

**Date:** April 19, 2019

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## Technical Memorandum

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**To:** Bruce G. Barnes, P.E., PTOE  
Jason T. Mayer, PLS  
Waukesha County

**From:** Christian R. Sternke, P.E.  
John Bieberitz, P.E., PTOE

**cc List:** Michael T. Franz, AIA  
Kahler Slater

**Subject:** Froedtert Medical Outpatient Clinic  
Waukesha County, Wisconsin

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### PART A – INTRODUCTION

A Froedtert Medical Outpatient Clinic is proposed to be located west of Genesee Road and south of Sunset Drive in Waukesha County, Wisconsin.

This technical memorandum summarizes the trip generation and traffic operations anticipated with the completion of the Froedtert clinic.

### PART B – STUDY AREA

An aerial of the study area with the site location is included in [Exhibit 1](#). A conceptual site plan for the proposed development is shown in [Exhibit 2](#).

Based on discussions with Waukesha County, the study area includes the Genesee Road intersections with Sunset Drive and the Waukesha State Bank Driveway/Frontage Road Access. [Exhibit 3](#) shows the existing transportation detail of the study area intersections.

*Genesee Road*, also designated as County Trunk Highway (CTH) X, is a four-lane north/south divided highway on the south side of Sunset Drive, opposite St. Paul Avenue. The posted speed limit along Genesee Road is 45 miles per hour (mph). The Wisconsin Department of Transportation (WisDOT) preliminary Year 2018 average annual daily traffic (AADT) volumes on Genesee Road were approximately 17,300 vehicles per day (vpd).

*St. Paul Avenue*, also designated as CTH X, is a four-lane north/south divided highway on the north side of Sunset Drive, opposite Genesee Road. The posted speed limit along St. Paul Avenue is 35-mph. The WisDOT preliminary Year 2018 AADT volumes on St. Paul Avenue were approximately 21,200-vpd. A multi-use path is present along the west side of St. Paul Avenue north of Sunset Drive.

*Sunset Drive*, also designated as CTH D, is a four-lane east/west divided highway that transitions to a two-lane undivided highway west of Genesee Road/St. Paul Avenue. The posted speed limit along Sunset Drive is 35-mph. The WisDOT preliminary Year 2018 AADT volumes on Sunset Drive were approximately 14,100-vpd west of Genesee Road/St. Paul Avenue and 11,300-vpd east of Genesee Road/St. Paul Avenue. A pedestrian sidewalk is present along the south side of Sunset Drive east of Genesee Road/St. Paul Avenue.

As shown on the conceptual site plan in [Exhibit 2](#), the Froedtert Clinic is proposed to have one access point to the existing roadway network. The driveway is proposed to connect to the existing frontage road and be accessed at the existing frontage road access point on the west side of Genesee Road across from the Waukesha State Bank driveway.

## **PART C – TRAFFIC VOLUMES**

### **C1. Year 2019 Existing Traffic Volumes**

TADI performed weekday turning movement traffic counts at the existing study area intersections in February of 2019. The weekday morning and evening peak hours were identified as 7:00 to 8:00am and 4:30 to 5:30pm, respectively. [Exhibit 4A](#) shows the unbalanced Year 2019 existing peak hour traffic volumes. [Exhibit 4B](#) shows the Year 2019 existing peak hour traffic volumes balanced along Genesee Road between intersections. The turning movement counts are included in [Appendix A](#) of this memorandum.

### **C2. Trip Generation**

The traffic volumes expected to be generated by the proposed Froedtert Clinic are based on the development size of 5,850 square feet and trip rates as published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, Tenth Edition, 2017*. The proposed Froedtert Clinic trip generation table is shown in [Exhibit 5](#).

As shown, the proposed Froedtert Clinic is expected to generate approximately 220 new trips (110 in/110 out) during a typical weekday (24-hour period), 20 new trips (15 in/5 out) during a typical weekday morning peak hour, and 20 new trips (5 in/15 out) during a typical weekday evening peak hour.

### **C3. Trip Distribution**

The trip distribution for the proposed Froedtert Clinic was determined based on the existing traffic patterns and the type of proposed land use. The expected trip distribution for the proposed development is summarized as follows:

- 20% traffic to/from the east on Sunset Drive
- 20% traffic to/from the west on Sunset Drive
- 35% traffic to/from the north on St. Paul Avenue
- 25% traffic to/from the south on Genesee Road

### **C4. Trip Assignment**

The proposed Froedtert Clinic new trips were assigned to the study area using the trip distribution previously outlined and are shown in [Exhibit 6](#).

## **C5. Year 2019 Build Traffic Volumes**

The Year 2019 build traffic volumes, shown in [Exhibit 7](#), were determined by summing the Year 2019 existing traffic volumes ([Exhibit 4B](#)) and the proposed Froedtert Clinic new trips ([Exhibit 6](#)).

## **PART D – INTERSECTION CAPACITY ANALYSIS**

### **D1. Level of Service Definitions**

The study area intersections were analyzed based on the procedures set forth in the *Highway Capacity Manual, 6<sup>th</sup> Edition* (HCM). Intersection operation is defined by “Level of Service”. Level of Service (LOS) is a quantitative measure that refers to the overall quality of flow at an intersection ranging from very good, represented by LOS ‘A’, to very poor, represented by LOS ‘F’. For the purpose of this study, and as is standard for use in urban areas in southeast Wisconsin, LOS D or better was used to define desirable peak hour operating conditions. Descriptions of the various levels of service are as follows:

*LOS A* is the highest level of service that can be achieved. Under this condition, intersection approaches appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation. At signalized and unsignalized intersections, average delays are less than 10 seconds.

*LOS B* represents stable operation. At signalized intersections, average vehicle delays are 10 to 20 seconds. At unsignalized intersections, average delays are 10 to 15 seconds.

*LOS C* still represents stable operation, but periodic backups of a few vehicles may develop behind turning vehicles. Most drivers begin to feel restricted, but not objectionably so. At signalized intersections, average vehicle delays are 20 to 35 seconds. At unsignalized intersections, average delays are 15 to 25 seconds.

*LOS D* represents increasing traffic restrictions as the intersection approaches instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but periodic clearance of long lines occurs, thus preventing excessive backups. At signalized intersections, average vehicle delays are 35 to 55 seconds. At unsignalized intersections, average delays are 25 to 35 seconds.

*LOS E* represents the capacity of the intersection. At signalized intersections, average vehicle delays are 55 to 80 seconds. At unsignalized intersections, average delays are 35 to 50 seconds.

*LOS F* represents jammed conditions where the intersection is over capacity and acceptable gaps for unsignalized intersections in the mainline traffic flow are minimal. At signalized intersections, average vehicle delays exceed 80 seconds. At unsignalized intersections, average delays exceed 50 seconds.

The analysis was performed using the HCM 6<sup>th</sup> Edition module in the Synchro 10 software (version 10.1.2.20). The LOS and 95<sup>th</sup> percentile queue were reported from the HCM 6<sup>th</sup> Edition module.

## **D2. Intersection Operations**

The Year 2019 existing and Year 2019 build (with proposed Froedtert Clinic) traffic volumes were analyzed using the existing transportation detail shown in [Exhibit 3](#) and the existing traffic signal timings, which were obtained from the City of Waukesha. The traffic signal timings are included in [Appendix B](#) of this memorandum.

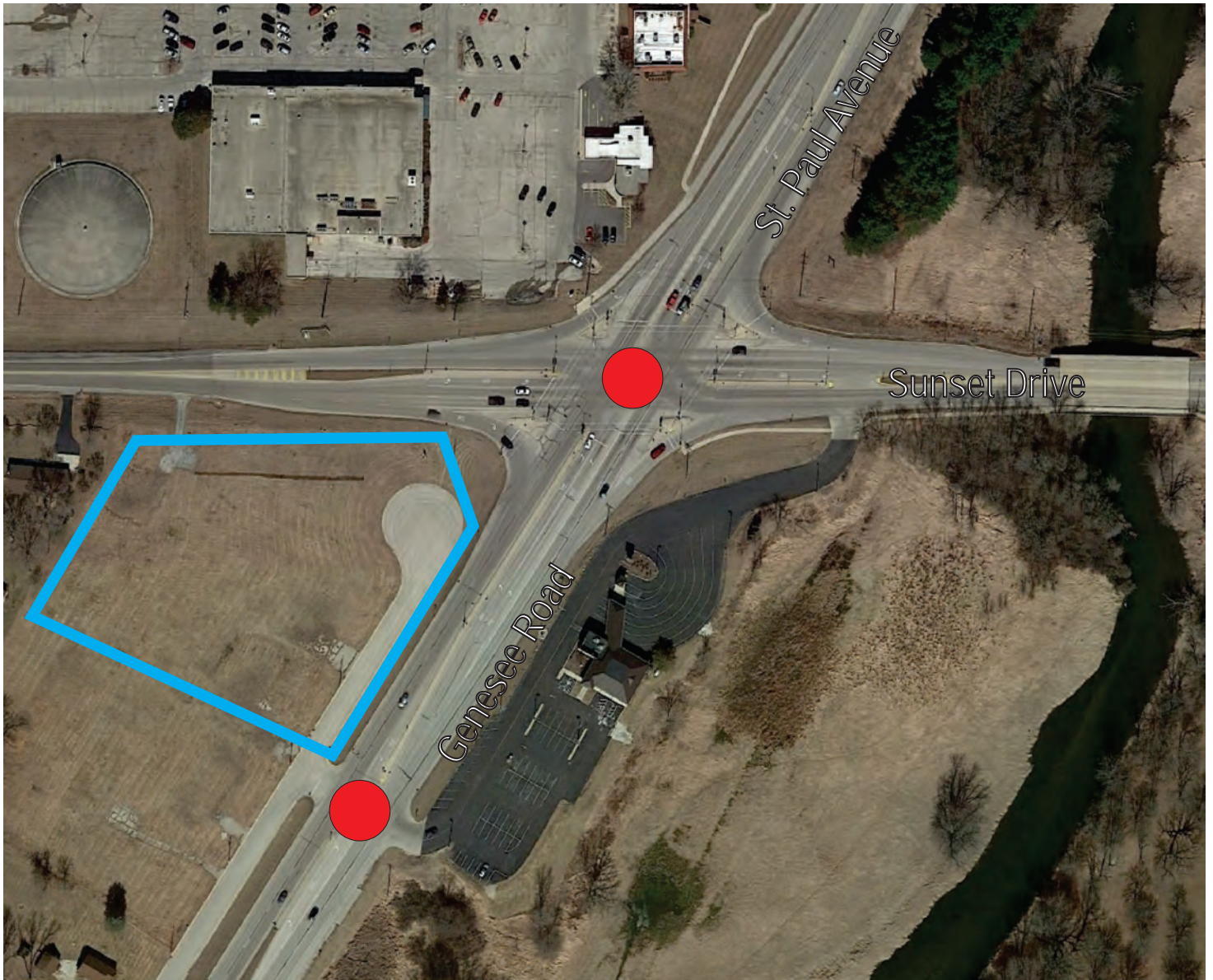
As shown in [Exhibit 8](#), all movements at the study area intersections are expected to operate at LOS D or better conditions with the full build of the proposed Froedtert Clinic with no geometric modifications and no modifications to the signal phasing or timing plans. Also, all queues are expected to be adequately stored within the existing turn lanes.

All analysis outputs are included in [Appendices C & D](#).

## **PART E – CONCLUSION**



All movements are expected to operate safely and efficiently upon full build and operation of the Froedtert Clinic with no modifications to the existing roadway network.

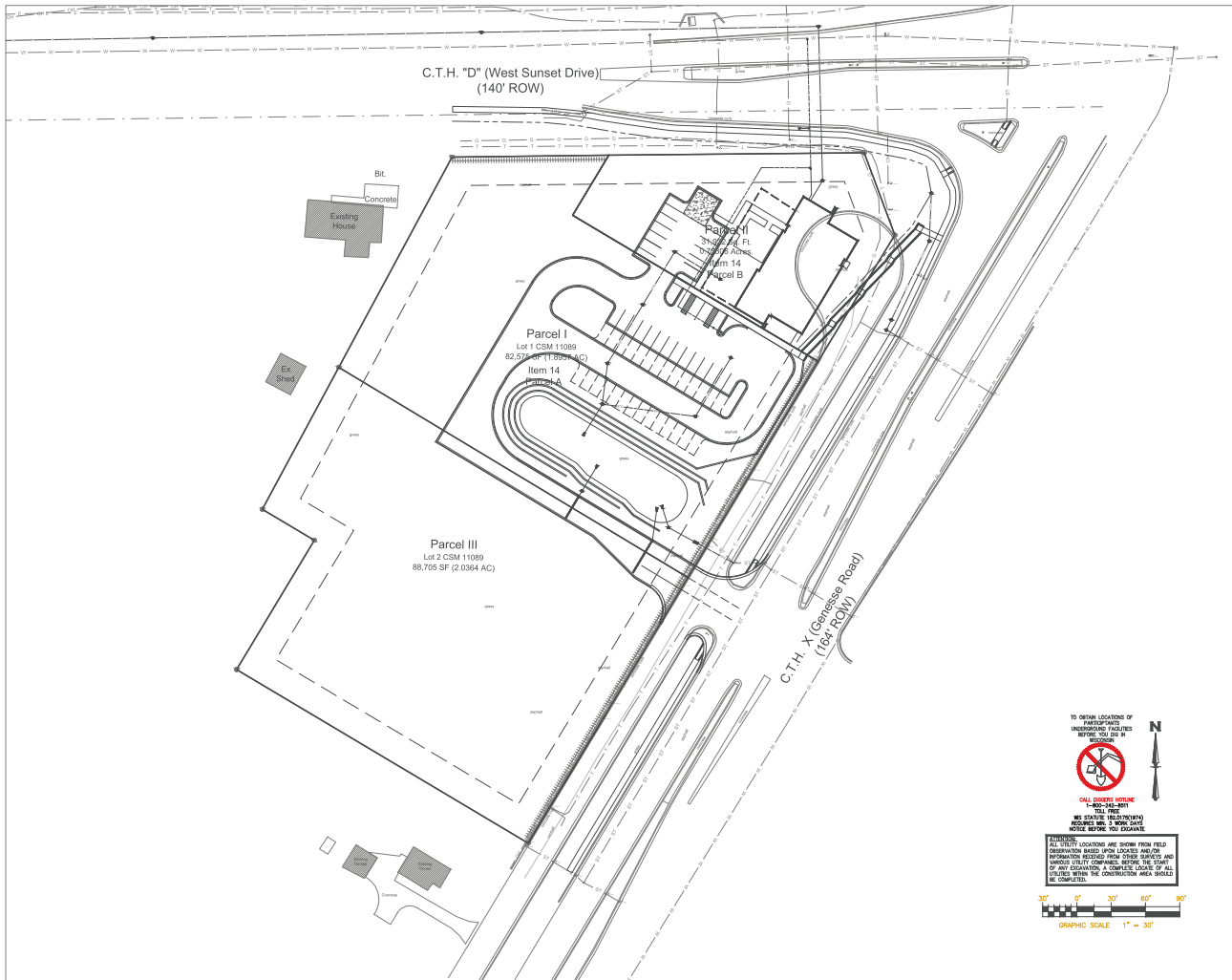
Should any questions or comments arise, please feel free to contact Christian R. Sternke, P.E., at 262-336-1892 or [csternke@tadi-us.com](mailto:csternke@tadi-us.com), or John Bieberitz, P.E. PTOE, at 262-377-1845 or [jbieberitz@tadi-us.com](mailto:jbieberitz@tadi-us.com).



Source: GoogleEarth, accessed 2-5-2019

**LEGEND**

-  Study Area Intersection
-  Site Location






INITIAL EROSION CONTROL PLAN

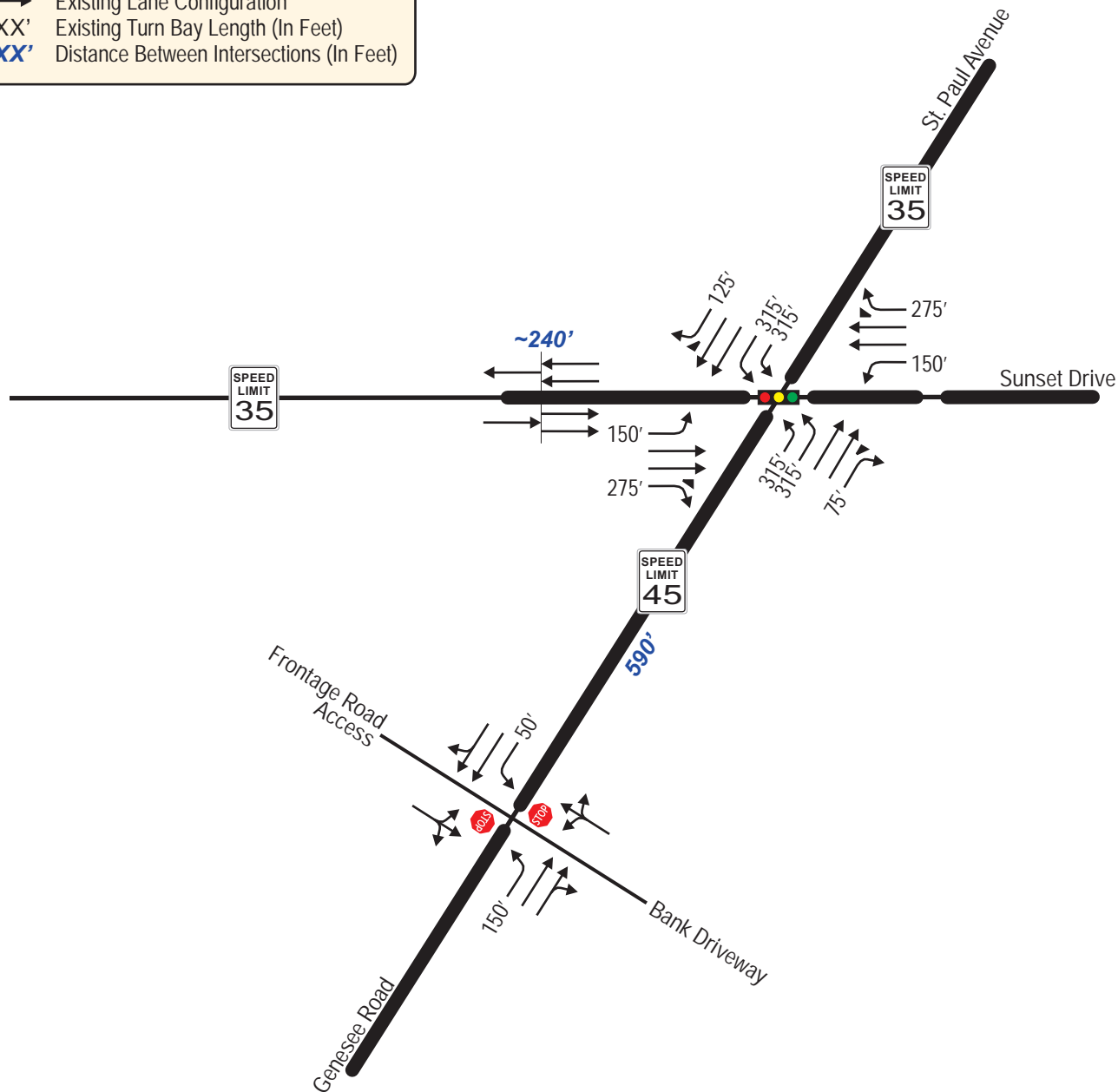
C100



NOT TO SCALE

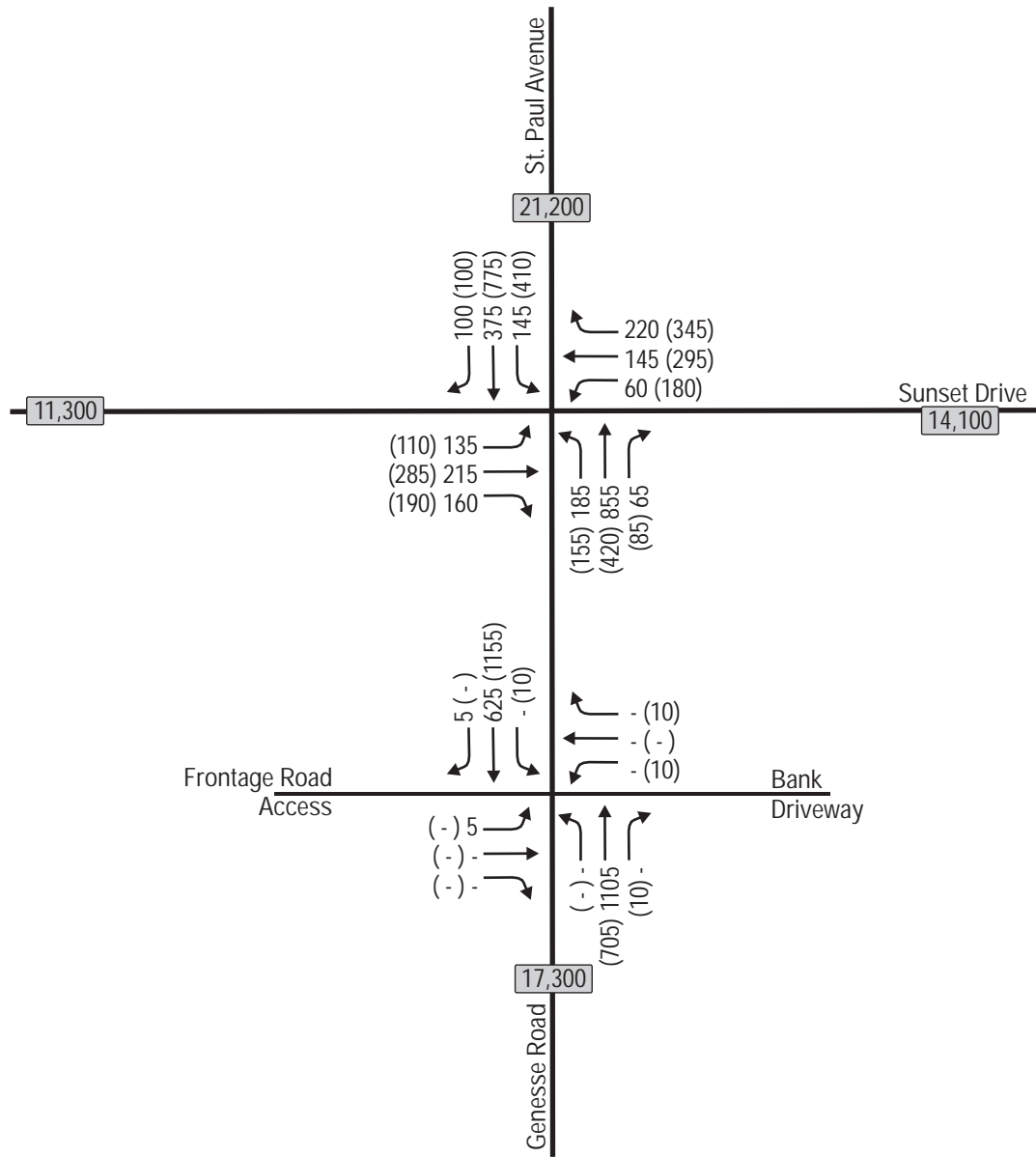
### LEGEND

-  Traffic Signal
-  Stop Sign
-  Existing Lane Configuration
- XX'** Existing Turn Bay Length (In Feet)
- XX'** Distance Between Intersections (In Feet)





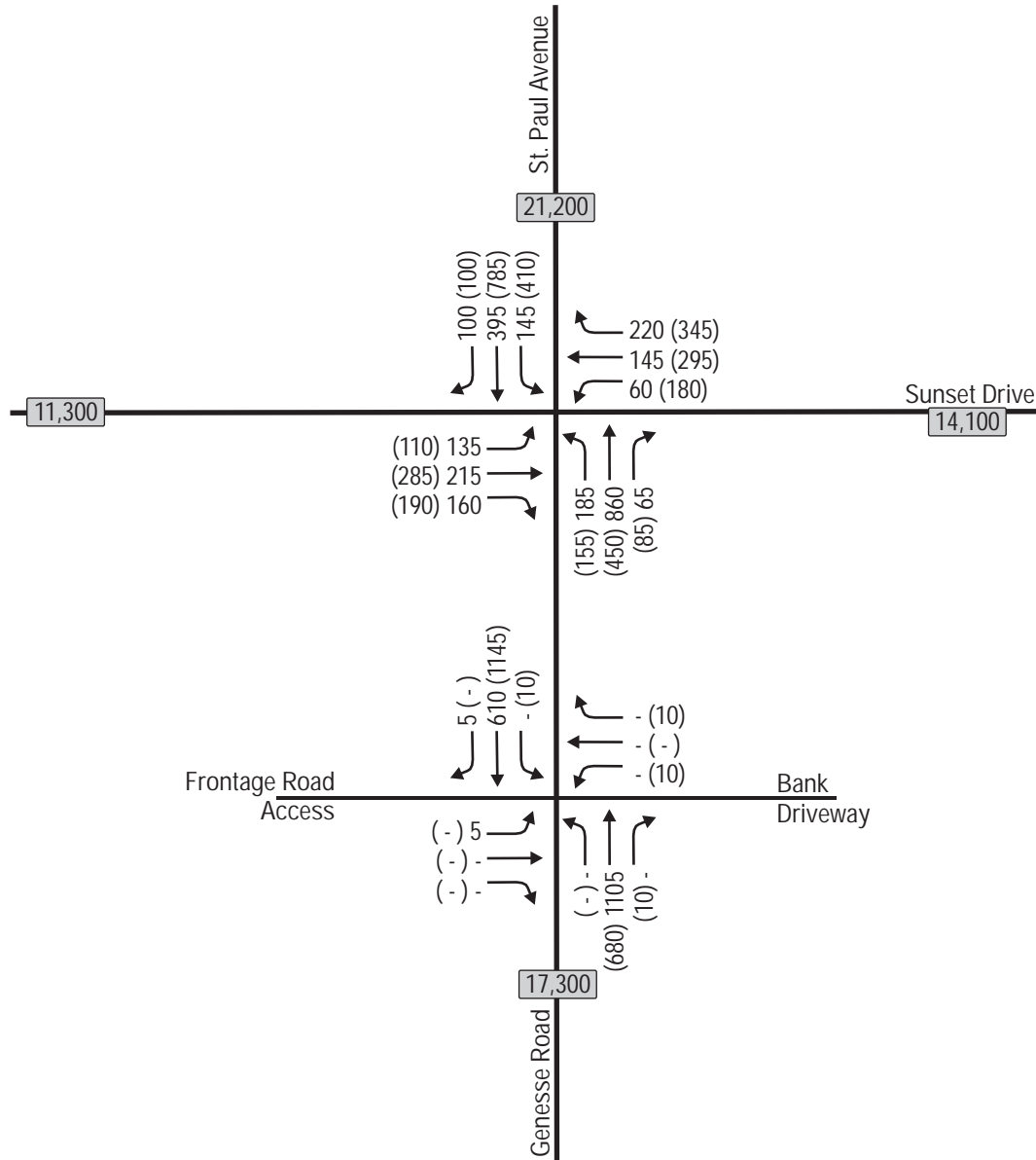
LEGEND	
XX	AM Peak Hour Volumes (7:00-8:00 AM)
(XX)	PM Peak Hour Volumes (4:30-5:30 PM)
-	Negligible Traffic Volumes (Fewer than 2 vph)
X,XXX	2018 Annual Average Daily Traffic (AADT)







LEGEND	
XX	AM Peak Hour Volumes (7:00-8:00 AM)
(XX)	PM Peak Hour Volumes (4:30-5:30 PM)
-	Negligible Traffic Volumes (Fewer than 2 vph)
X,XXX	2018 Annual Average Daily Traffic (AADT)



**Exhibit 5  
Froedtert Clinic On-Site Trip Generation Table**

Land Use	ITE Code	Proposed Size	Weekday Daily	AM Peak			PM Peak		
				In	Out	Total	In	Out	Total
Clinic	630	5,850 SF	220 (38.16)	15 (78%)	5 (22%)	20 (3.69)	5 (29%)	15 (71%)	20 (3.28)
<b>Total New Trips</b>			<b>220</b>	<b>15</b>	<b>5</b>	<b>20</b>	<b>5</b>	<b>15</b>	<b>20</b>

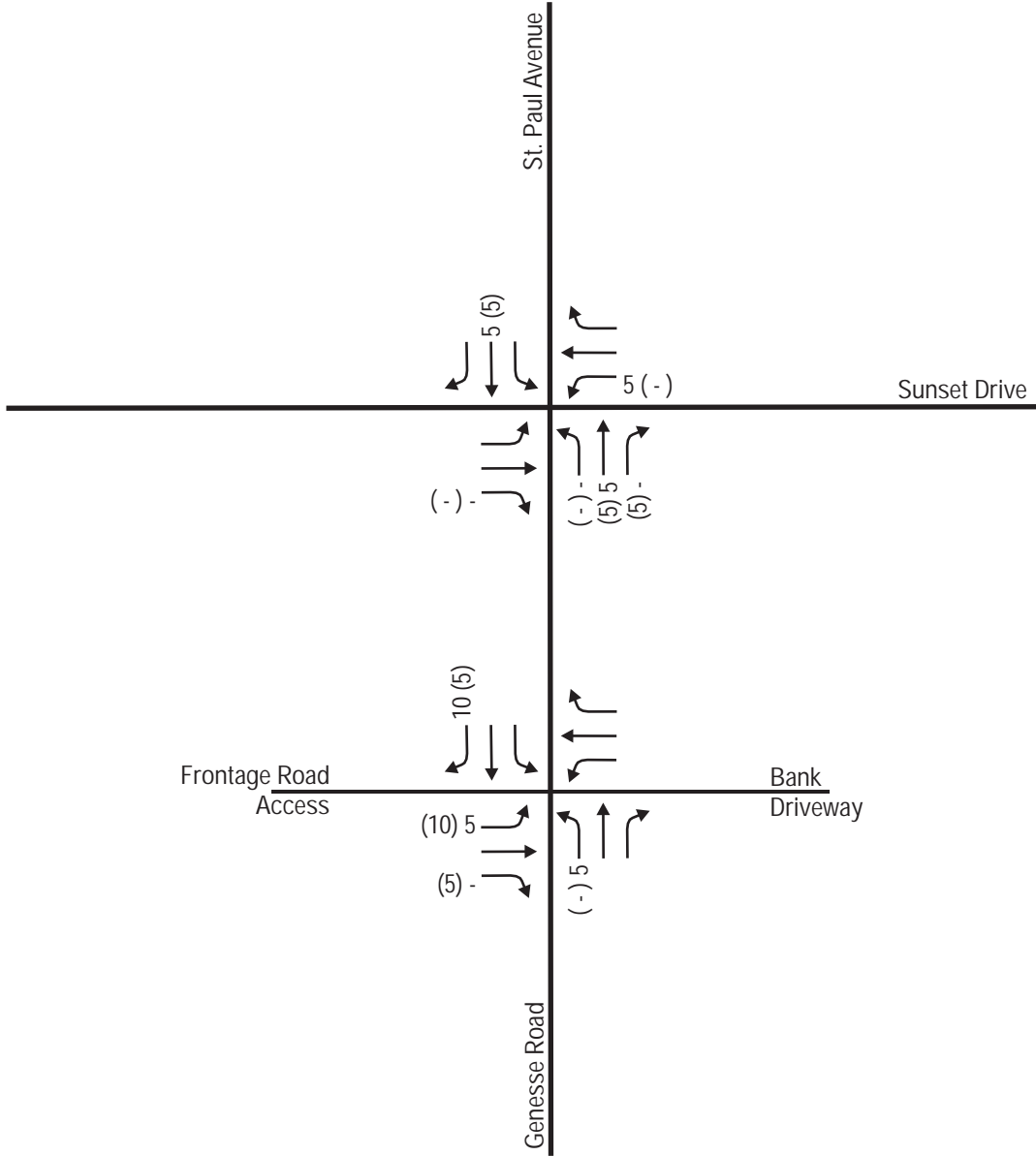
Trip rates from ITE *Trip Generation Manual, 10<sup>th</sup> Edition*

**TRIP DISTRIBUTION**

East on Sunset Drive	20%	40	5	0	0	5
West on Sunset Drive	20%	40	0	0	0	0
North on St. Paul Avenue	35%	80	5	5	5	5
South on Genesee Road	25%	60	5	0	0	5
	<b>100%</b>	<b>220</b>	<b>15</b>	<b>5</b>	<b>5</b>	<b>15</b>

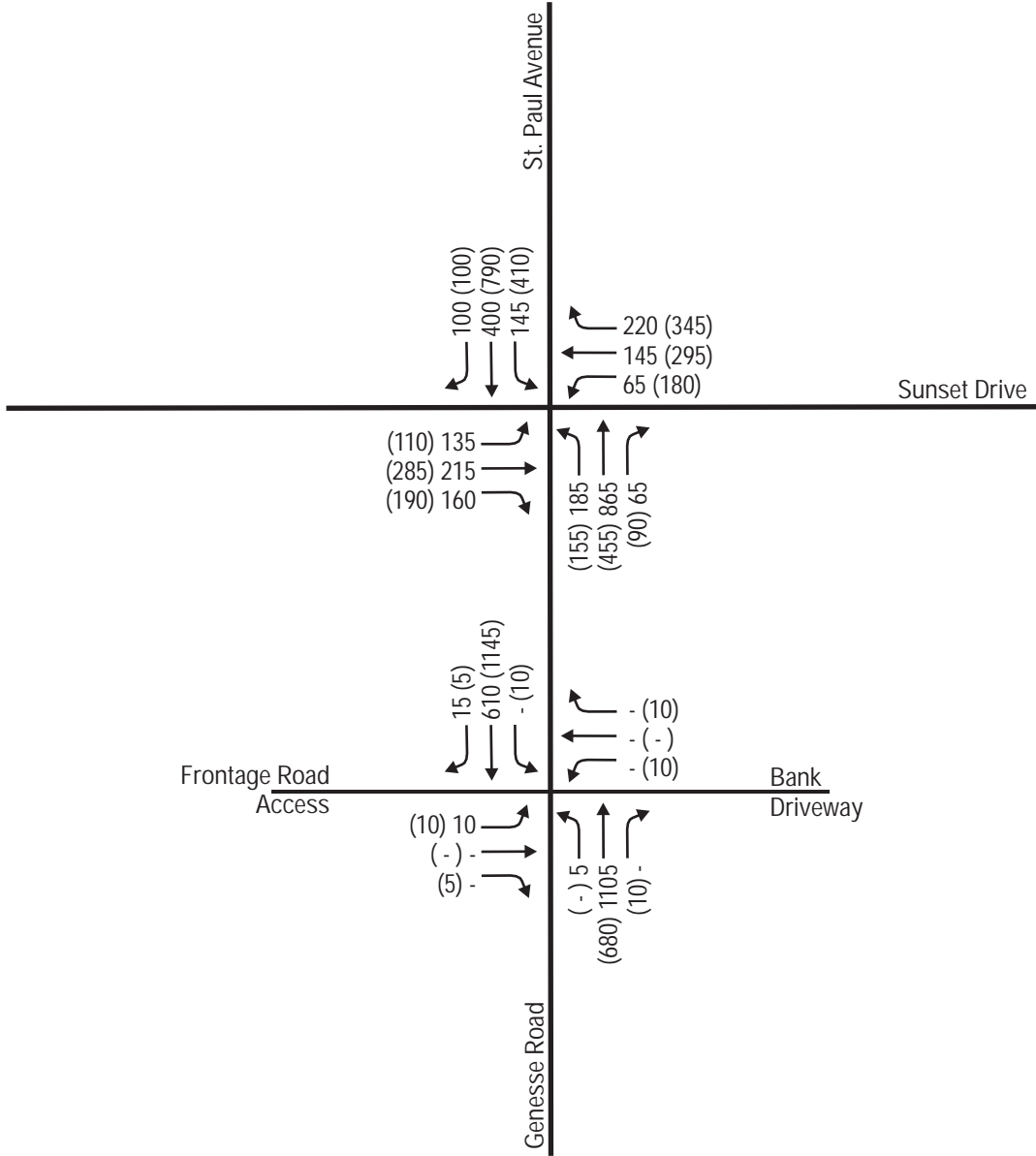


LEGEND	
XX	AM Peak Hour Volumes (7:00-8:00 AM)
(XX)	PM Peak Hour Volumes (4:30-5:30 PM)
-	Negligible Traffic Volumes (Fewer than 2 vph)





LEGEND	
XX	AM Peak Hour Volumes (7:00-8:00 AM)
(XX)	PM Peak Hour Volumes (4:30-5:30 PM)
-	Negligible Traffic Volumes (Fewer than 2 vph)



**Year 2019 Existing Traffic Operations & Queues  
Without Modifications**

Intersection	Peak Hour		Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Node 100: Genesee Road/St. Paul Avenue & Sunset Drive (Traffic Signal)	AM	LOS	C	C	C	C	C	C	D	C	B	C	B	B
		Queue	95	90	95	50	65	95	80	305	40	65	125	50
	PM	LOS	C	C	C	C	C	C	D	C	B	D	C	B
		Queue	75	110	110	120	115	125	70	165	55	160	275	55
Node 110: Genesee Road & Frontage Road Access/Bank Driveway (Two-Way Stop)	AM	LOS	C			C			A	*	*	B	*	*
		Queue	5			0			0	*	*	0	*	*
	PM	LOS	C			C			B	*	*	A	*	*
		Queue	0			5			0	*	*	0	*	*

(--) indicates a movement that is prohibited or does not exist; (\*) indicates a freeflow movement.  
Queue is maximum of the 50th & 95th percentile queue, measured in feet.

**Year 2019 Build Traffic Operations & Queues  
Without Modifications**

Intersection	Peak Hour		Level of Service per Movement by Approach											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Node 100: Genesee Road/St. Paul Avenue & Sunset Drive (Traffic Signal)	AM	LOS	C	C	C	C	C	C	D	C	B	C	B	B
		Queue	95	90	95	50	65	95	80	310	40	65	125	50
	PM	LOS	C	C	C	C	C	C	D	C	B	D	C	B
		Queue	75	110	110	120	115	125	70	170	55	160	280	55
Node 110: Genesee Road & Frontage Road Access/Bank Driveway (Two-Way Stop)	AM	LOS	C			C			A	*	*	B	*	*
		Queue	5			0			0	*	*	0	*	*
	PM	LOS	C			C			B	*	*	A	*	*
		Queue	10			5			0	*	*	0	*	*

(--) indicates a movement that is prohibited or does not exist; (\*) indicates a freeflow movement.  
Queue is maximum of the 50th & 95th percentile queue, measured in feet.

# **APPENDIX A**

## **Existing Traffic Counts**

# Intersection Traffic Volume Report

Count Basics		Version 2013.14.1		Page 1 of 13	
Start Date:	Monday, February 04, 2019	Weekday	Schools in Session		
Total Number of Hours Counted:	5	Non-Holiday	No Special Events		

## Base Information, Observed (5) Hour and Estimated (24) Hour Volume Summaries

Intersection of: **Genesee Rd - CTH D and Sunset Dr - CTH X**



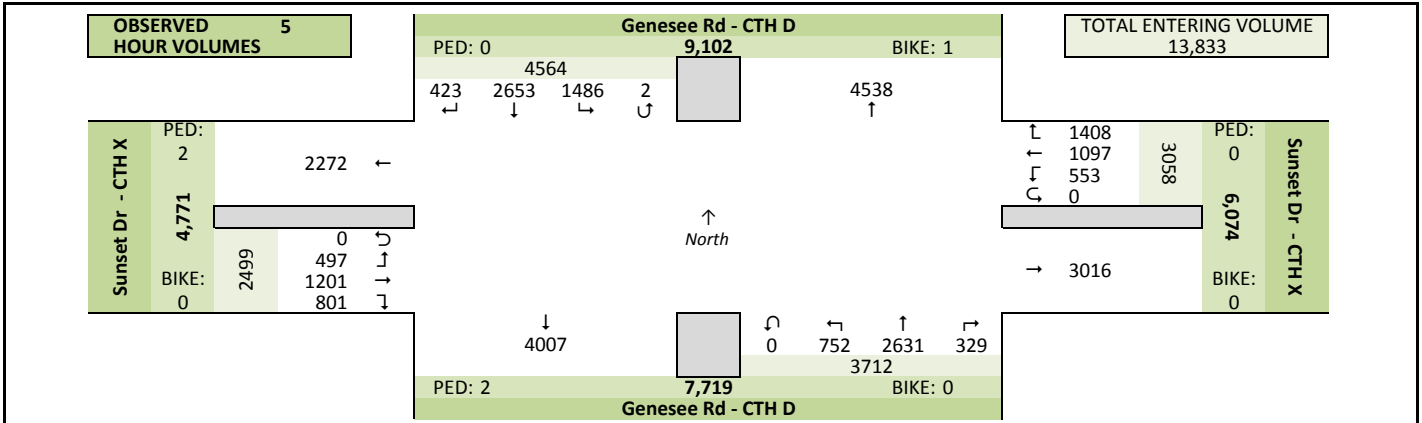
### Site Information

Municipality	Waukesha		
County	Waukesha	WisDOT Region	SE
Traffic Control	Traffic Signal		
Roadway Names	North Direction ↑		
North Leg	Genesee Rd - CTH D		
East Leg	Sunset Dr - CTH X		
South Leg	Genesee Rd - CTH D		
West Leg	Sunset Dr - CTH X		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementary school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None		

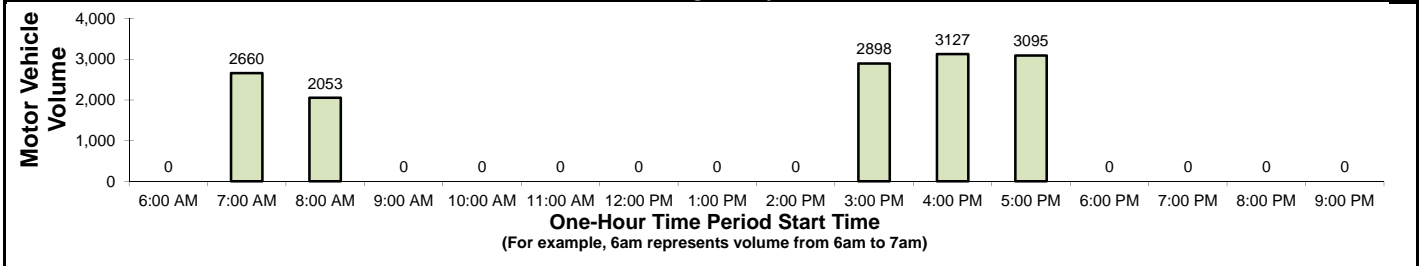
### Count Information

Hrs Counted:	7:00 AM-9:00 AM and 3:00 PM-6:00 PM		
1st Day of Count	Monday, February 04, 2019		Weather
AM Peak Period	Wednesday, February 13, 2019		Clear & Dry
Midday Peak Period			
PM Peak Period	Monday, February 04, 2019		Clear & Dry
Calculated Peak Hours			
AM	7:00-8:00am	MD	PM 4:30-5:30pm
Peak Hours Selected for Analysis			
AM	7:00-8:00am	MD	PM 4:30-5:30pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors		
Count Expansion Group	(2) Urban Arterials & Collectors		
Daily/Seasonal Adjustment Factor	1.005	Count Expansion Factor	2.620
Company Name	TADI		Manual Adj. 1.000
Observers	AM Peak Period	Amy Scheuerlein, Wendy Picard	
	Midday Peak Period		
	PM Peak Period	Amy Scheuerlein, Wendy Picard	
Comments	2017 DOT Seasonal Factors		

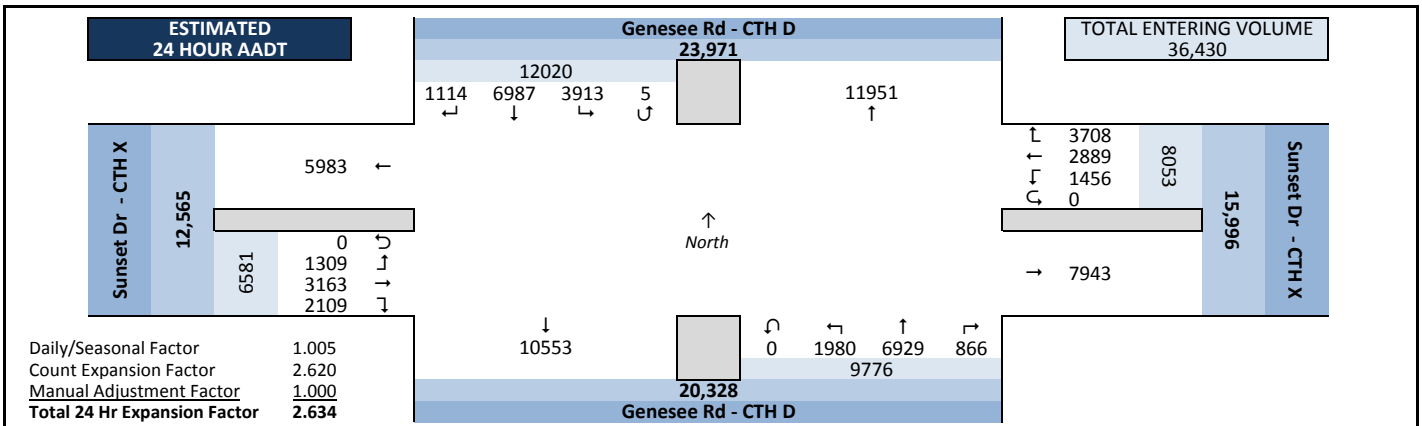
### Observed 5 Hour Volume Summary



### Total Entering Hourly Volume



### Estimated 24 Hour AADT



# Intersection Traffic Volume Report

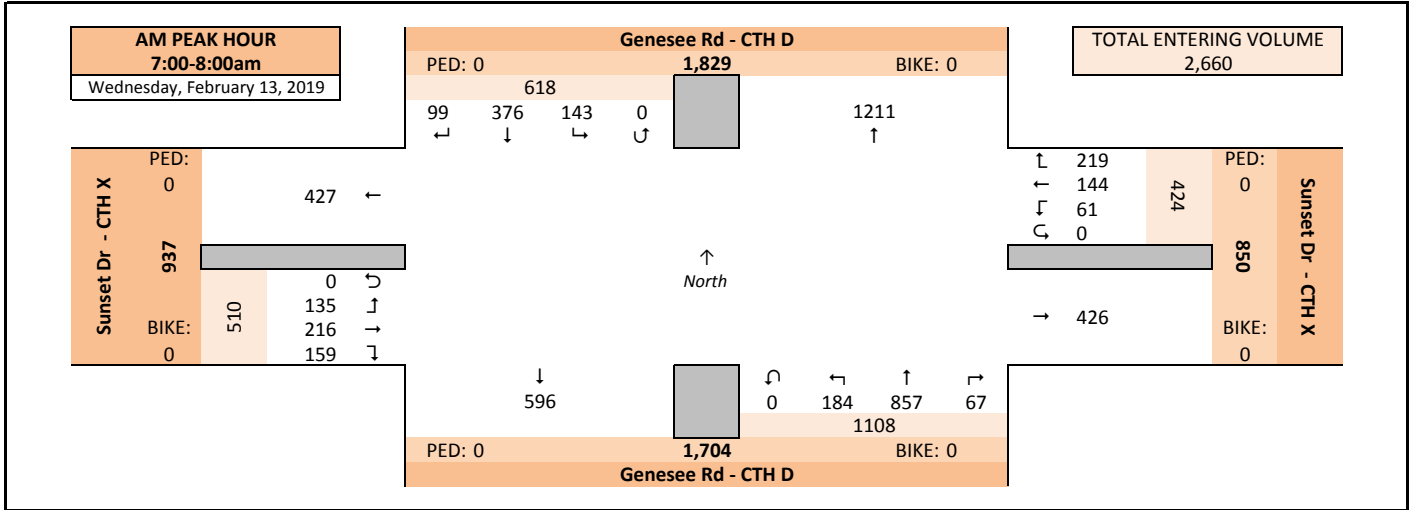
<b>Count Basics</b>		<b>Page 2 of 13</b>	
Start Date:	Monday, February 04, 2019	Weekday	Schools in Session
Total Number of Hours Counted:	5	Non-Holiday	No Special Events

## Peak Hour Volume Graphical Summary

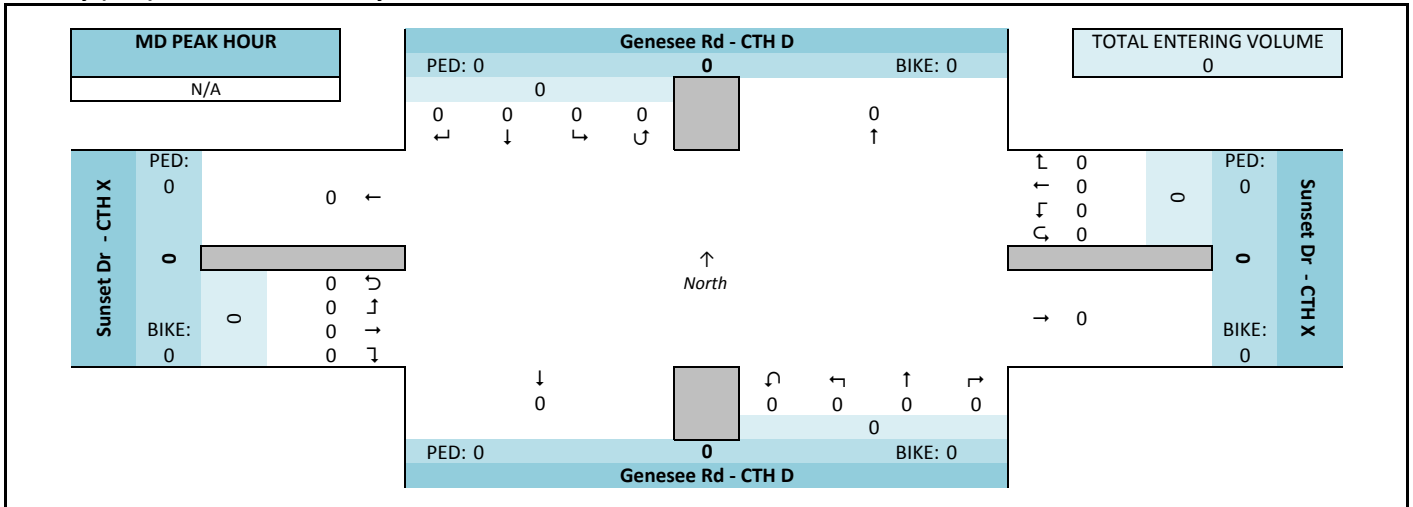
Genesee Rd - CTH D and Sunset Dr - CTH X



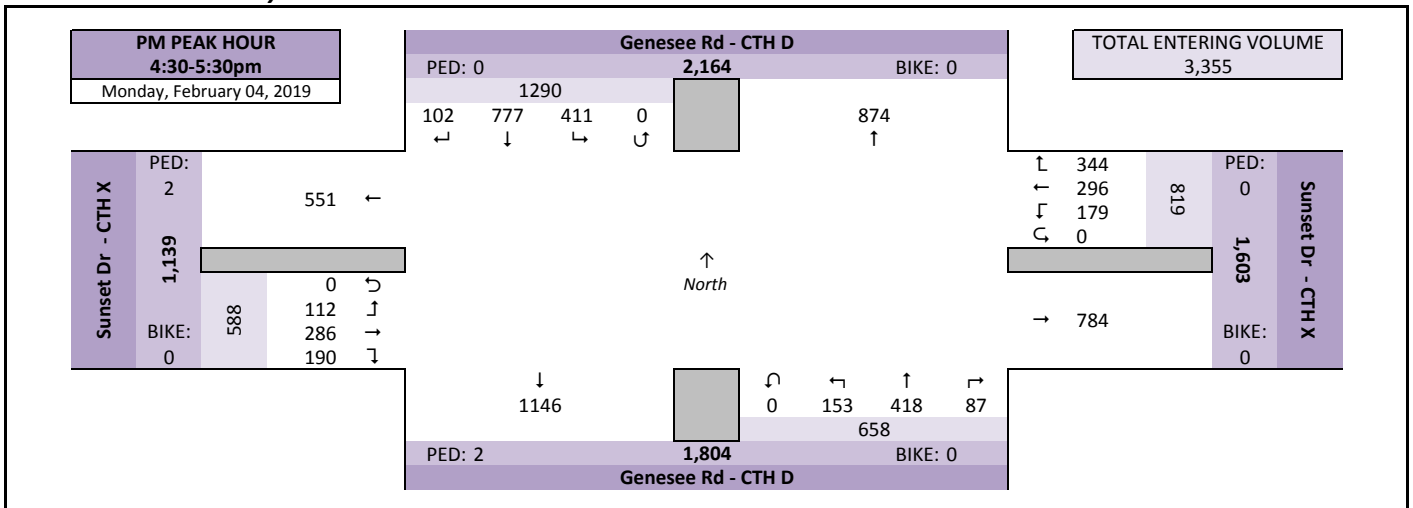
### AM Peak Hour Summary



### Midday (MD) Peak Hour Summary



### PM Peak Hour Summary



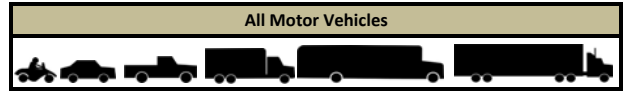


# Intersection Traffic Volume Report

<b>Count Basics</b>		<b>Page 3 of 13</b>	
Start Date:	Monday, February 04, 2019	Weekday	Schools in Session
Total Number of Hours Counted:	5	Non-Holiday	No Special Events

## Peak Hour Volume Summary

Genesee Rd - CTH D and Sunset Dr - CTH X



### Peak Hour Volumes, Truck Percentages, and PHFs

Wednesday, February 13, 2019		From North					From East					From South					From West					Totals
		Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X					
AM Peak Hour	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
	7:00 AM	29	66	26	0	121	55	38	18	0	111	16	189	25	0	230	42	52	37	0	131	593
	7:15 AM	30	93	28	0	151	46	29	16	0	91	16	206	60	0	282	43	60	45	0	148	672
	7:30 AM	18	90	45	0	153	63	41	14	0	118	18	248	49	0	315	34	62	33	0	129	715
	7:45 AM	22	127	44	0	193	55	36	13	0	104	17	214	50	0	281	40	42	20	0	102	680
	Peak Hour Volume	99	376	143	0	618	219	144	61	0	424	67	857	184	0	1108	159	216	135	0	510	2660
	Rounded Hourly Volume	100	375	145	0	620	220	145	60	0	425	65	855	185	0	1105	160	215	135	0	510	2660
	% Single Unit Trucks	8.1	4.0	2.8	0.0	4.4	5.0	4.9	4.9	0.0	5.0	6.0	2.0	4.3	0.0	2.6	5.0	2.3	14.1	0.0	6.3	4.1
	% Heavy Trucks	1.0	0.5	1.4	0.0	0.8	0.0	0.0	1.6	0.0	0.2	0.0	0.2	0.5	0.0	0.3	0.6	0.5	0.7	0.0	0.6	0.5
	% Trucks (Total)	9.1	4.5	4.2	0.0	5.2	5.0	4.9	6.6	0.0	5.2	6.0	2.2	4.9	0.0	2.9	5.7	2.8	14.8	0.0	6.9	4.5
	Peak Hour Factor (PHF)	0.82	0.74	0.79	0.00	0.80	0.87	0.88	0.85	0.00	0.90	0.93	0.86	0.77	0.00	0.88	0.92	0.87	0.75	0.00	0.86	0.93

N/A		From North					From East					From South					From West					Totals
		Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X					
Midday (MD) Peak Hour	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Monday, February 04, 2019		From North					From East					From South					From West					Totals
		Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X					
PM Peak Hour	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
	4:30 PM	25	188	80	0	293	82	88	50	0	220	16	99	25	0	140	44	70	16	0	130	783
	4:45 PM	28	197	109	0	334	83	61	30	0	174	37	111	35	0	183	41	69	26	0	136	827
	5:00 PM	28	185	102	0	315	81	82	53	0	216	13	101	48	0	162	54	74	33	0	161	854
	5:15 PM	21	207	120	0	348	98	65	46	0	209	21	107	45	0	173	51	73	37	0	161	891
	Peak Hour Volume	102	777	411	0	1290	344	296	179	0	819	87	418	153	0	658	190	286	112	0	588	3355
	Rounded Hourly Volume	100	775	410	0	1285	345	295	180	0	820	85	420	155	0	660	190	285	110	0	585	3350
	% Single Unit Trucks	4.9	0.5	0.0	0.0	0.7	1.7	1.0	1.1	0.0	1.3	2.3	1.0	1.3	0.0	1.2	5.3	1.7	1.8	0.0	2.9	1.3
	% Heavy Trucks	1.0	0.1	0.2	0.0	0.2	0.3	0.0	0.6	0.0	0.2	0.0	0.2	0.7	0.0	0.3	0.0	0.3	0.0	0.0	0.2	0.2
	% Trucks (Total)	5.9	0.6	0.2	0.0	0.9	2.0	1.0	1.7	0.0	1.6	2.3	1.2	2.0	0.0	1.5	5.3	2.1	1.8	0.0	3.1	1.6
	Peak Hour Factor (PHF)	0.91	0.94	0.86	0.00	0.93	0.88	0.84	0.84	0.00	0.93	0.59	0.94	0.80	0.00	0.90	0.88	0.97	0.76	0.00	0.91	0.94

### Peak Hour Pedestrian and Bicyclist Volumes

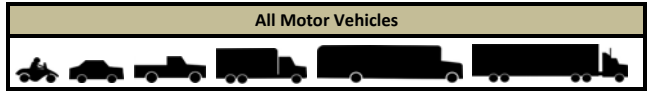
Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		Genesee Rd - CTH D			Sunset Dr - CTH X			Genesee Rd - CTH D			Sunset Dr - CTH X			
15-Minute Start Time		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:30 PM	0	0	0	0	0	0	1	0	1	1	0	1	
	4:45 PM	0	0	0	0	0	0	1	0	1	1	0	1	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	2	0	2	2	0	

# Intersection Traffic Volume Report

<b>Count Basics</b>		<b>Page 4 of 13</b>	
Start Date:	Monday, February 04, 2019	Weekday	Schools in Session
Total Number of Hours Counted:	5	Non-Holiday	No Special Events

## Hourly Volume Summary - Motor Vehicle Data

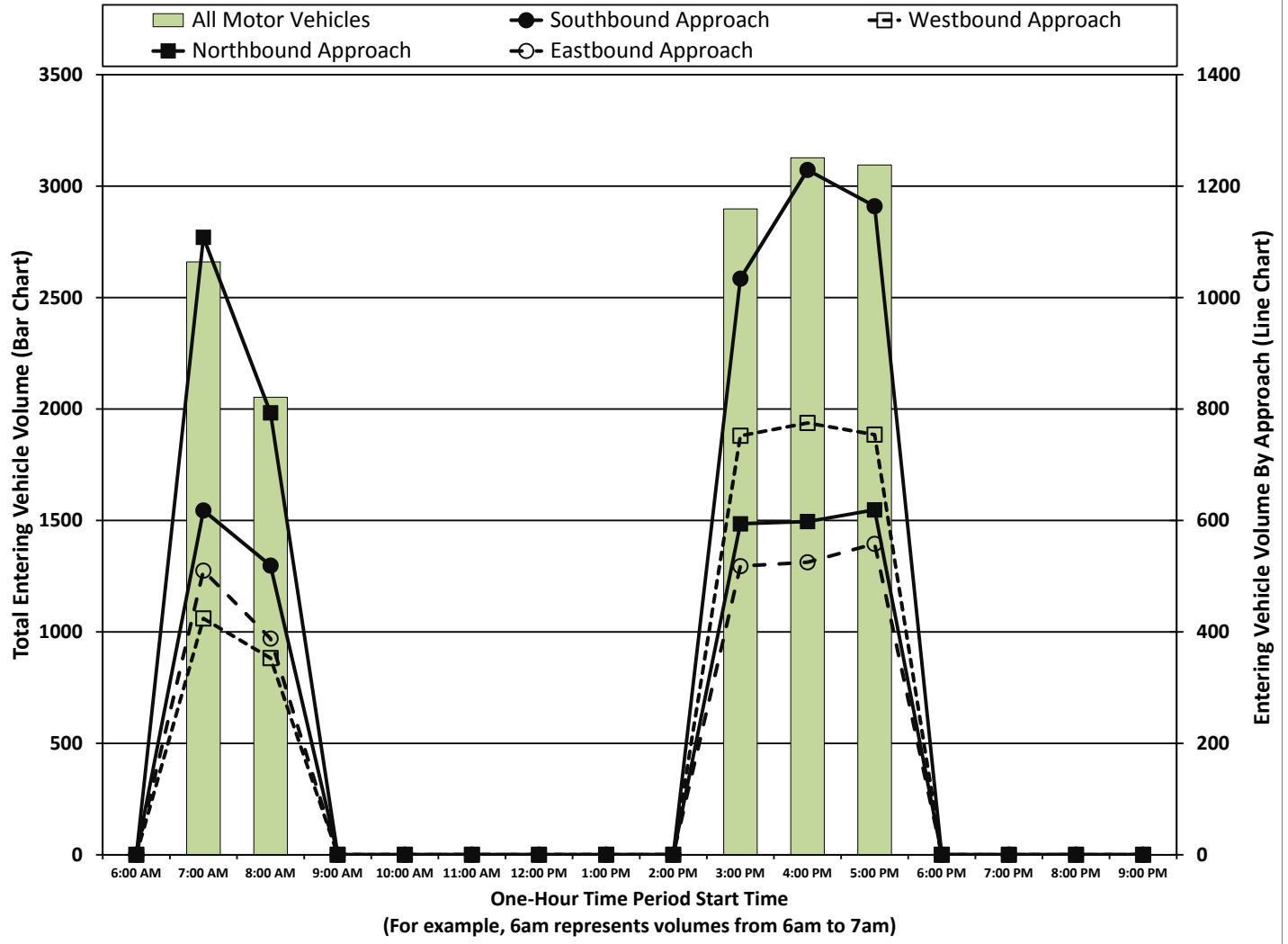
Genesee Rd - CTH D and Sunset Dr - CTH X



### One-Hour Motor Vehicle Data

One-Hour Time Period	From North					From East					From South					From West					Total Vehicle Volume	Directional Volume Totals			
	Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X						E/W	N/S		
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total					
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	99	376	143	0	618	219	144	61	0	424	67	857	184	0	1108	159	216	135	0	510	2660	934	1726		
8:00 AM	65	277	177	0	519	200	126	27	0	353	51	603	139	0	793	115	187	86	0	388	2053	741	1312		
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3:00 PM	74	588	370	2	1034	342	274	136	0	752	58	393	143	0	594	160	265	93	0	518	2898	1270	1628		
4:00 PM	105	743	381	0	1229	336	279	160	0	775	86	380	132	0	598	176	266	83	0	525	3127	1300	1827		
5:00 PM	80	669	415	0	1164	311	274	169	0	754	67	398	154	0	619	191	267	100	0	558	3095	1312	1783		
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Totals</b>	<b>423</b>	<b>2653</b>	<b>1486</b>	<b>2</b>	<b>4564</b>	<b>1408</b>	<b>1097</b>	<b>553</b>	<b>0</b>	<b>3058</b>	<b>329</b>	<b>2631</b>	<b>752</b>	<b>0</b>	<b>3712</b>	<b>801</b>	<b>1201</b>	<b>497</b>	<b>0</b>	<b>2499</b>	<b>13833</b>	<b>5557</b>	<b>8276</b>		

## Graphical Summary of Hourly Volumes







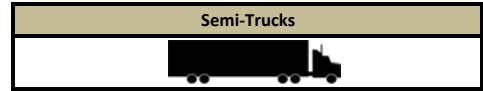


# Intersection Traffic Volume Report

<b>Count Basics</b>			<b>Page 8 of 13</b>
Start Date:	Monday, February 04, 2019	Weekday	Schools in Session
Total Number of Hours Counted:	5	Non-Holiday	No Special Events

## 15-Minute Semi-Truck Data

Genesee Rd - CTH D and Sunset Dr - CTH X



### 15-Minute Semi-Truck Data

15-Minute Time Period	From North					From East					From South					From West					15-Min Totals	Hourly Sum	
	Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X							
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	1	1	1	0	3	0	0	0	0	0	0	2	0	0	2	1	1	0	0	2	7	12	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	10	
7:30 AM	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	2	2	10	
7:45 AM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2	2	11	
8:00 AM	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	0	1	0	0	1	5	14	
8:15 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	14	
8:30 AM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3	14	
8:45 AM	0	1	0	0	1	0	0	1	0	1	1	1	0	1	2	1	0	0	0	1	5	14	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 PM	0	1	0	0	1	2	1	0	0	3	0	0	1	0	1	0	0	0	0	5	20		
3:15 PM	0	1	1	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	4	19			
3:30 PM	0	1	1	0	2	0	0	0	0	0	1	1	0	2	2	1	0	0	7	20			
3:45 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	1	1	0	0	1	4	15			
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	1	0	0	4	13			
4:15 PM	0	0	1	0	1	1	0	1	0	2	0	1	0	1	0	1	0	0	1	5	12		
4:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	2	8			
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	2	7			
5:00 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	0	1	3	7		
5:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7		
5:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	7		
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0	2	2	7		
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Totals</b>	<b>3</b>	<b>10</b>	<b>7</b>	<b>0</b>	<b>20</b>	<b>4</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>11</b>	<b>5</b>	<b>9</b>	<b>6</b>	<b>0</b>	<b>20</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>66</b>		

### Peak Hour Semi-Truck Volume Summary

Hourly Time Period	From North					From East					From South					From West					Total Hourly Volume
	Genesee Rd - CTH D					Sunset Dr - CTH X					Genesee Rd - CTH D					Sunset Dr - CTH X					
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM 7:00 AM	1	2	1	0	4	0	0	1	0	1	1	2	0	0	3	0	1	1	0	2	10
MD 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:30 PM	1	2	1	0	4	2	0	1	0	3	2	1	0	0	3	3	2	0	0	5	15







# Intersection Traffic Volume Report

## 15-Minute Pedestrian and Bicyclist Data

Genesee Rd - CTH D and Sunset Dr - CTH X



### 15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period	Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			15-Min Totals	Hourly Sum
	Genesee Rd - CTH D			Sunset Dr - CTH X			Genesee Rd - CTH D			Sunset Dr - CTH X				
	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total		
Start Time														
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	1	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4
4:30 PM	0	0	0	0	0	0	1	0	1	1	0	1	2	4
4:45 PM	0	0	0	0	0	0	1	0	1	1	0	1	2	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>5</b>	

### Special Pedestrians

Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementary School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

# Intersection Traffic Volume Report

Count Basics		Version 2013.14.1		Page 1 of 13	
Start Date:	Tuesday, February 05, 2019	Weekday	Schools in Session		
Total Number of Hours Counted:	5	Non-Holiday	No Special Events		

## Base Information, Observed (5) Hour and Estimated (24) Hour Volume Summaries

Intersection of: **Genesee Rd - CTH D and Waukesha State Bank Drwy**



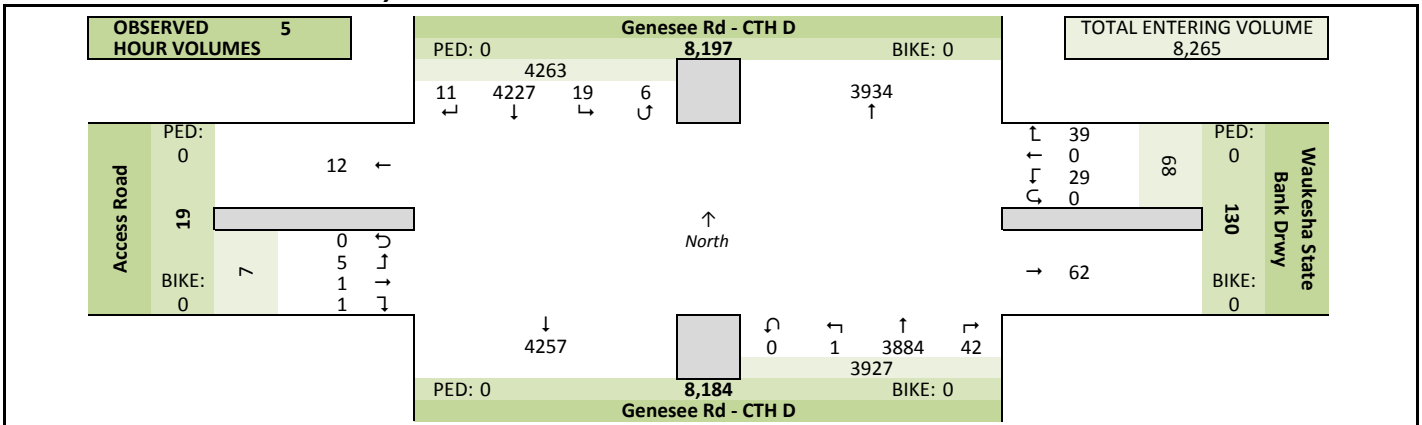
### Site Information

Municipality	Waukesha		
County	Waukesha	WisDOT Region	SE
Traffic Control	Partial Stop Control		
Roadway Names	North Direction ↑		
North Leg	Genesee Rd - CTH D		
East Leg	Waukesha State Bank Drwy		
South Leg	Genesee Rd - CTH D		
West Leg	Access Road		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
	Pre-school children	None	
	Elementary school age children	None	
	Visually impaired (white cane/helper dog)	None	
	Elderly/disabled (except wheelchairs)	None	
	Wheelchairs/electric scooters	None	
Other (describe)		None	None

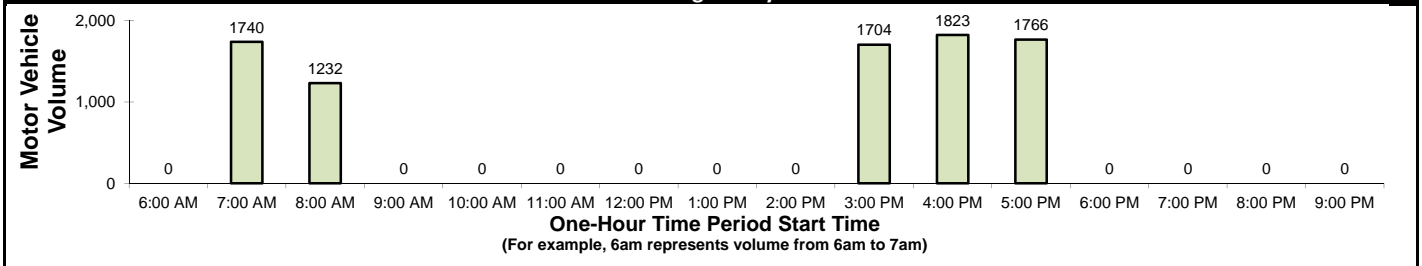
### Count Information

Hrs Counted:	7:00 AM-9:00 AM and 3:00 PM-6:00 PM		
1st Day of Count	Tuesday, February 05, 2019		Weather
AM Peak Period	Tuesday, February 05, 2019		Clear & Dry
Midday Peak Period			
PM Peak Period	Tuesday, February 05, 2019		Clear & Dry
Calculated Peak Hours			
	AM	7:00-8:00am	MD
			PM
			4:30-5:30pm
Peak Hours Selected for Analysis			
	AM	7:00-8:00am	MD
			PM
			4:30-5:30pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors		
Count Expansion Group	(2) Urban Arterials & Collectors		
Daily/Seasonal Adjustment Factor	1.000	Count Expansion Factor	2.620
Company Name	TADI		Manual Adj.
			1.000
Observers	AM Peak Period	Amy Scheuerlein	
	Midday Peak Period		
	PM Peak Period	Ron Andryk	
Comments	2017 DOT Seasonal Factors		

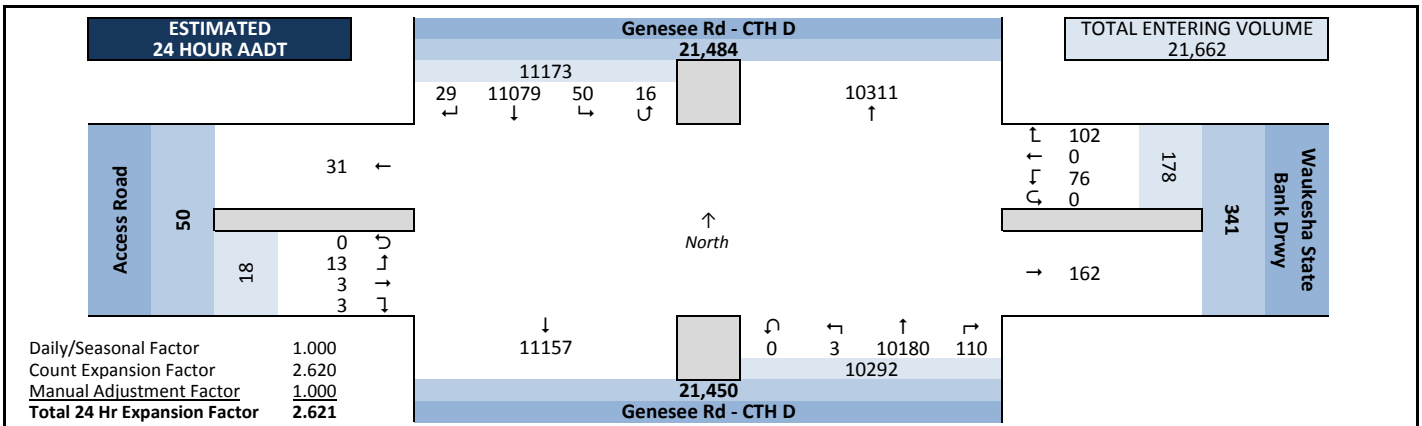
### Observed 5 Hour Volume Summary



### Total Entering Hourly Volume



### Estimated 24 Hour AADT



# Intersection Traffic Volume Report

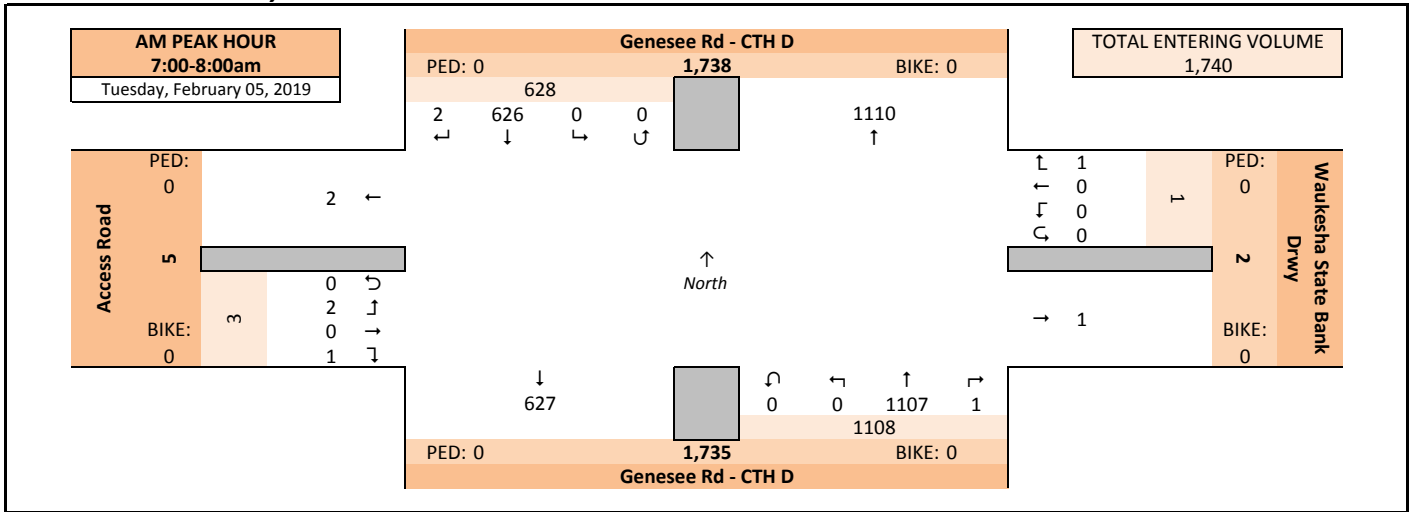
<b>Count Basics</b>		<b>Page 2 of 13</b>	
Start Date:	Tuesday, February 05, 2019	Weekday	Schools in Session
Total Number of Hours Counted: 5		Non-Holiday	No Special Events

## Peak Hour Volume Graphical Summary

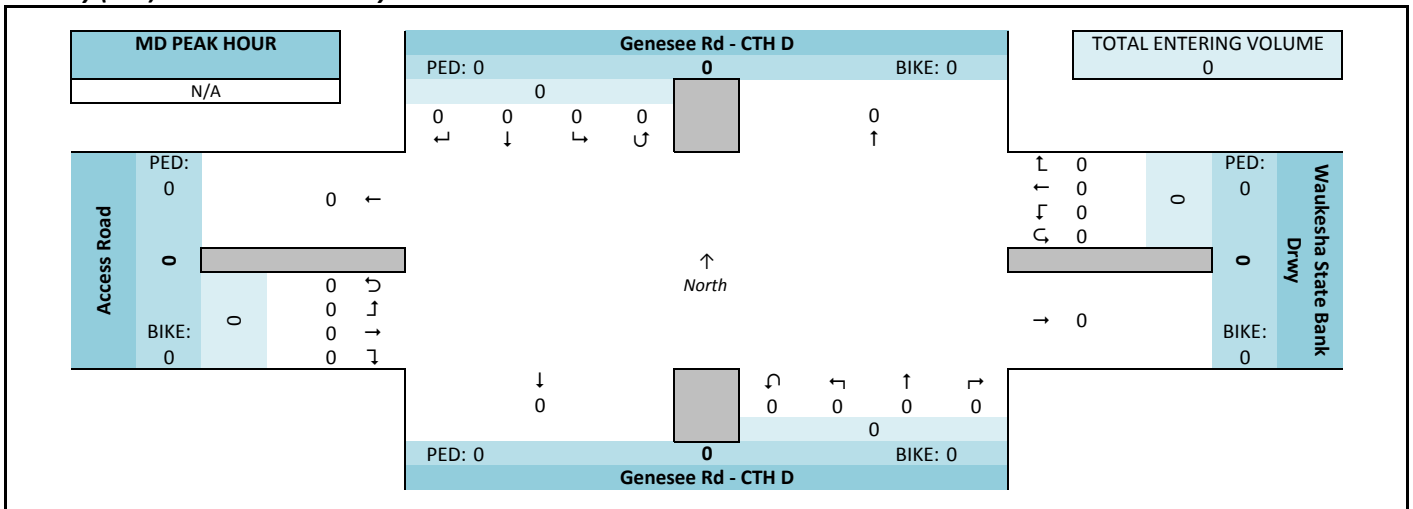
Genesee Rd - CTH D and Waukesha State Bank Drwy



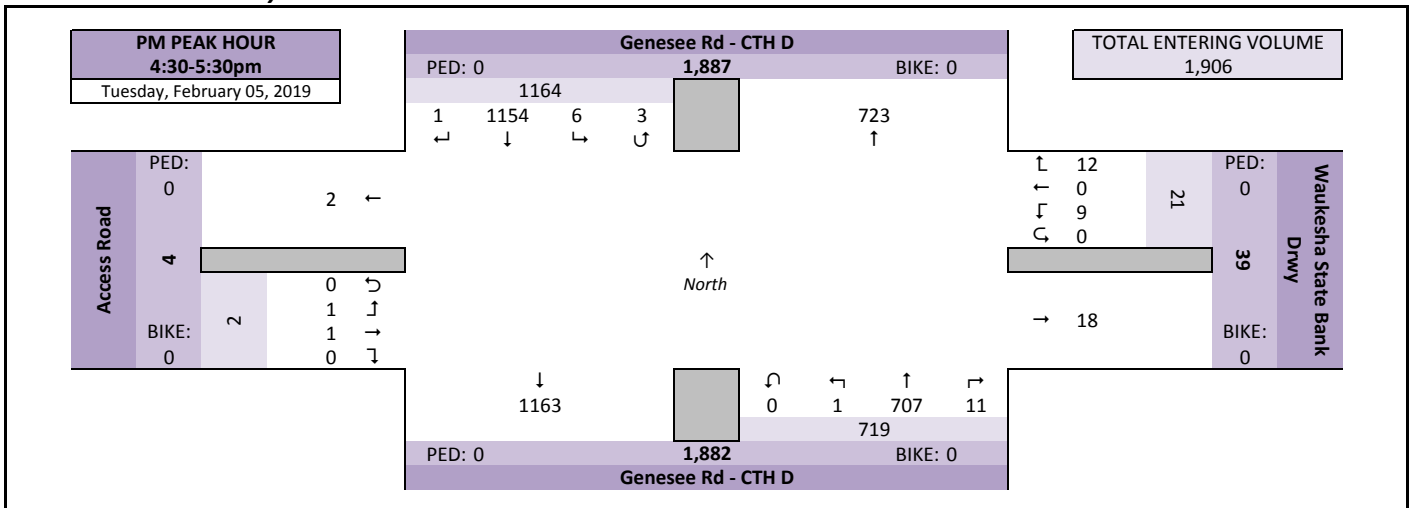
### AM Peak Hour Summary



### Midday (MD) Peak Hour Summary



### PM Peak Hour Summary



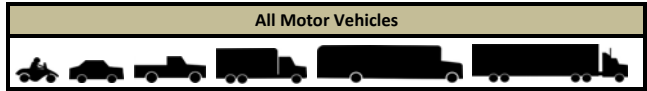


# Intersection Traffic Volume Report

<b>Count Basics</b>			<b>Page 4 of 13</b>
Start Date:	Tuesday, February 05, 2019	Weekday	Schools in Session
Total Number of Hours Counted:	5	Non-Holiday	No Special Events

## Hourly Volume Summary - Motor Vehicle Data

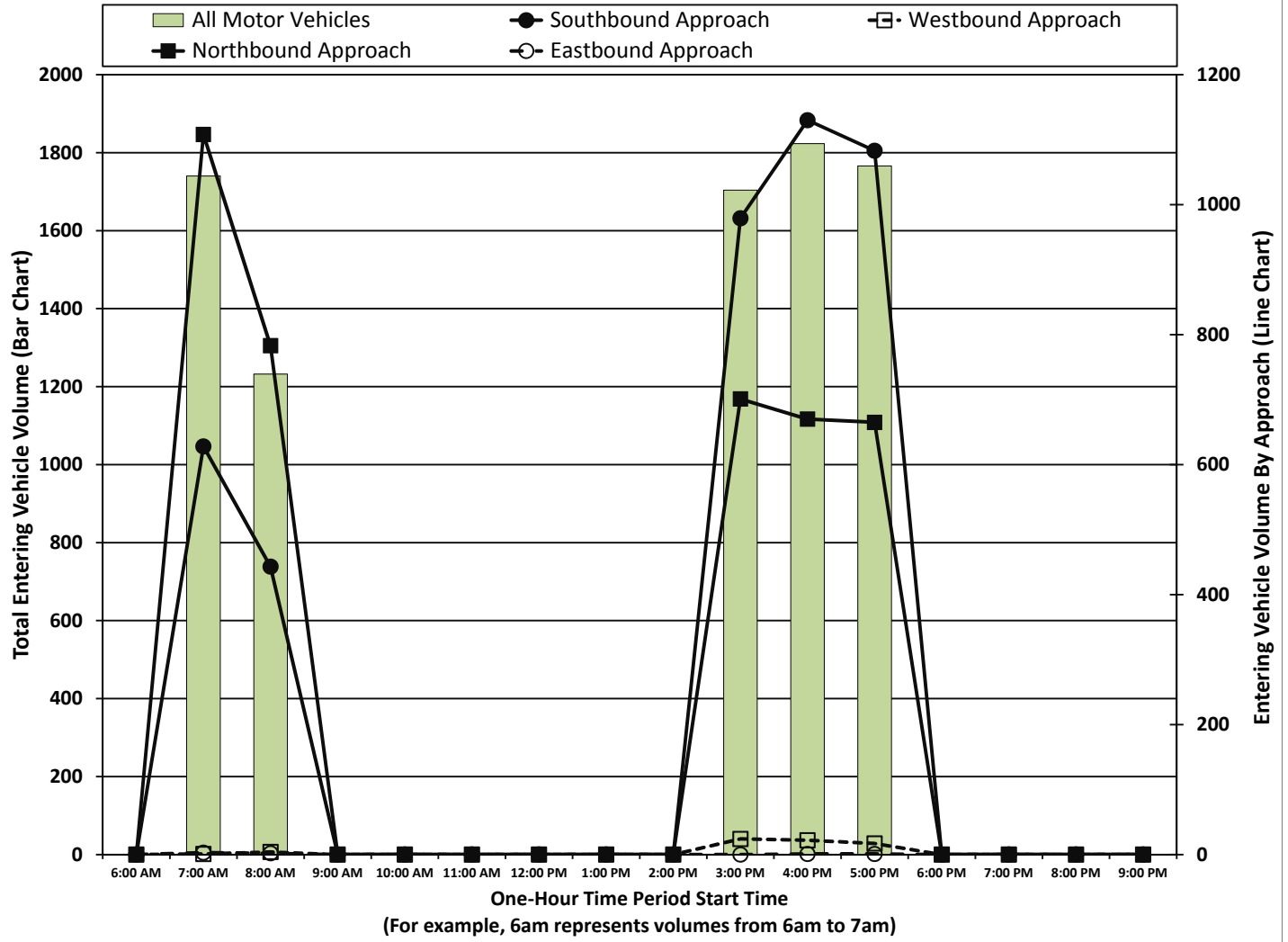
Genesee Rd - CTH D and Waukesha State Bank Drwy



### One-Hour Motor Vehicle Data

One-Hour Time Period	From North Genesee Rd - CTH D					From East Waukesha State Bank Drwy					From South Genesee Rd - CTH D					From West Access Road					Total Vehicle Volume	Directional Volume Totals			
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		E/W	N/S		
	Start Time																								
AM																									
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	2	626	0	0	628	1	0	0	0	1	1	1107	0	0	1108	1	0	2	0	3	1740	4	1736		
8:00 AM	3	435	3	2	443	2	0	2	0	4	9	774	0	0	783	0	0	2	0	2	1232	6	1226		
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
MD																									
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM																									
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
3:00 PM	0	974	5	0	979	15	0	9	0	24	13	688	0	0	701	0	0	0	0	0	1704	24	1680		
4:00 PM	3	1117	7	3	1130	10	0	12	0	22	14	656	0	0	670	0	1	0	0	1	1823	23	1800		
5:00 PM	3	1075	4	1	1083	11	0	6	0	17	5	659	1	0	665	0	0	1	0	1	1766	18	1748		
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
<b>Totals</b>	<b>11</b>	<b>4227</b>	<b>19</b>	<b>6</b>	<b>4263</b>	<b>39</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>68</b>	<b>42</b>	<b>3884</b>	<b>1</b>	<b>0</b>	<b>3927</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>7</b>	<b>8265</b>	<b>75</b>	<b>8190</b>		

### Graphical Summary of Hourly Volumes













# Intersection Traffic Volume Report

## 15-Minute Heavy Vehicle Data

Genesee Rd - CTH D and Waukesha State Bank Drwy



### 15-Minute Heavy Vehicle Data

15-Minute Time Period	From North					From East					From South					From West					15-Min Totals	Hourly Sum	
	Genesee Rd - CTH D					Waukesha State Bank Drwy					Genesee Rd - CTH D					Access Road							
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	8	0	0	8	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	15	74
7:15 AM	0	12	0	0	12	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	22	81
7:30 AM	0	8	0	0	8	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	19	78
7:45 AM	0	10	0	0	10	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	18	78
8:00 AM	0	13	0	0	13	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	22	71
8:15 AM	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	19	
8:30 AM	0	10	0	0	10	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	19	
8:45 AM	0	3	0	0	3	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	11	
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:00 PM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	11	59
3:15 PM	0	9	0	0	9	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	22	56
3:30 PM	0	11	0	0	11	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	16	43
3:45 PM	0	8	0	0	8	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	10	42
4:00 PM	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	8	41
4:15 PM	1	5	0	0	6	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	9	38
4:30 PM	0	9	0	0	9	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	15	33
4:45 PM	0	1	0	0	1	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	9	25
5:00 PM	0	1	0	0	1	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	0	5	20
5:15 PM	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	
5:30 PM	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	7	
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Totals</b>	1	134	0	0	135	0	0	0	0	0	0	129	1	0	130	0	0	0	0	0	0	265	

### Peak Hour Heavy Vehicle Volume Summary

Hourly Time Period	From North					From East					From South					From West					Total Hourly Volume	
	Genesee Rd - CTH D					Waukesha State Bank Drwy					Genesee Rd - CTH D					Access Road						
	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM 7:00 AM	0	38	0	0	38	0	0	0	0	0	0	36	0	0	36	0	0	0	0	0	0	74
MD 12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:30 PM	0	14	0	0	14	0	0	0	0	0	0	18	1	0	19	0	0	0	0	0	0	33



# Intersection Traffic Volume Report

## 15-Minute Pedestrian and Bicyclist Data

Genesee Rd - CTH D and Waukesha State Bank Drwy



### 15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period	Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			15-Min Totals	Hourly Sum
	Genesee Rd - CTH D			Waukesha State Bank Drwy			Genesee Rd - CTH D			Access Road				
	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Totals</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

### Special Pedestrians

Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementary School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

# **APPENDIX B**

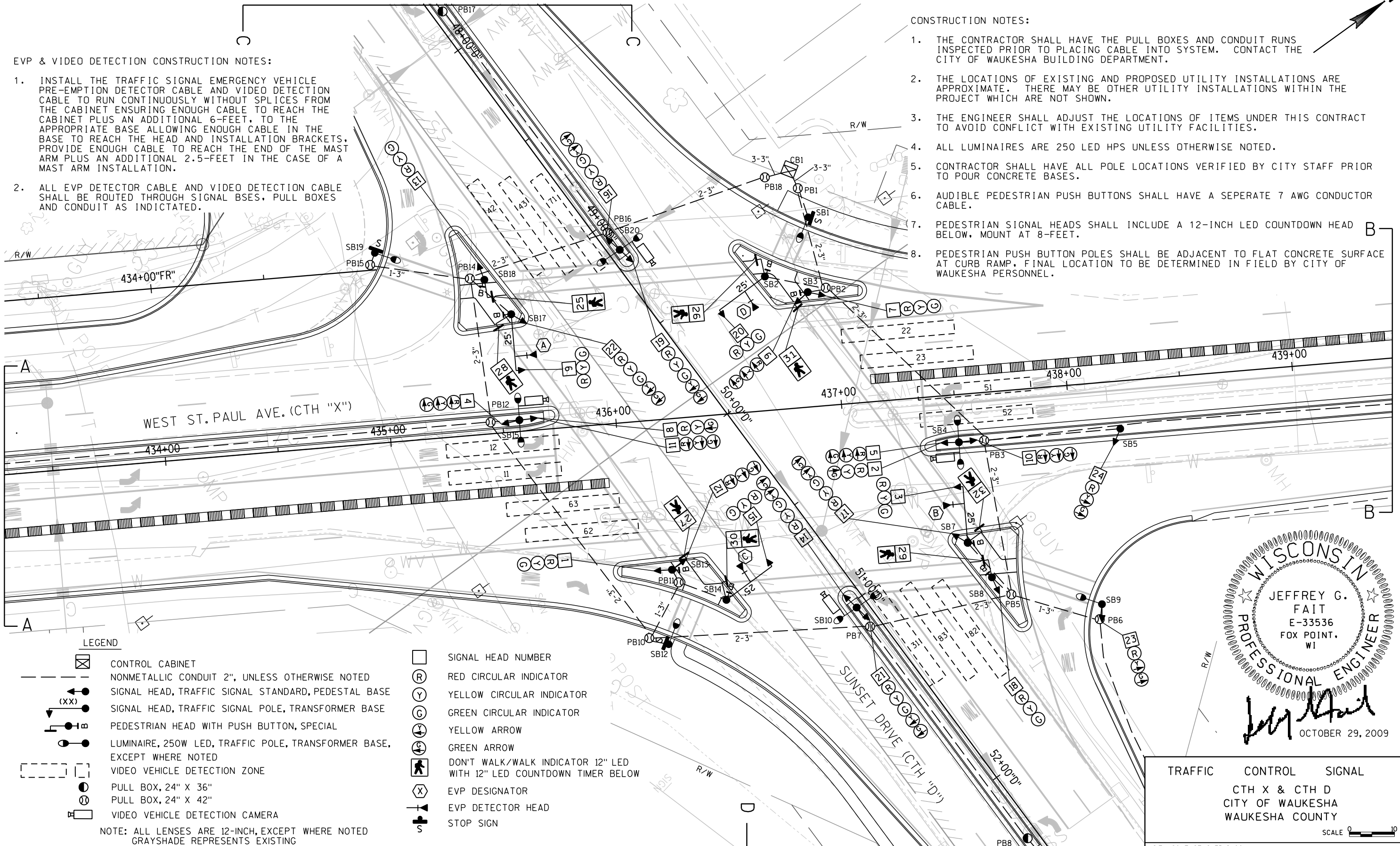
## **Existing Traffic Signal Timings**

EVP & VIDEO DETECTION CONSTRUCTION NOTES:

1. INSTALL THE TRAFFIC SIGNAL EMERGENCY VEHICLE PRE-EMPTION DETECTOR CABLE AND VIDEO DETECTION CABLE TO RUN CONTINUOUSLY WITHOUT SPLICES FROM THE CABINET ENSURING ENOUGH CABLE TO REACH THE CABINET PLUS AN ADDITIONAL 6- FEET, TO THE APPROPRIATE BASE ALLOWING ENOUGH CABLE IN THE BASE TO REACH THE HEAD AND INSTALLATION BRACKETS. PROVIDE ENOUGH CABLE TO REACH THE END OF THE MAST ARM PLUS AN ADDITIONAL 2.5- FEET IN THE CASE OF A MAST ARM INSTALLATION.
2. ALL EVP DETECTOR CABLE AND VIDEO DETECTION CABLE SHALL BE ROUTED THROUGH SIGNAL BSES, PULL BOXES AND CONDUIT AS INDICATED.

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL HAVE THE PULL BOXES AND CONDUIT RUNS INSPECTED PRIOR TO PLACING CABLE INTO SYSTEM. CONTACT THE CITY OF WAUKESHA BUILDING DEPARTMENT.
2. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
3. THE ENGINEER SHALL ADJUST THE LOCATIONS OF ITEMS UNDER THIS CONTRACT TO AVOID CONFLICT WITH EXISTING UTILITY FACILITIES.
4. ALL LUMINAIRES ARE 250 LED HPS UNLESS OTHERWISE NOTED.
5. CONTRACTOR SHALL HAVE ALL POLE LOCATIONS VERIFIED BY CITY STAFF PRIOR TO POUR CONCRETE BASES.
6. AUDIBLE PEDESTRIAN PUSH BUTTONS SHALL HAVE A SEPERATE 7 AWG CONDUCTOR CABLE.
7. PEDESTRIAN SIGNAL HEADS SHALL INCLUDE A 12-INCH LED COUNTDOWN HEAD BELOW, MOUNT AT 8- FEET.
8. PEDESTRIAN PUSH BUTTON POLES SHALL BE ADJACENT TO FLAT CONCRETE SURFACE AT CURB RAMP, FINAL LOCATION TO BE DETERMINED IN FIELD BY CITY OF WAUKESHA PERSONNEL.



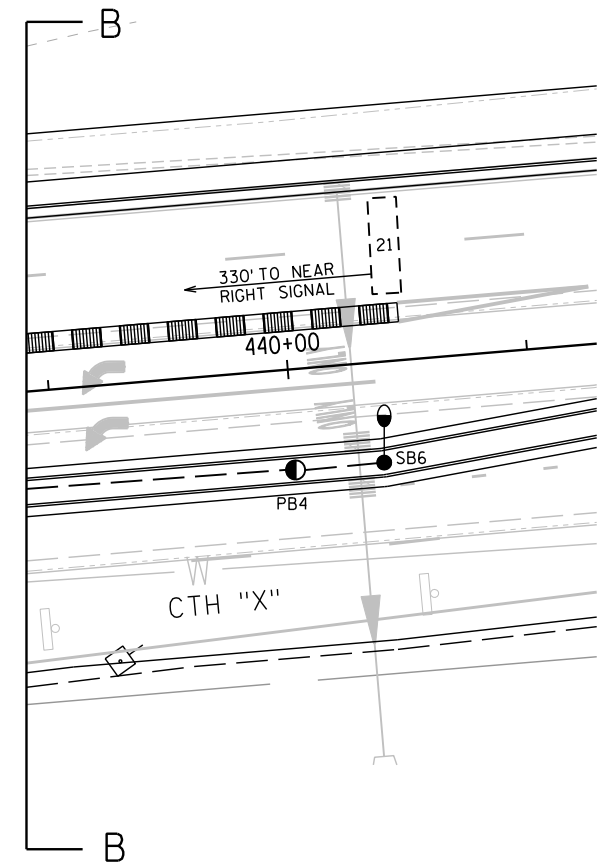
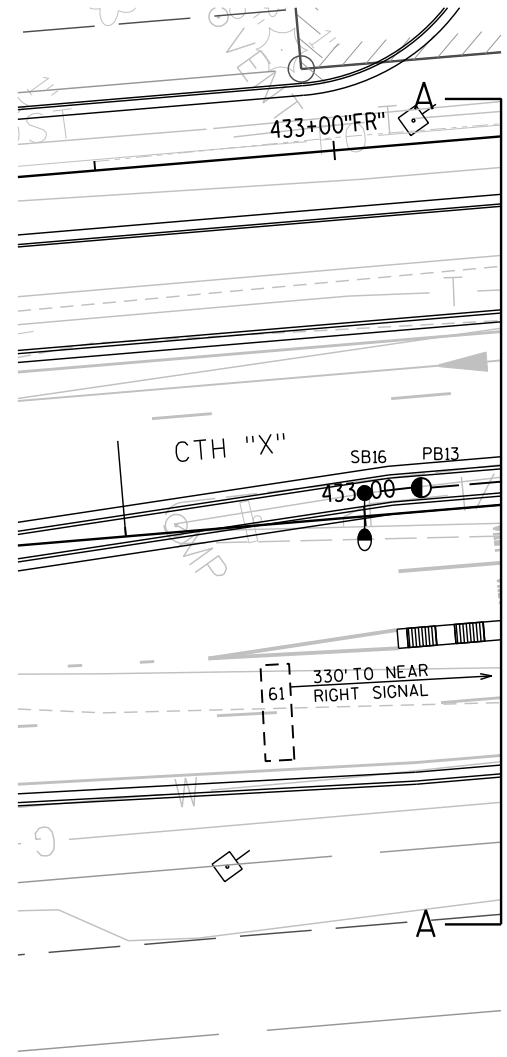
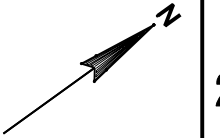
LEGEND

- |  |   |  |  |
|--|---|--|--|
|  | CONTROL CABINET   |  | SIGNAL HEAD NUMBER   |
|  | NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED                          |  | RED CIRCULAR INDICATOR   |
|  | SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE                     |  | YELLOW CIRCULAR INDICATOR  |
|  | SIGNAL HEAD, TRAFFIC SIGNAL POLE, TRANSFORMER BASE                      |  | GREEN CIRCULAR INDICATOR   |
|  | PEDESTRIAN HEAD WITH PUSH BUTTON, SPECIAL                               |  | YELLOW ARROW   |
|  | LUMINAIRE, 250W LED, TRAFFIC POLE, TRANSFORMER BASE, EXCEPT WHERE NOTED |  | GREEN ARROW  |
|  | VIDEO VEHICLE DETECTION ZONE  |  | DON'T WALK/WALK INDICATOR 12" LED WITH 12" LED COUNTDOWN TIMER BELOW |
|  | PULL BOX, 24" X 36"   |  | EVP DESIGNATOR   |
|  | PULL BOX, 24" X 42"   |  | EVP DETECTOR HEAD  |
|  | VIDEO VEHICLE DETECTION CAMERA  |  | STOP SIGN  |
- NOTE: ALL LENSES ARE 12-INCH, EXCEPT WHERE NOTED  
GRAYSHADE REPRESENTS EXISTING

WISCONSIN  
 JEFFREY G. FAIT  
 E-33536  
 FOX POINT, WI  
 PROFESSIONAL ENGINEER  
 OCTOBER 29, 2009

TRAFFIC CONTROL SIGNAL  
 CTH X & CTH D  
 CITY OF WAUKESHA  
 WAUKESHA COUNTY  
 SCALE 0 10

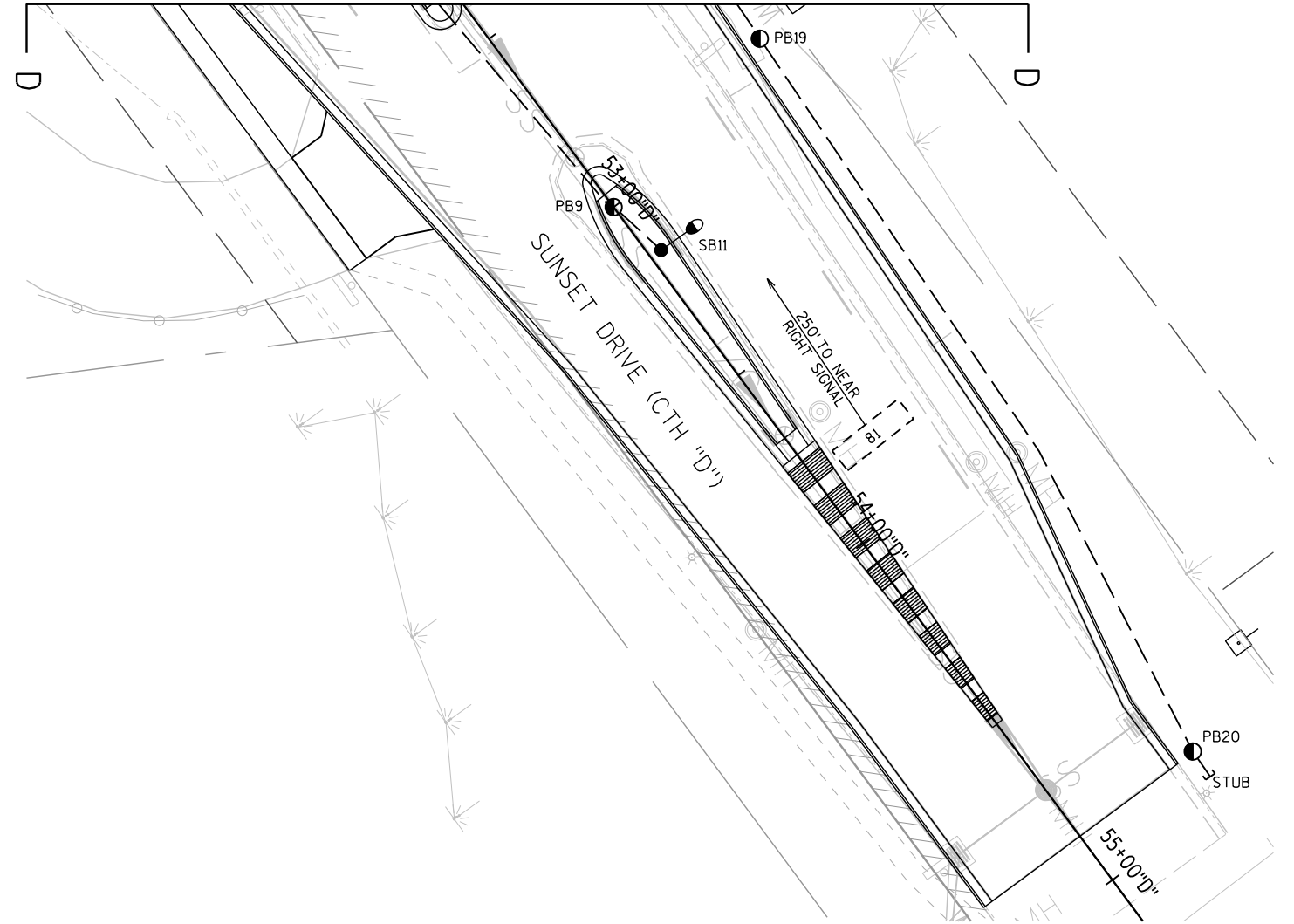
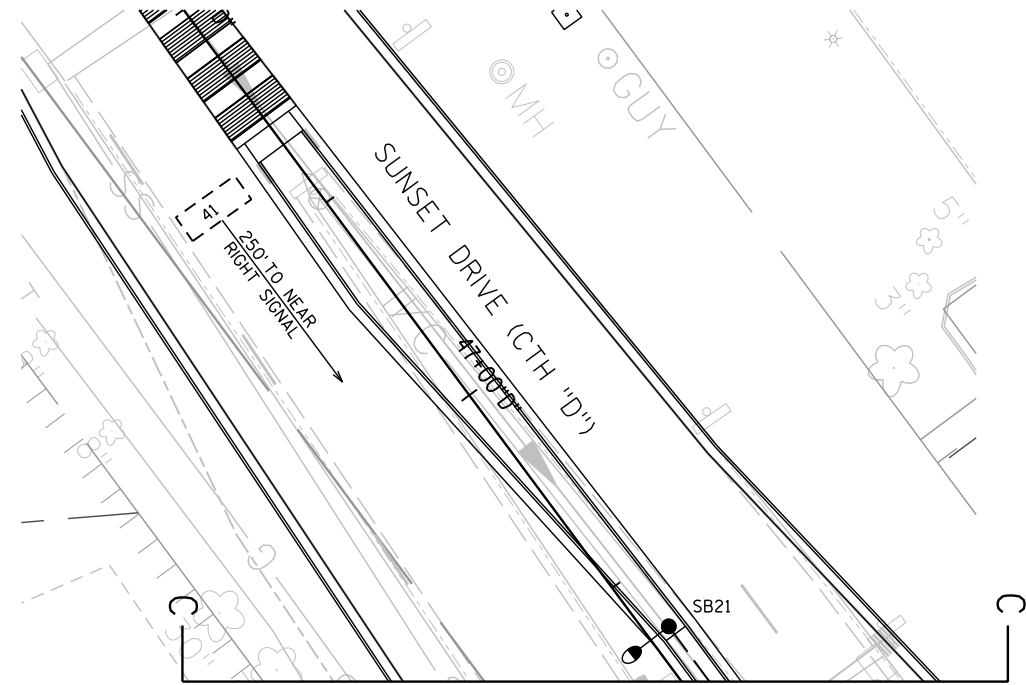
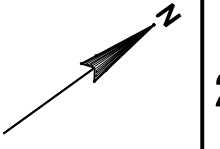
CITY CONTACT: CHERI SHOOK  
 DESIGNED BY: TAD, INC. PAGE 1 OF 5



TRAFFIC CONTROL SIGNAL  
 CTH X & CTH D  
 CITY OF WAUKESHA  
 WAUKESHA COUNTY

SCALE 0 10

CITY CONTACT: CHERI SHOOK  
 DESIGNED BY: TAD, INC. PAGE 2 OF 5



TRAFFIC CONTROL SIGNAL  
 CTH X & CTH D  
 CITY OF WAUKESHA  
 WAUKESHA COUNTY

SCALE 0 10

CITY CONTACT: CHERI SHOOK  
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PAGE 3 OF 5



SEQUENCE OF OPERATION



SEQUENCE OF OPERATION table for RING 1, columns: HEAD NUMBERS, CLEAR TO, R/W, and various signal states (G, Y, R, D, \*).

SEQUENCE OF OPERATION table for RING 2, columns: HEAD NUMBERS, CLEAR TO, R/W, and various signal states (G, Y, R, D, \*).

\*\* CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART 1)
\* WHEN CALLED, TIMED STEADY WALK, THEN FLASHING DON'T WALK, THEN GOES TO STEADY DON'T WALK

CHART 1

CHART 1 table with columns: PHASE ON, NONCONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY, PHASES IN CONFLICT WITH PHASE ON.

DETECTOR LOGIC

DETECTOR LOGIC table with columns: DETECTOR NUMBER, AMPLIFIER CHANNEL NUMBER, CALLS AND EXTENDS, EXTENDS ONLY, PHASE CALLED, PHASE EXTENDED, DETECTOR DISCONNECT PHASE, CALLING DELAY, EXTENSION STRETCH, SIZE, NUMBER OF TURNS.

CONTROLLER LOGIC

CONTROLLER LOGIC table with columns: PHASE NUMBER, PHASE LOCKING, DUAL ENTRY W / Ø, PHASE RECALL, PHASE ACTIVE.

OVERLAPS

O.L. "A" = PHASES 5 & 8
O.L. "B" =
O.L. "C" =
O.L. "D" =

TYPE OF INTERCONNECT COMMUNICATION table with options: NONE, TBC, CLOSED LOOP TWISTED PAIR\*, CLOSED LOOP FIBER OPTIC\*, RADIO.

TYPE OF PRE-EMPT table with options: NONE, RAILROAD, EMERGENCY VEHICLE, RADIO, 3M, TOMAR, HARDWARE, OTHER, LIFT BRIDGE, QUEUE DETECTOR.

TYPE OF LIGHTING table with options: BY OTHER AGENCY, IN TRAFFIC SIGNAL CABINET, IN SEPARATE DOT LIGHTING CABINET.

EMERGENCY VEHICLE PREEMPTION SEQUENCE table with columns: EMERGENCY VEHICLE DETECTOR, MOVEMENT, PHASE, and sequence values (A, B, C, D).

- GENERAL NOTES:
1. ANY ACTUATED PHASE FOR WHICH THERE IS NO CALL SHALL BE SKIPPED.
2. WHEN ONE PHASE IS ON ALONE, ANY NONCONFLICTING PHASE MAY START TIMING CONCURRENTLY WITHOUT A CLEARANCE INTERVAL.
3. IF ANY OPPOSING THRU PHASES ARE TIMING CONCURRENTLY, THEY SHALL TERMINATE TOGETHER DUE TO PERMISSIVE LEFT TURN CONFLICT.
4. AUDIBLE PEDESTRIAN CONTROL UNIT SHALL BE INSTALLED IN CABINET.
5. EVP CARD RACK AND DISRIMINATOR SHALL BE INSTALLED IN CABINET.
6. VIDEO DETECTION EQUIPMENT SHALL BE INSTALLED IN CABINET.

TRAFFIC CONTROL SIGNAL
CTH X & CTH D
CITY OF WAUKESHA
WAUKESHA COUNTY
SIGNAL NO.
DESIGNED BY: TAD, INC. PAGE 4 OF 5

PROJECT ID: 2370-08-70  
 INTERSECTION: CTH X & SUNSET DRIVE

SIGNAL WIRE COLOR CODING	BLK-BLACK	RED-RED	GRN-GREEN
	WHT-WHITE	BLU-BLUE	ORG-ORANGE

CB1 TO	JUMPER	# OF COND.	HEAD NO.	PHASE	SIGNAL INDICATION WIRE COLOR							PED BUTTON	OTHER
					RED	YELLOW	GREEN	*RED	*YELLOW	*GREEN	D/WALK		
SB2		12	20	8	RED	ORG	GRN						
			26	2						BLK	BLU		
SB3		12	6	1	RED	ORG	GRN						
			7	2	RED/BLK	ORG/BLK	GRN/BLK						
SB4		12	2	6	RED	ORG	GRN						
			5	1	RED/BLK	ORG/BLK	GRN/BLK						
SB5		12	24	OLA	RED				ORG	GRN			
			3	6	RED	ORG	GRN						
SB7		12	17	4+7	RED/BLK	ORG/BLK	GRN/BLK		RED/WHT	GRN/WHT			
			32	8						BLK	BLU		
SB8		12	18	8	RED	ORG	GRN						
			29	6						BLK	BLU		
SB9		12	23	OLA	RED				ORG	GRN			
			14	4+7	RED	ORG	GRN		BLK	BLU			
SB10		12	21	8+3	RED/BLK	ORG/BLK	GRN/BLK		RED/WHT	GRN/WHT			
			1	6	RED	ORG	GRN						
SB13		12	12	5	RED/BLK	ORG/BLK	GRN/BLK						
			27	4						BLK	BLU		
SB14		12	15	4	RED	ORG	GRN						
			30	6						BLK	BLU		
SB15		12	4	1	RED	ORG	GRN						
			8	2	RED/BLK	ORG/BLK	GRN/BLK						
SB17		12	11	5	RED/WHT	BLU/BLK	GRN/WHT						
			9	2	RED	ORG	GRN						
SB18		12	22	8+3	RED/BLK	ORG/BLK	GRN/BLK		RED/WHT	GRN/WHT			
			28	4						BLK	BLU		
SB20		12	13	4	RED	ORG	GRN						
			25	2						BLK	BLU		
SB20		12	16	4+7	RED	ORG	GRN		BLK	BLU			
			19	8+3	RED/BLK	ORG/BLK	GRN/BLK		RED/WHT	GRN/WHT			

FROM	TO
CB1	SB2
SB2	SB3
SB3	SB4
SB4	SB5
SB5	SB7
SB7	SB8
SB8	SB9
SB9	SB10
SB10	SB13
SB13	SB14
SB14	SB15
SB15	SB17
SB17	SB18
SB18	SB20
SB20	CB1

FROM	TO
CB1	PB1
SB3	PB2
SB4	PB3
SB6	PB4
SB8	PB5
SB8	PB6
SB10	PB7
SB11	PB8
SB11	PB9
SB13	PB10
SB13	PB11
SB15	PB12
SB16	PB13
SB18	PB14
SB18	PB15
SB20	PB16
SB21	PB17
CB1	PB18

FROM	TO
CB1	SB1
SB1	SB4
SB4	SB6
CB1	SB9
SB9	SB10
SB10	SB11
CB1	SB20
SB20	SB21
SB21	SB19
CB1	SB15
SB15	SB16
SB16	SB12

FROM	TO
CB1	SB17 (HEAD 'A')
CB1	SB7 (HEAD 'B')
CB1	SB14 (HEAD 'C')
CB1	SB2 (HEAD 'D')

FROM	TO
CB1	SB4
CB1	SB10
CB1	SB15
CB1	SB20

FROM	TO	PHASE	PED BUTTON
CB1	SB2	2	RED
SB2	SB3	8	BLU
SB3	SB7	8	BLU
SB7	SB8	6	GRN
SB8	SB14	6	GRN
SB14	SB13	4	ORG
SB13	SB17	4	ORG
SB17	SB18	2	RED
SB18	CB1		

- NOTES:
- USE WHITE CONDUCTOR IN THE SIGNAL CABLE AS THE GROUNDING CONDUCTOR FOR ALL TRAFFIC SIGNAL INDICATIONS.
  - ENSURE THE GROUNDING CONDUCTOR IN THE FEEDER CABLE AND THE POLE CABLES ARE BOTH 18" LONGER THAN THE UNGROUNDING CONDUCTORS.
  - AT THE SIGNAL BASES, CONNECT ONE TERMINAL FROM THE PEDESTRIAN PUSH BUTTONS TO THE COLOR INDICATED IN THE CHART. CONNECT THE OTHER TERMINAL TO THE GROUNDING CONDUCTOR.

TRAFFIC CONTROL SIGNAL  
 CTH X & CTH D  
 CITY OF WAUKESHA  
 WAUKESHA COUNTY

SIGNAL NO. \_\_\_\_\_

DESIGNED BY: TAD, INC. PAGE 5 OF 5

# Programmed EPAC Data

3/21/2013  
3:17:42PM

**Intersection Name: St. Paul/Sunset**

**Intersection Alias: spsu**

Access Code: 9999 Channel: 4 Address: Revision: 3.34g

**Access Data**

:1200 Baud

:19200 Baud

**Phase Data**

Vehical Basic Timings							Vehical Density Timings			Time B4	Cars	Time To
Phase	Min_Grn	Passage	Max1	Max2	Yellow	All Red	Added Initial	Max_Initial	Reduction	Before	Reduce	Min_Gap
1	8	2.0	11	30	3.5	1.0	0.0	0	0	0	0	0.0
2	12	2.0	20	50	4.5	2.0	0.0	0	0	0	0	0.0
3	6	2.0	10	30	3.5	1.0	0.0	0	0	0	0	0.0
4	12	2.0	20	50	3.6	2.5	0.0	0	0	0	0	0.0
5	8	2.0	12	30	3.5	1.0	0.0	0	0	0	0	0.0
6	12	2.0	20	50	4.5	2.0	0.0	0	0	0	0	0.0
7	6	2.0	10	30	3.5	1.0	0.0	0	0	0	0	0.0
8	12	2.0	20	50	3.6	2.5	0.0	0	0	0	0	0.0

Pedestrian Timing			Extended	Actuated	General Control					Miscellaneous				
Phase	Ped Walk	Flashing Clear	Ped Clear	Rest in Walk	Non-Act Initialize	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Passage	Conditional Service	No Simultaneous Gap Out	
1	0	0	No	0	Inactive	None	None	0	Yes	No	No	No	No	
2	7	28	No	0	Green	None	Min	0	No	Yes	No	No	No	
3	0	0	No	0	Inactive	None	None	0	Yes	No	No	No	No	
4	7	34	No	0	Inactive	None	None	0	Yes	Yes	No	No	No	
5	0	0	No	0	Inactive	None	Min	0	Yes	No	No	No	No	
6	7	28	No	0	Green	None	Min	0	No	Yes	No	No	No	
7	0	0	No	0	Inactive	None	None	0	Yes	No	No	No	No	
8	7	33	No	0	Inactive	None	None	0	Yes	Yes	No	No	No	

**Special Sequence Default Data**

**Vehical Detector Phase Assignment**

	Assigned Phase	Mode	Switched Phase	Extend	Delay
Vehical Detector Channel :9	1	Veh	0	0.0	0
Vehical Detector Channel :10	3	Veh	0	0.0	0
Vehical Detector Channel :11	5	Veh	0	0.0	0
Vehical Detector Channel :12	7	Veh	0	0.0	0

**Pedestrian Detector**

	Assign Phase	Mode	Switched Phase	Extend	Delay
Pedestrian Detector Channel :1	2	Ped	0	0.0	0
Pedestrian Detector Channel :2	4	Ped	0	0.0	0
Pedestrian Detector Channel :3	6	Ped	0	0.0	0
Pedestrian Detector Channel :4	8	Ped	0	0.0	0

**Special Detector Phase Assignment**

	Assign Phase	Mode	Switched Phase	Extend	Delay
:					

**Default Data**

**Unit Data**

**General Control**

Startup Time: 5sec Startup State: Flash Red Revert: 4.0sec  
 Auto Ped Clear: No Stop Time Reset: No Alternate Sequence: 0

ABC connector Input Modes: 0	Input Ring	Output Response	Selection
ABC connector Output Modes: 0	1	Ring 1	Ring 1
D connector Input Modes: 0	2	Ring 2	Ring 2
D connector Output Modes: 6	3	None	None
	4	None	None

**Remote Flash**

Test A = Flash	Flash Channel	Flash Color	Flash Alternat

**Default Data - No Flash**

**Default Data - No Flash**

Overlaps		Overlaps															
Phase(s)		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	5	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Green		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yellow		4.0	2.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Stop Grn/Yel Phase		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strat Green Phase		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring			Phase(s)															
Phase	Ring	Next Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	2	1	2	3	4	1	1	3	3	9	10	11	12	13	14	15	16
2	1	3	5	5	7	7	2	2	4	4								
3	1	4	6	6	8	8	5	6	7	8								
4	1	1																
5	2	6																
6	2	7																
7	2	8																
8	2	5																

**Alternate Sequences**

No Alternate Sequences Programmed

**Port 1 Data**

BIU Addr	Port Status	Message
	40	
1	Used	No
2	Used	No
9	Used	No
17	Used	No
19	Used	No

Control	Channel	Hardware Pins	Control	Channel	Hardware Pins
1 - Veh Phase 1	1	1 - Phase 1 RYG	2 - Veh Phase 2	2	2 - Phase 2 RYG
3 - Veh Phase 3	3	3 - Phase 3 RYG	4 - Veh Phase 4	4	4 - Phase 4 RYG
5 - Veh Phase 5	5	5 - Phase 5 RYG	6 - Veh Phase 6	6	6 - Phase 6 RYG
7 - Veh Phase 7	7	7 - Phase 7 RYG	8 - Veh Phase 8	8	8 - Phase 8 RYG
33 - Overlap A	9	10 - Phase 2 DPW	0 - None	10	12 - Phase 4 DPW
0 - None	11	14 - Phase 6 DPW	0 - None	12	16 - Phase 8 DPW
18 - Ped Phase 2	13	17 - Overlap A RYG	20 - Ped Phase 4	14	18 - Overlap B RYG
22 - Ped Phase 6	15	19 - Overlap C RYG	24 - Ped Phase 8	16	20 - Overlap D RYG
17 - Ped Phase 1	17	9 - Phase 1 DPW	19 - Ped Phase 3	18	11 - Phase 3 DPW
21 - Ped Phase 5	19	13 - Phase 5 DPW	23 - Ped Phase 7	20	15 - Phase 7 DPW

**Coordination Data**

**General Coordination Data**

Operation Mode: 1=Auto  
 Coordination Mode: 2=Permissive  
 Yield  
 Maximum Mode: 0=Inhibit  
 Correction Mode: 3=Short Way Plus  
 Offset Mode: 0=Beg Grn  
 Force Mode: 0=Plan  
 Max Dwell Time: 0  
 Yield Period: 0

**Dial/Split Cycle**

1/1	80
1/2	80
2/1	80
3/1	85
3/2	85
4/1	80

### Split Times and Phase Mode

#### Dial 1 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	32	1=Coordinate	3	13	0=Actuated	4	20	0=Actuated
5	15	0=Actuated	6	32	1=Coordinate	7	13	0=Actuated	8	20	0=Actuated

#### Dial 1 / Split 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	32	1=Coordinate	3	13	0=Actuated	4	20	0=Actuated
5	15	0=Actuated	6	32	1=Coordinate	7	13	0=Actuated	8	20	0=Actuated

#### Dial 2 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	28	1=Coordinate	3	13	0=Actuated	4	24	0=Actuated
5	20	0=Actuated	6	23	1=Coordinate	7	13	0=Actuated	8	24	0=Actuated

#### Dial 3 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	33	1=Coordinate	3	13	0=Actuated	4	24	0=Actuated
5	21	0=Actuated	6	27	1=Coordinate	7	13	0=Actuated	8	24	0=Actuated

#### Dial 3 / Split 2

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	33	1=Coordinate	3	13	0=Actuated	4	24	0=Actuated
5	21	0=Actuated	6	27	1=Coordinate	7	13	0=Actuated	8	24	0=Actuated

#### Dial 4 / Split 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	15	0=Actuated	2	28	1=Coordinate	3	13	0=Actuated	4	24	0=Actuated
5	20	0=Actuated	6	23	1=Coordinate	7	13	0=Actuated	8	24	0=Actuated

### Traffic Plan Data

Plan: <b>2/1/1</b>	Offset Time: 75	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: <b>3/1/1</b>	Offset Time: 79	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: <b>3/2/1</b>	Offset Time: 79	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
Plan: <b>4/1/1</b>	Offset Time: 75	Alt. Sequence: 0	Mode: 0=Normal	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0

### Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero Reference Hours: 24 Min: 0  
 End of Daylight Saving Month: 11 Week: 1

Source	Equate Days						
Day	1	2	3	4	5	6	7
1	7	0	0	0	0	0	0
2	3	4	5	6	0	0	0

### Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	1	10:0	4/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3	1	17:0	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4	2	0:1	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5	2	6:0	1/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	2	8:0	1/2/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
7	2	8:45	2/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8	2	15:15	3/2/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9	2	16:15	3/1/1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10	2	18:0	0/0/4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

### AUX. Events

Event	Program	Day	Hour	Min.	Aux Ouputs			Det.			Special Function Outputs									
					1	2	3	Diag.	Rpt.	Mult100	Dimming	1	2	3	4	5	6	7	8	
					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Default Data - No Special Day(s) or Week(s) Programmed

### Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8
Special Function 1	X							
Special Function 2		X						
Special Function 3			X					
Special Function 4				X				
Special Function 5					X			
Special Function 6						X		
Special Function 7							X	
Special Function 8								X

### Phase Function

Phase Function Map	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 1 Max2	X															
Phase 2 Max2		X														
Phase 3 Max2			X													
Phase 4 Max2				X												
Phase 5 Max2					X											
Phase 6 Max2						X										
Phase 7 Max2							X									
Phase 8 Max2								X								
Phase 1 Phase Omit									X							
Phase 2 Phase Omit										X						
Phase 3 Phase Omit											X					
Phase 4 Phase Omit												X				
Phase 5 Phase Omit													X			
Phase 6 Phase Omit														X		
Phase 7 Phase Omit															X	
Phase 8 Phase Omit																X

### Dimming Data

Channel Red Yellow Green Alternate

Default Data - No Dimming Programmed

### Preemption Data

#### General Preemption Data

Flash = Preempt 1, Preempt 1 = Preempt 2, Preempt 2 = Preempt 3, Preempt 3 = Preempt 4, Preempt 4 = Preempt 5, Preempt 5 = Preempt 6  
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Preempt	Preempt Timers								Select			Track				Dwell Green	Return		
	Non-Locking	Link to Preempt	Delay	Extend	Duration	MaxCall	Lock-Out	Ped Clear	Yel	Red	Grn	Ped	Yel	Red	Ped Clear		Yel	Red	
1	No	0	0	0	0	0	0	10	0	0	0	0	0	0	10	0	0	0	
2	No	0	0	0	0	0	0	10	0	0	0	0	0	0	10	0	0	0	
3	No	0	0	0	0	0	0	8	0	0	0	0	0	0	10	0	0	0	
4	No	0	0	0	0	0	0	8	0	0	0	0	0	0	10	0	0	0	
5	No	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20	
6	No	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20	

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes	1	No	Yes
2	Yes	Yes	2	Yes	Yes	2	No	Yes	2	No	Yes	2	No	Yes	2	No	Yes
3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes	3	No	Yes
4	No	Yes	4	No	Yes	4	Yes	Yes	4	Yes	Yes	4	No	Yes	4	No	Yes
5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes	5	No	Yes
6	Yes	Yes	6	Yes	Yes	6	No	Yes	6	No	Yes	6	No	Yes	6	No	Yes
7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes	7	No	Yes
8	No	Yes	8	No	Yes	8	Yes	Yes	8	Yes	Yes	8	No	Yes	8	No	Yes

Priority Timers										
Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases		
1	No	0	0	0	0	0	0	0=Do not Skip Phases		
2	No	0	0	0	0	0	0	0=Do not Skip Phases		
3	No	0	0	0	0	0	0	0=Do not Skip Phases		
4	No	0	0	0	0	0	0	0=Do not Skip Phases		
5	No	0	0	0	0	0	0	0=Do not Skip Phases		
6	No	0	0	0	0	0	0	0=Do not Skip Phases		

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases				Pedestrian Phases			Overlaps				
Ph.	Track	Dwell	Cycle	Ph	Track	Dwell	Cycle	Ovlp	Track	Dwell	Cycle
1	Red	Red	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Green	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Red	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Red	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Green	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Red	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Red	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Red	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

Preempt 2

Vehical Phases				Pedestrian Phases			Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Green	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Red	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Red	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Red	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Red	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Green	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Red	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Red	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

Preempt 3

Vehical Phases				Pedestrian Phases			Overlaps				
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Red	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Red	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Red	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Green	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Red	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Red	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Green	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Red	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

Preempt 4



Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Red	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Red	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Green	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Red	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Red	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Red	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Red	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Green	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

**Preempt 5**

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Red	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Red	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Red	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Red	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Red	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Red	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Red	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Red	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

**Preempt 6**

Vehical Phases				Pedestrian Phases				Overlaps			
Ph.	Track	Dwell	Cycle	Ph.	Track	Dwell	Cycle	Ovlp.	Track	Dwell	Cycle
1	Red	Red	No	1	Don't Walk	Don't Walk	No	A	Red	Red	No
2	Red	Red	No	2	Don't Walk	Don't Walk	No	B	Red	Red	No
3	Red	Red	No	3	Don't Walk	Don't Walk	No	C	Red	Red	No
4	Red	Red	No	4	Don't Walk	Don't Walk	No	D	Red	Red	No
5	Red	Red	No	5	Don't Walk	Don't Walk	No	E	Red	Red	No
6	Red	Red	No	6	Don't Walk	Don't Walk	No	F	Red	Red	No
7	Red	Red	No	7	Don't Walk	Don't Walk	No	G	Red	Red	No
8	Red	Red	No	8	Don't Walk	Don't Walk	No	H	Red	Red	No
9	Red	Red	No	9	Don't Walk	Don't Walk	No	I	Red	Red	No
10	Red	Red	No	10	Don't Walk	Don't Walk	No	J	Red	Red	No
11	Red	Red	No	11	Don't Walk	Don't Walk	No	K	Red	Red	No
12	Red	Red	No	12	Don't Walk	Don't Walk	No	L	Red	Red	No
13	Red	Red	No	13	Don't Walk	Don't Walk	No	M	Red	Red	No
14	Red	Red	No	14	Don't Walk	Don't Walk	No	N	Red	Red	No
15	Red	Red	No	15	Don't Walk	Don't Walk	No	O	Red	Red	No
16	Red	Red	No	16	Don't Walk	Don't Walk	No	P	Red	Red	No

**System/Detectors Data**

**Local Critical Alarms**

Revert to Backup: 15

Cycle Failure: No

Local Flash: No

Special Status 1: No

1st Phone:

Local Free: No

Cycle Fault: No

Special Status 2: No

2nd Phone:

Coord Failure: No

Coord Fault: No

Special Status 3: No

Conflict Flash: No

Preemption: No

Special Status 4: No

Remote Flash: No

Voltage Monitor: No

Special Status 5: No

Special Status 6: No

**Traffic Responsive**

System	Detector	Average	Occupancy	Min	Queue 1	System	Weight	Queue 2	System	Weight
Detector	Channel	Veh/Hr	Time(mins)	Correction/10	Volume %	Detectors	Detectors	Detectors	Detectors	Factor

**Default Data**

Sample Interval:

**Queue: 1** Input Selection: 0=Average  
 Detector Failed Level : 0

**Queue: 2** Input Selection: 0=Average  
 Detector Failed Level : 0

**Default Data**

**Queue:**  
 Level Enter Leave Dial / Split / Offset  
 / /

**Default Data**

**Default Data**

**Vehical Detector**

Diagnostic Value 0  
 Max No Erratic  
 Detector Presence Activity Count

**Vehical Detector**

Diagnostic Value 1  
 Max No Erratic  
 Detector Presence Activity Count

**Special Detector**

Diagnostic Value 0  
 Max No Erratic  
 Detector Presence Activity Count

**Default Data - Diag 0 Values**

**Default Data - No Diag 1 Values**

**Default Data - No Diag 0 Valu**

**Pedestrian Detector**

Diagnostic Value 0  
 Max No Erratic  
 Detector Presence Activity Count

**Pedestrian Detector**

Diagnostic Value 1  
 Max No Erratic  
 Detector Presence Activity Count

**Special Detector**

Diagnostic Value 1  
 Max No Erratic  
 Detector Presence Activity Count

**Default Data - No Diag 0 Values**

**Default Data - No Diag 1 Values**

**Default Data - No Diag 1 Values**

**Speed Trap Data**

Speed Trap:

Dial/Split/Offset  
 //

Speed Trap Speed Trap  
 Low Treshold High Treshold

Measurement:

Detector 1 Detector\_2 Distance :

**Default Data**

**Default Data**

**Volume Detector Data**

Report Interval  
 Volume Controller  
 Detector Detector  
 Number Channel

**Default Data**

# **APPENDIX C**

## **Year 2019 Existing Traffic Analysis Outputs**

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

AM Exist syn

04/10/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	135	215	160	60	145	220	185	860	65	145	395	100
Future Volume (vph)	135	215	160	60	145	220	185	860	65	145	395	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		275	150		275	315		75	315		125
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3374	1509	1719	3438	1538	3400	3505	1568	3335	3438	1538
Fit Permitted	0.560			0.608			0.950			0.950		
Satd. Flow (perm)	994	3374	1509	1100	3438	1538	3400	3505	1568	3335	3438	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	35			35			45			35		
Link Distance (ft)	421			990			591			912		
Travel Time (s)	8.2			19.3			9.0			17.8		
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%	62%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	145	231	107	65	156	147	199	925	43	156	425	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	231	107	65	156	147	199	925	43	156	425	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pt+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	8.5	1	6		5	2	
Permitted Phases	4		4	8				6				2
Detector Phase	7	4	4	3	8	8.5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	6.0	12.0	12.0	6.0	12.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	10.5	18.1	18.1	10.5	18.1		12.5	18.5	18.5	12.5	18.5	18.5
Total Split (s)	13.0	20.0	20.0	13.0	20.0		15.0	32.0	32.0	15.0	32.0	32.0
Total Split (%)	16.3%	25.0%	25.0%	16.3%	25.0%		18.8%	40.0%	40.0%	18.8%	40.0%	40.0%
Maximum Green (s)	8.5	13.9	13.9	8.5	13.9		10.5	25.5	25.5	10.5	25.5	25.5
Yellow Time (s)	3.5	3.6	3.6	3.5	3.6		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.1	6.1	4.5	6.1		4.5	6.5	6.5	4.5	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	Min	C-Max	C-Max
v/c Ratio	0.40	0.35	0.37	0.19	0.29	0.30	0.51	0.72	0.07	0.43	0.34	0.12
Control Delay	23.0	30.7	33.6	19.8	31.4	21.9	38.1	26.5	18.2	36.9	20.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	30.7	33.6	19.8	31.4	21.9	38.1	26.5	18.2	36.9	20.2	19.0
90th %ile Green (s)	8.5	13.9	13.9	8.5	13.9		10.5	25.5	25.5	10.5	25.5	25.5
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.5	13.1	13.1	7.5	12.1		10.2	28.7	28.7	9.1	27.6	27.6

TADI

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Synchro 10 Report

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

AM Exist syn

04/10/2019

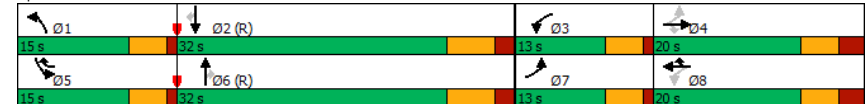


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70th %ile Term Code	Max	Hold	Hold	Gap	Gap		Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	8.5	14.0	14.0	6.5	12.0		9.0	29.8	29.8	8.1	28.9	28.9
50th %ile Term Code	Max	Hold	Hold	Gap	Min		Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	8.1	14.1	14.1	6.0	12.0		8.0	30.3	30.3	8.0	30.3	30.3
30th %ile Term Code	Gap	Hold	Hold	Min	Min		Min	Coord	Coord	Min	Coord	Coord
10th %ile Green (s)	6.1	22.6	22.6	0.0	12.0		8.0	32.3	32.3	8.0	32.3	32.3
10th %ile Term Code	Gap	Hold	Hold	Skip	Min		Min	Coord	Coord	Min	Coord	Coord
Queue Length 50th (ft)	52	54	48	22	36	56	48	203	14	38	80	22
Queue Length 95th (ft)	93	88	96	48	63	95	80	#304	38	65	125	52
Internal Link Dist (ft)		341			910			511			832	
Turn Bay Length (ft)	150		275	150		275	315		75	315		125
Base Capacity (vph)	371	662	296	375	597	461	446	1284	574	437	1242	555
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.35	0.36	0.17	0.26	0.32	0.45	0.72	0.07	0.36	0.34	0.12

Intersection Summary

Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	80
Offset:	0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
#	95th percentile volume exceeds capacity, queue may be longer.
	Queue shown is maximum after two cycles.

Splits and Phases: 100: Genesee Road/St. Paul Avenue & Sunset Drive



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Synchro 10 Report

HCM 6th Signalized Intersection Summary  
100: Genesee Road/St. Paul Avenue & Sunset Drive

AM Exist.syn  
04/10/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	135	215	160	60	145	220	185	860	65	145	395	100
Future Volume (veh/h)	135	215	160	60	145	220	185	860	65	145	395	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1796	1796	1796	1826	1826	1826	1856	1856	1856	1826	1826	1826
Adj Flow Rate, veh/h	145	231	107	65	156	147	199	925	43	156	425	67
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
Percent Heavy Veh, %	7	7	7	5	5	5	3	3	3	5	5	5
Cap, veh/h	360	628	280	317	520	387	339	1370	611	337	1352	603
Arrive On Green	0.09	0.18	0.18	0.06	0.15	0.15	0.10	0.39	0.39	0.10	0.39	0.39
Sat Flow, veh/h	1711	3413	1522	1739	3469	1547	3428	3526	1572	3374	3469	1547
Grp Volume(v), veh/h	145	231	107	65	156	147	199	925	43	156	425	67
Grp Sat Flow(s),veh/h/ln	1711	1706	1522	1739	1735	1547	1714	1763	1572	1687	1735	1547
Q Serve(g_s), s	5.6	4.7	4.9	2.5	3.2	6.3	4.4	17.4	1.4	3.5	6.8	2.2
Cycle Q Clear(g_c), s	5.6	4.7	4.9	2.5	3.2	6.3	4.4	17.4	1.4	3.5	6.8	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	628	280	317	520	387	339	1370	611	337	1352	603
V/C Ratio(X)	0.40	0.37	0.38	0.21	0.30	0.38	0.59	0.68	0.07	0.46	0.31	0.11
Avail Cap(c_a), veh/h	385	628	280	402	603	424	450	1370	611	443	1352	603
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	28.6	28.6	26.1	30.3	24.9	34.5	20.3	15.4	34.0	17.0	15.6
Incr Delay (d2), s/veh	0.3	0.1	0.3	0.1	0.1	0.2	0.6	2.7	0.2	0.4	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	3.4	3.1	1.8	2.3	4.0	3.2	11.1	0.9	2.5	4.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.3	28.7	29.0	26.3	30.4	25.1	35.1	23.0	15.6	34.3	17.6	15.9
LnGrp LOS	C	C	C	C	C	C	D	C	B	C	B	B
Approach Vol, veh/h	483			368			1167			648		
Approach Delay, s/veh	27.7			27.5			24.8			21.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	37.7	9.1	20.8	12.5	37.6	11.8	18.1				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.1	4.5	6.5	4.5	6.1				
Max Green Setting (Gmax), s	10.5	25.5	8.5	13.9	10.5	25.5	8.5	13.9				
Max Q Clear Time (g_c+I1), s	6.4	8.8	4.5	6.9	5.5	19.4	7.6	8.3				
Green Ext Time (p_c), s	0.1	1.7	0.0	0.6	0.1	2.2	0.0	0.4				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	24.9											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
110: Genesee Road & Frontage Road Access/Bank Driveway

AM Exist.syn  
04/10/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	5	1	1	1	1	1	1	1105	1	1	610	5
Future Volume (vph)	5	1	1	1	1	1	1	1105	1	1	610	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt	0.981				0.955				0.999			
Fit Protected	0.966				0.984		0.950				0.950	
Satd. Flow (prot)	0	1783	0	0	1768	0	1752	3505	0	1703	3402	0
Fit Permitted	0.966				0.984		0.950				0.950	
Satd. Flow (perm)	0	1783	0	0	1768	0	1752	3505	0	1703	3402	0
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	516				540		668				591	
Travel Time (s)	14.1				14.7		10.1				9.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	6%	6%	6%
Adj. Flow (vph)	5	1	1	1	1	1	1	1214	1	1	670	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	3	0	1	1215	0	1	675	0
Sign Control	Stop				Stop		Free				Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											

HCM 6th TWSC  
110: Genesee Road & Frontage Road Access/Bank Driveway

AM Exist.syn  
04/10/2019

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	5	1	1	1	1	1	1	1105	1	1	610	5
Future Vol, veh/h	5	1	1	1	1	1	1	1105	1	1	610	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	3	3	3	6	6	6
Mvmt Flow	5	1	1	1	1	1	1	1214	1	1	670	5

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1285	1892	338	1555
Stage 1	675	675	-	1217
Stage 2	610	1217	-	338
Critical Hdwy	7.52	6.52	6.92	7.52
Critical Hdwy Stg 1	6.52	5.52	-	6.52
Critical Hdwy Stg 2	6.52	5.52	-	6.52
Follow-up Hdwy	3.51	4.01	3.31	3.51
Pot Cap-1 Maneuver	123	70	661	77
Stage 1	412	454	-	193
Stage 2	451	254	-	653
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	122	70	661	76
Mov Cap-2 Maneuver	251	177	-	158
Stage 1	412	453	-	193
Stage 2	447	254	-	649

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	22.3	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	258	211	548	-	-
HCM Lane V/C Ratio	0.001	-	-	0.03	0.016	0.002	-	-
HCM Control Delay (s)	9	-	-	19.4	22.3	11.6	-	-
HCM Lane LOS	A	-	-	C	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

PM Exist.syn

04/10/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	110	285	190	180	295	345	155	450	85	410	785	100
Future Volume (vph)	110	285	190	180	295	345	155	450	85	410	785	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		275	150		275	315		75	315		125
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3505	1568	1770	3539	1583	3433	3539	1583	3467	3574	1599
Fit Permitted	0.561			0.486			0.950			0.950		
Satd. Flow (perm)	1035	3505	1568	905	3539	1583	3433	3539	1583	3467	3574	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	35			35			45			35		
Link Distance (ft)	421			990			591			912		
Travel Time (s)	8.2			19.3			9.0			17.8		
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%	62%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	117	303	125	191	314	228	165	479	56	436	835	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	303	125	191	314	228	165	479	56	436	835	66
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pt+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	8.5	1	6		5	2	
Permitted Phases	4		4	8				6				2
Detector Phase	7	4	4	3	8	8.5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	6.0	12.0	12.0	6.0	12.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	10.5	18.1	18.1	10.5	18.1		12.5	18.5	18.5	12.5	18.5	18.5
Total Split (s)	13.0	24.0	24.0	13.0	24.0		15.0	27.0	27.0	21.0	33.0	33.0
Total Split (%)	15.3%	28.2%	28.2%	15.3%	28.2%		17.6%	31.8%	31.8%	24.7%	38.8%	38.8%
Maximum Green (s)	8.5	17.9	17.9	8.5	17.9		10.5	20.5	20.5	16.5	26.5	26.5
Yellow Time (s)	3.5	3.6	3.6	3.5	3.6		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.1	6.1	4.5	6.1		4.5	6.5	6.5	4.5	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	Min	C-Max	C-Max
v/c Ratio	0.33	0.52	0.48	0.54	0.45	0.34	0.46	0.43	0.11	0.74	0.62	0.11
Control Delay	22.1	35.1	37.7	27.0	32.8	18.4	40.0	26.0	24.3	41.7	24.9	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	35.1	37.7	27.0	32.8	18.4	40.0	26.0	24.3	41.7	24.9	19.7
90th %ile Green (s)	8.5	17.9	17.9	8.5	17.9		10.5	20.5	20.5	16.5	26.5	26.5
90th %ile Term Code	Max	Hold	Hold	Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.5	15.9	15.9	8.5	15.9		9.5	22.5	22.5	16.5	29.5	29.5

Lanes, Volumes, Timings

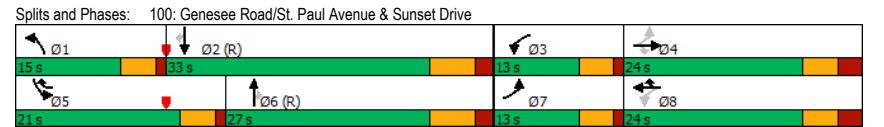
100: Genesee Road/St. Paul Avenue & Sunset Drive

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70th %ile Term Code	Max	Hold	Hold	Max	Gap		Gap	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	8.5	13.5	13.5	8.5	13.5		8.4	26.5	26.5	14.9	33.0	33.0
50th %ile Term Code	Max	Hold	Hold	Max	Gap		Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	7.2	12.0	12.0	8.5	13.3		8.0	29.7	29.7	13.2	34.9	34.9
30th %ile Term Code	Gap	Min	Min	Max	Hold		Min	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	12.0	12.0	7.1	23.6		8.0	33.5	33.5	10.8	36.3	36.3
10th %ile Term Code	Skip	Min	Min	Gap	Hold		Min	Coord	Coord	Gap	Coord	Coord
Queue Length 50th (ft)	44	79	62	76	82	85	43	106	21	114	183	22
Queue Length 95th (ft)	77	112	109	119	116	126	72	167	54	160	277	55
Internal Link Dist (ft)		341			910			511			832	
Turn Bay Length (ft)	150		275	150		275	315		75	315		125
Base Capacity (vph)	368	738	330	355	792	677	424	1104	494	673	1347	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.41	0.38	0.54	0.40	0.34	0.39	0.43	0.11	0.65	0.62	0.11

Intersection Summary	
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	85
Offset:	79 (93%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated



HCM 6th Signalized Intersection Summary  
100: Genesee Road/St. Paul Avenue & Sunset Drive

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04/10/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	110	285	190	180	295	345	155	450	85	410	785	100
Future Volume (veh/h)	110	285	190	180	295	345	155	450	85	410	785	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1856	1856	1856	1870	1870	1870	1870	1870	1885	1885	1885	1885
Adj Flow Rate, veh/h	117	303	125	191	314	228	165	479	56	436	835	66
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, %	3	3	3	2	2	2	2	2	1	1	1	1
Cap, veh/h	290	498	222	321	593	502	319	1261	562	522	1478	659
Arrive On Green	0.07	0.14	0.14	0.10	0.17	0.17	0.09	0.35	0.35	0.15	0.41	0.41
Sat Flow, veh/h	1767	3526	1572	1781	3554	1585	3456	3554	1585	3483	3582	1598
Grp Volume(v), veh/h	117	303	125	191	314	228	165	479	56	436	835	66
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1781	1777	1585	1728	1777	1585	1742	1791	1598
Q Serve(g_s), s	4.7	6.9	6.3	7.7	6.9	9.8	3.9	8.5	2.0	10.3	15.2	2.2
Cycle Q Clear(g_c), s	4.7	6.9	6.3	7.7	6.9	9.8	3.9	8.5	2.0	10.3	15.2	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	498	222	321	593	502	319	1261	562	522	1478	659
V/C Ratio(X)	0.40	0.61	0.56	0.60	0.53	0.45	0.52	0.38	0.10	0.84	0.57	0.10
Avail Cap(c_a), veh/h	335	742	331	321	748	571	427	1261	562	676	1478	659
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	34.3	34.1	27.8	32.4	23.2	36.8	20.4	18.3	35.1	19.1	15.3
Incr Delay (d2), s/veh	0.3	0.5	0.8	2.1	0.3	0.2	0.5	0.9	0.4	5.6	1.6	0.3
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	3.5	5.2	4.3	6.0	5.2	6.3	2.8	6.1	1.4	8.2	10.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	34.7	34.9	29.8	32.6	23.4	37.3	21.3	18.7	40.8	20.7	15.6
LnGrp LOS	C	C	C	C	C	C	D	C	B	D	C	B
Approach Vol, veh/h	545			733			700			1337		
Approach Delay, s/veh	33.4			29.0			24.9			27.0		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	41.6	13.0	18.1	17.2	36.7	10.8	20.3				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.1	4.5	6.5	4.5	6.1				
Max Green Setting (Gmax), s	10.5	26.5	8.5	17.9	16.5	20.5	8.5	17.9				
Max Q Clear Time (g_c+I1), s	5.9	17.2	9.7	8.9	12.3	10.5	6.7	11.8				
Green Ext Time (p_c), s	0.1	2.8	0.0	1.0	0.4	1.5	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	28.1											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
110: Genesee Road & Frontage Road Access/Bank Driveway

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04/10/2019

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	1	1	1	10	1	10	1	680	10	10	1145	1
Future Volume (vph)	1	1	1	10	1	10	1	680	10	10	1145	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0	0	0	150	0	50	0	50	0	0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (ft)	75			75		75		75		75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt	0.955				0.936		0.998					
Fit Protected	0.984				0.977		0.950				0.950	
Satd. Flow (prot)	0	1768	0	0	1720	0	1752	3498	0	1787	3574	0
Fit Permitted	0.984				0.977		0.950				0.950	
Satd. Flow (perm)	0	1768	0	0	1720	0	1752	3498	0	1787	3574	0
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	516				540		668				591	
Travel Time (s)	14.1				14.7		10.1				9.0	
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
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Adj. Flow (vph)	1	1	1	10	1	10	1	708	10	10	1193	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	3	0	0	21	0	1	718	0	10	1194	0
Sign Control	Stop				Stop		Free				Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											



HCM 6th TWSC  
110: Genesee Road & Frontage Road Access/Bank Driveway

PM Exist.syn  
04/10/2019

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	1	1	1	10	1	10	1	680	10	10	1145	1
Future Vol, veh/h	1	1	1	10	1	10	1	680	10	10	1145	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	3	3	3	1	1	1
Mvmt Flow	1	1	1	10	1	10	1	708	10	10	1193	1

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1571	1934	597	1332
Stage 1	1214	1214	-	715
Stage 2	357	720	-	617
Critical Hdwy	7.52	6.52	6.92	7.52
Critical Hdwy Stg 1	6.52	5.52	-	6.52
Critical Hdwy Stg 2	6.52	5.52	-	6.52
Follow-up Hdwy	3.51	4.01	3.31	3.51
Pot Cap-1 Maneuver	75	66	449	113
Stage 1	194	255	-	390
Stage 2	636	433	-	446
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	73	65	449	111
Mov Cap-2 Maneuver	157	171	-	238
Stage 1	194	252	-	389
Stage 2	623	432	-	438

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.6	16.6	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	575	-	-	208	331	886	-	-
HCM Lane V/C Ratio	0.002	-	-	0.015	0.066	0.012	-	-
HCM Control Delay (s)	11.3	-	-	22.6	16.6	9.1	-	-
HCM Lane LOS	B	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

# **APPENDIX D**

## **Year 2019 Build Traffic Analysis Outputs**

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

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04/10/2019



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	135	215	160	65	145	220	185	865	65	145	400	100
Future Volume (vph)	135	215	160	65	145	220	185	865	65	145	400	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		275	150		275	315		75	315		125
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1687	3374	1509	1719	3438	1538	3400	3505	1568	3335	3438	1538
Fit Permitted	0.565			0.608			0.950			0.950		
Satd. Flow (perm)	1003	3374	1509	1100	3438	1538	3400	3505	1568	3335	3438	1538
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	35			35			45			35		
Link Distance (ft)	421			990			591			912		
Travel Time (s)	8.2			19.3			9.0			17.8		
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%	62%	100%	100%	62%	100%	100%	62%	100%	100%	62%
Heavy Vehicles (%)	7%	7%	7%	5%	5%	5%	3%	3%	3%	5%	5%	5%
Adj. Flow (vph)	145	231	107	70	156	147	199	930	43	156	430	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	231	107	70	156	147	199	930	43	156	430	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pt+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	8.5	1	6		5	2	
Permitted Phases	4		4	8				6				2
Detector Phase	7	4	4	3	8	8.5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	6.0	12.0	12.0	6.0	12.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	10.5	18.1	18.1	10.5	18.1		12.5	18.5	18.5	12.5	18.5	18.5
Total Split (s)	13.0	20.0	20.0	13.0	20.0		15.0	32.0	32.0	15.0	32.0	32.0
Total Split (%)	16.3%	25.0%	25.0%	16.3%	25.0%		18.8%	40.0%	40.0%	18.8%	40.0%	40.0%
Maximum Green (s)	8.5	13.9	13.9	8.5	13.9		10.5	25.5	25.5	10.5	25.5	25.5
Yellow Time (s)	3.5	3.6	3.6	3.5	3.6		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.1	6.1	4.5	6.1		4.5	6.5	6.5	4.5	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	Min	C-Max	C-Max
v/c Ratio	0.40	0.35	0.37	0.20	0.29	0.30	0.51	0.72	0.07	0.43	0.35	0.12
Control Delay	22.9	30.8	33.7	20.0	31.4	21.9	38.1	26.7	18.2	36.9	20.2	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.9	30.8	33.7	20.0	31.4	21.9	38.1	26.7	18.2	36.9	20.2	19.0
90th %ile Green (s)	8.5	13.9	13.9	8.5	13.9		10.5	25.5	25.5	10.5	25.5	25.5
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.5	12.9	12.9	7.7	12.1		10.2	28.7	28.7	9.1	27.6	27.6

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Synchro 10 Report

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

AM Build.syn

04/10/2019

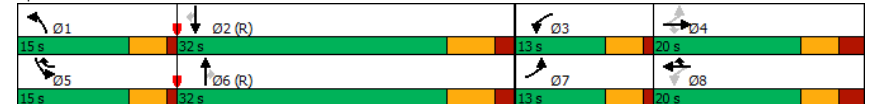


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70th %ile Term Code	Max	Hold	Hold	Gap	Gap		Gap	Coord	Coord	Gap	Coord	Coord
50th %ile Green (s)	8.5	13.8	13.8	6.7	12.0		9.0	29.8	29.8	8.1	28.9	28.9
50th %ile Term Code	Max	Hold	Hold	Gap	Min		Gap	Coord	Coord	Gap	Coord	Coord
30th %ile Green (s)	8.1	14.1	14.1	6.0	12.0		8.0	30.3	30.3	8.0	30.3	30.3
30th %ile Term Code	Gap	Hold	Hold	Min	Min		Min	Coord	Coord	Min	Coord	Coord
10th %ile Green (s)	6.1	22.6	22.6	0.0	12.0		8.0	32.3	32.3	8.0	32.3	32.3
10th %ile Term Code	Gap	Hold	Hold	Skip	Min		Min	Coord	Coord	Min	Coord	Coord
Queue Length 50th (ft)	52	54	48	24	36	56	48	204	14	38	81	22
Queue Length 95th (ft)	93	88	96	50	63	95	80	#308	38	65	127	52
Internal Link Dist (ft)		341			910			511			832	
Turn Bay Length (ft)	150		275	150		275	315		75	315		125
Base Capacity (vph)	372	661	295	375	597	461	446	1284	574	437	1242	555
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.35	0.36	0.19	0.26	0.32	0.45	0.72	0.07	0.36	0.35	0.12

Intersection Summary

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 100: Genesee Road/St. Paul Avenue & Sunset Drive



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Synchro 10 Report

HCM 6th Signalized Intersection Summary  
100: Genesee Road/St. Paul Avenue & Sunset Drive

AM Build.syn  
04/10/2019

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (veh/h)	135	215	160	65	145	220	185	865	65	145	400	100
Future Volume (veh/h)	135	215	160	65	145	220	185	865	65	145	400	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1796	1796	1796	1826	1826	1826	1856	1856	1856	1826	1826	1826
Adj Flow Rate, veh/h	145	231	107	70	156	147	199	930	43	156	430	67
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
Percent Heavy Veh, %	7	7	7	5	5	5	3	3	3	5	5	5
Cap, veh/h	360	622	278	318	520	387	339	1370	611	337	1352	603
Arrive On Green	0.09	0.18	0.18	0.06	0.15	0.15	0.10	0.39	0.39	0.10	0.39	0.39
Sat Flow, veh/h	1711	3413	1522	1739	3469	1547	3428	3526	1572	3374	3469	1547
Grp Volume(v), veh/h	145	231	107	70	156	147	199	930	43	156	430	67
Grp Sat Flow(s),veh/h/ln	1711	1706	1522	1739	1735	1547	1714	1763	1572	1687	1735	1547
Q Serve(g_s), s	5.6	4.7	4.9	2.7	3.2	6.3	4.4	17.5	1.4	3.5	6.9	2.2
Cycle Q Clear(g_c), s	5.6	4.7	4.9	2.7	3.2	6.3	4.4	17.5	1.4	3.5	6.9	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	360	622	278	318	520	387	339	1370	611	337	1352	603
V/C Ratio(X)	0.40	0.37	0.39	0.22	0.30	0.38	0.59	0.68	0.07	0.46	0.32	0.11
Avail Cap(c_a), veh/h	385	622	278	400	603	424	450	1370	611	443	1352	603
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	28.7	28.8	26.1	30.3	24.9	34.5	20.3	15.4	34.0	17.0	15.6
Incr Delay (d2), s/veh	0.3	0.1	0.3	0.1	0.1	0.2	0.6	2.7	0.2	0.4	0.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.9	3.4	3.2	1.9	2.3	4.0	3.2	11.1	0.9	2.5	4.8	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	28.8	29.1	26.2	30.4	25.1	35.1	23.0	15.6	34.3	17.6	15.9
LnGrp LOS	C	C	C	C	C	C	D	C	B	C	B	B
Approach Vol, veh/h	483			373			1172			653		
Approach Delay, s/veh	27.9			27.5			24.8			21.4		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.4	37.7	9.2	20.7	12.5	37.6	11.8	18.1				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.1	4.5	6.5	4.5	6.1				
Max Green Setting (Gmax), s	10.5	25.5	8.5	13.9	10.5	25.5	8.5	13.9				
Max Q Clear Time (g_c+I1), s	6.4	8.9	4.7	6.9	5.5	19.5	7.6	8.3				
Green Ext Time (p_c), s	0.1	1.8	0.0	0.6	0.1	2.2	0.0	0.4				
Intersection Summary												
HCM 6th Ctrl Delay	24.9											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
110: Genesee Road & Frontage Road Access/Bank Driveway

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	10	1	1	1	1	1	5	1105	1	1	610	15
Future Volume (vph)	10	1	1	1	1	1	5	1105	1	1	610	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt	0.990				0.955						0.997	
Fit Protected	0.959				0.984		0.950				0.950	
Satd. Flow (prot)	0	1786	0	0	1768	0	1752	3505	0	1703	3395	0
Fit Permitted	0.959				0.984		0.950				0.950	
Satd. Flow (perm)	0	1786	0	0	1768	0	1752	3505	0	1703	3395	0
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	516				540		668				591	
Travel Time (s)	14.1				14.7		10.1				9.0	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	6%	6%	6%
Adj. Flow (vph)	11	1	1	1	1	1	5	1214	1	1	670	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	13	0	0	3	0	5	1215	0	1	686	0
Sign Control	Stop				Stop		Free				Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	1	1	1	1	1	5	1105	1	1	610	15
Future Vol, veh/h	10	1	1	1	1	1	5	1105	1	1	610	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	1	1	1	1	1	1	3	3	3	6	6	6
Mvmt Flow	11	1	1	1	1	1	5	1214	1	1	670	16

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1298	1905	343	1563
Stage 1	680	680	-	1225
Stage 2	618	1225	-	338
Critical Hdwy	7.52	6.52	6.92	7.52
Critical Hdwy Stg 1	6.52	5.52	-	6.52
Critical Hdwy Stg 2	6.52	5.52	-	6.52
Follow-up Hdwy	3.51	4.01	3.31	3.51
Pot Cap-1 Maneuver	120	69	656	76
Stage 1	409	451	-	191
Stage 2	446	251	-	653
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	118	68	656	75
Mov Cap-2 Maneuver	247	174	-	156
Stage 1	407	450	-	190
Stage 2	440	249	-	649

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.1	22.7	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	897	-	-	251	207	548	-	-
HCM Lane V/C Ratio	0.006	-	-	0.053	0.016	0.002	-	-
HCM Control Delay (s)	9	-	-	20.1	22.7	11.6	-	-
HCM Lane LOS	A	-	-	C	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

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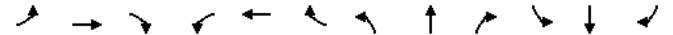
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔↔	↔	↔
Traffic Volume (vph)	110	285	190	180	295	345	155	455	90	410	790	100
Future Volume (vph)	110	285	190	180	295	345	155	455	90	410	790	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		275	150		275	315		75	315		125
Storage Lanes	1		1	1		1	2		1	2		1
Taper Length (ft)	75			75			75			75		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1752	3505	1568	1770	3539	1583	3433	3539	1583	3467	3574	1599
Fit Permitted	0.561			0.486			0.950			0.950		
Satd. Flow (perm)	1035	3505	1568	905	3539	1583	3433	3539	1583	3467	3574	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)	35			35			45			35		
Link Distance (ft)	421			990			591			912		
Travel Time (s)	8.2			19.3			9.0			17.8		
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%	62%	100%	100%	62%	100%	62%	100%	100%	62%	62%
Heavy Vehicles (%)	3%	3%	3%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Adj. Flow (vph)	117	303	125	191	314	228	165	484	59	436	840	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	303	125	191	314	228	165	484	59	436	840	66
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pt+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	8.5	1	6		5	2	
Permitted Phases	4		4	8				6				2
Detector Phase	7	4	4	3	8	8.5	1	6	6	5	2	2
Switch Phase												
Minimum Initial (s)	6.0	12.0	12.0	6.0	12.0		8.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	10.5	18.1	18.1	10.5	18.1		12.5	18.5	18.5	12.5	18.5	18.5
Total Split (s)	13.0	24.0	24.0	13.0	24.0		15.0	27.0	27.0	21.0	33.0	33.0
Total Split (%)	15.3%	28.2%	28.2%	15.3%	28.2%		17.6%	31.8%	31.8%	24.7%	38.8%	38.8%
Maximum Green (s)	8.5	17.9	17.9	8.5	17.9		10.5	20.5	20.5	16.5	26.5	26.5
Yellow Time (s)	3.5	3.6	3.6	3.5	3.6		3.5	4.5	4.5	3.5	4.5	4.5
All-Red Time (s)	1.0	2.5	2.5	1.0	2.5		1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	6.1	6.1	4.5	6.1		4.5	6.5	6.5	4.5	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None		None	C-Max	C-Max	Min	C-Max	C-Max
v/c Ratio	0.33	0.52	0.48	0.54	0.45	0.34	0.46	0.44	0.12	0.74	0.62	0.11
Control Delay	22.1	35.1	37.7	27.0	32.8	18.4	40.0	26.1	24.4	41.7	24.9	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.1	35.1	37.7	27.0	32.8	18.4	40.0	26.1	24.4	41.7	24.9	19.7
90th %ile Green (s)	8.5	17.9	17.9	8.5	17.9		10.5	20.5	20.5	16.5	26.5	26.5
90th %ile Term Code	Max	Hold	Hold	Max	Max		Max	Coord	Coord	Max	Coord	Coord
70th %ile Green (s)	8.5	15.9	15.9	8.5	15.9		9.5	22.5	22.5	16.5	29.5	29.5

Lanes, Volumes, Timings

100: Genesee Road/St. Paul Avenue & Sunset Drive

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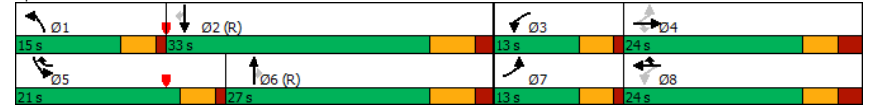
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70th %ile Term Code	Max	Hold	Hold	Max	Gap		Gap	Coord	Coord	Max	Coord	Coord
50th %ile Green (s)	8.5	13.5	13.5	8.5	13.5		8.4	26.5	26.5	14.9	33.0	33.0
50th %ile Term Code	Max	Hold	Hold	Max	Gap		Gap	Coord	Coord	Max	Coord	Coord
30th %ile Green (s)	7.2	12.0	12.0	8.5	13.3		8.0	29.7	29.7	13.2	34.9	34.9
30th %ile Term Code	Gap	Min	Min	Max	Hold		Min	Coord	Coord	Gap	Coord	Coord
10th %ile Green (s)	0.0	12.0	12.0	7.1	23.6		8.0	33.5	33.5	10.8	36.3	36.3
10th %ile Term Code	Skip	Min	Min	Gap	Hold		Min	Coord	Coord	Gap	Coord	Coord
Queue Length 50th (ft)	44	79	62	76	82	85	43	107	22	114	184	22
Queue Length 95th (ft)	77	112	109	119	116	126	72	169	56	160	280	55
Internal Link Dist (ft)		341			910			511			832	
Turn Bay Length (ft)	150		275	150		275	315		75	315		125
Base Capacity (vph)	368	738	330	355	792	677	424	1104	494	673	1347	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.41	0.38	0.54	0.40	0.34	0.39	0.44	0.12	0.65	0.62	0.11

Intersection Summary	
Area Type:	Other
Cycle Length:	85
Actuated Cycle Length:	85
Offset:	79 (93%), Referenced to phase 2:SBT and 6:NBT, Start of 1st Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated

Splits and Phases: 100: Genesee Road/St. Paul Avenue & Sunset Drive



HCM 6th Signalized Intersection Summary  
100: Genesee Road/St. Paul Avenue & Sunset Drive

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	110	285	190	180	295	345	155	455	90	410	790	100
Future Volume (veh/h)	110	285	190	180	295	345	155	455	90	410	790	100
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
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	1856	1856	1856	1870	1870	1870	1870	1870	1885	1885	1885	1885
Adj Flow Rate, veh/h	117	303	125	191	314	228	165	484	59	436	840	66
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, %	3	3	3	2	2	2	2	2	1	1	1	1
Cap, veh/h	290	498	222	321	593	502	319	1261	562	522	1478	659
Arrive On Green	0.07	0.14	0.14	0.10	0.17	0.17	0.09	0.35	0.35	0.15	0.41	0.41
Sat Flow, veh/h	1767	3526	1572	1781	3554	1585	3456	3554	1585	3483	3582	1598
Grp Volume(v), veh/h	117	303	125	191	314	228	165	484	59	436	840	66
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1781	1777	1585	1728	1777	1585	1742	1791	1598
Q Serve(g_s), s	4.7	6.9	6.3	7.7	6.9	9.8	3.9	8.6	2.1	10.3	15.3	2.2
Cycle Q Clear(g_c), s	4.7	6.9	6.3	7.7	6.9	9.8	3.9	8.6	2.1	10.3	15.3	2.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	290	498	222	321	593	502	319	1261	562	522	1478	659
V/C Ratio(X)	0.40	0.61	0.56	0.60	0.53	0.45	0.52	0.38	0.10	0.84	0.57	0.10
Avail Cap(c_a), veh/h	335	742	331	321	748	571	427	1261	562	676	1478	659
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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	34.3	34.1	27.8	32.4	23.2	36.8	20.5	18.4	35.1	19.2	15.3
Incr Delay (d2), s/veh	0.3	0.5	0.8	2.1	0.3	0.2	0.5	0.9	0.4	5.6	1.6	0.3
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	3.5	5.2	4.3	6.0	5.2	6.3	2.8	6.2	1.4	8.2	10.3	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	34.7	34.9	29.8	32.6	23.4	37.3	21.4	18.7	40.8	20.8	15.6
LnGrp LOS	C	C	C	C	C	C	D	C	B	D	C	B
Approach Vol, veh/h	545			733			708			1342		
Approach Delay, s/veh	33.4			29.0			24.9			27.0		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.3	41.6	13.0	18.1	17.2	36.7	10.8	20.3				
Change Period (Y+Rc), s	4.5	6.5	4.5	6.1	4.5	6.5	4.5	6.1				
Max Green Setting (Gmax), s	10.5	26.5	8.5	17.9	16.5	20.5	8.5	17.9				
Max Q Clear Time (g_c+I1), s	5.9	17.3	9.7	8.9	12.3	10.6	6.7	11.8				
Green Ext Time (p_c), s	0.1	2.8	0.0	1.0	0.4	1.5	0.0	1.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay	28.0											
HCM 6th LOS	C											

Lanes, Volumes, Timings  
110: Genesee Road & Frontage Road Access/Bank Driveway

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	10	1	5	10	1	10	1	680	10	10	1145	5
Future Volume (vph)	10	1	5	10	1	10	1	680	10	10	1145	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0	0	0	150	0	50	0	50	0	0
Storage Lanes	0	0	0	0	0	1	0	1	0	1	0	0
Taper Length (ft)	75			75		75		75		75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt	0.958				0.936				0.998			
Fit Protected	0.970				0.977		0.950				0.950	
Satd. Flow (prot)	0	1748	0	0	1720	0	1752	3498	0	1787	3571	0
Fit Permitted	0.970				0.977		0.950				0.950	
Satd. Flow (perm)	0	1748	0	0	1720	0	1752	3498	0	1787	3571	0
Link Speed (mph)	25				25		45				45	
Link Distance (ft)	516				540		668				591	
Travel Time (s)	14.1				14.7		10.1				9.0	
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
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	1%	1%	1%
Adj. Flow (vph)	10	1	5	10	1	10	1	708	10	10	1193	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	16	0	0	21	0	1	718	0	10	1198	0
Sign Control	Stop				Stop		Free				Free	
<b>Intersection Summary</b>												
Area Type:	Other											
Control Type:	Unsignalized											

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	
Traffic Vol, veh/h	10	1	5	10	1	10	1	680	10	10	1145	5
Future Vol, veh/h	10	1	5	10	1	10	1	680	10	10	1145	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	150	-	-	50	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	3	3	3	1	1	1
Mvmt Flow	10	1	5	10	1	10	1	708	10	10	1193	5

Major/Minor	Minor2	Minor1	Major1	Major2
Conflicting Flow All	1573	1936	599	1332
Stage 1	1216	1216	-	715
Stage 2	357	720	-	617
Critical Hdwy	7.52	6.52	6.92	7.52
Critical Hdwy Stg 1	6.52	5.52	-	6.52
Critical Hdwy Stg 2	6.52	5.52	-	6.52
Follow-up Hdwy	3.51	4.01	3.31	3.51
Pot Cap-1 Maneuver	75	66	447	113
Stage 1	194	254	-	390
Stage 2	636	433	-	446
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	73	65	447	110
Mov Cap-2 Maneuver	157	171	-	237
Stage 1	194	251	-	389
Stage 2	623	432	-	434

Approach	EB	WB	NB	SB
HCM Control Delay, s	24.8	16.7	0	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	573	-	-	198	330	886	-	-
HCM Lane V/C Ratio	0.002	-	-	0.084	0.066	0.012	-	-
HCM Control Delay (s)	11.3	-	-	24.8	16.7	9.1	-	-
HCM Lane LOS	B	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	0	-	-