

**Traffic Study for
Schonsheck Distribution Center
D.P.U.D. B-3**

**Situated in the Southwest Quarter, Section 20,
Township 38 North, Range 6 East,
Washington Township, Elkhart County, Indiana**

**Tax ID Numbers:
03-20-300-007-030 (part)
03-20-300-002-030
03-20-300-003-030**

prepared by



Marbach, Brady & Weaver, Inc.

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www.marbach.us

Engineering and Surveying Since 1918

MBW Project Number 0239-2019

January 30, 2020

Introduction

A DPUD B-3 application for the proposed project was submitted January 6, 2020. The County Engineer requested a Traffic Study as part of the application. The proposed project is for a pre-delivery inspection and distribution center for recreational vehicles.

One new private driveway is proposed for the County Road 6 frontage. It would be for both entrance and exit traffic. No access driveway is proposed for the County Road 19 frontage in this project.

Existing Traffic

Elkhart County Highway Department traffic count data was provided for County Road 6 and County Road 19 adjacent to the property. This data was used to calculate existing traffic volumes for the year 2020. A 2 percent growth rate was applied to these traffic counts. This data for County Road 6 is shown on Exhibit 1. This data for County Road 19 is shown on Exhibit 3.

Proposed Traffic

The proposed facility would employ 40 at opening and 100 at full operation. Hours of operation are planned to be 5 a.m. to 5 p.m. 100 employee vehicles were used for this traffic study. All new traffic was assumed to be conservative. The proposed facility would have 76 additional vehicles per day for RV arrival and delivery.

The calculations for Average Daily Traffic (ADT) for the proposed driveway on County Road 6 are shown on Exhibit 1. Proposed AM and PM peak traffic volumes for the proposed CR 6 driveway are shown on Exhibit 2.

CR 6 and CR 19 Intersection

The existing traffic volumes for the year 2020 on County Roads 6 and 19 were used to develop intersection traffic patterns. No turning movement data was available at the intersection. All existing traffic was assumed to be through traffic for the analysis. The four-way stop signs require that every vehicle stops at the intersection. As a result, the turning movements from existing or proposed traffic are not needed and do not affect traffic delay calculations.

The proposed traffic volumes from the proposed County Road 6 driveway was added to the existing traffic volumes to determine the impact on the intersection.

Traffic Study Results and Conclusions

Synchro version 11 was used to assess the existing and proposed traffic conditions at the County Road 6 and 19 intersection. The AM peak was evaluated for the existing and proposed conditions. An intersection map and Synchro report for the AM peak traffic under existing and proposed conditions are attached. An intersection map and Synchro report for the PM peak traffic under existing and proposed conditions are attached.

The intersection will operate at Level of Service A for the existing condition with 2020 traffics for both the AM and PM peak hours. The intersection will operate at Level of Service A for the proposed condition with 2020 traffic volumes for both the AM and PM peak hours.

The average traffic delay for the existing AM peak hour is 7.6 seconds. The average traffic delay for the proposed AM peak hour is 7.7 seconds, an increase of 0.1 second. The average traffic delay for the existing PM peak hour is 8.7 seconds. The average traffic delay for the proposed PM peak hour is 9.1 seconds, an increase of 0.4 seconds.

These results indicate that the increase in traffic at the intersection of County Roads 6 and 19 from the proposed development will not cause a significant increase in traffic delay or intersection Level of Service.

TRAFFIC CALCULATIONS

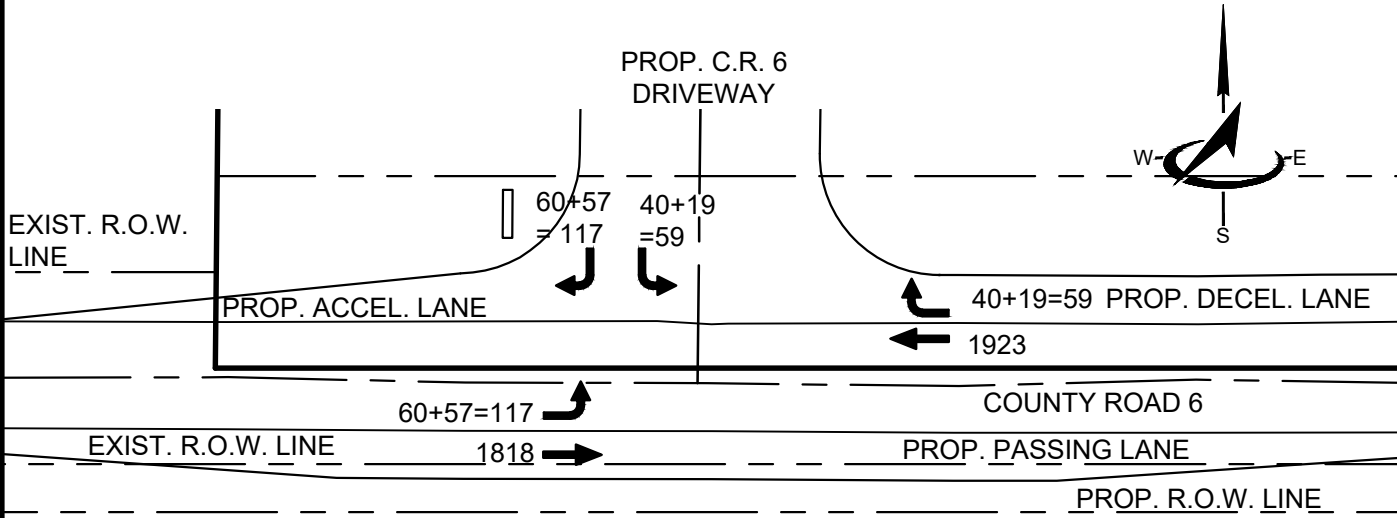
EXISTING COUNTY ROAD 6 TRAFFIC (ELKHART COUNTY 5/30/17 DATA)

1. ADT: 3,525 VEHICLES (2017) +2% GROWTH PER YR: 3,741 VEHICLES(2020)
2. PEAK AM HOUR: 11:45 A.M., 119 VEHICLES+2%/YR: 126 VEHICLES (2020)
3. PEAK PM HOUR: 4:30 P.M., 316 VEHICLES+2%/YR: 335 VEHICLES (2020)
4. DIRECTIONAL DISTRIBUTION: 48.6% WB, 51.4% EB
 - 4.1. ADT: $3,741 \times 0.486 = 1,818$ WB, $3,741 \times 0.514 = 1,923$ EB
 - 4.2. PEAK AM: $126 \times 0.486 = 61$ WB, $126 \times 0.514 = 65$ EB
 - 4.3. PEAK PM: $335 \times 0.486 = 163$ WB, $335 \times 0.514 = 172$ EB

PROPOSED TRAFFIC

1. EMPLOYEE TRAFFIC (ASSUME ALL NEW TRAFFIC TO BE CONSERVATIVE)
 - 1.1. ENTRANCE: C.R. 6 DRIVE, ORIGIN: EAST 40%/WEST 60% (ESTIMATE)
 - 1.1.1. ADT: 100 VEHICLES, 40 EAST, 60 WEST (OWNER'S PROJECTION)
 - 1.1.2. AM PEAK HOUR: 7-8 AM: 60 (ESTIMATE) 24 E/36 W
 - 1.2. EXIT: C.R. 6 DRIVE, DESTINATION: EAST 40%/WEST 60% (ESTIMATE)
 - 1.2.1. ADT: 100 VEHICLES, 40 EAST, 60 WEST (OWNER'S PROJECTION)
 - 1.2.2. PM PEAK HOUR: 4-5 PM: 60 (ESTIMATE)
 - 1.2.3. DESTINATION: EAST 40%/WEST 60%, 24 E/36 W (ESTIMATE)
2. DELIVERY VEHICLES (ASSUME ALL NEW TRAFFIC TO BE CONSERVATIVE)
 - 2.1. ENTRANCE: C.R. 6 DRIVE, ORIGIN: EAST 25%/WEST 75% (ESTIMATE)
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PROPOSED COUNTY ROAD 6 DRIVEWAY
 AVERAGE DAILY TRAFFIC
 SCHONSHECK D.P.U.D. B-3
 20596 CO.RD. 6, E OF CO. RD. 19
 WASHINGTON TWP., ELKHART CO., IN

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TRAFFIC CALCULATIONS

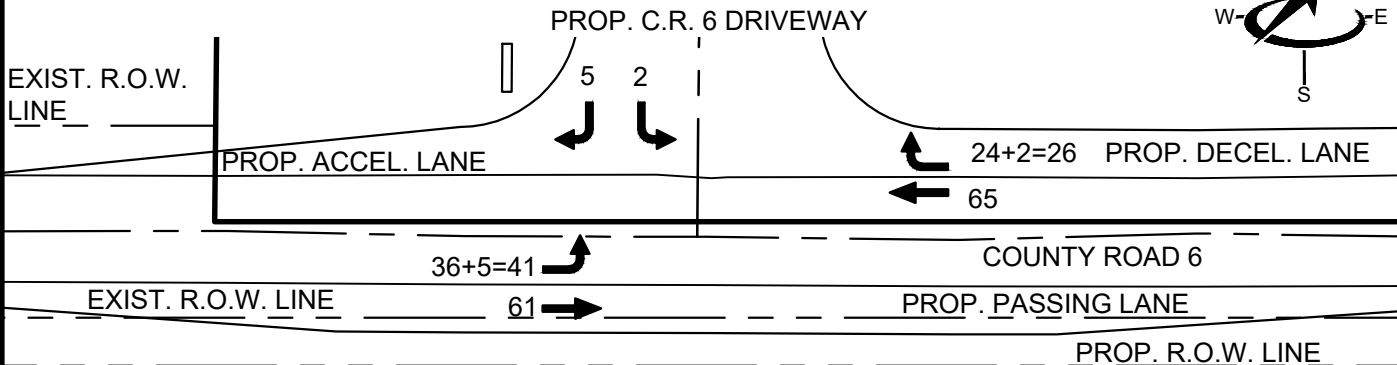
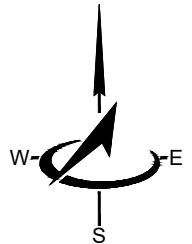
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TRAFFIC NOTES:

1. EXISTING AM PEAK HOUR TRAFFIC WAS 11:45 AM-12:45 PM
2. PROPOSED AM PEAK HOUR TRAFFIC WOULD BE BETWEEN 7-8 AM.
3. FOR THIS ANALYSIS, BOTH WERE ASSUMED TO BE AT THE SAME HOUR TO BE CONSERVATIVE.

PROPOSED COUNTY ROAD 6 DRIVEWAY
 AM PEAK HOUR TRAFFIC
 SCHONSHECK D.P.U.D. B-3
 20596 CO.RD. 6, E OF CO. RD. 19
 WASHINGTON TWP., ELKHART CO., IN



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TRAFFIC CALCULATIONS

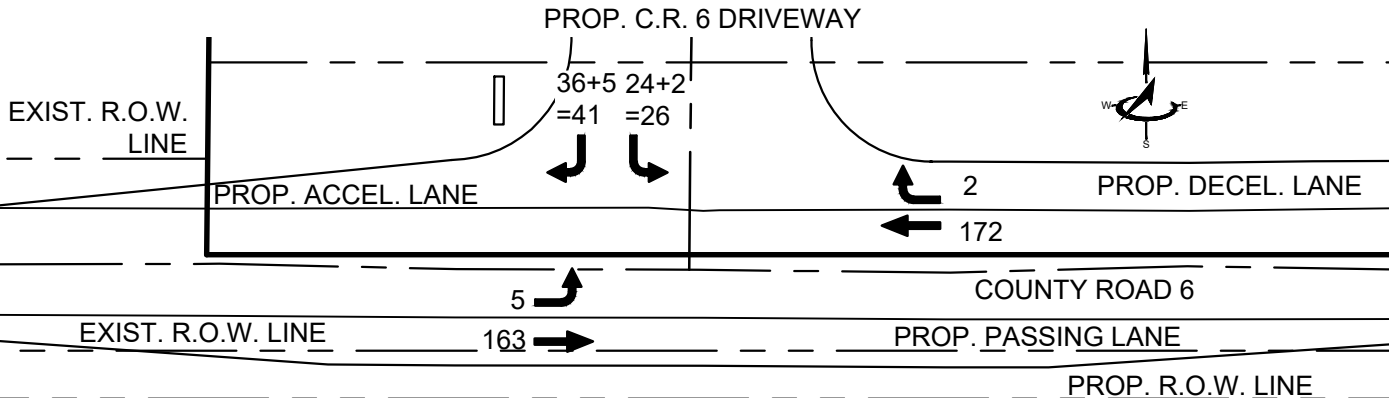
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TRAFFIC NOTES:

1. EXISTING PM PEAK HOUR TRAFFIC WAS 4:30 PM-5:30 PM.
2. PROPOSED PM PEAK HOUR TRAFFIC WOULD BE BETWEEN 4 AND 5 PM.
3. FOR THIS ANALYSIS, BOTH WERE ASSUMED TO BE AT SAME HOUR TO BE CONSERVATIVE.

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 PM PEAK HOUR TRAFFIC
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TRAFFIC CALCULATIONS

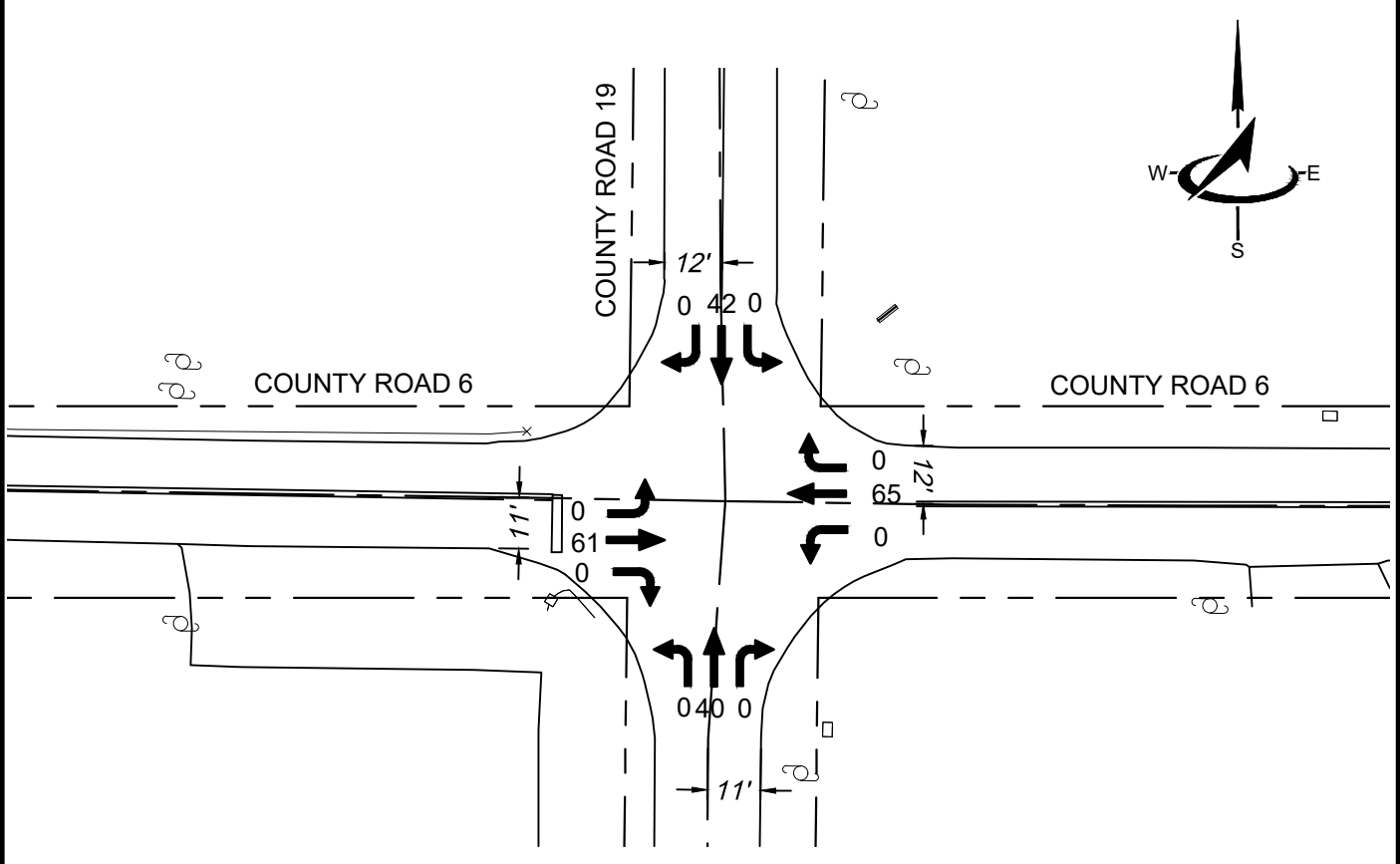
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EXISTING COUNTY ROAD 19 TRAFFIC (ELKHART COUNTY 5/14/19 DATA)

1. ADT: 1,318 VEHICLES (2019)+2% PER YR: 1,344 VEHICLES (2020)
2. PEAK AM HOUR: 11:15 A.M., 80 VEHICLES+2% PER YR: 82 VEHICLES (2020)
3. PEAK PM HOUR: 4:45 P.M., 130 VEHICLES+2% PER YR: 133 VEHICLES (2020)
4. DIRECTIONAL DISTRIBUTION: 49.0% NB, 51.0% SB
 - 4.1. ADT: $1,344 \times 0.490 = 653$ NB, $1,344 \times 0.510 = 685$ SB
 - 4.2. PEAK AM: $82 \times 0.490 = 40$ NB, $82 \times 0.510 = 42$ SB
 - 4.3. PEAK PM: $133 \times 0.490 = 65$ NB, $133 \times 0.510 = 68$ SB

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COUNTY ROAD 6 AND 19 INTERSECTION
EXISTING AM PEAK HOUR TRAFFIC

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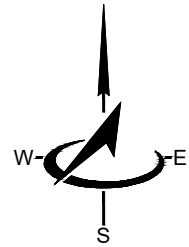
TRAFFIC CALCULATIONS

EXISTING COUNTY ROAD 6 TRAFFIC (ELKHART COUNTY 5/30/17 DATA)

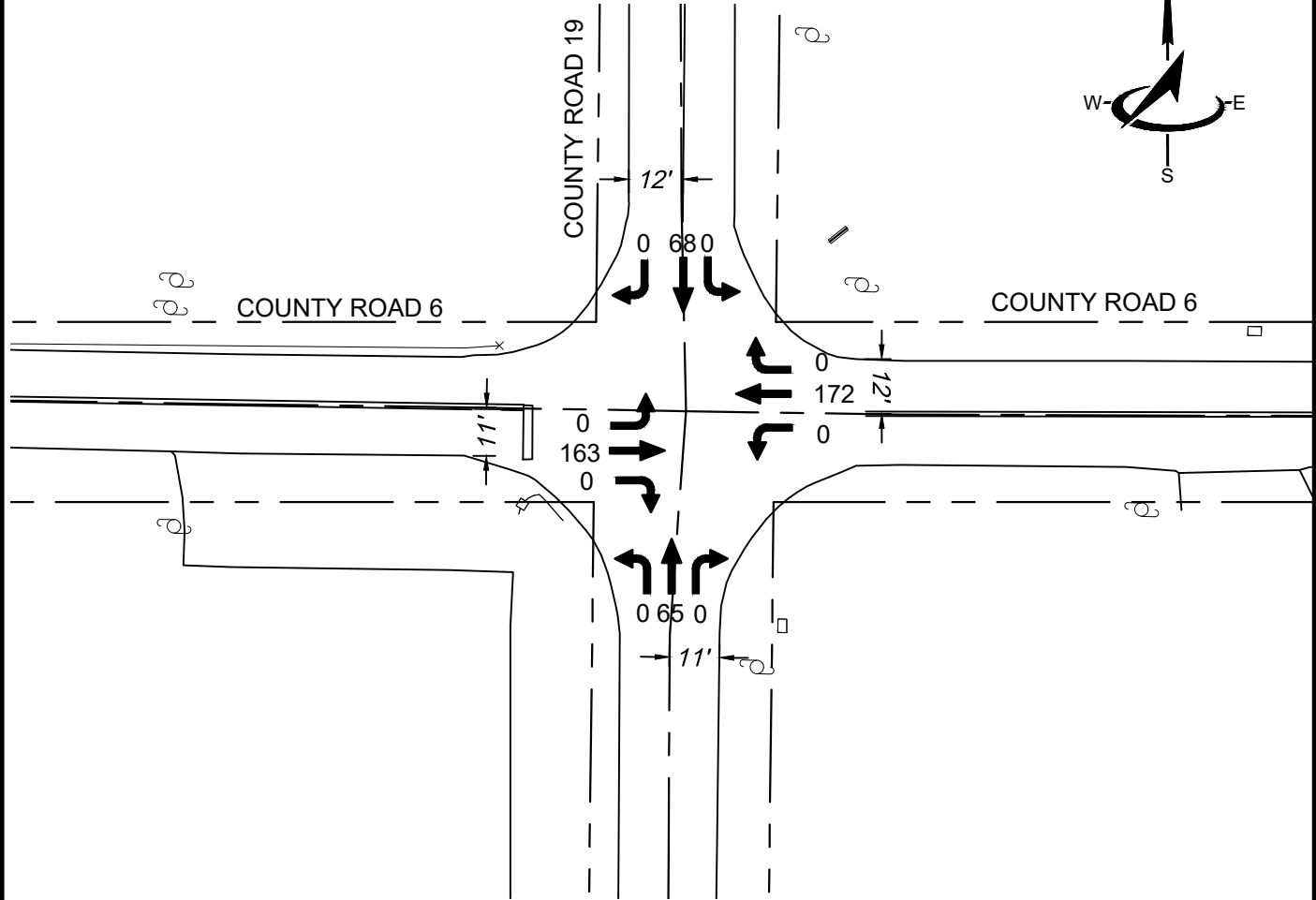
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2. PEAK AM HOUR: 11:15 A.M., 80 VEHICLES+2% PER YR: 82 VEHICLES (2020)
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**COUNTY ROAD 6 AND 19 INTERSECTION
EXISTING PM PEAK HOUR TRAFFIC**

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TRAFFIC CALCULATIONS

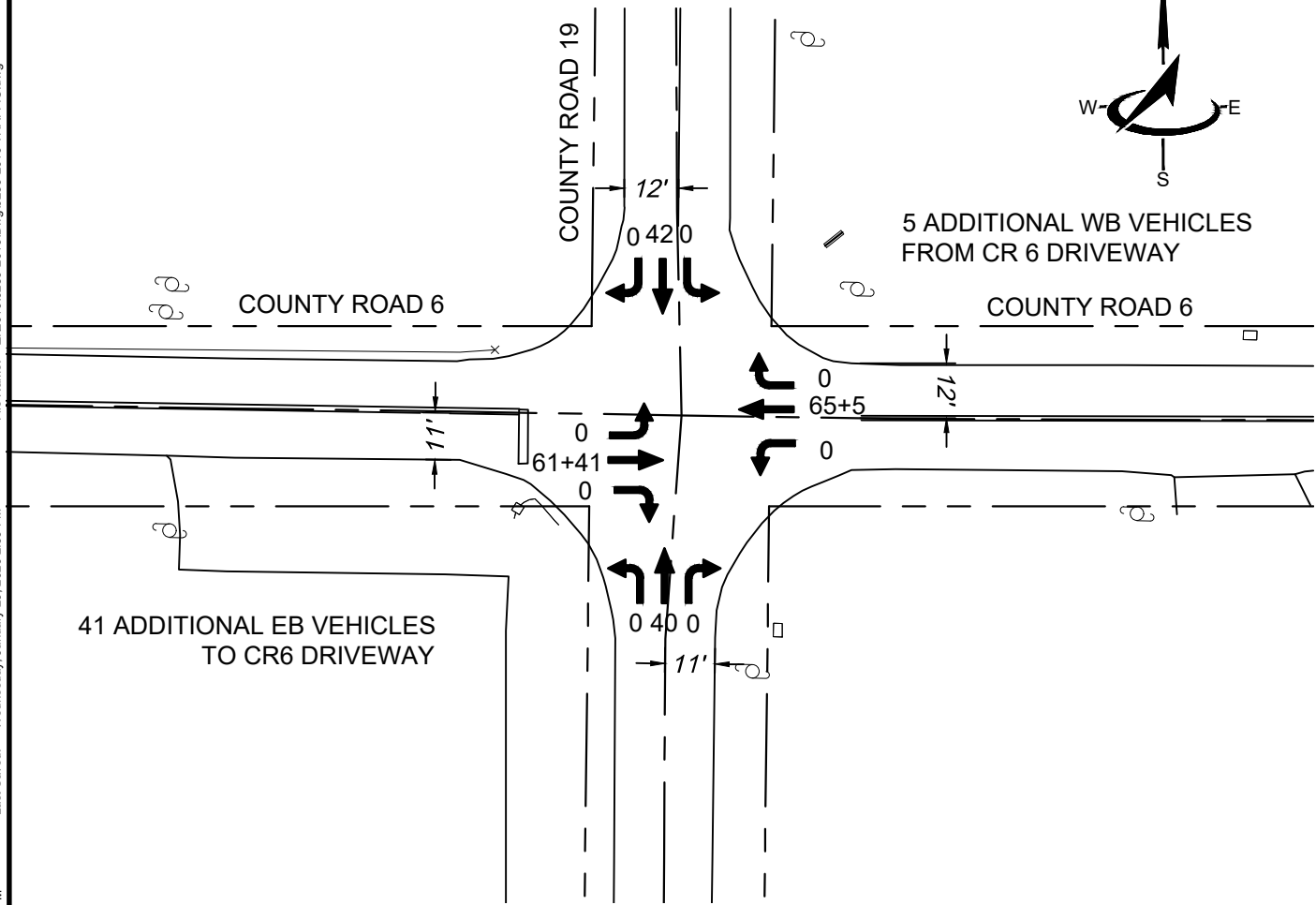
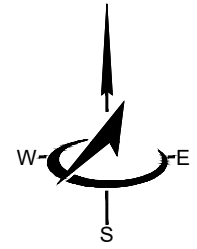
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**COUNTY ROAD 6 AND 19 INTERSECTION
 PROPOSED AM PEAK HOUR TRAFFIC**

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TRAFFIC CALCULATIONS

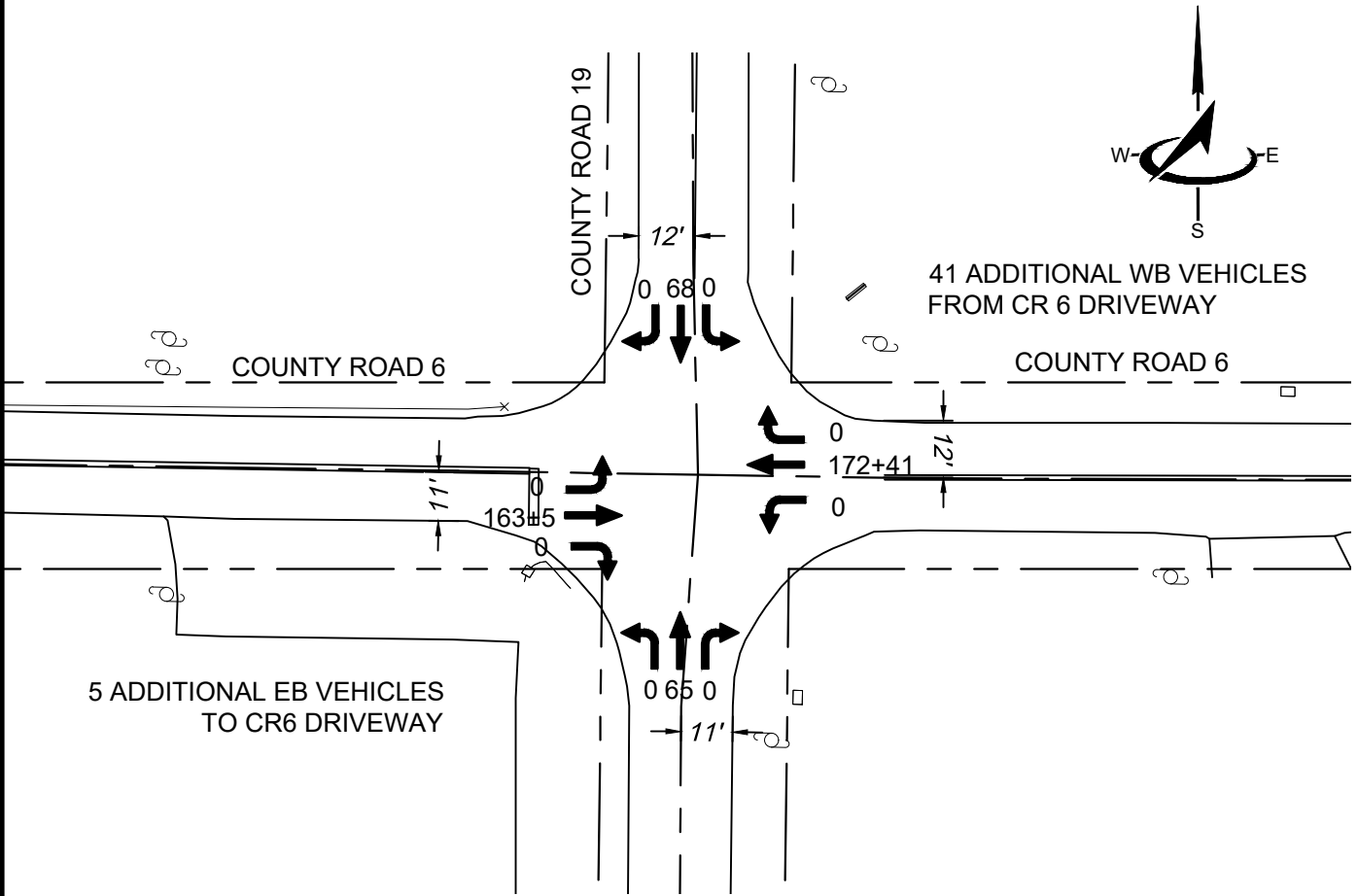
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2. PEAK AM HOUR: 11:15 A.M., 80 VEHICLES+2% PER YR: 82 VEHICLES (2020)
3. PEAK PM HOUR: 4:45 P.M., 130 VEHICLES+2% PER YR: 133 VEHICLES (2020)
4. DIRECTIONAL DISTRIBUTION: 49.0% NB, 51.0% SB
 - 4.1. ADT: $1,344 \times 0.490 = 653$ NB, $1,344 \times 0.510 = 685$ SB
 - 4.2. PEAK AM: $82 \times 0.490 = 40$ NB, $82 \times 0.510 = 42$ SB
 - 4.3. PEAK PM: $133 \times 0.490 = 65$ NB, $133 \times 0.510 = 68$ SB

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 Last Saved: Wednesday, January 29, 2020 3:34 PM
 Printed: Wednesday, January 29, 2020 3:34 PM



COUNTY ROAD 6 AND 19 INTERSECTION
 PROPOSED PM PEAK HOUR TRAFFIC

SCHONSHECK D.P.U.D. B-3
 20596 CO.RD. 6, E OF CO. RD. 19
 WASHINGTON TWP., ELKHART CO., IN

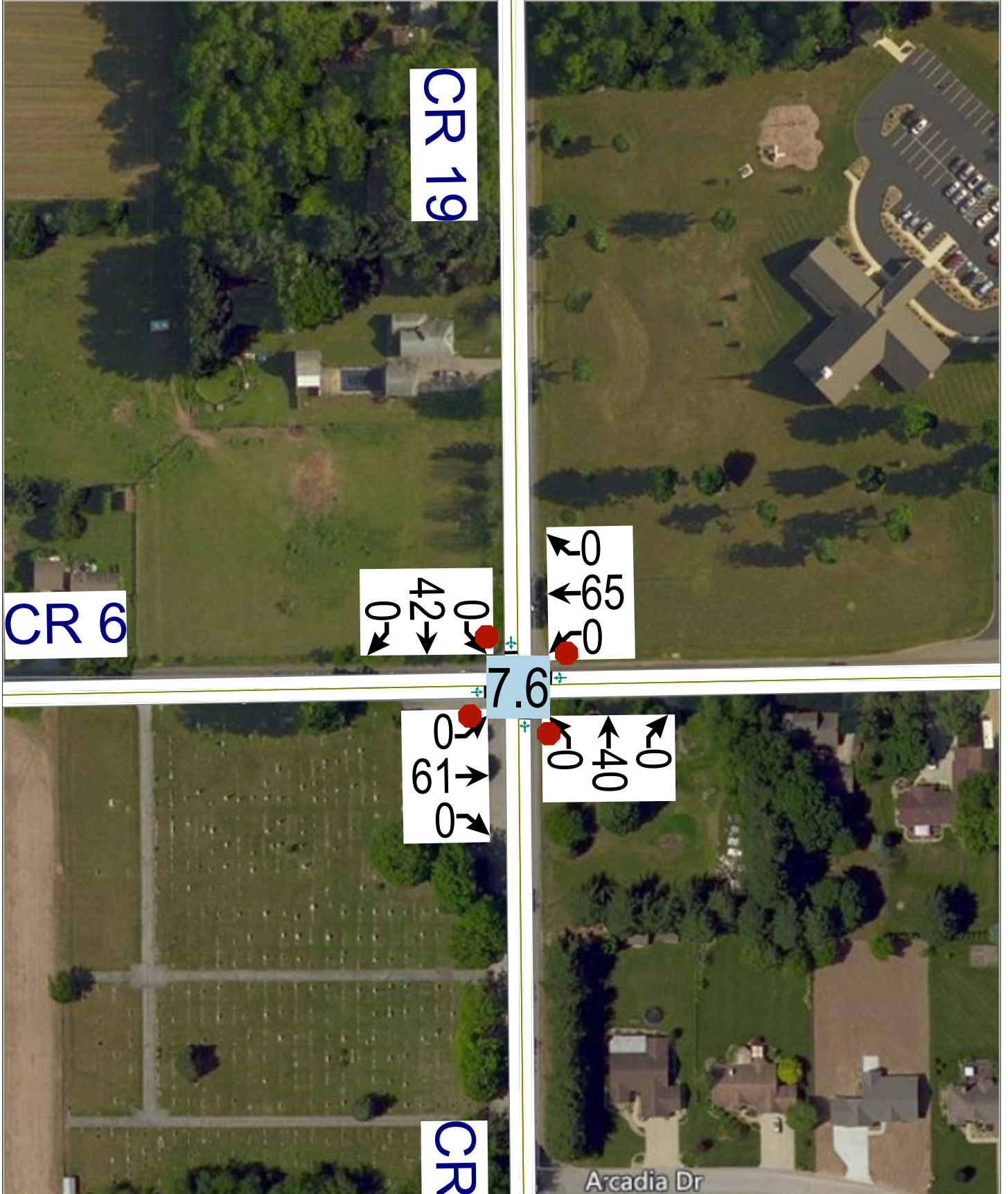
AUTOCAD FILE: 0239-2019 TRAFFIC.dwg



Marbach
 Marbach, Brady & Weaver, Inc.
 Engineering & Surveying Since 1918

3220 Southview Drive
 Elkhart, Indiana 46514
 (574) 266-1010
 Fax: (574) 262-3040
 info@marbach.us
 www.marbach.us

















JOB NUMBER 0239-2019	SCALE: NONE	DRAWN BY DSH	© 2020 Marbach, Brady & Weaver, Inc.	SHEET 2 OF 2	DRAWING NO. EXHIBIT 4
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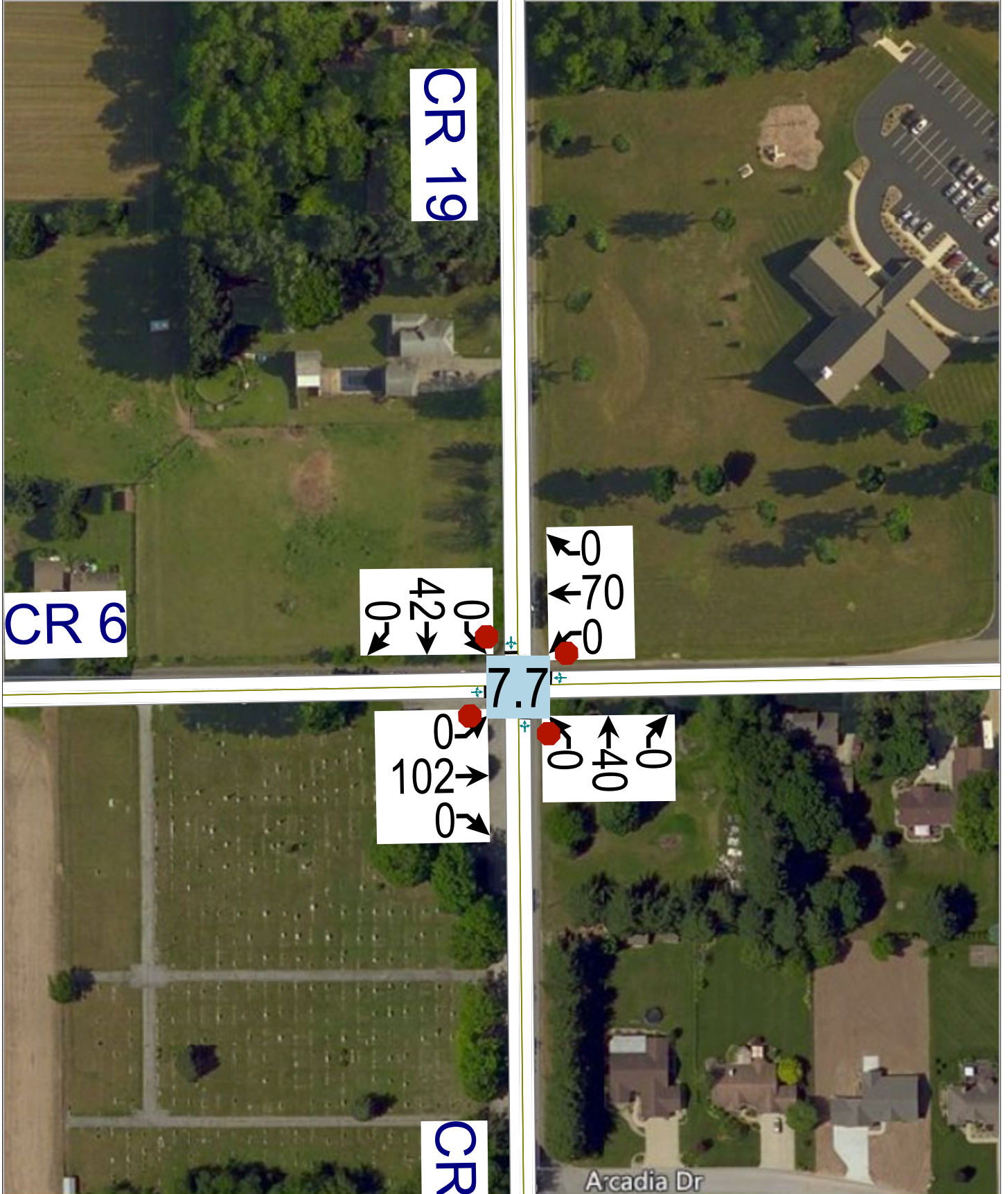


Lanes, Volumes, Timings
3: CR 19 & CR 6

AM Peak Hour Existing Condition

01/10/2020

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	61	0	0	65	0	0	40	0	0	42	0
Future Volume (vph)	0	61	0	0	65	0	0	40	0	0	42	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	11	8	8	12	8	8	11	8	8	12	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1801	0	0	1863	0	0	1801	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1801	0	0	1863	0	0	1801	0	0	1863	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1728			1853			1518			1730	
Travel Time (s)		39.3			42.1			34.5			39.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	66	0	0	71	0	0	43	0	0	46	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	66	0	0	71	0	0	43	0	0	46	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.04	1.20	1.20	1.00	1.20	1.20	1.04	1.20	1.20	1.00	1.20
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	13.4%					ICU Level of Service A						
Analysis Period (min)	15											

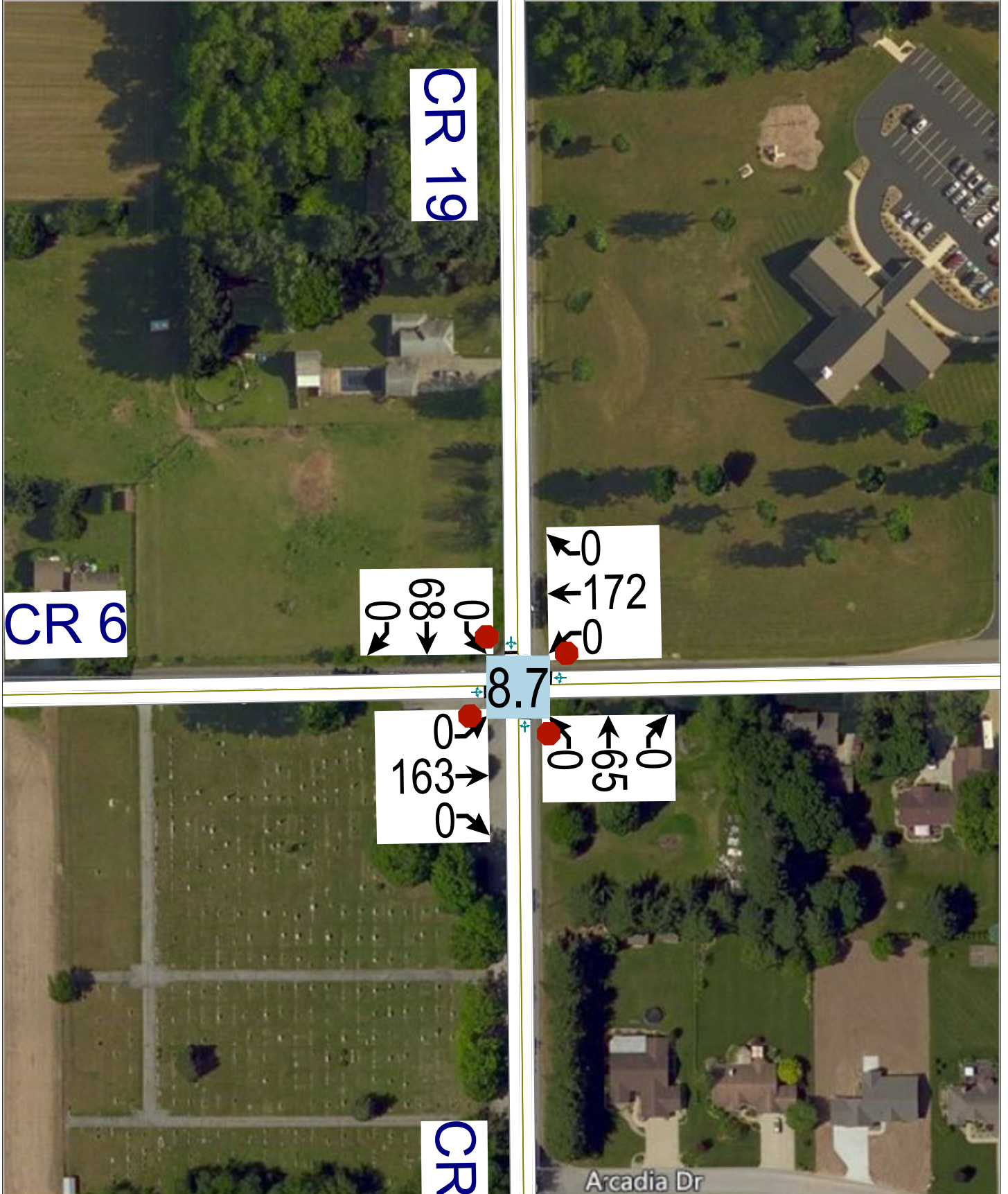


Lanes, Volumes, Timings

3: CR 19 & CR 6

01/10/2020

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	96	0	0	65	0	0	40	0	0	42	5
Future Volume (vph)	0	96	0	0	65	0	0	40	0	0	42	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	11	8	8	12	8	8	11	8	8	12	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												0.987
Flt Protected												
Satd. Flow (prot)	0	1801	0	0	1863	0	0	1801	0	0	1839	0
Flt Permitted												
Satd. Flow (perm)	0	1801	0	0	1863	0	0	1801	0	0	1839	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1728			1853			1518			1730	
Travel Time (s)		39.3			42.1			34.5			39.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	104	0	0	71	0	0	43	0	0	46	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	104	0	0	71	0	0	43	0	0	51	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.04	1.20	1.20	1.00	1.20	1.20	1.04	1.20	1.20	1.00	1.20
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	15.1%						ICU Level of Service A					
Analysis Period (min)	15											

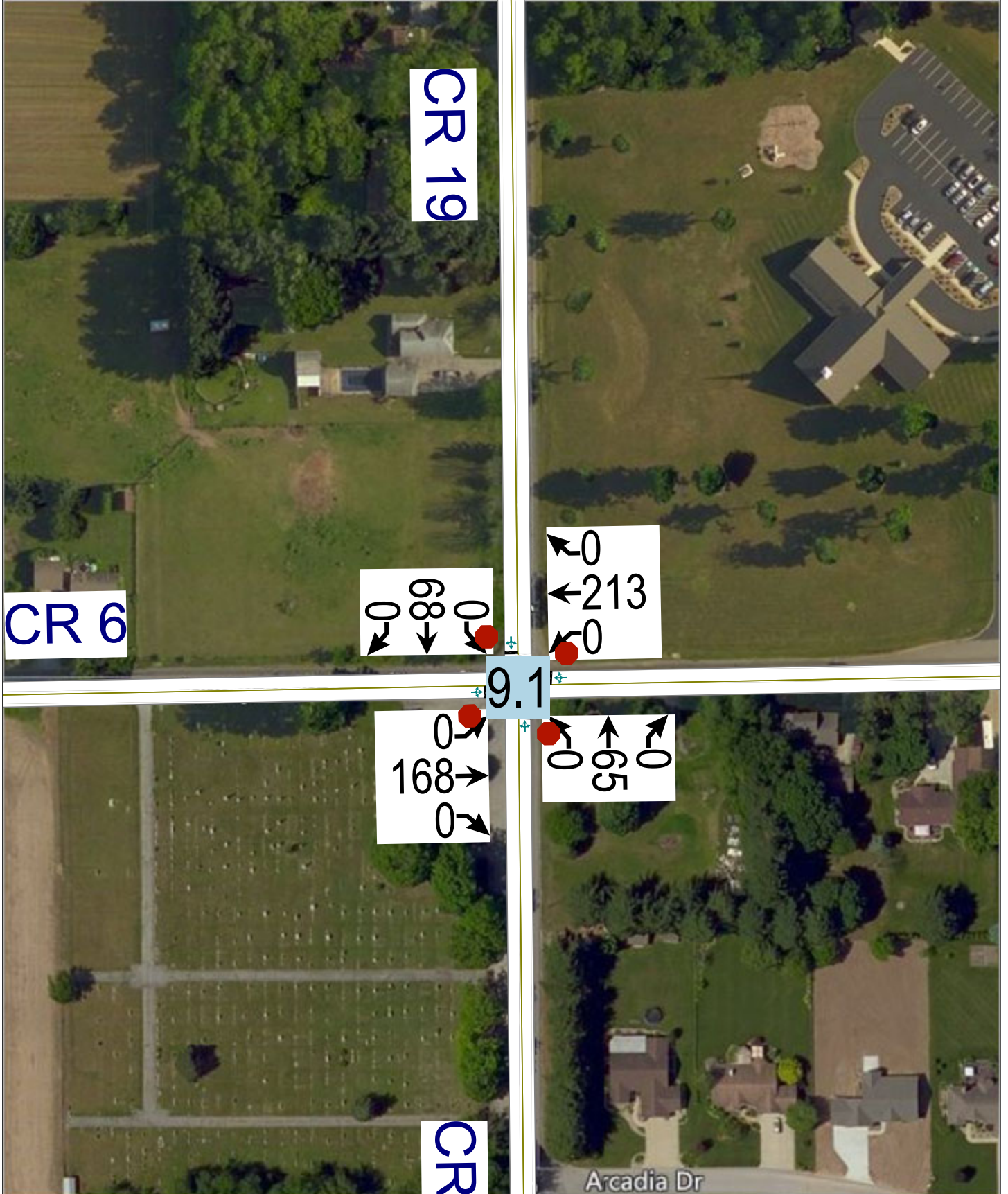


Lanes, Volumes, Timings
3: CR 19 & CR 6

PM Peak Hour Existing Condition

01/10/2020

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	163	0	0	172	0	0	65	0	0	68	0
Future Volume (vph)	0	163	0	0	172	0	0	65	0	0	68	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	11	8	8	12	8	8	11	8	8	12	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1801	0	0	1863	0	0	1801	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1801	0	0	1863	0	0	1801	0	0	1863	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1728			1853			1518			1730	
Travel Time (s)		39.3			42.1			34.5			39.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	177	0	0	187	0	0	71	0	0	74	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	177	0	0	187	0	0	71	0	0	74	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.04	1.20	1.20	1.00	1.20	1.20	1.04	1.20	1.20	1.00	1.20
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	19.3%						ICU Level of Service A					
Analysis Period (min)	15											



Lanes, Volumes, Timings
3: CR 19 & CR 6

PM Peak Hour Proposed Condition

01/10/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	168	0	0	187	0	0	65	0	0	68	20
Future Volume (vph)	0	168	0	0	187	0	0	65	0	0	68	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	8	11	8	8	12	8	8	11	8	8	12	8
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												0.969
Flt Protected												
Satd. Flow (prot)	0	1801	0	0	1863	0	0	1801	0	0	1805	0
Flt Permitted												
Satd. Flow (perm)	0	1801	0	0	1863	0	0	1801	0	0	1805	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1728			1853			1518			1730	
Travel Time (s)		39.3			42.1			34.5			39.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	183	0	0	203	0	0	71	0	0	74	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	183	0	0	203	0	0	71	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.20	1.04	1.20	1.20	1.00	1.20	1.20	1.04	1.20	1.20	1.00	1.20
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	21.3%						ICU Level of Service A					
Analysis Period (min)	15											