

2030 Alternatives Synchro LOS - Research Forest Drive														
Alternatives	AM Peak Hour							PM Peak Hour						
	Overall Delay (sec) & LOS	E/W Roadway		N/S Roadway		Residual Capacity to LOS F	Overall Delay (sec) & LOS	E/W Roadway		N/S Roadway		Residual Capacity to LOS F		
		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			
Conventional (6-lane RFD, 4-lane GMR)	43.1	D	6	118	4	94	---	44.9	D	6	118	4	94	---
Quadrant Roadway SW (6-lane RFD, 4-lane GMR)	35.4	D	6	130	4	70	---	39.1	D	6	130	4	70	---
Partial Displaced LT N-S (6-lane RFD, 4-lane GMR)	27.1	C	6	118	4	126	---	22.2	C	6	118	4	126	---
Median U-Turn N-S (6-lane RFD, 4-lane GMR)	28.5	C	6	106	4	106	---	34.5	C	6	106	4	106	---
Diamond N-S (6-lane RFD, 4-lane GMR)	38.7	D	4	124	4	94	---	36.3	D	4	124	4	94	---
Diverging Diamond N-S (6-lane RFD, 4-lane GMR)	19.6	B	4	124	4	80	---	14.3	B	4	124	4	80	---

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		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			
Conventional (6-lane RFD, 4-lane GMR)	50.5	D	6	118	4	94	---	62.4	E	6	118	4	94	---
Quadrant Roadway SW (6-lane RFD, 4-lane GMR)	40.5	D	6	130	4	70	---	47.5	D	6	130	4	70	---
Partial Displaced LT N-S (6-lane RFD, 4-lane GMR)	36.3	D	6	118	4	126	---	25.9	C	6	118	4	126	---
Median U-Turn N-S (6-lane RFD, 4-lane GMR)	29.1	C	6	106	4	106	---	38.1	D	6	106	4	106	---
Diamond N-S (6-lane RFD, 4-lane GMR)	41.7	D	4	124	4	94	---	36.6	D	4	124	4	94	---
Diverging Diamond N-S (6-lane RFD, 4-lane GMR)	21.3	C	4	124	4	80	---	15.4	B	4	124	4	80	---

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		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			
Conventional (8-lane RFD, 4-lane GMR)	43.0	D	8	142	4	94	20%	46.1	D	8	142	4	94	20%
Quadrant Roadway SW (6-lane RFD, 4-lane GMR)	35.4	D	6	130	4	106	40%	39.5	D	6	130	4	106	25%
Partial Displaced LT N-S (6-lane RFD, 4-lane GMR)	25.0	C	6	130	4	138	35%	21.9	C	6	130	4	138	30%
Median U-Turn N-S (6-lane RFD, 4-lane GMR)	28.3	C	6	106	4	106	60%	37.7	D	6	106	4	106	25%
Diamond N-S (6-lane RFD, 4-lane GMR)	39.1	D	6	148	4	94	60%	38.2	D	6	148	4	94	65%
Diverging Diamond N-S (6-lane RFD, 4-lane GMR)	22.1	C	6	148	4	80	60%	17.5	B	6	148	4	80	65%

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		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)					
Conventional (4-lane LWD, 4-lane GMR)	46.2	D	4	94	4	94	---	69.5	E	4	94	4	94	---
Partial Displaced LT N-S (4-lane LWD, 4-lane GMR)	36.1	D	4	106	4	138	---	34.7	C	4	106	4	138	---
Median U-Turn E-W (4-lane LWD, 4-lane GMR)	40.8	D	4	106	4	82	---	57.9	E	4	106	4	82	---
Diamond N-S (4-lane LWD, 4-lane GMR)	33.8	C	4	124	4	106	---	37.1	D	4	124	4	106	---
Single Point N-S (4-lane LWD, 4-lane GMR)	30.8	C	4	124	4	94	---	30.8	C	4	124	4	94	---

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		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)					
Conventional (4-lane LWD, 4-lane GMR)	67.9	E	4	94	4	94	---	90.4	F	4	94	4	94	---
Partial Displaced LT N-S (4-lane LWD, 4-lane GMR)	50.1	D	4	106	4	138	---	44.7	D	4	106	4	138	---
Median U-Turn E-W (4-lane LWD, 4-lane GMR)	53.1	D	4	106	4	82	---	62.8	E	4	106	4	82	---
Diamond N-S (4-lane LWD, 4-lane GMR)	36.0	D	4	124	4	106	---	38.2	D	4	124	4	106	---
Single Point N-S (4-lane LWD, 4-lane GMR)	32.2	C	4	124	4	94	---	33.0	C	4	124	4	94	---

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	Overall Delay (sec) & LOS	E/W Roadway		N/S Roadway		Residual Capacity to LOS F	Overall Delay (sec) & LOS	E/W Roadway		N/S Roadway		Residual Capacity to LOS F		
		# of Thru Lanes	Approach Width (ft)	# of Thru Lanes	Approach Width (ft)			# of Thru Lanes	Approach Width (ft)					
Conventional (6-lane LWD, 6-lane GMR)	32.5	C	6	118	6	118	30%	43.7	D	6	118	6	118	20%
Partial Displaced LT N-S (6-lane LWD, 6-lane GMR)	26.5	C	6	130	6	162	55%	22.1	C	6	130	6	162	55%
Median U-Turn E-W (6-lane LWD, 6-lane GMR)	30.5	C	6	130	6	106	50%	47.2	D	6	130	6	106	20%
Diamond N-S (4-lane LWD, 6-lane GMR)	31.6	C	6	148	6	130	70%	34.9	C	6	148	6	130	40%
Single Point N-S (4-lane LWD, 4-lane GMR)	32.7	C	6	148	4	94	50%	33.5	C	6	148	4	94	35%

Alternatives Comparison - Research Forest Drive 2045 Operations				
	Overall Intersection Area Delay	Individual LOS E/F Movements	Residual Capacity	Alternative Notes
Existing Geometry (6-lane RFD, 4-lane GMR)	LOS D/LOS E	5 - AM Peak 8 - PM Peak	0%	Existing intersection geometry fails at 2045 horizon year.
Conventional Expansion (8-lane RFD, 4-lane GMR)	LOS D/LOS D	3 - AM Peak 4 - PM Peak	20%	Poor turning operations, requires 8-lane RFD to not have overall intersection failure.
Quadrant Roadway SW (6-lane RFD, 4-lane GMR)	LOS D/LOS D	4 - AM Peak 4 - PM Peak	25%	Overall operations acceptable, all left-turn operate at effective LOS E/F.
Partial Displaced LT N-S (6-lane RFD, 4-lane GMR)	LOS C/LOS C	0 - AM Peak 0 - PM Peak	30%	Best operations of at-grade alternatives with largest footprint and access impacts.
Median U-Turn N-S (6-lane RFD, 4-lane GMR)	LOS C/LOS D	4 - AM Peak 4 - PM Peak	25%	Overall operations acceptable, all left-turns operate at effective LOS E/F.
Diamond N-S (6-lane RFD, 4-lane GMR)	LOS D/LOS D	0 - AM Peak 1 - PM Peak	60%	Provides LOS D operations with one LOS E movement. Has significant residual capacity.
Diverging Diamond N-S (6-lane RFD, 4-lane GMR)	LOS C/LOS B	0 - AM Peak 0 - PM Peak	60%	Operates at LOS B/C and provides significant residual capacity.

Alternatives Comparison - Lake Woodlands Drive 2045 Operations				
	Overall Intersection Area Delay	Individual LOS E/F Movements	Residual Capacity	Reason for Recommendation
Existing Geometry (4-lane LWD, 4-lane GMR)	LOS F/LOS F	6 - AM Peak 9 - PM Peak	0%	Existing intersection geometry fails at 2045 horizon year.
Conventional (6-lane LWD, 6-lane GMR)	LOS C/LOS D	4 - AM Peak 4 - PM Peak	20%	Overall LOS is acceptable, however may LOS E/F movements.
Partial Displaced LT N-S (6-lane LWD, 6-lane GMR)	LOS C/LOS C	2 - AM Peak 2 - PM Peak	55%	Large intersection size and would require rework of nearby Lake Woodland Drive signals.
Median U-Turn E-W (6-lane LWD, 6-lane GMR)	LOS C/LOS D	4 - AM Peak 4 - PM Peak	20%	Highest delay of at-grade. Left-turns operate at LOS E/F.
Diamond N-S (4-lane LWD, 6-lane GMR)	LOS C/LOS C	0 - AM Peak 0 - PM Peak	40%	Additional lanes on GMR provide 5% more residual capacity.
Single Point N-S (4-lane LWD, 4-lane GMR)	LOS C/LOS C	0 - AM Peak 0 - PM Peak	35%	Similar operations with smaller footprint vs. tight diamond.

Poor	
Good	
Best	