



ITE 130 Industrial Park - Alternative Analysis



1: Cloverleaf Rd. (SR 4025) & Mt. Pleasant Rd. (SR 4010)

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	9	191	97	37	263
Future Volume (vph)	63	9	191	97	37	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-1%		1%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	40		40			35
Link Distance (ft)	1309		1084			881
Travel Time (s)	22.3		18.5			17.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	17%	0%	19%	27%	24%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	313	0	0	326
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	9	191	97	37	263
Future Vol, veh/h	63	9	191	97	37	263
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	1	-	-	-1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	0	19	27	24	8
Mvmt Flow	68	10	208	105	40	286

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	627	260	0
Stage 1	260	-	-
Stage 2	366	-	-
Critical Hdwy	6.37	6.1	-
Critical Hdwy Stg 1	5.37	-	-
Critical Hdwy Stg 2	5.37	-	-
Follow-up Hdwy	3.2	3.1	-
Pot Cap-1 Maneuver	484	834	-
Stage 1	855	-	-
Stage 2	763	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	458	834	-
Mov Cap-2 Maneuver	458	-	-
Stage 1	808	-	-
Stage 2	763	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	13.85	0	1.15
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	485	222
HCM Lane V/C Ratio	-	-	0.161	0.046
HCM Ctrl Dly (s/v)	-	-	13.8	9.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	438	32	15	0	666	288	131	7	236	77
Future Volume (vph)	0	0	438	32	15	0	666	288	131	7	236	77
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	14	14	14	12	11	11	11	11	12
Grade (%)		0%			-5%			2%			-2%	
Storage Length (ft)	0		0	0		0	700		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	0	1455	0	1308	0	1628	1385	0	1670	1521	0
Flt Permitted					0.967		0.276			0.498		
Satd. Flow (perm)	0	0	1455	0	1308	0	473	1385	0	875	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			340					86			21	
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		523			1042			715			1084	
Travel Time (s)		14.3			23.7			12.2			18.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	7%	42%	53%	0%	4%	21%	13%	0%	11%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	481	0	51	0	732	460	0	8	344	0
Turn Type			pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases			5		8		5	2			6	
Permitted Phases			4	8			2			6		
Detector Phase			5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)			5.0	5.0	5.0		5.0	10.0		10.0	10.0	
Minimum Split (s)			11.0	11.0	11.0		11.0	16.0		16.0	16.0	
Total Split (s)			38.0	14.0	14.0		38.0	66.0		28.0	28.0	
Total Split (%)			47.5%	17.5%	17.5%		47.5%	82.5%		35.0%	35.0%	
Maximum Green (s)			32.0	8.0	8.0		32.0	60.0		22.0	22.0	
Yellow Time (s)			4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)			-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)			5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead			Lag	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	
Minimum Gap (s)			3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode			None	None	None		None	Min		Min	Min	
Walk Time (s)												

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.0
Total Split (s)	14.0
Total Split (%)	18%
Maximum Green (s)	8.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)			38.8			8.4			55.9	58.7	19.0	19.0
Actuated g/C Ratio			0.57			0.12			0.82	0.86	0.28	0.28
v/c Ratio			0.49			0.32			0.80	0.38	0.03	0.79
Control Delay (s/veh)			4.6			37.9			18.1	3.2	21.1	37.7
Queue Delay			0.0			0.0			0.0	0.0	0.0	0.0
Total Delay (s/veh)			4.6			37.9			18.1	3.2	21.1	37.7
LOS			A			D			B	A	C	D
Approach Delay (s/veh)			4.6			37.9			12.4			37.3
Approach LOS			A			D			B			D
Queue Length 50th (ft)			31			34			219	54	3	160
Queue Length 95th (ft)			85			83			#463	97	13	#300
Internal Link Dist (ft)			443			962			635			1004
Turn Bay Length (ft)									700			100
Base Capacity (vph)			1028			182			978	1200	312	556
Starvation Cap Reductn			0			0			0	0	0	0
Spillback Cap Reductn			0			0			0	0	0	0
Storage Cap Reductn			0			0			0	0	0	0
Reduced v/c Ratio			0.47			0.28			0.75	0.38	0.03	0.62

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 68.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay (s/veh): 15.4

Intersection LOS: B

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

#2  Ø2	#2  Ø4
66 s	14 s
#2  Ø5	#2  Ø6
38 s	28 s
#2  Ø8	
	14 s

Lane Group	Ø4
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 7th Edition methodology does not support Non-NEMA phasing.

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: A.M. Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	176	911	0	0	707
Future Volume (vph)	0	176	911	0	0	707
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	10	11	11	11	11
Grade (%)	-2%		2%			-2%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	25		40			40
Link Distance (ft)	831		554			715
Travel Time (s)	22.7		9.4			12.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	15%	6%	0%	0%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	191	990	0	0	768
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: A.M. Peak Hour

Intersection

Int Delay, s/veh 1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	176	911	0	0	707
Future Vol, veh/h	0	176	911	0	0	707
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	15	6	0	0	9
Mvmt Flow	0	191	990	0	0	768

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	990	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	5	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.6	-
Pot Cap-1 Maneuver	0	490	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	490	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.98	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 490	-
HCM Lane V/C Ratio	- 0.39	-
HCM Ctrl Dly (s/v)	- 17	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.8	-

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	0	371	0	0	0	0	862	717	156	565	0
Future Volume (vph)	76	0	371	0	0	0	0	862	717	156	565	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	14	12	12	12	11	11	11	11	12	12
Grade (%)		-1%			0%			-1%			-2%	
Storage Length (ft)	0		350	0		0	0		75	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25		100	25		25	25		25	100		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		906			759			2459			554	
Travel Time (s)		24.7			20.7			41.9			9.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	22%	0%	7%	0%	0%	0%	0%	5%	3%	16%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	85	417	0	0	0	0	969	806	175	635	0
Turn Type	Prot	NA	Perm					NA	Perm	Perm	NA	
Protected Phases	7	4						2			6	
Permitted Phases			4						2	6		
Detector Phase	7	4	4					2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					16.0	16.0	16.0	16.0	
Total Split (s)	14.0	14.0	14.0					46.0	46.0	46.0	46.0	
Total Split (%)	23.3%	23.3%	23.3%					76.7%	76.7%	76.7%	76.7%	
Maximum Green (s)	8.0	8.0	8.0					40.0	40.0	40.0	40.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0					-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Recall Mode	None	None	None					Min	Min	Min	Min	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.39	0.82					0.86	0.68	0.97	0.55	
Control Delay (s/veh)		28.8	22.4					17.9	4.6	75.9	6.8	

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay (s/veh)		28.8	22.4					17.9	4.6	75.9	6.8	
Queue Length 50th (ft)		28	32					218	19	45	89	
Queue Length 95th (ft)		64	#167					#524	53	#88	132	
Internal Link Dist (ft)		826			679			2379			474	
Turn Bay Length (ft)			350						75	200		
Base Capacity (vph)		220	513					1175	1203	189	1210	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.39	0.81					0.82	0.67	0.93	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 58.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

#4  Ø2	#4  Ø4
46 s	14 s
#4  Ø6	#4  Ø7
46 s	14 s

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	0	371	0	0	0	0	862	717	156	565	0
Future Volume (veh/h)	76	0	371	0	0	0	0	862	717	156	565	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.04				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1585	1911	1807				0	1766	1795	1647	1789	0
Adj Flow Rate, veh/h	85	0	0				0	969	0	175	635	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	22	0	7				0	5	3	16	6	0
Cap, veh/h	155	0					0	1291		339	1308	0
Arrive On Green	0.08	0.00	0.00				0.00	0.73	0.00	0.73	0.73	0.00
Sat Flow, veh/h	1820	0	1532				0	1766	1521	511	1789	0
Grp Volume(v), veh/h	85	0	0				0	969	0	175	635	0
Grp Sat Flow(s),veh/h/ln	1820	0	1532				0	1766	1521	511	1789	0
Q Serve(g_s), s	2.4	0.0	0.0				0.0	17.8	0.0	16.9	8.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0				0.0	17.8	0.0	34.6	8.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	155	0					0	1291		339	1308	0
V/C Ratio(X)	0.55	0.00					0.00	0.75		0.52	0.49	0.00
Avail Cap(c_a), veh/h	302	0					0	1333		351	1351	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.8	0.0	0.0				0.0	4.4	0.0	14.7	3.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	2.3	0.0	1.2	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	0.0				0.0	4.3	0.0	2.9	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.9	0.0	0.0				0.0	6.7	0.0	15.9	3.3	0.0
LnGrp LOS	C						A			B		
Approach Vol, veh/h	85						969			810		
Approach Delay, s/veh	26.9						6.7			6.0		
Approach LOS	C						A			A		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	44.7			9.6			44.7					
Change Period (Y+Rc), s	6.0			6.0			6.0					
Max Green Setting (Gmax), s	40.0			8.0			40.0					
Max Q Clear Time (g_c+l1), s	20.3			4.4			37.1					
Green Ext Time (p_c), s	7.3			0.1			1.6					
Intersection Summary												
HCM 7th Control Delay, s/veh	7.3											
HCM 7th LOS	A											
Notes												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	440	51	98	12	22	72	43	1067	25	17	724	196
Future Volume (vph)	440	51	98	12	22	72	43	1067	25	17	724	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	10	13	13	10	11	11	10	11	11
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	100		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	75		25	75		25	75		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		2071			2145			626			2459	
Travel Time (s)		40.3			41.8			10.7			41.9	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	7%	0%	0%	3%	0%	7%	43%	0%	11%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	468	158	0	13	100	0	46	1162	0	18	979	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		18.5	18.5		18.5	18.5	
Total Split (s)	39.0	39.0		39.0	39.0		21.0	21.0		21.0	21.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	33.0	33.0		33.0	33.0		14.5	14.5		14.5	14.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.81	0.19		0.02	0.13		0.41	1.11		0.16	0.94	
Control Delay (s/veh)	24.7	6.9		6.1	7.1		34.6	89.9		21.7	41.5	

2035 Projected (Build) Conditions
 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	24.7	6.9		6.1	7.1		34.6	89.9		21.7	41.5	
Queue Length 50th (ft)	122	24		2	16		13	~304		5	~220	
Queue Length 95th (ft)	#219	44		8	32		#59	#456		22	#368	
Internal Link Dist (ft)		1991			2065			546			2379	
Turn Bay Length (ft)	225			75			100			75		
Base Capacity (vph)	668	938		615	897		113	1045		113	1040	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.70	0.17		0.02	0.11		0.41	1.11		0.16	0.94	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

#6 		#6 
Ø2 (R)		Ø4
21 s		39 s
#6 		#6 
Ø6 (R)		Ø8
21 s		39 s

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	51	98	12	22	72	43	1067	25	17	724	196
Future Volume (veh/h)	440	51	98	12	22	72	43	1067	25	17	724	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1972	2066	1962	1750	1820	1776	1912	1812	1300	1949	1793	1906
Adj Flow Rate, veh/h	468	54	73	13	23	62	46	1135	27	18	770	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	7	0	0	3	0	7	43	0	11	3
Cap, veh/h	668	335	453	576	183	493	220	1390	33	176	1094	271
Arrive On Green	0.42	0.42	0.40	0.42	0.42	0.40	0.40	0.40	0.39	0.40	0.40	0.39
Sat Flow, veh/h	1384	796	1076	1182	435	1173	597	3437	82	504	2704	671
Grp Volume(v), veh/h	468	0	127	13	0	85	46	568	594	18	485	476
Grp Sat Flow(s),veh/h/ln	1384	0	1872	1182	0	1609	597	1722	1798	504	1703	1672
Q Serve(g_s), s	18.5	0.0	2.6	0.4	0.0	2.0	4.2	17.6	17.6	2.0	14.2	14.3
Cycle Q Clear(g_c), s	20.0	0.0	2.6	2.5	0.0	2.0	18.4	17.6	17.6	19.6	14.2	14.3
Prop In Lane	1.00		0.57	1.00		0.73	1.00		0.05	1.00		0.40
Lane Grp Cap(c), veh/h	668	0	787	576	0	676	220	696	727	176	689	676
V/C Ratio(X)	0.70	0.00	0.16	0.02	0.00	0.13	0.21	0.82	0.82	0.10	0.70	0.70
Avail Cap(c_a), veh/h	870	0	1061	749	0	912	220	696	727	176	689	676
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.71	0.71	0.71
Uniform Delay (d), s/veh	16.5	0.0	11.0	11.4	0.0	10.9	22.5	15.9	15.9	24.6	14.9	15.1
Incr Delay (d2), s/veh	1.7	0.0	0.1	0.0	0.0	0.1	2.2	10.2	9.8	0.8	4.3	4.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	0.0	1.7	0.2	0.0	1.1	1.2	12.1	12.4	0.5	8.5	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	0.0	11.1	11.4	0.0	11.0	24.7	26.1	25.8	25.4	19.2	19.4
LnGrp LOS	B		B	B		B	C	C	C	C	B	B
Approach Vol, veh/h	595				98		1208				979	
Approach Delay, s/veh	16.7				11.0		25.9				19.4	
Approach LOS	B				B		C				B	
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	29.8		30.2		29.8		30.2					
Change Period (Y+Rc), s	6.5		6.0		6.5		6.0					
Max Green Setting (Gmax), s	14.5		33.0		14.5		33.0					
Max Q Clear Time (g_c+11), s	20.1		22.5		16.7		5.0					
Green Ext Time (p_c), s	0.0		1.7		0.0		0.5					
Intersection Summary												
HCM 7th Control Delay, s/veh			21.3									
HCM 7th LOS			C									

2035 Projected (Build) Conditions
 7: Schwanger Rd. & Campus Dr. & Merts Dr.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	390	1	30	229	4	0	4	65	40	4	24
Future Volume (vph)	13	390	1	30	229	4	0	4	65	40	4	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	14	14	14	16	16	16
Grade (%)		0%			-1%			1%			-3%	
Storage Length (ft)	175		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		885			2071			354			527	
Travel Time (s)		17.2			40.3			6.9			10.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	17%	2%	0%	5%	1%	0%	0%	0%	3%	5%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	444	0	34	265	0	0	79	0	0	77	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	390	1	30	229	4	0	4	65	40	4	24
Future Vol, veh/h	13	390	1	30	229	4	0	4	65	40	4	24
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175			150								
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	1	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	2	0	5	1	0	0	0	3	5	0	4
Mvmt Flow	15	443	1	34	260	5	0	5	74	45	5	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	444	0	0	804	807	444	807	806	264
Stage 1	-	-	-	-	-	-	473	473	-	332	332	-
Stage 2	-	-	-	-	-	-	331	334	-	475	474	-
Critical Hdwy	4.5	-	-	4.4	-	-	7.3	6.7	6.33	6.6	5.9	5.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	5.55	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	5.55	4.9	-
Follow-up Hdwy	3.2	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	906	-	-	834	-	-	323	303	640	376	364	840
Stage 1	-	-	-	-	-	-	634	547	-	824	685	-
Stage 2	-	-	-	-	-	-	770	635	-	699	607	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	905	-	-	834	-	-	291	286	640	308	343	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	291	286	-	308	343	-
Stage 1	-	-	-	-	-	-	624	538	-	789	656	-
Stage 2	-	-	-	-	-	-	709	608	-	603	597	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.29			1.08			11.93			16.14		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	597	905	-	-	834	-	-	400
HCM Lane V/C Ratio	0.131	0.016	-	-	0.041	-	-	0.193
HCM Ctrl Dly (s/v)	11.9	9	-	-	9.5	-	-	16.1
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.7

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	34	10	23	54	26	39
Future Volume (vph)	34	10	23	54	26	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)	-2%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)		25	25		25	25
Link Speed (mph)	40			40	35	
Link Distance (ft)	2119			1252	852	
Travel Time (s)	36.1			21.3	16.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	16%	0%	19%	7%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	104	88	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	10	23	54	26	39
Future Vol, veh/h	34	10	23	54	26	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	16	0	19	7	0	5
Mvmt Flow	46	14	31	73	35	53

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	59
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.5
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.2
Pot Cap-1 Maneuver	-	-	1072
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1072
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.53	8.94
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1002	-	-	538	-
HCM Lane V/C Ratio	0.088	-	-	0.029	-
HCM Ctrl Dly (s/v)	8.9	-	-	8.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

9: Mt. Pleasant Rd. (SR 4010) & Eastern (Car Only) Dw

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	41	38	50	33	8	10
Future Volume (vph)	41	38	50	33	8	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25			25	25	25
Link Speed (mph)		40	40		25	
Link Distance (ft)		1109	2119		324	
Travel Time (s)		18.9	36.1		8.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	25%	15%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	88	93	0	20	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	41	38	50	33	8	10
Future Vol, veh/h	41	38	50	33	8	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	25	15	2	2	2
Mvmt Flow	46	42	56	37	9	11

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	92	0	0 207 74
Stage 1	-	-	- 74 -
Stage 2	-	-	- 133 -
Critical Hdwy	4.3	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	1117	-	- 903 1055
Stage 1	-	-	- 1107 -
Stage 2	-	-	- 1037 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1117	-	- 865 1055
Mov Cap-2 Maneuver	-	-	- 865 -
Stage 1	-	-	- 1061 -
Stage 2	-	-	- 1037 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	4.34	0	8.82
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	934	-	-	-	961
HCM Lane V/C Ratio	0.041	-	-	-	0.021
HCM Ctrl Dly (s/v)	8.4	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	60	0	5	55	0	0	53	19	0	25	17
Future Volume (vph)	74	60	0	5	55	0	0	53	19	0	25	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1309			1109			278			356	
Travel Time (s)		22.3			18.9			7.6			9.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	25%	0%	2%	15%	0%	0%	30%	2%	0%	64%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	149	0	0	67	0	0	80	0	0	47	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

Intersection

Int Delay, s/veh 6.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	74	60	0	5	55	0	0	53	19	0	25	17
Future Vol, veh/h	74	60	0	5	55	0	0	53	19	0	25	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	25	0	2	15	0	0	30	2	0	64	2
Mvmt Flow	82	67	0	6	61	0	0	59	21	0	28	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	67	0	0	317	303	67	333	303	61
Stage 1	-	-	-	-	-	-	231	231	-	72	72	-
Stage 2	-	-	-	-	-	-	86	72	-	261	231	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	6.8	6.22	7.1	7.14	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.8	-	6.1	6.14	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.8	-	6.1	6.14	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.27	3.1	3	4.576	3.1
Pot Cap-1 Maneuver	1144	-	-	1139	-	-	730	566	1065	713	519	1073
Stage 1	-	-	-	-	-	-	892	664	-	1094	728	-
Stage 2	-	-	-	-	-	-	1075	783	-	858	612	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1144	-	-	1139	-	-	625	521	1065	576	478	1073
Mov Cap-2 Maneuver	-	-	-	-	-	-	625	521	-	576	478	-
Stage 1	-	-	-	-	-	-	825	615	-	1089	724	-
Stage 2	-	-	-	-	-	-	1010	779	-	704	566	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	4.63	0.68	11.89	11.32
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	602	994	-	-	150	-	-	617
HCM Lane V/C Ratio	0.133	0.072	-	-	0.005	-	-	0.076
HCM Ctrl Dly (s/v)	11.9	8.4	0	-	8.2	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0	-	-	0.2

1: Cloverleaf Rd. (SR 4025) & Mt. Pleasant Rd. (SR 4010)

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	96	31	334	78	25	229
Future Volume (vph)	96	31	334	78	25	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-1%		1%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	40		40			35
Link Distance (ft)	1263		1057			799
Travel Time (s)	21.5		18.0			15.6
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	20%	13%	5%	2%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	438	0	0	271
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 2.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	31	334	78	25	229
Future Vol, veh/h	96	31	334	78	25	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	1	-	-	-1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	20	13	5	2	0	3
Mvmt Flow	102	33	355	83	27	244

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	694	397	0
Stage 1	397	-	-
Stage 2	297	-	-
Critical Hdwy	6.4	6.23	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.2	3.2	-
Pot Cap-1 Maneuver	439	672	-
Stage 1	736	-	-
Stage 2	820	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	423	672	-
Mov Cap-2 Maneuver	423	-	-
Stage 1	710	-	-
Stage 2	820	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	15.87	0	0.92
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	465	177
HCM Lane V/C Ratio	-	-	0.29	0.031
HCM Ctrl Dly (s/v)	-	-	15.9	9.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.2	0.1

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	758	106	35	23	407	381	56	2	248	57
Future Volume (vph)	0	0	758	106	35	23	407	381	56	2	248	57
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	14	12	14	12	11	11	11	11	12
Grade (%)		0%			-5%			2%			-2%	
Storage Length (ft)	0		0	0		0	700		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	0	1512	0	1580	0	1597	1532	0	1670	1620	0
Flt Permitted				0.969			0.317			0.505		
Satd. Flow (perm)	0	0	1512	0	1580	0	533	1532	0	887	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			380		8			14			12	
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		424			1042			715			1057	
Travel Time (s)		11.6			23.7			12.2			18.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	3%	11%	18%	0%	6%	7%	33%	0%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	773	0	167	0	415	446	0	2	311	0
Turn Type			pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases			5		8		5	2			6	
Permitted Phases			4	8			2			6		
Detector Phase			5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)			5.0	5.0	5.0		5.0	10.0		10.0	10.0	
Minimum Split (s)			11.0	11.0	11.0		11.0	16.0		16.0	16.0	
Total Split (s)			32.0	32.0	32.0		32.0	68.0		36.0	36.0	
Total Split (%)			32.0%	32.0%	32.0%		32.0%	68.0%		36.0%	36.0%	
Maximum Green (s)			26.0	26.0	26.0		26.0	62.0		30.0	30.0	
Yellow Time (s)			4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)			-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)			5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead			Lag	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	
Minimum Gap (s)			3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode			None	None	None		None	Min		Min	Min	
Walk Time (s)												

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.0
Total Split (s)	32.0
Total Split (%)	32%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)			43.2		13.9		48.8	48.8		19.6	19.6	
Actuated g/C Ratio			0.59		0.19		0.67	0.67		0.27	0.27	
v/c Ratio			0.74		0.55		0.59	0.43		0.01	0.71	
Control Delay (s/veh)			10.9		35.0		10.2	7.4		21.5	33.8	
Queue Delay			0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)			10.9		35.0		10.2	7.4		21.5	33.8	
LOS			B		C		B	A		C	C	
Approach Delay (s/veh)		10.9			35.0			8.7			33.7	
Approach LOS		B			C			A			C	
Queue Length 50th (ft)			99		77		71	78		1	133	
Queue Length 95th (ft)			339		166		171	176		6	246	
Internal Link Dist (ft)		344			962			635			977	
Turn Bay Length (ft)							700			100		
Base Capacity (vph)			1113		615		766	1306		393	725	
Starvation Cap Reductn			0		0		0	0		0	0	
Spillback Cap Reductn			0		0		0	0		0	0	
Storage Cap Reductn			0		0		0	0		0	0	
Reduced v/c Ratio			0.69		0.27		0.54	0.34		0.01	0.43	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 73.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 15.3

Intersection LOS: B

Intersection Capacity Utilization 89.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

#2  Ø2	#2  Ø4
68 s	32 s
#2  Ø5	#2  Ø8
32 s	36 s

Lane Group	Ø4
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 7th Edition methodology does not support Non-NEMA phasing.

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: P.M. Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	178	666	0	0	1115
Future Volume (vph)	0	178	666	0	0	1115
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	10	11	11	11	11
Grade (%)	-2%		2%			-2%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	25		40			40
Link Distance (ft)	831		554			715
Travel Time (s)	22.7		9.4			12.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	10%	6%	0%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	187	701	0	0	1174
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: P.M. Peak Hour

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	178	666	0	0	1115
Future Vol, veh/h	0	178	666	0	0	1115
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	-2
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	10	6	0	0	3
Mvmt Flow	0	187	701	0	0	1174

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	701	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	5	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.6	-
Pot Cap-1 Maneuver	0	666	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	666	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 666	-
HCM Lane V/C Ratio	- 0.281	-
HCM Ctrl Dly (s/v)	- 12.5	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	0	651	0	0	0	0	584	573	154	969	0
Future Volume (vph)	92	0	651	0	0	0	0	584	573	154	969	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	14	12	12	12	11	11	11	11	12	12
Grade (%)		-1%			0%			-1%			-2%	
Storage Length (ft)	0		350	0		0	0		75	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25		100	25		25	25		25	100		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		906			759			313			554	
Travel Time (s)		24.7			20.7			5.3			9.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	13%	0%	1%	0%	0%	0%	0%	6%	3%	7%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	664	0	0	0	0	596	585	157	989	0
Turn Type	Prot	NA	Perm					NA	Perm	Perm	NA	
Protected Phases	7	4						2			6	
Permitted Phases			4						2	6		
Detector Phase	7	4	4					2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					16.0	16.0	16.0	16.0	
Total Split (s)	23.0	23.0	23.0					37.0	37.0	37.0	37.0	
Total Split (%)	38.3%	38.3%	38.3%					61.7%	61.7%	61.7%	61.7%	
Maximum Green (s)	17.0	17.0	17.0					31.0	31.0	31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0					-1.0	0.0	-1.0	-1.0	
Total Lost Time (s)		5.0	5.0					5.0	6.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Recall Mode	None	None	None					Min	Min	Min	Min	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.20	1.20					0.68	0.60	0.56	1.04	
Control Delay (s/veh)		17.1	129.4					15.1	4.8	19.4	58.2	

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay (s/veh)		17.1	129.4					15.1	4.8	19.4	58.2	
Queue Length 50th (ft)		25	~280					149	17	36	~406	
Queue Length 95th (ft)		56	#466					259	70	#107	#614	
Internal Link Dist (ft)		826			679			233			474	
Turn Bay Length (ft)			350						75	200		
Base Capacity (vph)		471	552					880	980	278	950	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.20	1.20					0.68	0.60	0.56	1.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

#4  Ø2	#4  Ø4
37 s	23 s
#4  Ø6	#4  Ø7
37 s	23 s

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	0	651	0	0	0	0	584	573	154	969	0
Future Volume (veh/h)	92	0	651	0	0	0	0	584	573	154	969	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.04				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1719	1911	1896				0	1752	1795	1775	1846	0
Adj Flow Rate, veh/h	94	0	0				0	596	0	157	989	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	13	0	1				0	6	3	7	2	0
Cap, veh/h	191	0					0	1137		542	1198	0
Arrive On Green	0.11	0.00	0.00				0.00	0.65	0.00	0.65	0.65	0.00
Sat Flow, veh/h	1820	0	1607				0	1752	1521	780	1846	0
Grp Volume(v), veh/h	94	0	0				0	596	0	157	989	0
Grp Sat Flow(s),veh/h/ln	1820	0	1607				0	1752	1521	780	1846	0
Q Serve(g_s), s	2.0	0.0	0.0				0.0	7.4	0.0	5.5	16.5	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0				0.0	7.4	0.0	12.8	16.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	191	0					0	1137		542	1198	0
V/C Ratio(X)	0.49	0.00					0.00	0.52		0.29	0.83	0.00
Avail Cap(c_a), veh/h	805	0					0	1379		650	1453	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	0.0	0.0				0.0	3.8	0.0	7.2	5.4	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0				0.0	0.4	0.0	0.3	3.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	0.0				0.0	1.2	0.0	1.0	4.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.1	0.0	0.0				0.0	4.2	0.0	7.5	8.8	0.0
LnGrp LOS	B							A		A	A	
Approach Vol, veh/h	94						596			1146		
Approach Delay, s/veh	19.1						4.2			8.6		
Approach LOS	B						A			A		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	31.4			9.3			31.4					
Change Period (Y+Rc), s	6.0			6.0			6.0					
Max Green Setting (Gmax), s	31.0			17.0			31.0					
Max Q Clear Time (g_c+l1), s	9.9			4.0			19.0					
Green Ext Time (p_c), s	3.7			0.3			6.4					
Intersection Summary												
HCM 7th Control Delay, s/veh				7.7								
HCM 7th LOS				A								
Notes												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	53	82	31	65	26	93	833	19	62	1091	441
Future Volume (vph)	273	53	82	31	65	26	93	833	19	62	1091	441
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	10	13	13	10	11	11	10	11	11
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	100		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	75		25	75		25	75		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		2071			2145			626			2157	
Travel Time (s)		40.3			41.8			10.7			36.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	5%	0%	3%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	287	142	0	33	95	0	98	897	0	65	1612	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		18.5	18.5		18.5	18.5	
Total Split (s)	19.0	19.0		19.0	19.0		36.0	36.0		36.0	36.0	
Total Split (%)	34.5%	34.5%		34.5%	34.5%		65.5%	65.5%		65.5%	65.5%	
Maximum Green (s)	13.0	13.0		13.0	13.0		29.5	29.5		29.5	29.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.95	0.29		0.12	0.20		0.80	0.51		0.25	0.89	
Control Delay (s/veh)	67.2	11.3		17.1	13.7		60.2	8.8		9.4	17.8	

2035 Projected (Build) Conditions
 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	67.2	11.3		17.1	13.7		60.2	8.8		9.4	17.8	
Queue Length 50th (ft)	93	19		8	17		23	87		10	198	
Queue Length 95th (ft)	#222	56		26	48		#103	128		30	#379	
Internal Link Dist (ft)		1991			2065			546			2077	
Turn Bay Length (ft)	225			75			100			75		
Base Capacity (vph)	301	492		280	466		123	1772		261	1814	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.95	0.29		0.12	0.20		0.80	0.51		0.25	0.89	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 55

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

#6 	Ø2 (R)		#6 	Ø4
36 s			19 s	
#6 	Ø6 (R)		#6 	Ø8
36 s			19 s	

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	53	82	31	65	26	93	833	19	62	1091	441
Future Volume (veh/h)	273	53	82	31	65	26	93	833	19	62	1091	441
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1972	2066	2066	1750	1820	1820	1912	1841	1912	1906	1892	1935
Adj Flow Rate, veh/h	287	56	73	33	68	12	98	877	19	65	1148	448
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	0	0	0	0	5	0	3	4	1
Cap, veh/h	448	207	270	376	383	68	189	1941	42	388	1413	537
Arrive On Green	0.25	0.25	0.24	0.25	0.25	0.24	0.55	0.55	0.54	0.55	0.55	0.54
Sat Flow, veh/h	1390	814	1061	1180	1506	266	326	3500	76	633	2548	968
Grp Volume(v), veh/h	287	0	129	33	0	80	98	438	458	65	801	795
Grp Sat Flow(s),veh/h/ln	1390	0	1875	1180	0	1772	326	1749	1827	633	1798	1718
Q Serve(g_s), s	11.0	0.0	3.1	1.3	0.0	1.9	9.7	8.2	8.2	3.7	19.7	21.3
Cycle Q Clear(g_c), s	12.5	0.0	3.1	3.8	0.0	1.9	30.5	8.2	8.2	11.9	19.7	21.3
Prop In Lane	1.00		0.57	1.00		0.15	1.00		0.04	1.00		0.56
Lane Grp Cap(c), veh/h	448	0	477	376	0	451	189	970	1013	388	997	953
V/C Ratio(X)	0.64	0.00	0.27	0.09	0.00	0.18	0.52	0.45	0.45	0.17	0.80	0.83
Avail Cap(c_a), veh/h	448	0	477	376	0	451	189	970	1013	388	997	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	16.6	17.7	0.0	16.1	24.6	7.3	7.3	10.8	9.8	10.4
Incr Delay (d2), s/veh	3.1	0.0	0.3	0.1	0.0	0.2	9.9	1.5	1.5	0.9	6.8	8.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.3	0.0	2.2	0.6	0.0	1.3	3.0	4.4	4.5	0.9	11.2	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.7	0.0	17.0	17.8	0.0	16.3	34.5	8.8	8.8	11.8	16.7	19.0
LnGrp LOS	C		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h	416			113			994			1661		
Approach Delay, s/veh	21.6			16.7			11.3			17.6		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	36.0			19.0			36.0			19.0		
Change Period (Y+Rc), s	6.5			6.0			6.5			6.0		
Max Green Setting (Gmax), s	29.5			13.0			29.5			13.0		
Max Q Clear Time (g_c+I1), s	10.7			15.0			23.3			6.3		
Green Ext Time (p_c), s	14.6			0.0			6.2			0.2		
Intersection Summary												
HCM 7th Control Delay, s/veh	16.1											
HCM 7th LOS	B											

7: Schwanger Rd. & Campus Dr. & Merts Dr.

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	383	4	115	402	43	1	8	53	18	8	17
Future Volume (vph)	24	383	4	115	402	43	1	8	53	18	8	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	14	14	14	16	16	16
Grade (%)		0%			-1%			1%			-3%	
Storage Length (ft)	175		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		885			2071			354			527	
Travel Time (s)		17.2			40.3			6.9			10.3	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	1%	1%	2%	0%	13%	3%	6%	13%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	430	0	128	495	0	0	69	0	0	48	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	383	4	115	402	43	1	8	53	18	8	17
Future Vol, veh/h	24	383	4	115	402	43	1	8	53	18	8	17
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175		-	150		-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	1	-	-	-3	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	1	1	2	0	13	3	6	13	6
Mvmt Flow	27	426	4	128	447	48	1	9	59	20	9	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	495	0	0	430	0	0	1188	1232	429	1211	1210	472
Stage 1	-	-	-	-	-	-	481	481	-	727	727	-
Stage 2	-	-	-	-	-	-	707	751	-	484	483	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.83	6.33	6.56	6.03	5.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.83	-	5.56	5.03	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.83	-	5.56	5.03	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.117	3.1	3.1	4.117	3.2
Pot Cap-1 Maneuver	810	-	-	854	-	-	170	157	653	206	213	631
Stage 1	-	-	-	-	-	-	628	522	-	508	466	-
Stage 2	-	-	-	-	-	-	461	386	-	672	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	810	-	-	854	-	-	130	129	653	145	175	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	129	-	145	175	-
Stage 1	-	-	-	-	-	-	607	504	-	432	396	-
Stage 2	-	-	-	-	-	-	372	328	-	581	560	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.56			2.04			15.5			26.06		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	411	810	-	-	854	-	-	218
HCM Lane V/C Ratio	0.167	0.033	-	-	0.15	-	-	0.219
HCM Ctrl Dly (s/v)	15.5	9.6	-	-	10	-	-	26.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.5	-	-	0.8

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	81	30	45	34	12	35
Future Volume (vph)	81	30	45	34	12	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)	-2%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)		25	25		25	25
Link Speed (mph)	40			40	35	
Link Distance (ft)	2125			1252	852	
Travel Time (s)	36.2			21.3	16.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	0%	15%	3%	25%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	0	0	90	54	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	81	30	45	34	12	35
Future Vol, veh/h	81	30	45	34	12	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	0	15	3	25	4
Mvmt Flow	92	34	51	39	14	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	126
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.5
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.1
Pot Cap-1 Maneuver	-	-	1047
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1047
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	4.91	9.12
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	926	-	-	1024	-
HCM Lane V/C Ratio	0.058	-	-	0.049	-
HCM Ctrl Dly (s/v)	9.1	-	-	8.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

9: Mt. Pleasant Rd. (SR 4010) & Eastern (Car Only) Dw

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	79	36	11	33	40
Future Volume (vph)	14	79	36	11	33	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25			25	25	25
Link Speed (mph)		40	40		25	
Link Distance (ft)		1141	2125		293	
Travel Time (s)		19.4	36.2		8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	15%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	104	52	0	81	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	79	36	11	33	40
Future Vol, veh/h	14	79	36	11	33	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	8	15	2	2	2
Mvmt Flow	16	88	40	12	37	44

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	52	0	0 165 46
Stage 1	-	-	- 46 -
Stage 2	-	-	- 119 -
Critical Hdwy	4.3	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	1152	-	- 957 1094
Stage 1	-	-	- 1141 -
Stage 2	-	-	- 1054 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1152	-	- 943 1094
Mov Cap-2 Maneuver	-	-	- 943 -
Stage 1	-	-	- 1125 -
Stage 2	-	-	- 1054 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	1.23	0	8.83
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	271	-	-	-	1020
HCM Lane V/C Ratio	0.014	-	-	-	0.079
HCM Ctrl Dly (s/v)	8.2	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	87	0	18	58	0	0	28	6	0	51	73
Future Volume (vph)	24	87	0	18	58	0	0	28	6	0	51	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1263			1141			424			360	
Travel Time (s)		21.5			19.4			11.6			9.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	0%	2%	15%	0%	0%	57%	2%	0%	27%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	124	0	0	84	0	0	38	0	0	138	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

Intersection

Int Delay, s/veh 5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	24	87	0	18	58	0	0	28	6	0	51	73
Future Vol, veh/h	24	87	0	18	58	0	0	28	6	0	51	73
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	8	0	2	15	0	0	57	2	0	27	2
Mvmt Flow	27	97	0	20	64	0	0	31	7	0	57	81

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	97	0	0	283	254	97	270	254	64
Stage 1	-	-	-	-	-	-	150	150	-	104	104	-
Stage 2	-	-	-	-	-	-	133	104	-	166	150	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	7.07	6.22	7.1	6.77	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.07	-	6.1	5.77	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.07	-	6.1	5.77	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.513	3.1	3	4.243	3.1
Pot Cap-1 Maneuver	1141	-	-	1113	-	-	771	565	1024	787	609	1068
Stage 1	-	-	-	-	-	-	990	680	-	1050	763	-
Stage 2	-	-	-	-	-	-	1012	714	-	970	728	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1141	-	-	1113	-	-	618	541	1024	707	582	1068
Mov Cap-2 Maneuver	-	-	-	-	-	-	618	541	-	707	582	-
Stage 1	-	-	-	-	-	-	966	663	-	1030	749	-
Stage 2	-	-	-	-	-	-	848	700	-	896	710	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.78	1.96	11.52	10.47
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	590	389	-	-	426	-	-	795
HCM Lane V/C Ratio	0.064	0.023	-	-	0.018	-	-	0.173
HCM Ctrl Dly (s/v)	11.5	8.2	0	-	8.3	0	-	10.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0.1	-	-	0.6



TIS + 20% - Alternative Analysis



1: Cloverleaf Rd. (SR 4025) & Mt. Pleasant Rd. (SR 4010)

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	9	191	79	33	263
Future Volume (vph)	63	9	191	79	33	263
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-1%		1%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	40		40			35
Link Distance (ft)	1309		1084			881
Travel Time (s)	22.3		18.5			17.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	17%	0%	19%	27%	24%	8%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	0	294	0	0	322
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	63	9	191	79	33	263
Future Vol, veh/h	63	9	191	79	33	263
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	1	-	-	-1
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	0	19	27	24	8
Mvmt Flow	68	10	208	86	36	286

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	608	251	0
Stage 1	251	-	-
Stage 2	358	-	-
Critical Hdwy	6.37	6.1	-
Critical Hdwy Stg 1	5.37	-	-
Critical Hdwy Stg 2	5.37	-	-
Follow-up Hdwy	3.2	3.1	-
Pot Cap-1 Maneuver	497	844	-
Stage 1	864	-	-
Stage 2	770	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	473	844	-
Mov Cap-2 Maneuver	473	-	-
Stage 1	822	-	-
Stage 2	770	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	13.53	0	1.03
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	500	201
HCM Lane V/C Ratio	-	-	0.156	0.041
HCM Ctrl Dly (s/v)	-	-	13.5	9.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	438	36	18	0	666	270	131	7	236	77
Future Volume (vph)	0	0	438	36	18	0	666	270	131	7	236	77
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	14	14	14	12	11	11	11	11	12
Grade (%)		0%			-5%			2%			-2%	
Storage Length (ft)	0		0	0		0	700		0	100		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	0	1455	0	1245	0	1628	1347	0	1670	1521	0
Flt Permitted					0.968		0.276			0.507		
Satd. Flow (perm)	0	0	1455	0	1245	0	473	1347	0	891	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			340					92			21	
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		523			1042			715			1084	
Travel Time (s)		14.3			23.7			12.2			18.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	7%	49%	61%	0%	4%	21%	23%	0%	11%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	481	0	60	0	732	441	0	8	344	0
Turn Type			pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases			5		8		5	2			6	
Permitted Phases			4	8			2			6		
Detector Phase			5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)			5.0	5.0	5.0		5.0	10.0		10.0	10.0	
Minimum Split (s)			11.0	11.0	11.0		11.0	16.0		16.0	16.0	
Total Split (s)			38.0	14.0	14.0		38.0	66.0		28.0	28.0	
Total Split (%)			47.5%	17.5%	17.5%		47.5%	82.5%		35.0%	35.0%	
Maximum Green (s)			32.0	8.0	8.0		32.0	60.0		22.0	22.0	
Yellow Time (s)			4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)			-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)			5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead			Lag	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	
Minimum Gap (s)			3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode			None	None	None		None	Min		Min	Min	
Walk Time (s)												

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.0
Total Split (s)	14.0
Total Split (%)	18%
Maximum Green (s)	8.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	38.8			8.5			55.9		58.7	19.0		19.0
Actuated g/C Ratio	0.57			0.12			0.82		0.86	0.28		0.28
v/c Ratio	0.49			0.39			0.80		0.38	0.03		0.79
Control Delay (s/veh)	4.6			40.3			18.1		3.1	21.1		37.7
Queue Delay	0.0			0.0			0.0		0.0	0.0		0.0
Total Delay (s/veh)	4.6			40.3			18.1		3.1	21.1		37.7
LOS	A			D			B		A	C		D
Approach Delay (s/veh)	4.6			40.3			12.5			37.3		
Approach LOS	A			D			B			D		
Queue Length 50th (ft)	31			42			219		50	3		160
Queue Length 95th (ft)	85			98			#463		91	13		#300
Internal Link Dist (ft)	443			962			635			1004		
Turn Bay Length (ft)							700			100		
Base Capacity (vph)	1028			174			978		1168	318		556
Starvation Cap Reductn	0			0			0		0	0		0
Spillback Cap Reductn	0			0			0		0	0		0
Storage Cap Reductn	0			0			0		0	0		0
Reduced v/c Ratio	0.47			0.34			0.75		0.38	0.03		0.62

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 68.4

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay (s/veh): 15.7

Intersection LOS: B

Intersection Capacity Utilization 73.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

#2  Ø2	#2  Ø4
66 s	14 s
#2  Ø5	#2  Ø6
38 s	28 s
#2  Ø8	
	14 s

Lane Group	Ø4
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 7th Edition methodology does not support Non-NEMA phasing.

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: A.M. Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	170	899	0	0	712
Future Volume (vph)	0	170	899	0	0	712
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	10	11	11	11	11
Grade (%)	-2%		2%			-2%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	25		40			40
Link Distance (ft)	831		554			715
Travel Time (s)	22.7		9.4			12.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	19%	6%	0%	0%	9%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	185	977	0	0	774
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: A.M. Peak Hour

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	170	899	0	0	712
Future Vol, veh/h	0	170	899	0	0	712
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	-2
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	19	6	0	0	9
Mvmt Flow	0	185	977	0	0	774

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	977	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	5	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.6	-
Pot Cap-1 Maneuver	0	497	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	497	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	16.47	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 497	-
HCM Lane V/C Ratio	- 0.372	-
HCM Ctrl Dly (s/v)	- 16.5	-
HCM Lane LOS	- C	-
HCM 95th %tile Q(veh)	- 1.7	-

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	0	371	0	0	0	0	852	717	160	565	0
Future Volume (vph)	74	0	371	0	0	0	0	852	717	160	565	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	14	12	12	12	11	11	11	11	12	12
Grade (%)		-1%			0%			-1%			-2%	
Storage Length (ft)	0		350	0		0	0		75	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25		100	25		25	25		25	100		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		906			759			313			554	
Travel Time (s)		24.7			20.7			5.3			9.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	27%	0%	7%	0%	0%	0%	0%	5%	3%	18%	6%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	83	417	0	0	0	0	957	806	180	635	0
Turn Type	Prot	NA	Perm					NA	Perm	Perm	NA	
Protected Phases	7	4						2			6	
Permitted Phases			4						2	6		
Detector Phase	7	4	4					2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					16.0	16.0	16.0	16.0	
Total Split (s)	14.0	14.0	14.0					46.0	46.0	46.0	46.0	
Total Split (%)	23.3%	23.3%	23.3%					76.7%	76.7%	76.7%	76.7%	
Maximum Green (s)	8.0	8.0	8.0					40.0	40.0	40.0	40.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0					-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Recall Mode	None	None	None					Min	Min	Min	Min	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.40	0.82					0.85	0.68	0.96	0.55	
Control Delay (s/veh)		29.4	22.6					16.9	4.5	74.2	6.8	

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay (s/veh)		29.4	22.6					16.9	4.5	74.2	6.8	
Queue Length 50th (ft)		28	32					212	18	47	89	
Queue Length 95th (ft)		63	#167					#513	52	#90	133	
Internal Link Dist (ft)		826			679			233			474	
Turn Bay Length (ft)			350						75	200		
Base Capacity (vph)		210	512					1167	1202	193	1202	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.40	0.81					0.82	0.67	0.93	0.53	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 58.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

#4  Ø2	#4  Ø4
46 s	14 s
#4  Ø6	#4  Ø7
46 s	14 s

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: A.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	0	371	0	0	0	0	852	717	160	565	0
Future Volume (veh/h)	74	0	371	0	0	0	0	852	717	160	565	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.04				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1511	1911	1807				0	1766	1795	1619	1789	0
Adj Flow Rate, veh/h	83	0	0				0	957	0	180	635	0
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	27	0	7				0	5	3	18	6	0
Cap, veh/h	153	0					0	1292		343	1309	0
Arrive On Green	0.08	0.00	0.00				0.00	0.73	0.00	0.73	0.73	0.00
Sat Flow, veh/h	1820	0	1532				0	1766	1521	508	1789	0
Grp Volume(v), veh/h	83	0	0				0	957	0	180	635	0
Grp Sat Flow(s),veh/h/ln	1820	0	1532				0	1766	1521	508	1789	0
Q Serve(g_s), s	2.4	0.0	0.0				0.0	17.2	0.0	17.5	8.0	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.0				0.0	17.2	0.0	34.7	8.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	153	0					0	1292		343	1309	0
V/C Ratio(X)	0.54	0.00					0.00	0.74		0.52	0.49	0.00
Avail Cap(c_a), veh/h	302	0					0	1333		355	1351	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.9	0.0	0.0				0.0	4.3	0.0	14.4	3.0	0.0
Incr Delay (d2), s/veh	3.0	0.0	0.0				0.0	2.2	0.0	1.3	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.0	0.0	0.0				0.0	4.0	0.0	3.0	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.8	0.0	0.0				0.0	6.4	0.0	15.7	3.3	0.0
LnGrp LOS	C						A			B		
Approach Vol, veh/h	83						957			815		
Approach Delay, s/veh	26.8						6.4			6.1		
Approach LOS	C						A			A		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	44.7			9.6			44.7					
Change Period (Y+Rc), s	6.0			6.0			6.0					
Max Green Setting (Gmax), s	40.0			8.0			40.0					
Max Q Clear Time (g_c+l1), s	19.7			4.4			37.2					
Green Ext Time (p_c), s	7.3			0.1			1.5					
Intersection Summary												
HCM 7th Control Delay, s/veh				7.2								
HCM 7th LOS				A								
Notes												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	49	98	12	22	72	43	1059	22	17	724	196
Future Volume (vph)	438	49	98	12	22	72	43	1059	22	17	724	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	10	13	13	10	11	11	10	11	11
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	100		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	75		25	75		25	75		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		2071			2145			626			2157	
Travel Time (s)		40.3			41.8			10.7			36.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	7%	0%	0%	3%	0%	7%	43%	0%	11%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	466	156	0	13	100	0	46	1150	0	18	979	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		18.5	18.5		18.5	18.5	
Total Split (s)	39.0	39.0		39.0	39.0		21.0	21.0		21.0	21.0	
Total Split (%)	65.0%	65.0%		65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	33.0	33.0		33.0	33.0		14.5	14.5		14.5	14.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.81	0.19		0.02	0.13		0.40	1.10		0.16	0.94	
Control Delay (s/veh)	24.6	6.9		6.1	7.1		34.5	84.0		21.7	40.9	

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	24.6	6.9		6.1	7.1		34.5	84.0		21.7	40.9	
Queue Length 50th (ft)	122	23		2	16		13	~298		5	~219	
Queue Length 95th (ft)	215	44		8	32		#59	#451		22	#368	
Internal Link Dist (ft)		1991			2065			546			2077	
Turn Bay Length (ft)	225			75			100			75		
Base Capacity (vph)	668	937		617	897		114	1049		114	1044	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.70	0.17		0.02	0.11		0.40	1.10		0.16	0.94	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 70

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

#6 	Ø2 (R)		#6 	Ø4
21 s			39 s	
#6 	Ø6 (R)		#6 	Ø8
21 s			39 s	

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: A.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	49	98	12	22	72	43	1059	22	17	724	196
Future Volume (veh/h)	438	49	98	12	22	72	43	1059	22	17	724	196
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1972	2066	1962	1750	1820	1776	1912	1812	1300	1949	1793	1906
Adj Flow Rate, veh/h	466	52	73	13	23	62	46	1127	23	18	770	191
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	7	0	0	3	0	7	43	0	11	3
Cap, veh/h	666	326	458	576	182	492	221	1400	29	180	1097	272
Arrive On Green	0.42	0.42	0.40	0.42	0.42	0.40	0.41	0.41	0.39	0.41	0.41	0.39
Sat Flow, veh/h	1384	778	1092	1184	435	1173	597	3451	70	509	2704	671
Grp Volume(v), veh/h	466	0	125	13	0	85	46	562	588	18	485	476
Grp Sat Flow(s),veh/h/ln	1384	0	1869	1184	0	1609	597	1722	1800	509	1703	1672
Q Serve(g_s), s	18.4	0.0	2.5	0.4	0.0	2.0	4.2	17.3	17.3	1.9	14.2	14.3
Cycle Q Clear(g_c), s	19.9	0.0	2.5	2.4	0.0	2.0	18.4	17.3	17.3	19.2	14.2	14.3
Prop In Lane	1.00		0.58	1.00		0.73	1.00		0.04	1.00		0.40
Lane Grp Cap(c), veh/h	666	0	784	576	0	674	221	699	730	180	691	678
V/C Ratio(X)	0.70	0.00	0.16	0.02	0.00	0.13	0.21	0.80	0.80	0.10	0.70	0.70
Avail Cap(c_a), veh/h	870	0	1059	751	0	912	221	699	730	180	691	678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.6	0.0	11.0	11.5	0.0	10.9	22.4	15.7	15.7	24.2	14.8	15.0
Incr Delay (d2), s/veh	1.7	0.0	0.1	0.0	0.0	0.1	2.1	9.6	9.2	1.1	5.9	6.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.0	0.0	1.7	0.2	0.0	1.1	1.2	11.8	12.1	0.5	9.5	9.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.3	0.0	11.1	11.5	0.0	11.0	24.6	25.3	25.0	25.3	20.7	21.0
LnGrp LOS	B		B	B		B	C	C	C	C	C	C
Approach Vol, veh/h	591			98			1196			979		
Approach Delay, s/veh	16.8			11.1			25.1			20.9		
Approach LOS	B			B			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	29.8			30.2			29.8			30.2		
Change Period (Y+Rc), s	6.5			6.0			6.5			6.0		
Max Green Setting (Gmax), s	14.5			33.0			14.5			33.0		
Max Q Clear Time (g_c+l1), s	19.8			22.4			16.7			4.9		
Green Ext Time (p_c), s	0.0			1.7			0.0			0.5		
Intersection Summary												
HCM 7th Control Delay, s/veh	21.5											
HCM 7th LOS	C											

2035 Projected (Build) Conditions
 7: Schwanger Rd. & Campus Dr. & Merts Dr.

Timing Plan: A.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	392	1	30	229	4	0	4	65	40	4	24
Future Volume (vph)	13	392	1	30	229	4	0	4	65	40	4	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	14	14	14	16	16	16
Grade (%)		0%			-1%			1%			-3%	
Storage Length (ft)	175		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		885			2071			354			527	
Travel Time (s)		17.2			40.3			6.9			10.3	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	17%	2%	0%	5%	1%	0%	0%	0%	3%	5%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	446	0	34	265	0	0	79	0	0	77	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	392	1	30	229	4	0	4	65	40	4	24
Future Vol, veh/h	13	392	1	30	229	4	0	4	65	40	4	24
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175			150								
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	1	-	-	-3	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	17	2	0	5	1	0	0	0	3	5	0	4
Mvmt Flow	15	445	1	34	260	5	0	5	74	45	5	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	266	0	0	447	0	0	806	810	446	809	808	264
Stage 1	-	-	-	-	-	-	476	476	-	332	332	-
Stage 2	-	-	-	-	-	-	331	334	-	477	476	-
Critical Hdwy	4.5	-	-	4.4	-	-	7.3	6.7	6.33	6.6	5.9	5.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.7	-	5.55	4.9	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.7	-	5.55	4.9	-
Follow-up Hdwy	3.2	-	-	3	-	-	3	4	3.1	3	4	3.1
Pot Cap-1 Maneuver	906	-	-	833	-	-	321	302	638	374	363	840
Stage 1	-	-	-	-	-	-	632	546	-	824	685	-
Stage 2	-	-	-	-	-	-	770	635	-	697	606	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	905	-	-	833	-	-	290	285	638	307	342	839
Mov Cap-2 Maneuver	-	-	-	-	-	-	290	285	-	307	342	-
Stage 1	-	-	-	-	-	-	622	537	-	789	656	-
Stage 2	-	-	-	-	-	-	709	608	-	601	596	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.29	1.08	11.96	16.18
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	596	905	-	-	833	-	-	399
HCM Lane V/C Ratio	0.132	0.016	-	-	0.041	-	-	0.194
HCM Ctrl Dly (s/v)	12	9	-	-	9.5	-	-	16.2
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0.1	-	-	0.7

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	34	10	23	52	21	39
Future Volume (vph)	34	10	23	52	21	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)	-2%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)		25	25		25	25
Link Speed (mph)	40			40	35	
Link Distance (ft)	2119			1252	852	
Travel Time (s)	36.1			21.3	16.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	16%	0%	19%	7%	0%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	101	81	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 4.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	10	23	52	21	39
Future Vol, veh/h	34	10	23	52	21	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	16	0	19	7	0	5
Mvmt Flow	46	14	31	70	28	53

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	59
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.5
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.2
Pot Cap-1 Maneuver	-	-	1072
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1072
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.59	8.86
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1013	-	-	552	-
HCM Lane V/C Ratio	0.08	-	-	0.029	-
HCM Ctrl Dly (s/v)	8.9	-	-	8.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

9: Mt. Pleasant Rd. (SR 4010) & Eastern (Car Only) Dw

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	31	38	50	26	8	10
Future Volume (vph)	31	38	50	26	8	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25			25	25	25
Link Speed (mph)		40	40		25	
Link Distance (ft)		1109	2119		324	
Travel Time (s)		18.9	36.1		8.8	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	25%	15%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	76	85	0	20	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	31	38	50	26	8	10
Future Vol, veh/h	31	38	50	26	8	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	25	15	2	2	2
Mvmt Flow	34	42	56	29	9	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	84	0	-	0	181	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	111	-
Critical Hdwy	4.3	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	3	-	-	-	3	3.1
Pot Cap-1 Maneuver	1123	-	-	-	936	1060
Stage 1	-	-	-	-	1112	-
Stage 2	-	-	-	-	1063	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1123	-	-	-	907	1060
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	1077	-
Stage 2	-	-	-	-	1063	-
Approach	EB	WB		SB		
HCM Ctrl Dly, s/v	3.73	0		8.73		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	809	-	-	-	986	
HCM Lane V/C Ratio	0.031	-	-	-	0.02	
HCM Ctrl Dly (s/v)	8.3	0	-	-	8.7	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	55	0	5	55	0	0	58	14	0	32	17
Future Volume (vph)	57	55	0	5	55	0	0	58	14	0	32	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1309			1109			278			356	
Travel Time (s)		22.3			18.9			7.6			9.7	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	25%	0%	2%	15%	0%	0%	50%	2%	0%	72%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	124	0	0	67	0	0	80	0	0	55	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

Intersection

Int Delay, s/veh 6.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	57	55	0	5	55	0	0	58	14	0	32	17
Future Vol, veh/h	57	55	0	5	55	0	0	58	14	0	32	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	25	0	2	15	0	0	50	2	0	72	2
Mvmt Flow	63	61	0	6	61	0	0	64	16	0	36	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	61	0	0	61	0	0	278	260	61	292	260	61
Stage 1	-	-	-	-	-	-	188	188	-	72	72	-
Stage 2	-	-	-	-	-	-	90	72	-	220	188	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	7	6.22	7.1	7.22	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6	-	6.1	6.22	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6	-	6.1	6.22	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.45	3.1	3	4.648	3.1
Pot Cap-1 Maneuver	1144	-	-	1144	-	-	777	571	1073	760	541	1073
Stage 1	-	-	-	-	-	-	943	663	-	1094	716	-
Stage 2	-	-	-	-	-	-	1069	750	-	905	631	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1144	-	-	1144	-	-	669	535	1073	622	508	1073
Mov Cap-2 Maneuver	-	-	-	-	-	-	669	535	-	622	508	-
Stage 1	-	-	-	-	-	-	889	625	-	1089	712	-
Stage 2	-	-	-	-	-	-	993	746	-	754	594	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	4.24	0.68	12.02	11.35
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	593	916	-	-	150	-	-	621
HCM Lane V/C Ratio	0.135	0.055	-	-	0.005	-	-	0.088
HCM Ctrl Dly (s/v)	12	8.3	0	-	8.2	0	-	11.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0	-	-	0.3

1: Cloverleaf Rd. (SR 4025) & Mt. Pleasant Rd. (SR 4010)

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	27	334	69	23	229
Future Volume (vph)	80	27	334	69	23	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-1%		1%			-1%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	40		40			35
Link Distance (ft)	1263		1057			510
Travel Time (s)	21.5		18.0			9.9
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	20%	13%	5%	2%	0%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	428	0	0	268
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	80	27	334	69	23	229
Future Vol, veh/h	80	27	334	69	23	229
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-1	-	1	-	-	-1
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	20	13	5	2	0	3
Mvmt Flow	85	29	355	73	24	244

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	685	392	0
Stage 1	392	-	-
Stage 2	293	-	-
Critical Hdwy	6.4	6.23	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.2	3.2	-
Pot Cap-1 Maneuver	445	676	-
Stage 1	740	-	-
Stage 2	824	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	430	676	-
Mov Cap-2 Maneuver	430	-	-
Stage 1	716	-	-
Stage 2	824	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.99	0	0.85
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	473	164
HCM Lane V/C Ratio	-	-	0.24	0.029
HCM Ctrl Dly (s/v)	-	-	15	9.3
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	758	110	39	23	407	375	65	2	246	56
Future Volume (vph)	0	0	758	110	39	23	407	375	65	2	246	56
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	14	12	14	12	11	11	11	11	12
Grade (%)		0%			-5%			2%			-2%	
Storage Length (ft)	0		0	0		0	700		0	100		100
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Satd. Flow (prot)	0	0	1512	0	1502	0	1597	1492	0	1670	1620	0
Flt Permitted					0.969		0.317			0.503		
Satd. Flow (perm)	0	0	1512	0	1502	0	533	1492	0	884	1620	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			383		7			17			12	
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		424			1042			715			1057	
Travel Time (s)		11.6			23.7			12.2			18.0	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	3%	16%	29%	0%	6%	7%	47%	0%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	773	0	175	0	415	449	0	2	308	0
Turn Type			pm+ov	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases			5		8		5	2			6	
Permitted Phases			4	8			2			6		
Detector Phase			5	8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)			5.0	5.0	5.0		5.0	10.0		10.0	10.0	
Minimum Split (s)			11.0	11.0	11.0		11.0	16.0		16.0	16.0	
Total Split (s)			32.0	32.0	32.0		32.0	68.0		36.0	36.0	
Total Split (%)			32.0%	32.0%	32.0%		32.0%	68.0%		36.0%	36.0%	
Maximum Green (s)			26.0	26.0	26.0		26.0	62.0		30.0	30.0	
Yellow Time (s)			4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)			2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)			-1.0		-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)			5.0		5.0		5.0	5.0		5.0	5.0	
Lead/Lag			Lead				Lead			Lag	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	
Minimum Gap (s)			3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)			0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode			None	None	None		None	Min		Min	Min	
Walk Time (s)												

Lane Group	Ø4
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	4
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	11.0
Total Split (s)	32.0
Total Split (%)	32%
Maximum Green (s)	26.0
Yellow Time (s)	4.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	

2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

																
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Flash Don't Walk (s)																
Pedestrian Calls (#/hr)																
Act Effct Green (s)			44.1			14.8			48.9			48.9			19.6	19.6
Actuated g/C Ratio			0.59			0.20			0.66			0.66			0.26	0.26
v/c Ratio			0.73			0.57			0.60			0.45			0.01	0.71
Control Delay (s/veh)			10.6			36.0			10.7			8.1			22.0	34.5
Queue Delay			0.0			0.0			0.0			0.0			0.0	0.0
Total Delay (s/veh)			10.6			36.0			10.7			8.1			22.0	34.5
LOS			B			D			B			A			C	C
Approach Delay (s/veh)			10.6			36.0			9.4						34.4	
Approach LOS			B			D			A						C	
Queue Length 50th (ft)			98			89			75			83			1	134
Queue Length 95th (ft)			334			189			181			192			6	250
Internal Link Dist (ft)			344			962			635						977	
Turn Bay Length (ft)									700						100	
Base Capacity (vph)			1119			578			758			1258			387	717
Starvation Cap Reductn			0			0			0			0			0	0
Spillback Cap Reductn			0			0			0			0			0	0
Storage Cap Reductn			0			0			0			0			0	0
Reduced v/c Ratio			0.69			0.30			0.55			0.36			0.01	0.43

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 74.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay (s/veh): 15.7

Intersection LOS: B

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 2: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps/Steel Way

#2  Ø2	#2  Ø4
68 s	32 s
#2  Ø5	#2  Ø6
32 s	36 s
#2  Ø8	
	32 s

Lane Group	Ø4
Flash Don't Walk (s)	
Pedestrian Calls (#/hr)	
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay (s/veh)	
Queue Delay	
Total Delay (s/veh)	
LOS	
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

HCM 7th Edition methodology does not support Non-NEMA phasing.

2035 Projected (Build) Conditions
 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: P.M. Peak Hour

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	182	665	0	0	1117
Future Volume (vph)	0	182	665	0	0	1117
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Width (ft)	11	10	11	11	11	11
Grade (%)	-2%		2%			-2%
Storage Length (ft)	0	0		0	0	
Storage Lanes	0	1		0	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	25		40			40
Link Distance (ft)	831		554			715
Travel Time (s)	22.7		9.4			12.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	13%	6%	0%	0%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	192	700	0	0	1176
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

2035 Projected (Build) Conditions
3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps

Timing Plan: P.M. Peak Hour

Intersection

Int Delay, s/veh 1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	182	665	0	0	1117
Future Vol, veh/h	0	182	665	0	0	1117
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	-2
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	13	6	0	0	4
Mvmt Flow	0	192	700	0	0	1176

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	700	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	5	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.6	-
Pot Cap-1 Maneuver	0	667	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	-	667	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.55	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBTWBLn1	SBT
Capacity (veh/h)	- 667	-
HCM Lane V/C Ratio	- 0.287	-
HCM Ctrl Dly (s/v)	- 12.6	-
HCM Lane LOS	- B	-
HCM 95th %tile Q(veh)	- 1.2	-

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	0	651	0	0	0	0	581	573	158	967	0
Future Volume (vph)	94	0	651	0	0	0	0	581	573	158	967	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	13	13	14	12	12	12	11	11	11	11	12	12
Grade (%)		-1%			0%			-1%			-2%	
Storage Length (ft)	0		350	0		0	0		75	200		0
Storage Lanes	0		1	0		0	0		1	1		0
Taper Length (ft)	25		100	25		25	25		25	100		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		906			759			313			554	
Travel Time (s)		24.7			20.7			5.3			9.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	18%	0%	1%	0%	0%	0%	0%	6%	3%	10%	2%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	664	0	0	0	0	593	585	161	987	0
Turn Type	Prot	NA	Perm					NA	Perm	Perm	NA	
Protected Phases	7	4						2			6	
Permitted Phases			4						2	6		
Detector Phase	7	4	4					2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0					10.0	10.0	10.0	10.0	
Minimum Split (s)	11.0	11.0	11.0					16.0	16.0	16.0	16.0	
Total Split (s)	23.0	23.0	23.0					37.0	37.0	37.0	37.0	
Total Split (%)	38.3%	38.3%	38.3%					61.7%	61.7%	61.7%	61.7%	
Maximum Green (s)	17.0	17.0	17.0					31.0	31.0	31.0	31.0	
Yellow Time (s)	4.0	4.0	4.0					4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0					2.0	2.0	2.0	2.0	
Lost Time Adjust (s)		-1.0	-1.0					-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)		5.0	5.0					5.0	5.0	5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0					3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0					0.0	0.0	0.0	0.0	
Recall Mode	None	None	None					Min	Min	Min	Min	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.21	1.20					0.67	0.58	0.59	1.04	
Control Delay (s/veh)		17.3	128.5					15.0	4.2	21.3	57.5	

2035 Projected (Build) Conditions
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0					0.0	0.0	0.0	0.0	
Total Delay (s/veh)		17.3	128.5					15.0	4.2	21.3	57.5	
Queue Length 50th (ft)		26	~280					149	13	39	~405	
Queue Length 95th (ft)		57	#466					257	59	#130	#611	
Internal Link Dist (ft)		826			679			233			474	
Turn Bay Length (ft)			350						75	200		
Base Capacity (vph)		451	553					880	1006	272	950	
Starvation Cap Reductn		0	0					0	0	0	0	
Spillback Cap Reductn		0	0					0	0	0	0	
Storage Cap Reductn		0	0					0	0	0	0	
Reduced v/c Ratio		0.21	1.20					0.67	0.58	0.59	1.04	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

#4  Ø2	#4  Ø4
37 s	23 s
#4  Ø6	#4  Ø7
37 s	23 s

2035 Projected (Build) Conditions
4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

Timing Plan: P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	0	651	0	0	0	0	581	573	158	967	0
Future Volume (veh/h)	94	0	651	0	0	0	0	581	573	158	967	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.04				1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1645	1911	1896				0	1752	1795	1732	1846	0
Adj Flow Rate, veh/h	96	0	0				0	593	0	161	987	0
Peak Hour Factor	0.98	0.98	0.98				0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	18	0	1				0	6	3	10	2	0
Cap, veh/h	193	0					0	1136		535	1197	0
Arrive On Green	0.11	0.00	0.00				0.00	0.65	0.00	0.65	0.65	0.00
Sat Flow, veh/h	1820	0	1607				0	1752	1521	763	1846	0
Grp Volume(v), veh/h	96	0	0				0	593	0	161	987	0
Grp Sat Flow(s),veh/h/ln	1820	0	1607				0	1752	1521	763	1846	0
Q Serve(g_s), s	2.0	0.0	0.0				0.0	7.3	0.0	5.8	16.4	0.0
Cycle Q Clear(g_c), s	2.0	0.0	0.0				0.0	7.3	0.0	13.1	16.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	193	0					0	1136		535	1197	0
V/C Ratio(X)	0.50	0.00					0.00	0.52		0.30	0.82	0.00
Avail Cap(c_a), veh/h	804	0					0	1377		639	1451	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.2	0.0	0.0				0.0	3.8	0.0	7.3	5.4	0.0
Incr Delay (d2), s/veh	2.0	0.0	0.0				0.0	0.4	0.0	0.3	3.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	0.0				0.0	1.2	0.0	1.1	4.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	19.2	0.0	0.0				0.0	4.2	0.0	7.6	8.8	0.0
LnGrp LOS	B							A		A	A	
Approach Vol, veh/h	96						593			1148		
Approach Delay, s/veh	19.2						4.2			8.6		
Approach LOS	B						A			A		
Timer - Assigned Phs	2			4			6					
Phs Duration (G+Y+Rc), s	31.4			9.3			31.4					
Change Period (Y+Rc), s	6.0			6.0			6.0					
Max Green Setting (Gmax), s	31.0			17.0			31.0					
Max Q Clear Time (g_c+l1), s	9.8			4.0			18.9					
Green Ext Time (p_c), s	3.7			0.3			6.5					
Intersection Summary												
HCM 7th Control Delay, s/veh				7.7								
HCM 7th LOS				A								
Notes												
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.												

2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	52	82	30	64	26	93	831	18	62	1089	441
Future Volume (vph)	272	52	82	30	64	26	93	831	18	62	1089	441
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	10	13	13	10	13	13	10	11	11	10	11	11
Grade (%)		-5%			3%			-3%			-4%	
Storage Length (ft)	225		0	75		0	100		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25		25	75		25	75		25	75		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		2071			2145			626			2157	
Travel Time (s)		40.3			41.8			10.7			36.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	5%	0%	3%	4%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	286	141	0	32	94	0	98	894	0	65	1610	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	12.0		12.0	12.0	
Minimum Split (s)	9.0	9.0		9.0	9.0		18.5	18.5		18.5	18.5	
Total Split (s)	19.0	19.0		19.0	19.0		36.0	36.0		36.0	36.0	
Total Split (%)	34.5%	34.5%		34.5%	34.5%		65.5%	65.5%		65.5%	65.5%	
Maximum Green (s)	13.0	13.0		13.0	13.0		29.5	29.5		29.5	29.5	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.5	4.5	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0		-1.0	-1.0		-1.0	-1.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.5	5.5		5.5	5.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		6.0	6.0		6.0	6.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.95	0.29		0.11	0.20		0.80	0.50		0.25	0.89	
Control Delay (s/veh)	65.7	11.2		17.1	13.7		60.2	8.8		9.4	17.8	

2035 Projected (Build) Conditions
 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	65.7	11.2		17.1	13.7		60.2	8.8		9.4	17.8	
Queue Length 50th (ft)	92	18		8	17		23	86		10	197	
Queue Length 95th (ft)	#221	55		26	47		#103	127		30	#378	
Internal Link Dist (ft)		1991			2065			546			2077	
Turn Bay Length (ft)	225			75			100			75		
Base Capacity (vph)	302	492		281	466		123	1771		262	1814	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.95	0.29		0.11	0.20		0.80	0.50		0.25	0.89	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 55

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.



2035 Projected (Build) Conditions
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	52	82	30	64	26	93	831	18	62	1089	441
Future Volume (veh/h)	272	52	82	30	64	26	93	831	18	62	1089	441
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.04	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1972	2066	2066	1750	1820	1820	1912	1841	1912	1906	1892	1935
Adj Flow Rate, veh/h	286	55	73	32	67	12	98	875	18	65	1146	448
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	0	0	0	0	5	0	3	4	1
Cap, veh/h	449	205	272	377	382	68	189	1943	40	389	1412	537
Arrive On Green	0.25	0.25	0.24	0.25	0.25	0.24	0.55	0.55	0.54	0.55	0.55	0.54
Sat Flow, veh/h	1392	805	1068	1181	1502	269	327	3504	72	635	2546	969
Grp Volume(v), veh/h	286	0	128	32	0	79	98	437	456	65	800	794
Grp Sat Flow(s),veh/h/ln	1392	0	1873	1181	0	1771	327	1749	1828	635	1798	1718
Q Serve(g_s), s	11.0	0.0	3.0	1.2	0.0	1.9	9.8	8.2	8.2	3.7	19.6	21.2
Cycle Q Clear(g_c), s	12.4	0.0	3.0	3.8	0.0	1.9	30.5	8.2	8.2	11.9	19.6	21.2
Prop In Lane	1.00		0.57	1.00		0.15	1.00		0.04	1.00		0.56
Lane Grp Cap(c), veh/h	449	0	477	377	0	451	189	970	1014	389	997	953
V/C Ratio(X)	0.64	0.00	0.27	0.08	0.00	0.18	0.52	0.45	0.45	0.17	0.80	0.83
Avail Cap(c_a), veh/h	449	0	477	377	0	451	189	970	1014	389	997	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	0.0	16.6	17.7	0.0	16.1	24.6	7.3	7.3	10.8	9.8	10.4
Incr Delay (d2), s/veh	3.0	0.0	0.3	0.1	0.0	0.2	9.8	1.5	1.4	0.9	6.8	8.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.3	0.0	2.1	0.6	0.0	1.3	3.0	4.4	4.5	0.9	11.2	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.6	0.0	16.9	17.8	0.0	16.2	34.4	8.8	8.7	11.7	16.6	18.9
LnGrp LOS	C		B	B		B	C	A	A	B	B	B
Approach Vol, veh/h	414			111			991			1659		
Approach Delay, s/veh	21.5			16.7			11.3			17.5		
Approach LOS	C			B			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	36.0			19.0			36.0			19.0		
Change Period (Y+Rc), s	6.5			6.0			6.5			6.0		
Max Green Setting (Gmax), s	29.5			13.0			29.5			13.0		
Max Q Clear Time (g_c+I1), s	10.7			14.9			23.2			6.3		
Green Ext Time (p_c), s	14.6			0.0			6.2			0.2		
Intersection Summary												
HCM 7th Control Delay, s/veh	16.1											
HCM 7th LOS	B											

7: Schwanger Rd. & Campus Dr. & Merts Dr.

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	383	4	115	401	43	1	8	53	18	8	17
Future Volume (vph)	24	383	4	115	401	43	1	8	53	18	8	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10	14	14	14	16	16	16
Grade (%)		0%			-1%			1%			-3%	
Storage Length (ft)	175		0	150		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		885			2071			354			527	
Travel Time (s)		17.2			40.3			6.9			10.3	
Confl. Peds. (#/hr)	1					1			1	1		
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	2%	0%	1%	1%	2%	0%	13%	3%	6%	13%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	430	0	128	494	0	0	69	0	0	48	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	383	4	115	401	43	1	8	53	18	8	17
Future Vol, veh/h	24	383	4	115	401	43	1	8	53	18	8	17
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175		-	150		-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	1	-	-	-3	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	1	1	2	0	13	3	6	13	6
Mvmt Flow	27	426	4	128	446	48	1	9	59	20	9	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	494	0	0	430	0	0	1187	1231	429	1210	1209	470
Stage 1	-	-	-	-	-	-	481	481	-	726	726	-
Stage 2	-	-	-	-	-	-	706	750	-	484	483	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.3	6.83	6.33	6.56	6.03	5.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.3	5.83	-	5.56	5.03	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.3	5.83	-	5.56	5.03	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.117	3.1	3.1	4.117	3.2
Pot Cap-1 Maneuver	811	-	-	854	-	-	170	158	653	206	213	632
Stage 1	-	-	-	-	-	-	628	522	-	509	467	-
Stage 2	-	-	-	-	-	-	462	387	-	672	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	810	-	-	854	-	-	130	130	653	145	175	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	130	-	145	175	-
Stage 1	-	-	-	-	-	-	607	504	-	432	396	-
Stage 2	-	-	-	-	-	-	372	328	-	581	560	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.56			2.05			15.49			26.02		
HCM LOS							C			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	412	810	-	-	854	-	-	219
HCM Lane V/C Ratio	0.167	0.033	-	-	0.15	-	-	0.219
HCM Ctrl Dly (s/v)	15.5	9.6	-	-	10	-	-	26
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0.5	-	-	0.8

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	81	28	45	34	10	35
Future Volume (vph)	81	28	45	34	10	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	10	10	10	10
Grade (%)	-2%			0%	0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		0	0		1	0
Taper Length (ft)		25	25		25	25
Link Speed (mph)	40			40	35	
Link Distance (ft)	2125			1252	852	
Travel Time (s)	36.2			21.3	16.6	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	9%	0%	15%	3%	25%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	90	51	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	81	28	45	34	10	35
Future Vol, veh/h	81	28	45	34	10	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-2	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	9	0	15	3	25	4
Mvmt Flow	92	32	51	39	11	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	124
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.5
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	3.1
Pot Cap-1 Maneuver	-	-	1049
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1049
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	4.9	9.06
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	938	-	-	1025	-
HCM Lane V/C Ratio	0.055	-	-	0.049	-
HCM Ctrl Dly (s/v)	9.1	-	-	8.6	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

9: Mt. Pleasant Rd. (SR 4010) & Eastern (Car Only) Dw

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	79	36	9	31	38
Future Volume (vph)	10	79	36	9	31	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25			25	25	25
Link Speed (mph)		40	40		25	
Link Distance (ft)		1141	2125		293	
Travel Time (s)		19.4	36.2		8.0	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	15%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	99	50	0	76	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	79	36	9	31	38
Future Vol, veh/h	10	79	36	9	31	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	2	-2	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	8	15	2	2	2
Mvmt Flow	11	88	40	10	34	42

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	50	0	0 155 45
Stage 1	-	-	- 45 -
Stage 2	-	-	- 110 -
Critical Hdwy	4.3	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	3	-	- 3 3.1
Pot Cap-1 Maneuver	1154	-	- 970 1095
Stage 1	-	-	- 1143 -
Stage 2	-	-	- 1064 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1154	-	- 960 1095
Mov Cap-2 Maneuver	-	-	- 960 -
Stage 1	-	-	- 1131 -
Stage 2	-	-	- 1064 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.92	0	8.77
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	202	-	-	-	1030
HCM Lane V/C Ratio	0.01	-	-	-	0.074
HCM Ctrl Dly (s/v)	8.1	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	84	0	17	57	0	0	38	5	0	60	70
Future Volume (vph)	19	84	0	17	57	0	0	38	5	0	60	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			-1%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Link Speed (mph)		40			40			25			25	
Link Distance (ft)		1263			1141			424			360	
Travel Time (s)		21.5			19.4			11.6			9.8	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	8%	0%	2%	15%	0%	0%	74%	2%	0%	42%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	114	0	0	82	0	0	48	0	0	145	0
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

10: Proposed Archers Lane/Western Dw. & Mt. Pleasant Rd. (SR 4010)

Intersection

Int Delay, s/veh 6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	84	0	17	57	0	0	38	5	0	60	70
Future Vol, veh/h	19	84	0	17	57	0	0	38	5	0	60	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	-1	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	8	0	2	15	0	0	74	2	0	42	2
Mvmt Flow	21	93	0	19	63	0	0	42	6	0	67	78

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	63	0	0	93	0	0	270	237	93	258	237	63
Stage 1	-	-	-	-	-	-	136	136	-	101	101	-
Stage 2	-	-	-	-	-	-	134	101	-	157	136	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.1	7.24	6.22	7.1	6.92	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	6.24	-	6.1	5.92	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	6.24	-	6.1	5.92	-
Follow-up Hdwy	3	-	-	3	-	-	3	4.666	3.1	3	4.378	3.1
Pot Cap-1 Maneuver	1142	-	-	1116	-	-	787	557	1029	802	600	1070
Stage 1	-	-	-	-	-	-	1009	665	-	1054	740	-
Stage 2	-	-	-	-	-	-	1010	691	-	982	714	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1142	-	-	1116	-	-	624	536	1029	710	578	1070
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	536	-	710	578	-
Stage 1	-	-	-	-	-	-	989	652	-	1036	727	-
Stage 2	-	-	-	-	-	-	836	679	-	895	700	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.51	1.9	11.92	10.77
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	568	332	-	-	414	-	-	768
HCM Lane V/C Ratio	0.084	0.018	-	-	0.017	-	-	0.188
HCM Ctrl Dly (s/v)	11.9	8.2	0	-	8.3	0	-	10.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	0.7



Auxiliary Turn Lane Warrants:

Alternative Scenarios





ITE 150 Unfiltered - Alternative Analysis



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left Turn Lane
Left or Right-Turn Lane Analysis?: Left Turn Lane	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	30	2.0%	31
	Through	-	38	25.0%	43
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	Yes	25	2.0%	26

Advancing Volume: 74
 Opposing Volume: 80
 Left Turn Volume: 31

% Left Turns in Advancing Volume: 41.89%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	-	25	2.0%	N/A

Advancing Volume: N/A
 Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 31 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A
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PennDOT Publication 46, Exhibit 11-6

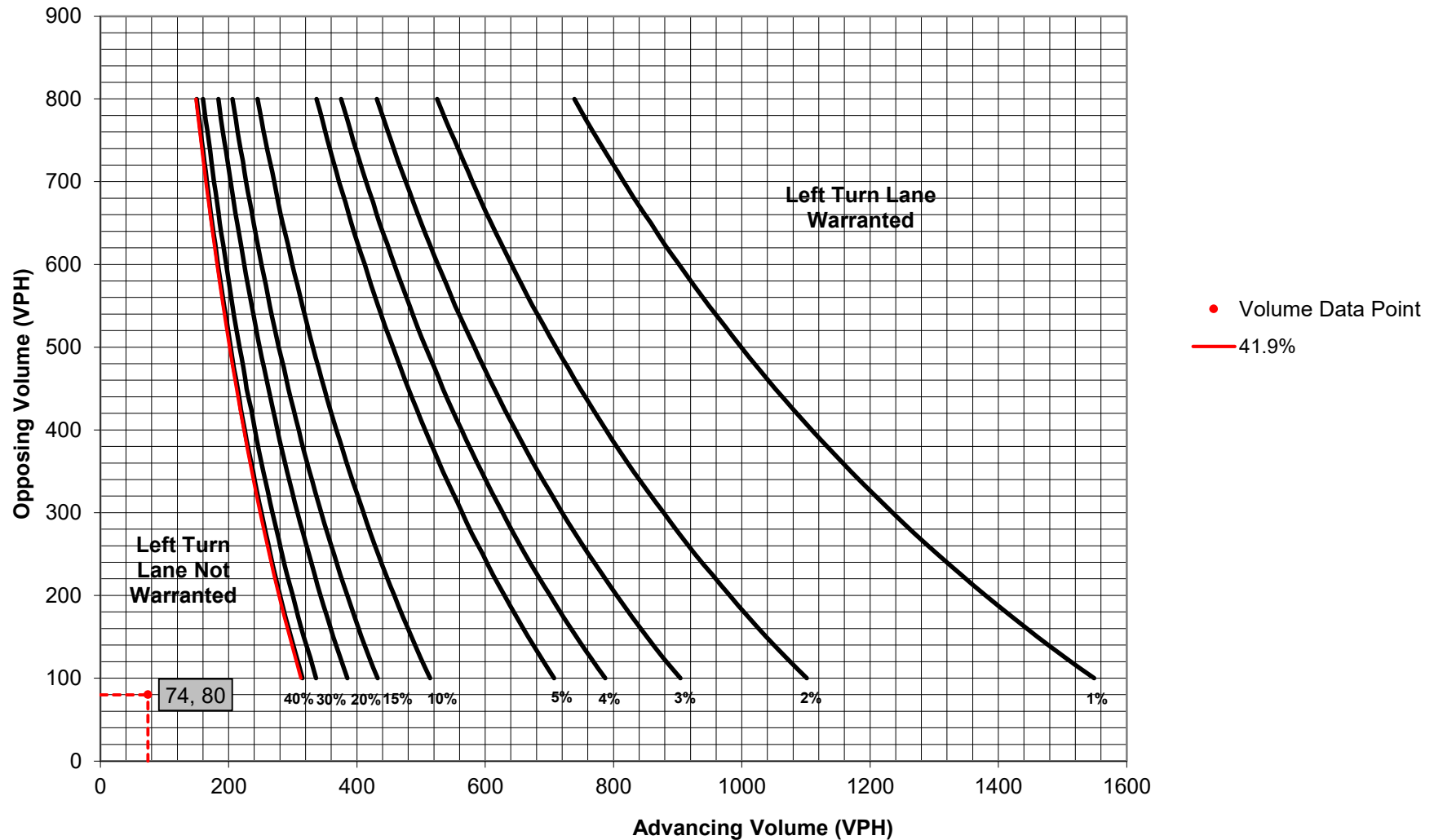
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: N/A Feet
 Condition B: N/A Feet
 Condition C: N/A Feet
 Required Left Turn Lane Storage Length: N/A Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	30	2.0%	N/A
	Through	-	38	25.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	Yes	25	2.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	-	25	2.0%	26
Advancing Volume: 80 Right Turn Volume: 26					

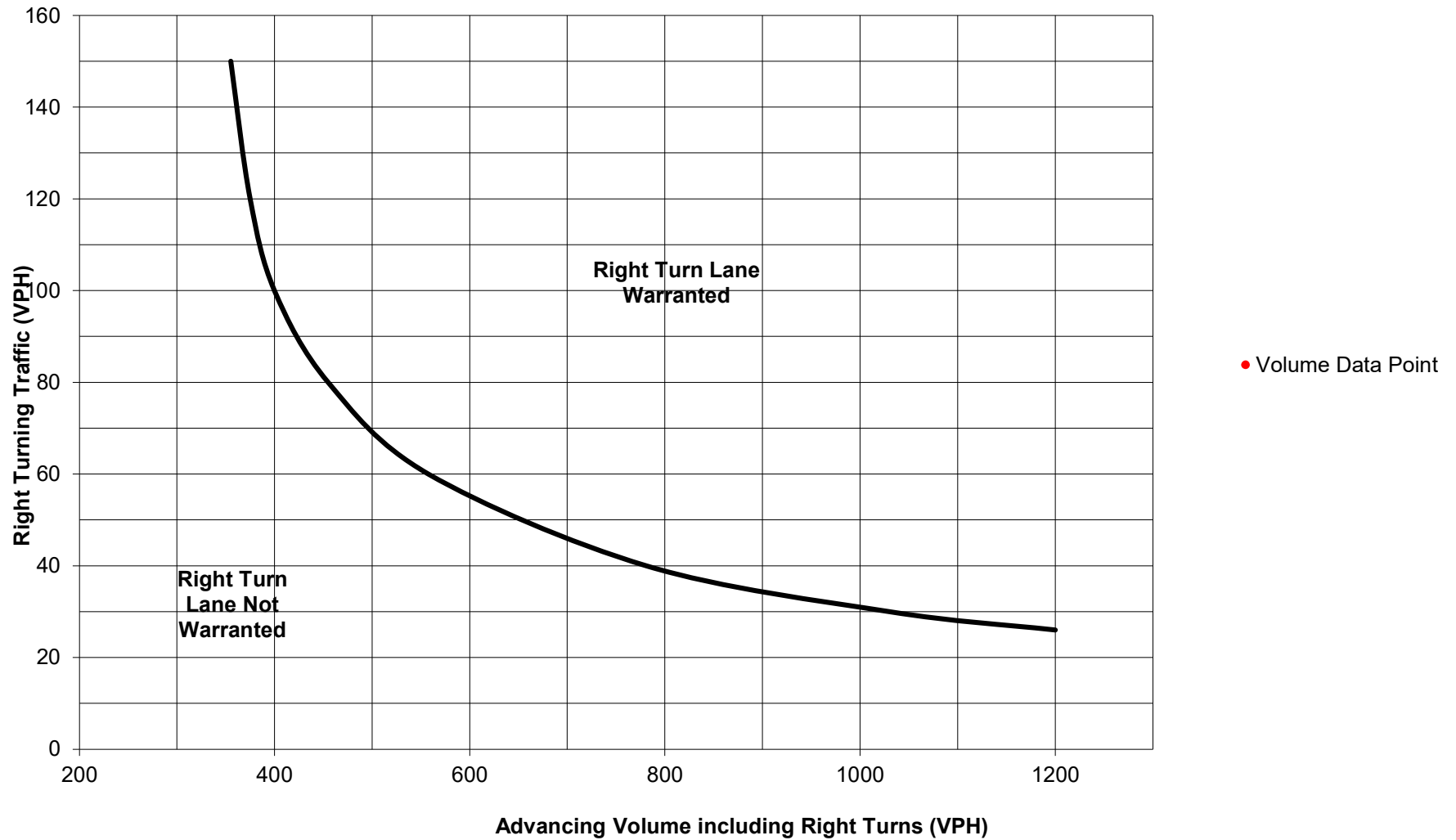
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 26 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

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Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	2.0%	11
	Through	-	79	8.0%	83
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	Yes	8	2.0%	9
Advancing Volume: 94 Opposing Volume: 48 Left Turn Volume: 11 % Left Turns in Advancing Volume: 11.70%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	-	8	2.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

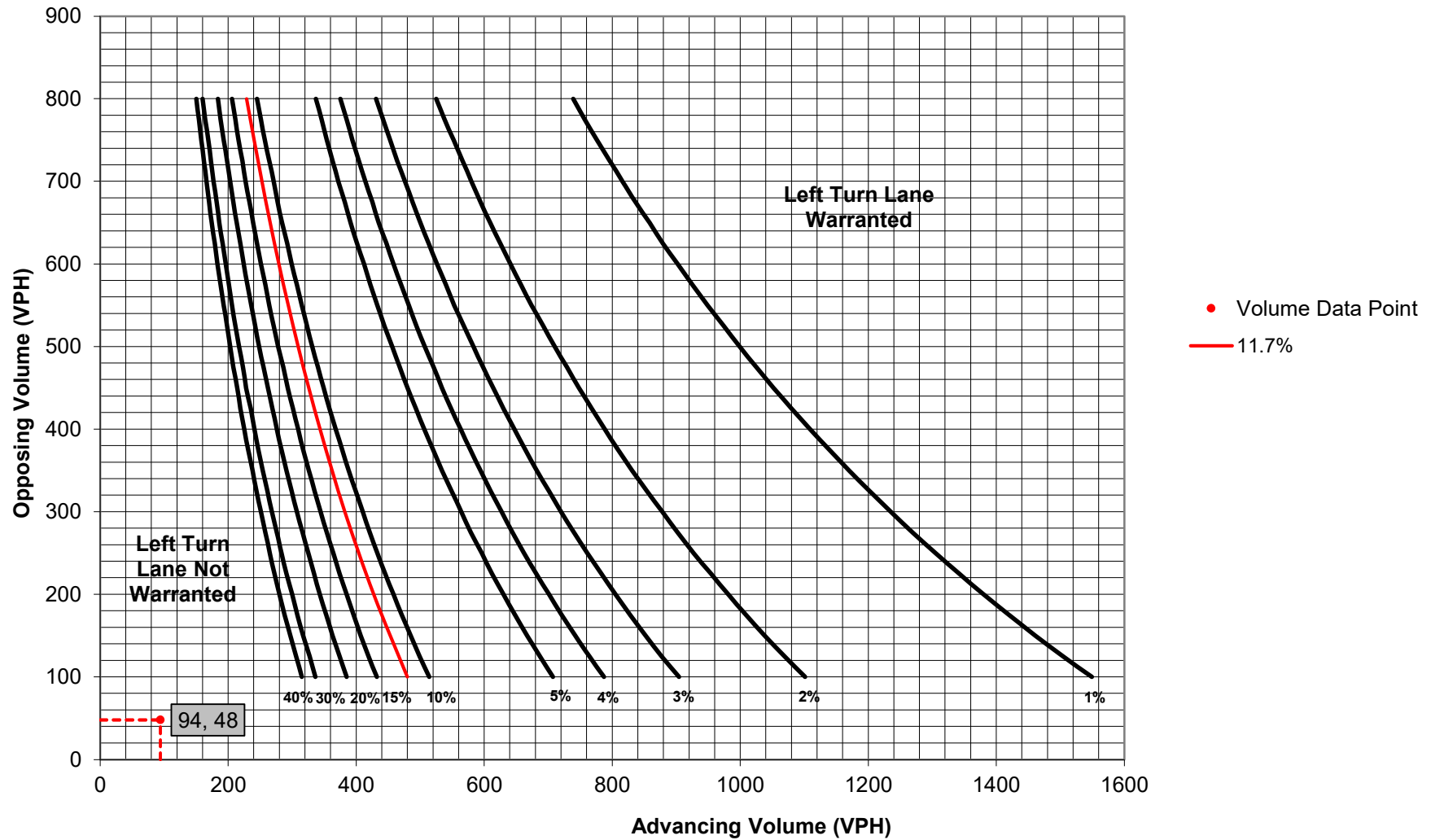
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 11 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

(L = % Left Turns in Advancing Volume)



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Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	2.0%	N/A
	Through	-	79	8.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	Yes	8	2.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	-	8	2.0%	9
Advancing Volume: 48 Right Turn Volume: 9					

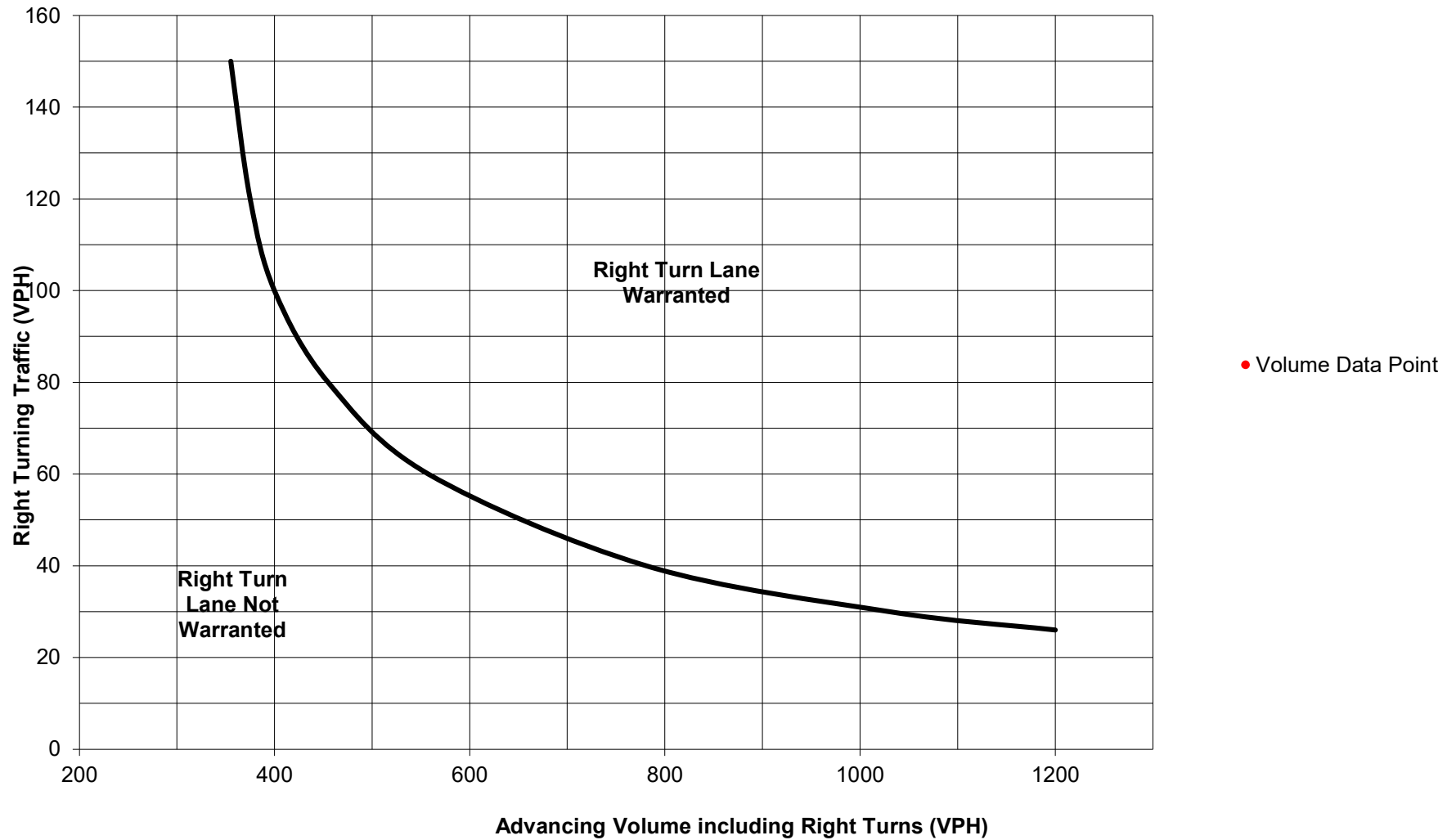
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 9 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
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Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



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Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left Turn Lane
Left or Right-Turn Lane Analysis?: Left Turn Lane	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	55	2.0%	56
	Through	-	54	25.0%	61
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	4	2.0%	5
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0
Advancing Volume: 117 Opposing Volume: 65 Left Turn Volume: 56 % Left Turns in Advancing Volume: 47.86%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

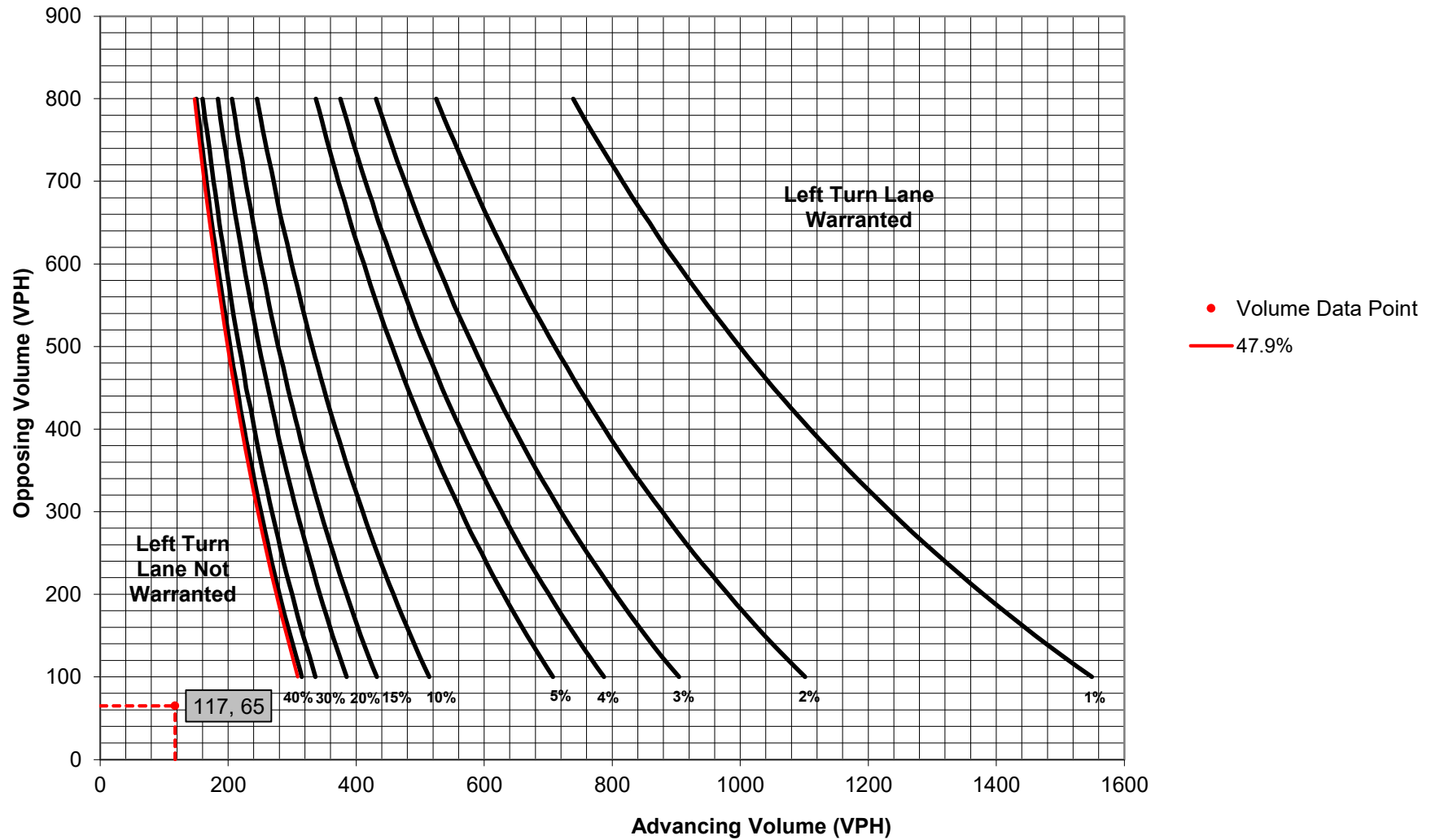
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 56 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
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Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

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VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	55	2.0%	N/A
	Through	-	54	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	4	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	5
	Through	-	55	15.0%	60
	Right	-	0	0.0%	0
Advancing Volume: 65 Right Turn Volume: 0					

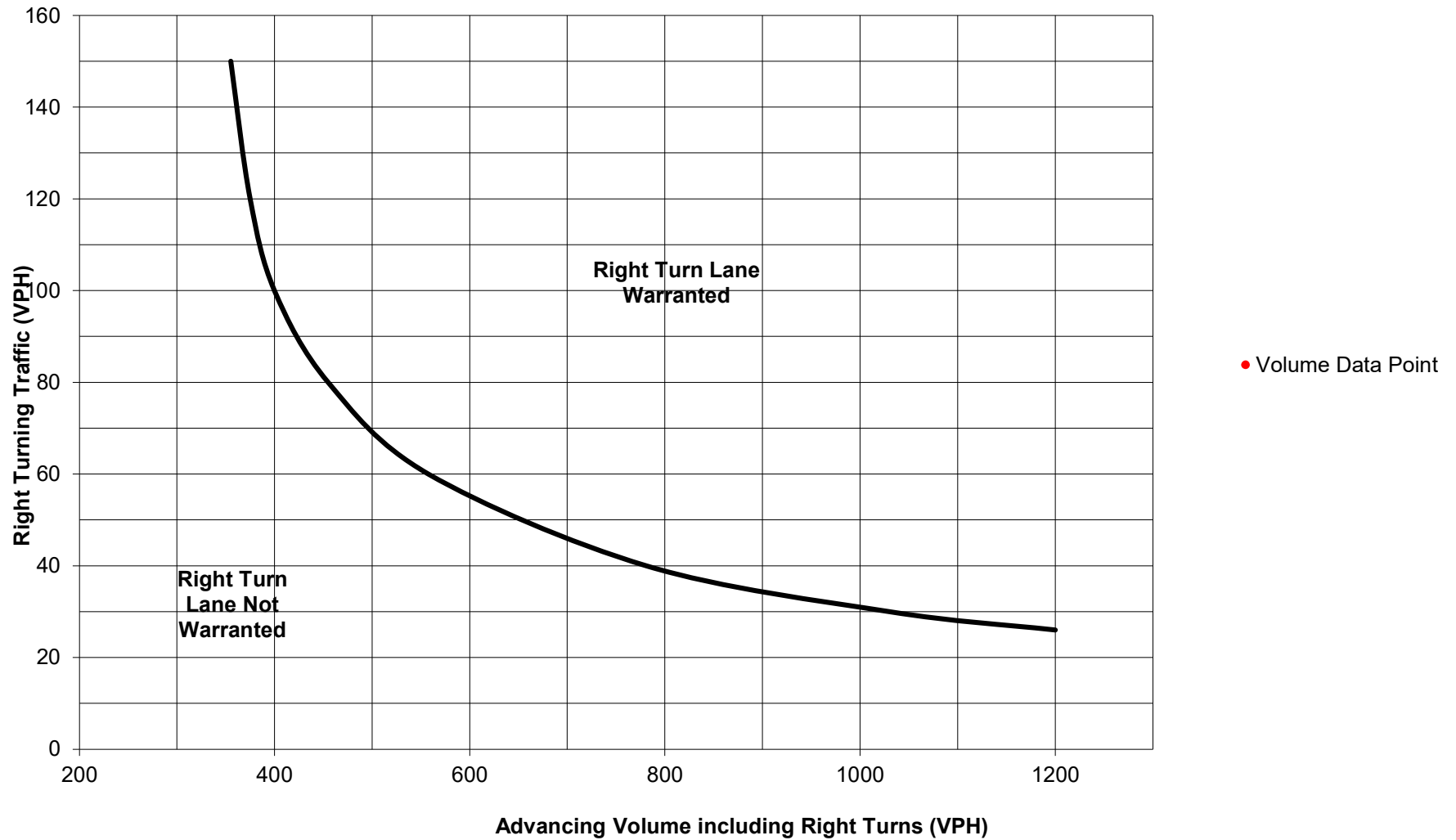
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	19
	Through	-	84	8.0%	88
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	16	2.0%	17
	Through	-	56	15.0%	61
	Right	Yes	0	0.0%	0
Advancing Volume: 107 Opposing Volume: 78 Left Turn Volume: 19 % Left Turns in Advancing Volume: 17.76%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	16	2.0%	N/A
	Through	-	56	15.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

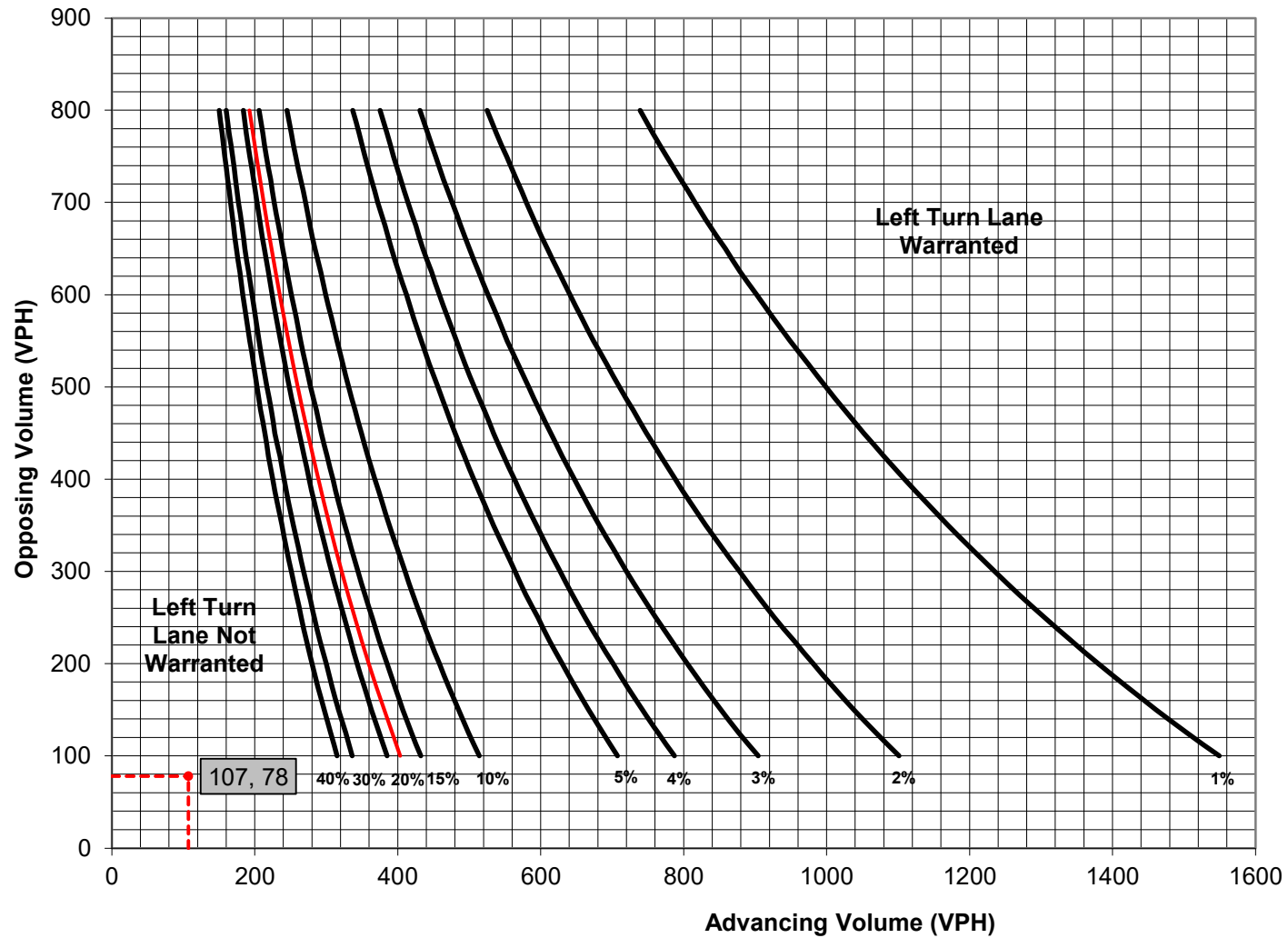
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 19 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Additional Findings: N/A																																									
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Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	N/A
	Through	-	84	8.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	16	2.0%	N/A
	Through	-	56	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	16	2.0%	17
	Through	-	56	15.0%	61
	Right	-	0	0.0%	0
Advancing Volume: 78 Right Turn Volume: 0					

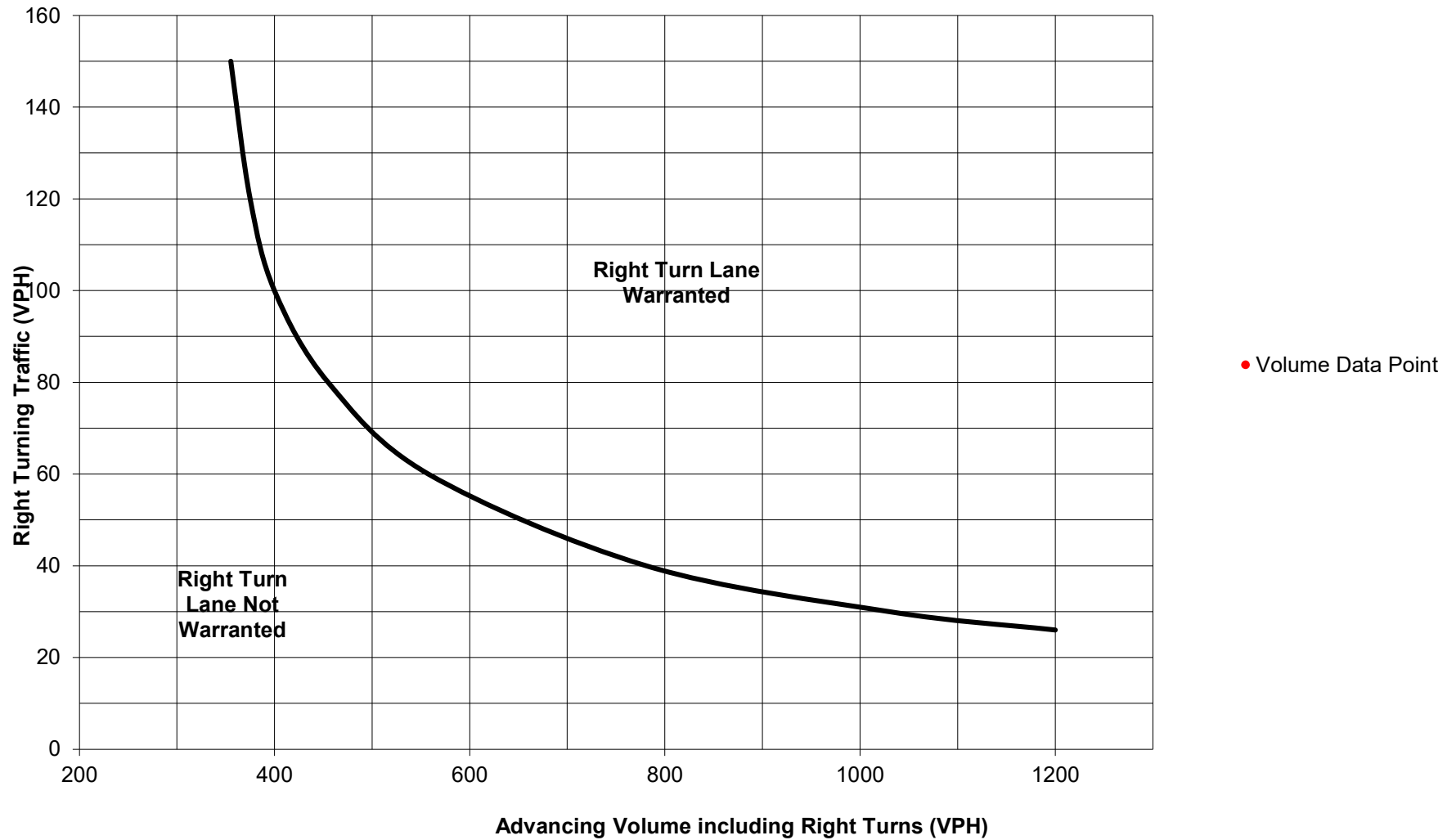
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
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Additional Findings: N/A																																									
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	5
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	55	2.0%	56
	Through	-	54	25.0%	61
	Right	Yes	0	0.0%	0
Advancing Volume: 65 Opposing Volume: 117 Left Turn Volume: 5 % Left Turns in Advancing Volume: 7.69%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	55	2.0%	N/A
	Through	-	54	25.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

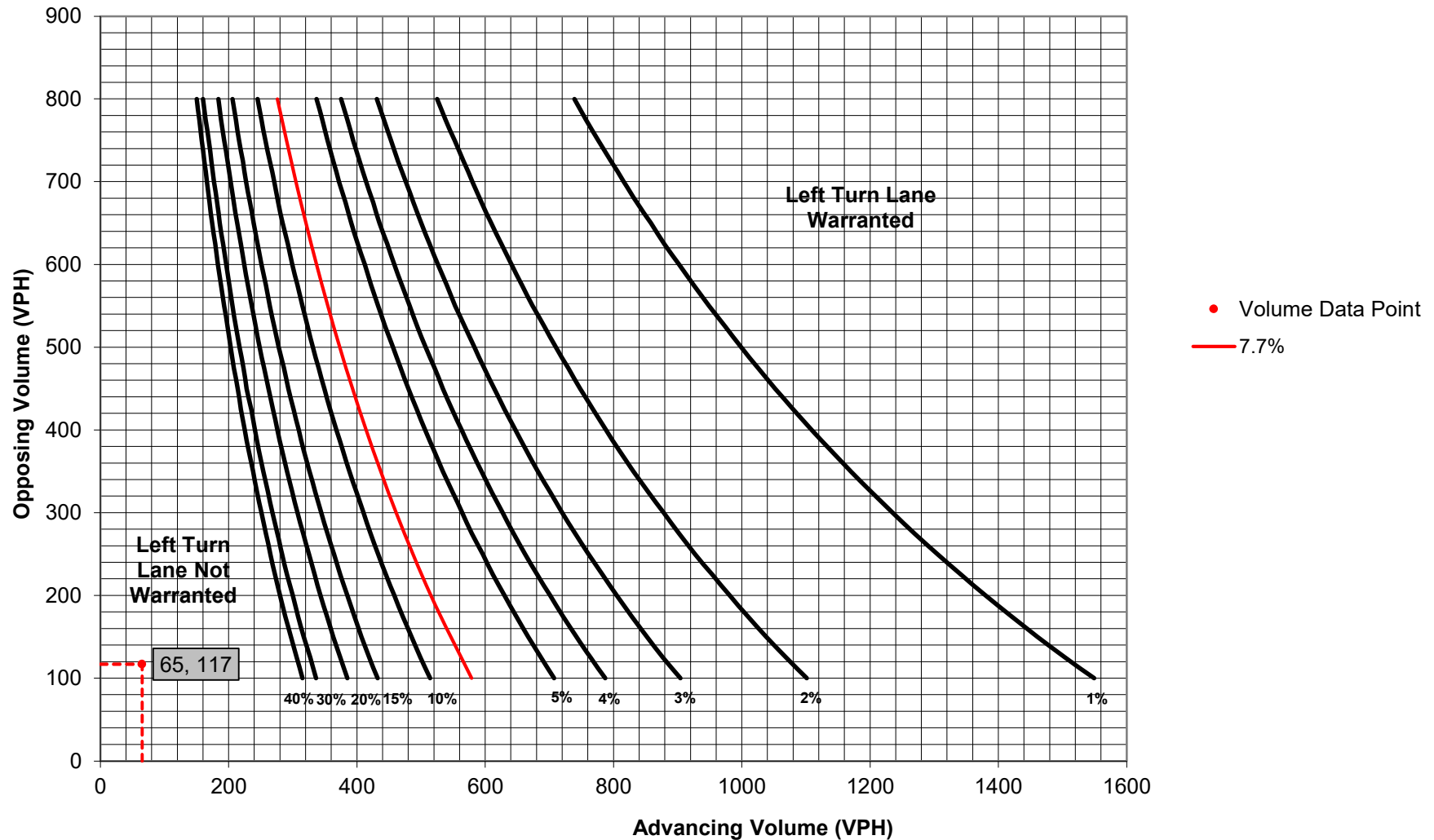
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 5 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
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Additional Findings: N/A																																									
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(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	4	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	55	2.0%	N/A
	Through	-	54	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	55	2.0%	56
	Through	-	54	25.0%	61
	Right	-	0	0.0%	0
Advancing Volume: 117 Right Turn Volume: 0					

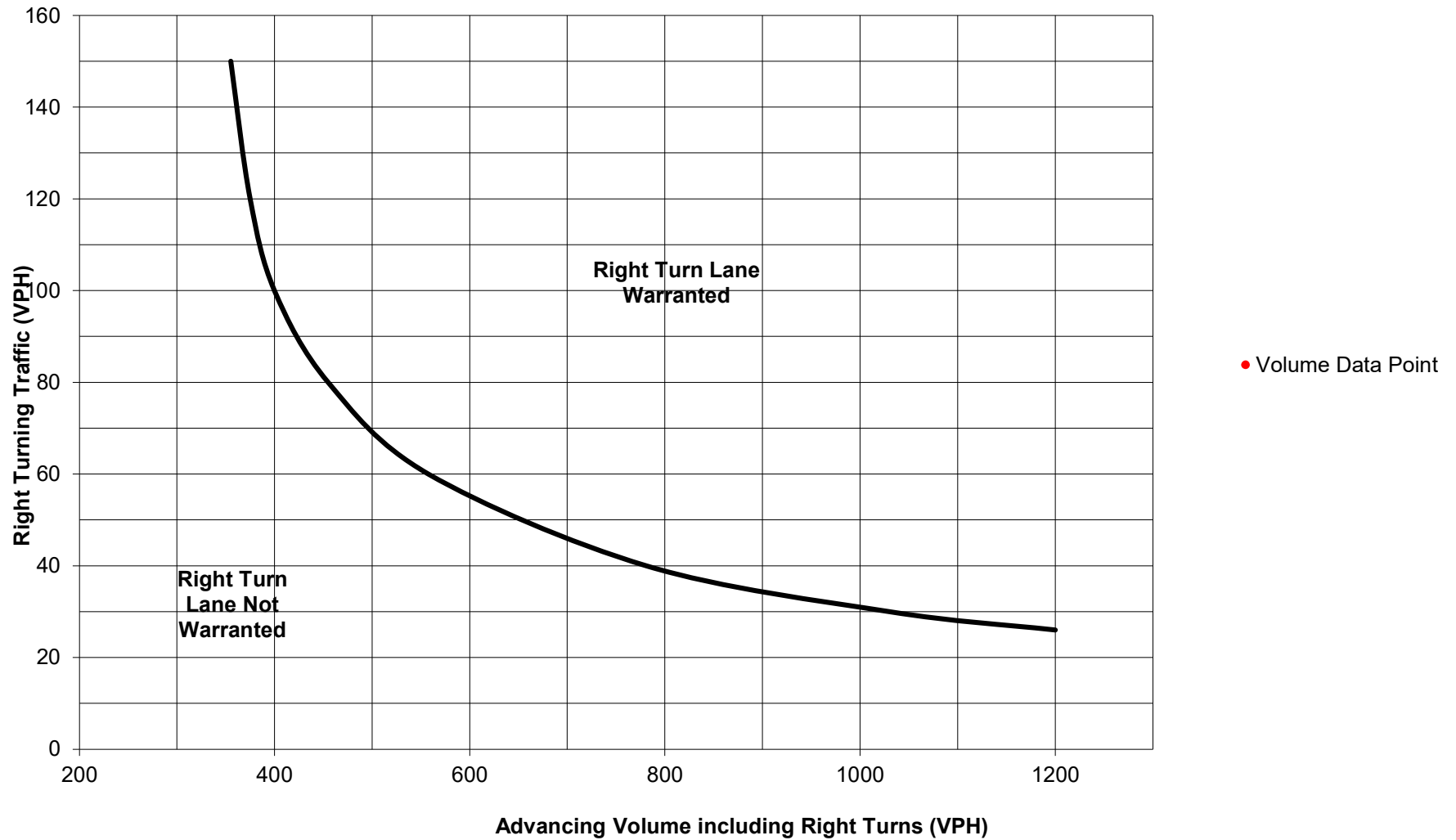
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
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Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/20/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40		
Type of Terrain:	Level		

Type of Analysis: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	16	2.0%	17
	Through	-	56	15.0%	61
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	18	2.0%	19
	Through	-	84	8.0%	88
	Right	Yes	0	0.0%	0

Advancing Volume: 78
Opposing Volume: 107
Left Turn Volume: 17

% Left Turns in Advancing Volume: 21.79%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	N/A
	Through	-	84	8.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume: N/A
Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	17
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: **N/A** Feet

Condition B: **N/A** Feet

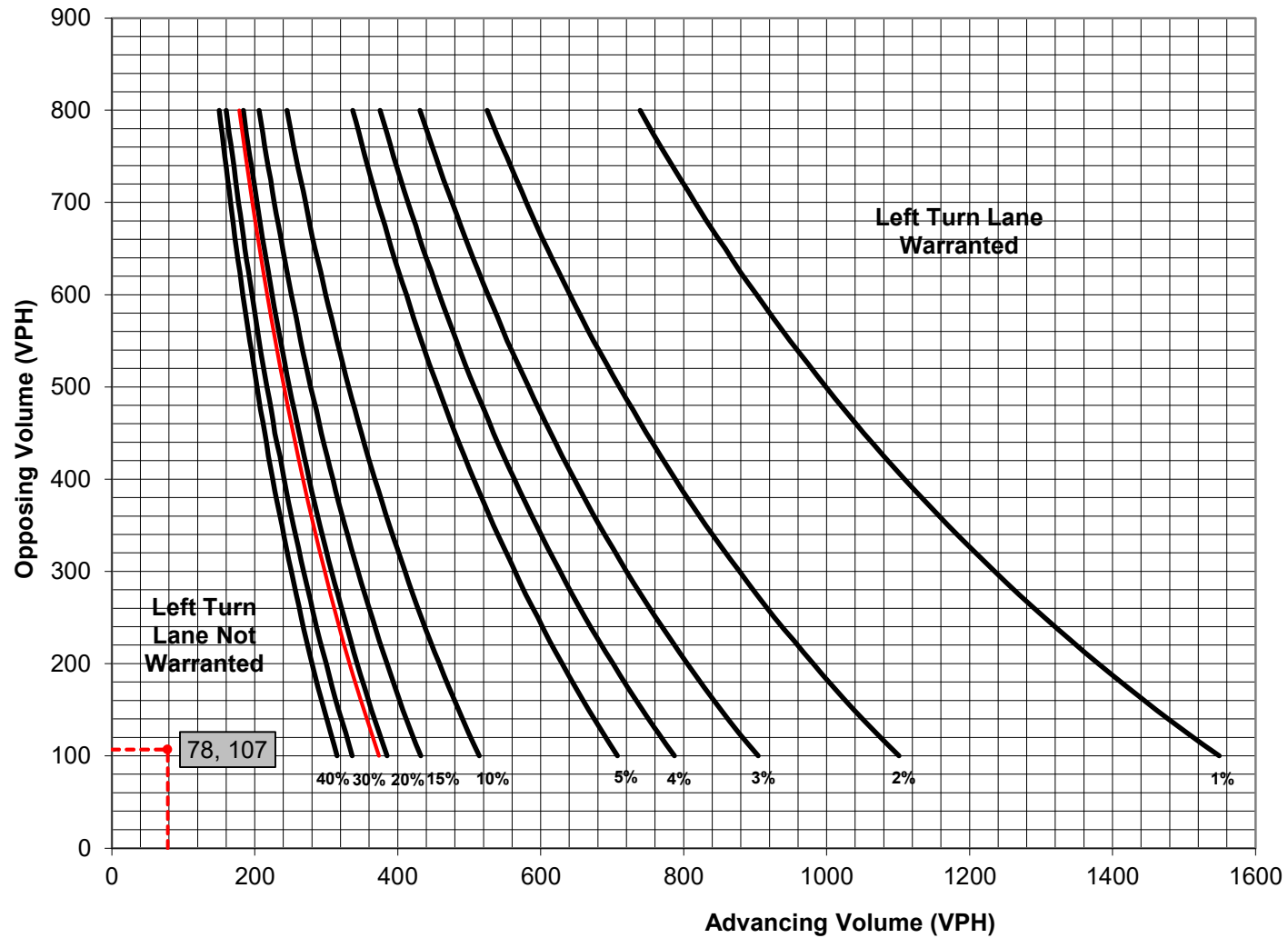
Condition C: **N/A** Feet

Required Left Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	16	2.0%	N/A
	Through	-	56	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	18	2.0%	N/A
	Through	-	84	8.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	19
	Through	-	84	8.0%	88
	Right	-	0	0.0%	0
Advancing Volume: 107 Right Turn Volume: 0					

TURN LANE WARRANT FINDINGS

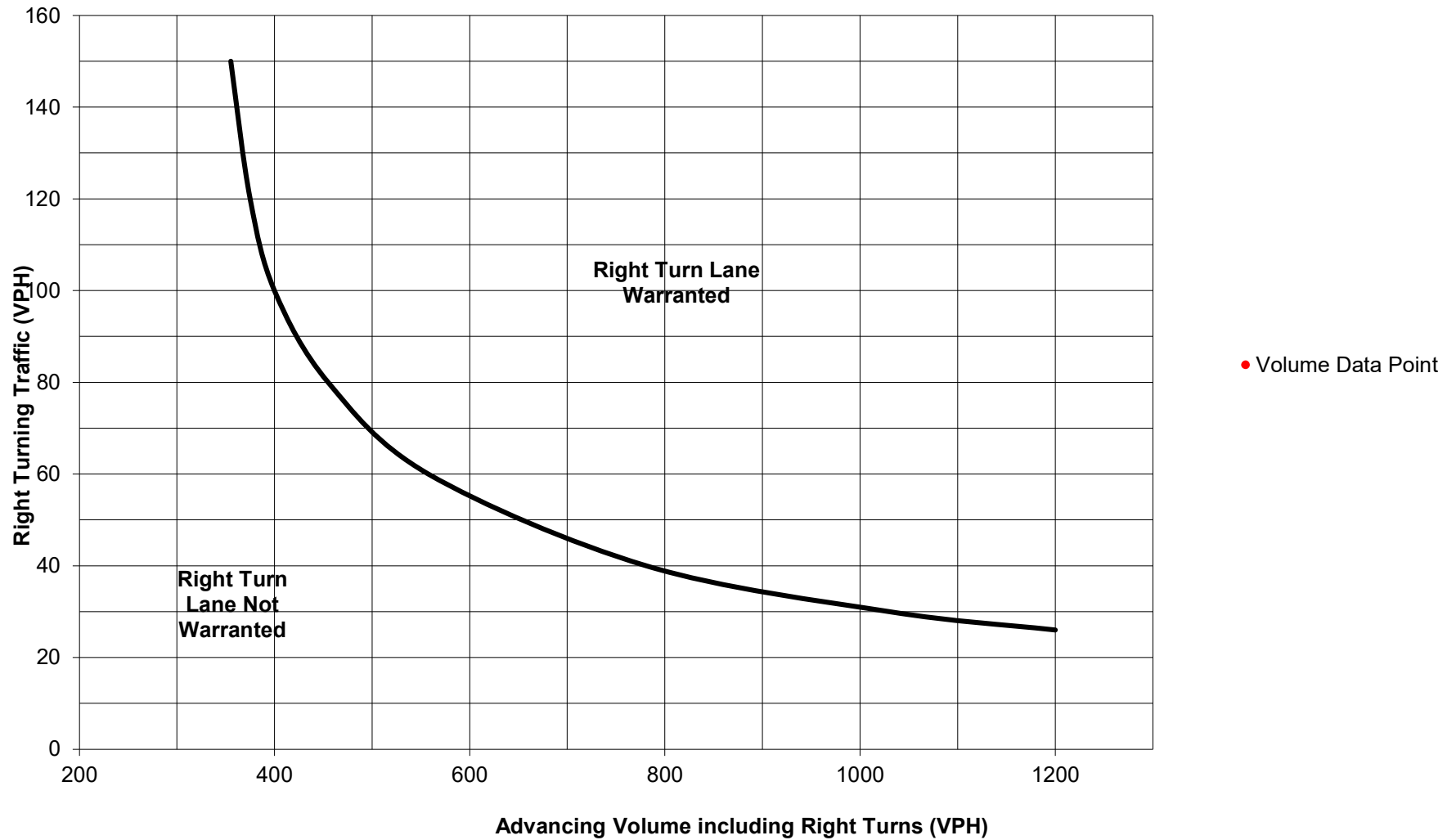
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A																																								
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Additional Findings: N/A																																									

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**





ITE 130 Industrial Park - Alternative Analysis



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	41	2.0%	42
	Through	-	38	25.0%	43
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	Yes	33	2.0%	34

Advancing Volume: 85
 Opposing Volume: 88
 Left Turn Volume: 42

% Left Turns in Advancing Volume: 49.41%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	-	33	2.0%	N/A

Advancing Volume: N/A
 Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 42 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A
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PennDOT Publication 46, Exhibit 11-6

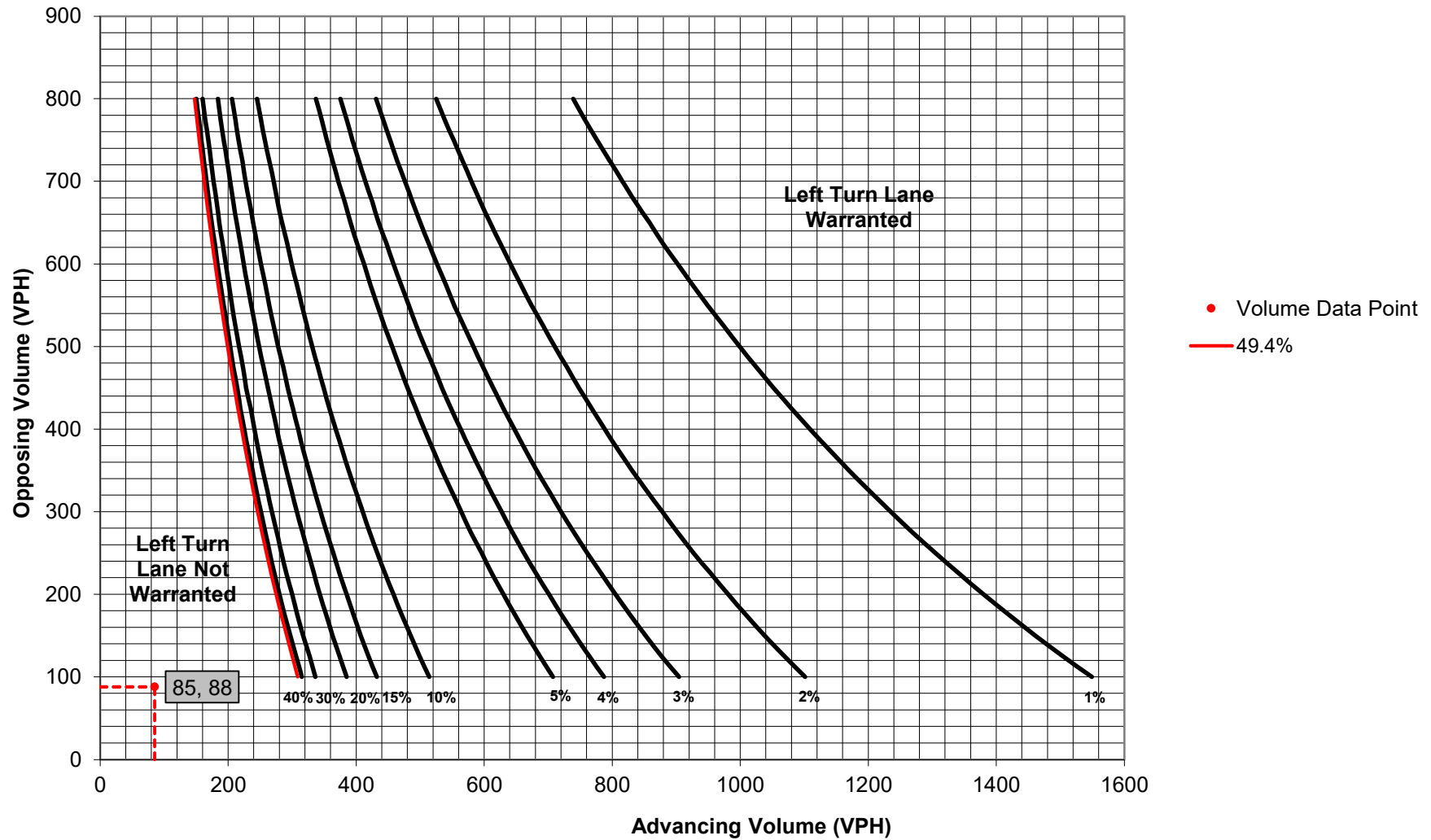
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: N/A Feet
 Condition B: N/A Feet
 Condition C: N/A Feet
 Required Left Turn Lane Storage Length: N/A Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/7/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Westbound Right

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40	Type of Analysis:	Right Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	41	2.0%	N/A
	Through	-	38	25.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	Yes	33	2.0%	N/A

Advancing Volume: N/A
Opposing Volume: N/A
Left Turn Volume: N/A

% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	-	33	2.0%	34

Advancing Volume: 88
Right Turn Volume: 34

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings Applicable Warrant Figure: N/A Warrant Met?: N/A	Right Turn Lane Warrant Findings Applicable Warrant Figure: Figure 9 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	34	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

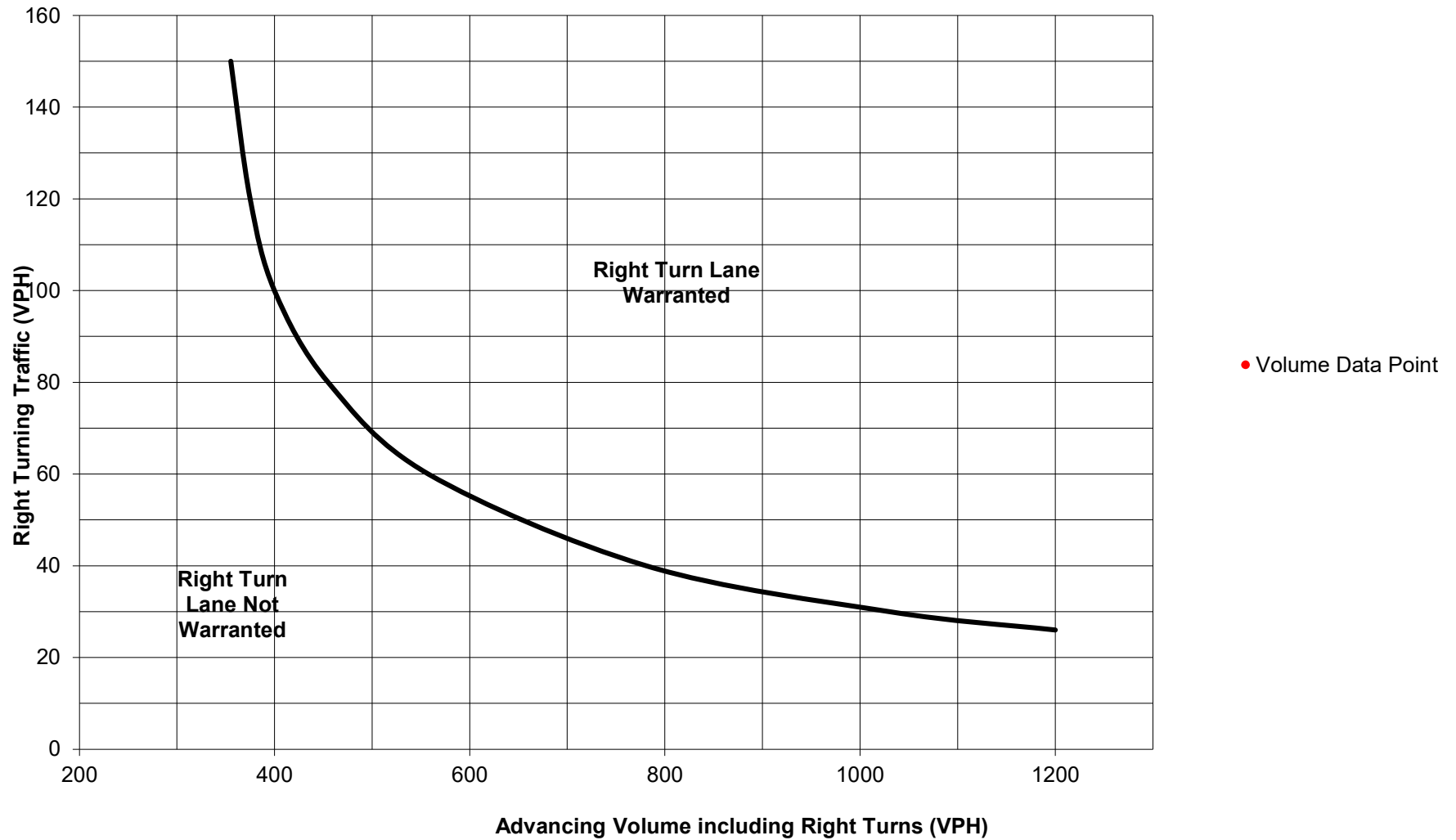
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: **N/A** Feet
 Condition B: **N/A** Feet
 Condition C: **N/A** Feet
 Required Right Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/7/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40	Type of Analysis:	Left Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	2.0%	15
	Through	-	79	8.0%	83
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	Yes	11	2.0%	12

Advancing Volume: 98
Opposing Volume: 51
Left Turn Volume: 15

% Left Turns in Advancing Volume: 15.31%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	-	11	2.0%	N/A

Advancing Volume: N/A
Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings Applicable Warrant Figure: Figure 2 Warrant Met?: No	Right Turn Lane Warrant Findings Applicable Warrant Figure: N/A Warrant Met?: N/A
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	15	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

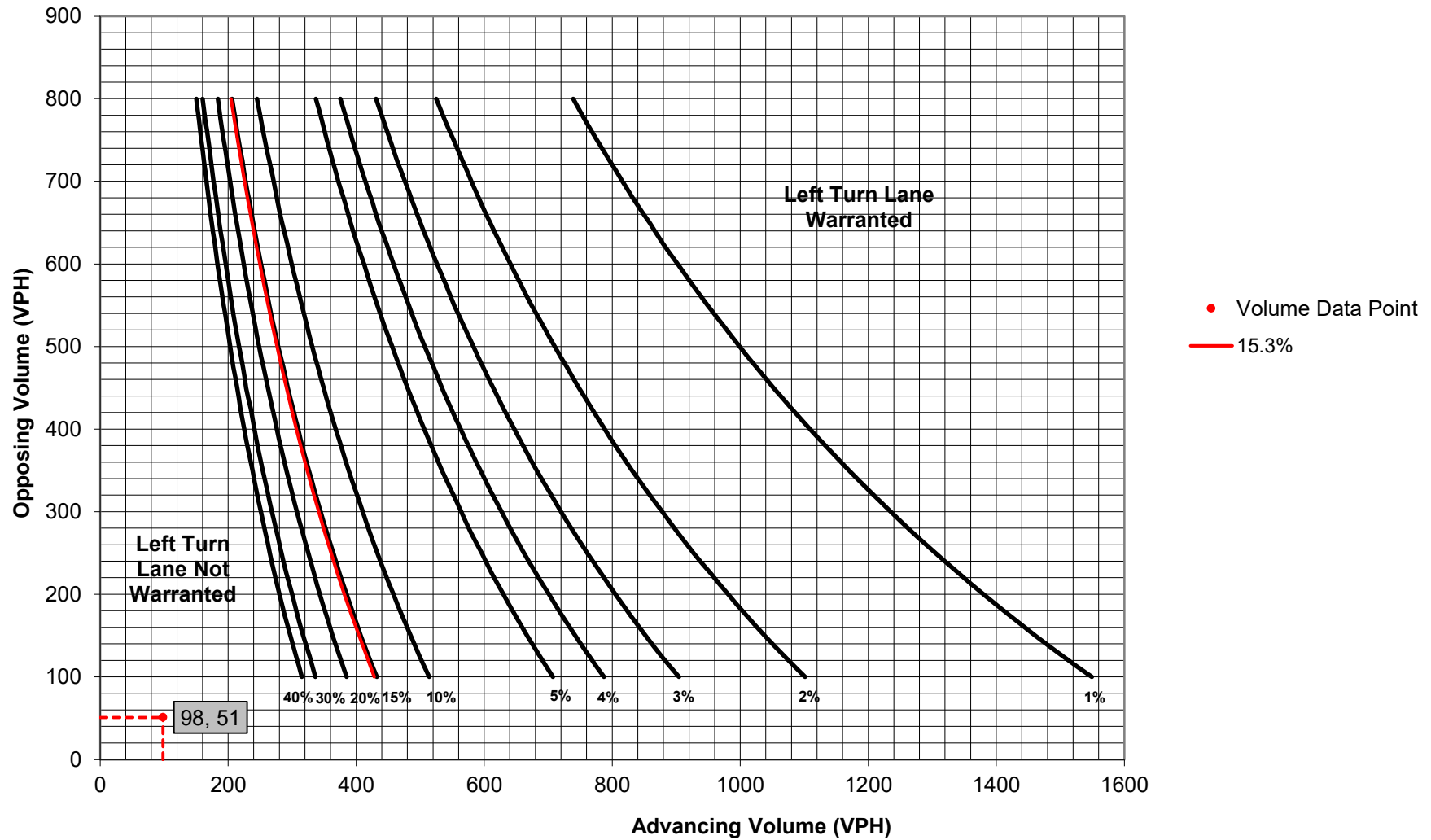
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: N/A Feet
Condition B: N/A Feet
Condition C: N/A Feet
Required Left Turn Lane Storage Length: N/A Feet

Additional Findings: N/A

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township
County: Lancaster County
PennDOT Engineering District: 8

Analysis Date: 8/7/2026
Conducted By: DZ
Checked By: JW
Agency/Company Name: TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Westbound Right

Analysis Period: 2035 Projected (Build)
Design Hour: PM Peak Hour
Intersection Control: Unsignalized
Posted Speed Limit (MPH): 40
Type of Terrain: Level

Number of Approach Lanes: 1
Undivided or Divided Highway: Undivided

Type of Analysis: Right Turn Lane
Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	14	2.0%	N/A
	Through	-	79	8.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	Yes	11	2.0%	N/A

Advancing Volume: N/A
Opposing Volume: N/A
Left Turn Volume: N/A

% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations

Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	-	11	2.0%	12

Advancing Volume: 51
Right Turn Volume: 12

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings

Applicable Warrant Figure: N/A
Warrant Met?: N/A

Right Turn Lane Warrant Findings

Applicable Warrant Figure: Figure 9
Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized
Design Hour Volume of Turning Lane: 12
Cycles Per Hour (Assumed): 60
Cycles Per Hour (If Known):

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

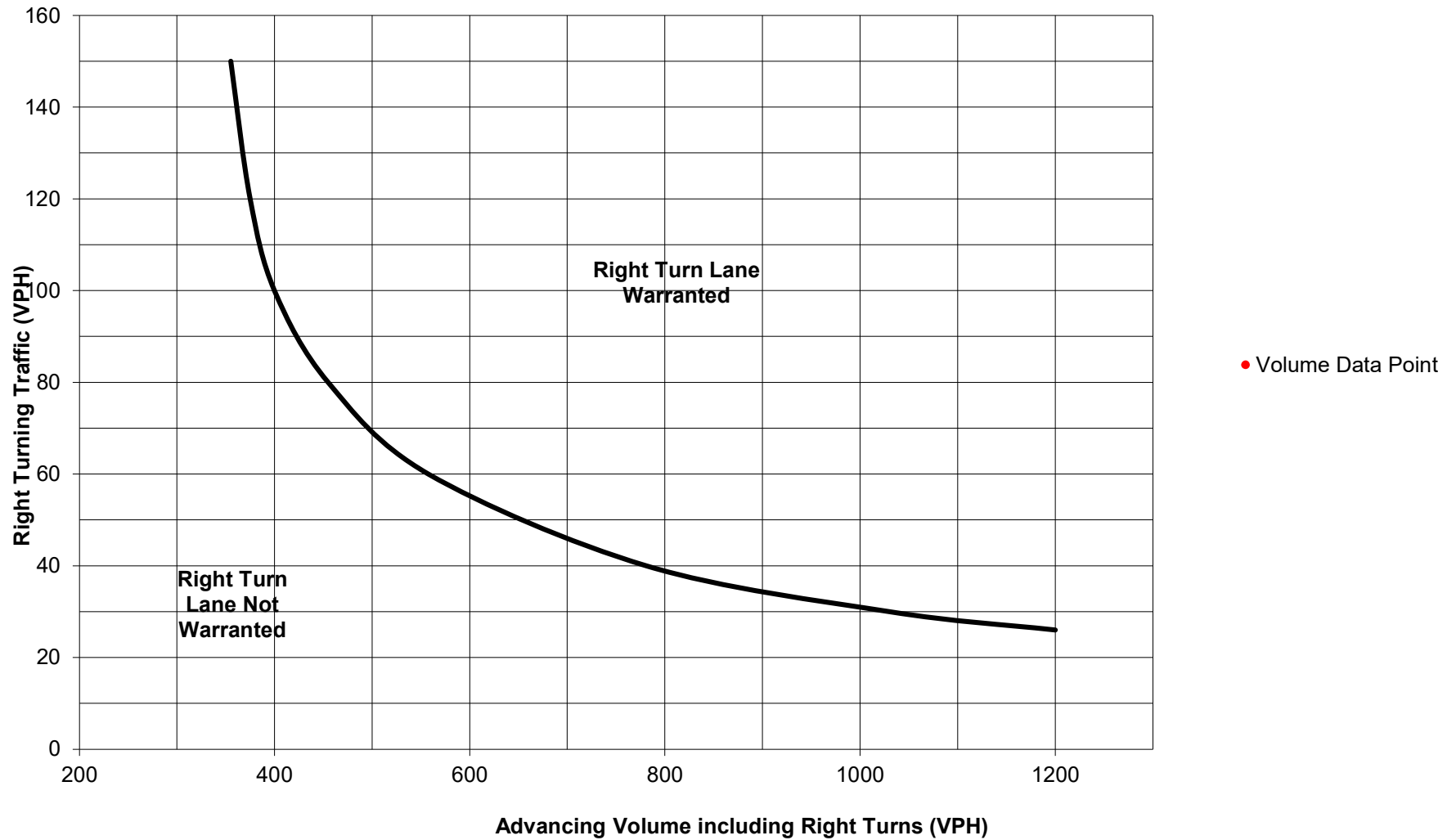
Right Turn Lane Storage Length, Condition A: N/A Feet
Condition B: N/A Feet
Condition C: N/A Feet
Required Right Turn Lane Storage Length: N/A Feet

Additional Findings:

N/A

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/7/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Eastbound Left

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40	Type of Analysis:	Left Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	74	2.0%	75
	Through	-	60	25.0%	68
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0

Advancing Volume: 143
Opposing Volume: 66
Left Turn Volume: 75

% Left Turns in Advancing Volume: 52.45%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume: N/A
Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings Applicable Warrant Figure: Figure 2 Warrant Met?: No	Right Turn Lane Warrant Findings Applicable Warrant Figure: N/A Warrant Met?: N/A
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	75	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

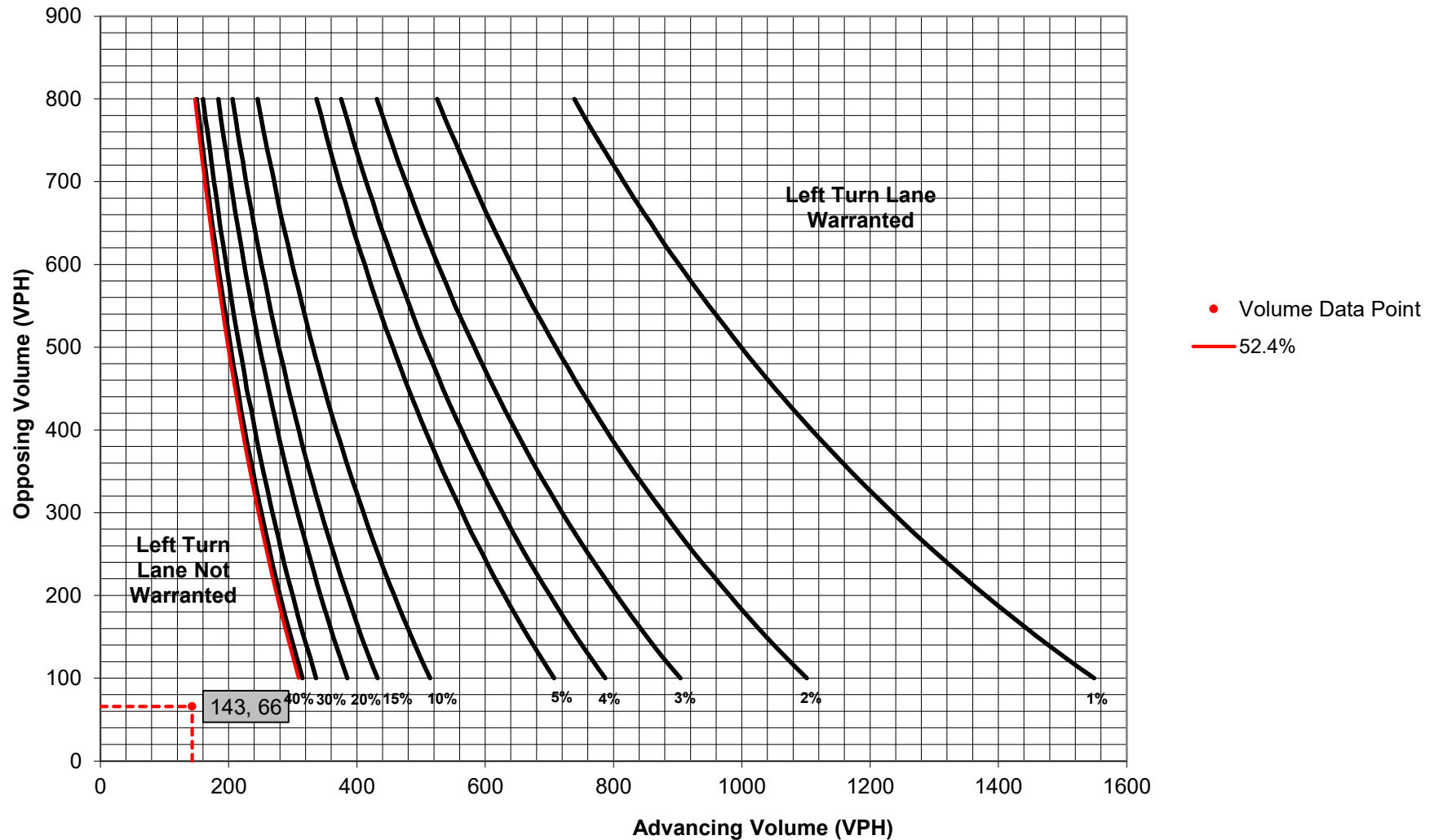
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: N/A Feet
Condition B: N/A Feet
Condition C: N/A Feet
Required Left Turn Lane Storage Length: N/A Feet

Additional Findings: N/A

Additional Comments / Justifications:

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	74	2.0%	N/A
	Through	-	60	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	-	0	0.0%	0
Advancing Volume: 66 Right Turn Volume: 0					

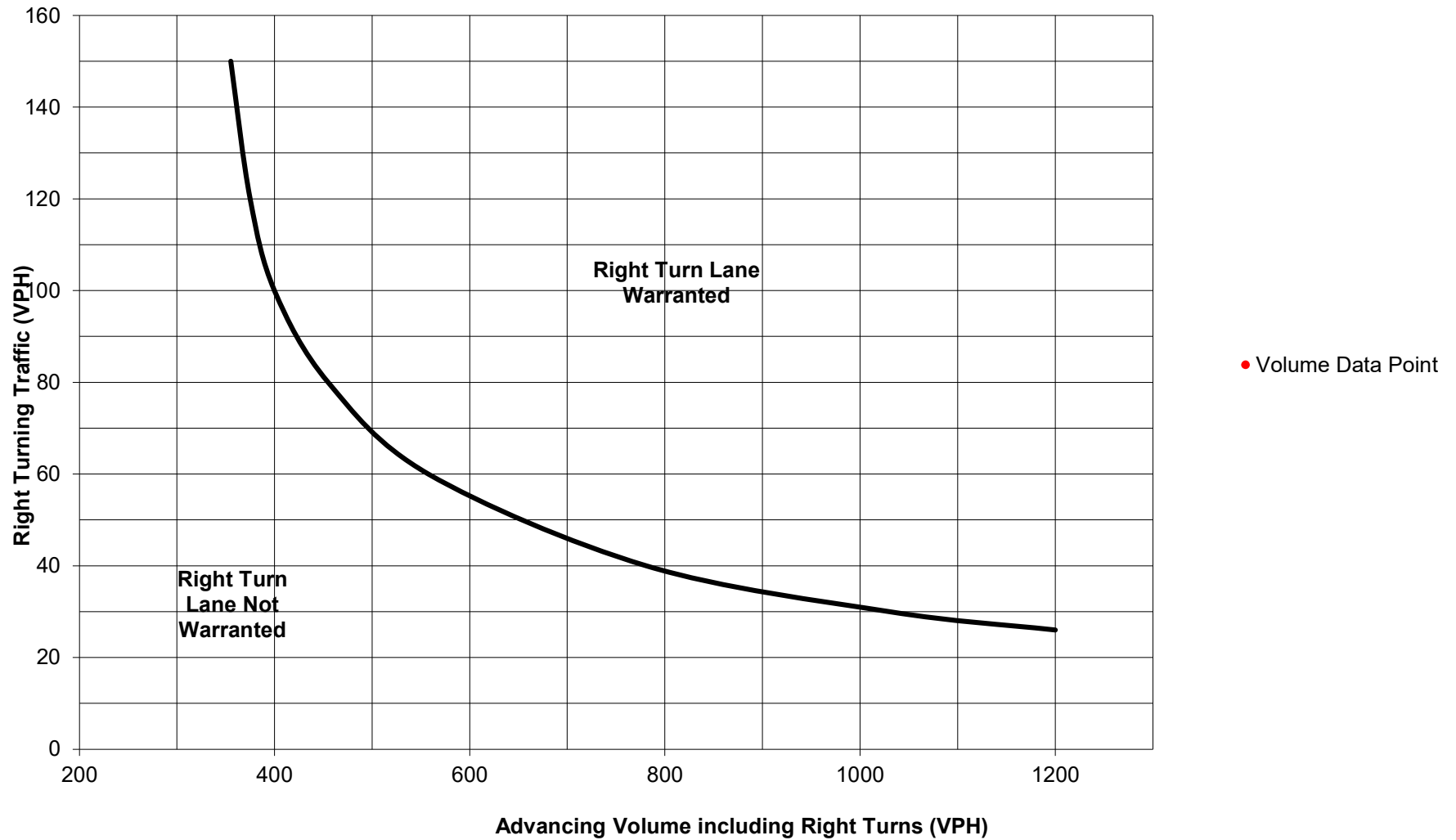
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	24	2.0%	25
	Through	-	87	8.0%	91
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	18	2.0%	19
	Through	-	58	15.0%	63
	Right	Yes	0	0.0%	0
Advancing Volume: 116 Opposing Volume: 82 Left Turn Volume: 25 % Left Turns in Advancing Volume: 21.55%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	N/A
	Through	-	58	15.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

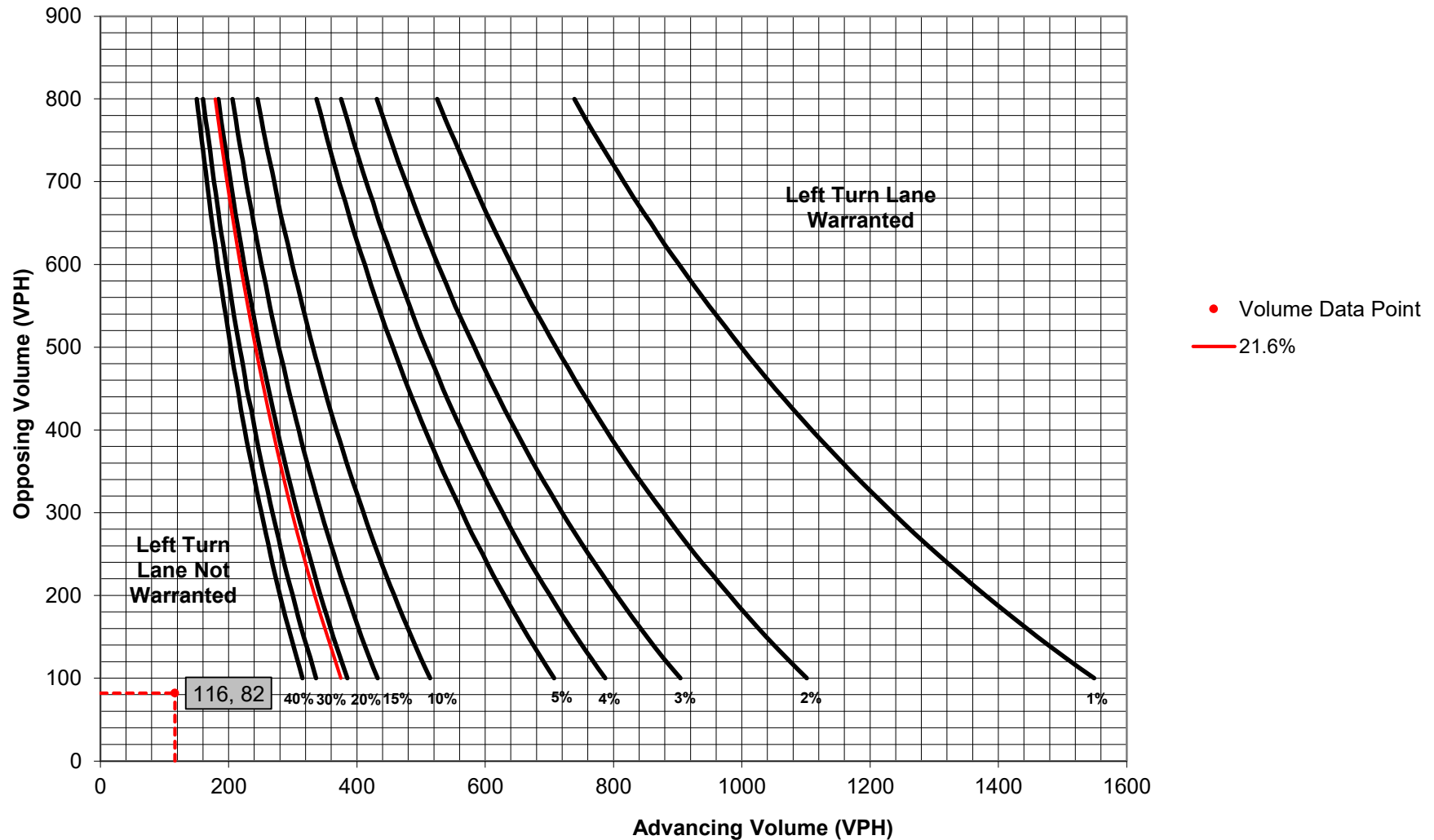
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 25 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	24	2.0%	N/A
	Through	-	87	8.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	18	2.0%	N/A
	Through	-	58	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	19
	Through	-	58	15.0%	63
	Right	-	0	0.0%	0
Advancing Volume: 82 Right Turn Volume: 0					

TURN LANE WARRANT FINDINGS

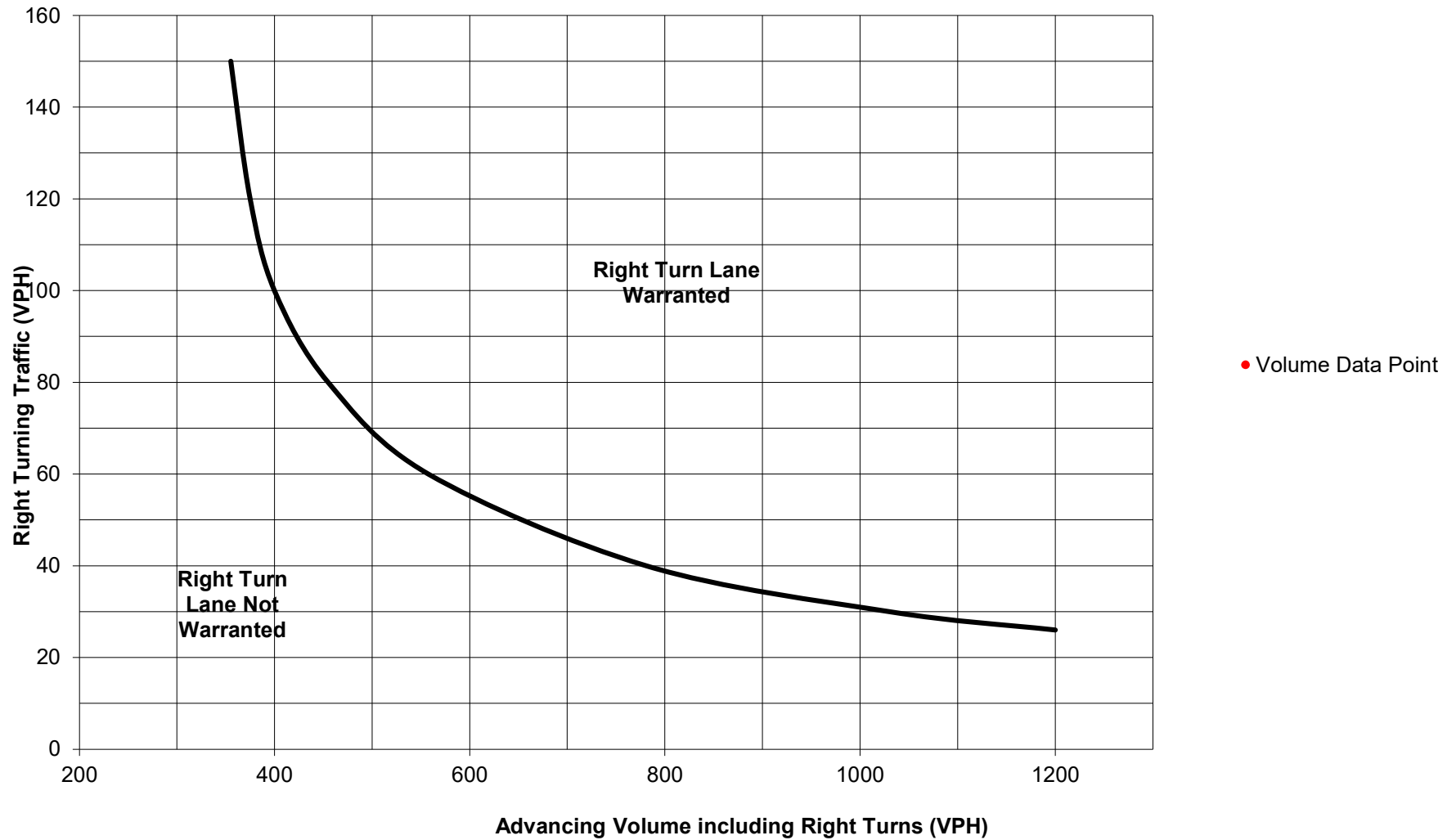
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/20/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	AM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40		
Type of Terrain:	Level		

Left or Right-Turn Lane Analysis?: **Type of Analysis**
Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	74	2.0%	75
	Through	-	60	25.0%	68
	Right	Yes	0	0.0%	0

Advancing Volume: 66
Opposing Volume: 143
Left Turn Volume: 6

% Left Turns in Advancing Volume: 9.09%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	74	2.0%	N/A
	Through	-	60	25.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume: N/A
Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized
Design Hour Volume of Turning Lane:	6
Cycles Per Hour (Assumed):	60
Cycles Per Hour (If Known):	

Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

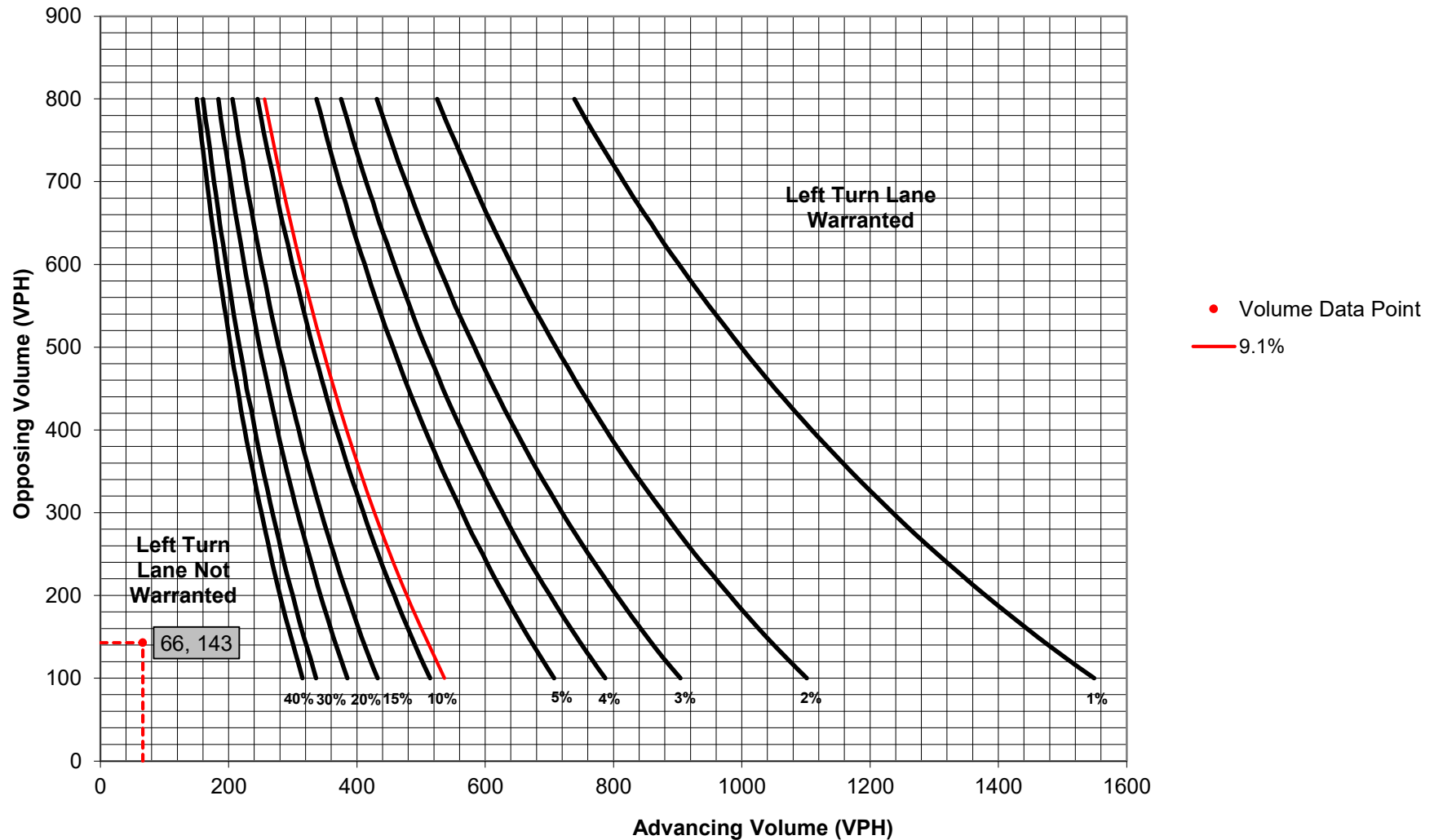
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: **N/A** Feet
Condition B: **N/A** Feet
Condition C: **N/A** Feet
Required Left Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Right Turn Lane
Left or Right-Turn Lane Analysis?: Right Turn Lane	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	74	2.0%	N/A
	Through	-	60	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	74	2.0%	75
	Through	-	60	25.0%	68
	Right	-	0	0.0%	0
Advancing Volume: 143 Right Turn Volume: 0					

TURN LANE WARRANT FINDINGS

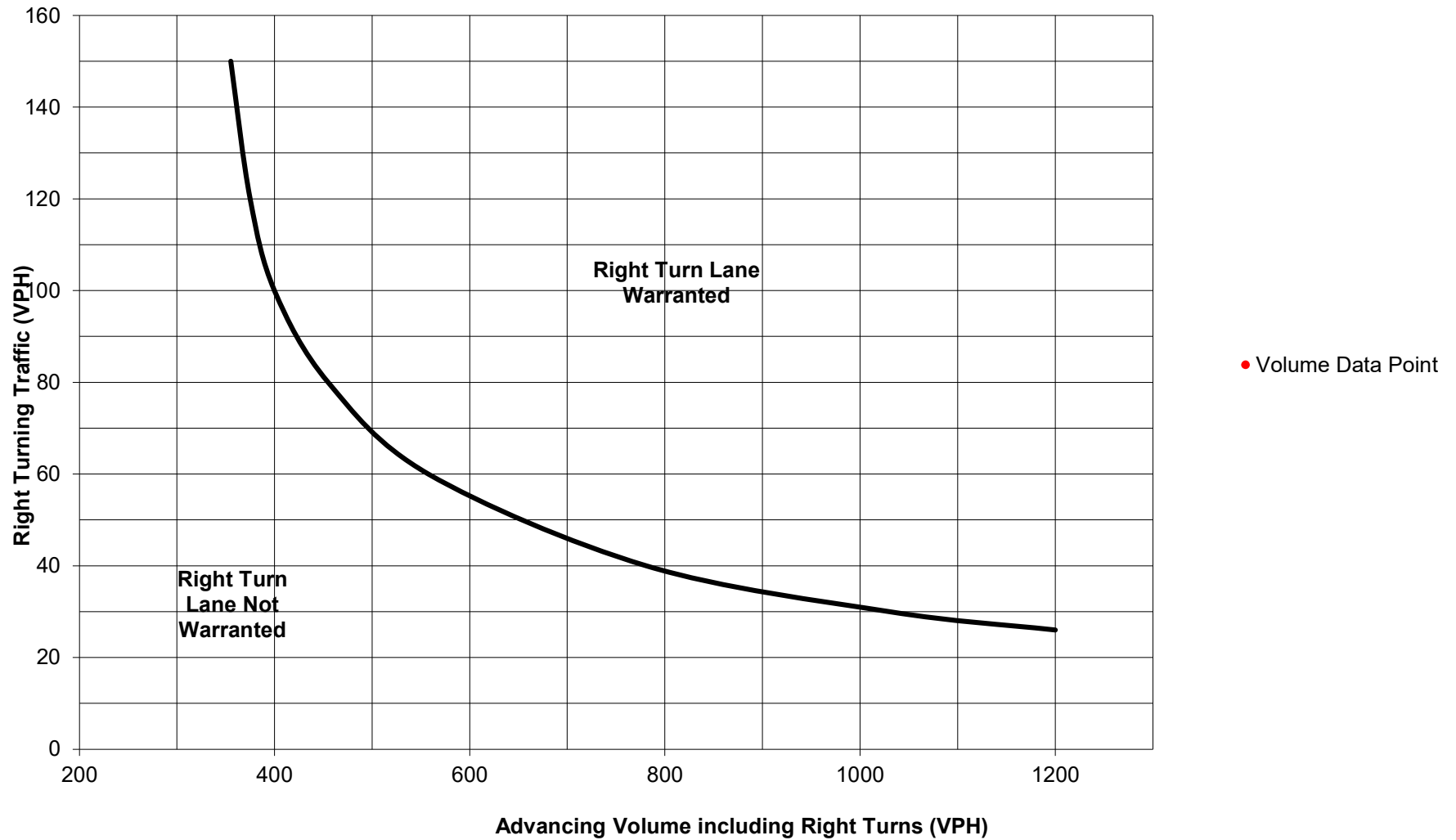
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township	Analysis Date: 8/20/2026
County: Lancaster County	Conducted By: DZ
PennDOT Engineering District: 8	Checked By: JW
	Agency/Company Name: TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left

Analysis Period: 2035 Projected (Build)	Number of Approach Lanes: 1
Design Hour: PM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 40	Type of Analysis
Type of Terrain: Level	Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	19
	Through	-	58	15.0%	63
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	24	2.0%	25
	Through	-	87	8.0%	91
	Right	Yes	0	0.0%	0

Advancing Volume: 82

Opposing Volume: 116

Left Turn Volume: 19

% Left Turns in Advancing Volume: 23.17%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	24	2.0%	N/A
	Through	-	87	8.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume: N/A

Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 19	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: **N/A** Feet

Condition B: **N/A** Feet

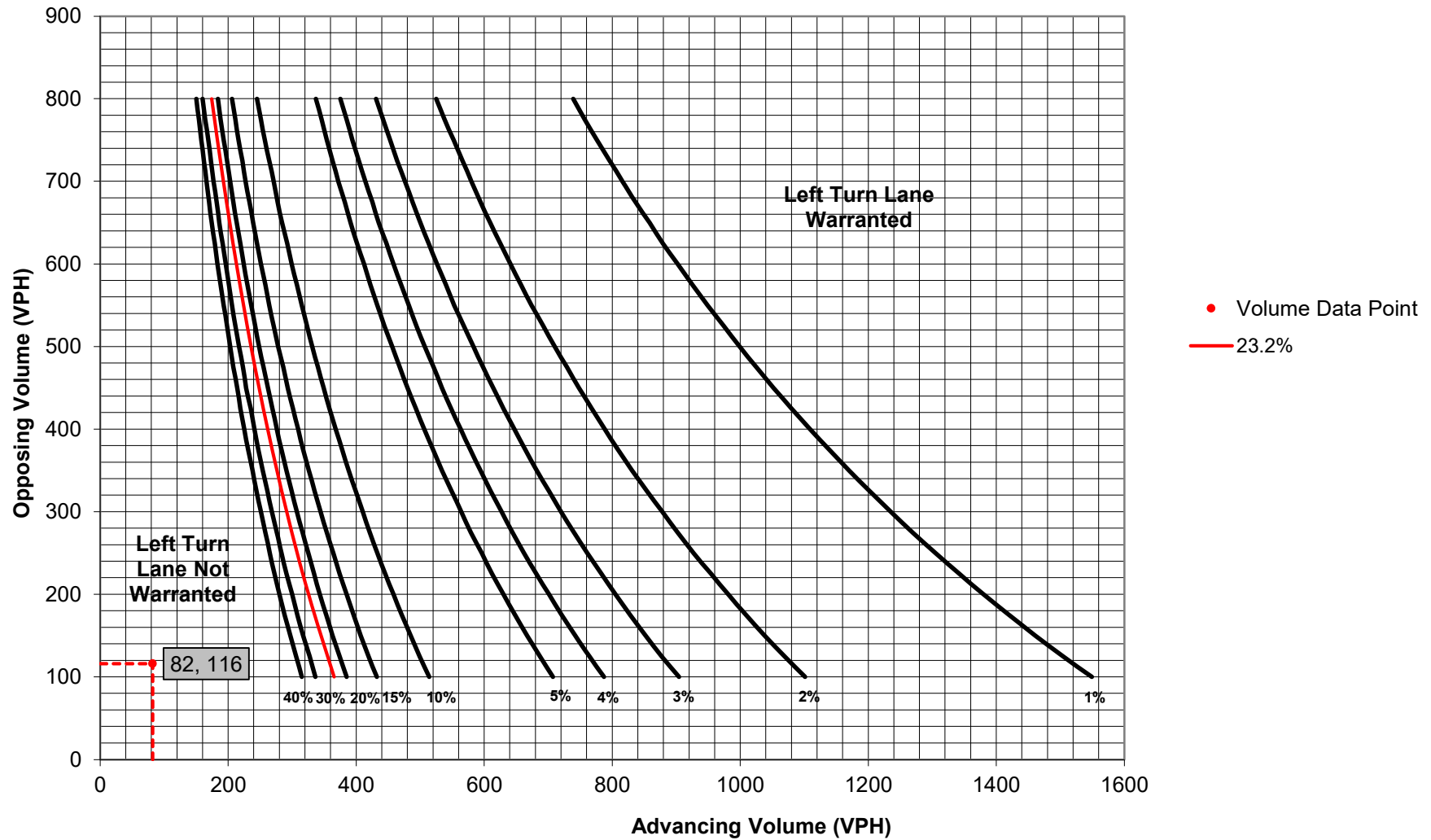
Condition C: **N/A** Feet

Required Left Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	18	2.0%	N/A
	Through	-	58	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	24	2.0%	N/A
	Through	-	87	8.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	24	2.0%	25
	Through	-	87	8.0%	91
	Right	-	0	0.0%	0
Advancing Volume: 116 Right Turn Volume: 0					

TURN LANE WARRANT FINDINGS

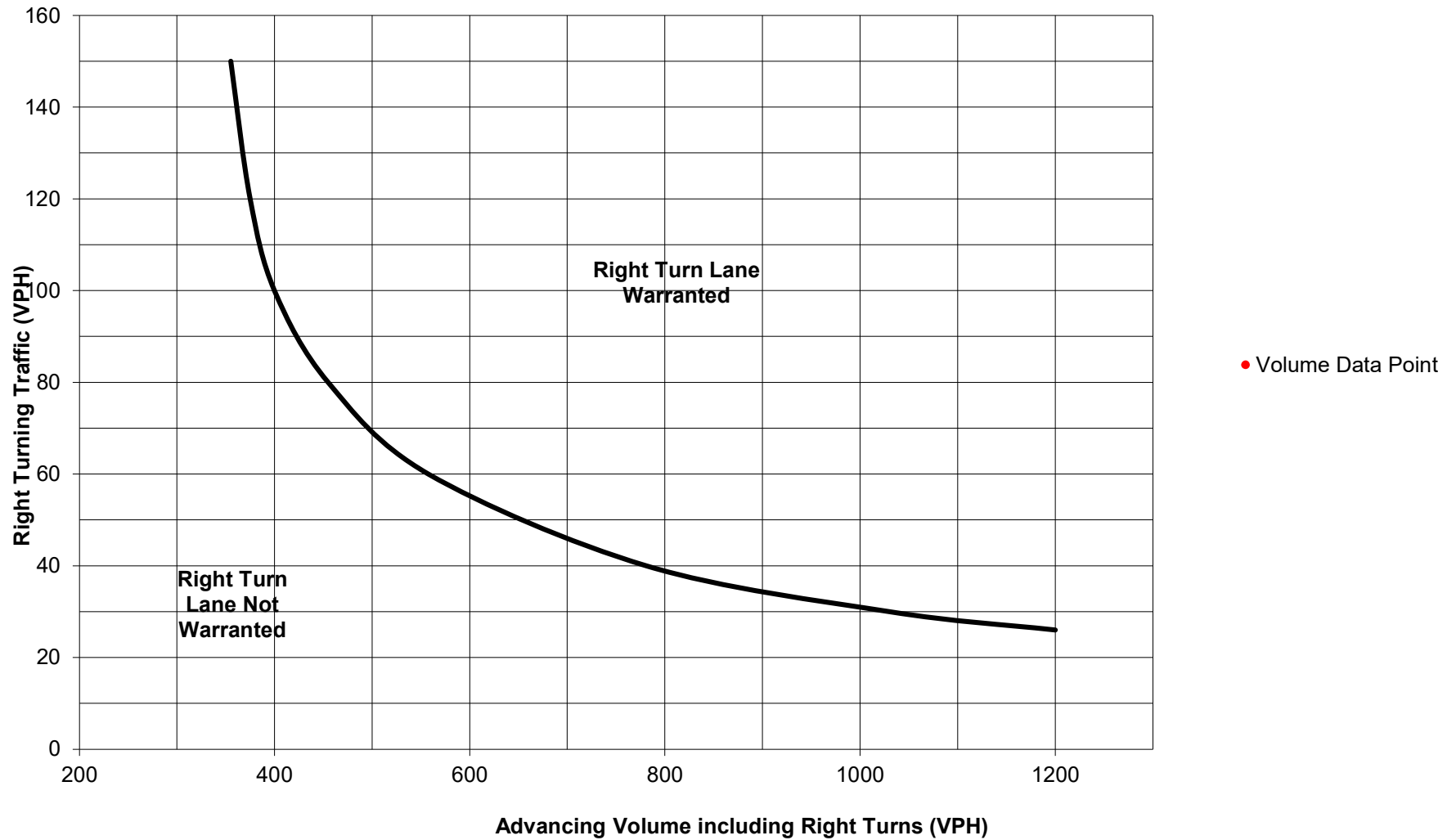
Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
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Type of Traffic Control	Speed (MPH)																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**





TIS + 20% - Alternative Analysis



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Type of Analysis Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	31	2.0%	32
	Through	-	38	25.0%	43
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	Yes	26	2.0%	27
Advancing Volume: 75 Opposing Volume: 81 Left Turn Volume: 32 % Left Turns in Advancing Volume: 42.67%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	-	26	2.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

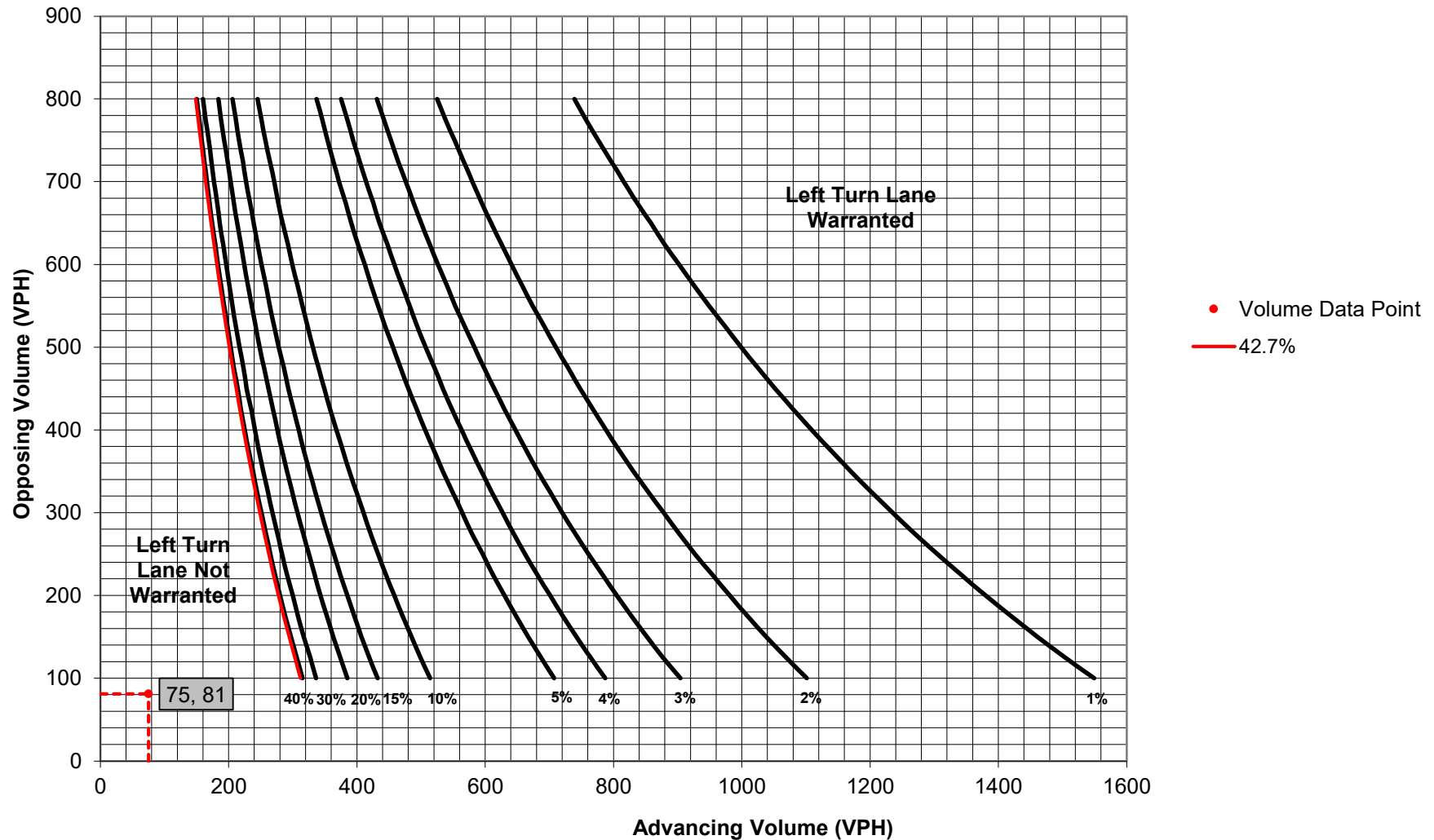
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 32 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
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	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications:																																									

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Right Turn Lane
Left or Right-Turn Lane Analysis?: Right Turn Lane	

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	31	2.0%	N/A
	Through	-	38	25.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	N/A
	Right	Yes	26	2.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	50	15.0%	54
	Right	-	26	2.0%	27
Advancing Volume: 81 Right Turn Volume: 27					

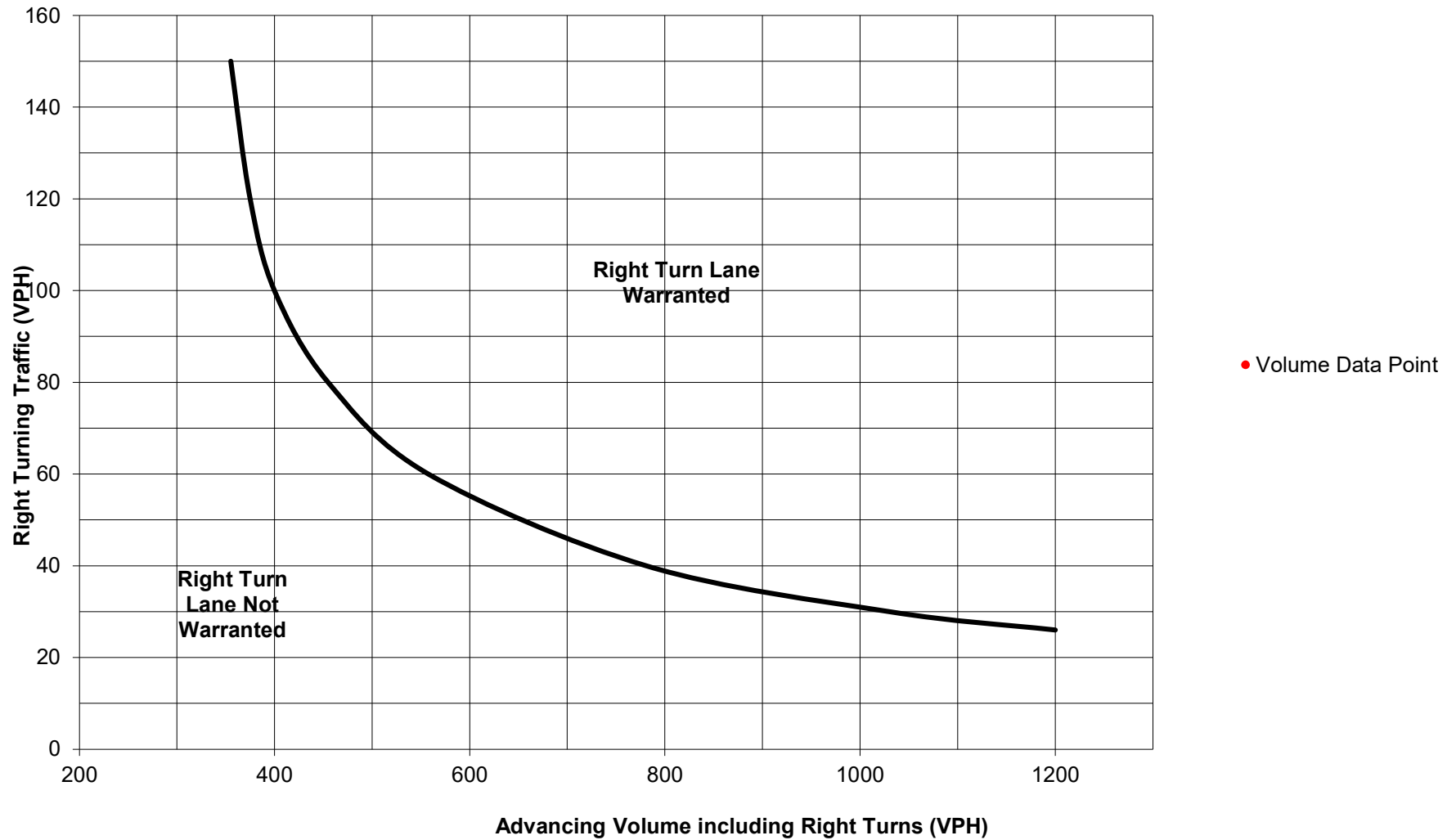
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 27 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications:																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	2.0%	11
	Through	-	79	8.0%	83
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	Yes	9	2.0%	10

Advancing Volume: 94
 Opposing Volume: 49
 Left Turn Volume: 11

% Left Turns in Advancing Volume: 11.70%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	-	9	2.0%	N/A

Advancing Volume: N/A
 Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 11 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A
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PennDOT Publication 46, Exhibit 11-6

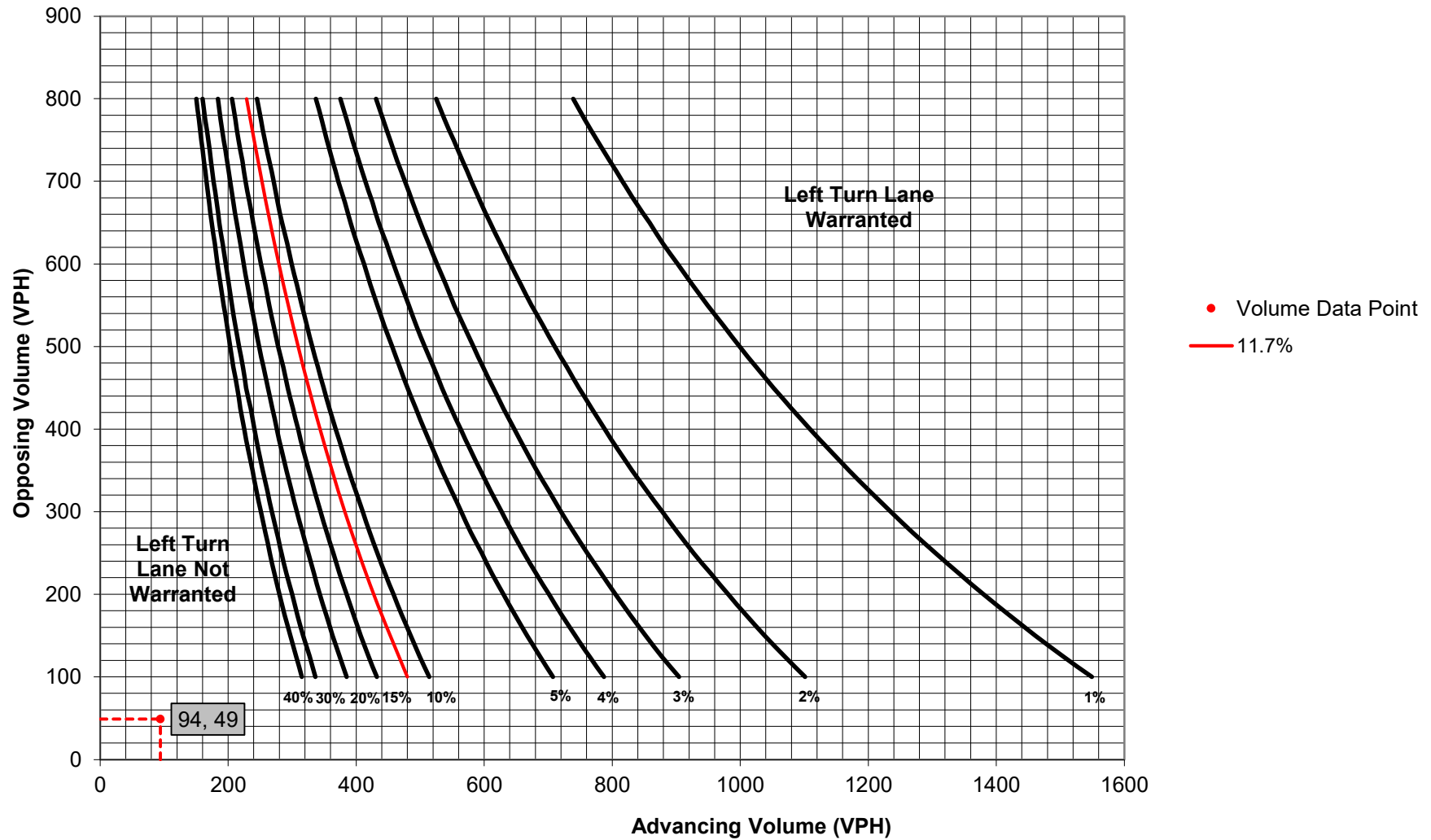
Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: N/A Feet
 Condition B: N/A Feet
 Condition C: N/A Feet
 Required Left Turn Lane Storage Length: N/A Feet

Additional Findings:
N/A

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
 (L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Eastern (car-only) Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	10	2.0%	N/A
	Through	-	79	8.0%	N/A
	Right	No	0	0.0%	N/A
Opposing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	N/A
	Right	Yes	9	2.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	No	0	0.0%	N/A
	Through	-	36	15.0%	39
	Right	-	9	2.0%	10
Advancing Volume: 49 Right Turn Volume: 10					

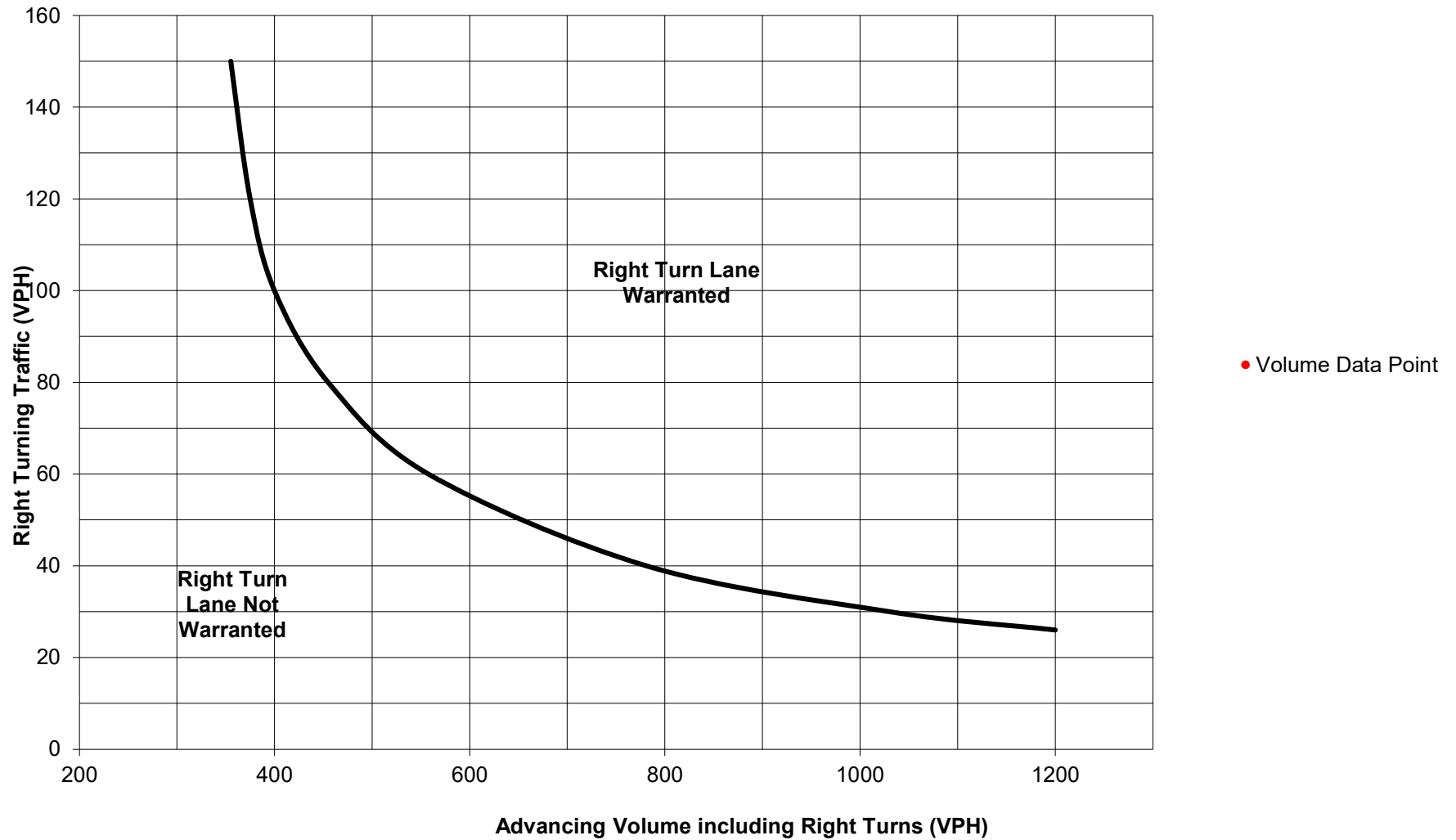
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 10 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
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Additional Findings: N/A																																									
Additional Comments / Justifications:																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	57	2.0%	58
	Through	-	55	25.0%	62
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0
Advancing Volume: 120 Opposing Volume: 66 Left Turn Volume: 58 % Left Turns in Advancing Volume: 48.33%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

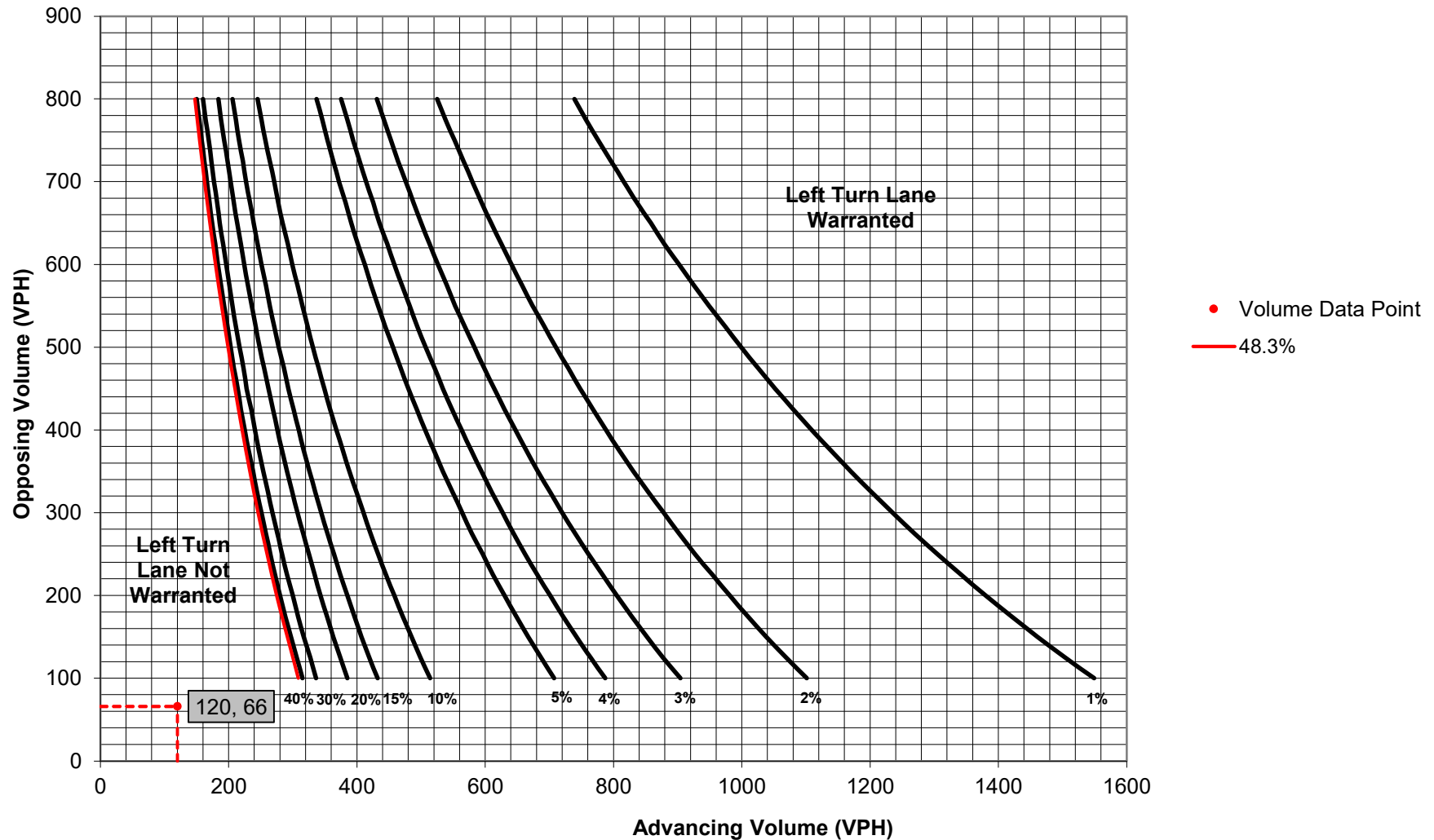
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 58 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	57	2.0%	N/A
	Through	-	55	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	-	0	0.0%	0
Advancing Volume: 66 Right Turn Volume: 0					

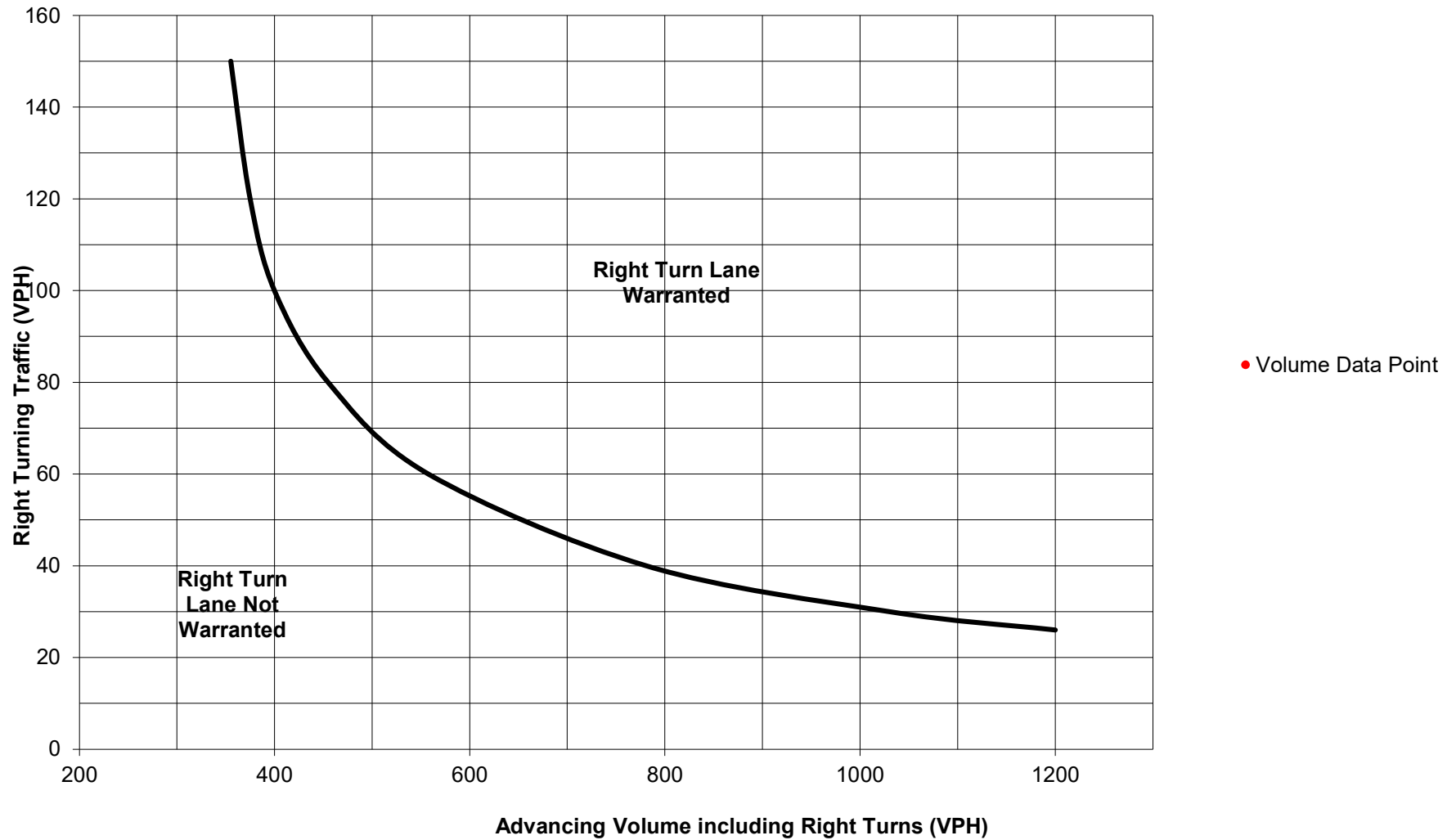
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
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Additional Findings: N/A																																									
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Eastbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	2.0%	20
	Through	-	84	8.0%	88
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	17	2.0%	18
	Through	-	57	15.0%	62
	Right	Yes	0	0.0%	0
Advancing Volume: 108 Opposing Volume: 80 Left Turn Volume: 20 % Left Turns in Advancing Volume: 18.52%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	17	2.0%	N/A
	Through	-	57	15.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

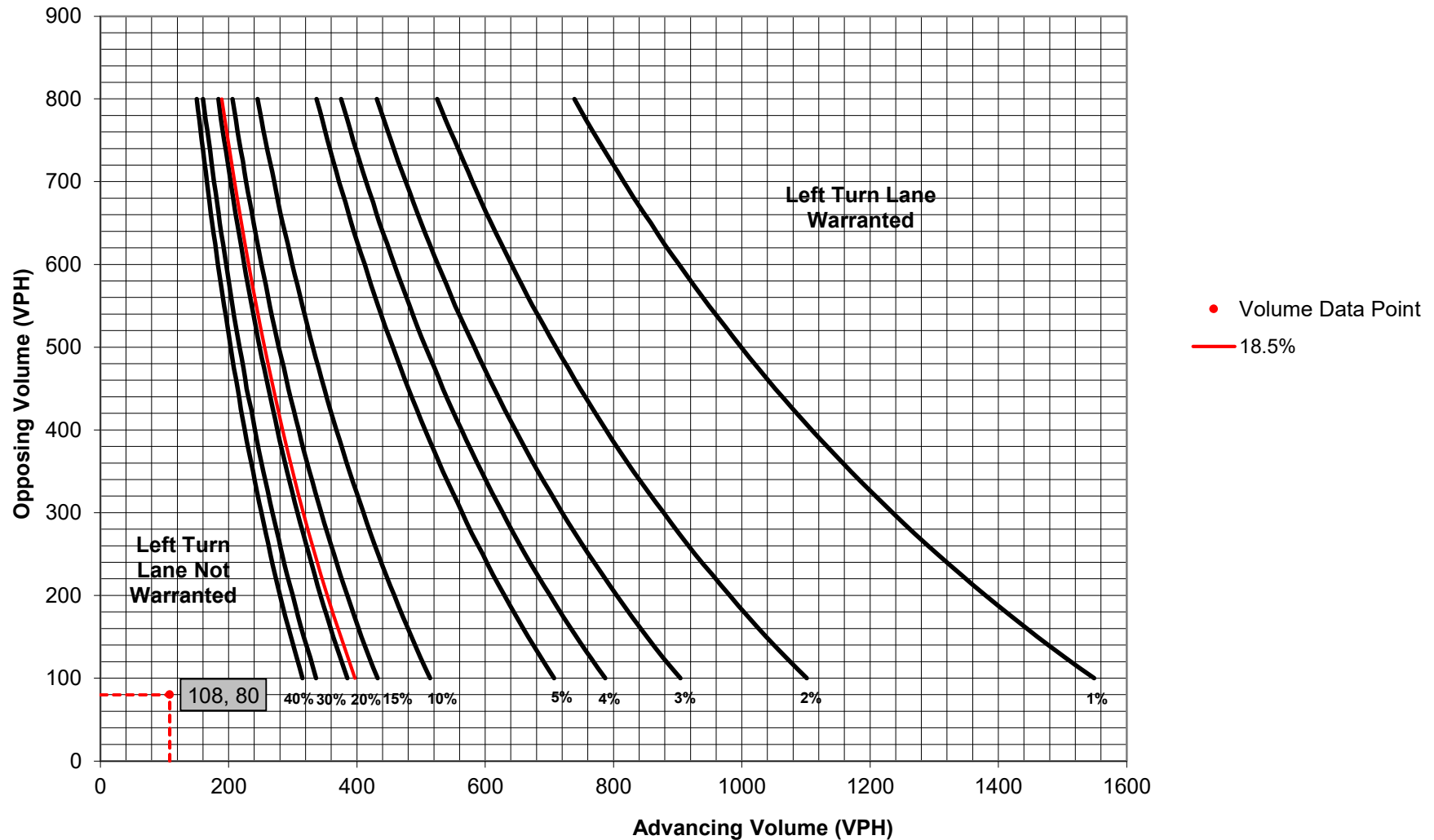
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 20 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
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(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/7/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Western Driveway - Westbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	19	2.0%	N/A	Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A
	Through	-	84	8.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Opposing	Left	Yes	17	2.0%	N/A	 % Left Turns in Advancing Volume: N/A
	Through	-	57	15.0%	N/A	
	Right	Yes	0	0.0%	N/A	
Right Turn Lane Volume Calculations						
Movement	Include?	Volume	% Trucks	PCEV		
Advancing	Left	Yes	17	2.0%	18	Advancing Volume: 80 Right Turn Volume: 0
	Through	-	57	15.0%	62	
	Right	-	0	0.0%	0	

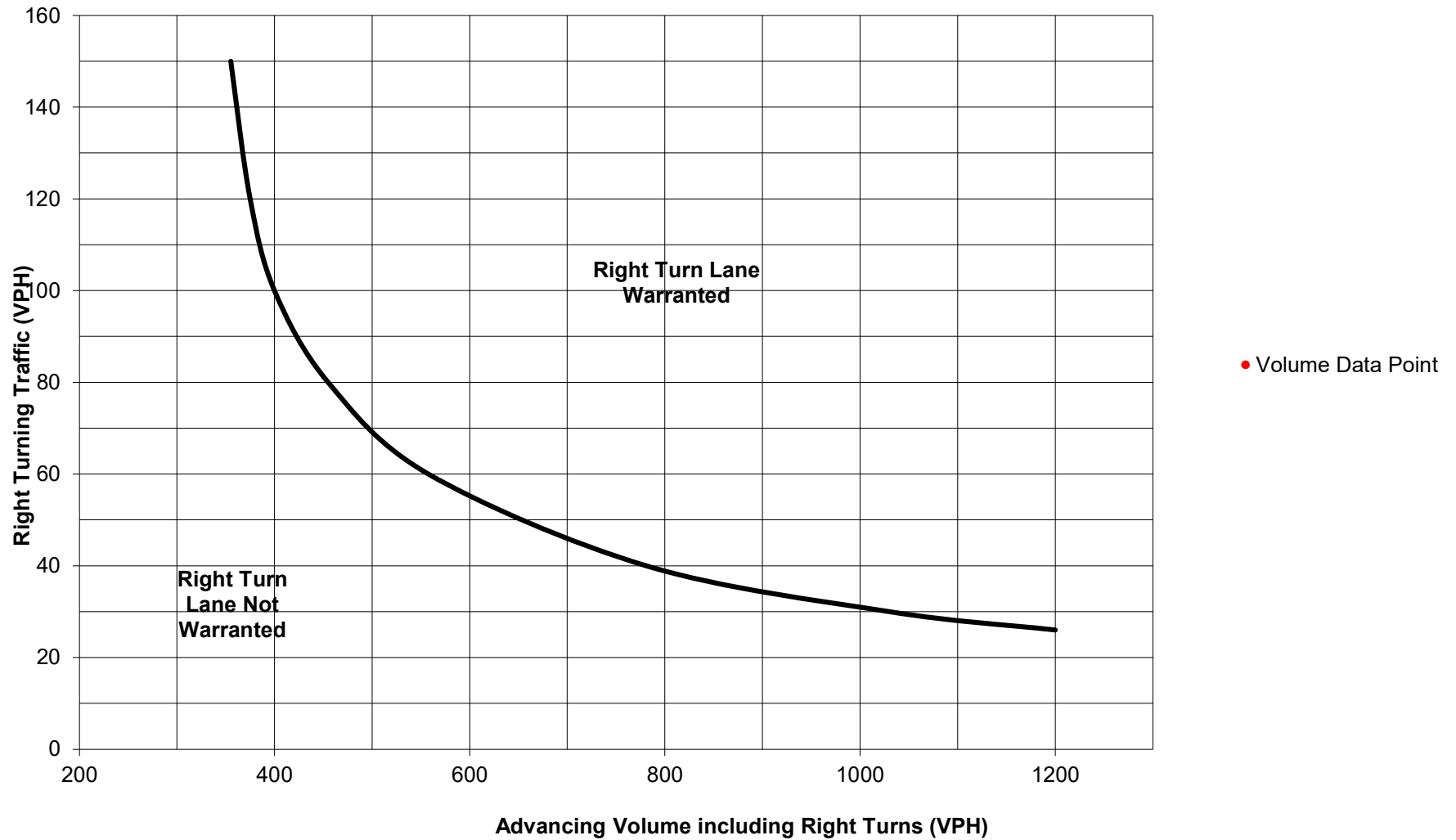
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
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Signalized	A	A	B or C	B or C	B or C	B or C																																			
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**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township	Analysis Date: 8/20/2026
County: Lancaster County	Conducted By: DZ
PennDOT Engineering District: 8	Checked By: JW
	Agency/Company Name: TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left

Analysis Period: 2035 Projected (Build)	Number of Approach Lanes: 1
Design Hour: AM Peak Hour	Undivided or Divided Highway: Undivided
Intersection Control: Unsignalized	
Posted Speed Limit (MPH): 40	Type of Analysis
Type of Terrain: Level	Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	6
	Through	-	55	15.0%	60
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	57	2.0%	58
	Through	-	55	25.0%	62
	Right	Yes	0	0.0%	0

Advancing Volume: 66

Opposing Volume: 120

Left Turn Volume: 6

% Left Turns in Advancing Volume: 9.09%

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	57	2.0%	N/A
	Through	-	55	25.0%	N/A
	Right	-	0	0.0%	N/A

Advancing Volume: N/A

Right Turn Volume: N/A

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2	Applicable Warrant Figure: N/A
Warrant Met?: No	Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized	
Design Hour Volume of Turning Lane: 6	
Cycles Per Hour (Assumed): 60	
Cycles Per Hour (If Known):	Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Left Turn Lane Storage Length, Condition A: **N/A** Feet

Condition B: **N/A** Feet

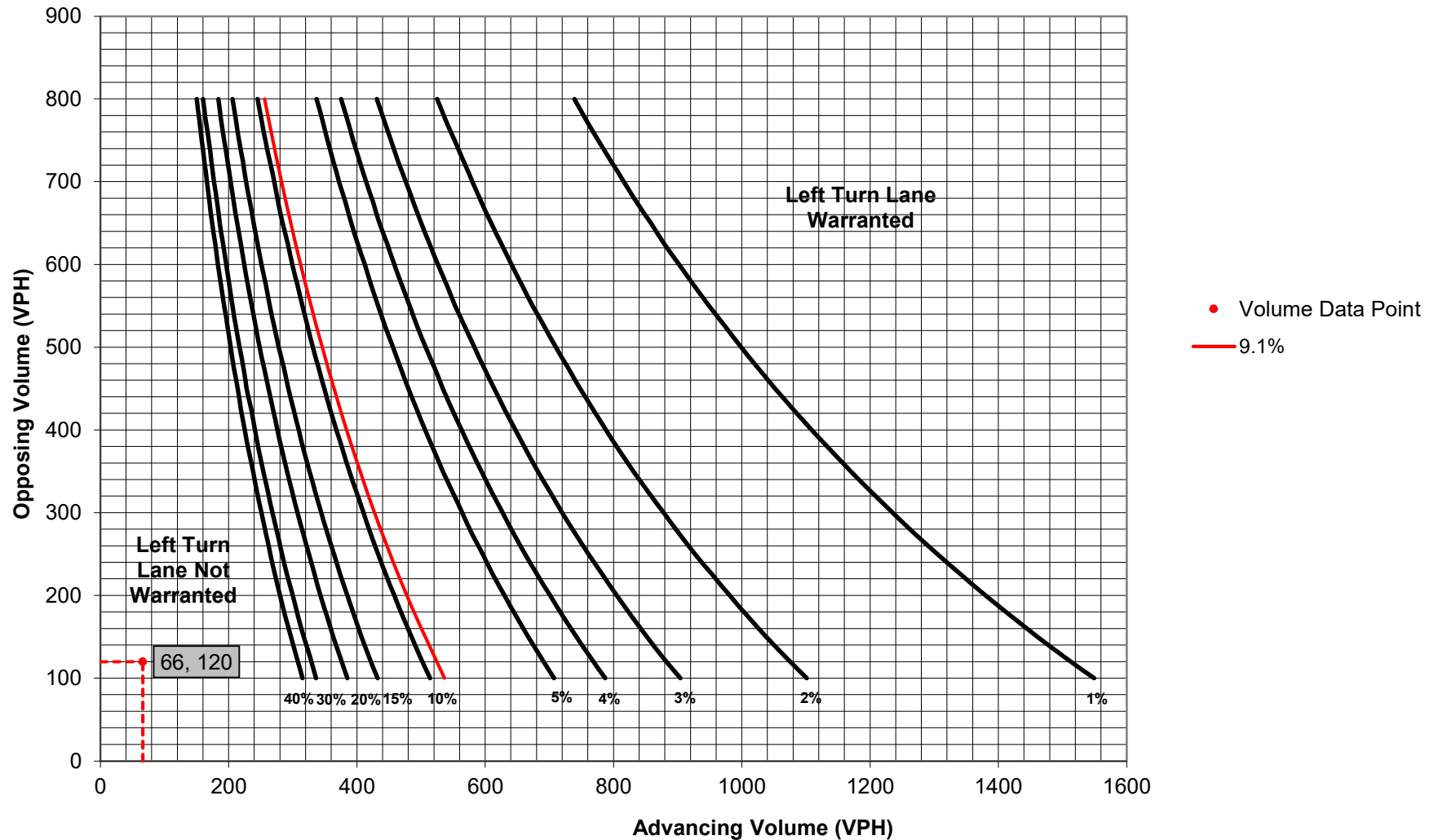
Condition C: **N/A** Feet

Required Left Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

Figure 2. Warrant for left turn lanes on two-lane highways
(40 mph speed, unsignalized and signalized intersections)
(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right	
Analysis Period: 2035 Projected (Build) Design Hour: AM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Right Turn Lane Left or Right-Turn Lane Analysis?: Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	5	2.0%	N/A
	Through	-	55	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	57	2.0%	N/A
	Through	-	55	25.0%	N/A
	Right	Yes	0	0.0%	N/A
Advancing Volume: N/A Opposing Volume: N/A Left Turn Volume: N/A % Left Turns in Advancing Volume: N/A					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	57	2.0%	58
	Through	-	55	25.0%	62
	Right	-	0	0.0%	0
Advancing Volume: 120 Right Turn Volume: 0					

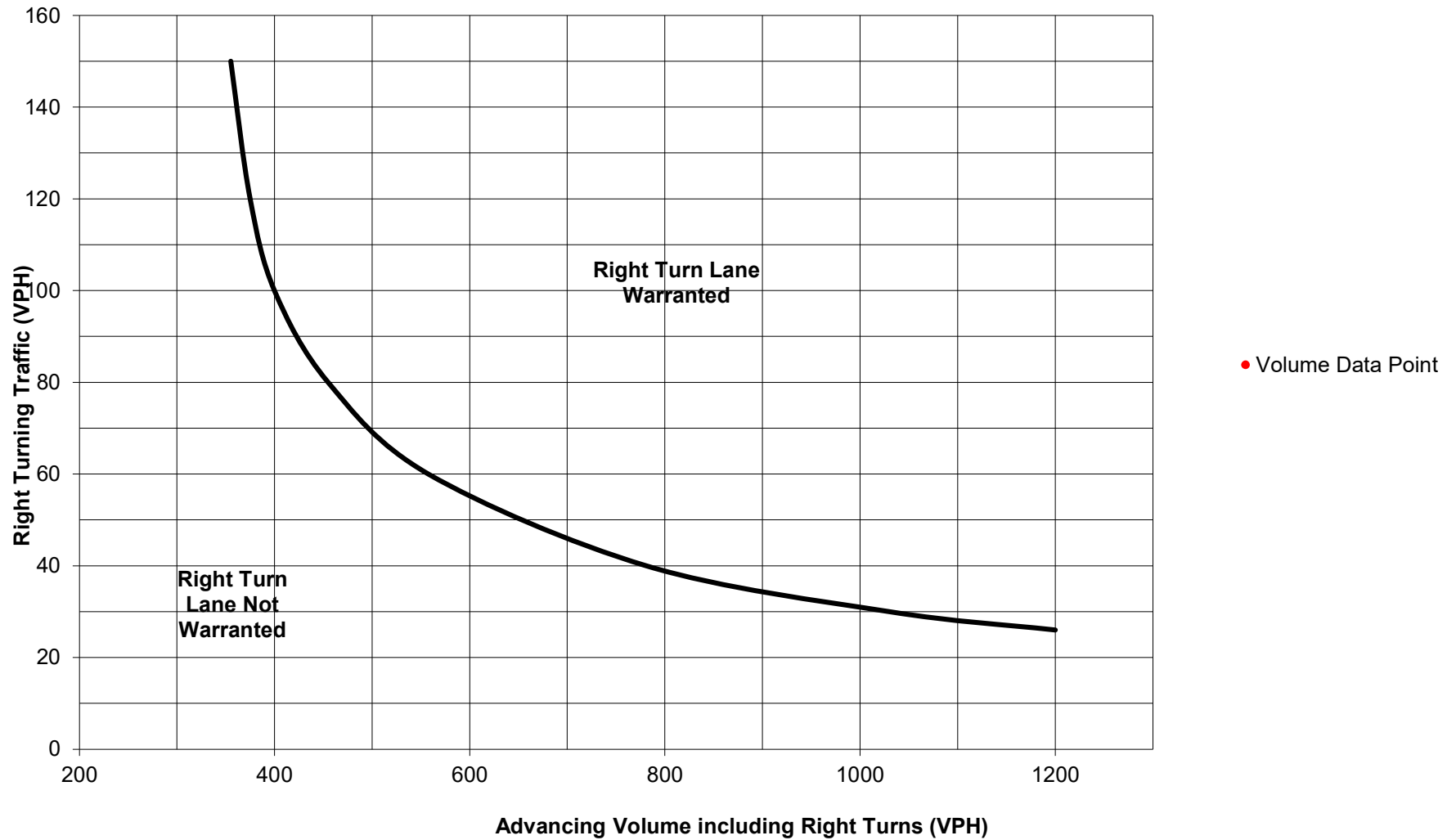
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: N/A Warrant Met?: N/A	Applicable Warrant Figure: Figure 9 Warrant Met?: No

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 0 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Right Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Right Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality: Mount Joy Township County: Lancaster County PennDOT Engineering District: 8	Analysis Date: 8/20/2026 Conducted By: DZ Checked By: JW Agency/Company Name: TPD, Inc.
Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Westbound Left	
Analysis Period: 2035 Projected (Build) Design Hour: PM Peak Hour Intersection Control: Unsignalized Posted Speed Limit (MPH): 40 Type of Terrain: Level	Number of Approach Lanes: 1 Undivided or Divided Highway: Undivided Type of Analysis: Left Turn Lane Left or Right-Turn Lane Analysis?: Left Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	17	2.0%	18
	Through	-	57	15.0%	62
	Right	Yes	0	0.0%	0
Opposing	Left	Yes	19	2.0%	20
	Through	-	84	8.0%	88
	Right	Yes	0	0.0%	0
Advancing Volume: 80 Opposing Volume: 108 Left Turn Volume: 18 % Left Turns in Advancing Volume: 22.50%					
Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	2.0%	N/A
	Through	-	84	8.0%	N/A
	Right	-	0	0.0%	N/A
Advancing Volume: N/A Right Turn Volume: N/A					

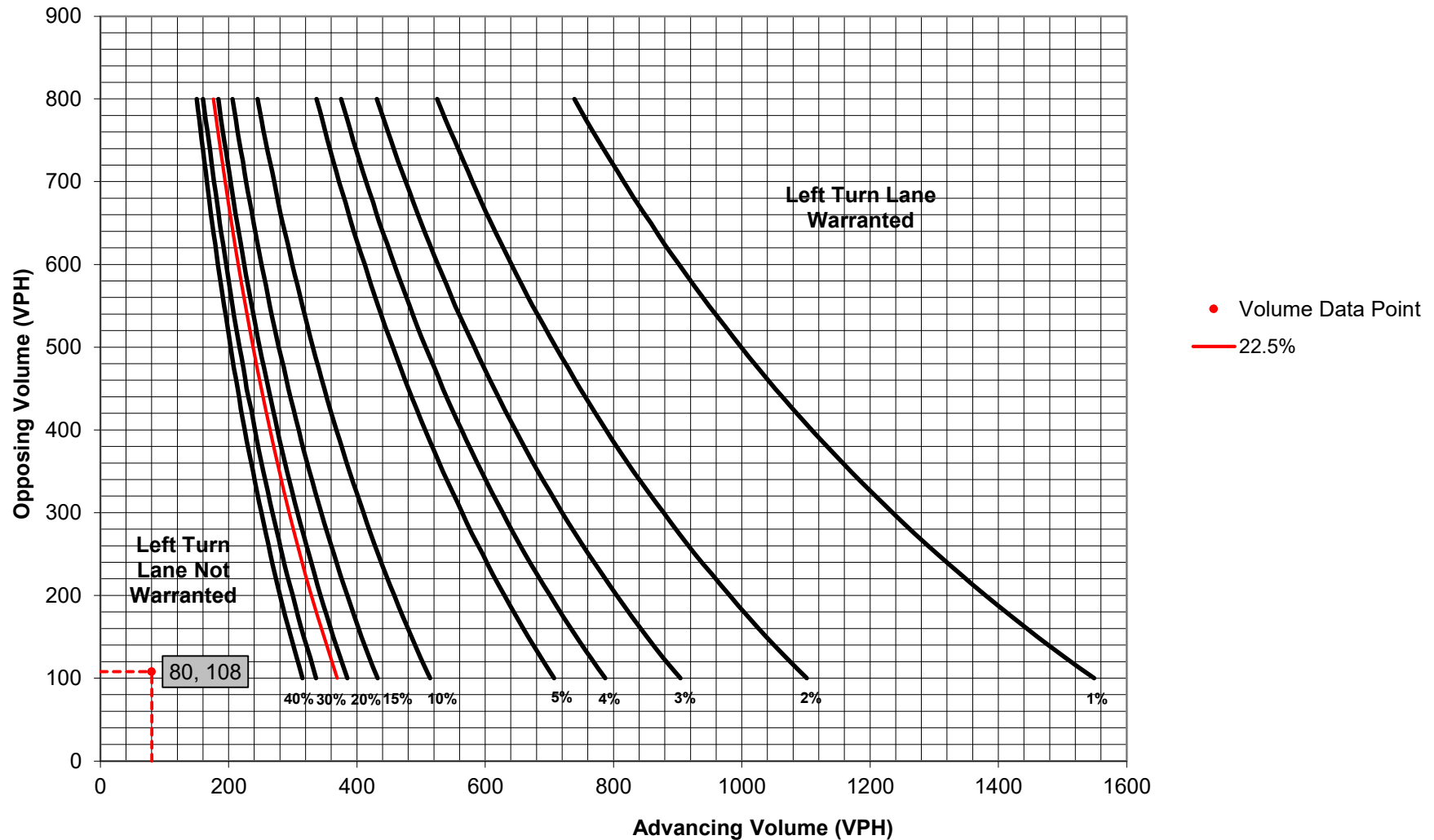
TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings	Right Turn Lane Warrant Findings
Applicable Warrant Figure: Figure 2 Warrant Met?: No	Applicable Warrant Figure: N/A Warrant Met?: N/A

TURN LANE LENGTH CALCULATIONS

Intersection Control: Unsignalized Design Hour Volume of Turning Lane: 18 Cycles Per Hour (Assumed): 60 Cycles Per Hour (If Known): 	Average # of Vehicles/Cycle: N/A																																								
PennDOT Publication 46, Exhibit 11-6																																									
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Type of Traffic Control</th> <th colspan="6">Speed (MPH)</th> </tr> <tr> <th colspan="2">25-35</th> <th colspan="2" rowspan="2">40-45</th> <th colspan="2" rowspan="2">50-60</th> </tr> <tr> <th colspan="6">Turn Demand Volume</th> </tr> <tr> <th></th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> <th>High</th> <th>Low</th> </tr> <tr> <td>Signalized</td> <td>A</td> <td>A</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> <td>B or C</td> </tr> <tr> <td>Unsignalized</td> <td>A</td> <td>A</td> <td>C</td> <td>B</td> <td>B or C</td> <td>B</td> </tr> </table>		Type of Traffic Control	Speed (MPH)						25-35		40-45		50-60		Turn Demand Volume							High	Low	High	Low	High	Low	Signalized	A	A	B or C	B or C	B or C	B or C	Unsignalized	A	A	C	B	B or C	B
Type of Traffic Control	Speed (MPH)																																								
	25-35		40-45		50-60																																				
	Turn Demand Volume																																								
	High	Low	High	Low	High	Low																																			
Signalized	A	A	B or C	B or C	B or C	B or C																																			
Unsignalized	A	A	C	B	B or C	B																																			
Left Turn Lane Storage Length, Condition A: N/A Feet Condition B: N/A Feet Condition C: N/A Feet Required Left Turn Lane Storage Length: N/A Feet																																									
Additional Findings: N/A																																									
Additional Comments / Justifications: 																																									

(L = % Left Turns in Advancing Volume)



Turn Lane Warrant and Length Analysis Workbook

STUDY LOCATION AND ANALYSIS INFORMATION

Municipality:	Mount Joy Township	Analysis Date:	8/20/2026
County:	Lancaster County	Conducted By:	DZ
PennDOT Engineering District:	8	Checked By:	JW
		Agency/Company Name:	TPD, Inc.

Intersection & Approach Description: Mt. Pleasant Road & Proposed Archers Lane - Eastbound Right

Analysis Period:	2035 Projected (Build)	Number of Approach Lanes:	1
Design Hour:	PM Peak Hour	Undivided or Divided Highway:	Undivided
Intersection Control:	Unsignalized		
Posted Speed Limit (MPH):	40	Type of Analysis:	Right Turn Lane
Type of Terrain:	Level	Left or Right-Turn Lane Analysis?:	Right Turn Lane

VOLUME CALCULATIONS

Left Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	17	2.0%	N/A
	Through	-	57	15.0%	N/A
	Right	Yes	0	0.0%	N/A
Opposing	Left	Yes	19	2.0%	N/A
	Through	-	84	8.0%	N/A
	Right	Yes	0	0.0%	N/A

Advancing Volume: N/A
Opposing Volume: N/A
Left Turn Volume: N/A
% Left Turns in Advancing Volume: N/A

Right Turn Lane Volume Calculations					
Movement		Include?	Volume	% Trucks	PCEV
Advancing	Left	Yes	19	2.0%	20
	Through	-	84	8.0%	88
	Right	-	0	0.0%	0

Advancing Volume: 108
Right Turn Volume: 0

TURN LANE WARRANT FINDINGS

Left Turn Lane Warrant Findings Applicable Warrant Figure: N/A Warrant Met?: N/A	Right Turn Lane Warrant Findings Applicable Warrant Figure: Figure 9 Warrant Met?: No
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TURN LANE LENGTH CALCULATIONS

Intersection Control:	Unsignalized	
Design Hour Volume of Turning Lane:	0	
Cycles Per Hour (Assumed):	60	
Cycles Per Hour (If Known):		Average # of Vehicles/Cycle: N/A

PennDOT Publication 46, Exhibit 11-6

Type of Traffic Control	Speed (MPH)					
	25-35		40-45		50-60	
	Turn Demand Volume					
	High	Low	High	Low	High	Low
Signalized	A	A	B or C	B or C	B or C	B or C
Unsignalized	A	A	C	B	B or C	B

Right Turn Lane Storage Length, Condition A: **N/A** Feet
Condition B: **N/A** Feet
Condition C: **N/A** Feet
Required Right Turn Lane Storage Length: **N/A** Feet

Additional Findings: **N/A**

Additional Comments / Justifications:

**Figure 9. Warrant for right turn lanes on two-lane roadways
(40 mph or lower speeds, unsignalized and signalized intersections)**

