OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
OLDHAM COUNTY FISCAL COURT
Oldham County, Kentucky

APPENDIX A

KY 146 and Cedar Point Road (KY 1817)

Existing Year - 2006

KY 22 Southbound			
	Right	Through	Left
AM	46	510	0
PM	57	355	0

Cedar Eastbound		AM	PM
	Left	78	54
	Through	0	0
	Right	96	56

KY 22 Northbound			
	Left	Through	Right
AM	47	483	0
PM	105	653	0

Future Year - 2026

KY 22 Southbound			
	Right	Through	Left
AM	83	921	0
PM	103	641	0

Cedar Eastbound		AM	PM
	Left	141	98
	Through	0	0
	Right	173	101

KY 22 Northbound			
	Left	Through	Right
AM	85	872	0
PM	190	1179	0

KY 329 Bypass and Arbor Ridge / Westwind Way

Existing Year - 2006

Arbor Ridge Southbound			
	Right	Through	Left
AM	46	0	45
PM	11	0	20

KY 329 Bypass Eastbound		AM	PM
	Left	1	36
	Through	307	423
	Right	2	15

AM	PM		KY 329 Bypass Westbound
18	26	Right	
506	326	Through	
20	7	Left	

Westwind Way Northbound			
	Left	Through	Right
AM	20	0	35
PM	8	0	9

Future Year - 2026

Arbor Ridge Southbound			
	Right	Through	Left
AM	542	28	349
PM	488	35	640

KY 329 Bypass Eastbound		AM	PM
	Left	312	715
	Through	462	500
	Right	3	16

AM	PM		KY 329 Bypass Westbound
526	536	Right	
763	387	Through	
30	9	Left	

Westwind Way Northbound			
	Left	Through	Right
AM	30	54	53
PM	9	26	11

KY 22 and Clore Lane

Existing Year - 2006

Clore Lane Southbound			
	Right	Through	Left
AM	66	0	109
PM	55	0	57

KY 22 Eastbound		AM	PM
	Left	10	76
	Through	356	413
	Right	0	0

AM	PM		KY 22 Westbound
19	65	Right	
328	409	Through	
0	0	Left	

Future Year - 2026

Clore Lane Southbound			
	Right	Through	Left
AM	119	0	197
PM	99	0	103

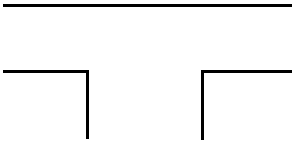
KY 22 Eastbound		AM	PM
	Left	18	137
	Through	643	746
	Right	0	0

AM	PM		KY 22 Westbound
34	117	Right	
592	739	Through	
0	0	Left	

KY 22 and Wooldridge Avenue

Existing Year - 2006

KY 22 Eastbound		AM	PM
	Left	0	0
	Through	352	409
	Right	4	4

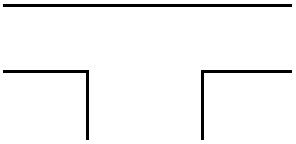


AM	PM		KY 22 Westbound
0	0	Right	
394	464	Through	
9	9	Left	

Wooldridge Avenue Southbound			
	Left	Through	Right
AM	4	0	9
PM	4	0	9

Future Year - 2026

KY 22 Eastbound		AM	PM
	Left	0	0
	Through	739	883
	Right	7	5



AM	PM		KY 22 Westbound
0	0	Right	
889	838	Through	
16	7	Left	

Wooldridge Avenue Southbound			
	Left	Through	Right
AM	7	0	16
PM	7	0	16

KY 22 and KY 329 Bypass

Existing Year - 2006

KY 329 Bypass Southbound			
	Right	Through	Left
AM	131	0	84
PM	141	0	259

KY 22 Eastbound		AM	PM
	Left	221	177
	Through	162	441
	Right	0	0

AM	PM		KY 22 Westbound
540	183	Right	
330	221	Through	
0	0	Left	

Future Year - 2026

KY 329 Bypass Southbound			
	Right	Through	Left
AM	105	0	525
PM	240	0	650

KY 22 Eastbound		AM	PM
	Left	100	99
	Through	340	523
	Right	0	0

AM	PM		KY 22 Westbound
690	495	Right	
555	320	Through	
0	0	Left	

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
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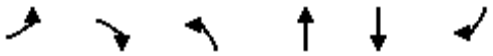
Oldham County, Kentucky

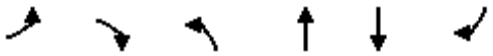
APPENDIX B



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	78	96	47	483	510	46
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	94	116	57	582	614	55
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1337	642	670			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1337	642	670			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	40	75	94			
cM capacity (veh/h)	156	469	888			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	94	116	639	670
Volume Left	94	0	57	0
Volume Right	0	116	0	55
cSH	156	469	888	1700
Volume to Capacity	0.60	0.25	0.06	0.39
Queue Length 95th (ft)	80	24	5	0
Control Delay (s)	58.2	15.2	1.7	0.0
Lane LOS	F	C	A	
Approach Delay (s)	34.5		1.7	0.0
Approach LOS	D			

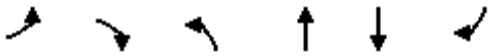
Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	54	56	105	653	355	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	61	114	710	386	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1355	417	448			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1355	417	448			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	60	90	89			
cM capacity (veh/h)	145	630	1076			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	59	61	824	448
Volume Left	59	0	114	0
Volume Right	0	61	0	62
cSH	145	630	1076	1700
Volume to Capacity	0.40	0.10	0.11	0.26
Queue Length 95th (ft)	44	8	9	0
Control Delay (s)	45.7	11.3	2.6	0.0
Lane LOS	E	B	A	
Approach Delay (s)	28.2		2.6	0.0
Approach LOS	D			

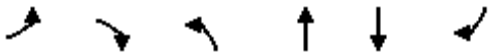
Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	75.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	141	173	85	872	921	83
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	170	208	102	1051	1110	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2415	1160	1210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2415	1160	1210			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	0	11	81			
cM capacity (veh/h)	29	235	553			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	170	208	1153	1210
Volume Left	170	0	102	0
Volume Right	0	208	0	100
cSH	29	235	553	1700
Volume to Capacity	5.93	0.89	0.19	0.71
Queue Length 95th (ft)	Err	184	17	0
Control Delay (s)	Err	77.3	6.9	0.0
Lane LOS	F	F	A	
Approach Delay (s)	4532.6		6.9	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	628.5		
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	98	101	190	1179	641	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	107	110	207	1282	697	112
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2447	753	809			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2447	753	809			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	0	73	74			
cM capacity (veh/h)	25	405	787			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	107	110	1488	809
Volume Left	107	0	207	0
Volume Right	0	110	0	112
cSH	25	405	787	1700
Volume to Capacity	4.31	0.27	0.26	0.48
Queue Length 95th (ft)	Err	27	26	0
Control Delay (s)	Err	17.2	11.8	0.0
Lane LOS	F	C	B	
Approach Delay (s)	4932.8		11.8	0.0
Approach LOS	F			

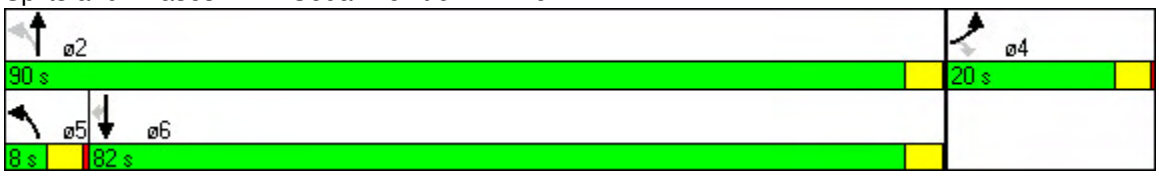
Intersection Summary			
Average Delay	431.6		
Intersection Capacity Utilization	128.0%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400	0	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1656	1743	1743	1482
Flt Permitted	0.950		0.101			
Satd. Flow (perm)	1719	1538	176	1743	1743	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		185				91
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	45	
Link Distance (ft)	464			937	333	
Travel Time (s)	7.0			14.2	5.0	
Volume (vph)	141	173	85	872	921	83
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	5%	5%	9%	9%	9%	9%
Adj. Flow (vph)	170	208	102	1051	1110	100
Lane Group Flow (vph)	170	208	102	1051	1110	100
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	8.0	90.0	82.0	82.0
Total Split (%)	18.2%	18.2%	7.3%	81.8%	74.5%	74.5%
Maximum Green (s)	16.0	16.0	4.0	86.0	78.0	78.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	16.0	16.0	86.0	86.0	78.0	78.0
Actuated g/C Ratio	0.15	0.15	0.78	0.78	0.71	0.71
v/c Ratio	0.68	0.54	0.53	0.77	0.90	0.09
Control Delay	59.4	14.6	13.1	11.5	24.6	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	14.6	13.1	11.5	24.6	1.4
LOS	E	B	B	B	C	A
Approach Delay	34.7			11.7	22.7	
Approach LOS	C			B	C	
Queue Length 50th (ft)	115	14	14	331	553	2
Queue Length 95th (ft)	173	66	23	397	665	13
Internal Link Dist (ft)	384			857	253	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)	400		200			200
Base Capacity (vph)	250	382	191	1363	1236	1077
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.54	0.53	0.77	0.90	0.09

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 4: Cedar Point & KY 146

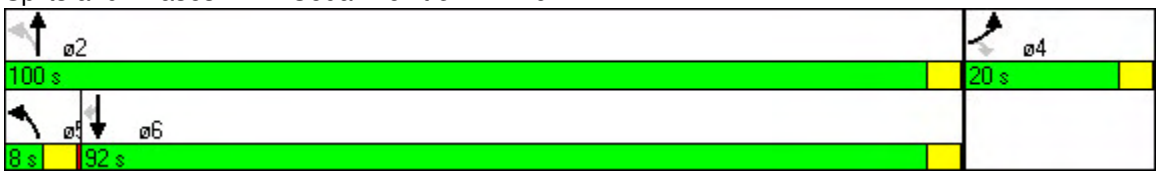


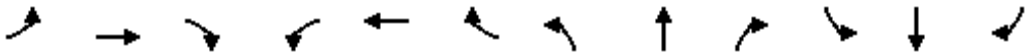
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	400	0	200			200
Storage Lanes	1	1	1			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1719	1538	1656	1743	1743	1482
Flt Permitted	0.950		0.312			
Satd. Flow (perm)	1719	1538	544	1743	1743	1482
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		110				112
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	45			45	45	
Link Distance (ft)	464			937	333	
Travel Time (s)	7.0			14.2	5.0	
Volume (vph)	98	101	190	1179	641	103
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	9%	9%	9%	9%
Adj. Flow (vph)	107	110	207	1282	697	112
Lane Group Flow (vph)	107	110	207	1282	697	112
Turn Type		Perm	pm+pt			Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Minimum Split (s)	20.0	20.0	8.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	8.0	100.0	92.0	92.0
Total Split (%)	16.7%	16.7%	6.7%	83.3%	76.7%	76.7%
Maximum Green (s)	16.0	16.0	4.0	96.0	88.0	88.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Walk Time (s)	5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s)	16.0	16.0	96.0	96.0	88.0	88.0
Actuated g/C Ratio	0.13	0.13	0.80	0.80	0.73	0.73
v/c Ratio	0.47	0.37	0.44	0.92	0.55	0.10
Control Delay	55.5	12.3	5.8	21.8	9.0	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	12.3	5.8	21.8	9.0	1.0
LOS	E	B	A	C	A	A
Approach Delay	33.6			19.6	7.9	
Approach LOS	C			B	A	
Queue Length 50th (ft)	78	0	30	608	210	0
Queue Length 95th (ft)	137	53	46	#1205	295	14
Internal Link Dist (ft)	384			857	253	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)	400		200			200
Base Capacity (vph)	229	300	472	1394	1278	1117
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.37	0.44	0.92	0.55	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 17.1		Intersection LOS: B	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 4: Cedar Point & KY 146

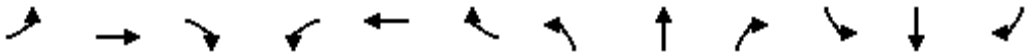




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	307	2	20	506	18	20	0	35	45	0	46
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	1	370	2	24	610	22	24	0	42	54	0	55
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	631			372			781	1052	185	887	1033	305
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	631			372			781	1052	185	887	1033	305
tC, single (s)	4.3			4.3			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.6	4.0	3.4
p0 queue free %	100			98			90	100	95	75	100	92
cM capacity (veh/h)	901			1134			253	215	816	218	221	682

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1
Volume Total	1	185	185	2	24	305	305	22	66	110
Volume Left	1	0	0	0	24	0	0	0	24	54
Volume Right	0	0	0	2	0	0	0	22	42	55
cSH	901	1700	1700	1700	1134	1700	1700	1700	451	332
Volume to Capacity	0.00	0.11	0.11	0.00	0.02	0.18	0.18	0.01	0.15	0.33
Queue Length 95th (ft)	0	0	0	0	2	0	0	0	13	35
Control Delay (s)	9.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0	14.4	21.1
Lane LOS	A				A				B	C
Approach Delay (s)	0.0				0.3				14.4	21.1
Approach LOS									B	C

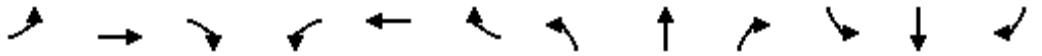
Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	36	423	15	7	326	26	8	0	9	20	0	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	40	470	17	8	362	29	9	0	10	22	0	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	391			487			767	965	243	717	959	196
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	391			487			767	965	243	717	959	196
tC, single (s)	4.3			4.3			7.6	6.6	7.0	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.0	3.4	3.6	4.0	3.4
p0 queue free %	96			99			97	100	99	93	100	98
cM capacity (veh/h)	1115			1025			273	238	748	297	240	804

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	40	313	173	8	241	150	19	34
Volume Left	40	0	0	8	0	0	9	22
Volume Right	0	0	17	0	0	29	10	12
cSH	1115	1700	1700	1025	1700	1700	411	383
Volume to Capacity	0.04	0.18	0.10	0.01	0.14	0.09	0.05	0.09
Queue Length 95th (ft)	3	0	0	1	0	0	4	7
Control Delay (s)	8.3	0.0	0.0	8.5	0.0	0.0	14.2	15.3
Lane LOS	A			A			B	C
Approach Delay (s)	0.6			0.2			14.2	15.3
Approach LOS							B	C

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			



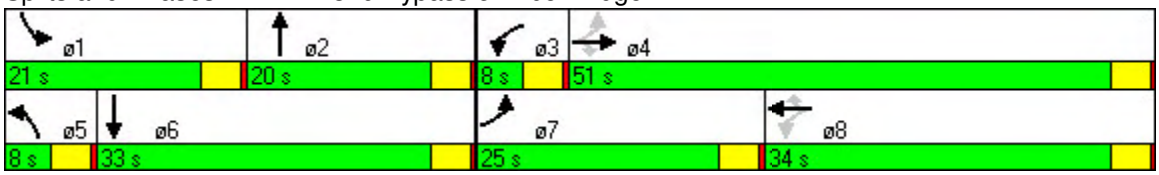
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		0	0		0
Storage Lanes	1		1	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.926			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3312	1482	1656	3312	1482	1719	1676	0	3335	1551	0
Flt Permitted	0.118			0.443			0.950			0.950		
Satd. Flow (perm)	206	3312	1482	772	3312	1482	1719	1676	0	3335	1551	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			4			591		42			400	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1594			1491			682			289	
Travel Time (s)		24.2			22.6			10.3			4.4	
Volume (vph)	312	462	3	30	763	526	30	54	53	349	28	542
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	376	557	4	36	919	634	36	65	64	420	34	653
Lane Group Flow (vph)	376	557	4	36	919	634	36	129	0	420	687	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8						
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	25.0	51.0	51.0	8.0	34.0	34.0	8.0	20.0	0.0	21.0	33.0	0.0
Total Split (%)	25.0%	51.0%	51.0%	8.0%	34.0%	34.0%	8.0%	20.0%	0.0%	21.0%	33.0%	0.0%
Maximum Green (s)	21.0	47.0	47.0	4.0	30.0	30.0	4.0	16.0		17.0	29.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	55.0	47.0	47.0	34.0	30.0	30.0	4.0	16.0		17.0	29.0	
Actuated g/C Ratio	0.55	0.47	0.47	0.34	0.30	0.30	0.04	0.16		0.17	0.29	
v/c Ratio	0.90	0.36	0.01	0.12	0.92	0.74	0.52	0.43		0.74	0.94	
Control Delay	51.3	17.7	9.0	13.7	50.0	9.6	73.8	30.2		48.3	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	51.3	17.7	9.0	13.7	50.0	9.6	73.8	30.2		48.3	36.3	
LOS	D	B	A	B	D	A	E	C		D	D	
Approach Delay		31.2			33.1			39.7			40.9	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	184	115	0	10	297	20	23	50		132	203	
Queue Length 95th (ft)	#302	140	5	22	#348	76	#60	95		168	#362	
Internal Link Dist (ft)		1514			1411			602			209	

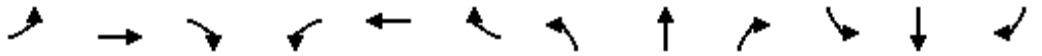
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	200		200	200		200						
Base Capacity (vph)	418	1557	699	298	994	858	69	303		567	734	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.90	0.36	0.01	0.12	0.92	0.74	0.52	0.43		0.74	0.94	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Pretimed
Maximum v/c Ratio: 0.94
Intersection Signal Delay: 35.2 Intersection LOS: D
Intersection Capacity Utilization 83.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: KY 329 Bypass & Arbor Ridge



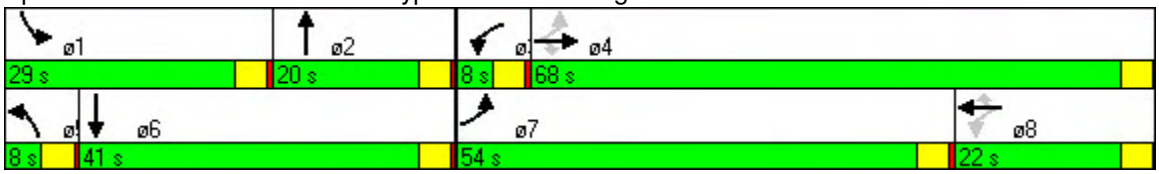


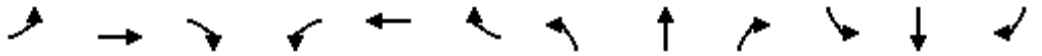
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		0	0		0
Storage Lanes	1		1	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.956			0.860	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3312	1482	1656	3312	1482	1719	1730	0	3335	1556	0
Flt Permitted	0.182			0.444			0.950			0.950		
Satd. Flow (perm)	317	3312	1482	774	3312	1482	1719	1730	0	3335	1556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			18			487		12			542	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1594			1491			682			289	
Travel Time (s)		24.2			22.6			10.3			4.4	
Volume (vph)	715	500	16	9	387	536	9	26	11	640	35	488
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	794	556	18	10	430	596	10	29	12	711	39	542
Lane Group Flow (vph)	794	556	18	10	430	596	10	41	0	711	581	0
Turn Type	pm+pt		Perm	pm+pt		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8						
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	54.0	68.0	68.0	8.0	22.0	22.0	8.0	20.0	0.0	29.0	41.0	0.0
Total Split (%)	43.2%	54.4%	54.4%	6.4%	17.6%	17.6%	6.4%	16.0%	0.0%	23.2%	32.8%	0.0%
Maximum Green (s)	50.0	64.0	64.0	4.0	18.0	18.0	4.0	16.0		25.0	37.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	72.0	64.0	64.0	22.0	18.0	18.0	4.0	16.0		25.0	37.0	
Actuated g/C Ratio	0.58	0.51	0.51	0.18	0.14	0.14	0.03	0.13		0.20	0.30	
v/c Ratio	1.11	0.33	0.02	0.06	0.90	0.95	0.18	0.18		1.07	0.69	
Control Delay	96.7	18.6	6.2	22.4	75.7	35.8	66.6	39.4		101.3	9.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	96.7	18.6	6.2	22.4	75.7	35.8	66.6	39.4		101.3	9.1	
LOS	F	B	A	C	E	D	E	D		F	A	
Approach Delay		63.8			52.2			44.7			59.8	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)	~685	134	0	3	182	94	8	21		~327	23	
Queue Length 95th (ft)	#933	174	13	11	#277	#340	28	57		#448	141	
Internal Link Dist (ft)		1514			1411			602			209	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	200		200	200		200						
Base Capacity (vph)	718	1696	768	164	477	630	55	232		667	842	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	1.11	0.33	0.02	0.06	0.90	0.95	0.18	0.18		1.07	0.69	

Intersection Summary			
Area Type:	Other		
Cycle Length: 125			
Actuated Cycle Length: 125			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 140			
Control Type: Pretimed			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 58.9		Intersection LOS: E	
Intersection Capacity Utilization 92.3%		ICU Level of Service F	
Analysis Period (min) 15			
~ Volume exceeds capacity, queue is theoretically infinite.			
Queue shown is maximum after two cycles.			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: KY 329 Bypass & Arbor Ridge



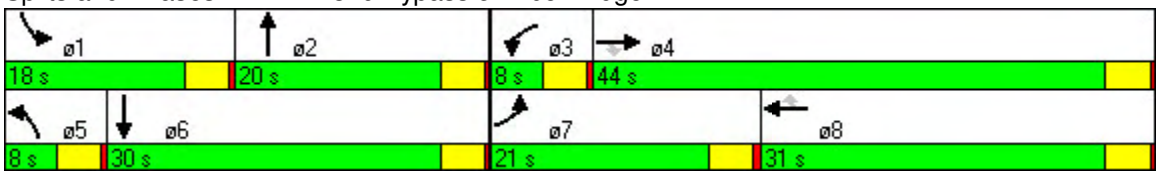


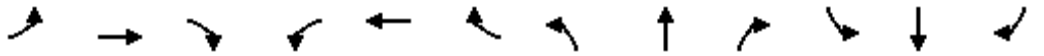
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		0	0		0
Storage Lanes	2		1	1		1	1		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.926			0.857	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	3312	1482	1656	3312	1482	1719	1676	0	3335	1551	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	3312	1482	1656	3312	1482	1719	1676	0	3335	1551	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			4			586		48			367	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1594			1491			682			289	
Travel Time (s)		24.2			22.6			10.3			4.4	
Volume (vph)	312	462	3	30	763	526	30	54	53	349	28	542
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	376	557	4	36	919	634	36	65	64	420	34	653
Lane Group Flow (vph)	376	557	4	36	919	634	36	129	0	420	687	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	21.0	44.0	44.0	8.0	31.0	31.0	8.0	20.0	0.0	18.0	30.0	0.0
Total Split (%)	23.3%	48.9%	48.9%	8.9%	34.4%	34.4%	8.9%	22.2%	0.0%	20.0%	33.3%	0.0%
Maximum Green (s)	17.0	40.0	40.0	4.0	27.0	27.0	4.0	16.0		14.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)		0	0		0	0		0			0	
Act Effct Green (s)	17.0	40.0	40.0	4.0	27.0	27.0	4.0	16.0		14.0	26.0	
Actuated g/C Ratio	0.19	0.44	0.44	0.04	0.30	0.30	0.04	0.18		0.16	0.29	
v/c Ratio	0.62	0.38	0.01	0.49	0.92	0.74	0.47	0.38		0.81	0.97	
Control Delay	38.6	17.6	9.3	64.6	46.9	9.6	63.0	24.6		50.4	43.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	38.6	17.6	9.3	64.6	46.9	9.6	63.0	24.6		50.4	43.5	
LOS	D	B	A	E	D	A	E	C		D	D	
Approach Delay		26.0			32.4			32.9			46.1	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	102	107	0	21	264	20	20	40		120	205	
Queue Length 95th (ft)	135	134	5	#53	#331	77	#51	82		#158	#368	
Internal Link Dist (ft)		1514			1411			602			209	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	200		200	200		200						
Base Capacity (vph)	607	1472	661	74	994	855	76	337		519	709	
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.62	0.38	0.01	0.49	0.92	0.74	0.47	0.38		0.81	0.97	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 34.8		Intersection LOS: C	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: KY 329 Bypass & Arbor Ridge



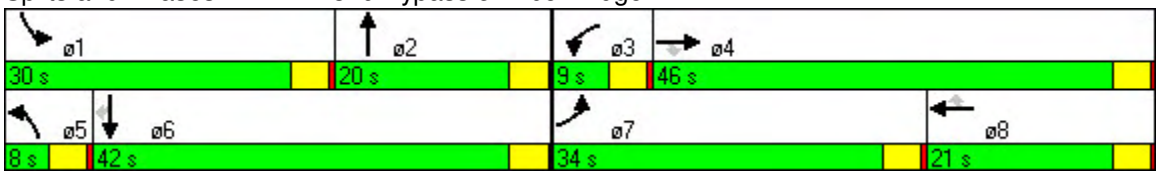


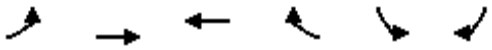
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		200	200		200	0		0	0		0
Storage Lanes	2		1	1		1	1		0	2		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850			0.850		0.956				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3213	3312	1482	1656	3312	1482	1719	1730	0	3335	1810	1538
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3213	3312	1482	1656	3312	1482	1719	1730	0	3335	1810	1538
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			18			596		12				542
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1594			1491			682			289	
Travel Time (s)		24.2			22.6			10.3			4.4	
Volume (vph)	715	500	16	9	387	536	9	26	11	640	35	488
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	794	556	18	10	430	596	10	29	12	711	39	542
Lane Group Flow (vph)	794	556	18	10	430	596	10	41	0	711	39	542
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	20.0
Total Split (s)	34.0	46.0	46.0	9.0	21.0	21.0	8.0	20.0	0.0	30.0	42.0	42.0
Total Split (%)	32.4%	43.8%	43.8%	8.6%	20.0%	20.0%	7.6%	19.0%	0.0%	28.6%	40.0%	40.0%
Maximum Green (s)	30.0	42.0	42.0	5.0	17.0	17.0	4.0	16.0		26.0	38.0	38.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0	5.0		5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0			0	0
Act Effct Green (s)	30.0	42.0	42.0	5.0	17.0	17.0	4.0	16.0		26.0	38.0	38.0
Actuated g/C Ratio	0.29	0.40	0.40	0.05	0.16	0.16	0.04	0.15		0.25	0.36	0.36
v/c Ratio	0.86	0.42	0.03	0.13	0.80	0.81	0.15	0.15		0.86	0.06	0.60
Control Delay	46.9	23.9	8.4	51.7	55.0	13.1	54.2	31.3		49.8	22.3	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	46.9	23.9	8.4	51.7	55.0	13.1	54.2	31.3		49.8	22.3	5.2
LOS	D	C	A	D	D	B	D	C		D	C	A
Approach Delay		37.1			30.9			35.8			30.3	
Approach LOS		D			C			D			C	
Queue Length 50th (ft)	260	139	0	7	147	0	7	17		236	17	0
Queue Length 95th (ft)	#361	186	14	24	#220	#138	24	49		#331	40	73
Internal Link Dist (ft)		1514			1411			602			209	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	200		200	200		200						
Base Capacity (vph)	918	1325	604	79	536	739	65	274		826	655	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.86	0.42	0.03	0.13	0.80	0.81	0.15	0.15		0.86	0.06	0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 105			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Pretimed			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 33.0		Intersection LOS: C	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: KY 329 Bypass & Arbor Ridge





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	10	356	328	19	109	66
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	387	357	21	118	72
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	377				776	367
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	377				776	367
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	99				67	89
cM capacity (veh/h)	1144				358	672

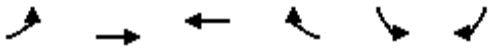
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	398	377	190
Volume Left	11	0	118
Volume Right	0	21	72
cSH	1144	1700	435
Volume to Capacity	0.01	0.22	0.44
Queue Length 95th (ft)	1	0	54
Control Delay (s)	0.3	0.0	19.6
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	19.6
Approach LOS			C

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	352	4	9	394	4	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	383	4	10	428	4	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			387		833	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			387		833	385
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		99	99
cM capacity (veh/h)			1134		332	656

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	387	438	14
Volume Left	0	10	4
Volume Right	4	0	10
cSH	1700	1134	505
Volume to Capacity	0.23	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.3	12.3
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	12.3
Approach LOS			B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	76	413	409	65	57	55
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	83	449	445	71	62	60
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	515				1094	480
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	515				1094	480
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	92				71	90
cM capacity (veh/h)	1016				215	580

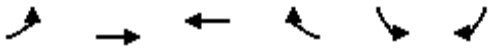
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	532	515	122
Volume Left	83	0	62
Volume Right	0	71	60
cSH	1016	1700	311
Volume to Capacity	0.08	0.30	0.39
Queue Length 95th (ft)	7	0	45
Control Delay (s)	2.2	0.0	23.9
Lane LOS	A		C
Approach Delay (s)	2.2	0.0	23.9
Approach LOS			C

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	409	4	9	464	4	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	445	4	10	504	4	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			449		971	447
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			449		971	447
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1075		275	605

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	449	514	14
Volume Left	0	10	4
Volume Right	4	0	10
cSH	1700	1075	442
Volume to Capacity	0.26	0.01	0.03
Queue Length 95th (ft)	0	1	2
Control Delay (s)	0.0	0.3	13.4
Lane LOS		A	B
Approach Delay (s)	0.0	0.3	13.4
Approach LOS			B

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	18	643	592	34	197	119
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	699	643	37	214	129
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	680				1400	662
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680				1400	662
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	98				0	72
cM capacity (veh/h)	880				149	457

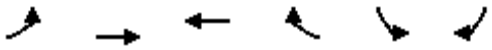
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	718	680	343
Volume Left	20	0	214
Volume Right	0	37	129
cSH	880	1700	200
Volume to Capacity	0.02	0.40	1.72
Queue Length 95th (ft)	2	0	587
Control Delay (s)	0.6	0.0	385.9
Lane LOS	A		F
Approach Delay (s)	0.6	0.0	385.9
Approach LOS			F

Intersection Summary			
Average Delay	76.3		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	739	7	16	889	7	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	803	8	17	966	8	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			811		1808	807
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			811		1808	807
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		91	95
cM capacity (veh/h)			785		83	377

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	811	984	25
Volume Left	0	17	8
Volume Right	8	0	17
cSH	1700	785	182
Volume to Capacity	0.48	0.02	0.14
Queue Length 95th (ft)	0	2	12
Control Delay (s)	0.0	0.7	27.9
Lane LOS		A	D
Approach Delay (s)	0.0	0.7	27.9
Approach LOS			D

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	137	746	739	117	103	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	149	811	803	127	112	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	930				1976	867
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	930				1976	867
tC, single (s)	4.2				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	79				0	69
cM capacity (veh/h)	707				53	348

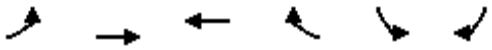
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	960	930	220
Volume Left	149	0	112
Volume Right	0	127	108
cSH	707	1700	90
Volume to Capacity	0.21	0.55	2.43
Queue Length 95th (ft)	20	0	505
Control Delay (s)	5.7	0.0	749.5
Lane LOS	A		F
Approach Delay (s)	5.7	0.0	749.5
Approach LOS			F

Intersection Summary			
Average Delay	80.6		
Intersection Capacity Utilization	114.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	883	5	7	838	7	16
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	960	5	8	911	8	17
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			965		1889	962
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			965		1889	962
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			99		90	94
cM capacity (veh/h)			686		75	306

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	965	918	25
Volume Left	0	8	8
Volume Right	5	0	17
cSH	1700	686	158
Volume to Capacity	0.57	0.01	0.16
Queue Length 95th (ft)	0	1	14
Control Delay (s)	0.0	0.3	32.0
Lane LOS		A	D
Approach Delay (s)	0.0	0.3	32.0
Approach LOS			D

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		

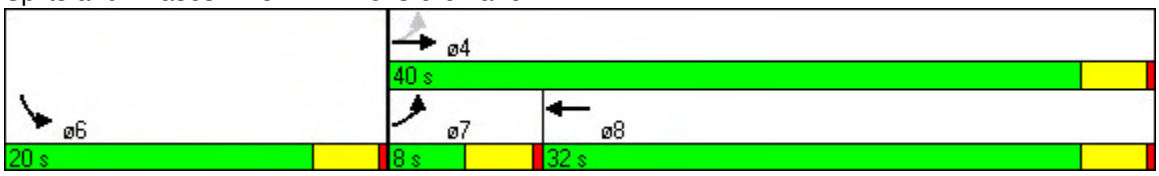


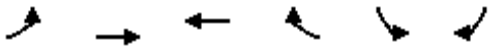
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.949	
Flt Protected	0.950				0.970	
Satd. Flow (prot)	1656	1743	1731	0	1666	0
Flt Permitted	0.160				0.970	
Satd. Flow (perm)	279	1743	1731	0	1666	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			6		49	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		45	
Link Distance (ft)		220	1276		1093	
Travel Time (s)		3.3	19.3		16.6	
Volume (vph)	18	643	592	34	197	119
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	9%	9%	9%	5%	5%
Adj. Flow (vph)	20	699	643	37	214	129
Lane Group Flow (vph)	20	699	680	0	343	0
Turn Type	pm+pt					
Protected Phases	7	4	8		6	
Permitted Phases	4					
Minimum Split (s)	8.0	20.0	20.0		20.0	
Total Split (s)	8.0	40.0	32.0	0.0	20.0	0.0
Total Split (%)	13.3%	66.7%	53.3%	0.0%	33.3%	0.0%
Maximum Green (s)	4.0	36.0	28.0		16.0	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	0.5	0.5	0.5		0.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Walk Time (s)		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	
Act Effct Green (s)	36.0	36.0	28.0		16.0	
Actuated g/C Ratio	0.60	0.60	0.47		0.27	
v/c Ratio	0.08	0.67	0.84		0.71	
Control Delay	5.5	12.0	26.0		27.3	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	5.5	12.0	26.0		27.3	
LOS	A	B	C		C	
Approach Delay		11.8	26.0		27.3	
Approach LOS		B	C		C	
Queue Length 50th (ft)	3	146	201		95	
Queue Length 95th (ft)	9	251	#395		#205	
Internal Link Dist (ft)		140	1196		1013	
Turn Bay Length (ft)						
Base Capacity (vph)	259	1046	811		480	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.08	0.67	0.84		0.71	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: KY 22 & Clore Lane





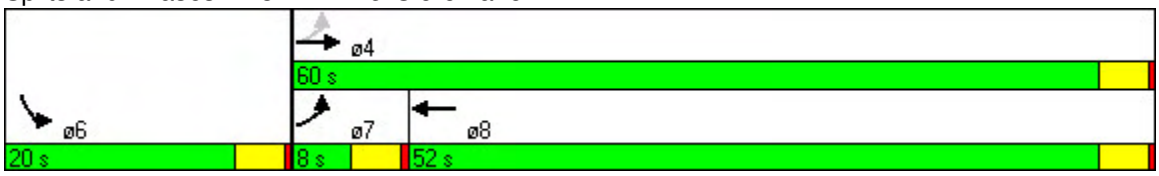
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.934	
Flt Protected	0.950				0.975	
Satd. Flow (prot)	1656	1743	1712	0	1648	0
Flt Permitted	0.110				0.975	
Satd. Flow (perm)	192	1743	1712	0	1648	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			18		54	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		45	
Link Distance (ft)		220	1276		1093	
Travel Time (s)		3.3	19.3		16.6	
Volume (vph)	137	746	739	117	103	99
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	9%	9%	9%	5%	5%
Adj. Flow (vph)	149	811	803	127	112	108
Lane Group Flow (vph)	149	811	930	0	220	0
Turn Type	pm+pt					
Protected Phases	7	4	8		6	
Permitted Phases	4					
Minimum Split (s)	8.0	20.0	20.0		20.0	
Total Split (s)	8.0	60.0	52.0	0.0	20.0	0.0
Total Split (%)	10.0%	75.0%	65.0%	0.0%	25.0%	0.0%
Maximum Green (s)	4.0	56.0	48.0		16.0	
Yellow Time (s)	3.5	3.5	3.5		3.5	
All-Red Time (s)	0.5	0.5	0.5		0.5	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Walk Time (s)		5.0	5.0		5.0	
Flash Dont Walk (s)		11.0	11.0		11.0	
Pedestrian Calls (#/hr)		0	0		0	
Act Effct Green (s)	56.0	56.0	48.0		16.0	
Actuated g/C Ratio	0.70	0.70	0.60		0.20	
v/c Ratio	0.72	0.66	0.90		0.59	
Control Delay	27.2	10.1	27.6		29.0	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	27.2	10.1	27.6		29.0	
LOS	C	B	C		C	
Approach Delay		12.7	27.6		29.0	
Approach LOS		B	C		C	
Queue Length 50th (ft)	20	190	360		75	
Queue Length 95th (ft)	#62	303	#657		146	
Internal Link Dist (ft)		140	1196		1013	
Turn Bay Length (ft)						
Base Capacity (vph)	208	1220	1034		373	

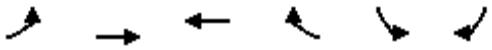
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.72	0.66	0.90		0.59	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green			
Natural Cycle: 80			
Control Type: Pretimed			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: KY 22 & Clore Lane

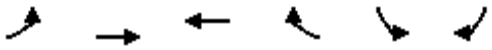




Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	221	162	330	540	84	131
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	248	182	371	607	94	147
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	978				1049	371
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	978				1049	371
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	63				39	78
cM capacity (veh/h)	679				155	660

Direction, Lane #	EB 1	WB 1	WB 2	SB 1	SB 2
Volume Total	430	371	607	94	147
Volume Left	248	0	0	94	0
Volume Right	0	0	607	0	147
cSH	679	1700	1700	155	660
Volume to Capacity	0.37	0.22	0.36	0.61	0.22
Queue Length 95th (ft)	42	0	0	82	21
Control Delay (s)	10.0	0.0	0.0	59.1	12.0
Lane LOS	B			F	B
Approach Delay (s)	10.0	0.0		30.4	
Approach LOS				D	

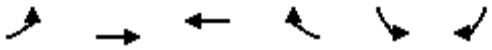
Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	177	441	221	183	259	141
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	186	464	233	193	273	148
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	425				1069	233
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	425				1069	233
tC, single (s)	4.2				6.5	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	83				0	81
cM capacity (veh/h)	1098				197	789

Direction, Lane #	EB 1	WB 1	WB 2	SB 1	SB 2
Volume Total	651	233	193	273	148
Volume Left	186	0	0	273	0
Volume Right	0	0	193	0	148
cSH	1098	1700	1700	197	789
Volume to Capacity	0.17	0.14	0.11	1.38	0.19
Queue Length 95th (ft)	15	0	0	397	17
Control Delay (s)	4.1	0.0	0.0	246.3	10.6
Lane LOS	A			F	B
Approach Delay (s)	4.1	0.0		163.2	
Approach LOS				F	

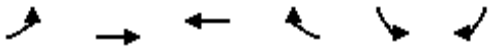
Intersection Summary			
Average Delay	47.7		
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	100	340	555	690	525	105
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	112	382	624	775	590	118
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1399				1427	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1399				1427	699
tC, single (s)	4.3				7.0	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	75				0	68
cM capacity (veh/h)	450				89	366

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	112	191	191	416	983	590	118
Volume Left	112	0	0	0	0	590	0
Volume Right	0	0	0	0	775	0	118
cSH	450	1700	1700	1700	1700	89	366
Volume to Capacity	0.25	0.11	0.11	0.24	0.58	6.65	0.32
Queue Length 95th (ft)	24	0	0	0	0	Err	34
Control Delay (s)	15.6	0.0	0.0	0.0	0.0	Err	19.4
Lane LOS	C					F	C
Approach Delay (s)	3.6			0.0		8335.7	
Approach LOS						F	

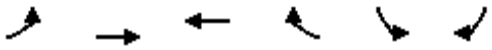
Intersection Summary			
Average Delay	2269.1		
Intersection Capacity Utilization	82.2%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Volume (veh/h)	99	523	320	495	650	240
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	104	551	337	521	684	253
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	858				1081	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	858				1081	429
tC, single (s)	4.3				7.0	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.4
p0 queue free %	86				0	55
cM capacity (veh/h)	736				173	555

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	104	275	275	225	633	684	253
Volume Left	104	0	0	0	0	684	0
Volume Right	0	0	0	0	521	0	253
cSH	736	1700	1700	1700	1700	173	555
Volume to Capacity	0.14	0.16	0.16	0.13	0.37	3.96	0.45
Queue Length 95th (ft)	12	0	0	0	0	Err	59
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	Err	16.8
Lane LOS	B					F	C
Approach Delay (s)	1.7			0.0		7307.2	
Approach LOS						F	

Intersection Summary			
Average Delay	2795.2		
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

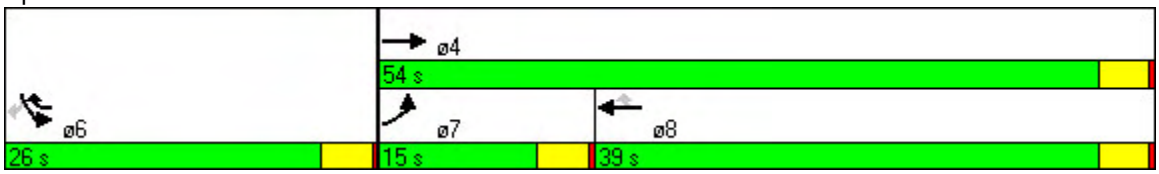


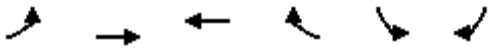
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			300	0	0
Storage Lanes	1			1	2	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1656	3312	3312	1482	3213	1482
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1656	3312	3312	1482	3213	1482
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				382		118
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		45	
Link Distance (ft)		1257	381		276	
Travel Time (s)		19.0	5.8		4.2	
Volume (vph)	100	340	555	690	525	105
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	112	382	624	775	590	118
Lane Group Flow (vph)	112	382	624	775	590	118
Turn Type	Prot			pm+ov		Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Minimum Split (s)	8.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	54.0	39.0	26.0	26.0	26.0
Total Split (%)	18.8%	67.5%	48.8%	32.5%	32.5%	32.5%
Maximum Green (s)	11.0	50.0	35.0	22.0	22.0	22.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Walk Time (s)		5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	11.0	50.0	35.0	61.0	22.0	22.0
Actuated g/C Ratio	0.14	0.62	0.44	0.76	0.28	0.28
v/c Ratio	0.49	0.18	0.43	0.63	0.67	0.24
Control Delay	40.0	6.6	16.8	4.6	30.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	6.6	16.8	4.6	30.1	6.1
LOS	D	A	B	A	C	A
Approach Delay		14.2	10.0		26.1	
Approach LOS		B	B		C	
Queue Length 50th (ft)	53	37	109	48	134	0
Queue Length 95th (ft)	102	55	150	104	186	36
Internal Link Dist (ft)		1177	301		196	
Turn Bay Length (ft)	300			300		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	228	2070	1449	1221	884	493
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.18	0.43	0.63	0.67	0.24

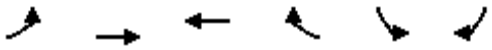
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: KY 22 & KY 329 B





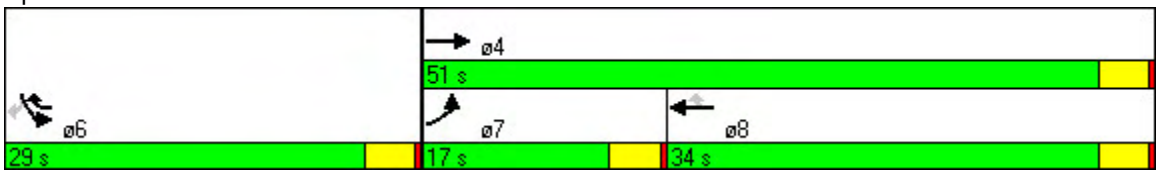
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300			200	0	0
Storage Lanes	1			1	2	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Turning Speed (mph)	15			9	15	9
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1656	3312	3312	1482	3213	1482
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1656	3312	3312	1482	3213	1482
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				479		253
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		45	45		45	
Link Distance (ft)		1257	381		276	
Travel Time (s)		19.0	5.8		4.2	
Volume (vph)	99	523	320	495	650	240
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	104	551	337	521	684	253
Lane Group Flow (vph)	104	551	337	521	684	253
Turn Type	Prot			pm+ov		Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Minimum Split (s)	8.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	17.0	51.0	34.0	29.0	29.0	29.0
Total Split (%)	21.3%	63.8%	42.5%	36.3%	36.3%	36.3%
Maximum Green (s)	13.0	47.0	30.0	25.0	25.0	25.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Walk Time (s)		5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0
Act Effct Green (s)	13.0	47.0	30.0	59.0	25.0	25.0
Actuated g/C Ratio	0.16	0.59	0.38	0.74	0.31	0.31
v/c Ratio	0.39	0.28	0.27	0.43	0.68	0.40
Control Delay	34.8	8.6	18.1	1.6	28.2	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.8	8.6	18.1	1.6	28.2	5.0
LOS	C	A	B	A	C	A
Approach Delay		12.8	8.1		21.9	
Approach LOS		B	A		C	
Queue Length 50th (ft)	47	65	60	5	152	0
Queue Length 95th (ft)	94	92	91	27	211	50
Internal Link Dist (ft)		1177	301		196	
Turn Bay Length (ft)	300			200		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Base Capacity (vph)	269	1946	1242	1219	1004	637
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.28	0.27	0.43	0.68	0.40

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2: and 6:SBL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 42.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 4: KY 22 & KY 329 B



OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
OLDHAM COUNTY FISCAL COURT
Oldham County, Kentucky

APPENDIX C

KY 146 AND CEDAR POINT ROAD (KY 1817) **AM PEAK**

28:9:06 OLDHAM COUNTY KY 146 AT CEDAR POINT ROAD 44

E	(m)	4.5	8.5	8.5
L'	(m)	40.00	40.00	40.00
V	(m)	3.60	3.60	3.60
RAD	(m)	20.00	20.00	20.00
PHI	(d)	30.00	30.00	30.00
DIA	(m)	45.00	45.00	45.00
GRAD SEP		0	0	0

TIME PERIOD	min 90
TIME SLICE	min 15
RESULTS PERIOD	min 15 75
TIME COST	$/hr 15.00
FLOW PERIOD	min 15 75
FLOW TYPE	pcu/veh VEH
FLOW PEAK	am/op/pm AM

LEG NAME	PCU	VEH	TURNS (1st exit, 2nd..U)	FLOF	CL	FLOW RATIO	FLOW TIME
CEDER SB	1.05	173	141 0	1.0	50	0.75 1.125 0.75	15 45 75
KY 146 EB	1.09	872	85 0	1.0	50	0.75 1.125 0.75	15 45 75
KY 146 WB	1.09	83	921 0	1.0	50	0.75 1.125 0.75	15 45 75

FLOW	veh	314	957	1004
CAPACITY	veh	747	1882	1918
AVE DELAY	mins	0.14	0.06	0.07
MAX DELAY	mins	0.21	0.09	0.09
AVE QUEUE	veh	1	1	1
MAX QUEUE	veh	1	1	1

AVEDEL s	4.5
LOS SIG	A
LOS UNSIG	A
VEHIC HRS	2.9
COST $	43

KY 146 AND CEDAR POINT ROAD (KY 1817) **PM PEAK**

```
*******************************************************************************
*                                                                             *
*  28:9:06           OLDHAM COUNTY KY 146 AT CEDAR POINT ROAD              45  *
*                                                                             *
*******************************************************************************
*                                                *                            *
* E    (m)    4.5    8.5    8.5                 * TIME PERIOD     min    90  *
* L'   (m)   40.00  40.00  40.00                 * TIME SLICE      min    15  *
* V    (m)    3.60   3.60   3.60                 * RESULTS PERIOD  min 15 75  *
* RAD  (m)   20.00  20.00  20.00                 * TIME COST      $/hr 15.00  *
* PHI  (d)   30.00  30.00  30.00                 * FLOW PERIOD     min 15 75  *
* DIA  (m)   45.00  45.00  45.00                 * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP       0     0      0                 * FLOW PEAK  am/op/pm    PM  *
*                                                *                            *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* CEDER  SB*1.05*  101   98    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 146 EB*1.09* 1179  190    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 146 WB*1.09*  103  641    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                      *                      *
* FLOW        veh     199   1369    744               * AVEDEL  s   5.6 *
* CAPACITY    veh     910   1912   1843               * LOS   SIG     A *
* AVE DELAY  mins    0.08   0.12   0.05               * LOS UNSIG     A *
* MAX DELAY  mins    0.11   0.18   0.07               *                   *
* AVE QUEUE   veh       0      3      1               * VEHIC HRS   3.6 *
* MAX QUEUE   veh       0      4      1               * COST    $    54 *
*                                                      *                   *
*******************************************************************************
```

KY 329 BYPASS AND ARBOR RIDGE / WESTWIND WAY **AM PEAK**

```
*******************************************************************************
*                                                                             *
*  14:9:06            OLDHAM COUNTY ARBOR RIDGE   KY 329                  89  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.50   8.50   8.50   8.50           * TIME PERIOD    min     90  *
* L'   (m)   15.00  35.00  15.00  20.00           * TIME SLICE     min     15  *
* V    (m)    7.30   3.60   7.30   3.60           * RESULTS PERIOD min  15 75  *
* RAD  (m)   20.00  20.00  20.00  20.00           * TIME COST     $/hr  15.00  *
* PHI  (d)   30.00  30.00  30.00  30.00           * FLOW PERIOD    min  15 75  *
* DIA  (m)   45.00  45.00  45.00  45.00           * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0      0           * FLOW PEAK am/op/pm     AM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *         *
*WB KY 329 *1.05*  526  763  30   0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*SB ARBOR  *1.05*  542  28   349  0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*EB KY 329 *1.05*  3    462  312  0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*NB ARBOR  *1.05*  53   54   30   0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh    1319    919    777    137            *                  *
* CAPACITY    veh    2072   1432   2063   1078            * AVDEL s     5.1  *
* AVE DELAY  mins    0.08   0.13   0.05   0.06            * L  O  S       A  *
* MAX DELAY  mins    0.12   0.20   0.06   0.09            * VEH HRS     4.5  *
* AVE QUEUE   veh       2      2      1      0            * COST  $    66.9  *
* MAX QUEUE   veh       2      3      1      0            *                  *
*                                                          *                  *
*******************************************************************************
```

KY 329 BYPASS AND ARBOR RIDGE / WESTWIND WAY **PM PEAK**

```
*******************************************************************************
*                                                                             *
*  14:9:06            OLDHAM COUNTY ARBOR RIDGE   KY 329                  90  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.50   8.50   8.50   8.50           * TIME PERIOD    min     90  *
* L'   (m)   15.00  35.00  15.00  20.00           * TIME SLICE     min     15  *
* V    (m)    7.30   3.60   7.30   3.60           * RESULTS PERIOD min  15 75  *
* RAD  (m)   20.00  20.00  20.00  20.00           * TIME COST     $/hr  15.00  *
* PHI  (d)   30.00  30.00  30.00  30.00           * FLOW PERIOD    min  15 75  *
* DIA  (m)   45.00  45.00  45.00  45.00           * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0      0           * FLOW PEAK am/op/pm     PM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *         *
*WB KY 329 *1.05*  536  387  9    0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*SB ARBOR  *1.05*  488  35   640  0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*EB KY 329 *1.05*  16   500  715  0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*NB ARBOR  *1.05*  11   26   9    0           *1.00*50*0.75 1.125 0.75*15 45 75 *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh     932   1163   1231     46            *                  *
* CAPACITY    veh    1794   1728   1846    587            * AVDEL s     5.8  *
* AVE DELAY  mins    0.07   0.11   0.10   0.12            * L  O  S       A  *
* MAX DELAY  mins    0.10   0.17   0.16   0.18            * VEH HRS     5.5  *
* AVE QUEUE   veh       1      2      2      0            * COST  $    82.1  *
* MAX QUEUE   veh       1      3      3      0            *                  *
*                                                          *                  *
*******************************************************************************
```

KY 22 AND CLORE LANE **AM PEAK**

```
*******************************************************************************
*                                                                             *
*  14:9:06              OLDHAM COUNTY CLORE LANE & KY 22                  63  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.40   4.50   8.40                  * TIME PERIOD    min     90  *
* L'   (m)   10.00  10.00  10.00                  * TIME SLICE     min     15  *
* V    (m)    3.60   3.60   3.60                  * RESULTS PERIOD min  15 75  *
* RAD  (m)   20.00  20.00  20.00                  * TIME COST     $/hr  15.00  *
* PHI  (d)   30.00  30.00  30.00                  * FLOW PERIOD    min  15 75  *
* DIA  (m)   45.00  45.00  45.00                  * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0                  * FLOW PEAK am/op/pm     AM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *         *
*WB KY 22  *1.05*  34   592   0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*SB CLORE  *1.05*  119  197   0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*EB KY 22  *1.05*  643  18    0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*******************************************************************************
*                                                       *                     *
* FLOW        veh     626    316    661                 *                     *
* CAPACITY    veh    1574    915   1463                 * AVDEL s     4.5     *
* AVE DELAY  mins    0.06   0.10   0.07                 * L  O  S       A     *
* MAX DELAY  mins    0.08   0.14   0.10                 * VEH HRS     2.0     *
* AVE QUEUE   veh       1      1      1                 * COST  $    29.8     *
* MAX QUEUE   veh       1      1      1                 *                     *
*                                                       *                     *
*******************************************************************************
```

KY 22 AND CLORE LANE **PM PEAK**

```
*******************************************************************************
*                                                                             *
*  14:9:06              OLDHAM COUNTY CLORE LANE & KY 22                  63  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.40   4.50   8.40                  * TIME PERIOD    min     90  *
* L'   (m)   10.00  10.00  10.00                  * TIME SLICE     min     15  *
* V    (m)    3.60   3.60   3.60                  * RESULTS PERIOD min  15 75  *
* RAD  (m)   20.00  20.00  20.00                  * TIME COST     $/hr  15.00  *
* PHI  (d)   30.00  30.00  30.00                  * FLOW PERIOD    min  15 75  *
* DIA  (m)   45.00  45.00  45.00                  * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0                  * FLOW PEAK am/op/pm     PM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                             *    *  *              *         *
*WB KY 22  *1.05*  117  739    0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*SB CLORE  *1.05*  99   103    0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*EB KY 22  *1.05*  746  137    0               *1.00*50*0.75 1.125 0.75*15 45 75 *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*          *    *                             *    *  *              *         *
*******************************************************************************
*                                                       *                     *
* FLOW        veh     856    202    883                 *                     *
* CAPACITY    veh    1500    834   1521                 * AVDEL s      5.6  *
* AVE DELAY  mins    0.09   0.09   0.09                 * L  O  S        A  *
* MAX DELAY  mins    0.13   0.13   0.13                 * VEH HRS      3.0  *
* AVE QUEUE   veh       1      0      1                 * COST  $     45.3  *
* MAX QUEUE   veh       2      0      2                 *                     *
*                                                       *                     *
*******************************************************************************
```

KY 22 AND KY 329 BYPASS **AM PEAK**

```
*******************************************************************************
*                                                                             *
*  28:9:06            OLDHAM COUNTY KY 22 AT KY 329 BYPASS                155  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.5    8.5   8.5                    * TIME PERIOD     min    90  *
* L'   (m)   20.00  20.00  20.00                   * TIME SLICE      min    15  *
* V    (m)    7.30   7.3    7.3                   * RESULTS PERIOD  min 15 75  *
* RAD  (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00  *
* PHI  (d)   30.00  30.00  30.00                   * FLOW PERIOD     min 15 75  *
* DIA  (m)   45.00  45.0   45.0                    * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP      0      0      0                    * FLOW PEAK  am/op/pm    AM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* KY 329 SB*1.07*  105  525    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 22  EB*1.09*  340  100    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 22  WB*1.09*  690  555    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh     630    440   1245                    * AVEDEL  s   3.2 *
* CAPACITY    veh    1907   1903   2230                    * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.04   0.06                    * LOS UNSIG     A *
* MAX DELAY  mins    0.06   0.05   0.09                    *                  *
* AVE QUEUE   veh       0      0      1                    * VEHIC HRS   2.0 *
* MAX QUEUE   veh       1      0      2                    * COST    $    31 *
*                                                          *                  *
*******************************************************************************
```

KY 22 AND KY 329 BYPASS **PM PEAK**

```
*******************************************************************************
*                                                                             *
*  28:9:06            OLDHAM COUNTY KY 22 AT KY 329 BYPASS                155  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E    (m)    8.5    8.5   8.5                    * TIME PERIOD     min    90  *
* L'   (m)   20.00  20.00  20.00                   * TIME SLICE      min    15  *
* V    (m)    7.30   7.3    7.3                   * RESULTS PERIOD  min 15 75  *
* RAD  (m)   20.00  20.00  20.00                   * TIME COST      $/hr 15.00  *
* PHI  (d)   30.00  30.00  30.00                   * FLOW PERIOD     min 15 75  *
* DIA  (m)   45.00  45.0   45.0                    * FLOW TYPE   pcu/veh   VEH  *
* GRAD SEP      0      0      0                    * FLOW PEAK  am/op/pm    PM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *VEH TURNS (1st exit, 2nd..U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
* KY 329 SB*1.07*  240  650    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 22  EB*1.09*  523   99    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
* KY 22  WB*1.09*  495  320    0              *1.0 *50*0.75 1.125 0.75*15 45 75 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW        veh     890    622    815                    * AVEDEL  s   2.8 *
* CAPACITY    veh    2096   1807   2231                    * LOS   SIG     A *
* AVE DELAY  mins    0.05   0.05   0.04                    * LOS UNSIG     A *
* MAX DELAY  mins    0.07   0.07   0.06                    *                  *
* AVE QUEUE   veh       1      1      1                    * VEHIC HRS   1.8 *
* MAX QUEUE   veh       1      1      1                    * COST    $    27 *
*                                                          *                  *
*******************************************************************************
```

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
OLDHAM COUNTY FISCAL COURT
Oldham County, Kentucky

APPENDIX D

Design Criteria

Following are guidelines specified in the Kentucky Transportation Cabinet Highway Design Manual regarding geometric design criteria for state roadways. Each roadway that is part of this study is listed below with the related Common Geometric Practices Exhibit.

As-built drawings were unavailable for this study, therefore, no existing information is listed for the intersections.

Route Number / Name	Roadway Classification	Exhibit Number
State Route (KY) 146	Rural Collector	700-02
KY 329 Bypass	Rural Collector	700-02
KY 22	Rural Collector	700-02
Cedar Point Road (KY 1817)	Rural Local	700-01
Arbor Ridge / Westwind Way	Rural Local	700-01
Clore Lane / Wooldridge Avenue	Rural Local	700-01

EXHIBIT 700-01

COMMON GEOMETRIC PRACTICES
RURAL LOCAL ROADS

		TRAFFIC VOLUME					
	TERRIAN	UNDER 50 A.D.T.	50-250 A.D.T.	250-400 A.D.T.	400-1500 A.D.T.	1500-2000 A.D.T.	OVER 2000 A.D.T.
MINIMUM DESIGN SPEED (M.P.H.) (6) (7)	LEVEL	30		40	50		
	ROLLING	20	30		40		
	MOUNTAIN	20			30		

	DESIGN SPEED	UNDER 400 A.D.T.	400-1500 A.D.T.	1500-2000 A.D.T.	OVER 2000 A.D.T.
PAVEMENT WIDTH (FEET) (4) (8)	15 MPH	18	20 (9)	20	22
	20 MPH				
	25 MPH			22	24 (11)
	30 MPH				
	40 MPH				
	45 MPH	20	22		
	50 MPH				
	55 MPH	22		24 (11)	
	60 MPH				
MIN. GRADED SHOULDER WIDTH (FEET) (5)	ALL SPEEDS	2	5 (9)(10)	6	8
MIN. CLEAR ROADWAY WIDTH OF NEW AND RECONSTRUCTED BRIDGES	ALL SPEEDS	APPROACH ROADWAY WIDTH			

MINIMUM RADIUS (FEET)	DESIGN SPEED	eMAX. 4%	eMAX. 6%	eMAX. 8%
	20 MPH	125	115	105
	25 MPH	205	185	170
	30 MPH	300	275	250
	35 MPH	420	380	350
	40 MPH	565	510	465
	45 MPH	730	660	600
	50 MPH	930	835	760

NORMAL PAVEMENT CROSS SLOPES (3)	RATE OF CROSS SLOPE = 2%							
NORMAL SHOULDER CROSS SLOPES	EARTH = 8%				PAVED = 4%			
MAXIMUM GRADE (PERCENT)	M.P.H.	20	25	30	35	40	45	50
	LEVEL	8	7					6
	ROLLING	11			10		9	8
	MOUNTAIN	16	15	14		13	12	10
MINIMUM STOPPING SIGHT DISTANCE (1)	(FEET)	115	155	200	250	305	360	425
MINIMUM PASSING SIGHT DISTANCE (2)	(FEET)	710	900	1090	1280	1470	1625	1835

(1) MINIMUM STOPPING SIGHT DISTANCE BASED ON HEIGHT OF EYE OF 3.5 FT AND HEIGHT OF OBJECT OF 2.0 FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENT.

(2) MINIMUM PASSING SIGHT DISTANCE BASED ON HEIGHT OF EYE OF 3.5 FT AND HEIGHT OF OBJECT OF 3.5 FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENTS.

(3) NORMAL PAVEMENT CROSS SLOPES ON BRIDGES IS 2%.

(4) CONSIDER CURVE WIDENING ON PROJECTS WITH SIGNIFICANT TRUCK VOLUMES.

(5) WIDEN 3 FT FOR GUARDRAIL.

(6) WHERE SELECTED DESIGN SPEED IS > 50 MPH, USE COMMON GEOMETRIC PRATICES EXHIBIT 500-02 FOR RURAL COLLECTOR ROADS.

(7) DOCUMENT AND RETAIN JUSTIFICATION FOR A DESIGN SPEED LESS THAN THE REGULATORY OR POSTED SPEED IN THE PROJECT FILES.

(8) FOR ROADS < 400 ADT, REFER TO AASHTO'S "GEOMETRIC DESIGN GUIDELINES FOR VERY LOW-VOLUME LOCAL ROADS (ADT≤400)".

(9) FOR ROADS IN MOUNTAINOUS TERRAIN WITH DESIGN VOLUME OF 400 TO 600 VEH/DAY, USE 18 FT TRAVELED WAY WIDTH AND 2 FT SHOULDER WIDTH.

(10) MAY BE ADJUSTED TO ACHIEVE A MINIMUM ROADWAY WIDTH OF 30 FT FOR DESIGN SPEEDS > THAN 40 MPH.

(11) WHERE THE WIDTH OF THE TRAVELED WAY IS SHOWN AS 24 FT, THE WIDTH MAY REMAIN AT 22 FT ON RECONSTRUCTED HIGHWAYS WHERE SAFETY RECORDS AND ALIGNMENT ARE SATISFACTORY.

EXHIBIT 700-02

COMMON GEOMETRIC PRACTICES
RURAL COLLECTOR ROADS

		TRAFFIC VOLUME			
	TERRIAN	UNDER 400 A.D.T.	400-2000 A.D.T.		OVER 2000 A.D.T.
MINIMUM DESIGN SPEED (7) (M.P.H.)	LEVEL	40	50		60
	ROLLING	30	40		50
	MOUNTAIN	20	30		40
PAVEMENT WIDTH (FEET) (1) (8)	DESIGN SPEED	UNDER 400 A.D.T.	400-1500 A.D.T.	1500-2000 A.D.T.	OVER 2000 A.D.T.
	20 MPH	20 (9)	20	22	24
	25 MPH				
	30 MPH				
	35 MPH		22		
	40 MPH				
	45 MPH	20			
	50 MPH				
	55 MPH	22		24	
	60 MPH				
MINIMUM GRADED SHOULDER WIDTH (FEET) (6)	ALL SPEEDS	2	5 (10)	6	8
MIN. CLEAR ROADWAY WIDTH OF NEW AND RECONSTRUCTED BRIDGES	ALL SPEEDS	APPROACH ROADWAY WIDTH			

MINIMUM RADIUS (FEET)	DESIGN SPEED	eMAX. 4%	eMAX. 6%	eMAX. 8%
	20 MPH	125	115	105
	25 MPH	205	185	170
	30 MPH	300	275	250
	35 MPH	420	380	350
	40 MPH	565	510	465
	45 MPH	730	660	600
	50 MPH	930	835	760
	55 MPH	1190	1065	965
	60 MPH	1505	1340	1205

NORMAL PAVEMENT CROSS SLOPES (4)	RATE OF CROSS SLOPE = 2%									
NORMAL SHOULDER CROSS SLOPES	EARTH = 8%						PAVED = 4%			
MAXIMUM GRADE (5) (PERCENT)	M.P.H.	20	25	30	35	40	45	50	55	60
	LEVEL	7						6		5
	ROLLING	10		9		8		7		6
	MOUNTAIN	12	11	10				9		8
MINIMUM STOPPING SIGHT DISTANCE (2)	(FEET)	115	155	200	250	305	360	425	495	570
MINIMUM PASSING SIGHT DISTANCE (3)	(FEET)	710	900	1090	1280	1470	1625	1835	1985	2135

(1) WIDEN PAVEMENT ON CURVES IN ACCORDANCE WITH APPROVED DESIGN STANDARDS. REFER TO CURRENT STANDARD DRAWING FOR ADDITIONAL DETAIL.

(2) MINIMUM STOPPING SIGHT DISTANCE BASED ON HEIGHT OF EYE OF 3.5 FT AND HEIGHT OF OBJECT OF 2.0FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENTS.

(3) MINIMUM PASSING SIGHT DISTANCES BASED ON HEIGHT OF EYE 3.5 FT AND HEIGHT OF OBJECT OF 3.5 FT. CONSIDER BOTH HORIZONTAL AND VERTICAL ALIGNMENTS.

(4) NORMAL PAVEMENT CROSS SLOPES ON BRIDGES IS 2%.

(5) MAY USE ONE PERCENT STEEPER MAXIMUM GRADES ON SHORT LENGTHS (LESS THAN 500 FT) AND ON ONE-WAY DOWN GRADES.

(6) WIDEN 3 FT FOR GUARDRAIL.

(7) DOCUMENT AND RETAIN JUSTIFICATION FOR A DESIGN SPEED LESS THAN THE REGULATORY OR POSTED SPEED IN THE PROJECT FILES.

(8) ON ROADWAYS TO BE RECONSTRUCTED, A 22 FT TRAVELLED WAY MAY BE RETAINED WHERE THE SAFETY RECORDS AND ALIGNMENT ARE SATISFACTORY.

(9) 18 FT MINIMUM WIDTH MAY BE USED FOR ROADWAYS WITH DESIGN VOLUMES UNDER 250 A.D.T.

(10) SHOULDER WIDTH MAY BE REDUCED FOR DESIGN SPEEDS GREATER THAN 30 MPH PROVIDED A MINIMUM ROADWAY WIDTH OF 30 FT IS MAINTAINED.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
OLDHAM COUNTY FISCAL COURT
Oldham County, Kentucky

APPENDIX E

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY

COST ESTIMATE SUMMARY

KY 146 and Cedar Point Road (KY 1817)

	Signalized	Roundabout
Construction Cost	$ 411,000	$ 840,000
Right of Way Impacts	0.30 acres	0.67 acres

KY 329 Bypass and Arbor Ridge / Westwind Way

	Signalized	Roundabout
Construction Cost	$ 623,000	$ 1,016,000
Right of Way Impacts	None	0.33 acres

KY 22 and Clore Lane / Wooldridge Ave.

	Signalized	Roundabout
Construction Cost	$ 1,011,000	$ 829,000
Right of Way Impacts	0.28 acres	0.42 acres

KY 22 and KY 329 Bypass

	Signalized	Roundabout
Construction Cost	$ 1,016,000	$ 959,000
Right of Way Impacts *	N/A	N/A

*Right-of-way not estimated due to KY 22 widening project

All construction cost estimates rounded to the nearest $1,000

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 146 AND CEDAR POINT ROAD

SIGNALIZED ALTERNATIVE

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Cost
	CLEARING AND GRUBBING (0.64 AC)	1	LS	$1,900.00	$1,900.00
	PAVEMENT MILLING AND TEXTURING	334	TN	$40.00	$13,360.00
	EARTHWORK	460	CY	$20.00	$9,200.00
	1.5 " ASPHALT OVERLAY	334	TN	$65.00	$21,710.00
	8" AGGREGATE BASE	633	TN	$25.00	$15,825.00
	15" ASPHALT PAVEMENT	1135	TN	$65.00	$73,775.00
	TRAFFIC SIGNAL	1	LS	$60,000.00	$60,000.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$30,000.00	$30,000.00
	RESTORATION (SEED AND MULCH)	2564	SY	$0.50	$1,282.00
	MAINTENANCE OF TRAFFIC	1	LS	$20,000.00	$20,000.00
	MISC ITEMS (10%)	1	LS	$25,905.20	$25,905.20
				SUBTOTAL	$284,957.20
	CONTINGENCY (20%) ±				$56,991.44
				CONSTRUCTION TOTAL	$341,948.64
	ENGINEERING FEES (20%)				$68,389.73
				TOTAL	$410,338.37

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 146 AND CEDAR POINT ROAD

ROUNDABOUT ALTERNATIVE

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (0.98 AC)	1	LS	$3,000.00	$3,000.00
	PAVEMENT REMOVAL	3092	SY	$8.00	$24,736.00
	EARTHWORK	1960	CY	$20.00	$39,200.00
	8" AGGREGATE BASE	2430	TN	$25.00	$60,750.00
	15" ASPHALT PAVEMENT	4356	TN	$65.00	$283,140.00
	CURB AND GUTTER	1472	LF	$22.00	$32,384.00
	12" STORM SEWER	50	LF	$70.00	$3,500.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$50,000.00	$50,000.00
	RESTORATION (SEED AND MULCH)	2455	SY	$0.50	$1,227.50
	MAINTENANCE OF TRAFFIC	1	LS	$20,000.00	$20,000.00
	MISC ITEMS (10%)	1	LS	$52,993.75	$52,993.75
				SUBTOTAL	$582,931.25
	CONTINGENCY (20%) ±				$116,586.25
				CONSTRUCTION TOTAL	$699,517.50
	ENGINEERING FEES (20%)				$139,903.50
				TOTAL	$839,421.00

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 329 BYPASS AND ARBOR RIDGE / WESTWIND WAY

SIGNALIZED ALTERNATIVE

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING	1	LS	$2,000.00	$2,000.00
	PAVEMENT MILLING AND TEXTURING	1372	TN	$40.00	$54,880.00
	EARTHWORK	150	CY	$20.00	$3,000.00
	1.5" ASPHALT SURFACE	0	TN	$65.00	$0.00
	8" AGGREGATE BASE	1081	TN	$25.00	$27,025.00
	15" ASPHALT PAVEMENT	1940	TN	$65.00	$126,100.00
	CURB AND GUTTER	50	LF	$22.00	$1,100.00
	TRAFFIC SIGNAL	1	LS	$100,000.00	$100,000.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$40,000.00	$40,000.00
	RESTORATION (SEED AND MULCH)	3200	SY	$0.50	$1,600.00
	MAINTENANCE OF TRAFFIC	1	LS	$25,000.00	$25,000.00
	MISC ITEMS (10%)	1	LS	$39,270.50	$39,270.50
				SUBTOTAL	$431,975.50
	CONTINGENCY (20%) ±				$86,395.10
				CONSTRUCTION TOTAL	$518,370.60
	ENGINEERING FEES (20%)				$103,674.12
				TOTAL	$622,044.72

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 329 BYPASS AND ARBOR RIDGE / WESTWIND WAY

ROUNDABOUT ALTERNATIVE

DLZ
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ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (0.87 AC)	1	LS	$2,600.00	$2,600.00
	PAVEMENT REMOVAL	6668	SY	$8.00	$53,344.00
	EARTHWORK	3150	CY	$20.00	$63,000.00
	8" AGGREGATE BASE	2574	TN	$25.00	$64,350.00
	15" ASPHALT PAVEMENT	4615	TN	$65.00	$299,975.00
	CURB AND GUTTER	2069	LF	$22.00	$45,518.00
	12" STORM SEWER	200	LF	$70.00	$14,000.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$60,000.00	$60,000.00
	RESTORATION (SEED AND MULCH)	2330	SY	$0.50	$1,165.00
	MAINTENANCE OF TRAFFIC	1	LS	$25,000.00	$25,000.00
	MISC ITEMS (10%)	1	LS	$64,095.20	$64,095.20
				SUBTOTAL	$705,047.20
	CONTINGENCY (20%) ±				$141,009.44
				CONSTRUCTION TOTAL	$846,056.64
	ENGINEERING FEES (20%)				$169,211.33
				TOTAL	$1,015,267.97

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 22 AND CLORE LANE / WOOLDRIDGE AVENUE

ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

SIGNALIZED ALTERNATIVE

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (0.81 AC)	1	LS	$2,400.00	$2,400.00
	PAVEMENT REMOVAL	4034	SY	$8.00	$32,272.00
	EARTHWORK	3775	CY	$20.00	$75,500.00
	8" AGGREGATE BASE	2604	TN	$25.00	$65,100.00
	15" ASPHALT PAVEMENT	4670	TN	$65.00	$303,550.00
	TRAFFIC SIGNAL	1	LS	$60,000.00	$60,000.00
	LIGHTING	1	LS	$18,000.00	$18,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$30,000.00	$30,000.00
	RESTORATION (SEED AND MULCH)	2590	SY	$0.50	$1,295.00
	MAINTENANCE OF TRAFFIC	1	LS	$50,000.00	$50,000.00
	MISC ITEMS (10%)	1	LS	$63,811.70	$63,811.70
				SUBTOTAL	$701,928.70
	CONTINGENCY (20%) ±				$140,385.74
				CONSTRUCTION TOTAL	$842,314.44
	ENGINEERING FEES (20%)				$168,462.89
				TOTAL	$1,010,777.33

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 22 AND CLORE LANE / WOOLDRIDGE AVENUE
ROUNDABOUT ALTERNATIVE

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (0.92 AC)	1	LS	$2,750.00	$2,750.00
	PAVEMENT REMOVAL	2187	SY	$8.00	$17,496.00
	EARTHWORK	3185	CY	$20.00	$63,700.00
	8" AGGREGATE BASE	1964	TN	$25.00	$49,100.00
	15" ASPHALT PAVEMENT	3519	TN	$65.00	$228,735.00
	CURB AND GUTTER	1630	LF	$22.00	$35,860.00
	12" STORM SEWER	100	LF	$70.00	$7,000.00
	LIGHTING	1	LS	$18,000.00	$18,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$50,000.00	$50,000.00
	RESTORATION (SEED AND MULCH)	1365	SY	$0.50	$682.50
	MAINTENANCE OF TRAFFIC	1	LS	$50,000.00	$50,000.00
	MISC ITEMS (10%)	1	LS	$52,332.35	$52,332.35
				SUBTOTAL	$575,655.85
	CONTINGENCY (20%) ±				$115,131.17
				CONSTRUCTION TOTAL	$690,787.02
	ENGINEERING FEES (20%)				$138,157.40
				TOTAL	$828,944.42

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 22 AND KY 329 BYPASS

SIGNALIZED ALTERNATIVE

DLZ
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PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (0.97 AC)	1	LS	$2,900.00	$2,900.00
	PAVEMENT REMOVAL	4225	SY	$8.00	$33,800.00
	8" AGGREGATE BASE	2975	TN	$25.00	$74,375.00
	15" ASPHALT PAVEMENT	5334	TN	$65.00	$346,710.00
	TRAFFIC SIGNAL	1	LS	$90,000.00	$90,000.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$40,000.00	$40,000.00
	RESTORATION (SEED AND MULCH)	2437	SY	$0.50	$1,218.50
	MAINTENANCE OF TRAFFIC	1	LS	$40,000.00	$40,000.00
	MISC ITEMS (10%)	1	LS	$64,100.35	$64,100.35
				SUBTOTAL	$705,103.85
	CONTINGENCY (20%) ±				$141,020.77
				CONSTRUCTION TOTAL	$846,124.62
	ENGINEERING FEES (20%)				$169,224.92
				TOTAL	$1,015,349.54

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
KY 22 AND KY 329 BYPASS

ROUNDABOUT ALTERNATIVE

DLZ
ENGINEERS • ARCHITECTS • SCIENTISTS
PLANNERS • SURVEYORS

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Cost	Total Amount Bid
	CLEARING AND GRUBBING (1.0 AC)	1	LS	$3,000.00	$3,000.00
	PAVEMENT REMOVAL	4225	SY	$8.00	$33,800.00
	8" AGGREGATE BASE	2635	TN	$25.00	$65,875.00
	15" ASPHALT PAVEMENT	4730	TN	$65.00	$307,450.00
	CURB AND GUTTER	1930	LF	$35.00	$67,550.00
	12" STORM SEWER	200	LF	$70.00	$14,000.00
	LIGHTING	1	LS	$12,000.00	$12,000.00
	SIGNING/PAVEMENT MARKING	1	LS	$60,000.00	$60,000.00
	RESTORATION (SEED AND MULCH)	2330	SY	$0.50	$1,165.00
	MAINTENANCE OF TRAFFIC	1	LS	$40,000.00	$40,000.00
	MISC ITEMS (10%)	1	LS	$60,484.00	$60,484.00
				SUBTOTAL	$665,324.00
	CONTINGENCY (20%) ±				$133,064.80
				CONSTRUCTION TOTAL	$798,388.80
	ENGINEERING FEES (20%)				$159,677.76
				TOTAL	$958,066.56

NOTE: Driveway work, ROW acquisition costs, landscaping and utility costs are not included in the estimate.

OLDHAM COUNTY INTERSECTION IMPROVEMENT STUDY
OLDHAM COUNTY FISCAL COURT
Oldham County, Kentucky

APPENDIX F

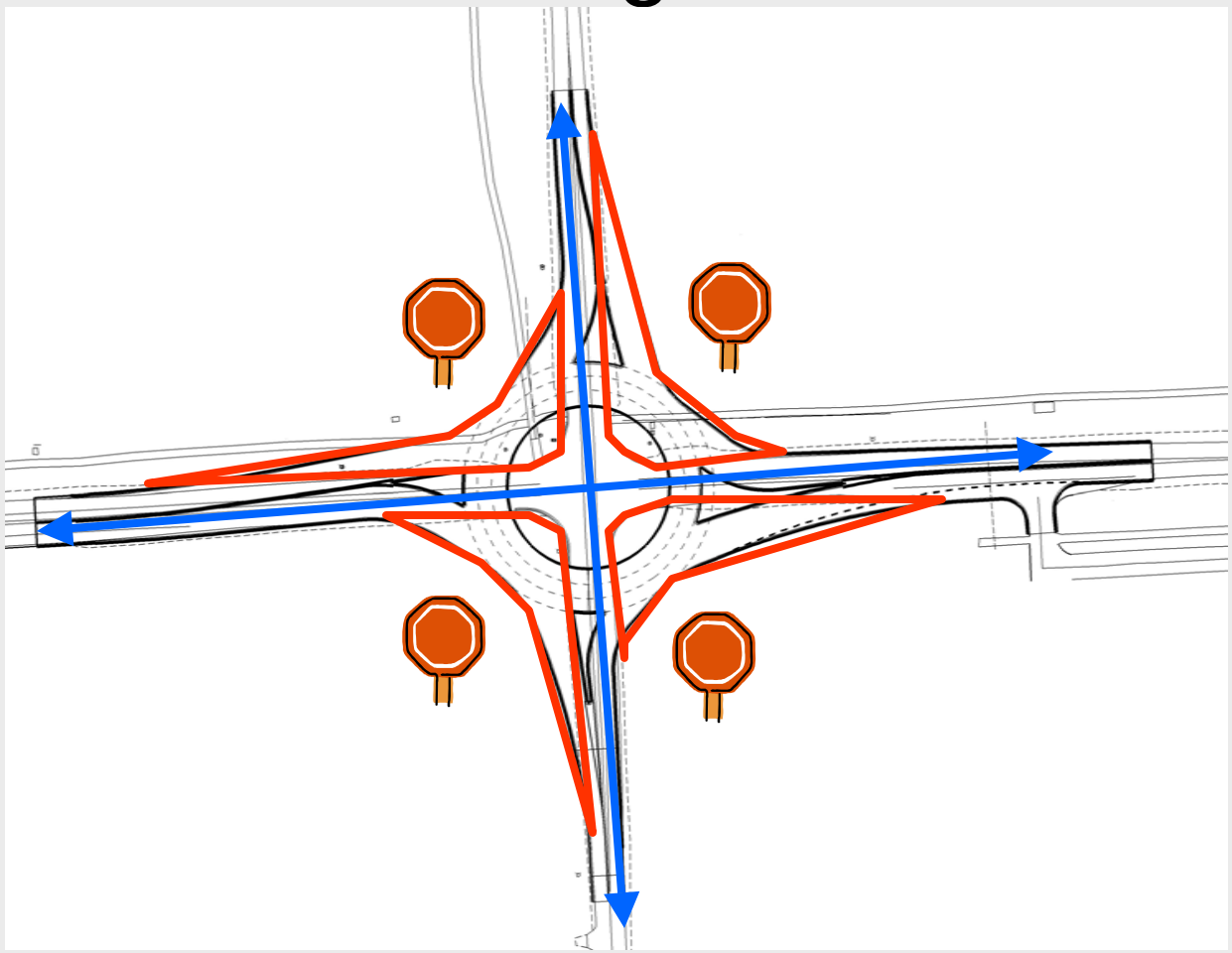
Maintenance of Traffic

- Stage 1:
  - Construction of outside portion of roundabout in all quadrants.
  - Use of stop control or temporary signals is necessary
- Stage 2:
  - Construction of the remaining roundabout including central island and approach tapers
  - Traffic uses circulating road
  - Use stop control or temporary signals
- Stage 3:
  - Complete remaining portions of circulating roadway

- Other Options include part width construction (For 2 lane roundabouts)
- If roundabout is not centered on intersection and/or if intersection is skewed, more complicated.

DLZ

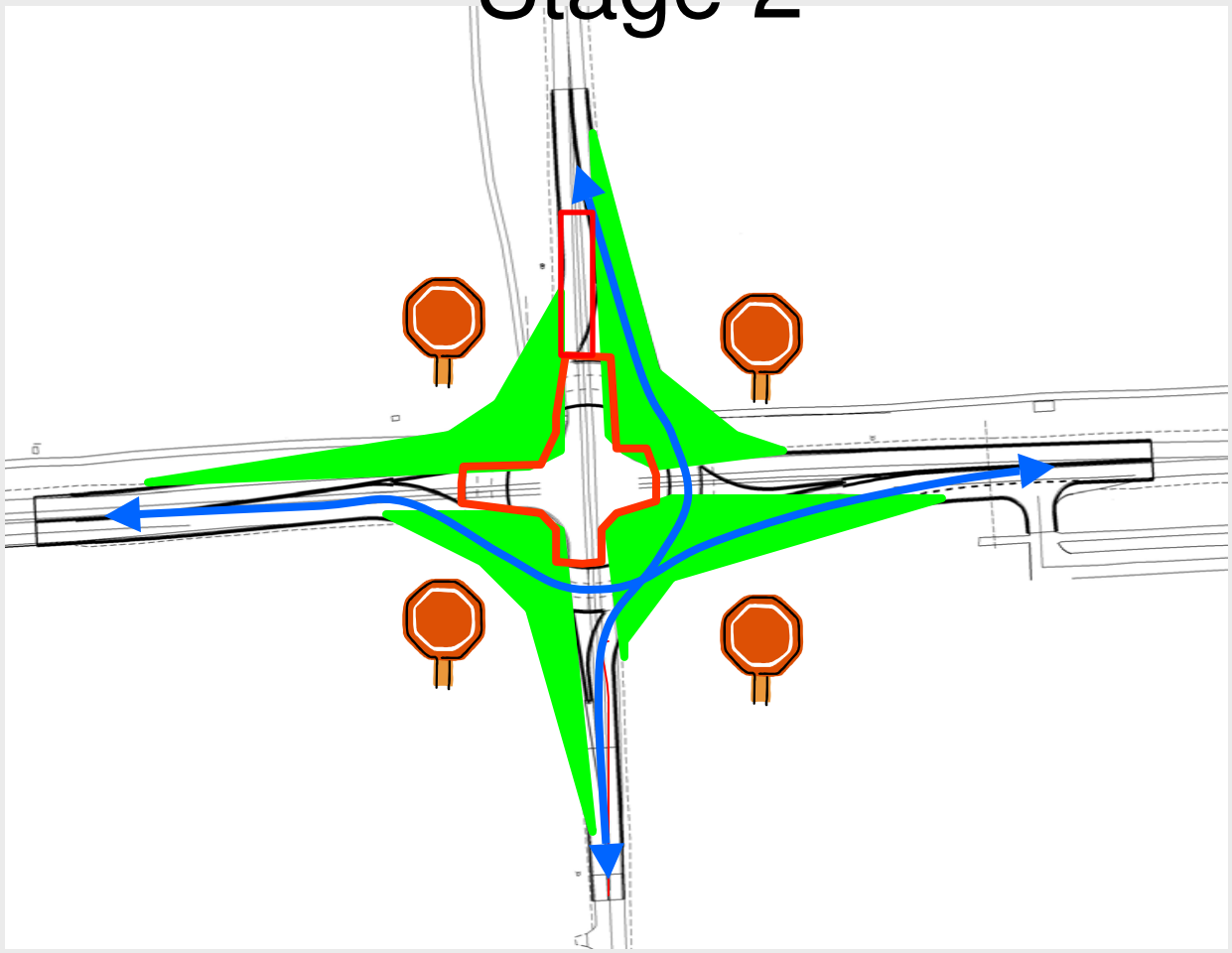
Stage 1



- Construct in 4 corners outside traveled portion of roadway

DLZ

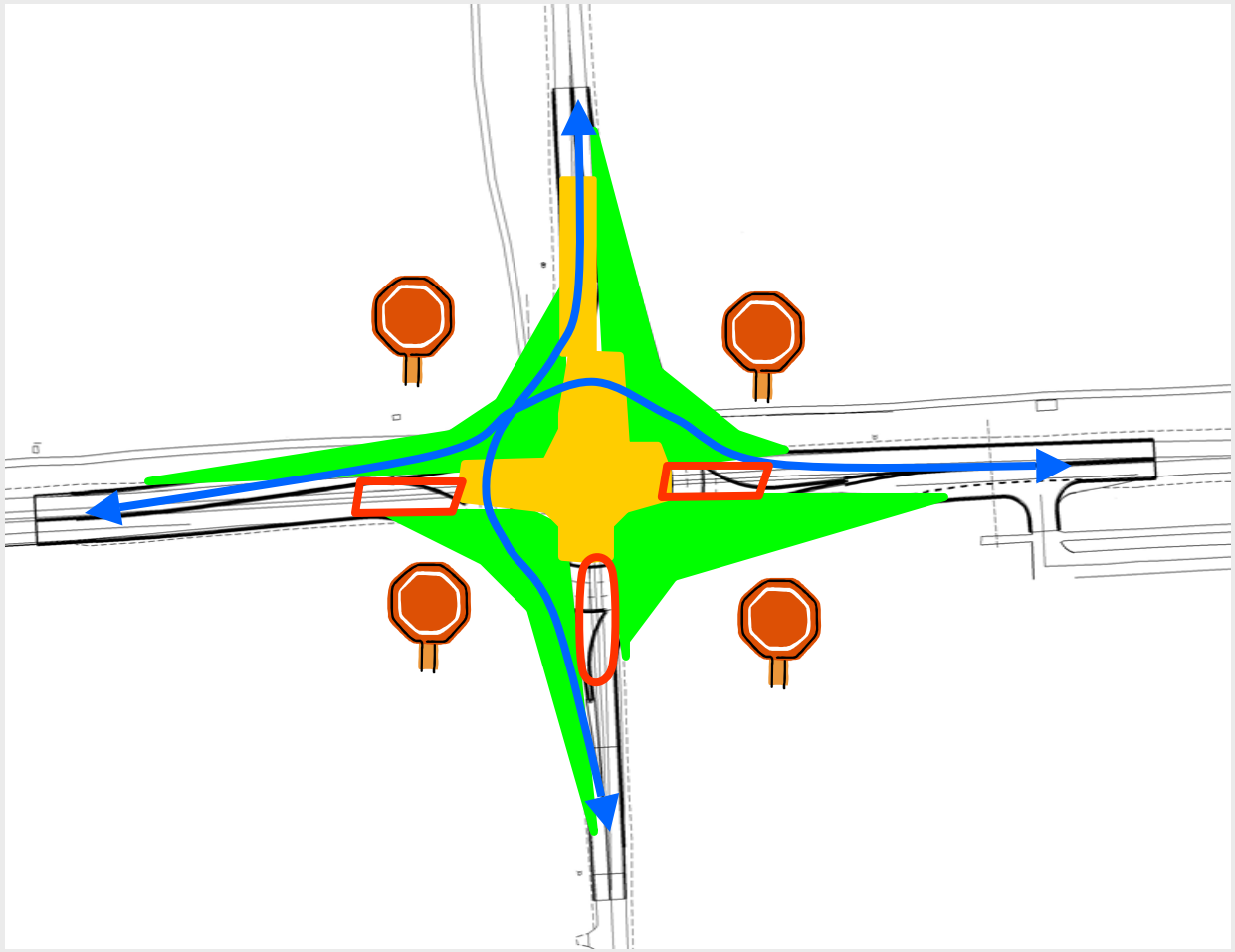
Stage 2



- Construct central island

DLZ

Stage 3



- Construct remaining portions of circulating roadway