



# ABBREVIATED SAFETY STUDY

DEL-521-12.88  
SR 61 and SR 521  
Intersection

2021 Rural  
Intersection Rank  
#65

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## Purpose and Need

This study analyzes the intersection of SR 61 and SR 521 in Delaware County. This segment is ranked 65 on ODOT's 2021 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 61 and SR 521 is a rural 4 legged intersection in northeastern Delaware County. SR 61 is a 2 lane, undivided roadway classified as a rural minor arterial with a 55 mph speed limit. SR 521 is a 2 lane, undivided roadway classified as a rural minor arterial west of SR 61 with a 55 mph speed limit. East of SR 61, SR 521 is a rural major collector.

Currently, SR 521 traffic stops, with dual stop signs on both approaches. Dual stop ahead signs also exist on the SR 521 approaches. The SR 521 approaches are misaligned; thru traffic on SR 521 needs additional time to make this movement. Also, there is a hill just south of the intersection on SR 61. Daily traffic volumes are 4,150 (7% trucks) on SR 61, and 2,050 (11% trucks) on SR 521. A turning movement count from 2023 is available in the appendix.

Most of the land near the intersection is not developed, with single family homes and woods to the east, and farmland to the west. The nearest driveways are about 250 feet east of the intersection on SR 521, and about 700 ft. north and 475 ft. south of the intersection on SR 61.

The SR 61 and SR 656/Wilson Rd intersection (about 0.6 mi south of the SR 61 and SR 521 intersection) was converted to a roundabout in 2021.



FIGURE 1 AERIAL VIEW



FIGURE 2 NORTHBOUND APPROACH





FIGURE 3 SOUTHBOUND APPROACH



FIGURE 4 EASTBOUND APPROACH



FIGURE 5 WESTBOUND APPROACH

## Crash Trends

21 crashes were reported in this area from 2017 to 2022, with 15 involving injuries. Of these crashes, 15 were angle crashes. 10 of these angle crashes involved southbound SR 61 vehicles and westbound SR 521 vehicles. 12 of the angle crashes involved injuries. One of these crashes involved a driver running the stop sign. There were no angle crashes involving eastbound and southbound drivers.

Other crashes included 3 fixed object crashes, with two on the northbound approach. The third fixed object crash involved a westbound driver striking a sign on the left side as the road curves slightly to the right. A backing crash, a left turn crash and one sideswipe crash involving a driver making a pass in the intersection also occurred here.

The crashes have occurred throughout the day, with an increase in the midday and late afternoon hours. Almost all of the crashes (95%) occurred in the daylight. The crashes are spread throughout the year, with an increase in the late summer and early fall.

Full crash data is available in the appendix.

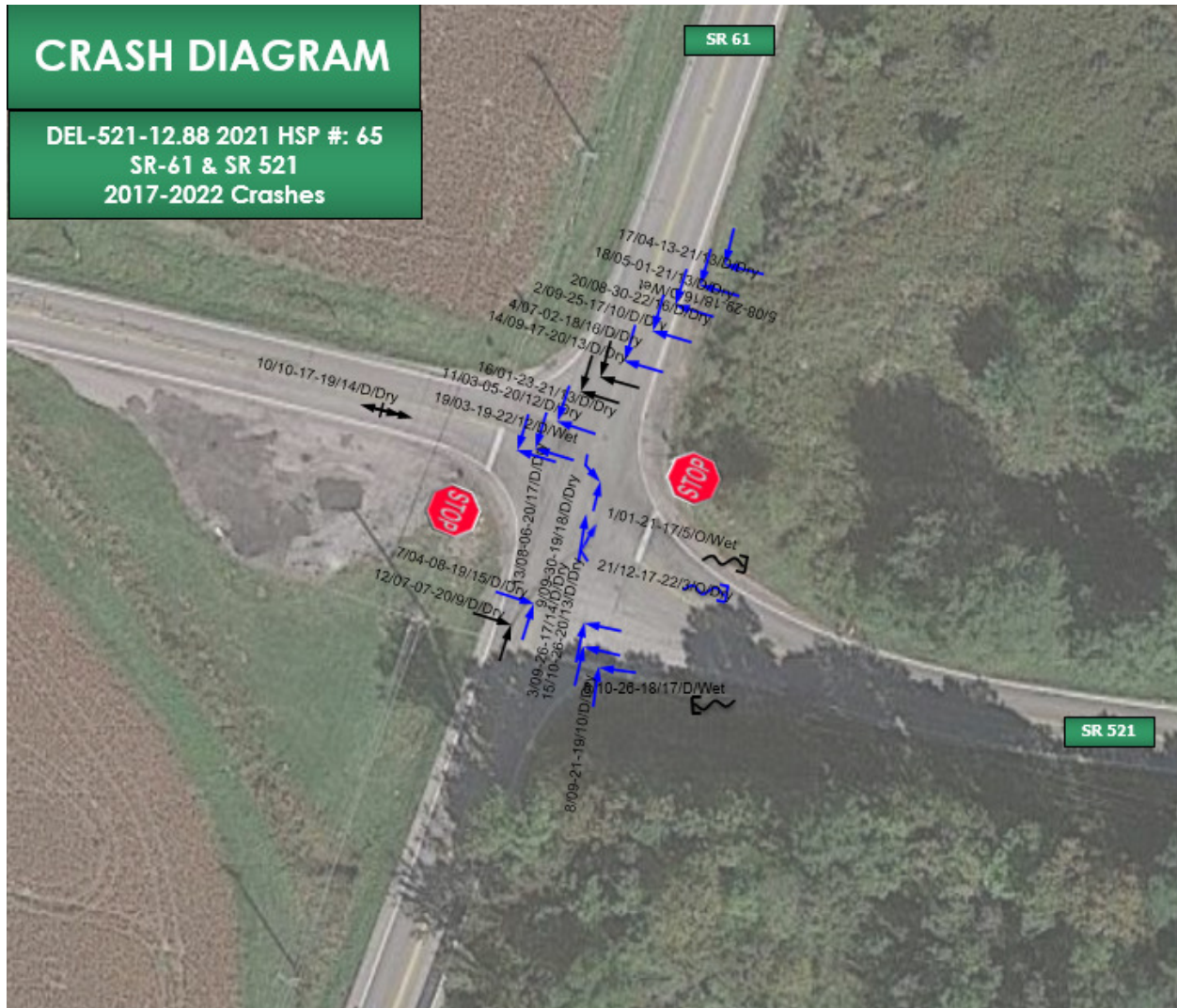


FIGURE 6 COLLISION DIAGRAM

## Recommendations

### Short Term

Maintain all existing signs and add intersection ahead signs to the SR 61 approaches. Also, review the sight distance, especially looking south.

### Long Term

Install a roundabout at the intersection. This would significantly reduce the angle crashes and resolve the intersection alignment issue. Also, a roundabout would have significantly less intersection delay compared to an all way stop.

# Appendix Crash Data



## DEL-521-12.88 (2017-22)

### Crash Summary Sheet

Fatalities	0
Serious Injuries	3
Other Injuries	25

Crash Severity	Crashes	%
(2) Serious Injury Suspected	1	4.76%
(3) Minor Injury Suspected	11	52.38%
(4) Injury Possible	3	14.29%
(5) PDO/No Injury	6	28.57%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Day of Week	Crashes	%
(2) Monday	5	23.81%
(3) Tuesday	4	19.05%
(4) Wednesday	1	4.76%
(5) Thursday	4	19.05%
(6) Friday	1	4.76%
(7) Saturday	6	28.57%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Hour of Day	Crashes	%
3	1	4.76%
5	1	4.76%
9	1	4.76%
10	2	9.52%
12	2	9.52%
13	5	23.81%
14	2	9.52%
15	1	4.76%
16	3	14.29%
17	2	9.52%
18	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Crashes Per Year	3.50
Fatal and All Injury Crashes	15
Percent Injury	71.4%
Equivalent PDO Index Value	6.50

Year	Crashes	%
2017	3	14.29%
2018	3	14.29%
2019	4	19.05%
2020	5	23.81%
2021	3	14.29%
2022	3	14.29%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Crash Type	Crashes	%
Angle	15	71.43%
Fixed Object	3	14.29%
Backing	1	4.76%
Sideswipe - Passing	1	4.76%
Left Turn	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Month	Crashes	%
1	2	9.52%
3	2	9.52%
4	2	9.52%
5	1	4.76%
7	2	9.52%
8	3	14.29%
9	5	23.81%
10	3	14.29%
12	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

**DEL-521-12.88 (2017-22)****Crash Summary Sheet**

Weather Condition	Crashes	%
Clear	13	61.90%
Cloudy	6	28.57%
Rain	2	9.52%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Road Condition	Crashes	%
Dry	17	80.95%
Wet	4	19.05%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Light Condition	Crashes	%
Daylight	19	90.48%
Dark - Roadway Not Lighted	2	9.52%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Number of Units	Crashes	%
2	15	71.43%
1	3	14.29%
3	2	9.52%
4	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

ODOT Location	Crashes	%
Four-Way Intersection	17	80.95%
Not An Intersection	2	9.52%
Data Not Valid or Not Provided	2	9.52%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Work Zone Related	Crashes	%
No	21	100.00%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Alcohol Related	Crashes	%
No	20	95.24%
Yes	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Drug Related (Inc. Marijuana)	Crashes	%
No	21	100.00%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Contour	Crashes	%
Curve Level	2	9.52%
Straight Grade	3	14.29%
Straight Level	16	76.19%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Marijuana Related	Crashes	%
No	21	100.00%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Roadway Departure	Crashes	%
No	17	80.95%
Yes	4	19.05%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Older Driver (65+)	Crashes	%
No	13	61.90%
Yes	8	38.10%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Intersection Related	Crashes	%
Yes	20	95.24%
No	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Young Driver (15-25)	Crashes	%
No	12	57.14%
Yes	9	42.86%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Speed Related	Crashes	%
No	18	85.71%
Yes	3	14.29%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Motorcycle Involved	Crashes	%
No	21	100.00%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

**DEL-521-12.88 (2017-22)****Crash Summary Sheet****Unit 1 Summary**

Unit 1 Pre-Crash Action	Crashes	%
Straight Ahead	16	76.19%
Making Left Turn	2	9.52%
Backing	1	4.76%
Entering Traffic Lane	1	4.76%
Negotiating a Curve	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Contributing Factor	Crashes	%
Failure to Yield	17	80.95%
Ran Stop Sign	1	4.76%
Swerving to Avoid	1	4.76%
Improper Backing	1	4.76%
Improper Lane Change	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Object Struck	Crashes	%
Nothing Struck	15	71.43%
Traffic Sign Post	3	14.29%
Tree	2	9.52%
Ditch	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Traffic Control	Crashes	%
Stop Sign	18	85.71%
No Control	3	14.29%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Posted Speed	Crashes	%
45	1	4.76%
55	20	95.24%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Direction From	Crashes	%
East	15	71.43%
West	4	19.05%
South	1	4.76%
Northeast	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 1 Direction To	Crashes	%
West	14	66.67%
East	5	23.81%
South	1	4.76%
North	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

**DEL-521-12.88 (2017-22)**

**Crash Summary Sheet**

**Unit 1 Summary**

Unit 1 Type	Crashes	%
Passenger Car	14	66.67%
Sport Utility Vehicle	3	14.29%
Pick up	2	9.52%
Unknown or Hit/Skip	1	4.76%
Single Unit Truck	1	4.76%
Grand Total	21	100.00%

Unit 1 Special Function	Crashes	%
None	21	100.00%
Grand Total	21	100.00%

**Crash Summary Sheet**

**Unit 2 Summary**

Unit 2 Pre-Crash Action	Crashes	%
Straight Ahead	16	76.19%
	3	14.29%
Slowing or Stopped In Traffic	1	4.76%
Making Left Turn	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 2 Contributing Factor	Crashes	%
None	18	85.71%
	3	14.29%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 2 Direction From	Crashes	%
	3	14.29%
North	9	42.86%
Northeast	1	4.76%
South	6	28.57%
Southwest	1	4.76%
West	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 2 Direction To	Crashes	%
	3	14.29%
East	1	4.76%
North	5	23.81%
Northeast	1	4.76%
South	9	42.86%
Southwest	1	4.76%
West	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 2 Type	Crashes	%
Passenger Car	9	42.86%
Sport Utility Vehicle	3	14.29%
	3	14.29%
Pick up	2	9.52%
Motorhome	1	4.76%
Cargo Van	1	4.76%
Single Unit Truck	1	4.76%
Passenger Van (minivan)	1	4.76%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>

Unit 2 Special Function	Crashes	%
None	18	85.71%
	3	14.29%
<b>Grand Total</b>	<b>21</b>	<b>100.00%</b>



## Appendix B: Traffic Counts



Ohio DOT - Traffic Operations  
1606 West Broad Street

Columbus, Ohio, United States 43223  
+16144667170 D06trafficcounts@dot.ohio.gov

Count Name: DEL-61-5.45  
Site Code:  
Start Date: 10/03/2023  
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	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	
6:00 AM	0	36	2	0	0	38	4	17	0	0	0	21	0	10	0	0	0	10	4	6	0	0	0	10	79
6:15 AM	0	33	5	0	0	38	5	21	1	0	0	27	0	12	1	0	0	13	1	4	1	0	0	6	84
6:30 AM	0	41	1	0	0	42	2	22	1	0	0	25	0	9	0	0	0	9	0	5	1	0	0	6	82
6:45 AM	0	39	4	0	0	43	5	16	1	0	0	22	0	12	1	0	0	13	2	11	0	0	0	13	91
Hourly Total	0	149	12	0	0	161	16	76	3	0	0	95	0	43	2	0	0	45	7	26	2	0	0	35	336
7:00 AM	1	36	5	0	0	42	2	29	1	0	0	32	0	9	1	0	0	10	0	12	0	0	0	12	96
7:15 AM	0	42	3	0	0	45	5	29	2	0	0	36	0	25	1	0	0	26	2	11	0	0	0	13	120
7:30 AM	0	27	3	0	0	30	6	33	2	0	0	41	0	21	1	0	0	22	0	9	0	0	0	9	102
7:45 AM	0	51	4	0	0	55	6	24	1	0	0	31	0	25	3	0	0	28	2	22	0	0	0	24	138
Hourly Total	1	156	15	0	0	172	19	115	6	0	0	140	0	80	6	0	0	86	4	54	0	0	0	58	456
8:00 AM	1	43	5	0	0	49	0	18	1	0	0	19	0	21	2	0	0	23	3	16	1	0	0	20	111
8:15 AM	3	42	2	0	0	47	0	20	0	0	0	20	0	23	1	0	0	24	4	10	0	0	0	14	105
8:30 AM	1	46	4	0	0	51	3	16	2	0	0	21	2	21	1	0	0	24	3	9	1	0	0	13	109
8:45 AM	0	28	6	0	0	34	4	18	3	0	0	25	0	30	3	0	0	33	7	9	1	0	0	17	109
Hourly Total	5	159	17	0	0	181	7	72	6	0	0	85	2	95	7	0	0	104	17	44	3	0	0	64	434
9:00 AM	0	24	3	0	0	27	4	11	0	0	0	15	1	20	4	0	0	25	3	9	0	0	0	12	79
9:15 AM	2	26	0	0	0	28	1	9	0	0	0	10	0	25	2	1	0	28	3	9	0	0	0	12	78
9:30 AM	2	18	1	0	0	21	2	13	0	0	0	15	0	13	2	0	0	15	0	6	1	0	0	7	58
9:45 AM	0	34	3	0	0	37	3	12	1	0	0	16	1	10	4	0	0	15	5	9	1	0	2	15	83
Hourly Total	4	102	7	0	0	113	10	45	1	0	0	56	2	68	12	1	0	83	11	33	2	0	2	46	298
10:00 AM	1	28	1	0	0	30	1	11	1	0	0	13	0	18	3	0	0	21	2	7	0	0	0	9	73
10:15 AM	0	24	3	1	0	28	5	9	1	0	0	15	0	19	1	0	0	20	3	9	1	0	0	13	76
10:30 AM	0	23	2	0	0	25	2	14	0	0	0	16	0	19	3	0	0	22	1	4	1	0	0	6	69
10:45 AM	0	28	0	0	0	28	2	2	0	0	0	4	0	18	1	0	0	19	2	8	0	0	0	10	61
Hourly Total	1	103	6	1	0	111	10	36	2	0	0	48	0	74	8	0	0	82	8	28	2	0	0	38	279
11:00 AM	0	18	2	0	0	20	4	8	1	0	0	13	0	19	4	0	0	23	3	10	0	0	0	13	69
11:15 AM	0	16	2	0	0	18	3	7	0	0	0	10	0	16	0	0	0	16	1	4	2	0	0	7	51
11:30 AM	2	33	4	0	0	39	4	8	0	0	0	12	0	13	3	0	0	16	2	8	1	0	0	11	78
11:45 AM	2	27	5	0	0	34	3	7	0	0	0	10	0	25	1	0	0	26	1	17	2	0	0	20	90
Hourly Total	4	94	13	0	0	111	14	30	1	0	0	45	0	73	8	0	0	81	7	39	5	0	0	51	288
12:00 PM	0	28	2	0	0	30	3	10	0	0	0	13	0	29	4	0	0	33	6	7	2	0	0	15	91
12:15 PM	1	18	6	0	0	25	6	6	0	0	0	12	0	42	1	0	0	43	0	14	1	0	0	15	95
12:30 PM	2	22	2	0	0	26	7	3	0	0	0	10	1	17	0	0	0	18	2	9	1	0	0	12	66
12:45 PM	2	15	2	0	0	19	6	8	1	0	0	15	0	22	0	0	0	22	1	10	0	0	0	11	67
Hourly Total	5	83	12	0	0	100	22	27	1	0	0	50	1	110	5	0	0	116	9	40	4	0	0	53	319

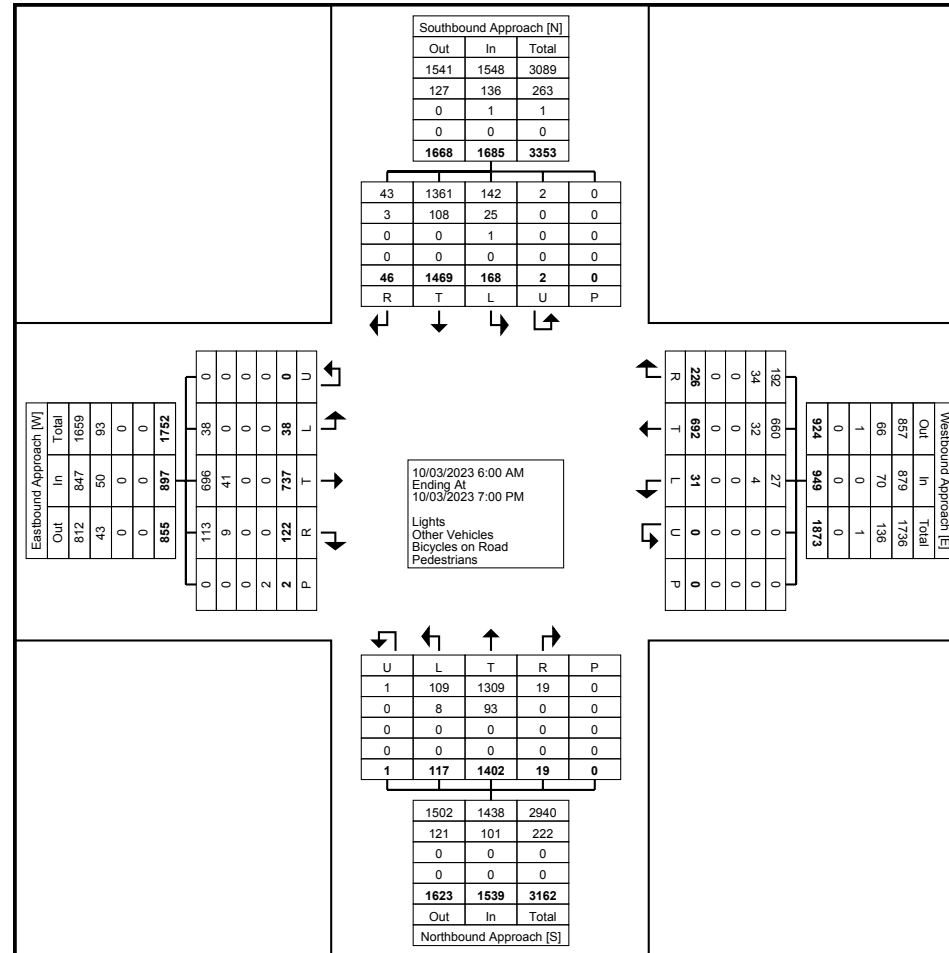
1:00 PM	0	24	5	0	0	29	4	7	0	0	0	11	1	30	0	0	0	31	1	13	0	0	0	14	85
1:15 PM	0	22	4	0	0	26	8	8	1	0	0	17	0	29	3	0	0	32	1	7	1	0	0	9	84
1:30 PM	0	21	2	0	0	23	3	8	0	0	0	11	0	31	3	0	0	34	3	10	0	0	0	13	81
1:45 PM	1	29	5	1	0	36	2	8	0	0	0	10	1	25	1	0	0	27	0	7	1	0	0	8	81
Hourly Total	1	96	16	1	0	114	17	31	1	0	0	49	2	115	7	0	0	124	5	37	2	0	0	44	331
2:00 PM	2	30	2	0	0	34	6	13	0	0	0	19	1	20	4	0	0	25	1	11	1	0	0	13	91
2:15 PM	2	22	0	0	0	24	3	10	1	0	0	14	2	22	1	0	0	25	4	18	0	0	0	22	85
2:30 PM	1	29	4	0	0	34	6	18	2	0	0	26	0	15	0	0	0	15	2	13	3	0	0	18	93
2:45 PM	2	29	4	0	0	35	6	13	0	0	0	19	0	24	1	0	0	25	3	19	0	0	0	22	101
Hourly Total	7	110	10	0	0	127	21	54	3	0	0	78	3	81	6	0	0	90	10	61	4	0	0	75	370
3:00 PM	1	32	2	0	0	35	5	12	1	0	0	18	1	39	3	0	0	43	5	17	0	0	0	22	118
3:15 PM	2	29	3	0	0	34	5	12	0	0	0	17	0	41	5	0	0	46	2	19	0	0	0	21	118
3:30 PM	0	36	3	0	0	39	6	6	0	0	0	12	0	40	4	0	0	44	0	26	0	0	0	26	121
3:45 PM	1	17	1	0	0	19	12	19	0	0	0	31	1	64	6	0	0	71	3	19	2	0	0	24	145
Hourly Total	4	114	9	0	0	127	28	49	1	0	0	78	2	184	18	0	0	204	10	81	2	0	0	93	502
4:00 PM	1	24	5	0	0	30	6	14	0	0	0	20	1	46	2	0	0	49	3	31	3	0	0	37	136
4:15 PM	2	22	2	0	0	26	4	13	1	0	0	18	1	55	2	0	0	58	5	46	2	0	0	53	155
4:30 PM	1	24	3	0	0	28	8	19	1	0	0	28	1	47	5	0	0	53	2	27	2	0	0	31	140
4:45 PM	1	26	5	0	0	32	9	9	0	0	0	18	0	39	3	0	0	42	2	29	1	0	0	32	124
Hourly Total	5	96	15	0	0	116	27	55	2	0	0	84	3	187	12	0	0	202	12	133	8	0	0	153	555
5:00 PM	1	34	7	0	0	42	10	12	3	0	0	25	2	39	5	0	0	46	3	26	0	0	0	29	142
5:15 PM	1	28	3	0	0	32	6	23	1	0	0	30	0	51	4	0	0	55	5	17	1	0	0	23	140
5:30 PM	1	35	3	0	0	39	2	13	0	0	0	15	0	37	2	0	0	39	3	25	0	0	0	28	121
5:45 PM	3	34	7	0	0	44	4	23	0	0	0	27	0	53	3	0	0	56	7	29	0	0	0	36	163
Hourly Total	6	131	20	0	0	157	22	71	4	0	0	97	2	180	14	0	0	196	18	97	1	0	0	116	566
6:00 PM	1	15	5	0	0	21	6	7	0	0	0	13	0	36	1	0	0	37	1	13	0	0	0	14	85
6:15 PM	1	30	5	0	0	36	1	7	0	0	0	8	1	25	5	0	0	31	0	21	2	0	0	23	98
6:30 PM	1	12	3	0	0	16	4	9	0	0	0	13	0	26	3	0	0	29	2	17	1	0	0	20	78
6:45 PM	0	19	3	0	0	22	2	8	0	0	0	10	1	25	3	0	0	29	1	13	0	0	0	14	75
Hourly Total	3	76	16	0	0	95	13	31	0	0	0	44	2	112	12	0	0	126	4	64	3	0	0	71	336
Grand Total	46	1469	168	2	0	1685	226	692	31	0	0	949	19	1402	117	1	0	1539	122	737	38	0	2	897	5070
Approach %	2.7	87.2	10.0	0.1	-	-	23.8	72.9	3.3	0.0	-	-	1.2	91.1	7.6	0.1	-	-	13.6	82.2	4.2	0.0	-	-	-
Total %	0.9	29.0	3.3	0.0	-	33.2	4.5	13.6	0.6	0.0	-	18.7	0.4	27.7	2.3	0.0	-	30.4	2.4	14.5	0.7	0.0	-	17.7	-
Lights	43	1361	142	2	-	1548	192	660	27	0	-	879	19	1309	109	1	-	1438	113	696	38	0	-	847	4712
% Lights	93.5	92.6	84.5	100.0	-	91.9	85.0	95.4	87.1	-	-	92.6	100.0	93.4	93.2	100.0	-	93.4	92.6	94.4	100.0	-	-	94.4	92.9
Other Vehicles	3	108	25	0	-	136	34	32	4	0	-	70	0	93	8	0	-	101	9	41	0	0	-	50	357
% Other Vehicles	6.5	7.4	14.9	0.0	-	8.1	15.0	4.6	12.9	-	-	7.4	0.0	6.6	6.8	0.0	-	6.6	7.4	5.6	0.0	-	-	5.6	7.0
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.6	0.0	-	0.1	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
Pedestrians	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-



Ohio DOT - Traffic Operations  
1606 West Broad Street

Columbus, Ohio, United States 43223  
+16144667170 D06trafficcounts@dot.ohio.gov

Count Name: DEL-61-5.45  
Site Code:  
Start Date: 10/03/2023  
Page No: 3



Turning Movement Data Plot



Ohio DOT - Traffic Operations  
1606 West Broad Street

Columbus, Ohio, United States 43223  
+16144667170 D06trafficcounts@dot.ohio.gov

Count Name: DEL-61-5.45  
Site Code:  
Start Date: 10/03/2023  
Page No: 4

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

Start Time	Southbound Approach Southbound						Westbound Approach Westbound						Northbound Approach Northbound						Eastbound Approach Eastbound						Int. 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	Right	Thru	Left	U-Turn	Peds	App. Total	
7:15 AM	0	42	3	0	0	45	5	29	2	0	0	36	0	25	1	0	0	26	2	11	0	0	0	13	120
7:30 AM	0	27	3	0	0	30	6	33	2	0	0	41	0	21	1	0	0	22	0	9	0	0	0	9	102
7:45 AM	0	51	4	0	0	55	6	24	1	0	0	31	0	25	3	0	0	28	2	22	0	0	0	24	138
8:00 AM	1	43	5	0	0	49	0	18	1	0	0	19	0	21	2	0	0	23	3	16	1	0	0	20	111
<b>Total</b>	<b>1</b>	<b>163</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>179</b>	<b>17</b>	<b>104</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>127</b>	<b>0</b>	<b>92</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>99</b>	<b>7</b>	<b>58</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>66</b>	<b>471</b>
Approach %	0.6	91.1	8.4	0.0	-	-	13.4	81.9	4.7	0.0	-	-	0.0	92.9	7.1	0.0	-	-	10.6	87.9	1.5	0.0	-	-	-
Total %	0.2	34.6	3.2	0.0	-	38.0	3.6	22.1	1.3	0.0	-	27.0	0.0	19.5	1.5	0.0	-	21.0	1.5	12.3	0.2	0.0	-	14.0	-
PHF	0.250	0.799	0.750	0.000	-	0.814	0.708	0.788	0.750	0.000	-	0.774	0.000	0.920	0.583	0.000	-	0.884	0.583	0.659	0.250	0.000	-	0.688	0.853
Lights	1	147	14	0	-	162	15	100	6	0	-	121	0	85	7	0	-	92	7	55	1	0	-	63	438
% Lights	100.0	90.2	93.3	-	-	90.5	88.2	96.2	100.0	-	-	95.3	-	92.4	100.0	-	-	92.9	100.0	94.8	100.0	-	-	95.5	93.0
Other Vehicles	0	16	1	0	-	17	2	4	0	0	-	6	0	7	0	0	-	7	0	3	0	0	-	3	33
% Other Vehicles	0.0	9.8	6.7	-	-	9.5	11.8	3.8	0.0	-	-	4.7	-	7.6	0.0	-	-	7.1	0.0	5.2	0.0	-	-	4.5	7.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% 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
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

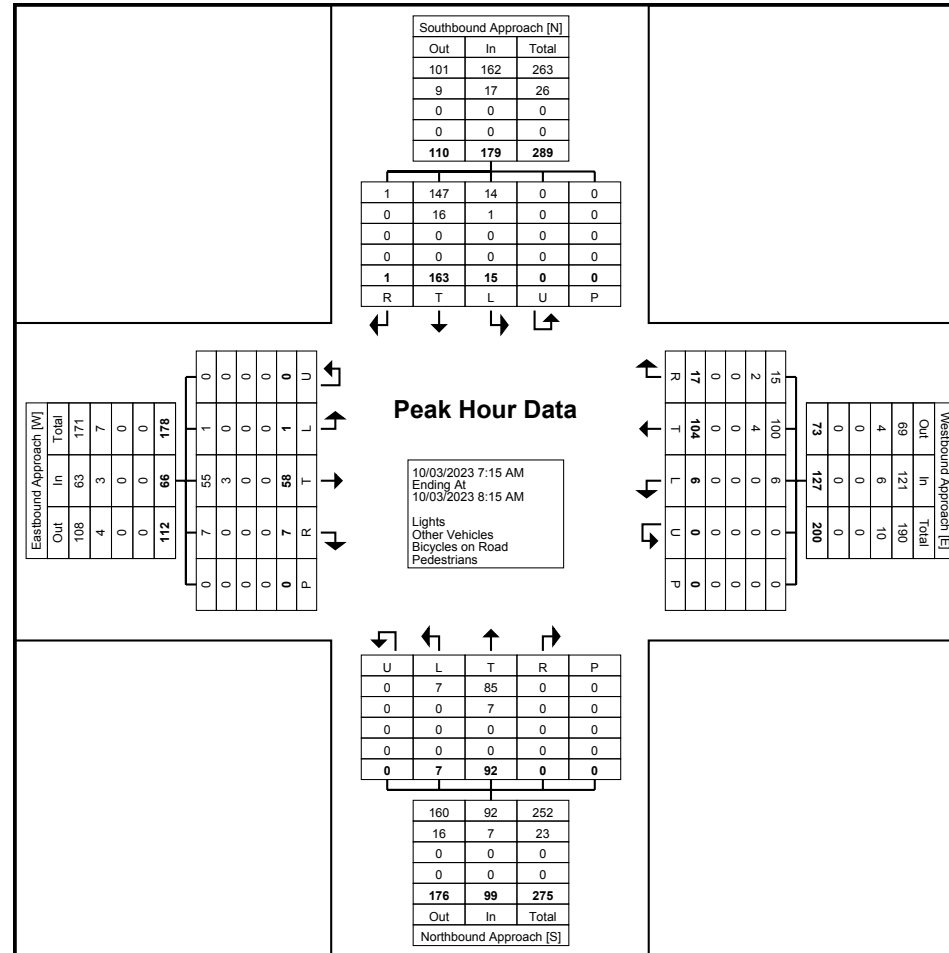




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Count Name: DEL-61-5.45  
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Start Date: 10/03/2023  
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Turning Movement Peak Hour Data Plot (7:15 AM)

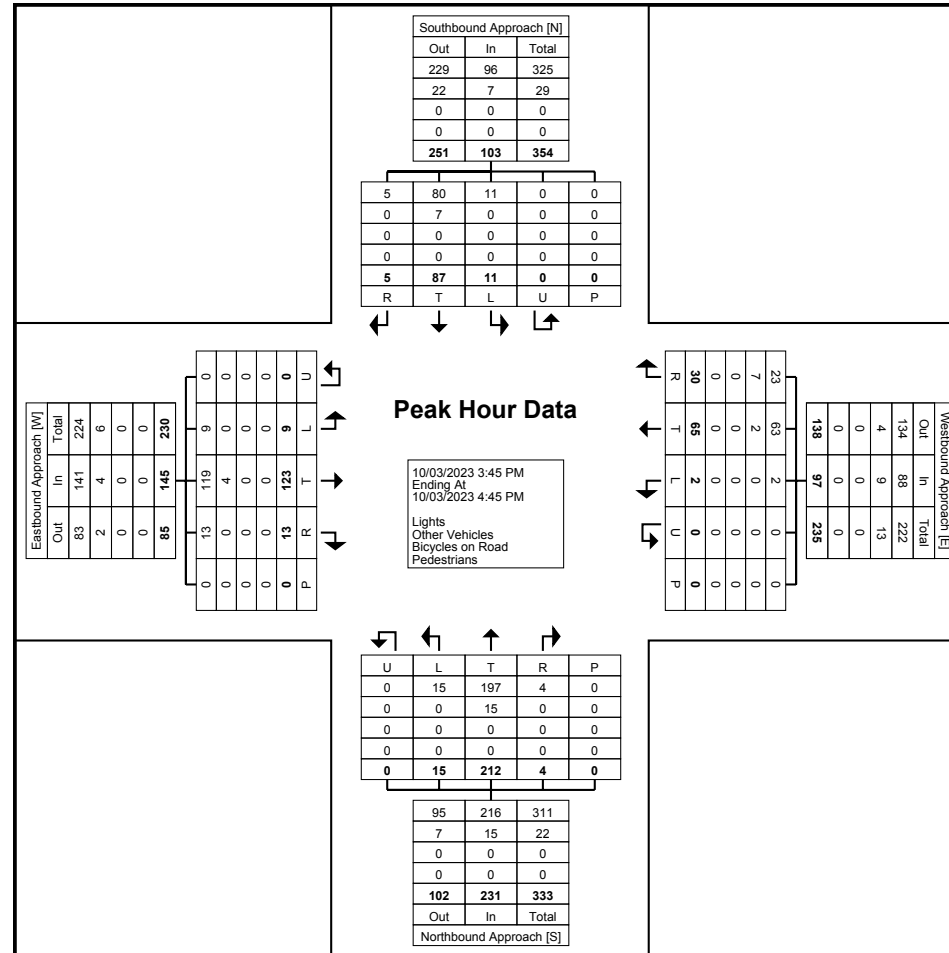




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Count Name: DEL-61-5.45  
Site Code:  
Start Date: 10/03/2023  
Page No: 7



Turning Movement Peak Hour Data Plot (3:45 PM)

## Appendix C: Signal Warrant Analysis

## STUDY AND ANALYSIS INFORMATION

Municipality:		Traffic Volumes Obtained By:	ODOT District 6
County:	Delaware	Analysis Date:	11/28/2023
ODOT Engineering District:	6	Agency/ Company Name Performing Warrant Analysis:	ODOT District 6
Google map link:	<a href="#">Map</a>		

### Analysis Information

Data Collection Date:

Day of the Week:

Is the intersection in a built-up area of an isolated community of <10,000 population?

Existing Traffic Signal at intersection:

Total Number of Approaches at Intersection:

### Major Street Information

Major Street Name and Route Number:

Major Street Approach Direction:

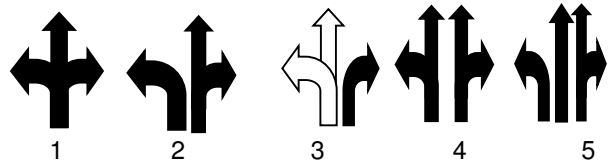
Number of Thru Lanes on Each Major Street Approach:  LANE(S)

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

### Minor Street Information

Minor Street Name and Route Number:

Minor Street Approach Configuration:  E-Bound  
 W-Bound



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

Apply Right Turn Lane Reduction\*:

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



## TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Warrant		Notes and Comments:			
	Applicable?	Satisfied?				
<b>Warrant 1, Eight-Hour Vehicular Volume</b>	Yes	No				
<b>Warrant 2, Four-Hour Vehicular Volume</b>	Yes	No				
<b>Warrant 3, Peak Hour</b>	Yes	No	Signals installed under Warrant 3 should be traffic actuated. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;"><b>Peak Hour</b></td></tr> <tr><td style="text-align: center;">3:45 PM</td></tr> <tr><td style="text-align: center;">4:45 PM</td></tr> </table>	<b>Peak Hour</b>	3:45 PM	4:45 PM
<b>Peak Hour</b>						
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)						
<b>Warrant 4, Pedestrian Volume</b>	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. <table border="1" style="float: right; margin-top: 5px;"> <tr><td style="text-align: center;"><b>Peak Hour</b></td></tr> <tr><td style="text-align: center;">5:00 PM</td></tr> <tr><td style="text-align: center;">6:00 PM</td></tr> </table>	<b>Peak Hour</b>	5:00 PM	6:00 PM
<b>Peak Hour</b>						
5:00 PM						
6:00 PM						
<b>Warrant 5, School Crossing</b>	No		N/A			
<b>Warrant 6, Coordinated Signal System</b>	No		(Shall not be used as the sole warrant in the analysis)			
<b>Warrant 7, Crash Experience</b>	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.			
<b>Warrant 8, Roadway Network</b>	No		(Shall not be used as the sole warrant in the analysis)			
<b>Warrant 9, Intersection Near a Grade Crossing</b>	No		Figure 4C-9			
<b>Multi-Way Stop Warrant</b>	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 <b>Modeling and Forecasting Section</b> 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. <b>Please fill inputs on PHB Score Sheet and submit to ODOT.</b>

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: Do Not Install New Traffic Signal

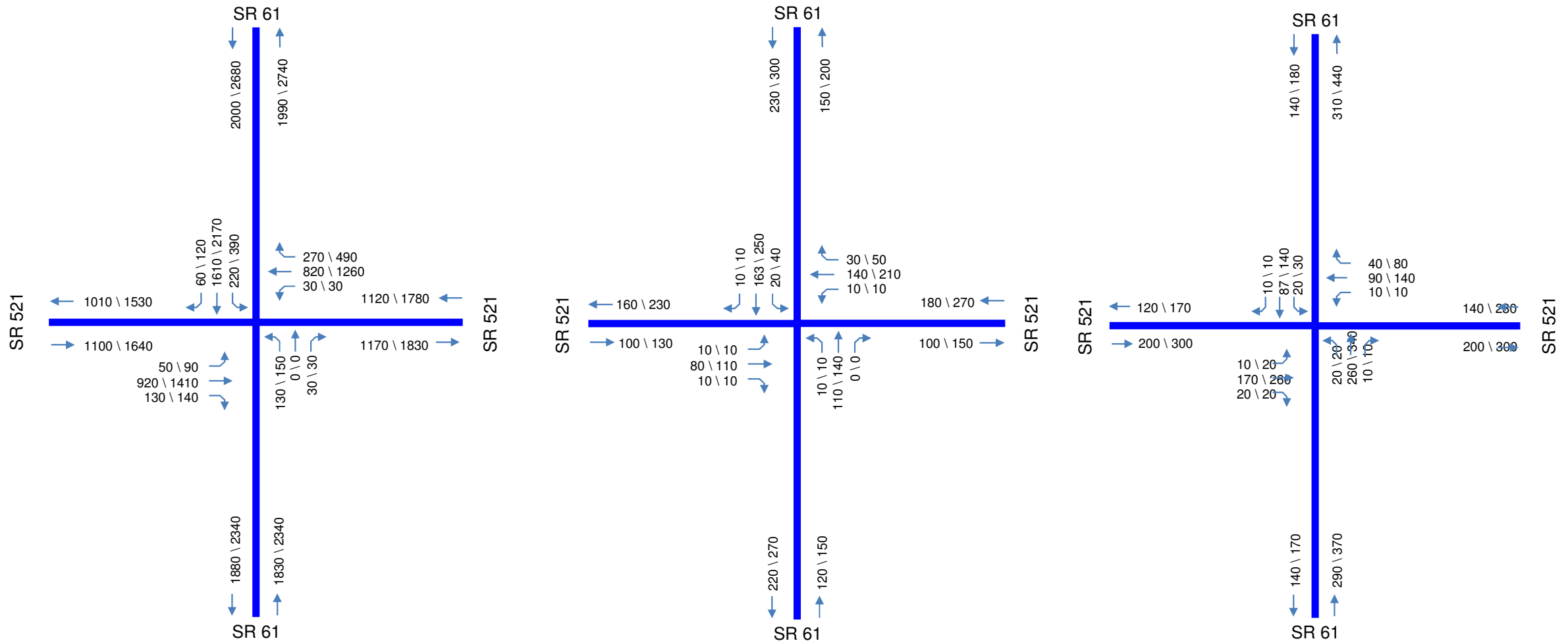
Notes:

## Appendix D: Traffic Forecast

2028 \ 2048 24 Hr  
 Open Yr \ Design Yr  
 Total Turn Volumes

2028 \ 2048 AM  
 Open Yr \ Design Yr  
 Total Turn Volumes

2028 \ 2048 PM  
 Open Yr \ Design Yr  
 Total Turn Volumes



DEL-521-12.88	PID XXXXX
ADT, AM, PM DHV	
OHIO DEPARTMENT OF TRANSPORTATION	
OCTOBER 25, 2023	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	2023.1900

## Forecast Summary

Project ID	Project Name	Opening Year	Design Year
	DEL-61 and 521	2028	2048

### Project Description

safety study

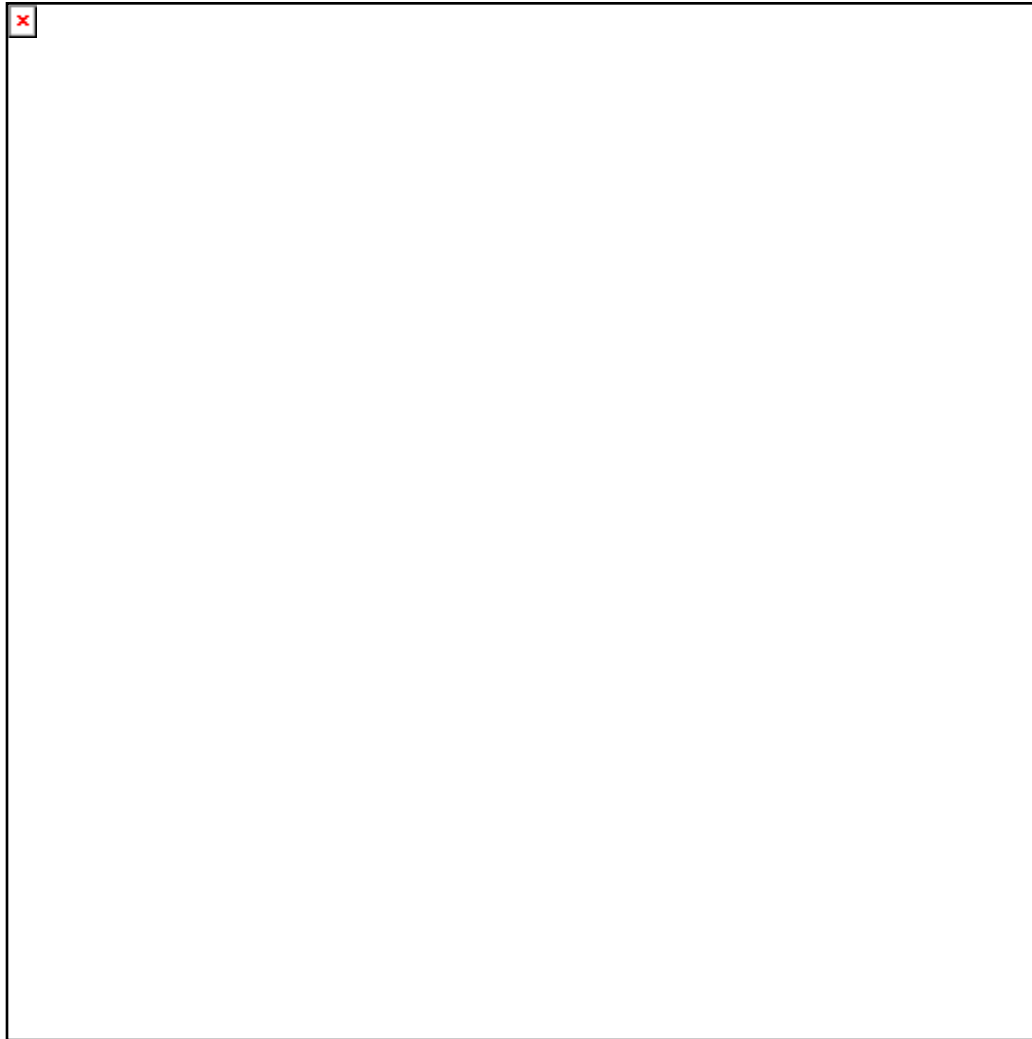
\*Users of this data need to be aware that there are limitations to the forecasts generated by this product that make it suitable only for roadway design projects which are low risk.

## Segment Information

Segment ID	LRS ID	BMP	EMP	Length	Latitude	Longitude
1833371	SDELSR00061**C	4.792	5.440	0.648	-82.8449788478488	40.3156181365217
1833373	SDELSR00061**C	5.440	7.846	2.406	-82.8355049798072	40.3365169479709
1833467	SDELSR00521**C	7.269	12.884	5.615	-82.8952287935474	40.3255681798129
1833469	SDELSR00521**C	12.884	13.585	0.701	-82.8365318633078	40.3195173449521

# Forecast Information

Segment ID	2028 AADT	2048 AADT	DHV-30	K%	D%	T24%	TD%
1833371	3,800	4,700	750	16.2	69.2	18	15
1833373	4,700	6,300	850	13.6	57.7	10	4
1833467	2,200	3,300	550	16.0	62.5	11	11
1833469	2,400	3,700	550	14.8	62.6	8	5



#### Definitions:

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

Forecast Segment ID	Route	BMP	EMP
1833371	SDELSR00061**C	4.792	5.440

## Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 16.2	11	4,000	Model	0.900	0.900
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
4,870	◆ 69.2	9	870	Model	4.600	4.600

◆ K/D factors from TCDS were used.

## Regression

Method Number	PA AADT	BC AADT	AADT
2	4,015	831	4,846

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
398	9131	653	1015	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	1.62	4.00	0	0	4,948	789	4,634	806
2	0.93	4.24	5	5	4,057	825	4,015	831
3	1.99	4.02	0	0	5,332	791	4,970	808
4	1.17	4.30	5	5	4,314	833	4,238	838
5	1.58	4.33	0	0	4,929	827	4,600	841
6	0.86	4.58	5	5	4,011	864	3,957	867

## 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	-491	4,885	18	861	0.94	4.52
2	RAT	0.88	4,726	1.05	884	0.73	4.74
3	MRAT	1.32	4,765	2.33	871	0.79	4.61
4	RAF		4,825		866	0.86	4.57

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Average	0.900	4.600

### Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
3842	4024	861	884	4703	4908

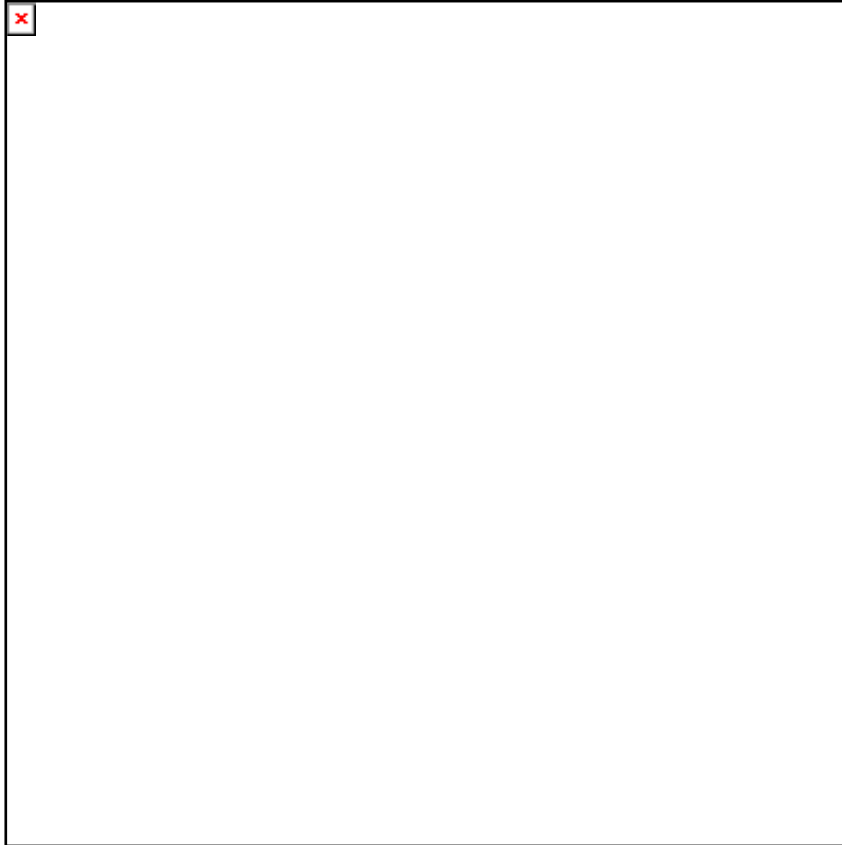
Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

## Historical Count

Year	All	Cars	Trucks
2008	3,030	2,880	150
2012	3,026	2,806	220
2013	3,114	2,888	226
2016	3,506	3,240	265
2019	4,146	3,849	297
* 2022	3,569	3,189	380

\* Pivot Point





Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1833371	SDELSR00061**C	4.792	5.440	0.648	3,800	4,700	750	16.2	69.2	18	15

Forecast Segment ID	Route	BMP	EMP
1833373	SDELSR00061**C	5.440	7.846

## Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 13.6	7	5,900	Model	1.900	1.900
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
6,520	◆ 57.7	3	620	Model	■ 6.800	4.000

■ Warning: The truck growth rate was exceeded the maximum and was capped at 6.800%

◆ K/D factors from TCDS were used.

## Regression

Method Number	PA AADT	BC AADT	AADT
2	5,411	568	5,979

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
2475	10679	-255	1722	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	2.01	4.71	0	0	6,255	741	6,030	682
2	1.44	3.33	5	5	5,364	578	5,411	568
3	2.55	6.40	0	0	6,925	900	6,617	821
4	1.89	4.82	5	5	5,925	719	5,898	691
5	2.38	5.37	0	0	6,723	808	6,431	736
6	1.79	4.00	5	5	5,814	646	5,795	623

## 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	-2,137	7,072	-637	1,162	1.90	10.54
2	RAT	0.66	6,080	0.32	568	1.53	3.33
3	MRAT	1.46	6,395	1.93	855	1.56	6.81
4	RAF		6,734		1,008	1.73	8.67
Adjust Method AADT		Adjust Method BC		Selected PA Growth Rate %		Selected BC Growth Rate %	
Average		Model Ratio		1.900		6.800	

### Method 1 - 4 Volume

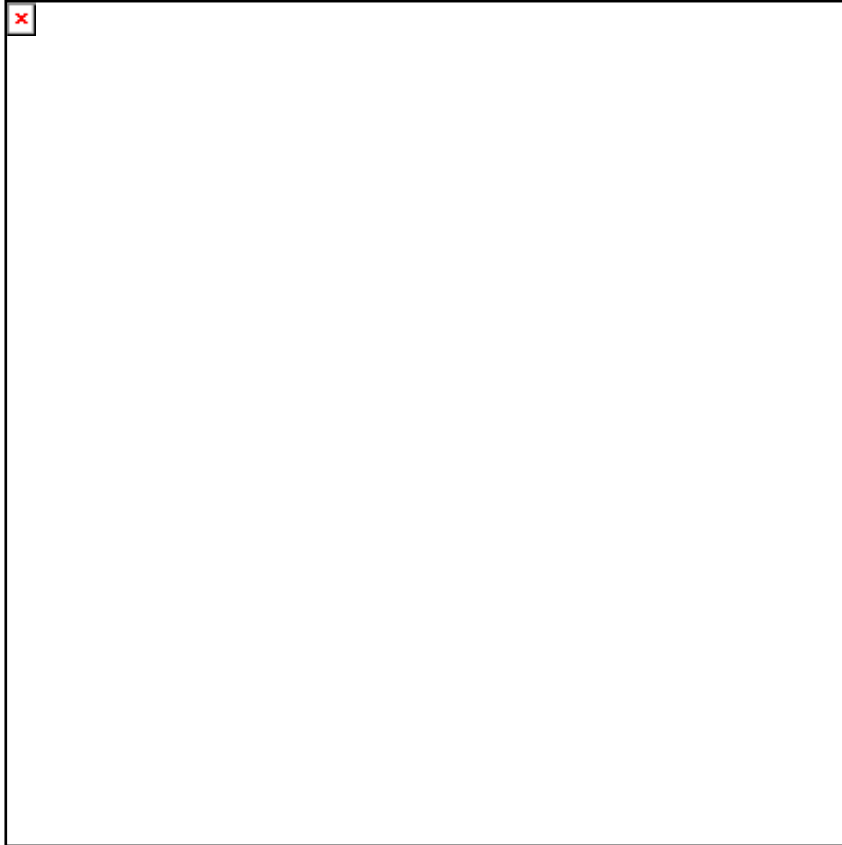
PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
5512	5910	568	1162	6080	7072

Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

## Historical Count

Year	All	Cars	Trucks
2008	3,370	3,170	200
2012	3,286	3,126	160
2013	3,381	3,216	165
2016	3,836	3,520	315
2019	4,754	4,351	403
* 2022	4,152	3,858	294

\* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1833373	SDELSR00061**C	5.440	7.846	2.406	4,700	6,300	850	13.6	57.7	10	4

Forecast Segment ID	Route	BMP	EMP
1833467	SDELSR00521**C	7.269	12.884

## Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 16.0	10	3,100	Average	▲ 3.200	3.000
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
3,480	◆ 62.5	9	380	Model	■ 7.100	4.000

▲ Warning: The car growth rate was exceeded the maximum and was capped at 3.200%

■ Warning: The truck growth rate was exceeded the maximum and was capped at 7.100%

◆ K/D factors from TCDS were used.

## Regression

Method Number	PA AADT	BC AADT	AADT
2	2,293	319	2,612

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
1593	4081	-77	1148	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	1.60	3.71	0	0	2,481	362	2,425	361
2	1.32	2.87	5	3	2,291	326	2,293	319
3	2.00	8.74	0	0	2,693	647	2,611	610
4	1.68	9.02	5	4	2,484	647	2,461	624
5	1.77	7.57	0	0	2,580	584	2,507	552
6	1.49	9.14	5	4	2,392	653	2,375	630

## 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	-1,111	4,889	-739	836	5.07	13.30
2	RAT	0.63	3,750	0.19	304	3.78	2.56
3	MRAT	2.03	4,327	1.72	527	4.53	7.06
4	RAF		4,608		681	4.80	10.17

Adjust Method AADT	Adjust Method BC	Selected PA Growth Rate %	Selected BC Growth Rate %
Average	Model Ratio	5.100	7.100

### Method 1 - 4 Volume

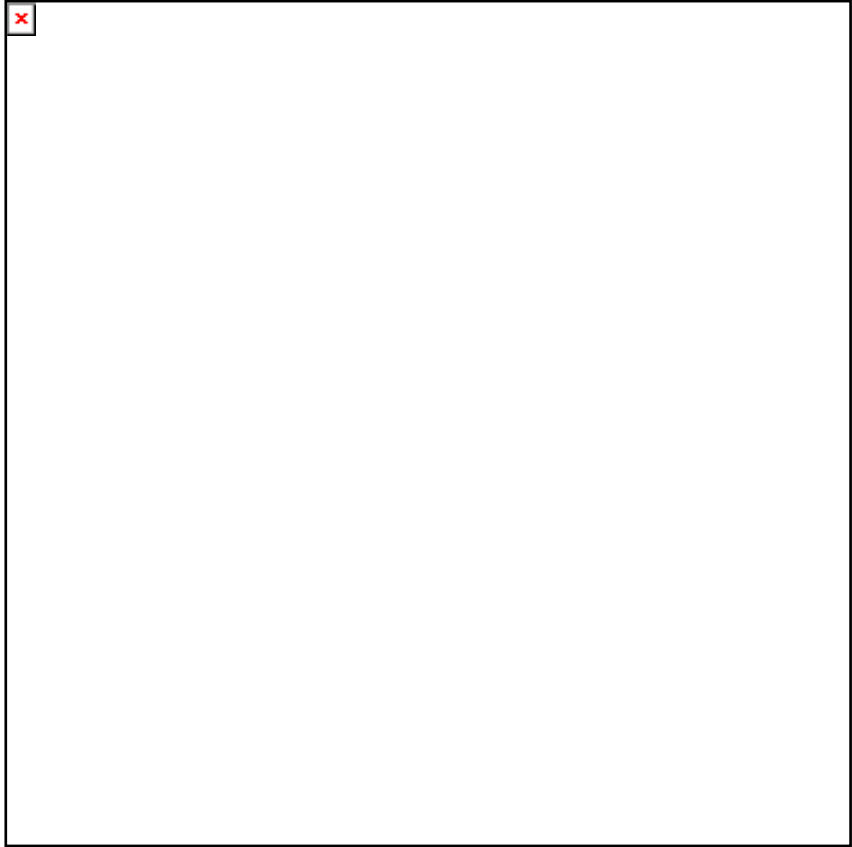
PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
3446	4081	304	836	3750	4917

Process Flag:	Adjusted model to counts with process per ODOT 255 spreadsheet
Comment:	No Comment

## Historical Count

Year	All	Cars	Trucks
2008	1,570	1,410	160
2012	1,434	1,392	42
2013	1,476	1,433	43
2016	1,778	1,591	186
2019	1,944	1,757	187
* 2022	1,852	1,675	177

\* Pivot Point



Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1833467	SDELSR00521**C	7.269	12.884	5.615	2,200	3,300	550	16.0	62.5	11	11

Forecast Segment ID	Route	BMP	EMP
1833469	SDELSR00521**C	12.884	13.585

## Forecast

Year	K%	T24 % (Existing)	PA AADT	PA Method	PA Growth Rate %	PA Calculated Rate %
2050	◆ 14.8	11	3,500	Model	3.300	3.300
AADT	D%	TD % (Existing)	BC AADT	BC Method	BC Growth Rate %	BC Calculated Rate %
3,810	◆ 62.6	7	310	Model	1.600	1.600

◆ K/D factors from TCDS were used.

## Regression

Method Number	PA AADT	BC AADT	AADT
2	3,667	299	3,966

95% Confidence Min/Max

PA Min	PA Max	BC Min	BC Max	Year
1807	4402	25	877	2050

Method Number	PA Growth %	BC Growth %	PA Drop Count	BC Drop Count	PA AADT	BC AADT	PA Adjustment	PA Adjustment
1	2.18	2.41	0	0	2,831	383	2,953	362
2	3.57	1.37	1	5	3,645	292	3,667	299
3	3.57	3.90	0	0	3,645	486	3,667	452
4	3.60	2.71	4	5	3,645	386	3,680	380
5	3.66	3.62	0	0	3,696	467	3,714	435
6	3.85	2.56	4	5	3,781	376	3,809	371



## 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	-127	3,868	-122	329	3.32	1.87
2	RAT	0.94	3,762	0.64	288	3.20	1.19
3	MRAT	1.84	3,810	1.33	298	3.27	1.36
4	RAF		3,839		314	3.30	1.62
Adjust Method AADT		Adjust Method BC		Selected PA Growth Rate %		Selected BC Growth Rate %	
Average		Average		3.300		1.600	

### Method 1 - 4 Volume

PA Min Volume	PA Max Volume	BC Min Volume	BC Max Volume	Total Min Volume	Total MaxVolume
3474	3539	288	329	3762	3868

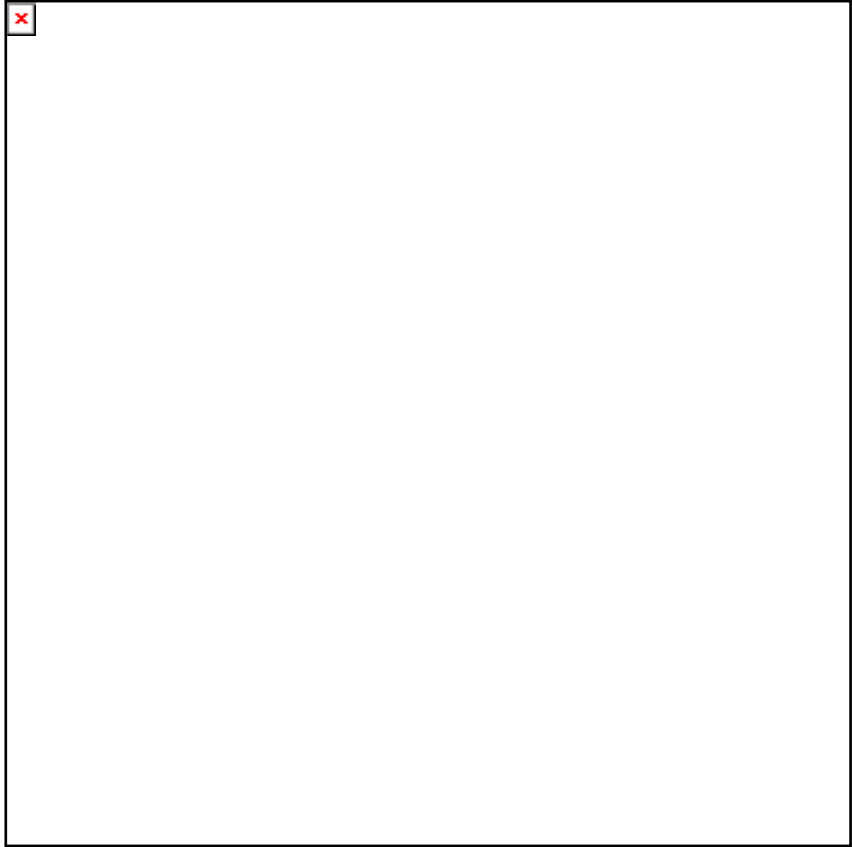
Process Flag: Adjusted model to counts with process per ODOT 255 spreadsheet

Comment: No Comment

## Historical Count

Year	All	Cars	Trucks
2008	1,550	1,360	190
2012	1,329	1,170	160
2013	1,345	1,184	161
2016	1,686	1,484	202
2019	1,824	1,552	272
* 2022	2,049	1,833	216

\* Pivot Point



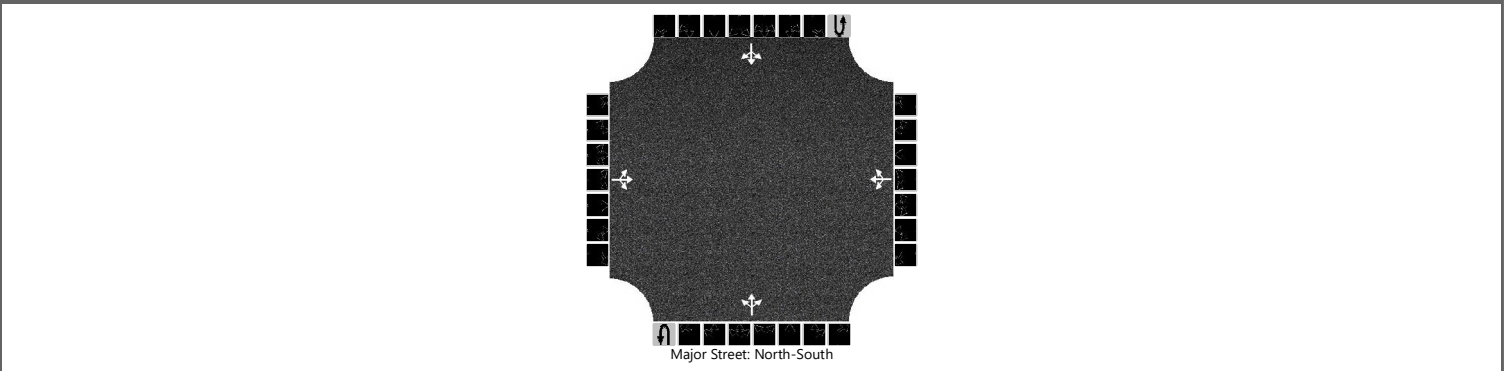
Segment ID	LRS ID	BMP	EMP	Length	Yr 2028 AADT	Yr 2048 AADT	DHV30	K %	D %	T24 %	TD %
1833469	SDELSR00521**C	12.884	13.585	0.701	2,400	3,700	550	14.8	62.6	8	5

## Appendix E: Capacity Analysis

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst		Intersection	SR 61 & SR 521				
Agency/Co.		Jurisdiction					
Date Performed	11/6/2023	East/West Street	SR 521				
Analysis Year	2028	North/South Street	SR 61				
Time Analyzed	2028 AM	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	No Build						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	80	10		10	140	30		10	110	10		20	200	10
Percent Heavy Vehicles (%)		4	4	4		5	5	5		9				9		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.14	6.54	6.24		7.15	6.55	6.25		4.19				4.19		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.54	4.04	3.34		3.55	4.05	3.35		2.28				2.28		

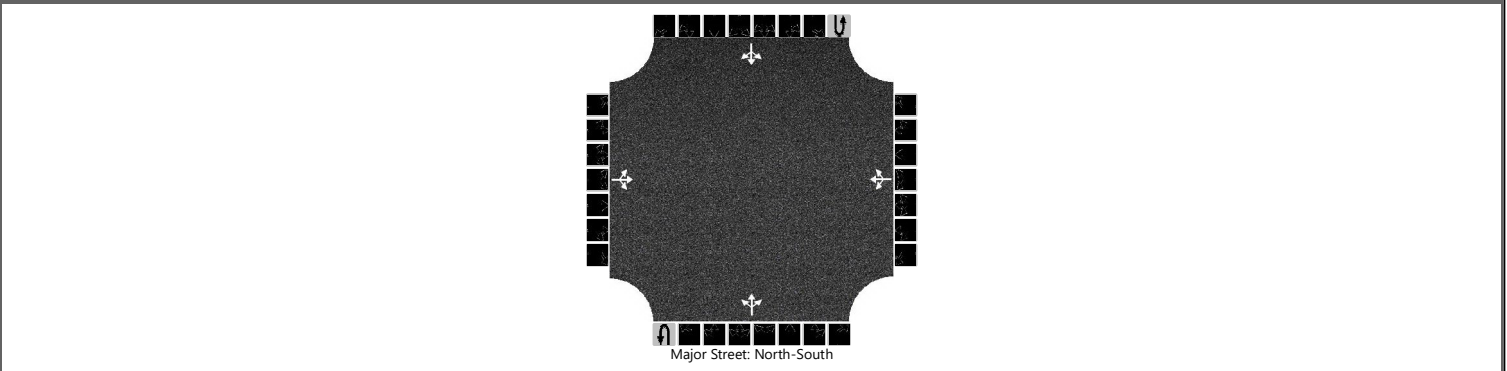
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			109				196				11				22	
Capacity, c (veh/h)			496				540				1300				1413	
v/c Ratio			0.22				0.36				0.01				0.02	
95% Queue Length, Q <sub>95</sub> (veh)			0.8				1.6				0.0				0.0	
Control Delay (s/veh)			14.3				15.4				7.8	0.1	0.1		7.6	0.1
Level of Service (LOS)			B				C				A	A	A		A	A
Approach Delay (s/veh)	14.3				15.4				0.7				0.8			
Approach LOS	B				C				A				A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst		Intersection	SR 61 & SR 521				
Agency/Co.		Jurisdiction					
Date Performed	11/6/2023	East/West Street	SR 521				
Analysis Year	2028	North/South Street	SR 61				
Time Analyzed	2028 PM	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	No Build						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	170	20		10	90	40		20	260	10		20	110	10
Percent Heavy Vehicles (%)		3	3	3		6	6	6		7				8		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.16	6.56	6.26		4.17				4.18		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.55	4.05	3.35		2.26				2.27		

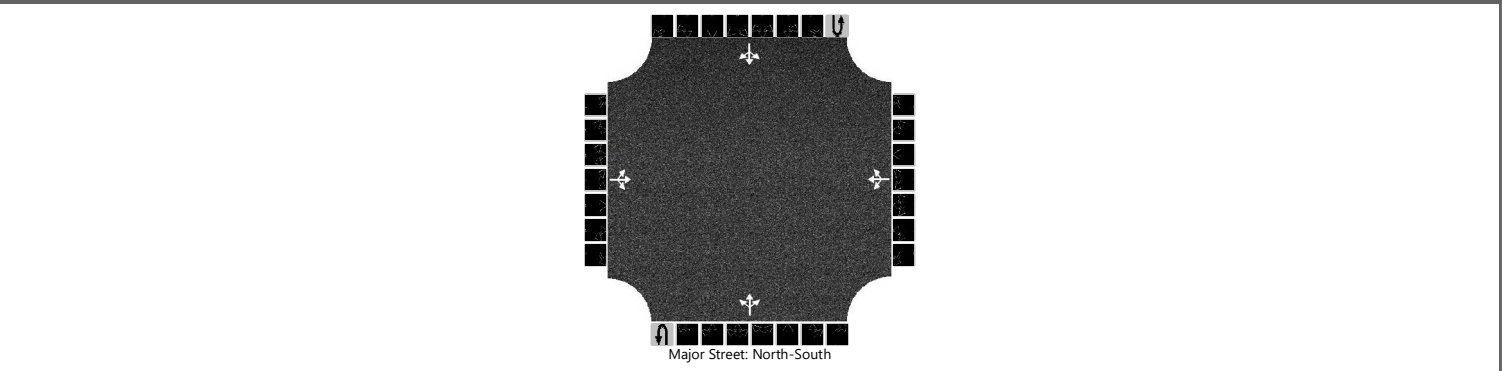
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			217				152			22				22		
Capacity, c (veh/h)			464				468			1425				1235		
v/c Ratio			0.47				0.33			0.02				0.02		
95% Queue Length, Q <sub>95</sub> (veh)			2.5				1.4			0.0				0.1		
Control Delay (s/veh)			19.4				16.4			7.6	0.1	0.1		8.0	0.2	0.2
Level of Service (LOS)			C				C			A	A	A		A	A	A
Approach Delay (s/veh)	19.4				16.4				0.7				1.3			
Approach LOS	C				C				A				A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst		Intersection	SR 61 & SR 521				
Agency/Co.		Jurisdiction					
Date Performed	11/6/2023	East/West Street	SR 521				
Analysis Year	2048	North/South Street	SR 61				
Time Analyzed	2048 AM	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	No Build						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		10	110	10		10	210	50		10	140	10		40	250	10
Percent Heavy Vehicles (%)		5	5	5		7	7	7		9				9		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.15	6.55	6.25		7.17	6.57	6.27		4.19				4.19		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.55	4.05	3.35		3.56	4.06	3.36		2.28				2.28		

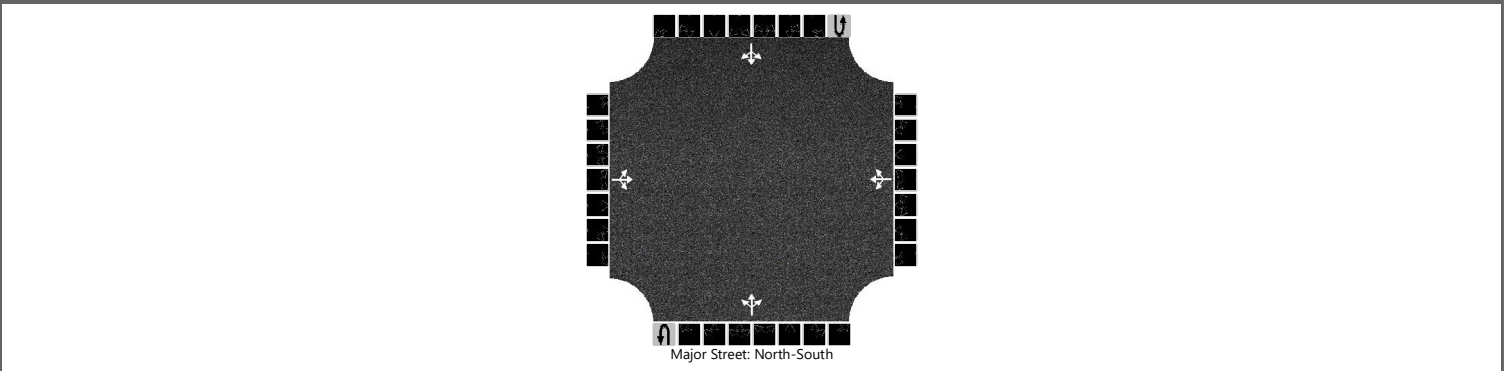
## Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			141				293			11				43		
Capacity, c (veh/h)			379				451			1241				1374		
v/c Ratio			0.37				0.65			0.01				0.03		
95% Queue Length, Q <sub>95</sub> (veh)			1.7				4.5			0.0				0.1		
Control Delay (s/veh)			20.1				26.7			7.9	0.1	0.1		7.7	0.3	0.3
Level of Service (LOS)			C				D			A	A	A		A	A	A
Approach Delay (s/veh)	20.1				26.7				0.6				1.3			
Approach LOS	C				D				A				A			

# HCS Two-Way Stop-Control Report

General Information				Site Information			
Analyst		Intersection	SR 61 & SR 521				
Agency/Co.		Jurisdiction					
Date Performed	11/6/2023	East/West Street	SR 521				
Analysis Year	2048	North/South Street	SR 61				
Time Analyzed	2048 PM	Peak Hour Factor	0.92				
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25				
Project Description	No Build						

## Lanes



## Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	1	0	0	0	1	0	0	0	1	0
Configuration			LTR				LTR				LTR				LTR	
Volume (veh/h)		20	260	20		10	140	80		20	340	10		30	140	10
Percent Heavy Vehicles (%)		3	3	3		6	6	6		7				8		
Proportion Time Blocked																
Percent Grade (%)	0				0											
Right Turn Channelized																
Median Type   Storage	Undivided															

## Critical and Follow-up Headways

Base Critical Headway (sec)		7.1	6.5	6.2		7.1	6.5	6.2		4.1				4.1		
Critical Headway (sec)		7.13	6.53	6.23		7.16	6.56	6.26		4.17				4.18		
Base Follow-Up Headway (sec)		3.5	4.0	3.3		3.5	4.0	3.3		2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33		3.55	4.05	3.35		2.26				2.27		

## Delay, Queue Length, and Level of Service

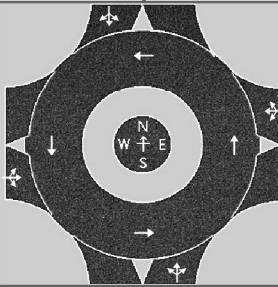
Flow Rate, v (veh/h)			326				250			22				33		
Capacity, c (veh/h)			351				353			1386				1146		
v/c Ratio			0.93				0.71			0.02				0.03		
95% Queue Length, Q <sub>95</sub> (veh)			9.6				5.2			0.0				0.1		
Control Delay (s/veh)			66.5				36.4			7.6	0.2	0.2		8.2	0.3	0.3
Level of Service (LOS)			F				E			A	A	A		A	A	A
Approach Delay (s/veh)	66.5				36.4				0.6				1.6			
Approach LOS	F				E				A				A			

# HCS Roundabouts Report

## General Information

## Site Information

Analyst	
Agency or Co.	
Date Performed	11/27/2023
Analysis Year	2028
Time Analyzed	2028 AM
Project Description	roundabout



Intersection	SR 61 & SR 521
E/W Street Name	SR 521
N/S Street Name	SR 61
Analysis Time Period, hrs	0.25
Peak Hour Factor	0.92
Jurisdiction	

## Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
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	80	10	0	10	140	30	0	10	110	10	0	20	200	10
Percent Heavy Vehicles, %	3	4	4	4	3	5	5	5	3	8	8	8	3	9	9	9
Flow Rate (V <sub>PCE</sub> ), pc/h	0	11	90	11	0	11	160	34	0	12	129	12	0	24	237	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		
	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

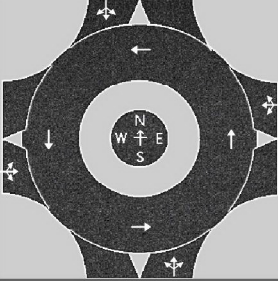
Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v <sub>e</sub> ), pc/h		112			205			153			273	
Entry Volume, veh/h		108			195			142			250	
Circulating Flow (v <sub>c</sub> ), pc/h	272			152			125			183		
Exiting Flow (v <sub>ex</sub> ), pc/h	126			184			174			259		
Capacity (C <sub>PCE</sub> ), pc/h		1046			1182			1215			1145	
Capacity (c), veh/h		1005			1126			1125			1050	
v/c Ratio (x)		0.11			0.17			0.13			0.24	

## Delay and Level of Service

Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.5			4.7			4.3			5.7	
Lane LOS		A			A			A			A	
95% Queue, veh		0.4			0.6			0.4			0.9	
Approach Delay, s/veh   LOS	4.5	A		4.7	A		4.3	A		5.7	A	
Intersection Delay, s/veh   LOS	5.0						A					



# HCS Roundabouts Report

General Information				Site Information				
Analyst					Intersection	SR 61 & SR 521		
Agency or Co.					E/W Street Name	SR 521		
Date Performed	11/27/2023				N/S Street Name	SR 61		
Analysis Year	2028				Analysis Time Period, hrs	0.25		
Time Analyzed	2028 PM				Peak Hour Factor	0.92		
Project Description	roundabout				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	170	20	0	10	90	40	0	20	260	10	0	20	110	10
Percent Heavy Vehicles, %	3	3	3	3	3	6	6	6	3	7	7	7	3	8	8	8
Flow Rate (V <sub>PCE</sub> ), pc/h	0	11	190	22	0	12	104	46	0	23	302	12	0	23	129	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 <sub>e</sub> ), pc/h		223			162			337			164	
Entry Volume, veh/h		217			153			315			152	
Circulating Flow (v <sub>c</sub> ), pc/h	164			336			224			139		
Exiting Flow (v <sub>ex</sub> ), pc/h	225			139			359			163		
Capacity (C <sub>PCE</sub> ), pc/h		1167			980			1098			1198	
Capacity (c), veh/h		1133			924			1026			1109	
v/c Ratio (x)		0.19			0.17			0.31			0.14	

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		4.9			5.5			6.6			4.4	
Lane LOS		A			A			A			A	
95% Queue, veh		0.7			0.6			1.3			0.5	
Approach Delay, s/veh   LOS	4.9   A			5.5   A			6.6   A			4.4   A		
Intersection Delay, s/veh   LOS	5.6						A					

# HCS Roundabouts Report

General Information				Site Information				
Analyst					Intersection	SR 61 & SR 521		
Agency or Co.					E/W Street Name	SR 521		
Date Performed	11/27/2023				N/S Street Name	SR 61		
Analysis Year	2048				Analysis Time Period, hrs	0.25		
Time Analyzed	2048 AM				Peak Hour Factor	0.92		
Project Description	roundabout				Jurisdiction			

Volume Adjustments and Site Characteristics																
Approach	EB				WB				NB				SB			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
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	110	10	0	10	210	50	0	10	140	10	0	40	250	10
Percent Heavy Vehicles, %	3	4	4	4	3	5	5	5	3	8	8	8	3	9	9	9
Flow Rate (V <sub>PCE</sub> ), pc/h	0	11	124	11	0	11	240	57	0	12	164	12	0	47	296	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		
	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		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v <sub>e</sub> ), pc/h		146			308			188			355	
Entry Volume, veh/h		140			293			174			326	
Circulating Flow (v <sub>c</sub> ), pc/h	354			187			182			263		
Exiting Flow (v <sub>ex</sub> ), pc/h	183			264			232			318		
Capacity (C <sub>PCE</sub> ), pc/h		962			1140			1146			1055	
Capacity (c), veh/h		925			1086			1061			968	
v/c Ratio (x)		0.15			0.27			0.16			0.34	

Delay and Level of Service												
Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.3			5.9			4.9			7.3	
Lane LOS		A			A			A			A	
95% Queue, veh		0.5			1.1			0.6			1.5	
Approach Delay, s/veh   LOS	5.3   A			5.9   A			4.9   A			7.3   A		
Intersection Delay, s/veh   LOS	6.1									A		

# HCS Roundabouts Report

General Information				Site Information				
Analyst					Intersection	SR 61 & SR 521		
Agency or Co.					E/W Street Name	SR 521		
Date Performed	11/27/2023				N/S Street Name	SR 61		
Analysis Year	2048				Analysis Time Period, hrs	0.25		
Time Analyzed	2048 PM				Peak Hour Factor	0.92		
Project Description	roundabout				Jurisdiction			

Volume Adjustments and Site Characteristics																
Approach	EB				WB				NB				SB			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
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	20	260	20	0	10	140	80	0	20	340	10	0	30	140	10
Percent Heavy Vehicles, %	3	3	3	3	3	6	6	6	3	7	7	7	3	8	8	8
Flow Rate (V <sub>PCE</sub> ), pc/h	0	22	291	22	0	12	161	92	0	23	395	12	0	35	164	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															

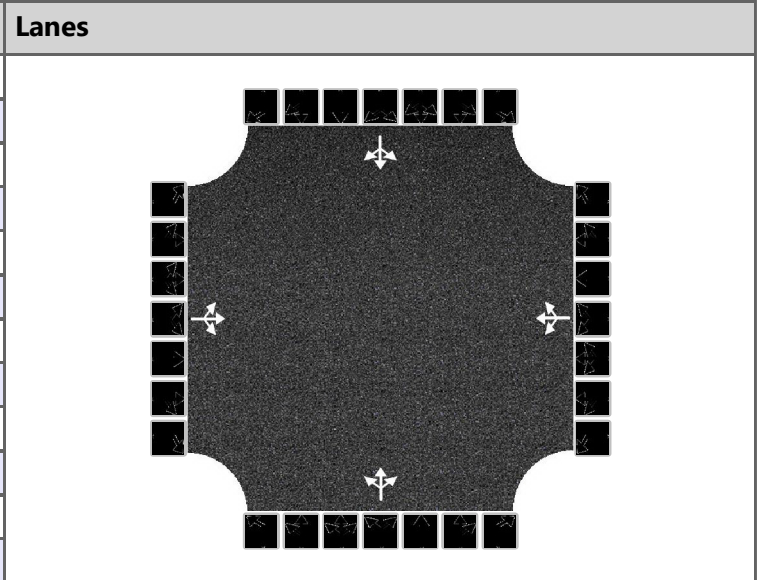
Critical and Follow-Up Headway Adjustment												
Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway, s		4.9763			4.9763			4.9763			4.9763	
Follow-Up Headway, s		2.6087			2.6087			2.6087			2.6087	

Flow Computations, Capacity and v/c Ratios												
Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v <sub>e</sub> ), pc/h		335			265			430			211	
Entry Volume, veh/h		325			250			402			195	
Circulating Flow (v <sub>c</sub> ), pc/h	211			440			348			196		
Exiting Flow (v <sub>ex</sub> ), pc/h	338			196			509			198		
Capacity (C <sub>PCE</sub> ), pc/h		1113			881			968			1130	
Capacity (c), veh/h		1080			831			904			1046	
v/c Ratio (x)		0.30			0.30			0.44			0.19	

Delay and Level of Service												
Approach	EB			WB			NB			SB		
	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		6.3			7.7			9.3			5.2	
Lane LOS		A			A			A			A	
95% Queue, veh		1.3			1.3			2.3			0.7	
Approach Delay, s/veh   LOS	6.3	A		7.7	A		9.3	A		5.2	A	
Intersection Delay, s/veh   LOS	7.4						A					

# HCS All-Way Stop Control Report

General and Site Information	
Analyst	
Agency/Co.	
Date Performed	11/27/2023
Analysis Year	2028
Analysis Time Period (hrs)	0.25
Time Analyzed	2028 AM
Project Description	All Way Stop
Intersection	SR 61 & SR 521
Jurisdiction	
East/West Street	SR 521
North/South Street	SR 61
Peak Hour Factor	0.92



## Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	10	80	10	10	140	30	10	110	10	20	200	10
% Thrus in Shared Lane												

## Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	109			196			141			250		
Percent Heavy Vehicles	4			5			8			9		
Initial Departure Headway, $h_d$ (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.097			0.174			0.126			0.222		
Final Departure Headway, $h_d$ (s)	5.25			5.09			5.17			5.06		
Final Degree of Utilization, x	0.159			0.276			0.203			0.351		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, $t_s$ (s)	3.25			3.09			3.17			3.06		

## Capacity, Delay and Level of Service

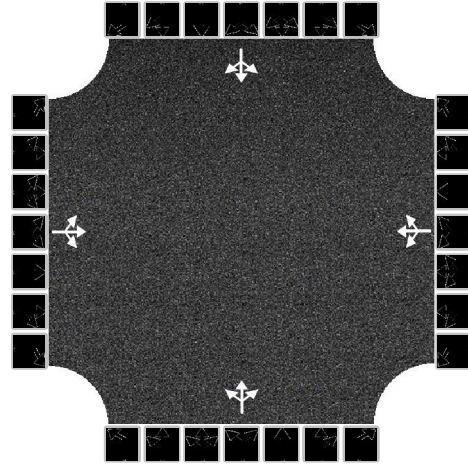
Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	109			196			141			250		
Capacity (veh/h)	686			708			696			712		
95% Queue Length, $Q_{95}$ (veh)	0.6			1.1			0.8			1.6		
Control Delay (s/veh)	9.2			10.0			9.5			10.8		
Level of Service, LOS	A			B			A			B		
Approach Delay (s/veh)   LOS	9.2	A		10.0	B		9.5	A		10.8	B	
Intersection Delay (s/veh)   LOS	10.1						B					

# HCS All-Way Stop Control Report

## General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/27/2023
Analysis Year	2028
Analysis Time Period (hrs)	0.25
Time Analyzed	2028 PM
Project Description	All Way Stop
Intersection	SR 61 & SR 521
Jurisdiction	
East/West Street	SR 521
North/South Street	SR 61
Peak Hour Factor	0.92

## Lanes



## Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	10	170	20	10	90	40	20	260	10	20	110	10
% Thrus in Shared Lane												

## Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	217			152			315			152		
Percent Heavy Vehicles	3			6			7			8		
Initial Departure Headway, $h_d$ (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.193			0.135			0.280			0.135		
Final Departure Headway, $h_d$ (s)	5.47			5.53			5.32			5.59		
Final Degree of Utilization, x	0.330			0.234			0.466			0.236		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, $t_s$ (s)	3.47			3.53			3.32			3.59		

## Capacity, Delay and Level of Service

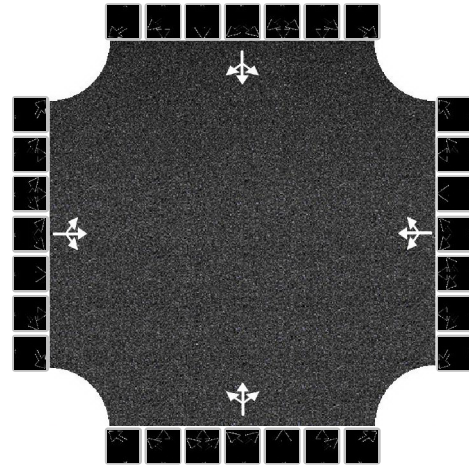
Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	217			152			315			152		
Capacity (veh/h)	658			651			677			644		
95% Queue Length, $Q_{95}$ (veh)	1.4			0.9			2.5			0.9		
Control Delay (s/veh)	11.1			10.2			12.9			10.3		
Level of Service, LOS	B			B			B			B		
Approach Delay (s/veh)   LOS	11.1		B	10.2		B	12.9		B	10.3		B
Intersection Delay (s/veh)   LOS	11.5						B					

# HCS All-Way Stop Control Report

## General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/27/2023
Analysis Year	2048
Analysis Time Period (hrs)	0.25
Time Analyzed	2048 AM
Project Description	All Way Stop
Intersection	SR 61 & SR 521
Jurisdiction	
East/West Street	SR 521
North/South Street	SR 61
Peak Hour Factor	0.92

## Lanes



## Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	10	110	10	10	210	50	10	140	10	30	250	10
% Thrus in Shared Lane												

## Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	141			293			174			315		
Percent Heavy Vehicles	4			5			8			9		
Initial Departure Headway, $h_d$ (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.126			0.261			0.155			0.280		
Final Departure Headway, $h_d$ (s)	5.93			5.58			5.87			5.65		
Final Degree of Utilization, x	0.233			0.455			0.284			0.495		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, $t_s$ (s)	3.93			3.58			3.87			3.65		

## Capacity, Delay and Level of Service

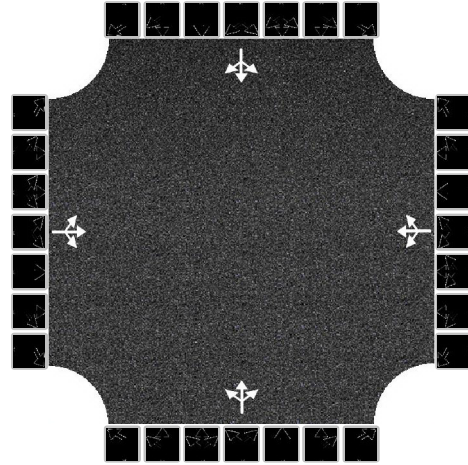
Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	141			293			174			315		
Capacity (veh/h)	607			645			613			637		
95% Queue Length, $Q_{95}$ (veh)	0.9			2.4			1.2			2.8		
Control Delay (s/veh)	10.7			13.2			11.2			14.1		
Level of Service, LOS	B			B			B			B		
Approach Delay (s/veh)   LOS	10.7		B	13.2		B	11.2		B	14.1		B
Intersection Delay (s/veh)   LOS	12.7						B					

# HCS All-Way Stop Control Report

## General and Site Information

Analyst	
Agency/Co.	
Date Performed	11/27/2023
Analysis Year	2048
Analysis Time Period (hrs)	0.25
Time Analyzed	2048 PM
Project Description	All Way Stop
Intersection	SR 61 & SR 521
Jurisdiction	
East/West Street	SR 521
North/South Street	SR 61
Peak Hour Factor	0.92

## Lanes



## Turning Movement Demand Volumes

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume (veh/h)	20	260	20	10	140	80	20	340	10	30	140	10
% Thrus in Shared Lane												

## Lane Flow Rate and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	326			250			402			196		
Percent Heavy Vehicles	3			6			7			8		
Initial Departure Headway, h <sub>d</sub> (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.290			0.222			0.357			0.174		
Final Departure Headway, h <sub>d</sub> (s)	6.58			6.66			6.45			7.00		
Final Degree of Utilization, x	0.596			0.463			0.721			0.381		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, t <sub>s</sub> (s)	4.58			4.66			4.45			5.00		

## Capacity, Delay and Level of Service

Approach	Eastbound			Westbound			Northbound			Southbound		
	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Lane												
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	326			250			402			196		
Capacity (veh/h)	547			540			558			514		
95% Queue Length, Q <sub>95</sub> (veh)	3.9			2.4			5.9			1.8		
Control Delay (s/veh)	18.8			15.3			24.4			14.2		
Level of Service, LOS	C			C			C			B		
Approach Delay (s/veh)   LOS	18.8		C	15.3		C	24.4		C	14.2		B
Intersection Delay (s/veh)   LOS	19.2						C					