PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

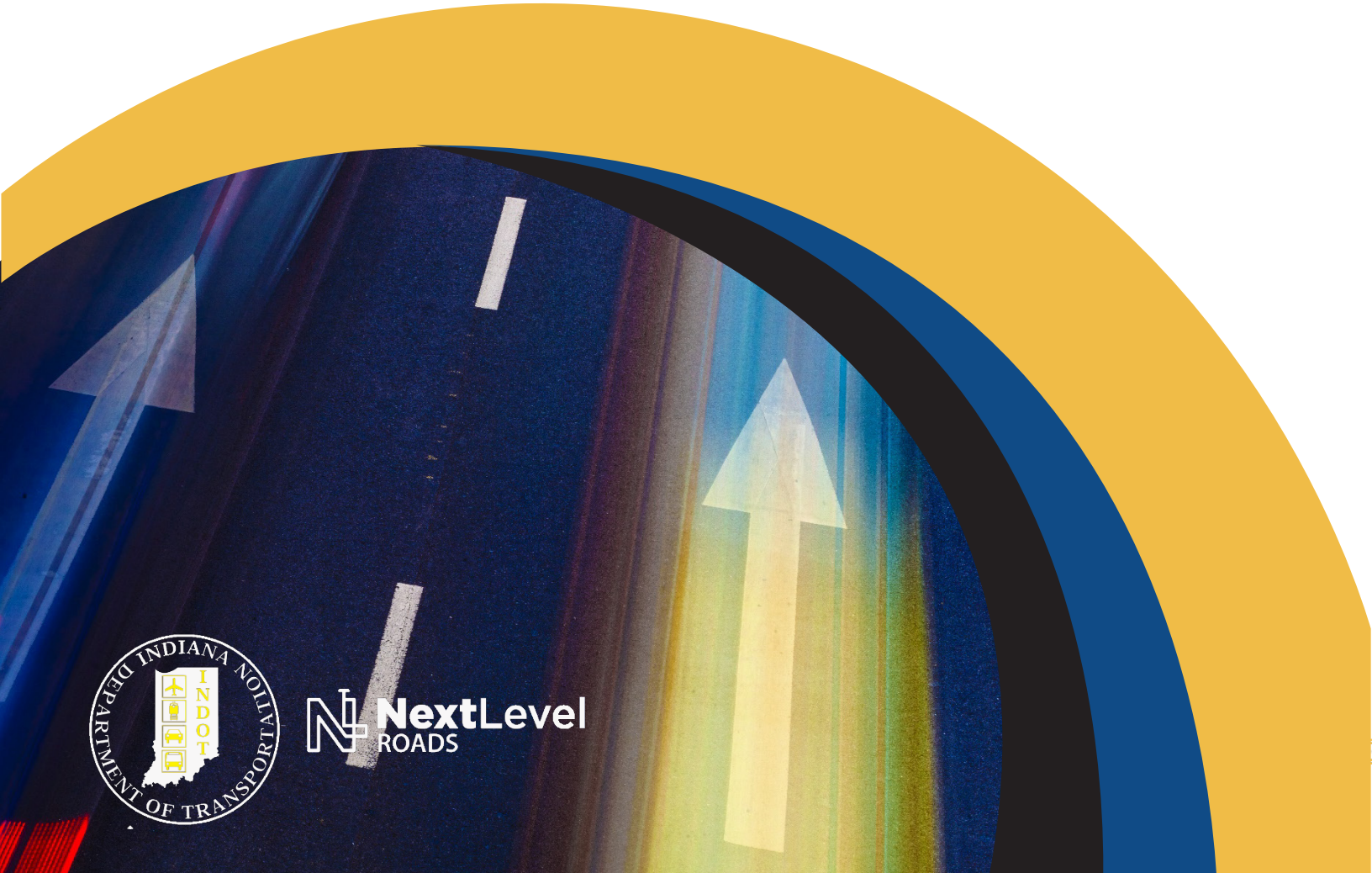
EXISTING TRANSPORTATION CONDITIONS REPORT

FINAL

Revision 1 – March 27, 2024

Prepared By

PARSONS



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1. INTRODUCTION

1.1. PURPOSE OF THIS REPORT

ProPEL is an Indiana Department of Transportation (INDOT) initiative for transportation planning that uses collaborative Planning and Environment Linkage (PEL) studies to consider environmental, community, and economic goals. Through the PEL studies, INDOT aspires to create smarter transportation systems that build stronger communities. INDOT is using PEL studies on the US 30 and US 31 corridors in central and northern Indiana. This Existing Transportation Conditions Report is being prepared for the ProPEL US 31 North study. The study corridor is approximately 27 miles long extending from CR 700 North, just south of the Fulton/Marshall County line, to CR 300 North, just south of the Eel River in Miami County. The study corridor location is shown in Figure 1.

As part of the data-gathering phase of these studies, the purpose of this report is to document existing transportation conditions in the corridor for consideration when defining the purpose and need for the study. The report will be used to inform the public and stakeholders and will support the early phases of the alternatives development and screening portion of this study. The existing transportation conditions will establish a baseline to which alternatives may be compared.

1.2. METHODOLOGY

Existing transportation conditions were gathered and assessed focusing on four areas: infrastructure (Section 2), mobility (Section 3), traffic operations (Section 4), and safety (Section 5). Plans for future improvements were also considered (Section 6). This information was supplemented and validated by input gathered from the public to date (Section 7). The following sections document the existing transportation conditions within the study corridor and identify potential mobility and safety concerns for all users.

2. INFRASTRUCTURE

2.1. ROADWAY

US 31 is a four-lane divided roadway throughout the study limits. It is classified as a Principal Arterial roadway. The median is typically 60 feet wide excluding turn lanes at intersections, except at the south end of the corridor south of SR 16 where the median is typically 50 feet wide. The roadway was designed with a 70 miles per hour (mph) design speed and currently has a posted speed limit of 60 mph. The roadway is asphalt surfaced. The base original roadway has likely been resurfaced multiple times since its original construction. Both concrete and asphalt original construction materials were used. Concrete was used between the Eel River bridge and approximately SR 16, and also for the portion of the study limits just south of Old US 31 to the north end of the study. Between approximately SR 16 and Old US 31, the pavement is full depth asphalt.

Along US 31, traffic is typically stop controlled for the crossing streets. No signalized intersections are present along US 31 within the study limits. The intersections at Old US 31/Southway 31 and CR 50 East/Sweetgum Road are two-way stop-controlled, but also have a yellow/red intersection control flashing beacon: yellow to US 31, red to the cross street. One interchange is present within the corridor. It is located at SR 25 and is configured as a diamond interchange with SR 25 crossing over US 31. SR 14 crosses over US 31 via a bridge, however no access is provided between the two roadways. There are no highway-rail crossings along US 31.

Figure 1 – Study Corridor Location

US 31 is generally on a north-south bearing and crosses through a predominantly grid-based county road network. As a result, intersecting roadways in the study corridor generally are perpendicular to the highway. According to the Indiana Design Manual, the desirable angle of the intersection (skew) is within 20 degrees of perpendicular, and a recommended maximum of 30 degrees from perpendicular. All but one of the intersections in the study corridor are within 20 degrees of perpendicular. The one exception that is greater than 20 degrees from perpendicular is the south approach of Old US 31, though the angle of intersection is still within the maximum of 30 degrees from perpendicular.

The right-of-way width along US 31 is highly variable. Typical tangent widths range from 87 feet each side of the roadway centerline to 150 feet each side of centerline and tend to increase from the southern end of the study corridor to the north. The right-of-way width at the SR 25 interchange is wider to accommodate the ramps.

2.2. BRIDGES AND SMALL STRUCTURES

Information for bridges and small structures (i.e., culverts larger than 36-inch span) was obtained from the INDOT Bridge Inspection Application System (BIAS) database. The structure information is summarized in Table 1. Seven bridges and 28 small structures were identified within the study corridor. In the table, small structures are indicated by "structure numbers" beginning with "CV." The location of each structure is identified on the Existing Transportation Conditions map in Appendix A using the "Map ID No." as shown in the table. The sufficiency and condition ratings provide a general context for the condition of the structures. Bridges are rated between 0 and 100, while small structures are rated between 0 and 10. In both cases the higher numbers represent better condition. There are no absolute thresholds for determining when a rehabilitation or replacement is required; for example, a small structure assigned a rating of 3 may or may not require replacement of the structure but it would indicate more deficiencies as compared to a rating of 5.

With the exception of US 31 over Eel River (031-52-04859 DSBL/DNBL), the bridges in the study corridor are in good condition and can be expected only to require routine maintenance. The bridge inspection report for US 31 over Eel River noted concerns on the wearing surface and remaining life of that component of the bridge.

Table 1 – Bridges and Small Structures in the Study Corridor

Map ID No.	Structure Number	Location	Bridge Construction Year	Number of Bridge Rehabilitations (year of last rehabilitation)	Sufficiency / Condition Rating
1	031-52-04859 DSBL	2.24 mi N of US 24	1963	4 (2019)	80.7
2	031-52-04859 DNBL	2.24 mi N of US 24	1963	4 (2019)	79.7
3	CV 031-052-186.31 L	3.07 mi S of SR 16			7
4	CV 031-052-187.67	4.78 mi N of US 24			9
5	CV 031-052-188.65	5.74 mi N of US 24			5
6	CV 031-052-191.28	1.89 mi N of SR 16			9
7	CV 031-052-193.18	3.8 mi N of SR 16			8
8	CV 031-052-193.20 L	3.82 mi N of SR 16			4
9	CV 031-052-194.31	4.91 mi N of SR 16			9

Map ID No.	Structure Number	Location	Bridge Construction Year	Number of Bridge Rehabilitations (year of last rehabilitation)	Sufficiency / Condition Rating
10	CV 031-052-195.43	6.03 mi N of SR 16			9
11	CV 031-052-196.60	7.18 mi N of SR 16			9
12	CV 031-052-197.46	8.07 mi N of SR 16			9
13	CV 031-052-198.40	8.99 mi N of SR 16			9
14	CV 031-025-199.25	5.55 mi S of JCT SR 14/US25			6
15	CV 031-025-199.50	5.30 mi S of JCT SR 14/US25			4
16	CV 031-025-199.95	4.85 mi S of JCT SR 25			7
17	CV 031-025-201.10	3.70 mi S of JCT SR 14/US25			5
18	CV 031-025-202.40	2.40 mi S of JCT SR 25			7
19	CV 031-025-203.50	0.13 mi S of JCT SR 14/25			8
20	CV 031-025-203.50D	0.13 mi S of JCT SR 14/US25			7
21	031-25-05874 BSB	1.21 mi S of SR 14	1970	2 (2015)	97.1
22	031-25-05874 BNB	1.21 mi S of SR 14	1969	2 (2015)	97.5
23	CV 031-025-204.10 SB	0.6 mi N of SR 25			7
24	CV 031-025-204.70	0.10 mi S of JCT SR 14/US25			7
25	014-25-08437 A	1.17 mi W of SR 25 W JCT	2006	1 (2020)	99.4
26	CV 031-035-205.20	0.40 mi N of JCT SR 14/US25			7
27	CV 031-025-205.70	1.30 mi N of JCT SR 14/US25			7
28	CV 031-025-205.90	1.10 mi N of JCT SR 14/US25			7
29	CV 031-025-206.20	1.40 mi N of JCT SR 14/US25			9
30	CV 031-025-206.90 P	Monticello St NBL			7
31	031-25-05351 BSBL	2.77 mi N of SR 14	1972	2 (2022)	99.5
32	031-25-05351 BNBL	2.77 mi N of SR 14	1972	2 (2022)	99.5
33	031-025-208.05	3.15 mi S of JCT SR 110			5
34	CV 031-025-211.30	1.60 mi S of JCT SR 110			7
35	CV 031-025-211.80 P	700 N NBL			6

Note: The location of each structure is identified in Appendix A using the Map ID No as shown in the first column.
Small Structures are indicated by Structure Numbers beginning with "CV."

2.3. UTILITIES

Utility information was obtained from Indiana 811. Utility owners are identified by county and township in Table 2. Notable utilities in the study corridor include two gas pipelines and an electric transmission line that cross US 31. A pipeline owned by Buckeye Pipeline crosses US 31 just north of 3rd Street along the north side of Prairie Edge Nature Park. A NIPSCO-owned gas transmission line crosses US 31 between CR 500 South/CR 1500 North and CR 650 South/CR 1350 North and an electric transmission line crosses US 31 just north of SR 16. The utilities listed under Fulton County-Rochester Township include utilities located within the City of Rochester.

Table 2 – Utilities in the Study Corridor

Miami County		Fulton County	
Jefferson Township	**Union Township**	**Richland Township**	**Rochester Township**
AT&T Distribution	AT&T Distribution	Fulton Co. REMC	AT&T Distribution
Brightspeed	Brightspeed	NIPSCO Gas	Buckeye Pipeline
Miami Cass REMC	Duke Energy	Rochester Tel & Comm Corp.	Comcast
NIPSCO Gas	Frontier		Duke Energy
Peru Utilities-Electric	Fulton Co. REMC		Fulton Co. REMC
Peru Utilities-Water and Wastewater	Miami Cass Co REMC		NIPSCO Gas
	Rochester Tel & Comm Corp.		Rochester Tel & Comm Corp.
			Rochester Water Dept.

2.4. PEDESTRIAN/BICYCLE/TRANSIT

There are three trails in the vicinity of the study corridor. The Nickel Plate Trail, a rail-trail corridor from Kokomo to Rochester, runs along the eastern right-of-way of US 31 between approximately CR 300 South and Wabash Road. The trail consists of a 10- to 12-ft wide asphalt path. The Nickel Plate Trail connects to the Judy Burton Nature Preserve Trail to the west of Wabash Avenue. The Judy Burton Nature Preserve Trail is a 1.9-mile earthen loop trail extending north and east of the connection to the Nickel Plate Trail. A trailhead is present along Wabash Avenue. The Prairie Edge Nature Park Trail is located north of 3rd Street and east of US 31. The Prairie Edge Nature Park Trail is not connected to other trail facilities. The trail consists of a 1.1-mile loop trail with a trailhead accessible from 3rd Street. These trails are shown on the Existing Transportation Conditions Map in Appendix A. Additionally, US Bicycle Route (USBR) 35, which is an approximately 380-mile, north-south national cycling route that crosses Indiana, uses CR 100 North/6th Street across US 31 into Rochester

Sidewalks are not present along US 31 in the study corridor. There are no sidewalks on side streets at US 31. There are sidewalks along local streets near and within Rochester, however, these sidewalks do not extend to US 31 or provide access across the US 31 right-of-way. Transit within the area is provided on an as-needed basis by private providers. There is no fixed-route transit.

3. MOBILITY

3.1. ACCESS POINTS

3.1.1. ACCESS POINT INVENTORY

Within the study limits, US 31 is considered to have Partial Access Control. Access to and across US 31 is provided at specific roadways and driveways as shown in Table 3. Limited Access Right-of-Way exists along both sides of the corridor. All but one of the access points, including private driveways, provide full access. One private, residential driveway at the south end of the corridor is right-in-right-out (RIRO). SR 14 is a grade-separated overpass with no access. In the 27-mile corridor, there are connections with eight roads classified as major collectors and above, 32 minor collectors and local roads, and ten private driveways.

Table 3 – Access Points in the Study Corridor (North to South)

Cross Street Name	Functional Classification	Intersection Control	County	Notes
CR 700 North	Local	2-way Stop	Fulton	
CR 600 North	Local	2-way Stop	Fulton	
CR 550 North	Local	2-way Stop	Fulton	
CR 450 North	Local	2-way Stop	Fulton	
CR 375 North	Local	2-way Stop	Fulton	
Olson Road	Major Collector	2-way Stop	Fulton	
Monticello Road	Local	2-way Stop	Fulton	
3rd Street	Local	2-way Stop	Fulton	
CR 100 North / 6th Street	Major Collector	2-way Stop	Fulton	
CR 50 North / 13th Street	Local	2-way Stop	Fulton	
SR 14 (overpass)	Principal Arterial – Other	Overpass	Fulton	No access
CR 50 East / Sweetgum Road	Local	2-way Stop	Fulton	
SR 25	Principal Arterial – Other	Interchange	Fulton	Ramp Access
Old US 31 / Southway 31	Major Collector	2-way Stop (red/amber flashing beacon)	Fulton	
CR 150 South / Wabash Avenue	Major Collector	2-way Stop	Fulton	
Wabash Road (north)	Local	2-way Stop	Fulton	
Private Drive / Wabash Road (south)	Minor Collector	2-way Stop	Fulton	
CR 300 South	Local	2-way Stop	Fulton	
CR 350 South	Local	2-way Stop	Fulton	
CR 400 South	Minor Collector	2-way Stop	Fulton	
CR 450 South / CR 1550 North	Local	2-way Stop	Fulton / Miami	

Cross Street Name	Functional Classification	Intersection Control	County	Notes
CR 500 South / CR 1500 North	Local	2-way Stop	Fulton / Miami	
CR 650 South / CR 1350 North	Major Collector	2-way Stop	Fulton / Miami	
CR 750 South / CR 1250 North	Local	2-way Stop	Fulton / Miami	
CR 1200 North	Local	2-way Stop	Miami	
CR 825 South	Local	2-way Stop	Miami	
CR 1050 North	Local	2-way Stop	Miami	
CR 1000 North	Minor Collector	2-way Stop	Miami	
CR 900 North	Local	2-way Stop	Miami	
CR 400 West	Local	2-way Stop	Miami	
CR 800 North	Local	2-way Stop	Miami	
Private Drive / Old US 31	Local	2-way Stop	Miami	0.4 miles south of CR 800 North
SR 16	Major Collector	2-way Stop	Miami	
Private Drive (west side)	N/A	N/A	Miami	0.4 miles south of SR 16
Private Drive (west side)	N/A	N/A	Miami	0.4 miles north of CR 600 North
Private Drive (west side)	N/A	N/A	Miami	0.4 miles north of CR 600 North (RIRO)
CR 600 North	Local	2-way Stop	Miami	
Private Drive (west side)	N/A	N/A	Miami	0.3 miles north of CR 550 North
CR 550 North / Mexico Road	Major Collector	2-way Stop	Miami	
Private Drive (both sides)	N/A	N/A	Miami	0.6 miles north of CR 450 North; McClure's Orchard on west side
CR 450 North	Minor Collector	2-way Stop	Miami	
CR 400 North	Local	2-way Stop	Miami	
Private Drive (both sides)	N/A	N/A	Miami	0.3 miles south of CR 400 North
Eel River Road (north)	Local	2-way Stop	Miami	
Eel River Road (south)	Local	2-way Stop	Miami	
CR 300 North	Local	2-way Stop	Miami	

3.1.2. TYPICAL INTERSECTION MOVEMENTS

The cross street intersections within the study corridor are all two-way, stop-controlled. A typical intersection (at SR 16) is shown in Figure 2. At most intersections, US 31 has left-turn lanes and right-turn lanes approaching the intersection to accommodate decelerating vehicles (as detailed in Section 3.1.3). Cross street movements must identify and utilize sufficient traffic gaps in what amounts to two high-speed roadways separated by a 60-foot median. Often through movements and left turns from the cross streets are executed in two stages. For example, an eastbound vehicle on SR 16 wishing to cross US 31 and continue eastbound on SR 16 would first stop at the stop sign directly adjacent to the US 31 southbound lanes. The driver must wait for a sufficient gap in the southbound traffic to proceed across the southbound lanes, reach the median, and pause there. Once in the median, the driver then looks south to find a sufficient gap in the US 31 northbound traffic before proceeding across the southbound lanes and continuing on SR 16. Some drivers wait for a gap in both directions and complete the maneuver in a single movement. A similar maneuver is used by left-turning vehicles from US 31 onto the cross street; however it only includes the latter half of the maneuver where the vehicle crosses the median and the two lanes of traffic in the opposite direction of travel. The counts for daily cross street movements for the intersections of US 31 with major collectors or higher are shown in Table 4.

These movements require drivers to be able to clearly see approaching vehicles and judge the time it takes for these vehicles – many moving 60 mph or faster – to reach the intersection as well as judge the amount of time it will take their vehicle to clear the intersection. The pause in the median between the stages requires drivers to successfully judge that the rear of their vehicle has cleared the first two lanes and that the front of their vehicle is not protruding into the second set of lanes. With a 60-foot median, it is challenging for a standard 70-foot long tractor-trailer to pause in the median without encroaching into the travel lanes.

Figure 2 – Typical Intersection at SR 16

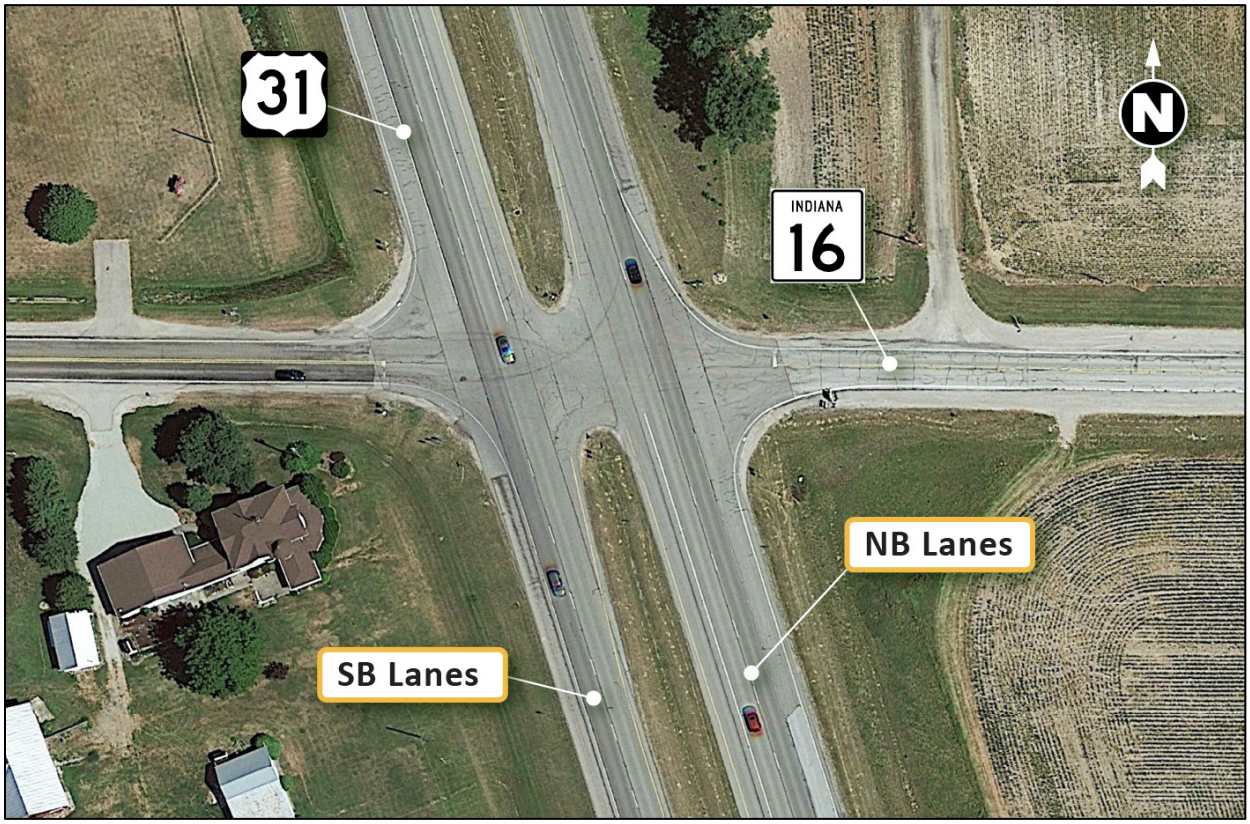


Table 4 – Cross Street (Major Collector or higher) Movements at US 31 – Existing 2022

Cross Street *Major Collector & Higher*	Vehicles per Day / Percent of Cross Street Volume		
	Crossing US 31	Turning Left onto US 31	Turning Right onto US 31
Olson Road	505 / 47%	100 / 9%	460 / 44%
CR 100 North / 6th Street	430 / 52%	95 / 11%	305 / 37%
Old US 31 / Southway 31	500 / 47%	450 / 42%	125 / 11%
CR 150 South / Wabash Avenue	40 / 9%	300 / 71%	85 / 20%
CR 650 South / CR 1350 North	180 / 28%	150 / 24%	305 / 48%
SR 16	170 / 21%	390 / 49%	240 / 30%
CR 550 North / Mexico Road	110 / 19%	25 / 4%	430 / 77%
Total	**1,935 / 36%**	**1,510 / 28%**	**1,955 / 36%**

3.1.3. ACCELERATION AND DECELERATION LANES

Acceleration lanes allow vehicles turning from side streets onto the highway a separate lane to accelerate up to highway speeds before merging into the through lanes. Deceleration lanes, or turn lanes, on the mainline of highways allow vehicles turning off the highway to decelerate to an appropriate turning speed in a lane separate from the higher-speed through lanes. Both deceleration and acceleration lanes separate high- and low-speed traffic and can help prevent rear-end crashes. Within the study area:

- There are no acceleration lanes provided on US 31 other than at the on-ramps at the SR 25 interchange.
- There are three intersections where no deceleration lanes are provided:
  - Eel River Road (north);
  - Eel River Road (south); and
  - CR 300 North.
- Left-turn deceleration lanes are provided on US 31 at all other left turns onto cross streets.
- Right-turn deceleration lanes are provided at all other right turns onto cross streets except for the following crossings:
  - Wabash Road (south);
  - CR 1550 North (northbound);
  - CR 500 South (southbound);
  - CR 1050 North (northbound);
  - CR 1000 North (southbound);
  - CR 900 North (southbound);
  - CR 600 North (Miami County) (northbound and southbound);
  - CR 550 North/Mexico Road (northbound and southbound);
  - CR 450 North (Miami County) (northbound and southbound) and
  - CR 400 North (southbound).

Of the intersections without right-turn deceleration lanes, five of them have elevated crash indices: CR 500 South, CR 1050 North, CR 400 North, Eel River Road (north), and CR 300 North (see further discussion in Section 5.2). However, no rear-end crashes involving right turns were identified in the crash records at these three intersections.

3.1.4. DRIVEWAYS

As shown in Appendix A, there are 10 private driveways in the study corridor that directly access US 31, the majority of which are located in the southern portion of the study area in Miami County. One private driveway is commercial and residential, serving McClure's Orchard and a residence; all others serve private residences and/or farms. One private driveway has only right-in/right-out access.

US 31 is classified as a Tier 1 Statewide Mobility Corridor; therefore, according to INDOT's *Access Management Guide* and *Driveway Permit Manual*, private access is prohibited, except in locations where it is infeasible to provide alternate access (via joint-use driveways or frontage roads). Full turning movements may be allowed at major commercial driveways; all other driveways should be limited to right-in/right-out access. Left-turn access may be allowed, contingent upon INDOT review and approval, and would require a dedicated left-turn lane on rural divided highways where the median is equal to or greater than 24 feet. Nine of the 10 private driveways in the US 31 study corridor allow full access to both directions of US 31 via a median opening.

Minimum spacing criteria for all unsignalized intersections and driveways along a major roadway should have a minimum spacing of 495 feet at speeds over 55 mph. The two private driveways located 0.4 miles north of CR 600 North (Miami County) are spaced 70 feet apart.

3.2. ORIGIN-DESTINATION DATA

Origin-destination (OD) data was obtained from the US 30/31 PEL studies travel demand model, which is based on the Indiana Statewide Travel Demand Model (ISTDM). As the statewide model primarily focuses on broader travel patterns across and within the state, it is helpful in looking at broad travel patterns for the study corridor.

The model OD data was used to provide a sense of US 31 travel in the corridor, specifically regarding the share of local trips versus through trips. The OD data shows that 37 percent of the modeled trips on US 31 in the corridor enter and exit US 31 within the study corridor. Another 48 percent of the trips either enter or exit US 31 within the corridor, but at least part of trip is on US 31 outside of the corridor. The remaining 16 percent of the trips are through trips that pass all the way through the corridor from end to end. In summary, 84 percent of the modeled trips on the US 31 corridor either access or egress US 31 (or both) within the study area.

Looking at trucks separately, 44 percent of modeled truck trips on US 31 are through trips that pass all the way through the corridor from end to end. In summary, the vast majority of the total modeled trips in the US 31 are local trips, but for truck trips, almost half of the trips are through trips.

3.3. CROSS STREET CONSIDERATIONS

This section summarizes known routes of school buses, emergency services, agricultural and industrial vehicles, and non-motorized vehicles within intersections of US 31 in the study area.

3.3.1. SCHOOLS

Three school districts were contacted regarding current routes that cross or use US 31 in the study area. There are no stops directly along US 31 for any of the three school districts. Coordination with the schools will be ongoing throughout the ProPEL US 31 North study process. According to the Transportation Director for North Miami Community Schools, there are five bus routes that cross US 31 in the study area twice a day on the following eight roadways:

- CR 400 North;
- CR 450 North (Miami County);
- SR 16;
- CR 800 North;
- CR 400 West;
- CR 1350 North;
- CR 1500 North; and
- CR 50 East/Sweetgum Road.

According to the Transportation Department for Rochester Community School Corporation, bus route crossings along US 31 includes the following nine roadways:

- Wabash Road (South);
- Wabash Avenue;
- Old US 31/Southway 31;
- SR 25;
- CR 50 North;
- CR 100 North;
- Monticello Road;
- Olson Road; and
- CR 550 North (Fulton County).

Additionally, buses turn south onto US 31 traveling from the west at the CR 450 North (Fulton County) crossing. The transportation department also provided the US 31 crossings of the local pre-school buses, which include Old US 31/Southway 31 and Olson Road.

The transportation director for Caston School Corporation confirmed that school buses utilize three crossings of US 31 in the study area:

- CR 1000 North;
- Wabash Avenue; and
- CR 650 South/CR 1350 North.

3.3.2. EMERGENCY MANAGEMENT SERVICE

The Emergency Management Agency (EMA) for both Fulton County and Miami County were contacted regarding roadways or intersections with US 31 in the study area that are important to emergency services (i.e., vehicles for fire departments, police, and hospitals). Coordination with emergency services will be ongoing throughout the ProPEL US 31 North study process. The EMAs identified the following intersections in the study area as providing essential access for their operations:

- CR 700 North;
- CR 459 North;
- Olson Road;
- Monticello Road;

- CR 100 North/6th Street;
- CR 50 North/13th Street;
- CR 50 East/Sweetgum Road (adjacent to the Sheriff's Department);
- SR 25;
- Old US 31/Southway 31;
- CR 150 South/Wabash Avenue;
- CR 500 South/CR 1550 North;
- CR 650 South/CR 1350 North (direct route to Macy);
- CR 1000 North (direct route to Deedsville);
- CR 900 North;
- CR 800 North;
- SR 16 (direct route to Denver);
- CR 550 North/Mexico Road;
- CR 400 North (direct route to Mexico); and
- CR 300 North.

The EMAs also provided input on intersections with operational issues for their vehicles (see Section 7.2 for additional details), including at 3rd Street; CR 650 South/CR 1350 North; and CR 300 North.

3.3.3. INDUSTRIAL SERVICES & GRAIN ELEVATORS

The following roadways provide direct access to specific industrial services and grain elevators in Rochester, Macy, and Mexico, so would be expected to be utilized by large trucks and/or heavy farm equipment:

- CR 700 North (landfill);
- CR 450 North (Fulton County) (industrial area);
- 3rd Street (agricultural fuel center; industrial area; 4-H fairgrounds);
- CR 50 North/13th Street (INDOT maintenance unit);
- CR 50 East/Sweetgum Road (truck fueling station);
- SR 25 (access to/through Rochester; agricultural services, including the Wilson Fertilizer and Grain; and county maintenance facility);
- CR 650 South/CR 1350 North (Macy grain elevator; adjacent construction/timber company);
- SR 16 (access to Denver; adjacent trucking company);
- CR 450 North (Miami County) (industrial supply services); and
- CR 400 North (Mexico grain elevator; access to Mexico).

Additionally, throughout the corridor, there are private farms that have driveway access to US 31, as well as driveway and/or field access in proximity on many cross streets; many cross streets that intersect US 31 are regularly used by local farm operators. The McClure's Orchard/Winery driveway has full access directly to US 31 (see Section 3.1.4). Coordination with the agricultural and industrial industries will be ongoing throughout the ProPEL US 31 North study process.

3.3.4. NON-MOTORIZED VEHICLES

According to Fulton County staff, Amish and Mennonite communities are primarily located in the northern part of Fulton County (north of CR 300 North). Horse-drawn vehicles, as well as bicycles and pedestrians, are known to travel along SR 110 (north of the study area), CR 700 North, and CR 450 North (Fulton County). Bicycles and pedestrians are also known to be present in the vicinity of CR 450 North (Fulton County), CR 100 North/6th Street (along USBR 35), Wabash Road (south), and CR 1000 North for recreational purposes.

3.3.5. SUMMARY

Table 5 below summarizes the key cross streets used by school buses, emergency services, agricultural and industrial vehicles, and non-motorized vehicles.

Table 5 – Summary of Cross Street Considerations

Cross Street Name	Functional Classification	2022 AADT (vpd)	School Route	EMS Route	Industrial Services & Grain Elevators	Non-Motorized Route
CR 700 North	Local	N/A		Yes	Yes	Yes
CR 550 North (Fulton County)	Local	N/A	Yes			
CR 450 North (Fulton County)	Local	N/A	Yes	Yes	Yes	Yes
Olson Road	Major Collector	970	Yes	Yes		
Monticello Road	Local	N/A	Yes	Yes		
3rd Street	Local	N/A			Yes	
CR 100 North / 6th Street	Major Collector	862	Yes	Yes		Yes
CR 50 North / 13th Street	Local	N/A	Yes	Yes	Yes	
CR 50 East / Sweetgum Road	Local	N/A	Yes	Yes	Yes	
SR 25	Principal Arterial – Other	7,770	Yes	Yes	Yes	
Old US 31 / Southway 31	Minor Arterial/Major Collector	1,388	Yes	Yes		
CR 150S / Wabash Avenue	Local/Major Collector	767	Yes	Yes		
Wabash Road (south)	Local	N/A	Yes			Yes
CR 500 South / CR 1500 North	Local	N/A	Yes	Yes		
CR 650 South / CR 1350 North	Major Collector/Minor Collector	484	Yes	Yes	Yes	
CR 1000 North	Minor Collector	N/A	Yes	Yes		Yes
CR 900 North	Local	N/A		Yes		
CR 400 West	Local	N/A	Yes			
CR 800 North	Local	N/A	Yes	Yes		
SR 16	Major Collector	643	Yes	Yes	Yes	
CR 550 North / Mexico Road	Major Collector	759		Yes		
CR 450 North (Miami County)	Minor Collector	N/A	Yes		Yes	
CR 400 North	Local	N/A	Yes	Yes	Yes	
CR 300 North	Local	N/A		Yes		

4. TRAFFIC OPERATIONS

4.1. TRAFFIC ANALYSIS AREA AND SCOPE

Traffic operations analysis was performed for the intersections of US 31 with streets of functional class Major Collector or higher. Of the 39 intersections of public roadways with US 31 in the corridor, eight are with roads classified as Major Collector or higher. Additionally, at the one interchange on the corridor at SR 25, there are two intersections with the US 31 ramps that were also analyzed. The following intersections were analyzed:

- Olson Road;
- CR 100 North / 6th Street;
- SB US 31 Ramps @ SR 25;
- NB US 31 Ramps @ SR 25;
- Old US 31;
- Wabash Avenue;
- CR 650 South / CR 1350 North;
- SR 16; and
- CR 550 North / Mexico Road.

4.2. TRAFFIC VOLUMES

4.2.1. EXISTING YEAR

Traffic volumes for the corridor were obtained from the Indiana Traffic Count Database System (TCDS). Turning movement counts were taken at study area intersections during Fall 2022. The average annual daily traffic (AADT) volumes on US 31 are shown in Table 6. The volumes range from 11,800 to 14,300 vehicles per day (vpd). Daily truck percentages are high in the corridor and range from 24 to 32 percent. The AADT values on the cross streets classified as major collectors and above are shown in Table 7. All are below 1,000 vpd except for SR 25 and Old US 31 (north leg).

Table 6 – 2022 AADTs – US 31

US 31 Segment	2022 AADT (vpd)
Northern Study Limit to Olson Road	14,300
Olson Road to CR 100 North / 6th Street	13,900
CR 100 North / 6th Street to SR 25	13,700
SR 25 to Old US 31	11,800
Old US 31 to Wabash Avenue	12,200
Wabash Avenue to CR 650 South / CR 1350 North	12,800
CR 650 South / CR 1350 North to SR 16	13,100
SR 16 to CR 550 North / Mexico Road	13,800
CR 550 North / Mexico Road to Southern Study Limit	13,300

Table 7 – 2022 AADTs – Cross Streets

Cross Street	2022 AADT (vpd)	
	West/South of US 31	East/North of US 31
Olson Road	962	970
CR 100 North / 6th Street	684	862
SR 25	6,678	7,770
Old US 31	735	1,388
Wabash Avenue	50	767
CR 650 South / CR 1350 North	643	484
SR 16	904	553
CR 550 North / Mexico Road	243	759

Because of distance between the intersections to be analyzed, the turning movement counts were used to determine AM and PM peak hours for each individual intersection. The exception was the Rochester-area intersections with Wabash Avenue, Old US 31, and SR 25 (at the US 31 ramps). Common AM and PM peak hours, 7:30 to 8:30 AM and 3:30 to 4:30 PM, were used for these intersections because of their proximity to one another. The peak hours of traffic volumes were used in the traffic operations analysis below.

4.2.2. DESIGN YEAR (2045)

The design year for this study is 2045. Traffic volume forecasts derived from the Indiana Statewide Travel Demand Model were provided to the study team by INDOT. These forecasts were used to derive growth rates along US 31 and the key cross streets. The average annual growth rate for US 31 is 0.6 percent and the 2045 forecast AADTs for US 31 along the corridor are shown in Table 8. The average growth rates derived for each of the cross streets as well as the 2045 forecast AADTs are shown in Table 9. These growth rates were used to estimate 2045 peak-hour turning movements at the key intersections.

Table 8 – 2045 AADTs – US 31

US 31 Segment	2045 AADT (vpd)
Northern Study Limit to Olson Road	16,500
Olson Road to CR 100 North / 6th Street	16,100
CR 100 North / 6th Street to SR 25	15,800
SR 25 to Old US 31	13,700
Old US 31 to Wabash Avenue	14,100
Wabash Avenue to CR 650 South / CR 1350 North	14,800
CR 650 South / CR 1350 North to SR 16	15,500
SR 16 to CR 550 North / Mexico Road	16,000
CR 550 North / Mexico Road to Southern Study Limit	15,300

Table 9 – Annual Growth Rates and 2045 AADTs – Cross Streets

Roadway	Annual Growth Rate	2045 AADT (vpd)	
		West/South of US 31	East/North of US 31
Olson Road	0.5%	1,080	1,065
CR 100 North / 6th Street	0.1%	700	865
SR 25	0.4%	5,060	8,520
Old US 31	0.6%	735	1,790
Wabash Avenue	0.1%	55	770
CR 650 South / CR 1350 North	0.1%	660	485
SR 16	0.0%	905	555
CR 550 North / Mexico Road	0.3%	245	855

4.3. TRAFFIC OPERATIONS

All of the intersections with US 31 are two-way stop-controlled on the side streets, so US 31 is unimpeded the length of the corridor. The majority of the corridor is rural in nature, with the exception of the SR 25 interchange area at Rochester, which is the only urban area in the corridor through which US 31 passes.

4.3.1. EXISTING YEAR SPEEDS

Speed and travel time data was acquired for the US 31 corridor from the National Performance Management Research Data Set (NPMRDS). The data from 2022 showed that speeds and travel times on US 31 are consistent throughout the corridor and throughout the day with no areas of recurring congestion, northbound or southbound. The 27-mile trip through the corridor has an average travel time of 24.6 minutes, which translates to average travel speeds of about 65 mph on US 31. The average speed for trucks in the corridor is slightly less at 64 mph. There are no travel delay concerns along US 31 in the corridor.

4.3.2. EXISTING YEAR LEVEL OF SERVICE

The key intersections of roadways classified as Major Collector and above were analyzed using Highway Capacity Manual's (HCM) two-way stop-controlled methodology within Synchro software. The HCM methodology estimates a level of service (LOS) based on calculations of volume-to-capacity ratios (v/c) and the average delay per vehicle for each key movement. LOS A is the service with the least delay while LOS F has the most delay. The delay thresholds for each level of service are shown in Table 10. A maximum queue length (95th percentile) is also calculated for each key movement. This is an estimate of the maximum queue length, in vehicles, that will not be exceeded 95 percent of the time.

Table 10 – Delay/LOS Thresholds

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

Source: Highway Capacity Manual (7th Edition)

Results of the capacity analyses for the base-year existing conditions are shown below in Table 11. All of the movements at the key intersections operate at LOS C or better, which is acceptable service for a rural area according to the Indiana Design Manual.

4.3.3. DESIGN-YEAR (2045) LEVEL OF SERVICE

The key intersections were also modeled with their existing configuration and control with design-year 2045 forecast traffic volumes. Results of the capacity analyses for the design-year 2045 conditions are shown below in Table 12. Like the results for the existing conditions, all of the movements at the key intersections operate at LOS C or better with forecast volumes, which is acceptable service. With only modest volume growth forecast, small increases in delay are seen for the cross street and mainline US 31 left-turn movements.

In summary, traffic operations in terms of delay and level of service are not a concern in the study corridor. Existing traffic volumes are low enough that travel times along US 31 are free-flow and delays on the cross streets are acceptable now and in the future design year of 2045. Details of the Existing and Design-Year traffic operations analysis can be found in Appendix B.

Table 11 – Intersection Operations – Existing 2022

Intersection/ Movement	AM Peak Hour				PM Peak Hour			
	Delay (s/veh)	v/c Ratio	95th % Queue (veh)	LOS	Delay (s/veh)	v/c Ratio	95th % Queue (veh)	LOS
US 31 @ Olson Road								
NB Left	8.8	0.0	0.1	A	9.1	0.0	0.1	A
EB	15.8	0.1	0.5	C	18.6	0.2	0.6	C
WB	15.1	0.1	0.5	C	17.4	0.2	0.7	C
SB Left	8.8	0.1	0.2	A	8.8	0.0	0.2	A
US 31 @ 100 North/6th Street								
NB Left	8.3	0.0	0.0	A	8.9	0.0	0.1	A
EB	15.4	0.2	0.7	C	15.8	0.1	0.4	C
WB	11.9	0.1	0.3	B	15.3	0.2	0.6	C
SB Left	8.6	0.0	0.1	A	8.9	0.0	0.1	A
US 31 Northbound Ramps @ SR 25								
NB Left	7.8	0.0	0.1	A	8.4	0.1	0.2	A
WB (NB Off-Ramp)	9.4	0.1	0.4	A	9.8	0.1	0.3	A
US 31 Southbound Ramps @ SR 25								
EB (SB Off-Ramp)	6.9	0.1	0.3	A	9.5	0.3	1.1	A
SB Left	8.3	0.1	0.2	A	8.2	0.1	0.3	A
US 31 @ Old US 31								
NB	14.6	0.2	0.6	B	16.6	0.1	0.5	C
EB Left	8.5	0.0	0.1	A	8.7	0.0	0.1	A
WB Left	8.2	0.0	0.0	A	8.6	0.0	0.0	A
SB	11.1	0.1	0.3	B	17.0	0.3	1.4	C
US 31 @ Wabash Avenue								
NB	11.8	0.0	0.0	B	14.0	0.0	0.0	B
EB Left	8.4	0.0	0.0	A	8.6	0.0	0.0	A
WB Left	8.2	0.0	0.0	A	8.6	0.0	0.0	A
SB	11.9	0.1	0.3	B	14.7	0.2	0.5	B
US 31 @ 650 South/1350 North								
NB Left	8.3	0.0	0.0	A	8.7	0.0	0.0	A
EB	12.7	0.1	0.3	B	15.4	0.1	0.3	C
WB	12.1	0.0	0.2	B	14.5	0.1	0.4	B
SB Left	8.3	0.0	0.0	A	8.7	0.0	0.1	A
US 31 @ SR 16								
NB Left	9.8	0.0	0.0	A	9.0	0.0	0.1	A
EB	13.7	0.1	0.4	B	14.5	0.2	0.6	B
WB	10.6	0.1	0.2	B	16.6	0.2	0.7	C
SB Left	9.1	0.0	0.0	A	9.0	0.0	0.1	A
US 31 @ Mexico Road								
NB Left	8.3	0.0	0.0	A	8.7	0.0	0.0	A
EB	13.9	0.1	0.3	B	16.1	0.1	0.4	C
WB	12.7	0.1	0.5	B	11.7	0.1	0.4	B
SB Left	8.5	0.0	0.1	A	9.4	0.1	0.2	A

Table 12 – Intersection Operations – Design Year 2045

Intersection/ Movement	AM Peak Hour				PM Peak Hour			
	Delay (s/veh)	v/c Ratio	95th % Queue (veh)	LOS	Delay (s/veh)	v/c Ratio	95th % Queue (veh)	LOS
US 31 @ Olson Road								
NB Left	9.2	0.0	0.1	A	9.6	0.1	0.2	A
EB	18.4	0.2	0.8	C	22.8	0.2	1.0	C
WB	17.8	0.2	0.8	C	20.8	0.3	1.1	C
SB Left	9.2	0.1	0.2	A	9.1	0.1	0.2	A
US 31 @ 100 North/6th Street								
NB Left	8.6	0.0	0.0	A	9.3	0.0	0.1	A
EB	17.7	0.3	1.1	C	19.0	0.2	0.6	C
WB	12.7	0.1	0.3	B	17.4	0.2	0.7	C
SB Left	8.9	0.0	0.1	A	9.2	0.1	0.2	A
US 31 Northbound Ramps @ SR 25								
NB Left	7.9	0.0	0.2	A	8.6	0.1	0.3	A
WB (NB Off-Ramp)	9.7	0.1	0.4	A	10.1	0.1	0.4	B
US 31 Southbound Ramps @ SR 25								
EB (SB Off-Ramp)	6.9	0.1	0.3	A	10.0	0.3	1.5	B
SB Left	8.4	0.1	0.2	A	8.3	0.1	0.4	A
US 31 @ Old US 31								
NB	16.3	0.2	0.7	C	19.0	0.2	0.6	C
EB	8.8	0.0	0.1	A	9.0	0.0	0.1	A
WB Left	8.4	0.0	0.0	A	8.9	0.0	0.0	A
SB	12.4	0.1	0.5	B	23.1	0.5	2.7	C
US 31 @ Wabash Avenue								
NB	12.5	0.0	0.0	B	15.2	0.0	0.1	C
EB Left	8.6	0.0	0.0	A	8.9	0.0	0.0	A
WB Left	8.4	0.0	0.0	A	8.9	0.0	0.0	A
SB	12.6	0.1	0.3	B	16.1	0.2	0.6	C
US 31 @ 650 South/1350 North								
NB Left	8.5	0.0	0.0	A	9.0	0.0	0.1	A
EB	13.7	0.1	0.5	B	18.0	0.1	0.5	C
WB	12.9	0.1	0.2	B	16.3	0.1	0.4	C
SB Left	8.5	0.0	0.0	A	9.1	0.0	0.1	A
US 31 @ SR 16								
NB Left	10.2	0.0	0.0	B	9.4	0.0	0.1	A
EB	14.9	0.1	0.5	B	16.3	0.2	0.8	C
WB	11.1	0.1	0.2	B	19.2	0.2	0.8	C
SB Left	9.3	0.0	0.0	A	9.5	0.0	0.1	A
US 31 @ Mexico Road								
NB Left	8.5	0.0	0.1	A	9.1	0.0	0.1	A
EB	15.2	0.1	0.4	C	18.5	0.1	0.4	C
WB	13.9	0.2	0.6	B	12.7	0.2	0.6	B
SB Left	8.8	0.1	0.2	A	9.9	0.1	0.3	A

5. SAFETY

Crash data for the study corridor was obtained from INDOT. Geocoded crash records for Fulton County and Miami County were provided for the years 2017 to 2021. The data includes information related to each crash including weather, surface and lighting conditions, latitude and longitude, severity, manner of collision, and date and time of crash. To ensure a more accurate analysis, the raw crash data was filtered to include only crashes on US 31 as well as crashes on all cross streets within 250 feet of the US 31 intersection. Only crashes that contained latitude and longitude values and/or other descriptors that placed the crash location within the study corridor were used in this study. Other fields of the crash data set were further reviewed to confirm that crashes were within the study corridor. The process also removed crashes that were inaccurately placed in the corridor. A total of 730 crashes were located within the study corridor. These crashes were further filtered to remove 340 animal crashes. With this being a very rural corridor, almost half of the crashes within the corridor are animal-related with deer being the most common animal. These crashes occurred all along the corridor. No specific locations were identified with significant numbers of animal crashes.

The crash data was analyzed using two primary methodologies. First, a historical crash analysis was performed to look for spatial patterns of crash concentrations and patterns of crashes by type. Second, an analysis of crash frequency and crash severity was performed using INDOT's Road Hazard Analysis Tool (RoadHAT) version 4.1.

5.1. HISTORICAL CRASH ANALYSIS

5.1.1. CRASHES BY MANNER OF COLLISION

The first step in the crash analysis was to examine the historical crashes (2017-2021) for the study corridor to determine overall safety performance trends. From that information, crash hot spots and manner of collision trends were identified for crashes not involving animals. Table 13 shows the US 31 crash data by manner of collision and crash severity. Crashes involving a vehicle running off the road were the most common crash type (34% of crashes), with the majority of those being crashes with property damage only (PDO). Right-Angle crashes were the next most common crash type in the corridor (26%). This type of crash tends to be more severe with nearly half resulting in injuries.

Table 13 – US 31 Crashes by Manner of Collision and Severity (2017-2021)

Collision Type	Number of Crashes				Percentage of Total Crashes
	Fatal & Incapacitating Injury (FI)	Non-Incapacitating Injury (NI)	Property Damage Only (PDO)	TOTAL	
Right Angle	28	18	56	102	26%
Rear End	9	7	31	47	12%
Sideswipe	2	0	45	47	12%
Ran Off Road	16	6	111	133	34%
Object in Road	0	1	18	19	5%
Other	3	2	37	42	11%
Total	**58**	**34**	**298**	**390**	**100%**

There were four fatal crashes in the study area corridor during the analysis period. Two of the fatal crashes occurred at the US 31 intersection with Old US 31/Southway 31. The first fatal crash occurred in 2019 when a vehicle northbound on US 31 attempted to make a right turn onto Southway 31, but lost control, overcorrected, and crashed, causing a single fatality. The second fatal crash occurred in 2021 and involved a turning vehicle whose driver failed to yield and caused an angular crash resulting in one fatality and three other injuries. Another fatal crash occurred in 2018 north of Olson Road when a southbound vehicle was travelling too fast for the rainy conditions, crossed the median and collided with a northbound vehicle causing one fatality and two incapacitating injuries. The fourth recorded fatality occurred in 2020 at the US 31 intersection with CR 400 South/CR 1600 North when an eastbound vehicle on CR 400 South attempted to cross US 31. The vehicle entered the median crossover, but failed to yield and was struck by a northbound vehicle causing one fatality, one incapacitating injury, and another possible injury.

5.1.2. CRASHES BY LOCATION

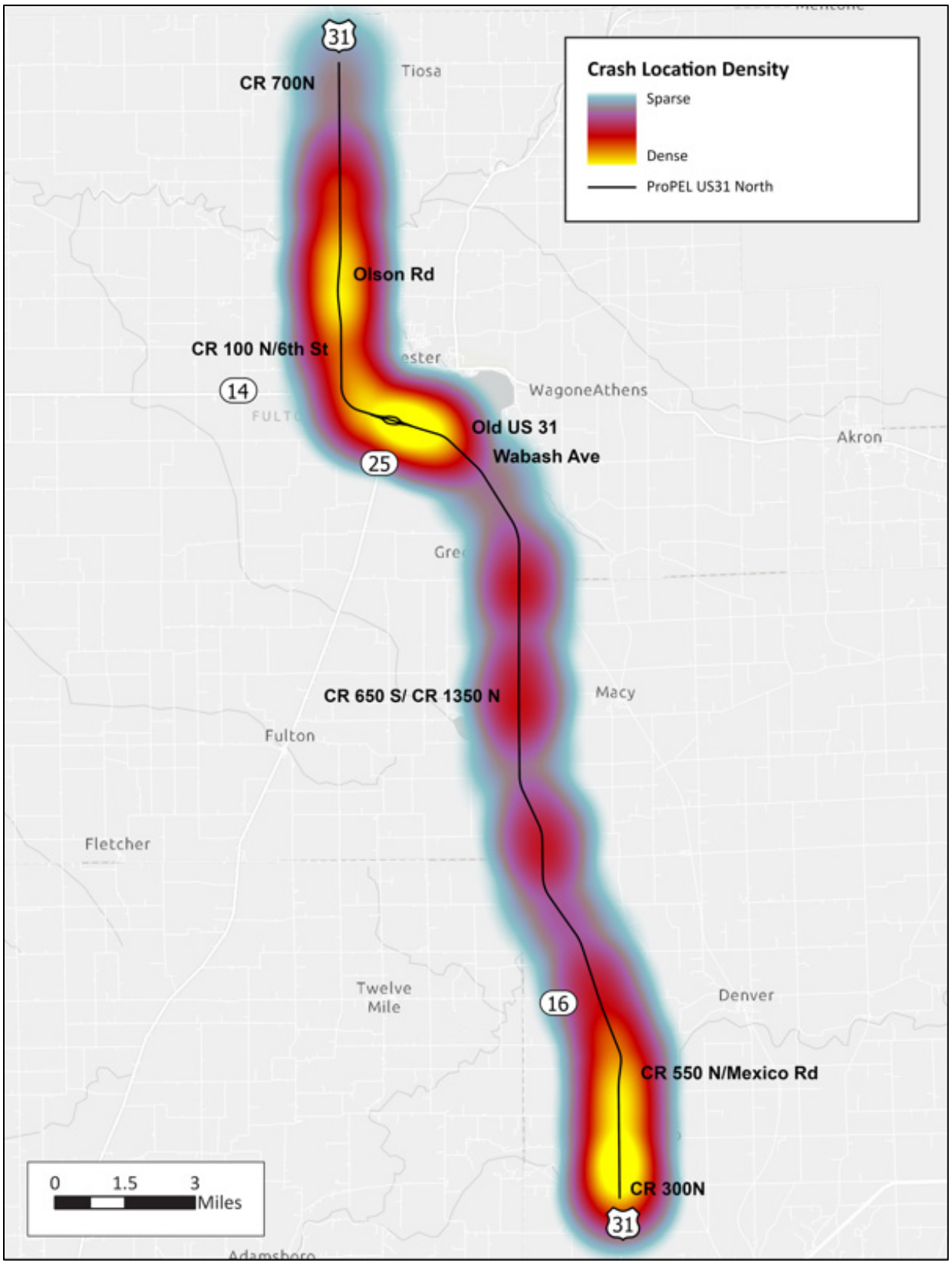
Crashes on US 31 in the study area corridor during the five-year period were plotted spatially and a heat map was created. The heat map highlights areas of the corridor with the highest crash densities indicating hotspots where crashes have occurred most frequently over the five-year period. The heat map is shown in Figure 3.

One of the densest concentrations of crashes is located in the SR 25 interchange / Old US 31 area on the south side of Rochester. There were 55 crashes in this area. Sixteen of the crashes were at the intersections of the US 31 ramps with SR 25 (see Section 5.2 for more detail) and twenty-five were at the intersection with Old US 31/Southway 31 (see Section 5.2 and Section 7.2.3 for more detail).

Another primary area of crash concentration is at the south end of the study corridor near CR 300 North and the area of the Eel River and Eel River Road – a stretch of 0.35 miles with 26 crashes. Of the 26 crashes, seven were related to snow/slush/icy roadway conditions while another two were related to standing water or hydroplaning. This stretch of the corridor features a low point at the bridge over the Eel River as well as three intersections with cross streets. Eight of the 26 crashes were in the proximity of the intersection at CR 300 North.

Secondary crash hot spots are located in the Olson Road / CR 100 North/6th Street area on the west side of Rochester and the CR 550 North/Mexico Road area at the south end of the corridor.

Figure 3 – Crash Density Heat Map



5.2. ROADHAT CRASH ANALYSIS

An analysis of crash frequency and crash severity was also performed using RoadHAT. The US 31 corridor was divided into highway segments, interchange segments, and intersections. In RoadHAT, an intersection is formed by a state-administered road (US or SR) and a state, county, or city road. It includes the intersection area and 250 feet on each leg of the intersection. The RoadHAT analysis focused on primary intersections of US 31 with streets of functional class Major Collector or higher. There is one interchange in the corridor, and it is located at SR 25. For interchange segments, RoadHAT considers the area contained within the outside ramps and an additional 250-foot area of influence upstream and downstream along US 31. All of the stretches of US 31 between intersections were analyzed as multilane highway segments. Secondary intersections of local roadways were also analyzed separately as spot intersection analyses to more thoroughly cover the study area, especially at locations where public comments referenced safety concerns.

The RoadHAT software considers the number and severity of crashes (in terms of injuries and fatalities), the exposure (AADT), and the length of the segment and compares them to expected crashes based on similar segments across the state. An index is calculated to indicate the number of standard deviations that the particular segment's safety performance is above or below the number of expected crashes for similar segments in Indiana. An index greater than 0.0 is above the statewide average. Higher indices indicate worse safety performance as compared to lower numbers.

The indices help to prioritize locations for focus, but whole corridor was investigated for correctible crash patterns. The index of crash frequency (ICF) indicates the frequency of all crashes within the segment and the index of crash cost (ICC) indicates the severity of all crashes within the segment. The results of the RoadHAT analysis for the study corridor is presented in Table 14, Table 15, and Figure 4, in which indices greater than 0.0 are indicated as elevated crash locations. The following sections further describe crash activity at intersections or segments with elevated crash indices.

Table 14 – Crash Frequency and Crash Severity – Primary Intersections and Segments

Segment Description	Number of Crashes (2017-2021)			Index of Crash Frequency (ICF)	Index of Crash Cost (ICC)
	Fatal & Incapacitating Injury (FI)	Non-Incapacitating Injury (NI)	Property Damage Only (PDO)		
US 31 – N. Study Limit to Olson Rd	6	7	35	-0.17	-0.38
INTERSECTION: US 31 at Olson Rd	1	0	11	-0.07	-0.48
US 31 – Olson Rd to CR 100 North/6th St	5	1	16	-0.03	0.33
INTERSECTION: US 31 at CR 100 North/6th St	2	0	8	-0.21	-0.11
US 31 – CR 100 North/6th St to SR 25	6	2	19	-0.01	0.29
US 31 – Interchange at SR 25	0	1	9	-0.74	-0.92
INTERSECTION: US 31 SB Ramps at SR 25	1	1	7	1.58	1.14
INTERSECTION: US 31 NB Ramps at SR 25	0	0	7	1.34	0.07
US 31 – SR 25 to Old US 31/Southway 31	0	0	4	-0.52	-0.70
INTERSECTION: US 31 at Old US 31/Southway 31	5	4	16	0.99	0.86
US 31 – Old US 31/Southway 31 to Wabash Ave	0	0	2	-0.95	-0.83
INTERSECTION: US 31 at Wabash Ave	0	0	0	-1.36	-0.90
US 31 – Wabash Ave to CR 650 South/CR 1350 North	7	1	33	-0.38	-0.42
INTERSECTION: US 31 at CR 650 South/CR 1350 North	2	1	9	0.45	0.18
US 31 – CR 650 South/CR 1350 North to SR 16	6	4	42	-0.35	-0.57
INTERSECTION: US 31 at SR 16	3	2	3	-0.19	0.49
US 31 – SR 16 to CR 550 North/Mexico Rd	6	0	13	-0.06	0.64
INTERSECTION: US 31 at CR 550 North/Mexico Rd	0	2	1	-0.97	-0.77
US 31 – CR 550 North/Mexico Rd to S. Study Limit	5	8	56	1.00	-0.10

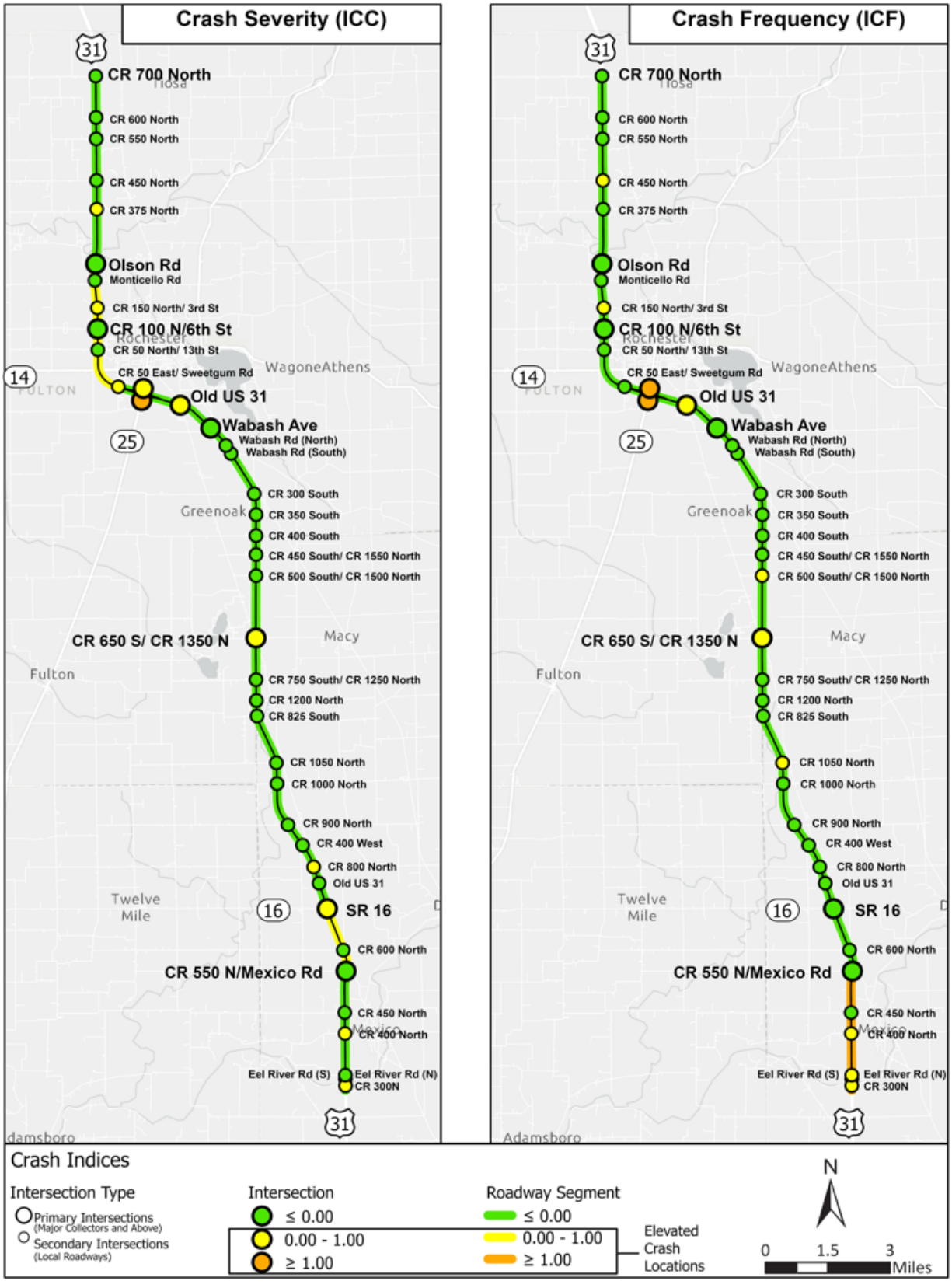
Shading indicates elevated crash indices above the statewide average: yellow shading is 0.0 - 1.0 and orange shading is > 1.0

Table 15 – Crash Frequency and Crash Severity – Secondary Intersections

Intersection	Number of Crashes (2017-2021)			Index of Crash Frequency (ICF)	Index of Crash Cost (ICC)
	Fatal & Incapacitating Injury (FI)	Non-Incapacitating Injury (NI)	Property Damage Only (PDO)		
CR 700 North	1	2	2	-0.50	-0.18
CR 600 North (Fulton County)	1	0	1	-0.74	-0.07
CR 550 North (Fulton County)	0	0	2	-0.74	-0.68
CR 450 North (Fulton County)	1	0	7	0.25	-0.02
CR 375 North	1	2	3	-0.07	0.12
Monticello Road	1	0	3	-0.38	-0.04
3rd Street	1	1	5	0.11	0.06
CR 50 North/13th Street	0	1	2	-0.55	-0.57
CR 50 East/Sweetgum Road	4	0	6	-0.26	0.46
Wabash Road (N)	0	0	0	-1.36	-0.90
Wabash Road (S)	1	0	2	-0.71	-0.22
CR 300 South	0	0	0	-1.11	-0.69
CR 350 South	0	0	3	-0.25	-0.57
CR 400 South	1	0	0	-0.90	-0.03
CR 450 South/CR 1550 North	0	0	2	-0.71	-0.67
CR 500 South/CR 1500 North	0	0	7	0.18	-0.62
CR 750 South/CR 1250 North	0	0	2	-0.70	-0.67
CR 1200 North	0	0	0	-1.11	-0.68
CR 825 South	0	0	0	-1.05	-0.61
CR 1050 North	0	1	5	0.03	-0.52
CR 1000 North	0	0	0	-1.11	-0.68
CR 900 North	0	0	2	-0.72	-0.67
CR 400 West	1	0	0	-0.91	-0.04
CR 800 North	2	2	2	0.00	0.61
Old Route 31	0	0	0	-1.11	-0.69
CR 600 North (Miami County)	1	0	1	-0.72	-0.03
CR 450 North (Miami County)	0	2	4	-0.62	-0.71
CR 400 North	2	1	7	0.62	0.56
Eel River Rd (N)	0	2	5	0.60	-0.21
Eel River Rd (S)	0	0	2	-0.52	-0.59
CR 300 North	2	2	8	0.91	0.65

Shading indicates elevated crash indices above the statewide average: yellow shading is 0.0 - 1.0 and orange shading is > 1.0

Figure 4 – RoadHAT Analysis - Index of Crash Frequency (ICF) and Index of Crash Severity (ICC)



5.2.1. INTERSECTIONS – US 31 RAMPS AT SR 25

Nine of the segments/primary intersections have either ICF, ICC, or both above the statewide average. The highest ICF and ICC values are located at the intersection of the US 31 ramps with SR 25. Both intersections have an ICF of 1.0 or greater. The crashes by collision type are shown for the intersections of SR 25 with the US 31 southbound ramps and northbound ramps are shown in Table 16 and Table 17 respectively.

Of the 16 total crashes at these two intersections, nine were rear end crashes. The crash narratives indicated that at least four were rear-end crashes involving vehicles from the off-ramp making a right turn via the yield-controlled turning roadway. The right-turn slip lanes are present at both off-ramps at the intersections. A rear-end crash can occur if the driver of the second vehicle is moving forward and to the right in the slip lane while looking left for oncoming traffic and does not notice that the first vehicle has stopped on the slip lane in front. Twenty-five percent of the crashes at these two intersections occurred during dark (not lighted) conditions. There is currently no roadway lighting at these two intersections. The intersection of the US 31 southbound ramps with SR 25 also has an ICC more than one standard deviation above the statewide average; however, there were only two crashes with injuries: one with an incapacitating injury and the other with a non-incapacitating injury. Crash diagrams for intersections with indices above 0.5 are shown in Appendix C. Details of the RoadHAT analysis for all segments and intersections can be found in Appendix D.

Table 16 – Intersection Crashes by Collision Type – US 31 Southbound Ramps at SR 25

Collision Type	Number of Crashes	Percentage
Rear End	5	56%
Right Angle	2	22%
Left Turn	1	11%
Same Direction Sideswipe	1	11%

Table 17 – Intersection Crashes by Collision Type – US 31 Northbound Ramps at SR 25

Collision Type	Number of Crashes	Percentage
Rear End	4	58%
Left Turn	1	14%
Ran Off Road	1	14%
Right Turn	1	14%

5.2.2. INTERSECTION – US 31 AT OLD US 31/SOUTHWAY 31

The intersection of US 31 and Old US 31/Southway 31 just south of the SR 25 interchange has elevated ICF and ICC indices. Both indices are just under one standard deviation above expected. There were 25 crashes at this intersection with two involving fatalities (as described in Section 5.1.1) and three crashes that involved incapacitating injuries. The crashes at this intersection are shown by collision type in Table 18.

Seventeen of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31. The crash narratives indicated that 16 of the crashes involved vehicles crossing US 31 from the side street and two involved a vehicle making a left turn from the side street. During the PM peak hour, there are 110 vehicles crossing or turning left onto US 31 from Old US 31/Southway 31. This

intersection was mentioned as a safety concern at the public meeting (see Section 7.2.3 for more detail). Only one of the crashes at this intersection occurred during dark (not lighted) conditions. A crash diagram is shown in Appendix C.

Table 18 – Intersection Crashes by Collision Type – US 31 at Old US 31/Southway 31

Collision Type	Number of Crashes	Percentage
Right Angle	17	68%
Other	3	12%
Ran Off Road	2	8%
Non-Collision	1	4%
Rear End	1	4%
Same Direction Sideswipe	1	4%

5.2.3. SEGMENT – CR 550 NORTH/MEXICO ROAD TO SOUTH STUDY LIMIT

One segment of note is the southernmost segment of the corridor from CR 550 North/Mexico Road to the south end of the study corridor at CR 300 North with an ICF of one standard deviation above the expected crash frequency. Of the 69 crashes in this segment, 26 of them occurred in the southern end of this segment was identified as a hot spot and discussed in the previous section. The 69 crashes in this segment are shown by collision type in Table 19. The most common type of collision involved vehicles running off the road. As noted above, several of the crashes involved wet/snowy/icy surface conditions. Rear end crashes and same direction sideswipes were the next most common collision types. There were five crashes in this segment involving incapacitating injuries and another eight that involved non-incapacitating injuries.

Table 19 – Segment Crashes by Collision Type – CR 550 North/Mexico Road to South End of Corridor

Collision Type	Number of Crashes	Percentage
Ran Off Road	27	39%
Rear End	12	18%
Same Direction Sideswipe	10	15%
Other	9	13%
Right Angle	5	7%
Collision with Object in Road	3	4%
Non-Collision	2	3%
Opposite Direction Sideswipe	1	1%

5.2.4. SEGMENT – SR 16 TO CR 550 NORTH/MEXICO ROAD

The segment from SR 16 to CR 550 North/Mexico Road has an elevated ICC index of 0.64. This 1.4-mile segment had six crashes with incapacitating injuries. Of those six crashes, five involved vehicles running off the road and one was a rear-end crash. Three of the ran off the road crashes involved snow/slush conditions and

another involved driver distraction with a cell phone. The collision type of all 19 crashes in this segment are shown in Table 20.

Table 20 – Segment Crashes by Collision Type – SR 16 to CR 550 North/Mexico Road

Collision Type	Number of Crashes	Percentage
Ran Off Road	12	63%
Same Direction Sideswipe	3	16%
Rear End	2	11%
Collision with Object in Road	1	5%
Other	1	5%

5.2.5. INTERSECTION – US 31 AT 650 SOUTH/CR 1350 NORTH

The intersection of US 31 and CR 650 South/CR 1350 North shows elevated ICF (0.45) and ICC (0.18) indices. There were 12 crashes at this intersection with two involving incapacitating injuries. The 12 crashes are shown by collision type in Table 21. Five of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). The crash narratives indicated that 3 of the crashes involved southbound left turns from US 31 and another three involved vehicles from the cross street crossing US 31. During the PM peak hour, there are only 30 vehicles crossing or turning left onto US 31 from CR 650 South and CR 1350 North. This intersection was mentioned as a safety concern at the public meeting (see Section 7.2.4 for more detail).

Table 21 – Intersection Crashes by Collision Type – US 31 at CR 650 South/CR 1350 North

Collision Type	Number of Crashes	Percentage
Right Angle	5	42%
Same Direction Sideswipe	2	17%
Ran Off Road	2	17%
Left/Right Turn	1	8%
Rear End	1	8%
Other	1	8%

5.2.6. INTERSECTION – US 31 AT SR 16

The intersection of US 31 and SR 16 shows an elevated ICC index of 0.49. There were eight crashes at this intersection with three involving incapacitating injuries. The crashes at this intersection are shown by collision type in Table 22. Five of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). The crash narratives indicated that six of the crashes at the intersection involved vehicles from the cross street crossing US 31. Another crash involved a southbound vehicle on US 31 turning right. During the PM peak hour, there are 60 vehicles crossing or turning left onto US 31 from SR 16. One third of the crashes at this intersection occurred during dark (not lighted) conditions. Two of the 8 crashes at this intersection occurred during dark

(not lighted) conditions. This intersection was mentioned as a safety concern at the public meeting (see Section 7.2.5 for more detail).

Table 22 – Intersection Crashes by Collision Type – US 31 at SR 16

Collision Type	Number of Crashes	Percentage
Right Angle	5	64%
Same Direction Sideswipe	1	12%
Ran Off Road	1	12%
Rear End	1	12%

5.2.7. INTERSECTION – US 31 AT CR 300 NORTH

For the secondary intersections, 10 intersections showed elevated indices. The intersection of US 31 and CR 300 North had the highest elevated indices with an ICF of 0.91 and an ICC of 0.65. The crashes at this intersection are shown by collision type in Table 23. There were seven crashes involving a vehicle running of the road. Four of the seven involved icy conditions on US 31 and the nearby Eel River bridge and did not directly involve intersection movements. An examination of the crash narratives showed only four of the crashes within 250 feet of the intersection were attributable to intersection movements. Two involved southbound right turns from US 31 and two involved eastbound through movements from CR 300 North crossing US 31. Of the crashes with injuries, only two of them were attributable to the intersection movements. Eight of the twelve crashes at this location seemed to involve conditions other than the intersection. Five of the 12 crashes at this location occurred during dark (not lighted) conditions. A crash diagram is shown in Appendix C.

Table 23 – Intersection Crashes by Collision Type – US 31 at CR 300 North

Collision Type	Number of Crashes	Percentage
Ran Off Road	7	58%
Rear End	2	17%
Right Angle	2	17%
Same Direction Sideswipe	1	8%

5.2.8. INTERSECTION – US 31 AT EEL RIVER ROAD (NORTH)

The northern intersection of US 31 and Eel River Road had an elevated ICF of 0.60. The crashes at this intersection are shown by collision type in Table 24. The most common collision type involves a vehicle running off the road. Of the three crashes of this type, two were weather related. The non-collision crash involved a vehicle catching fire while driving. It was not clear from the crash narratives that any of the seven crashes involved intersection operations. A crash diagram is shown in Appendix C.

Table 24 – Intersection Crashes by Collision Type – US 31 at Eel River Road (N)

Collision Type	Number of Crashes	Percentage
Ran Off Road	4	58%
Same Direction Sideswipe	1	14%
Rear End	1	14%
Non-Collision	1	14%

5.2.9. INTERSECTION – US 31 AT CR 400 NORTH

The intersection of US 31 and CR 400 North shows elevated ICF (0.62) and ICC (0.56) indices. There were 10 crashes at this intersection with two involving incapacitating injuries. The crashes at this intersection are shown by collision type in Table 25. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). The crash narratives indicated that three crashes involved vehicles from the cross street crossing US 31. Another involved a northbound vehicle making a left turn onto CR 400 North. Three of the 10 crashes at this intersection occurred during dark (not lighted) conditions. A crash diagram is shown in Appendix C.

Table 25 – Intersection Crashes by Collision Type – US 31 at CR 400 North

Collision Type	Number of Crashes	Percentage
Right Angle	4	40%
Ran Off Road	3	30%
Other	2	20%
Collision with Object in Road	1	10%

5.2.10. INTERSECTION – US 31 AT CR 800 NORTH

CR 800 North in Miami County shows an elevated ICC of 0.61. There were six crashes at this intersection with two of them involving incapacitating injuries. The crashes at this intersection are shown by collision type in Table 26. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). Right angle crashes were the most common crash type. The crash records show that all four of the right angle crashes involved vehicles from CR 800 N crossing US 31. All six of the crashes at this intersection occurred during daylight. A crash diagram is shown in Appendix C.

Table 26 – Intersection Crashes by Collision Type – US 31 at CR 800 North

Collision Type	Number of Crashes	Percentage
Right Angle	4	66%
Ran Off Road	1	17%
Same Direction Sideswipe	1	17%

5.2.11. INTERSECTION – US 31 AT CR 50 EAST/SWEETGUM ROAD

The intersection of US 31 and CR 50 East/Sweetgum Road shows an elevated ICC of 0.46. There were 10 crashes at this intersection with four of them involving incapacitating injuries. All four of the crashes involving incapacitating injuries were right angle crashes. The crashes at this intersection are shown by collision type in Table 27. An investigation of the crash narratives indicated that three of the crashes involved vehicles from the cross street crossing US 31 and two of the crashes involved vehicles from the cross street turning left. Three of the 10 crashes at this intersection occurred during dark (not lighted) conditions.

Table 27 – Intersection Crashes by Collision Type – US 31 at CR 50 East/Sweetgum Road

Collision Type	Number of Crashes	Percentage
Right Angle	6	60%
Other	2	20%
Left Turn	1	10%
Same Direction Sideswipe	1	10%

5.2.12. INTERSECTION – US 31 AT CR 450 NORTH (FULTON COUNTY)

The intersection of US 31 and CR 450 North (Fulton County) has an elevated ICC of 0.25. There were eight crashes at the intersection with one involving incapacitating injuries. The crashes at this intersection are shown by collision type in Table 28. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). The crash narratives show that all four of the right angle crashes involved vehicles from CR 450 North (Fulton County) crossing US 31. Two of the crashes that involved vehicles running off the road were due to icy/snowy conditions. None of the eight crashes at this intersection occurred during dark (not lighted) conditions.

Table 28 – Intersection Crashes by Collision Type – US 31 at CR 450 North (Fulton County)

Collision Type	Number of Crashes	Percentage
Right Angle	4	50%
Ran Off Road	3	38%
Same Direction Sideswipe	1	13%

5.2.13. INTERSECTION – US 31 AT CR 500 SOUTH / CR 1500 NORTH

The intersection of US 31 and CR 500 South / CR 1500 North shows an elevated ICC of 0.18. There were seven crashes in the vicinity of the CR 500 South / CR 1500 North intersection. The crashes at this intersection are shown by collision type in Table 29. Only one of the crashes was a right angle crash and it involved a vehicle from CR 1500 North crossing US 31. The crash records indicated that none of the other crashes were related to intersection movements. One of the seven crashes at this intersection occurred during dark (not lighted) conditions.

Table 29 – Intersection Crashes by Collision Type – US 31 at CR 500 South / CR 1500 North

Collision Type	Number of Crashes	Percentage
Collision with Object in Road	3	44%
Right Angle	1	14%
Ran Off Road	1	14%
Same Direction Sideswipe	1	14%
Rear End	1	14%

5.2.14. INTERSECTIONS – OTHER SECONDARY INTERSECTIONS

The intersections of US 31 with CR 375 North, 3rd Street, and CR 1050 North have elevated crash indices. At CR 375 North (ICC = 0.12), there were six crashes at the intersection with one of them involving incapacitating injuries. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). At 3rd Street (ICF = 0.11 and ICC = 0.06), there were seven crashes at the intersection with one of the crashes involving incapacitating injuries. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (or vehicles from US 31 turning onto a cross street). At CR 1050 North (ICF = 0.03), there were six crashes at the intersection. No discernable patterns were recognized.

5.3. OTHER SAFETY CONSIDERATIONS

5.3.1. PEDESTRIAN AND BICYCLE

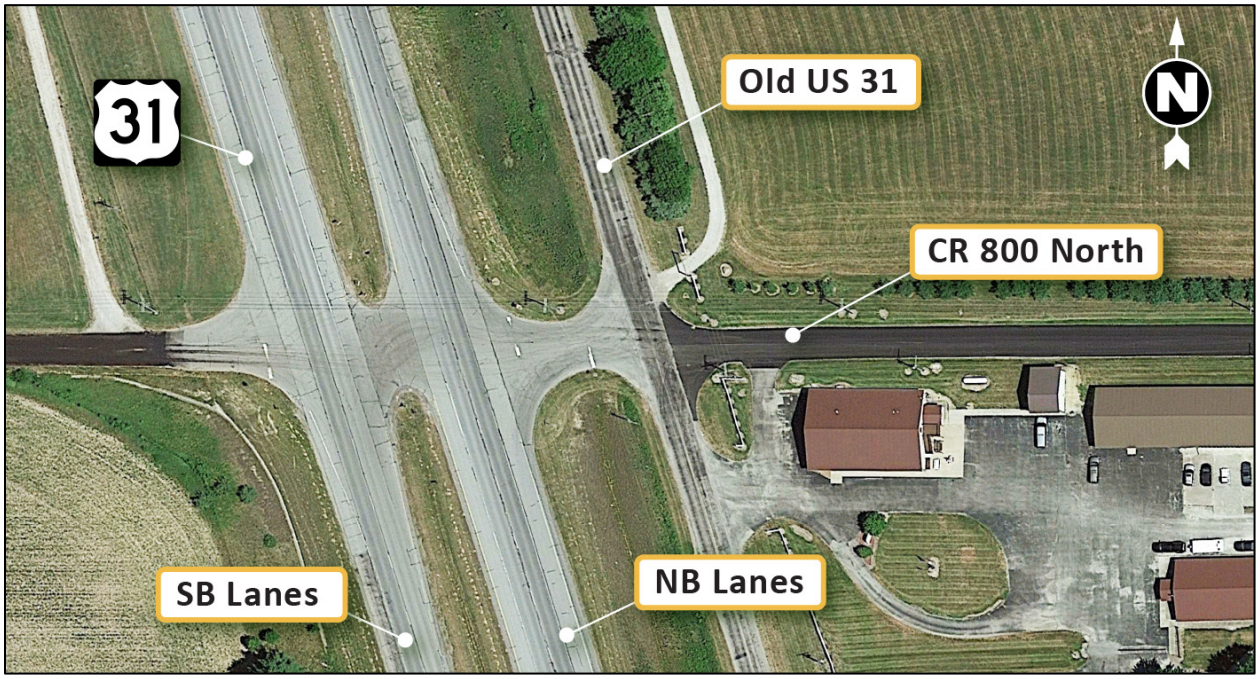
As noted earlier, sidewalks are not present along or across US 31. Because of the dominant rural land use and related low population density, pedestrian activity along and across US 31 is low. With the lack of pedestrian accommodation or signage and the speed of free-flow traffic on US 31, pedestrian crossings of US 31 are a challenging movement. Recently in December 2022, a pedestrian was struck and killed by a vehicle while attempting to cross US 31 near Sweetgum Road/CR 50 East near Rochester.

With the proximity of the Nickel Plate Trail, pedestrian and bicycle activity may be more likely at cross street access points at Wabash Avenue, Wabash Road (see Section 5.3.2 for additional detail), and CR 300 South. Public comments referenced bicycles crossing US 31 at CR 700 North. Overall, pedestrian and bicycle movements along or across US 31 in the corridor are challenging.

5.3.2. CONTROL AT IMMEDIATELY ADJACENT INTERSECTIONS

In some locations along the study corridor, there are other roads running closely parallel to US 31. In some cases, this means that there are intersections on the side street immediately adjacent to the intersection of US 31. When the adjacent intersection has four legs and the parallel street is not controlled, the potential for conflicting movements exists. An example of this is shown in Figure 5 where the intersection of CR 800 North and Old US 31 in Miami County at the southern end of the corridor is only 95 feet east of the intersection with US 31. The CR 800 North and Old US 31 intersection is two-way stop-controlled on CR 800 North. This means that a vehicle from the higher-speed facility US 31 turning east onto CR 800 North must immediately stop to avoid traffic on Old US 31 that does not stop. There were six crashes at the intersection of US 31 and CR 800 North and an additional four crashes at the intersection of Old US 31 and CR 800 North, including two crashes involving eastbound vehicles on CR 800 North.

Figure 5 – Immediately Adjacent Intersection at CR 800 North and Old US 31 (Miami County)

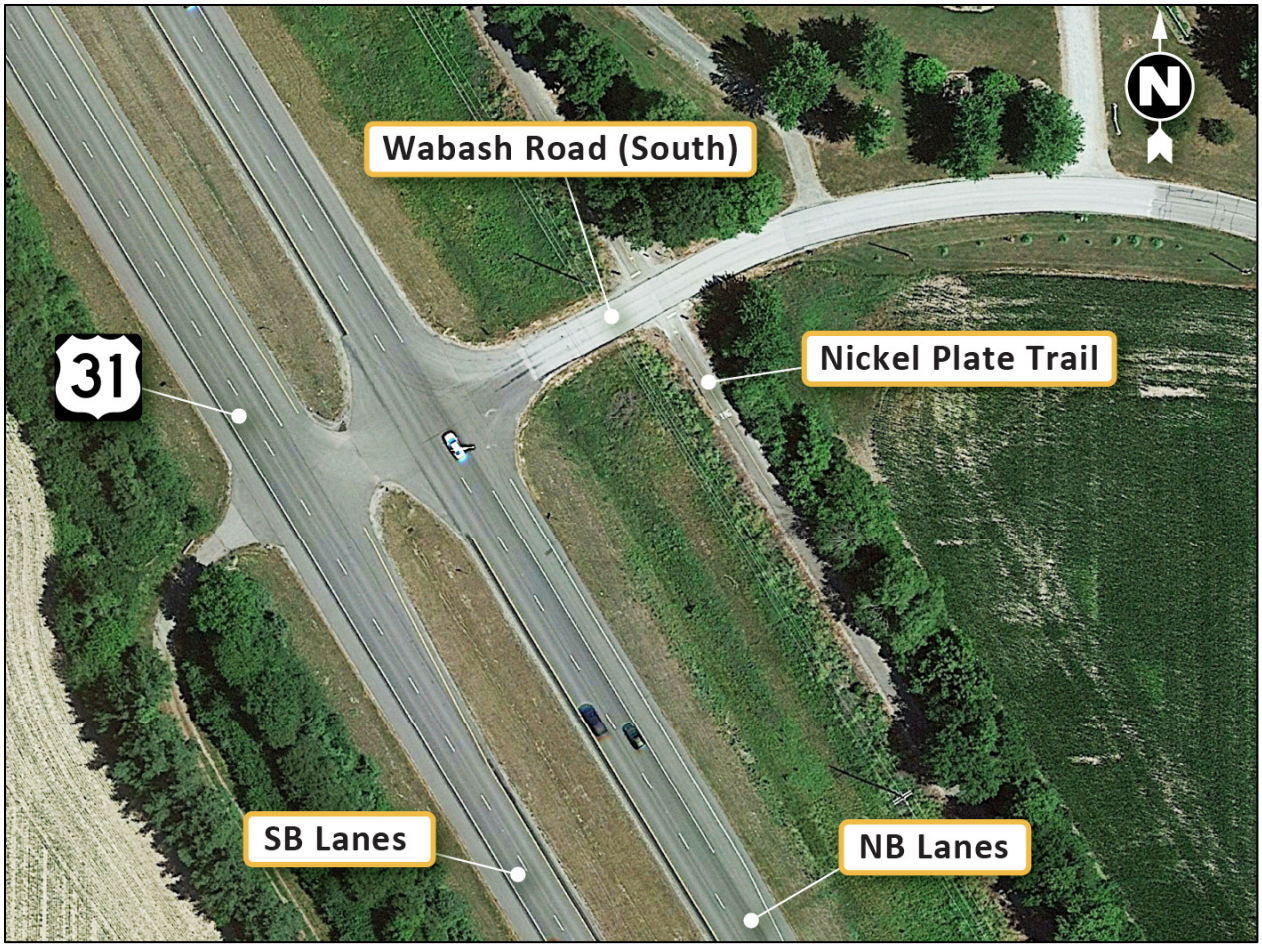


The Monticello Road intersection has a similar condition with the Meridian Road intersection located 120 feet to the west. Westbound Monticello Road is stop-controlled while northbound and southbound Meridian Road are uncontrolled. This situation provides less risk because Monticello T's into Meridian Road so vehicles must slow down to make a turn. No crashes were reported at this adjacent intersection during the analysis period.

There are other cross streets with immediately adjacent intersections (within 250 feet) at Olson Road, CR 150 South/Wabash Road, CR 300 South, CR 400 South, CR 650 South and CR 1350 North, Old US 31 (Miami County), and CR 600 North (Miami County). All of these are stop-controlled on the parallel street and not on the cross street (i.e., traffic from higher-speed US 31 does not have to stop at the adjacent intersection).

Additionally, the previously mentioned Nickel Plate trail (see Section 5.3.1) crosses Wabash Road (South) within approximately 115 feet of its intersection with US 31, as shown in Figure 6. While the Nickel Plate trail is stop-controlled for the northbound and southbound movements, the speed differential between stopped bicycles and pedestrians on the trail, and through traffic from US 31 and on Wabash Road (South), is high. A northbound vehicle turning right onto Wabash Road at 15 mph would reach the bike trail in 6.4 seconds.

Figure 6 – Immediately Adjacent Intersection at Wabash Road (south) and the Nickel Plate Trail



5.3.3. OTHER VEHICLE TYPES

Although the traffic counts did not explicitly document horse-drawn vehicles, their presence in the corridor was noted by both the public and the crash records. At least two of the crashes in the records indicated that a horse was involved: near CR 700 North and CR 600 North (Fulton County). Comments received from the public also noted the presence of horse-drawn vehicles in the area.

With the context of the corridor being dominated by agricultural land use, large and heavy farm machinery is also noted as being present in the corridor. These vehicles are more prevalent during the spring planting season and especially during the autumn harvest season. There are grain elevators located near the corridor in Rochester, Macy, and Mexico (see Section 3.3.3). All three are located east of US 31, and the elevator in Mexico is about one-half mile off of US 31. Comments from the public specifically mentioned farm equipment in the corridor in the vicinity of the elevators in Mexico and Macy.

6. OTHER TRANSPORTATION PROJECTS

The Statewide Transportation Improvement Program (STIP) lists all projects, and project phases, expected to be funded within 5 years with federal funds and state-funded projects that have been deemed Regionally Significant. INDOT's current STIP for fiscal year 2022 through 2026 includes several projects within the study corridor.

- Small structure and drain construction along US 31 at nine various locations between reference posts 177.52 + 196.15 (Des. No. 2001787). Construction is anticipated to begin in the second quarter of 2025.
- Small structure replacement of the drainage feature carrying US 31 over UNT to Mills Ditch, located 3.82 miles north of SR 16 (Des. No. 2000801). Construction is anticipated to begin in the first quarter of 2023.
- Small structure pipe lining of the drainage structure carrying US 31 over UNT to Rain Creek (Des. No. 2100783). Construction is anticipated to begin in the third quarter of 2025.
- Small structure pipe lining of the drainage structure carrying US 31 over UNT to Mill Creek, located 3.70 miles south of the SR 14 and SR 25 intersection (Des. No. 2100819). Construction is anticipated to begin in the third quarter of 2025.
- Hot-mix asphalt pavement overlay along SR 14, from SR 17 to US 31 (Des. Nos. 2000612, 1900006) Construction is anticipated to begin in the first quarter of 2024.
- Bridge Deck Sealing along the US 31 bridge over the Tippecanoe River, located 2.77 miles north of SR 14 (Des. No. 2001025). Construction was scheduled to begin in the second quarter of 2022.
- Small structure pipe lining along US 31, located 3.15 miles south of SR 110 (Des. No. 1700034). Construction is anticipated to begin in the first quarter of 2023.
- Small structure maintenance and repair project along US 31, located 1.60 miles south of SR 110 (Des. No. 2100943). Construction is anticipated to being in the first quarter of 2023.

There is currently one programmed INDOT project that is located within the US 31 North PEL study area that is advancing through project development independent of the PEL study. The project will provide a new overpass at CR 700 North (Des No. 2200484). This project is included in the INDOT 2022-2026 State Transportation Improvement Program (STIP) and is programmed for construction in 2027. Some other previously programmed projects located within the US 31 North PEL study area were postponed pending the conclusion of the PEL study. However, due to previously identified safety concerns at CR 700 North, this project was determined to be individually important enough to continue design and development independent of the PEL study. Projects that perform maintenance and preservation of existing assets were not postponed. Because this project at CR 700 North is already programmed, the PEL study will not analyze the CR 700 North intersection for potential improvements. The programmed project will be considered an existing condition for the ProPEL US 31 North study and will not preclude the scope of the programmed projects as they are designed and constructed. Coordination between the ProPEL US 31 North study and the project development work for programmed projects will be ongoing throughout the PEL study process.

7. PUBLIC INPUT

At this point in the study, members of the public have been given several means and opportunities to provide input about the characteristics, concerns, and needs within the ProPEL US 31 North study corridor including: bi-monthly community office hours (COH) starting in October 2022; in-person and virtual public information meetings (PIMs) in December 2022; and the opportunity to comment on an ongoing basis via the project website.

Comments from the public received through January 1, 2023 – which was the close of the PIM comment period – are summarized in the following subsections. During this timeframe, a total of 107 narrative comments were received at the PIM, at the COH, or online during the comment period and additionally, 60 responses to a series of visioning boards and aerial maps at the PIM were provided. All comments and responses were equally considered and categorized. Of the approximately 170 comments and responses received, most covered multiple topics or concerns and were each individually considered. Only comments related to existing conditions, needs, or deficiencies for the study area are summarized herein. Other comments – including suggestion, support of, or opposition to specific proposed improvements and questions or statements related to process, schedule, or funding – were removed for the purposes of this report summary, and full documentation of these early outreach activities is documented in the separate *Resource Agency, Stakeholder, & Public Involvement Summary Memorandum #1 (Vision/Scoping).*

Public and stakeholder input received at this point in the study will be utilized for development of the purpose, needs, and goals as well as early identification of potential alternatives or associated locations for proposed improvements for consideration.

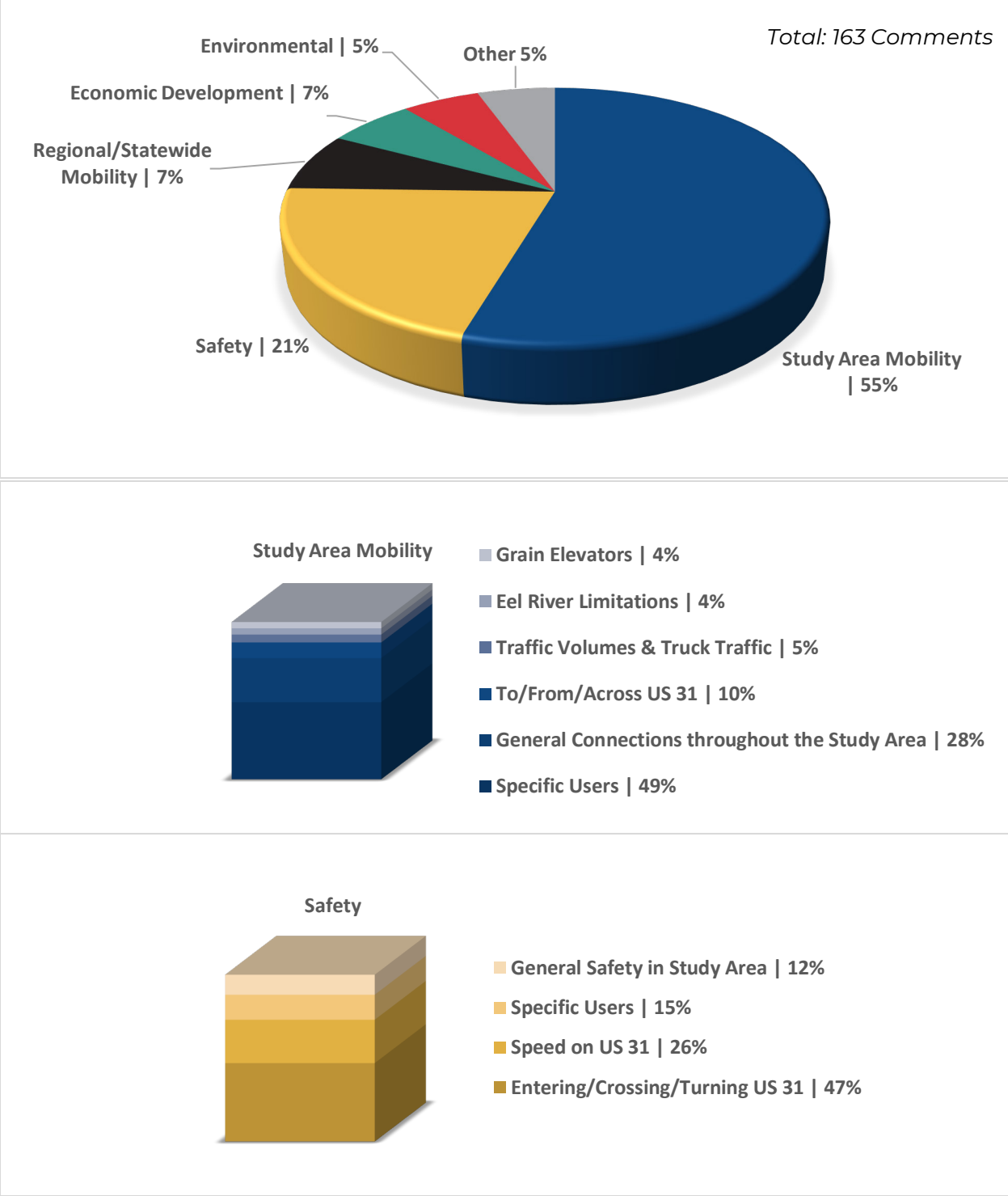
7.1. SUMMARY OF COMMENTS

Comments related to existing conditions, needs, or deficiencies were grouped by type of concern, as shown on Figure 7 and further described below. A total of 163 existing concerns were coded. Overall, the importance of US 31 for both daily life in the study area as well as for facilitating more regional travel was clear in the comments received. As shown below, Study Area Mobility and Safety comprise more than 75% of the comments received for existing conditions. Difficulty turning on to or crossing US 31 for a variety of reasons, including high speeds on US 31, and particular conditions for specific users including emergency services, school buses, agriculture equipment, large vehicles/trucks, and non-motorized vehicles, were the most common themes. While many of the comments for these two types of concerns were more general in nature and applied to the study area as a whole, some concerns indicated specific locations for mobility and safety issues. Location-specific comments are summarized in Section 7.2.

- **Study Area Mobility** | 55% |89 Comments | Concerns were primarily related to existing connections to, from, or across US 31, both for specific areas or specific users, or generally throughout the corridor. A more detailed review of Study Area Mobility comments is shown in Figure 7 and summarized below.
    - Needs of existing users within the study area, particularly at existing intersections: emergency vehicles, school buses, non-motorized (including horse-drawn vehicles and bicycles), farm and heavy equipment, and trucks
    - General connectivity needs throughout the study area for:
        - Communities, notably Rochester (northern and southern sides); Mexico; Macy; Denver; and Leiters Ford;
        - Farms, including mobility across US 31 and related agricultural services;

    - Residences; and
    - Businesses,
  - General mobility deficiencies across the corridor and/or accessing US 31.
  - Existing traffic volumes, including truck traffic, particularly within Rochester and its interchange with US 31, or during specific events (Notre Dame football games; weekends near recreational areas; etc.).
  - Existing accessibility needs to/from the grain elevators (three within, or accessed by, the study area corridor).
  - Lack of other existing options across the Eel River in the area, particularly the size/weight limitations of Denniston Bridge.
- **Safety** | 21% | 34 Comments | Concerns were primarily related to experienced or perceived safety issues, both in general throughout the corridor as well as at specific locations and/or for specific users. A more detailed review of Safety comments is shown in Figure 7 and summarized below.
  - Difficulties crossing and/or turning across US 31 at existing intersections, including the safety risk of multiple vehicles stacking in the median opening waiting to cross or turn, and sight distance.
  - Difficulties entering and/or exiting US 31 at existing intersections, including lack of sufficient turn lanes.
  - Speed of through traffic along US 31 (in general, and speed differential related to slower-moving traffic entering/exiting/crossing highway).
  - Safety needs of specific users in the study area, particularly at specific intersections: non-motorized vehicles (including horse-drawn vehicles), school buses, farm equipment, and trucks.
  - General safety issues throughout the corridor, including insufficiency of local roadways to safely accommodate farm/heavy equipment/trucks.
- **Regional/Statewide Mobility** | 7% | 12 Comments | Concerns were primarily related to the importance of travel along US 31 in the study area as part of the larger transportation network, and US 31 being a free-flow facility within the study area to facilitate more regional transportation needs.
- **Economic Development** | 7% | 10 Comments | Concerns were related to current population, development, and economic trends and the associated importance of US 31 in the communities within the study area.
- **Environmental** | 5% | 9 Comments | Concerns were related to the presence of existing environmental resources including cemeteries and habitat as well as noise issues due to traffic.
- **Other** | 5% | 9 Comments | Concerns were related to drainage or lack of alternative fuel options in the corridor.

Figure 7 – Summary of Existing Condition Comments (Type of Concern & Percent of Comments Received)



7.2. LOCATION-SPECIFIC COMMENTS

A summary of comments that identified mobility and safety issues at specific locations is discussed below in relation to the data that was presented and evaluated within this report. Intersections that received multiple similar comments are grouped together and presented first. Additionally, summary of specific users at specific locations as indicated by the public comments is provided at the end of this section.

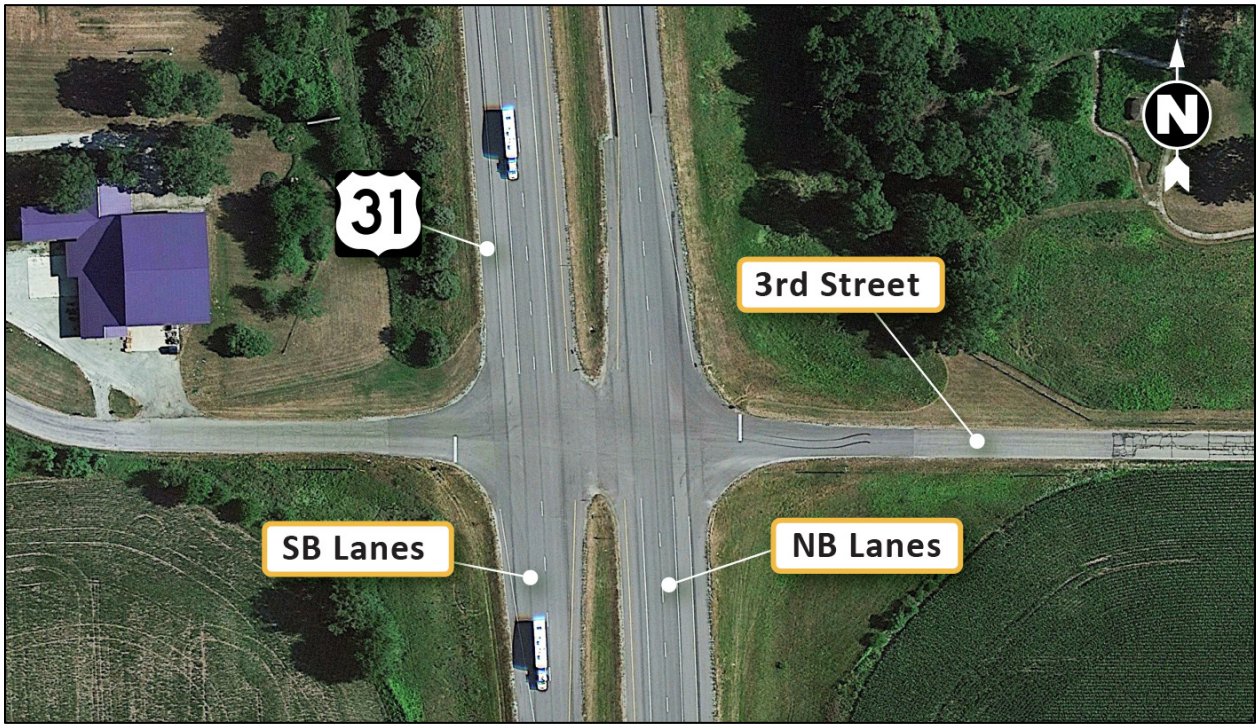
7.2.1. 3RD STREET

Comments indicated difficulty safely crossing/turning across this intersection, and the Fulton County Emergency Management Agency indicated emergency vehicles avoid this intersection due to limited visibility, particularly over the crest of the hill on US 31 southbound. The intersection is shown in Figure 8.

The RoadHAT safety analysis of this intersection identified elevated ICF (0.11) and ICC (0.06) indices. There were seven crashes at this intersection with five of them involving turning or crossing vehicles. Two of the crashes were weather related.

Intersection sight distance was evaluated for the 3rd Street approaches to the US 31 intersection. Adequate sight distance is currently provided for left and right turns from the west approach. Adequate sight distance is also provided for right turns from the east approach to northbound US 31. The sight distance for left turns was less than desirable for 3rd Street westbound to US 31 southbound when starting from the east approach to the intersection. The vertical profile obstructs the view of southbound vehicles approaching from the north. Details of these sight lines are shown in Appendix E. It should be noted that adequate sight distance is available for passenger cars that stage the left turn by pausing in the median and looking northbound for a gap in the southbound traffic. Due to the limited median width, it was assumed that larger vehicles would make the turn without staging in the median, so the sight restrictions would have more of an effect on trucks.

Figure 8 – US 31 Intersection with 3rd Street

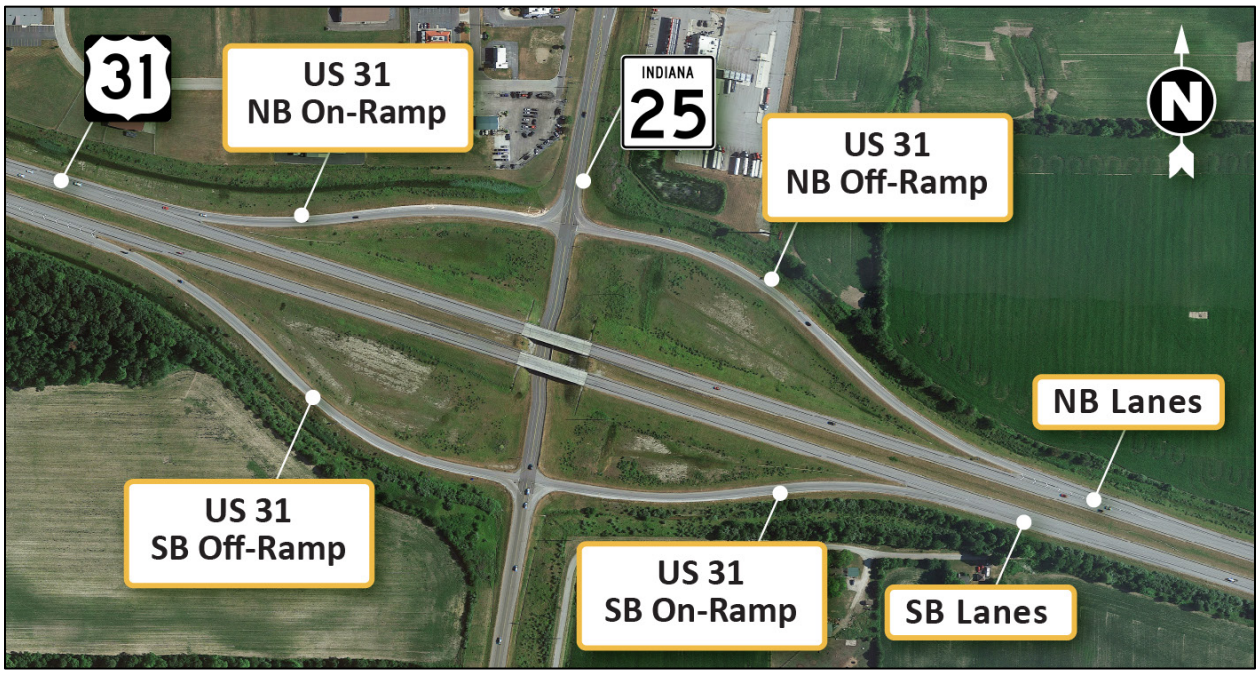


7.2.2. INTERCHANGE AT SR 25/ACCESS IN ROCHESTER

Comments indicated high traffic volumes – including higher truck traffic than other areas – accessing and using the grade-separated interchange at SR 25 on the south side of Rochester. Safety issues throughout the interchange and adjacent intersections in Rochester (particularly to the north), as well as existing congestion and lack of ability to handle future traffic, were noted. The intersection is shown in Figure 9.

The volumes at the ramp terminal intersections of the US 31 ramps and SR 25 do not indicate high traffic volumes. The intersection operations analyses indicated LOS A conditions at these two intersections and LOS A/B conditions even with the design-year 2045 forecast traffic. The PM peak-hour truck percentages are 14% at both intersections, but that is lower than the truck percentages of 26% to 32% on US 31. The heaviest truck movements at the intersections are utilizing the on- and off-ramps at this interchange. Substantially elevated indices for crash frequency and crash severity were identified at the intersections of SR 25 and the ramp terminals were identified. More detail can be found in Section 5.2.

Figure 9 – US 31 Interchange with SR 25



7.2.3. OLD US 31/SOUTHWAY 31

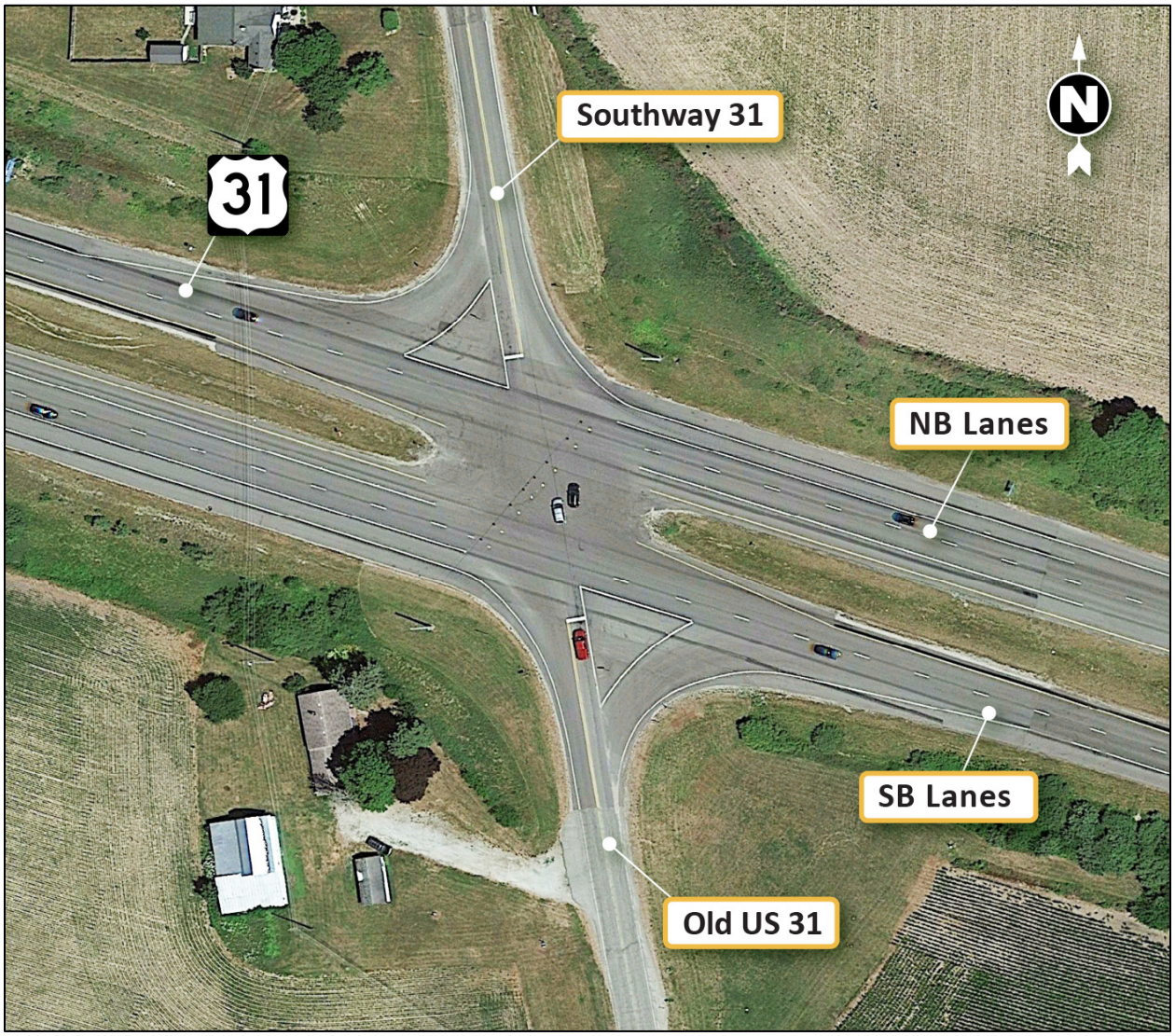
Comments indicated crash history and safety concerns crossing/turning across US 31, including related to high speeds and limited sight distance with the curve on US 31, south of this intersection. The intersection is shown in Figure 10.

The RoadHAT safety analysis of this intersection identified elevated ICF (0.99) and ICC (0.86) indices. There were 25 crashes at this intersection with two involving fatalities (as described in Section 5.1.1) and three crashes that involved incapacitating injuries. Seventeen of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 (see Table 18 for more detail). The crash narratives indicated that 16 of the crashes involved vehicles crossing US 31 from the side street. During the PM peak hour, there are 110 vehicles crossing or turning left onto US 31 from Old US 31/Southway

31. Investigation of the speed data showed that the average speed of US 31 traffic on this section is about 66 mph, which is above the posted speed limit and approximately the same as corridor as a whole.

Intersection sight distance was evaluated for the Old US 31/Southway 31 approaches to the US 31 intersection. Adequate sight distance is currently provided for left and right turns from the south approach. Adequate sight distance is also provided for right turns from the north approach to northbound US 31. The sight distance for left turns was less than desirable for Old US 31/Southway 31 northbound to US 31 northbound when starting from the south approach to the intersection. The sight distance obstruction at this location are the trees lining the west right-of-way line that obstruct views of the northbound US 31 traffic approaching from the right. Details of these sight lines are shown in Appendix E.

Figure 10 – US 31 Intersection with Old US 31/Southway 31

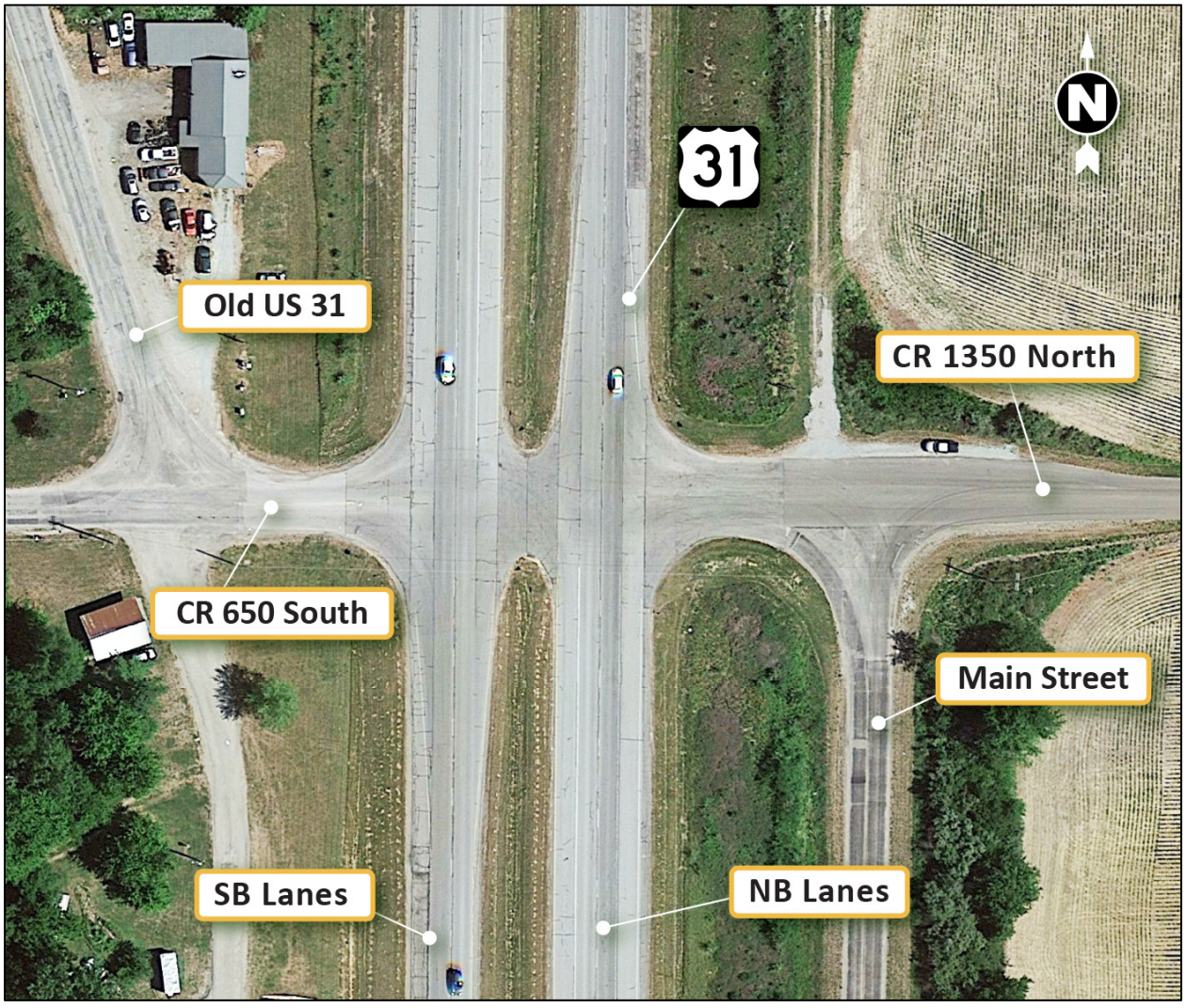


7.2.4. CR 650 SOUTH/CR 1350 NORTH & OLD US 31

Comments indicated difficulty safely crossing/turning across this intersection and the Miami County Emergency Management Agency indicated difficulties maneuvering through this intersection to Old US 31. The intersection is shown in Figure 11.

This location provides the most direct access to the Macy grain elevator from US 31, so would be expected to be utilized by grain trucks and some farm equipment. The RoadHAT safety analysis of this intersection identified elevated ICF (0.45) and ICC (0.18) indices. There were 12 crashes at this intersection with two involving incapacitating injuries. More detail regarding these crashes can be found in Section 5.2. During the PM peak hour, there are only 30 vehicles crossing or turning left onto US 31 from CR 650 South and CR 1350 North.

Figure 11 – US 31 Intersection with CR 650 South/CR 1350 North

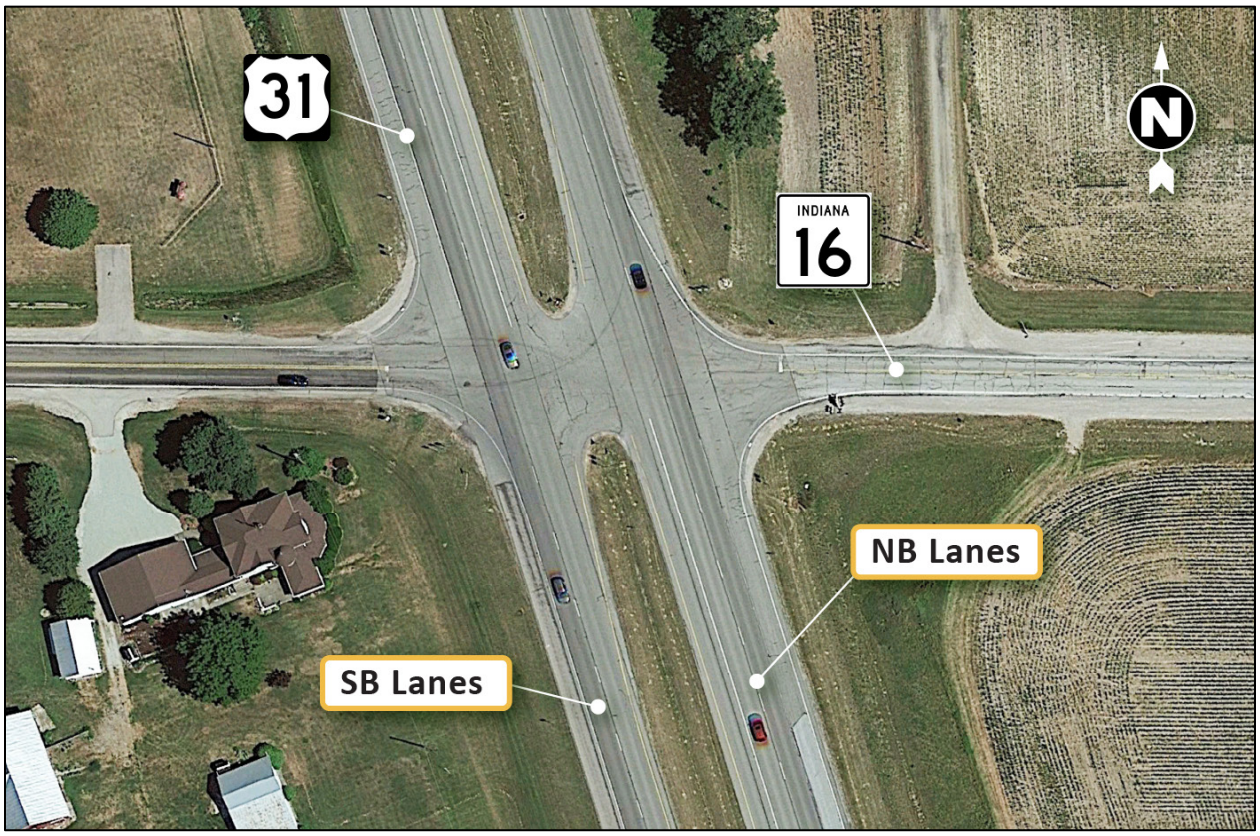


7.2.5. SR 16

Comments indicated difficulty safely crossing/entering US 31 from SR 16 and high traffic volumes – including truck traffic. The intersection is shown in Figure 12.

As mentioned previously, the RoadHAT safety analysis of this intersection identified an elevated ICC index of 0.49. There were eight crashes at this intersection with three involving incapacitating injuries. Five of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 or vehicles from US 31 turning onto a cross street (See Table 22 for more detail). The crash narratives indicated that six of the crashes involved vehicles from SR 16 crossing US 31 and one crash involved a southbound vehicle making a right turn from SR 16. The intersection operations analyses indicated acceptable LOS C or better conditions at this intersection with both the existing and design-year 2045 forecast traffic. There are fewer than 1,000 vehicles per day on SR 16 and the truck percentage is 10 percent. During the PM peak hour, there are 60 vehicles crossing or turning left onto US 31 from SR 16.

Figure 12 – US 31 Intersection with SR 16

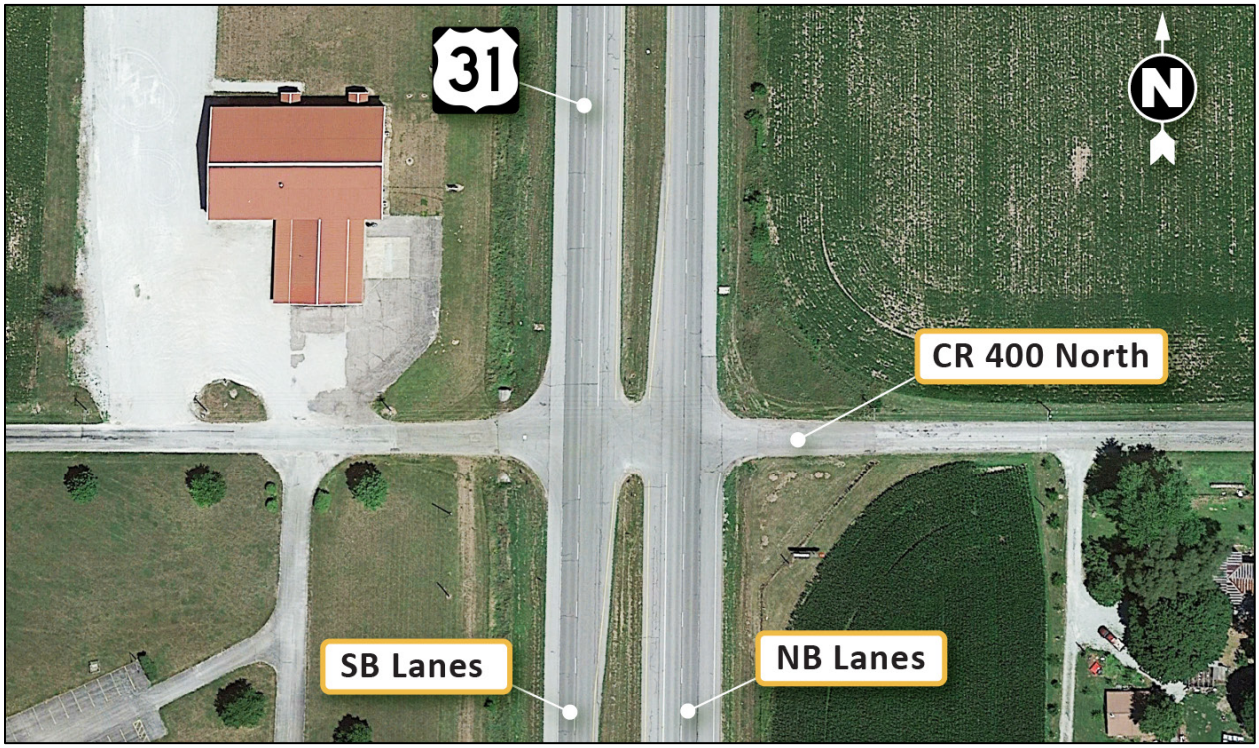


7.2.6. CR 400 NORTH

Comments indicated high levels of traffic, including truck and agriculture traffic, on this roadway, and difficulty safely crossing US 31 from CR 400 North in both directions as well as insufficient width on CR 400 North for turning. Additionally, limited access on the west side of US 31 due to the restricted weight limit on the Denniston Bridge and associated use of CR 400 North was noted multiple times for this roadway. The intersection is shown in Figure 13.

This location provides direct access to the Macy grain elevator, so would be expected to be utilized by both farm equipment and associated large trucks on a regular basis. As mentioned previously, the RoadHAT safety analysis of this intersection identified elevated ICF (0.62) and ICC (0.56) indices. Of the 10 crashes at this intersection, two involved incapacitating injuries. Four of the crashes were right angle crashes indicating the involvement of vehicles from the cross street crossing or turning onto US 31 or vehicles from US 31 turning onto a cross street (see Table 25 for more detail). The crash narratives indicated that three crashes involved vehicles from CR 400 North crossing US 31. Another involved a northbound vehicle making a left turn onto CR 400 North. Traffic volume data is not available at this location.

Figure 13 – US 31 Intersection with CR 400 North

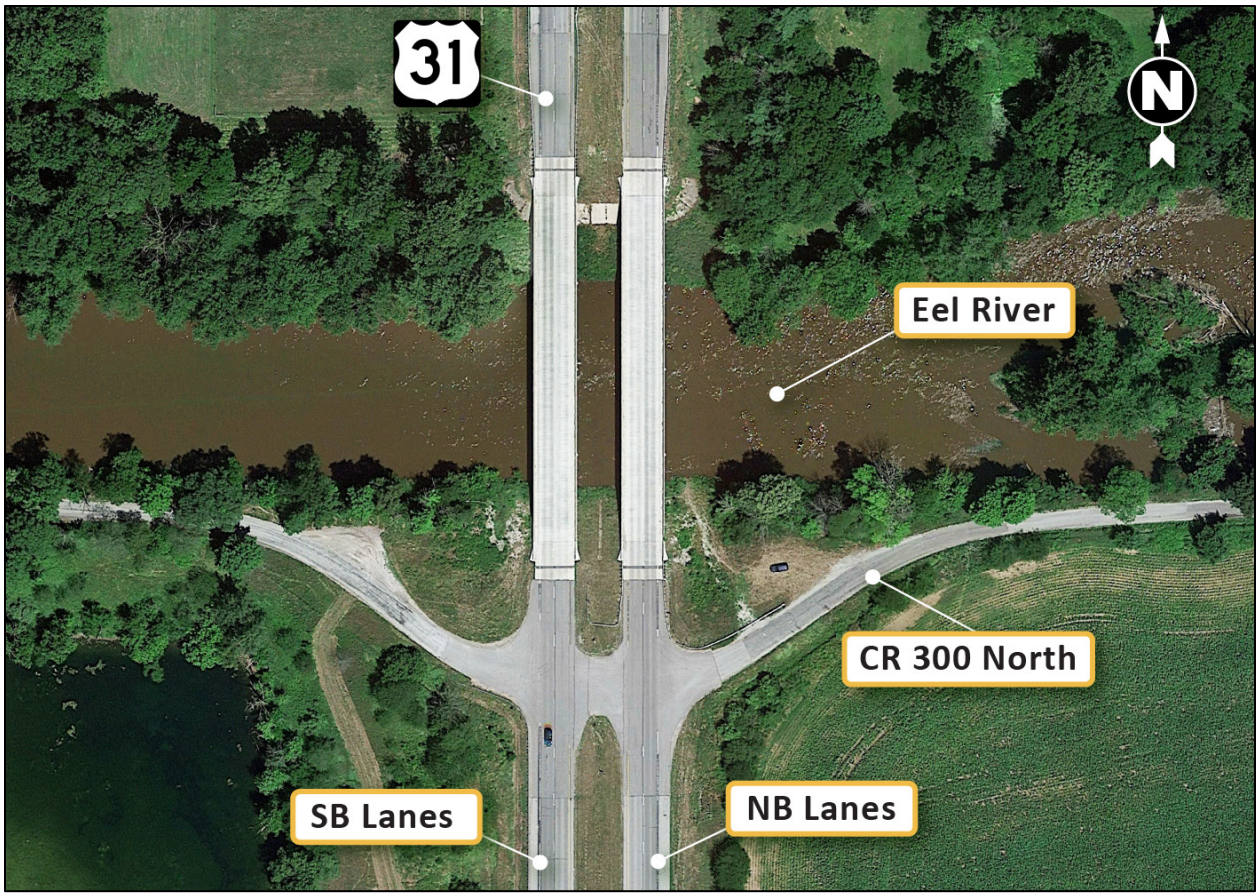


7.2.7. CR 300 NORTH

The Miami County Emergency Management Agency indicated that this intersection does not have adequate deceleration features and is a common detour route for vehicles and trucks to direct traffic to Mexico Road and then north into Mexico and then back to US 31 or south to US 24. The intersection is shown in Figure 14.

As noted in Section 3.1.3, there are no acceleration or deceleration lanes on US 31 at the CR 300 North intersection. The intersection has elevated ICF (0.91) and ICC (0.65) values with 12 crashes recorded (see Table 23 for more detail).

Figure 14 – US 31 Intersection with CR 300 North



7.2.8. OTHER LOCATIONS WITH POTENTIAL SAFETY CONCERNS

At least one comment indicated safety concerns, particularly entering/crossing/turning across US 31, at the following intersections along US 31:

- CR 550 North (Fulton County);
- CR 450 North (Fulton County);
- Olson Road;
- Monticello Road;
- CR 50 East / Sweetgum Road;
- CR 350 South; and
- CR 500 South / CR 1500 North.

Of the intersections mentioned above, only CR 450 North (ICF = 0.25), CR 50 East / Sweetgum Road (ICC=0.46), and CR 500 South / CR 1500 North (ICF = 0.18) have elevated crash indices. The crashes at these three intersections are described in greater detail in Section 5.2.

7.2.9. EEL RIVER CROSSING & LIMITATIONS OF THE DENNISTON BRIDGE

Comments indicated that US 31 provides access to one of few crossings of the Eel River in the region and concern over the viability of alternate crossings. While not located directly in the study area, the two closest crossings are the Denniston Bridge (formally known as Miami County Bridge 63) to the west and the North Mexico River bridge to the east.

The Denniston Bridge (formally known as Miami County Bridge 63) is located approximately 1.5 miles west of US 31 and connects CR 440 West and CR 400 North. Several comments indicated the Denniston Bridge is not a viable option for farm or heavy equipment. The Denniston Bridge is a wrought iron truss bridge with a less than 18 foot wide wooden deck. The bridge is currently posted with a maximum load of 4 tons as a single-lane bridge. The North Mexico River bridge is approximately 1 mile east of US 31 and provides connectivity between Mexico and US 24. The North Mexico River bridge over Eel River is a modern bridge, providing 32 feet of clear roadway.

The Denniston Bridge

US 31 North
EXISTING TRANSPORTATION CONDITIONS REPORT

APPENDIX A. EXISTING TRANSPORTATION CONDITIONS MAP

PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
- Study Area (0.5 Mile Corridor Buffer)
- Trails
- Existing Right-of-Way

Infrastructure Type

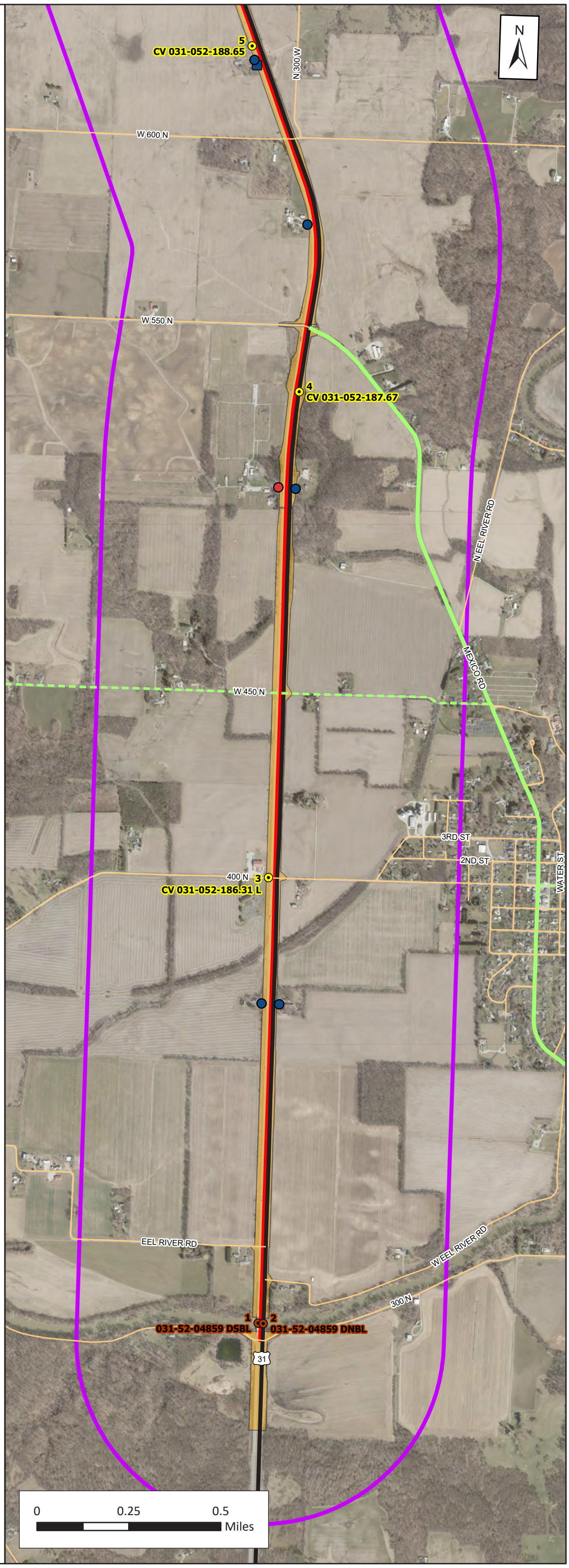
- Bridge
- Culvert
- Electric Transmission Line
- Pipeline

Functional Classification

- Principal Arterial - Other
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Private Driveways

- Full Access Commercial Property
- Full Access Residential/ Farm Property
- Right-In/Right-Out Access Residential/ Farm Property



State of Indiana

PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
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Infrastructure Type

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- Culvert
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- Pipeline

Functional Classification

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- Minor Arterial
- Major Collector
- Minor Collector
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Private Driveways

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- Full Access Residential/ Farm Property
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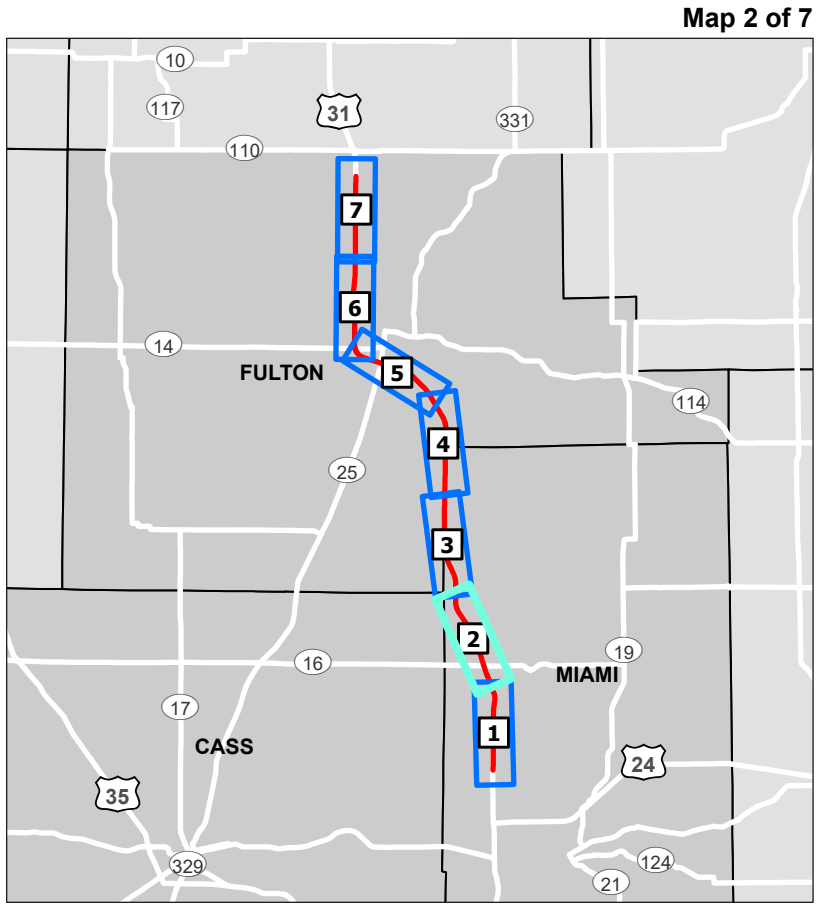

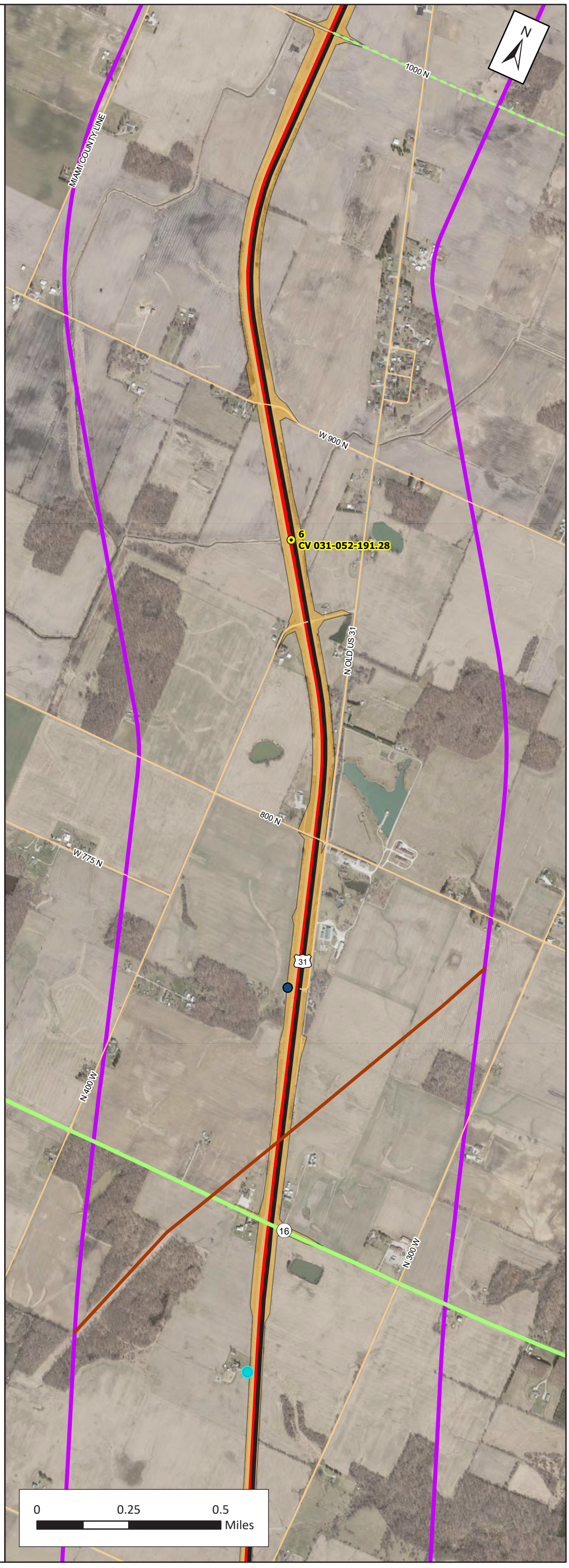

State of Indiana

PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
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- Trails
- Existing Right-of-Way

Infrastructure Type

- Bridge
- Culvert
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- Pipeline

Functional Classification

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- Minor Arterial
- Major Collector
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- Local

Private Driveways

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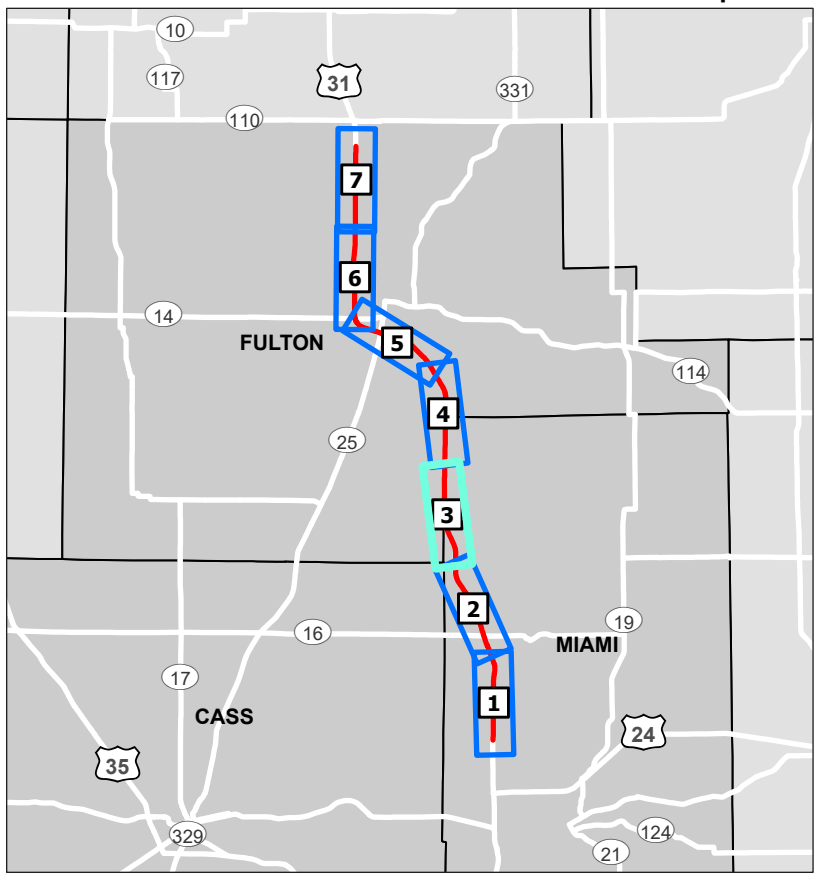
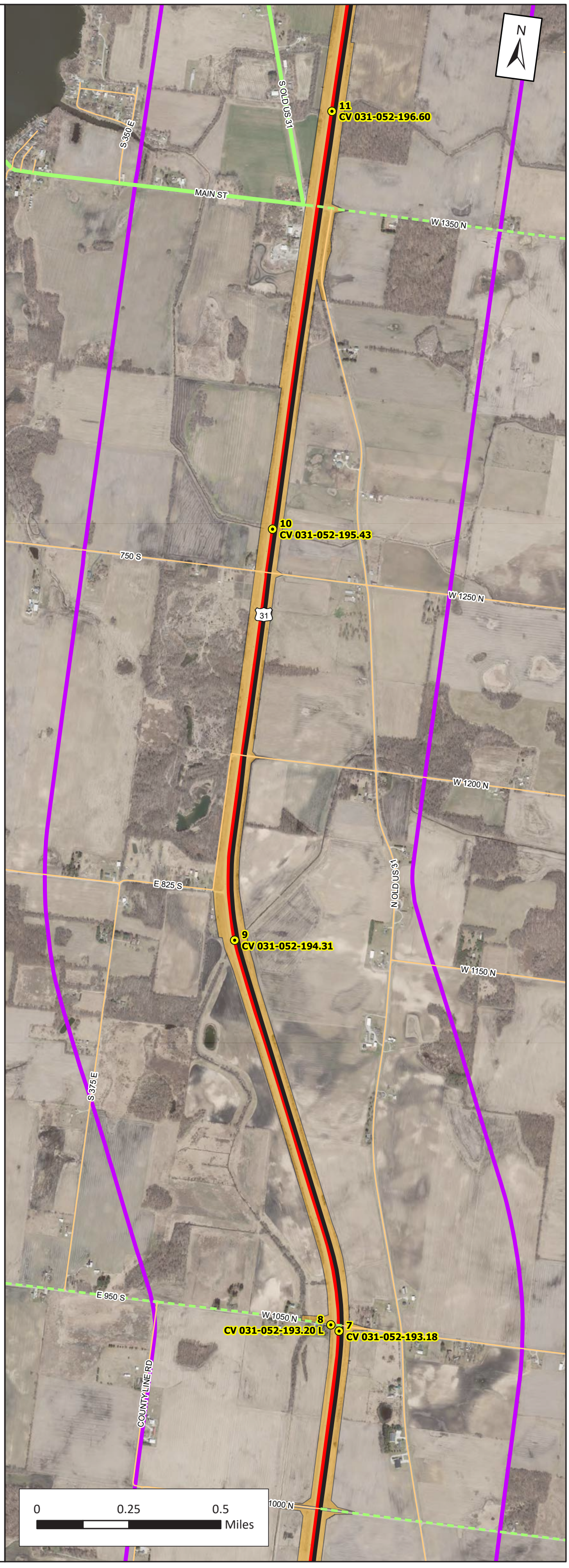
- Full Access Residential/ Farm Property
- Right-In/Right-Out Access Residential/ Farm Property

Map 3 of 7





State of Indiana

PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
- Study Area (0.5 Mile Corridor Buffer)
- Trails
- Existing Right-of-Way

Infrastructure Type

- Bridge
- Culvert
- Electric Transmission Line
- Pipeline

Functional Classification

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- Minor Collector
- Local

Private Driveways

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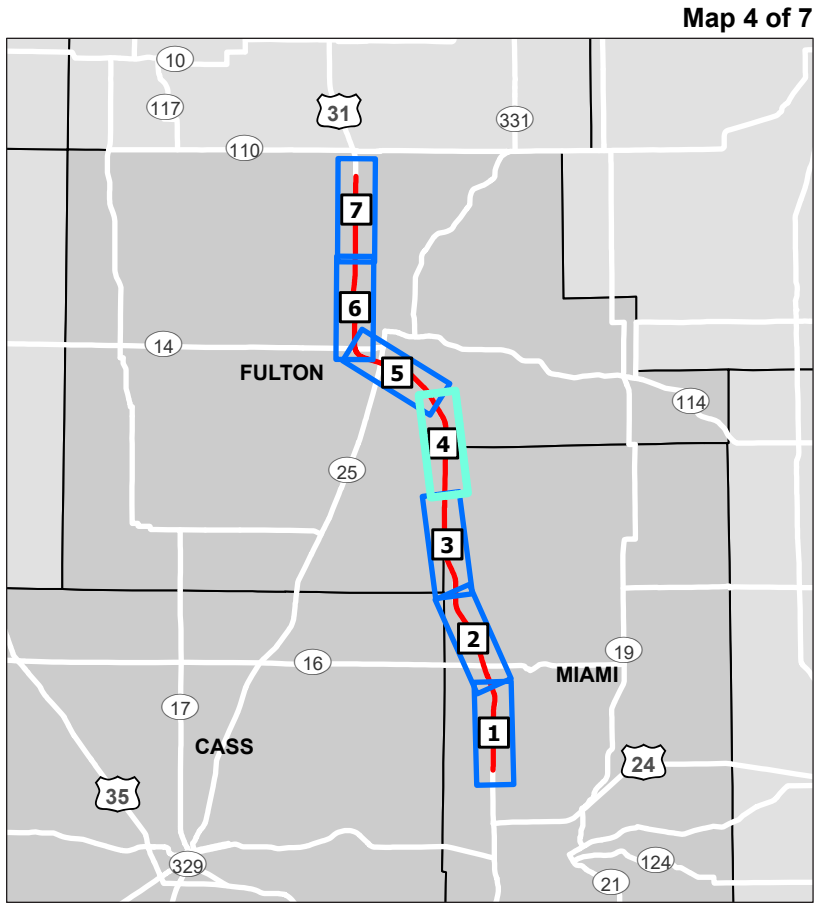
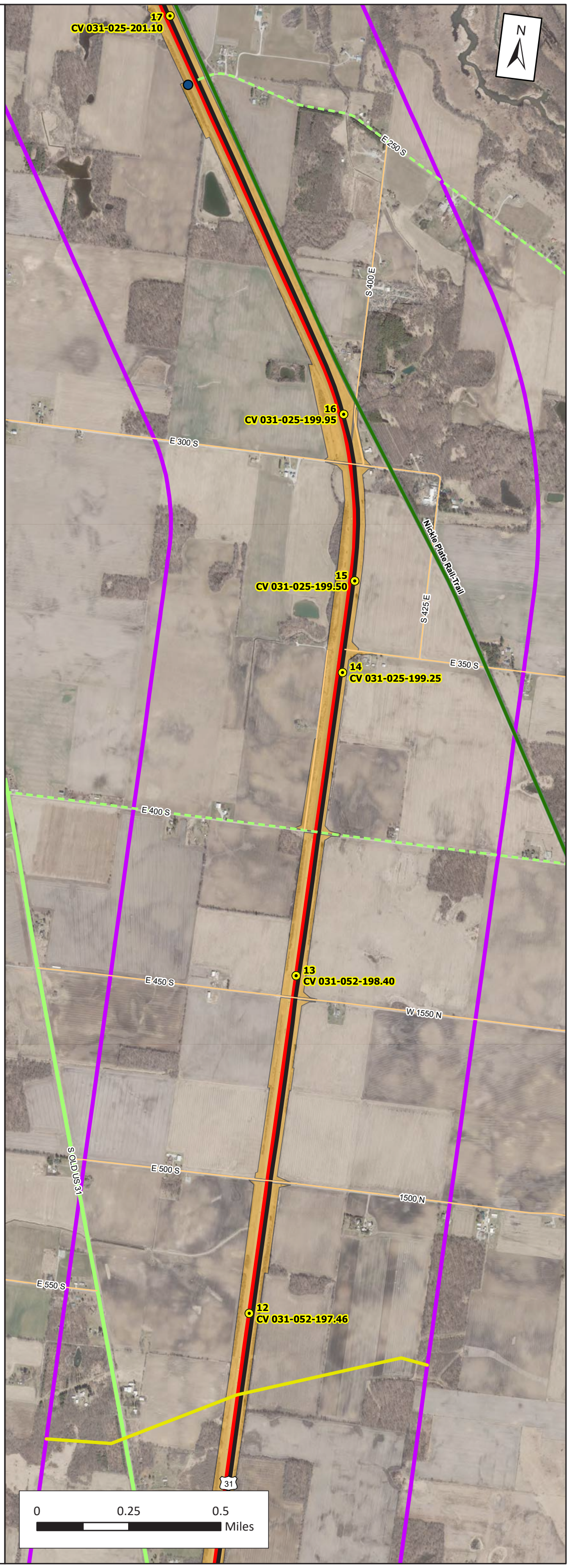
- Full Access Residential/ Farm Property
- Right-In/Right-Out Access Residential/ Farm Property

Map 4 of 7





State of Indiana

PROPEL US 31

Smarter Transportation. Stronger Communities.

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
- Study Area (0.5 Mile Corridor Buffer)
- Trails
- Existing Right-of-Way

Infrastructure Type

- Bridge
- Culvert
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- Pipeline

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- Minor Arterial
- Major Collector
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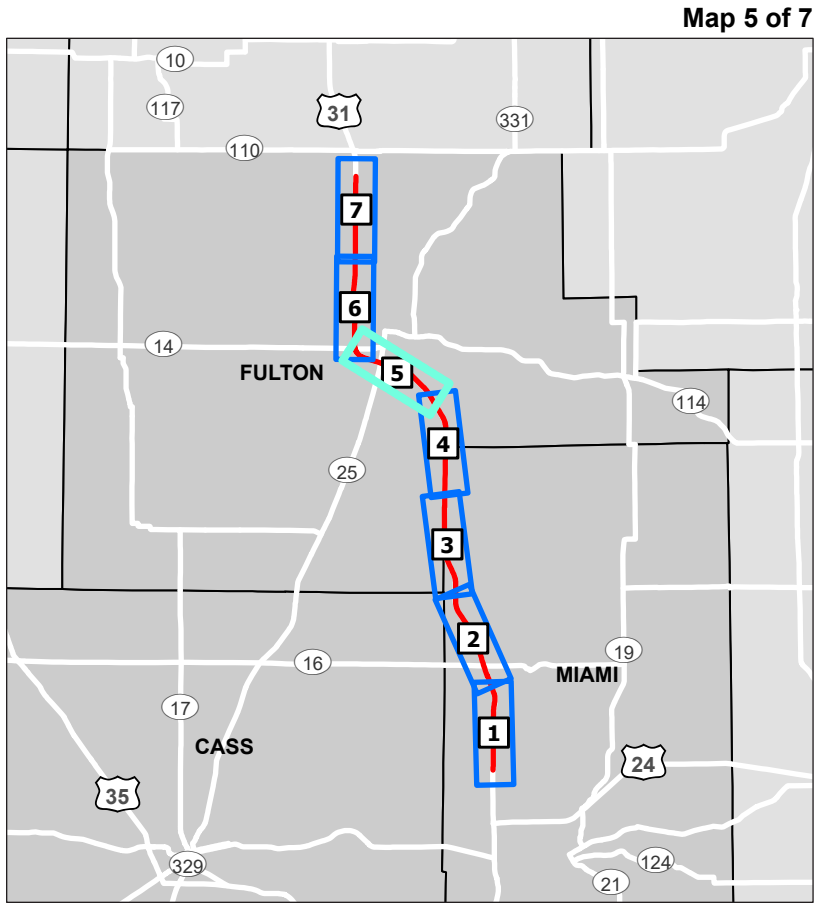

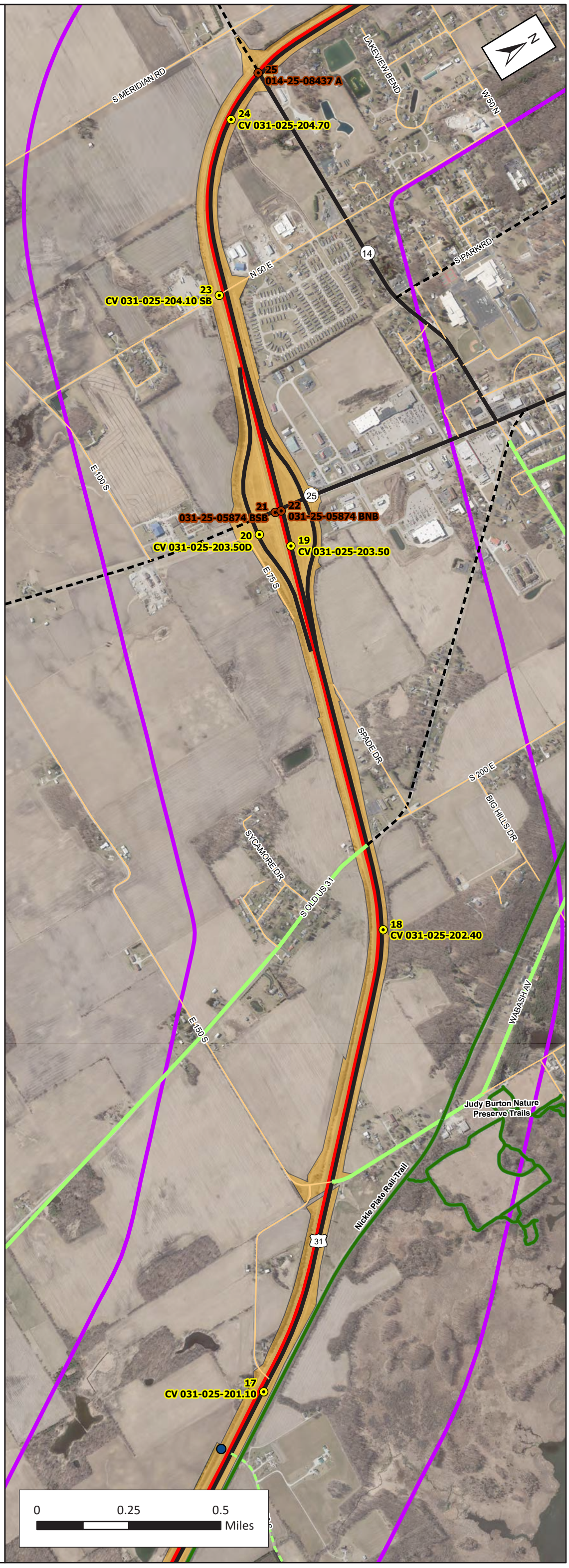

State of Indiana

PROPEL

Smarter Transportation. Stronger Communities.

US 31

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
- Study Area (0.5 Mile Corridor Buffer)
- Trails
- Existing Right-of-Way

Infrastructure Type

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- Culvert
- Electric Transmission Line
- Pipeline

Functional Classification

- Principal Arterial - Other
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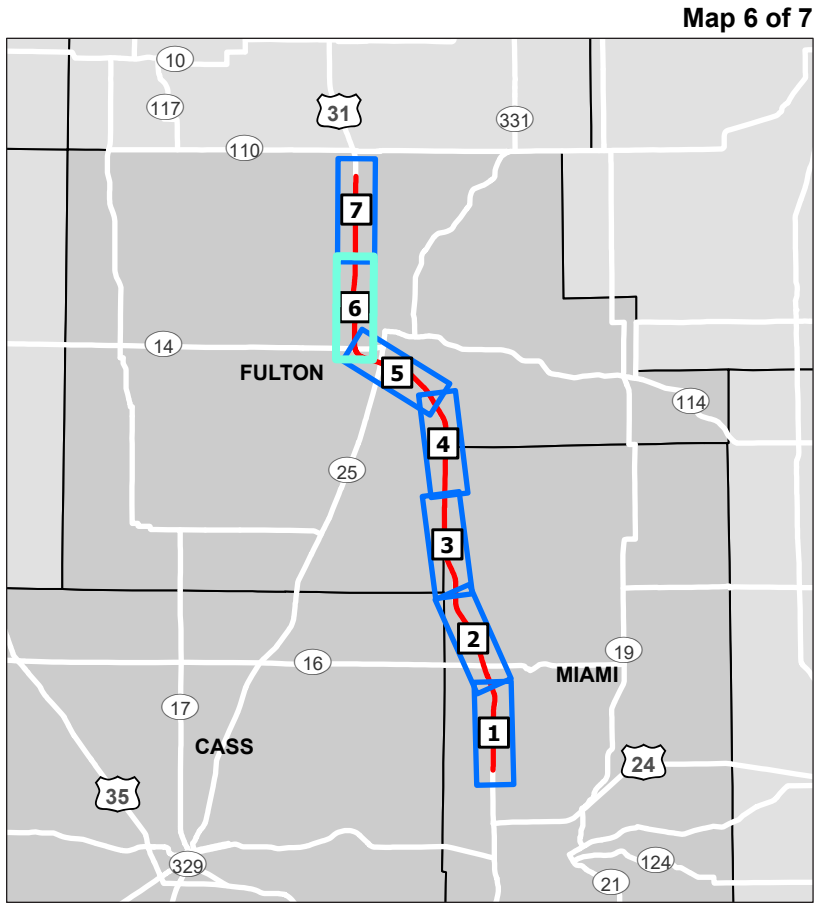
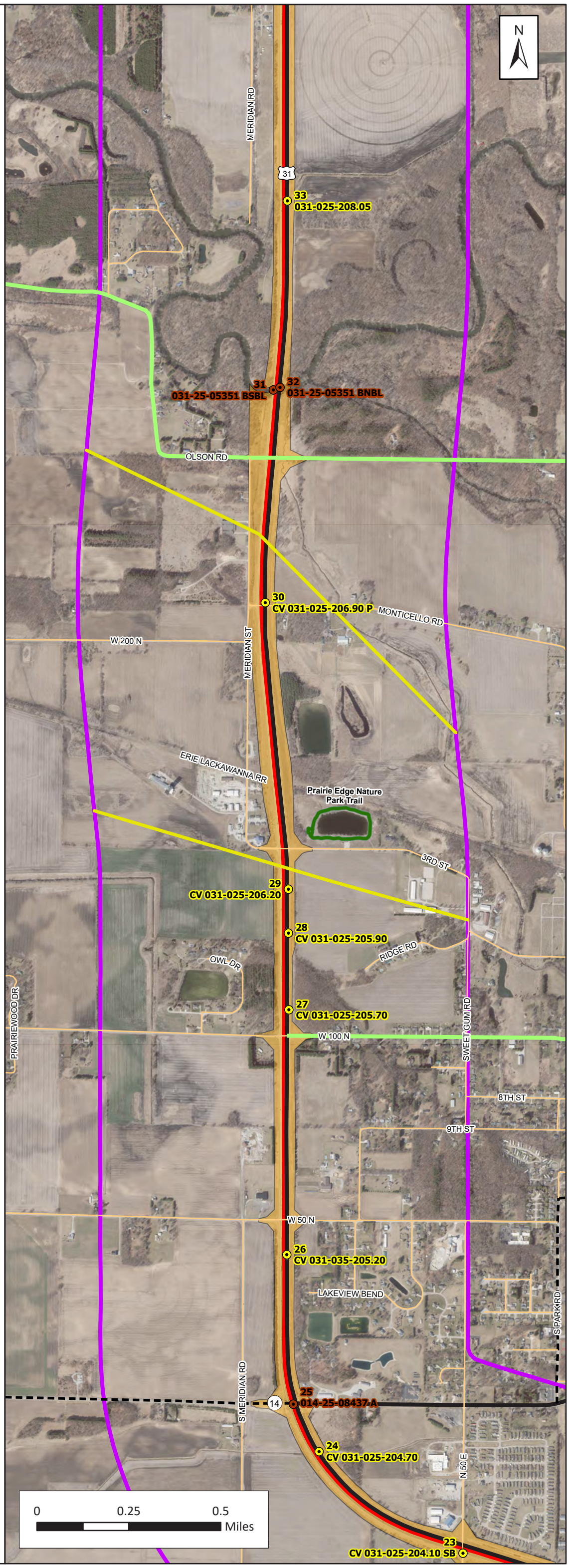
- Major Collector
- Minor Collector
- Local

Private Driveways

- Full Access Commercial Property
- Full Access Residential/ Farm Property
- Right-In/Right-Out Access Residential/ Farm Property

Map 6 of 7





PROPEL

Smarter Transportation. Stronger Communities.

US 31

US 31 North

Existing Transportation Conditions

- US 31 North PEL Corridor
- Study Area (0.5 Mile Corridor Buffer)
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Infrastructure Type

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Functional Classification

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Private Driveways

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- Full Access Residential/ Farm Property
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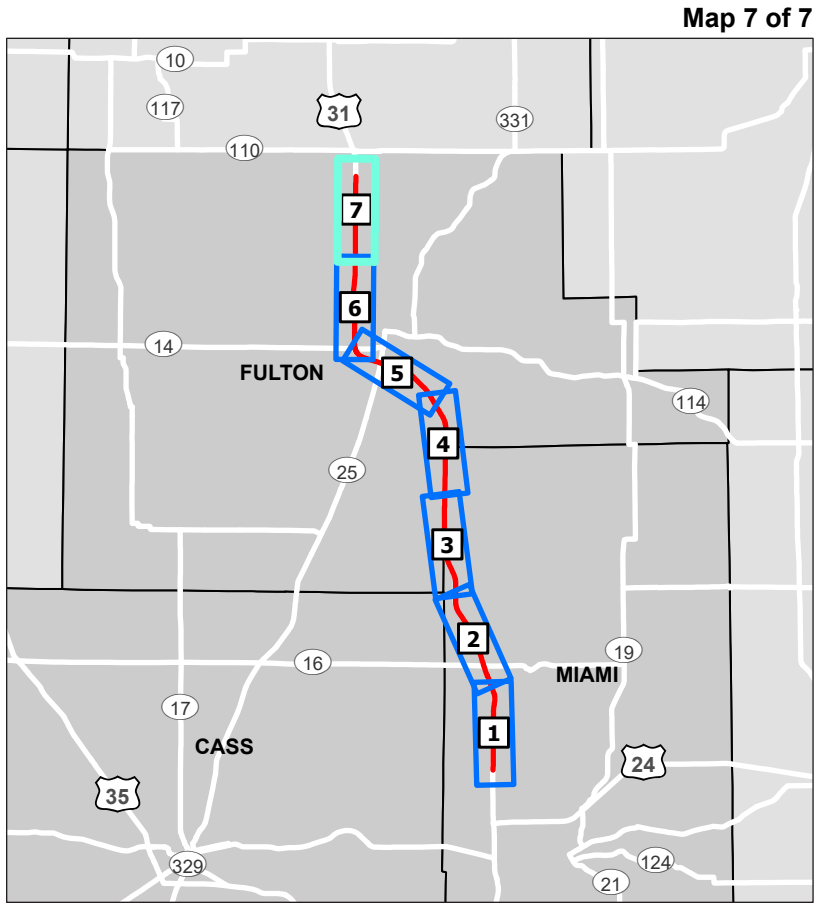
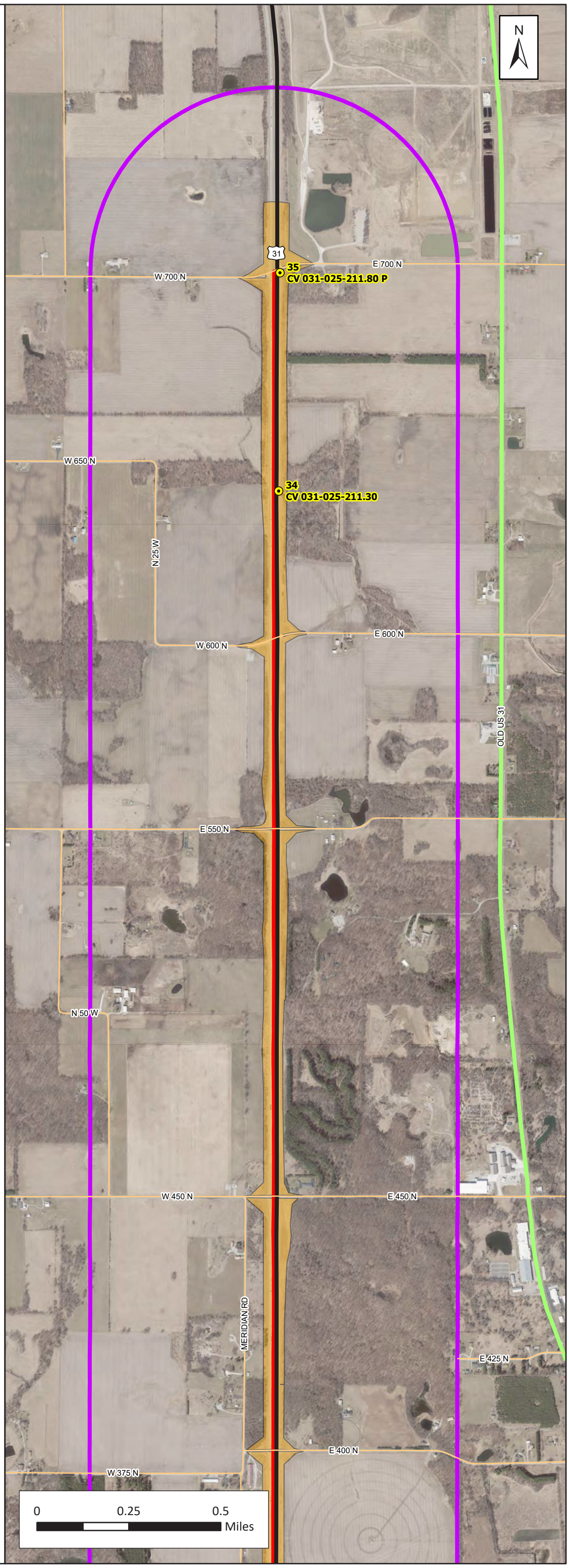
Map 7 of 7





State of Indiana

US 31 North
EXISTING TRANSPORTATION CONDITIONS REPORT

APPENDIX B. TRAFFIC OPERATIONS ANALYSIS – SYNCHRO OUTPUT

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	20	10	1	15	15	15	445	5	20	475	5
Future Vol, veh/h	5	20	10	1	15	15	15	445	5	20	475	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	342	-	383	385	-	369
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	55	69	25	50	70	70	92	50	40	86	38
Heavy Vehicles, %	17	0	0	0	14	14	7	30	25	14	27	0
Mvmt Flow	7	36	14	4	30	21	21	484	10	50	552	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	951	1188	276	920	1191	242	565	0	0	494	0	0
Stage 1	652	652	-	526	526	-	-	-	-	-	-	-
Stage 2	299	536	-	394	665	-	-	-	-	-	-	-
Critical Hdwy	7.84	6.5	6.9	7.5	6.78	7.18	4.24	-	-	4.38	-	-
Critical Hdwy Stg 1	6.84	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.84	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Follow-up Hdwy	3.67	4	3.3	3.5	4.14	3.44	2.27	-	-	2.34	-	-
Pot Cap-1 Maneuver	193	190	727	229	169	723	969	-	-	986	-	-
Stage 1	389	467	-	508	498	-	-	-	-	-	-	-
Stage 2	645	527	-	608	428	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	176	727	195	157	723	969	-	-	986	-	-
Mov Cap-2 Maneuver	323	343	-	376	318	-	-	-	-	-	-	-
Stage 1	380	443	-	497	487	-	-	-	-	-	-	-
Stage 2	575	515	-	519	406	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	15.1	0.4	0.7
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	969	-	-	392	412	986	-	-
HCM Lane V/C Ratio	0.022	-	-	0.147	0.135	0.051	-	-
HCM Control Delay (s)	8.8	-	-	15.8	15.1	8.8	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.5	0.2	-	-

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	5	35	10	1	10	20	5	460	5	15	430	5
Future Vol, veh/h	5	35	10	1	10	20	5	460	5	15	430	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	314	-	413	307	-	405
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	65	60	50	75	59	50	87	50	58	91	63
Heavy Vehicles, %	0	3	0	0	0	5	0	30	0	0	24	0
Mvmt Flow	13	54	17	2	13	34	10	529	10	26	473	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	816	1084	237	865	1082	265	481	0	0	539	0	0
Stage 1	525	525	-	549	549	-	-	-	-	-	-	-
Stage 2	291	559	-	316	533	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	6.9	7.5	6.5	7	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.3	3.5	4	3.35	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	272	214	771	251	219	724	1092	-	-	1040	-	-
Stage 1	509	525	-	493	520	-	-	-	-	-	-	-
Stage 2	698	507	-	675	528	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	207	771	213	212	724	1092	-	-	1040	-	-
Mov Cap-2 Maneuver	424	377	-	397	390	-	-	-	-	-	-	-
Stage 1	504	512	-	489	515	-	-	-	-	-	-	-
Stage 2	642	502	-	576	515	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	11.9	0.2	0.4
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1092	-	-	428	572	1040	-	-
HCM Lane V/C Ratio	0.009	-	-	0.195	0.086	0.025	-	-
HCM Control Delay (s)	8.3	-	-	15.4	11.9	8.6	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	5	55	45	220	0	0	155	90
Future Vol, veh/h	0	0	0	5	5	55	45	220	0	0	155	90
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	-	-	Yield	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	50	50	71	77	82	100	100	86	77
Heavy Vehicles, %	0	0	0	33	75	19	12	12	0	0	15	26
Mvmt Flow	0	0	0	10	10	77	58	268	0	0	180	117

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	564	564	268	180	0	-	-	-	0
Stage 1	384	384	-	-	-	-	-	-	-
Stage 2	180	180	-	-	-	-	-	-	-
Critical Hdwy	6.73	7.25	6.39	4.22	-	-	-	-	-
Critical Hdwy Stg 1	5.73	6.25	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.73	6.25	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4.675	3.471	2.308	-	-	-	-	-
Pot Cap-1 Maneuver	438	349	731	1337	-	0	0	-	-
Stage 1	626	502	-	-	-	0	0	-	-
Stage 2	782	632	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	416	0	731	1337	-	-	-	-	-
Mov Cap-2 Maneuver	416	0	-	-	-	-	-	-	-
Stage 1	594	0	-	-	-	-	-	-	-
Stage 2	782	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR
Capacity (veh/h)	1337	-	920	-	-
HCM Lane V/C Ratio	0.044	-	0.106	-	-
HCM Control Delay (s)	7.8	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	0	60	0	0	0	0	205	10	55	105	0
Future Vol, veh/h	70	0	60	0	0	0	0	205	10	55	105	0
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	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	188	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	25	81	100	100	100	100	78	40	70	91	100
Heavy Vehicles, %	16	0	10	0	0	0	0	10	0	27	10	0
Mvmt Flow	92	0	74	0	0	0	0	263	25	79	115	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	536	536	115	-	0	0	263	0	0
Stage 1	273	273	-	-	-	-	-	-	-
Stage 2	263	263	-	-	-	-	-	-	-
Critical Hdwy	6.56	6.5	6.3	-	-	-	4.37	-	-
Critical Hdwy Stg 1	5.56	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.56	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.644	4	3.39	-	-	-	2.443	-	-
Pot Cap-1 Maneuver	482	454	916	0	-	-	1169	-	0
Stage 1	742	688	-	0	-	-	-	-	0
Stage 2	750	694	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	447	0	916	-	-	-	1169	-	-
Mov Cap-2 Maneuver	447	0	-	-	-	-	-	-	-
Stage 1	742	0	-	-	-	-	-	-	-
Stage 2	696	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	6.9	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	2055	1169	-
HCM Lane V/C Ratio	-	-	0.081	0.067	-
HCM Control Delay (s)	-	-	6.9	8.3	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	345	10	1	365	65	10	30	1	15	10	15
Future Vol, veh/h	10	345	10	1	365	65	10	30	1	15	10	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	365	-	423	287	-	306	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	82	67	50	88	54	60	60	25	57	69	80
Heavy Vehicles, %	0	33	0	0	34	0	0	3	0	6	9	0
Mvmt Flow	20	421	15	2	415	120	17	50	4	26	14	19

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	535	0	0	436	0	0	680	1000	211	695	895	208
Stage 1	-	-	-	-	-	-	461	461	-	419	419	-
Stage 2	-	-	-	-	-	-	219	539	-	276	476	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.56	6.9	7.62	6.68	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.56	-	6.62	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.56	-	6.62	5.68	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.03	3.3	3.56	4.09	3.3
Pot Cap-1 Maneuver	1043	-	-	1134	-	-	341	240	801	321	266	804
Stage 1	-	-	-	-	-	-	555	561	-	572	571	-
Stage 2	-	-	-	-	-	-	769	518	-	696	538	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1043	-	-	1134	-	-	319	235	801	285	260	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	479	404	-	460	428	-
Stage 1	-	-	-	-	-	-	544	550	-	561	570	-
Stage 2	-	-	-	-	-	-	731	517	-	617	528	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	14.6	11.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	446	1043	-	-	1134	-	-	654
HCM Lane V/C Ratio	0.158	0.019	-	-	0.002	-	-	0.091
HCM Control Delay (s)	14.6	8.5	-	-	8.2	-	-	11.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.3

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	5	360	5	1	410	35	1	1	1	15	1	10
Future Vol, veh/h	5	360	5	1	410	35	1	1	1	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	304	-	278	318	-	294	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	85	75	25	94	63	100	100	100	63	25	50
Heavy Vehicles, %	0	31	0	0	30	6	0	0	0	7	0	0
Mvmt Flow	13	424	7	4	436	56	1	1	1	24	4	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	492	0	0	431	0	0	678	950	212	683	901	218
Stage 1	-	-	-	-	-	-	450	450	-	444	444	-
Stage 2	-	-	-	-	-	-	228	500	-	239	457	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.64	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.64	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.64	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.57	4	3.3
Pot Cap-1 Maneuver	1082	-	-	1139	-	-	342	262	800	326	280	792
Stage 1	-	-	-	-	-	-	564	575	-	550	579	-
Stage 2	-	-	-	-	-	-	760	546	-	729	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1082	-	-	1139	-	-	327	258	800	321	276	792
Mov Cap-2 Maneuver	-	-	-	-	-	-	490	428	-	480	447	-
Stage 1	-	-	-	-	-	-	557	568	-	543	577	-
Stage 2	-	-	-	-	-	-	733	544	-	718	564	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.1	11.8	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	533	1082	-	-	1139	-	-	570
HCM Lane V/C Ratio	0.006	0.012	-	-	0.004	-	-	0.084
HCM Control Delay (s)	11.8	8.4	-	-	8.2	-	-	11.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	5	15	5	5	10	5	390	5	5	405	5
Future Vol, veh/h	5	5	15	5	5	10	5	390	5	5	405	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	246	-	325	306	-	306
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	30	38	67	75	58	92	63	87	33	50	90	38
Heavy Vehicles, %	33	0	6	0	14	0	0	30	0	0	29	0
Mvmt Flow	17	13	22	7	9	11	8	448	15	10	450	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	715	949	225	716	947	224	463	0	0	463	0	0
Stage 1	470	470	-	464	464	-	-	-	-	-	-	-
Stage 2	245	479	-	252	483	-	-	-	-	-	-	-
Critical Hdwy	8.16	6.5	7.02	7.5	6.78	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.16	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.16	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Follow-up Hdwy	3.83	4	3.36	3.5	4.14	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	265	262	766	321	240	786	1109	-	-	1109	-	-
Stage 1	469	563	-	553	533	-	-	-	-	-	-	-
Stage 2	656	558	-	736	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	254	258	766	300	236	786	1109	-	-	1109	-	-
Mov Cap-2 Maneuver	407	430	-	473	403	-	-	-	-	-	-	-
Stage 1	466	558	-	549	529	-	-	-	-	-	-	-
Stage 2	632	554	-	691	517	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.7	12.1	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1109	-	-	518	530	1109	-	-
HCM Lane V/C Ratio	0.007	-	-	0.101	0.049	0.009	-	-
HCM Control Delay (s)	8.3	-	-	12.7	12.1	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.2	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	25	5	5	10	1	10	5	350	20	1	470	5
Future Vol, veh/h	25	5	5	10	1	10	5	350	20	1	470	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	281	-	241	290	-	320
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	75	50	100	50	40	75	97	75	50	90	50
Heavy Vehicles, %	9	0	0	13	0	0	50	23	33	50	25	25
Mvmt Flow	39	7	10	10	2	25	7	361	27	2	522	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	722	928	261	644	911	181	532	0	0	388	0	0
Stage 1	526	526	-	375	375	-	-	-	-	-	-	-
Stage 2	196	402	-	269	536	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.5	6.9	7.76	6.5	6.9	5.1	-	-	5.1	-	-
Critical Hdwy Stg 1	6.68	5.5	-	6.76	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.5	-	6.76	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.63	4	3.3	2.7	-	-	2.7	-	-
Pot Cap-1 Maneuver	301	270	744	336	276	837	761	-	-	887	-	-
Stage 1	486	532	-	589	621	-	-	-	-	-	-	-
Stage 2	767	604	-	683	527	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	288	267	744	325	273	837	761	-	-	887	-	-
Mov Cap-2 Maneuver	436	438	-	492	439	-	-	-	-	-	-	-
Stage 1	482	531	-	584	615	-	-	-	-	-	-	-
Stage 2	735	599	-	664	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	10.6	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	761	-	-	471	676	887	-	-
HCM Lane V/C Ratio	0.009	-	-	0.118	0.055	0.002	-	-
HCM Control Delay (s)	9.8	-	-	13.7	10.6	9.1	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	10	10	5	5	20	5	425	1	30	430	1
Future Vol, veh/h	1	10	10	5	5	20	5	425	1	30	430	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	326	-	-	327	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	42	46	25	33	56	31	94	100	70	94	25
Heavy Vehicles, %	0	20	45	0	0	0	0	31	0	6	26	0
Mvmt Flow	1	24	22	20	15	36	16	452	1	43	457	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	811	1030	231	812	1032	227	461	0	0	453	0	0
Stage 1	545	545	-	485	485	-	-	-	-	-	-	-
Stage 2	266	485	-	327	547	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.9	7.8	7.5	6.5	6.9	4.1	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.2	3.75	3.5	4	3.3	2.2	-	-	2.26	-	-
Pot Cap-1 Maneuver	274	205	655	274	235	782	1111	-	-	1076	-	-
Stage 1	495	474	-	537	555	-	-	-	-	-	-	-
Stage 2	722	507	-	665	521	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	243	194	655	241	223	782	1111	-	-	1076	-	-
Mov Cap-2 Maneuver	415	350	-	423	394	-	-	-	-	-	-	-
Stage 1	488	455	-	529	547	-	-	-	-	-	-	-
Stage 2	660	500	-	585	500	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.9	12.7	0.3	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1111	-	-	449	539	1076	-	-
HCM Lane V/C Ratio	0.015	-	-	0.104	0.131	0.04	-	-
HCM Control Delay (s)	8.3	-	-	13.9	12.7	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.5	0.1	-	-

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	5	15	10	1	35	15	20	550	5	25	605	5
Future Vol, veh/h	5	15	10	1	35	15	20	550	5	25	605	5
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	342	-	383	385	-	369
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	70	75	25	85	53	59	95	50	52	87	50
Heavy Vehicles, %	25	0	8	0	3	6	0	18	0	0	25	0
Mvmt Flow	15	21	13	4	41	28	34	579	10	48	695	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1169	1448	348	1101	1448	290	705	0	0	589	0	0
Stage 1	791	791	-	647	647	-	-	-	-	-	-	-
Stage 2	378	657	-	454	801	-	-	-	-	-	-	-
Critical Hdwy	8	6.5	7.06	7.5	6.56	7.02	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7	5.5	-	6.5	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7	5.5	-	6.5	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.75	4	3.38	3.5	4.03	3.36	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	124	133	631	169	129	695	902	-	-	996	-	-
Stage 1	303	404	-	431	462	-	-	-	-	-	-	-
Stage 2	557	465	-	560	393	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	99	122	631	146	118	695	902	-	-	996	-	-
Mov Cap-2 Maneuver	243	286	-	321	277	-	-	-	-	-	-	-
Stage 1	291	385	-	415	444	-	-	-	-	-	-	-
Stage 2	466	447	-	493	374	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	17.4	0.5	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	902	-	-	315	364	996	-	-
HCM Lane V/C Ratio	0.038	-	-	0.158	0.202	0.048	-	-
HCM Control Delay (s)	9.1	-	-	18.6	17.4	8.8	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0.2	-	-

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	5	10	5	1	25	20	15	535	1	25	585	10
Future Vol, veh/h	5	10	5	1	25	20	15	535	1	25	585	10
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	314	-	413	307	-	405
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	56	44	25	75	66	57	92	50	63	92	83
Heavy Vehicles, %	0	0	0	0	0	0	0	18	0	4	23	20
Mvmt Flow	10	18	11	4	33	30	26	582	2	40	636	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1076	1352	318	1041	1362	291	648	0	0	584	0	0
Stage 1	716	716	-	634	634	-	-	-	-	-	-	-
Stage 2	360	636	-	407	728	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	176	151	684	187	149	712	947	-	-	973	-	-
Stage 1	392	437	-	439	476	-	-	-	-	-	-	-
Stage 2	636	475	-	597	432	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	147	141	684	167	139	712	947	-	-	973	-	-
Mov Cap-2 Maneuver	317	311	-	345	309	-	-	-	-	-	-	-
Stage 1	381	419	-	427	463	-	-	-	-	-	-	-
Stage 2	550	462	-	539	414	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	15.3	0.4	0.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	947	-	-	371	417	973	-	-
HCM Lane V/C Ratio	0.028	-	-	0.106	0.162	0.041	-	-
HCM Control Delay (s)	8.9	-	-	15.8	15.3	8.9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	0	65	60	230	0	0	310	90
Future Vol, veh/h	0	0	0	5	0	65	60	230	0	0	310	90
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	-	-	Yield	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	50	50	84	73	86	100	100	90	82
Heavy Vehicles, %	0	0	0	25	0	14	18	11	0	0	8	13
Mvmt Flow	0	0	0	10	0	77	82	267	0	0	344	110

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	775	775	267	344	0	-	-	-	0
Stage 1	431	431	-	-	-	-	-	-	-
Stage 2	344	344	-	-	-	-	-	-	-
Critical Hdwy	6.65	6.5	6.34	4.28	-	-	-	-	-
Critical Hdwy Stg 1	5.65	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.65	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	2.362	-	-	-	-	-
Pot Cap-1 Maneuver	336	331	744	1131	-	0	0	-	-
Stage 1	609	586	-	-	-	0	0	-	-
Stage 2	669	640	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	307	0	744	1131	-	-	-	-	-
Mov Cap-2 Maneuver	307	0	-	-	-	-	-	-	-
Stage 1	557	0	-	-	-	-	-	-	-
Stage 2	669	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR
Capacity (veh/h)	1131	-	840	-	-
HCM Lane V/C Ratio	0.073	-	0.104	-	-
HCM Control Delay (s)	8.4	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.3	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	0	55	0	0	0	0	205	15	95	220	0
Future Vol, veh/h	80	0	55	0	0	0	0	205	15	95	220	0
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	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	188	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	91	25	100	100	100	100	85	41	73	92	100
Heavy Vehicles, %	0	19	0	0	0	0	0	10	15	16	4	0
Mvmt Flow	80	0	220	0	0	0	0	241	37	130	239	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	740	740	239	-	0	0	241	0	0
Stage 1	499	499	-	-	-	-	-	-	-
Stage 2	241	241	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.69	6.2	-	-	-	4.26	-	-
Critical Hdwy Stg 1	5.4	5.69	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.69	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.171	3.3	-	-	-	2.344	-	-
Pot Cap-1 Maneuver	387	325	805	0	-	-	1248	-	0
Stage 1	614	516	-	0	-	-	-	-	0
Stage 2	804	676	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	341	0	805	-	-	-	1248	-	-
Mov Cap-2 Maneuver	341	0	-	-	-	-	-	-	-
Stage 1	614	0	-	-	-	-	-	-	-
Stage 2	708	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.5	0	2.9
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	1098	1248	-
HCM Lane V/C Ratio	-	-	0.273	0.104	-
HCM Control Delay (s)	-	-	9.5	8.2	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.3	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	520	20	1	455	40	10	20	1	35	45	10
Future Vol, veh/h	25	520	20	1	455	40	10	20	1	35	45	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	365	-	423	287	-	306	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	93	68	100	88	75	56	58	100	73	60	50
Heavy Vehicles, %	0	26	0	0	24	8	0	0	0	0	0	0
Mvmt Flow	32	559	29	1	517	53	18	34	1	48	75	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	570	0	0	588	0	0	921	1195	280	880	1171	259
Stage 1	-	-	-	-	-	-	623	623	-	519	519	-
Stage 2	-	-	-	-	-	-	298	572	-	361	652	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1013	-	-	997	-	-	229	188	723	245	194	746
Stage 1	-	-	-	-	-	-	445	481	-	513	536	-
Stage 2	-	-	-	-	-	-	692	508	-	636	467	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1013	-	-	997	-	-	183	182	723	221	188	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	358	355	-	404	367	-
Stage 1	-	-	-	-	-	-	431	466	-	497	535	-
Stage 2	-	-	-	-	-	-	578	507	-	570	452	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0	16.6	17
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	363	1013	-	-	997	-	-	443
HCM Lane V/C Ratio	0.147	0.032	-	-	0.001	-	-	0.323
HCM Control Delay (s)	16.6	8.7	-	-	8.6	-	-	17
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	1.4

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	540	1	1	530	30	1	1	1	45	1	5
Future Vol, veh/h	5	540	1	1	530	30	1	1	1	45	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	304	-	278	318	-	294	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	91	100	100	97	83	100	25	100	77	100	63
Heavy Vehicles, %	0	25	0	0	23	7	0	0	0	2	0	0
Mvmt Flow	9	593	1	1	546	36	1	4	1	58	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	582	0	0	594	0	0	887	1195	297	865	1160	273
Stage 1	-	-	-	-	-	-	611	611	-	548	548	-
Stage 2	-	-	-	-	-	-	276	584	-	317	612	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.54	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.54	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.54	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.52	4	3.3
Pot Cap-1 Maneuver	1002	-	-	992	-	-	242	188	705	248	197	731
Stage 1	-	-	-	-	-	-	453	487	-	488	520	-
Stage 2	-	-	-	-	-	-	712	501	-	669	487	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1002	-	-	992	-	-	237	186	705	244	195	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	400	367	-	419	377	-
Stage 1	-	-	-	-	-	-	449	483	-	484	519	-
Stage 2	-	-	-	-	-	-	702	500	-	657	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	14	14.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	405	1002	-	-	992	-	-	440
HCM Lane V/C Ratio	0.015	0.009	-	-	0.001	-	-	0.153
HCM Control Delay (s)	14	8.6	-	-	8.6	-	-	14.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	15	5	5	10	15	10	500	10	10	545	15
Future Vol, veh/h	1	15	5	5	10	15	10	500	10	10	545	15
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	246	-	325	306	-	306
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	63	58	75	75	54	100	86	46	50	96	70
Heavy Vehicles, %	0	13	0	100	25	8	0	21	18	0	27	7
Mvmt Flow	2	24	9	7	13	28	10	581	22	20	568	21

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	925	1231	284	937	1230	291	589	0	0	603	0	0
Stage 1	608	608	-	601	601	-	-	-	-	-	-	-
Stage 2	317	623	-	336	629	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.76	6.9	9.5	7	7.06	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.76	-	8.5	6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.76	-	8.5	6	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.13	3.3	4.5	4.25	3.38	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	227	161	719	115	147	688	996	-	-	984	-	-
Stage 1	454	458	-	275	434	-	-	-	-	-	-	-
Stage 2	674	450	-	443	421	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	206	156	719	105	143	688	996	-	-	984	-	-
Mov Cap-2 Maneuver	382	326	-	231	308	-	-	-	-	-	-	-
Stage 1	449	449	-	272	430	-	-	-	-	-	-	-
Stage 2	620	446	-	406	413	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.4	14.5	0.1	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	996	-	-	381	425	984	-	-
HCM Lane V/C Ratio	0.01	-	-	0.09	0.112	0.02	-	-
HCM Control Delay (s)	8.7	-	-	15.4	14.5	8.7	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	5	25	15	10	5	15	565	30	10	485	10
Future Vol, veh/h	30	5	25	15	10	5	15	565	30	10	485	10
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	281	-	241	290	-	320
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	50	67	46	40	38	94	88	80	39	92	63
Heavy Vehicles, %	7	0	8	0	0	0	20	14	6	0	20	0
Mvmt Flow	34	10	37	33	25	13	16	642	38	26	527	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	945	1291	264	995	1269	321	543	0	0	680	0	0
Stage 1	579	579	-	674	674	-	-	-	-	-	-	-
Stage 2	366	712	-	321	595	-	-	-	-	-	-	-
Critical Hdwy	7.64	6.5	7.06	7.5	6.5	6.9	4.5	-	-	4.1	-	-
Critical Hdwy Stg 1	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.57	4	3.38	3.5	4	3.3	2.4	-	-	2.2	-	-
Pot Cap-1 Maneuver	209	165	717	202	170	681	907	-	-	922	-	-
Stage 1	456	504	-	415	457	-	-	-	-	-	-	-
Stage 2	612	439	-	671	496	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	187	158	717	181	162	681	907	-	-	922	-	-
Mov Cap-2 Maneuver	364	328	-	352	341	-	-	-	-	-	-	-
Stage 1	448	490	-	408	449	-	-	-	-	-	-	-
Stage 2	557	431	-	606	482	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.5	16.6	0.2	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	907	-	-	462	382	922	-	-
HCM Lane V/C Ratio	0.018	-	-	0.176	0.185	0.028	-	-
HCM Control Delay (s)	9	-	-	14.5	16.6	9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0.1	-	-

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	5	5	5	1	5	45	5	540	1	40	565	1
Future Vol, veh/h	5	5	5	1	5	45	5	540	1	40	565	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	326	-	-	327	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	33	50	100	75	69	38	88	50	70	93	25
Heavy Vehicles, %	0	0	0	0	0	2	0	18	0	15	27	0
Mvmt Flow	13	15	10	1	7	65	13	614	2	57	608	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1061	1366	306	1067	1367	308	612	0	0	616	0	0
Stage 1	724	724	-	641	641	-	-	-	-	-	-	-
Stage 2	337	642	-	426	726	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.94	4.1	-	-	4.4	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.32	2.2	-	-	2.35	-	-
Pot Cap-1 Maneuver	181	149	696	179	148	688	977	-	-	876	-	-
Stage 1	388	433	-	434	473	-	-	-	-	-	-	-
Stage 2	656	472	-	582	433	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	152	138	696	160	137	688	977	-	-	876	-	-
Mov Cap-2 Maneuver	321	301	-	341	311	-	-	-	-	-	-	-
Stage 1	383	405	-	428	467	-	-	-	-	-	-	-
Stage 2	578	466	-	516	405	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	11.7	0.2	0.8
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	977	-	-	362	612	876	-	-
HCM Lane V/C Ratio	0.013	-	-	0.106	0.119	0.065	-	-
HCM Control Delay (s)	8.7	-	-	16.1	11.7	9.4	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0.2	-	-

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	6	25	15	1	20	20	20	515	6	25	550	6
Future Vol, veh/h	6	25	15	1	20	20	20	515	6	25	550	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	342	-	383	385	-	369
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	55	69	25	50	70	70	92	50	40	86	38
Heavy Vehicles, %	17	0	0	0	14	14	7	30	25	14	27	0
Mvmt Flow	8	45	22	4	40	29	29	560	12	63	640	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1124	1396	320	1087	1400	280	656	0	0	572	0	0
Stage 1	766	766	-	618	618	-	-	-	-	-	-	-
Stage 2	358	630	-	469	782	-	-	-	-	-	-	-
Critical Hdwy	7.84	6.5	6.9	7.5	6.78	7.18	4.24	-	-	4.38	-	-
Critical Hdwy Stg 1	6.84	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.84	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Follow-up Hdwy	3.67	4	3.3	3.5	4.14	3.44	2.27	-	-	2.34	-	-
Pot Cap-1 Maneuver	143	142	682	173	125	682	894	-	-	919	-	-
Stage 1	330	415	-	448	450	-	-	-	-	-	-	-
Stage 2	593	478	-	549	376	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	112	128	682	136	113	682	894	-	-	919	-	-
Mov Cap-2 Maneuver	264	289	-	309	265	-	-	-	-	-	-	-
Stage 1	319	386	-	434	436	-	-	-	-	-	-	-
Stage 2	499	463	-	437	350	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	17.8	0.4	0.8
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	894	-	-	343	353	919	-	-
HCM Lane V/C Ratio	0.032	-	-	0.219	0.206	0.068	-	-
HCM Control Delay (s)	9.2	-	-	18.4	17.8	9.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.8	0.2	-	-

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	6	40	15	1	10	20	6	535	6	20	500	6
Future Vol, veh/h	6	40	15	1	10	20	6	535	6	20	500	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	314	-	413	307	-	405
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	65	60	50	75	59	50	87	50	58	91	63
Heavy Vehicles, %	0	3	0	0	0	5	0	30	0	0	24	0
Mvmt Flow	16	62	25	2	13	34	12	615	12	34	549	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	955	1268	275	1013	1266	308	559	0	0	627	0	0
Stage 1	617	617	-	639	639	-	-	-	-	-	-	-
Stage 2	338	651	-	374	627	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.56	6.9	7.5	6.5	7	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.56	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.03	3.3	3.5	4	3.35	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	216	166	729	196	171	679	1022	-	-	965	-	-
Stage 1	449	477	-	436	474	-	-	-	-	-	-	-
Stage 2	656	460	-	624	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	192	158	729	156	163	679	1022	-	-	965	-	-
Mov Cap-2 Maneuver	370	327	-	339	342	-	-	-	-	-	-	-
Stage 1	444	460	-	431	468	-	-	-	-	-	-	-
Stage 2	598	454	-	504	462	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.7	12.7	0.2	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1022	-	-	386	519	965	-	-
HCM Lane V/C Ratio	0.012	-	-	0.265	0.095	0.036	-	-
HCM Control Delay (s)	8.6	-	-	17.7	12.7	8.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.3	0.1	-	-

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	0	0	0	6	6	65	50	245	0	0	170	100
Future Vol, veh/h	0	0	0	6	6	65	50	245	0	0	170	100
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	-	-	Yield	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	50	50	71	77	82	100	100	86	77
Heavy Vehicles, %	0	0	0	33	75	19	12	12	0	0	15	26
Mvmt Flow	0	0	0	12	12	92	65	299	0	0	198	130

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	627	627	299	198	0	-	-	-	0
Stage 1	429	429	-	-	-	-	-	-	-
Stage 2	198	198	-	-	-	-	-	-	-
Critical Hdwy	6.73	7.25	6.39	4.22	-	-	-	-	-
Critical Hdwy Stg 1	5.73	6.25	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.73	6.25	-	-	-	-	-	-	-
Follow-up Hdwy	3.797	4.675	3.471	2.308	-	-	-	-	-
Pot Cap-1 Maneuver	401	318	702	1317	-	0	0	-	-
Stage 1	595	477	-	-	-	0	0	-	-
Stage 2	767	619	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	377	0	702	1317	-	-	-	-	-
Mov Cap-2 Maneuver	377	0	-	-	-	-	-	-	-
Stage 1	560	0	-	-	-	-	-	-	-
Stage 2	767	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	1.4	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR
Capacity (veh/h)	1317	-	886	-	-
HCM Lane V/C Ratio	0.049	-	0.13	-	-
HCM Control Delay (s)	7.9	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

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	85	0	70	0	0	0	0	220	15	60	115	0
Future Vol, veh/h	85	0	70	0	0	0	0	220	15	60	115	0
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	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	188	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	25	81	100	100	100	100	78	40	70	91	100
Heavy Vehicles, %	16	0	10	0	0	0	0	10	0	27	10	0
Mvmt Flow	112	0	86	0	0	0	0	282	38	86	126	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	580	580	126	-	0	0	282	0	0
Stage 1	298	298	-	-	-	-	-	-	-
Stage 2	282	282	-	-	-	-	-	-	-
Critical Hdwy	6.56	6.5	6.3	-	-	-	4.37	-	-
Critical Hdwy Stg 1	5.56	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.56	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.644	4	3.39	-	-	-	2.443	-	-
Pot Cap-1 Maneuver	454	428	903	0	-	-	1150	-	0
Stage 1	722	671	-	0	-	-	-	-	0
Stage 2	735	681	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	418	0	903	-	-	-	1150	-	-
Mov Cap-2 Maneuver	418	0	-	-	-	-	-	-	-
Stage 1	722	0	-	-	-	-	-	-	-
Stage 2	676	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	6.9	0	3.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	2072	1150	-
HCM Lane V/C Ratio	-	-	0.096	0.075	-
HCM Control Delay (s)	-	-	6.9	8.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	400	15	1	425	75	10	30	1	20	15	20
Future Vol, veh/h	15	400	15	1	425	75	10	30	1	20	15	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	365	-	423	287	-	306	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	82	67	50	88	54	60	60	25	57	69	80
Heavy Vehicles, %	0	33	0	0	34	0	0	3	0	6	9	0
Mvmt Flow	30	488	22	2	483	139	17	50	4	35	22	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	622	0	0	510	0	0	805	1174	244	816	1057	242
Stage 1	-	-	-	-	-	-	548	548	-	487	487	-
Stage 2	-	-	-	-	-	-	257	626	-	329	570	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.56	6.9	7.62	6.68	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.56	-	6.62	5.68	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.56	-	6.62	5.68	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4.03	3.3	3.56	4.09	3.3
Pot Cap-1 Maneuver	969	-	-	1065	-	-	277	189	763	262	213	765
Stage 1	-	-	-	-	-	-	493	513	-	520	531	-
Stage 2	-	-	-	-	-	-	731	473	-	647	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	969	-	-	1065	-	-	250	183	763	227	206	765
Mov Cap-2 Maneuver	-	-	-	-	-	-	416	353	-	406	379	-
Stage 1	-	-	-	-	-	-	478	497	-	504	530	-
Stage 2	-	-	-	-	-	-	677	472	-	561	471	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	16.3	12.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	969	-	-	1065	-	-	569
HCM Lane V/C Ratio	0.182	0.031	-	-	0.002	-	-	0.144
HCM Control Delay (s)	16.3	8.8	-	-	8.4	-	-	12.4
HCM Lane LOS	C	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0	-	-	0.5

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	420	6	1	475	45	1	1	1	15	1	10
Future Vol, veh/h	6	420	6	1	475	45	1	1	1	15	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	304	-	278	318	-	294	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	85	75	25	94	63	100	100	100	63	25	50
Heavy Vehicles, %	0	31	0	0	30	6	0	0	0	7	0	0
Mvmt Flow	16	494	8	4	505	71	1	1	1	24	4	20

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	576	0	0	502	0	0	789	1110	247	793	1047	253
Stage 1	-	-	-	-	-	-	526	526	-	513	513	-
Stage 2	-	-	-	-	-	-	263	584	-	280	534	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.64	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.64	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.64	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.57	4	3.3
Pot Cap-1 Maneuver	1007	-	-	1073	-	-	285	211	759	271	230	753
Stage 1	-	-	-	-	-	-	508	532	-	499	539	-
Stage 2	-	-	-	-	-	-	725	501	-	689	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1007	-	-	1073	-	-	271	207	759	266	225	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	438	383	-	431	404	-
Stage 1	-	-	-	-	-	-	500	523	-	491	537	-
Stage 2	-	-	-	-	-	-	698	499	-	676	520	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.1	12.5	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	483	1007	-	-	1073	-	-	521
HCM Lane V/C Ratio	0.006	0.016	-	-	0.004	-	-	0.092
HCM Control Delay (s)	12.5	8.6	-	-	8.4	-	-	12.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

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	6	6	20	5	5	10	6	450	6	6	470	6
Future Vol, veh/h	6	6	20	5	5	10	6	450	6	6	470	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	246	-	325	306	-	306
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	30	38	67	75	58	92	63	87	33	50	90	38
Heavy Vehicles, %	33	0	6	0	14	0	0	30	0	0	29	0
Mvmt Flow	20	16	30	7	9	11	10	517	18	12	522	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	829	1101	261	830	1099	259	538	0	0	535	0	0
Stage 1	546	546	-	537	537	-	-	-	-	-	-	-
Stage 2	283	555	-	293	562	-	-	-	-	-	-	-
Critical Hdwy	8.16	6.5	7.02	7.5	6.78	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.16	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.16	5.5	-	6.5	5.78	-	-	-	-	-	-	-
Follow-up Hdwy	3.83	4	3.36	3.5	4.14	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	216	214	726	266	193	746	1040	-	-	1043	-	-
Stage 1	418	521	-	501	492	-	-	-	-	-	-	-
Stage 2	620	516	-	696	479	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	206	209	726	243	189	746	1040	-	-	1043	-	-
Mov Cap-2 Maneuver	360	387	-	421	360	-	-	-	-	-	-	-
Stage 1	414	515	-	496	487	-	-	-	-	-	-	-
Stage 2	594	511	-	639	473	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	12.9	0.1	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1040	-	-	477	481	1043	-	-
HCM Lane V/C Ratio	0.009	-	-	0.138	0.054	0.012	-	-
HCM Control Delay (s)	8.5	-	-	13.7	12.9	8.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	5	5	10	1	10	6	405	25	1	545	6
Future Vol, veh/h	25	5	5	10	1	10	6	405	25	1	545	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	281	-	241	290	-	320
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	75	50	100	50	40	75	97	75	50	90	50
Heavy Vehicles, %	9	0	0	13	0	0	50	23	33	50	25	25
Mvmt Flow	39	7	10	10	2	25	8	418	33	2	606	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	836	1077	303	745	1056	209	618	0	0	451	0	0
Stage 1	610	610	-	434	434	-	-	-	-	-	-	-
Stage 2	226	467	-	311	622	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.5	6.9	7.76	6.5	6.9	5.1	-	-	5.1	-	-
Critical Hdwy Stg 1	6.68	5.5	-	6.76	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.5	-	6.76	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4	3.3	3.63	4	3.3	2.7	-	-	2.7	-	-
Pot Cap-1 Maneuver	248	221	699	283	227	803	694	-	-	830	-	-
Stage 1	432	488	-	542	585	-	-	-	-	-	-	-
Stage 2	736	565	-	644	482	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	237	218	699	273	224	803	694	-	-	830	-	-
Mov Cap-2 Maneuver	386	396	-	446	396	-	-	-	-	-	-	-
Stage 1	427	487	-	535	578	-	-	-	-	-	-	-
Stage 2	702	558	-	625	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	11.1	0.2	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	694	-	-	421	631	830	-	-
HCM Lane V/C Ratio	0.012	-	-	0.132	0.059	0.002	-	-
HCM Control Delay (s)	10.2	-	-	14.9	11.1	9.3	-	-
HCM Lane LOS	B	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	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	1	10	10	6	6	25	6	495	1	35	500	1
Future Vol, veh/h	1	10	10	6	6	25	6	495	1	35	500	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	326	-	-	327	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	42	46	25	33	56	31	94	100	70	94	25
Heavy Vehicles, %	0	20	45	0	0	0	0	31	0	6	26	0
Mvmt Flow	1	24	22	24	18	45	19	527	1	50	532	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	945	1200	268	944	1202	264	536	0	0	528	0	0
Stage 1	634	634	-	566	566	-	-	-	-	-	-	-
Stage 2	311	566	-	378	636	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.9	7.8	7.5	6.5	6.9	4.1	-	-	4.22	-	-
Critical Hdwy Stg 1	6.5	5.9	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.9	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.2	3.75	3.5	4	3.3	2.2	-	-	2.26	-	-
Pot Cap-1 Maneuver	220	160	616	220	186	741	1042	-	-	1008	-	-
Stage 1	439	429	-	481	511	-	-	-	-	-	-	-
Stage 2	680	463	-	621	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	188	149	616	189	174	741	1042	-	-	1008	-	-
Mov Cap-2 Maneuver	361	304	-	371	347	-	-	-	-	-	-	-
Stage 1	431	408	-	472	502	-	-	-	-	-	-	-
Stage 2	605	455	-	536	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	13.9	0.3	0.7
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1042	-	-	400	490	1008	-	-
HCM Lane V/C Ratio	0.019	-	-	0.116	0.177	0.05	-	-
HCM Control Delay (s)	8.5	-	-	15.2	13.9	8.8	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.6	0.2	-	-

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	6	20	15	1	40	20	25	635	6	30	700	6
Future Vol, veh/h	6	20	15	1	40	20	25	635	6	30	700	6
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	342	-	383	385	-	369
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	33	70	75	25	85	53	59	95	90	52	87	50
Heavy Vehicles, %	25	0	8	0	3	6	0	18	0	0	25	0
Mvmt Flow	18	29	20	4	47	38	42	668	7	58	805	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1363	1680	403	1285	1685	334	817	0	0	675	0	0
Stage 1	921	921	-	752	752	-	-	-	-	-	-	-
Stage 2	442	759	-	533	933	-	-	-	-	-	-	-
Critical Hdwy	8	6.5	7.06	7.5	6.56	7.02	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7	5.5	-	6.5	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7	5.5	-	6.5	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.75	4	3.38	3.5	4.03	3.36	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	87	96	580	124	92	650	820	-	-	926	-	-
Stage 1	249	352	-	373	414	-	-	-	-	-	-	-
Stage 2	507	418	-	503	341	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	85	580	100	82	650	820	-	-	926	-	-
Mov Cap-2 Maneuver	192	238	-	262	227	-	-	-	-	-	-	-
Stage 1	236	330	-	354	393	-	-	-	-	-	-	-
Stage 2	399	397	-	416	320	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.8	20.8	0.6	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	820	-	-	268	316	926	-	-
HCM Lane V/C Ratio	0.052	-	-	0.249	0.281	0.062	-	-
HCM Control Delay (s)	9.6	-	-	22.8	20.8	9.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1	1.1	0.2	-	-

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	6	15	6	1	25	20	20	620	1	30	675	15
Future Vol, veh/h	6	15	6	1	25	20	20	620	1	30	675	15
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	314	-	413	307	-	405
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	56	44	25	75	66	57	92	50	63	92	83
Heavy Vehicles, %	0	0	0	0	0	0	0	18	0	4	23	20
Mvmt Flow	12	27	14	4	33	30	35	674	2	48	734	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1254	1576	367	1221	1592	337	752	0	0	676	0	0
Stage 1	830	830	-	744	744	-	-	-	-	-	-	-
Stage 2	424	746	-	477	848	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.18	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.24	-	-
Pot Cap-1 Maneuver	131	111	636	138	108	665	867	-	-	898	-	-
Stage 1	335	388	-	377	424	-	-	-	-	-	-	-
Stage 2	584	424	-	543	380	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	101	636	116	98	665	867	-	-	898	-	-
Mov Cap-2 Maneuver	264	262	-	284	257	-	-	-	-	-	-	-
Stage 1	322	367	-	362	407	-	-	-	-	-	-	-
Stage 2	491	407	-	466	360	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19	17.4	0.5	0.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	867	-	-	310	357	898	-	-
HCM Lane V/C Ratio	0.04	-	-	0.169	0.189	0.053	-	-
HCM Control Delay (s)	9.3	-	-	19	17.4	9.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.7	0.2	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	6	0	75	70	255	0	0	340	100
Future Vol, veh/h	0	0	0	6	0	75	70	255	0	0	340	100
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	-	-	Yield	-	-	None	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	1	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	50	50	84	73	86	100	100	90	82
Heavy Vehicles, %	0	0	0	25	0	14	18	11	0	0	8	13
Mvmt Flow	0	0	0	12	0	89	96	297	0	0	378	122

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	867	867	297	378	0	-	-	-	0
Stage 1	489	489	-	-	-	-	-	-	-
Stage 2	378	378	-	-	-	-	-	-	-
Critical Hdwy	6.65	6.5	6.34	4.28	-	-	-	-	-
Critical Hdwy Stg 1	5.65	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.65	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.426	2.362	-	-	-	-	-
Pot Cap-1 Maneuver	295	293	715	1098	-	0	0	-	-
Stage 1	572	553	-	-	-	0	0	-	-
Stage 2	645	619	-	-	-	0	0	-	-
Platoon blocked, %					-			-	-
Mov Cap-1 Maneuver	264	0	715	1098	-	-	-	-	-
Mov Cap-2 Maneuver	264	0	-	-	-	-	-	-	-
Stage 1	512	0	-	-	-	-	-	-	-
Stage 2	645	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	2.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	SBT	SBR
Capacity (veh/h)	1098	-	811	-	-
HCM Lane V/C Ratio	0.087	-	0.125	-	-
HCM Control Delay (s)	8.6	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	0	65	0	0	0	0	220	20	105	240	0
Future Vol, veh/h	95	0	65	0	0	0	0	220	20	105	240	0
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	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	-	-	-	-	-	-	-	-	188	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	92	25	100	100	100	100	85	41	73	92	100
Heavy Vehicles, %	0	19	0	0	0	0	0	10	15	16	4	0
Mvmt Flow	95	0	260	0	0	0	0	259	49	144	261	0

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	808	808	261	-	0	0	259	0	0
Stage 1	549	549	-	-	-	-	-	-	-
Stage 2	259	259	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.69	6.2	-	-	-	4.26	-	-
Critical Hdwy Stg 1	5.4	5.69	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.4	5.69	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.171	3.3	-	-	-	2.344	-	-
Pot Cap-1 Maneuver	353	296	783	0	-	-	1228	-	0
Stage 1	583	490	-	0	-	-	-	-	0
Stage 2	789	663	-	0	-	-	-	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	305	0	783	-	-	-	1228	-	-
Mov Cap-2 Maneuver	305	0	-	-	-	-	-	-	-
Stage 1	583	0	-	-	-	-	-	-	-
Stage 2	681	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	SBL	SBT
Capacity (veh/h)	-	-	1069	1228	-
HCM Lane V/C Ratio	-	-	0.332	0.117	-
HCM Control Delay (s)	-	-	10	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.4	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	600	25	1	525	50	10	20	1	50	60	15
Future Vol, veh/h	30	600	25	1	525	50	10	20	1	50	60	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	365	-	423	287	-	306	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	93	68	100	88	75	56	58	100	73	60	50
Heavy Vehicles, %	0	26	0	0	24	8	0	0	0	0	0	0
Mvmt Flow	38	645	37	1	597	67	18	34	1	68	100	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	664	0	0	682	0	0	1072	1387	323	1015	1357	299
Stage 1	-	-	-	-	-	-	721	721	-	599	599	-
Stage 2	-	-	-	-	-	-	351	666	-	416	758	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.5	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.5	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	935	-	-	920	-	-	177	144	679	195	150	703
Stage 1	-	-	-	-	-	-	389	435	-	460	494	-
Stage 2	-	-	-	-	-	-	644	460	-	590	418	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	935	-	-	920	-	-	125	138	679	173	144	703
Mov Cap-2 Maneuver	-	-	-	-	-	-	296	309	-	354	322	-
Stage 1	-	-	-	-	-	-	373	417	-	441	494	-
Stage 2	-	-	-	-	-	-	491	460	-	518	401	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0	19	23.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	935	-	-	920	-	-	394
HCM Lane V/C Ratio	0.172	0.041	-	-	0.001	-	-	0.504
HCM Control Delay (s)	19	9	-	-	8.9	-	-	23.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	2.7

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	625	1	1	615	35	1	1	1	45	1	5
Future Vol, veh/h	6	625	1	1	615	35	1	1	1	45	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	304	-	278	318	-	294	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	2	-	-	2	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	91	100	100	97	83	100	25	100	77	100	63
Heavy Vehicles, %	0	25	0	0	23	7	0	0	0	2	0	0
Mvmt Flow	10	687	1	1	634	42	1	4	1	58	1	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	676	0	0	688	0	0	1027	1385	344	1002	1344	317
Stage 1	-	-	-	-	-	-	707	707	-	636	636	-
Stage 2	-	-	-	-	-	-	320	678	-	366	708	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.5	6.5	6.9	7.54	6.5	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	6.5	5.5	-	6.54	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.5	5.5	-	6.54	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.52	4	3.3
Pot Cap-1 Maneuver	925	-	-	916	-	-	191	145	658	197	153	685
Stage 1	-	-	-	-	-	-	397	441	-	433	475	-
Stage 2	-	-	-	-	-	-	672	455	-	626	441	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	925	-	-	916	-	-	187	143	658	193	151	685
Mov Cap-2 Maneuver	-	-	-	-	-	-	350	324	-	369	335	-
Stage 1	-	-	-	-	-	-	393	436	-	428	475	-
Stage 2	-	-	-	-	-	-	662	455	-	613	436	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	15.2	16.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	359	925	-	-	916	-	-	390
HCM Lane V/C Ratio	0.017	0.011	-	-	0.001	-	-	0.173
HCM Control Delay (s)	15.2	8.9	-	-	8.9	-	-	16.1
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.6

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	1	20	6	5	10	15	15	580	15	15	630	20
Future Vol, veh/h	1	20	6	5	10	15	15	580	15	15	630	20
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	246	-	325	306	-	306
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	63	58	75	75	54	100	86	46	50	96	70
Heavy Vehicles, %	0	13	0	100	25	8	0	21	18	0	27	7
Mvmt Flow	2	32	10	7	13	28	15	674	33	30	656	29

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1090	1453	328	1108	1449	337	685	0	0	707	0	0
Stage 1	716	716	-	704	704	-	-	-	-	-	-	-
Stage 2	374	737	-	404	745	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.76	6.9	9.5	7	7.06	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.76	-	8.5	6	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.76	-	8.5	6	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.13	3.3	4.5	4.25	3.38	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	172	117	674	79	106	642	918	-	-	901	-	-
Stage 1	392	406	-	228	386	-	-	-	-	-	-	-
Stage 2	624	397	-	393	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	152	111	674	68	101	642	918	-	-	901	-	-
Mov Cap-2 Maneuver	325	273	-	186	259	-	-	-	-	-	-	-
Stage 1	386	393	-	224	380	-	-	-	-	-	-	-
Stage 2	567	391	-	344	356	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18	16.3	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	918	-	-	320	366	901	-	-
HCM Lane V/C Ratio	0.016	-	-	0.138	0.131	0.033	-	-
HCM Control Delay (s)	9	-	-	18	16.3	9.1	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	5	25	15	10	5	20	655	35	15	560	15
Future Vol, veh/h	30	5	25	15	10	5	20	655	35	15	560	15
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	281	-	241	290	-	320
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	50	67	46	40	38	94	88	80	39	92	63
Heavy Vehicles, %	7	0	8	0	0	0	20	14	6	0	20	0
Mvmt Flow	34	10	37	33	25	13	21	744	44	38	609	24

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1112	1515	305	1172	1495	372	633	0	0	788	0	0
Stage 1	685	685	-	786	786	-	-	-	-	-	-	-
Stage 2	427	830	-	386	709	-	-	-	-	-	-	-
Critical Hdwy	7.64	6.5	7.06	7.5	6.5	6.9	4.5	-	-	4.1	-	-
Critical Hdwy Stg 1	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.64	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.57	4	3.38	3.5	4	3.3	2.4	-	-	2.2	-	-
Pot Cap-1 Maneuver	157	121	673	150	124	631	833	-	-	840	-	-
Stage 1	393	451	-	356	406	-	-	-	-	-	-	-
Stage 2	563	388	-	614	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	136	113	673	131	115	631	833	-	-	840	-	-
Mov Cap-2 Maneuver	306	273	-	295	288	-	-	-	-	-	-	-
Stage 1	383	431	-	347	396	-	-	-	-	-	-	-
Stage 2	503	378	-	541	420	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.3	19.2	0.2	0.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	833	-	-	400	324	840	-	-
HCM Lane V/C Ratio	0.026	-	-	0.204	0.218	0.046	-	-
HCM Control Delay (s)	9.4	-	-	16.3	19.2	9.5	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.8	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	5	5	5	1	6	55	6	625	1	50	655	1
Future Vol, veh/h	5	5	5	1	6	55	6	625	1	50	655	1
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	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	326	-	-	327	-	-
Veh in Median Storage, #	-	2	-	-	2	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	38	33	50	100	75	69	38	88	50	70	93	25
Heavy Vehicles, %	0	0	0	0	0	2	0	18	0	15	27	0
Mvmt Flow	13	15	10	1	8	80	16	710	2	71	704	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1239	1592	354	1245	1593	356	708	0	0	712	0	0
Stage 1	848	848	-	743	743	-	-	-	-	-	-	-
Stage 2	391	744	-	502	850	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.94	4.1	-	-	4.4	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.32	2.2	-	-	2.35	-	-
Pot Cap-1 Maneuver	134	108	648	133	108	640	900	-	-	802	-	-
Stage 1	327	380	-	378	425	-	-	-	-	-	-	-
Stage 2	610	424	-	525	380	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	97	648	115	97	640	900	-	-	802	-	-
Mov Cap-2 Maneuver	264	249	-	288	261	-	-	-	-	-	-	-
Stage 1	321	346	-	371	417	-	-	-	-	-	-	-
Stage 2	514	416	-	451	346	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	12.7	0.2	0.9
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	900	-	-	304	559	802	-	-
HCM Lane V/C Ratio	0.018	-	-	0.126	0.159	0.089	-	-
HCM Control Delay (s)	9.1	-	-	18.5	12.7	9.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.6	0.3	-	-

US 31 North
EXISTING TRANSPORTATION CONDITIONS REPORT

APPENDIX C. SAFETY ANALYSIS – CRASH DIAGRAMS

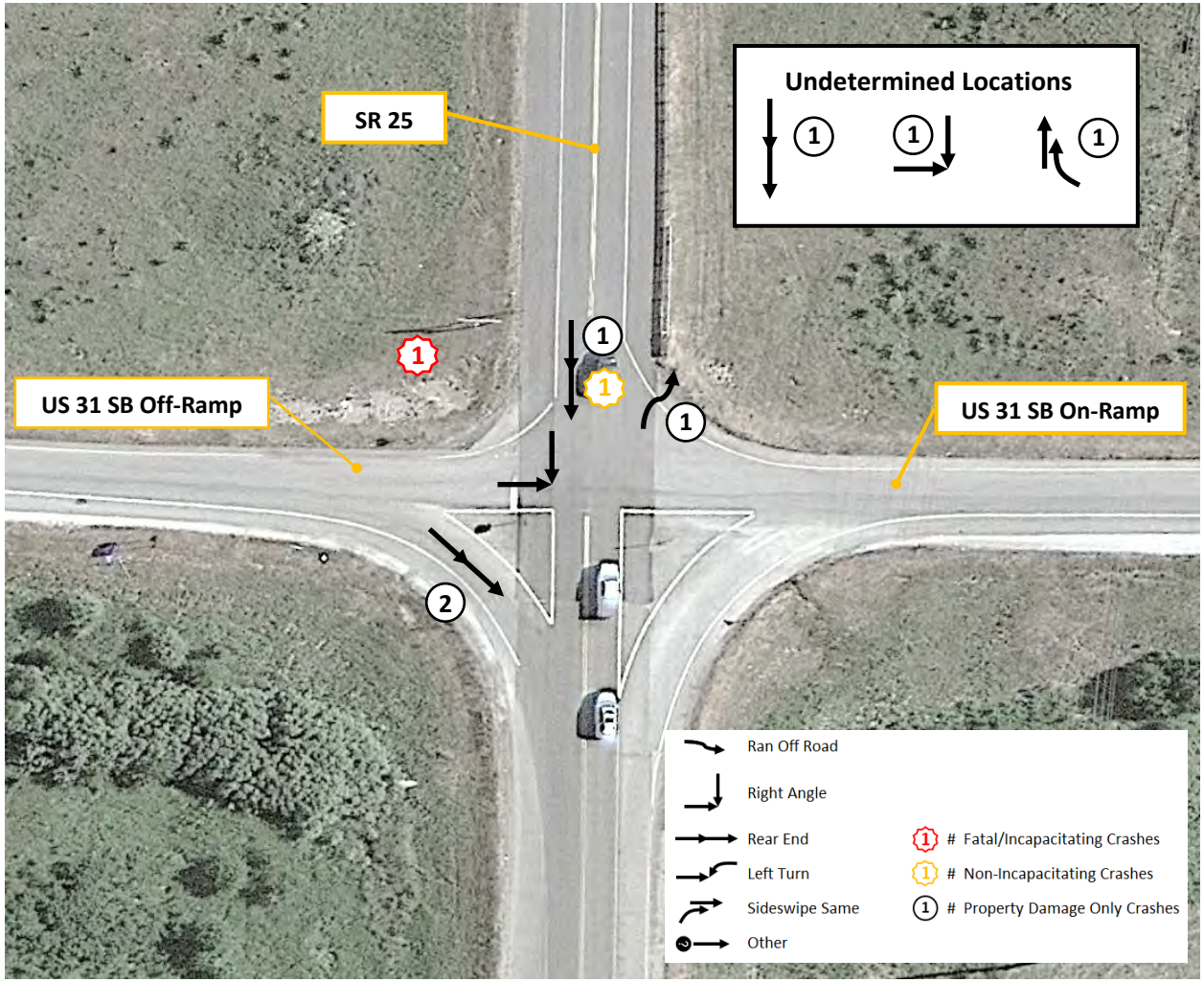


Figure 1 - US 31 Southbound Ramps at SR 25

Figure 2 - US 31 Northbound Ramps at SR 25

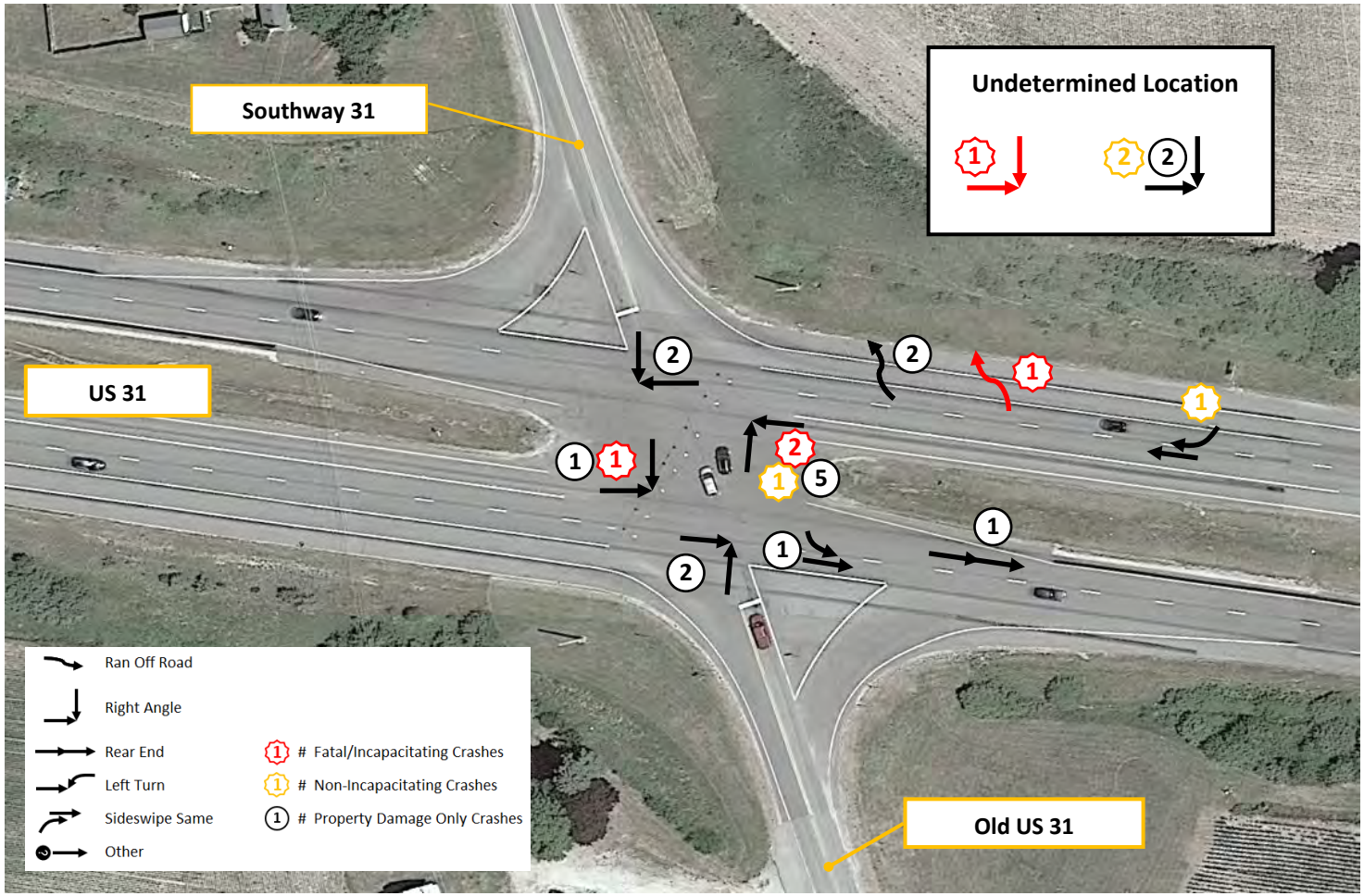


Figure 3 - US 31 at Old US 31/Southway 31

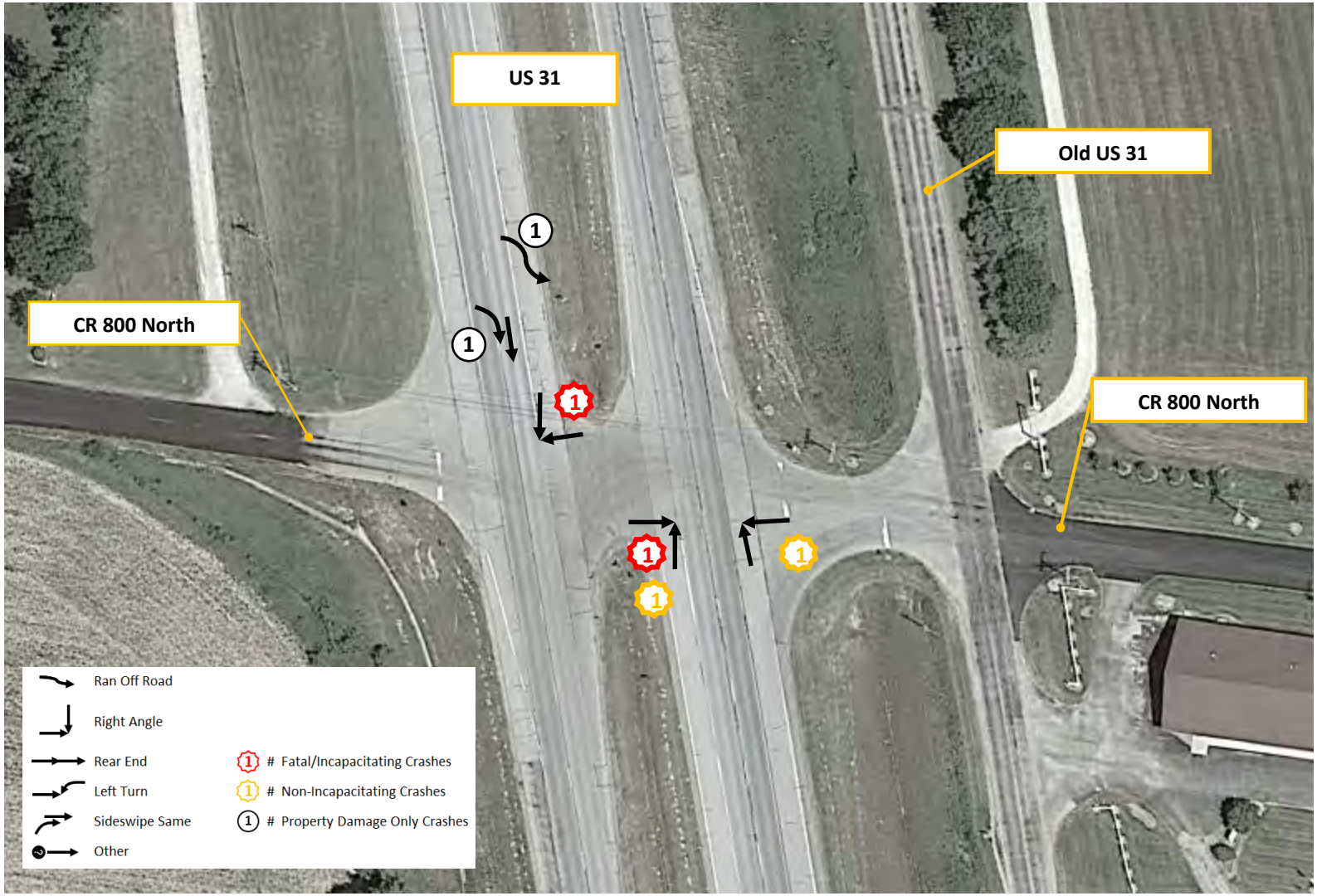


Figure 4 - US 31 at CR 800 North

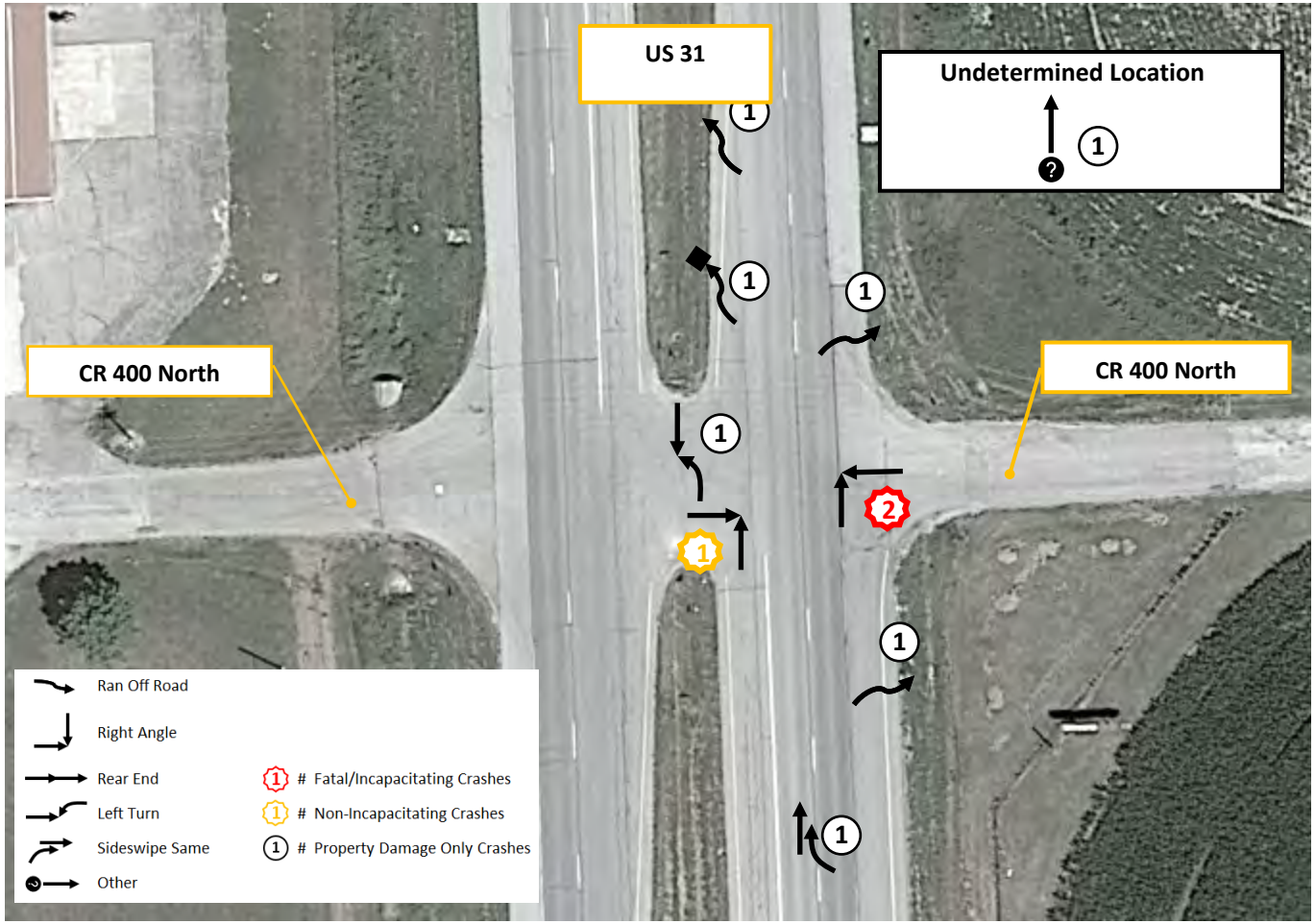


Figure 5 - US 31 at CR 400 North

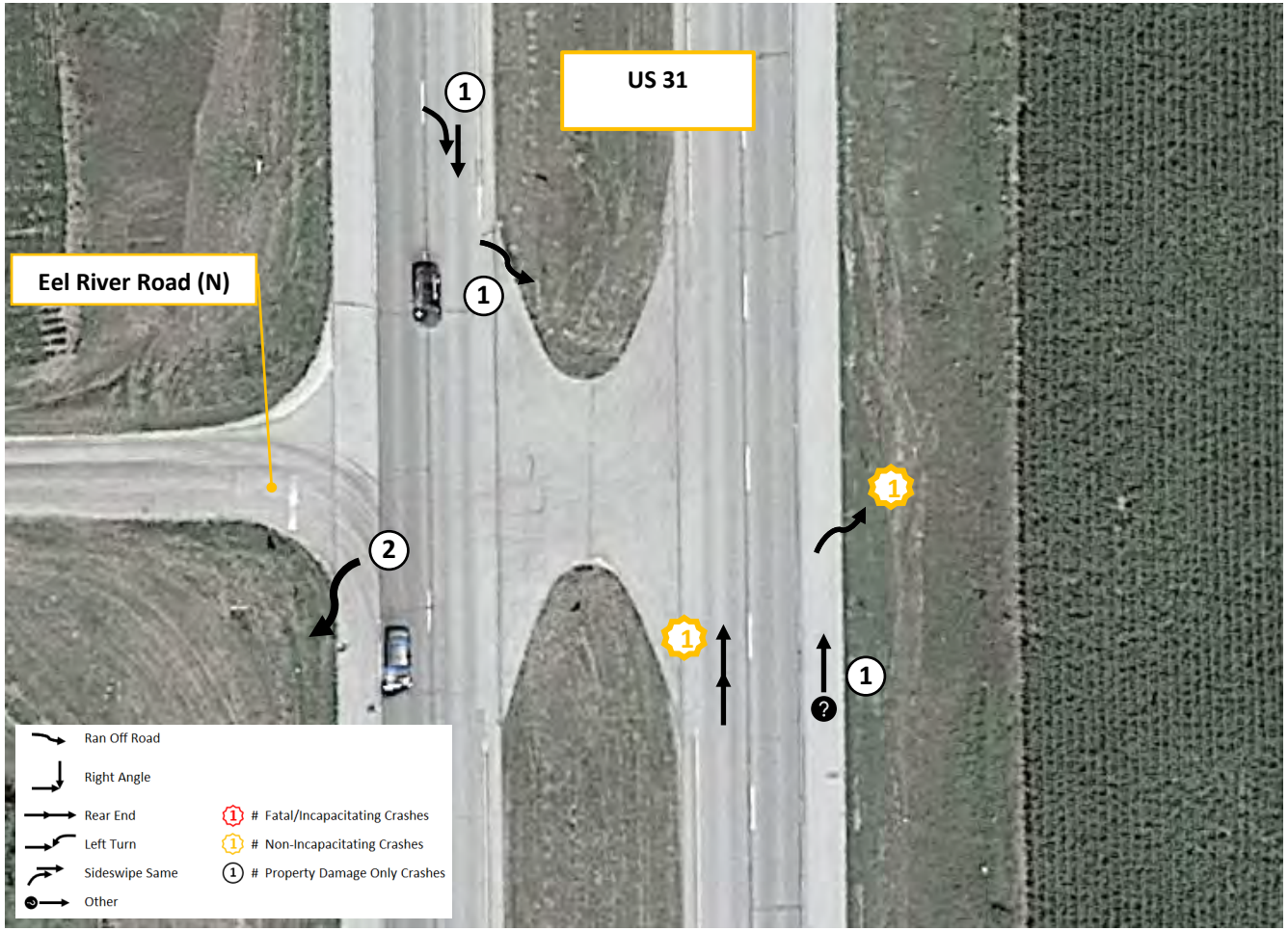


Figure 6 - US 31 at Eel River Road (N)

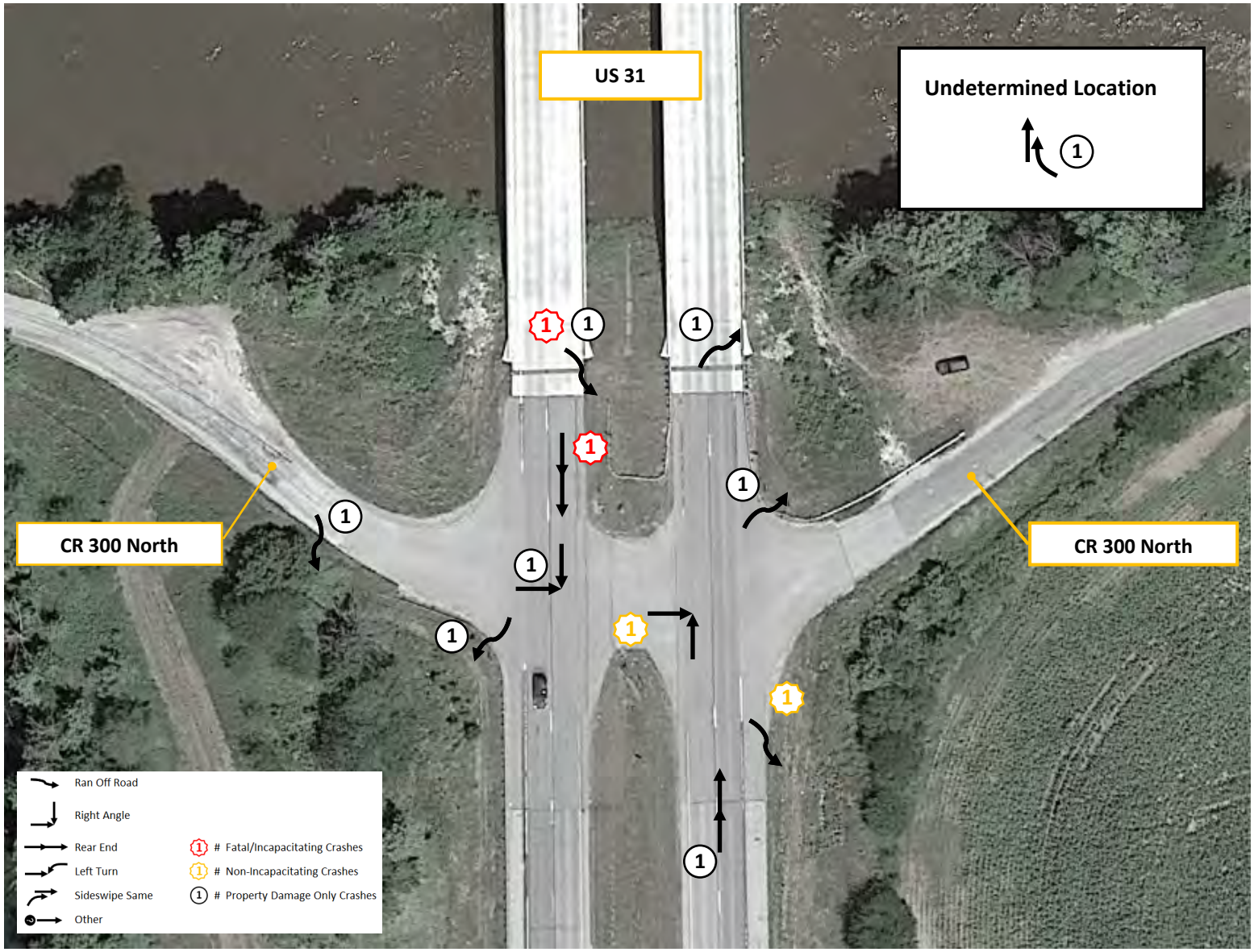


Figure 7 - US 31 at CR 300 North

US 31 North
EXISTING TRANSPORTATION CONDITIONS REPORT

APPENDIX D. SAFETY ANALYSIS – ROADHAT OUTPUT

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - N. Proj Limit to Olson Rd	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	207.3
End	211.9
AADT (veh/day)	14621
Intersection Density (int/mi)	1.09
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	6
Non-Incapacitating and Possible Injury Crashes	7
Property Damage Only Crashes	35
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	4.6
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	2.233
Non-Incapacitating and Possible Injury Crashes	1.27
Property Damage Only Crashes	7.48
All Crashes	10.99
Index of Crash Frequency	**-0.17**
Index of Crash Cost	**-0.38**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - N. Proj Limit to Olson Rd	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Olson Rd	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	14311
Crossing Road AADT (veh/day)	970
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	11
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.453
Non-Incapacitating and Possible Injury Crashes	0.23
Property Damage Only Crashes	1.87
All Crashes	2.55
Index of Crash Frequency	**-0.07**
Index of Crash Cost	**-0.48**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Olson Rd	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Olson Rd to 100N/6th St	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	205.8
End	207.2
AADT (veh/day)	14060
Intersection Density (int/mi)	1.43
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	5
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	16
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	1.4
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.667
Non-Incapacitating and Possible Injury Crashes	0.38
Property Damage Only Crashes	3.45
All Crashes	4.50
Index of Crash Frequency	**-0.03**
Index of Crash Cost	**0.33**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Olson Rd to 100N/6th St	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 100N/6th St	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	13946
Crossing Road AADT (veh/day)	862
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	8
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.427
Non-Incapacitating and Possible Injury Crashes	0.21
Property Damage Only Crashes	1.74
All Crashes	2.38
Index of Crash Frequency	**-0.21**
Index of Crash Cost	**-0.11**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 100N/6th St	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - 100N/6thSt to IN 25	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	203.9
End	205.7
AADT (veh/day)	14820
Intersection Density (int/mi)	1.11
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	6
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	19
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	1.8
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.861
Non-Incapacitating and Possible Injury Crashes	0.50
Property Damage Only Crashes	4.08
All Crashes	5.43
Index of Crash Frequency	**-0.01**
Index of Crash Cost	**0.28**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - 100N/6thSt to IN 25	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 Interchange @ IN 25	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Urban interchange non-freeway Segment
Beginning	203.2
End	203.9
AADT (veh/day)	14820
Clover Interchange (1 if present, 0 otherwise)	0
Diamond Interchange (1 if present, 0 otherwise)	1
Directional Interchange (1 if present, 0 otherwise)	0
Trumpet Interchange (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	9
Route or Road Type	Urban interchange non-freeway Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2095100
Non-Incapacitating and Possible Injury Crashes	339700
Property Damage Only Crashes	39000
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	0.7
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.483
Non-Incapacitating and Possible Injury Crashes	0.69
Property Damage Only Crashes	5.83

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 Interchange @ IN 25	
GIS		
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Date		

All Crashes	7.01
Index of Crash Frequency	**-0.74**
Index of Crash Cost	**-0.92**

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 SB Ramps @ IN 25	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Interchange Intersection
Busiest Road AADT (veh/day)	6678
Crossing Road AADT (veh/day)	1684
T Intersection Indicator (1 if present, 0 otherwise)	0
Signalized Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	7
Route or Road Type	Interchange Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	1557300
Non-Incapacitating and Possible Injury Crashes	382400
Property Damage Only Crashes	38800
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.014
Non-Incapacitating and Possible Injury Crashes	0.05
Property Damage Only Crashes	0.29
All Crashes	0.35
Index of Crash Frequency	**1.58**
Index of Crash Cost	**1.14**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 SB Ramps @ IN 25	
GIS		
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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 NB Ramps @ IN 25	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Interchange Intersection
Busiest Road AADT (veh/day)	7770
Crossing Road AADT (veh/day)	1064
T Intersection Indicator (1 if present, 0 otherwise)	0
Signalized Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	7
Route or Road Type	Interchange Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	1557300
Non-Incapacitating and Possible Injury Crashes	382400
Property Damage Only Crashes	38800
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.013
Non-Incapacitating and Possible Injury Crashes	0.04
Property Damage Only Crashes	0.26
All Crashes	0.31
Index of Crash Frequency	**1.34**
Index of Crash Cost	**0.07**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 NB Ramps @ IN 25	
GIS		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - IN 25 to Old US 31	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	202.7
End	203.2
AADT (veh/day)	11849
Intersection Density (int/mi)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	4
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	0.5
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.167
Non-Incapacitating and Possible Injury Crashes	0.09
Property Damage Only Crashes	1.29
All Crashes	1.54
Index of Crash Frequency	**-0.52**
Index of Crash Cost	**-0.70**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - IN 25 to Old US 31	
GIS		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Old US 31	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	12217
Crossing Road AADT (veh/day)	1388
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	5
Non-Incapacitating and Possible Injury Crashes	4
Property Damage Only Crashes	16
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.474
Non-Incapacitating and Possible Injury Crashes	0.25
Property Damage Only Crashes	2.04
All Crashes	2.76
Index of Crash Frequency	**0.99**
Index of Crash Cost	**0.86**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Old US 31	
GIS		
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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Old US 31 to Wabash Ave	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	201.8
End	202.6
AADT (veh/day)	12217
Intersection Density (int/mi)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	0.8
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.277
Non-Incapacitating and Possible Injury Crashes	0.15
Property Damage Only Crashes	1.80
All Crashes	2.22
Index of Crash Frequency	**-0.95**
Index of Crash Cost	**-0.83**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Old US 31 to Wabash Ave	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Ave	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	12846
Crossing Road AADT (veh/day)	767
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.391
Non-Incapacitating and Possible Injury Crashes	0.19
Property Damage Only Crashes	1.59
All Crashes	2.17
Index of Crash Frequency	**-1.36**
Index of Crash Cost	**-0.90**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Ave	
GIS		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Wabash Ave to 650S/1350N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	196.4
End	201.7
AADT (veh/day)	12935
Intersection Density (int/mi)	1.32
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	7
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	33
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	5.3
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	2.428
Non-Incapacitating and Possible Injury Crashes	1.33
Property Damage Only Crashes	7.72
All Crashes	11.48
Index of Crash Frequency	**-0.38**
Index of Crash Cost	**-0.42**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Wabash Ave to 650S/1350N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 650S/1350N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	12550
Crossing Road AADT (veh/day)	484
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	9
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.325
Non-Incapacitating and Possible Injury Crashes	0.15
Property Damage Only Crashes	1.27
All Crashes	1.74
Index of Crash Frequency	**0.45**
Index of Crash Cost	**0.18**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 650S/1350N	
GIS		
Post		
Analyst		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Wabash Ave to 650S/1350N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	189.4
End	196.3
AADT (veh/day)	13144
Intersection Density (int/mi)	1.16
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	6
Non-Incapacitating and Possible Injury Crashes	4
Property Damage Only Crashes	42
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	6.9
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	3.156
Non-Incapacitating and Possible Injury Crashes	1.73
Property Damage Only Crashes	9.12
All Crashes	14.00
Index of Crash Frequency	**-0.35**
Index of Crash Cost	**-0.57**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - Wabash Ave to 650S/1350N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ IN16	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	13144
Crossing Road AADT (veh/day)	553
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	3
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	3
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.350
Non-Incapacitating and Possible Injury Crashes	0.16
Property Damage Only Crashes	1.38
All Crashes	1.89
Index of Crash Frequency	**-0.19**
Index of Crash Cost	**0.49**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ IN16	
GIS		
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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - IN16 to 550N/MexicoRd	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	187.9
End	189.3
AADT (veh/day)	13611
Intersection Density (int/mi)	0.71
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	6
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	13
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	1.4
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.590
Non-Incapacitating and Possible Injury Crashes	0.33
Property Damage Only Crashes	3.08
All Crashes	4.00
Index of Crash Frequency	**-0.06**
Index of Crash Cost	**0.64**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - IN16 to 550N/MexicoRd	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ IN16	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection
Busiest Road AADT (veh/day)	13835
Crossing Road AADT (veh/day)	759
T Intersection Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	1
Route or Road Type	Unsignalized Rural State Intersection
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.406
Non-Incapacitating and Possible Injury Crashes	0.20
Property Damage Only Crashes	1.64
All Crashes	2.24
Index of Crash Frequency	**-0.97**
Index of Crash Cost	**-0.77**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ IN16	
GIS		
Post		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - 550N/MexicoRd to S. Project Limit	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Rural multilane Segment
Beginning	185
End	187.8
AADT (veh/day)	13292
Intersection Density (int/mi)	1.79
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	5
Non-Incapacitating and Possible Injury Crashes	8
Property Damage Only Crashes	56
Route or Road Type	Rural multilane Segment
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2442800
Non-Incapacitating and Possible Injury Crashes	368100
Property Damage Only Crashes	31600
Crash Cost Year (yyyy)	2017
OUTPUT	
Segment Length (mi)	2.8
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	1.370
Non-Incapacitating and Possible Injury Crashes	0.77
Property Damage Only Crashes	5.48
All Crashes	7.63
Index of Crash Frequency	**1.00**
Index of Crash Cost	**-0.10**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 - 550N/MexicoRd to S. Project Limit	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 700N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	14311
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.197
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.97
All Crashes	1.28
Index of Crash Frequency	**-0.23**
Index of Crash Cost	**0.11**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 700N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 600N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	14311
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	1
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.197
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.97
All Crashes	1.28
Index of Crash Frequency	**-0.74**
Index of Crash Cost	**-0.07**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 600N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 550N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	14311
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.197
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.97
All Crashes	1.28
Index of Crash Frequency	**-0.74**
Index of Crash Cost	**-0.68**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 550N	
GIS		
Post		
Analyst		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	14311
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	7
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.197
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.97
All Crashes	1.28
Index of Crash Frequency	**0.25**
Index of Crash Cost	**-0.02**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 375N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	14311
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	3
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.197
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.97
All Crashes	1.28
Index of Crash Frequency	**-0.07**
Index of Crash Cost	**0.12**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 375N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Monticello	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13946
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	3
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.193
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.96
All Crashes	1.26
Index of Crash Frequency	**-0.38**
Index of Crash Cost	**-0.04**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Monticello	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 3rd St	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13946
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	5
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.193
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.96
All Crashes	1.26
Index of Crash Frequency	**0.11**
Index of Crash Cost	**0.06**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 3rd St	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 50N / 13th St	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13695
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.190
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.95
All Crashes	1.24
Index of Crash Frequency	**-0.55**
Index of Crash Cost	**-0.57**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 50N / 13th St	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 50E / Sweetgum	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13695
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	4
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	6
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.190
Non-Incapacitating and Possible Injury Crashes	0.11
Property Damage Only Crashes	0.95
All Crashes	1.24
Index of Crash Frequency	**0.59**
Index of Crash Cost	**1.17**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 50E / Sweetgum	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Rd (N)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.101
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.65
All Crashes	0.81
Index of Crash Frequency	**-1.05**
Index of Crash Cost	**-0.61**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Rd (N)	
GIS		
Post		
Analyst		
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Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Rd (S)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.101
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.65
All Crashes	0.81
Index of Crash Frequency	**-0.25**
Index of Crash Cost	**0.31**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Wabash Rd (S)	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 300S	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.180
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.91
All Crashes	1.19
Index of Crash Frequency	**-1.11**
Index of Crash Cost	**-0.69**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 300S	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 350S	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	3
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.101
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.65
All Crashes	0.81
Index of Crash Frequency	**-0.25**
Index of Crash Cost	**-0.57**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 350S	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400S	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.180
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.91
All Crashes	1.19
Index of Crash Frequency	**-0.90**
Index of Crash Cost	**-0.03**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400S	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450S/1550N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.180
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.91
All Crashes	1.19
Index of Crash Frequency	**-0.71**
Index of Crash Cost	**-0.67**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450S/1550N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 500S/1500N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12846
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	7
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.180
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.91
All Crashes	1.19
Index of Crash Frequency	**0.18**
Index of Crash Cost	**-0.62**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 500S/1500N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 750S/1250N	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12550
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.177
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.89
All Crashes	1.17
Index of Crash Frequency	**-0.70**
Index of Crash Cost	**-0.67**

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Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 750S/1250N	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1200N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12550
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.177
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.89
All Crashes	1.17
Index of Crash Frequency	**-1.11**
Index of Crash Cost	**-0.68**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1200N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 825S (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12550
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.099
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.64
All Crashes	0.80
Index of Crash Frequency	**-1.05**
Index of Crash Cost	**-0.61**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 825S (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1050N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12550
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	5
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.177
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.89
All Crashes	1.17
Index of Crash Frequency	**0.03**
Index of Crash Cost	**-0.52**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1050N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1000N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	12550
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.177
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.89
All Crashes	1.17
Index of Crash Frequency	**-1.11**
Index of Crash Cost	**-0.68**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 1000N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 900N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13144
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.184
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.92
All Crashes	1.21
Index of Crash Frequency	**-0.72**
Index of Crash Cost	**-0.67**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 900N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400W (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13144
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.184
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.92
All Crashes	1.21
Index of Crash Frequency	**-0.91**
Index of Crash Cost	**-0.04**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400W (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

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Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 800N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13144
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.184
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.92
All Crashes	1.21
Index of Crash Frequency	**0.00**
Index of Crash Cost	**0.61**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 800N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Old US 31 (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13144
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	0
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.184
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.92
All Crashes	1.21
Index of Crash Frequency	**-1.11**
Index of Crash Cost	**-0.69**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Old US 31 (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 600N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13835
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	1
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	1
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.186
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.93
All Crashes	1.22
Index of Crash Frequency	**-0.72**
Index of Crash Cost	**-0.03**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 600N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13292
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	1
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	4
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.476
Non-Incapacitating and Possible Injury Crashes	0.26
Property Damage Only Crashes	1.88
All Crashes	2.61
Index of Crash Frequency	**-0.62**
Index of Crash Cost	**-0.71**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 450N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

Page 1/2

Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13292
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	1
Property Damage Only Crashes	7
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.186
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.93
All Crashes	1.22
Index of Crash Frequency	**0.62**
Index of Crash Cost	**0.56**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 400N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Eel River (N)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13292
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	5
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.104
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.66
All Crashes	0.83
Index of Crash Frequency	**0.60**
Index of Crash Cost	**-0.21**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Eel River (N)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Eel River (S)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13292
T Intersection Indicator (1 if present, 0 otherwise)	1
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	0
Non-Incapacitating and Possible Injury Crashes	0
Property Damage Only Crashes	2
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.104
Non-Incapacitating and Possible Injury Crashes	0.06
Property Damage Only Crashes	0.66
All Crashes	0.83
Index of Crash Frequency	**-0.52**
Index of Crash Cost	**-0.59**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ Eel River (S)	
GIS		
Post		
Analyst		
Date		

Comments:

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 300N (Miami)	
GIS		
Post		
Analyst		
Date		

INPUT	
Road Facility Type	Unsignalized Rural State Intersection One AADT
Busiest Road AADT (veh/day)	13292
T Intersection Indicator (1 if present, 0 otherwise)	0
Crossing Road Principal or Minor Arterial Indicator (1 if present, 0 otherwise)	0
Crossing Road Major or Minor Collector Indicator (1 if present, 0 otherwise)	0
First Year with Crash Data (yyyy)	2017
Last Year with Crash Data (yyyy)	2021
Number of Crashes (crash/period)	
Fatal and Incapacitating Injury Crashes	2
Non-Incapacitating and Possible Injury Crashes	2
Property Damage Only Crashes	8
Route or Road Type	Unsignalized Rural State Intersection One AADT
Average Crash Costs ($)	
Fatal and Incapacitating Injury Crashes	2335800
Non-Incapacitating and Possible Injury Crashes	389500
Property Damage Only Crashes	32200
Crash Cost Year (yyyy)	2017
OUTPUT	
Expected Crash Frequency (crash/year)	
Fatal and Incapacitating Injury Crashes	0.186
Non-Incapacitating and Possible Injury Crashes	0.10
Property Damage Only Crashes	0.93
All Crashes	1.22
Index of Crash Frequency	**0.91**
Index of Crash Cost	**0.65**

RoadHAT 4D

Index of Crash Frequency and Cost - Form F1

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Settings: Indiana state settings	Version: Version 4.1	
Location	US 31 @ 300N (Miami)	
GIS		
Post		
Analyst		
Date		

Comments:

US 31 North
EXISTING TRANSPORTATION CONDITIONS REPORT

APPENDIX E. SIGHT DISTANCE ANALYSIS

Design Speed: 60 MPH
Left Turn Sight Distance: Car = 1,100'; Single Unit Truck = 1,560'; From Median Refuge for Passenger Car = 840'
Passenger Car Sight Line and Single Unit Truck Sight Line intercept existing ground
Passenger Car Sight Line from Median Refuge does not intercept any obstructions

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: MTH DRAWN: KRR
CHECKED: MAT CHECKED: MAT

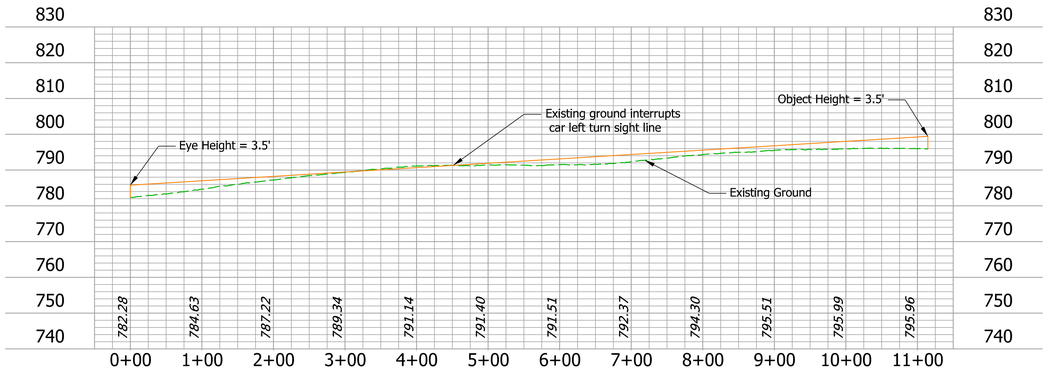
INDIANA
DEPARTMENT OF TRANSPORTATION

US 31 PEL
INTERSECTION SIGHT DISTANCE
3RD STREET EAST LEG, LT

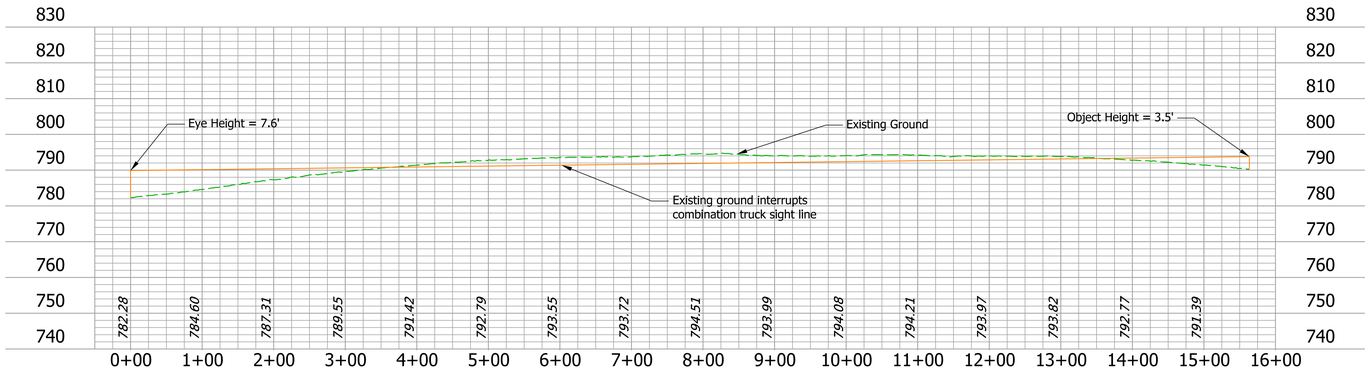
SCALE	BRIDGE FILE
1" = 100'	
	DESIGNATION
1" = 100'	
SURVEY BOOK	SHEETS
	1 of 1
CONTRACT	PROJECT

Plot: 3/20/2023 2:19 PM

File:
Model:3rd St East Leg LT_Sht



PASSENGER CAR TURNING LEFT FROM WESTBOUND 3RD STREET TO SOUTHBOUND US 31



COMBINATION TRUCK TURNING LEFT FROM WESTBOUND 3RD STREET TO SOUTHBOUND US 31

Design Speed: 60 MPH
Left Turn Sight Distance: Car = 1,100'; Single Unit Truck = 1,560'
Passenger Car Sight Line and Single Unit Truck Sight Line intercept existing ground

RECOMMENDED FOR APPROVAL
DESIGN ENGINEER DATE

DESIGNED: MTH DRAWN: KRR
CHECKED: MAT CHECKED: MAT

INDIANA
DEPARTMENT OF TRANSPORTATION

US 31 PEL
INTERSECTION SIGHT DISTANCE
3RD STREET EAST LEG, LT TURN

SCALE	BRIDGE FILE
1" = 100'	
	DESIGNATION
1" = 100'	
SURVEY BOOK	SHEETS
	1 of 1
CONTRACT	PROJECT

Plot: 3/20/2023 2:12 PM
File:
Model:3rd St East Leg LT SUT LOS-1 - Profile 2_Sht

Design Speed: 60 MPH
Left Turn Sight Distance: Combination Truck = 1,630'
Treeline intercepts combination truck sight line

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: MTH DRAWN: KRR
CHECKED: MAT CHECKED: MAT

INDIANA
DEPARTMENT OF TRANSPORTATION

US 31 PEL
INTERSECTION SIGHT DISTANCE
OLD US 31 SOUTH LEG, LT TURN

SCALE	BRIDGE FILE
1" = 100'	
	DESIGNATION
1" = 100'	
SURVEY BOOK	SHEETS
	1 of 1
CONTRACT	PROJECT

Plot: 3/20/2023 2:04 PM
File:
Model:Old US31 South Leg LT_SHT