

BURGESS & NIPLE

5085 Reed Rd. | Columbus, OH 43220 | 614.459.2050

Mr. Scott Schmid, PTP
Transportation Director
Clark County-Springfield Transportation
Coordinating Committee
3130 E. Main Street, Suite 2A
Springfield, OH 45505

Re: Traffic Signal Warrant Study
Columbia Street and Center Street

June 25, 2015

Dear Mr. Schmid:

As part of our 2015-2018 General Planning Services contract we have completed a traffic signal warrant study for existing traffic signal at the intersection of Columbia Street & Center Street. Traffic counts at the intersection were conducted on March 12, 2015.

As noted in the *Ohio Manual of Uniform Traffic Control Devices (OMUTCD)* Section 4B.02, changing traffic patterns may render an existing traffic signal as no longer necessary. Where this occurs, consideration should be given to removing the signal and replacing it with an appropriate alternative traffic control device. Section 401-4 of the *ODOT Traffic Engineering Manual* outlines the following factors to consider to determine if a traffic signal installation should be removed:

1. Warrant analysis summary. If reasons other than the standard warrants were used to justify the signal installation, determine if these reasons are still valid.
2. Crash history
3. Site conditions, especially sight distance problems.
4. Public, business, school board or governmental complaints resulting in the original signal installation.
5. Present and future developmental growth.
6. Known reasons for the change in traffic patterns or volumes.
7. Capacity analysis for the alternate traffic control scheme most likely to be installed if the signal is removed.
8. Analysis of the cost of continued signal operation versus a one-time signal removal cost.
9. Discussion of traffic volume growth needed to warrant the signal.

1. Warrant Analysis Summary

The OMUTCD establishes the criteria that are used to determine if a traffic signal is warranted. The predominant criteria used are based on minimum traffic volumes that must be present on both the major and minor streets. There are two conditions established for the 8-hour signal warrant. Condition A requires large intersecting traffic volumes. Condition B requires a very large major street traffic volume, which limits the ability of side street to enter or cross the major street. To satisfy the 8-hour signal warrant, either Condition A, Condition B, or 80% of the volume requirements for BOTH Condition A and Condition B must be met for at least 8 hours of the day.

As shown in the attached signal warrant analysis, the intersection of Columbia Street and Center Street **does not** meet the 8-hour signal warrant requirements for Condition A or Condition B and **does not** meet 80% of the total volume requirements for BOTH Condition A and Condition B. Using the standard traffic volume warrants, the traffic signal is not warranted.

2. Crash History

Crash analysis was conducted for the three year period of 2012-2014 using the Ohio Department of Public Safety crash database. During that time, there were four crashes at the intersection. All four involved vehicles traveling in the eastbound direction. There was one rear-end, one sideswipe and two, single-vehicle run off the road crashes. Since there were only four crashes in three years and they were of various types, there is not a crash trend at this intersection that would benefit by the continued use of the signal.

3. Site Conditions

B&N conducted a site visit of the intersection on June 12, 2015. From this visit, no issues were discovered that would require the continued use of the traffic signal. The Ohio Valley Surgical Hospital sign located on the southwest corner of the intersection causes some sight distance issues for drivers stopped at the stop line. However, after stopping at the stop line and then rolling up a few feet, adequate sight distance exists to find a gap and safely enter the intersection. Photos from both the stop line and in front of the stop line are shown below. Several vehicles were observed during the site visit using this process to make a right turn on red. This condition exists at many unsignalized intersections and should not result in a crash problem at this location.



View from stop line



View from in front of stop line

Important to note is that the traffic signal at the upstream intersection of Columbia Street and Lowry Avenue creates gaps in Columbia Street traffic arriving at Center Street. The Lowry Avenue signal groups the traffic together so that there is a several second period with a constant flow of traffic on Columbia Street followed by several seconds with little or no arriving vehicles. These natural gaps in traffic will provide ample opportunity for vehicles on Center Street to enter the intersection.

Finally, the existing radio interconnect at the intersection was evaluated. This is a local intersection in the City's radio system. The City's system is set up so that all local intersections communicate directly with one of two master locations. Since local intersections do not communicate with other local intersections, removing this local radio unit will not have an effect on the communications of any other signal.

4. Public, Business, School or Government Complaints Resulting in Original Signal Installation

The traffic signal at this intersection has been in place for several years and predates most City personnel. The original warrant for the traffic signal is unknown. Since there is no documentation available, this factor cannot be evaluated.

5. Existing and Future Development Growth

According to the City's Planning and Zoning department, there is currently one business that may develop in the vicinity of this intersection. A brewery may develop on the north side of Columbia Street, but this business is not going to be a large traffic generator. 85% of the product will be sold to other retailers. A "tasting room" will be onsite, but will only be open M, W, F from 2 PM to 8 PM. This development will not likely have a noticeable impact to the traffic volumes and would not result in the intersection meeting traffic signal warrant volume requirements.

No other development is proposed in the area that would significantly increase the traffic to the point that traffic signal warrant volume thresholds would be met.

6. Reasons for Traffic Pattern Change

Historical traffic counts from ODOT show that traffic volumes on this section of Columbia Street have steadily decreased by almost 2% per year since 1994. This decline in traffic volume corresponds with a decline in population for the City of Springfield over the same time period. The changes in traffic volumes at the intersection are not temporary and volumes are not expected to change significantly over the next few years.

7. Capacity Analysis

Capacity analysis was conducted for the intersection using the Highway Capacity Manual procedures assuming stop control for Center Street. Because Center Street at this intersection is offset, northbound vehicles that wish to continue on Center Street must make a right turn followed by an immediate left. This means that the right turn must be made across all of Columbia Street and into the northern most travel lane. To ensure that the model adequately accounted for this, the offset at the intersection was removed and the northbound vehicles that continue on Center Street were

entered as through vehicles. This way the analysis accounts for the fact that all three lanes on Columbia must be free of traffic, the same as with the existing offset condition.

For the analysis, Columbia Street does not stop and will operate with essentially zero delay. The delay at the intersection will be on the stop-controlled Center Street approach. In the AM peak, the northbound approach is expected to operate at Level of Service (LOS) B with a delay of 12.8 seconds per vehicle. In the PM peak, it will operate at LOS C with a delay of 17.0 seconds per vehicle. The operation of the intersection with stop-control will be very good and should not be considered as a justification to leave the existing traffic signal in place.

8. Cost Analysis

Average annual cost for electricity and maintenance of a traffic signal is approximately \$4,000.

Cost Estimate to Remove Signal

- Removal of existing poles, signal heads, controller, pull boxes and foundations - \$4,000
- Removal of stop line and crosswalks across Columbia Street - \$500
- Extension of crosswalk line across Center Street to curb - \$50
- Sidewalk replacement around pole foundations and pullbox - \$500
- Stop Sign on Center Street - \$350

Total cost to remove signal - **\$5,400.**

Comparing the annual cost for a signal with the one-time fee for the signal removal, removal of the traffic signal will pay for itself in a little over one year's time.

9. Volume Growth Needed to Warrant a Signal

In order to meet traffic signal volume warrants, traffic volumes along both Columbia Street and Center Street would need to increase by nearly 50%. Given that traffic volumes have steadily declined over the last 20 years, the growth needed to warrant the signal is not expected to happen in the foreseeable future. In fact, even if the intersection experienced a moderate growth rate of 2% per year, it would still take over 20 years for a traffic signal to be warranted.

RECOMMENDATION

The traffic study for the intersection has documented that the traffic signal does not meet current signal warrant thresholds and is not anticipated to meet those in the future. Also, there are no site conditions that would necessitate the continued use of a traffic signal at this intersection. Finally, the intersection will operate with a very acceptable level of service with stop control for Center Street. For these reasons, it is our recommendation that the traffic signal be removed. Section 401-4 of the *ODOT Traffic Engineering Manual* outlines the removal process for a traffic signal. The following process should be followed to remove the traffic signal at Columbia Street and Center Street.

1. Inform the local media, schools, governmental agencies and local emergency/safety forces of the intent to study the signal for removal.
2. Install a SIGNAL UNDER STUDY FOR REMOVAL (W24-H2b) sign next to the signal heads on each approach.
3. Check the controller cabinet wiring to ensure that the color of the flashing indications will agree with the stop controlled scheme. This would be flashing yellow for Columbia Street and flashing red for Center Street.
4. Install STOP sign for Center Street. Existing Stop Line on Columbia Street should not be removed at this time.
5. Place the signal in flashing operation for ninety days, in conjunction with Step 4 above.
6. During the ninety-day flashing period, crashes at the intersection should be monitored.
 - a. If three or more crashes involving vehicles on Center Street turning and being struck by vehicles traveling on Columbia Street occur, the traffic signal shall remain in flash for an additional sixty-day period. If three or more such crashes occur in the second sixty-day period, the signal shall be returned to stop-and-go operation until the site conditions can be improved to reduce the crash frequency.
 - b. If two or fewer crashes involving vehicles on Center Street turning and being struck by vehicles traveling on Columbia Street occur during either the ninety-day or sixty-day flashing period, continue with Step 7.
7. The traffic signal heads shall be covered and the traffic signal turned off for a sixty day period.
8. Remove traffic signal heads, poles, pedestrian pedestals, foundations (1 foot below grade), pull boxes, and controller. Underground conduit and cables may be abandoned in place. Existing Stop Line and Crosswalk Lines across Columbia Street shall be removed. Existing Crosswalk Lines across Center Street shall be extended to the curb.

Please call me should you have any questions regarding our analysis.

Respectfully,



Randy Kill, PE, PTOE

Intersection: Columbia Street @ Center Street

Major Street: Columbia Street
 Minor Street: Center Street

		ADJUSTED HOURLY VOLUMES			Condition A				Condition B			
COND-ITTON	NO. LANE	MAJOR ST 2-WAY	MINOR ST 1-WAY (NB)	MINOR ST 1-WAY	100%		80%		100%		80%	
*	1		x	x	500	150	400	120	750	75	600	60
NORM	2+	x			600	200	480	160	900	100	720	80
*	1				350	105	280	84	525	53	420	42
70%	2+				420	140	336	112	630	70	504	56
Mid-1AM												
1AM-2AM												
2AM-3AM												
3AM-4AM												
4AM-5AM												
5AM-6AM												
6AM-7AM		281	10									
7AM-8AM		599	33				x					
8AM-9AM		733	41		x		x			x		
9AM-10AM		594	64				x					x
10AM-11AM		603	82		x		x		x			x
11AM-NOON		750	91		x		x		x	x		x
N00N-1PM		812	91		x		x		x	x		x
1PM-2PM		912	115		x		x		x	x		x
2PM-3PM		841	92		x		x		x	x		x
3PM-4PM		920	114		x		x		x	x		x
4PM-5PM		1022	86		x		x		x	x		x
5PM-6PM		1004	93		x		x		x	x		x
6PM-7PM		714	67		x		x					x
7PM-8PM												
8PM-9PM												
9PM-10PM												
10PM-11PM												
11PM-MID												
HOURS MET					0	0	4	7				
CRITERIA MET					No	No	No	No				

* CONDITION IS DETERMINED BY ENVIRONMENT: USE 70% VALUES IF 85 PERCENTILE SPEED EXCEEDS 40 MPH ON THE MAJOR APPROACH OR IF LOCATION IS IN THE BUILT-UP AREA OF AN ISOLATED COMMUNITY WITH A POPULATION OF LESS THAN 10,000.

WARRANT #1 (EIGHT-HOUR VEHICULAR VOLUME)

Conditions A OR B are met at the 100% level

No

OR

Conditions A AND B are each met at the 80% level

No

WARRANT SATISFIED?

No

WARRANT #2 (FOUR-HOUR VEHICULAR VOLUME)

Population < 10,000 or Speed above 40 mph on Major street?

No

If yes, does plot of 2-way Major street volume against highest one-way Minor street volume for each hour plot above lane curve on Fig. 4C-2 for at least four hours?

If no, does plot of 2-way Major street volume against highest one-way Minor street volume for each hour plot above lane curve on Fig. 4C-1 for at least four hours?

No

WARRANT SATISFIED?

No

WARRANT #3 (PEAK HOUR)

Is this a special case: office complex, manufacturing plants, industrial complex, high-occupancy vehicle facility?

No

If no, warrant not applied

Total stopped-delay on minor street ≥ 4 veh-hrs for one lane or 5 veh-hrs for two lanes?

AND

Volume on same minor street approach ≥ 100 veh/h for one lane or 150 veh/h for two lanes?

AND

Total entering volume serviced ≥ 650 veh/h for intersection with three approaches or 800 veh/h for four approaches?

Population < 10,000 or Speed above 40 mph on Major street?

If yes, does plot of 2-way Major street volume against highest one-way Minor street volume for each hour plot above lane curve on Fig. 4C-4 for one hour?

If no, does plot of 2-way Major street volume against highest one-way Minor street volume for each hour plot above lane curve on Fig. 4C-3 for one hour?

WARRANT SATISFIED?

No



Burgess & Niple
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Columbus, Ohio, United States 43220
614-459-2050 x 356 kendra.schenk@burgessniple.com

Count Name: Columbia/Center
Site Code:
Start Date: 03/12/2015
Page No: 1

Turning Movement Data

Start Time	Center Southbound					Westbound Approach Westbound					Center Northbound					Columbia Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	47	1	0	49	51
6:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	48	1	0	51	53
6:30 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	7	72	2	0	81	83
6:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	4	92	4	0	100	104
Hourly Total	0	0	0	0	0	0	0	0	0	0	9	1	0	0	10	14	259	8	0	281	291
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	5	103	2	0	110	114
7:15 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	5	130	1	0	136	140
7:30 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	9	10	135	2	0	147	156
7:45 AM	0	0	0	0	0	0	0	0	0	0	14	2	0	0	16	8	198	0	0	206	222
Hourly Total	0	0	0	0	0	0	0	0	0	0	30	3	0	0	33	28	566	5	0	599	632
8:00 AM	0	0	0	0	0	0	0	0	0	0	9	2	0	0	11	7	194	0	0	201	212
8:15 AM	0	0	0	0	0	0	0	0	0	0	8	3	0	0	11	11	167	2	0	180	191
8:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	1	6	13	141	1	0	155	161
8:45 AM	0	0	0	0	0	0	0	0	0	0	13	0	0	0	13	14	181	2	0	197	210
Hourly Total	0	0	0	0	0	0	0	0	0	0	36	5	0	1	41	45	683	5	0	733	774
9:00 AM	0	0	0	0	0	0	0	0	0	0	10	3	0	1	13	11	139	1	0	151	164
9:15 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	14	6	141	4	0	151	165
9:30 AM	0	0	0	1	0	0	0	0	0	0	17	1	0	0	18	6	127	2	0	135	153
9:45 AM	0	0	0	0	0	0	0	0	0	0	16	3	0	0	19	8	147	2	0	157	176
Hourly Total	0	0	0	1	0	0	0	0	0	0	57	7	0	1	64	31	554	9	0	594	658
10:00 AM	0	0	0	1	0	0	0	0	0	0	17	0	0	0	17	9	132	2	0	143	160
10:15 AM	0	0	0	0	0	0	0	0	0	0	24	2	0	0	26	7	139	0	0	146	172
10:30 AM	0	0	0	1	0	0	0	0	0	0	18	2	0	1	20	8	137	2	0	147	167
10:45 AM	0	0	0	1	0	0	0	0	0	0	15	4	0	0	19	6	158	3	0	167	186
Hourly Total	0	0	0	3	0	0	0	0	0	0	74	8	0	1	82	30	566	7	0	603	685
11:00 AM	0	0	1	0	1	0	0	0	0	0	16	0	0	0	16	10	174	6	0	190	207
11:15 AM	0	0	0	1	0	0	0	0	0	0	18	1	0	1	19	7	156	0	0	163	182
11:30 AM	0	0	0	1	0	0	0	0	0	0	31	0	0	0	31	15	165	4	0	184	215
11:45 AM	0	0	0	2	0	0	0	0	0	0	21	4	0	0	25	11	198	4	0	213	238
Hourly Total	0	0	1	4	1	0	0	0	0	0	86	5	0	1	91	43	693	14	0	750	842
12:00 PM	0	0	0	0	0	0	0	0	0	0	26	1	0	0	27	8	209	2	1	219	246
12:15 PM	0	0	0	0	0	0	0	0	0	0	24	3	0	0	27	11	172	5	0	188	215
12:30 PM	0	0	0	0	0	0	0	0	0	0	17	3	0	0	20	12	182	5	0	199	219
12:45 PM	0	0	0	1	0	0	0	0	0	0	16	1	0	0	17	11	193	2	1	206	223
Hourly Total	0	0	0	1	0	0	0	0	0	0	83	8	0	0	91	42	756	14	2	812	903
1:00 PM	0	0	0	0	0	0	0	0	0	0	28	0	0	0	28	11	242	2	0	255	283
1:15 PM	0	0	0	0	0	0	0	0	0	0	26	0	0	0	26	8	180	3	0	191	217
1:30 PM	0	0	0	0	0	0	0	0	0	0	32	2	0	2	34	15	209	5	0	229	263

1:45 PM	0	0	0	0	0	0	0	0	0	0	26	1	0	0	27	15	220	2	0	237	264
Hourly Total	0	0	0	0	0	0	0	0	0	0	112	3	0	2	115	49	851	12	0	912	1027
2:00 PM	0	0	0	0	0	0	0	0	0	0	28	4	0	0	32	9	193	3	0	205	237
2:15 PM	0	0	0	0	0	0	0	0	0	0	16	3	0	1	19	16	192	1	0	209	228
2:30 PM	0	0	0	0	0	0	0	0	0	0	15	1	0	2	16	12	193	3	0	208	224
2:45 PM	0	0	0	2	0	0	0	0	0	0	24	1	0	1	25	10	206	3	0	219	244
Hourly Total	0	0	0	2	0	0	0	0	0	0	83	9	0	4	92	47	784	10	0	841	933
3:00 PM	0	0	0	0	0	0	0	0	0	0	25	0	0	2	25	7	187	2	2	196	221
3:15 PM	0	0	0	0	0	0	0	0	1	0	22	8	0	0	30	10	217	8	0	235	265
3:30 PM	0	0	0	0	0	0	0	0	0	0	30	3	0	1	33	13	223	6	0	242	275
3:45 PM	0	0	0	2	0	0	0	0	0	0	23	3	0	0	26	7	238	2	0	247	273
Hourly Total	0	0	0	2	0	0	0	0	1	0	100	14	0	3	114	37	865	18	2	920	1034
4:00 PM	0	0	0	2	0	0	0	0	0	0	21	3	0	0	24	10	259	4	0	273	297
4:15 PM	0	0	0	0	0	0	0	0	0	0	20	1	0	0	21	14	248	10	0	272	293
4:30 PM	0	0	0	0	0	0	0	0	0	0	26	0	0	1	26	8	232	2	0	242	268
4:45 PM	0	0	0	0	0	0	0	0	0	0	13	2	0	0	15	10	224	1	0	235	250
Hourly Total	0	0	0	2	0	0	0	0	0	0	80	6	0	1	86	42	963	17	0	1022	1108
5:00 PM	0	0	0	1	0	0	0	0	0	0	19	2	0	1	21	16	253	0	1	269	290
5:15 PM	0	0	0	0	0	0	0	0	0	0	30	1	0	0	31	6	253	1	0	260	291
5:30 PM	0	0	0	1	0	0	0	0	0	0	17	2	0	0	19	5	238	2	0	245	264
5:45 PM	0	0	0	0	0	0	0	0	0	0	19	3	0	0	22	11	218	1	0	230	252
Hourly Total	0	0	0	2	0	0	0	0	0	0	85	8	0	1	93	38	962	4	1	1004	1097
6:00 PM	0	0	0	0	0	0	0	0	0	0	18	0	0	1	18	9	194	5	0	208	226
6:15 PM	0	0	0	0	0	0	0	0	0	0	11	0	0	0	11	7	181	1	0	189	200
6:30 PM	0	0	0	0	0	0	0	0	0	0	21	3	0	0	24	8	179	0	0	187	211
6:45 PM	0	0	0	0	0	0	0	0	0	0	13	1	0	1	14	7	123	0	0	130	144
Hourly Total	0	0	0	0	0	0	0	0	0	0	63	4	0	2	67	31	677	6	0	714	781
Grand Total	0	0	1	17	1	0	0	0	1	0	898	81	0	17	979	477	9179	129	5	9785	10765
Approach %	0.0	0.0	100.0	-	-	NaN	NaN	NaN	-	-	91.7	8.3	0.0	-	-	4.9	93.8	1.3	-	-	-
Total %	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	8.3	0.8	0.0	-	9.1	4.4	85.3	1.2	-	90.9	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	1	32	0	-	33	33
% Motorcycles	-	-	0.0	-	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	0.2	0.3	0.0	-	0.3	0.3
Cars	0	0	1	-	1	0	0	0	-	0	757	62	0	-	819	412	7558	121	-	8091	8911
% Cars	-	-	100.0	-	100.0	-	-	-	-	-	84.3	76.5	-	-	83.7	86.4	82.3	93.8	-	82.7	82.8
Light Goods Vehicles	0	0	0	-	0	0	0	0	-	0	121	19	0	-	140	59	1325	4	-	1388	1528
% Light Goods Vehicles	-	-	0.0	-	0.0	-	-	-	-	-	13.5	23.5	-	-	14.3	12.4	14.4	3.1	-	14.2	14.2
Buses	0	0	0	-	0	0	0	0	-	0	6	0	0	-	6	1	24	0	-	25	31
% Buses	-	-	0.0	-	0.0	-	-	-	-	-	0.7	0.0	-	-	0.6	0.2	0.3	0.0	-	0.3	0.3
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	10	0	0	-	10	2	169	4	-	175	185
% Single-Unit Trucks	-	-	0.0	-	0.0	-	-	-	-	-	1.1	0.0	-	-	1.0	0.4	1.8	3.1	-	1.8	1.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	4	0	0	-	4	2	70	0	-	72	76
% Articulated Trucks	-	-	0.0	-	0.0	-	-	-	-	-	0.4	0.0	-	-	0.4	0.4	0.8	0.0	-	0.7	0.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	-	-	0.0	-	0.0	-	-	-	-	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	100.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	17	-	-	-	-	0	-	-	-	-	17	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	0.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	703	39	0	0	0	0	7	37	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	10	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	764	42	0	0	0	0	8	40	0	0	0

Major/Minor

	Major1	Minor1
Conflicting Flow All	0	792
Stage 1	-	792
Stage 2	-	0
Critical Hdwy	-	6.44
Critical Hdwy Stg 1	-	7.34
Critical Hdwy Stg 2	-	-
Follow-up Hdwy	-	3.82
Pot Cap-1 Maneuver	-	338
Stage 1	-	277
Stage 2	-	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	-	338
Mov Cap-2 Maneuver	-	338
Stage 1	-	277
Stage 2	-	-

Approach

	EB	NB
HCM Control Delay, s		12.8
HCM LOS		B

Minor Lane/Major Mvmt

	NBLn1	EBL	EBT	EBR
Capacity (veh/h)	511	-	-	-
HCM Lane V/C Ratio	0.094	-	-	-
HCM Control Delay (s)	12.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-

Intersection

Int Delay, s/veh 1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	22	968	44	0	0	0	0	10	94	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	10	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	1052	48	0	0	0	0	11	102	0	0	0

Major/Minor

	Major1			Minor1		
Conflicting Flow All	0	0	0	1124	1124	549
Stage 1	-	-	-	1124	1124	-
Stage 2	-	-	-	0	0	-
Critical Hdwy	-	-	-	6.44	6.54	7.14
Critical Hdwy Stg 1	-	-	-	7.34	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	3.82	4.02	3.92
Pot Cap-1 Maneuver	-	-	-	216	204	411
Stage 1	-	-	-	163	279	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	216	0	411
Mov Cap-2 Maneuver	-	-	-	216	0	-
Stage 1	-	-	-	163	0	-
Stage 2	-	-	-	-	0	-

Approach

	EB	NB
HCM Control Delay, s		17
HCM LOS		C

Minor Lane/Major Mvmt

	NBLn1	EBL	EBT	EBR
Capacity (veh/h)	411	-	-	-
HCM Lane V/C Ratio	0.275	-	-	-
HCM Control Delay (s)	17	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-