APPENDIX B: Capacity Analysis Reports

Existing Condition:

HCS7 Two-Way Stop-Control Report

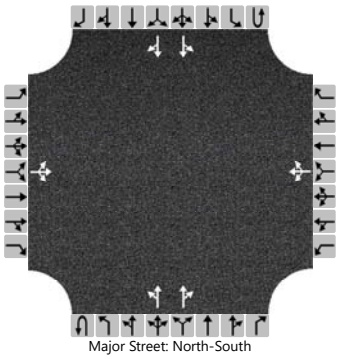
General Information

Analyst	
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield
North/South Street	KY 61
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		2	0	1		26	0	82		2	513	18		35	290	1
Percent Heavy Vehicles (%)		0	0	0		8	0	4		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.66	6.50	6.98		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.58	4.00	3.34		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			4				135			3				44		
Capacity, c (veh/h)			308				428			1191				921		
v/c Ratio			0.01				0.32			0.00				0.05		
95% Queue Length, Q_{95} (veh)			0.0				1.3			0.0				0.1		
Control Delay (s/veh)			16.8				17.2			8.0				9.1		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	16.8				17.2				0.0				1.2			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

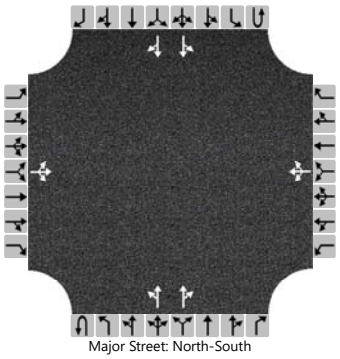
General Information

Analyst	
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2021
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield
North/South Street	KY 61
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		3	0	3		33	0	60		3	442	44		88	694	5
Percent Heavy Vehicles (%)		0	0	0		3	0	0		2				1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

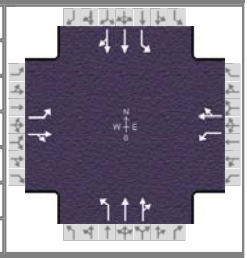
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.56	6.50	6.90		4.14				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.53	4.00	3.30		2.22				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			6				99			3				94		
Capacity, c (veh/h)			203				319			860				1052		
v/c Ratio			0.03				0.31			0.00				0.09		
95% Queue Length, Q_{95} (veh)			0.1				1.3			0.0				0.3		
Control Delay (s/veh)			23.3				21.3			9.2				8.8		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	23.3				21.3				0.1				1.4			
Approach LOS	C				C											

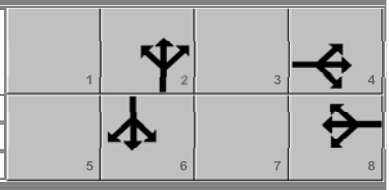
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.75
Urban Street	KY 251	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Pear Orchard Rd	File Name	AM KY 251 & Pear Orchard Rd.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	6	48	126	52	41	13	54	200	67	20	207	6

Signal Information												
Cycle, s	65.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	33.0	20.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.0	0.0	0.0	0.0	0.0		
				Red	2.0	2.1	0.0	0.0	0.0	0.0		



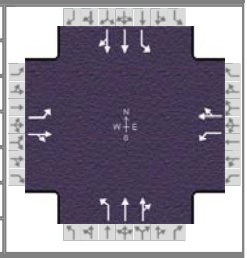
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		26.1		26.1		39.3		39.3
Change Period, ($Y+R_c$), s		6.1		6.1		6.3		6.3
Max Allow Headway (*MAH*), s		4.0		4.0		3.9		3.9
Queue Clearance Time (g_s), s		9.3		12.6		7.2		6.7
Green Extension Time (g_e), s		1.3		1.3		2.4		2.4
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	8	232		69	72		72	183	173	27	142	142
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1170	1681		1167	1793		1095	1856	1698	960	1856	1837
Queue Service Time (g_s), s	0.3	7.3		3.3	1.9		2.5	3.5	3.7	1.0	2.7	2.7
Cycle Queue Clearance Time (g_c), s	2.2	7.3		10.6	1.9		5.2	3.5	3.7	4.7	2.7	2.7
Green Ratio (*g/C*)	0.31	0.31		0.31	0.31		0.50	0.50	0.50	0.50	0.50	0.50
Capacity (*c*), veh/h	434	514		337	548		618	937	857	541	937	927
Volume-to-Capacity Ratio (*X*)	0.018	0.452		0.206	0.131		0.117	0.195	0.202	0.049	0.152	0.153
Back of Queue (*Q*), ft/ln (50 th percentile)	2.2	62.9		21.1	17.7		12.4	28.8	26.8	4.9	21.9	21.3
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	2.5		0.8	0.7		0.5	1.1	1.1	0.2	0.9	0.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.14	0.00		0.06	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	17.2	18.3		22.6	16.4		10.1	8.9	8.9	10.2	8.7	8.7
Incremental Delay (d_2), s/veh	0.0	0.5		0.3	0.1		0.1	0.1	0.1	0.0	0.1	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	17.2	18.8		22.9	16.5		10.1	9.0	9.0	10.3	8.8	8.8
Level of Service (LOS)	B	B		C	B		B	A	A	B	A	A
Approach Delay, s/veh / LOS	18.8	B		19.6	B		9.2	A		8.9	A	
Intersection Delay, s/veh / LOS	12.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.27	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.88	A	0.72	A	0.84	A	0.74	A

HCS7 Signalized Intersection Results Summary

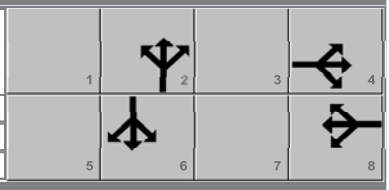
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	KY 251	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Pear Orchard Rd	File Name	PM KY 251 & Pear Orchard Rd.xus		
Project Description	PM Peak Hour				



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	85	106	88	78	42	124	243	114	23	236	4

Signal Information			
Cycle, s	65.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	33.0	20.0	0.0	0.0	0.0	0.0	
Yellow	4.3	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.1	0.0	0.0	0.0	0.0	



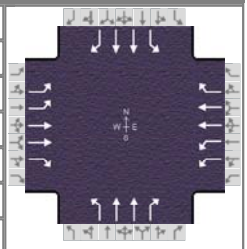
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		26.1		26.1		39.3		39.3
Change Period, ($Y+R_c$), s		6.1		6.1		6.3		6.3
Max Allow Headway (*MAH*), s		4.0		4.0		3.9		3.9
Queue Clearance Time (g_s), s		8.1		12.5		8.9		6.8
Green Extension Time (g_e), s		1.4		1.4		2.7		2.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	3	203		94	128		132	197	183	24	128	127
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1283	1714		1198	1773		1133	1900	1698	1019	1900	1889
Queue Service Time (g_s), s	0.1	6.1		4.4	3.5		4.6	3.7	3.9	0.9	2.3	2.3
Cycle Queue Clearance Time (g_c), s	3.6	6.1		10.5	3.5		6.9	3.7	3.9	4.8	2.3	2.3
Green Ratio (*g/C*)	0.31	0.31		0.31	0.31		0.50	0.50	0.50	0.50	0.50	0.50
Capacity (*c*), veh/h	433	524		365	542		642	959	857	564	959	953
Volume-to-Capacity Ratio (*X*)	0.007	0.388		0.257	0.235		0.206	0.205	0.214	0.043	0.133	0.134
Back of Queue (*Q*), ft/ln (50 th percentile)	0.8	54.1		28.2	32.3		23.5	30.4	28.5	4.2	19.1	19
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0	2.1		1.1	1.3		0.9	1.2	1.1	0.2	0.8	0.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.19	0.00		0.12	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	18.3	17.9		22.0	17.0		10.4	8.9	9.0	10.3	8.6	8.6
Incremental Delay (d_2), s/veh	0.0	0.4		0.4	0.2		0.1	0.1	0.1	0.0	0.1	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	18.3	18.3		22.4	17.2		10.6	9.0	9.1	10.4	8.7	8.7
Level of Service (LOS)	B	B		C	B		B	A	A	B	A	A
Approach Delay, s/veh / LOS	18.3	B		19.4	B		9.5	A		8.8	A	
Intersection Delay, s/veh / LOS	12.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.27	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.83	A	0.85	A	0.91	A	0.72	A

HCS7 Signalized Intersection Results Summary

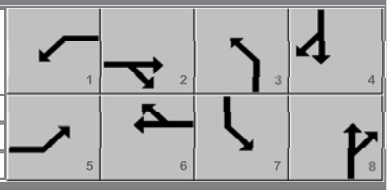
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	KY 3005	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	KY 251	File Name	AM KY 3005 & KY 251.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	518	63	48	553	80	87	56	67	85	63	87

Signal Information			
Cycle, s	88.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	5.0	1.2	35.0	6.3	18.0	0.0	
Yellow	4.7	0.0	4.8	3.5	3.5	0.0	
Red	1.8	0.0	1.8	3.0	0.3	0.0	



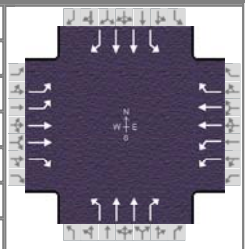
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	12.7	42.8	11.5	41.6	12.8	21.8	12.7	21.8
Change Period, ($Y+R_c$), s	6.5	6.6	6.5	6.6	6.5	7.1	6.5	7.1
Max Allow Headway (*MAH*), s	4.0	3.6	4.0	3.6	4.0	4.1	4.0	4.1
Queue Clearance Time (g_s), s	4.2	11.6	3.3	12.7	6.5	5.5	6.5	6.5
Green Extension Time (g_e), s	0.2	2.0	0.1	2.2	0.2	0.5	0.2	0.6
Phase Call Probability	0.89	1.00	0.71	1.00	0.90	0.96	0.89	0.98
Max Out Probability	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	88	545	66	51	582	84	92	59	71	89	66	92
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1766	1572	1702	1752	1510	1781	1738	1572	1725	1766	1585
Queue Service Time (g_s), s	2.2	9.6	2.3	1.3	10.7	3.2	4.5	1.3	3.5	4.5	1.4	4.5
Cycle Queue Clearance Time (g_c), s	2.2	9.6	2.3	1.3	10.7	3.2	4.5	1.3	3.5	4.5	1.4	4.5
Green Ratio (*g/C*)	0.07	0.41	0.41	0.06	0.39	0.39	0.07	0.17	0.17	0.07	0.17	0.17
Capacity (*c*), veh/h	244	1440	641	191	1380	594	126	576	261	121	584	262
Volume-to-Capacity Ratio (*X*)	0.363	0.379	0.103	0.264	0.422	0.142	0.728	0.102	0.271	0.739	0.114	0.349
Back of Queue (*Q*), ft/ln (50 th percentile)	23	92	19.8	13.6	103.4	27.4	54.5	13.4	33.2	55.5	14.9	43.5
Back of Queue (*Q*), veh/ln (50 th percentile)	0.9	3.6	0.8	0.5	4.0	1.0	2.1	0.5	1.3	2.1	0.6	1.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.11	0.00	0.00	0.09	0.00	0.00	0.27	0.00	0.00	0.18	0.00	0.00
Uniform Delay (d_1), s/veh	39.4	18.5	16.3	40.2	19.6	17.3	40.5	31.5	32.4	40.5	31.6	32.9
Incremental Delay (d_2), s/veh	0.9	0.1	0.1	0.7	0.2	0.1	7.8	0.1	0.6	8.5	0.1	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	40.4	18.6	16.3	40.9	19.8	17.4	48.3	31.5	32.9	49.0	31.6	33.7
Level of Service (LOS)	D	B	B	D	B	B	D	C	C	D	C	C
Approach Delay, s/veh / LOS	21.1	C		21.0	C		38.9	D		38.7	D	
Intersection Delay, s/veh / LOS	25.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.42	B	2.42	B	2.59	C	2.59	C
Bicycle LOS Score / LOS	1.07	A	1.08	A	0.67	A	0.69	A

HCS7 Signalized Intersection Results Summary

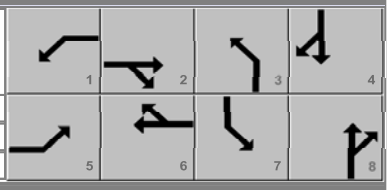
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	KY 3005	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	KY 251	File Name	PM KY 3005 & KY 251.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	693	81	59	619	178	68	98	76	128	98	76

Signal Information			
Cycle, s	92.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	5.6	1.1	35.0	5.9	2.9	14.9	
Yellow	4.7	0.0	4.8	3.5	0.0	4.8	
Red	1.8	0.0	1.8	3.0	0.0	2.3	



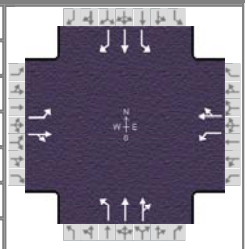
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	13.1	42.7	12.1	41.6	12.4	22.0	15.3	24.9
Change Period, ($Y+R_c$), s	6.5	6.6	6.5	6.6	6.5	7.1	6.5	7.1
Max Allow Headway (*MAH*), s	4.0	3.6	4.0	3.6	4.0	4.1	4.0	4.1
Queue Clearance Time (g_s), s	5.0	16.3	3.6	14.6	5.6	6.0	8.8	5.9
Green Extension Time (g_e), s	0.3	2.8	0.1	2.9	0.1	0.7	0.3	0.7
Phase Call Probability	0.95	1.00	0.80	1.00	0.84	0.99	0.97	0.99
Max Out Probability	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	116	729	85	62	652	187	72	103	80	135	103	80
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1795	1598	1757	1795	1585	1795	1795	1610	1781	1809	1598
Queue Service Time (g_s), s	3.0	14.3	3.2	1.6	12.6	7.6	3.6	2.3	4.0	6.8	2.2	3.9
Cycle Queue Clearance Time (g_c), s	3.0	14.3	3.2	1.6	12.6	7.6	3.6	2.3	4.0	6.8	2.2	3.9
Green Ratio (*g/C*)	0.07	0.39	0.39	0.06	0.38	0.38	0.06	0.16	0.16	0.10	0.19	0.19
Capacity (*c*), veh/h	250	1407	626	213	1366	603	115	580	260	170	699	309
Volume-to-Capacity Ratio (*X*)	0.464	0.518	0.136	0.292	0.477	0.311	0.624	0.178	0.308	0.791	0.148	0.259
Back of Queue (*Q*), ft/ln (50 th percentile)	31.9	139.6	27.5	16.7	124.1	67.1	42.7	24.2	38.8	82	22.9	37.1
Back of Queue (*Q*), veh/ln (50 th percentile)	1.3	5.5	1.1	0.7	4.9	2.6	1.7	1.0	1.6	3.2	0.9	1.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.16	0.00	0.00	0.11	0.00	0.00	0.21	0.00	0.00	0.27	0.00	0.00
Uniform Delay (d_1), s/veh	41.0	21.3	18.0	41.3	21.6	20.0	42.0	33.3	34.0	40.7	30.8	31.5
Incremental Delay (d_2), s/veh	1.3	0.2	0.1	0.8	0.2	0.2	5.4	0.1	0.7	8.0	0.1	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	42.3	21.6	18.0	42.1	21.8	20.3	47.4	33.4	34.7	48.7	30.9	32.0
Level of Service (LOS)	D	C	B	D	C	C	D	C	C	D	C	C
Approach Delay, s/veh / LOS	23.8	C		22.9	C		37.8	D		38.7	D	
Intersection Delay, s/veh / LOS	26.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.42	B	2.43	B	2.59	C	2.58	C
Bicycle LOS Score / LOS	1.26	A	1.23	A	0.70	A	0.75	A

HCS7 Signalized Intersection Results Summary

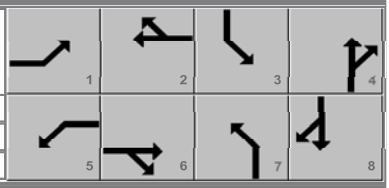
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	US 62	File Name	AM US 31W & US 62.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	124	295	46	25	283	29	74	234	22	93	214	111

Signal Information			
Cycle, s	69.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.1	4.5	16.3	10.0	11.5	0.0	
Yellow	3.5	0.0	3.5	3.5	3.5	0.0	
Red	2.1	0.0	2.2	2.0	5.0	0.0	



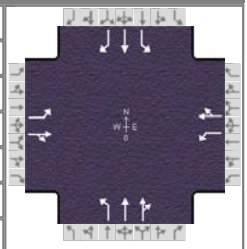
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	12.2	26.5	7.7	22.0		15.5		20.0
Change Period, ($Y+R_c$), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.1
Queue Clearance Time (g_s), s	7.2	15.0	3.1	14.6		7.1		10.7
Green Extension Time (g_e), s	0.1	1.9	0.0	1.7		0.6		0.8
Phase Call Probability	0.93	1.00	0.42	1.00		1.00		1.00
Max Out Probability	0.15	0.04	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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	139	383		28	351		83	145	143	104	240	125
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826		1810	1840		1795	1870	1814	1781	1856	1598
Queue Service Time (g_s), s	5.2	13.0		1.1	12.6		2.9	5.0	5.1	3.6	8.7	4.9
Cycle Queue Clearance Time (g_c), s	5.2	13.0		1.1	12.6		2.9	5.0	5.1	3.6	8.7	4.9
Green Ratio (*g/C*)	0.10	0.30		0.03	0.23		0.14	0.14	0.14	0.17	0.17	0.17
Capacity (*c*), veh/h	178	544		55	431		257	268	260	295	307	264
Volume-to-Capacity Ratio (*X*)	0.782	0.704		0.514	0.814		0.323	0.541	0.549	0.354	0.783	0.472
Back of Queue (*Q*), ft/ln (50 th percentile)	57.7	138.3		12.2	145.2		30.1	55	53.4	37.3	95.8	45.3
Back of Queue (*Q*), veh/ln (50 th percentile)	2.3	5.4		0.5	5.7		1.2	2.2	2.1	1.5	3.7	1.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.08	0.00		0.20	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	30.7	21.7		33.3	25.3		26.8	27.7	27.8	25.8	27.9	26.3
Incremental Delay (d_2), s/veh	2.8	2.4		2.8	5.3		0.3	0.6	0.7	0.3	1.7	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
Control Delay (*d*), s/veh	33.5	24.1		36.1	30.5		27.1	28.4	28.4	26.1	29.6	26.8
Level of Service (LOS)	C	C		D	C		C	C	C	C	C	C
Approach Delay, s/veh / LOS	26.6	C		31.0	C		28.1	C		28.1	C	
Intersection Delay, s/veh / LOS	28.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.28	B	1.92	B	1.95	B
Bicycle LOS Score / LOS	1.35	A	1.11	A	0.79	A	1.26	A

HCS7 Signalized Intersection Results Summary

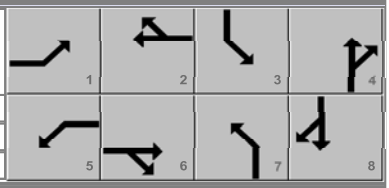
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	US 62	File Name	PM US 31W & US 62.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	144	357	50	32	268	32	80	338	28	112	304	118

Signal Information			
Cycle, s	80.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.8	0.6	17.6	11.5	17.2	0.0	
Yellow	3.5	3.5	3.5	3.5	3.5	0.0	
Red	2.1	1.8	2.2	2.0	5.0	0.0	



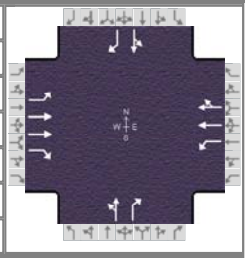
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	14.2	29.2	8.4	23.3		17.0		25.7
Change Period, ($Y+R_c$), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.1
Queue Clearance Time (g_s), s	9.1	20.7	3.6	16.0		10.6		16.1
Green Extension Time (g_e), s	0.1	1.8	0.0	1.6		0.9		1.0
Phase Call Probability	0.97	1.00	0.55	1.00		1.00		1.00
Max Out Probability	1.00	0.31	0.00	0.04		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	162	457		36	337		90	208	204	126	342	133
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1844		1767	1850		1810	1885	1834	1781	1870	1610
Queue Service Time (g_s), s	7.1	18.7		1.6	14.0		3.6	8.5	8.6	4.8	14.1	5.7
Cycle Queue Clearance Time (g_c), s	7.1	18.7		1.6	14.0		3.6	8.5	8.6	4.8	14.1	5.7
Green Ratio (*g/C*)	0.11	0.29		0.03	0.22		0.14	0.14	0.14	0.21	0.21	0.21
Capacity (*c*), veh/h	200	540		61	406		259	270	263	382	401	345
Volume-to-Capacity Ratio (*X*)	0.809	0.847		0.589	0.830		0.346	0.768	0.774	0.329	0.851	0.384
Back of Queue (*Q*), ft/ln (50 th percentile)	88	227.4		18.8	166.2		38.4	97.4	95.2	50.1	158.9	52.6
Back of Queue (*Q*), veh/ln (50 th percentile)	3.5	9.0		0.7	6.6		1.5	3.9	3.8	2.0	6.3	2.1
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.13	0.00		0.26	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	34.9	26.7		38.2	29.9		31.0	33.1	33.2	26.7	30.3	27.0
Incremental Delay (d_2), s/veh	9.3	8.8		3.3	6.2		0.3	1.7	1.9	0.2	2.0	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	44.1	35.5		41.6	36.1		31.3	34.9	35.0	26.9	32.3	27.3
Level of Service (LOS)	D	D		D	D		C	C	D	C	C	C
Approach Delay, s/veh / LOS	37.8	D		36.6	D		34.3	C		30.1	C	
Intersection Delay, s/veh / LOS	34.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.29	B	1.92	B	1.95	B
Bicycle LOS Score / LOS	1.51	B	1.10	A	0.90	A	1.48	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	AM US 62 & Commerce Dr.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	15	647	90	39	926	13	81	3	50	13	4	21

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	1.8	1.9	60.8	6.9	3.4	0.0	1	2	3	4		
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	5	6	7	8		
Red	2.3	0.0	2.3	3.0	3.0	0.0						

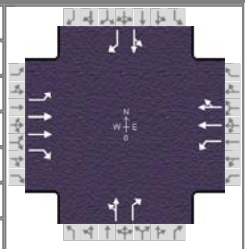
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	7.6	67.2	9.5	69.1		13.4		9.9
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.1
Queue Clearance Time (g_s), s	2.3		2.8			6.8		3.5
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		0.3		0.0
Phase Call Probability	0.36		0.68			0.98		0.67
Max Out Probability	0.00		0.00			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	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	16	681	95	41	495	493		88	53		18	22
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1752	1598	1810	1885	1876		1798	1585		1830	1485
Queue Service Time (g_s), s	0.3	9.6	2.5	0.8	13.5	13.5		4.8	3.2		1.0	1.5
Cycle Queue Clearance Time (g_c), s	0.3	9.6	2.5	0.8	13.5	13.5		4.8	3.2		1.0	1.5
Green Ratio (*g/C*)	0.62	0.60	0.60	0.64	0.62	0.62		0.07	0.07		0.03	0.03
Capacity (*c*), veh/h	373	2107	960	523	1170	1164		125	110		61	50
Volume-to-Capacity Ratio (*X*)	0.042	0.323	0.099	0.078	0.424	0.424		0.710	0.479		0.292	0.444
Back of Queue (*Q*), ft/ln (50 th percentile)	2.9	84.8	20.4	7.1	127.5	125.9		65	36		11.6	16.4
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	3.3	0.8	0.3	5.1	5.0		2.6	1.4		0.5	0.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.01	0.00	0.00	0.03	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	8.3	9.9	8.5	7.3	9.8	9.8		45.6	44.8		47.2	47.4
Incremental Delay (d_2), s/veh	0.0	0.4	0.2	0.1	1.1	1.1		14.7	6.8		2.6	6.1
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	8.3	10.3	8.7	7.4	10.9	10.9		60.2	51.6		49.7	53.5
Level of Service (LOS)	A	B	A	A	B	B		E	D		D	D
Approach Delay, s/veh / LOS	10.0	B		10.8	B		57.0	E		51.8	D	
Intersection Delay, s/veh / LOS	14.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.88	B	1.88	B	2.31	B	2.47	B
Bicycle LOS Score / LOS	1.14	A	1.34	A	0.72	A	0.55	A

HCS7 Signalized Intersection Results Summary

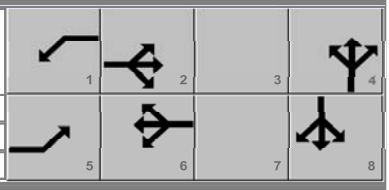
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	PM US 62 & Commerce Dr.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	19	1102	237	52	893	20	159	3	81	19	1	16

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	Off

Green	2.6	2.0	81.7	14.8	3.7	0.0	
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	
Red	2.3	0.0	2.3	3.0	3.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	8.4	88.1	10.4	90.1		21.3		10.2
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.1
Queue Clearance Time (g_s), s	2.5		3.4			14.0		3.5
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		0.8		0.1
Phase Call Probability	0.51		0.86			1.00		0.75
Max Out Probability	0.00		0.00			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	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	20	1160	249	55	482	479		171	85		21	17
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1781	1598	1781	1885	1870		1811	1585		1814	1610
Queue Service Time (g_s), s	0.5	23.7	9.1	1.4	16.2	16.2		12.0	6.6		1.5	1.3
Cycle Queue Clearance Time (g_c), s	0.5	23.7	9.1	1.4	16.2	16.2		12.0	6.6		1.5	1.3
Green Ratio (*g/C*)	0.64	0.62	0.62	0.66	0.64	0.64		0.11	0.11		0.03	0.03
Capacity (*c*), veh/h	374	2218	995	328	1204	1194		206	180		52	46
Volume-to-Capacity Ratio (*X*)	0.053	0.523	0.251	0.167	0.401	0.401		0.828	0.473		0.405	0.365
Back of Queue (*Q*), ft/ln (50 th percentile)	5.1	227.1	79.3	13.2	163.1	160.9		162.6	70.3		18.6	14.9
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	8.9	3.1	0.5	6.5	6.4		6.5	2.8		0.7	0.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.00	0.00	0.05	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	9.4	13.7	10.9	10.4	11.4	11.4		56.4	54.0		62.0	62.0
Incremental Delay (d_2), s/veh	0.1	0.9	0.6	0.2	1.0	1.0		20.1	4.1		5.0	4.8
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
Control Delay (*d*), s/veh	9.5	14.6	11.6	10.6	12.4	12.4		76.4	58.0		67.0	66.7
Level of Service (LOS)	A	B	B	B	B	B		E	E		E	E
Approach Delay, s/veh / LOS	14.0	B		12.3	B		70.3	E		66.9	E	
Intersection Delay, s/veh / LOS	19.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	1.88	B	2.32	B	2.48	B
Bicycle LOS Score / LOS	1.67	B	1.33	A	0.91	A	0.55	A

HCS7 Two-Way Stop-Control Report

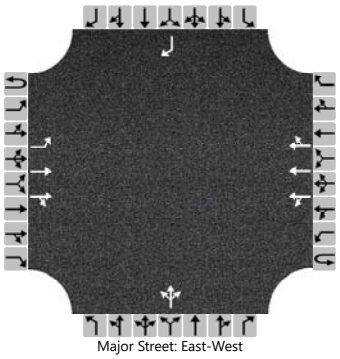
General Information

Analyst	
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	112	852	10		3	720	126		1	2	4				112
Percent Heavy Vehicles (%)	3	0				0				0	0	0				1
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.12
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.91

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		113				3					7					113
Capacity, c (veh/h)		466				783					238					494
v/c Ratio		0.24				0.00					0.03					0.23
95% Queue Length, Q_{95} (veh)		0.9				0.0					0.1					0.9
Control Delay (s/veh)		15.2				9.6					20.6					14.4
Level of Service (LOS)		C				A					C					B
Approach Delay (s/veh)	1.7				0.1				20.6				14.4			
Approach LOS									C				B			

HCS7 Two-Way Stop-Control Report

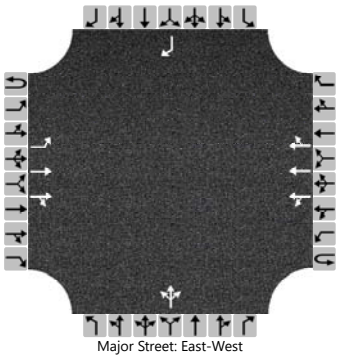
General Information

Analyst	
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2021
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	153	1271	2		3	940	154		11	1	16				154
Percent Heavy Vehicles (%)	3	0				0				0	0	0				0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized														No		
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

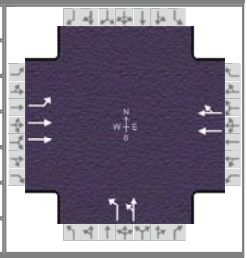
Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.10
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.90

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		155				3					28					156
Capacity, c (veh/h)		354				546					103					413
v/c Ratio		0.44				0.01					0.27					0.38
95% Queue Length, Q_{95} (veh)		2.1				0.0					1.0					1.7
Control Delay (s/veh)		22.8				11.6					52.7					18.9
Level of Service (LOS)		C				B					F					C
Approach Delay (s/veh)		2.5				0.1				52.7				18.9		
Approach LOS										F				C		

HCS7 Signalized Intersection Results Summary

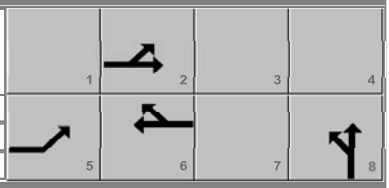
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	I65 NB Ramps	File Name	AM US 62 & I65 NB Ramps.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	239	235			528	49	327	0				

Signal Information			
Cycle, s	100.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	9.1	49.9	21.7	0.0	0.0	0.0
Yellow	3.5	4.5	3.5	0.0	0.0	0.0
Red	3.0	1.7	3.0	0.0	0.0	0.0



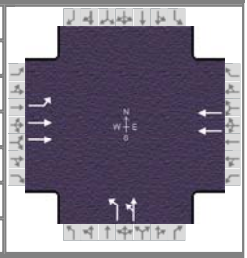
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		8.3		10.0		
Phase Duration, s	15.6	71.8		56.1		28.2		
Change Period, (*Y+R c*), s	6.5	6.2		6.2		6.5		
Max Allow Headway (*MAH*), s	4.0	0.0		0.0		7.0		
Queue Clearance Time (*g s*), s	8.5					21.0		
Green Extension Time (*g e*), s	0.6	0.0		0.0		0.8		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.01					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	5	2			6	16	3	8				
Adjusted Flow Rate (*v*), veh/h	254	250			311	303	348	0				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1767	1766			1811	1757	1781	1900				
Queue Service Time (*g s*), s	6.5	2.6			12.5	10.4	19.0	0.0				
Cycle Queue Clearance Time (*g c*), s	6.5	2.6			12.5	10.4	19.0	0.0				
Green Ratio (*g/C*)	0.61	0.66			0.50	0.50	0.22	0.22				
Capacity (*c*), veh/h	534	2316			904	877	387	413				
Volume-to-Capacity Ratio (*X*)	0.476	0.108			0.344	0.345	0.898	0.000				
Back of Queue (*Q*), ft/ln (50 th percentile)	57.3	21.5			108.7	101.2	267.1	0				
Back of Queue (*Q*), veh/ln (50 th percentile)	2.2	0.8			4.1	4.0	10.5	0.0				
Queue Storage Ratio (*RQ*) (50 th percentile)	0.14	0.00			0.00	0.00	0.00	0.00				
Uniform Delay (*d 1*), s/veh	10.4	6.4			15.1	15.2	38.1	0.0				
Incremental Delay (*d 2*), s/veh	0.7	0.1			1.0	1.1	24.7	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	11.1	6.5			16.2	16.2	62.8	0.0				
Level of Service (LOS)	B	A			B	B	E					
Approach Delay, s/veh / LOS	8.8	A		16.2	B		62.8	E		0.0		
Intersection Delay, s/veh / LOS	24.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.64	B	1.38	A	2.15	B	2.32	B
Bicycle LOS Score / LOS	0.90	A	0.99	A	1.06	A		

HCS7 Signalized Intersection Results Summary

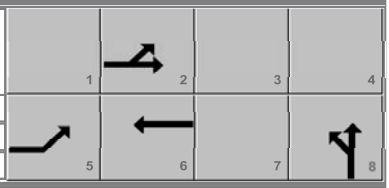
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	I65 NB Ramps	File Name	PM US 62 & I65 NB Ramps.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	308	521			476		267	0				

Signal Information			
Cycle, s	130.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	12.5	74.3	24.0	0.0	0.0	0.0
Yellow	3.5	4.5	3.5	0.0	0.0	0.0
Red	3.0	1.7	3.0	0.0	0.0	0.0



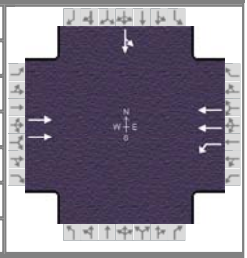
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		8		
Case Number	1.0	4.0		8.3		10.0		
Phase Duration, s	19.0	99.5		80.5		30.5		
Change Period, ($Y+R_c$), s	6.5	6.2		6.2		6.5		
Max Allow Headway (*MAH*), s	4.0	0.0		0.0		7.0		
Queue Clearance Time (g_s), s	11.5					21.9		
Green Extension Time (g_e), s	1.1	0.0		0.0		2.0		
Phase Call Probability	1.00					1.00		
Max Out Probability	0.00					0.33		

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2			6		3	8				
Adjusted Flow Rate (*v*), veh/h	328	554			506		284	0				
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1753	1781			1781		1795	1900				
Queue Service Time (g_s), s	9.5	6.8			9.2		19.9	0.0				
Cycle Queue Clearance Time (g_c), s	9.5	6.8			9.2		19.9	0.0				
Green Ratio (*g/C*)	0.68	0.72			0.57		0.18	0.18				
Capacity (*c*), veh/h	664	2557			2035		331	350				
Volume-to-Capacity Ratio (*X*)	0.493	0.217			0.249		0.858	0.000				
Back of Queue (*Q*), ft/ln (50 th percentile)	84.4	56.9			91.4		268.4	0				
Back of Queue (*Q*), veh/ln (50 th percentile)	3.3	2.2			3.6		10.7	0.0				
Queue Storage Ratio (*RQ*) (50 th percentile)	0.21	0.00			0.00		0.00	0.00				
Uniform Delay (d_1), s/veh	8.8	6.1			13.9		51.4	0.0				
Incremental Delay (d_2), s/veh	0.6	0.2			0.3		20.8	0.0				
Initial Queue Delay (d_3), s/veh	0.0	0.0			0.0		0.0	0.0				
Control Delay (*d*), s/veh	9.4	6.3			14.2		72.1	0.0				
Level of Service (LOS)	A	A			B		E					
Approach Delay, s/veh / LOS	7.4	A		14.2	B		72.1	E		0.0		
Intersection Delay, s/veh / LOS	20.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.64	B	1.38	A	2.16	B	2.33	B
Bicycle LOS Score / LOS	1.22	A	0.91	A	0.96	A		

HCS7 Signalized Intersection Results Summary

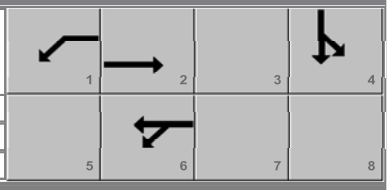
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	I65 SB Ramps	File Name	AM US 62 & I65 SB Ramps.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		436		123	726					23	0	

Signal Information			
Cycle, s	56.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	4.4	30.9	2.3	0.0	0.0	0.0
Yellow	3.5	3.9	3.5	0.0	0.0	0.0
Red	3.0	1.7	3.0	0.0	0.0	0.0



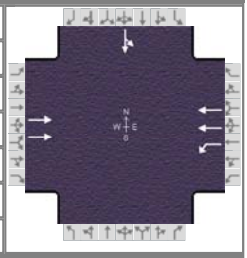
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	1.0	4.0				12.0
Phase Duration, s		36.5	10.9	47.4				8.8
Change Period, ($Y+R_c$), s		6.5	6.5	6.5				6.5
Max Allow Headway (*MAH*), s		3.9	4.0	3.9				4.0
Queue Clearance Time (g_s), s		6.1	3.8	6.4				2.8
Green Extension Time (g_e), s		1.9	0.4	3.5				0.0
Phase Call Probability		1.00	0.88	1.00				0.32
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		2		1	6					7	4	
Adjusted Flow Rate (*v*), veh/h		474		134	789						25	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1752		1626	1766						1682	
Queue Service Time (g_s), s		4.1		1.8	4.4						0.8	
Cycle Queue Clearance Time (g_c), s		4.1		1.8	4.4						0.8	
Green Ratio (*g/C*)		0.53		0.65	0.73						0.04	
Capacity (*c*), veh/h		1873		642	2572						68	
Volume-to-Capacity Ratio (*X*)		0.253		0.208	0.307						0.368	
Back of Queue (*Q*), ft/ln (50 th percentile)		26.5		8.5	9.3						9.4	
Back of Queue (*Q*), veh/ln (50 th percentile)		1.0		0.3	0.4						0.4	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.08	0.00						0.00	
Uniform Delay (d_1), s/veh		7.0		4.2	2.7						26.2	
Incremental Delay (d_2), s/veh		0.1		0.2	0.1						3.3	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0						0.0	
Control Delay (*d*), s/veh		7.1		4.3	2.7						29.5	
Level of Service (LOS)		A		A	A						C	
Approach Delay, s/veh / LOS	7.1	A		3.0	A		0.0			29.5	C	
Intersection Delay, s/veh / LOS	4.8						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.35	A	1.31	A	2.30	B	2.13	B
Bicycle LOS Score / LOS	0.88	A	1.25	A			0.53	A

HCS7 Signalized Intersection Results Summary

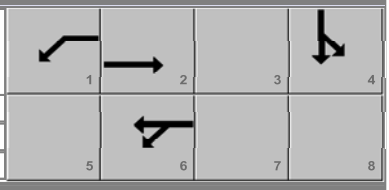
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.96
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	I65 SB Ramps	File Name	PM US 62 & I65 SB Ramps.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		765		122	625					49	0	

Signal Information			
Cycle, s	57.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	4.4	30.9	3.9	0.0	0.0	0.0
Yellow	3.5	3.9	3.5	0.0	0.0	0.0
Red	3.0	1.7	3.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6				4
Case Number		8.3	1.0	4.0				12.0
Phase Duration, s		36.5	10.9	47.4				10.4
Change Period, ($Y+R_c$), s		6.5	6.5	6.5				6.5
Max Allow Headway (*MAH*), s		3.9	4.0	3.9				4.0
Queue Clearance Time (g_s), s		10.0	3.7	5.8				3.6
Green Extension Time (g_e), s		3.6	0.4	2.8				0.1
Phase Call Probability		1.00	0.87	1.00				0.56
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		2		1	6					7	4	
Adjusted Flow Rate (*v*), veh/h		797		127	651						51	
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1781		1711	1781						1725	
Queue Service Time (g_s), s		8.0		1.7	3.8						1.6	
Cycle Queue Clearance Time (g_c), s		8.0		1.7	3.8						1.6	
Green Ratio (*g/C*)		0.52		0.63	0.71						0.07	
Capacity (*c*), veh/h		1849		502	2518						117	
Volume-to-Capacity Ratio (*X*)		0.431		0.253	0.259						0.436	
Back of Queue (*Q*), ft/ln (50 th percentile)		55.2		9.5	12.1						17.9	
Back of Queue (*Q*), veh/ln (50 th percentile)		2.2		0.4	0.5						0.7	
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00		0.10	0.00						0.00	
Uniform Delay (d_1), s/veh		8.6		5.4	3.0						25.9	
Incremental Delay (d_2), s/veh		0.2		0.3	0.1						2.5	
Initial Queue Delay (d_3), s/veh		0.0		0.0	0.0						0.0	
Control Delay (*d*), s/veh		8.8		5.6	3.1						28.4	
Level of Service (LOS)		A		A	A						C	
Approach Delay, s/veh / LOS	8.8	A		3.5	A		0.0			28.4	C	
Intersection Delay, s/veh / LOS	6.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.35	A	1.32	A	2.30	B	2.13	B
Bicycle LOS Score / LOS	1.15	A	1.13	A			0.57	A

HCS7 Two-Way Stop-Control Report

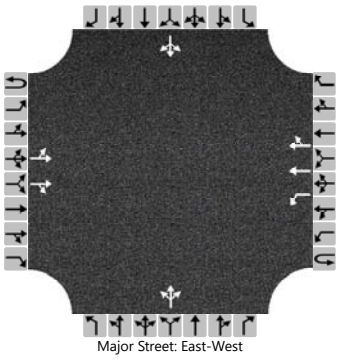
General Information

Analyst	
Agency/Co.	
Date Performed	4/28/2021
Analysis Year	2021
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Main St
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Main St
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	1	0		0	1	0
Configuration		LT		TR		L	T	TR			LTR				LTR	
Volume (veh/h)		7	504	6	0	80	558	10		4	1	115		4	1	6
Percent Heavy Vehicles (%)		0			3	0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		7				83					125				11	
Capacity, c (veh/h)		994				1046					696				387	
v/c Ratio		0.01				0.08					0.18				0.03	
95% Queue Length, Q_{95} (veh)		0.0				0.3					0.7				0.1	
Control Delay (s/veh)		8.6				8.7					11.3				14.6	
Level of Service (LOS)		A				A					B				B	
Approach Delay (s/veh)	0.2				1.1				11.3				14.6			
Approach LOS									B				B			

HCS7 Two-Way Stop-Control Report

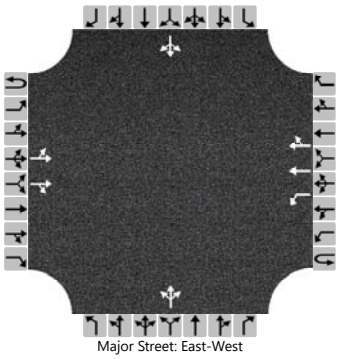
General Information

Analyst	
Agency/Co.	
Date Performed	4/28/2021
Analysis Year	2021
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Main St
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Main St
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	1	0		0	1	0
Configuration		LT		TR		L	T	TR			LTR				LTR	
Volume (veh/h)		6	737	6	0	149	694	5		5	0	145		8	0	12
Percent Heavy Vehicles (%)		0			3	0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage			Left + Thru								1					

Critical and Follow-up Headways

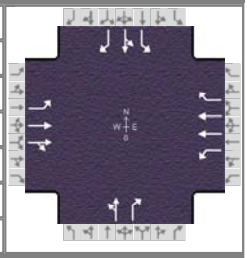
Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		6				155					156				21	
Capacity, c (veh/h)		885				851					574				260	
v/c Ratio		0.01				0.18					0.27				0.08	
95% Queue Length, Q_{95} (veh)		0.0				0.7					1.1				0.3	
Control Delay (s/veh)		9.1				10.2					13.6				20.0	
Level of Service (LOS)		A				B					B				C	
Approach Delay (s/veh)		0.1				1.8				13.6				20.0		
Approach LOS										B				C		

HCS7 Signalized Intersection Results Summary

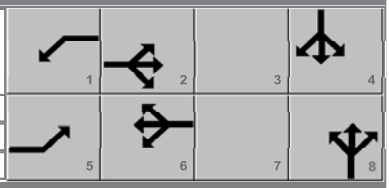
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	KY 3005	File Name	AM US 62 & Ring Rd.xus		
Project Description	AM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	412	10	3	436	360	6	2	6	462	5	232

Signal Information			
Cycle, s	93.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	0.4	2.4	26.6	29.6	1.3	0.0	
Yellow	3.5	4.6	4.7	4.6	4.7	0.0	
Red	3.0	1.9	2.3	1.9	1.9	0.0	



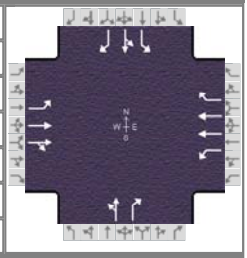
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		11.0		9.0
Phase Duration, s	15.8	42.5	6.9	33.6		7.9		36.1
Change Period, ($Y+R_c$), s	6.5	7.0	6.5	7.0		6.6		6.5
Max Allow Headway (*MAH*), s	4.0	3.5	4.0	3.7		4.1		4.1
Queue Clearance Time (g_s), s	8.7	10.0	2.2	23.6		2.6		26.7
Green Extension Time (g_e), s	0.6	1.2	0.0	2.9		0.0		2.7
Phase Call Probability	0.99	1.00	0.08	1.00		0.32		1.00
Max Out Probability	0.00	0.00	0.00	0.00		0.00		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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	191	225	224	3	464	383		9	6	491	5	247
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1856	1840	1344	1781	1572		1360	1397	1767	1604	1585
Queue Service Time (g_s), s	6.7	8.0	8.0	0.2	10.0	21.6		0.6	0.4	24.7	0.2	11.8
Cycle Queue Clearance Time (g_c), s	6.7	8.0	8.0	0.2	10.0	21.6		0.6	0.4	24.7	0.2	11.8
Green Ratio (*g/C*)	0.41	0.38	0.38	0.29	0.28	0.28		0.01	0.01	0.32	0.32	0.32
Capacity (*c*), veh/h	422	707	701	279	1017	449		19	19	560	508	503
Volume-to-Capacity Ratio (*X*)	0.453	0.318	0.319	0.011	0.456	0.853		0.450	0.328	0.877	0.010	0.491
Back of Queue (*Q*), ft/ln (50 th percentile)	67	83.5	81	1.5	103	207.4		8.6	5.5	275.8	2.2	108.3
Back of Queue (*Q*), veh/ln (50 th percentile)	2.6	3.3	3.2	0.0	4.1	8.1		0.3	0.2	10.8	0.1	4.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.45	0.00	0.00	0.02	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	19.4	20.4	20.5	23.7	27.5	31.6		45.9	45.8	30.3	21.9	25.9
Incremental Delay (d_2), s/veh	0.8	0.2	0.2	0.0	0.3	3.8		15.8	9.5	6.9	0.0	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
Control Delay (*d*), s/veh	20.2	20.7	20.7	23.7	27.8	35.5		61.7	55.3	37.2	22.0	26.6
Level of Service (LOS)	C	C	C	C	C	D		E	E	D	C	C
Approach Delay, s/veh / LOS	20.5	C		31.2	C		58.9	E		33.6	C	
Intersection Delay, s/veh / LOS	29.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	2.12	B	2.47	B	2.31	B
Bicycle LOS Score / LOS	1.02	A	1.19	A	0.51	A	1.71	B

HCS7 Signalized Intersection Results Summary

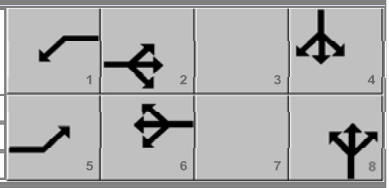
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	KY 3005	File Name	PM US 62 & Ring Rd.xus		
Project Description	PM Peak Hour				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	224	749	11	11	614	381	9	8	11	706	3	290

Signal Information			
Cycle, s	123.9	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	1.7	5.6	36.0	45.0	2.6	0.0	
Yellow	3.5	4.6	4.7	4.6	4.7	0.0	
Red	3.0	1.9	2.3	1.9	1.9	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		11.0		9.0
Phase Duration, s	20.2	55.1	8.2	43.0		9.2		51.5
Change Period, ($Y+R_c$), s	6.5	7.0	6.5	7.0		6.6		6.5
Max Allow Headway (*MAH*), s	4.0	3.5	4.0	3.7		4.1		4.1
Queue Clearance Time (g_s), s	12.9	23.0	2.6	32.2		3.2		47.0
Green Extension Time (g_e), s	0.8	2.3	0.0	3.8		0.0		0.0
Phase Call Probability	1.00	1.00	0.33	1.00		0.64		1.00
Max Out Probability	0.00	0.00	0.00	0.00		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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	238	405	403	12	653	405		18	12	751	3	309
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1861	1810	1795	1585		1851	1497	1781	1900	1598
Queue Service Time (g_s), s	10.9	21.0	21.0	0.6	19.6	30.2		1.2	1.0	45.0	0.1	18.9
Cycle Queue Clearance Time (g_c), s	10.9	21.0	21.0	0.6	19.6	30.2		1.2	1.0	45.0	0.1	18.9
Green Ratio (*g/C*)	0.42	0.39	0.39	0.30	0.29	0.29		0.02	0.02	0.36	0.36	0.36
Capacity (*c*), veh/h	364	726	722	221	1043	461		38	31	647	690	580
Volume-to-Capacity Ratio (*X*)	0.654	0.558	0.558	0.053	0.626	0.880		0.471	0.377	1.161	0.005	0.532
Back of Queue (*Q*), ft/ln (50 th percentile)	117.7	232.7	227.9	6.1	211.7	303.4		16.1	11.2	879.4	1.5	180.7
Back of Queue (*Q*), veh/ln (50 th percentile)	4.7	9.2	9.1	0.2	8.4	11.9		0.6	0.4	34.6	0.1	7.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.78	0.00	0.00	0.06	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	26.9	29.6	29.6	30.7	38.1	41.9		60.0	59.9	39.5	25.2	31.2
Incremental Delay (d_2), s/veh	2.0	0.5	0.5	0.1	0.5	4.6		8.7	7.4	88.9	0.0	0.9
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	28.9	30.2	30.2	30.8	38.6	46.5		68.7	67.3	128.4	25.2	32.1
Level of Service (LOS)	C	C	C	C	D	D		E	E	F	C	C
Approach Delay, s/veh / LOS	29.9	C		41.5	D		68.2	E		100.1	F	
Intersection Delay, s/veh / LOS	57.4						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.92	B	2.13	B	2.48	B	2.32	B
Bicycle LOS Score / LOS	1.35	A	1.37	A	0.54	A	2.24	B

2045 No Build Condition

HCS7 Two-Way Stop-Control Report

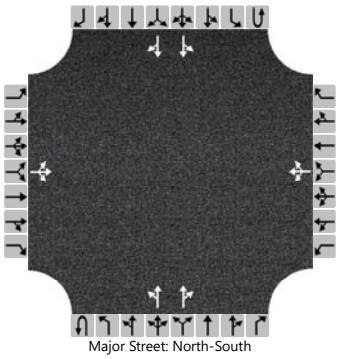
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2045
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield
North/South Street	KY 61
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		10	10	10		30	10	100		10	550	10		50	420	10
Percent Heavy Vehicles (%)		0	0	0		8	0	4		2				2		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.66	6.50	6.98		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.58	4.00	3.34		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			38				175			13				63		
Capacity, c (veh/h)			177				300			1027				893		
v/c Ratio			0.21				0.58			0.01				0.07		
95% Queue Length, Q_{95} (veh)			0.8				3.4			0.0				0.2		
Control Delay (s/veh)			30.7				32.5			8.5				9.3		
Level of Service (LOS)			D				D			A				A		
Approach Delay (s/veh)		30.7				32.5				0.2				1.3		
Approach LOS		D				D										

HCS7 Two-Way Stop-Control Report

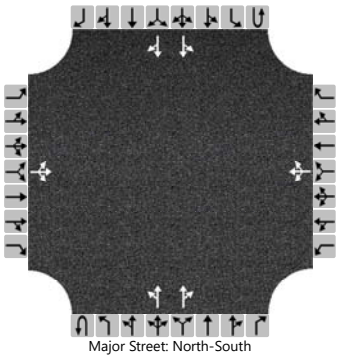
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2045
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield
North/South Street	KY 61
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		10	10	10		40	10	90		10	600	50		130	810	10
Percent Heavy Vehicles (%)		0	0	0		3	0	0		2				1		
Proportion Time Blocked																
Percent Grade (%)		0				0										
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

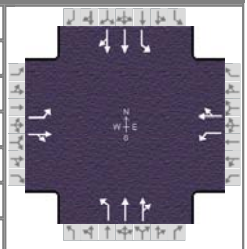
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.56	6.50	6.90		4.14				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.53	4.00	3.30		2.22				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			32				149			11				138		
Capacity, c (veh/h)			71				145			769				906		
v/c Ratio			0.45				1.03			0.01				0.15		
95% Queue Length, Q_{95} (veh)			1.8				7.7			0.0				0.5		
Control Delay (s/veh)			91.0				143.0			9.7				9.7		
Level of Service (LOS)			F				F			A				A		
Approach Delay (s/veh)		91.0				143.0				0.2				2.3		
Approach LOS		F				F										

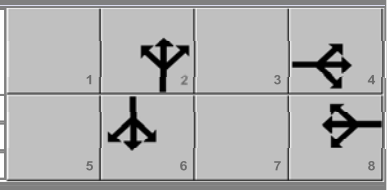
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.75
Urban Street	KY 251	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Pear Orchard Rd	File Name	AM KY 251 & Pear Orchard Rd.xus		
Project Description	AM Peak Hour - NB				



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	80	126	60	70	30	80	200	90	30	207	10

Signal Information											
Cycle, s	65.4	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	Yes	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								
				Green	33.0	20.0	0.0	0.0	0.0	0.0	
				Yellow	4.3	4.0	0.0	0.0	0.0	0.0	
				Red	2.0	2.1	0.0	0.0	0.0	0.0	



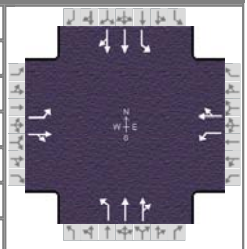
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		26.1		26.1		39.3		39.3
Change Period, ($Y+R_c$), s		6.1		6.1		6.3		6.3
Max Allow Headway (*MAH*), s		4.0		4.0		4.0		4.0
Queue Clearance Time (g_s), s		10.7		14.8		8.6		7.7
Green Extension Time (g_e), s		1.7		1.7		2.8		2.8
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	13	275		80	133		107	200	186	40	145	144
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1107	1712		1122	1775		1090	1856	1663	934	1856	1825
Queue Service Time (g_s), s	0.6	8.7		4.2	3.7		3.8	3.9	4.1	1.6	2.8	2.8
Cycle Queue Clearance Time (g_c), s	4.3	8.7		12.8	3.7		6.6	3.9	4.1	5.7	2.8	2.8
Green Ratio (*g/C*)	0.31	0.31		0.31	0.31		0.50	0.50	0.50	0.50	0.50	0.50
Capacity (*c*), veh/h	386	523		304	543		614	936	839	523	936	921
Volume-to-Capacity Ratio (*X*)	0.035	0.525		0.263	0.246		0.174	0.214	0.222	0.076	0.155	0.156
Back of Queue (*Q*), ft/ln (50 th percentile)	3.9	76.5		25.6	34		19.1	31.7	29	7.6	22.3	21.6
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	3.1		1.0	1.3		0.8	1.2	1.2	0.3	0.9	0.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.17	0.00		0.10	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	18.6	18.8		24.1	17.0		10.5	9.0	9.0	10.6	8.7	8.7
Incremental Delay (d_2), s/veh	0.0	0.7		0.5	0.2		0.1	0.1	0.1	0.1	0.1	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	18.7	19.5		24.5	17.3		10.6	9.1	9.2	10.7	8.8	8.8
Level of Service (LOS)	B	B		C	B		B	A	A	B	A	A
Approach Delay, s/veh / LOS	19.4	B		20.0	B		9.4	A		9.0	A	
Intersection Delay, s/veh / LOS	13.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.27	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.96	A	0.84	A	0.89	A	0.76	A

HCS7 Signalized Intersection Results Summary

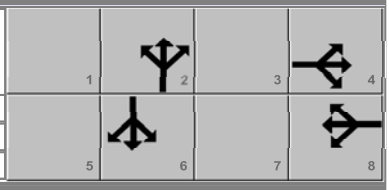
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	KY 251	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Pear Orchard Rd	File Name	PM KY 251 & Pear Orchard Rd.xus		
Project Description	PM Peak Hour - NB				



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	90	140	110	110	50	170	310	140	40	290	10

Signal Information			
Cycle, s	65.4	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	33.0	20.0	0.0	0.0	0.0	0.0	
Yellow	4.3	4.0	0.0	0.0	0.0	0.0	
Red	2.0	2.1	0.0	0.0	0.0	0.0	



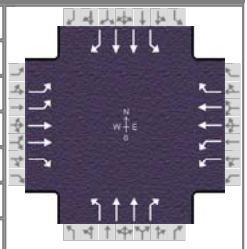
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		26.1		26.1		39.3		39.3
Change Period, ($Y+R_c$), s		6.1		6.1		6.3		6.3
Max Allow Headway (*MAH*), s		4.0		4.0		4.0		4.0
Queue Clearance Time (g_s), s		9.6		15.6		12.2		8.8
Green Extension Time (g_e), s		1.9		1.9		3.7		3.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (*v*), veh/h	11	245		117	170		181	249	229	43	160	159
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1234	1699		1153	1785		1069	1900	1701	930	1900	1877
Queue Service Time (g_s), s	0.4	7.6		6.0	4.8		7.2	4.9	5.1	1.8	3.0	3.0
Cycle Queue Clearance Time (g_c), s	5.2	7.6		13.6	4.8		10.2	4.9	5.1	6.8	3.0	3.0
Green Ratio (*g/C*)	0.31	0.31		0.31	0.31		0.50	0.50	0.50	0.50	0.50	0.50
Capacity (*c*), veh/h	397	520		328	546		601	959	858	508	959	947
Volume-to-Capacity Ratio (*X*)	0.027	0.471		0.357	0.312		0.301	0.260	0.267	0.084	0.167	0.168
Back of Queue (*Q*), ft/ln (50 th percentile)	2.8	67.3		37.8	44.1		35.3	39.8	36.8	7.8	24.3	24.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	2.7		1.5	1.8		1.4	1.6	1.5	0.3	1.0	1.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.25	0.00		0.18	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	19.4	18.4		23.9	17.4		11.5	9.2	9.3	11.2	8.8	8.8
Incremental Delay (d_2), s/veh	0.0	0.6		0.7	0.3		0.2	0.1	0.1	0.1	0.1	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	19.4	19.0		24.6	17.7		11.8	9.4	9.4	11.3	8.8	8.9
Level of Service (LOS)	B	B		C	B		B	A	A	B	A	A
Approach Delay, s/veh / LOS	19.0	B		20.5	C		10.0	B		9.1	A	
Intersection Delay, s/veh / LOS	13.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.27	B	2.27	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.91	A	0.96	A	1.03	A	0.79	A

HCS7 Signalized Intersection Results Summary

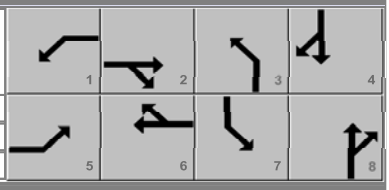
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	KY 3005	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	KY 251	File Name	AM KY 3005 & KY 251.xus		
Project Description	AM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	84	518	63	50	590	120	90	60	80	150	90	140

Signal Information			
Cycle, s	93.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	5.2	1.1	35.0	6.4	4.0	14.7	
Yellow	4.7	0.0	4.8	3.5	0.0	4.8	
Red	1.8	0.0	1.8	3.0	0.0	2.3	



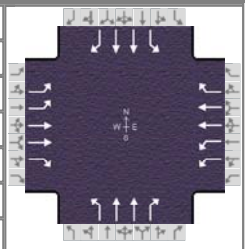
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	12.8	42.7	11.7	41.6	12.9	21.8	17.0	25.8
Change Period, ($Y+R_c$), s	6.5	6.6	6.5	6.6	6.5	7.1	6.5	7.1
Max Allow Headway (*MAH*), s	4.0	3.6	4.0	3.6	4.0	4.1	4.0	4.1
Queue Clearance Time (g_s), s	4.3	12.4	3.4	14.5	6.9	6.4	10.3	9.6
Green Extension Time (g_e), s	0.2	2.0	0.1	2.5	0.2	0.5	0.3	0.9
Phase Call Probability	0.90	1.00	0.74	1.00	0.91	0.98	0.98	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	88	545	66	53	621	126	95	63	84	158	95	147
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1743	1766	1572	1702	1752	1510	1781	1738	1572	1725	1766	1585
Queue Service Time (g_s), s	2.3	10.4	2.5	1.4	12.5	5.3	4.9	1.5	4.4	8.3	2.1	7.6
Cycle Queue Clearance Time (g_c), s	2.3	10.4	2.5	1.4	12.5	5.3	4.9	1.5	4.4	8.3	2.1	7.6
Green Ratio (*g/C*)	0.07	0.39	0.39	0.06	0.38	0.38	0.07	0.16	0.16	0.11	0.20	0.20
Capacity (*c*), veh/h	236	1369	609	190	1317	567	123	548	248	194	709	318
Volume-to-Capacity Ratio (*X*)	0.375	0.398	0.109	0.276	0.471	0.223	0.768	0.115	0.340	0.815	0.134	0.463
Back of Queue (*Q*), ft/ln (50 th percentile)	24.3	101.9	22	14.9	123.4	46.7	60.4	15.4	42.9	99.6	21.5	73
Back of Queue (*Q*), veh/ln (50 th percentile)	1.0	4.0	0.9	0.6	4.8	1.8	2.4	0.6	1.7	3.8	0.8	2.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.12	0.00	0.00	0.10	0.00	0.00	0.30	0.00	0.00	0.33	0.00	0.00
Uniform Delay (d_1), s/veh	41.5	20.7	18.2	42.2	22.0	19.8	42.6	33.7	34.9	40.4	30.6	32.8
Incremental Delay (d_2), s/veh	1.0	0.2	0.1	0.8	0.2	0.2	9.6	0.1	0.8	8.0	0.1	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	0.0
Control Delay (*d*), s/veh	42.5	20.8	18.3	42.9	22.3	20.0	52.2	33.8	35.7	48.4	30.7	33.9
Level of Service (LOS)	D	C	B	D	C	B	D	C	D	D	C	C
Approach Delay, s/veh / LOS	23.3	C		23.3	C		41.6	D		38.9	D	
Intersection Delay, s/veh / LOS	28.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.42	B	2.43	B	2.59	C	2.58	C
Bicycle LOS Score / LOS	1.07	A	1.15	A	0.69	A	0.82	A

HCS7 Signalized Intersection Results Summary

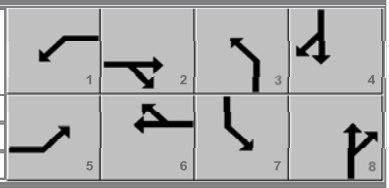
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	KY 3005	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	KY 251	File Name	PM KY 3005 & KY 251.xus		
Project Description	PM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	800	100	80	830	220	90	160	120	200	130	100

Signal Information			
Cycle, s	97.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	6.3	0.7	35.0	6.7	0.4	15.0	
Yellow	4.7	0.0	4.8	3.5	3.5	4.8	
Red	1.8	0.0	1.8	3.0	3.0	2.3	



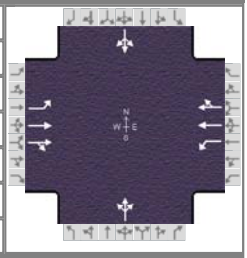
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	13.5	42.3	12.8	41.6	13.2	22.1	20.0	29.0
Change Period, ($Y+R_c$), s	6.5	6.6	6.5	6.6	6.5	7.1	6.5	7.1
Max Allow Headway (*MAH*), s	4.0	3.6	4.0	3.6	4.0	4.1	4.0	4.1
Queue Clearance Time (g_s), s	6.6	20.9	4.2	22.0	7.0	9.0	13.2	7.3
Green Extension Time (g_e), s	0.5	3.4	0.2	4.0	0.2	1.1	0.4	0.9
Phase Call Probability	0.99	1.00	0.90	1.00	0.92	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.14	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	168	842	105	84	874	232	95	168	126	211	137	105
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1730	1795	1598	1757	1795	1585	1795	1795	1610	1781	1809	1598
Queue Service Time (g_s), s	4.6	18.9	4.3	2.2	20.0	10.7	5.0	4.1	7.0	11.2	3.0	5.3
Cycle Queue Clearance Time (g_c), s	4.6	18.9	4.3	2.2	20.0	10.7	5.0	4.1	7.0	11.2	3.0	5.3
Green Ratio (*g/C*)	0.07	0.37	0.37	0.06	0.36	0.36	0.07	0.15	0.15	0.14	0.22	0.22
Capacity (*c*), veh/h	250	1319	587	227	1292	570	123	553	248	248	813	359
Volume-to-Capacity Ratio (*X*)	0.675	0.639	0.179	0.371	0.676	0.406	0.769	0.304	0.509	0.849	0.168	0.293
Back of Queue (*Q*), ft/ln (50 th percentile)	51.1	189.4	38.8	24.2	201.9	95.9	62.7	43.5	68.8	139.7	31.1	50.4
Back of Queue (*Q*), veh/ln (50 th percentile)	2.0	7.5	1.5	1.0	8.0	3.8	2.5	1.7	2.8	5.5	1.2	2.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.26	0.00	0.00	0.16	0.00	0.00	0.31	0.00	0.00	0.47	0.00	0.00
Uniform Delay (d_1), s/veh	44.0	25.4	20.8	43.6	26.3	23.3	44.5	36.5	37.8	40.9	30.4	31.3
Incremental Delay (d_2), s/veh	3.2	0.4	0.1	1.0	0.5	0.4	9.6	0.3	1.6	11.6	0.1	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	47.2	25.8	20.9	44.6	26.8	23.7	54.1	36.8	39.4	52.4	30.5	31.7
Level of Service (LOS)	D	C	C	D	C	C	D	D	D	D	C	C
Approach Delay, s/veh / LOS	28.6	C		27.5	C		41.9	D		41.0	D	
Intersection Delay, s/veh / LOS	31.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.59	C	2.58	C
Bicycle LOS Score / LOS	1.41	A	1.47	A	0.81	A	0.86	A

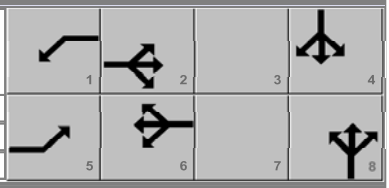
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street		Analysis Year	2045	Analysis Period	1> 7:00
Intersection		File Name	AM KY 3005 & Pear Orchard Rd.xus		
Project Description	AM KY 3005 & Pear Orchard Rd NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	70	620	100	29	750	60	120	60	22	90	50	90

Signal Information					EB			WB			NB			SB		
Cycle, s	142.1	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	3.6	0.9		89.1	30.2	0.0	0.0					
Uncoordinated	Yes	Simult. Gap E/W	Off	Yellow	3.5	0.0		4.8	4.7	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	Off	Red	2.4	0.0		1.5	1.5	0.0	0.0					



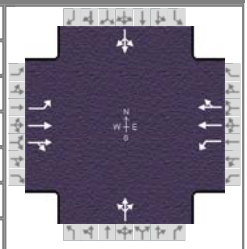
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		8.0		8.0
Phase Duration, s	10.4	96.3	9.5	95.4		36.4		36.4
Change Period, ($Y+R_c$), s	5.6	6.3	5.9	6.3		6.2		6.2
Max Allow Headway (*MAH*), s	3.0	3.0	3.0	2.9		3.2		3.1
Queue Clearance Time (g_s), s	4.1	16.2	2.9	18.8		29.7		24.1
Green Extension Time (g_e), s	0.1	1.4	0.0	1.6		0.4		0.2
Phase Call Probability	0.95	1.00	0.71	1.00		1.00		1.00
Max Out Probability	0.00	0.00	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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	76	401	382	32	446	434		220			250	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1779	1767	1856	1807		1129			1510	
Queue Service Time (g_s), s	2.1	14.2	14.2	0.9	16.8	16.8		5.6			0.0	
Cycle Queue Clearance Time (g_c), s	2.1	14.2	14.2	0.9	16.8	16.8		27.7			22.1	
Green Ratio (*g/C*)	0.66	0.63	0.63	0.65	0.63	0.63		0.21			0.21	
Capacity (*c*), veh/h	437	1184	1127	451	1163	1133		280			356	
Volume-to-Capacity Ratio (*X*)	0.174	0.338	0.339	0.070	0.383	0.383		0.784			0.703	
Back of Queue (*Q*), ft/ln (50 th percentile)	19.7	147.8	139	8.4	168.4	160.2		197.9			220.6	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.8	5.8	5.6	0.3	6.6	6.4		7.7			8.8	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	9.7	12.2	12.2	9.6	13.0	13.0		55.6			52.7	
Incremental Delay (d_2), s/veh	0.1	0.8	0.8	0.0	0.1	0.1		1.8			5.2	
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	9.7	12.9	13.0	9.7	13.1	13.1		57.4			57.9	
Level of Service (LOS)	A	B	B	A	B	B		E			E	
Approach Delay, s/veh / LOS	12.7	B		13.0	B		57.4	E		57.9	E	
Intersection Delay, s/veh / LOS	22.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.66	B	1.66	B	2.31	B	2.31	B
Bicycle LOS Score / LOS	1.20	A	1.24	A	0.85	A	0.90	A

HCS7 Signalized Intersection Results Summary

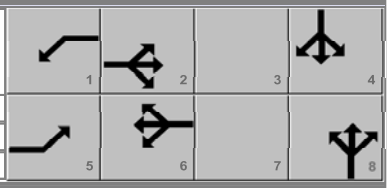
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.92
Urban Street	KY 3005	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Pear Orchard Rd	File Name	PM KY 3005 & Pear Orchard Rd.xus		
Project Description	PM Peak Hour - NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	880	150	30	930	160	140	120	20	110	80	70

Signal Information			
Cycle, s	152.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	3.7	2.2	87.8	40.6	0.0	0.0	
Yellow	3.5	0.0	4.8	4.7	0.0	0.0	
Red	2.4	0.0	1.5	1.5	0.0	0.0	



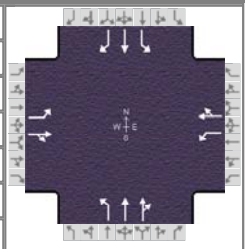
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		8.0		8.0
Phase Duration, s	11.9	96.3	9.6	94.1		46.8		46.8
Change Period, ($Y+R_c$), s	5.6	6.3	5.9	6.3		6.2		6.2
Max Allow Headway (*MAH*), s	3.0	3.0	3.0	3.0		3.1		3.2
Queue Clearance Time (g_s), s	6.2	29.5	3.2	33.0		40.1		32.2
Green Extension Time (g_e), s	0.1	2.2	0.0	2.3		0.6		0.0
Phase Call Probability	0.99	1.00	0.75	1.00		1.00		1.00
Max Out Probability	0.00	0.00	0.00	0.00		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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	120	574	545	33	607	577		304			283	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1885	1789	1711	1885	1788		1218			1335	
Queue Service Time (g_s), s	4.2	27.5	27.5	1.2	30.9	31.0		7.8			0.0	
Cycle Queue Clearance Time (g_c), s	4.2	27.5	27.5	1.2	30.9	31.0		38.1			30.2	
Green Ratio (*g/C*)	0.62	0.59	0.59	0.60	0.57	0.57		0.27			0.27	
Capacity (*c*), veh/h	300	1111	1054	280	1083	1028		359			388	
Volume-to-Capacity Ratio (*X*)	0.399	0.517	0.518	0.116	0.561	0.562		0.847			0.728	
Back of Queue (*Q*), ft/ln (50 th percentile)	41.4	301.5	285.3	11.9	329.6	311.1		299.9			269.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	1.7	12.0	11.4	0.5	13.1	12.4		11.8			10.5	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	16.3	18.5	18.6	15.1	20.4	20.4		55.9			52.0	
Incremental Delay (d_2), s/veh	0.3	1.7	1.8	0.1	0.4	0.4		4.9			5.9	
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	16.6	20.3	20.4	15.2	20.7	20.8		60.7			57.9	
Level of Service (LOS)	B	C	C	B	C	C		E			E	
Approach Delay, s/veh / LOS	20.0	B		20.6	C		60.7	E		57.9	E	
Intersection Delay, s/veh / LOS	27.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.67	B	1.68	B	2.31	B	2.31	B
Bicycle LOS Score / LOS	1.51	B	1.49	A	0.99	A	0.95	A

HCS7 Signalized Intersection Results Summary

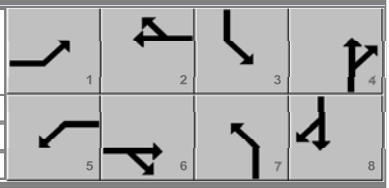
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	US 62	File Name	AM US 31W & US 62.xus		
Project Description	AM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	124	295	50	40	320	40	74	320	40	60	230	150

Signal Information			
Cycle, s	76.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	3.1	4.1	20.0	11.1	13.2	0.0	
Yellow	3.5	0.0	3.5	3.5	3.5	0.0	
Red	2.1	0.0	2.2	2.0	5.0	0.0	



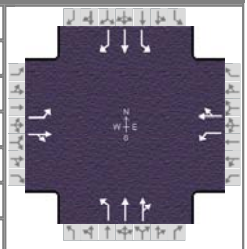
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	12.8	29.8	8.7	25.7		16.6		21.7
Change Period, ($Y+R_c$), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.2
Queue Clearance Time (g_s), s	7.8	16.3	3.9	18.1		10.2		12.3
Green Extension Time (g_e), s	0.1	1.9	0.0	1.8		0.8		0.9
Phase Call Probability	0.95	1.00	0.62	1.00		1.00		1.00
Max Out Probability	0.28	0.06	0.00	0.11		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	139	388		45	404		83	205	200	67	258	169
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1823		1810	1834		1795	1870	1798	1781	1856	1598
Queue Service Time (g_s), s	5.8	14.3		1.9	16.1		3.2	8.1	8.2	2.5	10.3	7.5
Cycle Queue Clearance Time (g_c), s	5.8	14.3		1.9	16.1		3.2	8.1	8.2	2.5	10.3	7.5
Green Ratio (*g/C*)	0.10	0.31		0.04	0.26		0.14	0.14	0.14	0.17	0.17	0.17
Capacity (*c*), veh/h	177	572		73	477		260	270	260	307	320	276
Volume-to-Capacity Ratio (*X*)	0.788	0.678		0.616	0.848		0.320	0.758	0.768	0.219	0.807	0.611
Back of Queue (*Q*), ft/ln (50 th percentile)	64.7	154.4		21.6	192.9		33.8	91.9	88.5	26.2	116.1	70.7
Back of Queue (*Q*), veh/ln (50 th percentile)	2.6	6.1		0.9	7.6		1.3	3.6	3.5	1.0	4.5	2.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.14	0.00		0.23	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	33.9	23.0		36.3	27.0		29.5	31.6	31.7	27.4	30.6	29.5
Incremental Delay (d_2), s/veh	2.9	2.4		3.1	7.5		0.3	1.6	1.8	0.1	1.8	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
Control Delay (*d*), s/veh	36.9	25.4		39.5	34.6		29.8	33.3	33.5	27.5	32.5	30.3
Level of Service (LOS)	D	C		D	C		C	C	C	C	C	C
Approach Delay, s/veh / LOS	28.5	C		35.0	D		32.8	C		31.0	C	
Intersection Delay, s/veh / LOS	31.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.28	B	1.92	B	1.95	B
Bicycle LOS Score / LOS	1.36	A	1.23	A	0.89	A	1.30	A

HCS7 Signalized Intersection Results Summary

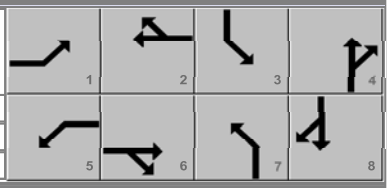
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	US 62	File Name	PM US 31W & US 62.xus		
Project Description	PM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	170	450	60	50	350	50	90	420	40	140	390	190

Signal Information			
Cycle, s	113.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	4.6	1.8	29.3	18.4	28.4	0.0	
Yellow	3.5	3.5	3.5	3.5	3.5	0.0	
Red	2.1	1.8	2.2	2.0	5.0	0.0	



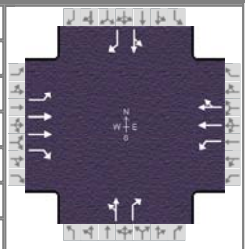
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	17.3	42.1	10.2	35.0		23.9		36.9
Change Period, ($Y+R_c$), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.1
Queue Clearance Time (g_s), s	14.0	36.6	5.6	29.0		17.4		27.9
Green Extension Time (g_e), s	0.0	0.0	0.0	0.3		1.0		0.5
Phase Call Probability	1.00	1.00	0.83	1.00		1.00		1.00
Max Out Probability	1.00	1.00	0.00	1.00		0.01		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	191	573		56	449		101	262	255	157	438	213
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1846		1767	1844		1810	1885	1827	1781	1870	1610
Queue Service Time (g_s), s	12.0	34.6		3.6	27.0		5.6	15.3	15.4	8.2	25.9	12.9
Cycle Queue Clearance Time (g_c), s	12.0	34.6		3.6	27.0		5.6	15.3	15.4	8.2	25.9	12.9
Green Ratio (*g/C*)	0.11	0.32		0.04	0.26		0.16	0.16	0.16	0.25	0.25	0.25
Capacity (*c*), veh/h	190	593		72	478		294	307	297	448	470	405
Volume-to-Capacity Ratio (*X*)	1.003	0.966		0.776	0.941		0.344	0.853	0.859	0.351	0.932	0.528
Back of Queue (*Q*), ft/ln (50 th percentile)	222.1	499.9		43.5	391.4		62.7	186.1	181.4	90.1	374.8	126.7
Back of Queue (*Q*), veh/ln (50 th percentile)	8.8	19.8		1.7	15.5		2.5	7.4	7.3	3.5	14.8	5.1
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.29	0.00		0.42	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	50.6	37.8		53.7	41.1		42.0	46.1	46.1	34.8	41.4	36.6
Incremental Delay (d_2), s/veh	66.0	28.5		6.5	26.6		0.3	4.0	4.5	0.2	23.4	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
Control Delay (*d*), s/veh	116.6	66.3		60.2	67.7		42.3	50.0	50.6	35.0	64.8	37.0
Level of Service (LOS)	F	E		E	E		D	D	D	C	E	D
Approach Delay, s/veh / LOS	78.9	E		66.9	E		49.0	D		51.7	D	
Intersection Delay, s/veh / LOS	61.6						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.12	B	2.29	B	1.93	B	1.97	B
Bicycle LOS Score / LOS	1.75	B	1.32	A	1.00	A	1.82	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	AM US 62 & Commerce Dr.xus		
Project Description	AM Peak Hour-NB				



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	770	120	50	1130	40	120	10	90	13	10	21

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	2.9	1.2	57.5	9.6	3.6	0.0	1	2	3	4		
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	5	6	7	8		
Red	2.3	0.0	2.3	3.0	3.0	0.0						

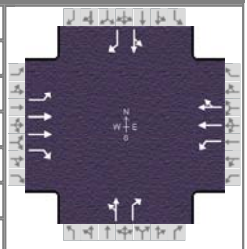
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	8.7	63.9	9.9	65.1		16.1		10.1
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.1
Queue Clearance Time (g_s), s	2.7		3.2			9.4		3.5
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		0.2		0.0
Phase Call Probability	0.58		0.77			1.00		0.72
Max Out Probability	0.00		0.00			1.00		0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	32	811	126	53	619	612		137	95		24	22
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1752	1598	1810	1885	1862		1802	1585		1848	1485
Queue Service Time (g_s), s	0.7	13.0	3.7	1.2	20.6	20.6		7.4	5.7		1.3	1.5
Cycle Queue Clearance Time (g_c), s	0.7	13.0	3.7	1.2	20.6	20.6		7.4	5.7		1.3	1.5
Green Ratio (*g/C*)	0.60	0.57	0.57	0.61	0.58	0.58		0.10	0.10		0.04	0.04
Capacity (*c*), veh/h	287	1989	907	441	1093	1080		173	152		67	54
Volume-to-Capacity Ratio (*X*)	0.110	0.407	0.139	0.119	0.567	0.567		0.793	0.624		0.362	0.411
Back of Queue (*Q*), ft/ln (50 th percentile)	6.4	119.1	31.3	10.3	205.3	201.6		107.7	65.8		15.8	16
Back of Queue (*Q*), veh/ln (50 th percentile)	0.3	4.6	1.2	0.4	8.1	8.1		4.3	2.6		0.6	0.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.00	0.00	0.04	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	10.7	12.2	10.2	8.9	13.1	13.2		44.2	43.5		47.1	47.1
Incremental Delay (d_2), s/veh	0.2	0.6	0.3	0.1	2.1	2.2		22.6	10.0		3.3	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
Control Delay (*d*), s/veh	10.9	12.8	10.5	9.0	15.3	15.3		66.8	53.5		50.3	52.1
Level of Service (LOS)	B	B	B	A	B	B		E	D		D	D
Approach Delay, s/veh / LOS	12.4	B		15.0	B		61.4	E		51.2	D	
Intersection Delay, s/veh / LOS	18.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	1.88	B	2.31	B	2.47	B
Bicycle LOS Score / LOS	1.29	A	1.55	B	0.87	A	0.56	A

HCS7 Signalized Intersection Results Summary

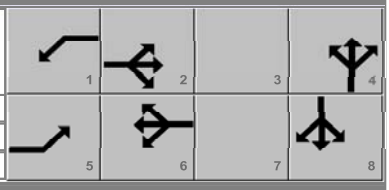
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	PM US 62 & Commerce Dr.xus		
Project Description	PM Peak Hour-NB				



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	1430	320	100	1190	40	220	10	160	199	10	16

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	Off

Green	3.4	2.8	63.6	19.2	15.8	0.0	
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	
Red	2.3	0.0	2.3	3.0	3.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	9.2	70.0	12.0	72.8		25.7		22.3
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.0
Queue Clearance Time (g_s), s	3.2		5.8			19.1		17.8
Green Extension Time (g_e), s	0.0	0.0	0.2	0.0		0.1		0.0
Phase Call Probability	0.68		0.98			1.00		1.00
Max Out Probability	0.00		0.01			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	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	32	1505	337	105	651	644		242	168		220	17
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1781	1598	1781	1885	1863		1813	1585		1814	1610
Queue Service Time (g_s), s	1.2	49.1	17.9	3.8	33.9	34.0		17.1	13.2		15.8	1.2
Cycle Queue Clearance Time (g_c), s	1.2	49.1	17.9	3.8	33.9	34.0		17.1	13.2		15.8	1.2
Green Ratio (*g/C*)	0.51	0.48	0.48	0.53	0.51	0.51		0.15	0.15		0.12	0.12
Capacity (*c*), veh/h	196	1724	773	173	953	942		268	234		220	196
Volume-to-Capacity Ratio (*X*)	0.161	0.873	0.436	0.609	0.683	0.684		0.904	0.719		0.999	0.086
Back of Queue (*Q*), ft/ln (50 th percentile)	12.3	538.4	171.9	42.3	385.4	378.7		249.7	150.6		268.6	12.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.5	21.2	6.8	1.7	15.3	15.1		10.0	5.9		10.7	0.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.06	0.00	0.00	0.17	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	20.5	30.0	21.9	28.1	24.3	24.3		54.5	52.8		57.1	50.7
Incremental Delay (d_2), s/veh	0.4	6.5	1.8	3.4	4.0	4.0		32.0	12.3		60.2	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
Control Delay (*d*), s/veh	20.8	36.4	23.7	31.6	28.2	28.3		86.5	65.1		117.3	50.9
Level of Service (LOS)	C	D	C	C	C	C		F	E		F	D
Approach Delay, s/veh / LOS	33.9	C		28.5	C		77.7	E		112.6	F	
Intersection Delay, s/veh / LOS	41.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	1.91	B	2.31	B	2.48	B
Bicycle LOS Score / LOS	2.03	B	1.64	B	1.16	A	0.88	A

HCS7 Two-Way Stop-Control Report

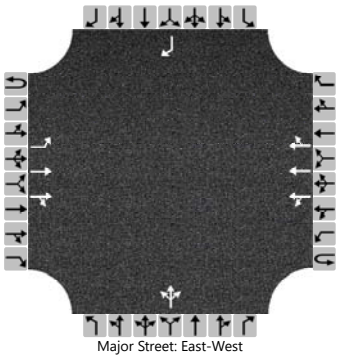
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2045
Time Analyzed	AM Peak Hour NB
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	120	870	10		10	1090	170		10	10	10				140
Percent Heavy Vehicles (%)	3	0				0				0	0	0				1
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.12
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.91

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		121				10					30					141
Capacity, c (veh/h)		294				771					105					362
v/c Ratio		0.41				0.01					0.29					0.39
95% Queue Length, Q_{95} (veh)		1.9				0.0					1.1					1.8
Control Delay (s/veh)		25.6				9.7					52.5					21.2
Level of Service (LOS)		D				A					F					C
Approach Delay (s/veh)	3.1				0.2				52.5				21.2			
Approach LOS									F				C			

HCS7 Two-Way Stop-Control Report

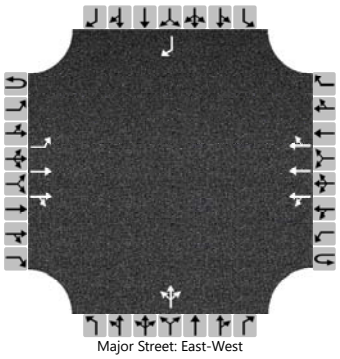
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/27/2021
Analysis Year	2045
Time Analyzed	PM Peak Hour NB
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	170	1710	10		10	1240	210		11	10	16				180
Percent Heavy Vehicles (%)	3	0				0				0	0	0				0
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.10
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.90

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		172				10					37					182
Capacity, c (veh/h)		237				367										315
v/c Ratio		0.73				0.03										0.58
95% Queue Length, Q_{95} (veh)		4.9				0.1										3.4
Control Delay (s/veh)		52.2				15.1										30.8
Level of Service (LOS)		F				C										D
Approach Delay (s/veh)	4.7				0.8								30.8			
Approach LOS													D			

HCS7 Two-Way Stop-Control Report

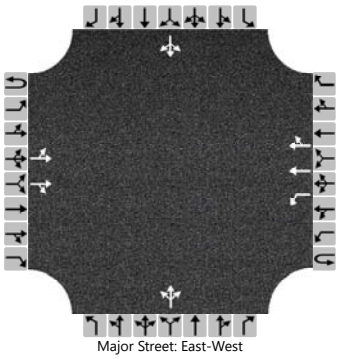
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/28/2021
Analysis Year	2045
Time Analyzed	AM Peak Hour NB
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Main St
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Main St
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	1	0		0	1	0
Configuration		LT		TR		L	T	TR			LTR				LTR	
Volume (veh/h)		260	504	80	0	80	558	50		110	110	115		60	160	520
Percent Heavy Vehicles (%)		0			3	0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		271				83					349				771	
Capacity, c (veh/h)		959				980										
v/c Ratio		0.28				0.09										
95% Queue Length, Q_{95} (veh)		1.2				0.3										
Control Delay (s/veh)		10.2				9.0										
Level of Service (LOS)		B				A										
Approach Delay (s/veh)		3.8				1.0										
Approach LOS																

HCS7 Two-Way Stop-Control Report

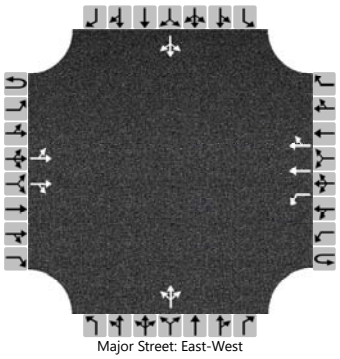
General Information

Analyst	ST
Agency/Co.	
Date Performed	4/28/2021
Analysis Year	2045
Time Analyzed	PM Peak Hour NB
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Main St
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Main St
Peak Hour Factor	0.96
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	2	0	0	1	2	0		0	1	0		0	1	0
Configuration		LT		TR		L	T	TR			LTR				LTR	
Volume (veh/h)		570	737	120	0	149	694	90		110	300	145		80	250	360
Percent Heavy Vehicles (%)		0			3	0				0	0	0		0	0	0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized																
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

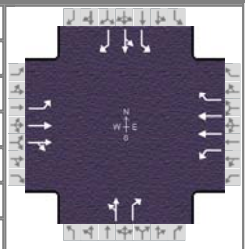
Base Critical Headway (sec)		4.1				4.1				7.5	6.5	6.9		7.5	6.5	6.9
Critical Headway (sec)		4.10				4.10				7.50	6.50	6.90		7.50	6.50	6.90
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.20				2.20				3.50	4.00	3.30		3.50	4.00	3.30

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		594				155					578				719	
Capacity, c (veh/h)		820				768										
v/c Ratio		0.72				0.20										
95% Queue Length, Q_{95} (veh)		6.4				0.8										
Control Delay (s/veh)		20.0				10.9										
Level of Service (LOS)		C				B										
Approach Delay (s/veh)		8.0				1.7										
Approach LOS																

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	KY 3005	File Name	AM US 62 & Ring Rd.xus		
Project Description	AM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	180	412	20	10	436	360	20	70	20	462	100	232

Signal Information			
Cycle, s	114.8	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

								1	2	3	4	
Green	1.5	3.1	31.9	35.5	9.7	0.0						
Yellow	3.5	4.6	4.7	4.6	4.7	0.0						
Red	3.0	1.9	2.3	1.9	1.9	0.0	5	6	7	8		

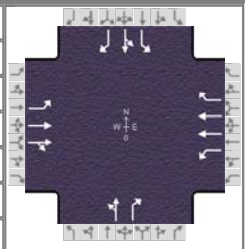
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		11.0		9.0
Phase Duration, s	17.6	48.5	8.0	38.9		16.3		42.0
Change Period, ($Y+R_c$), s	6.5	7.0	6.5	7.0		6.6		6.5
Max Allow Headway (*MAH*), s	4.0	3.5	4.0	3.7		4.0		4.1
Queue Clearance Time (g_s), s	10.4	12.5	2.7	28.8		9.8		32.7
Green Extension Time (g_e), s	0.6	1.2	0.0	2.9		0.1		2.7
Phase Call Probability	1.00	1.00	0.29	1.00		0.98		1.00
Max Out Probability	0.00	0.00	0.00	0.00		0.32		0.14

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	191	231	228	11	464	383		96	21	491	106	247
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1781	1856	1825	1344	1781	1572		1395	1397	1767	1604	1585
Queue Service Time (g_s), s	8.4	10.5	10.5	0.7	12.5	26.8		7.8	1.6	30.7	5.7	14.7
Cycle Queue Clearance Time (g_c), s	8.4	10.5	10.5	0.7	12.5	26.8		7.8	1.6	30.7	5.7	14.7
Green Ratio (*g/C*)	0.39	0.36	0.36	0.29	0.28	0.28		0.08	0.08	0.31	0.31	0.31
Capacity (*c*), veh/h	394	672	661	259	990	437		118	118	547	497	491
Volume-to-Capacity Ratio (*X*)	0.486	0.344	0.346	0.041	0.469	0.876		0.809	0.180	0.898	0.214	0.503
Back of Queue (*Q*), ft/ln (50 th percentile)	89.1	115.1	111.1	6.6	133.3	267.8		98.4	16.4	371.5	62	140.3
Back of Queue (*Q*), veh/ln (50 th percentile)	3.5	4.5	4.4	0.2	5.2	10.5		3.1	0.6	14.5	2.1	5.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.59	0.00	0.00	0.07	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	25.0	26.8	26.8	29.3	34.6	39.7		51.8	49.0	38.0	29.4	32.5
Incremental Delay (d_2), s/veh	0.9	0.2	0.2	0.1	0.3	4.7		14.3	0.7	12.5	0.2	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
Control Delay (*d*), s/veh	25.9	27.0	27.1	29.3	34.8	44.4		66.1	49.7	50.5	29.6	33.3
Level of Service (LOS)	C	C	C	C	C	D		E	D	D	C	C
Approach Delay, s/veh / LOS	26.7	C		39.0	D		63.1	E		42.9	D	
Intersection Delay, s/veh / LOS	38.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.92	B	2.12	B	2.48	B	2.31	B
Bicycle LOS Score / LOS	1.02	A	1.19	A	0.68	A	1.88	B

HCS7 Signalized Intersection Results Summary

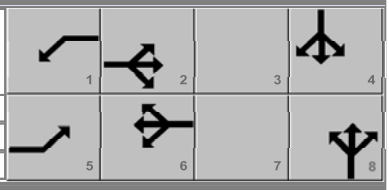
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.94
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	KY 3005	File Name	PM US 62 & Ring Rd.xus		
Project Description	PM Peak Hour-NB				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	224	749	30	20	614	381	20	200	30	706	150	290

Signal Information			
Cycle, s	143.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.9	6.3	40.9	45.0	15.0	0.0	
Yellow	3.5	4.6	4.7	4.6	4.7	0.0	
Red	3.0	1.9	2.3	1.9	1.9	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	3.0		11.0		9.0
Phase Duration, s	22.1	60.7	9.4	47.9		21.6		51.5
Change Period, ($Y+R_c$), s	6.5	7.0	6.5	7.0		6.6		6.5
Max Allow Headway (*MAH*), s	4.0	3.5	4.0	3.7		4.0		4.1
Queue Clearance Time (g_s), s	14.8	27.7	3.2	37.1		17.0		47.0
Green Extension Time (g_e), s	0.8	2.3	0.0	3.8		0.0		0.0
Phase Call Probability	1.00	1.00	0.57	1.00		1.00		1.00
Max Out Probability	0.00	0.00	0.00	0.00		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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	238	417	412	21	653	405		234	32	751	160	309
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1870	1845	1810	1795	1585		1891	1497	1781	1900	1598
Queue Service Time (g_s), s	12.8	25.7	25.7	1.2	22.7	35.1		15.0	2.8	45.0	9.0	23.5
Cycle Queue Clearance Time (g_c), s	12.8	25.7	25.7	1.2	22.7	35.1		15.0	2.8	45.0	9.0	23.5
Green Ratio (*g/C*)	0.41	0.38	0.38	0.31	0.29	0.29		0.10	0.10	0.31	0.31	0.31
Capacity (*c*), veh/h	349	702	692	209	1026	453		198	157	560	597	502
Volume-to-Capacity Ratio (*X*)	0.684	0.595	0.595	0.102	0.637	0.894		1.181	0.203	1.341	0.267	0.614
Back of Queue (*Q*), ft/ln (50 th percentile)	142.3	293.4	285	13.2	251.8	360.2		344.1	28.7	1144.6	104.2	236.2
Back of Queue (*Q*), veh/ln (50 th percentile)	5.7	11.6	11.4	0.5	10.0	14.2		13.8	1.1	45.1	4.2	9.4
Queue Storage Ratio (*RQ*) (50 th percentile)	0.95	0.00	0.00	0.13	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	31.8	36.0	36.0	35.7	44.6	49.0		64.1	58.6	49.1	36.7	41.7
Incremental Delay (d_2), s/veh	2.4	0.6	0.7	0.2	0.5	5.2		121.2	0.6	165.3	0.2	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	0.0	0.0
Control Delay (*d*), s/veh	34.2	36.6	36.6	35.9	45.1	54.3		185.3	59.2	214.4	37.0	43.9
Level of Service (LOS)	C	D	D	D	D	D		F	E	F	D	D
Approach Delay, s/veh / LOS	36.1	D		48.4	D		170.2	F		148.0	F	
Intersection Delay, s/veh / LOS	87.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.93	B	2.13	B	2.49	B	2.32	B
Bicycle LOS Score / LOS	1.37	A	1.38	A	0.93	A	2.50	B

2045 Build Condition

HCS7 Two-Way Stop-Control Report

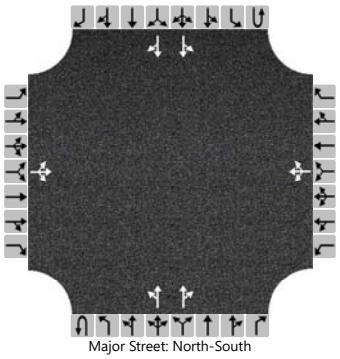
General Information

Analyst	ST
Agency/Co.	
Date Performed	05/20/2021
Analysis Year	2045
Time Analyzed	AM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd Build
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield KY
North/South Street	61
Peak Hour Factor	0.80
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		2	0	1		26	0	82		2	518	18		35	293	1
Percent Heavy Vehicles (%)		0	0	0		8	0	4		2				2		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.66	6.50	6.98		4.14				4.14		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.58	4.00	3.34		2.22				2.22		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			4				135			3				44		
Capacity, c (veh/h)			304				424			1188				916		
v/c Ratio			0.01				0.32			0.00				0.05		
95% Queue Length, Q_{95} (veh)			0.0				1.3			0.0				0.2		
Control Delay (s/veh)			17.0				17.4			8.0				9.1		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	17.0				17.4				0.0				1.2			
Approach LOS	C				C											

HCS7 Two-Way Stop-Control Report

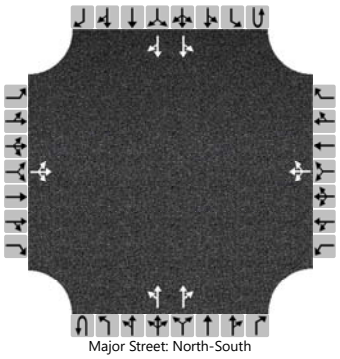
General Information

Analyst	ST
Agency/Co.	
Date Performed	05/20/2021
Analysis Year	2045
Time Analyzed	PM Peak Hour
Intersection Orientation	North-South
Project Description	E'town Planning Study

Site Information

Intersection	KY 61 & Springfield Rd Build
Jurisdiction	KYTC
East/West Street	Old Glendale-Springfield
North/South Street	KY 61
Peak Hour Factor	0.94
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	2	0	0	0	2	0
Configuration			LTR				LTR			LT		TR		LT		TR
Volume (veh/h)		3	0	3		33	0	60		3	446	44		89	701	5
Percent Heavy Vehicles (%)		0	0	0		3	0	0		2				1		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

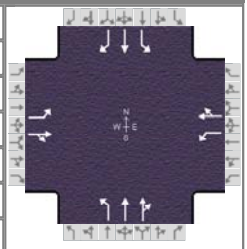
Base Critical Headway (sec)		7.5	6.5	6.9		7.5	6.5	6.9		4.1				4.1		
Critical Headway (sec)		7.50	6.50	6.90		7.56	6.50	6.90		4.14				4.12		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.50	4.00	3.30		3.53	4.00	3.30		2.22				2.21		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			6				99			3				95		
Capacity, c (veh/h)			199				314			854				1048		
v/c Ratio			0.03				0.32			0.00				0.09		
95% Queue Length, Q_{95} (veh)			0.1				1.3			0.0				0.3		
Control Delay (s/veh)			23.7				21.7			9.2				8.8		
Level of Service (LOS)			C				C			A				A		
Approach Delay (s/veh)	23.7				21.7				0.1				1.5			
Approach LOS	C				C											

HCS7 Signalized Intersection Results Summary

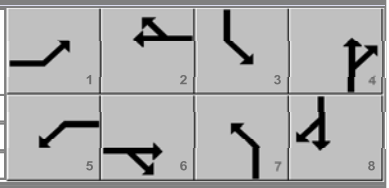
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	US 62	File Name	AM US 31W & US 62.xus		
Project Description	AM Peak Hour-Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	128	304	47	26	289	30	73	232	22	93	214	111

Signal Information			
Cycle, s	70.5	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.2	4.6	16.8	10.0	11.6	0.0	
Yellow	3.5	0.0	3.5	3.5	3.5	0.0	
Red	2.1	0.0	2.2	2.0	5.0	0.0	



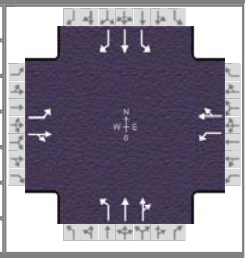
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	12.4	27.1	7.8	22.5		15.5		20.1
Change Period, (*Y+R c*), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.1
Queue Clearance Time (*g s*), s	7.5	15.5	3.1	15.0		7.1		10.8
Green Extension Time (*g e*), s	0.1	1.9	0.0	1.7		0.6		0.8
Phase Call Probability	0.94	1.00	0.44	1.00		1.00		1.00
Max Out Probability	0.20	0.05	0.00	0.03		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	144	394		29	358		82	144	142	104	240	125
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826		1810	1839		1795	1870	1813	1781	1856	1598
Queue Service Time (*g s*), s	5.5	13.5		1.1	13.0		2.9	5.0	5.1	3.7	8.8	5.0
Cycle Queue Clearance Time (*g c*), s	5.5	13.5		1.1	13.0		2.9	5.0	5.1	3.7	8.8	5.0
Green Ratio (*g/C*)	0.10	0.30		0.03	0.24		0.14	0.14	0.14	0.16	0.16	0.16
Capacity (*c*), veh/h	183	555		56	438		254	265	257	294	306	264
Volume-to-Capacity Ratio (*X*)	0.785	0.710		0.521	0.819		0.323	0.543	0.552	0.355	0.785	0.473
Back of Queue (*Q*), ft/ln (50 th percentile)	60.3	144.4		12.9	150.3		30.2	55.6	53.9	37.9	97.6	46
Back of Queue (*Q*), veh/ln (50 th percentile)	2.4	5.7		0.5	5.9		1.2	2.2	2.2	1.5	3.8	1.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.09	0.00		0.20	0.00	0.00	0.00	0.00	0.00
Uniform Delay (*d 1*), s/veh	31.0	21.8		33.7	25.5		27.3	28.2	28.2	26.1	28.3	26.7
Incremental Delay (*d 2*), s/veh	2.8	2.5		2.8	5.4		0.3	0.6	0.7	0.3	1.7	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
Control Delay (*d*), s/veh	33.8	24.3		36.5	30.8		27.5	28.8	28.9	26.4	30.0	27.2
Level of Service (LOS)	C	C		D	C		C	C	C	C	C	C
Approach Delay, s/veh / LOS	26.8	C		31.2	C		28.6	C		28.4	C	
Intersection Delay, s/veh / LOS	28.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.28	B	1.92	B	1.95	B
Bicycle LOS Score / LOS	1.38	A	1.13	A	0.79	A	1.26	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/28/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.89
Urban Street	US 31W	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	US 62	File Name	PM US 31W & US 62.xus		
Project Description	PM Peak Hour -Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	148	368	52	33	273	33	79	335	28	112	304	118

Signal Information			
Cycle, s	81.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	Off
Force Mode	Fixed	Simult. Gap N/S	Off

Green	2.8	0.8	18.1	11.5	17.4	0.0	1	2	3	4	5	6	7	8
Yellow	3.5	3.5	3.5	3.5	3.5	0.0								
Red	2.1	1.8	2.2	2.0	5.0	0.0								

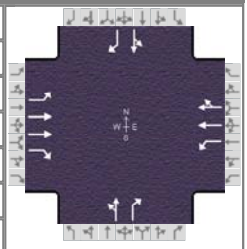
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2		4		8
Case Number	2.0	4.0	2.0	4.0		10.0		9.0
Phase Duration, s	14.5	29.9	8.4	23.8		17.0		25.9
Change Period, ($Y+R_c$), s	5.3	5.7	5.6	5.7		5.5		8.5
Max Allow Headway (*MAH*), s	3.1	5.1	3.1	5.1		3.1		3.1
Queue Clearance Time (g_s), s	9.4	21.7	3.7	16.4		10.6		16.3
Green Extension Time (g_e), s	0.1	1.8	0.0	1.6		0.9		1.0
Phase Call Probability	0.98	1.00	0.57	1.00		1.00		1.00
Max Out Probability	1.00	0.41	0.00	0.05		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	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	166	472		37	344		89	206	202	126	342	133
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1795	1844		1767	1849		1810	1885	1834	1781	1870	1610
Queue Service Time (g_s), s	7.4	19.7		1.7	14.4		3.6	8.6	8.6	4.9	14.3	5.7
Cycle Queue Clearance Time (g_c), s	7.4	19.7		1.7	14.4		3.6	8.6	8.6	4.9	14.3	5.7
Green Ratio (*g/C*)	0.11	0.30		0.04	0.22		0.14	0.14	0.14	0.21	0.21	0.21
Capacity (*c*), veh/h	205	549		62	412		257	268	260	381	401	345
Volume-to-Capacity Ratio (*X*)	0.813	0.859		0.599	0.835		0.345	0.769	0.776	0.330	0.853	0.385
Back of Queue (*Q*), ft/ln (50 th percentile)	93.6	242.4		19.6	172.2		38.6	98.1	95.9	50.9	161.2	53.5
Back of Queue (*Q*), veh/ln (50 th percentile)	3.7	9.6		0.8	6.8		1.5	3.9	3.8	2.0	6.3	2.1
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.13	0.00		0.26	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	35.2	27.0		38.7	30.2		31.5	33.6	33.7	27.0	30.7	27.4
Incremental Delay (d_2), s/veh	10.7	10.0		3.4	6.4		0.3	1.8	1.9	0.2	2.0	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	45.9	36.9		42.1	36.6		31.8	35.4	35.5	27.2	32.8	27.6
Level of Service (LOS)	D	D		D	D		C	D	D	C	C	C
Approach Delay, s/veh / LOS	39.3	D		37.1	D		34.8	C		30.5	C	
Intersection Delay, s/veh / LOS	35.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.29	B	1.92	B	1.95	B
Bicycle LOS Score / LOS	1.54	B	1.12	A	0.90	A	1.48	A

HCS7 Signalized Intersection Results Summary

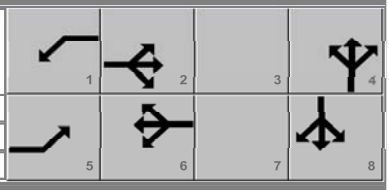
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	AM US 62 & Commerce Dr.xus		
Project Description	AM Peak Hour -Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	15	628	87	40	945	13	86	3	53	13	4	21

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	1.8	2.0	60.5	7.2	3.4	0.0	
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	
Red	2.3	0.0	2.3	3.0	3.0	0.0	



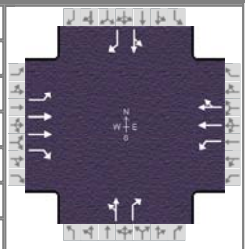
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	7.6	66.9	9.5	68.8		13.7		9.9
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.1
Queue Clearance Time (g_s), s	2.3		2.9			7.1		3.5
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		0.3		0.0
Phase Call Probability	0.36		0.69			0.98		0.67
Max Out Probability	0.00		0.00			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	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	16	661	92	42	505	503		94	56		18	22
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1752	1598	1810	1885	1876		1798	1585		1830	1485
Queue Service Time (g_s), s	0.3	9.4	2.4	0.9	14.0	14.0		5.1	3.4		1.0	1.5
Cycle Queue Clearance Time (g_c), s	0.3	9.4	2.4	0.9	14.0	14.0		5.1	3.4		1.0	1.5
Green Ratio (*g/C*)	0.62	0.60	0.60	0.63	0.62	0.62		0.07	0.07		0.03	0.03
Capacity (*c*), veh/h	364	2094	955	530	1164	1158		130	115		61	50
Volume-to-Capacity Ratio (*X*)	0.043	0.316	0.096	0.079	0.434	0.434		0.719	0.486		0.292	0.444
Back of Queue (*Q*), ft/ln (50 th percentile)	3	82.8	19.9	7.4	132.8	131.1		68.7	38		11.6	16.4
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	3.2	0.8	0.3	5.3	5.2		2.7	1.5		0.5	0.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.01	0.00	0.00	0.03	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	8.5	10.0	8.6	7.4	10.0	10.0		45.4	44.6		47.2	47.4
Incremental Delay (d_2), s/veh	0.0	0.4	0.2	0.1	1.2	1.2		14.7	6.7		2.6	6.1
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	8.5	10.4	8.8	7.5	11.2	11.2		60.1	51.3		49.7	53.5
Level of Service (LOS)	A	B	A	A	B	B		E	D		D	D
Approach Delay, s/veh / LOS	10.1	B		11.0	B		56.8	E		51.8	D	
Intersection Delay, s/veh / LOS	14.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.88	B	1.88	B	2.31	B	2.47	B
Bicycle LOS Score / LOS	1.12	A	1.35	A	0.73	A	0.55	A

HCS7 Signalized Intersection Results Summary

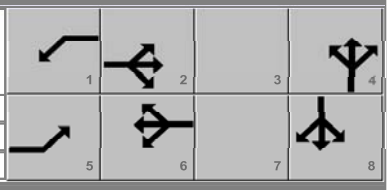
General Information				Intersection Information	
Agency				Duration, h	0.250
Analyst		Analysis Date	4/27/2021	Area Type	Other
Jurisdiction		Time Period		PHF	0.95
Urban Street	US 62	Analysis Year	2045	Analysis Period	1> 7:00
Intersection	Commerce Dr	File Name	PM US 62 & Commerce Dr.xus		
Project Description	PM Peak Hour-Build				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	18	1069	230	53	911	20	169	3	86	199	1	16

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	Off

Green	2.5	2.2	67.6	15.5	17.0	0.0	
Yellow	3.5	0.0	4.1	3.5	3.5	0.0	
Red	2.3	0.0	2.3	3.0	3.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		4		8
Case Number	1.1	3.0	1.1	4.0		11.0		11.0
Phase Duration, s	8.3	74.0	10.4	76.2		22.0		23.5
Change Period, ($Y+R_c$), s	5.8	7.1	6.1	7.1		6.5		6.5
Max Allow Headway (*MAH*), s	4.0	0.0	4.0	0.0		6.1		4.0
Queue Clearance Time (g_s), s	2.7		3.9			14.7		16.9
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		0.8		0.2
Phase Call Probability	0.50		0.87			1.00		1.00
Max Out Probability	0.00		0.00			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	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (*v*), veh/h	19	1125	242	56	492	488		181	91		211	17
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1739	1781	1598	1781	1885	1871		1811	1585		1810	1610
Queue Service Time (g_s), s	0.7	29.1	11.3	1.9	21.5	21.5		12.7	6.9		14.9	1.2
Cycle Queue Clearance Time (g_c), s	0.7	29.1	11.3	1.9	21.5	21.5		12.7	6.9		14.9	1.2
Green Ratio (*g/C*)	0.53	0.51	0.51	0.55	0.53	0.53		0.12	0.12		0.13	0.13
Capacity (*c*), veh/h	285	1833	822	260	1002	994		216	189		237	211
Volume-to-Capacity Ratio (*X*)	0.066	0.614	0.294	0.214	0.491	0.491		0.839	0.479		0.887	0.080
Back of Queue (*Q*), ft/ln (50 th percentile)	6.8	301.8	105.4	19.3	236.6	233		174.4	74.2		207.9	12.1
Back of Queue (*Q*), veh/ln (50 th percentile)	0.3	11.9	4.2	0.8	9.4	9.3		7.0	2.9		8.3	0.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.03	0.00	0.00	0.08	0.00	0.00		0.00	0.00		0.00	0.00
Uniform Delay (d_1), s/veh	16.1	22.4	18.0	17.4	19.3	19.3		56.0	53.5		55.5	49.6
Incremental Delay (d_2), s/veh	0.1	1.5	0.9	0.4	1.7	1.7		21.5	4.0		25.6	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
Control Delay (*d*), s/veh	16.2	23.9	18.9	17.8	21.0	21.0		77.5	57.5		81.1	49.7
Level of Service (LOS)	B	C	B	B	C	C		E	E		F	D
Approach Delay, s/veh / LOS	22.9	C		20.9	C		70.9	E		78.8	E	
Intersection Delay, s/veh / LOS	31.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.91	B	1.90	B	2.31	B	2.48	B
Bicycle LOS Score / LOS	1.63	B	1.34	A	0.94	A	0.86	A

HCS7 Two-Way Stop-Control Report

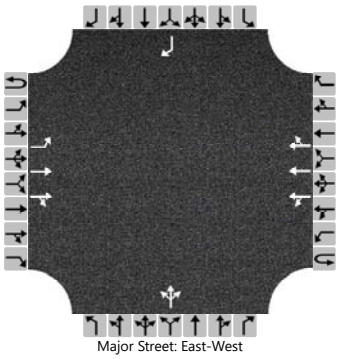
General Information

Analyst	ST
Agency/Co.	
Date Performed	05/20/2021
Analysis Year	2045
Time Analyzed	AM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr Build
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	109	826	10		3	698	122		1	2	4				112
Percent Heavy Vehicles (%)	3	0				0				0	0	0				1
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized													No			
Median Type | Storage	Left + Thru								1							

Critical and Follow-up Headways

Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.12
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.91

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		110				3					7					113
Capacity, c (veh/h)		480				801					251					504
v/c Ratio		0.23				0.00					0.03					0.22
95% Queue Length, Q_{95} (veh)		0.9				0.0					0.1					0.9
Control Delay (s/veh)		14.7				9.5					19.8					14.2
Level of Service (LOS)		B				A					C					B
Approach Delay (s/veh)	1.7				0.1				19.8				14.2			
Approach LOS									C				B			

HCS7 Two-Way Stop-Control Report

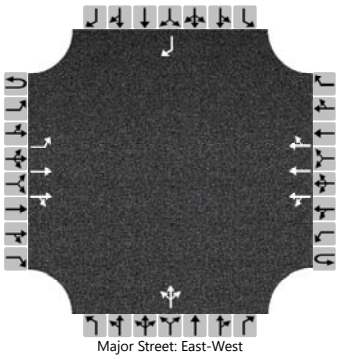
General Information

Analyst	ST
Agency/Co.	
Date Performed	05/20/2021
Analysis Year	2045
Time Analyzed	PM Peak Hour
Intersection Orientation	East-West
Project Description	E'town Planning Study

Site Information

Intersection	US 62 & Dolphin Dr Build
Jurisdiction	KYTC
East/West Street	US 62
North/South Street	Dolphin Dr
Peak Hour Factor	0.99
Analysis Time Period (hrs)	0.25

Lanes


Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	1	2	0	0	0	3	0		0	1	0		0	0	1
Configuration		L	T	TR		LT	T	TR			LTR					R
Volume (veh/h)	0	148	1233	2		3	912	149		11	1	16				154
Percent Heavy Vehicles (%)	3	0				0				0	0	0				0
Proportion Time Blocked																
Percent Grade (%)										0				0		
Right Turn Channelized														No		
Median Type | Storage		Left + Thru								1						

Critical and Follow-up Headways

Base Critical Headway (sec)		5.3				4.1				6.4	6.5	6.9				7.1
Critical Headway (sec)		5.30				4.10				6.40	6.50	6.90				7.10
Base Follow-Up Headway (sec)		3.1				2.2				3.8	4.0	3.3				3.9
Follow-Up Headway (sec)		3.10				2.20				3.80	4.00	3.30				3.90

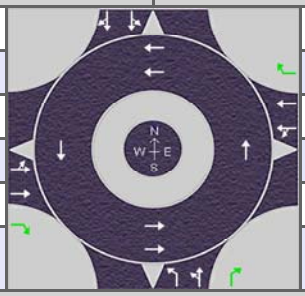
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		149				3					28					156
Capacity, c (veh/h)		367				565					114					423
v/c Ratio		0.41				0.01					0.25					0.37
95% Queue Length, Q_{95} (veh)		1.9				0.0					0.9					1.7
Control Delay (s/veh)		21.4				11.4					46.5					18.4
Level of Service (LOS)		C				B					E					C
Approach Delay (s/veh)		2.3				0.1				46.5				18.4		
Approach LOS										E				C		

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	



Site Information

Intersection	Commerce Dr & US 62 AM
E/W Street Name	US 62
N/S Street Name	Commerce Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	1	0	0	0	2	0
Lane Assignment	LT		T		LT		T		L		LT		LT		TR	
Volume (V), veh/h	0	19	1102	237	0	52	893	20	0	159	3	81	0	19	1	16
Percent Heavy Vehicles, %	3	3	4	3	3	13	3	3	3	3	3	3	3	3	9	3
Flow Rate (v_{PCE}), pc/h	0	21	1206	257	0	62	968	22	0	172	3	88	0	21	1	17
Right-Turn Bypass	Non-Yielding				Non-Yielding				Non-Yielding				None			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436		4.6453	4.3276		4.6453	4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352		2.6667	2.5352		2.6667	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	577	650	257	484	546	22	93	82	88	21	18	
Entry Volume, veh/h	555	625	250	467	527	21	90	80	85	20	17	
Circulating Flow (v_c), pc/h	84			196			1248			1202		
Exiting Flow (v_{ex}), pc/h	1227			1157			24			63		
Capacity (c_{pce}), pc/h	1316	1316		1188	1188		428	492		447	511	
Capacity (c), veh/h	1265	1265		1147	1147		416	477		433	496	
v/c Ratio (x)	0.44	0.49		0.41	0.46		0.22	0.17		0.05	0.04	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	7.2	8.1		7.3	8.1		12.1	9.9		9.0	7.7	
Lane LOS	A	A	A	A	A	A	B	A	A	A	A	
95% Queue, veh	2.3	2.8		2.0	2.5		0.8	0.6		0.1	0.1	
Approach Delay, s/veh	6.3			7.6			7.4			8.4		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	6.9						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	Dolphin Dr & US 62 AM
E/W Street Name	US 62
N/S Street Name	Dolphin Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.99
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	1	0	0	0	1	1
Lane Assignment	LT		TR		LT		TR				LTR		LT		R	
Volume (V), veh/h	0	112	852	10	0	3	720	126	0	1	2	4	0	0	0	112
Percent Heavy Vehicles, %	3	3	4	3	3	13	3	3	3	3	3	3	3	3	9	3
Flow Rate (v_{PCE}), pc/h	0	117	895	10	0	3	749	131	0	1	2	4	0	0	0	117
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436			4.3276		4.6453	4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352			2.5352		2.6667	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	480	542		415	468			7		0	117	
Entry Volume, veh/h	462	521		403	454			7		0	114	
Circulating Flow (v_c), pc/h	3			120			1012			753		
Exiting Flow (v_{ex}), pc/h	899			867			250			13		
Capacity (c_{pce}), pc/h	1416	1416		1273	1273			601		675	749	
Capacity (c), veh/h	1363	1363		1236	1236			583		656	727	
v/c Ratio (x)	0.34	0.38		0.33	0.37			0.01		0.00	0.16	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	5.7	6.2		5.9	6.4			6.3		5.5	6.6	
Lane LOS	A	A		A	A			A		A	A	
95% Queue, veh	1.5	1.8		1.4	1.7			0.0		0.0	0.6	
Approach Delay, s/veh	5.9			6.2			6.3			6.6		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	6.1						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	Buffalo Ck Dr & US 62 AM
E/W Street Name	US 62
N/S Street Name	Buffalo Creek Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	1	1	0	0	2	0
Lane Assignment	LT		T		LT		T		LT		R		LT		T	
Volume (V), veh/h	0	142	1026	0	0	50	856	108	0	16	8	34	0	129	5	88
Percent Heavy Vehicles, %	3	3	4	3	3	13	3	3	3	3	3	3	3	3	9	3
Flow Rate (v_{PCE}), pc/h	0	154	1123	0	0	59	928	117	0	17	9	37	0	140	6	95
Right-Turn Bypass	Non-Yielding				Non-Yielding				None				Non-Yielding			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436		4.6453	4.3276		4.6453	4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352		2.6667	2.5352		2.6667	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	600	677	0	464	523	117	26	37		69	77	95
Entry Volume, veh/h	578	652	0	448	505	114	25	36		66	75	92
Circulating Flow (v_c), pc/h	205			180			1417			1004		
Exiting Flow (v_{ex}), pc/h	1300			945			163			65		
Capacity (c_{pce}), pc/h	1178	1178		1205	1205		367	426		536	605	
Capacity (c), veh/h	1134	1134		1164	1164		356	413		519	586	
v/c Ratio (x)	0.51	0.57		0.38	0.43		0.07	0.09		0.13	0.13	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	9.0	10.2		6.9	7.6		11.2	10.0		8.6	7.7	
Lane LOS	A	B	A	A	A	A	B	A		A	A	A
95% Queue, veh	3.0	3.8		1.8	2.2		0.2	0.3		0.4	0.4	
Approach Delay, s/veh	9.6			6.5			10.5			4.9		
Approach LOS	A			A			B			A		
Intersection Delay, s/veh | LOS	7.9						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	Buffalo Ck Dr & US 62 PM
E/W Street Name	US 62
N/S Street Name	Buffalo Creek Drive
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.95
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	1	1	0	0	2	0
Lane Assignment	LT		T		LT		T		LT		R		LT		T	
Volume (V), veh/h	0	114	489	0	0	30	795	133	0	13	9	21	0	128	9	137
Percent Heavy Vehicles, %	3	3	4	3	3	13	3	3	3	3	3	3	3	3	9	3
Flow Rate (v_{PCE}), pc/h	0	124	535	0	0	36	862	144	0	14	10	23	0	139	10	149
Right-Turn Bypass	Non-Yielding				Non-Yielding				None				Non-Yielding			
Conflicting Lanes	1				1				2				2			
Pedestrians Crossing, p/h	0				0				0				0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436		4.6453	4.3276		4.6453	4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352		2.6667	2.5352		2.6667	2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	310	349	0	422	476	144	24	23		70	79	149
Entry Volume, veh/h	298	336	0	408	460	140	23	22		68	76	145
Circulating Flow (v_c), pc/h	185			148			798			912		
Exiting Flow (v_{ex}), pc/h	697			876			134			46		
Capacity (c_{pce}), pc/h	1200	1200		1241	1241		648	721		583	654	
Capacity (c), veh/h	1156	1156		1201	1201		629	700		564	633	
v/c Ratio (x)	0.26	0.29		0.34	0.38		0.04	0.03		0.12	0.12	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	5.5	5.8		6.2	6.8		6.1	5.5		7.8	7.1	
Lane LOS	A	A	A	A	A	A	A	A		A	A	A
95% Queue, veh	1.0	1.2		1.5	1.8		0.1	0.1		0.4	0.4	
Approach Delay, s/veh	5.7			5.6			5.8			3.7		
Approach LOS	A			A			A			A		
Intersection Delay, s/veh | LOS	5.4						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	I-65 SB Ramps & US 62
E/W Street Name	US 62
N/S Street Name	I-65 SB Ramps
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0
Lane Assignment	T		TR		LT		T								L	
Volume (V), veh/h	0		436	242	0	123	726						0	23		0
Percent Heavy Vehicles, %	3		4	3	3	13	3						3	3		3
Flow Rate (v_{PCE}), pc/h	0		493	271	0	151	813						0	26		0
Right-Turn Bypass	None				None				None				Non-Yielding			
Conflicting Lanes	1				1								2			
Pedestrians Crossing, p/h	0				0								0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436						4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352						2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	359	405		453	511						26	0
Entry Volume, veh/h	346	391		434	489						25	0
Circulating Flow (v_c), pc/h	177			0			519			964		
Exiting Flow (v_{ex}), pc/h	519			813			0			422		
Capacity (c_{pce}), pc/h	1209	1209		1420	1420						626	
Capacity (c), veh/h	1166	1166		1360	1360						608	
v/c Ratio (x)	0.30	0.33		0.32	0.36						0.04	

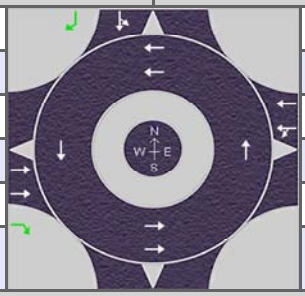
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	5.9	6.3		5.5	5.9						6.4	
Lane LOS	A	A		A	A						A	A
95% Queue, veh	1.3	1.5		1.4	1.7						0.1	
Approach Delay, s/veh	6.1			5.7						6.4		
Approach LOS	A			A						A		
Intersection Delay, s/veh | LOS	5.9						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	



Site Information

Intersection	I-65 SB Ramps & US 62 PM
E/W Street Name	US 62
N/S Street Name	I-65 SB Ramps
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0
Lane Assignment	T		T		LT		T								LT	
Volume (V), veh/h	0		765	505	0	625	726						0	49	1	376
Percent Heavy Vehicles, %	3		4	3	3	13	3						3	3	9	3
Flow Rate (v_{PCE}), pc/h	0		865	565	0	768	813						0	55	1	421
Right-Turn Bypass	Non-Yielding				None				None				Non-Yielding			
Conflicting Lanes	1				1								2			
Pedestrians Crossing, p/h	0				0								0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436						4.3276	
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352						2.5352	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	407	458	565	743	838						56	421
Entry Volume, veh/h	391	441	549	690	779						54	409
Circulating Flow (v_c), pc/h	824			0			920			1581		
Exiting Flow (v_{ex}), pc/h	920			813			0			769		
Capacity (c_{pce}), pc/h	671	671		1420	1420						370	
Capacity (c), veh/h	645	645		1319	1319						359	
v/c Ratio (x)	0.61	0.68		0.52	0.59						0.15	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	16.8	20.2		8.3	9.5						12.6	
Lane LOS	C	C	A	A	A						B	A
95% Queue, veh	4.1	5.4		3.2	4.1						0.5	
Approach Delay, s/veh	11.2			8.9						1.5		
Approach LOS	B			A						A		
Intersection Delay, s/veh | LOS	8.8						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	I-65 NB Ramps & US 62 AM
E/W Street Name	US 62
N/S Street Name	I-65 NB Ramps
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	0	1	0	0	0	0
Lane Assignment	LT		T		T		TR		L		R					
Volume (V), veh/h	0	239	235		0		528	49	0	327		129				
Percent Heavy Vehicles, %	3	3	4		3		3	3	3	3		3				
Flow Rate (v_{PCE}), pc/h	0	268	266		0		591	55	0	366		144				
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				2							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436		4.6453	4.3276				
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352		2.6667	2.5352				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	251	283		304	342		366	144				
Entry Volume, veh/h	243	273		295	332		355	140				
Circulating Flow (v_c), pc/h	0			634			534			957		
Exiting Flow (v_{ex}), pc/h	410			957			323			0		
Capacity (c_{pce}), pc/h	1420	1420		797	797		826	902				
Capacity (c), veh/h	1372	1372		774	774		802	876				
v/c Ratio (x)	0.18	0.20		0.38	0.43		0.44	0.16				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	4.1	4.3		9.4	10.2		10.2	5.7				
Lane LOS	A	A		A	B		B	A				
95% Queue, veh	0.6	0.7		1.8	2.2		2.3	0.6				
Approach Delay, s/veh	4.2			9.8			8.9					
Approach LOS	A			A			A					
Intersection Delay, s/veh | LOS	7.8						A					

HCS7 Roundabouts Report

General Information

Analyst	RDH
Agency or Co.	
Date Performed	6/14/2021
Analysis Year	2020
Time Analyzed	
Project Description	

Site Information

Intersection	I-65 NB Ramps & US 62 PM
E/W Street Name	US 62
N/S Street Name	I-65 NB Ramps
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	2	0	0	0	2	0	0	1	0	1	0	0	0	0
Lane Assignment	LT		T		T		TR		L		R					
Volume (V), veh/h	0	308	521		0		476	61	0	267		104				
Percent Heavy Vehicles, %	3	3	4		3		3	3	3	3		3				
Flow Rate (v_{PCE}), pc/h	0	345	589		0		533	68	0	299		116				
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				2							
Pedestrians Crossing, p/h	0				0				0							

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)	4.5436	4.5436		4.5436	4.5436		4.6453	4.3276				
Follow-Up Headway (s)	2.5352	2.5352		2.5352	2.5352		2.6667	2.5352				

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h	439	495		282	319		299	116				
Entry Volume, veh/h	424	478		274	309		290	113				
Circulating Flow (v_c), pc/h	0			644			934			832		
Exiting Flow (v_{ex}), pc/h	705			832			413			0		
Capacity (c_{pce}), pc/h	1420	1420		790	790		572	642				
Capacity (c), veh/h	1370	1370		767	767		555	623				
v/c Ratio (x)	0.31	0.35		0.36	0.40		0.52	0.18				

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh	5.3	5.8		9.1	9.8		16.0	7.9				
Lane LOS	A	A		A	A		C	A				
95% Queue, veh	1.3	1.6		1.6	2.0		3.0	0.7				
Approach Delay, s/veh	5.6			9.5			13.7					
Approach LOS	A			A			B					
Intersection Delay, s/veh | LOS	8.5						A					

Capacity Analysis for Planning of Junctions

Input Worksheet

Project Name:	*EECS: I-65 at US 62 Interchange - AM Analysis*
Project Number:	*n/a*
Location	*Elizabethtown, Kentucky*
Date	June 1, 2021

Critical Lane Volume Sum			
Acceptable Configurations			
< 1200	**1200 - 1399**	**1400 - 1599**	**≥ 1600**
17	**5**	**1**	**5**

Results for Intersections

#	TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Ranking
			CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		
1	Conventional	FULL									1452	0.91	0.91	13
2	Conventional Shared RT LN	CSRL									1712	1.07	1.07	14
3.1	Quadrant Roadway	S-W			1144	0.72			721	0.45	809	0.51	0.72	7
3.2		N-E	985	0.62			613	0.38			1073	0.67	0.67	6
3.3		S-E			906	0.57	906	0.57			917	0.57	0.57	1
3.4		N-W	1144	0.72					944	0.59	986	0.62	0.72	7
4.1	Partial Displaced Left Turn	N-S	678	0.42	944	0.59					792	0.49	0.59	2
4.2		E-W					146	0.09	386	0.24	1021	0.64	0.64	5
5	Displaced Left Turn	FULL	678	0.42	944	0.59	146	0.09	386	0.24	660	0.41	0.59	2
6.1	Restricted Crossing U-Turn	N-S	1017	0.64	1045	0.65	997	0.62	1241	0.78			0.78	11
6.2		E-W	2313	1.45	2411	1.51	1164	0.73	1023	0.64			1.51	15
7.1	Median U-Turn	N-S	969	0.61	935	0.58					1322	0.83	0.83	12
7.2		E-W					670	0.42	452	0.28	1005	0.63	0.63	4
8.1	Partial Median U-Turn	N-S	1105	0.69	798	0.50					1205	0.75	0.75	9
8.2		E-W					456	0.28	433	0.27	1205	0.75	0.75	9

Capacity Analysis for Planning of Junctions

Input Worksheet

Results for Roundabouts

#	TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Ranking
		Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3		
9.1	1 X 1	2.91			2.07			2.19			2.71			2.91	5
9.2	1 X 2	2.23			1.04	1.04		1.89			1.52	1.19		2.23	4
9.3	2 X 1	1.19	1.72		1.45			1.25	0.95		1.66			1.72	3
9.4	2 X 2	0.95	1.32		0.77	0.72		1.10	0.82		1.01	0.73		1.32	1
9.5	3 X 3	0.03	1.07	1.35	0.36	0.65	0.83	0.25	0.94	0.81	0.30	1.16	0.91	1.35	2

Results for Interchanges

#	TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Ranking
			CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		
10.1	Diamond	N-S					924	0.58	757	0.47					0.58	7
10.2		E-W					464	0.29	585	0.37					0.37	2
11.1	Partial Cloverleaf	N-S					718	0.45	494	0.31					0.45	5
11.2		E-W					452	0.62	445	0.28					0.28	1
13.1	Displaced Left Turn	N-S	701	0.44			771	0.48	833	0.52			944	0.59	0.59	8
13.2		E-W	677	0.42			414	0.26	571	0.36			262	0.16	0.42	3
14.1	Double Crossover Diamond	N-S	701	0.44	668	0.42	1181	0.74	1275	0.80	955	0.60	846	0.53	0.80	10
14.2		E-W	712	0.45	611	0.38	262	0.16	634	0.40	393	0.25	278	0.17	0.45	4
15.1	Single Point	N-S	492	0.31			1120	0.70					683	0.43	0.70	9
15.2		E-W	712	0.45			834	0.52					238	0.15	0.52	6

Capacity Analysis for Planning of Junctions

Input Worksheet

		Critical Lane Volume Sum			
Project Name:	*EECS: I-65 at US 62 Interchange - PM Analysis*	Acceptable Configurations			
Project Number:	*n/a*	< 1200	1200 - 1399	1400 - 1599	≥ 1600
Location	*Elizabethtown, Kentucky*	12	8	1	7
Date	June 1, 2021				

Results for Intersections

#	TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Ranking
			CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		
1	Conventional	FULL									1354	0.85	0.85	11
2	Conventional Shared RT LN	CSRL									2306	1.44	1.44	14
3.1	Quadrant Roadway	S-W			1285	0.80			1134	0.71	798	0.50	0.80	6
3.2		N-E	1110	0.69			644	0.40			1285	0.80	0.80	5
3.3		S-E			1095	0.68	1095	0.68			1153	0.72	0.72	4
3.4		N-W	1145	0.72					971	0.61	1285	0.80	0.80	9
4.1	Partial Displaced Left Turn	N-S	738	0.46	876	0.55					915	0.57	0.57	2
4.2		E-W					246	0.15	383	0.24	1128	0.70	0.70	3
5	Displaced Left Turn	FULL	738	0.46	876	0.55	246	0.15	383	0.24	844	0.53	0.55	1
6.1	Restricted Crossing U-Turn	N-S	1039	0.65	1221	0.76	1028	0.64	1656	1.04			1.04	12
6.2		E-W	2676	1.67	2671	1.67	1117	0.70	1328	0.83			1.67	15
7.1	Median U-Turn	N-S	991	0.62	956	0.60					1784	1.11	1.11	13
7.2		E-W					660	0.41	775	0.48	1300	0.81	0.81	10
8.1	Partial Median U-Turn	N-S	1085	0.68	789	0.49					1285	0.80	0.80	6
8.2		E-W					483	0.30	743	0.46	1285	0.80	0.80	6

Capacity Analysis for Planning of Junctions

Input Worksheet

Results for Roundabouts

#	TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Ranking
		Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3		
9.1	1 X 1	2.81			3.89			2.98			2.62			3.89	5
9.2	1 X 2	2.23			1.64	2.25		2.32			1.45	1.17		2.32	3
9.3	2 X 1	1.08	1.73		2.71			1.67	1.32		1.60			2.71	4
9.4	2 X 2	0.89	1.37		1.21	1.57		1.35	1.02		0.96	0.71		1.57	1
9.5	3 X 3	0.05	0.96	1.36	0.47	1.14	1.77	0.30	1.29	1.10	0.33	1.07	0.88	1.77	2

Results for Interchanges

#	TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Ranking
			CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C		
10.1	Diamond	N-S					896	0.56	834	0.52					0.56	7
10.2		E-W					420	0.26	565	0.35					0.35	1
11.1	Partial Cloverleaf	N-S					656	0.41	498	0.31					0.41	3
11.2		E-W					618	0.69	501	0.31					0.39	2
13.1	Displaced Left Turn	N-S	760	0.48			819	0.51	896	0.56			1130	0.71	0.71	8
13.2		E-W	731	0.46			389	0.24	561	0.35			404	0.25	0.46	4
14.1	Double Crossover Diamond	N-S	760	0.48	677	0.42	1220	0.76	1244	0.78	1003	0.63	1130	0.71	0.78	9
14.2		E-W	779	0.49	719	0.45	450	0.28	546	0.34	510	0.32	399	0.25	0.49	5
15.1	Single Point	N-S	541	0.34			1467	0.92					1002	0.63	0.92	10
15.2		E-W	779	0.49			815	0.51					311	0.19	0.51	6