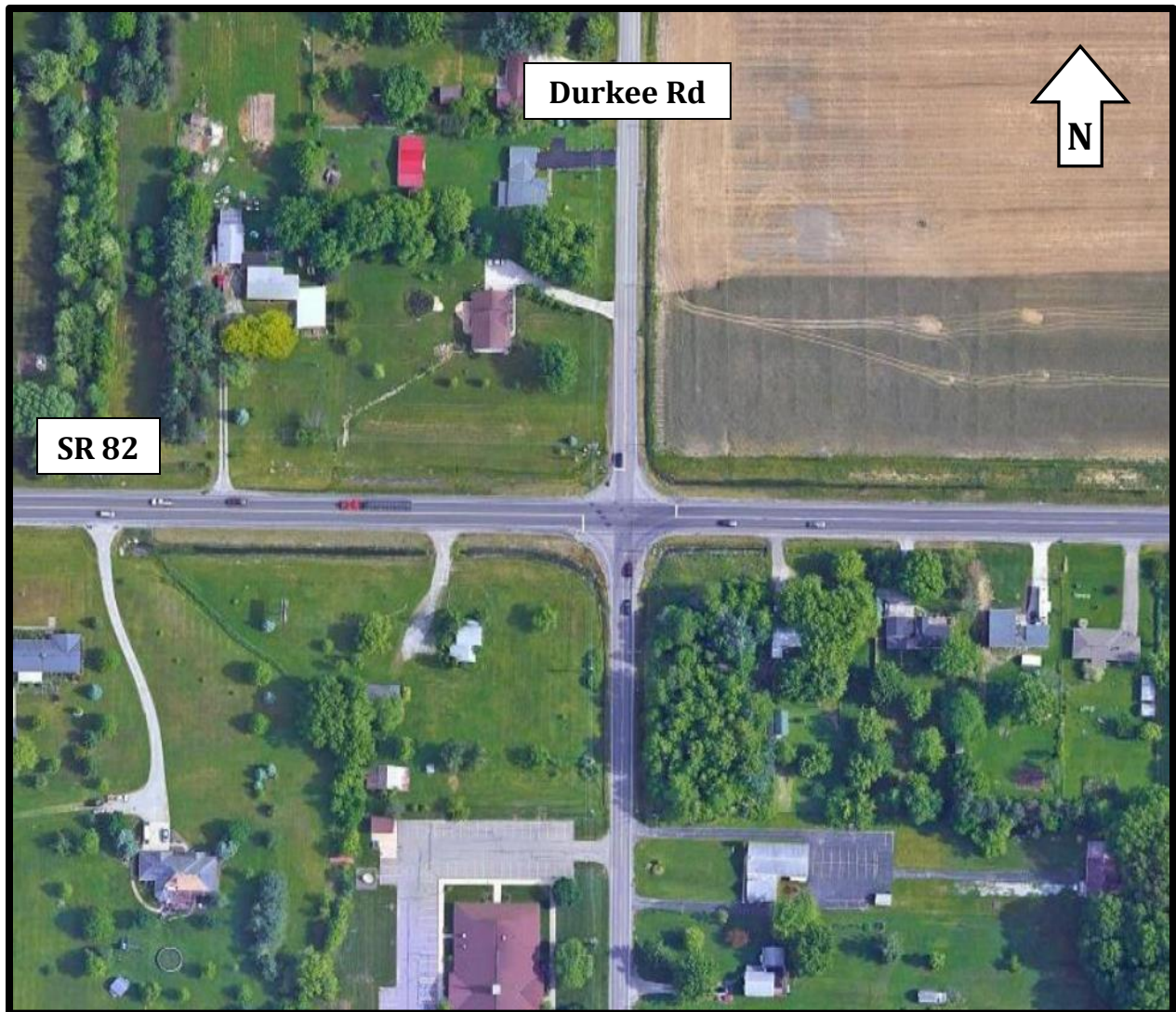




Ohio Department of Transportation, District 3
2021 Signal Evaluation
Lorain County SR 82, SLM 0.99
Durkee Road Intersection

By: Jared Feller

Date: February 2022



Signal Evaluation Background

The Ohio Manual of Uniform Traffic Control Devices (OMUTCD) requires that 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 Signal

The following features are present at the existing signal constructed in 1999:

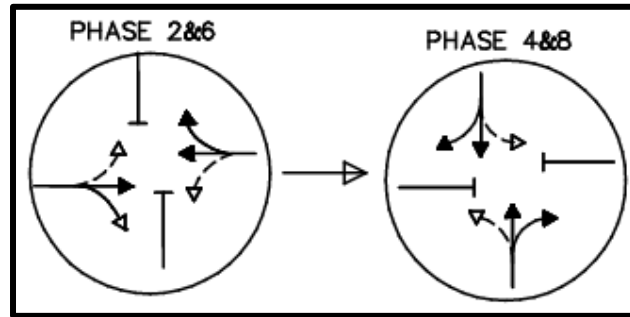
- Signal Type: Simple Span
- Signal Heads: Black Polycarbonate, 12-inch LEDs with Reflective Backplates
- Controller: Ground Mounted with Battery Backup
- Turn Lanes: None
- Detection: Stop Bar (SR 82, Durkee Road) – Loops
Dilemma Zone (SR 82, Durkee Road) - Loops
- Timing: See **Table 1** below.

Table 1 – Traffic Signal Timing

DATE: 9/28/2017		OVERLAP				A	B	C	D
FLASH MODE: ALL RED		PHASES							
INTERVAL OR FEATURE		CONTROLLER MOVEMENT No.							
		1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT			EB		SB		WB		NB
MINIMUM GREEN (INITIAL) (SEC)			20		10		20		10
PASSAGE TIME (GAP) (SEC)			3		3		3		3
MAXIMUM GREEN (SEC)			50		30		50		30
YELLOW CHANGE (SEC)			5.5		5		5.5		5
ALL RED CLEARANCE (SEC)			1		1		1		1
WALK (SEC)									
PEDESTRIAN CLEARANCE (SEC)									
RECALL	MINIMUM (ON/OFF)	OFF	ON	OFF	OFF	OFF	ON	OFF	OFF
	MAXIMUM (ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	PEDESTRIAN (ON/OFF)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
NON-LOCK (ON/OFF)		OFF	OFF	OFF	ON	OFF	OFF	OFF	ON
ADDED INITIAL (SEC)									
MAXIMUM INITIAL (SEC)									
TIME TO REDUCE (SEC)									
TIME BEFORE REDUCTION (SEC)									
MINIMUM GAP (SEC)									

- Phasing: See **Figure 1** below.

Figure 1 – Phasing Diagram



- Photo: See **Image 1** below for a photograph of the intersection.



Image 1 – SR 82 & Durkee Road Signal from the southwest corner (January 2022)

- Speeds: SR 82 = 50 MPH, Durkee Road = 55 MPH
- Traffic: Moderate traffic volumes on SR 82 and light traffic volumes on Durkee Road were observed on field visit. (early afternoon on 1/5/2022)
- Other Issues: No signal operation or queueing issues were observed.

Crash Data

Crashes were analyzed at the SR 82 & Durkee Road intersection from January 1, 2016 through December 31, 2020. The reported crashes are summarized in **Table 2**.

Table 2 – Crash Data

YEAR		SEVERITY		TYPE		ROAD CONDITION	
2016	2 (22%)	Fatal	0 (0%)	Rear End	8 (89%)	Dry	5 (56%)
2017	2 (22%)	Injury	2 (22%)	Angle	1 (11%)	Wet	1 (11%)
2018	3 (33%)	PDO	7 (78%)			Snow/Ice	3 (33%)
2019	2 (22%)						
2020	0 (0%)						
TOTAL	9 (100%)						

- There were eight rear end crashes reported at the intersection from 2016 – 2020. This is a reduction in the frequency of rear end crashes compared to the time frame reviewed with the previous signal evaluation (nine rear end crashes from 2013 – 2015). Half of the rear end crashes were caused by younger drivers (under 25 years old) and at least two were due to distracted driving.
- The angle crash was caused by a northbound driver who ran a red light and fled the scene of the crash. The frequency of angle crashes has significantly decreased compared to the previous signal evaluation (four angle crashes from 2013 – 2015).
- The lack of crashes in 2020 may be a result of reduced traffic volumes due to the COVID-19 pandemic.

Supplemental Evaluations

The following additional studies were performed to ensure safe and efficient operation of the signal:

1. **Turning Movements:** A traffic count was requested to obtain updated traffic volumes for the intersection. The traffic count was performed on September 14, 2021 between the hours of 6:00 AM – 6:00 PM. The count information can be found in in **Table 3** below:

Table 3 – Turning Movement Count

Peak Hour (Start Time)	Durkee Road Southbound				SR 82 Westbound				Durkee Road Northbound				SR 82 Eastbound				Total
	R	T	L	Tot	R	T	L	Tot	R	T	L	Tot	R	T	L	Tot	
Total Count	190	556	106	852	137	3,546	538	4,221	457	597	360	1,414	409	3,588	205	4,203	10,690
AM Peak (7:00)	8	76	3	87	14	348	75	437	69	78	39	186	58	393	25	476	1,186
PM Peak (3:15)	27	64	14	105	16	411	70	497	66	76	42	184	55	403	23	481	1,267

2. **Signal Warrant:** The signal warrant was analyzed at this intersection to verify if the existing signal should be retained. The OMUTCD Section 4C lists nine warrants for the installation of a signal. Warrants 1–3 (8-Hour Volume, 4-Hour Volume, Peak Hour Volume) were all analyzed based on the Turning Movement Count data. The intersection met the following signal warrants using the 70 percent volumes for signal retention as shown in **Table 4**:

Table 4 – Signal Warrant

Warrant	Hours Needed	Hours Met	Warrant Met
1A - Eight Hour Vehicular Volumes	8	6	No
1B - Interruption of Continuous Traffic	8	10	Yes
1 A&B - Combination of Warrants	1A	8	Yes
	1B	8	
2 - Four Hour Volumes	4	8	Yes
3 - Peak Hour Volumes	-	-	Yes

- 3. Clearance Interval Calculation:** Appropriate yellow and all-red clearance intervals are important to safe operation of a signal. Yellow and all red clearance intervals were calculated based on current ODOT Traffic Engineering Manual (TEM) guidelines, with the exception that all calculated values were rounded up to the nearest half second. The calculated clearance intervals are shown in **Table 5**:

Table 5 – Clearance Intervals

INTERVAL OR FEATURE	CONTROLLER MOVEMENT No.							
	1	2	3	4	5	6	7	8
INTERSECTION MOVEMENT		EB		SB		WB		NB
YELLOW CHANGE (SEC)		5.2		5.6		5.2		5.6
ALL RED CLEARANCE (SEC)		0.0		0.0		0.0		0.0
PEDESTRIAN CLEARANCE** (SEC)		11.4		10.3		8.3		8.3

**Pedestrian signals and crosswalks are not provided at the intersection. Pedestrian Clearance intervals are less than the Minimum Green + Yellow Change for all movements. No timing changes are required to accommodate the pedestrian clearance.

- 4. Capacity Analysis:** Highway Capacity Software (HCS 7) was used to analyze the Level of Service (LOS) of each approach for existing timing at the intersection. The LOS is based on the calculated seconds of delay for each approach at an intersection using the Highway Capacity Manual (HCM) methodology. The results are summarized in **Table 6** below:

Table 6 – Existing Intersection Level of Service by Approach

Existing Delay s/veh and (LOS)	Intersection Approach				Intersection Combined Delay
	SR 82		Durkee Road		
	EB	WB	NB	SB	
AM Peak	9.2 (A)	8.9 (A)	15.2 (B)	13.5 (B)	10.3 (B)
PM Peak	9.0 (A)	9.3 (A)	14.9 (B)	13.7 (B)	10.4 (B)

Signal Evaluation Recommendations

- Update Yellow Change for Durkee Road from 5 to 6 seconds
- Replace Loop Detection with Radar Detection. If installed, passage time can be reduced from 3 to 2 seconds.

The signal is operating well based on the capacity analysis and operations observed during the field review. The current Yellow Change interval for Durkee Road was calculated based on a speed of 45 MPH, however the speed limit on Durkee Road is 55 MPH. Upgrading the detection for this intersection to radar detection may improve operations and reduce crashes.

MATERIAL REQUIRED PROJ. 16(99)				
REF. NO.	ITEM	QTY.	UNITS	DESCRIPTION
6	625	1493	LF	CONDUIT, 1", 713.04
7	625	25	LF	CONDUIT, 1 1/2", 713.04
8	625	226	LF	CONDUIT, 2", 713.04
9	625	25	LF	CONDUIT, 3", 713.04
10	625	112	LF	CONDUIT, JACKED OR DRILLED UNDER PVM'T 2"
12	625	1783	LF	TRENCH, APP
15	625	18	EA.	PULL BOX, 713.08, 18"
18	632	2	EA.	GROUND ROD, APP
29	632	4	EA.	VEHICULAR SIGNAL HEAD, 3 SEC, 12" LENS 2 WAY
34	632	4	EA.	COVERING OF VEHICULAR SIGNAL HEAD
36	632	8	EA.	LOOP DETECTOR UNIT, DELAY AND EXTENSION TYPE, APP
38	632	128	LF	MESSENGER WIRE, 7 STRAND, 3/8" DIAMETER WITH ACCESSORIES
40	632	369	LF	SIGNAL CABLE, 5 CONDUCTOR, NO. 14 AWG
45	632	158	LF	LOOP LEAD-IN CABLE W/ INTEG. MESS.
46	632	1684	LF	LOOP DETECTOR LEAD-IN CABLE, 2 CONDUCTOR, NO. 14 AWG
47	632	25	LF	POWER CABLE, 2 CONDUCTOR, NO. 6 AWG
48	632	20	LF	POWER CABLE, 3 CONDUCTOR NO. 6 AWG
50	632	1	EA.	POWER SERVICE, APP
56	632	2	EA.	STRAIN POLE, TYPE TC-81.10, DESIGN 10, 32'
67	632	1	EA.	REMOVAL OF TRAFFIC SIGNAL INSTALLATION, APP
69	632	1	EA.	SIGNALIZATION, : METER BASE, 100 AMP WITH BYPASS
74	632	466	LF	SIGNALIZATION, MISC.: LOOP DETECTOR PAVEMENT CUTTING, APP
76	632	2315	LF	SIGNALIZATION, MISC.: LOOP DETECTOR WIRE, TYPE E, APP
82	633	1	EA.	CONTROLLER, ACTUATED, 8 PHASE, SOLID STATE DIGITAL MICROPROCESSOR, APP WITH INTERNAL TIME BASE CORD.
88	633	10.4	SF	CONTROLLER WORK PAD (30"x50")

* INHIBIT DELAY DURING PHASE
2 GREEN INTERVAL

SIGNAL PHASING DIAGRAM

PHASE 2 & 6		PHASE 4 & 8	
NOT USED PHASE 1		NOT USED PHASE 3	
NOT USED PHASE 5		NOT USED PHASE 7	

FLASHER OPERATIONS

YELLOW TO USR 82
RED TO DURKEE RD
SIGNAL NO. LOR-82-0.99S
SECTION NO. 0.00
ROUTE TYPE 40
INSTALLATION DATE 3-30-77
FILE NO. 2766

OHIO DEPARTMENT OF TRANSPORTATION

ELECTRICAL INSTALLATION
LOCATED AT
SR 82 AND DURKEE RD

District 3 County LORAIN

DATE	REVISIONS	DATE INSTALLED
6-09-99	PLAN REDRAWN TO SHOW UPGRADING TO SIGNAL AS PER PROJ. 16(99)	10-21-99

DESIGNED	DRAWN	REVISED	CHECKED	REVIEWED	SHEET
RSS	RSS				1
7/99	7/99				OF

\\mvfiles\dwg\signal\L82Durke.dwg

TRAFFIC SIGNAL TIMING (In Seconds)								
LOCATION: SR 82 / DURKEE RD.								
DATE: 09/28/2017								
PERSONNEL: KC								
	PHASE NUMBER							
	1	2	3	4	5	6	7	8
INTERVAL	NOT USED	SR 82 EB	NOT USED	DURKEE RD. SB	NOT USED	SR 82 WB	NOT USED	DURKEE RD. NB
MINIMUM GREEN		20		10		20		10
PASSAGE TIME		3.0		3.0		3.0		3.0
YELLOW CLEARANCE		5.5		5.0		5.5		5.0
RED CLEARANCE		1.0		1.0		1.0		1.0
MAX GREEN 1		50		30		50		30
MAX GREEN 2		50		30		50		30
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.)		0		0		0		0
MAXIMUM INITIAL		0		0		0		0
TIME TO REDUCE		0		0		0		0
TIME BEFORE REDUCTION		0		0		0		0
MINIMUM GAP		0		0		0		0
NOTES:								
BLANK or N/A = Not Applicable or Not Used. (+) = Yes or On. (-) = No or Off								

CRASH DIAGRAM

Lorain Co. SR-82, SLM 0.99
Durkee Rd. Intersection
Date: 1/1/2016 - 12/31/2020

Crashes By Year

2016: 2
2017: 2
2018: 3
2019: 2
2020: 0

Total: 9

Crashes By Severity

Fatal: 0
Injury: 2
PDO: 7

NOTES

-8 rear end
-1 angle



Durkee Rd.

02-09-17/5/Snow

06-14-17/10/Dry

11-07-16/7/Dry (D)
02-07-18/7/Snow
03-10-18/17/Dry (D)
05-03-19/11/Wet

SR-82

02-21-19/15/Dry

NB vehicle ran red light
and fled the scene

02-13-16/17/Ice
07-15-18/13/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	Right Turn
Stop Sign	Right Turn
Animal	

Diagram Label Key

Date/Hour/Road Condition
(D) = Distracted

Jacob Molnar



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1606 West Broad Street

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Count Name: LOR-82-0.99
Site Code:
Start Date: 09/14/2021
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	1	3	0	0	4	0	27	5	0	32	5	9	0	0	14	1	54	1	0	56	106
6:15 AM	2	5	0	0	7	1	56	6	0	63	7	10	5	0	22	0	70	1	0	71	163
6:30 AM	2	6	0	0	8	1	64	20	0	85	3	12	3	0	18	3	113	1	0	117	228
6:45 AM	0	17	1	0	18	1	66	25	0	92	14	16	5	0	35	8	100	4	0	112	257
Hourly Total	5	31	1	0	37	3	213	56	0	272	29	47	13	0	89	12	337	7	0	356	754
7:00 AM	1	16	1	0	18	5	62	23	0	90	20	13	5	0	38	16	89	6	0	111	257
7:15 AM	2	24	1	0	27	1	73	26	0	100	20	27	16	0	63	17	104	4	0	125	315
7:30 AM	3	20	1	0	24	5	100	13	0	118	20	20	12	0	52	11	97	9	0	117	311
7:45 AM	2	16	0	0	18	3	113	13	0	129	9	18	6	0	33	14	103	6	0	123	303
Hourly Total	8	76	3	0	87	14	348	75	0	437	69	78	39	0	186	58	393	25	0	476	1186
8:00 AM	9	7	2	0	18	0	74	9	0	83	7	20	12	0	39	15	95	6	0	116	256
8:15 AM	6	14	2	0	22	6	79	17	0	102	8	14	13	0	35	18	58	7	0	83	242
8:30 AM	11	5	5	0	21	3	69	10	0	82	8	11	10	0	29	13	69	5	0	87	219
8:45 AM	7	5	2	0	14	5	59	3	0	67	6	11	7	0	24	2	48	5	0	55	160
Hourly Total	33	31	11	0	75	14	281	39	0	334	29	56	42	0	127	48	270	23	0	341	877
9:00 AM	3	1	1	0	5	1	48	2	0	51	1	8	2	0	11	4	70	3	0	77	144
9:15 AM	2	6	1	0	9	2	58	1	0	61	5	12	5	0	22	2	46	1	0	49	141
9:30 AM	1	6	0	0	7	8	51	7	0	66	4	4	7	0	15	2	48	3	0	53	141
9:45 AM	2	1	1	0	4	2	57	7	0	66	4	4	5	0	13	5	71	0	0	76	159
Hourly Total	8	14	3	0	25	13	214	17	0	244	14	28	19	0	61	13	235	7	0	255	585
10:00 AM	3	4	2	0	9	3	46	5	0	54	6	12	4	0	22	13	50	4	0	67	152
10:15 AM	2	5	4	0	11	1	54	4	0	59	3	6	7	0	16	9	60	0	0	69	155
10:30 AM	1	7	2	0	10	3	68	6	0	77	7	6	1	0	14	11	54	2	0	67	168
10:45 AM	4	3	3	0	10	4	50	8	0	62	3	13	4	0	20	2	27	1	0	30	122
Hourly Total	10	19	11	0	40	11	218	23	0	252	19	37	16	0	72	35	191	7	0	233	597
11:00 AM	4	7	2	0	13	2	43	6	0	51	8	11	5	0	24	2	60	6	0	68	156
11:15 AM	3	6	1	0	10	3	49	6	0	58	6	7	5	0	18	3	61	1	0	65	151
11:30 AM	1	2	2	0	5	1	52	10	0	63	4	3	7	0	14	9	55	4	0	68	150
11:45 AM	4	8	2	0	14	3	55	3	0	61	6	5	3	0	14	3	55	6	0	64	153
Hourly Total	12	23	7	0	42	9	199	25	0	233	24	26	20	0	70	17	231	17	0	265	610
12:00 PM	7	7	4	0	18	3	60	7	0	70	5	7	9	0	21	2	57	3	0	62	171
12:15 PM	1	7	7	0	15	3	56	3	0	62	4	13	5	0	22	8	76	8	0	92	191
12:30 PM	1	3	1	0	5	1	51	8	0	60	5	8	5	0	18	7	59	4	0	70	153
12:45 PM	6	7	4	0	17	1	58	8	0	67	6	6	6	0	18	3	53	2	0	58	160
Hourly Total	15	24	16	0	55	8	225	26	0	259	20	34	25	0	79	20	245	17	0	282	675
1:00 PM	2	10	3	0	15	2	64	7	0	73	2	9	7	0	18	4	77	6	1	88	194

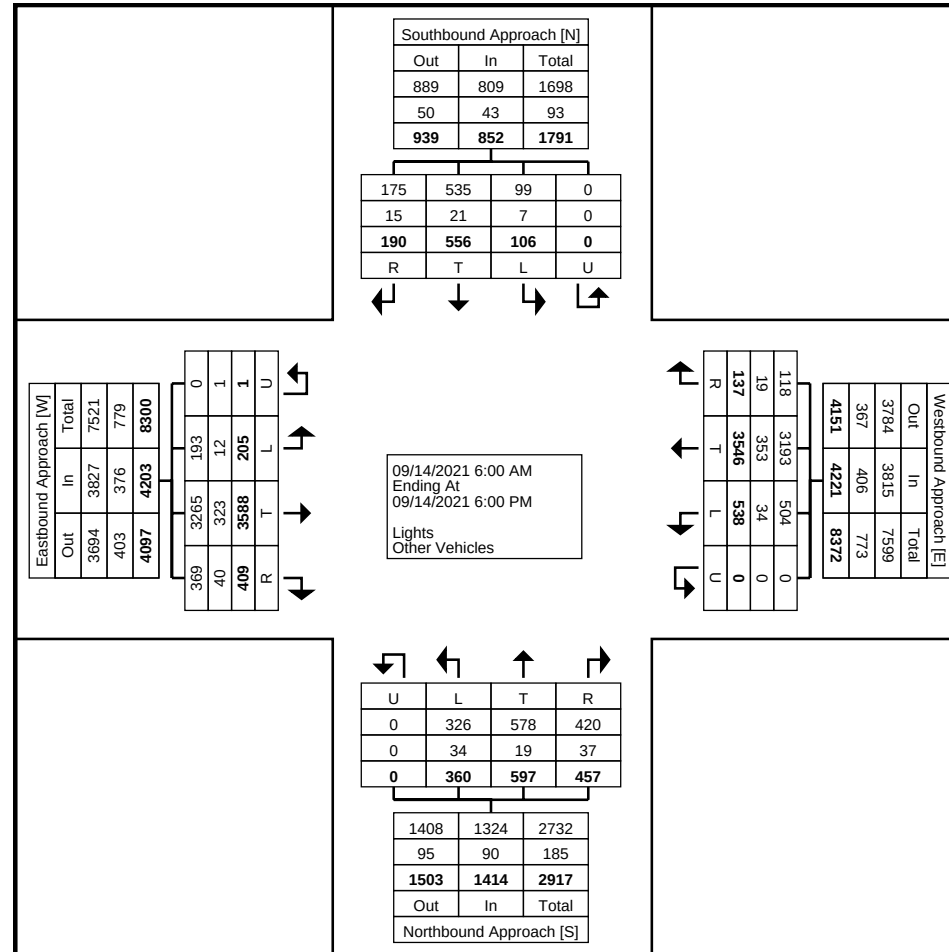
1:15 PM	1	11	3	0	15	0	55	12	0	67	10	8	12	0	30	8	69	6	0	83	195
1:30 PM	3	13	3	0	19	0	59	8	0	67	4	4	5	0	13	10	84	5	0	99	198
1:45 PM	7	12	2	0	21	3	71	13	0	87	3	11	6	0	20	5	64	3	0	72	200
Hourly Total	13	46	11	0	70	5	249	40	0	294	19	32	30	0	81	27	294	20	1	342	787
2:00 PM	6	15	5	0	26	3	73	9	0	85	11	13	6	0	30	11	76	0	0	87	228
2:15 PM	2	11	1	0	14	1	95	20	0	116	3	10	7	0	20	17	70	5	0	92	242
2:30 PM	0	26	1	0	27	6	99	18	0	123	11	20	10	0	41	13	68	7	0	88	279
2:45 PM	5	13	2	0	20	4	88	12	0	104	40	37	29	0	106	10	50	8	0	68	298
Hourly Total	13	65	9	0	87	14	355	59	0	428	65	80	52	0	197	51	264	20	0	335	1047
3:00 PM	8	21	6	0	35	5	103	13	0	121	31	27	19	0	77	9	59	6	0	74	307
3:15 PM	8	14	2	0	24	6	96	18	0	120	14	24	15	0	53	12	93	4	0	109	306
3:30 PM	5	16	4	0	25	3	103	13	0	119	23	21	8	0	52	12	102	6	0	120	316
3:45 PM	5	14	2	0	21	3	112	16	0	131	14	16	8	0	38	14	104	10	0	128	318
Hourly Total	26	65	14	0	105	17	414	60	0	491	82	88	50	0	220	47	358	26	0	431	1247
4:00 PM	9	20	6	0	35	4	100	23	0	127	15	15	11	0	41	17	104	3	0	124	327
4:15 PM	6	22	2	0	30	4	100	13	0	117	7	6	9	0	22	11	100	4	0	115	284
4:30 PM	5	16	3	0	24	3	120	14	0	137	8	19	8	0	35	10	90	4	0	104	300
4:45 PM	8	29	1	0	38	7	112	18	0	137	12	8	7	0	27	12	114	6	0	132	334
Hourly Total	28	87	12	0	127	18	432	68	0	518	42	48	35	0	125	50	408	17	0	475	1245
5:00 PM	3	21	2	0	26	5	120	12	0	137	8	13	5	0	26	7	91	5	0	103	292
5:15 PM	7	22	3	0	32	1	99	7	0	107	9	11	4	0	24	8	110	6	0	124	287
5:30 PM	4	20	1	0	25	2	99	13	0	114	9	6	7	0	22	10	92	4	0	106	267
5:45 PM	5	12	2	0	19	3	80	18	0	101	19	13	3	0	35	6	69	4	0	79	234
Hourly Total	19	75	8	0	102	11	398	50	0	459	45	43	19	0	107	31	362	19	0	412	1080
Grand Total	190	556	106	0	852	137	3546	538	0	4221	457	597	360	0	1414	409	3588	205	1	4203	10690
Approach %	22.3	65.3	12.4	0.0	-	3.2	84.0	12.7	0.0	-	32.3	42.2	25.5	0.0	-	9.7	85.4	4.9	0.0	-	-
Total %	1.8	5.2	1.0	0.0	8.0	1.3	33.2	5.0	0.0	39.5	4.3	5.6	3.4	0.0	13.2	3.8	33.6	1.9	0.0	39.3	-
Lights	175	535	99	0	809	118	3193	504	0	3815	420	578	326	0	1324	369	3265	193	0	3827	9775
% Lights	92.1	96.2	93.4	-	95.0	86.1	90.0	93.7	-	90.4	91.9	96.8	90.6	-	93.6	90.2	91.0	94.1	0.0	91.1	91.4
Other Vehicles	15	21	7	0	43	19	353	34	0	406	37	19	34	0	90	40	323	12	1	376	915
% Other Vehicles	7.9	3.8	6.6	-	5.0	13.9	10.0	6.3	-	9.6	8.1	3.2	9.4	-	6.4	9.8	9.0	5.9	100.0	8.9	8.6



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Count Name: LOR-82-0.99
Site Code:
Start Date: 09/14/2021
Page No: 3



Turning Movement Data Plot



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1606 West Broad Street

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Count Name: LOR-82-0.99
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Page No: 4

Turning Movement Peak Hour Data (7:00 AM)

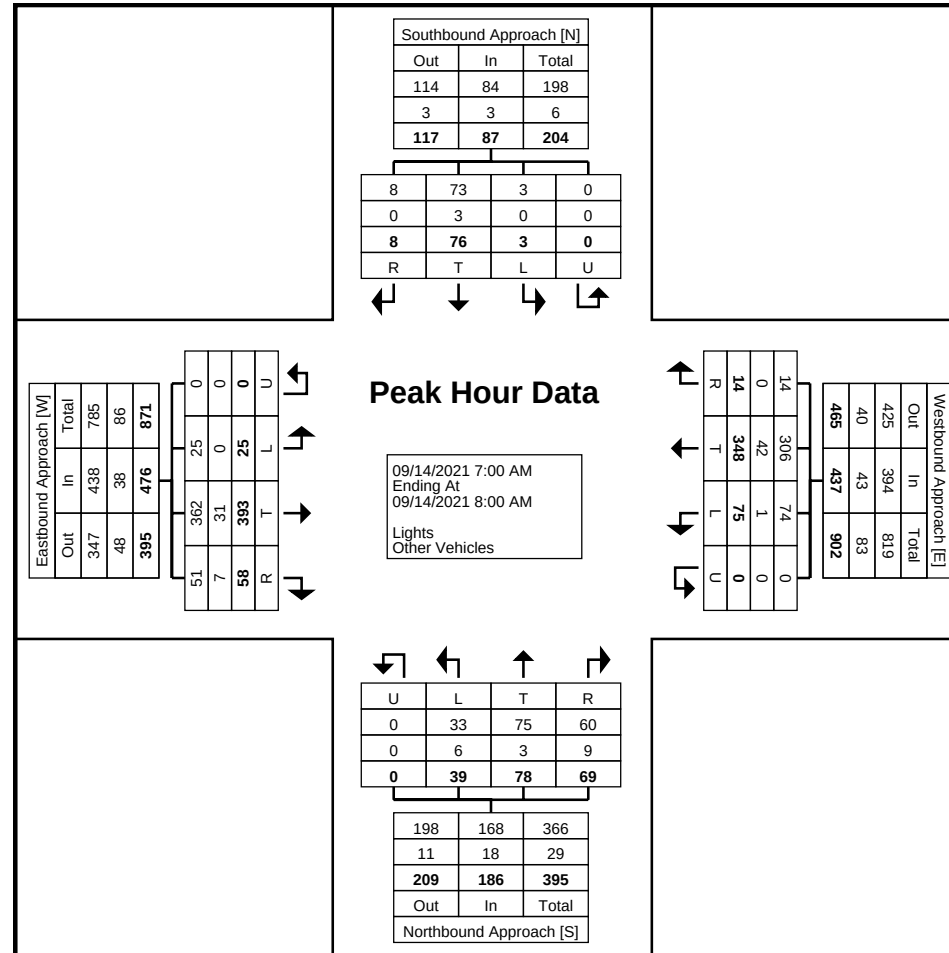
Start Time	Southbound Approach Southbound					Westbound Approach Westbound					Northbound Approach Northbound					Eastbound Approach Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
7:00 AM	1	16	1	0	18	5	62	23	0	90	20	13	5	0	38	16	89	6	0	111	257
7:15 AM	2	24	1	0	27	1	73	26	0	100	20	27	16	0	63	17	104	4	0	125	315
7:30 AM	3	20	1	0	24	5	100	13	0	118	20	20	12	0	52	11	97	9	0	117	311
7:45 AM	2	16	0	0	18	3	113	13	0	129	9	18	6	0	33	14	103	6	0	123	303
Total	8	76	3	0	87	14	348	75	0	437	69	78	39	0	186	58	393	25	0	476	1186
Approach %	9.2	87.4	3.4	0.0	-	3.2	79.6	17.2	0.0	-	37.1	41.9	21.0	0.0	-	12.2	82.6	5.3	0.0	-	-
Total %	0.7	6.4	0.3	0.0	7.3	1.2	29.3	6.3	0.0	36.8	5.8	6.6	3.3	0.0	15.7	4.9	33.1	2.1	0.0	40.1	-
PHF	0.667	0.792	0.750	0.000	0.806	0.700	0.770	0.721	0.000	0.847	0.863	0.722	0.609	0.000	0.738	0.853	0.945	0.694	0.000	0.952	0.941
Lights	8	73	3	0	84	14	306	74	0	394	60	75	33	0	168	51	362	25	0	438	1084
% Lights	100.0	96.1	100.0	-	96.6	100.0	87.9	98.7	-	90.2	87.0	96.2	84.6	-	90.3	87.9	92.1	100.0	-	92.0	91.4
Other Vehicles	0	3	0	0	3	0	42	1	0	43	9	3	6	0	18	7	31	0	0	38	102
% Other Vehicles	0.0	3.9	0.0	-	3.4	0.0	12.1	1.3	-	9.8	13.0	3.8	15.4	-	9.7	12.1	7.9	0.0	-	8.0	8.6



Ohio DOT - Traffic Operations
1606 West Broad Street

Columbus, Ohio, United States 43223
+16144667170 D03trafficcunts@dot.ohio.gov

Count Name: LOR-82-0.99
Site Code:
Start Date: 09/14/2021
Page No: 5



Turning Movement Peak Hour Data Plot (7:00 AM)



Ohio DOT - Traffic Operations
1606 West Broad Street

Columbus, Ohio, United States 43223
+16144667170 D03trafficcunts@dot.ohio.gov

Count Name: LOR-82-0.99
Site Code:
Start Date: 09/14/2021
Page No: 6

Turning Movement Peak Hour Data (3:15 PM)

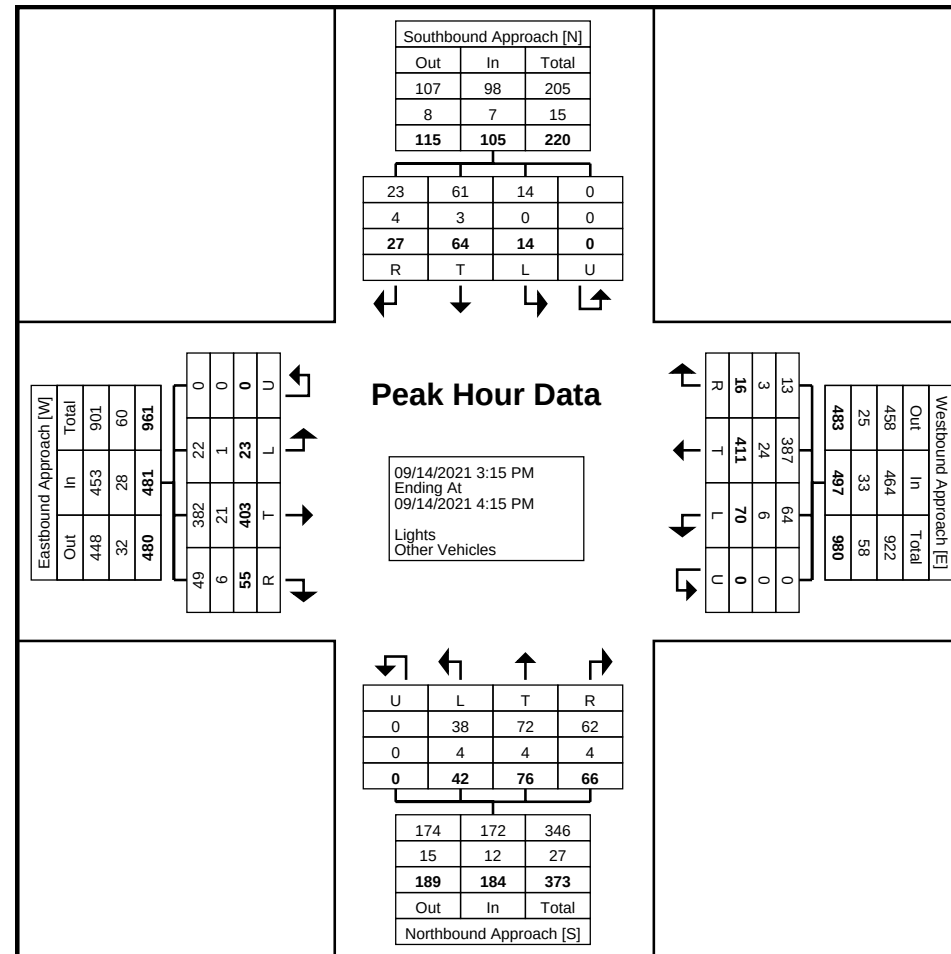
Start Time	Southbound Approach Southbound					Westbound Approach Westbound					Northbound Approach Northbound					Eastbound Approach Eastbound					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
3:15 PM	8	14	2	0	24	6	96	18	0	120	14	24	15	0	53	12	93	4	0	109	306
3:30 PM	5	16	4	0	25	3	103	13	0	119	23	21	8	0	52	12	102	6	0	120	316
3:45 PM	5	14	2	0	21	3	112	16	0	131	14	16	8	0	38	14	104	10	0	128	318
4:00 PM	9	20	6	0	35	4	100	23	0	127	15	15	11	0	41	17	104	3	0	124	327
Total	27	64	14	0	105	16	411	70	0	497	66	76	42	0	184	55	403	23	0	481	1267
Approach %	25.7	61.0	13.3	0.0	-	3.2	82.7	14.1	0.0	-	35.9	41.3	22.8	0.0	-	11.4	83.8	4.8	0.0	-	-
Total %	2.1	5.1	1.1	0.0	8.3	1.3	32.4	5.5	0.0	39.2	5.2	6.0	3.3	0.0	14.5	4.3	31.8	1.8	0.0	38.0	-
PHF	0.750	0.800	0.583	0.000	0.750	0.667	0.917	0.761	0.000	0.948	0.717	0.792	0.700	0.000	0.868	0.809	0.969	0.575	0.000	0.939	0.969
Lights	23	61	14	0	98	13	387	64	0	464	62	72	38	0	172	49	382	22	0	453	1187
% Lights	85.2	95.3	100.0	-	93.3	81.3	94.2	91.4	-	93.4	93.9	94.7	90.5	-	93.5	89.1	94.8	95.7	-	94.2	93.7
Other Vehicles	4	3	0	0	7	3	24	6	0	33	4	4	4	0	12	6	21	1	0	28	80
% Other Vehicles	14.8	4.7	0.0	-	6.7	18.8	5.8	8.6	-	6.6	6.1	5.3	9.5	-	6.5	10.9	5.2	4.3	-	5.8	6.3



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Count Name: LOR-82-0.99
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Turning Movement Peak Hour Data Plot (3:15 PM)

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Signal Warrants - Summary

Major Street Approaches

Eastbound: SR 82

Number of Lanes : 1

Total Approach Volume: 4,202

Westbound: SR 82

Number of Lanes :1

Total Approach Volume: 4,221

Minor Street Approaches

Northbound: Durkee

Number of Lanes :1

Total Approach Volume: 1,414

Southbound: Durkee

Number of Lanes :1

Total Approach Volume: 852

Warrant Summary (Rural Values Apply)

Warrant 1 - Eight Hour Vehicular Volumes.....Satisfied

Warrant 1A - Minimum Vehicular Volume.....Not Satisfied

Required volumes reached for 6 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic.....Satisfied

Required volumes reached for 10 hours, 8 are needed

Warrant 1C - Combination of Warrants.....Satisfied

Required 1A volumes reached for 8 hours, 8 are needed

Required 1B volumes reached for 12 hours, 8 are needed

Warrant 2 - Four Hour Volumes.....Satisfied

Number of hours (8) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour.....Satisfied

Warrant 3A - Peak Hour Delay.....Satisfied

Number of one hour periods (22) volumes exceed minimum >= required (1). Delay data not evaluated.

Warrant 3B - Peak Hour Volumes.....Satisfied

Volumes exceed minimums for at least one hour period.

Warrant 4 - Pedestrian Volumes.....Not Evaluated

Warrant 5 - School Crossing.....Not Evaluated

Warrant 6 - Coordinated Signal System.....Not Evaluated

Warrant 7 - Crash Experience.....Not Evaluated

Warrant 8 - Roadway Network.....Not Evaluated

Warrant 9 - Intersection Near a Grade Crossing.....Not Evaluated

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 1A - Minimum Volumes

Description

Intended for sites where the volume of intersecting traffic is the principal reason for consideration of a signal installation.

Summary

Only 6 one hour periods meet minimums.
Warrant is NOT met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **1**

Volume Requirements

Rural Factor of 70 % applied
Veh/Hr Major = **350**

Veh/Hr Minor = **105**

Major Road SR 82						Minor Road Durkee		
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met?
15:45 - 16:45	471	+	512	=	983	136	110	Yes
16:45 - 17:45	465	+	495	=	960	99	121	Yes
07:15 - 08:15	481	+	430	=	911	187	87	Yes
14:45 - 15:45	371	+	464	=	835	288	104	Yes
13:45 - 14:45	339	+	411	=	750	111	88	Yes
06:15 - 07:15	411	+	330	=	741	113	51	Yes
13:30 - 14:30	350	+	355	=	705	83	80	No
13:15 - 14:15	341	+	306	=	647	93	81	No
13:00 - 14:00	341	+	294	=	635	81	70	No
06:00 - 07:00	356	+	272	=	628	89	37	No
08:15 - 09:15	302	+	302	=	604	99	62	No
12:45 - 13:45	327	+	274	=	601	79	66	No
12:15 - 13:15	307	+	262	=	569	76	52	No
12:30 - 13:30	298	+	267	=	565	84	52	No
11:30 - 12:30	286	+	256	=	542	71	52	No
11:45 - 12:45	288	+	253	=	541	75	52	No
12:00 - 13:00	282	+	259	=	541	79	55	No
09:45 - 10:45	279	+	256	=	535	65	34	No
08:30 - 09:30	268	+	261	=	529	86	49	No
11:15 - 12:15	259	+	252	=	511	67	47	No
09:30 - 10:30	265	+	245	=	510	66	31	No
09:00 - 10:00	255	+	244	=	499	61	25	No
11:00 - 12:00	265	+	233	=	498	70	42	No
09:15 - 10:15	245	+	247	=	492	72	29	No
10:00 - 11:00	233		252		485	72	40	No

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 1B - Interruption of Continuous Traffic

Description

Intended for sites where the volume of the major street is so heavy that traffic on the minor street suffers excessive delay or hazard.

Summary

10 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **1**

Volume Requirements

Rural Factor of 70 % applied
Veh/Hr Major = **525**

Veh/Hr Minor = **52**

Major Road SR 82						Minor Road Durkee		
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met?
15:30 - 16:30	487	+	494	=	981	153	111	Yes
16:30 - 17:30	463	+	518	=	981	112	120	Yes
07:00 - 08:00	476	+	437	=	913	186	87	Yes
14:30 - 15:30	339	+	468	=	807	277	106	Yes
13:30 - 14:30	350	+	355	=	705	83	80	Yes
08:00 - 09:00	341	+	334	=	675	127	75	Yes
06:00 - 07:00	356	+	272	=	628	89	37	Yes
12:30 - 13:30	298	+	267	=	565	84	52	Yes
11:30 - 12:30	286	+	256	=	542	71	52	Yes
09:45 - 10:45	279	+	256	=	535	65	34	Yes
11:15 - 12:15	259	+	252	=	511	67	47	No
09:30 - 10:30	265	+	245	=	510	66	31	No
09:00 - 10:00	255	+	244	=	499	61	25	No
11:00 - 12:00	265	+	233	=	498	70	42	No
09:15 - 10:15	245	+	247	=	492	72	29	No
10:45 - 11:45	231	+	234	=	465	76	38	No
05:45 - 06:45	244	+	180	=	424	54	19	No
17:30 - 18:30	185	+	215	=	400	57	44	No
05:30 - 06:30	127	+	95	=	222	36	11	No
17:45 - 18:45	79	+	101	=	180	35	19	No
05:15 - 06:15	56	+	32	=	88	14	4	No
22:00 - 23:00	0	+	0	=	0	0	0	No
21:00 - 22:00	0	+	0	=	0	0	0	No
21:45 - 22:45	0	+	0	=	0	0	0	No
21:15 - 22:15	0		0		0	0	0	No

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 1C Combination of Warrants

Description

Intended for sites where the traffic volumes don't meet individual warrants but where Warrants 1A and 1B are both met to 80% of their stated values.

Summary

8 hours meet 1A minimums.
12 hours meet 1B minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **1**

Volume Requirements

Rural Factor of 70% applied
Warrant 1A 1B
Veh/Hr Major = **280 420**

Veh/Hr Minor = **84 42**

Major Road SR 82						Minor Road Durkee			
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1A?	
15:45 - 16:45	471	+	512	=	983	136	110	Yes	
16:45 - 17:45	465	+	495	=	960	99	121	Yes	
07:00 - 08:00	476	+	437	=	913	186	87	Yes	
14:45 - 15:45	371	+	464	=	835	288	104	Yes	
13:45 - 14:45	339	+	411	=	750	111	88	Yes	
08:00 - 09:00	341	+	334	=	675	127	75	Yes	
06:00 - 07:00	356	+	272	=	628	89	37	Yes	
12:30 - 13:30	298	+	267	=	565	84	52	Yes	
13:30 - 14:30	350	+	355	=	705	83	80	No	
12:15 - 13:15	307	+	262	=	569	76	52	No	
11:30 - 12:30	286	+	256	=	542	71	52	No	
12:00 - 13:00	282	+	259	=	541	79	55	No	

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1B?	
15:45 - 16:45	471	+	512	=	983	136	110	Yes	
16:45 - 17:45	465	+	495	=	960	99	121	Yes	
06:45 - 07:45	465	+	400	=	865	188	87	Yes	
14:45 - 15:45	371	+	464	=	835	288	104	Yes	
07:45 - 08:45	409	+	396	=	805	136	79	Yes	
13:45 - 14:45	339	+	411	=	750	111	88	Yes	
12:45 - 13:45	327	+	274	=	601	79	66	Yes	
11:45 - 12:45	288	+	253	=	541	75	52	Yes	
09:45 - 10:45	279	+	256	=	535	65	34	Yes	
08:45 - 09:45	234	+	245	=	479	72	35	Yes	
10:45 - 11:45	231	+	234	=	465	76	38	Yes	
05:45 - 06:45	244	+	180	=	424	54	19	Yes	

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 2 - Four Hour Volumes

Description

Intended for sites where the volume of intersecting traffic during any four hours of the day is the principal reason for consideration of a signal installation.

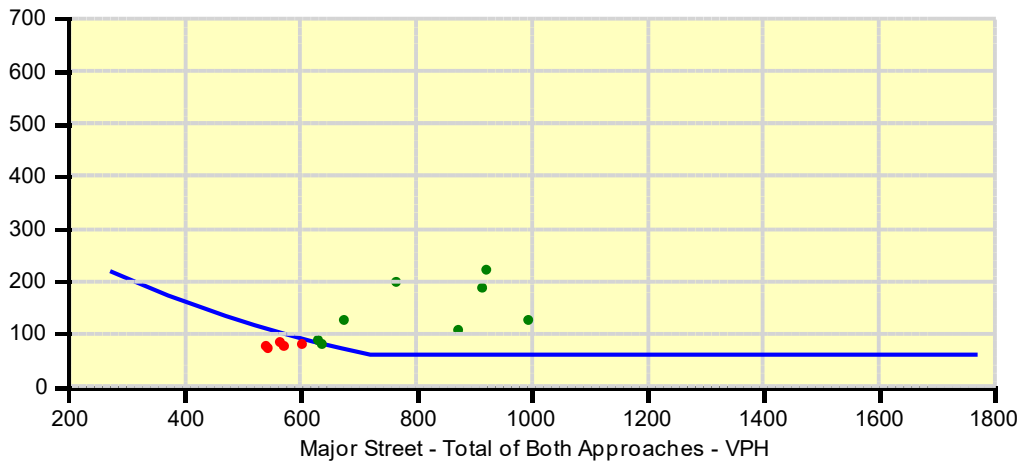
Summary

8 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **1**

Major Road SR 82						Minor Road Durkee		Met?
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
16:00 - 17:00	475	+	518	=	993	125	127	Yes
15:00 - 16:00	431	+	491	=	922	220	105	Yes
07:00 - 08:00	476	+	437	=	913	186	87	Yes
17:00 - 18:00	412	+	459	=	871	107	102	Yes
14:00 - 15:00	335	+	428	=	763	197	87	Yes
08:00 - 09:00	341	+	334	=	675	127	75	Yes
13:00 - 14:00	341	+	294	=	635	81	70	Yes
06:00 - 07:00	356	+	272	=	628	89	37	Yes
12:45 - 13:45	327	+	274	=	601	79	66	No
12:15 - 13:15	307	+	262	=	569	76	52	No
12:30 - 13:30	298	+	267	=	565	84	52	No



Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 3A - Peak Hour Delay

Description

Intended for sites where for one hour of the day minor street traffic suffers undue traffic delay entering or crossing the major street.

Summary

24 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Number of Minor Lanes = 1

Volume and Delay Requirements

Veh/Hr All Approaches = 800

Veh/Hr Minor = 100

Total Delay (Veh-Hrs) = 4

			Major Road			Minor Road			
			SR 82			Durkee			
Time	Total of All Approaches	Met?	Minor NB	Delay NB	Met?	Minor SB	Delay SB	Met?	Warrant Met?
15:15 - 16:15	1267	Yes	184	-	Yes	105	-	---	Yes
15:00 - 16:00	1247	Yes	220	-	Yes	105	-	---	Yes
15:30 - 16:30	1245	Yes	153	-	Yes	111	-	---	Yes
16:00 - 17:00	1245	Yes	125	-	---	127	-	Yes	Yes
15:45 - 16:45	1229	Yes	136	-	Yes	110	-	---	Yes
14:45 - 15:45	1227	Yes	288	-	Yes	104	-	---	Yes
16:30 - 17:30	1213	Yes	112	-	---	120	-	Yes	Yes
16:15 - 17:15	1210	Yes	110	-	---	118	-	Yes	Yes
14:30 - 15:30	1190	Yes	277	-	Yes	106	-	---	Yes
07:00 - 08:00	1186	Yes	186	-	Yes	87	-	---	Yes
07:15 - 08:15	1185	Yes	187	-	Yes	87	-	---	Yes
16:45 - 17:45	1180	Yes	99	-	---	121	-	Yes	Yes
06:45 - 07:45	1140	Yes	188	-	Yes	87	-	---	Yes
14:15 - 15:15	1126	Yes	244	-	Yes	96	-	---	Yes
07:30 - 08:30	1112	Yes	159	-	Yes	82	-	---	Yes
17:00 - 18:00	1080	Yes	107	-	Yes	102	-	---	Yes
06:30 - 07:30	1057	Yes	154	-	Yes	71	-	---	Yes
14:00 - 15:00	1047	Yes	197	-	Yes	87	-	---	Yes
07:45 - 08:45	1020	Yes	136	-	Yes	79	-	---	Yes
13:45 - 14:45	949	Yes	111	-	Yes	88	-	---	Yes
06:15 - 07:15	905	Yes	113	-	Yes	51	-	---	Yes
08:00 - 09:00	877	Yes	127	-	Yes	75	-	---	Yes
13:30 - 14:30	868	Yes	83	-	No	80	-	---	No
13:15 - 14:15	821	Yes	93	-	No	81	-	---	No
17:15 - 18:15	788	No	81	-	No	76	-	---	No

Report Title 1

Report Title 2

Report Title 3

Study Name: LOR-82 & Durkee Rd

Study Date : 10/13/2021

Warrant 3B - Peak Hour Volumes

Description

Intended for sites where the volume of intersecting traffic during one hour of the day is the principal reason for consideration of a signal installation.

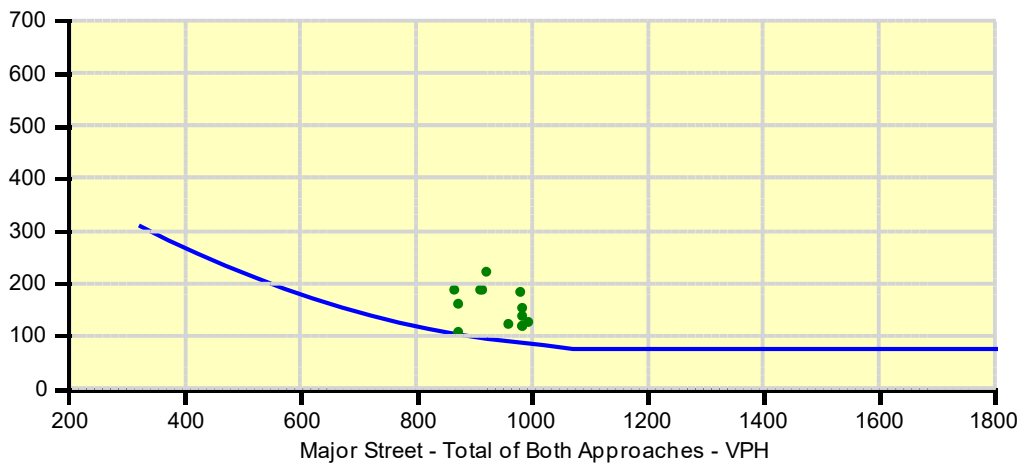
Summary

19 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **1**

Major Road SR 82						Minor Road Durkee		Met?
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
16:00 - 17:00	475	+	518	=	993	125	127	Yes
15:45 - 16:45	471	+	512	=	983	136	110	Yes
16:15 - 17:15	454	+	528	=	982	110	118	Yes
15:30 - 16:30	487	+	494	=	981	153	111	Yes
16:30 - 17:30	463	+	518	=	981	112	120	Yes
15:15 - 16:15	481	+	497	=	978	184	105	Yes
16:45 - 17:45	465	+	495	=	960	99	121	Yes
15:00 - 16:00	431	+	491	=	922	220	105	Yes
07:00 - 08:00	476	+	437	=	913	186	87	Yes
07:15 - 08:15	481	+	430	=	911	187	87	Yes
07:30 - 08:30	439	+	432	=	871	159	82	Yes
							102	Yes



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 Walk Interval (4-7s TYP)	OMUTCD 4E.06-07 Calculated Ped Clearance		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	(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	X	Y				
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				
1	-	-	-	1	-	-	10	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
2	EB	THROUGH/RT	50	1	57	57	10	56	20	0	5.2	-0.1	5.1	-	-	-	EB	-	40	NO	-	-	11.4	#VALUE!	15.3	-	-	-	-	#VALUE!
3	-	-	-	1	-	-	10	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	SB	THROUGH/RT	55	1	62	62	10	61	20	0	5.6	-0.1	5.5	-	-	-	SB	-	36	NO	-	-	10.3	#VALUE!	14.0	-	-	-	-	#VALUE!
5	-	-	-	1	-	-	10	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	WB	THROUGH/RT	50	1	57	57	10	67	20	0	5.2	0.0	5.2	-	-	-	WB	-	29	NO	-	-	8.3	#VALUE!	11.7	-	-	-	-	#VALUE!
7	-	-	-	1	-	-	10	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	NB	THROUGH/RT	55	1	62	62	10	53	20	0	5.6	-0.2	5.4	-	-	-	NB	-	29	NO	-	-	8.3	#VALUE!	11.7	-	-	-	-	#VALUE!

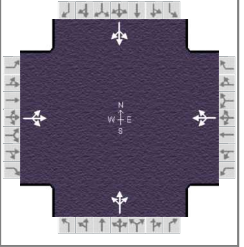
HCS7 Signalized Intersection Results Summary

General Information

Agency		Analysis Date	10/14/2021	Duration, h	0.250
Analyst		Area Type	Other		
Jurisdiction		Time Period		PHF	0.94
Urban Street	SR 82	Analysis Year	2021	Analysis Period	1> 7:00
Intersection	Durkee Road	File Name	LOR-82_Durkee AM Peak.xus		
Project Description	AM Peak				

Intersection Information

Duration, h	0.250
Area Type	Other
PHF	0.94
Analysis Period	1> 7:00
File Name	LOR-82_Durkee AM Peak.xus



Demand Information

	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	393	58	75	348	14	39	78	69	3	76	8

Signal Information

Cycle, s	42.2	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	20.0	9.7	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	5.5	5.0	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		8.0		8.0		8.0		8.0
Phase Duration, s		26.5		26.5		15.7		15.7
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		4.0		4.0		4.0		4.0
Queue Clearance Time (g _s), s		12.2		11.5		7.0		3.9
Green Extension Time (g _e), s		4.0		4.0		0.9		0.9
Phase Call Probability		1.00		1.00		0.97		0.97
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		506			465			198			93	
Adjusted Saturation Flow Rate (s), veh/h/ln		1580			1467			1457			1674	
Queue Service Time (g _s), s		0.0			0.0			1.4			0.0	
Cycle Queue Clearance Time (g _c), s		10.2			9.5			5.0			1.9	
Green Ratio (g/C)		0.47			0.47			0.23			0.23	
Capacity (c), veh/h		839			796			437			472	
Volume-to-Capacity Ratio (X)		0.603			0.584			0.453			0.196	
Back of Queue (Q), ft/ln (95 th percentile)		91.3			82.7			62.3			24.9	
Back of Queue (Q), veh/ln (95 th percentile)		3.4			3.1			2.3			1.0	
Queue Storage Ratio (RQ) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (d ₁), s/veh		8.5			8.2			14.4			13.3	
Incremental Delay (d ₂), s/veh		0.7			0.7			0.7			0.2	
Initial Queue Delay (d ₃), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		9.2			8.9			15.2			13.5	
Level of Service (LOS)		A			A			B			B	
Approach Delay, s/veh / LOS	9.2	A		8.9	A		15.2	B		13.5	B	
Intersection Delay, s/veh / LOS	10.3						B					

Multimodal Results

	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.64	B		1.64	B		1.67	B		1.67	B	
Bicycle LOS Score / LOS	1.32	A		1.25	A		0.81	A		0.64	A	

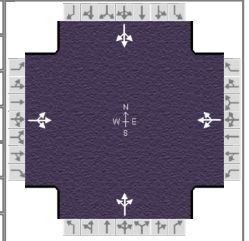
HCS7 Signalized Intersection Results Summary

General Information

Agency		Analysis Date	10/14/2021
Analyst		Time Period	
Jurisdiction		Analysis Year	2021
Urban Street	SR 82	File Name	LOR-82_Durkee PM Peak.xus
Intersection	Durkee Road		
Project Description	AM Peak		

Intersection Information

Duration, h	0.250
Area Type	Other
PHF	0.97
Analysis Period	1> 7:00



Demand Information

	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	23	403	55	70	411	16	42	76	66	14	64	27

Signal Information

Cycle, s	42.2	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Timer Results

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		26.5		26.5		15.7		15.7
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		4.0		4.0		4.0		4.0
Queue Clearance Time (g _s), s		11.7		12.6		6.6		4.4
Green Extension Time (g _e), s		4.2		4.2		1.0		1.0
Phase Call Probability		1.00		1.00		0.97		0.97
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		496			512			190			108	
Adjusted Saturation Flow Rate (s), veh/h/ln		1609			1532			1490			1548	
Queue Service Time (g _s), s		0.0			0.9			1.1			0.0	
Cycle Queue Clearance Time (g _c), s		9.7			10.6			4.6			2.4	
Green Ratio (g/C)		0.47			0.47			0.23			0.23	
Capacity (c), veh/h		852			823			447			452	
Volume-to-Capacity Ratio (X)		0.582			0.622			0.424			0.239	
Back of Queue (Q), ft/ln (95 th percentile)		86.3			91.6			57.6			30.5	
Back of Queue (Q), veh/ln (95 th percentile)		3.3			3.5			2.2			1.2	
Queue Storage Ratio (RQ) (95 th percentile)		0.00			0.00			0.00			0.00	
Uniform Delay (d ₁), s/veh		8.4			8.5			14.3			13.4	
Incremental Delay (d ₂), s/veh		0.6			0.8			0.6			0.3	
Initial Queue Delay (d ₃), s/veh		0.0			0.0			0.0			0.0	
Control Delay (d), s/veh		9.0			9.3			14.9			13.7	
Level of Service (LOS)		A			A			B			B	
Approach Delay, s/veh / LOS	9.0	A		9.3	A		14.9	B		13.7	B	
Intersection Delay, s/veh / LOS	10.4						B					

Multimodal Results

	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.64	B		1.64	B		1.67	B		1.67	B	
Bicycle LOS Score / LOS	1.31	A		1.33	A		0.80	A		0.67	A	