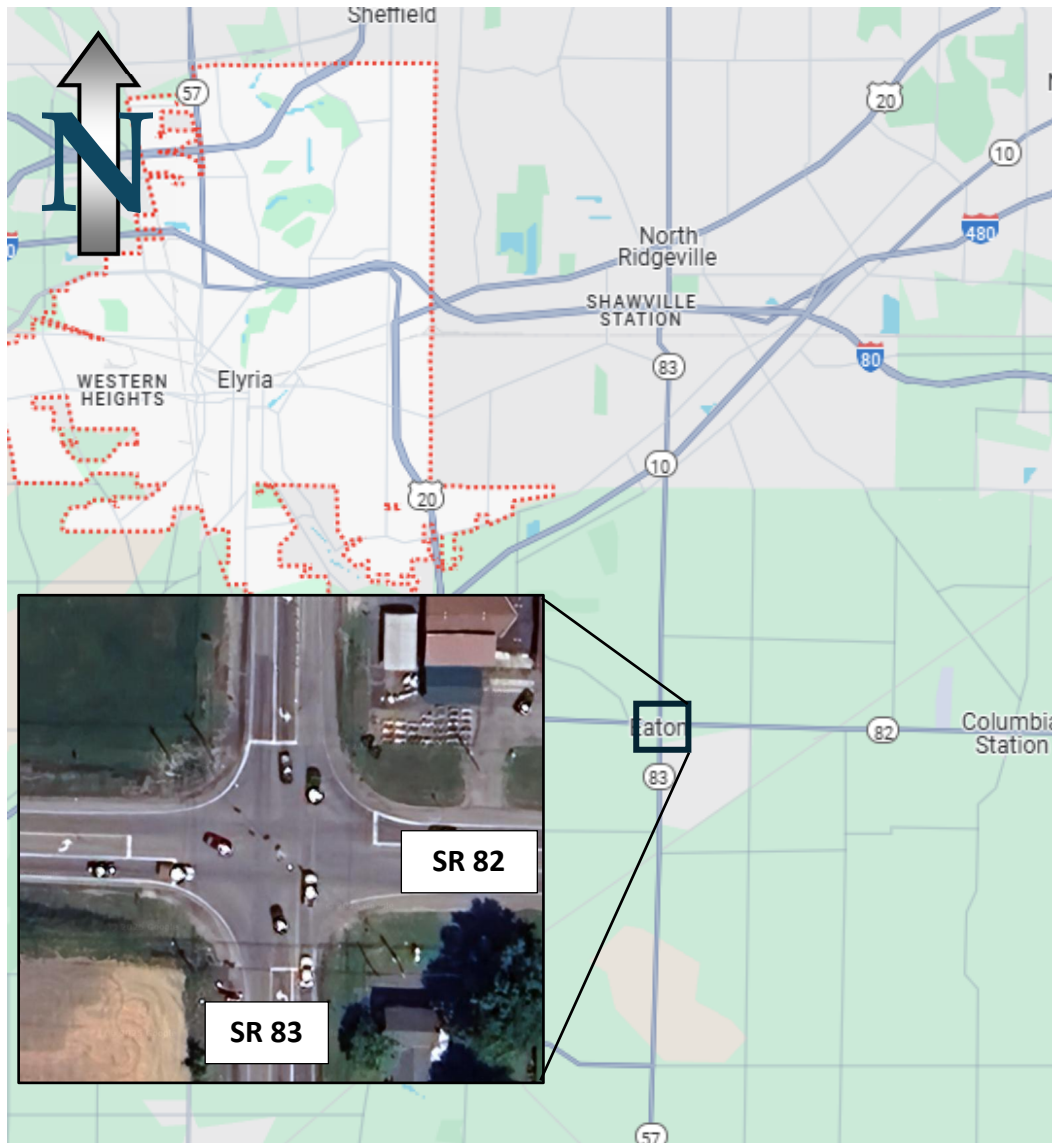


2025 Signal Evaluation

Lorain County, SR Route 82, SLM 2.57 (SR 83)



Prepared By: Carrie Whitaker
Date: 10/16/2025



**Department of
Transportation**
District 3

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Study Background

The Ohio Manual of Uniform Traffic Control Devices (OMUTCD) requires the operation of existing traffic signals to be analyzed every five years. The following report considers whether an existing signal is still warranted per OMUTCD signal warrants, and if any operational changes are required to ensure the signal is performing well.

Existing Conditions

The SR 82 and Avon Belden Road (SR 83) intersection is located in Eaton Township, Lorain County, Ohio, just south of the City North Ridgeville. Existing roadway data can be found in **Table 1** below.

Table 1. Existing Roadway Data

Category	Major Road	Minor Road
Route	SR 82	Avon Belden Road (SR 83)
Direction	East/West	North/South
Functional Class	4 (Minor Arterial)	North: 5 (Major Collector) South: 5 (Major Collector)
Speed Limit	50 MPH	55 MPH
National Truck Route?	Yes	Yes
AADT	2023: 9,123 (6% Truck)	2023: 7,214 North/ 6,959 South
Land Use	Residential/Agricultural/Commercial	
School Impacts?	Yes, Columbia High School and Middle School roughly 5 miles to the east	
Alignment		
Horizontal	Straight	Straight
Vertical	-	-
Skew	-	-
Signal		
Signal Type	Simple Span	
Install Year	2001	
Turn Lanes	Eastbound left turn lane: Storage 205 ft. Westbound left turn lane: storage 195 ft.	Northbound left turn lane: Storage 250 ft. Southbound left turn lane: Storage 260 ft.
Backplates	Yes	Yes
Detection	Dilemma Zone Radar Stop Bar Radar	Dilemma Zone Radar Stop Bar Radar
Preemption	No	

Signal Phasing and Timing

The phasing diagram can be found in **Figure 1**. The signal timing chart is in **Table 2** and the as-built drawings can be found in **Appendix A**.

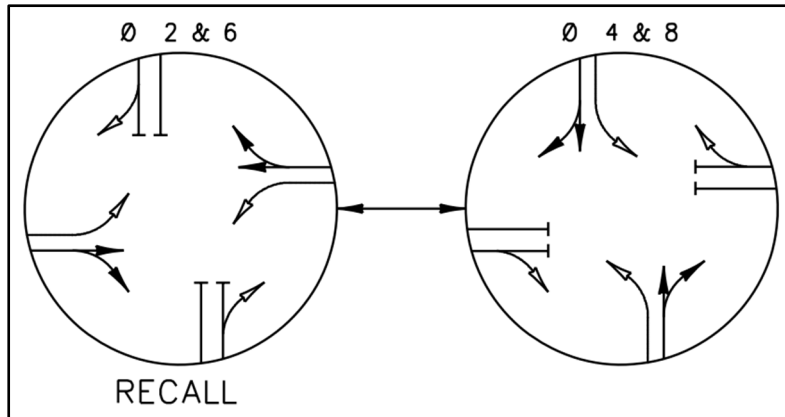


Figure 1. Phasing Diagram

Table 2. Signal Timing Chart (Replace Below)

INTERVAL	PHASE NUMBER							
	1 NOT USED	2 SR 82 EB	3 NOT USED	4 SR 83 NB	5 NOT USED	6 SR 82 WB	7 NOT USED	8 SR 83 SB
MINIMUM GREEN		20		12		20		12
PASSAGE TIME		2.0		2.0		2.0		2.0
YELLOW CLEARANCE		5.5		6.0		5.5		6.0
RED CLEARANCE		1.0		1.0		1.0		1.0
MAX GREEN 1		50		50		50		50
MAX GREEN 2		50		50		50		50
MAX GREEN 3		0		0		0		0
WALK		0		0		0		0
DON'T WALK		0		0		0		0
MINIMUM RECALL		+		-		+		-
MAXIMUM RECALL		-		-		-		-
NON-LOCK		-		+		-		+
ADDED INITIAL (Sec./act.)		1.5		0		1.5		0
MAXIMUM INITIAL		30		0		30		0
TIME TO REDUCE		15		0		15		0
TIME BEFORE REDUCTION		15		0		15		0
MINIMUM GAP		3.0		0		3.0		0

Field Review

A field review was conducted on Friday, October 3, 2025, and the following was noted:

- Signal in good condition.
- No operational concerns at time of review.

Existing conditions can be viewed in **Figure 2**.



Figure 2. Photo of Intersection (October 2025)
(Northeast Corner Looking Southwest)

Previous Studies and Improvements

A summary of intersection background information includes:

- **1994:** Left turn lanes installed on SR 82 as recommended from 1993 safety study.
- **1997:** Safety study completed. Install SR 83 left turn lanes and increase clearance intervals.
- **2001:** Signal installed (rebuild).
- **2008:** SR 83 speed study and safety review of intersection completed per Township request; 55 MPH determined appropriate and no identifiable crash pattern at intersection.
- **2016:** Signal evaluation completed. Increased maximum green time on SR 83 from 30 seconds to 50 seconds to help clear high left turn traffic volumes during peak times.
- **2017:** Safety Study completed. Signal timing adjustments made, and existing loop detection replaced with radar detection. “No Left Turn” and “Do Not Enter” signage and vertical plastic delineators installed to prevent left turns out of the Circle K driveway on SR 83 north approach.
- **2021:** Signal evaluation completed. Left turn phases for northbound and southbound traffic evaluated but not recommended for implementation. Plastic delineators on north approach were extended as illegal U-Turns persisted and signal timing adjustment made.
- **2024:** Safety study completed. Converting existing signal head span wire layout to mast arm design was evaluated but not recommended at this time due to low benefit/cost ratio (0.09). Roundabout also evaluated but not recommended at this time due to multi-lane concerns and low benefit/cost ratio (0.43). Abbreviated safety application for supplemental signal heads on all approaches submitted and approved.

Future Projects

The following are programmed projects in the area:

- **PID 121705 D03 TSG FY2026 (M)** – will install supplemental signal heads on all approaches (Construction in Spring 2026).
- **PID 124739 LOR TSG FY2030 TSMO** – Traffic signal upgrade. Project is a TSMO funded project with FY29 reservoir year.

Crash Data & Analysis

Crashes were reviewed at this intersection between January 1st, 2020 and December 31st, 2024 and are summarized in **Table 3** below. **Figure 3** shows the crash diagram and **Appendix B** has a crash diagram with further detail.

Table 3. Crash Data (2020-2024)

Year		Severity		Type		Road Condition	
2020	4 (11%)	Fatal	0 (0%)	Rear End	23 (64%)	Dry	27 (75%)
2021	8 (22%)	Injury	13 (36%)	Angle	7 (19%)	Wet	7 (19%)
2022	5 (14%)	PDO	23 (64%)	Left Turn	4 (11%)	Snow/Ice	2 (6%)
2023	9 (25%)			Sideswipe-Passing	1 (3%)		
2024	10 (28%)			Fixed Object	1 (3%)		

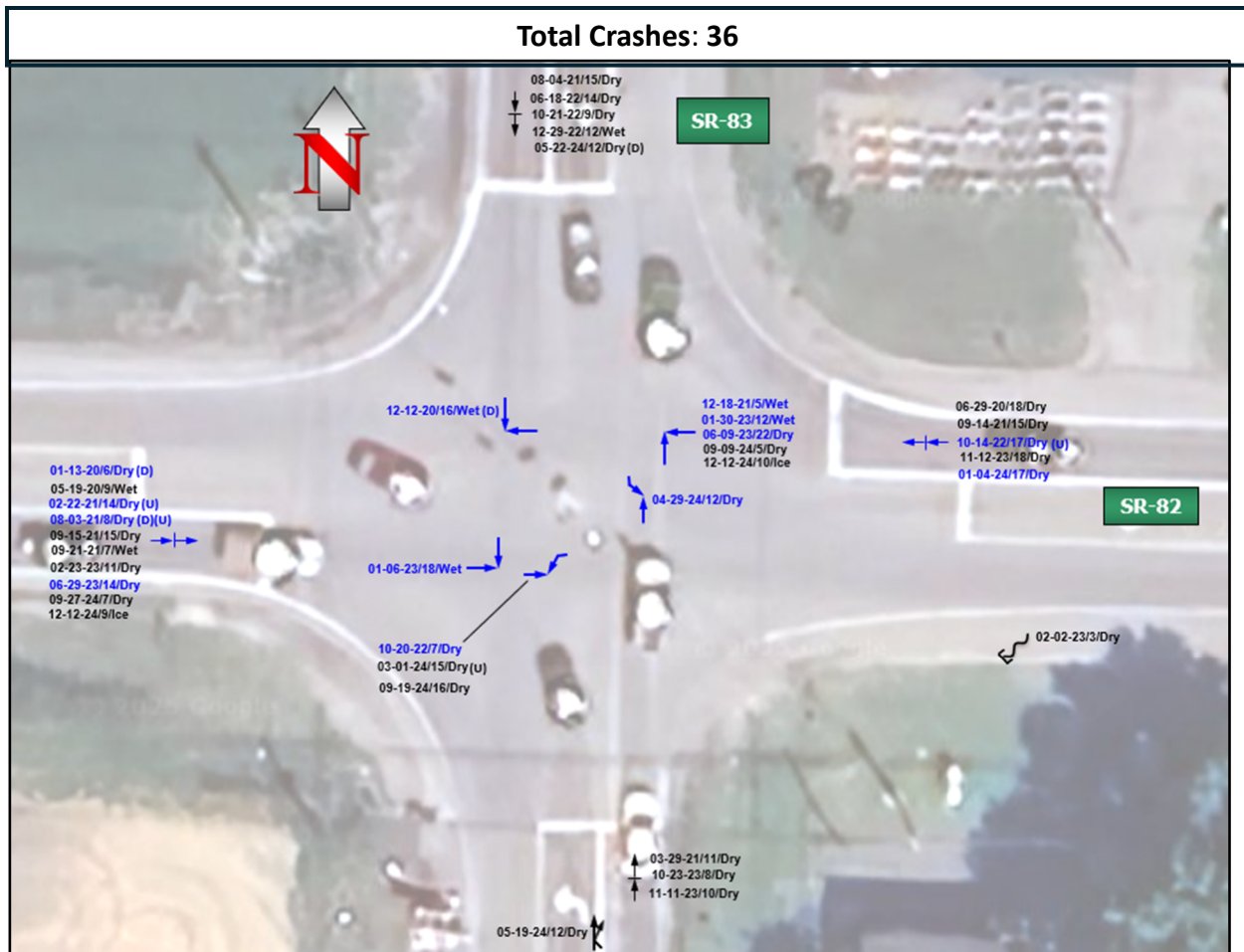


Figure 3. Crash Diagram (2020-2024)

- 23 rear end crashes: 10 eastbound, 5 westbound, 5 southbound, and 3 northbound
- 4 left turn crashes: 3 westbound and 1 southbound failure to yield
- 7 angle crashes: 3 westbound struck northbound vehicles, 2 northbound struck westbound vehicles, 1 eastbound struck a southbound vehicle, and 1 southbound struck a westbound vehicle. Contributing circumstances reported as “ran red light” or “failure to yield”. 5 of the 7 angle crashes occurred under wet or icy conditions.
- In 10 (28%) of the crashes, the at-fault driver was a younger driver (<26 yrs.)
- In 6 (17%) of the crashes, the at-fault driver was an older driver (>64 yrs.)
- In 4 (11%) of the crashes, the at-fault driver was distracted
- In 4 (11%) of the crashes, the at-fault driver was under the influence

Probable Causes and Potential Countermeasures

The probable causes of the crashes analyzed include:

- Driver inattention or impatience as shown by high number of reported distracted at-fault drivers (25%) and both rear end and running the red-light type crashes.
- Driver inexperience/ability as shown in the high occurrence of young and older at-fault driver crashes (45%).
- Driver judgement impaired as shown by reported at-fault drivers under the influence of alcohol and/or drugs (11%).

Traffic Data & Supplemental Studies

Supplemental traffic studies were performed to analyze the safety and operational capacity of the intersection. These supplemental studies are summarized below:

Turning Movement Count

A turning movement count was performed to obtain current traffic volumes for the intersection. The count was taken on Wednesday, April 9th, 2025, between the hours of 6:00 AM to 7:00 PM. The morning (AM) peak hour, afternoon (PM) peak hour, and 13-hour total are shown below in **Tables 4-6** below. The traffic count summary can be found in **Appendix C**.

Table 4. Traffic Count Data AM Peak (7:15 AM - 8:15 AM)

AM Pk	SR 82 EB			SR 82 WB			SR 83 NB			SR 83 SB			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	40	321	130	27	226	77	149	229	51	85	154	33	1522
	491			330			429			272			
Truck %	8.8%			9.4%			7.0%			12.5%			9.1%
PHF	0.921												

Table 5. Traffic Count Data PM Peak (3:45 PM – 4:45 PM)

PM Pk	SR 82 EB			SR 82 WB			SR 83 NB			SR 83 SB			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	44	319	110	49	377	79	126	188	36	138	251	43	1760
	473			505			350			432			
Truck %	3.2%			4.4%			4.0%			8.3%			4.9%
PHF	0.944												

Table 6. Traffic Count Data 13-Hour (6:00 AM – 7:00 PM)

13-Hr	SR 82 EB			SR 82 WB			SR 83 NB			SR 83 SB			Total
	L	T	R	L	T	R	L	T	R	L	T	R	
Volume	429	3154	1075	446	3029	758	1335	1994	388	1017	2050	373	16050
	4658			4233			3717			3442			
Truck %	6.7%			8.6%			6.9%			10.5%			8.1%

Left Turn Phasing Evaluation

Left Turn Phase Operation Guidelines found in the Traffic Engineering Manual (TEM) were reviewed and permissive left turn phasing is appropriate at this intersection. TEM Table 497-10 can be found in **Appendix D**.

Signal Warrant Analysis

The Ohio Manual of Uniform Traffic Control Devices (OMUTCD) Section 4C lists nine warrants for the installation of a signal. Warrants 1 – 3, using 70% volumes for signal retention, were analyzed using the turning movement count data as shown in **Table 7** below. The full signal warrant analysis can be found in **Appendix E**.

Table 7. Signal Warrants

Signal Warrant		Hours Needed	Hours Met	Warrant Met
		70% Volumes		
1 - Eight Hour Vehicular Volumes		-	-	Yes
1A – Minimum Vehicular Volume		8	13	Yes
1B - Interruption of Continuous Traffic		8	11	Yes
1 A&B - Combination of Warrants	1A	8	13	Yes
	1B	8	13	
2 - Four Hour Volumes		4	13	Yes
3 - Peak Hour Volumes		-	-	Yes

Clearance Interval

Appropriate yellow and all-red clearance intervals are important to safe operation of a signal. Using the clearance interval calculation method provided by the ODOT Office of Traffic Operations (OTO), the calculated clearance intervals are shown in **Table 8** below. A PDF version of the spreadsheet is in **Appendix F**.

Table 8. Existing and Proposed Clearance Intervals

INTERSECTION MOVEMENT	1	2	3	4	5	6	7	8
		SR 82 EB		SR 83 NB		SR 82 WB		SR 83 SB
Yellow Change (Existing)		5.5		6.0		5.5		6.0
Yellow Change (Calculated)		5.3		5.7		5.3		5.7
Yellow Change (Proposed)		5.5		6.0		5.5		6.0
All Red Clearance (Existing)		1.0		1.0		1.0		1.0
All Red Clearance (Calculated)		0.1		0.1		0.1		0.1
All Red Clearance (Proposed)		1.0		1.0		1.0		1.0
Min Green + Yellow Change (Existing)		25.5		18.0		25.5		18.0
Pedestrian Clearance (Calculated)		14.3		14.3		14.9		13.7

Notes include the following:

- Yellow Change Range: 3-6 seconds; Red Clearance Range: 1-6 seconds
- Ped Clearance is not greater than Min Green + Yellow Change, so minimum green does not need increased and post pedestrian restriction signing is not needed.
- District practice is to round clearance intervals up to the nearest 0.5 seconds.
- Existing timing clearance intervals are satisfactory, no signal timing adjustments needed.

HCS Capacity Analysis

Highway Capacity Software (HCS) 2024 was used to calculate the delay and associated Level of Service (LOS) at the intersection during the AM and PM peak hours. The average delay time in seconds per vehicle (seconds/vehicle) are shown below in **Table 9**. The full capacity analysis can be found in **Appendix G**.

Table 9. Existing Intersection Level of Service by Approach

Existing Delay s/veh and (LOS)	Intersection Approach				Intersection Combined Delay
	SR 82		SR 83		
Period	EB	WB	NB	SB	
AM Peak	13.6 (B)	11.9 (B)	15.7 (B)	15.2 (B)	14.1 (B)
PM Peak	14.4 (B)	15.5 (B)	16.7 (B)	16.3 (B)	15.6 (B)

Signal Timing Evaluation

Synchro traffic simulation software was used to calculate a signal timing plan based on site information and peak hour traffic data. Synchro then generates an optimized signal cycle length and signal phasing. Synchro uses the traffic volume and intersection geometry to minimize delay when calculating the cycle length and phase splits. Given ODOT Analysis and Traffic Simulation (OATS) Manual recommendations of major road minimum initial (green) duration of 20 seconds and minor road minimum initial duration of 10 seconds. Synchro calculated maximum green times at the intersection:

- AM Peak = 27.4 seconds for SR 82, 22.6 seconds for SR 83 (50.0 second cycle length)
- PM Peak = 31.0 seconds for SR82, 24.0 seconds for SR 83 (55.0 second cycle length)

Existing maximum green times are acceptable.

Recommendations

The following are recommended for implementation:

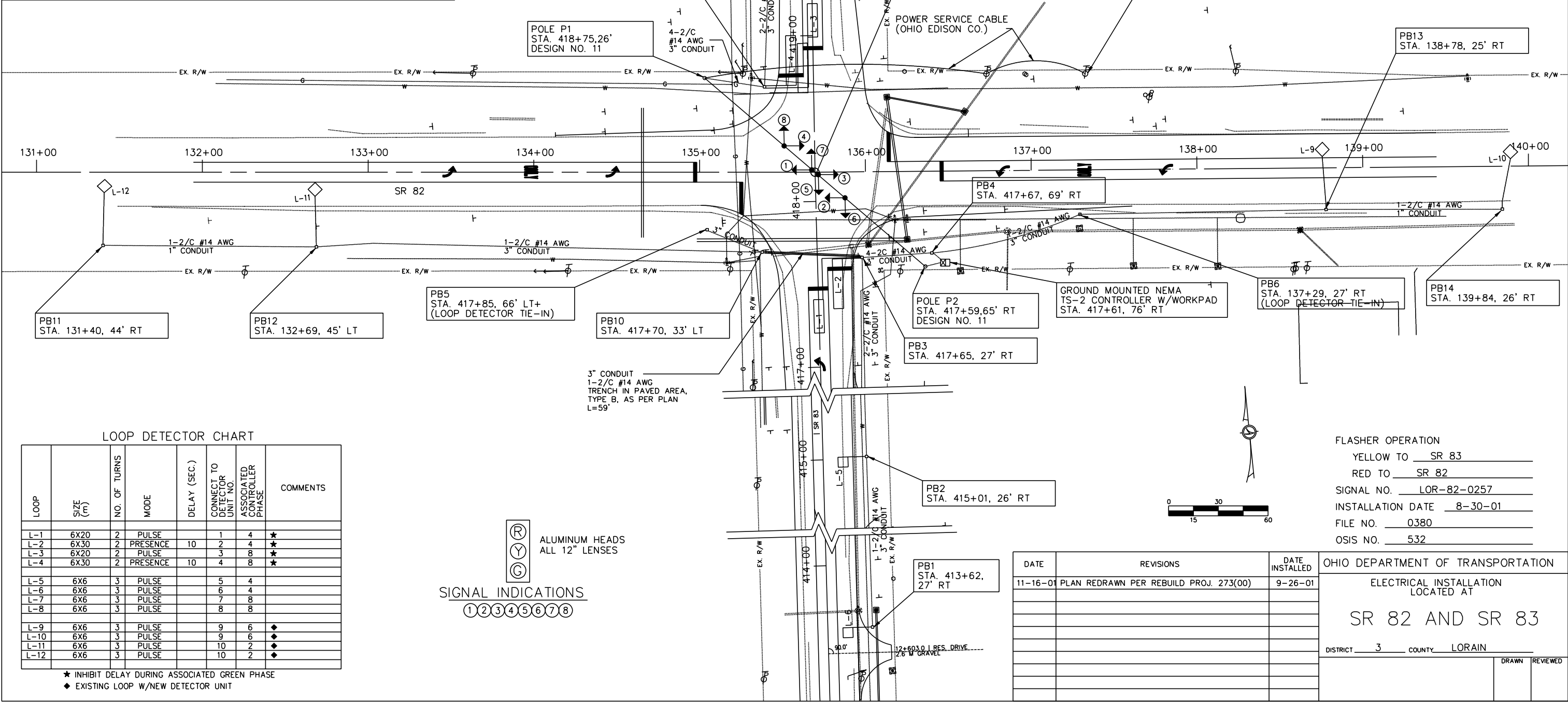
- Install supplemental signal heads on all approaches.

Overall, the intersection is operating well with no major operational issues. Supplemental signals heads on all approaches recommended as a safety countermeasure which are to be installed under PID 121705 D03 TSG FY2026 (M).

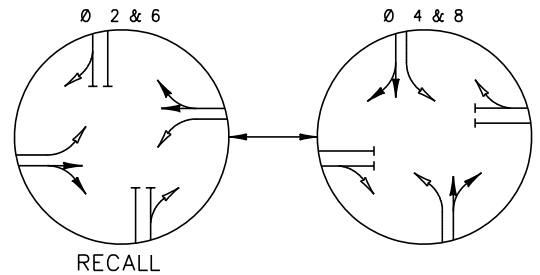
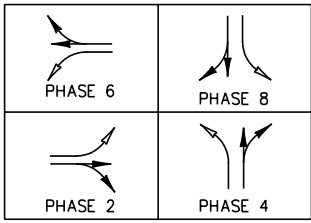
Appendix A

As-Built Signal Plans

MATERIAL REQUIRED			
ITEM	QTY.	UNITS	DESCRIPTION
625	1711	LIN. FT.	CONDUIT, 3", 713.07
625	60	LIN. FT.	CONDUIT, JACKED OR DRILLED, 3"
625	13	EACH	PULL BOX, 713.08, 18"
625	1	EACH	PULL BOX, 713.08, 24"
625	3	EACH	GROUND ROD, AS PER PLAN
632	175	LIN. FT.	MESSENGER WIRE, 7-STRAND, 1/4" DIA. W/ACCESSORIES, TETHER WIRE
632	175	LIN. FT.	MESSENGER WIRE, 7-STRAND, 3/8" DIA. W/ACCESSORIES
632	4	EACH	VEHICULAR SIGNAL HEAD, 3-SECTION, 12" LENS, 2-WAY, AS PER PLAN
632	8	EACH	DETECTOR LOOP, AS PER PLAN
632	10	EACH	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, APP
632	2	EACH	LOOP DETECTOR TIE-IN, AS PER PLAN
632	3638	LIN. FT.	LOOP DETECTOR LEAD-IN CABLE
632	1586	LIN. FT.	LOOP DETECTOR WIRE, TYPE E, APP
632	666	LIN. FT.	SIGNAL CABLE, 7 CONDUCTOR, NO. 14 AWG
632	2	EACH	STRAIN POLE FOUNDATION
632	2	EACH	STRAIN POLE, TYPE TC-81.10, DESIGN 11, AS PER PLAN
632	16	LIN. FT.	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
632	16	LIN. FT.	POWER CABLE, 3 CONDUCTOR, NO. 6 AWG
632	1	EACH	POWER SERVICE, AS PER PLAN
633	1	EACH	CONTROLLER ACTUATED, 8-PHASE, SOLID-STATE DIGITAL MICROPROCESSOR, APP
633	1	EACH	CONCRETE FOR CABINET FOUNDATION, TYPE TC-83.20, TYPE 2
633	12	SQ. FT.	CONTROLLER WORKPAD, TC-83.20, TYPE 2



PHASING IDENTIFICATION

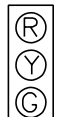


PHASING DIAGRAM

LOOP DETECTOR CHART

LOOP	SIZE (m)	NO. OF TURNS	MODE	DELAY (SEC.)	CONNECT TO DETECTOR UNIT NO.	ASSOCIATED CONTROLLER PHASE	COMMENTS
L-1	6X20	2	PULSE		1	4	★
L-2	6X30	2	PRESENCE	10	2	4	★
L-3	6X20	2	PULSE		3	8	★
L-4	6X30	2	PRESENCE	10	4	8	★
L-5	6X6	3	PULSE		5	4	
L-6	6X6	3	PULSE		6	4	
L-7	6X6	3	PULSE		7	8	
L-8	6X6	3	PULSE		8	8	
L-9	6X6	3	PULSE		9	6	◆
L-10	6X6	3	PULSE		9	6	◆
L-11	6X6	3	PULSE		10	2	◆
L-12	6X6	3	PULSE		10	2	◆

★ INHIBIT DELAY DURING ASSOCIATED GREEN PHASE
◆ EXISTING LOOP W/NEW DETECTOR UNIT



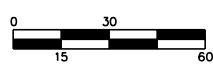
ALUMINUM HEADS
ALL 12" LENSES

SIGNAL INDICATIONS

①②③④⑤⑥⑦⑧

FLASHER OPERATION

YELLOW TO SR 83
RED TO SR 82
SIGNAL NO. LOR-82-0257
INSTALLATION DATE 8-30-01
FILE NO. 0380
OSIS NO. 532



DATE	REVISIONS	DATE INSTALLED	OHIO DEPARTMENT OF TRANSPORTATION	
11-16-01	PLAN REDRAWN PER REBUILD PROJ. 273(00)	9-26-01	ELECTRICAL INSTALLATION LOCATED AT	
			SR 82 AND SR 83	
			DISTRICT 3 COUNTY LORAIN	
			DRAWN	REVIEWED

L82&83.DWG

Appendix B

Crash Diagram

CRASH DIAGRAM

LOR-082-02.57

SR-82/SR-83

Date: 1/1/2020 - 12/31/2024



SR-83

08-04-21/15/Dry
06-18-22/14/Dry
10-21-22/9/Dry
12-29-22/12/Wet
05-22-24/12/Dry (D)

Crashes By Year

2020: 4
2021: 8
2022: 5
2023: 9
2024: 10

Total: 36

Crashes By Type

Rear End: 23 (64%)
Angle: 7 (19%)
Left Turn: 4 (11%)
Sideswipe - Passing: 1 (3%)
Fixed Object: 1 (3%)

Crashes By Severity

Fatal: 0 (0%)
Injury: 13 (36%)
PDO: 23 (64%)

Crashes By Road Condition

Dry: 27 (75%)
Wet: 7 (19%)
Snow/Ice: 2 (6%)

01-13-20/6/Dry (D)
05-19-20/9/Wet
02-22-21/14/Dry (U)
08-03-21/8/Dry (D)(U)
09-15-21/15/Dry
09-21-21/7/Wet
02-23-23/11/Dry
06-29-23/14/Dry
09-27-24/7/Dry
12-12-24/9/Ice

12-12-20/16/Wet (D)

12-18-21/5/Wet
01-30-23/12/Wet
06-09-23/22/Dry
09-09-24/5/Dry
12-12-24/10/Ice

04-29-24/12/Dry

06-29-20/18/Dry
09-14-21/15/Dry
10-14-22/17/Dry (U)
11-12-23/18/Dry
01-04-24/17/Dry

SR-82

01-06-23/18/Wet

10-20-22/7/Dry
03-01-24/15/Dry (U)
09-19-24/16/Dry

02-02-23/3/Dry

03-29-21/11/Dry
10-23-23/8/Dry
11-11-23/10/Dry

05-19-24/12/Dry

Legend:

Symbols		Types of Collisions	
	Other		Rear End
	Backing Vehicle		Head On
	Pedestrian		Side-Swipe Passing
	Parked Vehicle		Side-Swipe Meeting
	Fixed Object		Out-of-Control
	Fatal Crash		Angle
	Injury Crash		Angle
	Signal		Left Turn
	Street Name		Right Turn
	Stop Sign		Right Turn
	Animal		Right Turn

Diagram Label Key

Date/Hour/Road Condition
(U) = Under the Influence (D) = Distracted

Appendix C

Traffic Count



Ohio Department of Transportation - Safety
 1980 West Broad Street
 Mail Stop 5160
 Columbus, Ohio, United States 43223
 +16147528099 jared.feller@dot.state.oh.us
 Office of Traffic Engineering

Count Name: LOR-82-2.57
 Site Code:
 Start Date: 04/09/2025
 Page No: 1

Turning Movement Data

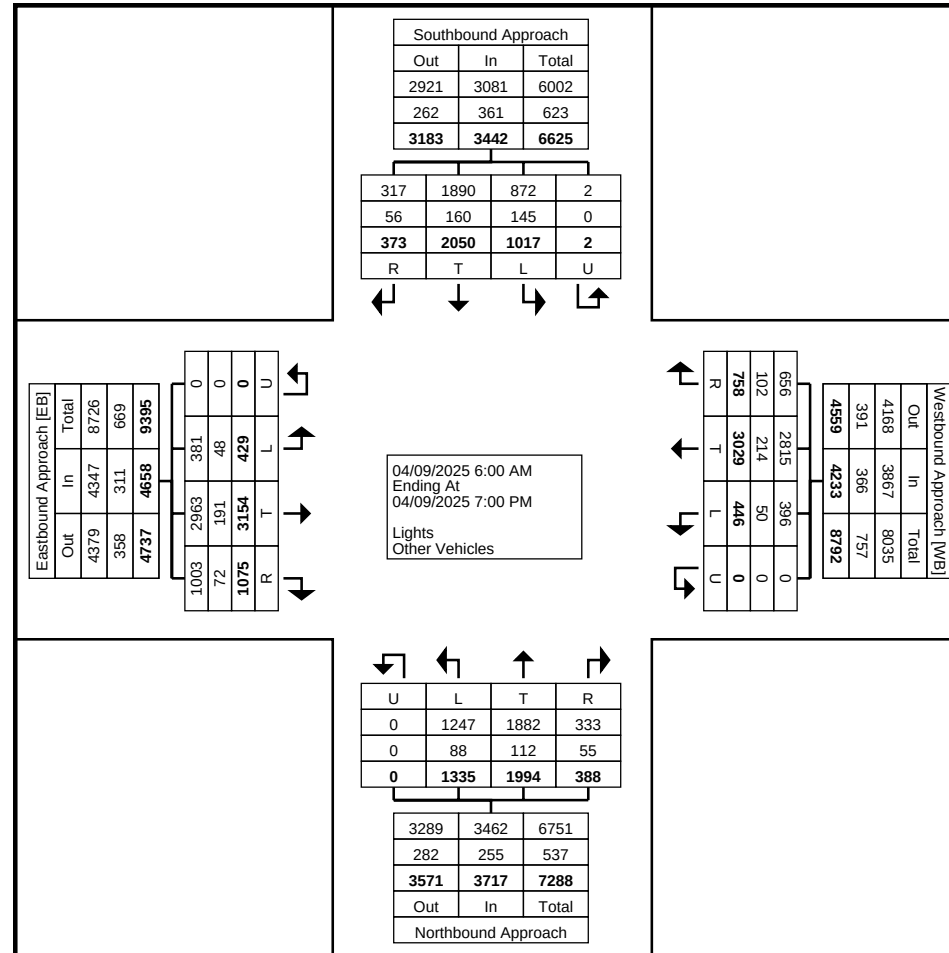
Start Time	Southbound Approach Southbound					Westbound Approach Westbound					Northbound Approach Northbound					Eastbound Approach Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
6:00 AM	2	18	6	0	26	8	30	4	0	42	4	47	23	0	74	16	34	6	0	56	198
6:15 AM	1	28	12	0	41	14	40	8	0	62	4	68	36	0	108	18	56	7	0	81	292
6:30 AM	8	24	10	0	42	17	48	5	0	70	5	60	24	0	89	33	87	7	0	127	328
6:45 AM	3	54	12	0	69	12	51	10	0	73	5	57	28	0	90	50	72	16	0	138	370
Hourly Total	14	124	40	0	178	51	169	27	0	247	18	232	111	0	361	117	249	36	0	402	1188
7:00 AM	10	29	14	0	53	11	54	5	0	70	7	61	27	0	95	29	65	8	0	102	320
7:15 AM	11	34	18	0	63	20	54	6	0	80	12	60	32	0	104	37	96	9	0	142	389
7:30 AM	7	41	22	0	70	20	63	7	0	90	11	53	43	0	107	31	67	10	0	108	375
7:45 AM	10	45	27	0	82	19	56	8	0	83	18	61	41	0	120	36	84	8	0	128	413
Hourly Total	38	149	81	0	268	70	227	26	0	323	48	235	143	0	426	133	312	35	0	480	1497
8:00 AM	5	34	18	0	57	18	53	6	0	77	10	55	33	0	98	26	74	13	0	113	345
8:15 AM	8	36	16	0	60	19	69	6	0	94	8	37	32	0	77	18	74	15	0	107	338
8:30 AM	3	24	15	0	42	16	45	7	0	68	8	49	29	0	86	16	50	10	0	76	272
8:45 AM	7	25	14	0	46	12	35	6	0	53	1	32	12	0	45	18	47	6	0	71	215
Hourly Total	23	119	63	0	205	65	202	25	0	292	27	173	106	0	306	78	245	44	0	367	1170
9:00 AM	7	28	12	0	47	14	25	6	0	45	1	30	13	0	44	18	50	6	0	74	210
9:15 AM	3	36	18	0	57	12	33	5	0	50	9	34	18	0	61	13	47	8	0	68	236
9:30 AM	5	15	13	0	33	9	35	6	0	50	5	42	25	0	72	18	43	4	0	65	220
9:45 AM	4	23	7	0	34	6	47	12	0	65	5	19	18	0	42	12	44	7	0	63	204
Hourly Total	19	102	50	0	171	41	140	29	0	210	20	125	74	0	219	61	184	25	0	270	870
10:00 AM	3	19	24	0	46	7	34	6	0	47	5	31	23	0	59	16	30	3	0	49	201
10:15 AM	2	26	11	0	39	13	37	11	0	61	8	30	16	0	54	9	57	8	0	74	228
10:30 AM	5	34	18	0	57	10	38	9	0	57	13	30	17	0	60	14	42	6	0	62	236
10:45 AM	6	29	16	0	51	12	41	5	0	58	10	23	19	0	52	11	42	5	0	58	219
Hourly Total	16	108	69	0	193	42	150	31	0	223	36	114	75	0	225	50	171	22	0	243	884
11:00 AM	6	22	19	0	47	12	39	8	0	59	7	26	10	0	43	16	47	7	0	70	219
11:15 AM	11	33	19	0	63	13	41	5	0	59	9	25	19	0	53	13	51	8	0	72	247
11:30 AM	8	26	17	0	51	15	58	15	0	88	9	33	19	0	61	9	60	3	0	72	272
11:45 AM	13	30	13	0	56	17	52	10	0	79	8	27	18	0	53	14	59	4	0	77	265
Hourly Total	38	111	68	0	217	57	190	38	0	285	33	111	66	0	210	52	217	22	0	291	1003
12:00 PM	4	46	19	0	69	4	33	8	0	45	12	22	21	0	55	12	44	9	0	65	234
12:15 PM	6	33	19	0	58	23	57	10	0	90	4	33	27	0	64	19	52	8	0	79	291
12:30 PM	8	34	18	0	60	12	53	11	0	76	5	35	11	0	51	20	45	13	0	78	265
12:45 PM	6	32	18	0	56	19	61	11	0	91	5	25	13	0	43	17	48	6	0	71	261
Hourly Total	24	145	74	0	243	58	204	40	0	302	26	115	72	0	213	68	189	36	0	293	1051

1:00 PM	4	39	17	0	60	16	52	8	0	76	7	28	20	0	55	21	60	7	0	88	279
1:15 PM	5	32	13	0	50	12	45	8	0	65	3	30	18	0	51	21	54	8	0	83	249
1:30 PM	6	32	21	0	59	12	55	7	0	74	4	29	22	0	55	17	49	12	0	78	266
1:45 PM	3	37	18	0	58	12	51	6	0	69	11	35	14	0	60	19	54	5	0	78	265
Hourly Total	18	140	69	0	227	52	203	29	0	284	25	122	74	0	221	78	217	32	0	327	1059
2:00 PM	10	39	23	0	72	11	61	4	0	76	3	40	27	0	70	25	53	5	0	83	301
2:15 PM	5	38	23	0	66	10	49	10	0	69	10	29	45	0	84	11	67	9	0	87	306
2:30 PM	7	51	23	0	81	12	73	3	0	88	14	43	30	0	87	23	81	3	0	107	363
2:45 PM	12	43	21	1	77	21	81	8	0	110	3	27	32	0	62	28	77	7	0	112	361
Hourly Total	34	171	90	1	296	54	264	25	0	343	30	139	134	0	303	87	278	24	0	389	1331
3:00 PM	7	38	28	0	73	28	99	14	0	141	10	50	52	0	112	23	76	12	0	111	437
3:15 PM	5	52	28	0	85	25	90	10	0	125	12	32	27	0	71	24	71	8	0	103	384
3:30 PM	8	64	24	0	96	10	71	16	0	97	9	60	40	0	109	19	74	8	0	101	403
3:45 PM	12	54	29	0	95	24	119	12	0	155	10	43	34	0	87	22	73	7	0	102	439
Hourly Total	32	208	109	0	349	87	379	52	0	518	41	185	153	0	379	88	294	35	0	417	1663
4:00 PM	7	51	31	0	89	16	80	14	0	110	13	49	35	0	97	31	76	16	0	123	419
4:15 PM	11	76	39	0	126	13	83	8	0	104	7	43	31	0	81	32	84	9	0	125	436
4:30 PM	13	70	39	0	122	26	95	15	0	136	6	53	26	0	85	25	86	12	0	123	466
4:45 PM	9	82	25	0	116	12	71	5	0	88	11	43	39	0	93	28	64	7	0	99	396
Hourly Total	40	279	134	0	453	67	329	42	0	438	37	188	131	0	356	116	310	44	0	470	1717
5:00 PM	18	67	26	0	111	18	112	14	0	144	5	42	37	0	84	21	69	9	0	99	438
5:15 PM	14	78	33	0	125	16	98	13	0	127	7	42	24	0	73	34	86	10	0	130	455
5:30 PM	9	59	23	0	91	11	66	10	0	87	8	40	26	0	74	22	76	6	0	104	356
5:45 PM	7	61	26	0	94	10	68	6	0	84	3	31	22	0	56	12	50	9	0	71	305
Hourly Total	48	265	108	0	421	55	344	43	0	442	23	155	109	0	287	89	281	34	0	404	1554
6:00 PM	6	41	23	0	70	19	70	12	0	101	9	26	23	0	58	12	51	13	0	76	305
6:15 PM	8	44	11	0	63	11	61	8	0	80	7	35	29	0	71	15	54	6	0	75	289
6:30 PM	7	25	14	1	47	10	46	7	0	63	5	14	18	0	37	18	46	12	0	76	223
6:45 PM	8	19	14	0	41	19	51	12	0	82	3	25	17	0	45	13	56	9	0	78	246
Hourly Total	29	129	62	1	221	59	228	39	0	326	24	100	87	0	211	58	207	40	0	305	1063
Grand Total	373	2050	1017	2	3442	758	3029	446	0	4233	388	1994	1335	0	3717	1075	3154	429	0	4658	16050
Approach %	10.8	59.6	29.5	0.1	-	17.9	71.6	10.5	0.0	-	10.4	53.6	35.9	0.0	-	23.1	67.7	9.2	0.0	-	-
Total %	2.3	12.8	6.3	0.0	21.4	4.7	18.9	2.8	0.0	26.4	2.4	12.4	8.3	0.0	23.2	6.7	19.7	2.7	0.0	29.0	-
Lights	317	1890	872	2	3081	656	2815	396	0	3867	333	1882	1247	0	3462	1003	2963	381	0	4347	14757
% Lights	85.0	92.2	85.7	100.0	89.5	86.5	92.9	88.8	-	91.4	85.8	94.4	93.4	-	93.1	93.3	93.9	88.8	-	93.3	91.9
Other Vehicles	56	160	145	0	361	102	214	50	0	366	55	112	88	0	255	72	191	48	0	311	1293
% Other Vehicles	15.0	7.8	14.3	0.0	10.5	13.5	7.1	11.2	-	8.6	14.2	5.6	6.6	-	6.9	6.7	6.1	11.2	-	6.7	8.1



Ohio Department of Transportation - Safety
1980 West Broad Street
Mail Stop 5160
Columbus, Ohio, United States 43223
+16147528099 jared.feller@dot.state.oh.us
Office of Traffic Engineering

Count Name: LOR-82-2.57
Site Code:
Start Date: 04/09/2025
Page No: 3



Turning Movement Data Plot



Ohio Department of Transportation - Safety
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Page No: 4

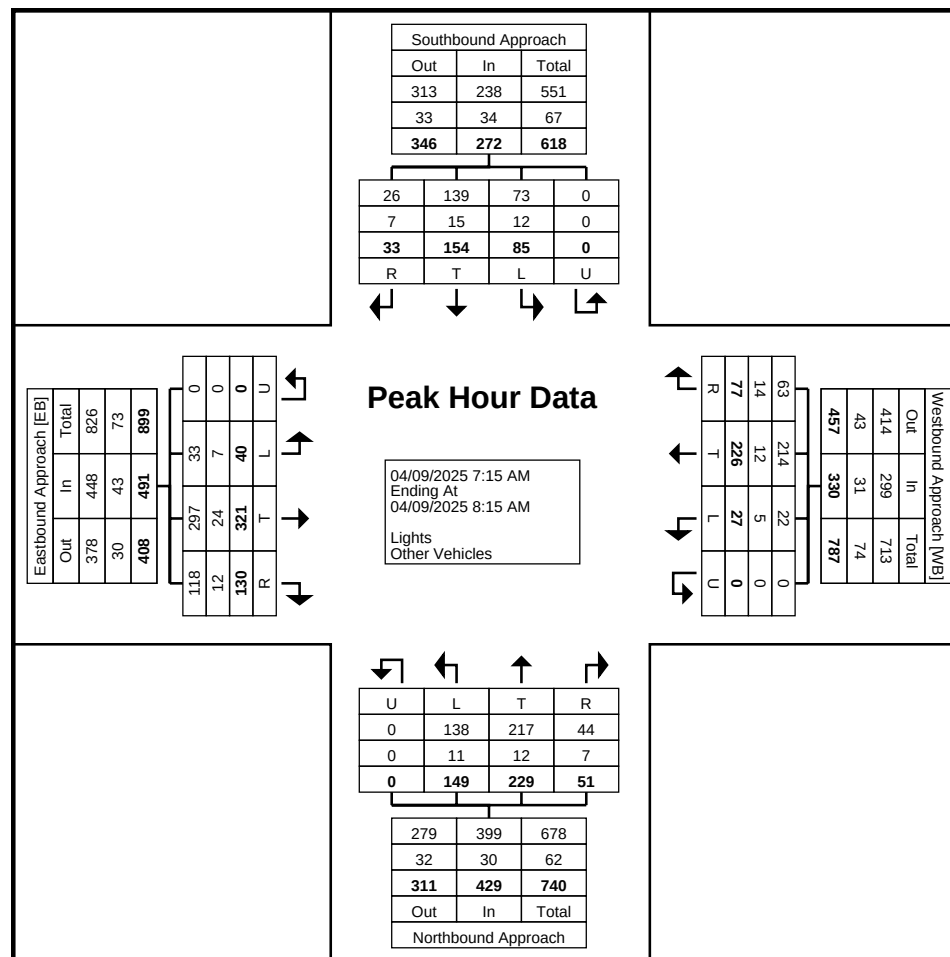
Turning Movement Peak Hour Data (7:15 AM)

Start Time	Southbound Approach					Westbound Approach					Northbound Approach					Eastbound Approach					Int. Total
	Southbound					Westbound					Northbound					Eastbound					
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:15 AM	11	34	18	0	63	20	54	6	0	80	12	60	32	0	104	37	96	9	0	142	389
7:30 AM	7	41	22	0	70	20	63	7	0	90	11	53	43	0	107	31	67	10	0	108	375
7:45 AM	10	45	27	0	82	19	56	8	0	83	18	61	41	0	120	36	84	8	0	128	413
8:00 AM	5	34	18	0	57	18	53	6	0	77	10	55	33	0	98	26	74	13	0	113	345
Total	33	154	85	0	272	77	226	27	0	330	51	229	149	0	429	130	321	40	0	491	1522
Approach %	12.1	56.6	31.3	0.0	-	23.3	68.5	8.2	0.0	-	11.9	53.4	34.7	0.0	-	26.5	65.4	8.1	0.0	-	-
Total %	2.2	10.1	5.6	0.0	17.9	5.1	14.8	1.8	0.0	21.7	3.4	15.0	9.8	0.0	28.2	8.5	21.1	2.6	0.0	32.3	-
PHF	0.750	0.856	0.787	0.000	0.829	0.963	0.897	0.844	0.000	0.917	0.708	0.939	0.866	0.000	0.894	0.878	0.836	0.769	0.000	0.864	0.921
Lights	26	139	73	0	238	63	214	22	0	299	44	217	138	0	399	118	297	33	0	448	1384
% Lights	78.8	90.3	85.9	-	87.5	81.8	94.7	81.5	-	90.6	86.3	94.8	92.6	-	93.0	90.8	92.5	82.5	-	91.2	90.9
Other Vehicles	7	15	12	0	34	14	12	5	0	31	7	12	11	0	30	12	24	7	0	43	138
% Other Vehicles	21.2	9.7	14.1	-	12.5	18.2	5.3	18.5	-	9.4	13.7	5.2	7.4	-	7.0	9.2	7.5	17.5	-	8.8	9.1



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Turning Movement Peak Hour Data Plot (7:15 AM)



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Site Code:
Start Date: 04/09/2025
Page No: 6

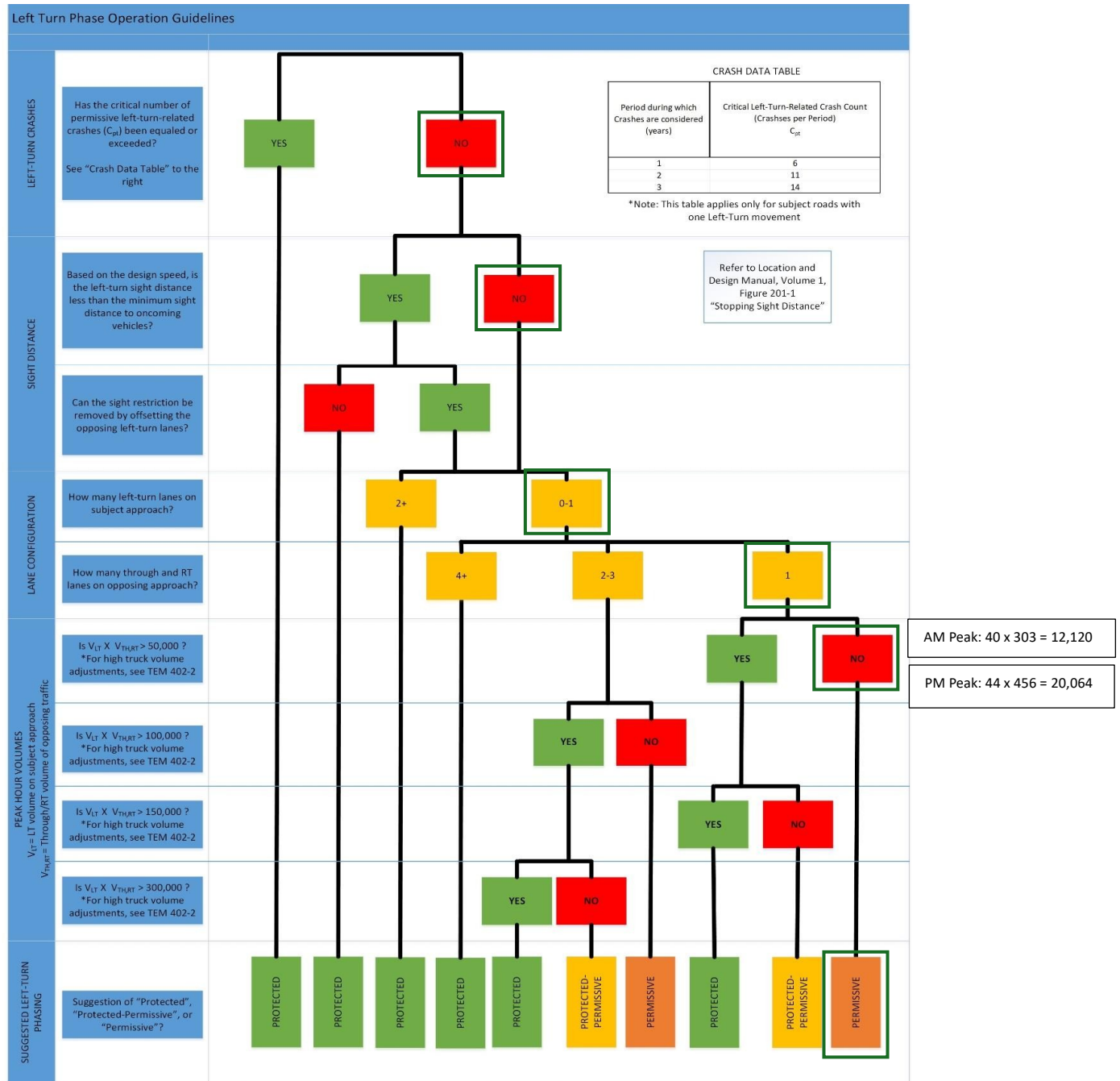
Turning Movement Peak Hour Data (3:45 PM)

Start Time	Southbound Approach					Westbound Approach					Northbound Approach					Eastbound Approach					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
3:45 PM	12	54	29	0	95	24	119	12	0	155	10	43	34	0	87	22	73	7	0	102	439
4:00 PM	7	51	31	0	89	16	80	14	0	110	13	49	35	0	97	31	76	16	0	123	419
4:15 PM	11	76	39	0	126	13	83	8	0	104	7	43	31	0	81	32	84	9	0	125	436
4:30 PM	13	70	39	0	122	26	95	15	0	136	6	53	26	0	85	25	86	12	0	123	466
Total	43	251	138	0	432	79	377	49	0	505	36	188	126	0	350	110	319	44	0	473	1760
Approach %	10.0	58.1	31.9	0.0	-	15.6	74.7	9.7	0.0	-	10.3	53.7	36.0	0.0	-	23.3	67.4	9.3	0.0	-	-
Total %	2.4	14.3	7.8	0.0	24.5	4.5	21.4	2.8	0.0	28.7	2.0	10.7	7.2	0.0	19.9	6.3	18.1	2.5	0.0	26.9	-
PHF	0.827	0.826	0.885	0.000	0.857	0.760	0.792	0.817	0.000	0.815	0.692	0.887	0.900	0.000	0.902	0.859	0.927	0.688	0.000	0.946	0.944
Lights	36	239	121	0	396	74	365	44	0	483	34	181	121	0	336	110	309	39	0	458	1673
% Lights	83.7	95.2	87.7	-	91.7	93.7	96.8	89.8	-	95.6	94.4	96.3	96.0	-	96.0	100.0	96.9	88.6	-	96.8	95.1
Other Vehicles	7	12	17	0	36	5	12	5	0	22	2	7	5	0	14	0	10	5	0	15	87
% Other Vehicles	16.3	4.8	12.3	-	8.3	6.3	3.2	10.2	-	4.4	5.6	3.7	4.0	-	4.0	0.0	3.1	11.4	-	3.2	4.9

Appendix D

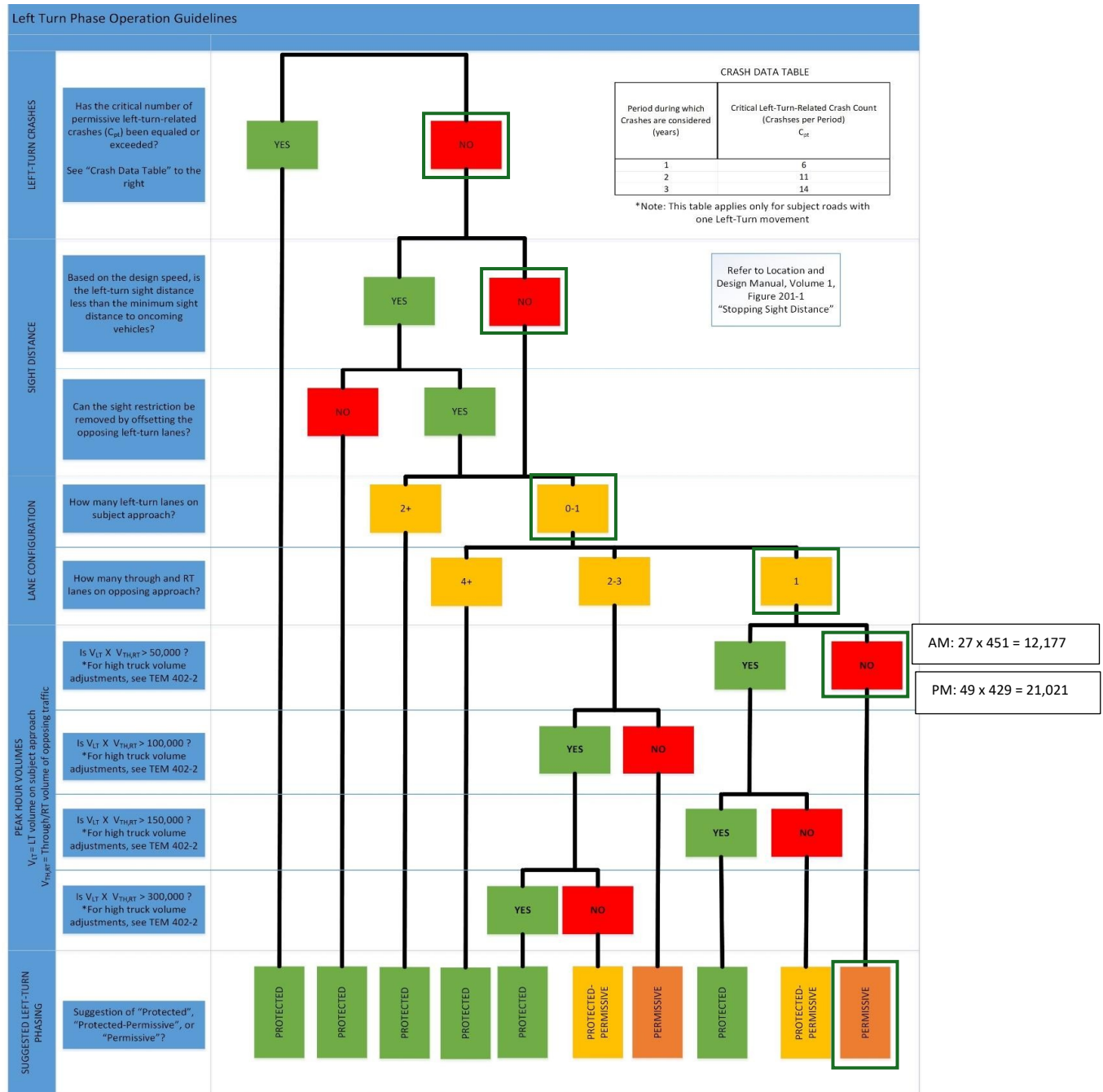
Left Turn Phasing Evaluation

SR 82 EB Approach Left Turn Phase Operation Guidelines

AM Peak: $40 \times 303 = 12,120$ PM Peak: $44 \times 456 = 20,064$

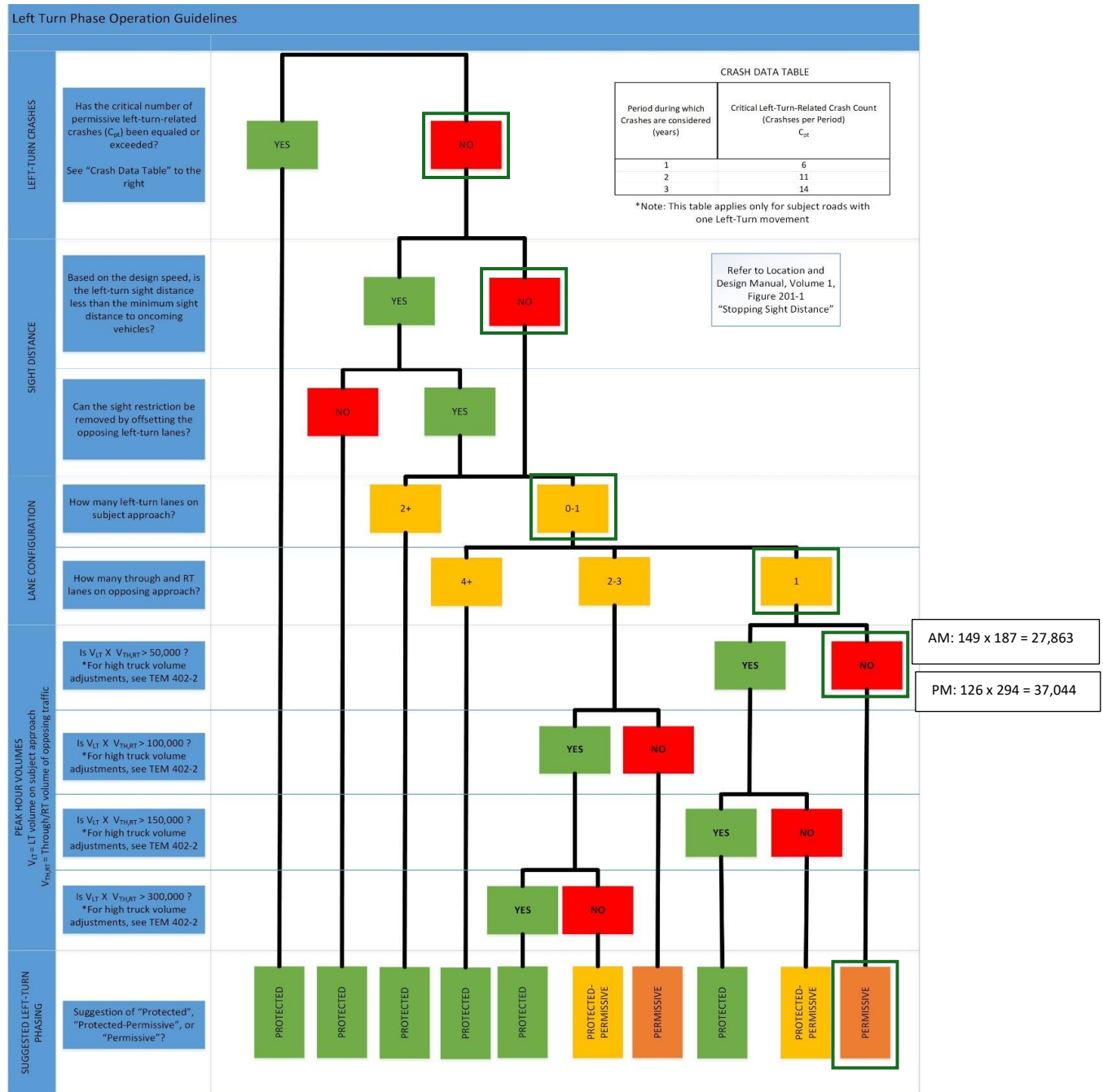
[Link to Location and Design Manual, Volume 1](#)

SR 82 WB Left Turn Phase Operation Guidelines



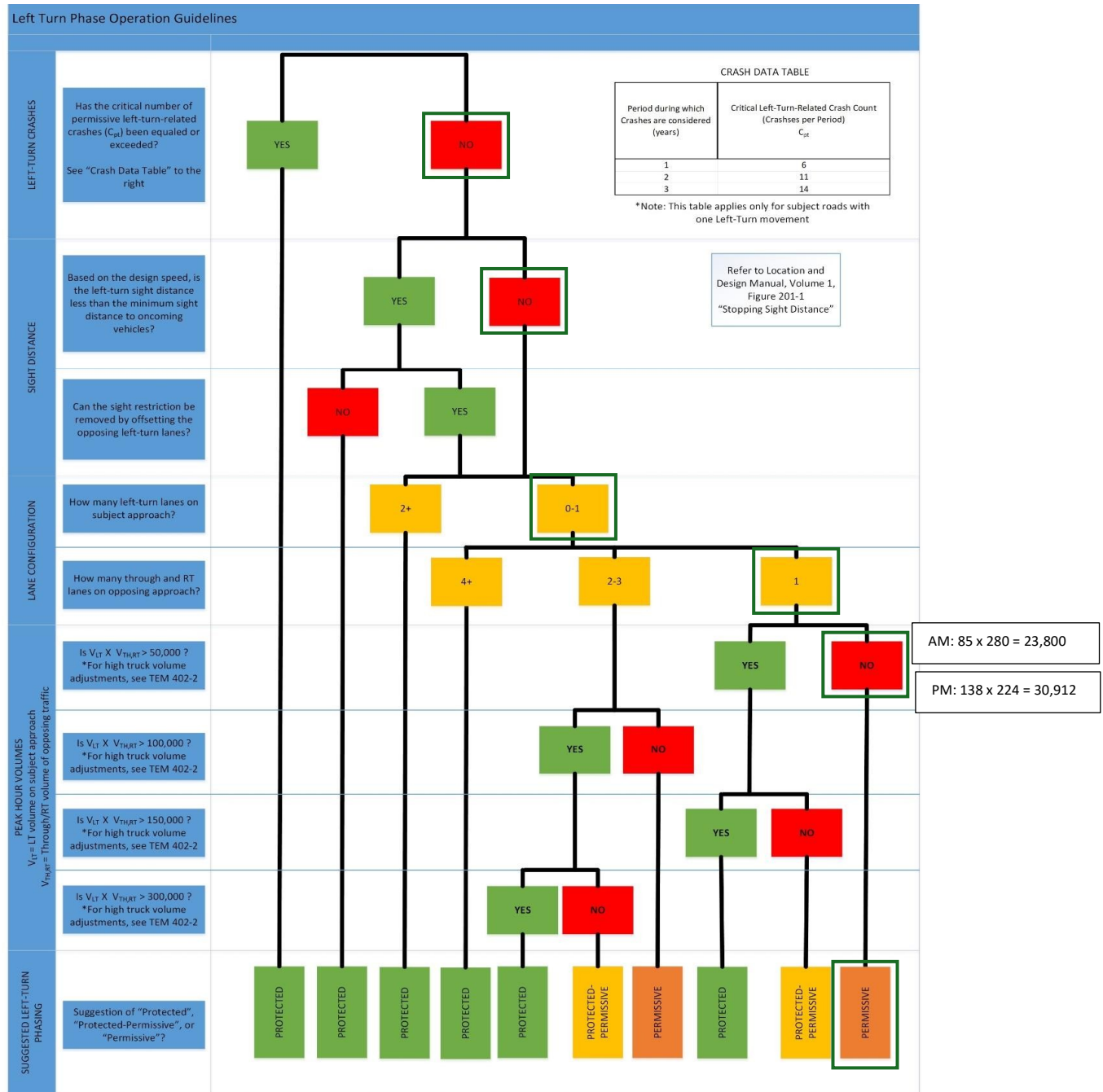
[Link to Location and Design Manual, Volume 1](#)

SR 83 NB Left Turn Phase Operation Guidelines



[Link to Location and Design Manual, Volume 1](#)

SR 83 SB Left Turn Phase Operation Guidelines



[Link to Location and Design Manual, Volume 1](#)

Appendix E

Signal Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:	N/A	Traffic Volumes Obtained By:	Counting Cars
County:	Lorain	Analysis Date:	7/7/2025
ODOT Engineering District:	3	Agency/ Company Name Performing Warrant Analysis:	ODOT D03
Google map link:	Map		

Analysis Information

Data Collection Date: 5/23/2024
Day of the Week: Thursday

Is the intersection in a built-up area of an isolated community of <10,000 population? No

Existing Traffic Signal at intersection: Yes

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: SR 82

Major Street Approach Direction: E-Bound
W-Bound

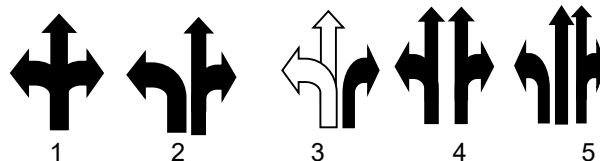
Number of Thru Lanes on Each Major Street Approach: 1 LANE(S)

Speed Limit or 85th Percentile Speed on the Major Street*: 50 MPH
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 83

Minor Street Approach Configuration: 2 N-Bound
2 S-Bound



Number of Thru Lanes on Each Minor Street Approach: 1 LANE(S)

Apply Right Turn Lane Reduction*: No

*Right Turn Lane Reduction Shall be used for Warrants 1, 2, & 3 for New ODOT Signals. Please refer to TEM 402-3.2 for clarification and criteria under which Right Turn Reduction is not required.

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

Warrant			Notes and Comments:			
	Applicable?	Satisfied?				
Warrant 1, Eight-Hour Vehicular Volume	Yes	Yes	Condition A was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*			
Warrant 2, Four-Hour Vehicular Volume	Yes	Yes	Figure 4C-1 (100%)			
Warrant 3, Peak Hour	Yes	Yes	Signals installed under Warrant 3 should be traffic actuated.			
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)			<table><tr><th>Peak Hour</th></tr><tr><td>4:30 PM</td></tr><tr><td>5:30 PM</td></tr></table>	Peak Hour	4:30 PM	5:30 PM
Peak Hour						
4:30 PM						
5:30 PM						
Warrant 4, Pedestrian Volume	No		If this warrant is met, and a traffic control signal is justified by an engineering study, the traffic control signal shall be equipped with pedestrian signal heads complying with the provisions set forth in Chapter 4E of the OMUTCD.			
Warrant 5, School Crossing	No		N/A			
Warrant 6, Coordinated Signal System	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 7, Crash Experience	No		If this is the sole warrant, signal must be semi-actuated with control devices which provide proper coordination if installed at an intersection within a coordinated system and normally should be fully traffic actuated if installed at an isolated intersection.			
Warrant 8, Roadway Network	No		(Shall not be used as the sole warrant in the analysis)			
Warrant 9, Intersection Near a Grade Crossing	No		Figure 4C-9			
Multi-Way Stop Warrant	No		May be used as an interim measure if traffic signal warrants are satisfied.			

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

If no warrants are satisfied, additional options may be considered:

1. An engineering study, performed by a firm prequalified by ODOT for signal design, if approved by the ODOT district, may be used to justify a new signal installation or retention of an existing signal that otherwise does not meet the published warrants. An example of such an instance is a traffic signal in proximity to a railroad crossing that serves to reduce queuing across the tracks.
2. According to TEM 402-2, If the actual turning movement counts fail to satisfy a signal warrant, it may be acceptable to use traffic volumes projected to the second year after project completion. The **Modeling and Forecasting Section** should provide the projected traffic volumes.
3. A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C of TEM) or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal. **Please fill inputs on PHB Score Sheet and submit to ODOT.**

Considerations such as geometrics and lack of sight distance generally have not been accepted in lieu of satisfying signal warrants. These considerations may allow an otherwise unwarranted traffic signal to be retained at **100 percent** local cost. Please review TEM 402-4 for details.

Conclusion: Retain Existing Traffic Signal

Notes:

OMUTCD WARRANT 1, EIGHT-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic
on Each Approach

Major Street: 1 Lane

Minor Street: 1 Lane

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? **Yes**

*Only applicable after an adequate trial of other alternatives (See section 4C.02.06 of the 2012 OMUTCD)

Lanes Major/ Minor	Adjusted Volumes		Condition A				Condition B				Combination A/B*							
			100%		70%		100%		70%		Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.	Maj.	Min.
1 / 1	X		500	150	350	105	750	75	525	53	400	120	600	60	280	84	420	42
2+ / 1			600	150	420	105	900	75	630	53	480	120	720	60	336	84	504	42
2+ / 2+			600	200	420	140	900	100	630	70	480	160	720	80	336	112	504	56
1 / 2+			500	200	350	140	750	100	525	70	400	160	600	80	280	112	420	56
12:00 AM	0	0																
12:15 AM	0	0																
12:30 AM	0	0																
12:45 AM	0	0																
1:00 AM	0	0																
1:15 AM	0	0																
1:30 AM	0	0																
1:45 AM	0	0																
2:00 AM	0	0																
2:15 AM	0	0																
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3:45 AM	0	0																
4:00 AM	0	0																
4:15 AM	0	0																
4:30 AM	0	0																
4:45 AM	0	0																
5:00 AM	0	0																
5:15 AM	98	74																
5:30 AM	241	182																
5:45 AM	438	271			1	1					1	1			1	1	1	1
6:00 AM	649	361	1	1					1	1			1	1				
6:15 AM	723	382																
6:30 AM	802	378					1	1										
6:45 AM	803	396			1	1					1	1			1	1	1	1
7:00 AM	803	426	1	1					1	1			1	1				
7:15 AM	821	429																
7:30 AM	800	402					1	1										
7:45 AM	746	381			1	1					1	1			1	1	1	1
8:00 AM	659	306	1	1					1	1			1	1				
8:15 AM	588	252																
8:30 AM	505	236																
8:45 AM	476	222			1	1					1	1			1	1	1	1
9:00 AM	480	219																
9:15 AM	457	234																
9:30 AM	474	227																
9:45 AM	478	215			1	1					1	1			1	1	1	1

ODOT Signal Warrant Spreadsheet_March2022

10:00 AM	466	225																
10:15 AM	499	209																
10:30 AM	495	218																
10:45 AM	536	212	1	1	1	1			1	1	1	1			1	1	1	1
11:00 AM	576	217																
11:15 AM	557	239																
11:30 AM	595	234																
11:45 AM	589	243	1	1	1	1			1	1	1	1			1	1	1	1
12:00 PM	595	243																
12:15 PM	649	234											1	1				
12:30 PM	628	226																
12:45 PM	626	225	1	1	1	1			1	1	1	1			1	1	1	1
1:00 PM	611	227																
1:15 PM	606	239											1	1				
1:30 PM	614	269																
1:45 PM	657	301	1	1	1	1			1	1	1	1			1	1	1	1
2:00 PM	732	303																
2:15 PM	825	345					1	1					1	1				
2:30 PM	897	332																
2:45 PM	900	354	1	1	1	1			1	1	1	1			1	1	1	1
3:00 PM	935	379																
3:15 PM	916	365					1	1					1	1				
3:30 PM	917	406																
3:45 PM	978	432	1	1	1	1			1	1	1	1			1	1	1	1
4:00 PM	908	453																
4:15 PM	918	475					1	1					1	1				
4:30 PM	946	474																
4:45 PM	878	443	1	1	1	1			1	1	1	1			1	1	1	1
5:00 PM	846	421																
5:15 PM	780	380					1	1					1	1				
5:30 PM	678	318																
5:45 PM	626	274	1	1	1	1			1	1	1	1			1	1	1	1
6:00 PM	631	221																
6:15 PM	454	153																
6:30 PM	299	88																
6:45 PM	160	45																
7:00 PM	0	0																
7:15 PM	0	0																
7:30 PM	0	0																
7:45 PM	0	0																
8:00 PM	0	0																
8:15 PM	0	0																
8:30 PM	0	0																
8:45 PM	0	0																
9:00 PM	0	0																
9:15 PM	0	0																
9:30 PM	0	0																
9:45 PM	0	0																
HOURS MET			11	11	13	13	6	6	11	11	13	13	9	9	13	13	13	13
WARRANT SATISFIED?			YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Warrant Met: **Yes**

Notes: Condition A was met. Condition A (70%) was met. Condition B (70%) was met. Combination of A/B (80%) was met.*Combination of A/B (56%) was met.*

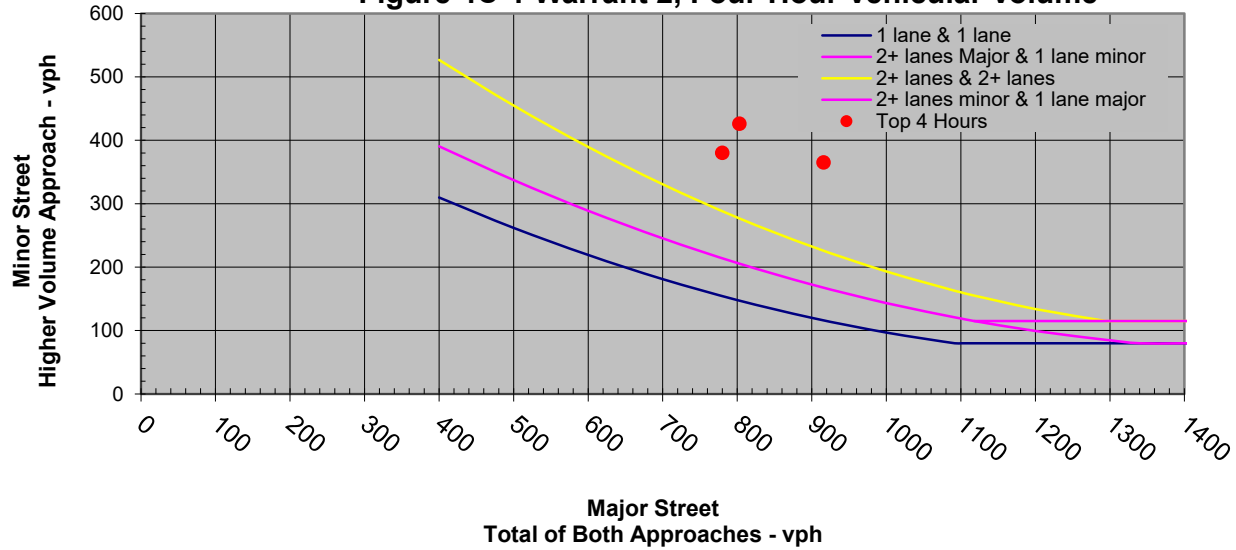
OMUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	Total Number of Unique Hours Met on Figure 4C-1	10
Major street: 1 Lane	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	13
Minor Street: 1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

Hour Interval Beginning At	Raw Traffic Counts				Total Major Approach Volumes	Highest Actual Minor Street Approach Volumes	Hour Met?	Hour Met? (70% Factor)
	Minor - SR 83		Major - SR 82					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	361	178	247	402	649	361	Met	
6:15 AM	382	205	275	448	723	382		
6:30 AM	378	227	293	509	802	378		
6:45 AM	396	255	313	490	803	396		Met
7:00 AM	426	268	323	480	803	426	Met	
7:15 AM	429	272	330	491	821	429		
7:30 AM	402	269	344	456	800	402		
7:45 AM	381	241	322	424	746	381		Met
8:00 AM	306	205	292	367	659	306	Met	
8:15 AM	252	195	260	328	588	252		
8:30 AM	236	192	216	289	505	236		
8:45 AM	222	183	198	278	476	222		Met
9:00 AM	219	171	210	270	480	219		
9:15 AM	234	170	212	245	457	234		
9:30 AM	227	152	223	251	474	227		
9:45 AM	215	176	230	248	478	215		Met
10:00 AM	225	193	223	243	466	225		
10:15 AM	209	194	235	264	499	209		
10:30 AM	208	218	233	262	495	218		
10:45 AM	209	212	264	272	536	212		Met
11:00 AM	210	217	285	291	576	217		
11:15 AM	222	239	271	286	557	239	Met	
11:30 AM	233	234	302	293	595	234		
11:45 AM	223	243	290	299	589	243		Met
12:00 PM	213	243	302	293	595	243		
12:15 PM	213	234	333	316	649	234	Met	
12:30 PM	200	226	308	320	628	226		
12:45 PM	204	225	306	320	626	225		Met
1:00 PM	221	227	284	327	611	227		
1:15 PM	236	239	284	322	606	239	Met	
1:30 PM	269	255	288	326	614	269		
1:45 PM	301	277	302	355	657	301		Met
2:00 PM	303	296	343	389	732	303		
2:15 PM	345	297	408	417	825	345	Met	
2:30 PM	332	316	464	433	897	332		
2:45 PM	354	331	473	427	900	354		Met
3:00 PM	379	349	518	417	935	379		
3:15 PM	364	365	487	429	916	365	Met	
3:30 PM	374	406	466	451	917	406		
3:45 PM	350	432	505	473	978	432		Met
4:00 PM	356	453	438	470	908	453		
4:15 PM	343	475	472	446	918	475	Met	
4:30 PM	335	474	495	451	946	474		
4:45 PM	324	443	446	432	878	443		Met
5:00 PM	287	421	442	404	846	421		
5:15 PM	261	380	399	381	780	380	Met	
5:30 PM	259	318	352	326	678	318		
5:45 PM	222	274	328	298	626	274		Met
6:00 PM	211	221	326	305	631	221		
6:15 PM	153	151	225	229	454	153		
6:30 PM	82	88	145	154	299	88		
6:45 PM	45	41	82	78	160	45		
7:00 PM	0	0	0	0	0	0		
7:15 PM	0	0	0	0	0	0		
7:30 PM	0	0	0	0	0	0		
7:45 PM	0	0	0	0	0	0		
8:00 PM	0	0	0	0	0	0		

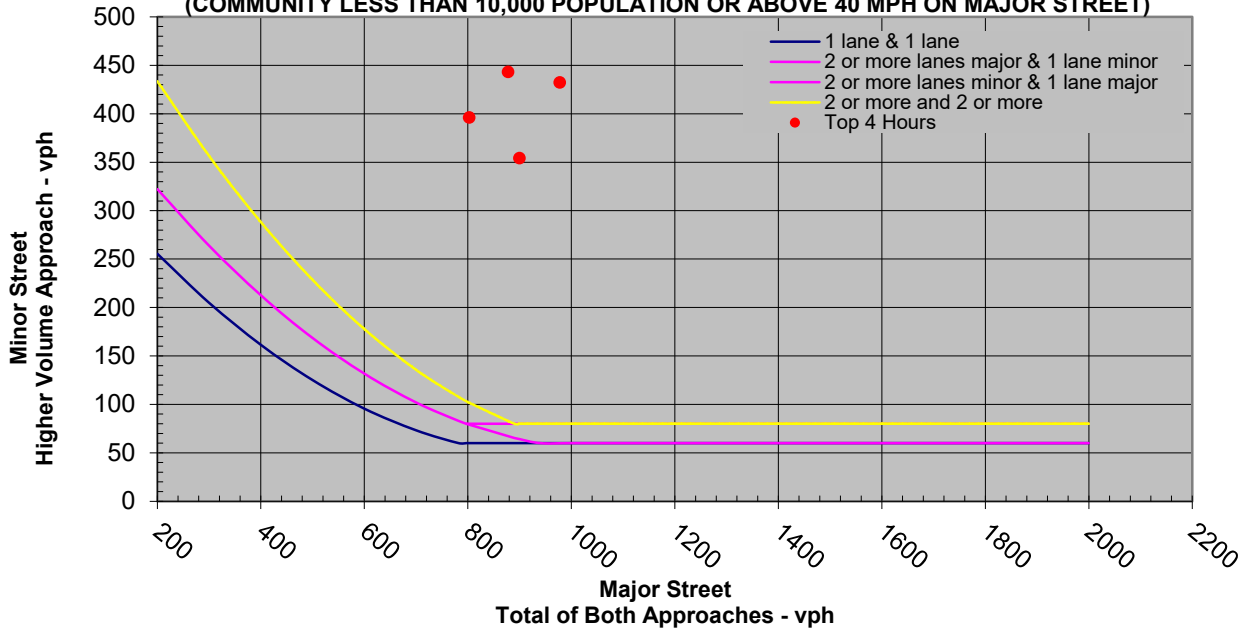
Figure 4C-1 Warrant 2, Four-Hour Vehicular Volume



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	4:15 PM	5:15 PM	918	475
2nd Highest Hour	7:00 AM	8:00 AM	803	426
3rd Highest Hour	3:15 PM	4:15 PM	916	365
4th Highest Hour	5:15 PM	6:15 PM	780	380

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	978	432
2nd Highest Hour	4:45 PM	5:45 PM	878	443
3rd Highest Hour	6:45 AM	7:45 AM	803	396
4th Highest Hour	2:45 PM	3:45 PM	900	354

**Figure 4C-2 Warrant 2 Four Hour Vehicular Volume (70% Factor)
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)**



Are the requirements for Warrant 2 met?: **Yes**

OMUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	4:30 PM
Major Street:	1 Lane	Peak Hour End Time	5:30 PM
Minor Street:	1 Lane		

Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street? Yes

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time? No

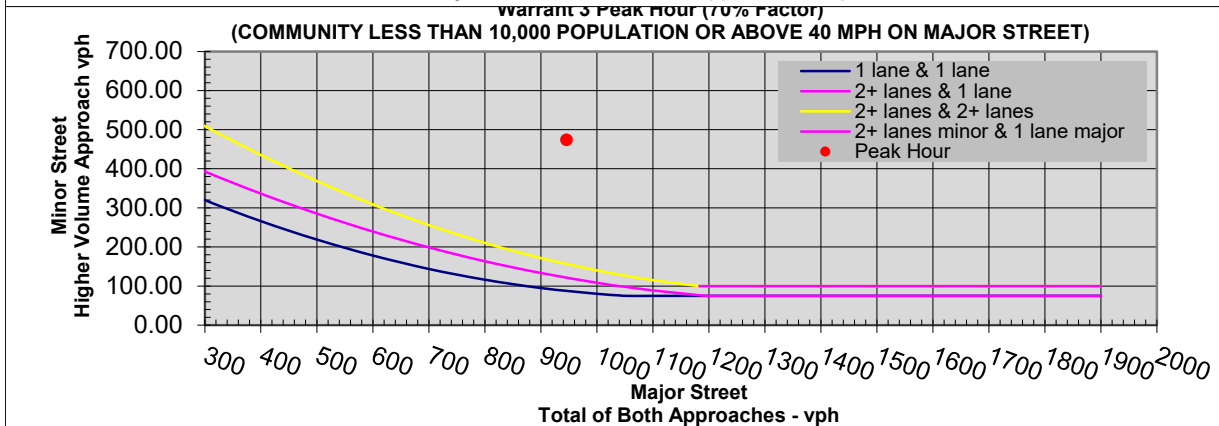
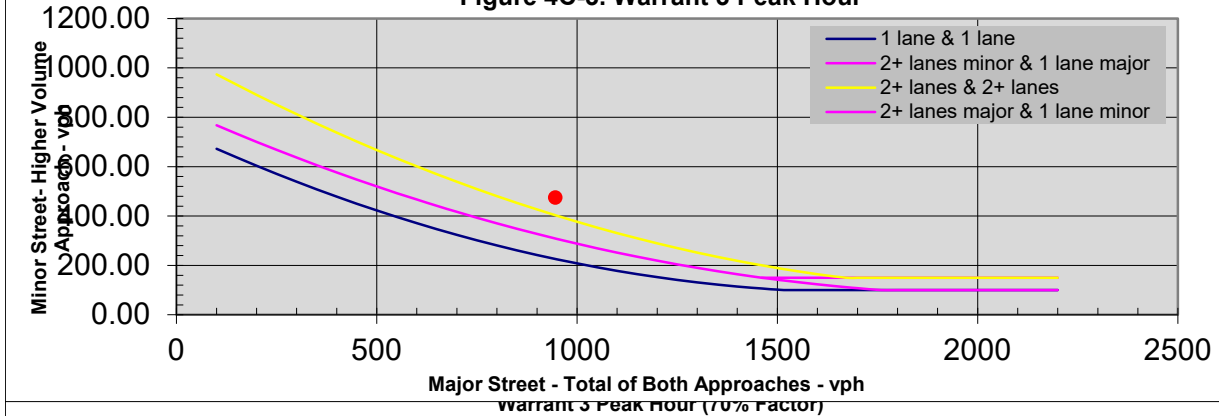
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	Yes
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	Yes

*If applicable, attach all supporting calculations and documentation.

Are the requirements for Warrant 3 met?: Yes

Figure 4C-3. Warrant 3 Peak Hour



Hour Vehicular Volume				
Hour Interval Beginning At	Major Street Combined Vehicles Per Hour (VPH)	Highest Minor Street Approach Vehicles Per Hour (VPH)	Sum of Major Street and Highest Minor Street	Sum of Major Street and Combined Minor Street
6:00 AM	649	361	1010	1188
6:15 AM	723	382	1105	1310
6:30 AM	802	378	1180	1407
6:45 AM	803	396	1199	1454
7:00 AM	803	426	1229	1497
7:15 AM	821	429	1250	1522
7:30 AM	800	402	1202	1471
7:45 AM	746	381	1127	1368
8:00 AM	659	306	965	1170
8:15 AM	588	252	840	1035
8:30 AM	505	236	741	933
8:45 AM	476	222	698	881
9:00 AM	480	219	699	870
9:15 AM	457	234	691	861
9:30 AM	474	227	701	853
9:45 AM	478	215	693	869
10:00 AM	466	225	691	884
10:15 AM	499	209	708	902
10:30 AM	495	218	713	921
10:45 AM	536	212	748	957
11:00 AM	576	217	793	1003
11:15 AM	557	239	796	1018
11:30 AM	595	234	829	1062
11:45 AM	589	243	832	1055
12:00 PM	595	243	838	1051
12:15 PM	649	234	883	1096
12:30 PM	628	226	854	1054
12:45 PM	626	225	851	1055
1:00 PM	611	227	838	1059
1:15 PM	606	239	845	1081
1:30 PM	614	269	883	1138
1:45 PM	657	301	958	1235
2:00 PM	732	303	1035	1331
2:15 PM	825	345	1170	1467
2:30 PM	897	332	1229	1545
2:45 PM	900	354	1254	1585
3:00 PM	935	379	1314	1663
3:15 PM	916	365	1281	1645
3:30 PM	917	406	1323	1697
3:45 PM	978	432	1410	1760
4:00 PM	908	453	1361	1717
4:15 PM	918	475	1393	1736
4:30 PM	946	474	1420	1755
4:45 PM	878	443	1321	1645
5:00 PM	846	421	1267	1554
5:15 PM	780	380	1160	1421
5:30 PM	678	318	996	1255
5:45 PM	626	274	900	1122
6:00 PM	631	221	852	1063
6:15 PM	454	153	607	758
6:30 PM	299	88	387	469
6:45 PM	160	45	205	246
7:00 PM	0	0	0	0
7:15 PM	0	0	0	0
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0

Actual Peak Hour Major Traffic Volume	Actual Peak Hour Minor Traffic Volume	Required Peak Hour Minor Traffic Volume for Fig. 4C-3	Required Peak Hour Minor Traffic Volume for Fig. 4C-4
946	474	226	87

Appendix F

Clearance Interval

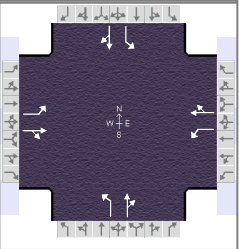
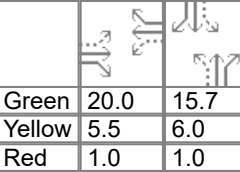
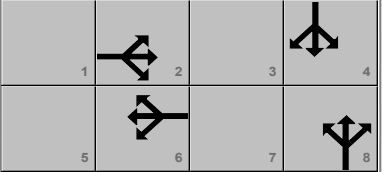
Spreadsheet

Associated Phase	Direction	Movement	Traffic Signal													Pedestrian															
			Factors *(TEM 403-2)								Calculated (TEM 403-2)			Final Clearance		Ped Movement	Associated Phase	Crosswalk Length	Pushbutton Provided	Distance to Pushbutton from Curb (furthest of the two corners)	OMUTCD 4E.06-12	OMUTCD 4E.06-07	Ped Change Interval (FDW)	3 fps Checks (OMUTCD 4E.06, 01-14)				Final Ped Timing			
			Posted Speed Limit	Perception/Reactio n Time (1s TYP)	Yellow Change Approach Speed*	Red Approach Speed*	Deceleration Rate (10 fps TYP)	Width of Intersection*	Length of Vehicle (20 ft TYP)	Approach Grade	Yellow	Red	Y + R	Yellow	Red						Y + R	WALK INTERVAL (4-7s TYP)		Calculated PED Clearance	PED CHANGE INTERVAL (FDW)	(L+P)/(3 fps) (NOTE: P=6 IF NO PUSHBUTTON)	WALK + PED CHANGE INTERVALS + YELLOW	IS Y>=X?	Additional Walk Interval Required	Final Walk Interval	Final PED Change Interval (FDW)
				t	V _Y	V _R	a	W	L	g	Y	R	TOTAL	Y (3-6s TYP)	R (1-6s TYP)						TOTAL	P		= 3.5 fps WALK TIME	= 3.5 fps WALK TIME - YELLOW	X	Y			SEC	SEC
MPH	SEC	MPH	MPH	FPS	FT	FT	%	SEC	SEC	SEC	SEC	SEC	SEC	SEC	FT	FT	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC	SEC				
1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
2	EB	THROUGH/RT	50	1	57	57	10	75	20	0	5.2	0.1	5.3	5.5	1	6.5	EB	2	50	NO	-	-	14.3	8.8	18.7	-	-	9			
3	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
4	NB	THROUGH/RT	55	1	62	62	10	82	20	0	5.6	0.1	5.7	6	1	7.0	NB	4	50	NO	-	-	14.3	8.3	18.7	-	-	9			
5	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
6	WB	THROUGH/RT	50	1	57	57	10	70	20	0	5.2	0.1	5.3	5.5	1	6.5	WB	6	52	NO	-	-	14.9	9.4	19.3	-	-	10			
7	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
8	SB	THROUGH/RT	55	1	62	62	10	80	20	0	5.6	0.1	5.7	6	1	7.0	SB	8	48	NO	-	-	13.7	7.7	18.0	-	-	8			

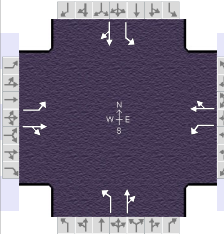
Appendix G

HCS & Synchro Capacity Analysis Reports

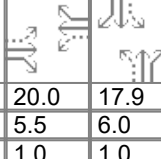
HCS Signalized Intersection Results Summary

General Information						Intersection Information										
Agency	ODOT D03					Duration, h	0.250									
Analyst	MRF		Analysis Date	7/3/2025		Area Type	Other									
Jurisdiction	ODOT D03		Time Period	Am Pk		PHF	0.92									
Urban Street	SR 82		Analysis Year	2025		Analysis Period	1> 7:00									
Intersection	LOR-82-2.57		File Name	LOR-082-02.57 HCS AM Pk Existing.xus												
Project Description	AM Pk															
Demand Information																
				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h				40	321	130	27	226	77	149	229	51	85	154	33	
Signal Information																
Cycle, s	49.2	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	Yes	Simult. Gap E/W	On			Green	20.0	15.7	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On			Yellow	5.5	6.0	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					2		6		8		4					
Case Number					6.0		6.0		6.0		6.0					
Phase Duration, s					26.5		26.5		22.7		22.7					
Change Period, (Y+R c), s					6.5		6.5		7.0		7.0					
Max Allow Headway (MAH), s					3.1		3.1		3.2		3.2					
Queue Clearance Time (g s), s					15.6		17.1		13.6		14.1					
Green Extension Time (g e), s					1.7		1.7		1.5		1.5					
Phase Call Probability					1.00		1.00		1.00		1.00					
Max Out Probability					0.00		0.00		0.00		0.00					
Movement Group Results				EB			WB			NB			SB			
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14	
Adjusted Flow Rate (v), veh/h				43	490		29	329		162	304		92	203		
Adjusted Saturation Flow Rate (s), veh/h/ln				992	1547		856	1556		1132	1602		981	1524		
Queue Service Time (g s), s				1.7	13.6		1.5	7.8		6.4	7.9		4.3	5.2		
Cycle Queue Clearance Time (g c), s				9.5	13.6		15.1	7.8		11.6	7.9		12.1	5.2		
Green Ratio (g/C)				0.41	0.41		0.41	0.41		0.32	0.32		0.32	0.32		
Capacity (c), veh/h				392	629		258	632		390	511		303	487		
Volume-to-Capacity Ratio (X)				0.111	0.780		0.114	0.521		0.415	0.595		0.304	0.418		
Back of Queue (Q), ft/ln (95 th percentile)				14	157		12	90		62	98		39	63		
Back of Queue (Q), veh/ln (95 th percentile)				0.5	5.8		0.5	3.3		2.3	3.7		1.4	2.3		
Queue Storage Ratio (RQ) (95 th percentile)				0.07	0.00		0.06	0.00		0.25	0.00		0.15	0.00		
Uniform Delay (d 1), s/veh				14.6	12.7		19.2	11.0		17.7	14.1		19.2	13.2		
Incremental Delay (d 2), s/veh				0.0	0.8		0.1	0.2		0.3	0.4		0.2	0.2		
Initial Queue Delay (d 3), s/veh				0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Control Delay (d), s/veh				14.6	13.5		19.3	11.2		17.9	14.5		19.4	13.4		
Level of Service (LOS)				B	B		B	B		B	B		B	B		
Approach Delay, s/veh / LOS				13.6	B		11.9	B		15.7	B		15.2	B		
Intersection Delay, s/veh / LOS				14.1					B							
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS				1.88	B		1.88	B		1.90	B		1.90	B		
Bicycle LOS Score / LOS				1.37	A		1.08	A		1.26	A		0.98	A		

HCS Signalized Intersection Results Summary

General Information					Intersection Information		
Agency	ODOT D03				Duration, h	0.250	
Analyst	MRF	Analysis Date	7/3/2025		Area Type	Other	
Jurisdiction	ODOT D03	Time Period	PM Pk		PHF	0.94	
Urban Street	SR 82	Analysis Year	2025		Analysis Period	1> 7:00	
Intersection	LOR-82-2.57	File Name	LOR-082-02.57 HCS PM Pk Existing.xus				
Project Description	PM Pk						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	44	319	110	49	377	79	126	188	36	138	251	43

Signal Information											
Cycle, s	51.4	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	Yes	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								
				Green	20.0	17.9	0.0	0.0	0.0	0.0	
				Yellow	5.5	6.0	0.0	0.0	0.0	0.0	
				Red	1.0	1.0	0.0	0.0	0.0	0.0	

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		26.5		26.5		24.9		24.9
Change Period, ($Y+R_c$), s		6.5		6.5		7.0		7.0
Max Allow Headway (MAH), s		3.1		3.1		3.2		3.2
Queue Clearance Time (g_s), s		17.6		16.8		16.2		13.8
Green Extension Time (g_e), s		2.1		2.1		1.7		1.7
Phase Call Probability		1.00		1.00		1.00		1.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	47	456		52	485		134	238		147	313	
Adjusted Saturation Flow Rate (s), veh/h/ln	903	1634		920	1644		1050	1648		1088	1599	
Queue Service Time (g_s), s	2.4	12.2		2.6	13.2		6.1	5.7		6.1	8.1	
Cycle Queue Clearance Time (g_c), s	15.6	12.2		14.8	13.2		14.2	5.7		11.8	8.1	
Green Ratio (g/C)	0.39	0.39		0.39	0.39		0.35	0.35		0.35	0.35	
Capacity (c), veh/h	261	635		280	640		340	574		400	557	
Volume-to-Capacity Ratio (X)	0.180	0.718		0.186	0.759		0.394	0.415		0.367	0.561	
Back of Queue (Q), ft/ln (95 th percentile)	20	149		22	164		55	70		57	101	
Back of Queue (Q), veh/ln (95 th percentile)	0.8	5.8		0.8	6.3		2.1	2.7		2.1	3.8	
Queue Storage Ratio (RQ) (95 th percentile)	0.10	0.00		0.11	0.00		0.22	0.00		0.22	0.00	
Uniform Delay (d_1), s/veh	20.4	13.3		19.6	13.6		19.3	12.8		17.2	13.6	
Incremental Delay (d_2), s/veh	0.1	0.6		0.1	0.7		0.3	0.2		0.2	0.3	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	20.5	13.9		19.7	14.3		19.6	12.9		17.4	13.9	
Level of Service (LOS)	C	B		B	B		B	B		B	B	
Approach Delay, s/veh / LOS	14.5	B		14.8	B		15.3	B		15.0	B	
Intersection Delay, s/veh / LOS	14.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	1.89	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.32	A	1.37	A	1.10	A	1.25	A

Lanes, Volumes, Timings

3: SR 83 & SR 82

10/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	321	130	27	226	77	149	229	51	85	154	33
Future Volume (vph)	40	321	130	27	226	77	149	229	51	85	154	33
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	205		0	195		0	250		0	260		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.957			0.962			0.973			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1525	1536	0	1525	1544	0	1554	1591	0	1471	1507	0
Flt Permitted	0.561			0.395			0.630			0.575		
Satd. Flow (perm)	901	1536	0	634	1544	0	1030	1591	0	890	1507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		50			42			23			23	
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		313			286			316			327	
Travel Time (s)		4.3			3.9			3.9			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	9%	9%	9%	9%	9%	9%	7%	7%	7%	13%	13%	13%
Adj. Flow (vph)	43	349	141	29	246	84	162	249	55	92	167	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	490	0	29	330	0	162	304	0	92	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

Lanes, Volumes, Timings

3: SR 83 & SR 82

10/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	27.4	27.4		27.4	27.4		22.6	22.6		22.6	22.6	
Total Split (%)	54.8%	54.8%		54.8%	54.8%		45.2%	45.2%		45.2%	45.2%	
Maximum Green (s)	20.9	20.9		20.9	20.9		15.6	15.6		15.6	15.6	
Yellow Time (s)	5.5	5.5		5.5	5.5		6.0	6.0		6.0	6.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	16.6	16.6		16.6	16.6		12.1	12.1		12.1	12.1	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.28	0.28		0.28	0.28	
v/c Ratio	0.12	0.78		0.12	0.53		0.56	0.65		0.37	0.46	
Control Delay (s/veh)	9.9	21.4		10.3	12.5		22.3	20.5		18.0	15.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	9.9	21.4		10.3	12.5		22.3	20.5		18.0	15.7	
LOS	A	C		B	B		C	C		B	B	
Approach Delay (s/veh)		20.5			12.4			21.1			16.4	
Approach LOS		C			B			C			B	

Intersection Summary

Area Type: Other

Cycle Length: 50

Actuated Cycle Length: 42.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay (s/veh): 18.2

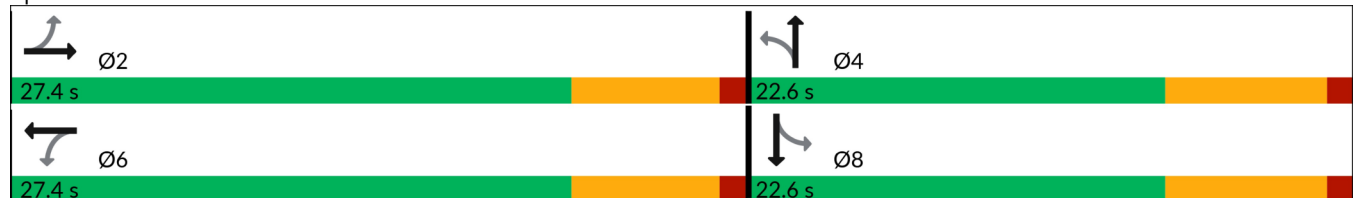
Intersection LOS: B

Intersection Capacity Utilization 74.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: SR 83 & SR 82



Lanes, Volumes, Timings

3: SR 83 & SR 82

10/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	319	110	49	377	79	126	188	36	138	251	43
Future Volume (vph)	44	319	110	49	377	79	126	188	36	138	251	43
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (ft)	205		0	195		0	250		0	260		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.974			0.976			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1614	1634	0	1599	1639	0	1599	1642	0	1539	1585	0
Flt Permitted	0.396			0.429			0.570			0.611		
Satd. Flow (perm)	673	1634	0	722	1639	0	959	1642	0	990	1585	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			25			18			16	
Link Speed (mph)		50			50			55			55	
Link Distance (ft)		313			286			316			327	
Travel Time (s)		4.3			3.9			3.9			4.1	
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
Heavy Vehicles (%)	3%	3%	3%	4%	4%	4%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	47	339	117	52	401	84	134	200	38	147	267	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	47	456	0	52	485	0	134	238	0	147	313	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	

Lanes, Volumes, Timings

3: SR 83 & SR 82

10/16/2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	31.0	31.0		31.0	31.0		24.0	24.0		24.0	24.0	
Total Split (%)	56.4%	56.4%		56.4%	56.4%		43.6%	43.6%		43.6%	43.6%	
Maximum Green (s)	24.5	24.5		24.5	24.5		17.0	17.0		17.0	17.0	
Yellow Time (s)	5.5	5.5		5.5	5.5		6.0	6.0		6.0	6.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		7.0	7.0		7.0	7.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	17.4	17.4		17.4	17.4		12.9	12.9		12.9	12.9	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.29	0.29		0.29	0.29	
v/c Ratio	0.18	0.69		0.18	0.74		0.48	0.49		0.51	0.66	
Control Delay (s/veh)	11.1	16.5		11.1	19.0		21.2	16.9		21.9	22.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	11.1	16.5		11.1	19.0		21.2	16.9		21.9	22.0	
LOS	B	B		B	B		C	B		C	C	
Approach Delay (s/veh)		16.0			18.2			18.5			21.9	
Approach LOS		B			B			B			C	

Intersection Summary

Area Type: Other

Cycle Length: 55

Actuated Cycle Length: 44.5

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay (s/veh): 18.6

Intersection LOS: B

Intersection Capacity Utilization 78.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: SR 83 & SR 82

