

Memorandum

To: Kevin Lang, Commissioner Marathon County Highway Department

From: Lauren Maenhout, PE

CC: Stephanie Christensen, PE

Date: July 21, 2026

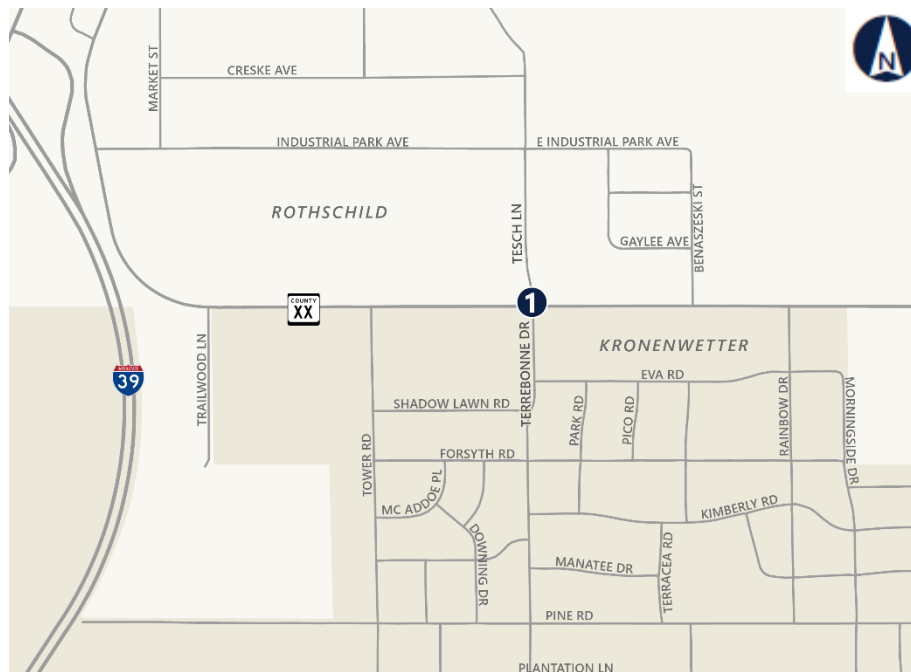
RE: CTH XX/Terrebonne Drive/Tesch Lane AWSC Warrant

Introduction

EMCS Inc. (EMCS) has been contracted to evaluate and determine if an all-way stop control (AWSC) intersection should be implemented at the intersection of County Trunk Highway (CTH) XX and Terrebonne Drive/Tesch Lane. The evaluation follows Wisconsin DOT (WisDOT) processes.

The intersection was temporarily converted to an AWSC intersection during a recent construction project and operated well. The intersection is in the Village of Rothschild and Village of Kronenwetter in Marathon County, Wisconsin. The intersection can be seen in **Figure**

Figure 1: Intersection Study Locations



1 below. This memorandum documents the analysis, procedures, and results of analysis.

Traffic Data

Existing Traffic Data

Turn movement counts were collected at CTH XX/Terrebonne Drive/Tesch Lane intersection by Gewalt Hamilton Associates, Inc. (GHA) in June of 2026 on a typical weekday while school was not in session and no inclement weather was present. Data was collected from 5:00 AM to 7:00 PM. The existing traffic volume data can be found in the **Appendix**.

Crash Data

Over a five-year period from 2021-2025 there were a total of 13 crashes at the intersection of CTH XX and Terrebonne Drive/Tesch Lane. The crashes were taken from Community Maps – Traffic Safety for Wisconsin and excluded deer crashes. Of the 13 crashes, eight crashes were classified as front to side or angle crashes and five of the eight resulted in suspected minor injury (B) or possible injury (C). The crash data can be found in the **Appendix**

All-Way Stop Control (AWSC) Warrant Analysis

In Chapter 13 Section 26 of WisDOT's Traffic Engineering, Operations and Safety Manual (TEOpS) AWSC is discussed. This section discusses the five AWSC warrants from the Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD) and they are:

- Warrant A: Crash Experience
- Warrant B: Sight Distance
- Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection
- Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)
- Warrant E: Other Factors

WisDOT created a worksheet to assess whether there is justification for the installation AWSC. The full worksheet can be found in the **Appendix**, and a summary of the results can be found in **Table 1**.

Table 1: AWSC Warrant Summary

	Existing (2026)
Warrant A – Crash Experience	Met
Warrant B- Sight Distance	Met (SW Corner of Intersection)
Warrant C – Transition to Signal/Yield Control	Not Met
Warrant D – 8-Hour Volume	3 Hours
Warrant E – Other Factors	Not Met

Conclusion

The intersection meets the crash data and sight distance warrants (southwest corner). The intersection does warrant the conversion from a two-way stop-controlled intersection to an all-way stop-controlled (AWSC) intersection. The proposal would require installation of two additional stop signs. Adding and repainting existing stop bars is recommended along with the stop sign installation.

Appendix

- Existing traffic data
- Crash data
- Intersection sight distance (ISD)
- AWSC warrant

APPENDIX

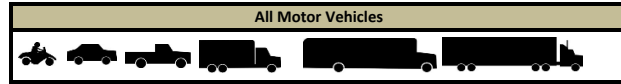
Existing Traffic Data

Intersection Traffic Volume Report

Hourly Volume Summary - Motor Vehicle Data

CTH XX & Terrebonne Dr/Tesch Ln

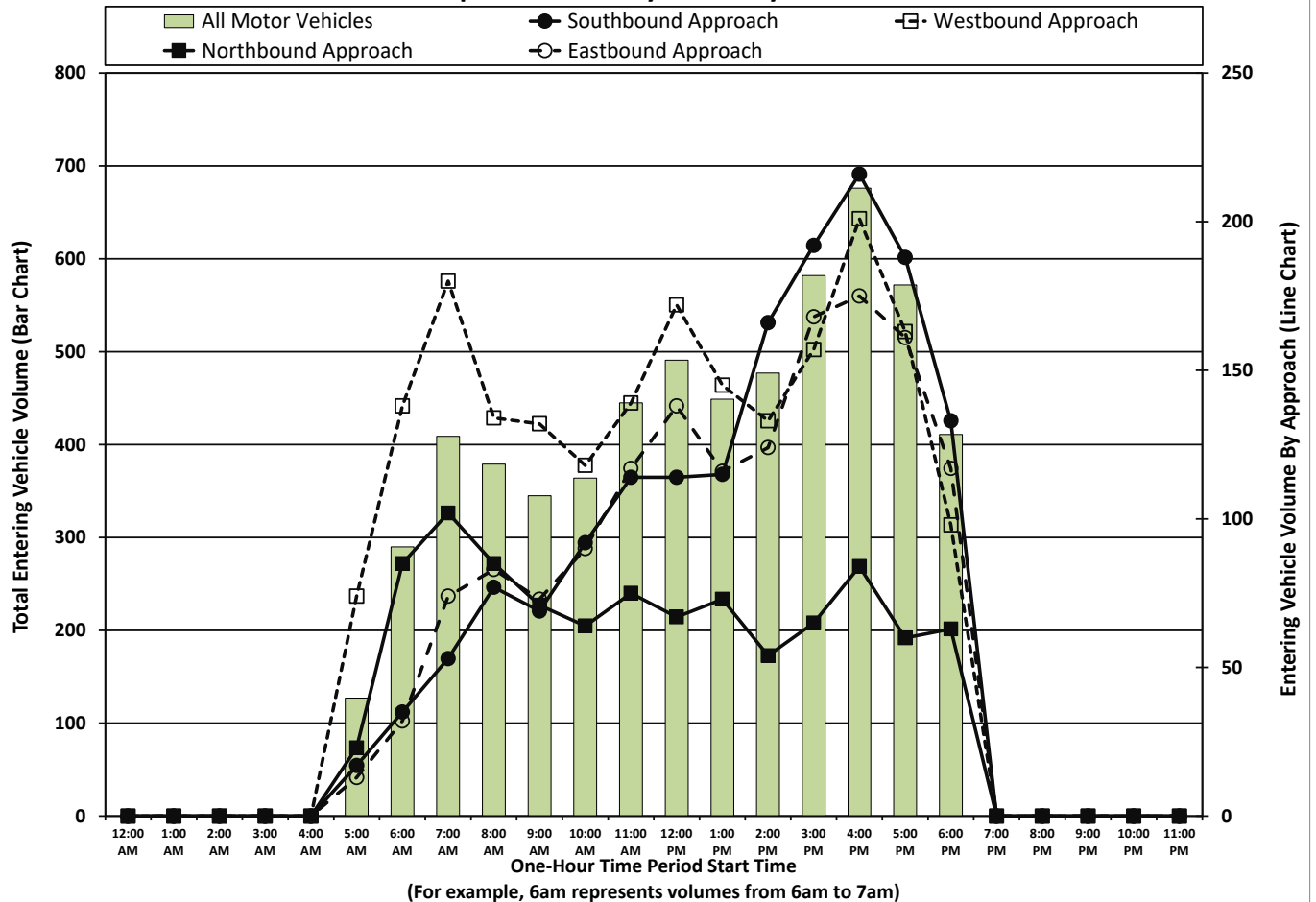
Count Basics		Page 4 of 13
Start Date:	0	Schools in Session
Total Number of Hours Counted: 14	Non-Holiday	No Special Events



One-Hour Motor Vehicle Data

One-Hour Time Period	Start Time	From North Tesch Ln					From East CTH XX					From South Terrebonne Dr					From West CTH XX					Total Vehicle Volume	Directional Volume Totals 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			
Pre-AM	12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	5:00 AM	8	3	6	0	17	36	38	0	0	74	0	16	7	0	23	2	11	0	0	13	127	87	40
	6:00 AM	1	16	18	0	35	68	70	0	0	138	6	48	31	0	85	9	18	5	0	32	290	170	120
	7:00 AM	11	18	24	0	53	81	97	2	0	180	6	51	45	0	102	12	55	7	0	74	409	254	155
	8:00 AM	13	24	40	0	77	57	72	5	0	134	10	39	36	0	85	13	62	8	0	83	379	217	162
	9:00 AM	9	29	31	0	69	48	77	7	0	132	5	44	22	0	71	17	50	6	0	73	345	205	140
MD	10:00 AM	7	44	41	0	92	52	64	2	0	118	6	31	27	0	64	18	58	14	0	90	364	208	156
	11:00 AM	19	40	55	0	114	52	82	5	0	139	6	48	21	0	75	29	74	14	0	117	445	256	189
	12:00 PM	14	33	67	0	114	71	95	6	0	172	7	43	17	0	67	29	100	9	0	138	491	310	181
	1:00 PM	12	39	64	0	115	62	74	9	0	145	9	36	28	0	73	31	76	9	0	116	449	261	188
	2:00 PM	10	49	107	0	166	53	72	8	0	133	2	27	25	0	54	30	87	6	1	124	477	257	220
PM	3:00 PM	21	62	109	0	192	65	81	11	0	157	11	37	16	1	65	31	130	7	0	168	582	325	257
	4:00 PM	12	92	112	0	216	79	108	14	0	201	12	46	26	0	84	38	126	11	0	175	676	376	300
	5:00 PM	7	91	90	0	188	66	88	9	0	163	8	24	28	0	60	44	109	8	0	161	572	324	248
	6:00 PM	5	56	72	0	133	40	50	8	0	98	13	26	24	0	63	30	85	2	0	117	411	215	196
	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
Totals	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
	10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Totals	149	596	836	0	1581	830	1068	86	0	1984	101	516	353	1	971	333	1041	106	1	1481	6017	3465	2552

Graphical Summary of Hourly Volumes



Crash Data

2021 TO 2025 CRASH SUMMARY
CTH XX AND TESCH LN/TERREBONNE DR

DOCTNMBR	CRSHDATE	CRSHHOUR	MUNICIPALITY	ONRDWY	ONRDWYDIR	ATRDWY	INTDIS	INTDIR	INJSVR	TOTFATL	TOTINJ	TOTVEH	MNRCOLL	BIKEFLAG	DISTDRVR	LANEDP1U	MCYCFLAG	OCCPPROT	TEENDRVR	65+DRVR	GOVTPROP	HITRUN	VRUFLAG	LOCTYPE
32L00LHJPQ	12/1/2021	11	KRONENWETTER	TERREBONNE DR		TESCH LN	0.000165	S	B	0	1	2	Front to Side											I
32L00FKDB9	9/2/2022	16	KRONENWETTER	TERREBONNE DR		XX	0.000072	S	O	0	0	1	Front to Side	Y									Y	I
32L3DT5JPG	2/14/2023	16	KRONENWETTER	TERREBONNE DR		XX	0.000108	S	O	0	0	2	Front To Rear		Y				Y					N
34L0122Z49	3/7/2023	15	ROTHSCHILD	XX	EB	TESCH LN	0		O	0	0	2	Front to Side											I
32L1BK8JPL	8/9/2023	11	KRONENWETTER	TERREBONNE DR		XX	0		O	0	0	2	Rear To Side				Y	Y		Y				I
34L013B03K	8/21/2023	16	ROTHSCHILD	XX	WB	TESCH LN	0		C	0	1	2	Front to Side											I
34L01884KB	10/18/2023	11	ROTHSCHILD	XX	WB	TERREBONNE DR	0		C	0	1	2	Front to Side							Y				I
34L010TWW9	11/9/2023	14	ROTHSCHILD	XX	EB	TESCH LN	0		O	0	0	2	Front to Side											I
NBL096J8X2	12/3/2024	99	ROTHSCHILD	TESCH LN		XX	0.00033	N	O	0	0	1	No Collision W/Vehicle In Transport			Y					Y	Y		N
NBL096J8Z0	3/17/2025	14	ROTHSCHILD	XX	WB	TESCH LN	0		B	0	1	3	Front to Side						Y	Y				I
NBL1BRFP3X	7/18/2025	11	ROTHSCHILD	TESCH LN		XX	0.000123	N	O	0	0	2	Front To Rear							Y				I
32L3DT5JRF	8/14/2025	11	KRONENWETTER	TERREBONNE DR		XX	0		B	0	1	2	Front to Side							Y				I
32L3DT5JRS	12/16/2025	16	KRONENWETTER	XX	SB	TESCH LN	0		O	0	0	2	Front To Rear											I

Computations by
JCSDate
7/13/26

Sheet 1 of 1

Checked by

Date

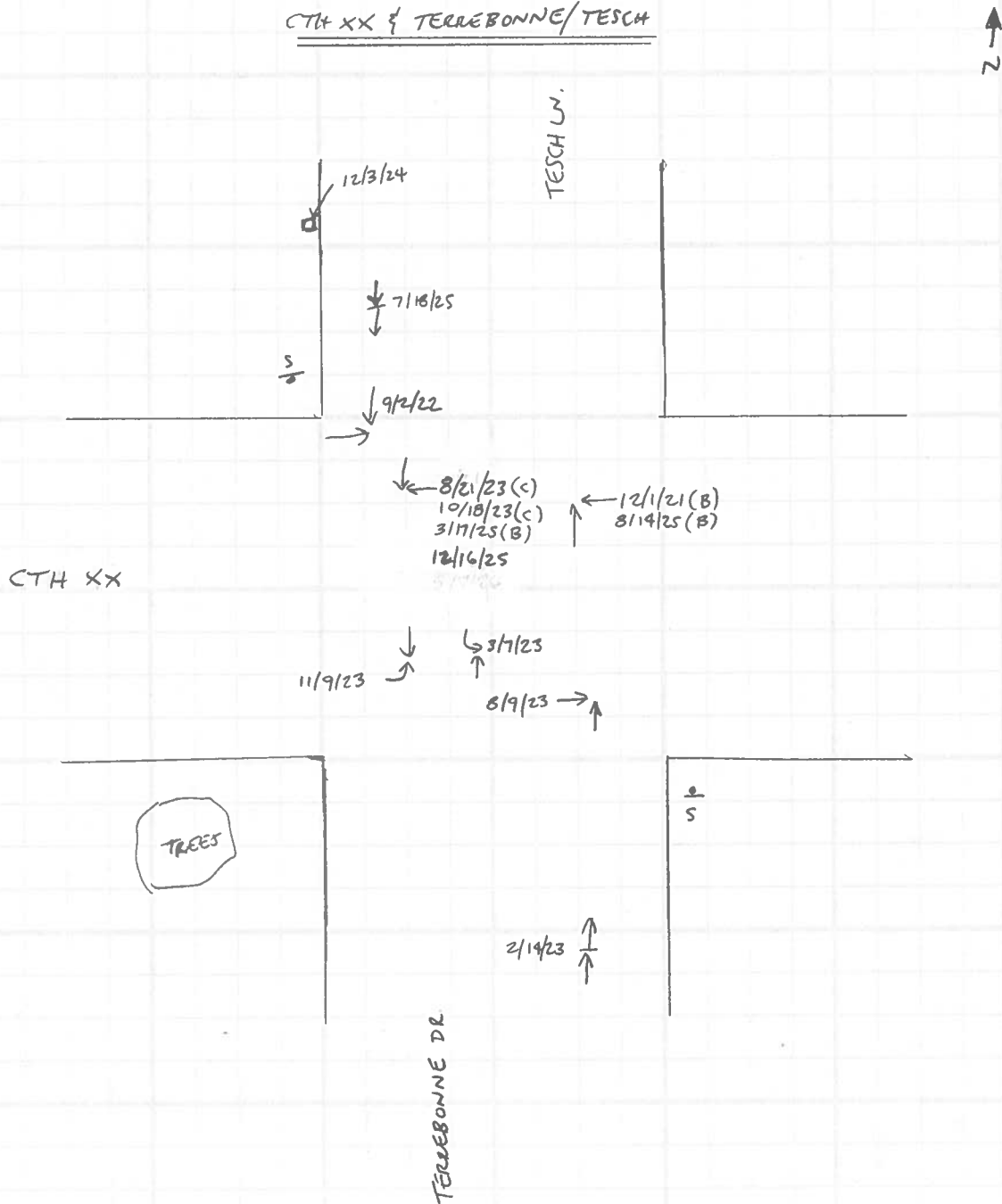
Project No.
5919

Backchecked by

Date

Item

For

2021-2025 CRASH DIAGRAMCTH XX & TERREBONNE/TESCH

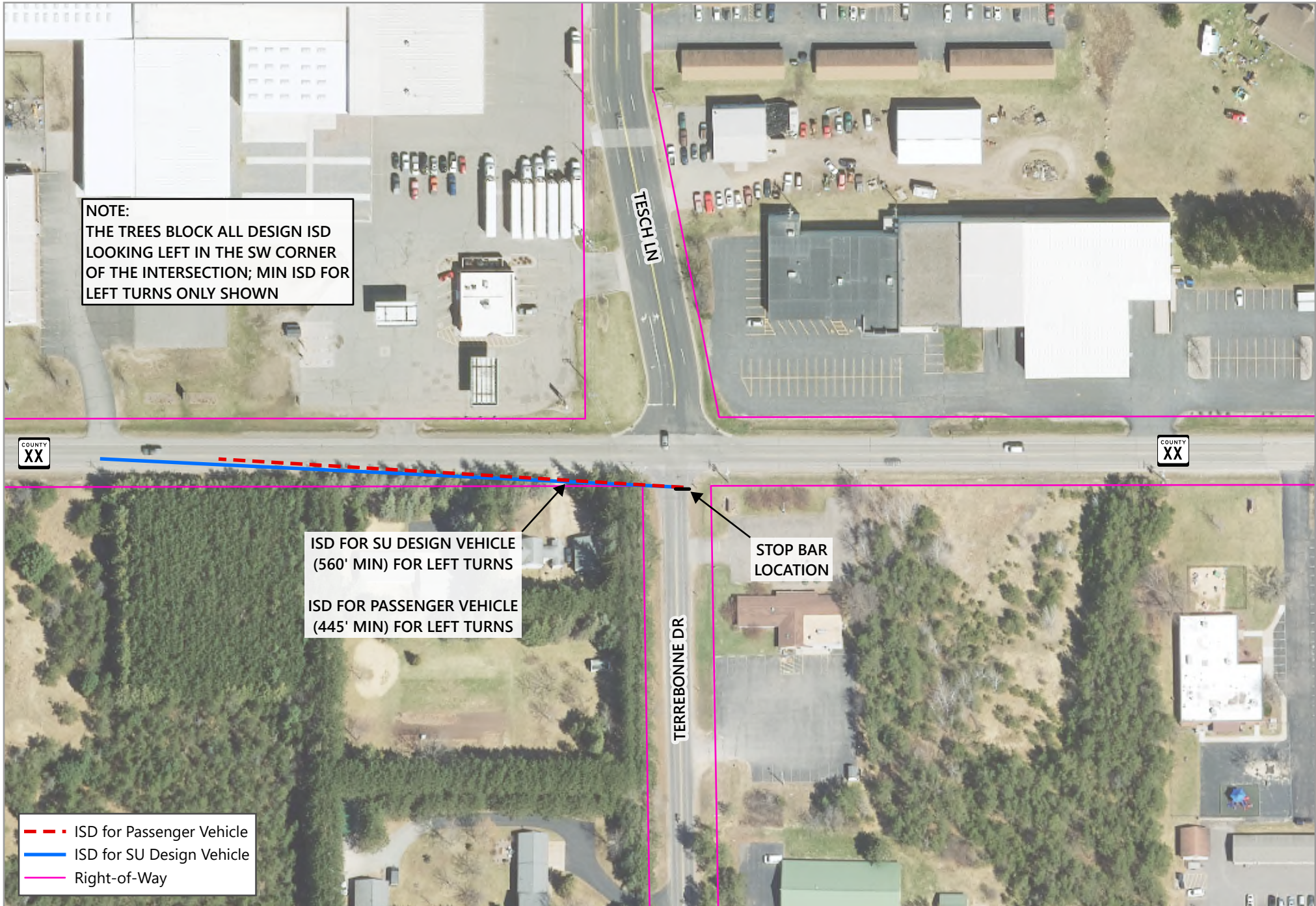
Intersection Sight Distance (ISD)
(SW Corner of Intersection)

AWSC Warrants

Intersection Sight Distance (ISD) in SW Corner of Intersection



0 60 120 Feet



AWSC Warrant

AWSC Warrant Criteria

Warrants met? Yes A, B,

MUTCD

Met? Criteria

Yes

Section 2B.13 All-Way Stop Control Warrant A: Crash Experience

Number of Approaches = 4-Leg

of Crashes in a 12 month period correctable by all-way stop control =

5

of Crashes in a 36 month period correctable by all-way stop control =

8

Yes

Section 2B.14 All-Way Stop Control Warrant B: Sight Distance

All-way stop control may be installed at an intersection where an engineering study indicates that sight distance on the minor-road approaches controlled by a STOP sign is not adequate for a vehicle to turn onto or cross the major (uncontrolled) road.

Support: At such location, a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop.

Is the warrant met? Yes

If yes, please include the engineering study in the final documentation after the AWSC Warrant Worksheet.

No

Section 2B.15 All-Way Stop Control Warrant C: Transition to Signal Control or Transition to Yield Control at a Circular Intersection

All-way stop control may be installed at locations where all-way stop control is an interim measure that can be installed to control traffic while arrangements are being made for the installation of a traffic control signal at the intersection or for the installation of yield control at a circular intersection (i.e., a roundabout).

Is the warrant met? No

If yes, please include details on the transition plan in the final documentation after the AWSC Warrant Worksheet.

Section 2B.16 All-Way Stop Control Warrant D: 8-Hour Volume (Vehicles, Pedestrians, Bicycles)

All-way stop control may be installed at an intersection where an engineering study indicates:

- A. The combined motor vehicle, bicycle, and pedestrian volume entering the intersection from the major-street approaches is at least 300 units per hour for each of any 8 hours of a typical day; and
- B. The combined motor vehicle, bicycle, and pedestrian volume entering the intersection from the minor-street approaches is at least 200 units per hour for each of any of the same 8 hours.

If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants may be reduced to 70 percent of the values given in Items A and B in Paragraph 1 of this Section.

Major Street 85th percentile mph: 40

Time Period	From	To	Major Road: Units per Hour	Minor Road: Units per Hour	A	B	Both Met?	A 70%	B 70%	Both Met?
1	5:00	6:00	87	40	No	No	No			
2	6:00	7:00	170	120	No	No	No			
3	7:00	8:00	254	155	No	No	No			
4	8:00	9:00	217	162	No	No	No			
5	9:00	10:00	205	140	No	No	No			
6	10:00	11:00	208	156	No	No	No			
7	11:00	12:00	256	189	No	No	No			
8	12:00	13:00	310	181	Yes	No	No			
9	13:00	14:00	261	188	No	No	No			
10	14:00	15:00	257	220	No	Yes	No			
11	15:00	16:00	325	257	Yes	Yes	Yes			
12	16:00	17:00	376	300	Yes	Yes	Yes			
13	17:00	18:00	324	248	Yes	Yes	Yes			
14	18:00	19:00	215	196	No	No	No			
15	19:00	20:00	0	0	No	No	No			
16	20:00	21:00	0	0	No	No	No			

No

Section 2B.16 All-Way Stop Control Warrant E: Other Factors

All-way stop control may be installed at an intersection where an engineering study indicates that all-way stop control is needed due to other factors not addressed in the other all-way stop control warrants. Such other factors may include, but are not limited to, the following:

- A. The need to control left-turn conflicts,
- B. An intersection of two residential neighborhood collector (through) streets of similar design and operation characteristics where all-way stop control would improve traffic operational characteristics of the intersection, or
- C. Where pedestrian and/or bicyclist movements support the installation of all-way stop control.

Is the warrant met? No

If yes, please include details on what other factors are met in the final documentation after the AWSC Warrant Worksheet.