

VILLAGE OF DOWNERS GROVE
Report for the Village Council Meeting
6/21/2016

SUBJECT:	SUBMITTED BY:
Revised Traffic Control for the Lacey Road and Esplanade Road Intersection	Nan Newlon Director of Public Works

SYNOPSIS

An ordinance has been prepared to amend a section of the Municipal Code concerning a designated all-way STOP control at the intersection of Lacey Road and Esplanade Road.

STRATEGIC PLAN ALIGNMENT

The goals for 2015-2017 include *Top Quality Infrastructure*.

FISCAL IMPACT

N/A

UPDATE & RECOMMENDATION

This item was discussed at the June 14, 2016 Village Council meeting. At the meeting, the Village Council asked staff about the cost of signaling the intersection and whether it could be funded by IDOT. A signal is approximately \$250,000. Because the intersection is at two local roads (Lacey Road and Esplanade Road), the Village or a private entity would be responsible for the costs.

Staff recommends approval on the June 21, 2016 Active Agenda.

BACKGROUND

Hamilton Partners has requested that the Village designate a four-way stop control at the corner of Lacey and Esplanade, which will complement other traffic operations improvements that have been approved by IDOT for the intersection of Esplanade Road and Butterfield Road.

A large portion of the traffic exiting the Esplanade Business Park does so through a right-in/right-out configuration at Esplanade Road and Butterfield Road. There are two concerns with the existing configuration:

1. Traffic backs up on Esplanade Road while waiting to turn right onto Butterfield Road.
2. Traffic exiting the parking garage cannot efficiently cross the intersection of Lacey Road and Esplanade Road due to traffic on Lacey Road

To address the first concern, Hamilton Partners worked with IDOT to gain approval to turn the Esplanade Road exit onto Butterfield into a one-way, eastbound exit onto Butterfield. This will allow two lanes of traffic to exit at the same time. IDOT has approved the change and the improvements will be made at the expense of Hamilton Partners.

For the second issue, Hamilton Partners asked the Village to approve a four-way stop at Lacey and Esplanade. Lacey Road is wide at this intersection, with average speeds between 35 and 40mph, making it difficult for vehicles to cross Lacey Road. Concern about safety was expressed by the Hamilton Partners. Although there is a relatively low crash history at this intersection, there were reports from users of a number of near misses. To support this request Hamilton Partners used SE3 to prepare a warrant analysis for this intersection, which is attached. The analysis demonstrated that the traffic counts are close to the peak hour warrants for an all-way stop.

To determine if the 4-way stop could be safely implemented staff recommended that Hamilton Partners install the 4-way stop under a temporary, 30-day trial period with the condition that the left turn lanes be removed from service, additional “stop” signs be installed on the inside lanes, and advance signage be put in place. These measures were put in place to improve visibility and help balance the intersection, which previously favored Lacey Road. The Village instituted a temporary approval for a 4-way stop under the Village Manager’s authority. During the past month Village staff and the engineer have observed the traffic flow at this intersection and have found it to be working in an acceptable manner. There have been no crashes reported during this time. Traffic continues to back-up on Esplanade Road and will continue to do so until the second right-turn lane is installed.

Hamilton Partners has requested that the Village approve the 4-way stop control at this intersection and approve the work in the right-of-way to permanently remove the left turn lanes. The Village will install the permanent signage and pavement striping and Hamilton Partners will construct the physical changes to the intersection. Based upon the data presented and the successful trial period staff recommends approval of an all way stop regulation at the intersection of Lacey Road and Esplanade Road.

The specific action requested is to:

DESIGNATE AN ALL-WAY STOP CONTROL AT THE INTERSECTION OF LACEY ROAD AND ESPLANADE ROAD WITH THE CONDITION THAT HAMILTON PARTNERS WILL COMPLETE THE RECOMMENDED PHYSICAL MODIFICATIONS TO THE INTERSECTION.

ATTACHMENTS

Ordinance
Exhibit
Report

VILLAGE OF DOWNERS GROVE
COUNCIL ACTION SUMMARY

INITIATED: Public Works DATE: June 21, 2106
(Name)

RECOMMENDATION FROM: Transportation and Parking Commission FILE REF: _____
(Board or Department)

NATURE OF ACTION:

STEPS NEEDED TO IMPLEMENT ACTION:

- Ordinance
- Resolution
- Motion
- Other

Motion to Adopt "AN ORDINANCE AMENDING TRAFFIC PROVISIONS AT THE INTERSECTION OF LACEY AND ESPLANADE", as presented.



SUMMARY OF ITEM:

Adoption of the attached ordinance shall amend traffic provisions at the intersection of Lacey and Esplanade.

RECORD OF ACTION TAKEN:

Lacey/Esplanade Stop

ORDINANCE NO. _____

**AN ORDINANCE AMENDING TRAFFIC PROVISIONS
AT THE INTERSECTION OF LACEY AND ESPLANADE**

BE IT ORDAINED by the Village Council of the Village of Downers Grove in DuPage County, Illinois, as follows: (Additions are indicated by **shading**/underline; deletions by ~~strikeout~~):

Section 1. That Section 14.80.1. is hereby amended to read as follows:**14.80.1. All-way stop signs.**

There shall be erected in conspicuous places at the following intersections signs lettered with the words "All-Way Stop", which signs shall be so located as to direct all traffic to come to a full stop before proceeding into the intersection:

Barneswood Drive and Saratoga Avenue.
Blodgett Avenue and 60th Street
Bolson Drive and Springside Avenue.
Chicago Avenue and Douglas Road.
Chicago Avenue and Oakwood Avenue.
Chicago Avenue and Saratoga Avenue.
Chicago Avenue and Lee Avenue.
Chicago Avenue and Roslyn Road.
Chicago Avenue and Cumnor Road.
Claremont Drive and Fairmount Avenue.
Curtiss Street and Washington Street.
Douglas Road and Franklin Street.
Downers Drive and Herbert Street.
Downers Drive and 40th Street.
Dunham Road, Andrus Avenue and 71st Street.
Florence Avenue and Grant Street.
Forest Avenue and Lincoln Street.
Grand Avenue and Hill Street.
Grant Street and Highland Avenue.
Grant Street and Middaugh Avenue.
Grant Street and Oakwood Avenue.
Grant Street and Prince Street.
Grant Street and Saratoga Avenue.
Grant Street and Seeley Avenue.
Grant Street and Stanley Avenue.
Grant Street/Traube Avenue and Cumnor Road.
Hill Street and Blodgett Street.
Highland Avenue and Franklin Street.
Highland Avenue and Warren Avenue.
Kenyon Street and Washington Street.
Lacey Road and Esplanade Road.
Lee Avenue and Chicago Avenue.
Linscott Avenue and Franklin Street.

Lacey/Esplanade Stop

Lyman Avenue and Summit Street.
Maple Avenue and Carpenter Street.
Maple Avenue and Washington Street.
Norfolk Street and Dunham Road.
Palmer Street and Dunham Road.
Park Avenue and Randall Street.
Prairie Avenue and Douglas Avenue.
Randall Street and Blodgett Avenue.
Saratoga Avenue and Candlewood Drive.
Seeley Avenue and Chicago Avenue.
Springside Avenue and Concord Drive.
Venard Road and Drove Avenue.
Washington Street and Chicago Avenue.
Washington Street and Grant Street.
Washington Street and Rogers Street.
6th Street and Florence Avenue.
7th Street/DesMoines Street and Williams Street.
39th Street and Cumnor Road.
39th Street and Washington Street.
59th Street and Fairmount Avenue.
61st Street and Lee Avenue.
61st Street and Pershing Avenue.
61st Street and Sherman Road.
61st Street and Woodward Avenue.

(Ord. No. 1362, § 1; Ord. No. 1365, § 1; Ord. No. 1558, § 1; Ord. No. 1559, § 1; Ord. No. 1589, § 1; Ord. No. 1654, § 3; Ord. No. 1655, § 3; Ord. No. 1781, § 6; Ord. No. 2024, § 4; Ord. No. 2095, §§ 5, 6; Ord. No. 2104, § 10; Ord. No. 2145, § 2; Ord. No. 2220, § 2; Ord. No. 2352, § 4; Ord. No. 2365, § 2; Ord. No. 2408, § 2; Ord. No. 2409, § 2; Ord. No. 3022, § 3; Ord. No. 3117, § 5; Ord. No. 3123, § 3; Ord. No. 3192, § 2; Ord. No. 3333, § 2.)

Section 2. That all ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed.

Section 3. That this ordinance shall be in full force and effect from and after its passage and publication in the manner provided by law.

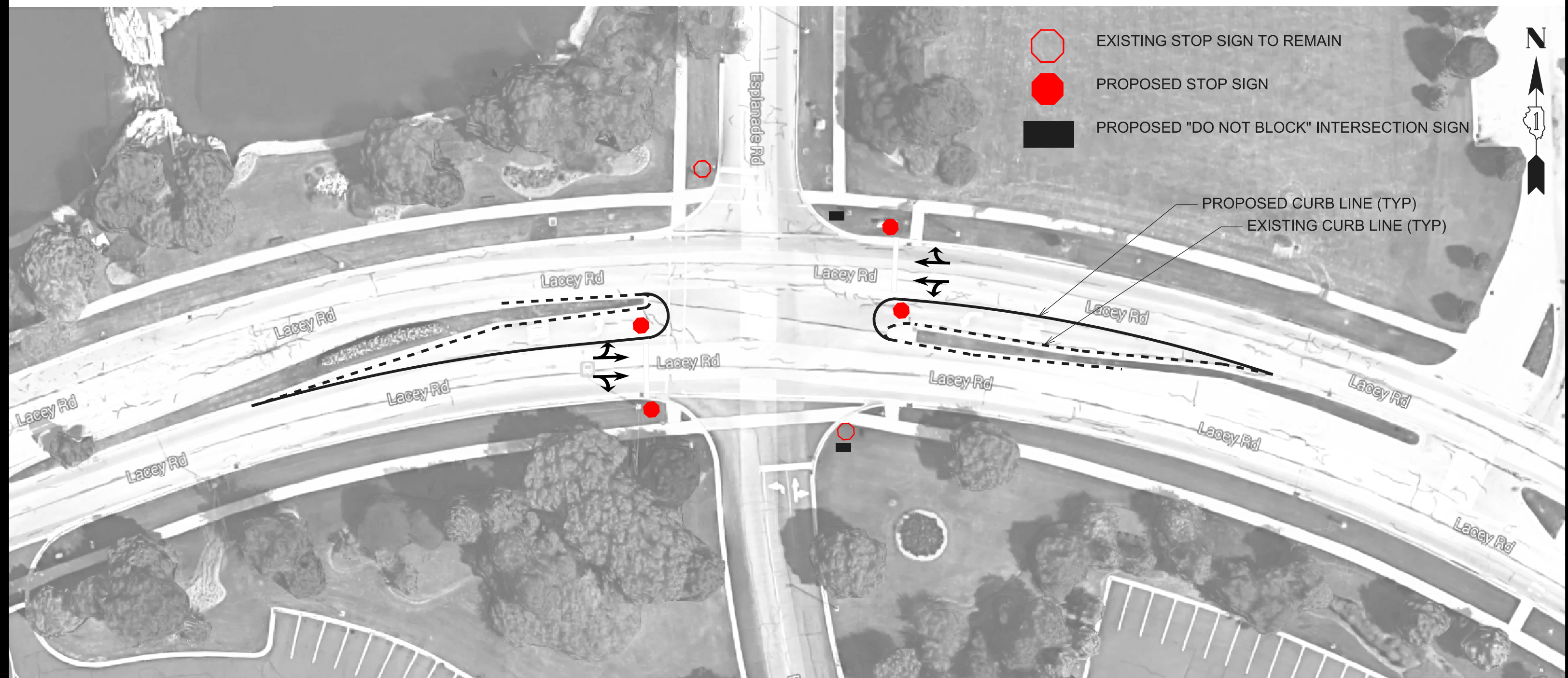
Mayor

Passed:

Published:

Attest: _____

Village Clerk



TRAFFIC CONTROL IMPROVEMENTS AT LACEY ROAD AND ESPLANADE ROAD

Lacey Road at Esplanade Road

Four-Way Stop Sign Analysis

Submitted to:



On Behalf of:

Hamilton Partners

Submitted by:



SE3, LLC
3041 Woodcreek Drive
Suite 211
Downers Grove, IL 60515-5417
630-641-9900

Contact: Matt Gauntt, PE
mgauntt@se3.us

Lacey Road at Esplanade Road Stop Sign Warrant Analysis

Project Purpose and Setting

The subject intersection is located in the Village of Downers Grove, DuPage County, IL approximately 900' west of the I-355 centerline and 350' south of Butterfield Road.

Lacey Road is a four lane roadway that serves the Esplanade Business Park. Esplanade Road is a local street that connects Butterfield Road to one of the office park's parking garages. Esplanade is stop sign controlled while Lacey is not controlled.

Our client, Hamilton Partners has contracted us to examine the possibility of adding stop signs on Lacey as well. The reasons for this addition are:

- During peak periods, traffic from the office park has difficulty crossing Lacey Road due to backups from the IL-56 intersection. Additional storage is planned for IL-56 at Esplanade Road under separate study.
- Limited site distance along Lacey to the east and west of the intersection.
- Reduction in accident exposure.

Figure 1 – Aerial Photo



Stop Sign Warrant Analysis

Following this page is a spreadsheet showing the analysis of a four-way stop sign warrant for the subject intersection. The analysis was performed according to the methodology outlined in the MUTCD 2009 Edition, Section 2B.07.

The requirements for volume are an average of 200 vehicles per hour on the side street for 8 hours where the major street also has over 300 vehicles per hour. For this criteria at the subject intersection, the major street volume is exceeded, but the minor street volume is a mere 3 vehicles per hour shy. At this time, many of the buildings south of the intersection are not at full capacity. With a lower vacancy rate, the cross street volume should easily exceed the requirements.

The MUTCD also has provisions that if the 85th percentile speed exceeds 40 MPH, the volume requirements are reduced by 30%. The Village of Downers Grove will be performing a speed study on Lacey to determine the applicability of this requirement.

The MUTCD also allows for several other considerations. Under Option – A, the need to control left-turn conflicts can be a consideration. As previously outlined, the traffic along Esplanade extends through the intersection of Lacey and Esplanade which does not allow northbound traffic to proceed through the intersection.

Additionally, Option C allows for the review of a site distance study. Attached to this report is a site distance study according to the IDOT BLR Manual. Under this analysis, both traffic from the right and the left of the intersection along Lacey Road has less site distance than is required.

Conclusion

Based on the above analysis, we believe that a four-way stop sign is warranted for the subject intersection. This is based on nearly meeting the volume requirements, conflicts with traffic going through the intersection and most importantly the existing site distance does not meet the requirements of the IDOT BLR Manual.

We would ask that the Village approve the installation of a four-way stop sign at the subject intersection. Due to the road curvature along Lacey, we would also recommend that advance warning signs for the stop signs also be installed.

Multi-Way Stop Sign Analysis

Lacey Road at Esplanade Road
Downers Grove, IL

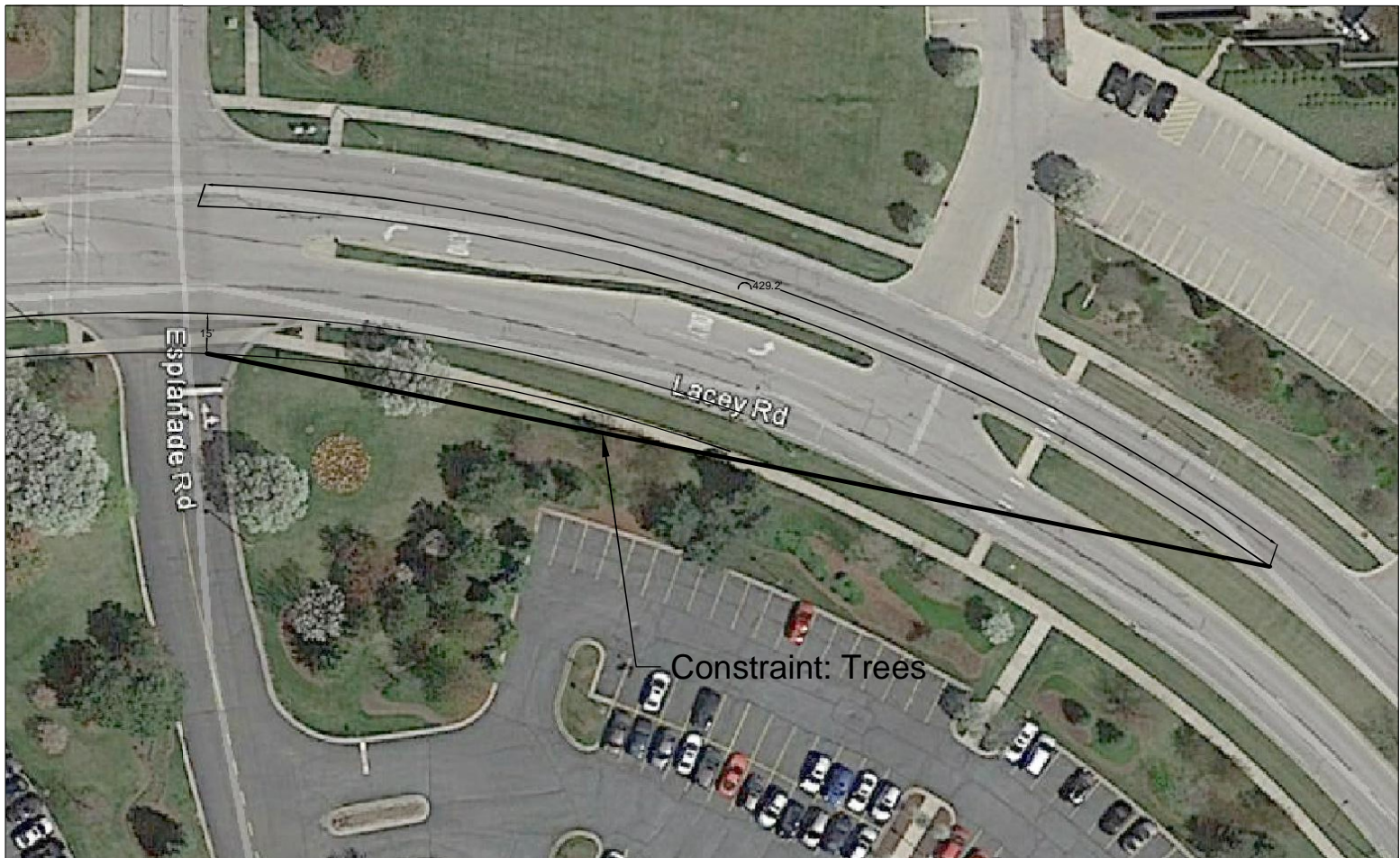
Time Range		Major Street - Lacey Road			Minor Street-Esplanade Rd.			Highest 8 Hours
Begin	End	Major St-EB	Major St-WB	Major Total	Minor St. - SB	Minor St. NB	Total Minor	
0:00	1:00	2	5	7	1	5	6	
1:00	2:00	4	14	18	0	14	14	
2:00	3:00	3	3	6	0	0	0	
3:00	4:00	0	1	1	0	0	0	
4:00	5:00	9	6	15	0	2	2	
5:00	6:00	42	6	48	2	1	3	
6:00	7:00	197	27	224	0	4	4	
7:00	8:00	845	109	954	6	17	23	
8:00	9:00	778	127	905	6	39	45	
9:00	10:00	374	110	484	6	42	48	
10:00	11:00	195	112	307	2	69	71	
11:00	12:00	181	201	382	10	159	169	169
12:00	13:00	302	233	535	7	165	172	172
13:00	14:00	394	149	543	6	132	138	138
14:00	15:00	219	159	378	1	108	109	109
15:00	16:00	146	208	354	6	181	187	187
16:00	17:00	214	582	796	8	314	322	322
17:00	18:00	181	615	796	17	325	342	342
18:00	19:00	153	196	349	5	133	138	138
19:00	20:00	60	68	128	4	54	58	
20:00	21:00	42	41	83	3	16	19	
21:00	22:00	56	59	115	2	11	13	
22:00	23:00	15	20	35	3	6	9	
23:00	0:00	10	10	20	0	2	2	

Total Highest 8-Hour Volume 1577

Average 197.1

Hours Major Street Exceeds Minimum Req. 12

Is Four-Way Stop Control Warranted? NO



IDOT BLR, Chapter 28-3.03 Case B-Intersection with Stop Control on the Minor Road

$ISD = 1.47 * (V\text{-major}) * Tg$
 $V\text{-major} = 40 \text{ MPH (Assumes Posted + 5 MPH for Design Speed)}$
 $Tg = 7.5 \text{ Sec}$
 $ISD = 1.47 * 40 * 7.5 = 441'$
 Available Site Distance = 429'

$ISD = 1.47 * (V\text{-major}) * Tg$
 $V\text{-major} = 40 \text{ MPH (Assumes Posted Speed)}$
 $Tg = 7.5 \text{ Sec}$
 $ISD = 1.47 * 35 * 7.5 = 386'$
 Available Site Distance = 429'



IDOT BLR, Chapter 28-3.03 Case B-Intersection with Stop Control on the Minor Road

$ISD = 1.47 * (V\text{-major}) * Tg$
 $V\text{-major} = 40 \text{ MPH (assumes Posted + 5 MPH for Design Speed)}$
 $Tg = 7.5 \text{ Sec}$
 $ISD = 1.47 * 40 * 7.5 = 441'$
 $\text{Available Site Distance} = 260'$

$ISD = 1.47 * (V\text{-major}) * Tg$
 $V\text{-major} = 35 \text{ MPH (assumes Posted Speed)}$
 $Tg = 7.5 \text{ Sec}$
 $ISD = 1.47 * 35 * 7.5 = 386'$
 $\text{Available Site Distance} = 260'$

4858.915 Downers Grove
Lacey Rd. and Esplanade Rd.
24-hr
GHA MIO

Gewalt Hamilton Associates Inc.
625 Forest Edge Drive
Vernon Hills, Illinois, United States 60061
(847) 478-9700 lbeckham@gha-engineers.com

Count Name: Lacey and Esplanade
Site Code:
Start Date: 06/16/2015
Page No: 1

Turning Movement Data

Start Time	Esplanade Rd. Southbound					Lacey Rd. Westbound					Esplanade Rd. Northbound					Lacey Rd. Eastbound					Int. Total
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	
12:00 AM	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	0	0	0	0	0	3
12:15 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
12:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	0	0	0	1	1	5
12:45 AM	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	3
Hourly Total	0	0	0	1	1	0	2	3	0	5	0	1	4	0	5	0	0	1	1	2	13
1:00 AM	0	0	0	0	0	0	2	1	5	8	0	0	3	1	4	0	0	2	0	2	14
1:15 AM	0	0	0	0	0	0	0	0	2	2	0	1	0	1	2	0	0	0	0	0	4
1:30 AM	0	0	0	0	0	0	0	0	2	2	0	0	8	0	8	0	0	1	0	1	11
1:45 AM	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	1	0	1	3
Hourly Total	0	0	0	0	0	0	2	2	10	14	0	1	11	2	14	0	0	4	0	4	32
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
2:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	2
2:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
2:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	2
Hourly Total	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	3	0	3	6
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Hourly Total	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	2	0	2	0	0	2	0	2	0	0	1	2	3	7
4:30 AM	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	1	1	0	2	6
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4	4
Hourly Total	0	0	0	0	0	0	0	3	3	6	0	0	2	0	2	0	1	5	3	9	17
5:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	5
5:15 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	8	2	10	12
5:30 AM	0	1	0	0	1	0	0	2	0	2	0	1	0	0	1	0	0	4	7	11	15
5:45 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	7	10	17	19
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6:15 AM	0	0	0	0	0	0	0	5	0	5	0	0	1	0	1	0	0	17	17	34	40
6:30 AM	0	0	0	0	0	0	0	4	1	5	0	0	0	0	0	0	3	29	24	56	61
6:45 AM	0	0	0	0	0	0	2	12	1	15	0	2	0	1	3	0	3	50	36	89	107
Hourly Total	0	0	0	0	0	0	2	23	2	27	0	2	1	1	4	0	6	103	88	197	228
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7:15 AM	0	0	1	0	1	0	9	14	7	30	0	1	2	0	3	0	2	127	82	211	245
7:30 AM	0	3	1	0	4	0	4	17	6	27	0	2	1	1	4	1	1	161	82	245	280
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Hourly Total	0	3	3	0	6	0	22	63	24	109	0	5	11	1	17	2	5	514	324	845	977
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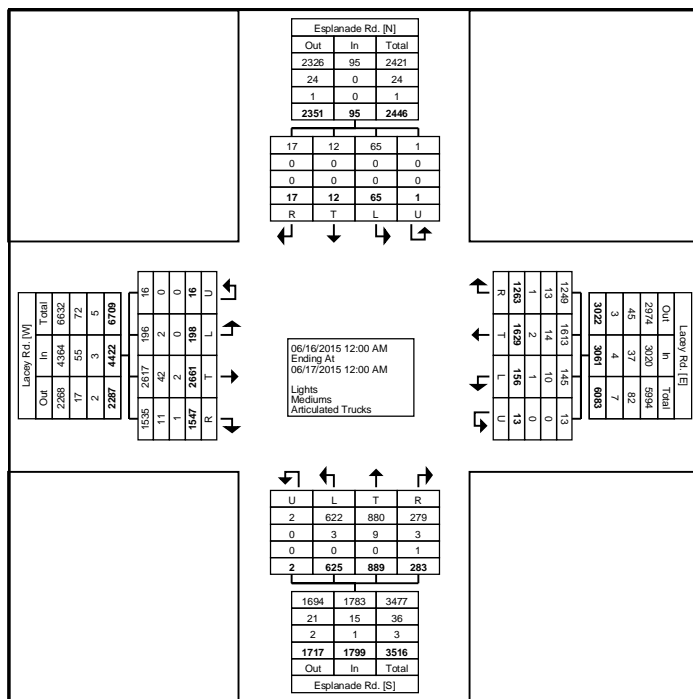
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8:30 AM	0	0	0	0	0	0	7	21	10	38	0	2	3	11	16	0	6	83	81	170	224
8:45 AM	0	2	0	0	2	0	3	16	8	27	0	1	4	1	6	0	3	78	73	154	189
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9:15 AM	0	0	0	1	1	0	2	15	7	24	0	0	3	0	3	0	2	46	52	100	128
9:30 AM	0	0	0	0	0	0	4	15	6	25	0	6	9	6	21	0	1	36	31	68	114
9:45 AM	0	3	0	0	3	0	6	19	8	33	0	2	5	2	9	0	3	39	31	73	118
Hourly Total	0	3	2	1	6	0	15	68	27	110	0	8	25	9	42	1	6	179	188	374	532
10:00 AM	0	1	0	0	1	0	3	15	6	24	0	3	10	3	16	0	6	21	34	61	102
10:15 AM	0	0	0	0	0	0	2	20	3	25	0	2	10	2	14	0	3	28	14	45	84
10:30 AM	0	0	1	0	1	0	3	19	13	35	0	3	10	1	14	0	2	26	20	48	98
10:45 AM	0	0	0	0	0	0	2	11	15	28	0	7	16	2	25	0	3	20	18	41	94
Hourly Total	0	1	1	0	2	0	10	65	37	112	0	15	46	8	69	0	14	95	86	195	378
11:00 AM	0	1	1	2	4	0	1	28	7	36	0	5	11	2	18	0	5	15	11	31	89
11:15 AM	0	1	1	0	2	0	1	25	16	42	0	8	26	3	37	0	2	23	13	38	119
11:30 AM	0	1	1	0	2	0	3	35	19	57	0	17	31	7	55	0	4	24	23	51	165
11:45 AM	0	2	0	0	2	0	4	23	39	66	0	8	37	4	49	0	4	42	15	61	178
Hourly Total	0	5	3	2	10	0	9	111	81	201	0	38	105	16	159	0	15	104	62	181	551
12:00 PM	0	1	0	0	1	0	2	26	47	75	0	12	31	12	55	0	6	45	16	67	198
12:15 PM	0	2	0	0	2	0	1	30	32	63	0	9	22	15	46	0	5	40	17	62	173
12:30 PM	0	2	1	0	3	0	4	30	23	57	0	11	21	2	34	0	8	41	38	87	181
12:45 PM	0	0	0	1	1	0	3	19	16	38	0	7	19	4	30	1	1	43	41	86	155
Hourly Total	0	5	1	1	7	0	10	105	118	233	0	39	93	33	165	1	20	169	112	302	707
1:00 PM	0	1	0	1	2	0	4	12	13	29	0	17	28	3	48	0	3	64	46	113	192
1:15 PM	0	1	0	3	4	0	3	23	11	37	0	2	10	2	14	0	3	63	27	93	148
1:30 PM	0	0	0	0	0	0	2	18	14	34	0	6	19	14	39	0	3	58	28	89	162
1:45 PM	0	0	0	0	0	0	7	30	12	49	0	11	11	9	31	0	1	64	34	99	179
Hourly Total	0	2	0	4	6	0	16	83	50	149	0	36	68	28	132	0	10	249	135	394	681
2:00 PM	0	0	0	0	0	0	4	14	18	36	0	7	9	4	20	0	1	47	20	68	124
2:15 PM	0	1	0	0	1	2	1	12	24	39	0	5	19	2	26	0	3	42	13	58	124
2:30 PM	0	0	0	0	0	0	2	27	13	42	0	6	21	6	33	0	5	22	18	45	120
2:45 PM	0	0	0	0	0	0	2	13	27	42	0	5	21	3	29	0	9	26	13	48	119
Hourly Total	0	1	0	0	1	2	9	66	82	159	0	23	70	15	108	0	18	137	64	219	487
3:00 PM	0	0	0	0	0	0	3	25	18	46	0	8	26	2	36	0	1	18	12	31	113
3:15 PM	0	1	0	1	2	0	7	21	21	49	0	5	27	7	39	0	1	33	8	42	132
3:30 PM	0	0	0	2	2	0	2	24	30	56	0	10	36	19	65	0	2	33	3	38	161
3:45 PM	0	2	0	0	2	0	0	31	26	57	0	7	29	5	41	0	6	22	7	35	135
Hourly Total	0	3	0	3	6	0	12	101	95	208	0	30	118	33	181	0	10	106	30	146	541
4:00 PM	0	0	0	1	1	0	3	33	72	108	0	43	33	4	80	0	5	36	5	46	235
4:15 PM	0	2	0	0	2	0	0	40	63	103	0	26	28	8	62	0	3	52	4	59	226
4:30 PM	0	2	0	1	3	0	3	96	63	162	0	67	9	17	93	5	4	36	8	53	311
4:45 PM	0	2	0	0	2	1	1	128	79	209	0	60	8	11	79	1	6	45	4	56	346
Hourly Total	0	6	0	2	8	1	7	297	277	582	0	196	78	40	314	6	18	169	21	214	1118
5:00 PM	0	0	1	0	1	6	6	116	62	190	2	51	15	22	90	0	4	45	3	52	333
5:15 PM	0	4	0	0	4	3	1	100	71	175	0	60	10	22	92	2	9	34	4	49	320
5:30 PM	0	4	0	0	4	1	1	74	67	143	0	50	24	2	76	2	3	35	6	46	269
5:45 PM	0	8	0	0	8	0	0	54	53	107	0	14	42	11	67	0	5	28	1	34	216
Hourly Total	0	16	1	0	17	10	8	344	253	615	2	175	91	57	325	4	21	142	14	181	1138
6:00 PM	0	2	0	0	2	0	1	34	42	77	0	13	37	7	57	0	6	37	7	50	186
6:15 PM	0	1	0	0	1	0	0	17	26	43	0	8	27	3	38	0	5	36	4	45	127
6:30 PM	0	1	0	1	2	0	0	23	17	40	0	1	18	1	20	0	4	23	0	27	89

6:45 PM	0	0	0	0	0	0	0	16	20	36	0	5	13	0	18	0	7	24	0	31	85
Hourly Total	0	4	0	1	5	0	1	90	105	196	0	27	95	11	133	0	22	120	11	153	487
7:00 PM	0	1	0	0	1	0	1	6	14	21	0	4	12	2	18	0	3	19	1	23	63
7:15 PM	0	0	0	0	0	0	0	9	2	11	0	4	7	2	13	0	2	12	2	16	40
7:30 PM	0	1	0	0	1	0	0	17	5	22	0	4	9	3	16	0	2	9	0	11	50
7:45 PM	0	2	0	0	2	0	0	11	3	14	0	1	6	0	7	0	2	8	0	10	33
Hourly Total	0	4	0	0	4	0	1	43	24	68	0	13	34	7	54	0	9	48	3	60	186
8:00 PM	0	0	0	0	0	0	0	5	5	10	0	1	5	1	7	0	2	7	0	9	26
8:15 PM	0	2	0	0	2	0	1	8	0	9	0	1	2	1	4	0	2	9	1	12	27
8:30 PM	0	0	0	0	0	0	0	12	0	12	0	0	3	0	3	0	1	9	0	10	25
8:45 PM	0	1	0	0	1	0	0	8	2	10	0	1	1	0	2	1	0	9	1	11	24
Hourly Total	0	3	0	0	3	0	1	33	7	41	0	3	11	2	16	1	5	34	2	42	102
9:00 PM	0	1	0	0	1	0	0	11	13	24	0	0	3	0	3	1	4	16	2	23	51
9:15 PM	0	0	0	0	0	0	0	4	3	7	0	2	4	0	6	0	2	7	2	11	24
9:30 PM	0	1	0	0	1	0	0	13	8	21	0	0	1	0	1	0	2	8	0	10	33
9:45 PM	0	0	0	0	0	0	1	0	6	7	0	0	1	0	1	0	0	12	0	12	20
Hourly Total	0	2	0	0	2	0	1	28	30	59	0	2	9	0	11	1	8	43	4	56	128
10:00 PM	1	1	0	0	2	0	0	4	3	7	0	0	0	0	0	0	0	2	1	3	12
10:15 PM	0	1	0	0	1	0	0	3	2	5	0	1	1	0	2	0	0	3	2	5	13
10:30 PM	0	0	0	0	0	0	1	3	0	4	0	2	2	0	4	0	0	4	1	5	13
10:45 PM	0	0	0	0	0	0	0	3	1	4	0	0	0	0	0	0	0	2	0	2	6
Hourly Total	1	2	0	0	3	0	1	13	6	20	0	3	3	0	6	0	0	11	4	15	44
11:00 PM	0	0	0	0	0	0	0	1	2	3	0	0	1	0	1	0	0	2	0	2	6
11:15 PM	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	0	4	0	4	7
11:30 PM	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	3	0	3	6
11:45 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	3
Hourly Total	0	0	0	0	0	0	1	7	2	10	0	0	2	0	2	0	0	10	0	10	22
Grand Total	1	65	12	17	95	13	156	1629	1263	3061	2	625	889	283	1799	16	198	2661	1547	4422	9377
Approach %	1.1	68.4	12.6	17.9	-	0.4	5.1	53.2	41.3	-	0.1	34.7	49.4	15.7	-	0.4	4.5	60.2	35.0	-	-
Total %	0.0	0.7	0.1	0.2	1.0	0.1	1.7	17.4	13.5	32.6	0.0	6.7	9.5	3.0	19.2	0.2	2.1	28.4	16.5	47.2	-
Lights	1	65	12	17	95	13	145	1613	1249	3020	2	622	880	279	1783	16	196	2617	1535	4364	9262
% Lights	100.0	100.0	100.0	100.0	100.0	100.0	92.9	99.0	98.9	98.7	100.0	99.5	99.0	98.6	99.1	100.0	99.0	98.3	99.2	98.7	98.8
Mediums	0	0	0	0	0	0	10	14	13	37	0	3	9	3	15	0	2	42	11	55	107
% Mediums	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.9	1.0	1.2	0.0	0.5	1.0	1.1	0.8	0.0	1.0	1.6	0.7	1.2	1.1
Articulated Trucks	0	0	0	0	0	0	1	2	1	4	0	0	0	1	1	0	0	2	1	3	8
% Articulated Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.1	0.1	0.1	0.1

4858.915 Downers Grove
 Lacey Rd. and Esplanade Rd.
 24-hr
 GHA MIO

Gewalt Hamilton Associates Inc.
 625 Forest Edge Drive
 Vernon Hills, Illinois, United States 60061
 (847) 478-9700 lbeckham@gha-engineers.com

Count Name: Lacey and Esplanade
 Site Code:
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Turning Movement Data Plot

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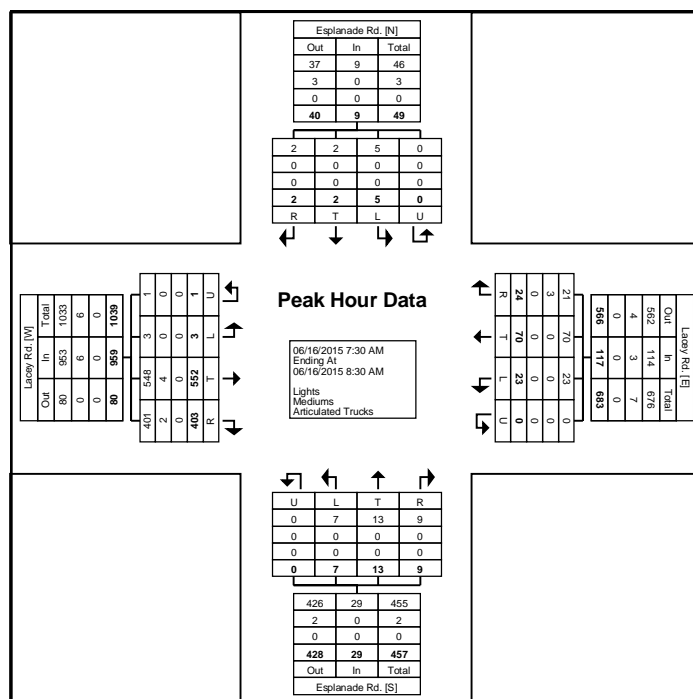
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Esplanade Rd. Southbound					Lacey Rd. Westbound					Esplanade Rd. Northbound					Lacey Rd. Eastbound					Int. Total
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	
7:30 AM	0	3	1	0	4	0	4	17	6	27	0	2	1	1	4	1	1	161	82	245	280
7:45 AM	0	0	1	0	1	0	3	19	6	28	0	1	7	0	8	0	1	158	101	260	297
8:00 AM	0	2	0	1	3	0	6	16	5	27	0	4	3	0	7	0	1	123	127	251	288
8:15 AM	0	0	0	1	1	0	10	18	7	35	0	0	2	8	10	0	0	110	93	203	249
Total	0	5	2	2	9	0	23	70	24	117	0	7	13	9	29	1	3	552	403	959	1114
Approach %	0.0	55.6	22.2	22.2	-	0.0	19.7	59.8	20.5	-	0.0	24.1	44.8	31.0	-	0.1	0.3	57.6	42.0	-	-
Total %	0.0	0.4	0.2	0.2	0.8	0.0	2.1	6.3	2.2	10.5	0.0	0.6	1.2	0.8	2.6	0.1	0.3	49.6	36.2	86.1	-
PHF	0.000	0.417	0.500	0.500	0.563	0.000	0.575	0.921	0.857	0.836	0.000	0.438	0.464	0.281	0.725	0.250	0.750	0.857	0.793	0.922	0.938
Lights	0	5	2	2	9	0	23	70	21	114	0	7	13	9	29	1	3	548	401	953	1105
% Lights	-	100.0	100.0	100.0	100.0	-	100.0	100.0	87.5	97.4	-	100.0	100.0	100.0	100.0	100.0	100.0	99.3	99.5	99.4	99.2
Mediums	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	4	2	6	9
% Mediums	-	0.0	0.0	0.0	0.0	-	0.0	0.0	12.5	2.6	-	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.5	0.6	0.8
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	-	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	0.0

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Turning Movement Peak Hour Data Plot (7:30 AM)

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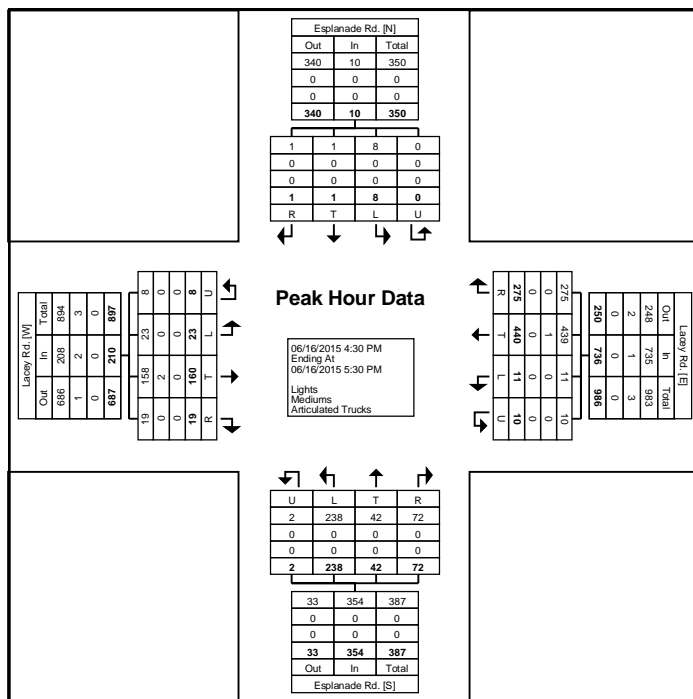
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Esplanade Rd. Southbound					Lacey Rd. Westbound					Esplanade Rd. Northbound					Lacey Rd. Eastbound					Int. Total
	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	App. Total	
4:30 PM	0	2	0	1	3	0	3	96	63	162	0	67	9	17	93	5	4	36	8	53	311
4:45 PM	0	2	0	0	2	1	1	128	79	209	0	60	8	11	79	1	6	45	4	56	346
5:00 PM	0	0	1	0	1	6	6	116	62	190	2	51	15	22	90	0	4	45	3	52	333
5:15 PM	0	4	0	0	4	3	1	100	71	175	0	60	10	22	92	2	9	34	4	49	320
Total	0	8	1	1	10	10	11	440	275	736	2	238	42	72	354	8	23	160	19	210	1310
Approach %	0.0	80.0	10.0	10.0	-	1.4	1.5	59.8	37.4	-	0.6	67.2	11.9	20.3	-	3.8	11.0	76.2	9.0	-	-
Total %	0.0	0.6	0.1	0.1	0.8	0.8	0.8	33.6	21.0	56.2	0.2	18.2	3.2	5.5	27.0	0.6	1.8	12.2	1.5	16.0	-
PHF	0.000	0.500	0.250	0.250	0.625	0.417	0.458	0.859	0.870	0.880	0.250	0.888	0.700	0.818	0.952	0.400	0.639	0.889	0.594	0.938	0.947
Lights	0	8	1	1	10	10	11	439	275	735	2	238	42	72	354	8	23	158	19	208	1307
% Lights	-	100.0	100.0	100.0	100.0	100.0	100.0	99.8	100.0	99.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.8	100.0	99.0	99.8
Mediums	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	3
% Mediums	-	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	1.0	0.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	-	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	0.0	0.0	0.0

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Turning Movement Peak Hour Data Plot (4:30 PM)

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