



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 1: Trailwood Village Dr. & Kingwood Dr.

AM Peak Hour

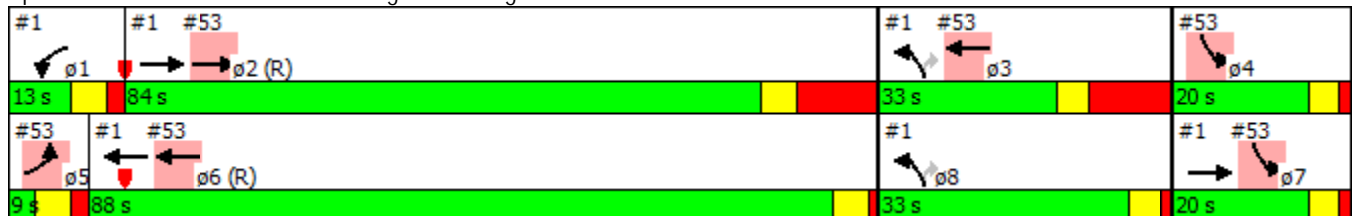


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2	ø3	ø4	ø5	ø7	ø8
Detector Phase	2 7		1	6	3 8	3 8						
Switch Phase												
Minimum Initial (s)			3.0	2.0			10.0	1.0	5.0	3.0	1.0	5.0
Minimum Split (s)			10.0	21.0			29.0	14.0	10.0	9.0	6.0	10.0
Total Split (s)			13.0	88.0			84.0	33.0	20.0	9.0	20.0	33.0
Total Split (%)			8.7%	58.7%			56%	22%	13%	6%	13%	22%
Maximum Green (s)			7.0	83.0			71.0	20.0	15.0	3.0	15.0	28.0
Yellow Time (s)			4.0	4.0			4.0	3.5	3.5	4.0	3.5	3.5
All-Red Time (s)			2.0	1.0			9.0	9.5	1.5	2.0	1.5	1.5
Lost Time Adjust (s)			0.0	0.0								
Total Lost Time (s)			6.0	5.0								
Lead/Lag			Lead	Lag			Lag			Lead		
Lead-Lag Optimize?			Yes	Yes			Yes			Yes		
Vehicle Extension (s)			3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode			None	C-Max			C-Max	None	None	None	None	None
Walk Time (s)				5.0			5.0					
Flash Dont Walk (s)				11.0			11.0					
Pedestrian Calls (#/hr)				0			0					
Act Effect Green (s)	88.4		6.6	83.0	20.0	20.0						
Actuated g/C Ratio	0.59		0.04	0.55	0.13	0.13						
v/c Ratio	0.31		0.31	0.83	0.78	0.22						
Control Delay	1.6		80.0	31.2	84.8	15.7						
Queue Delay	0.1		0.0	0.0	0.0	0.0						
Total Delay	1.7		80.0	31.2	84.8	15.7						
LOS	A		E	C	F	B						
Approach Delay	1.7			31.7	68.7							
Approach LOS	A			C	E							

Intersection Summary

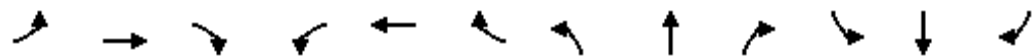
Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.20
Intersection Signal Delay:	26.4
Intersection LOS:	C
Intersection Capacity Utilization:	66.9%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 1: Trailwood Village Dr. & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
4: Green Oak Dr. & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	636	62	0	0	0	0	104	25	100	40	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987							0.850			
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1770	5019	0	0	0	0	0	1863	1583	1770	1863	0
Flt Permitted	0.950									0.950		
Satd. Flow (perm)	1770	5019	0	0	0	0	0	1863	1583	1770	1863	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17							198			
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		2489			270			515			89	
Travel Time (s)		42.4			4.6			11.7			2.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	51	809	79	0	0	0	0	132	32	127	51	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	888	0	0	0	0	0	132	32	127	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2						2	1	1	2	
Detector Template	Left	Thru						Thru	Right	Left	Thru	
Leading Detector (ft)	20	100						100	20	20	100	
Trailing Detector (ft)	0	0						0	0	0	0	
Detector 1 Position(ft)	0	0						0	0	0	0	
Detector 1 Size(ft)	20	6						6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Prot	NA						NA	Perm	Prot	NA	
Protected Phases	15	2						8		1 4	4	
Permitted Phases										8		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 4: Green Oak Dr. & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	6
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
4: Green Oak Dr. & Kingwood Dr.

AM Peak Hour

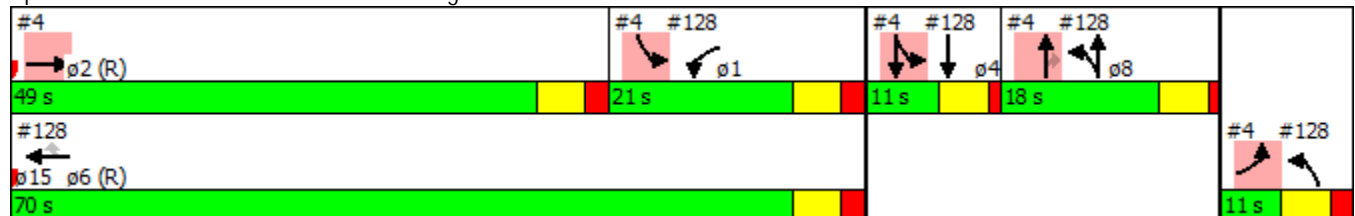


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	15	2						8	8	14	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0						5.0	5.0		5.0	
Minimum Split (s)	11.0	20.0						18.0	18.0		10.0	
Total Split (s)	11.0	49.0						18.0	18.0		11.0	
Total Split (%)	10.0%	44.5%						16.4%	16.4%		10.0%	
Maximum Green (s)	5.0	43.0						13.0	13.0		6.0	
Yellow Time (s)	4.0	4.0						4.0	4.0		4.0	
All-Red Time (s)	2.0	2.0						1.0	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	6.0	6.0						5.0	5.0		5.0	
Lead/Lag		Lead						Lag	Lag		Lead	
Lead-Lag Optimize?		Yes						Yes	Yes		Yes	
Vehicle Extension (s)	3.0	3.0						3.0	3.0		3.0	
Recall Mode	None	C-Max						None	None		None	
Walk Time (s)		4.0						6.0	6.0			
Flash Dont Walk (s)		10.0						7.0	7.0			
Pedestrian Calls (#/hr)		0						0	0			
Act Effct Green (s)	5.6	43.8						11.6	11.6	26.0	6.0	
Actuated g/C Ratio	0.05	0.40						0.11	0.11	0.24	0.05	
v/c Ratio	0.57	0.44						0.67	0.09	0.30	0.50	
Control Delay	76.6	24.7						64.1	0.6	23.4	39.0	
Queue Delay	2.8	0.0						0.0	0.0	0.0	0.0	
Total Delay	79.4	24.7						64.1	0.6	23.4	39.0	
LOS	E	C						E	A	C	D	
Approach Delay		27.7						51.7			27.8	
Approach LOS		C						D			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 30.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.4%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: Green Oak Dr. & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 4: Green Oak Dr. & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø6
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	4.0
Minimum Split (s)	11.0	10.0
Total Split (s)	21.0	70.0
Total Split (%)	19%	64%
Maximum Green (s)	15.0	64.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	C-Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 6: Northpark Dr. & Sorters

AM Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	93	120	71	0	362	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected	0.950					0.971
Satd. Flow (prot)	1770	1583	1863	0	0	1809
Flt Permitted	0.950					0.971
Satd. Flow (perm)	1770	1583	1863	0	0	1809
Link Speed (mph)	40		30			30
Link Distance (ft)	1488		70			496
Travel Time (s)	25.4		1.6			11.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	114	147	87	0	445	305
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	147	87	0	0	750
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.5%
Analysis Period (min)	15
	ICU Level of Service B

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 8: Lake Houston Parkway & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	224	468	246	586	11	495	105	119	10	255	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	150		0
Storage Lanes	1		0	1		0	2		0	2		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.97	0.95	0.95	0.97	0.95	0.95
Frt		0.899			0.997			0.920				0.942
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3182	0	1770	3529	0	3433	3256	0	3433	3334	0
Flt Permitted	0.313			0.251			0.456			0.583		
Satd. Flow (perm)	583	3182	0	468	3529	0	1648	3256	0	2107	3334	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		397			6			146			100	
Link Speed (mph)		45			40			30			40	
Link Distance (ft)		2785			2651			423			1141	
Travel Time (s)		42.2			45.2			9.6			19.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	47	275	575	302	720	14	608	129	146	12	313	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	850	0	302	734	0	608	275	0	12	513	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	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	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.20	0.56		1.61	0.52		0.92	0.20		0.01	0.37	



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 8: Lake Houston Parkway & Northpark Dr.

AM Peak Hour

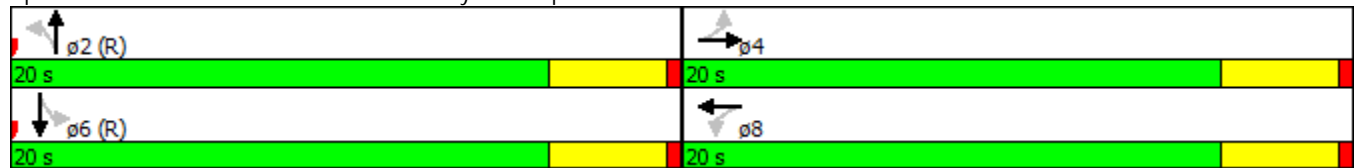


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	4.6	1.9		320.6	10.6		36.8	4.4		7.4	7.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.6	1.9		320.6	10.6		36.8	4.4		7.4	7.6	
LOS	A	A		F	B		D	A		A	A	
Approach Delay		2.0			101.0			26.7			7.6	
Approach LOS		A			F			C			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	55
Control Type:	Pretimed
Maximum v/c Ratio:	1.61
Intersection Signal Delay:	40.1
Intersection LOS:	D
Intersection Capacity Utilization	82.6%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 8: Lake Houston Parkway & Northpark Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 11: Woodland Hills & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	537	190	174	1414	79	381	228	140	94	268	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	150		0
Storage Lanes	1		0	1		0	2		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	0.95	0.97	0.95	0.95	1.00	0.95	0.95
Frt		0.961			0.992			0.943			0.947	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4887	0	1770	3511	0	3433	3337	0	1770	3352	0
Flt Permitted	0.250			0.281			0.460			0.491		
Satd. Flow (perm)	466	4887	0	523	3511	0	1662	3337	0	915	3352	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		233			17			123				2
Link Speed (mph)		45			45			35				35
Link Distance (ft)		944			4882			3685				2491
Travel Time (s)		14.3			74.0			71.8				48.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	45	660	233	214	1737	97	468	280	172	115	329	178
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	893	0	214	1834	0	468	452	0	115	507	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24				24
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	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	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.24	0.43		1.02	1.30		0.70	0.32		0.31	0.38	

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 11: Woodland Hills & Northpark Dr.

AM Peak Hour

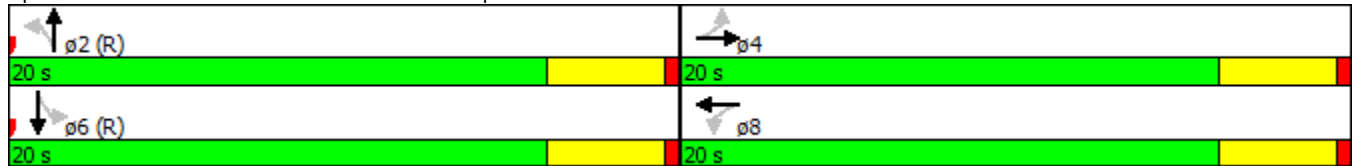


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.1	7.0		68.7	151.7		18.1	6.6		11.2	9.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	12.1	7.0		68.7	151.7		18.1	6.6		11.2	9.5	
LOS	B	A		E	F		B	A		B	A	
Approach Delay		7.2			143.0			12.5			9.8	
Approach LOS		A			F			B			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	1.30
Intersection Signal Delay:	70.1
Intersection Capacity Utilization	89.6%
Analysis Period (min)	15
Intersection LOS:	E
ICU Level of Service	E

Splits and Phases: 11: Woodland Hills & Northpark Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 14: US 59 SBFR & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑↑		↔↔	↑↑					↔	↑↑↑↑	↔
Volume (vph)	0	228	192	1764	333	0	0	0	0	452	311	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.86	0.86	0.97	0.95	1.00	1.00	1.00	1.00	0.86	0.81	0.86
Frt		0.931									0.997	0.850
Flt Protected				0.950						0.950	0.980	
Satd. Flow (prot)	0	5966	0	3433	3539	0	0	0	0	1522	4423	1362
Flt Permitted				0.950						0.950	0.980	
Satd. Flow (perm)	0	5966	0	3433	3539	0	0	0	0	1522	4423	1362
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33									2	232
Link Speed (mph)		40			30			55			55	
Link Distance (ft)		3907			296			398			255	
Travel Time (s)		66.6			6.7			4.9			3.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	280	236	2167	409	0	0	0	0	555	382	152
Shared Lane Traffic (%)										50%		10%
Lane Group Flow (vph)	0	516	0	2167	409	0	0	0	0	277	675	137
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2		1	2					1	2	1
Detector Template		Thru		Left	Thru					Left	Thru	Right
Leading Detector (ft)		100		20	100					20	100	20
Trailing Detector (ft)		0		0	0					0	0	0
Detector 1 Position(ft)		0		0	0					0	0	0
Detector 1 Size(ft)		6		20	6					20	6	20
Detector 1 Type		Cl+Ex		Cl+Ex	Cl+Ex					Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Queue (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 1 Delay (s)		0.0		0.0	0.0					0.0	0.0	0.0
Detector 2 Position(ft)		94			94						94	
Detector 2 Size(ft)		6			6						6	
Detector 2 Type		Cl+Ex			Cl+Ex						Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type		NA		Prot	NA					Perm	NA	Perm
Protected Phases		2		1 11 21	1 2 11						3 4	
Permitted Phases										3 4		3 4



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 14: US 59 SBFR & Northpark Dr.

AM Peak Hour

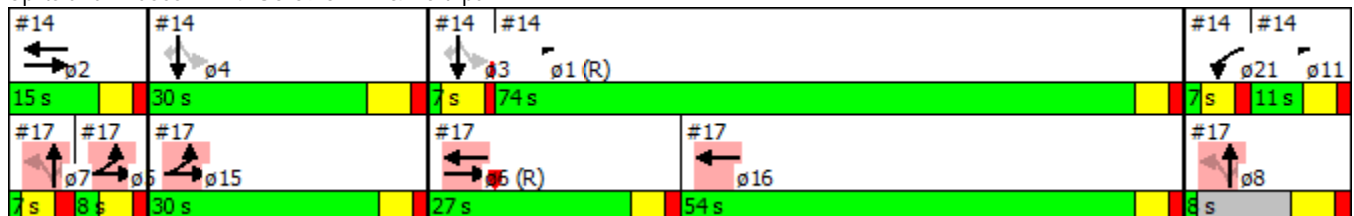


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2		1 11 21	1 2 11					3 4	3 4	3 4
Switch Phase												
Minimum Initial (s)		7.0										
Minimum Split (s)		14.0										
Total Split (s)		15.0										
Total Split (%)		10.4%										
Maximum Green (s)		9.7										
Yellow Time (s)		3.6										
All-Red Time (s)		1.7										
Lost Time Adjust (s)		0.0										
Total Lost Time (s)		5.3										
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0										
Recall Mode		None										
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		9.7		86.7	89.4					31.3	31.3	31.3
Actuated g/C Ratio		0.07		0.60	0.62					0.22	0.22	0.22
v/c Ratio		1.70dr		1.05	0.19					0.84	0.70	0.29
Control Delay		159.6		46.0	1.0					76.2	56.4	1.5
Queue Delay		0.0		21.3	0.2					0.0	0.0	0.0
Total Delay		159.6		67.3	1.2					76.2	56.4	1.5
LOS		F		E	A					E	E	A
Approach Delay		159.6			56.8						54.6	
Approach LOS		F			E						D	

Intersection Summary

Area Type: Other  
 Cycle Length: 144  
 Actuated Cycle Length: 144  
 Offset: 110 (76%), Referenced to phase 1:WBTL and 6:, Start of Green  
 Natural Cycle: 140  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.19  
 Intersection Signal Delay: 68.9  
 Intersection LOS: E  
 Intersection Capacity Utilization 79.5%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 14: US 59 SBFR & Northpark Dr.



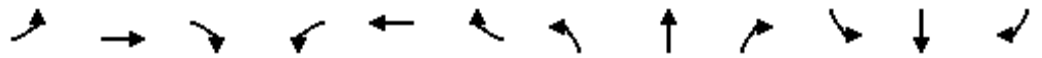
Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 14: US 59 SBFR & Northpark Dr.

AM Peak Hour

Lane Group	ø1	ø3	ø4	ø5	ø6	ø7	ø8	ø11	ø15	ø16	ø21
Detector Phase											
Switch Phase											
Minimum Initial (s)	3.0	1.0	5.0	2.7	5.0	1.0	1.0	3.0	3.0	4.0	1.0
Minimum Split (s)	21.3	7.0	22.7	8.0	26.3	7.0	8.0	8.3	8.3	20.0	7.0
Total Split (s)	74.0	7.0	30.0	8.0	27.0	7.0	8.0	11.0	30.0	54.0	7.0
Total Split (%)	51%	5%	21%	6%	19%	5%	6%	8%	21%	38%	5%
Maximum Green (s)	68.7	1.3	23.3	2.7	21.7	1.3	1.3	5.7	24.7	48.7	1.7
Yellow Time (s)	3.6	4.7	4.7	3.6	3.6	3.7	4.7	3.6	3.6	3.6	3.6
All-Red Time (s)	1.7	1.0	2.0	1.7	1.7	2.0	2.0	1.7	1.7	1.7	1.7
Lost Time Adjust (s)											
Total Lost Time (s)											
Lead/Lag	Lag	Lead		Lag	Lead	Lead		Lag		Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	None	None	None	C-Max	None	None	None	None	None	None
Walk Time (s)			5.0		5.0						
Flash Dont Walk (s)			11.0		16.0						
Pedestrian Calls (#/hr)			0		0						
Act Effect Green (s)											
Actuated g/C Ratio											
v/c Ratio											
Control Delay											
Queue Delay											
Total Delay											
LOS											
Approach Delay											
Approach LOS											
Intersection Summary											

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 17: US 59 NBFR & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑			↑↑↑		↔↔	↑↑	↔↔			
Volume (vph)	71	617	0	0	1823	226	145	126	434	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	2		0	0		1	2		2	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.86	0.86	0.97	0.95	0.88	1.00	1.00	1.00
Frt					0.983				0.850			
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3433	3539	0	0	6299	0	3433	3539	2787	0	0	0
Flt Permitted	0.950						0.950					
Satd. Flow (perm)	3433	3539	0	0	6299	0	3433	3539	2787	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					32				533			
Link Speed (mph)		30			45			55			55	
Link Distance (ft)		296			1797			365			309	
Travel Time (s)		6.7			27.2			4.5			3.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	87	758	0	0	2239	278	178	155	533	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	758	0	0	2517	0	178	155	533	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5 15	5 6 15			6 16			7 8				
Permitted Phases							7 8		7 8			





Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 17: US 59 NBFR & Northpark Dr.

AM Peak Hour

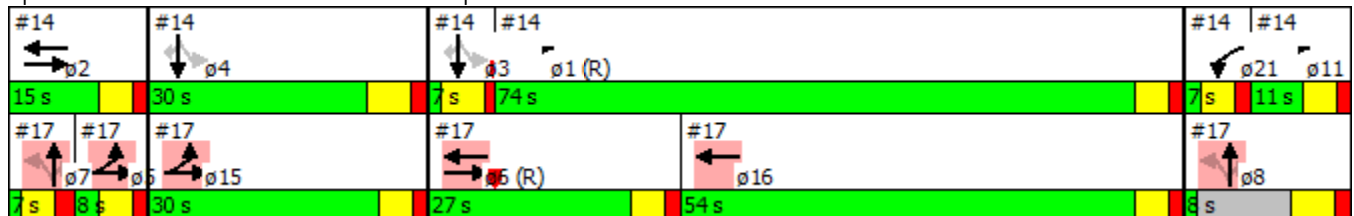


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5 15	5 6 15			6 16		7 8	7 8	7 8			
Switch Phase												
Minimum Initial (s)												
Minimum Split (s)												
Total Split (s)												
Total Split (%)												
Maximum Green (s)												
Yellow Time (s)												
All-Red Time (s)												
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)												
Recall Mode												
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	32.5	59.7			75.9		19.3	19.3	19.3			
Actuated g/C Ratio	0.23	0.41			0.53		0.13	0.13	0.13			
v/c Ratio	0.11	0.52			0.75		0.39	0.33	0.64			
Control Delay	22.2	1.8			28.2		59.7	58.6	8.2			
Queue Delay	0.0	1.3			0.2		0.0	0.0	0.0			
Total Delay	22.2	3.1			28.4		59.7	58.6	8.2			
LOS	C	A			C		E	E	A			
Approach Delay		5.1			28.4			27.8				
Approach LOS		A			C			C				

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	110 (76%), Referenced to phase 1:WBTL and 6:, Start of Green
Natural Cycle:	140
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.19
Intersection Signal Delay:	23.6
Intersection LOS:	C
Intersection Capacity Utilization	79.5%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 17: US 59 NBFR & Northpark Dr.



















Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 17: US 59 NBFR & Northpark Dr.

AM Peak Hour

Lane Group	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø11	ø15	ø16	ø21				
Detector Phase																
Switch Phase																
Minimum Initial (s)	3.0	7.0	1.0	5.0	2.7	5.0	1.0	1.0	3.0	3.0	4.0	1.0				
Minimum Split (s)	21.3	14.0	7.0	22.7	8.0	26.3	7.0	8.0	8.3	8.3	20.0	7.0				
Total Split (s)	74.0	15.0	7.0	30.0	8.0	27.0	7.0	8.0	11.0	30.0	54.0	7.0				
Total Split (%)	51%	10%	5%	21%	6%	19%	5%	6%	8%	21%	38%	5%				
Maximum Green (s)	68.7	9.7	1.3	23.3	2.7	21.7	1.3	1.3	5.7	24.7	48.7	1.7				
Yellow Time (s)	3.6	3.6	4.7	4.7	3.6	3.6	3.7	4.7	3.6	3.6	3.6	3.6				
All-Red Time (s)	1.7	1.7	1.0	2.0	1.7	1.7	2.0	2.0	1.7	1.7	1.7	1.7				
Lost Time Adjust (s)																
Total Lost Time (s)																
Lead/Lag	Lag		Lead		Lag		Lead		Lead		Lag		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Recall Mode	C-Max	None	None	None	None	C-Max	None	None	None	None	None	None				
Walk Time (s)					5.0		5.0									
Flash Dont Walk (s)					11.0		16.0									
Pedestrian Calls (#/hr)					0		0									
Act Effect Green (s)																
Actuated g/C Ratio																
v/c Ratio																
Control Delay																
Queue Delay																
Total Delay																
LOS																
Approach Delay																
Approach LOS																
Intersection Summary																

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 19: US 59 NBFR & Hamblen

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	43	0	0	0	217	0	637	125	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.865			0.850			
Flt Protected		0.997										
Satd. Flow (prot)	0	1857	0	0	0	1611	0	3539	1583	0	0	0
Flt Permitted		0.997										
Satd. Flow (perm)	0	1857	0	0	0	1611	0	3539	1583	0	0	0
Link Speed (mph)		35			35			55				55
Link Distance (ft)		168			123			612				7207
Travel Time (s)		3.3			2.4			7.6				89.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	4	53	0	0	0	267	0	782	154	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	0	267	0	782	154	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Free				Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	48.4%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 20: Loop 494 & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	862	108	191	1731	72	40	60	146	148	166	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		150	150		150
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4999	0	1770	5055	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.250			0.250			0.630			0.709		
Satd. Flow (perm)	466	4999	0	466	5055	0	1174	1863	1583	1321	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		66			18				30			27
Link Speed (mph)		45			45			30				30
Link Distance (ft)		1797			1638			3315				2861
Travel Time (s)		27.2			24.8			75.3				65.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	49	1059	133	235	2126	88	49	74	179	182	204	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	1192	0	235	2214	0	49	74	179	182	204	214
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	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	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effect Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.26	0.58		1.26	1.09		0.10	0.10	0.27	0.34	0.27	0.33

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 20: Loop 494 & Northpark Dr.

AM Peak Hour

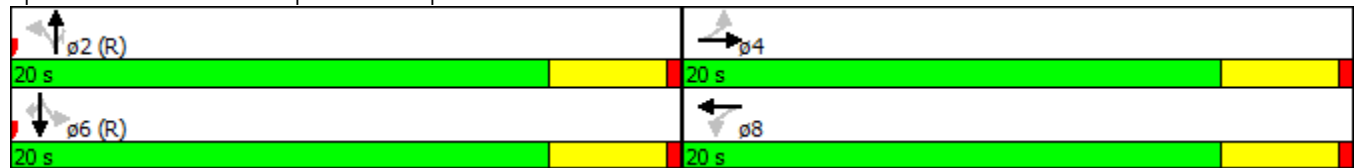


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	12.6	10.3		176.7	65.2		8.3	8.0	8.2	10.7	9.4	9.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	10.3		176.7	65.2		8.3	8.0	8.2	10.7	9.4	9.0
LOS	B	B		F	E		A	A	A	B	A	A
Approach Delay		10.3			75.9			8.2			9.6	
Approach LOS		B			E			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	80
Control Type:	Pretimed
Maximum v/c Ratio:	1.26
Intersection Signal Delay:	45.1
Intersection Capacity Utilization	69.5%
Analysis Period (min)	15
Intersection LOS:	D
ICU Level of Service	C

Splits and Phases: 20: Loop 494 & Northpark Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 23: Brookdale & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	684	22	7	1255	27	28	16	14	34	42	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.995			0.997			0.964			0.895	
Flt Protected	0.950			0.950				0.977			0.993	
Satd. Flow (prot)	1770	3522	0	1770	3529	0	0	3333	0	0	3145	0
Flt Permitted	0.250			0.250				0.811			0.918	
Satd. Flow (perm)	466	3522	0	466	3529	0	0	2767	0	0	2908	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			6			17			5	
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		4882			2785			1365			843	
Travel Time (s)		74.0			42.2			31.0			19.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	68	840	27	9	1541	33	34	20	17	42	52	217
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	867	0	9	1574	0	0	71	0	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	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	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.37	0.61		0.05	1.11		0.06				0.27	

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 23: Brookdale & Northpark Dr.

AM Peak Hour

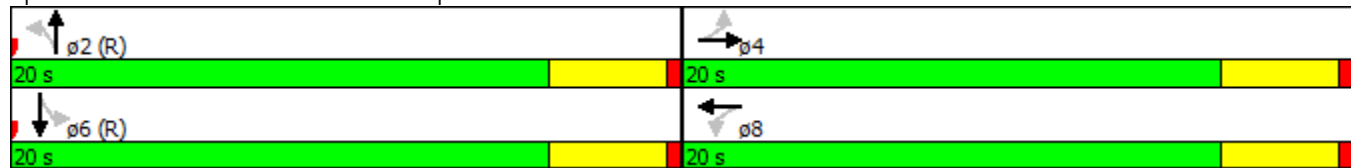


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	14.7	10.9		7.0	75.3			6.3			8.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	14.7	10.9		7.0	75.3			6.3			8.7	
LOS	B	B		A	E			A			A	
Approach Delay		11.2			74.9			6.3			8.7	
Approach LOS		B			E			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	1.11
Intersection Signal Delay:	45.6
Intersection Capacity Utilization	69.2%
Analysis Period (min)	15
Intersection LOS:	D
ICU Level of Service	C

Splits and Phases: 23: Brookdale & Northpark Dr.





Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 26: Northpark Dr. & Mills Branch

AM Peak Hour



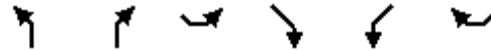
Lane Group	WBL	WBR	SEL	SER	NEL	NER
Lane Configurations						
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	1863	1770
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	1863	1770
Link Speed (mph)	30		30		40	
Link Distance (ft)	8209		3268		264	
Travel Time (s)	186.6		74.3		4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						0%
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	0		12		12	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 28: Kingwood Dr. & Mills Branch

AM Peak Hour



Lane Group	NBL	NBR	SEL	SER	SWL	SWR
Lane Configurations						
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3278	1863	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3278	1863	0	0	0
Link Speed (mph)	40		30		40	
Link Distance (ft)	1387		170		344	
Travel Time (s)	23.6		3.9		5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right
Median Width(ft)	0		12		0	
Link Offset(ft)	0		0		0	
Crosswalk Width(ft)	16		16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9
Sign Control	Stop		Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	2	15
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 29: Northpark Dr. & Rock Springs

AM Peak Hour

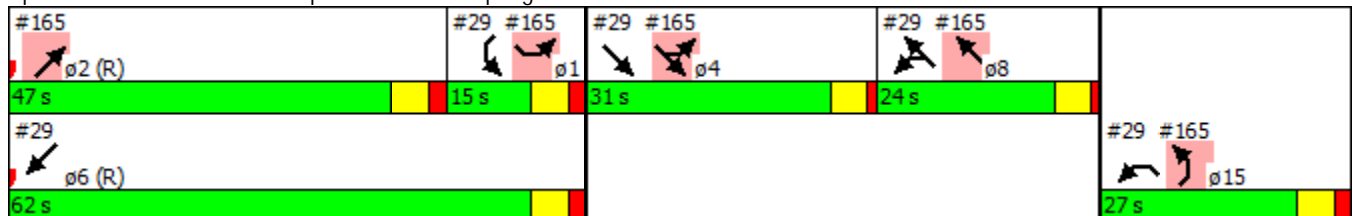


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase		4		15	8					1	6	
Switch Phase												
Minimum Initial (s)		5.0			5.0					5.0	4.0	
Minimum Split (s)		22.0			20.0					11.0	18.0	
Total Split (s)		31.0			24.0					15.0	62.0	
Total Split (%)		21.5%			16.7%					10.4%	43.1%	
Maximum Green (s)		26.0			19.0					9.0	56.0	
Yellow Time (s)		4.0			4.0					4.0	4.0	
All-Red Time (s)		1.0			1.0					2.0	2.0	
Lost Time Adjust (s)		0.0			0.0					0.0	0.0	
Total Lost Time (s)		5.0			5.0					6.0	6.0	
Lead/Lag		Lead			Lag					Lag		
Lead-Lag Optimize?		Yes			Yes					Yes		
Vehicle Extension (s)		3.0			3.0					3.0	3.0	
Recall Mode		None			Max					Max	C-Max	
Walk Time (s)		5.0			5.0						5.0	
Flash Dont Walk (s)		11.0			10.0						7.0	
Pedestrian Calls (#/hr)		0			0						0	
Act Effect Green (s)		9.9		61.1	35.1					9.0	56.0	
Actuated g/C Ratio		0.07		0.42	0.24					0.06	0.39	
v/c Ratio		0.73		0.11	0.16					0.06	0.52	
Control Delay		25.2		2.6	47.4					65.0	34.7	
Queue Delay		0.0		1.1	1.3					0.0	0.0	
Total Delay		25.2		3.7	48.6					65.0	34.7	
LOS		C		A	D					E	C	
Approach Delay		25.2			31.9						35.0	
Approach LOS		C			C						C	

Intersection Summary

Area Type: Other  
 Cycle Length: 144  
 Actuated Cycle Length: 144  
 Offset: 114 (79%), Referenced to phase 2:NET and 6:, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 31.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 46.5%  
 ICU Level of Service A  
 Analysis Period (min) 15

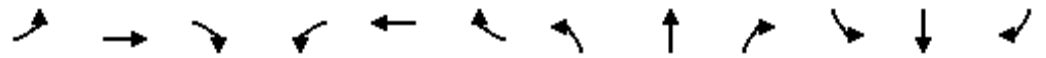
Splits and Phases: 29: Northpark Dr. & Rock Springs



Lane Group	ø2	ø15
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	5.0
Minimum Split (s)	18.0	11.0
Total Split (s)	47.0	27.0
Total Split (%)	33%	19%
Maximum Green (s)	41.0	21.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	Max
Walk Time (s)	5.0	
Flash Dont Walk (s)	7.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 35: Russel Palmer & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑						↑	↗		↖	
Volume (vph)	0	900	86	0	0	0	0	126	74	11	66	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		150	0		0
Storage Lanes	0		0	0		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987							0.850			
Flt Protected											0.993	
Satd. Flow (prot)	0	5019	0	0	0	0	0	1863	1583	0	1850	0
Flt Permitted											0.938	
Satd. Flow (perm)	0	5019	0	0	0	0	0	1863	1583	0	1747	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20							91			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		117			4389			1145			106	
Travel Time (s)		1.8			66.5			26.0			2.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	1105	106	0	0	0	0	155	91	14	81	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1211	0	0	0	0	0	155	91	0	95	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2						2	1	1	2	
Detector Template		Thru						Thru	Right	Left	Thru	
Leading Detector (ft)		100						100	20	20	100	
Trailing Detector (ft)		0						0	0	0	0	
Detector 1 Position(ft)		0						0	0	0	0	
Detector 1 Size(ft)		6						6	20	20	6	
Detector 1 Type		Cl+Ex						Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)		0.0						0.0	0.0	0.0	0.0	
Detector 1 Queue (s)		0.0						0.0	0.0	0.0	0.0	
Detector 1 Delay (s)		0.0						0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94						94			94	
Detector 2 Size(ft)		6						6			6	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type		NA						NA	Perm	Perm	NA	
Protected Phases		2						8			4	
Permitted Phases									8	4		

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	6
Permitted Phases		



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 35: Russel Palmer & Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2						8	8	4	4	
Switch Phase												
Minimum Initial (s)		15.0						5.0	5.0	5.0	5.0	
Minimum Split (s)		21.3						11.2	11.2	11.3	11.3	
Total Split (s)		95.0						28.0	28.0	28.0	28.0	
Total Split (%)		66.0%						19.4%	19.4%	19.4%	19.4%	
Maximum Green (s)		88.7						21.8	21.8	21.7	21.7	
Yellow Time (s)		4.3						3.6	3.6	4.3	4.3	
All-Red Time (s)		2.0						2.6	2.6	2.0	2.0	
Lost Time Adjust (s)		0.0						0.0	0.0		0.0	
Total Lost Time (s)		6.3						6.2	6.2		6.3	
Lead/Lag		Lag										
Lead-Lag Optimize?		Yes										
Vehicle Extension (s)		3.0						3.0	3.0	3.0	3.0	
Recall Mode		C-Max						Max	Max	None	None	
Act Effect Green (s)		91.1						21.8	21.8		21.7	
Actuated g/C Ratio		0.63						0.15	0.15		0.15	
v/c Ratio		0.38						0.55	0.29		0.36	
Control Delay		13.2						64.7	12.4		117.3	
Queue Delay		0.0						0.0	0.0		125.2	
Total Delay		13.2						64.7	12.4		242.5	
LOS		B						E	B		F	
Approach Delay		13.2						45.4			242.5	
Approach LOS		B						D			F	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	32.3
Intersection LOS:	C
Intersection Capacity Utilization:	47.3%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 35: Russel Palmer & Northpark Dr.



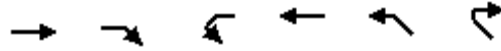
Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 35: Russel Palmer & Northpark Dr.

AM Peak Hour

Lane Group	ø1	ø6
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	15.0
Minimum Split (s)	11.3	21.3
Total Split (s)	21.0	116.0
Total Split (%)	15%	81%
Maximum Green (s)	14.7	109.7
Yellow Time (s)	4.3	4.3
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	C-Max
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
<b>Intersection Summary</b>		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 36: Northpark Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations		↑↑↑		↑↑↑		
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.76	1.00	0.91	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	4247	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	0	4247	0	5085	0	0
Link Speed (mph)	45			40	45	
Link Distance (ft)	1638			2834	2834	
Travel Time (s)	24.8			48.3	42.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 43: Sorters Rd & US 59 SBFR

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↖	↑↑						↙↑	↗
Volume (vph)	0	21	183	221	182	0	0	0	0	77	2	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	200		0	0		0	0		150
Storage Lanes	0		1	1		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.866										0.850
Flt Protected				0.950							0.953	
Satd. Flow (prot)	0	4404	0	1770	3539	0	0	0	0	0	3373	1583
Flt Permitted				0.590							0.953	
Satd. Flow (perm)	0	4404	0	1099	3539	0	0	0	0	0	3373	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		225										27
Link Speed (mph)		35			35			55				55
Link Distance (ft)		893			863			983				6715
Travel Time (s)		17.4			16.8			12.2				83.2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	26	225	271	224	0	0	0	0	95	2	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	0	271	224	0	0	0	0	0	97	25
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Perm	NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases				8						6		6
Minimum Split (s)		20.0		20.0	20.0					20.0	20.0	20.0
Total Split (s)		20.0		20.0	20.0					20.0	20.0	20.0
Total Split (%)		50.0%		50.0%	50.0%					50.0%	50.0%	50.0%
Maximum Green (s)		16.0		16.0	16.0					16.0	16.0	16.0
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
Lost Time Adjust (s)		0.0		0.0	0.0						0.0	0.0
Total Lost Time (s)		4.0		4.0	4.0						4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
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 Effect Green (s)		16.0		16.0	16.0						16.0	16.0
Actuated g/C Ratio		0.40		0.40	0.40						0.40	0.40
v/c Ratio		0.13		0.62	0.16						0.07	0.04

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 43: Sorters Rd & US 59 SBFR

AM Peak Hour

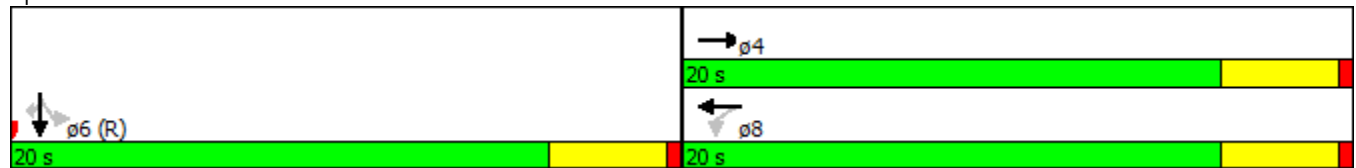


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		2.2		12.9	2.6						7.6	3.9
Queue Delay		0.0		0.0	0.0						0.0	0.0
Total Delay		2.2		12.9	2.6						7.6	3.9
LOS		A		B	A						A	A
Approach Delay		2.2			8.3						6.9	
Approach LOS		A			A						A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2: and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.62
Intersection Signal Delay:	6.3
Intersection LOS:	A
Intersection Capacity Utilization	33.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 43: Sorters Rd & US 59 SBFR



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
45: Loop 494 & Sorters Rd

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	61	42	317	492	22	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	150	180			225
Storage Lanes	2	1	1			1
Taper Length (ft)	25		25			
Lane Util. Factor	0.97	0.88	0.97	0.95	0.95	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	3433	2787	3433	3539	3539	1583
Fl <sub>t</sub> Permitted	0.950		0.739			
Satd. Flow (perm)	3433	2787	2671	3539	3539	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		52				106
Link Speed (mph)	35			45	45	
Link Distance (ft)	863			804	572	
Travel Time (s)	16.8			12.2	8.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	75	52	389	604	27	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	52	389	604	27	106
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	36			24	24	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Turn Type	NA	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						
Lead-Lag Optimize?						
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 Effect Green (s)	16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.05	0.05	0.36	0.43	0.02	0.15

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 45: Loop 494 & Sorters Rd

AM Peak Hour

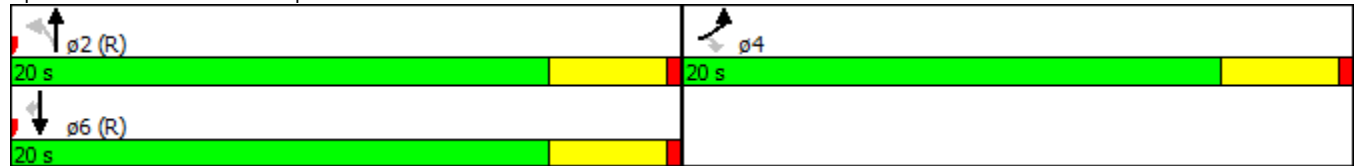


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Control Delay	4.4	1.7	9.7	9.9	7.4	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.4	1.7	9.7	9.9	7.4	2.9
LOS	A	A	A	A	A	A
Approach Delay	3.3			9.8	3.8	
Approach LOS	A			A	A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.43
Intersection Signal Delay:	8.5
Intersection Capacity Utilization	26.9%
Analysis Period (min)	15
Intersection LOS:	A
ICU Level of Service	A

Splits and Phases: 45: Loop 494 & Sorters Rd



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 49: Hamblen & Laurel Springs

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	36	136	422	18	17	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.881	
Flt Protected		0.990			0.994	
Satd. Flow (prot)	0	1844	1852	0	1631	0
Flt Permitted		0.990			0.994	
Satd. Flow (perm)	0	1844	1852	0	1631	0
Link Speed (mph)		35	35		30	
Link Distance (ft)		1799	1596		734	
Travel Time (s)		35.0	31.1		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	44	167	518	22	21	152
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	211	540	0	173	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

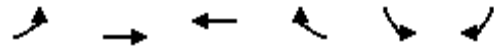
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	56.4%
Analysis Period (min)	15
	ICU Level of Service B





Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 53: Kingwood Dr. & Woodland Grove Dr.

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	ø1	ø3	ø4	ø6	ø7	ø8
Detector Phase	5	2	3 6		4 7							
Switch Phase												
Minimum Initial (s)	3.0	10.0					3.0	1.0	5.0	2.0	1.0	5.0
Minimum Split (s)	9.0	29.0					10.0	14.0	10.0	21.0	6.0	10.0
Total Split (s)	9.0	84.0					13.0	33.0	20.0	88.0	20.0	33.0
Total Split (%)	6.0%	56.0%					9%	22%	13%	59%	13%	22%
Maximum Green (s)	3.0	71.0					7.0	20.0	15.0	83.0	15.0	28.0
Yellow Time (s)	4.0	4.0					4.0	3.5	3.5	4.0	3.5	3.5
All-Red Time (s)	2.0	9.0					2.0	9.5	1.5	1.0	1.5	1.5
Lost Time Adjust (s)	0.0	0.0										
Total Lost Time (s)	6.0	13.0										
Lead/Lag	Lead	Lag					Lead			Lag		
Lead-Lag Optimize?	Yes	Yes					Yes			Yes		
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max					None	None	None	C-Max	None	None
Walk Time (s)		5.0								5.0		
Flash Dont Walk (s)		11.0								11.0		
Pedestrian Calls (#/hr)		0								0		
Act Effct Green (s)	3.0	76.2	108.0		15.0							
Actuated g/C Ratio	0.02	0.51	0.72		0.10							
v/c Ratio	1.20	0.34	0.69		1.53dr							
Control Delay	274.6	23.1	0.9		93.7							
Queue Delay	0.0	0.0	0.4		0.0							
Total Delay	274.6	23.1	1.3		93.7							
LOS	F	C	A		F							
Approach Delay		34.6	1.3		93.7							
Approach LOS		C	A		F							

Intersection Summary

















Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.20  
 Intersection Signal Delay: 17.5 Intersection LOS: B  
 Intersection Capacity Utilization 69.5% ICU Level of Service C  
 Analysis Period (min) 15  
 dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 53: Kingwood Dr. & Woodland Grove Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
54: Woodland Hills & Hamblen

AM Peak Hour

														
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Volume (vph)	0	0	0	0	0	4	0	0	0	6	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Frt	0.865													
Flt Protected												0.950		
Satd. Flow (prot)	1863	0	0	0	1611	0	0	1863	0	0	1770	0		
Flt Permitted												0.950		
Satd. Flow (perm)	1863	0	0	0	1611	0	0	1863	0	0	1770	0		
Link Speed (mph)					35					35				
Link Distance (ft)					6657					997				
Travel Time (s)					129.7					19.4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%		
Adj. Flow (vph)	0	0	0	0	0	5	0	0	0	7	0	0		
Shared Lane Traffic (%)	0%													
Lane Group Flow (vph)	0	0	0	0	5	0	0	0	0	0	7	0		
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No		
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right		
Median Width(ft)					12					12				
Link Offset(ft)					0					0				
Crosswalk Width(ft)					16					16				
Two way Left Turn Lane														
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		
Turning Speed (mph)	15	9		15	9		15	9		15	9			
Sign Control	Stop			Stop			Stop			Stop				

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
57: Redbud & Hamblen

AM Peak Hour



















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	38	5	28	2	6	2	14	77	1	0	89	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.947			0.975			0.999			0.998	
Flt Protected		0.974			0.991			0.993				
Satd. Flow (prot)	0	1718	0	0	1800	0	0	1848	0	0	1859	0
Flt Permitted		0.974			0.991			0.993				
Satd. Flow (perm)	0	1718	0	0	1800	0	0	1848	0	0	1859	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		753			6657			361			271	
Travel Time (s)		14.7			129.7			8.2			6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	47	6	34	2	7	2	17	95	1	0	109	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	11	0	0	113	0	0	111	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	29.3%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
60: Forest Cove & Hamblen

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	62	5	1	96	3	12	7	2	3	19	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.996			0.990			0.876	
Flt Protected		0.977						0.972			0.999	
Satd. Flow (prot)	0	1811	0	0	1855	0	0	1792	0	0	1630	0
Flt Permitted		0.977						0.972			0.999	
Satd. Flow (perm)	0	1811	0	0	1855	0	0	1792	0	0	1630	0
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		1966			1019			472			603	
Travel Time (s)		38.3			19.9			10.7			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	76	76	6	1	118	4	15	9	2	4	23	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	158	0	0	123	0	0	26	0	0	324	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.4%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 64: Woodland Hills & Kingwood Dr.

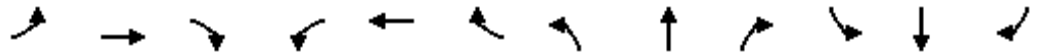
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	137	482	36	143	1353	68	43	103	112	84	126	416
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	150		0	150		0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	0.91	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.993				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5034	0	1770	5050	0	1770	1863	1583	1770	1863	1583
Flt Permitted	0.167			0.390			0.656			0.673		
Satd. Flow (perm)	311	5034	0	726	5050	0	1222	1863	1583	1254	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			21				142			22
Link Speed (mph)		40			40			35				35
Link Distance (ft)		406			1473			2549				2207
Travel Time (s)		6.9			25.1			49.7				43.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	174	613	46	182	1721	86	55	131	142	107	160	529
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	659	0	182	1807	0	55	131	142	107	160	529
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		70			75			20				30
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 64: Woodland Hills & Kingwood Dr.

AM Peak Hour

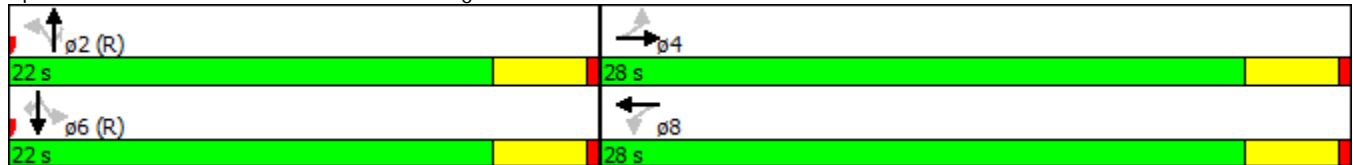


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	28.0	28.0		28.0	28.0		22.0	22.0	22.0	22.0	22.0	22.0
Total Split (%)	56.0%	56.0%		56.0%	56.0%		44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
Maximum Green (s)	24.0	24.0		24.0	24.0		18.0	18.0	18.0	18.0	18.0	18.0
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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)	5.0	5.0		5.0	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	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	24.0	24.0		24.0	24.0		18.0	18.0	18.0	18.0	18.0	18.0
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.36	0.36	0.36	0.36	0.36	0.36
v/c Ratio	1.17	0.27		0.52	0.74		0.13	0.20	0.22	0.24	0.24	0.91
Control Delay	149.4	7.7		15.9	12.7		11.7	12.0	3.6	13.0	12.4	38.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	149.4	7.7		15.9	12.7		11.7	12.0	3.6	13.0	12.4	38.8
LOS	F	A		B	B		B	B	A	B	B	D
Approach Delay		37.3			13.0			8.3			30.1	
Approach LOS		D			B			A			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 50  
 Actuated Cycle Length: 50  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 40  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.17  
 Intersection Signal Delay: 21.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 75.8%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 64: Woodland Hills & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
69: Kingwood Dr. & High Valley

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	43	0	0	163	68	7	290	43	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00
Frt					0.956			0.981				
Flt Protected	0.950	0.993						0.999				
Satd. Flow (prot)	1681	1757	0	0	3383	0	0	3468	0	0	0	0
Flt Permitted	0.950	0.993						0.999				
Satd. Flow (perm)	1681	1757	0	0	3383	0	0	3468	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					38			16				
Link Speed (mph)		30			30			40				40
Link Distance (ft)		93			765			1292				1387
Travel Time (s)		2.1			17.4			22.0				23.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	69	53	0	0	200	84	9	356	53	0	0	0
Shared Lane Traffic (%)	13%											
Lane Group Flow (vph)	60	62	0	0	284	0	0	418	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA			NA		Prot	NA				
Protected Phases	1 4	4			8		15	2				
Permitted Phases												
Minimum Split (s)		10.0			18.0		11.0	20.0				
Total Split (s)		17.0			28.0		16.0	67.0				
Total Split (%)		11.8%			19.4%		11.1%	46.5%				
Maximum Green (s)		12.0			23.0		10.0	61.0				
Yellow Time (s)		4.0			4.0		4.0	4.0				
All-Red Time (s)		1.0			1.0		2.0	2.0				
Lost Time Adjust (s)		0.0			0.0			0.0				
Total Lost Time (s)		5.0			5.0			6.0				
Lead/Lag		Lead			Lag			Lead				
Lead-Lag Optimize?		Yes			Yes			Yes				
Walk Time (s)					6.0			4.0				
Flash Dont Walk (s)					7.0			10.0				
Pedestrian Calls (#/hr)					0			0				
Act Effct Green (s)	27.0	28.0			23.0			71.0				
Actuated g/C Ratio	0.19	0.19			0.16			0.49				
v/c Ratio	0.19	0.18			0.50			0.44				
Control Delay	25.3	24.5			50.9			24.9				
Queue Delay	0.0	0.0			0.0			0.0				
Total Delay	25.3	24.5			50.9			24.9				



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 69: Kingwood Dr. & High Valley

AM Peak Hour

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	6
Permitted Phases		
Minimum Split (s)	11.0	10.0
Total Split (s)	16.0	83.0
Total Split (%)	11%	58%
Maximum Green (s)	10.0	77.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 69: Kingwood Dr. & High Valley

AM Peak Hour

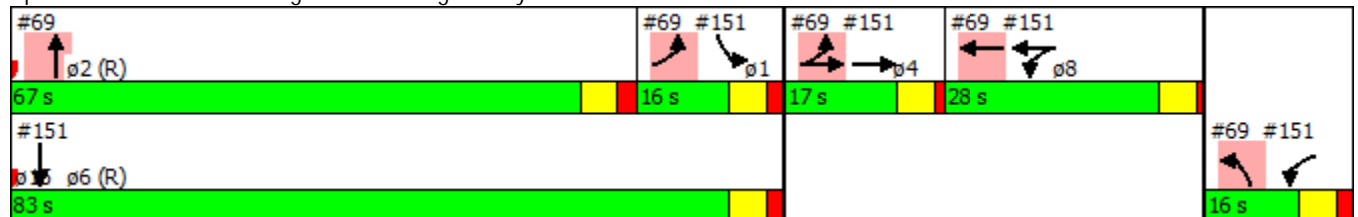


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C			D			C				
Approach Delay		24.9			50.9			24.9				
Approach LOS		C			D			C				

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	90 (63%), Referenced to phase 2:NBT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	33.9
Intersection LOS:	C
Intersection Capacity Utilization	51.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 69: Kingwood Dr. & High Valley

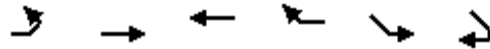


Lane Group	ø1	ø6
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 73: Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑	↑↑↑			
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.91	0.91	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	5085	5085	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5085	0	0	0
Link Speed (mph)		40	40		40	
Link Distance (ft)		1389	315		348	
Travel Time (s)		23.7	5.4		5.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		50	50		50	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 74: Kingwood Dr. & Willow Terrace

AM Peak Hour



Lane Group	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR	NEL2	NEL	NER	ø1
Lane Configurations				↑↑			↑↑		↑	↑↑↑		
Volume (vph)	0	0	16	39	0	0	446	34	24	297	185	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0	0	0		0	0		0		150	0	
Storage Lanes	0	0	0		0	0		0		1	0	
Taper Length (ft)	25		25			25				25		
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.97	0.95	
Frt							0.989			0.942		
Flt Protected				0.986					0.950	0.970		
Satd. Flow (prot)	0	0	0	3490	0	0	3500	0	1770	3302	0	
Flt Permitted				0.986					0.950	0.970		
Satd. Flow (perm)	0	0	0	3490	0	0	3500	0	1770	3302	0	
Right Turn on Red					Yes			Yes			Yes	
Satd. Flow (RTOR)							5			144		
Link Speed (mph)	40			30			30			40		
Link Distance (ft)	525			105			533			1400		
Travel Time (s)	8.9			2.4			12.1			23.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	
Adj. Flow (vph)	0	0	20	48	0	0	548	42	29	365	227	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	68	0	0	590	0	29	592	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(ft)	0			0			0			36		
Link Offset(ft)	0			0			0			0		
Crosswalk Width(ft)	16			16			16			16		
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9	15		9	15		9	15	15	9	
Turn Type			Prot	NA			NA		Prot	NA		
Protected Phases			1 4	4			8		15	2		1
Permitted Phases												
Minimum Split (s)				10.0			18.0		11.0	20.0		11.0
Total Split (s)				14.0			42.0		25.0	48.0		15.0
Total Split (%)				9.7%			29.2%		17.4%	33.3%		10%
Maximum Green (s)				9.0			37.0		19.0	42.0		9.0
Yellow Time (s)				4.0			4.0		4.0	4.0		4.0
All-Red Time (s)				1.0			1.0		2.0	2.0		2.0
Lost Time Adjust (s)				0.0			0.0		0.0	0.0		
Total Lost Time (s)				5.0			5.0		6.0	6.0		
Lead/Lag				Lead			Lag		Lead		Lag	
Lead-Lag Optimize?				Yes			Yes		Yes		Yes	Yes
Walk Time (s)							6.0			4.0		
Flash Dont Walk (s)							7.0			10.0		
Pedestrian Calls (#/hr)							0			0		
Act Effct Green (s)				24.0			37.0		19.0	42.0		
Actuated g/C Ratio				0.17			0.26		0.13	0.29		
v/c Ratio				0.12			0.65		0.12	0.56		

Lane Group	ø6
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Growth Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	6
Permitted Phases	
Minimum Split (s)	10.0
Total Split (s)	63.0
Total Split (%)	44%
Maximum Green (s)	57.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 74: Kingwood Dr. & Willow Terrace

AM Peak Hour

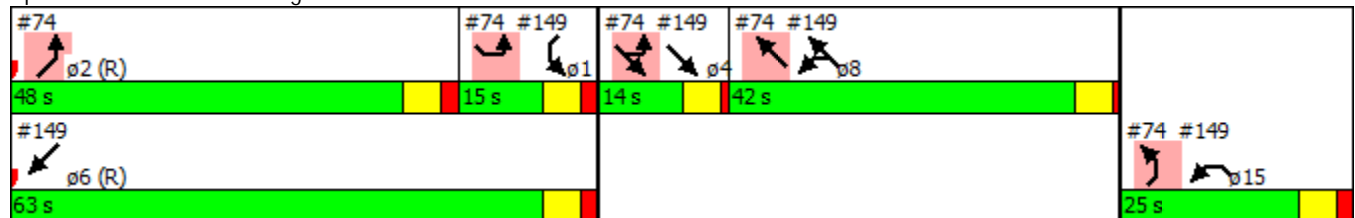


Lane Group	SBL	SBR	SEL	SET	SER	NWL	NWT	NWR	NEL2	NEL	NER	ø1
Control Delay				15.4			51.4		48.0	71.2		
Queue Delay				2.3			0.0		0.0	0.0		
Total Delay				17.7			51.4		48.0	71.2		
LOS				B			D		D	E		
Approach Delay				17.7			51.4			70.1		
Approach LOS				B			D			E		

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	12 (8%), Referenced to phase 2:NEL and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	58.7
Intersection LOS:	E
Intersection Capacity Utilization	40.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 74: Kingwood Dr. & Willow Terrace



Lane Group	ø6
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
77: Timber Shade Dr. & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	31	476	23	0	0	0	0	44	3	12	13	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Frt		0.993						0.990				
Flt Protected	0.950										0.976	
Satd. Flow (prot)	1770	3514	0	0	0	0	0	3504	0	0	3454	0
Flt Permitted	0.950										0.976	
Satd. Flow (perm)	1770	3514	0	0	0	0	0	3504	0	0	3454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5						4				
Link Speed (mph)		40			40			30				30
Link Distance (ft)		826			1647			741				83
Travel Time (s)		14.1			28.1			16.8				1.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	38	585	28	0	0	0	0	54	4	15	16	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	613	0	0	0	0	0	58	0	0	31	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA						NA		Prot	NA	
Protected Phases	15	2						8		14	4	
Permitted Phases												
Minimum Split (s)	11.0	20.0						18.0			10.0	
Total Split (s)	17.0	78.0						20.0			16.0	
Total Split (%)	11.8%	54.2%						13.9%			11.1%	
Maximum Green (s)	11.0	72.0						15.0			11.0	
Yellow Time (s)	4.0	4.0						4.0			4.0	
All-Red Time (s)	2.0	2.0						1.0			1.0	
Lost Time Adjust (s)	0.0	0.0						0.0			0.0	
Total Lost Time (s)	6.0	6.0						5.0			5.0	
Lead/Lag		Lead						Lag			Lead	
Lead-Lag Optimize?		Yes						Yes			Yes	
Walk Time (s)		4.0						6.0				
Flash Dont Walk (s)		10.0						7.0				
Pedestrian Calls (#/hr)		0						0				
Act Effct Green (s)	11.0	72.0						15.0			24.0	
Actuated g/C Ratio	0.08	0.50						0.10			0.17	
v/c Ratio	0.28	0.35						0.16			0.05	

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 77: Timber Shade Dr. & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	6
Permitted Phases		
Minimum Split (s)	11.0	10.0
Total Split (s)	13.0	91.0
Total Split (%)	9%	63%
Maximum Green (s)	7.0	85.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 77: Timber Shade Dr. & Kingwood Dr.

AM Peak Hour

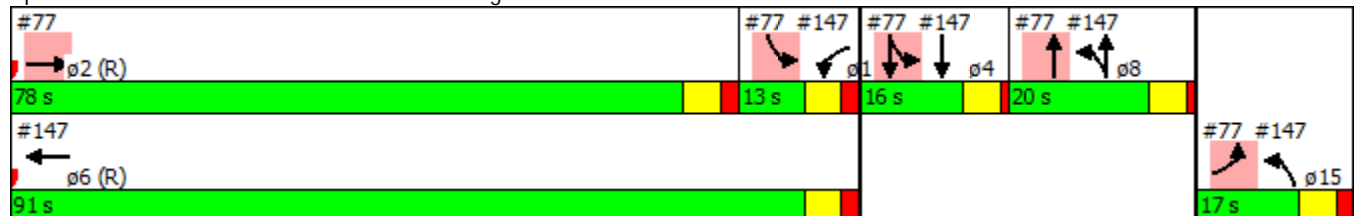


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	68.6	22.3						55.9			20.1	
Queue Delay	0.0	0.0						0.0			0.0	
Total Delay	68.6	22.3						55.9			20.1	
LOS	E	C						E			C	
Approach Delay		25.0						55.9			20.1	
Approach LOS		C						E			C	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	12 (8%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	27.2
Intersection LOS:	C
Intersection Capacity Utilization	32.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 77: Timber Shade Dr. & Kingwood Dr.



Lane Group	ø1	ø6
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 80: Kingwood Dr.

AM Peak Hour



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations			↑↑			↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	3539	0	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	3539	0	0	3539
Link Speed (mph)	40		40			40
Link Distance (ft)	826		310			841
Travel Time (s)	14.1		5.3			14.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 81: US 59 SBFR

AM Peak Hour



Lane Group	NBT	NBR	SBU	SBL	SBT	NWL	NWR
Lane Configurations			↵		↑↑↑↑		
Volume (vph)	0	0	131	0	887	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.81	1.00	1.00
Frt							
Flt Protected			0.950				
Satd. Flow (prot)	0	0	1770	0	7544	0	0
Flt Permitted			0.950				
Satd. Flow (perm)	0	0	1770	0	7544	0	0
Link Speed (mph)	55				55	30	
Link Distance (ft)	255				1812	318	
Travel Time (s)	3.2				22.5	7.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	161	0	1089	0	0
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	161	0	1089	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	0	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Sign Control	Stop				Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 83: US 59 NBFR

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	131	0	0	423	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	5085	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	5085	0	0
Link Speed (mph)	30			55	55	
Link Distance (ft)	318			309	1638	
Travel Time (s)	7.2			3.8	20.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	161	0	0	520	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	161	0	0	520	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Yield			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.1%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 84: US 59 SBFR

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBT	NBR	SBL	SBT	SBR	SWL	SWR
Lane Configurations							6		7	
Volume (vph)	0	0	0	0	0	0	2267	0	233	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.76	1.00	1.00	1.00
Frt										
Flt Protected									0.950	
Satd. Flow (prot)	0	0	0	0	0	0	8494	0	1770	0
Flt Permitted									0.950	
Satd. Flow (perm)	0	0	0	0	0	0	8494	0	1770	0
Link Speed (mph)	30			55			55		30	
Link Distance (ft)	48			6181			398		362	
Travel Time (s)	1.1			76.6			4.9		8.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0	2784	0	286	0
Shared Lane Traffic (%)										
Lane Group Flow (vph)	0	0	0	0	0	0	2784	0	286	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0		12	
Link Offset(ft)	0			0			0		0	
Crosswalk Width(ft)	16			16			16		16	
Two way Left Turn Lane										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15		9	15		9	15	9
Sign Control	Stop			Stop			Free		Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.0%
Analysis Period (min)	15
	ICU Level of Service A



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 85: Kingwood Dr.

AM Peak Hour



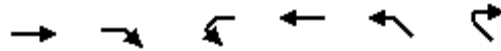
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations				↑↑↑		
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	5085	0	0
Link Speed (mph)	30			40	40	
Link Distance (ft)	190			56	218	
Travel Time (s)	4.3			1.0	3.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Free			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 87: Kingwood Dr.

AM Peak Hour



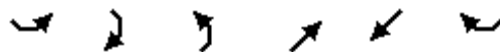
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑↑↑			↑↑		
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	5085	0	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	5085	0	0	3539	0	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	1473			4222	4245	
Travel Time (s)	25.1			72.0	96.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	50			50	50	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0% ICU Level of Service A
Analysis Period (min)	15

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 88: Kingwood Dr. & Kingwood High School

AM Peak Hour



Lane Group	SEL	SER	NEL	NET	SWT	SWR	ø6	ø8
Lane Configurations	↔↔		↔	↑↑				
Volume (vph)	94	0	72	821	0	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Util. Factor	0.97	1.00	1.00	0.95	1.00	1.00		
Frt								
Flt Protected	0.950		0.950					
Satd. Flow (prot)	3433	0	1770	3539	0	0		
Flt Permitted	0.950		0.950					
Satd. Flow (perm)	3433	0	1770	3539	0	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)								
Link Speed (mph)	30			40	40			
Link Distance (ft)	110			218	912			
Travel Time (s)	2.5			3.7	15.5			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	113%	113%	113%	113%	113%	113%		
Adj. Flow (vph)	115	0	88	1008	0	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	115	0	88	1008	0	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	24			40	40			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Speed (mph)	15	9	15			9		
Turn Type	NA		Prot	NA				
Protected Phases	4		15	2			6	8
Permitted Phases								
Minimum Split (s)	10.0		10.0	10.0			10.0	10.0
Total Split (s)	13.0		20.0	101.0			101.0	10.0
Total Split (%)	9.0%		13.9%	70.1%			70%	7%
Maximum Green (s)	8.0		14.0	95.0			95.0	5.0
Yellow Time (s)	4.0		4.0	4.0			4.0	4.0
All-Red Time (s)	1.0		2.0	2.0			2.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0				
Total Lost Time (s)	5.0		6.0	6.0				
Lead/Lag	Lead						Lag	
Lead-Lag Optimize?	Yes						Yes	
Act Effct Green (s)	8.0		14.0	95.0				
Actuated g/C Ratio	0.06		0.10	0.66				
v/c Ratio	0.61		0.51	0.43				
Control Delay	27.9		72.9	12.4				
Queue Delay	0.8		0.0	0.0				
Total Delay	28.6		72.9	12.4				
LOS	C		E	B				
Approach Delay	28.6			17.2				
Approach LOS	C			B				

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 88: Kingwood Dr. & Kingwood High School

AM Peak Hour

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:NET and 6:, Start of Green
Natural Cycle:	80
Control Type:	Pretimed
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	18.3
Intersection LOS:	B
Intersection Capacity Utilization	39.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 88: Kingwood Dr. & Kingwood High School



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 90: Northpark Dr.

AM Peak Hour



Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations		↑↑	↑↑			
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	3539	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	3539	0	0	0
Link Speed (mph)		30	40		40	
Link Distance (ft)		655	47		1475	
Travel Time (s)		14.9	0.8		25.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 91: Lake Kingwood Trail & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	6
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 91: Lake Kingwood Trail & Kingwood Dr.

AM Peak Hour

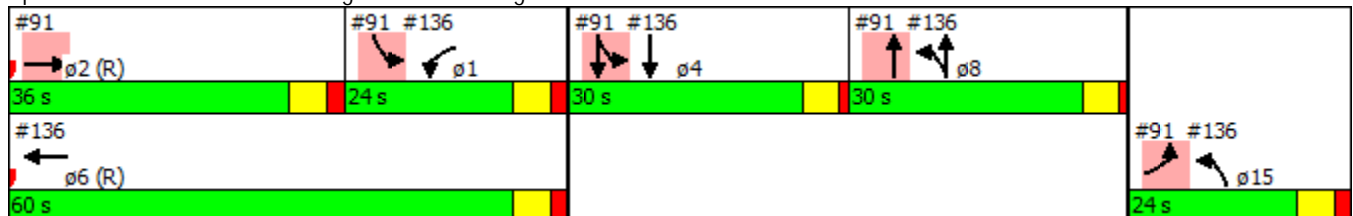


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	15	2						8		14	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0						5.0			5.0	
Minimum Split (s)	11.0	20.0						18.0			10.0	
Total Split (s)	24.0	36.0						30.0			30.0	
Total Split (%)	16.7%	25.0%						20.8%			20.8%	
Maximum Green (s)	18.0	30.0						25.0			25.0	
Yellow Time (s)	4.0	4.0						4.0			4.0	
All-Red Time (s)	2.0	2.0						1.0			1.0	
Lost Time Adjust (s)	0.0	0.0						0.0			0.0	
Total Lost Time (s)	6.0	6.0						5.0			5.0	
Lead/Lag		Lead						Lag			Lead	
Lead-Lag Optimize?		Yes						Yes			Yes	
Vehicle Extension (s)	3.0	3.0						3.0			3.0	
Recall Mode	None	C-Max						None			None	
Walk Time (s)		4.0						6.0				
Flash Dont Walk (s)		10.0						7.0				
Pedestrian Calls (#/hr)		0						0				
Act Effct Green (s)	6.8	80.5						7.9			34.0	
Actuated g/C Ratio	0.05	0.56						0.05			0.24	
v/c Ratio	0.17	0.52						0.40			0.14	
Control Delay	69.8	22.6						48.8			2.4	
Queue Delay	0.0	0.0						0.0			0.2	
Total Delay	69.8	22.6						48.8			2.6	
LOS	E	C						D			A	
Approach Delay		23.2						48.8			2.6	
Approach LOS		C						D			A	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	23.1
Intersection LOS:	C
Intersection Capacity Utilization:	46.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 91: Lake Kingwood Trail & Kingwood Dr.





Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
91: Lake Kingwood Trail & Kingwood Dr.

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AM Peak Hour

Lane Group	ø1	ø6
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	4.0
Minimum Split (s)	11.0	10.0
Total Split (s)	24.0	60.0
Total Split (%)	17%	42%
Maximum Green (s)	18.0	54.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	C-Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	6
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 96: Chestnut Ridge Dr. & Kingwood Dr.

AM Peak Hour

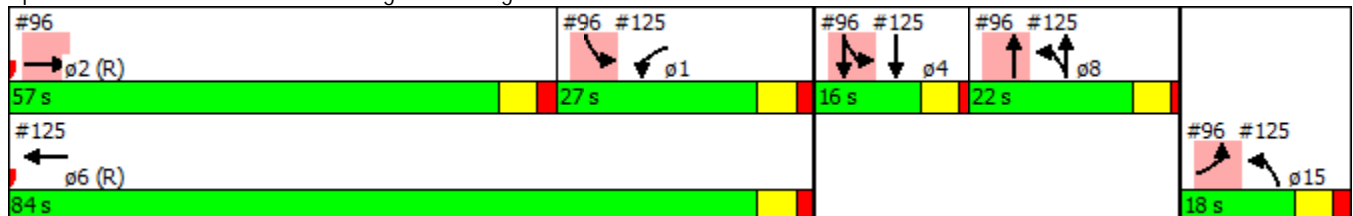


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	15	2						8		14	4	
Switch Phase												
Minimum Initial (s)	5.0	4.0						5.0			5.0	
Minimum Split (s)	11.0	20.0						18.0			10.0	
Total Split (s)	18.0	57.0						22.0			16.0	
Total Split (%)	12.9%	40.7%						15.7%			11.4%	
Maximum Green (s)	12.0	51.0						17.0			11.0	
Yellow Time (s)	4.0	4.0						4.0			4.0	
All-Red Time (s)	2.0	2.0						1.0			1.0	
Lost Time Adjust (s)	0.0	0.0						0.0			0.0	
Total Lost Time (s)	6.0	6.0						5.0			5.0	
Lead/Lag		Lead						Lag			Lead	
Lead-Lag Optimize?		Yes						Yes			Yes	
Vehicle Extension (s)	3.0	3.0						3.0			3.0	
Recall Mode	None	C-Max						None			None	
Walk Time (s)		4.0						6.0				
Flash Dont Walk (s)		10.0						7.0				
Pedestrian Calls (#/hr)		0						0				
Act Effct Green (s)	11.7	53.7						16.0			36.7	
Actuated g/C Ratio	0.08	0.38						0.11			0.26	
v/c Ratio	0.78	0.49						0.85			0.31	
Control Delay	95.0	33.9						84.8			7.9	
Queue Delay	0.0	0.0						0.0			0.0	
Total Delay	95.0	33.9						84.8			7.9	
LOS	F	C						F			A	
Approach Delay		40.5						84.8			7.9	
Approach LOS		D						F			A	

Intersection Summary

Area Type: Other  
 Cycle Length: 140  
 Actuated Cycle Length: 140  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 42.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 47.3%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 96: Chestnut Ridge Dr. & Kingwood Dr.



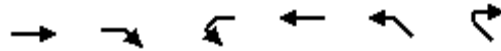
Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 96: Chestnut Ridge Dr. & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø6
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	4.0
Minimum Split (s)	11.0	10.0
Total Split (s)	27.0	84.0
Total Split (%)	19%	60%
Maximum Green (s)	21.0	78.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	C-Max
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 102: Kingwood Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑	↑	
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	1863	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	1863	0
Link Speed (mph)	40			40	30	
Link Distance (ft)	1481			242	190	
Travel Time (s)	25.2			4.1	4.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 104: US 59 SBFR & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø3	ø4	ø5	ø6	ø7	ø8	ø11	ø15	ø16	ø21
Lane Configurations											
Volume (vph)											
Ideal Flow (vphpl)											
Lane Util. Factor											
Frt											
Flt Protected											
Satd. Flow (prot)											
Flt Permitted											
Satd. Flow (perm)											
Right Turn on Red											
Satd. Flow (RTOR)											
Link Speed (mph)											
Link Distance (ft)											
Travel Time (s)											
Peak Hour Factor											
Growth Factor											
Adj. Flow (vph)											
Shared Lane Traffic (%)											
Lane Group Flow (vph)											
Enter Blocked Intersection											
Lane Alignment											
Median Width(ft)											
Link Offset(ft)											
Crosswalk Width(ft)											
Two way Left Turn Lane											
Headway Factor											
Turning Speed (mph)											
Number of Detectors											
Detector Template											
Leading Detector (ft)											
Trailing Detector (ft)											
Detector 1 Position(ft)											
Detector 1 Size(ft)											
Detector 1 Type											
Detector 1 Channel											
Detector 1 Extend (s)											
Detector 1 Queue (s)											
Detector 1 Delay (s)											
Detector 2 Position(ft)											
Detector 2 Size(ft)											
Detector 2 Type											
Detector 2 Channel											
Detector 2 Extend (s)											
Turn Type											
Protected Phases	1	3	4	5	6	7	8	11	15	16	21
Permitted Phases											
Detector Phase											
Switch Phase											
Minimum Initial (s)	3.0	1.0	5.0	3.0	8.0	1.0	1.0	3.0	3.0	4.0	1.0



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 104: US 59 SBFR & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)		12.3										
Total Split (s)		21.3										
Total Split (%)		15.2%										
Maximum Green (s)		16.0										
Yellow Time (s)		3.6										
All-Red Time (s)		1.7										
Lost Time Adjust (s)		0.0										
Total Lost Time (s)		5.3										
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0										
Recall Mode		None										
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)		16.0		84.7	94.4					23.0	23.0	23.0
Actuated g/C Ratio		0.11		0.60	0.67					0.16	0.16	0.16
v/c Ratio		0.47		0.89	0.39					0.93	0.93	0.48
Control Delay		55.8		21.1	2.9					98.4	74.6	7.1
Queue Delay		0.0		12.0	0.4					0.0	0.0	0.0
Total Delay		55.8		33.1	3.3					98.4	74.6	7.1
LOS		E		C	A					F	E	A
Approach Delay		55.8			23.2						67.3	
Approach LOS		E			C						E	

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 1:WBTL and 6:, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	37.5
Intersection LOS:	D
Intersection Capacity Utilization	78.3%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 104: US 59 SBFR & Kingwood Dr.

#104 ← ρ2	#104 ↓ ρ4	#104 ↓ ρ3	#104 ↙ ρ1 (R)	#104/#104 ↘ ρ21 ρ11
21.3 s	11.7 s	17 s	63.3 s	6.3 s 20.4 s
#105 ↑ ρ7	#105 ↗ ρ5	#105 ↗ ρ15	#105 ← ρ6 (R)	#105 ← ρ16
13 s	8.3 s	11.7 s	71 s	9.3 s 26.7 s

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 104: US 59 SBFR & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø3	ø4	ø5	ø6	ø7	ø8	ø11	ø15	ø16	ø21
Minimum Split (s)	8.3	6.7	11.7	8.3	25.3	6.7	26.7	8.3	8.3	9.3	6.3
Total Split (s)	63.3	17.0	11.7	8.3	71.0	13.0	26.7	20.4	11.7	9.3	6.3
Total Split (%)	45%	12%	8%	6%	51%	9%	19%	15%	8%	7%	5%
Maximum Green (s)	58.0	11.3	5.0	3.0	65.7	7.3	20.0	15.1	6.4	4.0	1.0
Yellow Time (s)	3.6	4.7	4.7	3.6	3.6	3.7	4.7	3.6	3.6	3.6	3.6
All-Red Time (s)	1.7	1.0	2.0	1.7	1.7	2.0	2.0	1.7	1.7	1.7	1.7
Lost Time Adjust (s)											
Total Lost Time (s)											
Lead/Lag	Lag	Lead		Lag	Lead	Lead		Lag		Lag	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes		Yes		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	C-Max	None	None	None	C-Max	Max	None	None	None	None	None
Walk Time (s)					5.0		6.0				
Flash Dont Walk (s)					15.0		14.0				
Pedestrian Calls (#/hr)					0		0				
Act Effct Green (s)											
Actuated g/C Ratio											
v/c Ratio											
Control Delay											
Queue Delay											
Total Delay											
LOS											
Approach Delay											
Approach LOS											
Intersection Summary											

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 105: US 59 NBFR & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	459	0	0	1789	146	453	96	453	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	500		0	0		0	0		0
Storage Lanes	2		0	1		0	1		2	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	1.00	0.86	0.86	0.86	0.86	0.88	1.00	1.00	1.00
Frt					0.989				0.850			
Flt Protected	0.950						0.950	0.966				
Satd. Flow (prot)	3433	3539	0	0	6337	0	1522	4642	2787	0	0	0
Flt Permitted	0.950						0.950	0.966				
Satd. Flow (perm)	3433	3539	0	0	6337	0	1522	4642	2787	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					19				556			
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		256			1514			180			199	
Travel Time (s)		5.8			25.8			4.1			4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	91	564	0	0	2197	179	556	118	556	0	0	0
Shared Lane Traffic (%)							50%					
Lane Group Flow (vph)	91	564	0	0	2376	0	278	396	556	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			
Detector Template	Left	Thru			Thru		Left	Thru	Right			
Leading Detector (ft)	20	100			100		20	100	20			
Trailing Detector (ft)	0	0			0		0	0	0			
Detector 1 Position(ft)	0	0			0		0	0	0			
Detector 1 Size(ft)	20	6			6		20	6	20			
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Perm	NA	Perm			
Protected Phases	5 15	5 6 15			6 16			7 8				
Permitted Phases							7 8		7 8			



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 105: US 59 NBFR & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5 15	5 6 15			6 16		7 8	7 8	7 8			
Switch Phase												
Minimum Initial (s)												
Minimum Split (s)												
Total Split (s)												
Total Split (%)												
Maximum Green (s)												
Yellow Time (s)												
All-Red Time (s)												
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)												
Recall Mode												
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	14.7	85.7			75.0		34.0	34.0	34.0			
Actuated g/C Ratio	0.10	0.61			0.54		0.24	0.24	0.24			
v/c Ratio	0.25	0.26			0.70		0.75	0.35	0.51			
Control Delay	77.0	3.3			25.3		63.2	44.9	5.0			
Queue Delay	0.0	2.1			0.3		0.0	0.0	0.0			
Total Delay	77.0	5.4			25.6		63.2	44.9	5.0			
LOS	E	A			C		E	D	A			
Approach Delay		15.3			25.6			31.0				
Approach LOS		B			C			C				

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 1:WBTL and 6:, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.93
Intersection Signal Delay:	25.6
Intersection LOS:	C
Intersection Capacity Utilization:	78.3%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 105: US 59 NBFR & Kingwood Dr.

#104 ← ø2	#104 ↓ ø4	#104 ↓ ø3	#104 ↙ ø1 (R)	#104/#104 ↘ ø21 ø11
21.3 s	11.7 s	17 s	63.3 s	6.3 s 20.4 s
#105 ↑ ø7	#105 ↗ ø5	#105 ↗ ø15	#105 ← ø6 (R)	#105 ← ø16
13 s	8.3 s	11.7 s	71 s	9.3 s 26.7 s

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 105: US 59 NBFR & Kingwood Dr.

AM Peak Hour

Lane Group	ø1	ø2	ø3	ø4	ø5	ø6	ø7	ø8	ø11	ø15	ø16	ø21				
Detector Phase																
Switch Phase																
Minimum Initial (s)	3.0	7.0	1.0	5.0	3.0	8.0	1.0	1.0	3.0	3.0	4.0	1.0				
Minimum Split (s)	8.3	12.3	6.7	11.7	8.3	25.3	6.7	26.7	8.3	8.3	9.3	6.3				
Total Split (s)	63.3	21.3	17.0	11.7	8.3	71.0	13.0	26.7	20.4	11.7	9.3	6.3				
Total Split (%)	45%	15%	12%	8%	6%	51%	9%	19%	15%	8%	7%	5%				
Maximum Green (s)	58.0	16.0	11.3	5.0	3.0	65.7	7.3	20.0	15.1	6.4	4.0	1.0				
Yellow Time (s)	3.6	3.6	4.7	4.7	3.6	3.6	3.7	4.7	3.6	3.6	3.6	3.6				
All-Red Time (s)	1.7	1.7	1.0	2.0	1.7	1.7	2.0	2.0	1.7	1.7	1.7	1.7				
Lost Time Adjust (s)																
Total Lost Time (s)																
Lead/Lag	Lag		Lead		Lag		Lead		Lead		Lag		Lag		Lead	
Lead-Lag Optimize?	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Recall Mode	C-Max	None	None	None	None	C-Max	Max	None	None	None	None	None				
Walk Time (s)							5.0						6.0			
Flash Dont Walk (s)							15.0						14.0			
Pedestrian Calls (#/hr)							0						0			
Act Effct Green (s)																
Actuated g/C Ratio																
v/c Ratio																
Control Delay																
Queue Delay																
Total Delay																
LOS																
Approach Delay																
Approach LOS																
Intersection Summary																

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 107: Kingwood Dr.

AM Peak Hour



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	245	114	17	56	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.982			
Flt Protected	0.950					0.987
Satd. Flow (prot)	1770	1583	1829	0	0	1839
Flt Permitted	0.950					0.987
Satd. Flow (perm)	1770	1583	1829	0	0	1839
Link Speed (mph)	40		35			35
Link Distance (ft)	2883		3652			1853
Travel Time (s)	49.1		71.1			36.1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	12	301	140	21	69	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	301	161	0	0	268
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.4%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 111: Lake Houston Parkway & Rustic Woods

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑		↑	↑↑				
Volume (vph)	24	33	0	0	131	28	72	854	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	0		0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00
Frt					0.974			0.995				
Flt Protected		0.980					0.950					
Satd. Flow (prot)	0	3468	0	0	3447	0	1770	3522	0	0	0	0
Flt Permitted		0.980					0.950					
Satd. Flow (perm)	0	3468	0	0	3447	0	1770	3522	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					14			3				
Link Speed (mph)		30			30			40				40
Link Distance (ft)		82			559			1308				4598
Travel Time (s)		1.9			12.7			22.3				78.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	29	41	0	0	161	34	88	1049	37	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	70	0	0	195	0	88	1086	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)			9	15		9	15		9	15		9
Turn Type	Prot	NA			NA		Prot	NA				
Protected Phases	1 4	4			8		15	2				
Permitted Phases												
Minimum Split (s)		10.0			18.0		11.0	20.0				
Total Split (s)		17.0			21.0		22.0	71.0				
Total Split (%)		11.8%			14.6%		15.3%	49.3%				
Maximum Green (s)		12.0			16.0		16.0	65.0				
Yellow Time (s)		4.0			4.0		4.0	4.0				
All-Red Time (s)		1.0			1.0		2.0	2.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		5.0			5.0		6.0	6.0				
Lead/Lag		Lead			Lag			Lead				
Lead-Lag Optimize?		Yes			Yes			Yes				
Walk Time (s)					6.0			4.0				
Flash Dont Walk (s)					7.0			10.0				
Pedestrian Calls (#/hr)					0			0				
Act Effct Green (s)		25.0			16.0		16.0	65.0				
Actuated g/C Ratio		0.17			0.11		0.11	0.45				
v/c Ratio		0.12			0.49		0.45	0.68				



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 111: Lake Houston Parkway & Rustic Woods

AM Peak Hour

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	6
Permitted Phases		
Minimum Split (s)	11.0	10.0
Total Split (s)	13.0	84.0
Total Split (%)	9%	58%
Maximum Green (s)	7.0	78.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)		
Flash Dont Walk (s)		
Pedestrian Calls (#/hr)		
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 111: Lake Houston Parkway & Rustic Woods

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		26.6			60.5		67.8	34.0				
Queue Delay		0.0			0.0		0.0	0.0				
Total Delay		26.6			60.5		67.8	34.0				
LOS		C			E		E	C				
Approach Delay		26.6			60.5			36.5				
Approach LOS		C			E			D				

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	90 (63%), Referenced to phase 2:NBT and 6:, Start of Green
Natural Cycle:	80
Control Type:	Pretimed
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	39.3
Intersection LOS:	D
Intersection Capacity Utilization	50.4%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 111: Lake Houston Parkway & Rustic Woods

#111 ↑ φ2 (R) 71 s	#111#175 ↑ φ1 13 s	#111#175 → φ4 17 s	#111#175 ← φ8 21 s	
#175 ↓ φ6 (R) 84 s			#111#175 ↘ φ15 22 s	

Lane Group	ø1	ø6
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 115: Loop 494 & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	653	95	161	1707	66	16	41	264	88	168	224
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	75		0	175		150	150		200	160		0
Storage Lanes	1		0	1		1	1		2	1		2
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	0.91	1.00	0.91	1.00	1.00	1.00	0.88	1.00	1.00	0.88
Frt		0.981				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	1770	5085	1583	1770	1863	2787	1770	1863	2787
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	1770	5085	1583	1770	1863	2787	1770	1863	2787
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		28				129			336			178
Link Speed (mph)		40			40			45				45
Link Distance (ft)		1514			523			675				922
Travel Time (s)		25.8			8.9			10.2				14.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	8	830	121	205	2171	84	20	52	336	112	214	285
Shared Lane Traffic (%)												
Lane Group Flow (vph)	8	951	0	205	2171	84	20	52	336	112	214	285
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1		6
Permitted Phases						8			2			6

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 115: Loop 494 & Kingwood Dr.

AM Peak Hour

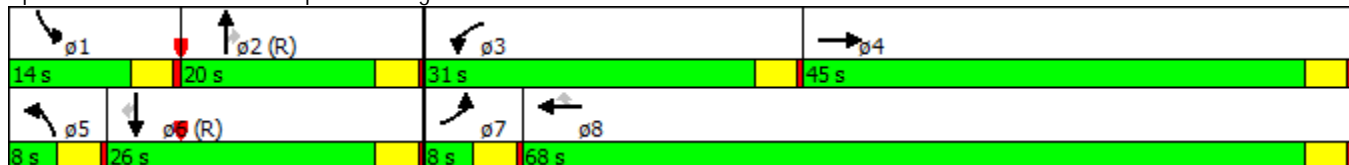


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	8.0	20.0	20.0	8.0	20.0	20.0
Total Split (s)	8.0	45.0		31.0	68.0	68.0	8.0	20.0	20.0	14.0	26.0	26.0
Total Split (%)	7.3%	40.9%		28.2%	61.8%	61.8%	7.3%	18.2%	18.2%	12.7%	23.6%	23.6%
Maximum Green (s)	4.0	41.0		27.0	64.0	64.0	4.0	16.0	16.0	10.0	22.0	22.0
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
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
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 Effect Green (s)	4.0	43.7		18.0	64.1	64.1	5.2	22.0	22.0	10.3	33.1	33.1
Actuated g/C Ratio	0.04	0.40		0.16	0.58	0.58	0.05	0.20	0.20	0.09	0.30	0.30
v/c Ratio	0.12	0.48		0.71	0.73	0.09	0.24	0.14	0.41	0.68	0.38	0.30
Control Delay	55.7	24.7		56.6	18.4	0.7	58.3	41.1	6.2	69.2	36.0	14.0
Queue Delay	0.0	0.0		0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	24.7		56.6	21.2	0.7	58.3	41.1	6.2	69.2	36.0	14.0
LOS	E	C		E	C	A	E	D	A	E	D	B
Approach Delay		24.9			23.4			13.2			31.8	
Approach LOS		C			C			B			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 24.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 67.5%  
 ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 115: Loop 494 & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 118: Royal Forest /Royal Forest & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	823	44	18	1813	18	33	5	8	1	2	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		75	150		0	0		0	0		150
Storage Lanes	1		1	1		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	0.91	1.00	1.00	1.00	0.95	0.95	1.00
Frt			0.850		0.999				0.850			0.850
Flt Protected	0.950			0.950				0.958			0.988	
Satd. Flow (prot)	1770	5085	1583	1770	5080	0	0	1785	1583	0	3497	1583
Flt Permitted	0.950			0.950				0.750			0.892	
Satd. Flow (perm)	1770	5085	1583	1770	5080	0	0	1397	1583	0	3157	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			56		2				98			112
Link Speed (mph)		40			40			30				30
Link Distance (ft)		523			284			392				750
Travel Time (s)		8.9			4.8			8.9				17.0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	176	1047	56	23	2306	23	42	6	10	1	3	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	176	1047	56	23	2329	0	0	48	10	0	4	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2!		1!	6!			8			6!	
Permitted Phases			2				8		8	6!		6

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 118: Royal Forest /Royal Forest & Kingwood Dr.

AM Peak Hour

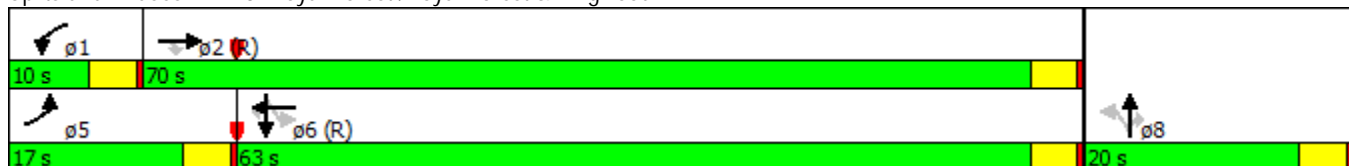


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2	2	1	6		8	8	8	6	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	20.0	20.0	8.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	17.0	70.0	70.0	10.0	63.0		20.0	20.0	20.0	63.0	63.0	63.0
Total Split (%)	17.0%	70.0%	70.0%	10.0%	63.0%		20.0%	20.0%	20.0%	63.0%	63.0%	63.0%
Maximum Green (s)	13.0	66.0	66.0	6.0	59.0		16.0	16.0	16.0	59.0	59.0	59.0
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
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag					Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max		None	None	None	C-Max	C-Max	C-Max
Walk Time (s)		5.0	5.0		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	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0		0	0	0	0	0	0
Act Effct Green (s)	14.8	84.2	84.2	6.9	68.6		8.7	8.7		68.6	68.6	68.6
Actuated g/C Ratio	0.15	0.84	0.84	0.07	0.69		0.09	0.09		0.69	0.69	0.69
v/c Ratio	0.67	0.24	0.04	0.19	0.67		0.40	0.04		0.00	0.10	0.10
Control Delay	53.0	3.5	1.6	47.0	12.2		51.8	0.3		8.0	1.9	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	53.0	3.5	1.6	47.0	12.2		51.8	0.3		8.0	1.9	1.9
LOS	D	A	A	D	B		D	A		A	A	A
Approach Delay		10.2			12.5		42.9			2.2		
Approach LOS		B			B		D			A		

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBSB, Start of Green  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 11.9  
 Intersection LOS: B  
 Intersection Capacity Utilization 69.5%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 ! Phase conflict between lane groups.

Splits and Phases: 118: Royal Forest /Royal Forest & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 121: US 59 SBFR

AM Peak Hour



Lane Group	NBT	NBR	SBU	SBL	SBT	NWL	NWR
Lane Configurations			↵		↑↑↑↑		
Volume (vph)	0	0	104	0	918	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.81	1.00	1.00
Frt							
Flt Protected			0.950				
Satd. Flow (prot)	0	0	1770	0	7544	0	0
Flt Permitted			0.950				
Satd. Flow (perm)	0	0	1770	0	7544	0	0
Link Speed (mph)	55				55	30	
Link Distance (ft)	202				6181	296	
Travel Time (s)	2.5				76.6	6.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	128	0	1128	0	0
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	128	0	1128	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	Left	Right	R NA	Left	Left	Left	Right
Median Width(ft)	12				12	0	
Link Offset(ft)	0				0	0	
Crosswalk Width(ft)	16				16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	9	15		15	9
Sign Control	Stop				Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.0%
Analysis Period (min)	15
	ICU Level of Service A



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 122: US 59 NBFR

AM Peak Hour



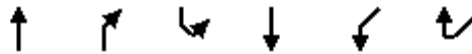
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	104	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	5085	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	5085	0	0
Link Speed (mph)	30			55	55	
Link Distance (ft)	296			199	6172	
Travel Time (s)	6.7			2.5	76.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	128	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15			9
Sign Control	Yield			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.5%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 123: US 59 SBFR

AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations				↑↑↑	↘	
Volume (vph)	0	0	0	1888	317	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	6715			184	304	
Travel Time (s)	83.2			2.3	6.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	2319	389	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2319	389	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Stop			Free	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.8%
Analysis Period (min)	15
	ICU Level of Service B

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 124: US 59 NBFR

AM Peak Hour



Lane Group	NBU	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations	<b>A</b>		<b>B</b>				
Volume (vph)	317	0	1002	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.76	1.00	1.00	1.00	1.00
Frt							
Flt Protected	0.950						
Satd. Flow (prot)	1770	0	8494	0	0	0	0
Flt Permitted	0.950						
Satd. Flow (perm)	1770	0	8494	0	0	0	0
Link Speed (mph)			55	55		30	
Link Distance (ft)			423	180		304	
Travel Time (s)			5.2	2.2		6.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	389	0	1231	0	0	0	0
Shared Lane Traffic (%)							
Lane Group Flow (vph)	389	0	1231	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Left	Left	Right	Left	Right
Median Width(ft)			12	12		0	
Link Offset(ft)			0	0		0	
Crosswalk Width(ft)			16	16		16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9	15			9	15	9
Sign Control			Free	Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	58.8%
Analysis Period (min)	15
	ICU Level of Service B



Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	2	15
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 125: Chestnut Ridge Dr. & Kingwood Dr.

AM Peak Hour

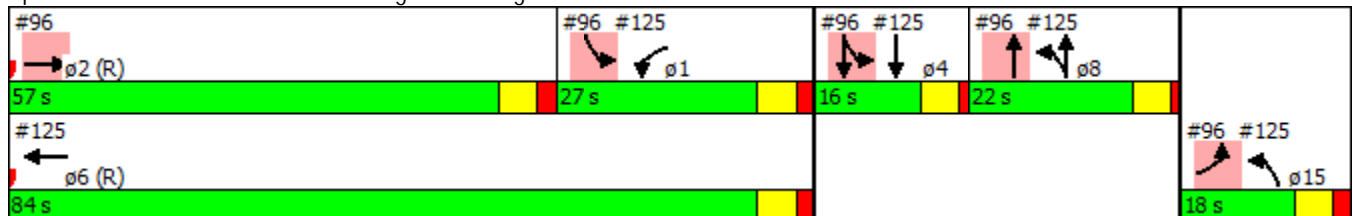


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				1	6		15	8				4
Switch Phase												
Minimum Initial (s)				5.0	4.0			5.0				5.0
Minimum Split (s)				11.0	10.0			18.0				10.0
Total Split (s)				27.0	84.0			22.0				16.0
Total Split (%)				19.3%	60.0%			15.7%				11.4%
Maximum Green (s)				21.0	78.0			17.0				11.0
Yellow Time (s)				4.0	4.0			4.0				4.0
All-Red Time (s)				2.0	2.0			1.0				1.0
Lost Time Adjust (s)				0.0	0.0			0.0				0.0
Total Lost Time (s)				6.0	6.0			5.0				5.0
Lead/Lag				Lag				Lag				Lead
Lead-Lag Optimize?				Yes				Yes				Yes
Vehicle Extension (s)				3.0	3.0			3.0				3.0
Recall Mode				None	C-Max			None				None
Walk Time (s)								6.0				
Flash Dont Walk (s)								7.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)				21.0	80.7			33.6				9.7
Actuated g/C Ratio				0.15	0.58			0.24				0.07
v/c Ratio				0.43	0.76			0.22				0.81
Control Delay				59.7	25.1			5.4				55.4
Queue Delay				0.0	0.0			0.0				0.0
Total Delay				59.7	25.1			5.4				55.4
LOS				E	C			A				E
Approach Delay					26.8			5.4				55.4
Approach LOS					C			A				E

Intersection Summary

Area Type:	Other
Cycle Length:	140
Actuated Cycle Length:	140
Offset:	0 (0%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	27.9
Intersection LOS:	C
Intersection Capacity Utilization:	67.0%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 125: Chestnut Ridge Dr. & Kingwood Dr.



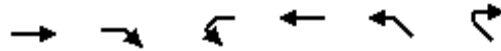
Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 125: Chestnut Ridge Dr. & Kingwood Dr.

AM Peak Hour

Lane Group	ø2	ø15
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	5.0
Minimum Split (s)	20.0	11.0
Total Split (s)	57.0	18.0
Total Split (%)	41%	13%
Maximum Green (s)	51.0	12.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	None
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 126: Kingwood Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑↑↑			↑↑↑		
Volume (vph)	832	0	0	1842	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	5085	0	0	5085	0	0
Flt Permitted						
Satd. Flow (perm)	5085	0	0	5085	0	0
Link Speed (mph)	40			40	40	
Link Distance (ft)	1032			502	530	
Travel Time (s)	17.6			8.6	9.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	1022	0	0	2262	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1022	0	0	2262	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.6%
Analysis Period (min)	15
	ICU Level of Service A



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 128: Kingwood Dr. & Green Oak Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↙	↑↑↑	↗	↙	↑			↑↔	
Volume (vph)	0	0	0	72	1718	413	79	75	0	0	112	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		150	0		0	0		0
Storage Lanes	0		0	1		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt						0.850					0.959	
Flt Protected				0.950			0.950					
Satd. Flow (prot)	0	0	0	1770	5085	1583	1770	1863	0	0	3394	0
Flt Permitted				0.950			0.950					
Satd. Flow (perm)	0	0	0	1770	5085	1583	1770	1863	0	0	3394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						360						37
Link Speed (mph)		40			40			30				30
Link Distance (ft)		558			1523			89				282
Travel Time (s)		9.5			26.0			2.0				6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%	117%
Adj. Flow (vph)	0	0	0	92	2185	525	100	95	0	0	142	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	92	2185	525	100	95	0	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors				1	2	1	1	2				2
Detector Template				Left	Thru	Right	Left	Thru				Thru
Leading Detector (ft)				20	100	20	20	100				100
Trailing Detector (ft)				0	0	0	0	0				0
Detector 1 Position(ft)				0	0	0	0	0				0
Detector 1 Size(ft)				20	6	20	20	6				6
Detector 1 Type				Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex				Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)				0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Queue (s)				0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Delay (s)				0.0	0.0	0.0	0.0	0.0				0.0
Detector 2 Position(ft)					94			94				94
Detector 2 Size(ft)					6			6				6
Detector 2 Type					Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type				Prot	NA	Perm	Prot	NA				NA
Protected Phases				1	6		15	8				4
Permitted Phases							6					

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphp)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	2	15
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 128: Kingwood Dr. & Green Oak Dr.

AM Peak Hour

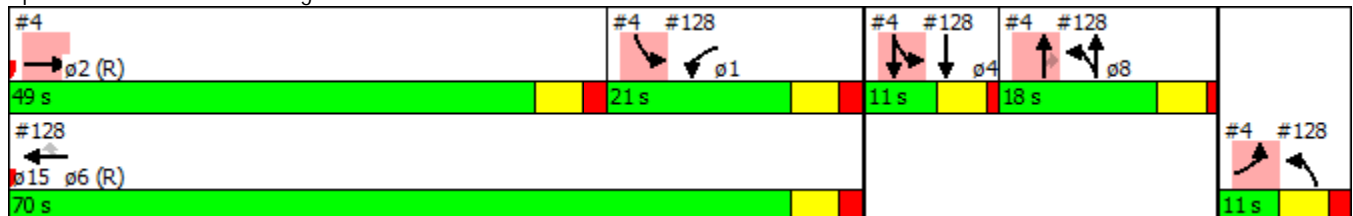


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				1	6	6	15	8				4
Switch Phase												
Minimum Initial (s)				5.0	4.0	4.0		5.0				5.0
Minimum Split (s)				11.0	10.0	10.0		18.0				10.0
Total Split (s)				21.0	70.0	70.0		18.0				11.0
Total Split (%)				19.1%	63.6%	63.6%		16.4%				10.0%
Maximum Green (s)				15.0	64.0	64.0		13.0				6.0
Yellow Time (s)				4.0	4.0	4.0		4.0				4.0
All-Red Time (s)				2.0	2.0	2.0		1.0				1.0
Lost Time Adjust (s)				0.0	0.0	0.0		0.0				0.0
Total Lost Time (s)				6.0	6.0	6.0		5.0				5.0
Lead/Lag				Lag				Lag				Lead
Lead-Lag Optimize?				Yes				Yes				Yes
Vehicle Extension (s)				3.0	3.0	3.0		3.0				3.0
Recall Mode				None	C-Max	C-Max		None				None
Walk Time (s)								6.0				
Flash Dont Walk (s)								7.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)				15.0	64.8	64.8	22.2	11.6				6.0
Actuated g/C Ratio				0.14	0.59	0.59	0.20	0.11				0.05
v/c Ratio				0.38	0.73	0.49	0.28	0.48				0.89
Control Delay				48.5	18.3	5.4	9.6	36.9				79.6
Queue Delay				0.7	0.0	0.0	0.0	0.0				10.4
Total Delay				49.2	18.3	5.4	9.6	36.9				90.0
LOS				D	B	A	A	D				F
Approach Delay					16.9			22.9				90.0
Approach LOS					B			C				F

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 21.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 81.4%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 128: Kingwood Dr. & Green Oak Dr.



Lane Group	ø2	ø15
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	5.0
Minimum Split (s)	20.0	11.0
Total Split (s)	49.0	11.0
Total Split (%)	45%	10%
Maximum Green (s)	43.0	5.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	None
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 133: Kingwood Dr.

AM Peak Hour



Lane Group	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations		↑↑				↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	0	3278	0	0	0	3539
Flt Permitted						
Satd. Flow (perm)	0	3278	0	0	0	3539
Link Speed (mph)	40		30			40
Link Distance (ft)	912		893			1892
Travel Time (s)	15.5		20.3			32.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Free		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	2	15
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 136: Kingwood Dr. & Lake Kingwood Trail

AM Peak Hour

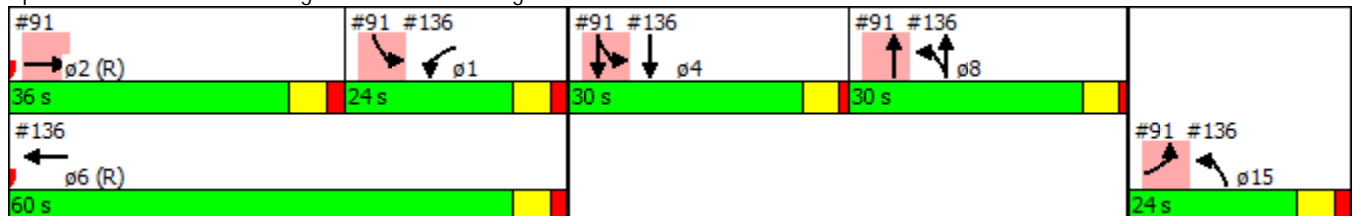


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase				1	6		15	8				4
Switch Phase												
Minimum Initial (s)				5.0	4.0			5.0				5.0
Minimum Split (s)				11.0	10.0			18.0				10.0
Total Split (s)				24.0	60.0			30.0				30.0
Total Split (%)				16.7%	41.7%			20.8%				20.8%
Maximum Green (s)				18.0	54.0			25.0				25.0
Yellow Time (s)				4.0	4.0			4.0				4.0
All-Red Time (s)				2.0	2.0			1.0				1.0
Lost Time Adjust (s)				0.0	0.0			0.0				0.0
Total Lost Time (s)				6.0	6.0			5.0				5.0
Lead/Lag				Lag				Lag				Lead
Lead-Lag Optimize?				Yes				Yes				Yes
Vehicle Extension (s)				3.0	3.0			3.0				3.0
Recall Mode				None	C-Max			None				None
Walk Time (s)								6.0				
Flash Dont Walk (s)								7.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)				18.0	104.5			13.5				10.0
Actuated g/C Ratio				0.12	0.73			0.09				0.07
v/c Ratio				0.42	0.72			0.18				0.47
Control Delay				64.5	15.4			26.1				67.6
Queue Delay				0.0	0.0			0.1				0.0
Total Delay				64.5	15.4			26.2				67.6
LOS				E	B			C				E
Approach Delay					17.8			26.2				67.6
Approach LOS					B			C				E

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	20.8
Intersection LOS:	C
Intersection Capacity Utilization:	65.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 136: Kingwood Dr. & Lake Kingwood Trail

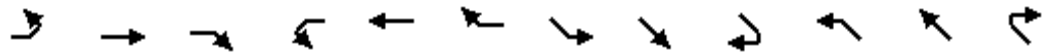




Lane Group	ø2	ø15
Detector Phase		
Switch Phase		
Minimum Initial (s)	4.0	5.0
Minimum Split (s)	20.0	11.0
Total Split (s)	36.0	24.0
Total Split (%)	25%	17%
Maximum Green (s)	30.0	18.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	C-Max	None
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 139: Kingwood High School & Kingwood Dr.

AM Peak Hour

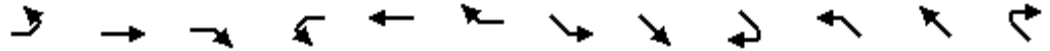


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					↑↑	↑		↑↑	↑			↑
Volume (vph)	0	0	0	0	1525	354	0	94	33	1	73	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt						0.850			0.850			
Flt Protected												0.999
Satd. Flow (prot)	0	0	0	0	3539	1583	0	3539	1583	0	1861	0
Flt Permitted												0.999
Satd. Flow (perm)	0	0	0	0	3539	1583	0	3539	1583	0	1861	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						227			106			
Link Speed (mph)		40			30			30				30
Link Distance (ft)		242			893			317				110
Travel Time (s)		4.1			20.3			7.2				2.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	1873	435	0	115	41	1	90	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1873	435	0	115	41	0	91	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		40			40			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type					NA	Perm		NA	Perm	Prot	NA	
Protected Phases					6			4		15 8	8	
Permitted Phases						6			4			
Minimum Split (s)					10.0	10.0		10.0	10.0			10.0
Total Split (s)					101.0	101.0		13.0	13.0			10.0
Total Split (%)					70.1%	70.1%		9.0%	9.0%			6.9%
Maximum Green (s)					95.0	95.0		8.0	8.0			5.0
Yellow Time (s)					4.0	4.0		4.0	4.0			4.0
All-Red Time (s)					2.0	2.0		1.0	1.0			1.0
Lost Time Adjust (s)					0.0	0.0		0.0	0.0			0.0
Total Lost Time (s)					6.0	6.0		5.0	5.0			5.0
Lead/Lag								Lead	Lead			Lag
Lead-Lag Optimize?								Yes	Yes			Yes
Act Effect Green (s)					95.0	95.0		8.0	8.0			25.0
Actuated g/C Ratio					0.66	0.66		0.06	0.06			0.17
v/c Ratio					0.80	0.39		0.59	0.22			0.28
Control Delay					21.2	5.9		79.0	2.7			4.8
Queue Delay					0.0	0.0		0.3	0.0			2.4
Total Delay					21.2	5.9		79.3	2.7			7.2

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	15
Permitted Phases		
Minimum Split (s)	10.0	10.0
Total Split (s)	101.0	20.0
Total Split (%)	70%	14%
Maximum Green (s)	95.0	14.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 139: Kingwood High School & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
LOS					C	A		E	A		A	
Approach Delay					18.3			59.2			7.2	
Approach LOS					B			E			A	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:NET and 6:, Start of Green
Natural Cycle:	80
Control Type:	Pretimed
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	20.4
Intersection LOS:	C
Intersection Capacity Utilization	69.5%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 139: Kingwood High School & Kingwood Dr.



Lane Group	ø2	ø15
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 141: Lake Houston Parkway & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↗	↗↗	↗	↗↗	↗↗	↗	↗↗	↗↗	↗	↗↗	↗↗	↗
Volume (vph)	154	298	331	154	791	135	450	642	60	169	807	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		150	150		150	150		150	150		150
Storage Lanes	2		1	2		1	2		1	2		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Fr <sub>t</sub>			0.850			0.850			0.850			0.850
Fl <sub>t</sub> Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Fl <sub>t</sub> Permitted	0.250			0.534			0.250			0.283		
Satd. Flow (perm)	903	3539	1583	1930	3539	1583	903	3539	1583	1023	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			39			79			74			41
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		513			546			450			568	
Travel Time (s)		8.7			9.3			7.7			9.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	189	366	407	189	972	166	553	789	74	208	991	325
Shared Lane Traffic (%)												
Lane Group Flow (vph)	189	366	407	189	972	166	553	789	74	208	991	325
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
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	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	0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0	5.0	5.0	5.0	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	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Act Effect Green (s)	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.52	0.26	0.62	0.24	0.69	0.24	1.53	0.56	0.11	0.51	0.70	0.49

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 141: Lake Houston Parkway & Kingwood Dr.

AM Peak Hour

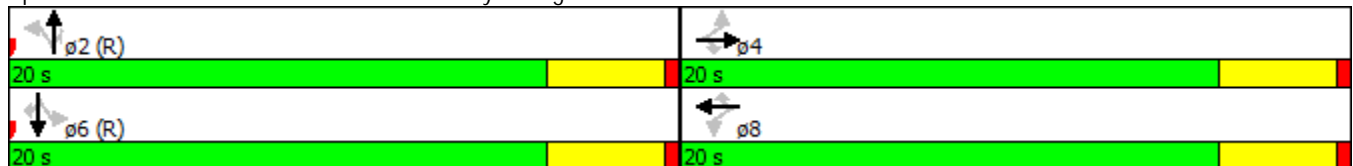
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.6	8.6	13.7	9.9	14.2	7.5	272.6	11.1	3.1	14.5	13.3	11.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	8.6	13.7	9.9	14.2	7.5	272.6	11.1	3.1	14.5	13.3	11.0
LOS	B	A	B	A	B	A	F	B	A	B	B	B
Approach Delay	12.1			12.8			112.8			13.0		
Approach LOS	B			B			F			B		

**Intersection Summary**

Area Type: Other  
 Cycle Length: 40  
 Actuated Cycle Length: 40  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 65  
 Control Type: Pretimed  
 Maximum v/c Ratio: 1.53  
 Intersection Signal Delay: 39.8  
 Intersection Capacity Utilization 82.7%  
 Analysis Period (min) 15

Intersection LOS: D  
 ICU Level of Service E

Splits and Phases: 141: Lake Houston Parkway & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 144: Forest Garden Dr. & Kingwood Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	437	44	10	1006	80	107	44	16	78	30	239
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.986			0.989			0.985			0.897	
Flt Protected	0.950			0.950				0.969			0.989	
Satd. Flow (prot)	1770	3490	0	1770	3500	0	0	3378	0	0	3140	0
Flt Permitted	0.250			0.402				0.657			0.846	
Satd. Flow (perm)	466	3490	0	749	3500	0	0	2290	0	0	2686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		32			24			20			16	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		821			413			426			481	
Travel Time (s)		14.0			7.0			9.7			10.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	152	537	54	12	1236	98	131	54	20	96	37	294
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	591	0	12	1334	0	0	205	0	0	427	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	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	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	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	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effect Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.82	0.42		0.04	0.94		0.22				0.39	



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 144: Forest Garden Dr. & Kingwood Dr.

AM Peak Hour

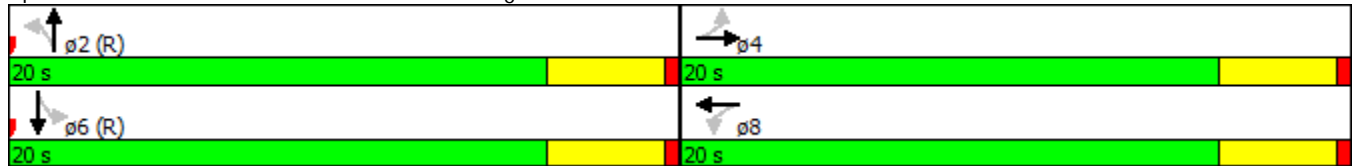


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	51.6	9.9		7.8	28.3			7.9			9.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	51.6	9.9		7.8	28.3			7.9			9.6	
LOS	D	A		A	C			A			A	
Approach Delay		18.4			28.1			7.9			9.6	
Approach LOS		B			C			A			A	

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	21.0
Intersection LOS:	C
Intersection Capacity Utilization	74.3%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 144: Forest Garden Dr. & Kingwood Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 147: Kingwood Dr. & Timber Shade Dr.

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	11	994	11	36	38	0	0	16	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	150		0	0		0	0		0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	0.95
Frt					0.998						0.875	
Flt Protected				0.950				0.976				
Satd. Flow (prot)	0	0	0	1770	3532	0	0	3454	0	0	3097	0
Flt Permitted				0.950				0.976				
Satd. Flow (perm)	0	0	0	1770	3532	0	0	3454	0	0	3097	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1							99
Link Speed (mph)		40			40			30				30
Link Distance (ft)		841			1628			83				459
Travel Time (s)		14.3			27.8			1.9				10.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	14	1221	14	44	47	0	0	20	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	14	1235	0	0	91	0	0	119	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type				Prot	NA		Prot	NA				NA
Protected Phases				1	6		15	8				4
Permitted Phases												
Minimum Split (s)				11.0	10.0			18.0				10.0
Total Split (s)				13.0	91.0			20.0				16.0
Total Split (%)				9.0%	63.2%			13.9%				11.1%
Maximum Green (s)				7.0	85.0			15.0				11.0
Yellow Time (s)				4.0	4.0			4.0				4.0
All-Red Time (s)				2.0	2.0			1.0				1.0
Lost Time Adjust (s)				0.0	0.0			0.0				0.0
Total Lost Time (s)				6.0	6.0			5.0				5.0
Lead/Lag				Lag				Lag				Lead
Lead-Lag Optimize?				Yes				Yes				Yes
Walk Time (s)								6.0				
Flash Dont Walk (s)								7.0				
Pedestrian Calls (#/hr)								0				
Act Effect Green (s)				7.0	85.0			32.0				11.0
Actuated g/C Ratio				0.05	0.59			0.22				0.08
v/c Ratio				0.16	0.59			0.12				0.36

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 147: Kingwood Dr. & Timber Shade Dr.

AM Peak Hour

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphp)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	15
Permitted Phases		
Minimum Split (s)	20.0	11.0
Total Split (s)	78.0	17.0
Total Split (%)	54%	12%
Maximum Green (s)	72.0	11.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 147: Kingwood Dr. & Timber Shade Dr.

AM Peak Hour

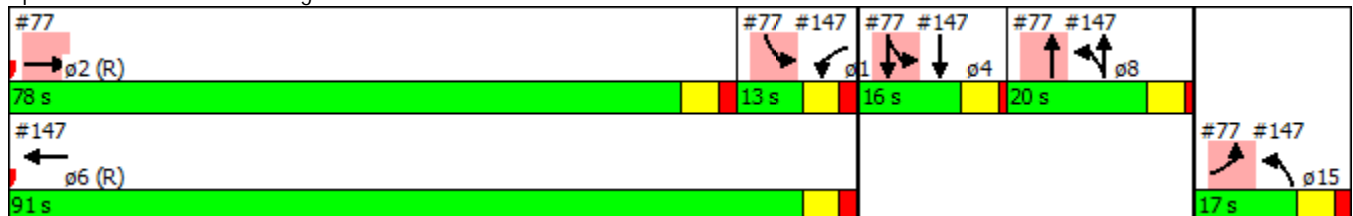


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay				51.5	9.6			4.3			19.9	
Queue Delay				0.0	0.0			0.0			0.0	
Total Delay				51.5	9.6			4.3			19.9	
LOS				D	A			A			B	
Approach Delay					10.1			4.3			19.9	
Approach LOS					B			A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	12 (8%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.59
Intersection Signal Delay:	10.6
Intersection LOS:	B
Intersection Capacity Utilization	49.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 147: Kingwood Dr. & Timber Shade Dr.



Lane Group	ø2	ø15
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 149: Kingwood Dr. & Willow Terrace

AM Peak Hour



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		↑↑		↖	↖					↖	↑↑	
Volume (vph)	0	23	52	424	40	0	0	0	0	32	574	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	150		0
Storage Lanes	0		0	1		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.896										0.996
Flt Protected				0.950	0.960					0.950		
Satd. Flow (prot)	0	3171	0	1681	1699	0	0	0	0	1770	3525	0
Flt Permitted				0.950	0.960					0.950		
Satd. Flow (perm)	0	3171	0	1681	1699	0	0	0	0	1770	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		64										2
Link Speed (mph)		30			30			40				40
Link Distance (ft)		359			105			1388				466
Travel Time (s)		8.2			2.4			23.7				7.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	28	64	521	49	0	0	0	0	39	705	21
Shared Lane Traffic (%)				46%								
Lane Group Flow (vph)	0	92	0	281	289	0	0	0	0	39	726	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA					Prot	NA	
Protected Phases		4		15	8					1	6	
Permitted Phases												
Minimum Split (s)		10.0			18.0					11.0	10.0	
Total Split (s)		14.0			42.0					15.0	63.0	
Total Split (%)		9.7%			29.2%					10.4%	43.8%	
Maximum Green (s)		9.0			37.0					9.0	57.0	
Yellow Time (s)		4.0			4.0					4.0	4.0	
All-Red Time (s)		1.0			1.0					2.0	2.0	
Lost Time Adjust (s)		0.0			0.0					0.0	0.0	
Total Lost Time (s)		5.0			5.0					6.0	6.0	
Lead/Lag		Lead			Lag					Lag		
Lead-Lag Optimize?		Yes			Yes					Yes		
Walk Time (s)					6.0							
Flash Dont Walk (s)					7.0							
Pedestrian Calls (#/hr)					0							
Act Effect Green (s)		9.0		61.0	62.0					9.0	57.0	
Actuated g/C Ratio		0.06		0.42	0.43					0.06	0.40	
v/c Ratio		0.36		0.39	0.40					0.35	0.52	

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 149: Kingwood Dr. & Willow Terrace

AM Peak Hour

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	15
Permitted Phases		
Minimum Split (s)	20.0	11.0
Total Split (s)	48.0	25.0
Total Split (%)	33%	17%
Maximum Green (s)	42.0	19.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 149: Kingwood Dr. & Willow Terrace

AM Peak Hour



Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Control Delay		28.1		1.7	1.7					79.2	39.0	
Queue Delay		0.0		1.3	1.3					0.0	0.0	
Total Delay		28.1		3.0	3.0					79.2	39.0	
LOS		C		A	A					E	D	
Approach Delay		28.1			3.0						41.1	
Approach LOS		C			A						D	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	12 (8%), Referenced to phase 2:NEL and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	25.0
Intersection LOS:	C
Intersection Capacity Utilization	48.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 149: Kingwood Dr. & Willow Terrace

#74 ↑ ø2 (R) 48 s	#74 #149 ↘ ø1 15 s	#74 #149 ↘ ø4 14 s	#74 #149 ↘ ø8 42 s	
#149 ↘ ø6 (R) 63 s				#74 #149 ↘ ø15 25 s



Lane Group	ø2	ø15
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

---



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 151: Kingwood Dr. & High Valley

AM Peak Hour

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	15
Permitted Phases		
Minimum Split (s)	20.0	11.0
Total Split (s)	67.0	16.0
Total Split (%)	47%	11%
Maximum Green (s)	61.0	10.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 151: Kingwood Dr. & High Valley

AM Peak Hour

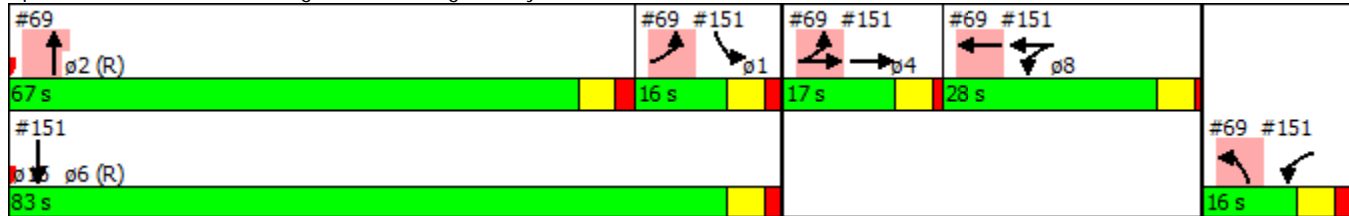


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		D		A	A							C
Approach Delay		45.8			7.6							26.0
Approach LOS		D			A							C

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	90 (63%), Referenced to phase 2:NBT and 6:, Start of Green
Natural Cycle:	70
Control Type:	Pretimed
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	24.5
Intersection LOS:	C
Intersection Capacity Utilization	51.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 151: Kingwood Dr. & High Valley



Lane Group	ø2	ø15
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 154: Kingwood Dr. & Mills Branch

AM Peak Hour



Lane Group	EBL	EBR	NBL	NBR	NWL	NWR	SWL	SWR
Lane Configurations								
Volume (vph)	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								
Flt Protected								
Satd. Flow (prot)	1863	0	0	0	1863	0	1863	1863
Flt Permitted								
Satd. Flow (perm)	1863	0	0	0	1863	0	1863	1863
Link Speed (mph)	30		40		30		30	
Link Distance (ft)	8209		1459		170		300	
Travel Time (s)	186.6		24.9		3.9		6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Right	Left	Right
Median Width(ft)	12		0		12		12	
Link Offset(ft)	0		0		0		0	
Crosswalk Width(ft)	16		16		16		16	
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9	15	9	15	9	15	9
Sign Control	Stop		Stop		Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 157: US 59 NBFR

AM Peak Hour



Lane Group	NBU	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	<b>A</b>	<b>B</b>					
Volume (vph)	233	705	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.76	1.00	1.00	1.00	1.00	1.00
Frt							
Flt Protected	0.950						
Satd. Flow (prot)	1770	8494	0	0	0	0	0
Flt Permitted	0.950						
Satd. Flow (perm)	1770	8494	0	0	0	0	0
Link Speed (mph)		55			30	55	
Link Distance (ft)		6172			362	365	
Travel Time (s)		76.5			8.2	4.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	286	866	0	0	0	0	0
Shared Lane Traffic (%)							
Lane Group Flow (vph)	286	866	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No
Lane Alignment	R NA	Left	Right	Left	Left	Left	Right
Median Width(ft)		12			12	0	
Link Offset(ft)		0			0	0	
Crosswalk Width(ft)		16			16	16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		9	15		15	9
Sign Control		Free			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.4%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 159: Russel Palmer & Northpark Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2	ø4
Lane Configurations								
Volume (vph)	0	0	77	1865	126	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Storage Length (ft)		0	150		0	0		
Storage Lanes		0	1		1	0		
Taper Length (ft)			25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00		
Fr <sub>t</sub>								
Fl <sub>t</sub> Protected			0.950		0.950			
Satd. Flow (prot)	0	0	1770	5085	1770	0		
Fl <sub>t</sub> Permitted			0.950		0.950			
Satd. Flow (perm)	0	0	1770	5085	1770	0		
Right Turn on Red		Yes				Yes		
Satd. Flow (RTOR)								
Link Speed (mph)	45			45	30			
Link Distance (ft)	128			3286	106			
Travel Time (s)	1.9			49.8	2.4			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	113%	113%	113%	113%	113%	113%		
Adj. Flow (vph)	0	0	95	2291	155	0		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	0	95	2291	155	0		
Enter Blocked Intersection	No	No	No	No	No	No		
Lane Alignment	Left	Right	Left	Left	Left	Right		
Median Width(ft)	12			12	12			
Link Offset(ft)	0			0	0			
Crosswalk Width(ft)	16			16	16			
Two way Left Turn Lane								
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Turning Speed (mph)		9	15		15	9		
Number of Detectors			1	2	1			
Detector Template			Left	Thru	Left			
Leading Detector (ft)			20	100	20			
Trailing Detector (ft)			0	0	0			
Detector 1 Position(ft)			0	0	0			
Detector 1 Size(ft)			20	6	20			
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel								
Detector 1 Extend (s)			0.0	0.0	0.0			
Detector 1 Queue (s)			0.0	0.0	0.0			
Detector 1 Delay (s)			0.0	0.0	0.0			
Detector 2 Position(ft)				94				
Detector 2 Size(ft)				6				
Detector 2 Type				Cl+Ex				
Detector 2 Channel								
Detector 2 Extend (s)				0.0				
Turn Type			custom	NA	NA			
Protected Phases				6	8		2	4
Permitted Phases			1					



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 159: Russel Palmer & Northpark Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	ø2	ø4
Detector Phase			1	6	8			
Switch Phase								
Minimum Initial (s)			5.0	15.0	5.0		15.0	5.0
Minimum Split (s)			11.3	21.3	11.2		21.3	11.3
Total Split (s)			21.0	116.0	28.0		95.0	28.0
Total Split (%)			14.6%	80.6%	19.4%		66%	19%
Maximum Green (s)			14.7	109.7	21.8		88.7	21.7
Yellow Time (s)			4.3	4.3	3.6		4.3	4.3
All-Red Time (s)			2.0	2.0	2.6		2.0	2.0
Lost Time Adjust (s)			0.0	0.0	0.0			
Total Lost Time (s)			6.3	6.3	6.2			
Lead/Lag			Lead				Lag	
Lead-Lag Optimize?			Yes				Yes	
Vehicle Extension (s)			3.0	3.0	3.0		3.0	3.0
Recall Mode			None	C-Max	Max		C-Max	None
Act Effect Green (s)			12.3	109.7	21.8			
Actuated g/C Ratio			0.09	0.76	0.15			
v/c Ratio			0.63	0.59	0.58			
Control Delay			81.7	8.2	10.0			
Queue Delay			127.1	0.0	0.2			
Total Delay			208.8	8.2	10.1			
LOS			F	A	B			
Approach Delay				16.2	10.1			
Approach LOS				B	B			

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	0 (0%), Referenced to phase 2:EBT and 6:, Start of Green
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.63
Intersection Signal Delay:	15.8
Intersection LOS:	B
Intersection Capacity Utilization:	59.0%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 159: Russel Palmer & Northpark Dr.



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 161: Northpark Dr.

AM Peak Hour



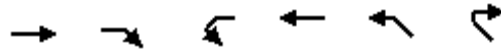
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑				
Volume (vph)	41	986	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	1.00	1.00	1.00	1.00
Frt						
Flt Protected		0.998				
Satd. Flow (prot)	0	5075	0	0	0	0
Flt Permitted		0.998				
Satd. Flow (perm)	0	5075	0	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		2834	117		111	
Travel Time (s)		42.9	1.8		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	50	1211	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1261	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	32.5%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 162: Northpark Dr.

AM Peak Hour



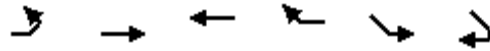
Lane Group	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations				↑↑↑	↑	
Volume (vph)	0	0	0	0	41	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	5085	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	5085	1770	0
Link Speed (mph)	45			45	30	
Link Distance (ft)	2834			128	111	
Travel Time (s)	42.9			1.9	2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	50	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	50	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Yield	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 163: Northpark Dr.

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations		↑↑↑	↑↑↑			
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.91	0.91	0.91	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	5085	5085	0	0	0
Flt Permitted						
Satd. Flow (perm)	0	5085	5085	0	0	0
Link Speed (mph)		45	45		30	
Link Distance (ft)		4389	944		1100	
Travel Time (s)		66.5	14.3		25.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	12		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 164: Northpark Dr.

AM Peak Hour



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations				↑↑		↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	3278	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	3278	0	3539
Link Speed (mph)	40		40			40
Link Distance (ft)	609		2651			576
Travel Time (s)	10.4		45.2			9.8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

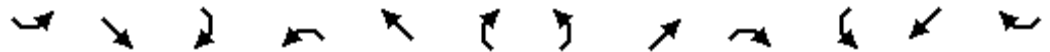
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A



Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	1	6
Permitted Phases		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 165: Northpark Dr. & Rock Springs

AM Peak Hour

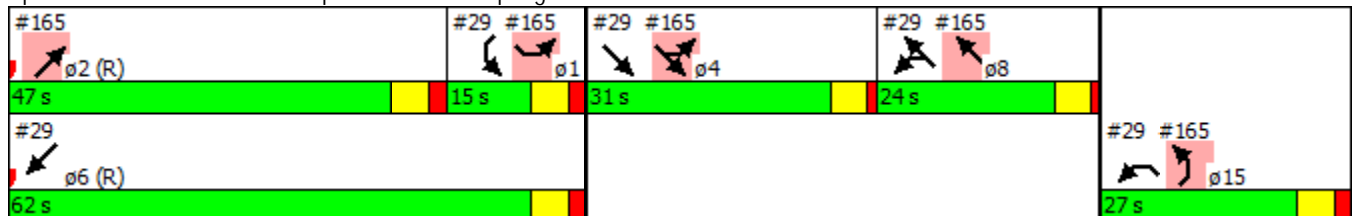


Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	1 4	4			8			15	2			
Switch Phase												
Minimum Initial (s)		5.0			5.0		5.0	4.0				
Minimum Split (s)		22.0			20.0		11.0	18.0				
Total Split (s)		31.0			24.0		27.0	47.0				
Total Split (%)		21.5%			16.7%		18.8%	32.6%				
Maximum Green (s)		26.0			19.0		21.0	41.0				
Yellow Time (s)		4.0			4.0		4.0	4.0				
All-Red Time (s)		1.0			1.0		2.0	2.0				
Lost Time Adjust (s)		0.0			0.0		0.0	0.0				
Total Lost Time (s)		5.0			5.0		6.0	6.0				
Lead/Lag		Lead			Lag			Lead				
Lead-Lag Optimize?		Yes			Yes			Yes				
Vehicle Extension (s)		3.0			3.0		3.0	3.0				
Recall Mode		None			Max		Max	C-Max				
Walk Time (s)		5.0			5.0			5.0				
Flash Dont Walk (s)		11.0			10.0			7.0				
Pedestrian Calls (#/hr)		0			0			0				
Act Effct Green (s)	23.9	9.9			35.1		21.0	41.0				
Actuated g/C Ratio	0.17	0.07			0.24		0.15	0.28				
v/c Ratio	0.18	0.13			0.16		0.36	0.35				
Control Delay	36.4	42.7			40.9		60.0	40.9				
Queue Delay	0.3	0.0			0.0		0.0	0.0				
Total Delay	36.7	42.7			40.9		60.0	40.9				
LOS	D	D			D		E	D				
Approach Delay		38.9			40.9			44.9				
Approach LOS		D			D			D				

Intersection Summary

Area Type: Other  
 Cycle Length: 144  
 Actuated Cycle Length: 144  
 Offset: 114 (79%), Referenced to phase 2:NET and 6:, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 43.3  
 Intersection LOS: D  
 Intersection Capacity Utilization 46.5%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 165: Northpark Dr. & Rock Springs

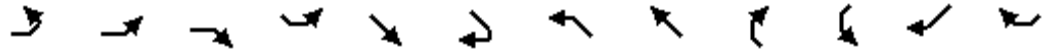




Lane Group	ø1	ø6
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	4.0
Minimum Split (s)	11.0	18.0
Total Split (s)	15.0	62.0
Total Split (%)	10%	43%
Maximum Green (s)	9.0	56.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	Max	C-Max
Walk Time (s)		5.0
Flash Dont Walk (s)		7.0
Pedestrian Calls (#/hr)		0
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 168: Lake Houston Parkway & Kings Crossing

AM Peak Hour

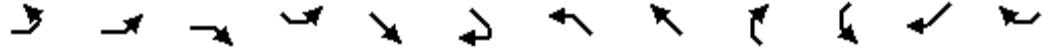


Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Lane Configurations		<del>57</del>						<del>47</del>			<del>77</del>	
Volume (vph)	57	28	0	0	0	0	11	1070	155	0	290	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.95	0.97	1.00	1.00	1.00	1.00	0.95	0.95	0.95	1.00	0.88	1.00
Frts								0.981			0.850	
Flt Protected		0.950										
Satd. Flow (prot)	0	3433	0	0	0	0	0	3472	0	0	2787	0
Flt Permitted		0.950										
Satd. Flow (perm)	0	3433	0	0	0	0	0	3472	0	0	2787	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								17			152	
Link Speed (mph)		30			40			40		30		
Link Distance (ft)		148			829			954		813		
Travel Time (s)		3.4			14.1			16.3		18.5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	70	34	0	0	0	0	14	1314	190	0	356	41
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	0	0	0	1518	0	0	397	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right	Right
Median Width(ft)		24			0			0		0		
Link Offset(ft)		0			0			0		0		
Crosswalk Width(ft)		16			16			16		16		
Two way Left Turn Lane												
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
Turning Speed (mph)	15	15	9	15		9	15		9	15	9	9
Turn Type	Prot	NA					Prot	NA			custom	
Protected Phases	1 4	4					15	2			8	
Permitted Phases												
Minimum Split (s)		21.0					11.0	17.0			21.0	
Total Split (s)		21.0					11.0	80.0			21.0	
Total Split (%)		14.6%					7.6%	55.6%			14.6%	
Maximum Green (s)		16.0					5.0	74.0			16.0	
Yellow Time (s)		4.0					4.0	4.0			4.0	
All-Red Time (s)		1.0					2.0	2.0			1.0	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.0						6.0			5.0	
Lead/Lag		Lead						Lead			Lag	
Lead-Lag Optimize?		Yes						Yes			Yes	
Walk Time (s)		5.0						4.0			4.0	
Flash Dont Walk (s)		11.0						7.0			12.0	
Pedestrian Calls (#/hr)		0						0			0	
Act Effct Green (s)		27.0						79.0			16.0	
Actuated g/C Ratio		0.19						0.55			0.11	
v/c Ratio		0.16						2.64dr			0.89	
Control Delay		45.7						273.0			61.7	
Queue Delay		3.6						0.2			26.5	
Total Delay		49.3						273.2			88.2	

Lane Group	ø1	ø6
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	1	6
Permitted Phases		
Minimum Split (s)	11.0	17.0
Total Split (s)	11.0	91.0
Total Split (%)	8%	63%
Maximum Green (s)	5.0	85.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)		4.0
Flash Dont Walk (s)		7.0
Pedestrian Calls (#/hr)		0
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 168: Lake Houston Parkway & Kings Crossing

AM Peak Hour

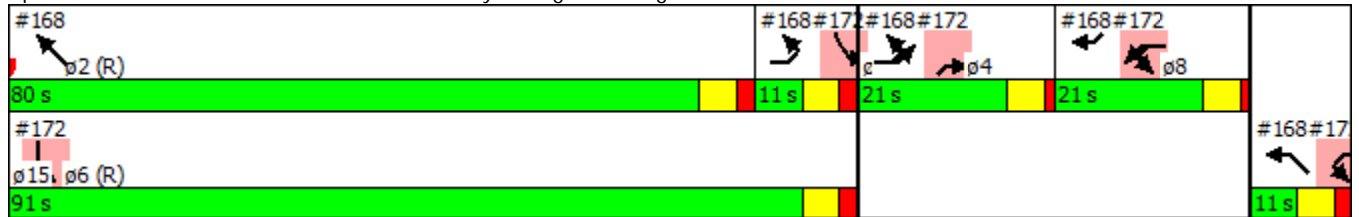


Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
LOS		D						F				F
Approach Delay		49.3						273.2				
Approach LOS		D						F				

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	48 (33%), Referenced to phase 2:NWT and 6:, Start of Green
Natural Cycle:	145
Control Type:	Pretimed
Maximum v/c Ratio:	1.54
Intersection Signal Delay:	225.3
Intersection LOS:	F
Intersection Capacity Utilization	61.3%
ICU Level of Service	B
Analysis Period (min)	15
dr	Defacto Right Lane. Recode with 1 though lane as a right lane.

Splits and Phases: 168: Lake Houston Parkway & Kings Crossing



Lane Group	ø1	ø6
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 171: Lake Houston Parkway

AM Peak Hour



Lane Group	NBL	NBT	SBT	SBR	SEL	SER
Lane Configurations		↑↑				↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.88
Frt						
Flt Protected						
Satd. Flow (prot)	0	3539	0	0	0	3278
Flt Permitted						
Satd. Flow (perm)	0	3539	0	0	0	3278
Link Speed (mph)		40	40		40	
Link Distance (ft)		568	1308		1315	
Travel Time (s)		9.7	22.3		22.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		24	24		0	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 172: Kings Crossing & Lake Houston Parkway

AM Peak Hour



Lane Group	WBL2	WBL	WBR	SBL2	SBL	SBR	NWL	NWR	NEL	NER	NER2	ø2
Lane Configurations		<del>57</del>			<del>57</del>					<del>76</del>		
Volume (vph)	284	31	0	27	1080	18	0	0	0	59	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	0.95	0.97	1.00	0.95	0.97	0.95	1.00	1.00	1.00	0.88	1.00	
Frt					0.998					0.850		
Flt Protected		0.950			0.953							
Satd. Flow (prot)	0	3433	0	0	3437	0	0	0	0	2787	0	
Flt Permitted		0.950			0.953							
Satd. Flow (perm)	0	3433	0	0	3437	0	0	0	0	2787	0	
Right Turn on Red			Yes			Yes					Yes	
Satd. Flow (RTOR)					98					152		
Link Speed (mph)		30			40		40		30			
Link Distance (ft)		148			871		719		472			
Travel Time (s)		3.4			14.8		12.3		10.7			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	
Adj. Flow (vph)	349	38	0	33	1327	22	0	0	0	72	5	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	387	0	0	1382	0	0	0	0	77	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Right	Left	Right	Right	
Median Width(ft)		24			24		0		0			
Link Offset(ft)		0			0		0		0			
Crosswalk Width(ft)		16			16		16		16			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	15	9	15	15	9	15	9	15	9	9	
Turn Type	Prot	NA		Prot	NA					custom		
Protected Phases	15 8	8		1	6					4	2	
Permitted Phases												
Minimum Split (s)		21.0		11.0	17.0					21.0	17.0	
Total Split (s)		21.0		11.0	91.0					21.0	80.0	
Total Split (%)		14.6%		7.6%	63.2%					14.6%	56%	
Maximum Green (s)		16.0		5.0	85.0					16.0	74.0	
Yellow Time (s)		4.0		4.0	4.0					4.0	4.0	
All-Red Time (s)		1.0		2.0	2.0					1.0	2.0	
Lost Time Adjust (s)		0.0			0.0					0.0		
Total Lost Time (s)		5.0			6.0					5.0		
Lead/Lag		Lag		Lag						Lead	Lead	
Lead-Lag Optimize?		Yes		Yes						Yes	Yes	
Walk Time (s)		4.0			4.0					5.0	4.0	
Flash Dont Walk (s)		12.0			7.0					11.0	7.0	
Pedestrian Calls (#/hr)		0			0					0	0	
Act Effct Green (s)		27.0			85.0					16.0		
Actuated g/C Ratio		0.19			0.59					0.11		
v/c Ratio		1.05dl			1.29					0.17		
Control Delay		25.9			167.3					0.8		
Queue Delay		32.8			0.3					0.0		
Total Delay		58.7			167.5					0.9		

Lane Group	ø15
Lane Configurations	
Volume (vph)	
Ideal Flow (vphpl)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Growth Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Turn Type	
Protected Phases	15
Permitted Phases	
Minimum Split (s)	11.0
Total Split (s)	11.0
Total Split (%)	8%
Maximum Green (s)	5.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Walk Time (s)	
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 172: Kings Crossing & Lake Houston Parkway

AM Peak Hour

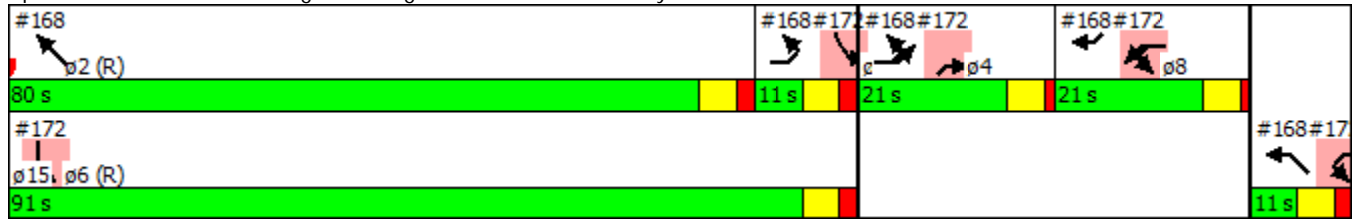


Lane Group	WBL2	WBL	WBR	SBL2	SBL	SBR	NWL	NWR	NEL	NER	NER2	ø2
LOS		E			F						A	
Approach Delay		58.7			167.5							
Approach LOS		E			F							

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	48 (33%), Referenced to phase 2:NWT and 6:, Start of Green
Natural Cycle:	145
Control Type:	Pretimed
Maximum v/c Ratio:	1.54
Intersection Signal Delay:	137.8
Intersection LOS:	F
Intersection Capacity Utilization	63.3%
ICU Level of Service	B
Analysis Period (min)	15
dl Defacto Left Lane. Recode with 1 though lane as a left lane.	

Splits and Phases: 172: Kings Crossing & Lake Houston Parkway

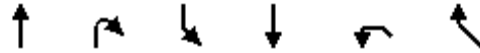


Lane Group	ø15
LOS	
Approach Delay	
Approach LOS	
Intersection Summary	

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 174: Lake Houston Parkway

AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations				↑↑		↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	3278
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	3278
Link Speed (mph)	40			40	30	
Link Distance (ft)	672			450	712	
Travel Time (s)	11.5			7.7	16.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0% ICU Level of Service A
Analysis Period (min)	15

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 175: Lake Houston Parkway & Rustic Woods

AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑					↑	↑↑	
Volume (vph)	0	42	134	113	92	0	0	0	0	15	1093	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	150		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.886									0.998	
Flt Protected					0.973					0.950		
Satd. Flow (prot)	0	3136	0	0	3444	0	0	0	0	1770	3532	0
Flt Permitted					0.973					0.950		
Satd. Flow (perm)	0	3136	0	0	3444	0	0	0	0	1770	3532	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		165									1	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		576			82			1315			563	
Travel Time (s)		13.1			1.9			22.4			9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	52	165	139	113	0	0	0	0	18	1342	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	217	0	0	252	0	0	0	0	18	1357	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
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
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type		NA		Prot	NA					Prot	NA	
Protected Phases		4		15	8					1	6	
Permitted Phases												
Minimum Split (s)		10.0			18.0					11.0	10.0	
Total Split (s)		17.0			21.0					13.0	84.0	
Total Split (%)		11.8%			14.6%					9.0%	58.3%	
Maximum Green (s)		12.0			16.0					7.0	78.0	
Yellow Time (s)		4.0			4.0					4.0	4.0	
All-Red Time (s)		1.0			1.0					2.0	2.0	
Lost Time Adjust (s)		0.0			0.0					0.0	0.0	
Total Lost Time (s)		5.0			5.0					6.0	6.0	
Lead/Lag		Lead			Lag					Lag		
Lead-Lag Optimize?		Yes			Yes					Yes		
Walk Time (s)					6.0							
Flash Dont Walk (s)					7.0							
Pedestrian Calls (#/hr)					0							
Act Effct Green (s)		12.0			38.0					7.0	78.0	
Actuated g/C Ratio		0.08			0.26					0.05	0.54	
v/c Ratio		0.53			0.28					0.21	0.71	

Lane Group	ø2	ø15
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Growth Factor		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	15
Permitted Phases		
Minimum Split (s)	20.0	11.0
Total Split (s)	71.0	22.0
Total Split (%)	49%	15%
Maximum Green (s)	65.0	16.0
Yellow Time (s)	4.0	4.0
All-Red Time (s)	2.0	2.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	
Lead-Lag Optimize?	Yes	
Walk Time (s)	4.0	
Flash Dont Walk (s)	10.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 175: Lake Houston Parkway & Rustic Woods

AM Peak Hour

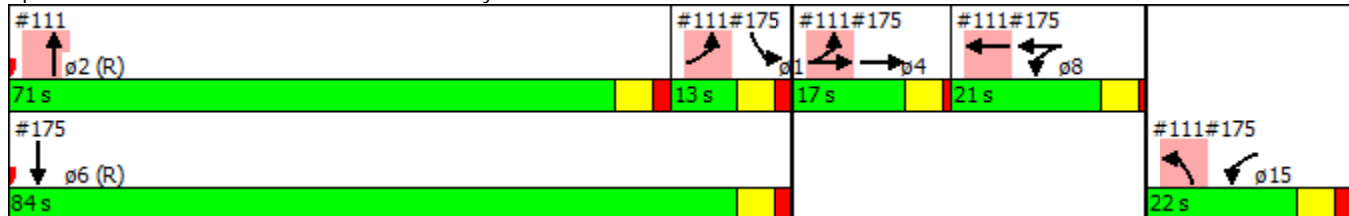


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		22.2			3.2					71.8	27.1	
Queue Delay		0.0			0.0					0.0	0.0	
Total Delay		22.2			3.2					71.8	27.1	
LOS		C			A					E	C	
Approach Delay		22.2			3.2						27.7	
Approach LOS		C			A						C	

Intersection Summary

Area Type:	Other
Cycle Length:	144
Actuated Cycle Length:	144
Offset:	90 (63%), Referenced to phase 2:NBT and 6:, Start of Green
Natural Cycle:	80
Control Type:	Pretimed
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	23.7
Intersection LOS:	C
Intersection Capacity Utilization	61.2%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 175: Lake Houston Parkway & Rustic Woods

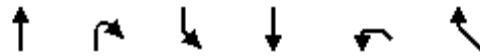


Lane Group	ø2	ø15
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 178: Lake Houston Parkway

AM Peak Hour



Lane Group	NBT	NBR	SBL	SBT	NWL	NWR
Lane Configurations				↑↑		↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	3278
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	3278
Link Speed (mph)	40			40	40	
Link Distance (ft)	472			423	4598	
Travel Time (s)	8.0			7.2	78.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	24			24	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0% ICU Level of Service A
Analysis Period (min)	15



Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
185: Hamblen

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	121	4	305	217	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.996					
Flt Protected			0.950			
Satd. Flow (prot)	1855	0	1770	1863	1863	0
Flt Permitted			0.950			
Satd. Flow (perm)	1855	0	1770	1863	1863	0
Link Speed (mph)	35			35	30	
Link Distance (ft)	123			358	309	
Travel Time (s)	2.4			7.0	7.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	149	5	375	267	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	154	0	375	267	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 188: Sorters & Northpark Dr.

AM Peak Hour



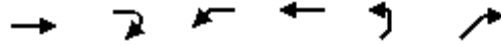
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			↔			↑
Volume (vph)	0	0	71	15	0	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.977			
Flt Protected						
Satd. Flow (prot)	0	0	1820	0	0	1863
Flt Permitted						
Satd. Flow (perm)	0	0	1820	0	0	1863
Link Speed (mph)	40		35			30
Link Distance (ft)	1492		3855			70
Travel Time (s)	25.4		75.1			1.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	87	18	0	419
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	105	0	0	419
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.6%
Analysis Period (min)	15
	ICU Level of Service A

Alternative K: Widening Kingwood Dr. + Widening Northpark Dr.  
 189: Northpark Dr.

AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NEL	NER
Lane Configurations				↑↑		↑↑
Volume (vph)	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	3278
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	3278
Link Speed (mph)	40			40	30	
Link Distance (ft)	1488			3907	1492	
Travel Time (s)	25.4			66.6	33.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	113%	113%	113%	113%	113%	113%
Adj. Flow (vph)	0	0	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	9		15	15		9
Sign Control	Free			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0% ICU Level of Service A
Analysis Period (min)	15