ABBREVIATED SAFETY STUDY

MAR-203-7.77
SR 203 and SR 739 Intersection

2024 Rural Intersection Rank #257

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Purpose and Need

This study analyzes the intersection of SR 203 and SR 739 in Marion County. This intersection is ranked 257 on ODOT's 2024 rural intersections list. The purpose of this report is to study this location and analyze the crashes to determine what, if any, actions can be taken to reduce the high percentage of angle crashes that have occurred in the study area.

Existing Conditions

The intersection of SR 203 and SR 739 is a rural 4-legged intersection in western Marion County, about 3 miles southwest of Marion and 1.5 miles northeast of Green Camp. SR 203 is a 2 lane, undivided roadway classified as a rural major collector with a 55 mph speed limit. SR 739 is a 2 lane, undivided roadway classified as a rural major collector with a 55 mph speed limit.

The intersection currently operates as a two way stop, with the SR 203 traffic stopping. Daily traffic volumes are 2,500 (11% trucks) on SR 739, and 1,700 (22% trucks) on SR 203, with more trucks on the south and east legs. A turning movement count from 2024 is available in the appendix.

There is a lumber yard on the southeast corner, with their driveway just over 100 ft east of the intersection on SR 739. On the northeast corner, there is residence with its driveway about 350 ft north of the intersection on SR 203. About 275 ft to the south of the intersection, there is a field drive. There are no driveways within 500 ft on the eastbound approach.

The south leg of SR 203 was resurfaced in 2020 (PID 107819). SR 739 is scheduled for a chip seal in 2029 (PID 119128),and the north leg of SR 203 is scheduled for resurfacing in 2030 (PID 121353).

Both SR 203 approaches have dual stop and stop ahead signs, with LED stop signs on the right side. Both SR 739 approaches have dual intersection ahead signs with road name plaques.

FIGURE 1 AERIAL VIEW

FIGURE 2 NORTHBOUND APPROACH

FIGURE 3 SOUTHBOUND APPROACH

FIGURE 4 EASTBOUND APPROACH

FIGURE 5 WESTBOUND APPROACH

Crash Trends

14 crashes were reported in this area from 2019 to 2023, with 11 involving injuries. Of these crashes, 12 were angle crashes. 7 of these involved southbound SR 203 drivers failing to yield to eastbound SR 739 drivers. All but one of these crashes had injuries, including one serious injury. 3 crashes, including one serious injury, involved northbound and eastbound drivers. The other angle crashes involved northbound and westbound drivers, and both crashes resulted in minor injuries.

The other two crashes were both sideswipe-meeting crashes near the intersection; one of these involved minor injuries.

The crashes have occurred throughout the day, with all but one crash occurring in daylight hours. The crashes are spread throughout the year, with an increase in the summer. More than half of the crashes involved a young driver; Elgin High School is 3 miles northwest of the intersection. Full crash data is available in the appendix.

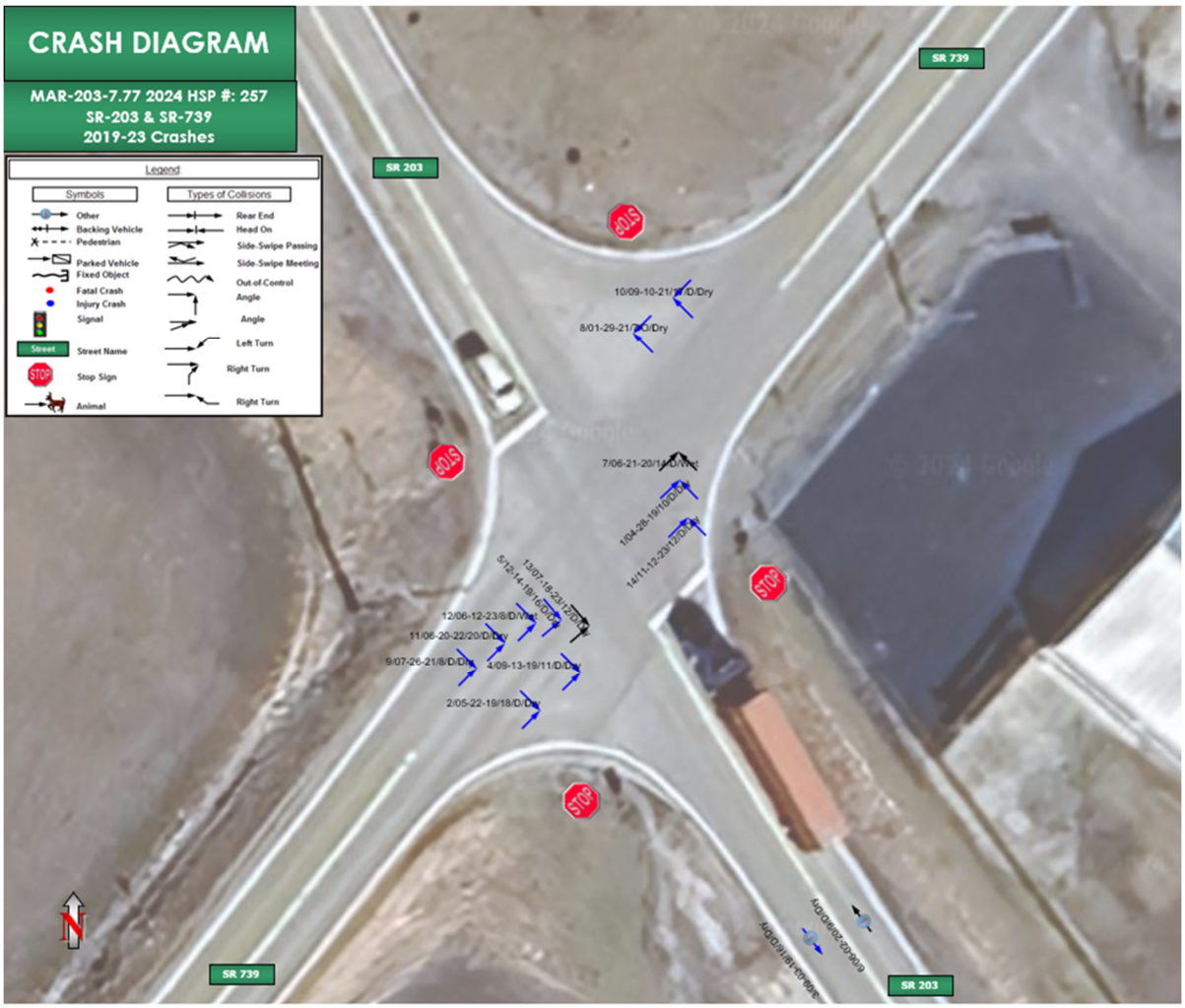


FIGURE 6 COLLISION DIAGRAM

Recommendations

Short Term

Maintain existing signs. An all way stop was also considered, however it is not recommended at this time due to the high truck volumes and turning patterns.

Long Term

Install a roundabout at the intersection. This would significantly reduce the angle crashes.

Appendix

Crash Data

MAR-203 at SR 739 (2019-23)
Crash Summary Sheet

Fatalities	0
Serious Injuries	2
Other Injuries	19

Crashes Per Year	2.80
Fatal and All Injury Crashes	11
Percent Injury	78.6%
Equivalent PDO Index Value	10.80

Crash Severity	Crashes	%
(2) Serious Injury Suspected	2	14.29%
(3) Minor Injury Suspected	8	57.14%
(4) Injury Possible	1	7.14%
(5) PDO/No Injury	3	21.43%
Grand Total	14	100.00%

Year	Crashes	%
2019	5	35.71%
2020	2	14.29%
2021	3	21.43%
2022	1	7.14%
2023	3	21.43%
Grand Total	14	100.00%

Day of Week	Crashes	%
(1) Sunday	3	21.43%
(2) Monday	3	21.43%
(3) Tuesday	3	21.43%
(4) Wednesday	1	7.14%
(6) Friday	3	21.43%
(7) Saturday	1	7.14%
Grand Total	14	100.00%

Crash Type	Crashes	%
Angle	12	85.71%
Sideswipe- Meeting	2	14.29%
Grand Total	14	100.00%

Hour of Day	Crashes	%
7	1	7.14%
8	2	14.29%
9	1	7.14%
10	1	7.14%
11	1	7.14%
12	2	14.29%
14	1	7.14%
16	2	14.29%
17	1	7.14%
18	1	7.14%
20	1	7.14%
Grand Total	14	100.00%

Month	Crashes	%
1	1	7.14%
4	1	7.14%
5	1	7.14%
6	4	28.57%
7	2	14.29%
9	3	21.43%
11	1	7.14%
12	1	7.14%
Grand Total	14	100.00%

MAR-203 at SR 739 (2019-23)

Crash Summary Sheet

Weather Condition	Crashes	%
Clear	9	64.29%
Cloudy	4	28.57%
Rain	1	7.14%
Grand Total	14	100.00%

Road Condition	Crashes	%
Dry	12	85.71%
Wet	2	14.29%
Grand Total	14	100.00%

Light Condition	Crashes	%
Daylight	13	92.86%
Dawn/Dusk	1	7.14%
Grand Total	14	100.00%

Number of Units	Crashes	%
2	14	100.00%
Grand Total	14	100.00%

ODOT Location	Crashes	%
Four-Way Intersection	8	57.14%
Data Not Valid or Not Provided	4	28.57%
Not An Intersection	2	14.29%
Grand Total	14	100.00%

Work Zone Related	Crashes	%
No	14	100.00%
Grand Total	14	100.00%

Alcohol Related	Crashes	%
No	14	100.00%
Grand Total	14	100.00%

Drug Related (Inc. Marijuana)	Crashes	%
No	14	100.00%
Grand Total	14	100.00%

Contour	Crashes	%
Curve Grade	1	7.14%
Straight Grade	4	28.57%
Straight Level	9	64.29%
Grand Total	14	100.00%

Marijuana Related	Crashes	%
No	14	100.00%
Grand Total	14	100.00%

Roadway Departure	Crashes	%
No	13	92.86%
Yes	1	7.14%
Grand Total	14	100.00%

Older Driver (65+)	Crashes	%
No	11	78.57%
Yes	3	21.43%
Grand Total	14	100.00%

Intersection Related	Crashes	%
Yes	12	85.71%
No	2	14.29%
Grand Total	14	100.00%

Young Driver (15-25)	Crashes	%
No	6	42.86%
Yes	8	57.14%
Grand Total	14	100.00%

Speed Related	Crashes	%
No	10	71.43%
Yes	4	28.57%
Grand Total	14	100.00%

Motorcycle Involved	Crashes	%
No	14	100.00%
Grand Total	14	100.00%

MAR-203 at SR 739 (2019-23)
Crash Summary Sheet
Unit 1 Summary

Unit 1 Pre-Crash Action	Crashes	%
Straight Ahead	13	92.86%
Entering Traffic Lane	1	7.14%
Grand Total	14	100.00%

Unit 1 Contributing Factor	Crashes	%
Failure to Yield	11	78.57%
Not Discernible	1	7.14%
Ran Stop Sign	1	7.14%
None	1	7.14%
Grand Total	14	100.00%

Unit 1 Object Struck	Crashes	%
Nothing Struck	13	92.86%
Traffic Sign Post	1	7.14%
Grand Total	14	100.00%

Unit 1 Traffic Control	Crashes	%
Stop Sign	12	85.71%
No Control	2	14.29%
Grand Total	14	100.00%

Unit 1 Posted Speed	Crashes	%
55	14	100.00%
Grand Total	14	100.00%

Unit 1 Direction From	Crashes	%
Northwest	6	42.86%
Southeast	3	21.43%
South	3	21.43%
North	2	14.29%
Grand Total	14	100.00%

Unit 1 Direction To	Crashes	%
Southeast	6	42.86%
North	3	21.43%
Northwest	3	21.43%
South	2	14.29%
Grand Total	14	100.00%

MAR-203 at SR 739 (2019-23)
Crash Summary Sheet
Unit 1 Summary

Unit 1 Type	Crashes	%
Pick up	5	35.71%
Passenger Car	3	21.43%
Sport Utility Vehicle	3	21.43%
Semi-Tractor	2	14.29%
Single Unit Truck	1	7.14%
Grand Total	14	100.00%

Unit 1 Special Function	Crashes	%
None	13	92.86%
Police	1	7.14%
Grand Total	14	100.00%

MAR-203 at SR 739 (2019-23)
Crash Summary Sheet

Unit 2 Summary

Unit 2 Pre-Crash Action	Crashes	%
Straight Ahead	14	100.00%
Grand Total	14	100.00%

Unit 2 Contributing Factor	Crashes	%
None	12	85.71%
Left of Center	1	7.14%
Not Discernible	1	7.14%
Grand Total	14	100.00%

Unit 2 Direction From	Crashes	%
North	1	7.14%
Northeast	2	14.29%
South	2	14.29%
Southeast	1	7.14%
Southwest	7	50.00%
West	1	7.14%
Grand Total	14	100.00%

Unit 2 Direction To	Crashes	%
East	1	7.14%
North	2	14.29%
Northeast	7	50.00%
Northwest	1	7.14%
South	1	7.14%
Southwest	2	14.29%
Grand Total	14	100.00%

Unit 2 Type	Crashes	%
Passenger Car	4	28.57%
Sport Utility Vehicle	3	21.43%
Pick up	3	21.43%
Passenger Van (minivan)	1	7.14%
Farm Equipment	1	7.14%
Single Unit Truck	1	7.14%
Semi-Tractor	1	7.14%
Grand Total	14	100.00%

Unit 2 Special Function	Crashes	%
None	12	85.71%
Police	1	7.14%
Farm	1	7.14%
Grand Total	14	100.00%

Traffic Count and Forecast

Ohio Department of Transportation - Safety
1980 West Broad Street
Mail Stop 5160
Columbus, Ohio, United States 43223
+16147528099 Andrew.Hurst@dot.ohio.gov
Office of Traffic Engineering

Count Name: MAR-203-7.74
Site Code:
Start Date: 10/22/2024

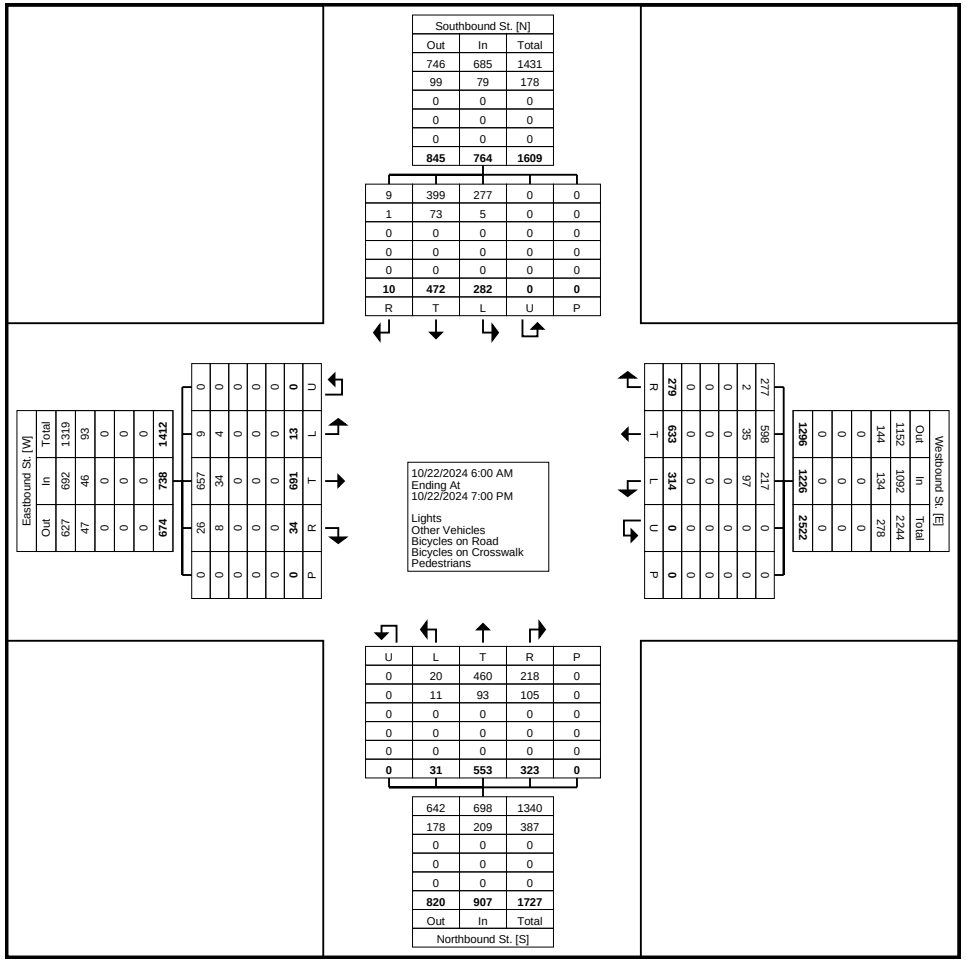
Turning Movement Data

Start Time	Southbound St. Southbound						Westbound St. Westbound						Northbound St. Northbound						Eastbound St. Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
6:00 AM	0	11	3	0	0	14	0	2	6	0	0	8	6	5	0	0	0	11	0	6	0	0	0	6	39
6:15 AM	0	17	1	0	0	18	0	7	11	0	0	18	5	3	0	0	0	8	0	10	0	0	0	10	54
6:30 AM	0	5	5	0	0	10	1	5	3	0	0	9	7	12	0	0	0	19	1	8	1	0	0	10	48
6:45 AM	0	7	4	0	0	11	4	8	8	0	0	20	6	8	0	0	0	14	0	7	0	0	0	7	52
Hourly Total	0	40	13	0	0	53	5	22	28	0	0	55	24	28	0	0	0	52	1	31	1	0	0	33	193
7:00 AM	0	8	3	0	0	11	5	5	12	0	0	22	2	23	0	0	0	25	0	18	0	0	0	18	76
7:15 AM	0	14	6	0	0	20	17	8	9	0	0	34	10	25	0	0	0	35	0	12	1	0	0	13	102
7:30 AM	0	19	9	0	0	28	3	4	4	0	0	11	9	7	0	0	0	16	1	17	0	0	0	18	73
7:45 AM	0	17	3	0	0	20	2	8	7	0	0	17	6	7	0	0	0	13	1	14	0	0	0	15	65
Hourly Total	0	58	21	0	0	79	27	25	32	0	0	84	27	62	0	0	0	89	2	61	1	0	0	64	316
8:00 AM	0	9	6	0	0	15	2	3	4	0	0	9	5	8	0	0	0	13	0	24	1	0	0	25	62
8:15 AM	0	11	2	0	0	13	2	5	4	0	0	11	5	14	1	0	0	20	0	15	0	0	0	15	59
8:30 AM	0	8	9	0	0	17	4	11	6	0	0	21	3	11	1	0	0	15	1	17	0	0	0	18	71
8:45 AM	0	11	10	0	0	21	4	7	5	0	0	16	4	15	0	0	0	19	2	13	1	0	0	16	72
Hourly Total	0	39	27	0	0	66	12	26	19	0	0	57	17	48	2	0	0	67	3	69	2	0	0	74	264
9:00 AM	0	10	10	0	0	20	3	9	4	0	0	16	0	3	1	0	0	4	0	10	1	0	0	11	51
9:15 AM	0	4	9	0	0	13	3	10	6	0	0	19	8	9	0	0	0	17	2	6	0	0	0	8	57
9:30 AM	1	6	7	0	0	14	5	11	6	0	0	22	3	8	2	0	0	13	1	15	1	0	0	17	66
9:45 AM	0	5	2	0	0	7	3	13	4	0	0	20	6	2	0	0	0	8	0	10	0	0	0	10	45
Hourly Total	1	25	28	0	0	54	14	43	20	0	0	77	17	22	3	0	0	42	3	41	2	0	0	46	219
10:00 AM	0	7	6	0	0	13	4	14	7	0	0	25	2	5	3	0	0	10	0	14	0	0	0	14	62
10:15 AM	0	5	4	0	0	9	6	6	6	0	0	18	10	9	0	0	0	19	1	10	0	0	0	11	57
10:30 AM	0	5	5	0	0	10	1	10	8	0	0	19	4	10	0	0	0	14	0	11	0	0	0	11	54
10:45 AM	0	8	6	0	0	14	3	7	4	0	0	14	9	9	1	0	0	19	0	17	0	0	0	17	64
Hourly Total	0	25	21	0	0	46	14	37	25	0	0	76	25	33	4	0	0	62	1	52	0	0	0	53	237
11:00 AM	0	5	3	0	0	8	3	11	5	0	0	19	5	2	0	0	0	7	1	11	0	0	0	12	46
11:15 AM	0	5	3	0	0	8	8	14	4	0	0	26	6	4	2	0	0	12	0	14	0	0	0	14	60
11:30 AM	0	7	7	0	0	14	4	9	7	0	0	20	6	11	3	0	0	20	0	9	0	0	0	9	63
11:45 AM	0	8	3	0	0	11	5	6	5	0	0	16	10	9	0	0	0	19	1	6	0	0	0	7	53
Hourly Total	0	25	16	0	0	41	20	40	21	0	0	81	27	26	5	0	0	58	2	40	0	0	0	42	222
12:00 PM	0	10	8	0	0	18	7	10	1	0	0	18	5	5	0	0	0	10	1	9	0	0	0	10	56
12:15 PM	0	11	4	0	0	15	4	7	6	0	0	17	6	10	0	0	0	16	2	12	0	0	0	14	62
12:30 PM	0	7	4	0	0	11	4	7	9	0	0	20	5	9	0	0	0	14	2	11	0	0	0	13	58
12:45 PM	1	6	1	0	0	8	2	15	4	0	0	21	3	8	1	0	0	12	1	11	0	0	0	12	53

Hourly Total	1	34	17	0	0	52	17	39	20	0	0	76	19	32	1	0	0	52	6	43	0	0	0	49	229
1:00 PM	1	8	4	0	0	13	3	6	3	0	0	12	6	7	0	0	0	13	1	12	1	0	0	14	52
1:15 PM	0	7	8	0	0	15	5	15	7	0	0	27	3	6	2	0	0	11	2	14	0	0	0	16	69
1:30 PM	0	15	5	0	0	20	6	18	11	0	0	35	5	4	0	0	0	9	0	11	0	0	0	11	75
1:45 PM	0	8	6	0	0	14	3	14	5	0	0	22	11	9	1	0	0	21	0	9	0	0	0	9	66
Hourly Total	1	38	23	0	0	62	17	53	26	0	0	96	25	26	3	0	0	54	3	46	1	0	0	50	262
2:00 PM	1	8	5	0	0	14	11	8	7	0	0	26	4	7	0	0	0	11	0	10	1	0	0	11	62
2:15 PM	0	10	5	0	0	15	9	12	3	0	0	24	4	13	3	0	0	20	2	12	0	0	0	14	73
2:30 PM	1	9	10	0	0	20	4	14	8	0	0	26	5	12	0	0	0	17	0	10	1	0	0	11	74
2:45 PM	0	15	4	0	0	19	4	18	9	0	0	31	7	10	0	0	0	17	0	12	1	0	0	13	80
Hourly Total	2	42	24	0	0	68	28	52	27	0	0	107	20	42	3	0	0	65	2	44	3	0	0	49	289
3:00 PM	0	9	6	0	0	15	8	17	8	0	0	33	8	25	1	0	0	34	2	14	2	0	0	18	100
3:15 PM	0	8	4	0	0	12	10	26	9	0	0	45	9	20	0	0	0	29	1	18	0	0	0	19	105
3:30 PM	0	17	8	0	0	25	6	20	5	0	0	31	4	12	2	0	0	18	0	23	0	0	0	23	97
3:45 PM	0	17	12	0	0	29	8	26	7	0	0	41	8	13	1	0	0	22	0	21	0	0	0	21	113
Hourly Total	0	51	30	0	0	81	32	89	29	0	0	150	29	70	4	0	0	103	3	76	2	0	0	81	415
4:00 PM	0	9	8	0	0	17	4	29	14	0	0	47	7	17	2	0	0	26	2	18	0	0	0	20	110
4:15 PM	0	8	5	0	0	13	7	24	7	0	0	38	11	15	1	0	0	27	1	21	0	0	0	22	100
4:30 PM	0	10	4	0	0	14	16	13	8	0	0	37	3	16	0	0	0	19	1	28	0	0	0	29	99
4:45 PM	2	11	3	0	0	16	7	20	7	0	0	34	16	12	0	0	0	28	0	15	0	0	0	15	93
Hourly Total	2	38	20	0	0	60	34	86	36	0	0	156	37	60	3	0	0	100	4	82	0	0	0	86	402
5:00 PM	0	8	5	0	0	13	13	22	6	0	0	41	9	26	0	0	0	35	0	11	0	0	0	11	100
5:15 PM	0	15	7	0	0	22	5	20	4	0	0	29	7	15	0	0	0	22	1	13	0	0	0	14	87
5:30 PM	0	5	4	0	0	9	9	17	5	0	0	31	6	14	0	0	0	20	1	12	0	0	0	13	73
5:45 PM	0	13	7	0	0	20	7	15	7	0	0	29	8	16	1	0	0	25	0	23	0	0	0	23	97
Hourly Total	0	41	23	0	0	64	34	74	22	0	0	130	30	71	1	0	0	102	2	59	0	0	0	61	357
6:00 PM	1	3	7	0	0	11	7	14	2	0	0	23	8	11	1	0	0	20	0	11	0	0	0	11	65
6:15 PM	1	6	5	0	0	12	5	14	1	0	0	20	8	10	0	0	0	18	1	18	0	0	0	19	69
6:30 PM	1	5	5	0	0	11	7	13	3	0	0	23	6	5	1	0	0	12	1	12	0	0	0	13	59
6:45 PM	0	2	2	0	0	4	6	6	3	0	0	15	4	7	0	0	0	11	0	6	1	0	0	7	37
Hourly Total	3	16	19	0	0	38	25	47	9	0	0	81	26	33	2	0	0	61	2	47	1	0	0	50	230
Grand Total	10	472	282	0	0	764	279	633	314	0	0	1226	323	553	31	0	0	907	34	691	13	0	0	738	3635
Approach %	1.3	61.8	36.9	0.0	-	-	22.8	51.6	25.6	0.0	-	-	35.6	61.0	3.4	0.0	-	-	4.6	93.6	1.8	0.0	-	-	-
Total %	0.3	13.0	7.8	0.0	-	21.0	7.7	17.4	8.6	0.0	-	33.7	8.9	15.2	0.9	0.0	-	25.0	0.9	19.0	0.4	0.0	-	20.3	-
Lights	9	399	277	0	-	685	277	598	217	0	-	1092	218	460	20	0	-	698	26	657	9	0	-	692	3167
% Lights	90.0	84.5	98.2	-	-	89.7	99.3	94.5	69.1	-	-	89.1	67.5	83.2	64.5	-	-	77.0	76.5	95.1	69.2	-	-	93.8	87.1
Other Vehicles	1	73	5	0	-	79	2	35	97	0	-	134	105	93	11	0	-	209	8	34	4	0	-	46	468
% Other Vehicles	10.0	15.5	1.8	-	-	10.3	0.7	5.5	30.9	-	-	10.9	32.5	16.8	35.5	-	-	23.0	23.5	4.9	30.8	-	-	6.2	12.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Ohio Department of Transportation - Safety
1980 West Broad Street
Mail Stop 5160
Columbus, Ohio, United States 43223
+16147528099 Andrew.Hurst@dot.ohio.gov
Office of Traffic Engineering

Count Name: MAR-203-7.74
Site Code:
Start Date: 10/22/2024
Page No: 3



Turning Movement Data Plot

Ohio Department of Transportation - Safety
1980 West Broad Street
Mail Stop 5160
Columbus, Ohio, United States 43223
+16147528099 Andrew.Hurst@dot.ohio.gov
Office of Traffic Engineering

Count Name: MAR-203-7.74
Site Code:
Start Date: 10/22/2024

Turning Movement Peak Hour Data (7:00 AM)

Start Time	Southbound St. Southbound						Westbound St. Westbound						Northbound St. Northbound						Eastbound St. Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	8	3	0	0	11	5	5	12	0	0	22	2	23	0	0	0	25	0	18	0	0	0	18	76
7:15 AM	0	14	6	0	0	20	17	8	9	0	0	34	10	25	0	0	0	35	0	12	1	0	0	13	102
7:30 AM	0	19	9	0	0	28	3	4	4	0	0	11	9	7	0	0	0	16	1	17	0	0	0	18	73
7:45 AM	0	17	3	0	0	20	2	8	7	0	0	17	6	7	0	0	0	13	1	14	0	0	0	15	65
Total	0	58	21	0	0	79	27	25	32	0	0	84	27	62	0	0	0	89	2	61	1	0	0	64	316
Approach %	0.0	73.4	26.6	0.0	-	-	32.1	29.8	38.1	0.0	-	-	30.3	69.7	0.0	0.0	-	-	3.1	95.3	1.6	0.0	-	-	-
Total %	0.0	18.4	6.6	0.0	-	25.0	8.5	7.9	10.1	0.0	-	26.6	8.5	19.6	0.0	0.0	-	28.2	0.6	19.3	0.3	0.0	-	20.3	-
PHF	0.000	0.763	0.583	0.000	-	0.705	0.397	0.781	0.667	0.000	-	0.618	0.675	0.620	0.000	0.000	-	0.636	0.500	0.847	0.250	0.000	-	0.889	0.775
Lights	0	53	20	0	-	73	26	23	29	0	-	78	25	57	0	0	-	82	1	61	1	0	-	63	296
% Lights	-	91.4	95.2	-	-	92.4	96.3	92.0	90.6	-	-	92.9	92.6	91.9	-	-	-	92.1	50.0	100.0	100.0	-	-	98.4	93.7
Other Vehicles	0	5	1	0	-	6	1	2	3	0	-	6	2	5	0	0	-	7	1	0	0	0	-	1	20
% Other Vehicles	-	8.6	4.8	-	-	7.6	3.7	8.0	9.4	-	-	7.1	7.4	8.1	-	-	-	7.9	50.0	0.0	0.0	-	-	1.6	6.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Ohio Department of Transportation - Safety
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Office of Traffic Engineering

Count Name: MAR-203-7.74
Site Code:
Start Date: 10/22/2024

Peak Hour Data

10/22/2024 7:00 AM
Ending At
10/22/2024 8:00 AM

Lights
Other Vehicles
Bicycles on Road
Bicycles on Crosswalk
Pedestrians

Southbound St. [N]

Out	In	Total
84	73	157
6	6	12
0	0	0
0	0	0
0	0	0
90	**79**	**169**

U	L	T	R	P
0	53	20	0	0
0	5	1	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	**58**	**21**	**0**	**0**
R	T	L	U	P

Eastbound St. [W]

Out	In	Total
23	63	86
2	1	3
0	0	0
0	0	0
0	0	0
25	**64**	**89**

U	L	T	R	P
0	0	0	0	0
1	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	**1**	**61**	**2**	**0**
U	L	T	R	P

Westbound St. [E]

Out	In	Total
106	78	184
3	6	9
0	0	0
0	0	0
0	0	0
109	**84**	**193**

R	T	L	U	P
26	23	29	0	0
1	2	3	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
27	**25**	**32**	**0**	**0**
R	T	L	U	P

U	L	T	R	P
0	0	57	25	0
0	0	5	2	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	**0**	**62**	**27**	**0**
U	L	T	R	P

Northbound St. [S]

Out	In	Total
83	82	165
9	7	16
0	0	0
0	0	0
0	0	0
92	**89**	**181**

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

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Office of Traffic Engineering

Count Name: MAR-203-7.74
Site Code:
Start Date: 10/22/2024

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Southbound St. Southbound						Westbound St. Westbound						Northbound St. Northbound						Eastbound St. Eastbound						
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Int. Total
3:15 PM	0	8	4	0	0	12	10	26	9	0	0	45	9	20	0	0	0	29	1	18	0	0	0	19	105
3:30 PM	0	17	8	0	0	25	6	20	5	0	0	31	4	12	2	0	0	18	0	23	0	0	0	23	97
3:45 PM	0	17	12	0	0	29	8	26	7	0	0	41	8	13	1	0	0	22	0	21	0	0	0	21	113
4:00 PM	0	9	8	0	0	17	4	29	14	0	0	47	7	17	2	0	0	26	2	18	0	0	0	20	110
Total	0	51	32	0	0	83	28	101	35	0	0	164	28	62	5	0	0	95	3	80	0	0	0	83	425
Approach %	0.0	61.4	38.6	0.0	-	-	17.1	61.6	21.3	0.0	-	-	29.5	65.3	5.3	0.0	-	-	3.6	96.4	0.0	0.0	-	-	-
Total %	0.0	12.0	7.5	0.0	-	19.5	6.6	23.8	8.2	0.0	-	38.6	6.6	14.6	1.2	0.0	-	22.4	0.7	18.8	0.0	0.0	-	19.5	-
PHF	0.000	0.750	0.667	0.000	-	0.716	0.700	0.871	0.625	0.000	-	0.872	0.778	0.775	0.625	0.000	-	0.819	0.375	0.870	0.000	0.000	-	0.902	0.940
Lights	0	49	31	0	-	80	28	93	31	0	-	152	21	52	4	0	-	77	2	77	0	0	-	79	388
% Lights	-	96.1	96.9	-	-	96.4	100.0	92.1	88.6	-	-	92.7	75.0	83.9	80.0	-	-	81.1	66.7	96.3	-	-	-	95.2	91.3
Other Vehicles	0	2	1	0	-	3	0	8	4	0	-	12	7	10	1	0	-	18	1	3	0	0	-	4	37
% Other Vehicles	-	3.9	3.1	-	-	3.6	0.0	7.9	11.4	-	-	7.3	25.0	16.1	20.0	-	-	18.9	33.3	3.8	-	-	-	4.8	8.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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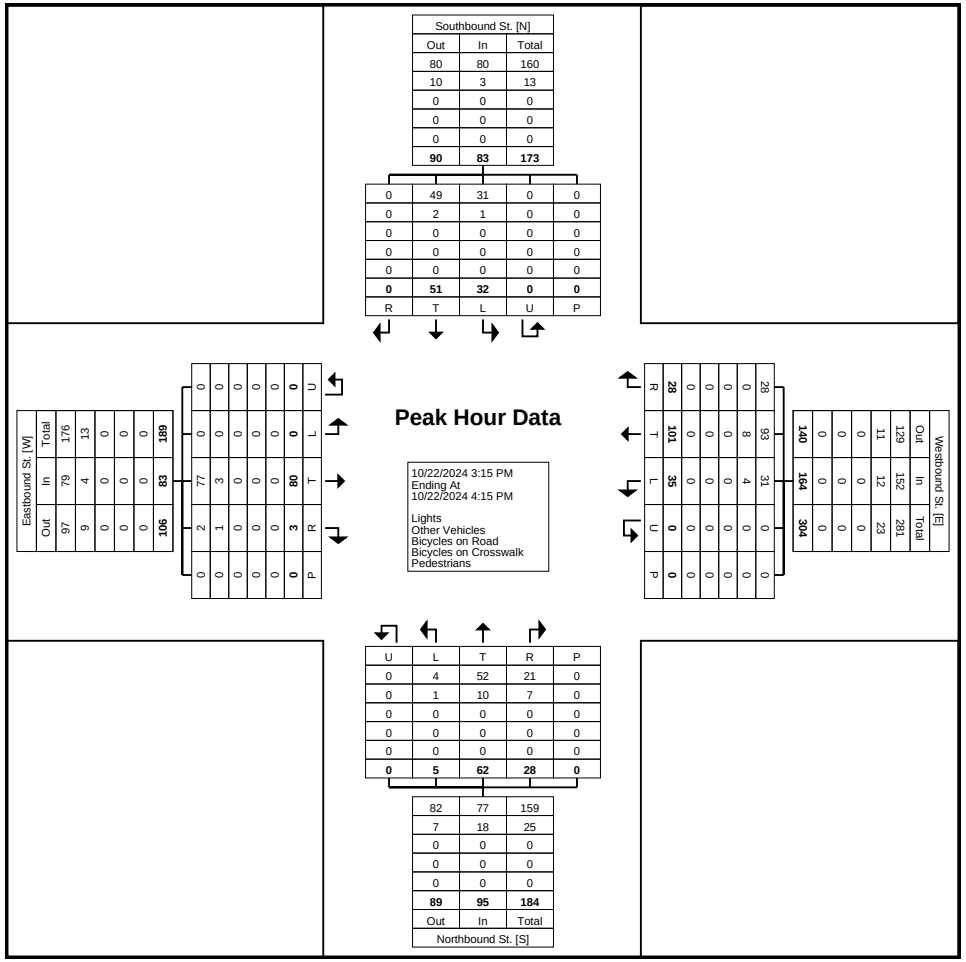
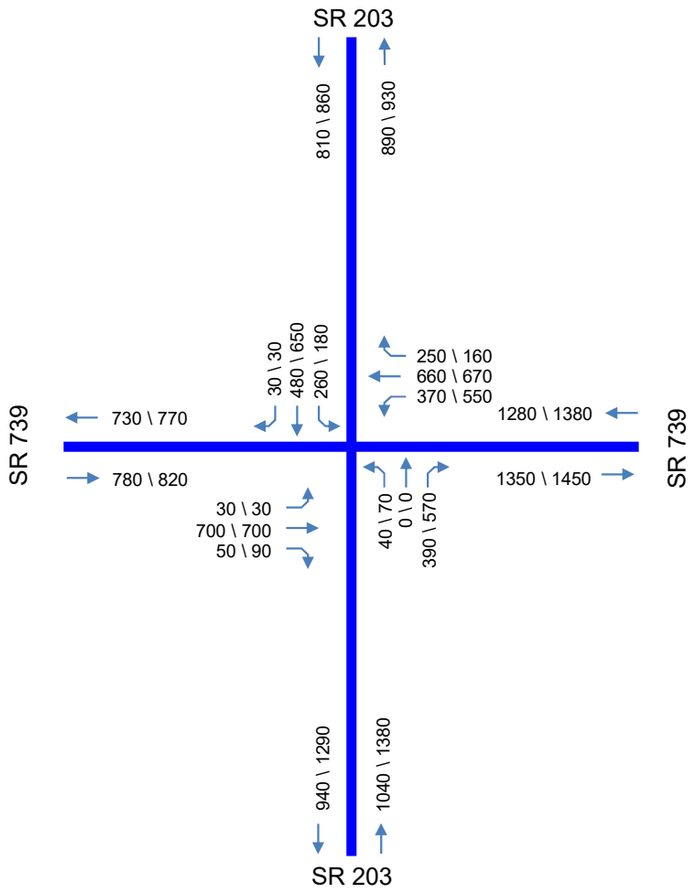


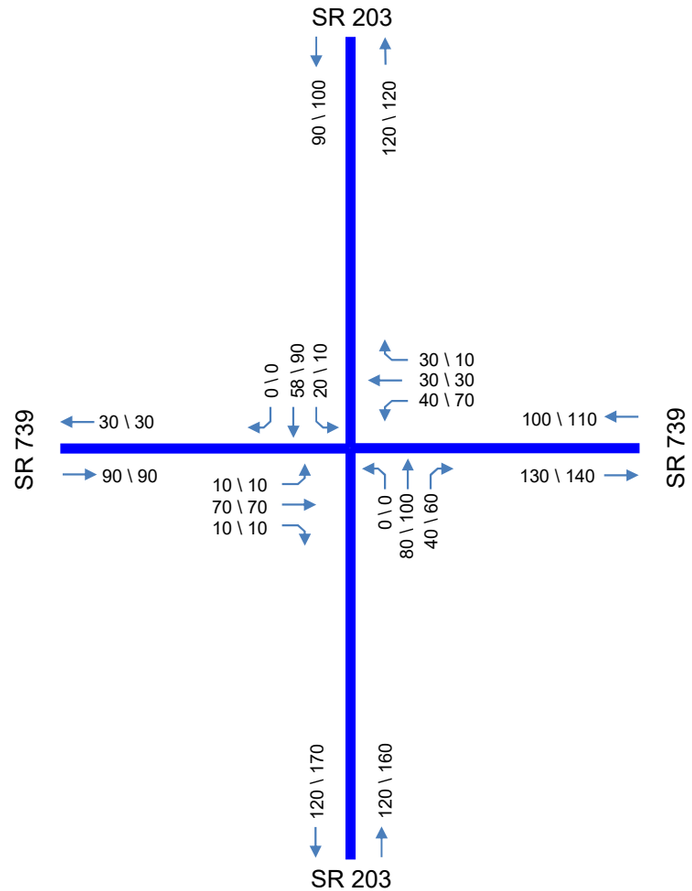
Turning Movement Peak Hour Data Plot (3:15 PM)

MAR-203-7.77
PID XXXXX
PLATE 1 of 1

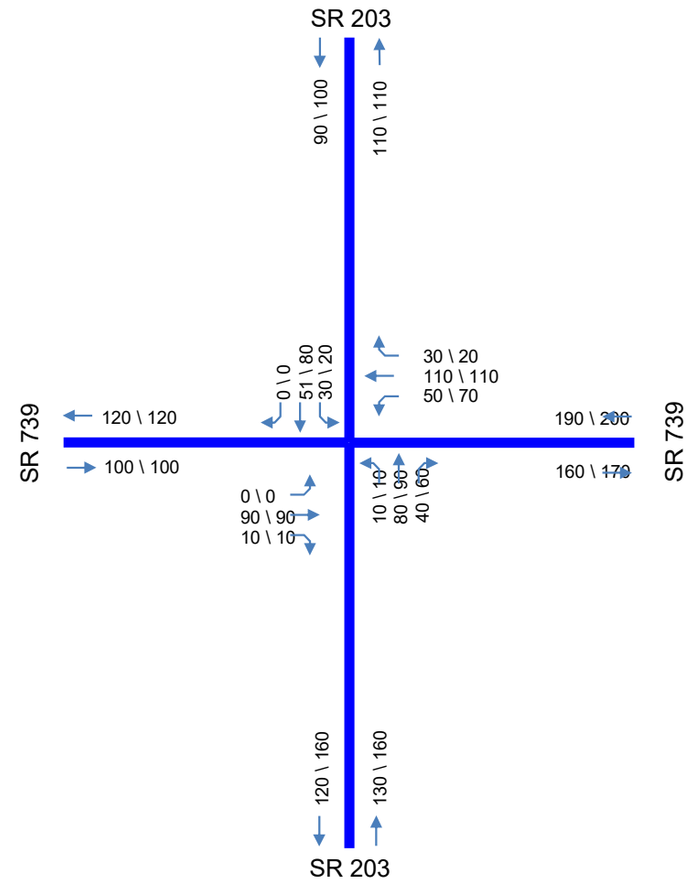
2030 \ 2050 24 Hr
Open Yr \ Design Yr
Total Turn Volumes



2030 \ 2050 AM
Open Yr \ Design Yr
Total Turn Volumes



2030 \ 2050 PM
Open Yr \ Design Yr
Total Turn Volumes



N

MAR-203-7.77	PID XXXXX
ADT, AM, PM DHV	
OHIO DEPARTMENT OF TRANSPORTATION	
NOVEMBER 21, 2024	NOT TO SCALE

TFMS - Segment Forecast Report

Username	Email	Script Import Date	Script Version	Model Version
Andrew.Hurst	Andrew.Hurst@dot.ohio.gov	4/14/2020 5:30:19 PM	2020.001	2024.1900

Forecast Summary

Project ID	Project Name	Opening Year	Design Year
		2028	2048

Project Description

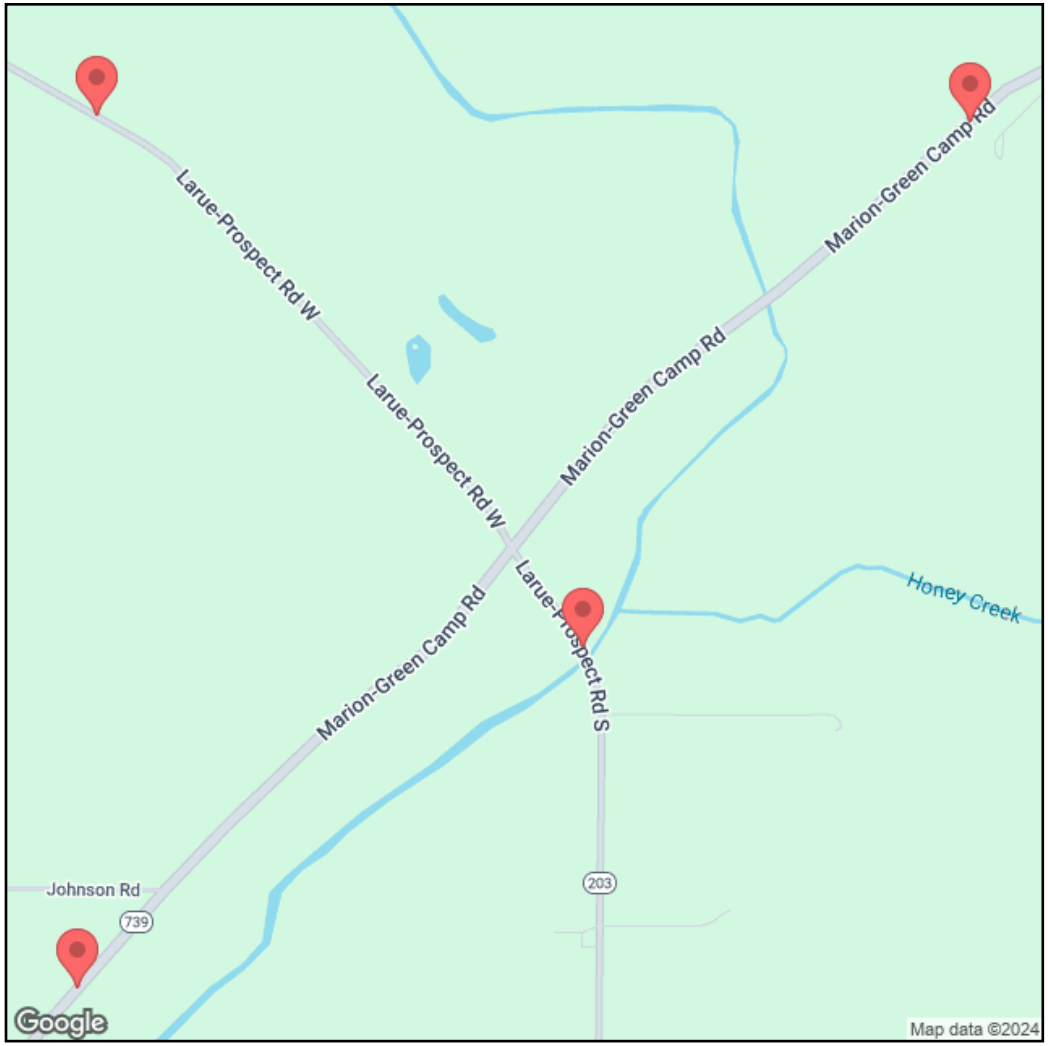
*Users of this data need to be aware that there are limitations to the forecasts generated by this product that make it suitable only for roadway design projects which are low risk.

Segment Information

Segment ID	LRS ID	BMP	EMP	Length	Latitude	Longitude
1940819	SMARSR00203**C	7.403	7.743	0.340	-83.190055895983	40.5472992399745
1940821	SMARSR00203**C	7.743	9.424	1.681	-83.202962838542	40.5579777019423
1940966	SMARSR00739**C	3.624	5.350	1.726	-83.203448865139	40.5404443800641
1940971	SMARSR00739**C	5.350	7.100	1.750	-83.1798113280513	40.5578740143923

Forecast Information

Segment ID	2028 AADT	2048 AADT	DHV-30	K%	D%	T24%	TD%
1940819	1,700	2,400	350	15.0	50.3	24	21
1940821	1,900	2,000	300	14.2	59.8	15	25
1940966	1,500	1,600	250	14.7	54.6	9	16
1940971	2,600	2,800	350	12.6	54.8	14	16



Definitions:

- AADT – Annual Average Daily Traffic
- DHV30 – Design Hour Volume for 30th highest hour of the year
- DHV30 – K * AADT
- K % – Design Hour Factor
- D % – Peak Direction Factor
- T24 % – Percent Daily Trucks
- TD % – Percent Design Hour Trucks

Forecast Segment ID	Route	BMP	EMP
1940819	SMARSR00203**C	7.403	7.743

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 15.0	18	1,900	Model	2.000	2.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
2,490	◆ 50.3	16	590	Model	■ 8.700	4.000

■ Warning: The truck growth rate was exceeded the maximum and was capped at 8.700%

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	768	510	1,278

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-1774	2181	-89	1517	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-1.45	2.92	0	0	769	438	768	510
2	-1.66	0.34	4	6	624	157	694	311
3	-2.05	5.46	0	0	534	663	564	705
4	-1.99	2.83	4	6	499	368	583	503
5	-3.01	6.93	0	0	172	787	235	818
6	-2.27	7.51	4	5	398	852	489	863

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-2,024	3,628	-1,277	1,517	2.50	16.01
2	RAT	0.43	2,447	0.18	510	1.99	2.92
3	MRAT	1.58	2,882	1.79	954	1.96	8.69
4	RAF		3,255		1,236	2.23	12.36

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Model Ratio	Model Ratio	2.000	8.700

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
1928	2111	510	1517	2438	3628

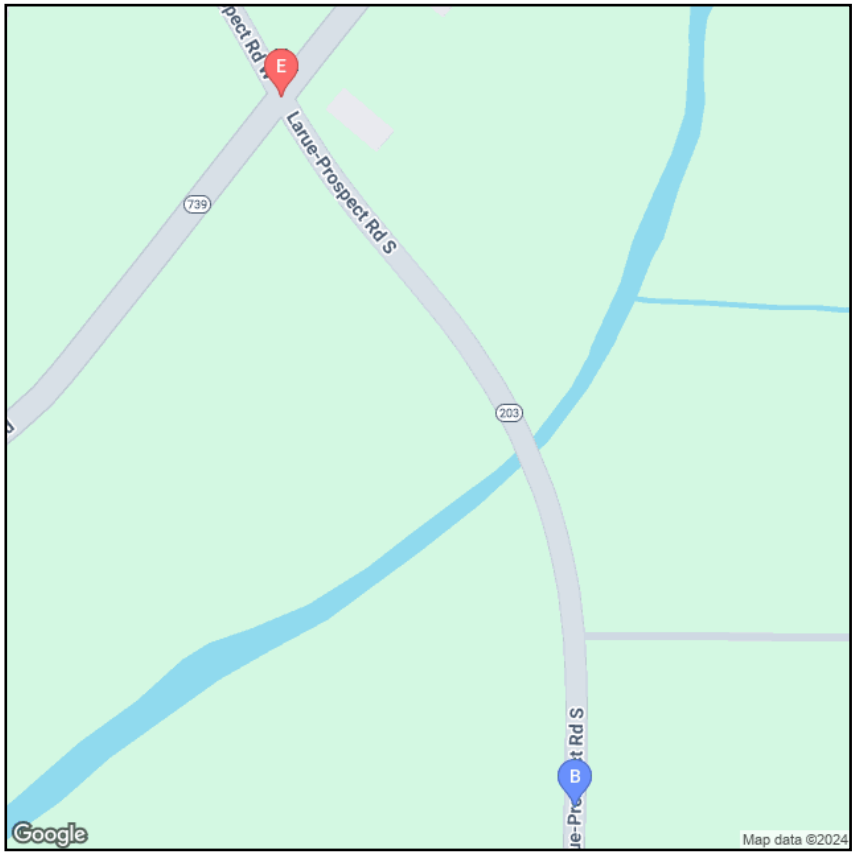
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	1,620	1,470	150
2012	1,530	1,430	100
2014	1,574	1,471	103
2017	1,736	1,622	114
2020	1,277	1,117	160
* 2023	1,545	1,260	285

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1940819	SMARSR00203**C	7.403	7.743	0.340	1,700	2,400	350	15.0	50.3	24	21

Forecast Segment ID	Route	BMP	EMP
1940821	SMARSR00203**C	7.743	9.424

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 14.2	9	1,700	Model	● -0.200	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
2,020	◆ 59.8	14	320	Model	3.700	3.700

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
2	2,554	332	2,886

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
1187	4473	-352	1150	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	2.01	4.52	0	0	2,509	395	2,598	353
2	1.92	4.03	4	4	2,423	354	2,554	332
3	2.60	6.48	0	0	2,816	492	2,865	437
4	2.63	6.64	4	4	2,792	481	2,880	444
5	2.58	4.64	0	0	2,805	405	2,855	358
6	3.05	6.66	4	4	2,996	482	3,070	445

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-1,184	1,929	-782	545	-0.66	8.99
2	RAT	0.61	1,895	0.17	224	-0.03	1.51
3	MRAT	1.03	1,896	1.41	318	-0.23	3.70
4	RAF		1,913		431	-0.44	6.34

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Model Ratio	-0.200	3.700

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
1384	1671	224	545	1608	2216

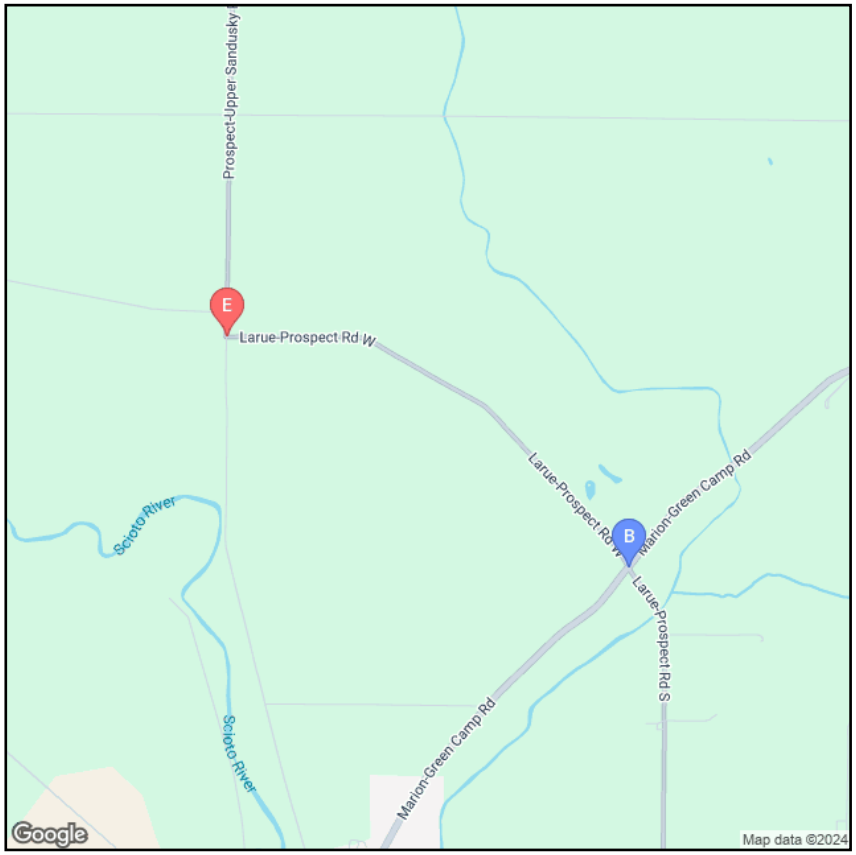
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	1,290	1,170	120
2012	1,230	1,150	80
2014	1,266	1,184	82
2017	1,772	1,540	229
2020	1,565	1,345	220
* 2023	1,842	1,683	159

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1940821	SMARSR00203**C	7.743	9.424	1.681	1,900	2,000	300	14.2	59.8	15	25

Forecast Segment ID	Route	BMP	EMP
1940966	SMARSR00739**C	3.624	5.350

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 14.7	6	1,400	Average	● -0.300	0.000
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
1,550	◆ 54.6	11	150	Average	2.300	2.300

● Warning: The growth rate was negative and was capped.

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	890	188	1,078

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-1238	2380	-252	634	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-1.41	3.70	0	0	1,065	216	890	188
2	-1.55	3.23	4	4	958	191	836	176
3	-1.62	5.12	0	0	970	257	808	224
4	-1.58	5.28	4	4	944	250	824	228
5	-2.78	2.99	0	0	474	198	358	170
6	-2.36	5.04	4	4	620	244	522	222

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-754	1,969	52	117	1.07	0.91
2	RAT	0.67	1,825	2.26	147	0.62	2.09
3	MRAT	1.19	1,848	1.56	136	0.71	1.65
4	RAF		1,909		127	0.89	1.30

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Difference	0.900	0.900

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
1678	1852	117	147	1795	1999

Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	1,970	1,890	80
2012	1,801	1,741	60
2014	1,854	1,792	62
2017	2,065	1,921	145
2020	1,918	1,784	134
* 2023	1,532	1,438	94

* Pivot Point

Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1940966	SMARSR00739**C	3.624	5.350	1.726	1,500	1,600	250	14.7	54.6	9	16

Forecast Segment ID	Route	BMP	EMP
1940971	SMARSR00739**C	5.350	7.100

Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 12.6	8	2,400	Average	0.100	0.100
AADT	**D%**	**TD % (Existing)**	**BC AADT**	**BC Method**	**BC Growth Rate %**	**BC Calculated Rate %**
2,810	◆ 54.8	9	410	Model	■ 11.500	4.000

■ Warning: The truck growth rate was exceeded the maximum and was capped at 11.500%

◆ K/D factors from TCDS were used.

Regression

Method Number	PA AADT	BC AADT	AADT
1	934	412	1,346

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
-2773	3855	-698	1262	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	-2.21	4.12	0	0	931	427	934	412
2	-2.42	3.38	4	4	673	350	803	373
3	-1.76	3.57	0	0	1,250	394	1,211	383
4	-1.70	3.78	4	4	1,182	374	1,252	394
5	-2.87	1.65	0	0	491	282	523	282
6	-2.07	4.58	4	4	932	419	1,019	436

Adjustment Info

ID	Adjustment Methods Name	Model vs Count AADT	Adjusted AADT	Model vs Count BC	Adjusted BC	PA Growth Rate %	BC Growth Rate %
1	DIF	-969	4,850	-469	1,064	2.36	16.51
2	RAT	0.72	4,196	0.29	450	2.30	4.84
3	MRAT	1.67	4,459	2.31	799	2.16	11.47
4	RAF		4,654		932	2.26	14.00

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Model Ratio	2.500	11.500

Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
3660	3855	450	1064	4110	4919

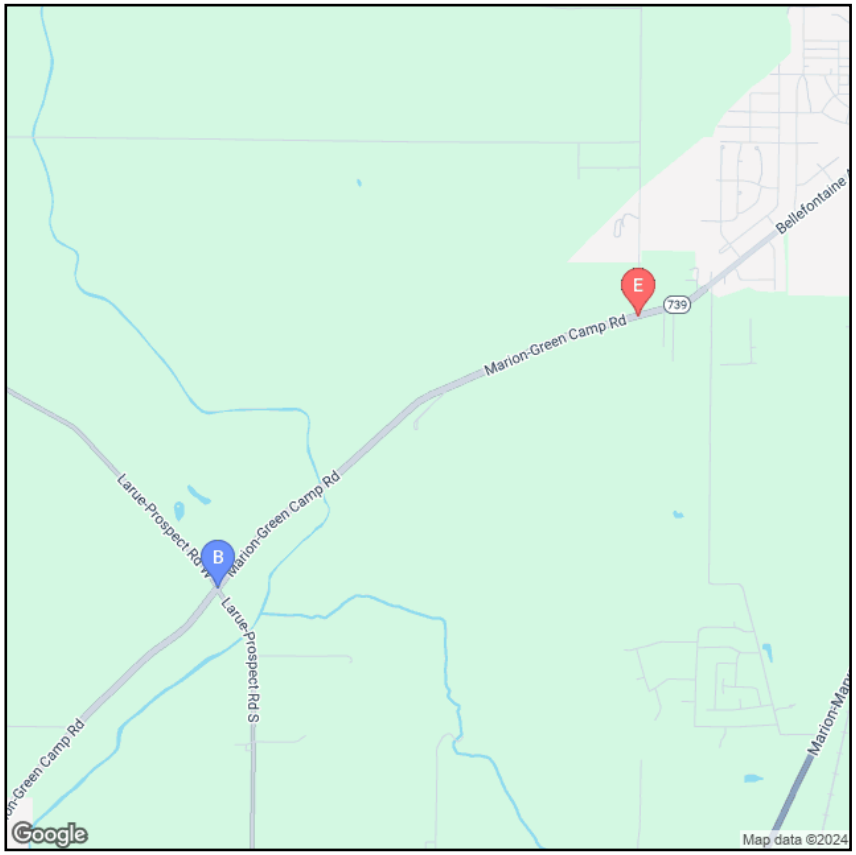
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

Historical Count

Year	All	Cars	Trucks
2008	3,240	3,160	80
2012	2,724	2,621	103
2014	2,804	2,698	106
2017	3,360	3,062	296
2020	2,363	2,237	126
* 2023	2,506	2,311	195

* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1940971	SMARSR00739**C	5.350	7.100	1.750	2,600	2,800	350	12.6	54.8	14	16

Signal Warrant Analysis

STUDY AND ANALYSIS INFORMATION

Municipality:		**Traffic Volumes Obtained By:**	ODOT
County:	Marion	**Analysis Date:**	11/18/2024
ODOT Engineering District:	6	**Agency/ Company Name Performing Warrant Analysis:**	ODOT District 6
Google map link:	Map		

Analysis Information

Data Collection Date: 10/22/2024

Day of the Week: Tuesday

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

Existing Traffic Signal at intersection: No

Total Number of Approaches at Intersection: 4

Major Street Information

Major Street Name and Route Number: SR 739

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*: 55 **MPH**

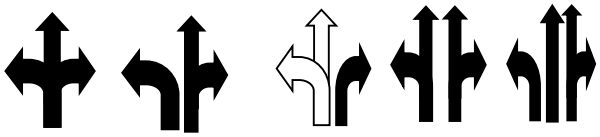
*Unknown assumes below 45 mph

Minor Street Information

Minor Street Name and Route Number: SR 203

Minor Street Approach Configuration:

1	N-Bound
1	S-Bound



1 2 3 4 5

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

Apply Right Turn Lane Reduction*: Yes

*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

	Applicable?	Warrant Satisfied?	Notes and Comments:	
Warrant 1, Eight-Hour Vehicular Volume	Yes	**No**		
Warrant 2, Four-Hour Vehicular Volume	Yes	**No**		
Warrant 3, Peak Hour	Yes	**No**	Signals installed under Warrant 3 should be traffic actuated.	**Peak Hour** 3:45 PM 4:45 PM
For Warrants 1-3, new ODOT signals must be based off of 100% volume thresholds (TEM 402-3.2)				
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.	**Peak Hour** 3:45 PM 4:45 PM
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	Yes	**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:

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*							
											Cond. A		Cond. B		Cond. A		Cond. B	
	Major	Minor	100%		70%		100%		70%		80%		80%		56%		56%	
			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																
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5:30 AM	42	32																
5:45 AM	61	42																
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9:30 AM	137	43																
9:45 AM	128	43																
10:00 AM	129	52																
10:15 AM	121	48																

10:30 AM	132	43																
10:45 AM	131	48																
11:00 AM	123	48																
11:15 AM	120	51																
11:30 AM	111	58																
11:45 AM	115	55																
12:00 PM	125	52																
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1:00 PM	146	62																
1:15 PM	157	63																
1:30 PM	152	63																
1:45 PM	143	65																
2:00 PM	156	68																
2:15 PM	170	84																
2:30 PM	196	92																
2:45 PM	213	93																
3:00 PM	231	98																
3:15 PM	247	90																
3:30 PM	243	87																
3:45 PM	255	89																
4:00 PM	242	86																
4:15 PM	227	94																
4:30 PM	210	97																
4:45 PM	188	90																
5:00 PM	191	96																
5:15 PM	173	82																
5:30 PM	169	71																
5:45 PM	161	63																
6:00 PM	131	51																
6:15 PM	97	34																
6:30 PM	58	19																
6:45 PM	22	10																
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9:45 PM	0	0																
HOURS MET			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
WARRANT SATISFIED?			**NO**		**NO**		**NO**		**NO**		**NO**				**NO**			

Warrant Met: **No**

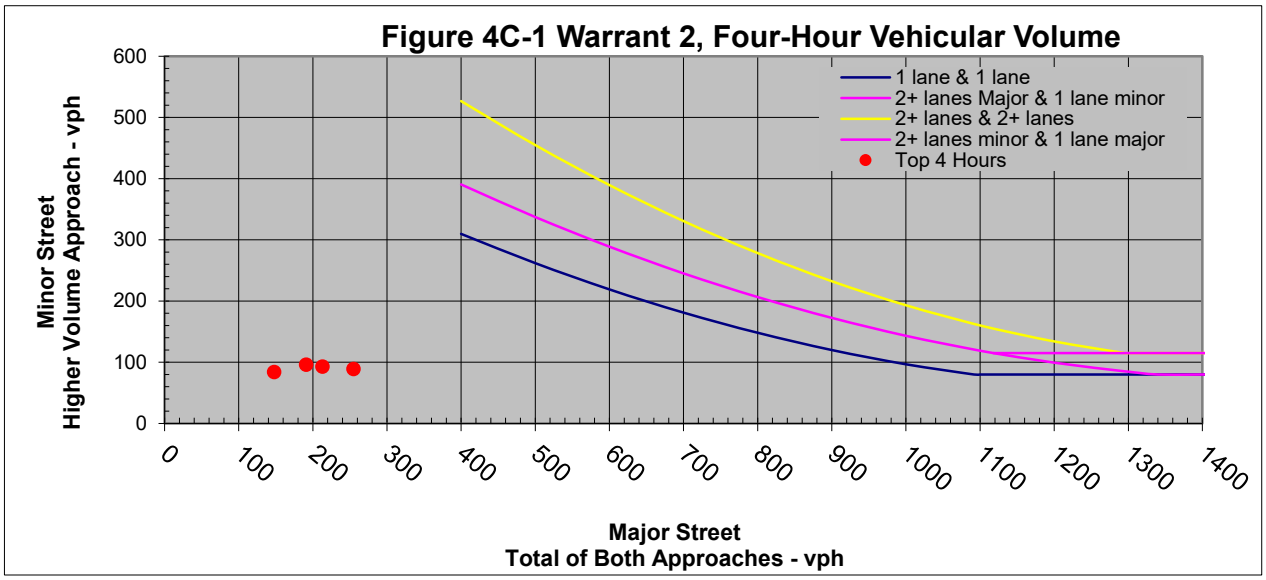
Notes:

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	0
Major street:	1 Lane	Total Number of Unique Hours Met on Figure 4C-2 (70% Factor)	0
Minor Street:	1 Lane		

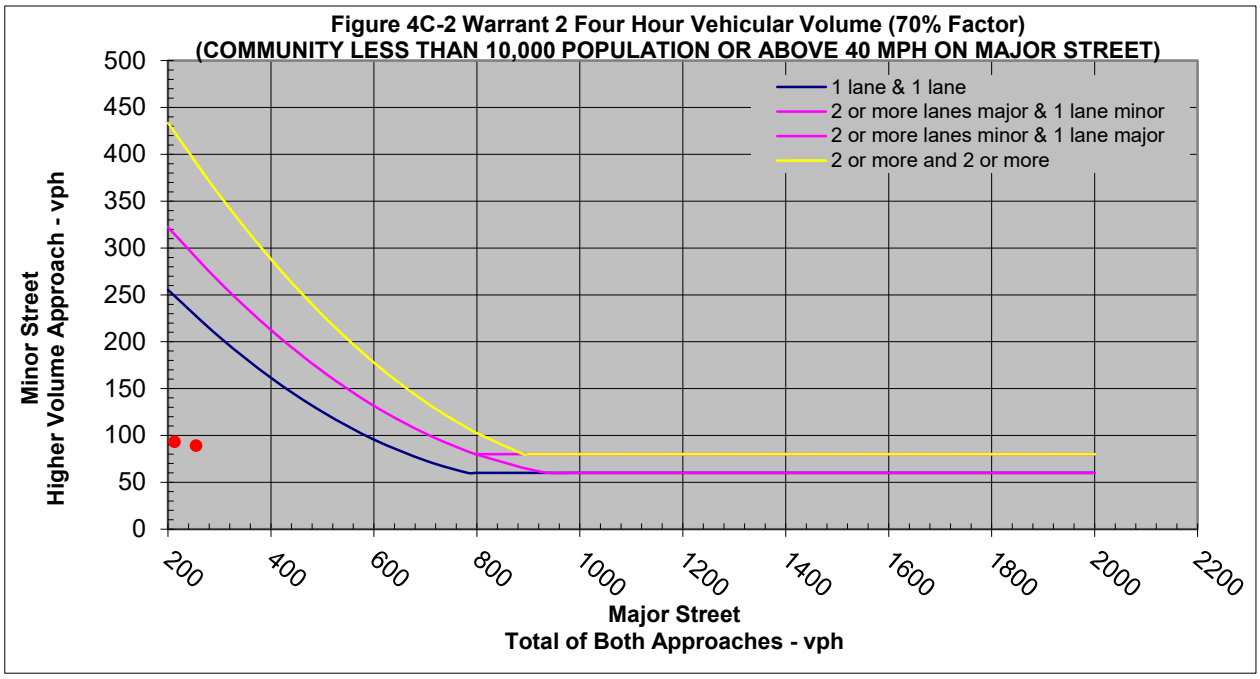
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

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 203		Major - SR 739					
	N-Bound	S-Bound	W-Bound	E-Bound				
6:00 AM	43	53	55	33	88	53		
6:15 AM	62	50	69	45	114	62		
6:30 AM	88	52	85	48	133	88		
6:45 AM	85	70	87	56	143	85		
7:00 AM	84	79	84	64	148	84		
7:15 AM	65	83	71	71	142	83		
7:30 AM	52	76	48	73	121	76		
7:45 AM	58	65	58	73	131	65		
8:00 AM	64	66	57	74	131	66		
8:15 AM	56	71	64	60	124	71		
8:30 AM	52	71	72	53	125	71		
8:45 AM	50	68	73	52	125	68		
9:00 AM	36	54	77	46	123	54		
9:15 AM	41	47	86	49	135	47		
9:30 AM	42	43	85	52	137	43		
9:45 AM	43	39	82	46	128	43		
10:00 AM	52	46	76	53	129	52		
10:15 AM	48	41	70	51	121	48		
10:30 AM	43	40	78	54	132	43		
10:45 AM	48	44	79	52	131	48		
11:00 AM	48	41	81	42	123	48		
11:15 AM	51	51	80	40	120	51		
11:30 AM	55	58	71	40	111	58		
11:45 AM	49	55	71	44	115	55		
12:00 PM	45	52	76	49	125	52		
12:15 PM	47	47	70	53	123	47		
12:30 PM	47	47	80	55	135	47		
12:45 PM	39	56	95	53	148	56		
1:00 PM	44	62	96	50	146	62		
1:15 PM	43	63	110	47	157	63		
1:30 PM	52	63	107	45	152	63		
1:45 PM	65	63	98	45	143	65		
2:00 PM	61	68	107	49	156	68		
2:15 PM	84	69	114	56	170	84		
2:30 PM	92	66	135	61	196	92		
2:45 PM	93	71	140	73	213	93		
3:00 PM	98	81	150	81	231	98		
3:15 PM	90	83	164	83	247	90		
3:30 PM	87	84	157	86	243	87		
3:45 PM	89	73	163	92	255	89		
4:00 PM	86	60	156	86	242	86		
4:15 PM	94	56	150	77	227	94		
4:30 PM	97	65	141	69	210	97		
4:45 PM	90	60	135	53	188	90		
5:00 PM	96	64	130	61	191	96		
5:15 PM	82	62	112	61	173	82		
5:30 PM	71	52	103	66	169	71		
5:45 PM	63	54	95	66	161	63		
6:00 PM	51	38	81	50	131	51		
6:15 PM	34	27	58	39	97	34		
6:30 PM	19	15	38	20	58	19		
6:45 PM	10	4	15	7	22	10		
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		



Top Hours for Figure 4C-1	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	255	89
2nd Highest Hour	2:45 PM	3:45 PM	213	93
3rd Highest Hour	5:00 PM	6:00 PM	191	96
4th Highest Hour	7:00 AM	8:00 AM	148	84

Top Hours for Figure 4C-2	Start Time	End Time	Major Street	Minor Street
Top Hour	3:45 PM	4:45 PM	255	89
2nd Highest Hour	2:45 PM	3:45 PM	213	93
3rd Highest Hour	5:00 PM	6:00 PM	191	96
4th Highest Hour	7:00 AM	8:00 AM	148	84



Are the requirements for Warrant 2 met?: No

OMUTCD WARRANT 3, PEAK HOUR

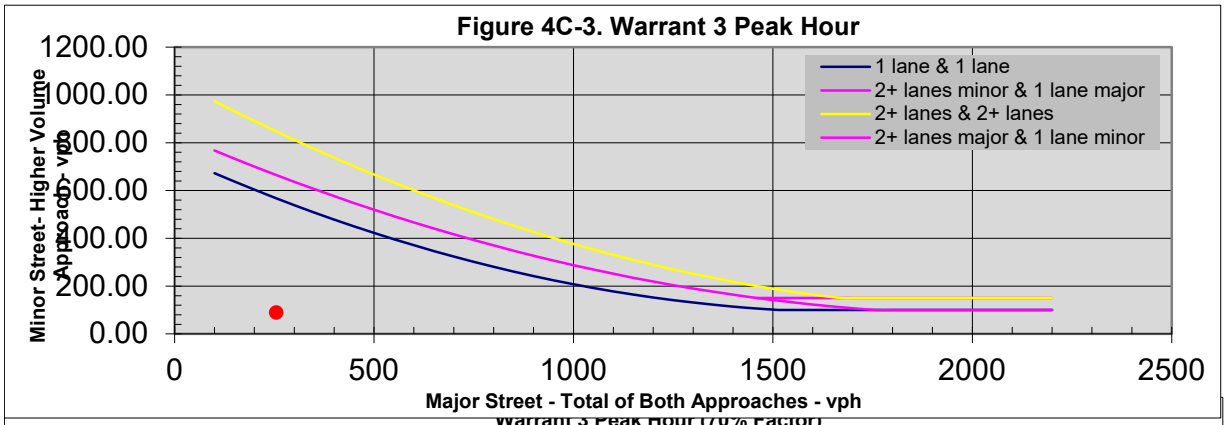
Number of Lanes for Moving Traffic on Each Approach		Peak Hour Start time	3:45 PM
Major Street:	1 Lane	Peak Hour End Time	4:45 PM
Minor Street:	1 Lane		

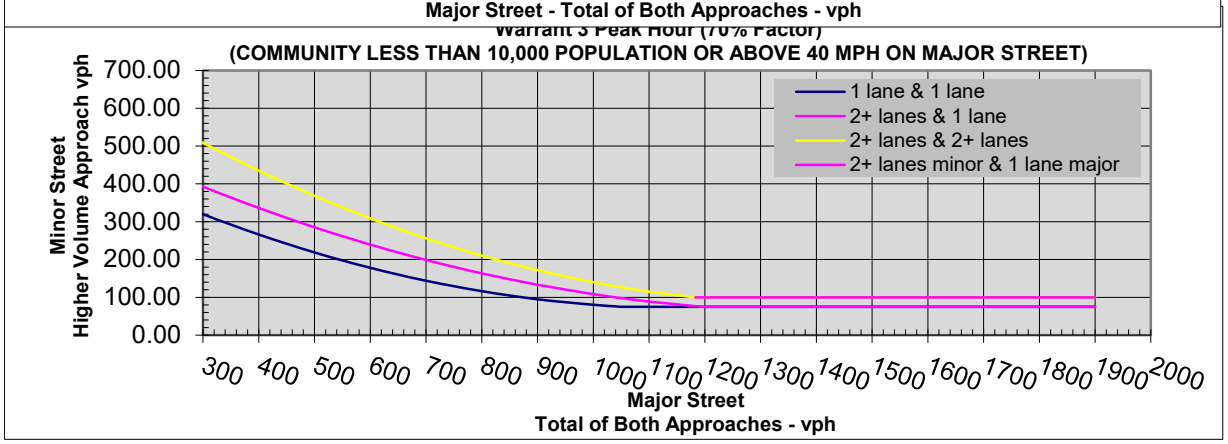
Built up Isolated Community with Less Than 10,000 Population or Above 40 MPH on Major Street?	Yes

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?	No
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?	No
**If applicable, attach all supporting calculations and documentation.*	

Are the requirements for Warrant 3 met?:	No





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	88	53	141	184
6:15 AM	114	62	176	226
6:30 AM	133	88	221	273
6:45 AM	143	85	228	298
7:00 AM	148	84	232	311
7:15 AM	142	83	225	290
7:30 AM	121	76	197	249
7:45 AM	131	65	196	254
8:00 AM	131	66	197	261
8:15 AM	124	71	195	251
8:30 AM	125	71	196	248
8:45 AM	125	68	193	243
9:00 AM	123	54	177	213
9:15 AM	135	47	182	223
9:30 AM	137	43	180	222
9:45 AM	128	43	171	210
10:00 AM	129	52	181	227
10:15 AM	121	48	169	210
10:30 AM	132	43	175	215
10:45 AM	131	48	179	223
11:00 AM	123	48	171	212
11:15 AM	120	51	171	222
11:30 AM	111	58	169	224
11:45 AM	115	55	170	219
12:00 PM	125	52	177	222
12:15 PM	123	47	170	217
12:30 PM	135	47	182	229
12:45 PM	148	56	204	243
1:00 PM	146	62	208	252
1:15 PM	157	63	220	263
1:30 PM	152	63	215	267
1:45 PM	143	65	208	271
2:00 PM	156	68	224	285
2:15 PM	170	84	254	323
2:30 PM	196	92	288	354
2:45 PM	213	93	306	377
3:00 PM	231	98	329	410
3:15 PM	247	90	337	420
3:30 PM	243	87	330	414
3:45 PM	255	89	344	417
4:00 PM	242	86	328	388
4:15 PM	227	94	321	377
4:30 PM	210	97	307	372
4:45 PM	188	90	278	338
5:00 PM	191	96	287	351
5:15 PM	173	82	255	317
5:30 PM	169	71	240	292
5:45 PM	161	63	224	278
6:00 PM	131	51	182	220
6:15 PM	97	34	131	158
6:30 PM	58	19	77	92
6:45 PM	22	10	32	36
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
255	89	567	346

Multi-Way Stop Application

OMUTCD Section 2B.07

	Warranted ?
A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.	No
B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multiway stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.	No
C. Minimum Volumes:	
1 The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day.	No
2 The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour.* *If this condition is satisfied, there must also be an average delay of at least 30 seconds per vehicle during the peak hour.	No
3 If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum volume warrants are 70 percent of the values provided in Items 1 and 2.	Yes
D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.	No

Other criteria that may be considered in an engineering study include:

A. The need to control left-turn conflicts;	No
B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;	No
C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and	
D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.	No

Are the requirements for Multi-Way Stop Satisfied?: No

AUTOCALC table								
Each hour is individually checked and tallied if "met"								
Lanes Major/ Minor	ADJUSTED VOLUMES		Condition C.1		Condition C.2		Condition D	
	MAJOR	MINOR	100%		70%		80%	
			MAJ.	MIN.	MAJ.	MIN.	MAJ.	MIN.
Required Volumes			300	200	210	140	240	160
6:00 AM	88	53						
6:15 AM	114	62						
6:30 AM	133	88						
6:45 AM	143	85						
7:00 AM	148	84						
7:15 AM	142	83						
7:30 AM	121	76						
7:45 AM	131	65						
8:00 AM	131	66						
8:15 AM	124	71						
8:30 AM	125	71						
8:45 AM	125	68						
9:00 AM	123	54						
9:15 AM	135	47						
9:30 AM	137	43						
9:45 AM	128	43						
10:00 AM	129	52						
10:15 AM	121	48						
10:30 AM	132	43						
10:45 AM	131	48						
11:00 AM	123	48						
11:15 AM	120	51						
11:30 AM	111	58						
11:45 AM	115	55						
12:00 PM	125	52						
12:15 PM	123	47						
12:30 PM	135	47						
12:45 PM	148	56						
1:00 PM	146	62						
1:15 PM	157	63						
1:30 PM	152	63						
1:45 PM	143	65						
2:00 PM	156	68						
2:15 PM	170	84						
2:30 PM	196	92						
2:45 PM	213	93			1			
3:00 PM	231	98						
3:15 PM	247	90					1	
3:30 PM	243	87						
3:45 PM	255	89			1			
4:00 PM	242	86						
4:15 PM	227	94						
4:30 PM	210	97						
4:45 PM	188	90						
5:00 PM	191	96						
5:15 PM	173	82						
5:30 PM	169	71						
5:45 PM	161	63						
6:00 PM	131	51						

6:15 PM	97	34						
6:30 PM	58	19						
6:45 PM	22	10						
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						
10:00 PM	0	0						
10:15 PM	0	0						
10:30 PM	0	0						
10:45 PM	0	0						
11:00 PM	0	0						
11:15 PM	0	0						
11:30 PM	0	0						
11:45 PM	0	0						
HOURS MET			**0**	**0**	**2**	**0**	**1**	**0**
CONDITION SATISFIED?			**NO**		**NO**		**NO**	

Capacity Analysis

HCS Two-Way Stop-Control Report

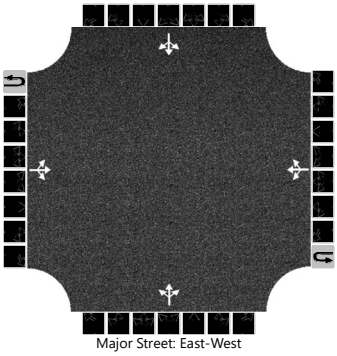
General Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2030
Time Analyzed	2030 AM
Intersection Orientation	East-West
Project Description	No Build

Site Information

Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	70	10		40	30	30		10	80	40		20	70	10
Percent Heavy Vehicles (%)		3				5				9	9	9		7	7	7
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.15				7.19	6.59	6.29		7.17	6.57	6.27
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.25				3.58	4.08	3.38		3.56	4.06	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				43					141				109	
Capacity, c (veh/h)		1530				1490					683				619	
v/c Ratio		0.01				0.03					0.21				0.18	
95% Queue Length, Q_{95} (veh)		0.0				0.1					0.8				0.6	
95% Queue Length, Q_{95} (ft)		0.0				2.5					21.4				15.8	
Control Delay (s/veh)		7.4	0.1	0.1		7.5	0.2	0.2			11.6				12.1	
Level of Service (LOS)		A	A	A		A	A	A			B				B	
Approach Delay (s/veh)	0.9				3.1				11.6				12.1			
Approach LOS	A				A				B				B			

HCS Two-Way Stop-Control Report

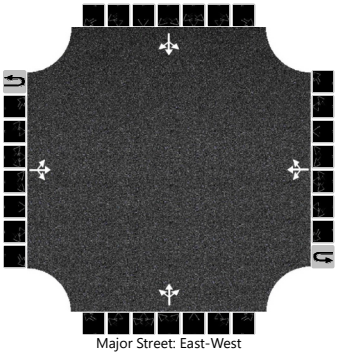
General Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2030
Time Analyzed	2030 PM
Intersection Orientation	East-West
Project Description	No Build

Site Information

Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	90	10		50	110	30		10	80	40		30	60	10
Percent Heavy Vehicles (%)		7				8				14	14	14		8	8	8
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.17				4.18				7.24	6.64	6.34		7.18	6.58	6.28
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.26				2.27				3.63	4.13	3.43		3.57	4.07	3.37

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				54					141				109	
Capacity, c (veh/h)		1399				1445					578				493	
v/c Ratio		0.01				0.04					0.24				0.22	
95% Queue Length, Q_{95} (veh)		0.0				0.1					1.0				0.8	
95% Queue Length, Q_{95} (ft)		0.0				2.5					27.8				21.3	
Control Delay (s/veh)		7.6	0.1	0.1		7.6	0.3	0.3			13.2				14.3	
Level of Service (LOS)		A	A	A		A	A	A			B				B	
Approach Delay (s/veh)	0.7				2.2				13.2				14.3			
Approach LOS	A				A				B				B			

HCS Two-Way Stop-Control Report

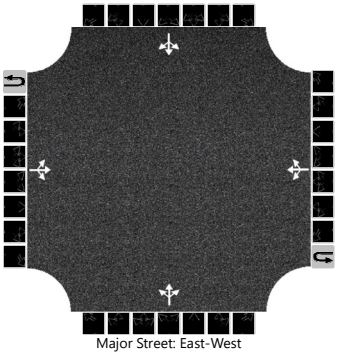
General Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2050
Time Analyzed	2050 AM
Intersection Orientation	East-West
Project Description	No Build

Site Information

Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	70	10		70	30	30		10	100	60		20	90	10
Percent Heavy Vehicles (%)		3				5				9	9	9		7	7	7
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.13				4.15				7.19	6.59	6.29		7.17	6.57	6.27
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.23				2.25				3.58	4.08	3.38		3.56	4.06	3.36

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		11				76					185				130	
Capacity, c (veh/h)		1530				1490					638				543	
v/c Ratio		0.01				0.05					0.29				0.24	
95% Queue Length, Q_{95} (veh)		0.0				0.2					1.2				0.9	
95% Queue Length, Q_{95} (ft)		0.0				5.0					32.2				23.8	
Control Delay (s/veh)		7.4	0.1	0.1		7.5	0.4	0.4			12.9				13.7	
Level of Service (LOS)		A	A	A		A	A	A			B				B	
Approach Delay (s/veh)	0.9				4.2				12.9				13.7			
Approach LOS	A				A				B				B			

HCS Two-Way Stop-Control Report

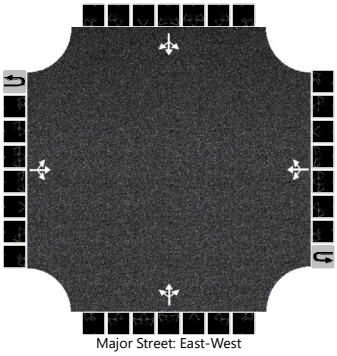
General Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2050
Time Analyzed	2050 PM
Intersection Orientation	East-West
Project Description	No Build

Site Information

Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Major Street: East-West

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	1	0		0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	90	10		70	110	30		10	90	60		30	80	10
Percent Heavy Vehicles (%)		7				8				14	14	14		8	8	8
Proportion Time Blocked																
Percent Grade (%)									0				0			
Right Turn Channelized																
Median Type | Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		4.1				4.1				7.1	6.5	6.2		7.1	6.5	6.2
Critical Headway (sec)		4.17				4.18				7.24	6.64	6.34		7.18	6.58	6.28
Base Follow-Up Headway (sec)		2.2				2.2				3.5	4.0	3.3		3.5	4.0	3.3
Follow-Up Headway (sec)		2.26				2.27				3.63	4.13	3.43		3.57	4.07	3.37

Delay, Queue Length, and Level of Service

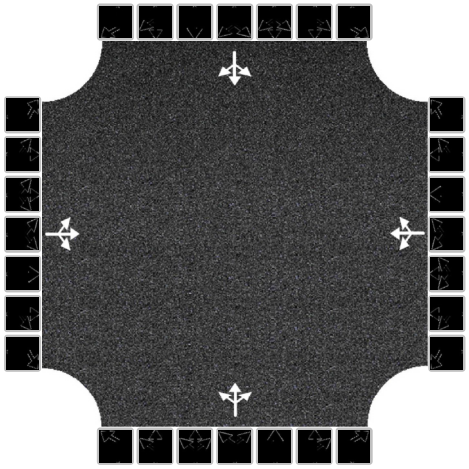
Flow Rate, v (veh/h)		11				76					174				130	
Capacity, c (veh/h)		1399				1445					563				449	
v/c Ratio		0.01				0.05					0.31				0.29	
95% Queue Length, Q_{95} (veh)		0.0				0.2					1.3				1.2	
95% Queue Length, Q_{95} (ft)		0.0				5.0					36.1				31.9	
Control Delay (s/veh)		7.6	0.1	0.1		7.6	0.4	0.4			14.2				16.3	
Level of Service (LOS)		A	A	A		A	A	A			B				C	
Approach Delay (s/veh)	0.7				2.8				14.2				16.3			
Approach LOS	A				A				B				C			

HCS All-Way Stop Control Report

General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2030
Analysis Time Period (hrs)	0.25
Time Analyzed	2030 AM
Project Description	
Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	10	70	10	40	30	30	10	80	40	20	70	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	98			109			141			109		
Percent Heavy Vehicles	3			5			9			7		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.087			0.097			0.126			0.097		
Final Departure Headway, h_d (s)	4.64			4.61			4.52			4.67		
Final Degree of Utilization, x	0.126			0.139			0.177			0.141		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	2.64			2.61			2.52			2.67		

Capacity, Delay and Level of Service

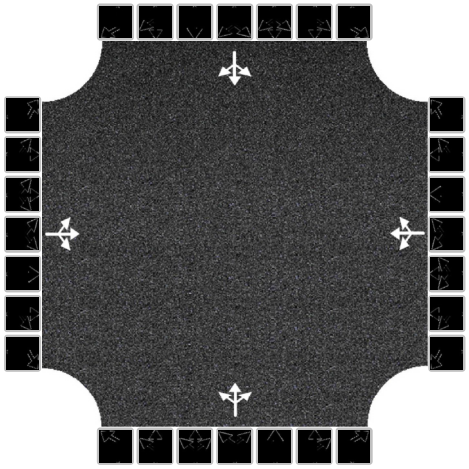
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	98			109			141			109		
Capacity (veh/h)	776			782			797			771		
95% Queue Length, Q_{95} (veh)	0.4			0.5			0.6			0.5		
95% Queue Length, Q_{95} (ft)	10.2			13.0			16.1			13.2		
Control Delay (s/veh)	8.3			8.3			8.5			8.4		
Level of Service, LOS	A			A			A			A		
Approach Delay (s/veh) | LOS	8.3	A		8.3	A		8.5	A		8.4	A	
Intersection Delay (s/veh) | LOS	8.4						A					

HCS All-Way Stop Control Report

General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2030
Analysis Time Period (hrs)	0.25
Time Analyzed	2030 PM
Project Description	
Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	10	90	10	70	110	30	10	80	40	30	60	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	120			228			141			109		
Percent Heavy Vehicles	7			8			14			8		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.106			0.203			0.126			0.097		
Final Departure Headway, h_d (s)	4.94			4.83			5.00			5.12		
Final Degree of Utilization, x	0.164			0.306			0.196			0.154		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	2.94			2.83			3.00			3.12		

Capacity, Delay and Level of Service

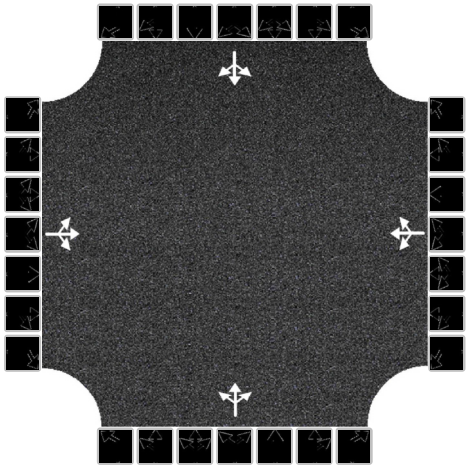
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	120			228			141			109		
Capacity (veh/h)	728			745			719			704		
95% Queue Length, Q_{95} (veh)	0.6			1.3			0.7			0.5		
95% Queue Length, Q_{95} (ft)	15.8			34.6			19.5			13.3		
Control Delay (s/veh)	8.9			10.0			9.2			9.0		
Level of Service, LOS	A			A			A			A		
Approach Delay (s/veh) | LOS	8.9		A	10.0		A	9.2		A	9.0		A
Intersection Delay (s/veh) | LOS	9.4						A					

HCS All-Way Stop Control Report

General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2050
Analysis Time Period (hrs)	0.25
Time Analyzed	2050 AM
Project Description	
Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	10	70	10	70	30	30	10	100	60	20	90	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	98			141			185			130		
Percent Heavy Vehicles	3			5			9			7		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.087			0.126			0.164			0.116		
Final Departure Headway, h_d (s)	4.87			4.86			4.63			4.84		
Final Degree of Utilization, x	0.132			0.191			0.238			0.175		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	2.87			2.86			2.63			2.84		

Capacity, Delay and Level of Service

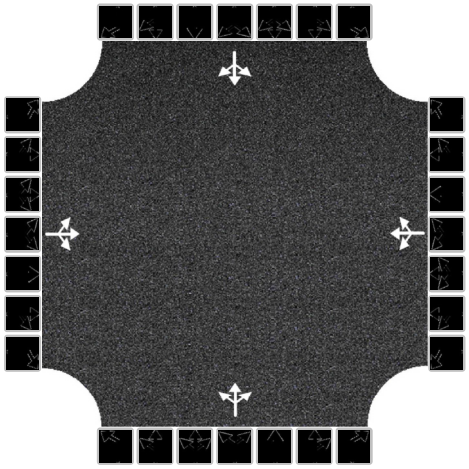
Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	98			141			185			130		
Capacity (veh/h)	739			741			778			744		
95% Queue Length, Q_{95} (veh)	0.5			0.7			0.9			0.6		
95% Queue Length, Q_{95} (ft)	12.8			18.2			24.1			15.8		
Control Delay (s/veh)	8.6			9.0			9.1			8.9		
Level of Service, LOS	A			A			A			A		
Approach Delay (s/veh) | LOS	8.6	A		9.0	A		9.1	A		8.9	A	
Intersection Delay (s/veh) | LOS	8.9						A					

HCS All-Way Stop Control Report

General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/21/2024
Analysis Year	2050
Analysis Time Period (hrs)	0.25
Time Analyzed	2050 PM
Project Description	
Intersection	SR 203 & SR 739
Jurisdiction	
East/West Street	SR 739
North/South Street	SR 203
Peak Hour Factor	0.92

Lanes



Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume (veh/h)	10	90	10	70	110	30	10	90	60	30	80	10
% Thrus in Shared Lane												

Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	120			228			174			130		
Percent Heavy Vehicles	7			8			14			8		
Initial Departure Headway, h_d (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.106			0.203			0.155			0.116		
Final Departure Headway, h_d (s)	5.11			4.99			5.02			5.19		
Final Degree of Utilization, x	0.170			0.316			0.243			0.188		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t_s (s)	3.11			2.99			3.02			3.19		

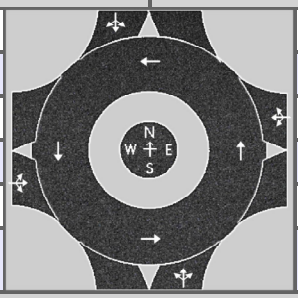
Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	120			228			174			130		
Capacity (veh/h)	705			722			717			693		
95% Queue Length, Q_{95} (veh)	0.6			1.4			0.9			0.7		
95% Queue Length, Q_{95} (ft)	15.8			37.2			25.0			18.6		
Control Delay (s/veh)	9.1			10.3			9.6			9.4		
Level of Service, LOS	A			B			A			A		
Approach Delay (s/veh) | LOS	9.1		A	10.3		B	9.6		A	9.4		A
Intersection Delay (s/veh) | LOS	9.7						A					

HCS Roundabouts Report

General Information

Analyst	
Agency or Co.	
Date Performed	11/27/2024
Analysis Year	2030
Time Analyzed	2030 AM
Project Description	



Site Information

Intersection	SR 203 & SR 739
E/W Street Name	SR 739
N/S Street Name	SR 203
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	10	70	10	0	40	30	30	0	10	80	40	0	20	70	10
Percent Heavy Vehicles, %	3	3	3	3	5	5	5	5	9	9	9	9	7	7	7	7
Flow Rate (v_{PCE}), pc/h	0	11	78	11	0	46	34	34	0	12	95	47	0	23	81	12
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		100			114			154			116	
Entry Volume, veh/h		97			109			141			108	
Circulating Flow (v_c), pc/h	150			118			112			92		
Exiting Flow (v_{ex}), pc/h	148			58			140			138		
Capacity (c_{pce}), pc/h		1184			1224			1231			1256	
Capacity (c), veh/h		1150			1165			1129			1174	
v/c Ratio (x)		0.08			0.09			0.13			0.09	

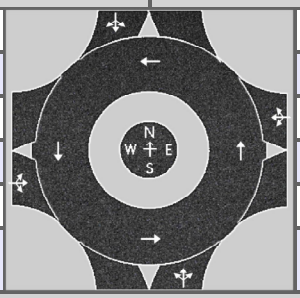
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		3.8			3.9			4.3			3.8	
Lane LOS		A			A			A			A	
95% Queue Length, Q_{95} (veh)		0.3			0.3			0.4			0.3	
95% Queue Length, Q_{95} (ft)		7.7			7.8			10.7			7.9	
Approach Delay, s/veh | LOS	3.8	A		3.9	A		4.3	A		3.8	A	
Intersection Delay, s/veh | LOS	4.0						A					

HCS Roundabouts Report

General Information

Analyst	
Agency or Co.	
Date Performed	11/27/2024
Analysis Year	2030
Time Analyzed	2030 PM
Project Description	



Site Information

Intersection	SR 203 & SR 739
E/W Street Name	SR 739
N/S Street Name	SR 203
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	10	90	10	0	50	110	30	0	10	80	40	0	30	60	10
Percent Heavy Vehicles, %	7	7	7	7	8	8	8	8	14	14	14	14	8	8	8	8
Flow Rate (v_{PCE}), pc/h	0	12	105	12	0	59	129	35	0	12	99	50	0	35	70	12
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		129			223			161			117	
Entry Volume, veh/h		121			206			141			108	
Circulating Flow (v_c), pc/h	164			123			152			200		
Exiting Flow (v_{ex}), pc/h	190			153			146			141		
Capacity (c_{pce}), pc/h		1167			1217			1182			1125	
Capacity (c), veh/h		1091			1127			1037			1042	
v/c Ratio (x)		0.11			0.18			0.14			0.10	

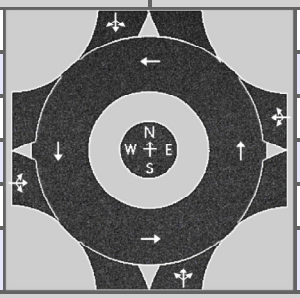
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.3			4.8			4.7			4.4	
Lane LOS		A			A			A			A	
95% Queue Length, Q_{95} (veh)		0.4			0.7			0.5			0.3	
95% Queue Length, Q_{95} (ft)		10.6			18.6			13.9			8.0	
Approach Delay, s/veh | LOS	4.3	A		4.8	A		4.7	A		4.4	A	
Intersection Delay, s/veh | LOS	4.6						A					

HCS Roundabouts Report

General Information

Analyst	
Agency or Co.	
Date Performed	11/27/2024
Analysis Year	2050
Time Analyzed	2050 AM
Project Description	



Site Information

Intersection	SR 203 & SR 739
E/W Street Name	SR 739
N/S Street Name	SR 203
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	10	70	10	0	70	30	30	0	10	100	60	0	20	80	10
Percent Heavy Vehicles, %	3	3	3	3	5	5	5	5	9	9	9	9	7	7	7	7
Flow Rate (v_{PCE}), pc/h	0	11	78	11	0	80	34	34	0	12	118	71	0	23	93	12
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		100			148			201			128	
Entry Volume, veh/h		97			141			184			120	
Circulating Flow (v_c), pc/h	196			141			112			126		
Exiting Flow (v_{ex}), pc/h	172			58			163			184		
Capacity (c_{pce}), pc/h		1130			1195			1231			1214	
Capacity (c), veh/h		1097			1138			1129			1134	
v/c Ratio (x)		0.09			0.12			0.16			0.11	

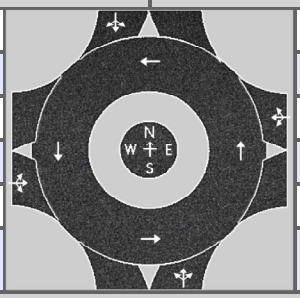
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.0			4.2			4.6			4.1	
Lane LOS		A			A			A			A	
95% Queue Length, Q_{95} (veh)		0.3			0.4			0.6			0.4	
95% Queue Length, Q_{95} (ft)		7.7			10.4			16.1			10.6	
Approach Delay, s/veh | LOS	4.0		A	4.2		A	4.6		A	4.1		A
Intersection Delay, s/veh | LOS	4.3						A					

HCS Roundabouts Report

General Information

Analyst	
Agency or Co.	
Date Performed	11/27/2024
Analysis Year	2050
Time Analyzed	2050 PM
Project Description	



Site Information

Intersection	SR 203 & SR 739
E/W Street Name	SR 739
N/S Street Name	SR 203
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0
Lane Assignment			LTR				LTR				LTR				LTR	
Volume (V), veh/h	0	10	90	10	0	70	110	30	0	10	90	60	0	30	80	10
Percent Heavy Vehicles, %	7	7	7	7	8	8	8	8	14	14	14	14	8	8	8	8
Flow Rate (v_{PCE}), pc/h	0	12	105	12	0	82	129	35	0	12	112	74	0	35	94	12
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1				1				1			
Pedestrians Crossing, p/h	0				0				0				0			
Proportion of CAVs, %	0															

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		129			246			198			141	
Entry Volume, veh/h		121			228			174			131	
Circulating Flow (v_c), pc/h	211			136			152			223		
Exiting Flow (v_{ex}), pc/h	214			153			159			188		
Capacity (c_{pce}), pc/h		1113			1201			1182			1099	
Capacity (c), veh/h		1040			1112			1037			1018	
v/c Ratio (x)		0.12			0.20			0.17			0.13	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.5			5.1			5.0			4.7	
Lane LOS		A			A			A			A	
95% Queue Length, Q_{95} (veh)		0.4			0.8			0.6			0.4	
95% Queue Length, Q_{95} (ft)		10.6			21.3			16.7			10.6	
Approach Delay, s/veh | LOS	4.5	A		5.1	A		5.0	A		4.7	A	
Intersection Delay, s/veh | LOS	4.9						A					

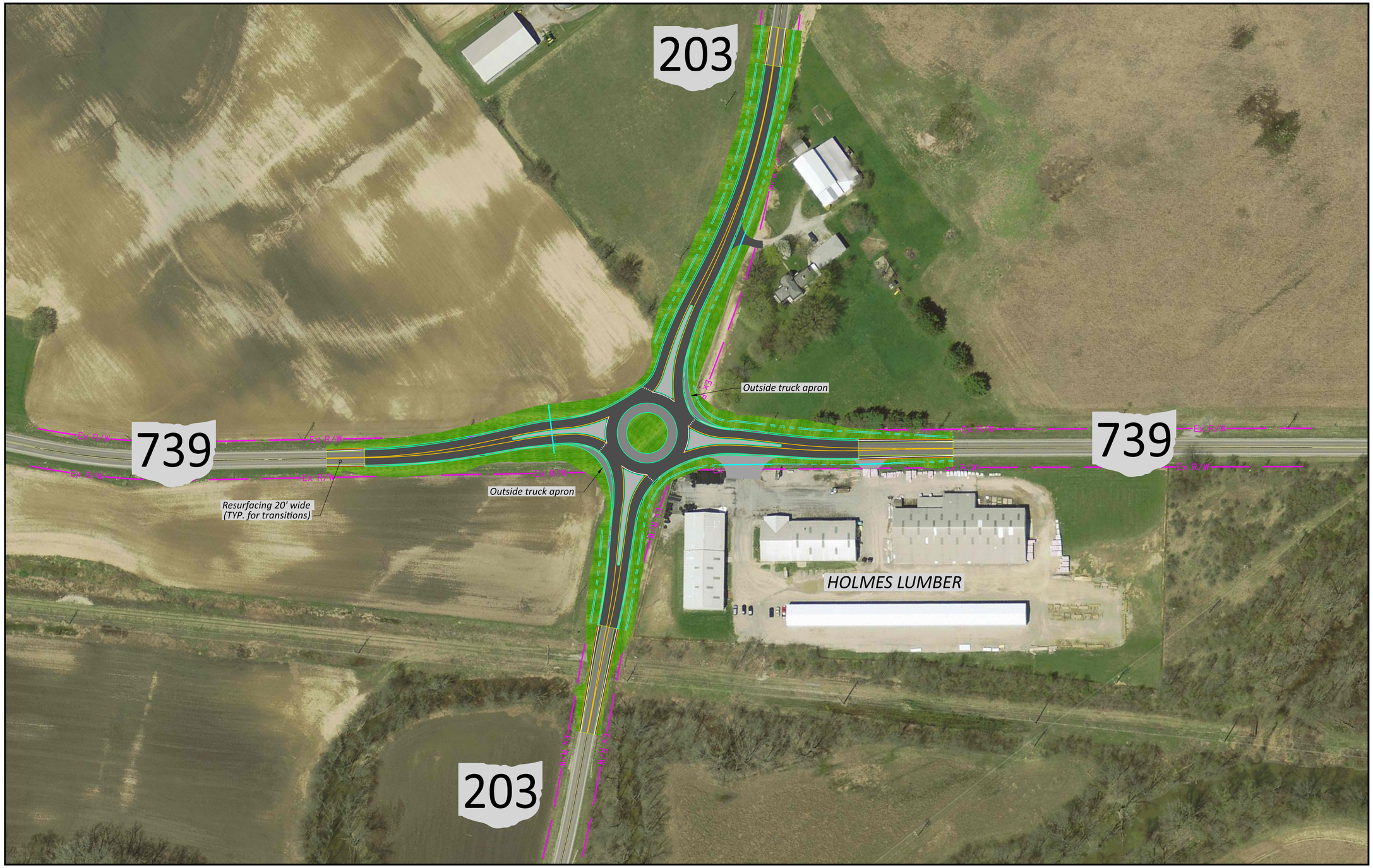
Conceptual Layout & Cost Estimate

SR-739/SR-203 ROUNDABOUT CONCEPT PLAN

HORIZONTAL SCALE IN FEET

0 75

37.5 150



Preliminary Construction Estimate

MAR-203/739 Roundabout

#	Category	Item	Quantity	Unit	Unit Cost	Total Cost
1	Roadway Pavement	9" Concrete Pavement	927	Sq. Yds.	$117.00	$108,459
		Asphalt Surface	307	Cu. Yds.	$250.00	$76,750
		Asphalt Intermediate	376	Cu. Yds.	$212.00	$79,712
		Asphalt Base	1288	Cu. Yds.	$175.00	$225,400
		Aggregate Base	1504	Cu. Yds.	$87.50	$131,600
2		Pavement Planing	975	Sq. Yds.	$8.00	$7,800
		Pavement Removed	4389	Sq. Yds.	$23.00	$100,947
3	Earthwork	Excavation	6472	Cu. Yds.	$18.50	$119,732
4		Embankment	2141	Cu. Yds.	$25.00	$53,525
5	Curb		514	Ft.	$54.80	$28,167
6	Curb and Gutter		3353	Ft.	$36.00	$120,708
7	Guardrail		832	Ft.	$20.50	$17,056
8	Concrete Median		621	Sq. Yds.	$102.00	$63,342
					SUBTOTAL	$1,133,198
9	Erosion Control		See Quantities Sheet			$91,306
10	Drainage		See Quantities Sheet			$131,758
11	Traffic Control		See Quantities Sheet			$32,460
12	Maintenance of Traffic		≈ 4% Construction Cost			$66,029
13	Lighting		$150,000/RAB			$150,000
14	Incidentals		See Quantities Sheet			$112,000
					SUBTOTAL	$583,553
	TOTAL ROADWAY COSTS					$1,716,751
15	Contingency		% of Items 1-14	25.0%		$429,000
16	Inflation (Assuming 1 year)			19.0%		$407,693
	TOTAL CONSTRUCTION COST			**$2,553,444**		

Date: March 25, 2025