
Appendix
for
Project Steel TIS



Prepared For:
Prologis
6250 N. River Road, Suite 1100
Rosemont (Chicago), IL 60018

Prepared By:
Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C.
200 W. Madison Street, Suite 2900
Chicago, IL 60606

LANGAN

November 2025
541061101

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November 2025
541061101

APPENDICES

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APPENDIX A

Public Agency Correspondence / Preliminary Submission

From: Gabe Braboy <GBraboy@eeiweb.com>
Sent: Tuesday, July 29, 2025 1:27 PM
To: Jason Puglisi; Brad Sanderson
Cc: Christopher Prisk; Andrew Pierson; Timothy O'Neill; Fraser, Katie
Subject: [External] RE: Project Steel Initial Submission

Jason,

Thank you for providing the updated projections. I have no further comments on the growth rates for your analysis.

Regards,

GABRIEL BRABOY, PE

Senior Project Engineer I

GBraboy@eeiweb.com

Direct: 630.466.6735 / Cell: 815.993.8566 / Main: 630.466.6700

52 Wheeler Rd, Sugar Grove, IL 60554

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From: Jason Puglisi <jpuglisi@langan.com>
Sent: Tuesday, July 29, 2025 11:15 AM
To: Gabe Braboy <GBraboy@eeiweb.com>; Brad Sanderson <bsanderson@eeiweb.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Andrew Pierson <apierson@langan.com>; Timothy O'Neill <toneill@langan.com>; Fraser, Katie <kfraser@prologis.com>
Subject: RE: Project Steel Initial Submission

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Gabe / Brad,

We have received revised projections from CMAP using the more recent ADT information. The link below includes our revised preliminary submission and the letter from CMAP. We have also incorporated the updated information regarding Project Cardinal to the north.

<https://clients.langan.com/Sharing/FileSharing/ViewPosted?transactionHash=482884242>

Please let us know if this clears up the confusion regarding the growth rate discussion.

Thank you,

Jason Puglisi
Staff Engineer

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Direct: 312.547.7740

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From: Gabe Braboy <GBraboy@eeiweb.com>
Sent: Friday, July 25, 2025 11:39 AM
To: Jason Puglisi <jpuglisi@langan.com>; Brad Sanderson <bsanderson@eeiweb.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Andrew Pierson <apierson@langan.com>; Timothy O'Neill <toneill@langan.com>
Subject: RE: Project Steel Initial Submission

Jason,

The feedback was provided based on the notes below Table 3:

- The “Current Year” ADT information was obtained from IROADS.
- The 2050 ADT projections are provided by CMAP.

The letter from Mr. Rios states “traffic projections are developed using existing ADT data provided in the request letter and the results from the December 2024 CMAP Travel Demand Analysis.” Do you have a copy of your request letter to Mr. Rios?

Regards,

GABRIEL BRABOY, PE

Senior Project Engineer I

GBraboy@eeiweb.com

Direct: 630.466.6735 / Cell: 815.993.8566 / Main: 630.466.6700

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From: Jason Puglisi <jpuglisi@langan.com>
Sent: Friday, July 25, 2025 11:08 AM
To: Gabe Braboy <GBraboy@eeiweb.com>; Brad Sanderson <bsanderson@eeiweb.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Andrew Pierson <apierson@langan.com>; Timothy O'Neill <toneill@langan.com>
Subject: RE: Project Steel Initial Submission

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Gabriel / Brad,

We had some questions regarding the feedback you provided on our growth rate calculations. The “current year” ADT we used was based on information provided by CMAP (see attached CMAP letter). We would like to stick to the information provided by CMAP as it is our understanding that the 2050 projections are based on the current year ADTs that they provide.

We used this information to calculate a growth rate percentage per year. This percentage was then applied linearly to calculate the growth shown in figures 4A,5A,and 6A. I have reattached Table 3 and the growth figures for reference.

Please let us know if you agree with the methodology that we are using for our growth rate calculations. Feel free to give me a call to discuss in more details.

Thank you,

Jason Puglisi
Staff Engineer

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Direct: 312.547.7740

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From: Gabe Braboy <GBraboy@eeiweb.com>
Sent: Wednesday, July 23, 2025 3:43 PM
To: Andrew Pierson <apierson@langan.com>
Cc: Brad Sanderson <bsanderson@eeiweb.com>
Subject: RE: Project Steel Initial Submission

Andrew,

Attached is a summary of the comments to be addressed in the final report for the Traffic Impact Study for Project Steel. Let me know if you have any questions.

Regards,

GABRIEL BRABOY, PE

Senior Project Engineer I

GBraboy@eeiweb.com

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From: Brad Sanderson <bsanderson@eeiweb.com>

Sent: Wednesday, July 23, 2025 10:53 AM

To: Andrew Pierson <apierson@langan.com>

Cc: Gabe Braboy <GBraboy@eeiweb.com>

Subject: RE: Project Steel Initial Submission

Good morning,

Your best contact is probably the Kendall County Engineer = Fran Klaas.

Fran Klaas fklaas@kendallcountyil.gov

Also, here is a link to the Rt 47 prefinal plans that we just received. They are on tap for a November letting at this point.

 [Contract 62M71 - Waterpark to Jericho](#)

We also just received the Project Cardinal traffic study. Your study should take their development into account. We will share your study with them as well.

<https://app.box.com/s/rwkivod07mf3dnrtkk9sopku2zs84252>

Let me know if you need anything else.

BRAD

Chief Operating Officer / President

D: 630.466.6720

C: 630.816.0957

From: Andrew Pierson <apierson@langan.com>
Sent: Wednesday, July 23, 2025 9:33 AM
To: Brad Sanderson <bsanderson@eeiweb.com>
Subject: RE: Project Steel Initial Submission

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Brad,

I know we just submitted the initial submission but could you provide one additional information for the project? Can you get me the timings at a couple study intersections or a name for someone to call? These two intersections are signalized:

1. IL 47 & Galena Road
2. Galena Road & Eldmain Road

Thanks.

Andrew Pierson, PE, PTOE
Senior Traffic Project Manager

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Direct: 216.328.3318

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From: Brad Sanderson <bsanderson@eeiweb.com>
Sent: Monday, July 21, 2025 4:03 PM
To: Andrew Pierson <apierson@langan.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Jason Puglisi <jpuglisi@langan.com>; Timothy O'Neill <toneill@langan.com>; Chris Ott <COtt@eeiweb.com>; Fraser, Katie <kfraser@prologis.com>
Subject: RE: Project Steel Initial Submission

Thanks and yes, we will take a look at the information.

BRADLEY P. SANDERSON, PE

Chief Operating Officer / President

bsanderson@eeiweb.com

Direct: 630.466.6720 / Cell: 630.816.0957 / Main: 630.466.6700

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From: Andrew Pierson <apierson@langan.com>
Sent: Monday, July 21, 2025 2:01 PM
To: Brad Sanderson <bsanderson@eeiweb.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Jason Puglisi <jpuglisi@langan.com>; Timothy O'Neill <toneill@langan.com>; Chris Ott <COtt@eeiweb.com>; Fraser, Katie <kfraser@prologis.com>
Subject: Project Steel Initial Submission

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Brad,

We have put together the preliminary submission (linked below) for the proposed Project Steel development. Outlined below are the contents of the submission.

<https://clients.langan.com/Sharing/FileSharing/ViewPosted?transactionHash=-1403763866>

Link Expires 9/12/2025

- Table 1 - Project Steel trip generation
- Table 2 – Project Cardinal trip generation based on the project’s methodology letter and dived into phases based on the site plan from the city’s website.
- Table 3 – Growth rate calculations based on data provided by CMAP.
- Figures – Background development trips and Project Steel trips were routed based on the existing distribution of traffic. Project Cardinal phasing was assumed to approximately line up with Project Steel.

Could you please review the figures and tables and confirm if the trip generation estimations and trip routing are acceptable before we proceed with our full TIS submission?

Let us know if you have any questions regarding our submission.

Andrew Pierson, PE, PTOE
Senior Traffic Project Manager

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Direct: 216.328.3318

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From: Brad Sanderson <bsanderson@eeiweb.com>

Sent: Friday, June 13, 2025 4:38 PM

To: Andrew Pierson <apierson@langan.com>

Cc: Christopher Prisk <cprisk@Langan.com>; Jason Puglisi <jpuglisi@langan.com>; Timothy O'Neill <toneill@langan.com>; Chris Ott <COtt@eeiweb.com>

Subject: RE: Project Steel Coordination E-Mail

Good afternoon,

Please see our comments below. Note that you should contact Kendall County Highway Department also.

BRADLEY P. SANDERSON, PE

Chief Operating Officer / President

bsanderson@eeiweb.com

Direct: 630.466.6720 / Cell: 630.816.0957 / Main: 630.466.6700

52 Wheeler Rd, Sugar Grove, IL 60554

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From: Andrew Pierson <apierson@langan.com>
Sent: Thursday, June 12, 2025 12:38 PM
To: Brad Sanderson <bsanderson@eeiweb.com>
Cc: Christopher Prisk <cprisk@Langan.com>; Jason Puglisi <jpuglisi@langan.com>; Timothy O'Neill <toneill@langan.com>
Subject: Project Steel Coordination E-Mail

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Brad,

It was great to talk to you at the kick-off meet on the 21st and we are excited to get started on this important project. As we discussed at the meeting, I've listed below my preliminary scoping items in an effort to minimize any uncertainty as to what information should be collected and presented in the TIS. Once we have your concurrence on these items, we'll develop and submit to you a preliminary submission which will document the collected traffic volumes, generated trip generation and proposed trip distribution.

The items which are attached:

1. The Trip Generation tables for the site are attached. The first spreadsheet breaks down the employee traffic based on the information for this specific site which we received from the client. Most employees are expected to access the site in the early morning, mid-day and evening with only some overnight employees expected to exit during the AM peak hour. We would prefer to utilize these generated volumes in the study since they are site specific, and we believe ITE data is out of date when it comes to traffic generated by the current data center design. The ITE Trip Generation information utilizing the Gross Square Footage of the proposed office spaces is also attached for your reference. **Please confirm you are agreeable using the site-specific trip generation for the study. We are okay with site-specific trip generation but ask that you provide support on how the numbers were derived.**
2. The site plan is attached. The site plan has changed since the Trip Generation Letter was submitted and the total number of proposed buildings has been decreased to 18 buildings. This plan specifies the site is to be completed in three phases with Phase 1 along extended Beecher, Phase 2 in the center of the site and Phase 3 on the northwest corner of the site. Phase 1 will be analyzed with an access driveway on Corneils Road and two access driveways onto proposed Beecher Road. Phase 2 is shown to have an access driveway onto Corneils Road and cross access driveway into the Phase 1 and Phase 3 internal driveway network. Phase 3 shows it will have two access driveways onto Rt 7 and an emergency drive onto Rt 9. We are proposing that the proposed driveway access locations onto Galena, Eldermain and Corneils be analyzed. **Please confirm that minor access driveways onto Beech or internal driveway intersections do not need to be analyzed. Internal and minor access drives do not need to be analyzed. We note that we continue to have concerns with the proximity of the Corneils Road access for Phase 1 to Proposed Beecher Road.**

I plan on including the following in the TIS submission:

1. The following intersections will be counted and will be considered the study limits for this project. **Please confirm the study intersections which will be required to be analyzed.**
 1. Rt 9 (Galena) & E. Beech Road (W. Beech Road will not be counted due to the very low anticipated side street volumes)
 2. Rt 9 (Galena) & Rt 7 (Eldermain)
 3. Corneils Rd & Beech Road (It is understood that the existing traffic on Beech Road will be moved to the relocated Beech Road in the Build scenario)
 4. Rt 7 (Eldermain) & Corneils Rd
 5. **Add:**
 1. **Rt 47 and Galena Road**
 2. **Rt 47 and Corneils Road**
2. The estimated opening for Phase 1 is in 2034 while the estimated opening of Phase 2 is in 2039 while Phase 3 could be in 2044. The opening year for each of the three phases will be analyzed in the study. **Please confirm no other Design Year analyses will be necessary. No other design year will be necessary.**
3. **Please provide the traffic impact studies for any permitted nearby sites which we will need to incorporate into our future No-Build traffic volumes. Please see the attached preliminary numbers from Project Cardinal.**
4. The proposed access locations being used by construction trucks will be discussed in the TIS but there will be no specific capacity analyses performed for these construction vehicles. The construction trucks will sporadically enter the site throughout the day and should not be concentrated during either peak hour. **Please let me know if any additional construction traffic verbiage or analyses is necessary. Please provide a memo regarding the expected construction traffic (i.e. trucks and workers).**
5. The distribution of employee traffic will be calculated by reviewing surrounding possible employment areas. The distribution of truck traffic will concentrate on the quickest access to the nearby freeway interchanges. **Please provide any preferences in terms of the distribution of employee and truck traffic to and from the site. No preference and should be based on existing traffic patterns.**
6. Synchro 12 will be used for Capacity Analyses.
7. Background growth rates will be obtained from CMAP for the various study roadways. **Please specify if a specific background traffic growth rate should be used. We are good with the CMAP traffic projections.**
8. We will evaluate signal and turn lane warrants as applicable.
9. Our search of the City of Yorkville website did not show any specific requirements for a Traffic Impact Study so **please provide any standards that will need to be adhered to that deviate from the typical IDOT requirements.**

Please review all of these items and let us know as soon as possible if we can proceed under these assumptions.

Andrew Pierson, PE
Senior Traffic Project Manager

LANGAN

Direct: 216.328.3318

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Phone: 216.328.3300 Fax: 216.328.3301

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APPENDIX B

Turning Movement Count Data

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Eldamain Rd / Ashe Rd & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.712514, -88.484584

Provided by: Gewalt Hamilton Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Eldamain Rd Northbound						Ashe Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	31	29	1	0		61	6	7	1	0		14	2	76	15	0		93	0	15	5	0		20	188
6:15 AM	35	29	8	0		72	20	9	0	0		29	2	80	19	0		101	4	26	13	0		43	245
6:30 AM	42	31	10	0		83	12	12	5	0		29	2	79	15	0		96	0	21	14	0		35	243
6:45 AM	26	24	13	0		63	21	9	5	0		35	3	62	19	0		84	0	31	14	0		45	227
Hourly Total	134	113	32	0		279	59	37	11	0		107	9	297	68	0		374	4	93	46	0		143	903
7:00 AM	28	36	6	0		70	4	9	4	0		17	3	107	18	0		128	1	23	12	0		36	251
7:15 AM	36	22	9	0		67	10	17	6	0		33	3	96	17	0		116	1	22	12	0		35	251
7:30 AM	35	23	11	0		69	16	19	2	0		37	7	102	25	0		134	4	28	24	0		56	296
7:45 AM	30	26	12	0		68	12	16	4	0		32	5	88	14	0		107	2	32	19	0		53	260
Hourly Total	129	107	38	0		274	42	61	16	0		119	18	393	74	0		485	8	105	67	0		180	1058
8:00 AM	22	27	12	0		61	16	16	2	0		34	5	64	13	0		82	1	17	16	0		34	211
8:15 AM	24	20	10	0		54	14	16	3	0		33	5	32	36	0		73	1	28	17	0		46	206
8:30 AM	4	37	14	0		55	14	17	2	0		33	9	0	72	0		81	0	31	11	0		42	211
8:45 AM	1	34	12	0		47	20	12	1	0		33	12	4	61	0		77	5	28	11	0		44	201
Hourly Total	51	118	48	0		217	64	61	8	0		133	31	100	182	0		313	7	104	55	0		166	829
3:00 PM	19	21	9	0		49	16	23	6	0		45	7	33	12	0		52	3	83	35	0		121	267
3:15 PM	16	16	11	0		43	31	37	3	0		71	13	39	23	0		75	1	92	30	0		123	312
3:30 PM	14	23	9	0		46	24	30	3	0		57	15	34	31	0		80	5	105	29	0		139	322
3:45 PM	16	29	11	0		56	29	32	1	0		62	12	46	24	0		82	1	103	54	0		158	358
Hourly Total	65	89	40	0		194	100	122	13	0		235	47	152	90	0		289	10	383	148	0		541	1259
4:00 PM	16	16	7	0		39	13	38	1	0		52	5	28	15	0		48	8	114	50	0		172	311
4:15 PM	23	29	18	0		70	18	34	6	0		58	8	43	16	0		67	2	104	39	0		145	340
4:30 PM	23	29	8	0		60	13	33	3	0		49	14	39	10	0		63	5	91	41	0		137	309
4:45 PM	15	20	6	0		41	18	39	2	0		59	7	32	14	0		53	6	114	46	0		166	319
Hourly Total	77	94	39	0		210	62	144	12	0		218	34	142	55	0		231	21	423	176	0		620	1279
5:00 PM	12	19	8	0		39	17	33	3	0		53	10	37	18	0		65	6	126	41	0		173	330
5:15 PM	11	16	3	0		30	20	33	1	0		54	5	35	19	0		59	4	109	37	0		150	293
5:30 PM	18	26	5	0		49	18	33	3	0		54	10	24	16	0		50	3	96	38	0		137	290
5:45 PM	15	27	6	0		48	13	26	2	0		41	3	32	6	0		41	2	87	34	0		123	253
Hourly Total	56	88	22	0		166	68	125	9	0		202	28	128	59	0		215	15	418	150	0		583	1166
Grand Total	512	609	219	0		1340	395	550	69	0		1014	167	1212	528	0		1907	65	1526	642	0		2233	6494
Approach %	3.8	4.5	1.6	0.0	-	-	3.9	5.4	0.7	0.0	-	-	0.9	6.4	2.8	0.0	-	-	0.3	6.8	2.9	0.0	-	-	-
Total %	7.9	9.4	3.4	0	-	-	6.1	8.5	1.1	0	-	-	2.6	18.7	8.1	0	-	-	1	23.5	9.9	0	-	-	-
Lights	510	596	192	0	0	1298	273	526	68	0	-	867	151	1197	392	0	-	1740	65	1512	638	0	-	2215	6120
% Lights	99.6	97.9	87.7	0.0	-	285.2	69.1	95.6	98.6	0.0	-	263.3	90.4	98.8	74.2	0.0	-	263.4	100	99.1	99.4	0.0	-	298.5	1110.4
Trucks	1	12	27	0	0	40	121	23	1	0	-	145	14	13	134	0	-	161	0	12	3	0	-	15	361
% Trucks	0.2	2	12.3	0.0	-	14.5	30.6	4.2	1.4	0.0	-	36.2	8.4	1.1	25.4	0.0	-	34.9	0.0	0.8	0.5	0.0	-	1.3	86.9
Buses	1	1	0	0	0	2	1	1	0	0	-	2	2	2	2	0	-	6	0	2	1	0	-	3	13
% Buses	0.2	0.2	0.0	0.0	-	0.4	0.3	0.2	0.0	0.0	-	0.5	1.2	0.2	0.4	0.0	-	1.8	0.0	0.1	0.2	0.0	-	0.3	3

LANGAN

Eldamain Rd / Ashe Rd & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.712514, -88.484584

Provided by: Gewalt Hamilton Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Eldamain Rd Northbound						Ashe Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	28	36	6	0		70	4	9	4	0		17	3	107	18	0		128	1	23	12	0		36	251
7:15 AM	36	22	9	0		67	10	17	6	0		33	3	96	17	0		116	1	22	12	0		35	251
7:30 AM	35	23	11	0		69	16	19	2	0		37	7	102	25	0		134	4	28	24	0		56	296
7:45 AM	30	26	12	0		68	12	16	4	0		32	5	88	14	0		107	2	32	19	0		53	260
Hourly Total	129	107	38	0		274	42	61	16	0		119	18	393	74	0		485	8	105	67	0		180	1058
Approach %	4.7	3.9	1.4	0.0	-	-	3.5	5.1	1.3	0.0	-	-	0.4	8.1	1.5	0.0	-	-	0.4	5.8	3.7	0.0	-	-	-
Total %	12.2	10.1	3.6	0	-	-	4	5.8	1.5	0	-	-	1.7	37.1	7	0	-	-	0.8	9.9	6.3	0	-	-	-
Lights	127	104	30	0	0	261	18	60	16	0	-	94	15	391	42	0	-	448	8	101	66	0	-	175	978
% Lights	98.4	97.2	78.9	0.0	-	274.5	42.9	98.4	100	0.0	-	241.3	83.3	99.5	56.8	0.0	-	239.6	100	96.2	98.5	0.0	-	294.7	1050.1
Trucks	1	2	8	0	0	11	24	1	0	0	-	25	2	2	32	0	-	36	0	3	0	0	-	3	75
% Trucks	0.8	1.9	21.1	0.0	-	23.8	57.1	1.6	0.0	0.0	-	58.7	11.1	0.5	43.2	0.0	-	54.8	0.0	2.9	0.0	0.0	-	2.9	140.2
Buses	1	1	0	0	0	2	0	0	0	0	-	0	1	0	0	0	-	1	0	1	1	0	-	2	5
% Buses	0.8	0.9	0.0	0.0	-	1.7	0.0	0.0	0.0	0.0	-	0	5.6	0.0	0.0	0.0	-	5.6	0.0	1	1.5	0.0	-	2.5	9.8

LANGAN

Eldamain Rd / Ashe Rd & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.712514, -88.484584

Provided by: Gewalt Hamilton Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Eldamain Rd Northbound						Ashe Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	16	16	11	0		43	31	37	3	0		71	13	39	23	0		75	1	92	30	0		123	312
3:30 PM	14	23	9	0		46	24	30	3	0		57	15	34	31	0		80	5	105	29	0		139	322
3:45 PM	16	29	11	0		56	29	32	1	0		62	12	46	24	0		82	1	103	54	0		158	358
4:00 PM	16	16	7	0		39	13	38	1	0		52	5	28	15	0		48	8	114	50	0		172	311
Hourly Total	62	84	38	0		184	97	137	8	0		242	45	147	93	0		285	15	414	163	0		592	1303
Approach %	3.4	4.6	2.1	0.0	-	-	4.0	5.7	0.3	0.0	-	-	1.6	5.2	3.3	0.0	-	-	0.3	7.0	2.8	0.0	-	-	-
Total %	4.8	6.4	2.9	0	-	-	7.4	10.5	0.6	0	-	-	3.5	11.3	7.1	0	-	-	1.2	31.8	12.5	0	-	-	-
Lights	62	80	36	0	0	178	82	131	8	0	-	221	43	144	77	0	-	264	15	414	163	0	-	592	1255
% Lights	100	95.2	94.7	0.0	-	289.9	84.5	95.6	100	0.0	-	280.1	95.6	98	82.8	0.0	-	276.4	100	100	100	0.0	-	300	1146.4
Trucks	0	4	2	0	0	6	15	5	0	0	-	20	1	3	16	0	-	20	0	0	0	0	-	0	46
% Trucks	0.0	4.8	5.3	0.0	-	10.1	15.5	3.6	0.0	0.0	-	19.1	2.2	2	17.2	0.0	-	21.4	0.0	0.0	0.0	0.0	-	0	50.6
Buses	0	0	0	0	0	0	0	1	0	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	2
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.7	0.0	0.0	-	0.7	2.2	0.0	0.0	0.0	-	2.2	0.0	0.0	0.0	0.0	-	0	2.9

LANGAN

Eldamain Rd & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690035, -88.488741

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Eldamain Rd Northbound						Eldamain Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	4	6	1	0	11	0	91	5	0	96	0	28	0	0	28	135			
6:15 AM	0	0	0	0	0	0	8	0	3	0	11	0	89	4	0	93	0	48	0	0	48	152			
6:30 AM	0	0	0	0	0	0	6	0	1	0	7	0	98	5	0	103	2	40	0	0	42	152			
6:45 AM	0	0	0	0	0	0	3	0	0	0	3	0	89	5	0	94	3	67	0	0	70	167			
Hourly Total	0	0	0	0	0	0	21	6	5	0	32	0	367	19	0	386	5	183	0	0	188	606			
7:00 AM	0	0	0	0	0	0	2	0	1	0	3	0	126	2	0	128	1	33	0	0	34	165			
7:15 AM	0	0	0	0	0	0	2	0	3	0	5	0	115	5	0	120	5	38	0	0	43	168			
7:30 AM	0	0	0	0	0	0	4	0	2	0	6	0	136	8	1	145	1	51	0	0	52	203			
7:45 AM	0	0	0	0	0	0	3	0	2	0	5	0	93	5	0	98	4	49	0	0	53	156			
Hourly Total	0	0	0	0	0	0	11	0	8	0	19	0	470	20	1	491	11	171	0	0	182	692			
8:00 AM	0	0	0	0	0	0	6	0	4	0	10	0	77	6	0	83	1	44	0	0	45	138			
8:15 AM	0	0	0	0	0	0	2	0	0	0	2	0	82	4	0	86	0	57	0	0	57	145			
8:30 AM	0	0	0	0	0	0	2	0	2	0	4	0	67	5	0	72	4	54	0	0	58	134			
8:45 AM	0	0	0	0	0	0	3	0	1	0	4	0	86	3	0	89	3	61	0	0	64	157			
Hourly Total	0	0	0	0	0	0	13	0	7	0	20	0	312	18	0	330	8	216	0	0	224	574			
3:00 PM	0	0	0	0	0	0	6	0	1	0	7	0	59	4	0	63	1	118	0	0	119	189			
3:15 PM	0	0	0	0	0	0	5	0	1	0	6	0	76	9	0	85	4	114	0	0	118	209			
3:30 PM	0	0	0	0	0	0	8	0	4	0	12	0	86	3	0	89	2	139	0	0	141	242			
3:45 PM	0	0	0	0	0	0	6	0	2	0	8	0	69	3	0	72	4	136	0	0	140	220			
Hourly Total	0	0	0	0	0	0	25	0	8	0	33	0	290	19	0	309	11	507	0	0	518	860			
4:00 PM	0	0	0	0	0	0	4	0	3	0	7	0	49	7	0	56	5	132	0	0	137	200			
4:15 PM	0	0	1	0	1	1	6	0	1	0	7	0	61	5	0	66	7	135	1	0	143	217			
4:30 PM	0	0	0	0	0	0	7	0	6	0	13	0	64	6	0	70	4	117	0	0	121	204			
4:45 PM	0	0	0	0	0	0	11	0	3	0	14	0	51	2	0	53	4	136	0	0	140	207			
Hourly Total	0	0	1	0	1	1	28	0	13	0	41	0	225	20	0	245	20	520	1	0	541	828			
5:00 PM	0	0	0	0	0	0	3	0	4	0	7	0	64	3	0	67	5	128	0	0	133	207			
5:15 PM	0	0	0	0	0	0	5	0	2	0	7	0	61	5	0	66	8	128	0	0	136	209			
5:30 PM	0	0	0	0	0	0	7	0	4	0	11	0	42	4	0	46	7	123	0	0	130	187			
5:45 PM	0	0	0	0	0	0	8	0	2	0	10	0	41	5	0	46	3	106	0	0	109	165			
Hourly Total	0	0	0	0	0	0	23	0	12	0	35	0	208	17	0	225	23	485	0	0	508	768			
Grand Total	0	0	1	0	1	1	121	6	53	0	180	0	1872	113	1	1986	78	2082	1	0	2161	4328			
Approach %	0.0	0.0	10.0	0.0	-	-	6.7	0.3	2.9	0.0	-	-	0.0	9.4	0.6	0.0	-	-	0.4	9.6	0.0	0.0	-	-	-
Total %	0	0	0	0	-	-	2.8	0.1	1.2	0	-	-	0	43.3	2.6	0	-	-	1.8	48.1	0	0	-	-	-
Lights	0	0	1	0	0	1	116	6	51	0	173	0	1709	110	1	1820	75	1924	1	0	2000	3994			
% Lights	0.0	0.0	100	0.0	-	100	95.9	100	96.2	0.0	-	292.1	0.0	91.3	97.3	100	-	288.6	96.2	92.4	100	0.0	-	288.6	969.3
Trucks	0	0	0	0	0	0	5	0	2	0	7	0	160	3	0	163	3	157	0	0	160	330			
% Trucks	0.0	0.0	0.0	0.0	-	0	4.1	0.0	3.8	0.0	7.9	0.0	8.5	2.7	0.0	11.2	3.8	7.5	0.0	0.0	11.3	30.4			
Buses	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	4			
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0	0.2			

LANGAN

Eldamain Rd & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690035, -88.488741

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Eldamain Rd Northbound						Eldamain Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	0	0	0	0	0	2	0	1	0	3	0	126	2	0	128	1	33	0	0	34	165			
7:15 AM	0	0	0	0	0	0	2	0	3	0	5	0	115	5	0	120	5	38	0	0	43	168			
7:30 AM	0	0	0	0	0	0	4	0	2	0	6	0	136	8	1	145	1	51	0	0	52	203			
7:45 AM	0	0	0	0	0	0	3	0	2	0	5	0	93	5	0	98	4	49	0	0	53	156			
Hourly Total	0	0	0	0	0	0	11	0	8	0	19	0	470	20	1	491	11	171	0	0	182	692			
Approach %	0	0	0	0	-	-	5.8	0.0	4.2	0.0	-	-	0.0	9.6	0.4	0.0	-	-	0.6	9.4	0.0	0.0	-	-	-
Total %	0	0	0	0	-	-	1.6	0	1.2	0	-	-	0	67.9	2.9	0.1	-	-	1.6	24.7	0	0	-	-	-
Lights	0	0	0	0	0	0	9	0	7	0	16	0	436	20	1	457	11	139	0	0	150	623			
% Lights	0.0	0.0	0.0	0.0	-	0	81.8	0.0	87.5	0.0	-	169.3	0.0	92.8	100	100	-	292.8	100	81.3	0.0	0.0	-	181.3	643.4
Trucks	0	0	0	0	0	0	2	0	1	0	3	0	33	0	0	33	0	32	0	0	32	68			
% Trucks	0.0	0.0	0.0	0.0	-	0	18.2	0.0	12.5	0.0	-	30.7	0.0	7	0.0	0.0	-	7	0.0	18.7	0.0	0.0	-	18.7	56.4
Buses	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1			
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0	0.2

LANGAN

Eldamain Rd & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690035, -88.488741

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Eldamain Rd Northbound						Eldamain Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	0	0	0	0	0	0	5	0	1	0	0	6	0	76	9	0	0	85	4	114	0	0	0	118	209
3:30 PM	0	0	0	0	0	0	8	0	4	0	0	12	0	86	3	0	0	89	2	139	0	0	0	141	242
3:45 PM	0	0	0	0	0	0	6	0	2	0	0	8	0	69	3	0	0	72	4	136	0	0	0	140	220
4:00 PM	0	0	0	0	0	0	4	0	3	0	0	7	0	49	7	0	0	56	5	132	0	0	0	137	200
Hourly Total	0	0	0	0	0	0	23	0	10	0	0	33	0	280	22	0	0	302	15	521	0	0	0	536	871
Approach %	0	0	0	0	-	-	7.0	0.0	3.0	0.0	-	-	0.0	9.3	0.7	0.0	-	-	0.3	9.7	0.0	0.0	-	-	-
Total %	0	0	0	0	-	-	2.6	0	1.1	0	-	-	0	32.1	2.5	0	-	-	1.7	59.8	0	0	-	-	-
Lights	0	0	0	0	0	0	23	0	9	0	-	32	0	256	21	0	-	277	15	503	0	0	-	518	827
% Lights	0.0	0.0	0.0	0.0	-	0	100	0.0	90	0.0	-	190	0.0	91.4	95.5	0.0	-	186.9	100	96.5	0.0	0.0	-	196.5	573.4
Trucks	0	0	0	0	0	0	0	0	1	0	-	1	0	23	1	0	-	24	0	18	0	0	-	18	43
% Trucks	0.0	0.0	0.0	0.0	-	0	0.0	0.0	10	0.0	-	10	0.0	8.2	4.5	0.0	-	12.7	0.0	3.5	0.0	0.0	-	3.5	26.2
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	0.0	0.4	0.0	0.0	-	0.4	0.0	0.0	0.0	0.0	-	0	0.4

LANGAN

Corneils Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690615, -88.47246

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	0	5	0	0		5	0	4	0	0		4	1	1	0	0		2	0	0	0	0		0	
6:15 AM	0	9	0	0		9	1	8	0	0		9	1	2	0	0		3	0	1	0	0		1	
6:30 AM	0	6	4	0		10	1	5	0	0		6	0	0	0	0		0	0	0	0	0		0	
6:45 AM	2	4	2	0		8	0	3	0	0		3	3	0	0	0		3	0	0	0	0		0	
Hourly Total	2	24	6	0		32	2	20	0	0		22	5	3	0	0		8	0	1	0	0		1	
7:00 AM	0	5	0	0		5	0	2	1	0		3	2	1	1	0		4	0	0	2	0		2	
7:15 AM	0	7	2	0		9	0	4	1	0		5	1	1	1	0		3	1	0	0	0		1	
7:30 AM	1	4	0	0		5	0	6	2	0		8	0	0	1	0		1	0	0	0	0		0	
7:45 AM	0	7	1	0		8	0	4	1	0		5	1	2	1	0		4	0	0	0	0		0	
Hourly Total	1	23	3	0		27	0	16	5	0		21	4	4	4	0		12	1	0	2	0		3	
8:00 AM	0	5	0	0		5	0	4	0	0		4	4	0	1	0		5	1	0	0	0		1	
8:15 AM	0	3	1	0		4	1	4	0	0		5	1	2	0	0		3	0	1	0	0		1	
8:30 AM	0	8	1	0		9	1	3	0	0		4	1	0	0	0		1	0	1	0	0		1	
8:45 AM	0	4	1	0		5	0	7	0	0		7	1	1	1	0		3	0	0	1	0		1	
Hourly Total	0	20	3	0		23	2	18	0	0		20	7	3	2	0		12	1	2	1	0		4	
3:00 PM	0	4	1	0		5	0	6	1	0		7	2	0	2	0		4	1	0	0	0		1	
3:15 PM	1	10	2	0		13	0	2	1	0		3	3	0	1	0		4	0	2	1	0		3	
3:30 PM	0	6	1	0		7	3	9	0	0		12	4	0	0	0		4	1	1	0	0		2	
3:45 PM	0	3	4	0		7	0	7	2	0		9	1	1	0	0		2	0	0	0	0		0	
Hourly Total	1	23	8	0		32	3	24	4	0		31	10	1	3	0		14	2	3	1	0		6	
4:00 PM	0	8	5	0		13	0	5	0	0		5	1	1	2	0		4	0	2	0	0		2	
4:15 PM	1	3	4	0		8	2	5	0	0		7	0	0	0	0		0	0	0	0	0		0	
4:30 PM	0	7	3	0		10	0	7	1	0		8	2	0	1	0		3	2	0	1	0		3	
4:45 PM	0	2	5	0		7	0	7	0	0		7	0	0	0	0		0	1	0	2	0		3	
Hourly Total	1	20	17	0		38	2	24	1	0		27	3	1	3	0		7	3	2	3	0		8	
5:00 PM	0	3	5	0		8	3	3	1	0		7	2	1	3	0		6	0	2	0	0		2	
5:15 PM	0	6	5	0		11	1	10	0	0		11	2	1	2	0		5	0	2	1	0		3	
5:30 PM	0	4	1	0		5	1	9	0	0		10	3	0	3	0		6	0	0	0	0		0	
5:45 PM	0	4	0	0		4	0	6	0	0		6	1	0	0	1		2	0	0	0	0		0	
Hourly Total	0	17	11	0		28	5	28	1	0		34	8	2	8	1		19	0	4	1	0		5	
Grand Total	5	127	48	0		180	14	130	11	0		155	37	14	20	1		72	7	12	8	0		27	
Approach %	0.3	7.1	2.7	0.0	-	-	0.9	8.4	0.7	0.0	-	-	5.1	1.9	2.8	0.1	-	-	2.6	4.4	3.0	0.0	-	-	
Total %	1.2	29.3	11.1	0	-	-	3.2	30	2.5	0	-	-	8.5	3.2	4.6	0.2	-	-	1.6	2.8	1.8	0	-	-	
Lights	5	126	47	0	0	178	14	128	8	0	-	150	37	13	16	1	-	67	4	11	7	0	-	22	
% Lights	100	99.2	97.9	0.0	-	297.1	100	98.5	72.7	0.0	-	271.2	100	92.9	80	100	-	372.9	57.1	91.7	87.5	0.0	-	236.3	
Trucks	0	1	1	0	0	2	0	2	3	0	-	5	0	1	4	0	-	5	3	1	1	0	-	5	
% Trucks	0.0	0.8	2.1	0.0	-	2.9	0.0	1.5	27.3	0.0	-	28.8	0.0	7.1	20	0.0	-	27.1	42.9	8.3	12.5	0.0	-	63.7	
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	
% Buses	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	

LANGAN

Corneils Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690615, -88.47246

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	5	0	0		5	0	2	1	0		3	2	1	1	0		4	0	0	2	0		2	14
7:15 AM	0	7	2	0		9	0	4	1	0		5	1	1	1	0		3	1	0	0	0		1	28
7:30 AM	1	4	0	0		5	0	6	2	0		8	0	0	1	0		1	0	0	0	0		0	14
7:45 AM	0	7	1	0		8	0	4	1	0		5	1	2	1	0		4	0	0	0	0		0	17
Hourly Total	1	23	3	0		27	0	16	5	0		21	4	4	4	0		12	1	0	2	0		3	63
Approach %	0.4	8.5	1.1	0.0	-	-	0.0	7.6	2.4	0.0	-	-	3.3	3.3	3.3	0.0	-	-	3.3	0.0	6.7	0.0	-	-	-
Total %	1.6	36.5	4.8	0	-	-	0.0	25.4	7.9	0	-	-	6.3	6.3	6.3	0	-	-	1.6	0	3.2	0	-	-	-
Lights	1	23	3	0	0	27	0	14	3	0	-	17	4	4	2	0	-	10	1	0	2	0	-	3	57
% Lights	100	100	100	0.0	-	300	0.0	87.5	60	0.0	-	147.5	100	100	50	0.0	-	250	100	0.0	100	0.0	-	200	897.5
Trucks	0	0	0	0	0	0	0	2	2	0	-	4	0	0	2	0	-	2	0	0	0	0	-	0	6
% Trucks	0.0	0.0	0.0	0.0	-	0	0.0	12.5	40	0.0	-	52.5	0.0	0.0	50	0.0	-	50	0.0	0.0	0.0	0.0	-	0	102.5
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	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

LANGAN

Corneils Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.690615, -88.47246

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	1	10	2	0		13	0	2	1	0		3	3	0	1	0		4	0	2	1	0		3	23
3:30 PM	0	6	1	0		7	3	9	0	0		12	4	0	0	0		4	1	1	0	0		2	25
3:45 PM	0	3	4	0		7	0	7	2	0		9	1	1	0	0		2	0	0	0	0		0	18
4:00 PM	0	8	5	0		13	0	5	0	0		5	1	1	2	0		4	0	2	0	0		2	24
Hourly Total	1	27	12	0		40	3	23	3	0		29	9	2	3	0		14	1	5	1	0		7	90
Approach %	0.2	6.8	3.0	0.0	-	-	1.0	7.9	1.0	0.0	-	-	6.4	1.4	2.1	0.0	-	-	1.4	7.1	1.4	0.0	-	-	-
Total %	1.1	30	13.3	0	-	-	3.3	25.6	3.3	0	-	-	10	2.2	3.3	0	-	-	1.1	5.6	1.1	0	-	-	-
Lights	1	26	12	0	0	39	3	23	2	0	-	28	9	2	3	0	-	14	1	5	1	0	-	7	88
% Lights	100	96.3	100	0.0	-	296.3	100	100	66.7	0.0	-	266.7	100	100	100	0.0	-	300	100	100	100	0.0	-	300	1163
Trucks	0	1	0	0	0	1	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Trucks	0.0	3.7	0.0	0.0	-	3.7	0.0	0.0	33.3	0.0	-	33.3	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	37
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	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

LANGAN

Bridge St & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.691452, -88.448064

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Bridge St Northbound						Bridge St Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	5	0	0	0		5	1	0	0	0		1	2	143	1	0		146	0	77	2	0		79	231
6:15 AM	11	0	1	0		12	1	5	1	0		7	0	179	3	0		182	1	74	3	0		78	279
6:30 AM	12	0	1	0		13	1	1	2	0		4	2	172	0	0		174	0	92	5	0		97	288
6:45 AM	8	1	0	0		9	0	0	3	0		3	2	148	1	0		151	0	79	4	0		83	246
Hourly Total	36	1	2	0		39	3	6	6	0		15	6	642	5	0		653	1	322	14	0		337	1044
7:00 AM	5	0	4	0		9	1	0	1	0		2	3	160	0	0		163	1	87	6	0		94	268
7:15 AM	5	1	2	0		8	0	0	3	0		3	1	163	0	0		164	1	104	3	0		108	283
7:30 AM	6	0	1	0		7	0	0	3	0		3	3	175	0	0		178	0	96	5	0		101	289
7:45 AM	5	0	3	0		8	3	1	3	0		7	0	148	1	0		149	3	152	3	0		158	322
Hourly Total	21	1	10	0		32	4	1	10	0		15	7	646	1	0		654	5	439	17	0		461	1162
8:00 AM	8	0	1	0		9	0	1	2	0		3	1	172	2	0		175	0	106	1	0		107	294
8:15 AM	4	0	5	0		9	3	0	1	0		4	1	140	1	0		142	0	121	3	0		124	279
8:30 AM	3	1	2	0		6	0	0	2	0		2	4	135	1	0		140	0	110	1	0		111	259
8:45 AM	5	1	3	0		9	0	2	1	0		3	1	135	1	0		137	0	132	4	0		136	285
Hourly Total	20	2	11	0		33	3	3	6	0		12	7	582	5	0		594	0	469	9	0		478	1117
3:00 PM	3	1	4	0		8	0	0	0	0		0	5	159	0	0		164	2	188	7	0		197	369
3:15 PM	4	1	4	0		9	1	0	4	0		5	0	114	0	0		114	0	182	6	0		188	316
3:30 PM	2	2	5	0		9	0	1	1	0		2	3	179	0	0		182	0	179	7	0		186	379
3:45 PM	3	0	0	0		3	0	0	0	0		0	2	151	1	0		154	3	192	8	0		203	360
Hourly Total	12	4	13	0		29	1	1	5	0		7	10	603	1	0		614	5	741	28	0		774	1424
4:00 PM	3	0	2	0		5	0	2	1	0		3	2	134	2	0		138	0	196	7	0		203	349
4:15 PM	6	1	3	0		10	0	0	0	0		0	1	140	0	0		141	1	168	9	0		178	329
4:30 PM	6	0	1	0		7	1	0	1	0		2	5	149	4	0		158	2	169	11	0		182	349
4:45 PM	7	0	1	0		8	0	0	0	0		0	4	147	3	0		154	1	194	5	0		200	362
Hourly Total	22	1	7	0		30	1	2	2	0		5	12	570	9	0		591	4	727	32	0		763	1389
5:00 PM	3	0	4	0		7	1	0	2	0		3	1	154	1	0		156	1	189	10	0		200	366
5:15 PM	5	2	0	0		7	0	1	1	0		2	2	139	0	0		141	1	205	8	0		214	364
5:30 PM	6	1	6	0		13	1	1	0	0		2	2	152	1	0		155	1	204	13	0		218	388
5:45 PM	0	1	2	0		3	1	1	0	0		2	0	123	1	0		124	1	217	9	0		227	356
Hourly Total	14	4	12	0		30	3	3	3	0		9	5	568	3	0		576	4	815	40	0		859	1474
Grand Total	125	13	55	0		193	15	16	32	0		63	47	3611	24	0		3682	19	3513	140	0		3672	7610
Approach %	6.5	0.7	2.8	0.0	-	-	2.4	2.5	5.1	0.0	-	-	0.1	9.8	0.1	0.0	-	-	0.1	9.6	0.4	0.0	-	-	-
Total %	1.6	0.2	0.7	0	-	-	0.2	0.2	0.4	0	-	-	0.6	47.5	0.3	0	-	-	0.2	46.2	1.8	0	-	-	-
Lights	122	13	49	0	0	184	13	15	31	0	-	59	39	3324	22	0	-	3385	19	3248	137	0	-	3404	7032
% Lights	97.6	100	89.1	0.0	-	286.7	86.7	93.8	96.9	0.0	-	277.4	83	92.1	91.7	0.0	-	266.8	100	92.5	97.9	0.0	-	290.4	1121.3
Trucks	3	0	6	0	0	9	1	1	1	0	-	3	8	285	0	0	-	293	0	258	3	0	-	261	566
% Trucks	2.4	0.0	10.9	0.0	-	13.3	6.7	6.2	3.1	0.0	-	16	17	7.9	0.0	0.0	-	24.9	0.0	7.3	2.1	0.0	-	9.4	63.6
Buses	0	0	0	0	0	0	1	0	0	0	-	1	0	2	2	0	-	4	0	7	0	0	-	7	12
% Buses	0.0	0.0	0.0	0.0	-	0	6.7	0.0	0.0	0.0	-	6.7	0.0	0.1	8.3	0.0	-	8.4	0.0	0.2	0.0	0.0	-	0.2	15.3

LANGAN

Bridge St & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.691452, -88.448064

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Bridge St Northbound						Bridge St Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	5	0	4	0		9	1	0	1	0		2	3	160	0	0		163	1	87	6	0		94	268
7:15 AM	5	1	2	0		8	0	0	3	0		3	1	163	0	0		164	1	104	3	0		108	283
7:30 AM	6	0	1	0		7	0	0	3	0		3	3	175	0	0		178	0	96	5	0		101	289
7:45 AM	5	0	3	0		8	3	1	3	0		7	0	148	1	0		149	3	152	3	0		158	322
Hourly Total	21	1	10	0		32	4	1	10	0		15	7	646	1	0		654	5	439	17	0		461	1162
Approach %	6.6	0.3	3.1	0.0	-	-	2.7	0.7	6.7	0.0	-	-	0.1	9.9	0.0	0.0	-	-	0.1	9.5	0.4	0.0	-	-	-
Total %	1.8	0.1	0.9	0	-	-	0.3	0.1	0.9	0	-	-	0.6	55.6	0.1	0	-	-	0.4	37.8	1.5	0	-	-	-
Lights	21	1	7	0	0	29	3	0	9	0	-	12	4	589	1	0	-	594	5	383	14	0	-	402	1037
% Lights	100	100	70	0.0	-	270	75	0.0	90	0.0	-	165	57.1	91.2	100	0.0	-	248.3	100	87.2	82.4	0.0	-	269.6	952.9
Trucks	0	0	3	0	0	3	0	1	1	0	-	2	3	57	0	0	-	60	0	55	3	0	-	58	123
% Trucks	0.0	0.0	30	0.0	-	30	0.0	100	10	0.0	-	110	42.9	8.8	0.0	0.0	-	51.7	0.0	12.5	17.6	0.0	-	30.1	221.8
Buses	0	0	0	0	0	0	1	0	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Buses	0.0	0.0	0.0	0.0	-	0	25	0.0	0.0	0.0	-	25	0.0	0.0	0.0	0.0	-	0	0.0	0.2	0.0	0.0	-	0.2	25.2

LANGAN

Bridge St & Corneils Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.691452, -88.448064

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Corneils Rd Eastbound						Corneils Rd Westbound						Bridge St Northbound						Bridge St Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	4	1	4	0		9	1	0	4	0		5	0	114	0	0		114	0	182	6	0		188	316
3:30 PM	2	2	5	0		9	0	1	1	0		2	3	179	0	0		182	0	179	7	0		186	379
3:45 PM	3	0	0	0		3	0	0	0	0		0	2	151	1	0		154	3	192	8	0		203	360
4:00 PM	3	0	2	0		5	0	2	1	0		3	2	134	2	0		138	0	196	7	0		203	349
Hourly Total	12	3	11	0		26	1	3	6	0		10	7	578	3	0		588	3	749	28	0		780	1404
Approach %	4.6	1.2	4.2	0.0	-	-	1.0	3.0	6.0	0.0	-	-	0.1	9.8	0.1	0.0	-	-	0.0	9.6	0.4	0.0	-	-	-
Total %	0.9	0.2	0.8	0	-	-	0.1	0.2	0.4	0	-	-	0.5	41.2	0.2	0	-	-	0.2	53.3	2	0	-	-	-
Lights	11	3	11	0	0	25	0	3	6	0	-	9	7	540	2	0	-	549	3	696	28	0	-	727	1310
% Lights	91.7	100	100	0.0	-	291.7	0.0	100	100	0.0	-	200	100	93.4	66.7	0.0	-	260.1	100	92.9	100	0.0	-	292.9	1044.7
Trucks	1	0	0	0	0	1	1	0	0	0	-	1	0	38	0	0	-	38	0	52	0	0	-	52	92
% Trucks	8.3	0.0	0.0	0.0	-	8.3	100	0.0	0.0	0.0	-	100	0.0	6.6	0.0	0.0	-	6.6	0.0	6.9	0.0	0.0	-	6.9	121.8
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	2
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	0.0	0.0	33.3	0.0	-	33.3	0.0	0.1	0.0	0.0	-	0.1	33.4

LANGAN

IL 47 & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.705278, -88.446366

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Galena Rd Eastbound						Galena Rd Westbound						IL 47 Northbound						IL 47 Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	22	14	8	0		44	15	9	20	0		44	4	107	6	0		117	10	52	3	0		65	270
6:15 AM	14	33	6	0		53	13	19	40	0		72	0	137	4	0		141	11	66	10	0		87	353
6:30 AM	11	32	7	0		50	19	15	35	0		69	10	135	8	0		153	13	73	8	0		94	366
6:45 AM	13	27	3	0		43	12	15	27	0		54	5	141	9	0		155	19	80	7	0		106	358
Hourly Total	60	106	24	0		190	59	58	122	0		239	19	520	27	0		566	53	271	28	0		352	1347
7:00 AM	14	28	7	0		49	14	14	28	0		56	6	146	6	0		158	13	87	6	0		106	369
7:15 AM	11	33	3	0		47	23	18	43	0		84	9	147	11	0		167	12	83	8	0		103	401
7:30 AM	13	35	2	0		50	18	17	34	0		69	5	169	16	0		190	12	101	11	0		124	433
7:45 AM	9	29	5	0		43	18	18	31	0		67	8	150	12	0		170	18	132	5	0		155	435
Hourly Total	47	125	17	0		189	73	67	136	0		276	28	612	45	0		685	55	403	30	0		488	1638
8:00 AM	12	26	6	0		44	20	21	21	0		62	4	149	14	0		167	14	97	12	0		123	396
8:15 AM	14	19	4	0		37	21	24	21	0		66	2	139	20	0		161	13	102	12	0		127	391
8:30 AM	74	27	5	0		106	16	19	18	0		53	4	126	14	0		144	9	110	5	0		124	427
8:45 AM	62	33	5	0		100	17	18	13	0		48	5	121	14	0		140	17	100	10	0		127	415
Hourly Total	162	105	20	0		287	74	82	73	0		229	15	535	62	0		612	53	409	39	0		501	1629
3:00 PM	6	38	5	0		49	36	39	10	0		85	10	120	24	0		154	25	175	6	0		206	494
3:15 PM	6	20	2	0		28	10	41	18	0		69	7	132	25	0		164	40	173	17	0		230	491
3:30 PM	18	36	7	0		61	23	46	16	0		85	9	103	35	0		147	21	170	10	0		201	494
3:45 PM	11	37	12	0		60	18	37	21	0		76	6	147	39	0		192	26	154	18	0		198	526
Hourly Total	41	131	26	0		198	87	163	65	0		315	32	502	123	0		657	112	672	51	0		835	2005
4:00 PM	10	25	6	0		41	16	33	23	0		72	12	124	41	0		177	26	166	10	0		202	492
4:15 PM	11	27	6	0		44	15	38	20	0		73	7	112	17	0		136	38	162	8	0		208	461
4:30 PM	11	24	7	0		42	18	31	13	0		62	7	150	31	0		188	29	164	15	0		208	500
4:45 PM	6	21	7	0		34	19	31	14	0		64	9	140	34	0		183	46	184	13	0		243	524
Hourly Total	38	97	26	0		161	68	133	70	0		271	35	526	123	0		684	139	676	46	0		861	1977
5:00 PM	10	30	6	0		46	30	34	19	1		84	8	125	32	0		165	23	167	11	0		201	496
5:15 PM	13	24	7	0		44	23	32	24	0		79	12	129	45	0		186	34	162	13	0		209	518
5:30 PM	9	24	8	0		41	27	34	18	0		79	9	126	44	0		179	26	189	10	0		225	524
5:45 PM	7	24	9	0		40	20	29	17	0		66	8	107	30	0		145	44	179	9	0		232	483
Hourly Total	39	102	30	0		171	100	129	78	1		308	37	487	151	0		675	127	697	43	0		867	2021
Grand Total	387	666	143	0		1196	461	632	544	1		1638	166	3182	531	0		3879	539	3128	237	0		3904	10617
Approach %	3.2	5.6	1.2	0.0	-	-	2.8	3.9	3.3	0.0	-	-	0.4	8.2	1.4	0.0	-	-	1.4	8.0	0.6	0.0	-	-	-
Total %	3.6	6.3	1.3	0	-	-	4.3	6	5.1	0	-	-	1.6	30	5	0	-	-	5.1	29.5	2.2	0	-	-	-
Lights	280	627	136	0	0	1043	452	601	509	1	-	1563	155	2903	520	0	-	3578	503	2861	133	0	-	3497	9681
% Lights	72.4	94.1	95.1	0.0	-	261.6	98	95.1	93.6	100	-	386.7	93.4	91.2	97.9	0.0	-	282.5	93.3	91.5	56.1	0.0	-	240.9	1171.7
Trucks	107	39	7	0	0	153	7	31	35	0	-	73	11	274	11	0	-	296	36	259	104	0	-	399	921
% Trucks	27.6	5.9	4.9	0.0	-	38.4	1.5	4.9	6.4	0.0	-	12.8	6.6	8.6	2.1	0.0	-	17.3	6.7	8.3	43.9	0.0	-	58.9	127.4
Buses	0	0	0	0	0	0	2	0	0	0	-	2	0	5	0	0	-	5	0	8	0	0	-	8	15
% Buses	0.0	0.0	0.0	0.0	-	0	0.4	0.0	0.0	0.0	-	0.4	0.0	0.2	0.0	0.0	-	0.2	0.0	0.3	0.0	0.0	-	0.3	0.9

LANGAN

IL 47 & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.705278, -88.446366

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						IL 47 Northbound						IL 47 Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	14	28	7	0		49	14	14	28	0		56	6	146	6	0		158	13	87	6	0		106	369
7:15 AM	11	33	3	0		47	23	18	43	0		84	9	147	11	0		167	12	83	8	0		103	401
7:30 AM	13	35	2	0		50	18	17	34	0		69	5	169	16	0		190	12	101	11	0		124	433
7:45 AM	9	29	5	0		43	18	18	31	0		67	8	150	12	0		170	18	132	5	0		155	435
Hourly Total	47	125	17	0		189	73	67	136	0		276	28	612	45	0		685	55	403	30	0		488	1638
Approach %	2.5	6.6	0.9	0.0	-	-	2.6	2.4	4.9	0.0	-	-	0.4	8.9	0.7	0.0	-	-	1.1	8.3	0.6	0.0	-	-	-
Total %	2.9	7.6	1	0	-	-	4.5	4.1	8.3	0	-	-	1.7	37.4	2.7	0	-	-	3.4	24.6	1.8	0	-	-	-
Lights	21	117	17	0	0	155	70	62	125	0	-	257	26	550	44	0	-	620	43	336	12	0	-	391	1423
% Lights	44.7	93.6	100	0.0	-	238.3	95.9	92.5	91.9	0.0	-	280.3	92.9	89.9	97.8	0.0	-	280.6	78.2	83.4	40	0.0	-	201.6	1000.8
Trucks	26	8	0	0	0	34	2	5	11	0	-	18	2	62	1	0	-	65	12	59	18	0	-	89	206
% Trucks	55.3	6.4	0.0	0.0	-	61.7	2.7	7.5	8.1	0.0	-	18.3	7.1	10.1	2.2	0.0	-	19.4	21.8	14.6	60	0.0	-	96.4	195.8
Buses	0	0	0	0	0	0	1	0	0	0	-	1	0	0	0	0	-	0	0	8	0	0	-	8	9
% Buses	0.0	0.0	0.0	0.0	-	0	1.4	0.0	0.0	0.0	-	1.4	0.0	0.0	0.0	0.0	-	0	0.0	2	0.0	0.0	-	2	3.4

LANGAN

IL 47 & Galena Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.705278, -88.446366

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						IL 47 Northbound						IL 47 Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
3:15 PM	6	20	2	0		28	10	41	18	0		69	7	132	25	0		164	40	173	17	0		230	491
3:30 PM	18	36	7	0		61	23	46	16	0		85	9	103	35	0		147	21	170	10	0		201	494
3:45 PM	11	37	12	0		60	18	37	21	0		76	6	147	39	0		192	26	154	18	0		198	526
4:00 PM	10	25	6	0		41	16	33	23	0		72	12	124	41	0		177	26	166	10	0		202	492
Hourly Total	45	118	27	0		190	67	157	78	0		302	34	506	140	0		680	113	663	55	0		831	2003
Approach %	2.4	6.2	1.4	0.0	-	-	2.2	5.2	2.6	0.0	-	-	0.5	7.4	2.1	0.0	-	-	1.4	8.0	0.7	0.0	-	-	-
Total %	2.2	5.9	1.3	0	-	-	3.3	7.8	3.9	0	-	-	1.7	25.3	7	0	-	-	5.6	33.1	2.7	0	-	-	-
Lights	30	116	26	0	0	172	63	153	66	0	-	282	34	464	137	0	-	635	107	614	41	0	-	762	1851
% Lights	66.7	98.3	96.3	0.0	-	261.3	94	97.5	84.6	0.0	-	276.1	100	91.7	97.9	0.0	-	289.6	94.7	92.6	74.5	0.0	-	261.8	1088.8
Trucks	15	2	1	0	0	18	3	4	12	0	-	19	0	42	3	0	-	45	6	49	14	0	-	69	151
% Trucks	33.3	1.7	3.7	0.0	-	38.7	4.5	2.5	15.4	0.0	-	22.4	0.0	8.3	2.1	0.0	-	10.4	5.3	7.4	25.5	0.0	-	38.2	109.7
Buses	0	0	0	0	0	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	0	1.5	0.0	0.0	0.0	-	1.5	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	1.5

LANGAN

Galena Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.709956, -88.468062

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM		47	0	0		47	0	15	0	0		15	0	0	0	0		0						62	
6:15 AM		49	0	0		49	0	28	0	0		28	0	0	0	0		0						77	
6:30 AM		45	0	0		45	1	36	0	0		37	0	1	0	0		1						83	
6:45 AM		43	1	0		44	0	28	0	0		28	0	0	0	0		0						72	
Hourly Total		184	1	0		185	1	107	0	0		108	0	1	0	0		1						294	
7:00 AM		45	0	0		45	3	17	0	0		20	1	1	0	0		2						67	
7:15 AM		50	1	0		51	0	37	0	0		37	0	1	0	0		1						89	
7:30 AM		50	0	0		50	1	30	0	0		31	2	1	0	0		3						84	
7:45 AM		39	2	0		41	2	32	0	0		34	0	1	0	0		1						76	
Hourly Total		184	3	0		187	6	116	0	0		122	3	4	0	0		7						316	
8:00 AM		41	0	0		41	1	34	0	0		35	0	2	0	0		2						78	
8:15 AM		57	0	0		57	0	40	0	0		40	1	2	0	0		3						100	
8:30 AM		104	0	0		104	5	29	0	0		34	0	1	0	0		1						139	
8:45 AM		102	0	0		102	1	32	0	0		33	0	2	0	0		2						137	
Hourly Total		304	0	0		304	7	135	0	0		142	1	7	0	0		8						454	
3:00 PM		44	0	0		44	1	41	0	0		42	0	1	0	0		1						87	
3:15 PM		38	0	0		38	2	75	0	0		77	0	2	0	0		2						117	
3:30 PM		58	1	0		59	1	43	0	0		44	0	1	0	0		1						104	
3:45 PM		47	0	0		47	1	47	0	0		48	1	1	0	0		2						97	
Hourly Total		187	1	0		188	5	206	0	0		211	1	5	0	0		6						405	
4:00 PM		43	0	0		43	2	55	0	0		57	1	0	0	0		1						101	
4:15 PM		48	0	0		48	0	55	0	0		55	0	0	0	0		0						103	
4:30 PM		43	1	0		44	1	48	0	0		49	0	0	0	0		0						93	
4:45 PM		41	0	0		41	1	55	0	0		56	3	0	0	0		3						100	
Hourly Total		175	1	0		176	4	213	0	0		217	4	0	0	0		4						397	
5:00 PM		43	0	0		43	0	60	0	0		60	0	1	0	0		1						104	
5:15 PM		37	0	0		37	0	56	0	0		56	0	1	0	0		1						94	
5:30 PM		46	0	0		46	0	51	0	0		51	0	0	0	0		0						97	
5:45 PM		35	0	0		35	0	37	0	0		37	1	0	0	0		1						73	
Hourly Total		161	0	0		161	0	204	0	0		204	1	2	0	0		3						368	
Grand Total		1195	6	0		1201	23	981	0	0		1004	10	19	0	0		29						2234	
Approach %	0.0	10.0	0.0	0.0	-	-	0.2	9.8	0.0	0.0	-	-	3.4	0.0	6.6	0.0	-	-	0	0	0	0	-	-	-
Total %	0	53.5	0.3	0	-	-	1	43.9	0	0	-	-	0.4	0	0.9	0	-	-	0	0	0	0	-	-	-
Lights	0	1047	3	0	0	1050	12	846	0	0	-	858	7	0	8	0	-	15	0	0	0	0	-	0	1923
% Lights	0.0	87.6	50	0.0	-	137.6	52.2	86.2	0.0	0.0	-	138.4	70	0.0	42.1	0.0	-	112.1	0.0	0.0	0.0	0.0	-	0	388.1
Trucks	0	148	3	0	0	151	11	132	0	0	-	143	3	0	11	0	-	14	0	0	0	0	-	0	308
% Trucks	0.0	12.4	50	0.0	-	62.4	47.8	13.5	0.0	0.0	-	61.3	30	0.0	57.9	0.0	-	87.9	0.0	0.0	0.0	0.0	-	0	211.6
Buses	0	0	0	0	0	0	0	3	0	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.3	0.0	0.0	-	0.3	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	0.3

LANGAN

Galena Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.709956, -88.468062

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (7:00 AM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
7:00 AM		45	0	0		45	3	17		0		20	1		1	0		2								67
7:15 AM		50	1	0		51	0	37		0		37	0		1	0		1								89
7:30 AM		50	0	0		50	1	30		0		31	2		1	0		3								84
7:45 AM		39	2	0		41	2	32		0		34	0		1	0		1								76
Hourly Total		184	3	0		187	6	116		0		122	3		4	0		7								316
Approach %	0.0	9.8	0.2	0.0	-	-	0.5	9.5	0.0	0.0	-	-	4.3	0.0	5.7	0.0	-	-	0	0	0	0	-	-	-	
Total %	0	58.2	0.9	0	-	-	1.9	36.7	0	0	-	-	0.9	0	1.3	0	-	-	0	0	0	0	-	-	-	
Lights	0	151	2	0	0	153	5	93	0	0	-	98	1	0	2	0	-	3	0	0	0	0	-	0	254	
% Lights	0.0	82.1	66.7	0.0	-	148.8	83.3	80.2	0.0	0.0	-	163.5	33.3	0.0	50	0.0	-	83.3	0.0	0.0	0.0	0.0	-	0	395.6	
Trucks	0	33	1	0	0	34	1	23	0	0	-	24	2	0	2	0	-	4	0	0	0	0	-	0	62	
% Trucks	0.0	17.9	33.3	0.0	-	51.2	16.7	19.8	0.0	0.0	-	36.5	66.7	0.0	50	0.0	-	116.7	0.0	0.0	0.0	0.0	-	0	204.4	
Buses	0	0	0	0	0	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	
% Buses	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	

LANGAN

Galena Rd & Beecher Rd
 Tuesday, June 24, 2025
 6 AM-9 AM, 3 PM-6 PM
 Location: 41.709956, -88.468062

Provided by: Gewalt Hamilton
 Associates, Inc.
 625 Forest Drive
 Vernon Hills, IL 60061

Turning Movement Data (3:15 PM)

Start Time	Galena Rd Eastbound						Galena Rd Westbound						Beecher Rd Northbound						Beecher Rd Southbound						Int Total	
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total		
3:15 PM		38	0	0		38	2	75		0		77	0		2	0		2								117
3:30 PM		58	1	0		59	1	43		0		44	0		1	0		1								104
3:45 PM		47	0	0		47	1	47		0		48	1		1	0		2								97
4:00 PM		43	0	0		43	2	55		0		57	1		0	0		1								101
Hourly Total		186	1	0		187	6	220		0		226	2		4	0		6								419
Approach %	0.0	9.9	0.1	0.0	-	-	0.3	9.7	0.0	0.0	-	-	3.3	0.0	6.7	0.0	-	-	0	0	0	0	-	-	-	
Total %	0	44.4	0.2	0	-	-	1.4	52.5	0	0	-	-	0.5	0	1	0	-	-	0	0	0	0	-	-	-	
Lights	0	165	0	0	0	165	6	207	0	0	-	213	1	0	3	0	-	4	0	0	0	0	-	0	382	
% Lights	0.0	88.7	0.0	0.0	-	88.7	100	94.1	0.0	0.0	-	194.1	50	0.0	75	0.0	-	125	0.0	0.0	0.0	0.0	-	0	407.8	
Trucks	0	21	1	0	0	22	0	11	0	0	-	11	1	0	1	0	-	2	0	0	0	0	-	0	35	
% Trucks	0.0	11.3	100	0.0	-	111.3	0.0	5	0.0	0.0	-	5	50	0.0	25	0.0	-	75	0.0	0.0	0.0	0.0	-	0	191.3	
Buses	0	0	0	0	0	0	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	2	
% Buses	0.0	0.0	0.0	0.0	-	0	0.0	0.9	0.0	0.0	-	0.9	0.0	0.0	0.0	0.0	-	0	0.0	0.0	0.0	0.0	-	0	0.9	

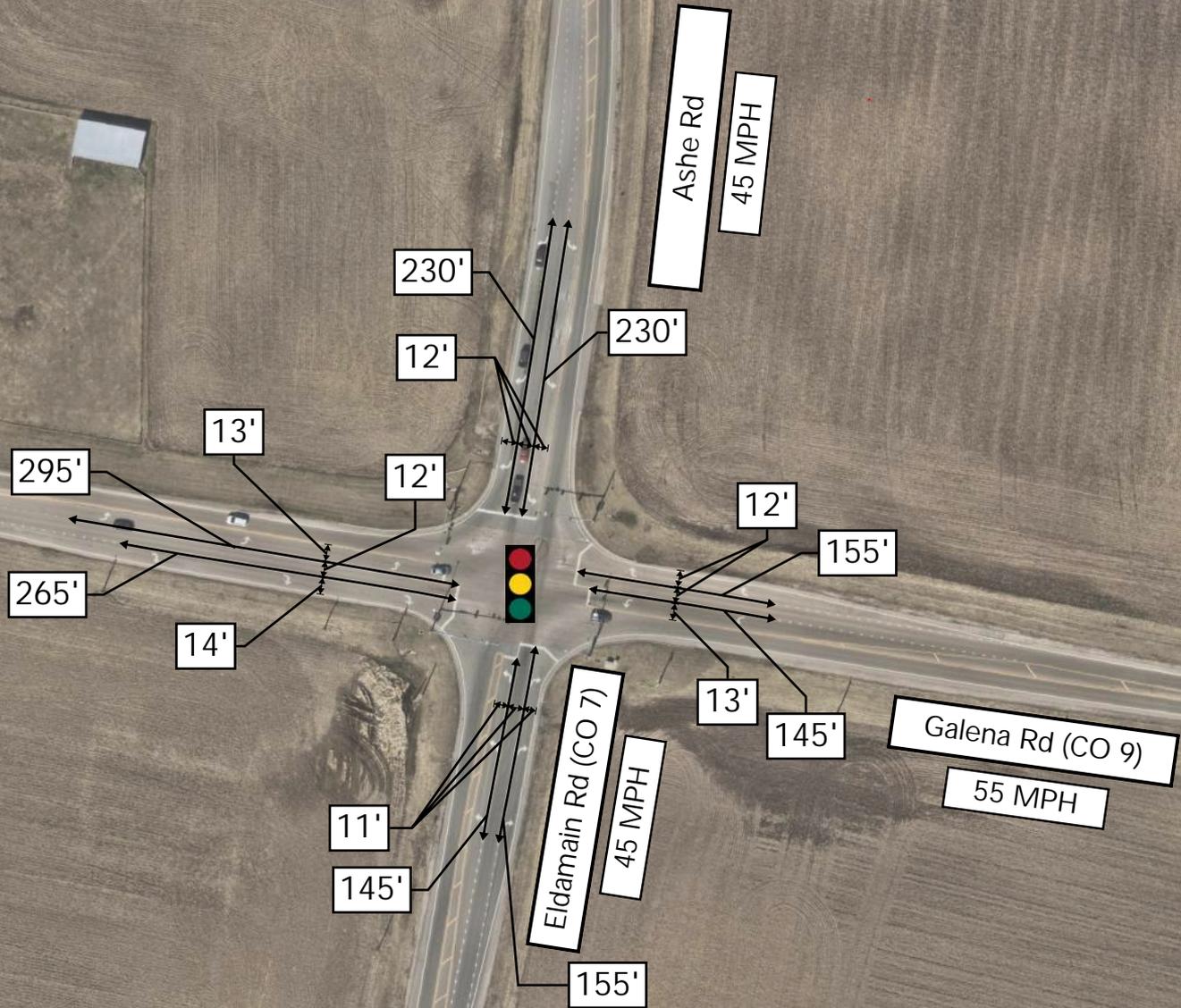
APPENDIX C

Field Inventory Sketches

Intersection 1

Galena Rd (CO 9) &
Ashe Rd/Eldamain Rd (CO 7)

Signalized



Intersection 2

Eldamain Rd (CO 7) &
Site Driveway B

Unsignalized

Eldamain Rd (CO 7)

45 MPH

12'

Site Driveway B

25 MPH

12'

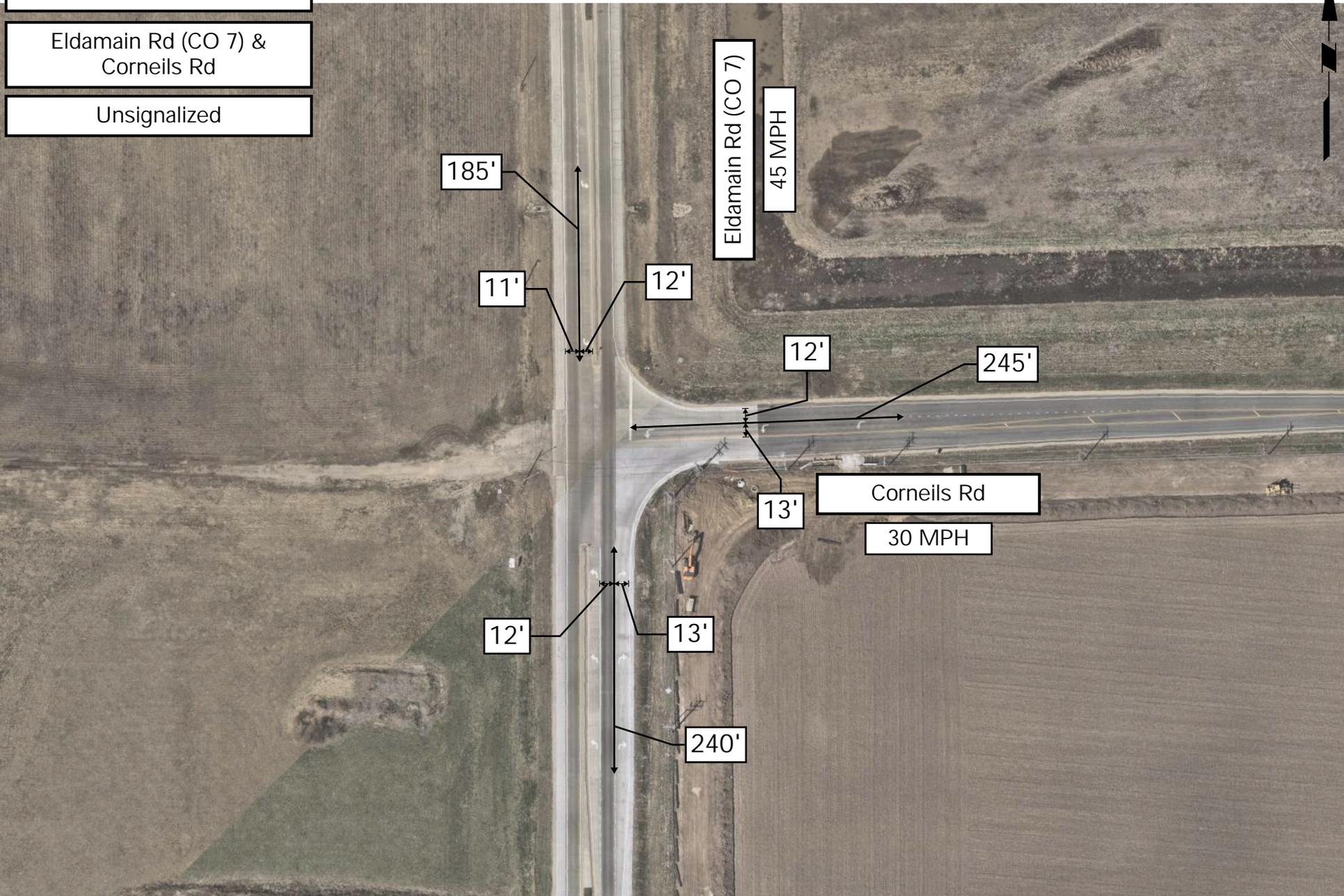
*Driveway speed
limit assumed to be
25 MPH



Intersection 3

Eldamain Rd (CO 7) &
Corneils Rd

Unsignalized



Intersection 4

Corneils Rd &
Site Driveway C

Unsignalized

Site Driveway C

25 MPH

10'

10'

Corneils Rd

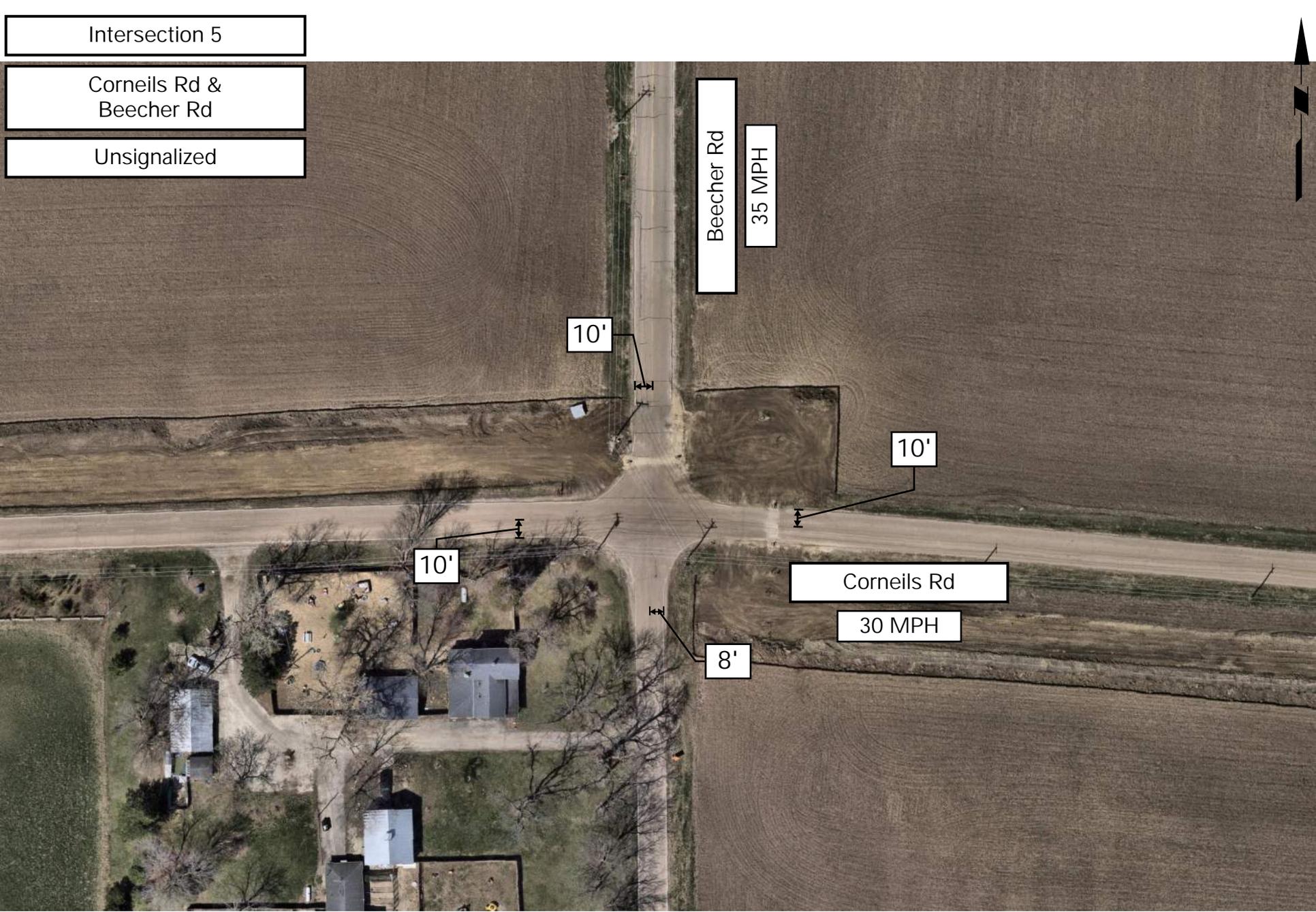
30 MPH

*Driveway speed
limit assumed to be
25 MPH

Intersection 5

Corneils Rd &
Beecher Rd

Unsignalized



Beecher Rd

35 MPH

10'

10'

10'

Corneils Rd

30 MPH

8'

Intersection 7

Corneils Rd &
E Beecher Rd

Unsignalized

Proposed Beecher
Road Extension

35 MPH

10'

10'

Corneils Rd

30 MPH

*Proposed
extension speed
limit assumed to be
35 MPH

Intersection 8

IL 47 &
Corneils Rd

Unsignalized



IL 47

55 MPH

12'

11'

11'

Corneils Rd

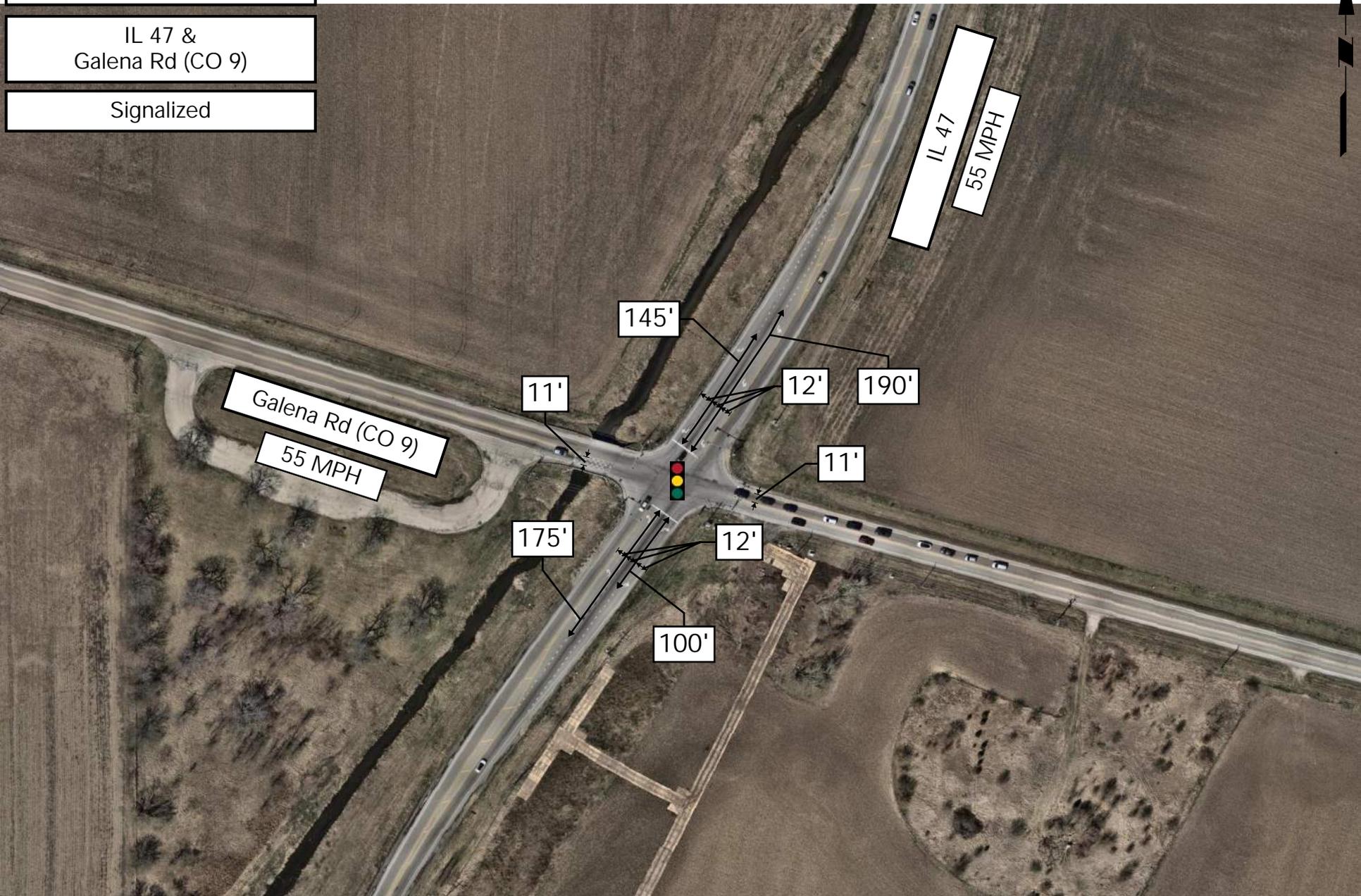
30 MPH

12'

Intersection 9

IL 47 &
Galena Rd (CO 9)

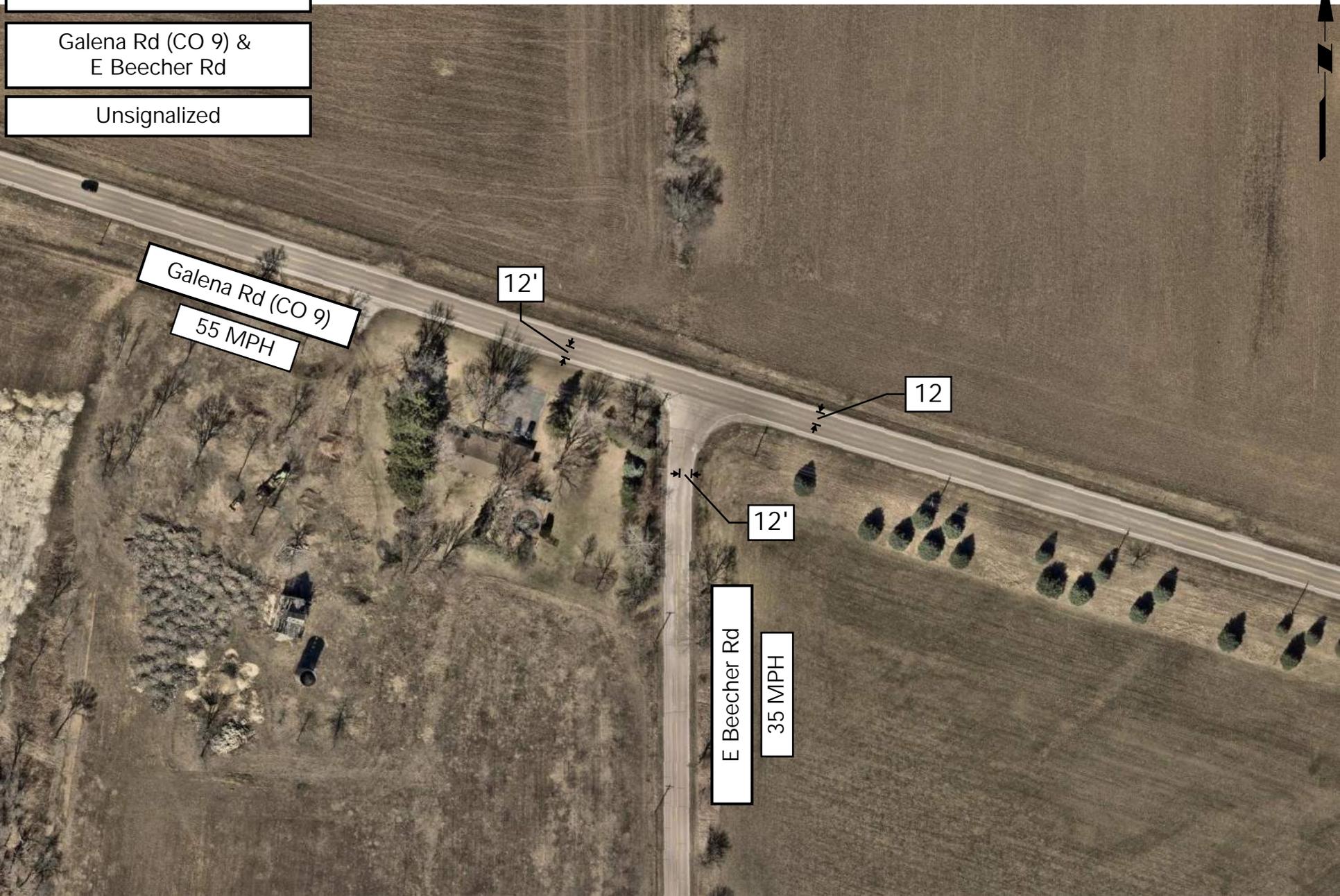
Signalized



Intersection 10

Galena Rd (CO 9) &
E Beecher Rd

Unsignalized



Galena Rd (CO 9)
55 MPH

12'

12

12'

E Beecher Rd

35 MPH

APPENDIX D

Intersection Photograph Log

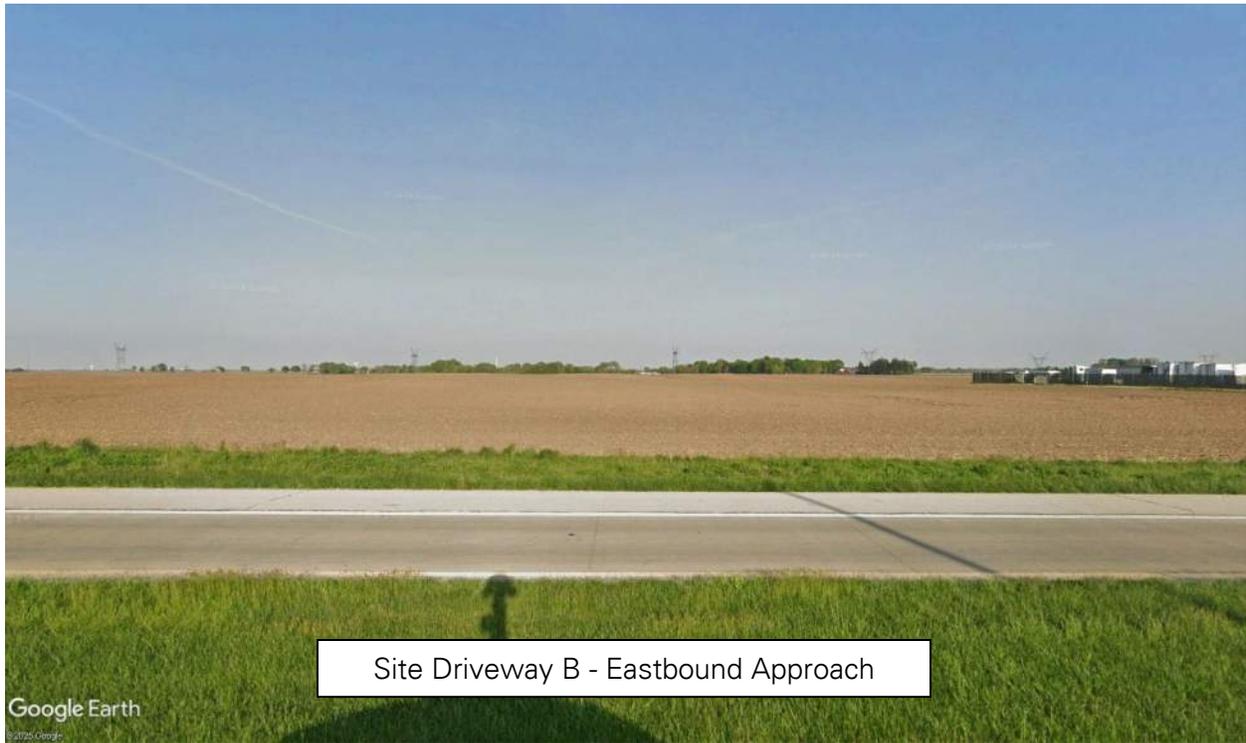


Galena Road - Eastbound Approach



Galena Road - Westbound Approach











Eldmain Road - Northbound Approach



Eldmain Road - Southbound Approach



Corneils Road - Eastbound Approach



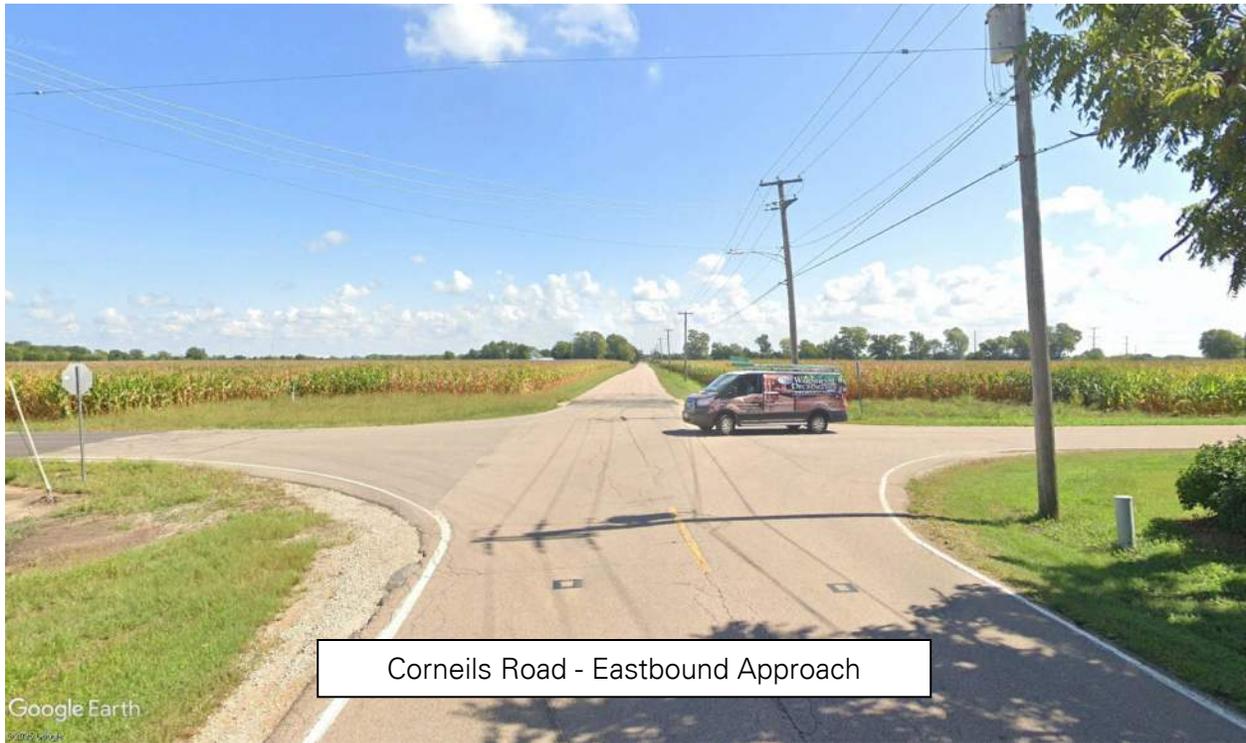
Corneils Road - Westbound Approach



Site Driveway C - Northbound View



Site Driveway C - Southbound Approach



Corneils Road - Eastbound Approach



Corneils Road - Westbound Approach



Beecher Road - Northbound Approach



Beecher Road - Southbound Approach



Corneils Road - Eastbound Approach



Corneils Road - Westbound Approach



E Beecher Road - Northbound View



E Beecher Road - Southbound Approach







Galena Road - Eastbound Approach



Galena Road - Westbound Approach



IL 47 - Northbound Approach



IL 47 - Southbound Approach



Galena Road - Eastbound Approach



Galena Road - Westbound Approach



E Beecher Road - Northbound Approach



E Beecher Road - Southbound View

APPENDIX E

CMAP Correspondence

From: Jose Rodriguez <JRodriguez@cmap.illinois.gov>
Sent: Friday, July 25, 2025 5:05 PM
To: Jason Puglisi
Subject: CMAP 2050 ADT Updated - Yorkville (proposed Data Center)
Attachments: [Letter2050ADT_07.25.25_Yorkville_DataCrtProposed_Langan.pdf](#)

Jason:

Here is a CMAP letter with the updated 2050 ADTs based on more recent current ADTs provided earlier today. This was much more straightforward than I thought - there is another recent submittal for the large parcel north of this area featuring 5 intersections (Project Steel) - I thought that this was that one, not the Data Center. The other proposal did feature 3 of the same segments for which they had the 2023 and 2024 ADT for (Corneils is only in this request).

Reply if there is need for further work on this.

Thanks,

Jose

Jose Rodriguez
Senior Planner
Chicago Metropolitan Agency for Planning
433 West Van Buren Street
Suite 450
Chicago, IL 60607

jrodriguez@cmap.illinois.gov
312-386-8806 office
708-334-1023 direct cell

From: Jason Puglisi <jpuglisi@langan.com>
Sent: Friday, July 25, 2025 12:53 PM
To: Jose Rodriguez <JRodriguez@cmap.illinois.gov>
Subject: RE: Letter - CMAP 2050 ADT - Yorkville (proposed Data Center)

Jose,

Thank you for taking my call today and answering my questions. Can you provide me updated 2050 ADT projections for the following segments:

- Galena Road between IL 47 and Eldamain Road – 2024 IDOT AADT 5,050 Vehicles
- Eldamain Road Between Galena and Corneils Road – 2024 IDOT AADT 7,800 Vehicles
- Corneils Road between Eldamain Road and IL 47 – 2019 IDOT AADT 1,150 Vehicles
- IL 47 between Corneils Road and Galena Road – 2023 IDOT AADT 15,300 Vehicles

I also provided a KMZ file to assist in identifying our study roadways. Please let me know if I can provide any additional information or context and thank you again for your assistance.

Thank you,

Jason Puglisi
Staff Engineer

LANGAN

Direct: 312.547.7740

[File Sharing Link](#)

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OHIO NORTH CAROLINA TENNESSEE FLORIDA TEXAS ARIZONA COLORADO UTAH WASHINGTON CALIFORNIA
ATHENS CALGARY DUBAI LONDON PANAMA

From: Jose Rodriguez <JRodriguez@cmap.illinois.gov>

Sent: Monday, June 16, 2025 12:11 PM

To: Jason Puglisi <jpuglisi@langan.com>

Subject: Letter - CMAP 2050 ADT - Yorkville (proposed Data Center)

Jason:

Attached is CMAP's response letter with Year 2050 ADT for the 4 road segments requested.

My contact information is below and on the Letter if there are any questions or concerns.

Thanks,

Jose

Jose Rodriguez
Senior Planner
Chicago Metropolitan Agency for Planning
433 West Van Buren Street
Suite 450
Chicago, IL 60607

jrodriguez@cmap.illinois.gov
312-386-8806 office
708-334-1023 direct cell

From: Jason Puglisi <jpuglisi@langan.com>
Sent: Monday, June 16, 2025 10:11 AM
To: Jose Rodriguez <JRodriguez@cmap.illinois.gov>
Cc: Andrew Pierson <apierson@langan.com>; Christopher Prisk <cprisk@Langan.com>
Subject: CMAP 2050 ADT Request - Yorkville, IL

Jose,

I received your contact information from my colleague. I am working on traffic impact study for a proposed data center campus development in the city of Yorkville. The proposed Data Center Campus is bounded by Galena Road to the north, East Beecher Road to the east, Corneils Road to the south and Eldamain Road to the west.

In order to project future traffic conditions, I am hoping you can provide 2050 ADT projections for the following:

- Galena Road between IL 47 and Eldamain Road – 2015 IDOT AADT 6,400 Vehicles
- Eldamain Road Between Galena and Corneils Road – 2019 IDOT AADT 7,300 Vehicles
- Corneils Road between Eldamain Road and IL 47 – 2019 IDOT AADT 1,300 Vehicles
- IL 47 between Corneils Road and Galena Road – 2023 IDOT AADT 15,300 Vehicles

I also provided a KMZ file to assist in identifying our study roadways. Please let me know if I can provide any additional information or context and thank you for any assistance you can provide.

Thank you,

Jason Puglisi
Staff Engineer

LANGAN

Direct: 312.547.7740
[File Sharing Link](#)

Phone: 312.547.7700 Fax: 312.547.7701
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Chicago, IL 60606
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ATHENS CALGARY DUBAI LONDON PANAMA



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July 25, 2025

Jason Puglisi
Staff Engineer
LANGAN
200 W. Madison Street
Suite 1920
Chicago, IL 60606

Subject: Galena Road - Beecher Road- Corneils Road - Eldamain Road
IDOT

Dear Mr. Puglisi:

In response to a request made on your behalf and dated June 16, 2025 and using updated current ADT information received on July 25, 2025, we have developed revised year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Galena Road between IL 47 and Eldamain Road	5,050 (2024)	6,650
Eldamain Road Between Galena and Corneils Road	7,800 (2024)	9,000
Corneils Road between Eldamain Road and IL 47	1,150 (2024)	1,900
IL 47 between Corneils Road and Galena Road	15,300 (2023)	26,700

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2025 CMAP Travel Demand Analysis. The regional travel model uses CMAP 2050 socioeconomic projections and assumes the implementation of the ON TO 2050 Comprehensive Regional Plan for the Northeastern Illinois area. The provision of this data in support of your request does not constitute a CMAP endorsement of the proposed development or any subsequent developments.

If you have any questions, please call me at (312) 386-8806 or email me at jrodriguez@cmap.illinois.gov



Jose Rodriguez, PTP, AICP
Senior Planner, Research & Analysis

TRAFFIC FORECAST RECORD

Record Number: ke-06-25

Type of Report: Projection

Year Sought: 2050

Analyst: JAR

Organization Requestion Forecast: Langan

Contact: Jason Puglisi

Email or Phone: jpuglisi@langan.com

Sponsor: IDOT

Date request was received: 6/16/2025 // 7/25/2025

Date that response was emailed: 6/16/25 // 7/25/2025

Facility Location: Galena Road - Beecher Road- Corneils Road - Eldamain Road

Municipality: Yorkville

APPENDIX F

Excerpts from Project Cardinal Traffic Impact Study



PIONEER DEVELOPMENT

Traffic Impact Study

Project Cardinal

Project No. 182671

Revision 0

July 21, 2025



A handwritten signature in black ink that reads "Timothy Cope".

Date: 7/21/2025

Expires: 11/30/2025



Executive Summary

The traffic impact study for the proposed Project Cardinal data center development in Yorkville, Illinois, assesses the potential effects of a large-scale project spanning approximately 17.4 million square feet across three campuses. The site is bounded by Ashe Road to the west, Baseline Road to the north, IL 47 to the east, and Galena Road to the south. The development's access plan includes six full-access driveways with three connecting to Baseline Road and three to Galena Road. Driveways are proposed to be two-lane (one lane entry, one exit), while two driveways on Galena Road will be three-lane, providing one entry and two exit lanes to accommodate higher outbound traffic volumes. Access to the site will be phased: Phase 1 will utilize Drive #1 (Baseline) and Drive #6 (Galena); Phase 2 will use Drives #4 and #5 (Galena); and Phase 3 will be served by Drives #2 and #3 (Baseline). There is no planned internal connectivity between the three campuses.

Traffic Projections

Traffic projections were developed for the years 2027, 2029, and 2031, aligning with the completion of Phases 1, 2, and 3 of the project. These projections were based on regional growth data from CMAP extending to 2050. The study evaluated both existing intersections and the proposed driveway connections, focusing on capacity, level of service (LOS), and the need for auxiliary lanes or traffic signals. The westbound approach of Baseline Road at Drive #1, Drive #2, and Drive #3, as well as the eastbound approach of Galena Road at Drive #4, Drive #5, and Drive #6 all meet the warrant and were therefore considered. Similarly, the westbound approach of Galena Road at Drive #4, Drive #5, and Drive #6 meet the warrant were considered. Additionally, the intersection of Baseline Road and Ashe Road is expected to meet the criteria for a traffic signal by 2029, specifically under MUTCD Warrant 3 during the evening peak hour. Signalization at this location is recommended to maintain acceptable traffic operations.

Traffic Analysis

Results of the capacity analysis for the existing intersections indicate that three of the five study area intersections and their approaches currently experience poor LOS. The intersection of IL 47 and Baseline Road and IL 47 and Galena Road experience an overall LOS C with the eastbound and westbound approaches experiencing LOS E or worse. Delays continued to increase with the added traffic in the background scenarios, with no approaches degrading to failing levels of service in the three intersections operating at acceptable levels of service. Signalized intersections along IL 47 are part of a project by IDOT that will be let November 5, 2025. Proposed improvements for this portion of IL 47 provide adequate capacity expansions that result in the signalized intersections operating at acceptable levels of service both overall and at all approaches. By 2031, without improvements, the westbound approach at Baseline Road and Ashe Road would degrade to LOS F. However, with the recommended signalization and auxiliary lanes, this intersection is projected to operate at LOS B or better in all future scenarios.

This study also included a queue analysis, which revealed that existing geometry results in significant queuing at supporting intersection approaches. However, with the combined effect of the IDOT improvements, auxiliary lanes, and signalization, reported queues are expected to remain within acceptable storage limits.

Following implementation of recommended improvements including auxiliary lanes, signalization at Baseline and Ashe, and the IDOT improvements along IL 47, all study intersections are projected to operate at acceptable LOS in full build out conditions. Table E-1 summarizes mitigation identified through the Traffic Impact Study.



Table E-1: Mitigation Summary

Location	Description	Timing (Year)	Responsibility
Galena Road	Widen to three lanes with TWLTL between Eldamain Road and IL 47	Phase 1 (2027)	County/Developer
Drive #1	Westbound Left-Turn Lane with: 265' Taper and 265' storage	Phase 1 (2027)	Developer
Drive #6	Westbound Left-Turn Lane with: 215' Taper and 220' storage	Phase 1 (2027)	Developer
Baseline Road at Ashe Road	Signalize Intersection	Phase 2 (2029)	Village/Developer
Drive #2	Westbound Left-Turn Lane with: 265' Taper and 265' storage	Phase 2 (2029)	Developer
Drive #3	Westbound Left-Turn Lane with: 265' Taper and 265' storage	Phase 2 (2029)	Developer
Drive #4	Westbound Left-Turn Lane with: 215' Taper and 220' storage	Phase 3 (2031)	Developer
Drive #5	Westbound Left-Turn Lane with: 215' Taper and 220' storage	Phase 3 (2031)	Developer
IL 47	IDOT IL 47 Improvements	Nov. 5th, 2025 Letting	IDOT

1.0 Introduction

1.1 Introduction

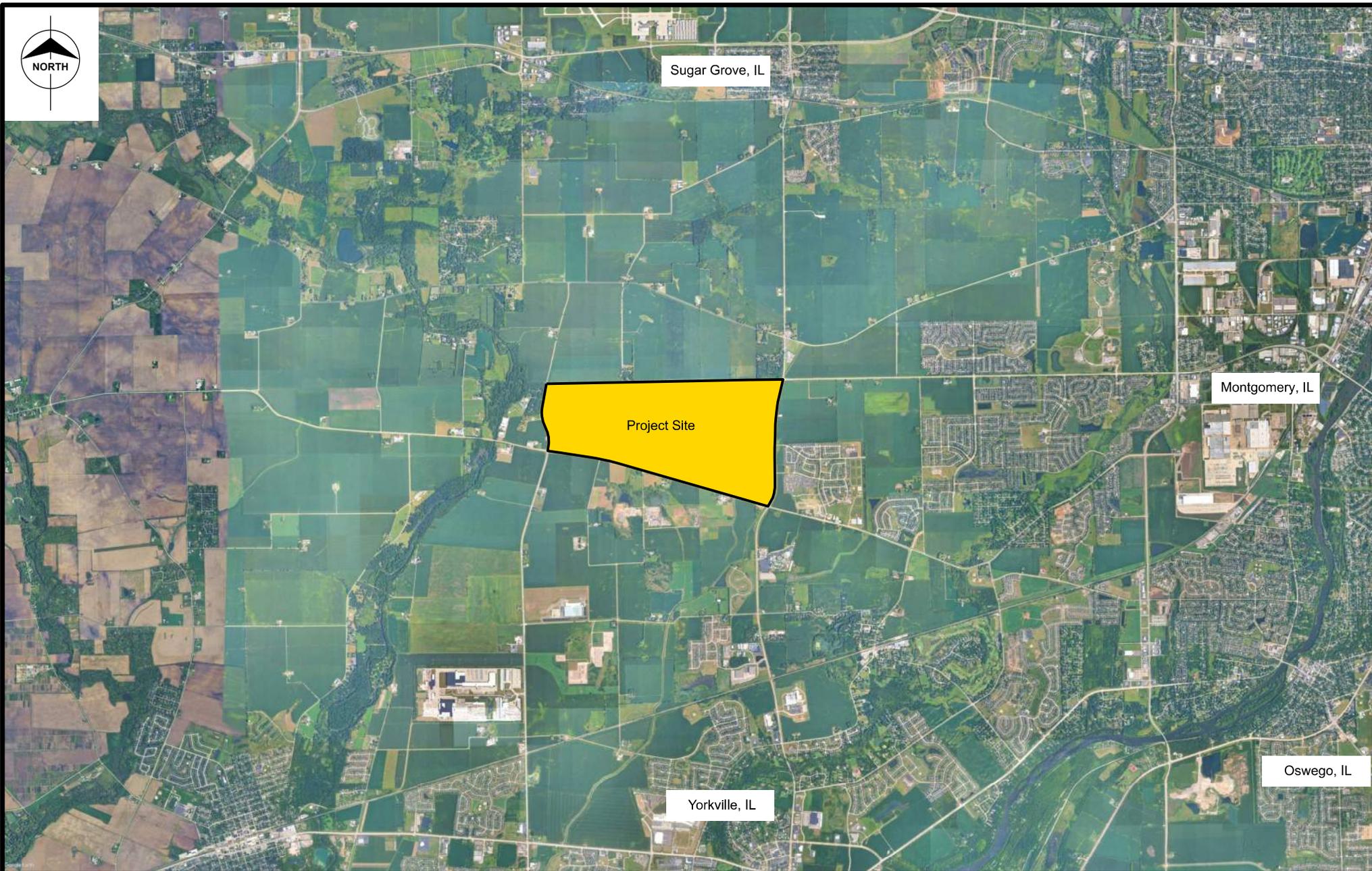
Burns and McDonnell Engineering Company has been tasked with conducting a traffic impact study for a proposed multiphase complex of data centers located in the land bounded by Baseline Road to the north, Ashe Road to the west, Galena Road to the south, and IL 47 to the east in Yorkville, Illinois. Figure 1-1 depicts the proposed site location and surrounding area.

The proposed development consists of 14 data centers totaling 17,313,002 square feet and being developed in three separate phases. The proposed site access plan includes six full access driveways, three along Baseline Road and three along Galena Road. The site plan proposes a total of 3,750 parking stalls. Figure 1-2 illustrates the conceptual site plan for this development.

The purpose of this study is to evaluate the potential traffic impacts of the proposed data centers. Traffic estimates are projected to 2027, 2029, and 2031 based on traffic projections from the Chicago Metropolitan Agency for Planning (CMAP). These years represent the buildout of phases 1, 2 and 3, respectively, of the proposed development. The study area roadway network was identified to include the following critical intersections for evaluation as well as the proposed access drives:

- Intersection #1 – Ashe Road at Baseline Road (TWSC)
- Intersection #2 – Mighell Road at Baseline Road (TWSC)
- Intersection #3 – IL 47 at Baseline Road (Signalized)
- Intersection #4 – IL 47 at Galena Road (Signalized)
- Intersection #5 – Eldamain Road/Ashe Road at Galena Road (Signalized)
- Access Drive #1 – Drive #1 at Baseline Road (TWSC)
- Access Drive #2 – Drive #2 at Baseline Road (TWSC)
- Access Drive #3 – Drive #3 at Baseline Road (TWSC)
- Access Drive #4 – Drive #4 at Galena Road (TWSC)
- Access Drive #5 – Drive #5 at Galena Road (TWSC)
- Access Drive #6 – Drive #6 at Galena Road (TWSC)

This report presents an overview of current roadway conditions, summarizes collected traffic data and capacity analyses, and includes assessments such as signal and turn lane warrant evaluations, site access spacing, and resulting conclusions.



Date July 2025

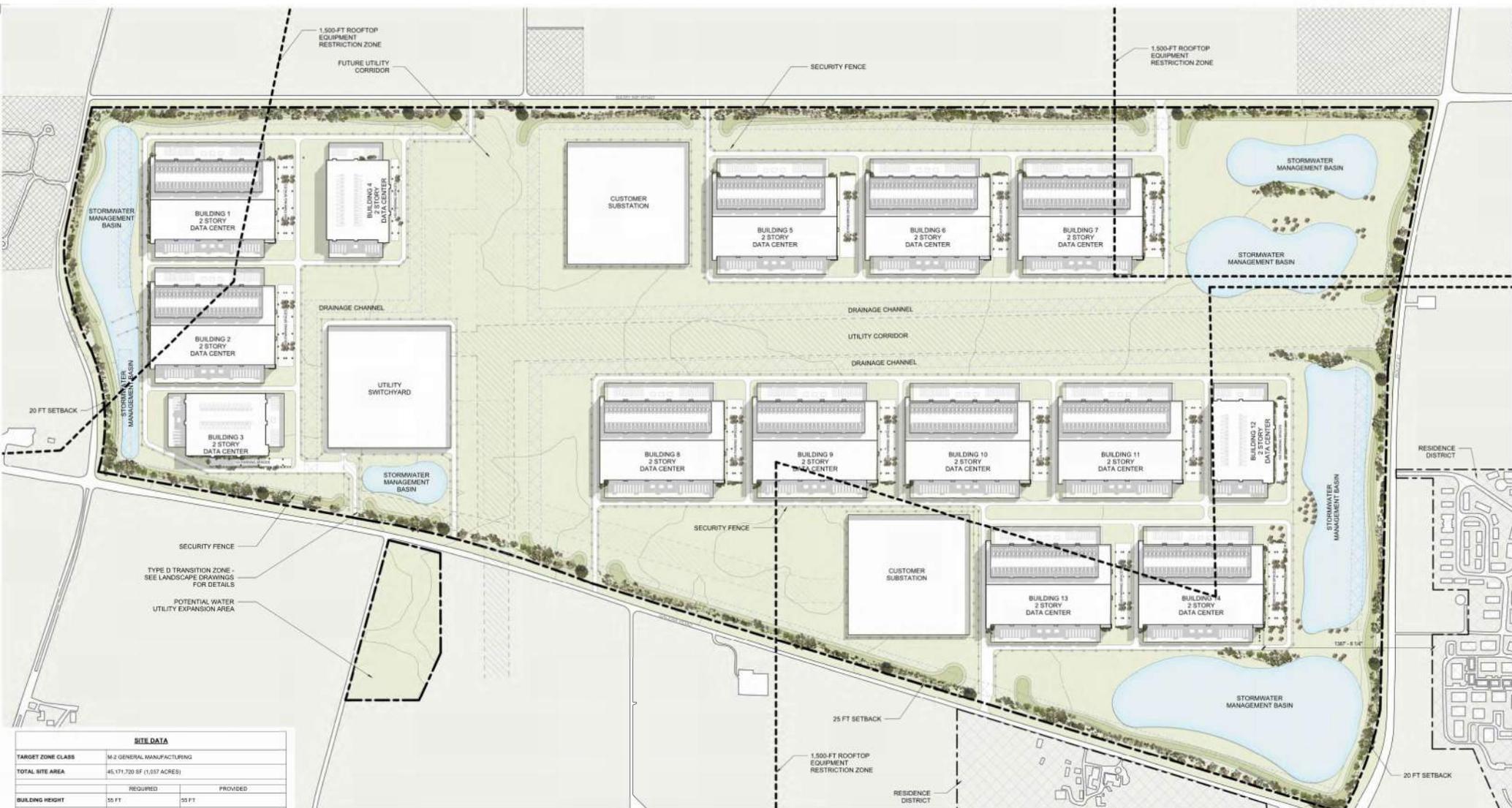
Designed J. Rathman

Yorkville, IL
Project Cardinal
Traffic Impact Analysis

Figure 1-1: Site Location Map

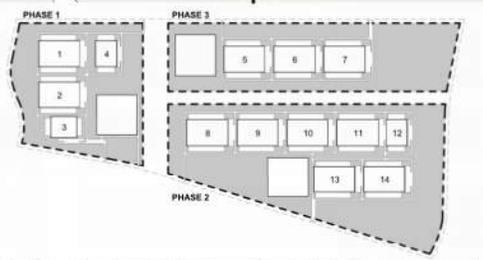
LEGEND

-  Study Intersection
-  Study Area Roads



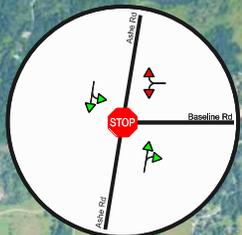
SITE DATA		
TARGET ZONE CLASS	M-2 GENERAL MANUFACTURING	
TOTAL SITE AREA	45,171,730 SF (1,037 ACRES)	
BUILDING HEIGHT	REQUIRED	PROVIDED
	55 FT	55 FT
SETBACKS		
FRONT	35 FT	25 FT
SIDE	MIN: 10% OF LOT DEPTH MAX: 20 FT	30 FT
REAR	0 FT	0 FT
*SETBACKS APPLY ONLY TO THE PERIMETER OF THE PROPERTY IN THE EVENT THAT THE PROPERTY IS RESUBDIVIDED. THERE SHALL BE NO SETBACKS APPLICABLE TO INTERNAL LOT LINES.		
PARKING		
DATA CENTER PARKING RATIO	0.3 SPACES PER 1,000 SF	
	REQUIRED	PROVIDED
PARKING SPACES	1,154	1,700
ACCESSIBLE PARKING SPACES	114	92
COVERAGE		
MINIMUM LOT SIZE	N/A	N/A
MAXIMUM LOT COVERAGE	80% (38,592,962 SF)	41% (18,252,806 SF)
MAXIMUM F.A.R.	N/A	N/A

BUILDING AREAS					
PHASE	BUILDING NUMBER	FOOTPRINT AREA	TOTAL FLOOR AREA	HEIGHT (TOP OF BUILDING)	HEIGHT (TOP OF EQUIPMENT)
P1	BUILDING 1	680,591 SF	1,361,182 SF	55 FT	78 FT
P1	BUILDING 2	680,591 SF	1,361,182 SF	55 FT	78 FT
P1	BUILDING 3	390,000 SF	780,000 SF	55 FT	78 FT
P1	BUILDING 4	390,000 SF	780,000 SF	55 FT	78 FT
P3	BUILDING 5	680,591 SF	1,361,182 SF	55 FT	78 FT
P3	BUILDING 6	680,591 SF	1,361,182 SF	55 FT	78 FT
P3	BUILDING 7	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 8	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 9	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 10	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 11	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 12	390,000 SF	780,000 SF	55 FT	78 FT
P2	BUILDING 13	680,591 SF	1,361,182 SF	55 FT	78 FT
P2	BUILDING 14	680,591 SF	1,361,182 SF	55 FT	78 FT
	TOTAL	6,656,501 SF	17,315,002 SF	N/A	N/A

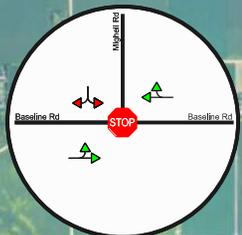


PROJECT CARDINAL

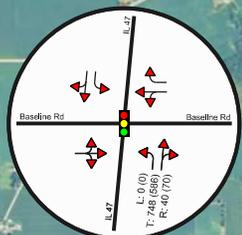
SITE PLAN



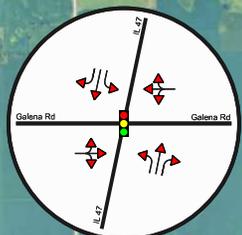
1 Ashe at Baseline Rd



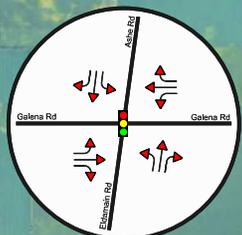
2 Mighell Rd at Baseline Rd



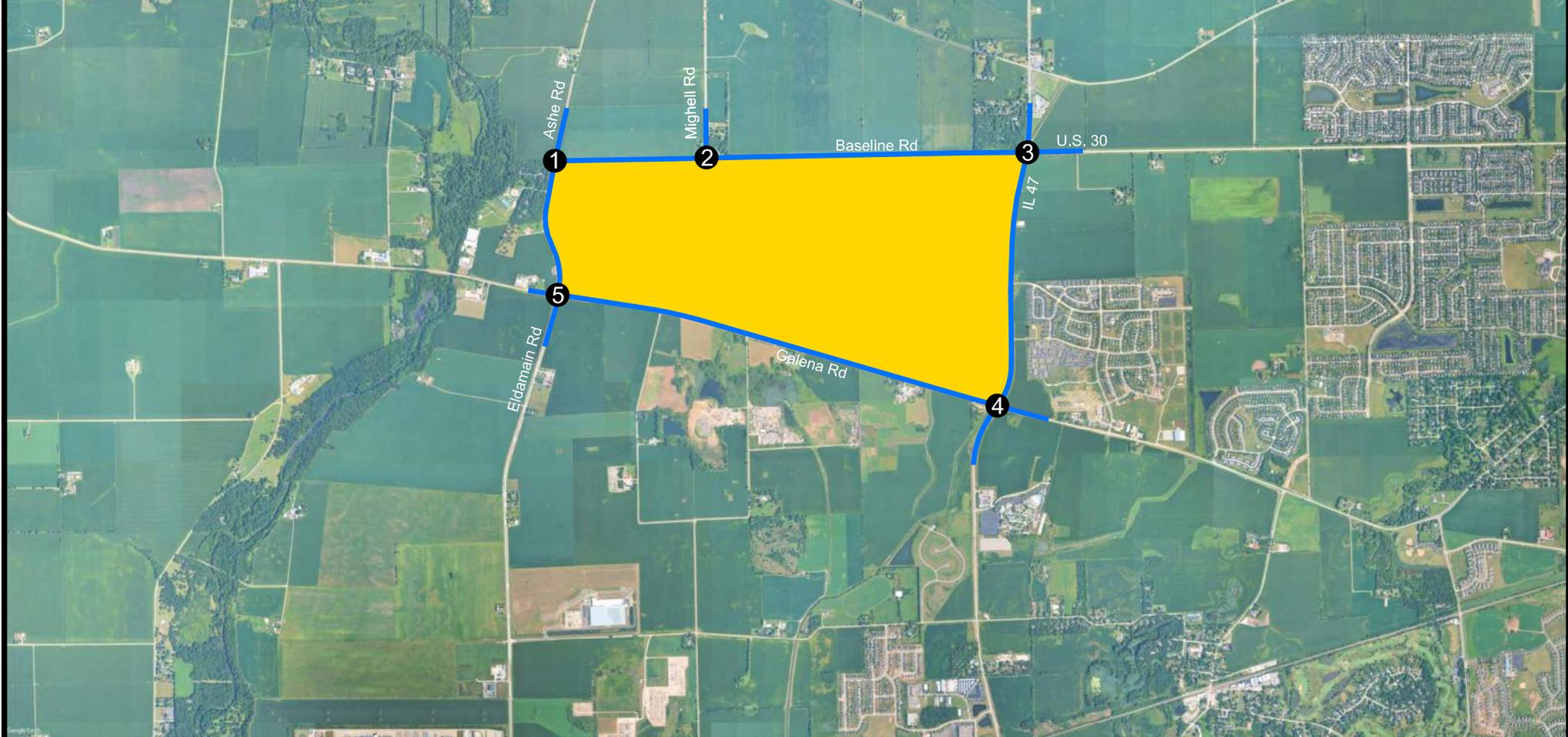
3 IL 47 at Baseline Rd



4 IL 47 at Galena Rd



5 Eldamain Rd at Galena Rd



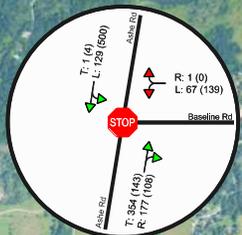
Date July 2025
Designed J. Rathman

Yorkville, IL Project Cardinal Traffic Impact Analysis

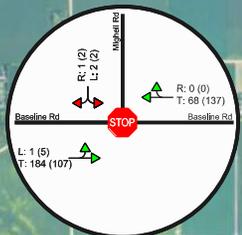
Figure 2-2: Existing Lane Configuration

LEGEND

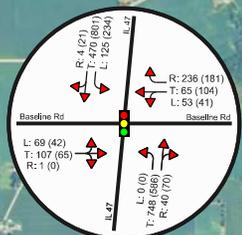
-  Study Intersection
-  Study Area Roads



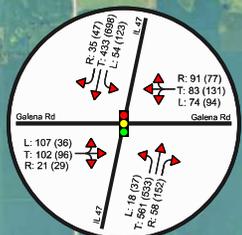
1 Ashe at Baseline Rd



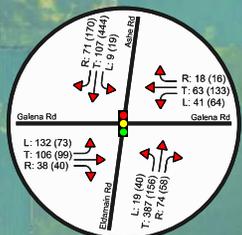
2 Mighell Rd at Baseline Rd



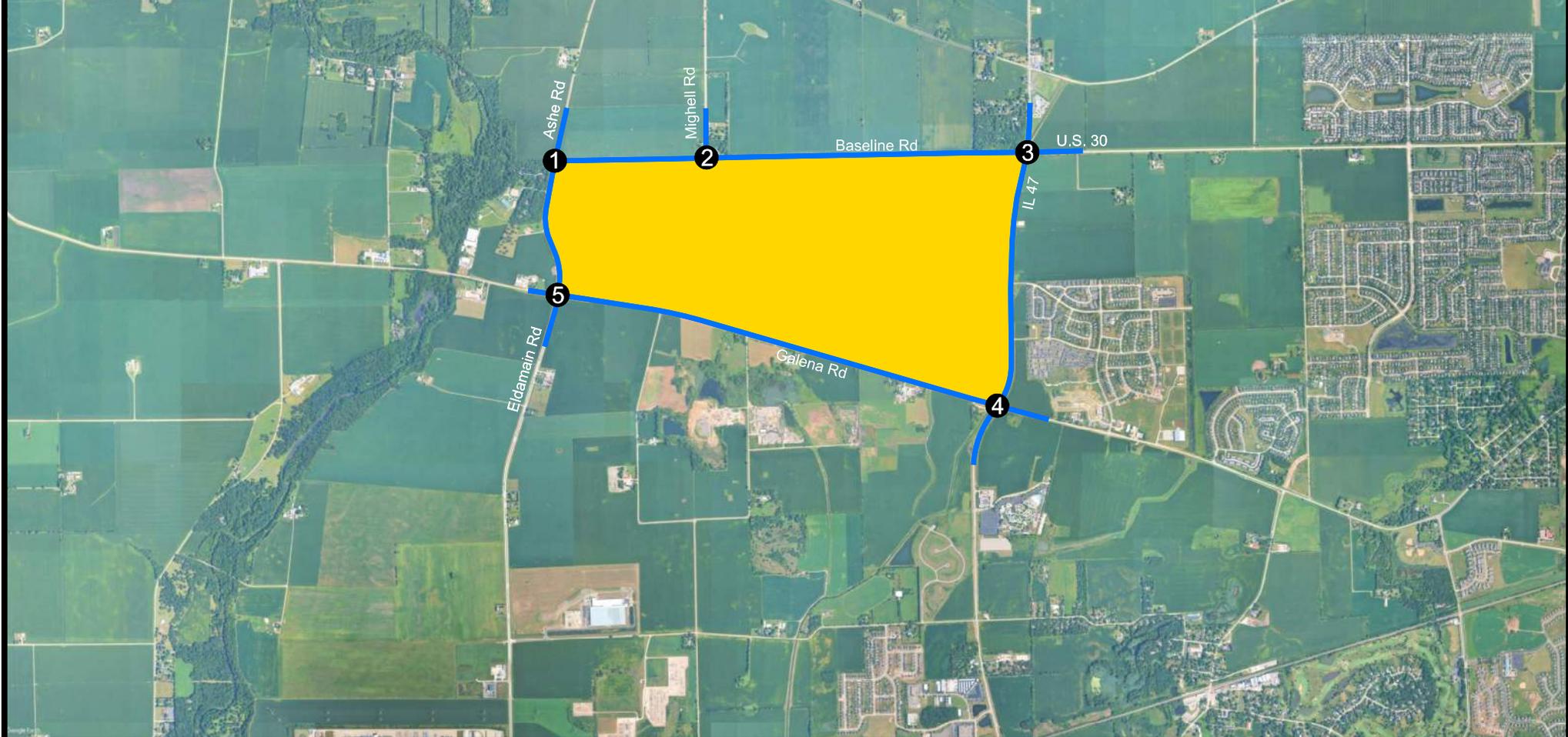
3 IL 47 at Baseline Rd



4 IL 47 at Galena Rd



5 Eldamain Rd at Galena Rd



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Figure 2-3: Existing Traffic Control and Volumes

LEGEND

- X Study Intersection
- Study Area Roads

3.0 Traffic Forecasts

3.1 Project Traffic Volumes

3.1.1 Trip Generation

The proposed development consists of approximately 8,656,501 square feet of data center land use. Generated trips were calculated per Institute of Transportation Engineers (ITE) trip generation methodologies utilizing the current *ITE Trip Generation Manual, 11th Edition*. The following ITE land use code was referenced for the purposes of this study:

Data Center (ITE Land Use Code 160) – A data center is a free-standing warehouse type of facility that is primarily used for off-site storage of computer systems and associated components including applications and secure data. Some data centers may include maintenance areas and a small office. Data centers may be occupied by single or multiple tenants. Data centers typically have a small number of employees and visitors.

The *ITE Trip Generation Manual, 11th Edition* estimates trip generation projections based on assessments of various similar sites throughout the United States and offers estimates of projected vehicle trips based on building square footage. Trip projections are presented based both on averages linear rates and fitted curve equations and selection of the trip projection methodology is based on an assessment of the number of assessed sites and resulting R² as a measure of curve fit. Recommendations of utilizing the fitted curve projection approach typically occur when either there are at least 20 representative land use data points or the resulting R² values is or greater than 0.75. Furthermore, peak hour trip evaluations are evaluated based on the peak hour of the adjacent street which is representative for one hour from 7 AM to 9 AM and 4 PM to 6 PM.

For the purposes of this assessment the following equations were referenced for the estimation of projected traffic across the proposed site developments:

- Weekday [Average Rate] = 0.99 x (Units)
- Weekday, AM Peak Hour of Adjacent Street [Average Rate] = 0.11 x (Units)
- Weekday, PM Peak Hour of Adjacent Street [Fitted Curve] = 0.11 x (Units) – 5.65

Table 3-1 summarizes the resulting trip generation projections for the proposed development considering each development’s respective size as part of Phase 1.

Table 3-1: Phase 1 Trip Generation

Description		Weekday Daily	Weekday AM			Weekday PM		
Developments	Size KSF		Total	In	Out	Total	In	Out
			Building 1	1,361.2	1,348	171	94	77
Building 2	1,361.2	1,348	171	94	77	144	43	101
Building 3	780	772	96	53	43	80	24	56
Building 4	780	772	96	53	43	80	24	56
Phase Total	-	4,240	534	294	240	448	134	314
Grand Total	-	4,240	534	294	240	448	134	314



In total, 4,240 daily weekday, 534 weekday morning peak hour, and 448 weekday evening peak hour trips are projected to be added as new trips to the study area. Table 3-2 summarizes the resulting trip generation projections for the proposed development with respect to newly added trips as part of Phase 2.

Table 3-2: Phase 2 Trip Generation

Description		Weekday Daily	Weekday AM			Weekday PM		
Developments	Size KSF		Total	In	Out	Total	In	Out
			Building 8	1,361.2	1,348	171	94	77
Building 9	1,361.2	1,348	171	94	77	144	43	101
Building 10	1,361.2	1,348	171	94	77	144	43	101
Building 11	1,361.2	1,348	171	94	77	144	43	101
Building 12	780	772	96	53	43	80	24	56
Building 13	1,361.2	1,348	171	94	77	144	43	101
Building 14	1,361.2	1,348	171	94	77	144	43	101
Phase Total	-	8,860	1,122	617	505	944	282	662
Grand Total	-	13,100	1,656	911	745	1,392	416	976

As part of the Phase 2 development, 4,240 daily weekday, 534 weekday morning peak hour, and 448 weekday evening peak hour trips are projected to be added as new trips to the study area. In combination of Phase 1 and Phase 2, 13,100 daily weekday, 1,656 weekday morning peak hour, and 1,392 weekday evening peak hour trips are projected to be added as new trips to the study area. Table 3-3 summarizes the resulting trip generation projections for the proposed development with respect to newly added trips as part of Phase 3.

Table 3-3: Phase 3 Trip Generation

Description		Weekday Daily	Weekday AM			Weekday PM		
Developments	Size KSF		Total	In	Out	Total	In	Out
			Building 5	1,361.2	1,348	171	94	77
Building 6	1,361.2	1,348	171	94	77	144	43	101
Building 7	1,361.2	1,348	171	94	77	144	43	101
Phase Total	-	4,044	513	282	231	432	129	303
Grand Total	-	17,144	2,169	1,193	976	1,824	545	1279

As part of the Phase 3 development, 4,044 daily weekday, 513 weekday morning peak hour, and 432 weekday evening peak hour trips are projected to be added as new trips to the study area. In combination of Phase 1 and Phase 2, 17,144 daily weekday, 2,169 weekday morning peak hour, and 1,824 weekday evening peak hour trips are projected to be added as new trips to the study area.

3.1.2 Trip Distribution and Assignment

Due to the relative lack of developed land around the proposed site location, the direction from which traffic approaches and departs the site was determined by leveraging the existing traffic patterns observed on Tuesday, June 24th, 2025. The overall trip distribution is summarized in Table 3-4.



Table 3-4: External Trip Distribution

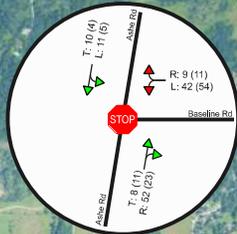
Cordon Location	Percentage
Ashe Road - North of Baselines Road	7%
Mighell Road - North of Baseline Road	1%
IL 47 - North of Baseline Road	17%
Baseline Road - East of IL 47	11%
Galena Road - East of IL 47	15%
IL 47 - South of Galena Road	14%
Eldamain Road - South of Galena Road	18%
Galena Road - West of Ashe Road	17%

The assignment of traffic to the site was performed based on the location of data centers within the site and their proximity to driveways with consideration towards the development phases. The following summarizes the phase in which each proposed access drive is introduced:

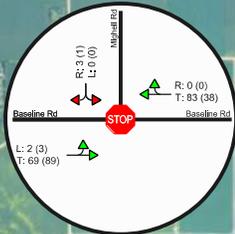
- Phase 1 – Drive #1 and Drive #6
- Phase 2 – Drive #4 and Drive #5
- Phase 3 – Drive #2 and Drive #3

As the driveways for each phase of the proposed development generally anchor the edges of their respective phases, the distribution of each phase’s trips is equally distributed amongst its driveways and trips are routed to the appropriate intersection(s) according to the shortest distance to each trip’s entry/exit point. The distribution of proposed site generated trips in Phases 1-3 are summarized in Figure 3-1, Figure 3-2, and Figure 3-3, respectively.

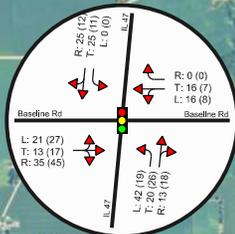




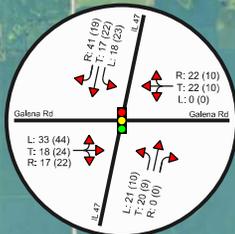
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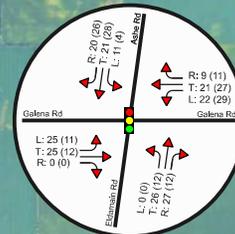
2 Mighell Rd at Baseline Rd



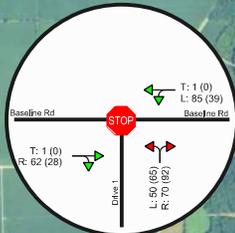
3 IL 47 at Baseline Rd



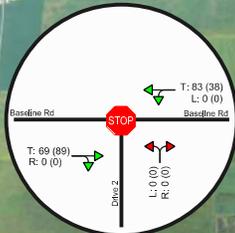
4 IL 47 at Galena Rd



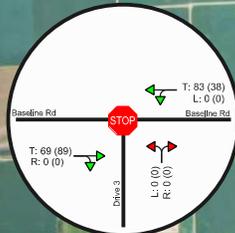
5 Eldmain Rd at Galena Rd



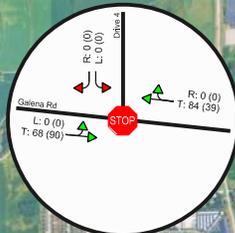
6 Drive 1 at Baseline Rd



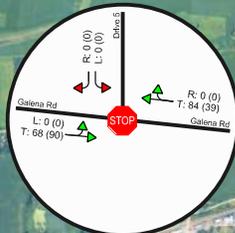
7 Drive 2 at Baseline Rd



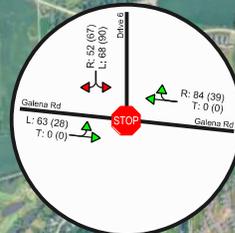
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



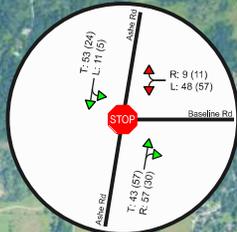
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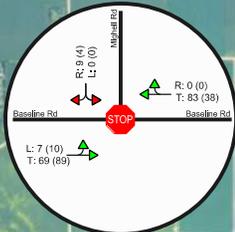
Figure 3-1: Phase 1 (2027) Site Generated Trips

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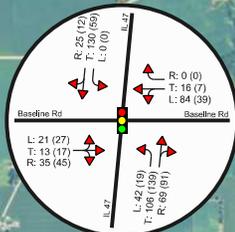
-  Study Intersection
-  Study Area Roads



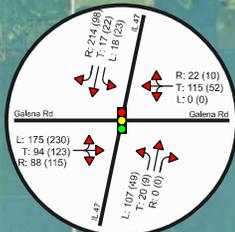
1 Ashe at Baseline Rd



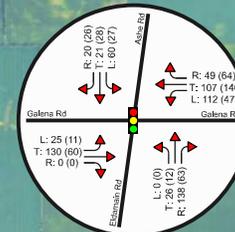
2 Mighell Rd at Baseline Rd



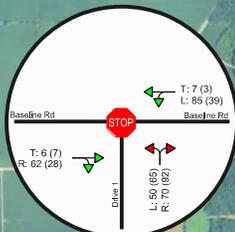
3 IL 47 at Baseline Rd



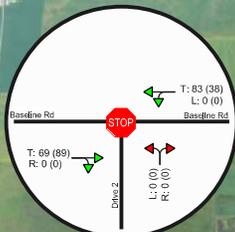
4 IL 47 at Galena Rd



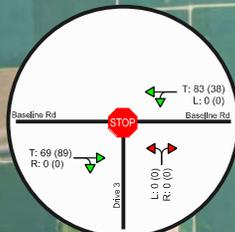
5 Eldmain Rd at Galena Rd



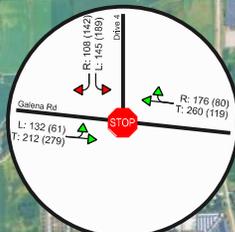
6 Drive 1 at Baseline Rd



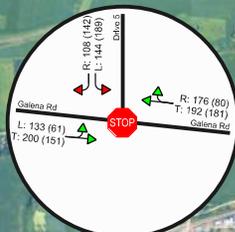
7 Drive 2 at Baseline Rd



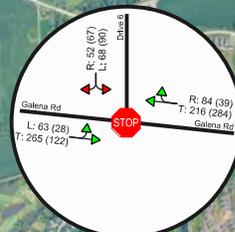
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



Date July 2025

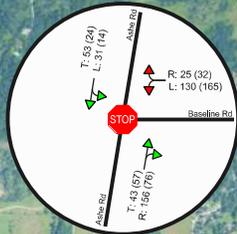
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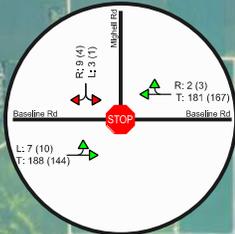
Figure 3-2: Phase 2 (2029) Site Generated Trips

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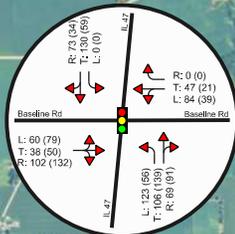
- Study Intersection
- Study Area Roads



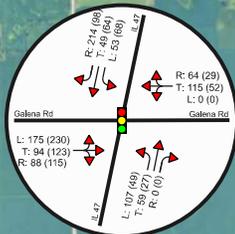
1 Ashe at Baseline Rd



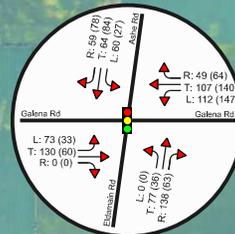
2 Mighell Rd at Baseline Rd



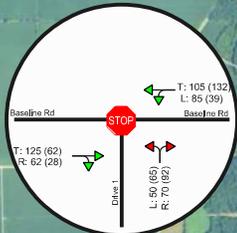
3 IL 47 at Baseline Rd



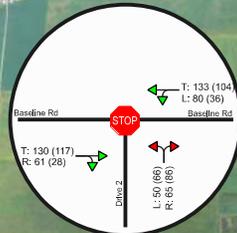
4 IL 47 at Galena Rd



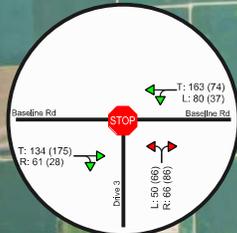
5 Eldamain Rd at Galena Rd



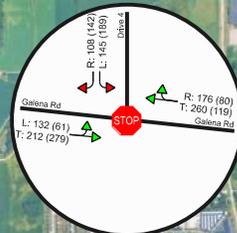
6 Drive 1 at Baseline Rd



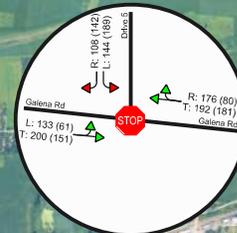
7 Drive 2 at Baseline Rd



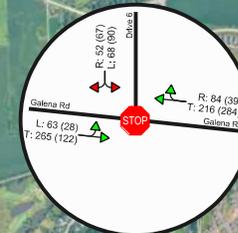
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



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Figure 3-3: Phase 3 (2031) Site Generated Trips

LEGEND

-  Study Intersection
-  Study Area Roads

3.2 Background Traffic Volumes

Background traffic volumes were estimated for the years 2027, 2029, and 2031, which represent the anticipated build-out years for Phase 1, Phase 2, and Phase 3, respectively. These volumes account for future growth in the area regardless of the proposed development. The AADT volumes referenced for the study area roadway network were derived from the IDOT database. Table 3-5 summarizes the growth rate determination, and CMAP correspondence regarding the establishment of an area growth rate is provided in Appendix B.

Table 3-5: CMAP Established Growth Rates

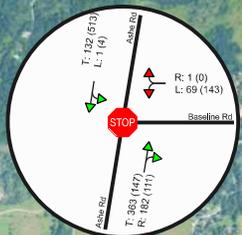
Approach	AADT		Effective 26-yr Growth	Compounded Annual Growth Rate	
	Current ADT (2023 or 2024, IDOT)	2050 ADT			
Baseline Rd at Ashe Rd	Ashe Rd - North Leg	5,150	6,000	16.5%	0.60%
	Ashe Rd - South Leg	7,700	9,300	20.8%	0.70%
	Baseline Rd - East Leg	2,600	3,600	38.5%	1.30%
Baseline Rd at IL 47	IL 47 - North Leg	20,200	36,000	78.2%	2.20%
	IL 47 - South Leg	16,000	28,000	75.0%	2.20%
	Baseline Rd - West Leg	2,600	3,400	30.8%	1.00%
	Baseline Rd - East Leg	15,800	20,000	26.6%	0.90%
Galena Rd at IL 47	IL 47 - North Leg	16,000	28,000	75.0%	2.20%
	IL 47 - South Leg	15,300	26,100	70.6%	2.10%
	Galena Rd - West Leg	5,000	6,600	32.0%	1.10%
Galena Rd at Ashe Rd	Galena Rd - East Leg	7,150	9,900	38.5%	1.30%
	Ashe Rd - North Leg	7,700	9,300	20.8%	0.70%
	Ashe Rd - South Leg	7,800	9,000	15.4%	0.60%
Baseline Rd at Mighell Rd	Galena Rd - West Leg	5,850	7,800	33.3%	1.10%
	Galena Rd - East Leg	5,050	6,650	31.7%	1.10%
	Mighell Rd - North Leg	1,350	2,050	51.9%	1.60%
Baseline Rd at Mighell Rd	Baseline Rd - West Leg	2,600	3,600	38.5%	1.30%
	Baseline Rd - East Leg	2,600	3,400	30.8%	1.00%

Based on Table 3-5, the CMAP projections show an averaged annual growth rate of 1.30% which was applied as a uniform total growth factor to predict future background traffic volume growth. Figure 3-4, Figure 3-5, and Figure 3-6 illustrate the background traffic volumes for years 2027, 2029, and 2031 respectively.

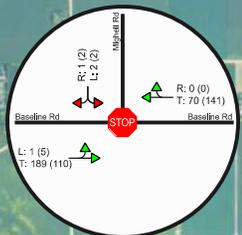
3.3 Future Traffic Volumes

Future total traffic volumes consist of the projected development trips and background volumes per phase of the development. Total future traffic volumes are depicted for Phase 1 Build, Phase 2 Build, and Phase 3 Build conditions in Figure 3-7, Figure 3-8, and Figure 3-9 respectively.

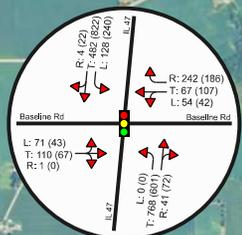




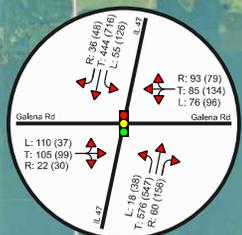
1 Ashe at Baseline Rd



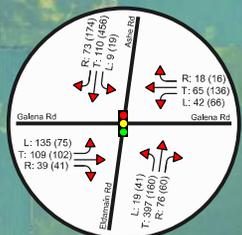
2 Mighell Rd at Baseline Rd



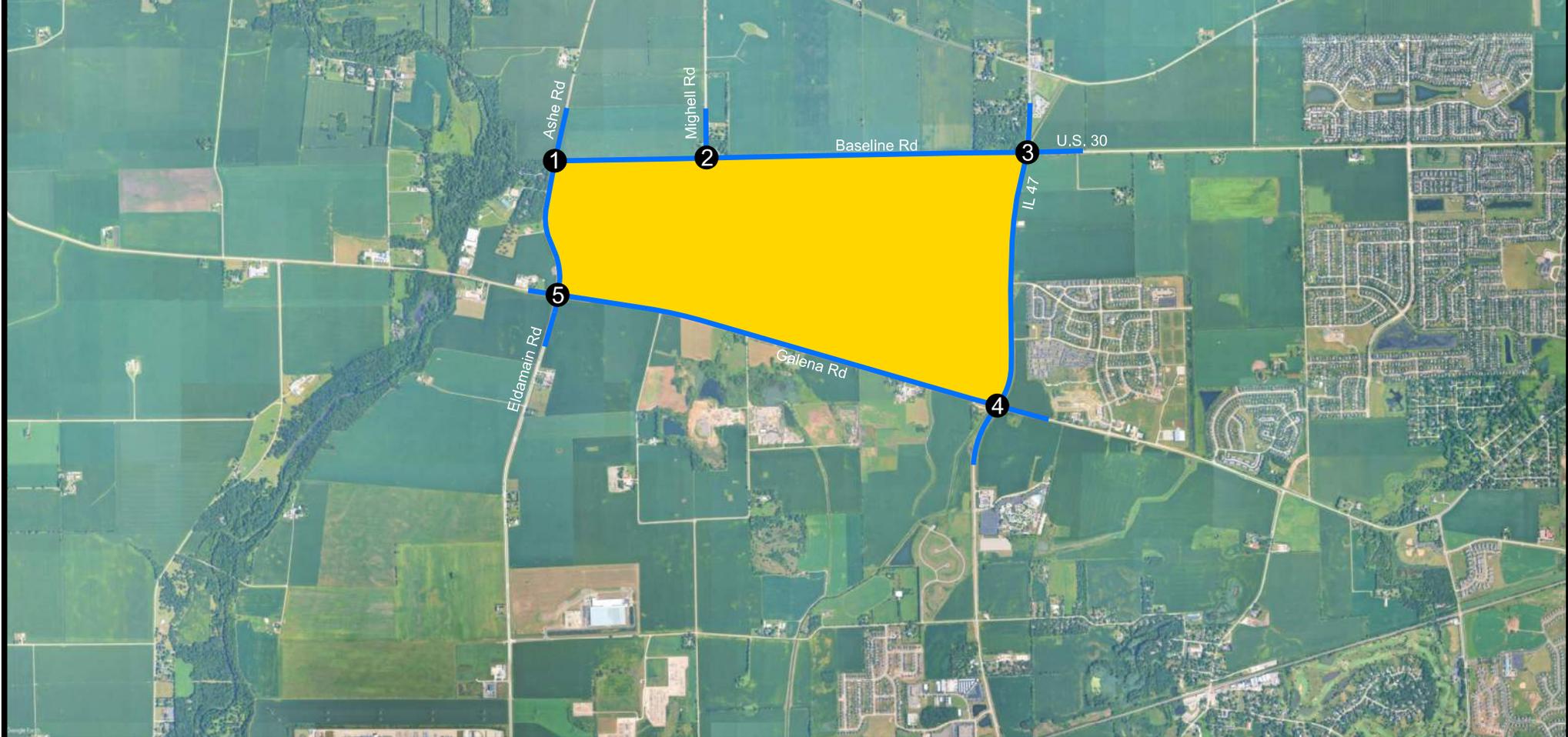
3 IL 47 at Baseline Rd



4 IL 47 at Galena Rd



5 Eldamain Rd at Galena Rd



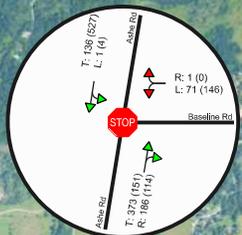
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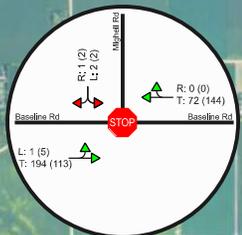
Figure 3-4: Background Year 2027 Traffic Volumes

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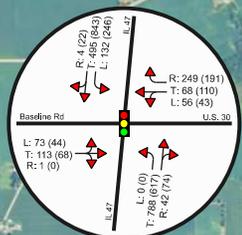
-  Study Intersection
-  Study Area Roads



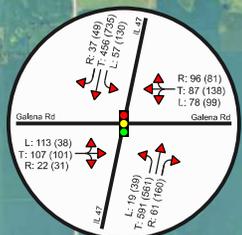
1 Ashe at Baseline Rd



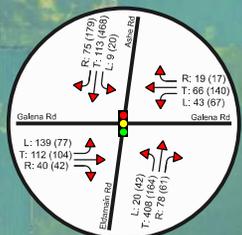
2 Mighell Rd at Baseline Rd



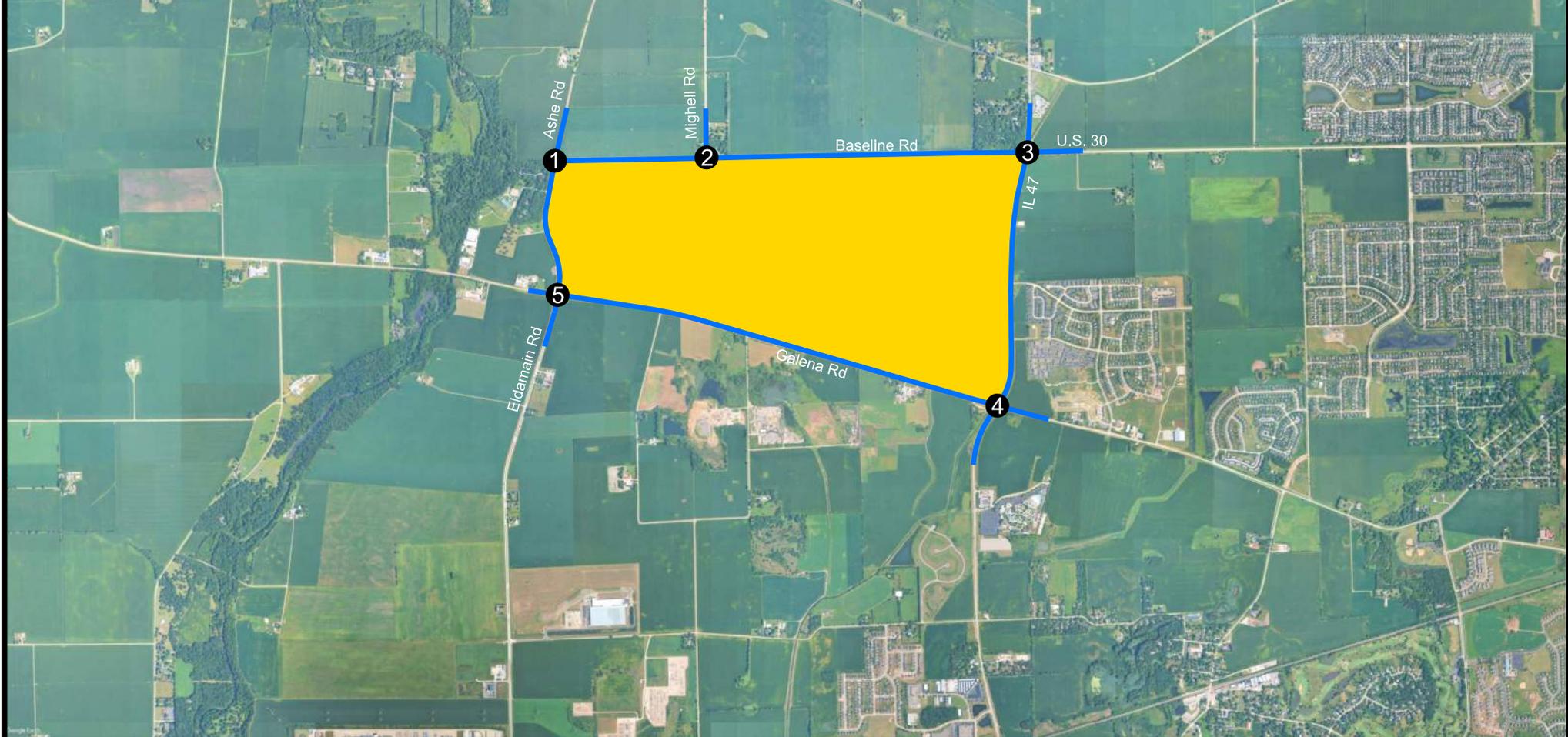
3 IL 47 at Baseline Rd



4 IL 47 at Galena Rd



5 Eldmain Rd at Galena Rd



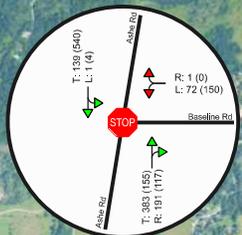
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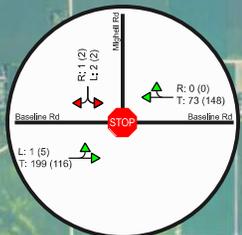
Figure 3-5: Background Year 2029 Traffic Volumes

LEGEND

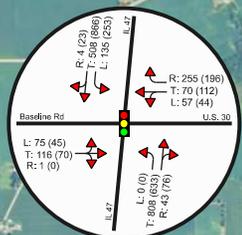
-  Study Intersection
-  Study Area Roads



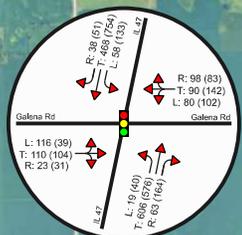
1 Ashe at Baseline Rd



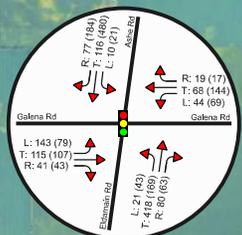
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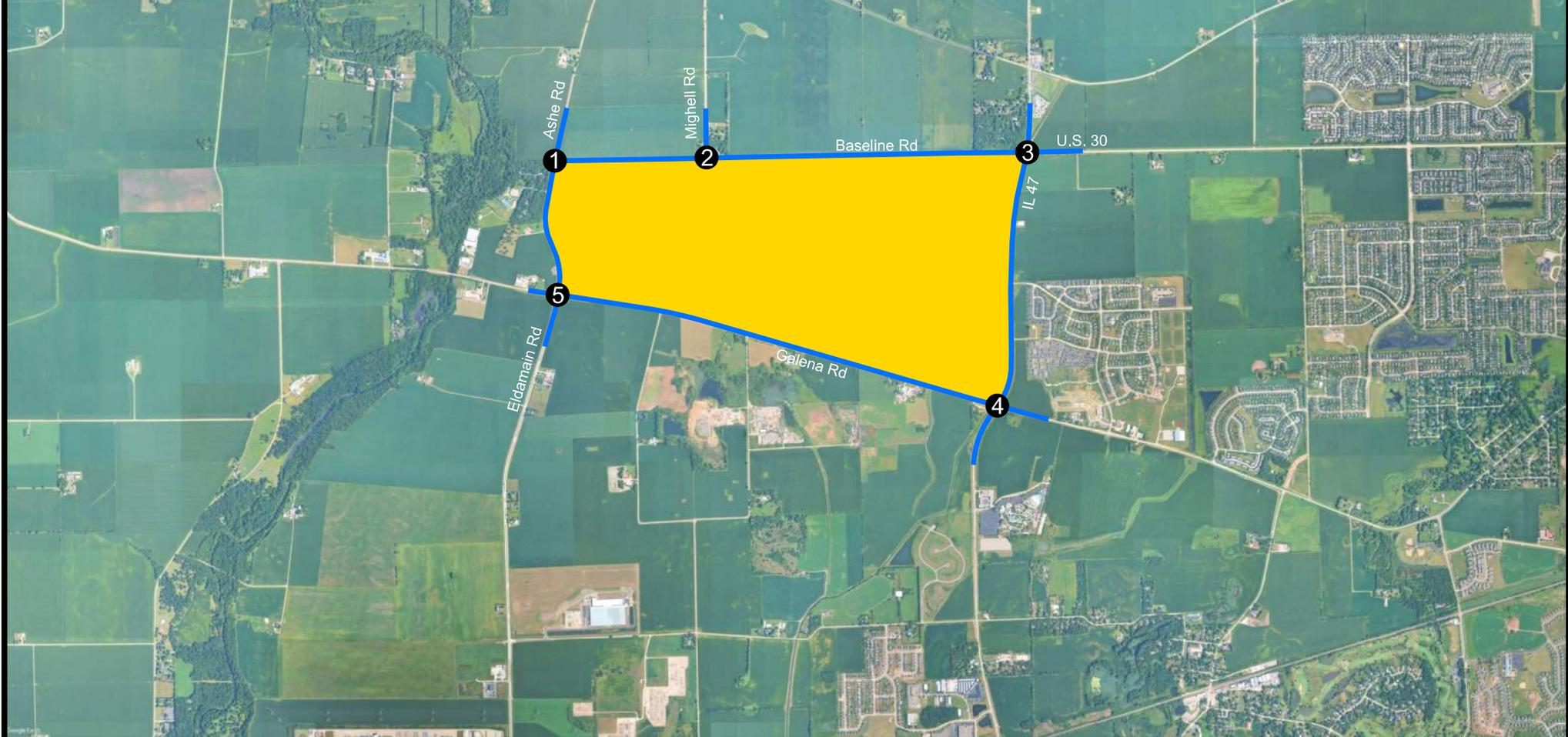
3 IL 47 at Baseline Rd



4 IL 47 at Galena Rd



5 Eldamain Rd at Galena Rd



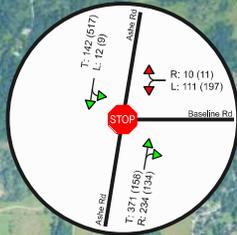
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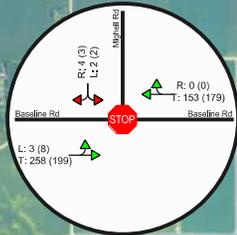
Figure 3-6: Background Year 2031 Traffic Volumes

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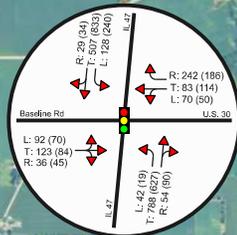
- Study Intersection
- Study Area Roads



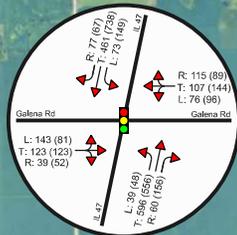
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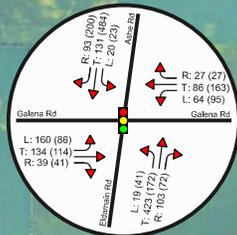
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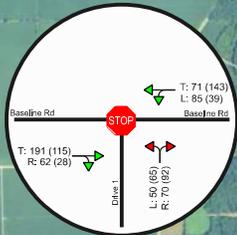
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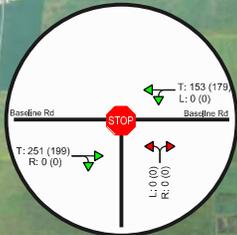
4 IL 47 at Galena Rd



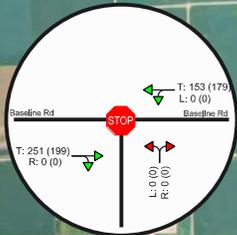
5 Eldmain Rd at Galena Rd



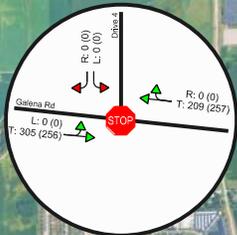
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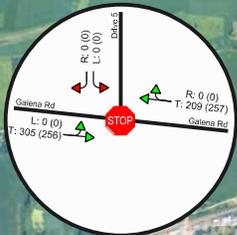
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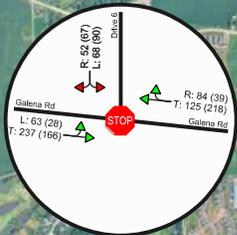
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



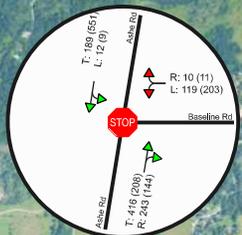
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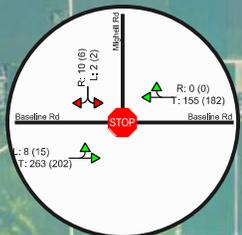
Figure 3-7: Phase 1 (2027) Total Future Traffic Volumes

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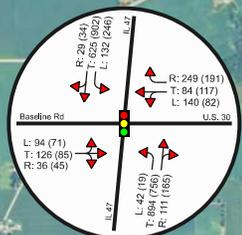
- Study Intersection
- Study Area Roads



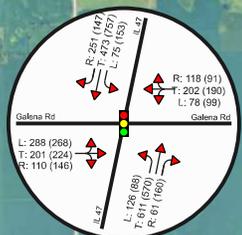
1 Ashe at Baseline Rd



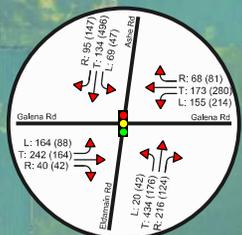
2 Mighell Rd at Baseline Rd



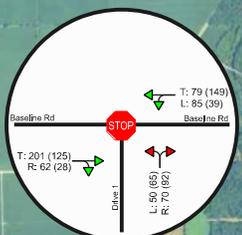
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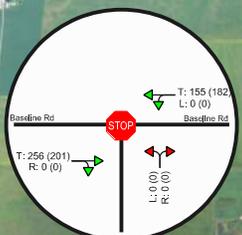
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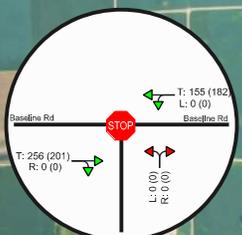
5 Eldmain Rd at Galena Rd



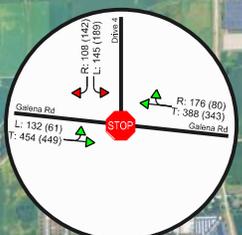
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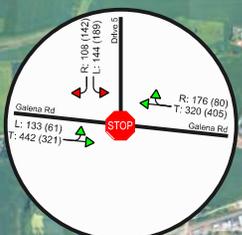
7 Drive 2 at Baseline Rd



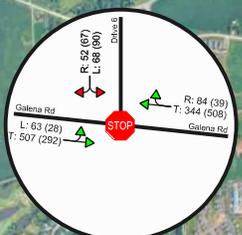
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



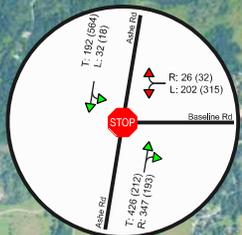
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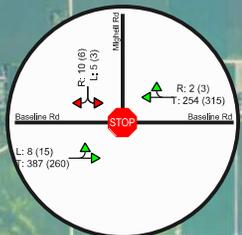
Figure 3-8: Phase 2 (2029) Total Future Traffic Volumes

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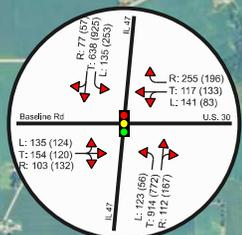
-  Study Intersection
-  Study Area Roads



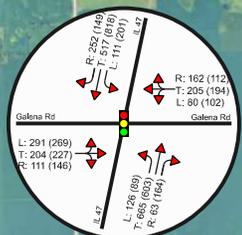
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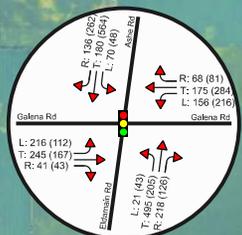
2 Mighell Rd at Baseline Rd



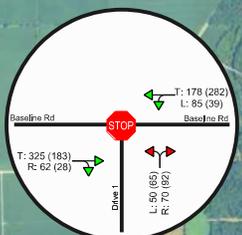
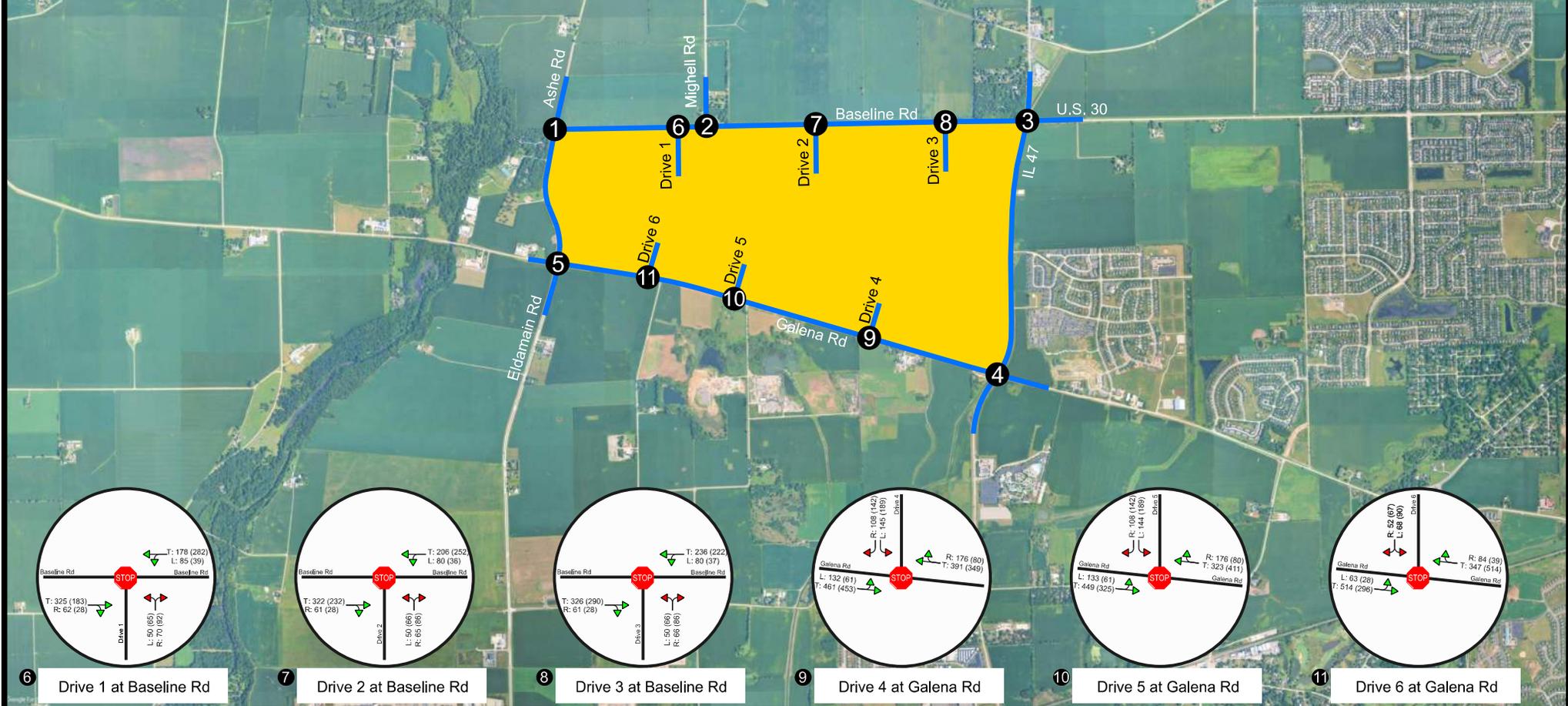
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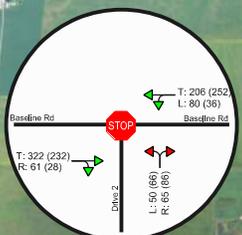
4 IL 47 at Galena Rd



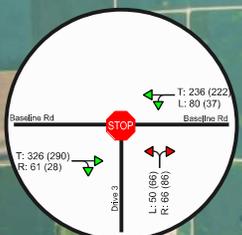
5 Eldamain Rd at Galena Rd



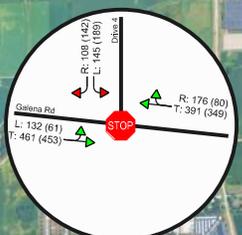
6 Drive 1 at Baseline Rd



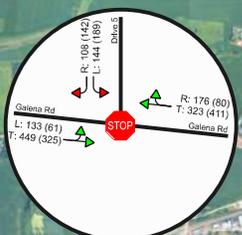
7 Drive 2 at Baseline Rd



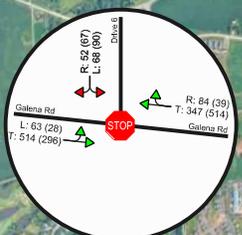
8 Drive 3 at Baseline Rd



9 Drive 4 at Galena Rd



10 Drive 5 at Galena Rd



11 Drive 6 at Galena Rd



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Figure 3-9: Phase 3 (2031) Total Future Traffic Volumes

LEGEND

-  Study Intersection
-  Study Area Roads

4.0 Traffic Analysis

Traffic analyses include the evaluation of auxiliary turn lane warrants, traffic signal warrants, intersection capacity, and queue lengths based on projected traffic conditions. Site circulation and proposed lane configuration were considered to assess adequate accommodation of turning and through movements in the study area.

4.1 Auxiliary Lane Analysis

Auxiliary lane warrant analyses were performed along study area intersections in concurrence to methodologies presented in IDOT's *Bureau of Design and Environmental Manual* (BDE). Section 36-3.01 of the BDE defines warrant criteria determined through comparison of projected turning vehicle volume, opposing traffic volume, and percentage share of turning vehicles for left turning movements. Right turning and left turning lanes are evaluated based on separate independent criteria for the major roadway. Auxiliary lane warrant tables and worksheets are included in Appendix C.

Right-Turn Lane Warrant Analysis

Based on the comparison of turning movement volumes and one directional major street volumes, Drive #4, Drive #5, and Drive #6, all satisfy the first right-turn warrant for unsignalized intersections in Phase 2 Build Year 2029. Moreover, the intersections of Drive #4 and Drive #5 with Galena Road satisfy the fifth criteria outlined for right-turn lane consideration as right-turn volumes exceed 150 vehicles per hour (vph) at both drives and mainline through volumes surpass 300 vehicles per lane per hour (vphpl). It is recommended to implement a right-turn auxiliary lane at the following intersections in adherence to the turn lane design parameters established in Section 36-3.02 of the BDE:

- Drive #4 and Galena Road – Westbound Right-Turn Lane in Phase 2 Build Year 2029
- Drive #5 and Galena Road – Westbound Right-Turn Lane in Phase 2 Build Year 2029
- Drive #6 and Galena Road – Westbound Right-Turn Lane in Phase 2 Build Year 2029

Left-Turn Lane Warrant Analysis

Overall, the warrant evaluation found all proposed access drives to meet the criteria of warrant 1 under varying phased build conditions. For the purposes of this analysis, a design speed 5 miles per hour higher than the posted or regulatory speed is applied to warrant 1 left-turn lane evaluations, which results in a design speed of 60 mph along Baseline Road and 50 mph along Galena Road. The existing roadway configurations of Galena Road and Baseline Road are two-lane, two-way undivided typical sections. Left-turn lane accommodation can be achieved through implementation of a dedicated turn lane or through incorporation of a two-way left-turn lane (TWLTL). Left-turn auxiliary lanes or dedicated space is recommended at the following intersections and should be designed to accommodate the 95th percentile queue lengths presented in Section 4.4:

- Drive #1 and Baseline Road – Westbound Left-Turn Lane in Phase 3 Build Year 2031
- Drive #2 and Baseline Road – Westbound Left-Turn Lane in Phase 3 Build Year 2031
- Drive #3 and Baseline Road – Westbound Left-Turn Lane in Phase 3 Build Year 2031
- Drive #4 and Galena Road – Eastbound Left-Turn Lane in Phase 2 Build Year 2029
- Drive #5 and Galena Road – Eastbound Left-Turn Lane in Phase 2 Build Year 2029
- Drive #6 and Galena Road – Eastbound Left-Turn Lane in Phase 1 Build Year 2027

Additional Auxiliary Lane Considerations

Auxiliary lane analyses focused on proposed access locations for the major road, where turn lane warrants were evaluated based on projected turning movement and applicable warrant thresholds at new access drives. When a proposed access location meets turn lane warrant criteria in a future year beyond the opening day, it is recommended that the turn lane be implemented at the time of site phase opening when the drive is introduced to accommodate anticipated traffic demand. Mitigation measures specific to the minor leg approach of the proposed access drive intersections are to be determined by intersection performance results in Section 4.3 of this report. For existing intersections in the study area, the justification for auxiliary lane implementation was also assessed through capacity and queue length analyses. Sections 4.3 and 4.4 present the intersection performance and 95th percentile queue length analyses respectively, which inform the identification of potential mitigation measures such as storage length or the incorporation of auxiliary lanes at existing study area intersections.

4.2 Traffic Signal Warrant Analysis

A peak hour warrant analysis at existing study area intersections was performed to establish an understanding of which intersections satisfy the conditions outlined in the Manual on Uniform Traffic Control Devices (MUTCD) for signalized operations. For the purposes of this study, the intersections of Baseline Road at Ashe Road and Baseline Road at Mighell Road represent existing, unsignalized intersections directly servicing the area. Future study volumes evaluated incorporate a 60% right turn reduction per IDOT guidance to account for single shared lane usage at both intersections.

Based on the results of the signal warrant analysis, the intersection of Baseline Road at Ashe Road satisfies the criteria for Warrant 3 under future build conditions. Table 4-1 highlights the conditions in which the peak hour warrant was met, and Appendix D provides the analysis worksheets summarizing the results.

Table 4-1: Peak Hour Traffic Signal Warrant Analysis Summary

Condition	Satisfies Peak Hour Warrant 3 (Y/N)		
	2029 Build PM	2031 Build AM	2031 Build PM
Baseline Road at Ashe Road			
Condition A	N	Y	Y
Condition B	Y	Y	Y
Baseline Road at Mighell Road			
Condition A	-	-	N
Condition B	-	-	N

4.3 Capacity Analysis

The traffic analysis was performed using Trafficware’s Synchro version 12 for intersection analyses. Synchro analyzes data based on the Highway Capacity Manual (HCM) 7th Edition, Chapters 19 and 20 methodologies. The HCM requires four parameters: peak hour factor (PHF), percentage of trucks on the roadway system, existing roadway geometry, and traffic volumes. The PHF represents the ratio of total hourly volume to the peak 15-minute flow rate within the hour. Lower PHFs correspond to greater variability of flow within the peak hour, while higher PHFs indicate less flow variation. Average approach PHF and percent heavy vehicles were used as determined by the traffic counts.



Intersection traffic operations were evaluated using the Level of Service (LOS) concept outlined in the HCM. LOS is defined by the average control delay per vehicle in a peak 15-minute analysis period for intersections. The HCM defines control delay “as the total time that elapses from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line”. The HCM designates intersection operations in six letter categories, A to F, with LOS A indicating the best operational conditions to LOS F representing over capacity conditions. Ranges in control delay which correspond to LOS for Two-Way Stop Controlled (TWSC) and All-Way Stop Controlled (AWSC) intersections are listed in Table 4-2. Ranges in control delay which correspond to LOS for signalized intersections are listed in Table 4-3.

Table 4-2: LOS Criteria for TWSC and AWSC

LOS	Average Control Delay (seconds/vehicle)
A	0-10
B	>10-15
C	>15-25
D	>25-35
E	>35-50
F	>50 or v/c > 1.0

Source: HCM 7th Edition Exhibits 20-2 and 21-8: Level of Service Criteria (Motorized Vehicle Mode)

Table 4-3: LOS Criteria for Signalized Intersections

LOS	Average Control Delay (seconds/vehicle)
A	0-10
B	>10-20
C	>20-35
D	>35-55
E	>55-80
F	>80 or v/c > 1.0

Source: HCM 7th Edition Exhibit 19-8: Level of Service Criteria (Motorized Vehicle Mode)

Local standards indicate that the minimum acceptable level of service is LOS D for an approach or intersection. Approaches performing at a LOS E or LOS F are highlighted in red to indicate unacceptable levels of delay and identify areas where potential mitigation measures are to be explored. Table 4-4 and Table 4-5 show the results of the capacity analysis for unsignalized intersections in the AM and PM peak hours, respectively. Table 4-6 shows the results of the capacity analysis for currently signalized intersections within the study area for both peak hour conditions across all scenarios with existing geometry.



Table 4-4: Capacity Analysis of Unsignalized Intersections (AM Peak Hour)

Intersection/ Approach	Weekday AM													
	Existing (2025)		Background (2027)		Background (2029)		Background (2031)		Future w/Traffic (2027)		Future w/Traffic (2029)		Future w/Traffic (2031)	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Baseline Road at Ashe Road														
WB Left/Right	14.9	B	15.2	C	15.6	C	15.9	C	18.9	C	23.3	C	69.9	F
NB Thru/Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
SB Thru/Left	0.1	A	0.1	A	0.1	A	0.1	A	0.7	A	0.5	A	1.4	A
Mighell Road at Baseline Road														
EB Thru/Right	0.0	A	0.0	A	0.0	A	0.0	A	0.1	A	0.2	A	0.2	A
WB Thru/Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
SB Left/Right	9.8	A	9.8	A	9.9	A	9.9	A	10.2	B	9.8	A	12.0	B
Drive #1 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		0.0	A	0.0	A	0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		4.4	A	4.2	A	2.7	A
NB Right/Left	N/A		N/A		N/A		N/A		12.2	B	12.4	B	15.5	C
Drive #2 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		N/A		N/A		0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		N/A		N/A		2.4	A
NB Right/Left	N/A		N/A		N/A		N/A		N/A		N/A		15.6	C
Drive #3 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		N/A		N/A		0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		N/A		N/A		2.1	A
NB Right/Left	N/A		N/A		N/A		N/A		N/A		N/A		16.1	C
Drive #4 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		N/A		2.1	A	2.1	A
WB Thru/Right	N/A		N/A		N/A		N/A		N/A		0.0	A	0.0	A
SB Left	N/A		N/A		N/A		N/A		N/A		170.5	F	178.2	F
SB Right	N/A		N/A		N/A		N/A		N/A		13.2	B	13.2	B
Drive #5 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		N/A		2.1	A	2.1	A
WB Thru/Right	N/A		N/A		N/A		N/A		N/A		0.0	A	0.0	A
SB Left	N/A		N/A		N/A		N/A		N/A		117.5	F	123.1	F
SB Right	N/A		N/A		N/A		N/A		N/A		12.2	B	12.3	B
Drive #6 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		1.6	A	0.9	A	0.9	A
WB Thru/Right	N/A		N/A		N/A		N/A		0.0	A	0.0	A	0.0	A
SB Left/Right	N/A		N/A		N/A		N/A		13.2	B	26.2	D	26.7	D



Table 4-5: Capacity Analysis of Unsignalized Intersections (PM Peak Hour)

Intersection/ Approach	Weekday PM													
	Existing (2025)		Background (2027)		Background (2029)		Background (2031)		Future w/Traffic (2027)		Future w/Traffic (2029)		Future w/Traffic (2031)	
	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS
Baseline Road at Ashe Road														
WB Left/Right	20.8	C	21.8	C	22.9	C	24.3	C	30.8	D	43.0	E	188.7	F
NB Thru/Right	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
SB Thru/Left	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.1	A	0.3	A
Mighell Road at Baseline Road														
EB Thru/Right	0.3	A	0.3	A	0.3	A	0.3	A	0.3	A	0.5	A	0.4	A
WB Thru/Left	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A
SB Left/Right	9.6	A	9.6	A	9.7	A	9.7	A	10.1	B	9.9	A	11.5	B
Drive #1 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		0.0	A	0.0	A	0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		1.8	A	1.6	A	0.9	A
NB Right/Left	N/A		N/A		N/A		N/A		12.2	B	11.4	B	13.2	B
Drive #2 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		N/A		N/A		0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		N/A		N/A		1.0	A
NB Right/Left	N/A		N/A		N/A		N/A		N/A		N/A		13.7	B
Drive #3 at Baseline Road														
EB Thru/Right	N/A		N/A		N/A		N/A		N/A		N/A		0.0	A
WB Thru/Left	N/A		N/A		N/A		N/A		N/A		N/A		1.2	A
NB Right/Left	N/A		N/A		N/A		N/A		N/A		N/A		14.5	B
Drive #4 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		N/A		1.0	A	1.0	A
WB Thru/Right	N/A		N/A		N/A		N/A		N/A		0.0	A	0.0	A
SB Left	N/A		N/A		N/A		N/A		N/A		74.6	F	78.2	F
SB Right	N/A		N/A		N/A		N/A		N/A		12.5	B	12.5	B
Drive #5 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		N/A		1.4	A	1.4	A
WB Thru/Right	N/A		N/A		N/A		N/A		N/A		0.0	A	0.0	A
SB Left	N/A		N/A		N/A		N/A		N/A		56.0	F	58.4	F
SB Right	N/A		N/A		N/A		N/A		N/A		13.4	B	13.5	B
Drive #6 at Galena Road														
EB Thru/Left	N/A		N/A		N/A		N/A		1.1	A	0.8	A	0.8	A
WB Thru/Right	N/A		N/A		N/A		N/A		0.0	A	0.0	A	0.0	A
SB Left/Right	N/A		N/A		N/A		N/A		13.3	B	25.1	D	25.6	D



Table 4-6: Capacity Analysis of Signalized Intersections

Intersection	Peak Hour	Scenario	Eastbound		Westbound		Northbound		Southbound		Intersection	
			Delay (sec)	LOS	Delay (sec)	LOS						
TMC #3 - Baseline Road at IL 47	Weekday AM	Existing (2025)	74.0	E	66.1	E	25.6	C	12.3	B	28.8	C
		Background (2027)	75.4	E	66.2	E	28.0	C	13.2	B	30.4	C
		Background (2029)	76.6	E	66.3	E	31.0	C	14.3	B	32.3	C
		Background (2031)	77.7	E	66.5	E	34.6	C	15.7	B	34.7	C
		Future w/Traffic (2027)	108.1	F	41.1	D	58.1	E	27.7	C	51.6	D
		Future w/Traffic (2029)	158.4	F	120.7	F	99.7	F	46.7	D	90.2	F
		Future w/Traffic (2031)	207.2	F	134.2	F	126.6	F	70.1	E	136.8	F
	Weekday PM	Existing (2025)	93.9	F	91.2	F	16.8	B	12.0	B	23.9	C
		Background (2027)	93.8	F	92.0	F	17.8	B	12.9	B	24.8	C
		Background (2029)	95.8	F	96.7	F	18.8	B	13.7	B	26.0	C
		Background (2031)	97.0	F	97.7	F	19.9	B	14.8	B	27.0	C
		Future w/Traffic (2027)	112.7	F	73.6	E	41.1	D	30.3	C	46.8	D
		Future w/Traffic (2029)	138.2	F	136.4	F	78.1	E	53.5	D	76.0	E
		Future w/Traffic (2031)	167.5	F	175.1	F	129.1	F	87.7	F	119.6	F
TMC #4- Galena Road at IL 47	Weekday AM	Existing (2025)	70.6	E	64.0	E	17.0	B	14.2	B	30.8	C
		Background (2027)	70.9	E	63.7	E	18.2	B	15.2	B	31.6	C
		Background (2029)	70.0	E	62.7	E	19.2	B	15.9	B	31.9	C
		Background (2031)	70.3	E	62.4	E	20.5	C	17.0	B	32.7	C
		Future w/Traffic (2027)	69.8	E	53.9	D	27.8	C	23.4	C	37.2	D
		Future w/Traffic (2029)	85.3	F	28.7	C	110.2	F	101.9	F	89.4	F
		Future w/Traffic (2031)	129.2	F	32.6	C	143.8	F	102.5	F	109.7	F
	Weekday PM	Existing (2025)	60.3	E	76.6	E	16.2	B	18.1	B	29.3	C
		Background (2027)	59.6	E	76.6	E	17.2	B	19.3	B	30.1	C
		Background (2029)	59.3	E	77.9	E	18.4	B	20.7	C	31.4	C
		Background (2031)	59.0	E	79.1	E	19.7	B	22.3	C	32.6	C
		Future w/Traffic (2027)	67.5	E	79.3	E	23.1	C	25.3	C	37.0	D
		Future w/Traffic (2029)	94.2	F	32.0	C	89.3	F	133.4	F	99.0	F
		Future w/Traffic (2031)	116.1	F	34.6	F	100.2	C	171.2	F	121.8	F
TMC #5 - Galena Road at Eldamain Road/Ashe Road	Weekday AM	Existing (2025)	14.3	B	15.8	B	13.2	B	10.6	B	13.3	B
		Background (2027)	14.5	B	16.0	B	13.3	B	10.5	B	13.4	B
		Background (2029)	14.8	B	16.3	B	13.3	B	10.5	B	13.5	B
		Background (2031)	15.0	B	16.7	B	13.4	B	10.6	B	13.7	B
		Future w/Traffic (2027)	16.0	B	17.9	B	14.2	B	10.7	B	14.5	B
		Future w/Traffic (2029)	22.8	C	20.4	C	23.0	C	14.2	B	20.9	C
		Future w/Traffic (2031)	24.6	C	22.8	C	25.6	C	14.4	B	22.7	C
	Weekday PM	Existing (2025)	16.7	B	18.1	B	9.7	A	13.1	B	13.9	B
		Background (2027)	17.0	B	18.4	B	9.8	A	13.3	B	14.0	B
		Background (2029)	17.3	B	18.8	B	9.8	A	13.4	B	14.2	B
		Background (2031)	17.6	B	19.2	B	9.9	A	13.5	B	14.4	B
		Future w/Traffic (2027)	18.1	B	19.3	B	10.3	B	14.0	B	14.9	B
		Future w/Traffic (2029)	23.7	C	19.7	B	13.7	B	17.1	B	18.2	B
		Future w/Traffic (2031)	26.2	C	22.7	C	13.7	B	17.7	B	19.6	B

4.3.1 Existing Scenario

Based on the analysis of the signalized intersection results in the existing scenario, the intersection of Galena Road at Eldamain Road/Ashe Road operates at an overall LOS C or better. The intersections of Baseline Road and Galena Road intersections with IL 47 were found to operate at LOS E or worse on their eastbound and westbound approaches in both the morning and evening peak hours.



All study area unsignalized intersections operate with all approaches at LOS C or better.

4.3.2 Background Scenario

In the background scenarios, delays tended to increase due to growth of non-project related traffic. Based on the analysis of the unsignalized intersections, resulting operations were similar to existing conditions as no approaches degrade to a lower LOS in any of the background scenarios.

The analysis of the signalized intersections shows a similar trend to the unsignalized intersections where delays increase, however no intersection approaches see a degradation in LOS.

4.3.3 Future with Traffic Scenario

In the analysis of existing unsignalized intersections in the Future with Project scenarios, the additional site traffic results in increased delay in comparison to the background scenario with some additional degradation of approaches' LOS. Notably, the shared westbound left/right lane of Baseline Road at Ashe Road degrades to LOS E in the Future with Project (2029) scenario and continues to degrade to LOS F in the Future with Project (2031) scenario. The southbound approaches of proposed Drives 4 and 5 at Galena Road perform at LOS F, while Galena Road sees minimal delay and operates at LOS A on both east and westbound approaches at both intersections.

The analysis of the currently signalized intersections shows additional overall LOS degradation to LOS D in both peak hours of the Future with Project (2027) scenario at the intersections of Baseline Road and Galena Road with IL 47. In the Future with Project (2029) scenario, the intersection of Baseline Road at IL 47 degrades to an overall LOS F in the morning peak hour and LOS E in the evening peak hour. A similar reduction in LOS occurs at the intersection of Galena Road with IL 47, with overall operations falling to LOS F in both the morning and evening peak hours. Galena Road at Eldamain Road/Ashe Road degrades to LOS C from LOS B in the evening peak hour. In the Future with Project (2031) scenario, both the Baseline Road and Galena Road intersections with IL 47 operate at LOS F in both the morning and evening peak hours, with at least three of the four approaches failing at both intersections and both peak hours. At Galena Road at Eldamain Road/Ashe Road, the only LOS reduction that occurs is the westbound approach of Galena Road, which drops from LOS B to LOS C.

The capacities of study area intersections with planned improvements to IL 47 and the recommended mitigation measures were analyzed. Table 4-7 and Table 4-8 show the results of the morning and evening peak hour, respectively, in the Future with Traffic scenarios for the years 2027, 2029, and 2031. Table 4-9 shows the analysis results for the morning and peak hours for the study intersections that would be modified and/or signalized with impending improvements and recommended mitigation measures.

**Table 4-7: Capacity Analysis of Unsignalized Intersections
(AM Peak Hour with Improvements and Mitigation)**

Intersection/Approach	Weekday AM					
	Future w/Traffic (2027)		Future w/Traffic (2029)		Future w/Traffic (2031)	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Baseline Road at Ashe Road (Signalized Year 2029)						
WB Left/Right	18.9	C	N/A		N/A	
NB Thru/Right	0.0	A				
SB Thru/Left	0.7	A				
Mighell Road at Baseline Road						
EB Thru/Left	0.1	A	0.2	A	0.2	A
WB Thru/Right	0.0	A	0.0	A	0.0	A
SB Left/Right	10.2	B	9.8	A	12.0	B
Drive #1 at Baseline Road						
EB Thru	0.0	A	0.0	A	0.0	A
EB Right	0.0	A	0.0	A	0.0	A
WB Thru	0.0	A	0.0	A	0.0	A
WB Left	8.0	A	8.0	A	8.4	A
NB Right/Left	12.2	B	12.4	B	15.4	C
Drive #2 at Baseline Road						
EB Thru/Right	N/A		N/A		0.0	A
WB Thru					0.0	A
WB Left					8.4	A
NB Right/Left					15.5	C
Drive #3 at Baseline Road						
EB Thru/Right	N/A		N/A		0.0	A
WB Thru					0.0	A
WB Left					8.4	A
NB Right/Left					16.0	C
Drive #4 at Galena Road						
EB Thru	N/A		0.0	A	0.0	A
EB Left			9.4	A	9.4	A
WB Thru			0.0	A	0.0	A
WB Right			0.0	A	0.0	A
SB Left			30.3	D	30.8	D
SB Right			12.0	B	12.0	B
Drive #5 at Galena Road						
EB Thru	N/A		0.0	A	0.0	A
EB Left			9.1	A	9.1	A
WB Thru			0.0	A	0.0	A
WB Right			0.0	A	0.0	A
SB Left			27.1	D	27.5	D
SB Right			11.2	B	11.3	B
Drive #6 at Galena Road						
EB Thru	0.0	A	0.0	A	0.0	A
EB Left	7.8	A	8.5	A	8.5	A
WB Thru	0.0	A	0.0	A	0.0	A
WB Right	0.0	A	0.0	A	0.0	A
SB Left/Right	11.7	B	16.4	C	16.5	C



**Table 4-8: Capacity Analysis of Unsignalized Intersections
(PM Peak Hour with Improvements and Mitigation)**

Intersection/Approach	Weekday PM					
	Future w/Traffic (2027)		Future w/Traffic (2029)		Future w/Traffic (2031)	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Baseline Road at Ashe Road (Signalized Year 2029)						
WB Left/Right	30.8	D	N/A		N/A	
NB Thru/Right	0.0	A				
SB Thru/Left	0.1	A				
Mighell Road at Baseline Road						
EB Thru/Left	0.3	A	0.5	A	0.4	A
WB Thru/Right	0.0	A	0.0	A	0.0	A
SB Left/Right	10.1	B	9.9	A	11.5	B
Drive #1 at Baseline Road						
EB Thru	0.0	A	0.0	A	0.0	A
EB Right	0.0	A	0.0	A	0.0	A
WB Thru	0.0	A	0.0	A	0.0	A
WB Left	7.6	A	7.6	A	7.8	A
NB Right/Left	11.2	B	11.4	B	13.2	C
Drive #2 at Baseline Road						
EB Thru/Right	N/A		N/A		0.0	A
WB Thru					0.0	A
WB Left					7.9	A
NB Right/Left					13.7	B
Drive #3 at Baseline Road						
EB Thru/Right	N/A		N/A		0.0	A
WB Thru					0.0	A
WB Left					8.1	A
NB Right/Left					14.4	B
Drive #4 at Galena Road						
EB Thru	N/A		0.0	A	0.0	A
EB Left			8.5	A	8.5	A
WB Thru			0.0	A	0.0	A
WB Right			0.0	A	0.0	A
SB Left			25.2	D	25.6	D
SB Right			11.9	B	12.0	B
Drive #5 at Galena Road						
EB Thru	N/A		0.0	A	0.0	A
EB Left			9.1	A	8.7	A
WB Thru			0.0	A	0.0	A
WB Right			0.0	A	0.0	A
SB Left			27.1	D	22.8	D
SB Right			11.2	B	12.8	B
Drive #6 at Galena Road						
EB Thru	0.0	A	0.0	A	0.0	A
EB Left	7.9	A	8.8	A	8.8	A
WB Thru	0.0	A	0.0	A	0.0	A
WB Right	0.0	A	0.0	A	0.0	A
SB Left/Right	12.1	B	17.6	C	17.8	C



Table 4-9: Capacity Analysis of Signalized Intersections with Improvements and Mitigation

Intersection	Peak Hour	Scenario	Eastbound		Westbound		Northbound		Southbound		Intersection	
			Delay (sec)	LOS	Delay (sec)	LOS						
TMC # 1 - Baseline Road at Ashe Road (Signalized Year 2029)	Weekday AM	Future w/Traffic (2027)	N/A		N/A		N/A		N/A		N/A	
		Future w/Traffic (2029)	N/A		15.4	B	5.9	A	3.2	A	6.6	A
		Future w/Traffic (2031)	N/A		19.1	A	10.3	A	4.8	A	10.9	B
	Weekday PM	Future w/Traffic (2027)	N/A		N/A		N/A		N/A		N/A	
		Future w/Traffic (2029)	N/A		13.0	B	5.0	A	5.8	A	6.9	A
		Future w/Traffic (2031)	N/A		13.3	B	7.2	A	8.1	A	9.2	A
TMC #3 - Baseline Road at IL 47	Weekday AM	Future w/Traffic (2027)	22.5	C	21.5	C	17.3	B	15.5	B	17.7	B
		Future w/Traffic (2029)	28.0	C	24.6	C	17.9	B	17.2	B	19.5	B
		Future w/Traffic (2031)	27.1	C	26.3	C	21.0	C	22.0	C	22.8	C
	Weekday PM	Future w/Traffic (2027)	25.6	C	28.0	C	14.3	B	15.7	B	17.2	B
		Future w/Traffic (2029)	25.7	C	27.3	C	15.4	B	16.2	B	17.7	B
		Future w/Traffic (2031)	25.4	C	29.3	C	18.5	B	20.0	B	21.0	C
TMC #4- Galena Road at IL 47	Weekday AM	Future w/Traffic (2027)	13.3	B	14.1	B	24.3	C	19.5	B	19.2	B
		Future w/Traffic (2029)	14.3	B	20.0	B	28.6	C	25.1	C	22.5	C
		Future w/Traffic (2031)	16.1	B	22.4	C	34.1	C	29.3	C	26.3	C
	Weekday PM	Future w/Traffic (2027)	14.1	B	13.5	B	26.9	C	26.8	C	23.1	C
		Future w/Traffic (2029)	17.7	B	20.7	C	27.1	C	29.4	C	24.7	C
		Future w/Traffic (2031)	18.6	B	24.3	C	33.3	C	33.4	C	28.6	C

As shown in Table 4-7 through Table 4-9, after analysis of study area intersections and proposed access locations, the planned improvements and recommended mitigation measures result in all intersections and approaches operating at LOS D or higher.

4.3.4 Planned Improvements

The City of Yorkville made available plans prepared for Illinois Department of Transportation (IDOT)’s intended improvement of IL 47 including its intersections with Baseline Road and Galena Road. These improvements include the widening of the typical section of the roadway to two northbound and southbound through lanes along IL 47 with the addition of a southbound left turn lane, westbound left turn lane, channelized northbound right turn lane, and eastbound left and right turn lanes at IL 47 at Baseline Road. At the intersection of IL 47 at Galena Road, westbound left and right turn lanes, eastbound left and right turn lanes were added along with the northbound right turn becoming channelized. The plans for these intersections can be found in Appendix I.

As shown in Table 4-7 through Table 4-9, the analysis of study area intersections and proposed access locations shows that the planned improvements and recommended mitigation measures result in all intersections and approaches operating at LOS D or higher.

4.3.5 Potential Mitigation Scenario

Based upon the analysis of the existing, background, and background with project volumes, the following mitigation measures are recommended at the associated years:

- Baseline Road at Ashe Road (Year 2029)
 - Signalization Intersection
- Galena Road (Year 2027)
 - Widen Galena Road to three lanes with TWLTL between Eldamain Road and IL 47.
- Drive #1 at Baseline Road (Year 2027)



5.0 Conclusions

The purpose of this study is to evaluate the potential traffic impacts of the proposed Project Cardinal data center development located in the area bordered by Ashe Road to the west, Baseline Road to the north, IL 47 to the east, and Galena road to the south in the city of Yorkville, Illinois. The proposed development consists of approximately 17,444 KSF of data center land use across three campuses.

The proposed access plan includes six full access drives, with three full access driveways extending north to Baseline Road and three additional full access driveways extending south to Galena Road. All three drives accessing Baseline Road and one drive accessing Galena Road are proposed be two lanes with one entering and one exiting. The eastern two drives connecting with Galena Road are proposed as three lanes, with one lane entering the site and two lanes exiting the site.

Background traffic estimates were projected to the years 2027, 2029, and 2031. These years correspond to the anticipated completion date of Phase 1, 2, and 3 of the project, respectively. The growth rate used for these projections were developed in conjunction with CMAP data that projected volumes to 2050. The study area includes the existing two-way stop-controlled (TWSC) intersections of Baseline Road and Ashe Road and Baseline Road and Mighell Road as well as the existing signalized intersections of IL 47 and Baseline Road, IL 47 and Galena Road, and Galena Road and Ashe Road/Eldamain Road. In addition, proposed connections of the six driveways, three (Drives #1, #2, and #3) with Baseline Road and three (Drives #4, #5, and #6) with Galena Road, were evaluated.

This study evaluated whether additional auxiliary lanes are warranted at the study are intersections. The westbound approach of Baseline Road at Drive #1, Drive #2, and Drive #3, as well as the eastbound approach of Galena Road at Drive #4, Drive #5, and Drive #6 all meet the warrant based on the chart comparing left-turn and approach volumes and were therefore considered. Similarly, the westbound approach of Galena Road at Drive #4, Drive #5, and Drive #6 meet the warrant based on the chart comparing right-turn and approach volumes and were also considered.

As part of this study, the methodology established in the MUTCD criteria regarding the necessity of a traffic signal was evaluated at poorly performing intersections. Warrant 3, the peak hour traffic signal warrant, was satisfied in the evening peak hour of the 2029 Background with Future Traffic scenario at the intersection of Baseline Road and Ashe Road, and thus a traffic signal is recommended to be installed at that intersection by the year 2029.

Results of the capacity analysis for the existing intersections indicate that three of the five study area intersections and their approaches currently experience low delay. However, the intersection of IL 47 and Baseline Road and IL 47 and Galena Road experience an overall LOS C with the eastbound and westbound approaches experiencing LOS E or worse. Delays continued to increase with the added traffic in the background scenarios, with no approaches degrading to failing levels of service in the three intersections operating at acceptable levels of service. However, intersections that are currently operating at failing levels of service only increase in delay and degrade to worse levels of service. These failing intersections along IL 47 are part of a project by IDOT that will be let on November 5, 2025. The improvements proposed for this portion of IL 47 in the plans made available provide adequate capacity expansions that result in the intersections along IL 47 operating at acceptable levels of service both overall and at all approaches.

In the Future with Project 2031 scenario, the westbound approach of the intersection of Baseline Road and Ashe Road degrades to LOS F not observed in the 2031 Background scenario. Given that this intersection satisfied Signal Warrant 3 from the MUTCD, this intersection was re-analyzed as a signalized intersection with existing geometry. With this improvement, the intersection and all approaches operated at LOS B or better in all scenarios and peak hours. As a result, the signalization of the intersection of Baseline Road at Ashe Road is recommended in the year 2029, as that is the first year that the signal is warranted.

Additionally, the study area driveways were analyzed for their capacities and operations. With the implementation of the warranted auxiliary lanes as described earlier in the conclusion, all approaches of the intersections of the proposed access locations and either Baseline Road or Galena Road operate at acceptable levels of service in all scenarios and peak hours.

Analysis of 95th percentile queue results was performed on all study intersections, including the existing intersections and the proposed access locations. Lengthy queues were recorded at the eastbound and westbound approaches in all scenarios utilizing the existing geometry, further highlighting the importance of the impending IDOT project on traffic operations in the study area. When considering the improvements from the IDOT project in conjunction with the recommended auxiliary lanes at the access locations and the signalization of Baseline Rd at Ashe Rd, all 95th percentile queues experienced significant improvements, and no queues are projected to exceed the provided storage lengths according to the obtained IDOT plans or minimum lengths recommended by IDOT's *Bureau of Design and Environment Manual*.

In the proposed site plan, Drive #1 and Drive #6 will provide access between the Phase 1 developments and both Galena Road and Baseline Road. Drive #4 and Drive #5 will serve as primary access to Galena Road for the Phase 2 developments, while the Phase 3 developments will be served by Drive #2 and Drive #3 in connection to Baseline Road. There is no planned internal access or need for internal overall site project access between development campuses.

Following implementation of recommended improvements including auxiliary lanes, signalization at Baseline and Ashe, and the IDOT improvements along IL 47, all study intersections are projected to operate at acceptable LOS in full build out conditions.

APPENDIX G

Level of Service Definitions

Table A
Level of Service Criteria – Signalized Intersection

Level of Service	Description of Expected Traffic Delay	Signalized Stop Delay (sec/veh)
A	Little or None	≤ 10
B	Short	> 10 and ≤ 20
C	Average	> 20 and ≤ 35
D	Long	> 35 and ≤ 55
E	Very Long	> 55 and ≤ 80
F	Excessive	> 80

Source: Highway Capacity Manual (HCM)

Table B
Level of Service Criteria – Unsignalized Intersection

Level of Service	Description of Expected Traffic Delay	Unsignalized Average Total Delay (sec/veh)
A	Little or None	≤ 10
B	Short	> 10 and ≤ 15
C	Average	> 15 and ≤ 25
D	Long	> 25 and ≤ 35
E	Very Long	> 35 and ≤ 50
F	Excessive	> 50

Source: Highway Capacity Manual (HCM)

The LOS criteria for unsignalized intersections are somewhat different from the criteria used for signalized intersections primarily because different transportation facilities create different driver perceptions. The expectation is that a signalized intersection is designed to carry higher traffic volumes and experience greater delay than an unsignalized intersection.

APPENDIX H

2025 Existing Capacity Analysis

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

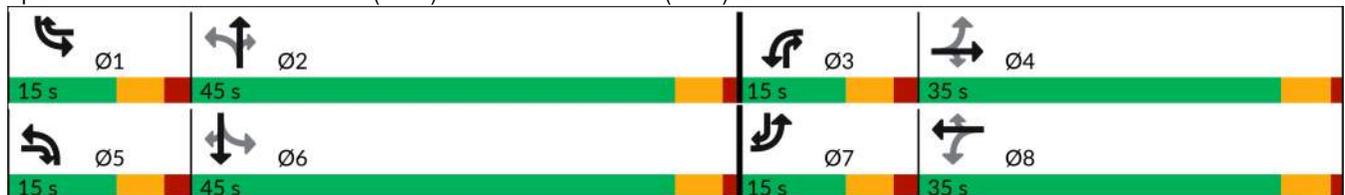
Project Steel
 2025 Existing - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	107	38	42	61	16	18	393	74	8	105	67
Future Volume (vph)	129	107	38	42	61	16	18	393	74	8	105	67
Lane Group Flow (vph)	145	120	43	47	69	18	20	442	83	9	118	75
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.32	0.28	0.08	0.18	0.14	0.03	0.03	0.46	0.11	0.02	0.13	0.07
Control Delay (s/veh)	21.2	30.9	2.0	20.8	29.9	0.1	10.8	19.4	2.7	10.6	18.0	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.2	30.9	2.0	20.8	29.9	0.1	10.8	19.4	2.7	10.6	18.0	2.5
Queue Length 50th (ft)	46	49	0	14	28	0	5	138	0	2	41	0
Queue Length 95th (ft)	104	111	8	44	71	0	16	292	19	10	79	17
Internal Link Dist (ft)		4224			532			480			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	480	933	580	305	942	632	608	1105	765	547	1110	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.13	0.07	0.15	0.07	0.03	0.03	0.40	0.11	0.02	0.11	0.07

Intersection Summary

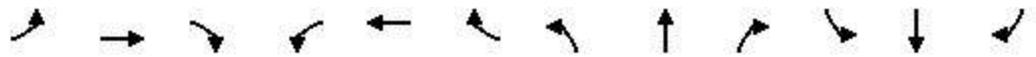
Cycle Length: 110
 Actuated Cycle Length: 69.8
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2025 Existing - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	129	107	38	42	61	16	18	393	74	8	105	67
Future Volume (veh/h)	129	107	38	42	61	16	18	393	74	8	105	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	145	120	43	47	69	18	20	442	83	9	118	75
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	516	489	388	297	407	362	463	699	438	276	670	716
Arrive On Green	0.08	0.26	0.26	0.04	0.22	0.22	0.01	0.37	0.37	0.01	0.36	0.36
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	145	120	43	47	69	18	20	442	83	9	118	75
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	4.1	3.5	1.6	2.4	2.1	0.6	0.6	13.2	3.4	0.2	3.0	1.9
Cycle Q Clear(g_c), s	4.1	3.5	1.6	2.4	2.1	0.6	0.6	13.2	3.4	0.2	3.0	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	516	489	388	297	407	362	463	699	438	276	670	716
V/C Ratio(X)	0.28	0.25	0.11	0.16	0.17	0.05	0.04	0.63	0.19	0.03	0.18	0.10
Avail Cap(c_a), veh/h	603	811	631	394	817	715	647	1098	664	501	1072	1065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	19.9	18.5	19.9	21.8	20.9	13.5	17.7	13.0	14.9	14.8	11.0
Incr Delay (d2), s/veh	0.3	0.6	0.3	0.2	0.4	0.1	0.0	4.3	1.0	0.0	0.6	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.4	0.5	0.5	0.8	0.2	0.2	5.7	0.8	0.1	1.2	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	18.5	20.5	18.8	20.2	22.2	21.0	13.6	22.1	14.0	14.9	15.4	11.3
LnGrp LOS	B	C	B	C	C	C	B	C	B	B	B	B
Approach Vol, veh/h		308			134			545			202	
Approach Delay, s/veh		19.3			21.3			20.5			13.8	
Approach LOS		B			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	30.5	8.6	23.1	7.0	30.0	11.8	19.9				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	2.2	15.2	4.4	5.5	2.6	5.0	6.1	4.1				
Green Ext Time (p_c), s	0.0	8.9	0.0	1.3	0.0	3.0	0.1	0.6				

Intersection Summary												
HCM 7th Control Delay, s/veh											19.2	
HCM 7th LOS											B	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	8	477	20	11	174
Future Vol, veh/h	11	8	477	20	11	174
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	13	9	561	24	13	205

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	792	561	0	0	585	0
Stage 1	561	-	-	-	-	-
Stage 2	231	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	337	508	-	-	1000	-
Stage 1	541	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	332	508	-	-	1000	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	761	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.56	0	0.51
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	332	508	1000	-
HCM Lane V/C Ratio	-	-	0.039	0.019	0.013	-
HCM Ctrl Dly (s/v)	-	-	16.3	12.2	8.6	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0.1	0	-

Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	24	6	2	20	0	5	3	0	0	1	0
Future Vol, veh/h	2	24	6	2	20	0	5	3	0	0	1	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	17	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	33	8	3	28	0	7	4	0	0	1	0

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	28	0	0	42	0	0	77	76	38	74	81	28
Stage 1	-	-	-	-	-	-	43	43	-	33	33	-
Stage 2	-	-	-	-	-	-	34	33	-	41	47	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1599	-	-	1580	-	-	917	818	1040	921	814	1053
Stage 1	-	-	-	-	-	-	976	863	-	988	871	-
Stage 2	-	-	-	-	-	-	987	871	-	979	860	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1599	-	-	1580	-	-	912	815	1040	913	811	1053
Mov Cap-2 Maneuver	-	-	-	-	-	-	912	815	-	913	811	-
Stage 1	-	-	-	-	-	-	975	861	-	986	870	-
Stage 2	-	-	-	-	-	-	984	870	-	972	858	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0.45		0.66		9.18		9.45	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	873	108	-	-	164	-	-	811
HCM Lane V/C Ratio	0.013	0.002	-	-	0.002	-	-	0.002
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9.4
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	21	1	10	4	1	10	7	646	1	5	439	17
Future Vol, veh/h	21	1	10	4	1	10	7	646	1	5	439	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	23	1	11	4	1	11	8	718	1	6	488	19

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1242	1243	497	1233	1252	718	507	0	0	719	0	0
Stage 1	508	508	-	734	734	-	-	-	-	-	-	-
Stage 2	734	734	-	499	518	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.5	7.35	7.5	6.3	4.53	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.35	6.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.35	6.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.57	3.725	4.9	3.39	2.587	-	-	2.2	-	-
Pot Cap-1 Maneuver	153	176	521	138	113	416	878	-	-	892	-	-
Stage 1	551	542	-	378	309	-	-	-	-	-	-	-
Stage 2	415	429	-	513	402	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	144	172	521	131	110	416	878	-	-	892	-	-
Mov Cap-2 Maneuver	144	172	-	131	110	-	-	-	-	-	-	-
Stage 1	546	537	-	372	304	-	-	-	-	-	-	-
Stage 2	396	422	-	496	398	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	28.69		21.44		0.1		0.1	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	19	-	-	187	236	19	-	-
HCM Lane V/C Ratio	0.009	-	-	0.19	0.071	0.006	-	-
HCM Ctrl Dly (s/v)	9.1	0	-	28.7	21.4	9.1	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

Project Steel
2025 Existing - AM Peak Hour

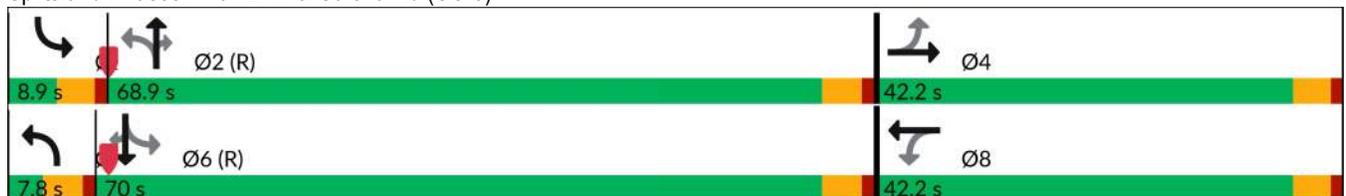


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↗	↖	↗	↖	↖	↗
Traffic Volume (vph)	47	125	73	67	28	612	45	55	403	30
Future Volume (vph)	47	125	73	67	28	612	45	55	403	30
Lane Group Flow (vph)	0	201	0	294	30	651	48	59	429	32
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	12.5	12.5	22.5	22.5	7.5	19.5	19.5	7.5	19.5	19.5
Total Split (s)	42.2	42.2	42.2	42.2	7.8	68.9	68.9	8.9	70.0	70.0
Total Split (%)	35.2%	35.2%	35.2%	35.2%	6.5%	57.4%	57.4%	7.4%	58.3%	58.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	Max	C-Min	C-Min
v/c Ratio		0.70		0.88	0.06	0.79	0.06	0.15	0.42	0.05
Control Delay (s/veh)		52.6		62.8	8.8	33.9	3.2	8.7	14.5	1.4
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		52.6		62.8	8.8	33.9	3.2	8.7	14.5	1.4
Queue Length 50th (ft)		139		190	7	399	0	14	174	0
Queue Length 95th (ft)		205		278	21	506	16	35	283	7
Internal Link Dist (ft)		6063		1207		1384			758	
Turn Bay Length (ft)					175		100	290		145
Base Capacity (vph)		377		425	509	926	875	393	1033	661
Starvation Cap Reductn		0		0	0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.53		0.69	0.06	0.70	0.05	0.15	0.42	0.05

Intersection Summary

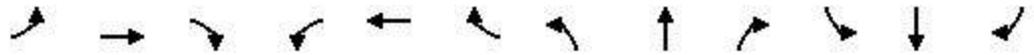
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2025 Existing - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Volume (veh/h)	47	125	17	73	67	136	28	612	45	55	403	30
Future Volume (veh/h)	47	125	17	73	67	136	28	612	45	55	403	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1811	1900	1841	1796	1781	1796	1752	1870	1574	1648	1011
Adj Flow Rate, veh/h	50	133	18	78	71	145	30	651	48	59	429	32
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	95	232	29	112	93	163	548	1087	983	364	1057	549
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.02	0.62	0.62	0.04	0.64	0.64
Sat Flow, veh/h	249	1009	124	320	405	706	1711	1752	1585	1499	1648	857
Grp Volume(v), veh/h	201	0	0	294	0	0	30	651	48	59	429	32
Grp Sat Flow(s),veh/h/ln	1382	0	0	1431	0	0	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	0.0	0.0	0.0	9.0	0.0	0.0	0.8	26.9	1.4	1.7	15.1	1.7
Cycle Q Clear(g_c), s	15.0	0.0	0.0	24.0	0.0	0.0	0.8	26.9	1.4	1.7	15.1	1.7
Prop In Lane	0.25		0.09	0.27		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	0	0	368	0	0	548	1087	983	364	1057	549
V/C Ratio(X)	0.57	0.00	0.00	0.80	0.00	0.00	0.05	0.60	0.05	0.16	0.41	0.06
Avail Cap(c_a), veh/h	486	0	0	490	0	0	568	1087	983	364	1057	549
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	0.0	0.0	44.7	0.0	0.0	8.8	13.8	8.9	10.7	10.4	8.0
Incr Delay (d2), s/veh	2.0	0.0	0.0	8.0	0.0	0.0	0.0	2.4	0.1	1.0	1.2	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	0.0	8.8	0.0	0.0	0.3	9.7	0.5	0.5	5.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	42.7	0.0	0.0	52.7	0.0	0.0	8.8	16.2	9.0	11.6	11.6	8.2
LnGrp LOS	D			D			A	B	A	B	B	A
Approach Vol, veh/h		201			294			729			520	
Approach Delay, s/veh		42.7			52.7			15.4			11.4	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.9	79.0		32.1	6.4	81.5		32.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	4.4	64.4		37.7	3.3	65.5		37.7				
Max Q Clear Time (g_c+I1), s	3.7	28.9		17.0	2.8	17.1		26.0				
Green Ext Time (p_c), s	0.0	15.3		1.3	0.0	10.0		1.6				
Intersection Summary												
HCM 7th Control Delay, s/veh				23.6								
HCM 7th LOS				C								

Intersection						
Int Delay, s/veh	0.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	185	3	6	119	3	4
Future Vol, veh/h	185	3	6	119	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	208	3	7	134	3	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	211	0	357
Stage 1	-	-	-	-	210
Stage 2	-	-	-	-	147
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	1275	-	530
Stage 1	-	-	-	-	693
Stage 2	-	-	-	-	744
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1275	-	527
Mov Cap-2 Maneuver	-	-	-	-	527
Stage 1	-	-	-	-	693
Stage 2	-	-	-	-	739

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.38	10.85
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	624	-	-	86	-
HCM Lane V/C Ratio	0.013	-	-	0.005	-
HCM Ctrl Dly (s/v)	10.8	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

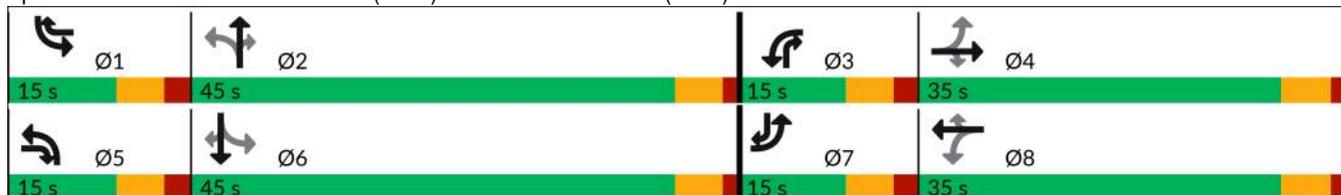
Project Steel
 2025 Existing - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	84	38	97	137	8	45	152	93	15	414	163
Future Volume (vph)	62	84	38	97	137	8	45	152	93	15	414	163
Lane Group Flow (vph)	67	90	41	104	147	9	48	163	100	16	445	175
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.16	0.21	0.06	0.28	0.39	0.01	0.14	0.20	0.13	0.03	0.63	0.19
Control Delay (s/veh)	21.4	32.5	1.4	22.9	34.6	0.0	11.6	15.9	2.6	10.9	26.7	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.4	32.5	1.4	22.9	34.6	0.0	11.6	15.9	2.6	10.9	26.7	2.3
Queue Length 50th (ft)	22	40	0	36	66	0	12	41	0	4	186	0
Queue Length 95th (ft)	59	92	7	85	139	0	31	108	22	14	319	30
Internal Link Dist (ft)		4224			532			480			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	435	717	696	397	703	662	374	925	788	618	956	968
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.13	0.06	0.26	0.21	0.01	0.13	0.18	0.13	0.03	0.47	0.18

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 80.6
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2025 Existing - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	84	38	97	137	8	45	152	93	15	414	163
Future Volume (veh/h)	62	84	38	97	137	8	45	152	93	15	414	163
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	67	90	41	104	147	9	48	163	100	16	445	175
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	392	370	349	397	417	380	303	734	571	508	710	673
Arrive On Green	0.04	0.20	0.20	0.07	0.22	0.22	0.03	0.39	0.39	0.01	0.38	0.38
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	67	90	41	104	147	9	48	163	100	16	445	175
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	1.9	2.7	1.4	3.4	4.5	0.3	1.1	3.9	3.2	0.4	12.9	4.7
Cycle Q Clear(g_c), s	1.9	2.7	1.4	3.4	4.5	0.3	1.1	3.9	3.2	0.4	12.9	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	370	349	397	417	380	303	734	571	508	710	673
V/C Ratio(X)	0.17	0.24	0.12	0.26	0.35	0.02	0.16	0.22	0.18	0.03	0.63	0.26
Avail Cap(c_a), veh/h	567	847	743	501	834	742	493	1121	825	731	1129	1032
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	22.6	20.6	19.3	21.8	19.6	13.5	13.5	10.5	12.7	17.0	12.7
Incr Delay (d2), s/veh	0.2	0.7	0.3	0.3	1.1	0.1	0.2	0.7	0.7	0.0	4.2	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.1	0.5	1.1	1.8	0.1	0.4	1.5	0.8	0.1	5.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.3	23.4	21.0	19.6	22.9	19.6	13.7	14.2	11.2	12.7	21.1	13.6
LnGrp LOS	C	C	C	B	C	B	B	B	B	B	C	B
Approach Vol, veh/h		198			260			311			636	
Approach Delay, s/veh		21.8			21.5			13.1			18.9	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	31.2	10.7	18.1	7.9	30.1	8.8	20.0				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	2.4	5.9	5.4	4.7	3.1	14.9	3.9	6.5				
Green Ext Time (p_c), s	0.0	4.3	0.1	1.0	0.0	10.3	0.0	1.3				

Intersection Summary												
HCM 7th Control Delay, s/veh				18.5								
HCM 7th LOS				B								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↑	↗	↘	↑
Traffic Vol, veh/h	23	10	280	22	15	534
Future Vol, veh/h	23	10	280	22	15	534
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	24	10	289	23	15	551

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	870	289	0	0	311	0
Stage 1	289	-	-	-	-	-
Stage 2	581	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	325	755	-	-	1261	-
Stage 1	765	-	-	-	-	-
Stage 2	563	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	321	755	-	-	1261	-
Mov Cap-2 Maneuver	321	-	-	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	556	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	14.92	0	0.22
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	321	755	1261	-
HCM Lane V/C Ratio	-	-	0.074	0.014	0.012	-
HCM Ctrl Dly (s/v)	-	-	17.1	9.8	7.9	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	0	-

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	27	12	3	23	3	9	2	3	1	5	1
Future Vol, veh/h	1	27	12	3	23	3	9	2	3	1	5	1
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	100	0	0
Mvmt Flow	1	36	16	4	30	4	12	3	4	1	7	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	34	0	0	51	0	0	88	88	43	80	94	32
Stage 1	-	-	-	-	-	-	46	46	-	40	40	-
Stage 2	-	-	-	-	-	-	41	42	-	39	54	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1590	-	-	1568	-	-	903	806	1033	718	800	1047
Stage 1	-	-	-	-	-	-	973	860	-	775	865	-
Stage 2	-	-	-	-	-	-	978	864	-	775	854	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1590	-	-	1568	-	-	891	803	1033	710	797	1047
Mov Cap-2 Maneuver	-	-	-	-	-	-	891	803	-	710	797	-
Stage 1	-	-	-	-	-	-	972	860	-	773	863	-
Stage 2	-	-	-	-	-	-	967	862	-	769	853	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.18			0.76			9.07			9.49		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	904	42	-	-	182	-	-	811
HCM Lane V/C Ratio	0.02	0.001	-	-	0.003	-	-	0.011
HCM Ctrl Dly (s/v)	9.1	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	3	11	1	3	6	7	578	3	3	749	28
Future Vol, veh/h	12	3	11	1	3	6	7	578	3	3	749	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	13	3	12	1	3	6	7	608	3	3	788	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1434	1436	803	1421	1449	610	818	0	0	612	0	0
Stage 1	809	809	-	625	625	-	-	-	-	-	-	-
Stage 2	625	626	-	796	824	-	-	-	-	-	-	-
Critical Hdwy	7.15	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.15	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.15	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.545	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	110	135	387	115	132	498	819	-	-	977	-	-
Stage 1	370	396	-	476	481	-	-	-	-	-	-	-
Stage 2	468	480	-	383	390	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	104	132	387	107	130	498	819	-	-	977	-	-
Mov Cap-2 Maneuver	104	132	-	107	130	-	-	-	-	-	-	-
Stage 1	367	394	-	470	474	-	-	-	-	-	-	-
Stage 2	452	473	-	367	388	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	32.94		21.81		0.11		0.03	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	21	-	-	156	225	7	-	-
HCM Lane V/C Ratio	0.009	-	-	0.176	0.047	0.003	-	-
HCM Ctrl Dly (s/v)	9.4	0	-	32.9	21.8	8.7	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.1	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

Project Steel
2025 Existing - PM Peak Hour

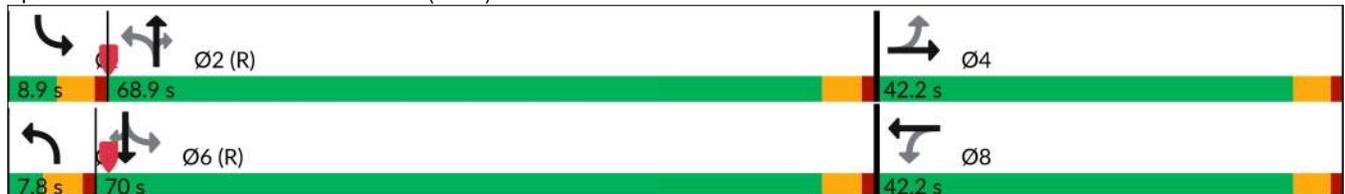


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↗	↖	↗	↗	↖	↖
Traffic Volume (vph)	45	118	67	157	34	506	140	113	663	55
Future Volume (vph)	45	118	67	157	34	506	140	113	663	55
Lane Group Flow (vph)	0	194	0	308	35	516	143	115	677	56
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4		8	5	2		1	6	
Permitted Phases	4		8		2		2	6		6
Detector Phase	4	4	8	8	5	2	2	1	6	6
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	8.0	3.0	15.0	15.0	3.0	15.0	15.0
Minimum Split (s)	12.5	12.5	22.5	22.5	7.5	19.5	19.5	7.5	19.5	19.5
Total Split (s)	42.2	42.2	42.2	42.2	7.8	68.9	68.9	8.9	70.0	70.0
Total Split (%)	35.2%	35.2%	35.2%	35.2%	6.5%	57.4%	57.4%	7.4%	58.3%	58.3%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lead/Lag					Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?					Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Min	C-Min	Max	C-Min	C-Min
v/c Ratio		0.64		0.85	0.09	0.72	0.21	0.19	0.59	0.07
Control Delay (s/veh)		48.2		61.3	10.3	35.8	8.2	8.8	18.0	3.7
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		48.2		61.3	10.3	35.8	8.2	8.8	18.0	3.7
Queue Length 50th (ft)		130		217	8	351	27	28	325	0
Queue Length 95th (ft)		194		300	23	349	51	61	505	20
Internal Link Dist (ft)		6063		1207		1384			758	
Turn Bay Length (ft)					175		100	290		145
Base Capacity (vph)		389		466	377	971	908	606	1144	782
Starvation Cap Reductn		0		0	0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0	0
Reduced v/c Ratio		0.50		0.66	0.09	0.53	0.16	0.19	0.59	0.07

Intersection Summary

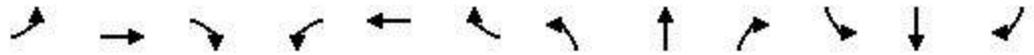
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2025 Existing - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↖	↗	↖	↖	↗
Traffic Volume (veh/h)	45	118	27	67	157	78	34	506	140	113	663	55
Future Volume (veh/h)	45	118	27	67	157	78	34	506	140	113	663	55
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1826	1841	1900	1870	1856	1856	1826	1900	1870	1826	1396
Adj Flow Rate, veh/h	46	120	28	68	160	80	35	516	143	115	677	56
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	88	213	45	100	195	91	409	1152	1016	502	1187	769
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.02	0.63	0.63	0.04	0.65	0.65
Sat Flow, veh/h	233	968	202	287	889	412	1767	1826	1610	1781	1826	1183
Grp Volume(v), veh/h	194	0	0	308	0	0	35	516	143	115	677	56
Grp Sat Flow(s),veh/h/ln	1403	0	0	1588	0	0	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	0.0	0.0	0.0	8.4	0.0	0.0	0.9	17.4	4.3	2.8	24.7	2.1
Cycle Q Clear(g_c), s	14.3	0.0	0.0	22.6	0.0	0.0	0.9	17.4	4.3	2.8	24.7	2.1
Prop In Lane	0.24		0.14	0.22		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	346	0	0	386	0	0	409	1152	1016	502	1187	769
V/C Ratio(X)	0.56	0.00	0.00	0.80	0.00	0.00	0.09	0.45	0.14	0.23	0.57	0.07
Avail Cap(c_a), veh/h	492	0	0	538	0	0	428	1152	1016	502	1187	769
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	0.0	0.0	45.2	0.0	0.0	9.8	11.4	9.0	8.6	11.7	7.7
Incr Delay (d2), s/veh	2.0	0.0	0.0	7.0	0.0	0.0	0.1	1.3	0.3	1.1	2.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	0.0	9.2	0.0	0.0	0.3	6.4	1.4	1.0	8.9	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	43.5	0.0	0.0	52.2	0.0	0.0	9.9	12.7	9.3	9.6	13.6	7.9
LnGrp LOS	D			D			A	B	A	A	B	A
Approach Vol, veh/h	194			308			694			848		
Approach Delay, s/veh	43.5			52.2			11.8			12.7		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2	4		5	6	8					
Phs Duration (G+Y+Rc), s	8.9	80.2	30.9		6.6	82.5	30.9					
Change Period (Y+Rc), s	4.5	4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s	4.4	64.4	37.7		3.3	65.5	37.7					
Max Q Clear Time (g_c+I1), s	4.8	19.4	16.3		2.9	26.7	24.6					
Green Ext Time (p_c), s	0.0	14.3	1.3		0.0	16.9	1.8					
Intersection Summary												
HCM 7th Control Delay, s/veh				21.3								
HCM 7th LOS				C								

Intersection						
Int Delay, s/veh	0.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	186	1	7	239	2	4
Future Vol, veh/h	186	1	7	239	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	196	1	7	252	2	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	197	0	463
Stage 1	-	-	-	-	196
Stage 2	-	-	-	-	266
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	955	-	561
Stage 1	-	-	-	-	842
Stage 2	-	-	-	-	783
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	955	-	556
Mov Cap-2 Maneuver	-	-	-	-	556
Stage 1	-	-	-	-	842
Stage 2	-	-	-	-	776

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.25	10.03
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	723	-	-	51	-
HCM Lane V/C Ratio	0.009	-	-	0.008	-
HCM Ctrl Dly (s/v)	10	-	-	8.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX I

2034 No Build Capacity Analysis

Lanes, Volumes, Timings

1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	249	42	159	175	67	19	491	216	68	175	130
Future Volume (vph)	216	249	42	159	175	67	19	491	216	68	175	130
Lane Group Flow (vph)	243	280	47	179	197	75	21	552	243	76	197	146
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.60	0.65	0.08	0.81	0.45	0.12	0.05	0.81	0.36	0.29	0.28	0.16
Control Delay (s/veh)	30.6	41.5	1.9	55.3	36.0	5.1	14.0	38.3	5.1	16.5	22.5	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	41.5	1.9	55.3	36.0	5.1	14.0	38.3	5.1	16.5	22.5	2.8
Queue Length 50th (ft)	111	163	0	84	109	0	6	301	11	23	82	0
Queue Length 95th (ft)	178	253	9	#195	179	26	21	#527	61	53	152	30
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	407	614	603	220	619	679	473	806	676	297	821	934
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.46	0.08	0.81	0.32	0.11	0.04	0.68	0.36	0.26	0.24	0.16

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 93.4

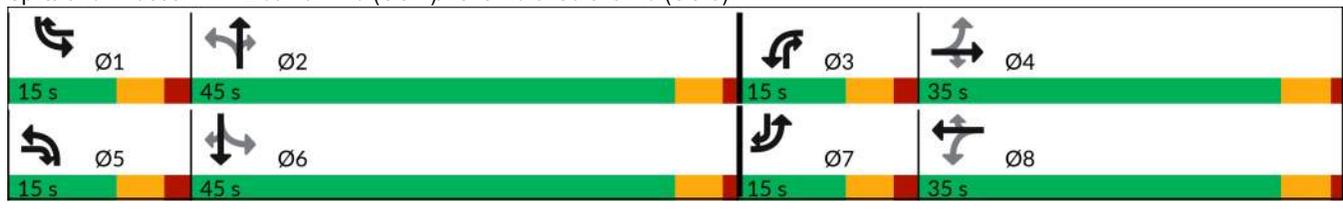
Natural Cycle: 75

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2034 No Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	249	42	159	175	67	19	491	216	68	175	130
Future Volume (veh/h)	216	249	42	159	175	67	19	491	216	68	175	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	243	280	47	179	197	75	21	552	243	76	197	146
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	401	365	295	230	368	383	429	744	537	259	776	844
Arrive On Green	0.11	0.20	0.20	0.11	0.20	0.20	0.01	0.39	0.39	0.04	0.42	0.42
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	243	280	47	179	197	75	21	552	243	76	197	146
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	8.9	12.0	2.3	9.0	8.0	3.1	0.7	21.1	12.4	2.1	5.8	4.0
Cycle Q Clear(g_c), s	8.9	12.0	2.3	9.0	8.0	3.1	0.7	21.1	12.4	2.1	5.8	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	365	295	230	368	383	429	744	537	259	776	844
V/C Ratio(X)	0.61	0.77	0.16	0.78	0.53	0.20	0.05	0.74	0.45	0.29	0.25	0.17
Avail Cap(c_a), veh/h	401	660	517	230	665	638	575	894	621	378	873	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	32.0	27.2	28.6	30.4	25.7	15.0	21.8	13.6	17.0	15.8	10.3
Incr Delay (d2), s/veh	2.6	7.0	0.5	15.4	2.6	0.5	0.0	6.6	2.7	0.6	0.8	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	5.6	0.7	1.9	3.5	1.1	0.2	9.6	2.8	0.8	2.4	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.6	39.0	27.7	44.0	33.0	26.2	15.1	28.4	16.3	17.6	16.6	10.8
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		570			451			816			419	
Approach Delay, s/veh		32.8			36.2			24.5			14.7	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	38.3	15.0	21.6	7.2	40.6	15.0	21.6				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.1	23.1	11.0	14.0	2.7	7.8	10.9	10.0				
Green Ext Time (p_c), s	0.1	10.2	0.0	2.6	0.0	5.6	0.0	2.2				

Intersection Summary												
HCM 7th Control Delay, s/veh				27.1								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	13	10	717	21	12	359
Future Vol, veh/h	13	10	717	21	12	359
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	15	12	844	25	14	422

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1294	844	0	0	868	0
Stage 1	844	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	166	349	-	-	784	-
Stage 1	396	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	163	349	-	-	784	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	23.41	0	0.31
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	163	349	784	-
HCM Lane V/C Ratio	-	-	0.094	0.034	0.018	-
HCM Ctrl Dly (s/v)	-	-	29.3	15.7	9.7	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	29	7	2	24	0	6	3	0	0	1	0
Future Vol, veh/h	2	29	7	2	24	0	6	3	0	0	1	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	17	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	40	10	3	33	0	8	4	0	0	1	0

Major/Minor	Major1		Major2			Minor1			Minor2			
Conflicting Flow All	33	0	0	50	0	0	90	90	45	87	94	33
Stage 1	-	-	-	-	-	-	51	51	-	39	39	-
Stage 2	-	-	-	-	-	-	40	39	-	48	56	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1592	-	-	1570	-	-	899	804	1030	904	799	1046
Stage 1	-	-	-	-	-	-	967	857	-	981	867	-
Stage 2	-	-	-	-	-	-	980	867	-	971	853	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1592	-	-	1570	-	-	894	801	1030	896	797	1046
Mov Cap-2 Maneuver	-	-	-	-	-	-	894	801	-	896	797	-
Stage 1	-	-	-	-	-	-	966	855	-	980	865	-
Stage 2	-	-	-	-	-	-	977	865	-	964	851	-

Approach	EB		WB			NB			SB		
HCM Ctrl Dly, s/v	0.38		0.56			9.24			9.53		
HCM LOS						A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	861	91	-	-	138	-	-	797
HCM Lane V/C Ratio	0.015	0.002	-	-	0.002	-	-	0.002
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9.5
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	25	1	12	5	1	12	9	972	1	6	685	21
Future Vol, veh/h	25	1	12	5	1	12	9	972	1	6	685	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	28	1	13	6	1	13	10	1080	1	7	761	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1347	1887	392	1495	1898	541	784	0	0	1081	0	0
Stage 1	786	786	-	1101	1101	-	-	-	-	-	-	-
Stage 2	561	1101	-	394	798	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	112	71	534	68	23	466	610	-	-	653	-	-
Stage 1	356	406	-	190	142	-	-	-	-	-	-	-
Stage 2	485	290	-	544	226	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	100	69	534	64	23	466	610	-	-	653	-	-
Mov Cap-2 Maneuver	100	69	-	64	23	-	-	-	-	-	-	-
Stage 1	352	402	-	187	140	-	-	-	-	-	-	-
Stage 2	460	285	-	523	224	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	44.2		40.48		0.1		0.09	
HCM LOS	E		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	133	121	653	-	-
HCM Lane V/C Ratio	0.016	-	-	0.318	0.165	0.01	-	-
HCM Ctrl Dly (s/v)	11	-	-	44.2	40.5	10.6	-	-
HCM Lane LOS	B	-	-	E	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0.6	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

Project Steel
2034 No Build - AM Peak Hour

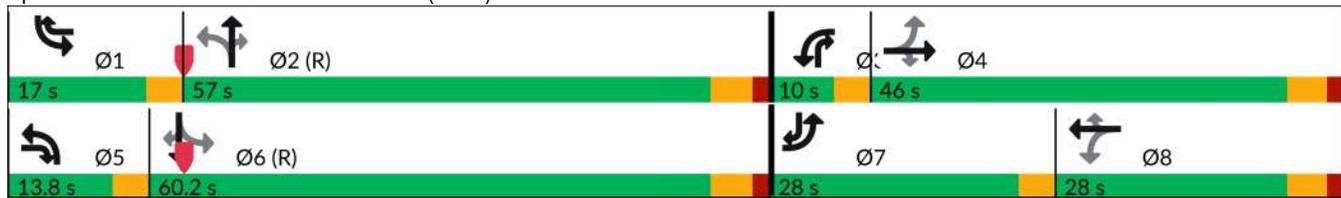
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	233	107	81	189	215	142	823	56	122	552	251
Future Volume (vph)	227	233	107	81	189	215	142	823	56	122	552	251
Lane Group Flow (vph)	241	248	114	86	201	229	151	876	60	130	587	267
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	13.8	10.0	28.0	17.0	13.8	57.0	10.0	17.0	60.2	28.0
Total Split (%)	21.5%	35.4%	10.6%	7.7%	21.5%	13.1%	10.6%	43.8%	7.7%	13.1%	46.3%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.83	0.49	0.16	0.30	0.75	0.37	0.36	0.70	0.08	0.39	0.40	0.35
Control Delay (s/veh)	55.1	41.7	4.3	30.4	69.8	15.8	17.9	38.6	2.1	18.0	26.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.1	41.7	4.3	30.4	69.8	15.8	17.9	38.6	2.1	18.0	26.2	2.3
Queue Length 50th (ft)	149	170	0	44	163	58	63	323	0	54	186	0
Queue Length 95th (ft)	#257	248	35	81	246	132	100	383	15	89	233	30
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	296	568	719	283	312	615	424	1368	773	336	1464	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.44	0.16	0.30	0.64	0.37	0.36	0.64	0.08	0.39	0.40	0.34

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2034 No Build - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	233	107	81	189	215	142	823	56	122	552	251
Future Volume (veh/h)	227	233	107	81	189	215	142	823	56	122	552	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	241	248	114	86	201	229	151	876	60	130	587	267
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	280	558	577	298	291	389	376	1454	737	322	1494	550
Arrive On Green	0.19	0.29	0.29	0.05	0.15	0.15	0.07	0.42	0.42	0.10	0.45	0.45
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	241	248	114	86	201	229	151	876	60	130	587	267
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	13.8	6.4	5.3	13.1	17.2	6.5	25.4	2.7	5.7	15.4	21.1
Cycle Q Clear(g_c), s	24.5	13.8	6.4	5.3	13.1	17.2	6.5	25.4	2.7	5.7	15.4	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	558	577	298	291	389	376	1454	737	322	1494	550
V/C Ratio(X)	0.86	0.44	0.20	0.29	0.69	0.59	0.40	0.60	0.08	0.40	0.39	0.49
Avail Cap(c_a), veh/h	280	594	608	298	327	418	399	1454	737	322	1494	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	37.4	28.8	43.3	52.0	42.2	19.8	29.7	19.3	19.3	23.7	12.1
Incr Delay (d2), s/veh	22.9	0.8	0.2	0.5	6.1	2.4	0.7	1.9	0.2	3.7	0.8	3.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	6.4	2.4	2.3	6.5	6.4	2.5	10.4	1.0	2.2	5.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.7	38.2	29.0	43.8	58.2	44.6	20.5	31.5	19.5	23.0	24.4	15.2
LnGrp LOS	E	D	C	D	E	D	C	C	B	C	C	B
Approach Vol, veh/h		603			516			1087			984	
Approach Delay, s/veh		45.1			49.8			29.3			21.7	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	59.5	10.0	43.5	12.1	64.4	28.0	25.5				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.3	54.7	24.5	22.5				
Max Q Clear Time (g_c+I1), s	7.7	27.4	7.3	15.8	8.5	23.1	26.5	19.2				
Green Ext Time (p_c), s	0.1	15.3	0.0	2.5	0.1	15.8	0.0	0.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.3									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	549	3	6	500	3	4
Future Vol, veh/h	549	3	6	500	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	617	3	7	562	3	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	620	0	1194
Stage 1	-	-	-	-	619
Stage 2	-	-	-	-	575
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	892	-	154
Stage 1	-	-	-	-	431
Stage 2	-	-	-	-	453
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	892	-	153
Mov Cap-2 Maneuver	-	-	-	-	271
Stage 1	-	-	-	-	431
Stage 2	-	-	-	-	450

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	15.95
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	337	-	-	892	-
HCM Lane V/C Ratio	0.023	-	-	0.008	-
HCM Ctrl Dly (s/v)	16	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings

1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	153	42	255	292	73	47	196	161	43	520	250
Future Volume (vph)	102	153	42	255	292	73	47	196	161	43	520	250
Lane Group Flow (vph)	110	165	45	274	314	78	51	211	173	46	559	269
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.35	0.37	0.07	0.73	0.69	0.12	0.21	0.31	0.24	0.09	0.79	0.28
Control Delay (s/veh)	24.4	34.4	1.5	39.2	43.0	5.4	16.1	23.8	3.2	14.5	37.1	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.4	34.4	1.5	39.2	43.0	5.4	16.1	23.8	3.2	14.5	37.1	2.7
Queue Length 50th (ft)	46	89	0	130	185	0	16	93	0	14	312	0
Queue Length 95th (ft)	87	153	8	#228	291	29	39	168	35	36	#532	42
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	331	625	665	373	613	694	276	802	727	556	833	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.26	0.07	0.73	0.51	0.11	0.18	0.26	0.24	0.08	0.67	0.27

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 94.2

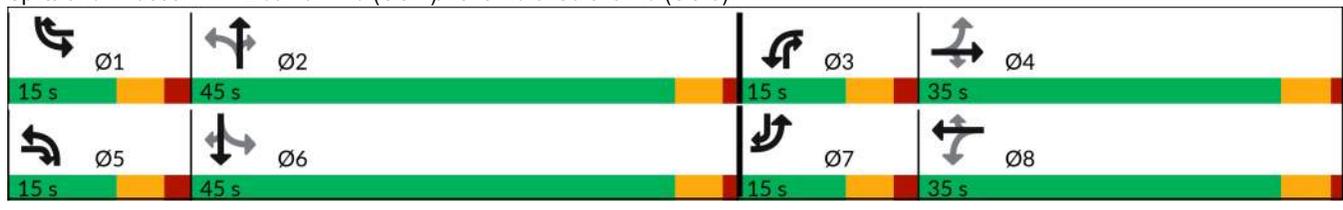
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2034 No Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	153	42	255	292	73	47	196	161	43	520	250
Future Volume (veh/h)	102	153	42	255	292	73	47	196	161	43	520	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	110	165	45	274	314	78	51	211	173	46	559	269
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	281	334	320	372	413	400	245	771	646	479	772	766
Arrive On Green	0.07	0.18	0.18	0.11	0.22	0.22	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	110	165	45	274	314	78	51	211	173	46	559	269
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	3.8	6.4	1.9	9.0	12.8	3.1	1.3	6.0	6.3	1.2	20.0	8.5
Cycle Q Clear(g_c), s	3.8	6.4	1.9	9.0	12.8	3.1	1.3	6.0	6.3	1.2	20.0	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	334	320	372	413	400	245	771	646	479	772	766
V/C Ratio(X)	0.39	0.49	0.14	0.74	0.76	0.20	0.21	0.27	0.27	0.10	0.72	0.35
Avail Cap(c_a), veh/h	367	702	624	372	691	641	392	929	750	634	936	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	29.9	26.2	26.5	29.3	23.9	15.8	15.7	10.6	13.4	20.0	13.3
Incr Delay (d2), s/veh	0.9	2.4	0.4	7.5	6.1	0.5	0.4	0.9	1.0	0.1	5.8	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.8	0.7	1.5	5.9	1.1	0.5	2.5	1.6	0.4	8.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.9	32.3	26.6	34.0	35.4	24.4	16.2	16.6	11.6	13.5	25.8	14.5
LnGrp LOS	C	C	C	C	D	C	B	B	B	B	C	B
Approach Vol, veh/h		320			666			435			874	
Approach Delay, s/veh		29.3			33.5			14.6			21.7	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	38.2	15.0	19.3	8.3	38.0	11.3	22.9				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.2	8.3	11.0	8.4	3.3	22.0	5.8	14.8				
Green Ext Time (p_c), s	0.0	6.4	0.0	1.7	0.0	10.9	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh											24.8	
HCM 7th LOS											C	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	12	394	23	16	793
Future Vol, veh/h	27	12	394	23	16	793
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	28	12	406	24	16	818

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1257	406	0	0	430	0
Stage 1	406	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	191	649	-	-	1140	-
Stage 1	677	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	188	649	-	-	1140	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	22.28	0	0.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	188	649	1140	-
HCM Lane V/C Ratio	-	-	0.148	0.019	0.014	-
HCM Ctrl Dly (s/v)	-	-	27.4	10.7	8.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0	-

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	32	14	4	27	3	11	2	4	1	5	1
Future Vol, veh/h	1	32	14	4	27	3	11	2	4	1	5	1
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	100	0	0
Mvmt Flow	1	42	18	5	36	4	14	3	5	1	7	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	39	0	0	61	0	0	103	104	51	94	111	38
Stage 1	-	-	-	-	-	-	54	54	-	48	48	-
Stage 2	-	-	-	-	-	-	49	50	-	46	63	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1583	-	-	1556	-	-	882	790	1022	701	783	1040
Stage 1	-	-	-	-	-	-	964	854	-	766	859	-
Stage 2	-	-	-	-	-	-	969	857	-	768	846	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1583	-	-	1556	-	-	870	786	1022	692	779	1040
Mov Cap-2 Maneuver	-	-	-	-	-	-	870	786	-	692	779	-
Stage 1	-	-	-	-	-	-	963	853	-	764	856	-
Stage 2	-	-	-	-	-	-	957	854	-	761	845	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.15			0.86			9.15			9.59		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	890	36	-	-	208	-	-	793
HCM Lane V/C Ratio	0.025	0.001	-	-	0.003	-	-	0.012
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	14	4	13	1	4	7	9	798	4	4	1114	35
Future Vol, veh/h	14	4	13	1	4	7	9	798	4	4	1114	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	15	4	14	1	4	7	9	840	4	4	1173	37

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1641	2063	605	1458	2079	422	1209	0	0	844	0	0
Stage 1	1199	1199	-	861	861	-	-	-	-	-	-	-
Stage 2	441	863	-	597	1218	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	64	55	446	92	54	586	584	-	-	801	-	-
Stage 1	192	261	-	321	375	-	-	-	-	-	-	-
Stage 2	557	374	-	461	255	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	57	54	446	81	53	586	584	-	-	801	-	-
Mov Cap-2 Maneuver	57	54	-	81	53	-	-	-	-	-	-	-
Stage 1	191	259	-	316	369	-	-	-	-	-	-	-
Stage 2	535	368	-	438	254	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	67.15		38.46		0.13		0.03	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	584	-	-	89	120	801	-	-
HCM Lane V/C Ratio	0.016	-	-	0.366	0.105	0.005	-	-
HCM Ctrl Dly (s/v)	11.3	-	-	67.1	38.5	9.5	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0.3	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

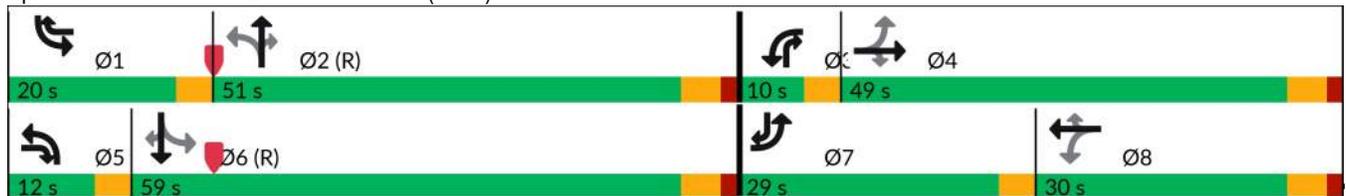
Project Steel
2034 No Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	254	145	74	226	116	91	659	175	209	892	167
Future Volume (vph)	280	254	145	74	226	116	91	659	175	209	892	167
Lane Group Flow (vph)	286	259	148	76	231	118	93	672	179	213	910	170
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.85	0.45	0.20	0.25	0.75	0.17	0.35	0.63	0.24	0.45	0.59	0.19
Control Delay (s/veh)	52.1	37.6	6.1	26.9	67.6	5.4	21.1	41.9	3.8	20.2	31.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.1	37.6	6.1	26.9	67.6	5.4	21.1	41.9	3.8	20.2	31.1	1.7
Queue Length 50th (ft)	164	164	11	35	187	0	42	258	0	103	336	0
Queue Length 95th (ft)	#320	248	52	70	273	41	68	297	42	145	383	25
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	341	622	729	302	357	697	276	1266	743	473	1579	877
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.42	0.20	0.25	0.65	0.17	0.34	0.53	0.24	0.45	0.58	0.19

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2034 No Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	254	145	74	226	116	91	659	175	209	892	167
Future Volume (veh/h)	280	254	145	74	226	116	91	659	175	209	892	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	286	259	148	76	231	118	93	672	179	213	910	170
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	312	553	519	280	274	419	295	1457	719	452	1757	801
Arrive On Green	0.20	0.29	0.29	0.05	0.14	0.14	0.04	0.40	0.40	0.13	0.48	0.48
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	286	259	148	76	231	118	93	672	179	213	910	170
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	14.4	9.1	4.6	14.9	7.7	4.0	17.6	9.0	8.1	22.4	7.0
Cycle Q Clear(g_c), s	25.5	14.4	9.1	4.6	14.9	7.7	4.0	17.6	9.0	8.1	22.4	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	553	519	280	274	419	295	1457	719	452	1757	801
V/C Ratio(X)	0.92	0.47	0.29	0.27	0.84	0.28	0.32	0.46	0.25	0.47	0.52	0.21
Avail Cap(c_a), veh/h	312	643	592	284	371	496	331	1457	719	452	1757	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	38.1	32.0	44.8	54.5	37.8	21.9	28.8	22.4	17.7	23.3	7.9
Incr Delay (d2), s/veh	30.7	0.9	0.4	0.5	13.9	0.5	0.6	1.1	0.8	3.5	1.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	6.8	3.3	2.0	8.1	2.9	1.6	7.5	3.4	3.5	9.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.1	39.0	32.4	45.3	68.5	38.3	22.5	29.8	23.2	21.2	24.4	8.5
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		693			425			944			1293	
Approach Delay, s/veh		49.6			56.0			27.8			21.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	57.4	9.7	42.9	9.3	68.0	29.0	23.6				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+I1), s	10.1	19.6	6.6	16.4	6.0	24.4	27.5	16.9				
Green Ext Time (p_c), s	0.3	14.1	0.0	2.8	0.0	19.3	0.0	1.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.6									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	546	1	7	526	2	4
Future Vol, veh/h	546	1	7	526	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	575	1	7	554	2	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	576	0	1144
Stage 1	-	-	-	-	575
Stage 2	-	-	-	-	568
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	651	-	223
Stage 1	-	-	-	-	567
Stage 2	-	-	-	-	571
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	651	-	221
Mov Cap-2 Maneuver	-	-	-	-	359
Stage 1	-	-	-	-	567
Stage 2	-	-	-	-	564

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.14	13.06
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	453	-	-	651	-
HCM Lane V/C Ratio	0.014	-	-	0.011	-
HCM Ctrl Dly (s/v)	13.1	-	-	10.6	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX J

2034 Build Capacity Analysis

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

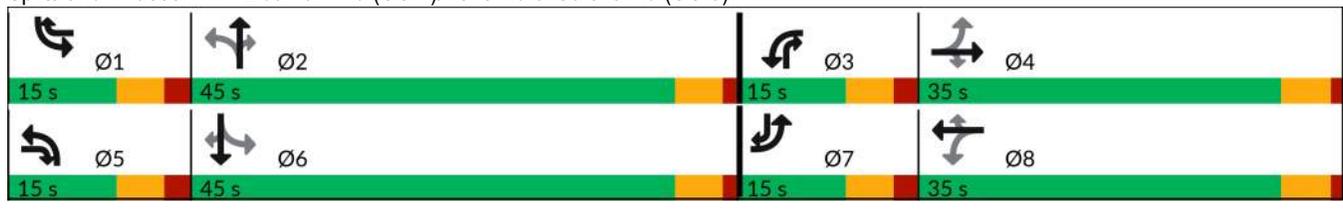
Project Steel
 2034 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	249	42	159	175	67	22	493	216	68	175	130
Future Volume (vph)	216	249	42	159	175	67	22	493	216	68	175	130
Lane Group Flow (vph)	243	280	47	179	197	75	25	554	243	76	197	146
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.60	0.65	0.08	0.81	0.45	0.12	0.06	0.81	0.36	0.29	0.28	0.16
Control Delay (s/veh)	30.7	41.6	1.9	55.6	36.0	5.1	14.0	38.4	5.2	16.5	22.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.7	41.6	1.9	55.6	36.0	5.1	14.0	38.4	5.2	16.5	22.6	2.8
Queue Length 50th (ft)	112	164	0	84	109	0	7	302	12	23	82	0
Queue Length 95th (ft)	178	253	9	#195	179	26	23	#531	61	53	153	30
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	406	613	603	220	619	678	473	805	676	296	819	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.46	0.08	0.81	0.32	0.11	0.05	0.69	0.36	0.26	0.24	0.16

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 93.5
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2034 Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	216	249	42	159	175	67	22	493	216	68	175	130
Future Volume (veh/h)	216	249	42	159	175	67	22	493	216	68	175	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	243	280	47	179	197	75	25	554	243	76	197	146
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	400	365	298	230	368	383	431	745	537	259	774	842
Arrive On Green	0.11	0.20	0.20	0.11	0.20	0.20	0.02	0.40	0.40	0.04	0.42	0.42
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	243	280	47	179	197	75	25	554	243	76	197	146
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	8.9	12.1	2.3	9.0	8.0	3.1	0.8	21.3	12.4	2.1	5.9	4.0
Cycle Q Clear(g_c), s	8.9	12.1	2.3	9.0	8.0	3.1	0.8	21.3	12.4	2.1	5.9	4.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	400	365	298	230	368	383	431	745	537	259	774	842
V/C Ratio(X)	0.61	0.77	0.16	0.78	0.54	0.20	0.06	0.74	0.45	0.29	0.25	0.17
Avail Cap(c_a), veh/h	400	659	519	230	664	637	573	893	621	378	872	927
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	32.1	27.1	28.7	30.5	25.8	15.0	21.9	13.6	17.0	15.9	10.4
Incr Delay (d2), s/veh	2.6	7.0	0.5	15.5	2.6	0.5	0.1	6.6	2.7	0.6	0.8	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	5.6	0.8	1.9	3.6	1.2	0.3	9.7	3.0	0.8	2.4	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.7	39.1	27.6	44.2	33.0	26.3	15.0	28.5	16.3	17.6	16.7	10.9
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		570			451			822			419	
Approach Delay, s/veh		32.9			36.3			24.5			14.8	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	38.4	15.0	21.6	7.3	40.5	15.0	21.6				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.1	23.3	11.0	14.1	2.8	7.9	10.9	10.0				
Green Ext Time (p_c), s	0.1	10.2	0.0	2.6	0.0	5.6	0.0	2.3				

Intersection Summary												
HCM 7th Control Delay, s/veh											27.2	
HCM 7th LOS											C	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↑	↘	↘	↑
Traffic Vol, veh/h	25	15	717	21	12	359
Future Vol, veh/h	25	15	717	21	12	359
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	29	18	844	25	14	422

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1294	844	0	0	868	0
Stage 1	844	-	-	-	-	-
Stage 2	451	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	166	349	-	-	784	-
Stage 1	396	-	-	-	-	-
Stage 2	610	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	163	349	-	-	784	-
Mov Cap-2 Maneuver	163	-	-	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	25.87	0	0.31
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	163	349	784	-
HCM Lane V/C Ratio	-	-	0.18	0.051	0.018	-
HCM Ctrl Dly (s/v)	-	-	31.9	15.9	9.7	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.2	0.1	-

Intersection			
Intersection Delay, s/veh	3.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	53	61	12
Demand Flow Rate, veh/h	55	61	12
Vehicles Circulating, veh/h	4	8	43
Vehicles Exiting, veh/h	65	47	16
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.0	3.0	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	55	61	12
Cap Entry Lane, veh/h	1374	1369	1321
Entry HV Adj Factor	0.964	1.000	1.000
Flow Entry, veh/h	53	61	12
Cap Entry, veh/h	1324	1369	1321
V/C Ratio	0.040	0.045	0.009
Control Delay, s/veh	3.0	3.0	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	7.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	1	
Traffic Vol, veh/h	0	48	0	5	1	0
Future Vol, veh/h	0	48	0	5	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	0	5	1	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	7	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1015	1083	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1015	1083	1622	-	-	-
Mov Cap-2 Maneuver	1015	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.49	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1083	-	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection			
Intersection Delay, s/veh	3.1		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	47	36	68
Demand Flow Rate, veh/h	48	37	70
Vehicles Circulating, veh/h	44	7	37
Vehicles Exiting, veh/h	63	85	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.1	2.9	3.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	48	37	70
Cap Entry Lane, veh/h	1319	1370	1329
Entry HV Adj Factor	0.983	0.980	0.971
Flow Entry, veh/h	47	36	68
Cap Entry, veh/h	1297	1343	1291
V/C Ratio	0.036	0.027	0.053
Control Delay, s/veh	3.1	2.9	3.2
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	42	1	26	5	1	12	9	972	1	6	685	21
Future Vol, veh/h	42	1	26	5	1	12	9	972	1	6	685	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	47	1	29	6	1	13	10	1080	1	7	761	23

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1347	1887	392	1495	1898	541	784	0	0	1081	0	0
Stage 1	786	786	-	1101	1101	-	-	-	-	-	-	-
Stage 2	561	1101	-	394	798	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	112	71	534	68	23	466	610	-	-	653	-	-
Stage 1	356	406	-	190	142	-	-	-	-	-	-	-
Stage 2	485	290	-	544	226	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	100	69	534	62	23	466	610	-	-	653	-	-
Mov Cap-2 Maneuver	100	69	-	62	23	-	-	-	-	-	-	-
Stage 1	352	402	-	187	140	-	-	-	-	-	-	-
Stage 2	460	285	-	508	224	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	55.83		41.17		0.1		0.09	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	610	-	-	143	119	653	-	-
HCM Lane V/C Ratio	0.016	-	-	0.535	0.168	0.01	-	-
HCM Ctrl Dly (s/v)	11	-	-	55.8	41.2	10.6	-	-
HCM Lane LOS	B	-	-	F	E	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.6	0.6	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

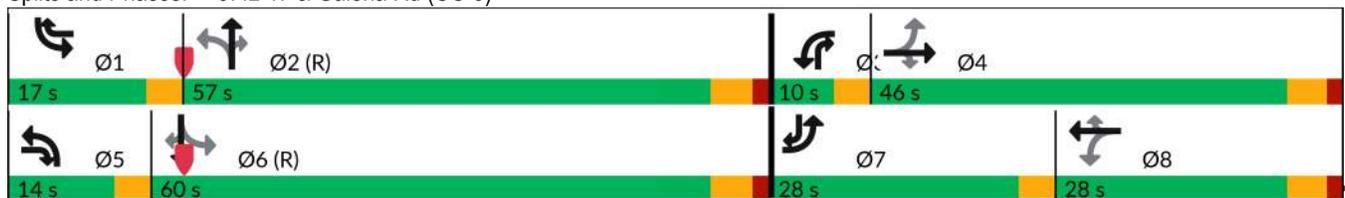
Project Steel
2034 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	227	233	107	81	189	215	142	835	61	122	552	251
Future Volume (vph)	227	233	107	81	189	215	142	835	61	122	552	251
Lane Group Flow (vph)	241	248	114	86	201	229	151	888	65	130	587	267
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	14.0	10.0	28.0	17.0	14.0	57.0	10.0	17.0	60.0	28.0
Total Split (%)	21.5%	35.4%	10.8%	7.7%	21.5%	13.1%	10.8%	43.8%	7.7%	13.1%	46.2%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.83	0.49	0.16	0.30	0.75	0.37	0.36	0.71	0.08	0.39	0.40	0.35
Control Delay (s/veh)	55.4	41.7	4.3	30.5	69.8	16.0	17.8	38.5	2.7	18.0	26.2	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	55.4	41.7	4.3	30.5	69.8	16.0	17.8	38.5	2.7	18.0	26.2	2.3
Queue Length 50th (ft)	150	170	0	45	163	60	62	327	0	54	185	0
Queue Length 95th (ft)	#257	248	35	81	246	134	100	389	18	89	233	30
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	296	568	720	282	312	611	428	1368	777	331	1461	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.44	0.16	0.30	0.64	0.37	0.35	0.65	0.08	0.39	0.40	0.34

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2034 Build - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	227	233	107	81	189	215	142	835	61	122	552	251
Future Volume (veh/h)	227	233	107	81	189	215	142	835	61	122	552	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	241	248	114	86	201	229	151	888	65	130	587	267
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	280	558	577	298	291	389	376	1454	737	318	1493	550
Arrive On Green	0.19	0.29	0.29	0.05	0.15	0.15	0.07	0.42	0.42	0.10	0.45	0.45
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	241	248	114	86	201	229	151	888	65	130	587	267
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	13.8	6.4	5.3	13.1	17.2	6.5	25.8	3.0	5.7	15.4	21.1
Cycle Q Clear(g_c), s	24.5	13.8	6.4	5.3	13.1	17.2	6.5	25.8	3.0	5.7	15.4	21.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	558	577	298	291	389	376	1454	737	318	1493	550
V/C Ratio(X)	0.86	0.44	0.20	0.29	0.69	0.59	0.40	0.61	0.09	0.41	0.39	0.49
Avail Cap(c_a), veh/h	280	594	608	298	327	418	401	1454	737	318	1493	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	37.4	28.8	43.3	52.0	42.2	19.8	29.8	19.4	19.5	23.7	12.1
Incr Delay (d2), s/veh	22.9	0.8	0.2	0.5	6.1	2.4	0.7	1.9	0.2	3.8	0.8	3.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	6.4	2.4	2.3	6.5	6.4	2.5	10.6	1.1	2.2	5.8	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	59.7	38.2	29.0	43.8	58.2	44.6	20.5	31.7	19.6	23.3	24.4	15.2
LnGrp LOS	E	D	C	D	E	D	C	C	B	C	C	B
Approach Vol, veh/h		603			516			1104			984	
Approach Delay, s/veh		45.1			49.8			29.5			21.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	59.5	10.0	43.5	12.1	64.4	28.0	25.5				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.5	54.5	24.5	22.5				
Max Q Clear Time (g_c+I1), s	7.7	27.8	7.3	15.8	8.5	23.1	26.5	19.2				
Green Ext Time (p_c), s	0.1	15.3	0.0	2.5	0.1	15.7	0.0	0.8				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.3									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	549	3	6	500	3	4
Future Vol, veh/h	549	3	6	500	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	617	3	7	562	3	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	620	0	1194
Stage 1	-	-	-	-	619
Stage 2	-	-	-	-	575
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	892	-	154
Stage 1	-	-	-	-	431
Stage 2	-	-	-	-	453
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	892	-	153
Mov Cap-2 Maneuver	-	-	-	-	271
Stage 1	-	-	-	-	431
Stage 2	-	-	-	-	450

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	15.95
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	337	-	-	892	-
HCM Lane V/C Ratio	0.023	-	-	0.008	-
HCM Ctrl Dly (s/v)	16	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

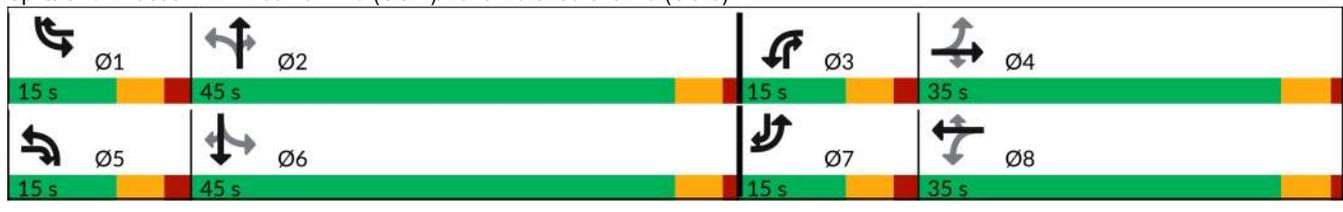
Project Steel
 2034 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	153	42	255	292	73	47	196	161	43	520	250
Future Volume (vph)	102	153	42	255	292	73	47	196	161	43	520	250
Lane Group Flow (vph)	110	165	45	274	314	78	51	211	173	46	559	269
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.35	0.37	0.07	0.73	0.69	0.12	0.21	0.31	0.24	0.09	0.79	0.28
Control Delay (s/veh)	24.4	34.4	1.5	39.2	43.0	5.4	16.1	23.8	3.2	14.5	37.1	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.4	34.4	1.5	39.2	43.0	5.4	16.1	23.8	3.2	14.5	37.1	2.7
Queue Length 50th (ft)	46	89	0	130	185	0	16	93	0	14	312	0
Queue Length 95th (ft)	87	153	8	#228	291	29	39	168	35	36	#532	42
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	331	625	665	373	613	694	276	802	727	556	833	987
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.26	0.07	0.73	0.51	0.11	0.18	0.26	0.24	0.08	0.67	0.27

Intersection Summary

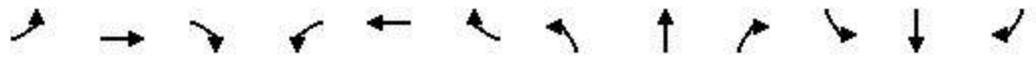
Cycle Length: 110
 Actuated Cycle Length: 94.2
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2034 Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	153	42	255	292	73	47	196	161	43	520	250
Future Volume (veh/h)	102	153	42	255	292	73	47	196	161	43	520	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	110	165	45	274	314	78	51	211	173	46	559	269
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	281	334	320	372	413	400	245	771	646	479	772	766
Arrive On Green	0.07	0.18	0.18	0.11	0.22	0.22	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	110	165	45	274	314	78	51	211	173	46	559	269
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	3.8	6.4	1.9	9.0	12.8	3.1	1.3	6.0	6.3	1.2	20.0	8.5
Cycle Q Clear(g_c), s	3.8	6.4	1.9	9.0	12.8	3.1	1.3	6.0	6.3	1.2	20.0	8.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	334	320	372	413	400	245	771	646	479	772	766
V/C Ratio(X)	0.39	0.49	0.14	0.74	0.76	0.20	0.21	0.27	0.27	0.10	0.72	0.35
Avail Cap(c_a), veh/h	367	702	624	372	691	641	392	929	750	634	936	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.1	29.9	26.2	26.5	29.3	23.9	15.8	15.7	10.6	13.4	20.0	13.3
Incr Delay (d2), s/veh	0.9	2.4	0.4	7.5	6.1	0.5	0.4	0.9	1.0	0.1	5.8	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.8	0.7	1.5	5.9	1.1	0.5	2.5	1.6	0.4	8.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	25.9	32.3	26.6	34.0	35.4	24.4	16.2	16.6	11.6	13.5	25.8	14.5
LnGrp LOS	C	C	C	C	D	C	B	B	B	B	C	B
Approach Vol, veh/h		320			666			435			874	
Approach Delay, s/veh		29.3			33.5			14.6			21.7	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	38.2	15.0	19.3	8.3	38.0	11.3	22.9				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.2	8.3	11.0	8.4	3.3	22.0	5.8	14.8				
Green Ext Time (p_c), s	0.0	6.4	0.0	1.7	0.0	10.9	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh											24.8	
HCM 7th LOS											C	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	27	12	394	23	16	793
Future Vol, veh/h	27	12	394	23	16	793
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	28	12	406	24	16	818

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1257	406	0	0	430	0
Stage 1	406	-	-	-	-	-
Stage 2	851	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	191	649	-	-	1140	-
Stage 1	677	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	188	649	-	-	1140	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	416	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	22.28	0	0.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	188	649	1140	-
HCM Lane V/C Ratio	-	-	0.148	0.019	0.014	-
HCM Ctrl Dly (s/v)	-	-	27.4	10.7	8.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0	-

Intersection			
Intersection Delay, s/veh	2.9		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	61	49	22
Demand Flow Rate, veh/h	61	49	22
Vehicles Circulating, veh/h	12	14	43
Vehicles Exiting, veh/h	51	51	30
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.0	2.9	2.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	61	49	22
Cap Entry Lane, veh/h	1363	1360	1321
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	61	49	22
Cap Entry, veh/h	1363	1360	1321
V/C Ratio	0.045	0.036	0.017
Control Delay, s/veh	3.0	2.9	2.9
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	1	
Traffic Vol, veh/h	0	0	0	5	7	0
Future Vol, veh/h	0	0	0	5	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	8	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	13	8	8	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1006	1075	1613	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1006	1075	1613	-	-	-
Mov Cap-2 Maneuver	1006	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1613	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection			
Intersection Delay, s/veh	2.9		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	50	45	9
Demand Flow Rate, veh/h	51	46	9
Vehicles Circulating, veh/h	1	3	42
Vehicles Exiting, veh/h	50	49	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	2.9	2.9	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	51	46	9
Cap Entry Lane, veh/h	1378	1376	1322
Entry HV Adj Factor	0.982	0.982	1.000
Flow Entry, veh/h	50	45	9
Cap Entry, veh/h	1353	1351	1322
V/C Ratio	0.037	0.033	0.007
Control Delay, s/veh	2.9	2.9	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	14	4	13	1	4	7	9	798	4	4	1114	35
Future Vol, veh/h	14	4	13	1	4	7	9	798	4	4	1114	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	15	4	14	1	4	7	9	840	4	4	1173	37

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1641	2063	605	1458	2079	422	1209	0	0	844	0	0
Stage 1	1199	1199	-	861	861	-	-	-	-	-	-	-
Stage 2	441	863	-	597	1218	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	64	55	446	92	54	586	584	-	-	801	-	-
Stage 1	192	261	-	321	375	-	-	-	-	-	-	-
Stage 2	557	374	-	461	255	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	57	54	446	81	53	586	584	-	-	801	-	-
Mov Cap-2 Maneuver	57	54	-	81	53	-	-	-	-	-	-	-
Stage 1	191	259	-	316	369	-	-	-	-	-	-	-
Stage 2	535	368	-	438	254	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	67.15		38.46		0.13		0.03	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	584	-	-	89	120	801	-	-
HCM Lane V/C Ratio	0.016	-	-	0.366	0.105	0.005	-	-
HCM Ctrl Dly (s/v)	11.3	-	-	67.1	38.5	9.5	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0.3	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

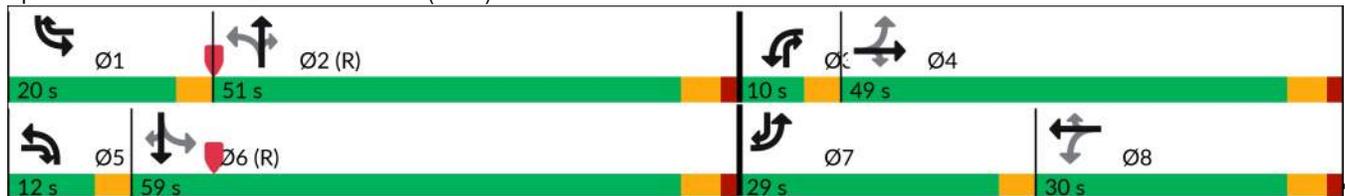
Project Steel
2034 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	280	254	145	74	226	116	91	659	175	209	892	167
Future Volume (vph)	280	254	145	74	226	116	91	659	175	209	892	167
Lane Group Flow (vph)	286	259	148	76	231	118	93	672	179	213	910	170
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.85	0.45	0.20	0.25	0.75	0.17	0.35	0.63	0.24	0.45	0.59	0.19
Control Delay (s/veh)	52.1	37.6	6.1	26.9	67.6	5.4	21.1	41.9	3.8	20.2	31.1	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	52.1	37.6	6.1	26.9	67.6	5.4	21.1	41.9	3.8	20.2	31.1	1.7
Queue Length 50th (ft)	164	164	11	35	187	0	42	258	0	103	336	0
Queue Length 95th (ft)	#320	248	52	70	273	41	68	297	42	145	383	25
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	341	622	729	302	357	697	276	1266	743	473	1579	877
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.42	0.20	0.25	0.65	0.17	0.34	0.53	0.24	0.45	0.58	0.19

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2034 Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	280	254	145	74	226	116	91	659	175	209	892	167
Future Volume (veh/h)	280	254	145	74	226	116	91	659	175	209	892	167
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	286	259	148	76	231	118	93	672	179	213	910	170
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	312	553	519	280	274	419	295	1457	719	452	1757	801
Arrive On Green	0.20	0.29	0.29	0.05	0.14	0.14	0.04	0.40	0.40	0.13	0.48	0.48
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	286	259	148	76	231	118	93	672	179	213	910	170
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	14.4	9.1	4.6	14.9	7.7	4.0	17.6	9.0	8.1	22.4	7.0
Cycle Q Clear(g_c), s	25.5	14.4	9.1	4.6	14.9	7.7	4.0	17.6	9.0	8.1	22.4	7.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	312	553	519	280	274	419	295	1457	719	452	1757	801
V/C Ratio(X)	0.92	0.47	0.29	0.27	0.84	0.28	0.32	0.46	0.25	0.47	0.52	0.21
Avail Cap(c_a), veh/h	312	643	592	284	371	496	331	1457	719	452	1757	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.5	38.1	32.0	44.8	54.5	37.8	21.9	28.8	22.4	17.7	23.3	7.9
Incr Delay (d2), s/veh	30.7	0.9	0.4	0.5	13.9	0.5	0.6	1.1	0.8	3.5	1.1	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	6.8	3.3	2.0	8.1	2.9	1.6	7.5	3.4	3.5	9.2	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	68.1	39.0	32.4	45.3	68.5	38.3	22.5	29.8	23.2	21.2	24.4	8.5
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		693			425			944			1293	
Approach Delay, s/veh		49.6			56.0			27.8			21.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	57.4	9.7	42.9	9.3	68.0	29.0	23.6				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+I1), s	10.1	19.6	6.6	16.4	6.0	24.4	27.5	16.9				
Green Ext Time (p_c), s	0.3	14.1	0.0	2.8	0.0	19.3	0.0	1.3				
Intersection Summary												
HCM 7th Control Delay, s/veh			33.6									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	546	1	7	526	2	4
Future Vol, veh/h	546	1	7	526	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	575	1	7	554	2	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	576	0	1144
Stage 1	-	-	-	-	575
Stage 2	-	-	-	-	568
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	651	-	223
Stage 1	-	-	-	-	567
Stage 2	-	-	-	-	571
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	651	-	221
Mov Cap-2 Maneuver	-	-	-	-	359
Stage 1	-	-	-	-	567
Stage 2	-	-	-	-	564

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.14	13.06
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	453	-	-	651	-
HCM Lane V/C Ratio	0.014	-	-	0.011	-
HCM Ctrl Dly (s/v)	13.1	-	-	10.6	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX K

2039 No Build Capacity Analysis

Lanes, Volumes, Timings

1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

2039 No Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	255	44	161	178	68	19	502	218	69	178	132
Future Volume (vph)	224	255	44	161	178	68	19	502	218	69	178	132
Lane Group Flow (vph)	252	287	49	181	200	76	21	564	245	78	200	148
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.63	0.66	0.09	0.85	0.46	0.12	0.05	0.81	0.36	0.30	0.28	0.16
Control Delay (s/veh)	32.3	42.6	2.1	61.7	36.4	5.2	14.1	38.5	5.3	16.7	22.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.3	42.6	2.1	61.7	36.4	5.2	14.1	38.5	5.3	16.7	22.4	2.8
Queue Length 50th (ft)	119	171	0	87	113	0	6	313	13	24	84	0
Queue Length 95th (ft)	185	260	10	#205	181	27	21	#544	63	54	154	30
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	399	600	598	213	606	672	478	789	678	293	809	942
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.48	0.08	0.85	0.33	0.11	0.04	0.71	0.36	0.27	0.25	0.16

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 95

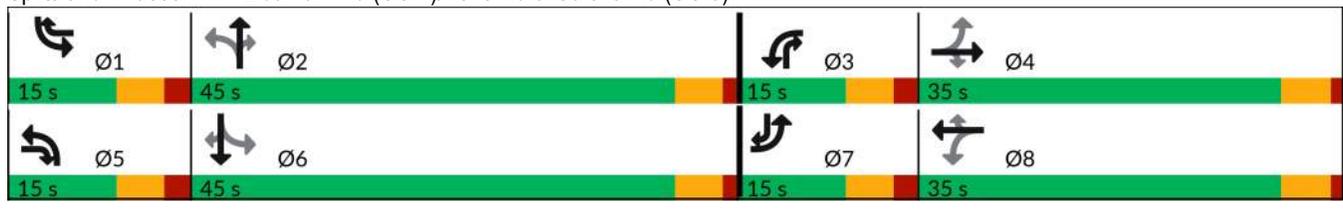
Natural Cycle: 80

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2039 No Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	255	44	161	178	68	19	502	218	69	178	132
Future Volume (veh/h)	224	255	44	161	178	68	19	502	218	69	178	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	252	287	49	181	200	76	21	564	245	78	200	148
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	398	371	300	227	374	389	428	748	537	254	781	846
Arrive On Green	0.11	0.20	0.20	0.11	0.20	0.20	0.01	0.40	0.40	0.04	0.42	0.42
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	252	287	49	181	200	76	21	564	245	78	200	148
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	9.0	12.5	2.4	9.0	8.2	3.2	0.7	22.1	12.7	2.2	6.0	4.1
Cycle Q Clear(g_c), s	9.0	12.5	2.4	9.0	8.2	3.2	0.7	22.1	12.7	2.2	6.0	4.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	398	371	300	227	374	389	428	748	537	254	781	846
V/C Ratio(X)	0.63	0.77	0.16	0.80	0.53	0.20	0.05	0.75	0.46	0.31	0.26	0.18
Avail Cap(c_a), veh/h	398	649	509	227	655	631	571	880	612	369	859	913
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	32.4	27.4	29.3	30.7	25.9	15.2	22.3	13.8	17.3	15.9	10.5
Incr Delay (d2), s/veh	3.2	7.1	0.5	17.9	2.5	0.5	0.0	7.0	2.8	0.7	0.8	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	5.8	0.8	2.2	3.7	1.2	0.2	10.1	3.0	0.8	2.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.0	39.6	28.0	47.2	33.2	26.4	15.2	29.2	16.6	18.0	16.7	10.9
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		588			457			830			426	
Approach Delay, s/veh		33.6			37.6			25.1			14.9	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	39.0	15.0	22.2	7.2	41.4	15.0	22.2				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.2	24.1	11.0	14.5	2.7	8.0	11.0	10.2				
Green Ext Time (p_c), s	0.1	9.9	0.0	2.6	0.0	5.7	0.0	2.3				

Intersection Summary												
HCM 7th Control Delay, s/veh											27.9	
HCM 7th LOS											C	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↗	↗	↘	↗
Traffic Vol, veh/h	14	10	731	22	12	364
Future Vol, veh/h	14	10	731	22	12	364
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	16	12	860	26	14	428

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1316	860	0	0	886	0
Stage 1	860	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	161	341	-	-	773	-
Stage 1	389	-	-	-	-	-
Stage 2	606	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	158	341	-	-	773	-
Mov Cap-2 Maneuver	158	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	595	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	24.39	0	0.31
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	158	341	773	-
HCM Lane V/C Ratio	-	-	0.104	0.034	0.018	-
HCM Ctrl Dly (s/v)	-	-	30.4	15.9	9.7	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.1	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	31	8	3	26	0	6	3	0	0	1	0
Future Vol, veh/h	2	31	8	3	26	0	6	3	0	0	1	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	17	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	43	11	4	36	0	8	4	0	0	1	0

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	36	0	0	54	0	0	99	99	49	95	104	36
Stage 1	-	-	-	-	-	-	54	54	-	44	44	-
Stage 2	-	-	-	-	-	-	45	44	-	51	60	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1588	-	-	1564	-	-	887	795	1026	893	790	1042
Stage 1	-	-	-	-	-	-	963	854	-	975	862	-
Stage 2	-	-	-	-	-	-	974	862	-	967	849	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1588	-	-	1564	-	-	882	792	1026	884	786	1042
Mov Cap-2 Maneuver	-	-	-	-	-	-	882	792	-	884	786	-
Stage 1	-	-	-	-	-	-	962	852	-	972	860	-
Stage 2	-	-	-	-	-	-	970	860	-	961	848	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0.35		0.76		9.3		9.59	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	849	84	-	-	186	-	-	786
HCM Lane V/C Ratio	0.015	0.002	-	-	0.003	-	-	0.002
HCM Ctrl Dly (s/v)	9.3	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	27	1	13	5	1	13	10	1062	1	7	746	24
Future Vol, veh/h	27	1	13	5	1	13	10	1062	1	7	746	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	30	1	14	6	1	14	11	1180	1	8	829	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1471	2061	428	1633	2074	591	856	0	0	1181	0	0
Stage 1	858	858	-	1203	1203	-	-	-	-	-	-	-
Stage 2	613	1203	-	431	871	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	90	55	504	53	16	431	566	-	-	598	-	-
Stage 1	322	376	-	162	121	-	-	-	-	-	-	-
Stage 2	452	260	-	516	202	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	79	54	504	49	16	431	566	-	-	598	-	-
Mov Cap-2 Maneuver	79	54	-	49	16	-	-	-	-	-	-	-
Stage 1	318	372	-	159	119	-	-	-	-	-	-	-
Stage 2	424	254	-	493	200	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	62.54		52.05		0.11		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	566	-	-	106	97	598	-
HCM Lane V/C Ratio	0.02	-	-	0.43	0.217	0.013	-
HCM Ctrl Dly (s/v)	11.5	-	-	62.5	52.1	11.1	-
HCM Lane LOS	B	-	-	F	F	B	-
HCM 95th %tile Q(veh)	0.1	-	-	1.8	0.8	0	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

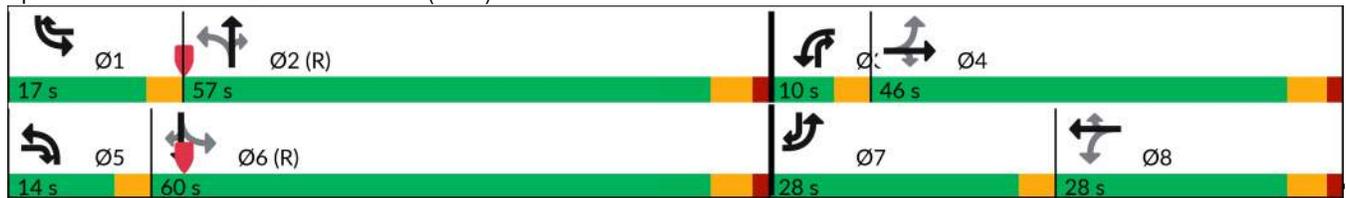
Project Steel
2039 No Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	240	108	85	193	223	146	907	62	129	608	256
Future Volume (vph)	230	240	108	85	193	223	146	907	62	129	608	256
Lane Group Flow (vph)	245	255	115	90	205	237	155	965	66	137	647	272
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	14.0	10.0	28.0	17.0	14.0	57.0	10.0	17.0	60.0	28.0
Total Split (%)	21.5%	35.4%	10.8%	7.7%	21.5%	13.1%	10.8%	43.8%	7.7%	13.1%	46.2%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.86	0.50	0.16	0.33	0.76	0.40	0.39	0.74	0.08	0.46	0.44	0.35
Control Delay (s/veh)	58.9	41.8	4.3	31.3	70.3	18.8	17.9	38.6	2.8	20.5	26.8	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.9	41.8	4.3	31.3	70.3	18.8	17.9	38.6	2.8	20.5	26.8	2.3
Queue Length 50th (ft)	158	175	0	48	166	74	61	354	0	54	202	0
Queue Length 95th (ft)	#267	255	35	85	249	151	102	434	18	100	260	31
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	291	568	724	276	312	586	410	1368	793	301	1456	775
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.45	0.16	0.33	0.66	0.40	0.38	0.71	0.08	0.46	0.44	0.35

Intersection Summary

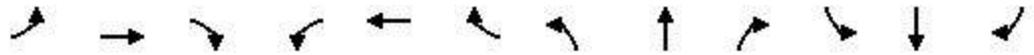
Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2039 No Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	240	108	85	193	223	146	907	62	129	608	256
Future Volume (veh/h)	230	240	108	85	193	223	146	907	62	129	608	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	245	255	115	90	205	237	155	965	66	137	647	272
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	281	565	586	300	299	395	353	1441	731	297	1475	545
Arrive On Green	0.19	0.30	0.30	0.05	0.16	0.16	0.07	0.41	0.41	0.10	0.45	0.45
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	245	255	115	90	205	237	155	965	66	137	647	272
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	14.1	6.4	5.6	13.3	17.9	6.8	29.1	3.0	6.1	17.5	22.0
Cycle Q Clear(g_c), s	24.5	14.1	6.4	5.6	13.3	17.9	6.8	29.1	3.0	6.1	17.5	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	565	586	300	299	395	353	1441	731	297	1475	545
V/C Ratio(X)	0.87	0.45	0.20	0.30	0.69	0.60	0.44	0.67	0.09	0.46	0.44	0.50
Avail Cap(c_a), veh/h	281	594	610	300	327	418	376	1441	731	297	1475	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.9	37.1	28.3	43.0	51.7	42.0	20.3	31.1	19.7	21.1	24.7	12.6
Incr Delay (d2), s/veh	24.6	0.8	0.2	0.6	6.1	2.7	0.9	2.5	0.2	5.1	1.0	3.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	6.6	2.4	2.4	6.6	6.7	2.6	12.0	1.1	2.4	6.6	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	61.5	37.9	28.5	43.5	57.8	44.7	21.1	33.6	19.9	26.1	25.6	15.9
LnGrp LOS	E	D	C	D	E	D	C	C	B	C	C	B
Approach Vol, veh/h	615			532			1186			1056		
Approach Delay, s/veh	45.6			49.5			31.2			23.2		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	59.0	10.0	44.0	12.3	63.7	28.0	26.0				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.5	54.5	24.5	22.5				
Max Q Clear Time (g_c+I1), s	8.1	31.1	7.6	16.1	8.8	24.0	26.5	19.9				
Green Ext Time (p_c), s	0.1	14.6	0.0	2.5	0.1	16.7	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh				34.2								
HCM 7th LOS				C								

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	561	3	6	507	3	4
Future Vol, veh/h	561	3	6	507	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	630	3	7	570	3	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	634	0	1215
Stage 1	-	-	-	-	632
Stage 2	-	-	-	-	583
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	881	-	149
Stage 1	-	-	-	-	424
Stage 2	-	-	-	-	449
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	881	-	148
Mov Cap-2 Maneuver	-	-	-	-	266
Stage 1	-	-	-	-	424
Stage 2	-	-	-	-	446

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	16.16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	330	-	-	881	-
HCM Lane V/C Ratio	0.024	-	-	0.008	-
HCM Ctrl Dly (s/v)	16.2	-	-	9.1	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings

1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

2039 No Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	158	44	261	300	73	49	201	164	43	532	254
Future Volume (vph)	106	158	44	261	300	73	49	201	164	43	532	254
Lane Group Flow (vph)	114	170	47	281	323	78	53	216	176	46	572	273
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.37	0.38	0.07	0.76	0.71	0.12	0.23	0.31	0.24	0.09	0.81	0.28
Control Delay (s/veh)	24.6	34.4	1.8	40.9	43.5	5.4	16.6	24.1	3.2	14.6	38.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.6	34.4	1.8	40.9	43.5	5.4	16.6	24.1	3.2	14.6	38.9	2.7
Queue Length 50th (ft)	49	94	0	138	196	0	17	96	0	15	327	0
Queue Length 95th (ft)	90	158	9	#245	300	29	41	171	36	36	#552	42
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	328	622	670	371	610	697	263	801	725	549	830	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.27	0.07	0.76	0.53	0.11	0.20	0.27	0.24	0.08	0.69	0.28

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 94.7

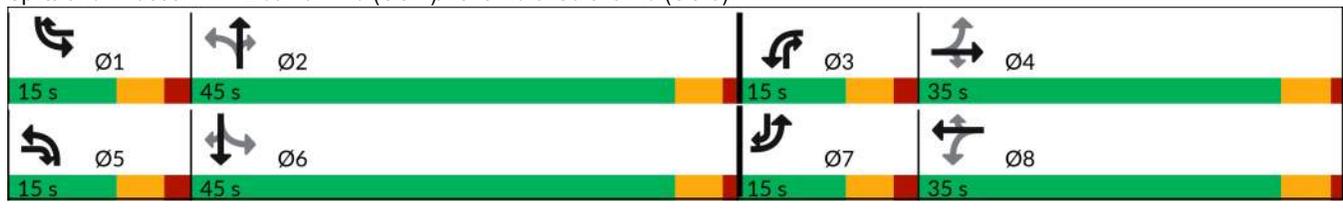
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

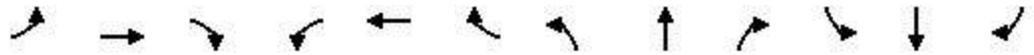
Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2039 No Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	158	44	261	300	73	49	201	164	43	532	254
Future Volume (veh/h)	106	158	44	261	300	73	49	201	164	43	532	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	114	170	47	281	323	78	53	216	176	46	572	273
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	280	348	333	371	419	405	238	774	645	474	773	769
Arrive On Green	0.07	0.18	0.18	0.11	0.23	0.23	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	114	170	47	281	323	78	53	216	176	46	572	273
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	4.0	6.7	2.0	9.0	13.5	3.1	1.4	6.3	6.5	1.2	21.2	8.8
Cycle Q Clear(g_c), s	4.0	6.7	2.0	9.0	13.5	3.1	1.4	6.3	6.5	1.2	21.2	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	348	333	371	419	405	238	774	645	474	773	769
V/C Ratio(X)	0.41	0.49	0.14	0.76	0.77	0.19	0.22	0.28	0.27	0.10	0.74	0.35
Avail Cap(c_a), veh/h	358	686	612	371	675	627	379	907	733	625	915	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	30.1	26.3	27.3	29.9	24.3	16.3	16.0	10.9	13.7	20.6	13.5
Incr Delay (d2), s/veh	0.9	2.3	0.4	8.7	6.3	0.5	0.5	0.9	1.0	0.1	6.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.0	0.7	1.9	6.3	1.2	0.5	2.6	1.7	0.5	9.5	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.2	32.4	26.7	36.0	36.2	24.8	16.8	16.9	12.0	13.8	26.9	14.8
LnGrp LOS	C	C	C	D	D	C	B	B	B	B	C	B
Approach Vol, veh/h		331			682			445			891	
Approach Delay, s/veh		29.4			34.8			14.9			22.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	39.1	15.0	20.2	8.4	38.8	11.6	23.6				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.2	8.5	11.0	8.7	3.4	23.2	6.0	15.5				
Green Ext Time (p_c), s	0.0	6.5	0.0	1.8	0.0	10.6	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh				25.6								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	13	402	24	16	809
Future Vol, veh/h	30	13	402	24	16	809
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	31	13	414	25	16	834

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1281	414	0	0	439	0
Stage 1	414	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	184	642	-	-	1131	-
Stage 1	671	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	642	-	-	1131	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	409	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	23.36	0	0.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	182	642	1131	-
HCM Lane V/C Ratio	-	-	0.17	0.021	0.015	-
HCM Ctrl Dly (s/v)	-	-	28.8	10.7	8.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	35	16	4	30	3	12	2	4	1	5	1
Future Vol, veh/h	1	35	16	4	30	3	12	2	4	1	5	1
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	100	0	0
Mvmt Flow	1	46	21	5	39	4	16	3	5	1	7	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	43	0	0	67	0	0	113	113	57	102	122	41
Stage 1	-	-	-	-	-	-	59	59	-	52	52	-
Stage 2	-	-	-	-	-	-	53	54	-	50	70	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1578	-	-	1547	-	-	870	781	1016	692	772	1035
Stage 1	-	-	-	-	-	-	957	850	-	762	856	-
Stage 2	-	-	-	-	-	-	964	854	-	764	841	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1578	-	-	1547	-	-	858	777	1016	683	769	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	858	777	-	683	769	-
Stage 1	-	-	-	-	-	-	957	849	-	760	853	-
Stage 2	-	-	-	-	-	-	952	851	-	757	840	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.14			0.79			9.21			9.65		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	878	33	-	-	191	-	-	784
HCM Lane V/C Ratio	0.027	0.001	-	-	0.003	-	-	0.012
HCM Ctrl Dly (s/v)	9.2	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	16	4	14	1	4	8	10	877	4	4	1217	39
Future Vol, veh/h	16	4	14	1	4	8	10	877	4	4	1217	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	17	4	15	1	4	8	11	923	4	4	1281	41

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1795	2258	661	1597	2277	464	1322	0	0	927	0	0
Stage 1	1310	1310	-	946	946	-	-	-	-	-	-	-
Stage 2	485	948	-	651	1331	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	49	42	410	73	41	551	529	-	-	746	-	-
Stage 1	164	231	-	285	343	-	-	-	-	-	-	-
Stage 2	525	342	-	428	226	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	42	41	410	61	40	551	529	-	-	746	-	-
Mov Cap-2 Maneuver	42	41	-	61	40	-	-	-	-	-	-	-
Stage 1	163	230	-	279	336	-	-	-	-	-	-	-
Stage 2	500	335	-	403	224	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	110.45		47.38		0.13		0.03	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	529	-	-	66	98	746	-	-
HCM Lane V/C Ratio	0.02	-	-	0.54	0.139	0.006	-	-
HCM Ctrl Dly (s/v)	11.9	-	-	110.4	47.4	9.9	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.5	0	-	-

Lanes, Volumes, Timings
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2039 No Build - PM Peak Hour

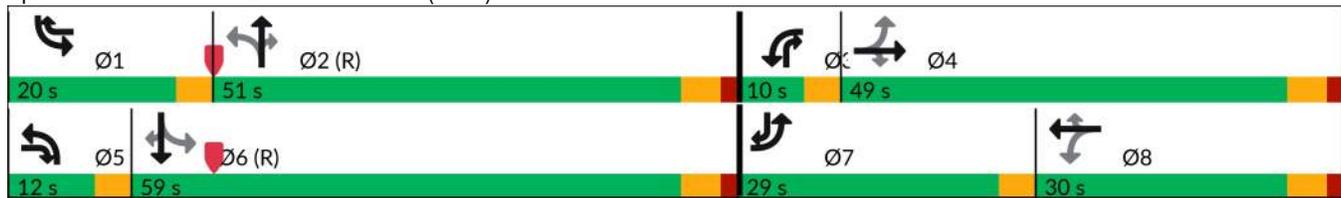
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	261	147	78	236	120	96	729	194	225	983	174
Future Volume (vph)	283	261	147	78	236	120	96	729	194	225	983	174
Lane Group Flow (vph)	289	266	150	80	241	122	98	744	198	230	1003	178
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.89	0.46	0.21	0.27	0.77	0.18	0.41	0.66	0.26	0.52	0.64	0.20
Control Delay (s/veh)	58.9	38.2	8.1	27.5	68.8	5.4	22.1	41.1	3.7	21.2	32.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.9	38.2	8.1	27.5	68.8	5.4	22.1	41.1	3.7	21.2	32.0	1.8
Queue Length 50th (ft)	182	178	21	41	195	0	40	270	0	101	352	0
Queue Length 95th (ft)	#335	255	62	73	284	42	72	334	44	156	433	25
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	327	616	717	298	357	683	248	1266	776	440	1564	875
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.43	0.21	0.27	0.68	0.18	0.40	0.59	0.26	0.52	0.64	0.20

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2039 No Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	261	147	78	236	120	96	729	194	225	983	174
Future Volume (veh/h)	283	261	147	78	236	120	96	729	194	225	983	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	289	266	150	80	241	122	98	744	198	230	1003	178
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	311	559	527	288	284	426	268	1440	715	424	1731	793
Arrive On Green	0.20	0.29	0.29	0.05	0.14	0.14	0.05	0.39	0.39	0.13	0.47	0.47
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	289	266	150	80	241	122	98	744	198	230	1003	178
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	14.8	9.2	4.8	15.5	8.0	4.3	20.1	10.1	8.9	25.9	7.6
Cycle Q Clear(g_c), s	25.5	14.8	9.2	4.8	15.5	8.0	4.3	20.1	10.1	8.9	25.9	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	559	527	288	284	426	268	1440	715	424	1731	793
V/C Ratio(X)	0.93	0.48	0.28	0.28	0.85	0.29	0.37	0.52	0.28	0.54	0.58	0.22
Avail Cap(c_a), veh/h	311	643	595	288	371	496	300	1440	715	424	1731	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	38.0	31.5	44.2	54.2	37.4	22.7	30.0	22.9	19.1	24.8	8.3
Incr Delay (d2), s/veh	32.9	0.9	0.4	0.5	15.0	0.5	0.8	1.3	1.0	4.9	1.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	7.0	3.4	2.1	8.6	3.0	1.7	8.6	3.8	3.9	10.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.1	38.9	32.0	44.7	69.2	38.0	23.5	31.3	23.9	24.0	26.2	9.0
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		705			443			1040			1411	
Approach Delay, s/veh		50.2			56.2			29.1			23.7	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	56.7	10.0	43.3	9.6	67.1	29.0	24.3				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+I1), s	10.9	22.1	6.8	16.8	6.3	27.9	27.5	17.5				
Green Ext Time (p_c), s	0.3	14.5	0.0	2.9	0.0	18.9	0.0	1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			34.5									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	1	7	541	2	4
Future Vol, veh/h	558	1	7	541	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	587	1	7	569	2	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	588	0	1172
Stage 1	-	-	-	-	588
Stage 2	-	-	-	-	584
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	643	-	215
Stage 1	-	-	-	-	559
Stage 2	-	-	-	-	561
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	643	-	212
Mov Cap-2 Maneuver	-	-	-	-	351
Stage 1	-	-	-	-	559
Stage 2	-	-	-	-	555

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.14	13.22
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	444	-	-	643	-
HCM Lane V/C Ratio	0.014	-	-	0.011	-
HCM Ctrl Dly (s/v)	13.2	-	-	10.7	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX L

2039 Build Capacity Analysis

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

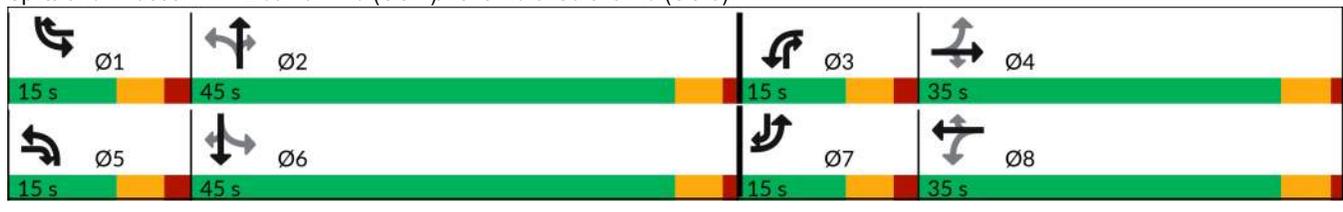
Project Steel
 2039 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	255	44	161	178	68	24	506	245	69	178	132
Future Volume (vph)	224	255	44	161	178	68	24	506	245	69	178	132
Lane Group Flow (vph)	252	287	49	181	200	76	27	569	275	78	200	148
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.63	0.66	0.09	0.85	0.46	0.12	0.06	0.81	0.40	0.30	0.28	0.16
Control Delay (s/veh)	32.3	42.6	2.1	62.0	36.5	5.2	14.1	38.9	5.6	16.8	22.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.3	42.6	2.1	62.0	36.5	5.2	14.1	38.9	5.6	16.8	22.6	2.8
Queue Length 50th (ft)	119	171	0	87	113	0	8	317	15	24	84	0
Queue Length 95th (ft)	185	260	10	#205	181	27	25	#553	71	54	155	31
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	398	599	597	212	605	671	476	787	689	290	804	940
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.48	0.08	0.85	0.33	0.11	0.06	0.72	0.40	0.27	0.25	0.16

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 95.1
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2039 Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	224	255	44	161	178	68	24	506	245	69	178	132
Future Volume (veh/h)	224	255	44	161	178	68	24	506	245	69	178	132
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	252	287	49	181	200	76	27	569	275	78	200	148
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	396	371	303	225	374	388	432	753	539	251	781	844
Arrive On Green	0.10	0.20	0.20	0.10	0.20	0.20	0.02	0.40	0.40	0.04	0.42	0.42
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	252	287	49	181	200	76	27	569	275	78	200	148
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	9.0	12.6	2.5	9.0	8.3	3.2	0.9	22.4	14.8	2.2	6.1	4.2
Cycle Q Clear(g_c), s	9.0	12.6	2.5	9.0	8.3	3.2	0.9	22.4	14.8	2.2	6.1	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	396	371	303	225	374	388	432	753	539	251	781	844
V/C Ratio(X)	0.64	0.77	0.16	0.80	0.54	0.20	0.06	0.76	0.51	0.31	0.26	0.18
Avail Cap(c_a), veh/h	396	645	510	225	650	627	569	874	608	365	854	907
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	32.7	27.4	29.6	30.9	26.1	15.1	22.3	14.3	17.4	16.0	10.6
Incr Delay (d2), s/veh	3.3	7.2	0.5	18.7	2.5	0.5	0.1	7.0	3.4	0.7	0.8	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	5.9	0.8	2.3	3.8	1.2	0.3	10.3	3.6	0.8	2.5	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.4	39.9	28.0	48.3	33.5	26.6	15.1	29.2	17.7	18.1	16.8	11.0
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		588			457			871			426	
Approach Delay, s/veh		33.9			38.2			25.2			15.0	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	39.5	15.0	22.2	7.4	41.6	15.0	22.2				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.2	24.4	11.0	14.6	2.9	8.1	11.0	10.3				
Green Ext Time (p_c), s	0.1	10.1	0.0	2.6	0.0	5.7	0.0	2.3				

Intersection Summary												
HCM 7th Control Delay, s/veh				28.1								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		B			A
Traffic Vol, veh/h	17	31	745	0	0	376
Future Vol, veh/h	17	31	745	0	0	376
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	7	2	2	19
Mvmt Flow	19	35	837	0	0	422

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1260	837	0	0	837	0
Stage 1	837	-	-	-	-	-
Stage 2	422	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	188	367	-	-	797	-
Stage 1	425	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	188	367	-	-	797	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	661	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	21.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	274	797
HCM Lane V/C Ratio	-	-	0.197	-
HCM Ctrl Dly (s/v)	-	-	21.3	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0

Intersection						
Int Delay, s/veh	1.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↕	↘	↘	↕
Traffic Vol, veh/h	26	15	731	22	17	376
Future Vol, veh/h	26	15	731	22	17	376
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	31	18	860	26	20	442

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1342	860	0	0	886	0
Stage 1	860	-	-	-	-	-
Stage 2	482	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	155	341	-	-	773	-
Stage 1	389	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	151	341	-	-	773	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	574	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	27.97	0	0.42
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	151	341	773	-
HCM Lane V/C Ratio	-	-	0.203	0.052	0.026	-
HCM Ctrl Dly (s/v)	-	-	34.8	16.1	9.8	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.2	0.1	-

Intersection			
Intersection Delay, s/veh	3.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	64	66	12
Demand Flow Rate, veh/h	66	66	12
Vehicles Circulating, veh/h	6	8	53
Vehicles Exiting, veh/h	68	57	19
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.1	3.0	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	66	66	12
Cap Entry Lane, veh/h	1371	1369	1307
Entry HV Adj Factor	0.970	1.000	1.000
Flow Entry, veh/h	64	66	12
Cap Entry, veh/h	1330	1369	1307
V/C Ratio	0.048	0.048	0.009
Control Delay, s/veh	3.1	3.0	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	7.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	0	48	0	5	1	0
Future Vol, veh/h	0	48	0	5	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	0	5	1	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	7	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1015	1083	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1015	1083	1622	-	-	-
Mov Cap-2 Maneuver	1015	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.49	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1083	-	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection			
Intersection Delay, s/veh	3.1		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	57	40	68
Demand Flow Rate, veh/h	58	41	70
Vehicles Circulating, veh/h	44	7	41
Vehicles Exiting, veh/h	67	95	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.1	2.9	3.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	58	41	70
Cap Entry Lane, veh/h	1319	1370	1323
Entry HV Adj Factor	0.983	0.980	0.971
Flow Entry, veh/h	57	40	68
Cap Entry, veh/h	1297	1343	1286
V/C Ratio	0.044	0.030	0.053
Control Delay, s/veh	3.1	2.9	3.2
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	44	1	32	5	1	13	10	1062	1	7	756	24
Future Vol, veh/h	44	1	32	5	1	13	10	1062	1	7	756	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	49	1	36	6	1	14	11	1180	1	8	840	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1482	2072	433	1639	2085	591	867	0	0	1181	0	0
Stage 1	869	869	-	1203	1203	-	-	-	-	-	-	-
Stage 2	613	1203	-	436	882	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	89	55	500	52	16	431	560	-	-	598	-	-
Stage 1	317	372	-	162	121	-	-	-	-	-	-	-
Stage 2	452	260	-	512	199	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	77	53	500	46	16	431	560	-	-	598	-	-
Mov Cap-2 Maneuver	77	53	-	46	16	-	-	-	-	-	-	-
Stage 1	313	367	-	159	119	-	-	-	-	-	-	-
Stage 2	424	254	-	468	196	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	91.34		54.27		0.11		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	560	-	-	118	94	598	-
HCM Lane V/C Ratio	0.02	-	-	0.726	0.225	0.013	-
HCM Ctrl Dly (s/v)	11.6	-	-	91.3	54.3	11.1	-
HCM Lane LOS	B	-	-	F	F	B	-
HCM 95th %tile Q(veh)	0.1	-	-	4	0.8	0	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

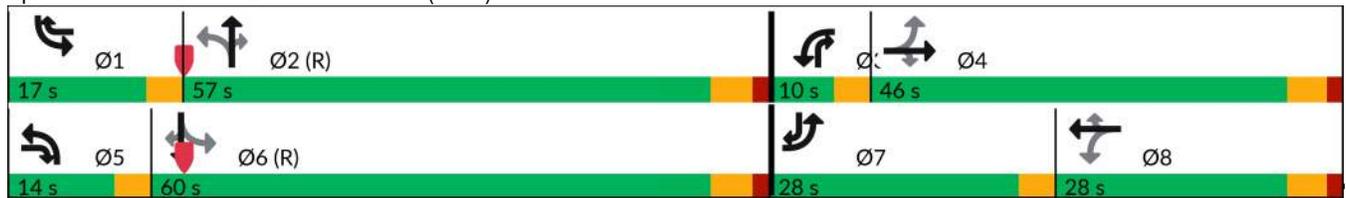
Project Steel
2039 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	242	245	118	85	193	223	146	919	67	129	608	256
Future Volume (vph)	242	245	118	85	193	223	146	919	67	129	608	256
Lane Group Flow (vph)	257	261	126	90	205	237	155	978	71	137	647	272
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	14.0	10.0	28.0	17.0	14.0	57.0	10.0	17.0	60.0	28.0
Total Split (%)	21.5%	35.4%	10.8%	7.7%	21.5%	13.1%	10.8%	43.8%	7.7%	13.1%	46.2%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.89	0.50	0.17	0.33	0.76	0.41	0.39	0.75	0.09	0.47	0.45	0.35
Control Delay (s/veh)	63.6	41.8	4.2	31.3	70.3	20.0	17.9	38.8	3.3	21.5	27.0	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.6	41.8	4.2	31.3	70.3	20.0	17.9	38.8	3.3	21.5	27.0	2.3
Queue Length 50th (ft)	168	180	0	48	166	79	61	361	0	54	202	0
Queue Length 95th (ft)	#291	261	37	85	249	156	102	442	22	103	260	31
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	292	568	736	274	312	577	406	1368	794	292	1447	773
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.46	0.17	0.33	0.66	0.41	0.38	0.71	0.09	0.47	0.45	0.35

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2039 Build - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	242	245	118	85	193	223	146	919	67	129	608	256
Future Volume (veh/h)	242	245	118	85	193	223	146	919	67	129	608	256
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	257	261	126	90	205	237	155	978	71	137	647	272
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	281	565	586	298	299	395	353	1441	731	294	1475	545
Arrive On Green	0.19	0.30	0.30	0.05	0.16	0.16	0.07	0.41	0.41	0.10	0.45	0.45
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	257	261	126	90	205	237	155	978	71	137	647	272
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	14.5	7.0	5.6	13.3	17.9	6.8	29.6	3.3	6.1	17.5	22.0
Cycle Q Clear(g_c), s	24.5	14.5	7.0	5.6	13.3	17.9	6.8	29.6	3.3	6.1	17.5	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	565	586	298	299	395	353	1441	731	294	1475	545
V/C Ratio(X)	0.92	0.46	0.21	0.30	0.69	0.60	0.44	0.68	0.10	0.47	0.44	0.50
Avail Cap(c_a), veh/h	281	594	610	298	327	418	376	1441	731	294	1475	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.2	37.3	28.5	43.0	51.7	42.0	20.3	31.3	19.8	21.3	24.7	12.6
Incr Delay (d2), s/veh	32.5	0.8	0.3	0.6	6.1	2.7	0.9	2.6	0.3	5.2	1.0	3.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	6.7	2.6	2.4	6.6	6.7	2.6	12.2	1.2	2.4	6.6	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.7	38.1	28.8	43.5	57.8	44.7	21.1	33.9	20.0	26.5	25.6	15.9
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	B
Approach Vol, veh/h		644			532			1204			1056	
Approach Delay, s/veh		49.3			49.5			31.4			23.2	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	59.0	10.0	44.0	12.3	63.7	28.0	26.0				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.5	54.5	24.5	22.5				
Max Q Clear Time (g_c+I1), s	8.1	31.6	7.6	16.5	8.8	24.0	26.5	19.9				
Green Ext Time (p_c), s	0.1	14.4	0.0	2.6	0.1	16.7	0.0	0.7				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.1									
HCM 7th LOS			D									

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	588	3	6	507	3	4
Future Vol, veh/h	588	3	6	507	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	661	3	7	570	3	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	664	0	1246
Stage 1	-	-	-	-	662
Stage 2	-	-	-	-	583
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	858	-	142
Stage 1	-	-	-	-	409
Stage 2	-	-	-	-	449
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	858	-	141
Mov Cap-2 Maneuver	-	-	-	-	259
Stage 1	-	-	-	-	409
Stage 2	-	-	-	-	446

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	16.55
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	320	-	-	858	-
HCM Lane V/C Ratio	0.025	-	-	0.008	-
HCM Ctrl Dly (s/v)	16.6	-	-	9.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

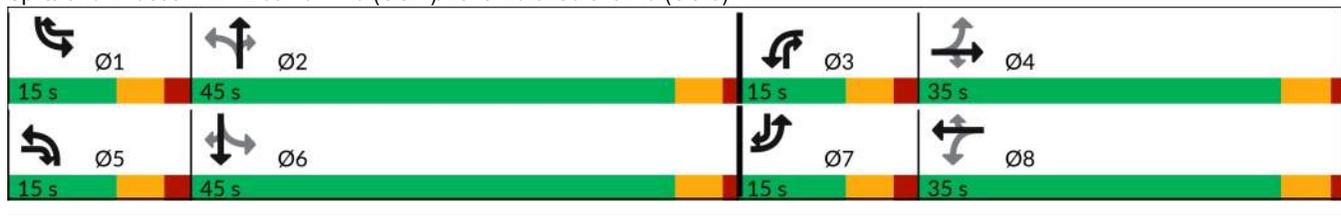
Project Steel
 2039 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	106	158	44	261	300	73	49	201	164	43	532	254
Future Volume (vph)	106	158	44	261	300	73	49	201	164	43	532	254
Lane Group Flow (vph)	114	170	47	281	323	78	53	216	176	46	572	273
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.37	0.38	0.07	0.76	0.71	0.12	0.23	0.31	0.24	0.09	0.81	0.28
Control Delay (s/veh)	24.6	34.4	1.8	40.9	43.5	5.4	16.6	24.1	3.2	14.6	38.9	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.6	34.4	1.8	40.9	43.5	5.4	16.6	24.1	3.2	14.6	38.9	2.7
Queue Length 50th (ft)	49	94	0	138	196	0	17	96	0	15	327	0
Queue Length 95th (ft)	90	158	9	#245	300	29	41	171	36	36	#552	42
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	328	622	670	371	610	697	263	801	725	549	830	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.27	0.07	0.76	0.53	0.11	0.20	0.27	0.24	0.08	0.69	0.28

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 94.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2039 Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	158	44	261	300	73	49	201	164	43	532	254
Future Volume (veh/h)	106	158	44	261	300	73	49	201	164	43	532	254
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	114	170	47	281	323	78	53	216	176	46	572	273
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	280	348	333	371	419	405	238	774	645	474	773	769
Arrive On Green	0.07	0.18	0.18	0.11	0.23	0.23	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	114	170	47	281	323	78	53	216	176	46	572	273
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	4.0	6.7	2.0	9.0	13.5	3.1	1.4	6.3	6.5	1.2	21.2	8.8
Cycle Q Clear(g_c), s	4.0	6.7	2.0	9.0	13.5	3.1	1.4	6.3	6.5	1.2	21.2	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	280	348	333	371	419	405	238	774	645	474	773	769
V/C Ratio(X)	0.41	0.49	0.14	0.76	0.77	0.19	0.22	0.28	0.27	0.10	0.74	0.35
Avail Cap(c_a), veh/h	358	686	612	371	675	627	379	907	733	625	915	890
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.2	30.1	26.3	27.3	29.9	24.3	16.3	16.0	10.9	13.7	20.6	13.5
Incr Delay (d2), s/veh	0.9	2.3	0.4	8.7	6.3	0.5	0.5	0.9	1.0	0.1	6.3	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.0	0.7	1.9	6.3	1.2	0.5	2.6	1.7	0.5	9.5	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.2	32.4	26.7	36.0	36.2	24.8	16.8	16.9	12.0	13.8	26.9	14.8
LnGrp LOS	C	C	C	D	D	C	B	B	B	B	C	B
Approach Vol, veh/h		331			682			445			891	
Approach Delay, s/veh		29.4			34.8			14.9			22.5	
Approach LOS		C			C			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.1	39.1	15.0	20.2	8.4	38.8	11.6	23.6				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.2	8.5	11.0	8.7	3.4	23.2	6.0	15.5				
Green Ext Time (p_c), s	0.0	6.5	0.0	1.8	0.0	10.6	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh				25.6								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	413	0	0	825
Future Vol, veh/h	0	0	413	0	0	825
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	11	2	2	4
Mvmt Flow	0	0	444	0	0	887

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1331	444	0	0	444	0
Stage 1	444	-	-	-	-	-
Stage 2	887	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	170	614	-	-	1116	-
Stage 1	646	-	-	-	-	-
Stage 2	402	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	170	614	-	-	1116	-
Mov Cap-2 Maneuver	170	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	402	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1116
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	13	402	24	16	809
Future Vol, veh/h	30	13	402	24	16	809
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	31	13	414	25	16	834

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1281	414	0	0	439	0
Stage 1	414	-	-	-	-	-
Stage 2	867	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	184	642	-	-	1131	-
Stage 1	671	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	182	642	-	-	1131	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	671	-	-	-	-	-
Stage 2	409	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	23.36	0	0.16
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	182	642	1131	-
HCM Lane V/C Ratio	-	-	0.17	0.021	0.015	-
HCM Ctrl Dly (s/v)	-	-	28.8	10.7	8.2	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	0	-

Intersection			
Intersection Delay, s/veh	3.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	68	53	24
Demand Flow Rate, veh/h	68	53	24
Vehicles Circulating, veh/h	12	16	47
Vehicles Exiting, veh/h	57	55	33
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.0	3.0	2.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	68	53	24
Cap Entry Lane, veh/h	1363	1358	1315
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	68	53	24
Cap Entry, veh/h	1363	1358	1315
V/C Ratio	0.050	0.039	0.018
Control Delay, s/veh	3.0	3.0	2.9
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	1	
Traffic Vol, veh/h	0	0	0	5	7	0
Future Vol, veh/h	0	0	0	5	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	8	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	13	8	8	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1006	1075	1613	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1006	1075	1613	-	-	-
Mov Cap-2 Maneuver	1006	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1613	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection			
Intersection Delay, s/veh	2.9		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	54	49	9
Demand Flow Rate, veh/h	55	50	9
Vehicles Circulating, veh/h	1	3	46
Vehicles Exiting, veh/h	54	53	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.0	2.9	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	55	50	9
Cap Entry Lane, veh/h	1378	1376	1317
Entry HV Adj Factor	0.981	0.982	1.000
Flow Entry, veh/h	54	49	9
Cap Entry, veh/h	1353	1351	1317
V/C Ratio	0.040	0.036	0.007
Control Delay, s/veh	3.0	2.9	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	16	4	14	1	4	8	10	877	4	4	1217	39
Future Vol, veh/h	16	4	14	1	4	8	10	877	4	4	1217	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	17	4	15	1	4	8	11	923	4	4	1281	41

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1795	2258	661	1597	2277	464	1322	0	0	927	0	0
Stage 1	1310	1310	-	946	946	-	-	-	-	-	-	-
Stage 2	485	948	-	651	1331	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	49	42	410	73	41	551	529	-	-	746	-	-
Stage 1	164	231	-	285	343	-	-	-	-	-	-	-
Stage 2	525	342	-	428	226	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	42	41	410	61	40	551	529	-	-	746	-	-
Mov Cap-2 Maneuver	42	41	-	61	40	-	-	-	-	-	-	-
Stage 1	163	230	-	279	336	-	-	-	-	-	-	-
Stage 2	500	335	-	403	224	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	110.45		47.38		0.13		0.03	
HCM LOS	F		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	529	-	-	66	98	746	-	-
HCM Lane V/C Ratio	0.02	-	-	0.54	0.139	0.006	-	-
HCM Ctrl Dly (s/v)	11.9	-	-	110.4	47.4	9.9	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.5	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

Project Steel
2039 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	283	261	147	78	236	120	96	729	194	225	983	174
Future Volume (vph)	283	261	147	78	236	120	96	729	194	225	983	174
Lane Group Flow (vph)	289	266	150	80	241	122	98	744	198	230	1003	178
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.89	0.46	0.21	0.27	0.77	0.18	0.41	0.66	0.26	0.52	0.64	0.20
Control Delay (s/veh)	58.9	38.2	8.1	27.5	68.8	5.4	22.1	41.1	3.7	21.2	32.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.9	38.2	8.1	27.5	68.8	5.4	22.1	41.1	3.7	21.2	32.0	1.8
Queue Length 50th (ft)	182	178	21	41	195	0	40	270	0	101	352	0
Queue Length 95th (ft)	#335	255	62	73	284	42	72	334	44	156	433	25
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	327	616	717	298	357	683	248	1266	776	440	1564	875
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.43	0.21	0.27	0.68	0.18	0.40	0.59	0.26	0.52	0.64	0.20

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2039 Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	283	261	147	78	236	120	96	729	194	225	983	174
Future Volume (veh/h)	283	261	147	78	236	120	96	729	194	225	983	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	289	266	150	80	241	122	98	744	198	230	1003	178
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	311	559	527	288	284	426	268	1440	715	424	1731	793
Arrive On Green	0.20	0.29	0.29	0.05	0.14	0.14	0.05	0.39	0.39	0.13	0.47	0.47
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	289	266	150	80	241	122	98	744	198	230	1003	178
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	14.8	9.2	4.8	15.5	8.0	4.3	20.1	10.1	8.9	25.9	7.6
Cycle Q Clear(g_c), s	25.5	14.8	9.2	4.8	15.5	8.0	4.3	20.1	10.1	8.9	25.9	7.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	559	527	288	284	426	268	1440	715	424	1731	793
V/C Ratio(X)	0.93	0.48	0.28	0.28	0.85	0.29	0.37	0.52	0.28	0.54	0.58	0.22
Avail Cap(c_a), veh/h	311	643	595	288	371	496	300	1440	715	424	1731	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	38.0	31.5	44.2	54.2	37.4	22.7	30.0	22.9	19.1	24.8	8.3
Incr Delay (d2), s/veh	32.9	0.9	0.4	0.5	15.0	0.5	0.8	1.3	1.0	4.9	1.4	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	7.0	3.4	2.1	8.6	3.0	1.7	8.6	3.8	3.9	10.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	70.1	38.9	32.0	44.7	69.2	38.0	23.5	31.3	23.9	24.0	26.2	9.0
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		705			443			1040			1411	
Approach Delay, s/veh		50.2			56.2			29.1			23.7	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	56.7	10.0	43.3	9.6	67.1	29.0	24.3				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+I1), s	10.9	22.1	6.8	16.8	6.3	27.9	27.5	17.5				
Green Ext Time (p_c), s	0.3	14.5	0.0	2.9	0.0	18.9	0.0	1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			34.5									
HCM 7th LOS			C									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	558	1	7	541	2	4
Future Vol, veh/h	558	1	7	541	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	587	1	7	569	2	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	588	0	1172
Stage 1	-	-	-	-	588
Stage 2	-	-	-	-	584
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	643	-	215
Stage 1	-	-	-	-	559
Stage 2	-	-	-	-	561
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	643	-	212
Mov Cap-2 Maneuver	-	-	-	-	351
Stage 1	-	-	-	-	559
Stage 2	-	-	-	-	555

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.14	13.22
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	444	-	-	643	-
HCM Lane V/C Ratio	0.014	-	-	0.011	-
HCM Ctrl Dly (s/v)	13.2	-	-	10.7	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX M

2044 No Build Capacity Analysis

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

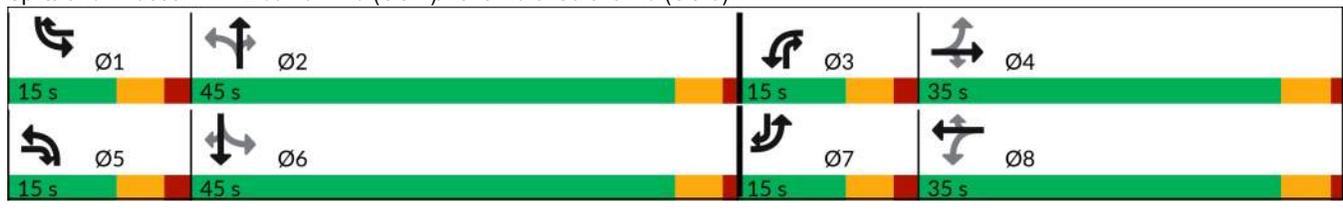
Project Steel
 2044 No Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	262	47	164	182	69	20	514	220	69	181	134
Future Volume (vph)	232	262	47	164	182	69	20	514	220	69	181	134
Lane Group Flow (vph)	261	294	53	184	204	78	22	578	247	78	203	151
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.66	0.68	0.10	0.88	0.47	0.12	0.05	0.82	0.36	0.30	0.28	0.16
Control Delay (s/veh)	33.8	43.3	2.5	67.7	36.7	5.4	14.1	39.6	5.5	17.0	22.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.8	43.3	2.5	67.7	36.7	5.4	14.1	39.6	5.5	17.0	22.6	2.8
Queue Length 50th (ft)	124	177	0	89	116	0	7	328	15	24	86	0
Queue Length 95th (ft)	192	267	13	#215	184	28	21	#568	67	54	156	31
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	394	593	597	208	599	670	477	779	678	285	800	945
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.50	0.09	0.88	0.34	0.12	0.05	0.74	0.36	0.27	0.25	0.16

Intersection Summary

Cycle Length: 110
 Actuated Cycle Length: 95.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2044 No Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	262	47	164	182	69	20	514	220	69	181	134
Future Volume (veh/h)	232	262	47	164	182	69	20	514	220	69	181	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	261	294	53	184	204	78	22	578	247	78	203	151
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	395	378	305	223	381	394	426	752	537	247	784	846
Arrive On Green	0.10	0.20	0.20	0.10	0.20	0.20	0.01	0.40	0.40	0.04	0.43	0.43
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	261	294	53	184	204	78	22	578	247	78	203	151
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	9.0	13.0	2.7	9.0	8.5	3.3	0.7	23.1	13.0	2.2	6.2	4.3
Cycle Q Clear(g_c), s	9.0	13.0	2.7	9.0	8.5	3.3	0.7	23.1	13.0	2.2	6.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	378	305	223	381	394	426	752	537	247	784	846
V/C Ratio(X)	0.66	0.78	0.17	0.82	0.54	0.20	0.05	0.77	0.46	0.32	0.26	0.18
Avail Cap(c_a), veh/h	395	640	503	223	645	622	566	867	603	360	846	900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	32.8	27.7	30.0	31.0	26.1	15.3	22.7	14.0	17.7	16.1	10.6
Incr Delay (d2), s/veh	4.0	7.2	0.6	21.5	2.5	0.5	0.0	7.4	2.8	0.7	0.8	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	6.1	0.9	2.5	3.9	1.3	0.2	10.7	3.1	0.9	2.5	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	29.6	40.0	28.2	51.5	33.5	26.6	15.3	30.1	16.8	18.4	16.9	11.1
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		608			466			847			432	
Approach Delay, s/veh		34.5			39.4			25.9			15.2	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	39.7	15.0	22.7	7.2	42.1	15.0	22.7				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.2	25.1	11.0	15.0	2.7	8.2	11.0	10.5				
Green Ext Time (p_c), s	0.1	9.6	0.0	2.7	0.0	5.8	0.0	2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh											28.8	
HCM 7th LOS											C	

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↑	↘	↘	↑
Traffic Vol, veh/h	15	11	745	22	12	370
Future Vol, veh/h	15	11	745	22	12	370
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	18	13	876	26	14	435

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1340	876	0	0	902	0
Stage 1	876	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	156	334	-	-	762	-
Stage 1	382	-	-	-	-	-
Stage 2	601	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	153	334	-	-	762	-
Mov Cap-2 Maneuver	153	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	590	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	25.12	0	0.31
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	153	334	762	-
HCM Lane V/C Ratio	-	-	0.116	0.039	0.019	-
HCM Ctrl Dly (s/v)	-	-	31.6	16.2	9.8	-
HCM Lane LOS	-	-	D	C	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0.1	0.1	-

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	34	8	3	28	0	7	3	0	0	1	0
Future Vol, veh/h	2	34	8	3	28	0	7	3	0	0	1	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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	17	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	47	11	4	39	0	10	4	0	0	1	0

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	39	0	0	58	0	0	106	106	53	102	111	39
Stage 1	-	-	-	-	-	-	58	58	-	47	47	-
Stage 2	-	-	-	-	-	-	48	47	-	55	64	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1584	-	-	1559	-	-	878	788	1020	883	783	1039
Stage 1	-	-	-	-	-	-	958	850	-	971	860	-
Stage 2	-	-	-	-	-	-	971	860	-	962	846	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1584	-	-	1559	-	-	872	785	1020	875	779	1039
Mov Cap-2 Maneuver	-	-	-	-	-	-	872	785	-	875	779	-
Stage 1	-	-	-	-	-	-	957	849	-	969	857	-
Stage 2	-	-	-	-	-	-	966	857	-	956	844	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	0.33		0.71		9.34		9.63	
HCM LOS					A		A	

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	844	79	-	-	174	-	-	779
HCM Lane V/C Ratio	0.016	0.002	-	-	0.003	-	-	0.002
HCM Ctrl Dly (s/v)	9.3	7.3	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	29	1	14	6	1	14	11	1151	2	8	806	26
Future Vol, veh/h	29	1	14	6	1	14	11	1151	2	8	806	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	32	1	16	7	1	16	12	1279	2	9	896	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1592	2233	462	1771	2247	641	924	0	0	1281	0	0
Stage 1	928	928	-	1304	1304	-	-	-	-	-	-	-
Stage 2	664	1306	-	466	942	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	73	43	477	41	12	399	527	-	-	549	-	-
Stage 1	292	349	-	139	103	-	-	-	-	-	-	-
Stage 2	421	232	-	490	181	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	61	42	477	37	11	399	527	-	-	549	-	-
Mov Cap-2 Maneuver	61	42	-	37	11	-	-	-	-	-	-	-
Stage 1	288	344	-	136	101	-	-	-	-	-	-	-
Stage 2	391	227	-	464	178	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	96.47		75.14		0.11		0.11	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	527	-	-	84	74	549	-	-
HCM Lane V/C Ratio	0.023	-	-	0.585	0.317	0.016	-	-
HCM Ctrl Dly (s/v)	12	-	-	96.5	75.1	11.7	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.6	1.2	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

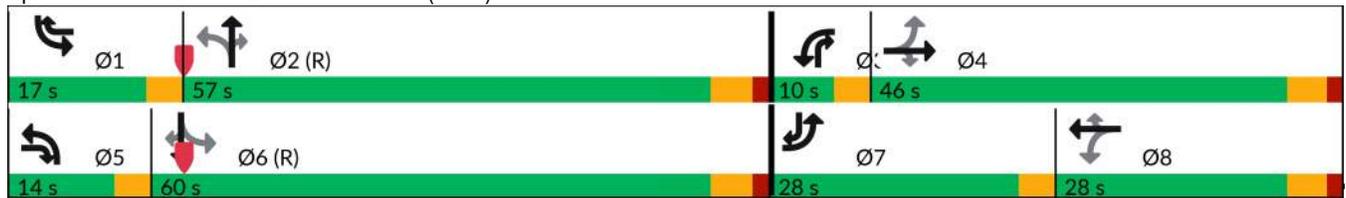
Project Steel
2044 No Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	248	109	90	198	232	150	992	69	137	663	260
Future Volume (vph)	233	248	109	90	198	232	150	992	69	137	663	260
Lane Group Flow (vph)	248	264	116	96	211	247	160	1055	73	146	705	277
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	14.0	10.0	28.0	17.0	14.0	57.0	10.0	17.0	60.0	28.0
Total Split (%)	21.5%	35.4%	10.8%	7.7%	21.5%	13.1%	10.8%	43.8%	7.7%	13.1%	46.2%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.88	0.51	0.16	0.35	0.77	0.43	0.43	0.79	0.09	0.54	0.48	0.36
Control Delay (s/veh)	63.1	42.0	4.3	32.3	71.2	21.4	18.4	39.9	3.5	27.3	27.5	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	63.1	42.0	4.3	32.3	71.2	21.4	18.4	39.9	3.5	27.3	27.5	2.4
Queue Length 50th (ft)	159	182	0	51	171	89	64	402	0	59	227	0
Queue Length 95th (ft)	#278	265	35	89	257	169	105	488	23	#134	288	31
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	286	568	729	271	312	570	385	1368	804	272	1458	774
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.46	0.16	0.35	0.68	0.43	0.42	0.77	0.09	0.54	0.48	0.36

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2044 No Build - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	248	109	90	198	232	150	992	69	137	663	260
Future Volume (veh/h)	233	248	109	90	198	232	150	992	69	137	663	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	248	264	116	96	211	247	160	1055	73	146	705	277
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	281	574	597	304	308	403	333	1424	723	274	1452	539
Arrive On Green	0.19	0.30	0.30	0.05	0.16	0.16	0.07	0.41	0.41	0.10	0.44	0.44
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	248	264	116	96	211	247	160	1055	73	146	705	277
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	14.6	6.3	5.9	13.7	18.6	7.0	33.2	3.4	6.7	19.8	23.0
Cycle Q Clear(g_c), s	24.5	14.6	6.3	5.9	13.7	18.6	7.0	33.2	3.4	6.7	19.8	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	574	597	304	308	403	333	1424	723	274	1452	539
V/C Ratio(X)	0.88	0.46	0.19	0.32	0.69	0.61	0.48	0.74	0.10	0.53	0.49	0.51
Avail Cap(c_a), veh/h	281	594	614	304	327	418	352	1424	723	274	1452	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	36.8	27.7	42.6	51.3	41.8	21.0	32.8	20.1	23.5	25.9	13.2
Incr Delay (d2), s/veh	26.0	0.8	0.2	0.6	6.2	3.0	1.1	3.5	0.3	7.2	1.2	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	6.8	2.4	2.5	6.8	7.0	2.7	13.9	1.3	2.7	7.5	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	62.8	37.7	27.9	43.2	57.5	44.8	22.0	36.3	20.4	30.7	27.0	16.7
LnGrp LOS	E	D	C	D	E	D	C	D	C	C	C	B
Approach Vol, veh/h	628			554			1288			1128		
Approach Delay, s/veh	45.8			49.4			33.6			25.0		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	58.3	10.0	44.7	12.6	62.8	28.0	26.7				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.5	54.5	24.5	22.5				
Max Q Clear Time (g_c+I1), s	8.7	35.2	7.9	16.6	9.0	25.0	26.5	20.6				
Green Ext Time (p_c), s	0.1	12.8	0.0	2.6	0.1	17.5	0.0	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	35.5											
HCM 7th LOS	D											

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	572	3	6	515	3	4
Future Vol, veh/h	572	3	6	515	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	643	3	7	579	3	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	646	0	1237
Stage 1	-	-	-	-	644
Stage 2	-	-	-	-	592
Critical Hdwy	-	-	4.27	-	7.07
Critical Hdwy Stg 1	-	-	-	-	6.07
Critical Hdwy Stg 2	-	-	-	-	6.07
Follow-up Hdwy	-	-	2.353	-	4.103
Pot Cap-1 Maneuver	-	-	872	-	144
Stage 1	-	-	-	-	418
Stage 2	-	-	-	-	445
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	872	-	143
Mov Cap-2 Maneuver	-	-	-	-	261
Stage 1	-	-	-	-	418
Stage 2	-	-	-	-	441

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	16.36
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	325	-	-	872	-
HCM Lane V/C Ratio	0.024	-	-	0.008	-
HCM Ctrl Dly (s/v)	16.4	-	-	9.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings

1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

2044 No Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	163	47	266	309	74	50	205	166	44	544	259
Future Volume (vph)	109	163	47	266	309	74	50	205	166	44	544	259
Lane Group Flow (vph)	117	175	51	286	332	80	54	220	178	47	585	278
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.38	0.38	0.08	0.77	0.72	0.12	0.24	0.32	0.25	0.09	0.83	0.29
Control Delay (s/veh)	24.9	34.5	2.1	42.2	44.0	5.4	17.1	24.4	3.2	14.8	40.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	34.5	2.1	42.2	44.0	5.4	17.1	24.4	3.2	14.8	40.5	2.7
Queue Length 50th (ft)	51	97	0	143	204	0	18	99	0	15	341	0
Queue Length 95th (ft)	92	161	11	#257	309	30	41	175	36	37	#574	43
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	322	616	673	371	604	700	253	795	725	543	822	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.28	0.08	0.77	0.55	0.11	0.21	0.28	0.25	0.09	0.71	0.28

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 95.7

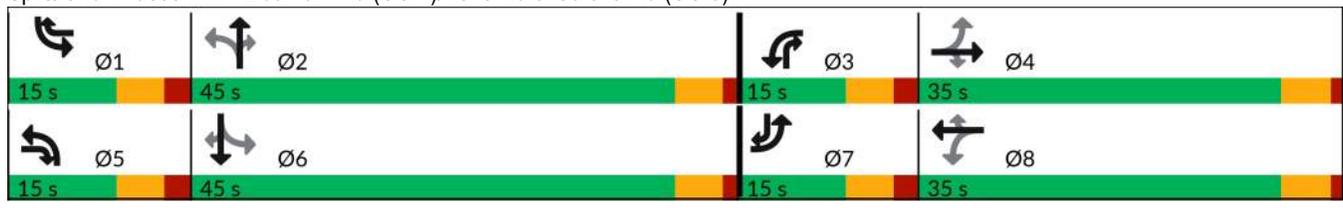
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2044 No Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	163	47	266	309	74	50	205	166	44	544	259
Future Volume (veh/h)	109	163	47	266	309	74	50	205	166	44	544	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	117	175	51	286	332	80	54	220	178	47	585	278
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	278	361	345	370	426	412	231	775	643	470	774	772
Arrive On Green	0.07	0.19	0.19	0.11	0.23	0.23	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	117	175	51	286	332	80	54	220	178	47	585	278
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	4.1	7.0	2.2	9.0	14.1	3.3	1.5	6.6	6.8	1.3	22.3	9.2
Cycle Q Clear(g_c), s	4.1	7.0	2.2	9.0	14.1	3.3	1.5	6.6	6.8	1.3	22.3	9.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	278	361	345	370	426	412	231	775	643	470	774	772
V/C Ratio(X)	0.42	0.49	0.15	0.77	0.78	0.19	0.23	0.28	0.28	0.10	0.76	0.36
Avail Cap(c_a), veh/h	350	672	601	370	661	616	367	888	718	616	895	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	30.3	26.4	27.9	30.4	24.6	16.8	16.4	11.3	14.0	21.2	13.8
Incr Delay (d2), s/veh	1.0	2.2	0.4	9.8	6.5	0.5	0.5	0.9	1.1	0.1	6.8	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.1	0.8	2.3	6.6	1.2	0.6	2.7	1.8	0.5	10.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	32.5	26.8	37.7	37.0	25.0	17.3	17.3	12.3	14.1	28.0	15.1
LnGrp LOS	C	C	C	D	D	C	B	B	B	B	C	B
Approach Vol, veh/h		343			698			452			910	
Approach Delay, s/veh		29.6			35.9			15.3			23.3	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	39.9	15.0	21.1	8.5	39.6	11.8	24.3				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.3	8.8	11.0	9.0	3.5	24.3	6.1	16.1				
Green Ext Time (p_c), s	0.0	6.6	0.0	1.8	0.0	10.2	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh				26.4								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↑	↘	↘	↑
Traffic Vol, veh/h	32	14	410	24	17	825
Future Vol, veh/h	32	14	410	24	17	825
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	33	14	423	25	18	851

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1308	423	0	0	447	0
Stage 1	423	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	178	635	-	-	1124	-
Stage 1	665	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	635	-	-	1124	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	24.38	0	0.17
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	175	635	1124	-
HCM Lane V/C Ratio	-	-	0.189	0.023	0.016	-
HCM Ctrl Dly (s/v)	-	-	30.3	10.8	8.3	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	0	-

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	38	17	4	32	3	13	2	4	1	5	1
Future Vol, veh/h	1	38	17	4	32	3	13	2	4	1	5	1
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									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	100	0	0
Mvmt Flow	1	50	22	5	42	4	17	3	5	1	7	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	46	0	0	72	0	0	120	120	61	109	130	44
Stage 1	-	-	-	-	-	-	64	64	-	55	55	-
Stage 2	-	-	-	-	-	-	56	57	-	54	75	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1575	-	-	1540	-	-	860	774	1010	684	765	1032
Stage 1	-	-	-	-	-	-	952	846	-	759	853	-
Stage 2	-	-	-	-	-	-	961	852	-	760	836	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1575	-	-	1540	-	-	848	770	1010	675	761	1032
Mov Cap-2 Maneuver	-	-	-	-	-	-	848	770	-	675	761	-
Stage 1	-	-	-	-	-	-	951	845	-	757	850	-
Stage 2	-	-	-	-	-	-	949	849	-	753	836	-

Approach	EB			WB			NB			SB		
HCM Ctrl Dly, s/v	0.13			0.75			9.27			9.69		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	868	30	-	-	182	-	-	776
HCM Lane V/C Ratio	0.029	0.001	-	-	0.003	-	-	0.012
HCM Ctrl Dly (s/v)	9.3	7.3	0	-	7.3	0	-	9.7
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	17	4	15	1	4	8	11	957	5	5	1321	43
Future Vol, veh/h	17	4	15	1	4	8	11	957	5	5	1321	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	18	4	16	1	4	8	12	1007	5	5	1391	45

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1953	2459	718	1741	2479	506	1436	0	0	1013	0	0
Stage 1	1424	1424	-	1033	1033	-	-	-	-	-	-	-
Stage 2	529	1036	-	708	1446	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	37	31	376	57	30	517	479	-	-	693	-	-
Stage 1	139	204	-	252	312	-	-	-	-	-	-	-
Stage 2	493	311	-	396	199	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	30	30	376	45	29	517	479	-	-	693	-	-
Mov Cap-2 Maneuver	30	30	-	45	29	-	-	-	-	-	-	-
Stage 1	138	202	-	246	305	-	-	-	-	-	-	-
Stage 2	467	304	-	369	197	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	194.73		63.97		0.14		0.04	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	479	-	-	49	74	693	-	-
HCM Lane V/C Ratio	0.024	-	-	0.772	0.184	0.008	-	-
HCM Ctrl Dly (s/v)	12.7	-	-	194.7	64	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.1	0.6	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

Project Steel
2044 No Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	285	268	148	83	245	125	101	798	213	240	1075	182
Future Volume (vph)	285	268	148	83	245	125	101	798	213	240	1075	182
Lane Group Flow (vph)	291	273	151	85	250	128	103	814	217	245	1097	186
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.92	0.48	0.22	0.28	0.79	0.19	0.48	0.68	0.27	0.60	0.70	0.21
Control Delay (s/veh)	65.3	38.7	9.8	28.0	70.1	7.5	24.4	40.8	4.0	25.3	33.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	65.3	38.7	9.8	28.0	70.1	7.5	24.4	40.8	4.0	25.3	33.5	1.8
Queue Length 50th (ft)	183	183	28	43	202	9	42	301	3	109	402	0
Queue Length 95th (ft)	#347	262	70	77	295	52	75	372	49	#193	490	26
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	317	616	707	299	357	661	221	1266	805	406	1571	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.44	0.21	0.28	0.70	0.19	0.47	0.64	0.27	0.60	0.70	0.21

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2044 No Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	268	148	83	245	125	101	798	213	240	1075	182
Future Volume (veh/h)	285	268	148	83	245	125	101	798	213	240	1075	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	291	273	151	85	250	128	103	814	217	245	1097	186
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	311	566	536	291	293	433	244	1424	708	399	1708	785
Arrive On Green	0.20	0.29	0.29	0.05	0.15	0.15	0.05	0.39	0.39	0.13	0.47	0.47
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	291	273	151	85	250	128	103	814	217	245	1097	186
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	15.2	9.1	5.1	16.1	8.3	4.5	22.8	11.3	9.7	29.7	8.2
Cycle Q Clear(g_c), s	25.5	15.2	9.1	5.1	16.1	8.3	4.5	22.8	11.3	9.7	29.7	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	566	536	291	293	433	244	1424	708	399	1708	785
V/C Ratio(X)	0.94	0.48	0.28	0.29	0.85	0.30	0.42	0.57	0.31	0.61	0.64	0.24
Avail Cap(c_a), veh/h	311	643	599	291	371	496	273	1424	708	399	1708	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	37.7	31.0	43.8	54.0	37.1	23.7	31.1	23.6	20.8	26.3	8.7
Incr Delay (d2), s/veh	34.5	0.9	0.4	0.5	15.9	0.5	1.2	1.7	1.1	6.9	1.9	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	7.1	3.3	2.3	9.0	3.1	1.9	9.8	4.3	4.4	12.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.5	38.6	31.4	44.4	69.9	37.7	24.8	32.8	24.7	27.7	28.2	9.4
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		715			463			1134			1528	
Approach Delay, s/veh		50.4			56.3			30.5			25.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	56.2	10.0	43.8	9.9	66.3	29.0	24.8				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+11), s	11.7	24.8	7.1	17.2	6.5	31.7	27.5	18.1				
Green Ext Time (p_c), s	0.3	14.3	0.0	2.9	0.0	17.5	0.0	1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.5									
HCM 7th LOS			D									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	1	7	555	2	4
Future Vol, veh/h	569	1	7	555	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	599	1	7	584	2	4

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	0	0	600	1198
Stage 1	-	-	-	599
Stage 2	-	-	-	599
Critical Hdwy	-	-	5.1	6.4
Critical Hdwy Stg 1	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	3.5
Pot Cap-1 Maneuver	-	-	636	207
Stage 1	-	-	-	552
Stage 2	-	-	-	553
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	636	204
Mov Cap-2 Maneuver	-	-	-	344
Stage 1	-	-	-	552
Stage 2	-	-	-	546

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.13	13.36
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	636	-
HCM Lane V/C Ratio	0.014	-	-	0.012	-
HCM Ctrl Dly (s/v)	13.4	-	-	10.7	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX N

2044 Build Capacity Analysis

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

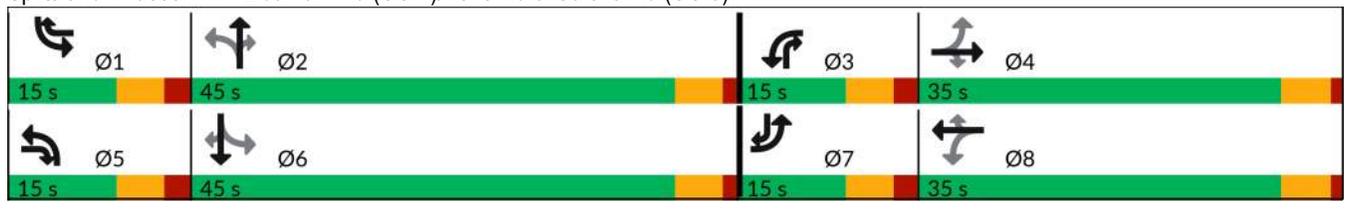
Project Steel
 2044 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	232	262	47	164	182	69	28	520	247	69	181	134
Future Volume (vph)	232	262	47	164	182	69	28	520	247	69	181	134
Lane Group Flow (vph)	261	294	53	184	204	78	31	584	278	78	203	151
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.67	0.68	0.09	0.88	0.47	0.12	0.07	0.83	0.40	0.31	0.28	0.16
Control Delay (s/veh)	34.1	43.4	2.4	68.3	36.8	5.4	14.2	39.9	5.9	17.1	22.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.1	43.4	2.4	68.3	36.8	5.4	14.2	39.9	5.9	17.1	22.8	2.8
Queue Length 50th (ft)	124	177	0	89	116	0	9	332	18	24	86	0
Queue Length 95th (ft)	192	267	13	#215	184	28	27	#577	76	54	158	32
Internal Link Dist (ft)		4224			532			1309			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	392	591	595	208	597	668	476	776	689	282	792	942
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.50	0.09	0.88	0.34	0.12	0.07	0.75	0.40	0.28	0.26	0.16

Intersection Summary

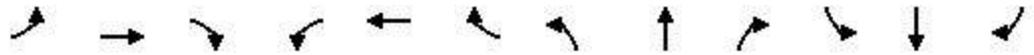
Cycle Length: 110
 Actuated Cycle Length: 96.2
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2044 Build - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	262	47	164	182	69	28	520	247	69	181	134
Future Volume (veh/h)	232	262	47	164	182	69	28	520	247	69	181	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1945	1856	1652	1097	1870	1900	1648	1885	1263	1900	1841	1885
Adj Flow Rate, veh/h	261	294	53	184	204	78	31	584	278	78	203	151
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	3	21	57	2	0	17	1	43	0	4	1
Cap, veh/h	393	377	310	222	380	394	431	757	540	244	781	842
Arrive On Green	0.10	0.20	0.20	0.10	0.20	0.20	0.02	0.40	0.40	0.04	0.42	0.42
Sat Flow, veh/h	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Grp Volume(v), veh/h	261	294	53	184	204	78	31	584	278	78	203	151
Grp Sat Flow(s),veh/h/ln	1853	1856	1400	1045	1870	1610	1570	1885	1070	1810	1841	1598
Q Serve(g_s), s	9.0	13.1	2.7	9.0	8.5	3.4	1.0	23.5	15.2	2.2	6.2	4.3
Cycle Q Clear(g_c), s	9.0	13.1	2.7	9.0	8.5	3.4	1.0	23.5	15.2	2.2	6.2	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	393	377	310	222	380	394	431	757	540	244	781	842
V/C Ratio(X)	0.66	0.78	0.17	0.83	0.54	0.20	0.07	0.77	0.52	0.32	0.26	0.18
Avail Cap(c_a), veh/h	393	636	505	222	641	618	563	861	599	355	841	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	33.0	27.6	30.4	31.2	26.3	15.1	22.7	14.5	17.8	16.3	10.8
Incr Delay (d2), s/veh	4.2	7.3	0.6	22.4	2.5	0.5	0.1	7.5	3.5	0.8	0.8	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	6.1	0.9	2.6	3.9	1.3	0.3	10.9	3.7	0.9	2.6	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	30.0	40.3	28.1	52.8	33.7	26.8	15.2	30.2	18.0	18.5	17.1	11.3
LnGrp LOS	C	D	C	D	C	C	B	C	B	B	B	B
Approach Vol, veh/h		608			466			893			432	
Approach Delay, s/veh		34.9			40.1			25.9			15.3	
Approach LOS		C			D			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.6	40.2	15.0	22.8	7.6	42.2	15.0	22.8				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	4.2	25.5	11.0	15.1	3.0	8.2	11.0	10.5				
Green Ext Time (p_c), s	0.1	9.7	0.0	2.7	0.0	5.8	0.0	2.4				

Intersection Summary												
HCM 7th Control Delay, s/veh				29.0								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	17	31	764	0	0	382
Future Vol, veh/h	17	31	764	0	0	382
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	2	2	7	2	2	19
Mvmt Flow	19	35	858	0	0	429

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1288	858	0	0	858
Stage 1	858	-	-	-	-
Stage 2	429	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	181	356	-	-	782
Stage 1	415	-	-	-	-
Stage 2	657	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	181	356	-	-	782
Mov Cap-2 Maneuver	181	-	-	-	-
Stage 1	415	-	-	-	-
Stage 2	657	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	22	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	265	782
HCM Lane V/C Ratio	-	-	0.203	-
HCM Ctrl Dly (s/v)	-	-	22	0
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0

Intersection						
Int Delay, s/veh	1.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘	↘	↑	↗	↘	↑
Traffic Vol, veh/h	39	21	745	22	17	382
Future Vol, veh/h	39	21	745	22	17	382
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	18	12	7	0	0	19
Mvmt Flow	46	25	876	26	20	449

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1366	876	0	0	902	0
Stage 1	876	-	-	-	-	-
Stage 2	489	-	-	-	-	-
Critical Hdwy	6.58	6.32	-	-	4.1	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.408	-	-	2.2	-
Pot Cap-1 Maneuver	150	334	-	-	762	-
Stage 1	382	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	146	334	-	-	762	-
Mov Cap-2 Maneuver	146	-	-	-	-	-
Stage 1	382	-	-	-	-	-
Stage 2	569	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	32.22	0	0.42
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	146	334	762	-
HCM Lane V/C Ratio	-	-	0.314	0.074	0.026	-
HCM Ctrl Dly (s/v)	-	-	40.6	16.6	9.9	-
HCM Lane LOS	-	-	E	C	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0.2	0.1	-

Intersection						
Int Delay, s/veh	3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		Y	
Traffic Vol, veh/h	0	49	52	0	31	17
Future Vol, veh/h	0	49	52	0	31	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	68	72	0	43	24

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	72	0	-	0	140 72
Stage 1	-	-	-	-	72 -
Stage 2	-	-	-	-	68 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1528	-	-	-	853 990
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	955 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1528	-	-	-	853 990
Mov Cap-2 Maneuver	-	-	-	-	853 -
Stage 1	-	-	-	-	951 -
Stage 2	-	-	-	-	955 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	9.34
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1528	-	-	-	897
HCM Lane V/C Ratio	-	-	-	-	0.074
HCM Ctrl Dly (s/v)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection			
Intersection Delay, s/veh	3.2		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	111	68	14
Demand Flow Rate, veh/h	113	68	14
Vehicles Circulating, veh/h	6	10	100
Vehicles Exiting, veh/h	72	104	19
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.3	3.0	3.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	113	68	14
Cap Entry Lane, veh/h	1371	1366	1246
Entry HV Adj Factor	0.982	1.000	1.000
Flow Entry, veh/h	111	68	14
Cap Entry, veh/h	1347	1366	1246
V/C Ratio	0.082	0.050	0.011
Control Delay, s/veh	3.3	3.0	3.0
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	7.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	0	48	0	5	1	0
Future Vol, veh/h	0	48	0	5	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	52	0	5	1	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	7	1	1	0	-	0
Stage 1	1	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1015	1083	1622	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1015	1083	1622	-	-	-
Mov Cap-2 Maneuver	1015	-	-	-	-	-
Stage 1	1022	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	8.49	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1622	-	1083	-	-
HCM Lane V/C Ratio	-	-	0.048	-	-
HCM Ctrl Dly (s/v)	0	-	8.5	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection			
Intersection Delay, s/veh	3.3		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	104	43	68
Demand Flow Rate, veh/h	106	44	70
Vehicles Circulating, veh/h	44	7	44
Vehicles Exiting, veh/h	70	143	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.4	2.9	3.2
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	106	44	70
Cap Entry Lane, veh/h	1319	1370	1319
Entry HV Adj Factor	0.982	0.980	0.971
Flow Entry, veh/h	104	43	68
Cap Entry, veh/h	1295	1343	1282
V/C Ratio	0.080	0.032	0.053
Control Delay, s/veh	3.4	2.9	3.2
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	15.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	63	1	47	6	1	14	11	1151	2	8	816	26
Future Vol, veh/h	63	1	47	6	1	14	11	1151	2	8	816	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	30	25	100	10	43	9	0	0	13	18
Mvmt Flow	70	1	52	7	1	16	12	1279	2	9	907	29

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1603	2244	468	1776	2258	641	936	0	0	1281	0	0
Stage 1	939	939	-	1304	1304	-	-	-	-	-	-	-
Stage 2	664	1306	-	472	953	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.5	8	8.5	7.1	4.96	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	7	7.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.6	3.75	5	3.4	2.63	-	-	2.2	-	-
Pot Cap-1 Maneuver	72	43	472	41	11	399	521	-	-	549	-	-
Stage 1	288	345	-	139	103	-	-	-	-	-	-	-
Stage 2	421	232	-	486	178	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 60	41	472	34	11	399	521	-	-	549	-	-
Mov Cap-2 Maneuver	~ 60	41	-	34	11	-	-	-	-	-	-	-
Stage 1	283	340	-	136	101	-	-	-	-	-	-	-
Stage 2	390	227	-	424	175	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	276.62		81.44		0.11		0.11	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	521	-	-	94	69	549	-
HCM Lane V/C Ratio	0.023	-	-	1.306	0.337	0.016	-
HCM Ctrl Dly (s/v)	12.1	-	-	276.6	81.4	11.7	-
HCM Lane LOS	B	-	-	F	F	B	-
HCM 95th %tile Q(veh)	0.1	-	-	8.8	1.3	0	-

Notes	
~: Volume exceeds capacity	\$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

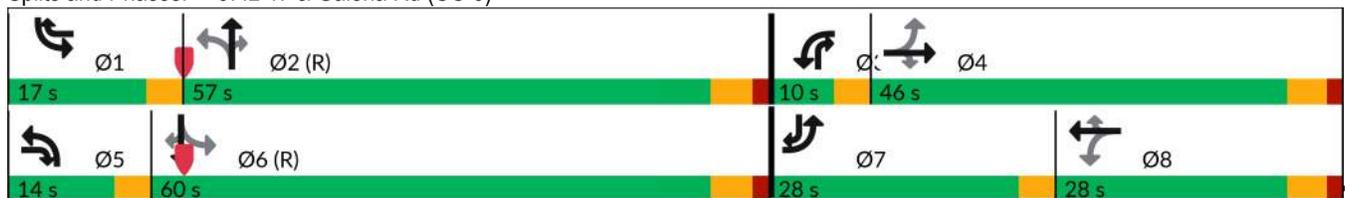
Project Steel
2044 Build - AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	253	119	90	198	232	150	1016	79	137	663	260
Future Volume (vph)	245	253	119	90	198	232	150	1016	79	137	663	260
Lane Group Flow (vph)	261	269	127	96	211	247	160	1081	84	146	705	277
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	9.5	13.5	7.5	9.5	22.5	7.5	7.5	20.5	9.5	7.5	20.5	9.5
Total Split (s)	28.0	46.0	14.0	10.0	28.0	17.0	14.0	57.0	10.0	17.0	60.0	28.0
Total Split (%)	21.5%	35.4%	10.8%	7.7%	21.5%	13.1%	10.8%	43.8%	7.7%	13.1%	46.2%	21.5%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.92	0.51	0.17	0.36	0.77	0.44	0.43	0.80	0.10	0.56	0.49	0.36
Control Delay (s/veh)	68.6	41.9	4.2	32.3	71.2	22.8	18.5	40.6	4.4	29.8	27.7	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	68.6	41.9	4.2	32.3	71.2	22.8	18.5	40.6	4.4	29.8	27.7	2.4
Queue Length 50th (ft)	170	186	0	51	171	94	64	416	2	59	227	0
Queue Length 95th (ft)	#307	269	37	89	257	176	105	505	29	#147	288	31
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	287	568	740	270	312	558	382	1368	806	260	1446	771
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.47	0.17	0.36	0.68	0.44	0.42	0.79	0.10	0.56	0.49	0.36

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2044 Build - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	253	119	90	198	232	150	1016	79	137	663	260
Future Volume (veh/h)	245	253	119	90	198	232	150	1016	79	137	663	260
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1085	1906	1900	1841	1891	1781	1796	1844	1870	1574	1735	1011
Adj Flow Rate, veh/h	261	269	127	96	211	247	160	1081	84	146	705	277
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	55	6	0	4	7	8	7	10	2	22	17	60
Cap, veh/h	281	574	597	301	308	403	333	1424	723	268	1452	539
Arrive On Green	0.19	0.30	0.30	0.05	0.16	0.16	0.07	0.41	0.41	0.10	0.44	0.44
Sat Flow, veh/h	1033	1906	1610	1753	1891	1510	1711	3504	1585	1499	3296	857
Grp Volume(v), veh/h	261	269	127	96	211	247	160	1081	84	146	705	277
Grp Sat Flow(s),veh/h/ln	1033	1906	1610	1753	1891	1510	1711	1752	1585	1499	1648	857
Q Serve(g_s), s	24.5	14.9	7.0	5.9	13.7	18.6	7.0	34.4	4.0	6.7	19.8	23.0
Cycle Q Clear(g_c), s	24.5	14.9	7.0	5.9	13.7	18.6	7.0	34.4	4.0	6.7	19.8	23.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	281	574	597	301	308	403	333	1424	723	268	1452	539
V/C Ratio(X)	0.93	0.47	0.21	0.32	0.69	0.61	0.48	0.76	0.12	0.54	0.49	0.51
Avail Cap(c_a), veh/h	281	594	614	301	327	418	352	1424	723	268	1452	539
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	36.9	27.9	42.6	51.3	41.8	21.0	33.1	20.3	24.2	25.9	13.2
Incr Delay (d2), s/veh	35.1	0.8	0.3	0.6	6.2	3.0	1.1	3.8	0.3	7.7	1.2	3.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	6.9	2.6	2.5	6.8	7.0	2.7	14.4	1.4	2.7	7.5	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	73.2	37.8	28.2	43.2	57.5	44.8	22.0	37.0	20.6	31.9	27.0	16.7
LnGrp LOS	E	D	C	D	E	D	C	D	C	C	C	B
Approach Vol, veh/h	657			554			1325			1128		
Approach Delay, s/veh	50.0			49.4			34.1			25.1		
Approach LOS	D			D			C			C		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.0	58.3	10.0	44.7	12.6	62.8	28.0	26.7				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	13.5	51.5	6.5	40.5	10.5	54.5	24.5	22.5				
Max Q Clear Time (g_c+I1), s	8.7	36.4	7.9	16.9	9.0	25.0	26.5	20.6				
Green Ext Time (p_c), s	0.1	12.2	0.0	2.7	0.1	17.5	0.0	0.5				
Intersection Summary												
HCM 7th Control Delay, s/veh	36.5											
HCM 7th LOS	D											

Intersection						
Int Delay, s/veh	0.2					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	599	3	6	515	3	4
Future Vol, veh/h	599	3	6	515	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	18	33	17	20	67	50
Mvmt Flow	673	3	7	579	3	4

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	676	0	1267 675
Stage 1	-	-	-	-	675 -
Stage 2	-	-	-	-	592 -
Critical Hdwy	-	-	4.27	-	7.07 6.7
Critical Hdwy Stg 1	-	-	-	-	6.07 -
Critical Hdwy Stg 2	-	-	-	-	6.07 -
Follow-up Hdwy	-	-	2.353	-	4.103 3.75
Pot Cap-1 Maneuver	-	-	849	-	138 381
Stage 1	-	-	-	-	403 -
Stage 2	-	-	-	-	445 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	849	-	137 381
Mov Cap-2 Maneuver	-	-	-	-	254 -
Stage 1	-	-	-	-	403 -
Stage 2	-	-	-	-	441 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.11	16.76
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	314	-	-	849	-
HCM Lane V/C Ratio	0.025	-	-	0.008	-
HCM Ctrl Dly (s/v)	16.8	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Lanes, Volumes, Timings
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2044 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	109	163	47	266	309	74	50	205	166	44	544	259
Future Volume (vph)	109	163	47	266	309	74	50	205	166	44	544	259
Lane Group Flow (vph)	117	175	51	286	332	80	54	220	178	47	585	278
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	3.0	10.0	3.0	3.0	15.0	3.0	3.0	25.0	3.0	3.0	25.0	3.0
Minimum Split (s)	9.0	15.0	9.0	9.0	20.0	9.0	9.0	30.0	9.0	9.0	30.0	9.0
Total Split (s)	15.0	35.0	15.0	15.0	35.0	15.0	15.0	45.0	15.0	15.0	45.0	15.0
Total Split (%)	13.6%	31.8%	13.6%	13.6%	31.8%	13.6%	13.6%	40.9%	13.6%	13.6%	40.9%	13.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	Min	None	None	Min	None						
v/c Ratio	0.38	0.38	0.08	0.77	0.72	0.12	0.24	0.32	0.25	0.09	0.83	0.29
Control Delay (s/veh)	24.9	34.5	2.1	42.2	44.0	5.4	17.1	24.4	3.2	14.8	40.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	34.5	2.1	42.2	44.0	5.4	17.1	24.4	3.2	14.8	40.5	2.7
Queue Length 50th (ft)	51	97	0	143	204	0	18	99	0	15	341	0
Queue Length 95th (ft)	92	161	11	#257	309	30	41	175	36	37	#574	43
Internal Link Dist (ft)		4224			532			1417			1339	
Turn Bay Length (ft)	295		265	145		155	145		155	230		230
Base Capacity (vph)	322	616	673	371	604	700	253	795	725	543	822	985
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.28	0.08	0.77	0.55	0.11	0.21	0.28	0.25	0.09	0.71	0.28

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 95.7

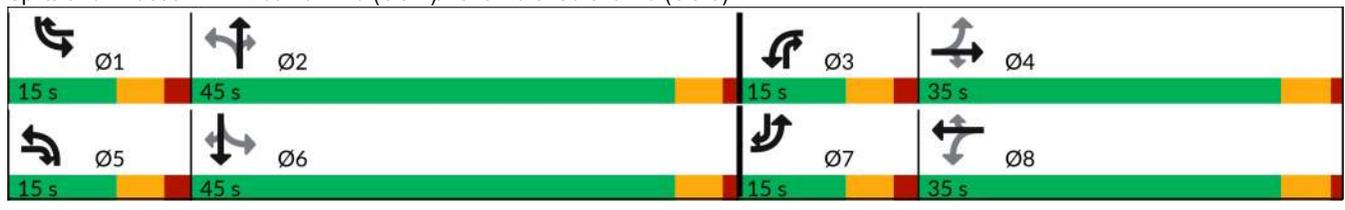
Natural Cycle: 70

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 1: Eldamain Rd (CO 7)/Ashe Rd & Galena Rd (CO 9)

Project Steel
 2044 Build - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	163	47	266	309	74	50	205	166	44	544	259
Future Volume (veh/h)	109	163	47	266	309	74	50	205	166	44	544	259
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.04	1.00	1.04	1.04	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1976	1885	1837	1683	1856	1900	1856	1870	1455	1900	1885	1900
Adj Flow Rate, veh/h	117	175	51	286	332	80	54	220	178	47	585	278
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	1	9	19	3	0	3	2	30	0	1	0
Cap, veh/h	278	361	345	370	426	412	231	775	643	470	774	772
Arrive On Green	0.07	0.19	0.19	0.11	0.23	0.23	0.03	0.41	0.41	0.03	0.41	0.41
Sat Flow, veh/h	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Grp Volume(v), veh/h	117	175	51	286	332	80	54	220	178	47	585	278
Grp Sat Flow(s),veh/h/ln	1882	1885	1557	1603	1856	1610	1767	1870	1233	1810	1885	1610
Q Serve(g_s), s	4.1	7.0	2.2	9.0	14.1	3.3	1.5	6.6	6.8	1.3	22.3	9.2
Cycle Q Clear(g_c), s	4.1	7.0	2.2	9.0	14.1	3.3	1.5	6.6	6.8	1.3	22.3	9.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	278	361	345	370	426	412	231	775	643	470	774	772
V/C Ratio(X)	0.42	0.49	0.15	0.77	0.78	0.19	0.23	0.28	0.28	0.10	0.76	0.36
Avail Cap(c_a), veh/h	350	672	601	370	661	616	367	888	718	616	895	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	30.3	26.4	27.9	30.4	24.6	16.8	16.4	11.3	14.0	21.2	13.8
Incr Delay (d2), s/veh	1.0	2.2	0.4	9.8	6.5	0.5	0.5	0.9	1.1	0.1	6.8	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	3.1	0.8	2.3	6.6	1.2	0.6	2.7	1.8	0.5	10.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.4	32.5	26.8	37.7	37.0	25.0	17.3	17.3	12.3	14.1	28.0	15.1
LnGrp LOS	C	C	C	D	D	C	B	B	B	B	C	B
Approach Vol, veh/h		343			698			452			910	
Approach Delay, s/veh		29.6			35.9			15.3			23.3	
Approach LOS		C			D			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	39.9	15.0	21.1	8.5	39.6	11.8	24.3				
Change Period (Y+Rc), s	6.0	5.0	6.0	5.0	6.0	5.0	6.0	5.0				
Max Green Setting (Gmax), s	9.0	40.0	9.0	30.0	9.0	40.0	9.0	30.0				
Max Q Clear Time (g_c+I1), s	3.3	8.8	11.0	9.0	3.5	24.3	6.1	16.1				
Green Ext Time (p_c), s	0.0	6.6	0.0	1.8	0.0	10.2	0.1	3.2				

Intersection Summary												
HCM 7th Control Delay, s/veh				26.4								
HCM 7th LOS				C								

Notes
 User approved pedestrian interval to be less than phase max green.

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	0	0	422	0	0	842
Future Vol, veh/h	0	0	422	0	0	842
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	2	11	2	2	4
Mvmt Flow	0	0	454	0	0	905

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1359	454	0	0	454	0
Stage 1	454	-	-	-	-	-
Stage 2	905	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	164	606	-	-	1107	-
Stage 1	640	-	-	-	-	-
Stage 2	395	-	-	-	-	-
Platoon blocked, %			-	-	-	-
Mov Cap-1 Maneuver	164	606	-	-	1107	-
Mov Cap-2 Maneuver	164	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	395	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1107
HCM Lane V/C Ratio	-	-	-	-
HCM Ctrl Dly (s/v)	-	-	0	0
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	14	410	24	17	825
Future Vol, veh/h	32	14	410	24	17	825
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	245	0	-	240	185	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	11	0	0	4
Mvmt Flow	33	14	423	25	18	851

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1308	423	0	0	447	0
Stage 1	423	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	178	635	-	-	1124	-
Stage 1	665	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	175	635	-	-	1124	-
Mov Cap-2 Maneuver	175	-	-	-	-	-
Stage 1	665	-	-	-	-	-
Stage 2	400	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	24.38	0	0.17
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	175	635	1124	-
HCM Lane V/C Ratio	-	-	0.189	0.023	0.016	-
HCM Ctrl Dly (s/v)	-	-	30.3	10.8	8.3	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	0.7	0.1	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4	1		Y	
Traffic Vol, veh/h	0	56	46	0	0	0
Future Vol, veh/h	0	56	46	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	76	76	76	76
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	74	61	0	0	0

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	61	0	-	0	134 61
Stage 1	-	-	-	-	61 -
Stage 2	-	-	-	-	74 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1543	-	-	-	859 1005
Stage 1	-	-	-	-	962 -
Stage 2	-	-	-	-	949 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1543	-	-	-	859 1005
Mov Cap-2 Maneuver	-	-	-	-	859 -
Stage 1	-	-	-	-	962 -
Stage 2	-	-	-	-	949 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1543	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection			
Intersection Delay, s/veh	3.0		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	73	55	25
Demand Flow Rate, veh/h	73	55	25
Vehicles Circulating, veh/h	12	17	51
Vehicles Exiting, veh/h	60	59	34
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.1	3.0	2.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	73	55	25
Cap Entry Lane, veh/h	1363	1356	1310
Entry HV Adj Factor	1.000	1.000	1.000
Flow Entry, veh/h	73	55	25
Cap Entry, veh/h	1363	1356	1310
V/C Ratio	0.054	0.041	0.019
Control Delay, s/veh	3.1	3.0	2.9
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			4	4	
Traffic Vol, veh/h	0	0	0	5	7	0
Future Vol, veh/h	0	0	0	5	7	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	8	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	13	8	8	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	5	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	1006	1075	1613	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	1006	1075	1613	-	-	-
Mov Cap-2 Maneuver	1006	-	-	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	1018	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1613	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Ctrl Dly (s/v)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection			
Intersection Delay, s/veh	3.0		
Intersection LOS	A		
Approach	EB	WB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	58	51	9
Demand Flow Rate, veh/h	59	52	9
Vehicles Circulating, veh/h	1	3	48
Vehicles Exiting, veh/h	56	57	7
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	3.0	3.0	2.8
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	LT	TR	LR
Assumed Moves	LT	TR	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
A (Intercept)	1380	1380	1380
B (Slope)	1.02e-3	1.02e-3	1.02e-3
Entry Flow, veh/h	59	52	9
Cap Entry Lane, veh/h	1378	1376	1314
Entry HV Adj Factor	0.981	0.982	1.000
Flow Entry, veh/h	58	51	9
Cap Entry, veh/h	1353	1351	1314
V/C Ratio	0.043	0.038	0.007
Control Delay, s/veh	3.0	3.0	2.8
LOS	A	A	A
95th %tile Queue, veh	0	0	0

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	17	4	15	1	4	8	11	957	5	5	1321	43
Future Vol, veh/h	17	4	15	1	4	8	11	957	5	5	1321	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	210	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	5	0	0	0	0	0	0	4	0	0	4	0
Mvmt Flow	18	4	16	1	4	8	12	1007	5	5	1391	45

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1953	2459	718	1741	2479	506	1436	0	0	1013	0	0
Stage 1	1424	1424	-	1033	1033	-	-	-	-	-	-	-
Stage 2	529	1036	-	708	1446	-	-	-	-	-	-	-
Critical Hdwy	7.6	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.6	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.55	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	37	31	376	57	30	517	479	-	-	693	-	-
Stage 1	139	204	-	252	312	-	-	-	-	-	-	-
Stage 2	493	311	-	396	199	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	30	30	376	45	29	517	479	-	-	693	-	-
Mov Cap-2 Maneuver	30	30	-	45	29	-	-	-	-	-	-	-
Stage 1	138	202	-	246	305	-	-	-	-	-	-	-
Stage 2	467	304	-	369	197	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Ctrl Dly, s/v	194.73		63.97		0.14		0.04	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	479	-	-	49	74	693	-	-
HCM Lane V/C Ratio	0.024	-	-	0.772	0.184	0.008	-	-
HCM Ctrl Dly (s/v)	12.7	-	-	194.7	64	10.2	-	-
HCM Lane LOS	B	-	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.1	0.6	0	-	-

Lanes, Volumes, Timings
9: IL 47 & Galena Rd (CO 9)

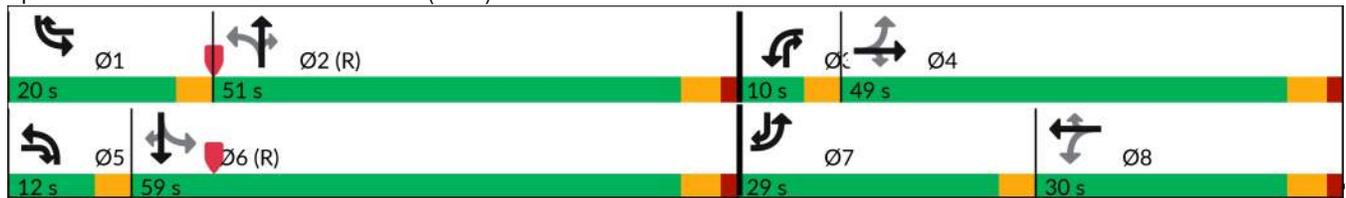
Project Steel
2044 Build - PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	285	268	148	83	245	125	101	798	213	240	1075	182
Future Volume (vph)	285	268	148	83	245	125	101	798	213	240	1075	182
Lane Group Flow (vph)	291	273	151	85	250	128	103	814	217	245	1097	186
Turn Type	pm+pt	NA	pm+ov									
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	5	3	8	1	5	2	3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	8.0	3.0	5.0	8.0	3.0	3.0	15.0	5.0	3.0	15.0	5.0
Minimum Split (s)	8.5	13.5	6.5	8.5	13.5	6.5	6.5	20.5	8.5	6.5	20.5	8.5
Total Split (s)	29.0	49.0	12.0	10.0	30.0	20.0	12.0	51.0	10.0	20.0	59.0	29.0
Total Split (%)	22.3%	37.7%	9.2%	7.7%	23.1%	15.4%	9.2%	39.2%	7.7%	15.4%	45.4%	22.3%
Yellow Time (s)	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All-Red Time (s)	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0	0.0	1.5	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5	3.5	5.5	3.5
Lead/Lag	Lead	Lag	Lead									
Lead-Lag Optimize?	Yes											
Recall Mode	None	None	None	None	None	Max	None	C-Min	None	Max	C-Min	None
v/c Ratio	0.92	0.48	0.22	0.28	0.79	0.19	0.48	0.68	0.27	0.60	0.70	0.21
Control Delay (s/veh)	65.3	38.7	9.8	28.0	70.1	7.5	24.4	40.8	4.0	25.3	33.5	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	65.3	38.7	9.8	28.0	70.1	7.5	24.4	40.8	4.0	25.3	33.5	1.8
Queue Length 50th (ft)	183	183	28	43	202	9	42	301	3	109	402	0
Queue Length 95th (ft)	#347	262	70	77	295	52	75	372	49	#193	490	26
Internal Link Dist (ft)		6063			1207			1384			758	
Turn Bay Length (ft)	215		210	215		210	300		185	290		175
Base Capacity (vph)	317	616	707	299	357	661	221	1266	805	406	1571	874
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.44	0.21	0.28	0.70	0.19	0.47	0.64	0.27	0.60	0.70	0.21

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 9: IL 47 & Galena Rd (CO 9)



HCM 7th Signalized Intersection Summary
 9: IL 47 & Galena Rd (CO 9)

Project Steel
 2044 Build - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	285	268	148	83	245	125	101	798	213	240	1075	182
Future Volume (veh/h)	285	268	148	83	245	125	101	798	213	240	1075	182
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1278	1922	1841	1900	1969	1856	1856	1922	1900	1870	1922	1396
Adj Flow Rate, veh/h	291	273	151	85	250	128	103	814	217	245	1097	186
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	42	5	4	0	2	3	3	5	0	2	5	34
Cap, veh/h	311	566	536	291	293	433	244	1424	708	399	1708	785
Arrive On Green	0.20	0.29	0.29	0.05	0.15	0.15	0.05	0.39	0.39	0.13	0.47	0.47
Sat Flow, veh/h	1217	1922	1560	1810	1969	1572	1767	3652	1610	1781	3652	1183
Grp Volume(v), veh/h	291	273	151	85	250	128	103	814	217	245	1097	186
Grp Sat Flow(s),veh/h/ln	1217	1922	1560	1810	1969	1572	1767	1826	1610	1781	1826	1183
Q Serve(g_s), s	25.5	15.2	9.1	5.1	16.1	8.3	4.5	22.8	11.3	9.7	29.7	8.2
Cycle Q Clear(g_c), s	25.5	15.2	9.1	5.1	16.1	8.3	4.5	22.8	11.3	9.7	29.7	8.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	311	566	536	291	293	433	244	1424	708	399	1708	785
V/C Ratio(X)	0.94	0.48	0.28	0.29	0.85	0.30	0.42	0.57	0.31	0.61	0.64	0.24
Avail Cap(c_a), veh/h	311	643	599	291	371	496	273	1424	708	399	1708	785
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.0	37.7	31.0	43.8	54.0	37.1	23.7	31.1	23.6	20.8	26.3	8.7
Incr Delay (d2), s/veh	34.5	0.9	0.4	0.5	15.9	0.5	1.2	1.7	1.1	6.9	1.9	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.4	7.1	3.3	2.3	9.0	3.1	1.9	9.8	4.3	4.4	12.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	71.5	38.6	31.4	44.4	69.9	37.7	24.8	32.8	24.7	27.7	28.2	9.4
LnGrp LOS	E	D	C	D	E	D	C	C	C	C	C	A
Approach Vol, veh/h		715			463			1134			1528	
Approach Delay, s/veh		50.4			56.3			30.5			25.8	
Approach LOS		D			E			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.0	56.2	10.0	43.8	9.9	66.3	29.0	24.8				
Change Period (Y+Rc), s	3.5	5.5	3.5	5.5	3.5	5.5	3.5	5.5				
Max Green Setting (Gmax), s	16.5	45.5	6.5	43.5	8.5	53.5	25.5	24.5				
Max Q Clear Time (g_c+11), s	11.7	24.8	7.1	17.2	6.5	31.7	27.5	18.1				
Green Ext Time (p_c), s	0.3	14.3	0.0	2.9	0.0	17.5	0.0	1.2				
Intersection Summary												
HCM 7th Control Delay, s/veh			35.5									
HCM 7th LOS			D									

Intersection						
Int Delay, s/veh	0.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	1	7	555	2	4
Future Vol, veh/h	569	1	7	555	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	13	0	100	7	0	0
Mvmt Flow	599	1	7	584	2	4

Major/Minor	Major1	Major2	Minor1	Minor2	Minor3
Conflicting Flow All	0	0	600	0	1198
Stage 1	-	-	-	-	599
Stage 2	-	-	-	-	599
Critical Hdwy	-	-	5.1	-	6.4
Critical Hdwy Stg 1	-	-	-	-	5.4
Critical Hdwy Stg 2	-	-	-	-	5.4
Follow-up Hdwy	-	-	3.1	-	3.5
Pot Cap-1 Maneuver	-	-	636	-	207
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	553
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	636	-	204
Mov Cap-2 Maneuver	-	-	-	-	344
Stage 1	-	-	-	-	552
Stage 2	-	-	-	-	546

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.13	13.36
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	437	-	-	636	-
HCM Lane V/C Ratio	0.014	-	-	0.012	-
HCM Ctrl Dly (s/v)	13.4	-	-	10.7	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0	-	-	0	-

APPENDIX O

Crash Data and Correspondence

Jason Puglisi

From: Jason Puglisi
Sent: Monday, October 6, 2025 10:07 AM
To: Arun Krishnamurthy
Subject: FW: Yorkville, IL Crash Data Request

See below

Jason Puglisi
Staff Engineer

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Direct: 312.547.7740
[File Sharing Link](#)
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ATHENS CALGARY DUBAI LONDON PANAMA

From: DOT.DTS.DataRequests <DOT.DTS.DataRequests@illinois.gov>
Sent: Thursday, October 2, 2025 9:15 AM
To: Jason Puglisi <jpuglisi@langan.com>; DOT.DTS.DataRequests <DOT.DTS.DataRequests@illinois.gov>
Cc: Blankenship, Mark A <Mark.Blankenship@illinois.gov>
Subject: RE: Yorkville, IL Crash Data Request

Hello Jason,

I am providing you a link to the 2020 to 2024 GIS Crash data for Kendall County.

[JPuglisi_KendallCounty_CrashData_2024_100225](#)

Thanks,
Aaron Rath
IDOT Data Collection

The Bureau of Data Collection requires the following statement be placed on any work product that incorporates or references our data.

DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the a fore mentioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau of Data Collection uses the exact latitude/longitude supplied by the investigating law

enforcement agency to locate crashes. Therefore, location data may vary in previous years since data prior to 2015 was physically located by bureau personnel.

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From: Jason Puglisi <jpuglisi@langan.com>
Sent: Tuesday, September 30, 2025 11:09 AM
To: DOT.DTS.DataRequests <DOT.DTS.DataRequests@illinois.gov>
Cc: Christopher Prisk <cprisk@Langan.com>
Subject: [External] Yorkville, IL Crash Data Request

Hello,

I am working on a project in the city of Yorkville. I was hoping to request 5-year historic crash data along the following roadways and corresponding intersections:

- Galena Road Between Eldamain Road and IL 47
- IL 47 Between Galena Road and Corneils Road
- Corneils Road Between IL 47 and Eldamain Road
- Eldamain Road Between Corneils Road and Galena Road.

Thank you in advance for your assistance.

Best,

Jason Puglisi
Staff Engineer

LANGAN

Direct: 312.547.7740
[File Sharing Link](#)

Phone: 312.547.7700 Fax: 312.547.7701
200 W Madison Street
Suite 2900
Chicago, IL 60606
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Galena Road (CO 9) & Eldamain Road

Date	Hour	Collision Type	Collision Class	Injury	Fatality	Direction	Maneuver	Weather	Lighting	Surface Condition	Other
2020	9:00 AM	Turning	PD	0	0	S	Left Turn	Clear	Daylight	Dry	
						E	Through				
2020	11:00 AM	Sideswipe Same Direction	PD	0	0	E	Change Lanes	Clear	Daylight	Wet	
2020	5:00 AM	Turning	B	1	0	SW	Left Turn	Fog/Smoke/Haze	Darkness	Dry	
2020	11:00 AM	Angle	PD	0	0	S	Through	Clear	Daylight	Dry	
						W	Starting in Traffic				
2021	6:00 AM	Turning	B	2	0	E	Left Turn	Clear	Daylight	Snow/Slush	
						W	Through				
2021	6:00 PM	Front to Rear	PD	0	0	S	Through	Clear	Darkness	Dry	
						S	Slow/Stop				
2022	12:00 PM	Front to Rear	PD	0	0	E	Through	Clear	Daylight	Dry	
2022	5:00 AM	Animal	PD	0	0	E	Through	Clear	Daylight	Dry	Deer
2023	2:00 AM	Front to Rear	PD	0	0	S	Slow/Stop	Cloudy/Overcast	Daylight	Dry	
						S	Slow/Stop				
2023	6:00 AM	Turning	A	1	0	W	Unknown	Clear	Dawn	Dry	
						W	Left Turn				
2023	3:00 AM	Front to Rear	PD	0	0	SW	Slow/Stop	Clear	Daylight	Dry	
						SW	Slow/Stop				
2023	6:00 AM	Turning	PD	0	0	S	Skidding	Snow	Daylight	Ice	
						E	Left Turn				
2024	1:00 AM	Angle	B	1	0	S	Through	Clear	Daylight	Dry	
						E	Through				
2024	5:00 AM	Rear to Front	PD	0	0	W	Backing	Clear	Daylight		
						E	Slow/Stop				
2024	7:00 AM	Overtaken	B	1	0	W	Through	Clear	Daylight	Dry	
						N	Through				
2024	4:00 AM	Turning	PD	0	0	SW	Right Turn	Clear	Daylight	Dry	
						SW	Right Turn				
2024	9:00 AM	Fixed Object	PD	0	0	S	Lost Control	Clear	Daylight	Dry	Utility pole

Eldamain Road & Corneils Road

Date	Hour	Collision Class	Collision Type	Injury	Fatality	Direction	Maneuver	Weather	Lighting	Surface Condition
2021	7:00 PM	B	Turning	2	0	SW	Left Turn	Clear	Daylight	Dry
						S	Through			
2023	2:00 AM	C	Turning	1	0	S	Left Turn	Clear	Daylight	Dry
						W	Left Turn			
2023	7:00 AM	B	Turning	1	0	SW	Left Turn	Cloudy/Overcast	Dawn	Wet

Corneils Road & Beecher Road

Date	Hour	Collision Class	Collision Type	Injury	Fatality	Direction	Maneuver	Weather	Lighting	Surface Condition
2023	3:00 AM	PD	Angle	0	0	N	Through	Clear	Daylight	Dry
						W	Through			

Corneils Road & Beecher Road

Date	Hour	Collision Class	Collision Type	Injury	Fatality	Direction	Maneuver	Weather	Lighting	Surface Condition	Other
2020	9:00 AM	C	Angle	3	0	S	Starting in Traffic	Clear	Darkness Lighted	Dry	
						E	Through				
2021	9:00 PM	PD	Angle	0	0	S	Through	Clear	Darkness Lighted	Dry	
						N	Through				
2022	4:00 PM	PD	Front to Rear	0	0	N	Through	Rain	Daylight	Wet	
2023	10:00 AM	PD	Angle	0	0	E	Starting in Traffic	Clear	Daylight	Dry	Ran off roadway
						S	Through				
2023	11:00 PM	PD	Animal	0	0	N	Through	Clear	Darkness	Dry	Deer
						N	Through				
2024	3:00 PM	PD	Front to Rear	0	0	N	Slow/Stop	Clear	Daylight	Dry	

APPENDIX P

Signal Warrant Analysis

Intersection #8: Bridge Street (IL 47) & Corneils Road
2025 Existing - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	146	79	225	5	1
6:15 AM	6:29 AM	182	78	260	12	7
6:30 AM	6:44 AM	174	97	271	13	4
6:45 AM	6:59 AM	151	83	234	9	3
7:00 AM	7:14 AM	163	94	257	9	2
7:15 AM	7:29 AM	164	108	272	8	3
7:30 AM	7:44 AM	178	101	279	7	3
7:45 AM	7:59 AM	149	158	307	8	7
8:00 AM	8:14 AM	175	107	282	9	3
8:15 AM	8:29 AM	142	124	266	9	4
8:30 AM	8:44 AM	140	111	251	6	2
8:45 AM	8:59 AM	137	136	273	9	3
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	164	197	361	8	0
3:15 PM	3:29 PM	114	188	302	9	5
3:30 PM	3:44 PM	182	186	368	9	2
3:45 PM	3:59 PM	154	203	357	3	0
4:00 PM	4:14 PM	138	203	341	5	3
4:15 PM	4:29 PM	141	178	319	10	0
4:30 PM	4:44 PM	158	182	340	7	2
4:45 PM	4:59 PM	154	200	354	8	0
5:00 PM	5:14 PM	156	200	356	7	3
5:15 PM	5:29 PM	141	214	355	7	2
5:30 PM	5:44 PM	155	218	373	13	2
5:45 PM	5:59 PM	124	227	351	3	2
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		3682	3672	7354	193	63

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

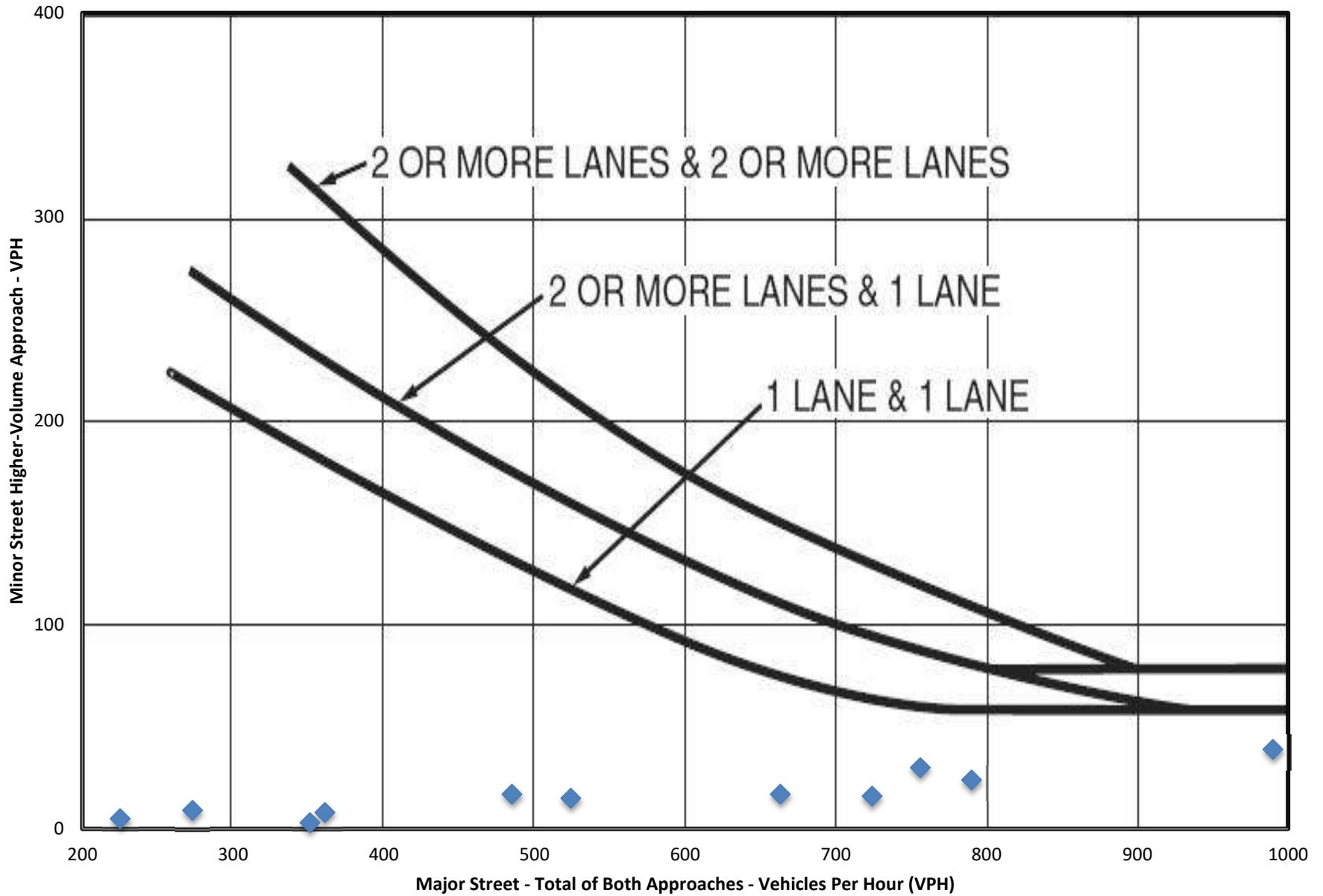
Total Number of Unique Hours Met On Figure 4C-2
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	225	5	
5:30 AM	485	17	
5:45 AM	756	30	
6:00 AM	990	39	
6:15 AM	1022	43	
6:30 AM	1034	39	
6:45 AM	1042	33	
7:00 AM	1115	32	
7:15 AM	1140	32	
7:30 AM	1134	33	
7:45 AM	1106	32	
8:00 AM	1072	33	
8:15 AM	790	24	
8:30 AM	524	15	
8:45 AM	273	9	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	361	8	
2:30 PM	663	17	
2:45 PM	1031	26	
3:00 PM	1388	29	
3:15 PM	1368	26	
3:30 PM	1385	27	
3:45 PM	1357	25	
4:00 PM	1354	30	
4:15 PM	1369	32	
4:30 PM	1405	29	
4:45 PM	1438	35	
5:00 PM	1435	30	
5:15 PM	1079	23	
5:30 PM	724	16	
5:45 PM	351	3	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

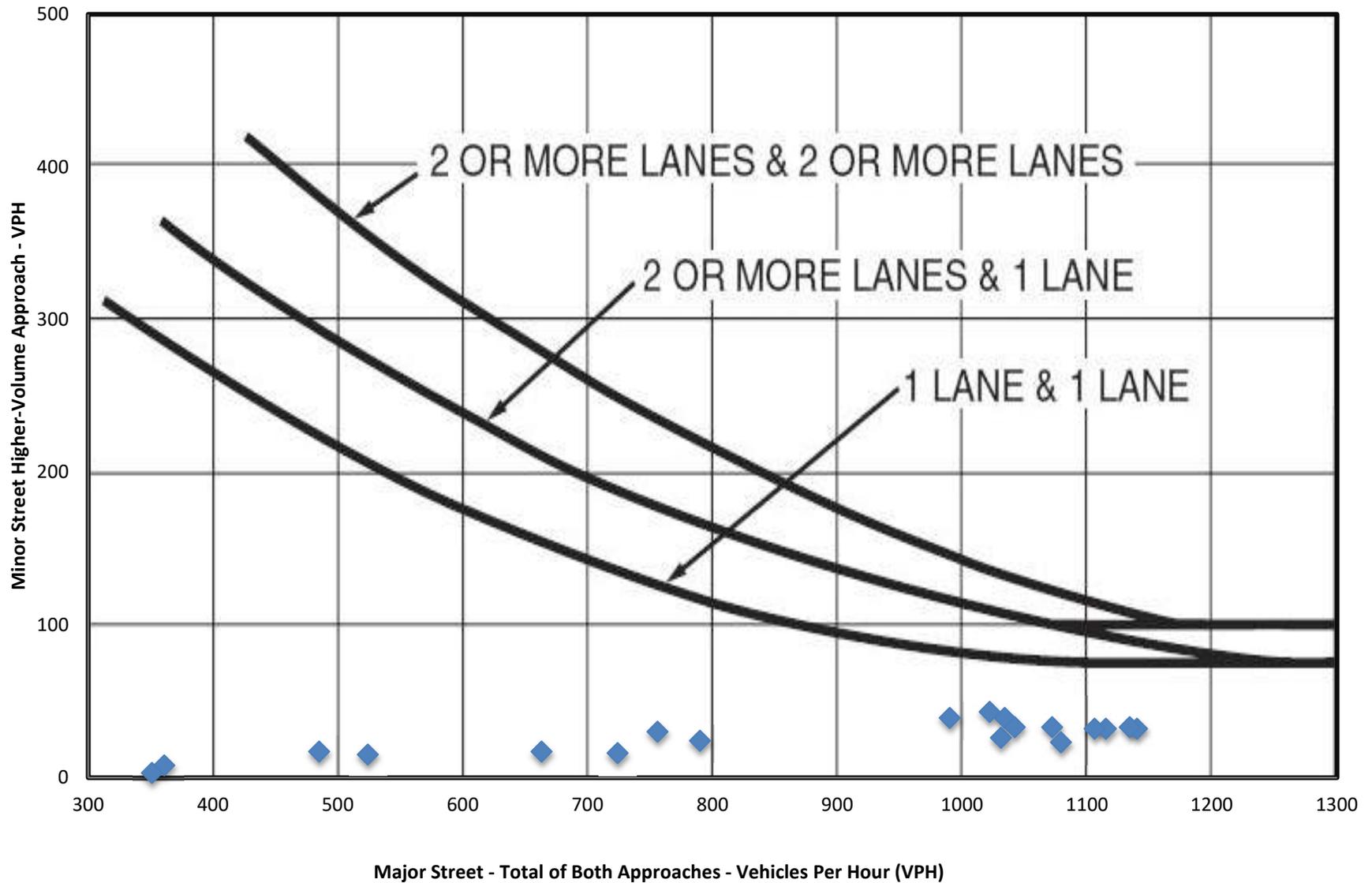
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	225	5	
5:30 AM	485	17	
5:45 AM	756	30	
6:00 AM	990	39	
6:15 AM	1022	43	
6:30 AM	1034	39	
6:45 AM	1042	33	
7:00 AM	1115	32	
7:15 AM	1140	32	
7:30 AM	1134	33	
7:45 AM	1106	32	
8:00 AM	1072	33	
8:15 AM	790	24	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	524	15	
8:45 AM	273	9	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	361	8	
2:30 PM	663	17	
2:45 PM	1031	26	
3:00 PM	1388	29	
3:15 PM	1368	26	
3:30 PM	1385	27	
3:45 PM	1357	25	
4:00 PM	1354	30	
4:15 PM	1369	32	
4:30 PM	1405	29	
4:45 PM	1438	35	
5:00 PM	1435	30	
5:15 PM	1079	23	
5:30 PM	724	16	
5:45 PM	351	3	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2034 No Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	240	117	357	6	1
6:15 AM	6:29 AM	285	115	400	14	8
6:30 AM	6:44 AM	275	139	414	15	5
6:45 AM	6:59 AM	247	122	369	11	4
7:00 AM	7:14 AM	258	146	404	11	2
7:15 AM	7:29 AM	260	164	424	10	4
7:30 AM	7:44 AM	277	155	432	8	4
7:45 AM	7:59 AM	241	226	467	10	8
8:00 AM	8:14 AM	267	166	433	11	4
8:15 AM	8:29 AM	226	187	413	11	5
8:30 AM	8:44 AM	224	171	395	7	2
8:45 AM	8:59 AM	220	202	422	11	4
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	246	320	566	10	0
3:15 PM	3:29 PM	183	309	492	11	6
3:30 PM	3:44 PM	268	306	574	11	2
3:45 PM	3:59 PM	233	327	560	4	0
4:00 PM	4:14 PM	204	315	519	6	4
4:15 PM	4:29 PM	208	284	492	12	0
4:30 PM	4:44 PM	229	289	518	8	2
4:45 PM	4:59 PM	224	312	536	10	0
5:00 PM	5:14 PM	225	307	532	8	4
5:15 PM	5:29 PM	206	324	530	8	2
5:30 PM	5:44 PM	224	329	553	15	2
5:45 PM	5:59 PM	185	340	525	4	2
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		5655	5672	11327	232	75

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

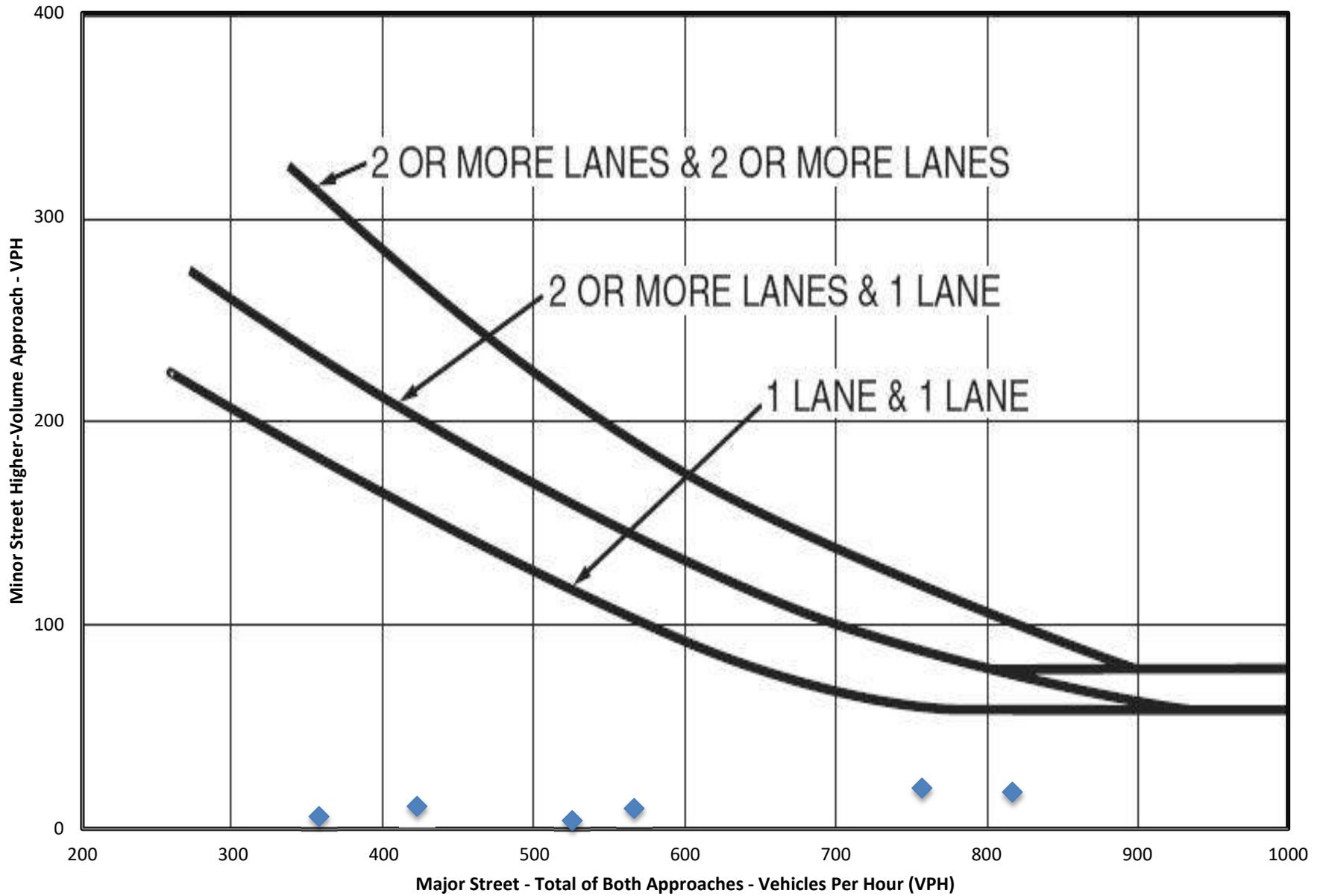
Total Number of Unique Hours Met On Figure 4C-2
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	357	6	
5:30 AM	757	20	
5:45 AM	1171	35	
6:00 AM	1540	46	
6:15 AM	1587	51	
6:30 AM	1611	47	
6:45 AM	1629	40	
7:00 AM	1727	39	
7:15 AM	1756	39	
7:30 AM	1745	40	
7:45 AM	1708	39	
8:00 AM	1663	40	
8:15 AM	1230	29	
8:30 AM	817	18	
8:45 AM	422	11	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	566	10	
2:30 PM	1058	21	
2:45 PM	1632	32	
3:00 PM	2192	36	
3:15 PM	2145	32	
3:30 PM	2145	33	
3:45 PM	2089	30	
4:00 PM	2065	36	
4:15 PM	2078	38	
4:30 PM	2116	34	
4:45 PM	2151	41	
5:00 PM	2140	35	
5:15 PM	1608	27	
5:30 PM	1078	19	
5:45 PM	525	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

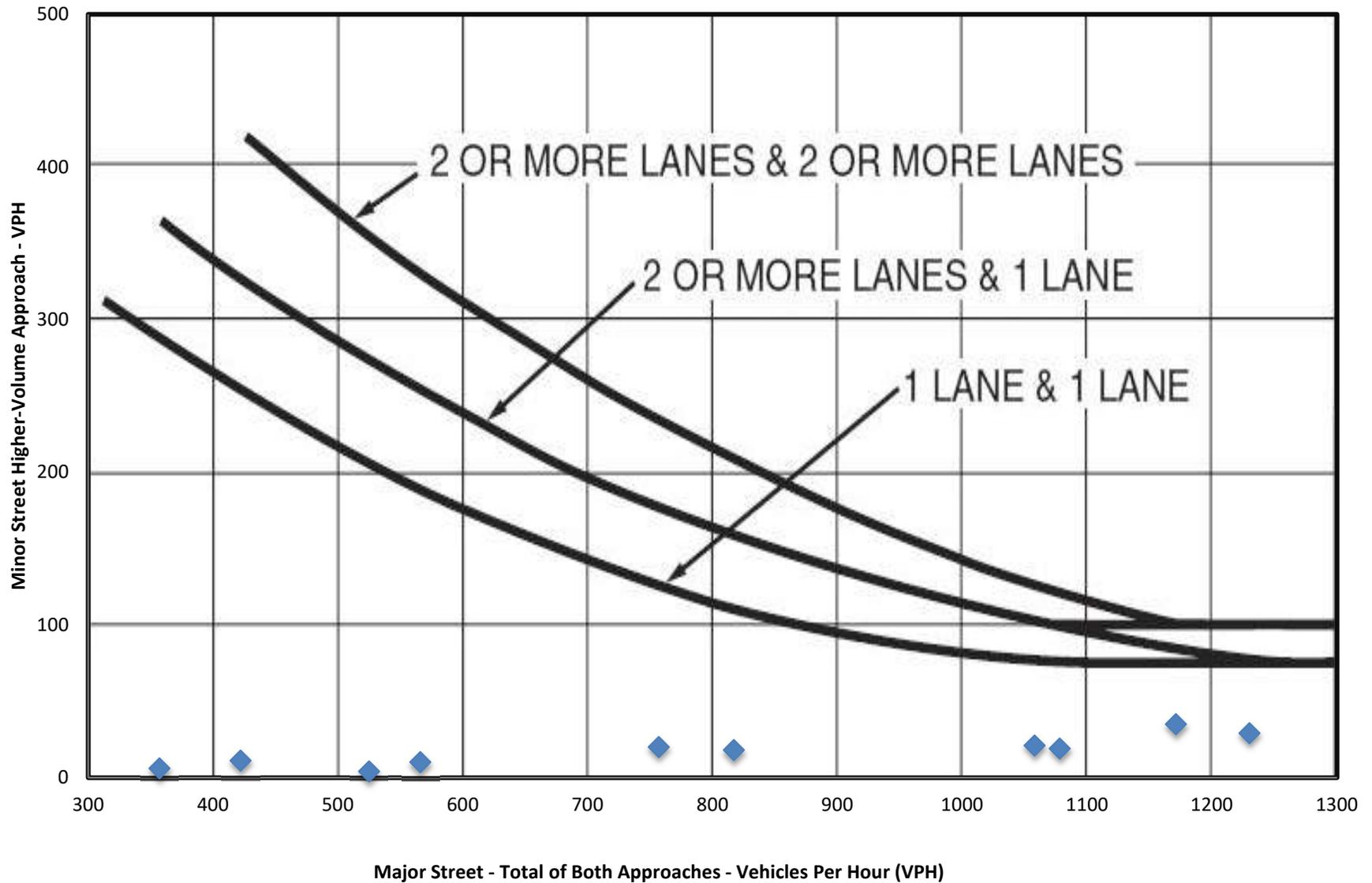
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	357	6	
5:30 AM	757	20	
5:45 AM	1171	35	
6:00 AM	1540	46	
6:15 AM	1587	51	
6:30 AM	1611	47	
6:45 AM	1629	40	
7:00 AM	1727	39	
7:15 AM	1756	39	
7:30 AM	1745	40	
7:45 AM	1708	39	
8:00 AM	1663	40	
8:15 AM	1230	29	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	817	18	
8:45 AM	422	11	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	566	10	
2:30 PM	1058	21	
2:45 PM	1632	32	
3:00 PM	2192	36	
3:15 PM	2145	32	
3:30 PM	2145	33	
3:45 PM	2089	30	
4:00 PM	2065	36	
4:15 PM	2078	38	
4:30 PM	2116	34	
4:45 PM	2151	41	
5:00 PM	2140	35	
5:15 PM	1608	27	
5:30 PM	1078	19	
5:45 PM	525	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2034 Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	241	117	358	6	1
6:15 AM	6:29 AM	286	116	402	14	8
6:30 AM	6:44 AM	276	140	416	15	3
6:45 AM	6:59 AM	247	123	370	11	2
7:00 AM	7:14 AM	260	147	407	11	2
7:15 AM	7:29 AM	260	165	425	10	2
7:30 AM	7:44 AM	278	156	434	10	2
7:45 AM	7:59 AM	242	228	470	10	7
8:00 AM	8:14 AM	268	166	434	13	2
8:15 AM	8:29 AM	227	188	415	10	5
8:30 AM	8:44 AM	225	171	396	8	1
8:45 AM	8:59 AM	221	203	424	11	3
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	246	321	567	11	0
3:15 PM	3:29 PM	184	309	493	12	3
3:30 PM	3:44 PM	269	307	576	11	2
3:45 PM	3:59 PM	234	329	563	8	0
4:00 PM	4:14 PM	204	317	521	8	3
4:15 PM	4:29 PM	209	285	494	14	0
4:30 PM	4:44 PM	230	290	520	11	2
4:45 PM	4:59 PM	226	312	538	12	0
5:00 PM	5:14 PM	225	307	532	9	2
5:15 PM	5:29 PM	207	325	532	10	2
5:30 PM	5:44 PM	224	330	554	14	2
5:45 PM	5:59 PM	186	341	527	4	2
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		5675	5693	11368	253	56

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

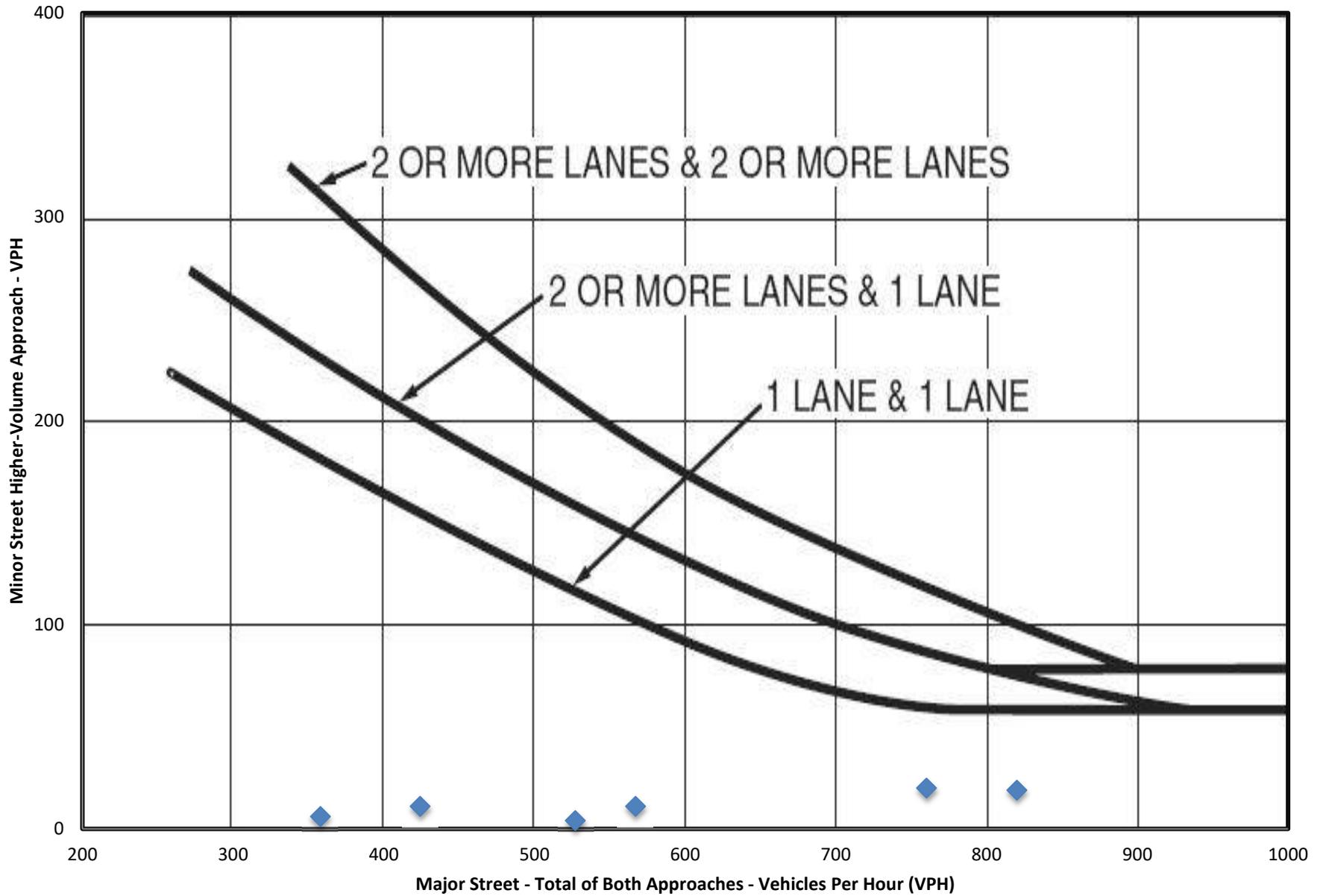
Total Number of Unique Hours Met On Figure 4C-2
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	358	6	
5:30 AM	760	20	
5:45 AM	1176	35	
6:00 AM	1546	46	
6:15 AM	1595	51	
6:30 AM	1618	47	
6:45 AM	1636	42	
7:00 AM	1736	41	
7:15 AM	1763	43	
7:30 AM	1753	43	
7:45 AM	1715	41	
8:00 AM	1669	42	
8:15 AM	1235	29	
8:30 AM	820	19	
8:45 AM	424	11	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	567	11	
2:30 PM	1060	23	
2:45 PM	1636	34	
3:00 PM	2199	42	
3:15 PM	2153	39	
3:30 PM	2154	41	
3:45 PM	2098	41	
4:00 PM	2073	45	
4:15 PM	2084	46	
4:30 PM	2122	42	
4:45 PM	2156	45	
5:00 PM	2145	37	
5:15 PM	1613	28	
5:30 PM	1081	18	
5:45 PM	527	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

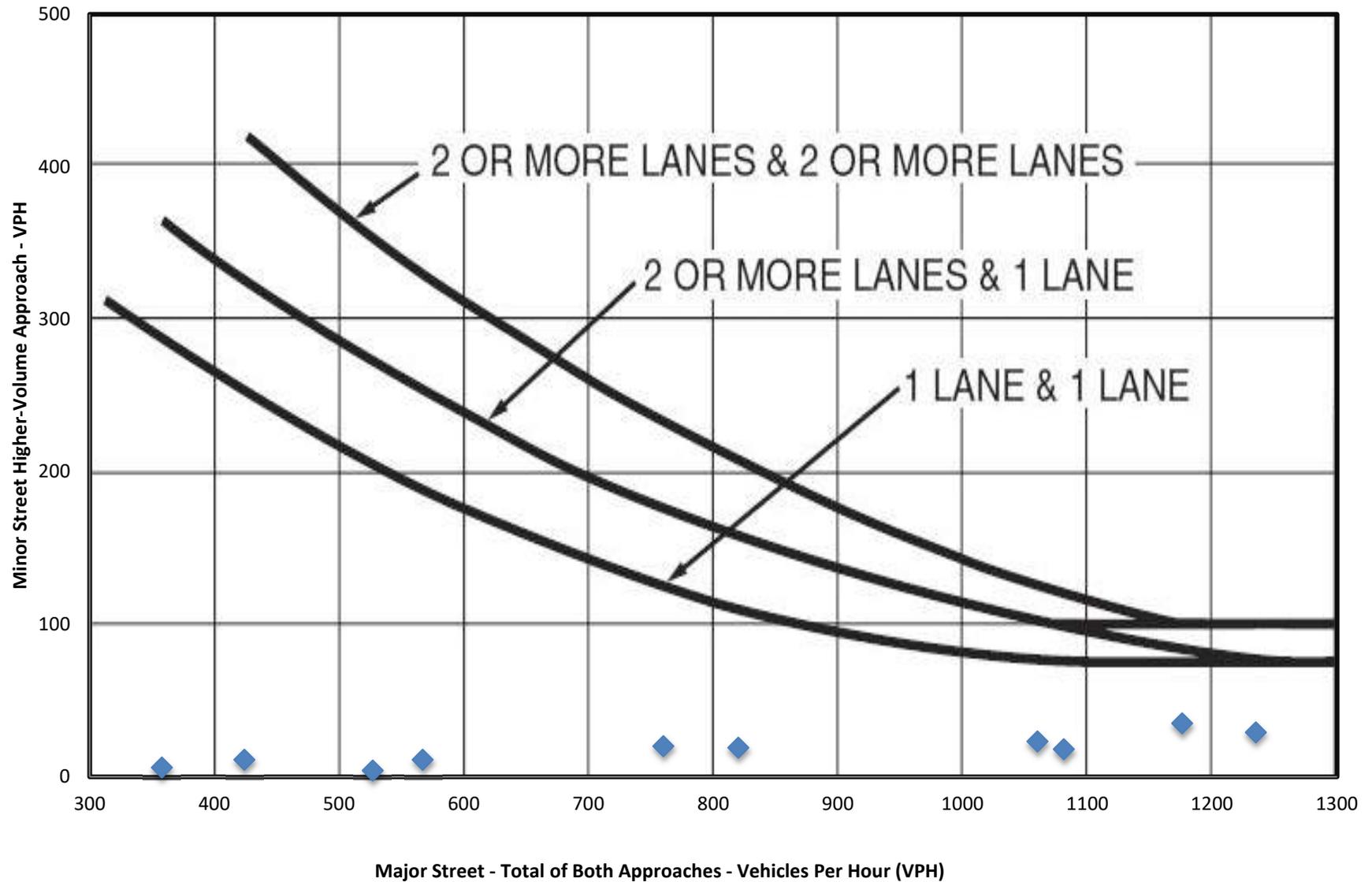
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	358	6	
5:30 AM	760	20	
5:45 AM	1176	35	
6:00 AM	1546	46	
6:15 AM	1595	51	
6:30 AM	1618	47	
6:45 AM	1636	42	
7:00 AM	1736	41	
7:15 AM	1763	43	
7:30 AM	1753	43	
7:45 AM	1715	41	
8:00 AM	1669	42	
8:15 AM	1235	29	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	820	19	
8:45 AM	424	11	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	567	11	
2:30 PM	1060	23	
2:45 PM	1636	34	
3:00 PM	2199	42	
3:15 PM	2153	39	
3:30 PM	2154	41	
3:45 PM	2098	41	
4:00 PM	2073	45	
4:15 PM	2084	46	
4:30 PM	2122	42	
4:45 PM	2156	45	
5:00 PM	2145	37	
5:15 PM	1613	28	
5:30 PM	1081	18	
5:45 PM	527	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2039 No Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	260	128	388	6	1
6:15 AM	6:29 AM	310	126	436	16	9
6:30 AM	6:44 AM	299	152	451	17	5
6:45 AM	6:59 AM	267	133	400	12	4
7:00 AM	7:14 AM	281	159	440	12	3
7:15 AM	7:29 AM	282	179	461	10	4
7:30 AM	7:44 AM	302	169	471	9	4
7:45 AM	7:59 AM	262	248	510	10	9
8:00 AM	8:14 AM	292	180	472	12	4
8:15 AM	8:29 AM	246	204	450	12	5
8:30 AM	8:44 AM	243	186	429	8	3
8:45 AM	8:59 AM	239	221	460	12	4
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	268	347	615	10	0
3:15 PM	3:29 PM	199	335	534	12	6
3:30 PM	3:44 PM	293	332	625	12	3
3:45 PM	3:59 PM	255	355	610	4	0
4:00 PM	4:14 PM	223	343	566	6	4
4:15 PM	4:29 PM	227	309	536	13	0
4:30 PM	4:44 PM	251	314	565	9	3
4:45 PM	4:59 PM	246	339	585	10	0
5:00 PM	5:14 PM	246	334	580	9	4
5:15 PM	5:29 PM	225	354	579	9	3
5:30 PM	5:44 PM	245	359	604	17	3
5:45 PM	5:59 PM	202	372	574	4	3
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		6163	6178	12341	251	84

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

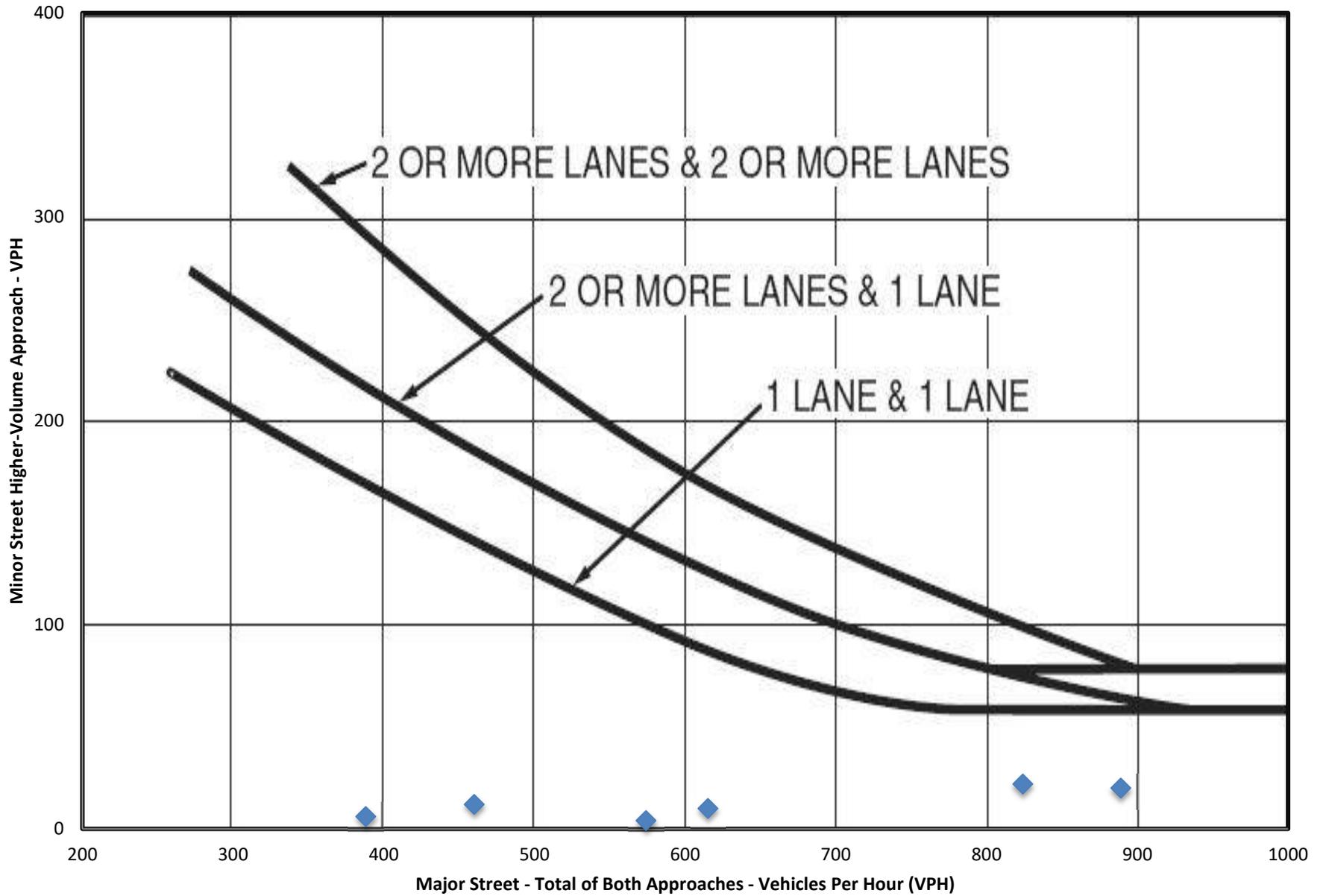
Total Number of Unique Hours Met On Figure 4C-2
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	388	6	
5:30 AM	824	22	
5:45 AM	1275	39	
6:00 AM	1675	51	
6:15 AM	1727	57	
6:30 AM	1752	51	
6:45 AM	1772	43	
7:00 AM	1882	41	
7:15 AM	1914	41	
7:30 AM	1903	43	
7:45 AM	1861	42	
8:00 AM	1811	44	
8:15 AM	1339	32	
8:30 AM	889	20	
8:45 AM	460	12	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	615	10	
2:30 PM	1149	22	
2:45 PM	1774	34	
3:00 PM	2384	38	
3:15 PM	2335	34	
3:30 PM	2337	35	
3:45 PM	2277	32	
4:00 PM	2252	38	
4:15 PM	2266	41	
4:30 PM	2309	37	
4:45 PM	2348	45	
5:00 PM	2337	39	
5:15 PM	1757	30	
5:30 PM	1178	21	
5:45 PM	574	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

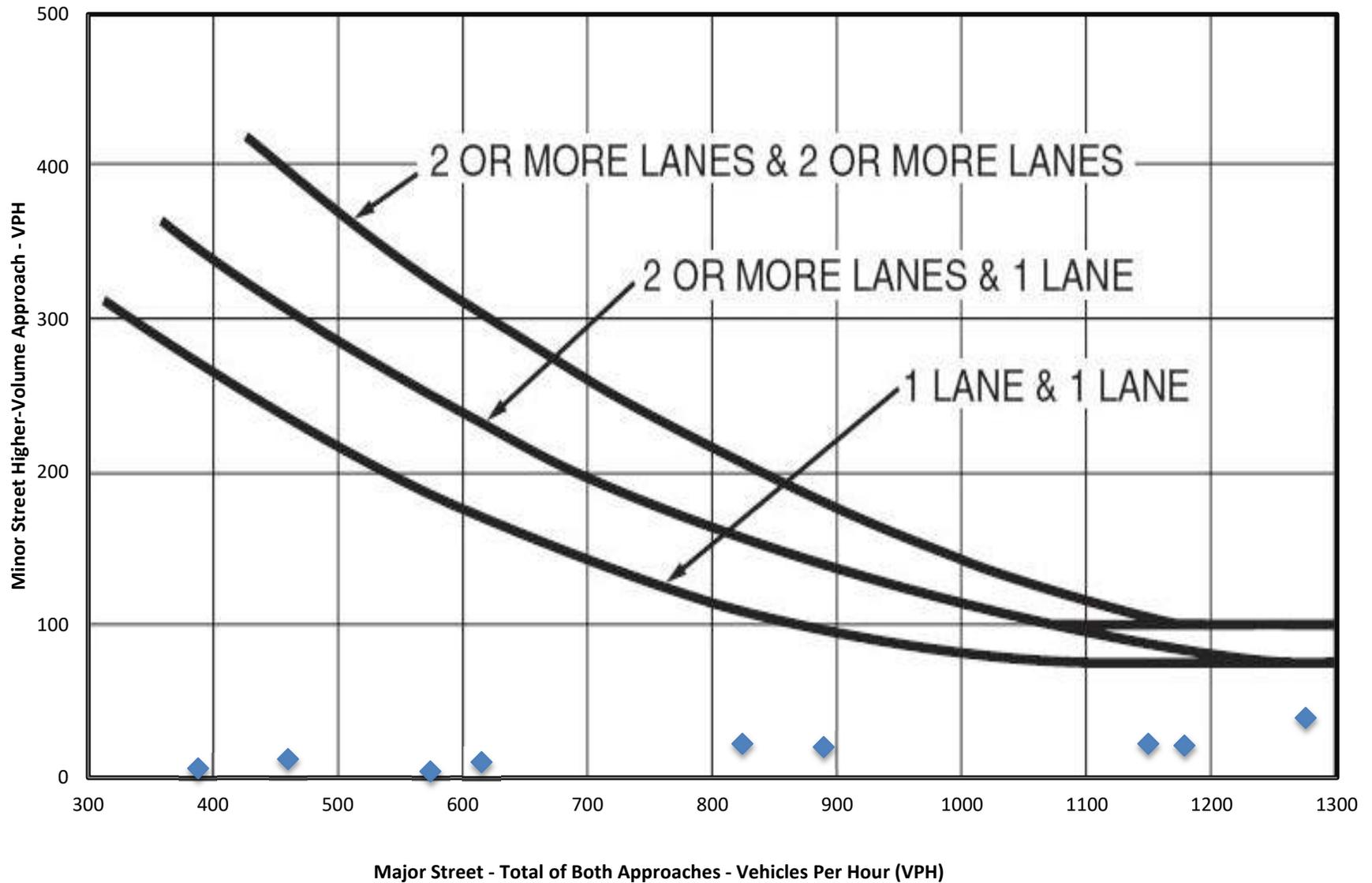
Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*	
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	388	6	
5:30 AM	824	22	
5:45 AM	1275	39	
6:00 AM	1675	51	
6:15 AM	1727	57	
6:30 AM	1752	51	
6:45 AM	1772	43	
7:00 AM	1882	41	
7:15 AM	1914	41	
7:30 AM	1903	43	
7:45 AM	1861	42	
8:00 AM	1811	44	
8:15 AM	1339	32	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	889	20	
8:45 AM	460	12	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	615	10	
2:30 PM	1149	22	
2:45 PM	1774	34	
3:00 PM	2384	38	
3:15 PM	2335	34	
3:30 PM	2337	35	
3:45 PM	2277	32	
4:00 PM	2252	38	
4:15 PM	2266	41	
4:30 PM	2309	37	
4:45 PM	2348	45	
5:00 PM	2337	39	
5:15 PM	1757	30	
5:30 PM	1178	21	
5:45 PM	574	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2039 Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	262	129	391	6	1
6:15 AM	6:29 AM	312	127	439	16	9
6:30 AM	6:44 AM	301	153	454	17	5
6:45 AM	6:59 AM	269	134	403	12	4
7:00 AM	7:14 AM	283	160	443	14	3
7:15 AM	7:29 AM	284	180	464	12	4
7:30 AM	7:44 AM	304	170	474	11	4
7:45 AM	7:59 AM	264	249	513	12	9
8:00 AM	8:14 AM	294	181	475	14	4
8:15 AM	8:29 AM	248	205	453	14	5
8:30 AM	8:44 AM	245	187	432	10	3
8:45 AM	8:59 AM	241	222	463	14	4
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	270	349	619	15	0
3:15 PM	3:29 PM	201	337	538	17	6
3:30 PM	3:44 PM	295	334	629	17	3
3:45 PM	3:59 PM	257	357	614	9	0
4:00 PM	4:14 PM	224	345	569	9	4
4:15 PM	4:29 PM	228	311	539	16	0
4:30 PM	4:44 PM	252	316	568	12	3
4:45 PM	4:59 PM	247	341	588	13	0
5:00 PM	5:14 PM	247	336	583	11	4
5:15 PM	5:29 PM	226	356	582	11	3
5:30 PM	5:44 PM	246	361	607	19	3
5:45 PM	5:59 PM	203	374	577	6	3
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		6203	6214	12417	307	84

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

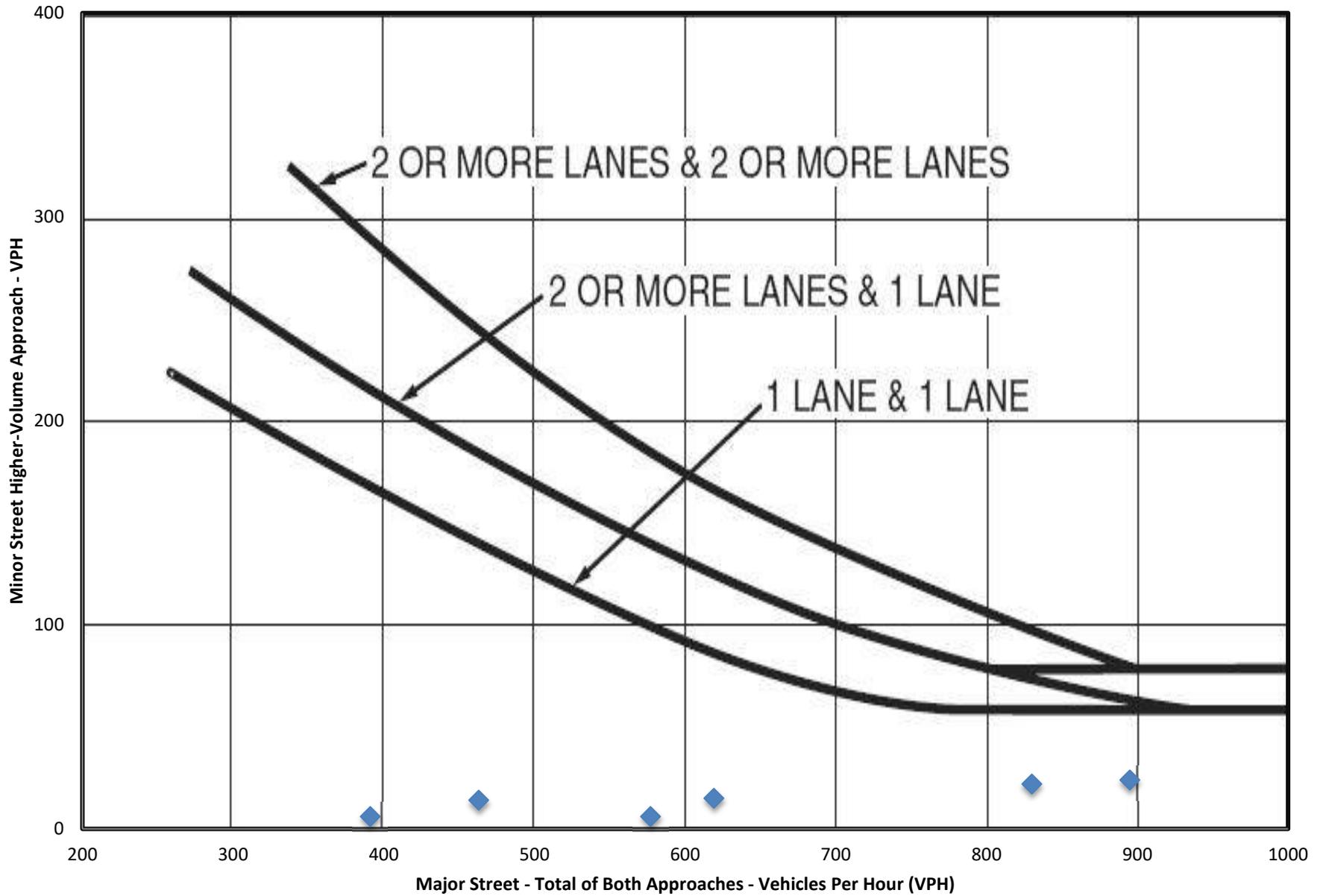
Total Number of Unique Hours Met On Figure 4C-2
0

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	391	6	
5:30 AM	830	22	
5:45 AM	1284	39	
6:00 AM	1687	51	
6:15 AM	1739	59	
6:30 AM	1764	55	
6:45 AM	1784	49	
7:00 AM	1894	49	
7:15 AM	1926	49	
7:30 AM	1915	51	
7:45 AM	1873	50	
8:00 AM	1823	52	
8:15 AM	1348	38	
8:30 AM	895	24	
8:45 AM	463	14	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	619	15	
2:30 PM	1157	32	
2:45 PM	1786	49	
3:00 PM	2400	58	
3:15 PM	2350	52	
3:30 PM	2351	51	
3:45 PM	2290	46	
4:00 PM	2264	50	
4:15 PM	2278	52	
4:30 PM	2321	47	
4:45 PM	2360	54	
5:00 PM	2349	47	
5:15 PM	1766	36	
5:30 PM	1184	25	
5:45 PM	577	6	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

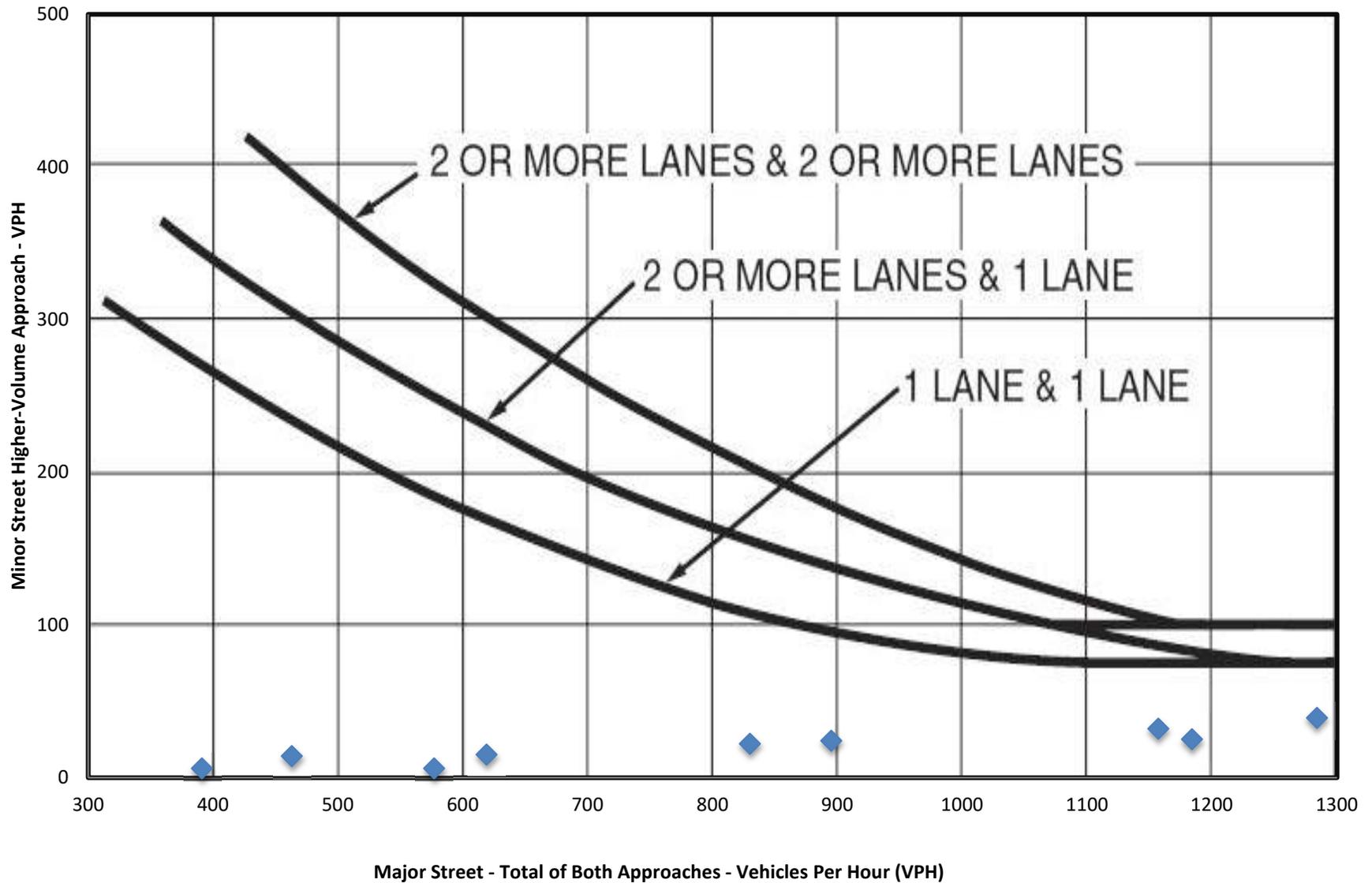
Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A
<i>*If applicable, attach all supporting calculations and documentation.</i>	

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	391	6	
5:30 AM	830	22	
5:45 AM	1284	39	
6:00 AM	1687	51	
6:15 AM	1739	59	
6:30 AM	1764	55	
6:45 AM	1784	49	
7:00 AM	1894	49	
7:15 AM	1926	49	
7:30 AM	1915	51	
7:45 AM	1873	50	
8:00 AM	1823	52	
8:15 AM	1348	38	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	895	24	
8:45 AM	463	14	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	619	15	
2:30 PM	1157	32	
2:45 PM	1786	49	
3:00 PM	2400	58	
3:15 PM	2350	52	
3:30 PM	2351	51	
3:45 PM	2290	46	
4:00 PM	2264	50	
4:15 PM	2278	52	
4:30 PM	2321	47	
4:45 PM	2360	54	
5:00 PM	2349	47	
5:15 PM	1766	36	
5:30 PM	1184	25	
5:45 PM	577	6	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2044 No Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 1 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	281	138	419	7	1
6:15 AM	6:29 AM	335	137	472	17	10
6:30 AM	6:44 AM	323	166	489	18	6
6:45 AM	6:59 AM	288	145	433	13	4
7:00 AM	7:14 AM	303	172	475	13	3
7:15 AM	7:29 AM	305	194	499	11	4
7:30 AM	7:44 AM	326	183	509	10	4
7:45 AM	7:59 AM	282	270	552	11	10
8:00 AM	8:14 AM	316	195	511	13	4
8:15 AM	8:29 AM	265	221	486	13	6
8:30 AM	8:44 AM	262	201	463	8	3
8:45 AM	8:59 AM	258	239	497	13	4
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH

Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	291	374	665	11	0
3:15 PM	3:29 PM	215	361	576	13	7
3:30 PM	3:44 PM	318	358	676	13	3
3:45 PM	3:59 PM	276	383	659	4	0
4:00 PM	4:14 PM	242	371	613	7	4
4:15 PM	4:29 PM	247	333	580	14	0
4:30 PM	4:44 PM	273	339	612	10	3
4:45 PM	4:59 PM	267	367	634	11	0
5:00 PM	5:14 PM	268	362	630	10	4
5:15 PM	5:29 PM	245	383	628	10	3
5:30 PM	5:44 PM	266	389	655	18	3
5:45 PM	5:59 PM	219	403	622	4	3
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		6671	6684	13355	272	89

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

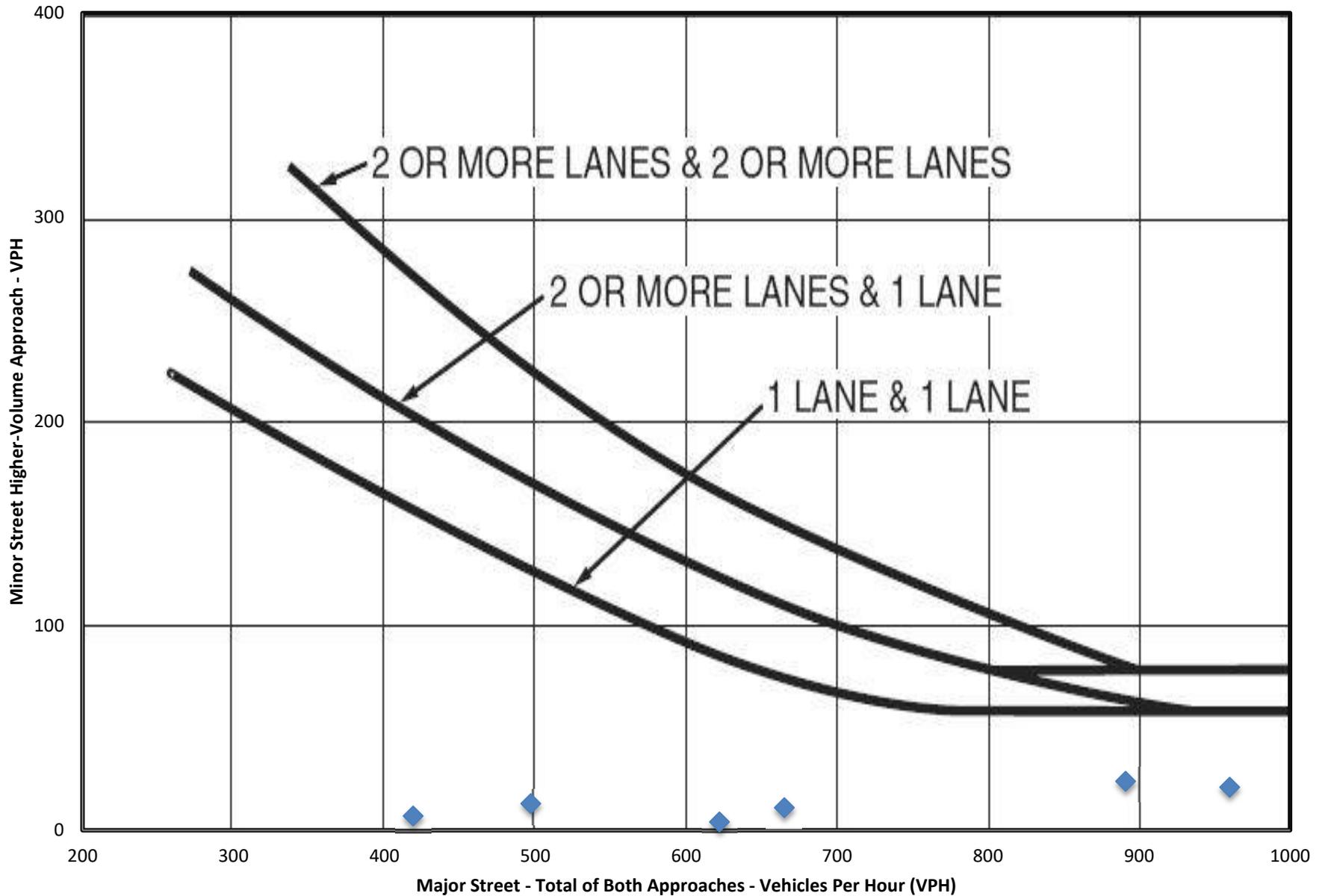
Total Number of Unique Hours Met On Figure 4C-2
1

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	419	7	
5:30 AM	891	24	
5:45 AM	1380	42	
6:00 AM	1813	55	
6:15 AM	1869	61	Met
6:30 AM	1896	55	
6:45 AM	1916	47	
7:00 AM	2035	45	
7:15 AM	2071	45	
7:30 AM	2058	47	
7:45 AM	2012	45	
8:00 AM	1957	47	
8:15 AM	1446	34	
8:30 AM	960	21	
8:45 AM	497	13	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	665	11	
2:30 PM	1241	24	
2:45 PM	1917	37	
3:00 PM	2576	41	
3:15 PM	2524	37	
3:30 PM	2528	38	
3:45 PM	2464	35	
4:00 PM	2439	42	
4:15 PM	2456	45	
4:30 PM	2504	41	
4:45 PM	2547	49	
5:00 PM	2535	42	
5:15 PM	1905	32	
5:30 PM	1277	22	
5:45 PM	622	4	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A

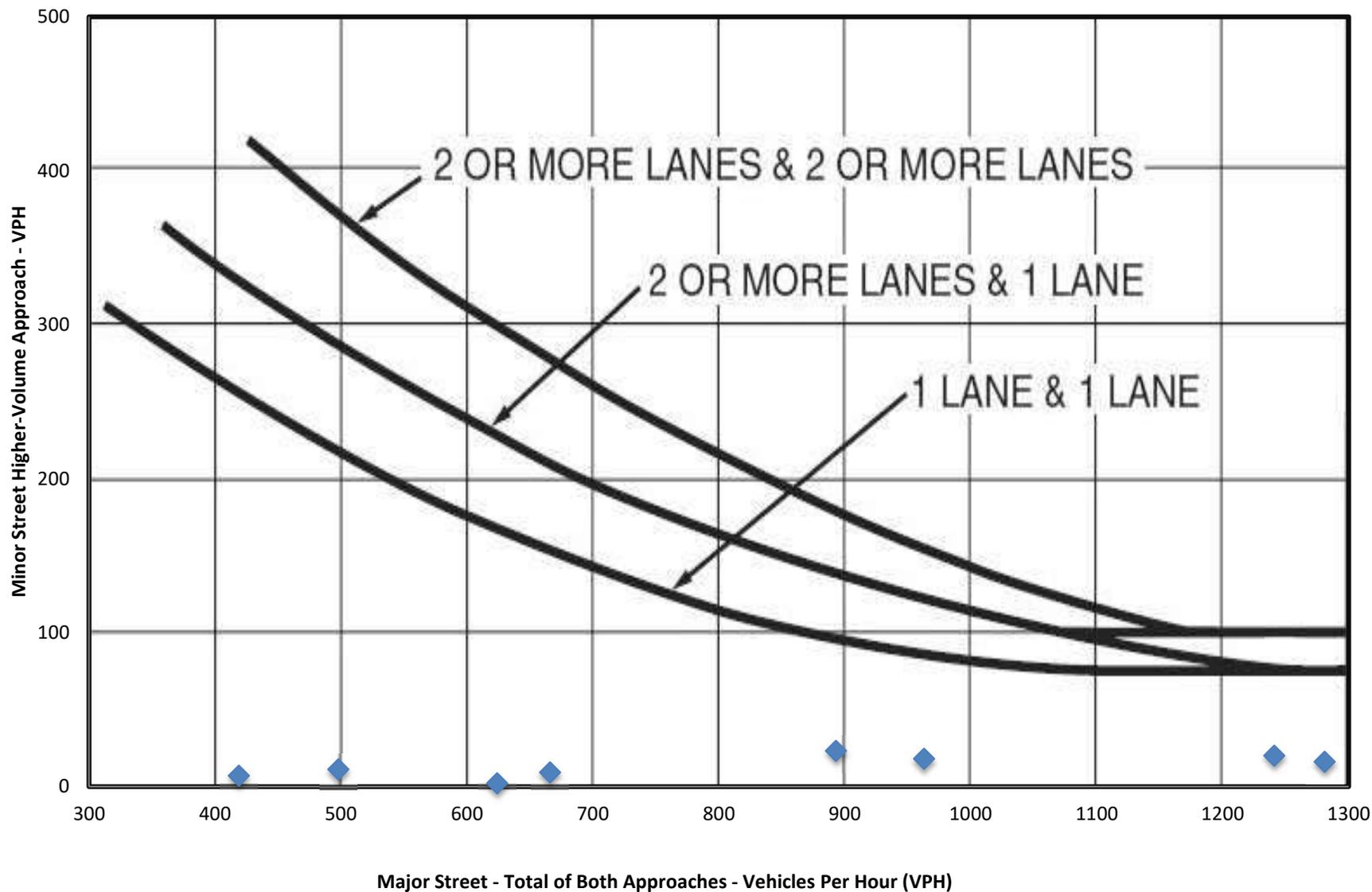
**If applicable, attach all supporting calculations and documentation.*

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	419	7	
5:30 AM	893	23	
5:45 AM	1382	41	
6:00 AM	1815	53	
6:15 AM	1873	57	
6:30 AM	1899	51	
6:45 AM	1920	42	
7:00 AM	2041	39	
7:15 AM	2076	40	
7:30 AM	2063	40	
7:45 AM	2018	38	
8:00 AM	1962	40	
8:15 AM	1450	28	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	963	18	
8:45 AM	498	11	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	666	9	
2:30 PM	1241	20	
2:45 PM	1918	30	
3:00 PM	2578	34	
3:15 PM	2526	31	
3:30 PM	2532	32	
3:45 PM	2468	31	
4:00 PM	2443	38	
4:15 PM	2460	40	
4:30 PM	2508	38	
4:45 PM	2552	43	
5:00 PM	2541	34	
5:15 PM	1910	26	
5:30 PM	1281	16	
5:45 PM	624	2	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

Intersection #8: Bridge Street (IL 47) & Corneils Road
2044 Build - Signal Warrant

Analysis Information

Data Collection Date: 6/24/2025
Day of the Week: Tuesday

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

Major Street Information

Major Street Name and Route Number: Bridge Street (IL 47)
Major Street Approach #1 Direction: N-Bound
Major Street Approach #2 Direction: S-Bound

Number of Lanes for Moving Traffic on Each Major Street Approach: 2 LANE(S)
Speed Limit or 85th Percentile Speed on the Major Street: 55 MPH

Minor Street Information

Minor Street Name and Route Number: Corneils Road
Minor Street Approach #1 Direction: E-Bound
Minor Street Approach #2 Direction: W-Bound

Number of Lanes for Moving Traffic on Each Minor Street Approach: 1 LANE(S)

TRAFFIC SIGNAL WARRANT ANALYSIS FINDINGS

	Applicable?	Warrant Met?
Warrant 1, Eight-Hour Vehicular Volume	No	N/A
Warrant 2, Four-Hour Vehicular Volume	Yes	No
Warrant 3, Peak Hour	Yes	No
Warrant 4, Pedestrian Volume	No	N/A
Warrant 5, School Crossing	No	N/A
Warrant 6, Coordinated Signal System	No	N/A
Warrant 7, Crash Experience	No	N/A
Warrant 8, Roadway Network	No	N/A
Warrant 9, Intersection Near a Grade Crossing	No	N/A

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 AM	12:14 AM			0		
12:15 AM	12:29 AM			0		
12:30 AM	12:44 AM			0		
12:45 AM	12:59 AM			0		
1:00 AM	1:14 AM			0		
1:15 AM	1:29 AM			0		
1:30 AM	1:44 AM			0		
1:45 AM	1:59 AM			0		
2:00 AM	2:14 AM			0		
2:15 AM	2:29 AM			0		
2:30 AM	2:44 AM			0		
2:45 AM	2:59 AM			0		
3:00 AM	3:14 AM			0		
3:15 AM	3:29 AM			0		
3:30 AM	3:44 AM			0		
3:45 AM	3:59 AM			0		
4:00 AM	4:14 AM			0		
4:15 AM	4:29 AM			0		
4:30 AM	4:44 AM			0		
4:45 AM	4:59 AM			0		
5:00 AM	5:14 AM			0		
5:15 AM	5:29 AM			0		
5:30 AM	5:44 AM			0		
5:45 AM	5:59 AM			0		
6:00 AM	6:14 AM	284	140	424	7	1
6:15 AM	6:29 AM	339	140	479	16	9
6:30 AM	6:44 AM	326	168	494	18	4
6:45 AM	6:59 AM	292	146	438	12	2
7:00 AM	7:14 AM	307	175	482	14	2
7:15 AM	7:29 AM	308	197	505	14	2
7:30 AM	7:44 AM	330	185	515	12	2
7:45 AM	7:59 AM	286	273	559	13	7
8:00 AM	8:14 AM	319	198	517	15	2
8:15 AM	8:29 AM	269	223	492	13	5
8:30 AM	8:44 AM	266	204	470	10	1
8:45 AM	8:59 AM	262	241	503	14	4
9:00 AM	9:14 AM			0		
9:15 AM	9:29 AM			0		
9:30 AM	9:44 AM			0		
9:45 AM	9:59 AM			0		
10:00 AM	10:14 AM			0		
10:15 AM	10:29 AM			0		
10:30 AM	10:44 AM			0		
10:45 AM	10:59 AM			0		
11:00 AM	11:14 AM			0		
11:15 AM	11:29 AM			0		
11:30 AM	11:44 AM			0		
11:45 AM	11:59 AM			0		

ENTER VOLUME DATA PER 15 MINUTE INTERVAL, PER APPROACH						
Time Interval		Major Street Approach #1 (N-Bound)	Major Street Approach #2 (S-Bound)	Major Street Combined	Minor Street Approach #1 (E-Bound)	Minor Street Approach #2 (W-Bound)
Begin At	End Of	Volume	Volume	Total Volume	Volume	Volume
12:00 PM	12:14 PM			0		
12:15 PM	12:29 PM			0		
12:30 PM	12:44 PM			0		
12:45 PM	12:59 PM			0		
1:00 PM	1:14 PM			0		
1:15 PM	1:29 PM			0		
1:30 PM	1:44 PM			0		
1:45 PM	1:59 PM			0		
2:00 PM	2:14 PM			0		
2:15 PM	2:29 PM			0		
2:30 PM	2:44 PM			0		
2:45 PM	2:59 PM			0		
3:00 PM	3:14 PM	294	378	672	16	0
3:15 PM	3:29 PM	218	363	581	18	3
3:30 PM	3:44 PM	322	361	683	17	2
3:45 PM	3:59 PM	279	387	666	11	0
4:00 PM	4:14 PM	244	375	619	11	4
4:15 PM	4:29 PM	249	337	586	18	0
4:30 PM	4:44 PM	275	343	618	14	2
4:45 PM	4:59 PM	269	371	640	16	0
5:00 PM	5:14 PM	271	365	636	11	2
5:15 PM	5:29 PM	247	387	634	14	2
5:30 PM	5:44 PM	269	393	662	17	2
5:45 PM	5:59 PM	222	407	629	6	2
6:00 PM	6:14 PM			0		
6:15 PM	6:29 PM			0		
6:30 PM	6:44 PM			0		
6:45 PM	6:59 PM			0		
7:00 PM	7:14 PM			0		
7:15 PM	7:29 PM			0		
7:30 PM	7:44 PM			0		
7:45 PM	7:59 PM			0		
8:00 PM	8:14 PM			0		
8:15 PM	8:29 PM			0		
8:30 PM	8:44 PM			0		
8:45 PM	8:59 PM			0		
9:00 PM	9:14 PM			0		
9:15 PM	9:29 PM			0		
9:30 PM	9:44 PM			0		
9:45 PM	9:59 PM			0		
10:00 PM	10:14 PM			0		
10:15 PM	10:29 PM			0		
10:30 PM	10:44 PM			0		
10:45 PM	10:59 PM			0		
11:00 PM	11:14 PM			0		
11:15 PM	11:29 PM			0		
11:30 PM	11:44 PM			0		
11:45 PM	11:59 PM			0		
Approach Totals:		6747	6757	13504	327	60

MUTCD WARRANT 2, FOUR-HOUR VEHICULAR VOLUME

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	1 Lane
Minor Street:	1 Lane

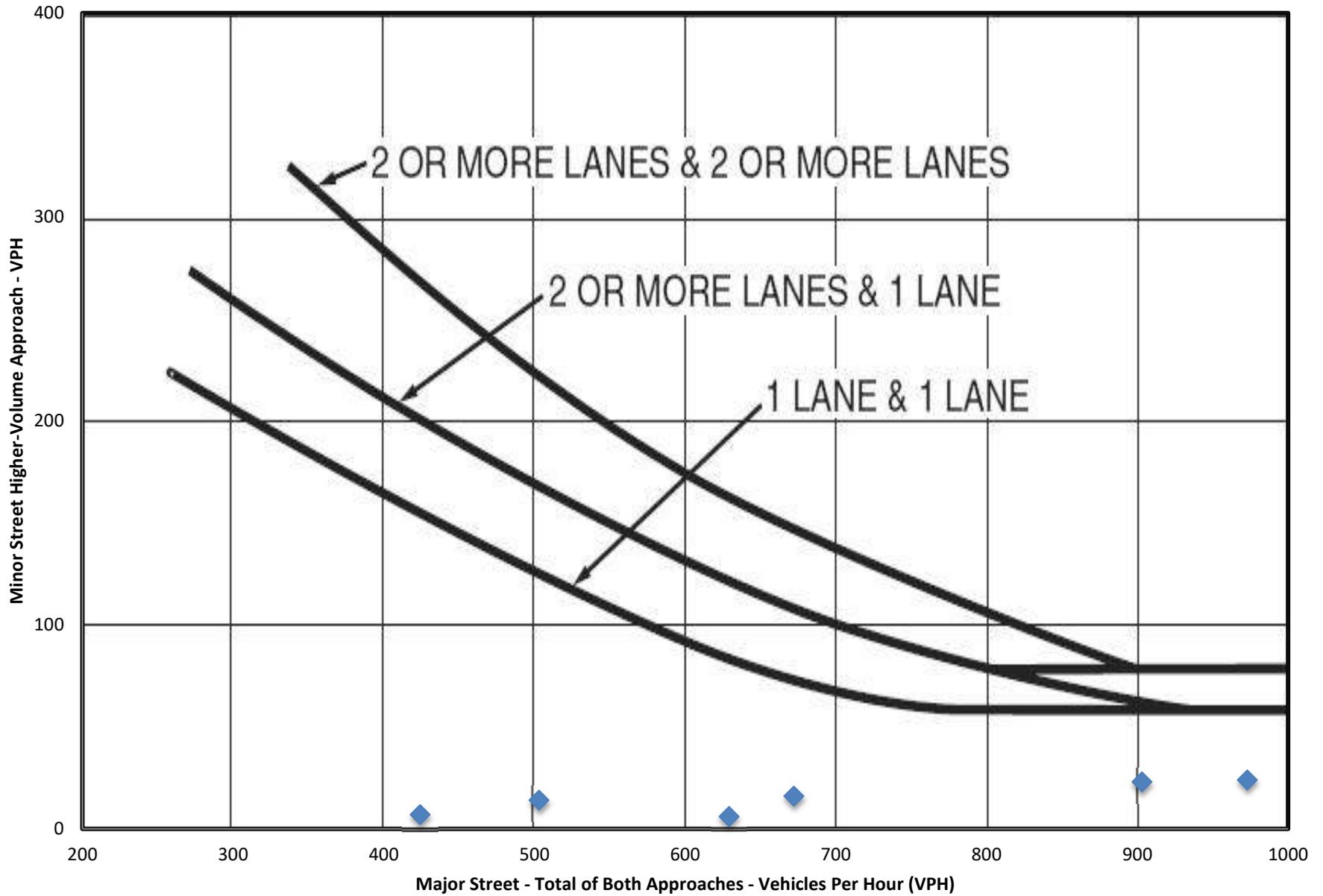
Total Number of Unique Hours Met On Figure 4C-2
2

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

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	424	7	
5:30 AM	903	23	
5:45 AM	1397	41	
6:00 AM	1835	53	
6:15 AM	1893	60	Met
6:30 AM	1919	58	
6:45 AM	1940	52	
7:00 AM	2061	53	
7:15 AM	2096	54	
7:30 AM	2083	53	
7:45 AM	2038	51	
8:00 AM	1982	52	
8:15 AM	1465	37	
8:30 AM	973	24	
8:45 AM	503	14	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	672	16	
2:30 PM	1253	34	
2:45 PM	1936	51	
3:00 PM	2602	62	Met
3:15 PM	2549	57	
3:30 PM	2554	57	
3:45 PM	2489	54	
4:00 PM	2463	59	
4:15 PM	2480	59	
4:30 PM	2528	55	
4:45 PM	2572	58	
5:00 PM	2561	48	
5:15 PM	1925	37	
5:30 PM	1291	23	
5:45 PM	629	6	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,000 VPH.

MUTCD WARRANT 3, PEAK HOUR

Number of Lanes for Moving Traffic on Each Approach	
Major Street:	2 or More Lanes
Minor Street:	1 Lane

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

Is this signal warrant being applied for an unusual case, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time?	Yes
---	-----

Indicate whether all three of the following conditions for the same 1 hour (any four consecutive 15-minute periods) of an average day are present*

Does the total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equal or exceed 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach?	N/A
Does the volume on the same minor-street approach (one direction only) equal or exceed 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes?	N/A
Does the total entering volume serviced during the hour equal or exceed 650 vehicles per hour for intersection with three approaches or 800 vehicles per hour for intersections with four or more approaches?	N/A

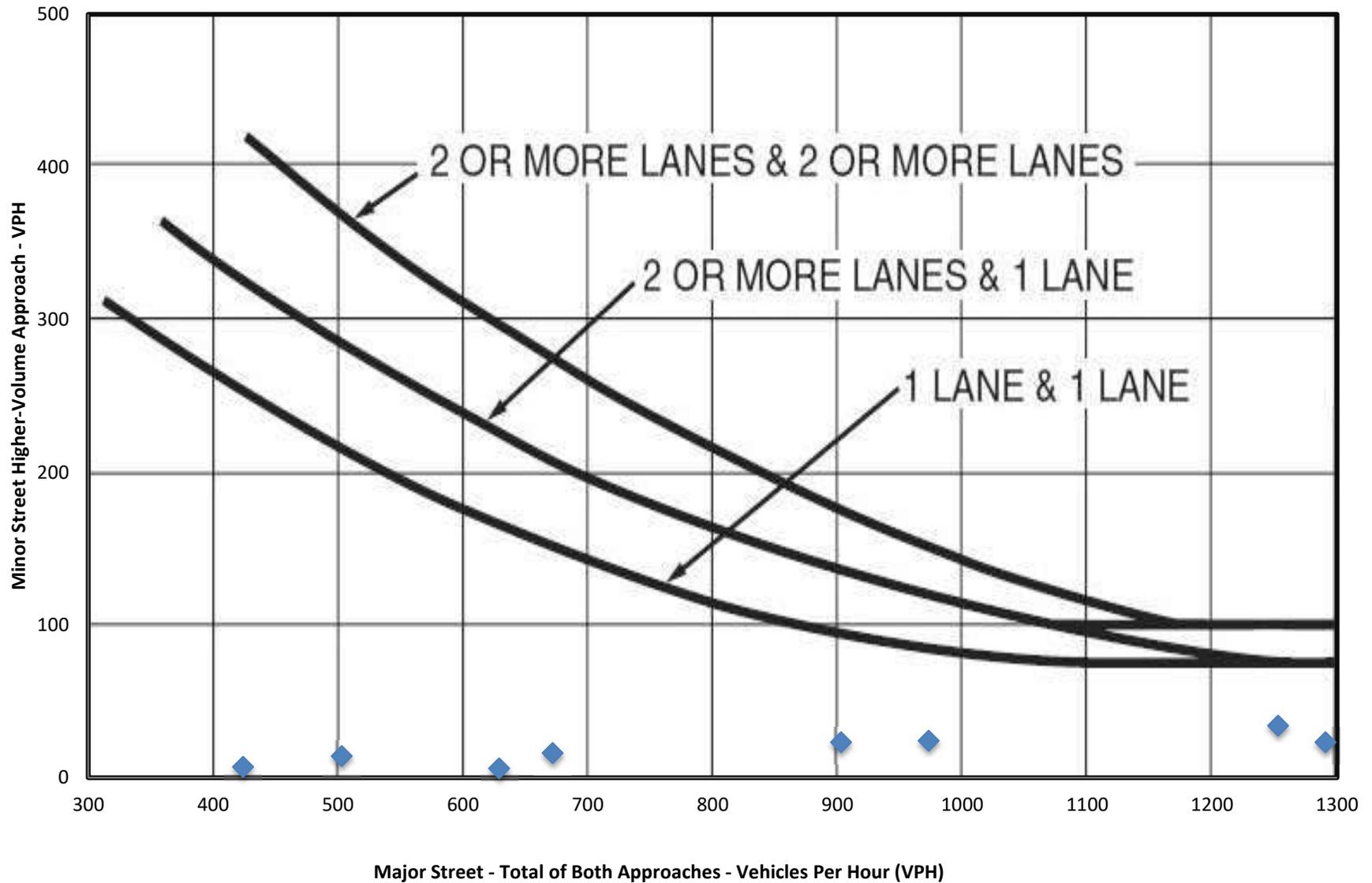
**If applicable, attach all supporting calculations and documentation.*

Total Number of Unique Hours Met On Figure 4C-4
0

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
12:00 AM	0	0	
12:15 AM	0	0	
12:30 AM	0	0	
12:45 AM	0	0	
1:00 AM	0	0	
1:15 AM	0	0	
1:30 AM	0	0	
1:45 AM	0	0	
2:00 AM	0	0	
2:15 AM	0	0	
2:30 AM	0	0	
2:45 AM	0	0	
3:00 AM	0	0	
3:15 AM	0	0	
3:30 AM	0	0	
3:45 AM	0	0	
4:00 AM	0	0	
4:15 AM	0	0	
4:30 AM	0	0	
4:45 AM	0	0	
5:00 AM	0	0	
5:15 AM	424	7	
5:30 AM	903	23	
5:45 AM	1397	41	
6:00 AM	1835	53	
6:15 AM	1893	60	
6:30 AM	1919	58	
6:45 AM	1940	52	
7:00 AM	2061	53	
7:15 AM	2096	54	
7:30 AM	2083	53	
7:45 AM	2038	51	
8:00 AM	1982	52	
8:15 AM	1465	37	

Hourly Vehicular Volume			
Hour Interval	Major Street Combined	Highest Minor Street Approach	Hour Met?
Beginning At	Vehicles Per Hour (VPH)	Vehicles Per Hour (VPH)	
8:30 AM	973	24	
8:45 AM	503	14	
9:00 AM	0	0	
9:15 AM	0	0	
9:30 AM	0	0	
9:45 AM	0	0	
10:00 AM	0	0	
10:15 AM	0	0	
10:30 AM	0	0	
10:45 AM	0	0	
11:00 AM	0	0	
11:15 AM	0	0	
11:30 AM	0	0	
11:45 AM	0	0	
12:00 PM	0	0	
12:15 PM	0	0	
12:30 PM	0	0	
12:45 PM	0	0	
1:00 PM	0	0	
1:15 PM	0	0	
1:30 PM	0	0	
1:45 PM	0	0	
2:00 PM	0	0	
2:15 PM	672	16	
2:30 PM	1253	34	
2:45 PM	1936	51	
3:00 PM	2602	62	
3:15 PM	2549	57	
3:30 PM	2554	57	
3:45 PM	2489	54	
4:00 PM	2463	59	
4:15 PM	2480	59	
4:30 PM	2528	55	
4:45 PM	2572	58	
5:00 PM	2561	48	
5:15 PM	1925	37	
5:30 PM	1291	23	
5:45 PM	629	6	
6:00 PM	0	0	
6:15 PM	0	0	
6:30 PM	0	0	
6:45 PM	0	0	
7:00 PM	0	0	
7:15 PM	0	0	
7:30 PM	0	0	
7:45 PM	0	0	
8:00 PM	0	0	
8:15 PM	0	0	
8:30 PM	0	0	
8:45 PM	0	0	
9:00 PM	0	0	
9:15 PM	0	0	
9:30 PM	0	0	
9:45 PM	0	0	
10:00 PM	0	0	
10:15 PM	0	0	
10:30 PM	0	0	
10:45 PM	0	0	
11:00 PM	0	0	

MUTCD Figure 4C-4. Warrant 3, Peak Hour (70% Factor)



The remaining data points are plotting of the chart due to the sum of Major Street Traffic exceeding 1,300 VPH.

APPENDIX Q

Comment Response Letter

November 21, 2025

Krysti Barksdale-Noble
Community Development Director
United City of Yorkville
651 Prairie Pointe Drive
Yorkville, IL 60560

Bradley P. Sanderson, P.E.
Chief Operating Officer / President
Engineering Enterprises, INC.
52 Wheeler Road
Sugar Grove, IL 60554

**Re: Response to Comments – Review #1
Project Steel**

Dear Krysti and Bradley,

Langan is pleased to provide the following responses (*listed in italics*) to the United City of Yorkville's comments via Engineering Enterprises, Inc. dated September 25, 2025. All comments are **listed in bold** below and summarized if needed.

General

- 1. The report addresses the impact of the development traffic after the data centers are constructed. It does not address how construction traffic will be addressed. A construction management plan will be required to be submitted no later than at the time of the building permit submittal. Detailed infrastructure requirements will be noted with future infrastructure agreements.**

Comment noted.

Page 8

- 1. Mitigation Improvements because of Project Cardinal to the north that will impact Project Steel to the south should be considered and discussed in the report.**
 - a. The speed limit of Galena Road will be lowered to 45 mph with its reconstruction according to Kendall County. Galena Road will also be reconstructed with a TWLTL from Eldamain to IL 47.**

TIS Analyses have been updated to reflect the addition of a TWLTL along Galena Road.

- b. Traffic leaving Project Cardinal’s Driveway #5 (Galena Road at East Beecher Road) should be considered at Project Steel’s Intersection #10.**

Applicable Project Cardinal Background Trips from Project Cardinal Driveways #5 and #6 were carried through as thru volumes at Intersection #10

- c. The Traffic Impact Study for Project Cardinal is currently being updated by Burns & McDonnell. The second submittal is anticipated to have lower trip generation totals, as it will utilize the recently updated Trip Generation Manual. Project Steel’s next submittal should reflect any updated numbers for trip generation by Project Cardinal.**

As discussed during correspondence with the city, the reduced Project Cardinal Trips were not reflected in the revised TIS as they are not anticipated to alter the findings of the TIS. A note has been added to the TIS explaining that the Project Cardinal Trip Generation is likely to be less than stated and as such the analyses are conservative.

- 2. Galena Road and Eldamain Road are under the jurisdiction of Kendall County. The Kendall County Highway Department should be provided with a copy of the traffic study. Their comments should be provided to the city.**

The revised TIS was submitted to Kendall County for their review.

- 3. An analysis of 95th percentile queues should be performed on all studied intersections.**

An analysis of the 95th percentile queues was added to the text and a queue comparison table has been provided.

Page 13

- 4. It is anticipated that both Corneils and Beecher Intersections (#5 and #7) will be reconstructed with roundabouts. The impact analysis should reflect these improvements.**

Intersections #5 and #7 have been analyzed as single lane roundabouts per the provided concept plans in the revised TIS.

- 5. The warrants for right-turn or left-turn lanes within the IDOT BDE and BLRS Manuals were not discussed in the report. These warrants consider factors such as crash experience, traffic operations, sight distance restrictions, or engineering judgement. Please obtain the crash history within the study area. Include the history, a brief discussion, and all correspondence in the report.**

A turn lane warrant discussion has been added to the revised report.

Page 14

- 6. The proposed IDOT project along IL 47 is planned to encompass Intersection #8 (IL 47 and Corneils). Two (2) lanes will be provided in each direction along IL 47. The project will terminate at Kennedy Road in Yorkville. Update this section of the impact study to consider these improvements. These plans will be provided via email.**

The analyses at this intersection have been updated to reflect the proposed conditions detailed in the provided roadway plans.

- 7. In the 2044 Build Condition, the proposed improvements for westbound left-turning traffic at Intersection #3 (Eldamain and Corneils) result in LOS E for the AM Peak Hour. The level of service for the 2044 No Build condition for this movement is LOS D. Whether or not mitigation is not provided, the report should discuss this.**

A discussion regarding the LOS of the westbound left turn movement during the AM Peak Hour has been added to the revised TIS.

Page 18

- 8. Should the site plan be updated, the provided Figure should be revised.**

Comment noted.

- 9. Dimension the distances between all existing roads and proposed driveways analyzed in this study.**

A figure showing proposed driveway and intersection spacing has been provided in the revised TIS.

- 10. The distance between Intersection #7 (Corneils and E Beecher) and Intersection #6 (Driveway A and Corneils) is of concern. According to IDOT's BDE Manual Section 36-1.04, Spacing for unsignalized intersections and driveways will depend on the available stopping sight distance, intersection sight distance, traffic volumes, turning volumes, the addition of turn lanes, turning speeds, access control, and local development. The current site plan has these intersections spaced at 250 feet. According to Figure 28-3E of the BLRS Manual, the minimum intersection sight distance for a 30 mph road is 335 feet. In addition, the proposed location of Intersection #7 will likely impact the splitter island of the future eastern roundabout.**

Site Driveway A is now proposed along the extended East Beecher Road. The new driveway location is proposed 355 ft from the edge of Corneils Road. The final driveway location will be finalized as the civil design progresses further.

- 11. The location of Intersection #4 (Corneils and Site Driveway C) on the Site Plan and the location shown on Page 55 of the Appendix do not match.**

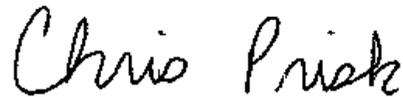
The site plan showed on page 55 of the Appendix was part of the preliminary submission sent to the city and their reviewer. Since the preliminary submission, the site plan has been updated and the site plan provided on Figure 2 reflects the most recent site plan.

12. The United City of Yorkville has plans to construct multi-use paths along the project's limits. Discuss any safety concerns for pedestrians with the proposed access drives and existing intersections.

As shown on Table 2, each driveway is only anticipated to see around 360 Two-way vehicular trips a day. Given these low volumes, few vehicular and pedestrian interactions are anticipated.

If you should have any comments or questions, please contact me via phone (724) 514-5154 or email cprisk@langan.com.

Sincerely,
**Langan Engineering, Environmental, Surveying,
Landscape Architecture and Geology, D.P.C**



Christopher A. Prisk, P.E., PTOE
Associate