Northeast Industrial Access
PLANNING STUDY

May 2019

Prepared For:

Iowa Northland Regional Council of Governments
229 East Park Avenue
Waterloo, Iowa

Prepared By:

AECOM

In conjunction with:

HRGreen

Hg Consult Inc engineers planners

AMPERAGE
MOVE THE NEEDLE

CGA
ENGINEERS • LAND SURVEYORS

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I. Introduction

A. Study Overview

The Northeast Industrial Access Planning Study aimed to provide feasible alternatives to address existing and future transportation issues related to the Northeast Industrial Area of Waterloo in Black Hawk County, Iowa. This study examined primary, secondary and local routes currently utilized to access the industrial area with US 63, US 218, US 20 and I-380.

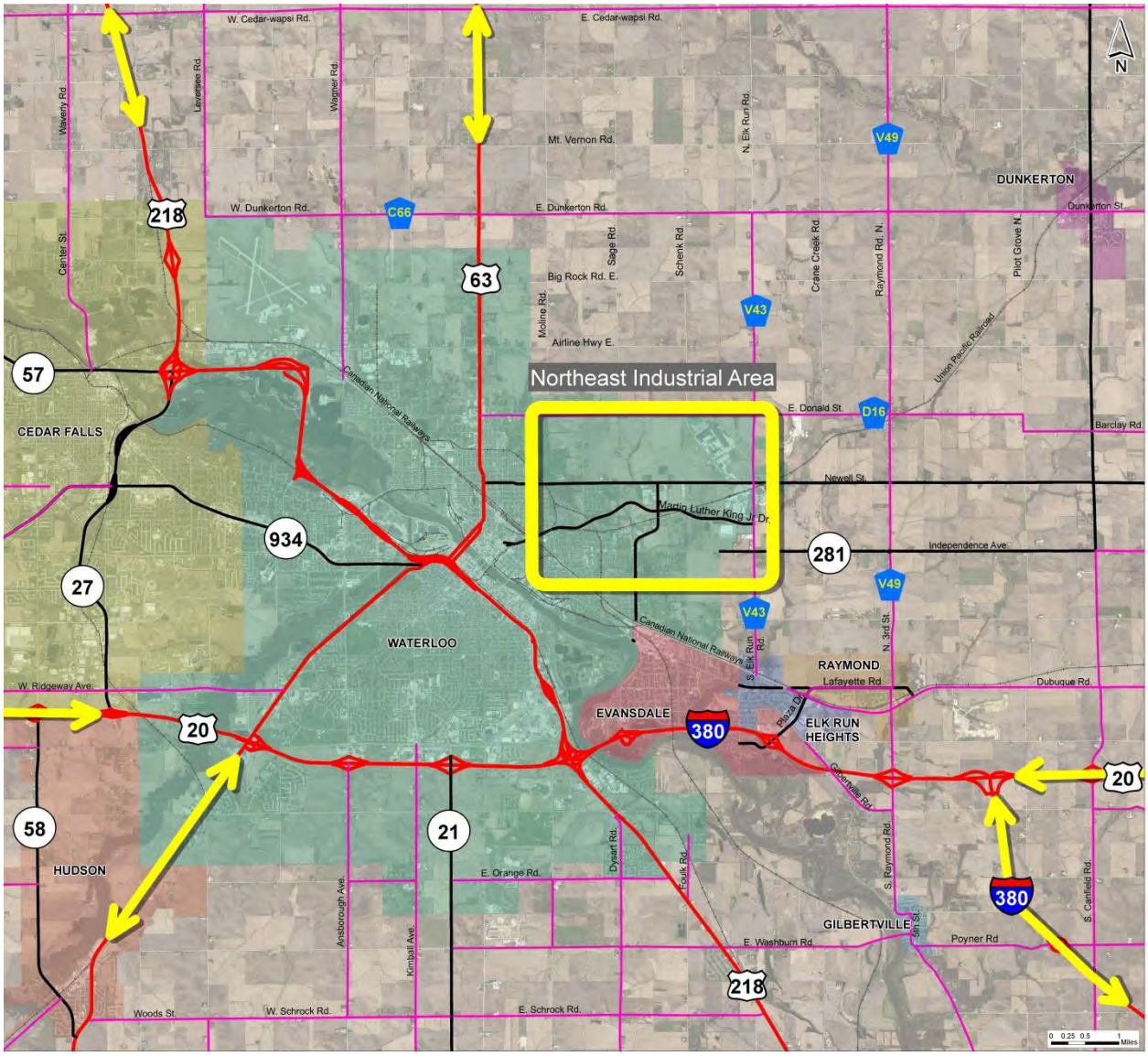


FIGURE 1: *The industrial area of Northeast Waterloo is looking for improved access to primary roadways in the metropolitan area.*

The goal of the study was to identify routes, either existing or on new alignment, that would improve access and freight accommodation to the Northeast Industrial Area. Also considered in the study was the identification of existing roadway corridors for increased capacity and intersections for possible

improvements for safety and capacity. The project was a collaboration between the Iowa Northland Regional Council of Governments, City of Evansdale, City of Elk Run Heights, City of Raymond, City of Waterloo, Black Hawk County and the Iowa DOT.

Due to forecasted growth in the Northeast Industrial Area, growing problems with freight traffic, deteriorating roads and recent traffic congestion, the communities felt the need to identify cost-effective solutions.

B. Supporting Economic Development

Industries in the Northeast Industrial Area, such as John Deere Tractor Cab Assembly Operations, Ferguson Distribution, Kinder Morgan, Warren Transport, Gray Transportation, Ryder Integrated Logistics and Tyson Fresh Meats, have been important employers and contributors to our local economy. More than 6,200 people are employed in the Northeast Industrial Area.

Companies in the Northeast Industrial Area create high volumes of freight transport. Roadways to access this area have experienced high volumes of freight traffic and, likewise, caused traffic flow and maintenance issues for existing roadway facilities. With responsible decisions to enable more efficient freight movement, there is potential for business and employment growth in this important industrial area.

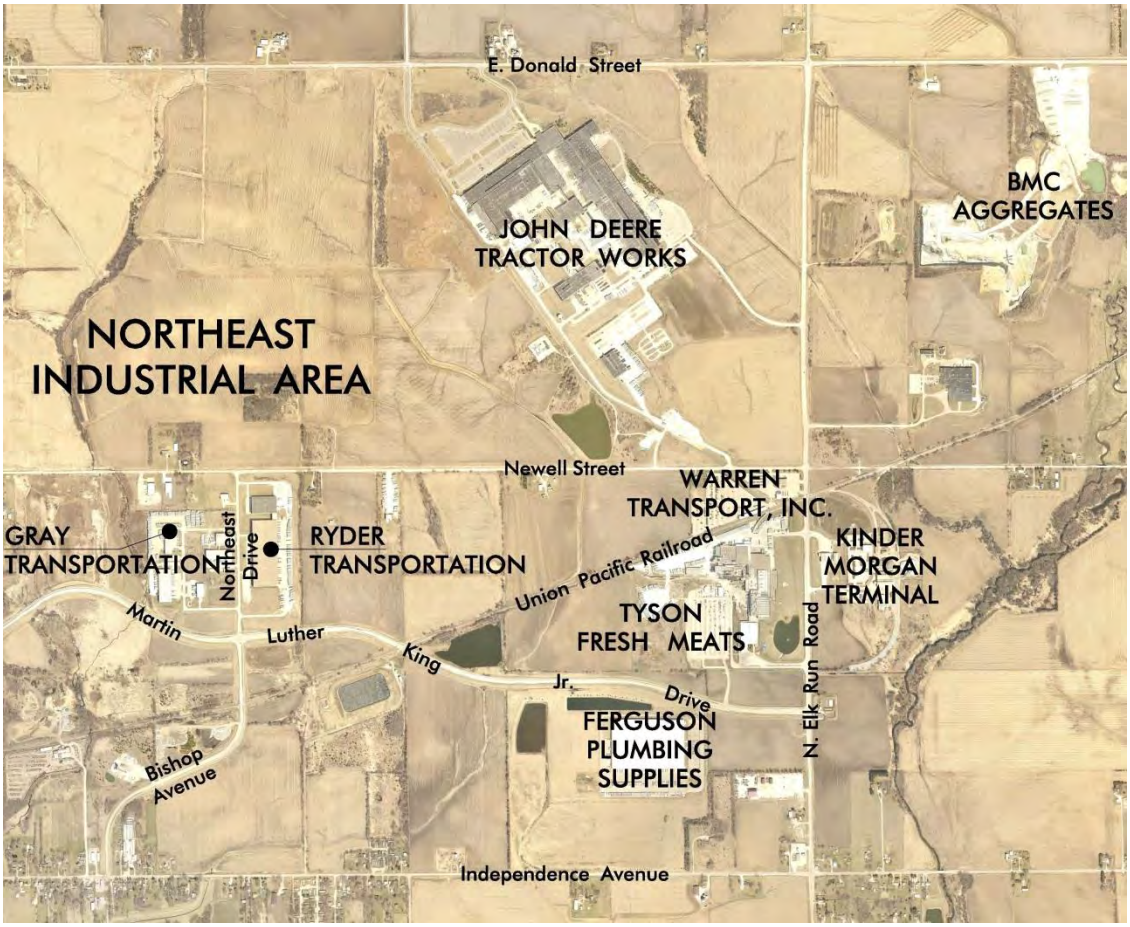


FIGURE 2: *Industries and freight companies in the Northeast Industrial Area.*

C. Exploring Solutions

Current routes do not provide sufficient access to the Northeast Industrial Area, which may have prevented freight-dependent businesses from meeting their full potential for efficiency. Communities in Black Hawk County have witnessed freight traffic on local roads that were not designed to accommodate semi-truck traffic.

Public and stakeholder involvement helped drive this study to expose these and other key issues, and to determine priorities. The study included utilizing planners and leaders from the surrounding communities, as well as representatives from Iowa DOT and Black Hawk County. This group of planners and leaders were an integral part of the study and were involved with every step in the planning process.

D. Assessing the Facts

The Northeast "Bypass" was listed as an illustrative project for the Metropolitan Planning Organization's (MPO) 2040 Long Range Transportation Plan (LRTP). Various scenarios were modeled to examine the impacts on vehicle miles and hours traveled. After the modeling was completed, the project was classified as "illustrative," meaning a formal study would be required to determine best solutions and funding required for the preferred solution. A "bypass" was included as an option, but with the goal of providing improved access to the industrial area instead of a "bypass" around the metropolitan area.

The Northeast Industrial Access Planning Study was a formal study to determine the best way to move traffic, especially trucks heading to and from the Northeast Industrial Area. The study was more than a "bypass" study. Solutions ranged from no construction, to improving the existing transportation infrastructure, to establishing a new roadway corridor.

II. Access Study Needs Evaluation

This section of the report includes the preliminary evaluation of the existing traffic operations of the study area. The traffic operations in the study area include how freight is transported, what impacts rail crossings have on transportation and industry, future development in the study area, and an analysis of the existing and future traffic. Analyzing these aspects of the existing study area has allowed the development of alternatives that provide improvements to the issues identified by this evaluation

A. Freight Industry Analysis

There were several aspects of the freight industry analysis that were completed as part of the study. A review was done on two recently completed freight studies completed by the Iowa Department of Transportation. Also as part of the freight data collection, the completion of shipper/receiver and freight carrier surveys was completed.

Development of Iowa Statewide Freight Transportation Network Optimization Strategy

This study, prepared by Quetica, LLC, in 2016, analyzed Iowa's multimodal transportation network, commodity flows, and freight network costs from a quantitative and qualitative perspective. This study looked at all modes of freight, including truck, rail, barge and air. There are four key findings in the Quetica analysis that relate to this Study, listed below:

- Iowa's primary highway system capacity is well managed, but capacity constraints affecting freight transportation are projected in the future.
- A substantial volume of truck shipments are small shipments that could be consolidated to reduce transportation costs.
- Railroad capacity constraints are projected in the future, but there still remain significant opportunities to leverage railroad transportation in Iowa to reduce freight costs.
- Businesses in many Iowa communities may pay high drayage costs as a result of limited access to rail intermodal services. Drayage is the term used for ground transport of goods a short distance, such as from a warehouse or barge to a railroad.

Some alternatives identified in the study to mitigate capacity issues include highway capacity expansion, developing alternate highway routes, and/or diverting some truck freight to rail. Black Hawk County ranked 10th in the Top 10 export counties by total tonnage at 497,000. Businesses in Black Hawk County could benefit from reducing transportation costs for these exports. The study made several feasible alternatives on how to reduce transportation costs. These include the development of truck cross-docking, rail intermodal facilities, transload facilities, and using rail in areas with high-volume truck traffic as there are portions of Iowa's highway system projected to be at or above capacity for freight in the future. A brief description of these facilities is included below.

A ***transload facility*** transfers freight from truck-to-rail and rail-to-truck. There are several examples of a transload facility in the Waterloo area, such as the Bryant Yard transload facility operated by the Iowa Northern Railroad and the Black Hawk Terminal transload facility operated by Kinder Morgan, which is in the study area. Recently, a FAST Act grant was received to develop a transload facility within the city of Cedar Rapids. It would be located near the US 30 and Edgewood Road interchange and, once completed, there are businesses that likely would ship from Waterloo to this new facility.

A ***cross docking*** facility is a specific type of transload facility, and truck cross-docking is a logistics method that can enable greater truck freight consolidation with little or no storage needed. Freight materials from a supplier or manufacturing plant are distributed straight onto customer or retail chain outbound trucks, trailers or rail cars with minimal handling and storage time. So an outbound truck can be loaded with products from several different suppliers to improve efficiency for customers.

Rail ***intermodal*** facilities enable freight to be moved by capitalizing on the best mode of transportation, whether truck or rail. An intermodal facility is able to store freight that is in intermodal containers (and also referred to as containerized freight) that arrives by one mode and transferred to another mode for the remainder of its journey.

Iowa in Motion – State Freight Plan

In 2016, Iowa DOT completed the State Freight Plan - Iowa in Motion. The purpose of that report was to align freight transportation in Iowa with the "Iowa in Motion - Planning Ahead 2040" state

transportation plan; to meet the requirements of MAP-21 and the FAST Act; and to support national freight goals. One of the pieces of the study that applied to the Northeast Industrial Access Planning Study was the review of truck freight movement in the state of Iowa. While the report did not analyze any of the local roads, it did evaluate the primary road system. The report discussed areas in the state with the highest freight congestion, specifically pointing out several freight bottlenecks on I-380 in Waterloo. The highest prioritized bottleneck area was on I-380/US 218 from San Marnan Drive to West Ninth Street, the 14th highest priority in the state of Iowa.

Freight Industry Interviews

Through summer 2017, interviews were conducted with businesses and industries in the Northeast Industrial Access Planning Study area. A standard list of questions was developed and approved by the committee for consistency in data collection. The survey questions are shown in Appendix A. The interviews sought to understand each businesses' logistics patterns and gather information on freight mobility issues and possible improvements.

A total of 27 businesses were contacted within the study area, with nine individual interviews being conducted in July and August, 2017. The breakdown of the interviews by business type were: truck services (2); trucking/distribution (4); and manufacturers (3). The following table summarizes these interviews.

TABLE 1: Summary of Freight Interviews

Freight-Related Category	Primary Logistics Pattern	Concerns	Suggested Improvements
Truck Services	Up to 80% of trucks come from I-380/US 20.	Need easy access in and out of facilities due to new drivers; stops/starts on Plaza Drive; pavement condition due to trucks.	Simplify Evansdale/ Plaza Drive with lane configuration and signal timing.
Trucking/Distribution	Both local distribution (using MLK Jr. Drive, N. Elk Run Road and other local roadways) and outside freight (primarily from I-380/US 20).	Congestion on N. Elk Run Road; the rail crossing at Dubuque Road; Plaza Drive/Dubuque Road intersection; narrow roadways (2-lane); signals; embargoed routes.	A dedicated truck route from I-380 to N. Elk Run Road; new/improved roadways; rail separation or crossing improvement; better winter maintenance.
Manufacturers	Approximately 80 rail cars in/out per week; trucks both locally (using MLK Jr. Drive, N. Elk Run Road and other local roadways) and outside freight using all major roadways north (US 63), south (I-380) east and west (US 20). One manufacturer receives 2/3 of products from the north, but ships finished product in all directions.	Bottlenecks near Tyson, railroad on Dubuque Road and truck stops on Evansdale Drive; embargoed routes; narrow roadways (2-lane) not built for trucks.	A dedicated truck route; new/expanded roadways; better winter maintenance; spot improvements; bypass with access to manufacturing facilities.

All those interviewed expressed interest in the project and that the area was being looked at for possible improvements. As shown above, many of the same issues were mentioned, including embargoed routes, 2-lane roadways not built to handle freight traffic, and the need for improved roadways. Not included in the table above, and something that is beyond the scope of this study, is the need for more drivers in the freight industry and the abundance of new, inexperienced drivers which create some safety issues with their lack of experience. This issue was brought up again and again.

Freight Funding Possibilities

The federal transportation bill signed into law in December of 2015 is titled "Fixing America's Surface Transportation Act" (FAST Act). The FAST Act establishes and funds new programs to support critical transportation projects to ease congestion and facilitate the movement of freight on the Interstate System and other major roads. With this emphasis on freight, there are several funding possibilities for freight projects identified in the FAST Act bill.

Much of the funds set aside below are for projects in excess of $100 million and on the National Highway Freight Network, which any proposed project coming from this study would not qualify. Each year, however, a minimum amount of funds must be used for rural projects (25%) and projects under the $100 million cost threshold (10%). Some of the programs and grants are described below.

National Highway Freight Program: The FAST Act includes an estimated average of $1.2 billion per year for a new National Highway Freight Program, which is focused on improving the efficient movement of freight on the National Highway Freight Network (NHFN). Funds are distributed to States by formula for eligible activities, such as construction, operational improvements, freight planning and performance measurement. Although the program is highway-focused, each State may use up to 10% of its NHFP funds for each fiscal year for public or private freight rail, water facilities (including ports) and intermodal facilities.

National Highway Freight Network: The FAST Act requires FHWA to establish a National Highway Freight Network to include the Primary Highway Freight System (PHFS), critical rural and urban freight corridors (as designated by the States and, in some cases, by MPOs), and the portions of the Interstate System not included in the PHFS. After the initial designation, FHWA must re-designate the PHFS every five years, with up to 3% growth each time.

FASTLANE Grants (Nationally Significant Freight and Highway Projects): In addition to the new formula freight program, the FAST Act also establishes a discretionary competitive grant program of $4.5 billion over five years to provide financial assistance to nationally and regionally significant highway, rail, port, and intermodal freight and highway projects. USDOT refers to this program as "FASTLANE" grants (Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies).

Surface Transportation Block Grant (STBG) Program: This program provides flexible funding for projects to preserve and improve the condition and performance of transportation facilities. The Iowa DOT targets STBG funding to the Black Hawk County MPO on an annual basis for programming. The MPO receives approximately $3.3 million annually.

Iowa Clean Air Attainment Program (ICAAP): ICAAP funds projects that are intended to maximize emission reductions through traffic flow improvements, reduced vehicle miles of travel, and reduced single occupancy vehicle trips. The program's annual funding level is approximately $4 million.

BUILD Grant: The Better Utilizing Investments to Leverage Development (BUILD) Transportation Discretionary Grant program provides federal funds to invest in road, rail, transit and port projects to achieve national objectives. This highly-competitive program allows project sponsors to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional funding programs. The program's annual funding level is $1.5 billion.

B. CN and UP Railroads

The CN Railroad and UP Railroad are the two railroads within the study area. These two railroads cross North Elk Run Road, South Elk Run Road, Lafayette Road and Martin Luther King Jr. Drive. The following section describes the crossings and some of the issues at these locations.

The CN Railroad crosses South Elk Run Road just north of Dubuque Road in Elk Run Heights and Lafayette Road in Raymond. The UP Railroad crosses North Elk Run Road just south of Newell Street in Waterloo and Martin Luther King Jr. Drive approximately 2,200 feet east of Northeast Drive in Waterloo.

CN Railroad

The CN Railroad crosses both South Elk Run Road just north of Dubuque Road in Elk Run Heights and Lafayette Road just north of Dubuque Road at the city limits line between Elk Run Heights and Raymond. The CN Railroad traffic has been observed to be more frequent and with longer trains in recent years, increasing delays at both crossings.

The CN Railroad crossing of South Elk Run Road is causing increased delays on both South Elk Run Road, Dubuque Road and Gilbertville Road. South Elk Run Road is an important road that accesses the industrial area to the north. Semi-trailer trucks making the right turn from Dubuque Road onto South Elk Run Road have hit the railroad gate in the southeast corner of the crossing. The crossing includes gate arms and flashing lights. The following information is from the US DOT Crossing Inventory Forms:

307107E 2010 Crossing Data
Total Day Thru Trains (6 AM to 6 PM): 6
Total Night Thru Trains (6 PM to 6 AM): 4
Maximum Timetable Speed: 50 mph
Typical Speed Range Over Crossing: 5 to 50 mph

FIGURE 3: *Google image of the CN Railroad Crossing of South Elk Run Road.*

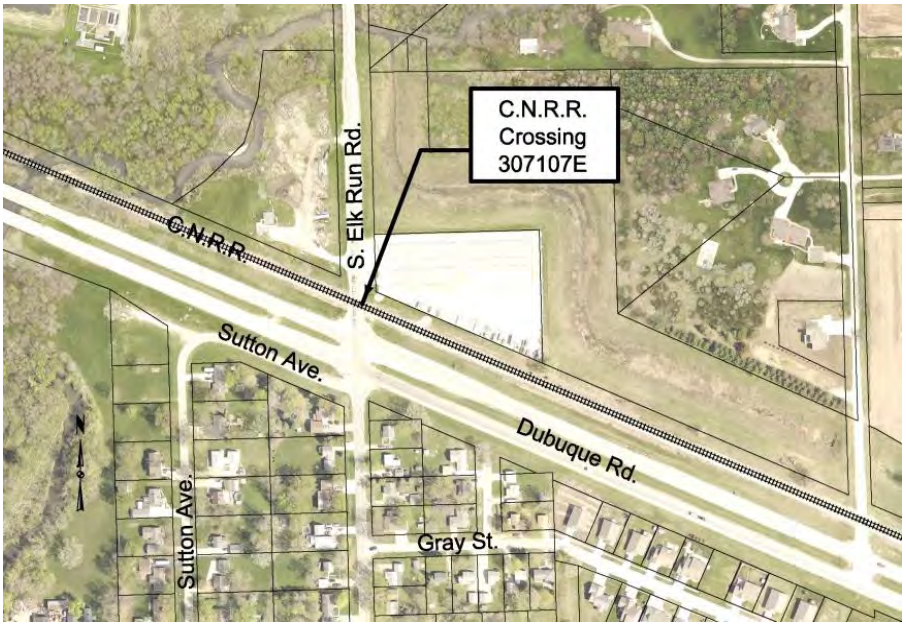


FIGURE 4: *Location of the CN Railroad crossing of South Elk Run Road.*

The CN Railroad also crosses Lafayette Road just north of Dubuque Road. This crossing is not used by semi-trucks accessing the industrial area. The crossing includes gate arms and cantilevered flashing lights. The following information is from the US DOT Crossing Inventory Forms:

911765R 2010 Crossing Data
Total Day Thru Trains (6 AM to 6 PM): 4
Total Night Thru Trains (6 PM to 6 AM): 4
Maximum Timetable Speed: 50 mph
Typical Speed Range Over Crossing: 5 to 50 mph

FIGURE 5: *Google image of the CN Railroad Crossing of Lafayette Road.*

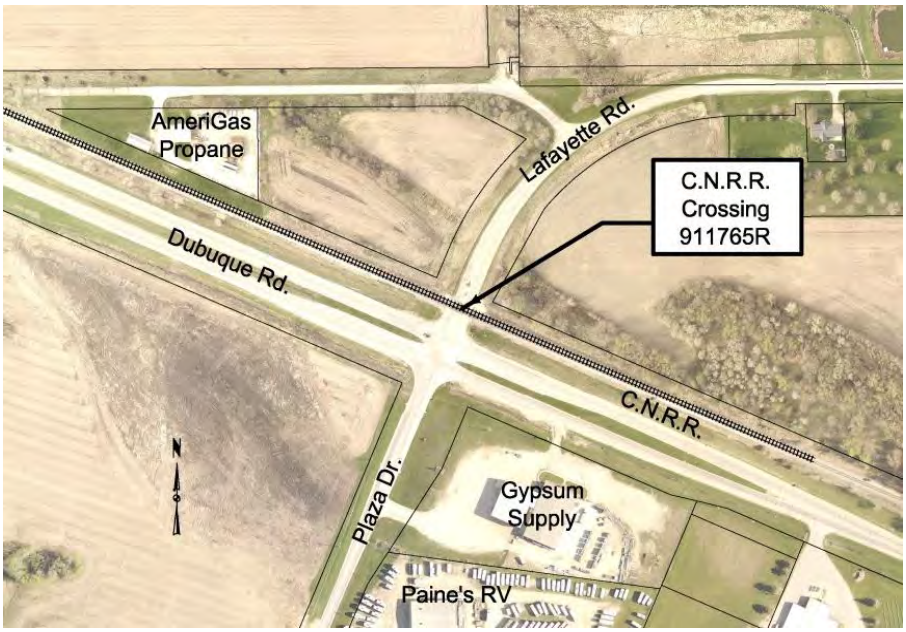


FIGURE 6: *Location of the CN Railroad crossing of Lafayette Road.*

<u>UP Railroad</u>

The UP Railroad crosses North Elk Run Road just south of Newell Street in Waterloo and Martin Luther King Jr. Drive approximately 2,200 feet east of Northeast Drive in Waterloo.

The UP Railroad crossing of North Elk Run Road is currently a 2-lane roadway crossing, with 4 lanes south and 4 lanes north. Although the frequency of train traffic is not as high as the CN Railroad, there has been backing and switching across North Elk Run Road that has created some delays. The crossing

includes mast-mounted flashing lights without gates. The following information is from the US DOT Crossing Inventory Forms:

200775H 2018 Crossing Data
Total Day Thru Trains (6 AM to 6 PM): 0
Total Night Thru Trains (6 PM to 6 AM): 0
Maximum Timetable Speed: 10 mph
Typical Speed Range Over Crossing: 5 to 10 mph

FIGURE 7: *Google image of the UP Railroad Crossing of North Elk Run Road.*

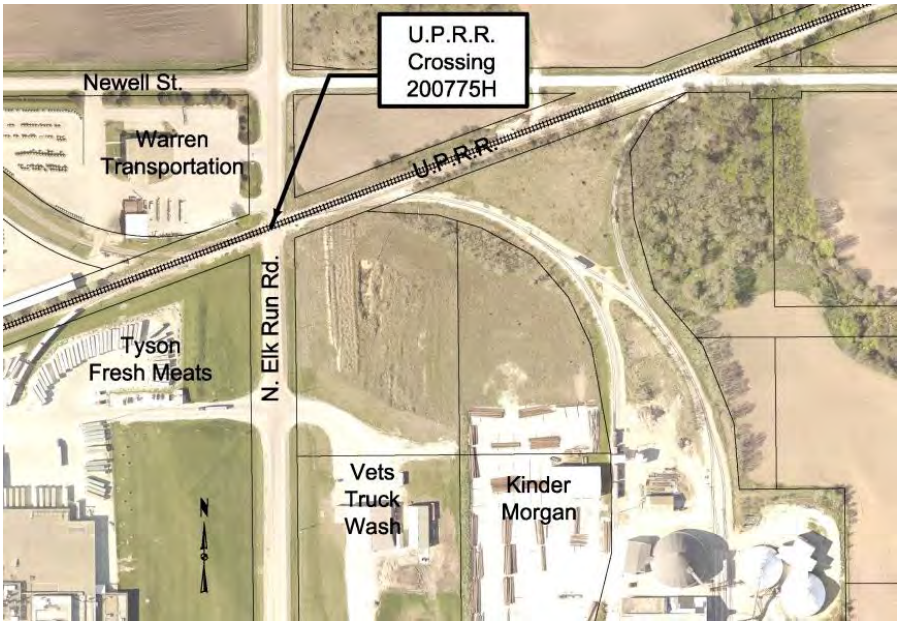


FIGURE 8: *Location of the UP Railroad crossing of North Elk Run Road.*

The UP Railroad also crosses Martin Luther King Jr. Drive and is currently a 2-lane crossing with cantilevered flashing lights and no gates. The following information is from the US DOT Crossing Inventory Forms:

411920M 2018 Crossing Data
Total Day Thru Trains (6 AM to 6 PM): 2
Total Night Thru Trains (6 PM to 6 AM): 2
Maximum Timetable Speed: 10 mph
Typical Speed Range Over Crossing: 5 to 10 mph

FIGURE 9: *Google image of the UP Railroad Crossing of Martin Luther King Jr. Drive.*

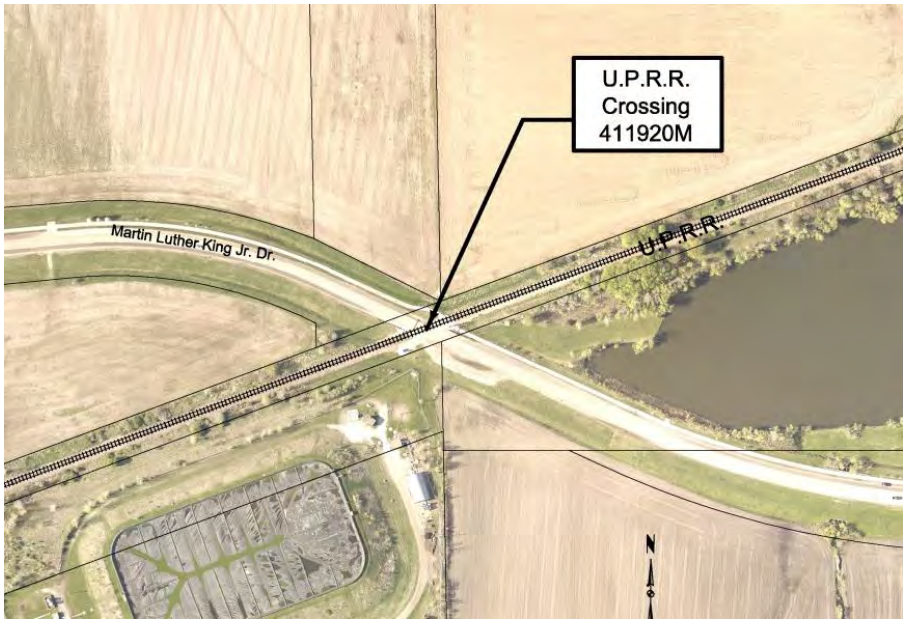


FIGURE 10: *Location of the UP Railroad Crossing of Martin Luther King Jr. Drive.*

C. Future Development

Before beginning the development of alternatives, identification of high development potential areas was completed based on interviews and discussions with the cities in the study area. While much of the areas in the city limits are identified on future land use maps as commercial or residential, some areas have been recently platted or have had some planning completed already. These areas were identified as being high development potential.

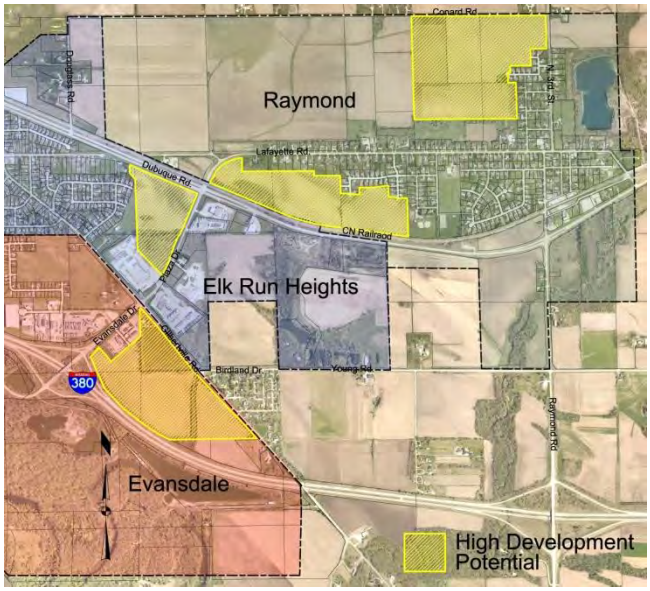


FIGURE 11: *High development potential areas in Evansdale, Elk Run Heights and Raymond.*

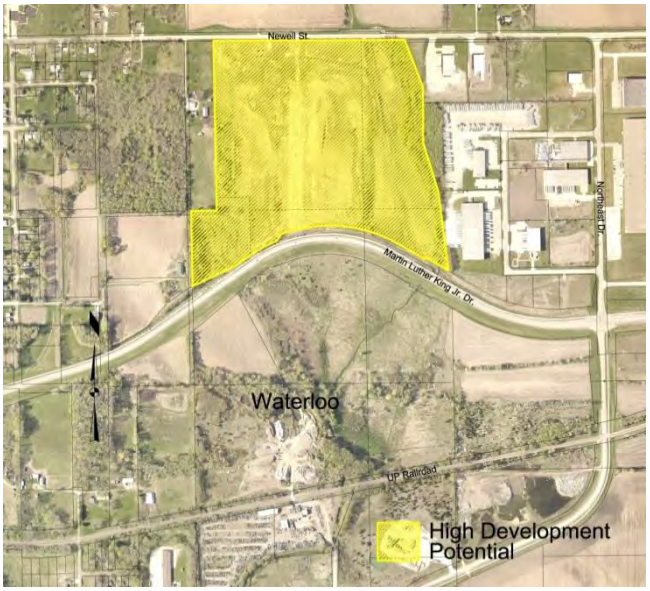


FIGURE 12: *High development potential area in Waterloo.*

By identifying high development potential areas, alternatives that adversely impact these areas will be considered in the evaluation phase.

D. Existing Traffic Conditions

This section of the study includes the findings of an existing condition traffic operations and safety study of the Northeast Industrial Access Planning Study Area, including 18 intersections between US 63 in the west to County Road V49 (Raymond Road) in the east, and between County Road C66 (Dunkerton Road) in the north to Interstate 380 in the south. The existing traffic conditions documentation is intended to influence the development of future design alternatives. The existing traffic conditions documentation includes the following components:

- Presentation of existing traffic volume data.
- Evaluation of intersection crash data between 2012 and 2016.
- Analysis of traffic operations with 2017 existing conditions.

Traffic Volumes

The most current (2014) hourly traffic movements were provided by the Iowa DOT at the following intersections:

- EB I-380 & Evansdale Drive
- WB I-380 & Evansdale Drive
- US 63 & County Road C66 (Dunkerton Road)
- Elk Run Road & IA 281 (Independence Avenue)
- US 63 & Newell Street
- US 63 & Donald Street
- Raymond Road & IA 281 (Independence Avenue)

At the request of the project team, hourly traffic movements were collected by All Traffic Data, Inc., at the following intersections:

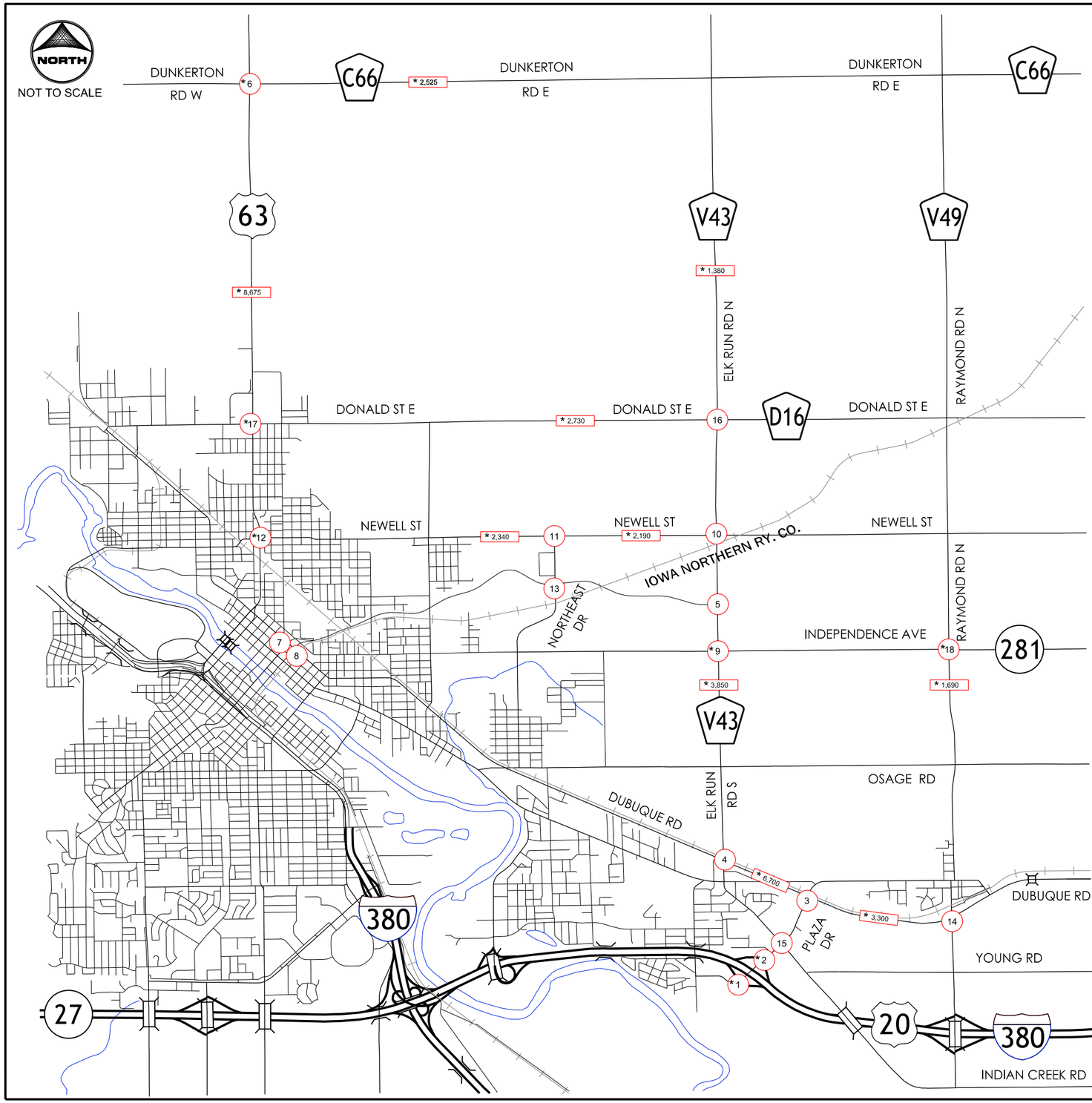
- Plaza Drive & Dubuque Road
- Elk Run Road & Dubuque Road
- Elk Run Road & Martin Luther King Jr. Drive
- East 5th Street & Franklin Street
- East 6th Street & Franklin Street
- Elk Run Road & Newell Street
- Northeast Drive & Newell Street
- Northeast Drive & Martin Luther King Jr. Drive
- 3rd Street & Dubuque Road
- Plaza Drive & Gilbertville Road
- Elk Run Road & Donald Street

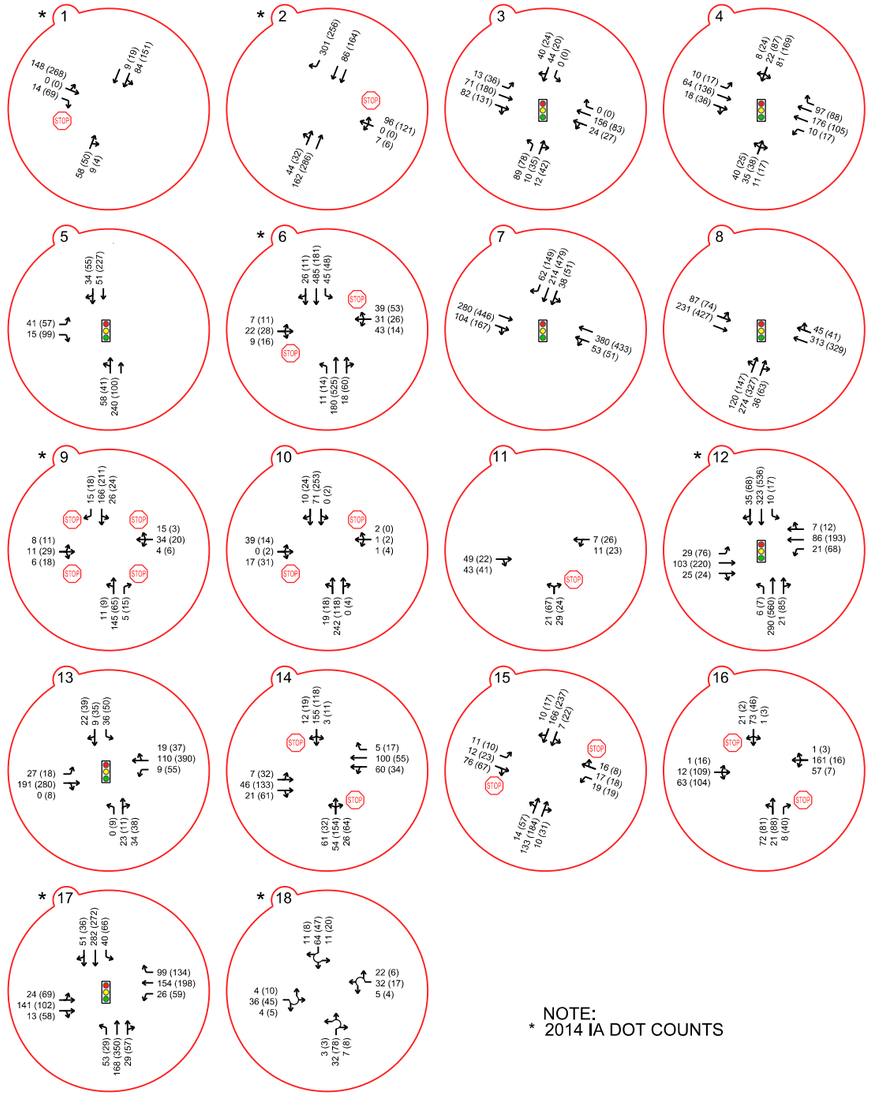
Data for each intersection was collected via 15-minute intervals on Thursday, May 18, 2017. Traffic counts conducted at the intersections included the timeframes of 6:00 to 9:00 AM, 11:00 AM to 1:00 PM, and 2:00 to 6:00 PM. The morning and evening area peak hour volumes, representing the existing conditions, are identified and presented in Figure 13.

Traffic and Safety Operations

Intersection level of service (LOS) is primarily a function of peak hour turning movement volumes, intersection lane configuration and traffic control. For intersection analysis, the Highway Capacity Manual (HCM) defines LOS in terms of the average control delay at the intersection in seconds per vehicle. The results of an HCM analysis are typically presented in the form of a letter grade (A-F) that provides a qualitative estimate of the operational efficiency or effectiveness of the corridor. Much like an academic report card, LOS A represents the best range of operating conditions (*i.e.*, motorists experiencing little delay or congestion) and LOS F represents the worst (*i.e.*, extreme delay or severe congestion).

Table 2 defines the HCM control delay range corresponding to each LOS. For signalized intersection locations, LOS E is considered to be at capacity and, typically, LOS D is considered acceptable operations in urban environments. For un-signalized intersections (Stop Control or Roundabouts), the





NOTE:
* 2014 IA DOT COUNTS

LEGEND

XX , X X X	AVERAGE DAILY TRAFFIC VOLUME (ADT)
XXX (XXX)	AM (PM) PEAK HOUR VOLUME
X	NUMBER OF LANES AND FLOW DIRECTION
	TRAFFIC SIGNAL CONTROL
STOP	STOP CONTROL

EXISTING AM & PM PEAK HOUR TRAFFIC VOLUMES

FIGURE 13

$$DATE$$
$$DGN$$

worst-case stop-controlled LOS is reported. For instance, if an intersection experienced LOS D on one approach and LOS B on another, the LOS D would be reported for the intersection.

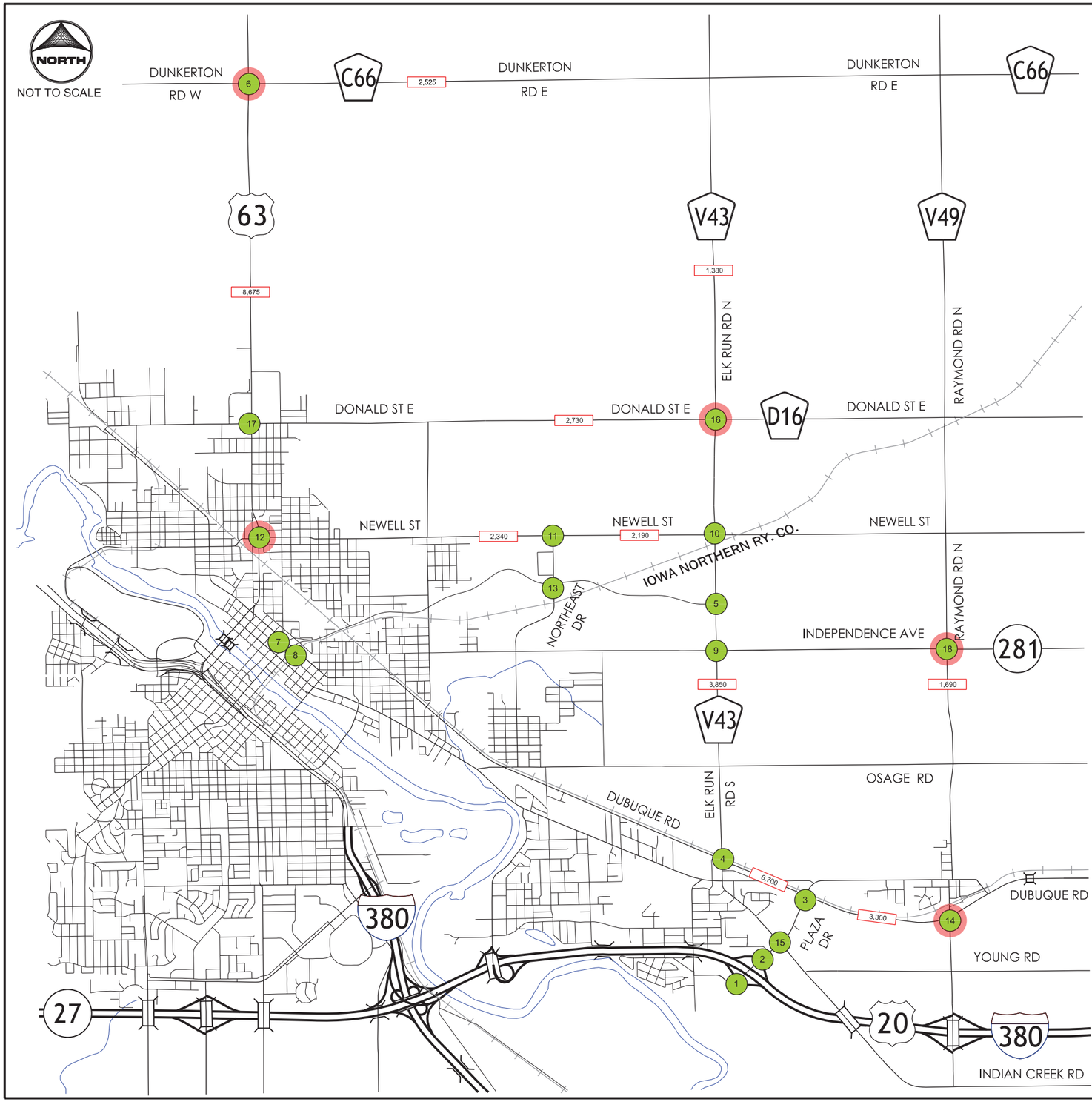
TABLE 2: Level of Service vs. Control Delay

Level of Service	**Signalized** Delay (sec/veh)	**Stop or Roundabout** Delay (sec/veh
A	0 – 10	< 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Crash data within the study area was compiled using the WebSAVE tool accessible through the Iowa DOT website. The crash data review includes five years of crash data (2012-2016).

The Northeast Industrial Access Planning Study Area includes 18 intersections between US 63 in the west to County Road V49 (Raymond Road) in the east, and between County Road C66 (Dunkerton Road) in the north to Interstate 380 in the south. An exhibit depicting the morning and evening area peak hour traffic operations and safety summary is presented in Figure 14.

As shown in Figure 14, four (4) intersections with crash rates higher than comparable intersections statewide were in the study area. A two-page summary has been included for each of these intersections (see Figures 15 through 18). The first page of each intersection includes an image of the intersection, along with posted speed limit, traffic control and other pertinent information. The second page of each intersection contains a table summarizing the operational performance and crash details.



INTERSECTION LEVELS-OF-SERVICE

ID	CORRIDORS	CONTROL TYPE		PEAK HOUR	
		SIGNAL	STOP	AM	PM
	NE INDUSTRIAL AREA				
1	Evansdale Drive & I-380 EB Ramp Terminal		X	B	C
2	Evansdale Drive & I-380 WB Ramp Terminal		X	A	B
3	Plaza Drive & Dubuque Road	X		B	B
4	Elk Run Road & Dubuque Road	X		A	A
5	Elk Run Road & Martin Luther King Jr Drive	X		B	B
6	US 63 & County Road C66 (Dunkerton Road)		X	C	C
7	E 5th Street & Franklin Street	X		A	B
8	E 6th Street & Franklin Street	X		A	A
9	Elk Run Road & Iowa 281 (Independence Avenue)		X	A	B
10	Elk Run Road & Newell Street		X	B	B
11	Northeast Drive & Newell Street		X	A	A
12	US 63 & Newell Street	X		B	B
13	Northeast Drive & Martin Luther King Jr Drive	X		B	B
14	Raymond Road & Dubuque Road		X	B	C
15	Plaza Drive & Gilbertville Road		X	B	B
16	Elk Run Road & Donald Street		X	B	B
17	US 63 & Donald Street	X		B	B
18	Raymond Road & Iowa 281 (Independence Avenue)			A	A

LEGEND

XX,XXX AVERAGE DAILY TRAFFIC VOLUME (ADT)

AM / PM INTERSECTION LEVEL-OF-SERVICE

A B C D E F

INTERSECTION WITH CRASH RATE HIGHER THAN COMPARABLE AVERAGE

$$DATE$$
$$DGN$$

EXISTING TRAFFIC OPERATIONS & SAFETY SUMMARY FIGURE 14

US 63 & County Road C66 (Dunkerton Road)

- Four Legged Intersection
- US Highway 63 Posted Speed Limit: 55 mph
- County Road 66 (Dunkerton Road) Posted Speed Limit: 55 mph
- Stop Controlled (Dunkerton Road)
- Crash Rate: 1.05 Crashes/Million Entering Vehicles
    - Compared to 0.8 Crashes/MEV Statewide Average, Rural Primary Street with Secondary Street

FIGURE 15A. *US 63 and Dunkerton Road Plan View*

US 63 & County Road C66 (Dunkerton Road)

Traffic Operations Summary		Two-Way Stop Control				
Peak Hour	Measure of Effectiveness	EB	WB	SB	NB	Intersection
AM	*Control Delay (sec)*	19.4	16.3	0.7	0.5	19.4
	Level-of-Service	C	C	A	A	C
	95th Queue (feet)	67	98	13	4	-
PM	*Control Delay (sec)*	20.7	14.4	2.1	0.2	20.7
	Level-of-Service	C	B	A	A	C
	95th Queue (feet)	67	79	64	18	-

Crash History Summary							
CR = 1.05 Crashes/MEV	Fatal	Major	Minor	Possible/ Unknown	Uninjured	PDO	TOTAL
Crash Severity (Vehicle)		1	2			6	9
Injury Severity (Occupant)		1	3	2	12		18
Total Property Damage	*$135,594*			Average Property Damage			*$15,066*

Surface Conditions									
Dry	6	Ice		Slush		Water		Unknown	
Wet	1	Snow	1	Sand/Dirt/ Oil/Gravel		Other		Not Reported	1

Manner of Crash			
Broadside	5	Angle, Oncoming Left Turn	
Rear-end	1	Head-On	1
Sideswipe, Same Direction		Non-Collision	2

Major Cause Summary			
Animal	1	Improper Backing	1
Ran Stop Sign	3	Swerving/Evasive Action	1
FTYROW: From Stop Sign	1	Made Improper Turn	1
Driving Too Fast for Conditions	1	Other: Other Improper Action	

FIGURE 15B: *US 63 and Dunkerton Road Operational Performance*

Raymond Road (S 3rd Street) & Dubuque Road

- Four Legged Intersection
- Dubuque Road Posted Speed Limit: 40 mph
- Raymond Road Southbound Approach Posted Speed Limit: 25 mph
- S 3rd Street Northbound Posted Speed Limit: 45 mph
- Stop Controlled (Raymond Rd and 3rd Street)
- Crash Rate: 1.04 Crashes/Million Entering Vehicles
    - Compared to 0.8 Crashes/MEV Statewide Average, Municipal City Street with City Street

FIGURE 16A: *Raymond Road and Dubuque Road Plan View*

Raymond Road (S 3rd Street) & Dubuque Road

Traffic Operations Summary		Two-Way Stop Control				
Peak Hour	Measure of Effectiveness	EB	WB	SB	NB	Intersection
AM	*Control Delay (sec)*	0.7	2.8	13.8	14.8	14.8
	Level-of-Service	A	A	B	B	B
	95th Queue (feet)	10	14	62	71	-
PM	*Control Delay (sec)*	1.1	2.4	14.0	18.0	18.0
	Level-of-Service	A	A	B	C	C
	95th Queue (feet)	28	17	69	96	-

Crash History Summary							
CR = 1.04 Crashes/MEV	Fatal	Major	Minor	Possible/ Unknown	Uninjured	PDO	TOTAL
Crash Severity (Vehicle)			5	5		6	16
Injury Severity (Occupant)			5	9	23		37
Total Property Damage	*$186,200*			Average Property Damage			*$11,637.50*

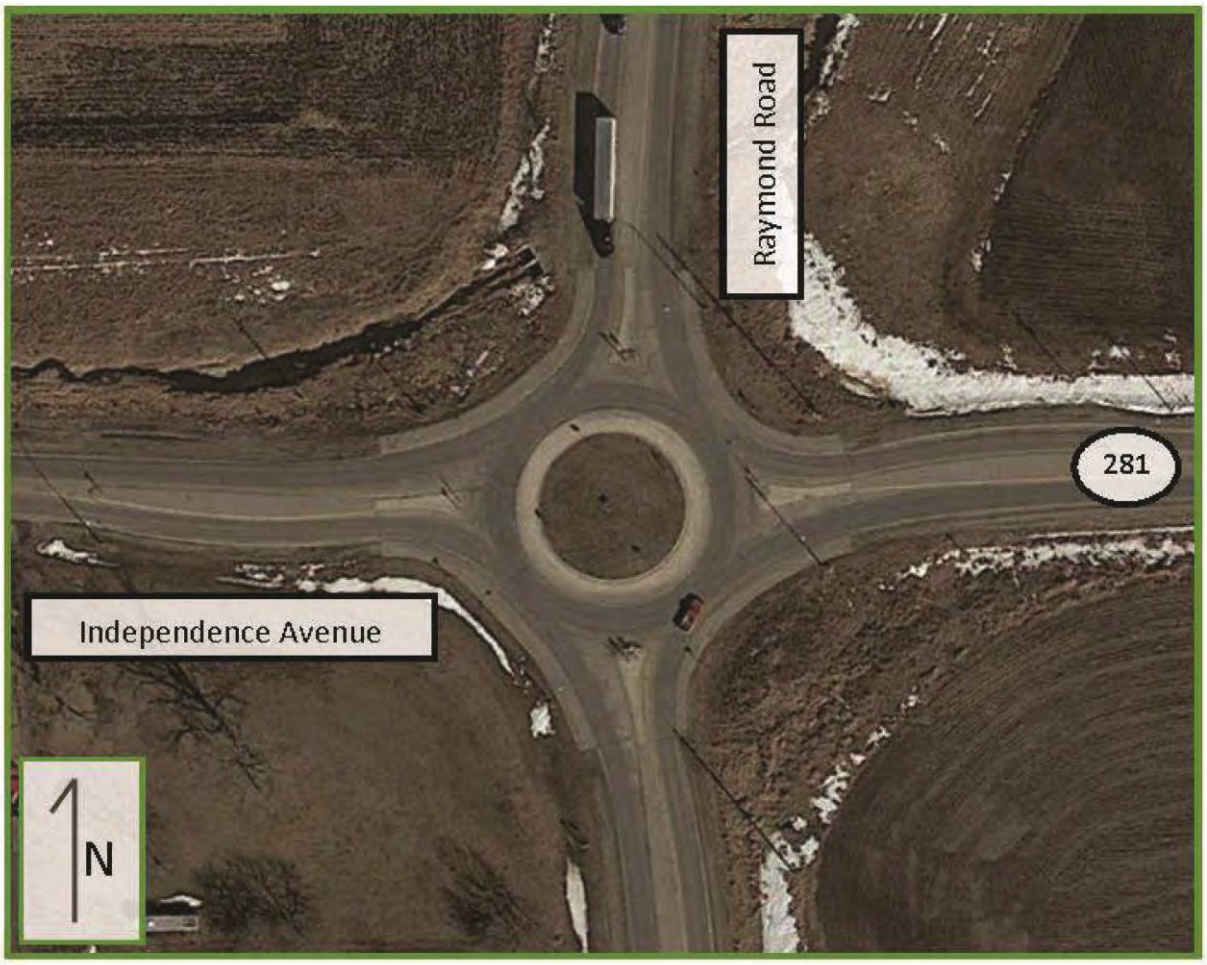
Surface Conditions									
Dry	13	Ice		Slush		Water		Unknown	
Wet	3	Snow		Sand/Dirt/ Oil/Gravel		Other		Not Reported	

Manner of Crash			
Broadside	13	Angle, Oncoming Left Turn	3
Rear-end		Head-On	
Sideswipe, Same Direction		Non-Collision	

Major Cause Summary			
Ran Stop Sign	1	FTYROW: Making Left Turn	3
FTYROW: From Stop Sign	10	FTYROW: Other	1
Improper Lane Change		Unknown	1

FIGURE 16B: *Raymond Road and Dubuque Road Operational Performance*

Raymond Road & IA 281 (Independence Avenue)



- Four Legged Roundabout Intersection
- Iowa Highway 281 (Independence Avenue) Posted Speed Limit: 25 mph
- Raymond Road Posted Speed Limit: 25 mph
- Roundabout Controlled
- Crash Rate: 0.85 Crashes/Million Entering Vehicles
    - Compared to 0.8 Crashes/MEV Statewide Average, Rural Primary Street with Secondary Street

FIGURE 17A: *Raymond Road and Iowa 281 Plan View*

Raymond Road & IA 281 (Independence Avenue)

Traffic Operations Summary		Roundabout Control				
Peak Hour	**Measure of Effectiveness**	**EB**	**WB**	**SB**	**NB**	**Intersection**
AM	*Control Delay (sec)*	4.2	4.0	4.3	4.0	4.2
	Level-of-Service	A	A	A	A	A
	95th Queue (feet)	13	17	14	6	-
PM	*Control Delay (sec)*	3.6	3.4	3.2	3.6	3.5
	Level-of-Service	A	A	A	A	A
	95th Queue (feet)	12	16	6	17	-

Crash History Summary							
CR = 0.85 Crashes/MEV	**Fatal**	**Major**	**Minor**	**Possible/ Unknown**	**Uninjured**	**PDO**	**TOTAL**
Crash Severity (Vehicle)			1			1	2
Injury Severity (Occupant)			3		2		5
Total Property Damage	*$8,000*			**Average Property Damage**			*$4,000*

Surface Conditions									
Dry	1	**Ice**		**Slush**		**Water**		**Unknown**	
Wet	1	**Snow**		**Sand/Dirt/ Oil/Gravel**		**Other**		**Not Reported**	

Manner of Crash			
Broadside		**Angle, Oncoming Left Turn**	
Rear-end	1	**Head-On**	
Sideswipe, Same Direction		**Non-Collision**	1

Major Cause Summary			
Driving Too Fast for Conditions	1	**Lost Control**	1

FIGURE 17B: *Raymond Road and Iowa 281 Operational Performance*

Elk Run Road & Donald Street

- Four Legged Intersection
- Elk Run Road Posted Speed Limit: 45 mph
- Donald Street Posted Speed Limit: 55 mph
- Stop Controlled (North Elk Run Road)
- Crash Rate: 0.81 Crashes/Million Entering Vehicles
    - Compared to 0.8 Crashes/MEV Statewide Average, Municipal City Street with City Street

FIGURE 18A: *Elk Run Road and Donald Street Plan View*

Elk Run Road & Donald Street

Traffic Operations Summary		Two-Way Stop Control				
Peak Hour	**Measure of Effectiveness**	**EB**	**WB**	**SB**	**NB**	**Intersection**
AM	*Control Delay (sec)*	0.1	2.0	12.8	14.3	14.3
	Level-of-Service	A	A	B	B	B
	95th Queue (feet)	3	16	60	66	-
PM	*Control Delay (sec)*	0.5	2.1	12.0	12.6	12.6
	Level-of-Service	A	A	B	B	B
	95th Queue (feet)	12	7	64	84	-

Crash History Summary							
CR = 0.81 Crashes/MEV	**Fatal**	**Major**	**Minor**	**Possible/ Unknown**	**Uninjured**	**PDO**	**TOTAL**
Crash Severity (Vehicle)		1	1	2		4	8
Injury Severity (Occupant)		1	2	2	12		17
Total Property Damage	*$121,600*			**Average Property Damage**			*$15,200*

Surface Conditions									
Dry	7	**Ice**		**Slush**		**Water**		**Unknown**	
Wet	1	**Snow**		**Sand/Dirt/ Oil/Gravel**		**Other**		**Not Reported**	

Manner of Crash			
Broadside	5	**Angle, Oncoming Left Turn**	2
Rear-end		**Head-On**	
Sideswipe, Same Direction		**Non-Collision**	1

Major Cause Summary			
Ran Traffic Signal	1	**FTYROW: From Stop Sign**	5
Ran Stop Sign	1	**FTYROW: Making Left Turn**	1

FIGURE 18B: *Elk Run Road and Donald Street Operational Performance*

E. Truck Traffic Analysis

To understand and quantify the location of the truck traffic in the study area, an analysis was conducted to extrapolate the truck traffic from the hourly traffic counts at the 18 measured intersections. At each intersection there was approximately 8 hours of count data available. This data identified the peak hourly volumes and provided volumes by vehicle type. Truck traffic is steady and does not experience the hourly fluctuations that passenger cars do, particularly at the beginning or end of a work day. When evaluating the percentage of trucks during the peak hour flow, truck traffic can be understated. For the purpose of developing estimated average daily truck traffic, the total truck traffic during an 8 hour time period was multiplied by 1.6. This process allowed an estimated amount of daily truck traffic to be generated on the roads within the study area, and the methodology was checked at locations where 24-hour truck counts were available. Truck traffic is defined as combo, semi-trailer trucks and single unit trucks.

As shown in the truck traffic figure, the highest amount of truck traffic is shown on Evansdale Drive and Plaza Drive near the I-380 interchange. The truck traffic is shown at over 1,400 trucks per day. Another corridor with very high truck traffic is Elk Run Road, from Dubuque Road to Martin Luther King Jr. Drive. The estimated existing daily truck traffic is shown in Figure 19.

F. Embargoed Roadways within the Study Area

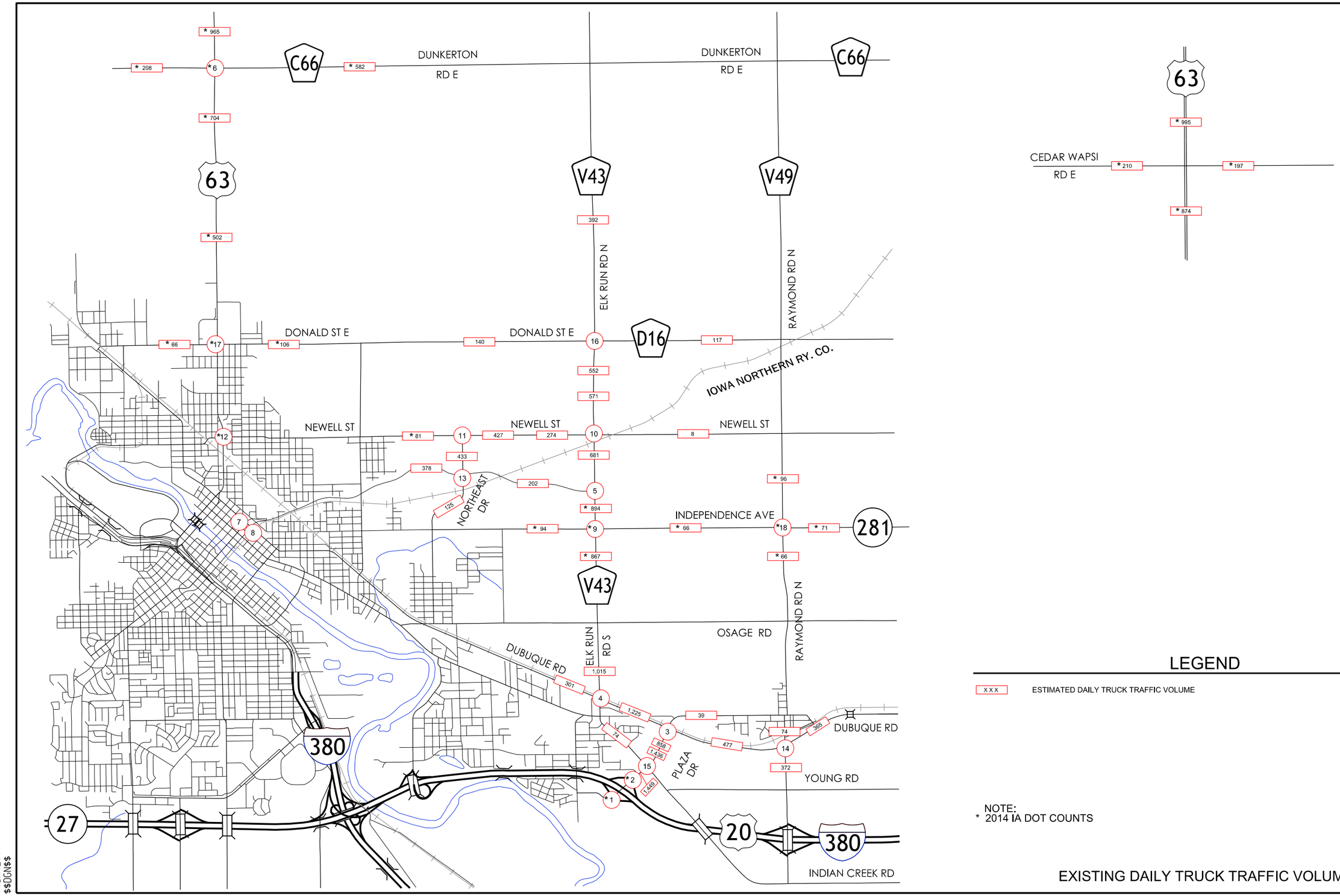
Within the study area, communities have enacted truck embargoes on roadways that are near the Northeast Industrial Area. These roadways are usually in residential areas or on local roads unsuited for truck traffic. Figure 20 shows the roadways in the study area with truck embargo.

G. "No Build" Analysis on Year 2045 Traffic Projections

The Average Daily Traffic (ADT) and peak hour traffic volume projections have been prepared for the forecast year 2045 No Build condition, as defined for analysis in the Northeast Industrial Area Planning Study. Existing turning movement volumes and output from the Iowa Northland Regional Council of Governments' (INRCOG) travel demand model were used to estimate the peak hour traffic volumes.

Travel Demand Model Parameters

The Iowa Northland Regional Council of Governments (INRCOG) maintains a computerized travel demand model (TDM) for estimating future year traffic. In the model, the Black Hawk County metropolitan area is divided into smaller analysis zones (TAZs), each of which includes information such as existing and future population, employment and other socioeconomic data. The future land use for each TAZ (which will determine the future population and employment) is based on the plans of the municipalities in the area. The primary model outputs used for this study were the average daily traffic (ADT) projections (2014 and 2045) for each link in the network.



LEGEND

XXX ESTIMATED DAILY TRUCK TRAFFIC VOLUME

NOTE:
* 2014 IA DOT COUNTS

NORTH

NOT TO SCALE

EXISTING DAILY TRUCK TRAFFIC VOLUMES

FIGURE 19

$$DATE$$
$$DGN$$

Northeast Industrial Access PLANNING STUDY

Northeast Industrial Area

Sage Rd.

Idaho St.

Donald St.

N. Elk Run Rd.

Newell St.

U.P.R.R.

Martin Luther King Jr. Dr.

Independence Ave.

Franklin St.

Dubuque Rd.

Bishop Ave.

Osage Rd.

C.N.R.R.

S. Elk Run Rd.

S. Raymond Rd.

Layfayette St.

Plaza Dr.

Evansdale Dr.

Gilberville Rd.

63

D16

281

V43

V49

218

380

20

27

Truck Embargoes

Weight Limit Embargo

$$DATE$$
$$DGN$$

Truck Embargoes In Study Area

Figure 20

Forecast Year Traffic Volumes

The existing peak hour traffic volumes provided the framework for the forecasting of the design year peak hour volumes. The INRCOG travel demand model base year and forecast year ADT values were also used in the estimation of forecast year peak hour turning movement volumes and truck percentages.

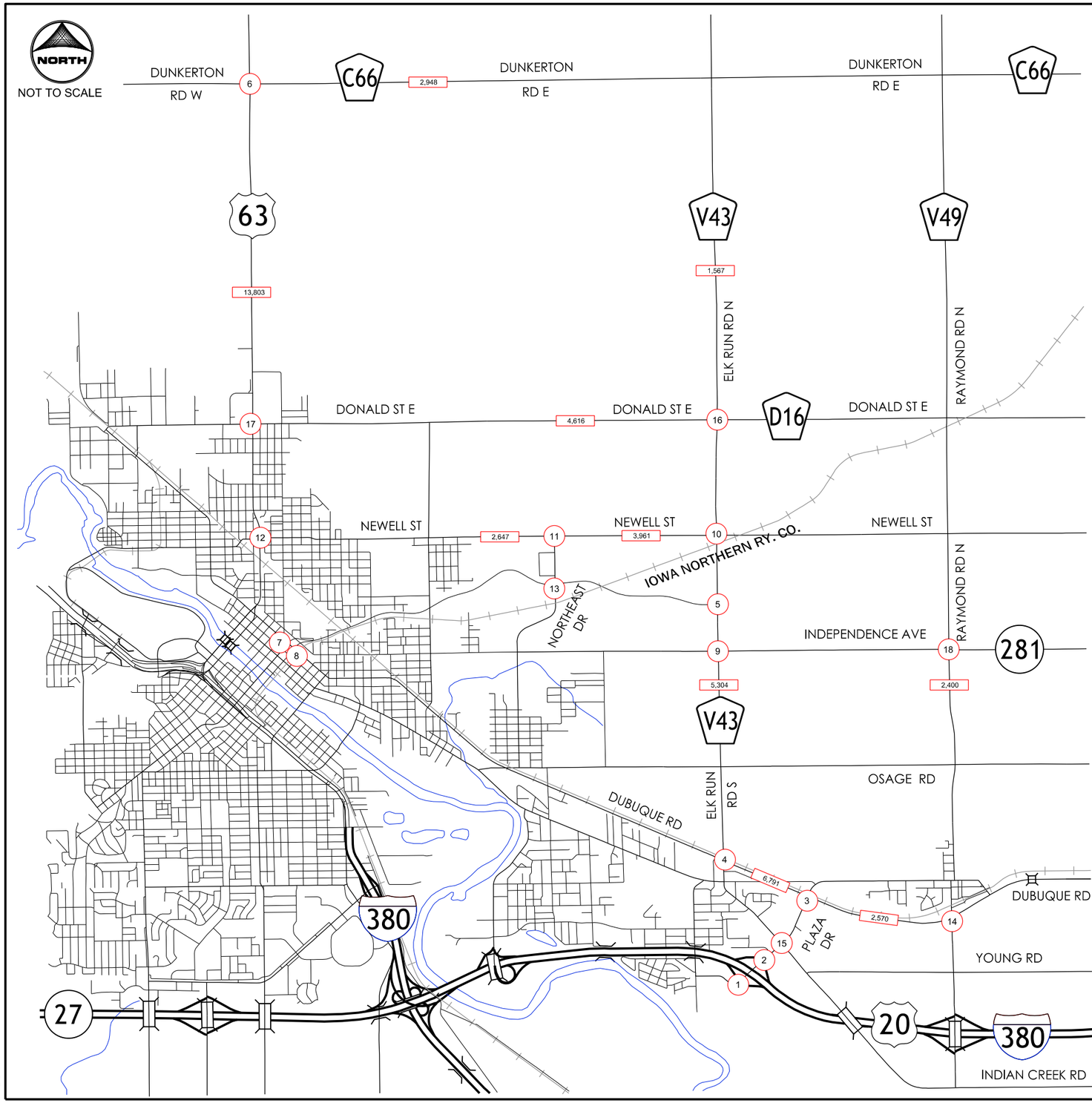
Travel demand model output for the intersections within the study area were available, representing ADT for each link of the intersection leg. The estimated ADT volumes for the forecast year 2045 were used to develop morning and afternoon peak hour volumes. The peak hour volumes were later used for the traffic analysis to assess the level of operations for intersections within the study network. The methodology used to estimate peak hour volumes follows the proposed methodology described in the NCHRP Report 765 "Analytical Travel Forecasting Approaches for Project-Level Planning and Design." Utilizing existing peak hour traffic data, along with projected future year and base year ADT volumes, a multi-step process was used to obtain peak hour traffic counts for each of the proposed alternatives. The iterative calculation process utilizes both the base and forecast year approach/departure ADTs of each of the intersection approaches, as well as the existing turning movement counts to calculate a growth rate for each of the intersection approaches. The growth rates were then used, within the iterative process, to develop the AM and PM peak hour traffic volume projections by balancing the approach and departure volumes for each leg of the intersection. It should be noted that for the purpose of the implementation of this methodology, interchanges were treated as intersections in order to estimate peak hour turning volumes. The resulting output was the forecast year's peak hour turning volumes at each intersection and interchange. The morning and evening area peak hour volumes, representing the 2045 forecast conditions, are identified and presented in Figure 21.

Year 2045 Traffic Operations Analysis

Traffic models were created for the No Build intersection and corridor segment geometry with the 2045 forecast year traffic volumes. Traffic models for the study area intersections were created using Synchro/SimTraffic software. The models were simulated using SimTraffic simulation software. The simulations were run five times, with varying random number seeds. The results of the multiple simulations were averaged to collect Measures of Effectiveness (MOE), such as intersection delay, intersection queues and arterial speed.

The Northeast Industrial Access Planning Study Area includes 18 intersections between US 63 in the west to County Road V49 (Raymond Road) in the east, and between County Road C66 (Dunkerton Road) in the north to Interstate 380 in the south. The traffic operations MOEs for each intersection in the analysis area can be seen in the following exhibit.

An exhibit depicting the morning and evening area peak hour traffic operations is presented in Figure 22.



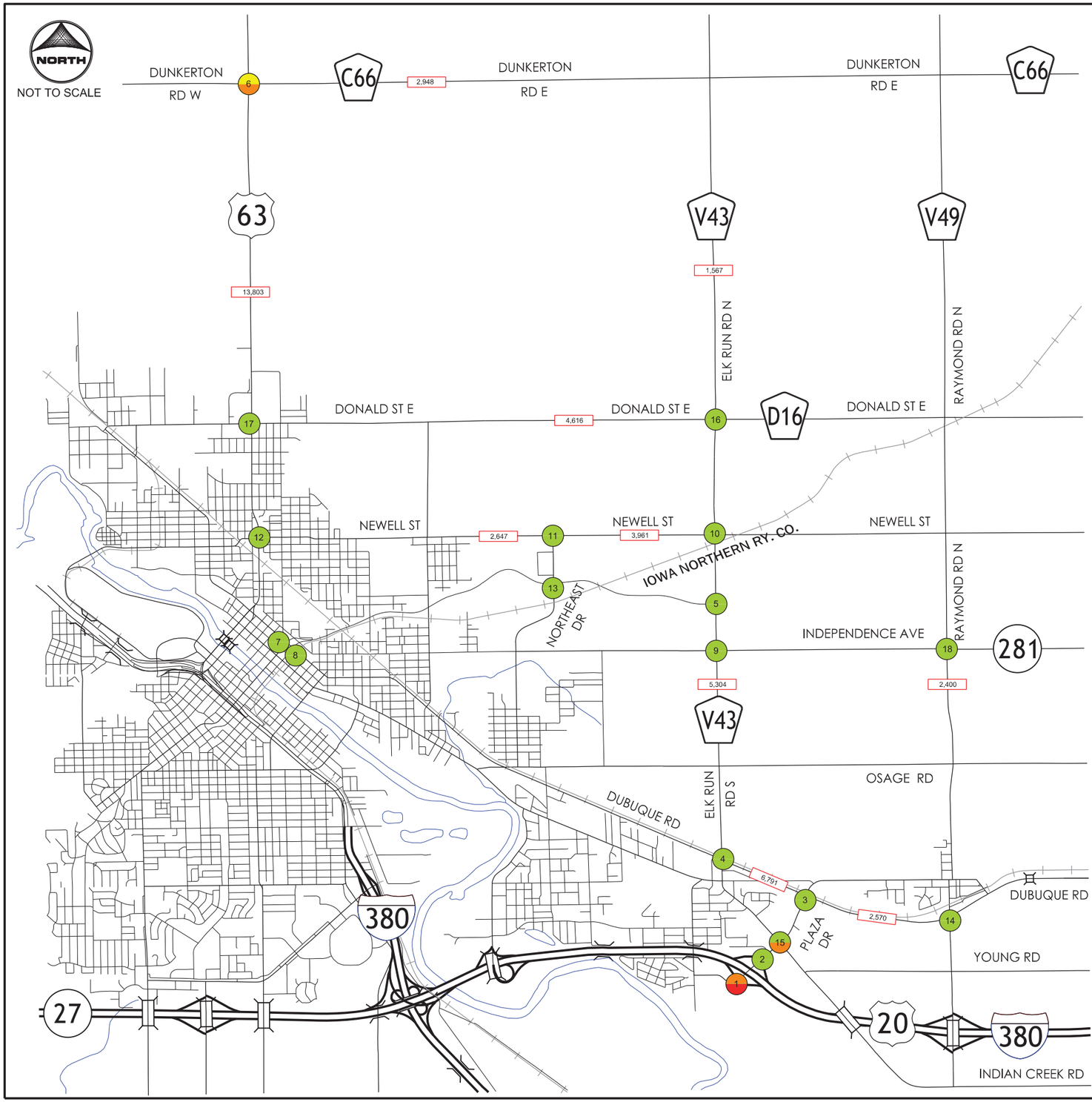
LEGEND

XX , X X X	AVERAGE DAILY TRAFFIC VOLUME (ADT)
XXX (XXX)	AM (PM) PEAK HOUR VOLUME
X	NUMBER OF LANES AND FLOW DIRECTION
	TRAFFIC SIGNAL CONTROL
STOP	STOP CONTROL

2045 AM & PM PEAK HOUR TRAFFIC VOLUMES

FIGURE 21

$$DATE$$
$$DGN$$



INTERSECTION LEVELS-OF-SERVICE

ID	CORRIDORS	CONTROL TYPE		PEAK HOUR	
		SIGNAL	STOP	AM	PM
	NE INDUSTRIAL AREA				
1	Evansdale Drive & I-380 EB Ramp Terminal		X	E	F
2	Evansdale Drive & I-380 WB Ramp Terminal		X	B	B
3	Plaza Drive & Dubuque Road	X		B	B
4	Elk Run Road & Dubuque Road	X		A	A
5	Elk Run Road & Martin Luther King Jr Drive	X		B	B
6	US 63 & County Road C66 (Dunkerton Road)		X	D	E
7	E 5th Street & Franklin Street	X		A	B
8	E 6th Street & Franklin Street	X		A	A
9	Elk Run Road & Iowa 281 (Independence Avenue)		X	B	B
10	Elk Run Road & Newell Street		X	B	B
11	Northeast Drive & Newell Street		X	A	B
12	US 63 & Newell Street	X		B	B
13	Northeast Drive & Martin Luther King Jr Drive	X		B	B
14	Raymond Road & Dubuque Road		X	B	B
15	Plaza Drive & Gilbertville Road		X	B	E
16	Elk Run Road & Donald Street		X	C	B
17	US 63 & Donald Street	X		B	B
18	Raymond Road & Iowa 281 (Independence Avenue)			A	A

LEGEND

XX,XXX AVERAGE DAILY TRAFFIC VOLUME (ADT)

AM / PM INTERSECTION LEVEL-OF-SERVICE

A	B	C	D	E	F

$$DATE$$
$$DGN$$

2045 TRAFFIC OPERATIONS SUMMARY

FIGURE 22

"No Build" Analysis Summary of Year 2045 Traffic Projections

The No Build Condition road network includes 18 intersections between US 63 in the west to County Road V49 (Raymond Road) in the east, and between County Road C66 (Dunkerton Road) in the north to Interstate 380 in the south. Of the 18 total intersections along the study corridor, 9 intersections are stop-controlled, 8 intersections are signal controlled, and 1 intersection is a roundabout configuration.

The 2045 No Build Conditions scenario traffic operations, in terms of AM and PM peak hour LOS, are provided in Figure 22.

The results of the No Build Condition analysis show acceptable traffic operations at the majority of intersections within the study area. Minimal delays are experienced at each intersection approach, with only three (3) intersections falling below a LOS C. Intersections with undesirable LOS include: EB I-380 & Plaza Drive (Evansdale Drive) during the AM peak hour (LOS E) and the PM peak hour (LOS F), US 63 & County Road C66 (Dunkerton Road) during the AM peak hour (LOS D) and the PM peak hour (LOS E), and Plaza Drive & Gilbertville Road during the PM peak hour (LOS E). The results of the No Build Condition queuing analysis show that the longest 95th percentile queue length at all of the studied intersections was 730 feet in length, which was on the eastbound approach of the EB I-380 & Plaza Drive intersection, PM peak hour. However, the majority of 95th percentile queues on intersection approaches within the study area are generally less than 100 feet in length. Assuming a vehicle length of 20 to 25 feet, the longest queue of 730 feet along the I-380 EB ramp would equate to approximately 30 to 37 vehicles long, while the more typical queues of 100 feet or less at the majority of intersection approaches would equate to a queue of, at most, 5 vehicles long.

After analysis, three (3) intersections were identified that were determined to be on the low end of operational performance. The EB I-380 & Plaza Drive ramp terminal intersection, under existing intersection control type and geometry, produced the highest delays and 95th percentile queue lengths in the study network. Additionally, the intersections of US 63 & County Road C66 (Dunkerton Road) and Plaza Drive & Gilbertville Road were both recognized as intersections that could benefit from potential improvements to the area.

H. Access Study Needs Evaluation

Based on the data gathering, traffic analysis, truck traffic analysis, interviews with representatives from the freight industry and the "no build" analysis on future traffic projections, issues and needs within the study area have been identified and include the following:

- The traffic analysis shows that there is a high percentage of truck traffic on the main roadways accessing the northeast industrial area. Truck traffic on local roads not designed to handle heavy truck loads creates maintenance and safety concerns.
- CN Railroad traffic blocks access to the northeast industrial area. Train traffic is increasing, as well as the length of trains. Providing a bridge over the railroad would improve access and increase travel efficiency.
- Freight haulers are looking for efficient access to the primary highways, as indicated by truck embargoes. A clear and efficient route to primary highways would eliminate freight haulers looking for a better and more efficient route.

- Access to primary roadways is a key for development of available commercial and industrial property. Providing enhanced access to the Northeast Industrial Area will only increase the development potential of commercial and industrial zoned property.
- Several intersections have been identified in the corridor that have above-average crash rates and current/future capacity issues. Alternatives should include capacity and safety benefits at identified intersections.

III. Development of Initial Alternatives

This portion of the report will document the process that was utilized to develop, evaluate and compare the initial alternatives for the Northeast Industrial Access Study. The process included the use of an Advisory Committee that assisted in developing and evaluating the alternatives. The alternatives were grouped into categories, such as spot improvements at intersections, capacity improvements on existing road corridors and partial/new alignment alternatives. A description of the process to develop the initial alternatives follows.

A. Advisory Committee

Throughout the study process, Advisory Committee meetings were held approximately monthly to discuss project status, develop initial alternatives, discuss key project issues, coordinate public involvement and to discuss other items that were pertinent to the study. The Advisory Committee is shown in Table 3.

TABLE 3: Advisory Committee

Representing	Advisory Committee Member
Black Hawk County	Cathy Nicholas, PE Ryan Brennan, PE Linda Laylin, Black Hawk County Supervisor
Elk Run Heights	Tim Swope, Mayor
Evansdale	Doug Faas, Mayor
Iowa DOT	Krista Billhorn, District Transportation Planner
Raymond	Becky Pint, Councilperson
Waterloo	Noel Anderson, Director of Planning Adrienne Miller, Planner Aric Schroeder, Planner
Project Team:	
- **INRCOG**	Kevin Blanshan, Executive Director
- **INRCOG**	Kyle Durant, Transportation Planner
- **INRCOG**	Codie Leseman, Transportation Planner
- **AECOM**	Mark Durbahn, Project Manager
- **Hg Consult**	Steve Wells, AICP
- **HR Green**	Andy Swisher, PE, PTOE
- **AMPERAGE**	Robin Frost, Project Manager
- **CGA**	Jerry Shoff, PE

B. Design Standards for Initial Alternatives

For the development of partial and new alignment alternatives, a set of design standards was developed that serves over 6,000 vehicles per day and includes heavy truck traffic. The new pavement will be designed to carry heavy truck traffic as well, so initial cost estimates will include thicker pavement costs. It is also anticipated that partial or new alignments will include some access control to prohibit multiple access points. Final feasible alternatives on access control are described in the Summary of Feasible Alternatives section of this study report. Design criteria were taken from the Iowa DOT Road Design Criteria worksheets for Rural Two-lane Highways, Iowa DOT Design Manual Section 1C-1. Below you will see a description of the design speeds that are anticipated and typical cross sections for the alternatives.

Design Speed

Identifying the design speed for alternatives allows the proper assignment of design standards for various segments of roadway. The design speed is set at 5 mph above the proposed speed limit. The design speed within developed areas and within the city limits was set at 40 mph. Within the city limits, and in undeveloped areas, the design speed was set at 50 mph. In rural areas outside of the city limits, the design speed was set at 60 mph.

Typical Cross Sections

The typical cross section for capacity improvements includes adding 1 to 2 lanes onto the existing pavement and widening the shoulders and flattening the foreslopes. The capacity improvements include adding lanes for a consistent 4-lane roadway with dedicated left turn lanes at intersections. The typical cross section is shown in Figure 23.

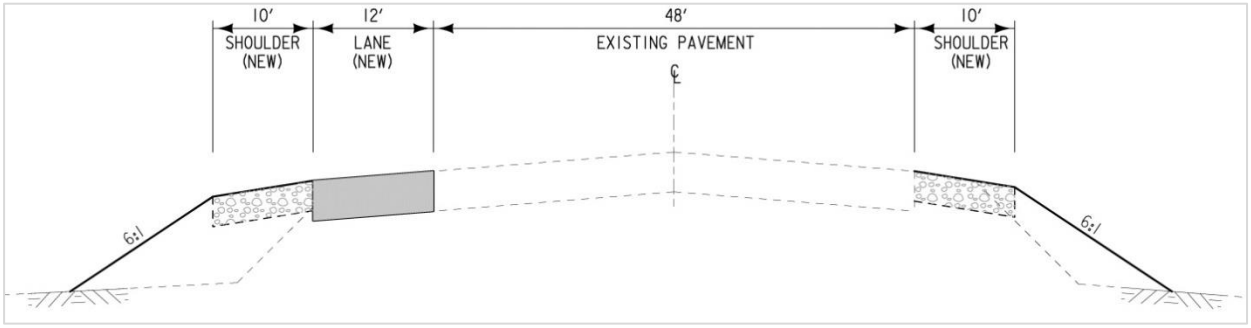


FIGURE 23: *Typical Cross Section for Capacity Improvements*

The typical cross section for partial and new alignments is the preferred typical cross section for a 60 mph design speed in rural areas and includes 10-foot granular shoulders and 6:1 foreslopes. The typical cross section is shown in Figure 24.

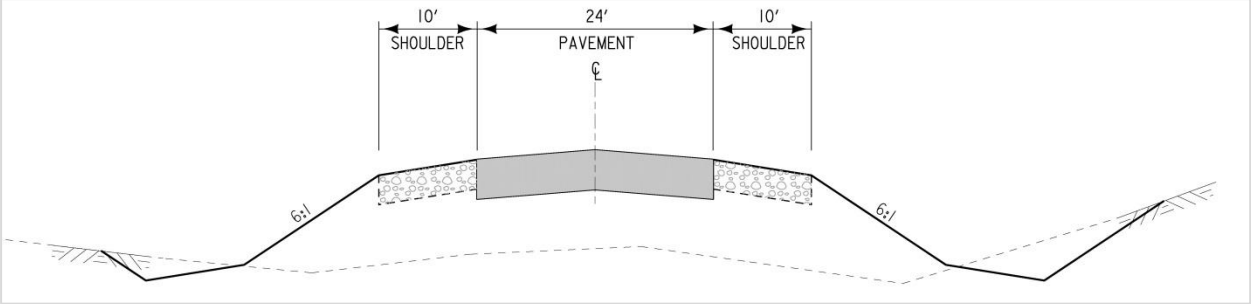


FIGURE 24: *Typical Cross Section for Partial and New Alignments*

C. Description of Initial Alternatives

The primary goal of developing alternatives was to improve access and transportation of freight from the Northeast Industrial Area to the major highway corridors in the metropolitan area. To begin the discussion of alternatives with the Advisory Committee, an evaluation of the access points to US 63 and to I-380/US 20 was completed. By identifying and evaluating possible access points to the major highways, the initial alternatives could be laid out that either improved existing intersections and roadway corridors or provided new or partial alignments.

US 63 Access Points

The access points that were shown to the Advisory Committee included East Donald Street, Airline Highway, Big Rock Road, East Dunkerton Road and Cedar Wapsi Road. An evaluation was completed for each location.

East Donald Street: East Donald Street is a signalized intersection with US 63. It is truck embargoed from US 63 to Sage Road. This would not be a good access point for the Northeast Industrial Area due to the residential and recreational facilities along East Donald Street.

Airline Highway: Airline Highway is a signalized intersection with US 63, and 4-lane paving 430 feet east of US 63. The first mile east of US 63 includes numerous homes with 22 access points. The extension of Airline Highway to North Elk Run Road would include 4 miles of new roadway construction.

Big Rock Road: Big Rock Road is a stop condition at US 63. The road is a granular-surfaced county road from US 63 to east of North Elk Run Road. The first mile east of US 63 includes numerous homes with 13 access points. Big Rock Road improvements would include 4 miles of new roadway construction.

East Dunkerton Road: East Dunkerton Road is County Road C66 and is a rural paved county road that currently serves as the main US 63 access point for the Northeast Industrial Area. The location of the intersection with US 63 includes a divided 42-foot median width with a stop condition for Dunkerton Road. The median width cannot store a standard semi-trailer truck with a 53-foot trailer; and the intersection has an above-average crash rate. West Dunkerton Road does not have direct access to US 218; but Lone Tree Road, which is ¾ of a mile south of West Dunkerton Road, includes an interchange with US 218.

Cedar Wapsi Road: Cedar Wapsi Road is County Road C57 and is a rural paved county road that includes an interchange with US 218. Cedar Wapsi Road is located 3 miles north of Dunkerton Road (C66). The C57 intersection with US 63 has had some safety improvements installed, such as offset right-turn lanes. The intersection includes a divided median width of 42 feet with stop conditions for Cedar Wapsi Road at US 63. To provide a paved connection to the Northeast Industrial Area would include paving 3 miles of North Elk Run Road.

See Figure 25 for locations of evaluated US 63 access points.

I-380/US 20 Access Points

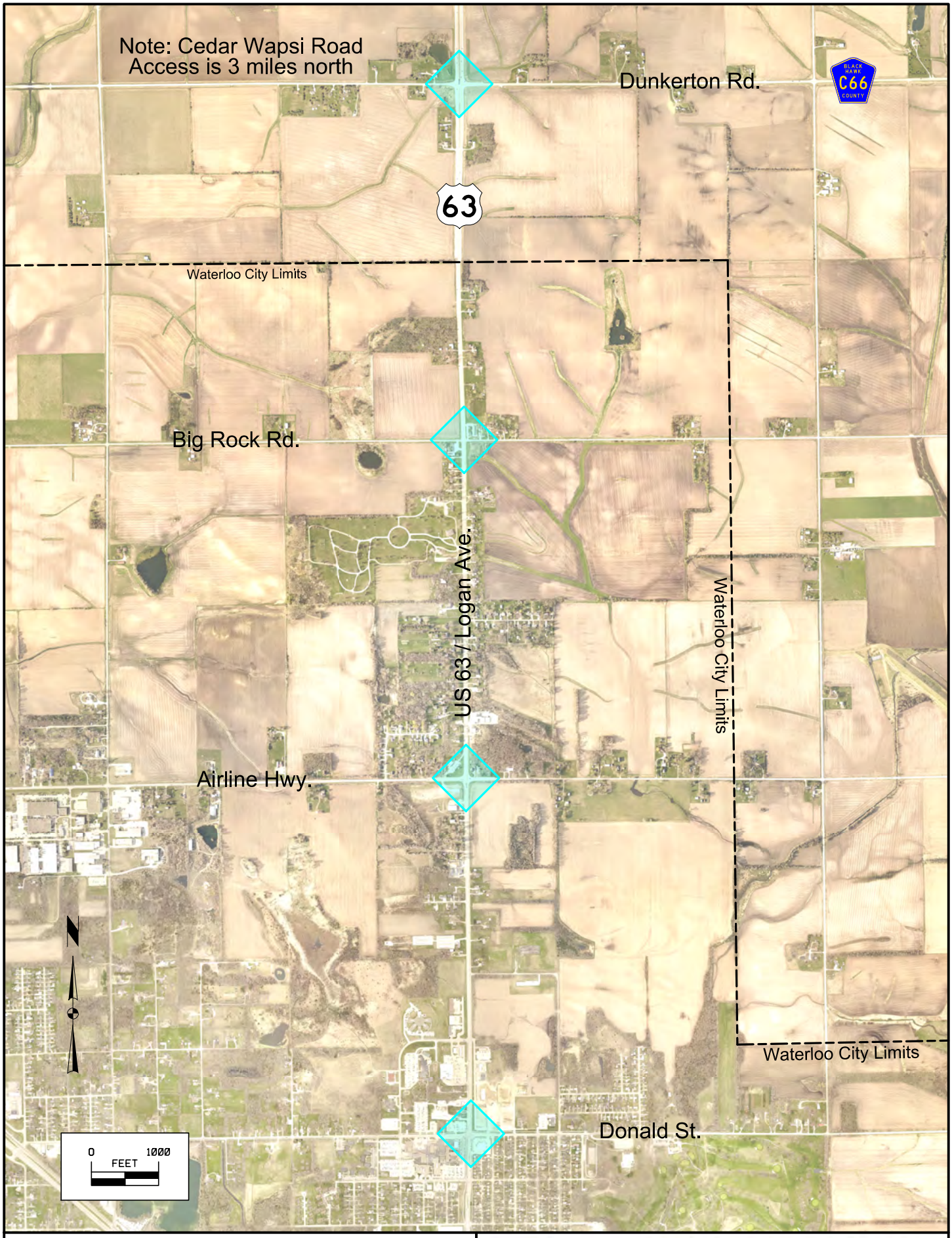
Evansdale Drive Interchange: The Evansdale Drive interchange serves as the main I-380/US 20 access to the Northeast Industrial Area. It also serves as the main access for several truck stops and businesses along Evansdale Drive and Plaza Drive. Currently, there are signalized intersections at Evansdale Drive & Doris Drive and Plaza Drive & Dubuque Road in the vicinity of the interchange. Identifying this interchange as the main I-380/US 20 access may increase traffic, creating delays at intersections in the future.

Raymond Road Interchange (V49): The Raymond Road interchange serves the communities of Raymond and Gilbertville. This interchange has less traffic than the Evansdale Drive interchange. The connection is farther to the east, making this connection less desirable for westbound traffic on US 20.

I-380/US 20 Systems Interchange: Creating a north leg of the I-380/US 20 systems interchange would include adding directional ramps, loops and bridges. This would allow a roadway extension to the north and a connection to the Northeast Industrial Area. An Interchange Justification Report would be needed based on traffic and regional significance to the transportation system.

South Canfield Road Interchange: The South Canfield Road (V51) interchange is 4.8 miles farther east than the Evansdale Drive Interchange. Roadway improvement alternatives from the Northeast Industrial Area would need to extend to South Canfield Road. Out-of-distance travel for westbound US 20 traffic would be approximately 9.6 miles in comparison to the Evansdale Drive interchange.

See Figure 26 for locations of evaluated I-380/US 20 access points.



$$DATE$$
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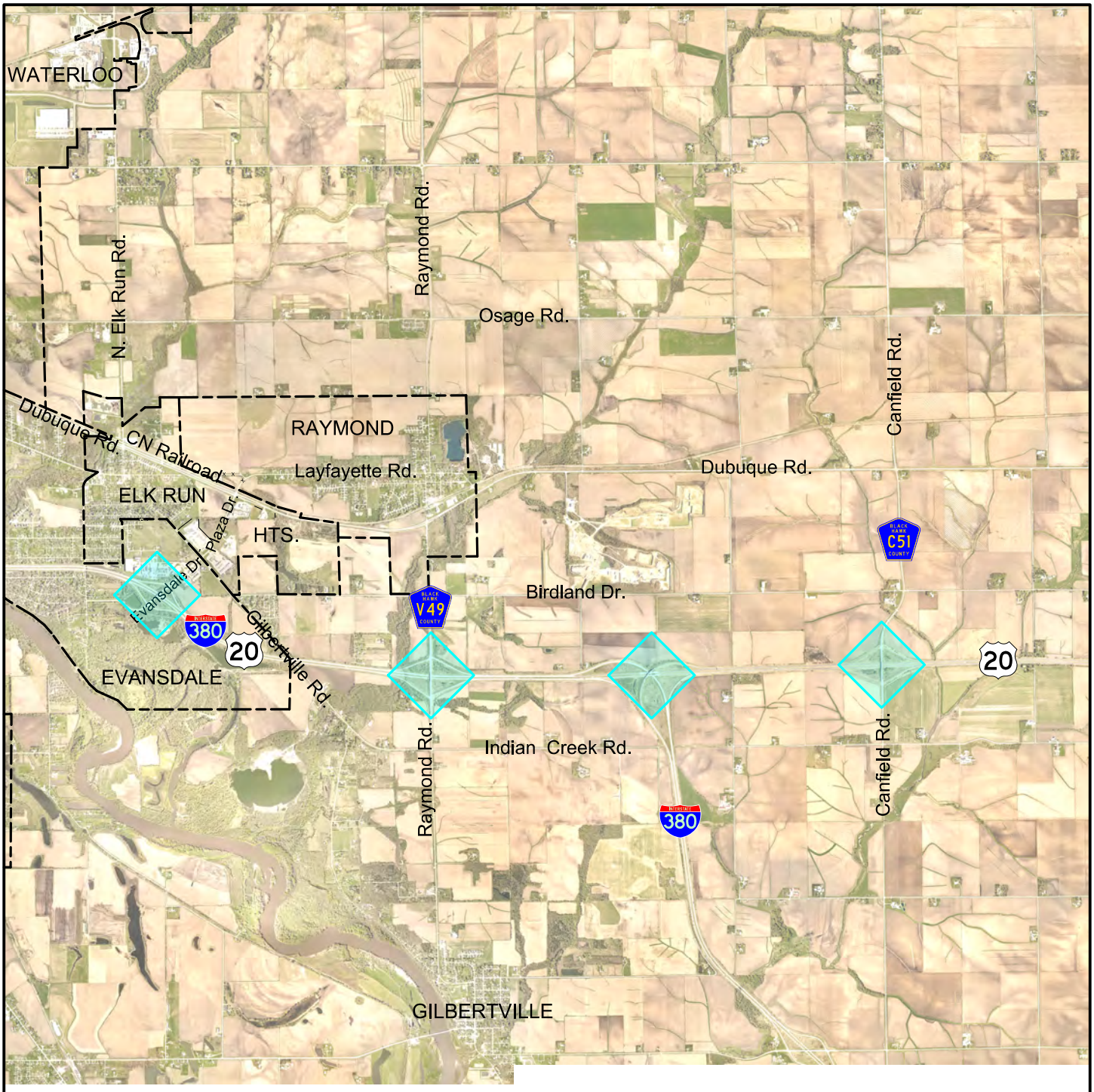
US 63 Access Points
Figure 25

Northeast Industrial Access
PLANNING STUDY



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I-380 / US 20 Access Points
Figure 26

Northeast Industrial Access
PLANNING STUDY

Spot Improvements at Intersections

There were several locations where alternatives were developed at intersections throughout the corridor. Alternatives were developed based on either a crash history or a capacity issue with existing or future traffic projections.

US 63 and Dunkerton Road: Due to the intersection showing a crash rate higher than the statewide average and with a narrow 42-foot wide median, options were explored to improve the intersection as far as safety and operation.

One of the alternatives that may provide some safety improvement is offset, right-turn lanes similar to what was done on the Cedar Wapsi intersection. The US 63 intersection with Dunkerton Road has fewer right turns than the Cedar Wapsi intersection, but this alternative is fairly low cost in comparison with other alternatives.

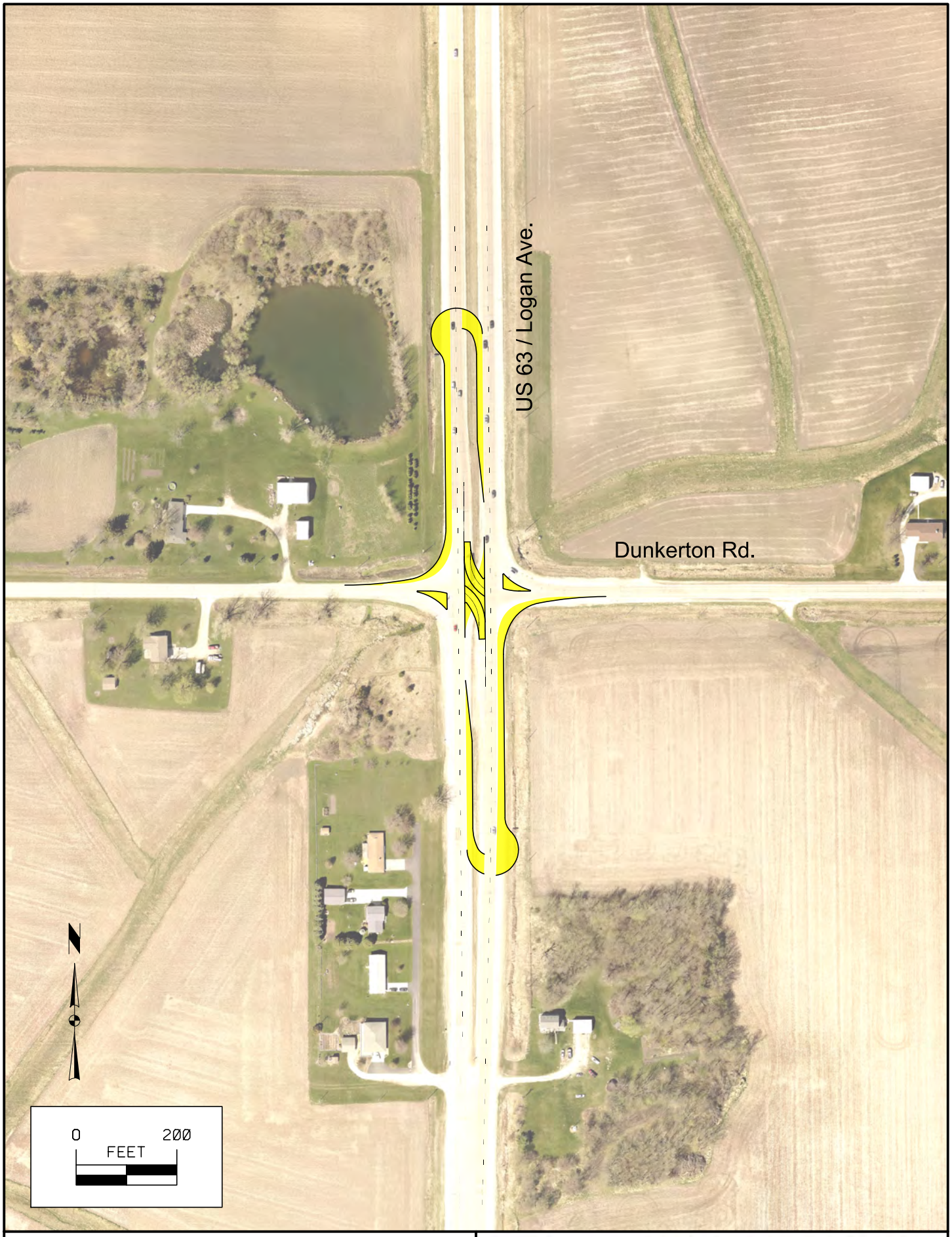
Offset, left-turn lanes can be considered at this intersection and have been utilized within the State of Iowa. The Iowa DOT Design Manual states the use of offset (tapered) left-turn lanes should be limited on rural intersections. They should be considered only if traffic signals will likely be installed or opposing left-turning vehicles create a significant sight distance problem. The current peak PM left-turn traffic volume at this intersection is 14 vehicles northbound to westbound and 48 vehicles southbound to eastbound. Given the information above, the offset intersections were not developed further.

One of the alternatives that was developed for this intersection was a J-Turn intersection. A J-Turn has fewer conflict points than a traditional intersection, which can reduce the frequency and severity of collisions, especially severe T-bone collisions. Also, J-Turn intersections keep county road drivers from having to cross 4 lanes of high-speed highway traffic at once.

The disadvantages of the J-Turn intersection is that, in this location, the median is not wide enough for semi-trailer trucks to make the U-turn without turning out onto the far shoulder. Also, J-Turns have not been installed in Iowa, so there would be an educational and public involvement process with this alternative. See Figure 27 for the layout of a J-Turn intersection at US 63 and Dunkerton Road.

Evansdale Drive and Eastbound Ramps of I-380/US 20: As described in Section II.G, “No Build” Analysis on Year 2045 Traffic Projections, Figure 22 shows that the AM peak hour traffic for this intersection is estimated to operate at a level of service E which is considered at capacity. The PM peak hour traffic for this intersection is estimated to operate at a level of service F which represents extreme delay or severe congestion and would meet the warrants for traffic signals based on the 2045 traffic projections. A proposed traffic signal at this intersection is shown in the Evansdale Drive/Plaza Drive Capacity Improvements alternative.

East Donald Street and North Elk Run Road: The current traffic control at the intersection includes stop signs on North Elk Run Road. An evaluation was completed on the installation of stop signs on East Donald Street based on the data shown on Figure 13 and Figure 18B. Based on the current traffic and crash history, an all-way stop at this intersection is not warranted. This intersection should be evaluated again in the future to determine if traffic volumes and/or crash rates have increased enough to warrant an all-way stop application.



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US63/Dunkerton J-Turn (ALT 1)
Figure 27

Northeast Industrial Access
PLANNING STUDY

The crash data (2012-2016) shows that this intersection is higher than comparable intersections statewide; and there has been some concern with this intersection in the past. This intersection also includes one severe injury crash, as shown in Figure 18B. Based on the safety concerns, an alternative that included a roundabout intersection was developed. Refer to Figure 28 for the roundabout intersection. The single-lane roundabout would be designed to accommodate semi-trailer truck traffic and would be similar in design to the Raymond Road/IA 281 roundabout not far from this intersection.

The advantage of a roundabout intersection is that it decreases the severity of crashes at an intersection. As shown on the US Department of Transportation Federal Highway Administration website, research has shown that a conversion of a 2-way, stop-controlled intersection to a roundabout intersection reduces crash severity by 82%. The disadvantage is that there are right-of-way impacts, truck overturning concerns and there may be some opposition from industry in the surrounding area.

An evaluation was also completed on the installation of a right-turn auxiliary lane based on the Iowa DOT's Auxiliary Lane Warrants (Iowa DOT Design Manual, 6A-1). The current traffic does not warrant the installation of auxiliary lanes on East Donald Street.

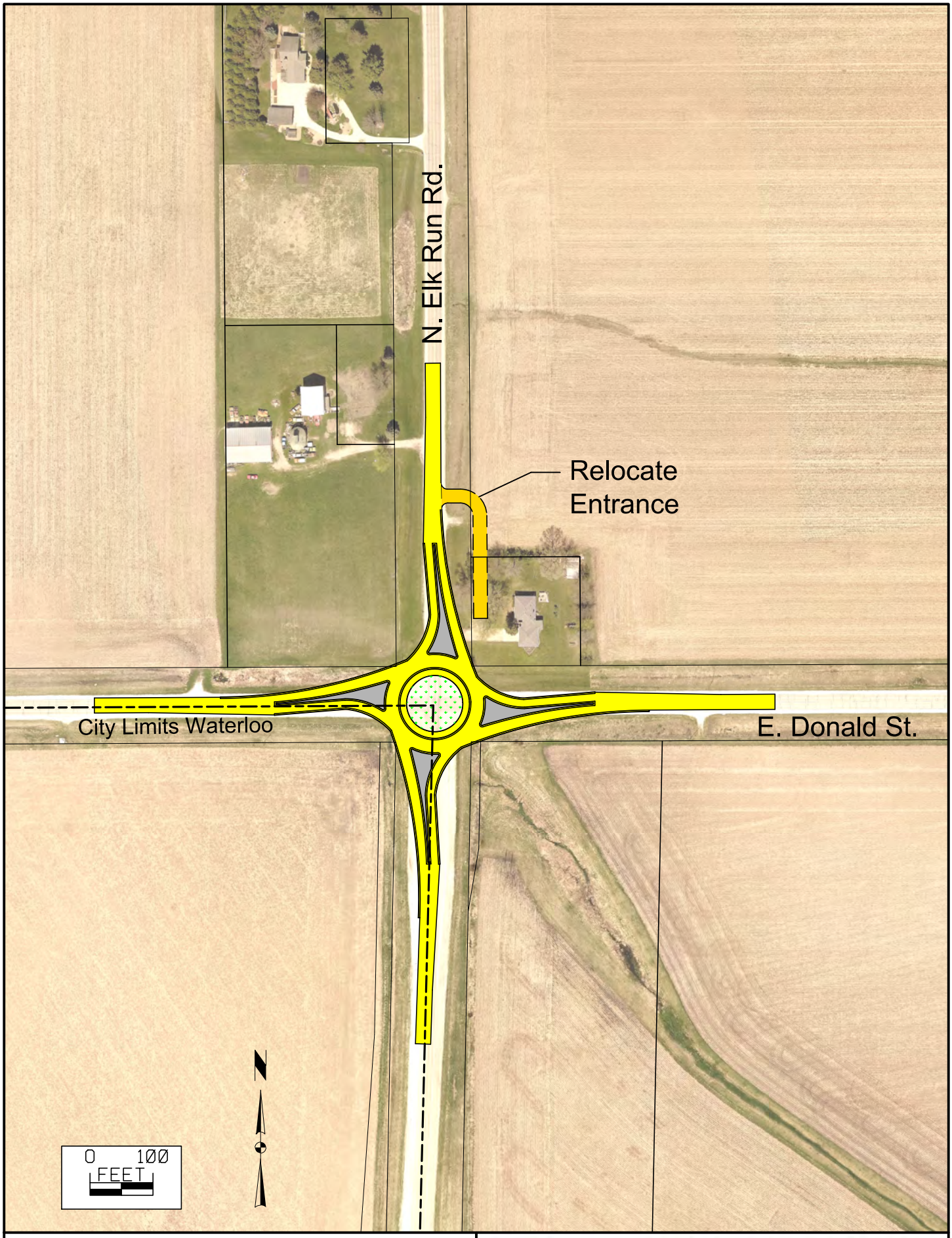
Another option that was suggested was to switch the stop control from North Elk Run Road to stop control on East Donald Street. This change would make North Elk Run Road the major roadway and East Donald Street the minor roadway. Although this change would improve traffic flow for freight to the Northeast Industrial Area, there are serious questions about safety after the change. This change would introduce additional driver confusion with increased chances of high-speed, broadside collisions with trucks. If this option is implemented, an extensive public outreach and education campaign to alert drivers of the changes is needed to ensure compliance with the new traffic control at this intersection. Additionally, a phased approach of installing an interim all-way stop should be considered as an initial step in the conversion of the stop control.

Capacity Improvements

There were several alternatives that included capacity improvements for portions of roadway in the study area that had issues with lane continuity and a very high percentage of trucks in the corridor.

Evansdale Drive/Plaza Drive: The 2017 Iowa DOT traffic counts show an Annual Average Daily Traffic of 9,300 vehicles per day south of Doris Drive. The truck percentage in this area is 15%. Due to a high percentage of trucks and several intersections in this area, an alternative that provided dedicated left-turn lanes and right-turn lanes was developed. See Figure 29 for the capacity improvement alternative on Evansdale Drive/Plaza Drive.

North Elk Run Road: The 2017 Iowa DOT traffic counts show an Annual Average Daily Traffic of 4,090 vehicles per day south of Martin Luther King Jr. Drive. There have been comments regarding trucks turning out of the north entrance of Tyson Fresh Meat's not having time to accelerate in a single lane. The railroad crossing of the UP Railroad is a 2-lane crossing with 4 lanes immediately south and north of the crossing. Based on these issues, an alternative was developed that included a dedicated left-turn lane for intersections and entrances and two through lanes for turning and accelerating truck traffic. See Figures 30A and 30B for the capacity improvement alternative on North Elk Run Road.



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Elk Run Road - East Donald Roundabout
Figure 28

Northeast Industrial Access
PLANNING STUDY

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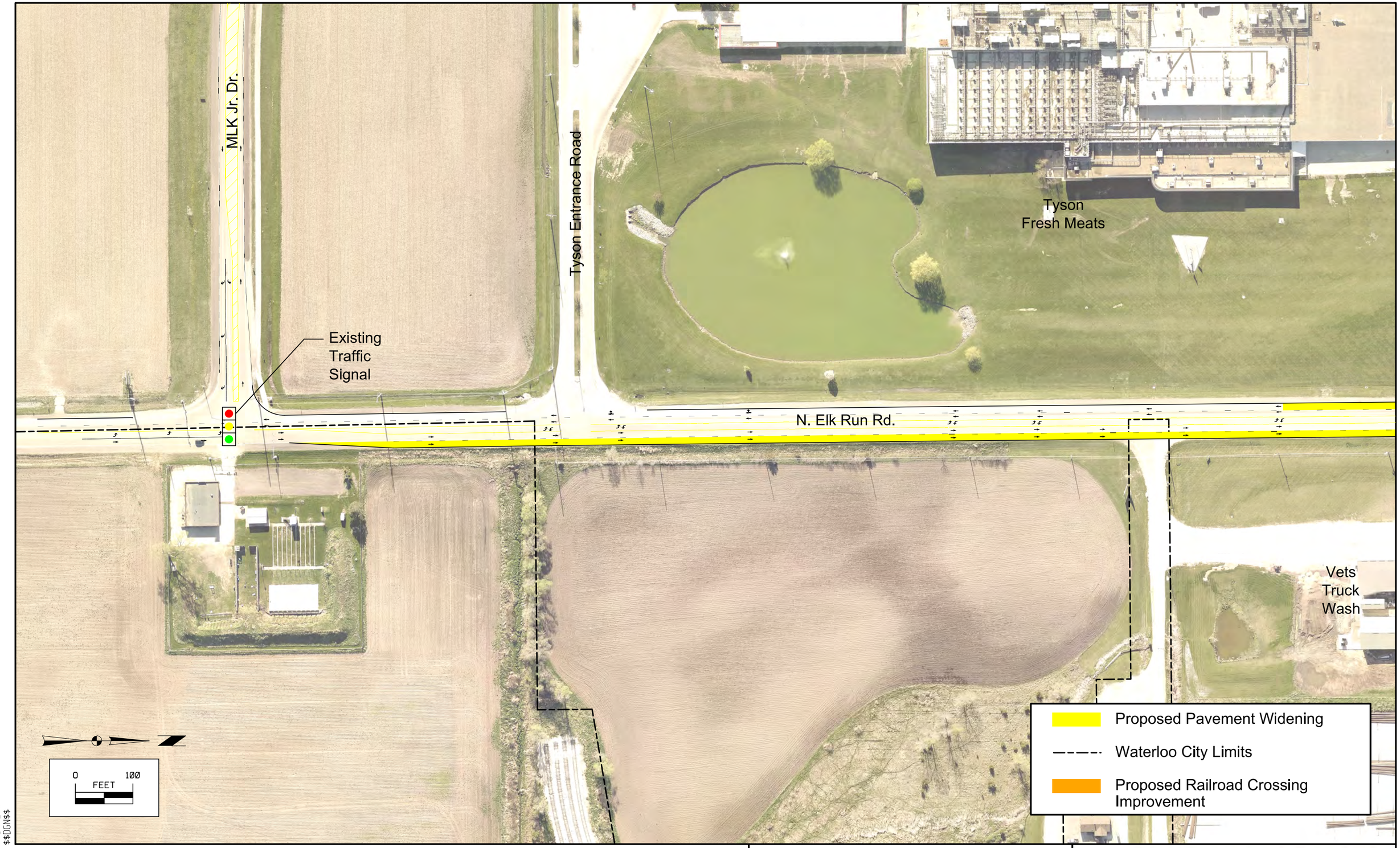
Evansdale - Plaza Drive Improvements
Figure 29

Northeast Industrial Access
PLANNING STUDY



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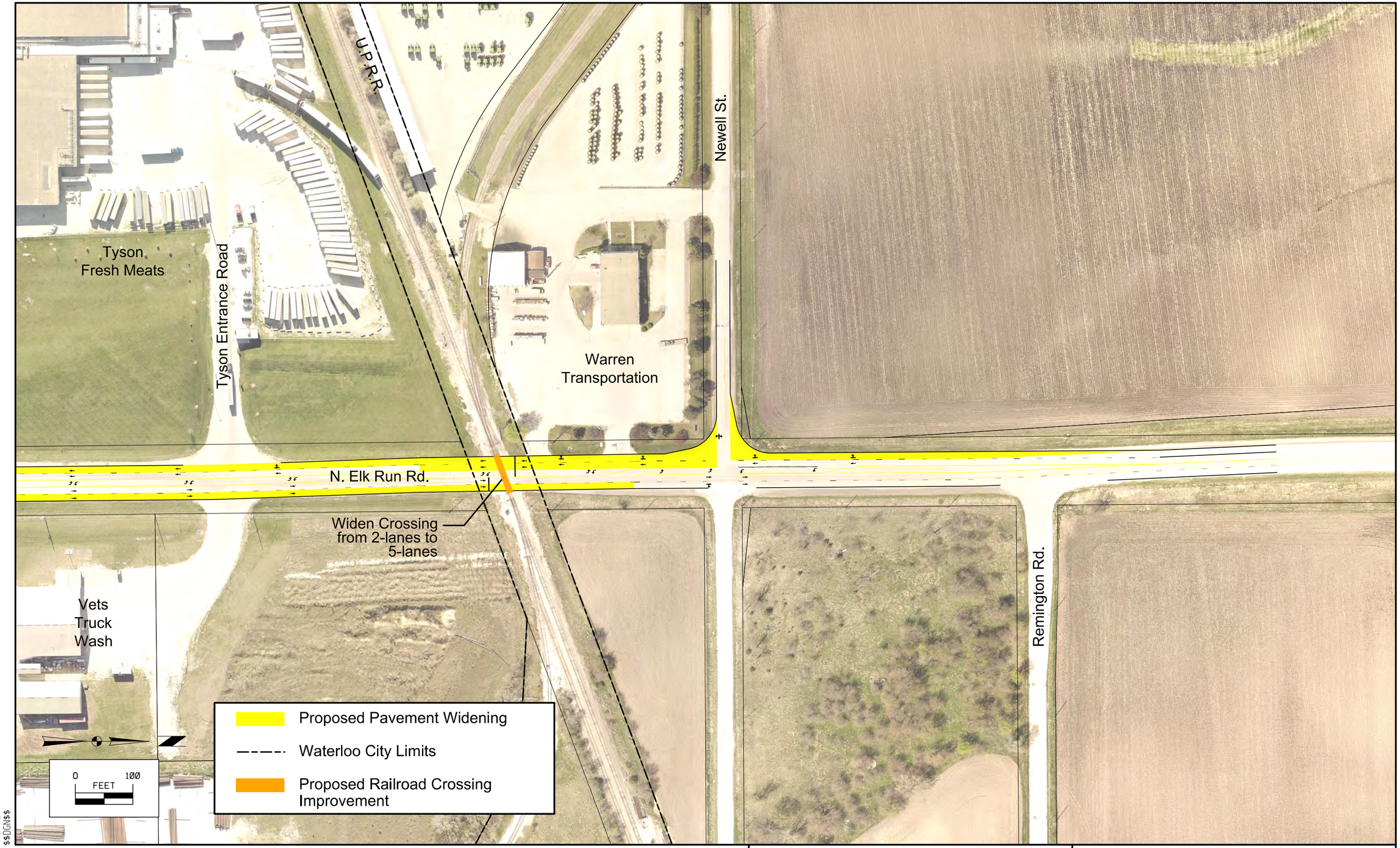
North Elk Run Road Improvements
(South Segment)
Figure 30A

Northeast Industrial Access
PLANNING STUDY



North Elk Run Road Improvements
(North Segment)
Figure 30B

Northeast Industrial Access
PLANNING STUDY

Partial and New Alignment Alternatives

The partial and new alignment alternatives were created based on comments from the Advisory Committee and analysis of the study area. During the evaluation of the study area and the development of the Access Study Needs Evaluation, some of the primary issues were:

- High Truck Traffic on Local Roads
- CN Railroad Traffic Blocking Access to the Northeast Industrial Area
- Trucks are Looking for Efficient Routes to Main Highways in the Metro Area

These alternatives were developed to provide grade separation/bridge over the CN Railroad, provide improved access to the Northeast Industrial Area and designate a freight route for the area.

The following figures (Figures 31 through 37) show the various partial and new alternatives that were developed and presented to public and or industry for review and comment.

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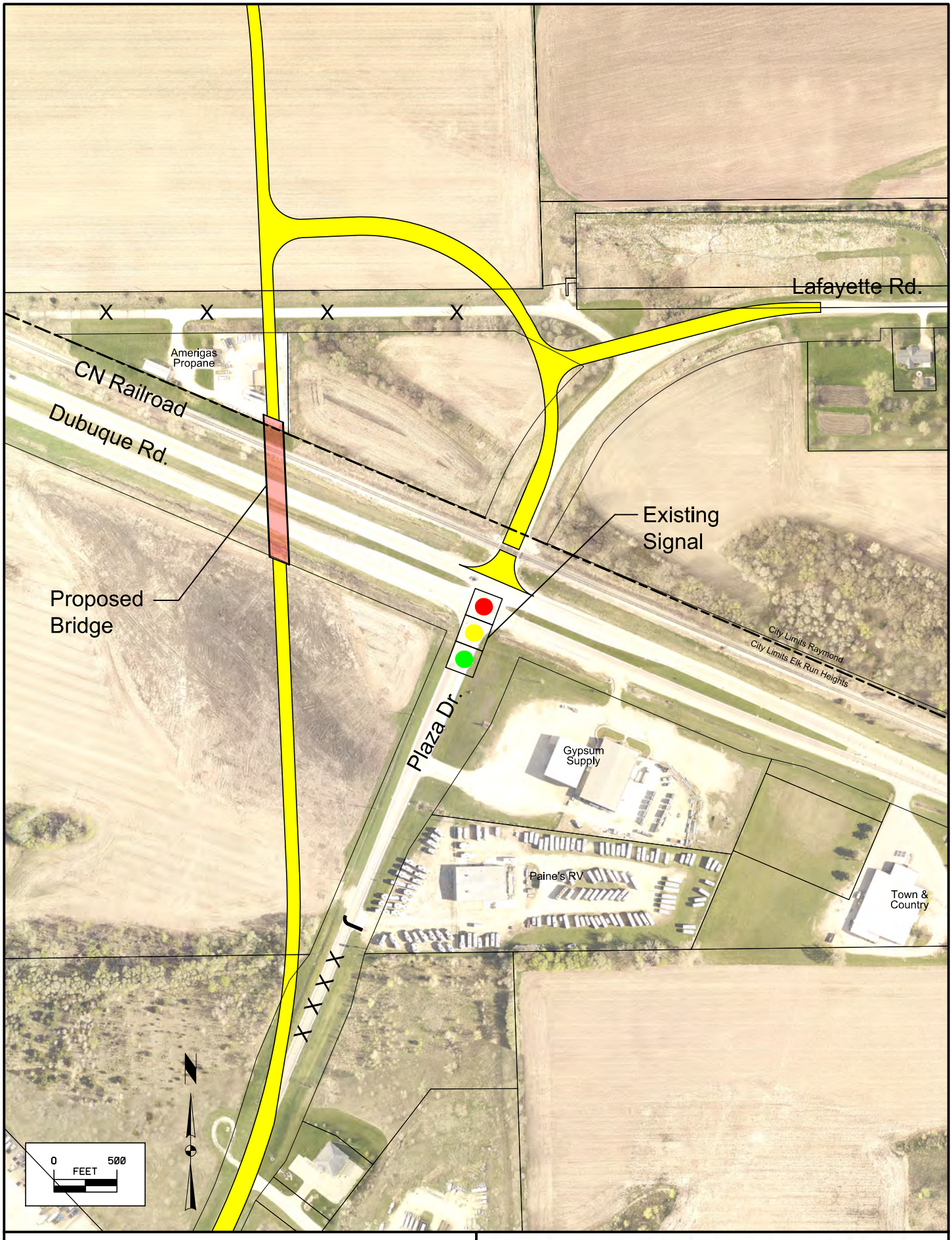
PLaza Drive - Elk Run Road (ALT 1)
Figure 31A

Northeast Industrial Access
PLANNING STUDY



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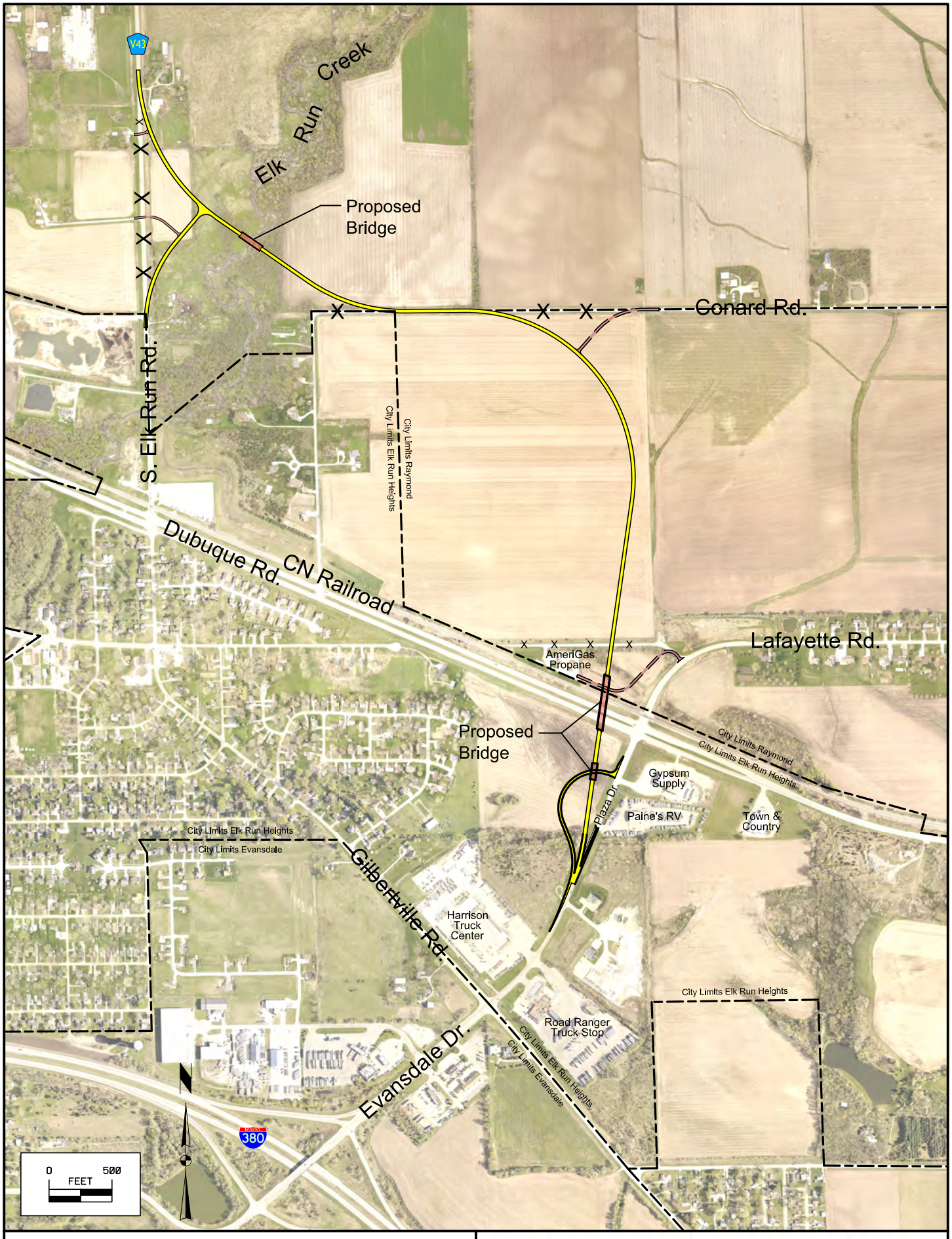
Plaza Drive - Elk Run Road (ALT 1)
Figure 31B

Northeast Industrial Access
PLANNING STUDY



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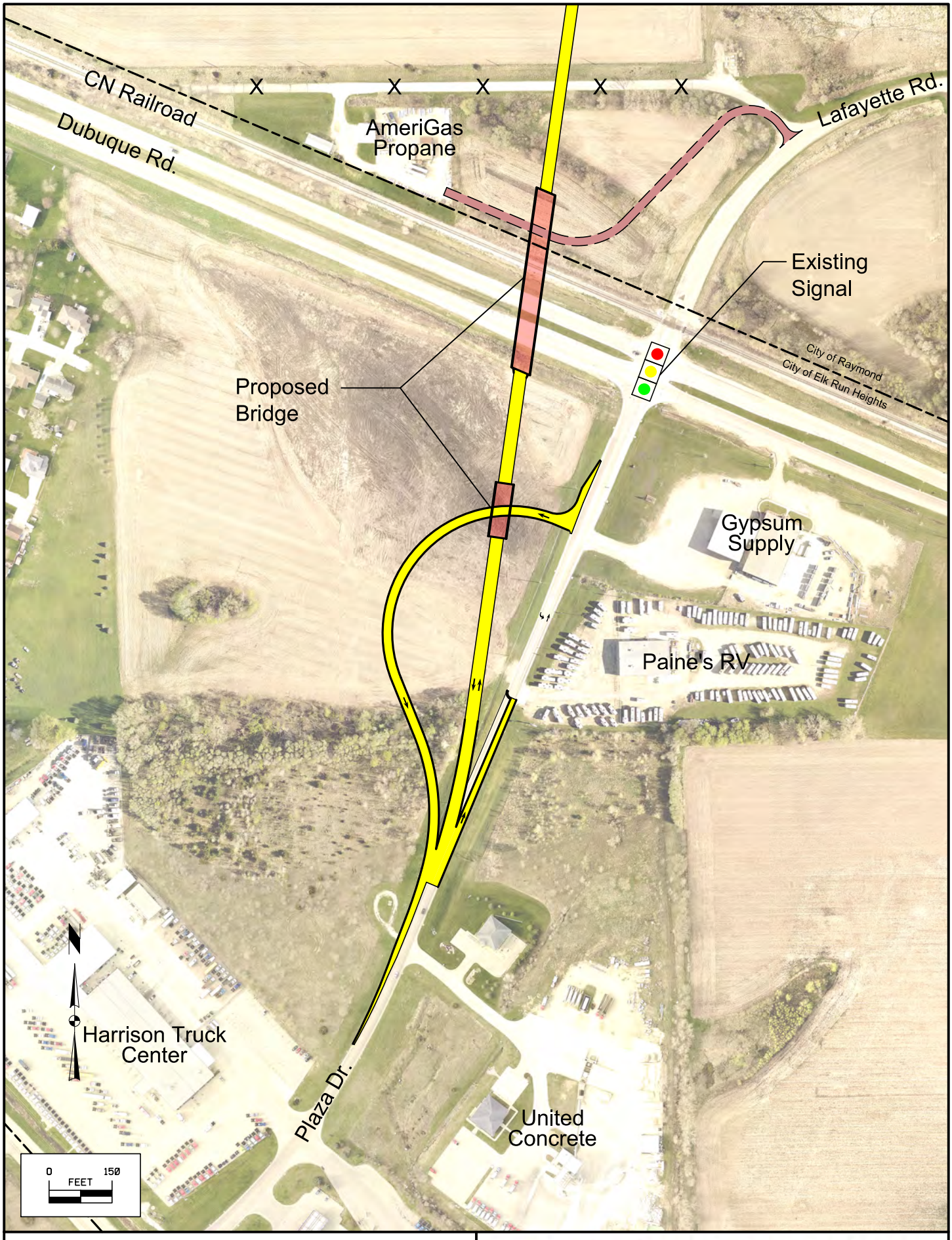
Plaza Drive - Elk Run Road (ALT 2)
Figure 32A

Northeast Industrial Access
PLANNING STUDY



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Plaza Drive - Elk Run Road (ALT 2)
Figure 32B

Northeast Industrial Access
PLANNING STUDY

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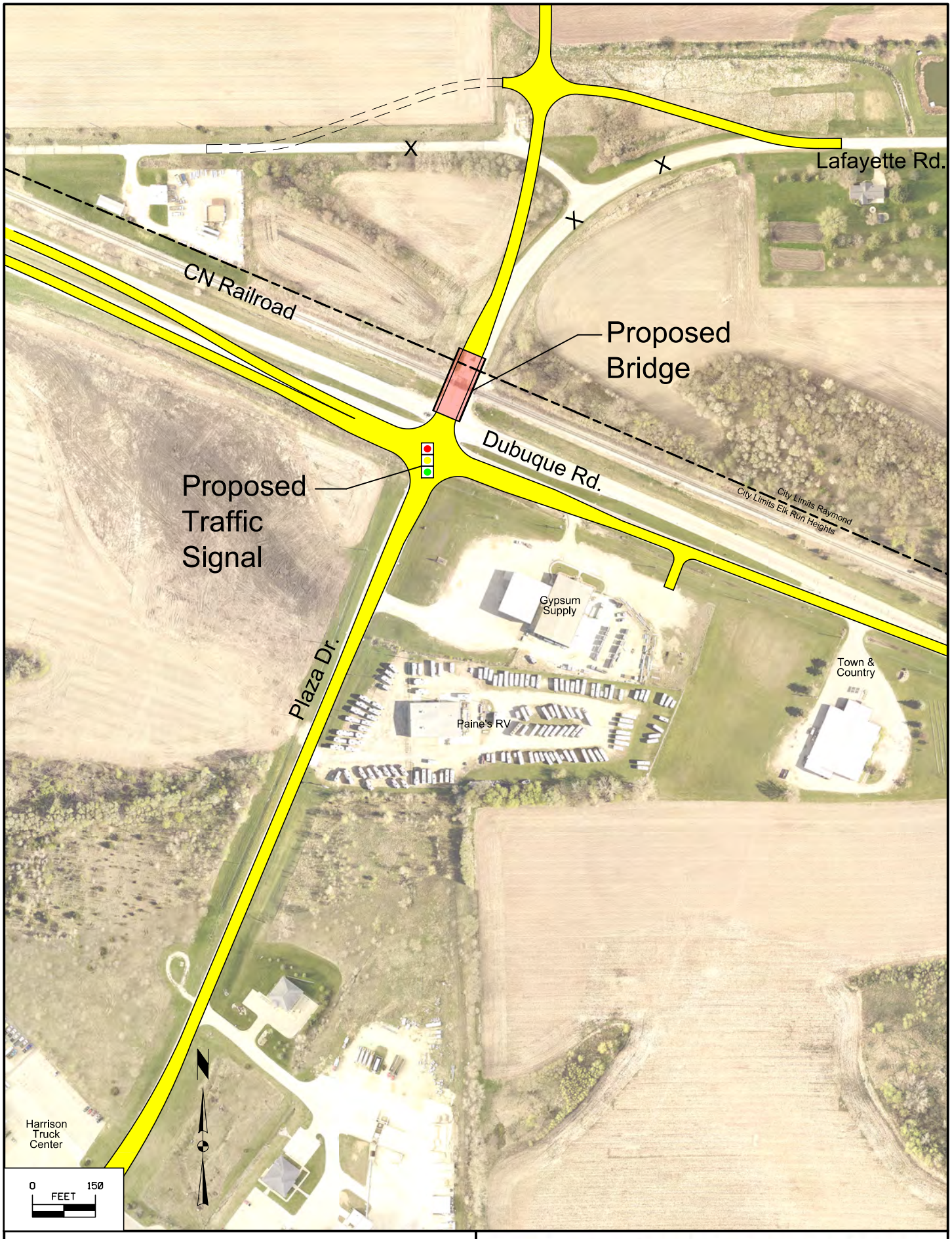
PLaza Drive - Elk Run Road (ALT 3)
Figure 33A

Northeast Industrial Access
PLANNING STUDY



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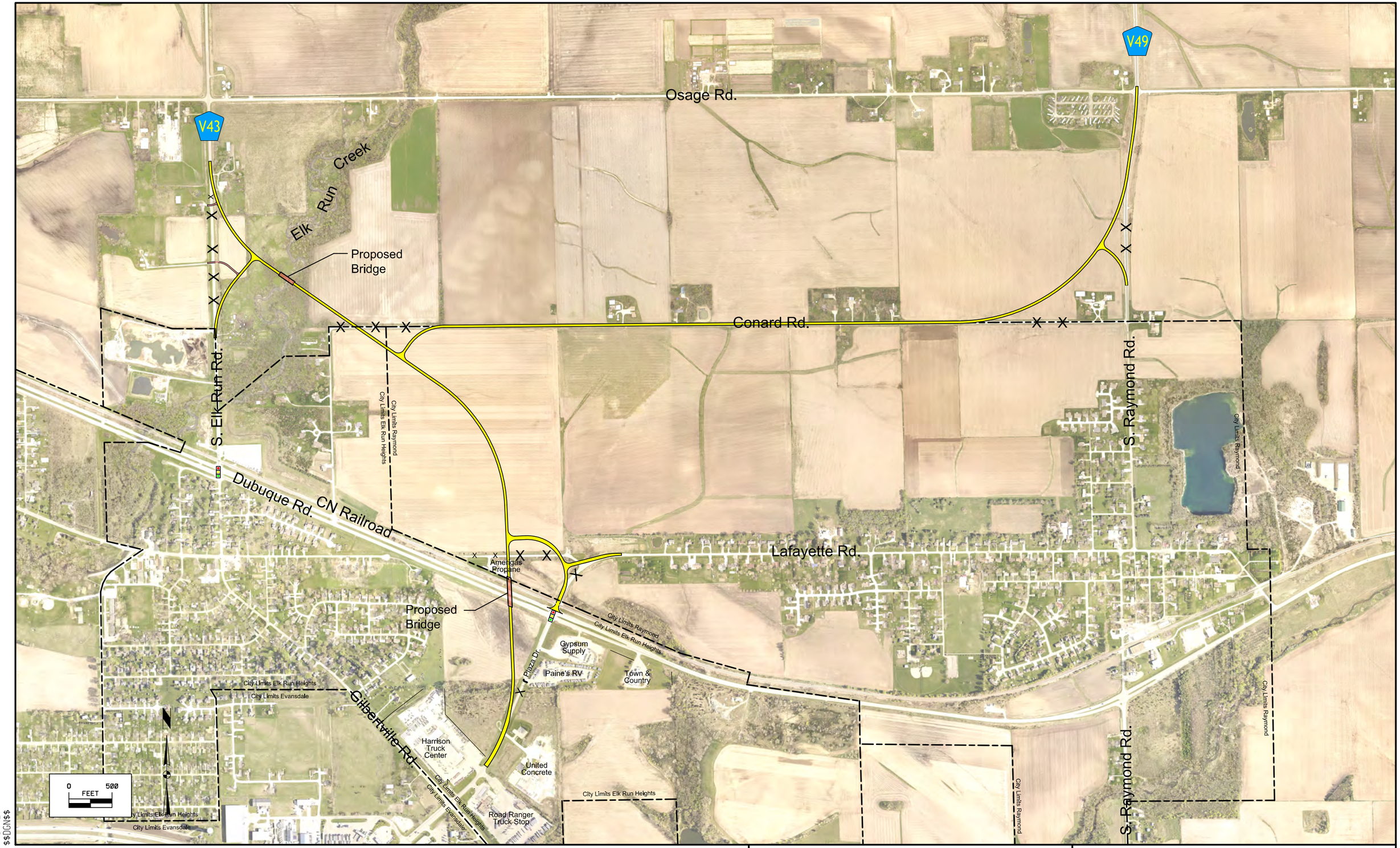
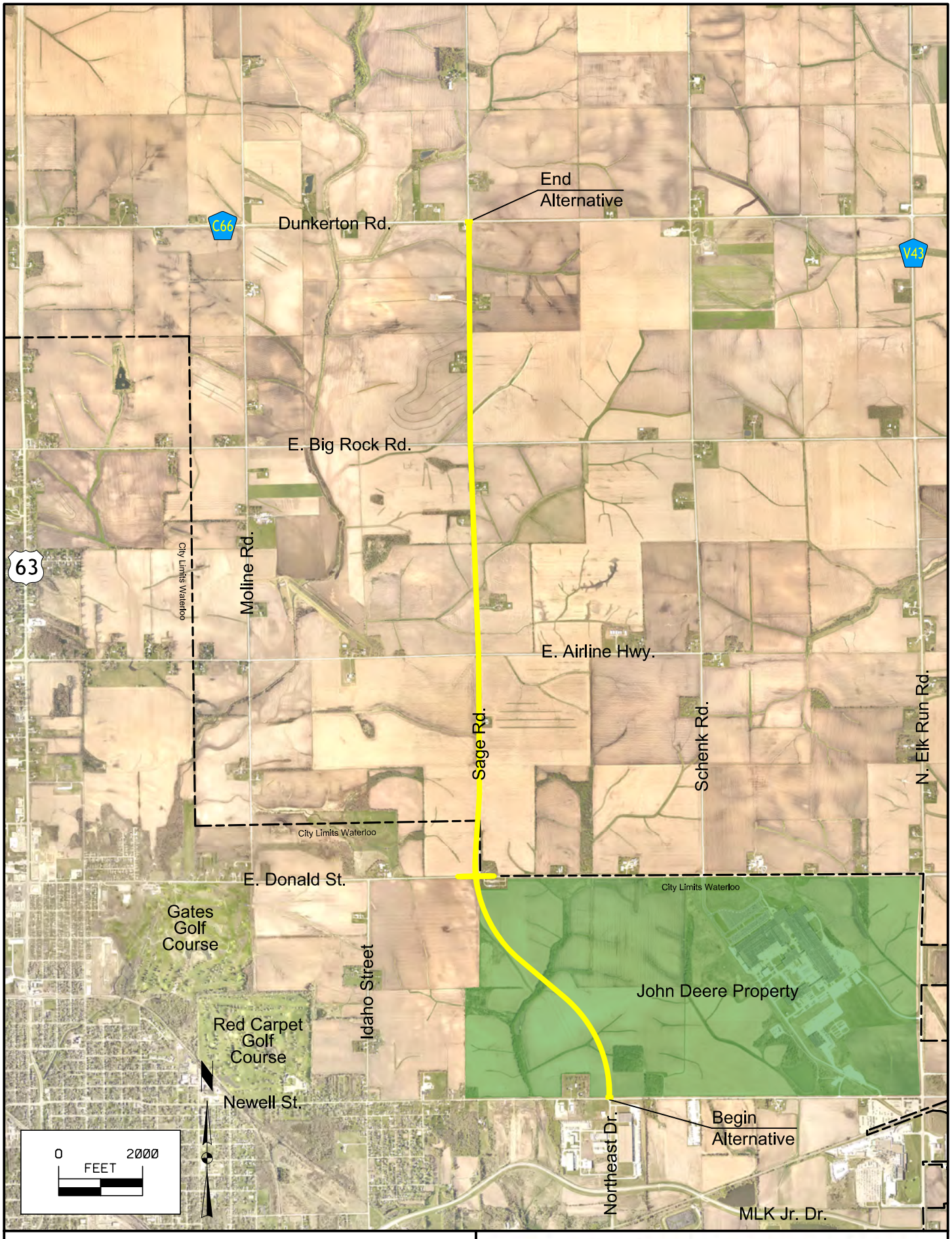
Plaza Drive - Elk Run Road (ALT 3)
Figure 33B

Northeast Industrial Access
PLANNING STUDY



Conard Road Improvements
With Plaza Drive - Elk Run Rd. (Alt 1)
Figure 34

Northeast Industrial Access
PLANNING STUDY



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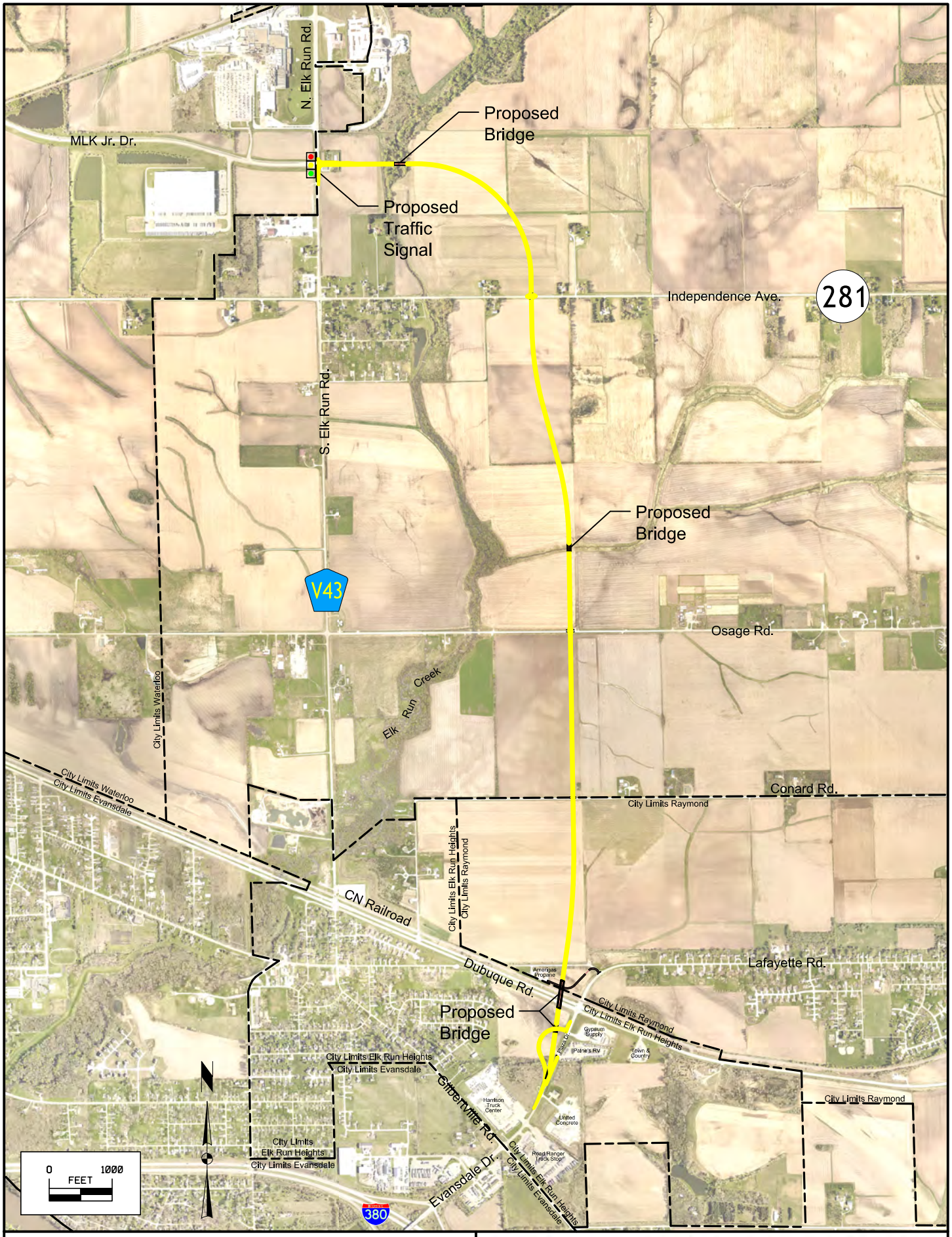
Sage Road Alternative
Figure 35

Northeast Industrial Access
PLANNING STUDY



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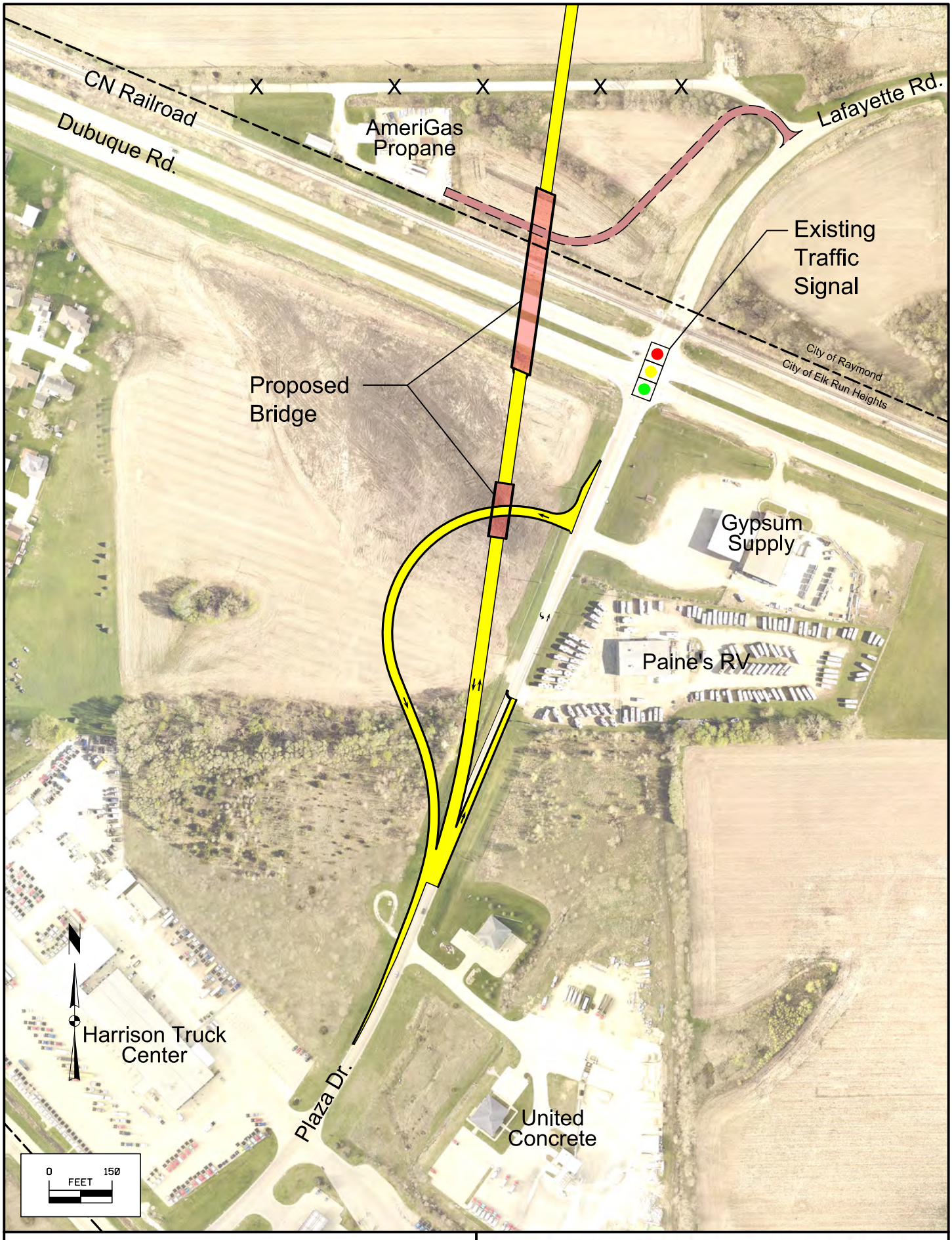
Plaza Dr. - Martin Luther King Jr. Drive Alternative
Figure 36A

Northeast Industrial Access PLANNING STUDY



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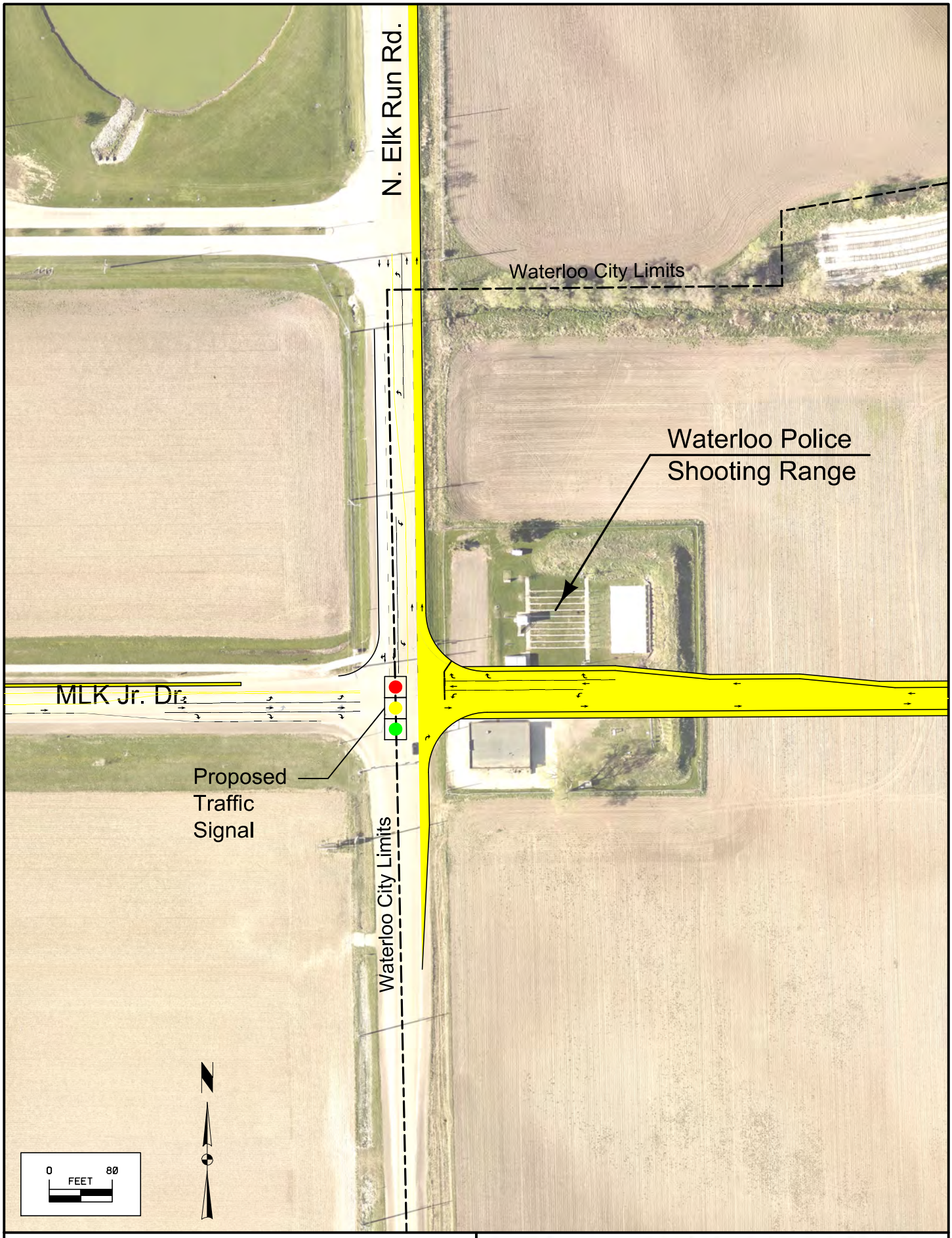
Plaza Dr. - Martin Luther King Jr. Drive
Alternative (South End)
Figure 36B

Northeast Industrial Access
PLANNING STUDY



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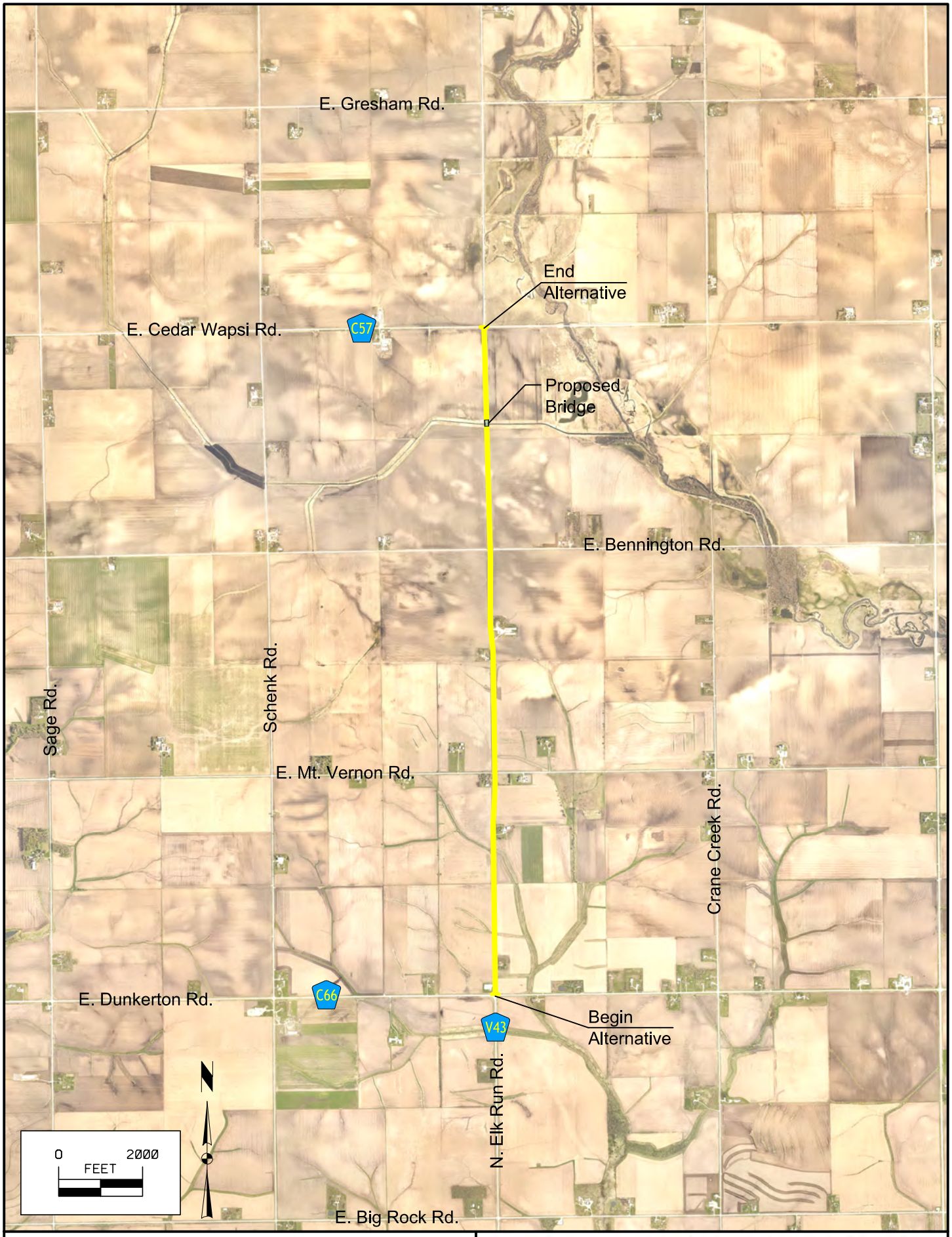
Plaza Dr. - Martin Luther King Jr. Drive
Alternative (North End)
Figure 36C

Northeast Industrial Access
PLANNING STUDY



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North Elk Run Road Extension
Alternative
Figure 37

Northeast Industrial Access
PLANNING STUDY

IV. Final Evaluation of Alternatives

This section of the study describes the final evaluation of the partial and new alignment alternatives. A more thorough assessment of impacts will be presented in this section, which will include an assessment of costs, right-of-way needs, impacts to future development, traffic operations, public comments and freight industry comments.

A. Assessment of Cost

Planning level cost estimates were developed for the alternatives based on estimated quantities of major items. Road profiles, cross sections and construction limits were developed for each alternative. The cross sections were developed based on the typical cross sections shown previously in this study. The planning level cost estimates used unit costs for the measured major items and a contingency for the unmeasured minor items. The planning level cost estimate for each alternative is shown in Figure 38.

B. Right-of-Way Needs and Impacts to Future Development

Right-of-way impacts have been identified for each alternative and are shown in Figure 38, Planning Level Cost Estimates. The right-of-way impacts were estimated by locating an estimated right-of-way line 10 to 15 feet beyond the estimated construction limit line.

Plaza Drive – Elk Run Road Alternative 1: It is estimated that this alternative will include an estimated 4.6 acres of the right-of-way from the high development potential property in the southwest quadrant of Dubuque Road and Plaza Drive in Elk Run Heights. This parcel is described as the Rottinghaus Parcel. This alternative also includes an estimated 38.5 acres of agricultural right-of-way, and a commercial relocation of Amerigas Eagle Propane which is just north of Dubuque Road. If this alternative is further developed, future designs may be able to minimize or eliminate impact to this business.

Plaza Drive – Elk Run Road Alternative 2: It is estimated that this alternative will include an estimated 7.9 acres of the right-of-way from the Rottinghaus parcel and an estimated 28.2 acres of agricultural right-of-way.

Plaza Drive – Elk Run Road Alternative 3: It is estimated that this alternative will have the least amount of impact to the Rottinghaus parcel, at 2.1 acres. It also includes an estimated 48.6 acres of agricultural impact north of Dubuque Road.

Plaza Drive – Martin Luther King Jr. Drive Alternative: Since this alternative matches the Plaza Drive – Elk Run Road Alternative through the Rottinghaus parcel, the impact will be the same at an estimated 7.9 acres. The agricultural right-of-way is estimated at 56.7 acres. This alternative also includes a commercial relocation of the City of Waterloo Shooting Range at the current end of Martin Luther King Jr. Drive on the east side of North Elk Run Road.

Planning Level Cost Estimates for Final Alternatives

			Spot Improvements at Intersections				Capacity Improvements				Partial and New Alignment Alternatives													
			E. Donald St. and Elk Run Rd. Roundabout Alternative		US 63 / Dunkerton Road J-Turn Alternative		Evansdale and Plaza Drive Improvements		North Elk Run Road Improvements		Plaza Drive - Elk Run Road Alternative 1		Plaza Drive - Elk Run Road Alternative 2		Plaza Drive - Elk Run Road Alternative 3		Plaza Dr-Martin Luther King Jr Drive Alternative		Conard Road Alternative		Sage Road Extension Alternative		North Elk Run Road Extension Alternative	
Item	Units	Unit Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
GRADING	CY	$6.00	0	$0.00	20000	$120,000.00	15000	$90,000.00	25000	$150,000.00	550000	$3,300,000.00	439000	$2,634,000.00	605000	$3,630,000.00	451000	$2,706,000.00	155000	$930,000.00	433000	$2,598,000.00	82459	$494,754.00
GRANULAR/MODIFIED SUBBASE	SY	$10.00	10164	$101,640.00	4800	$48,000.00	10733	$107,330.00	16990	$169,900.00	62830	$628,300.00	68784	$687,840.00	93272	$932,720.00	103588.2	$1,035,882.00	54133	$541,330.00	130758	$1,307,580.00	60216	$602,160.00
SHOULDERS	SY	$15.00	1800	$27,000.00	1700	$25,500.00	1330	$19,950.00	5460	$81,900.00	15765	$236,475.00	11300	$169,500.00	26617	$399,255.00	26855	$402,825.00	17208	$258,120.00	40625	$609,375.00	28160	$422,400.00
GRANULAR SURFACING	SY	$10.00	122	$1,220.00	0	$0.00	0	$0.00	0	$0.00	1406	$14,060.00	2570	$25,700.00	2959	$29,590.00	2461	$24,610.00	0	$0.00	254	$2,540.00	620	$6,200.00
BRIDGE APPROACHES	SY	$180.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	1471	$264,780.00	1467	$264,060.00	1354	$243,720.00	1742	$313,560.00	0	$0.00	0	$0.00	507	$91,260.00
ROADWAY PAVING	SY	$65.00	8952	$581,880.00	3658	$237,770.00	8535	$554,775.00	8000	$520,000.00	38450	$2,499,250.00	35410	$2,301,650.00	50738	$3,297,970.00	57549	$3,740,685.00	30658	$1,992,770.00	74891	$4,867,915.00	49590	$3,223,350.00
SIGNING	LS		1	$10,000.00	1	$30,000.00	1	$25,000.00	1	$25,000.00	1	$15,000.00	1	$15,000.00	1	$25,000.00	1	$25,000.00	1	$10,000.00	1	$15,000.00	1	$5,000.00
TRAFFIC CONTROL	LS		1	$10,000.00	1	$40,000.00	1	$50,000.00	1	$50,000.00	1	$20,000.00	1	$20,000.00	1	$50,000.00	1	$50,000.00	1	$15,000.00	1	$20,000.00	1	$10,000.00
CULVERTS, (10% of Earthwork Costs)	LS		0	$0.00	1	$12,000.00	1	$9,000.00	1	$15,000.00	1	$330,000.00	1	$263,400.00	1	$363,000.00	1	$270,600.00	1	$33,000.00	1	$259,800.00		$49,475.40
LONGITUDINAL SHOULDER SUBDRAINS	LF	$10.00	3900	$39,000.00	2200	$22,000.00	0	$0.00	0	$0.00	21500	$215,000.00	18500	$185,000.00	29000	$290,000.00	34200	$342,000.00	22000	$220,000.00	46000	$460,000.00	31600	$316,000.00
SUBDRAIN OUTLETS	EA	$200.00	8	$1,600.00	8	$1,600.00	0	$0.00	0	$0.00	43	$8,600.00	37	$7,400.00	58	$3,770.00	68	$4,420.00	44	$8,800.00	92	$18,400.00	128	$8,320.00
SIGNALS, (Intersections at $200,000)	EA	$200,000.00	0	$0.00	0	$0.00	2	$400,000.00	1	$200,000.00	0	$0.00	0	$0.00	1	$200,000.00	1	$200,000.00	0	$0.00	0	$0.00	0	$0.00
RCB'S	LF	$1,000.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00		$0.00		$0.00	0	$0.00	0	$0.00	0	$0.00
BRIDGES	SF	$150.00	0	$0.00	0	$0.00	0	$0.00		$0.00	25469	$3,820,350.00	32816	$4,922,400.00	20549	$3,082,350.00	40830	$6,124,500.00	0	$0.00	0	$0.00	7075	$1,061,250.00
MOBILIZATION, (5% of above items)	%			$38,700.00		$26,900.00		$62,900.00		$60,600.00		$567,600.00		$574,300.00		$627,400.00		$762,100.00		$203,500.00		$508,000.00		$314,600.00
CONTINGENCIES, (25%)	%			$202,760.00		$140,942.50		$329,800.00		$318,100.00		$2,979,900.00		$3,017,700.00		$3,293,693.75		$4,000,545.50		$1,068,200.00		$2,666,700.00		$1,651,192.35
ENGINEERING, (20%)	%			$202,800.00		$117,000.00		$311,800.00		$288,100.00		$2,319,900.00		$2,490,300.00		$2,567,700.00		$3,459,400.00		$882,200.00		$2,147,100.00		$1,552,300.00
RAILROAD CROSSING	EA	$350,000.00		$0.00	0	$0.00	0	$0.00	1	$350,000.00	0	$0.00	0	$0.00		$0.00		$0.00	0	$0.00	0	$0.00	0	$0.00
ROW ACQUISITION																								
Commercial Relocations	LS		0	$0.00	0	$0.00	0	$0.00	0	$0.00	1	$350,000.00	0	$0.00	0	$0.00	1	$250,000.00	0	$0.00	0	$0.00	0	$0.00
Rottinghaus Parcel	AC	$40,000.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	4.6	$184,000.00	7.9	$316,000.00	2.1	$84,000.00	7.9	$316,000.00	0	$0.00	0	$0.00	0	$0.00
Agricultural	AC	$10,000.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	38.5	$385,000.00	28.2	$282,000.00	46.8	$468,000.00	56.7	$567,000.00	19.1	$191,000.00	79.3	$793,000.00	33.3	$333,000.00
Residential	AC	$400,000.00	0.6	$240,000.00	0.1	$40,000.00	0	$0.00	0	$0.00	0.0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00	0	$0.00
			Planning Level Estimated Cost:		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**		**Planning Level Estimated Cost:**	
			$ 1,457,000.00		**$ 862,000.00**		**$ 1,961,000.00**		**$ 2,229,000.00**		**$ 18,139,000.00**		**$ 18,178,000.00**		**$ 19,589,000.00**		**$ 24,596,000.00**		**$ 6,414,000.00**		**$ 16,274,000.00**		**$ 10,142,000.00**	

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Planning Level Cost Estimates
For Final Alternatives
Figure 38

Northeast Industrial Access PLANNING STUDY

The right-of-way impact for the Plaza Drive – Martin Luther King Jr. Drive Alternative is more significant than the other alternatives due to the longer alternative and the commercial relocation.

Conard Road Alternative: This connection, from Raymond Road to one of the three Plaza Drive – Elk Run Road Alternatives, includes an estimated 19.1 acres of impact.

Sage Road Extension Alternative: This alternative includes 79.3 acres of agricultural right-of-way. This alternative includes the extension of Northeast Drive that will bisect property owned by John Deere as part of the John Deere Tractor Cab Assembly Operations. In discussions with John Deere regarding this study, they have described this property as crucial for federal permitting of the facility. A reduction in property around the Tractor Works may impact permit requirements and other issues.

North Elk Run Road Extension Alternative: This alternative includes 33.3 acres of agricultural right-of-way and includes widening an existing 66-foot right-of-way to accommodate a new rural 2-lane paved roadway.

C. Traffic Operations

This section of the study documents the findings from analyzing the traffic volumes generated through the INRCOG Travel Demand Model of the Northeast Industrial Access Study Area. Specifically, the projected traffic volumes for the year 2045 were compared between the No Build scenario and two design alternatives to the south of the study area at eight different locations to assess the relative changes in travel patterns resulting from the new transportation network connectivity associated with the alternatives. These two design alternatives include:

- Plaza Drive – Elk Run Road Alternative 1 or Alternative 2: Extending Plaza Drive to the North of Dubuque Road and Connecting with Elk Run Road
- Plaza Drive – Martin Luther King Jr. Drive: Extending Plaza Drive to the North of Dubuque Road and Connecting with Martin Luther King Jr. Drive

Additionally, a high-level qualitative assessment of the changes in the transportation network's connectivity with respect to two other design alternatives to the north of the study area were also performed. These alternatives affected roadways extending outside the boundary of the region's travel demand model. Thus, a more quantitative assessment, similar to the volume comparison completed for the southern alternatives, could not be performed. These two alternatives are described as below:

- Sage Road Extension: Extending Northeast Drive to the North of Martin Luther King Jr. Drive and Connecting with Sage Road at East Donald Street; Paving Sage Road Between East Donald Street and East Dunkerton Road
- North Elk Run Road Extension: Extending/Paving Elk Run Road from East Dunkerton Road to Cedar Wapsi Road

Quantitative Traffic Comparison of Southern Connectivity Alternatives

The traffic volumes at the eight locations for the first two design alternatives are presented in Table 4.

TABLE 4. Traffic Volume Summary

Location	No Build (2045)	Design Alternatives (2045)	
		Plaza Drive – Elk Run Road Alternative 1 or 2	Plaza Drive – Martin Luther King Jr. Drive
Plaza Drive - Elk Run Road Alternatives 1 or 2	0	8,933	0
Plaza Drive - MLK Jr. Drive Alternative - North of Dubuque Road	0	0	9,373
Plaza Drive - MLK Jr. Drive Alternative - West of North Elk Run Road	0	0	6,325
South Elk Run Road, North of Dubuque Road	4,665	1,048	1,445
Dubuque Road, Between South Elk Run Road and Plaza Drive	6,791	3,538	2,282
Dubuque Road, East of Plaza Drive	3,060	1,834	2,330
North Elk Run Road, North of MLK Jr. Drive	5,395	5,278	7,653
North Elk Run Road, South of MLK Jr. Drive	5,337	6,150	2,350
MLK Jr. Drive Extension, West of North Elk Run Road	936	2,306	1,684
Raymond Road South of Osage Road	2,302	2,394	1,384
Raymond Road South of Young Road	3,821	3,707	3,973
Plaza Drive	9,527	12,292	12,163

Through reviewing the projected 2045 traffic volumes at the eight locations, several findings and differentiators between these two alternatives are presented as follows:

1) As a result of both of these alternatives, the Plaza Drive extensions north of Dubuque Road carry approximately 9,000 vehicles per day which would otherwise be distributed on other routes under the No Build scenario.

2) Both alternatives decrease the traffic volume significantly on North Elk Run Road, just north of Dubuque Road. Specifically, the Plaza Drive – Elk Run Road Alternatives decrease traffic volume by approximately 78%, while the Plaza Drive to Martin Luther King Jr. Drive Alternative decreases traffic volume by approximately 69%.

3) The Plaza Drive – Martin Luther King Jr. Drive Alternative decreases traffic volume on the section of Elk Run Road between Dubuque Road and Martin Luther King Jr. Drive by approximately 56%, shifting traffic away from the residential acreages along this roadway.

4) The intersection formed by the Plaza Drive - Martin Luther King Jr. Drive Alternative with North Elk Run Road will experience high, heavy vehicle traffic volumes for the westbound right-turn and southbound left-turn movements. Thus, it is recommended that if this alternative is carried forward, this intersection be designed to accommodate large heavy vehicle turning volumes, especially for the two turning movements mentioned above.

Qualitative Traffic Comparison of Northern Connectivity Alternatives

The Sage Road Extension and North Elk Run Road Extension mainly aim to improve access and freight accommodation to the north of the Northeast Industrial Area. In this area, US 63 and US 218 are the two major highways that are very likely to attract most of the heavy vehicle traffic. These two design alternatives may provide better routes to the northbound and southbound traffic to access East Dunkerton Road and East Cedar Wapsi Road, which are the two major corridors connecting US 63 and US 218.

Because the current INRCOG Travel Demand Model does not cover the scope of the areas for Sage Road Extension and North Elk Run Road Extension, detailed traffic volume projections for the year 2045 were not available. Refer to Figure 39 for a graphical representation of the Projected 2045 ADT for various alternatives. As a result, a qualitative review and assessment of the possible changes in traffic patterns in the nearby area introduced by these two design alternatives was performed and summarized as follows.

1) Sage Road Extension may result in fewer heavy vehicles along Donald Street west of Sage and east of US 63, a stretch of roadway currently embargoed. Paving Sage Road between Donald Street and Dunkerton Road would provide a route for heavy vehicles to bypass the embargoed segment of Donald Street where, currently, there is no paved option at the point where the embargo begins.

2) The heavy vehicle traffic volume on East Dunkerton Road between US 218 and Sage Road may increase under both design alternatives. Pavement evaluation along this segment may be needed to accommodate future traffic.

3) Accommodations to heavy turning movements are needed at the two new intersections (Sage Road & East Dunkerton Road and North Elk Run Road & East Cedar Wapsi Road), especially the northbound left-turn and westbound right-turn movements.

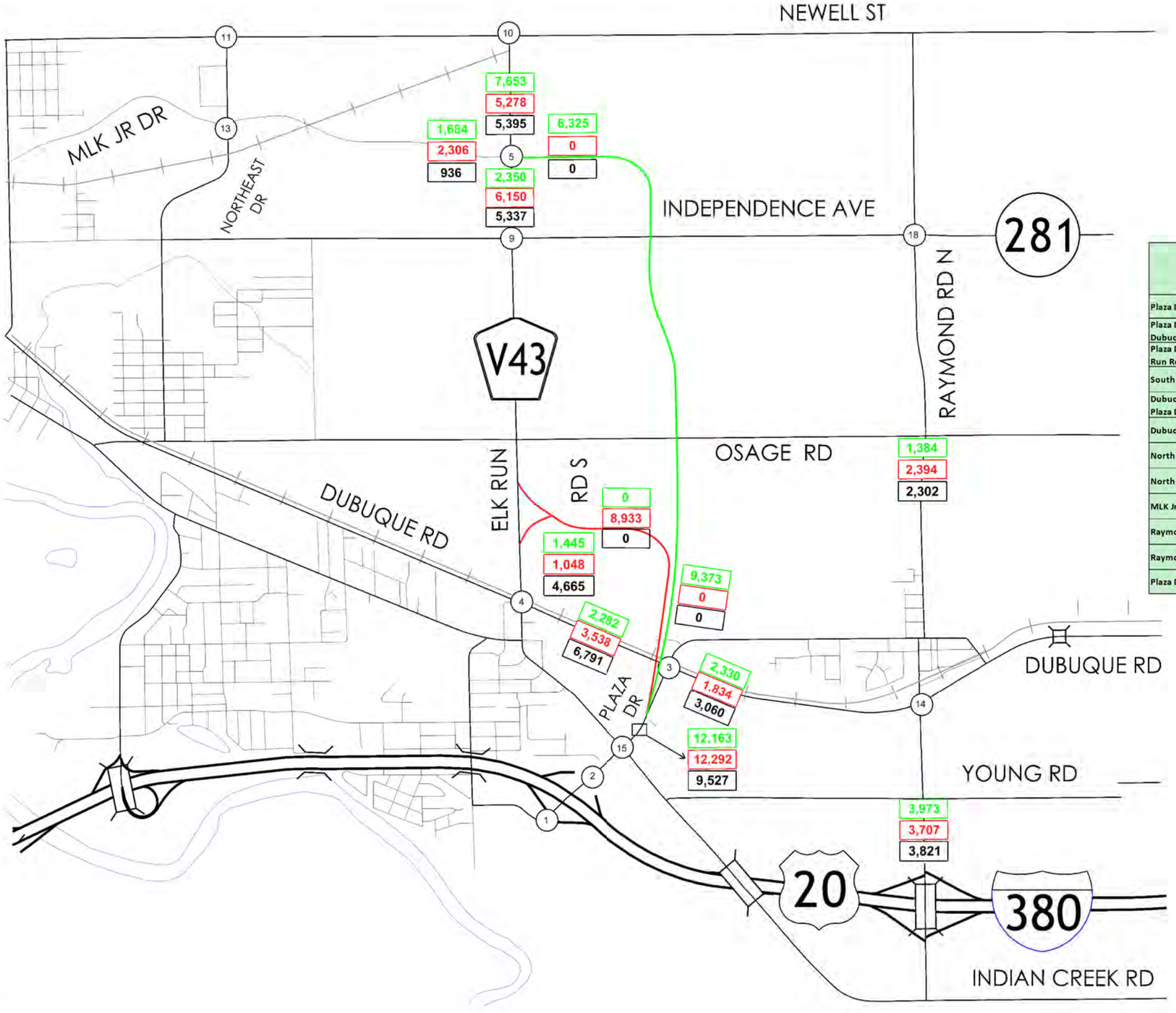
4) The North Elk Run Road Extension alternative provides the added benefit of connecting west to an interchange with US 218, providing additional connectivity to areas north and west of Waterloo.

D. Public Comments

Throughout the study process, public comments were encouraged and received. This section of the study gives an overview of the public involvement process of the study.

Project Website

Throughout the project, a website was maintained that included basic information on the study and provided study updates. The public could subscribe to receive emails as well as view maps and alternatives.



NORTH

NOT TO SCALE

Location	No Build (2045)	Design Alternatives (2045)	
		Plaza Drive - Elk Run Road Alternative #1 or #2	Plaza Drive – Martin Luther King Jr. Drive Alternative
Plaza Drive - Elk Run Road Alternatives 1 or 2	0	8,933	0
Plaza Drive - MLK Jr. Drive Alternative, North of Dubuque Road	0	0	9,373
Plaza Drive - MLK Jr. Drive Alternative, East of N. Elk Run Road	0	0	6,325
South Elk Run Road, North of Dubuque Road	4,665	1,048	1,445
Dubuque Road, Between South Elk Run Road and Plaza Drive	6,791	3,538	2,282
Dubuque Road, East of Plaza	3,060	1,834	2,330
North Elk Run Road, North of MLK Jr. Drive	5,395	5,278	7,653
North Elk Run Road, South of MLK Jr. Drive	5,337	6,150	2,350
MLK Jr. Drive Extension, West of North Elk Run Road	936	2,306	1,684
Raymond Road, South of Osage Road	2,302	2,394	1,384
Raymond Road, South of Young Road	3,821	3,707	3,973
Plaza Drive	9,527	12,292	12,163

LEGEND

- ROADWAY NETWORK - NO BUILD
- SCHEMATIC OF DESIGN ALTERNATIVE #1 - EXTEND PLAZA DRIVE TO ELK RUN ROAD
- SCHEMATIC OF DESIGN ALTERNATIVE #2 - EXTEND PLAZA DRIVE TO MLK JR. DRIVE
- X,XXX PROJECTED 2045 ADT - PLAZA DRIVE - MLK JR. DRIVE
- X,XXX PROJECTED 2045 ADT - PLAZA DRIVE - ELK RUN ROAD ALTERNATIVE 1 OR 2
- X,XXX PROJECTED 2045 ADT - NO BUILD

TRAFFIC VOLUME SUMMARY

FIGURE 39

$$DATE$$
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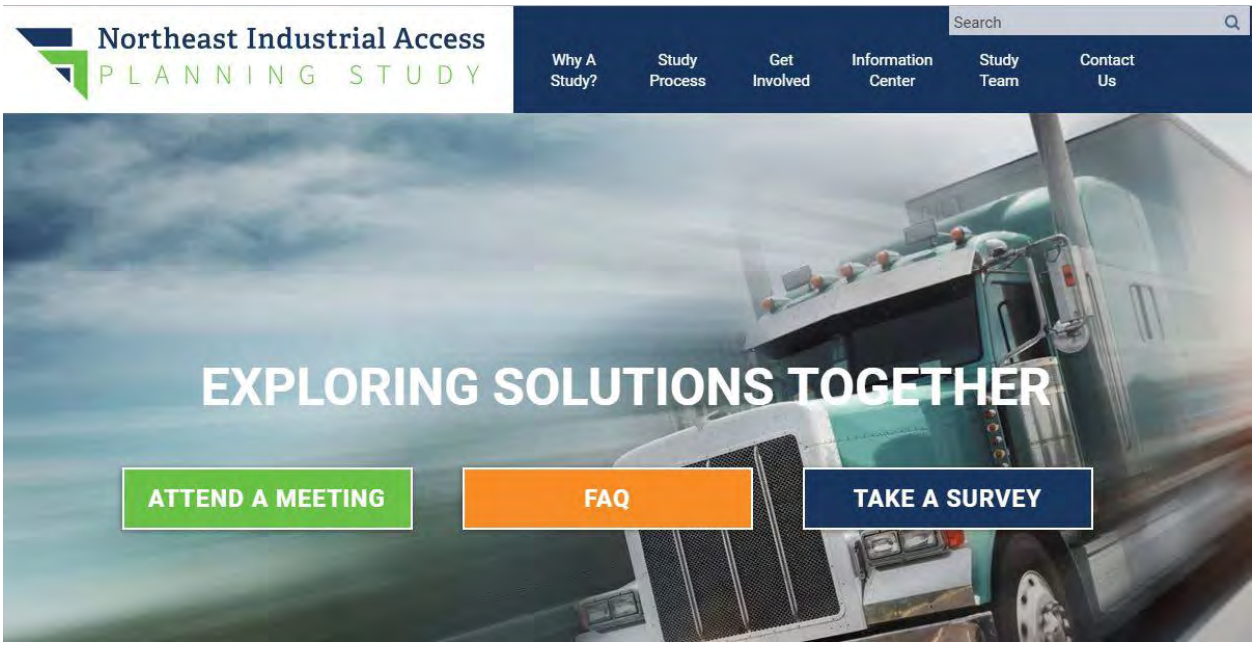


FIGURE 40: *Project Website Address:* www.neindustrialaccess.com

Public Information Meeting, April 20, 2017

An initial Public Information Meeting was held on April 20, 2017, to introduce the public to the Northeast Industrial Access Planning Study. Thirty (30) to 35 people attended the open house, with many positive comments received.

Public Information Meeting, September 20, 2018

A public information meeting was held on September 20, 2018, to review capacity improvements, spot intersection improvements and partial/new alignment alternatives. All of the alternatives shown in the description of alternatives were displayed and shown at the public information meeting. More than 30 area residents attended the meeting which included a presentation.

The presentation included a description of the alternatives that have been developed, and there was encouragement to provide comments on the various alternatives. A survey of questions, along with the comment form, was available to the public. The results of the survey and comments received are shown in the Appendix B.

E. Freight Industry Comments

AECOM reached out to the freight industry in the Northeast Industrial Area by e-mailing and calling roughly 18 businesses. Of those businesses, eight of the businesses responded. The e-mail included the proposed alternatives with a description of the project, project website and the information requested. The businesses were asked the following questions:

- To which major highway corridor would your company most like to have improved access?
- Do you think the proposed alternatives improve access to the major highway corridors?
- Which alternative(s) would you give highest priority for funding/completion?
- What are your comments to the attached alternatives?

FREIGHT INDUSTRY RESPONDERS	
Tyson Fresh Meats	501 North Elk Run Road, Waterloo
John Deere Tractor Works	3500 East Donald Street, Waterloo
Road Ranger	100 Plaza Drive, Elk Run Heights
BMC Aggregates	101 BMC Drive, Elk Run Heights 3622 Gilbertville Road, Waterloo 4618 East Donald Street, Waterloo
Gray Transportation	2459 GT Drive, Waterloo
Watco (Formerly Kinder Morgan Terminals)	638 North Elk Run Road, Waterloo
CON-TROL Container Systems	2425 GT Drive, Waterloo
Johnson Feed, Inc.	880 Doris Drive, Evansdale

We received a variety of comments and concerns about the alternatives and access issues. The primary issues were with access to US 20, through traffic bypassing downtown Waterloo, maintenance and safety issues on North Elk Run Road south of Independence Avenue, and Tyson's truck traffic blocking access and traffic. The majority of businesses supported the Plaza Drive and railroad grade separation, widening of North Elk Run Road and the extension of Plaza Drive to Martin Luther King Jr. Drive. They felt these improvements would improve access to the highway corridor and increase safety. A few commented on the benefits of improving North Elk Run Road to Cedar Wapsi Road; however, others thought that improvement would increase bypass/cut-through traffic. The comments received on the roundabout were split. The supporters felt it would keep traffic moving and safer; however, others thought the trucks would be unable to maneuver the roundabout.

To see all of the comments from the freight industry, refer to Appendix C.

V. Summary of Feasible Alternatives

Throughout the study process, many alternatives were discussed and evaluated. The process was not intended to meet the requirements of the National Environmental Policy Act (NEPA), but to identify feasible alternatives for future improvement. For partial and new alignment alternatives, future phases of project development will include an Environmental Assessment, at which time all feasible alternatives must be reconsidered before a final decision is made. This study provides conceptual alternatives which will be used to guide future planning and development of projects in the study area.

This section of the study provides a discussion of each alternative, which will include advantages and disadvantages.

A. Spot Improvements at Intersections

Donald Street and Elk Run Road Roundabout Alternative

This alternative includes the installation of a roundabout intersection. The roundabout intersection is shown in Figure 28. The estimated planning level cost of the single-lane roundabout intersection is $1,457,0000. KWWL aired a news story in November of 2017 based on concerns from a resident who lives near the intersection. There is a perceived safety concern from the public. As stated in the Development of Initial Alternatives, Section III, the crash data (2012-2016) shows that this intersection is higher than comparable intersections statewide. The crash rate at this intersection is 0.81 crashes/ million entering vehicles (MEV) compared to 0.80 crashes/MEV. This intersection includes one severe injury crash, as shown in Figure 18B.

The comments on the roundabout intersection from the freight industry were mixed. The freight industry concerns were in regard to trucks tipping while navigating through the roundabout. Positive comments were in regard to traffic flow and safety improvements.

The advantage of a roundabout intersection is that it decreases the severity of crashes at an intersection. As shown on the US Department of Transportation Federal Highway Administration website, research has shown that conversion of a 2-way, stop-controlled intersection to a roundabout intersection reduces crash severity by 82%.

The disadvantages include the right-of-way impacts at the intersection. The entrance to the property in the northeast quadrant would most likely need to be relocated due to close proximity to the intersection. The house is fairly close to the intersection as well. Another disadvantage is the perceived issues with trucks navigating through a roundabout intersection. With the high volume of truck traffic through this intersection, it will be very important that future consideration of a roundabout intersection include measures to accommodate large trucks, such as truck aprons with low curb heights and larger inscribed diameter. Roundabouts do receive additional public attention and would include more public participation than other roadway projects.

US 63/Dunkerton Road J-Turn Alternative

As discussed in the Development of Initial Alternatives, Section III, a J-Turn was an alternative that was developed for this intersection. Due to public opposition and other reasons, J-Turn intersections have not been installed in Iowa. Due to the narrow median width, a J-Turn intersection may not be the best solution for this intersection. To provide truck accommodation, additional modification of the far shoulder to allow for U-turns would be needed.

B. Capacity Improvements

Based on a review of the existing conditions and future traffic along Evansdale Drive/Plaza Drive Corridor and the North Elk Run Road Corridor, the capacity improvements of both corridors have many advantages.

The advantages of these alternatives include:

- Lane continuity for through traffic and designated turn-lane assignments.
- Extra lane capacity assists in truck turning movements, acceleration and deceleration of trucks.
- The existing railroad crossing of the UP Railroad on North Elk Run Road is currently 2 lane, with 4-lanes north and south of the crossing. The recommended capacity improvement widens the crossing to 5 lanes.
- Allows for traffic growth and the development of the Plaza Drive to Martin Luther King Jr. Drive alternative.
- The capacity improvements of Evansdale Drive/Plaza Drive includes the signalization of the eastbound ramps at the Evansdale Drive interchange with I-380/US 20. Without signalization, this intersection showed a Level of Service "F." By providing signalization, it will allow for future development and growth.

C. New Alignment Alternative

The new alignment alternatives that were developed as part of the study include alternatives that improve access to I 380/US 20 and alternatives that improve access to US 63.

The I-380/US 20 alternatives are as follows:

Plaza Drive – Elk Run Road Alternatives

These alternatives on new alignment all include extensions of Plaza Drive at Dubuque Road, with bridges over Dubuque Road and the CN Railroad to eliminate conflicts with the CN Railroad which is an identified barrier to efficient access to the Northeast Industrial Area. All of the alternatives then connect to South Elk Run Road south of Osage Road. These alternatives have the following similarities:

- Allow for some development of the Rottinghaus parcel south of Dubuque Road and future development north of Dubuque Road.
- Each alternative maintains a 0.25-mile spacing for access control.
- Provides a connection back to South Elk Run Road south of Osage Road utilizing the existing South and North Elk Run Roads to provide access to the Northeast Industrial Area.
- These alternatives would utilize 1.6 miles of existing North/South Elk Run Roads up to Martin Luther King Jr. Drive. North/South Elk Run Roads include pavement widths of 22 feet and shoulder widths ranging from 6 to 8 feet. This 1.6-mile section of roadway also includes over 30 access points, such as field entrances, driveways and intersections.
- Lower cost alternative compared to the Plaza Drive to Martin Luther King Jr. Drive Alternative.
- These alternatives show a projected 2045 traffic volume of 8,933 vpd and increases the traffic on Plaza Drive south of Dubuque Road from the projected 2045 "No-Build" alternative (9,527 vpd) to 12,292 vpd.

Alternative 1: This alternative is shown in Figures 31A and 31B and includes an intersection on the north side of Dubuque Road that connects to Lafayette Road and Dubuque Road. This alternative includes approximately 2.2 miles of new roadway. This alternative includes the relocation of Amerigas Eagle Propane, which is located just north of Dubuque Road to the west of Lafayette Road.

Alternative 2: This alternative is shown in Figures 32A and 32B and includes a modified directional intersection with Plaza Drive which connects to the existing Dubuque Road/Plaza Drive intersection which will remain as is. This alternative includes approximately 2.1 miles of new roadway.

Alternative 3: This alternative is shown in Figures 33A and 33B and includes a proposed signalized intersection with Dubuque Road that is graded to allow for a bridge over the CN Railroad. This alternative also includes an intersection with Lafayette Road and includes approximately 2.7 miles of new roadway. This alternative would include intersections that do not meet the 0.25-mile spacing for access control.

Conard Road Improvements

The Conard Road alternative provides a direct connection of County Road V49 (Raymond Road) to either of the Plaza Drive – Elk Run Road Alternatives, as shown in Figure 34. This alternative routes traffic away from the City of Raymond and onto the Plaza Drive/Evansdale Drive corridor. This alternative may open up the development potential along the improved Conard Road. Although the access spacing would be less than 0.25 mile, improvements to traffic flow may be experienced due to the bypass of the City of Raymond. This alternative includes approximately 2.1 miles of new roadway.

Plaza Drive to Martin Luther King Jr. Drive

This alternative is an extension of Plaza Drive at Dubuque Road and provides a parallel route to North/South Elk Run Road all the way north to the easterly extension of Martin Luther King Jr. Drive, as shown in Figures 36A, 36B and 36C. This alternative includes approximately 3.5 miles of new roadway and includes bridges over Dubuque Road and the CN Railroad to eliminate conflicts with the CN Railroad which is an identified barrier to efficient access to the Northeast Industrial Area. This alternative includes the following advantages and disadvantages:

The advantages of this alternative include the following:

- Provides an alternative that is designed for heavy truck traffic and would be a preferred route over the existing North/South Elk Run Road. When evaluating costs, consideration should be given to the future maintenance costs of North/South Elk Run Road.
- Plaza Drive – Elk Run Road Alternatives include utilizing the existing North/South Elk Run Roads which have numerous access points, narrow shoulders and a pavement structure not designed for heavy truck traffic. The Plaza Drive – Martin Luther King Jr. Drive Alternative would be designed to accommodate trucks and include access control spacing of at least o.25 mile.
- This alternative attracts more future 2045 traffic (6,325 vpd) to the corridor than the No-Build (5,337 vpd) or Plaza Drive – Elk Run Road Alternatives (6,150 vpd) just south of Martin Luther King Jr. Drive.
- This alternative reduces the projected 2045 traffic (1,384 vpd) on Raymond Road compared to the No-Build alternative (2,302 vpd) and the Plaza Drive – Elk Run Road Alternatives (2,394 vpd).

- This alternative reduces the projected 2045 traffic (1,684 vpd) on Martin Luther King Jr. Drive west of North Elk Road compared to the Plaza Drive – Elk Run Road Alternative (2,306 vpd).

The disadvantages of this alternative include the following:

- This alternative has a higher construction cost than the Plaza Drive – Elk Run Road Alternatives.
- This alternative has more right-of-way impacts compared to the Plaza Drive – Elk Run Road Alternatives.

The US 63 alternatives are as follows:

Sage Road Alternative

The Sage Road Alternative is the extension of the Northeast Drive north, with a westerly shift toward the Sage Road, and along Sage Road up to Dunkerton Road. This alternative will include access control at 0.25-mile spacing and includes approximately 4.0 miles of new roadway, as shown in Figure 35.

The advantages of this alternative include the following:

- Improves access for the Northeast Industrial Area to US 63 and US 218.
- Provides an opportunity for future development along the corridor.
- This alternative may result in fewer heavy vehicles along Donald Street west of Sage Road and east of US 63, a stretch of roadway currently embargoed. Paving Sage Road between Donald Street and Dunkerton Road would provide a route for heavy vehicles to bypass the embargoed segment of Donald Street where, currently, there is no paved option at the point where the embargo begins.
- This alternative may result in less traffic on Dunkerton Road from Sage Road to North Elk Run Road and on North Elk Run Road. The Sage Road Alternative provides an additional north/south connection to the Northeast Industrial Area.

The disadvantages of this alternative include the following:

- This alternative bisects property owned by John Deere as part of the John Deere Tractor Works. In discussions with John Deere regarding this study, they have described this property as crucial for federal permitting of the facility. A reduction in property around the tractor works may impact permit requirements and other issues.
- Less traffic is projected to travel north of the Northeast Industrial Area than south. The No-Build 2045 traffic projections for North Elk Run Road north of East Donald Street is estimated at 1,567 vpd and the No-Build 2045 traffic projections for North Elk Run Road south of Independence Avenue is estimated at 5,304 vpd.

North Elk Run Road Extension Alternative

This alternative includes paving North Elk Run Road (V49) from Dunkerton Road up to Cedar Wapsi Road (C57), which is approximately 3.0 miles in length and is shown in Figure 37.

The advantages of this alternative include the following:

- Improves access for the Northeast Industrial Area to US 63 and US 218.
- Provides direct access to Cedar Wapsi Road from the Northeast Industrial Area. Cedar Wapsi Road includes an interchange with US 218 and is a destination for northbound US 218 traffic.
- This alternative will decrease traffic at the Dunkerton Road and US 63 intersection. The projected 2045 traffic operations level-of-service (LOS) for this intersection is AM – LOS D and PM – LOS E, which is at capacity. See Figure 22 for 2045 Traffic Operations Summary.
- Routes traffic away from an intersection that has a higher than average crash rate.

The disadvantages of this alternative include the following:

- Existing Dunkerton Road provides access to US 63, and current traffic operations are satisfactory.
- The speed limit on US 63 is 55 mph at Dunkerton Road, compared to 65 mph at Cedar Wapsi Road.

Refer to Figure 41 that shows all of the new alignment alternatives.

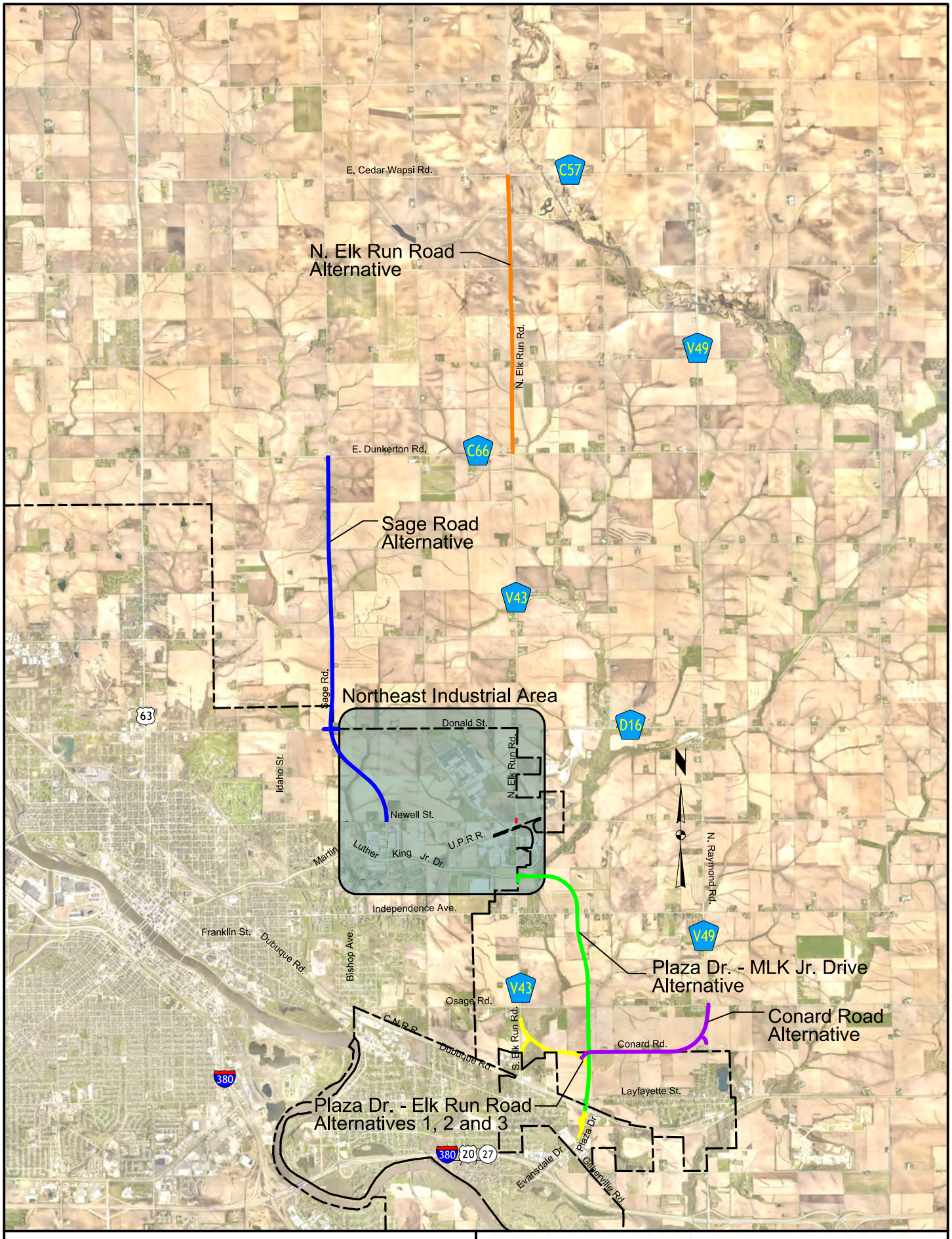
D. Future Project Development Activities

It should be noted that this study constitutes a preliminary location study and is intended to be used as a planning tool for future projects and development within the study area.

This study represents existing conditions and known developments which are pending at the time of this study. If changes occur in the planned development within this corridor, it is recommended that the proposed roadway alignments be reviewed and modified, as necessary, to correspond with these changing conditions.

Acceptance of this report by the Advisory Committee and INRCOG indicates that the project team has successfully performed tasks consistent with the study's scope of work. Acceptance by any or all of the members of the Advisory Committee does not imply that the alternatives have been selected. Selection of a design alternative will occur as the project enters a formal planning/design phase and necessary National Environmental Policy Act (NEPA) activities are undertaken.

Finally, it is recommended that this study be considered as a living document, and should be monitored to confirm if future development and traffic volumes are tracking as expected. If conditions change in the study area, alternatives should be reviewed and modified, if necessary, to represent the new conditions.



$$DATE$$
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New Alignment Alternatives
Figure 41

Northeast Industrial Access
PLANNING STUDY

APPENDIX A
FREIGHT SURVEY QUESTIONS

NE INDUSTRIAL ACCESS PLANNING STUDY
Freight Survey Questions

Introduction:

Thank you for the time today to help us with this important study. Before we begin, we wanted to assure you that all answers provided today will be treated as confidential and only be presented as an aggregation of all the data we collect. The data will help the team identify the freight related needs in the study area and to assist in the evaluation of the alternatives developed.

General Information

1. Which of the following industries best characterizes your business (all that apply)?
    - Agriculture
    - Natural Resources
    - Manufacturing
    - Consumer Goods
    - Transportation and Logistics
    - Other
2. Approximately how many employees do you have in the Northeast Industrial Access Study Area? (Fewer than 10; 10-24; 50-99; 100-249; 250-499; 500-999; over 1000)

Freight Logistics

3. Where do your inbound commodities come from?
   (local (map), regional (map), Iowa; Midwest; Elsewhere in US; International)
4. What transportation modes do your inbound commodities use?
   (Road, Rail, Water, Air, Intermodal/Container)
5. Approximately how many trucks and/or rail cars enter your Northeast Industrial area facility on a weekly basis?
6. Where do you ship your goods?
   (Iowa; Midwest; Elsewhere in US; International)
7. What modes do you use to ship your goods?
   (Road, Rail, Air, Water, Intermodal/Container)
8. Approximately how many trucks and/or rail cars leave your Northeast Industrial area facility on a weekly basis?

Trucking Related Challenges

9. What challenges do you see with the local roadway network in regards to trucking?
10. Are there local or regional routes which would be more preferred if they met your trucking needs?
11. Are there any deterrents which cause your drivers to avoid any study area routes (e.g. weight restriction, height restriction, turning radius, congestion, etc.)?
12. Are there access problems into and out of any facility locations?
13. Are there major bottlenecks or congestion that impacts freight movement?

Air Related Challenges

14. What challenges do you see with shipping by air freight?
15. Is air freight located in a location that is easy for your organization to use?
16. What improvements would result in you utilizing air freight more frequently?

General Transportation Needs/Issues

17. Transportation System Needs and Issues – From your perspective what are the top 3 most significant transportation issues in the Northeast Industrial Access area (try to provide specific details where possible)?
    - Congestion
    - Safety
    - Geometric Issues (turn lanes, lane drops, clearance, access points, etc)
    - Other infrastructure issues (bridge wt limits, truck route restrictions, etc)
    - Truck Parking
    - Access to modes/competitive services
    - Cost
    - Regulatory issues (delivery restrictions, hours of services)
    - Other (please identify)
18. From your perspective, what are the top 3 transportation system improvements in the Northeast Industrial Access area that would help improve the competitiveness of your business, providing specific details where possible:
    - New/expanded roadways
    - Pavement improvements

- At-grade rail separation/crossing improvements
- Dedicated truck routes
- Bridge improvements
- New/improved intermodal and/or port facilities
- Transload/consolidation facilities
- Truck parking
- Tolling
- Other (please identify)

18. In the next 5 to 10 years, which freight mode do you expect will see the most growth in your Northeast Industrial Access area operations?

- Truck
- Rail
- Air
- Water
- Pipeline
- No opinion

19. What are the biggest challenges for freight movement in the Northeast Industrial Access area in the next 5 to 10 years? Please select up to THREE options:

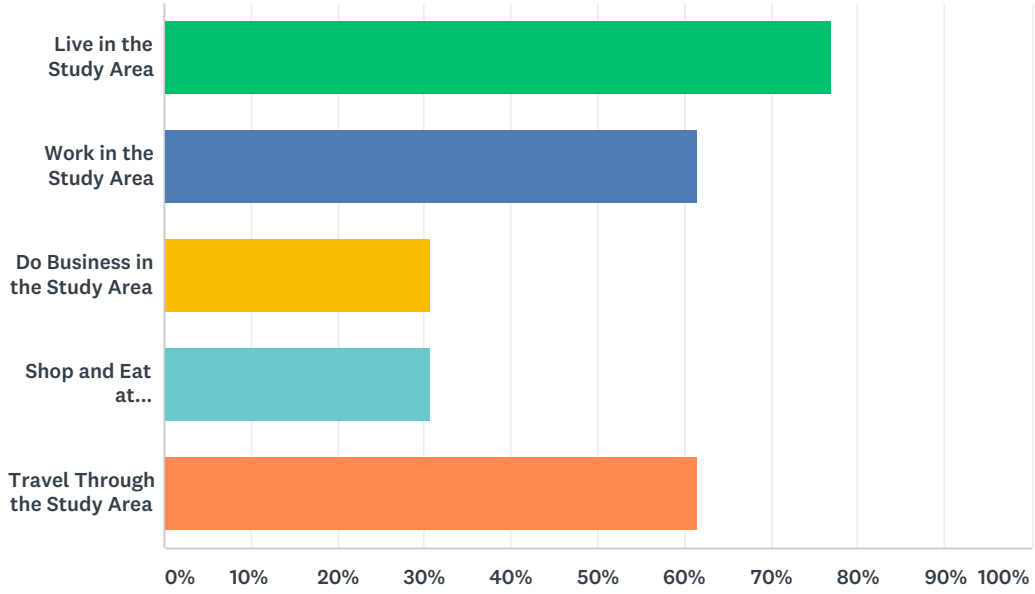
- Infrastructure constraints
- Carrier/Operator availability
- Intermodal connectivity
- Reliability
- Technology
- Policy
- Cost (rates)
- Safety and Security
- Environmental Impact

20. What trends or new infrastructure are likely to influence your supply chain decisions in the next 5 to 10 years?

APPENDIX B
PUBLIC INFORMATION MEETING SURVEY RESULTS AND COMMENTS

Q1 Which of the following best describes you? (check all that apply)

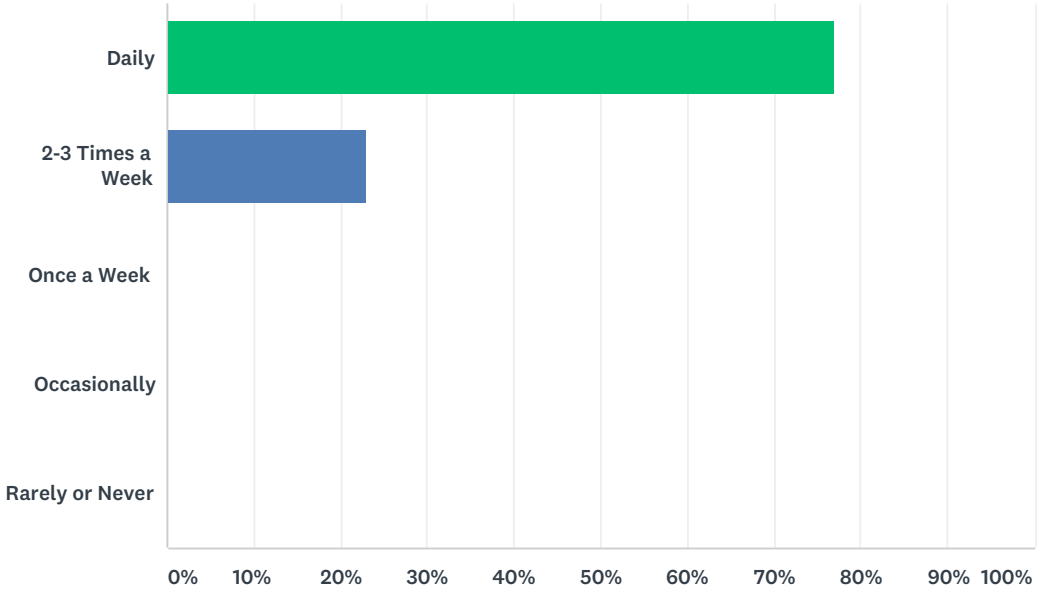
Answered: 13 Skipped: 0



ANSWER CHOICES	RESPONSES	
Live in the Study Area	76.92%	10
Work in the Study Area	61.54%	8
Do Business in the Study Area	30.77%	4
Shop and Eat at Establishments in the Study Area	30.77%	4
Travel Through the Study Area	61.54%	8
Total Respondents: 13		

Q2 How often do you travel in the study area?

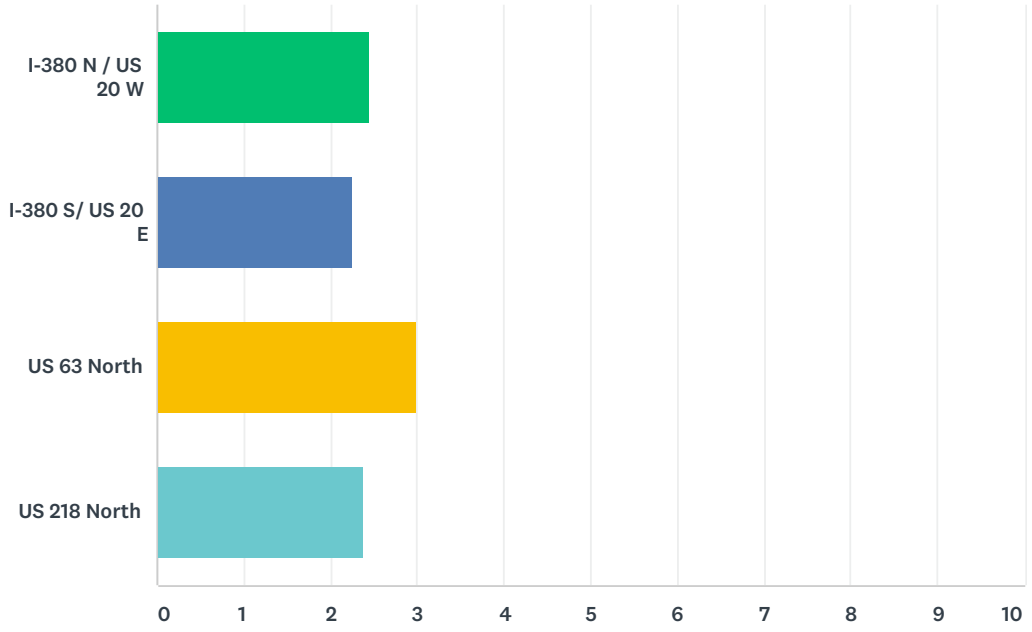
Answered: 13 Skipped: 0



ANSWER CHOICES	RESPONSES	
Daily	76.92%	10
2-3 Times a Week	23.08%	3
Once a Week	0.00%	0
Occasionally	0.00%	0
Rarely or Never	0.00%	0
TOTAL		13

Q3 From the study area, where would you like to have improved access or which direction do you most commonly travel? (Ranking from 1 as the Most Important to 4 as the Least Important)

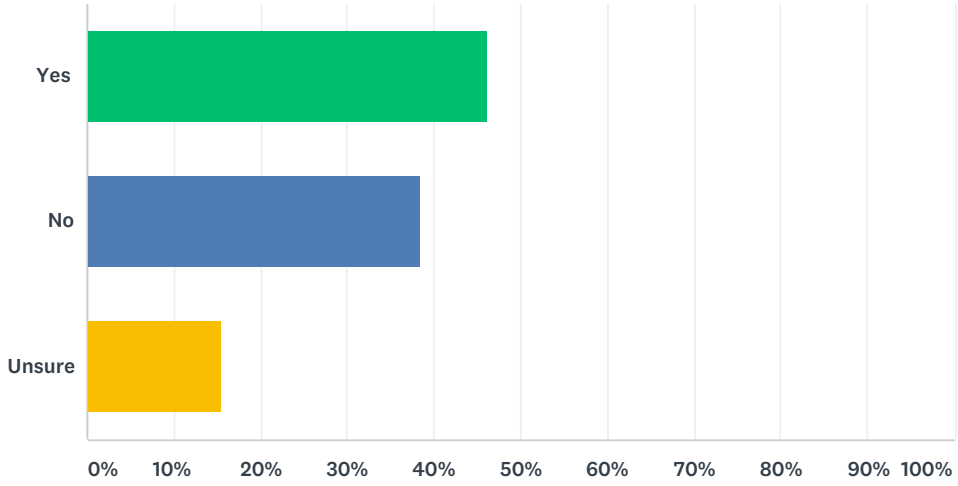
Answered: 10 Skipped: 3



	1	2	3	4	TOTAL	SCORE
I-380 N / US 20 W	44.44% 4	0.00% 0	11.11% 1	44.44% 4	9	2.44
I-380 S/ US 20 E	0.00% 0	37.50% 3	50.00% 4	12.50% 1	8	2.25
US 63 North	40.00% 4	30.00% 3	20.00% 2	10.00% 1	10	3.00
US 218 North	12.50% 1	37.50% 3	25.00% 2	25.00% 2	8	2.38

Q4 Do you think the proposed alternatives provide improved access to the route you ranked as number 1 in the previous question?

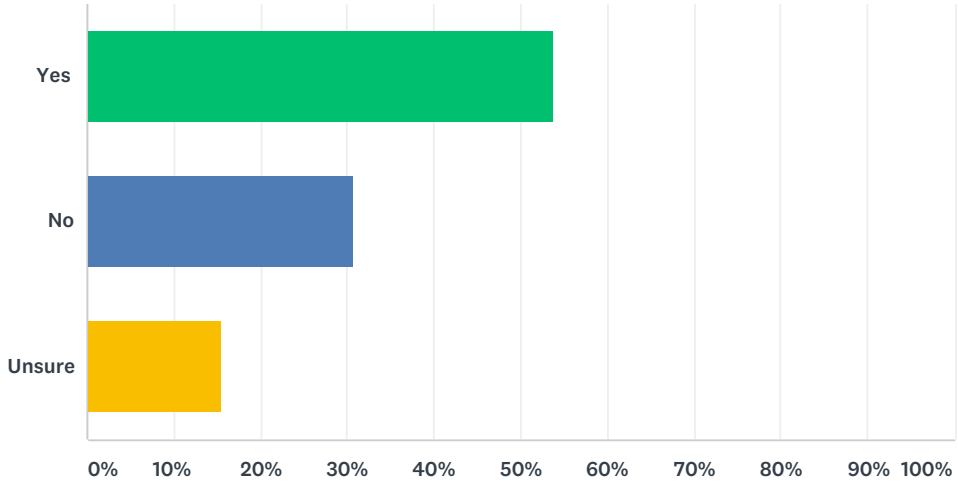
Answered: 13 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	46.15%	6
No	38.46%	5
Unsure	15.38%	2
TOTAL		13

Q5 Do you think the alternatives will improve the traffic flow in the study area?

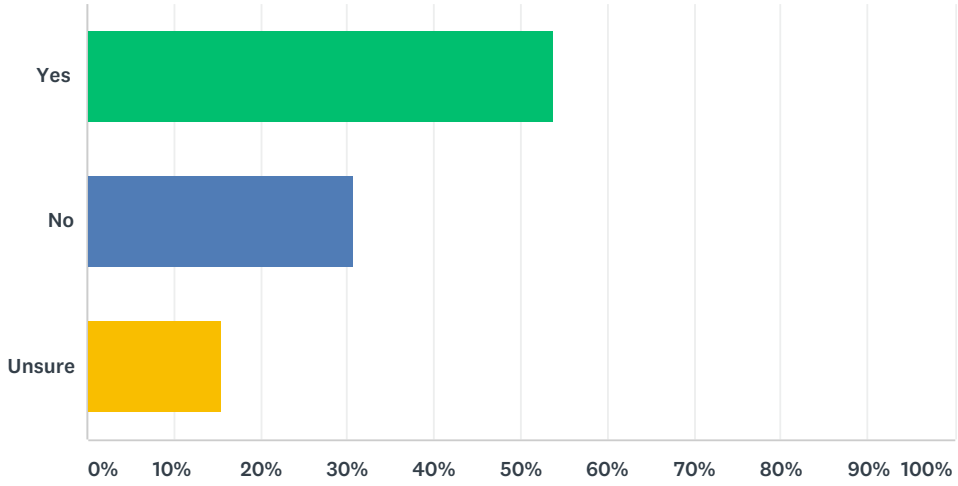
Answered: 13 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	53.85%	7
No	30.77%	4
Unsure	15.38%	2
TOTAL		13

Q6 Do you think the alternatives will improve development potential in the study area?

Answered: 13 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	53.85%	7
No	30.77%	4
Unsure	15.38%	2
TOTAL		13

Q7 What are your comments on the alternatives presented?

Answered: 11 Skipped: 2

#	RESPONSES	DATE
1	I believe that we should look @ actual interchange option along w/extension north to MLK Blvd.	12/13/2018 1:23 PM
2	-You are trying to build a road over flood plane land. The road would have to be raised a minimum of 10' to keep it from going underwater several times a year. -How can you build a road in flood plane when construction can't be don in a flood plane according to Black Hawk County. -Go look at the flood today. Between Dubuque Rd. & Osage Rd. -You need to look at a different path from Dubuque Rd. North. Where you are cutting through now is the absolutely worse path to take. I have lived there over 30 years I know what I am talking about. -Go straighter from Plaza Dr North cut over to Elk Run Rd farther north more by Independence Ave.	12/13/2018 8:41 AM
3	Wasting a lot by not utilizing/improving Elk Run. Ultimate needs to connect 218/380 to 63/218 add 3 miles of concrete to Elk Run North and with a few round abouts you do not cross traffic between core Tyson traffic and JD and the local supply base with the interchange. 380 Ramp over old 20 and the railroad to Elk run connection is great!! Add roundabout at Dunkerton Rd/Elk Run intersection. 3 miles of concrete to C57->roundabout to 63 add overpass and your hooked to 218 with a HUGE safety improvement. Adding any extra roadways between Elk Run & Idaho will cost local businesses $$$$.	12/13/2018 8:37 AM
4	Conard Road Improvements w/Plaza Drive – Elk Run Road (Alt. 1) is best alternative as it allows truck traffic to bypass the city of Raymond.	11/5/2018 5:35 PM
5	Sorry I missed the September meeting. I cannot adress the area around Evansdale but the other changes seem minor and do not address increasing truck traffic on residential streets like Newell and Donald.	10/21/2018 9:53 PM
6	They all end up on South ElkRun Rd and pass a residental area with school bus stops Have seen many times vehicles and trucks blowing passed stopped buses with their stop arms out. It has become a dangerous and noisy area. There is a "no engine break" sign located south of the residental area that is never adheared to or enforced. The alternative routes presented would solve nothing to alleviate the traffic problems and concerns incountered daily along Elk Run Road. You are still funneling the traffic onto the same congested roadway. A tolal bypass road is needed to connect with the north and south bound highways and anything less than that is short sided and a complete waste of money spent.	10/9/2018 9:03 PM
7	options 2 & 3 appear to have the least impact on farmland by following the fenceline and option 3 keeps existing property square with the roads	10/9/2018 3:16 PM
8	The proposed Sage Rd alternative is not a favorable one. It will disrupt the quietness and "secluded" nature that we enjoy out here by not having all this truck traffic. It will drive down our property value by having another road go by and that is unacceptable. I will not silently allow a road to be put in directly along my property, which would also require use of my property for said road. There is already enough traffic that disobeys the "no trucks sign" in front of my house during the times in which it is suppose to be enforced. Trucks constantly follow Donald St all the way to Highway 63, all times of the year. N Elk Run Rd is being resurfaced from Donald to Dunkerton Rd. Why is it also not an alternative to make N Elk Run Rd a hard surfaced road between Dunkerton Rd and Cedar Wapsi?	10/4/2018 8:03 PM
9	Uncertain at this point which proposal I like the best. But I do think the ending point should go to either Independence Ave or Martian Luther King Drive.	9/30/2018 5:22 PM
10	We live on dunkerton rd right at mid point. The traffic and semi drivers fly past our house. It scares me for the young children we have and the neighbors around do. We have become a younger generation with in the last 7 yrs living here. The school bus must stop and pick kids up along the current route. I don't know how many times cars pass in no passing zones to go around semi drivers. It is all around not a safe area.	9/23/2018 10:16 AM

11	The meeting held a Poyner School today was very good , they have come up with great ideas that won't displace a lot of home or take a lot of farmland . The plaza drive is a great idea to move trucks and cars better and the sage road paving makes a lot of sense to divide the truck traffic from all of the businesses. First plan that make sense since they started back in the 80s . Stick with these plans they are the best for everyone . Thank You	9/20/2018 7:04 PM

APPENDIX C
FREIGHT INDUSTRY COMMENTS ON FINAL ALTERNATIVES

FREIGHT INDUSTRY COMMENTS ON FINAL ALTERNATIVES

Below are comments received from eight companies that haul or generate freight in the study area. Comments were received either by email or by phone conversation.

- Prefers all alternatives for Plaza Drive that gives through traffic priority and has grade separated railroad crossing.
- Concerned with all the through/bypass traffic that uses Hwy 218, Hwy 63, Hwy 20 and I-380 to avoid downtown Waterloo.
- Concerns with county maintenance vs. state maintenance levels.
- Would like a four-lane bypass from N. Elk from Dunkerton to Hwy 20.
- Most traffic coming from the east gets off at Raymond and goes down Dubuque Rd. to N. Elk Run.
- Likes roundabout keeps traffic moving.
- The alternative with a road from Plaza Dr. to MLK has the most impact on our business.
- We do not have a lot of traffic going north, so getting to 20, 80 and 380 has the most value.
- We like the idea of the roundabout on Donald Street to reduce accidents.
- First of all, DO NOT CONSIDER THE ROUND-A-BOUT AT EAST DONALD AND NORTH ELK RUN ROAD. THIS IS A PATHWAY FOR DISASTERS.
- Our recommendation is a version of Alternate #3 where from Dubuque Road and Plaza Drive, the road would go north to MLK Drive then north on Northeast Dr. to Sage Rd. then north to Dunkerton Rd. This would not interfere with the current businesses located along Plaza Road nor would this interfere with traffic on East Donald Street.
- Our biggest concern is with Tyson's trucks parking on the road.
- We would like to see an easier access to Hwy 380 and Hwy 20.
- We have some trucks that travel on Hwy 63 and there is no easy access to the Northeast Industrial area.
- The bypass that puts traffic back on Elk Run Rd south of Independence Ave. would be a waste of time and money. Dubuque Rd. is capable of handling truck traffic, the safety issue here is getting off Elk Run Rd but the bypass connects to it.
- The Plaza Dr. to MLK Blvd. seems to be the safest for all involved.
- I would discourage my drivers to take Elk Run Rd. to E. Donald Street just to avoid the roundabout. Trucks are not compatible with roundabouts, especially with high traffic volumes.
- Northeast Dr. to Dunkerton Rd. would be ideal if it wasn't for all of the tractor/trailer traffic that bypasses downtown Waterloo by travelling Dubuque Rd. to Elk Run Rd. to whatever western route they take to get to Hwy 63. Newell St. nor Northeast Dr. could handle the extra traffic to access Northeast Dr. to Dunkerton Rd.
- The highest priority for funding/completion would hands down be the Plaza Dr. to MLK Blvd bypass.
- Elk Run Rd. south of Independence Ave. is a very dangerous road in the winter months, being a single-lane road with big truck traffic, speeds are too fast not to mention the wear put on this road.
- I cannot believe that a bypass putting drivers onto Elk Run Rd. south of Independence Ave is even being considered.
- Roundabouts are not trucker friendly.

- I am not convinced that anyone is aware of the bypass truck traffic that goes around the northeast side of Waterloo.
- The major highway corridor would your company most like to have improved access would be N. Elk Run Road.
- The highest priority for funding/completion would be the widening on pages 2 and 3.
- We like the roundabout on page 4 over the installation of a traffic signal. We think it will be safer and keep traffic moving.
- On page 2, please extend the widening south on the west side of the road to the Tyson's entrance road.
- Noted Traffic Problems:
  - Their trucks struggle getting south to Hwy 20/I-380. They currently go south to Dubuque Rd then past Harrison's. No issues going north, they take Dunkerton Road to Hwy 63.
  - Tyson's trucks park in front of their building and they can't get trucks in or out. They notice the same issues for the adjacent property. They fear it will get worse with Tyson's improvements coming this year.
- Like any of the alternatives that includes a bridge over CN Railroad.
- The Plaza Drive - MLK Jr. Drive connection is the most preferable as it provides a wide road from Industrial Area to Dubuque Road.
- The Sage Road Extension does not seem to provide much benefit for transporting freight for our operation.
- Trucks have issues with navigating through roundabout intersections due to tipping and off tracking, though we're not as concerned at this location since our operation does not have much product going through this intersection. The roundabout intersection may have more benefit for employees providing a safer intersection particularly at shift change.
- We would like to see a corridor that can handle large over-size, over-weight trucks from the industrial area to I-380/US 20. There are concerns with the narrow shoulders and rutting on the existing South and North Elk Run Road north of Dubuque Road to the industrial area.
- Likes the capacity improvement options that include lane widening and lane continuity. It allows the most bang for the buck.
- Capacity improvements should include better roadway lighting.