.0	4.0	4.0	4.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0
Force Mode	Fixed	Simult. Gap N/S	On										

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0
Phase Duration, s	11.8	16.0	12.8	17.0	11.8	73.6	12.6	74.5
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s	5.1	9.2	5.2	7.9	3.3		4.1	
Green Extension Time (g_e), s	0.0	0.3	0.1	0.4	0.1	0.0	0.1	0.0
Phase Call Probability	0.82	1.00	0.97	1.00	0.82		0.94	
Max Out Probability	0.00	0.00	0.00	0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	109		109	54	89	54	1508	426	88	1099	1099
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1702		1716	1856	1572	1767	1766	1572	1767	1856	1846
Queue Service Time (g_s), s	3.1	7.2		3.2	3.1	5.9	1.3	35.3	15.1	2.1	67.7	68.5
Cycle Queue Clearance Time (g_c), s	3.1	7.2		3.2	3.1	5.9	1.3	35.3	15.1	2.1	67.7	68.5
Green Ratio (g/C)	0.14	0.09		0.15	0.10	0.15	0.64	0.59	0.65	0.65	0.60	0.60
Capacity (c), veh/h	220	148		391	178	241	151	2078	1018	261	1104	1099
Volume-to-Capacity Ratio (X)	0.247	0.734		0.278	0.306	0.370	0.359	0.726	0.419	0.338	0.995	1.001
Back of Queue (Q), ft/ln (95 th percentile)	62.6	142		61.6	66.1	103.3	39.2	492.2	217.2	34.9	1094.8	1084.8
Back of Queue (Q), veh/ln (95 th percentile)	2.4	5.5		2.4	2.6	4.0	1.5	19.2	8.5	1.4	42.8	43.4
Queue Storage Ratio (RQ) (95 th percentile)	0.31	0.00		0.15	0.00	0.52	0.08	0.00	0.43	0.09	0.00	0.00
Uniform Delay (d_1), s/veh	44.2	51.2		43.5	48.4	43.7	27.7	17.0	9.8	14.9	23.1	23.3
Incremental Delay (d_2), s/veh	0.2	2.6		0.1	0.4	0.4	0.5	2.2	1.3	0.3	26.0	27.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.5	53.8		43.7	48.8	44.1	28.2	19.3	11.1	15.2	49.1	50.6
Level of Service (LOS)	D	D		D	D	D	C	B	B	B	D	F
Approach Delay, s/veh / LOS	50.7		D	44.9		D	17.8		B	48.5		D
Intersection Delay, s/veh / LOS	35.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.31	B	2.25	B	1.89	B
Bicycle LOS Score / LOS	0.76	A	0.90	A	2.13	B	2.37	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Lewis Center Road	File Name	118_US23-LewisCenter_PM.xus													
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	50	50	180	15	220	75	1912	75	98	1436	5
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.5	0.3	67.2	5.9	1.1	15.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0				
Phase Duration, s					11.9	21.0	13.0	22.1	12.5	73.2	12.8	73.5				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					5.1	9.2	7.9	18.1	4.2		5.0					
Green Extension Time (g _e), s					0.0	0.4	0.0	0.0	0.1	0.0	0.1	0.0				
Phase Call Probability					0.84	1.00	1.00	1.00	0.93		0.97					
Max Out Probability					1.00	0.15	1.00	1.00	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	109		196	16	239	82	2078	82	107	783	783
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1702		1716	1856	1572	1767	1766	1572	1767	1856	1853
Queue Service Time (g _s), s					3.1	7.2		5.9	0.9	16.1	2.2	67.2	2.5	3.0	38.4	38.4
Cycle Queue Clearance Time (g _c), s					3.1	7.2		5.9	0.9	16.1	2.2	67.2	2.5	3.0	38.4	38.4
Green Ratio (g/C)					0.17	0.12		0.18	0.13	0.19	0.61	0.56	0.62	0.62	0.56	0.56
Capacity (c), veh/h					299	213		487	250	301	230	1979	972	160	1043	1042
Volume-to-Capacity Ratio (X)					0.182	0.511		0.402	0.065	0.795	0.355	1.050	0.084	0.665	0.751	0.751
Back of Queue (Q), ft/ln (95 th percentile)					62.3	139.4		113.6	19.3	312.4	39	1179.9	38.3	77.8	589.7	576.9
Back of Queue (Q), veh/ln (95 th percentile)					2.4	5.4		4.4	0.8	12.2	1.5	46.1	1.5	3.0	23.0	23.1
Queue Storage Ratio (RQ) (95 th percentile)					0.31	0.00		0.28	0.00	1.56	0.08	0.00	0.08	0.19	0.00	0.00
Uniform Delay (d ₁), s/veh					42.3	49.1		42.7	45.3	46.3	18.3	26.4	9.2	28.2	19.9	19.9
Incremental Delay (d ₂), s/veh					0.1	0.9		0.2	0.0	12.8	0.3	35.0	0.2	1.8	5.0	5.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					42.4	50.0		42.9	45.4	59.0	18.7	61.4	9.4	30.0	24.9	24.9
Level of Service (LOS)					D	D		D	D	E	B	F	A	C	C	C
Approach Delay, s/veh / LOS					47.4		D	51.5		D	57.9		E	25.2		C
Intersection Delay, s/veh / LOS					44.8					D						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.46		B	2.31		B	2.26		B	1.90		B
Bicycle LOS Score / LOS					0.76		A	1.23		A	2.34		B	1.87		B

HCS Signalized Intersection Results Summary

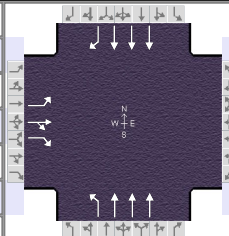
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Olentangy Crossing		File Name	119_US23-OlentangyCrossing_AM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	20	50	51	3	56	50	1246	208	169	1984	30
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.8	1.2	68.2	5.8	10.0	0.0										
Yellow	4.0	0.0	4.0	4.0	4.0	0.0										
Red	2.0	0.0	2.0	2.0	2.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					11.8	16.0	11.8	16.0	11.8	74.2	13.0	75.4				
Change Period, ($Y+R_c$), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g_s), s					5.1	7.1	5.2	5.9	3.3		6.6					
Green Extension Time (g_e), s					0.0	0.2	0.0	0.2	0.1	0.0	0.3	0.0				
Phase Call Probability					0.82	1.00	0.83	1.00	0.82		1.00					
Max Out Probability					0.00	0.00	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	76		55	3	61	54	1354	226	184	2157	33
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1644		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g_s), s					3.1	5.1		3.2	0.2	3.9	1.3	29.1	6.9	4.6	69.4	0.8
Cycle Queue Clearance Time (g_c), s					3.1	5.1		3.2	0.2	3.9	1.3	29.1	6.9	4.6	69.4	0.8
Green Ratio (g/C)					0.14	0.09		0.14	0.09	0.15	0.64	0.59	0.64	0.65	0.60	0.65
Capacity (c), veh/h					247	143		208	162	233	151	2096	1012	306	2133	1028
Volume-to-Capacity Ratio (X)					0.220	0.533		0.267	0.020	0.262	0.359	0.646	0.223	0.601	1.011	0.032
Back of Queue (Q), ft/ln (95 th percentile)					62.5	96.3		63.8	3.9	69.6	39.6	414.4	101.5	74	1038.5	12.2
Back of Queue (Q), veh/ln (95 th percentile)					2.4	3.8		2.5	0.2	2.7	1.5	16.2	4.0	2.9	40.6	0.5
Queue Storage Ratio (RQ) (95 th percentile)					0.36	0.00		0.26	0.00	0.28	0.13	0.00	0.20	0.19	0.00	0.04
Uniform Delay (d_1), s/veh					44.2	50.3		44.3	48.0	43.4	27.8	15.4	8.5	14.5	22.8	7.0
Incremental Delay (d_2), s/veh					0.2	1.1		0.3	0.0	0.2	0.5	1.6	0.5	0.7	22.2	0.1
Initial Queue Delay (d_3), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					44.4	51.4		44.6	48.0	43.7	28.3	17.0	9.0	15.2	45.0	7.1
Level of Service (LOS)					D	D		D	D	D	C	B	A	B	F	A
Approach Delay, s/veh / LOS					48.5		D	44.2		D	16.3		B	42.1		D
Intersection Delay, s/veh / LOS					32.5					C						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.89		B
Bicycle LOS Score / LOS					0.70		A	0.68		A	1.84		B	2.45		B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Olentangy Crossing		File Name	119_US23-OlentangyCrossing_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	50	30	112	11	150	100	1958	109	196	1381	11
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.8	0.2	72.0	5.9	1.1	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					11.9	16.0	13.0	17.1	12.8	78.0	13.0	78.2				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					5.3	7.8	9.0	13.1	4.7		9.0					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0				
Phase Call Probability					0.84	1.00	0.98	1.00	0.97		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	0.00		1.00					
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	87		122	12	163	109	2128	118	213	1501	12
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1738		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					3.3	5.8		7.0	0.7	11.1	2.7	72.0	3.3	7.0	35.3	0.3
Cycle Queue Clearance Time (g _c), s					3.3	5.8		7.0	0.7	11.1	2.7	72.0	3.3	7.0	35.3	0.3
Green Ratio (g/C)					0.13	0.08		0.14	0.09	0.15	0.66	0.60	0.66	0.66	0.60	0.65
Capacity (c), veh/h					244	145		209	172	238	261	2120	1035	163	2125	1023
Volume-to-Capacity Ratio (X)					0.223	0.600		0.583	0.069	0.686	0.416	1.004	0.114	1.306	0.706	0.012
Back of Queue (Q), ft/ln (95 th percentile)					66	122.9		158.1	14.9	219.7	50.7	1059.8	49.1	514.6	493.9	4.8
Back of Queue (Q), veh/ln (95 th percentile)					2.6	4.8		6.2	0.6	8.6	2.0	41.4	1.9	20.1	19.3	0.2
Queue Storage Ratio (RQ) (95 th percentile)					0.38	0.00		0.63	0.00	0.88	0.17	0.00	0.10	1.29	0.00	0.02
Uniform Delay (d ₁), s/veh					46.6	53.1		48.1	49.7	48.2	15.9	24.0	7.6	40.1	16.6	7.4
Incremental Delay (d ₂), s/veh					0.2	4.8		2.8	0.1	6.7	0.4	20.5	0.2	174.8	2.0	0.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					46.8	57.9		50.9	49.8	54.9	16.3	44.5	7.8	214.9	18.6	7.4
Level of Service (LOS)					D	E		D	D	D	B	F	A	F	B	A
Approach Delay, s/veh / LOS					53.6		D	53.0		D	41.4		D	42.7		D
Intersection Delay, s/veh / LOS					43.0					D						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.89		B
Bicycle LOS Score / LOS					0.72		A	0.98		A	2.43		B	1.91		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00
Intersection	Orange Point Drive	File Name	D115_US23-OrangePoint_AM.xus		
Project Description	Concept D Design Year (2030)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	100	0	129				150	1838			2148	50

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		10.2	51.8	10.0	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

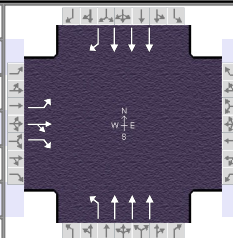
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		16.0			16.2	74.0		57.8
Change Period, ($Y+R_c$), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g_s), s		8.9			10.1			
Green Extension Time (g_e), s		0.4			0.3	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h	137	0	112				163	1998		2335	54	
Adjusted Saturation Flow Rate (s), veh/h/ln	1727	1856	1572				1767	1671		1685	1560	
Queue Service Time (g_s), s	6.9	0.0	5.4				8.1	14.6		32.8	1.0	
Cycle Queue Clearance Time (g_c), s	6.9	0.0	5.4				8.1	14.6		32.8	1.0	
Green Ratio (g/C)	0.11	0.11	0.22				0.11	0.76		0.58	0.69	
Capacity (c), veh/h	192	206	353				200	3789		2910	1071	
Volume-to-Capacity Ratio (X)	0.714	0.000	0.318				0.815	0.527		0.802	0.051	
Back of Queue (Q), ft/ln (95 th percentile)	132.3	0	88.9				162.1	138.3		415.7	12.3	
Back of Queue (Q), veh/ln (95 th percentile)	5.2	0.0	3.5				6.3	5.4		16.2	0.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.53	0.00	0.89				0.32	0.00		0.00	0.04	
Uniform Delay (d_1), s/veh	38.6	0.0	29.2				39.0	4.5		15.0	4.6	
Incremental Delay (d_2), s/veh	1.9	0.0	0.2				3.1	0.5		2.4	0.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	40.5	0.0	29.4				42.0	5.0		17.5	4.7	
Level of Service (LOS)	D			C			D			A		
Approach Delay, s/veh / LOS	35.5		D	0.0			7.8		A	17.2		B
Intersection Delay, s/veh / LOS	13.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	1.32	A	2.07	B
Bicycle LOS Score / LOS	0.90	A			1.68	B	1.80	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Orange Point Drive	File Name	D115_US23-OrangePoint_PM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	75	25	86				164	2348			1569	50

Signal Information														
Cycle, s	90.0	Reference Phase	2	EB		WB		NB		SB				
Offset, s	0	Reference Point	End	Green	11.0	51.0	9.9	0.0	0.0	0.0	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		15.9			17.0	74.1		57.0
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		5.9			10.9			
Green Extension Time (g _e), s		0.3			0.3	0.0		0.0
Phase Call Probability		0.99			0.99			
Max Out Probability		0.00			0.00			

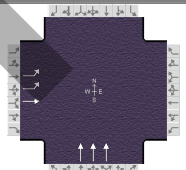
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h	82	46	75				178	2552		1705	54	
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1740	1572				1767	1671		1671	1572	
Queue Service Time (g _s), s	3.9	2.2	3.4				8.9	22.7		20.1	1.0	
Cycle Queue Clearance Time (g _c), s	3.9	2.2	3.4				8.9	22.7		20.1	1.0	
Green Ratio (g/C)	0.11	0.11	0.23				0.12	0.76		0.57	0.68	
Capacity (c), veh/h	195	192	366				216	3792		2844	1065	
Volume-to-Capacity Ratio (X)	0.418	0.239	0.204				0.824	0.673		0.600	0.051	
Back of Queue (Q), ft/ln (95 th percentile)	74.9	41.1	57				176	214.3		276.2	12.9	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	1.6	2.2				6.9	8.3		10.7	0.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.30	0.00	0.57				0.35	0.00		0.00	0.04	
Uniform Delay (d ₁), s/veh	37.3	36.6	27.8				38.5	5.4		12.8	4.8	
Incremental Delay (d ₂), s/veh	0.5	0.2	0.1				3.0	1.0		0.9	0.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	37.9	36.8	27.9				41.6	6.4		13.7	4.9	
Level of Service (LOS)	D	D	C				D	A		B	A	
Approach Delay, s/veh / LOS	33.9	C		0.0			8.7	A		13.4	B	
Intersection Delay, s/veh / LOS	11.6						B					

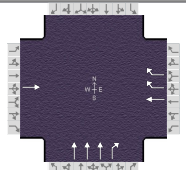
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	1.32	A	2.07	B
Bicycle LOS Score / LOS	0.82	A			1.99	B	1.46	A

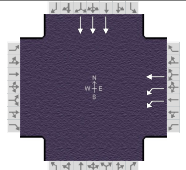
HCS Alternative Intersections Results Summary

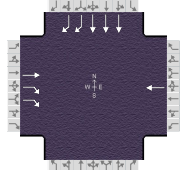
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/17/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_AM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	1057	0						2230				
Intersection Two Demand (v), veh/h		480			0	1425		2110	777			
Intersection Three Demand (v), veh/h				1355	0						2763	
Intersection Four Demand (v), veh/h		0	1487		400						2418	1220

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	42.5	35.5	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	51												
Uncoordinated	No	Green	24.5	53.5	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	58												
Uncoordinated	No	Green	33.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	26												
Uncoordinated	No	Green	56.3	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

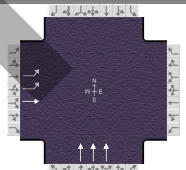
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	388	483.3	30.2	513.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	761	605.9	30.2	636.1	F
EBR	EBR(4)	467	18.6	--	18.6	B
WBL	WBR(2) + NBU(3) + SBT(4)	571	669.3	30.2	699.5	F
WBT	WBR(2) + NBU(3) + SBR(4)	902	549.3	30.2	579.5	F
WBR	WBR(2)	76	20.4	--	20.4	C
NBL	NBT(1) + NBL(2)	435	73.3	--	73.3	F
NBT	NBT(1) + NBT(2)	2495	490.5	--	490.5	F
NBR	NBT(1) + NBR(2)	919	613.1	--	613.1	F
SBL	SBT(3) + SBL(4)	522	143.7	--	143.7	F
SBT	SBT(3) + SBT(4)	2324	607.1	--	607.1	F
SBR	SBT(3) + SBR(4)	1172	487.1	--	487.1	F

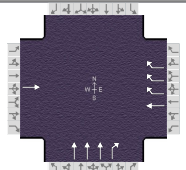
Overall Results		
Intersection ETT, s/veh LOS	484.6	F

HCS Alternative Intersections Results Summary

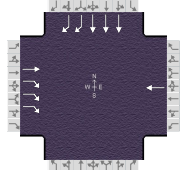
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	4/17/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	Home Road	PHF	0.92		Arterial Direction	North-South	
File Name	D117_US23-Home_AM_NB_TripleRT.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	1057	0						2230				
Intersection Two Demand (v), veh/h		480			0	1425		2110	777			
Intersection Three Demand (v), veh/h				1355	0						2763	
Intersection Four Demand (v), veh/h		0	1487		400					2418	1220	

Signal One Information												
Cycle, s	115.0											
Offset, s	0											
Uncoordinated	No	Green	56.3	46.7	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0				

Signal Two Information												
Cycle, s	115.0											
Offset, s	45											
Uncoordinated	No	Green	55.6	47.4	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0				

Signal Three Information												
Cycle, s	115.0											
Offset, s	68											
Uncoordinated	No	Green	43.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information												
Cycle, s	115.0											
Offset, s	30											
Uncoordinated	No	Green	50.4	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0				

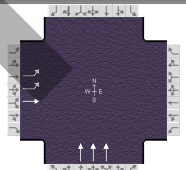
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	388	127.4	30.2	157.6	F
EBT	EBR(4) + SBU(1) + NBR(2)	761	193.0	30.2	223.2	F
EBR	EBR(4)	467	30.2	--	30.2	C
WBL	WBR(2) + NBU(3) + SBT(4)	571	268.8	30.2	299.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	902	240.3	30.2	270.5	F
WBR	WBR(2)	76	32.4	--	32.4	C
NBL	NBT(1) + NBL(2)	435	88.3	--	88.3	F
NBT	NBT(1) + NBT(2)	2524	128.3	--	128.3	F
NBR	NBT(1) + NBR(2)	929	193.9	--	193.9	F
SBL	SBT(3) + SBL(4)	522	145.4	--	145.4	F
SBT	SBT(3) + SBT(4)	2408	180.6	--	180.6	F
SBR	SBT(3) + SBR(4)	1215	152.2	--	152.2	F

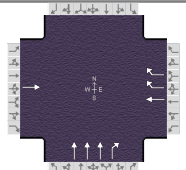
Overall Results		
Intersection ETT, s/veh LOS	171.5	F

HCS Alternative Intersections Results Summary

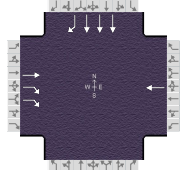
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_PM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	818	0						2805				
Intersection Two Demand (v), veh/h		269			0	1360		2378	875			
Intersection Three Demand (v), veh/h				1260	0						2087	
Intersection Four Demand (v), veh/h		0	1068		370						2319	759

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	53.1	28.9	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	45										
Uncoordinated	No	Green	30.8	51.2	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	3										
Uncoordinated	No	Green	43.7	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	55										
Uncoordinated	No	Green	41.5	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

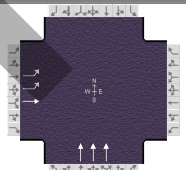
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	318	372.5	30.2	402.7	F
EBT	EBR(4) + SBU(1) + NBR(2)	571	478.8	30.2	509.0	F
EBR	EBR(4)	272	23.5	--	23.5	C
WBL	WBR(2) + NBU(3) + SBT(4)	653	132.1	30.2	162.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	716	131.3	30.2	161.5	F
WBR	WBR(2)	109	20.5	--	20.5	C
NBL	NBT(1) + NBL(2)	402	78.8	--	78.8	F
NBT	NBT(1) + NBT(2)	2714	375.2	--	375.2	F
NBR	NBT(1) + NBR(2)	999	481.5	--	481.5	F
SBL	SBT(3) + SBL(4)	292	110.4	--	110.4	F
SBT	SBT(3) + SBT(4)	2518	189.9	--	189.9	F
SBR	SBT(3) + SBR(4)	824	189.0	--	189.0	F

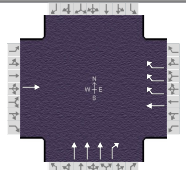
Overall Results		
Intersection ETT, s/veh LOS	266.7	F

HCS Alternative Intersections Results Summary

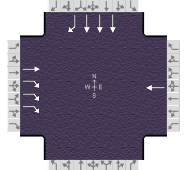
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	4/10/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	Home Road	PHF	0.92		Arterial Direction	North-South	
File Name	D117_US23-Home_PM_NB_TripleRT.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	818	0						2805				
Intersection Two Demand (v), veh/h		269			0	1360		2378	875			
Intersection Three Demand (v), veh/h				1260	0						2087	
Intersection Four Demand (v), veh/h		0	1068		370						2319	759

Signal One Information													
Cycle, s	115.0												
Offset, s	0												
Uncoordinated	No	Green	66.4	36.6	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Two Information													
Cycle, s	115.0												
Offset, s	88												
Uncoordinated	No	Green	57.7	45.3	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Three Information													
Cycle, s	115.0												
Offset, s	76												
Uncoordinated	No	Green	51.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information													
Cycle, s	115.0												
Offset, s	76												
Uncoordinated	No	Green	36.9	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	318	151.8	30.2	182.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	571	224.2	30.2	254.4	F
EBR	EBR(4)	272	37.5	--	37.5	D
WBL	WBR(2) + NBU(3) + SBT(4)	653	116.1	30.2	146.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	716	115.1	30.2	145.3	F
WBR	WBR(2)	109	33.4	--	33.4	C
NBL	NBT(1) + NBL(2)	402	112.8	--	112.8	F
NBT	NBT(1) + NBT(2)	2666	149.6	--	149.6	F
NBR	NBT(1) + NBR(2)	981	222.0	--	222.0	F
SBL	SBT(3) + SBL(4)	292	85.3	--	85.3	F
SBT	SBT(3) + SBT(4)	2628	84.3	--	84.3	F
SBR	SBT(3) + SBR(4)	860	83.3	--	83.3	F

Overall Results		
Intersection ETT, s/veh LOS	135.3	F

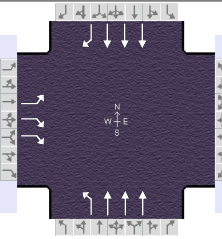
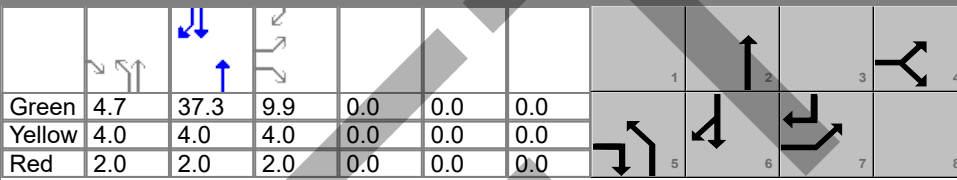
HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00											
Intersection	Lewis Center Road	File Name	D118_US23-LewisCenter_AM.xus														
Project Description	Concept D Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h								154		132	1447	392	250	2034			
Signal Information																	
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	9.5	52.5	10.0	0.0	0.0	0.0						
					Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
					Red	2.0	2.0	2.0	0.0	0.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase								8		2	1	6					
Case Number								9.0		7.3	2.0	4.0					
Phase Duration, s								16.0		58.5	15.5	74.0					
Change Period, ($Y+R_c$), s								6.0		6.0	6.0	6.0					
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0					
Queue Clearance Time (g_s), s								9.1			8.9						
Green Extension Time (g_e), s								0.4		0.0	0.6	0.0					
Phase Call Probability								1.00			1.00						
Max Out Probability								0.02			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								3		18	2	12	1	6			
Adjusted Flow Rate (v), veh/h								167		143	1573	426	272	2211			
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572	1671	1572	1716	1671			
Queue Service Time (g_s), s								4.1		7.1	17.1	10.2	6.9	17.3			
Cycle Queue Clearance Time (g_c), s								4.1		7.1	17.1	10.2	6.9	17.3			
Green Ratio (g/C)								0.11		0.22	0.58	0.69	0.11	0.76			
Capacity (c), veh/h								381		341	2925	1092	362	3789			
Volume-to-Capacity Ratio (X)								0.439		0.421	0.538	0.390	0.750	0.584			
Back of Queue (Q), ft/ln (95 th percentile)								76.5		117.8	238.4	124.3	130.4	166.7			
Back of Queue (Q), veh/ln (95 th percentile)								3.0		4.6	9.2	4.9	5.1	6.5			
Queue Storage Ratio (RQ) (95 th percentile)								0.19		0.59	0.00	0.25	0.33	0.00			
Uniform Delay (d_1), s/veh								37.4		30.4	11.4	5.8	39.1	4.8			
Incremental Delay (d_2), s/veh								0.3		0.3	0.7	1.1	1.2	0.7			
Initial Queue Delay (d_3), s/veh								0.0		0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh								37.7		30.7	12.1	6.8	40.3	5.5			
Level of Service (LOS)								D		C	B	A	D	A			
Approach Delay, s/veh / LOS					0.0			34.5		C	11.0		B	9.3		A	
Intersection Delay, s/veh / LOS								11.6						B			
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.60		C	2.74		C	2.24		B	0.64		A	
Bicycle LOS Score / LOS										F	1.59		B	1.85		B	

HCS Signalized Intersection Results Summary

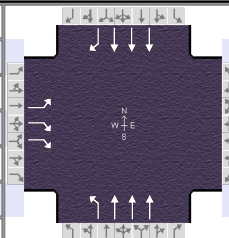
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Lewis Center Road	File Name	D118_US23-LewisCenter_PM.xus													
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								203		235		2024	75	294	1481	
Signal Information																
Cycle, s	85.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	9.8	43.3	13.9	0.0	0.0	0.0					
					Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
					Red	2.0	2.0	2.0	0.0	0.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	2.0	4.0				
Phase Duration, s								19.9		49.3	15.8	65.1				
Change Period, ($Y+R_c$), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.2		0.0	3.0	0.0				
Queue Clearance Time (g_s), s								13.9			9.7					
Green Extension Time (g_e), s								0.0		0.0	0.0	0.0				
Phase Call Probability								1.00			1.00					
Max Out Probability								1.00			1.00					
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h								221		255		2200	82	320	1610	
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572		1671	1572	1716	1671	
Queue Service Time (g_s), s								4.9		11.9		32.6	1.5	7.7	12.3	
Cycle Queue Clearance Time (g_c), s								4.9		11.9		32.6	1.5	7.7	12.3	
Green Ratio (g/C)								0.16		0.28		0.51	0.67	0.11	0.70	
Capacity (c), veh/h								562		438		2556	1059	394	3486	
Volume-to-Capacity Ratio (X)								0.393		0.583		0.861	0.077	0.811	0.462	
Back of Queue (Q), ft/ln (95 th percentile)								88.4		196.1		438.2	18.3	167.5	140.2	
Back of Queue (Q), veh/ln (95 th percentile)								3.5		7.7		17.0	0.7	6.5	5.4	
Queue Storage Ratio (RQ) (95 th percentile)								0.22		0.98		0.00	0.04	0.42	0.00	
Uniform Delay (d_1), s/veh								31.8		26.4		18.2	4.8	36.7	5.8	
Incremental Delay (d_2), s/veh								0.2		1.3		4.1	0.1	10.6	0.4	
Initial Queue Delay (d_3), s/veh								0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh								31.9		27.7		22.3	4.9	47.3	6.3	
Level of Service (LOS)								C		C		C	A	D	A	
Approach Delay, s/veh / LOS					0.0			29.7		C	21.7		C	13.1		B
Intersection Delay, s/veh / LOS								18.9								B
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.60		C	2.73		C	2.25		B	0.65		A
Bicycle LOS Score / LOS										F	1.74		B	1.55		B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Olentangy Crossing		File Name	D119_US23-OlentangyCrossing_AM.xus												
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					100		140				53	1292			2262	30
Signal Information																
Cycle, s	70.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green					4.7	37.3	9.9	0.0	0.0	0.0						
Yellow					4.0	4.0	4.0	0.0	0.0	0.0						
Red					2.0	2.0	2.0	0.0	0.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4			5	2		6				
Case Number						9.0			2.0	4.0		7.3				
Phase Duration, s						15.9			10.7	54.1		43.3				
Change Period, (Y+R _c), s						6.0			6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.2			3.0	0.0		0.0				
Queue Clearance Time (g _s), s						5.9			4.2							
Green Extension Time (g _e), s						0.2			0.0	0.0		0.0				
Phase Call Probability						0.99			0.67							
Max Out Probability						0.43			0.25							
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h					109		152				58	1404		2459		33
Adjusted Saturation Flow Rate (s), veh/h/ln					1767		1392				1767	1671		1685		1572
Queue Service Time (g _s), s					3.9		3.2				2.2	8.5		30.9		0.5
Cycle Queue Clearance Time (g _c), s					3.9		3.2				2.2	8.5		30.9		0.5
Green Ratio (g/C)					0.14		0.21				0.07	0.69		0.53		0.68
Capacity (c), veh/h					251		583				119	3443		2697		1062
Volume-to-Capacity Ratio (X)					0.433		0.261				0.484	0.408		0.912		0.031
Back of Queue (Q), ft/ln (95 th percentile)					71.4		44.1				41.6	82		397.9		4.9
Back of Queue (Q), veh/ln (95 th percentile)					2.8		1.7				1.6	3.2		15.5		0.2
Queue Storage Ratio (RQ) (95 th percentile)					0.41		0.44				0.14	0.00		0.00		0.02
Uniform Delay (d ₁), s/veh					27.5		23.1				31.5	4.8		14.8		3.8
Incremental Delay (d ₂), s/veh					0.4		0.1				1.1	0.4		6.0		0.1
Initial Queue Delay (d ₃), s/veh					0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh					27.9		23.2				32.6	5.1		20.8		3.8
Level of Service (LOS)					C		C				C	A		C		A
Approach Delay, s/veh / LOS					25.2	C	0.0				6.2	A		20.6		C
Intersection Delay, s/veh / LOS					15.9						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.59	C	2.59	C	0.65	A	2.07	B				
Bicycle LOS Score / LOS						F			1.29	A	1.86	B				

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Olentangy Crossing		File Name	D119_US23-OlentangyCrossing_PM.xus			
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	100		80				111	2082			1542	11

Signal Information													
Cycle, s	90.0	Reference Phase	2	EB		WB		NB		SB			
Offset, s	0	Reference Point	End	Green	7.8	54.3	9.9	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		15.9			13.8	74.1		60.3
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		7.2			8.0			
Green Extension Time (g _e), s		0.4			0.2	0.0		0.0
Phase Call Probability		0.99			0.95			
Max Out Probability		0.00			0.00			

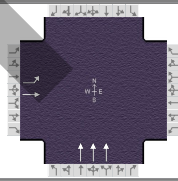
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	109		87				121	2263		1676		12
Adjusted Saturation Flow Rate (s), veh/h/ln	1767		1392				1767	1671		1685		1572
Queue Service Time (g _s), s	5.2		2.3				6.0	18.0		17.7		0.2
Cycle Queue Clearance Time (g _c), s	5.2		2.3				6.0	18.0		17.7		0.2
Green Ratio (g/C)	0.11		0.20				0.09	0.76		0.60		0.71
Capacity (c), veh/h	195		548				153	3793		3048		1122
Volume-to-Capacity Ratio (X)	0.558		0.159				0.787	0.597		0.550		0.011
Back of Queue (Q), ft/ln (95 th percentile)	102.1		34.3				121.3	173.9		240.7		2.2
Back of Queue (Q), veh/ln (95 th percentile)	4.0		1.3				4.7	6.7		9.4		0.1
Queue Storage Ratio (RQ) (95 th percentile)	0.58		0.34				0.40	0.00		0.00		0.01
Uniform Delay (d ₁), s/veh	38.0		29.9				40.3	4.9		10.6		3.7
Incremental Delay (d ₂), s/veh	0.9		0.0				3.4	0.7		0.7		0.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	38.9		30.0				43.6	5.6		11.3		3.7
Level of Service (LOS)	D		C				D	A		B		A
Approach Delay, s/veh / LOS	34.9		C	0.0			7.5	A		11.3		B
Intersection Delay, s/veh / LOS	10.2						B					

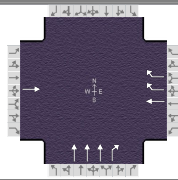
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.64	A	2.07	B
Bicycle LOS Score / LOS		F			1.80	B	1.42	A

HCS Alternative Intersections Results Summary

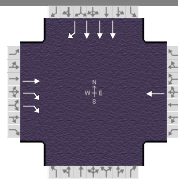
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Orange Point Drive	PHF	0.92	Arterial Direction	North-South		
File Name	C115_US23-OrangePoint_AM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	95	0						2068				
Intersection Two Demand (v), veh/h		180			0	205		1893	120			
Intersection Three Demand (v), veh/h				155	0						2480	
Intersection Four Demand (v), veh/h		0	224		150						2375	80

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	68.8	9.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	65.9	12.1	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	11.7	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	80												
Uncoordinated	No	Green	10.5	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

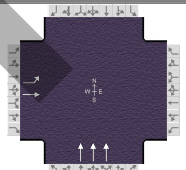
Alternative Intersection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	82	88.1	30.2	118.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	22	84.8	30.2	115.0	F
EBR	EBR(4)	140	39.7	--	39.7	F
WBL	WBR(2) + NBU(3) + SBT(4)	136	87.4	30.2	117.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	33	82.1	30.2	112.3	F
WBR	WBR(2)	54	37.3	--	37.3	D
NBL	NBT(1) + NBL(2)	163	45.6	--	45.6	D
NBT	NBT(1) + NBT(2)	2211	13.3	--	13.3	B
NBR	NBT(1) + NBR(2)	140	10.0	--	10.0	A
SBL	SBT(3) + SBL(4)	196	48.1	--	48.1	D
SBT	SBT(3) + SBT(4)	2771	17.7	--	17.7	B
SBR	SBT(3) + SBR(4)	93	12.4	--	12.4	B

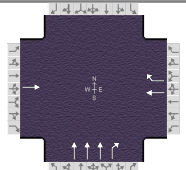
Overall Results		
Intersection ETT, s/veh LOS	23.6	C

HCS Alternative Intersections Results Summary

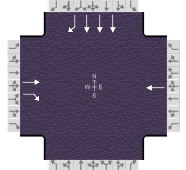
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Orange Point Drive	PHF	0.92	Arterial Direction	North-South		
File Name	C115_US23-OrangePoint_PM_NB.xus						
Project Description	Concept 3C						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	73	0						2615				
Intersection Two Demand (v), veh/h		169			0	372		2344	130			
Intersection Three Demand (v), veh/h				260	0						1953	
Intersection Four Demand (v), veh/h		0	159		214						1935	109

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	69.4	8.6	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	52.5	25.5	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	18.5	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	80												
Uncoordinated	No	Green	13.7	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	47	101.7	30.2	131.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	33	87.7	30.2	117.9	F
EBR	EBR(4)	93	37.9	--	37.9	F
WBL	WBR(2) + NBU(3) + SBT(4)	218	79.8	30.2	110.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	64	76.3	30.2	106.5	F
WBR	WBR(2)	122	34.1	--	34.1	C
NBL	NBT(1) + NBL(2)	233	46.1	--	46.1	D
NBT	NBT(1) + NBT(2)	2768	30.7	--	30.7	C
NBR	NBT(1) + NBR(2)	154	16.8	--	16.8	B
SBL	SBT(3) + SBL(4)	184	35.9	--	35.9	D
SBT	SBT(3) + SBT(4)	2277	19.3	--	19.3	B
SBR	SBT(3) + SBR(4)	128	15.8	--	15.8	B

Overall Results		
Intersection ETT, s/veh LOS	32.8	C

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Crossing	PHF	0.92	Arterial Direction	North-South		
File Name	C119_US23-OlentangyCrossing_AM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	120	0						1636				
Intersection Two Demand (v), veh/h		250			0	260		1428	228			
Intersection Three Demand (v), veh/h				204	0						2321	
Intersection Four Demand (v), veh/h		0	220		100						2192	83

Signal One Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	98.1	9.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	87.7	20.3	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	8.1	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	12.9	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

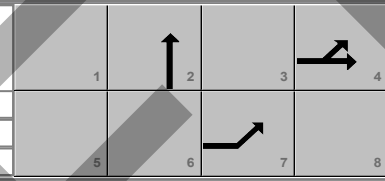

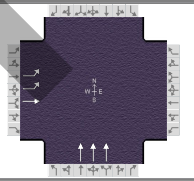
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	109	113.8	30.2	144.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	22	112.0	30.2	142.2	F
EBR	EBR(4)	109	54.3	--	54.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	164	106.0	30.2	136.2	F
WBT	WBR(2) + NBU(3) + SBR(4)	58	103.6	30.2	133.8	F
WBR	WBR(2)	61	46.6	--	46.6	D
NBL	NBT(1) + NBL(2)	109	55.1	--	55.1	E
NBT	NBT(1) + NBT(2)	1646	9.6	--	9.6	A
NBR	NBT(1) + NBR(2)	263	7.8	--	7.8	A
SBL	SBT(3) + SBL(4)	272	56.8	--	56.8	E
SBT	SBT(3) + SBT(4)	2644	10.2	--	10.2	B
SBR	SBT(3) + SBR(4)	100	7.8	--	7.8	A

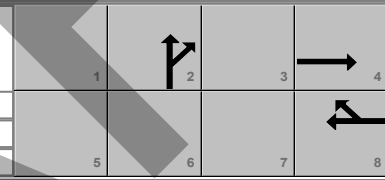

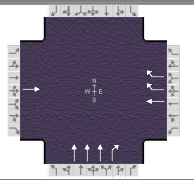
Overall Results		
Intersection ETT, s/veh LOS	24.4	C

HCS Alternative Intersections Results Summary

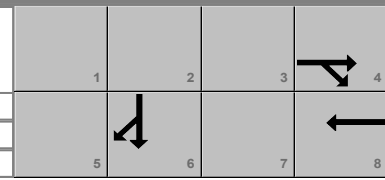

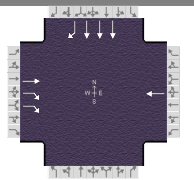
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Crossing	PHF	0.92	Arterial Direction	North-South		
File Name	C119_US23-OlentangyCrossing_PM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	150	0						2325				
Intersection Two Demand (v), veh/h		294			0	468		2141	159			
Intersection Three Demand (v), veh/h				318	0						1845	
Intersection Four Demand (v), veh/h		0	230		175						1832	37

Signal One Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	98.0	10.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	83.2	24.8	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	13.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

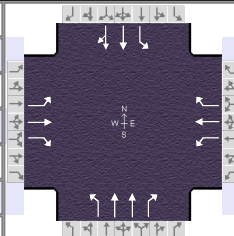
Signal Four Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	14.8	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	109	115.6	30.2	145.8	F
EBT	EBR(4) + SBU(1) + NBR(2)	54	110.6	30.2	140.8	F
EBR	EBR(4)	87	51.8	--	51.8	F
WBL	WBR(2) + NBU(3) + SBT(4)	317	127.5	30.2	157.7	F
WBT	WBR(2) + NBU(3) + SBR(4)	28	125.8	30.2	156.0	F
WBR	WBR(2)	163	48.1	--	48.1	F
NBL	NBT(1) + NBL(2)	190	59.2	--	59.2	E
NBT	NBT(1) + NBT(2)	2504	14.3	--	14.3	B
NBR	NBT(1) + NBR(2)	186	9.2	--	9.2	A
SBL	SBT(3) + SBL(4)	320	65.2	--	65.2	E
SBT	SBT(3) + SBT(4)	2305	9.7	--	9.7	A
SBR	SBT(3) + SBR(4)	47	8.1	--	8.1	A

Overall Results		
Intersection ETT, s/veh LOS	32.4	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Hyatts Road/Shanahan...	File Name	120_US23-HyattsShanahan_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	128	207	323	201	204	164	124	1092	145	37	1778	106

Signal Information														
Cycle, s	120.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.2	1.8	64.0	31.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	5	6	7	8
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

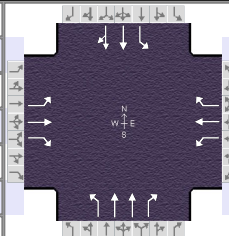
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s		37.0		37.0	13.0	71.8	11.2	70.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		28.0		33.0	6.9		3.2	
Green Extension Time (g_e), s		1.2		0.0	0.1	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.99		0.74	
Max Out Probability		1.00		1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	139	225	351	218	222	178	135	1187	158	40	1024	1024
Adjusted Saturation Flow Rate (s), veh/h/ln	1150	1856	1572	1147	1856	1572	1767	1766	1572	1767	1856	1819
Queue Service Time (g_s), s	13.9	12.3	25.6	18.7	12.1	11.4	4.9	27.4	6.0	1.2	64.0	64.0
Cycle Queue Clearance Time (g_c), s	26.0	12.3	25.6	31.0	12.1	11.4	4.9	27.4	6.0	1.2	64.0	64.0
Green Ratio (g/C)	0.26	0.26	0.26	0.26	0.26	0.26	0.59	0.55	0.55	0.58	0.53	0.53
Capacity (c), veh/h	241	479	406	239	479	406	163	1938	863	278	990	970
Volume-to-Capacity Ratio (X)	0.577	0.469	0.864	0.915	0.463	0.439	0.829	0.612	0.183	0.145	1.034	1.055
Back of Queue (Q), ft/ln (95 th percentile)	185.7	237.5	435	351.3	234.3	196.6	97	410	97.9	20.2	1201.7	1226.6
Back of Queue (Q), veh/ln (95 th percentile)	7.3	9.3	17.0	13.7	9.2	7.7	3.8	16.0	3.8	0.8	46.9	49.1
Queue Storage Ratio (RQ) (95 th percentile)	0.62	0.00	1.45	1.41	0.00	1.97	0.19	0.00	0.49	0.08	0.00	0.00
Uniform Delay (d_1), s/veh	48.4	37.6	42.5	52.3	37.5	37.2	32.6	18.4	13.6	14.5	28.0	28.0
Incremental Delay (d_2), s/veh	2.2	0.3	16.6	35.4	0.3	0.3	4.1	1.5	0.5	0.1	37.8	44.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.6	37.8	59.1	87.8	37.7	37.5	36.7	19.9	14.1	14.6	65.8	72.5
Level of Service (LOS)	D	D	E	F	D	D	D	B	B	B	F	F
Approach Delay, s/veh / LOS	50.8		D	55.3		E	20.8		C	68.1		E
Intersection Delay, s/veh / LOS	49.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.30	B	2.09	B	2.09	B
Bicycle LOS Score / LOS	1.67	B	1.51	B	1.71	B	2.21	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hyatts Road/Shanahan...	File Name	120_US23-HyattsShanahan_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	221	218	265	162	183	179	337	1725	255	136	1286	108

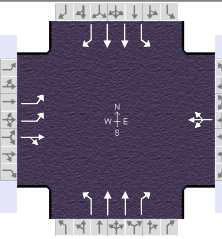
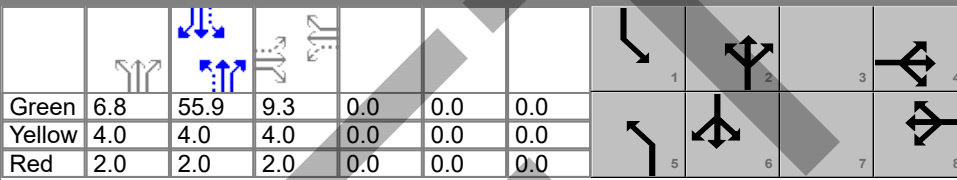
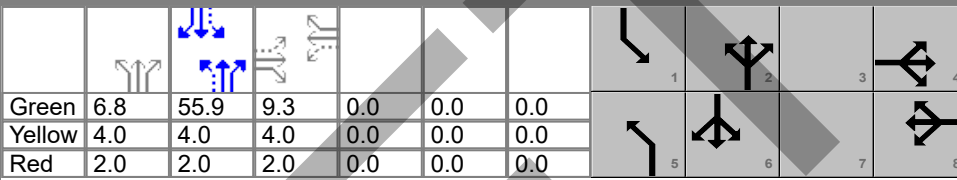
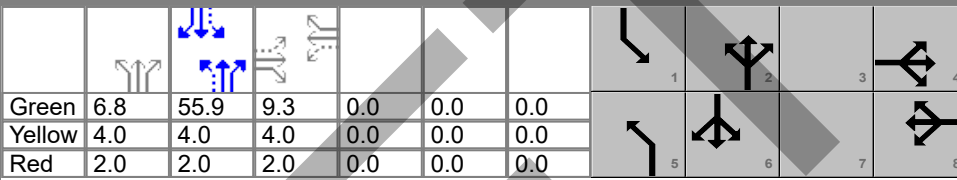
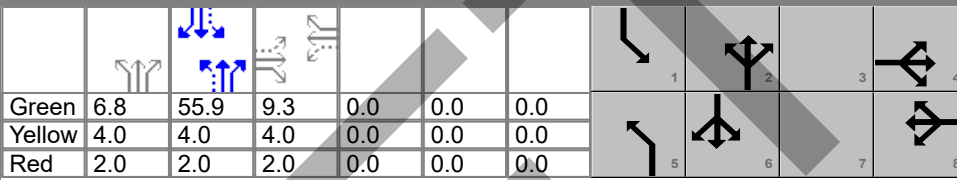
Signal Information														
Cycle, s	80.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	4.3	34.0	17.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	5	6	7	8
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s		23.0		23.0	17.0	44.3	12.7	40.0
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		19.0		19.0	13.0		5.6	
Green Extension Time (g _e), s		0.0		0.0	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	1.00		0.96	
Max Out Probability		1.00		1.00	1.00		0.02	

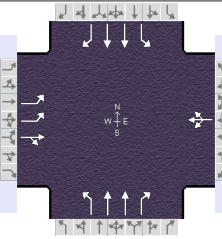
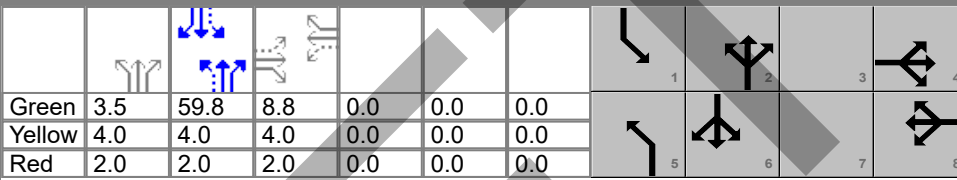
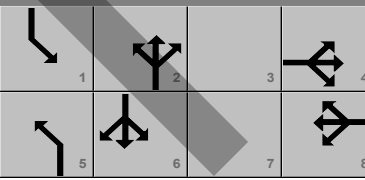
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	240	237	288	176	199	195	366	1875	277	148	765	750
Adjusted Saturation Flow Rate (s), veh/h/ln	1174	1856	1572	1134	1856	1572	1767	1766	1572	1767	1856	1805
Queue Service Time (g _s), s	9.4	9.2	14.1	7.8	7.6	8.9	11.0	38.3	8.9	3.6	32.3	32.7
Cycle Queue Clearance Time (g _c), s	17.0	9.2	14.1	17.0	7.6	8.9	11.0	38.3	8.9	3.6	32.3	32.7
Green Ratio (g/C)	0.21	0.21	0.21	0.21	0.21	0.21	0.57	0.48	0.48	0.51	0.42	0.42
Capacity (c), veh/h	228	394	334	200	394	334	338	1690	752	239	789	767
Volume-to-Capacity Ratio (X)	1.051	0.601	0.862	0.879	0.504	0.582	1.082	1.110	0.369	0.619	0.970	0.978
Back of Queue (Q), ft/ln (95 th percentile)	363.3	183.5	280	224.1	145.2	149.8	427.1	973.1	137.9	57.3	625.2	615.7
Back of Queue (Q), veh/ln (95 th percentile)	14.2	7.2	10.9	8.8	5.7	5.9	16.7	38.0	5.4	2.2	24.4	24.6
Queue Storage Ratio (RQ) (95 th percentile)	1.21	0.00	0.93	0.90	0.00	1.50	0.85	0.00	0.69	0.23	0.00	0.00
Uniform Delay (d ₁), s/veh	37.1	28.4	30.4	37.6	27.8	28.3	23.1	20.9	13.2	17.7	22.5	22.6
Incremental Delay (d ₂), s/veh	73.7	1.8	19.2	32.0	0.4	1.7	72.7	58.4	1.4	1.0	25.5	27.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	110.8	30.2	49.6	69.6	28.2	30.0	95.9	79.3	14.6	18.7	48.0	50.3
Level of Service (LOS)	F	C	D	E	C	C	F	F	B	B	D	D
Approach Delay, s/veh / LOS	62.8		E	41.6		D	74.6		E	46.4		D
Intersection Delay, s/veh / LOS	61.1						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.29	B	2.08	B	2.09	B
Bicycle LOS Score / LOS	1.75	B	1.43	A	2.57	C	1.86	B

HCS Signalized Intersection Results Summary

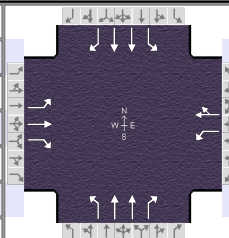
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Greif Parkway		File Name	121_US23-Greif_AM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	0	50	0	0	0	129	1303	0	0	1863	71
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	6.8	55.9	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						6.0		8.0	1.1	3.0	1.1	3.0				
Phase Duration, s						15.3		15.3	12.8	74.7	0.0	61.9				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		0.0	3.0	0.0	0.0	0.0				
Queue Clearance Time (g _s), s						4.9			4.2							
Green Extension Time (g _e), s						0.1		0.0	0.1	0.0	0.0	0.0				
Phase Call Probability						0.93			0.97							
Max Out Probability						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	54		0			140	1416	0	0	2025	77
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1572		0			1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					1.3	2.9		0.0			2.2	14.3	0.0	0.0	45.8	1.7
Cycle Queue Clearance Time (g _c), s					1.3	2.9		0.0			2.2	14.3	0.0	0.0	45.8	1.7
Green Ratio (g/C)					0.10	0.10					0.72	0.76	0.76	0.55	0.62	0.62
Capacity (c), veh/h					516	163					237	2695	1200	301	2193	1000
Volume-to-Capacity Ratio (X)					0.105	0.333		0.000			0.593	0.525	0.000	0.000	0.923	0.077
Back of Queue (Q), ft/ln (95 th percentile)					24.1	49.8		0			83.4	142.3	0	0	593.1	23.5
Back of Queue (Q), veh/ln (95 th percentile)					0.9	1.9		0.0			3.3	5.6	0.0	0.0	23.2	0.9
Queue Storage Ratio (RQ) (95 th percentile)					0.12	0.00		0.00			0.17	0.00	0.00	0.00	0.00	0.08
Uniform Delay (d ₁), s/veh					36.7	37.4					21.6	4.2	0.0	0.0	15.2	6.8
Incremental Delay (d ₂), s/veh					0.0	0.4		0.0			0.9	0.7	0.0	0.0	8.0	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					36.7	37.9					22.5	5.0	0.0	0.0	23.2	6.9
Level of Service (LOS)					D	D					C	A			C	A
Approach Delay, s/veh / LOS					37.3	D	0.0				6.5	A	22.6	C		
Intersection Delay, s/veh / LOS					16.4			B								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.45	B	2.45	B	1.61	B	2.06	B				
Bicycle LOS Score / LOS					0.67	A	0.49	A	1.77	B	2.22	B				

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Greif Parkway		File Name	121_US23-Greif_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					34	0	43	0	0	0	25	1978	0	0	1445	7
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	3.5	59.8	8.8	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						6.0		8.0	1.1	3.0	1.1	3.0				
Phase Duration, s						14.8		14.8	9.5	75.2	0.0	65.8				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		0.0	3.0	0.0	0.0	0.0				
Queue Clearance Time (g _s), s						4.5			2.4							
Green Extension Time (g _e), s						0.1		0.0	0.0	0.0	0.0	0.0				
Phase Call Probability						0.88			0.49							
Max Out Probability						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					37	47		0			27	2150	0	0	1571	8
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1572		0			1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					0.9	2.5		0.0			0.4	32.3	0.0	0.0	24.2	0.1
Cycle Queue Clearance Time (g _c), s					0.9	2.5		0.0			0.4	32.3	0.0	0.0	24.2	0.1
Green Ratio (g/C)					0.10	0.10					0.72	0.77	0.77	0.60	0.66	0.66
Capacity (c), veh/h					494	153					276	2718	1210	153	2347	1070
Volume-to-Capacity Ratio (X)					0.075	0.305		0.000			0.098	0.791	0.000	0.000	0.669	0.007
Back of Queue (Q), ft/ln (95 th percentile)					16.4	43		0			5.3	289.8	0	0	302.7	1.8
Back of Queue (Q), veh/ln (95 th percentile)					0.6	1.7		0.0			0.2	11.3	0.0	0.0	11.8	0.1
Queue Storage Ratio (RQ) (95 th percentile)					0.08	0.00		0.00			0.01	0.00	0.00	0.00	0.00	0.01
Uniform Delay (d ₁), s/veh					37.0	37.8					7.6	6.1	0.0	0.0	9.1	5.1
Incremental Delay (d ₂), s/veh					0.0	0.4		0.0			0.1	2.4	0.0	0.0	1.5	0.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					37.1	38.2					7.7	8.6	0.0	0.0	10.7	5.1
Level of Service (LOS)					D	D					A	A			B	A
Approach Delay, s/veh / LOS					37.7	D	0.0				8.6	A	10.6	B		
Intersection Delay, s/veh / LOS					10.0			B								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.45	B	2.45	B	1.61	B	2.05	B				
Bicycle LOS Score / LOS					0.63	A	0.49	A	2.28	B	1.79	B				

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Glenn Parkway		File Name	122_US23-GlennPkwy_AM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	20	40	50	476	14	180	100	992	390	208	1650	62

Signal Information				Signal Timing (s)										
Cycle, s	110.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	2.4	54.9	28.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

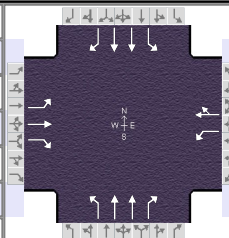
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		34.0		34.0	12.7	60.9	15.1	63.3
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		16.3		30.0	5.2		8.7	
Green Extension Time (g _e), s		1.5		0.0	0.2	0.0	0.4	0.0
Phase Call Probability		1.00		1.00	0.96		1.00	
Max Out Probability		0.04		1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	22	43	54	517	211		109	1078	424	226	1793	67
Adjusted Saturation Flow Rate (s), veh/h/ln	1161	1856	1572	1352	1590		1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	1.8	2.0	2.9	26.0	12.5		3.2	24.2	20.3	6.7	54.4	2.4
Cycle Queue Clearance Time (g _c), s	14.3	2.0	2.9	28.0	12.5		3.2	24.2	20.3	6.7	54.4	2.4
Green Ratio (g/C)	0.25	0.25	0.25	0.25	0.25		0.56	0.50	0.50	0.58	0.52	0.52
Capacity (c), veh/h	229	472	400	385	405		176	1763	785	356	1839	818
Volume-to-Capacity Ratio (X)	0.095	0.092	0.136	1.342	0.521		0.618	0.612	0.540	0.634	0.975	0.082
Back of Queue (Q), ft/ln (95 th percentile)	23.4	39.6	50.1	1114.5	212.5		61.5	373.4	303.6	112.9	828.8	38
Back of Queue (Q), veh/ln (95 th percentile)	0.9	1.5	2.0	43.5	8.3		2.4	14.6	11.9	4.4	32.4	1.5
Queue Storage Ratio (RQ) (95 th percentile)	0.23	0.00	0.50	0.00	0.00		0.15	0.00	0.51	0.38	0.00	0.08
Uniform Delay (d ₁), s/veh	41.4	31.3	31.7	44.2	35.2		25.0	19.9	18.9	15.8	25.7	13.2
Incremental Delay (d ₂), s/veh	0.1	0.0	0.1	170.6	0.6		1.3	1.6	2.7	0.7	15.9	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.5	31.3	31.7	214.8	35.8		26.3	21.5	21.6	16.5	41.6	13.4
Level of Service (LOS)	D	C	C	F	D		C	C	C	B	D	B
Approach Delay, s/veh / LOS	33.3		C	163.0		F	21.8		C	38.0		D
Intersection Delay, s/veh / LOS	52.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	1.90	B	2.09	B
Bicycle LOS Score / LOS	0.68	A	1.69	B	1.82	B	2.21	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Glenn Parkway		File Name	122_US23-GlennPkwy_PM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	7	10	41	127	0	178	24	1620	413	68	1324	31

Signal Information				Signal Timing (s)										
Cycle, s	75.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin											
Uncoordinated	No	Simult. Gap E/W	On	Green	2.9	2.6	39.7	11.8	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

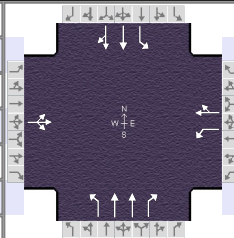
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		17.8		17.8	8.9	45.7	11.5	48.3
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		11.3		10.9	2.5		3.3	
Green Extension Time (g _e), s		0.4		0.5	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.42		0.79	
Max Out Probability		0.18		0.13	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	8	11	45	138	193		26	1761	449	74	1439	34
Adjusted Saturation Flow Rate (s), veh/h/ln	1180	1856	1572	1393	1572		1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	0.5	0.4	1.8	7.0	8.9		0.5	35.1	14.1	1.3	22.5	0.7
Cycle Queue Clearance Time (g _c), s	9.3	0.4	1.8	7.4	8.9		0.5	35.1	14.1	1.3	22.5	0.7
Green Ratio (g/C)	0.16	0.16	0.16	0.16	0.16		0.57	0.53	0.53	0.60	0.56	0.56
Capacity (c), veh/h	142	292	247	308	247		252	1870	832	242	1991	886
Volume-to-Capacity Ratio (X)	0.054	0.037	0.180	0.448	0.782		0.103	0.941	0.539	0.305	0.723	0.038
Back of Queue (Q), ft/ln (95 th percentile)	5.9	7.1	30	101	155		6.8	509.2	203.6	26.4	302.2	9.7
Back of Queue (Q), veh/ln (95 th percentile)	0.2	0.3	1.2	3.9	6.1		0.3	19.9	8.0	1.0	11.8	0.4
Queue Storage Ratio (RQ) (95 th percentile)	0.06	0.00	0.30	0.00	0.00		0.02	0.00	0.34	0.09	0.00	0.02
Uniform Delay (d ₁), s/veh	34.8	26.8	27.4	29.9	30.4		10.5	16.6	11.6	16.2	12.1	7.3
Incremental Delay (d ₂), s/veh	0.1	0.0	0.1	0.4	4.0		0.1	10.9	2.5	0.3	2.3	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	34.9	26.8	27.5	30.3	34.4		10.6	27.5	14.1	16.4	14.4	7.4
Level of Service (LOS)	C	C	C	C	C		B	C	B	B	B	A
Approach Delay, s/veh / LOS	28.3		C	32.7		C	24.6		C	14.3		B
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.44	B	1.88	B	2.07	B
Bicycle LOS Score / LOS	0.59	A	1.03	A	2.33	B	1.76	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	CBD		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	OhioHealth Blvd	File Name	123_US23-OhioHealth_AM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	3	11	6	48	3	6	13	1100	18	238	1806	11

Signal Information				Phase Diagram								
Cycle, s	70.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	1.7	5.3	36.9	8.0	0.0	0.0						
Yellow	4.0	0.0	4.0	4.0	0.0	0.0						
Red	2.0	0.0	2.0	2.0	0.0	0.0						

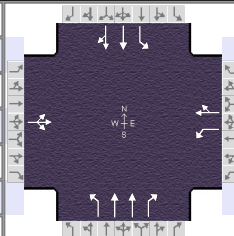
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		8.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		14.0		14.0	7.7	42.9	13.0	48.3
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		2.9		5.6	2.3		6.8	
Green Extension Time (g_e), s		0.1		0.0	0.0	0.0	0.3	0.0
Phase Call Probability		0.80		0.80	0.24		0.99	
Max Out Probability		0.00		0.20	0.00		0.02	

Movement Group Results	EB			WB			NB			SB		
	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	22			52	10		14	1196	20	259	988	988
Adjusted Saturation Flow Rate (s), veh/h/ln	1557			1245	1491		1590	1590	1415	1590	1670	1666
Queue Service Time (g_s), s	0.0			2.7	0.4		0.3	19.9	0.5	4.8	40.1	40.3
Cycle Queue Clearance Time (g_c), s	0.9			3.6	0.4		0.3	19.9	0.5	4.8	40.1	40.3
Green Ratio (g/C)	0.11			0.11	0.11		0.55	0.53	0.53	0.65	0.60	0.60
Capacity (c), veh/h	238			230	171		141	1678	747	364	1009	1007
Volume-to-Capacity Ratio (X)	0.091			0.226	0.057		0.100	0.713	0.026	0.711	0.979	0.981
Back of Queue (Q), ft/ln (95 th percentile)	14			35.4	6.3		4.6	256.6	5.8	78	598.5	589.6
Back of Queue (Q), veh/ln (95 th percentile)	0.5			1.4	0.2		0.2	10.0	0.2	3.0	23.4	23.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00		0.01	0.00	0.02	0.13	0.00	0.00
Uniform Delay (d_1), s/veh	27.8			29.4	27.6		16.8	12.5	7.9	12.3	13.4	13.5
Incremental Delay (d_2), s/veh	0.1			0.2	0.1		0.1	2.6	0.1	1.0	23.7	24.2
Initial Queue Delay (d_3), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	27.9			29.6	27.7		17.0	15.1	8.0	13.3	37.1	37.6
Level of Service (LOS)	C			C	C		B	B	A	B	D	D
Approach Delay, s/veh / LOS	27.9	C		29.3	C		15.0	B		34.6	C	
Intersection Delay, s/veh / LOS	27.7 C											

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.29	B	1.88	B	1.64	B
Bicycle LOS Score / LOS	0.52	A	0.59	A	1.50	B	2.33	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	CBD		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	OhioHealth Blvd	File Name	123_US23-OhioHealth_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	4	0	3	31	0	22	1	1671	12	24	1366	1

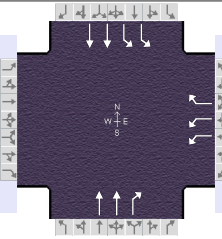
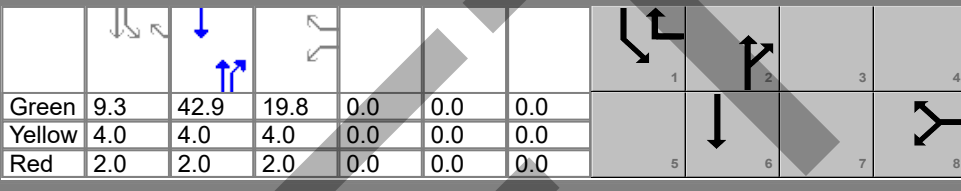
Signal Information														
Cycle, s	65.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	0.1	2.5	37.5	6.9	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		8.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		12.9		12.9	6.1	43.5	8.6	45.9
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.3		3.9	2.0		2.4	
Green Extension Time (g _e), s		0.0		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.69		0.69	0.02		0.38	
Max Out Probability		0.00		0.01	0.00		0.00	

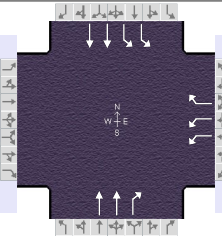
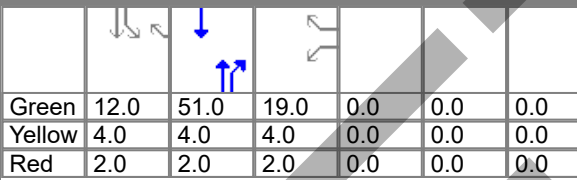
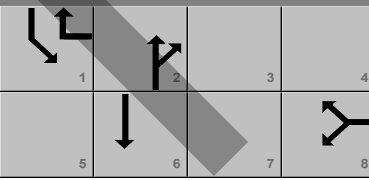
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	8			34	24		1	1816	13	26	743	743
Adjusted Saturation Flow Rate (s), veh/h/ln	1358			1262	1415		1590	1590	1415	1590	1670	1670
Queue Service Time (g _s), s	0.0			1.6	1.0		0.0	36.7	0.3	0.4	20.1	20.1
Cycle Queue Clearance Time (g _c), s	0.3			1.9	1.0		0.0	36.7	0.3	0.4	20.1	20.1
Green Ratio (g/C)	0.11			0.11	0.11		0.58	0.58	0.58	0.62	0.61	0.61
Capacity (c), veh/h	232			240	151		201	1832	815	178	1026	1026
Volume-to-Capacity Ratio (X)	0.033			0.141	0.159		0.005	0.991	0.016	0.147	0.724	0.724
Back of Queue (Q), ft/ln (95 th percentile)	4.5			20.5	14.4		0.2	501	2.9	8.6	249.8	244.6
Back of Queue (Q), veh/ln (95 th percentile)	0.2			0.8	0.6		0.0	19.6	0.1	0.3	9.8	9.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00	0.00		0.00	0.00	0.01	0.01	0.00	0.00
Uniform Delay (d ₁), s/veh	26.1			26.9	26.4		8.8	13.6	5.9	15.6	8.7	8.7
Incremental Delay (d ₂), s/veh	0.0			0.1	0.2		0.0	19.1	0.0	0.1	4.4	4.4
Initial Queue Delay (d ₃), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	26.1			27.0	26.6		8.8	32.7	5.9	15.7	13.1	13.1
Level of Service (LOS)	C			C	C		A	C	A	B	B	B
Approach Delay, s/veh / LOS	26.1	C		26.8	C		32.5	C		13.2	B	
Intersection Delay, s/veh / LOS				23.8						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.44	B	2.29	B	1.87	B	1.64	B
Bicycle LOS Score / LOS	0.50	A	0.58	A	2.00	B	1.73	B

HCS Signalized Intersection Results Summary

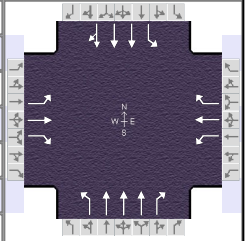
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Cheshire Road		File Name	124_US23-Cheshire_AM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB		WB		NB		SB					
Approach Movement					L	T	R	L	T	R	L	T	R			
Demand (v), veh/h								342		307	1087	123	246	1723		
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	9.3	42.9	19.8	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	2.0	4.0				
Phase Duration, s								25.8		48.9	15.3	64.2				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								18.4			8.8					
Green Extension Time (g _e), s								1.4		0.0	0.5	0.0				
Phase Call Probability								1.00			1.00					
Max Out Probability								0.01			0.00					
Movement Group Results					EB		WB		NB		SB					
Approach Movement					L	T	R	L	T	R	L	T	R			
Assigned Movement								3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h								372		334	1182	134	267	1873		
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572	1766	1572	1716	1766		
Queue Service Time (g _s), s								8.5		16.4	23.7	4.4	6.8	35.9		
Cycle Queue Clearance Time (g _c), s								8.5		16.4	23.7	4.4	6.8	35.9		
Green Ratio (g/C)								0.22		0.32	0.48	0.48	0.10	0.65		
Capacity (c), veh/h								755		508	1684	750	354	2284		
Volume-to-Capacity Ratio (X)								0.492		0.656	0.701	0.178	0.755	0.820		
Back of Queue (Q), ft/ln (95 th percentile)								153.9		247.2	357.3	68.8	128.8	441.6		
Back of Queue (Q), veh/ln (95 th percentile)								6.0		9.7	14.0	2.7	5.0	17.3		
Queue Storage Ratio (RQ) (95 th percentile)								1.54		0.00	0.00	0.28	0.43	0.00		
Uniform Delay (d ₁), s/veh								30.7		26.2	18.5	13.5	39.3	12.0		
Incremental Delay (d ₂), s/veh								0.2		0.5	2.5	0.5	1.2	3.4		
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								30.9		26.7	21.0	14.0	40.5	15.4		
Level of Service (LOS)								C		C	C	B	D	B		
Approach Delay, s/veh / LOS					0.0			28.9		C	20.3		C	18.5		B
Intersection Delay, s/veh / LOS								20.8								C
Multimodal Results					EB		WB		NB		SB					
Pedestrian LOS Score / LOS					2.31		B	2.46		B	2.26		B	0.67		A
Bicycle LOS Score / LOS										F	1.57		B	2.25		B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Cheshire Road		File Name	124_US23-Cheshire_PM.xus												
Project Description	No Build Design Year (2030)															
Demand Information					EB		WB		NB		SB					
Approach Movement					L	T	R	L	T	R	L	T	R			
Demand (v), veh/h								315		348	1453	361	399	1146		
Signal Information																
Cycle, s	100.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	12.0	51.0	19.0	0.0	0.0	0.0					
					Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
					Red	2.0	2.0	2.0	0.0	0.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	2.0	4.0				
Phase Duration, s								25.0		57.0	18.0	75.0				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.2		0.0	3.0	0.0				
Queue Clearance Time (g _s), s								21.0			14.0					
Green Extension Time (g _e), s								0.0		0.0	0.0	0.0				
Phase Call Probability								1.00			1.00					
Max Out Probability								1.00			1.00					
Movement Group Results					EB		WB		NB		SB					
Approach Movement					L	T	R	L	T	R	L	T	R			
Assigned Movement								3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h								342		378	1579	392	434	1246		
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572	1766	1572	1716	1766		
Queue Service Time (g _s), s								9.0		19.0	39.6	16.3	12.0	16.9		
Cycle Queue Clearance Time (g _c), s								9.0		19.0	39.6	16.3	12.0	16.9		
Green Ratio (g/C)								0.19		0.31	0.51	0.51	0.12	0.69		
Capacity (c), veh/h								652		487	1802	802	412	2438		
Volume-to-Capacity Ratio (X)								0.525		0.776	0.877	0.489	1.053	0.511		
Back of Queue (Q), ft/ln (95 th percentile)								167.5		347.4	575.6	247.1	339.1	226.1		
Back of Queue (Q), veh/ln (95 th percentile)								6.5		13.6	22.5	9.7	13.2	8.8		
Queue Storage Ratio (RQ) (95 th percentile)								1.67		0.00	0.00	0.99	1.13	0.00		
Uniform Delay (d ₁), s/veh								36.4		31.3	21.7	16.0	44.0	7.4		
Incremental Delay (d ₂), s/veh								0.4		7.0	6.4	2.1	59.0	0.8		
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								36.8		38.4	28.1	18.1	103.0	8.2		
Level of Service (LOS)								D		D	C	B	F	A		
Approach Delay, s/veh / LOS					0.0			37.6		D	26.1		C	32.7		
Intersection Delay, s/veh / LOS								30.5						C		
Multimodal Results					EB		WB		NB		SB					
Pedestrian LOS Score / LOS					2.31		B	2.47		B	2.26		B	0.66		A
Bicycle LOS Score / LOS										F	2.11		B	1.87		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Hyatts Road/Shanahan...	File Name	D120_US23-HyattsShanahan_AM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	128	207	323	201	204	164	124	1092	145	37	1778	106

Signal Information				Signal Timing (s)										
Cycle, s	115.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.1	5.6	50.7	35.6	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

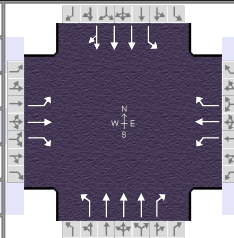
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	2.0	3.0	2.0	4.0
Phase Duration, s		41.6		41.6	16.7	62.3	11.1	56.7
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		25.2		34.2	10.6		4.6	
Green Extension Time (g _e), s		2.6		1.4	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.99		0.72	
Max Out Probability		0.10		0.87	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	139	225	351	218	222	178	135	1187	158	40	1377	671
Adjusted Saturation Flow Rate (s), veh/h/ln	1150	1856	1572	1147	1856	1572	1767	1658	1572	1767	1826	1771
Queue Service Time (g _s), s	12.4	11.0	19.8	21.3	10.8	9.5	8.6	18.4	6.5	2.6	38.9	39.2
Cycle Queue Clearance Time (g _c), s	23.2	11.0	19.8	32.2	10.8	9.5	8.6	18.4	6.5	2.6	38.9	39.2
Green Ratio (g/C)	0.31	0.31	0.40	0.31	0.31	0.35	0.09	0.49	0.49	0.04	0.44	0.44
Capacity (c), veh/h	311	575	633	309	575	556	164	2436	770	78	1611	781
Volume-to-Capacity Ratio (X)	0.447	0.392	0.555	0.708	0.386	0.320	0.823	0.487	0.205	0.517	0.855	0.859
Back of Queue (Q), ft/ln (95 th percentile)	158	213.1	293.5	264.6	210.5	159.1	179.1	287.1	108.8	53.1	622.2	624.5
Back of Queue (Q), veh/ln (95 th percentile)	6.2	8.3	11.5	10.3	8.2	6.2	7.0	11.0	4.3	2.1	23.9	25.0
Queue Storage Ratio (RQ) (95 th percentile)	0.53	0.00	0.98	1.06	0.00	1.59	0.36	0.00	0.54	0.21	0.00	0.00
Uniform Delay (d ₁), s/veh	40.2	31.2	26.4	43.8	31.1	27.1	51.2	19.7	16.6	53.8	28.8	28.9
Incremental Delay (d ₂), s/veh	0.4	0.2	0.5	5.0	0.2	0.1	3.9	0.7	0.6	2.0	6.0	11.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.6	31.3	26.9	48.9	31.3	27.2	55.1	20.4	17.2	55.7	34.9	40.7
Level of Service (LOS)	D	C	C	D	C	C	E	C	B	E	C	D
Approach Delay, s/veh / LOS	31.0		C	36.3		D	23.2		C	37.1		D
Intersection Delay, s/veh / LOS			31.9						C			

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.72	C	2.58	C
Bicycle LOS Score / LOS	1.67	B	1.51	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Hyatts Road/Shanahan...	File Name	D120_US23-HyattsShanahan_PM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	221	218	265	162	183	179	337	1725	255	136	1278	108

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.1	1.9	38.0	29.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0			
				Red	2.0	2.0	2.0	2.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s		35.0		35.0	21.0	51.9	13.1	44.0
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		31.0		27.4	15.6		7.0	
Green Extension Time (g _e), s		0.0		0.7	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		0.98	
Max Out Probability		1.00		1.00	1.00		0.00	

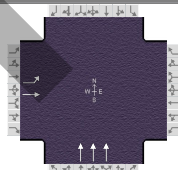
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	240	237	288	176	199	195	366	1875	277	148	1018	488
Adjusted Saturation Flow Rate (s), veh/h/ln	1174	1856	1572	1134	1856	1572	1767	1658	1572	1767	1826	1750
Queue Service Time (g _s), s	20.5	10.4	12.6	15.0	8.5	9.0	13.6	32.7	11.6	5.0	24.0	24.0
Cycle Queue Clearance Time (g _c), s	29.0	10.4	12.6	25.4	8.5	9.0	13.6	32.7	11.6	5.0	24.0	24.0
Green Ratio (g/C)	0.29	0.29	0.44	0.29	0.29	0.36	0.55	0.46	0.46	0.45	0.38	0.38
Capacity (c), veh/h	312	538	692	283	538	567	385	2285	723	224	1388	665
Volume-to-Capacity Ratio (X)	0.769	0.440	0.416	0.622	0.370	0.343	0.950	0.820	0.384	0.661	0.734	0.734
Back of Queue (Q), ft/ln (95 th percentile)	272.4	201.5	195.5	194.2	166.6	146.3	310.9	466.3	191.7	90.2	405.2	396.5
Back of Queue (Q), veh/ln (95 th percentile)	10.6	7.9	7.6	7.6	6.5	5.7	12.1	17.9	7.5	3.5	15.6	15.9
Queue Storage Ratio (RQ) (95 th percentile)	0.91	0.00	0.65	0.78	0.00	1.46	0.62	0.00	0.96	0.36	0.00	0.00
Uniform Delay (d ₁), s/veh	39.8	28.9	19.2	39.2	28.2	23.3	24.0	23.4	17.7	22.7	26.7	26.7
Incremental Delay (d ₂), s/veh	10.0	0.2	0.1	3.1	0.2	0.1	32.9	3.5	1.5	1.2	3.5	7.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.8	29.1	19.3	42.3	28.4	23.5	56.8	26.9	19.3	23.9	30.1	33.7
Level of Service (LOS)	D	C	B	D	C	C	E	C	B	C	C	C
Approach Delay, s/veh / LOS	31.9	C		31.0	C		30.4	C		30.6	C	
Intersection Delay, s/veh / LOS			30.8						C			

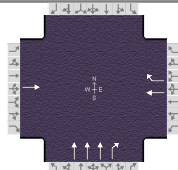
Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.71	C	2.58	C
Bicycle LOS Score / LOS	1.75	B	1.43	A

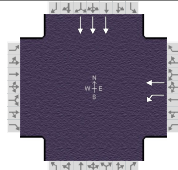
HCS Alternative Intersections Results Summary

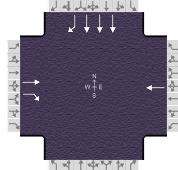
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 16, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Greif Parkway	PHF	0.92	Arterial Direction	North-South		
File Name	D121_US23-Greif_AM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	60	0						1524				
Intersection Two Demand (v), veh/h		50			0	110		1395	60			
Intersection Three Demand (v), veh/h				60	0						2026	
Intersection Four Demand (v), veh/h		0	110		129						1955	81

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	70.0	8.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	77												
Uncoordinated	No	Green	68.1	9.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

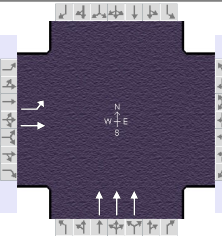
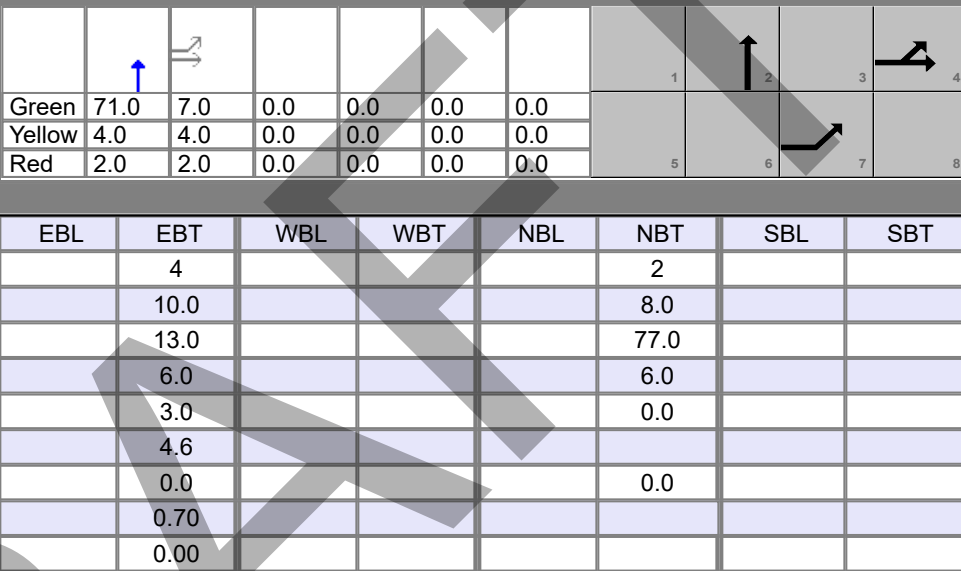
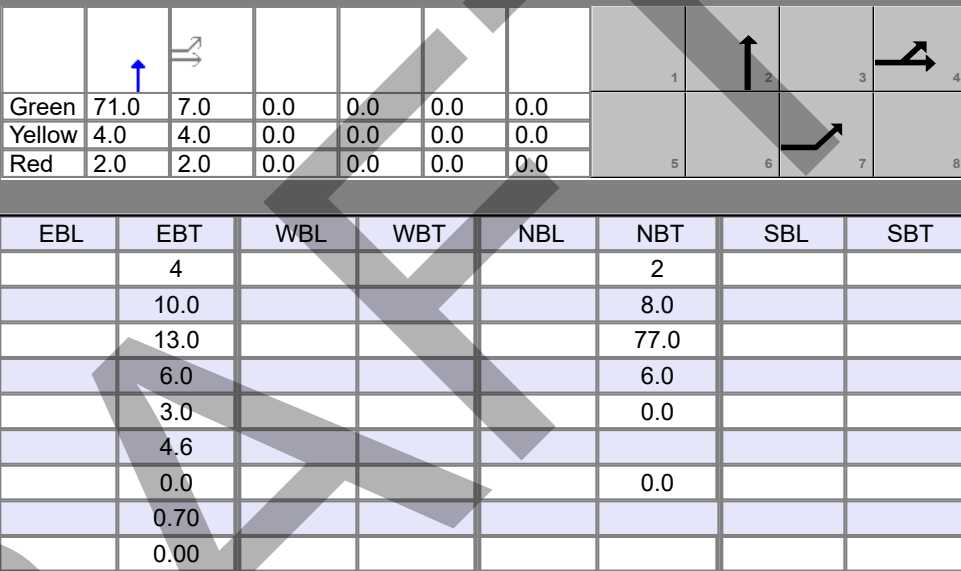
Signal Three Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	8.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	57												
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	54	85.7	30.2	115.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	83.7	30.2	113.9	F
EBR	EBR(4)	54	40.3	--	40.3	D
WBL	WBR(2) + NBU(3) + SBT(4)	54	87.3	30.2	117.5	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	84.0	30.2	114.2	F
WBR	WBR(2)	54	40.5	--	40.5	D
NBL	NBT(1) + NBL(2)	140	43.7	--	43.7	D
NBT	NBT(1) + NBT(2)	1651	9.4	--	9.4	A
NBR	NBT(1) + NBR(2)	71	7.4	--	7.4	A
SBL	SBT(3) + SBL(4)	54	41.8	--	41.8	D
SBT	SBT(3) + SBT(4)	2177	11.8	--	11.8	B
SBR	SBT(3) + SBR(4)	90	8.5	--	8.5	A

Overall Results		
Intersection ETT, s/veh LOS	16.4	B

HCS Signalized Intersection Results Summary

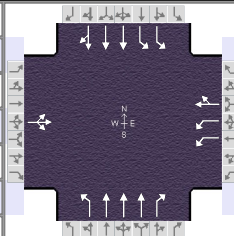
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection		File Name	D121_US23-Greif_PM_NB.xus													
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					44	0					2081					
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4				2						
Case Number						10.0				8.0						
Phase Duration, s						13.0				77.0						
Change Period, (Y+R _c), s						6.0				6.0						
Max Allow Headway (MAH), s						3.0				0.0						
Queue Clearance Time (g _s), s						4.6										
Green Extension Time (g _e), s						0.0				0.0						
Phase Call Probability						0.70										
Max Out Probability						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					2					
Adjusted Flow Rate (v), veh/h					48	0					2262					
Adjusted Saturation Flow Rate (s), veh/h/ln					1577	1856					1618					
Queue Service Time (g _s), s					2.6	0.0					16.6					
Cycle Queue Clearance Time (g _c), s					2.6	0.0					16.6					
Green Ratio (g/C)					0.08	0.08					0.79					
Capacity (c), veh/h					122	144					3829					
Volume-to-Capacity Ratio (X)					0.391	0.000					0.591					
Back of Queue (Q), ft/ln (95 th percentile)					45.4	0					126.8					
Back of Queue (Q), veh/ln (95 th percentile)					1.8	0.0					4.8					
Queue Storage Ratio (RQ) (95 th percentile)					0.23	0.00					0.00					
Uniform Delay (d ₁), s/veh					39.5	0.0					3.7					
Incremental Delay (d ₂), s/veh					0.8	0.0					0.7					
Initial Queue Delay (d ₃), s/veh					0.0	0.0					0.0					
Control Delay (d), s/veh					40.2	0.0					4.4					
Level of Service (LOS)					D						A					
Approach Delay, s/veh / LOS					40.2	D	0.0				4.4	A	0.0			
Intersection Delay, s/veh / LOS					5.2					A						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					1.95	B	1.95	B	1.31	A	1.72	B				
Bicycle LOS Score / LOS					0.57	A			1.73	B						

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00										
Intersection	Glenn Parkway		File Name	D122_US23-GlennPkwy_AM.xus													
Project Description	Concept D Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h								490		180	1009	440	208	1702			
Signal Information																	
Cycle, s	100.0	Reference Phase	2														
Offset, s	0	Reference Point	Begin														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	14.8	48.6	18.6	0.0	0.0	0.0						
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0									
		Red	2.0	2.0	2.0	0.0	0.0	0.0									
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase								8		2	1	6					
Case Number								9.0		7.3	2.0	4.0					
Phase Duration, s								24.6		54.6	20.8	75.4					
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0					
Max Allow Headway (MAH), s								3.1		0.0	3.0	0.0					
Queue Clearance Time (g _s), s								17.0			14.5						
Green Extension Time (g _e), s								1.7		0.0	0.4	0.0					
Phase Call Probability								1.00			1.00						
Max Out Probability								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								3		18	2	12	1	6			
Adjusted Flow Rate (v), veh/h								533		196	1097	478	226	1850			
Adjusted Saturation Flow Rate (s), veh/h/ln								1716		1572	1618	1572	1767	1618			
Queue Service Time (g _s), s								15.0		9.5	15.0	14.4	12.5	18.9			
Cycle Queue Clearance Time (g _c), s								15.0		9.5	15.0	14.4	12.5	18.9			
Green Ratio (g/C)								0.19		0.33	0.49	0.67	0.15	0.69			
Capacity (c), veh/h								639		526	2356	1056	262	3367			
Volume-to-Capacity Ratio (X)								0.834		0.372	0.465	0.453	0.863	0.549			
Back of Queue (Q), ft/ln (95 th percentile)								260.1		154.7	238.2	194.6	237.4	235.5			
Back of Queue (Q), veh/ln (95 th percentile)								10.2		6.0	9.0	7.6	9.3	8.9			
Queue Storage Ratio (RQ) (95 th percentile)								0.00		0.62	0.00	0.32	0.79	0.00			
Uniform Delay (d ₁), s/veh								39.2		25.3	17.1	7.7	41.6	7.6			
Incremental Delay (d ₂), s/veh								1.1		0.2	0.7	1.4	3.3	0.6			
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh								40.3		25.5	17.8	9.1	44.9	8.2			
Level of Service (LOS)								D		C	B	A	D	A			
Approach Delay, s/veh / LOS					0.0			36.3		D	15.1	B	12.2	B			
Intersection Delay, s/veh / LOS								17.3				B					
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.61	C		2.61	C		2.09	B		0.66	A		
Bicycle LOS Score / LOS									F		1.35	A		1.63	B		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cheshire Road	File Name	D124_US23-Cheshire_AM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	2	2	2	342	2	307	2	1087	123	246	1723	2

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	2.9	34.3	1.5	20.9	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0			
				Red	2.0	2.0	2.0	2.0	2.0	0.0			

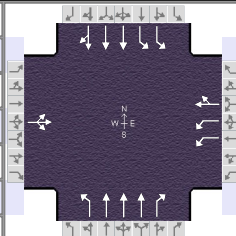
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		12.0		10.0	2.0	3.0	2.0	4.0
Phase Duration, s		7.5		26.9	6.4	40.3	15.3	49.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.3		20.7	2.1		8.8	
Green Extension Time (g _e), s		0.0		0.2	0.0	0.0	0.5	0.0
Phase Call Probability		0.15		1.00	0.05		1.00	
Max Out Probability		0.00		1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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			372	336		2	1182	134	267	1250	625
Adjusted Saturation Flow Rate (s), veh/h/ln	1723			1716	1574		1767	1685	1572	1716	1856	1854
Queue Service Time (g _s), s	0.3			8.4	18.7		0.1	17.0	5.2	6.8	23.8	23.8
Cycle Queue Clearance Time (g _c), s	0.3			8.4	18.7		0.1	17.0	5.2	6.8	23.8	23.8
Green Ratio (g/C)	0.02			0.23	0.23		0.00	0.38	0.38	0.10	0.48	0.48
Capacity (c), veh/h	29			798	366		7	1926	599	354	1781	890
Volume-to-Capacity Ratio (X)	0.226			0.466	0.918		0.298	0.613	0.223	0.756	0.702	0.702
Back of Queue (Q), ft/ln (95 th percentile)	6.9			150.9	366.4		2.9	270	86.7	128.8	371	380.4
Back of Queue (Q), veh/ln (95 th percentile)	0.3			5.9	14.3		0.1	10.5	3.4	5.0	14.5	15.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00			1.51	0.00		0.01	0.00	0.35	0.43	0.00	0.00
Uniform Delay (d ₁), s/veh	43.7			29.7	33.7		44.7	22.5	18.8	39.3	18.3	18.3
Incremental Delay (d ₂), s/veh	1.5			0.2	26.0		8.2	1.5	0.9	1.2	2.3	4.6
Initial Queue Delay (d ₃), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	45.1			29.9	59.7		52.9	24.0	19.7	40.5	20.7	23.0
Level of Service (LOS)	D			C	E		D	C	B	D	C	C
Approach Delay, s/veh / LOS	45.1		D	44.0		D	23.6		C	23.8		C
Intersection Delay, s/veh / LOS	27.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.74	C	2.27	B	1.67	B
Bicycle LOS Score / LOS	0.50	A	1.66	B	1.21	A	1.67	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 17, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cheshire Road	File Name	D124_US23-Cheshire_PM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	2	2	2	315	2	348	2	1453	361	399	1146	2

Signal Information													
Cycle, s	110.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.4	9.8	40.0	1.1	28.8	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0			
				Red	2.0	2.0	2.0	2.0	2.0	0.0			

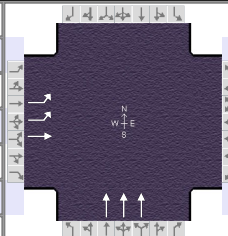
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		12.0		10.0	2.0	3.0	2.0	4.0
Phase Duration, s		7.1		34.8	6.4	46.0	22.1	61.7
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.4		27.9	2.1		15.6	
Green Extension Time (g _e), s		0.0		0.9	0.0	0.0	0.6	0.0
Phase Call Probability		0.18		1.00	0.06		1.00	
Max Out Probability		0.00		0.41	0.00		0.14	

Movement Group Results	EB			WB			NB			SB		
	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			342	380		2	1579	392	434	832	416
Adjusted Saturation Flow Rate (s), veh/h/ln	1723			1716	1574		1767	1685	1572	1716	1856	1854
Queue Service Time (g _s), s	0.4			9.0	25.9		0.1	31.8	23.3	13.6	15.7	15.7
Cycle Queue Clearance Time (g _c), s	0.4			9.0	25.9		0.1	31.8	23.3	13.6	15.7	15.7
Green Ratio (g/C)	0.01			0.26	0.26		0.00	0.36	0.36	0.15	0.51	0.51
Capacity (c), veh/h	17			899	412		6	1837	571	504	1880	939
Volume-to-Capacity Ratio (X)	0.384			0.381	0.923		0.350	0.860	0.687	0.861	0.443	0.443
Back of Queue (Q), ft/ln (95 th percentile)	9.2			166.7	450.8		3.7	488	368.2	259.8	268.6	269
Back of Queue (Q), veh/ln (95 th percentile)	0.4			6.5	17.6		0.1	19.1	14.4	10.1	10.5	10.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00			1.67	0.00		0.01	0.00	1.47	0.87	0.00	0.00
Uniform Delay (d ₁), s/veh	54.1			33.3	39.5		54.7	32.4	29.7	45.8	17.3	17.3
Incremental Delay (d ₂), s/veh	5.2			0.1	21.1		12.0	5.5	6.6	7.4	0.8	1.5
Initial Queue Delay (d ₃), s/veh	0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	59.3			33.4	60.6		66.7	38.0	36.3	53.2	18.0	18.8
Level of Service (LOS)	E			C	E		E	D	D	D	B	B
Approach Delay, s/veh / LOS	59.3	E		47.7	D		37.7	D		27.3	C	
Intersection Delay, s/veh / LOS				35.4						D		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.74	C	2.28	B	1.68	B
Bicycle LOS Score / LOS	0.50	A	1.68	B	1.57	B	1.41	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection		File Name	C120_US23-HyattsShanahan_AM_NB.xus				
Project Description	Concept C Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	335	0						1468				

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	64.6	13.4	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		
Case Number		10.0				8.0		
Phase Duration, s		19.4				70.6		
Change Period, ($Y+R_c$), s		6.0				6.0		
Max Allow Headway (MAH), s		3.0				0.0		
Queue Clearance Time (g_s), s		12.3						
Green Extension Time (g_e), s		0.8				0.0		
Phase Call Probability		1.00						
Max Out Probability		0.00						

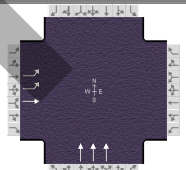
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4						2				
Adjusted Flow Rate (v), veh/h	364	0						1596				
Adjusted Saturation Flow Rate (s), veh/h/ln	1531	1856						1618				
Queue Service Time (g_s), s	10.3	0.0						12.6				
Cycle Queue Clearance Time (g_c), s	10.3	0.0						12.6				
Green Ratio (g/C)	0.15	0.15						0.72				
Capacity (c), veh/h	466	282						3467				
Volume-to-Capacity Ratio (X)	0.781	0.000						0.460				
Back of Queue (Q), ft/ln (95 th percentile)	171.3	0						141.9				
Back of Queue (Q), veh/ln (95 th percentile)	6.7	0.0						5.3				
Queue Storage Ratio (RQ) (95 th percentile)	0.57	0.00						0.00				
Uniform Delay (d_1), s/veh	36.7	0.0						5.5				
Incremental Delay (d_2), s/veh	1.1	0.0						0.4				
Initial Queue Delay (d_3), s/veh	0.0	0.0						0.0				
Control Delay (d), s/veh	37.8	0.0						5.9				
Level of Service (LOS)	D						A					
Approach Delay, s/veh / LOS	37.8		D	0.0			5.9		A	0.0		
Intersection Delay, s/veh / LOS	11.8						B					

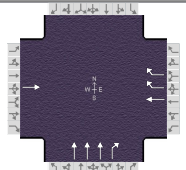
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	1.95	B	1.33	A	1.95	B
Bicycle LOS Score / LOS	1.09	A			1.37	A		

HCS Alternative Intersections Results Summary

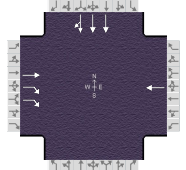
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hyatts Road/Shanahan Ro	PHF	0.92	Arterial Direction	North-South		
File Name	C120_US23-HyattsShanahan_PM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	439	0						2501				
Intersection Two Demand (v), veh/h		136			0	524		2130	473			
Intersection Three Demand (v), veh/h				345	0						1665	
Intersection Four Demand (v), veh/h		0	704		337						1583	291

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	61.1	16.9	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	56.5	21.5	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	4										
Uncoordinated	No	Green	13.7	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	69										
Uncoordinated	No	Green	28.3	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

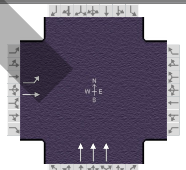
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	240	81.1	30.2	111.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	237	75.8	30.2	106.0	F
EBR	EBR(4)	288	30.3	--	30.3	C
WBL	WBR(2) + NBU(3) + SBT(4)	176	90.4	30.2	120.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	199	95.1	30.2	125.3	F
WBR	WBR(2)	195	34.1	--	34.1	F
NBL	NBT(1) + NBL(2)	366	40.2	--	40.2	D
NBT	NBT(1) + NBT(2)	2615	28.5	--	28.5	C
NBR	NBT(1) + NBR(2)	581	23.1	--	23.1	C
SBL	SBT(3) + SBL(4)	148	35.1	--	35.1	D
SBT	SBT(3) + SBT(4)	1487	25.2	--	25.2	C
SBR	SBT(3) + SBR(4)	698	29.9	--	29.9	C

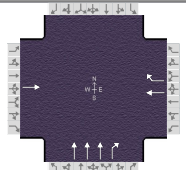
Overall Results		
Intersection ETT, s/veh LOS	41.1	D

HCS Alternative Intersections Results Summary

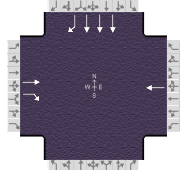
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Cheshire Road	PHF	0.92	Arterial Direction	North-South		
File Name	C124_US23-Cheshire_AM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						1228				
Intersection Two Demand (v), veh/h		246			0	659		1105	133			
Intersection Three Demand (v), veh/h				352	0						2265	
Intersection Four Demand (v), veh/h		0	30		10						2351	20

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	86												
Uncoordinated	No	Green	34.7	43.3	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	10												
Uncoordinated	No	Green	24.2	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

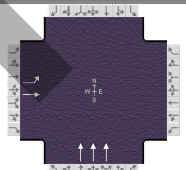
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	103.3	30.2	133.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	99.1	30.2	129.3	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	372	66.1	30.2	96.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	61.6	30.2	91.8	F
WBR	WBR(2)	334	25.2	--	25.2	C
NBL	NBT(1) + NBL(2)	11	41.2	--	41.2	D
NBT	NBT(1) + NBT(2)	1211	23.3	--	23.3	C
NBR	NBT(1) + NBR(2)	146	19.1	--	19.1	B
SBL	SBT(3) + SBL(4)	267	33.2	--	33.2	C
SBT	SBT(3) + SBT(4)	2821	26.6	--	26.6	C
SBR	SBT(3) + SBR(4)	24	22.1	--	22.1	C

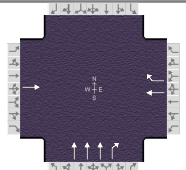
Overall Results		
Intersection ETT, s/veh LOS	32.2	C

HCS Alternative Intersections Results Summary

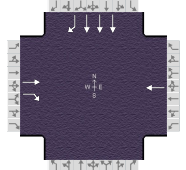
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Cheshire Road	PHF	0.92	Arterial Direction	North-South		
File Name	C124_US23-Cheshire_PM_NB.xus						
Project Description	Concept C Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						1833				
Intersection Two Demand (v), veh/h		399			0	673		1472	371			
Intersection Three Demand (v), veh/h				325	0						1819	
Intersection Four Demand (v), veh/h		0	30		10						1725	20

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	34.1	43.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	22.5	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

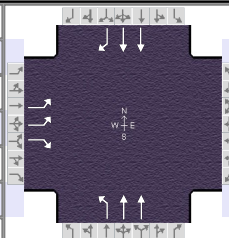
Signal Four Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	110.3	30.2	140.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	107.7	30.2	137.9	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	342	65.3	30.2	95.5	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	62.7	30.2	92.9	F
WBR	WBR(2)	378	25.5	--	25.5	C
NBL	NBT(1) + NBL(2)	11	41.9	--	41.9	D
NBT	NBT(1) + NBT(2)	1609	31.0	--	31.0	C
NBR	NBT(1) + NBR(2)	405	28.4	--	28.4	F
SBL	SBT(3) + SBL(4)	434	28.4	--	28.4	C
SBT	SBT(3) + SBT(4)	2304	18.4	--	18.4	B
SBR	SBT(3) + SBR(4)	27	15.8	--	15.8	B

Overall Results		
Intersection ETT, s/veh LOS	31.3	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	125_US23-SR315_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	250		88				113	1279			2108	280

Signal Information													
Cycle, s	110.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.8	74.2	10.9	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

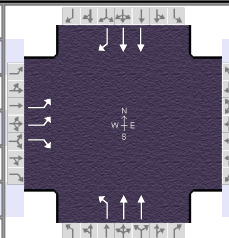
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		16.9			12.8	93.1		80.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		10.4			5.3			
Green Extension Time (g _e), s		0.5			0.2	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		0.02			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	272		96				123	1390		2291		304
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	8.4		5.9				3.3	15.7		72.6		6.2
Cycle Queue Clearance Time (g _c), s	8.4		5.9				3.3	15.7		72.6		6.2
Green Ratio (g/C)	0.10		0.16				0.76	0.79		0.67		0.77
Capacity (c), veh/h	344		256				174	2707		2308		1179
Volume-to-Capacity Ratio (X)	0.790		0.373				0.706	0.514		0.993		0.258
Back of Queue (Q), ft/ln (95 th percentile)	161.8		101.6				151.7	143.7		909.8		60.5
Back of Queue (Q), veh/ln (95 th percentile)	6.4		4.0				5.7	5.4		34.5		2.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	48.4		41.1				34.2	4.0		17.6		3.5
Incremental Delay (d ₂), s/veh	1.5		0.3				2.0	0.7		17.1		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	50.0		41.5				36.1	4.7		34.8		4.0
Level of Service (LOS)	D		D				D	A		C		A
Approach Delay, s/veh / LOS	47.7		D	0.0			7.3	A		31.2		C
Intersection Delay, s/veh / LOS	24.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	0.63	A	2.06	B
Bicycle LOS Score / LOS		F			1.74	B	2.63	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	125_US23-SR315_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	380		111				118	1684			1517	380

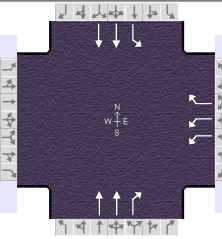
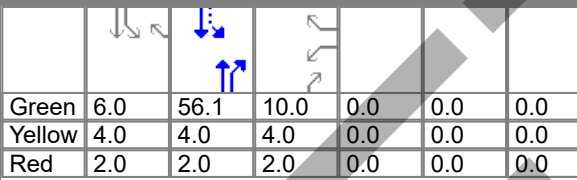
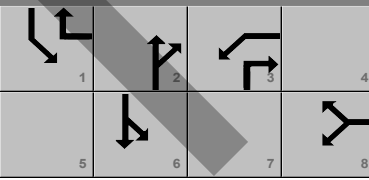
Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.6	43.2	12.2	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		18.2			12.6	61.8		49.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.2			4.3			
Green Extension Time (g _e), s		1.0			0.2	0.0		0.0
Phase Call Probability		1.00			0.94			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	413		121				128	1830		1649		413
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	9.2		5.0				2.3	27.9		34.3		9.2
Cycle Queue Clearance Time (g _c), s	9.2		5.0				2.3	27.9		34.3		9.2
Green Ratio (g/C)	0.15		0.24				0.65	0.70		0.54		0.69
Capacity (c), veh/h	529		373				263	2384		1846		1054
Volume-to-Capacity Ratio (X)	0.781		0.323				0.487	0.768		0.893		0.392
Back of Queue (Q), ft/ln (95 th percentile)	161.9		78.3				54	271.4		459.1		90.5
Back of Queue (Q), veh/ln (95 th percentile)	6.4		3.1				2.0	10.3		17.4		3.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	32.6		25.3				17.0	7.9		16.4		5.2
Incremental Delay (d ₂), s/veh	1.0		0.2				0.5	2.4		7.1		1.1
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	33.6		25.5				17.5	10.3		23.5		6.3
Level of Service (LOS)	C		C				B	B		C		A
Approach Delay, s/veh / LOS	31.7		C	0.0			10.8	B		20.0		C
Intersection Delay, s/veh / LOS	17.4						B					

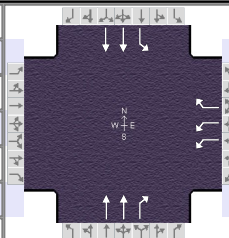
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	0.65	A	2.07	B
Bicycle LOS Score / LOS		F			2.10	B	2.19	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00											
Intersection	Meeker Way		File Name	126_US23-Meeker_AM.xus													
Project Description	No-Build Design Year (2030)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h								240		20	1346	130	70	2143			
Signal Information																	
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	6.0	56.1	10.0	0.0	0.0	0.0						
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0									
		Red	2.0	2.0	2.0	0.0	0.0	0.0									
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase								8		2	1	6					
Case Number								9.0		7.3	1.0	4.0					
Phase Duration, s								16.0		62.1	12.0	74.0					
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0					
Max Allow Headway (MAH), s								3.0		0.0	2.9	0.0					
Queue Clearance Time (g _s), s								8.5			3.2						
Green Extension Time (g _e), s								0.4		0.0	0.1	0.0					
Phase Call Probability								1.00			0.85						
Max Out Probability								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								3		18	2	12	1		6		
Adjusted Flow Rate (v), veh/h								261		22	1463	141	76	2329			
Adjusted Saturation Flow Rate (s), veh/h/ln								1730		1585	1710	1522	1711	1710			
Queue Service Time (g _s), s								6.5		1.0	25.4	2.5	1.2	47.0			
Cycle Queue Clearance Time (g _c), s								6.5		1.0	25.4	2.5	1.2	47.0			
Green Ratio (g/C)								0.11		0.18	0.62	0.73	0.71	0.76			
Capacity (c), veh/h								384		281	2130	1117	312	2584			
Volume-to-Capacity Ratio (X)								0.679		0.077	0.687	0.126	0.244	0.901			
Back of Queue (Q), ft/ln (50 th percentile)								66.3		9.3	197.2	12.7	9.6	256.8			
Back of Queue (Q), veh/ln (50 th percentile)								2.6		0.4	7.5	0.5	0.4	9.7			
Queue Storage Ratio (RQ) (50 th percentile)								0.00		0.00	0.00	0.00	0.00	0.00			
Uniform Delay (d ₁), s/veh								38.5		30.9	11.2	3.5	9.3	8.4			
Incremental Delay (d ₂), s/veh								0.8		0.0	1.8	0.2	0.1	5.6			
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh								39.3		30.9	13.0	3.7	9.4	14.1			
Level of Service (LOS)								D		C	B	A	A	B			
Approach Delay, s/veh / LOS					0.0			38.6		D	12.2		B	13.9		B	
Intersection Delay, s/veh / LOS								14.9						B			
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.31		B	2.31		B	2.06		B	0.64		A	
Bicycle LOS Score / LOS										F	1.81		B	2.47		B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Meeker Way		File Name	126_US23-Meeker_PM.xus			
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				380		100	1922	230	110	1557		

Signal Information				Signal Timing (s)										
Cycle, s	105.0	Reference Phase	2	Green	6.8	65.1	15.1	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

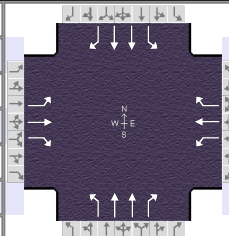
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				21.1		71.1	12.8	83.9
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.0		0.0	2.9	0.0
Queue Clearance Time (g _s), s				14.2			4.6	
Green Extension Time (g _e), s				1.0		0.0	0.2	0.0
Phase Call Probability				1.00			0.97	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h				413		109	2089	250	120	1692		
Adjusted Saturation Flow Rate (s), veh/h/ln				1730		1585	1710	1522	1711	1710		
Queue Service Time (g _s), s				12.2		6.1	62.7	4.9	2.6	26.6		
Cycle Queue Clearance Time (g _c), s				12.2		6.1	62.7	4.9	2.6	26.6		
Green Ratio (g/C)				0.14		0.21	0.62	0.76	0.70	0.74		
Capacity (c), veh/h				499		331	2120	1163	183	2536		
Volume-to-Capacity Ratio (X)				0.828		0.328	0.986	0.215	0.652	0.667		
Back of Queue (Q), ft/ln (50 th percentile)				127.1		56.9	631.1	26.2	48.1	170.1		
Back of Queue (Q), veh/ln (50 th percentile)				5.0		2.2	23.9	1.0	1.8	6.4		
Queue Storage Ratio (RQ) (50 th percentile)				0.00		0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh				43.7		35.3	19.5	3.5	27.3	6.9		
Incremental Delay (d ₂), s/veh				1.4		0.2	16.4	0.4	1.5	1.4		
Initial Queue Delay (d ₃), s/veh				0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh				45.0		35.5	36.0	3.9	28.8	8.4		
Level of Service (LOS)				D		D	D	A	C	A		
Approach Delay, s/veh / LOS	0.0			43.0		D	32.5	C	9.7	A		
Intersection Delay, s/veh / LOS				24.9				C				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	2.07	B	0.65	A
Bicycle LOS Score / LOS				F	2.42	B	1.98	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Hawthorn Blvd	File Name	127_US23-Hawthorn_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	40	30	160	120	20	50	40	1269	1	30	1966	20

Signal Information														
Cycle, s	120.0	Reference Phase	2	EB		WB		NB		SB				
Offset, s	0	Reference Point	End	Green	5.4	71.6	8.0	11.0	0.0	0.0	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0	5	6	7	8
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.0	0.0	0.0				

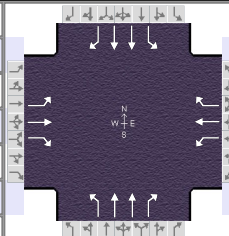
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2		6
Case Number		5.3	1.0	3.0	1.0	3.0		5.3
Phase Duration, s		17.0	14.0	31.0	11.4	89.0		77.6
Change Period, ($Y+R_c$), s		6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1	2.9	3.1	2.9	0.0		0.0
Queue Clearance Time (g_s), s		13.0	9.8	5.4	3.1			
Green Extension Time (g_e), s		0.0	0.0	0.5	0.1	0.0		0.0
Phase Call Probability		1.00	0.99	1.00	0.77			
Max Out Probability		1.00	1.00	0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	43	33	174	130	22	54	43	1379	1	33	2137	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1390	1870	1585	1781	1870	1572	1711	1710	1522	377	1710	1522
Queue Service Time (g_s), s	3.5	1.9	11.0	7.8	1.1	3.4	1.1	25.0	0.0	5.9	71.6	0.7
Cycle Queue Clearance Time (g_c), s	3.5	1.9	11.0	7.8	1.1	3.4	1.1	25.0	0.0	19.5	71.6	0.7
Green Ratio (g/C)	0.09	0.09	0.14	0.17	0.21	0.21	0.66	0.69	0.76	0.60	0.60	0.60
Capacity (c), veh/h	187	171	216	283	390	328	136	2366	1154	242	2042	909
Volume-to-Capacity Ratio (X)	0.232	0.190	0.805	0.461	0.056	0.166	0.319	0.583	0.001	0.135	1.047	0.024
Back of Queue (Q), ft/ln (50 th percentile)	30.3	22.4	150.7	84.7	12.6	32.5	19.4	200.4	0.1	14.5	881.2	5.8
Back of Queue (Q), veh/ln (50 th percentile)	1.2	0.9	5.9	3.3	0.5	1.3	0.7	7.6	0.0	0.5	33.4	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	51.1	50.4	50.3	44.1	38.0	39.0	29.8	9.6	3.5	17.5	24.2	9.9
Incremental Delay (d_2), s/veh	0.2	0.2	18.2	0.4	0.0	0.1	0.5	1.1	0.0	1.2	33.4	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	51.3	50.6	68.5	44.6	38.1	39.0	30.3	10.6	3.5	18.7	57.6	9.9
Level of Service (LOS)	D	D	E	D	D	D	C	B	A	B	F	A
Approach Delay, s/veh / LOS	63.2		E	42.4		D	11.2		B	56.5		E
Intersection Delay, s/veh / LOS	40.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.46	B	2.06	B	2.08	B
Bicycle LOS Score / LOS	0.90	A	0.83	A	1.66	B	2.30	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	127_US23-Hawthorn_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	20	60	60	190	40	150	140	1793	160	40	1415	50

Signal Information				Signal Phases											
Cycle, s	95.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	6.9	44.1	10.0	10.0	0.0	0.0	1	2	3	4	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0	5	6	7	8	
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.0	0.0	0.0	9	10	11	12	

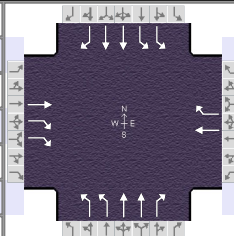
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4	3	8	5	2		6
Case Number		5.3	1.0	3.0	1.0	3.0		5.3
Phase Duration, s		16.0	16.0	32.0	12.9	63.0		50.1
Change Period, ($Y+R_c$), s		6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1	2.9	3.1	2.9	0.0		0.0
Queue Clearance Time (g_s), s		5.4	11.6	10.0	6.1			
Green Extension Time (g_e), s		0.4	0.0	0.6	0.1	0.0		0.0
Phase Call Probability		1.00	1.00	1.00	0.98			
Max Out Probability		0.03	1.00	0.00	0.09			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	22	65	65	207	43	163	152	1949	174	43	1538	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1363	1870	1585	1781	1870	1572	1711	1710	1522	217	1710	1522
Queue Service Time (g_s), s	1.4	3.1	3.4	9.6	1.6	8.0	4.1	50.3	3.6	6.7	41.6	1.9
Cycle Queue Clearance Time (g_c), s	1.4	3.1	3.4	9.6	1.6	8.0	4.1	50.3	3.6	44.1	41.6	1.9
Green Ratio (g/C)	0.11	0.11	0.18	0.23	0.27	0.27	0.56	0.60	0.71	0.46	0.46	0.46
Capacity (c), veh/h	219	197	282	361	512	430	208	2052	1074	91	1589	707
Volume-to-Capacity Ratio (X)	0.099	0.331	0.232	0.572	0.085	0.379	0.731	0.950	0.162	0.478	0.968	0.077
Back of Queue (Q), ft/ln (50 th percentile)	11.1	34.1	30.9	99.9	17.3	71.4	40.6	474.5	21.9	36.9	468.2	16.2
Back of Queue (Q), veh/ln (50 th percentile)	0.4	1.3	1.2	3.9	0.7	2.8	1.5	18.0	0.8	1.4	17.7	0.6
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	38.6	39.4	33.5	31.9	25.7	28.0	21.3	17.7	4.7	46.3	24.8	14.1
Incremental Delay (d_2), s/veh	0.1	0.4	0.2	1.4	0.0	0.2	3.4	11.1	0.3	16.9	16.2	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.7	39.8	33.7	33.3	25.7	28.2	24.8	28.8	5.0	63.2	40.9	14.3
Level of Service (LOS)	D	D	C	C	C	C	C	C	A	E	D	B
Approach Delay, s/veh / LOS	37.0		D	30.5		C	26.7		C	40.6		D
Intersection Delay, s/veh / LOS	32.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.44	B	2.07	B	2.09	B
Bicycle LOS Score / LOS	0.74	A	1.17	A	2.36	B	1.84	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Delaware Plaza South/P...	File Name	128_US23-DelPlazaS_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		0	28		0	110	70	1250	40	270	2006	20

Signal Information													
Cycle, s	65.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.0	0.9	41.1	4.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0			
				Red	2.0	0.0	2.0	0.0	0.0	0.0			

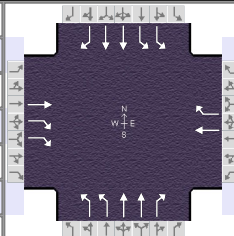
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		4.0		4.0	13.0	47.1	13.9	48.0
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		2.6		6.0	3.3		7.4	
Green Extension Time (g _e), s		0.0		0.0	0.1	0.0	0.4	0.0
Phase Call Probability		0.93		0.93	1.00		1.00	
Max Out Probability		1.00		1.00	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		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	30		0	120	76	1359	43	293	2180	22
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1585	1689	1738	1547	1689	1738	1547
Queue Service Time (g _s), s		0.0	0.6		0.0	4.0	1.3	15.3	0.7	5.4	38.7	0.3
Cycle Queue Clearance Time (g _c), s		0.0	0.6		0.0	4.0	1.3	15.3	0.7	5.4	38.7	0.3
Green Ratio (g/C)		0.06	0.17		0.06	0.18	0.11	0.63	0.63	0.12	0.65	0.65
Capacity (c), veh/h		115	475		115	289	364	2201	980	408	2246	1000
Volume-to-Capacity Ratio (X)		0.000	0.064		0.000	0.414	0.209	0.617	0.044	0.719	0.971	0.022
Back of Queue (Q), ft/ln (95th percentile)		0	7.8		0	64.8	22.3	155.6	6.6	91.7	433.5	3
Back of Queue (Q), veh/ln (95th percentile)		0.0	0.3		0.0	2.5	0.9	6.0	0.3	3.5	16.7	0.1
Queue Storage Ratio (RQ) (95th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	22.7		0.0	23.5	26.5	7.2	4.5	27.5	10.9	4.1
Incremental Delay (d ₂), s/veh		0.0	0.0		0.0	0.4	0.1	1.3	0.1	0.9	13.2	0.0
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	22.7		0.0	23.9	26.6	8.5	4.6	28.4	24.2	4.2
Level of Service (LOS)			C			C	C	A	A	C	C	A
Approach Delay, s/veh / LOS	22.7		C	23.9		C	9.3		A	24.5		C
Intersection Delay, s/veh / LOS	19.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.05	B	2.21	B
Bicycle LOS Score / LOS	0.54	A	0.68	A	1.71	B	2.55	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza South/P...	File Name	128_US23-DelPlazaS_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	110		0	240	180	1797	80	420	1342	40

Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.0	4.0	48.0	9.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0			
				Red	2.0	0.0	2.0	0.0	0.0	0.0			

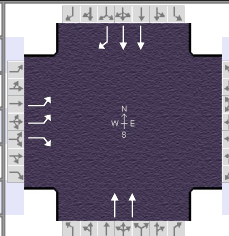
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		9.0		9.0	13.0	54.0	17.0	58.0
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		4.8		11.0	6.5		12.8	
Green Extension Time (g _e), s		0.4		0.0	0.3	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.49		1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	4	14		8	18		5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	120		0	261		196	1953	87	457	1459	43
Adjusted Saturation Flow Rate (s), veh/h/ln	1870	1403		1870	1585		1689	1738	1547	1689	1738	1547
Queue Service Time (g _s), s	0.0	2.8		0.0	9.0		4.5	41.0	1.9	10.8	20.2	0.8
Cycle Queue Clearance Time (g _c), s	0.0	2.8		0.0	9.0		4.5	41.0	1.9	10.8	20.2	0.8
Green Ratio (g/C)	0.11	0.20		0.11	0.25		0.09	0.60	0.60	0.14	0.65	0.65
Capacity (c), veh/h	210	561		210	396		296	2086	928	464	2260	1006
Volume-to-Capacity Ratio (X)	0.000	0.213		0.000	0.658		0.662	0.936	0.094	0.983	0.646	0.043
Back of Queue (Q), ft/ln (50 th percentile)	0	21.9		0	109.2		45	354.6	13	166.2	135.5	5
Back of Queue (Q), veh/ln (50 th percentile)	0.0	0.9		0.0	4.3		1.7	13.6	0.5	6.4	5.2	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	0.0	26.7		0.0	26.9		35.4	14.6	6.8	34.4	8.4	5.0
Incremental Delay (d ₂), s/veh	0.0	0.1		0.0	3.2		1.0	9.5	0.2	37.2	1.4	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	26.8		0.0	30.1		36.3	24.1	7.0	71.6	9.9	5.1
Level of Service (LOS)		C			C		D	C	A	E	A	A
Approach Delay, s/veh / LOS	26.8	C		30.1	C		24.5	C		24.2	C	
Intersection Delay, s/veh / LOS	24.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.59	C	2.06	B	2.22	B
Bicycle LOS Score / LOS	0.68	A	0.92	A	2.33	B	2.10	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	129_US23-DelPlazaN_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	90		80					1339			2360	70

Signal Information				Signal Timing (s)													
Cycle, s	100.0	Reference Phase	2	Green	76.1	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off														

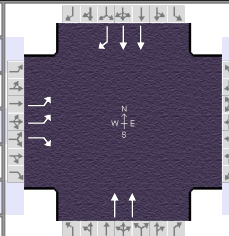
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		16.9				83.1		83.1
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		7.2						
Green Extension Time (g _e), s		0.2				0.0		0.0
Phase Call Probability		0.99						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	98		87					1455			2565	76
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585					1710			1710	1522
Queue Service Time (g _s), s	2.6		5.2					17.7			71.8	1.3
Cycle Queue Clearance Time (g _c), s	2.6		5.2					17.7			71.8	1.3
Green Ratio (g/C)	0.10		0.10					0.76			0.76	0.76
Capacity (c), veh/h	344		158					2601			2601	1158
Volume-to-Capacity Ratio (X)	0.284		0.552					0.560			0.986	0.066
Back of Queue (Q), ft/ln (50th percentile)	27.1		50.3					96.9			500.3	6.5
Back of Queue (Q), veh/ln (50th percentile)	1.1		2.0					3.7			18.9	0.2
Queue Storage Ratio (RQ) (50th percentile)	0.00		0.00					0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	41.7		42.9					5.0			11.5	3.0
Incremental Delay (d ₂), s/veh	0.2		1.1					0.9			14.7	0.1
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	41.9		44.0					5.9			26.1	3.1
Level of Service (LOS)	D		D					A			C	A
Approach Delay, s/veh / LOS	42.9		D	0.0				5.9		A	25.5	C
Intersection Delay, s/veh / LOS	19.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	0.64	A	2.03	B
Bicycle LOS Score / LOS		F			1.69	B	2.67	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	129_US23-DelPlazaN_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	350		100						1984			1644 220

Signal Information				Signal Timing (s)													
Cycle, s	65.0	Reference Phase	2	Green	41.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off														

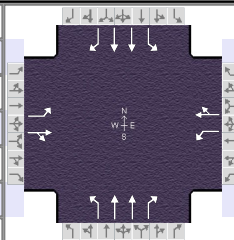
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		17.0				48.0		48.0
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		8.8						
Green Extension Time (g _e), s		0.6				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.10						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	380		109					2157			1787	239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585					1710			1710	1522
Queue Service Time (g _s), s	6.8		4.0					41.0			26.3	4.5
Cycle Queue Clearance Time (g _c), s	6.8		4.0					41.0			26.3	4.5
Green Ratio (g/C)	0.15		0.15					0.63			0.63	0.63
Capacity (c), veh/h	532		244					2157			2157	960
Volume-to-Capacity Ratio (X)	0.715		0.446					1.000			0.828	0.249
Back of Queue (Q), ft/ln (50th percentile)	62.5		34.2					357.4			162	24
Back of Queue (Q), veh/ln (50th percentile)	2.5		1.3					13.5			6.1	0.9
Queue Storage Ratio (RQ) (50th percentile)	0.00		0.00					0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	26.1		25.0					12.0			9.3	5.3
Incremental Delay (d ₂), s/veh	0.7		0.5					19.3			3.8	0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	26.8		25.5					31.3			13.1	5.9
Level of Service (LOS)	C		C					C			B	A
Approach Delay, s/veh / LOS	26.5		C	0.0				31.3		C	12.3	B
Intersection Delay, s/veh / LOS	22.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.13	B	2.30	B	0.66	A	2.05	B
Bicycle LOS Score / LOS		F			2.27	B	2.16	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive		File Name	130_US23-Cottswold_AM.xus			
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	30	10	60	40	10	40	30	1367	40	40	2130	20

Signal Information														
Cycle, s	95.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	4.0	0.7	62.3	10.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

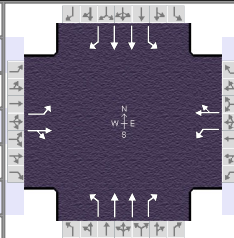
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		16.0		16.0	10.0	68.3	10.8	69.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s		7.1		9.2	2.6		2.7	
Green Extension Time (g_e), s		0.1		0.0	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.58		0.68	
Max Out Probability		1.00		1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	33	76		43	54		33	1486	43	43	2315	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1350	1620		1323	1635		1711	1710	1522	1711	1710	1522
Queue Service Time (g_s), s	2.2	4.2		3.0	2.9		0.6	25.1	1.0	0.7	63.0	0.5
Cycle Queue Clearance Time (g_c), s	5.1	4.2		7.2	2.9		0.6	25.1	1.0	0.7	63.0	0.5
Green Ratio (g/C)	0.10	0.10		0.10	0.10		0.70	0.66	0.66	0.71	0.66	0.66
Capacity (c), veh/h	176	170		156	171		149	2242	998	295	2268	1010
Volume-to-Capacity Ratio (X)	0.186	0.448		0.278	0.317		0.220	0.663	0.044	0.147	1.021	0.022
Back of Queue (Q), ft/ln (50 th percentile)	17.6	40.6		24.1	28.5		11.7	189.4	6.6	4.6	635.6	3.1
Back of Queue (Q), veh/ln (50 th percentile)	0.7	1.6		1.0	1.1		0.4	7.2	0.3	0.2	24.1	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	41.7	39.9		43.3	39.4		24.8	10.0	5.8	8.0	16.0	5.5
Incremental Delay (d_2), s/veh	0.2	0.7		0.4	0.4		0.3	1.6	0.1	0.1	24.3	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.9	40.6		43.7	39.8		25.1	11.5	5.9	8.1	40.3	5.5
Level of Service (LOS)	D	D		D	D		C	B	A	A	F	A
Approach Delay, s/veh / LOS	41.0		D	41.5		D	11.7		B	39.4		D
Intersection Delay, s/veh / LOS	29.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.78	B	2.45	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Cottswold Drive	File Name	130_US23-Cottswold_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	20	90	80	30	90	90	2095	80	130	1720	40

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.5	0.3	61.1	14.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

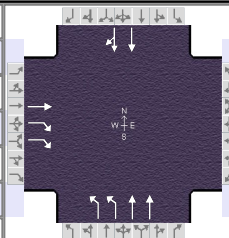
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		20.0		20.0	12.5	67.1	12.9	67.5
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s		14.5		15.6	4.0		5.8	
Green Extension Time (g_e), s		0.0		0.0	0.1	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.93		0.98	
Max Out Probability		1.00		1.00	0.00		0.02	

Movement Group Results	EB			WB			NB			SB		
	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	65	120		87	130		98	2277	87	141	1870	43
Adjusted Saturation Flow Rate (s), veh/h/ln	1260	1630		1272	1648		1711	1710	1522	1711	1710	1522
Queue Service Time (g_s), s	5.1	6.8		6.8	7.4		2.0	61.1	2.4	3.8	46.5	1.1
Cycle Queue Clearance Time (g_c), s	12.5	6.8		13.6	7.4		2.0	61.1	2.4	3.8	46.5	1.1
Green Ratio (g/C)	0.14	0.14		0.14	0.14		0.68	0.61	0.61	0.68	0.61	0.61
Capacity (c), veh/h	155	228		164	231		214	2091	931	189	2102	936
Volume-to-Capacity Ratio (X)	0.420	0.524		0.532	0.565		0.456	1.089	0.093	0.746	0.889	0.046
Back of Queue (Q), ft/ln (50 th percentile)	39	66.8		53.6	74.8		34.4	855.9	17.9	52.2	412.6	8.6
Back of Queue (Q), veh/ln (50 th percentile)	1.5	2.6		2.1	2.9		1.3	32.4	0.7	2.0	15.6	0.3
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	46.0	39.9		46.2	40.2		22.2	19.4	8.0	27.9	16.4	7.6
Incremental Delay (d_2), s/veh	0.7	1.1		1.7	2.0		0.6	48.7	0.2	2.7	6.1	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	46.7	41.0		47.9	42.2		22.8	68.2	8.2	30.5	22.5	7.7
Level of Service (LOS)	D	D		D	D		C	F	A	C	C	A
Approach Delay, s/veh / LOS	43.0		D	44.5		D	64.2		E	22.8		C
Intersection Delay, s/veh / LOS	45.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.79	A	0.85	A	2.52	C	2.18	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	131_US23-SouthSandusky_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	312				295	1286			1870	16

Signal Information													
Cycle, s	90.0	Reference Phase	6										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	10.3	57.7	10.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

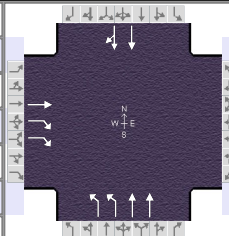
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		10.0			16.3	80.0		63.7
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		11.7			10.2			
Green Extension Time (g _e), s		0.0			0.1	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0	339				321	1398			1025	1025
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1766			1856	1850
Queue Service Time (g _s), s		0.0	9.7				8.2	10.5			40.9	40.1
Cycle Queue Clearance Time (g _c), s		0.0	9.7				8.2	10.5			40.9	40.1
Green Ratio (g/C)		0.11	0.23				0.11	0.82			0.64	0.64
Capacity (c), veh/h		206	627				392	2905			1190	1186
Volume-to-Capacity Ratio (X)		0.000	0.541				0.817	0.481			0.861	0.864
Back of Queue (Q), ft/ln (95 th percentile)		0	142.5				177.4	56.3			550.6	540.9
Back of Queue (Q), veh/ln (95 th percentile)		0.0	5.6				6.9	2.2			21.5	21.6
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.18				0.35	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	30.7				38.9	2.4			12.9	13.0
Incremental Delay (d ₂), s/veh		0.0	0.5				10.3	0.6			8.3	8.5
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0	31.3				49.3	2.9			21.2	21.5
Level of Service (LOS)			C				D	A			C	C
Approach Delay, s/veh / LOS	31.3		C	0.0			11.6	B		21.3		C
Intersection Delay, s/veh / LOS				18.1						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.14	B	1.29	A	2.23	B
Bicycle LOS Score / LOS	1.05	A			1.91	B	2.18	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	131_US23-SouthSandusky_PM.xus				
Project Description	No Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	341				481	1958			1560	14

Signal Information														
Cycle, s	85.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	11.2	50.0	11.8	0.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

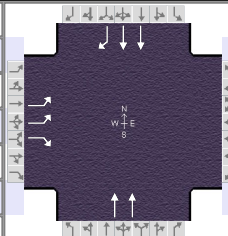
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		11.8			17.2	73.2		56.0
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		11.5			13.2			
Green Extension Time (g _e), s		0.3			0.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h		0	371				523	2128		856	855	
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1766		1856	1850	
Queue Service Time (g _s), s		0.0	9.5				11.2	27.0		30.0	30.1	
Cycle Queue Clearance Time (g _c), s		0.0	9.5				11.2	27.0		30.0	30.1	
Green Ratio (g/C)		0.14	0.27				0.13	0.79		0.59	0.59	
Capacity (c), veh/h		258	753				452	2793		1092	1088	
Volume-to-Capacity Ratio (X)		0.000	0.492				1.158	0.762		0.784	0.786	
Back of Queue (Q), ft/ln (95 th percentile)		0	135.4				421.6	206.7		436.4	426.9	
Back of Queue (Q), veh/ln (95 th percentile)		0.0	5.3				16.5	8.1		17.0	17.1	
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.17				0.84	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh		0.0	26.1				36.9	4.7		13.4	13.4	
Incremental Delay (d ₂), s/veh		0.0	0.2				93.2	2.0		5.7	5.7	
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		0.0	26.3				130.1	6.7		19.0	19.1	
Level of Service (LOS)			C				F	A		B	B	
Approach Delay, s/veh / LOS	26.3		C	0.0			31.1	C	19.1		B	
Intersection Delay, s/veh / LOS	26.3			26.3			C			C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.14	B	1.31	A	2.24	B
Bicycle LOS Score / LOS	1.10	A			2.67	C	1.90	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	132_US23-US42_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h	338		75						1205			1997	677

Signal Information				Signal Timing (s)														
Cycle, s	90.0	Reference Phase	2	Green	65.2	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On															

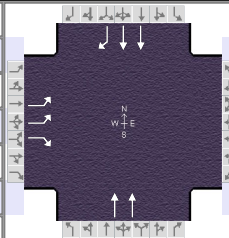
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		18.8				71.2		71.2
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		11.9						
Green Extension Time (g _e), s		0.9				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	367		82					1310			2171	736
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336					1724			1724	1485
Queue Service Time (g _s), s	9.9		5.0					15.2			42.2	11.8
Cycle Queue Clearance Time (g _c), s	9.9		5.0					15.2			42.2	11.8
Green Ratio (g/C)	0.14		0.14					0.72			0.72	0.87
Capacity (c), veh/h	461		190					2497			2497	1287
Volume-to-Capacity Ratio (X)	0.796		0.428					0.524			0.869	0.572
Back of Queue (Q), ft/ln (95 th percentile)	183.8		76.8					179.4			441.9	32.2
Back of Queue (Q), veh/ln (95 th percentile)	6.8		2.8					6.8			16.9	1.2
Queue Storage Ratio (RQ) (95 th percentile)	0.78		0.77					0.00			0.00	0.21
Uniform Delay (d ₁), s/veh	37.3		35.2					5.5			9.2	1.6
Incremental Delay (d ₂), s/veh	1.2		0.6					0.8			4.5	1.9
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	38.5		35.8					6.3			13.7	3.4
Level of Service (LOS)	D		D					A			B	A
Approach Delay, s/veh / LOS	38.0		D		0.0			6.3		A	11.1	B
Intersection Delay, s/veh / LOS	12.3						6.3			B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.31	B	0.65	A	2.04	B
Bicycle LOS Score / LOS		F			1.57	B	2.89	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	132_US23-US42_PM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	624		78						1822			1494 312

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	64.1	23.9	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

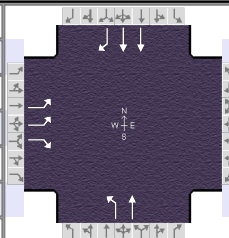
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		29.9				70.1		70.1
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		22.2						
Green Extension Time (g _e), s		1.7				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	678		85					1980			1624	339
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336					1724			1724	1485
Queue Service Time (g _s), s	20.2		5.2					48.4			32.0	3.6
Cycle Queue Clearance Time (g _c), s	20.2		5.2					48.4			32.0	3.6
Green Ratio (g/C)	0.24		0.24					0.64			0.64	0.88
Capacity (c), veh/h	774		319					2211			2211	1306
Volume-to-Capacity Ratio (X)	0.876		0.266					0.896			0.735	0.260
Back of Queue (Q), ft/ln (95 th percentile)	330.2		78.1					615.7			414.8	8.5
Back of Queue (Q), veh/ln (95 th percentile)	12.2		2.9					23.5			15.8	0.3
Queue Storage Ratio (RQ) (95 th percentile)	1.41		0.78					0.00			0.00	0.06
Uniform Delay (d ₁), s/veh	36.6		30.9					15.1			12.2	0.9
Incremental Delay (d ₂), s/veh	1.3		0.2					6.2			2.2	0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	37.9		31.1					21.3			14.4	1.4
Level of Service (LOS)	D		C					C			B	A
Approach Delay, s/veh / LOS	37.2		D	0.0				21.3		C	12.1	B
Intersection Delay, s/veh / LOS	20.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	0.67	A	2.06	B
Bicycle LOS Score / LOS		F			2.12	B	2.11	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	E125_US23-SR315_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	250		88				113	0			2108	280

Signal Information													
Cycle, s	105.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.8	69.5	10.7	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

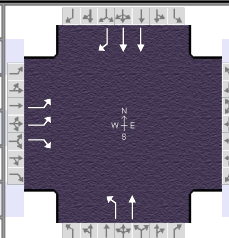
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		16.7			12.8	88.3		75.5
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		10.0			5.1			
Green Extension Time (g _e), s		0.6			0.2	0.0		0.0
Phase Call Probability		1.00			0.97			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	272		96				123	0		2291		304
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1796		1710		1522
Queue Service Time (g _s), s	8.0		5.6				3.1	0.0		69.5		6.2
Cycle Queue Clearance Time (g _c), s	8.0		5.6				3.1	0.0		69.5		6.2
Green Ratio (g/C)	0.10		0.17				0.75	0.78		0.66		0.76
Capacity (c), veh/h	352		264				179	1408		2264		1163
Volume-to-Capacity Ratio (X)	0.773		0.362				0.684	0.000		1.012		0.262
Back of Queue (Q), ft/ln (95 th percentile)	152.7		95.4				96.7	0		932.5		60.6
Back of Queue (Q), veh/ln (95 th percentile)	6.0		3.8				3.7	0.0		35.3		2.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	46.0		38.8				31.6	0.0		17.7		3.7
Incremental Delay (d ₂), s/veh	1.4		0.3				1.7	0.0		21.9		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	47.4		39.1				33.3	0.0		39.6		4.2
Level of Service (LOS)	D		D				C			F		A
Approach Delay, s/veh / LOS	45.2		D	0.0			33.3	C		35.5		D
Intersection Delay, s/veh / LOS	36.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	0.64	A	2.06	B
Bicycle LOS Score / LOS		F			0.69	A	2.63	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	E125_US23-SR315_PM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	380		111					118	0		1517	380

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	51.8	13.5	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

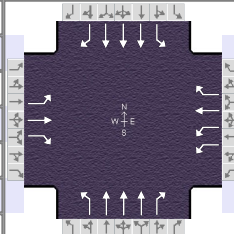
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		19.5			12.7	70.5		57.8
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		12.4			4.4			
Green Extension Time (g _e), s		1.1			0.2	0.0		0.0
Phase Call Probability		1.00			0.96			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	413		121				128	0		1649		413
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1796		1710		1522
Queue Service Time (g _s), s	10.4		5.8				2.4	0.0		35.6		9.2
Cycle Queue Clearance Time (g _c), s	10.4		5.8				2.4	0.0		35.6		9.2
Green Ratio (g/C)	0.15		0.22				0.67	0.72		0.58		0.73
Capacity (c), veh/h	518		356				260	1288		1969		1104
Volume-to-Capacity Ratio (X)	0.797		0.339				0.493	0.000		0.838		0.374
Back of Queue (Q), ft/ln (95 th percentile)	188.5		92.7				68.7	0		457.9		91
Back of Queue (Q), veh/ln (95 th percentile)	7.4		3.7				2.6	0.0		17.3		3.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	36.9		29.3				18.0	0.0		15.7		4.7
Incremental Delay (d ₂), s/veh	1.1		0.2				0.5	0.0		4.4		1.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	38.0		29.5				18.5	0.0		20.1		5.6
Level of Service (LOS)	D		C				B			C		A
Approach Delay, s/veh / LOS	36.1		D	0.0			18.5		B	17.2		B
Intersection Delay, s/veh / LOS	21.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.31	B	0.65	A	2.07	B
Bicycle LOS Score / LOS		F			0.70	A	2.19	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	E127_US23-Hawthorn_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	30	160	120	20	50	40	1269	80	30	1966	20

Signal Information				Signal Phases									
Cycle, s	85.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		3.8	0.7	39.1	4.5	2.2	10.7				
		Yellow		4.0	0.0	4.0	4.0	0.0	4.0				
		Red		2.0	0.0	2.0	2.0	0.0	2.0				

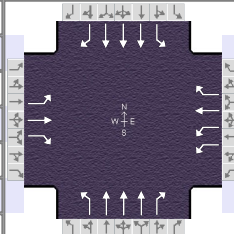
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	10.5	16.7	12.7	18.9	10.5	45.9	9.8	45.1
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	2.9	3.1	2.9	3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s	4.0	10.6	5.1	4.4	4.1		3.6	
Green Extension Time (g_e), s	0.0	0.1	0.1	0.4	0.0	0.0	0.0	0.0
Phase Call Probability	0.64	1.00	0.95	1.00	0.64		0.54	
Max Out Probability	0.02	1.00	1.00	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	43	33	174	130	22	54	43	1379	87	33	2137	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522	1711	1631	1522
Queue Service Time (g_s), s	2.0	1.3	8.6	3.1	0.8	2.4	2.1	17.7	2.3	1.6	35.6	0.6
Cycle Queue Clearance Time (g_c), s	2.0	1.3	8.6	3.1	0.8	2.4	2.1	17.7	2.3	1.6	35.6	0.6
Green Ratio (g/C)	0.05	0.13	0.18	0.08	0.15	0.20	0.05	0.47	0.55	0.04	0.46	0.51
Capacity (c), veh/h	94	236	283	272	284	308	90	2295	833	76	2252	781
Volume-to-Capacity Ratio (X)	0.462	0.138	0.614	0.480	0.077	0.176	0.481	0.601	0.104	0.431	0.949	0.028
Back of Queue (Q), ft/ln (50 th percentile)	21.7	14.2	79.9	31	9	21.8	22.6	150.6	17.7	17.1	348.4	4.7
Back of Queue (Q), veh/ln (50 th percentile)	0.9	0.6	3.1	1.2	0.4	0.9	0.9	5.7	0.7	0.6	13.2	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.1	33.0	32.2	37.5	30.9	28.5	39.1	16.7	9.2	39.6	22.0	10.2
Incremental Delay (d_2), s/veh	1.3	0.1	1.8	0.5	0.0	0.1	1.5	1.2	0.3	1.4	10.3	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.4	33.1	34.0	38.0	31.0	28.6	40.6	17.9	9.5	41.0	32.2	10.3
Level of Service (LOS)	D	C	C	D	C	C	D	B	A	D	C	B
Approach Delay, s/veh / LOS	35.0		D	34.8		C	18.0		B	32.1		C
Intersection Delay, s/veh / LOS	27.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	2.26	B	2.09	B
Bicycle LOS Score / LOS	0.90	A	0.83	A	1.32	A	1.69	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	E127_US23-Hawthorn_PM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	60	60	190	40	150	140	1793	160	40	1415	50

Signal Information				Signal Timing (s)																		
Cycle, s	80.0	Reference Phase	2	Green	3.7	5.1	30.3	2.7	4.2	10.0	Yellow	4.0	0.0	4.0	4.0	4.0	Red	2.0	0.0	2.0	2.0	2.0
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On																			
Force Mode	Fixed	Simult. Gap N/S	On																			

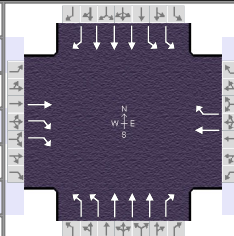
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.7	16.0	12.9	20.2	14.8	41.4	9.7	36.3
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	2.9	3.1	2.9	3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s	3.0	4.6	6.6	9.2	9.0		4.0	
Green Extension Time (g_e), s	0.0	0.4	0.1	0.4	0.2	0.0	0.0	0.0
Phase Call Probability	0.38	1.00	0.99	1.00	0.97		0.62	
Max Out Probability	0.01	0.01	0.59	0.02	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	22	65	65	207	43	163	152	1949	174	43	1538	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522	1711	1631	1522
Queue Service Time (g_s), s	1.0	2.5	2.6	4.6	1.6	7.2	7.0	29.6	4.9	2.0	22.8	1.7
Cycle Queue Clearance Time (g_c), s	1.0	2.5	2.6	4.6	1.6	7.2	7.0	29.6	4.9	2.0	22.8	1.7
Green Ratio (g/C)	0.03	0.12	0.23	0.09	0.18	0.22	0.11	0.44	0.53	0.05	0.38	0.41
Capacity (c), veh/h	60	234	372	300	333	353	188	2163	805	79	1852	627
Volume-to-Capacity Ratio (X)	0.364	0.279	0.175	0.689	0.131	0.462	0.809	0.901	0.216	0.547	0.830	0.087
Back of Queue (Q), ft/ln (50 th percentile)	10.4	26.9	22.7	46.5	16.3	62.4	73.9	274.1	37.2	21.5	214	14.7
Back of Queue (Q), veh/ln (50 th percentile)	0.4	1.1	0.9	1.8	0.6	2.4	2.8	10.4	1.4	0.8	8.1	0.6
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	37.8	31.7	24.4	35.5	27.7	26.8	34.8	20.7	10.0	37.3	22.5	14.3
Incremental Delay (d_2), s/veh	1.4	0.2	0.1	1.1	0.1	0.4	3.1	6.6	0.6	2.2	4.5	0.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	32.0	24.5	36.6	27.7	27.2	37.9	27.3	10.7	39.5	27.0	14.6
Level of Service (LOS)	D	C	C	D	C	C	D	C	B	D	C	B
Approach Delay, s/veh / LOS	29.8	C		31.9	C		26.7	C		26.9	C	
Intersection Delay, s/veh / LOS	27.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.71	C	2.26	B	2.10	B
Bicycle LOS Score / LOS	0.74	A	1.17	A	1.74	B	1.39	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Delaware Plaza South/P...	File Name	E128_US23-DelPlazaS_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	28		0	110	70	1250	40	270	2006	20

Signal Information													
Cycle, s	75.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.0	1.8	47.4	6.8	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0			
				Red	2.0	0.0	2.0	0.0	0.0	0.0			

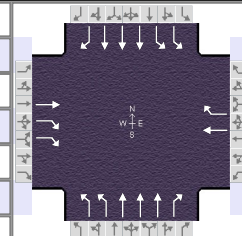
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		6.8		6.8	13.0	53.4	14.8	55.2
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		2.7		6.8	3.6		8.3	
Green Extension Time (g _e), s		0.2		0.2	0.1	0.0	0.5	0.0
Phase Call Probability		0.96		0.96	1.00		1.00	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	30		0	120	76	1359	43	293	2180	22
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1585	1689	1658	1547	1689	1658	1547
Queue Service Time (g _s), s		0.0	0.7		0.0	4.8	1.6	10.4	0.8	6.3	20.1	0.4
Cycle Queue Clearance Time (g _c), s		0.0	0.7		0.0	4.8	1.6	10.4	0.8	6.3	20.1	0.4
Green Ratio (g/C)		0.09	0.18		0.09	0.21	0.09	0.63	0.63	0.12	0.66	0.66
Capacity (c), veh/h		169	515		169	330	315	3144	978	398	3266	1016
Volume-to-Capacity Ratio (X)		0.000	0.059		0.000	0.363	0.241	0.432	0.044	0.738	0.668	0.021
Back of Queue (Q), ft/ln (95 th percentile)		0	9.2		0	74.8	27.4	112.5	8.7	110.8	204.2	3.8
Back of Queue (Q), veh/ln (95 th percentile)		0.0	0.4		0.0	2.9	1.1	4.3	0.3	4.3	7.9	0.1
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	25.3		0.0	25.4	31.5	7.0	5.2	32.0	7.9	4.5
Incremental Delay (d ₂), s/veh		0.0	0.0		0.0	0.2	0.1	0.4	0.1	1.0	1.1	0.0
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	25.3		0.0	25.7	31.7	7.4	5.3	33.0	9.0	4.5
Level of Service (LOS)			C			C	C	A	A	C	A	A
Approach Delay, s/veh / LOS	25.3		C	25.7		C	8.6		A	11.8		B
Intersection Delay, s/veh / LOS	11.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.84	C	2.84	C	2.05	B	2.22	B
Bicycle LOS Score / LOS	0.54	A	0.68	A	1.30	A	1.86	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2030	Analysis Period	1 > 7:00		
Intersection	Delaware Plaza South/P...	File Name	E128_US23-DelPlazaS_PM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	110		0	240	180	1797	80	420	1342	40

Signal Information														
Cycle, s	80.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	7.0	5.7	42.1	13.2	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	0.0	2.0	0.0	0.0	0.0				

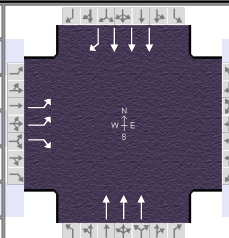
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		13.2		13.2	13.0	48.1	18.7	53.8
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		4.7		12.7	6.5		12.5	
Green Extension Time (g _e), s		0.7		0.5	0.3	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		0.00		0.10	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	120		0	261	196	1953	87	457	1459	43
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1585	1689	1658	1547	1689	1658	1547
Queue Service Time (g _s), s		0.0	2.7		0.0	10.7	4.5	24.5	2.3	10.5	13.3	0.9
Cycle Queue Clearance Time (g _c), s		0.0	2.7		0.0	10.7	4.5	24.5	2.3	10.5	13.3	0.9
Green Ratio (g/C)		0.16	0.25		0.16	0.32	0.09	0.53	0.53	0.16	0.60	0.60
Capacity (c), veh/h		307	707		307	512	296	2620	815	536	2975	925
Volume-to-Capacity Ratio (X)		0.000	0.169		0.000	0.509	0.662	0.745	0.107	0.851	0.490	0.047
Back of Queue (Q), ft/ln (50 th percentile)		0	20.1		0	88.6	45	193.5	17.1	119.9	92	6.4
Back of Queue (Q), veh/ln (50 th percentile)		0.0	0.8		0.0	3.5	1.7	7.4	0.7	4.6	3.5	0.2
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	23.4		0.0	21.9	35.4	14.7	9.5	32.7	9.1	6.6
Incremental Delay (d ₂), s/veh		0.0	0.0		0.0	0.3	1.0	2.0	0.3	10.0	0.6	0.1
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	23.4		0.0	22.2	36.3	16.7	9.8	42.7	9.7	6.7
Level of Service (LOS)			C			C	D	B	A	D	A	A
Approach Delay, s/veh / LOS	23.4		C	22.2		C	18.2		B	17.4		B
Intersection Delay, s/veh / LOS	18.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.84	C	2.84	C	2.08	B	2.23	B
Bicycle LOS Score / LOS	0.68	A	0.92	A	1.72	B	1.56	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	E129_US23-DelPlazaN_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	90		80						1339		2183	70

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	66.1	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

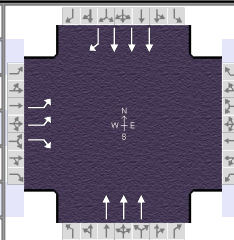
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		16.9				73.1		73.1
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		6.6						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		0.99						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	98		87					1455			2373	76
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585					1631			1631	1522
Queue Service Time (g _s), s	2.3		4.6					10.1			22.5	1.3
Cycle Queue Clearance Time (g _c), s	2.3		4.6					10.1			22.5	1.3
Green Ratio (g/C)	0.11		0.11					0.73			0.73	0.73
Capacity (c), veh/h	381		174					3594			3594	1118
Volume-to-Capacity Ratio (X)	0.257		0.499					0.405			0.660	0.068
Back of Queue (Q), ft/ln (50 th percentile)	23.5		43.6					51.4			116.4	6.5
Back of Queue (Q), veh/ln (50 th percentile)	0.9		1.7					1.9			4.4	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00					0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	36.7		37.7					4.5			6.2	3.3
Incremental Delay (d ₂), s/veh	0.1		0.8					0.3			1.0	0.1
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	36.8		38.5					4.9			7.1	3.5
Level of Service (LOS)	D		D					A			A	A
Approach Delay, s/veh / LOS	37.6		D		0.0			4.9		A	7.0	A
Intersection Delay, s/veh / LOS	7.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	0.65	A	2.03	B
Bicycle LOS Score / LOS		F			1.29	A	1.83	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	E129_US23-DelPlazaN_PM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	350		100						1984			1644 220

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	63.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

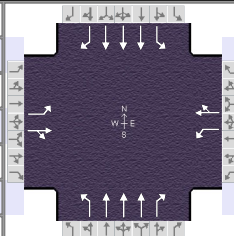
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		19.5				70.5		70.5
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		11.6						
Green Extension Time (g _e), s		1.0				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	380		109					2157			1787	239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585					1631			1631	1522
Queue Service Time (g _s), s	9.6		5.7					20.9			15.3	4.9
Cycle Queue Clearance Time (g _c), s	9.6		5.7					20.9			15.3	4.9
Green Ratio (g/C)	0.14		0.14					0.71			0.71	0.71
Capacity (c), veh/h	482		221					3450			3450	1073
Volume-to-Capacity Ratio (X)	0.789		0.492					0.625			0.518	0.223
Back of Queue (Q), ft/ln (50 th percentile)	96.8		52.9					122.2			88.1	28.9
Back of Queue (Q), veh/ln (50 th percentile)	3.8		2.1					4.6			3.3	1.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00					0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	37.4		35.8					7.0			6.2	4.6
Incremental Delay (d ₂), s/veh	1.1		0.6					0.9			0.6	0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	38.6		36.4					7.9			6.7	5.1
Level of Service (LOS)	D		D					A			A	A
Approach Delay, s/veh / LOS	38.1		D		0.0			7.9		A	6.5	A
Intersection Delay, s/veh / LOS	10.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	0.65	A	2.04	B
Bicycle LOS Score / LOS		F			1.67	B	1.60	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	E130_US23-Cottswold_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	30	10	60	40	10	40	30	1367	40	40	2130	20

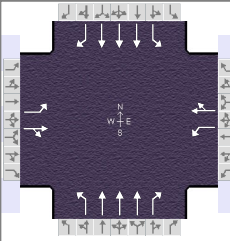
Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.9	0.7	57.4	9.9	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.9		15.9	9.9	63.4	10.6	64.2
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s		6.8		8.8	3.7		4.2	
Green Extension Time (g_e), s		0.3		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	0.56		0.66	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	33	76		43	54		33	1486	43	43	2315	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1350	1620		1323	1635		1711	1631	1522	1711	1631	1522
Queue Service Time (g_s), s	2.1	3.9		2.9	2.8		1.7	14.2	1.0	2.2	28.6	0.5
Cycle Queue Clearance Time (g_c), s	4.8	3.9		6.8	2.8		1.7	14.2	1.0	2.2	28.6	0.5
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.04	0.64	0.64	0.05	0.65	0.65
Capacity (c), veh/h	188	179		168	181		74	3122	971	88	3162	984
Volume-to-Capacity Ratio (X)	0.174	0.425		0.258	0.301		0.440	0.476	0.045	0.493	0.732	0.022
Back of Queue (Q), ft/ln (50 th percentile)	16.3	37.7		22.4	26.5		18.3	98.8	6.6	24.2	199.2	3.1
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.5		0.9	1.0		0.7	3.7	0.2	0.9	7.5	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.0	37.4		40.5	36.8		42.0	8.5	6.1	41.5	10.7	5.7
Incremental Delay (d_2), s/veh	0.2	0.6		0.3	0.3		1.5	0.5	0.1	1.6	1.5	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	38.0		40.8	37.2		43.5	9.0	6.2	43.1	12.2	5.8
Level of Service (LOS)	D	D		D	D		D	A	A	D	B	A
Approach Delay, s/veh / LOS	38.3		D	38.8		D	9.6		A	12.7		B
Intersection Delay, s/veh / LOS	12.9						B					

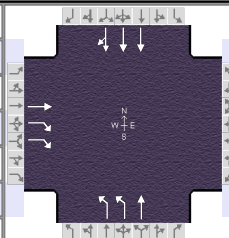
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.73	C	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.35	A	1.80	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information															
Agency	ms consultants				Duration, h	0.250														
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other														
Jurisdiction		Time Period	PM Peak		PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00														
Intersection	Cottswold Drive		File Name	E130_US23-Cottswold_PM.xus																
Project Description	Concept E Design Year (2030)																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h					60	20	90	80	30	90	90	2095	80	130	1720	40				
Signal Information																				
Cycle, s	90.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On		Green	6.6	2.6	48.4	14.5	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	0.0	4.0	4.0	0.0	0.0									
					Red	2.0	0.0	2.0	2.0	0.0	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							6.0				6.0		2.0		3.0		2.0		3.0	
Phase Duration, s							20.5				20.5		12.6		54.4		15.1		57.0	
Change Period, ($Y+R_c$), s							6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s							3.1				3.1		2.9		0.0		2.9		0.0	
Queue Clearance Time (g_s), s							12.9				13.9		7.1				9.3			
Green Extension Time (g_e), s							0.6				0.6		0.1		0.0		0.1		0.0	
Phase Call Probability							1.00				1.00		0.91				0.97			
Max Out Probability							0.00				0.01		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					65	120		87	130		98	2277	87	141	1870	43				
Adjusted Saturation Flow Rate (s), veh/h/ln					1260	1630		1272	1648		1711	1631	1522	1711	1631	1522				
Queue Service Time (g_s), s					4.5	6.0		6.0	6.5		5.1	36.3	2.5	7.3	24.2	1.1				
Cycle Queue Clearance Time (g_c), s					10.9	6.0		11.9	6.5		5.1	36.3	2.5	7.3	24.2	1.1				
Green Ratio (g/C)					0.16	0.16		0.16	0.16		0.07	0.54	0.54	0.10	0.57	0.57				
Capacity (c), veh/h					193	263		202	266		125	2629	818	174	2769	862				
Volume-to-Capacity Ratio (X)					0.337	0.455		0.431	0.491		0.785	0.866	0.106	0.814	0.675	0.050				
Back of Queue (Q), ft/ln (50 th percentile)					33.2	56.4		44.9	62		56.1	310	20	79.5	190.9	8.8				
Back of Queue (Q), veh/ln (50 th percentile)					1.3	2.2		1.8	2.4		2.1	11.7	0.8	3.0	7.2	0.3				
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00				
Uniform Delay (d_1), s/veh					39.3	34.2		39.5	34.4		41.0	18.0	10.2	39.6	13.7	8.7				
Incremental Delay (d_2), s/veh					0.4	0.5		0.5	0.5		4.1	4.1	0.3	3.5	1.3	0.1				
Initial Queue Delay (d_3), s/veh					0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh					39.7	34.6		40.0	34.9		45.1	22.2	10.5	43.1	15.1	8.8				
Level of Service (LOS)					D	C		D	C		D	C	B	D	B	A				
Approach Delay, s/veh / LOS					36.4		D	37.0		D	22.7		C	16.9		B				
Intersection Delay, s/veh / LOS					21.4					C										
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.72		C	2.72		C	1.89		B	1.88		B				
Bicycle LOS Score / LOS					0.79		A	0.85		A	1.84		B	1.62		B				

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	E131_US23-SouthSandusky_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	312				295	0			1870	16

Signal Information														
Cycle, s	65.0	Reference Phase	6											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	8.1	36.1	8.9	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

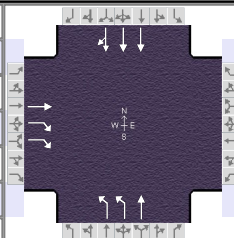
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		8.9			14.1	56.1		42.1
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		8.7			7.9			
Green Extension Time (g _e), s		0.2			0.2	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h		0	339				321	0		1368	682	
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1856		1856	1847	
Queue Service Time (g _s), s		0.0	6.7				5.9	0.0		18.1	16.9	
Cycle Queue Clearance Time (g _c), s		0.0	6.7				5.9	0.0		18.1	16.9	
Green Ratio (g/C)		0.14	0.26				0.12	0.77		0.55	0.55	
Capacity (c), veh/h		254	725				425	1431		2059	1025	
Volume-to-Capacity Ratio (X)		0.000	0.468				0.754	0.000		0.665	0.665	
Back of Queue (Q), ft/ln (95 th percentile)		0	87.6				108.8	0		233.6	244.3	
Back of Queue (Q), veh/ln (95 th percentile)		0.0	3.4				4.3	0.0		9.1	9.8	
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.11				0.22	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh		0.0	20.2				27.5	0.0		10.2	10.2	
Incremental Delay (d ₂), s/veh		0.0	0.2				3.3	0.0		1.7	3.4	
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		0.0	20.4				30.9	0.0		11.9	13.6	
Level of Service (LOS)			C				C			B	B	
Approach Delay, s/veh / LOS	20.4		C	0.0			30.9		C	12.5		B
Intersection Delay, s/veh / LOS	15.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.13	B	1.30	A	2.23	B
Bicycle LOS Score / LOS	1.05	A			1.02	A	1.62	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	E131_US23-SouthSandusky_PM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	341				481	0			1560	14

Signal Information														
Cycle, s	65.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	21.0	31.0	1.0	0.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

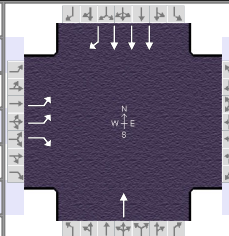
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		1.0			27.0	64.0		37.0
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		3.0			9.9			
Green Extension Time (g _e), s		0.0			1.0	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h		0	371				523	0		1142	569	
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1856		1856	1847	
Queue Service Time (g _s), s		0.0	1.0				7.9	0.0		15.1	15.1	
Cycle Queue Clearance Time (g _c), s		0.0	1.0				7.9	0.0		15.1	15.1	
Green Ratio (g/C)		0.02	0.34				0.32	0.89		0.48	0.48	
Capacity (c), veh/h		29	942				1109	1656		1770	881	
Volume-to-Capacity Ratio (X)		0.000	0.393				0.472	0.000		0.645	0.646	
Back of Queue (Q), ft/ln (95 th percentile)		0	83.2				133.4	0		232.5	241.1	
Back of Queue (Q), veh/ln (95 th percentile)		0.0	3.2				5.2	0.0		9.1	9.6	
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.10				0.27	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh		0.0	16.4				17.6	0.0		12.8	12.8	
Incremental Delay (d ₂), s/veh		0.0	0.1				1.4	0.0		1.8	3.6	
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		0.0	16.5				19.0	0.0		14.7	16.5	
Level of Service (LOS)			B				B			B	B	
Approach Delay, s/veh / LOS	16.5		B	0.0			19.0		B	15.3		B
Intersection Delay, s/veh / LOS	16.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.13	B	1.28	A	2.24	B
Bicycle LOS Score / LOS	1.10	A			1.35	A	1.43	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	E132_US23-US42_AM.xus				
Project Description	Concept E Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	338		75						0			1997 677

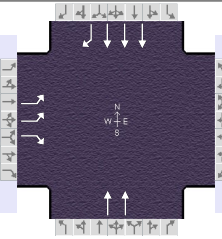
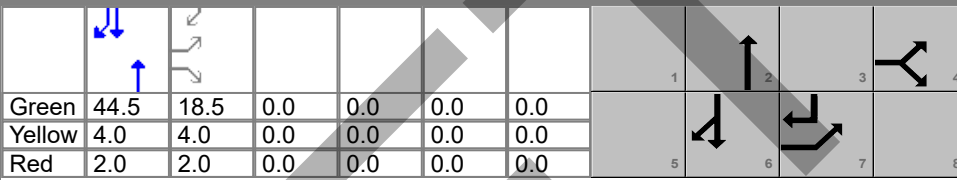
Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	38.0	10.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		16.0				44.0		44.0
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		8.4						
Green Extension Time (g _e), s		0.2				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		1.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14					2			6	16
Adjusted Flow Rate (v), veh/h	367		82					0			2171	736
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336					1811			1644	1485
Queue Service Time (g _s), s	6.4		3.2					0.0			17.3	11.8
Cycle Queue Clearance Time (g _c), s	6.4		3.2					0.0			17.3	11.8
Green Ratio (g/C)	0.17		0.17					0.63			0.63	0.80
Capacity (c), veh/h	540		223					1147			3125	1188
Volume-to-Capacity Ratio (X)	0.681		0.366					0.000			0.695	0.620
Back of Queue (Q), ft/ln (95 th percentile)	114.6		44.8					0			173.2	39
Back of Queue (Q), veh/ln (95 th percentile)	4.2		1.7					0.0			6.6	1.4
Queue Storage Ratio (RQ) (95 th percentile)	0.49		0.45					0.00			0.00	0.26
Uniform Delay (d ₁), s/veh	23.5		22.2					0.0			7.2	2.4
Incremental Delay (d ₂), s/veh	2.9		0.4					0.0			1.3	2.4
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0			0.0	0.0
Control Delay (d), s/veh	26.4		22.6					0.0			8.5	4.8
Level of Service (LOS)	C		C								A	A
Approach Delay, s/veh / LOS	25.7		C	0.0				0.0			7.6	A
Intersection Delay, s/veh / LOS	10.0						A					

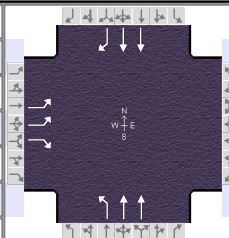
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.45	B	0.66	A	2.04	B
Bicycle LOS Score / LOS		F			0.49	A	2.09	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	US 42	File Name	E132_US23-US42_PM.xus													
Project Description	Concept E Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					624		78				0			1494		312
Signal Information								Cycle, s		75.0	Reference Phase	2				
Offset, s		0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	44.5	18.5	0.0	0.0				0.0	0.0							
Yellow	4.0	4.0	0.0	0.0	0.0	0.0										
Red	2.0	2.0	0.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4				2		6				
Case Number						9.0				8.0		7.0				
Phase Duration, s						24.5				50.5		50.5				
Change Period, (Y+R _c), s						6.0				6.0		6.0				
Max Allow Headway (MAH), s						3.0				0.0		0.0				
Queue Clearance Time (g _s), s						17.0										
Green Extension Time (g _e), s						1.5				0.0		0.0				
Phase Call Probability						1.00										
Max Out Probability						0.02										
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					7		14				2			6		16
Adjusted Flow Rate (v), veh/h					678		85				0			1624		339
Adjusted Saturation Flow Rate (s), veh/h/ln					1620		1336				1724			1644		1485
Queue Service Time (g _s), s					15.0		3.8				0.0			15.0		3.6
Cycle Queue Clearance Time (g _c), s					15.0		3.8				0.0			15.0		3.6
Green Ratio (g/C)					0.25		0.25				0.59			0.59		0.84
Capacity (c), veh/h					799		329				2047			2928		1247
Volume-to-Capacity Ratio (X)					0.849		0.257				0.000			0.555		0.272
Back of Queue (Q), ft/ln (95 th percentile)					251.3		54.1				0			195.5		9.1
Back of Queue (Q), veh/ln (95 th percentile)					9.3		2.0				0.0			7.5		0.3
Queue Storage Ratio (RQ) (95 th percentile)					1.07		0.54				0.00			0.00		0.06
Uniform Delay (d ₁), s/veh					26.9		22.7				0.0			9.2		1.2
Incremental Delay (d ₂), s/veh					2.4		0.2				0.0			0.8		0.5
Initial Queue Delay (d ₃), s/veh					0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh					29.3		22.9				0.0			10.0		1.8
Level of Service (LOS)					C		C							A		A
Approach Delay, s/veh / LOS					28.6		C	0.0			0.0			8.6		A
Intersection Delay, s/veh / LOS					14.2						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.30		B	2.46		B	0.67		A	2.06		B
Bicycle LOS Score / LOS							F				0.49		A	1.57		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	D125_US23-SR315_AM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	250		88				113	1279			2108	280

Signal Information													
Cycle, s	110.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.8	74.2	11.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

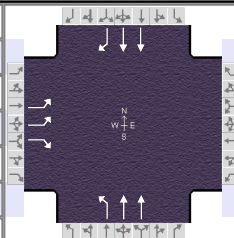
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		17.0			12.8	93.0		80.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		10.4			5.3			
Green Extension Time (g _e), s		0.5			0.2	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		0.01			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	272		96				123	1390		2291		304
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	8.4		5.9				3.3	15.7		72.7		6.2
Cycle Queue Clearance Time (g _c), s	8.4		5.9				3.3	15.7		72.7		6.2
Green Ratio (g/C)	0.10		0.16				0.75	0.79		0.67		0.77
Capacity (c), veh/h	345		257				174	2706		2307		1179
Volume-to-Capacity Ratio (X)	0.787		0.373				0.706	0.514		0.993		0.258
Back of Queue (Q), ft/ln (95 th percentile)	161.7		101.4				151.7	143.7		913.6		60.5
Back of Queue (Q), veh/ln (95 th percentile)	6.4		4.0				5.7	5.4		34.6		2.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	48.4		41.1				34.2	4.0		17.7		3.5
Incremental Delay (d ₂), s/veh	1.5		0.3				2.0	0.7		17.2		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	49.9		41.4				36.1	4.7		34.9		4.0
Level of Service (LOS)	D		D				D	A		C		A
Approach Delay, s/veh / LOS	47.7		D	0.0			7.3	A		31.3		C
Intersection Delay, s/veh / LOS	24.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	0.63	A	2.06	B
Bicycle LOS Score / LOS		F			1.74	B	2.63	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	D125_US23-SR315_PM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	380		111				118	1684			1517	380

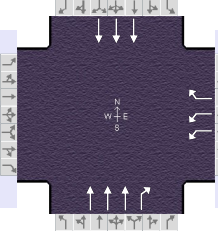
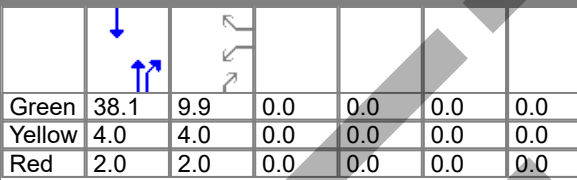
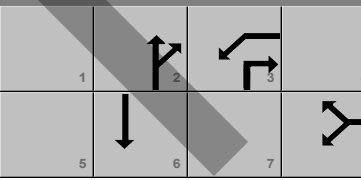
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	51.8	13.4	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		19.4			12.7	70.6		57.8
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		12.4			4.4			
Green Extension Time (g _e), s		1.1			0.2	0.0		0.0
Phase Call Probability		1.00			0.96			
Max Out Probability		0.00			0.00			

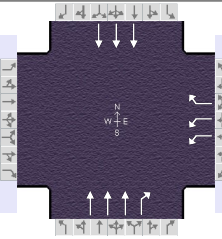
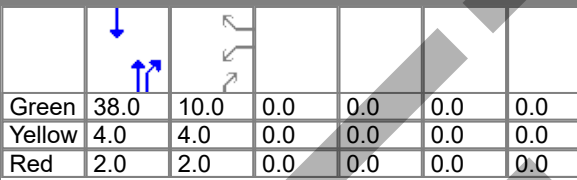
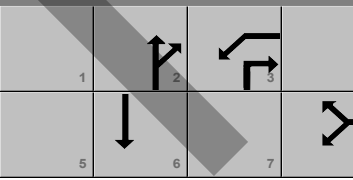
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	413		121				128	1830		1649		413
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	10.4		5.8				2.4	29.3		35.5		9.2
Cycle Queue Clearance Time (g _c), s	10.4		5.8				2.4	29.3		35.5		9.2
Green Ratio (g/C)	0.15		0.22				0.67	0.72		0.58		0.73
Capacity (c), veh/h	516		355				260	2453		1970		1104
Volume-to-Capacity Ratio (X)	0.800		0.340				0.493	0.746		0.837		0.374
Back of Queue (Q), ft/ln (95 th percentile)	188.5		92.7				68.7	290.6		457.7		91
Back of Queue (Q), veh/ln (95 th percentile)	7.4		3.7				2.6	11.0		17.3		3.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	37.0		29.3				18.0	7.7		15.6		4.7
Incremental Delay (d ₂), s/veh	1.1		0.2				0.5	2.1		4.4		1.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	38.1		29.5				18.5	9.8		20.0		5.6
Level of Service (LOS)	D		C				B	A		C		A
Approach Delay, s/veh / LOS	36.2		D	0.0			10.4	B		17.2		B
Intersection Delay, s/veh / LOS	16.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	0.65	A	2.07	B
Bicycle LOS Score / LOS		F			2.10	B	2.19	B

HCS Signalized Intersection Results Summary

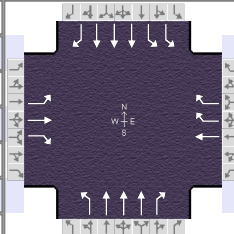
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Meeker Way		File Name	D126_US23-Meeker_AM.xus												
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								240		20	1346	130			2143	
Signal Information																
Cycle, s	60.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	38.1	9.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0							
		Red	2.0	2.0	0.0	0.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2		6				
Case Number								9.0		7.0		8.0				
Phase Duration, s								15.9		44.1		44.1				
Change Period, (Y+R _c), s								6.0		6.0		6.0				
Max Allow Headway (MAH), s								3.0		0.0		0.0				
Queue Clearance Time (g _s), s								6.1								
Green Extension Time (g _e), s								0.3		0.0		0.0				
Phase Call Probability								0.99								
Max Out Probability								0.13								
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18		2	12		6	
Adjusted Flow Rate (v), veh/h								261		22		1463	141		2329	
Adjusted Saturation Flow Rate (s), veh/h/ln								1730		1585		1631	1522		1631	
Queue Service Time (g _s), s								4.1		0.7		9.3	1.2		19.9	
Cycle Queue Clearance Time (g _c), s								4.1		0.7		9.3	1.2		19.9	
Green Ratio (g/C)								0.17		0.17		0.63	0.80		0.63	
Capacity (c), veh/h								571		262		3106	1218		3106	
Volume-to-Capacity Ratio (X)								0.457		0.083		0.471	0.116		0.750	
Back of Queue (Q), ft/ln (50 th percentile)								35.9		5.6		42.5	1.7		95	
Back of Queue (Q), veh/ln (50 th percentile)								1.4		0.2		1.6	0.1		3.6	
Queue Storage Ratio (RQ) (50 th percentile)								0.00		0.00		0.00	0.00		0.00	
Uniform Delay (d ₁), s/veh								22.6		21.2		5.7	1.3		7.6	
Incremental Delay (d ₂), s/veh								0.2		0.0		0.5	0.2		1.7	
Initial Queue Delay (d ₃), s/veh								0.0		0.0		0.0	0.0		0.0	
Control Delay (d), s/veh								22.8		21.2		6.2	1.5		9.3	
Level of Service (LOS)								C		C		A	A		A	
Approach Delay, s/veh / LOS					0.0			22.7	C		5.8	A		9.3	A	
Intersection Delay, s/veh / LOS								8.9				A				
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.59		C	2.45		B	2.04		B	0.66		A
Bicycle LOS Score / LOS										F	1.37		A	1.77		B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Meeker Way		File Name	D126_US23-Meeker_PM.xus												
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								380		100	1922	230			1557	
Signal Information																
Cycle, s	60.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	38.0	10.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0							
		Red	2.0	2.0	0.0	0.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2		6				
Case Number								9.0		7.0		8.0				
Phase Duration, s								16.0		44.0		44.0				
Change Period, (Y+R _c), s								6.0		6.0		6.0				
Max Allow Headway (MAH), s								3.0		0.0		0.0				
Queue Clearance Time (g _s), s								8.8								
Green Extension Time (g _e), s								0.5		0.0		0.0				
Phase Call Probability								1.00								
Max Out Probability								0.42								
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18		2	12		6	
Adjusted Flow Rate (v), veh/h								413		109		2089	250		1692	
Adjusted Saturation Flow Rate (s), veh/h/ln								1730		1585		1631	1522		1631	
Queue Service Time (g _s), s								6.8		3.7		16.4	2.4		11.6	
Cycle Queue Clearance Time (g _c), s								6.8		3.7		16.4	2.4		11.6	
Green Ratio (g/C)								0.17		0.17		0.63	0.80		0.63	
Capacity (c), veh/h								576		264		3099	1218		3099	
Volume-to-Capacity Ratio (X)								0.717		0.412		0.674	0.205		0.546	
Back of Queue (Q), ft/ln (50 th percentile)								61.6		30		76.4	3.4		53.3	
Back of Queue (Q), veh/ln (50 th percentile)								2.4		1.2		2.9	0.1		2.0	
Queue Storage Ratio (RQ) (50 th percentile)								0.00		0.00		0.00	0.00		0.00	
Uniform Delay (d ₁), s/veh								23.7		22.4		7.0	1.4		6.2	
Incremental Delay (d ₂), s/veh								1.4		0.4		1.2	0.4		0.7	
Initial Queue Delay (d ₃), s/veh								0.0		0.0		0.0	0.0		0.0	
Control Delay (d), s/veh								25.0		22.8		8.2	1.8		6.9	
Level of Service (LOS)								C		C		A	A		A	
Approach Delay, s/veh / LOS					0.0			24.5		C	7.5	A		6.9		A
Intersection Delay, s/veh / LOS								9.2								A
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.59		C	2.45		B	2.04		B	0.66		A
Bicycle LOS Score / LOS										F	1.77		B	1.42		A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	D127_US23-Hawthorn_AM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	40	30	160		0	50	60	1410	80	380	2045	20

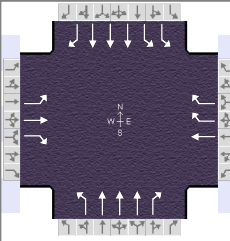
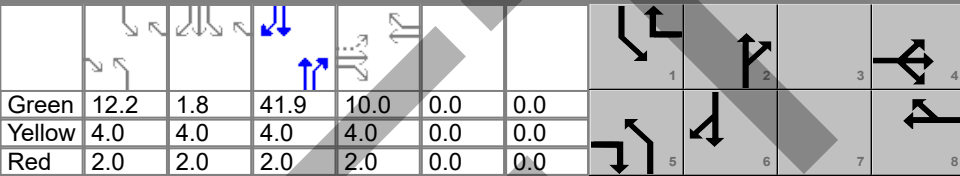
Signal Information													
Cycle, s	65.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.8	5.3	26.9	10.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		16.0		16.0	10.8	32.9	16.1	38.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		8.2		2.9	4.4		9.8	
Green Extension Time (g _e), s		0.3		0.5	0.1	0.0	0.3	0.0
Phase Call Probability		1.00		1.00	0.69		1.00	
Max Out Probability		0.04		0.00	0.00		0.77	

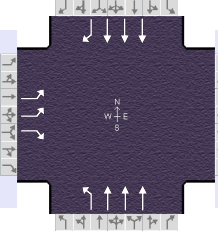
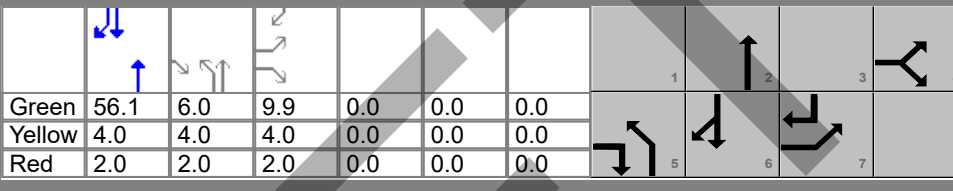
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h	43	33	174	0	54	65	1533	87	413	2223	22	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585		1870	1392	1711	1631	1522	1661	1631	1522
Queue Service Time (g _s), s	1.4	1.0	6.2		0.0	0.9	2.4	17.4	2.3	7.8	27.3	0.5
Cycle Queue Clearance Time (g _c), s	1.4	1.0	6.2		0.0	0.9	2.4	17.4	2.3	7.8	27.3	0.5
Green Ratio (g/C)	0.15	0.15	0.23		0.15	0.31	0.07	0.41	0.41	0.16	0.50	0.50
Capacity (c), veh/h	384	287	361		287	860	127	2026	630	517	2424	754
Volume-to-Capacity Ratio (X)	0.113	0.114	0.482		0.000	0.063	0.512	0.756	0.138	0.798	0.917	0.029
Back of Queue (Q), ft/ln (50 th percentile)	12.9	9.6	50.2		0	6	23.8	142.2	18.1	77.3	224.7	3.4
Back of Queue (Q), veh/ln (50 th percentile)	0.5	0.4	2.0		0.0	0.2	0.9	5.4	0.7	2.9	8.5	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	23.9	23.7	21.8		0.0	15.8	28.9	16.2	11.8	26.5	15.2	8.4
Incremental Delay (d ₂), s/veh	0.0	0.1	0.4		0.0	0.0	1.2	2.7	0.5	4.0	6.9	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	23.9	23.8	22.1		0.0	15.8	30.1	18.9	12.3	30.4	22.1	8.5
Level of Service (LOS)	C	C	C			B	C	B	B	C	C	A
Approach Delay, s/veh / LOS	22.7	C		15.8	B		19.0	B		23.3	C	
Intersection Delay, s/veh / LOS	21.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.83	C	2.25	B	2.07	B
Bicycle LOS Score / LOS	0.90	A	0.58	A	1.41	A	1.95	B

HCS Signalized Intersection Results Summary

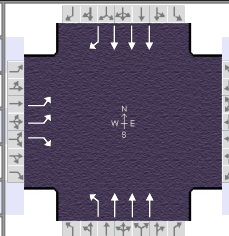
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Hawthorn Blvd		File Name	D127_US23-Hawthorn_PM.xus												
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					20	60	60		0	150	180	2003	160	590	1407	50
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	12.2	1.8	41.9	10.0	0.0	0.0										
Yellow	4.0	4.0	4.0	4.0	0.0	0.0										
Red	2.0	2.0	2.0	2.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						5.0		7.0	2.0	3.0	2.0	3.0				
Phase Duration, s						16.0		16.0	18.2	47.9	26.1	55.8				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.1	2.9	0.0	2.9	0.0				
Queue Clearance Time (g _s), s						4.9		5.7	12.0		18.7					
Green Extension Time (g _e), s						0.4		0.4	0.3	0.0	1.4	0.0				
Phase Call Probability						1.00		1.00	0.99		1.00					
Max Out Probability						0.01		0.02	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	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h					22	65	65	0	163	196	2177	174	641	1529	54	
Adjusted Saturation Flow Rate (s), veh/h/ln					1781	1870	1585		1870	1392	1711	1631	1522	1661	1631	1522
Queue Service Time (g _s), s					1.0	2.9	2.9	0.0	3.7	10.0	38.6	6.2	16.7	18.3	1.5	
Cycle Queue Clearance Time (g _c), s					1.0	2.9	2.9	0.0	3.7	10.0	38.6	6.2	16.7	18.3	1.5	
Green Ratio (g/C)					0.11	0.11	0.25		0.11	0.33	0.14	0.47	0.47	0.22	0.55	0.55
Capacity (c), veh/h					278	208	392		208	931	233	2278	709	742	2705	842
Volume-to-Capacity Ratio (X)					0.078	0.314	0.166		0.000	0.175	0.840	0.956	0.245	0.865	0.565	0.065
Back of Queue (Q), ft/ln (50 th percentile)					10.3	31.7	25.7		0	28.1	107.8	384.1	52.7	165.1	146.3	11.6
Back of Queue (Q), veh/ln (50 th percentile)					0.4	1.2	1.0		0.0	1.1	4.1	14.6	2.0	6.3	5.5	0.4
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					36.0	36.8	26.6		0.0	21.2	37.9	23.1	14.5	33.6	13.1	9.3
Incremental Delay (d ₂), s/veh					0.0	0.3	0.1		0.0	0.0	3.1	11.0	0.8	1.2	0.9	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					36.0	37.2	26.7		0.0	21.2	41.1	34.1	15.3	34.9	14.0	9.5
Level of Service (LOS)					D	D	C			C	D	C	B	C	B	A
Approach Delay, s/veh / LOS					32.5	C	21.2	C	33.4	C	19.9	B				
Intersection Delay, s/veh / LOS					27.0			C								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.73	C	2.85	C	2.26	B	2.08	B				
Bicycle LOS Score / LOS					0.74	A	0.76	A	1.89	B	1.71	B				

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00										
Intersection	Delaware Plaza North		File Name	D129_US23-DelPlazaN_AM.xus												
Project Description	Concept D Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					90		94				70	1486			2340	70
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	Off													
Green	56.1	6.0	9.9	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4			5	2		6				
Case Number						9.0			2.0	4.0		7.4				
Phase Duration, s						15.9			12.0	74.1		62.1				
Change Period, (Y+R _c), s						6.0			6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.1			2.9	0.0		0.0				
Queue Clearance Time (g _s), s						7.1			5.8							
Green Extension Time (g _e), s						0.4			0.8	0.0		0.0				
Phase Call Probability						0.99			0.85							
Max Out Probability						0.00			1.00							
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					7		14				5	2		6	16	
Adjusted Flow Rate (v), veh/h					98		102				76	1615		2543	76	
Adjusted Saturation Flow Rate (s), veh/h/ln					1730		1585				1781	1631		1631	1522	
Queue Service Time (g _s), s					2.3		5.1				3.8	10.8		36.7	1.3	
Cycle Queue Clearance Time (g _c), s					2.3		5.1				3.8	10.8		36.7	1.3	
Green Ratio (g/C)					0.11		0.18				0.07	0.76		0.62	0.73	
Capacity (c), veh/h					382		280				118	3701		3050	1117	
Volume-to-Capacity Ratio (X)					0.256		0.365				0.645	0.436		0.834	0.068	
Back of Queue (Q), ft/ln (50 th percentile)					23.5		46.6				42.9	47.6		273.1	6.2	
Back of Queue (Q), veh/ln (50 th percentile)					0.9		1.8				1.7	1.8		10.3	0.2	
Queue Storage Ratio (RQ) (50 th percentile)					0.00		0.00				0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh					36.7		32.6				41.0	4.0		13.3	0.0	
Incremental Delay (d ₂), s/veh					0.1		0.3				4.6	0.4		2.9	0.1	
Initial Queue Delay (d ₃), s/veh					0.0		0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh					36.8		32.9				45.6	4.4		16.1	0.1	
Level of Service (LOS)					D		C				D	A		B	A	
Approach Delay, s/veh / LOS					34.8		C	0.0			6.2	A	15.7	B		
Intersection Delay, s/veh / LOS					13.0			B								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.60		C	2.60		C	0.64	A	2.14	B		
Bicycle LOS Score / LOS							F				1.42	A	1.93	B		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North		File Name	D129_US23-DelPlazaN_PM.xus			
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	350		155				180	2211			1761	220

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	47.1	12.2	12.7	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	Off	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

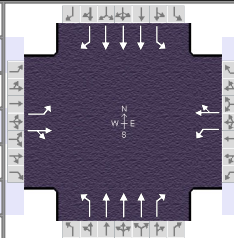
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.4
Phase Duration, s		18.7			18.2	71.3		53.1
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.6			11.6			
Green Extension Time (g _e), s		1.1			0.6	0.0		0.0
Phase Call Probability		1.00			0.99			
Max Out Probability		0.00			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	380		168				196	2403		1914		239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1781	1631		1631		1522
Queue Service Time (g _s), s	9.6		7.7				9.6	23.8		27.6		5.7
Cycle Queue Clearance Time (g _c), s	9.6		7.7				9.6	23.8		27.6		5.7
Green Ratio (g/C)	0.14		0.28				0.14	0.73		0.52		0.66
Capacity (c), veh/h	486		440				244	3553		2555		1009
Volume-to-Capacity Ratio (X)	0.782		0.383				0.801	0.676		0.749		0.237
Back of Queue (Q), ft/ln (50 th percentile)	96.6		67.9				124.9	127.2		231.9		31.8
Back of Queue (Q), veh/ln (50 th percentile)	3.8		2.7				4.9	4.8		8.8		1.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	37.3		26.3				37.6	6.6		16.9		0.0
Incremental Delay (d ₂), s/veh	1.1		0.2				15.6	1.1		2.1		0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	38.4		26.5				53.2	7.7		18.9		0.6
Level of Service (LOS)	D		C				D	A		B		A
Approach Delay, s/veh / LOS	34.7		C	0.0			11.1	B		16.9		B
Intersection Delay, s/veh / LOS	15.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.65	A	2.13	B
Bicycle LOS Score / LOS		F			1.92	B	1.67	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	D130_US23-Cottswold_AM.xus				
Project Description	Concept D Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	30	10	60	40	10	40	30	1367	40	40	2130	20

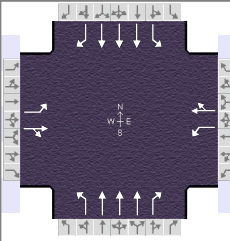
Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.9	0.7	57.4	9.9	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.9		15.9	9.9	63.4	10.6	64.2
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s		6.8		8.8	3.7		4.2	
Green Extension Time (g_e), s		0.3		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	0.56		0.66	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	33	76		43	54		33	1486	43	43	2315	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1350	1620		1323	1635		1711	1631	1522	1711	1631	1522
Queue Service Time (g_s), s	2.1	3.9		2.9	2.8		1.7	14.2	1.0	2.2	28.6	0.5
Cycle Queue Clearance Time (g_c), s	4.8	3.9		6.8	2.8		1.7	14.2	1.0	2.2	28.6	0.5
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.04	0.64	0.64	0.05	0.65	0.65
Capacity (c), veh/h	188	179		168	181		74	3122	971	88	3162	984
Volume-to-Capacity Ratio (X)	0.174	0.425		0.258	0.301		0.440	0.476	0.045	0.493	0.732	0.022
Back of Queue (Q), ft/ln (50 th percentile)	16.3	37.7		22.4	26.5		18.3	98.8	6.6	24.2	199.2	3.1
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.5		0.9	1.0		0.7	3.7	0.2	0.9	7.5	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.0	37.4		40.5	36.8		42.0	8.5	6.1	41.5	10.7	5.7
Incremental Delay (d_2), s/veh	0.2	0.6		0.3	0.3		1.5	0.5	0.1	1.6	1.5	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	38.0		40.8	37.2		43.5	9.0	6.2	43.1	12.2	5.8
Level of Service (LOS)	D	D		D	D		D	A	A	D	B	A
Approach Delay, s/veh / LOS	38.3		D	38.8		D	9.6		A	12.7		B
Intersection Delay, s/veh / LOS	12.9						B					

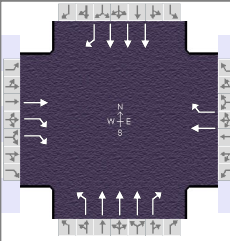
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.73	C	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.35	A	1.80	B

HCS Signalized Intersection Results Summary

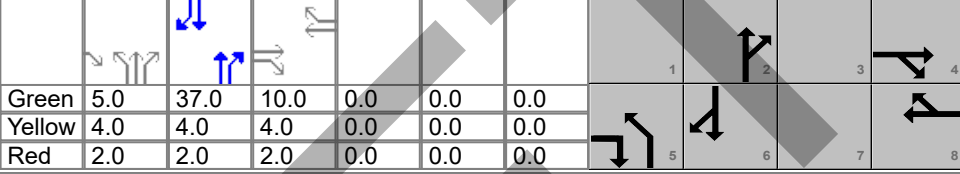
General Information					Intersection Information															
Agency	ms consultants				Duration, h	0.250														
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other														
Jurisdiction		Time Period	PM Peak		PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00														
Intersection	Cottswold Drive	File Name	D130_US23-Cottswold_PM.xus																	
Project Description	Concept D Design Year (2030)																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h					60	20	90	80	30	90	90	2095	80	130	1720	40				
Signal Information																				
Cycle, s	90.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On		Green	6.6	2.6	48.4	14.5	0.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	0.0	4.0	4.0	0.0	0.0									
					Red	2.0	0.0	2.0	2.0	0.0	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							6.0				6.0		2.0		3.0		2.0		3.0	
Phase Duration, s							20.5				20.5		12.6		54.4		15.1		57.0	
Change Period, ($Y+R_c$), s							6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s							3.1				3.1		2.9		0.0		2.9		0.0	
Queue Clearance Time (g_s), s							12.9				13.9		7.1				9.3			
Green Extension Time (g_e), s							0.6				0.6		0.1		0.0		0.1		0.0	
Phase Call Probability							1.00				1.00		0.91				0.97			
Max Out Probability							0.00				0.01		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					65	120		87	130		98	2277	87	141	1870	43				
Adjusted Saturation Flow Rate (s), veh/h/ln					1260	1630		1272	1648		1711	1631	1522	1711	1631	1522				
Queue Service Time (g_s), s					4.5	6.0		6.0	6.5		5.1	36.3	2.5	7.3	24.2	1.1				
Cycle Queue Clearance Time (g_c), s					10.9	6.0		11.9	6.5		5.1	36.3	2.5	7.3	24.2	1.1				
Green Ratio (g/C)					0.16	0.16		0.16	0.16		0.07	0.54	0.54	0.10	0.57	0.57				
Capacity (c), veh/h					193	263		202	266		125	2629	818	174	2769	862				
Volume-to-Capacity Ratio (X)					0.337	0.455		0.431	0.491		0.785	0.866	0.106	0.814	0.675	0.050				
Back of Queue (Q), ft/ln (50 th percentile)					33.2	56.4		44.9	62		56.1	310	20	79.5	190.9	8.8				
Back of Queue (Q), veh/ln (50 th percentile)					1.3	2.2		1.8	2.4		2.1	11.7	0.8	3.0	7.2	0.3				
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00				
Uniform Delay (d_1), s/veh					39.3	34.2		39.5	34.4		41.0	18.0	10.2	39.6	13.7	8.7				
Incremental Delay (d_2), s/veh					0.4	0.5		0.5	0.5		4.1	4.1	0.3	3.5	1.3	0.1				
Initial Queue Delay (d_3), s/veh					0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh					39.7	34.6		40.0	34.9		45.1	22.2	10.5	43.1	15.1	8.8				
Level of Service (LOS)					D	C		D	C		D	C	B	D	B	A				
Approach Delay, s/veh / LOS					36.4		D	37.0		D	22.7		C	16.9		B				
Intersection Delay, s/veh / LOS					21.4					C										
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.72		C	2.72		C	1.89		B	1.88		B				
Bicycle LOS Score / LOS					0.79		A	0.85		A	1.84		B	1.62		B				

HCS Signalized Intersection Results Summary

General Information						Intersection Information					
Agency	ms consultants					Duration, h	0.250				
Analyst	JRH	Analysis Date	Jun 25, 2024			Area Type	Other				
Jurisdiction		Time Period	AM Peak			PHF	0.92				
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00				
Intersection	Hawthorn Blvd		File Name	C127_US23-Hawthorn_AM.xus							
Project Description	Concept C Design Year (2030)										



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					0	230		0	50	60	1435	56		2169	20

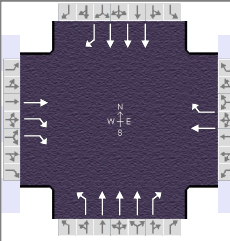
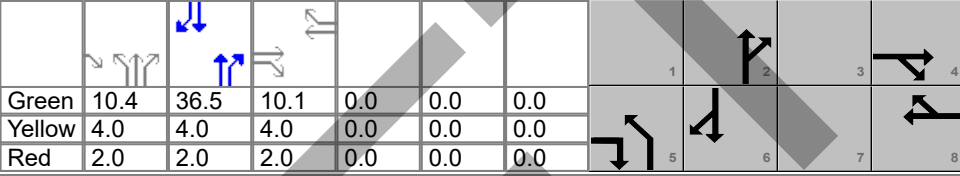
Signal Information				Signal Phases											
Cycle, s	70.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		5.0	37.0	10.0	0.0	0.0	0.0						
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0						
		Red		2.0	2.0	2.0	0.0	0.0	0.0						

Timer Results		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase			4		8	5	2		6
Case Number			7.0		7.0	2.0	3.0		7.3
Phase Duration, s			16.0		16.0	11.0	54.0		43.0
Change Period, (Y+R _c), s			6.0		6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s			3.2		3.2	2.9	0.0		0.0
Queue Clearance Time (g _s), s			7.4		4.1	4.6			
Green Extension Time (g _e), s			0.3		0.4	0.0	0.0		0.0
Phase Call Probability			1.00		1.00	0.72			
Max Out Probability			0.68		0.04	0.08			

Movement Group Results		EB			WB			NB			SB		
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18		5	2	12		6	16
Adjusted Flow Rate (v), veh/h		0	250		0	54		65	1560	61		2358	22
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1572		1711	1631	1522		1631	1522
Queue Service Time (g _s), s		0.0	5.4		0.0	2.1		2.6	10.3	0.9		30.7	0.5
Cycle Queue Clearance Time (g _c), s		0.0	5.4		0.0	2.1		2.6	10.3	0.9		30.7	0.5
Green Ratio (g/C)		0.14	0.21		0.14	0.14		0.07	0.69	0.69		0.53	0.53
Capacity (c), veh/h		266	601		266	224		123	3357	1044		2586	805
Volume-to-Capacity Ratio (X)		0.000	0.416		0.000	0.243		0.530	0.465	0.058		0.912	0.027
Back of Queue (Q), ft/ln (50 th percentile)		0	39.5		0	18.6		26.3	46.1	4.3		246.7	3.4
Back of Queue (Q), veh/ln (50 th percentile)		0.0	1.6		0.0	0.7		1.0	1.7	0.2		9.3	0.1
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	23.7		0.0	26.7		31.3	5.1	3.6		15.0	7.9
Incremental Delay (d ₂), s/veh		0.0	0.2		0.0	0.2		1.3	0.5	0.1		6.2	0.1
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Control Delay (d), s/veh		0.0	23.9		0.0	26.9		32.7	5.5	3.7		21.2	8.0
Level of Service (LOS)			C			C		C	A	A		C	A
Approach Delay, s/veh / LOS		23.9	C	26.9	C	6.5	A	21.1	C				
Intersection Delay, s/veh / LOS		15.7						B					

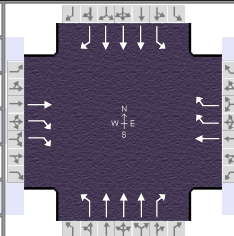
Multimodal Results		EB		WB		NB		SB	
Pedestrian LOS Score / LOS		2.71	C	2.58	C	1.85	B	2.07	B
Bicycle LOS Score / LOS		0.90	A	0.58	A	1.41	A	1.80	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Hawthorn Blvd		File Name	C127_US23-Hawthorn_PM.xus												
Project Description	Concept C Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						0	140		0	150	180	1999	112		1606	50
Signal Information																
Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	10.4	36.5	10.1	0.0	0.0	0.0					
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0								
		Red	2.0	2.0	2.0	0.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2		6				
Case Number						7.0		7.0	2.0	3.0		7.3				
Phase Duration, s						16.1		16.1	16.4	58.9		42.5				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.2		3.2	2.9	0.0		0.0				
Queue Clearance Time (g _s), s						5.1		9.5	10.3							
Green Extension Time (g _e), s						0.7		0.6	0.3	0.0		0.0				
Phase Call Probability						1.00		1.00	0.98							
Max Out Probability						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						4	14		8	18	5	2	12		6	16
Adjusted Flow Rate (v), veh/h						0	152		0	163	196	2173	122		1746	54
Adjusted Saturation Flow Rate (s), veh/h/ln						1870	1403		1870	1572	1711	1631	1522		1631	1522
Queue Service Time (g _s), s						0.0	3.1		0.0	7.5	8.3	17.7	1.9		21.4	1.4
Cycle Queue Clearance Time (g _c), s						0.0	3.1		0.0	7.5	8.3	17.7	1.9		21.4	1.4
Green Ratio (g/C)						0.13	0.27		0.13	0.13	0.14	0.71	0.71		0.49	0.49
Capacity (c), veh/h						252	768		252	212	238	3450	1073		2379	740
Volume-to-Capacity Ratio (X)						0.000	0.198		0.000	0.769	0.823	0.630	0.113		0.734	0.073
Back of Queue (Q), ft/ln (50 th percentile)						0	22.8		0	68.6	86	81.3	9.2		172.4	11
Back of Queue (Q), veh/ln (50 th percentile)						0.0	0.9		0.0	2.7	3.3	3.1	0.3		6.5	0.4
Queue Storage Ratio (RQ) (50 th percentile)						0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh						0.0	20.9		0.0	31.3	31.4	5.9	3.5		15.4	10.3
Incremental Delay (d ₂), s/veh						0.0	0.0		0.0	2.2	2.7	0.9	0.2		2.1	0.2
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0
Control Delay (d), s/veh						0.0	21.0		0.0	33.5	34.1	6.7	3.8		17.4	10.5
Level of Service (LOS)							C			C	C	A	A		B	B
Approach Delay, s/veh / LOS					21.0	C	33.5	C	8.8	A	17.2	B				
Intersection Delay, s/veh / LOS					13.3					B						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.72	C	2.58	C	1.84	B	2.08	B				
Bicycle LOS Score / LOS					0.74	A	0.76	A	1.86	B	1.48	A				

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	C130_US23-Cottswold_AM.xus				
Project Description	Concept C Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	100		0	90	30	1509	40	40	2281	20

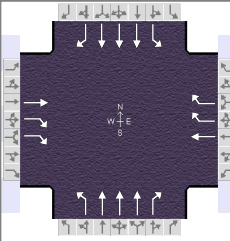
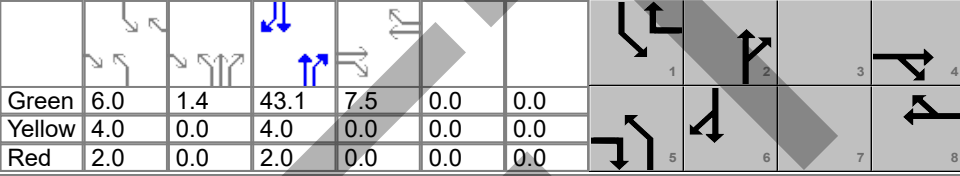
Signal Information														
Cycle, s	70.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	0.7	49.4	4.6	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	0.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		4.6		4.6	9.3	55.4	10.0	56.1
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		4.5		4.2	3.3		3.7	
Green Extension Time (g _e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		0.98		0.98	0.47		0.57	
Max Out Probability		0.08		0.05	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	109		0	98	33	1640	43	43	2479	22
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1425	1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s		0.0	2.5		0.0	2.2	1.3	10.4	0.6	1.7	20.5	0.3
Cycle Queue Clearance Time (g _c), s		0.0	2.5		0.0	2.2	1.3	10.4	0.6	1.7	20.5	0.3
Green Ratio (g/C)		0.07	0.11		0.07	0.12	0.05	0.71	0.71	0.06	0.72	0.72
Capacity (c), veh/h		124	318		124	352	80	3451	1074	98	3500	1089
Volume-to-Capacity Ratio (X)		0.000	0.342		0.000	0.278	0.406	0.475	0.040	0.445	0.708	0.020
Back of Queue (Q), ft/ln (50 th percentile)		0	19.2		0	16.7	13.5	41.3	2.6	17.7	79.1	1.2
Back of Queue (Q), veh/ln (50 th percentile)		0.0	0.8		0.0	0.7	0.5	1.6	0.1	0.7	3.0	0.0
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	28.6		0.0	27.9	32.4	4.6	3.1	31.9	5.7	2.9
Incremental Delay (d ₂), s/veh		0.0	0.2		0.0	0.2	1.2	0.5	0.1	1.2	1.2	0.0
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	28.9		0.0	28.0	33.6	5.0	3.2	33.1	7.0	2.9
Level of Service (LOS)			C			C	C	A	A	C	A	A
Approach Delay, s/veh / LOS	28.9		C	28.0		C	5.5		A	7.4		A
Intersection Delay, s/veh / LOS				7.7						A		

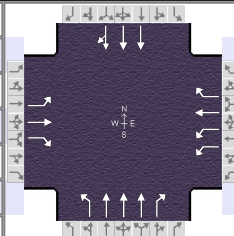
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	2.03	B	2.03	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.43	A	1.89	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2030		Analysis Period	1 > 7:00									
Intersection	Cottswold Drive		File Name	C130_US23-Cottswold_PM.xus												
Project Description	Concept C Design Year (2030)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						0	170		0	200	130	1842	40	90	2320	80
Signal Information																
Cycle, s	70.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.0	1.4	43.1	7.5	0.0	0.0										
Yellow	4.0	0.0	4.0	0.0	0.0	0.0										
Red	2.0	0.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						7.0		7.0	2.0	3.0	2.0	3.0				
Phase Duration, s						7.5		7.5	13.3	50.5	12.0	49.1				
Change Period, (Y+R _c), s						0.0		0.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.2	2.9	0.0	2.9	0.0				
Queue Clearance Time (g _s), s						5.9		6.7	7.6		5.9					
Green Extension Time (g _e), s						0.9		0.9	0.2	0.0	0.1	0.0				
Phase Call Probability						1.00		1.00	0.94		0.85					
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						4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h						0	185		0	217	141	2002	43	98	2522	87
Adjusted Saturation Flow Rate (s), veh/h/ln						1870	1403		1870	1425	1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s						0.0	3.9		0.0	4.7	5.6	17.6	0.7	3.9	28.6	1.6
Cycle Queue Clearance Time (g _c), s						0.0	3.9		0.0	4.7	5.6	17.6	0.7	3.9	28.6	1.6
Green Ratio (g/C)						0.11	0.21		0.11	0.19	0.10	0.64	0.64	0.09	0.62	0.62
Capacity (c), veh/h						201	595		201	549	179	3112	968	146	3016	938
Volume-to-Capacity Ratio (X)						0.000	0.310		0.000	0.396	0.789	0.643	0.045	0.672	0.836	0.093
Back of Queue (Q), ft/ln (50 th percentile)						0	28.6		0	34.7	58.4	98.9	4.3	39.9	179.4	9.8
Back of Queue (Q), veh/ln (50 th percentile)						0.0	1.1		0.0	1.4	2.2	3.7	0.2	1.5	6.8	0.4
Queue Storage Ratio (RQ) (50 th percentile)						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh						0.0	23.3		0.0	24.7	30.6	7.9	4.8	31.1	10.6	5.5
Incremental Delay (d ₂), s/veh						0.0	0.1		0.0	0.2	2.9	1.0	0.1	2.0	2.9	0.2
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh						0.0	23.4		0.0	24.9	33.5	8.9	4.9	33.1	13.6	5.7
Level of Service (LOS)							C			C	C	A	A	C	B	A
Approach Delay, s/veh / LOS					23.4		C	24.9		C	10.4		B	14.0		B
Intersection Delay, s/veh / LOS					13.3						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.72		C	2.72		C	2.05		B	2.05		B
Bicycle LOS Score / LOS					0.79		A	0.85		A	1.69		B	1.98		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	B127_US23-Hawthorn_AM.xus				
Project Description	Concept B Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	62	128	341	28	50	32	1284	64		2007	20

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.1	40.0	4.6	1.3	10.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0			
				Red	2.0	2.0	2.0	2.0	2.0	0.0			

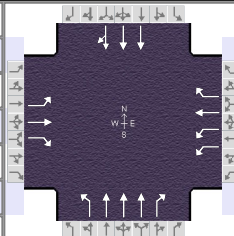
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2		6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0		8.3
Phase Duration, s	10.6	16.0	17.9	23.3	10.1	56.1		46.0
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s	2.9	3.1	2.9	3.1	2.9	0.0		0.0
Queue Clearance Time (g _s), s	4.1	9.3	11.4	4.6	3.8			
Green Extension Time (g _e), s	0.0	0.4	0.5	0.5	0.0	0.0		0.0
Phase Call Probability	0.66	1.00	1.00	1.00	0.58			
Max Out Probability	0.00	0.00	0.01	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		6	16	
Adjusted Flow Rate (v), veh/h	43	67	139	371	30	54	35	1396	70		1471	732	
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522		1796	1787	
Queue Service Time (g _s), s	2.1	3.0	7.3	9.4	1.2	2.6	1.8	15.9	1.3		48.6	34.7	
Cycle Queue Clearance Time (g _c), s	2.1	3.0	7.3	9.4	1.2	2.6	1.8	15.9	1.3		48.6	34.7	
Green Ratio (g/C)	0.05	0.11	0.16	0.13	0.19	0.19	0.05	0.56	0.69		0.44	0.44	
Capacity (c), veh/h	92	208	248	457	359	301	77	2724	1049		1598	795	
Volume-to-Capacity Ratio (X)	0.473	0.324	0.562	0.811	0.085	0.180	0.450	0.512	0.066		0.920	0.921	
Back of Queue (Q), ft/ln (95 th percentile)	41.8	59.2	121.4	172.6	23.1	42.4	35	220.2	14.6		549.1	601.3	
Back of Queue (Q), veh/ln (95 th percentile)	1.6	2.3	4.8	6.8	0.9	1.7	1.3	8.3	0.6		20.8	22.8	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	41.5	36.9	35.1	38.0	29.9	30.5	41.9	12.4	4.6		23.5	23.5	
Incremental Delay (d ₂), s/veh	1.4	0.3	0.7	1.6	0.0	0.1	1.5	0.7	0.1		10.1	17.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	42.9	37.2	35.9	39.5	29.9	30.6	43.4	13.1	4.7		33.6	41.2	
Level of Service (LOS)	D	D	D	D	C	C	D	B	A		C	D	
Approach Delay, s/veh / LOS	37.5		D	37.8		D	13.4		B		36.1		D
Intersection Delay, s/veh / LOS	28.6						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.45	B	2.24	B	2.09	B
Bicycle LOS Score / LOS	0.90	A	1.24	A	1.31	A	1.70	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	B127_US23-Hawthorn_PM.xus				
Project Description	Concept B Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	20	72	48	523	68	150	112	1848	128		1404	50

Signal Information				Signal Timing (s)												
Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	6.7	26.3	2.5	5.5	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

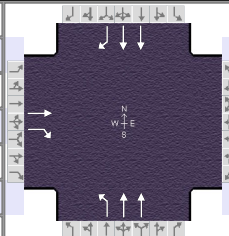
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2		6
Case Number	1.1	3.0	1.1	3.0	2.0	3.0		8.3
Phase Duration, s	8.5	16.0	14.0	21.4	12.7	45.0		32.3
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s	2.9	3.0	2.9	3.0	2.9	0.0		0.0
Queue Clearance Time (g _s), s	2.8	4.8	10.0	8.9	7.2			
Green Extension Time (g _e), s	0.0	0.3	0.0	0.4	0.0	0.0		0.0
Phase Call Probability	0.36	1.00	1.00	1.00	0.92			
Max Out Probability	0.01	0.20	1.00	0.07	1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12		6	16
Adjusted Flow Rate (v), veh/h	22	78	52	568	74	163	122	2009	139		1060	520
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522		1796	1763
Queue Service Time (g _s), s	0.8	2.8	2.0	8.0	2.5	6.9	5.2	25.1	2.8		20.9	20.4
Cycle Queue Clearance Time (g _c), s	0.8	2.8	2.0	8.0	2.5	6.9	5.2	25.1	2.8		20.9	20.4
Green Ratio (g/C)	0.17	0.13	0.22	0.26	0.21	0.21	0.09	0.52	0.63		0.35	0.35
Capacity (c), veh/h	333	249	352	813	385	324	152	2545	954		1261	619
Volume-to-Capacity Ratio (X)	0.065	0.314	0.148	0.699	0.192	0.503	0.800	0.789	0.146		0.841	0.841
Back of Queue (Q), ft/ln (95 th percentile)	13.5	53.4	30.3	205	44.6	107.2	124.7	313.7	31.2		345.3	376.1
Back of Queue (Q), veh/ln (95 th percentile)	0.5	2.1	1.2	8.1	1.8	4.2	4.7	11.9	1.2		13.1	14.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh	26.3	29.4	23.5	26.0	24.6	26.4	33.5	14.7	5.8		22.4	22.4
Incremental Delay (d ₂), s/veh	0.0	0.3	0.1	2.3	0.1	0.5	15.6	2.6	0.3		6.9	13.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Control Delay (d), s/veh	26.4	29.7	23.5	28.2	24.7	26.9	49.1	17.2	6.1		29.3	35.4
Level of Service (LOS)	C	C	C	C	C	C	D	B	A		C	D
Approach Delay, s/veh / LOS	27.1	C		27.6	C		18.3	B		31.3	C	
Intersection Delay, s/veh / LOS	24.4						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.72	C		2.44	B		2.24	B		2.10	B	
Bicycle LOS Score / LOS	0.74	A		1.82	B		1.74	B		1.36	A	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Pennsylvania Avenue		File Name	133_US23-Pennsylvania_AM.xus			
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	228				117	1226			2155	199

Signal Information														
Cycle, s	110.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.9	72.9	18.2	0.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

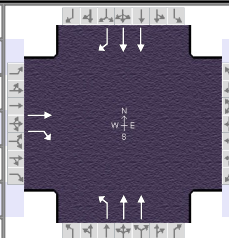
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			1.0	4.0		7.3
Phase Duration, s		18.2			12.9	91.8		78.9
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		17.9			5.6			
Green Extension Time (g _e), s		0.4			0.2	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0	248				127	1333			2342	216
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1572				1767	1724			1724	1572
Queue Service Time (g _s), s		0.0	15.9				3.6	15.3			72.9	5.9
Cycle Queue Clearance Time (g _c), s		0.0	15.9				3.6	15.3			72.9	5.9
Green Ratio (g/C)		0.17	0.23				0.74	0.78			0.66	0.66
Capacity (c), veh/h		308	359				176	2688			2285	1042
Volume-to-Capacity Ratio (X)		0.000	0.691				0.724	0.496			1.025	0.208
Back of Queue (Q), ft/ln (95 th percentile)		0	255.6				156	173.9			1073.1	83.6
Back of Queue (Q), veh/ln (95 th percentile)		0.0	10.0				6.1	6.6			41.0	3.3
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00				0.31	0.00			0.00	0.24
Uniform Delay (d ₁), s/veh		0.0	38.9				34.6	4.4			18.5	7.3
Incremental Delay (d ₂), s/veh		0.0	0.9				2.1	0.7			25.5	0.5
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0	39.8				36.7	5.0			44.0	7.7
Level of Service (LOS)			D				D	A			F	A
Approach Delay, s/veh / LOS	39.8		D	0.0			7.8	A		41.0		D
Intersection Delay, s/veh / LOS				29.5						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.32	A	1.87	B
Bicycle LOS Score / LOS	0.90	A			1.69	B	2.60	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Pennsylvania Avenue		File Name	133_US23-Pennsylvania_PM.xus			
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	72				169	1849			1664	195

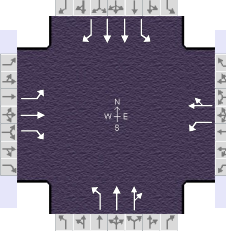

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.9	56.5	8.6	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			1.0	4.0		7.3
Phase Duration, s		14.6			12.9	75.4		62.5
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		5.9			4.9			
Green Extension Time (g _e), s		0.1			0.3	0.0		0.0
Phase Call Probability		0.86			0.99			
Max Out Probability		0.00			0.00			

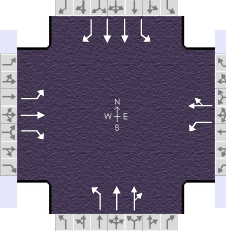
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h		0	78				184	2010		1809	212	
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1572				1767	1724		1724	1572	
Queue Service Time (g _s), s		0.0	3.9				2.9	28.8		37.0	5.2	
Cycle Queue Clearance Time (g _c), s		0.0	3.9				2.9	28.8		37.0	5.2	
Green Ratio (g/C)		0.10	0.17				0.73	0.77		0.63	0.63	
Capacity (c), veh/h		177	271				272	2659		2164	987	
Volume-to-Capacity Ratio (X)		0.000	0.289				0.676	0.756		0.836	0.215	
Back of Queue (Q), ft/ln (95 th percentile)		0	65.7				111.3	259.8		468.4	71.1	
Back of Queue (Q), veh/ln (95 th percentile)		0.0	2.6				4.3	9.9		17.9	2.8	
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00				0.22	0.00		0.00	0.20	
Uniform Delay (d ₁), s/veh		0.0	32.4				19.8	5.6		13.1	7.2	
Incremental Delay (d ₂), s/veh		0.0	0.2				1.1	2.1		4.0	0.5	
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh		0.0	32.6				20.9	7.7		17.1	7.7	
Level of Service (LOS)			C				C	A		B	A	
Approach Delay, s/veh / LOS	32.6		C	0.0			8.8	A	16.2		B	
Intersection Delay, s/veh / LOS			12.7					B				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.32	A	1.87	B
Bicycle LOS Score / LOS	0.62	A			2.30	B	2.15	B

HCS Signalized Intersection Results Summary

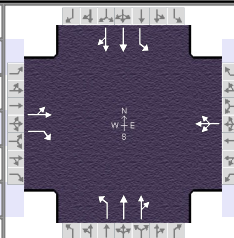
General Information						Intersection Information															
Agency			ms consultants			Duration, h		0.250													
Analyst		JRH		Analysis Date		Mar 27, 2023		Area Type		Other											
Jurisdiction			Time Period			AM Peak			PHF		0.92										
Urban Street			US 23 Corridor Study			Analysis Year		2030		Analysis Period			1 > 7:00								
Intersection			Panhandle Road			File Name		134_US23-Panhandle_AM.xus													
Project Description			No-Build Design Year (2030)																		
Demand Information				EB			WB			NB			SB								
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R						
Demand (v), veh/h				177	143	441	189	55	50	294	1268	67	37	1737	62						
Signal Information																					
Cycle, s		85.0	Reference Phase		2																
Offset, s		0	Reference Point		End																
Uncoordinated		No	Simult. Gap E/W		On																
Force Mode		Fixed	Simult. Gap N/S		On																
Green				4.3	3.0	27.8	10.0	10.0	0.0												
Yellow				4.0	4.0	4.0	4.0	4.0	0.0												
Red				2.0	2.0	2.0	2.0	2.0	0.0												
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT			
Assigned Phase						4				8		5		2		1		6			
Case Number						9.0				10.0		1.1		4.0		1.1		3.0			
Phase Duration, s						16.0				16.0		19.2		42.7		10.3		33.8			
Change Period, (Y+R _c), s						6.0				6.0		6.0		6.0		6.0		6.0			
Max Allow Headway (MAH), s						3.1				3.0		3.0		0.0		3.0		0.0			
Queue Clearance Time (g _s), s						12.0				11.9		12.9				3.2					
Green Extension Time (g _e), s						0.0				0.0		0.4		0.0		0.0		0.0			
Phase Call Probability						1.00				1.00		1.00				0.61					
Max Out Probability						1.00				1.00		0.01				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				192	155	479	205	114		320	731	721	40	1888	67						
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1856	1572	1767	1709		1767	1781	1750	1767	1696	1610						
Queue Service Time (g _s), s				9.2	6.9	10.0	9.9	5.4		10.9	33.6	33.8	1.2	27.8	2.5						
Cycle Queue Clearance Time (g _c), s				9.2	6.9	10.0	9.9	5.4		10.9	33.6	33.8	1.2	27.8	2.5						
Green Ratio (g/C)				0.12	0.12	0.12	0.12	0.12		0.51	0.43	0.43	0.38	0.33	0.33						
Capacity (c), veh/h				208	218	185	208	201		360	769	756	178	1107	526						
Volume-to-Capacity Ratio (X)				0.925	0.712	2.591	0.988	0.568		0.887	0.950	0.954	0.226	1.705	0.128						
Back of Queue (Q), ft/ln (95 th percentile)				260.5	159.7	1661.6	303.6	103.4		218.3	630.4	606.4	21.6	2478.5	42.4						
Back of Queue (Q), veh/ln (95 th percentile)				10.2	6.2	64.9	11.9	4.0		8.5	23.7	23.7	0.8	93.2	1.7						
Queue Storage Ratio (RQ) (95 th percentile)				1.11	0.00	16.62	0.76	0.00		0.44	0.00	0.00	0.04	0.00	0.28						
Uniform Delay (d ₁), s/veh				37.1	36.1	37.5	37.4	35.5		22.3	23.3	23.3	21.4	28.6	20.1						
Incremental Delay (d ₂), s/veh				41.5	9.0	731.5	58.8	2.4		9.6	22.2	23.2	0.2	321.0	0.5						
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Control Delay (d), s/veh				78.6	45.1	769.0	96.2	37.8		31.9	45.5	46.5	21.6	349.7	20.6						
Level of Service (LOS)				E	D	F	F	D		C	D	D	C	F	C						
Approach Delay, s/veh / LOS				472.4		F	75.3		E	43.5		D	331.9		F						
Intersection Delay, s/veh / LOS				234.9						F											
Multimodal Results				EB			WB			NB			SB								
Pedestrian LOS Score / LOS				2.30		B	2.46		B	1.90		B	2.11		B						
Bicycle LOS Score / LOS				1.85		B	1.01		A	1.95		B	2.13		B						

HCS Signalized Intersection Results Summary

General Information					Intersection Information															
Agency	ms consultants				Duration, h	0.250														
Analyst	JRH	Analysis Date	Jun 24, 2024		Area Type	Other														
Jurisdiction		Time Period	PM Peak		PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00														
Intersection	Panhandle Road		File Name	134_US23-Panhandle_PM.xus																
Project Description	No-Build Design Year (2030)																			
Demand Information					EB			WB			NB			SB						
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h					167	103	341	45	124	44	522	1906	106	98	1437	136				
Signal Information																				
Cycle, s	115.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On		Green	6.8	9.2	42.0	18.0	11.0	0.0									
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	4.0	4.0	0.0									
					Red	2.0	0.0	2.0	2.0	2.0	0.0									
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase							4				8		5		2		1		6	
Case Number							9.0				10.0		1.1		4.0		1.1		3.0	
Phase Duration, s							24.0				17.0		26.0		61.2		12.8		48.0	
Change Period, (Y+R _c), s							6.0				6.0		4.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s							3.1				3.0		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s							20.0				13.0		24.0				6.2			
Green Extension Time (g _e), s							0.0				0.0		0.0		0.0		0.1		0.0	
Phase Call Probability							1.00				1.00		1.00				0.97			
Max Out Probability							1.00				1.00		1.00				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					182	112	371	49	183		567	1093	1093	107	1562	148				
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1772		1767	1781	1748	1767	1696	1610				
Queue Service Time (g _s), s					11.1	6.2	18.0	3.0	11.0		22.0	55.2	55.2	4.2	42.0	7.4				
Cycle Queue Clearance Time (g _c), s					11.1	6.2	18.0	3.0	11.0		22.0	55.2	55.2	4.2	42.0	7.4				
Green Ratio (g/C)					0.16	0.16	0.16	0.10	0.10		0.57	0.48	0.48	0.42	0.37	0.37				
Capacity (c), veh/h					277	290	246	169	170		401	856	840	167	1239	588				
Volume-to-Capacity Ratio (X)					0.656	0.385	1.506	0.289	1.077		1.416	1.278	1.302	0.639	1.261	0.251				
Back of Queue (Q), ft/ln (95 th percentile)					224.4	129.6	954.6	59.4	368		1124.8	2059.3	2052.5	80.6	1466.6	129.9				
Back of Queue (Q), veh/ln (95 th percentile)					8.8	5.1	37.3	2.3	14.4		43.9	77.4	80.2	3.1	55.1	5.2				
Queue Storage Ratio (RQ) (95 th percentile)					0.95	0.00	9.55	0.15	0.00		2.25	0.00	0.00	0.16	0.00	0.87				
Uniform Delay (d ₁), s/veh					45.6	43.5	48.5	48.4	52.0		37.1	29.9	29.9	28.0	36.5	25.5				
Incremental Delay (d ₂), s/veh					4.4	0.3	247.7	0.3	91.2		201.4	134.1	144.7	1.5	124.0	1.0				
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh					50.0	43.8	296.2	48.7	143.2		238.6	164.0	174.6	29.5	160.5	26.5				
Level of Service (LOS)					D	D	F	D	F		F	F	F	C	F	C				
Approach Delay, s/veh / LOS					186.4		F		123.3		F		183.6		F		142.0		F	
Intersection Delay, s/veh / LOS					167.5						F									
Multimodal Results					EB			WB			NB			SB						
Pedestrian LOS Score / LOS					2.31		B		2.47		B		1.91		B		2.11		B	
Bicycle LOS Score / LOS					1.58		B		0.87		A		2.76		C		1.99		B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Big Lots	File Name	135_US23-BigLots_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	80	2	105	87	2	76	84	1353	77	86	1648	26

Signal Information													
Cycle, s	115.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.7	0.9	59.5	10.5	14.3	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0			
				Red	2.0	0.0	2.0	2.0	2.0	0.0			

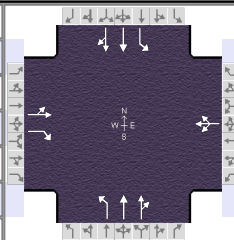
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		11.0		12.0	1.1	4.0	1.1	4.0
Phase Duration, s		16.5		20.3	12.6	66.5	11.7	65.5
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		10.2		14.1	4.7		4.8	
Green Extension Time (g _e), s		0.4		0.3	0.1	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.95		0.95	
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	89		114	179			91	782	772	93	910	909
Adjusted Saturation Flow Rate (s), veh/h/ln	1769		1572	1673			1767	1781	1747	1767	1781	1772
Queue Service Time (g _s), s	5.5		8.2	12.1			2.7	42.7	43.2	2.8	58.0	58.5
Cycle Queue Clearance Time (g _c), s	5.5		8.2	12.1			2.7	42.7	43.2	2.8	58.0	58.5
Green Ratio (g/C)	0.09		0.09	0.12			0.58	0.53	0.53	0.57	0.52	0.52
Capacity (c), veh/h	162		144	208			167	937	919	194	922	917
Volume-to-Capacity Ratio (X)	0.551		0.793	0.861			0.547	0.835	0.841	0.482	0.987	0.991
Back of Queue (Q), ft/ln (95 th percentile)	112.3		151.1	226.6			56.8	677.4	651.4	54.2	1003.8	951.8
Back of Queue (Q), veh/ln (95 th percentile)	4.4		5.9	8.9			2.2	25.5	25.4	2.1	37.7	38.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.76	0.00			0.19	0.00	0.00	0.11	0.00	0.00
Uniform Delay (d ₁), s/veh	50.0		51.2	49.4			26.3	23.1	23.2	23.2	27.4	27.5
Incremental Delay (d ₂), s/veh	1.1		3.7	4.0			1.0	8.7	9.2	0.7	26.7	27.7
Initial Queue Delay (d ₃), s/veh	0.0		0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	51.1		54.9	53.4			27.4	31.8	32.4	23.9	54.1	55.2
Level of Service (LOS)	D		D	D			C	C	C	C	D	E
Approach Delay, s/veh / LOS	53.2		D	53.4		D	31.8		C	53.1		D
Intersection Delay, s/veh / LOS	44.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.32	B	1.67	B	1.90	B
Bicycle LOS Score / LOS	0.82	A	0.78	A	1.85	B	2.07	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Big Lots	File Name	135_US23-BigLots_PM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	90	2	105	97	2	116	54	1939	116	96	1402	34

Signal Information				Signal Phases												
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
		Green	5.8	57.2	10.0	13.0	0.0	0.0								
		Yellow	4.0	4.0	4.0	4.0	0.0	0.0								
		Red	2.0	2.0	2.0	2.0	0.0	0.0								

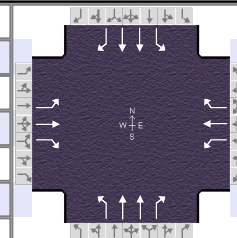
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		11.0		12.0	1.1	4.0	1.1	4.0
Phase Duration, s		16.0		19.0	11.8	63.2	11.8	63.2
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		9.8		15.0	3.6		5.0	
Green Extension Time (g_e), s		0.2		0.0	0.1	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	0.83		0.96	
Max Out Probability		0.37		1.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		100	114		234		59	1117	1117	104	783	778
Adjusted Saturation Flow Rate (s), veh/h/ln		1769	1572		1657		1767	1781	1746	1767	1781	1766
Queue Service Time (g_s), s		6.0	7.8		13.0		1.6	57.2	57.2	3.0	41.4	41.6
Cycle Queue Clearance Time (g_c), s		6.0	7.8		13.0		1.6	57.2	57.2	3.0	41.4	41.6
Green Ratio (g/C)		0.09	0.09		0.12		0.57	0.52	0.52	0.57	0.52	0.52
Capacity (c), veh/h		161	143		196		205	927	909	158	926	918
Volume-to-Capacity Ratio (X)		0.623	0.800		1.192		0.286	1.205	1.229	0.661	0.845	0.848
Back of Queue (Q), ft/ln (95 th percentile)		121.4	154.8		486.7		27.2	1806.2	1817.1	62.7	661.6	621.7
Back of Queue (Q), veh/ln (95 th percentile)		4.7	6.0		19.0		1.1	67.9	71.0	2.5	24.9	24.9
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.77		0.00		0.09	0.00	0.00	0.13	0.00	0.00
Uniform Delay (d_1), s/veh		48.2	49.0		48.5		20.0	26.4	26.4	25.6	22.6	22.7
Incremental Delay (d_2), s/veh		1.5	9.5		125.7		0.3	102.4	112.8	1.8	9.4	9.6
Initial Queue Delay (d_3), s/veh		0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		49.7	58.6		174.2		20.3	128.7	139.2	27.3	32.0	32.3
Level of Service (LOS)		D	E		F		C	F	F	C	C	C
Approach Delay, s/veh / LOS	54.4		D	174.2		F	131.0		F	31.8		C
Intersection Delay, s/veh / LOS	92.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.32	B	1.67	B	1.90	B
Bicycle LOS Score / LOS	0.84	A	0.87	A	2.38	B	1.86	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hills-Miller Road		File Name	136_US23-HillsMiller_AM.xus			
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	268	117	394	50	223	329	158	1296	50	491	1394	47

Signal Information				Signal Phases											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		7.4	0.6	33.0	11.0	8.0	0.0						
		Yellow		4.0	4.0	4.0	4.0	4.0	0.0						
		Red		2.0	2.0	2.0	2.0	2.0	0.0						

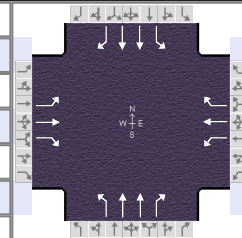
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		9.0		9.0	1.1	3.0	1.1	3.0
Phase Duration, s		17.0		14.0	13.4	39.0	20.0	45.6
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		13.0		10.0	7.3		16.0	
Green Extension Time (g_e), s		0.0		0.0	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.99		1.00	
Max Out Probability		1.00		1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	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	291	127	428	54	242	358	172	1409	54	534	1515	51
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1696	1572	1767	1696	1572
Queue Service Time (g_s), s	11.0	5.8	11.0	2.6	8.0	8.0	5.3	33.0	1.8	14.0	39.6	1.3
Cycle Queue Clearance Time (g_c), s	11.0	5.8	11.0	2.6	8.0	8.0	5.3	33.0	1.8	14.0	39.6	1.3
Green Ratio (g/C)	0.12	0.12	0.20	0.09	0.09	0.24	0.45	0.37	0.46	0.54	0.44	0.56
Capacity (c), veh/h	216	227	322	157	165	384	226	1244	716	355	1491	884
Volume-to-Capacity Ratio (X)	1.349	0.561	1.330	0.346	1.470	0.930	0.760	1.133	0.076	1.504	1.016	0.058
Back of Queue (Q), ft/ln (95 th percentile)	632.3	121	840.6	50.6	600.7	393.3	94.8	929.4	27.9	1077.1	721.9	19.3
Back of Queue (Q), veh/ln (95 th percentile)	24.7	4.7	32.8	2.0	23.5	15.4	3.7	34.9	1.1	42.1	27.1	0.8
Queue Storage Ratio (RQ) (95 th percentile)	3.16	0.00	4.20	0.13	0.00	0.00	0.32	0.00	0.28	2.15	0.00	0.13
Uniform Delay (d_1), s/veh	39.5	37.2	35.8	38.5	41.0	33.3	21.2	28.5	13.8	27.2	25.2	8.9
Incremental Delay (d_2), s/veh	184.4	1.9	168.4	0.5	241.2	28.5	2.0	70.2	0.2	241.0	27.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	223.9	39.2	204.2	39.0	282.2	61.8	23.2	98.7	14.0	268.1	52.6	9.1
Level of Service (LOS)	F	D	F	D	F	E	C	F	B	F	F	A
Approach Delay, s/veh / LOS	186.2		F	141.6		F	88.0		F	106.3		F
Intersection Delay, s/veh / LOS	117.9						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.10	B	2.09	B
Bicycle LOS Score / LOS	1.88	B	1.57	B	1.84	B	2.22	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Hills-Miller Road		File Name	136_US23-HillsMiller_PM.xus			
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	202	206	192	200	119	447	293	1692	150	351	1289	176

Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	15.0	3.6	52.4	7.0	12.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	4.0	0.0			
				Red	2.0	0.0	2.0	2.0	2.0	0.0			

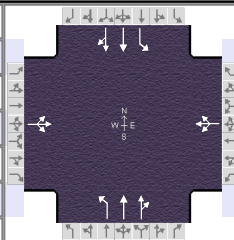
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	13.0	18.0	19.0	24.0	24.6	62.0	21.0	58.4
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	9.0	14.0	15.0	20.0	18.1		17.0	
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	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	220	224	209	217	129	486	318	1839	163	382	1401	191
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1696	1572	1767	1696	1572
Queue Service Time (g _s), s	7.0	12.0	12.0	13.0	7.6	18.0	16.1	56.0	5.9	15.0	47.6	8.4
Cycle Queue Clearance Time (g _c), s	7.0	12.0	12.0	13.0	7.6	18.0	16.1	56.0	5.9	15.0	47.6	8.4
Green Ratio (g/C)	0.16	0.10	0.26	0.22	0.15	0.28	0.59	0.47	0.58	0.56	0.44	0.49
Capacity (c), veh/h	250	186	401	251	278	432	349	1583	904	281	1481	778
Volume-to-Capacity Ratio (X)	0.878	1.207	0.520	0.865	0.465	1.124	0.912	1.162	0.180	1.358	0.946	0.246
Back of Queue (Q), ft/ln (95 th percentile)	220.8	495.3	228.2	297.7	160	807	368.8	1451.3	94	872.4	758.1	140.7
Back of Queue (Q), veh/ln (95 th percentile)	8.6	19.3	8.9	11.6	6.3	31.5	14.4	54.6	3.7	34.1	28.5	5.5
Queue Storage Ratio (RQ) (95 th percentile)	1.10	0.00	1.14	0.74	0.00	1.34	1.23	0.00	0.94	1.74	0.00	0.94
Uniform Delay (d ₁), s/veh	51.1	54.0	38.4	41.9	46.6	43.5	36.0	32.0	12.1	39.7	32.5	17.4
Incremental Delay (d ₂), s/veh	26.9	132.7	0.6	24.5	0.4	81.4	3.9	80.3	0.4	182.6	13.7	0.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	77.9	186.7	39.0	66.4	47.0	124.9	39.9	112.3	12.5	222.3	46.1	18.2
Level of Service (LOS)	E	F	D	E	D	F	D	F	B	F	D	B
Approach Delay, s/veh / LOS	102.8		F	97.6		F	95.3		F	77.5		E
Intersection Delay, s/veh / LOS	90.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.46	B	2.10	B	2.11	B
Bicycle LOS Score / LOS	1.56	B	1.86	B	2.40	B	2.12	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 24, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Coover Road	File Name	137_US23-Coover_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	46	10	244	30	10	30	210	1461	30	30	1643	162

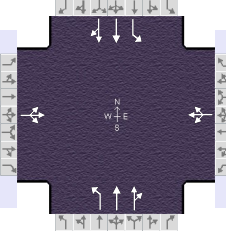
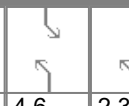
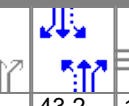


Signal Information														
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	3.7	55.6	20.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0	5	6	7	8
				Red	0.0	2.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		8.0		8.0	1.1	4.0	1.1	4.0
Phase Duration, s		26.0		26.0	17.4	71.3	7.7	61.6
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		22.0		7.3	11.2		2.9	
Green Extension Time (g_e), s		0.0		0.7	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.61	
Max Out Probability		1.00		0.00	0.01		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	326			76			228	812	809	33	981	981
Adjusted Saturation Flow Rate (s), veh/h/ln	1566			990			1767	1722	1710	1767	1722	1668
Queue Service Time (g_s), s	14.7			0.0			9.2	35.4	35.6	0.9	55.6	55.6
Cycle Queue Clearance Time (g_c), s	20.0			5.3			9.2	35.4	35.6	0.9	55.6	55.6
Green Ratio (g/C)	0.19			0.19			0.66	0.62	0.62	0.56	0.53	0.53
Capacity (c), veh/h	338			238			261	1071	1064	212	911	883
Volume-to-Capacity Ratio (X)	0.965			0.320			0.875	0.758	0.760	0.154	1.076	1.111
Back of Queue (Q), ft/ln (95 th percentile)	451.1			75.1			266.6	515.9	483.3	14.3	1232.2	1218.3
Back of Queue (Q), veh/ln (95 th percentile)	17.6			2.9			10.4	18.8	18.9	0.6	45.0	48.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.89	0.00	0.00	0.03	0.00	0.00
Uniform Delay (d_1), s/veh	43.3			36.2			33.6	14.2	14.2	14.3	24.7	24.7
Incremental Delay (d_2), s/veh	39.4			0.3			9.9	5.0	5.1	0.1	52.5	65.5
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	82.7			36.5			43.5	19.2	19.4	14.4	77.2	90.2
Level of Service (LOS)	F			D			D	B	B	B	F	F
Approach Delay, s/veh / LOS	82.7	F		36.5	D		22.3	C		82.6	F	
Intersection Delay, s/veh / LOS	55.5						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.30	B	1.65	B	1.67	B
Bicycle LOS Score / LOS	1.03	A	0.61	A	2.01	B	2.13	B

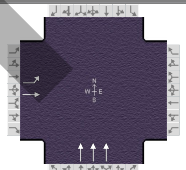
HCS Signalized Intersection Results Summary

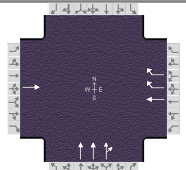
General Information					Intersection Information																					
Agency	ms consultants				Duration, h	0.250																				
Analyst	JRH	Analysis Date	Jun 24, 2024		Area Type	Other																				
Jurisdiction		Time Period	PM Peak		PHF	0.92																				
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00																				
Intersection	Coover Road		File Name	137_US23-Coover_PM.xus																						
Project Description	No-Build Design Year (2030)																									
Demand Information																										
			EB			WB			NB			SB														
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h			67	30	154	50	30	50	130	2016	50	50	1509	52												
Signal Information																										
Cycle, s	95.0	Reference Phase	2																							
Offset, s	0	Reference Point	End		Green	4.6	2.3	43.2	14.0	7.0	0.0	1	2	3	4											
Uncoordinated	No	Simult. Gap E/W	On		Yellow	4.0	0.0	4.0	4.0	4.0	0.0	5	6	7	8											
Force Mode	Fixed	Simult. Gap N/S	On		Red	2.0	0.0	2.0	2.0	2.0	0.0															
Timer Results																										
			EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT									
Assigned Phase					4				8		5		2		1		6									
Case Number					12.0				12.0		1.1		4.0		1.1		4.0									
Phase Duration, s					20.0				13.0		12.8		51.4		10.6		49.2									
Change Period, (Y+R _c), s					6.0				6.0		6.0		6.0		6.0		6.0									
Max Allow Headway (MAH), s					3.2				3.1		3.0		0.0		3.0		0.0									
Queue Clearance Time (g _s), s					16.0				9.0		5.9				3.5											
Green Extension Time (g _e), s					0.0				0.0		0.2		0.0		0.0		0.0									
Phase Call Probability					1.00				0.98		0.98				0.76											
Max Out Probability					1.00				1.00		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			273			141			141			1123			1123			54			851			846		
Adjusted Saturation Flow Rate (s), veh/h/ln			1651			1705			1767			1722			1707			1767			1722			1702		
Queue Service Time (g _s), s			14.0			7.0			3.9			45.4			45.4			1.5			43.2			43.2		
Cycle Queue Clearance Time (g _c), s			14.0			7.0			3.9			45.4			45.4			1.5			43.2			43.2		
Green Ratio (g/C)			0.15			0.07			0.53			0.48			0.48			0.50			0.45			0.45		
Capacity (c), veh/h			243			126			203			824			816			161			783			773		
Volume-to-Capacity Ratio (X)			1.121			1.125			0.696			1.363			1.375			0.338			1.087			1.094		
Back of Queue (Q), ft/ln (95 th percentile)			468.5			299.4			67.1			2264.1			2150			25.6			1077.8			995.5		
Back of Queue (Q), veh/ln (95 th percentile)			18.3			11.7			2.6			82.6			84.0			1.0			39.3			39.8		
Queue Storage Ratio (RQ) (95 th percentile)			0.00			0.00			0.22			0.00			0.00			0.05			0.00			0.00		
Uniform Delay (d ₁), s/veh			40.5			44.0			21.4			24.8			24.8			21.9			25.9			25.9		
Incremental Delay (d ₂), s/veh			94.2			117.8			1.6			171.4			176.6			0.5			58.4			61.1		
Initial Queue Delay (d ₃), s/veh			0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0		
Control Delay (d), s/veh			134.7			161.8			23.0			196.1			201.4			22.4			84.3			87.1		
Level of Service (LOS)			F			F			C			F			F			C			F			F		
Approach Delay, s/veh / LOS			134.7		F		161.8		F		188.4		F		83.7		F									
Intersection Delay, s/veh / LOS			144.1									F														
Multimodal Results																										
			EB			WB			NB			SB														
Pedestrian LOS Score / LOS			2.31		B		2.31		B		1.67		B		1.68		B									
Bicycle LOS Score / LOS			0.94		A		0.72		A		2.46		B		1.93		B									

HCS Alternative Intersections Results Summary

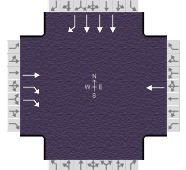
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Panhandle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D134_US23-Panhandle_AM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	320	0						1783				
Intersection Two Demand (v), veh/h		203			0	294		1599	210			
Intersection Three Demand (v), veh/h				244	0						2166	
Intersection Four Demand (v), veh/h		0	761		294						2090	117

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	55.8	22.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	64.5	13.5	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	44												
Uncoordinated	No	Green	10.2	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	23												
Uncoordinated	No	Green	30.3	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

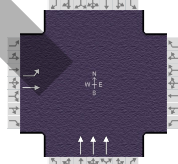
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	192	73.2	30.2	103.4	F
EBT	EBR(4) + SBU(1) + NBR(2)	155	74.9	30.2	105.1	F
EBR	EBR(4)	479	29.3	--	29.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	205	107.4	30.2	137.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	60	90.3	30.2	120.5	F
WBR	WBR(2)	54	37.8	--	37.8	D
NBL	NBT(1) + NBL(2)	320	36.5	--	36.5	D
NBT	NBT(1) + NBT(2)	1546	21.8	--	21.8	C
NBR	NBT(1) + NBR(2)	740	23.5	--	23.5	C
SBL	SBT(3) + SBL(4)	221	45.1	--	45.1	D
SBT	SBT(3) + SBT(4)	2481	36.0	--	36.0	D
SBR	SBT(3) + SBR(4)	139	18.9	--	18.9	B

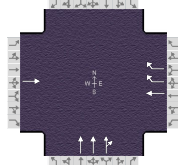
Overall Results		
Intersection ETT, s/veh LOS	40.5	D

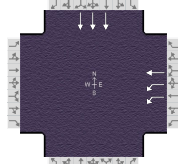
HCS Alternative Intersections Results Summary

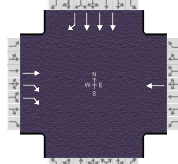
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Panhandle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D134_US23-Panhandle_PM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	270	0						2679				
Intersection Two Demand (v), veh/h		284			0	213		2218	209			
Intersection Three Demand (v), veh/h				169	0						1897	
Intersection Four Demand (v), veh/h		0	611		522						1522	260

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	58.9	19.1	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	60.4	17.6	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	44												
Uncoordinated	No	Green	9.9	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	23												
Uncoordinated	No	Green	31.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

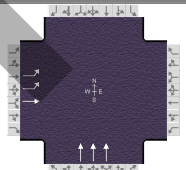
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	182	80.8	30.2	111.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	112	85.8	30.2	116.0	F
EBR	EBR(4)	371	25.7	--	25.7	F
WBL	WBR(2) + NBU(3) + SBT(4)	49	90.4	30.2	120.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	135	86.4	30.2	116.6	F
WBR	WBR(2)	48	32.0	--	32.0	C
NBL	NBT(1) + NBL(2)	567	49.4	--	49.4	D
NBT	NBT(1) + NBT(2)	2137	38.6	--	38.6	D
NBR	NBT(1) + NBR(2)	1068	43.7	--	43.7	D
SBL	SBT(3) + SBL(4)	309	42.5	--	42.5	D
SBT	SBT(3) + SBT(4)	1918	25.2	--	25.2	C
SBR	SBT(3) + SBR(4)	328	21.2	--	21.2	F

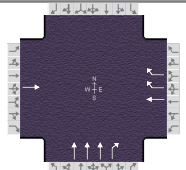
Overall Results		
Intersection ETT, s/veh LOS	41.2	D

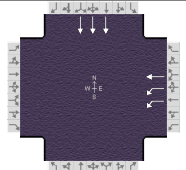
HCS Alternative Intersections Results Summary

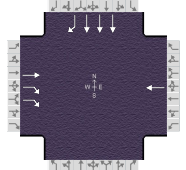
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hills-Miller Road	PHF	0.92	Arterial Direction	North-South		
File Name	D136_US23-HillsMiller_AM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	465	0						1977				
Intersection Two Demand (v), veh/h		491			0	602		1946	167			
Intersection Three Demand (v), veh/h				273	0						1975	
Intersection Four Demand (v), veh/h		0	859		329						1487	270

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	60.2	17.8	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	61												
Uncoordinated	No	Green	48.6	29.4	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	22												
Uncoordinated	No	Green	11.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	73												
Uncoordinated	No	Green	33.9	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

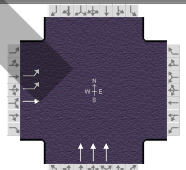
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	378	88.8	30.2	119.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	127	77.6	30.2	107.8	F
EBR	EBR(4)	428	27.4	--	27.4	F
WBL	WBR(2) + NBU(3) + SBT(4)	54	92.8	30.2	123.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	242	87.7	30.2	117.9	F
WBR	WBR(2)	358	27.1	--	27.1	C
NBL	NBT(1) + NBL(2)	358	32.1	--	32.1	C
NBT	NBT(1) + NBT(2)	2445	36.2	--	36.2	D
NBR	NBT(1) + NBR(2)	210	25.1	--	25.1	F
SBL	SBT(3) + SBL(4)	534	36.6	--	36.6	D
SBT	SBT(3) + SBT(4)	2068	32.9	--	32.9	C
SBR	SBT(3) + SBR(4)	375	27.8	--	27.8	F

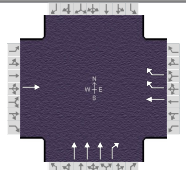
Overall Results		
Intersection ETT, s/veh LOS	44.8	D

HCS Alternative Intersections Results Summary

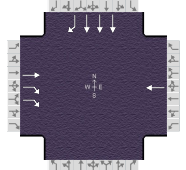
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	4/10/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hills-Miller Road	PHF	0.92	Arterial Direction	North-South		
File Name	D136_US23-HillsMiller_PM_NB.xus						
Project Description	Concept D Design Year (2030)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	498	0						2540				
Intersection Two Demand (v), veh/h		351			0	766		2238	356			
Intersection Three Demand (v), veh/h				319	0						1990	
Intersection Four Demand (v), veh/h		0	690		444						1663	295

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	59.1	18.9	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	48.1	29.9	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	15										
Uncoordinated	No	Green	12.9	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

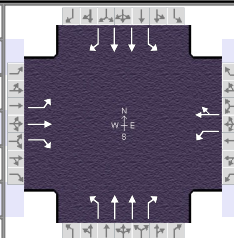
Signal Four Information											
Cycle, s	90.0										
Offset, s	5										
Uncoordinated	No	Green	28.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	317	132.7	30.2	162.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	224	76.8	30.2	107.0	F
EBR	EBR(4)	209	30.3	--	30.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	217	86.7	30.2	116.9	F
WBT	WBR(2) + NBU(3) + SBR(4)	129	81.0	30.2	111.2	F
WBR	WBR(2)	486	30.1	--	30.1	C
NBL	NBT(1) + NBL(2)	483	46.4	--	46.4	D
NBT	NBT(1) + NBT(2)	2849	84.0	--	84.0	F
NBR	NBT(1) + NBR(2)	453	28.1	--	28.1	F
SBL	SBT(3) + SBL(4)	382	33.9	--	33.9	C
SBT	SBT(3) + SBT(4)	2132	25.7	--	25.7	C
SBR	SBT(3) + SBR(4)	378	20.0	--	20.0	F

Overall Results		
Intersection ETT, s/veh LOS	61.3	E

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Coover Road	File Name	C137_US23-Coover_AM.xus				
Project Description	Concept C Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	46	10	244	30	10	30	210	1296	30	30	1405	162

Signal Information															
Cycle, s	90.0	Reference Phase	2	[Diagram: EB Left Turn]		[Diagram: EB Through/Right]		[Diagram: WB Left Turn]		[Diagram: WB Through/Right]		[Diagram: NB Left Turn]		[Diagram: NB Through/Right]	
Offset, s	0	Reference Point	End	Green	3.9	3.5	48.5	16.1	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.0	0.0	0.0					

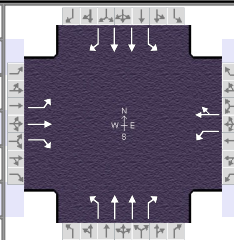
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		22.1		22.1	13.4	58.0	9.9	54.5
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		15.5		4.2	7.1		2.7	
Green Extension Time (g _e), s		0.6		0.8	0.4	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.56	
Max Out Probability		0.03		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	50	11	265	33	43		228	1409	33	33	1527	176
Adjusted Saturation Flow Rate (s), veh/h/ln	1352	1856	1572	1393	1635		1767	1639	1572	1767	1639	1610
Queue Service Time (g _s), s	2.9	0.4	13.5	1.8	2.0		5.1	28.6	0.8	0.7	36.2	5.1
Cycle Queue Clearance Time (g _c), s	4.9	0.4	13.5	2.2	2.0		5.1	28.6	0.8	0.7	36.2	5.1
Green Ratio (g/C)	0.18	0.18	0.26	0.18	0.18		0.62	0.58	0.58	0.58	0.54	0.54
Capacity (c), veh/h	291	331	410	322	292		272	1895	909	247	1768	868
Volume-to-Capacity Ratio (X)	0.172	0.033	0.646	0.101	0.149		0.840	0.743	0.036	0.132	0.864	0.203
Back of Queue (Q), ft/ln (95 th percentile)	42.3	8.6	215.8	26.5	35.3		113.6	393.1	11.5	10.7	512.8	76.6
Back of Queue (Q), veh/ln (95 th percentile)	1.7	0.3	8.4	1.0	1.4		4.4	14.3	0.5	0.4	18.7	3.1
Queue Storage Ratio (RQ) (95 th percentile)	0.21	0.00	1.08	0.07	0.00		0.38	0.00	0.12	0.02	0.00	0.51
Uniform Delay (d ₁), s/veh	33.3	30.5	29.6	31.5	31.2		19.2	14.0	8.2	12.5	17.9	10.7
Incremental Delay (d ₂), s/veh	0.1	0.0	0.6	0.1	0.1		2.7	2.7	0.1	0.1	5.9	0.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	33.4	30.6	30.2	31.5	31.3		21.9	16.7	8.3	12.5	23.8	11.3
Level of Service (LOS)	C	C	C	C	C		C	B	A	B	C	B
Approach Delay, s/veh / LOS	30.7		C	31.4		C	17.3		B	22.3		C
Intersection Delay, s/veh / LOS	21.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	1.88	B	2.08	B
Bicycle LOS Score / LOS	1.03	A	0.61	A	1.86	B	1.92	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Coover Road	File Name	C137_US23-Coover_PM.xus				
Project Description	Concept C Design Year (2030)						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	67	30	154	50	30	50	130	1692	50	50	1289	52

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.2	1.6	54.2	11.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		17.0		17.0	12.8	61.8	11.2	60.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		11.3		6.7	4.5		3.0	
Green Extension Time (g _e), s		0.0		0.4	0.2	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.97		0.74	
Max Out Probability		1.00		0.48	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	73	33	167	54	87		141	1839	54	54	1401	57
Adjusted Saturation Flow Rate (s), veh/h/ln	1300	1856	1572	1365	1668		1767	1639	1572	1767	1639	1610
Queue Service Time (g _s), s	4.9	1.4	8.6	3.3	4.3		2.5	43.7	1.2	1.0	26.7	1.3
Cycle Queue Clearance Time (g _c), s	9.3	1.4	8.6	4.7	4.3		2.5	43.7	1.2	1.0	26.7	1.3
Green Ratio (g/C)	0.12	0.12	0.20	0.12	0.12		0.68	0.62	0.62	0.66	0.60	0.60
Capacity (c), veh/h	176	227	311	225	204		330	2033	975	210	1975	970
Volume-to-Capacity Ratio (X)	0.414	0.144	0.538	0.241	0.427		0.428	0.905	0.056	0.259	0.709	0.058
Back of Queue (Q), ft/ln (95 th percentile)	70.8	28.4	146.3	49.6	79.1		41.5	568.3	16.8	28.5	359.8	18.1
Back of Queue (Q), veh/ln (95 th percentile)	2.8	1.1	5.7	1.9	3.1		1.6	20.7	0.7	1.1	13.1	0.7
Queue Storage Ratio (RQ) (95 th percentile)	0.35	0.00	0.73	0.12	0.00		0.14	0.00	0.17	0.06	0.00	0.12
Uniform Delay (d ₁), s/veh	40.9	35.3	32.4	37.4	36.6		11.4	14.8	6.7	19.1	12.4	7.4
Incremental Delay (d ₂), s/veh	0.6	0.1	1.0	0.2	0.5		0.3	7.2	0.1	0.2	2.2	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.5	35.4	33.4	37.6	37.1		11.7	22.0	6.8	19.3	14.6	7.5
Level of Service (LOS)	D	D	C	D	D		B	C	A	B	B	A
Approach Delay, s/veh / LOS	35.8		D	37.3		D	20.9		C	14.5		B
Intersection Delay, s/veh / LOS	20.1						C					

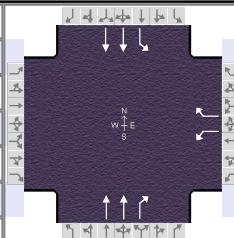
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	1.87	B	2.07	B
Bicycle LOS Score / LOS	0.94	A	0.72	A	2.17	B	1.73	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Jun 25, 2024		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00											
Intersection	Delaware State Park	File Name	138_US23-DelPark_AM.xus														
Project Description	No-Build Design Year (2030)																
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	1488	5	0	1825			
Signal Information																	
Cycle, s	60.0	Reference Phase	2														
Offset, s	0	Reference Point	Begin														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	47.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase								8		2	1	6					
Case Number								9.0		7.3	1.0	4.0					
Phase Duration, s								6.7		53.3	0.0	53.3					
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0					
Max Allow Headway (MAH), s								3.1		0.0	0.0	0.0					
Queue Clearance Time (g _s), s								2.1									
Green Extension Time (g _e), s								0.0		0.0	0.0	0.0					
Phase Call Probability								0.07									
Max Out Probability								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								3		18		2	12	1	6		
Adjusted Flow Rate (v), veh/h								2		2	1617	5	0	1984			
Adjusted Saturation Flow Rate (s), veh/h/ln								1767		1572	1639	1572	1767	1639			
Queue Service Time (g _s), s								0.1		0.1	12.4	0.0	0.0	19.4			
Cycle Queue Clearance Time (g _c), s								0.1		0.1	12.4	0.0	0.0	19.4			
Green Ratio (g/C)								0.01		0.01	0.79	0.79	0.72	0.79			
Capacity (c), veh/h								21		18	2585	1240	303	2585			
Volume-to-Capacity Ratio (X)								0.105		0.119	0.626	0.004	0.000	0.767			
Back of Queue (Q), ft/ln (95 th percentile)								1.5		1.5	20.5	0.1	0	39.8			
Back of Queue (Q), veh/ln (95 th percentile)								0.1		0.1	0.7	0.0	0.0	1.5			
Queue Storage Ratio (RQ) (95 th percentile)								0.01		0.00	0.00	0.00	0.00	0.00			
Uniform Delay (d ₁), s/veh								29.3		29.3	2.7	1.3	0.0	3.4			
Incremental Delay (d ₂), s/veh								0.8		1.1	1.2	0.0	0.0	2.2			
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0			
Control Delay (d), s/veh								30.2		30.4	3.8	1.4	0.0	5.7			
Level of Service (LOS)								C		C	A	A		A			
Approach Delay, s/veh / LOS					0.0			30.3		C	3.8	A		5.7		A	
Intersection Delay, s/veh / LOS								4.8						A			
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.29		B	2.29		B	1.81		B	0.61		A	
Bicycle LOS Score / LOS										F	1.83		B	2.12		B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	Delaware State Park	File Name	138_US23-DelPark_PM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				18		2		2085	13	7	1560	

Signal Information				Signal Timing (s)													
Cycle, s	80.0	Reference Phase	2														
Offset, s	0	Reference Point	End	Green	1.1	57.1	3.8	0.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0							

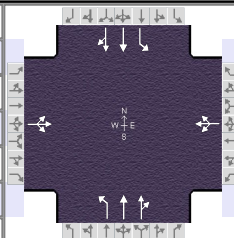
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				9.8		63.1	7.1	70.2
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.0		0.0	3.0	0.0
Queue Clearance Time (g _s), s				2.9			2.1	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				0.38			0.16	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				20		2		2266	14	8		1696
Adjusted Saturation Flow Rate (s), veh/h/ln				1767		1572		1639	1572	1767		1639
Queue Service Time (g _s), s				0.9		0.1		51.3	0.2	0.1		17.0
Cycle Queue Clearance Time (g _c), s				0.9		0.1		51.3	0.2	0.1		17.0
Green Ratio (g/C)				0.05		0.05		0.71	0.71	0.75		0.80
Capacity (c), veh/h				85		75		2340	1122	126		2630
Volume-to-Capacity Ratio (X)				0.231		0.029		0.969	0.013	0.060		0.645
Back of Queue (Q), ft/ln (95 th percentile)				16.6		1.8		567.6	2.1	4.3		96.5
Back of Queue (Q), veh/ln (95 th percentile)				0.6		0.1		20.7	0.1	0.2		3.5
Queue Storage Ratio (RQ) (95 th percentile)				0.07		0.00		0.00	0.01	0.02		0.00
Uniform Delay (d ₁), s/veh				36.7		36.3		10.6	3.3	21.1		3.2
Incremental Delay (d ₂), s/veh				0.5		0.1		12.6	0.0	0.1		1.2
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				37.2		36.4		23.2	3.3	21.2		4.5
Level of Service (LOS)				D		D		C	A	C		A
Approach Delay, s/veh / LOS	0.0			37.1		D	23.1	C		4.6		A
Intersection Delay, s/veh / LOS				15.3						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.85	B	0.62	A
Bicycle LOS Score / LOS				F	2.37	B	1.89	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 229	File Name	139_US23-SR229_AM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	10	10	10	24	10	90	10	1412	51	96	1791	10

Signal Information				Signal Timing and Phases								
Cycle, s	70.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	40.0	4.7	9.3	0.0	0.0	0.0				
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
		Red	2.0	2.0	0.0	0.0	0.0	0.0				

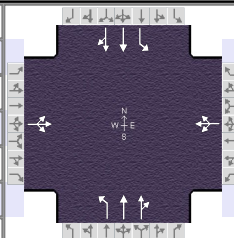
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		6.0
Phase Duration, s		10.7		13.3		46.0		46.0
Change Period, ($Y+R_c$), s		6.0		4.0		6.0		6.0
Max Allow Headway (MAH), s		3.1		3.2		0.0		0.0
Queue Clearance Time (g_s), s		3.3		7.5				
Green Extension Time (g_e), s		0.0		0.1		0.0		0.0
Phase Call Probability		0.47		0.93				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	33			135			11	798	792	104	979	979
Adjusted Saturation Flow Rate (s), veh/h/ln	1723			1627			223	1722	1701	318	1722	1719
Queue Service Time (g_s), s	1.3			5.5			0.4	25.9	26.1	13.9	39.5	39.6
Cycle Queue Clearance Time (g_c), s	1.3			5.5			40.0	25.9	26.1	40.0	39.5	39.6
Green Ratio (g/C)	0.07			0.13			0.57	0.57	0.57	0.57	0.57	0.57
Capacity (c), veh/h	116			216			104	985	973	166	985	983
Volume-to-Capacity Ratio (X)	0.282			0.625			0.104	0.810	0.814	0.628	0.994	0.996
Back of Queue (Q), ft/ln (95 th percentile)	23.1			93.3			10.6	382.9	358.9	111.7	691.9	636.4
Back of Queue (Q), veh/ln (95 th percentile)	0.9			3.6			0.4	14.0	14.0	4.4	25.3	25.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.04	0.00	0.00	0.22	0.00	0.00
Uniform Delay (d_1), s/veh	31.0			28.7			35.0	12.0	12.0	30.8	14.9	14.9
Incremental Delay (d_2), s/veh	0.5			1.1			2.0	7.2	7.5	16.7	27.2	27.7
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	31.5			29.8			37.0	19.2	19.5	47.5	42.1	42.6
Level of Service (LOS)	C			C			D	B	B	D	D	D
Approach Delay, s/veh / LOS	31.5	C		29.8	C		19.4	B		42.6	D	
Intersection Delay, s/veh / LOS	32.4			32.4			C			C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.30	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.54	A	0.71	A	1.81	B	2.19	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Jun 25, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2030	Analysis Period	1 > 7:00	
Intersection	SR 229	File Name	139_US23-SR229_PM.xus				
Project Description	No-Build Design Year (2030)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	10	10	10	33	10	53	10	2013	66	100	1517	10

Signal Information														
Cycle, s	90.9	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	60.0	5.6	9.3	0.0	0.0	0.0	1	2	3	4
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
				Red	2.0	2.0	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		12.0		12.0		6.0		6.0
Phase Duration, s		11.6		13.3		66.0		66.0
Change Period, (Y+R _c), s		6.0		4.0		6.0		6.0
Max Allow Headway (MAH), s		3.1		3.1		3.3		3.3
Queue Clearance Time (g _s), s		3.6		7.5		62.0		62.0
Green Extension Time (g _e), s		0.1		0.1		0.0		0.0
Phase Call Probability		0.56		0.93		1.00		1.00
Max Out Probability		0.00		0.16		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	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	33			104			11	1130	1130	109	830	829
Adjusted Saturation Flow Rate (s), veh/h/ln	1723			1662			298	1722	1703	165	1722	1718
Queue Service Time (g _s), s	1.6			5.5			2.3	59.0	60.0	0.0	28.8	28.8
Cycle Queue Clearance Time (g _c), s	1.6			5.5			31.3	59.0	60.0	60.0	28.8	28.8
Green Ratio (g/C)	0.06			0.10			0.66	0.66	0.66	0.66	0.66	0.66
Capacity (c), veh/h	107			170			181	1137	1124	79	1137	1134
Volume-to-Capacity Ratio (X)	0.306			0.615			0.060	0.994	1.005	1.372	0.731	0.731
Back of Queue (Q), ft/ln (95 th percentile)	31.6			101			6.9	894.4	867.9	310.9	372.5	339.7
Back of Queue (Q), veh/ln (95 th percentile)	1.2			3.9			0.3	32.6	33.9	12.1	13.6	13.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.02	0.00	0.00	0.62	0.00	0.00
Uniform Delay (d ₁), s/veh	40.8			39.1			20.5	15.3	15.5	45.5	10.1	10.2
Incremental Delay (d ₂), s/veh	0.6			1.3			0.1	25.2	28.2	228.6	2.1	2.1
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.4			40.4			20.5	40.5	43.6	274.0	12.3	12.3
Level of Service (LOS)	D			D			C	D	F	F	B	B
Approach Delay, s/veh / LOS	41.4		D	40.4		D	41.9		D	28.4		C
Intersection Delay, s/veh / LOS	36.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.31	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.54	A	0.66	A	2.36	B	1.95	B

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	1/4/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	US 23/SR 229	PHF	0.92		Arterial Direction	North-South	
File Name	D139_US23-SR229_AM_NB.xus						
Project Description	No-Build 2030						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						1482				
Intersection Two Demand (v), veh/h		96			0	124		1431	61			
Intersection Three Demand (v), veh/h				34	0						1919	
Intersection Four Demand (v), veh/h		0	30		10						1837	20

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	77										
Uncoordinated	No	Green	68.0	10.0	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	3										
Uncoordinated	No	Green	6.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	88										
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

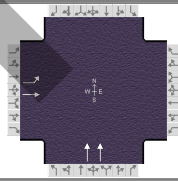
Alternative Intersection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	89.3	24.7	114.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	85.6	24.7	110.3	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	26	89.6	24.7	114.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	84.5	24.7	109.2	F
WBR	WBR(2)	98	41.3	--	41.3	D
NBL	NBT(1) + NBL(2)	11	42.6	--	42.6	D
NBT	NBT(1) + NBT(2)	1566	10.9	--	10.9	B
NBR	NBT(1) + NBR(2)	67	7.2	--	7.2	A
SBL	SBT(3) + SBL(4)	104	44.8	--	44.8	D
SBT	SBT(3) + SBT(4)	2100	13.8	--	13.8	B
SBR	SBT(3) + SBR(4)	23	8.8	--	8.8	A

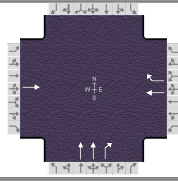
Overall Results		
Intersection ETT, s/veh LOS	15.7	B

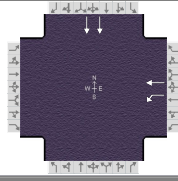
HCS Alternative Intersections Results Summary

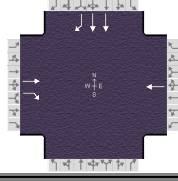
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	Jun 25, 2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	US 23/SR 229	PHF	0.92		Arterial Direction	North-South	
File Name	D139_US23-SR229_PM_NB.xus						
Project Description	No-Build 2030						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						2097				
Intersection Two Demand (v), veh/h		100			0	96		2031	76			
Intersection Three Demand (v), veh/h				43	0						1656	
Intersection Four Demand (v), veh/h		0	30		10						1579	20

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	77										
Uncoordinated	No	Green	68.0	10.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	3										
Uncoordinated	No	Green	6.9	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

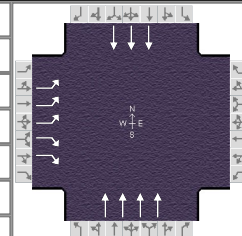
Signal Four Information											
Cycle, s	90.0										
Offset, s	88										
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	94.0	24.7	118.7	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	85.6	24.7	110.3	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	36	85.7	24.7	110.4	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	81.8	24.7	106.5	F
WBR	WBR(2)	58	39.2	--	39.2	D
NBL	NBT(1) + NBL(2)	11	46.2	--	46.2	D
NBT	NBT(1) + NBT(2)	2218	19.1	--	19.1	B
NBR	NBT(1) + NBR(2)	83	10.8	--	10.8	B
SBL	SBT(3) + SBL(4)	109	44.2	--	44.2	D
SBT	SBT(3) + SBT(4)	1824	11.9	--	11.9	B
SBR	SBT(3) + SBR(4)	23	8.0	--	8.0	A

Overall Results		
Intersection ETT, s/veh LOS	18.6	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	I-270 Eastbound Exit Ra...	File Name	101_US23-I270EB_AM.xus				
Project Description	Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	2092		769						1426			1581

Signal Information													
Cycle, s	105.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On	Green	42.6	50.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

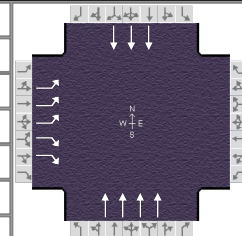
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		8.0
Phase Duration, s		56.4				48.6		48.6
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		45.2						
Green Extension Time (g _e), s		5.2				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.81						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2				6
Adjusted Flow Rate (v), veh/h	2274		836					1550				1718
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1392					1671				1671
Queue Service Time (g _s), s	43.2		23.4					18.8				32.5
Cycle Queue Clearance Time (g _c), s	43.2		23.4					18.8				32.5
Green Ratio (g/C)	0.48		0.48					0.41				0.41
Capacity (c), veh/h	2470		1336					2713				2035
Volume-to-Capacity Ratio (X)	0.921		0.626					0.571				0.844
Back of Queue (Q), ft/ln (95 th percentile)	612		292.2					295.8				482.6
Back of Queue (Q), veh/ln (95 th percentile)	23.9		11.4					11.5				18.7
Queue Storage Ratio (RQ) (95 th percentile)	1.02		0.58					0.00				0.00
Uniform Delay (d ₁), s/veh	25.4		20.3					24.1				28.2
Incremental Delay (d ₂), s/veh	5.8		0.6					0.9				4.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0				0.0
Control Delay (d), s/veh	31.3		20.9					25.0				32.7
Level of Service (LOS)	C		C					C				C
Approach Delay, s/veh / LOS	28.5		C	0.0				25.0		C	32.7	C
Intersection Delay, s/veh / LOS	28.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.61	C	0.72	A	2.27	B
Bicycle LOS Score / LOS		F			1.13	A	1.43	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	CBD		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	I-270 Eastbound Exit Ra...	File Name	101_US23-I270EB_PM.xus				
Project Description	Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	2731		902						1606			801

Signal Information													
Cycle, s	115.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	45.0	58.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

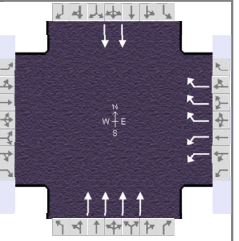
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		8.0
Phase Duration, s		64.0				51.0		51.0
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		60.0						
Green Extension Time (g _e), s		0.0				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		1.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14					2				6
Adjusted Flow Rate (v), veh/h	2968		980					1746				871
Adjusted Saturation Flow Rate (s), veh/h/ln	1532		1252					1014				1504
Queue Service Time (g _s), s	58.0		36.7					45.0				16.7
Cycle Queue Clearance Time (g _c), s	58.0		36.7					45.0				16.7
Green Ratio (g/C)	0.50		0.50					0.39				0.39
Capacity (c), veh/h	2318		1263					1587				1766
Volume-to-Capacity Ratio (X)	1.281		0.776					1.100				0.493
Back of Queue (Q), ft/ln (95 th percentile)	1782.3		401					633.4				253.9
Back of Queue (Q), veh/ln (95 th percentile)	69.1		15.7					24.5				9.8
Queue Storage Ratio (RQ) (95 th percentile)	2.97		0.80					0.00				0.00
Uniform Delay (d ₁), s/veh	28.5		23.2					35.0				26.4
Incremental Delay (d ₂), s/veh	129.7		2.8					55.2				1.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0					0.0				0.0
Control Delay (d), s/veh	158.2		26.0					90.2				27.4
Level of Service (LOS)	F		C					F				C
Approach Delay, s/veh / LOS	125.4		F	0.0				90.2		F	27.4	C
Intersection Delay, s/veh / LOS	103.0						F					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.62	C	2.62	C	0.72	A	2.28
Bicycle LOS Score / LOS		F			1.21	A	0.97	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	I-270 Westbound Exit R...	File Name	102_US23-I270WB_AM.xus		
Project Description	Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				495		1693			3483			952

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	48.0	40.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

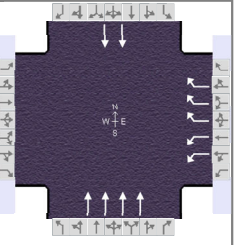
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				9.0		8.0		8.0
Phase Duration, s				46.0		54.0		54.0
Change Period, (Y+R _c), s				6.0		6.0		6.0
Max Allow Headway (MAH), s				3.2		0.0		0.0
Queue Clearance Time (g _s), s				42.0				
Green Extension Time (g _e), s				0.0		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				1.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2			6	
Adjusted Flow Rate (v), veh/h				538		1840		3786			1035	
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1392		1671			1752	
Queue Service Time (g _s), s				11.2		40.0		48.0			21.8	
Cycle Queue Clearance Time (g _c), s				11.2		40.0		48.0			21.8	
Green Ratio (g/C)				0.40		0.40		0.48			0.48	
Capacity (c), veh/h				1373		1670		3209			1682	
Volume-to-Capacity Ratio (X)				0.392		1.102		1.180			0.615	
Back of Queue (Q), ft/ln (95 th percentile)				192.7		770.9		1317			338.4	
Back of Queue (Q), veh/ln (95 th percentile)				7.5		30.1		51.0			13.1	
Queue Storage Ratio (RQ) (95 th percentile)				0.39		0.00		0.00			0.00	
Uniform Delay (d ₁), s/veh				21.3		30.0		26.0			19.2	
Incremental Delay (d ₂), s/veh				0.1		55.5		84.4			1.7	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0			0.0	
Control Delay (d), s/veh				21.4		85.5		110.4			20.9	
Level of Service (LOS)				C		F		F			C	
Approach Delay, s/veh / LOS	0.0			71.0		E	110.4		F	20.9		C
Intersection Delay, s/veh / LOS				84.5						F		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.26	B	0.70	A
Bicycle LOS Score / LOS				F	2.05	B	1.34	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	I-270 Westbound Exit R...	File Name	102_US23-I270WB_PM.xus		
Project Description	Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				553		1754			3681			868

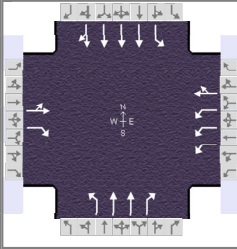
Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	46.0	37.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				9.0		8.0		8.0
Phase Duration, s				43.0		52.0		52.0
Change Period, (Y+R _c), s				6.0		6.0		6.0
Max Allow Headway (MAH), s				3.2		0.0		0.0
Queue Clearance Time (g _s), s				39.0				
Green Extension Time (g _e), s				0.0		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				1.00				

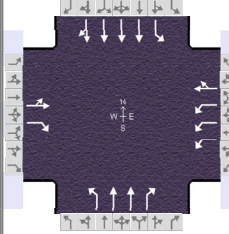
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2			6	
Adjusted Flow Rate (v), veh/h				601		1907		4001			943	
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1392		1671			1752	
Queue Service Time (g _s), s				12.3		37.0		46.0			18.0	
Cycle Queue Clearance Time (g _c), s				12.3		37.0		46.0			18.0	
Green Ratio (g/C)				0.39		0.39		0.48			0.48	
Capacity (c), veh/h				1337		1626		3237			1697	
Volume-to-Capacity Ratio (X)				0.450		1.172		1.236			0.556	
Back of Queue (Q), ft/ln (95 th percentile)				207.2		903.9		1515.3			285.2	
Back of Queue (Q), veh/ln (95 th percentile)				8.1		35.3		58.7			11.1	
Queue Storage Ratio (RQ) (95 th percentile)				0.41		0.00		0.00			0.00	
Uniform Delay (d ₁), s/veh				21.5		29.0		24.5			17.3	
Incremental Delay (d ₂), s/veh				0.1		84.5		109.0			1.3	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0			0.0	
Control Delay (d), s/veh				21.6		113.5		133.5			18.6	
Level of Service (LOS)				C		F		F			B	
Approach Delay, s/veh / LOS	0.0			91.5		F	133.5		F	18.6		B
Intersection Delay, s/veh / LOS	104.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.26	B	0.70	A
Bicycle LOS Score / LOS				F	2.14	B	1.27	A

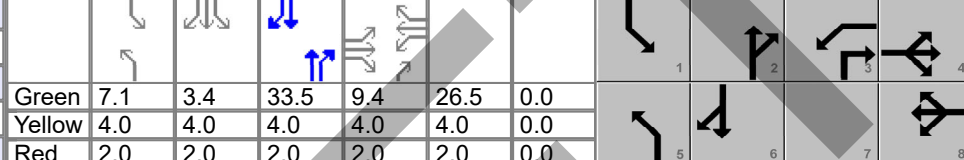
HCS Signalized Intersection Results Summary

General Information					Intersection Information																													
Agency	ms consultants				Duration, h	0.250																												
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other																												
Jurisdiction		Time Period	AM Peak		PHF	0.92																												
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																											
Intersection	Campus View Blvd.		File Name	103_US23-CampusView_AM.xus																														
Project Description	Design Year (2050)																																	
Demand Information					EB			WB			NB			SB																				
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R																		
Demand (v), veh/h					10	10	74	779	7	53	44	588	1175	256	4106	9																		
Signal Information																																		
Cycle, s	135.0	Reference Phase	2																															
Offset, s	0	Reference Point	End																															
Uncoordinated	No	Simult. Gap E/W	On		Green	5.8	6.2	57.0	9.8	26.2	0.0																							
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	4.0	4.0	0.0																							
					Red	2.0	2.0	2.0	2.0	2.0	0.0																							
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT															
Assigned Phase							4		8		5		2		1		6																	
Case Number							11.0		10.0		2.0		3.0		2.0		4.0																	
Phase Duration, s							15.8		32.2		11.8		63.0		24.0		75.2																	
Change Period, (Y+R _c), s							6.0		6.0		6.0		6.0		6.0		6.0																	
Max Allow Headway (MAH), s							3.2		3.0		3.0		0.0		3.0		0.0																	
Queue Clearance Time (g _s), s							8.8		28.2		5.6				20.0																			
Green Extension Time (g _e), s							0.0		0.0		0.0		0.0		0.0		0.0																	
Phase Call Probability							0.98		1.00		0.83				1.00																			
Max Out Probability							0.94		1.00		0.00				1.00																			
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					22			80			847			65			48			639			1277			278			3355			1118		
Adjusted Saturation Flow Rate (s), veh/h/ln					1810			1572			1311			1601			1767			1752			1572			1767			1841			1838		
Queue Service Time (g _s), s					1.5			6.8			26.2			4.6			3.6			17.4			57.0			18.0			69.2			69.2		
Cycle Queue Clearance Time (g _c), s					1.5			6.8			26.2			4.6			3.6			17.4			57.0			18.0			69.2			69.2		
Green Ratio (g/C)					0.07			0.07			0.19			0.19			0.04			0.42			0.62			0.13			0.51			0.51		
Capacity (c), veh/h					131			114			764			311			76			1480			969			236			2829			942		
Volume-to-Capacity Ratio (X)					0.166			0.706			1.109			0.210			0.626			0.432			1.318			1.180			1.186			1.188		
Back of Queue (Q), ft/ln (95 th percentile)					32			133.3			513.8			84			76.3			301.5			2497.2			602.6			1851.9			1903.6		
Back of Queue (Q), veh/ln (95 th percentile)					1.3			5.2			20.1			3.3			3.0			11.7			97.5			23.5			71.8			74.4		
Queue Storage Ratio (RQ) (95 th percentile)					0.00			1.33			1.03			0.00			0.13			0.00			0.00			6.03			0.00			0.00		
Uniform Delay (d ₁), s/veh					58.8			61.2			54.4			45.7			63.5			27.6			25.9			58.5			32.9			32.9		
Incremental Delay (d ₂), s/veh					0.2			7.8			66.6			0.1			3.1			0.9			150.3			116.0			87.5			95.1		
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0		
Control Delay (d), s/veh					59.0			69.0			120.9			45.8			66.6			28.5			176.2			174.5			120.4			128.1		
Level of Service (LOS)					E			E			F			D			E			C			F			F			F			F		
Approach Delay, s/veh / LOS					66.9			E			115.6			F			125.5			F			125.3			F			F					
Intersection Delay, s/veh / LOS								123.5									F																	
Multimodal Results					EB			WB			NB			SB																				
Pedestrian LOS Score / LOS					2.73			C			2.62			C			2.28			B			1.91			B								
Bicycle LOS Score / LOS					0.66			A			1.99			B			2.11			B			2.45			B								

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Campus View Blvd.	File Name	103_US23-CampusView_PM.xus			
Project Description	Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	12	14	61	1358	8	61	83	769	771	217	3009	13

Signal Information													
Cycle, s	110.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	7.1	3.4	33.5	9.4	26.5	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	4.0	0.0			
				Red	2.0	2.0	2.0	2.0	2.0	0.0			

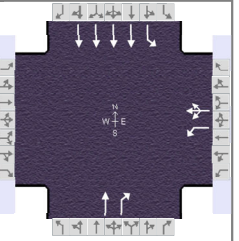
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		11.0		10.0	2.0	3.0	2.0	4.0
Phase Duration, s		15.4		32.5	13.1	39.5	22.5	48.9
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		6.4		28.5	7.5		16.4	
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.1	0.0
Phase Call Probability		0.94		1.00	0.94		1.00	
Max Out Probability		0.00		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	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		28	66	1476	75		90	836	838	236	2387	898
Adjusted Saturation Flow Rate (s), veh/h/ln		1814	1572	1716	1601		1767	1752	1572	1767	1629	1836
Queue Service Time (g _s), s		1.6	4.4	26.5	4.1		5.5	23.9	33.6	14.4	43.0	43.0
Cycle Queue Clearance Time (g _c), s		1.6	4.4	26.5	4.1		5.5	23.9	33.6	14.4	43.0	43.0
Green Ratio (g/C)		0.09	0.09	0.24	0.24		0.06	0.30	0.55	0.15	0.39	0.39
Capacity (c), veh/h		156	135	1242	386		114	1069	859	265	1908	717
Volume-to-Capacity Ratio (X)		0.181	0.491	1.189	0.194		0.794	0.782	0.976	0.891	1.251	1.253
Back of Queue (Q), ft/ln (95 th percentile)		32.6	79.4	815.9	71.6		132.6	409.7	836.1	320.1	1380.5	1578.9
Back of Queue (Q), veh/ln (95 th percentile)		1.3	3.1	31.9	2.8		5.2	15.9	32.7	12.5	53.5	61.7
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.79	1.63	0.00		0.22	0.00	0.00	3.20	0.00	0.00
Uniform Delay (d ₁), s/veh		46.7	48.0	41.7	33.2		50.7	34.9	24.2	45.9	33.5	33.5
Incremental Delay (d ₂), s/veh		0.2	1.0	93.3	0.1		15.8	5.7	25.4	24.4	117.4	125.0
Initial Queue Delay (d ₃), s/veh		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		46.9	49.0	135.0	33.3		66.5	40.6	49.6	70.3	151.0	158.5
Level of Service (LOS)		D	D	F	C		E	D	D	E	F	F
Approach Delay, s/veh / LOS	48.4	D		130.1	F		46.2	D		147.5	F	
Intersection Delay, s/veh / LOS				116.5						F		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.61	C	2.29	B	1.92	B
Bicycle LOS Score / LOS	0.64	A	3.05	C	1.94	B	1.94	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Flint Road		File Name	104_US23-Flint_AM.xus			
Project Description	Design Year (2050)						



Demand Information	EB			WB			NB			SB					
	L	T	R	L	T	R	L	T	R	L	T	R			
Approach Movement															
Demand (v), veh/h				1078	0	5				237	598		35	3252	

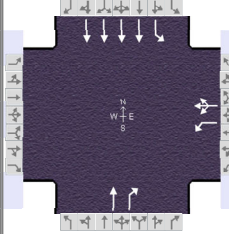
Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	4.3	38.7	29.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	2.0	4.0
Phase Duration, s				35.0		44.7	10.3	55.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				31.0			3.9	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				1.00			0.61	
Max Out Probability				1.00			0.02	

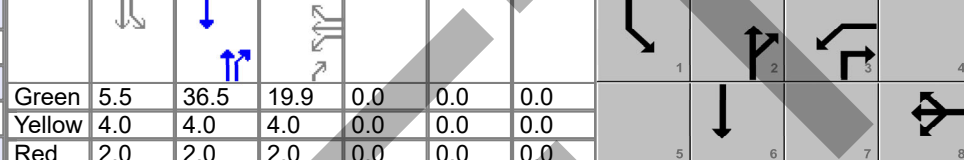
Movement Group Results	EB			WB			NB			SB											
	L	T	R	L	T	R	L	T	R	L	T	R									
Assigned Movement				3	8	18				2	12		1	6							
Adjusted Flow Rate (v), veh/h				644	533					258	650		38	3535							
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1765					1841	1572		1767	1663							
Queue Service Time (g _s), s				29.0	27.2					8.3	15.7		1.9	46.5							
Cycle Queue Clearance Time (g _c), s				29.0	27.2					8.3	15.7		1.9	46.5							
Green Ratio (g/C)				0.32	0.32					0.43	0.75		0.05	0.54							
Capacity (c), veh/h				569	569					792	1183		84	3621							
Volume-to-Capacity Ratio (X)				1.132	0.937					0.325	0.549		0.451	0.976							
Back of Queue (Q), ft/ln (95th percentile)				880.6	605					159.4	161.8		37.8	624.1							
Back of Queue (Q), veh/ln (95th percentile)				34.4	23.6					6.2	6.3		1.5	24.2							
Queue Storage Ratio (RQ) (95th percentile)				2.20	0.00					0.00	0.00		0.38	0.00							
Uniform Delay (d ₁), s/veh				30.5	43.9					17.0	4.7		41.7	19.9							
Incremental Delay (d ₂), s/veh				79.5	22.9					1.1	1.8		1.4	10.4							
Initial Queue Delay (d ₃), s/veh				0.0	0.0					0.0	0.0		0.0	0.0							
Control Delay (d), s/veh				110.0	66.8					18.1	6.5		43.1	30.3							
Level of Service (LOS)				F	E					B	A		D	C							
Approach Delay, s/veh / LOS	0.0			90.5			F			9.8			A			30.4			C		
Intersection Delay, s/veh / LOS				39.6						D											

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.91	B	1.37	A
Bicycle LOS Score / LOS			2.43	B	1.99	B	1.96	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Flint Road	File Name	104_US23-Flint_PM.xus			
Project Description	Design Year (2050)					

Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h				651	0	40				302	654	65	2553

Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.5	36.5	19.9	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

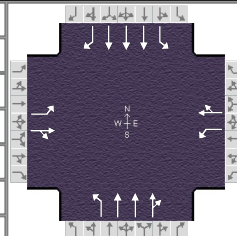
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				10.0		7.3	2.0	4.0
Phase Duration, s				25.9		42.5	11.5	54.1
Change Period, ($Y+R_c$), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g_s), s				19.4			5.1	
Green Extension Time (g_e), s				0.6		0.0	0.0	0.0
Phase Call Probability				1.00			0.79	
Max Out Probability				1.00			0.05	

Movement Group Results	EB			WB			NB			SB					
	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement				3	8	18				2	12	1	6		
Adjusted Flow Rate (v), veh/h				396	355					328	711	71	2775		
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1743					1841	1572	1767	1469		
Queue Service Time (g_s), s				17.4	16.2					9.4	19.4	3.1	28.6		
Cycle Queue Clearance Time (g_c), s				17.4	16.2					9.4	19.4	3.1	28.6		
Green Ratio (g/C)				0.25	0.25					0.46	0.71	0.07	0.60		
Capacity (c), veh/h				440	434					840	1110	122	3530		
Volume-to-Capacity Ratio (X)				0.900	0.817					0.391	0.641	0.577	0.786		
Back of Queue (Q), ft/ln (95 th percentile)				351.2	347.8					172.8	212.6	60.6	307.6		
Back of Queue (Q), veh/ln (95 th percentile)				13.7	13.6					6.7	8.3	2.4	11.9		
Queue Storage Ratio (RQ) (95 th percentile)				0.88	0.00					0.00	0.00	0.61	0.00		
Uniform Delay (d_1), s/veh				29.1	37.0					14.4	6.3	36.1	12.1		
Incremental Delay (d_2), s/veh				17.5	8.7					1.4	2.8	1.6	1.8		
Initial Queue Delay (d_3), s/veh				0.0	0.0					0.0	0.0	0.0	0.0		
Control Delay (d), s/veh				46.6	45.7					15.7	9.2	37.7	13.9		
Level of Service (LOS)				D	D					B	A	D	B		
Approach Delay, s/veh / LOS	0.0			46.2			D			11.2			B		
Intersection Delay, s/veh / LOS				18.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.90	B	1.35	A
Bicycle LOS Score / LOS			1.73	B	2.20	B	1.66	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard		File Name	105_US23-Northwoods_AM.xus			
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	43	2	84	8	2	5	260	2487	8	41	3128	109

Signal Information				Signal Timing (s)										
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.0	5.2	62.0	9.9	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.0	0.0	0.0				

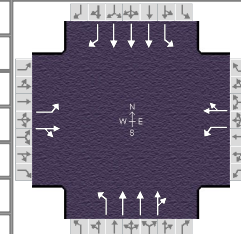
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		15.9		15.9	16.1	73.2	11.0	68.0
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		7.7		8.3	12.1		4.5	
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	1.00		0.71	
Max Out Probability		1.00		1.00	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	47	93		9	8		283	1808	904	45	3400	118
Adjusted Saturation Flow Rate (s), veh/h/ln	1397	1578		1292	1644		1767	1841	1838	1767	1671	1572
Queue Service Time (g _s), s	3.1	5.7		0.6	0.4		10.1	31.7	31.8	2.5	62.0	3.1
Cycle Queue Clearance Time (g _c), s	3.6	5.7		6.3	0.4		10.1	31.7	31.8	2.5	62.0	3.1
Green Ratio (g/C)	0.10	0.10		0.10	0.10		0.10	0.67	0.67	0.05	0.62	0.62
Capacity (c), veh/h	204	156		126	162		179	2472	1234	88	3109	975
Volume-to-Capacity Ratio (X)	0.229	0.600		0.069	0.047		1.579	0.731	0.732	0.507	1.094	0.122
Back of Queue (Q), ft/ln (95th percentile)	48.6	106.8		9.4	7.7		755.7	410.9	428.5	50	1175.1	44.4
Back of Queue (Q), veh/ln (95th percentile)	1.9	4.2		0.4	0.3		29.5	15.9	16.7	2.0	45.5	1.7
Queue Storage Ratio (RQ) (95th percentile)	0.49	0.00		0.13	0.00		1.26	0.00	0.00	0.20	0.00	0.13
Uniform Delay (d ₁), s/veh	42.4	43.2		46.2	40.8		44.9	10.6	10.6	46.3	19.0	7.8
Incremental Delay (d ₂), s/veh	0.2	4.2		0.1	0.0		285.5	2.0	3.9	1.7	48.1	0.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	42.6	47.4		46.3	40.8		330.4	12.5	14.5	48.0	67.1	8.1
Level of Service (LOS)	D	D		D	D		F	B	B	D	F	A
Approach Delay, s/veh / LOS	45.8		D	43.7		D	43.1		D	64.9		E
Intersection Delay, s/veh / LOS	54.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.73	C	1.87	B	1.88	B
Bicycle LOS Score / LOS	0.72	A	0.51	A	2.13	B	2.45	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard		File Name	105_US23-Northwoods_PM.xus			
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	123	2	112	10	1	28	145	3507	6	10	2488	71

Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.7	2.6	53.9	12.8	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0			
				Red	2.0	2.0	2.0	2.0	0.0	0.0			

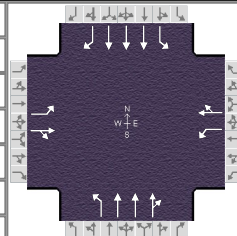
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		18.8		18.8	16.3	68.5	7.7	59.9
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		12.8		9.8	10.3		2.6	
Green Extension Time (g _e), s		0.0		0.2	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.98		0.25	
Max Out Probability		1.00		0.97	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	134	124		11	32		158	2546	1273	11	2704	77
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1577		1257	1581		1767	1841	1839	1767	1671	1572
Queue Service Time (g _s), s	9.1	7.0		0.8	1.7		8.3	62.5	62.5	0.6	48.1	2.1
Cycle Queue Clearance Time (g _c), s	10.8	7.0		7.8	1.7		8.3	62.5	62.5	0.6	48.1	2.1
Green Ratio (g/C)	0.13	0.13		0.13	0.13		0.11	0.66	0.66	0.02	0.57	0.57
Capacity (c), veh/h	236	212		152	213		192	2421	1209	32	2845	892
Volume-to-Capacity Ratio (X)	0.567	0.584		0.071	0.148		0.822	1.052	1.053	0.335	0.950	0.086
Back of Queue (Q), ft/ln (95 th percentile)	140.4	126.5		10.9	28.9		167.4	1073.7	1140.1	12.2	633.8	31.5
Back of Queue (Q), veh/ln (95 th percentile)	5.5	4.9		0.4	1.1		6.5	41.6	44.5	0.5	24.6	1.2
Queue Storage Ratio (RQ) (95 th percentile)	1.40	0.00		0.14	0.00		0.28	0.00	0.00	0.05	0.00	0.09
Uniform Delay (d ₁), s/veh	41.1	38.6		42.3	36.3		41.4	16.3	16.3	46.1	19.3	9.3
Incremental Delay (d ₂), s/veh	1.9	2.5		0.1	0.1		3.3	33.7	40.9	2.2	8.7	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	42.9	41.2		42.3	36.4		44.8	49.9	57.1	48.3	28.0	9.5
Level of Service (LOS)	D	D		D	D		D	F	F	D	C	A
Approach Delay, s/veh / LOS	42.1		D	37.9		D	52.0		D	27.6		C
Intersection Delay, s/veh / LOS	41.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.73	C	1.87	B	1.89	B
Bicycle LOS Score / LOS	0.91	A	0.56	A	2.67	C	2.02	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Highbluffs Blvd./Windso...	File Name	106_US23-Highbluffs_AM.xus				
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	82	2	239	38	3	8	21	2490	6	2	2886	33

Signal Information													
Cycle, s	110.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.5	3.1	64.6	23.8	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

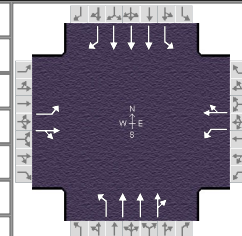
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		29.8		29.8	9.5	73.7	6.5	70.6
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		19.2		23.0	3.4		2.1	
Green Extension Time (g _e), s		0.8		0.8	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.50		0.06	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	89	262		41	12		23	1809	904	2	3137	36
Adjusted Saturation Flow Rate (s), veh/h/ln	1391	1574		1109	1641		1767	1841	1838	1767	1671	1572
Queue Service Time (g _s), s	5.9	17.2		4.0	0.6		1.4	40.9	41.0	0.1	64.6	1.1
Cycle Queue Clearance Time (g _c), s	6.4	17.2		21.0	0.6		1.4	40.9	41.0	0.1	64.6	1.1
Green Ratio (g/C)	0.22	0.22		0.22	0.22		0.03	0.62	0.62	0.00	0.59	0.59
Capacity (c), veh/h	361	342		135	357		56	2264	1130	7	2944	923
Volume-to-Capacity Ratio (X)	0.247	0.765		0.306	0.034		0.404	0.799	0.800	0.300	1.066	0.039
Back of Queue (Q), ft/ln (95 th percentile)	90.5	274.3		50.4	11.4		28.9	567.5	592.6	3.5	1114	16.3
Back of Queue (Q), veh/ln (95 th percentile)	3.5	10.7		2.0	0.4		1.1	22.0	23.2	0.1	43.2	0.6
Queue Storage Ratio (RQ) (95 th percentile)	0.91	0.00		0.67	0.00		0.07	0.00	0.00	0.01	0.00	0.05
Uniform Delay (d ₁), s/veh	36.4	40.4		50.2	33.9		52.2	16.0	16.0	54.6	22.7	9.6
Incremental Delay (d ₂), s/veh	0.1	1.4		0.5	0.0		1.7	3.1	6.0	8.4	37.4	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	36.5	41.8		50.7	34.0		53.9	19.1	22.0	63.0	60.1	9.7
Level of Service (LOS)	D	D		D	C		D	B	C	E	F	A
Approach Delay, s/veh / LOS	40.4		D	46.9		D	20.3		C	59.5		E
Intersection Delay, s/veh / LOS	41.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.72	C	1.88	B	1.89	B
Bicycle LOS Score / LOS	1.07	A	0.58	A	1.99	B	2.23	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Feb 20, 2024	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Highbluffs Blvd./Windso...	File Name	106_US23-Highbluffs_PM.xus				
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	74	1	62	16	1	9	103	3457	45	9	2428	41

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	1.5	5.8	54.8	9.9	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

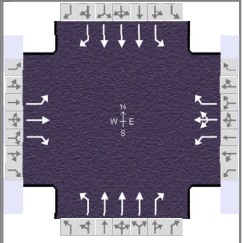
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	3.0
Phase Duration, s		15.9		15.9	13.3	66.6	7.5	60.8
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		7.5		6.7	7.6		2.5	
Green Extension Time (g _e), s		0.3		0.3	0.2	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	0.94		0.22	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	80	68		17	11		112	2538	1269	10	2639	45
Adjusted Saturation Flow Rate (s), veh/h/ln	1393	1576		1322	1597		1767	1841	1828	1767	1671	1572
Queue Service Time (g _s), s	4.9	3.6		1.1	0.5		5.6	60.6	60.6	0.5	39.1	1.0
Cycle Queue Clearance Time (g _c), s	5.5	3.6		4.7	0.5		5.6	60.6	60.6	0.5	39.1	1.0
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.08	0.67	0.67	0.02	0.61	0.61
Capacity (c), veh/h	224	173		172	175		143	2479	1231	30	3055	958
Volume-to-Capacity Ratio (X)	0.358	0.396		0.101	0.062		0.783	1.024	1.031	0.328	0.864	0.047
Back of Queue (Q), ft/ln (95 th percentile)	75.2	62.9		16.2	9.6		113.5	903.7	996.7	10.4	473.2	14.2
Back of Queue (Q), veh/ln (95 th percentile)	2.9	2.5		0.6	0.4		4.4	35.0	38.9	0.4	18.3	0.6
Queue Storage Ratio (RQ) (95 th percentile)	0.75	0.00		0.22	0.00		0.28	0.00	0.00	0.04	0.00	0.04
Uniform Delay (d ₁), s/veh	38.4	37.3		39.5	35.9		40.6	14.7	14.7	43.7	14.5	7.1
Incremental Delay (d ₂), s/veh	0.4	0.5		0.1	0.1		3.5	24.4	33.9	2.3	3.5	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.7	37.8		39.6	36.0		44.1	39.1	48.6	46.1	18.0	7.2
Level of Service (LOS)	D	D		D	D		D	F	F	D	B	A
Approach Delay, s/veh / LOS	38.3	D		38.2	D		42.3	D		18.0	B	
Intersection Delay, s/veh / LOS	32.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.73	C	1.86	B	1.87	B
Bicycle LOS Score / LOS	0.73	A	0.53	A	2.64	C	1.97	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Lazelle Road		File Name	107_US23-Lazelle_AM.xus			
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	28	17	32	336	55	96	80	2204	204	73	2540	77

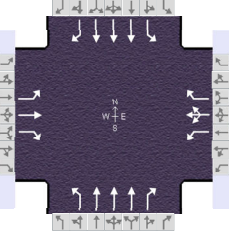
Signal Information													
Cycle, s	125.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Float	Simult. Gap N/S	On										
				Green	7.2	0.5	59.9	9.5	24.0	0.0			
				Yellow	4.0	0.0	4.0	4.0	4.0	0.0			
				Red	2.0	0.0	2.0	2.0	2.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		9.0		9.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.5		30.0	13.7	66.4	13.2	65.9
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		4.6		26.0	8.1		7.5	
Green Extension Time (g _e), s		0.0		0.0	0.0	0.0	0.1	0.0
Phase Call Probability		0.95		1.00	0.95		0.94	
Max Out Probability		0.04		1.00	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	30	18	35	365	60	104	87	2396	222	79	2761	84
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1671	1572	1767	1671	1572
Queue Service Time (g _s), s	2.0	1.2	2.6	24.0	3.4	7.2	6.1	59.1	6.7	5.5	59.9	3.1
Cycle Queue Clearance Time (g _c), s	2.0	1.2	2.6	24.0	3.4	7.2	6.1	59.1	6.7	5.5	59.9	3.1
Green Ratio (g/C)	0.08	0.08	0.08	0.19	0.19	0.19	0.06	0.48	0.68	0.06	0.48	0.55
Capacity (c), veh/h	134	140	119	339	356	302	109	2422	1062	101	2402	872
Volume-to-Capacity Ratio (X)	0.228	0.132	0.292	1.076	0.168	0.346	0.801	0.989	0.209	0.784	1.150	0.096
Back of Queue (Q), ft/ln (95 th percentile)	41.3	24.8	47.5	630.5	70	127.1	162.7	873.4	97.8	118.1	1391.5	50.9
Back of Queue (Q), veh/ln (95 th percentile)	1.6	1.0	1.9	24.6	2.7	5.0	6.4	33.9	3.8	4.6	53.9	2.0
Queue Storage Ratio (RQ) (95 th percentile)	0.33	0.00	0.38	1.80	0.00	0.00	0.33	0.00	0.43	0.39	0.00	0.34
Uniform Delay (d ₁), s/veh	54.3	53.9	54.6	50.5	42.2	43.7	57.9	32.0	7.7	58.2	32.6	13.1
Incremental Delay (d ₂), s/veh	0.3	0.2	0.5	70.7	0.1	0.3	29.0	15.9	0.4	4.9	72.7	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	54.7	54.1	55.1	121.2	42.2	44.0	86.9	47.8	8.1	63.1	105.2	13.3
Level of Service (LOS)	D	D	E	F	D	D	F	D	A	E	F	B
Approach Delay, s/veh / LOS	54.7		D	97.1		F	45.8		D	101.5		F
Intersection Delay, s/veh / LOS	76.4						E					

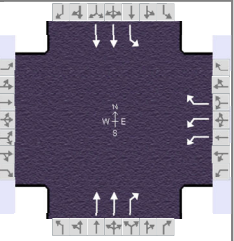
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.75	C	2.10	B	2.10	B
Bicycle LOS Score / LOS	0.63	A	1.36	A	1.97	B	2.10	B

HCS Signalized Intersection Results Summary

General Information						Intersection Information																				
Agency	ms consultants					Duration, h	0.250																			
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other																			
Jurisdiction		Time Period	PM Peak			PHF	0.92																			
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																			
Intersection	Lazelle Road		File Name	107_US23-Lazelle_PM.xus																						
Project Description	No Build Design Year (2050)																									
Demand Information																										
			EB			WB			NB			SB														
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h			49	29	38	469	32	131	37	3014	313	172	1984	61												
Signal Information																										
Cycle, s	125.0	Reference Phase	2																							
Offset, s	0	Reference Point	End																							
Uncoordinated	No	Simult. Gap E/W	On																							
Force Mode	Float	Simult. Gap N/S	On																							
Timer Results																										
			EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT		
Assigned Phase						4			8			5			2			1			6					
Case Number						9.0			9.0			2.0			3.0			2.0			3.0					
Phase Duration, s						15.9			30.0			11.3			65.1			14.0			67.9					
Change Period, (Y+R _c), s						6.0			6.0			6.0			6.0			6.0			6.0					
Max Allow Headway (MAH), s						3.1			3.1			3.0			0.0			3.0			0.0					
Queue Clearance Time (g _s), s						5.6			26.0			4.8			10.0											
Green Extension Time (g _e), s						0.1			0.0			0.0			0.0			0.0			0.0					
Phase Call Probability						0.99			1.00			0.75						1.00								
Max Out Probability						0.00			1.00			0.00						1.00								
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			53	32	41	510	35	142	40	3276	340	187	2157	66												
Adjusted Saturation Flow Rate (s), veh/h/ln			1767	1856	1572	1767	1856	1572	1767	1671	1572	1767	1671	1572												
Queue Service Time (g _s), s			3.6	2.0	3.1	24.0	1.9	10.1	2.8	59.1	11.6	8.0	47.7	2.3												
Cycle Queue Clearance Time (g _c), s			3.6	2.0	3.1	24.0	1.9	10.1	2.8	59.1	11.6	8.0	47.7	2.3												
Green Ratio (g/C)			0.08	0.08	0.08	0.19	0.19	0.19	0.04	0.47	0.67	0.06	0.49	0.57												
Capacity (c), veh/h			140	147	124	339	356	302	74	2372	1046	113	2481	902												
Volume-to-Capacity Ratio (X)			0.382	0.215	0.332	1.502	0.098	0.472	0.540	1.381	0.325	1.653	0.869	0.073												
Back of Queue (Q), ft/ln (95 th percentile)			73	42.5	56.4	1295.4	40.2	178.3	58.5	2325.7	172.5	581.6	664.8	37.6												
Back of Queue (Q), veh/ln (95 th percentile)			2.9	1.7	2.2	50.6	1.6	7.0	2.3	90.1	6.7	22.7	25.8	1.5												
Queue Storage Ratio (RQ) (95 th percentile)			0.58	0.00	0.45	3.70	0.00	0.00	0.12	0.00	0.77	1.94	0.00	0.25												
Uniform Delay (d ₁), s/veh			54.7	53.9	54.4	50.5	41.6	44.9	58.7	32.9	9.0	58.5	28.0	11.8												
Incremental Delay (d ₂), s/veh			0.6	0.3	0.6	241.0	0.0	0.4	2.3	174.3	0.8	329.8	4.5	0.2												
Initial Queue Delay (d ₃), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0												
Control Delay (d), s/veh			55.3	54.2	55.0	291.5	41.6	45.3	60.9	207.2	9.8	388.3	32.5	12.0												
Level of Service (LOS)			E	D	E	F	D	D	E	F	A	F	C	B												
Approach Delay, s/veh / LOS			54.9	D		227.8	F		187.3	F		59.5	E													
Intersection Delay, s/veh / LOS			144.1						F																	
Multimodal Results																										
			EB			WB			NB			SB														
Pedestrian LOS Score / LOS			2.73	C		2.75	C		2.10	B		2.10	B													
Bicycle LOS Score / LOS			0.70	A		1.62	B		2.50	B		1.81	B													

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Olentangy Meadows Drive	File Name	108_US23-OlentangyMeadows_AM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				120		41		2257	33	59	2459	

Signal Information				Signal Phases										
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On											
		Green	5.9	71.1	9.9	0.0	0.0	0.0						
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
		Red	2.0	2.0	2.0	0.0	0.0	0.0						

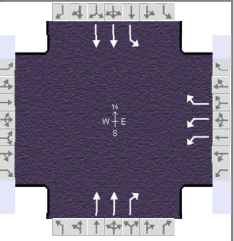
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				15.9		77.1	11.9	89.1
Change Period, ($Y+R_c$), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g_s), s				5.8			3.0	
Green Extension Time (g_e), s				0.3		0.0	0.1	0.0
Phase Call Probability				0.99			0.85	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				130		45		2453	36	64		2673
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1752	1572	1767		1752
Queue Service Time (g_s), s				3.8		2.6		71.1	0.6	1.0		70.5
Cycle Queue Clearance Time (g_c), s				3.8		2.6		71.1	0.6	1.0		70.5
Green Ratio (g/C)				0.09		0.15		0.68	0.77	0.75		0.79
Capacity (c), veh/h				325		238		2374	1214	168		2772
Volume-to-Capacity Ratio (X)				0.401		0.188		1.033	0.030	0.381		0.964
Back of Queue (Q), ft/ln (95 th percentile)				71.9		45.2		1056.6	5.9	50.7		657
Back of Queue (Q), veh/ln (95 th percentile)				2.8		1.8		41.0	0.2	2.0		25.5
Queue Storage Ratio (RQ) (95 th percentile)				0.32		0.20		0.00	0.02	0.10		0.00
Uniform Delay (d_1), s/veh				44.7		38.9		16.9	2.8	28.8		9.7
Incremental Delay (d_2), s/veh				0.3		0.1		27.7	0.0	0.5		10.5
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				45.0		39.1		44.6	2.8	29.3		20.2
Level of Service (LOS)				D		D		F	A	C		C
Approach Delay, s/veh / LOS	0.0			43.5		D	44.0		D	20.4		C
Intersection Delay, s/veh / LOS	32.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	2.06	B	0.63	A
Bicycle LOS Score / LOS				F	2.54	C	2.75	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Olentangy Meadows Drive	File Name	108_US23-OlentangyMeadows_PM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				34		62		3020	103	129	2100	

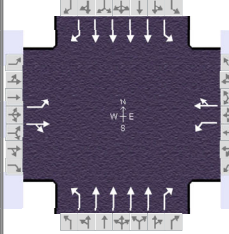
Signal Information				Signal Timing (s)										
Cycle, s	115.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	6.9	80.4	9.6	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				15.6		86.4	12.9	99.4
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.0	0.0
Queue Clearance Time (g _s), s				6.4			6.9	
Green Extension Time (g _e), s				0.1		0.0	0.0	0.0
Phase Call Probability				0.96			0.99	
Max Out Probability				0.57			1.00	

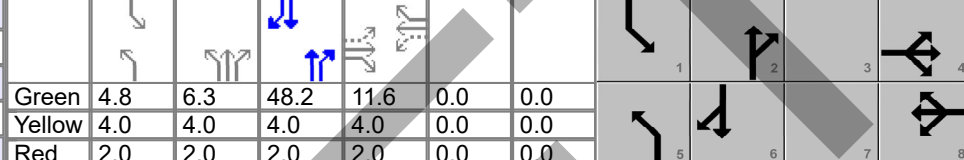
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				37		67		3283	112	140		2283
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1752	1572	1767		1752
Queue Service Time (g _s), s				1.1		4.4		80.4	1.9	4.9		40.4
Cycle Queue Clearance Time (g _c), s				1.1		4.4		80.4	1.9	4.9		40.4
Green Ratio (g/C)				0.08		0.14		0.70	0.78	0.78		0.81
Capacity (c), veh/h				288		226		2451	1232	169		2845
Volume-to-Capacity Ratio (X)				0.128		0.298		1.339	0.091	0.830		0.802
Back of Queue (Q), ft/ln (95 th percentile)				22.3		77.9		2967	20.9	222.3		361.5
Back of Queue (Q), veh/ln (95 th percentile)				0.9		3.0		115.0	0.8	8.7		14.0
Queue Storage Ratio (RQ) (95 th percentile)				0.10		0.35		0.00	0.08	0.44		0.00
Uniform Delay (d ₁), s/veh				48.8		44.0		17.3	2.9	40.5		5.8
Incremental Delay (d ₂), s/veh				0.1		0.3		155.4	0.1	24.7		2.5
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				48.9		44.3		172.7	3.1	65.3		8.3
Level of Service (LOS)				D		D		F	A	E		A
Approach Delay, s/veh / LOS	0.0			45.9		D	167.1		F	11.6		B
Intersection Delay, s/veh / LOS				101.4						F		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	2.05	B	0.63	A
Bicycle LOS Score / LOS				F	3.29	C	2.49	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard	File Name	D105_US23-Northwoods_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	125	2	84	8	2	5	260	2487	8	41	3128	109

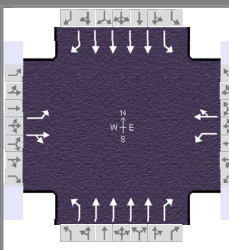
Signal Information																	
Cycle, s	95.0	Reference Phase	2	Green	4.8	6.3	48.2	11.6	0.0	0.0	Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Offset, s	0	Reference Point	End	Red	2.0	2.0	2.0	2.0	0.0	0.0	Force Mode	Fixed	Simult. Gap E/W	On	Simult. Gap N/S	On	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		17.6		17.6	23.1	66.5	10.8	54.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		11.4		7.8	16.8		4.3	
Green Extension Time (g _e), s		0.2		0.3	0.3	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.69	
Max Out Probability		0.10		0.00	0.02		0.00	

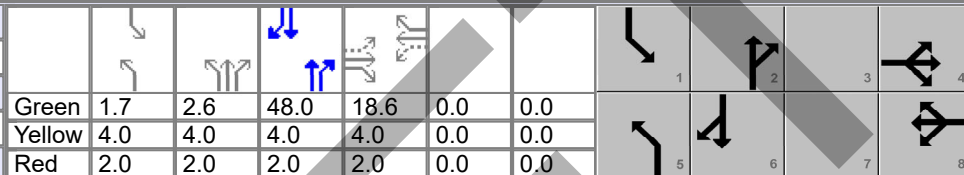
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	136	93		9	8		283	2703	9	45	3400	118
Adjusted Saturation Flow Rate (s), veh/h/ln	1397	1578		1292	1644		1767	1671	1572	1767	1671	1572
Queue Service Time (g _s), s	9.0	5.2		0.6	0.4		14.8	23.4	0.2	2.3	48.2	3.8
Cycle Queue Clearance Time (g _c), s	9.4	5.2		5.8	0.4		14.8	23.4	0.2	2.3	48.2	3.8
Green Ratio (g/C)	0.12	0.12		0.12	0.12		0.18	0.64	0.64	0.05	0.51	0.51
Capacity (c), veh/h	241	193		163	201		319	4259	1002	90	3394	798
Volume-to-Capacity Ratio (X)	0.563	0.483		0.053	0.038		0.887	0.635	0.009	0.495	1.002	0.148
Back of Queue (Q), ft/ln (95 th percentile)	138.9	91.5		8.6	7		292.5	293.6	2.6	47.1	705.5	59.7
Back of Queue (Q), veh/ln (95 th percentile)	5.4	3.6		0.3	0.3		11.4	11.4	0.1	1.8	27.3	2.3
Queue Storage Ratio (RQ) (95 th percentile)	1.39	0.00		0.11	0.00		0.49	0.00	0.01	0.19	0.00	0.17
Uniform Delay (d ₁), s/veh	40.9	38.9		41.6	36.7		38.0	10.5	6.3	43.9	23.4	12.5
Incremental Delay (d ₂), s/veh	0.8	0.7		0.1	0.0		11.2	0.7	0.0	1.6	15.9	0.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.7	39.6		41.7	36.8		49.2	11.2	6.3	45.4	39.2	12.8
Level of Service (LOS)	D	D		D	D		D	B	A	D	F	B
Approach Delay, s/veh / LOS	40.8		D	39.4		D	14.8		B	38.4		D
Intersection Delay, s/veh / LOS	28.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.97	C	2.97	C	1.87	B	1.90	B
Bicycle LOS Score / LOS	0.87	A	0.51	A	1.72	B	1.96	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Northwoods Boulevard	File Name	D105_US23-Northwoods_PM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	198	2	112	10	1	28	145	3507	6	10	2488	71

Signal Information														
Cycle, s	95.0	Reference Phase	2	Green	1.7	2.6	48.0	18.6	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	4.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	2.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		24.6		24.6	16.3	62.6	7.7	54.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		18.1		9.2	10.3		2.6	
Green Extension Time (g_e), s		0.5		0.7	0.2	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.98		0.25	
Max Out Probability		0.02		0.00	0.00		0.00	

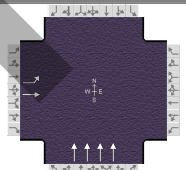
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	215	124		11	32		158	3812	7	11	2704	77
Adjusted Saturation Flow Rate (s), veh/h/ln	1367	1577		1257	1581		1767	1671	1572	1767	1671	1572
Queue Service Time (g_s), s	14.6	6.5		0.7	1.6		8.3	50.9	0.2	0.6	31.9	2.4
Cycle Queue Clearance Time (g_c), s	16.1	6.5		7.2	1.6		8.3	50.9	0.2	0.6	31.9	2.4
Green Ratio (g/C)	0.20	0.20		0.20	0.20		0.11	0.60	0.60	0.02	0.51	0.51
Capacity (c), veh/h	322	309		237	310		192	3984	937	32	3379	795
Volume-to-Capacity Ratio (X)	0.668	0.400		0.046	0.102		0.819	0.957	0.007	0.335	0.800	0.097
Back of Queue (Q), ft/ln (95 th percentile)	211	110.7		9.9	26.4		167.2	635.9	2.3	12.2	432.8	37.9
Back of Queue (Q), veh/ln (95 th percentile)	8.2	4.3		0.4	1.0		6.5	24.6	0.1	0.5	16.8	1.5
Queue Storage Ratio (RQ) (95 th percentile)	2.11	0.00		0.13	0.00		0.28	0.00	0.01	0.05	0.00	0.11
Uniform Delay (d_1), s/veh	37.9	33.3		36.4	31.3		41.4	18.0	7.8	46.1	19.5	12.2
Incremental Delay (d_2), s/veh	0.9	0.3		0.0	0.1		3.3	7.3	0.0	2.2	2.1	0.2
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.8	33.6		36.5	31.4		44.7	25.3	7.8	48.3	21.6	12.5
Level of Service (LOS)	D	C		D	C		D	C	A	D	C	B
Approach Delay, s/veh / LOS	36.9		D	32.7		C	26.1		C	21.5		C
Intersection Delay, s/veh / LOS	24.8						C					

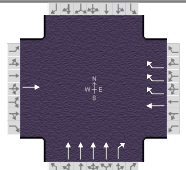
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.96	C	2.96	C	1.88	B	1.90	B
Bicycle LOS Score / LOS	1.05	A	0.56	A	2.13	B	1.64	B

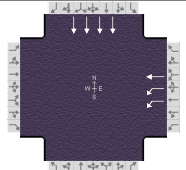
HCS Alternative Intersections Results Summary

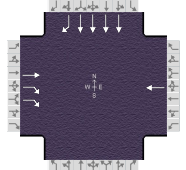
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Lazelle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D107_US23-Lazelle_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	45	0						2516				
Intersection Two Demand (v), veh/h		73			0	549		2260	221			
Intersection Three Demand (v), veh/h				453	0						2840	
Intersection Four Demand (v), veh/h		0	77		80						3088	132

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	70.9	7.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	61.8	16.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	17.4	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

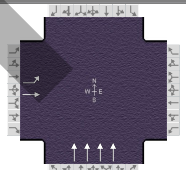
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	30	86.7	30.2	116.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	18	84.2	30.2	114.4	F
EBR	EBR(4)	35	36.8	--	36.8	D
WBL	WBR(2) + NBU(3) + SBT(4)	433	79.1	30.2	109.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	60	75.9	30.2	106.1	F
WBR	WBR(2)	104	36.1	--	36.1	D
NBL	NBT(1) + NBL(2)	87	41.6	--	41.6	D
NBT	NBT(1) + NBT(2)	2536	13.4	--	13.4	B
NBR	NBT(1) + NBR(2)	248	11.0	--	11.0	B
SBL	SBT(3) + SBL(4)	79	41.8	--	41.8	D
SBT	SBT(3) + SBT(4)	3433	17.5	--	17.5	B
SBR	SBT(3) + SBR(4)	147	14.3	--	14.3	B

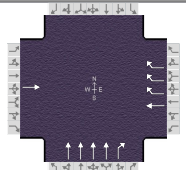
Overall Results		
Intersection ETT, s/veh LOS	24.4	C

HCS Alternative Intersections Results Summary

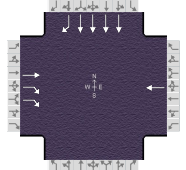
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Lazelle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D107_US23-Lazelle_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	78	0						3413				
Intersection Two Demand (v), veh/h		172			0	632		3112	342			
Intersection Three Demand (v), veh/h				501	0						2217	
Intersection Four Demand (v), veh/h		0	116		37						2453	93

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	69.2	8.8	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	59.6	18.4	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	19.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	9.8	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Float	Red	2.0	0.0	0.0	0.0	0.0	0.0					

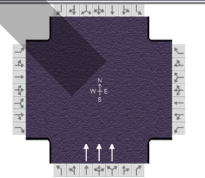
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	53	92.2	30.2	122.4	F
EBT	EBR(4) + SBU(1) + NBR(2)	32	87.2	30.2	117.4	F
EBR	EBR(4)	41	37.7	--	37.7	D
WBL	WBR(2) + NBU(3) + SBT(4)	510	75.1	30.2	105.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	35	73.4	30.2	103.6	F
WBR	WBR(2)	142	34.8	--	34.8	C
NBL	NBT(1) + NBL(2)	40	43.0	--	43.0	D
NBT	NBT(1) + NBT(2)	3419	20.9	--	20.9	C
NBR	NBT(1) + NBR(2)	376	15.9	--	15.9	B
SBL	SBT(3) + SBL(4)	187	41.2	--	41.2	D
SBT	SBT(3) + SBT(4)	2846	14.8	--	14.8	B
SBR	SBT(3) + SBR(4)	108	13.1	--	13.1	B

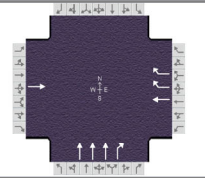
Overall Results		
Intersection ETT, s/veh LOS	27.1	C

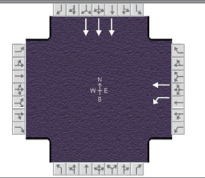
HCS Alternative Intersections Results Summary

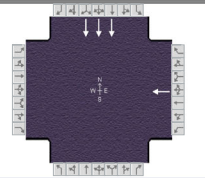
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Meadows Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D108_US23-OlentangyMeadows_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h								2326				
Intersection Two Demand (v), veh/h		59			0	161		2293	33			
Intersection Three Demand (v), veh/h				120	0						2535	
Intersection Four Demand (v), veh/h					0						2596	

Signal One Information													
Cycle, s	120.0								↑				
Offset, s	0												
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0								↑				
Offset, s	0												
Uncoordinated	No	Green	83.2	8.8	10.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
		Red	2.0	2.0	2.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	120.0								↓				
Offset, s	0												
Uncoordinated	No	Green	12.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0								↓				
Offset, s	0												
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
		Red	0.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	0	0	30.2	0	
EBT	EBR(4) + SBU(1) + NBR(2)	0	0	30.2	0	
EBR	EBR(4)	0	0	--	0	
WBL	WBR(2) + NBU(3) + SBT(4)	130	119.9	30.2	150.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	0	0	30.2	0	
WBR	WBR(2)	45	62.8	--	62.8	E
NBL	NBT(1) + NBL(2)	0	0	--	0	
NBT	NBT(1) + NBT(2)	2492	11.4	--	11.4	B
NBR	NBT(1) + NBR(2)	36	5.9	--	5.9	A
SBL	SBT(3) + SBL(4)	64	60.7	--	60.7	E
SBT	SBT(3) + SBT(4)	2886	7.3	--	7.3	A
SBR	SBT(3) + SBR(4)			--		

Overall Results	
Intersection ETT, s/veh LOS	

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Meadows Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D108_US23-OlentangyMeadows_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h								3156				
Intersection Two Demand (v), veh/h		129			0	96		3053	103			
Intersection Three Demand (v), veh/h				34	0						2267	
Intersection Four Demand (v), veh/h					0						2172	

Signal One Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	114.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	81.4	10.9	9.7	0.0	0.0	0.0					
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	2.0	0.0	0.0	0.0					

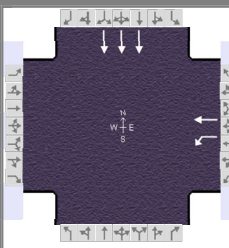
Signal Three Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	7.1	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0												
Offset, s	0												
Uncoordinated	No	Green	0.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	0.0	0.0	0.0	0.0	0.0	0.0					

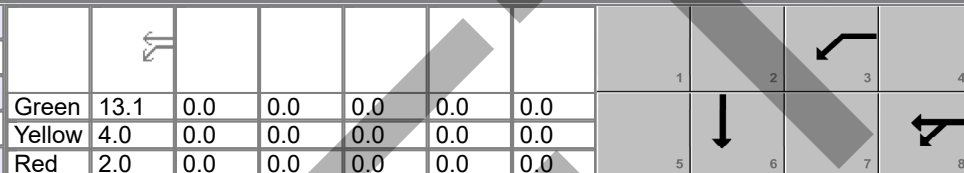
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	0	0	30.2	0	
EBT	EBR(4) + SBU(1) + NBR(2)	0	0	30.2	0	
EBR	EBR(4)	0	0	--	0	
WBL	WBR(2) + NBU(3) + SBT(4)	37	109.4	30.2	139.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	0	0	30.2	0	
WBR	WBR(2)	67	53.2	--	53.2	D
NBL	NBT(1) + NBL(2)	0	0	--	0	
NBT	NBT(1) + NBT(2)	3318	25.6	--	25.6	C
NBR	NBT(1) + NBR(2)	112	7.5	--	7.5	A
SBL	SBT(3) + SBL(4)	140	64.1	--	64.1	E
SBT	SBT(3) + SBT(4)	2501	4.3	--	4.3	A
SBR	SBT(3) + SBR(4)			--		

Overall Results	
Intersection ETT, s/veh LOS	

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Olentangy Meadows Drive	File Name	C108_US23-OlentangyMeadows_AM.xus			
Project Description	Concept C Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				200	0						2975	

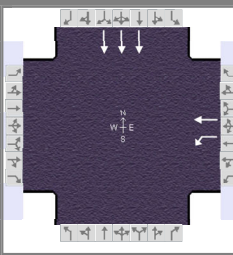
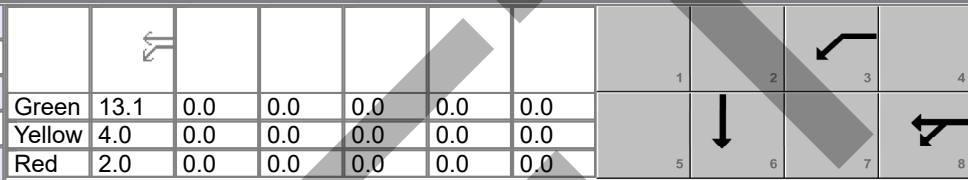
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8				6
Case Number				10.0				8.0
Phase Duration, s				19.1				70.9
Change Period, ($Y+R_c$), s				6.0				6.0
Max Allow Headway (MAH), s				3.0				0.0
Queue Clearance Time (g_s), s				12.8				
Green Extension Time (g_e), s				0.4				0.0
Phase Call Probability				1.00				
Max Out Probability				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				3	8						6	
Adjusted Flow Rate (v), veh/h				217	0						3234	
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1856						1671	
Queue Service Time (g_s), s				10.8	0.0						45.6	
Cycle Queue Clearance Time (g_c), s				10.8	0.0						45.6	
Green Ratio (g/C)				0.15	0.15						0.72	
Capacity (c), veh/h				257	270						3616	
Volume-to-Capacity Ratio (X)				0.845	0.000						0.894	
Back of Queue (Q), ft/ln (95 th percentile)				208.4	0						447.4	
Back of Queue (Q), veh/ln (95 th percentile)				8.1	0.0						17.3	
Queue Storage Ratio (RQ) (95 th percentile)				0.93	0.00						0.00	
Uniform Delay (d_1), s/veh				37.5	0.0						9.9	
Incremental Delay (d_2), s/veh				2.9	0.0						3.9	
Initial Queue Delay (d_3), s/veh				0.0	0.0						0.0	
Control Delay (d), s/veh				40.4	0.0						13.8	
Level of Service (LOS)				D							B	
Approach Delay, s/veh / LOS	0.0			40.4		D	0.0			13.8		B
Intersection Delay, s/veh / LOS				15.4						B		

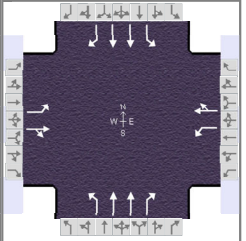
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.95	B	1.95	B	1.72	B	1.33	A
Bicycle LOS Score / LOS			0.85	A			2.27	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH		Analysis Date	Apr 4, 2023		Area Type	Other									
Jurisdiction			Time Period	PM Peak		PHF	0.92									
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Olentangy Meadows Drive		File Name	C108_US23-OlentangyMeadows_PM.xus												
Project Description	Concept C Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								200	0							2643
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
					Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
					Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8				6				
Case Number								10.0				8.0				
Phase Duration, s								19.1				70.9				
Change Period, (Y+R _c), s								6.0				6.0				
Max Allow Headway (MAH), s								3.0				0.0				
Queue Clearance Time (g _s), s								12.8								
Green Extension Time (g _e), s								0.4				0.0				
Phase Call Probability								1.00								
Max Out Probability								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								3	8						6	
Adjusted Flow Rate (v), veh/h								217	0						2873	
Adjusted Saturation Flow Rate (s), veh/h/ln								1767	1856					1671		
Queue Service Time (g _s), s								10.8	0.0					33.7		
Cycle Queue Clearance Time (g _c), s								10.8	0.0					33.7		
Green Ratio (g/C)								0.15	0.15					0.72		
Capacity (c), veh/h								257	270					3616		
Volume-to-Capacity Ratio (X)								0.845	0.000					0.795		
Back of Queue (Q), ft/ln (95 th percentile)								208.4	0					336.7		
Back of Queue (Q), veh/ln (95 th percentile)								8.1	0.0					13.0		
Queue Storage Ratio (RQ) (95 th percentile)								0.93	0.00					0.00		
Uniform Delay (d ₁), s/veh								37.5	0.0					8.2		
Incremental Delay (d ₂), s/veh								2.9	0.0					1.9		
Initial Queue Delay (d ₃), s/veh								0.0	0.0					0.0		
Control Delay (d), s/veh								40.4	0.0					10.1		
Level of Service (LOS)								D						B		
Approach Delay, s/veh / LOS					0.0			40.4	D	0.0			10.1	B		
Intersection Delay, s/veh / LOS					12.2			B								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					1.95	B		1.95	B	1.72	B		1.33	A		
Bicycle LOS Score / LOS								0.85	A				2.07	B		

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Green Meadows Dr/Hig...	File Name	109_US23-GreenMeadows_AM.xus				
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	1	1	1	123	3	8	13	2047	215	38	2340	14

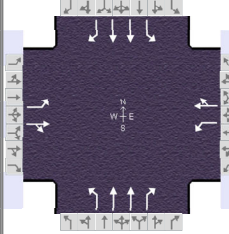
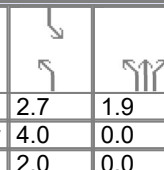
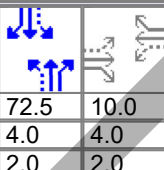
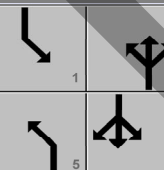
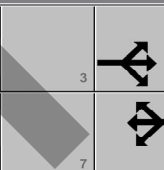
Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
				Green	2.2	2.5	62.4	10.0	0.0	0.0			
				Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		16.0		16.0	8.2	68.4	10.6	70.8
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.0		3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.7		11.1	2.2		2.7	
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.98		0.98	0.31		0.66	
Max Out Probability		0.01		1.00	0.00		0.00	

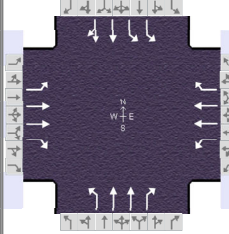
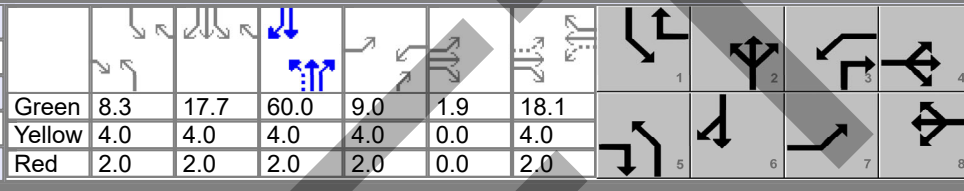
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	1	2		134	12		14	2225	234	41	2543	15
Adjusted Saturation Flow Rate (s), veh/h/ln	1391	1702		1404	1641		1767	1752	1572	1767	1752	1572
Queue Service Time (g _s), s	0.1	0.1		9.0	0.6		0.2	56.8	5.7	0.7	64.8	0.3
Cycle Queue Clearance Time (g _c), s	0.7	0.1		9.1	0.6		0.2	56.8	5.7	0.7	64.8	0.3
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.68	0.66	0.66	0.71	0.68	0.68
Capacity (c), veh/h	213	179		222	173		116	2300	1032	172	2391	1073
Volume-to-Capacity Ratio (X)	0.005	0.012		0.602	0.069		0.121	0.967	0.226	0.240	1.064	0.014
Back of Queue (Q), ft/ln (95 th percentile)	1	2		145.9	11.2		9.2	729.8	76.4	26.8	1086.6	3.7
Back of Queue (Q), veh/ln (95 th percentile)	0.0	0.1		5.7	0.4		0.4	28.3	3.0	1.0	42.1	0.1
Queue Storage Ratio (RQ) (95 th percentile)	0.01	0.00		0.36	0.00		0.05	0.00	0.19	0.13	0.00	0.02
Uniform Delay (d ₁), s/veh	38.6	38.1		42.1	38.3		25.4	15.4	6.6	24.0	15.1	4.8
Incremental Delay (d ₂), s/veh	0.0	0.0		3.2	0.1		0.2	12.5	0.5	0.3	38.1	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.6	38.1		45.4	38.4		25.6	27.9	7.1	24.3	53.2	4.9
Level of Service (LOS)	D	D		D	D		C	C	A	C	F	A
Approach Delay, s/veh / LOS	38.3	D		44.8	D		25.9	C		52.4	D	
Intersection Delay, s/veh / LOS	39.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.87	B	1.86	B
Bicycle LOS Score / LOS	0.49	A	0.73	A	2.53	C	2.63	C

HCS Signalized Intersection Results Summary

General Information						Intersection Information												
Agency	ms consultants					Duration, h	0.250											
Analyst	JRH		Analysis Date	Apr 4, 2023		Area Type	Other											
Jurisdiction			Time Period	PM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00											
Intersection	Green Meadows Dr/Hig...		File Name	109_US23-GreenMeadows_PM.xus														
Project Description	No Build Design Year (2050)																	
Demand Information																		
			EB			WB			NB			SB						
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h			45	13	24	143	10	22	33	2788	221	15	2038	29				
Signal Information																		
Cycle, s	105.0	Reference Phase	2															
Offset, s	0	Reference Point	End		Green	2.7	1.9	72.5	10.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On		Yellow	4.0	0.0	4.0	4.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On		Red	2.0	0.0	2.0	2.0	0.0	0.0							
Timer Results																		
			EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase					4				8		5		2		1		6	
Case Number					6.0				6.0		1.1		3.0		1.1		3.0	
Phase Duration, s					16.0				16.0		10.5		80.3		8.7		78.5	
Change Period, (Y+R _c), s					6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s					3.1				3.1		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s					7.7				12.0		2.6				2.3			
Green Extension Time (g _e), s					0.1				0.0		0.0		0.0		0.0		0.0	
Phase Call Probability					1.00				1.00		0.65				0.38			
Max Out Probability					1.00				1.00		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			49	40		155	35		36	3030	240	16	2215	32				
Adjusted Saturation Flow Rate (s), veh/h/ln			1363	1662		1356	1651		1767	1752	1572	1767	1752	1572				
Queue Service Time (g _s), s			3.6	2.4		7.6	2.0		0.6	74.3	5.5	0.3	55.9	0.7				
Cycle Queue Clearance Time (g _c), s			5.7	2.4		10.0	2.0		0.6	74.3	5.5	0.3	55.9	0.7				
Green Ratio (g/C)			0.10	0.10		0.10	0.10		0.73	0.71	0.71	0.72	0.69	0.69				
Capacity (c), veh/h			172	158		167	157		172	2482	1113	113	2418	1085				
Volume-to-Capacity Ratio (X)			0.285	0.254		0.929	0.221		0.208	1.221	0.216	0.144	0.916	0.029				
Back of Queue (Q), ft/ln (95 th percentile)			55.4	43.9		264.3	37.9		25.5	2098.7	71.2	12.7	669.4	8.8				
Back of Queue (Q), veh/ln (95 th percentile)			2.2	1.7		10.3	1.5		1.0	81.3	2.8	0.5	25.9	0.3				
Queue Storage Ratio (RQ) (95 th percentile)			0.55	0.00		0.66	0.00		0.13	0.00	0.18	0.06	0.00	0.06				
Uniform Delay (d ₁), s/veh			46.5	44.0		50.1	43.9		22.6	15.3	5.3	29.3	13.7	5.1				
Incremental Delay (d ₂), s/veh			0.3	0.3		48.6	0.3		0.2	103.4	0.4	0.2	6.9	0.0				
Initial Queue Delay (d ₃), s/veh			0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh			46.8	44.4		98.7	44.2		22.8	118.7	5.7	29.5	20.6	5.2				
Level of Service (LOS)			D	D		F	D		C	F	A	C	C	A				
Approach Delay, s/veh / LOS			45.7		D	88.7		F	109.5		F	20.4		C				
Intersection Delay, s/veh / LOS			73.4						E									
Multimodal Results																		
			EB			WB			NB			SB						
Pedestrian LOS Score / LOS			2.46		B	2.46		B	1.86		B	1.86		B				
Bicycle LOS Score / LOS			0.63		A	0.80		A	3.22		C	2.35		B				

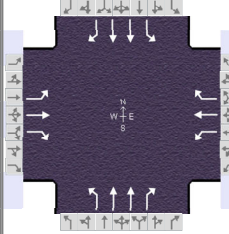
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	SR 750		File Name	110_US23-750_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					117	533	214	220	306	240	116	1722	219	635	2278	74
Signal Information																
Cycle, s	145.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	8.3	17.7	60.0	9.0	1.9	18.1										
Yellow	4.0	4.0	4.0	4.0	0.0	4.0										
Red	2.0	2.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	2.0	4.0				
Phase Duration, s					16.9	26.0	15.0	24.1	14.3	66.0	38.0	89.7				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					11.0	22.0	11.0	20.1	8.1		30.4					
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.2	0.0	1.6	0.0				
Phase Call Probability					0.99	1.00	1.00	1.00	0.99		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	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					127	579	233	239	333	261	126	1872	238	690	1278	1278
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1766	1572	1767	1766	1572	1767	1766	1572	1716	1856	1835
Queue Service Time (g _s), s					9.0	20.0	20.0	9.0	13.2	18.1	6.1	60.0	13.6	28.4	83.7	83.7
Cycle Queue Clearance Time (g _c), s					9.0	20.0	20.0	9.0	13.2	18.1	6.1	60.0	13.6	28.4	83.7	83.7
Green Ratio (g/C)					0.20	0.14	0.19	0.19	0.12	0.35	0.47	0.41	0.48	0.22	0.58	0.58
Capacity (c), veh/h					218	487	307	159	440	543	150	1461	748	758	1071	1059
Volume-to-Capacity Ratio (X)					0.584	1.189	0.759	1.501	0.756	0.480	0.838	1.281	0.318	0.911	1.193	1.207
Back of Queue (Q), ft/ln (95 th percentile)					186.3	617.6	346	531.4	263.9	295.9	125	1914.9	227.2	471.1	2229	2225.7
Back of Queue (Q), veh/ln (95 th percentile)					7.3	24.1	13.5	20.8	10.3	11.6	4.9	74.8	8.9	18.4	87.1	89.0
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					50.7	62.5	55.1	57.0	61.3	37.3	35.9	42.5	23.5	55.1	30.6	30.6
Incremental Delay (d ₂), s/veh					2.0	104.0	9.4	255.2	6.6	0.2	4.7	131.8	1.1	5.4	96.2	102.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					52.7	166.5	64.6	312.2	67.9	37.5	40.6	174.3	24.6	60.5	126.9	132.6
Level of Service (LOS)					D	F	E	F	E	D	D	F	C	E	F	F
Approach Delay, s/veh / LOS					125.8	F		128.6	F		150.8	F		115.0	F	
Intersection Delay, s/veh / LOS					129.0						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.47	B		2.44	B		2.41	B	
Bicycle LOS Score / LOS					1.26	A		1.17	A		2.33	B		3.17	C	

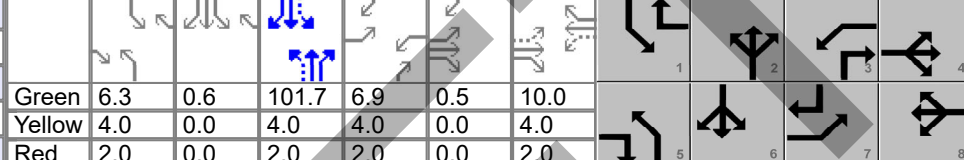
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	SR 750		File Name	110_US23-750_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					120	472	142	222	634	478	262	2441	194	391	1958	102
Signal Information																
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	12.0	3.4	45.6	9.0	5.0	11.0					
		Yellow	4.0	0.0	4.0	4.0	0.0	4.0								
		Red	2.0	0.0	2.0	2.0	0.0	2.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	2.0	4.0				
Phase Duration, s					15.0	17.0	20.0	22.0	21.4	55.0	18.0	51.6				
Change Period, ($Y+R_c$), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g_s), s					9.2	13.0	15.3	18.0	15.3		14.0					
Green Extension Time (g_e), s					0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0				
Phase Call Probability					0.98	1.00	1.00	1.00	1.00		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	1.00		1.00					
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					130	513	154	241	689	520	285	2653	211	425	1120	1120
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1766	1572	1767	1766	1572	1767	1766	1572	1716	1856	1823
Queue Service Time (g_s), s					7.2	11.0	9.1	13.3	16.0	16.0	13.3	49.0	7.3	12.0	45.6	45.6
Cycle Queue Clearance Time (g_c), s					7.2	11.0	9.1	13.3	16.0	16.0	13.3	49.0	7.3	12.0	45.6	45.6
Green Ratio (g/C)					0.18	0.10	0.24	0.24	0.15	0.25	0.55	0.45	0.57	0.11	0.41	0.41
Capacity (c), veh/h					210	353	378	290	514	400	313	1574	901	374	769	756
Volume-to-Capacity Ratio (X)					0.621	1.452	0.409	0.831	1.341	1.298	0.910	1.686	0.234	1.135	1.456	1.482
Back of Queue (Q), ft/ln (95 th percentile)					150.1	634.1	156.3	286.9	742.6	1025.7	373.1	3480.7	113.4	394	2476.8	2481.1
Back of Queue (Q), veh/ln (95 th percentile)					5.9	24.8	6.1	11.2	29.0	40.1	14.6	136.0	4.4	15.4	96.8	99.2
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh					40.3	49.5	35.2	37.8	47.0	41.0	33.6	30.5	11.6	49.0	32.2	32.2
Incremental Delay (d_2), s/veh					4.2	218.7	0.3	17.1	166.2	151.5	25.3	311.5	0.6	88.6	212.4	223.9
Initial Queue Delay (d_3), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					44.5	268.2	35.5	54.9	213.2	192.5	58.9	342.0	12.2	137.6	244.6	256.1
Level of Service (LOS)					D	F	D	D	F	F	E	F	B	F	F	F
Approach Delay, s/veh / LOS					186.6	F		179.4	F		294.3	F		232.4	F	
Intersection Delay, s/veh / LOS					242.5						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.46	B		2.46	B		2.42	B		2.43	B	
Bicycle LOS Score / LOS					1.15	A		1.68	B		3.09	C		2.69	C	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period		1 > 7:00
Intersection	Meadow Park Drive	File Name	111_US23-MeadowPark_AM.xus				
Project Description	No Build Design Year (2050)						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	33	30	63	23	17	50	2113	111	90	2736	88

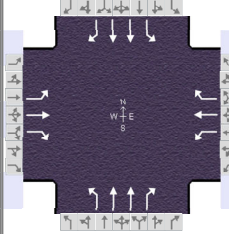

Signal Information																							
Cycle, s	150.0	Reference Phase	2	Green	6.3	0.6	101.7	6.9	0.5	10.0	Yellow	4.0	0.0	4.0	4.0	4.0	Red	2.0	0.0	2.0	2.0	0.0	2.0
Offset, s	0	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On												

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	13.4	16.5	12.9	16.0	12.3	107.7	12.9	108.3
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	7.8	4.8	7.4	3.9	3.3		4.9	
Green Extension Time (g _e), s	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.0
Phase Call Probability	0.95	1.00	0.94	1.00	0.90		0.98	
Max Out Probability	0.74	0.00	1.00	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	74	36	33	68	25	18	54	2297	121	98	2974	96
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	5.8	2.7	2.8	5.4	1.9	1.6	1.3	89.8	3.4	2.9	102.3	2.5
Cycle Queue Clearance Time (g _c), s	5.8	2.7	2.8	5.4	1.9	1.6	1.3	89.8	3.4	2.9	102.3	2.5
Green Ratio (g/C)	0.12	0.07	0.11	0.11	0.07	0.11	0.72	0.68	0.72	0.72	0.68	0.73
Capacity (c), veh/h	210	130	176	182	124	177	122	2395	1139	142	2409	1178
Volume-to-Capacity Ratio (X)	0.352	0.276	0.185	0.376	0.202	0.104	0.446	0.959	0.106	0.691	1.234	0.081
Back of Queue (Q), ft/ln (95 th percentile)	119.2	59.9	51.7	110.7	41.7	29	63.3	1176.7	50.3	115.3	2656.9	36.8
Back of Queue (Q), veh/ln (95 th percentile)	4.7	2.3	2.0	4.3	1.6	1.1	2.5	46.0	2.0	4.5	103.8	1.5
Queue Storage Ratio (RQ) (95 th percentile)	1.19	0.00	0.52	0.74	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	61.1	66.1	60.4	61.5	66.2	59.8	40.5	22.3	6.2	42.4	23.9	5.7
Incremental Delay (d ₂), s/veh	0.4	0.4	0.2	0.5	0.3	0.1	0.9	11.0	0.2	2.2	109.3	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	61.5	66.6	60.6	61.9	66.5	59.9	41.5	33.3	6.4	44.6	133.2	5.9
Level of Service (LOS)	E	E	E	E	E	E	D	C	A	D	F	A
Approach Delay, s/veh / LOS	62.6	E	62.6	E	32.1	C	126.6	F				
Intersection Delay, s/veh / LOS	84.2						F					

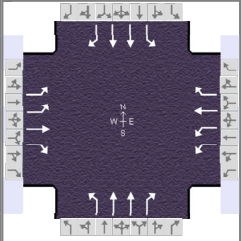
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.07	B	2.07	B
Bicycle LOS Score / LOS	0.72	A	0.67	A	2.53	C	3.10	C

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Meadow Park Drive		File Name	111_US23-MeadowPark_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					113	62	50	168	91	92	150	2898	176	100	2205	120
Signal Information																
Cycle, s	150.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	7.1	4.7	96.2	8.0	10.0	0.0										
Yellow	4.0	0.0	4.0	4.0	4.0	0.0										
Red	2.0	0.0	2.0	2.0	2.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					14.0	16.0	14.0	16.0	17.8	106.9	13.1	102.2				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					10.0	7.3	10.0	11.0	11.6		7.0					
Green Extension Time (g _e), s					0.0	0.2	0.0	0.0	0.3	0.0	0.2	0.0				
Phase Call Probability					0.99	1.00	1.00	1.00	1.00		0.99					
Max Out Probability					1.00	1.00	1.00	1.00	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					123	67	54	183	99	100	163	3150	191	109	2397	130
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					8.0	5.3	4.6	8.0	7.9	9.0	9.6	100.9	5.7	5.0	96.2	4.0
Cycle Queue Clearance Time (g _c), s					8.0	5.3	4.6	8.0	7.9	9.0	9.6	100.9	5.7	5.0	96.2	4.0
Green Ratio (g/C)					0.12	0.07	0.15	0.12	0.07	0.11	0.72	0.67	0.73	0.69	0.64	0.69
Capacity (c), veh/h					143	124	229	166	124	180	187	2376	1141	132	2266	1119
Volume-to-Capacity Ratio (X)					0.857	0.545	0.238	1.098	0.800	0.557	0.872	1.326	0.168	0.824	1.058	0.117
Back of Queue (Q), ft/ln (95 th percentile)					100.4	118.3	83.7	297.1	209.7	169.4	266.7	3217.1	83.5	194.6	1579.4	61.3
Back of Queue (Q), veh/ln (95 th percentile)					3.9	4.6	3.3	11.6	8.2	6.6	10.4	125.7	3.3	7.6	61.7	2.5
Queue Storage Ratio (RQ) (95 th percentile)					1.00	0.00	0.84	1.98	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					64.3	67.8	56.7	66.9	69.0	62.8	54.5	24.6	6.4	48.7	26.9	7.6
Incremental Delay (d ₂), s/veh					35.8	2.8	0.2	98.5	28.0	2.3	4.8	149.6	0.3	4.8	36.4	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					100.0	70.6	56.9	165.4	97.0	65.2	59.3	174.2	6.7	53.5	63.3	7.8
Level of Service (LOS)					F	E	E	F	F	E	E	F	A	D	F	A
Approach Delay, s/veh / LOS					82.3		F	121.4		F	159.7		F	60.1		E
Intersection Delay, s/veh / LOS					116.0					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.48		B	2.48		B	2.07		B	2.08		B
Bicycle LOS Score / LOS					0.89		A	1.12		A	3.38		C	2.66		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Windbrush Drive	File Name	112_US23-Windbrush_AM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	56	10	50	75	10	29	51	2026	25	50	2824	75

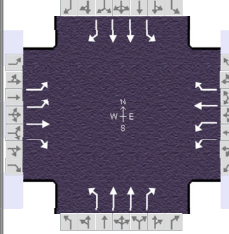

Signal Information				Phase Diagrams									
Cycle, s	150.0	Reference Phase	2										
Offset, s	0	Reference Point	Begin										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	6.3	103.0	6.4	0.3	10.0	0.0					
		Yellow	4.0	4.0	4.0	0.0	4.0	0.0					
		Red	2.0	2.0	2.0	0.0	2.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.4	16.0	12.8	16.3	12.3	109.0	12.3	108.9
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	4.6	6.8	5.5	4.7	3.3		3.3	
Green Extension Time (g _e), s	0.1	0.2	0.0	0.2	0.1	0.0	0.1	0.0
Phase Call Probability	0.92	1.00	0.97	1.00	0.90		0.90	
Max Out Probability	0.00	0.00	1.00	0.00	0.00		0.00	

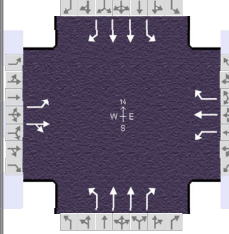

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	61	11	54	82	11	32	55	2202	27	54	3070	82
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	2.6	0.8	4.8	3.5	0.8	2.7	1.3	77.8	0.7	1.3	102.9	2.2
Cycle Queue Clearance Time (g _c), s	2.6	0.8	4.8	3.5	0.8	2.7	1.3	77.8	0.7	1.3	102.9	2.2
Green Ratio (g/C)	0.04	0.07	0.11	0.05	0.07	0.11	0.73	0.69	0.73	0.73	0.69	0.73
Capacity (c), veh/h	148	124	171	155	128	174	122	2425	1150	149	2424	1174
Volume-to-Capacity Ratio (X)	0.413	0.088	0.318	0.527	0.085	0.181	0.453	0.908	0.024	0.365	1.266	0.069
Back of Queue (Q), ft/ln (95 th percentile)	52.5	18	88	70.7	17.9	50	65.5	996.3	10.2	63.8	2867.7	31.4
Back of Queue (Q), veh/ln (95 th percentile)	2.1	0.7	3.4	2.8	0.7	2.0	2.6	38.9	0.4	2.5	112.0	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.26	0.00	0.44	0.71	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	69.9	65.7	61.7	70.1	65.4	60.5	41.0	19.6	5.5	35.3	23.5	5.8
Incremental Delay (d ₂), s/veh	0.7	0.1	0.4	1.0	0.1	0.2	1.0	6.4	0.0	0.6	123.2	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	70.6	65.8	62.1	71.1	65.5	60.7	42.0	25.9	5.5	35.9	146.7	5.9
Level of Service (LOS)	E	E	E	E	E	E	D	C	A	D	F	A
Approach Delay, s/veh / LOS	66.5	E		68.0	E		26.1	C		141.2	F	
Intersection Delay, s/veh / LOS	92.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.48	B	2.48	B	2.24	B	2.24	B
Bicycle LOS Score / LOS	0.70	A	0.69	A	2.37	B	3.13	C

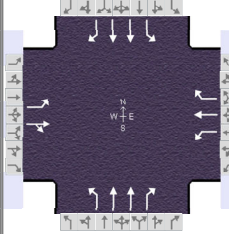

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Windbrush Drive		File Name	112_US23-Windbrush_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					165	43	201	191	43	118	109	2775	100	148	2033	125
Signal Information																
Cycle, s	135.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.9	3.3	82.7	8.0	10.0	0.0										
Yellow	4.0	0.0	4.0	4.0	4.0	0.0										
Red	2.0	0.0	2.0	2.0	2.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					14.0	16.0	14.0	16.0	12.9	88.7	16.3	92.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					9.0	12.0	10.0	12.0	6.6		10.0					
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0				
Phase Call Probability					1.00	1.00	1.00	1.00	0.99		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	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					179	47	218	208	47	128	118	3016	109	161	2210	136
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					7.0	3.2	10.0	8.0	3.2	10.0	4.6	82.7	3.3	8.0	81.7	3.8
Cycle Queue Clearance Time (g _c), s					7.0	3.2	10.0	8.0	3.2	10.0	4.6	82.7	3.3	8.0	81.7	3.8
Green Ratio (g/C)					0.06	0.07	0.13	0.06	0.07	0.15	0.66	0.61	0.67	0.69	0.64	0.70
Capacity (c), veh/h					203	137	197	203	137	236	147	2165	1057	188	2253	1122
Volume-to-Capacity Ratio (X)					0.882	0.340	1.109	1.021	0.340	0.544	0.806	1.393	0.103	0.858	0.981	0.121
Back of Queue (Q), ft/ln (95 th percentile)					180	69.8	464.9	236	69.8	186.5	187.7	3234.1	49.5	240.3	1124	55.1
Back of Queue (Q), veh/ln (95 th percentile)					7.0	2.7	18.2	9.2	2.7	7.3	7.3	126.3	1.9	9.4	43.9	2.2
Queue Storage Ratio (RQ) (95 th percentile)					0.90	0.00	2.32	2.36	0.00	1.87	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					63.0	59.4	59.0	63.5	59.4	53.1	40.2	26.1	7.8	46.1	23.7	6.8
Incremental Delay (d ₂), s/veh					32.2	0.5	96.2	68.6	0.5	1.4	3.9	179.7	0.2	4.3	15.0	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					95.2	59.9	155.3	132.1	59.9	54.5	44.2	205.8	8.0	50.4	38.6	7.0
Level of Service (LOS)					F	E	F	F	E	D	D	F	A	D	D	A
Approach Delay, s/veh / LOS					121.0		F	97.3		F	193.3		F	37.7		D
Intersection Delay, s/veh / LOS					123.5					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.25		B	2.24		B
Bicycle LOS Score / LOS					1.22		A	1.12		A	3.16		C	2.56		C

HCS Signalized Intersection Results Summary

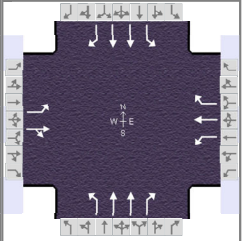
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Hidden Ravines		File Name	113_US23-HiddenRavines_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					100	10	25	25	10	50	25	1926	25	100	2888	50
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	4.1	2.7	67.4	4.1	2.9	9.8										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					13.0	18.8	10.1	15.8	10.1	73.4	12.8	76.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					8.4	4.4	3.6	5.8	2.7		4.7					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0				
Phase Call Probability					0.97	1.00	0.58	0.98	0.58		0.97					
Max Out Probability					1.00	0.00	0.01	0.02	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					109	38		27	11	54	27	2093	27	109	3139	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1644		1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					6.4	2.4		1.6	0.6	3.8	0.7	67.4	0.8	2.7	70.1	1.3
Cycle Queue Clearance Time (g _c), s					6.4	2.4		1.6	0.6	3.8	0.7	67.4	0.8	2.7	70.1	1.3
Green Ratio (g/C)					0.15	0.11		0.12	0.09	0.09	0.62	0.59	0.62	0.64	0.61	0.67
Capacity (c), veh/h					282	183		224	159	135	125	2070	977	167	2153	1079
Volume-to-Capacity Ratio (X)					0.386	0.208		0.121	0.068	0.404	0.217	1.011	0.028	0.651	1.458	0.050
Back of Queue (Q), ft/ln (95 th percentile)					127.4	45.1		31.4	13.1	67.8	19.5	1029.1	11.5	79.4	3385.7	18.8
Back of Queue (Q), veh/ln (95 th percentile)					5.0	1.8		1.2	0.5	2.6	0.8	40.2	0.4	3.1	132.3	0.8
Queue Storage Ratio (RQ) (95 th percentile)					0.54	0.00		0.16	0.00	0.34	0.07	0.00	0.04	0.26	0.00	0.06
Uniform Delay (d ₁), s/veh					44.6	46.5		45.1	48.4	49.8	28.1	23.8	8.4	27.9	22.5	6.5
Incremental Delay (d ₂), s/veh					0.3	0.2		0.1	0.1	0.7	0.3	22.6	0.1	1.6	208.6	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					45.0	46.7		45.2	48.4	50.5	28.4	46.5	8.5	29.5	231.1	6.6
Level of Service (LOS)					D	D		D	D	D	C	F	A	C	F	A
Approach Delay, s/veh / LOS					45.4	D		48.7	D		45.8	D		220.8	F	
Intersection Delay, s/veh / LOS					147.4					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.46	B		2.47	B		2.08	B		1.88	B	
Bicycle LOS Score / LOS					0.73	A		0.64	A		2.26	B		3.21	C	

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Hidden Ravines		File Name	113_US23-HiddenRavines_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					121	27	17	71	8	119	50	2893	100	166	2174	44
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	5.9	4.4	68.8	6.5	0.5	10.0					
					Yellow	4.0	0.0	4.0	4.0	0.0	4.0					
					Red	2.0	0.0	2.0	2.0	0.0	2.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					13.0	16.5	12.5	16.0	11.9	74.8	16.2	79.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					9.0	5.1	6.7	11.9	3.4		9.9					
Green Extension Time (g _e), s					0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.0				
Phase Call Probability					0.99	1.00	0.92	1.00	0.84		1.00					
Max Out Probability					1.00	0.10	1.00	1.00	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					132	48		77	9	129	54	3145	109	180	2363	48
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1735		1767	1856	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s					7.0	3.1		4.7	0.5	9.9	1.4	68.8	3.3	7.9	73.1	1.2
Cycle Queue Clearance Time (g _c), s					7.0	3.1		4.7	0.5	9.9	1.4	68.8	3.3	7.9	73.1	1.2
Green Ratio (g/C)					0.14	0.09		0.14	0.08	0.08	0.62	0.57	0.63	0.66	0.61	0.67
Capacity (c), veh/h					273	152		216	155	131	146	2025	986	210	2153	1075
Volume-to-Capacity Ratio (X)					0.481	0.314		0.357	0.056	0.987	0.371	1.553	0.110	0.857	1.097	0.044
Back of Queue (Q), ft/ln (95 th percentile)					166.7	61.7		94.7	11	273.8	40	3794.6	50.4	236.1	1443.9	17.7
Back of Queue (Q), veh/ln (95 th percentile)					6.5	2.4		3.7	0.4	10.7	1.6	148.2	2.0	9.2	56.4	0.7
Queue Storage Ratio (RQ) (95 th percentile)					0.71	0.00		0.47	0.00	1.37	0.13	0.00	0.17	0.79	0.00	0.06
Uniform Delay (d ₁), s/veh					47.9	51.3		46.8	50.7	54.9	28.6	25.6	9.0	39.0	23.4	6.8
Incremental Delay (d ₂), s/veh					0.5	0.4		0.4	0.1	74.3	0.6	251.2	0.2	3.9	51.8	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					48.3	51.8		47.2	50.7	129.3	29.1	276.8	9.2	42.9	75.2	6.9
Level of Service (LOS)					D	D		D	D	F	C	F	A	D	F	A
Approach Delay, s/veh / LOS					49.3		D	96.6		F	264.0		F	71.7		E
Intersection Delay, s/veh / LOS					173.0					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.89		B
Bicycle LOS Score / LOS					0.78		A	0.84		A	3.22		C	2.63		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Orange Road	File Name	114_US23-Orange_AM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	80	200	135	173	99	347	12	1867	192	161	2661	33

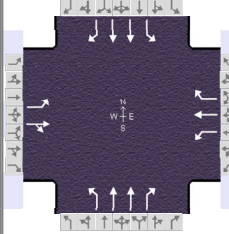
Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.0	5.1	41.8	6.3	3.7	12.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0			
				Red	2.0	0.0	2.0	2.0	0.0	2.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	12.3	18.0	16.0	21.7	8.0	47.8	13.2	53.0
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	6.0	14.0	10.7	17.7	2.4		7.1	
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Phase Call Probability	0.90	1.00	0.99	1.00	0.29		0.99	
Max Out Probability	0.01	1.00	1.00	1.00	0.00		0.13	

Movement Group Results	EB			WB			NB			SB		
	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	87	364		188	108	377	13	2029	209	175	2892	36
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1730		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	4.0	12.0		8.7	4.9	15.7	0.4	41.8	6.6	5.1	47.0	1.0
Cycle Queue Clearance Time (g _c), s	4.0	12.0		8.7	4.9	15.7	0.4	41.8	6.6	5.1	47.0	1.0
Green Ratio (g/C)	0.19	0.13		0.23	0.17	0.17	0.46	0.44	0.55	0.53	0.49	0.56
Capacity (c), veh/h	311	219		262	307	260	114	1555	858	209	1746	882
Volume-to-Capacity Ratio (X)	0.279	1.666		0.718	0.351	1.451	0.115	1.305	0.243	0.836	1.656	0.041
Back of Queue (Q), ft/ln (95 th percentile)	75.5	983.5		188.4	98	880	6.7	1747.5	100.6	109	3572.9	14.5
Back of Queue (Q), veh/ln (95 th percentile)	2.9	38.4		7.4	3.8	34.4	0.3	68.3	3.9	4.3	139.6	0.6
Queue Storage Ratio (RQ) (95 th percentile)	0.32	0.00		0.47	0.00	0.00	0.01	0.00	1.01	0.22	0.00	0.10
Uniform Delay (d ₁), s/veh	32.6	41.5		32.1	35.1	39.6	23.1	26.6	11.3	22.4	24.0	9.4
Incremental Delay (d ₂), s/veh	0.2	319.1		7.9	0.3	223.2	0.2	141.9	0.7	9.2	297.9	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	32.8	360.6		40.1	35.4	262.8	23.2	168.5	12.0	31.7	321.9	9.5
Level of Service (LOS)	C	F		D	D	F	C	F	B	C	F	A
Approach Delay, s/veh / LOS	297.4	F		164.2	F		153.2	F		301.9	F	
Intersection Delay, s/veh / LOS	235.6						F					

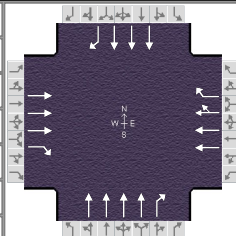
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	2.10	B	1.90	B
Bicycle LOS Score / LOS	1.23	A	1.60	B	2.34	B	3.05	C

HCS Signalized Intersection Results Summary

General Information						Intersection Information															
Agency	ms consultants					Duration, h	0.250														
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other														
Jurisdiction		Time Period	PM Peak			PHF	0.92														
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00														
Intersection	No Build Orange Road		File Name	114_US23-Orange_PM.xus																	
Project Description	Design Year (2050)																				
Demand Information						EB			WB			NB			SB						
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h						313	292	271	481	308	365	372	2409	378	328	1650	116				
Signal Information																					
Cycle, s	120.0	Reference Phase	2																		
Offset, s	0	Reference Point	End																		
Uncoordinated	No	Simult. Gap E/W	On			Green	14.0	5.4	34.6	14.0	3.0	19.0									
Force Mode	Fixed	Simult. Gap N/S	On			Yellow	4.0	4.0	4.0	4.0	0.0	4.0									
						Red	2.0	2.0	2.0	2.0	0.0	2.0									
Timer Results						EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						7		4		3		8		5		2		1		6	
Case Number						1.1		4.0		1.1		3.0		1.1		3.0		1.1		3.0	
Phase Duration, s						23.0		28.0		20.0		25.0		31.4		52.0		20.0		40.6	
Change Period, (Y+R _c), s						6.0		6.0		6.0		6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s						3.0		3.1		3.0		3.1		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s						19.0		24.0		16.0		21.0		24.8				16.0			
Green Extension Time (g _e), s						0.0		0.0		0.0		0.0		0.7		0.0		0.0		0.0	
Phase Call Probability						1.00		1.00		1.00		1.00		1.00				1.00			
Max Out Probability						1.00		1.00		1.00		1.00		0.00				1.00			
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						340	612		523	335	397	404	2618	411	357	1793	126				
Adjusted Saturation Flow Rate (s), veh/h/ln						1767	1708		1767	1856	1572	1767	1766	1572	1767	1766	1610				
Queue Service Time (g _s), s						17.0	22.0		14.0	19.0	19.0	22.8	46.0	21.2	14.0	34.6	5.8				
Cycle Queue Clearance Time (g _c), s						17.0	22.0		14.0	19.0	19.0	22.8	46.0	21.2	14.0	34.6	5.8				
Green Ratio (g/C)						0.30	0.18		0.28	0.16	0.16	0.52	0.38	0.50	0.40	0.29	0.43				
Capacity (c), veh/h						310	313		266	294	249	435	1354	786	266	1018	692				
Volume-to-Capacity Ratio (X)						1.096	1.955		1.964	1.140	1.593	0.930	1.933	0.523	1.339	1.763	0.182				
Back of Queue (Q), ft/ln (95 th percentile)						547	1902.5		1563.3	625.5	1084.8	477	3975.8	317.7	740.8	2529.4	100				
Back of Queue (Q), veh/ln (95 th percentile)						21.4	74.3		61.1	24.4	42.4	18.6	155.3	12.4	28.9	98.8	4.0				
Queue Storage Ratio (RQ) (95 th percentile)						2.33	0.00		3.91	0.00	0.00	0.95	0.00	3.18	1.48	0.00	0.67				
Uniform Delay (d ₁), s/veh						37.8	49.0		39.9	50.5	50.5	35.9	37.0	20.3	35.3	42.7	21.2				
Incremental Delay (d ₂), s/veh						79.4	441.1		447.3	95.6	285.2	12.2	422.8	2.5	175.9	347.2	0.6				
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh						117.2	490.1		487.1	146.1	335.7	48.1	459.8	22.8	211.2	389.9	21.8				
Level of Service (LOS)						F	F		F	F	F	D	F	C	F	F	C				
Approach Delay, s/veh / LOS						356.8	F		348.2	F		359.0	F		341.5	F					
Intersection Delay, s/veh / LOS						352.0						F									
Multimodal Results						EB			WB			NB			SB						
Pedestrian LOS Score / LOS						2.46	B		2.46	B		2.11	B		1.93	B					
Bicycle LOS Score / LOS						2.06	B		2.56	C		3.32	C		2.37	B					

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	SR 750	File Name	D110_US23-750_AM.xus		
Project Description	Concept D Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		1323	227		548	240		1902	219		2583	74

Signal Information				Signal Timing (s)										
Cycle, s	105.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	59.1	33.9	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

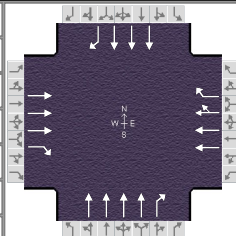
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		7.0		7.0		7.0		7.0
Phase Duration, s		39.9		39.9		65.1		65.1
Change Period, (Y+R _c), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g _s), s		30.3		16.1				
Green Extension Time (g _e), s		3.6		7.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.74		0.16				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18		2	12		6	16
Adjusted Flow Rate (v), veh/h		1438	247		596	261		2067	238		2808	80
Adjusted Saturation Flow Rate (s), veh/h/ln		1685	1572		1856	1572		1658	1572		1658	1610
Queue Service Time (g _s), s		28.3	13.2		8.5	14.1		20.8	8.2		59.1	2.4
Cycle Queue Clearance Time (g _c), s		28.3	13.2		8.5	14.1		20.8	8.2		59.1	2.4
Green Ratio (g/C)		0.32	0.32		0.32	0.32		0.56	0.56		0.56	0.56
Capacity (c), veh/h		1630	507		1795	507		3735	886		2802	907
Volume-to-Capacity Ratio (X)		0.882	0.487		0.332	0.514		0.553	0.269		1.002	0.089
Back of Queue (Q), ft/ln (95 th percentile)		441	214.2		166.3	225.6		296.4	127		839.9	37.2
Back of Queue (Q), veh/ln (95 th percentile)		17.2	8.4		6.5	8.8		11.4	5.0		32.3	1.5
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh		33.7	28.6		27.0	28.9		14.5	11.8		22.9	10.5
Incremental Delay (d ₂), s/veh		5.2	0.3		0.0	0.3		0.6	0.7		17.5	0.2
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh		38.9	28.9		27.0	29.2		15.1	12.5		40.4	10.7
Level of Service (LOS)		D	C		C	C		B	B		F	B
Approach Delay, s/veh / LOS	37.4		D	27.7		C	14.9		B	39.6		D
Intersection Delay, s/veh / LOS		30.4				C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.71	C	2.54	C	2.54	C
Bicycle LOS Score / LOS	1.41	A	0.96	A	1.44	A	2.08	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	SR 750	File Name	D110_US23-750_PM.xus				
Project Description	Concept D Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		1011	175		1049	478		2594	194		2308	102

Signal Information												
Cycle, s	115.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	57.1	45.9	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
		Red	2.0	2.0	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		7.0		7.0		7.0		7.0
Phase Duration, s		51.9		51.9		63.1		63.1
Change Period, (Y+R _c), s		6.0		6.0		6.0		6.0
Max Allow Headway (MAH), s		3.0		3.0		0.0		0.0
Queue Clearance Time (g _s), s		21.2		36.1				
Green Extension Time (g _e), s		10.6		9.8		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.04		0.13				

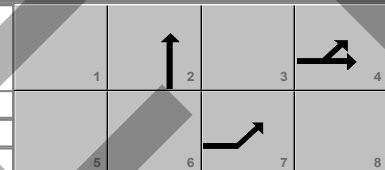

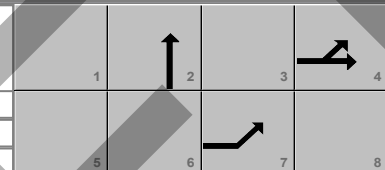
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14		8	18		2	12		6	16
Adjusted Flow Rate (v), veh/h		1099	190		1140	520		2820	211		2509	111
Adjusted Saturation Flow Rate (s), veh/h/ln		1685	1572		1856	1572		1658	1572		1658	1610
Queue Service Time (g _s), s		19.2	9.5		17.8	34.1		42.8	9.0		57.1	4.3
Cycle Queue Clearance Time (g _c), s		19.2	9.5		17.8	34.1		42.8	9.0		57.1	4.3
Green Ratio (g/C)		0.40	0.40		0.40	0.40		0.50	0.50		0.50	0.50
Capacity (c), veh/h		2018	628		2222	628		3292	781		2469	799
Volume-to-Capacity Ratio (X)		0.545	0.303		0.513	0.828		0.856	0.270		1.016	0.139
Back of Queue (Q), ft/ln (95 th percentile)		301.4	156.4		306.3	473.7		589.7	149.4		891.4	70.7
Back of Queue (Q), veh/ln (95 th percentile)		11.8	6.1		12.0	18.5		22.7	5.8		34.3	2.8
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh		26.5	23.6		26.1	31.0		25.4	16.8		29.0	15.7
Incremental Delay (d ₂), s/veh		0.1	0.1		0.1	3.1		3.1	0.9		22.2	0.4
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Control Delay (d), s/veh		26.6	23.7		26.2	34.1		28.5	17.7		51.2	16.0
Level of Service (LOS)		C	C		C	C		C	B		F	B
Approach Delay, s/veh / LOS	26.2	C		28.7	C		27.7	C			49.7	D
Intersection Delay, s/veh / LOS	34.4						C					

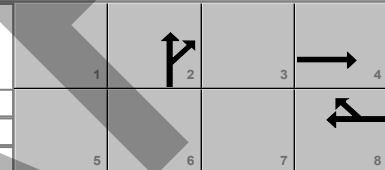

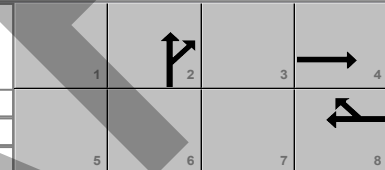
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.70	C	2.70	C	2.56	C	2.56	C
Bicycle LOS Score / LOS	1.20	A	1.40	A	1.74	B	1.93	B

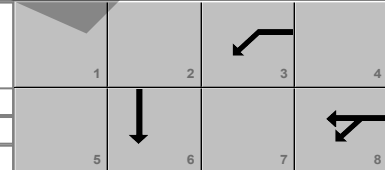

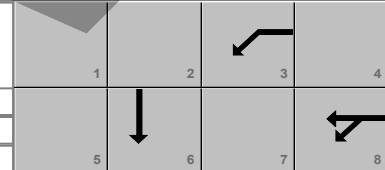
HCS Alternative Intersections Results Summary

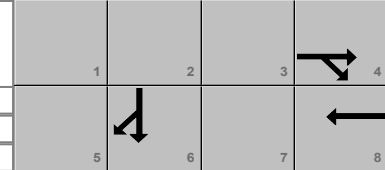

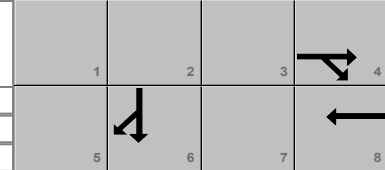
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Windbrush Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D112_US23-Windbrush_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	277	0						2376				
Intersection Two Demand (v), veh/h		140			0	235		2459	68			
Intersection Three Demand (v), veh/h				206	0						3114	
Intersection Four Demand (v), veh/h		0	327		126						3062	118

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	66.6	11.4	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	78												
Uncoordinated	No	Green	67.9	10.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	20												
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	86												
Uncoordinated	No	Green	10.6	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	254	86.8	30.2	117.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	47	81.7	30.2	111.9	F
EBR	EBR(4)	54	39.0	--	39.0	D
WBL	WBR(2) + NBU(3) + SBT(4)	177	92.8	30.2	123.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	47	81.5	30.2	111.7	F
WBR	WBR(2)	32	38.2	--	38.2	D
NBL	NBT(1) + NBL(2)	137	46.9	--	46.9	D
NBT	NBT(1) + NBT(2)	2806	16.8	--	16.8	B
NBR	NBT(1) + NBR(2)	78	11.7	--	11.7	B
SBL	SBT(3) + SBL(4)	152	54.5	--	54.5	D
SBT	SBT(3) + SBT(4)	3475	29.4	--	29.4	C
SBR	SBT(3) + SBR(4)	134	18.1	--	18.1	B

Overall Results		
Intersection ETT, s/veh LOS	32.7	C

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Windbrush Drive	PHF	0.92	Arterial Direction	North-South		
File Name	D112_US23-Windbrush_PM_NB.xus						
Project Description	No Build Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	564	0						3492				
Intersection Two Demand (v), veh/h		296			0	665		3602	186			
Intersection Three Demand (v), veh/h				547	0						2695	
Intersection Four Demand (v), veh/h		0	765		268						2727	219

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	62.0	16.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Two Information													
Cycle, s	90.0												
Offset, s	17												
Uncoordinated	No	Green	59.2	18.8	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Three Information													
Cycle, s	90.0												
Offset, s	73												
Uncoordinated	No	Green	20.5	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	22.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

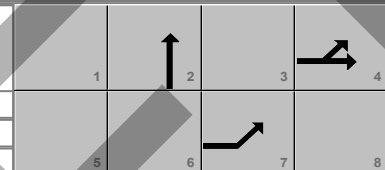
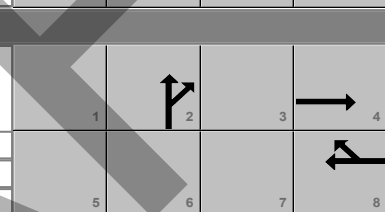
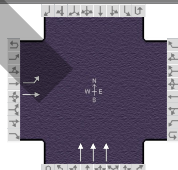
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	520	226.9	30.2	257.1	F
EBT	EBR(4) + SBU(1) + NBR(2)	93	150.4	30.2	180.6	F
EBR	EBR(4)	218	32.7	--	32.7	F
WBL	WBR(2) + NBU(3) + SBT(4)	492	119.9	30.2	150.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	102	72.0	30.2	102.2	F
WBR	WBR(2)	128	34.9	--	34.9	F
NBL	NBT(1) + NBL(2)	291	110.2	--	110.2	F
NBT	NBT(1) + NBT(2)	3672	158.3	--	158.3	F
NBR	NBT(1) + NBR(2)	190	81.8	--	81.8	F
SBL	SBT(3) + SBL(4)	322	71.3	--	71.3	E
SBT	SBT(3) + SBT(4)	3262	75.1	--	75.1	F
SBR	SBT(3) + SBR(4)	262	27.2	--	27.2	C

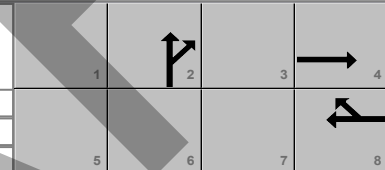
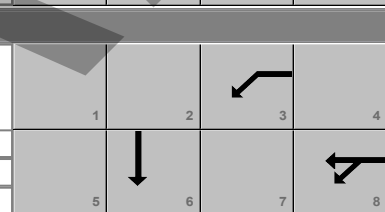
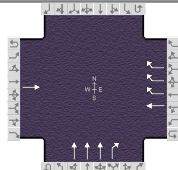
Overall Results		
Intersection ETT, s/veh LOS	125.3	F

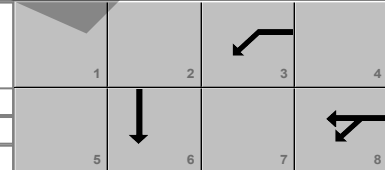
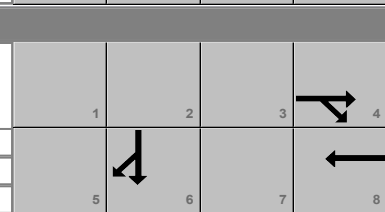
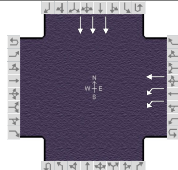
HCS Alternative Intersections Results Summary

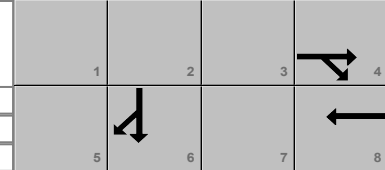
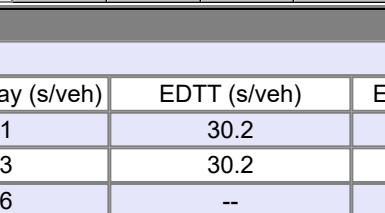
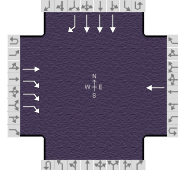
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Orange Road	PHF	0.92	Arterial Direction	North-South		
File Name	D114_US23-Orange_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	350	0						2071				
Intersection Two Demand (v), veh/h		261			0	619		1967	412			
Intersection Three Demand (v), veh/h				292	0						2855	
Intersection Four Demand (v), veh/h		0	515		42						2734	152

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	53.9	24.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	74												
Uncoordinated	No	Green	59.7	18.3	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	65												
Uncoordinated	No	Green	11.9	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	25												
Uncoordinated	No	Green	15.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

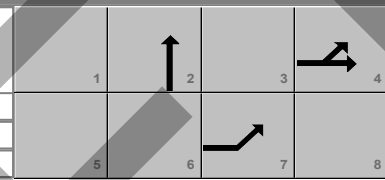
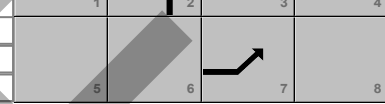
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	141	83.1	30.2	113.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	239	82.3	30.2	112.5	F
EBR	EBR(4)	179	36.6	--	36.6	F
WBL	WBR(2) + NBU(3) + SBT(4)	188	92.1	30.2	122.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	129	79.6	30.2	109.8	F
WBR	WBR(2)	355	34.7	--	34.7	C
NBL	NBT(1) + NBL(2)	46	48.1	--	48.1	D
NBT	NBT(1) + NBT(2)	2176	29.4	--	29.4	C
NBR	NBT(1) + NBR(2)	456	28.6	--	28.6	F
SBL	SBT(3) + SBL(4)	284	47.3	--	47.3	D
SBT	SBT(3) + SBT(4)	3240	31.1	--	31.1	C
SBR	SBT(3) + SBR(4)	180	18.6	--	18.6	B

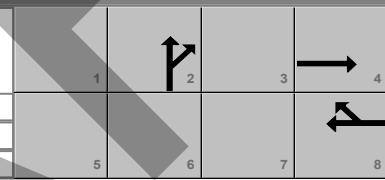
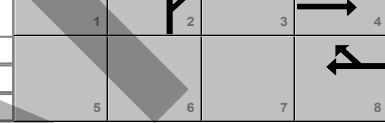
Overall Results		
Intersection ETT, s/veh LOS	40.5	D

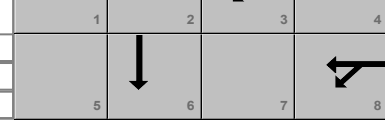
HCS Alternative Intersections Results Summary

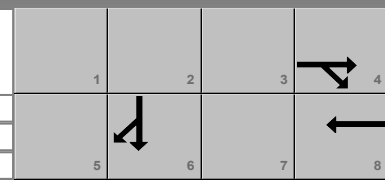
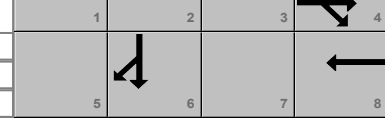
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Concept D Orange Road	PHF	0.92	Arterial Direction	North-South		
File Name	D114_US23-Orange_PM_NB.xus						
Project Description	Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	810	0						3159				
Intersection Two Demand (v), veh/h		494			0	1154		2727	750			
Intersection Three Demand (v), veh/h				869	0						2094	
Intersection Four Demand (v), veh/h		0	1201		492						1965	504

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	55.0	23.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	46.8	31.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	3												
Uncoordinated	No	Green	31.2	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

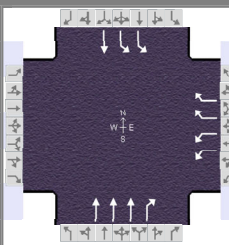
Signal Four Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	33.6	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	476	223.1	30.2	253.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	404	155.6	30.2	185.8	F
EBR	EBR(4)	425	26.2	--	26.2	F
WBL	WBR(2) + NBU(3) + SBT(4)	523	115.8	30.2	146.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	422	79.7	30.2	109.9	F
WBR	WBR(2)	310	28.1	--	28.1	C
NBL	NBT(1) + NBL(2)	535	118.3	--	118.3	F
NBT	NBT(1) + NBT(2)	2911	183.9	--	183.9	F
NBR	NBT(1) + NBR(2)	800	116.4	--	116.4	F
SBL	SBT(3) + SBL(4)	537	63.4	--	63.4	E
SBT	SBT(3) + SBT(4)	2563	87.3	--	87.3	F
SBR	SBT(3) + SBR(4)	657	51.2	--	51.2	F

Overall Results		
Intersection ETT, s/veh LOS	131.6	F

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Green Meadows Dr/Hig...	File Name	C109_US23-GreenMeadows_AM.xus				
Project Description	Concept C Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				558		191		1725	550	528	0	

Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	17.6	35.4	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

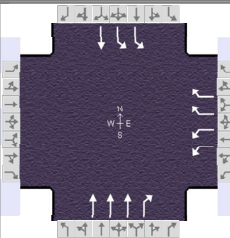
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				25.0		41.4	23.6	65.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				17.2			16.5	
Green Extension Time (g _e), s				1.7		0.0	1.1	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.02			0.01	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				607		208		1875	598	574		0
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1392		1671	1572	1716		1841
Queue Service Time (g _s), s				15.2		4.3		32.6	21.9	14.5		0.0
Cycle Queue Clearance Time (g _c), s				15.2		4.3		32.6	21.9	14.5		0.0
Green Ratio (g/C)				0.21		0.41		0.39	0.60	0.20		0.66
Capacity (c), veh/h				723		1132		1973	950	672		1207
Volume-to-Capacity Ratio (X)				0.839		0.183		0.951	0.629	0.854		0.000
Back of Queue (Q), ft/ln (95th percentile)				262.5		58.4		509.2	288.5	255		0
Back of Queue (Q), veh/ln (95th percentile)				10.3		2.3		19.7	11.3	10.0		0.0
Queue Storage Ratio (RQ) (95th percentile)				0.66		0.00		0.00	0.72	1.28		0.00
Uniform Delay (d ₁), s/veh				34.0		17.1		26.4	11.4	34.9		0.0
Incremental Delay (d ₂), s/veh				2.1		0.0		11.5	3.2	2.8		0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				36.2		17.2		38.0	14.5	37.7		0.0
Level of Service (LOS)				D		B		D	B	D		
Approach Delay, s/veh / LOS	0.0			31.3		C	32.3		C	37.7		D
Intersection Delay, s/veh / LOS				32.9			C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.42	B	0.67	A
Bicycle LOS Score / LOS				F	1.85	B	1.43	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Green Meadows Dr/Hig...	File Name	C109_US23-GreenMeadows_PM.xus				
Project Description	Concept C Design Year (2050)						



Demand Information	EB			WB			NB			SB					
	L	T	R	L	T	R	L	T	R	L	T	R			
Approach Movement															
Demand (v), veh/h				531			376			2365	677		337	0	

Signal Information				Phase Diagram											
Cycle, s	110.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		9.4	60.6	22.0	0.0	0.0	0.0						
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0						
		Red		2.0	2.0	2.0	0.0	0.0	0.0						

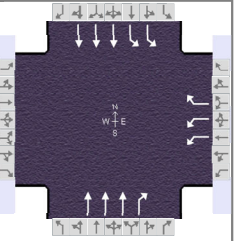
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				28.0		66.6	15.4	82.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				19.8			8.6	
Green Extension Time (g _e), s				2.2		0.0	0.7	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.03			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				577		409		2571	736	366		0
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1392		1671	1572	1716		1841
Queue Service Time (g _s), s				17.8		13.5		51.9	24.1	6.6		0.0
Cycle Queue Clearance Time (g _c), s				17.8		13.5		51.9	24.1	6.6		0.0
Green Ratio (g/C)				0.20		0.29		0.55	0.75	0.65		0.69
Capacity (c), veh/h				686		794		2764	1181	443		1272
Volume-to-Capacity Ratio (X)				0.841		0.515		0.930	0.623	0.828		0.000
Back of Queue (Q), ft/ln (95 th percentile)				308.3		200.7		694.9	270.4	215.8		0
Back of Queue (Q), veh/ln (95 th percentile)				12.0		7.8		26.9	10.6	8.4		0.0
Queue Storage Ratio (RQ) (95 th percentile)				0.77		0.00		0.00	0.68	1.08		0.00
Uniform Delay (d ₁), s/veh				42.3		32.9		22.7	6.4	31.9		0.0
Incremental Delay (d ₂), s/veh				3.0		0.2		7.1	2.5	1.5		0.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				45.3		33.1		29.8	8.9	33.5		0.0
Level of Service (LOS)				D		C		C	A	C		
Approach Delay, s/veh / LOS	0.0			40.3		D	25.1		C	33.5		C
Intersection Delay, s/veh / LOS				29.0						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	2.41	B	0.67	A
Bicycle LOS Score / LOS				F	2.31	B	1.09	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Meadow Park Drive	File Name	C111_US23-MeadowPark_AM.xus		
Project Description	Concept C Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				163		170		2113	111	90	2736	

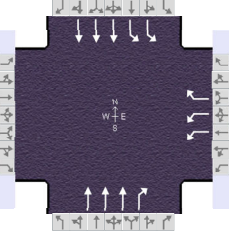
Signal Information													
Cycle, s	95.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.5	57.7	12.8	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				18.8		63.7	12.5	76.2
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				12.1			4.6	
Green Extension Time (g _e), s				0.7		0.0	0.2	0.0
Phase Call Probability				1.00			0.92	
Max Out Probability				0.00			0.00	

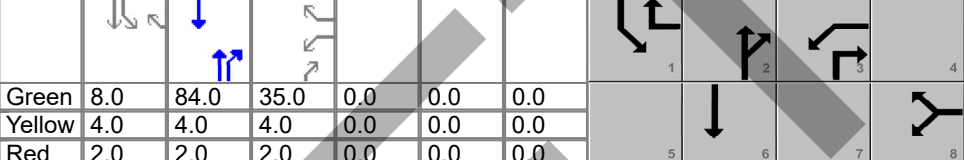
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				177		185		2297	121	98		2974
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1685	1572	1716		1685
Queue Service Time (g _s), s				4.5		10.1		31.1	2.0	2.6		35.5
Cycle Queue Clearance Time (g _c), s				4.5		10.1		31.1	2.0	2.6		35.5
Green Ratio (g/C)				0.13		0.20		0.61	0.74	0.07		0.74
Capacity (c), veh/h				463		319		3070	1167	234		3734
Volume-to-Capacity Ratio (X)				0.382		0.579		0.748	0.103	0.419		0.796
Back of Queue (Q), ft/ln (95 th percentile)				83.5		170.9		389.2	22	49.4		345.9
Back of Queue (Q), veh/ln (95 th percentile)				3.3		6.7		15.2	0.9	1.9		13.5
Queue Storage Ratio (RQ) (95 th percentile)				0.56		0.85		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				37.5		34.2		13.4	3.4	42.5		7.9
Incremental Delay (d ₂), s/veh				0.2		0.6		1.7	0.2	0.4		1.8
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				37.7		34.8		15.1	3.6	42.9		9.7
Level of Service (LOS)				D		C		B	A	D		A
Approach Delay, s/veh / LOS	0.0			36.2		D	14.6		B	10.8		B
Intersection Delay, s/veh / LOS				13.9					B			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.74	C	2.24	B	0.65	A
Bicycle LOS Score / LOS				F	1.82	B	2.18	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Meadow Park Drive	File Name	C111_US23-MeadowPark_PM.xus			
Project Description	Concept C Design Year (2050)					

Demand Information	EB			WB			NB		SB			
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				430		465	3011	176	303	1959		

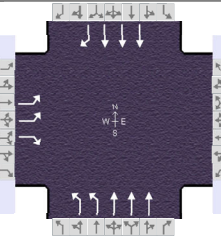
Signal Information																
Cycle, s	145.0	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	8.0	84.0	35.0	0.0	0.0	0.0						
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				41.0		90.0	14.0	104.0
Change Period, ($Y+R_c$), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.0	0.0
Queue Clearance Time (g_s), s				37.0			10.0	
Green Extension Time (g_e), s				0.0		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			1.00	

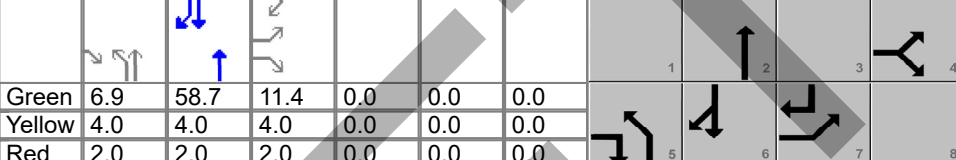
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				467		505		3273	191	329		2129
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1685	1572	1716		1685
Queue Service Time (g_s), s				17.3		35.0		84.0	3.6	8.0		34.2
Cycle Queue Clearance Time (g_c), s				17.3		35.0		84.0	3.6	8.0		34.2
Green Ratio (g/C)				0.24		0.30		0.58	0.82	0.06		0.68
Capacity (c), veh/h				828		466		2928	1291	189		3416
Volume-to-Capacity Ratio (X)				0.564		1.084		1.118	0.148	1.739		0.623
Back of Queue (Q), ft/ln (95 th percentile)				302.5		891.6		1628.5	40.7	542		449.1
Back of Queue (Q), veh/ln (95 th percentile)				11.8		34.8		63.6	1.6	21.2		17.5
Queue Storage Ratio (RQ) (95 th percentile)				2.02		4.46		0.00	0.00	0.00		0.00
Uniform Delay (d_1), s/veh				48.3		51.0		30.5	2.7	68.5		13.2
Incremental Delay (d_2), s/veh				0.6		66.2		58.3	0.2	353.8		0.9
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				48.9		117.2		88.8	2.9	422.3		14.0
Level of Service (LOS)				D		F		F	A	F		B
Approach Delay, s/veh / LOS	0.0			84.4		F	84.0		F	68.7		E
Intersection Delay, s/veh / LOS				78.6						E		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.62	C	2.75	C	2.26	B	0.68	A
Bicycle LOS Score / LOS				F	2.39	B	1.84	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Windbrush Drive	File Name	C112_US23-Windbrush_AM.xus			
Project Description	Concept C Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	293		93				159	1874			2725	149

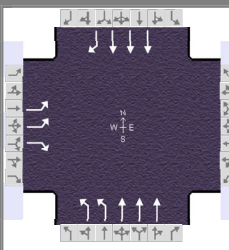
Signal Information														
Cycle, s	95.0	Reference Phase	2	Green	6.9	58.7	11.4	0.0	0.0	0.0				
Offset, s	0	Reference Point	Begin	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		17.4			12.9	77.6		64.7
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		10.6			6.7			
Green Extension Time (g _e), s		0.8			0.4	0.0		0.0
Phase Call Probability		1.00			0.99			
Max Out Probability		0.00			0.00			

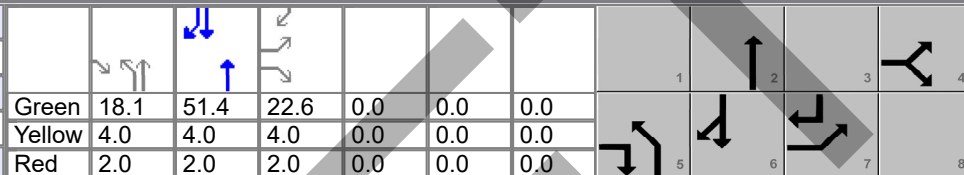
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	318		101				173	2037			2962	162
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1572				1716	1671			1671	1610
Queue Service Time (g _s), s	8.6		5.3				4.7	16.0			52.4	2.8
Cycle Queue Clearance Time (g _c), s	8.6		5.3				4.7	16.0			52.4	2.8
Green Ratio (g/C)	0.12		0.19				0.07	0.75			0.62	0.74
Capacity (c), veh/h	410		303				251	3782			3098	1187
Volume-to-Capacity Ratio (X)	0.777		0.334				0.688	0.539			0.956	0.136
Back of Queue (Q), ft/ln (95 th percentile)	162.4		89				89.6	164			652.6	30.7
Back of Queue (Q), veh/ln (95 th percentile)	6.3		3.5				3.5	6.4			25.3	1.2
Queue Storage Ratio (RQ) (95 th percentile)	0.81		0.45				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	40.6		33.1				43.0	4.8			16.9	3.6
Incremental Delay (d ₂), s/veh	1.2		0.2				1.3	0.6			8.8	0.2
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	41.8		33.3				44.2	5.4			25.7	3.9
Level of Service (LOS)	D		C				D	A			C	A
Approach Delay, s/veh / LOS	39.8		D	0.0			8.4	A		24.6		C
Intersection Delay, s/veh / LOS	19.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.61	C	0.64	A	2.23	B
Bicycle LOS Score / LOS		F			1.70	B	2.21	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Windbrush Drive	File Name	C112_US23-Windbrush_PM.xus			
Project Description	Concept C Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	486		306				443	2856			2060	227

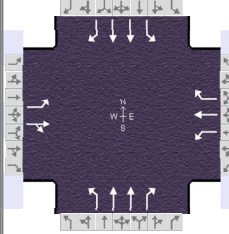

Signal Information														
Cycle, s	110.0	Reference Phase	2	Green	18.1	51.4	22.6	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	Begin	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		28.6			24.1	81.4		57.4
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		20.6			17.0			
Green Extension Time (g _e), s		2.0			1.1	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		0.00			0.00			

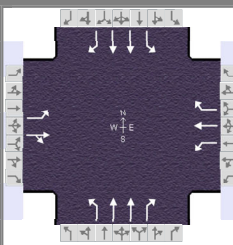
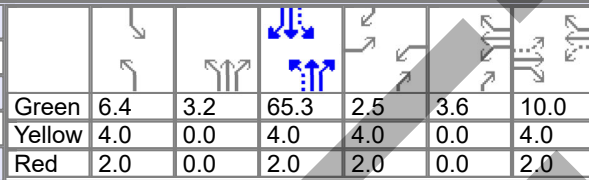
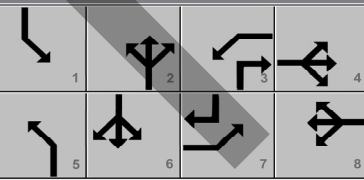
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	528		333				482	3104			2239	247
Adjusted Saturation Flow Rate (s), veh/h/ln	1716		1572				1716	1671			1671	1610
Queue Service Time (g _s), s	15.9		18.6				15.0	56.2			47.3	6.5
Cycle Queue Clearance Time (g _c), s	15.9		18.6				15.0	56.2			47.3	6.5
Green Ratio (g/C)	0.21		0.37				0.16	0.69			0.47	0.67
Capacity (c), veh/h	704		581				564	3439			2341	1082
Volume-to-Capacity Ratio (X)	0.750		0.573				0.854	0.903			0.956	0.228
Back of Queue (Q), ft/ln (95 th percentile)	274.2		279.3				265.6	638.3			690.5	91.1
Back of Queue (Q), veh/ln (95 th percentile)	10.7		10.9				10.4	24.7			26.8	3.6
Queue Storage Ratio (RQ) (95 th percentile)	1.37		1.40				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	41.1		27.7				44.7	14.3			28.2	7.0
Incremental Delay (d ₂), s/veh	0.6		0.3				1.5	4.4			10.9	0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	41.7		28.1				46.1	18.7			39.1	7.5
Level of Service (LOS)	D		C				D	B			D	A
Approach Delay, s/veh / LOS	36.4		D	0.0			22.4	C			36.0	D
Intersection Delay, s/veh / LOS			29.0					C				

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.74	C	2.61	C	0.67	A	2.27	B
Bicycle LOS Score / LOS		F			2.46	B	1.85	B

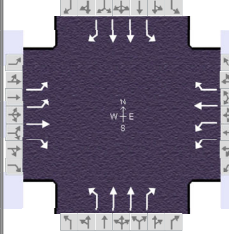

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Orange Point Drive		File Name	115_US23-OrangePoint_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					25	10	129	50	10	50	100	2134	100	120	2610	50
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.8	0.1	65.6	4.1	1.7	12.8										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					10.1	18.8	11.8	20.5	12.8	71.6	12.9	71.7				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					3.5	12.7	5.1	5.6	4.8		6.2					
Green Extension Time (g _e), s					0.0	0.0	0.0	0.3	0.2	0.0	0.2	0.0				
Phase Call Probability					0.58	1.00	0.82	1.00	0.97		0.98					
Max Out Probability					0.01	1.00	0.21	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					27	151		54	11	54	109	2320	109	130	2837	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1590		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					1.5	10.7		3.1	0.6	3.6	2.8	65.6	3.2	4.2	65.7	1.6
Cycle Queue Clearance Time (g _c), s					1.5	10.7		3.1	0.6	3.6	2.8	65.6	3.2	4.2	65.7	1.6
Green Ratio (g/C)					0.15	0.11		0.16	0.13	0.13	0.63	0.57	0.62	0.63	0.57	0.61
Capacity (c), veh/h					269	176		173	233	198	167	2015	976	169	2018	954
Volume-to-Capacity Ratio (X)					0.101	0.857		0.315	0.047	0.275	0.651	1.151	0.111	0.774	1.406	0.057
Back of Queue (Q), ft/ln (95 th percentile)					30.3	241.1		60.8	12.4	63.9	76.9	1592.1	48.8	94.1	2916.5	24.7
Back of Queue (Q), veh/ln (95 th percentile)					1.2	9.4		2.4	0.5	2.5	3.0	62.2	1.9	3.7	113.9	1.0
Queue Storage Ratio (RQ) (95 th percentile)					0.12	0.00		0.24	0.00	0.00	0.15	0.00	0.20	0.19	0.00	0.08
Uniform Delay (d ₁), s/veh					42.6	50.2		42.3	44.2	45.5	27.1	24.7	8.9	31.4	24.7	9.2
Incremental Delay (d ₂), s/veh					0.1	28.7		0.4	0.0	0.3	1.6	74.3	0.2	2.9	185.6	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					42.6	78.9		42.7	44.2	45.8	28.7	99.0	9.1	34.2	210.2	9.3
Level of Service (LOS)					D	E		D	D	D	C	F	A	C	F	A
Approach Delay, s/veh / LOS					73.4	E		44.2	D		92.1	F		199.0	F	
Intersection Delay, s/veh / LOS					145.7						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.46	B		2.46	B		2.08	B		1.89	B	
Bicycle LOS Score / LOS					0.78	A		0.68	A		2.58	C		2.98	C	

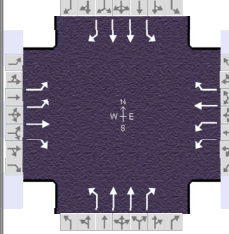

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Orange Point Drive		File Name	115_US23-OrangePoint_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					13	7	86	61	34	112	164	2754	100	69	1907	50
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.4	3.2	65.3	2.5	3.6	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					8.5	16.0	12.2	19.6	15.6	74.5	12.4	71.3				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					2.8	9.1	5.9	10.5	9.3		3.9					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.2	0.3	0.0	0.0	0.0				
Phase Call Probability					0.36	1.00	0.88	1.00	1.00		0.91					
Max Out Probability					0.07	1.00	1.00	0.53	0.00		0.05					
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					14	101		66	37	122	178	2993	109	75	2073	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1591		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					0.8	7.1		3.9	2.1	8.5	7.3	68.5	3.0	1.9	65.3	1.7
Cycle Queue Clearance Time (g _c), s					0.8	7.1		3.9	2.1	8.5	7.3	68.5	3.0	1.9	65.3	1.7
Green Ratio (g/C)					0.11	0.09		0.14	0.12	0.12	0.65	0.60	0.65	0.62	0.57	0.59
Capacity (c), veh/h					215	138		189	220	186	210	2104	1021	160	2006	927
Volume-to-Capacity Ratio (X)					0.066	0.731		0.350	0.168	0.654	0.851	1.423	0.107	0.468	1.034	0.059
Back of Queue (Q), ft/ln (95 th percentile)					16.5	150.1		76.8	43.1	161.9	225.2	3118.2	43.8	52	1085.1	26.1
Back of Queue (Q), veh/ln (95 th percentile)					0.6	5.9		3.0	1.7	6.3	8.8	121.8	1.7	2.0	42.4	1.0
Queue Storage Ratio (RQ) (95 th percentile)					0.07	0.00		0.31	0.00	0.00	0.45	0.00	0.18	0.10	0.00	0.09
Uniform Delay (d ₁), s/veh					46.0	51.2		44.4	45.6	48.4	36.3	23.3	7.6	27.1	24.9	10.0
Incremental Delay (d ₂), s/veh					0.0	12.8		0.4	0.1	5.2	3.7	193.1	0.2	0.8	29.3	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					46.1	64.0		44.8	45.7	53.6	40.0	216.4	7.8	27.9	54.2	10.1
Level of Service (LOS)					D	E		D	D	D	D	F	A	C	F	B
Approach Delay, s/veh / LOS					61.8	E		49.7	D		199.9	F		52.2	D	
Intersection Delay, s/veh / LOS					135.5						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.46	B		2.08	B		1.89	B	
Bicycle LOS Score / LOS					0.68	A		0.86	A		3.19	C		2.30	B	

HCS Signalized Intersection Results Summary

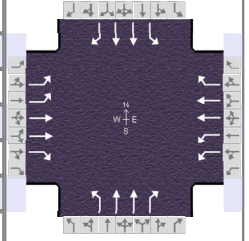
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Corduroy Road		File Name	116_US23-Corduroy_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					127	20	50	75	20	75	50	2112	100	100	2652	50
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.9	1.0	72.3	6.5	0.4	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					12.9	16.4	12.5	16.0	11.9	78.3	12.8	79.2				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					6.7	5.7	4.8	7.6	3.3		5.1					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0				
Phase Call Probability					0.99	1.00	0.93	1.00	0.84		0.97					
Max Out Probability					1.00	0.20	1.00	1.00	0.01		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					138	22	54	82	22	82	54	2296	109	109	2883	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					4.7	1.3	3.7	2.8	1.3	5.6	1.3	72.3	3.1	3.1	73.2	1.4
Cycle Queue Clearance Time (g _c), s					4.7	1.3	3.7	2.8	1.3	5.6	1.3	72.3	3.1	3.1	73.2	1.4
Green Ratio (g/C)					0.06	0.09	0.14	0.05	0.08	0.14	0.65	0.60	0.66	0.66	0.61	0.67
Capacity (c), veh/h					198	161	213	187	155	220	146	2127	1033	160	2156	1050
Volume-to-Capacity Ratio (X)					0.697	0.135	0.255	0.436	0.141	0.370	0.372	1.079	0.105	0.678	1.337	0.052
Back of Queue (Q), ft/ln (95 th percentile)					103	27.6	66.1	54.5	27.7	100.4	42.5	1350.4	45.1	86.6	2736.8	20.7
Back of Queue (Q), veh/ln (95 th percentile)					4.0	1.1	2.6	2.1	1.1	3.9	1.7	52.8	1.8	3.4	106.9	0.8
Queue Storage Ratio (RQ) (95 th percentile)					1.03	0.00	0.66	0.22	0.00	0.25	0.11	0.00	0.06	0.17	0.00	0.04
Uniform Delay (d ₁), s/veh					55.5	50.7	46.5	54.9	51.0	46.8	29.3	23.9	7.6	31.4	23.4	6.9
Incremental Delay (d ₂), s/veh					8.4	0.1	0.2	0.6	0.2	0.4	0.6	44.8	0.2	1.9	155.0	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					63.9	50.8	46.7	55.5	51.2	47.2	29.9	68.7	7.8	33.2	178.4	6.9
Level of Service (LOS)					E	D	D	E	D	D	C	F	A	C	F	A
Approach Delay, s/veh / LOS					58.2	E		51.3	D		65.1	E		170.2	F	
Intersection Delay, s/veh / LOS					118.6					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.47	B		2.25	B		2.25	B	
Bicycle LOS Score / LOS					0.84	A		0.79	A		2.52	C		3.00	C	

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Corduroy Road		File Name	116_US23-Corduroy_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					93	25	24	150	25	150	50	2622	150	150	1993	79
Signal Information																
Cycle, s	140.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.2	4.7	88.1	6.9	0.1	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					12.9	16.0	13.0	16.1	12.2	94.1	16.9	98.8				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					6.0	4.1	8.6	12.1	3.5		10.6					
Green Extension Time (g _e), s					0.0	0.2	0.0	0.0	0.1	0.0	0.3	0.0				
Phase Call Probability					0.98	1.00	1.00	1.00	0.88		1.00					
Max Out Probability					1.00	0.09	1.00	1.00	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					101	27	26	163	27	163	54	2850	163	163	2166	86
Adjusted Saturation Flow Rate (s), veh/h/ln					1716	1856	1572	1716	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					4.0	1.9	2.1	6.6	1.9	10.1	1.5	88.1	5.2	8.6	74.8	2.3
Cycle Queue Clearance Time (g _c), s					4.0	1.9	2.1	6.6	1.9	10.1	1.5	88.1	5.2	8.6	74.8	2.3
Green Ratio (g/C)					0.05	0.07	0.12	0.05	0.07	0.15	0.67	0.63	0.68	0.71	0.66	0.71
Capacity (c), veh/h					168	133	181	172	134	236	150	2224	1068	189	2343	1120
Volume-to-Capacity Ratio (X)					0.601	0.205	0.144	0.950	0.202	0.690	0.363	1.282	0.153	0.863	0.925	0.077
Back of Queue (Q), ft/ln (95 th percentile)					84.3	41.9	38	190.3	41.8	250.2	53.5	2687.7	78.7	250.8	975.8	33.7
Back of Queue (Q), veh/ln (95 th percentile)					3.3	1.6	1.5	7.4	1.6	9.8	2.1	105.0	3.1	9.8	38.1	1.3
Queue Storage Ratio (RQ) (95 th percentile)					0.84	0.00	0.38	0.76	0.00	0.63	0.13	0.00	0.10	0.50	0.00	0.07
Uniform Delay (d ₁), s/veh					65.2	61.3	55.7	66.3	61.1	56.4	32.4	25.9	8.0	49.5	20.5	6.1
Incremental Delay (d ₂), s/veh					3.9	0.3	0.1	53.6	0.3	7.0	0.5	130.4	0.3	4.5	7.7	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					69.1	61.5	55.8	119.9	61.4	63.4	32.9	156.3	8.3	54.0	28.2	6.3
Level of Service (LOS)					E	E	E	F	E	E	C	F	A	D	C	A
Approach Delay, s/veh / LOS					65.5	E		89.3	F		146.2	F		29.2	C	
Intersection Delay, s/veh / LOS					93.6						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.47	B		2.25	B		2.24	B	
Bicycle LOS Score / LOS					0.74	A		1.07	A		3.02	C		2.48	B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Home Road		File Name	117_US23-Home_AM.xus			
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	230	680	430	400	800	70	400	1774	77	260	1996	390

Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	17.1	2.9	42.0	10.7	0.3	17.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0			
				Red	2.0	2.0	2.0	2.0	0.0	2.0			

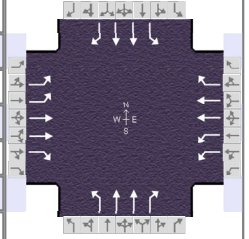
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	16.7	23.0	17.0	23.3	32.0	56.9	23.1	48.0
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	10.6	19.0	13.0	19.3	27.3		16.7	
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		1.00	
Max Out Probability	1.00	1.00	1.00	1.00	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	250	739	467	435	870	76	435	1928	84	283	2170	424
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1766	1572	1716	1766	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	8.6	17.0	17.0	11.0	17.3	4.4	25.3	50.9	3.3	14.7	42.0	24.0
Cycle Queue Clearance Time (g _c), s	8.6	17.0	17.0	11.0	17.3	4.4	25.3	50.9	3.3	14.7	42.0	24.0
Green Ratio (g/C)	0.09	0.14	0.36	0.09	0.14	0.29	0.58	0.42	0.52	0.49	0.35	0.44
Capacity (c), veh/h	307	501	563	315	509	451	443	1497	810	313	1237	707
Volume-to-Capacity Ratio (X)	0.815	1.477	0.829	1.382	1.709	0.169	0.982	1.288	0.103	0.904	1.755	0.599
Back of Queue (Q), ft/ln (95 th percentile)	184.6	916.7	494.8	537.2	1225.8	74.8	462.9	1805.8	53.9	226.9	3040	361.7
Back of Queue (Q), veh/ln (95 th percentile)	7.2	35.8	19.3	21.0	47.9	2.9	18.1	70.5	2.1	8.9	118.8	14.5
Queue Storage Ratio (RQ) (95 th percentile)	0.37	0.00	0.99	1.07	0.00	0.15	0.77	0.00	0.07	0.65	0.00	1.03
Uniform Delay (d ₁), s/veh	53.7	51.5	35.2	54.5	51.4	32.1	38.1	34.6	14.9	35.9	39.0	25.6
Incremental Delay (d ₂), s/veh	9.3	225.2	9.5	190.6	327.6	0.1	37.7	134.8	0.3	7.7	342.9	3.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	62.9	276.7	44.6	245.1	378.9	32.1	75.8	169.3	15.1	43.6	381.9	29.3
Level of Service (LOS)	E	F	D	F	F	C	E	F	B	D	F	C
Approach Delay, s/veh / LOS	165.5	F		317.7	F		147.4	F		296.7	F	
Intersection Delay, s/veh / LOS	232.1						F					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.46	B	2.46	B	2.57	C	2.58
Bicycle LOS Score / LOS	1.69	B	1.63	B	2.51	C	2.86	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	No Build Home Road		File Name	117_US23-Home_PM.xus			
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	200	500	250	390	600	100	370	2241	350	50	1706	100

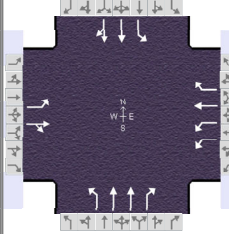

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.0	10.0	54.0	10.3	2.7	17.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	4.0			
				Red	2.0	2.0	2.0	2.0	0.0	2.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	1.1	3.0	1.1	3.0
Phase Duration, s	16.3	23.0	19.0	25.7	28.0	76.0	12.0	60.0
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	3.0	3.0	3.0	3.0	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s	10.1	19.0	15.0	21.7	24.0		4.2	
Green Extension Time (g _e), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Phase Call Probability	1.00	1.00	1.00	1.00	1.00		0.86	
Max Out Probability	0.36	1.00	1.00	1.00	1.00		0.00	

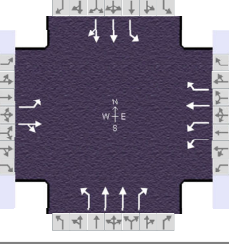
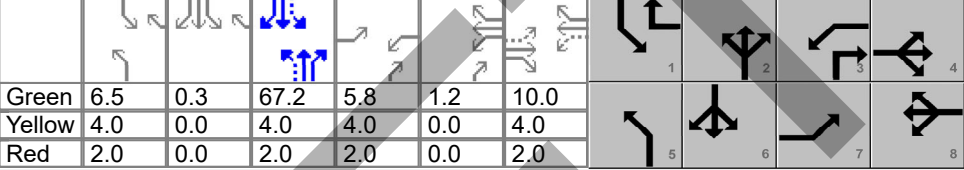
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	217	543	272	424	652	109	402	2436	380	54	1854	109
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1766	1572	1716	1766	1572	1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	8.1	17.0	17.0	13.0	19.7	7.7	22.0	70.0	15.0	2.2	54.0	4.8
Cycle Queue Clearance Time (g _c), s	8.1	17.0	17.0	13.0	19.7	7.7	22.0	70.0	15.0	2.2	54.0	4.8
Green Ratio (g/C)	0.08	0.13	0.30	0.10	0.15	0.20	0.60	0.54	0.64	0.46	0.42	0.49
Capacity (c), veh/h	271	462	472	343	536	312	354	1902	1004	137	1468	796
Volume-to-Capacity Ratio (X)	0.802	1.176	0.576	1.235	1.216	0.349	1.135	1.281	0.379	0.396	1.264	0.137
Back of Queue (Q), ft/ln (95 th percentile)	169.5	545.5	299.7	476.4	663.8	137.5	729.8	2276.3	224.4	42.1	1751.6	80.6
Back of Queue (Q), veh/ln (95 th percentile)	6.6	21.3	11.7	18.6	25.9	5.4	28.5	88.9	8.8	1.6	68.4	3.2
Queue Storage Ratio (RQ) (95 th percentile)	0.34	0.00	0.60	0.95	0.00	0.28	1.22	0.00	0.28	0.12	0.00	0.23
Uniform Delay (d ₁), s/veh	58.9	56.5	38.5	58.5	55.1	44.9	44.2	30.0	11.2	30.6	38.0	17.8
Incremental Delay (d ₂), s/veh	6.1	100.0	1.1	128.5	113.3	0.2	89.6	130.5	1.1	0.7	124.2	0.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	65.0	156.5	39.6	187.0	168.5	45.1	133.7	160.5	12.3	31.3	162.2	18.2
Level of Service (LOS)	E	F	D	F	F	D	F	F	B	C	F	B
Approach Delay, s/veh / LOS	106.5	F		163.8	F		139.7	F		150.9	F	
Intersection Delay, s/veh / LOS	142.0						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.46	B	2.56	C	2.58	C
Bicycle LOS Score / LOS	1.34	A	1.47	A	3.14	C	2.15	B

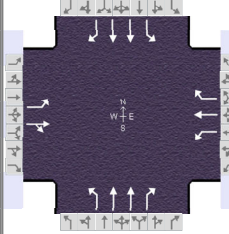

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Lewis Center Road	File Name	118_US23-LewisCenter_AM.xus													
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	50	50	100	50	82	50	1686	392	81	2422	30
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.8	0.8	67.6	5.8	1.0	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0				
Phase Duration, s					11.8	16.0	12.8	17.0	11.8	73.6	12.6	74.5				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.1	3.0	3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					5.1	9.2	5.2	7.9	3.3		4.1					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0				
Phase Call Probability					0.82	1.00	0.97	1.00	0.82		0.94					
Max Out Probability					1.00	1.00	1.00	0.32	0.01		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	109		109	54	89	54	1833	426	88	1333	1333
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1702		1716	1856	1572	1767	1766	1572	1767	1856	1847
Queue Service Time (g _s), s					3.1	7.2		3.2	3.1	5.9	1.3	51.0	15.1	2.1	68.5	68.5
Cycle Queue Clearance Time (g _c), s					3.1	7.2		3.2	3.1	5.9	1.3	51.0	15.1	2.1	68.5	68.5
Green Ratio (g/C)					0.14	0.09		0.15	0.10	0.15	0.64	0.59	0.65	0.65	0.60	0.60
Capacity (c), veh/h					220	148		391	178	241	151	2078	1018	200	1104	1100
Volume-to-Capacity Ratio (X)					0.247	0.734		0.278	0.306	0.370	0.359	0.882	0.419	0.440	1.207	1.212
Back of Queue (Q), ft/ln (95 th percentile)					62.6	158.3		61.6	66.1	103.3	39.2	698.5	217.2	63.2	2049.8	2022.9
Back of Queue (Q), veh/ln (95 th percentile)					2.4	6.2		2.4	2.6	4.0	1.5	27.3	8.5	2.5	80.1	80.9
Queue Storage Ratio (RQ) (95 th percentile)					0.31	0.00		0.15	0.00	0.52	0.08	0.00	0.43	0.16	0.00	0.00
Uniform Delay (d ₁), s/veh					44.3	51.2		43.5	48.4	43.7	27.7	20.3	9.8	24.1	23.3	23.3
Incremental Delay (d ₂), s/veh					0.2	11.2		0.1	0.4	0.4	0.5	5.8	1.3	0.6	101.7	103.9
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					44.5	62.4		43.7	48.8	44.1	28.2	26.1	11.1	24.7	124.9	127.2
Level of Service (LOS)					D	E		D	D	D	C	C	B	C	F	F
Approach Delay, s/veh / LOS					56.4	E		44.9	D		23.4	C		122.8	F	
Intersection Delay, s/veh / LOS					75.3					E						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47	B		2.31	B		2.25	B		1.89	B	
Bicycle LOS Score / LOS					0.76	A		0.90	A		2.40	B		2.76	C	

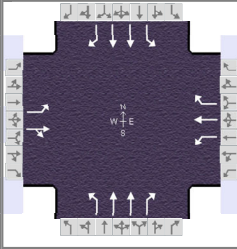
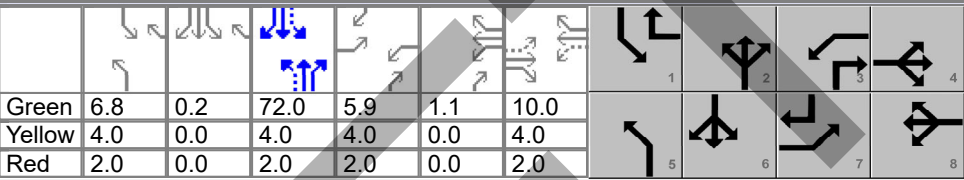
HCS Signalized Intersection Results Summary

General Information						Intersection Information								
Agency	ms consultants					Duration, h	0.250							
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other							
Jurisdiction		Time Period	PM Peak			PHF	0.92							
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00							
Intersection	Lewis Center Road		File Name	118_US23-LewisCenter_PM.xus										
Project Description	No Build Design Year (2050)													
Demand Information			EB			WB			NB			SB		
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h			50	50	50	180	15	220	75	2324	75	98	1745	5
Signal Information														
Cycle, s	115.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On											
Green	6.5	0.3	67.2	5.8	1.2	10.0								
Yellow	4.0	0.0	4.0	4.0	0.0	4.0								
Red	2.0	0.0	2.0	2.0	0.0	2.0								
Timer Results			EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase			7	4	3	8	5	2	1	6				
Case Number			1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0				
Phase Duration, s			11.8	16.0	13.0	17.2	12.5	73.2	12.8	73.5				
Change Period, (Y+R _c), s			6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s			3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s			5.1	9.2	7.9	13.2	4.0		4.6					
Green Extension Time (g _e), s			0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.0				
Phase Call Probability			0.82	1.00	1.00	1.00	0.93		0.97					
Max Out Probability			1.00	1.00	1.00	1.00	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	109		196	16	239	82	2526	82	107	951	951
Adjusted Saturation Flow Rate (s), veh/h/ln			1767	1702		1716	1856	1572	1767	1766	1572	1767	1856	1854
Queue Service Time (g _s), s			3.1	7.2		5.9	0.9	11.2	2.0	67.2	2.2	2.6	49.9	50.0
Cycle Queue Clearance Time (g _c), s			3.1	7.2		5.9	0.9	11.2	2.0	67.2	2.2	2.6	49.9	50.0
Green Ratio (g/C)			0.14	0.09		0.15	0.10	0.16	0.64	0.58	0.65	0.64	0.59	0.59
Capacity (c), veh/h			251	148		397	181	246	194	2065	1015	167	1089	1088
Volume-to-Capacity Ratio (X)			0.216	0.734		0.493	0.090	0.971	0.421	1.223	0.080	0.639	0.873	0.874
Back of Queue (Q), ft/ln (95 th percentile)			62.5	165.9		113.8	19.3	387	58.2	1980.1	32.7	77.4	751	735.4
Back of Queue (Q), veh/ln (95 th percentile)			2.4	6.5		4.4	0.8	15.1	2.3	77.3	1.3	3.0	29.3	29.4
Queue Storage Ratio (RQ) (95 th percentile)			0.31	0.00		0.28	0.00	1.93	0.12	0.00	0.07	0.19	0.00	0.00
Uniform Delay (d ₁), s/veh			44.2	51.2		44.5	47.2	48.2	24.4	23.9	7.6	27.4	20.1	20.1
Incremental Delay (d ₂), s/veh			0.2	15.2		0.4	0.1	49.0	0.5	104.9	0.2	1.5	9.7	9.8
Initial Queue Delay (d ₃), s/veh			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh			44.3	66.4		44.9	47.3	97.2	25.0	128.8	7.8	29.0	29.8	29.9
Level of Service (LOS)			D	E		D	D	F	C	F	A	C	C	C
Approach Delay, s/veh / LOS			59.1	E		72.7	E		122.0	F		29.8	C	
Intersection Delay, s/veh / LOS			81.0						F					
Multimodal Results			EB			WB			NB			SB		
Pedestrian LOS Score / LOS			2.47	B		2.31	B		2.25	B		1.89	B	
Bicycle LOS Score / LOS			0.76	A		1.23	A		2.71	C		2.14	B	

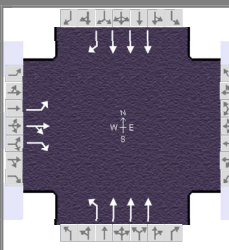
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Olentangy Crossing		File Name	119_US23-OlentangyCrossing_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	20	50	51	3	56	50	1514	208	169	2411	30
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.9	1.1	73.1	5.9	10.0	0.0										
Yellow	4.0	0.0	4.0	4.0	4.0	0.0										
Red	2.0	0.0	2.0	2.0	2.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					11.9	16.0	11.9	16.0	11.9	79.1	13.0	80.3				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					5.3	7.3	5.4	6.1	3.3		6.6					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.0				
Phase Call Probability					0.84	1.00	0.84	1.00	0.84		1.00					
Max Out Probability					1.00	0.01	1.00	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	76		55	3	61	54	1646	226	184	2621	33
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1644		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					3.3	5.3		3.4	0.2	4.1	1.3	40.9	6.9	4.6	74.3	0.8
Cycle Queue Clearance Time (g _c), s					3.3	5.3		3.4	0.2	4.1	1.3	40.9	6.9	4.6	74.3	0.8
Green Ratio (g/C)					0.13	0.08		0.13	0.08	0.14	0.66	0.61	0.66	0.67	0.62	0.67
Capacity (c), veh/h					238	137		198	155	223	146	2153	1036	244	2186	1050
Volume-to-Capacity Ratio (X)					0.229	0.556		0.280	0.021	0.273	0.372	0.764	0.218	0.753	1.199	0.031
Back of Queue (Q), ft/ln (95 th percentile)					66	101.6		67.6	4.1	73.7	43.1	558.2	101.3	147.6	1979.3	12.2
Back of Queue (Q), veh/ln (95 th percentile)					2.6	4.0		2.6	0.2	2.9	1.7	21.8	4.0	5.8	77.3	0.5
Queue Storage Ratio (RQ) (95 th percentile)					0.38	0.00		0.27	0.00	0.29	0.14	0.00	0.20	0.37	0.00	0.04
Uniform Delay (d ₁), s/veh					46.7	52.9		46.8	50.5	46.0	29.5	17.1	8.2	22.6	22.9	6.8
Incremental Delay (d ₂), s/veh					0.2	1.3		0.3	0.0	0.2	0.6	2.6	0.5	1.8	94.1	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					46.8	54.2		47.0	50.5	46.2	30.1	19.8	8.7	24.4	117.0	6.8
Level of Service (LOS)					D	D		D	D	D	C	B	A	C	F	A
Approach Delay, s/veh / LOS					51.1		D	46.7		D	18.8		B	109.7		F
Intersection Delay, s/veh / LOS					71.7						E					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.88		B
Bicycle LOS Score / LOS					0.70		A	0.68		A	2.08		B	2.83		C

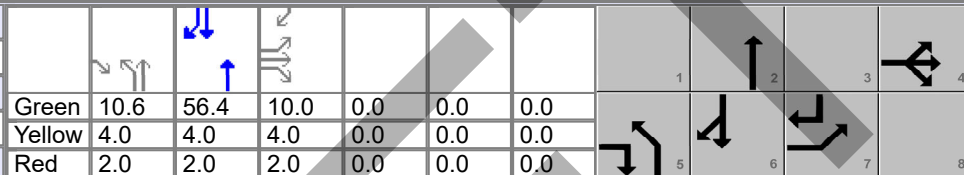
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Olentangy Crossing		File Name	119_US23-OlentangyCrossing_PM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	50	30	112	11	150	100	2380	109	196	1678	11
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.8	0.2	72.0	5.9	1.1	10.0										
Yellow	4.0	0.0	4.0	4.0	0.0	4.0										
Red	2.0	0.0	2.0	2.0	0.0	2.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2	1	6				
Case Number					1.1	4.0	1.1	3.0	1.1	3.0	1.1	3.0				
Phase Duration, s					11.9	16.0	13.0	17.1	12.8	78.0	13.0	78.2				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					5.3	7.8	9.0	13.1	4.7		9.0					
Green Extension Time (g _e), s					0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0				
Phase Call Probability					0.84	1.00	0.98	1.00	0.97		1.00					
Max Out Probability					1.00	1.00	1.00	1.00	0.00		1.00					
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	87		122	12	163	109	2587	118	213	1824	12
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1738		1767	1856	1572	1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					3.3	5.8		7.0	0.7	11.1	2.7	72.0	3.3	7.0	51.0	0.3
Cycle Queue Clearance Time (g _c), s					3.3	5.8		7.0	0.7	11.1	2.7	72.0	3.3	7.0	51.0	0.3
Green Ratio (g/C)					0.13	0.08		0.14	0.09	0.15	0.66	0.60	0.66	0.66	0.60	0.65
Capacity (c), veh/h					244	145		209	172	238	201	2120	1035	163	2125	1023
Volume-to-Capacity Ratio (X)					0.223	0.600		0.583	0.069	0.686	0.541	1.220	0.114	1.306	0.858	0.012
Back of Queue (Q), ft/ln (95 th percentile)					66	122.9		158.1	14.9	219.7	84.5	2055.1	49.1	514.6	692.1	4.8
Back of Queue (Q), veh/ln (95 th percentile)					2.6	4.8		6.2	0.6	8.6	3.3	80.3	1.9	20.1	27.0	0.2
Queue Storage Ratio (RQ) (95 th percentile)					0.38	0.00		0.63	0.00	0.88	0.28	0.00	0.10	1.29	0.00	0.02
Uniform Delay (d ₁), s/veh					46.6	53.1		48.1	49.7	48.2	25.6	24.0	7.6	40.1	19.7	7.4
Incremental Delay (d ₂), s/veh					0.2	4.8		2.8	0.1	6.7	0.8	103.7	0.2	174.8	4.8	0.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					46.8	57.9		50.9	49.8	54.9	26.4	127.7	7.8	214.9	24.5	7.4
Level of Service (LOS)					D	E		D	D	D	C	F	A	F	C	A
Approach Delay, s/veh / LOS					53.6		D	53.0		D	118.7		F	44.2		D
Intersection Delay, s/veh / LOS					84.5						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.08		B	1.89		B
Bicycle LOS Score / LOS					0.72		A	0.98		A	2.81		C	2.18		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Orange Point Drive	File Name	D115_US23-OrangePoint_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	100	0	129				150	2234			2610	50

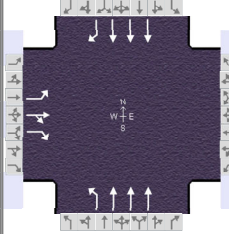
Signal Information														
Cycle, s	95.0	Reference Phase	2	Green	10.6	56.4	10.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		16.0			16.6	79.0		62.4
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		9.3			10.6			
Green Extension Time (g _e), s		0.3			0.2	0.0		0.0
Phase Call Probability		1.00			0.99			
Max Out Probability		0.04			0.00			

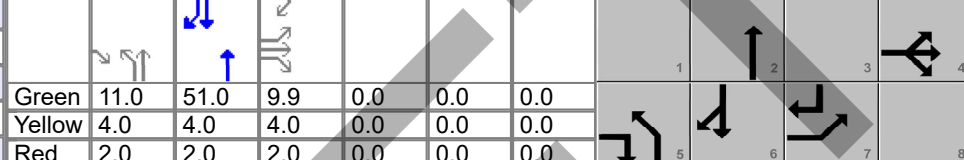
Movement Group Results	EB			WB			NB			SB											
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R									
Assigned Movement	7	4	14				5	2		6	16										
Adjusted Flow Rate (v), veh/h	137	0	112				163	2428		2837	54										
Adjusted Saturation Flow Rate (s), veh/h/ln	1727	1856	1572				1767	1671		1685	1560										
Queue Service Time (g _s), s	7.3	0.0	5.7				8.6	20.6		49.4	1.0										
Cycle Queue Clearance Time (g _c), s	7.3	0.0	5.7				8.6	20.6		49.4	1.0										
Green Ratio (g/C)	0.11	0.11	0.22				0.11	0.77		0.59	0.70										
Capacity (c), veh/h	182	195	341				197	3854		3002	1090										
Volume-to-Capacity Ratio (X)	0.753	0.000	0.329				0.827	0.630		0.945	0.050										
Back of Queue (Q), ft/ln (95 th percentile)	142.9	0	96.1				173.2	197.3		626.6	12.6										
Back of Queue (Q), veh/ln (95 th percentile)	5.6	0.0	3.8				6.8	7.6		24.5	0.5										
Queue Storage Ratio (RQ) (95 th percentile)	0.57	0.00	0.96				0.35	0.00		0.00	0.04										
Uniform Delay (d ₁), s/veh	41.3	0.0	31.4				41.3	4.9		17.9	4.5										
Incremental Delay (d ₂), s/veh	2.4	0.0	0.2				3.4	0.8		7.8	0.1										
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0				0.0	0.0		0.0	0.0										
Control Delay (d), s/veh	43.7	0.0	31.6				44.7	5.7		25.7	4.5										
Level of Service (LOS)	D			C			D			A											
Approach Delay, s/veh / LOS	38.2			D			0.0			8.2			A			25.3			C		
Intersection Delay, s/veh / LOS	18.1						B														

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.61	C	1.32	A	2.07	B
Bicycle LOS Score / LOS	0.90	A			1.91	B	2.08	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Orange Point Drive	File Name	D115_US23-OrangePoint_PM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	75	25	86				164	2854			1907	50

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	11.0	51.0	9.9	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		15.9			17.0	74.1		57.0
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		5.9			10.9			
Green Extension Time (g _e), s		0.3			0.3	0.0		0.0
Phase Call Probability		0.99			0.99			
Max Out Probability		0.00			0.00			

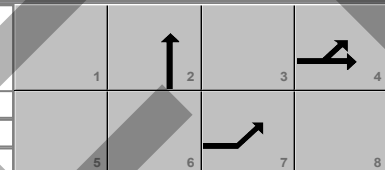
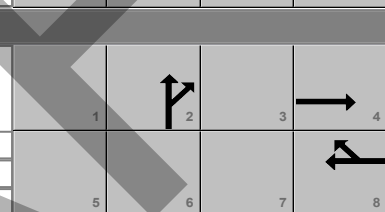
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14				5	2		6	16	
Adjusted Flow Rate (v), veh/h	82	46	75				178	3102		2073	54	
Adjusted Saturation Flow Rate (s), veh/h/ln	1767	1740	1572				1767	1671		1671	1572	
Queue Service Time (g _s), s	3.9	2.2	3.4				8.9	35.6		27.5	1.0	
Cycle Queue Clearance Time (g _c), s	3.9	2.2	3.4				8.9	35.6		27.5	1.0	
Green Ratio (g/C)	0.11	0.11	0.23				0.12	0.76		0.57	0.68	
Capacity (c), veh/h	195	192	366				216	3792		2844	1065	
Volume-to-Capacity Ratio (X)	0.418	0.239	0.204				0.824	0.818		0.729	0.051	
Back of Queue (Q), ft/ln (95 th percentile)	74.9	41.1	57				176	313.6		359.2	12.9	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	1.6	2.2				6.9	12.2		13.9	0.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.30	0.00	0.57				0.35	0.00		0.00	0.04	
Uniform Delay (d ₁), s/veh	37.3	36.6	27.8				38.5	7.0		14.4	4.8	
Incremental Delay (d ₂), s/veh	0.5	0.2	0.1				3.0	2.1		1.7	0.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	37.9	36.8	27.9				41.6	9.1		16.1	4.9	
Level of Service (LOS)	D	D	C				D	A		B	A	
Approach Delay, s/veh / LOS	33.9		C	0.0			10.9		B	15.8		B
Intersection Delay, s/veh / LOS	13.6						B					

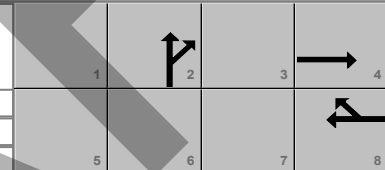
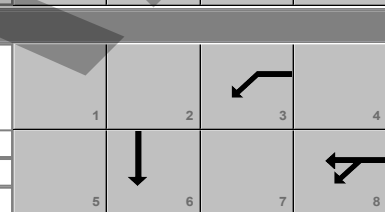
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	1.32	A	2.07	B
Bicycle LOS Score / LOS	0.82	A			2.29	B	1.66	B

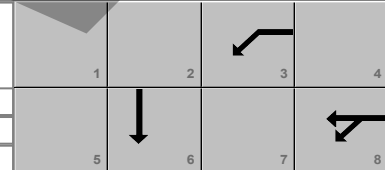
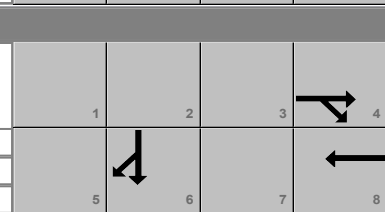
HCS Alternative Intersections Results Summary

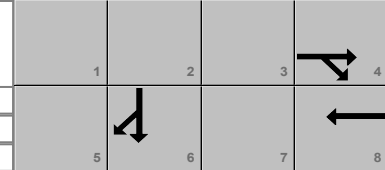
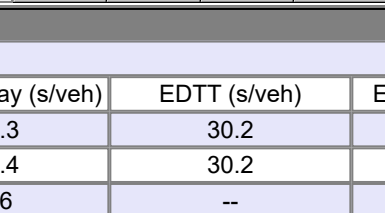
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	1057	0						2608				
Intersection Two Demand (v), veh/h		480			0	1425		2488	777			
Intersection Three Demand (v), veh/h				1355	0						3171	
Intersection Four Demand (v), veh/h		0	1487		400						2826	1220

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	43.0	35.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	89												
Uncoordinated	No	Green	24.6	53.4	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	55												
Uncoordinated	No	Green	30.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	23												
Uncoordinated	No	Green	56.3	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	388	540.3	30.2	570.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	761	503.4	30.2	533.6	F
EBR	EBR(4)	467	18.6	--	18.6	B
WBL	WBR(2) + NBU(3) + SBT(4)	571	795.0	30.2	825.2	F
WBT	WBR(2) + NBU(3) + SBR(4)	902	547.2	30.2	577.4	F
WBR	WBR(2)	76	21.6	--	21.6	C
NBL	NBT(1) + NBL(2)	435	136.1	--	136.1	F
NBT	NBT(1) + NBT(2)	2631	604.5	--	604.5	F
NBR	NBT(1) + NBR(2)	822	567.7	--	567.7	F
SBL	SBT(3) + SBL(4)	522	183.5	--	183.5	F
SBT	SBT(3) + SBT(4)	2487	711.8	--	711.8	F
SBR	SBT(3) + SBR(4)	1074	463.9	--	463.9	F

Overall Results		
Intersection ETT, s/veh LOS	551.4	F

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_AM_NB_TripleRT.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	1057	0						2608				
Intersection Two Demand (v), veh/h		480			0	1425		2488	777			
Intersection Three Demand (v), veh/h				1355	0						3171	
Intersection Four Demand (v), veh/h		0	1487		400						2826	1220

Signal One Information													
Cycle, s	90.0									1 2 3 4			
Offset, s	0									5 6 7 8			
Uncoordinated	No	Green	49.0	29.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0									1 2 3 4			
Offset, s	52									5 6 7 8			
Uncoordinated	No	Green	39.9	38.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0									1 2 3 4			
Offset, s	55									5 6 7 8			
Uncoordinated	No	Green	30.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0									1 2 3 4			
Offset, s	26									5 6 7 8			
Uncoordinated	No	Green	40.7	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

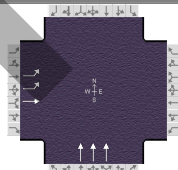
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	388	282.3	30.2	312.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	761	269.6	30.2	299.8	F
EBR	EBR(4)	467	22.5	--	22.5	C
WBL	WBR(2) + NBU(3) + SBT(4)	571	389.0	30.2	419.2	F
WBT	WBR(2) + NBU(3) + SBR(4)	902	290.3	30.2	320.5	F
WBR	WBR(2)	76	24.4	--	24.4	C
NBL	NBT(1) + NBL(2)	435	79.2	--	79.2	F
NBT	NBT(1) + NBT(2)	2730	205.6	--	205.6	F
NBR	NBT(1) + NBR(2)	852	192.9	--	192.9	F
SBL	SBT(3) + SBL(4)	522	195.6	--	195.6	F
SBT	SBT(3) + SBT(4)	2487	303.0	--	303.0	F
SBR	SBT(3) + SBR(4)	1074	204.3	--	204.3	F

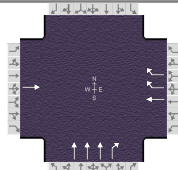
Overall Results		
Intersection ETT, s/veh LOS	250.2	F

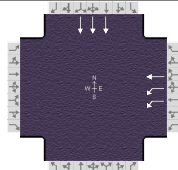
HCS Alternative Intersections Results Summary

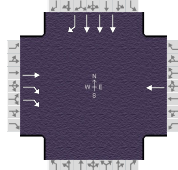
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	818	0						3254				
Intersection Two Demand (v), veh/h		269			0	1360		2827	875			
Intersection Three Demand (v), veh/h				1260	0						2457	
Intersection Four Demand (v), veh/h		0	1068		370						2689	759

Signal One Information												
Cycle, s	90.0											
Offset, s	0											
Uncoordinated	No	Green	51.0	27.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0				

Signal Two Information												
Cycle, s	90.0											
Offset, s	45											
Uncoordinated	No	Green	26.8	51.2	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0				

Signal Three Information												
Cycle, s	90.0											
Offset, s	69											
Uncoordinated	No	Green	42.5	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information												
Cycle, s	90.0											
Offset, s	55											
Uncoordinated	No	Green	41.5	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0				

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	318	517.6	30.2	547.8	F
EBT	EBR(4) + SBU(1) + NBR(2)	571	485.7	30.2	515.9	F
EBR	EBR(4)	272	23.5	--	23.5	C
WBL	WBR(2) + NBU(3) + SBT(4)	653	202.0	30.2	232.2	F
WBT	WBR(2) + NBU(3) + SBR(4)	716	123.6	30.2	153.8	F
WBR	WBR(2)	109	22.0	--	22.0	C
NBL	NBT(1) + NBL(2)	402	168.0	--	168.0	F
NBT	NBT(1) + NBT(2)	2768	592.3	--	592.3	F
NBR	NBT(1) + NBR(2)	857	560.4	--	560.4	F
SBL	SBT(3) + SBL(4)	292	238.4	--	238.4	F
SBT	SBT(3) + SBT(4)	2516	377.1	--	377.1	F
SBR	SBT(3) + SBR(4)	710	298.7	--	298.7	F

Overall Results		
Intersection ETT, s/veh LOS	408.0	F

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Home Road	PHF	0.92	Arterial Direction	North-South		
File Name	D117_US23-Home_PM_NB_TripleRT.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	818	0						3254				
Intersection Two Demand (v), veh/h		269			0	1360		2827	875			
Intersection Three Demand (v), veh/h				1260	0						2457	
Intersection Four Demand (v), veh/h		0	1068		370						2689	759

Signal One Information													
Cycle, s	115.0												
Offset, s	0												
Uncoordinated	No	Green	74.0	29.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	115.0												
Offset, s	10												
Uncoordinated	No	Green	57.7	45.3	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

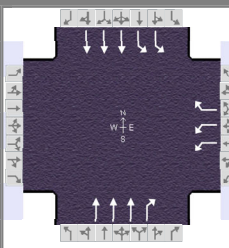
Signal Three Information													
Cycle, s	115.0												
Offset, s	67												
Uncoordinated	No	Green	42.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	115.0												
Offset, s	41												
Uncoordinated	No	Green	36.9	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

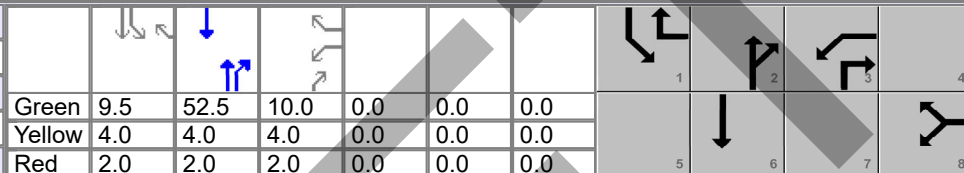
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	318	282.8	30.2	313.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	571	252.8	30.2	283.0	F
EBR	EBR(4)	272	35.6	--	35.6	D
WBL	WBR(2) + NBU(3) + SBT(4)	653	229.4	30.2	259.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	716	219.6	30.2	249.8	F
WBR	WBR(2)	109	33.4	--	33.4	C
NBL	NBT(1) + NBL(2)	402	117.5	--	117.5	F
NBT	NBT(1) + NBT(2)	2946	206.3	--	206.3	F
NBR	NBT(1) + NBR(2)	912	176.3	--	176.3	F
SBL	SBT(3) + SBL(4)	292	75.4	--	75.4	F
SBT	SBT(3) + SBT(4)	2836	85.6	--	85.6	F
SBR	SBT(3) + SBR(4)	801	75.8	--	75.8	F

Overall Results		
Intersection ETT, s/veh LOS	173.0	F

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Lewis Center Road	File Name	D118_US23-LewisCenter_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				154		132		1759	392	250	2472	

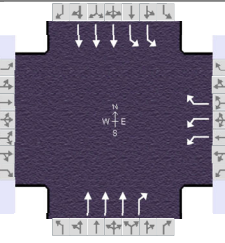
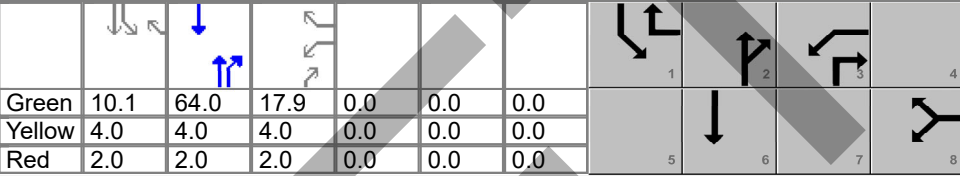
Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	9.5	52.5	10.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				16.0		58.5	15.5	74.0
Change Period, ($Y+R_c$), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g_s), s				9.1			8.9	
Green Extension Time (g_e), s				0.5		0.0	0.6	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.00			0.00	

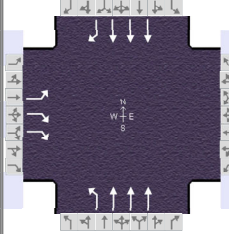
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				167		143		1912	426	272		2687
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1671	1572	1716		1671
Queue Service Time (g_s), s				4.1		7.1		23.1	10.2	6.9		25.4
Cycle Queue Clearance Time (g_c), s				4.1		7.1		23.1	10.2	6.9		25.4
Green Ratio (g/C)				0.11		0.22		0.58	0.69	0.11		0.76
Capacity (c), veh/h				381		341		2925	1092	362		3789
Volume-to-Capacity Ratio (X)				0.439		0.421		0.654	0.390	0.750		0.709
Back of Queue (Q), ft/ln (95 th percentile)				76.5		117.8		305.2	123.8	130.6		235.2
Back of Queue (Q), veh/ln (95 th percentile)				3.0		4.6		11.8	4.8	5.1		9.1
Queue Storage Ratio (RQ) (95 th percentile)				0.19		0.59		0.00	0.25	0.33		0.00
Uniform Delay (d_1), s/veh				37.4		30.4		12.6	5.8	39.1		5.8
Incremental Delay (d_2), s/veh				0.3		0.3		1.2	1.1	1.2		1.1
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				37.7		30.7		13.8	6.8	40.3		6.9
Level of Service (LOS)				D		C		B	A	D		A
Approach Delay, s/veh / LOS	0.0			34.5		C	12.5		B	10.0		B
Intersection Delay, s/veh / LOS				12.4					B			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.74	C	2.24	B	0.64	A
Bicycle LOS Score / LOS				F	1.77	B	2.11	B

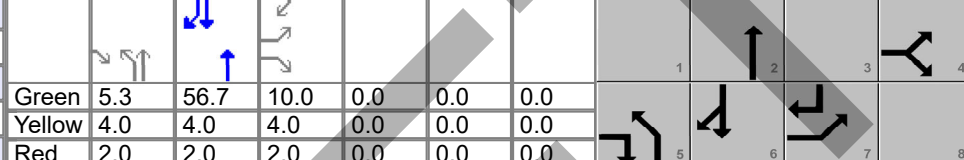
HCS Signalized Intersection Results Summary

General Information						Intersection Information								
Agency	ms consultants					Duration, h	0.250							
Analyst	JRH		Analysis Date	Apr 4, 2023		Area Type	Other							
Jurisdiction			Time Period	PM Peak		PHF	0.92							
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00							
Intersection	Lewis Center Road		File Name	D118_US23-LewisCenter_PM.xus										
Project Description	Concept D Design Year (2050)													
Demand Information			EB			WB			NB			SB		
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						203		235	2460	75	294	1800		
Signal Information														
Cycle, s	110.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On											
Green	10.1	64.0	17.9	0.0	0.0	0.0								
Yellow	4.0	4.0	4.0	0.0	0.0	0.0								
Red	2.0	2.0	2.0	0.0	0.0	0.0								
Timer Results			EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						8		2	1	6				
Case Number						9.0		7.3	2.0	4.0				
Phase Duration, s						23.9		70.0	16.1	86.1				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		0.0	3.0	0.0				
Queue Clearance Time (g _s), s						17.9			12.1					
Green Extension Time (g _e), s						0.0		0.0	0.0	0.0				
Phase Call Probability						1.00			1.00					
Max Out Probability						1.00			1.00					
Movement Group Results			EB			WB			NB			SB		
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement						3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h						221		255	2674	82	320	1957		
Adjusted Saturation Flow Rate (s), veh/h/ln						1716		1572	1671	1572	1716	1671		
Queue Service Time (g _s), s						6.3		15.9	52.6	1.5	10.1	19.1		
Cycle Queue Clearance Time (g _c), s						6.3		15.9	52.6	1.5	10.1	19.1		
Green Ratio (g/C)						0.16		0.25	0.58	0.74	0.09	0.73		
Capacity (c), veh/h						559		400	2917	1171	315	3650		
Volume-to-Capacity Ratio (X)						0.395		0.638	0.917	0.070	1.016	0.536		
Back of Queue (Q), ft/ln (95 th percentile)						120.2		261.5	679.6	18.4	277.9	234.2		
Back of Queue (Q), veh/ln (95 th percentile)						4.7		10.2	26.3	0.7	10.9	9.1		
Queue Storage Ratio (RQ) (95 th percentile)						0.30		1.31	0.00	0.04	0.69	0.00		
Uniform Delay (d ₁), s/veh						41.2		36.5	20.6	3.8	50.0	6.7		
Incremental Delay (d ₂), s/veh						0.2		2.6	5.9	0.1	54.9	0.6		
Initial Queue Delay (d ₃), s/veh						0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh						41.4		39.1	26.5	3.9	104.9	7.2		
Level of Service (LOS)						D		D	C	A	F	A		
Approach Delay, s/veh / LOS			0.0			40.1		D	25.8	C	20.9	C		
Intersection Delay, s/veh / LOS						25.0				C				
Multimodal Results			EB			WB			NB			SB		
Pedestrian LOS Score / LOS			2.61		C	2.74		C	2.25		B	0.66		A
Bicycle LOS Score / LOS								F	2.00		B	1.74		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Olentangy Crossing	File Name	D119_US23-OlentangyCrossing_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	100		140				53	1570			2749	30

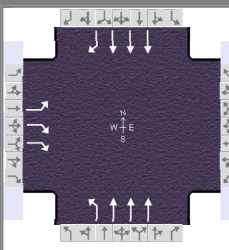
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.3	56.7	10.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		16.0			11.3	74.0		62.7
Change Period, ($Y+R_c$), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2			3.0	0.0		0.0
Queue Clearance Time (g_s), s		7.2			4.9			
Green Extension Time (g_e), s		0.3			0.1	0.0		0.0
Phase Call Probability		1.00			0.76			
Max Out Probability		0.09			0.00			

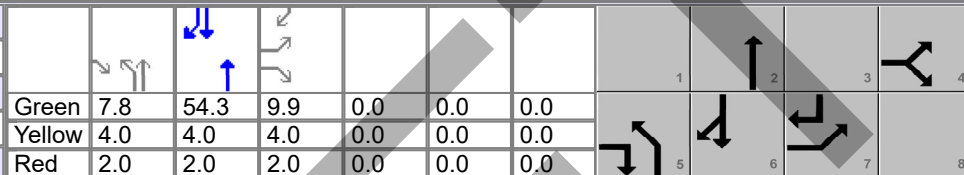
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	109		152				58	1707			2988	33
Adjusted Saturation Flow Rate (s), veh/h/ln	1767		1392				1767	1671			1685	1572
Queue Service Time (g_s), s	5.2		4.3				2.9	11.3			48.2	0.5
Cycle Queue Clearance Time (g_c), s	5.2		4.3				2.9	11.3			48.2	0.5
Green Ratio (g/C)	0.11		0.17				0.06	0.76			0.63	0.74
Capacity (c), veh/h	196		474				105	3789			3183	1165
Volume-to-Capacity Ratio (X)	0.554		0.321				0.549	0.450			0.939	0.028
Back of Queue (Q), ft/ln (95 th percentile)	102		64				56.9	108.3			575.4	5.1
Back of Queue (Q), veh/ln (95 th percentile)	4.0		2.5				2.2	4.2			22.5	0.2
Queue Storage Ratio (RQ) (95 th percentile)	0.58		0.64				0.19	0.00			0.00	0.02
Uniform Delay (d_1), s/veh	37.9		32.8				41.2	4.1			15.1	3.1
Incremental Delay (d_2), s/veh	0.9		0.1				1.7	0.4			6.9	0.0
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	38.8		32.9				42.8	4.5			22.0	3.1
Level of Service (LOS)	D		C				D	A			C	A
Approach Delay, s/veh / LOS	35.4		D	0.0			5.7	A		21.8		C
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.64	A	2.06	B
Bicycle LOS Score / LOS		F			1.46	A	2.15	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Olentangy Crossing	File Name	D119_US23-OlentangyCrossing_PM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	100		80				111	2530			1874	11

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	7.8	54.3	9.9	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.3
Phase Duration, s		15.9			13.8	74.1		60.3
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			3.0	0.0		0.0
Queue Clearance Time (g _s), s		7.2			8.0			
Green Extension Time (g _e), s		0.4			0.2	0.0		0.0
Phase Call Probability		0.99			0.95			
Max Out Probability		0.00			0.00			

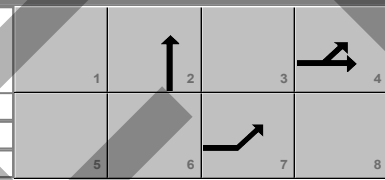
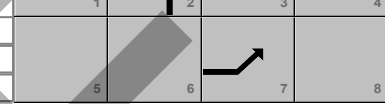
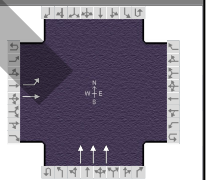
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	109		87				121	2750		2037		12
Adjusted Saturation Flow Rate (s), veh/h/ln	1767		1392				1767	1671		1685		1572
Queue Service Time (g _s), s	5.2		2.3				6.0	26.6		24.1		0.2
Cycle Queue Clearance Time (g _c), s	5.2		2.3				6.0	26.6		24.1		0.2
Green Ratio (g/C)	0.11		0.20				0.09	0.76		0.60		0.71
Capacity (c), veh/h	195		548				153	3793		3048		1122
Volume-to-Capacity Ratio (X)	0.558		0.159				0.787	0.725		0.668		0.011
Back of Queue (Q), ft/ln (95 th percentile)	102.1		34.3				121.3	243.9		309.5		2.2
Back of Queue (Q), veh/ln (95 th percentile)	4.0		1.3				4.7	9.5		12.1		0.1
Queue Storage Ratio (RQ) (95 th percentile)	0.58		0.34				0.40	0.00		0.00		0.01
Uniform Delay (d ₁), s/veh	38.0		29.9				40.3	5.9		11.9		3.7
Incremental Delay (d ₂), s/veh	0.9		0.0				3.4	1.2		1.2		0.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	38.9		30.0				43.6	7.2		13.1		3.7
Level of Service (LOS)	D		C				D	A		B		A
Approach Delay, s/veh / LOS	34.9		C	0.0			8.7	A		13.0		B
Intersection Delay, s/veh / LOS	11.4						B					

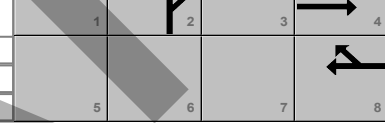
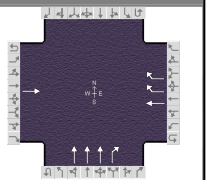
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.64	A	2.07	B
Bicycle LOS Score / LOS		F			2.07	B	1.61	B

HCS Alternative Intersections Results Summary

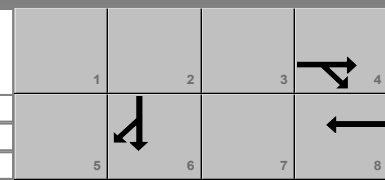
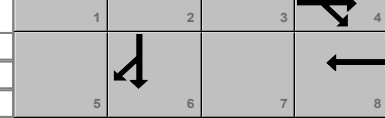
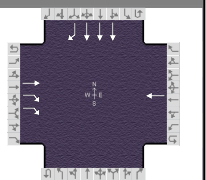
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Orange Point Drive	PHF	0.92	Arterial Direction	North-South		
File Name	C115_US23-OrangePoint_AM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	95	0						2459				
Intersection Two Demand (v), veh/h		180			0	205		2284	120			
Intersection Three Demand (v), veh/h				155	0						2965	
Intersection Four Demand (v), veh/h		0	224		150						2860	80

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	68.8	9.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	66.0	12.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	89												
Uncoordinated	No	Green	11.7	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	80												
Uncoordinated	No	Green	10.5	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

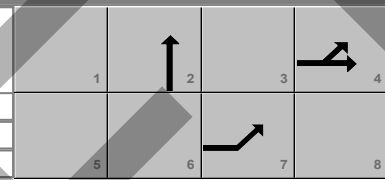
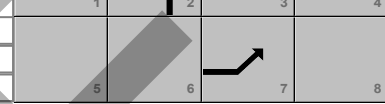
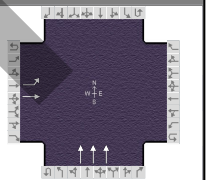
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	82	89.8	30.2	120.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	22	84.8	30.2	115.0	F
EBR	EBR(4)	140	39.7	--	39.7	F
WBL	WBR(2) + NBU(3) + SBT(4)	136	90.5	30.2	120.7	F
WBT	WBR(2) + NBU(3) + SBR(4)	33	82.1	30.2	112.3	F
WBR	WBR(2)	54	37.3	--	37.3	D
NBL	NBT(1) + NBL(2)	163	46.9	--	46.9	D
NBT	NBT(1) + NBT(2)	2638	16.2	--	16.2	B
NBR	NBT(1) + NBR(2)	139	11.2	--	11.2	B
SBL	SBT(3) + SBL(4)	196	52.1	--	52.1	D
SBT	SBT(3) + SBT(4)	3299	24.8	--	24.8	C
SBR	SBT(3) + SBR(4)	92	16.4	--	16.4	B

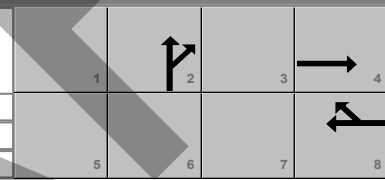
Overall Results		
Intersection ETT, s/veh LOS	27.1	C

HCS Alternative Intersections Results Summary

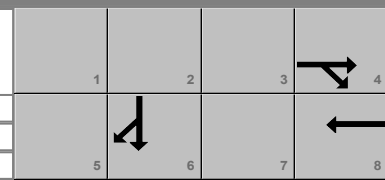
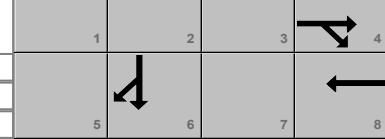
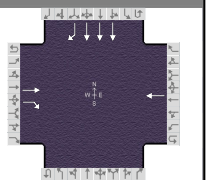
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Orange Point Drive	PHF	0.92	Arterial Direction	North-South		
File Name	C115_US23-OrangePoint_PM_NB.xus						
Project Description	Concept 3C						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	73	0						3111				
Intersection Two Demand (v), veh/h		169			0	372		2840	130			
Intersection Three Demand (v), veh/h				260	0						2327	
Intersection Four Demand (v), veh/h		0	159		214						2309	109

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	69.4	8.6	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	7												
Uncoordinated	No	Green	52.8	25.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	15												
Uncoordinated	No	Green	18.5	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	13.7	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

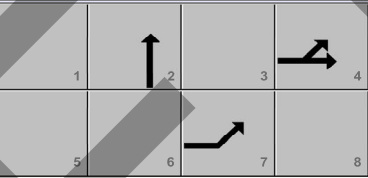
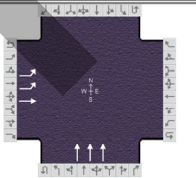
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	47	144.3	30.2	174.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	33	82.8	30.2	113.0	F
EBR	EBR(4)	93	37.9	--	37.9	F
WBL	WBR(2) + NBU(3) + SBT(4)	218	83.2	30.2	113.4	F
WBT	WBR(2) + NBU(3) + SBR(4)	64	77.3	30.2	107.5	F
WBR	WBR(2)	122	34.7	--	34.7	C
NBL	NBT(1) + NBL(2)	233	49.4	--	49.4	D
NBT	NBT(1) + NBT(2)	3309	76.6	--	76.6	F
NBR	NBT(1) + NBR(2)	151	15.1	--	15.1	B
SBL	SBT(3) + SBL(4)	184	38.4	--	38.4	D
SBT	SBT(3) + SBT(4)	2685	24.3	--	24.3	C
SBR	SBT(3) + SBR(4)	127	18.4	--	18.4	B

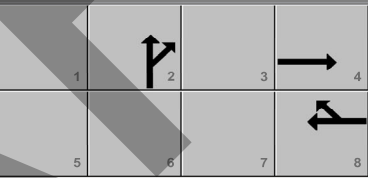
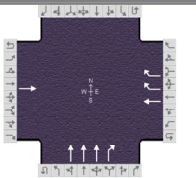
Overall Results		
Intersection ETT, s/veh LOS	55.6	E

HCS Alternative Intersections Results Summary

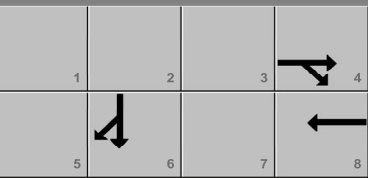
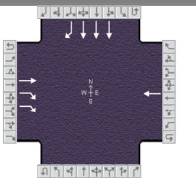
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Crossing	PHF	0.92	Arterial Direction	North-South		
File Name	C119_US23-OlentangyCrossing_AM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	120	0						1822				
Intersection Two Demand (v), veh/h		250			0	260		1614	228			
Intersection Three Demand (v), veh/h				204	0						2610	
Intersection Four Demand (v), veh/h		0	220		100						2481	83

Signal One Information																	
Cycle, s	120.0																
Offset, s	0																
Uncoordinated	No	Green	98.1	9.9	0.0	0.0	0.0	0.0									
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0									

Signal Two Information																	
Cycle, s	120.0																
Offset, s	0																
Uncoordinated	No	Green	88.0	20.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0									

Signal Three Information																	
Cycle, s	120.0																
Offset, s	0																
Uncoordinated	No	Green	11.1	0.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0									

Signal Four Information																	
Cycle, s	120.0																
Offset, s	0																
Uncoordinated	No	Green	12.9	0.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0									

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	109	114.0	30.2	144.2	F
EBT	EBR(4) + SBU(1) + NBR(2)	22	111.9	30.2	142.1	F
EBR	EBR(4)	109	54.3	--	54.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	164	107.7	30.2	137.9	F
WBT	WBR(2) + NBU(3) + SBR(4)	58	104.0	30.2	134.2	F
WBR	WBR(2)	61	46.8	--	46.8	D
NBL	NBT(1) + NBL(2)	109	55.4	--	55.4	E
NBT	NBT(1) + NBT(2)	1850	10.1	--	10.1	B
NBR	NBT(1) + NBR(2)	261	7.9	--	7.9	A
SBL	SBT(3) + SBL(4)	272	65.9	--	65.9	E
SBT	SBT(3) + SBT(4)	2960	12.5	--	12.5	B
SBR	SBT(3) + SBR(4)	99	8.8	--	8.8	A

Overall Results		
Intersection ETT, s/veh LOS	24.8	C

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Olentangy Crossing	PHF	0.92	Arterial Direction	North-South		
File Name	C119_US23-OlentangyCrossing_PM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	150	0						2664				
Intersection Two Demand (v), veh/h		294			0	468		2480	159			
Intersection Three Demand (v), veh/h				318	0						1885	
Intersection Four Demand (v), veh/h		0	230		175						1872	37

Signal One Information													
Cycle, s	120.0								1 2 3 4				
Offset, s	0								5 6 7 8				
Uncoordinated	No	Green	98.0	10.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	120.0								1 2 3 4				
Offset, s	0								5 6 7 8				
Uncoordinated	No	Green	83.5	24.5	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

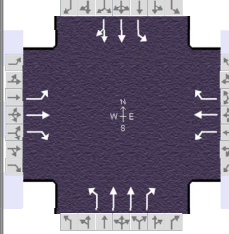

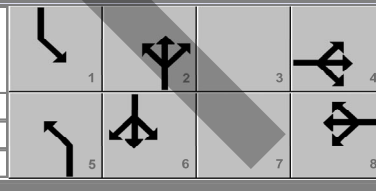
Signal Three Information													
Cycle, s	120.0								1 2 3 4				
Offset, s	0								5 6 7 8				
Uncoordinated	No	Green	16.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	120.0								1 2 3 4				
Offset, s	0								5 6 7 8				
Uncoordinated	No	Green	14.6	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

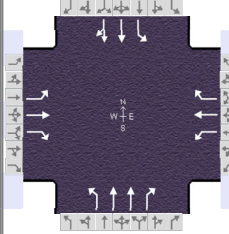
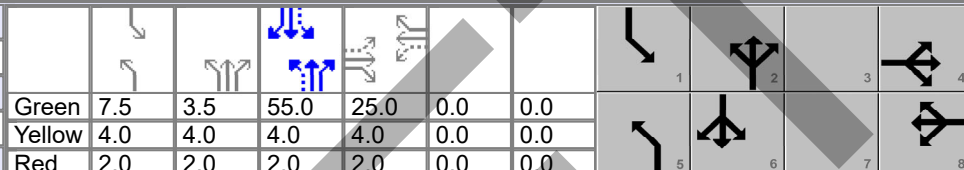
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	109	119.4	30.2	149.6	F
EBT	EBR(4) + SBU(1) + NBR(2)	54	112.5	30.2	142.7	F
EBR	EBR(4)	87	52.0	--	52.0	F
WBL	WBR(2) + NBU(3) + SBT(4)	317	110.1	30.2	140.3	F
WBT	WBR(2) + NBU(3) + SBR(4)	28	107.4	30.2	137.6	F
WBR	WBR(2)	163	48.5	--	48.5	F
NBL	NBT(1) + NBL(2)	190	68.2	--	68.2	E
NBT	NBT(1) + NBT(2)	2874	17.0	--	17.0	B
NBR	NBT(1) + NBR(2)	184	10.1	--	10.1	B
SBL	SBT(3) + SBL(4)	320	67.0	--	67.0	E
SBT	SBT(3) + SBT(4)	2348	11.7	--	11.7	B
SBR	SBT(3) + SBR(4)	46	9.0	--	9.0	A

Overall Results		
Intersection ETT, s/veh LOS	32.4	C

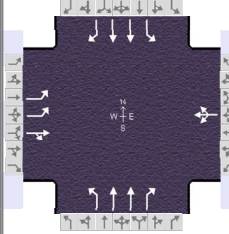
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Hyatts Road/Shanahan...		File Name	120_US23-HyattsShanahan_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					128	207	323	201	204	164	124	1307	145	37	2128	106
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	5.1	1.8	64.1	26.0	0.0	0.0	0.0	0.0	0.0		
		Yellow	4.0	0.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						5.0		5.0	1.1	3.0	1.1	4.0				
Phase Duration, s						32.0		32.0	12.9	71.9	11.1	70.1				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						28.0		28.0	6.5		3.1					
Green Extension Time (g _e), s						0.0		0.0	0.2	0.0	0.0	0.0				
Phase Call Probability						1.00		1.00	0.99		0.72					
Max Out Probability						1.00		1.00	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					139	225	351	218	222	178	135	1421	158	40	1214	1214
Adjusted Saturation Flow Rate (s), veh/h/ln					1150	1856	1572	1147	1856	1572	1767	1766	1572	1767	1856	1824
Queue Service Time (g _s), s					13.9	12.3	25.6	13.7	12.1	11.4	4.5	33.0	5.5	1.1	64.1	64.1
Cycle Queue Clearance Time (g _c), s					26.0	12.3	25.6	26.0	12.1	11.4	4.5	33.0	5.5	1.1	64.1	64.1
Green Ratio (g/C)					0.23	0.23	0.23	0.23	0.23	0.23	0.62	0.57	0.57	0.60	0.56	0.56
Capacity (c), veh/h					202	420	356	199	420	356	169	2026	902	241	1034	1017
Volume-to-Capacity Ratio (X)					0.689	0.536	0.988	1.096	0.529	0.501	0.799	0.701	0.175	0.167	1.174	1.194
Back of Queue (Q), ft/ln (95 th percentile)					198.1	239.2	513.3	432	235.7	197	95.6	470.2	86.2	17.7	1793.4	1821.5
Back of Queue (Q), veh/ln (95 th percentile)					7.7	9.3	20.0	16.9	9.2	7.7	3.7	18.4	3.4	0.7	70.1	72.9
Queue Storage Ratio (RQ) (95 th percentile)					0.66	0.00	1.71	1.73	0.00	1.97	0.19	0.00	0.43	0.07	0.00	0.00
Uniform Delay (d ₁), s/veh					50.5	39.2	44.3	52.8	39.1	38.8	31.4	17.5	11.6	14.7	25.5	25.5
Incremental Delay (d ₂), s/veh					8.0	0.7	44.2	91.6	0.6	0.4	3.3	2.1	0.4	0.1	88.7	97.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					58.6	39.9	88.5	144.4	39.8	39.3	34.7	19.6	12.1	14.8	114.1	122.6
Level of Service (LOS)					E	D	F	F	D	D	C	B	B	B	F	F
Approach Delay, s/veh / LOS					67.4			E			76.6			E		
Intersection Delay, s/veh / LOS					75.8						E					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.45	B		2.30	B		2.08	B		2.09	B	
Bicycle LOS Score / LOS					1.67	B		1.51	B		1.90	B		2.52	C	

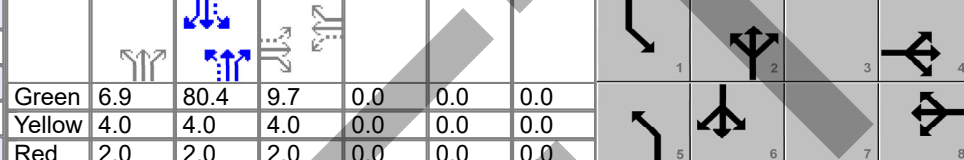
HCS Signalized Intersection Results Summary

General Information						Intersection Information																		
Agency	ms consultants					Duration, h	0.250																	
Analyst	JRH	Analysis Date	May 16, 2023			Area Type	Other																	
Jurisdiction		Time Period	PM Peak			PHF	0.92																	
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																	
Intersection	Hyatts Road/Shanahan...		File Name	120_US23-HyattsShanahan_PM.xus																				
Project Description	No Build Design Year (2050)																							
Demand Information				EB			WB			NB			SB											
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h				221	218	265	162	183	179	337	2064	255	136	1539	108									
Signal Information																								
Cycle, s	115.0	Reference Phase	2																					
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On	Green	7.5	3.5	55.0	25.0	0.0	0.0	Yellow	4.0	4.0	4.0	4.0	0.0	0.0	Red	2.0	2.0	2.0	2.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Assigned Phase					4		8	5	2	1	6													
Case Number					5.0		5.0	1.1	3.0	1.1	4.0													
Phase Duration, s					31.0		31.0	23.0	70.5	13.5	61.0													
Change Period, (Y+R _c), s					6.0		6.0	6.0	6.0	6.0	6.0													
Max Allow Headway (MAH), s					3.2		3.2	3.0	0.0	3.0	0.0													
Queue Clearance Time (g _s), s					27.0		27.0	19.0		7.4														
Green Extension Time (g _e), s					0.0		0.0	0.0	0.0	0.2	0.0													
Phase Call Probability					1.00		1.00	1.00		0.99														
Max Out Probability					1.00		1.00	1.00		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				240	237	288	176	199	195	366	2243	277	148	898	892									
Adjusted Saturation Flow Rate (s), veh/h/ln				1174	1856	1572	1134	1856	1572	1767	1766	1572	1767	1856	1813									
Queue Service Time (g _s), s				14.2	13.2	20.2	11.8	10.8	12.7	17.0	64.5	10.8	5.4	55.0	55.0									
Cycle Queue Clearance Time (g _c), s				25.0	13.2	20.2	25.0	10.8	12.7	17.0	64.5	10.8	5.4	55.0	55.0									
Green Ratio (g/C)				0.22	0.22	0.22	0.22	0.22	0.22	0.64	0.56	0.56	0.54	0.48	0.48									
Capacity (c), veh/h				208	403	342	179	403	342	324	1981	882	178	887	867									
Volume-to-Capacity Ratio (X)				1.157	0.587	0.843	0.982	0.493	0.569	1.131	1.133	0.314	0.829	1.012	1.029									
Back of Queue (Q), ft/ln (95 th percentile)				497.2	256.3	359.9	325.6	215.1	218.3	498.5	1486.1	172.7	90.1	1021.3	1024.7									
Back of Queue (Q), veh/ln (95 th percentile)				19.4	10.0	14.1	12.7	8.4	8.5	19.5	58.1	6.7	3.5	39.9	41.0									
Queue Storage Ratio (RQ) (95 th percentile)				1.66	0.00	1.20	1.30	0.00	2.18	1.00	0.00	0.86	0.36	0.00	0.00									
Uniform Delay (d ₁), s/veh				52.5	40.4	43.1	53.6	39.4	40.2	39.4	25.3	13.5	29.4	30.0	30.0									
Incremental Delay (d ₂), s/veh				111.4	1.5	16.3	61.7	0.3	1.4	90.3	66.7	0.9	3.7	33.3	38.2									
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Control Delay (d), s/veh				164.0	41.9	59.4	115.3	39.8	41.6	129.8	91.9	14.4	33.1	63.3	68.2									
Level of Service (LOS)				F	D	E	F	D	D	F	F	B	C	F	F									
Approach Delay, s/veh / LOS				86.8	F	63.8	E	89.3	F	63.2	E													
Intersection Delay, s/veh / LOS				78.4						E														
Multimodal Results				EB			WB			NB			SB											
Pedestrian LOS Score / LOS				2.45	B	2.30	B	2.08	B	2.10	B													
Bicycle LOS Score / LOS				1.75	B	1.43	A	2.87	C	2.09	B													

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Greif Parkway	File Name	121_US23-Greif_AM.xus			
Project Description	No Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	50	0	50	0	0	0	129	1559	0	0	2230	71

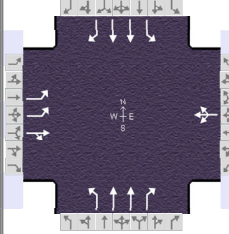
Signal Information																	
Cycle, s	115.0	Reference Phase	2	Green	6.9	80.4	9.7	0.0	0.0	0.0							
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0							
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On														

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		8.0	1.1	3.0	1.1	3.0
Phase Duration, s		15.7		15.7	12.9	99.3	0.0	86.4
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		0.0	3.0	0.0	0.0	0.0
Queue Clearance Time (g _s), s		5.8			6.5			
Green Extension Time (g _e), s		0.1		0.0	0.2	0.0	0.0	0.0
Phase Call Probability		0.97			0.99			
Max Out Probability		0.05			0.00			

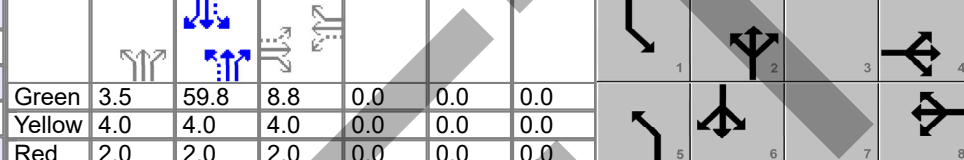
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	54	54		0			140	1695	0	0	2424	77
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1572		0			1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	1.6	3.8		0.0			4.5	20.0	0.0	0.0	75.6	1.7
Cycle Queue Clearance Time (g _c), s	1.6	3.8		0.0			4.5	20.0	0.0	0.0	75.6	1.7
Green Ratio (g/C)	0.08	0.08					0.78	0.81	0.81	0.65	0.70	0.70
Capacity (c), veh/h	414	133					175	2867	1276	242	2470	1126
Volume-to-Capacity Ratio (X)	0.131	0.410		0.000			0.802	0.591	0.000	0.000	0.981	0.069
Back of Queue (Q), ft/ln (95 th percentile)	32.8	68		0			184	200.1	0	0	948.4	23.8
Back of Queue (Q), veh/ln (95 th percentile)	1.3	2.7		0.0			7.2	7.8	0.0	0.0	37.0	1.0
Queue Storage Ratio (RQ) (95 th percentile)	0.16	0.00		0.00			0.37	0.00	0.00	0.00	0.00	0.08
Uniform Delay (d ₁), s/veh	49.0	49.9					39.2	3.9	0.0	0.0	16.6	5.5
Incremental Delay (d ₂), s/veh	0.1	0.8		0.0			3.2	0.9	0.0	0.0	14.3	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.0	50.7					42.4	4.8	0.0	0.0	30.8	5.6
Level of Service (LOS)	D	D					D	A			C	A
Approach Delay, s/veh / LOS	49.9	D		0.0			7.7	A		30.1	C	
Intersection Delay, s/veh / LOS	21.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.47	B	2.47	B	1.60	B	2.05	B
Bicycle LOS Score / LOS	0.67	A	0.49	A	2.00	B	2.55	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Greif Parkway	File Name	121_US23-Greif_PM.xus			
Project Description	No Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	34	0	43	0	0	0	25	2367	0	0	1729	7

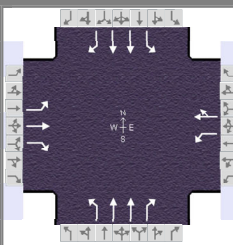
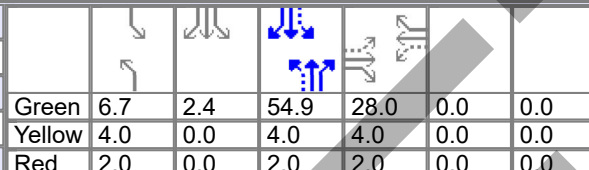
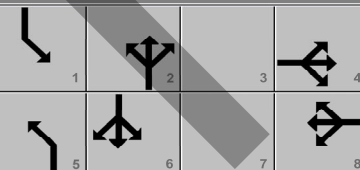
Signal Information													
Cycle, s	90.0	Reference Phase	2	Green	3.5	59.8	8.8	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On										

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		8.0	1.1	3.0	1.1	3.0
Phase Duration, s		14.8		14.8	9.5	75.2	0.0	65.8
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		0.0	3.0	0.0	0.0	0.0
Queue Clearance Time (g _s), s		4.5			2.4			
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.88			0.49			
Max Out Probability		0.00			0.00			

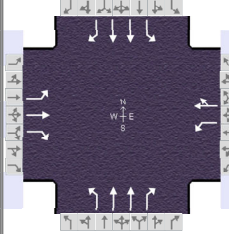
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	37	47		0			27	2573	0	0	1879	8
Adjusted Saturation Flow Rate (s), veh/h/ln	1716	1572		0			1767	1766	1572	1767	1766	1610
Queue Service Time (g _s), s	0.9	2.5		0.0			0.4	55.7	0.0	0.0	34.3	0.1
Cycle Queue Clearance Time (g _c), s	0.9	2.5		0.0			0.4	55.7	0.0	0.0	34.3	0.1
Green Ratio (g/C)	0.10	0.10					0.72	0.77	0.77	0.60	0.66	0.66
Capacity (c), veh/h	494	153					216	2718	1210	97	2347	1070
Volume-to-Capacity Ratio (X)	0.075	0.305		0.000			0.126	0.947	0.000	0.000	0.801	0.007
Back of Queue (Q), ft/ln (95 th percentile)	16.4	43		0			9.5	507.2	0	0	410.7	1.8
Back of Queue (Q), veh/ln (95 th percentile)	0.6	1.7		0.0			0.4	19.8	0.0	0.0	16.0	0.1
Queue Storage Ratio (RQ) (95 th percentile)	0.08	0.00		0.00			0.02	0.00	0.00	0.00	0.00	0.01
Uniform Delay (d ₁), s/veh	37.0	37.8					11.8	8.8	0.0	0.0	10.8	5.1
Incremental Delay (d ₂), s/veh	0.0	0.4		0.0			0.1	8.6	0.0	0.0	3.0	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.1	38.2					11.8	17.5	0.0	0.0	13.8	5.1
Level of Service (LOS)	D	D					B	B			B	A
Approach Delay, s/veh / LOS	37.7	D		0.0			17.4	B		13.8	B	
Intersection Delay, s/veh / LOS	16.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.45	B	1.61	B	2.05	B
Bicycle LOS Score / LOS	0.63	A	0.49	A	2.63	C	2.04	B

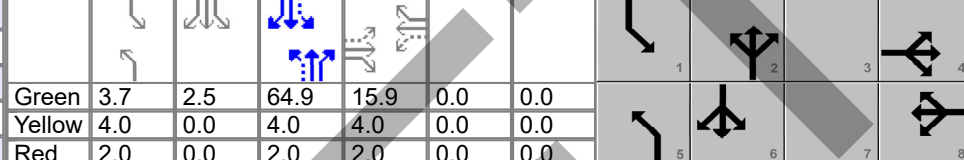
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Glenn Parkway		File Name	122_US23-GlennPkwy_AM.xus												
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					20	40	50	476	14	180	100	1187	390	208	1975	62
Signal Information																
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	Begin													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	6.7	2.4	54.9	28.0	0.0	0.0	0.0	0.0	0.0	0.0	
		Yellow	4.0	0.0	4.0	4.0	0.0	0.0								
		Red	2.0	0.0	2.0	2.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						5.0		6.0	1.1	3.0	1.1	3.0				
Phase Duration, s						34.0		34.0	12.7	60.9	15.1	63.3				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						16.3		30.0	5.2		8.7					
Green Extension Time (g _e), s						1.5		0.0	0.2	0.0	0.4	0.0				
Phase Call Probability						1.00		1.00	0.96		1.00					
Max Out Probability						0.04		1.00	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					22	43	54	517	211		109	1290	424	226	2147	67
Adjusted Saturation Flow Rate (s), veh/h/ln					1161	1856	1572	1352	1590		1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s					1.8	2.0	2.9	26.0	12.5		3.2	31.7	20.3	6.7	57.3	2.4
Cycle Queue Clearance Time (g _c), s					14.3	2.0	2.9	28.0	12.5		3.2	31.7	20.3	6.7	57.3	2.4
Green Ratio (g/C)					0.25	0.25	0.25	0.25	0.25		0.56	0.50	0.50	0.58	0.52	0.52
Capacity (c), veh/h					229	472	400	385	405		174	1763	785	301	1839	818
Volume-to-Capacity Ratio (X)					0.095	0.092	0.136	1.342	0.521		0.625	0.732	0.540	0.751	1.167	0.082
Back of Queue (Q), ft/ln (95 th percentile)					23.4	39.6	50.1	1114.5	212.5		61.6	471.6	303.6	122.7	1518.2	38
Back of Queue (Q), veh/ln (95 th percentile)					0.9	1.5	2.0	43.5	8.3		2.4	18.4	11.9	4.8	59.3	1.5
Queue Storage Ratio (RQ) (95 th percentile)					0.23	0.00	0.50	0.00	0.00		0.15	0.00	0.51	0.41	0.00	0.08
Uniform Delay (d ₁), s/veh					41.4	31.3	31.7	44.2	35.2		25.0	21.7	18.9	20.1	26.4	13.2
Incremental Delay (d ₂), s/veh					0.1	0.0	0.1	170.6	0.6		1.4	2.7	2.7	1.4	81.7	0.2
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					41.5	31.3	31.7	214.8	35.8		26.4	24.5	21.6	21.6	108.0	13.4
Level of Service (LOS)					D	C	C	F	D		C	C	C	C	F	B
Approach Delay, s/veh / LOS					33.3		C	163.0		F	23.9		C	97.4		F
Intersection Delay, s/veh / LOS					79.0					E						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.45		B	2.45		B	1.90		B	2.09		B
Bicycle LOS Score / LOS					0.68		A	1.69		B	1.99		B	2.50		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Glenn Parkway	File Name	122_US23-GlennPkwy_PM.xus			
Project Description	No Build Design Year (2050)					

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	10	41	127	0	178	24	1939	413	68	1584	31

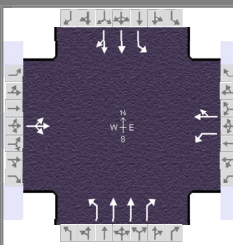
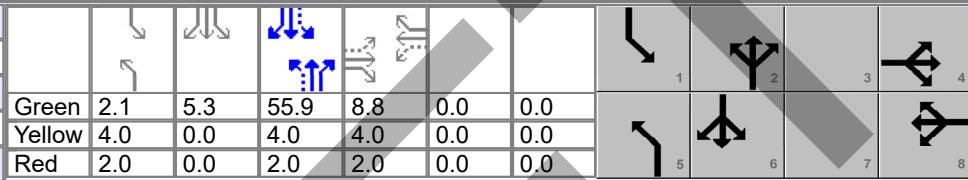
Signal Information																								
Cycle, s	105.0	Reference Phase	2	Green	3.7	2.5	64.9	15.9	0.0	0.0	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	Red	2.0	0.0	2.0	2.0	0.0	0.0
Offset, s	0	Reference Point	Begin	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		21.9		21.9	9.7	70.9	12.2	73.4
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		15.2		14.5	2.5		3.5	
Green Extension Time (g _e), s		0.7		0.7	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.53		0.88	
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	11	45	138	193		26	2108	449	74	1722	34
Adjusted Saturation Flow Rate (s), veh/h/ln	1180	1856	1572	1393	1572		1767	1766	1572	1767	1766	1572
Queue Service Time (g _s), s	0.7	0.5	2.6	9.9	12.5		0.5	59.3	16.0	1.5	35.8	0.8
Cycle Queue Clearance Time (g _c), s	13.2	0.5	2.6	10.4	12.5		0.5	59.3	16.0	1.5	35.8	0.8
Green Ratio (g/C)	0.15	0.15	0.15	0.15	0.15		0.65	0.62	0.62	0.68	0.64	0.64
Capacity (c), veh/h	107	282	239	273	239		210	2183	972	183	2266	1008
Volume-to-Capacity Ratio (X)	0.071	0.039	0.187	0.506	0.811		0.124	0.965	0.462	0.404	0.760	0.033
Back of Queue (Q), ft/ln (95 th percentile)	8.8	10.7	45.1	152.6	216.4		8.5	811.8	228.5	50.5	463.6	11.8
Back of Queue (Q), veh/ln (95 th percentile)	0.3	0.4	1.8	6.0	8.5		0.3	31.7	8.9	2.0	18.1	0.5
Queue Storage Ratio (RQ) (95 th percentile)	0.09	0.00	0.45	0.00	0.00		0.02	0.00	0.38	0.17	0.00	0.02
Uniform Delay (d ₁), s/veh	49.5	38.0	38.9	42.4	43.1		12.9	19.0	10.7	25.4	13.2	6.9
Incremental Delay (d ₂), s/veh	0.1	0.0	0.1	0.5	2.5		0.1	12.7	1.6	0.5	2.5	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.6	38.0	39.0	43.0	45.6		13.0	31.7	12.3	25.9	15.6	7.0
Level of Service (LOS)	D	D	D	D	D		B	C	B	C	B	A
Approach Delay, s/veh / LOS	40.1		D	44.5		D	28.1		C	15.9		B
Intersection Delay, s/veh / LOS	24.8						C					

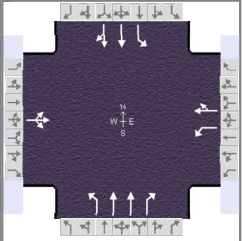
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.88	B	2.06	B
Bicycle LOS Score / LOS	0.59	A	1.03	A	2.62	C	2.00	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	CBD										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	OhioHealth Blvd	File Name	123_US23-OhioHealth_AM.xus													
Project Description	No Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					3	11	6	48	3	6	13	1316	18	238	2161	11
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	2.1	5.3	55.9	8.8	0.0	0.0	1	2	3	4	
					Yellow	4.0	0.0	4.0	4.0	0.0	0.0	5	6	7	8	
					Red	2.0	0.0	2.0	2.0	0.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						8.0		6.0	1.1	3.0	1.1	4.0				
Phase Duration, s						14.8		14.8	8.1	61.9	13.4	67.2				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						3.1		6.7	2.3		6.9					
Green Extension Time (g _e), s						0.1		0.1	0.0	0.0	0.4	0.0				
Phase Call Probability						0.88		0.88	0.30		1.00					
Max Out Probability						0.00		0.02	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						22		52	10		14	1430	20	259	1180	1180
Adjusted Saturation Flow Rate (s), veh/h/ln						1557		1245	1491		1590	1590	1415	1590	1670	1667
Queue Service Time (g _s), s						0.0		3.6	0.5		0.3	27.9	0.5	4.9	61.1	61.1
Cycle Queue Clearance Time (g _c), s						1.1		4.7	0.5		0.3	27.9	0.5	4.9	61.1	61.1
Green Ratio (g/C)						0.10		0.10	0.10		0.64	0.62	0.62	0.72	0.68	0.68
Capacity (c), veh/h						198		186	145		117	1974	878	314	1135	1133
Volume-to-Capacity Ratio (X)						0.110		0.281	0.067		0.121	0.725	0.022	0.824	1.040	1.042
Back of Queue (Q), ft/ln (95 th percentile)						19.5		49.1	8.8		8	335.9	6	155.1	963.9	947
Back of Queue (Q), veh/ln (95 th percentile)						0.8		1.9	0.3		0.3	13.1	0.2	6.1	37.7	37.9
Queue Storage Ratio (RQ) (95 th percentile)						0.00		0.00	0.00		0.02	0.00	0.02	0.26	0.00	0.00
Uniform Delay (d ₁), s/veh						37.2		39.3	36.9		23.1	11.8	6.6	16.9	14.4	14.4
Incremental Delay (d ₂), s/veh						0.1		0.3	0.1		0.2	2.4	0.0	2.1	37.8	38.4
Initial Queue Delay (d ₃), s/veh						0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh						37.3		39.6	37.0		23.3	14.1	6.6	19.0	52.2	52.8
Level of Service (LOS)						D		D	D		C	B	A	B	F	F
Approach Delay, s/veh / LOS					37.3		D	39.2		D	14.1		B	49.2		D
Intersection Delay, s/veh / LOS					36.7			D								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.45		B	2.30		B	1.87		B	1.63		B
Bicycle LOS Score / LOS					0.52		A	0.59		A	1.70		B	2.65		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	CBD		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	OhioHealth Blvd	File Name	123_US23-OhioHealth_PM.xus				
Project Description	No Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	4	0	3	31	0	22	1	2000	12	24	1635	1

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.2	3.2	60.6	8.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

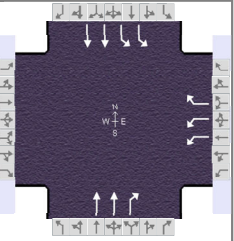
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		8.0		6.0	1.1	3.0	1.1	4.0
Phase Duration, s		14.0		14.0	6.2	66.6	9.4	69.8
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.3		3.3	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		2.4		4.7	2.0		2.4	
Green Extension Time (g _e), s		0.1		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		0.80		0.80	0.03		0.48	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		8		34	24		1	2174	13	26	889	889
Adjusted Saturation Flow Rate (s), veh/h/ln		1352		1262	1415		1590	1590	1415	1590	1670	1670
Queue Service Time (g _s), s		0.0		2.3	1.4		0.0	60.6	0.3	0.4	29.9	29.9
Cycle Queue Clearance Time (g _c), s		0.4		2.7	1.4		0.0	60.6	0.3	0.4	29.9	29.9
Green Ratio (g/C)		0.09		0.09	0.09		0.68	0.67	0.67	0.71	0.71	0.71
Capacity (c), veh/h		184		187	126		168	2141	953	139	1183	1183
Volume-to-Capacity Ratio (X)		0.041		0.180	0.189		0.006	1.015	0.014	0.187	0.751	0.752
Back of Queue (Q), ft/ln (95 th percentile)		6.8		31.2	21.9		0.2	770.8	3.1	16.4	342.2	334.2
Back of Queue (Q), veh/ln (95 th percentile)		0.3		1.2	0.9		0.0	30.1	0.1	0.6	13.4	13.4
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.00	0.00		0.00	0.00	0.01	0.03	0.00	0.00
Uniform Delay (d ₁), s/veh		37.5		38.7	38.0		9.4	14.7	4.8	24.2	8.2	8.2
Incremental Delay (d ₂), s/veh		0.0		0.2	0.3		0.0	23.4	0.0	0.2	4.4	4.4
Initial Queue Delay (d ₃), s/veh		0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		37.5		38.9	38.2		9.4	38.0	4.9	24.5	12.6	12.6
Level of Service (LOS)		D		D	D		A	F	A	C	B	B
Approach Delay, s/veh / LOS	37.5		D	38.6		D	37.8		D	12.8		B
Intersection Delay, s/veh / LOS	26.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.30	B	1.86	B	1.63	B
Bicycle LOS Score / LOS	0.50	A	0.58	A	2.29	B	1.98	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Cheshire Road	File Name	124_US23-Cheshire_AM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				342		307		1301	123	246	2062	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	9.3	42.9	19.8	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

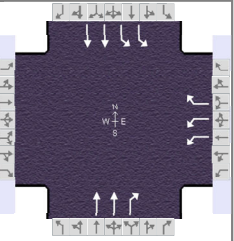
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				25.8		48.9	15.3	64.2
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g _s), s				18.4			8.8	
Green Extension Time (g _e), s				1.4		0.0	0.5	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.01			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				372		334		1414	134	267		2241
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1766	1572	1716		1766
Queue Service Time (g _s), s				8.5		16.4		31.4	4.4	6.8		55.2
Cycle Queue Clearance Time (g _c), s				8.5		16.4		31.4	4.4	6.8		55.2
Green Ratio (g/C)				0.22		0.32		0.48	0.48	0.10		0.65
Capacity (c), veh/h				755		508		1684	750	354		2284
Volume-to-Capacity Ratio (X)				0.492		0.656		0.840	0.178	0.755		0.981
Back of Queue (Q), ft/ln (95 th percentile)				153.9		247.2		465.8	68.8	128.8		728.2
Back of Queue (Q), veh/ln (95 th percentile)				6.0		9.7		18.2	2.7	5.0		28.4
Queue Storage Ratio (RQ) (95 th percentile)				1.54		0.00		0.00	0.28	0.43		0.00
Uniform Delay (d ₁), s/veh				30.7		26.2		20.5	13.5	39.3		15.4
Incremental Delay (d ₂), s/veh				0.2		0.5		5.2	0.5	1.2		14.9
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				30.9		26.7		25.8	14.0	40.5		30.3
Level of Service (LOS)				C		C		C	B	D		C
Approach Delay, s/veh / LOS	0.0			28.9		C		24.7	C	31.3		C
Intersection Delay, s/veh / LOS				28.8						C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.46	B	2.26	B	0.67	A
Bicycle LOS Score / LOS				F	1.76	B	2.56	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	May 17, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Cheshire Road	File Name	124_US23-Cheshire_PM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				315		348		1739	361	399	1372	

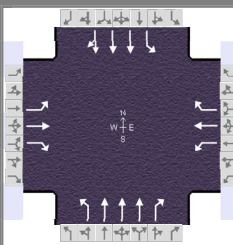
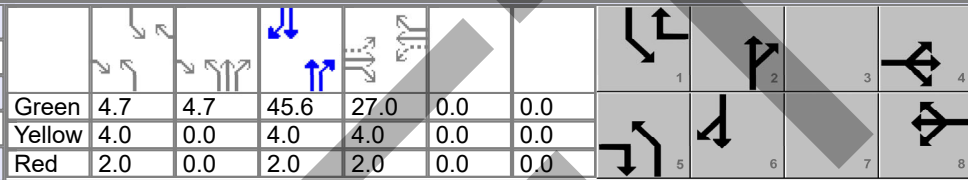
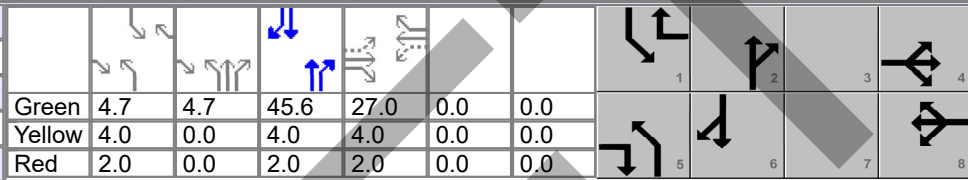
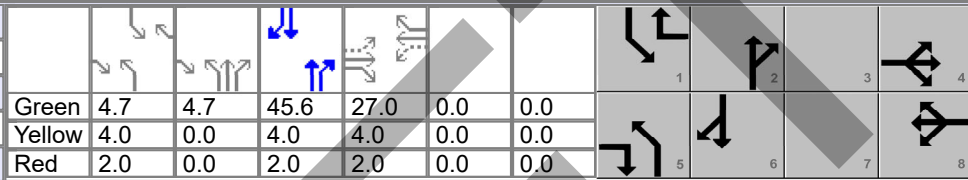
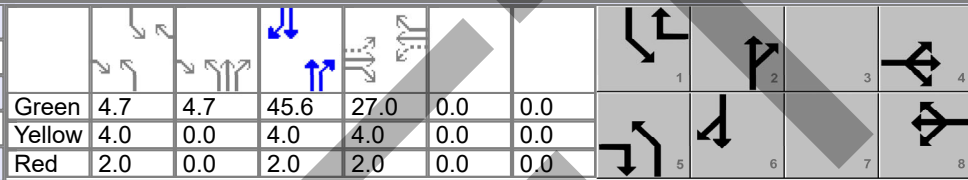
Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	12.0	56.0	14.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				20.0		62.0	18.0	80.0
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.0	0.0
Queue Clearance Time (g _s), s				16.0			14.0	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				1.00			1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				342		378		1890	392	434		1491
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1766	1572	1716		1766
Queue Service Time (g _s), s				9.5		14.0		50.6	14.6	12.0		19.0
Cycle Queue Clearance Time (g _c), s				9.5		14.0		50.6	14.6	12.0		19.0
Green Ratio (g/C)				0.14		0.26		0.56	0.56	0.12		0.74
Capacity (c), veh/h				480		409		1978	881	412		2614
Volume-to-Capacity Ratio (X)				0.713		0.925		0.955	0.446	1.053		0.570
Back of Queue (Q), ft/ln (95 th percentile)				191.2		435.2		728.6	219.2	339.1		223.7
Back of Queue (Q), veh/ln (95 th percentile)				7.5		17.0		28.5	8.6	13.2		8.7
Queue Storage Ratio (RQ) (95 th percentile)				1.91		0.00		0.00	0.88	1.13		0.00
Uniform Delay (d ₁), s/veh				41.1		36.1		20.8	12.9	44.0		5.8
Incremental Delay (d ₂), s/veh				4.2		26.3		12.1	1.6	59.0		0.9
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				45.3		62.4		33.0	14.5	103.0		6.8
Level of Service (LOS)				D		E		C	B	F		A
Approach Delay, s/veh / LOS	0.0			54.3		D	29.8		C	28.4		C
Intersection Delay, s/veh / LOS				32.8						C		

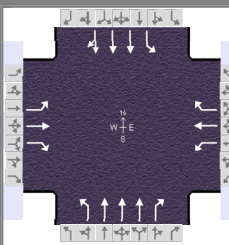
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.47	B	2.25	B	0.65	A
Bicycle LOS Score / LOS				F	2.37	B	2.08	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 16, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Hyatts Road/Shanahan...		File Name	D120_US23-HyattsShanahan_AM.xus												
Project Description	Concept D Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					128	207	323	201	204	164	124	1307	145	37	2128	106
Signal Information																
Cycle, s	100.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	4.7	4.7	45.6	27.0	0.0	0.0					
		Yellow	4.0	0.0	4.0	4.0	0.0	0.0								
		Red	2.0	0.0	2.0	2.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						5.0		5.0	2.0	3.0	2.0	4.0				
Phase Duration, s						33.0		33.0	15.4	56.3	10.7	51.6				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						23.3		29.0	9.5		4.2					
Green Extension Time (g _e), s						1.4		0.0	0.1	0.0	0.0	0.0				
Phase Call Probability						1.00		1.00	0.98		0.67					
Max Out Probability						0.90		1.00	0.00		0.01					
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					139	225	351	218	222	178	135	1421	158	40	1627	802
Adjusted Saturation Flow Rate (s), veh/h/ln					1150	1856	1572	1147	1856	1572	1767	1658	1572	1767	1826	1780
Queue Service Time (g _s), s					11.4	10.1	18.3	16.9	9.9	8.7	7.5	19.9	5.5	2.2	43.7	44.6
Cycle Queue Clearance Time (g _c), s					21.3	10.1	18.3	27.0	9.9	8.7	7.5	19.9	5.5	2.2	43.7	44.6
Green Ratio (g/C)					0.27	0.27	0.36	0.27	0.27	0.32	0.09	0.50	0.50	0.05	0.46	0.46
Capacity (c), veh/h					269	501	572	266	501	499	166	2501	791	83	1666	812
Volume-to-Capacity Ratio (X)					0.518	0.449	0.614	0.821	0.443	0.357	0.813	0.568	0.199	0.483	0.976	0.987
Back of Queue (Q), ft/ln (95 th percentile)					144.7	197.4	277.1	274.5	194.7	143.6	153.1	295.5	88.6	45.2	737.9	780.6
Back of Queue (Q), veh/ln (95 th percentile)					5.7	7.7	10.8	10.7	7.6	5.6	6.0	11.4	3.5	1.8	28.4	31.2
Queue Storage Ratio (RQ) (95 th percentile)					0.48	0.00	0.92	1.10	0.00	1.44	0.31	0.00	0.44	0.18	0.00	0.00
Uniform Delay (d ₁), s/veh					39.1	30.3	26.1	42.5	30.3	26.3	44.4	17.3	13.7	46.5	26.7	26.9
Incremental Delay (d ₂), s/veh					0.8	0.2	1.4	17.2	0.2	0.2	3.6	0.9	0.6	1.6	17.1	28.7
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					39.9	30.6	27.5	59.6	30.5	26.5	48.1	18.2	14.3	48.1	43.8	55.6
Level of Service (LOS)					D	C	C	E	C	C	D	B	B	D	D	E
Approach Delay, s/veh / LOS					30.9		C	39.6		D	20.2		C	47.7		D
Intersection Delay, s/veh / LOS					36.1						D					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.71		C	2.58		C	2.09		B	2.10		B
Bicycle LOS Score / LOS					1.67		B	1.51		B	1.43		A	1.85		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Hyatts Road/Shanahan...	File Name	D120_US23-HyattsShanahan_PM.xus				
Project Description	Concept D Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	221	218	265	162	183	179	337	2064	255	136	1539	108

Signal Information																						
Cycle, s	100.0	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On	Green	7.1	1.9	38.0	29.0	0.0	0.0	1			2			3			4		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	4.0	0.0	0.0	5			6			7			8		
				Red	2.0	2.0	2.0	2.0	0.0	0.0												

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	1.1	3.0	1.1	4.0
Phase Duration, s		35.0		35.0	21.0	51.9	13.1	44.0
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g_s), s		31.0		27.4	17.0		7.0	
Green Extension Time (g_e), s		0.0		0.7	0.0	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	1.00		0.98	
Max Out Probability		1.00		1.00	1.00		0.00	

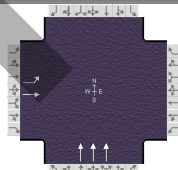
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	240	237	288	176	199	195	366	2243	277	148	1207	583
Adjusted Saturation Flow Rate (s), veh/h/ln	1174	1856	1572	1134	1856	1572	1767	1658	1572	1767	1826	1762
Queue Service Time (g_s), s	20.5	10.4	12.6	15.0	8.5	9.0	15.0	44.4	11.6	5.0	30.6	30.7
Cycle Queue Clearance Time (g_c), s	29.0	10.4	12.6	25.4	8.5	9.0	15.0	44.4	11.6	5.0	30.6	30.7
Green Ratio (g/C)	0.29	0.29	0.44	0.29	0.29	0.36	0.55	0.46	0.46	0.45	0.38	0.38
Capacity (c), veh/h	312	538	692	283	538	567	356	2285	723	197	1388	670
Volume-to-Capacity Ratio (X)	0.769	0.440	0.416	0.622	0.370	0.343	1.028	0.982	0.384	0.752	0.870	0.871
Back of Queue (Q), ft/ln (95 th percentile)	272.4	201.5	195.5	194.2	166.6	146.3	374.5	673.4	191.7	92.2	516	522.1
Back of Queue (Q), veh/ln (95 th percentile)	10.6	7.9	7.6	7.6	6.5	5.7	14.6	25.9	7.5	3.6	19.8	20.9
Queue Storage Ratio (RQ) (95 th percentile)	0.91	0.00	0.65	0.78	0.00	1.46	0.75	0.00	0.96	0.37	0.00	0.00
Uniform Delay (d_1), s/veh	39.8	28.9	19.2	39.2	28.2	23.3	28.9	26.6	17.7	23.7	28.7	28.7
Incremental Delay (d_2), s/veh	10.0	0.2	0.1	3.1	0.2	0.1	55.1	15.0	1.5	2.2	7.7	14.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.8	29.1	19.3	42.3	28.4	23.5	84.0	41.6	19.3	25.9	36.4	43.3
Level of Service (LOS)	D	C	B	D	C	C	F	D	B	C	D	D
Approach Delay, s/veh / LOS	31.9		C	31.0		C	44.8		D	37.6		D
Intersection Delay, s/veh / LOS	39.7						D					

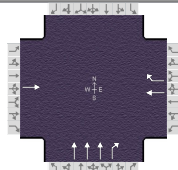
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.71	C	2.58	C	2.10	B	2.11	B
Bicycle LOS Score / LOS	1.75	B	1.43	A	2.08	B	1.55	B

HCS Alternative Intersections Results Summary

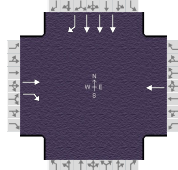
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 16, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Greif Parkway	PHF	0.92	Arterial Direction	North-South		
File Name	D121_US23-Greif_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	60	0						1788				
Intersection Two Demand (v), veh/h		50			0	110		1659	60			
Intersection Three Demand (v), veh/h				60	0						2401	
Intersection Four Demand (v), veh/h		0	110		129						2330	81

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	70.0	8.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	77												
Uncoordinated	No	Green	68.1	9.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	8.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	57												
Uncoordinated	No	Green	10.0	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

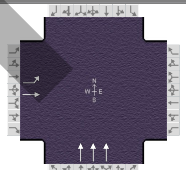
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	54	86.4	30.2	116.6	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	83.7	30.2	113.9	F
EBR	EBR(4)	54	40.3	--	40.3	D
WBL	WBR(2) + NBU(3) + SBT(4)	54	88.7	30.2	118.9	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	84.0	30.2	114.2	F
WBR	WBR(2)	54	40.5	--	40.5	D
NBL	NBT(1) + NBL(2)	140	44.2	--	44.2	D
NBT	NBT(1) + NBT(2)	1939	10.5	--	10.5	B
NBR	NBT(1) + NBR(2)	70	7.9	--	7.9	A
SBL	SBT(3) + SBL(4)	54	42.9	--	42.9	D
SBT	SBT(3) + SBT(4)	2585	14.4	--	14.4	B
SBR	SBT(3) + SBR(4)	90	9.6	--	9.6	A

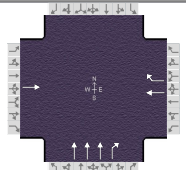
Overall Results		
Intersection ETT, s/veh LOS	17.4	B

HCS Alternative Intersections Results Summary

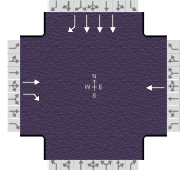
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 16, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Greif Parkway	PHF	0.92	Arterial Direction	North-South		
File Name	D121_US23-Greif_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	44	0						2476				
Intersection Two Demand (v), veh/h		50			0	110		2435	60			
Intersection Three Demand (v), veh/h				60	0						1836	
Intersection Four Demand (v), veh/h		0	87		25						1829	17

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	71.0	7.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

Signal Two Information													
Cycle, s	90.0												
Offset, s	77												
Uncoordinated	No	Green	68.1	9.9	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0				

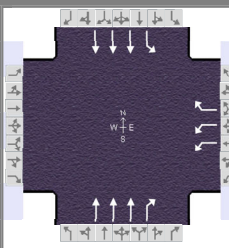
Signal Three Information													
Cycle, s	90.0												
Offset, s	66												
Uncoordinated	No	Green	8.0	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

Signal Four Information													
Cycle, s	90.0												
Offset, s	57												
Uncoordinated	No	Green	9.5	0.0	0.0	0.0	0.0	0.0	0.0				
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0				

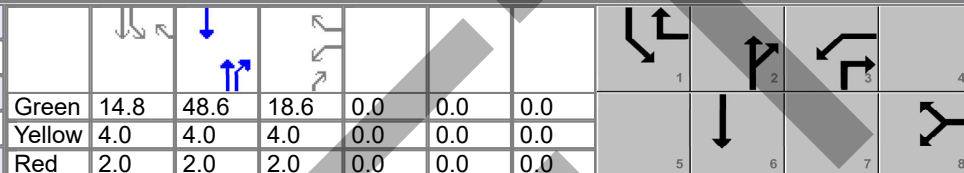
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	37	88.4	30.2	118.6	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	83.3	30.2	113.5	F
EBR	EBR(4)	47	39.4	--	39.4	D
WBL	WBR(2) + NBU(3) + SBT(4)	54	86.8	30.2	117.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	83.7	30.2	113.9	F
WBR	WBR(2)	54	40.5	--	40.5	D
NBL	NBT(1) + NBL(2)	27	42.2	--	42.2	D
NBT	NBT(1) + NBT(2)	2673	14.4	--	14.4	B
NBR	NBT(1) + NBR(2)	66	9.2	--	9.2	A
SBL	SBT(3) + SBL(4)	54	41.3	--	41.3	D
SBT	SBT(3) + SBT(4)	2042	10.9	--	10.9	B
SBR	SBT(3) + SBR(4)	19	7.7	--	7.7	A

Overall Results		
Intersection ETT, s/veh LOS	16.3	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Glenn Parkway	File Name	D122_US23-GlennPkwy_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				490		180		1207	440	208	2037	

Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin	Green	14.8	48.6	18.6	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				

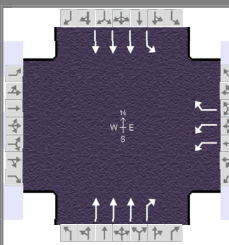
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				24.6		54.6	20.8	75.4
Change Period, ($Y+R_c$), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	3.0	0.0
Queue Clearance Time (g_s), s				17.0			14.5	
Green Extension Time (g_e), s				1.7		0.0	0.4	0.0
Phase Call Probability				1.00			1.00	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				533		196		1312	478	226		2214
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1618	1572	1767		1618
Queue Service Time (g_s), s				15.0		9.5		19.1	14.4	12.5		25.7
Cycle Queue Clearance Time (g_c), s				15.0		9.5		19.1	14.4	12.5		25.7
Green Ratio (g/C)				0.19		0.33		0.49	0.67	0.15		0.69
Capacity (c), veh/h				639		526		2356	1056	262		3367
Volume-to-Capacity Ratio (X)				0.834		0.372		0.557	0.453	0.863		0.658
Back of Queue (Q), ft/ln (95 th percentile)				260.1		154.7		288.8	194.6	237.4		303.1
Back of Queue (Q), veh/ln (95 th percentile)				10.2		6.0		10.9	7.6	9.3		11.4
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.62		0.00	0.32	0.79		0.00
Uniform Delay (d_1), s/veh				39.2		25.3		18.1	7.7	41.6		8.6
Incremental Delay (d_2), s/veh				1.1		0.2		1.0	1.4	3.3		1.0
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				40.3		25.5		19.1	9.1	44.9		9.6
Level of Service (LOS)				D		C		B	A	D		A
Approach Delay, s/veh / LOS	0.0			36.3		D	16.4		B	12.9		B
Intersection Delay, s/veh / LOS				17.6						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.61	C	2.61	C	2.09	B	0.66	A
Bicycle LOS Score / LOS				F	1.47	A	1.83	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	May 16, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Glenn Parkway	File Name	D122_US23-GlennPkwy_PM.xus		
Project Description	Concept D Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				127		178		1939	413	68	1584	

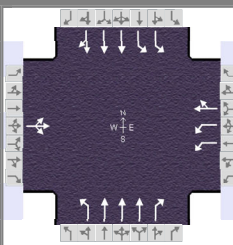
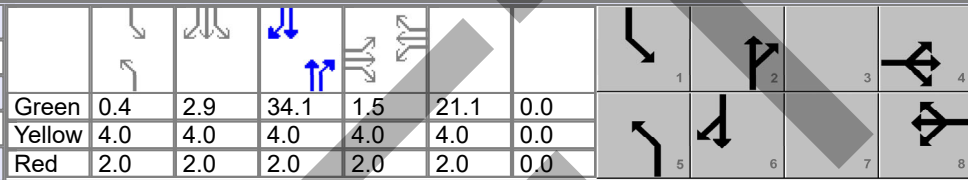
Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	Begin											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.9	53.4	12.7	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	2.0	4.0
Phase Duration, s				18.7		59.4	11.9	71.3
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.2		0.0	3.0	0.0
Queue Clearance Time (g _s), s				12.0			5.7	
Green Extension Time (g _e), s				0.7		0.0	0.1	0.0
Phase Call Probability				1.00			0.84	
Max Out Probability				0.00			0.00	

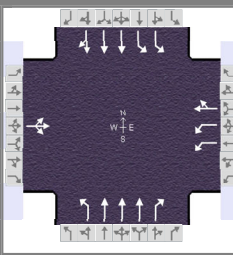
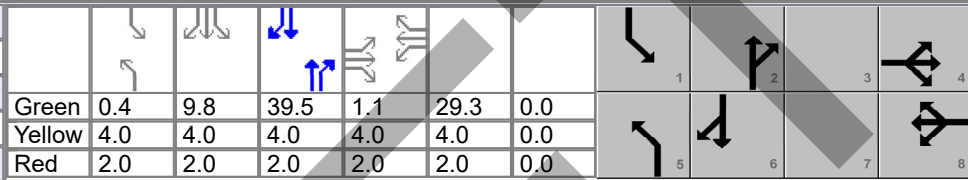
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				138		193		2108	449	74		1722
Adjusted Saturation Flow Rate (s), veh/h/ln				1716		1572		1618	1572	1767		1618
Queue Service Time (g _s), s				3.2		10.0		28.1	9.5	3.7		13.6
Cycle Queue Clearance Time (g _c), s				3.2		10.0		28.1	9.5	3.7		13.6
Green Ratio (g/C)				0.14		0.21		0.59	0.73	0.07		0.73
Capacity (c), veh/h				483		325		2881	1155	116		3522
Volume-to-Capacity Ratio (X)				0.286		0.596		0.732	0.389	0.638		0.489
Back of Queue (Q), ft/ln (95th percentile)				59.8		168.2		358.2	103.1	73.7		148.1
Back of Queue (Q), veh/ln (95th percentile)				2.3		6.6		13.5	4.0	2.9		5.6
Queue Storage Ratio (RQ) (95th percentile)				0.00		0.67		0.00	0.17	0.25		0.00
Uniform Delay (d ₁), s/veh				34.6		32.3		13.1	4.4	41.0		5.2
Incremental Delay (d ₂), s/veh				0.1		0.7		1.7	1.0	2.2		0.5
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				34.7		33.0		14.8	5.4	43.2		5.7
Level of Service (LOS)				C		C		B	A	D		A
Approach Delay, s/veh / LOS	0.0			33.7		C	13.2		B	7.3		A
Intersection Delay, s/veh / LOS				12.4						B		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	2.07	B	0.65	A
Bicycle LOS Score / LOS				F	1.89	B	1.48	A

HCS Signalized Intersection Results Summary

General Information					Intersection Information																				
Agency	ms consultants				Duration, h	0.250																			
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other																			
Jurisdiction		Time Period	AM Peak		PHF	0.92																			
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																		
Intersection	Cheshire Road		File Name	D124_US23-Cheshire_AM.xus																					
Project Description	Concept D Design Year (2050)																								
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	342	2	307	2	1301	123	246	2062	2									
Signal Information																									
Cycle, s	90.0	Reference Phase	2																						
Offset, s	0	Reference Point	End																						
Uncoordinated	No	Simult. Gap E/W	On																						
Force Mode	Fixed	Simult. Gap N/S	On		Green	0.4	2.9	34.1	1.5	21.1	0.0	Yellow	4.0	4.0	4.0	4.0	4.0	0.0	Red	2.0	2.0	2.0	2.0	2.0	0.0
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Assigned Phase						4		8	5	2	1	6													
Case Number						12.0		10.0	2.0	3.0	2.0	4.0													
Phase Duration, s						7.5		27.1	6.4	40.1	15.3	49.0													
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0													
Max Allow Headway (MAH), s						3.1		3.1	3.0	0.0	3.0	0.0													
Queue Clearance Time (g _s), s						2.3		20.7	2.1		8.8														
Green Extension Time (g _e), s						0.0		0.4	0.0	0.0	0.5	0.0													
Phase Call Probability						0.15		1.00	0.05		1.00														
Max Out Probability						0.00		1.00	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			372	336		2	1414	134	267	1496	748									
Adjusted Saturation Flow Rate (s), veh/h/ln					1723			1716	1574		1767	1685	1572	1716	1856	1855									
Queue Service Time (g _s), s					0.3			8.4	18.7		0.1	21.7	5.2	6.8	31.7	31.7									
Cycle Queue Clearance Time (g _c), s					0.3			8.4	18.7		0.1	21.7	5.2	6.8	31.7	31.7									
Green Ratio (g/C)					0.02			0.23	0.23		0.00	0.38	0.38	0.10	0.48	0.48									
Capacity (c), veh/h					29			805	369		7	1917	596	353	1774	887									
Volume-to-Capacity Ratio (X)					0.226			0.462	0.910		0.298	0.738	0.224	0.757	0.843	0.843									
Back of Queue (Q), ft/ln (95 th percentile)					6.9			150.4	356.6		2.9	332.6	87.1	128.8	487.9	511									
Back of Queue (Q), veh/ln (95 th percentile)					0.3			5.9	13.9		0.1	13.0	3.4	5.0	19.1	20.4									
Queue Storage Ratio (RQ) (95 th percentile)					0.00			1.50	0.00		0.01	0.00	0.35	0.43	0.00	0.00									
Uniform Delay (d ₁), s/veh					43.7			29.6	33.5		44.7	24.1	19.0	39.3	20.5	20.5									
Incremental Delay (d ₂), s/veh					1.5			0.2	23.0		8.2	2.6	0.9	1.3	5.1	9.6									
Initial Queue Delay (d ₃), s/veh					0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0									
Control Delay (d), s/veh					45.1			29.7	56.5		52.9	26.7	19.8	40.5	25.6	30.2									
Level of Service (LOS)					D			C	E		D	C	B	D	C	C									
Approach Delay, s/veh / LOS					45.1	D	42.4	D		26.1	C	28.6	C												
Intersection Delay, s/veh / LOS					29.8			C																	
Multimodal Results					EB			WB			NB			SB											
Pedestrian LOS Score / LOS					2.71	C	2.74	C		2.27	B	1.67	B												
Bicycle LOS Score / LOS					0.50	A	1.66	B		1.34	A	1.87	B												

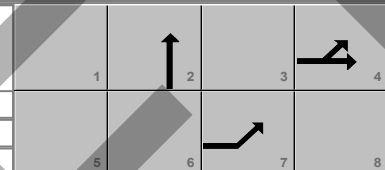
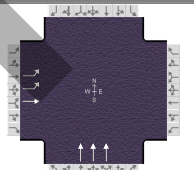
HCS Signalized Intersection Results Summary

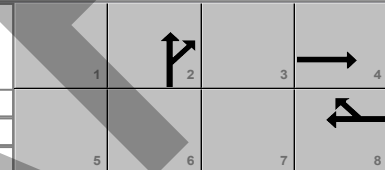
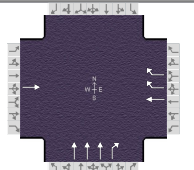
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	May 17, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Cheshire Road		File Name	D124_US23-Cheshire_PM.xus												
Project Description	Concept D Design Year (2050)															
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	315	2	348	2	1739	361	399	1372	2
Signal Information																
Cycle, s	110.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	0.4	9.8	39.5	1.1	29.3	0.0	0.0	0.0	0.0	0.0	
					Yellow	4.0	4.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	
					Red	2.0	2.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						12.0		10.0	2.0	3.0	2.0	4.0				
Phase Duration, s						7.1		35.3	6.4	45.5	22.2	61.3				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						2.4		27.7	2.1		15.6					
Green Extension Time (g _e), s						0.0		1.5	0.0	0.0	0.6	0.0				
Phase Call Probability						0.18		1.00	0.06		1.00					
Max Out Probability						0.00		0.00	0.00		0.09					
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			342	380		2	1890	392	434	996	498
Adjusted Saturation Flow Rate (s), veh/h/ln					1723			1716	1574		1767	1685	1572	1716	1856	1854
Queue Service Time (g _s), s					0.4			8.9	25.7		0.1	39.5	23.4	13.6	20.1	20.1
Cycle Queue Clearance Time (g _c), s					0.4			8.9	25.7		0.1	39.5	23.4	13.6	20.1	20.1
Green Ratio (g/C)					0.01			0.27	0.27		0.00	0.36	0.36	0.15	0.50	0.50
Capacity (c), veh/h					17			913	419		6	1815	565	504	1865	932
Volume-to-Capacity Ratio (X)					0.384			0.375	0.909		0.351	1.041	0.695	0.860	0.534	0.534
Back of Queue (Q), ft/ln (95 th percentile)					9.2			165.8	410.2		3.7	739.2	371.1	258.4	331	332.1
Back of Queue (Q), veh/ln (95 th percentile)					0.4			6.5	16.0		0.1	28.9	14.5	10.1	12.9	13.3
Queue Storage Ratio (RQ) (95 th percentile)					0.00			1.66	0.00		0.01	0.00	1.48	0.86	0.00	0.00
Uniform Delay (d ₁), s/veh					54.1			32.9	39.1		54.7	35.2	30.1	45.8	18.6	18.6
Incremental Delay (d ₂), s/veh					5.2			0.1	10.3		12.1	32.8	6.9	6.8	1.1	2.2
Initial Queue Delay (d ₃), s/veh					0.0			0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					59.3			33.0	49.4		66.8	68.0	37.0	52.6	19.7	20.8
Level of Service (LOS)					E			C	D		E	F	D	D	B	C
Approach Delay, s/veh / LOS					59.3	E		41.6	D		62.7	E		27.4	C	
Intersection Delay, s/veh / LOS								45.8						D		
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.72	C		2.74	C		2.28	B		1.68	B	
Bicycle LOS Score / LOS					0.50	A		1.68	B		1.74	B		1.55	B	

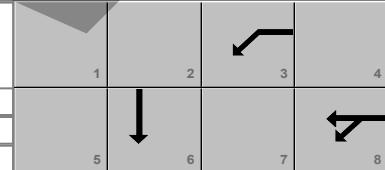
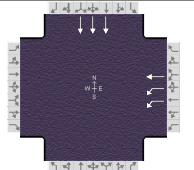
HCS Alternative Intersections Results Summary

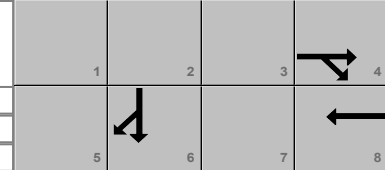
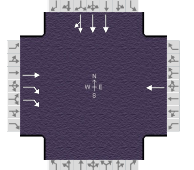
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 16, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hyatts Road/Shanahan Ro	PHF	0.92	Arterial Direction	North-South		
File Name	C120_US23-HyattsShanahan_AM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	335	0						1704				
Intersection Two Demand (v), veh/h		37			0	569		1563	352			
Intersection Three Demand (v), veh/h				405	0						2472	
Intersection Four Demand (v), veh/h		0	658		124						2530	310

Signal One Information																	
Cycle, s	90.0																
Offset, s	0																
Uncoordinated	No	Green	64.6	13.4	0.0	0.0	0.0	0.0									
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0									

Signal Two Information																	
Cycle, s	90.0																
Offset, s	89																
Uncoordinated	No	Green	55.0	23.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0									

Signal Three Information																	
Cycle, s	90.0																
Offset, s	11																
Uncoordinated	No	Green	15.8	0.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0									

Signal Four Information																	
Cycle, s	90.0																
Offset, s	26																
Uncoordinated	No	Green	26.3	0.0	0.0	0.0	0.0	0.0									
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0									
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0									

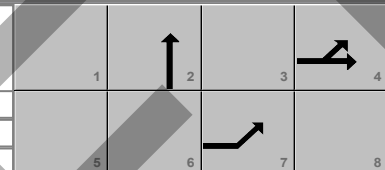
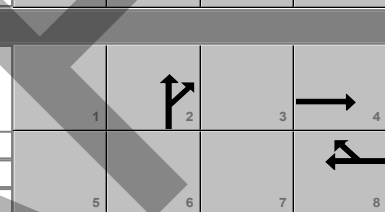
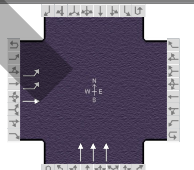
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	139	82.4	30.2	112.6	F
EBT	EBR(4) + SBU(1) + NBR(2)	225	78.9	30.2	109.1	F
EBR	EBR(4)	351	31.6	--	31.6	C
WBL	WBR(2) + NBU(3) + SBT(4)	218	103.9	30.2	134.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	222	129.0	30.2	159.2	F
WBR	WBR(2)	178	33.4	--	33.4	F
NBL	NBT(1) + NBL(2)	135	30.9	--	30.9	C
NBT	NBT(1) + NBT(2)	1809	19.5	--	19.5	B
NBR	NBT(1) + NBR(2)	407	16.0	--	16.0	B
SBL	SBT(3) + SBL(4)	40	37.6	--	37.6	D
SBT	SBT(3) + SBT(4)	2085	46.1	--	46.1	F
SBR	SBT(3) + SBR(4)	1042	71.1	--	71.1	F

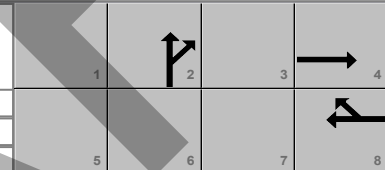
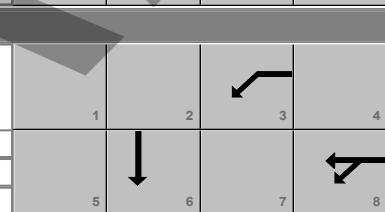
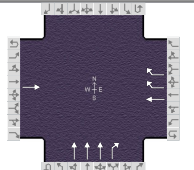
Overall Results		
Intersection ETT, s/veh LOS	48.6	D

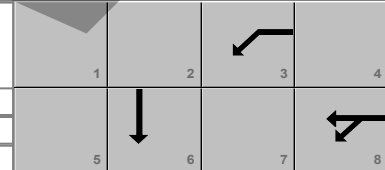
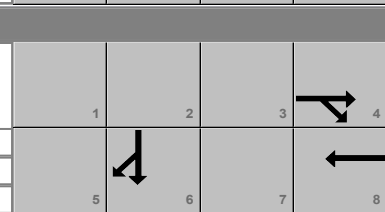
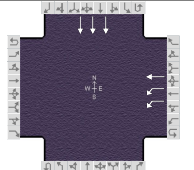
HCS Alternative Intersections Results Summary

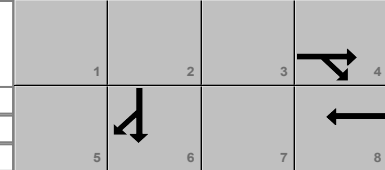
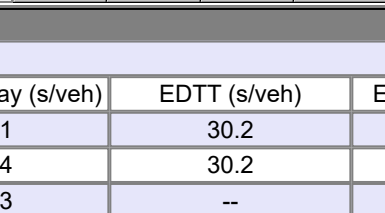
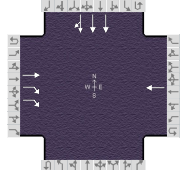
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 16, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hyatts Road/Shanahan Ro	PHF	0.92	Arterial Direction	North-South		
File Name	C120_US23-HyattsShanahan_PM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	439	0						2877				
Intersection Two Demand (v), veh/h		136			0	524		2506	473			
Intersection Three Demand (v), veh/h				345	0						1945	
Intersection Four Demand (v), veh/h		0	704		337						1863	291

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	61.1	16.9	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	68												
Uncoordinated	No	Green	56.5	21.5	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	56												
Uncoordinated	No	Green	13.7	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	27												
Uncoordinated	No	Green	28.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

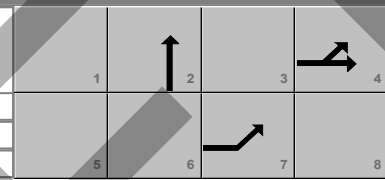
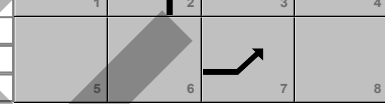
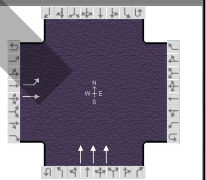
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	240	92.1	30.2	122.3	F
EBT	EBR(4) + SBU(1) + NBR(2)	237	80.4	30.2	110.6	F
EBR	EBR(4)	288	30.3	--	30.3	C
WBL	WBR(2) + NBU(3) + SBT(4)	176	94.4	30.2	124.6	F
WBT	WBR(2) + NBU(3) + SBR(4)	199	101.8	30.2	132.0	F
WBR	WBR(2)	195	34.1	--	34.1	F
NBL	NBT(1) + NBL(2)	366	48.5	--	48.5	D
NBT	NBT(1) + NBT(2)	3032	47.8	--	47.8	D
NBR	NBT(1) + NBR(2)	572	36.1	--	36.1	F
SBL	SBT(3) + SBL(4)	148	36.0	--	36.0	D
SBT	SBT(3) + SBT(4)	1680	30.0	--	30.0	C
SBR	SBT(3) + SBR(4)	809	37.5	--	37.5	D

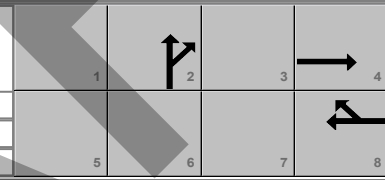

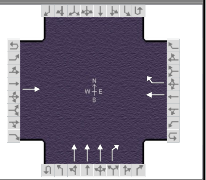
Overall Results		
Intersection ETT, s/veh LOS	50.3	D

HCS Alternative Intersections Results Summary

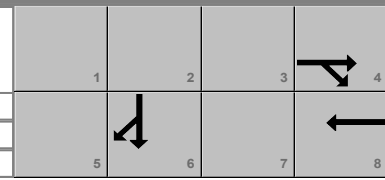
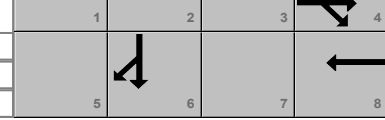
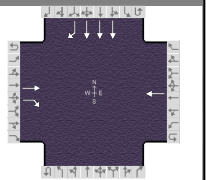
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Cheshire Road	PHF	0.92	Arterial Direction	North-South		
File Name	C124_US23-Cheshire_AM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						1444				
Intersection Two Demand (v), veh/h		246			0	659		1321	133			
Intersection Three Demand (v), veh/h				352	0						2660	
Intersection Four Demand (v), veh/h		0	30		10						2746	20

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	86												
Uncoordinated	No	Green	34.9	43.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	10												
Uncoordinated	No	Green	24.2	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

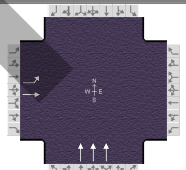
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	105.8	30.2	136.0	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	99.0	30.2	129.2	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	372	69.7	30.2	99.9	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	63.6	30.2	93.8	F
WBR	WBR(2)	334	27.2	--	27.2	C
NBL	NBT(1) + NBL(2)	11	41.4	--	41.4	D
NBT	NBT(1) + NBT(2)	1446	26.0	--	26.0	C
NBR	NBT(1) + NBR(2)	146	19.2	--	19.2	B
SBL	SBT(3) + SBL(4)	267	52.2	--	52.2	F
SBT	SBT(3) + SBT(4)	3221	47.1	--	47.1	F
SBR	SBT(3) + SBR(4)	23	41.0	--	41.0	F

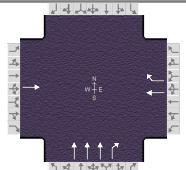
Overall Results		
Intersection ETT, s/veh LOS	43.8	D

HCS Alternative Intersections Results Summary

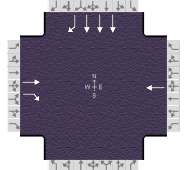
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	May 17, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Cheshire Road	PHF	0.92	Arterial Direction	North-South		
File Name	C124_US23-Cheshire_PM_NB.xus						
Project Description	Concept C Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						2120				
Intersection Two Demand (v), veh/h		399			0	673		1759	371			
Intersection Three Demand (v), veh/h				325	0						2096	
Intersection Four Demand (v), veh/h		0	30		10						2002	20

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	88												
Uncoordinated	No	Green	34.1	43.9	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	4												
Uncoordinated	No	Green	22.5	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

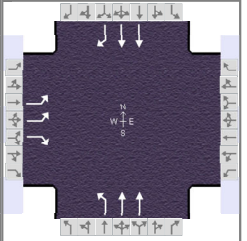
Signal Four Information													
Cycle, s	90.0												
Offset, s	70												
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	138.2	30.2	168.4	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	107.2	30.2	137.4	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	342	68.6	30.2	98.8	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	65.0	30.2	95.2	F
WBR	WBR(2)	378	27.8	--	27.8	C
NBL	NBT(1) + NBL(2)	11	42.3	--	42.3	D
NBT	NBT(1) + NBT(2)	1921	59.4	--	59.4	F
NBR	NBT(1) + NBR(2)	405	28.4	--	28.4	F
SBL	SBT(3) + SBL(4)	434	30.5	--	30.5	C
SBT	SBT(3) + SBT(4)	2605	21.6	--	21.6	C
SBR	SBT(3) + SBR(4)	26	17.9	--	17.9	B

Overall Results		
Intersection ETT, s/veh LOS	42.4	D

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	SR 315	File Name	125_US23-SR315_AM.xus		
Project Description	No-Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	250		88				113	1446			2383	280

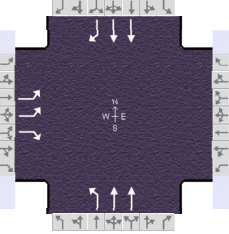
Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		6.9	83.3	11.8	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		17.8			12.9	102.2		89.3
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.2			6.2			
Green Extension Time (g _e), s		0.6			0.2	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		0.00			0.00			

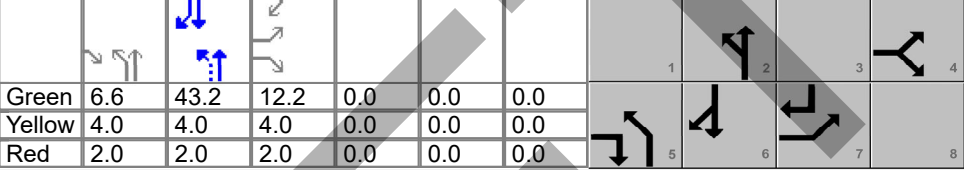
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	272		96				123	1572		2590		304
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	9.2		6.5				4.2	20.3		83.3		6.2
Cycle Queue Clearance Time (g _c), s	9.2		6.5				4.2	20.3		83.3		6.2
Green Ratio (g/C)	0.10		0.16				0.77	0.80		0.69		0.79
Capacity (c), veh/h	341		247				158	2741		2374		1207
Volume-to-Capacity Ratio (X)	0.798		0.387				0.777	0.573		1.091		0.252
Back of Queue (Q), ft/ln (95 th percentile)	179		113.4				171.5	197.4		1436.2		60.2
Back of Queue (Q), veh/ln (95 th percentile)	7.0		4.5				6.5	7.5		54.4		2.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	52.9		45.5				40.7	4.4		18.3		3.2
Incremental Delay (d ₂), s/veh	1.6		0.4				3.1	0.9		48.6		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	54.6		45.9				43.8	5.3		67.0		3.7
Level of Service (LOS)	D		D				D	A		F		A
Approach Delay, s/veh / LOS	52.3		D	0.0			8.0	A		60.3		E
Intersection Delay, s/veh / LOS	41.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	0.63	A	2.06	B
Bicycle LOS Score / LOS		F			1.89	B	2.88	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	125_US23-SR315_PM.xus			
Project Description	No Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	380		111				118	1904			1715	380

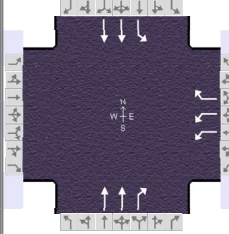
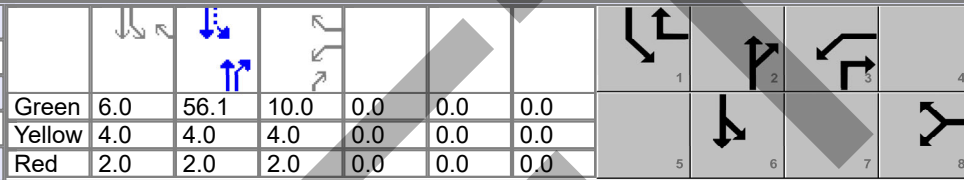
Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		6.6	43.2	12.2	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		18.2			12.6	61.8		49.2
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.2			4.3			
Green Extension Time (g _e), s		1.0			0.2	0.0		0.0
Phase Call Probability		1.00			0.94			
Max Out Probability		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		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	413		121				128	2070		1864		413
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710		1710		1522
Queue Service Time (g _s), s	9.2		5.0				2.3	37.0		43.2		9.2
Cycle Queue Clearance Time (g _c), s	9.2		5.0				2.3	37.0		43.2		9.2
Green Ratio (g/C)	0.15		0.23				0.65	0.70		0.54		0.69
Capacity (c), veh/h	526		372				231	2387		1848		1054
Volume-to-Capacity Ratio (X)	0.785		0.324				0.555	0.867		1.009		0.392
Back of Queue (Q), ft/ln (95 th percentile)	162.2		78.4				54.7	354.5		676		90.5
Back of Queue (Q), veh/ln (95 th percentile)	6.4		3.1				2.1	13.4		25.6		3.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	32.6		25.4				18.1	9.3		18.4		5.2
Incremental Delay (d ₂), s/veh	1.0		0.2				0.8	4.6		23.1		1.1
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	33.6		25.5				18.9	13.8		41.5		6.3
Level of Service (LOS)	C		C				B	B		F		A
Approach Delay, s/veh / LOS	31.8		C	0.0			14.1	B		35.1		D
Intersection Delay, s/veh / LOS	25.5						C					

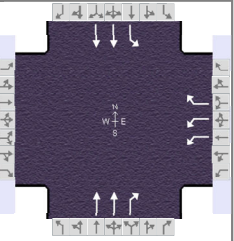
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	0.65	A	2.07	B
Bicycle LOS Score / LOS		F			2.30	B	2.37	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Meeker Way		File Name	126_US23-Meeker_AM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								240		20	1522	130	70	2423		
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.0	56.1	10.0	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2	1	6				
Case Number								9.0		7.3	1.0	4.0				
Phase Duration, s								16.0		62.1	12.0	74.0				
Change Period, (Y+R _c), s								6.0		6.0	6.0	6.0				
Max Allow Headway (MAH), s								3.0		0.0	2.9	0.0				
Queue Clearance Time (g _s), s								8.5			3.2					
Green Extension Time (g _e), s								0.4		0.0	0.1	0.0				
Phase Call Probability								1.00			0.85					
Max Out Probability								0.01			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								3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h								261		22	1654	141	76	2634		
Adjusted Saturation Flow Rate (s), veh/h/ln								1730		1585	1710	1522	1711	1710		
Queue Service Time (g _s), s								6.5		1.0	31.8	2.5	1.2	68.0		
Cycle Queue Clearance Time (g _c), s								6.5		1.0	31.8	2.5	1.2	68.0		
Green Ratio (g/C)								0.11		0.18	0.62	0.73	0.71	0.76		
Capacity (c), veh/h								384		281	2130	1117	271	2584		
Volume-to-Capacity Ratio (X)								0.679		0.077	0.777	0.126	0.281	1.019		
Back of Queue (Q), ft/ln (50 th percentile)								66.3		9.3	251.6	12.7	15.1	509.6		
Back of Queue (Q), veh/ln (50 th percentile)								2.6		0.4	9.5	0.5	0.6	19.3		
Queue Storage Ratio (RQ) (50 th percentile)								0.00		0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh								38.5		30.9	12.4	3.5	12.6	11.0		
Incremental Delay (d ₂), s/veh								0.8		0.0	2.9	0.2	0.2	22.7		
Initial Queue Delay (d ₃), s/veh								0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh								39.3		30.9	15.3	3.7	12.8	33.7		
Level of Service (LOS)								D		C	B	A	B	F		
Approach Delay, s/veh / LOS					0.0			38.6		D	14.4		B	33.1		C
Intersection Delay, s/veh / LOS								26.4						C		
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.31		B	2.31		B	2.06		B	0.64		A
Bicycle LOS Score / LOS										F	1.97		B	2.72		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Meeker Way	File Name	126_US23-Meeker_PM.xus		
Project Description	No Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				380		100		2173	230	110	1760	

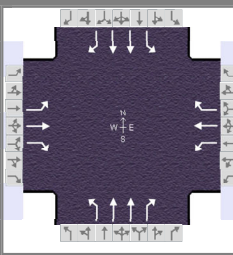
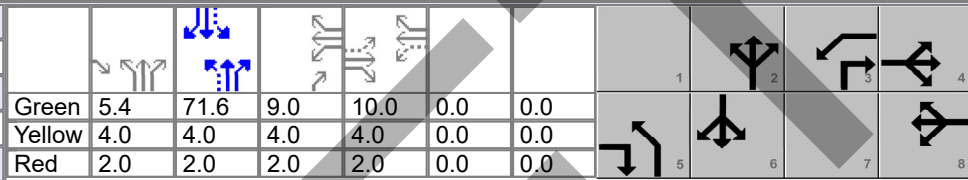
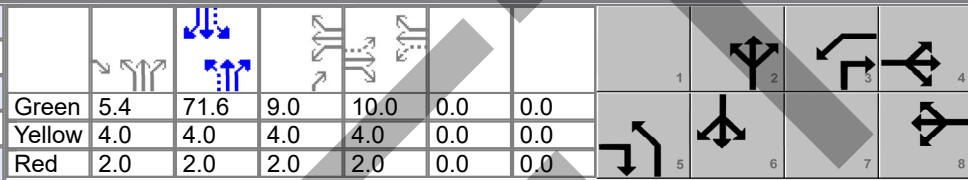
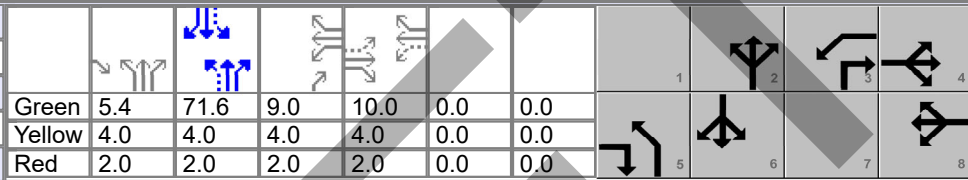
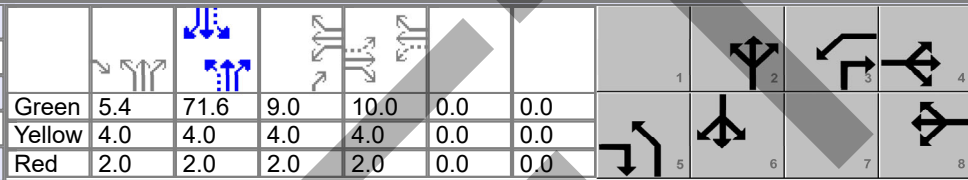
Signal Information				Phase Diagram									
Cycle, s	115.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		6.8	73.8	16.4	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				22.4		79.8	12.8	92.6
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.0		0.0	2.9	0.0
Queue Clearance Time (g _s), s				15.4			5.6	
Green Extension Time (g _e), s				1.0		0.0	0.2	0.0
Phase Call Probability				1.00			0.98	
Max Out Probability				0.00			0.00	

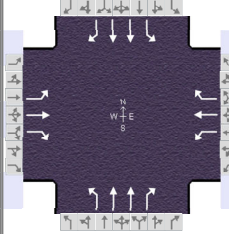

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				413		109		2362	250	120		1913
Adjusted Saturation Flow Rate (s), veh/h/ln				1730		1585		1710	1522	1711		1710
Queue Service Time (g _s), s				13.4		6.8		73.8	4.9	3.6		36.0
Cycle Queue Clearance Time (g _c), s				13.4		6.8		73.8	4.9	3.6		36.0
Green Ratio (g/C)				0.14		0.20		0.64	0.78	0.72		0.75
Capacity (c), veh/h				493		320		2194	1193	164		2576
Volume-to-Capacity Ratio (X)				0.838		0.339		1.077	0.209	0.727		0.743
Back of Queue (Q), ft/ln (50th percentile)				141.9		64.1		954.2	26.2	87.1		240.4
Back of Queue (Q), veh/ln (50th percentile)				5.6		2.5		36.1	1.0	3.3		9.1
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				48.0		39.3		20.6	3.2	34.6		8.0
Incremental Delay (d ₂), s/veh				1.5		0.2		43.6	0.4	2.3		2.0
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				49.5		39.5		64.2	3.6	36.9		9.9
Level of Service (LOS)				D		D		F	A	D		A
Approach Delay, s/veh / LOS	0.0			47.4		D	58.4		E	11.5		B
Intersection Delay, s/veh / LOS				38.9						D		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	2.07	B	0.65	A
Bicycle LOS Score / LOS				F	2.64	C	2.16	B

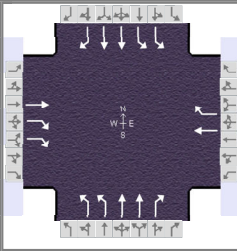
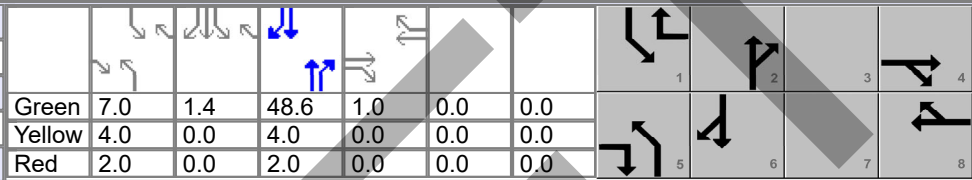
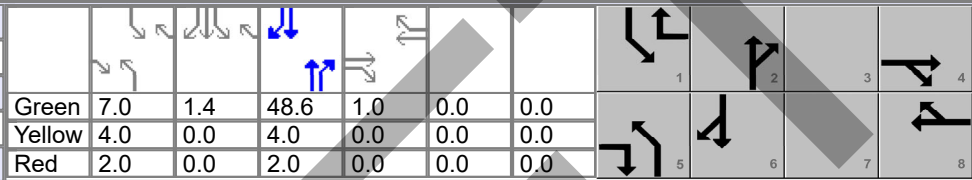
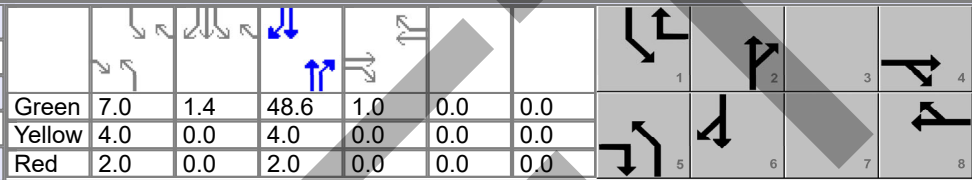
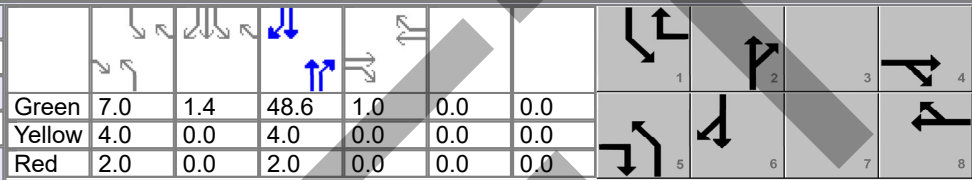
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Hawthorn Blvd		File Name	127_US23-Hawthorn_AM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					40	30	160	120	20	50	40	1435	80	30	2223	20
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	5.4	71.6	9.0	10.0	0.0	0.0					
		Yellow	4.0	4.0	4.0	4.0	0.0	0.0								
		Red	2.0	2.0	2.0	2.0	0.0	0.0								
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4	3	8	5	2		6				
Case Number						5.3	1.0	3.0	1.0	3.0		5.3				
Phase Duration, s						16.0	15.0	31.0	11.4	89.0		77.6				
Change Period, (Y+R _c), s						6.0	6.0	6.0	6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.1	2.9	3.1	2.9	0.0		0.0				
Queue Clearance Time (g _s), s						12.0	9.8	5.4	3.1							
Green Extension Time (g _e), s						0.0	0.0	0.5	0.1	0.0		0.0				
Phase Call Probability						1.00	0.99	1.00	0.77							
Max Out Probability						1.00	1.00	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					43	33	174	130	22	54	43	1560	87	33	2416	22
Adjusted Saturation Flow Rate (s), veh/h/ln					1390	1870	1585	1781	1870	1572	1711	1710	1522	317	1710	1522
Queue Service Time (g _s), s					3.6	2.0	10.0	7.8	1.1	3.4	1.1	31.0	1.7	7.8	71.6	0.7
Cycle Queue Clearance Time (g _c), s					3.6	2.0	10.0	7.8	1.1	3.4	1.1	31.0	1.7	27.5	71.6	0.7
Green Ratio (g/C)					0.08	0.08	0.13	0.18	0.21	0.21	0.66	0.69	0.77	0.60	0.60	0.60
Capacity (c), veh/h					176	156	203	286	390	328	136	2366	1167	197	2042	909
Volume-to-Capacity Ratio (X)					0.247	0.209	0.857	0.456	0.056	0.166	0.319	0.659	0.075	0.165	1.183	0.024
Back of Queue (Q), ft/ln (50 th percentile)					30.6	22.6	163.7	84.7	12.6	32.4	19.4	249.4	10.2	16.9	1289	5.8
Back of Queue (Q), veh/ln (50 th percentile)					1.2	0.9	6.4	3.3	0.5	1.3	0.7	9.4	0.4	0.6	48.8	0.2
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					52.0	51.3	51.2	44.1	38.0	39.0	29.8	10.5	3.5	21.5	24.2	9.9
Incremental Delay (d ₂), s/veh					0.3	0.2	27.5	0.4	0.0	0.1	0.5	1.5	0.1	1.8	87.9	0.0
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					52.3	51.6	78.8	44.6	38.1	39.0	30.3	11.9	3.6	23.3	112.1	9.9
Level of Service (LOS)					D	D	E	D	D	D	C	B	A	C	F	A
Approach Delay, s/veh / LOS					70.6		E	42.4		D	12.0		B	110.0		F
Intersection Delay, s/veh / LOS					69.0					E						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.47		B	2.46		B	2.06		B	2.08		B
Bicycle LOS Score / LOS					0.90		A	0.83		A	1.88		B	2.53		C

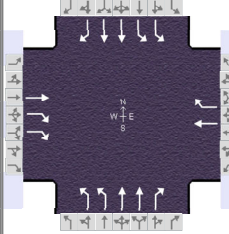
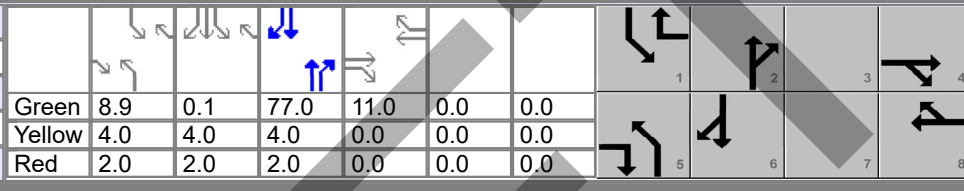
HCS Signalized Intersection Results Summary

General Information						Intersection Information									
Agency	ms consultants					Duration, h	0.250								
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other								
Jurisdiction		Time Period	PM Peak			PHF	0.92								
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00								
Intersection	Hawthorn Blvd		File Name	127_US23-Hawthorn_PM.xus											
Project Description	No Build Design Year (2050)														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				20	60	60	190	40	150	140	2027	160	40	1600	50
Signal Information															
Cycle, s	100.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On	Green	6.9	51.1	8.0	10.0	0.0	0.0					
		Yellow	4.0	4.0	4.0	4.0	0.0	0.0							
		Red	2.0	2.0	2.0	2.0	0.0	0.0							
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4	3	8	5	2		6				
Case Number					5.3	1.0	3.0	1.0	3.0		5.3				
Phase Duration, s					16.0	14.0	30.0	12.9	70.0		57.1				
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0		6.0				
Max Allow Headway (MAH), s					3.1	2.9	3.1	2.9	0.0		0.0				
Queue Clearance Time (g _s), s					5.6	10.0	10.8	6.4							
Green Extension Time (g _e), s					0.1	0.0	0.5	0.2	0.0		0.0				
Phase Call Probability					1.00	1.00	1.00	0.99							
Max Out Probability					0.35	1.00	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				22	65	65	207	43	163	152	2203	174	43	1739	54
Adjusted Saturation Flow Rate (s), veh/h/ln				1363	1870	1585	1781	1870	1572	1711	1710	1522	169	1710	1522
Queue Service Time (g _s), s				1.5	3.3	3.6	8.0	1.8	8.8	4.4	64.0	3.6	0.0	50.6	1.8
Cycle Queue Clearance Time (g _c), s				1.5	3.3	3.6	8.0	1.8	8.8	4.4	64.0	3.6	51.1	50.6	1.8
Green Ratio (g/C)				0.10	0.10	0.17	0.20	0.24	0.24	0.60	0.64	0.72	0.51	0.51	0.51
Capacity (c), veh/h				208	187	268	305	449	377	191	2189	1096	72	1748	778
Volume-to-Capacity Ratio (X)				0.104	0.349	0.243	0.678	0.097	0.432	0.795	1.007	0.159	0.604	0.995	0.070
Back of Queue (Q), ft/ln (50 th percentile)				11.9	36.6	33.3	128	19.5	80.5	47.2	648.8	21.9	44.3	577.7	15.2
Back of Queue (Q), veh/ln (50 th percentile)				0.5	1.4	1.3	5.0	0.8	3.1	1.8	24.6	0.8	1.7	21.9	0.6
Queue Storage Ratio (RQ) (50 th percentile)				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh				41.2	42.0	36.0	37.6	29.6	32.2	25.0	18.0	4.4	50.0	24.3	12.4
Incremental Delay (d ₂), s/veh				0.1	0.4	0.2	4.9	0.0	0.3	2.8	20.8	0.3	32.3	20.4	0.2
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				41.2	42.4	36.2	42.5	29.6	32.5	27.9	38.8	4.7	82.3	44.7	12.6
Level of Service (LOS)				D	D	D	D	C	C	C	F	A	F	D	B
Approach Delay, s/veh / LOS				39.6		D	37.2		D	35.8		D	44.7		D
Intersection Delay, s/veh / LOS				39.4						D					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.46		B	2.45		B	2.06		B	2.09		B
Bicycle LOS Score / LOS				0.74		A	1.17		A	2.57		C	2.00		B

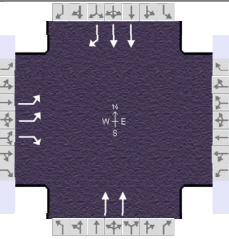
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Delaware Plaza South/P...		File Name	128_US23-DelPlazaS_AM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						0	28		0	110	70	1413	40	270	2268	20
Signal Information																
Cycle, s	70.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	7.0	1.4	48.6	1.0	0.0	0.0										
Yellow	4.0	0.0	4.0	0.0	0.0	0.0										
Red	2.0	0.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						7.0		7.0	2.0	3.0	2.0	3.0				
Phase Duration, s						1.0		1.0	13.0	54.6	14.4	56.0				
Change Period, (Y+R _c), s						0.0		0.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.2	2.9	0.0	2.9	0.0				
Queue Clearance Time (g _s), s						2.7		3.0	3.5		7.9					
Green Extension Time (g _e), s						0.0		0.0	0.0	0.0	0.6	0.0				
Phase Call Probability						0.95		0.95	1.00		1.00					
Max Out Probability						1.00		1.00	0.01		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						4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h						0	30		0	120	76	1536	43	293	2465	22
Adjusted Saturation Flow Rate (s), veh/h/ln						1870	1403		1870	1585	1689	1738	1547	1689	1738	1547
Queue Service Time (g _s), s						0.0	0.7		0.0	1.0	1.5	17.0	0.6	5.9	48.8	0.3
Cycle Queue Clearance Time (g _c), s						0.0	0.7		0.0	1.0	1.5	17.0	0.6	5.9	48.8	0.3
Green Ratio (g/C)						0.01	0.11		0.01	0.13	0.10	0.69	0.69	0.12	0.71	0.71
Capacity (c), veh/h						27	321		27	213	338	2413	1074	406	2483	1105
Volume-to-Capacity Ratio (X)						0.000	0.095		0.000	0.561	0.225	0.637	0.040	0.723	0.993	0.020
Back of Queue (Q), ft/ln (95 th percentile)						0	9.4		0	81.2	24.8	146.1	5.1	100.9	470.8	2.1
Back of Queue (Q), veh/ln (95 th percentile)						0.0	0.4		0.0	3.2	1.0	5.6	0.2	3.9	18.1	0.1
Queue Storage Ratio (RQ) (95 th percentile)						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh						0.0	27.8		0.0	28.4	29.0	5.9	3.4	29.7	9.8	2.9
Incremental Delay (d ₂), s/veh						0.0	0.0		0.0	2.0	0.1	1.3	0.1	0.9	16.4	0.0
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh						0.0	27.8		0.0	30.4	29.1	7.2	3.4	30.6	26.3	2.9
Level of Service (LOS)							C			C	C	A	A	C	C	A
Approach Delay, s/veh / LOS					27.8		C	30.4		C	8.1		A	26.5		C
Intersection Delay, s/veh / LOS					20.0					B						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.59		C	2.59		C	2.04		B	2.20		B
Bicycle LOS Score / LOS					0.54		A	0.68		A	1.85		B	2.78		C

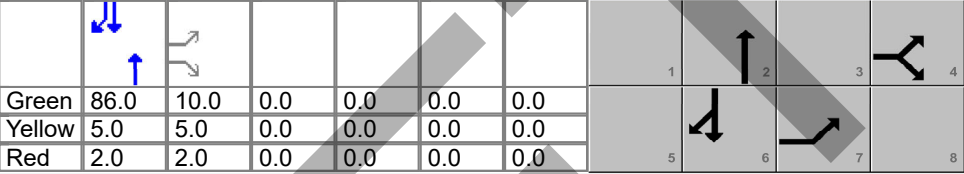
HCS Signalized Intersection Results Summary

General Information					Intersection Information																													
Agency	ms consultants				Duration, h	0.250																												
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other																												
Jurisdiction		Time Period	PM Peak		PHF	0.92																												
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																											
Intersection	Delaware Plaza South/P...		File Name	128_US23-DelPlazaS_PM.xus																														
Project Description	No Build Design Year (2050)																																	
Demand Information					EB			WB			NB			SB																				
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R																		
Demand (v), veh/h						0	110		0	240	180	2032	80	420	1517	40																		
Signal Information									Cycle, s				115.0				Reference Phase				2													
Offset, s									0				Reference Point				End																	
Uncoordinated									No				Simult. Gap E/W				On																	
Force Mode									Fixed				Simult. Gap N/S				On																	
									Green	8.9	0.1	77.0	11.0	0.0	0.0																			
					Yellow	4.0	4.0	4.0	0.0	0.0	0.0																							
					Red	2.0	2.0	2.0	0.0	0.0	0.0																							
Timer Results					EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT															
Assigned Phase							4				8		5		2		1		6															
Case Number							7.0				7.0		2.0		3.0		2.0		3.0															
Phase Duration, s							11.0				11.0		14.9		83.0		21.0		89.1															
Change Period, (Y+R _c), s							0.0				0.0		6.0		6.0		6.0		6.0															
Max Allow Headway (MAH), s							3.2				3.2		2.9		0.0		2.9		0.0															
Queue Clearance Time (g _s), s							6.2				13.0		8.5				17.0																	
Green Extension Time (g _e), s							0.4				0.0		0.4		0.0		0.0		0.0															
Phase Call Probability							1.00				1.00		1.00				1.00																	
Max Out Probability							0.31				1.00		0.00				1.00																	
Movement Group Results					EB			WB			NB			SB																				
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R																		
Assigned Movement					4			14			8			18			5			2			12			1			6			16		
Adjusted Flow Rate (v), veh/h					0			120			0			261			196			2209			87			457			1649			43		
Adjusted Saturation Flow Rate (s), veh/h/ln					1870			1403			1870			1585			1689			1738			1547			1689			1738			1547		
Queue Service Time (g _s), s					0.0			4.2			0.0			11.0			6.5			66.2			2.3			15.0			28.8			0.9		
Cycle Queue Clearance Time (g _c), s					0.0			4.2			0.0			11.0			6.5			66.2			2.3			15.0			28.8			0.9		
Green Ratio (g/C)					0.10			0.17			0.10			0.23			0.08			0.67			0.67			0.13			0.72			0.72		
Capacity (c), veh/h					179			486			179			358			262			2328			1036			440			2512			1118		
Volume-to-Capacity Ratio (X)					0.000			0.246			0.000			0.728			0.748			0.949			0.084			1.036			0.656			0.039		
Back of Queue (Q), ft/ln (50 th percentile)					0			35.6			0			180.3			70.2			600.1			16.9			240.2			210.6			6.2		
Back of Queue (Q), veh/ln (50 th percentile)					0.0			1.4			0.0			7.1			2.7			23.1			0.6			9.2			8.1			0.2		
Queue Storage Ratio (RQ) (50 th percentile)					0.00			0.00			0.00			0.00			0.00			0.00			0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh					0.0			41.1			0.0			41.2			51.9			17.2			6.7			50.0			8.4			4.6		
Incremental Delay (d ₂), s/veh					0.0			0.1			0.0			6.4			1.6			10.0			0.2			52.6			1.4			0.1		
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0		
Control Delay (d), s/veh					0.0			41.2			0.0			47.6			53.6			27.2			6.8			102.6			9.8			4.6		
Level of Service (LOS)								D						D			D			C			A			F			A			A		
Approach Delay, s/veh / LOS					41.2			D			47.6			D			28.6			C			29.4			C								
Intersection Delay, s/veh / LOS								30.2									C																	
Multimodal Results					EB			WB			NB			SB																				
Pedestrian LOS Score / LOS					2.61			C			2.61			C			2.06			B			2.22			B								
Bicycle LOS Score / LOS					0.68			A			0.92			A			2.54			C			2.26			B								

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	129_US23-DelPlazaN_AM.xus			
Project Description	No-Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	90		80					1514			2468	70

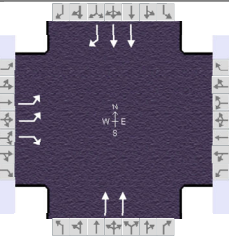
Signal Information												
Cycle, s	110.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
	Green	86.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		17.0				93.0		93.0
Change Period, ($Y+R_c$), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g_s), s		7.8						
Green Extension Time (g_e), s		0.3				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

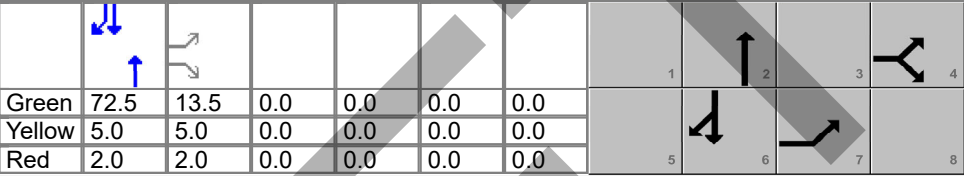
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	98		87				1646			2683		76
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1710			1710		1522
Queue Service Time (g_s), s	2.9		5.8				22.2			86.0		1.3
Cycle Queue Clearance Time (g_c), s	2.9		5.8				22.2			86.0		1.3
Green Ratio (g/C)	0.09		0.09				0.78			0.78		0.78
Capacity (c), veh/h	313		144				2675			2675		1191
Volume-to-Capacity Ratio (X)	0.312		0.606				0.615			1.003		0.064
Back of Queue (Q), ft/ln (50 th percentile)	30.6		57.1				122.1			608.9		6.5
Back of Queue (Q), veh/ln (50 th percentile)	1.2		2.2				4.6			23.1		0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00			0.00		0.00
Uniform Delay (d_1), s/veh	46.8		48.1				5.0			12.0		2.7
Incremental Delay (d_2), s/veh	0.2		1.5				1.1			18.1		0.1
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	47.0		49.7				6.1			30.1		2.9
Level of Service (LOS)	D		D				A			F		A
Approach Delay, s/veh / LOS	48.3		D	0.0			6.1		A	29.3		C
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.32	B	0.64	A	2.03	B
Bicycle LOS Score / LOS		F			1.85	B	2.76	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	129_US23-DelPlazaN_PM.xus			
Project Description	No Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	350		100					2243			1858	220

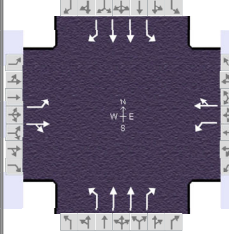
Signal Information												
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	72.5	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		20.5				79.5		79.5
Change Period, ($Y+R_c$), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g_s), s		12.7						
Green Extension Time (g_e), s		0.9				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

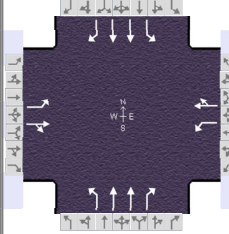
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	380		109				2438			2020		239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1710			1710		1522
Queue Service Time (g_s), s	10.7		6.4				68.4			39.7		5.1
Cycle Queue Clearance Time (g_c), s	10.7		6.4				68.4			39.7		5.1
Green Ratio (g/C)	0.14		0.14				0.72			0.72		0.72
Capacity (c), veh/h	468		215				2478			2478		1103
Volume-to-Capacity Ratio (X)	0.813		0.507				0.984			0.815		0.217
Back of Queue (Q), ft/ln (50 th percentile)	110.7		60.4				542.5			265.7		30.8
Back of Queue (Q), veh/ln (50 th percentile)	4.4		2.4				20.5			10.1		1.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00			0.00		0.00
Uniform Delay (d_1), s/veh	42.0		40.1				13.2			9.3		4.5
Incremental Delay (d_2), s/veh	1.3		0.7				14.6			3.1		0.5
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	43.3		40.8				27.8			12.3		4.9
Level of Service (LOS)	D		D				C			B		A
Approach Delay, s/veh / LOS	42.8		D	0.0			27.8		C	11.6		B
Intersection Delay, s/veh / LOS	22.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	0.65	A	2.04	B
Bicycle LOS Score / LOS		F			2.50	B	2.35	B

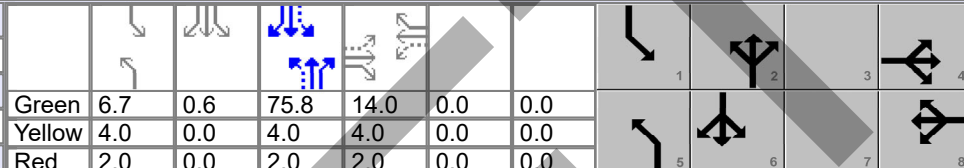
HCS Signalized Intersection Results Summary

General Information						Intersection Information												
Agency	ms consultants					Duration, h	0.250											
Analyst	JRH		Analysis Date	Mar 27, 2023		Area Type	Other											
Jurisdiction			Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00											
Intersection	Cottswold Drive		File Name	130_US23-Cottswold_AM.xus														
Project Description	No-Build Design Year (2050)																	
Demand Information			EB			WB			NB			SB						
Approach Movement			L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h			30	10	60	40	10	40	30	1545	40	40	2408	20				
Signal Information																		
Cycle, s	110.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	4.4	0.7	76.9	10.0	0.0	0.0								
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0								
				Red	2.0	0.0	2.0	2.0	0.0	0.0								
Timer Results			EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase					4				8		5		2		1		6	
Case Number					6.0				6.0		1.1		3.0		1.1		3.0	
Phase Duration, s					16.0				16.0		10.4		82.9		11.1		83.6	
Change Period, (Y+R _c), s					6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s					3.1				3.1		2.9		0.0		2.9		0.0	
Queue Clearance Time (g _s), s					8.0				10.5		2.6				2.7			
Green Extension Time (g _e), s					0.1				0.0		0.0		0.0		0.1		0.0	
Phase Call Probability					1.00				1.00		0.63				0.74			
Max Out Probability					1.00				1.00		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			33	76		43	54		33	1679	43	43	2617	22				
Adjusted Saturation Flow Rate (s), veh/h/ln			1350	1620		1323	1635		1711	1710	1522	1711	1710	1522				
Queue Service Time (g _s), s			2.6	4.9		3.6	3.4		0.6	32.0	1.0	0.7	77.6	0.5				
Cycle Queue Clearance Time (g _c), s			6.0	4.9		8.5	3.4		0.6	32.0	1.0	0.7	77.6	0.5				
Green Ratio (g/C)			0.09	0.09		0.09	0.09		0.74	0.70	0.70	0.75	0.71	0.71				
Capacity (c), veh/h			146	147		126	149		134	2389	1064	261	2412	1074				
Volume-to-Capacity Ratio (X)			0.223	0.516		0.344	0.366		0.243	0.703	0.041	0.167	1.085	0.020				
Back of Queue (Q), ft/ln (50 th percentile)			21.3	49.7		29.2	34.5		15.3	242.6	6.7	6.9	951.4	3.2				
Back of Queue (Q), veh/ln (50 th percentile)			0.8	2.0		1.2	1.4		0.6	9.2	0.3	0.3	36.0	0.1				
Queue Storage Ratio (RQ) (50 th percentile)			0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00				
Uniform Delay (d ₁), s/veh			49.8	47.7		51.7	47.0		30.7	9.8	5.1	9.2	16.2	4.8				
Incremental Delay (d ₂), s/veh			0.3	1.4		0.6	0.6		0.3	1.8	0.1	0.1	46.2	0.0				
Initial Queue Delay (d ₃), s/veh			0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh			50.1	49.1		52.3	47.6		31.0	11.6	5.2	9.3	62.4	4.9				
Level of Service (LOS)			D	D		D	D		C	B	A	A	F	A				
Approach Delay, s/veh / LOS			49.4		D	49.7		D	11.8		B	61.1		E				
Intersection Delay, s/veh / LOS			41.9						D									
Multimodal Results			EB			WB			NB			SB						
Pedestrian LOS Score / LOS			2.46		B	2.46		B	1.86		B	1.86		B				
Bicycle LOS Score / LOS			0.67		A	0.65		A	1.94		B	2.70		C				

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	130_US23-Cottswold_PM.xus			
Project Description	No Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	20	90	80	30	90	90	2368	80	130	1944	40

Signal Information													
Cycle, s	115.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.7	0.6	75.8	14.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

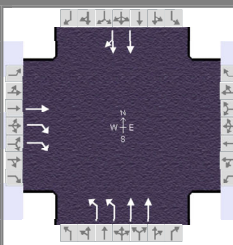
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		20.0		20.0	12.7	81.8	13.2	82.3
Change Period, ($Y+R_c$), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s		16.0		16.0	4.0		7.1	
Green Extension Time (g_e), s		0.0		0.0	0.1	0.0	0.2	0.0
Phase Call Probability		1.00		1.00	0.96		0.99	
Max Out Probability		1.00		1.00	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	65	120		87	130		98	2574	87	141	2113	43
Adjusted Saturation Flow Rate (s), veh/h/ln	1260	1630		1272	1648		1711	1710	1522	1711	1710	1522
Queue Service Time (g_s), s	5.3	8.0		6.0	8.7		2.0	75.8	2.4	5.1	62.6	1.1
Cycle Queue Clearance Time (g_c), s	14.0	8.0		14.0	8.7		2.0	75.8	2.4	5.1	62.6	1.1
Green Ratio (g/C)	0.12	0.12		0.12	0.12		0.72	0.66	0.66	0.72	0.66	0.66
Capacity (c), veh/h	121	198		129	201		181	2253	1003	170	2269	1010
Volume-to-Capacity Ratio (X)	0.540	0.602		0.674	0.650		0.540	1.142	0.087	0.829	0.931	0.043
Back of Queue (Q), ft/ln (50 th percentile)	48.4	83.9		71.4	94.5		45.2	1179.5	18.1	105.6	561.4	8.6
Back of Queue (Q), veh/ln (50 th percentile)	1.9	3.3		2.8	3.7		1.7	44.7	0.7	4.0	21.3	0.3
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	55.1	47.9		55.2	48.2		28.7	19.6	7.1	37.6	17.0	6.7
Incremental Delay (d_2), s/veh	2.6	3.6		10.7	5.7		0.9	70.0	0.2	3.9	8.4	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	57.8	51.5		65.9	53.9		29.6	89.6	7.3	41.5	25.5	6.8
Level of Service (LOS)	E	D		E	D		C	F	A	D	C	A
Approach Delay, s/veh / LOS	53.7		D	58.7		E	84.9		F	26.1		C
Intersection Delay, s/veh / LOS	58.0						E					

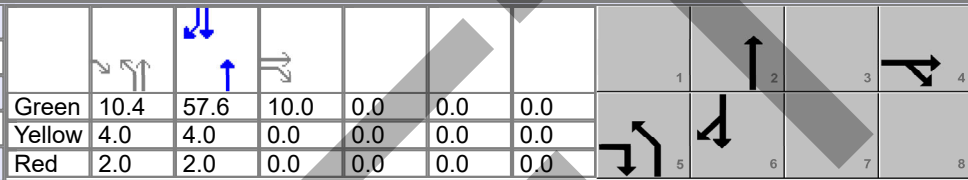
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.79	A	0.85	A	2.76	C	2.38	B

HCS Signalized Intersection Results Summary

General Information						Intersection Information					
Agency	ms consultants					Duration, h	0.250				
Analyst	JRH	Analysis Date	Mar 27, 2023			Area Type	Other				
Jurisdiction		Time Period	AM Peak			PHF	0.92				
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00				
Intersection	S. Sandusky Street		File Name	131_US23-SouthSandusky_AM.xus							
Project Description	No-Build Design Year (2050)										



Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					0	312				295	0			2114	16

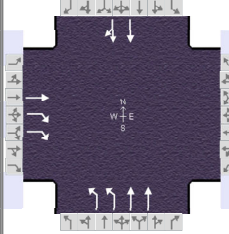
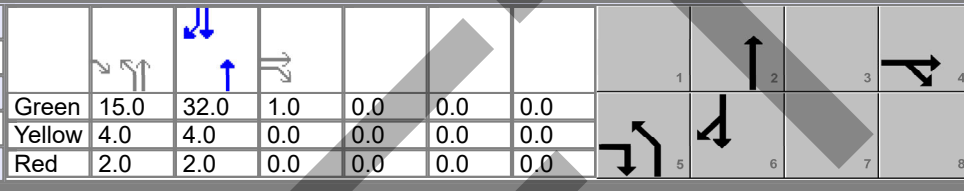
Signal Information				Signal Timing (s)																
Cycle, s	90.0	Reference Phase	6																	
Offset, s	0	Reference Point	End	Green	10.4	57.6	10.0	0.0	0.0	0.0										
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0										
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0										

Timer Results		EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase			4			5	2		6
Case Number			11.0			2.0	4.0		8.3
Phase Duration, s			10.0			16.4	80.0		63.6
Change Period, (Y+R _c), s			0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s			3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s			11.7			10.2			
Green Extension Time (g _e), s			0.0			0.2	0.0		0.0
Phase Call Probability			1.00			1.00			
Max Out Probability			1.00			1.00			

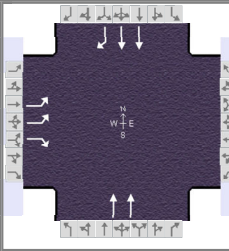
Movement Group Results		EB			WB			NB			SB		
Approach Movement		L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4		14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0		339				321	0			1158	1158
Adjusted Saturation Flow Rate (s), veh/h/ln		1856		1392				1716	1766			1856	1851
Queue Service Time (g _s), s		0.0		9.7				8.2	0.0			56.6	54.1
Cycle Queue Clearance Time (g _c), s		0.0		9.7				8.2	0.0			56.6	54.1
Green Ratio (g/C)		0.11		0.23				0.12	0.82			0.64	0.64
Capacity (c), veh/h		206		630				395	2905			1188	1185
Volume-to-Capacity Ratio (X)		0.000		0.539				0.812	0.000			0.974	0.977
Back of Queue (Q), ft/ln (95 th percentile)		0		142.3				171.4	0			805.7	794.3
Back of Queue (Q), veh/ln (95 th percentile)		0.0		5.6				6.7	0.0			31.5	31.8
Queue Storage Ratio (RQ) (95 th percentile)		0.00		0.18				0.34	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh		0.0		30.7				38.9	0.0			15.5	15.5
Incremental Delay (d ₂), s/veh		0.0		0.5				8.1	0.0			20.6	21.1
Initial Queue Delay (d ₃), s/veh		0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0		31.2				46.9	0.0			36.1	36.7
Level of Service (LOS)				C				D				D	D
Approach Delay, s/veh / LOS		31.2		C	0.0			46.9		D	36.4		D
Intersection Delay, s/veh / LOS		36.9						D					

Multimodal Results		EB		WB		NB		SB	
Pedestrian LOS Score / LOS		2.46	B	2.14	B	1.29	A	2.23	B
Bicycle LOS Score / LOS		1.05	A			0.75	A	2.40	B

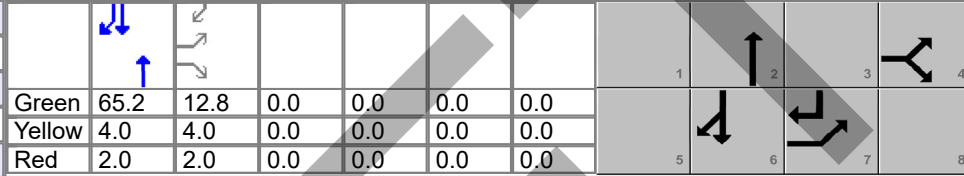
HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other											
Jurisdiction		Time Period	PM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00										
Intersection	S. Sandusky Street		File Name	131_US23-SouthSandusky_PM.xus													
Project Description	No Build Design Year (2050)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h						0	341				481	0			1764	14	
Signal Information																	
Cycle, s	60.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
Green					15.0	32.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow					4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red					2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase						4			5	2		6					
Case Number						11.0			2.0	4.0		8.3					
Phase Duration, s						1.0			21.0	59.0		38.0					
Change Period, (Y+R _c), s						0.0			6.0	6.0		6.0					
Max Allow Headway (MAH), s						3.3			3.0	0.0		0.0					
Queue Clearance Time (g _s), s						3.0			10.1								
Green Extension Time (g _e), s						0.0			0.7	0.0		0.0					
Phase Call Probability						1.00			1.00								
Max Out Probability						1.00			0.27								
Movement Group Results					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement						4	14				5	2			6	16	
Adjusted Flow Rate (v), veh/h						0	371				523	0		966	966		
Adjusted Saturation Flow Rate (s), veh/h/ln						1856	1392				1716	1766		1856	1850		
Queue Service Time (g _s), s						0.0	1.0				8.1	0.0		30.5	30.6		
Cycle Queue Clearance Time (g _c), s						0.0	1.0				8.1	0.0		30.5	30.6		
Green Ratio (g/C)						0.02	0.27				0.25	0.88		0.53	0.53		
Capacity (c), veh/h						31	742				858	3121		990	987		
Volume-to-Capacity Ratio (X)						0.000	0.499				0.609	0.000		0.976	0.979		
Back of Queue (Q), ft/ln (95 th percentile)						0	86.1				144.5	0		545.4	537.6		
Back of Queue (Q), veh/ln (95 th percentile)						0.0	3.4				5.6	0.0		21.3	21.5		
Queue Storage Ratio (RQ) (95 th percentile)						0.00	0.11				0.29	0.00		0.00	0.00		
Uniform Delay (d ₁), s/veh						0.0	18.6				19.9	0.0		13.6	13.7		
Incremental Delay (d ₂), s/veh						0.0	0.2				3.2	0.0		23.5	24.0		
Initial Queue Delay (d ₃), s/veh						0.0	0.0				0.0	0.0		0.0	0.0		
Control Delay (d), s/veh						0.0	18.8				23.1	0.0		37.1	37.7		
Level of Service (LOS)							B				C			D	D		
Approach Delay, s/veh / LOS					18.8		B	0.0			23.1		C	37.4		D	
Intersection Delay, s/veh / LOS					32.3			C									
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.45		B	2.12		B	1.28		A	2.23		B	
Bicycle LOS Score / LOS					1.10		A				0.92		A	2.08		B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	132_US23-US42_AM.xus			
Project Description	No-Build Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	338		75					1362			2258	677

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	65.2	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

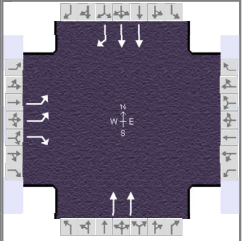
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		18.8				71.2		71.2
Change Period, ($Y+R_c$), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g_s), s		11.9						
Green Extension Time (g_e), s		0.9				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	367		82				1480			2454		736
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336				1724			1724		1485
Queue Service Time (g_s), s	9.9		5.0				18.7			61.3		11.8
Cycle Queue Clearance Time (g_c), s	9.9		5.0				18.7			61.3		11.8
Green Ratio (g/C)	0.14		0.14				0.72			0.72		0.87
Capacity (c), veh/h	461		190				2497			2497		1287
Volume-to-Capacity Ratio (X)	0.796		0.428				0.593			0.983		0.572
Back of Queue (Q), ft/ln (95 th percentile)	183.8		76.8				217			693.7		32.2
Back of Queue (Q), veh/ln (95 th percentile)	6.8		2.8				8.3			26.5		1.2
Queue Storage Ratio (RQ) (95 th percentile)	0.78		0.77				0.00			0.00		0.21
Uniform Delay (d_1), s/veh	37.3		35.2				6.0			11.9		1.6
Incremental Delay (d_2), s/veh	1.2		0.6				1.0			14.4		1.9
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	38.5		35.8				7.0			26.3		3.4
Level of Service (LOS)	D		D				A			C		A
Approach Delay, s/veh / LOS	38.0		D	0.0			7.0		A	21.0		C
Intersection Delay, s/veh / LOS	18.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.14	B	2.31	B	0.65	A	2.04	B
Bicycle LOS Score / LOS		F			1.71	B	3.12	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	132_US23-US42_PM.xus				
Project Description	No-Build Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	624		78					2060			1689	312

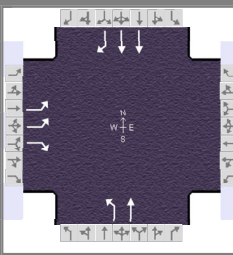
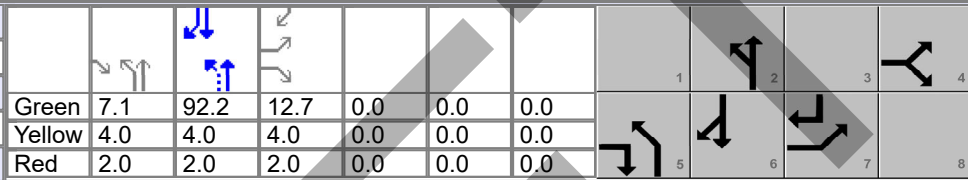
Signal Information														
Cycle, s	100.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	64.1	23.9	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
				Red	2.0	2.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		29.9				70.1		70.1
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		22.2						
Green Extension Time (g _e), s		1.7				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

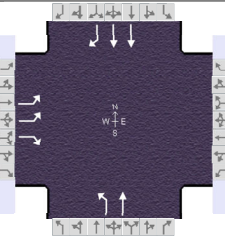
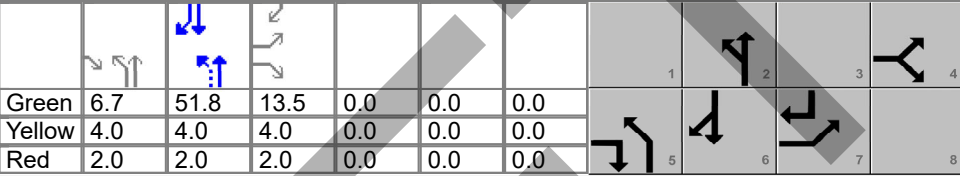
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	678		85				2239			1836		339
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336				1724			1724		1485
Queue Service Time (g _s), s	20.2		5.2				64.1			40.9		3.6
Cycle Queue Clearance Time (g _c), s	20.2		5.2				64.1			40.9		3.6
Green Ratio (g/C)	0.24		0.24				0.64			0.64		0.88
Capacity (c), veh/h	774		319				2211			2211		1306
Volume-to-Capacity Ratio (X)	0.876		0.266				1.013			0.831		0.260
Back of Queue (Q), ft/ln (95 th percentile)	330.2		78.1				928.5			520		8.5
Back of Queue (Q), veh/ln (95 th percentile)	12.2		2.9				35.4			19.8		0.3
Queue Storage Ratio (RQ) (95 th percentile)	1.41		0.78				0.00			0.00		0.06
Uniform Delay (d ₁), s/veh	36.6		30.9				17.9			13.8		0.9
Incremental Delay (d ₂), s/veh	1.3		0.2				22.4			3.8		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	37.9		31.1				40.3			17.6		1.4
Level of Service (LOS)	D		C				F			B		A
Approach Delay, s/veh / LOS	37.2		D	0.0			40.3		D	15.1		B
Intersection Delay, s/veh / LOS	29.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	0.67	A	2.06	B
Bicycle LOS Score / LOS		F			2.33	B	2.28	B

HCS Signalized Intersection Results Summary

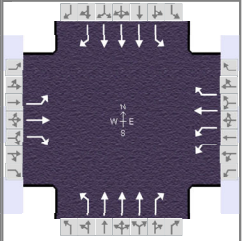
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	SR 315	File Name	E125_US23-SR315_AM.xus													
Project Description	Concept E Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					250		88				113	0			2383	280
Signal Information								Cycle, s		130.0	Reference Phase	2				
Offset, s		0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	7.1	92.2	12.7	0.0				0.0	0.0							
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4			5	2		6				
Case Number						9.0			1.0	4.0		7.3				
Phase Duration, s						18.7			13.1	111.3		98.2				
Change Period, (Y+R _c), s						6.0			6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.0			2.9	0.0		0.0				
Queue Clearance Time (g _s), s						12.0			7.0							
Green Extension Time (g _e), s						0.7			0.2	0.0		0.0				
Phase Call Probability						1.00			0.99							
Max Out Probability						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		14				5	2		6	16	
Adjusted Flow Rate (v), veh/h					272		96				123	0		2590	304	
Adjusted Saturation Flow Rate (s), veh/h/ln					1730		1585				1711	1796		1710	1522	
Queue Service Time (g _s), s					10.0		7.1				5.0	0.0		92.2	6.3	
Cycle Queue Clearance Time (g _c), s					10.0		7.1				5.0	0.0		92.2	6.3	
Green Ratio (g/C)					0.10		0.15				0.78	0.81		0.71	0.81	
Capacity (c), veh/h					339		241				148	1455		2426	1229	
Volume-to-Capacity Ratio (X)					0.802		0.396				0.827	0.000		1.068	0.248	
Back of Queue (Q), ft/ln (95 th percentile)					195.3		124.9				190.9	0		1428	60.8	
Back of Queue (Q), veh/ln (95 th percentile)					7.7		4.9				7.2	0.0		54.1	2.3	
Queue Storage Ratio (RQ) (95 th percentile)					0.00		0.00				0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh					57.4		49.7				46.4	0.0		18.9	3.0	
Incremental Delay (d ₂), s/veh					1.7		0.4				4.4	0.0		39.6	0.5	
Initial Queue Delay (d ₃), s/veh					0.0		0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh					59.1		50.1				50.8	0.0		58.5	3.5	
Level of Service (LOS)					E		D				D			F	A	
Approach Delay, s/veh / LOS					56.8		E	0.0			50.8		D	52.7		D
Intersection Delay, s/veh / LOS					53.0						D					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.16		B	2.32		B	0.63		A	2.06		B
Bicycle LOS Score / LOS							F				0.69		A	2.88		C

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	SR 315	File Name	E125_US23-SR315_PM.xus													
Project Description	Concept E Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					380		111				118	0			1715	380
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green					6.7	51.8	13.5	0.0	0.0	0.0						
Yellow					4.0	4.0	4.0	0.0	0.0	0.0						
Red					2.0	2.0	2.0	0.0	0.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4			5	2		6				
Case Number						9.0			1.0	4.0		7.3				
Phase Duration, s						19.5			12.7	70.5		57.8				
Change Period, (Y+R _c), s						6.0			6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.0			2.9	0.0		0.0				
Queue Clearance Time (g _s), s						12.4			4.4							
Green Extension Time (g _e), s						1.1			0.2	0.0		0.0				
Phase Call Probability						1.00			0.96							
Max Out Probability						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		14				5	2		6	16	
Adjusted Flow Rate (v), veh/h					413		121				128	0		1864	413	
Adjusted Saturation Flow Rate (s), veh/h/ln					1730		1585				1711	1796		1710	1522	
Queue Service Time (g _s), s					10.4		5.8				2.4	0.0		45.8	9.2	
Cycle Queue Clearance Time (g _c), s					10.4		5.8				2.4	0.0		45.8	9.2	
Green Ratio (g/C)					0.15		0.22				0.67	0.72		0.58	0.73	
Capacity (c), veh/h					518		356				223	1288		1969	1104	
Volume-to-Capacity Ratio (X)					0.797		0.339				0.574	0.000		0.947	0.374	
Back of Queue (Q), ft/ln (95 th percentile)					188.5		92.7				69.4	0		614.1	91	
Back of Queue (Q), veh/ln (95 th percentile)					7.4		3.7				2.6	0.0		23.3	3.4	
Queue Storage Ratio (RQ) (95 th percentile)					0.00		0.00				0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh					36.9		29.3				20.9	0.0		17.8	4.7	
Incremental Delay (d ₂), s/veh					1.1		0.2				0.9	0.0		11.1	1.0	
Initial Queue Delay (d ₃), s/veh					0.0		0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh					38.0		29.5				21.8	0.0		28.9	5.6	
Level of Service (LOS)					D		C				C			C	A	
Approach Delay, s/veh / LOS					36.1	D	0.0				21.8	C		24.7	C	
Intersection Delay, s/veh / LOS					26.7			C								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.14	B	2.31	B	0.65	A	2.07	B				
Bicycle LOS Score / LOS						F			0.70	A	2.37	B				

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Hawthorn Blvd	File Name	E127_US23-Hawthorn_AM.xus		
Project Description	Concept E Design Year (2050)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	30	160	120	20	50	40	1435	80	30	2223	20

Signal Information													
Cycle, s	100.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.2	0.7	51.7	4.9	1.9	12.6			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	4.0			
				Red	2.0	0.0	2.0	2.0	0.0	2.0			

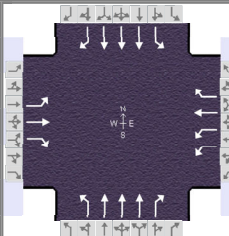
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	10.9	18.6	12.8	20.5	10.9	58.4	10.2	57.7
Change Period, ($Y+R_c$), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	2.9	3.1	2.9	3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g_s), s	4.4	12.2	5.7	4.9	4.5		3.9	
Green Extension Time (g_e), s	0.0	0.4	0.2	0.5	0.0	0.0	0.0	0.0
Phase Call Probability	0.70	1.00	0.97	1.00	0.70		0.60	
Max Out Probability	0.00	0.00	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	43	33	174	130	22	54	43	1560	87	33	2416	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522	1711	1631	1522
Queue Service Time (g_s), s	2.4	1.6	10.2	3.7	1.0	2.9	2.5	22.3	2.5	1.9	47.2	0.6
Cycle Queue Clearance Time (g_c), s	2.4	1.6	10.2	3.7	1.0	2.9	2.5	22.3	2.5	1.9	47.2	0.6
Green Ratio (g/C)	0.05	0.13	0.18	0.07	0.15	0.19	0.05	0.52	0.59	0.04	0.52	0.57
Capacity (c), veh/h	87	236	278	236	271	294	84	2564	901	71	2528	861
Volume-to-Capacity Ratio (X)	0.497	0.138	0.626	0.553	0.080	0.185	0.518	0.608	0.096	0.457	0.956	0.025
Back of Queue (Q), ft/ln (50 th percentile)	26.4	17.2	95.4	38.2	11.1	27	27.5	192.5	19.1	20.7	459.2	5
Back of Queue (Q), veh/ln (50 th percentile)	1.0	0.7	3.8	1.5	0.4	1.1	1.0	7.3	0.7	0.8	17.4	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	46.3	38.9	38.2	45.1	37.0	34.2	46.4	16.6	8.8	46.8	23.1	9.6
Incremental Delay (d_2), s/veh	1.6	0.1	0.9	0.8	0.0	0.1	1.8	1.1	0.2	1.7	10.2	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	48.0	39.0	39.1	45.9	37.0	34.4	48.2	17.7	9.0	48.5	33.2	9.6
Level of Service (LOS)	D	D	D	D	D	C	D	B	A	D	C	A
Approach Delay, s/veh / LOS	40.6		D	41.9		D	18.0		B	33.2		C
Intersection Delay, s/veh / LOS	28.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.73	C	2.25	B	2.09	B
Bicycle LOS Score / LOS	0.90	A	0.83	A	1.42	A	1.85	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Hawthorn Blvd	File Name	E127_US23-Hawthorn_PM.xus		
Project Description	Concept E Design Year (2050)				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	20	60	60	190	40	150	140	2027	160	40	1600	50

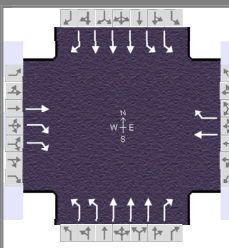
Signal Information				Signal Timing (s)														
Cycle, s	85.0	Reference Phase	2	Green	3.9	5.4	34.8	2.8	4.1	10.0	Yellow	4.0	0.0	4.0	4.0	4.0	4.0	4.0
Offset, s	0	Reference Point	End	Red	2.0	0.0	2.0	2.0	0.0	2.0	Red	2.0	0.0	2.0	2.0	2.0	2.0	2.0
Uncoordinated	No	Simult. Gap E/W	On															
Force Mode	Fixed	Simult. Gap N/S	On															

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	7	4	3	8	5	2	1	6
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.8	16.0	12.9	20.1	15.3	46.2	9.9	40.8
Change Period, (Y+R _c), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s	2.9	3.1	2.9	3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s	3.0	4.8	7.0	9.8	9.4		4.1	
Green Extension Time (g _e), s	0.0	0.4	0.0	0.4	0.1	0.0	0.0	0.0
Phase Call Probability	0.40	1.00	0.99	1.00	0.97		0.64	
Max Out Probability	0.00	0.04	1.00	0.07	0.00		0.00	

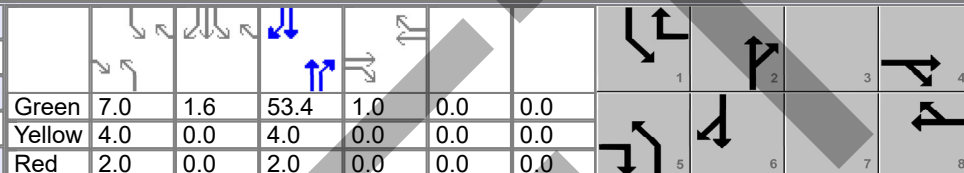
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	22	65	65	207	43	163	152	2203	174	43	1739	54
Adjusted Saturation Flow Rate (s), veh/h/ln	1781	1870	1585	1730	1870	1572	1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	1.0	2.7	2.8	5.0	1.7	7.8	7.4	36.7	4.9	2.1	27.7	1.8
Cycle Queue Clearance Time (g _c), s	1.0	2.7	2.8	5.0	1.7	7.8	7.4	36.7	4.9	2.1	27.7	1.8
Green Ratio (g/C)	0.03	0.12	0.23	0.08	0.17	0.21	0.11	0.47	0.55	0.05	0.41	0.44
Capacity (c), veh/h	59	220	359	283	311	333	186	2314	844	78	2003	673
Volume-to-Capacity Ratio (X)	0.369	0.296	0.182	0.730	0.140	0.490	0.817	0.952	0.206	0.561	0.868	0.081
Back of Queue (Q), ft/ln (50th percentile)	11.1	29.3	24.8	54.6	17.9	68.9	79.5	356.2	37.1	23.2	262.9	14.7
Back of Queue (Q), veh/ln (50th percentile)	0.4	1.2	1.0	2.2	0.7	2.7	3.0	13.5	1.4	0.9	10.0	0.6
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.2	34.3	26.5	38.1	30.2	29.5	37.0	21.5	9.5	39.7	23.0	13.7
Incremental Delay (d ₂), s/veh	1.4	0.3	0.1	5.4	0.1	0.4	3.3	10.4	0.6	2.4	5.4	0.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.7	34.6	26.6	43.5	30.3	29.9	40.4	31.9	10.1	42.1	28.4	13.9
Level of Service (LOS)	D	C	C	D	C	C	D	C	B	D	C	B
Approach Delay, s/veh / LOS	32.2	C		36.7	D		30.9	C		28.3	C	
Intersection Delay, s/veh / LOS	30.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	2.26	B	2.10	B
Bicycle LOS Score / LOS	0.74	A	1.17	A	1.88	B	1.50	A

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza South/P...	File Name	E128_US23-DelPlazaS_AM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		0	28		0	110	70	1413	40	270	2268	20

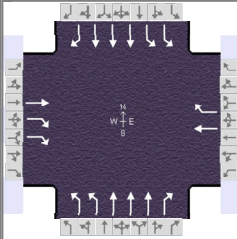
Signal Information														
Cycle, s	75.0	Reference Phase	2	Green	7.0	1.6	53.4	1.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		1.0		1.0	13.0	59.4	14.6	61.0
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		2.7		3.0	3.6		8.3	
Green Extension Time (g _e), s		0.0		0.0	0.1	0.0	0.2	0.0
Phase Call Probability		0.96		0.96	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.46	

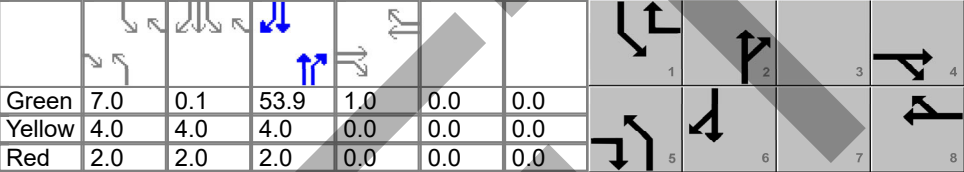
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	30		0	120	76	1536	43	293	2465	22
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1585	1689	1658	1547	1689	1658	1547
Queue Service Time (g _s), s		0.0	0.7		0.0	1.0	1.6	9.6	0.6	6.3	19.7	0.3
Cycle Queue Clearance Time (g _c), s		0.0	0.7		0.0	1.0	1.6	9.6	0.6	6.3	19.7	0.3
Green Ratio (g/C)		0.01	0.11		0.01	0.13	0.09	0.71	0.71	0.11	0.73	0.73
Capacity (c), veh/h		25	299		25	202	315	3544	1103	385	3647	1135
Volume-to-Capacity Ratio (X)		0.000	0.102		0.000	0.592	0.241	0.433	0.039	0.762	0.676	0.019
Back of Queue (Q), ft/ln (95 th percentile)		0	10.3		0	91.8	27.4	74.5	5.1	114.6	136.9	2.1
Back of Queue (Q), veh/ln (95 th percentile)		0.0	0.4		0.0	3.6	1.1	2.9	0.2	4.4	5.3	0.1
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	30.3		0.0	30.9	31.5	4.5	3.2	32.2	5.3	2.7
Incremental Delay (d ₂), s/veh		0.0	0.1		0.0	3.2	0.1	0.4	0.1	2.3	1.0	0.0
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	30.3		0.0	34.0	31.7	4.9	3.3	34.6	6.3	2.7
Level of Service (LOS)			C			C	C	A	A	C	A	A
Approach Delay, s/veh / LOS	30.3		C	34.0		C	6.1		A	9.3		A
Intersection Delay, s/veh / LOS	8.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.85	C	2.03	B	2.20	B
Bicycle LOS Score / LOS	0.54	A	0.68	A	1.40	A	2.02	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza South/P...	File Name	E128_US23-DelPlazaS_PM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		0	110		0	240	180	2032	80	420	1517	40

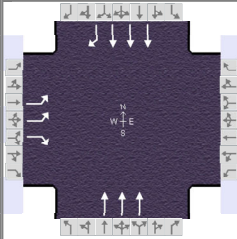
Signal Information														
Cycle, s	80.0	Reference Phase	2	Green	7.0	0.1	53.9	1.0	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		1.0		1.0	13.0	59.9	19.1	66.0
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		3.0		3.0	6.5		12.5	
Green Extension Time (g _e), s		0.0		0.0	0.3	0.0	0.6	0.0
Phase Call Probability		1.00		1.00	1.00		1.00	
Max Out Probability		1.00		1.00	0.00		0.06	

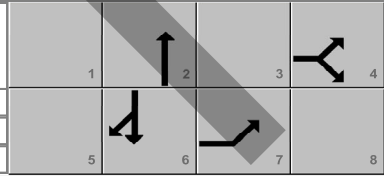
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	120		0	261	196	2209	87	457	1649	43
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1585	1689	1658	1547	1689	1658	1547
Queue Service Time (g _s), s		0.0	1.0		0.0	1.0	4.5	20.8	1.6	10.5	9.9	0.6
Cycle Queue Clearance Time (g _c), s		0.0	1.0		0.0	1.0	4.5	20.8	1.6	10.5	9.9	0.6
Green Ratio (g/C)		0.01	0.10		0.01	0.18	0.09	0.67	0.67	0.16	0.75	0.75
Capacity (c), veh/h		23	281		23	279	296	3352	1043	552	3730	1161
Volume-to-Capacity Ratio (X)		0.000	0.426		0.000	0.935	0.662	0.659	0.083	0.827	0.442	0.037
Back of Queue (Q), ft/ln (50 th percentile)		0	25.7		0	185	45	119.4	8.9	106.3	36.8	2.3
Back of Queue (Q), veh/ln (50 th percentile)		0.0	1.0		0.0	7.3	1.7	4.6	0.3	4.1	1.4	0.1
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	33.8		0.0	32.5	35.4	7.6	4.5	32.4	3.7	2.6
Incremental Delay (d ₂), s/veh		0.0	0.4		0.0	36.4	1.0	1.0	0.2	3.1	0.4	0.1
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	34.2		0.0	68.9	36.3	8.7	4.7	35.5	4.1	2.6
Level of Service (LOS)			C			E	D	A	A	D	A	A
Approach Delay, s/veh / LOS	34.2		C	68.9		E	10.7		B	10.7		B
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.85	C	2.85	C	2.05	B	2.19	B
Bicycle LOS Score / LOS	0.68	A	0.92	A	1.86	B	1.67	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	E129_US23-DelPlazaN_AM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	90		80					1514			2468	70

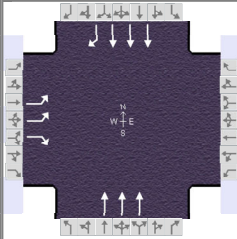
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	Off									
Green	66.1	9.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		16.9				73.1		73.1
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		6.6						
Green Extension Time (g _e), s		0.3				0.0		0.0
Phase Call Probability		0.99						
Max Out Probability		0.00						

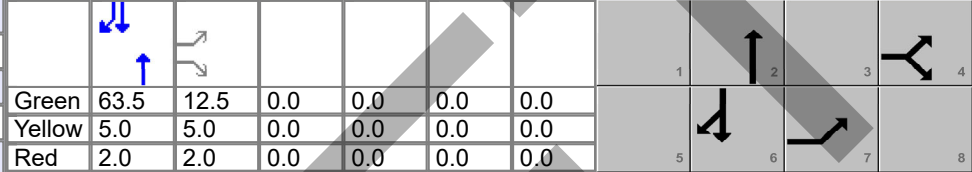
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	98		87				1646			2683		76
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1631			1631		1522
Queue Service Time (g _s), s	2.3		4.6				12.1			29.0		1.3
Cycle Queue Clearance Time (g _c), s	2.3		4.6				12.1			29.0		1.3
Green Ratio (g/C)	0.11		0.11				0.73			0.73		0.73
Capacity (c), veh/h	381		174				3594			3594		1118
Volume-to-Capacity Ratio (X)	0.257		0.499				0.458			0.747		0.068
Back of Queue (Q), ft/ln (50 th percentile)	23.5		43.6				61.2			151.2		6.5
Back of Queue (Q), veh/ln (50 th percentile)	0.9		1.7				2.3			5.7		0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00			0.00		0.00
Uniform Delay (d ₁), s/veh	36.7		37.7				4.8			7.0		3.3
Incremental Delay (d ₂), s/veh	0.1		0.8				0.4			1.5		0.1
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	36.8		38.5				5.2			8.5		3.5
Level of Service (LOS)	D		D				A			A		A
Approach Delay, s/veh / LOS	37.6		D	0.0			5.2		A	8.3		A
Intersection Delay, s/veh / LOS	8.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	0.65	A	2.03	B
Bicycle LOS Score / LOS		F			1.39	A	2.00	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	E129_US23-DelPlazaN_PM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h	350		100						2243			1858	220

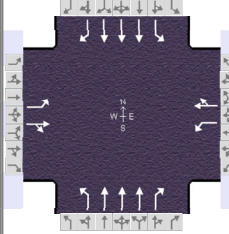
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	63.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	5.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		19.5				70.5		70.5
Change Period, (Y+R _c), s		7.0				7.0		7.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		11.6						
Green Extension Time (g _e), s		1.0				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.00						

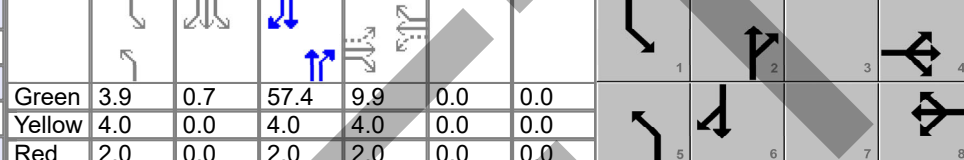
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	380		109				2438			2020		239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1631			1631		1522
Queue Service Time (g _s), s	9.6		5.7				26.4			18.7		4.9
Cycle Queue Clearance Time (g _c), s	9.6		5.7				26.4			18.7		4.9
Green Ratio (g/C)	0.14		0.14				0.71			0.71		0.71
Capacity (c), veh/h	482		221				3450			3450		1073
Volume-to-Capacity Ratio (X)	0.789		0.492				0.707			0.585		0.223
Back of Queue (Q), ft/ln (50 th percentile)	96.8		52.9				155.3			108.4		28.9
Back of Queue (Q), veh/ln (50 th percentile)	3.8		2.1				5.9			4.1		1.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00			0.00		0.00
Uniform Delay (d ₁), s/veh	37.4		35.8				7.8			6.7		4.6
Incremental Delay (d ₂), s/veh	1.1		0.6				1.2			0.7		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	38.6		36.4				9.0			7.4		5.1
Level of Service (LOS)	D		D				A			A		A
Approach Delay, s/veh / LOS	38.1		D	0.0			9.0		A	7.2		A
Intersection Delay, s/veh / LOS	11.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.60	C	0.65	A	2.04	B
Bicycle LOS Score / LOS		F			1.83	B	1.73	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	E130_US23-Cottswold_AM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	10	60	40	10	40	30	1545	40	40	2408	20

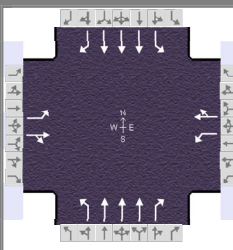
Signal Information																								
Cycle, s	90.0	Reference Phase	2	Green	3.9	0.7	57.4	9.9	0.0	0.0	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	Red	2.0	0.0	2.0	2.0	0.0	0.0
Offset, s	0	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.9		15.9	9.9	63.4	10.6	64.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		6.8		8.8	3.7		4.2	
Green Extension Time (g _e), s		0.3		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	0.56		0.66	
Max Out Probability		0.00		0.00	0.00		0.00	

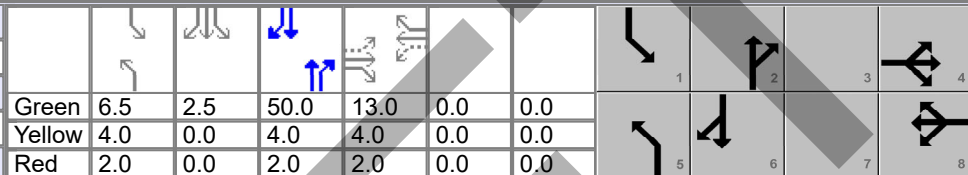
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	33	76		43	54		33	1679	43	43	2617	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1350	1620		1323	1635		1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	2.1	3.9		2.9	2.8		1.7	17.0	1.0	2.2	36.6	0.5
Cycle Queue Clearance Time (g _c), s	4.8	3.9		6.8	2.8		1.7	17.0	1.0	2.2	36.6	0.5
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.04	0.64	0.64	0.05	0.65	0.65
Capacity (c), veh/h	188	179		168	181		74	3122	971	88	3162	984
Volume-to-Capacity Ratio (X)	0.174	0.425		0.258	0.301		0.440	0.538	0.045	0.493	0.828	0.022
Back of Queue (Q), ft/ln (50 th percentile)	16.3	37.7		22.4	26.5		18.3	118.4	6.6	24.2	261	3.1
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.5		0.9	1.0		0.7	4.5	0.2	0.9	9.9	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.0	37.4		40.5	36.8		42.0	9.0	6.1	41.5	12.1	5.7
Incremental Delay (d ₂), s/veh	0.2	0.6		0.3	0.3		1.5	0.7	0.1	1.6	2.6	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	38.0		40.8	37.2		43.5	9.6	6.2	43.1	14.8	5.8
Level of Service (LOS)	D	D		D	D		D	A	A	D	B	A
Approach Delay, s/veh / LOS	38.3	D		38.8	D		10.2	B		15.1		B
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.73	C	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.45	A	1.96	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	E130_US23-Cottswold_PM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	60	20	90	80	30	90	90	2368	80	130	1944	40

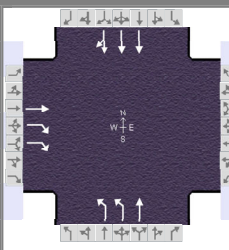
Signal Information																								
Cycle, s	90.0	Reference Phase	2	Green	6.5	2.5	50.0	13.0	0.0	0.0	Yellow	4.0	0.0	4.0	4.0	0.0	0.0	Red	2.0	0.0	2.0	2.0	0.0	0.0
Offset, s	0	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On													

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		19.0		19.0	12.5	56.0	15.0	58.5
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		13.2		14.2	7.1		9.3	
Green Extension Time (g _e), s		0.0		0.0	0.1	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.91		0.97	
Max Out Probability		1.00		1.00	0.00		1.00	

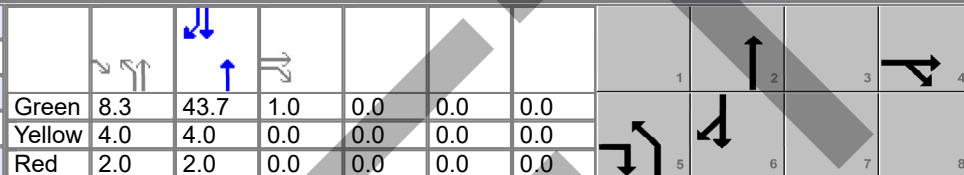
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	65	120		87	130		98	2574	87	141	2113	43
Adjusted Saturation Flow Rate (s), veh/h/ln	1260	1630		1272	1648		1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	4.6	6.1		6.1	6.6		5.1	44.4	2.4	7.3	28.5	1.1
Cycle Queue Clearance Time (g _c), s	11.2	6.1		12.2	6.6		5.1	44.4	2.4	7.3	28.5	1.1
Green Ratio (g/C)	0.14	0.14		0.14	0.14		0.07	0.56	0.56	0.10	0.58	0.58
Capacity (c), veh/h	169	235		178	238		124	2717	845	172	2853	887
Volume-to-Capacity Ratio (X)	0.385	0.508		0.490	0.548		0.788	0.947	0.103	0.823	0.741	0.049
Back of Queue (Q), ft/ln (50 th percentile)	34.2	58.2		46.2	65		56.2	399	18.9	100.9	223.1	8.3
Back of Queue (Q), veh/ln (50 th percentile)	1.3	2.3		1.8	2.6		2.1	15.1	0.7	3.8	8.5	0.3
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	41.0	35.5		41.2	35.8		41.1	18.8	9.4	39.7	13.8	8.1
Incremental Delay (d ₂), s/veh	0.5	0.7		0.8	1.5		4.2	8.7	0.2	20.5	1.8	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.5	36.3		42.0	37.3		45.2	27.5	9.7	60.2	15.5	8.2
Level of Service (LOS)	D	D		D	D		D	C	A	E	B	A
Approach Delay, s/veh / LOS	38.1		D	39.2		D	27.6		C	18.2		B
Intersection Delay, s/veh / LOS	24.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	1.89	B	1.88	B
Bicycle LOS Score / LOS	0.79	A	0.85	A	2.00	B	1.75	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	E131_US23-SouthSandusky_AM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h		0	312					295	0			2114	16

Signal Information																
Cycle, s	65.0	Reference Phase	6													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On	Green	8.3	43.7	1.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
				Red	2.0	2.0	0.0	0.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		1.0			14.3	64.0		49.7
Change Period, (Y+R _c), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		3.0			7.8			
Green Extension Time (g _e), s		0.0			0.4	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			0.05			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0	339				321	0			1545	770
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1856			1856	1848
Queue Service Time (g _s), s		0.0	1.0				5.8	0.0			19.3	15.2
Cycle Queue Clearance Time (g _c), s		0.0	1.0				5.8	0.0			19.3	15.2
Green Ratio (g/C)		0.02	0.14				0.13	0.89			0.67	0.67
Capacity (c), veh/h		29	396				436	1656			2498	1244
Volume-to-Capacity Ratio (X)		0.000	0.856				0.736	0.000			0.618	0.619
Back of Queue (Q), ft/ln (95 th percentile)		0	146.4				101.9	0			161.9	175.7
Back of Queue (Q), veh/ln (95 th percentile)		0.0	5.7				4.0	0.0			6.3	7.0
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.18				0.20	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	27.2				27.3	0.0			6.0	6.0
Incremental Delay (d ₂), s/veh		0.0	16.0				0.9	0.0			1.2	2.3
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0	43.2				28.2	0.0			7.1	8.3
Level of Service (LOS)			D				C				A	A
Approach Delay, s/veh / LOS	43.2		D	0.0			28.2		C	7.5		A
Intersection Delay, s/veh / LOS	13.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.45	B	2.13	B	1.28	A	2.21	B
Bicycle LOS Score / LOS	1.05	A			1.02	A	1.76	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	S. Sandusky Street	File Name	E131_US23-SouthSandusky_PM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB			
	L	T	R	L	T	R	L	T	R	L	T	R	
Approach Movement													
Demand (v), veh/h		0	341					481	0			1764	14

Signal Information												
Cycle, s	95.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	17.0	65.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

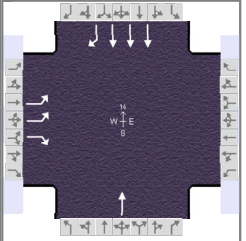
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			2.0	4.0		8.3
Phase Duration, s		1.0			23.0	94.0		71.0
Change Period, ($Y+R_c$), s		0.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g_s), s		3.0			16.0			
Green Extension Time (g_e), s		0.0			0.2	0.0		0.0
Phase Call Probability		1.00			1.00			
Max Out Probability		1.00			1.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0	371				523	0			1290	643
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1392				1716	1856			1856	1848
Queue Service Time (g_s), s		0.0	1.0				14.0	0.0			16.0	16.0
Cycle Queue Clearance Time (g_c), s		0.0	1.0				14.0	0.0			16.0	16.0
Green Ratio (g/C)		0.01	0.19				0.18	0.93			0.68	0.68
Capacity (c), veh/h		20	527				614	1719			2539	1264
Volume-to-Capacity Ratio (X)		0.000	0.703				0.851	0.000			0.508	0.508
Back of Queue (Q), ft/ln (95 th percentile)		0	187.6				282.5	0			220.2	223.8
Back of Queue (Q), veh/ln (95 th percentile)		0.0	7.3				11.0	0.0			8.6	9.0
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.23				0.57	0.00			0.00	0.00
Uniform Delay (d_1), s/veh		0.0	36.0				37.8	0.0			7.3	7.3
Incremental Delay (d_2), s/veh		0.0	3.6				13.9	0.0			0.7	1.5
Initial Queue Delay (d_3), s/veh		0.0	0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0	39.6				51.7	0.0			8.0	8.7
Level of Service (LOS)			D				D				A	A
Approach Delay, s/veh / LOS	39.6		D	0.0			51.7		D	8.2		A
Intersection Delay, s/veh / LOS	20.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.14	B	1.28	A	2.22	B
Bicycle LOS Score / LOS	1.10	A			1.35	A	1.55	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	US 42	File Name	E132_US23-US42_AM.xus				
Project Description	Concept E Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	338		75						0			2258 677

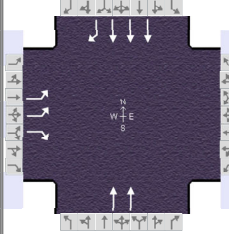
Signal Information													
Cycle, s	60.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	38.0	10.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0			
				Red	2.0	2.0	0.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		16.0				44.0		44.0
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.1				0.0		0.0
Queue Clearance Time (g _s), s		8.4						
Green Extension Time (g _e), s		0.2				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		1.00						

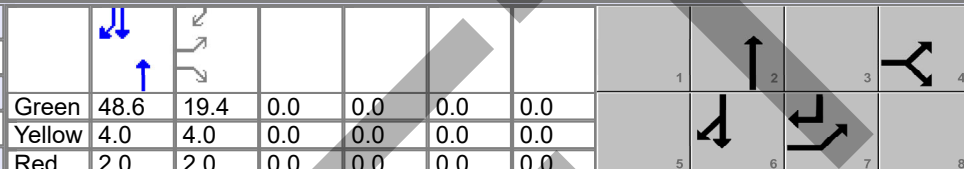
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	367		82				0			2454		736
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336				1811			1644		1485
Queue Service Time (g _s), s	6.4		3.2				0.0			21.8		11.8
Cycle Queue Clearance Time (g _c), s	6.4		3.2				0.0			21.8		11.8
Green Ratio (g/C)	0.17		0.17				0.63			0.63		0.80
Capacity (c), veh/h	540		223				1147			3125		1188
Volume-to-Capacity Ratio (X)	0.681		0.366				0.000			0.785		0.620
Back of Queue (Q), ft/ln (95 th percentile)	114.6		44.8				0			218.3		39
Back of Queue (Q), veh/ln (95 th percentile)	4.2		1.7				0.0			8.3		1.4
Queue Storage Ratio (RQ) (95 th percentile)	0.49		0.45				0.00			0.00		0.26
Uniform Delay (d ₁), s/veh	23.5		22.2				0.0			8.0		2.4
Incremental Delay (d ₂), s/veh	2.9		0.4				0.0			2.1		2.4
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	26.4		22.6				0.0			10.1		4.8
Level of Service (LOS)	C		C							B		A
Approach Delay, s/veh / LOS	25.7		C	0.0			0.0			8.9		A
Intersection Delay, s/veh / LOS	10.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.45	B	0.66	A	2.04	B
Bicycle LOS Score / LOS		F			0.49	A	2.24	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	US 42	File Name	E132_US23-US42_PM.xus			
Project Description	Concept E Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	624		78						0			1689 312

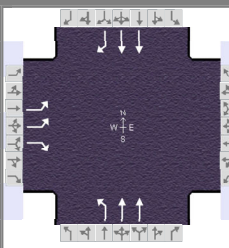
Signal Information													
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	48.6	19.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4				2		6
Case Number		9.0				8.0		7.0
Phase Duration, s		25.4				54.6		54.6
Change Period, (Y+R _c), s		6.0				6.0		6.0
Max Allow Headway (MAH), s		3.0				0.0		0.0
Queue Clearance Time (g _s), s		18.0						
Green Extension Time (g _e), s		1.4				0.0		0.0
Phase Call Probability		1.00						
Max Out Probability		0.05						

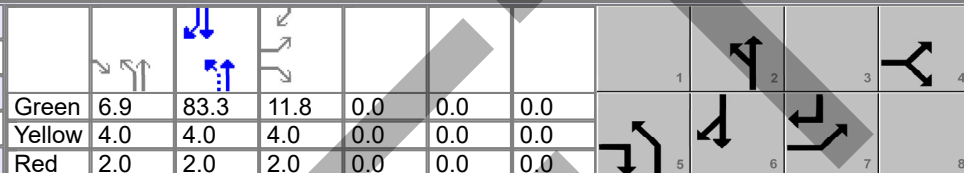
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				2			6		16
Adjusted Flow Rate (v), veh/h	678		85				0			1836		339
Adjusted Saturation Flow Rate (s), veh/h/ln	1620		1336				1724			1644		1485
Queue Service Time (g _s), s	16.0		4.1				0.0			18.6		3.6
Cycle Queue Clearance Time (g _c), s	16.0		4.1				0.0			18.6		3.6
Green Ratio (g/C)	0.24		0.24				0.61			0.61		0.85
Capacity (c), veh/h	787		325				2093			2995		1262
Volume-to-Capacity Ratio (X)	0.862		0.261				0.000			0.613		0.269
Back of Queue (Q), ft/ln (95 th percentile)	275.2		59.1				0			237.6		8.9
Back of Queue (Q), veh/ln (95 th percentile)	10.2		2.2				0.0			9.1		0.3
Queue Storage Ratio (RQ) (95 th percentile)	1.17		0.59				0.00			0.00		0.06
Uniform Delay (d ₁), s/veh	29.0		24.5				0.0			9.8		1.2
Incremental Delay (d ₂), s/veh	4.0		0.2				0.0			0.9		0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0			0.0		0.0
Control Delay (d), s/veh	33.0		24.6				0.0			10.8		1.7
Level of Service (LOS)	C		C							B		A
Approach Delay, s/veh / LOS	32.1		C	0.0			0.0			9.4		A
Intersection Delay, s/veh / LOS	15.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.46	B	0.67	A	2.06	B
Bicycle LOS Score / LOS		F			0.49	A	1.68	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	SR 315	File Name	D125_US23-SR315_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	250		88				113	1446			2383	280

Signal Information															
Cycle, s	120.0	Reference Phase	2	Green	6.9	83.3	11.8	0.0	0.0	0.0	1	4	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

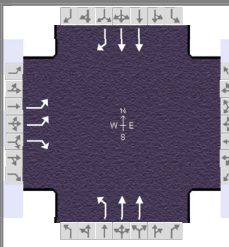
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		17.8			12.9	102.2		89.3
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.2			6.2			
Green Extension Time (g _e), s		0.6			0.2	0.0		0.0
Phase Call Probability		1.00			0.98			
Max Out Probability		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		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	272		96				123	1572			2590	304
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710			1710	1522
Queue Service Time (g _s), s	9.2		6.5				4.2	20.2			83.3	6.2
Cycle Queue Clearance Time (g _c), s	9.2		6.5				4.2	20.2			83.3	6.2
Green Ratio (g/C)	0.10		0.16				0.77	0.80			0.69	0.79
Capacity (c), veh/h	340		247				158	2742			2375	1207
Volume-to-Capacity Ratio (X)	0.799		0.388				0.777	0.573			1.091	0.252
Back of Queue (Q), ft/ln (95 th percentile)	179.4		113.4				171.5	195.3			1436.1	60.2
Back of Queue (Q), veh/ln (95 th percentile)	7.1		4.5				6.5	7.4			54.4	2.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	52.9		45.5				40.7	4.4			18.3	3.2
Incremental Delay (d ₂), s/veh	1.7		0.4				3.1	0.9			48.5	0.5
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	54.6		45.9				43.8	5.2			66.8	3.7
Level of Service (LOS)	D		D				D	A			F	A
Approach Delay, s/veh / LOS	52.3		D	0.0			8.0	A		60.2		E
Intersection Delay, s/veh / LOS	41.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	0.63	A	2.06	B
Bicycle LOS Score / LOS		F			1.89	B	2.88	C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	SR 315	File Name	D125_US23-SR315_PM.xus		
Project Description	Concept D Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	380		111				118	1904			1715	380

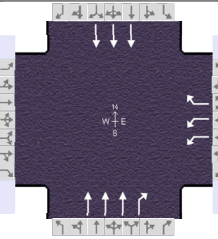
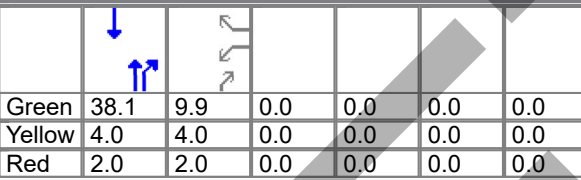
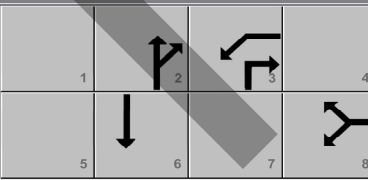
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		6.7	51.8	13.4	0.0	0.0	0.0				
		Yellow		4.0	4.0	4.0	0.0	0.0	0.0				
		Red		2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			1.0	4.0		7.3
Phase Duration, s		19.4			12.7	70.6		57.8
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		12.4			4.4			
Green Extension Time (g _e), s		1.1			0.2	0.0		0.0
Phase Call Probability		1.00			0.96			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	413		121				128	2070			1864	413
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1711	1710			1710	1522
Queue Service Time (g _s), s	10.4		5.8				2.4	39.0			45.7	9.2
Cycle Queue Clearance Time (g _c), s	10.4		5.8				2.4	39.0			45.7	9.2
Green Ratio (g/C)	0.15		0.22				0.67	0.72			0.58	0.73
Capacity (c), veh/h	516		355				224	2453			1970	1104
Volume-to-Capacity Ratio (X)	0.800		0.340				0.573	0.844			0.946	0.374
Back of Queue (Q), ft/ln (95 th percentile)	188.5		92.7				69.4	378.5			613.4	91
Back of Queue (Q), veh/ln (95 th percentile)	7.4		3.7				2.6	14.3			23.2	3.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	37.0		29.3				20.9	9.1			17.8	4.7
Incremental Delay (d ₂), s/veh	1.1		0.2				0.9	3.8			11.0	1.0
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	38.1		29.5				21.8	12.9			28.8	5.6
Level of Service (LOS)	D		C				C	B			C	A
Approach Delay, s/veh / LOS	36.2		D	0.0			13.4	B		24.6		C
Intersection Delay, s/veh / LOS	20.9						C					

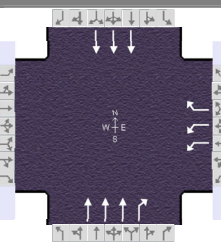
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	0.65	A	2.07	B
Bicycle LOS Score / LOS		F			2.30	B	2.37	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Meeker Way		File Name	D126_US23-Meeker_AM.xus												
Project Description	Concept D Design Year (2050)															
Demand Information					EB			WB			NB		SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h								240		20	1522	130		2423		
Signal Information																
Cycle, s	60.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	38.1	9.9	0.0	0.0	0.0	0.0					
					Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
					Red	2.0	2.0	0.0	0.0	0.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase								8		2		6				
Case Number								9.0		7.0		8.0				
Phase Duration, s								15.9		44.1		44.1				
Change Period, (Y+R _c), s								6.0		6.0		6.0				
Max Allow Headway (MAH), s								3.0		0.0		0.0				
Queue Clearance Time (g _s), s								6.1								
Green Extension Time (g _e), s								0.3		0.0		0.0				
Phase Call Probability								0.99								
Max Out Probability								0.13								
Movement Group Results					EB			WB			NB		SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement								3		18		2	12		6	
Adjusted Flow Rate (v), veh/h								261		22		1654	141		2634	
Adjusted Saturation Flow Rate (s), veh/h/ln								1730		1585		1631	1522		1631	
Queue Service Time (g _s), s								4.1		0.7		11.2	1.2		25.5	
Cycle Queue Clearance Time (g _c), s								4.1		0.7		11.2	1.2		25.5	
Green Ratio (g/C)								0.17		0.17		0.63	0.80		0.63	
Capacity (c), veh/h								571		262		3106	1218		3106	
Volume-to-Capacity Ratio (X)								0.457		0.083		0.533	0.116		0.848	
Back of Queue (Q), ft/ln (50 th percentile)								35.9		5.6		51.1	1.7		128.4	
Back of Queue (Q), veh/ln (50 th percentile)								1.4		0.2		1.9	0.1		4.9	
Queue Storage Ratio (RQ) (50 th percentile)								0.00		0.00		0.00	0.00		0.00	
Uniform Delay (d ₁), s/veh								22.6		21.2		6.0	1.3		8.7	
Incremental Delay (d ₂), s/veh								0.2		0.0		0.7	0.2		3.1	
Initial Queue Delay (d ₃), s/veh								0.0		0.0		0.0	0.0		0.0	
Control Delay (d), s/veh								22.8		21.2		6.7	1.5		11.8	
Level of Service (LOS)								C		C		A	A		B	
Approach Delay, s/veh / LOS					0.0			22.7		C	6.3	A		11.8		B
Intersection Delay, s/veh / LOS								10.3								B
Multimodal Results					EB			WB			NB		SB			
Pedestrian LOS Score / LOS					2.59		C	2.45		B	2.04		B	0.66		A
Bicycle LOS Score / LOS										F	1.48		A	1.94		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Meeker Way		File Name	D126_US23-Meeker_PM.xus			
Project Description	Concept D Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				380		100		2173	230		1760	

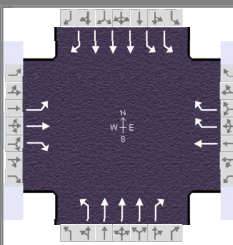
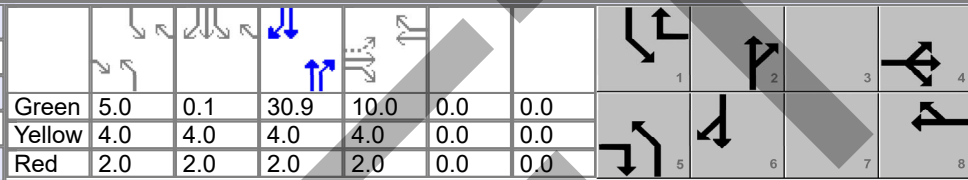
Signal Information				Signal Timing (s)									Signal Phases						
Cycle, s	60.0	Reference Phase	2	Green	38.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On																

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2		6
Case Number				9.0		7.0		8.0
Phase Duration, s				16.0		44.0		44.0
Change Period, (Y+R _c), s				6.0		6.0		6.0
Max Allow Headway (MAH), s				3.0		0.0		0.0
Queue Clearance Time (g _s), s				8.8				
Green Extension Time (g _e), s				0.3		0.0		0.0
Phase Call Probability				1.00				
Max Out Probability				1.00				

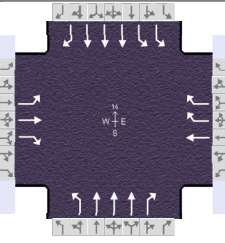
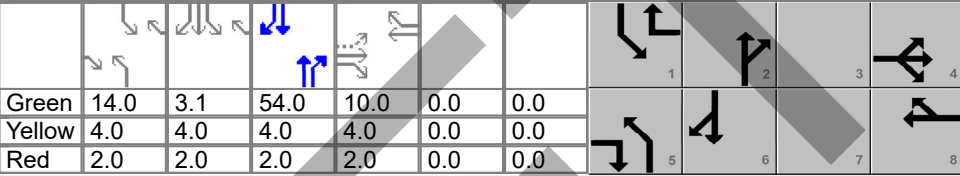
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12		6	
Adjusted Flow Rate (v), veh/h				413		109		2362	250		1913	
Adjusted Saturation Flow Rate (s), veh/h/ln				1730		1585		1631	1522		1631	
Queue Service Time (g _s), s				6.8		3.7		20.5	2.4		14.1	
Cycle Queue Clearance Time (g _c), s				6.8		3.7		20.5	2.4		14.1	
Green Ratio (g/C)				0.17		0.17		0.63	0.80		0.63	
Capacity (c), veh/h				576		264		3099	1218		3099	
Volume-to-Capacity Ratio (X)				0.717		0.412		0.762	0.205		0.617	
Back of Queue (Q), ft/ln (50th percentile)				64.5		30		98.2	3.4		64.6	
Back of Queue (Q), veh/ln (50th percentile)				2.5		1.2		3.7	0.1		2.4	
Queue Storage Ratio (RQ) (50th percentile)				0.00		0.00		0.00	0.00		0.00	
Uniform Delay (d ₁), s/veh				23.7		22.4		7.8	1.4		6.6	
Incremental Delay (d ₂), s/veh				2.8		0.4		1.8	0.4		0.9	
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0		0.0	
Control Delay (d), s/veh				26.4		22.8		9.6	1.8		7.6	
Level of Service (LOS)				C		C		A	A		A	
Approach Delay, s/veh / LOS	0.0			25.7		C		8.9	A		7.6	A
Intersection Delay, s/veh / LOS				10.1							B	

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.59	C	2.45	B	2.04	B	0.66	A
Bicycle LOS Score / LOS				F	1.92	B	1.54	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00										
Intersection	Hawthorn Blvd		File Name	D127_US23-Hawthorn_AM.xus													
Project Description	Concept D Design Year (2050)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					40	30	160		0	50	60	1594	80	380	2312	20	
Signal Information										1		2		3		4	
Cycle, s	70.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
Green	5.0	0.1	30.9	10.0	0.0	0.0											
Yellow	4.0	4.0	4.0	4.0	0.0	0.0											
Red	2.0	2.0	2.0	2.0	0.0	0.0											
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase						4		8	5	2	1	6					
Case Number						5.0		7.0	2.0	3.0	2.0	3.0					
Phase Duration, s						16.0		16.0	11.0	36.9	17.1	43.0					
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0					
Max Allow Headway (MAH), s						3.1		3.1	2.9	0.0	2.9	0.0					
Queue Clearance Time (g _s), s						8.8		3.0	4.6		10.4						
Green Extension Time (g _e), s						0.1		0.4	0.0	0.0	0.7	0.0					
Phase Call Probability						1.00		1.00	0.72		1.00						
Max Out Probability						1.00		0.04	0.08		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		8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h					43	33	174		0	54	65	1733	87	413	2513	22	
Adjusted Saturation Flow Rate (s), veh/h/ln					1781	1870	1585		1870	1392	1711	1631	1522	1661	1631	1522	
Queue Service Time (g _s), s					1.5	1.1	6.8		0.0	1.0	2.6	21.4	2.4	8.4	34.8	0.5	
Cycle Queue Clearance Time (g _c), s					1.5	1.1	6.8		0.0	1.0	2.6	21.4	2.4	8.4	34.8	0.5	
Green Ratio (g/C)					0.14	0.14	0.21		0.14	0.30	0.07	0.44	0.44	0.16	0.53	0.53	
Capacity (c), veh/h					357	266	340		266	837	123	2163	673	526	2586	805	
Volume-to-Capacity Ratio (X)					0.122	0.122	0.512		0.000	0.065	0.530	0.801	0.129	0.785	0.972	0.027	
Back of Queue (Q), ft/ln (50 th percentile)					14.5	10.8	57.2		0	6.8	26.3	178.5	18.6	78.8	313.1	3.4	
Back of Queue (Q), veh/ln (50 th percentile)					0.6	0.4	2.3		0.0	0.3	1.0	6.8	0.7	3.0	11.9	0.1	
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh					26.4	26.2	24.3		0.0	17.4	31.3	16.9	11.6	28.3	16.0	7.9	
Incremental Delay (d ₂), s/veh					0.1	0.1	0.6		0.0	0.0	1.3	3.2	0.4	1.0	12.2	0.1	
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					26.4	26.3	24.8		0.0	17.5	32.7	20.1	12.0	29.3	28.2	8.0	
Level of Service (LOS)					C	C	C			B	C	C	B	C	C	A	
Approach Delay, s/veh / LOS					25.3	C		17.5	B		20.2	C		28.2	C		
Intersection Delay, s/veh / LOS					25.0					C							
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.71	C		2.84	C		2.25	B		2.07	B		
Bicycle LOS Score / LOS					0.90	A		0.58	A		1.52	B		2.11	B		

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Hawthorn Blvd		File Name	D127_US23-Hawthorn_PM.xus												
Project Description	Concept D Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					20	60	60		0	150	180	2264	160	590	1591	50
Signal Information								Cycle, s		105.0	Reference Phase	2				
Offset, s		0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green		14.0	3.1	54.0				10.0	0.0	0.0						
Yellow		4.0	4.0	4.0	4.0	0.0	0.0									
Red		2.0	2.0	2.0	2.0	0.0	0.0									
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						5.0		7.0	2.0	3.0	2.0	3.0				
Phase Duration, s						16.0		16.0	20.0	60.0	29.0	69.0				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.1	2.9	0.0	2.9	0.0				
Queue Clearance Time (g _s), s						5.5		6.5	13.8		21.6					
Green Extension Time (g _e), s						0.4		0.3	0.2	0.0	1.4	0.0				
Phase Call Probability						1.00		1.00	1.00		1.00					
Max Out Probability						0.05		0.12	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		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					22	65	65		0	163	196	2461	174	641	1729	54
Adjusted Saturation Flow Rate (s), veh/h/ln					1781	1870	1585		1870	1392	1711	1631	1522	1661	1631	1522
Queue Service Time (g _s), s					1.2	3.4	3.5		0.0	4.5	11.8	51.6	6.6	19.6	22.9	1.6
Cycle Queue Clearance Time (g _c), s					1.2	3.4	3.5		0.0	4.5	11.8	51.6	6.6	19.6	22.9	1.6
Green Ratio (g/C)					0.10	0.10	0.23		0.10	0.31	0.13	0.51	0.51	0.22	0.60	0.60
Capacity (c), veh/h					238	178	362		178	876	227	2515	782	729	2938	914
Volume-to-Capacity Ratio (X)					0.091	0.366	0.180		0.000	0.186	0.861	0.978	0.222	0.880	0.589	0.059
Back of Queue (Q), ft/ln (50 th percentile)					12.6	39	32.2		0	35.5	130.3	527.3	56.6	200.4	186.3	12.2
Back of Queue (Q), veh/ln (50 th percentile)					0.5	1.5	1.3		0.0	1.4	4.9	20.0	2.1	7.6	7.1	0.5
Queue Storage Ratio (RQ) (50 th percentile)					0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh					43.5	44.5	32.6		0.0	26.2	44.6	24.9	14.0	39.6	13.0	8.7
Incremental Delay (d ₂), s/veh					0.1	0.5	0.1		0.0	0.0	3.7	13.6	0.7	1.4	0.9	0.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					43.6	45.0	32.7		0.0	26.2	48.3	38.5	14.7	41.1	13.8	8.8
Level of Service (LOS)					D	D	C			C	D	D	B	D	B	A
Approach Delay, s/veh / LOS					39.5		D	26.2		C	37.7		D	20.9		C
Intersection Delay, s/veh / LOS					30.1					C						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.73		C	2.86		C	2.26		B	2.07		B
Bicycle LOS Score / LOS					0.74		A	0.76		A	2.04		B	1.82		B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other	
Jurisdiction		Time Period	AM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	D129_US23-DelPlazaN_AM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	90		94				70	1680			2645	70

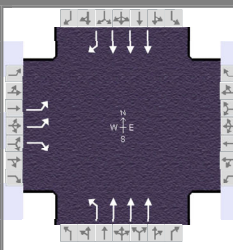
Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	56.1	6.0	9.9	0.0	0.0	0.0	1	2	3	4
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.0	2.0	2.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.4
Phase Duration, s		15.9			12.0	74.1		62.1
Change Period, ($Y+R_c$), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.1			2.9	0.0		0.0
Queue Clearance Time (g_s), s		7.1			5.8			
Green Extension Time (g_e), s		0.4			0.8	0.0		0.0
Phase Call Probability		0.99			0.85			
Max Out Probability		0.00			1.00			

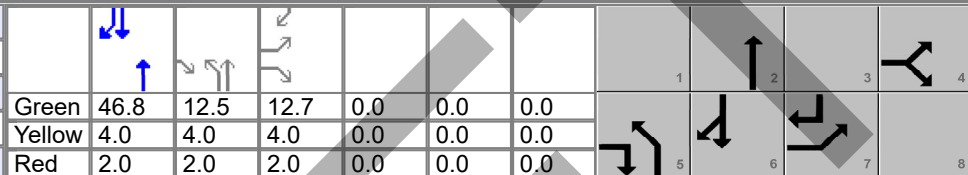
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	98		102				76	1826			2875	76
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1781	1631			1631	1522
Queue Service Time (g_s), s	2.3		5.1				3.8	13.1			48.3	1.3
Cycle Queue Clearance Time (g_c), s	2.3		5.1				3.8	13.1			48.3	1.3
Green Ratio (g/C)	0.11		0.18				0.07	0.76			0.62	0.73
Capacity (c), veh/h	382		280				118	3701			3050	1117
Volume-to-Capacity Ratio (X)	0.256		0.365				0.645	0.493			0.942	0.068
Back of Queue (Q), ft/ln (50 th percentile)	23.5		46.6				42.9	57.8			386.9	6.2
Back of Queue (Q), veh/ln (50 th percentile)	0.9		1.8				1.7	2.2			14.7	0.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh	36.7		32.6				41.0	4.3			15.5	0.0
Incremental Delay (d_2), s/veh	0.1		0.3				4.6	0.5			7.5	0.1
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	36.8		32.9				45.6	4.7			23.0	0.1
Level of Service (LOS)	D		C				D	A			C	A
Approach Delay, s/veh / LOS	34.8		C	0.0			6.4	A		22.4		C
Intersection Delay, s/veh / LOS	16.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.64	A	2.14	B
Bicycle LOS Score / LOS		F			1.53	B	2.11	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Delaware Plaza North	File Name	D129_US23-DelPlazaN_PM.xus			
Project Description	Concept D Design Year (2050)					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	350		155				180	2499			1991	220

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	46.8	12.5	12.7	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	Off											

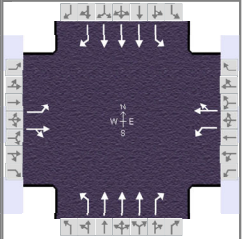
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		7.4
Phase Duration, s		18.7			18.5	71.3		52.8
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.0			2.9	0.0		0.0
Queue Clearance Time (g _s), s		11.6			11.5			
Green Extension Time (g _e), s		1.1			1.0	0.0		0.0
Phase Call Probability		1.00			0.99			
Max Out Probability		0.00			1.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	380		168				196	2716			2164	239
Adjusted Saturation Flow Rate (s), veh/h/ln	1730		1585				1781	1631			1631	1522
Queue Service Time (g _s), s	9.6		7.7				9.5	30.8			34.4	5.7
Cycle Queue Clearance Time (g _c), s	9.6		7.7				9.5	30.8			34.4	5.7
Green Ratio (g/C)	0.14		0.28				0.14	0.73			0.52	0.66
Capacity (c), veh/h	486		446				251	3553			2538	1004
Volume-to-Capacity Ratio (X)	0.782		0.378				0.781	0.765			0.853	0.238
Back of Queue (Q), ft/ln (50 th percentile)	96.6		67.4				120.6	166.8			298.1	32.4
Back of Queue (Q), veh/ln (50 th percentile)	3.8		2.7				4.7	6.3			11.3	1.2
Queue Storage Ratio (RQ) (50 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	37.3		26.0				37.3	7.6			18.7	0.0
Incremental Delay (d ₂), s/veh	1.1		0.2				13.1	1.6			3.9	0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	38.4		26.2				50.4	9.2			22.6	0.6
Level of Service (LOS)	D		C				D	A			C	A
Approach Delay, s/veh / LOS	34.7		C	0.0			12.0	B		20.4		C
Intersection Delay, s/veh / LOS	17.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.60	C	2.60	C	0.65	A	2.13	B
Bicycle LOS Score / LOS		F			2.09	B	1.81	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Cottswold Drive	File Name	D130_US23-Cottswold_AM.xus				
Project Description	Concept D Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	30	10	60	40	10	40	30	1545	40	40	2408	20

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.9	0.7	57.4	9.9	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

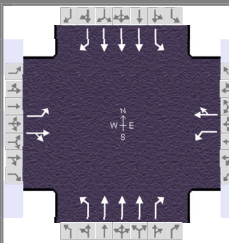
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		15.9		15.9	9.9	63.4	10.6	64.2
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		6.8		8.8	3.7		4.2	
Green Extension Time (g _e), s		0.3		0.3	0.0	0.0	0.0	0.0
Phase Call Probability		0.99		0.99	0.56		0.66	
Max Out Probability		0.00		0.00	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	33	76		43	54		33	1679	43	43	2617	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1350	1620		1323	1635		1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	2.1	3.9		2.9	2.8		1.7	17.0	1.0	2.2	36.6	0.5
Cycle Queue Clearance Time (g _c), s	4.8	3.9		6.8	2.8		1.7	17.0	1.0	2.2	36.6	0.5
Green Ratio (g/C)	0.11	0.11		0.11	0.11		0.04	0.64	0.64	0.05	0.65	0.65
Capacity (c), veh/h	188	179		168	181		74	3122	971	88	3162	984
Volume-to-Capacity Ratio (X)	0.174	0.425		0.258	0.301		0.440	0.538	0.045	0.493	0.828	0.022
Back of Queue (Q), ft/ln (50 th percentile)	16.3	37.7		22.4	26.5		18.3	118.4	6.6	24.2	261	3.1
Back of Queue (Q), veh/ln (50 th percentile)	0.6	1.5		0.9	1.0		0.7	4.5	0.2	0.9	9.9	0.1
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.0	37.4		40.5	36.8		42.0	9.0	6.1	41.5	12.1	5.7
Incremental Delay (d ₂), s/veh	0.2	0.6		0.3	0.3		1.5	0.7	0.1	1.6	2.6	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	38.0		40.8	37.2		43.5	9.6	6.2	43.1	14.8	5.8
Level of Service (LOS)	D	D		D	D		D	A	A	D	B	A
Approach Delay, s/veh / LOS	38.3		D	38.8		D	10.2		B	15.1		B
Intersection Delay, s/veh / LOS	14.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.73	C	2.73	C	1.87	B	1.87	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.45	A	1.96	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other		
Jurisdiction		Time Period	PM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	D130_US23-Cottswold_PM.xus				
Project Description	Concept D Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	60	20	90	80	30	90	90	2368	80	130	1944	40

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.5	2.5	50.0	13.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0			
				Red	2.0	0.0	2.0	2.0	0.0	0.0			

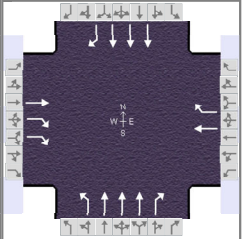
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	3.0	2.0	3.0
Phase Duration, s		19.0		19.0	12.5	56.0	15.0	58.5
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.1		3.1	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		13.2		14.2	7.1		9.3	
Green Extension Time (g _e), s		0.0		0.0	0.1	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.91		0.97	
Max Out Probability		1.00		1.00	0.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	65	120		87	130		98	2574	87	141	2113	43
Adjusted Saturation Flow Rate (s), veh/h/ln	1260	1630		1272	1648		1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	4.6	6.1		6.1	6.6		5.1	44.4	2.4	7.3	28.5	1.1
Cycle Queue Clearance Time (g _c), s	11.2	6.1		12.2	6.6		5.1	44.4	2.4	7.3	28.5	1.1
Green Ratio (g/C)	0.14	0.14		0.14	0.14		0.07	0.56	0.56	0.10	0.58	0.58
Capacity (c), veh/h	169	235		178	238		124	2717	845	172	2852	887
Volume-to-Capacity Ratio (X)	0.385	0.508		0.490	0.548		0.788	0.947	0.103	0.823	0.741	0.049
Back of Queue (Q), ft/ln (50 th percentile)	34.2	58.2		46.2	65		56.2	399	18.9	100.9	223.1	8.3
Back of Queue (Q), veh/ln (50 th percentile)	1.3	2.3		1.8	2.6		2.1	15.1	0.7	3.8	8.5	0.3
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	41.0	35.5		41.2	35.8		41.1	18.8	9.4	39.7	13.8	8.1
Incremental Delay (d ₂), s/veh	0.5	0.7		0.8	1.5		4.1	8.7	0.2	20.5	1.8	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.5	36.3		42.0	37.3		45.2	27.5	9.7	60.2	15.6	8.2
Level of Service (LOS)	D	D		D	D		D	C	A	E	B	A
Approach Delay, s/veh / LOS	38.1		D	39.2		D	27.6		C	18.2		B
Intersection Delay, s/veh / LOS	24.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	1.89	B	1.88	B
Bicycle LOS Score / LOS	0.79	A	0.85	A	2.00	B	1.75	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Hawthorn Blvd	File Name	C127_US23-Hawthorn_AM.xus				
Project Description	Concept C Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	230		0	50	60	1622	56		2452	20

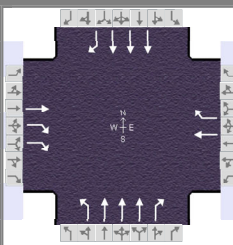
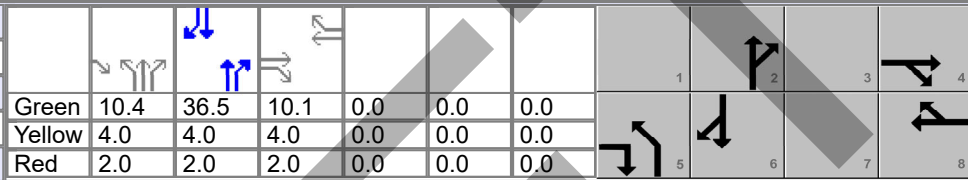
Signal Information				Signal Timing (s)									
Cycle, s	80.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.4	46.7	10.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2		6
Case Number		7.0		7.0	2.0	3.0		7.3
Phase Duration, s		16.0		16.0	11.4	64.0		52.7
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0		6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0		0.0
Queue Clearance Time (g _s), s		8.3		4.5	5.0			
Green Extension Time (g _e), s		0.7		0.7	0.1	0.0		0.0
Phase Call Probability		1.00		1.00	0.77			
Max Out Probability		0.00		0.00	0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	4	14		8	18		5	2	12		6	16
Adjusted Flow Rate (v), veh/h	0	250		0	54		65	1763	61		2665	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1870	1403		1870	1572		1711	1631	1522		1631	1522
Queue Service Time (g _s), s	0.0	6.3		0.0	2.5		3.0	12.4	0.9		39.9	0.5
Cycle Queue Clearance Time (g _c), s	0.0	6.3		0.0	2.5		3.0	12.4	0.9		39.9	0.5
Green Ratio (g/C)	0.12	0.19		0.12	0.12		0.07	0.73	0.73		0.58	0.58
Capacity (c), veh/h	234	538		234	196		115	3548	1104		2853	888
Volume-to-Capacity Ratio (X)	0.000	0.465		0.000	0.277		0.569	0.497	0.055		0.934	0.024
Back of Queue (Q), ft/ln (50th percentile)	0	49		0	22.6		31.3	54.8	4.3		321.8	3.4
Back of Queue (Q), veh/ln (50th percentile)	0.0	1.9		0.0	0.9		1.2	2.1	0.2		12.2	0.1
Queue Storage Ratio (RQ) (50th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh	0.0	28.7		0.0	31.7		36.2	4.7	3.1		15.3	7.1
Incremental Delay (d ₂), s/veh	0.0	0.2		0.0	0.3		1.7	0.5	0.1		7.2	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Control Delay (d), s/veh	0.0	28.9		0.0	32.0		37.9	5.2	3.2		22.5	7.1
Level of Service (LOS)		C			C		D	A	A		C	A
Approach Delay, s/veh / LOS	28.9	C		32.0	C		6.3	A		22.3	C	
Intersection Delay, s/veh / LOS	16.6						B					

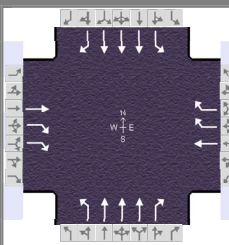
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.59	C	1.84	B	2.07	B
Bicycle LOS Score / LOS	0.90	A	0.58	A	1.53	B	1.97	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Hawthorn Blvd	File Name	C127_US23-Hawthorn_PM.xus													
Project Description	Concept C Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						0	140		0	150	180	2260	112		1816	50
Signal Information																
Cycle, s	75.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	10.4	36.5	10.1	0.0	0.0	0.0										
Yellow	4.0	4.0	4.0	0.0	0.0	0.0										
Red	2.0	2.0	2.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2		6				
Case Number						7.0		7.0	2.0	3.0		7.3				
Phase Duration, s						16.1		16.1	16.4	58.9		42.5				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0		6.0				
Max Allow Headway (MAH), s						3.2		3.2	2.9	0.0		0.0				
Queue Clearance Time (g _s), s						5.1		9.5	10.3							
Green Extension Time (g _e), s						0.7		0.6	0.3	0.0		0.0				
Phase Call Probability						1.00		1.00	0.98							
Max Out Probability						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						4	14		8	18	5	2	12		6	16
Adjusted Flow Rate (v), veh/h						0	152		0	163	196	2457	122		1974	54
Adjusted Saturation Flow Rate (s), veh/h/ln						1870	1403		1870	1572	1711	1631	1522		1631	1522
Queue Service Time (g _s), s						0.0	3.1		0.0	7.5	8.3	22.3	1.9		26.1	1.4
Cycle Queue Clearance Time (g _c), s						0.0	3.1		0.0	7.5	8.3	22.3	1.9		26.1	1.4
Green Ratio (g/C)						0.13	0.27		0.13	0.13	0.14	0.71	0.71		0.49	0.49
Capacity (c), veh/h						252	768		252	212	238	3450	1073		2379	740
Volume-to-Capacity Ratio (X)						0.000	0.198		0.000	0.769	0.823	0.712	0.113		0.830	0.073
Back of Queue (Q), ft/ln (50 th percentile)						0	22.8		0	68.6	86	104.4	9.2		215.5	11
Back of Queue (Q), veh/ln (50 th percentile)						0.0	0.9		0.0	2.7	3.3	4.0	0.3		8.2	0.4
Queue Storage Ratio (RQ) (50 th percentile)						0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00
Uniform Delay (d ₁), s/veh						0.0	20.9		0.0	31.3	31.4	6.5	3.5		16.6	10.3
Incremental Delay (d ₂), s/veh						0.0	0.0		0.0	2.2	2.7	1.3	0.2		3.5	0.2
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0
Control Delay (d), s/veh						0.0	21.0		0.0	33.5	34.1	7.8	3.8		20.1	10.5
Level of Service (LOS)							C			C	C	A	A		C	B
Approach Delay, s/veh / LOS					21.0	C	33.5	C	9.5	A	19.9	B				
Intersection Delay, s/veh / LOS					14.7			B								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.72	C	2.58	C	1.84	B	2.08	B				
Bicycle LOS Score / LOS					0.74	A	0.76	A	2.01	B	1.60	B				

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Cottswold Drive	File Name	C130_US23-Cottswold_AM.xus		
Project Description	Concept C Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	100		0	90	30	1706	40	40	2579	20

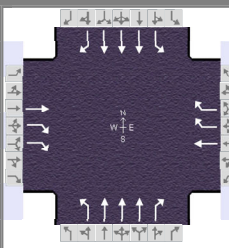
Signal Information																		
Cycle, s	70.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	0.7	49.4	4.6	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	0.0	4.0	0.0	0.0	0.0	5		6		7		8	
				Red	2.0	0.0	2.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		4.6		4.6	9.3	55.4	10.0	56.1
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		4.5		4.2	3.3		3.7	
Green Extension Time (g _e), s		0.2		0.2	0.0	0.0	0.0	0.0
Phase Call Probability		0.98		0.98	0.47		0.57	
Max Out Probability		0.08		0.05	0.00		0.00	

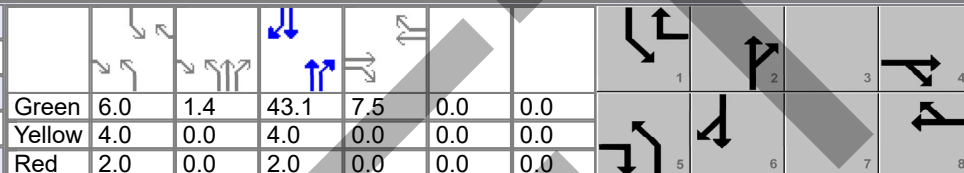
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	4	14		8	18		5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	0	109		0	98		33	1854	43	43	2803	22
Adjusted Saturation Flow Rate (s), veh/h/ln	1870	1403		1870	1425		1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s	0.0	2.5		0.0	2.2		1.3	12.6	0.6	1.7	26.7	0.3
Cycle Queue Clearance Time (g _c), s	0.0	2.5		0.0	2.2		1.3	12.6	0.6	1.7	26.7	0.3
Green Ratio (g/C)	0.07	0.11		0.07	0.12		0.05	0.71	0.71	0.06	0.72	0.72
Capacity (c), veh/h	124	318		124	352		80	3451	1074	98	3500	1089
Volume-to-Capacity Ratio (X)	0.000	0.342		0.000	0.278		0.406	0.537	0.040	0.445	0.801	0.020
Back of Queue (Q), ft/ln (50 th percentile)	0	19.2		0	16.7		13.5	50.4	2.6	17.7	106.4	1.2
Back of Queue (Q), veh/ln (50 th percentile)	0.0	0.8		0.0	0.7		0.5	1.9	0.1	0.7	4.0	0.0
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	0.0	28.6		0.0	27.9		32.4	4.9	3.1	31.9	6.6	2.9
Incremental Delay (d ₂), s/veh	0.0	0.2		0.0	0.2		1.2	0.6	0.1	1.2	2.0	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	28.9		0.0	28.0		33.6	5.5	3.2	33.1	8.7	2.9
Level of Service (LOS)		C			C		C	A	A	C	A	A
Approach Delay, s/veh / LOS	28.9	C		28.0	C		5.9	A		9.0	A	
Intersection Delay, s/veh / LOS	8.6						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	2.03	B	2.03	B
Bicycle LOS Score / LOS	0.67	A	0.65	A	1.55	B	2.07	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	ms consultants			Duration, h	0.250	
Analyst	JRH	Analysis Date	Apr 4, 2023	Area Type	Other	
Jurisdiction		Time Period	PM Peak	PHF	0.92	
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00	
Intersection	Cottswold Drive	File Name	C130_US23-Cottswold_PM.xus			
Project Description	Concept C Design Year (2050)					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	170		0	200	130	2082	40	90	2623	80

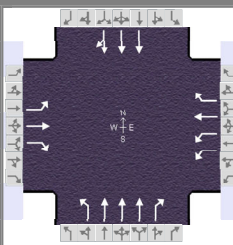
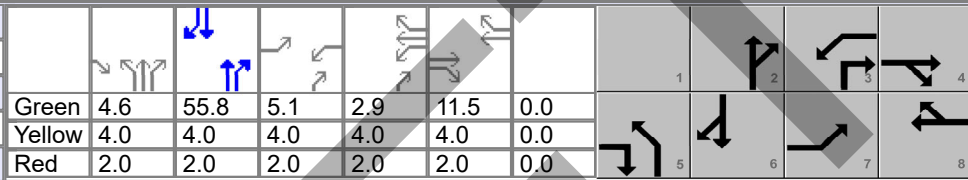
Signal Information														
Cycle, s	70.0	Reference Phase	2	Green	6.0	1.4	43.1	7.5	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	4.0	0.0	4.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		7.0		7.0	2.0	3.0	2.0	3.0
Phase Duration, s		7.5		7.5	13.3	50.5	12.0	49.1
Change Period, (Y+R _c), s		0.0		0.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	2.9	0.0	2.9	0.0
Queue Clearance Time (g _s), s		5.9		6.7	7.6		5.9	
Green Extension Time (g _e), s		0.9		0.9	0.2	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.94		0.85	
Max Out Probability		0.00		0.00	0.00		0.00	

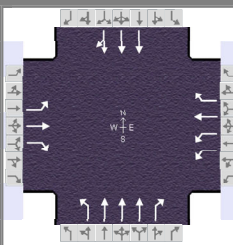
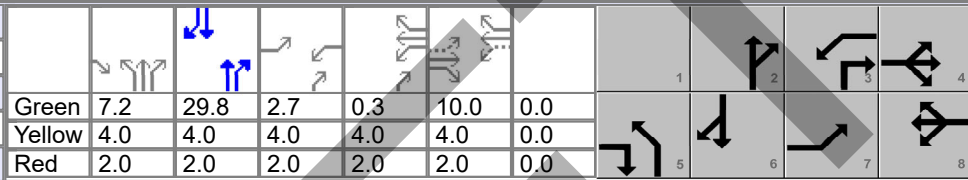
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14		8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		0	185		0	217	141	2263	43	98	2851	87
Adjusted Saturation Flow Rate (s), veh/h/ln		1870	1403		1870	1425	1711	1631	1522	1711	1631	1522
Queue Service Time (g _s), s		0.0	3.9		0.0	4.7	5.6	21.9	0.7	3.9	37.5	1.6
Cycle Queue Clearance Time (g _c), s		0.0	3.9		0.0	4.7	5.6	21.9	0.7	3.9	37.5	1.6
Green Ratio (g/C)		0.11	0.21		0.11	0.19	0.10	0.64	0.64	0.09	0.62	0.62
Capacity (c), veh/h		201	595		201	549	179	3112	968	146	3016	938
Volume-to-Capacity Ratio (X)		0.000	0.310		0.000	0.396	0.789	0.727	0.045	0.672	0.945	0.093
Back of Queue (Q), ft/ln (50 th percentile)		0	28.6		0	34.7	58.4	125	4.3	39.9	265.4	9.8
Back of Queue (Q), veh/ln (50 th percentile)		0.0	1.1		0.0	1.4	2.2	4.7	0.2	1.5	10.1	0.4
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh		0.0	23.3		0.0	24.7	30.6	8.6	4.8	31.1	12.3	5.5
Incremental Delay (d ₂), s/veh		0.0	0.1		0.0	0.2	2.9	1.5	0.1	2.0	7.8	0.2
Initial Queue Delay (d ₃), s/veh		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh		0.0	23.4		0.0	24.9	33.5	10.2	4.9	33.1	20.2	5.7
Level of Service (LOS)			C			C	C	B	A	C	C	A
Approach Delay, s/veh / LOS	23.4		C	24.9		C	11.4		B	20.2		C
Intersection Delay, s/veh / LOS	16.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.72	C	2.72	C	2.05	B	2.05	B
Bicycle LOS Score / LOS	0.79	A	0.85	A	1.83	B	2.16	B

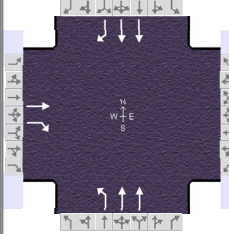
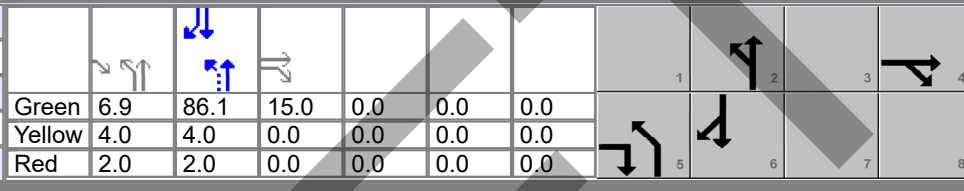
HCS Signalized Intersection Results Summary

General Information					Intersection Information												
Agency	ms consultants				Duration, h	0.250											
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other											
Jurisdiction		Time Period	AM Peak		PHF	0.92											
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00										
Intersection	Hawthorn Blvd		File Name	B127_US23-Hawthorn_AM.xus													
Project Description	Concept B Design Year (2050)																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					40	62	128	341	28	50	32	1451	64		2269	20	
Signal Information																	
Cycle, s	110.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On		Green	4.6	55.8	5.1	2.9	11.5	0.0						
					Yellow	4.0	4.0	4.0	4.0	4.0	0.0						
					Red	2.0	2.0	2.0	2.0	2.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					7	4	3	8	5	2		6					
Case Number					2.0	3.0	2.0	3.0	2.0	3.0		8.3					
Phase Duration, s					11.1	17.5	20.1	26.4	10.6	72.4		61.8					
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0		6.0					
Max Allow Headway (MAH), s					2.9	3.1	2.9	3.1	2.9	0.0		0.0					
Queue Clearance Time (g _s), s					4.6	11.0	13.5	5.2	4.2								
Green Extension Time (g _e), s					0.0	0.5	0.6	0.5	0.0	0.0		0.0					
Phase Call Probability					0.74	1.00	1.00	1.00	0.65								
Max Out Probability					0.00	0.00	0.01	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		6	16	
Adjusted Flow Rate (v), veh/h					43	67	139	371	30	54	35	1577	70		1660	828	
Adjusted Saturation Flow Rate (s), veh/h/ln					1781	1870	1585	1730	1870	1572	1711	1631	1522		1796	1788	
Queue Service Time (g _s), s					2.6	3.7	9.0	11.5	1.5	3.2	2.2	20.7	1.4		77.4	46.7	
Cycle Queue Clearance Time (g _c), s					2.6	3.7	9.0	11.5	1.5	3.2	2.2	20.7	1.4		77.4	46.7	
Green Ratio (g/C)					0.05	0.10	0.15	0.13	0.19	0.19	0.04	0.60	0.73		0.51	0.51	
Capacity (c), veh/h					83	196	232	442	348	292	71	2954	1114		1823	907	
Volume-to-Capacity Ratio (X)					0.522	0.344	0.599	0.838	0.088	0.186	0.488	0.534	0.062		0.911	0.913	
Back of Queue (Q), ft/ln (95 th percentile)					53.2	75.6	156.6	216	29.7	54.5	44.4	280.4	16.1		694.2	747.4	
Back of Queue (Q), veh/ln (95 th percentile)					2.1	3.0	6.2	8.5	1.2	2.1	1.7	10.6	0.6		26.3	28.3	
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh					51.2	45.7	43.9	46.9	37.1	37.8	51.6	12.7	4.2		24.8	24.9	
Incremental Delay (d ₂), s/veh					1.9	0.4	0.9	3.0	0.0	0.1	1.9	0.7	0.1		8.3	15.0	
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay (d), s/veh					53.1	46.1	44.8	49.8	37.1	37.9	53.5	13.4	4.3		33.1	39.9	
Level of Service (LOS)					D	D	D	D	D	D	D	B	A		C	D	
Approach Delay, s/veh / LOS					46.6		D	47.5		D	13.9		B		35.4		D
Intersection Delay, s/veh / LOS					29.7					C							
Multimodal Results					EB			WB			NB			SB			
Pedestrian LOS Score / LOS					2.73		C	2.45		B	2.24		B		2.09		B
Bicycle LOS Score / LOS					0.90		A	1.24		A	1.41		A		1.86		B

HCS Signalized Intersection Results Summary

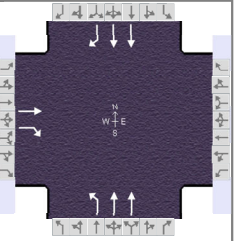
General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Hawthorn Blvd	File Name	B127_US23-Hawthorn_PM.xus													
Project Description	Concept B Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					20	72	48	523	68	150	112	2089	128	1587	50	
Signal Information																
Cycle, s	80.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On		Green	7.2	29.8	2.7	0.3	10.0	0.0					
					Yellow	4.0	4.0	4.0	4.0	4.0	0.0					
					Red	2.0	2.0	2.0	2.0	2.0	0.0					
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					7	4	3	8	5	2						
Case Number					1.1	3.0	1.1	3.0	2.0	3.0			8.3			
Phase Duration, s					8.7	16.0	15.0	22.3	13.2	49.0			35.8			
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0			6.0			
Max Allow Headway (MAH), s					2.9	3.0	2.9	3.0	2.9	0.0			0.0			
Queue Clearance Time (g _s), s					2.8	5.1	11.0	9.4	7.6							
Green Extension Time (g _e), s					0.0	0.5	0.0	0.6	0.1	0.0			0.0			
Phase Call Probability					0.38	1.00	1.00	1.00	0.93							
Max Out Probability					0.00	0.00	1.00	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	6	16	
Adjusted Flow Rate (v), veh/h					22	78	52	568	74	163	122	2271	139	1192	587	
Adjusted Saturation Flow Rate (s), veh/h/ln					1781	1870	1585	1730	1870	1572	1711	1631	1522	1796	1767	
Queue Service Time (g _s), s					0.8	3.1	2.1	9.0	2.6	7.4	5.6	32.0	2.8	29.8	25.0	
Cycle Queue Clearance Time (g _c), s					0.8	3.1	2.1	9.0	2.6	7.4	5.6	32.0	2.8	29.8	25.0	
Green Ratio (g/C)					0.16	0.12	0.21	0.26	0.20	0.20	0.09	0.54	0.65	0.37	0.37	
Capacity (c), veh/h					315	234	340	798	381	321	153	2630	989	1340	659	
Volume-to-Capacity Ratio (X)					0.069	0.335	0.153	0.712	0.194	0.508	0.794	0.863	0.141	0.890	0.891	
Back of Queue (Q), ft/ln (95 th percentile)					14.9	58.7	33.5	202.1	48.6	116.7	108.2	394.9	31.1	419.8	459.8	
Back of Queue (Q), veh/ln (95 th percentile)					0.6	2.3	1.3	8.0	1.9	4.6	4.1	15.0	1.2	15.9	17.4	
Queue Storage Ratio (RQ) (95 th percentile)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh					28.7	32.0	25.5	27.4	26.4	28.3	35.7	16.0	5.4	23.5	23.6	
Incremental Delay (d ₂), s/veh					0.0	0.3	0.1	2.6	0.1	0.5	3.5	4.1	0.3	9.2	16.7	
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh					28.7	32.3	25.6	30.0	26.5	28.7	39.2	20.0	5.7	32.7	40.2	
Level of Service (LOS)					C	C	C	C	C	C	D	C	A	C	D	
Approach Delay, s/veh / LOS					29.5	C	29.4	C	20.2	C	35.2	D				
Intersection Delay, s/veh / LOS					26.9					C						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.72	C	2.44	B	2.24	B	2.10	B				
Bicycle LOS Score / LOS					0.74	A	1.82	B	1.88	B	1.47	A				

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other										
Jurisdiction		Time Period	AM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Pennsylvania Avenue		File Name	133_US23-Pennsylvania_AM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						0	228				117	0			2478	199
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	6.9	86.1	15.0	0.0	0.0	0.0										
Yellow	4.0	4.0	0.0	0.0	0.0	0.0										
Red	2.0	2.0	0.0	0.0	0.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4			5	2			6			
Case Number						11.0			1.0	4.0			7.3			
Phase Duration, s						15.0			12.9	105.0			92.1			
Change Period, (Y+R _c), s						0.0			6.0	6.0			6.0			
Max Allow Headway (MAH), s						3.3			3.0	0.0			0.0			
Queue Clearance Time (g _s), s						17.0			6.4							
Green Extension Time (g _e), s						0.0			0.2	0.0			0.0			
Phase Call Probability						1.00			0.99							
Max Out Probability						1.00			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						4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h						0	248				127	0		2693	216	
Adjusted Saturation Flow Rate (s), veh/h/ln						1856	1572				1767	1724		1724	1572	
Queue Service Time (g _s), s						0.0	15.0				4.4	0.0		86.1	5.4	
Cycle Queue Clearance Time (g _c), s						0.0	15.0				4.4	0.0		86.1	5.4	
Green Ratio (g/C)						0.12	0.18				0.79	0.82		0.72	0.72	
Capacity (c), veh/h						232	287				162	2845		2474	1128	
Volume-to-Capacity Ratio (X)						0.000	0.864				0.787	0.000		1.089	0.192	
Back of Queue (Q), ft/ln (95 th percentile)						0	347				175.1	0		1489.2	73	
Back of Queue (Q), veh/ln (95 th percentile)						0.0	13.6				6.8	0.0		56.8	2.9	
Queue Storage Ratio (RQ) (95 th percentile)						0.00	0.00				0.35	0.00		0.00	0.21	
Uniform Delay (d ₁), s/veh						0.0	47.6				42.5	0.0		17.0	5.6	
Incremental Delay (d ₂), s/veh						0.0	21.9				3.2	0.0		47.4	0.4	
Initial Queue Delay (d ₃), s/veh						0.0	0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh						0.0	69.5				45.7	0.0		64.4	5.9	
Level of Service (LOS)							E				D			F	A	
Approach Delay, s/veh / LOS					69.5		E	0.0			45.7		D	60.0		E
Intersection Delay, s/veh / LOS					60.2			E								
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.32		B	2.32		B	1.31		A	1.86		B
Bicycle LOS Score / LOS					0.90		A				0.59		A	2.89		C

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Pennsylvania Avenue	File Name	133_US23-Pennsylvania_PM.xus		
Project Description	No-Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h		0	72				169	0			1914	195

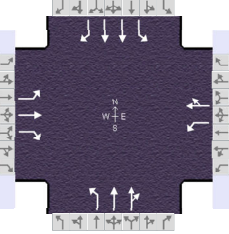
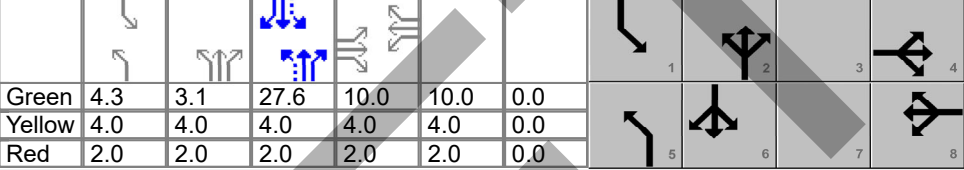
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	6.9	56.5	8.6	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		11.0			1.0	4.0		7.3
Phase Duration, s		14.6			12.9	75.4		62.5
Change Period, (Y+R _c), s		6.0			6.0	6.0		6.0
Max Allow Headway (MAH), s		3.3			3.0	0.0		0.0
Queue Clearance Time (g _s), s		5.9			6.4			
Green Extension Time (g _e), s		0.0			0.3	0.0		0.0
Phase Call Probability		0.86			0.99			
Max Out Probability		0.32			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement		4	14				5	2			6	16
Adjusted Flow Rate (v), veh/h		0	78				184	0			2080	212
Adjusted Saturation Flow Rate (s), veh/h/ln		1856	1572				1767	1724			1724	1572
Queue Service Time (g _s), s		0.0	3.9				4.4	0.0			51.0	5.2
Cycle Queue Clearance Time (g _c), s		0.0	3.9				4.4	0.0			51.0	5.2
Green Ratio (g/C)		0.10	0.17				0.73	0.77			0.63	0.63
Capacity (c), veh/h		177	271				228	2660			2164	987
Volume-to-Capacity Ratio (X)		0.000	0.289				0.805	0.000			0.961	0.215
Back of Queue (Q), ft/ln (95 th percentile)		0	65.7				179.6	0			678.8	71.1
Back of Queue (Q), veh/ln (95 th percentile)		0.0	2.6				7.0	0.0			25.9	2.8
Queue Storage Ratio (RQ) (95 th percentile)		0.00	0.00				0.36	0.00			0.00	0.20
Uniform Delay (d ₁), s/veh		0.0	32.4				26.8	0.0			15.7	7.2
Incremental Delay (d ₂), s/veh		0.0	0.2				2.5	0.0			12.2	0.5
Initial Queue Delay (d ₃), s/veh		0.0	0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh		0.0	32.6				29.3	0.0			27.9	7.7
Level of Service (LOS)			C				C				C	A
Approach Delay, s/veh / LOS	32.6		C	0.0			29.3		C	26.0		C
Intersection Delay, s/veh / LOS	26.5			C			C			C		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.31	B	1.32	A	1.87	B
Bicycle LOS Score / LOS	0.62	A			0.64	A	2.38	B

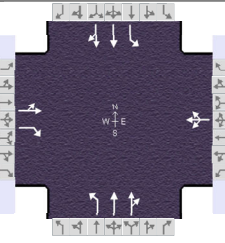
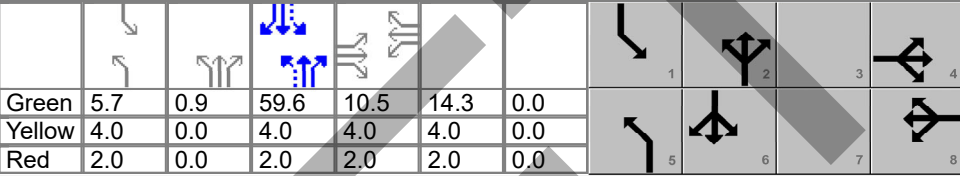
HCS Signalized Intersection Results Summary

General Information						Intersection Information															
Agency			ms consultants			Duration, h		0.250													
Analyst		JRH		Analysis Date		Mar 27, 2023		Area Type		Other											
Jurisdiction			Time Period			AM Peak			PHF		0.92										
Urban Street		US 23 Corridor Study		Analysis Year		2050		Analysis Period		1 > 7:00											
Intersection		Panhandle Road		File Name		134_US23-Panhandle_AM.xus															
Project Description		No-Build Design Year (2050)																			
Demand Information				EB			WB			NB			SB								
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R						
Demand (v), veh/h				177	143	441	189	55	50	294	1458	67	37	1997	62						
Signal Information																					
Cycle, s		85.0	Reference Phase		2																
Offset, s		0	Reference Point		End																
Uncoordinated		No	Simult. Gap E/W		On																
Force Mode		Fixed	Simult. Gap N/S		On																
Green				4.3	3.1	27.6	10.0	10.0	0.0												
Yellow				4.0	4.0	4.0	4.0	4.0	0.0												
Red				2.0	2.0	2.0	2.0	2.0	0.0												
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT			
Assigned Phase						4				8		5		2		1		6			
Case Number						9.0				10.0		1.1		4.0		1.1		3.0			
Phase Duration, s						16.0				16.0		19.4		42.7		10.3		33.6			
Change Period, (Y+R _c), s						6.0				6.0		6.0		6.0		6.0		6.0			
Max Allow Headway (MAH), s						3.1				3.0		3.0		0.0		3.0		0.0			
Queue Clearance Time (g _s), s						12.0				11.9		12.8				3.2					
Green Extension Time (g _e), s						0.0				0.0		0.5		0.0		0.0		0.0			
Phase Call Probability						1.00				1.00		1.00				0.61					
Max Out Probability						1.00				1.00		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				192	155	479	205	114		320	832	825	40	2171	67						
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1856	1572	1767	1709		1767	1781	1754	1767	1696	1610						
Queue Service Time (g _s), s				9.2	6.9	10.0	9.9	5.4		10.8	36.7	36.7	1.2	27.6	2.5						
Cycle Queue Clearance Time (g _c), s				9.2	6.9	10.0	9.9	5.4		10.8	36.7	36.7	1.2	27.6	2.5						
Green Ratio (g/C)				0.12	0.12	0.12	0.12	0.12		0.51	0.43	0.43	0.38	0.33	0.33						
Capacity (c), veh/h				208	218	185	208	201		362	769	757	174	1103	524						
Volume-to-Capacity Ratio (X)				0.925	0.712	2.591	0.988	0.568		0.882	1.082	1.090	0.231	1.968	0.129						
Back of Queue (Q), ft/ln (95 th percentile)				260.5	159.7	1661.6	303.6	103.4		194.2	949.2	927.5	21.7	3261.7	42.5						
Back of Queue (Q), veh/ln (95 th percentile)				10.2	6.2	64.9	11.9	4.0		7.6	35.7	36.2	0.8	122.6	1.7						
Queue Storage Ratio (RQ) (95 th percentile)				1.11	0.00	16.62	0.76	0.00		0.39	0.00	0.00	0.04	0.00	0.28						
Uniform Delay (d ₁), s/veh				37.1	36.1	37.5	37.4	35.5		22.2	24.1	24.1	21.4	28.7	20.2						
Incremental Delay (d ₂), s/veh				41.5	9.0	731.5	58.8	2.4		2.8	56.8	60.0	0.2	438.8	0.5						
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0						
Control Delay (d), s/veh				78.6	45.1	769.0	96.2	37.8		25.0	80.9	84.1	21.7	467.5	20.7						
Level of Service (LOS)				E	D	F	F	D		C	F	F	C	F	C						
Approach Delay, s/veh / LOS				472.4		F	75.3		E	73.2		E	446.4		F						
Intersection Delay, s/veh / LOS				291.8						F											
Multimodal Results				EB			WB			NB			SB								
Pedestrian LOS Score / LOS				2.30		B	2.46		B	1.90		B	2.11		B						
Bicycle LOS Score / LOS				1.85		B	1.01		A	2.12		B	2.37		B						

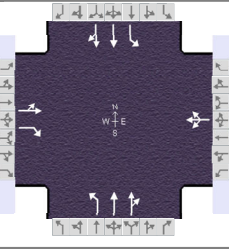
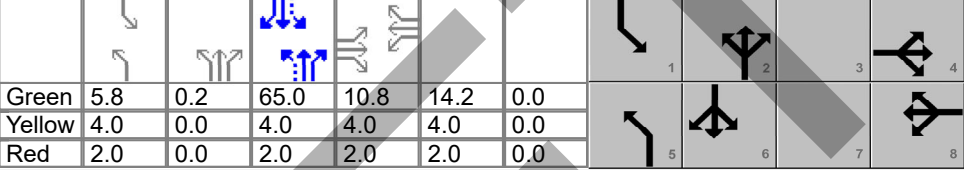
HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Panhandle Road		File Name	134_US23-Panhandle_PM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					167	103	341	45	124	44	522	2192	106	98	1653	136
Signal Information																
Cycle, s	115.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green					6.8	13.2	40.0	16.0	11.0	0.0						
Yellow					4.0	4.0	4.0	4.0	4.0	0.0						
Red					2.0	0.0	2.0	2.0	2.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						9.0		10.0	1.1	4.0	1.1	3.0				
Phase Duration, s						22.0		17.0	30.0	63.2	12.8	46.0				
Change Period, (Y+R _c), s						6.0		6.0	4.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.0	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						18.0		13.0	28.0		6.4					
Green Extension Time (g _e), s						0.0		0.0	0.0	0.0	0.1	0.0				
Phase Call Probability						1.00		1.00	1.00		0.97					
Max Out Probability						1.00		1.00	1.00		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					182	112	371	49	183		567	1249	1249	107	1797	148
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1772		1767	1781	1752	1767	1696	1610
Queue Service Time (g _s), s					11.3	6.4	16.0	3.0	11.0		26.0	57.2	57.2	4.4	40.0	7.6
Cycle Queue Clearance Time (g _c), s					11.3	6.4	16.0	3.0	11.0		26.0	57.2	57.2	4.4	40.0	7.6
Green Ratio (g/C)					0.14	0.14	0.14	0.10	0.10		0.59	0.50	0.50	0.41	0.35	0.35
Capacity (c), veh/h					246	258	219	169	170		462	887	872	167	1180	560
Volume-to-Capacity Ratio (X)					0.738	0.434	1.694	0.289	1.077		1.228	1.409	1.432	0.639	1.523	0.264
Back of Queue (Q), ft/ln (95 th percentile)					239.8	132.8	1063.7	59.4	368		888.3	2747.6	2713.6	83.4	2234.3	134.4
Back of Queue (Q), veh/ln (95 th percentile)					9.4	5.2	41.5	2.3	14.4		34.7	103.3	106.0	3.3	84.0	5.4
Queue Storage Ratio (RQ) (95 th percentile)					1.02	0.00	10.64	0.15	0.00		1.78	0.00	0.00	0.17	0.00	0.90
Uniform Delay (d ₁), s/veh					47.5	45.3	49.5	48.4	52.0		36.4	28.9	28.9	28.5	37.5	26.9
Incremental Delay (d ₂), s/veh					9.9	0.4	331.3	0.3	91.2		120.4	190.7	201.0	1.5	239.7	1.1
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					57.4	45.8	380.8	48.7	143.2		156.7	219.5	229.9	30.0	277.2	28.1
Level of Service (LOS)					E	D	F	D	F		F	F	F	C	F	C
Approach Delay, s/veh / LOS					235.9		F	123.3		F	212.1		F	246.4		F
Intersection Delay, s/veh / LOS					223.0					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.31		B	2.47		B	1.90		B	2.12		B
Bicycle LOS Score / LOS					1.58		B	0.87		A	3.02		C	2.18		B

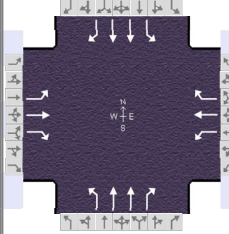

HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency			ms consultants			Duration, h		0.250											
Analyst		JRH		Analysis Date		Mar 27, 2023		Area Type		Other									
Jurisdiction			Time Period			AM Peak			PHF		0.92								
Urban Street			US 23 Corridor Study			Analysis Year		2050		Analysis Period				1 > 7:00					
Intersection			Big Lots			File Name								135_US23-BigLots_AM.xus					
Project Description			No-Build Design Year (2050)																
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				80	2	105	87	2	76	84	1556	77	86	1895	26				
Signal Information																			
Cycle, s		115.0		Reference Phase		2													
Offset, s		0		Reference Point		End													
Uncoordinated		No		Simult. Gap E/W		On													
Force Mode		Fixed		Simult. Gap N/S		On													
Green				5.7	0.9	59.6	10.5	14.3	0.0										
Yellow				4.0	0.0	4.0	4.0	4.0	4.0										
Red				2.0	0.0	2.0	2.0	2.0	2.0										
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4				8		5		2		1		6	
Case Number						11.0				12.0		1.1		4.0		1.1		4.0	
Phase Duration, s						16.5				20.3		12.6		66.5		11.7		65.6	
Change Period, (Y+R _c), s						6.0				6.0		6.0		6.0		6.0		6.0	
Max Allow Headway (MAH), s						3.2				3.1		3.0		0.0		3.0		0.0	
Queue Clearance Time (g _s), s						10.2				14.1		4.7				4.8			
Green Extension Time (g _e), s						0.3				0.2		0.1		0.0		0.1		0.0	
Phase Call Probability						1.00				1.00		0.95				0.95			
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				89 114			179			91 890 885			93 1044 1044						
Adjusted Saturation Flow Rate (s), veh/h/ln				1769 1572			1673			1767 1781 1752			1767 1781 1773						
Queue Service Time (g _s), s				5.5 8.2			12.1			2.7 54.4 55.6			2.8 59.6 59.6						
Cycle Queue Clearance Time (g _c), s				5.5 8.2			12.1			2.7 54.4 55.6			2.8 59.6 59.6						
Green Ratio (g/C)				0.09 0.09			0.12			0.58 0.53 0.53			0.57 0.52 0.52						
Capacity (c), veh/h				161 143			208			164 938 922			157 923 919						
Volume-to-Capacity Ratio (X)				0.552 0.796			0.863			0.555 0.949 0.960			0.596 1.131 1.136						
Back of Queue (Q), ft/ln (95 th percentile)				112.5 151.3			226.9			57 902.2 885.1			58.8 1514.4 1440.2						
Back of Queue (Q), veh/ln (95 th percentile)				4.4 5.9			8.9			2.2 33.9 34.6			2.3 56.9 57.6						
Queue Storage Ratio (RQ) (95 th percentile)				0.00 0.76			0.00			0.19 0.00 0.00			0.12 0.00 0.00						
Uniform Delay (d ₁), s/veh				50.0 51.2			49.4			26.4 25.8 26.1			26.7 27.7 27.7						
Incremental Delay (d ₂), s/veh				1.1 3.8			4.1			1.1 19.4 21.4			1.3 72.5 74.7						
Initial Queue Delay (d ₃), s/veh				0.0 0.0			0.0			0.0 0.0 0.0			0.0 0.0 0.0						
Control Delay (d), s/veh				51.1 55.0			53.5			27.4 45.2 47.5			28.0 100.2 102.4						
Level of Service (LOS)				D D			D			C D D			C F F						
Approach Delay, s/veh / LOS				53.3 D			53.5 D			45.4 D			98.2 F						
Intersection Delay, s/veh / LOS				72.1						E									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.31 B			2.32 B			1.67 B			1.90 B						
Bicycle LOS Score / LOS				0.82 A			0.78 A			2.03 B			2.29 B						

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	Big Lots		File Name	135_US23-BigLots_PM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					90	2	105	97	2	116	54	2230	116	96	1612	34
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	5.8	0.2	65.0	10.8	14.2	0.0										
Yellow	4.0	0.0	4.0	4.0	4.0	0.0										
Red	2.0	0.0	2.0	2.0	2.0	0.0										
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						11.0		12.0	1.1	4.0	1.1	4.0				
Phase Duration, s						16.8		20.2	12.0	71.2	11.8	71.0				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.1		3.2	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						10.5		16.2	3.7		5.1					
Green Extension Time (g _e), s						0.2		0.0	0.0	0.0	0.2	0.0				
Phase Call Probability						1.00		1.00	0.86		0.97					
Max Out Probability						0.02		1.00	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						100	114		234		59	1275	1275	104	896	894
Adjusted Saturation Flow Rate (s), veh/h/ln						1769	1572		1657		1767	1781	1750	1767	1781	1768
Queue Service Time (g _s), s						6.5	8.5		14.2		1.7	65.2	65.2	3.1	55.6	56.2
Cycle Queue Clearance Time (g _c), s						6.5	8.5		14.2		1.7	65.2	65.2	3.1	55.6	56.2
Green Ratio (g/C)						0.09	0.09		0.12		0.59	0.54	0.54	0.59	0.54	0.54
Capacity (c), veh/h						159	141		196		168	968	951	146	965	958
Volume-to-Capacity Ratio (X)						0.630	0.809		1.190		0.349	1.317	1.341	0.716	0.928	0.933
Back of Queue (Q), ft/ln (95 th percentile)						133.9	159.3		504.4		40.1	2533.5	2517.4	74.2	896.5	850.1
Back of Queue (Q), veh/ln (95 th percentile)						5.2	6.2		19.7		1.6	95.2	98.3	2.9	33.7	34.0
Queue Storage Ratio (RQ) (95 th percentile)						0.00	0.80		0.00		0.13	0.00	0.00	0.15	0.00	0.00
Uniform Delay (d ₁), s/veh						52.7	53.6		52.9		26.5	27.4	27.4	28.3	25.3	25.5
Incremental Delay (d ₂), s/veh						1.5	4.1		124.8		0.5	150.2	160.5	2.5	16.1	16.8
Initial Queue Delay (d ₃), s/veh						0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh						54.2	57.7		177.7		26.9	177.6	187.9	30.8	41.4	42.3
Level of Service (LOS)						D	E		F		C	F	F	C	D	D
Approach Delay, s/veh / LOS					56.1	E		177.7	F		179.2	F		41.2	D	
Intersection Delay, s/veh / LOS					121.1					F						
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.31	B		2.32	B		1.67	B		1.90	B	
Bicycle LOS Score / LOS					0.84	A		0.87	A		2.64	C		2.05	B	

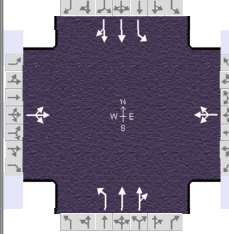
HCS Signalized Intersection Results Summary

General Information						Intersection Information									
Agency	ms consultants					Duration, h	0.250								
Analyst	JRH	Analysis Date	Apr 4, 2023			Area Type	Other								
Jurisdiction		Time Period	AM Peak			PHF	0.92								
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00								
Intersection	Hills-Miller Road		File Name	136_US23-HillsMiller_AM.xus											
Project Description	No-Build Design Year (2050)														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				268	117	394	50	223	329	158	1490	50	491	1603	47
Signal Information															
Cycle, s	95.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	7.6	5.4	37.0	12.0	9.0	0.0									
Yellow	4.0	0.0	4.0	4.0	4.0	0.0									
Red	2.0	0.0	2.0	2.0	2.0	0.0									
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4		8	5	2	1	6				
Case Number					9.0		9.0	1.1	3.0	1.1	3.0				
Phase Duration, s					18.0		15.0	13.6	43.0	19.0	48.4				
Change Period, (Y+R _c), s					6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s					3.1		3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s					14.0		11.0	7.4		15.0					
Green Extension Time (g _e), s					0.0		0.0	0.3	0.0	0.0	0.0				
Phase Call Probability					1.00		1.00	0.99		1.00					
Max Out Probability					1.00		1.00	0.00		1.00					
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				291	127	428	54	242	358	172	1620	54	534	1742	51
Adjusted Saturation Flow Rate (s), veh/h/ln				1767	1856	1572	1767	1856	1572	1767	1696	1572	1767	1696	1572
Queue Service Time (g _s), s				12.0	6.1	12.0	2.7	9.0	9.0	5.4	37.0	1.8	13.0	42.4	1.4
Cycle Queue Clearance Time (g _c), s				12.0	6.1	12.0	2.7	9.0	9.0	5.4	37.0	1.8	13.0	42.4	1.4
Green Ratio (g/C)				0.13	0.13	0.21	0.09	0.09	0.23	0.47	0.39	0.48	0.54	0.45	0.57
Capacity (c), veh/h				223	234	325	167	176	364	217	1321	761	318	1514	900
Volume-to-Capacity Ratio (X)				1.305	0.543	1.320	0.325	1.379	0.982	0.790	1.226	0.071	1.680	1.151	0.057
Back of Queue (Q), ft/ln (95 th percentile)				615.6	126.7	846.9	53.4	567.8	452.5	97.8	1304.1	27.8	1384.3	1183.4	20.2
Back of Queue (Q), veh/ln (95 th percentile)				24.0	4.9	33.1	2.1	22.2	17.7	3.8	49.0	1.1	54.1	44.5	0.8
Queue Storage Ratio (RQ) (95 th percentile)				3.08	0.00	4.23	0.13	0.00	0.00	0.33	0.00	0.28	2.77	0.00	0.13
Uniform Delay (d ₁), s/veh				41.5	38.9	37.7	40.2	43.0	36.3	22.0	29.0	13.1	29.0	26.3	9.0
Incremental Delay (d ₂), s/veh				165.8	1.4	163.9	0.4	202.0	42.1	2.4	108.6	0.2	319.6	76.1	0.1
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh				207.3	40.4	201.6	40.6	245.0	78.4	24.5	137.6	13.3	348.6	102.4	9.1
Level of Service (LOS)				F	D	F	D	F	E	C	F	B	F	F	A
Approach Delay, s/veh / LOS				179.4	F		137.0	F		123.4	F		156.8	F	
Intersection Delay, s/veh / LOS				147.0						F					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.46	B		2.46	B		2.10	B		2.10	B	
Bicycle LOS Score / LOS				1.88	B		1.57	B		2.01	B		2.41	B	

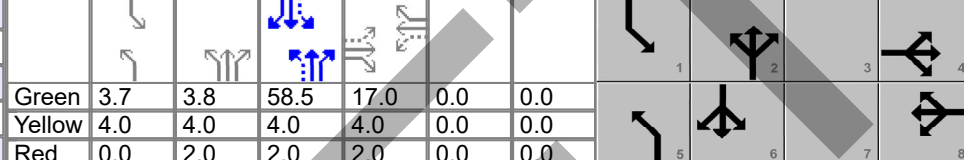
HCS Signalized Intersection Results Summary

General Information					Intersection Information																				
Agency	ms consultants				Duration, h	0.250																			
Analyst	JRH	Analysis Date	Apr 4, 2023		Area Type	Other																			
Jurisdiction		Time Period	PM Peak		PHF	0.92																			
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																		
Intersection	Hills-Miller Road		File Name	136_US23-HillsMiller_PM.xus																					
Project Description	No-Build Design Year (2050)																								
Demand Information					EB			WB			NB			SB											
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R									
Demand (v), veh/h					202	206	192	200	119	447	293	1946	150	351	1482	176									
Signal Information																									
Cycle, s	120.0	Reference Phase	2																						
Offset, s	0	Reference Point	End																						
Uncoordinated	No	Simult. Gap E/W	On																						
Force Mode	Fixed	Simult. Gap N/S	On		Green	15.0	3.0	53.0	13.0	12.0	0.0	Yellow	4.0	0.0	4.0	4.0	4.0	0.0	Red	2.0	0.0	2.0	2.0	2.0	0.0
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT													
Assigned Phase					7	4	3	8	5	2	1	6													
Case Number					1.1	3.0	1.1	3.0	1.1	3.0	1.1	3.0													
Phase Duration, s					19.0	18.0	19.0	18.0	24.0	62.0	21.0	59.0													
Change Period, (Y+R _c), s					6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0													
Max Allow Headway (MAH), s					3.0	3.2	3.0	3.2	3.0	0.0	3.0	0.0													
Queue Clearance Time (g _s), s					15.0	14.0	15.0	14.0	19.5		17.0														
Green Extension Time (g _e), s					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0													
Phase Call Probability					1.00	1.00	1.00	1.00	1.00		1.00														
Max Out Probability					1.00	1.00	1.00	1.00	1.00		1.00														
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					220	224	209	217	129	486	318	2115	163	382	1611	191									
Adjusted Saturation Flow Rate (s), veh/h/ln					1767	1856	1572	1767	1856	1572	1767	1696	1572	1767	1696	1572									
Queue Service Time (g _s), s					13.0	12.0	12.0	13.0	8.1	12.0	17.5	56.0	5.9	15.0	53.0	7.5									
Cycle Queue Clearance Time (g _c), s					13.0	12.0	12.0	13.0	8.1	12.0	17.5	56.0	5.9	15.0	53.0	7.5									
Green Ratio (g/C)					0.21	0.10	0.25	0.21	0.10	0.23	0.59	0.47	0.58	0.57	0.44	0.55									
Capacity (c), veh/h					271	186	393	251	186	354	325	1583	904	281	1498	865									
Volume-to-Capacity Ratio (X)					0.809	1.207	0.531	0.865	0.697	1.373	0.980	1.336	0.180	1.358	1.075	0.221									
Back of Queue (Q), ft/ln (95 th percentile)					286.3	495.3	230.1	302.4	191.2	1069.6	347.1	2174.5	94	720.6	1089.3	121.4									
Back of Queue (Q), veh/ln (95 th percentile)					11.2	19.3	9.0	11.8	7.5	41.8	13.6	81.7	3.7	28.1	40.9	4.7									
Queue Storage Ratio (RQ) (95 th percentile)					1.43	0.00	1.15	0.76	0.00	1.78	1.16	0.00	0.94	1.44	0.00	0.81									
Uniform Delay (d ₁), s/veh					43.8	54.0	38.9	43.7	52.2	46.5	39.9	32.0	12.1	39.8	33.5	13.8									
Incremental Delay (d ₂), s/veh					15.5	132.7	0.7	24.5	9.3	185.0	44.1	155.7	0.4	182.6	46.4	0.6									
Initial Queue Delay (d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0									
Control Delay (d), s/veh					59.3	186.7	39.6	68.2	61.5	231.5	84.0	187.7	12.5	222.4	79.9	14.4									
Level of Service (LOS)					E	F	D	E	E	F	F	F	B	F	F	B									
Approach Delay, s/veh / LOS					96.7		F	162.4		F	164.0		F	99.1		F									
Intersection Delay, s/veh / LOS					134.2					F															
Multimodal Results					EB			WB			NB			SB											
Pedestrian LOS Score / LOS					2.47		B	2.47		B	2.10		B	2.11		B									
Bicycle LOS Score / LOS					1.56		B	1.86		B	2.63		C	2.29		B									

HCS Signalized Intersection Results Summary

General Information					Intersection Information					
Agency	ms consultants				Duration, h	0.250				
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other				
Jurisdiction		Time Period	AM Peak		PHF	0.92				
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00				
Intersection	Coover Road		File Name	137_US23-Coover_AM.xus						
Project Description	No-Build Design Year (2050)									

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	46	10	244	30	10	30	210	1680	30	30	1889	162

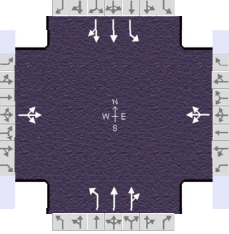
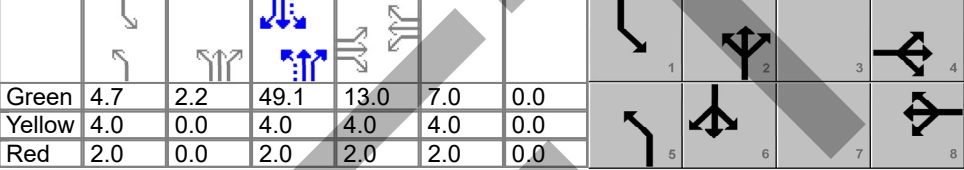
Signal Information												
Cycle, s	105.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	3.7	3.8	58.5	17.0	0.0	0.0						
Yellow	4.0	4.0	4.0	4.0	0.0	0.0						
Red	0.0	2.0	2.0	2.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		8.0		8.0	1.1	4.0	1.1	4.0
Phase Duration, s		23.0		23.0	17.5	74.3	7.7	64.5
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	4.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		19.0		7.3	11.2		2.8	
Green Extension Time (g _e), s		0.0		0.6	0.3	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.61	
Max Out Probability		1.00		0.01	0.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	326			76			228	930	929	33	1115	1115
Adjusted Saturation Flow Rate (s), veh/h/ln	1578			1081			1767	1722	1711	1767	1722	1675
Queue Service Time (g _s), s	11.7			0.0			9.2	43.1	43.5	0.8	58.5	58.5
Cycle Queue Clearance Time (g _c), s	17.0			5.3			9.2	43.1	43.5	0.8	58.5	58.5
Green Ratio (g/C)	0.16			0.16			0.69	0.65	0.65	0.59	0.56	0.56
Capacity (c), veh/h	295			224			261	1121	1113	184	960	934
Volume-to-Capacity Ratio (X)	1.105			0.340			0.873	0.830	0.834	0.178	1.161	1.194
Back of Queue (Q), ft/ln (95 th percentile)	553.8			78.4			258.5	605.2	570	13.1	1643.3	1604.9
Back of Queue (Q), veh/ln (95 th percentile)	21.6			3.1			10.1	22.1	22.3	0.5	60.0	64.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.86	0.00	0.00	0.03	0.00	0.00
Uniform Delay (d ₁), s/veh	45.0			38.8			34.5	13.9	14.0	15.9	23.2	23.2
Incremental Delay (d ₂), s/veh	83.6			0.3			6.6	7.2	7.4	0.2	84.0	97.8
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	128.6			39.1			41.1	21.1	21.4	16.1	107.3	121.0
Level of Service (LOS)	F			D			D	C	C	B	F	F
Approach Delay, s/veh / LOS	128.6	F		39.1	D		23.4	C		112.7	F	
Intersection Delay, s/veh / LOS	73.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.30	B	2.30	B	1.65	B	1.67	B
Bicycle LOS Score / LOS	1.03	A	0.61	A	2.21	B	2.35	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050	Analysis Period	1 > 7:00										
Intersection	Coover Road		File Name	137_US23-Coover_PM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					67	30	154	50	30	50	130	2318	50	50	1735	52
Signal Information																
Cycle, s	100.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode					Fixed	Simult. Gap N/S	On									
Green					4.7	2.2	49.1	13.0	7.0	0.0						
Yellow					4.0	0.0	4.0	4.0	4.0	0.0						
Red					2.0	0.0	2.0	2.0	2.0	0.0						
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8	5	2	1	6				
Case Number						12.0		12.0	1.1	4.0	1.1	4.0				
Phase Duration, s						19.0		13.0	12.9	57.3	10.7	55.1				
Change Period, (Y+R _c), s						6.0		6.0	6.0	6.0	6.0	6.0				
Max Allow Headway (MAH), s						3.2		3.1	3.0	0.0	3.0	0.0				
Queue Clearance Time (g _s), s						15.0		9.0	5.8		3.5					
Green Extension Time (g _e), s						0.0		0.0	0.2	0.0	0.0	0.0				
Phase Call Probability						1.00		0.98	0.98		0.78					
Max Out Probability						1.00		1.00	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					273			141			141	1287	1287	54	971	971
Adjusted Saturation Flow Rate (s), veh/h/ln					1651			1705			1767	1722	1709	1767	1722	1704
Queue Service Time (g _s), s					13.0			7.0			3.8	51.3	51.3	1.5	49.1	49.1
Cycle Queue Clearance Time (g _c), s					13.0			7.0			3.8	51.3	51.3	1.5	49.1	49.1
Green Ratio (g/C)					0.13			0.07			0.56	0.51	0.51	0.54	0.49	0.49
Capacity (c), veh/h					215			119			193	884	877	155	846	837
Volume-to-Capacity Ratio (X)					1.271			1.184			0.731	1.456	1.467	0.352	1.148	1.160
Back of Queue (Q), ft/ln (95 th percentile)					574.6			323.7			70.8	2916.1	2758.5	26.3	1406.7	1316.1
Back of Queue (Q), veh/ln (95 th percentile)					22.4			12.6			2.8	106.4	107.8	1.0	51.3	52.6
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.24	0.00	0.00	0.05	0.00	0.00
Uniform Delay (d ₁), s/veh					43.5			46.5			22.6	24.3	24.3	23.1	25.4	25.4
Incremental Delay (d ₂), s/veh					153.3			140.2			2.0	211.5	216.4	0.5	80.2	85.0
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					196.8			186.7			24.6	235.8	240.8	23.6	105.6	110.5
Level of Service (LOS)					F			F			C	F	F	C	F	F
Approach Delay, s/veh / LOS					196.8	F		186.7	F		227.2	F		105.7	F	
Intersection Delay, s/veh / LOS					177.1						F					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.31	B		2.31	B		1.67	B		1.67	B	
Bicycle LOS Score / LOS					0.94	A		0.72	A		2.73	C		2.13	B	

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Mar 27, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Panhandle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D134_US23-Panhandle_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	320	0						1996				
Intersection Two Demand (v), veh/h		203			0	294		1812	210			
Intersection Three Demand (v), veh/h				244	0						2451	
Intersection Four Demand (v), veh/h		0	761		294						2375	117

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	55.8	22.2	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	74												
Uncoordinated	No	Green	64.5	13.5	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	18												
Uncoordinated	No	Green	10.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	24												
Uncoordinated	No	Green	30.3	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	192	74.3	30.2	104.5	F
EBT	EBR(4) + SBU(1) + NBR(2)	155	76.2	30.2	106.4	F
EBR	EBR(4)	479	29.3	--	29.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	205	137.5	30.2	167.7	F
WBT	WBR(2) + NBU(3) + SBR(4)	60	85.0	30.2	115.2	F
WBR	WBR(2)	54	37.8	--	37.8	D
NBL	NBT(1) + NBL(2)	320	38.0	--	38.0	D
NBT	NBT(1) + NBT(2)	1693	24.4	--	24.4	C
NBR	NBT(1) + NBR(2)	824	26.2	--	26.2	C
SBL	SBT(3) + SBL(4)	221	46.4	--	46.4	D
SBT	SBT(3) + SBT(4)	2792	67.7	--	67.7	F
SBR	SBT(3) + SBR(4)	138	15.2	--	15.2	B

Overall Results		
Intersection ETT, s/veh LOS	54.1	D

HCS Alternative Intersections Results Summary

General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Mar 27, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Panhandle Road	PHF	0.92	Arterial Direction	North-South		
File Name	D134_US23-Panhandle_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	270	0						2987				
Intersection Two Demand (v), veh/h		284			0	213		2526	209			
Intersection Three Demand (v), veh/h				169	0						2118	
Intersection Four Demand (v), veh/h		0	611		522						1743	260

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	58.9	19.1	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	75												
Uncoordinated	No	Green	60.5	17.5	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	18												
Uncoordinated	No	Green	9.9	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	69												
Uncoordinated	No	Green	31.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

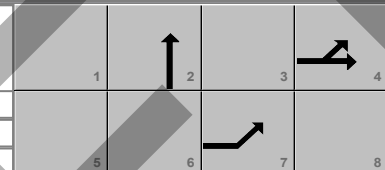
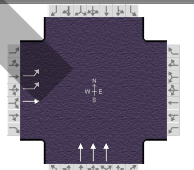
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	182	82.5	30.2	112.7	F
EBT	EBR(4) + SBU(1) + NBR(2)	112	90.2	30.2	120.4	F
EBR	EBR(4)	371	25.7	--	25.7	F
WBL	WBR(2) + NBU(3) + SBT(4)	49	95.9	30.2	126.1	F
WBT	WBR(2) + NBU(3) + SBR(4)	135	88.3	30.2	118.5	F
WBR	WBR(2)	48	32.0	--	32.0	C
NBL	NBT(1) + NBL(2)	567	70.0	--	70.0	F
NBT	NBT(1) + NBT(2)	2295	61.0	--	61.0	F
NBR	NBT(1) + NBR(2)	1148	68.7	--	68.7	F
SBL	SBT(3) + SBL(4)	309	43.1	--	43.1	D
SBT	SBT(3) + SBT(4)	2163	31.4	--	31.4	C
SBR	SBT(3) + SBR(4)	323	23.7	--	23.7	F

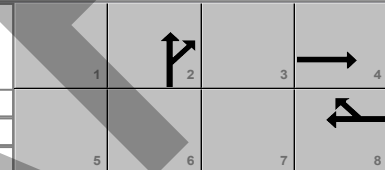
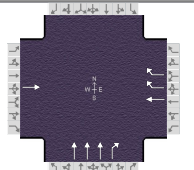
Overall Results		
Intersection ETT, s/veh LOS	53.7	D

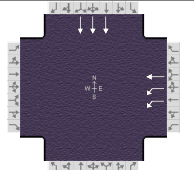
HCS Alternative Intersections Results Summary

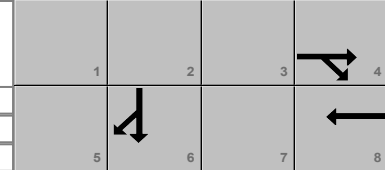
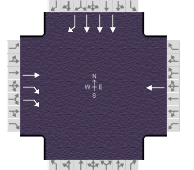
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hills-Miller Road	PHF	0.92	Arterial Direction	North-South		
File Name	D136_US23-HillsMiller_AM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	465	0						2217				
Intersection Two Demand (v), veh/h		491			0	602		2186	167			
Intersection Three Demand (v), veh/h				273	0						2191	
Intersection Four Demand (v), veh/h		0	859		329						1703	270

Signal One Information																	
Cycle, s	90.0																
Offset, s	0	Green	60.2	17.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Signal Two Information																	
Cycle, s	90.0																
Offset, s	73	Green	49.5	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Signal Three Information																	
Cycle, s	90.0																
Offset, s	22	Green	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Signal Four Information																	
Cycle, s	90.0																
Offset, s	24	Green	33.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

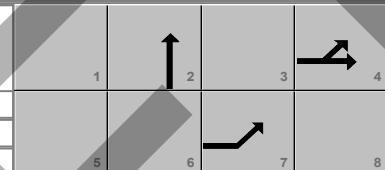
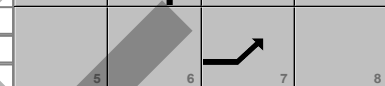
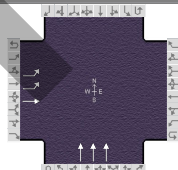
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	378	99.5	30.2	129.7	F
EBT	EBR(4) + SBU(1) + NBR(2)	127	75.1	30.2	105.3	F
EBR	EBR(4)	428	27.4	--	27.4	F
WBL	WBR(2) + NBU(3) + SBT(4)	54	96.3	30.2	126.5	F
WBT	WBR(2) + NBU(3) + SBR(4)	242	79.5	30.2	109.7	F
WBR	WBR(2)	358	28.0	--	28.0	C
NBL	NBT(1) + NBL(2)	358	33.6	--	33.6	C
NBT	NBT(1) + NBT(2)	2708	48.4	--	48.4	F
NBR	NBT(1) + NBR(2)	207	24.1	--	24.1	F
SBL	SBT(3) + SBL(4)	534	51.1	--	51.1	D
SBT	SBT(3) + SBT(4)	2312	36.4	--	36.4	D
SBR	SBT(3) + SBR(4)	367	19.6	--	19.6	F

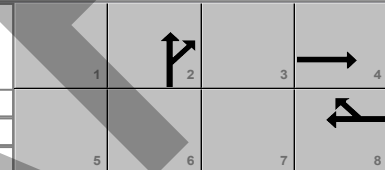

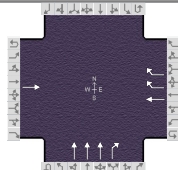
Overall Results		
Intersection ETT, s/veh LOS	50.4	D

HCS Alternative Intersections Results Summary

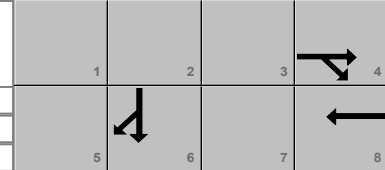

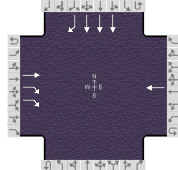
General Information				Alternative Intersection Information			
Agency	ms consultants			Intersection Type	RCUT		
Analyst	JRH	Analysis Date	Apr 4, 2023	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	Hills-Miller Road	PHF	0.92	Arterial Direction	North-South		
File Name	D136_US23-HillsMiller_PM_NB.xus						
Project Description	Concept D Design Year (2050)						

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	498	0						2832				
Intersection Two Demand (v), veh/h		351			0	766		2530	356			
Intersection Three Demand (v), veh/h				319	0						2209	
Intersection Four Demand (v), veh/h		0	690		444						1882	295

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	59.1	18.9	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	72												
Uncoordinated	No	Green	48.1	29.9	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
		Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	11												
Uncoordinated	No	Green	12.9	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

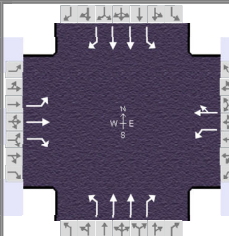
Signal Four Information													
Cycle, s	90.0												
Offset, s	3												
Uncoordinated	No	Green	28.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
		Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	317	187.7	30.2	217.9	F
EBT	EBR(4) + SBU(1) + NBR(2)	224	81.9	30.2	112.1	F
EBR	EBR(4)	209	30.3	--	30.3	F
WBL	WBR(2) + NBU(3) + SBT(4)	217	89.5	30.2	119.7	F
WBT	WBR(2) + NBU(3) + SBR(4)	129	80.3	30.2	110.5	F
WBR	WBR(2)	486	30.1	--	30.1	C
NBL	NBT(1) + NBL(2)	483	55.9	--	55.9	E
NBT	NBT(1) + NBT(2)	3173	148.5	--	148.5	F
NBR	NBT(1) + NBR(2)	446	42.7	--	42.7	F
SBL	SBT(3) + SBL(4)	382	34.8	--	34.8	C
SBT	SBT(3) + SBT(4)	2375	29.4	--	29.4	C
SBR	SBT(3) + SBR(4)	372	20.2	--	20.2	F

Overall Results		
Intersection ETT, s/veh LOS	88.0	F

HCS Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	ms consultants			Duration, h	0.250		
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other		
Jurisdiction		Time Period	AM Peak	PHF	0.92		
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00		
Intersection	Coover Road	File Name	C137_US23-Coover_AM.xus				
Project Description	Concept C Design Year (2050)						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	46	10	244	30	10	30	210	1680	30	30	1889	162

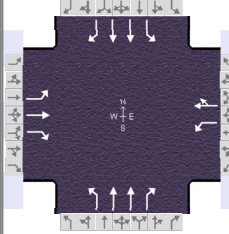

Signal Information				Phase Diagram								
Cycle, s	100.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	4.2	0.4	60.4	11.0	0.0	0.0						
Yellow	4.0	4.0	4.0	4.0	0.0	0.0						
Red	2.0	2.0	2.0	2.0	0.0	0.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		6.0	1.1	3.0	1.1	3.0
Phase Duration, s		17.0		17.0	16.6	72.8	10.2	66.4
Change Period, (Y+R _c), s		6.0		6.0	6.0	6.0	6.0	6.0
Max Allow Headway (MAH), s		3.2		3.2	3.0	0.0	3.0	0.0
Queue Clearance Time (g _s), s		13.0		4.7	10.6		2.7	
Green Extension Time (g _e), s		0.0		0.5	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	1.00		0.60	
Max Out Probability		1.00		0.12	1.00		0.00	

Movement Group Results	EB			WB			NB			SB		
	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	50	11	265	33	43		228	1826	33	33	2053	176
Adjusted Saturation Flow Rate (s), veh/h/ln	1352	1856	1572	1393	1635		1767	1639	1572	1767	1639	1610
Queue Service Time (g _s), s	3.5	0.5	11.0	2.1	2.4		8.6	41.7	0.7	0.7	60.4	4.9
Cycle Queue Clearance Time (g _c), s	5.9	0.5	11.0	2.7	2.4		8.6	41.7	0.7	0.7	60.4	4.9
Green Ratio (g/C)	0.11	0.11	0.22	0.11	0.11		0.73	0.67	0.67	0.65	0.60	0.60
Capacity (c), veh/h	188	204	339	218	180		259	2191	1051	204	1981	973
Volume-to-Capacity Ratio (X)	0.266	0.053	0.781	0.150	0.242		0.881	0.833	0.031	0.160	1.036	0.181
Back of Queue (Q), ft/ln (95 th percentile)	52.9	10.8	282.9	33.1	44.1		294.3	512.5	9.4	12.1	1001.6	71
Back of Queue (Q), veh/ln (95 th percentile)	2.1	0.4	11.1	1.3	1.7		11.5	18.7	0.4	0.5	36.6	2.8
Queue Storage Ratio (RQ) (95 th percentile)	0.26	0.00	1.41	0.08	0.00		0.98	0.00	0.09	0.02	0.00	0.47
Uniform Delay (d ₁), s/veh	43.4	39.8	37.0	41.0	40.7		33.9	12.4	5.6	14.4	19.8	8.8
Incremental Delay (d ₂), s/veh	0.3	0.0	10.3	0.1	0.3		25.6	3.9	0.1	0.1	30.4	0.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	43.7	39.9	47.2	41.2	40.9		59.6	16.3	5.7	14.5	50.2	9.2
Level of Service (LOS)	D	D	D	D	D		E	B	A	B	F	A
Approach Delay, s/veh / LOS	46.5		D	41.0		D	20.9		C	46.5		D
Intersection Delay, s/veh / LOS	35.1						D					

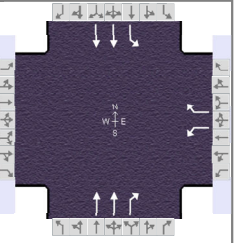
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.46	B	2.46	B	1.87	B	2.07	B
Bicycle LOS Score / LOS	1.03	A	0.61	A	2.21	B	2.35	B

HCS Signalized Intersection Results Summary

General Information						Intersection Information													
Agency			ms consultants			Duration, h		0.250											
Analyst		JRH		Analysis Date		Mar 27, 2023		Area Type		Other									
Jurisdiction			Time Period			PM Peak			PHF		0.92								
Urban Street		US 23 Corridor Study		Analysis Year		2050		Analysis Period		1 > 7:00									
Intersection		Coover Road		File Name		C137_US23-Coover_PM.xus													
Project Description		Concept C Design Year (2050)																	
Demand Information				EB			WB			NB			SB						
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R				
Demand (v), veh/h				67	30	154	50	30	50	130	2318	50	50	1735	52				
Signal Information																			
Cycle, s		120.0														Reference Phase		2	
Offset, s		0														Reference Point		End	
Uncoordinated		No														Simult. Gap E/W		On	
Force Mode		Fixed														Simult. Gap N/S		On	
Green				5.9	1.1	81.1	14.0	0.0	0.0										
Yellow				4.0	0.0	4.0	4.0	0.0	0.0										
Red				2.0	0.0	2.0	2.0	0.0	0.0										
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase						4		8		5		2		1		6			
Case Number						5.0		6.0		1.1		3.0		1.1		3.0			
Phase Duration, s						20.0		20.0		12.9		88.1		11.9		87.1			
Change Period, (Y+R _c), s						6.0		6.0		6.0		6.0		6.0		6.0			
Max Allow Headway (MAH), s						3.2		3.2		3.0		0.0		3.0		0.0			
Queue Clearance Time (g _s), s						14.5		8.4		4.8				3.0					
Green Extension Time (g _e), s						0.0		0.5		0.2		0.0		0.1		0.0			
Phase Call Probability						1.00		1.00		0.99				0.84					
Max Out Probability						1.00		0.19		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				73	33	167	54	87		141	2520	54	54	1886	57				
Adjusted Saturation Flow Rate (s), veh/h/ln				1300	1856	1572	1365	1668		1767	1639	1572	1767	1639	1610				
Queue Service Time (g _s), s				6.6	1.9	11.8	4.5	5.8		2.8	82.1	1.4	1.0	52.7	1.4				
Cycle Queue Clearance Time (g _c), s				12.5	1.9	11.8	6.4	5.8		2.8	82.1	1.4	1.0	52.7	1.4				
Green Ratio (g/C)				0.12	0.12	0.17	0.12	0.12		0.73	0.68	0.68	0.72	0.68	0.68				
Capacity (c), veh/h				149	216	274	198	195		219	2244	1076	146	2215	1088				
Volume-to-Capacity Ratio (X)				0.490	0.151	0.610	0.275	0.447		0.647	1.123	0.050	0.371	0.851	0.052				
Back of Queue (Q), ft/ln (95 th percentile)				99.6	39.9	211.4	69.6	110.8		126.9	1660.7	19.2	48.6	666.8	20.3				
Back of Queue (Q), veh/ln (95 th percentile)				3.9	1.6	8.3	2.7	4.3		5.0	60.6	0.8	1.9	24.3	0.8				
Queue Storage Ratio (RQ) (95 th percentile)				0.50	0.00	1.06	0.17	0.00		0.42	0.00	0.19	0.10	0.00	0.14				
Uniform Delay (d ₁), s/veh				55.2	47.7	45.8	50.5	49.4		26.4	18.9	6.2	32.1	14.9	6.5				
Incremental Delay (d ₂), s/veh				0.9	0.1	2.9	0.3	0.6		1.2	61.7	0.1	0.6	4.4	0.1				
Initial Queue Delay (d ₃), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0				
Control Delay (d), s/veh				56.1	47.8	48.6	50.8	50.0		27.6	80.6	6.3	32.7	19.2	6.6				
Level of Service (LOS)				E	D	D	D	D		C	F	A	C	B	A				
Approach Delay, s/veh / LOS				50.5		D		50.3		D		76.4		E		19.2		B	
Intersection Delay, s/veh / LOS				52.0						D									
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS				2.46		B		2.46		B		1.87		B		2.06		B	
Bicycle LOS Score / LOS				0.94		A		0.72		A		2.73		C		2.13		B	

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	AM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Delaware State Park	File Name	138_US23-DelPark_AM.xus		
Project Description	No-Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				2		2			1695	5	0	2079

Signal Information				Signal Timing (s)								Signal Phases							
Cycle, s	60.0	Reference Phase	2	Green	47.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	Begin	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On					1		2		3		4		5		6	

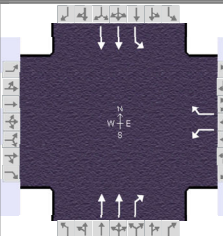
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				6.7		53.3	0.0	53.3
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.1		0.0	0.0	0.0
Queue Clearance Time (g _s), s				2.1				
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				0.07				
Max Out Probability				0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				2		2		1842	5	0		2260
Adjusted Saturation Flow Rate (s), veh/h/ln				1767		1572		1639	1572	1767		1639
Queue Service Time (g _s), s				0.1		0.1		16.3	0.0	0.0		28.2
Cycle Queue Clearance Time (g _c), s				0.1		0.1		16.3	0.0	0.0		28.2
Green Ratio (g/C)				0.01		0.01		0.79	0.79	0.72		0.79
Capacity (c), veh/h				21		18		2585	1240	252		2585
Volume-to-Capacity Ratio (X)				0.106		0.119		0.713	0.004	0.000		0.874
Back of Queue (Q), ft/ln (95 th percentile)				1.5		1.5		30.2	0.1	0		79.4
Back of Queue (Q), veh/ln (95 th percentile)				0.1		0.1		1.1	0.0	0.0		2.9
Queue Storage Ratio (RQ) (95 th percentile)				0.01		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				29.3		29.3		3.1	1.3	0.0		4.3
Incremental Delay (d ₂), s/veh				0.8		1.1		1.7	0.0	0.0		4.5
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				30.2		30.4		4.8	1.4	0.0		8.8
Level of Service (LOS)				C		C		A	A			A
Approach Delay, s/veh / LOS	0.0			30.3		C		4.8	A		8.8	A
Intersection Delay, s/veh / LOS				7.0								A

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.81	B	0.61	A
Bicycle LOS Score / LOS				F	2.01	B	2.35	B

HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	ms consultants			Duration, h	0.250
Analyst	JRH	Analysis Date	Mar 27, 2023	Area Type	Other
Jurisdiction		Time Period	PM Peak	PHF	0.92
Urban Street	US 23 Corridor Study	Analysis Year	2050	Analysis Period	1 > 7:00
Intersection	Delaware State Park	File Name	138_US23-DelPark_PM.xus		
Project Description	No-Build Design Year (2050)				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				18		2		2376	13	7	1777	

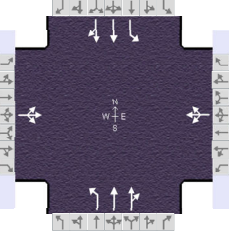
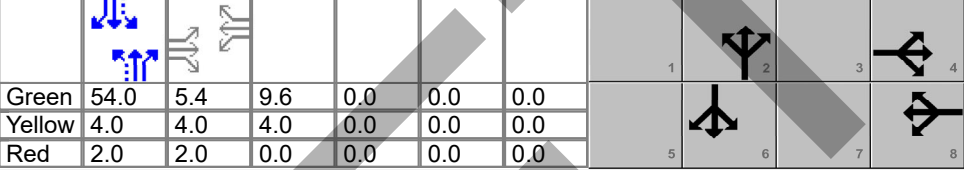
Signal Information				Phase Diagram								
Cycle, s	110.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	1.5	85.7	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		7.3	1.0	4.0
Phase Duration, s				10.9		91.7	7.5	99.1
Change Period, (Y+R _c), s				6.0		6.0	6.0	6.0
Max Allow Headway (MAH), s				3.0		0.0	3.0	0.0
Queue Clearance Time (g _s), s				3.2			2.1	
Green Extension Time (g _e), s				0.0		0.0	0.0	0.0
Phase Call Probability				0.49			0.21	
Max Out Probability				0.00			0.00	

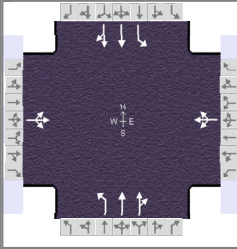
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				20		2		2583	14	8		1932
Adjusted Saturation Flow Rate (s), veh/h/ln				1767		1572		1639	1572	1767		1639
Queue Service Time (g _s), s				1.2		0.1		85.7	0.2	0.1		24.2
Cycle Queue Clearance Time (g _c), s				1.2		0.1		85.7	0.2	0.1		24.2
Green Ratio (g/C)				0.04		0.04		0.78	0.78	0.81		0.85
Capacity (c), veh/h				78		69		2554	1225	89		2777
Volume-to-Capacity Ratio (X)				0.251		0.031		1.011	0.012	0.086		0.696
Back of Queue (Q), ft/ln (95 th percentile)				24		2.6		946.3	2.4	7.5		157.5
Back of Queue (Q), veh/ln (95 th percentile)				0.9		0.1		34.5	0.1	0.3		5.7
Queue Storage Ratio (RQ) (95 th percentile)				0.10		0.00		0.00	0.01	0.03		0.00
Uniform Delay (d ₁), s/veh				50.8		50.3		12.2	2.7	36.9		3.1
Incremental Delay (d ₂), s/veh				0.6		0.1		20.6	0.0	0.2		1.5
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				51.4		50.4		32.7	2.7	37.1		4.6
Level of Service (LOS)				D		D		F	A	D		A
Approach Delay, s/veh / LOS	0.0			51.3		D	32.5		C	4.7		A
Intersection Delay, s/veh / LOS				20.8					C			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.32	B	2.32	B	1.84	B	0.61	A
Bicycle LOS Score / LOS				F	2.63	C	2.09	B

HCS Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	ms consultants				Duration, h	0.250										
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other										
Jurisdiction		Time Period	PM Peak		PHF	0.92										
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00									
Intersection	SR 229		File Name	139_US23-SR229_AM.xus												
Project Description	No-Build Design Year (2050)															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					10	10	10	24	10	90	10	1609	51	96	2041	10
Signal Information																
Cycle, s	85.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode					Fixed	Simult. Gap N/S	On									
Green					54.0	5.4	9.6	0.0	0.0	0.0						
Yellow					4.0	4.0	4.0	0.0	0.0	0.0						
Red					2.0	2.0	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						12.0		12.0		6.0		6.0				
Phase Duration, s						11.4		13.6		60.0		60.0				
Change Period, (Y+R _c), s						6.0		4.0		6.0		6.0				
Max Allow Headway (MAH), s						3.1		3.2		0.0		0.0				
Queue Clearance Time (g _s), s						3.5		8.8								
Green Extension Time (g _e), s						0.0		0.1		0.0		0.0				
Phase Call Probability						0.54		0.96								
Max Out Probability						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					33			135			11	904	901	104	1115	1115
Adjusted Saturation Flow Rate (s), veh/h/ln					1723			1627			170	1722	1703	259	1722	1719
Queue Service Time (g _s), s					1.5			6.8			0.0	34.2	34.7	19.3	54.0	54.0
Cycle Queue Clearance Time (g _c), s					1.5			6.8			54.0	34.2	34.7	54.0	54.0	54.0
Green Ratio (g/C)					0.06			0.11			0.64	0.64	0.64	0.64	0.64	0.64
Capacity (c), veh/h					109			183			85	1095	1083	143	1095	1093
Volume-to-Capacity Ratio (X)					0.300			0.735			0.128	0.825	0.832	0.728	1.018	1.020
Back of Queue (Q), ft/ln (95 th percentile)					29.2			122.9			13.4	475.2	449.8	146.5	918.7	842.8
Back of Queue (Q), veh/ln (95 th percentile)					1.1			4.8			0.5	17.3	17.6	5.7	33.5	33.7
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.04	0.00	0.00	0.29	0.00	0.00
Uniform Delay (d ₁), s/veh					38.0			36.5			42.5	11.9	12.0	37.1	15.5	15.5
Incremental Delay (d ₂), s/veh					0.6			2.1			3.1	7.1	7.5	27.4	31.8	32.3
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh					38.6			38.6			45.6	19.0	19.4	64.5	47.3	47.8
Level of Service (LOS)					D			D			D	B	B	E	F	F
Approach Delay, s/veh / LOS					38.6	D	38.6	D	19.4	B	48.3	D				
Intersection Delay, s/veh / LOS					35.7						D					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					2.30	B	2.31	B	1.64	B	1.64	B				
Bicycle LOS Score / LOS					0.54	A	0.71	A	1.99	B	2.41	B				

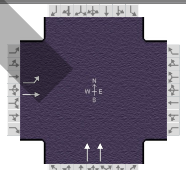
HCS Signalized Intersection Results Summary

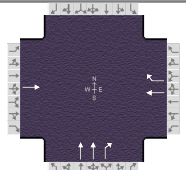
General Information					Intersection Information																							
Agency	ms consultants				Duration, h	0.250																						
Analyst	JRH	Analysis Date	Mar 27, 2023		Area Type	Other																						
Jurisdiction		Time Period	PM Peak		PHF	0.92																						
Urban Street	US 23 Corridor Study		Analysis Year	2050		Analysis Period	1 > 7:00																					
Intersection	SR 229		File Name	139_US23-SR229_PM.xus																								
Project Description	No-Build Design Year (2050)																											
Demand Information					EB			WB			NB			SB														
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h					10	10	10	33	10	53	10	2293	66	100	1728	10												
Signal Information																												
Cycle, s	124.5	Reference Phase	2																									
Offset, s	0	Reference Point	End																									
Uncoordinated	Yes	Simult. Gap E/W	On		Green	92.0	6.8	9.7	0.0	0.0	0.0																	
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.0	4.0	4.0	0.0	0.0	0.0																	
					Red	2.0	2.0	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							12.0				12.0				6.0				6.0									
Phase Duration, s							12.8				13.7				98.0				98.0									
Change Period, (Y+R _c), s							6.0				4.0				6.0				6.0									
Max Allow Headway (MAH), s							3.1				3.1				3.4				3.4									
Queue Clearance Time (g _s), s							4.3				9.7				94.0				94.0									
Green Extension Time (g _e), s							0.0				0.1				0.0				0.0									
Phase Call Probability							0.68				0.97				1.00				1.00									
Max Out Probability							0.01				0.02				1.00				1.00									
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					33			104			11			1282			109			945			944					
Adjusted Saturation Flow Rate (s), veh/h/ln					1723			1662			238			1722			1705			122			1722			1719		
Queue Service Time (g _s), s					2.3			7.7			3.5			92.0			92.0			0.1			39.5			39.6		
Cycle Queue Clearance Time (g _c), s					2.3			7.7			43.1			92.0			92.0			92.0			39.5			39.6		
Green Ratio (g/C)					0.05			0.08			0.74			0.74			0.74			0.74			0.74			0.74		
Capacity (c), veh/h					94			130			158			1273			1260			58			1273			1270		
Volume-to-Capacity Ratio (X)					0.348			0.803			0.069			1.007			1.018			1.878			0.742			0.744		
Back of Queue (Q), ft/ln (95 th percentile)					45.6			152.5			8.8			1271.6			1217.4			418.3			490.7			448.7		
Back of Queue (Q), veh/ln (95 th percentile)					1.8			6.0			0.3			46.4			47.6			16.3			17.9			17.9		
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.03			0.00			0.00			0.84			0.00			0.00		
Uniform Delay (d ₁), s/veh					56.7			56.4			21.9			16.2			16.2			62.2			9.4			9.4		
Incremental Delay (d ₂), s/veh					0.8			4.3			0.1			27.0			29.8			453.0			2.1			2.1		
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0			0.0			0.0			0.0			0.0		
Control Delay (d), s/veh					57.6			60.8			22.0			43.3			46.1			515.2			11.5			11.5		
Level of Service (LOS)					E			E			C			F			F			F			B			B		
Approach Delay, s/veh / LOS					57.6		E		60.8		E		44.6		D		38.9		D									
Intersection Delay, s/veh / LOS					42.6						D																	
Multimodal Results					EB			WB			NB			SB														
Pedestrian LOS Score / LOS					2.32			B			2.32			B			1.63			B			1.63			B		
Bicycle LOS Score / LOS					0.54			A			0.66			A			2.61			C			2.14			B		

HCS Alternative Intersections Results Summary

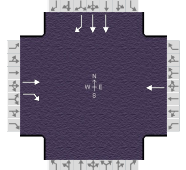
General Information				Alternative Intersection Information			
Agency				Intersection Type	RCUT		
Analyst		Analysis Date	1/4/2024	Segment One Distance, ft	1000		
Jurisdiction		Duration, h	0.250	Segment Two Distance, ft	1000		
Intersection	US 23/SR 229	PHF	0.92	Arterial Direction	North-South		
File Name	D139_US23-SR229_AM_NB.xus						
Project Description							

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						1680				
Intersection Two Demand (v), veh/h		96			0	124		1629	61			
Intersection Three Demand (v), veh/h				34	0						2171	
Intersection Four Demand (v), veh/h		0	30		10						2089	20

Signal One Information											
Cycle, s	90.0										
Offset, s	0										
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Two Information											
Cycle, s	90.0										
Offset, s	80										
Uncoordinated	No	Green	68.0	10.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	4.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	2.0	0.0	0.0	0.0	0.0	0.0		

Signal Three Information											
Cycle, s	90.0										
Offset, s	65										
Uncoordinated	No	Green	6.0	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

Signal Four Information											
Cycle, s	90.0										
Offset, s	42										
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Yellow	4.0	0.0	0.0	0.0	0.0	0.0	0.0		
		Red	2.0	0.0	0.0	0.0	0.0	0.0	0.0		

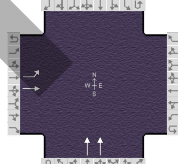
Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	90.5	24.7	115.2	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	85.6	24.7	110.3	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	26	91.7	24.7	116.4	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	84.5	24.7	109.2	F
WBR	WBR(2)	98	41.3	--	41.3	D
NBL	NBT(1) + NBL(2)	11	43.3	--	43.3	D
NBT	NBT(1) + NBT(2)	1781	12.7	--	12.7	B
NBR	NBT(1) + NBR(2)	67	7.9	--	7.9	A
SBL	SBT(3) + SBL(4)	104	47.3	--	47.3	D
SBT	SBT(3) + SBT(4)	2374	18.4	--	18.4	B
SBR	SBT(3) + SBR(4)	23	11.3	--	11.3	B

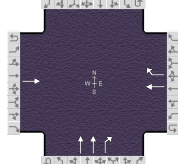
Overall Results		
Intersection ETT, s/veh LOS	18.6	B

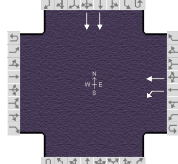
HCS Alternative Intersections Results Summary

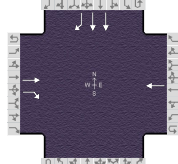
General Information				Alternative Intersection Information			
Agency		Intersection Type	RCUT				
Analyst		Analysis Date	1/4/2024		Segment One Distance, ft	1000	
Jurisdiction		Duration, h	0.250		Segment Two Distance, ft	1000	
Intersection	US 23/SR 229	PHF	0.92		Arterial Direction	North-South	
File Name	D139_US23-SR229_PM_NB.xus						
Project Description							

Demand	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Intersection One Demand (v), veh/h	20	0						2379				
Intersection Two Demand (v), veh/h		100			0	96		2313	76			
Intersection Three Demand (v), veh/h				43	0						1871	
Intersection Four Demand (v), veh/h		0	30		10						1794	20

Signal One Information													
Cycle, s	90.0												
Offset, s	0												
Uncoordinated	No	Green	73.8	4.2	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Two Information													
Cycle, s	90.0												
Offset, s	80												
Uncoordinated	No	Green	68.0	10.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	4.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	2.0	0.0	0.0	0.0	0.0					

Signal Three Information													
Cycle, s	90.0												
Offset, s	65												
Uncoordinated	No	Green	6.9	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Signal Four Information													
Cycle, s	90.0												
Offset, s	42												
Uncoordinated	No	Green	6.6	0.0	0.0	0.0	0.0	0.0					
		Yellow	4.0	0.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Red	2.0	0.0	0.0	0.0	0.0	0.0					

Alternative Intesection Results						
O-D	O-D Movements	Flow Rate (veh/h)	Control Delay (s/veh)	EDTT (s/veh)	ETT (s/veh)	LOS
EBL	EBR(4) + SBU(1) + NBT(2)	11	101.1	24.7	125.8	F
EBT	EBR(4) + SBU(1) + NBR(2)	11	85.6	24.7	110.3	F
EBR	EBR(4)	11	39.9	--	39.9	D
WBL	WBR(2) + NBU(3) + SBT(4)	36	87.3	24.7	112.0	F
WBT	WBR(2) + NBU(3) + SBR(4)	11	81.9	24.7	106.6	F
WBR	WBR(2)	58	39.2	--	39.2	D
NBL	NBT(1) + NBL(2)	11	52.1	--	52.1	D
NBT	NBT(1) + NBT(2)	2525	32.1	--	32.1	C
NBR	NBT(1) + NBR(2)	83	16.6	--	16.6	B
SBL	SBT(3) + SBL(4)	109	45.7	--	45.7	D
SBT	SBT(3) + SBT(4)	2057	14.9	--	14.9	B
SBR	SBT(3) + SBR(4)	23	9.5	--	9.5	A

Overall Results		
Intersection ETT, s/veh LOS	26.5	C