

September 8, 2026

TRG
2 E. Market Street, Suite 2
York, PA 17401
Attention: Chris Schwab, P.E.

RE: Response to Mount Joy Township's Transportation Impact Study (TIS) Review

Greiner Tract Project
Mount Joy Township, Lancaster County
TPD No. ETHD.00004

Dear Chris:

Thank you for discussing TRG's review comments to the Transportation Impact Study (TIS) TPD prepared as part of the zoning application for the proposed Griner Development Project. Pursuant to our discussion, TPD prepared this response letter and completed supplemental analysis to address all of TRG's comments. Please let me know if you have any questions or need any additional information.

Response to Mount Joy Township's March 18, 2026 TIS Review Comments by TRG:

For the discussion below, TRG's comments from the 03/18/26 review letter are provided below in regular type, with the corresponding TPD responses in **bold type**.

Transportation Impact Study (TIS) Comments:

1. The trip generation for the proposed development was based on PennDOT's best practice guidance for speculative warehouse facilities. We concur with the trip generation methodology for the proposed 378,000sf and 248,000sf warehouse buildings. Land Use Code 150, Warehousing, was used for these buildings. Furthermore, the warehousing was filtered by region and provides a more conservative trip generation estimate than using the unfiltered data from ITE for Warehousing. The trip generation for the 603,200sf building was estimated using ITE Land Use Code 154, High-Cube Transload and Short-Term Storage Warehouse. Based on the flowchart found in PennDOT's guidance, Land Use Code 154 is appropriate for use when buildings are greater than 500,000sf with a ceiling height greater than 24', an office/employee welfare space less than 1% of the total gross floor area, and a loading dock to floor area ratio between 1:5,000 and 1:15,000. Because the proposed building does not have users, the use of Land Use Code 150 for the proposed 603,200sf warehouse will provide a more conservative trip generation estimate. The engineer should provide justification for the use of land use code 154 or revise the TIS to use Land Use Code 150 for all 3 proposed buildings.

The trip generation methodology utilized in the TIS for the 603,200 sf building follows PennDOT's best practice guidance for speculative warehouse facilities identified in Publication 282 (that was updated in the strike-off-letter issued by PennDOT on June 24, 2024) and this methodology was confirmed with PennDOT prior to TIS preparation (see email correspondence in Appendix A). The trip generation analysis was conducted in accordance with PennDOT's Policies and Procedures for Transportation Impact Studies and Assessment Related to Highway Occupancy Permits, dated June 2025. Attachment H (Page H-5) provides a flow chart for

determining trip generation methodology for buildings/facilities under and over 500,000 s.f. TPD utilized this flow chart for the trip generation analysis and based on the size of buildings and anticipated operational characteristics, usage of ITE#150 filtered data for the two buildings <500ksf., and ITE #154 for the building >500 ksf, is consistent with current PennDOT procedures for speculative warehouse facilities. Because access into the proposed development is from a state road (Mount Pleasant Road) that will require issuance of an HOP, the trip generation methodology provided by PennDOT for determining which ITE Code should be used for speculative warehouse facilities over 500,000 s.f. was properly followed. As such, the trip generation methodology utilized in the 11/13/25 TIS and the 9/8/26 supplemental analysis is appropriate and meets applicable PennDOT standards and the requirements of the Township's Subdivision and Land Development Ordinance (SALDO).

TPD notes that the current traffic study was prepared for the special exception application which required a traffic study pursuant to the Township's SALDO requirements. As we discussed, because the project requires access to a state road (Mount Pleasant Road), a separate traffic study will be prepared and submitted to PennDOT as part of the HOP process which will occur during the land development process. In addition, because all relevant intersections involve state roads, PennDOT has exclusive jurisdiction and authority to determine as part of the HOP process what improvements may be required at off-site intersections to be sure the peak traffic generated by the development is accommodated in a safe and efficient manner. However, to evaluate how an increase in trip generation numbers would affect the results of the TIS that our office prepared for the special exception zoning application (pursuant to the requirements of the Township's SALDO), TPD voluntarily conducted supplemental analysis for three additional scenarios utilizing different trip generation numbers. This sensitivity analysis was done simply to demonstrate that even under these alternative scenarios involving higher trip generation numbers than what is reasonably expected to be generated by the proposed use, the road network in the area providing access to the site can accommodate the volume of traffic and the peak traffic from the proposed development in a safe and convenient manner pursuant to the criteria set forth in the SALDO. The following three additional scenarios are as follows:

- » Usage of ITE's trip generation data for Industrial Park (ITE#130) for the two smaller buildings proposed on-site, with the larger building generated using ITE #154 consistent with the TIS;
- » Usage of ITE's trip generation data for Warehousing (ITE#150, unfiltered) for the larger 603,200 s.f. building, with the two smaller buildings utilizing ITE#150 filtered consistent with the TIS ;
- » 20% increase to the trip generation volumes shown in the original TIS.

1. Industrial Park Analysis (ITE#130) – Two Smaller Buildings

For this supplemental analysis, TPD generated trips for the two proposed smaller buildings (378,000 s.f. and 246,580 s.f. buildings) using a different methodology than the original TIS. TPD selected usage of ITE#130 for this supplemental analysis, as the description (see below) and data set fit the size and zoning provisions of the Township's ordinance, while the larger building was generated using ITE#154 consistent with the TIS. It should be noted that TPD did not select ITE's light industrial land use code for this analysis, as the size of the proposed smaller buildings is outside the data set for ITE's light industrial statistics (ITE's light industrial data only analyzes facilities < 150 ksf).

Land Use: 130 Industrial Park

Description

An industrial park contains several individual industrial or related facilities. It is characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities. Some parks in the database have a large number of small businesses and others have one or two dominant industries. Business park (Land Use 770) is a related use.

The trip generation of the two smaller buildings using ITE#130 (Industrial Park) and square footage as the independent variable, along with the larger building generated using ITE#154, is identified in Table R1.1 below and compared to the trip generation shown in the current TIS.

2. ITE#150 Warehousing (Unfiltered) – Larger Building

For this supplemental scenario, TPD generated trips for the larger (603,200 s.f. buildings) using ITE#150 (unfiltered) rather than ITE#154 as utilized in the TIS, with the two smaller buildings generated using ITE#150 (filtered) consistent with the TIS. The trip generation using this method is summarized in Table R1.1 and compared against the trip generation shown in the current TIS.3.

20% Increase to TIS Trip Generation

For this supplemental scenario, TPD generated trips assuming a 20% increase to daily and peak hour volumes shown in the current TIS analysis. The trip generation using this method is summarized in Table R1.1 and compared against the trip generation shown in the current TIS.

TABLE R1.1
TRIP GENERATION CALCULATIONS – VARIOUS SENARIOS

Condition	Trips: All Vehicles			Trips: Trucks			Trips: Passenger Cars		
	Total	Enter	Exit	Total	Enter	Exit	Total	Enter	Exit
Trip Generation From TIS Submitted To Twp Using ITE #154 And #150									
Average Weekday	2422	1210	1212	383	192	191	2039	1018	1021
Weekday AM Peak Hour of Adjacent Street Traffic	199	143	56	43	24	19	156	119	37
Weekday PM Peak Hour of Adjacent Street Traffic	229	63	166	44	23	21	185	40	145
ITE #150 (Unfiltered) For Larger Building And ITE #150 (Filtered) For Two Smaller Buildings									
Average Weekday	2410	1204	1206	509	256	253	1901	948	953
Weekday AM Peak Hour of Adjacent Street Traffic	223	161	62	43	24	19	180	137	43
Weekday PM Peak Hour of Adjacent Street Traffic	259	71	188	50	26	24	209	45	164
Trip Generation From TIS Submitted To Twp Using ITE #154 And #150 + 20%									
Average Weekday	2906	1452	1454	460	230	229	2447	1222	1225
Weekday AM Peak Hour of Adjacent Street Traffic	239	172	67	52	29	23	187	143	44
Weekday PM Peak Hour of Adjacent Street Traffic	275	76	199	53	28	25	222	48	174
ITE #154 For Larger Building and ITE #130 For Two Smaller Buildings (Industrial Park)									
Average Weekday	2930	1465	1465	445	222	223	2485	1243	1242
Weekday AM Peak Hour of Adjacent Street Traffic	261	201	60	32	16	16	229	185	44
Weekday PM Peak Hour of Adjacent Street Traffic	274	77	197	30	16	14	244	61	183

TPD also conducted supplemental analyses for the Industrial Park (ITE#130) trip generation scenario for the smaller buildings, ITE#150 (unfiltered) scenario for the larger building, and the 20% increase to TIS trip generation scenario using the same methodologies as in the current TIS. The LOS and queue results associated with this supplemental sensitivity analysis are shown in Tables R1.2-R1.5 below.

TABLE R1.2 - LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – A.M. PEAK

Intersection	Movement	TIS_v2	Industrial Park	Warehousing (150)	TIS_v2 + 20%
		CIP - Projected	CIP - Projected	CIP - Projected	CIP - Projected
Cloverleaf Road (SR 4025) & Mt. Pleasant Road (SR 4010)	WB L/R	B	B	B	B
	SB L/T	A	A	A	A
	ILOS	A (1.9)	A (2.0)	A (2.0)	A (2.0)
Cloverleaf Road (SR 4025) & Steel Way ¹	EB R	A	A	A	A
	WB L/T/R	C	D	D	D
	NB L	C	B	B	B
	NB T/R	A	A	A	A
	SB L	B	C	C	C
	SB T/R	C	D	D	D
	ILOS	B (15.9)	B (15.4)	B (15.6)	B (15.7)
Cloverleaf Road (SR 4025) & Route 283 West Ramps	WB R	C	C	C	C
	ILOS	A (1.5)	A (1.7)	A (1.5)	A (1.6)
Cloverleaf Road (SR 4025) & Route 283 East Ramps	EB L/T	C	C	C	C
	EB R	A	A	A	A
	NB T	A	A	A	A
	NB R	A	A	A	A
	SB L	B	B	B	B
	SB T	A	A	A	A
	ILOS	A (6.9)	A (7.3)	A (7.1)	A (7.2)
Cloverleaf Road (SR 4025) & Schwanger Road	EB L	B	B	B	B
	EB T/R	B	B	B	B
	WB L	B	B	B	B
	WB T/R	B	B	B	B
	NB L	C	C	C	C
	NB T	C	C	C	C
	NB T/R	C	C	C	C
	SB L	C	C	C	C
	SB T	B	B	B	C
	SB T/R	B	B	B	C
	ILOS	C (20.7)²	C (21.3)²	C (20.8)²	C (21.3)²
Schwanger Road/Campus Road & Merts Drive/Schwanger Road	EB L	A	A	A	A
	WB L	A	A	A	A
	NB L/T/R	B	B	B	B
	SB L/T/R	C	C	C	C
	ILOS	A (2.9)	A (2.9)	A (2.9)	A (2.9)
Mt. Pleasant Road (SR 4010) & Schwanger Road	WB L/T	A	A	A	A
	NB L/R	A	A	A	A
	ILOS	A (4.0)	A (4.2)	A (4.0)	A (4.1)
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Eastern (Car-Only) Driveway	EB L/T	A	A	A	A
	SB L/R	A	A	A	A
	ILOS	A (2.3)	A (2.8)	A (2.5)	A (2.5)
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Western Driveway/ Archers Lane	EB L/T/R	A	A	A	A
	WB L/T/R	A	A	A	A
	NB L/T/R	B	B	B	B
	SB L/T/R	B	B	B	B
	ILOS	A (6.1)	A (6.5)	A (6.3)	A (6.6)

Projected conditions with implementation of improvements recommended in this TIS or in Mount Joy Township's ACT 209 CIP

¹ HCM 7th unable to determine LOS due to Non-NEMA phasing, synchro percentile delay methodology provided

² The Mount Joy TIS Ordinance requires identification of improvements needed to achieve the Township's desired LOS of D or better whether needed for mitigation or not. As noted in the TIS, the addition of thru lanes on Cloverleaf Road in either direction would achieve the Township's desired LOS of D, and this conclusion remains the same for each of the alternative evaluations (i.e. LOS D or better is maintained with the extra thru lanes for the Industrial Park (ITE#130), ITE#150 for larger building, and 20% increase scenarios).

TABLE R1.3 - LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – P.M. PEAK

Intersection	Movement	TIS_v2	Industrial Park	Warehousing (150)	TIS_v2 + 20%
		CIP - Projected	CIP - Projected	CIP - Projected	CIP - Projected
Cloverleaf Road (SR 4025) & Mt. Pleasant Road (SR 4010)	WB L/R	B	C	C	B
	SB L/T	A	A	A	A
	ILOS	A (2.4)	A (2.8)	A (2.6)	A (2.4)
Cloverleaf Road (SR 4025) & Steel Way ¹	EB R	B	B	B	B
	WB L/T/R	C	C	D	D
	NB L	B	B	B	B
	NB T/R	A	A	A	A
	SB L	C	C	C	C
	SB T/R	C	C	D	C
	ILOS	B (14.9)	B (15.3)	B (15.7)	B (15.7)
Cloverleaf Road (SR 4025) & Route 283 West Ramps	WB R	B	B	B	B
	ILOS	A (1.1)	A (1.1)	A (1.2)	A (1.2)
Cloverleaf Road (SR 4025) & Route 283 East Ramps	EB L/T	B	B	B	B
	EB R	A	A	A	A
	NB T	A	A	A	A
	NB R	A	A	A	A
	SB L	A	A	A	A
	SB T	A	A	A	A
	ILOS	A (7.6)	A (7.7)	A (7.7)	A (7.7)
Cloverleaf Road (SR 4025) & Schwanger Road	EB L	C	C	C	C
	EB T/R	B	B	B	B
	WB L	B	B	B	B
	WB T/R	B	B	B	B
	NB L	C	C	C	C
	NB T	A	A	A	A
	NB T/R	A	A	A	A
	SB L	B	B	B	B
	SB T	B	B	B	B
	SB T/R	B	B	B	B
	ILOS	B (12.5)²	B (16.1)²	B (12.6)²	B (16.1)²
Schwanger Road/Campus Road & Merts Drive/Schwanger Road	EB L	A	A	A	A
	WB L	A	B	B	B
	NB L/T/R	B	C	C	C
	SB L/T/R	C	D	D	D
	ILOS	A (3.2)	A (3.2)	A (3.2)	A (3.2)
Mt. Pleasant Road (SR 4010) & Schwanger Road	WB L/T	A	A	A	A
	NB L/R	A	A	A	A
	ILOS	A (3.5)	A (3.4)	A (3.5)	A (3.4)
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Eastern (Car-Only) Driveway	EB L/T	A	A	A	A
	SB L/R	A	A	A	A
	ILOS	A (3.1)	A (3.6)	A (3.3)	A (3.4)
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Western Driveway/ Archers Lane	EB L/T/R	A	A	A	A
	WB L/T/R	A	A	A	A
	NB L/T/R	B	B	B	B
	SB L/T/R	B	B	B	B
	ILOS	A (5.8)	A (5.9)	A (6.1)	A (6.3)

Projected conditions with implementation of Township's ACT 209 CIP

¹ HCM 7th unable to determine LOS due to Non-NEMA phasing, Synchro percentile delay used

² The Mount Joy TIS Ordinance requires identification of improvements needed to achieve the Township's desired LOS of D or better whether needed for mitigation or not. See further description in footnote 2 under Table R1.2

TABLE R1.4 - QUEUE ANALYSIS: WEEKDAY A.M. PEAK HOUR

Approach/ Movement	Projected Storage	TIS_v2		Industrial Park		Warehousing (150)		TIS_v2 + 20%	
		Synchro 95th	HCM 95th	Synchro 95th	Synchro 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th
Cloverleaf Road (SR 4025) & Mt. Pleasant Road (SR 4010)									
WB L/R	500'+	--	13'	--	15'	--	13'	--	13'
SB L/T	500'+	--	3'	--	3'	--	3'	--	3'
Cloverleaf Road (SR 4025) & Steel Way									
EB R	1000'+	68'	--	85'	--	85'	--	85'	--
WB L/R	1000'+	81'	--	83'	--	89'	--	98'	--
NB L	700'	507'	--	463'	--	463'	--	463'	--
NB T/R	700'	116'	--	97'	--	87'	--	91'	--
SB L	100'	12'	--	13'	--	13'	--	13'	--
SB T/R	500'+	245'	--	300'	--	300'	--	300'	--
Cloverleaf Road (SR 4025) & Steel Way									
WB R	400	--	38'	--	45'	--	40'	--	43'
Cloverleaf Road (SR 4025) & Route 283 West Ramps									
EB L/T	1,000'	59'	43'	64'	50'	62'	48'	63'	50'
EB R	475'+	167'	0'	167'	0'	167'	0'	167'	0'
NB T	1,500'	508'	93'	524'	108'	512'	98'	513'	100'
NB R	75'	51'	0'	53'	0'	51'	0'	52'	0'
SB L	200'	86'	68'	88'	73'	89'	73'	90'	75'
SB T	1000'+	132'	33'	132'	38'	133'	35'	133'	35'
Cloverleaf Road (SR 4025) & Schwanger Road ¹									
EB L	225'	214'	223'	219'	225'	215'	225'	215'	225
EB T/R	550'	44'	40'	44'	43'	44'	43'	44'	43
WB L	75'	7'	5'	8'	5'	8'	5'	8'	5'
WB T/R	325'	32'	28'	32'	28'	32'	28'	32'	28'
NB L	100'	59'	30'	59'	30'	59'	30'	59'	30'
NB T	1000'+	446'	290'	456'	303'	448'	293'	451'	295'
NB T/R	1000'+	446'	298'	456'	310'	448'	303'	451'	303'
SB L	75'	22'	10'	22'	13'	22'	13'	22'	13'
SB T	1500'+	367'	210'	368'	213'	368'	210'	368'	238'
SB T/R	1500'+	367'	210'	368	213'	368'	210'	368'	235'
Schwanger Road/Campus Road & Merts Drive/Schwanger Road									
EB L	175'	--	0'	--	0'	--	0'	--	0'
WB L	150'	--	3'	--	3'	--	3'	--	3'
NB L/T/R	1000'+	--	13'	--	13'	--	13'	--	13'
SB L/T/R	400'	--	18'	--	18'	--	18'	--	18'
Mt. Pleasant Road (SR 4010) & Schwanger Road									
WB L/T	1000+	--	3'	--	3'	--	3'	--	3'
NB L/R	1000+	--	5'	--	8'	--	8'	--	8'
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Eastern (Car-Only) Driveway									
EB L/T	500'+	--	3'	--	3'	--	3'	--	3'
SB L/R	100'+	--	3'	--	3'	--	3'	--	3'
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Western Driveway/ Archers Lane									
EB L/T/R	500'+	--	3'	--	5'	--	5'	--	5'
WB L/T/R	500'+	--	0'	--	0'	--	0'	--	0'
NB L/T/R	100'+	--	10'	--	13'	--	10'	--	13'
SB L/T/R	100'+	--	5'	--	5'	--	8'	--	8'

Projected conditions with implementation of improvements recommended in this TIS or in Mount Joy Township's ACT 209 CIP

¹ Improvements identified previously to achieve Township's desired LOS D or better (additional Cloverleaf Road thru lanes) per Mt Joy Township SALDO requirements will also results in acceptable queue storage at the intersection and are included in the queue analysis.

TABLE R1.5 - QUEUE ANALYSIS: WEEKDAY P.M. PEAK HOUR

Approach/ Movement	Projected Storage	TIS_v2		Industrial Park		Warehousing (150)		TIS_v2 + 20%	
		Synchro 95th	HCM 95th	Synchro 95th	Synchro 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th
Cloverleaf Road (SR 4025) & Mt. Pleasant Road (SR 4010)									
WB L/R	500'+	--	23'	--	30'	--	28'	--	23'
SB L/T	500'+	--	3'	--	3'	--	3'	--	3'
Cloverleaf Road (SR 4025) & Steel Way									
EB R	1000'+	305'	--	339'	--	332'	--	334'	--
WB L/R	1000'+	156'	--	166'	--	184'	--	189'	--
NB L	700'	162'	--	171'	--	178'	--	181'	--
NB T/R	700'	171'	--	176'	--	185'	--	192'	--
SB L	100'	6'	--	6'	--	6'	--	6'	--
SB T/R	500'+	224'	--	246'	--	249'	--	250'	--
Cloverleaf Road (SR 4025) & Steel Way									
WB R	400	--	28'	--	30'	--	30'	--	30'
Cloverleaf Road (SR 4025) & Route 283 West Ramps									
EB L/T	1,000'	56'	38'	56'	38'	57'	38'	57'	38'
EB R	475'+	465'	0'	466'	0'	466'	0'	466'	0'
NB T	1,500'	256'	30'	259'	30'	256'	30'	257'	30'
NB R	75'	58'	0'	70'	0'	58'	0'	59'	0'
SB L	200'	99'	25'	107'	25'	125'	25'	130'	28'
SB T	1000'+	606'	108'	614'	110'	610'	110'	611'	113'
Cloverleaf Road (SR 4025) & Schwanger Road ¹									
EB L	225'	221'	158'	222'	158'	221'	158'	221'	158'
EB T/R	550'	55'	53'	56'	55'	55'	53'	55'	53'
WB L	75'	24'	13'	26'	15'	25'	13'	26'	15'
WB T/R	325'	46'	33'	48'	33'	47'	33'	47'	33'
NB L	100'	103'	75'	103'	75'	103'	75'	103'	75'
NB T	1000'+	127'	108'	128'	110'	127'	110'	127'	110'
NB T/R	1000'+	127'	108'	128'	113'	127'	113'	127'	113'
SB L	75'	30'	18'	30'	23'	30'	18'	30'	23'
SB T	1500'+	375'	158'	379'	280'	378'	158'	378'	280'
SB T/R	1500'+	375'	165'	379'	303'	378'	168'	378'	303'
Schwanger Road/Campus Road & Merts Drive/Schwanger Road									
EB L	175'	--	3'	--	3'	--	3'	--	3'
WB L	150'	--	13'	--	13'	--	13'	--	13'
NB L/T/R	1000'+	--	15'	--	15'	--	15'	--	15'
SB L/T/R	400'	--	20'	--	20'	--	20'	--	20'
Mt. Pleasant Road (SR 4010) & Schwanger Road									
WB L/T	1000+	--	5'	--	5'	--	5'	--	5'
NB L/R	1000+	--	5'	--	5'	--	5'	--	5'
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Eastern (Car-Only) Driveway									
EB L/T	500'+	--	0'	--	0'	--	0'	--	0'
SB L/R	100'+	--	5'	--	8'	--	5'	--	5'
Mt. Pleasant Road (SR 4010) & Proposed Greiner Tract Western Driveway/ Archers Lane									
EB L/T/R	500'+	--	0'	--	3'	--	3'	--	3'
WB L/T/R	500'+	--	0'	--	3'	--	0'	--	3'
NB L/T/R	100'+	--	5'	--	5'	--	8'	--	8'
SB L/T/R	100'+	--	13'	--	15'	--	15'	--	18'

Projected conditions with implementation of improvements recommended in this TIS or in Mount Joy Township's ACT 209 CIP

¹ Improvements identified previously to achieve Township's desired LOS D or better (additional Cloverleaf Road thru lanes) per Mt Joy Township SALDO requirements will also results in acceptable queue storage at the intersection and are included in the queue analysis.

As shown in Tables R1.1-R1.5, the alternative trip generation scenarios noted above *do not significantly alter the LOS or queueing results as compared against those shown in the current TIS. Pursuant to the Township's traffic impact study requirements set forth in Section 119-32.C.(5) of the SALDO, the improvements proposed in the Township's capital improvement plan are to be considered as being constructed by others and the "TIS shall consider such improvements in determining whether safe and convenient access to the site is possible."* As such, this sensitivity analysis establishes that even if higher trip generation numbers are used in the analysis of the TIS, pursuant to the express requirements of the Township's SALDO such increases *do not significantly impact the conclusions or improvement recommendations in the current TIS.* To be clear, the trip generation methodology utilized in the current TIS is consistent with PennDOT standards for speculative warehousing and is appropriate for this project; however, the sensitivity analysis was prepared simply to show that increased trip generation for the development could be accommodated without significantly altering the recommendations of the TIS that TPD prepared for the special exception application based upon the Township's SALDO requirements.

2. The trip generation for the proposed development assuming both land use codes 150 and 154 as proposed in the TIS will result in 199 total AM peak hour, 229 total PM peak hour, and 2,422 total daily trips. Truck trips will account for 43 AM peak hour, 44 PM peak hour, and 383 daily trips.

Acknowledged.

3. We concur with the study intersections and peak hour times included in the TIS. The study intersections were selected to include major intersections within a 1-mile concentric circle of the proposed development driveways in accordance with SALDO Section 119-32(C)(5)(a). Traffic counts were conducted from 6am-9am and from 3pm-6pm. A Saturday peak hour analysis was not conducted as peak times for warehouses occur during the weekday AM and PM peak hour periods and not during the Saturday midday.

Acknowledged.

4. We concur with the 2030 opening year and 2035 design year analysis included in the TIS.

Acknowledged.

5. The study assumed a 10% overall growth for the 2030 opening year analysis and a 15% total growth rate for the 2035 design year analysis. The growth rate used in the TIS is more conservative than the 0.46% yearly growth rate found in PennDOT's current Growth Factors.

Acknowledged. In conjunction with TIS comment #6, the TIS has been revised to account for PennDOT's standard background growth assumptions for Lancaster County (0.46% per year) that were in place at time of original TIS preparation/revision, along with the specific background developments identified for inclusion by the Township. This supplemental analysis has been provided in the 9/8/26 TIS.

6. While the overall growth rate is greater than the growth rate calculated when using PennDOT's growth factors, following planned projects in the vicinity of the site were included in the TIS.
 - a. 156 Harrisburg Avenue Warehouse
 - b. Westmount Residential
 - c. Westbrooke IV – Phase 1

The following projects should also be included as background development.

- d. Mt Joy Town Center
- e. 1376 Campus Road Development
- f. 1925 Sheaffer Road Development
- g. Raffensberger Tract

While the overall growth rate used in the TIS is greater than the growth rate calculated when using PennDOT's growth factors, the addition of specific development traffic volumes may impact specific intersection approaches/movements that may not be noticed when using a general background growth rate.

TPD included the additional background developments noted above as part of the 9/8/26 supplemental analysis completed in response to TRG's comments. The inclusion of these developments did not significantly impact the recommendations nor conclusions of the 11/13/25 TIS when including implementation of the Township's Capital Improvement Plan (per Township TIS ordinance requirements). Attached to this response letter is a table comparing the LOS results of the 11/13/25 TIS versus the supplemental 9/8/26 TIS incorporating the background developments noted above; as shown in this table, there are no significant changes in LOS with the exception of the Schwanger Road/Cloverleaf Road intersection. At the Schwanger Road/Cloverleaf intersection, both the future base ("no-build" without Greiner tract) and projected (build with Greiner tract development) conditions operate at lower LOS from a movement and overall intersection basis as a result of inclusion of the additional background developments identified by Mount Joy Township. Because the Schwanger Road / Cloverleaf Road is an off-site intersection involving a state road, the specific improvements that may be required at this intersection will be determined by PennDOT as part of the issuance of an HOP. However, because the Township's SALDO requires a description of improvements that TPD anticipates may be required to achieve the Township's desired LOS of D that are above and beyond the improvements identified in the Township's CIP; TPD has concluded that the construction of one additional northbound and southbound thru lanes on Cloverleaf Road would achieve LOS D when factoring in the additional background developments identified by the Township. As this is similar to the conclusions of the original TIS (see TRG comment #13), the previous conclusions of the 11/13/25 TIS at this intersection remain unchanged.

7. We concur with the trip distribution percentages however, the assignment of passenger cars to use the proposed Archers Lane and Steel Way to access Cloverleaf Road seems high since 100% of the truck traffic will use this route. It may be more realistic for passenger vehicles to use Mt Pleasant Road to avoid truck traffic. The assignment of the passenger cars to/from the proposed development should be reevaluated and/or justified.

The assignment of passenger cars has been modified in the 9/8/26 supplemental analysis to address this comment, with a heavier weighting of car traffic assigned to Mt. Pleasant Road/Cloverleaf Road as identified in this comment.

8. The following Synchro inputs should be revised for the Cloverleaf Road (SR 4025) / Route 283 West Intersection.
 - a. Recall mode should be set to C-max
 - b. Lost time adjust should be corrected

The intersection of Cloverleaf Road (SR 4025) / Route 283 West Intersection cannot be coded to C-max because the coordination sheet during the AM & PM peak periods operates independently; please refer to the signal permit documentation in Appendix H. Program 5 PA

283 WB Incident Management is the only scenario when this intersection is incorporated into the coordinated system.

No changes required in relation to extension of effective green time per Pub 46 Exhibit 10-10.

9. Level of Service Tables 9 and 10 should be revised to include the delay for intersection movements or approaches where there is a level of service F for comparison between each analysis scenario.

Supplemental information has been provided in the 9/8/26 supplemental analysis as requested.

10. The queue analysis Tables 11 and 12 should be revised to correct the titles for the methodology used. The Synchro 50th, Synchro 95th, and HCM 95th columns appear to be mislabeled.

The titles for the applicable tables in the 9/8/26 supplemental analysis have been modified as requested.

11. The study recommends intersection improvements required to mitigate the impact of the proposed development in accordance with SALDO Section 119-32(C)(5)(i)(1). This section states that "If the necessary improvements are programmed by the Roadway Sufficiency Analysis and Transportation Capital Improvements Plan, the applicant may consider those improvements to be constructed by others." All of the recommendations included in the TIS assume that the improvements in the Transportation Capital Improvements Plan will be made prior to the 2030 opening year analysis. The following improvements have been recommended as part of the TIS.
 - a. Modify intersection geometry at the Cloverleaf Road & Steel Way intersection to allow tractor trailers to turn to/from the south without encroaching on opposing lanes. We concur with this geometric improvement, however a concept plan showing the recommended improvements should be added to the TIS. The improvements assumed to be constructed by others as part of the Transportation Capital Improvements Plan include the installation of a traffic signal, construction of NB and SB left turn lanes, and the construction of the Route 283 WB Ramp to create a 4-legged intersection.
 - b. Construct Archers Lane connecting Steel Way to Mt Pleasant Road. This improvement is included on the Township's Official Map. We concur with this improvement.
 - c. Construct the Proposed Western Site Driveway to include a full movement low volume driveway. The radii will be constructed to prevent truck turns at the intersection. All truck traffic to and from the site will be accessed via Archers Lane.
 - d. Construct the Proposed Eastern (Car Only) Site Driveway to include a full movement low volume driveway.
 - e. Construct a 150' left turn lane with a 75' bay taper on Steel Way at the proposed Archers Lane if feasible. The warrants for a left turn lane are not met at this intersection. However, due to the amount of truck traffic anticipated to make this movement, a left turn lane is desirable. The left turn lane is shown on the concept plan provided and noted as a "possible left turn lane".

Acknowledged.

12. The following Transportation Capital Improvements Plan improvements were assumed for both the 2030 opening year and 2035 horizon year to be completed by others. The level of service results shown in Tables 9 and 10 include the following improvements.
 - a. Cloverleaf Road & Steel Way
 - i. Install Traffic Signal

- ii. NB and SB Left Turn Lanes
 - iii. Construction of the Route 283 WB Ramp to create a 4-legged intersection
- b. Cloverleaf Road & Route 283 West Ramps
 - i. Remove existing traffic signal
 - ii. Convert WB 283 Ramp to right turn only movements
- c. Cloverleaf Road & Route 283 East Ramps
 - i. Install traffic signal
- d. Cloverleaf Road & Merts Drive
 - i. Close intersection
- e. Cloverleaf Road & Schwanger Road
 - i. Signal retiming

Acknowledged. An exhibit graphically illustrating the CIP improvements above is attached to this response letter.

- 13.** The study shows that with the improvements listed in comment no. 12; all of the intersections will operate at acceptable levels of service with the exception of the Cloverleaf & Schwanger Road intersection. This intersection will operate with a northbound level of service F during the AM peak hour and a southbound level of service F during the PM peak hour with the recommended signal retiming at this intersection. The study states that a second northbound thru lane and a second southbound thru lane would be required to achieve an LOS D. No improvements are recommended in the TIS since these improvements are required with or without the proposed development. The engineer should determine if any other improvements at this intersection are feasible to improve the intersection levels of service.

As noted in the 11/13/25 TIS and supplemental analysis, to achieve the Township's preferred LOS of D or better for all movements and the overall intersection during both the 2035 AM and PM peak hours, one additional thru lane in both the northbound and southbound direction would be required. As noted in this comment, these additional thru lanes would be required with or without the development and therefore are not needed for specific mitigation of the Greiner Tract development pursuant to the requirements of the SALDO.

An alternative intersection improvement, given the background developments along Schwanger Road and associated southbound right turn movements from Cloverleaf Road to Schwanger Road, would be construction of a dedicated southbound right turn lane. Doing so would improve LOS on the southbound Cloverleaf Road intersection to D or better during the 2035 AM and PM peak hours, but it would not restore LOS D or better on other approaches (i.e., northbound Cloverleaf thru lane, eastbound Schwanger Road left turn). As such, construction of a southbound right turn lane alone would not achieve the desired LOS identified in the Township's SALDO. As mentioned above, PennDOT will ultimately evaluate this off-site intersection to determine if any improvements are required as part of issuing an HOP for the project.

- 14.** While the SALDO states that the improvements listed in comment no. 12 should be assumed to be constructed by others, it is not likely that all of these improvements listed will be constructed prior to opening of the proposed Greiner Development Project. The study should include an analysis showing the levels of service and queues with the proposed development but without the Transportation Capital Improvements Plan improvements. A discussion of improvements required to allow for safe and efficient operation of the proposed Greiner Development Project should also be included.

The existing TIS provides an analysis showing the levels of service and queues with the proposed development but without the Transportation Capital Improvement Plan under the “Projected” or “Build” columns in the associated tables. The mitigation analysis in the 11/13/25 TIS (along with the supplemental analysis) was prepared for the special exception application in accordance with the provisions of the SALDO as required by Section 135-310 of the Zoning Ordinance. The SALDO establishes both how to perform the mitigation analysis and how to perform the site access evaluation.

As to the mitigation analysis, section 119-32.C(5)(i)[1] of the SALDO, states the following:

“...The applicant shall specify whether such improvements are programmed within the Township’s adopted Roadway Sufficiency Analysis and Transportation Capital Improvement Plan. If the necessary improvements are required are programmed by the Roadway Sufficiency Analysis and Transportation Capital Improvement Plan, the applicant may consider those improvements to be constructed by others...”

As to the site access evaluation, section 119-32.C(5)(j)[1] states the following:

“The applicant shall demonstrate that the road network included in the TIS area providing access to the site can accommodate the volume of traffic reasonably expected to be generated by the proposed use in a safe and convenient manner. If improvements required to provide safe and convenient access to the site are programmed to be completed by the Township’s Roadway Sufficiency Analysis and Transportation Capital Improvements Plan, the TIS shall consider such improvements in determining whether safe and convenient access to the site is possible and may consider such improvements as ones which will be done by others.”

Similarly, section 119-32.C(5)(j)[2] states the following:

“The applicant shall demonstrate that the horizontal and vertical alignments and grades of the existing road network included within the TISA and the proposed streets or accessways to the site permit safe and convenient access to the site. If improvements to the horizontal and vertical alignments and grades of the existing road network required to provide safe and convenient access to the site are programmed to be completed by the Township’s Roadway Sufficiency Analysis and Transportation Capital Improvements Plan, the TISA shall consider such improvements in determining whether safe and convenient access to the site is possible and may consider such improvements as ones which will be constructed by others.”

As such, inclusion of improvements identified in the Township’s Capital Improvement Plan (CIP) in future projected conditions is consistent with ordinance requirements. In fact, the SALDO specifically states that the TIS “shall” consider such improvements in determining whether there is safe and convenient access to the site.

In preparing this response, TPD also asked Greiner’s legal counsel, Dwight Yoder, to review whether the Municipalities Planning Code (“MPC”) addresses a situation in which a municipality has adopted a traffic impact fee ordinance but has not yet constructed the transportation improvements identified in the CIP. Attorney Yoder indicated that the SALDO’s requirements

that CIP improvements must be considered as part of the TIS is consistent with the requirements of the MPC and is based on the Township's decision to adopt the Mount Joy Township Impact Fee Ordinance. This ordinance specifically imposes a transportation impact fee on developments based on the peak number of trips generated by the proposed development to fund the capital roadway improvements identified in the CIP. Attorney Yoder specifically referenced section 503-A(f) of the MPC, 53 P.S. § 10503-A(f), which states the following:

(f) No municipality may delay or deny any application for building permit, certificate-of-occupancy, development or any other approval or permit required for construction, land development, subdivision or occupancy for the reason that any project of an approved capital improvement program has not been completed.

Therefore, it is TPD's understanding that a municipality cannot adopt a traffic impact fee ordinance that requires the payment of fees specifically to be used for constructing identified transportation capital improvements and then, during the approval process, require an Applicant to identify different traffic improvements that may be required because the capital improvements have not yet been started or completed by the municipality.

In addition, Attorney Yoder noted that the MPC prohibits municipalities from requiring off-site road improvements on state roads that are under the exclusive jurisdiction of PennDOT as a condition of approval. He indicated that while a municipality can require as a condition of approval that an applicant obtain the required HOP, PennDOT has the "exclusive authority and jurisdiction over all State designated highways." 71 P.S. § 512(a)(10). Under state law, only the secretary of PennDOT has the authority to establish rules and regulations governing the use of state roads and to issue permits related to state roads. 36 P.S. § 670-420. Therefore, as we discussed in reviewing TRG's comments, because the proposed project requires access to a state road (Mount Pleasant Road) and because all of the major intersections in the TIS study area involve state roads, PennDOT has sole jurisdiction and authority over what improvements may be required, which will be determined as part of the submission of an HOP application with PennDOT. Importantly, PennDOT will only issue an HOP if the peak traffic generated by a proposed development can be accommodated in a safe and efficient manner.

Finally, in your comments, you requested that "A discussion of improvements required to allow for safe and efficient operation of the proposed Griner Development Project should also be included." This comment appears to be based on the general requirements for special exception applications, found at section 135-383.B(2) of the Township's zoning ordinance which states

"...The peak traffic generated by the subject of the application shall be accommodated in a safe and efficient manner or improvements made in order to effect the same... If the proposed use or development is estimated to generate more than 1,000 daily trips or more than 100 a.m. or p.m. peak hour trips using accepted engineering standards such as the ITE Trip Generation Manual, the applicant shall provide a traffic study meeting all requirements of Chapter [119](#), Subdivision and Land Development, § [119-32C\(5\)](#)."

While this provision is a general requirement for all special exception applications, it specifically requires an applicant to prepare a TIS for demonstrating accommodation of peak traffic in a safe and efficient manner and any improvements that may be required for developments generating more than 1,000 daily trips or more than 100 a.m. or p.m. peak hour trips. Thus, when a proposed use requires the preparation of a TIS as part of the special exception zoning approval

process (as is the case for the proposed development), the SALDO establishes the specific standards for demonstrating if the peak traffic generated will be accommodated in a safe and efficient manner (or if any improvements are required).

As set forth above, both the Township's SALDO and the MPC establish specific standards for determining how to evaluate safe and efficient site access based on the legal requirement that improvements identified in the Township's CIP be considered having been completed by others (regardless if the improvements have not yet been completed). Therefore, it is TPD's position that by preparing a TIS that met the specific requirements of section 119-32C(5) of the Township's SALDO, the analysis and conclusions of the TIS demonstrate that the peak traffic generated by the proposed project will be accommodated in a safe and efficient manner as required by the general requirement set forth in section 135-383.B.(2) of the zoning ordinance. Moreover, as mentioned above, PennDOT will only issue an HOP if the peak traffic generated by the proposed development is accommodated in a safe and efficient manner and has sole jurisdiction to determine what improvements may be required at off-site intersections involving state roads.

As to the proposed on-site road improvements (which are within the jurisdiction of the Township), the site plan shows a dedicated entrance for truck traffic across from the to-be-constructed Archers Lane that will provide safe and efficient access into the site for trucks. The site plan was intentionally designed to minimize truck traffic utilizing Mount Pleasant Road. The secondary access required by the zoning ordinance is located further east along Mount Pleasant Road but will be limited to non-truck access into the site (as well as emergency vehicles).

While the Township's SALDO requirement for TIS requires including the capital improvements identified in the Township's CIP when determining if there is safe and efficient access into the site, TPD offers the following as it relates to TRG's request for additional information as to how the peak traffic generated by the subject application could be accommodated in a safe and efficient manner without considering implementation of the Township's CIP. Because of the on-going nature of the special exception zoning hearings, Attorney Yoder requested that TPD's response to this request make it clear that the Greiners are not waiving their position that: (a) the general standard set forth in the zoning ordinance was satisfied by TPD's preparation of a TIS pursuant to the specific requirements of the SALDO; (b) that the MPC prohibits the denial of any approval because identified capital improvements have not yet been completed; and (c) PennDOT has exclusive jurisdiction and authority over what road improvements may be required and will only issue an HOP if such access is safe and efficient. With that caveat, TPD provides the following response:

Project Location

The project site is located approximately 2,700 feet from the Cloverleaf Road/SR 283 interchange, as measured via driving path from the SR 283 West Ramps to Cloverleaf Road to Steel Way to Proposed Archers Lane (and vice versa), and therefore is located approximately one-half mile from a limited access state highway (SR 0283). The location of the Greiner tract is appropriate for industrial traffic, as it is located near a limited access interchange, which means that heavy vehicle traffic generated by the development travels a minimal distance before entering onto a limited access highway. In addition, heavy vehicles traveling on the route will not travel directly past any residentially zoned properties to access the site to/from SR 0283.

The Township's official map appears to contemplate development of the Greiner Tract, as the Official Map includes a recommended road referred to as "Archers Lane", that connects Steel Way Drive and Mount Pleasant Road. Archer's Lane allows truck traffic to travel to and from the Greiner Tract directly to Cloverleaf Road and the SR 283 interchange without using Mount Pleasant Road. The Township previously acquired the necessary right-of-way for Archers Lane from Greiner Industries. The Greiners have agreed to construct Archers Lane at their own cost and the site plan establishes the only entrance for truck traffic directly across from where Archers Lane will intersect Mount Pleasant Road. Therefore, the location of the project site is advantageous given its proximity to SR 0283 and allows peak traffic generated by the Greiner Tract development to be accommodated in a safe and efficient manner.

Crash History

To evaluate if any safety issues exist within the study area of the TIS, TPD obtained PennDOT's reportable crash records for the study area for 2020-2024. Based on review of PennDOT's crash data at the study area intersections and along the Cloverleaf Road and Mount Pleasant Road corridors, there are no significant crash patterns within the study area, and the corridor crash rates are below statewide averages (based on PennDOT statistics) for corridors similar in nature to Cloverleaf Road and Mount Pleasant Road. Therefore, since there are no significant crash patterns, TPD concludes that there are no significant safety issues within the study area that would prevent peak traffic generated by the Greiner Tract development from being accommodated in a safe and efficient manner.

PennDOT Highway Occupancy Permit (HOP) required

As discussed above, because Mount Pleasant Road is a State-owned roadway (SR 4010), a PennDOT HOP is required for the project to be advanced. This HOP will be secured during the land development approval process. To secure an HOP, the Applicant will need to submit a TIS to PennDOT (that meets PennDOT standards) identifying on-site and off-site improvements needed to safely and efficiently accommodate peak site traffic and then will need to provide detailed design plans that provide construction details for the required on-site and off-site improvements.

PennDOT's traffic study requirements are identified in *Policies and Procedures for Transportation Impact Studies and Assessments*, dated June 2025, which is contained within PennDOT Publication 282. The introduction of this document (Page 1) indicates the following relative to PennDOT's review of HOP applications:

- » "PennDOT regulations, Title PA Code Chapter 441, *Access to and Occupancy of Highways by Driveways and Local Roads*, provides PennDOT with authority to ensure the location and design of driveways and local roads within State highway right-of-way to preserve safe and reasonable access."
- » "As part of the process to obtain an HOP, applicants may be tasked with identifying impacts of the proposed access on the transportation system in the surrounding area and identifying mitigations to offset that impact through the development of a Transportation Impact Study (TIS)..."
- » "PennDOT reviews the TIS or TIA to assure safe and reasonable access as well as safe and convenient passage of traffic on the State highway. PennDOT is also responsible for ensuring

that driveways safely and efficiently function as an integral component of the highway system based on the amount and type of traffic expected to be served and the type and character of roadway being accessed. PennDOT will use the TIS or TIA to provide direction to the applicant on needed improvements.”

- » “The ultimate goal of the process is a safe and efficient transportation system.”

As such, to obtain a PennDOT HOP for the Greiner Tract, the Applicant must demonstrate that the proposed on-site and off-site improvements (as required) will provide safe and efficient access, will mitigate any off-site impacts to a degree required by PennDOT standards, and that safe and convenient passage of traffic will be provided on the State Highways. Therefore, a PennDOT HOP must be obtained for the Greiner Tract project to be constructed, and in issuing an HOP, PennDOT is confirming that the peak traffic generated by the Greiner Tract development will be accommodated in a safe and efficient manner. Accordingly, a condition on any zoning approval that Applicant must obtain an HOP from PennDOT for the project will satisfy the general zoning standard for special exception applications that “the peak traffic generated by the subject of the application shall be accommodated in a safe and efficient manner or improvements made in order to effect the same.”

Site Access Considerations

With implementation of the improvements recommended in the TIS, the proposed site driveways will provide safe and efficient access for the peak traffic generated by development as evidenced by the following:

- » Levels of Service at the driveways will operate at LOS B or better through the design year, which is considered acceptable operation based on Township ordinance and PennDOT HOP standards.
- » Available sight distances exceed applicable PennDOT requirements.
- » No significant queuing is anticipated at the site driveways based on the results of the TIS.
- » Auxiliary turn lane warrants are not met on Mount Pleasant Road approaching the site driveways.
- » Site frontage widening and curbing is required along the Mount Pleasant Road site frontage per Township Subdivision and Land Development requirements; since auxiliary turn lanes are not warranted, this widening does not appear to be necessary. However, if the Township requires implementation of the frontage widening/curbing, and PennDOT allows such widening (since it proposed along a State Highway), the applicant will construct the required frontage improvements. Applicant also will construct and install all site improvements required by the Township’s SALDO.
- » With this supplemental TIS submission, to address concerns raised about site-related trucks turning left or right onto Mount Pleasant Road, a design concept has been included with this submission showing an alternative design that would reinforce the proposed truck route (i.e., all site-related trucks using Archer Lane/Steel Way to Cloverleaf Road for access to/from the external road system). With this alternative design, reduced turning radii and related signing are proposed for the truck entrance opposite Archer Lane as a visual cue that all trucks are to proceed straight through to/from Archer Lane/Western Greiner Tract driveway at the

intersection. In addition, raised center medians are proposed on Mount Pleasant Road approaching the intersection, as the provision of raised medians acts not only as a visual cue, but also would make it extremely difficult for trucks to turn left or right onto Mount Pleasant Road, as to do so, a truck would have to run up over curb (for the driveway radii), or drive over the raised median/signing on Mount Pleasant Road, which would cause damage to the truck, the signs and potential median/curbs. This type of restrictive design will therefore severely hamper the ability to make errant truck turns and should lead to trucks following the proposed truck route. The Developer is offering this alternative as a possible solution to address concerns over errant truck turns at the site driveway/Archer Lane intersection, but it is subject to review/approval by both PennDOT and Mount Joy Township as part of the issuance of an HOP. If both PennDOT and Mount Joy Township are agreeable to this design, the Applicant is willing to implement this alternative design in conjunction with the project.

Possible Off-site Improvements PennDOT Could Require during HOP process

During the PennDOT TIS/HOP process, the scope/extent of off-site improvements required as part of this project to mitigate traffic impacts will be specifically identified. During the PennDOT HOP Process, a separate TIS will be prepared meeting PennDOT standards, and this TIS will not include the Township's CIP improvements in the analysis, as PennDOT does not allow the assumption of construction of improvements by others unless those improvements are funded and scheduled.

In the Greiner Tract TIS, the "Projected Condition" volumes in the LOS and queue tables identify the impacts of the development without implementation of the Township's CIP. Based on review of the analysis results, and TPD's extensive experience preparing TIS submissions to PennDOT District 8-0, TPD offers the following regarding improvements PennDOT might require in conjunction with the project. For this discussion, the improvements noted below are in addition to those improvements already recommended in the TIS that accompanied the Special Exception application.

Steel Way and Cloverleaf Road – Possible PennDOT-required HOP improvements

- » Widening for a northbound right turn lane on Cloverleaf Road.
- » The TIS shows acceptable LOS on the stop-controlled approach of Steel Way approaching Cloverleaf Road with build-out of the Greiner Tract. Based on field observation, it is understood that during shift changes for existing industrial uses along Steel Way, there is a brief period where longer delay and queueing occurs on the Steel Way approach, but this queue clears in approximately 10 minutes or less. As such, in TPD's experience, PennDOT normally does not require change in traffic control in instances like this where this is limited periods of congestion, although it is possible that PennDOT might require evaluation of a signal or other traffic control modifications at the intersection. However, based on a review of available gaps at the intersection during the AM and PM peak hours, there are sufficient gaps in traffic along Cloverleaf Road to accommodate the proposed Greiner Tract development, and therefore, maintenance of the existing "Stop" control on Steel Way seems likely based on typical PennDOT standards. Additionally, it should be noted that construction of Archers Lane will provide a relief outlet for motorists currently using Steel Way today, as it will provide those motorists an alternate route to Cloverleaf Road (Archers

Lane to Mount Pleasant Road to Cloverleaf), which should help alleviate the aforementioned delay on Steel Way during shift changes.

SR 0283 West Ramps and Cloverleaf Road – Possible PennDOT-required HOP improvements

- » Signal timing/split optimization.

SR 0283 East Ramps and Cloverleaf Road – Possible PennDOT-required HOP improvements

- » Installation of a new three-phase traffic signal that includes an advance southbound left turn phase (protected/permitted).

Merts Drive and Cloverleaf Road – Possible PennDOT-required HOP improvements

- » Possible prohibition of left turn movements from Merts Drive in conjunction with traffic signalization of the SR 0283 East ramps, either on a peak hour basis with signing or permanently via a channelization island.

Schwanger Road and Cloverleaf Road – Possible PennDOT-required HOP improvements

- » Signal timing/split optimization, which will restore overall LOS to applicable base conditions.
- » Possible southbound right turn lane on Cloverleaf Road approach.

The above represents TPD’s opinion of possible improvements PennDOT could require of the Applicant in conjunction with the HOP approval process. Ultimately, PennDOT will determine if the improvements noted above are needed, or if additional/modified improvements are required. In conjunction with this supplemental TIS submission, an exhibit has been provided that graphically illustrates the likely PennDOT HOP improvements noted above.

As noted in the TIS, the Applicant has expressed a willingness to work with the Township to evaluate and advance a potential “Alternative Design” approach to the Act 209 strategy for the Cloverleaf/I-283 Interchange — as conceptually outlined in Appendix I of the TIS — rather than the improvements noted above, which could unlock \$3 Million in public funding the Township had secured for the Cloverleaf Road/Schwanger Road intersection. However, it should be noted that this “Alternative Design” addresses regional issues and in no way is required to mitigate the site-related traffic impacts associated with the Greiner Tract. If this alternative improvement scenario is pursued as a public/private partnership, the following alternative design could be pursued:

SR 0283 West Ramps and Cloverleaf Road

- » Construct a multilane roundabout

SR 0283 East Ramps and Cloverleaf Road

- » Construct a multilane roundabout

Merts Drive and Cloverleaf Road

- » Convert Merts Drive to a right-in, right-out configuration

Schwanger Road and Cloverleaf Road

- » Construct a single-lane roundabout.

LOS and queue tables summarizing the results of the analysis summarized above (without implementation of the Township's CIP) are attached to this response letter.

15. The "Projected Improvements – Act 209" section found on page 28 and 29 of the TIS states that although the applicant is not required to construct off-site Act 209 improvements, the Applicant is committed to being a long-term community partner and is prepared to voluntarily collaborate with the Township, PennDOT, and other agencies to advance improvements at the Cloverleaf/I- 283 interchange. Appendix I of the TIS includes an "Alternative Design" showing roundabouts at both the 283 eastbound and westbound intersections with Cloverleaf Road. The study states that the advancing of the Alternative Design would help unlock the approximately \$4 million in state grant funding previously awarded to the Township for improvements at the Schwanger Road and Cloverleaf Road intersection. The study states that the Applicant is willing to consider contributing substantial voluntary funds, resources, and expertise above and beyond all ordinance requirement and Act 209 impact fees.

Acknowledged.

If you have any questions or require additional information to process this application, please call anytime.

Sincerely,

TPD



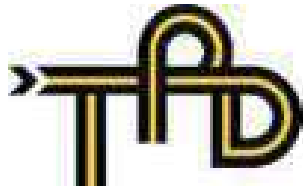
Jason T. Wheeler, PTP
Project Manager
JWheeler@TPDinc.com



Craig Mellott, P.E., PTOE
Vice President
CMellott@TPDinc.com

Attachments:

- Attachment 0: LOS & Queue comparison, 11/13/25 TIS to Current TIS
- Attachment 1: LOS and queue results – possible PennDOT HOP improvements
- Attachment 2: Figure illustrating Travel Distance from Site to SR 0283
- Attachment 3: Schematic figure identifying Township's CIP
- Attachment 4: Graphic illustrating likely off-site PennDOT HOP improvements
- Attachment 5: Alternative Site Driveway/Archer Lane Design to Promote Truck Route Compliance
- Attachment 6: Response Letter Technical Appendices



Attachment 0:

**LOS & Queue Comparison - 11/13/25 TIS
vs Current TIS**



TABLE R1.6
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – PROJECTED CONDITION COMPARISON WITH CIP

Intersection	Movement	2035 Projected W IMP Condition AM		2035 Projected W IMP Condition PM	
		2025-11-13 TIS	Updated TIS	2025-11-13 TIS	Updated TIS
Cloverleaf Road (SR 4025) & Steel Way	EB R	A	A	D	B
	WB L/R	D	C	D	C
	NB L	C	C	D	B
	NB T/R	A	A	B	A
	SB L	C	B	C	C
	SB T/R	D	C	C	C
	ILOS	C (20.8)	B (15.9)	C (33.6)	B (14.9)
Cloverleaf Road (SR 4025) & Route 283 West Ramps	WB L/T	--	--	--	--
	WB R	C	C	B	B
	NB L	--	--	--	--
	NB T	--	--	--	--
	SB T	--	--	--	--
	SB R	--	--	--	--
	ILOS	A (1.7)	A (1.5)	A (1.3)	A (1.1)
Cloverleaf Road (SR 4025) & Route 283 East Ramps	EB L/T	C	C	B	B
	EB R	A	A	A	A
	NB T	A	A	A	A
	NB R	A	A	A	A
	SB L	B	B	A	A
	SB T	A	A	A	A
	ILOS	A (7.3)	A (6.9)	A (6.3)	A (7.6)
Cloverleaf Road (SR 4025) & Merts Drive	EB L/R	Eliminate Intersection	Eliminate Intersection	Eliminate Intersection	Eliminate Intersection
	NB L/T				
	ILOS				
Cloverleaf Road (SR 4025) & Schwanger Road ^{1 2}	EB L	D	E	D	[D] F (111.2)
	EB T/R	B	B	C	[C] C
	WB L	B	B	C	[C] C
	WB T/R	B	B	C	[C] C
	NB L	C	D	D	[E] E
	NB T/R	F (60.1)	F (99.7)	A	[B] A
	SB L	C	C	B	[B] B
	SB T/R	B	F (44.6)	F (76.3)	[F (171.5)] F (133.3)
	ILOS	D (41.5)	E (67.6)	D (47.7)	[F (97.6)] F (83.8)

CIP = TOWNSHIP CAPITAL IMPROVEMENT PLAN

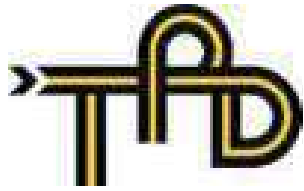
¹ As noted in TIS, addition of a NB and SB thru lane will achieve LOS D or better at the intersection

² [2035 Base (No-Build) Condition Scenario In Current TIS]

TABLE R1.7
QUEUE ANALYSIS – PROJECTED CONDITION COMPARISON WITH CIP

Approach/ Movement		Available Storage w/ Imp ¹	Design Year 2035: Build AM 2025-11-13 TIS		Design Year 2035: Build AM Updated TIS		Design Year 2035: Build PM 2025-11-13 TIS		Design Year 2035: Build PM Updated TIS	
			Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th
Cloverleaf Road (SR 4025) & Steel Way										
EB R		1000'+	0'	--	68'	--	264'	--	305'	--
WB L/R	WB L/T/R	1000'+	69'	--	81'	--	291'	--	156'	--
NB L		700'	481'	--	507'	--	173'	--	162'	--
NB T/R		700'	86'	--	116'	--	160'	--	171'	--
SB L		100'	26'	--	12'	--	10'	--	6'	--
SB T/R		500'+	335'		245'	--	167'	--	224'	--
Cloverleaf Road (SR 4025) & Route 283 West Ramps										
WB L/T		875'	--	--	--	--	--	--	--	--
WB R		400'	--	40'	--	38'	--	28'	--	28'
NB L		225'	--	--	--	--	--	--	--	--
NB T		400'	--	--	--	--	--	--	--	--
SB T/R	SB T	500+'	--	--	--	--	--	--	--	--
	SB R	75'	--	--	--	--	--	--	--	--
Cloverleaf Road (SR 4025) & Route 283 East Ramps										
EB L		1,000'	51'	45'	59'	43'	64'	35'	56'	38'
EB R		450'+	78'	0'	167'	0'	412'	0'	465'	0'
NB T		1,500'	1145'	85'	508'	93'	606'	25'	256'	30'
NB R		75'	--	--	51'	0'	--	--	68'	0'
SB L		200'	110'	68'	86'	68'	116'	23'	99'	25'
SB T		500' 1000'+	110'	28'	132'	33'	285'	63'	606'	108'
Cloverleaf Road (SR 4025) & Merts Drive										
EB L/R		1000'+	Eliminate Intersection		Eliminate Intersection		Eliminate Intersection		Eliminate Intersection	
NB L/T		1000'+								
Cloverleaf Road (SR 4025) & Schwanger Road ¹										
EB L		225'	316'	310'	391'	428'	222'	188'	[267'] 292'	[233'] 380'
EB T/R		550'	43'	35'	52'	55'	54'	53'	[58'] 63'	[68'] 78'
WB L		75'	15'	5'	13'	5'	32'	18'	[18'] 31'	[8'] 18'
WB T/R		325'	37'	43'	38'	38'	52'	38'	[53'] 59'	[38'] 45'
NB L		100'	17'	18'	48'	40'	60'	50'	[73'] 73'	[120'] 120'
NB T/R		1000'+	737'	820'	813'	1,173'	235'	150'	[479'] 324'	[245'] 190'
SB L		75'	13'	15'	14'	13'	21'	25'	[30'] 22'	[33'] 20'
SB T/R		1500'+	498'	313'	685'	575'	892'	1,100'	[1,077'] 1,071'	[2,258'] 1,663'

CIP = TOWNSHIP CAPITAL IMPROVEMENT PLAN
¹ [2035 Base (No-Build) Condition Scenario In Current TIS]



Attachment 1:

**LOS and queue results – possible
PennDOT HOP improvements**



TABLE R1.8
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – A.M. POSSIBLE PENNDOT HOP IMPROVEMENTS

Intersection	Movement		2035 Horizon Year		
			Base	Projected	Proj. w/ Imp ¹
Cloverleaf Road (SR 4025) & Steel Way	WB L/R		B	B	B
	NB T/R	NB T	A	A	A
		NB R			A
	SB L/T		A	A	A
	ILOS		A (0.7)	A (1.2)	A (1.1)
Cloverleaf Road (SR 4025) & Route 283 West Ramps	WB L/T		D	D	D
	WB R		A	A	A
	NB L		F (70.6)	F (85.0)	F (69.7)
	NB T		A	A	A
	SB T		D	D	D
	SB R		A	A	A
	ILOS		D (50.9)	D (54.8)	D (49.3)
Cloverleaf Road (SR 4025) & Route 283 East Ramps	EB L/T		F (129.7)	F (486.3)	D
	EB R		E	E	A
	NB T		A	A	B
	NB R		A	A	B
	SB L		B	C	B
	SB T		A	A	A
	ILOS		A (7.8)	C (18.4)	B (11.0)
Cloverleaf Road (SR 4025) & Merts Drive	EB L/R	EB R	F (81.3)	F (92.2)	C
	NB L/T		B	B	--
	ILOS		A (0.5)	A (0.5)	A (0.1)
Cloverleaf Road (SR 4025) & Schwanger Road	EB L		D	D	D
	EB T/R		B	B	B
	WB L		B	B	B
	WB T/R		B	B	B
	NB L		D	D	C
	NB T/R		F (90.8)	F (107.6)	F (104.7)
	SB L		D	D	D
	SB T/R	SB T	F (52.3)	F (55.1)	C
		SB R			A
	ILOS		E (64.6)	E (72.8)	E (59.2)

Base = No-Build scenario Projected = Build scenario ILOS = Overall Intersection Level of Service
Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.

¹ Projected conditions with implementation of possible HOP improvements

TABLE R1.9
LEVEL OF SERVICE DELAY (SECONDS) SUMMARY – P.M. POSSIBLE PENNDOT HOP IMPROVEMENTS

Intersection	Movement		2035 Horizon Year		
			Base	Projected	Proj. w/ Imp ¹
Cloverleaf Road (SR 4025) & Steel Way ²	WB L/R		C	D	D
	NB T/R	NB T	A	A	A
		NB R			A
	SB L/T		A	A	A
	ILOS		A (4.6)	A (9.7)	A (8.7)
Cloverleaf Road (SR 4025) & Route 283 West Ramps	WB L/T		F (108.2)	F (147.0)	F (95.7)
	WB R		A	A	A
	NB L		C	C	D
	NB T		B	B	A
	SB T		D	D	D
	SB R		A	A	A
	ILOS		E (61.1)	E (75.3)	E (60.0)
Cloverleaf Road (SR 4025) & Route 283 East Ramps	EB L/T		F (107.8)	F (350.7)	D
	EB R		F (463.1)	F (503.7)	A
	NB T		A	A	A
	NB R		A	A	A
	SB L		B	B	A
	SB T		A	A	A
	ILOS		F (107.7)	F (120.4)	A (5.7)
Cloverleaf Road (SR 4025) & Merts Drive	EB L/R		F (416.0)	F (462.8)	E
	NB L/T		C	C	--
	ILOS		A (4.4)	A (4.9)	A (0.5)
Cloverleaf Road (SR 4025) & Schwanger Road	EB L		D	D	D
	EB T/R		C	C	C
	WB L		C	C	C
	WB T/R		C	C	C
	NB L		E	E	D
	NB T/R		B	B	B
	SB L		B	B	B
	SB T/R	SB T	F (171.5)	F (184.5)	C
		SB R			A
	ILOS		F (97.6)	F (104.3)	C (20.8)

Base = No-Build scenario Projected = Build scenario ILOS = Overall Intersection Level of Service
Unsignalized ILOS calculated in accordance with Figure 5 of Policies and Procedures for Transportation Impact Studies.
¹ Projected conditions with implementation of possible HOP improvements

TABLE R1.10
QUEUE ANALYSIS: WEEKDAY A.M. PEAK HOUR

Approach/ Movement		Available Storage w/ Imp ¹	2025 Existing Condition		Design Year 2035: No-Build		Design Year 2035: Build		Design Year 2035: Build w Imp ¹	
			Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th
Cloverleaf Road (SR 4025) & Steel Way										
WB L/R		1000'+	--	3'	--	3'	--	13'	--	--
NB T/R	NB T	700'	--	--	--	--	--	--	--	--
	NB R	700'	--	--	--	--	--	--	--	--
SB L/T		500'+	--	3'	--	3'	--	3'	--	--
Cloverleaf Road (SR 4025) & Route 283 West Ramps										
WB L/T		875'	275'	233'	558'	470'	558'	490'	483'	468'
WB R		400'	38'	8'	47'	8'	57'	15'	53'	15'
NB L		225'	402'	233'	697'	705'	724'	790'	575'	580'
NB T		400'	59'	28'	93'	73'	125'	105'	86'	45'
SB T		500'+	156'	123'	255'	250'	292'	285'	351'	308'
SB R		75'	28'	0'	35'	0'	49'	0'	44'	0'
Cloverleaf Road (SR 4025) & Route 283 East Ramps										
EB L		1,000'	--	30'	--	65'	--	185'	126'	90'
EB R		475'+	--	65'	--	205'	--	210'	160'	0'
NB T		1,500'	--	--	--	--	--	--	730'	413'
NB R		75'	--	--	--	--	--	--	275'	0'
SB L		200'	--	20'	--	28'	--	38'	91'	68'
SB T		500' 1000'+	--	--	--	--	--	--	219'	5'
Cloverleaf Road (SR 4025) & Merts Drive										
EB L/R		1000'+	--	8'	--	20'	--	23'	--	3'
NB L/T		1000'+	--	0'	--	0'	--	0'	--	--
Cloverleaf Road (SR 4025) & Schwanger Road										
EB L		225'	273'	215'	424'	410'	429'	420'	450'	438'
EB T/R		550'	39'	30'	53'	63'	55'	63'	57'	68'
WB L		75'	11'	3'	10'	3'	15'	5'	15'	8'
WB T/R		325'	35'	38'	39'	43'	41'	43'	42'	45'
NB L		100'	16'	15'	59'	50'	59'	50'	34'	25'
NB T/R		1000'+	655'	458'	890'	1,135'	931'	1,308'	984'	1,318'
SB L		75'	14'	13'	17'	18'	17'	18'	18'	10'
SB T/R	SB T	1500'	1500'	388'	280'	776'	718'	785'	745'	584'
	SB R	+	75'							28'

¹ Projected conditions with implementation of possible HOP improvements

TABLE R1.11
QUEUE ANALYSIS: WEEKDAY P.M. PEAK HOUR

Approach/ Movement		Available Storage w/ Imp ¹		2025 Existing Condition		Design Year 2035: No-Build		Design Year 2035: Build		Design Year 2035: Build w Imp ¹	
				Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th	Synchro 95th	HCM 95th
Cloverleaf Road (SR 4025) & Steel Way											
WB L/R		1000'+		--	45'	--	65'	--	165'	--	--
NB T/R	NB T	700'		--	--	--	--	--	--	--	--
	NB R	700'		--	--	--	--	--	--	--	--
SB L/T		500'+		--	0'	--	0'	--	0'	--	--
Cloverleaf Road (SR 4025) & Route 283 West Ramps											
WB L/T		875'		478'	338'	898'	1038'	1015'	1310'	780'	995'
WB R		400'		35'	10'	45'	13'	56'	15'	44'	15'
NB L		225'		188'	128'	294'	293'	360'	310'	365'	315'
NB T		400'		122'	70'	128'	133'	141'	150'	109'	53'
SB T		500+		185'	135'	237'	248'	332'	333'	380'	360'
SB R		75'		16'	0'	16'	0'	46'	0'	32'	0'
Cloverleaf Road (SR 4025) & Route 283 East Ramps											
EB L/T		1,000'		--	40'	--	98'	--	195'	99'	98'
EB R		475'+		--	410'	--	1,148'	--	1,188'	652'	0'
NB T		1,500'		--	--	--	--	--	--	380'	103'
NB R		75'		--	--	--	--	--	--	203'	0'
SB L		200'		--	8'	--	10'	--	20'	72'	13'
SB T		500' 1000'+		--	--	--	--	--	--	481'	0'
Cloverleaf Road (SR 4025) & Merts Drive											
EB L/R		1000'+		--	33'	--	90'	--	93'	--	25'
NB L/T		1000'+		--	0'	--	0'	--	0'	--	--
Cloverleaf Road (SR 4025) & Schwanger Road											
EB L		225'		160'	108'	267'	233'	268'	238'	268'	238'
EB T/R		550'		44'	38'	58'	68'	59'	68'	59'	68'
WB L		75'		16'	8'	18'	8'	29'	15'	29'	15'
WB T/R		325'		40'	25'	53'	38'	55'	40'	55'	40'
NB L		100'		49'	40'	73'	120'	73'	120'	73'	95'
NB T/R		1000'+		203'	148'	479'	245'	491'	250'	491'	250'
SB L		75'		23'	20'	30'	33'	31'	33'	31'	33'
SB T/R	SB T	1500'	1500'	726'	613'	1,077'	2,258'	1,107'	2,430'	695'	458'
	SB R	+	75'							25'	90'

¹ Projected conditions with implementation of possible HOP improvements

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	51	1	244	139	17	331
Future Volume (vph)	51	1	244	139	17	331
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	11	11	11	11
Grade (%)	-5%		2%			-2%
Storage Length (ft)	0	0		150	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	30		40			40
Link Distance (ft)	1042		715			1084
Travel Time (s)	23.7		12.2			18.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	54%	0%	21%	18%	0%	11%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	0	262	149	0	374
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	1	244	139	17	331
Future Vol, veh/h	51	1	244	139	17	331
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	-	-	150	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-5	-	2	-	-	-2
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	54	0	21	18	0	11
Mvmt Flow	55	1	262	149	18	356

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	655	262	0
Stage 1	262	-	-
Stage 2	392	-	-
Critical Hdwy	5.94	5.7	-
Critical Hdwy Stg 1	4.94	-	-
Critical Hdwy Stg 2	4.94	-	-
Follow-up Hdwy	3.5	3.1	-
Pot Cap-1 Maneuver	472	856	-
Stage 1	813	-	-
Stage 2	722	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	460	856	-
Mov Cap-2 Maneuver	460	-	-
Stage 1	792	-	-
Stage 2	722	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	13.83	0	0.45
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	88
HCM Lane V/C Ratio	-	-	0.121	0.021
HCM Ctrl Dly (s/v)	-	-	13.8	9.2
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

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

Timing Plan: A.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	444	0	159	686	243	0	0	274	92
Future Volume (vph)	0	0	0	444	0	159	686	243	0	0	274	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	11	11	10	11	11	11	11	11	11
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	225		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25		25	25		25	100		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		835			831			554			715	
Travel Time (s)		22.8			22.7			9.4			12.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	7%	0%	18%	4%	17%	0%	0%	14%	19%
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	0	0	477	171	738	261	0	0	295	99
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	7.0	12.0			12.0	12.0
Minimum Split (s)				8.5	8.5	8.5	13.0	18.0			18.0	18.0
Total Split (s)				31.0	31.0	31.0	35.0	59.0			24.0	24.0
Total Split (%)				34.4%	34.4%	34.4%	38.9%	65.6%			26.7%	26.7%
Maximum Green (s)				25.5	25.5	25.5	29.0	53.0			18.0	18.0
Yellow Time (s)				3.0	3.0	3.0	4.0	4.0			4.0	4.0
All-Red Time (s)				2.5	2.5	2.5	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)					4.5	4.5	5.0	5.0			5.0	5.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	6.0			6.0	6.0
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	13.0			13.0	13.0
Time To Reduce (s)				0.0	0.0	0.0	0.0	12.0			12.0	12.0
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio					1.04	0.36	1.17	0.30			0.91	0.29
Control Delay (s/veh)					85.8	6.3	104.6	9.6			67.8	8.4

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

Timing Plan: A.M. Peak Hour
 No CIP

												
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)					85.8	6.3	104.6	9.6			67.8	8.4
Queue Length 50th (ft)					~296	0	~436	62			183	0
Queue Length 95th (ft)					#483	53	m#575	m86			#351	44
Internal Link Dist (ft)		755			751			474			635	
Turn Bay Length (ft)						400	225					75
Base Capacity (vph)					459	480	632	883			325	346
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					1.04	0.36	1.17	0.30			0.91	0.29

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

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

Natural Cycle: 130

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

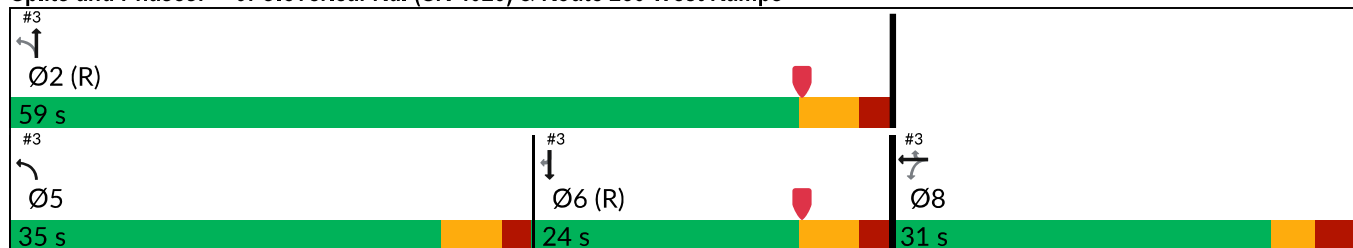
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps



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

Timing Plan: A.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	444	0	159	686	243	0	0	274	92
Future Volume (veh/h)	0	0	0	444	0	159	686	243	0	0	274	92
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	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				1775	1875	1619	1722	1539	0	0	1675	1604
Adj Flow Rate, veh/h				477	0	0	738	261	0	0	295	0
Peak Hour Factor				0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %				7	0	18	4	17	0	0	14	19
Cap, veh/h				522	0		671	926	0	0	357	
Arrive On Green				0.28	0.00	0.00	0.44	0.80	0.00	0.00	0.21	0.00
Sat Flow, veh/h				1785	0	1372	1640	1539	0	0	1675	1360
Grp Volume(v), veh/h				477	0	0	738	261	0	0	295	0
Grp Sat Flow(s),veh/h/ln				1785	0	1372	1640	1539	0	0	1675	1360
Q Serve(g_s), s				23.3	0.0	0.0	30.0	3.9	0.0	0.0	15.1	0.0
Cycle Q Clear(g_c), s				23.3	0.0	0.0	30.0	3.9	0.0	0.0	15.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				522	0		671	926	0	0	357	
V/C Ratio(X)				0.91	0.00		1.10	0.28	0.00	0.00	0.83	
Avail Cap(c_a), veh/h				526	0		671	926	0	0	357	
HCM Platoon Ratio				1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.41	0.41	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				31.2	0.0	0.0	15.0	4.0	0.0	0.0	33.8	0.0
Incr Delay (d2), s/veh				20.4	0.0	0.0	54.7	0.3	0.0	0.0	19.3	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				18.7	0.0	0.0	23.2	1.8	0.0	0.0	12.3	0.0
Unsig. Movement Delay, s/veh						9.10						
LnGrp Delay(d), s/veh				51.6	0.0	9.1	69.7	4.3	0.0	0.0	53.1	0.0
LnGrp LOS				D		A	F	A			D	
Approach Vol, veh/h					617			999			295	
Approach Delay, s/veh					42.0			52.6			53.1	
Approach LOS					D			D			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		59.2			35.0	24.2		30.8				
Change Period (Y+Rc), s		6.0			6.0	6.0		5.5				
Max Green Setting (Gmax), s		53.0			29.0	18.0		25.5				
Max Q Clear Time (g_c+I1), s		6.4			32.5	17.6		25.3				
Green Ext Time (p_c), s		7.4			0.0	0.2		0.1				

Intersection Summary

HCM 7th Control Delay, s/veh	49.3
HCM 7th LOS	D

Notes

Unsignalized Delay for [WBR] is included in calculations of the approach delay and intersection delay.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

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

Timing Plan: A.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	0	371	0	0	0	0	847	717	156	563	0
Future Volume (vph)	68	0	371	0	0	0	0	847	717	156	563	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		475	0		0	0		75	100		0
Storage Lanes	1		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%	17%	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)	76	0	417	0	0	0	0	952	806	175	633	0
Turn Type	Prot		Prot					NA	Perm	pm+pt	NA	
Protected Phases	7		7					2		1	6	
Permitted Phases									2	6		
Detector Phase	7		7					2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0		5.0					5.0	5.0	4.0	5.0	
Minimum Split (s)	13.0		13.0					22.0	22.0	10.0	22.0	
Total Split (s)	13.0		13.0					64.0	64.0	13.0	77.0	
Total Split (%)	14.4%		14.4%					71.1%	71.1%	14.4%	85.6%	
Maximum Green (s)	7.0		7.0					58.0	58.0	7.0	71.0	
Yellow Time (s)	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	
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								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	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	
Time Before Reduce (s)	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	
Recall Mode	None		None					C-Max	C-Max	None	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.61		0.84					0.87	0.74	0.63	0.46	
Control Delay (s/veh)	61.9		22.8					23.4	9.9	26.8	7.5	

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

Timing Plan: A.M. Peak Hour
No CIP

												
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	2.1	
Total Delay (s/veh)	61.9		22.8					23.4	9.9	26.8	9.5	
Queue Length 50th (ft)	52		14					402	129	86	214	
Queue Length 95th (ft)	#126		#160					#730	275	m91	m219	
Internal Link Dist (ft)		826			679			233				474
Turn Bay Length (ft)			475						75	100		
Base Capacity (vph)	124		494					1093	1082	281	1372	
Starvation Cap Reductn	0		0					0	0	0	566	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.61		0.84					0.87	0.74	0.62	0.79	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

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

Natural Cycle: 80

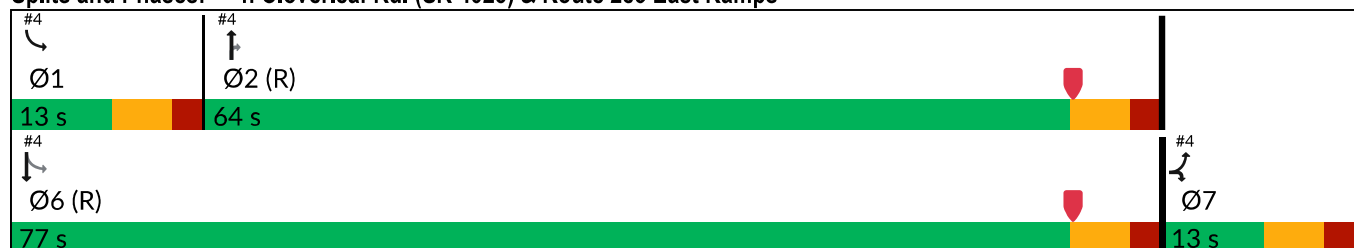
Control Type: Actuated-Coordinated

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

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



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

Timing Plan: A.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	0	371	0	0	0	0	847	717	156	563	0
Future Volume (veh/h)	68	0	371	0	0	0	0	847	717	156	563	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	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	0	1807				0	1766	1795	1633	1789	0
Adj Flow Rate, veh/h	76	0	0				0	952	0	175	633	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	17	6	0
Cap, veh/h	113	0					0	1213		351	1450	0
Arrive On Green	0.08	0.00	0.00				0.00	0.69	0.00	0.14	1.00	0.00
Sat Flow, veh/h	1439	0	1532				0	1766	1521	1555	1789	0
Grp Volume(v), veh/h	76	0	0				0	952	0	175	633	0
Grp Sat Flow(s),veh/h/ln	1439	0	1532				0	1766	1521	1555	1789	0
Q Serve(g_s), s	4.6	0.0	0.0				0.0	33.0	0.0	2.6	0.0	0.0
Cycle Q Clear(g_c), s	4.6	0.0	0.0				0.0	33.0	0.0	2.6	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	113	0					0	1213		351	1450	0
V/C Ratio(X)	0.67	0.00					0.00	0.79		0.50	0.44	0.00
Avail Cap(c_a), veh/h	128	0					0	1213		383	1450	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.30	0.30	0.00
Uniform Delay (d), s/veh	40.3	0.0	0.0				0.0	9.6	0.0	11.7	0.0	0.0
Incr Delay (d2), s/veh	11.1	0.0	0.0				0.0	5.1	0.0	0.3	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	3.6	0.0	0.0				0.0	16.5	0.0	2.7	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	51.5	0.0	0.0				0.0	14.7	0.0	12.0	0.3	0.0
LnGrp LOS	D							B		B	A	
Approach Vol, veh/h	76						952			808		
Approach Delay, s/veh	51.5						14.7			2.8		
Approach LOS	D						B			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	11.1	66.8		12.1		77.9						
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	7.0	58.0		7.0		71.0						
Max Q Clear Time (g_c+I1), s	5.1	35.5		7.1		2.5						
Green Ext Time (p_c), s	0.1	7.5		0.0		4.6						

Intersection Summary

HCM 7th Control Delay, s/veh	11.0
HCM 7th LOS	B

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	13	0	1568	916	26
Future Volume (vph)	0	13	0	1568	916	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	11	11	11	11
Grade (%)	0%			-2%	1%	
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)	507			2157	313	
Travel Time (s)	13.8			36.8	5.3	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	5%	9%	6%
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	14	0	1686	1013	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	13	0	1568	916	26
Future Vol, veh/h	0	13	0	1568	916	26
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, %	0	-	-	-2	1	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	11	0	5	9	6
Mvmt Flow	0	14	0	1686	985	28

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 999	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.31	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.2	- -	- -
Pot Cap-1 Maneuver	0 295	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 295	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.82	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 295	- -	- -
HCM Lane V/C Ratio	- 0.047	- -	- -
HCM Ctrl Dly (s/v)	- 17.8	- -	- -
HCM Lane LOS	- C	- -	- -
HCM 95th %tile Q(veh)	- 0.1	- -	- -

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

Timing Plan: A.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	438	48	98	11	22	72	43	1054	19	17	722	196
Future Volume (vph)	438	48	98	11	22	72	43	1054	19	17	722	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		400
Storage Lanes	1		0	1		0	1		0	1		1
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	155	0	12	100	0	46	1141	0	18	768	209
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	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	18.5
Total Split (s)	29.0	29.0		29.0	29.0		46.0	46.0		46.0	46.0	46.0
Total Split (%)	38.7%	38.7%		38.7%	38.7%		61.3%	61.3%		61.3%	61.3%	61.3%
Maximum Green (s)	23.0	23.0		23.0	23.0		39.5	39.5		39.5	39.5	39.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	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	2.0
Lost Time Adjust (s)	-1.0	-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	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	6.0
Minimum Gap (s)	3.0	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	14.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	14.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	1.24	0.26		0.03	0.18		0.27	1.29		0.20	0.89	0.24
Control Delay (s/veh)	154.0	8.7		18.0	8.9		14.3	160.2		15.5	30.5	2.1

Lanes, Volumes, Timings
pam.syn

Synchro 12 Report
08/20/2026

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

Timing Plan: A.M. Peak Hour
No CIP

												
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	0.0
Total Delay (s/veh)	154.0	8.7		18.0	8.9		14.3	160.2		15.5	30.5	2.1
Queue Length 50th (ft)	~276	16		4	10		11	~735		4	318	0
Queue Length 95th (ft)	#450	57		15	42		34	#984		18	#584	28
Internal Link Dist (ft)		1991			2065			546			2077	
Turn Bay Length (ft)	225			75			100			75		400
Base Capacity (vph)	377	594		349	552		173	884		91	863	887
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.24	0.26		0.03	0.18		0.27	1.29		0.20	0.89	0.24

Intersection Summary

Area Type: Other

Cycle Length: 75

Actuated Cycle Length: 75

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

Natural Cycle: 120

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
46 s	29 s
#6 	#6 
Ø6 (R)	Ø8
46 s	29 s

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

Timing Plan: A.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	438	48	98	11	22	72	43	1054	19	17	722	196
Future Volume (veh/h)	438	48	98	11	22	72	43	1054	19	17	722	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	51	73	12	23	62	46	1121	20	18	768	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	495	246	352	425	139	375	213	958	17	99	968	872
Arrive On Green	0.32	0.32	0.31	0.32	0.32	0.31	0.54	0.54	0.53	0.54	0.54	0.54
Sat Flow, veh/h	1384	768	1100	1185	435	1173	598	1775	32	514	1793	1616
Grp Volume(v), veh/h	466	0	124	12	0	85	46	0	1141	18	768	191
Grp Sat Flow(s),veh/h/ln	1384	0	1868	1185	0	1609	598	0	1807	514	1793	1616
Q Serve(g_s), s	21.6	0.0	3.7	0.6	0.0	2.9	5.0	0.0	40.5	0.5	25.9	4.6
Cycle Q Clear(g_c), s	24.0	0.0	3.7	3.7	0.0	2.9	30.9	0.0	40.5	40.5	25.9	4.6
Prop In Lane	1.00		0.59	1.00		0.73	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	495	0	598	425	0	515	213	0	976	99	968	872
V/C Ratio(X)	0.94	0.00	0.21	0.03	0.00	0.17	0.22	0.00	1.17	0.18	0.79	0.22
Avail Cap(c_a), veh/h	495	0	598	425	0	515	213	0	976	99	968	872
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	18.8	19.8	0.0	18.6	26.3	0.0	17.3	37.5	13.9	9.0
Incr Delay (d2), s/veh	26.5	0.0	0.2	0.0	0.0	0.1	2.3	0.0	87.4	4.0	6.7	0.6
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	17.5	0.0	2.7	0.3	0.0	1.8	1.5	0.0	52.7	0.8	15.4	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	54.7	0.0	19.0	19.8	0.0	18.7	28.6	0.0	104.7	41.4	20.5	9.6
LnGrp LOS	D		B	B		B	C		F	D	C	A
Approach Vol, veh/h	590			97			1187			977		
Approach Delay, s/veh	47.2			18.9			101.7			18.8		
Approach LOS	D			B			F			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	46.0			29.0			46.0			29.0		
Change Period (Y+Rc), s	6.5			6.0			6.5			6.0		
Max Green Setting (Gmax), s	39.5			23.0			39.5			23.0		
Max Q Clear Time (g_c+I1), s	42.5			26.5			28.4			6.2		
Green Ext Time (p_c), s	0.0			0.0			9.6			0.2		
Intersection Summary												
HCM 7th Control Delay, s/veh	59.2											
HCM 7th LOS	E											

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

Timing Plan: A.M. Peak Hour
 No CIP

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	159	243	0	0	0
Future Volume (vph)	0	159	243	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-2%		2%			0%
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)	184		118			92
Travel Time (s)	5.0		2.0			1.6
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	18%	17%	0%	0%	0%
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	171	261	0	0	0
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	159	243	0	0	0
Future Vol, veh/h	0	159	243	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	18	17	0	0	0
Mvmt Flow	0	171	261	0	0	0
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	261	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	1057	-	0	0	0
Stage 1	0	-	-	0	0	0
Stage 2	0	-	-	0	0	0
Platoon blocked, %			-			
Mov Cap-1 Maneuver	-	1057	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	9.06	0				
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1					
Capacity (veh/h)	-		1057			
HCM Lane V/C Ratio	-		0.162			
HCM Ctrl Dly (s/v)	-		9.1			
HCM Lane LOS	-		A			
HCM 95th %tile Q(veh)	-		0.6			

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	209	61	317	49	4	303
Future Volume (vph)	209	61	317	49	4	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	14	11	11	11	11
Grade (%)	-5%		2%			-2%
Storage Length (ft)	0	0		150	0	
Storage Lanes	1	0		1	0	
Taper Length (ft)	25	25		25	25	
Link Speed (mph)	30		40			40
Link Distance (ft)	1042		715			1057
Travel Time (s)	23.7		12.2			18.0
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	12%	2%	11%	56%	25%	7%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	360	0	423	65	0	409
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	8.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	209	61	317	49	4	303
Future Vol, veh/h	209	61	317	49	4	303
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	-	-	150	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-5	-	2	-	-	-2
Peak Hour Factor	75	75	75	75	75	75
Heavy Vehicles, %	12	2	11	56	25	7
Mvmt Flow	279	81	423	65	5	404
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	837	423	0	0	488	0
Stage 1	423	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Critical Hdwy	5.52	5.72	-	-	4.6	-
Critical Hdwy Stg 1	4.52	-	-	-	-	-
Critical Hdwy Stg 2	4.52	-	-	-	-	-
Follow-up Hdwy	3.1	3.1	-	-	3.2	-
Pot Cap-1 Maneuver	451	708	-	-	743	-
Stage 1	815	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	447	708	-	-	743	-
Mov Cap-2 Maneuver	447	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	820	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	30.41	0		0.13		
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	488	23	-	
HCM Lane V/C Ratio	-	-	0.738	0.007	-	
HCM Ctrl Dly (s/v)	-	-	30.4	9.9	0	
HCM Lane LOS	-	-	D	A	A	
HCM 95th %tile Q(veh)	-	-	6.1	0	-	

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

Timing Plan: P.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	761	0	176	415	263	0	0	346	87
Future Volume (vph)	0	0	0	761	0	176	415	263	0	0	346	87
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (ft)	12	12	12	11	11	10	11	11	11	11	11	11
Grade (%)		0%			-2%			2%			-2%	
Storage Length (ft)	0		0	0		400	225		0	0		75
Storage Lanes	0		0	0		1	1		0	0		1
Taper Length (ft)	25		25	25		25	100		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		835			831			554			715	
Travel Time (s)		22.8			22.7			9.4			12.2	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	3%	0%	12%	6%	8%	0%	0%	5%	15%
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	0	0	793	183	432	274	0	0	360	91
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				3.0	3.0	3.0	3.0	12.0			12.0	12.0
Minimum Split (s)				9.5	9.5	9.5	13.0	18.0			18.0	18.0
Total Split (s)				41.0	41.0	41.0	23.0	49.0			26.0	26.0
Total Split (%)				45.6%	45.6%	45.6%	25.6%	54.4%			28.9%	28.9%
Maximum Green (s)				35.0	35.0	35.0	17.0	43.0			20.0	20.0
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	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)				3.0	3.0	3.0	3.0	6.0			6.0	6.0
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	13.0			13.0	13.0
Time To Reduce (s)				0.0	0.0	0.0	0.0	12.0			12.0	12.0
Recall Mode				None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio					1.22	0.29	1.09	0.35			0.92	0.24
Control Delay (s/veh)					141.4	4.2	94.5	15.1			65.4	5.9

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

Timing Plan: P.M. Peak Hour
 No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay					1.8	0.0	0.0	0.0			0.0	0.0
Total Delay (s/veh)					143.2	4.2	94.5	15.1			65.4	5.9
Queue Length 50th (ft)					~560	0	~135	74			209	0
Queue Length 95th (ft)					#780	44	#365	m109			#380	32
Internal Link Dist (ft)		755			751			474			635	
Turn Bay Length (ft)						400	225					75
Base Capacity (vph)					648	625	395	779			390	386
Starvation Cap Reductn					0	0	0	0			0	0
Spillback Cap Reductn					138	0	0	0			0	0
Storage Cap Reductn					0	0	0	0			0	0
Reduced v/c Ratio					1.55	0.29	1.09	0.35			0.92	0.24

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

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

Natural Cycle: 140

Control Type: Actuated-Coordinated

~ Volume exceeds capacity, queue is theoretically infinite.

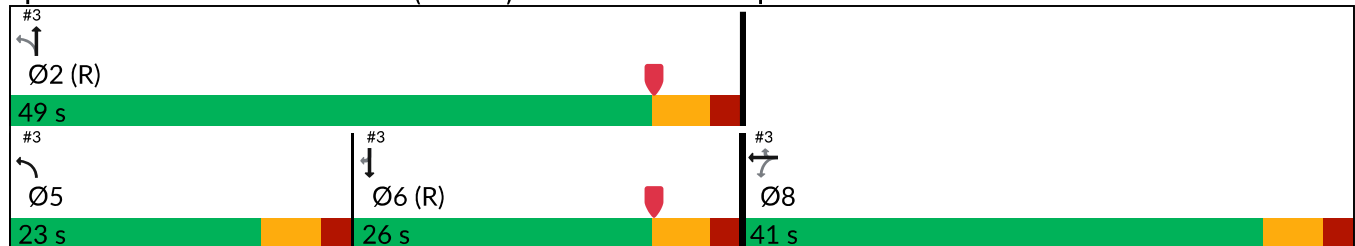
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Cloverleaf Rd. (SR 4025) & Route 283 West Ramps



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

Timing Plan: P.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	761	0	176	415	263	0	0	346	87
Future Volume (veh/h)	0	0	0	761	0	176	415	263	0	0	346	87
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Lane Width Adj.				1.00	1.00	1.00	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				1832	1875	1704	1693	1665	0	0	1803	1661
Adj Flow Rate, veh/h				793	0	0	432	274	0	0	360	0
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				3	0	12	6	8	0	0	5	15
Cap, veh/h				714	0		442	814	0	0	421	
Arrive On Green				0.39	0.00	0.00	0.33	0.82	0.00	0.00	0.23	0.00
Sat Flow, veh/h				1785	0	1444	1613	1665	0	0	1803	1408
Grp Volume(v), veh/h				793	0	0	432	274	0	0	360	0
Grp Sat Flow(s),veh/h/ln				1785	0	1444	1613	1665	0	0	1803	1408
Q Serve(g_s), s				36.0	0.0	0.0	18.0	3.7	0.0	0.0	17.2	0.0
Cycle Q Clear(g_c), s				36.0	0.0	0.0	18.0	3.7	0.0	0.0	17.2	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				714	0		442	814	0	0	421	
V/C Ratio(X)				1.11	0.00		0.98	0.34	0.00	0.00	0.86	
Avail Cap(c_a), veh/h				714	0		442	814	0	0	421	
HCM Platoon Ratio				1.00	1.00	1.00	1.67	1.67	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.74	0.74	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				27.5	0.0	0.0	18.5	4.6	0.0	0.0	33.0	0.0
Incr Delay (d2), s/veh				68.2	0.0	0.0	31.3	0.8	0.0	0.0	19.5	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				39.8	0.0	0.0	12.6	2.1	0.0	0.0	14.4	0.0
Unsig. Movement Delay, s/veh						9.20						
LnGrp Delay(d), s/veh				95.7	0.0	9.2	49.8	5.4	0.0	0.0	52.5	0.0
LnGrp LOS				F		A	D	A			D	
Approach Vol, veh/h					917			706			360	
Approach Delay, s/veh					84.0			32.5			52.5	
Approach LOS					F			C			D	
Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		49.0			23.0	26.0		41.0				
Change Period (Y+Rc), s		6.0			6.0	6.0		6.0				
Max Green Setting (Gmax), s		43.0			17.0	20.0		35.0				
Max Q Clear Time (g_c+I1), s		6.2			20.5	19.7		38.0				
Green Ext Time (p_c), s		7.2			0.0	0.2		0.0				

Intersection Summary

HCM 7th Control Delay, s/veh	60.0
HCM 7th LOS	E

Notes

Unsignalized Delay for [WBR] is included in calculations of the approach delay and intersection delay.
Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

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

Timing Plan: P.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	91	0	651	0	0	0	0	579	573	147	960	0
Future Volume (vph)	91	0	651	0	0	0	0	579	573	147	960	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		475	0		0	0		75	100		0
Storage Lanes	1		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 (%)	17%	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)	93	0	664	0	0	0	0	591	585	150	980	0
Turn Type	Prot		Prot					NA	Perm	pm+pt	NA	
Protected Phases	7		7					2		1	6	
Permitted Phases									2	6		
Detector Phase	7		7					2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0		5.0					5.0	5.0	4.0	5.0	
Minimum Split (s)	11.0		11.0					11.0	11.0	10.0	11.0	
Total Split (s)	25.0		25.0					52.0	52.0	13.0	65.0	
Total Split (%)	27.8%		27.8%					57.8%	57.8%	14.4%	72.2%	
Maximum Green (s)	19.0		19.0					46.0	46.0	7.0	59.0	
Yellow Time (s)	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	
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								Lag	Lag	Lead		
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	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	
Time Before Reduce (s)	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	
Recall Mode	None		None					C-Max	C-Max	None	C-Max	
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	0.28		1.37					0.68	0.64	0.40	0.82	
Control Delay (s/veh)	31.7		205.8					21.1	9.9	23.6	20.4	

Lanes, Volumes, Timings
ppm.syn

Synchro 12 Report
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2035 Projected (Build) Conditions W IMP
 4: Cloverleaf Rd. (SR 4025) & Route 283 East Ramps

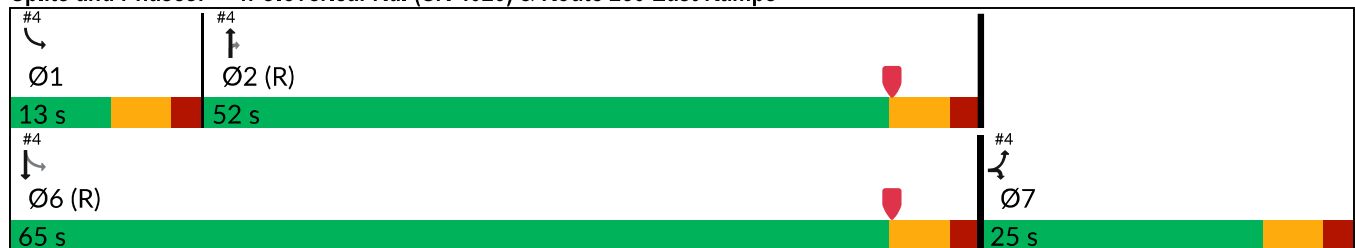
Timing Plan: P.M. Peak Hour
 No CIP

												
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	49.0	
Total Delay (s/veh)	31.7		205.8					21.1	9.9	23.6	69.4	
Queue Length 50th (ft)	50		~436					248	89	64	544	
Queue Length 95th (ft)	99		#652					380	203	m72	m481	
Internal Link Dist (ft)		826			679			233			474	
Turn Bay Length (ft)			475						75	100		
Base Capacity (vph)	337		483					863	912	378	1188	
Starvation Cap Reductn	0		0					0	0	0	323	
Spillback Cap Reductn	0		0					0	0	0	0	
Storage Cap Reductn	0		0					0	0	0	0	
Reduced v/c Ratio	0.28		1.37					0.68	0.64	0.40	1.13	

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
 Natural Cycle: 90
 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.
 m Volume for 95th percentile queue is metered by upstream signal.

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



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

Timing Plan: P.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	0	651	0	0	0	0	579	573	147	960	0
Future Volume (veh/h)	91	0	651	0	0	0	0	579	573	147	960	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	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	1659	0	1896				0	1752	1795	1732	1846	0
Adj Flow Rate, veh/h	93	0	0				0	591	0	150	980	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, %	17	0	1				0	6	3	10	2	0
Cap, veh/h	141	0					0	1195		580	1477	0
Arrive On Green	0.09	0.00	0.00				0.00	0.68	0.00	0.12	1.00	0.00
Sat Flow, veh/h	1580	0	1607				0	1752	1521	1650	1846	0
Grp Volume(v), veh/h	93	0	0				0	591	0	150	980	0
Grp Sat Flow(s),veh/h/ln	1580	0	1607				0	1752	1521	1650	1846	0
Q Serve(g_s), s	5.1	0.0	0.0				0.0	14.6	0.0	2.1	0.0	0.0
Cycle Q Clear(g_c), s	5.1	0.0	0.0				0.0	14.6	0.0	2.1	0.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	141	0					0	1195		580	1477	0
V/C Ratio(X)	0.66	0.00					0.00	0.49		0.26	0.66	0.00
Avail Cap(c_a), veh/h	351	0					0	1195		624	1477	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.27	0.27	0.00
Uniform Delay (d), s/veh	39.7	0.0	0.0				0.0	6.9	0.0	4.3	0.0	0.0
Incr Delay (d2), s/veh	5.2	0.0	0.0				0.0	1.5	0.0	0.1	0.6	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	3.9	0.0	0.0				0.0	8.1	0.0	0.7	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	44.9	0.0	0.0				0.0	8.3	0.0	4.3	0.6	0.0
LnGrp LOS	D							A		A	A	
Approach Vol, veh/h	93						591			1130		
Approach Delay, s/veh	44.9						8.3			1.1		
Approach LOS	D						A			A		
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	10.6	66.4		13.0		77.0						
Change Period (Y+Rc), s	6.0	6.0		6.0		6.0						
Max Green Setting (Gmax), s	7.0	46.0		19.0		59.0						
Max Q Clear Time (g_c+I1), s	4.6	17.1		7.6		2.5						
Green Ext Time (p_c), s	0.1	3.9		0.2		9.8						

Intersection Summary

HCM 7th Control Delay, s/veh	5.7
HCM 7th LOS	A

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	29	0	1137	1609	5
Future Volume (vph)	0	29	0	1137	1609	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	11	11	11	11
Grade (%)	0%			-2%	1%	
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)	507			2157	313	
Travel Time (s)	13.8			36.8	5.3	
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%	7%	0%	4%	3%	0%
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	31	0	1197	1699	0
Sign Control	Stop			Free	Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	29	0	1137	1609	5
Future Vol, veh/h	0	29	0	1137	1609	5
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, %	0	-	-	-2	1	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	7	0	4	3	0
Mvmt Flow	0	31	0	1197	1694	5

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 1696	-	0 - 0
Stage 1	- -	-	- -
Stage 2	- -	-	- -
Critical Hdwy	- 6.27	-	- -
Critical Hdwy Stg 1	- -	-	- -
Critical Hdwy Stg 2	- -	-	- -
Follow-up Hdwy	- 3.1	-	- -
Pot Cap-1 Maneuver	0 115	0	- -
Stage 1	0 -	0	- -
Stage 2	0 -	0	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	- 115	-	- -
Mov Cap-2 Maneuver	- -	-	- -
Stage 1	- -	-	- -
Stage 2	- -	-	- -

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	47.2	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT EBLn1	SBT	SBR
Capacity (veh/h)	- 115	-	-
HCM Lane V/C Ratio	- 0.265	-	-
HCM Ctrl Dly (s/v)	- 47.2	-	-
HCM Lane LOS	- E	-	-
HCM 95th %tile Q(veh)	- 1	-	-

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

Timing Plan: P.M. Peak Hour
No CIP

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	272	52	82	28	63	26	93	829	17	62	1083	440
Future Volume (vph)	272	52	82	28	63	26	93	829	17	62	1083	440
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		400
Storage Lanes	1		0	1		0	1		0	1		1
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	29	93	0	98	891	0	65	1140	463
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		2	2		6	6	6
Switch Phase												
Minimum Initial (s)	3.0	3.0		3.0	3.0		12.0	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	18.5
Total Split (s)	16.0	16.0		16.0	16.0		44.0	44.0		44.0	44.0	44.0
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	73.3%
Maximum Green (s)	10.0	10.0		10.0	10.0		37.5	37.5		37.5	37.5	37.5
Yellow Time (s)	4.0	4.0		4.0	4.0		4.5	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	2.0
Lost Time Adjust (s)	-1.0	-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	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	6.0
Minimum Gap (s)	3.0	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	14.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		14.0	14.0		14.0	14.0	14.0
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	C-Max
Walk Time (s)												
Flash Don't Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio	1.32	0.36		0.14	0.27		0.87	0.83		0.31	1.04	0.41
Control Delay (s/veh)	198.5	13.0		22.6	18.5		75.0	17.2		9.5	53.1	1.7

Lanes, Volumes, Timings
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Synchro 12 Report
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2035 Projected (Build) Conditions W IMP
6: Cloverleaf Rd. (SR 4025) & Schwanger Rd.

Timing Plan: P.M. Peak Hour
No CIP

												
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	0.0
Total Delay (s/veh)	198.5	13.0		22.6	18.5		75.0	17.2		9.5	53.1	1.7
Queue Length 50th (ft)	~139	17		9	20		24	212		9	~476	0
Queue Length 95th (ft)	#268	59		29	55		#73	#491		31	#695	25
Internal Link Dist (ft)		1991			2065			546			2077	
Turn Bay Length (ft)	225			75			100			75		400
Base Capacity (vph)	217	387		202	343		113	1078		212	1095	1124
Starvation Cap Reductn	0	0		0	0		0	0		0	0	0
Spillback Cap Reductn	0	0		0	0		0	0		0	0	0
Storage Cap Reductn	0	0		0	0		0	0		0	0	0
Reduced v/c Ratio	1.32	0.36		0.14	0.27		0.87	0.83		0.31	1.04	0.41

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: 110

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
44 s	16 s
#6 	#6 
Ø6 (R)	Ø8
44 s	16 s

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

Timing Plan: P.M. Peak Hour
No CIP

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	272	52	82	28	63	26	93	829	17	62	1083	440
Future Volume (veh/h)	272	52	82	28	63	26	93	829	17	62	1083	440
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	29	66	12	98	873	17	65	1140	447
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	334	148	196	275	275	50	152	1155	22	319	1214	1052
Arrive On Green	0.18	0.18	0.17	0.18	0.18	0.17	0.64	0.64	0.63	0.64	0.64	0.64
Sat Flow, veh/h	1393	805	1068	1181	1498	272	329	1799	35	637	1892	1640
Grp Volume(v), veh/h	286	0	128	29	0	78	98	0	890	65	1140	447
Grp Sat Flow(s),veh/h/ln	1393	0	1873	1181	0	1771	329	0	1834	637	1892	1640
Q Serve(g_s), s	9.2	0.0	3.6	1.3	0.0	2.3	5.9	0.0	20.3	4.7	32.6	8.1
Cycle Q Clear(g_c), s	11.0	0.0	3.6	4.4	0.0	2.3	38.5	0.0	20.3	24.5	32.6	8.1
Prop In Lane	1.00		0.57	1.00		0.15	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	334	0	343	275	0	325	152	0	1177	319	1214	1052
V/C Ratio(X)	0.86	0.00	0.37	0.11	0.00	0.24	0.64	0.00	0.76	0.20	0.94	0.42
Avail Cap(c_a), veh/h	334	0	343	275	0	325	152	0	1177	319	1214	1052
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	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.5	0.0	21.7	23.2	0.0	21.0	29.0	0.0	7.5	15.8	9.7	5.3
Incr Delay (d2), s/veh	19.0	0.0	0.7	0.2	0.0	0.4	19.0	0.0	4.6	1.4	14.8	1.3
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	9.5	0.0	2.7	0.6	0.0	1.6	3.8	0.0	10.0	1.3	18.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	45.6	0.0	22.4	23.4	0.0	21.4	48.0	0.0	12.0	17.2	24.5	6.6
LnGrp LOS	D		C	C		C	D		B	B	C	A
Approach Vol, veh/h	414			107			988			1652		
Approach Delay, s/veh	38.4			21.9			15.6			19.4		
Approach LOS	D			C			B			B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	44.0			16.0			44.0			16.0		
Change Period (Y+Rc), s	6.5			6.0			6.5			6.0		
Max Green Setting (Gmax), s	37.5			10.0			37.5			10.0		
Max Q Clear Time (g_c+l1), s	22.3			13.5			35.1			6.9		
Green Ext Time (p_c), s	13.1			0.0			2.4			0.1		
Intersection Summary												
HCM 7th Control Delay, s/veh	20.8											
HCM 7th LOS	C											

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

Timing Plan: P.M. Peak Hour
 No CIP

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	176	263	0	0	0
Future Volume (vph)	0	176	263	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	10	11	11	11	11
Grade (%)	-2%		2%			0%
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)	278		122			129
Travel Time (s)	7.6		2.1			2.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	12%	8%	0%	0%	0%
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	183	274	0	0	0
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	176	263	0	0	0
Future Vol, veh/h	0	176	263	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-2	-	2	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	12	8	0	0	0
Mvmt Flow	0	183	274	0	0	0
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	-	274	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	1043	-	0	0	0
Stage 1	0	-	-	0	0	0
Stage 2	0	-	-	0	0	0
Platoon blocked, %			-			
Mov Cap-1 Maneuver	-	1043	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	9.19	0				
HCM LOS	A					
Minor Lane/Major Mvmt	NBTWBLn1					
Capacity (veh/h)	- 1043					
HCM Lane V/C Ratio	- 0.176					
HCM Ctrl Dly (s/v)	- 9.2					
HCM Lane LOS	- A					
HCM 95th %tile Q(veh)	- 0.6					



Attachment 2:

Figure illustrating Travel Distance from
Site to SR 0283



PRO
SITE A

MT PLEASANT RD (SR 4010)

PROPOSED ARCHER LANE

