

# Traffic Safety Improvement Program

Site-Specific Category  
FY 2025



Applications Received by August 16, 2023

Applications listed in alphabetical order by applicant.

Page No.	Applicant	Title/Subject	\$\$\$		
			Project	Safety	Request
4	Appanoose County	Shoulder rumble strips, pave shoulder and safety edge	\$653,102	\$653,102	\$500,000
21	Buchanan County	Paved shoulder, centerline and shoulder rumble strips, 6 inch pavement markings, safety edge, and install chevron signs	\$4,285,097	\$769,087	\$500,000
46	Cerro Gordo County	Paved shoulder, shoulder rumble strips, 6 inch pavement markings, and high-tension guardrail	\$1,023,502	\$1,007,249	\$500,000
70	Cerro Gordo County	Curve and Tangent Realignment	\$536,049	\$525,028	\$500,000
95	City of Ankeny	Add left turn lanes, add right turn lanes, convert to flashing yellow arrow, and construct raised median	\$8,751,000	\$1,107,000	\$500,000
120	City of Cedar Falls	Roundabout	\$3,023,000	\$507,000	\$500,000
145	City of Cedar Rapids	Intersection realignment, add left turn lane, and add right turn lane	\$1,104,000	\$495,000	\$495,000
169	City of Cedar Rapids	Guardrail improvements	\$630,087	\$630,087	\$500,000
193	City of Davenport	Dual left turn lanes, right turn lanes, change left turn phasing to protected only, and restrict access turning movements	\$973,279	\$899,240	\$500,000
217	City of Des Moines	Intersection realignment and sidewalk improvements	\$775,000	\$775,000	\$500,000
235	City of Des Moines	Adding signal heads, retroreflective backplates, positive left turn offset, remove through lane, and adjusting yellow and red clearance intervals	\$2,700,000	\$750,000	\$500,000
256	City of Dubuque	Add right turn lane	\$389,642	\$311,714	\$311,714
281	City of Hiawatha	2-3-lane conversion	\$1,744,596	\$1,743,438	\$350,000

302	City of Maquoketa	Redesign of the intersection - increase intersection surface area, add school crossing sign, repaint pavement markings, lower nearby retaining walls, and improve sidewalks.	\$531,950	\$531,950	\$500,000
345	City of Muscatine	Roundabout	\$314,956	\$314,956	\$314,956
373	City of Waterloo	Install new traffic signal	\$262,500	\$262,500	\$262,500
410	Clayton County	Paved shoulders, 6 inch pavement markings, edgeline rumble strips, and safety edge	\$726,579	\$652,205	\$500,000
433	District 2/Fayette County	Intersection realignment	\$961,676	\$961,676	\$500,000
459	District 3	Paved shoulders, 6 inch pavement markings, shoulder and centerline rumble strips	\$2,350,000	\$2,350,000	\$500,000
479	Jackson County	Destination lighting	\$326,700	\$326,700	\$326,700
618	Johnson County	Add left and right turn lanes	\$615,390	\$501,673	\$500,000
643	Jones County	Edgeline rumble strips, widen lanes, paved shoulder, and safety edge	\$3,750,000	\$1,009,000	\$500,000
656	Traffic and Safety Bureau	Vulnerable road user countermeasures	\$250,000	\$250,000	\$250,000
658	Washington County	Widen lanes, pave shoulders, and centerline and edgeline rumble strips	\$2,932,331	\$836,736	\$500,000
684	Webster County	Roundabout	\$1,206,700	\$1,206,700	\$500,000
706	Webster County	Roundabout	\$1,140,700	\$1,140,700	\$500,000
728	<b>Totals</b>	<b>Projects</b>	\$41,957,836	\$20,517,741	\$11,810,870



# Application for TRAFFIC CONTROL DEVICE TSIP FUNDS

**GENERAL INFORMATION**

DATE: August 7, 2023

Location / Title of Project Appanoose County – S70 Curve Improvements

Applicant Appanoose County Secondary Roads Department

Contact Person Brad Skinner Title Engineer

Complete Mailing Address 1200 Hwy 2 West

Centerville, IA 52544

Phone (641) 856-6193 E-Mail bskinner@appanoosecounty.net  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 653,102.00

Total Project Cost \$ 653,102.00

**Safety Funds Requested** \$ 500,000.00

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain Candidate from the Local Road Safety Plan


No

**APPLICATION CERTIFICATION FOR PUBLIC AGENCY**

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Appanoose County Secondary Roads Department

Signed:  8/7/23  
Signature Date Signed

BRAD SKINNER  
Printed Name

Attest: Mackenzie Milani 8/7/23  
Signature Date Signed

Mackenzie Milani  
Printed Name

**RESOLUTION FOR TRAFFIC SAFETY IMPROVEMENT PROGRAM**  
Grant Application for S70 CURVE IMPROVEMENTS  
Six curve locations from Iowa 2 to County J18

APPANOOSE COUNTY RESOLUTION No. 2023-39


WHEREAS: The Board of Supervisors is empowered under authority of Iowa Code Section 306.4 2021 Code of Iowa to operate and manage the Secondary Road System; and

WHEREAS: The State of Iowa has available Grant funds associated with the Traffic Safety Improvement Program up to a maximum of \$500,000 per location; and


WHEREAS: The County Engineer recommends application for funding of a shoulder widening project on Appanoose County Highway S70 from the Iowa 2 to County J18.

NOW THEREFORE, BE IT RESOLVED: That we, the Board of Supervisors of Appanoose County do hereby declare support for and endorsement of the Grant Application for said widening project, currently programmed for construction in FY 2026. The Board further endorses the submittal of such application for grant funding and assures that the County will adequately maintain such improvements within the Appanoose County Secondary Roads system; and directs the County Engineer to pursue available funding for said project.

Passed and Adopted this 7<sup>th</sup> of August 2023.

  
\_\_\_\_\_  
Chairman Board of Supervisors  
Appanoose County, Iowa

ATTEST:

  
Kelly Howard  
Appanoose County Auditor

# APPANOOSE COUNTY SECONDARY ROADS

1200 HWY 2 WEST  
CENTERVILLE IA 52544

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641-856-6193 (P)  
641-437-4665 (F)

## S70 CURVE IMPROVEMENTS

### Six curve locations from Iowa 2 to County J18

Appanoose County continues to improve the paved road system that serves the county, including segments serving Centerville, Lake Rathbun, and the surrounding areas. Although the focus has been on replacing aged and failing pavements, safety concerns are also a major consideration of projects chosen for improvement. Utilizing the Local Road Safety Plan (LRSP) for Appanoose County, as well as established local knowledge of accident history, the County has identified a leading priority project for safety fund consideration, the S70 Curve Improvements.

#### **Project Location**

The proposed paved shoulder widening project is located on major collector route County Road S70. The segment for this funding application includes six locations of sharp curves along S70 from the town Plano, north to the intersection of County Road J18. The combined length of the six locations is approximately 2.5 miles. This identified short corridor is listed as a high priority in the LRSP for Appanoose County.

#### **Existing Conditions**

County Road S70 is a 22-foot-wide pavement originally paved in the 1970's. The highway is currently a 6" PCC pavement with 3" or 6" of HMA top without paved shoulders or safety edge. The horizontal alignment around the curves is not acceptable to current 55 mph design speed on all curves. Most curves have less superelevation than required given the current two of six curves are posted with speed advisory warning signs. However, with the narrow width, it can be difficult to navigate at highway speeds, especially with the additional lake traffic pulling boats, trailers or campers.

All signs and other traffic control devices are currently installed according to MUTCD requirements, including warnings of the oncoming curves. Existing foreslopes throughout the curve area are generally 4:1, including the entire proposed project. Our county crew cleared all brush and obstructions from the clear zone last winter to improving the visibility and drainage throughout the corridor.

**Proposed Concept**

Appanoose County proposes to improve the referenced corridor utilizing TSIP funding to provide as many updates as possible to keep traffic on the road top in the project area. This is accomplished with amending the described roadway by widening the driving surface with four-foot paved shoulders and a safety edge. In addition, a granular shoulder filet will be included in this project to provide gradual transitions for traffic diverging from the driving lanes and allow traffic leaving the roadway an opportunity to safely regain control. The ideal timing of these improvements will be inclusion in an HMA overlay project with TSIP paved shoulders along Hwy J46 in 2026.

**Safety Justification**

At four of the six proposed curve locations, a safety concern has been mentioned from the LRSP prepared by Kimley-Horn. Of the six locations, two of the curves have risk factors between 9 and 11. These curves have had five crashes in the past five years, with a fatal crash in 2016. Over the last couple of years, the traffic has increased significantly, especially with recreational vehicles and trailers.

Standard curve signing does not appear to have been sufficient warning in the recorded crashes. Speed is a factor in many crashes, but the winding road with narrow curves causes people to overcorrect their vehicle when the tires come off of the pavement onto the gravel shoulder. Therefore, the maximum benefit for paved shoulders will be within the curves of the designated S70 project.

The proposed four-foot paved shoulder with edge rumbles should warn the drivers of departing the roadway with enough time to restore control without over correcting. If drivers continue on to the gravel shoulder filet, the added safety edge will also help to ease back onto the paved surface without edge ruts concerns. Extending the shoulder along the curves also allows towing vehicles extra space without fear of dropping the trailer tires off of road edge

The benefit/cost ratio for this project yields a 3.02:1 result with the five-year accident history. This safety benefit/cost ratio clearly shows a justified project for the proposed curve improvements.



**Cost Estimate**

Item No.	Item Code	Item	Unit	\$/Unit	Total Quantity	Total Cost
20	2121-7425020	Granular Shoulders, Type B	TON	\$ 32.00	1,000	\$ 32,000
30	2213-2713300	Excavation, Class 13, for Widening	CY	\$ 20.00	6,015	\$ 120,300
40	2213-8200000	Base Widening, HMA Mixture	TON	\$ 45.00	3,230	\$ 145,350
70	2303-1033500	Hot Mix Asphalt Stnd Traffic Surface Course 1/2 In	TON	\$ 60.00	1,000	\$ 60,000
80	2303-1258284	Ashpalt Binder PG 58-28H, High Traffic	TON	\$ 650.00	250	\$ 162,500
90	2303-6911000	Hot Mix Asphalt Pavement Samples	LS	\$ 5,000.00	1	\$ 5,000
140	2527-9263109	Painted Pavement Markings	STA	\$ 12.00	297	\$ 3,564
150	2528-8445110	Traffic Control	LS	\$ 10,000.00	1	\$ 10,000
160	2528-8445113	Flaggers	EACH	\$ 540.00	50	\$ 27,000
170	2528-8445115	Pilot Cars	EACH	\$ 805.00	15	\$ 12,075
180	2533-4980005	Mobilization	LS	\$ 10,000.00	1	\$ 10,000
190	2548-0000100	Milled Shoulder Rumble Strips, HMA Surface	STA	\$ 20.00	297	\$ 5,940
				TOTAL CONSTRUCTION COST		\$ 593,729
					10% CONT.	\$ 59,373
				ESTIMATED COST		\$ 653,102

**Time Schedule**

Project Design

July 2023 thru August 2024

Project Reviews

September 2024 thru March 2025

TSIP Grant Award

January 2023 thru April 2024

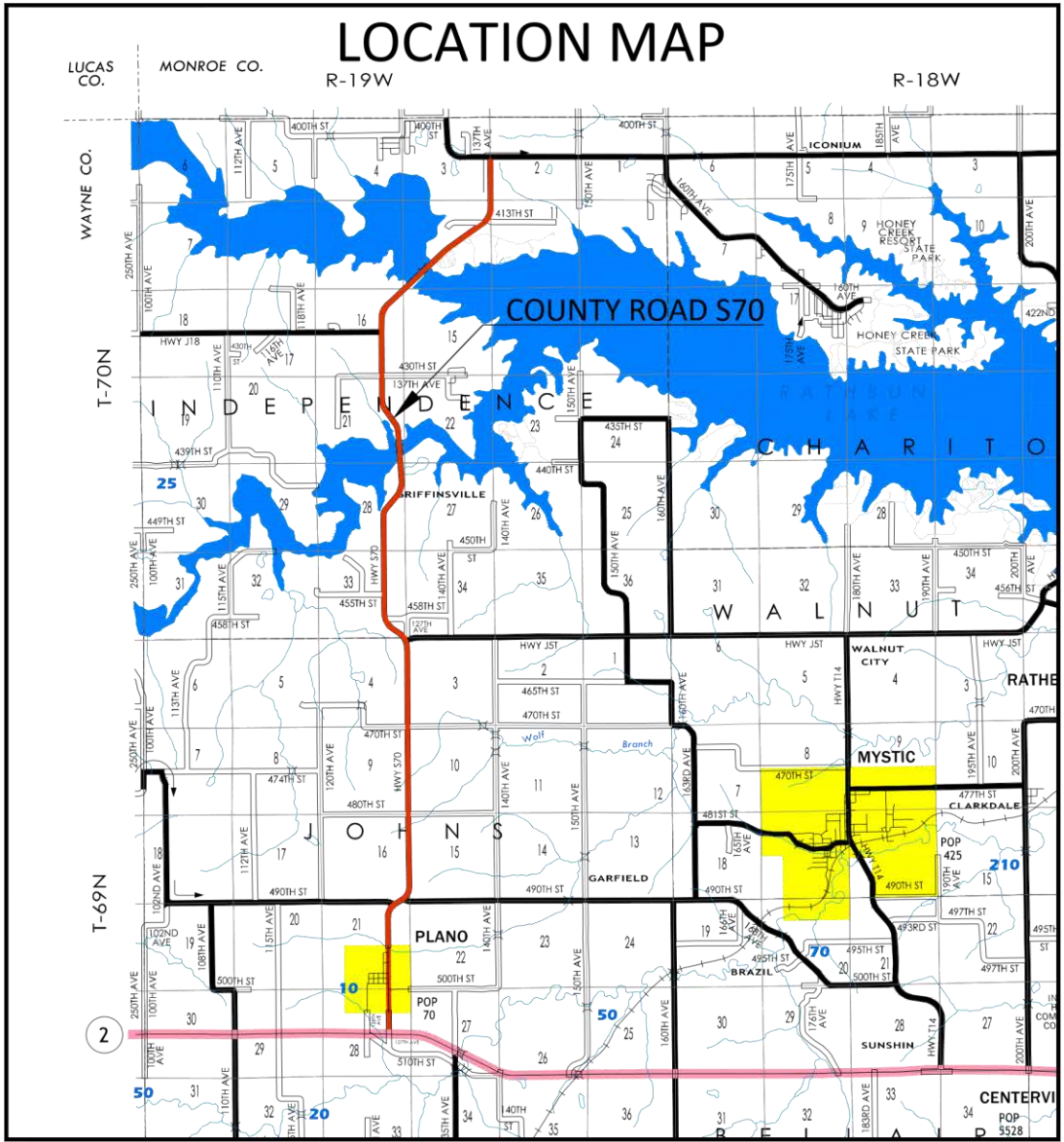
Project Letting

November 2025

Construction

April 2026 thru November 2026

Map

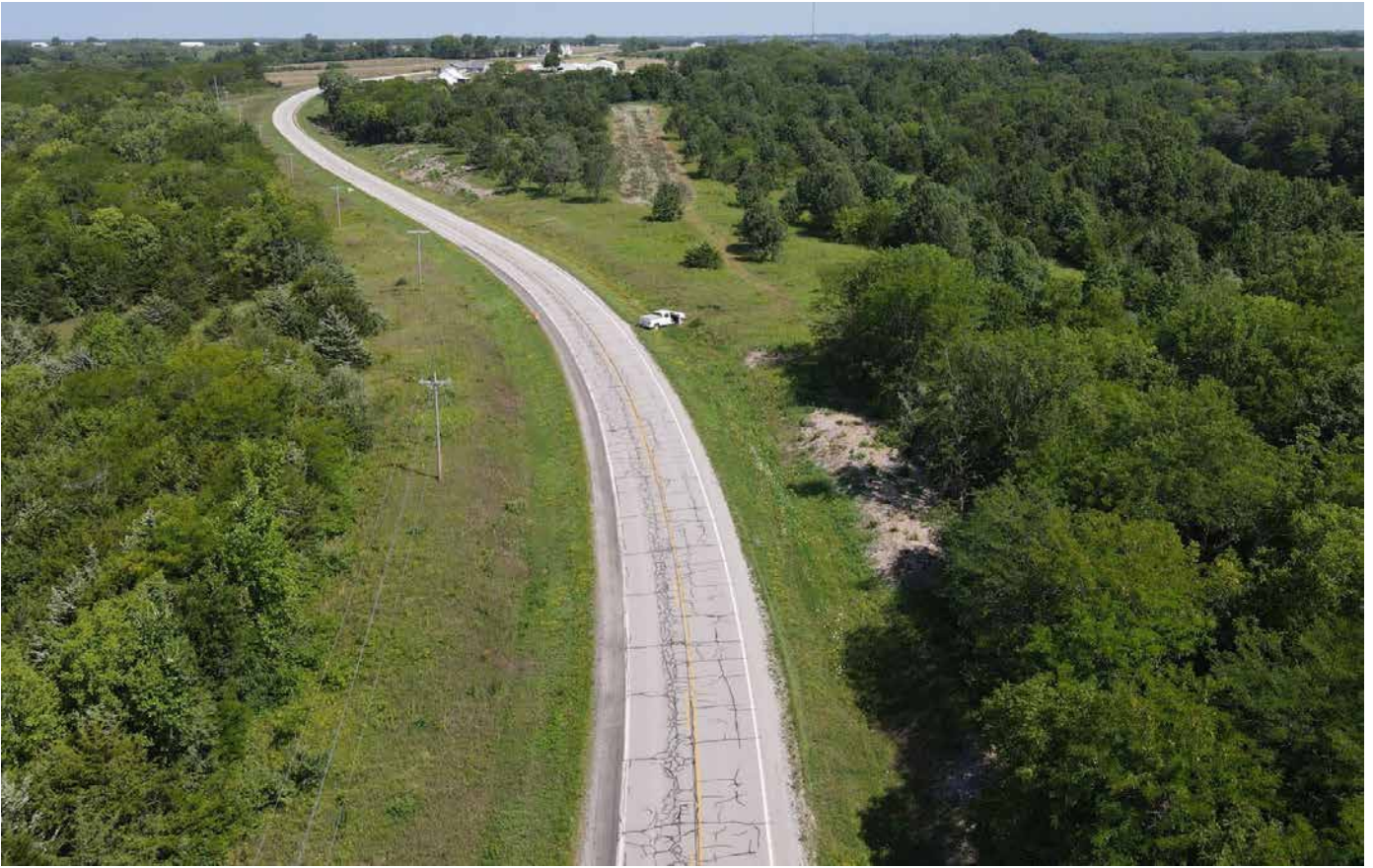




*Site A looking north*



*Site B looking north*



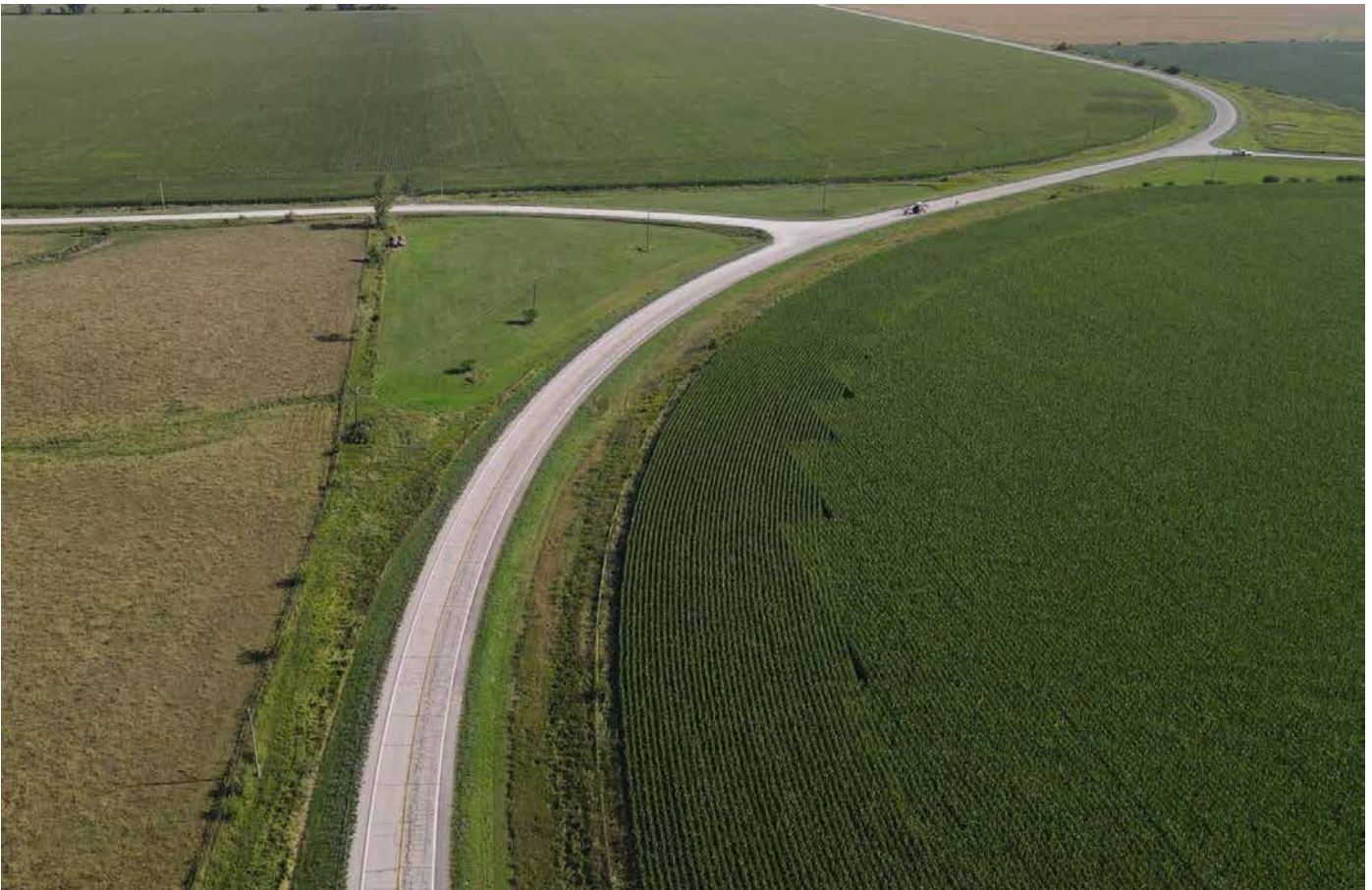
*Site C looking north*



*Site D looking north*



*Site E looking north*



*Site F looking north*

# COUNTY HWY S70 PAVED SHOULDERS

Site A  
Length = 1,588'

Site B  
Length = 2,910'

Site C  
Length = 3,146'



Site D  
Length = 3,005'

Site E  
Length = 2,762'

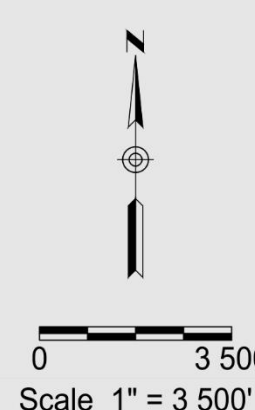
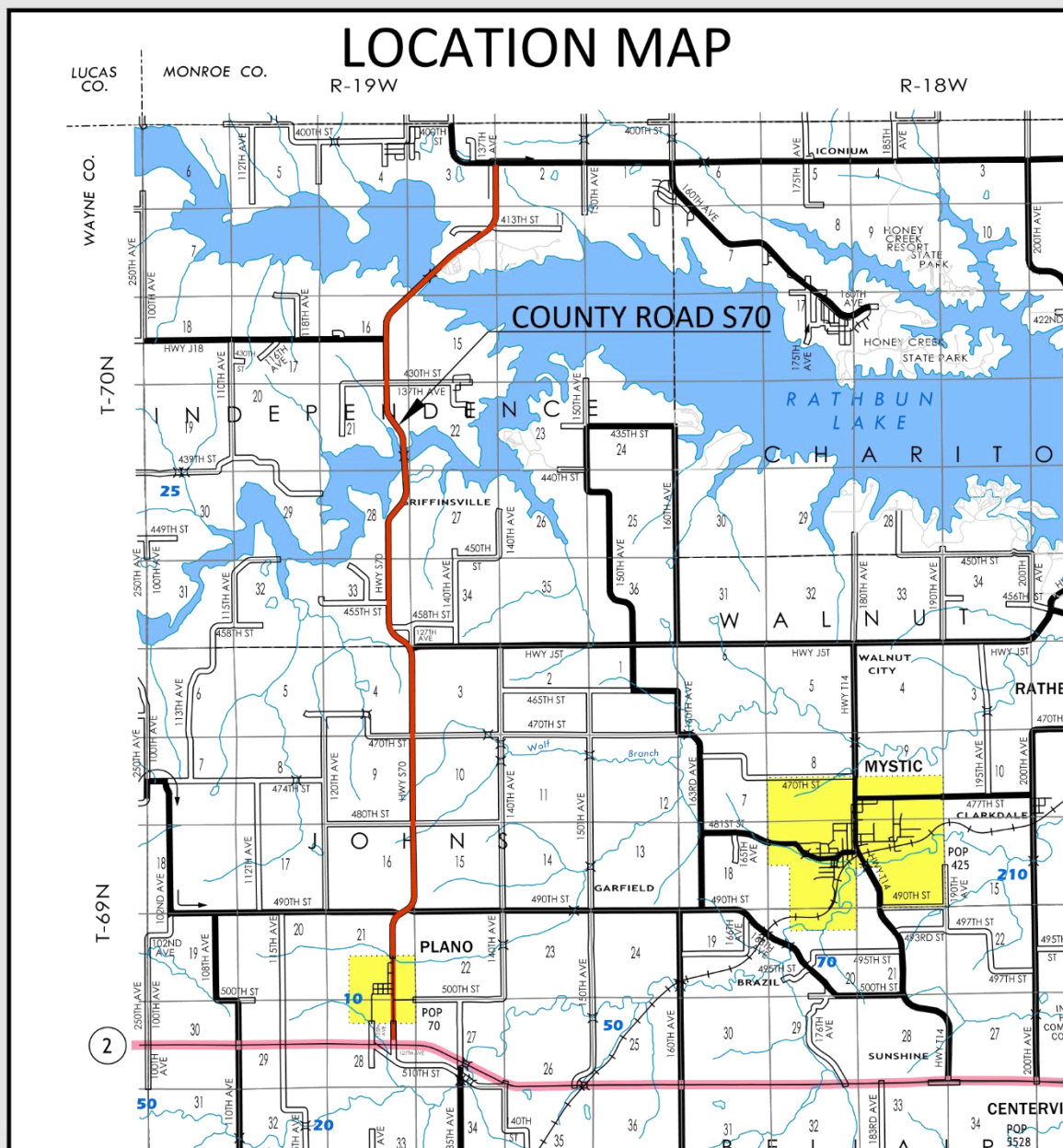
Site F  
Length = 1,438'

PLAN VIEW

## LEGEND

-  COUNTY HWY S70
-  HWY S70 PAVED SHOULDER PROJECT

## LOCATION MAP



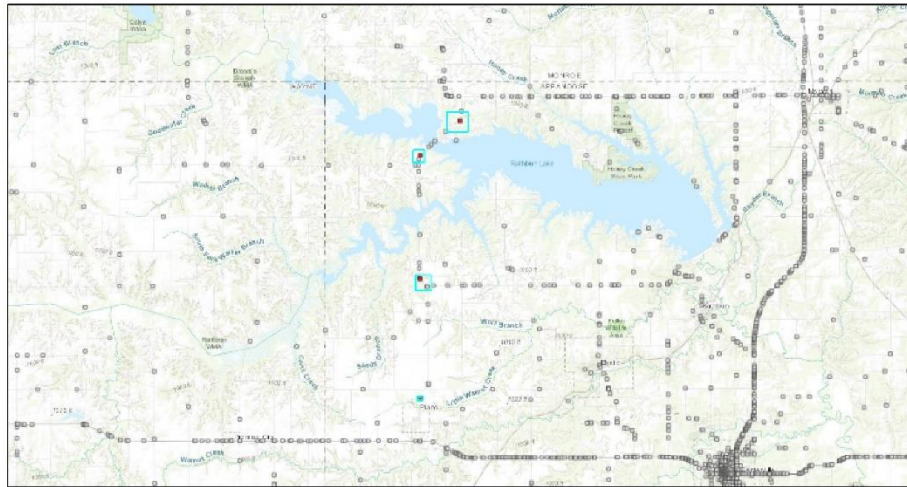
# ICAT Crash Summary



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Crash Severity</b>	<b>5</b>	<b>Injury Status Summary</b>	<b>2</b>
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	1	Suspected serious/incapacitating	1
Suspected Minor Injury Crash	0	Suspected minor/non-incapacitating	0
Possible/Unknown Injury Crash	1	Possible (complaint of pain/injury)	1
Property Damage Only	3	Unknown	0

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	27,000.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	5,400.00	Fatalities/Crash:	0.00
Total Vehicles	7.00	Injuries/Crash:	0.40
Average (per crash):	1.40	Major Injuries/Crash:	0.20
Total Occupants:	7.00	Minor Injuries/Crash:	0.00
Average (per crash):	1.40	Possible/Unknown Injuries/Crash:	0.20



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause		5	
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	1	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	1
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	1
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	1	Not reported	0
Other: No improper action	0		0



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Monday	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	1	0	1	0	0	2
Friday	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	2	1	0	2	0	0	5

Manner of Crash Collision	Count	Surface Conditions	Count
Non-collision (single vehicle)	3	Dry	4
Head-on (front to front)	0	Wet	0
Rear-end (front to rear)	0	Ice/frost	1
Angle, oncoming left turn	0	Snow	0
Broadside (front to side)	1	Slush	0
Sideswipe, same direction	0	Mud, dirt	0
Sideswipe, opposite direction	1	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	0	Gravel	0
Other	0	Not reported	0
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	Count	Other fixed object	Count
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	0
Ditch	2	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	0	Guardrail - end	0
Concrete traffic barrier (median or right sid...	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	0
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	0	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	1	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	4



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	1	0	0	1
>= 35 and <= 39	1	0	0	0	1
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	1	0	0	1
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	1	0	0	0	1
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	1	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	1	0	1
<b>Total</b>	2	4	1	0	7

Drug/Alcohol Related	Count
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	1
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	4

Alcohol Test Given	Count
None	5
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	1
Not reported	1

Drug Test Given	Count
None	6
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

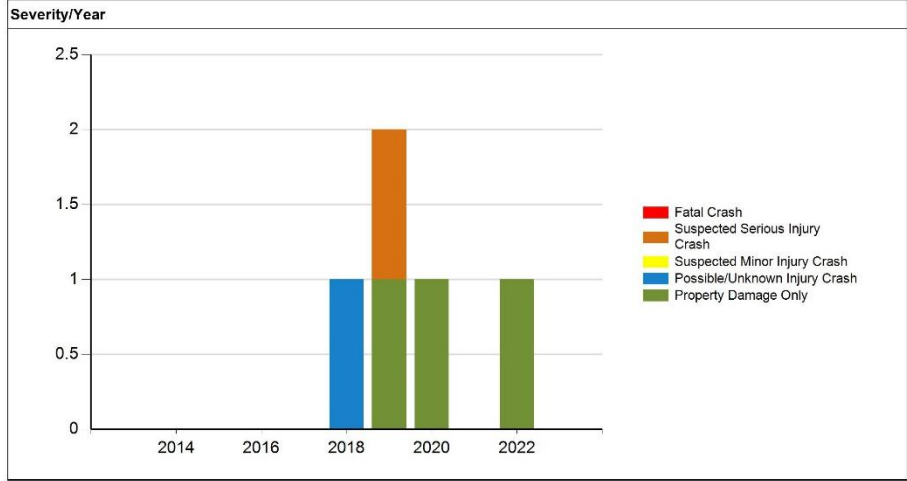
Drug Test Result	Count
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	7
Other	0





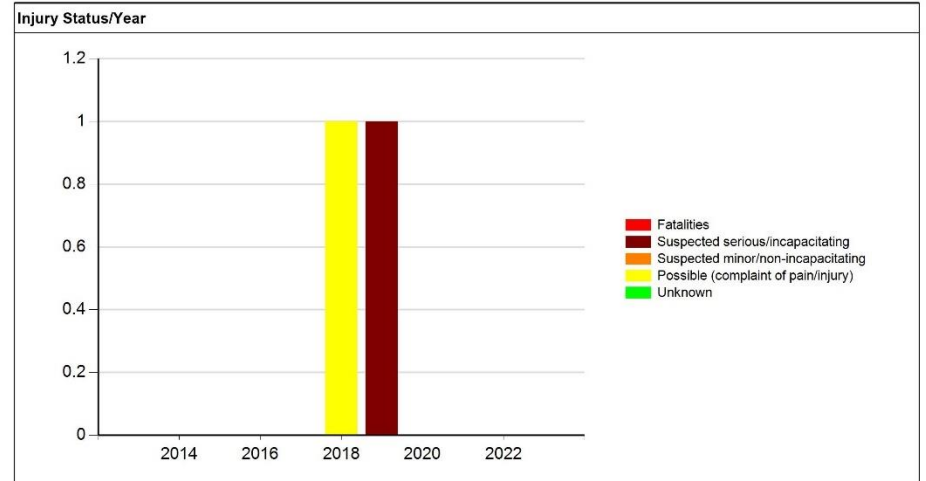
Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	1	0	1
2019	0	1	0	0	1	2
2020	0	0	0	0	1	1
2021	0	0	0	0	0	0
2022	0	0	0	0	1	1
2023	0	0	0	0	0	0
<b>Total</b>	0	1	0	1	3	5

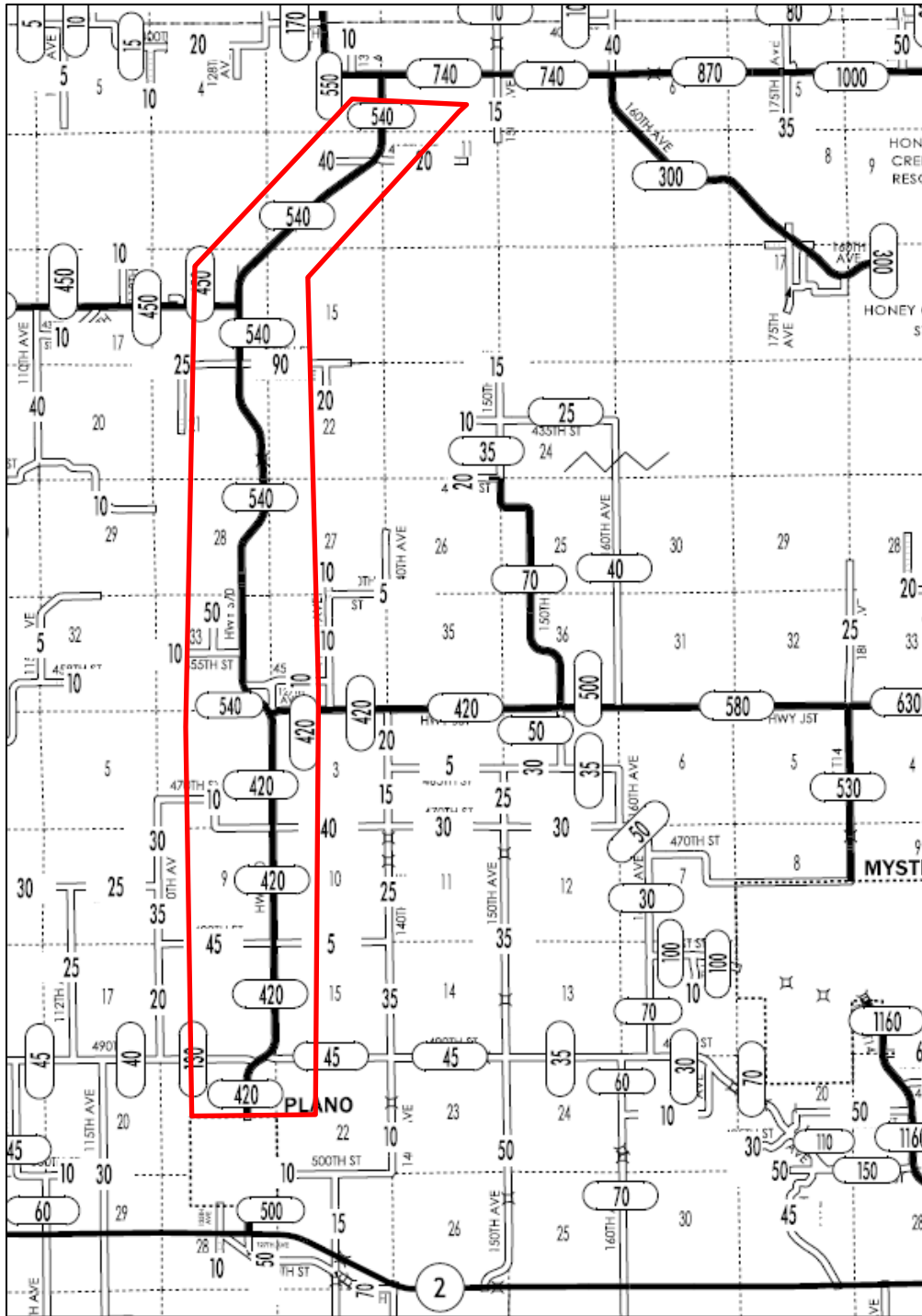


Iowa Crash Analysis Tool  
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Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	1	0	1
2019	0	1	0	0	0	1
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	1	0	1	0	2



### Traffic Volume



Iowa DOT AADT Map 2018



County:	Appanoose	Prepared By:	MM/GEK
Location:	County Rd S70	Date Prepared:	7/27/2023
Proposed Improvements:	Install 4-ft Paved Shoulder in curves (4% CRF) with Rumble Strips (15% CRF) and Safety Edge (6% CRF)		
Estimated Improvement Cost:	\$ 650,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 13,000

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF
CRF Value (%)	4	15	6	20.2

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	20.2	0.00	0.00
Serious Injury (A)	\$ 4,000,000	1	20.2	0.20	0.04
Minor Injury (B)	\$ 265,000	0	20.2	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	1	20.2	0.20	0.04
Property Damage Only (O)	\$ 20,000	3	20.2	0.60	0.12

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ 161,464
Minor Injury (B)	\$ -
Possible/Unknown Injury (C)	\$ 5,046
Property Damage Only (O)	\$ 2,422

### Total Benefits and Costs

	Implementation Cost	\$ 650,000	
	Present Value of Maint.	\$ 176,674	
Present Value Benefits (Societal Benefits)	\$ 2,495,243	Present Value Costs (Impl. and Maint. Costs)	\$ 826,674
Present Value Net Return	\$ 1,668,569		
<b>Benefit Cost Ratio</b>	<b>3.02</b>		

Form continues on next page

Project sheet developed at the request of the County Engineer.

**Local Road Safety Plan**  
**Project Description for Curve Improvements**  
**Risk Factor Points: 9**

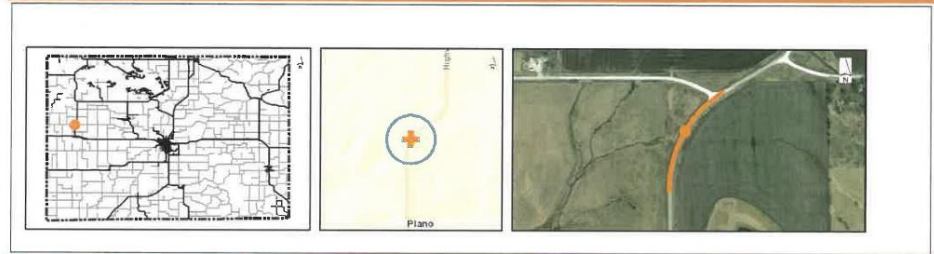
Project Name: Curve 79047 on HWY S70  
 Agency Name: Appanoose County  
 Contact Name: Haden, Matt  
 E-mail: mhaden@appanoosecounty.net

Date: 1/18/18  
 Prepared By: DJG/DVM  
 Checked By: MMO

**CURVE**  
 GPS ID: 79047



**Project Location Maps**



**Curve Information and Systemic Ranking Summary**

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	390	3
Curve Radius (ft)	902	3
Shoulder Width (ft)	6	0
Avg. Pavement Condition (IRI)	0	0
Intersections   Driveways	1   0	3
K or A Crash	0	0
<b>Total Risk Factor Points (21 max)</b>		<b>9</b>

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	6
Speed Limit (mph)	45
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Existing Curve Chevrons	No

Crash Data, 2007-2016	
Total Crashes	0
K and A Crashes	0
Lane Departure Crashes	0
Lane Departure K and A Crashes	0
Total Crash Rate (per HMVMT)	0.0
K and A Crash Rate (per HMVMT)	0.0

Key Emphasis Areas	
Local Roads	
Lane Departures	
Roadside Collisions	

**Opinion of Probable Cost (Project Selection Decision Tree Results)**

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0.18	MILE	\$ 1,200	\$ 221
Install 6" Retroreflective Edgeline (Both Sides of Road)	0.00	MILE	\$ 1,800	\$ -
Install 4" Retroreflective Centerline	0.18	MILE	\$ 800	\$ 147
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0.18	MILE	\$ 65,000	\$ 11,979
Install Edgeline Rumble Strips (Both Sides of Road)	0.18	MILE	\$ 2,500	\$ 461
Install Centerline Rumble Strips	0.00	MILE	\$ 1,000	\$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	1	CURVE	\$ 5,000	\$ 5,000
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	\$ 2,500	\$ -
Clear and Grub (15 ft Both Sides of Road)	0.18	MILE	\$ 10,000	\$ 1,843
<b>Project Selection Decision Tree Systemic Improvements Subtotal:</b>				<b>\$ 19,651</b>

Continued on back of this page.

**Project Location Map Sources:**  
 Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Front Page


Project sheet developed at the request of the County Engineer.

**Local Road Safety Plan**  
**Project Description for Curve Improvements**  
**Risk Factor Points: 11**

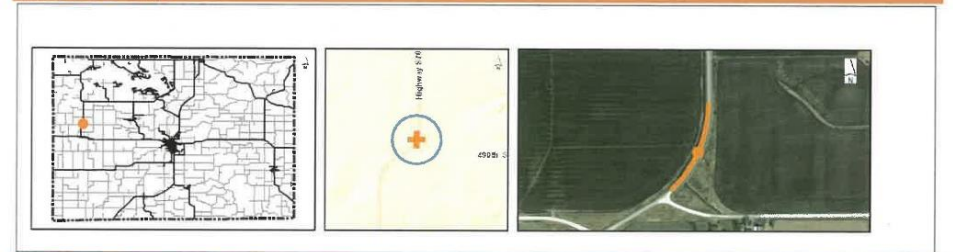
Project Name: Curve 79048 on HWY S70  
 Agency Name: Appanoose County  
 Contact Name: Haden, Matt  
 E-mail: mhaden@appanoosecounty.net

Date: 1/18/18  
 Prepared By: DJG/DVM  
 Checked By: MMO

**CURVE**  
 GPS ID: 79048



**Project Location Maps**



**Curve Information and Systemic Ranking Summary**

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	390	3
Curve Radius (ft)	852	3
Shoulder Width (ft)	6	0
Avg. Pavement Condition (IRI)	0	0
Intersections   Driveways	1   0	3
K or A Crash	1	2
<b>Total Risk Factor Points (21 max)</b>		<b>11</b>

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	6
Speed Limit (mph)	55
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Existing Curve Chevrons	No

Crash Data, 2007-2016	
Total Crashes	1
K and A Crashes	1
Lane Departure Crashes	0
Lane Departure K and A Crashes	0
Total Crash Rate (per HMVMT)	469.3
K and A Crash Rate (per HMVMT)	469.3

Key Emphasis Areas	
Local Roads	
Lane Departures	
Roadside Collisions	

**Opinion of Probable Cost (Project Selection Decision Tree Results)**

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0.15	MILE	\$ 1,200	\$ 180
Install 6" Retroreflective Edgeline (Both Sides of Road)	0.00	MILE	\$ 1,800	\$ -
Install 4" Retroreflective Centerline	0.15	MILE	\$ 800	\$ 120
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0.15	MILE	\$ 65,000	\$ 9,730
Install Edgeline Rumble Strips (Both Sides of Road)	0.15	MILE	\$ 2,500	\$ 374
Install Centerline Rumble Strips	0.00	MILE	\$ 1,000	\$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	1	CURVE	\$ 5,000	\$ 5,000
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	\$ 2,500	\$ -
Clear and Grub (15 ft Both Sides of Road)	0.15	MILE	\$ 10,000	\$ 1,497
<b>Project Selection Decision Tree Systemic Improvements Subtotal:</b>				<b>\$ 16,901</b>

Continued on back of this page.

**Project Location Map Sources:**  
 Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community

Front Page

# **Application for SITE-SPECIFIC TSIP FUNDS**

**GENERAL INFORMATION**

DATE: July 6, 2023

Location / Title of Project W-35 Quasqueton Diagonal Boulevard

Applicant Buchanan County Secondary Roads

Contact Person Brian Keierleber Title Buchanan County Engineer

Complete Mailing Address 1511 1<sup>st</sup>. St. East Independence 769,087, Iowa 50644

Phone (319) 334-6031 E-Mail engineer@co.buchanan.ia.us  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 769,087

Total Project Cost \$ 4,285,097

**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? X

Yes – Explain It is included in our LRSP with the recommended safety improvements listed.  No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the BUCHANAN COUNTY SECONDARY ROADS

Signed: Brian T. Keizerleber 7/7/23  
Signature Date Signed

BRIAN T. KEIZERLEBER  
Printed Name

Attest: Janet Payne 7/7/23  
Signature Date Signed

Janet Payne  
Printed Name

A

A

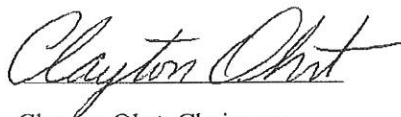
**23-48 Resolution**

**WHEREAS**, Safety is a major concern of the Buchanan County Board of Supervisors and Highway Safety is a major aspect of safety;

**WHEREAS**, funding is insufficient to provide all the appropriate safety components on our county roadways;


**NOW THEREFORE**, be it resolved by the Board of Supervisors to apply for safety funding on County Road W-35 as part of the programmed project on County Road W-35. It is also assured by the Buchanan County Board of Supervisors that any funded improvements will be adequately maintained.

Passed this 12<sup>th</sup> day of June 2023



Clayton Ohrt, Chairman  
Buchanan County Supervisors

ATTEST:



Kris Wilgenbusch, County Auditor

**BUCHANAN COUNTY SECONDARY ROAD DEPARTMENT**  
1511 1ST ST E • INDEPENDENCE • IOWA 50644

B

Brian P. Keierleber PE  
County Engineer

Alex Davis PE  
Assistant Engineer

Phil Fangman  
Road Superintendent

Janet Payne  
Office Manager

Phone: 319-334-6031

Fax: 319-334-9951

## Narrative of W-35

W-35 between D-22 (Old US 20, also known as IA 939) and the North Corporate limits of Quasqueton is also known as the Quasqueton Diagonal Boulevard. The road originated as an old military trail and stagecoach route. The significance of this is the 7-mile stretch consists of many curves as it attempts to follow the ridgelines. The road was originally paved in 1981. Due to the curves and limited sight pictures the entire road was posted at 45 miles per hour. Two of the curves we plan to address have chevrons existing and we plan to add chevrons to an additional curve identified in our Local Road Safety Plan. One curve in particular has created crashes over the years to include at least one fatal crash. Even though the change in angle is only about 30 degrees. The radius of the curve is about 634 ft which means that the degree of curve is about 9 degrees. This particular curve tends to surprise motorists even though chevrons and paved shoulders have been added at this location. We plan to flatten the curve by placing about an 1100 ft. radius. That will meet the posted 45 MPH posting. We plan to overlay the existing 11 ft. wide lanes with 6 inches of concrete utilizing a fabric bond breaker and place a 4 ft. tied paved shoulder with safety edges. On the second curve that is located at the end of a bridge, we plan to place a high friction course and extend it onto the bridge. We will place a 6-inch concrete overlay with a 4 ft. tied paved shoulder and safety edge. We will place center rumbles and shoulder rumbles with 6-inch-wide pavement markings. All these items are proven to reduce crashes. After our Local Road Safety Plan was developed we have added center rumbles on the entire stretch and chevrons on several of the curves. The Local Road Safety Plan adopted in 2016 does address many of these improvements including paved shoulders, center and shoulder rumbles and 6" pavement markings. County Forces have been aggressively flattening slopes, widening shoulders, and widening structures to accommodate these improvements. Tied with this project we plan to replace a bridge on this route. Funding is always an issue and we hope to continue to implement the safety features as funding will allow when we rehab the pavement.



W-35 Cost Estimate

C, p.1

Based on Average Awarded Contract unit price Jan 19,2023

Items 2599 were based on the Bid price low bidder 10-C010-115

0600 2599-9999020 Modified subbase	750 tons x \$20	= \$15,000
0060 2121-7425020 Granular Shoulders Type B	8,300 tons x \$27.88	= \$231,404
0080 2212-5075001 HMA Surface patches	45-ton x \$ 278.73	= \$12,543
0090 2213-7100400 Relocation of Mailboxes	52 each x \$315	= \$16,380
0120 2310-8300550 Pavement Interlayer Geotextile 90,350 Sy. X \$3.33		= \$300,865
0120 2310-5151040 PCC Conc. Overlay Furnish only 16,090 CY x \$117.55		=\$1,891,380
0150 2310-5151045 PCC Overlay Place only	90,350 SY x \$6.76	= \$609,863
0170 2315-8275025 Driveway Class A Crushed Stone	1890-ton x \$28.90	= \$54,621
0180 2316-0000110 Smoothness Incentive	41,160 EACH x \$1	= \$41,160
0370 2510-6745850 Pavement Removal	6062 SY x \$9.73	=\$58,983
0500 2526-8285000 Construction Survey	1 LS x \$19,612	= \$19,612
0530 2528-8445110 Traffic Control	1 LS x \$17,992	= \$17,992
0550 2533-4980005 Mobilization	1 LS x \$ 97,366	=\$97,366
110 2301-0690220 Bridge Approach	212 SY x \$207.61	= \$44,013
SUB Total		\$3,411,182

W-35 Safety (cont.)

C<sub>2</sub> P 2

Safety Related Bid Items

0580 2599-9999017 Base Prep for 7" shoulder	364 STA x \$84.80	= \$29,620
0590 2599-9999018 Paved shoulder 7" place only	32,365 SY x 6.76	= \$218,787
0120 2310-5151040 PCC Concrete furnish only	6293 CY x \$117.55	
=		=\$739,742
0560 2548-0000200 Milled Shoulder Rumble Strips	660 STA x \$49.20	= \$32,472
0570 2548-0000320 Milled Centerline Rumble Strips	330 STA x \$45.51	= \$15,018
0510 2527-9263109 Painted Pavement markings	1482 STA x \$ 17.35	= \$25,712
0520 2527-9270111 Groves for pavement markings.	936 STA x \$30.92	= \$28,941
Safety Edge Bid as part of shoulder	8088 SY x \$6.76	=\$54,675
Concrete for safety edge	786 CY x \$117.55	= \$ 92,433
 Sub-Total Safety Costs		 \$1,237,400

## Curve improvements

## Curve GPS ID 10381

0370 2510-6745850 Pavement Removal	1711 SY x \$8.55	= \$ 14,630
2109-8225100 SPECIAL COMPACTION OF SUBGRADE	7 sta. x \$1250	= \$8,750
0600 2599-9999020 Modified subbase	780 tons x \$20	= \$15,000
2301-1033090 9" P.C.C. Paving CL SS CI 3	1711 SY x \$63.45	= \$108,562

## Requested Funding

## Curve GPS ID 10950

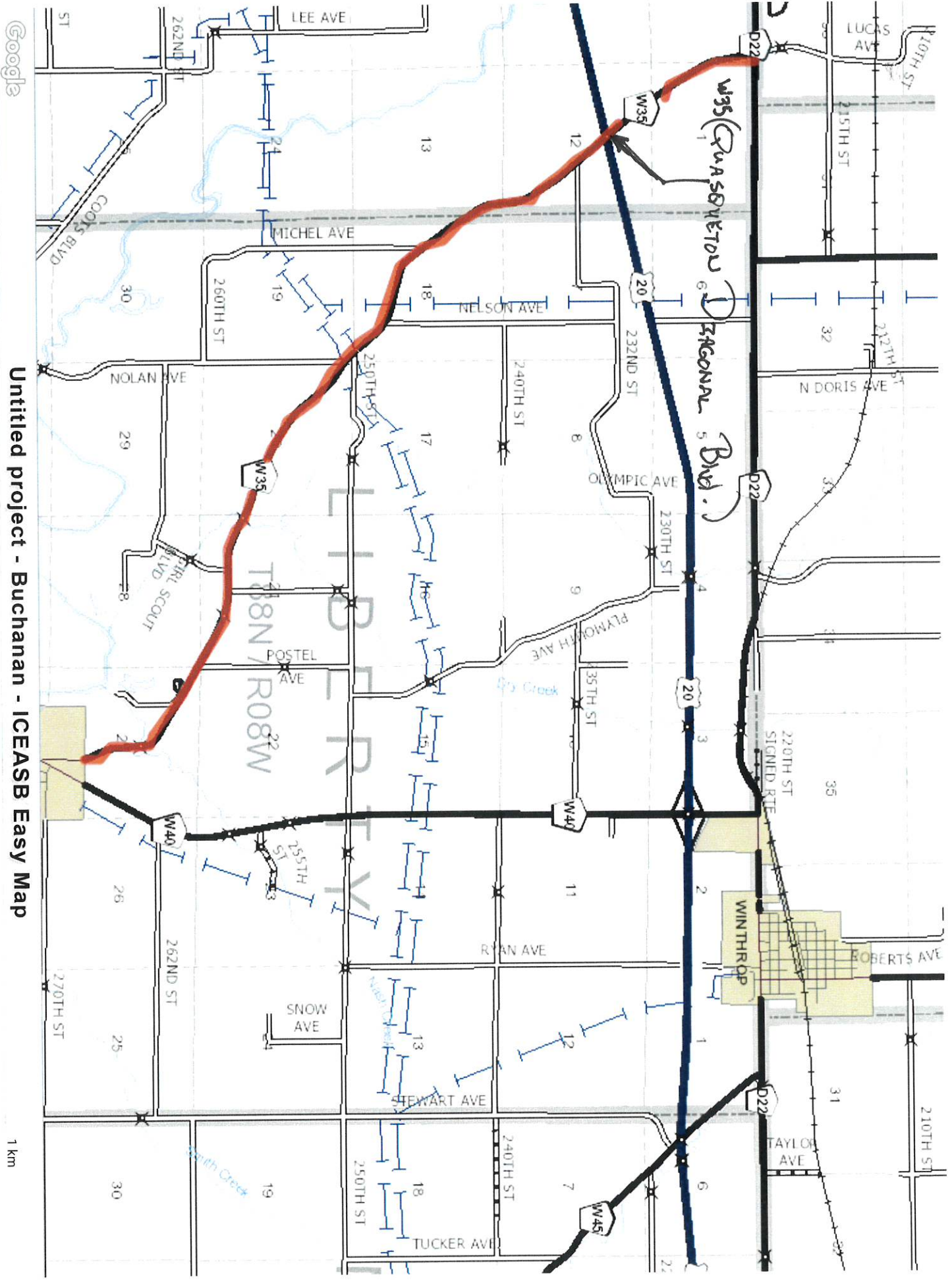
2524-9130011 Marker, Chevron W1-18 (Special)	6 EA x \$622.34	= \$3,734
2 ft. paved Shoulders		
0580 2599-9999017 Base Prep for 7" shoulder	364 STA x \$84.80	= \$29,620
0590 2599-9999018 Paved shoulder 7" place only	16,427 SY x 6.76	= \$111,044
0120 2310-5151040 PCC Concrete furnish only	3,194 CY x \$117.55	= \$375,471
0560 2548-0000200 Milled Shoulder Rumble Strips	660 STA x \$49.20	= \$32,472
0570 2548-0000320 Milled Centerline Rumble Strips	330 STA x \$45.51	= \$15,018
0510 2527-9263109 Painted Pavement markings	1482 STA x \$ 17.35	= \$25,712
0520 2527-9270111 Groves for pavement markings.	936 STA x \$30.92	= \$28,941
2524-9130011 Marker, Chevron W1-18 (Special)	6 EA x \$622.34	= \$3,734
Safety Edge Bid as part of shoulder	8088 SY x \$6.76	= \$54,675
Concrete for safety edge	786 CY x \$117.55	= \$ 92,433
Total Estimated Costs		\$769,087
Total Requested max		= \$500,000

# W-35 Quasqueton Diagonal Boulevard Time Schedule

September 2023 continue plan development

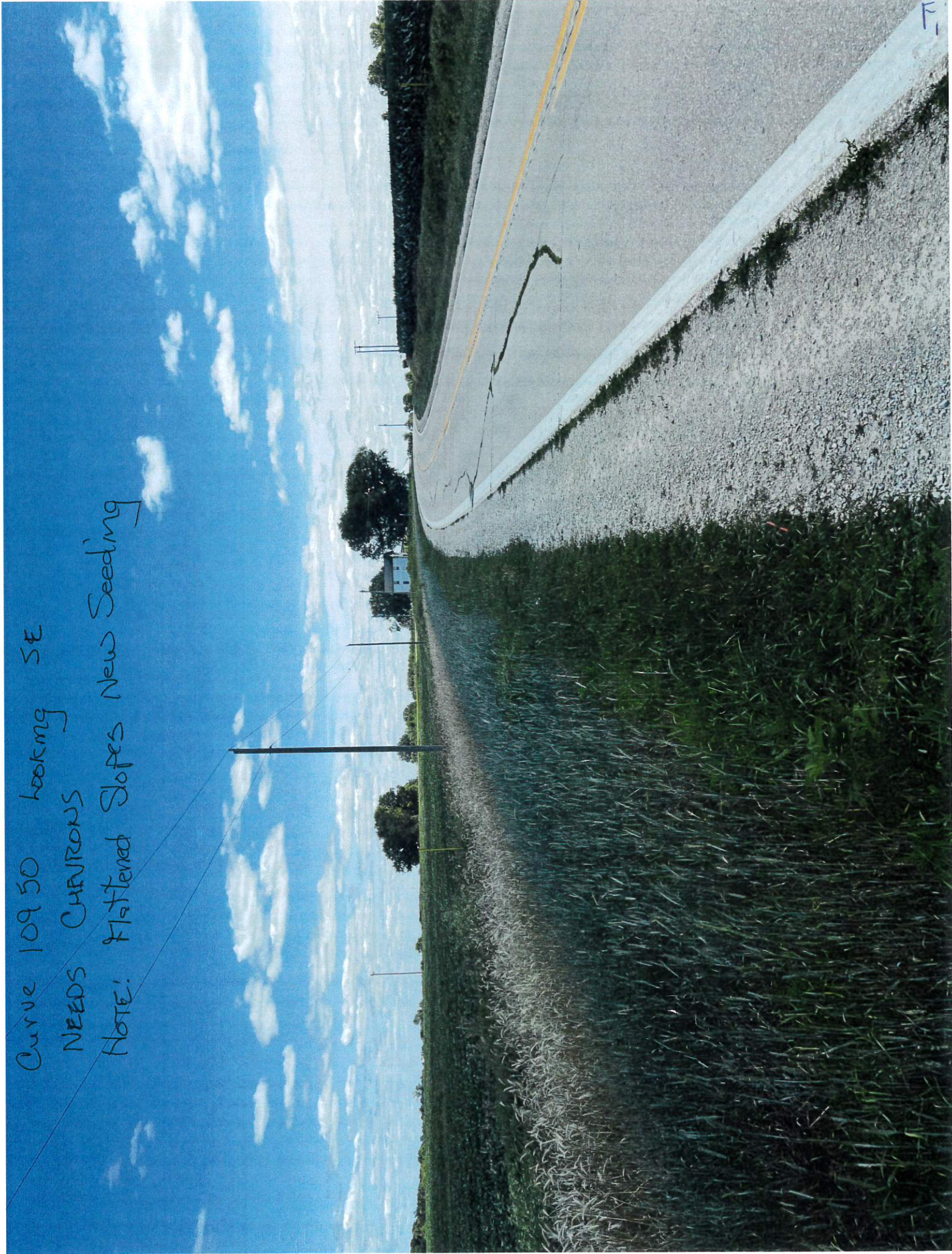
April 2024 Letting with a May 2025 Late Start Date

October 2025 Completion of project.



Untitled project - Buchanan - ICEASB Easy Map

Curve 10950 looking SE  
NEEDS CHEVRONS  
NOTE: Flattened Slopes New Seeding

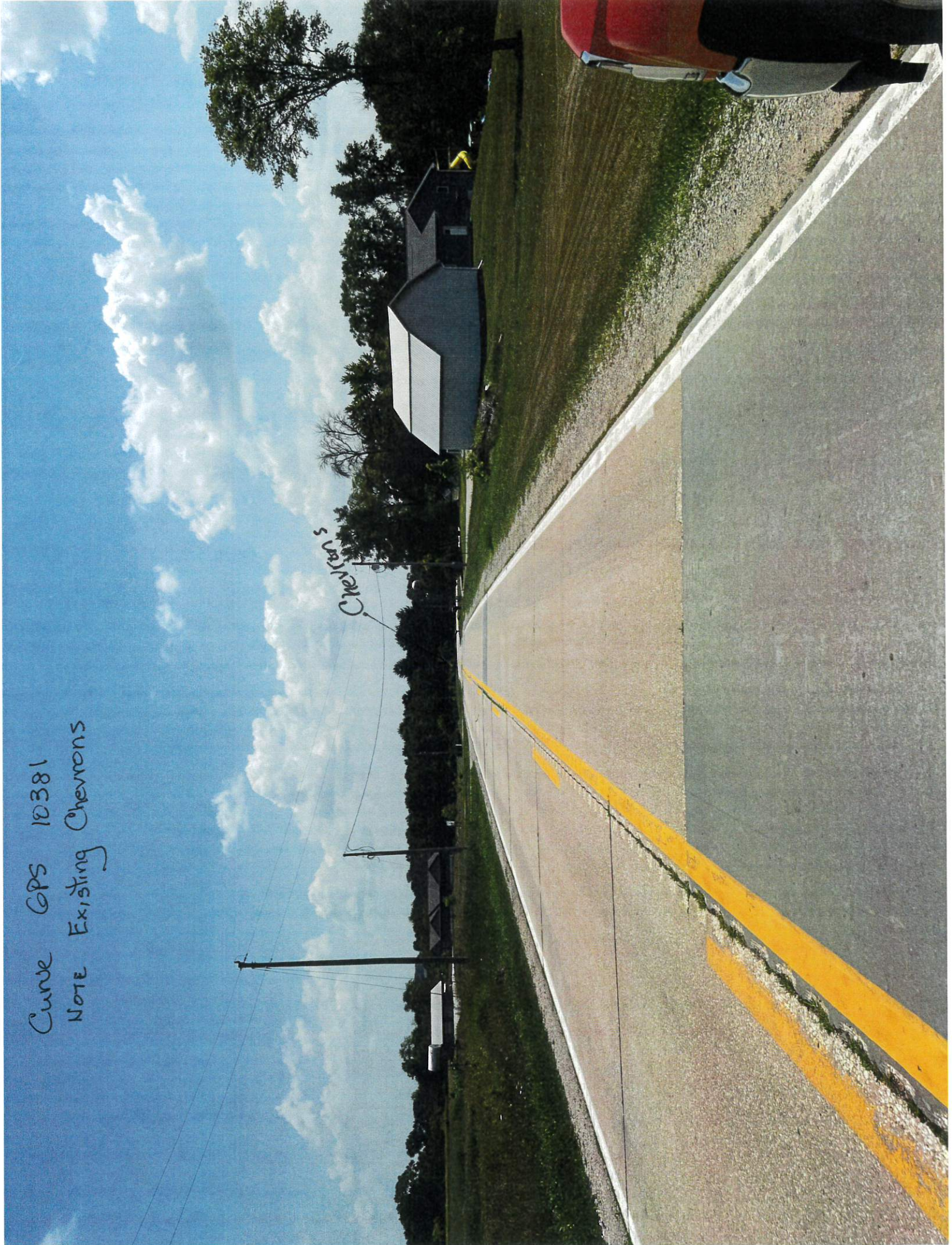


Curve GPS ID 10950

NOTE NEW SEEDING ON OUTSIDE OF CURVE  
SITE CHEVRONS NEEDED LOOKING S.E.

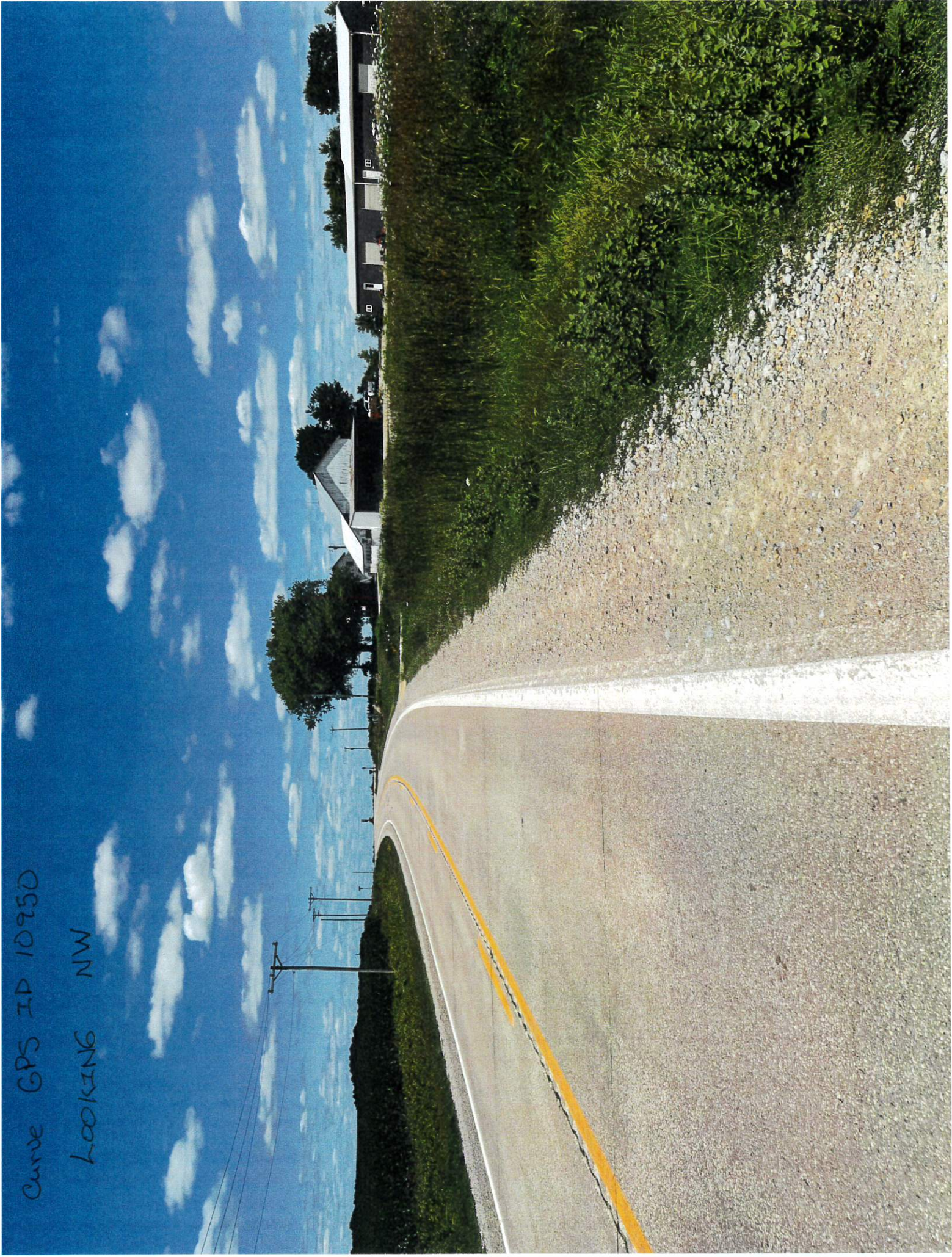


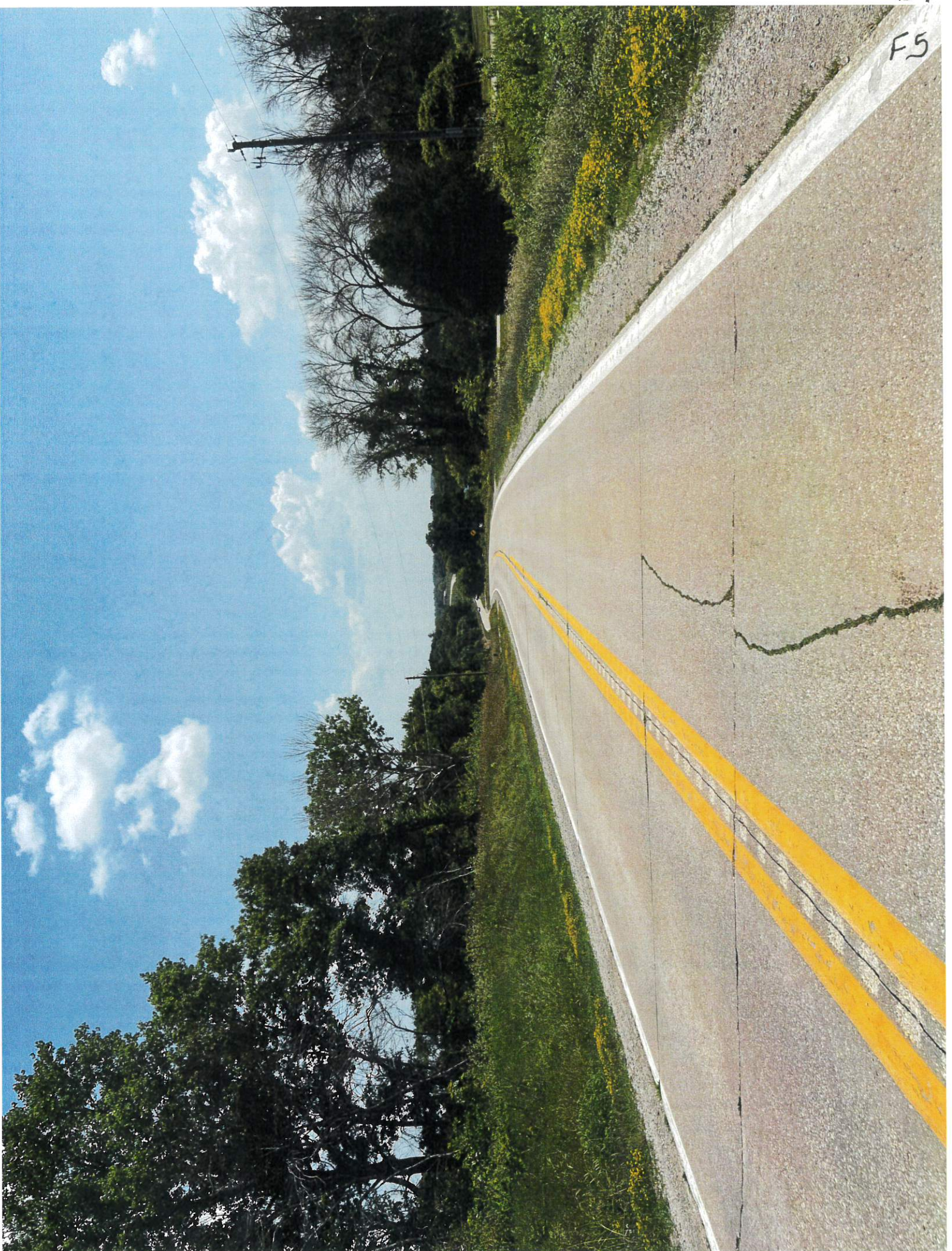
Curve GPS 10381  
NOTE Existing Chevrons



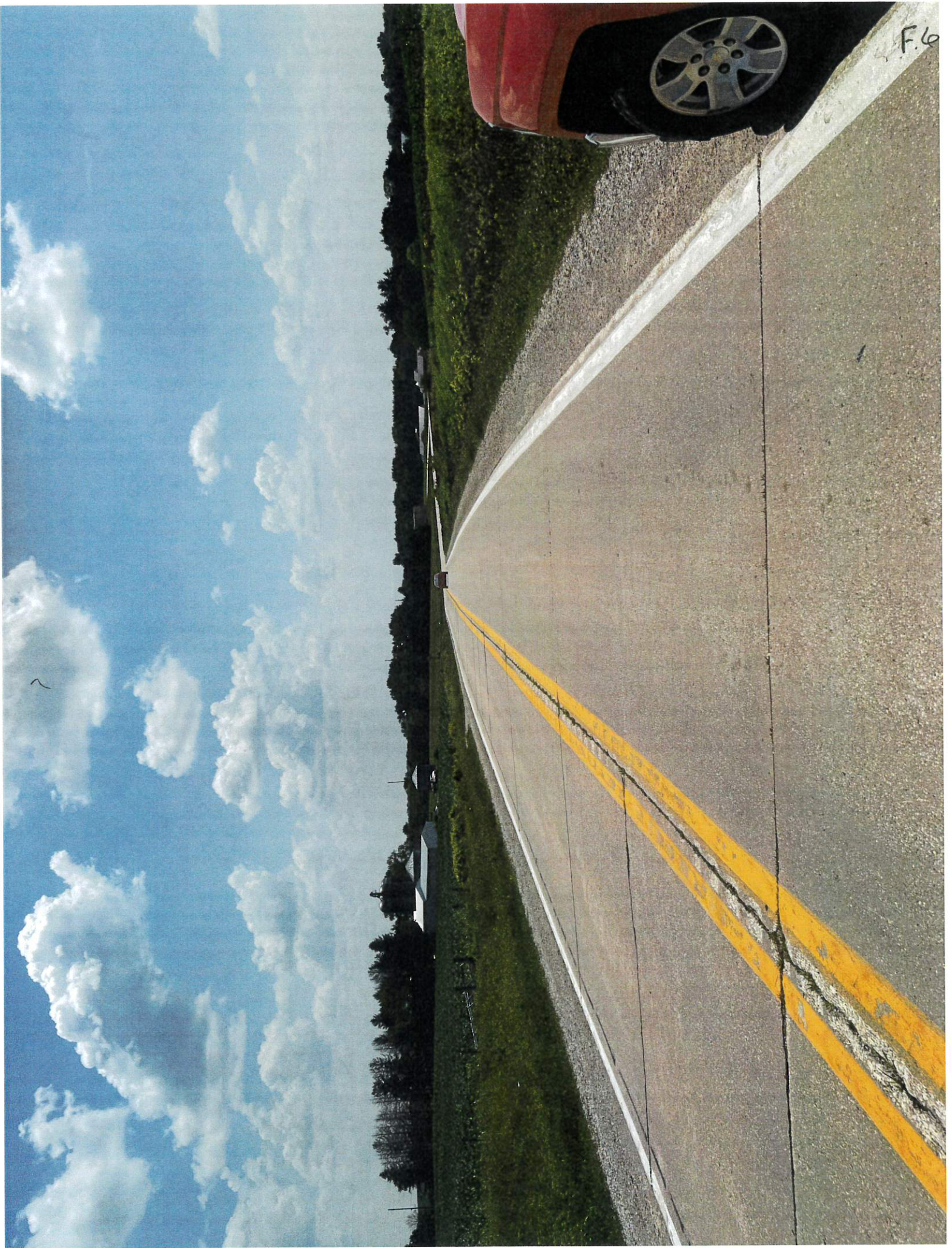


Curve GPS ID 10950  
LOOKING NW

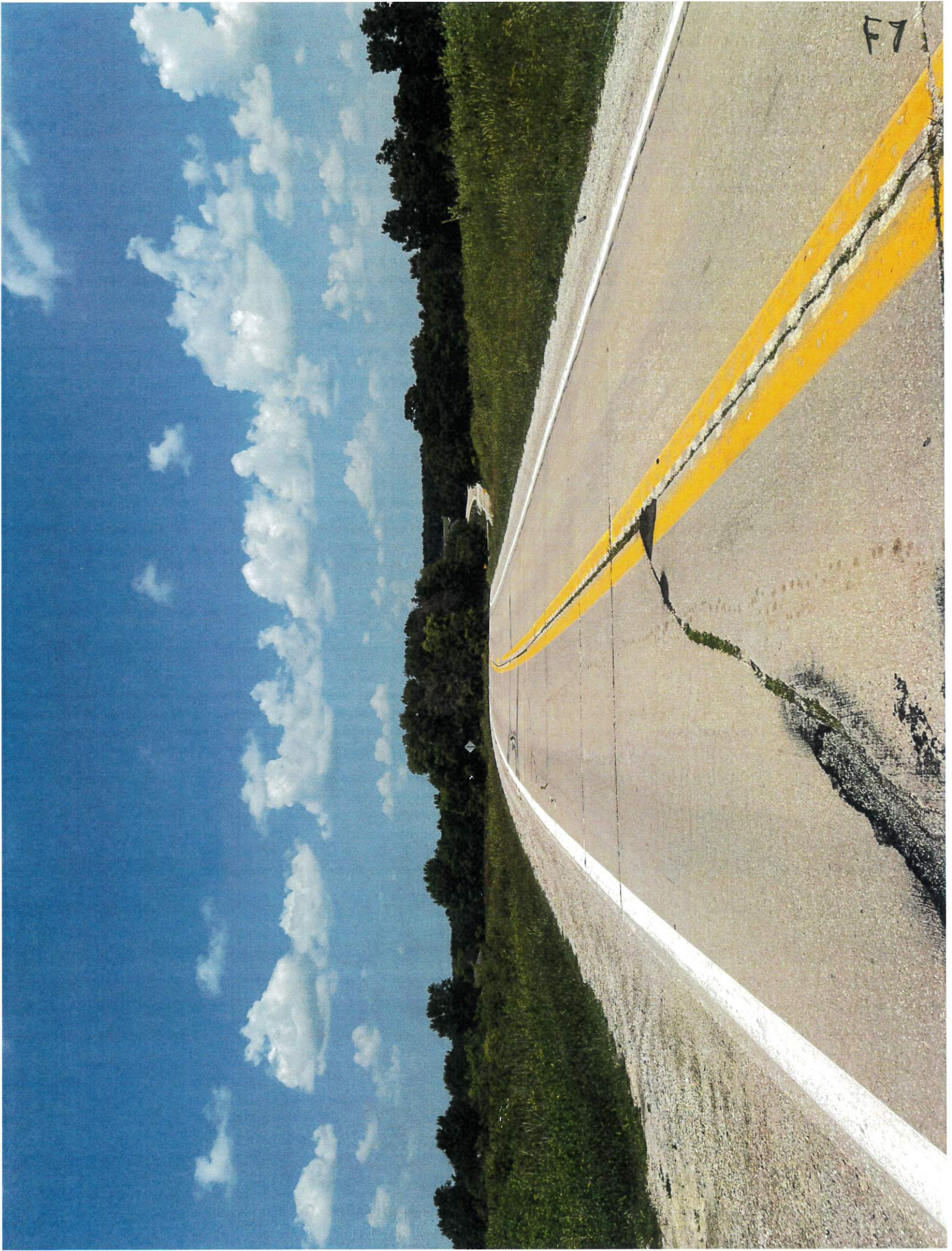




F5

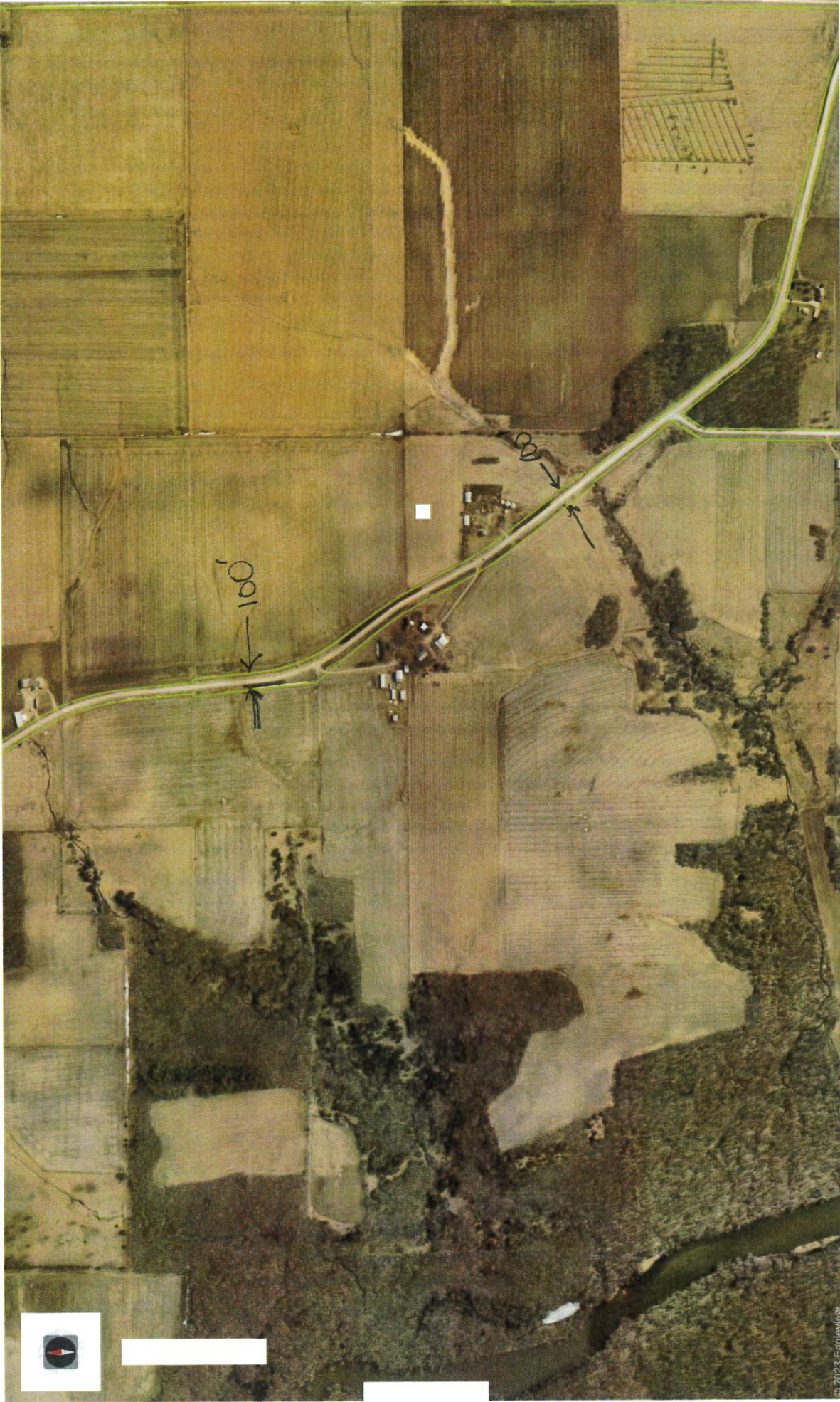


F.6



F7





G/A 2



G/H 7



Click a starting point.







G/A 5



G/H6

Click a starting point.





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

I

Crash Severity	28
Fatal Crash	0
Suspected Serious Injury Crash	1
Suspected Minor Injury Crash	3
Possible/Unknown Injury Crash	1
Property Damage Only	23

Injury Status Summary	6
Fatalities	0
Suspected serious/incapacitating	1
Suspected minor/non-incapacitating	3
Possible (complaint of pain/injury)	2
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	161,650.00
Average (per crash dollars):	5,773.21
Total Vehicles:	32.00
Average (per crash):	1.14
Total Occupants:	46.00
Average (per crash):	1.64

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.21
Major Injuries/Crash:	0.04
Minor Injuries/Crash:	0.11
Possible/Unknown Injuries/Crash:	0.07



# TRAFFIC FLOW MAP OF BUCHANAN COUNTY IOWA



Prepared by

**SYSTEMS PLANNING BUREAU**  
Phone: (515) 239-1064  
WWW.IOWADOT.GOV/SPBS



In Cooperation With  
**United States**  
Department of Transportation  
JANUARY 1, 2022

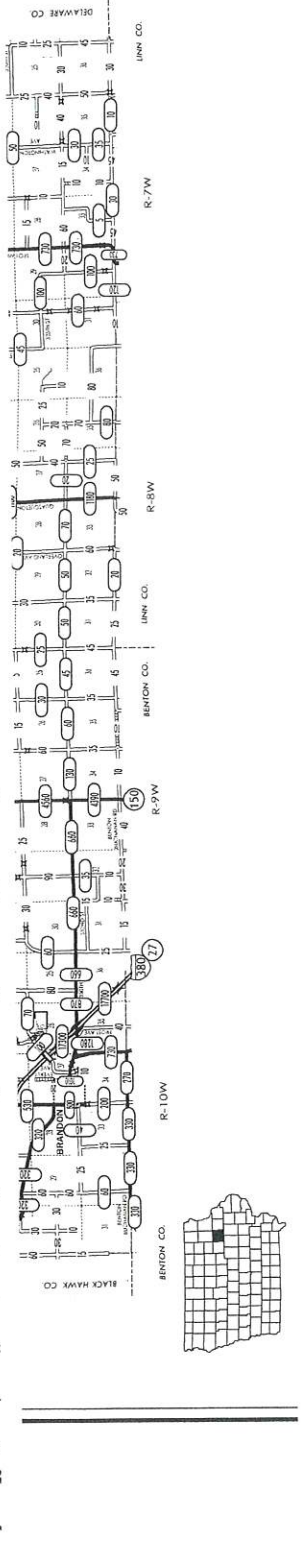


7-1-1-22

## LEGEND



SPEED LIMIT  
PAVED ROAD  
UNPAVED ROAD  
CANTON ROAD  
LOCAL HOT OILS ROAD



L

County:	Buchanan	Prepared By:	Brian Keierleber
Location:	W-35 Quasqueton Diagonal	Date Prepared:	7/7/2023
Proposed Improvements:	Shoulder Rumbles, Safety Edge, Chevrons are used for the CRF. We also will have paved shoulders, CL rumbles, and 6" pavement markings		
Estimated Improvement Cost:	\$ 769,087		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 15,382

Method Choice: CRF Method

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	15	6	15	28.0	
	Rounded	Crash History	CRF (from	Crash History -	Crashes Saved
Crash Severity	Societal Costs	(Total):	above)	Annual Avg	Annually
Fatal (K)	\$ 4,000,000		28.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	1	28.0	0.20	0.06
Minor Injury (B)	\$ 265,000	3	28.0	0.60	0.17
Possible/Unknown Injury (C)	\$ 125,000	1	28.0	0.20	0.06
Property Damage Only (O)	\$ 20,000	31	28.0	6.20	1.74

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ 224,214
Minor Injury (B)	\$ 44,563
Possible/Unknown Injury (C)	\$ 7,007
Property Damage Only (O)	\$ 34,753

### Total Benefits and Costs

		Implementation Cost	\$ 769,087
		Present Value of Maint.	\$ 209,043
Present Value Benefits (Societal Benefits)	\$ 4,586,849	Present Value Costs (Impl. and Maint. Costs)	\$ 978,130
Present Value Net Return	\$ 3,608,719		
<b>Benefit Cost Ratio</b>	<b>4.69</b>		

Form continues on next page



**Application for SITE-SPECIFIC  
TSIP FUNDS**

**GENERAL INFORMATION**

DATE: \_\_\_\_\_

Location / Title of Project S-56 Subsidence CorrectionApplicant Cerro Gordo CountyContact Person Mary Arndt Title Asst. to the County EngineerComplete Mailing Address 17274 Lark Av.  
Mason City IA 50401Phone 641-424-9037 E-Mail marndt@cgcounty.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:****Funding Amount**Total Safety Cost \$ 1,007,249Total Project Cost \$ 1,023,502**Safety Funds Requested** \$ 1,007,249

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain \_\_\_\_\_ No

### APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Cerro Gordo County

Signed: *Brandon Billings* 7-19-23  
Signature Date Signed

Brandon Billings, P.E. , County Engineer  
Printed Name

Attest: *Mary Arndt* 7-19-23  
Signature Date Signed

Mary Arndt  
Printed Name

**RESOLUTION**  
**2023-76**

**A RESOLUTION APPROVING SUBMITTAL OF SAFETY FUNDING APPLICATION**

WHEREAS, the Iowa Department of Transportation has adopted Administrative Rule 761—Chapter 164, which created the Traffic Safety Improvement Program to allow for funding to be provided to local jurisdictions for eligible traffic safety improvement projects; and

WHEREAS, Thrush Avenue from about 500 feet north of 325<sup>th</sup> Street and continuing north about 500 feet has an issue with slumping of the land and lateral tearing of road surface of the northbound lane adjacent to the high bank of the Shell Rock River at a major cut bank due to geomorphological effects over the years; and

WHEREAS, the steel beam guardrail, within three feet of the edge of the road, also affected by lateral shift and slumping of the ground, is in spots far less effective in deflecting traffic as designed; and

WHEREAS, the Cerro Gordo County Engineer recommends that the application be submitted to the Iowa Department of Transportation for possible Traffic Safety Funding of the above said project.

NOW, THEREFORE, BE IT RESOLVED that the Cerro Gordo County Board of Supervisors endorses the above said project and will authorize maintenance of the improvement after it is constructed; and

BE IT FURTHER RESOLVED that that the Chairperson of the Cerro Gordo County Board of Supervisors be authorized to sign the said application and direct the Engineering Department to submit the same to the Iowa Department of Transportation for Traffic Safety Improvement Funding.

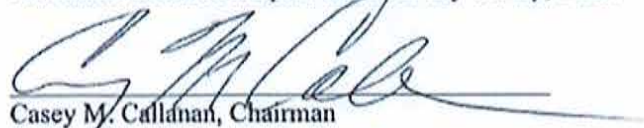
Motion was made by Supervisor Meacham Ginapp and seconded by Supervisor Watts to adopt the foregoing resolution. Vote taken thereon resulted as follows:

Ayes: Meacham Ginapp, Watts, Callanan

Nays: None

Absent/Not Voting: None

Resolution declared adopted this 10th day of July, 2023.



Casey M. Callanan, Chairman  
Board of Supervisors  
Cerro Gordo County

ATTEST

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Bob Peshak, Deputy Auditor  
Cerro Gordo County



Cerro Gordo County reviews each project prior to resurfacing and reconstruction to review and address safety issues to enhance the roadway for the travelling public.

Route S-56 (Thrush Avenue), within the area cover under this application, is a 22-foot-wide asphalt surfaced roadway part of the secondary road system with a speed limit of 45 m.p.h. dropping to 25 m.p.h. before entering the city limits due to large number of residences – 15 in 2000 feet. S-56 continues as a route extension into the City of Plymouth (pop. 368) the speed limit remains 25 m.p.h.

No traffic studies have been completed, but with a general observation it appears the speed 85<sup>th</sup> percentile is higher than the posts limits. This may be one of the factors for reports of vehicles in the south bound lane leaving the road, especially during the winter months. There may also be a perceived, but not real, narrowing of the lanes with tall vegetation and the closeness with the guardrail within 2½ feet adjacent the other lane. The county has experienced 4 years of relatively mild winters and less accidents. During normal winter seasons, and for whatever reason - speed, semi-urban segment, and lane width, vehicles get 'caught' by the edge of the road and each vehicle leaving the road can aggravate the edge rutting problem at a time when maintenance can't be performed. Placing a 2 ft paved shoulder could alleviate this matter.

The shoulder for the north bound lane is about 2½' wide with 581 feet of steel beam guardrail. The reason for the guardrail is a high bank with steep slopes above a large river bend within the clear zone. The guardrail is slowly subsiding and laterally moving with the rest of the slope. The posts and railing are leaning outward and the height of rail in places is less than 20 inches (27" is standard). Worse, the edge of road drop could be a factor in pulling a vehicle off the road; and the shoulder subsidence and erosion of the granular shoulder could trap a vehicle instead of deflecting it as designed.

Due to the cross-slope break in the north bound lane, winter plowing often leaves snow and ice on the outside half of the lane which goes through several freeze/thaw cycles. The cross-slope and the icy conditions affect vehicles until the material evaporates or salt/sand mixture can be added.

The county would like to pave the shoulders to prevent accidents and maintain a sound shoulder on the river side. We must first deal with the natural forces affecting the roadway causing longitudinal cracking of the pavement due to lateral movement and subsidence of the high bank. Once the designed 9-inch steel sheet pile (two courses) is driven along the river cut bank, the paved shoulders and guardrail can be placed and have a life span of 45-60 years.

The north bound lane will need to have an asphalt wedge course placed to correct the slope break mid-lane and the 4-inch drop at the edge of the road, and the overall road segment will

have a 2-inch overlay (existing road surface placed in 2010). The overlay placed in the same action as the paved shoulder will allow the county to skip this segment for planned resurfacing circa 2032 and forgo the task of matching the paved shoulders.

Shoulder rumble strips will be installed as well as 6-inch edgeline strips.

Summary - Cerro Gordo County is designing plans to first, hold back the lateral movement and ground subsidence while placing additional erosion control measures; second, bring this roadway back to standard and make safety improvements as noted below.

The stages of the plans (all on the east side of road unless noted). Permanent safety is in **BOLD**.

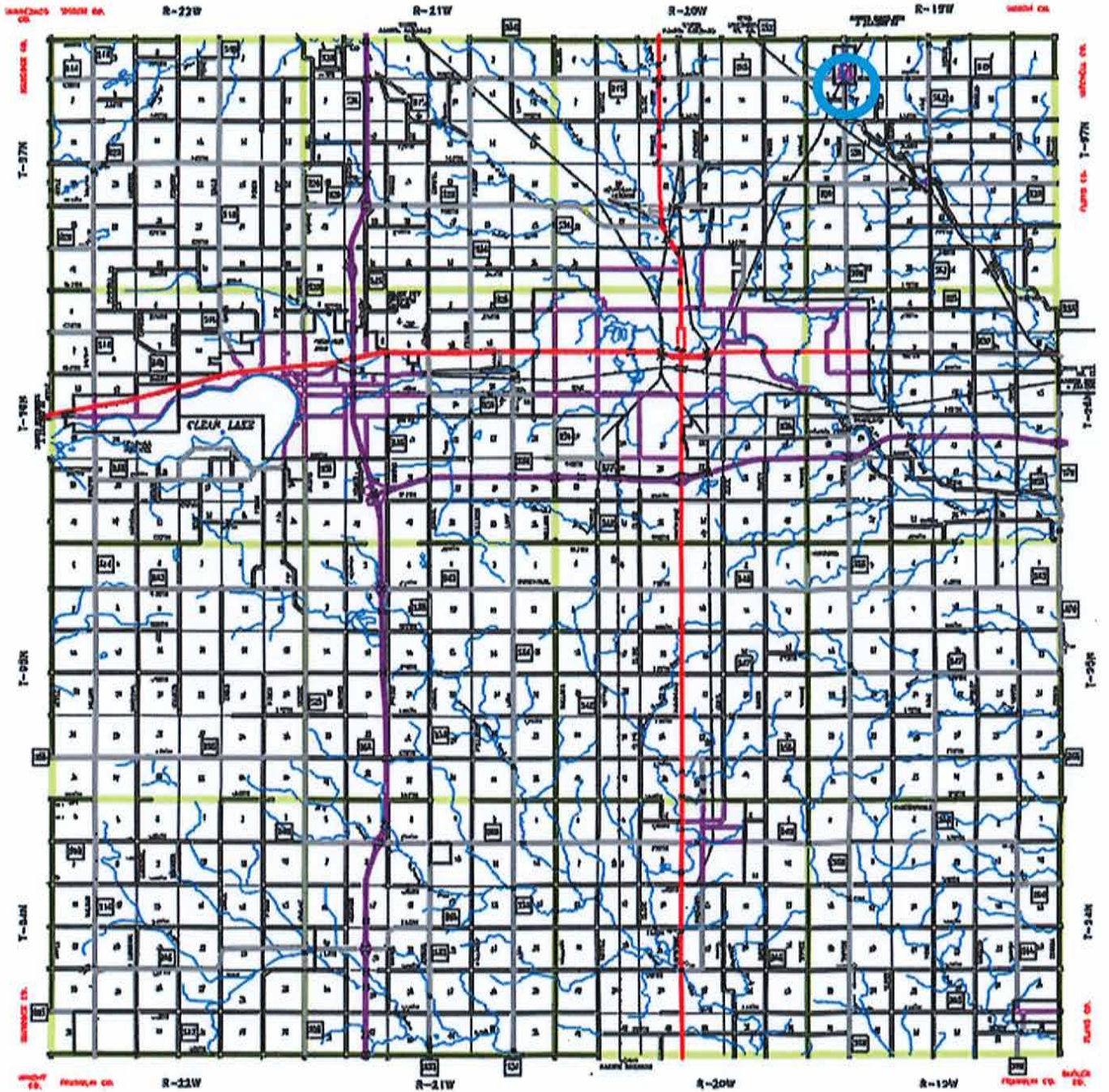
- Place 2 ft **paved shoulder** on west side of road
- Set up temporary barrier rail and traffic signals
- Remove existing ineffective revetment and perform clearing and grubbing
- Build embankment
- Drive two-course sheet piling
- Place revetment and other erosion control measures
- Wedge course in north bound lane
- Place drainage structures
- Embankment finish
- Place geogrid, MSB, 8 ft **paved shoulder** (2 ft under TSIP)
- 2" overlay
- Place **high-tension guardrail**
- Place **shoulder rumble strips**
- Place **shoulder rumble strips** on west side of road
- Place **6" edgeline**
- Place **6" edgeline** on west side of road
- Seeding and additional erosion control



ESTIMATE OF QUANTITIES									
	Estimate of Quantities	unit	quantity	unit cost	total TSIP	Local funding	Total		
1	CLEARING AND GRUBBING	ACRE	0.31	\$ 34,000.00	\$ 10,540.00		\$ 10,540.00		
2	EMBANKMENT-IN-PLACE	CY	1552	\$ 32.00	\$ 49,664.00		\$ 49,664.00		
3	EXCAVATION, CLASS 13, WASTE	CY	108	\$ 35.00	\$ 3,780.00		\$ 3,780.00		
4	MODIFIED SUBBASE	CY	136	\$ 60.00	\$ 5,160.00	\$ 3,000.00	\$ 8,160.00		
5	GRANULAR SHOULDERS, TYPE B	TON	120	\$ 35.00	\$ 4,200.00		\$ 4,200.00		
6	SUBGRADE STABILIZATION MATERIAL, POLYMER GRID	SY	400	\$ 2.25	\$ 225.00	\$ 675.00	\$ 900.00		
7	PAVED SHOULDER, HMA MIXTURE, 6 INCH	SY	1344.4	\$ 37.00	\$ 38,642.80	\$ 11,100.00	\$ 49,742.80		
8	PAVEMENT SCARIFICATION	SY	1446.4	\$ 9.75	\$ 14,102.40		\$ 14,102.40		
9	HOT MIX ASPHALT MIXTURE, WEDGE, LEVELING OR STRENGTHENING COURSE	TON	70	\$ 93.00	\$ 6,510.00		\$ 6,510.00		
10	HMA STANDARD TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, NO SPECIAL FRICTION	TON	730	\$ 90.00	\$ 65,700.00		\$ 65,700.00		
11	ASPHALT BINDER, PG 58-28S, STANDARD TRAFFIC	TON	45	\$ 630.00	\$ 28,350.00		\$ 28,350.00		
12	REMOVALS, AS PER PLAN	LS	1	\$ 45,000.00	\$ 45,000.00		\$ 45,000.00		
13	PILE, STEEL SHEET	SF	18000	\$ 14.80	\$ 266,400.00		\$ 266,400.00		
14	REMOVAL OF STEEL GUARDRAIL	LF	581.25	\$ 50.00	\$ 29,062.50		\$ 29,062.50		
15	HIGH TENSION CABLE GUARDRAIL	LF	546	\$ 27.00	\$ 14,742.00		\$ 14,742.00		
16	HIGH TENSION CABLE GUARDRAIL, END ANCHOR	EACH	2	\$ 3,700.00	\$ 7,400.00		\$ 7,400.00		
17	HIGH TENSION CABLE GUARDRAIL, SPARE PARTS KIT	EACH	1	\$ 4,000.00	\$ 4,000.00		\$ 4,000.00		
18	EARTH SCREW ANCHOR	EACH	9	\$ 997.00	\$ 8,973.00		\$ 8,973.00		
19	ENGINEERING FABRIC	SY	1250	\$ 7.50	\$ 9,375.00		\$ 9,375.00		
20	REVTMENT, CLASS C	TON	978	\$ 113.00	\$ 110,514.00		\$ 110,514.00		
21	REVTMENT, CLASS E	TON	652	\$ 101.00	\$ 65,852.00		\$ 65,852.00		
22	CURB, SPECIAL, AS PER PLAN	LF	450	\$ 37.00	\$ 16,650.00		\$ 16,650.00		
23	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	67.88	\$ 237.00	\$ 16,087.56		\$ 16,087.56		
24	PAINTED SYMBOLS AND LEGENDS, WATERBORNE OR SOLVENT-BASED	EACH	1	\$ 500.00	\$ 500.00		\$ 500.00		
25	SAFETY CLOSURE	EACH	2	\$ 350.00	\$ 700.00		\$ 700.00		
26	TEMPORARY BARRIER RAIL, CONCRETE	LF	500	\$ 13.00	\$ 6,500.00		\$ 6,500.00		
27	TRAFFIC CONTROL	LS	1	\$ 3,500.00	\$ 3,500.00		\$ 3,500.00		
28	FLAGGERS	EACH	20	\$ 540.00	\$ 10,800.00		\$ 10,800.00		
29	MOBILIZATION	LS	1	\$ 52,000.00	\$ 52,000.00		\$ 52,000.00		
30	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	47	\$ 95.00	\$ 4,465.00		\$ 4,465.00		
31	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	68	\$ 27.00	\$ 1,836.00		\$ 1,836.00		
32	SEEDING AND FERTILIZING (RURAL)	ACRE	1	\$ 5,000.00	\$ 5,000.00		\$ 5,000.00		
33	TEMPORARY TRAFFIC SIGNALS	EACH	2	\$ 3,000.00	\$ 6,000.00		\$ 6,000.00		
34	SPECIAL CONCRETE FLUME	EACH	3	\$ 1,150.00	\$ 3,450.00		\$ 3,450.00		
					\$ 915,681.26	\$ 14,775.00	\$ 930,456.26		
					\$ 91,568.13	\$ 1,477.50	\$ 93,045.63		
					<b>\$ 1,007,249.39</b>	<b>\$ 16,252.50</b>	<b>\$ 1,023,501.89</b>		

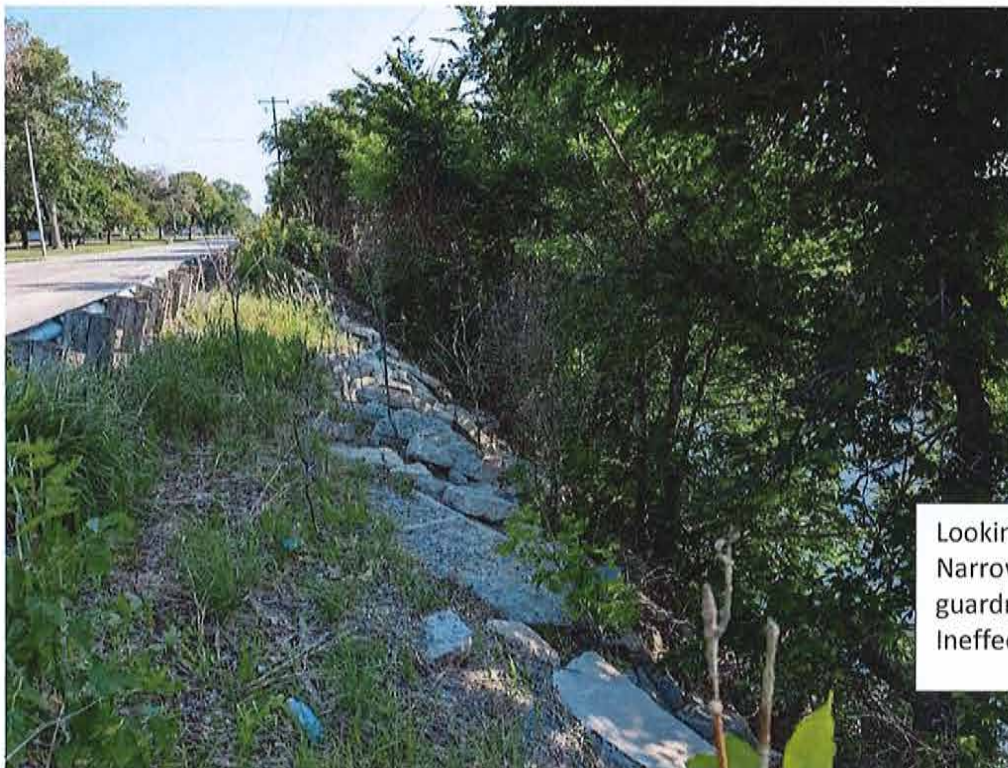
10%

July 2023	TSIP application submittal
January 2024	Iowa DOT Approval of TSIP application
February-May 2024	Project Engineering Finalizing
February-March 2024	Securing Temporary Encroachment Agreement
March-July 2024	Utility Relocation
July 2024	Project Letting (local)
July 2024 -October 2025	Project Construction





Looking SSE  
Lean of guardrail and erosion of the shoulder lessens the 'w' beam deflection properties; may trap a vehicle under the rail.  
  
Note subsidence stress cracks.



Looking North  
Narrow embankment behind guardrail.  
Ineffective concrete pieces



Looking North  
Note lateral movement of guardrail.  
And subsidence stress cracks.

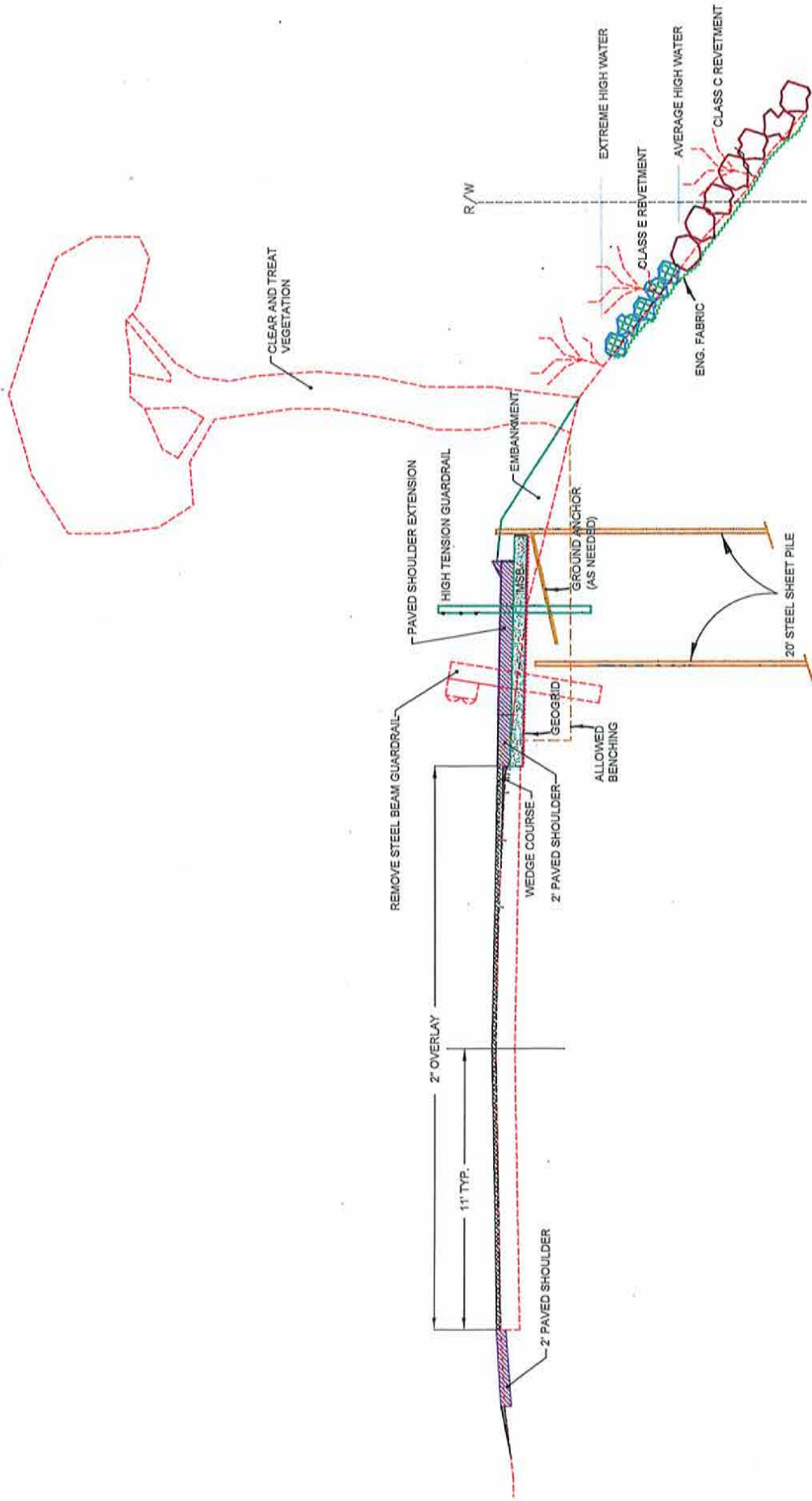


Looking North  
Tearing at mid lane.  
Cross slope different for each wheel path.



Looking at west edge of road  
Common winter edge rutting  
and accident factor.





TYPICAL CROSSSECTION AT CUT BANK

33-RAW



2' GRANULAR SHOULDER

2' PAVED SHOULDER



THRUROAD AVENUE



2' HMA PAVED SHOULDER

EARTH ANCHOR  
(AS NEEDED)

6' HMA PAVING

CONCRETE FLUME

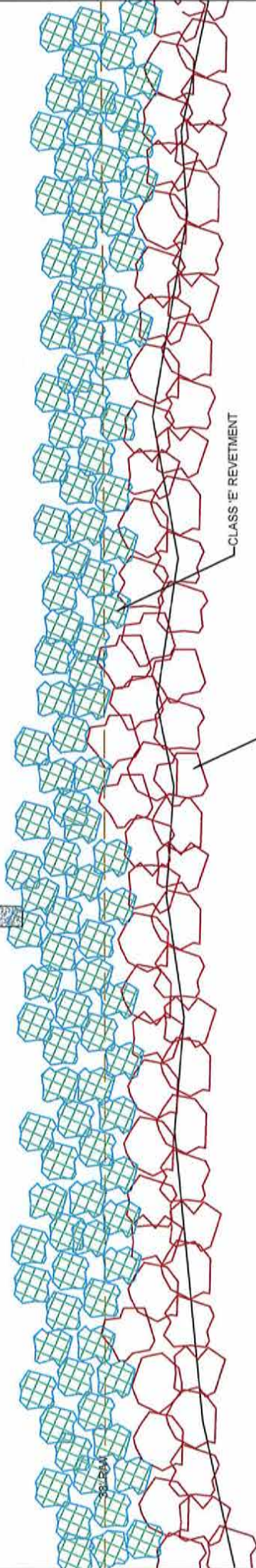
6" HMA CURB

STEEL SHEET PILE (2 COURSE)

4 1/2'

9 1/2'

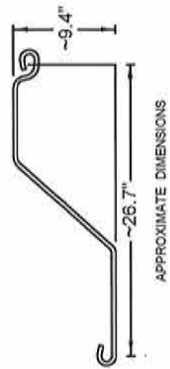
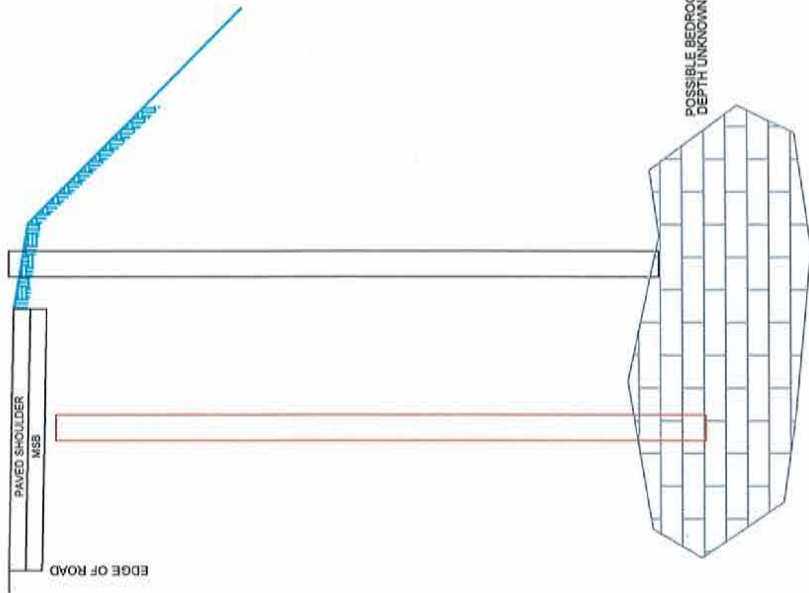
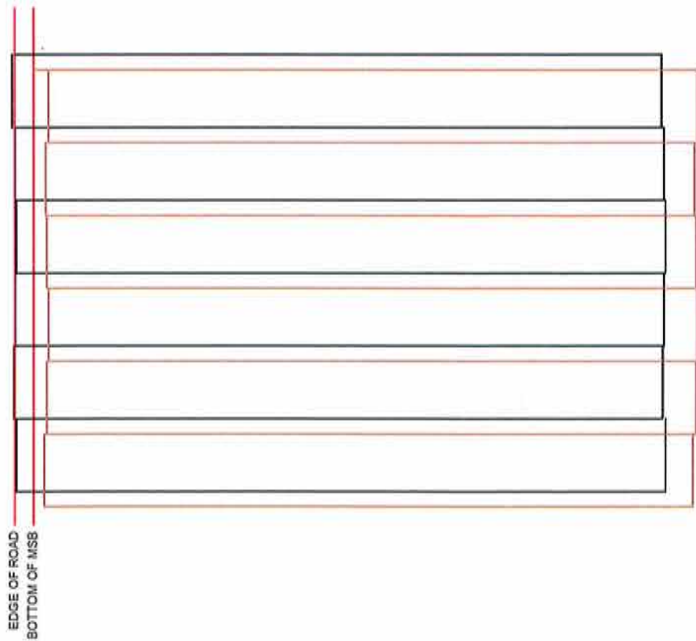
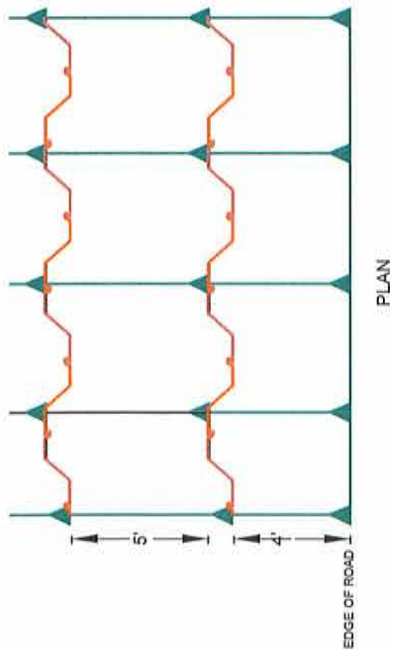
HIGH TENSIONED GUARDRAIL



J. FRITZ FARMS, INC.  
TEMPORARY ENCROACHMENT AGREEMENT

SHELLROCK RIVER

# STEEL SHEET PILE



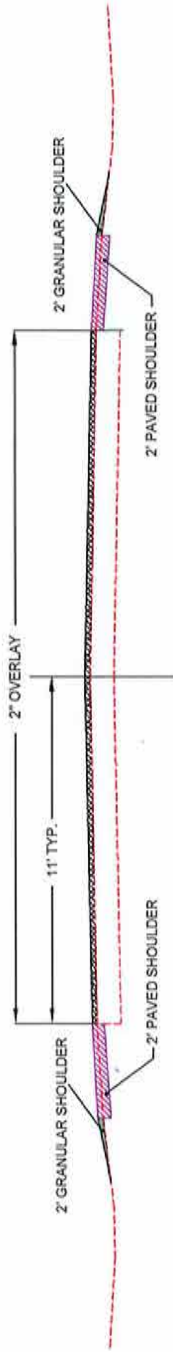
SHOP DRAWING APPROVAL IS REQUIRED OF INTERLOCKING INTERMEDIATE HEAVYWEIGHT STEEL PILE (BARE) ASTM-A-328. WEB THICKNESS NO LESS THAN  $\frac{3}{8}$ " (375 INCHES) AND SECTION MODULUS NO LESS THAN 19.3 INCH<sup>4</sup>/FT.

ALL PILES MUST BE DRIVEN AND BE TRIMMED TO PLAN ELEVATION.

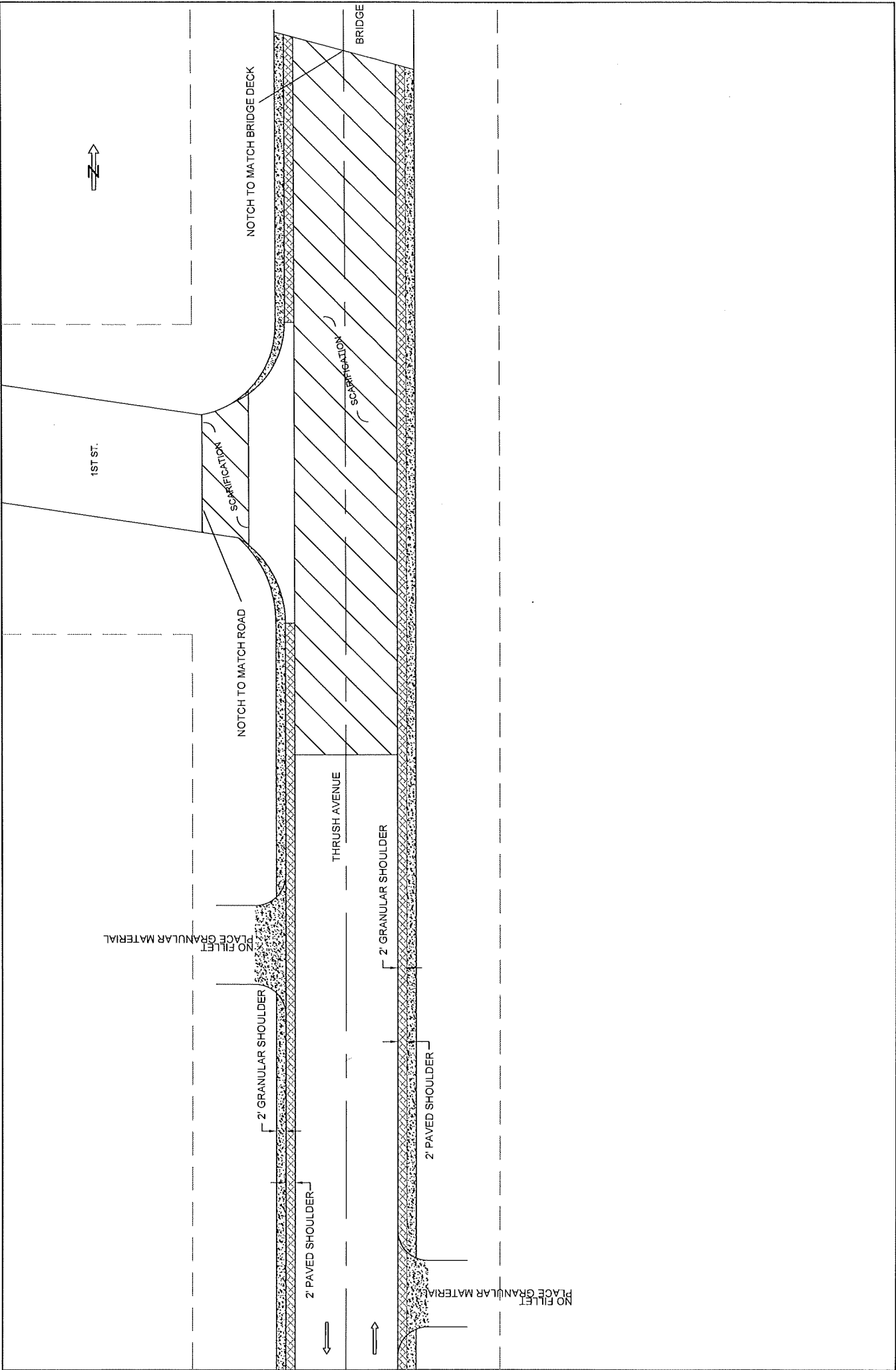
IT IS EXPECTED THE CONTRACTOR WOULD ORDER SUFFICIENT LENGTHS TO COMPLETE DRIVING IN ONE OPERATION. IF AUTHORIZED BY ENGINEER, EXTENSIONS MUST BE DONE BY A CERTIFIED WELDER.

PILES MAY BE LEFT IN A UNPAINTED CONDITION.

ONLY CUT-OFF LENGTHS 4 FEET OR LESS WILL BE PAID 100% AND CUT-OFFS WILL BE STOCKPILED FOR COLLECTION BY THE CONTRACTING AUTHORITY.



TYPICAL CROSSESECTION NON-CUTBANK







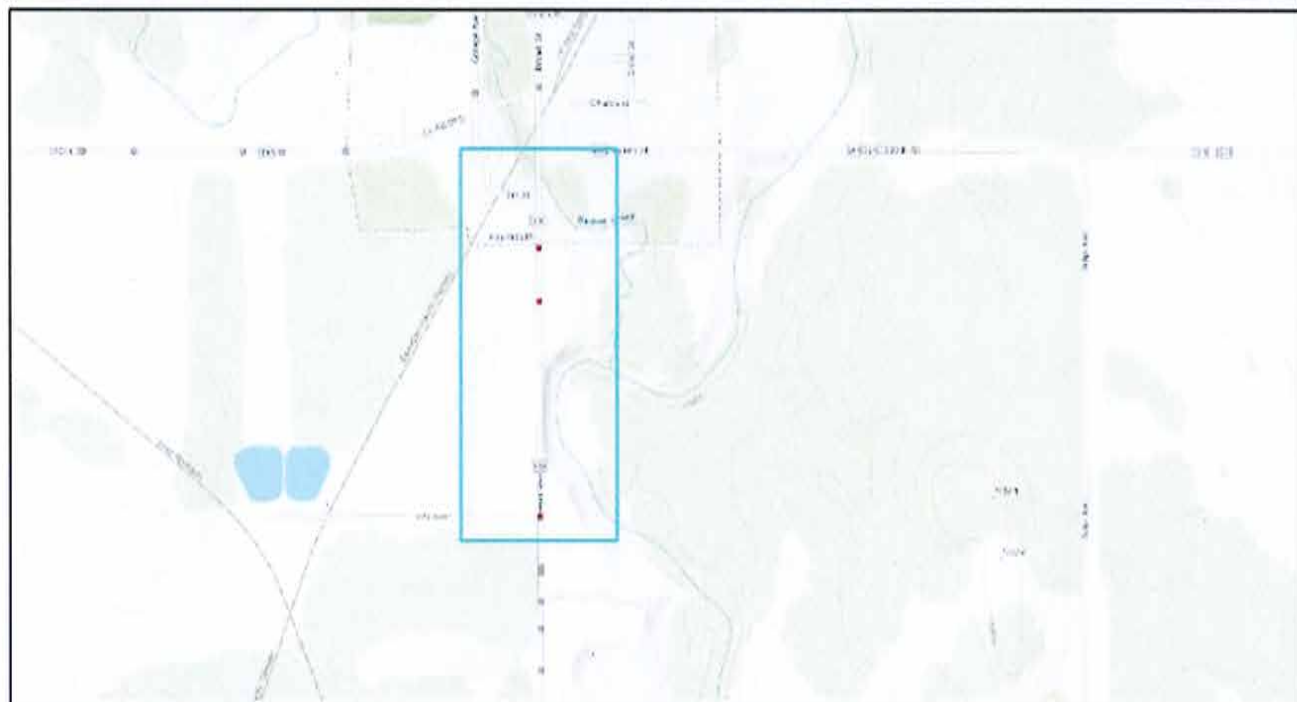
Iowa Crash Analysis Tool  
Quick Report  
2013-2023

<b>Crash Severity</b>	<b>3</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	3

<b>Injury Status Summary</b>	<b>0</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars)	17,000.00
Average (per crash dollars):	5,666.67
Total Vehicles:	3.00
Average (per crash):	1.00
Total Occupants:	3.00
Average (per crash):	1.00

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2013-2023

Major Cause		3	
Animal	2	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		0



Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	1	0	0	0	0	1	0	0	0	0	2
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	1	0	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	1	1	0	0	0	1	0	0	0	0	3

Manner of Crash Collision	3	Surface Conditions	3
Non-collision (single vehicle)	2	Dry	0
Head-on (front to front)	0	Wet	0
Rear-end (front to rear)	0	Ice/frost	0
Angle, oncoming left turn	0	Snow	1
Broadside (front to side)	0	Slush	0
Sideswipe, same direction	0	Mud, dirt	0
Sideswipe, opposite direction	0	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	1	Gravel	0
Other	0	Not reported	2
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	3
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	1
Building	0
None (no fixed object struck)	2

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	1	0	0	1
= 20	0	0	0	0	0
>= 21 and <= 24	1	0	0	0	1
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	1	0	0	0	1
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>

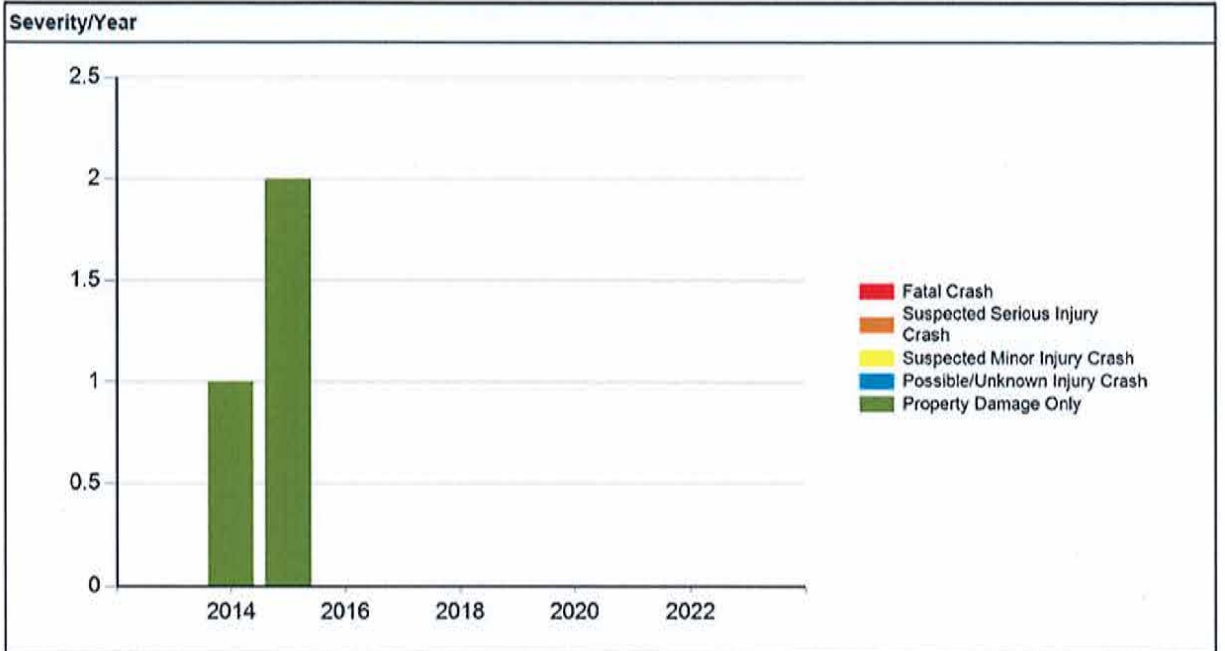
Alcohol Test Given	3
None	3
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

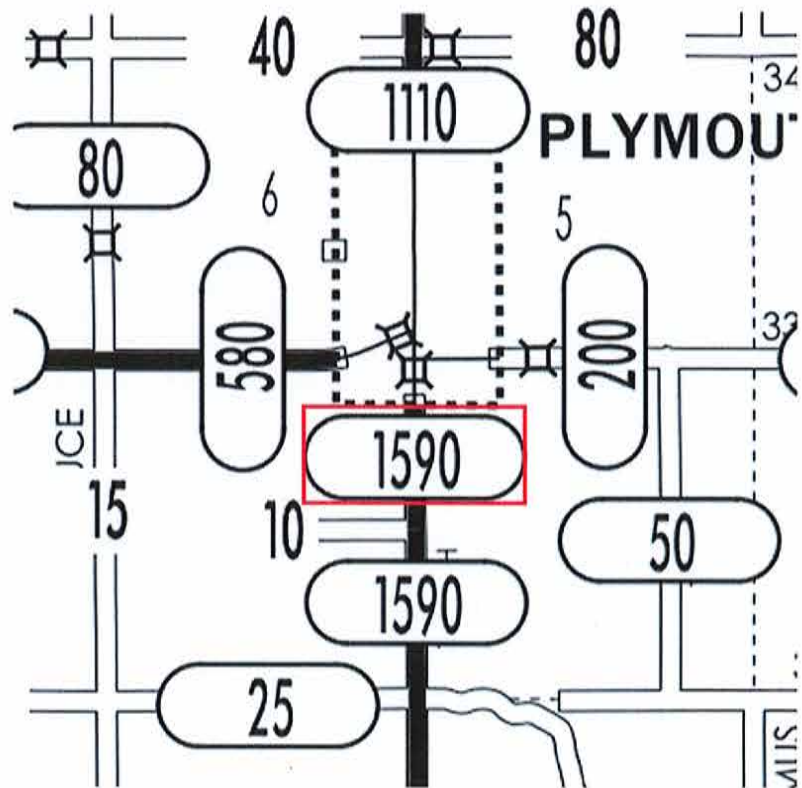
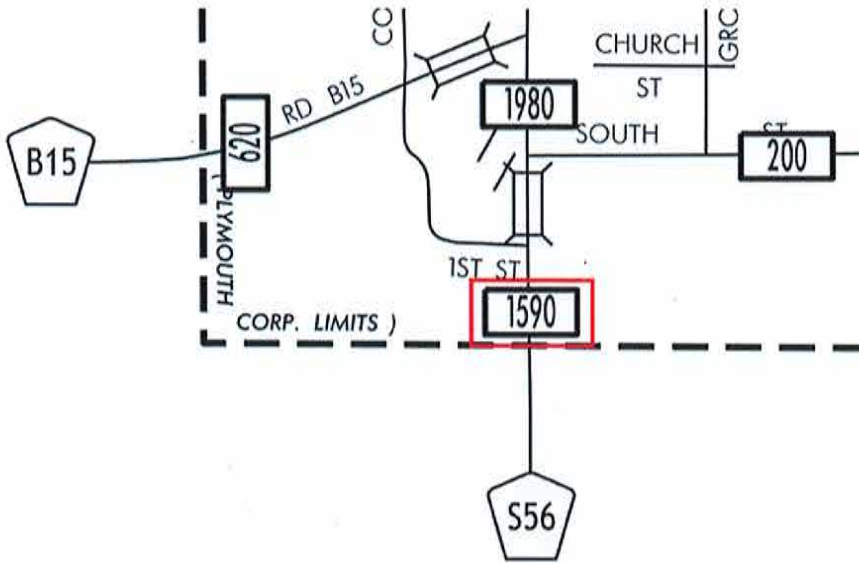
Drug Test Given	3
None	3
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

Drug/Alcohol Related	3
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	3

Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	
2014	0	0	0	0	1	1	
2015	0	0	0	0	2	2	
2016	0	0	0	0	0	0	
2017	0	0	0	0	0	0	
2018	0	0	0	0	0	0	
2019	0	0	0	0	0	0	
2020	0	0	0	0	0	0	
2021	0	0	0	0	0	0	
2022	0	0	0	0	0	0	
2023	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	3	3	







County:	Cerro Gordo	Prepared By:	Mary Arndt		
Location:	S-56 north of 325th St.	Date Prepared:	7/6/2023		
Proposed Improvements:	Paved Shoulders, High tension guardrail, 6 inch edge lines after making repair to slumping embankment involving the roadway				
Estimated Improvement Cost:	\$ 89,014				
Inflation on Crash Costs:	4%	Annual Maintenance:	2%		
Discount Rate:	4%	(% of Improvement Cost)			
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 1,780		
<b>Service Life List</b>					
Method Choice:	CRF Method	The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.			
<b>Crash Reduction Factor (CRF) Method</b>		<a href="#">Learn More</a>	<a href="#">CRF Sources</a>		
Traffic Growth Factor:	1%				
Number of CRFs:	3				
Years of Crash History:	5				
<b>Combined CRF (Dominant Common Residuals Method)</b>		<i>Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.</i>			
	CRF 1:	CRF 2:	CRF 3:	<b>Combined CRF</b>	
CRF Value (%)	20	7	2	22.3	
Crash Severity	Rounded Societal	Crash History	CRF (from above)	Crash History -	Crashes Saved
Fatal (K)	\$ 4,000,000	0	22.3	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	22.3	0.00	0.00
Minor Injury (B)	\$ 265,000	0	22.3	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	22.3	0.00	0.00
Property Damage Only (D)	\$ 20,000	3	22.3	0.60	0.13
Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (D)	\$ 2,680				
<b>Total Benefits and Costs</b>					
		Implementation Cost	\$	89,014	
		Present Value of Maint.	\$	24,195	
Present Value Benefits (Societal Benefits)	\$	39,584	Present Value Costs (Impl. and Maint. Costs)	\$	113,209
Present Value Net Return	\$	(73,625)			
<b>Benefit Cost Ratio</b>		<b>0.35</b>			<i>Form continues on next page</i>



**Application for SITE-SPECIFIC  
TSIP FUNDS**

## GENERAL INFORMATION

DATE: \_\_\_\_\_

Location / Title of Project S-62 Curve & Tangent RealignmentApplicant Cerro Gordo CountyContact Person Mary Arndt Title Asst. to the County EngineerComplete Mailing Address 17274 Lark Av.  
Mason City IA 50401Phone 641-424-9037 E-Mail marndt@cgcounty.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

## PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

## Funding Amount

Total Safety Cost \$ 525,028Total Project Cost \$ 536,049Safety Funds Requested \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?


 Yes – Explain \_\_\_\_\_ No

### APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Cerro Gordo County

Signed:  5-9-2023  
Signature Date Signed

Brandon Billings, P.E. , County Engineer  
Printed Name

Attest:  5-9-2023  
Signature Date Signed

Mary Arndt  
Printed Name

**RESOLUTION**  
**2023-51**

**A RESOLUTION APPROVING SUBMITTAL OF SAFETY FUNDING APPLICATION**

WHEREAS, the Iowa Department of Transportation has adopted Administrative Rule 761—Chapter 164, which created the Traffic Safety Improvement Program to allow for funding to be provided to local jurisdictions for eligible traffic safety improvement projects; and

WHEREAS, traffic crash history shows the existing alignment on S-62 entering the Town of Rock Falls from the south is a problem area and these accidents could be reduced with appropriate realignment of S-62 and additional safety features; and

WHEREAS, the Town of Rock Falls has a population under 500 and Cerro Gordo County is responsible for the S-62 extension through the town; and

WHEREAS, the Cerro Gordo County Engineer recommends that the application be submitted to the Iowa Department of Transportation for possible Traffic Safety Funding of the above said project.

NOW, THEREFORE, BE IT RESOLVED that the Cerro Gordo County Board of Supervisors endorses the above said project and will authorize maintenance of the improvement after it is constructed; and

BE IT FURTHER RESOLVED that that the Chairperson of the Cerro Gordo County Board of Supervisors be authorized to sign the said application and direct the Engineering Department to submit the same to the Iowa Department of Transportation for Traffic Safety Improvement Funding.

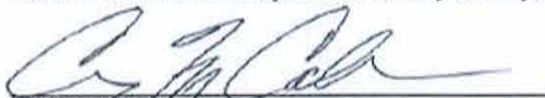
Motion was made by Supervisor Meacham Ginapp and seconded by Supervisor Watts to adopt the foregoing resolution. Vote taken thereon resulted as follows:

Ayes: Meacham Ginapp, Watts, Callanan

Nays: None

Absent/Not Voting: None

Resolution declared adopted this 1st day of May, 2023.



Casey M. Callanan  
Chairman, Board of Supervisors  
Cerro Gordo County

ATTEST:



Bob Peshak, Deputy Auditor  
Cerro Gordo County



Cerro Gordo County reviews each project prior to resurfacing and reconstruction to review and address safety issues to enhance the roadway for the travelling public. Route S-62 (Vine Avenue) is a county-controlled extension into the town of Rock Falls (population 147.)

Approximately 410 to 920 vehicles per day enter/exit the town from this direction. Vehicles are getting bigger and include farm equipment and semi-trucks traveling to the coop located adjacent this segment; plus, campers and recreational vehicles traveling to a local county park adjacent to the segment.

The project limits is 1636' long; work is broken into two segments.

The south segment traffic encounters existing three curves within 800 feet of one another, one with approximately a 120' radius. Existing curves superelevation are not to standard. Shoulders consist of 2' granular material. There are railroad tracks crossing over a very short tangent between south two of the curves. There have been several accidents where vehicles left the roadway trying to negotiate the tight curves. The county would like to realign the road to reduce the curves from 3 to 2 and increase the new curve radii using *table 1: Low Speed Two-Lane Undivided Roadways; Design Manual Section 2A-3*. The proposed radius will be 340' with 5.6% superelevation while maintaining the posted speed limit at 25 mph.

**Table 1: Low Speed, Two-Lane Undivided Roadways (w = 12 feet), e<sub>max</sub> = 6%, NC = 2%**

radius (ft)	Design Speed (mph)														
	25			30			35			40			45		
	e	L	x	e	L	x	e	L	x	e	L	x	e	L	x
340	4.8	82	34	5.6	102	36	6.0	116	39						
320	5.0	86	34	5.8	100	36	R <sub>min</sub> = 340								
300	5.0	86	34	5.8	106	36									
275	5.2	89	34	6.0	109	36									
250	5.4	93	34	6.0	109	36									
231	5.6	96	34	6.0	109	36									
225	5.6	96	34	R <sub>min</sub> = 231											
200	5.8	100	34												
144	6.0	103	34	R <sub>min</sub> = 144											

NC = Normal Crown  
RC = Remove Crown

The south segment safety enhancements are realign the curves, bring superelevation to standard, place 3' paved shoulder through the curve sections, mill in shoulder rumble strips, add safety edges and 6" edge lines on both tangent and curve sections. Upgrade curve chevrons to diamond grade and w/reflective strip on signposts.

The north segment has had a less than tangent alignment since the town was platted and the road was built. The paving simply followed the existing alignment to connect with a bridge in town. Severe rutting occurs along the east edge of the north road segment due to vehicles not following the misaligned road and dropping off the edge. This is intensified during rain events as water pools in this rut instead of sheeting off the shoulder. This has caused the edge to break off, increasing the hazard to the traveling public. The County would like to profile mill the existing crown out of the road, straighten the alignment, and place a thin lift with new crown. A short 2' widening with catch basin on the east side at the bridge will be placed to capture water sheeting off the bridge and immediately direct it to the ditch.

The north segment safety enhancements are straighten the tangent section, add safety edges and 6" edge lines.

The County has been contacted by the Northern Iowa Railway Company about damage to their system, both signals and control box, that require a shutdown of train traffic while repairs are made. The railroad, at their own expense, will work with us in relocating the needed crossings at the proposed road segment.

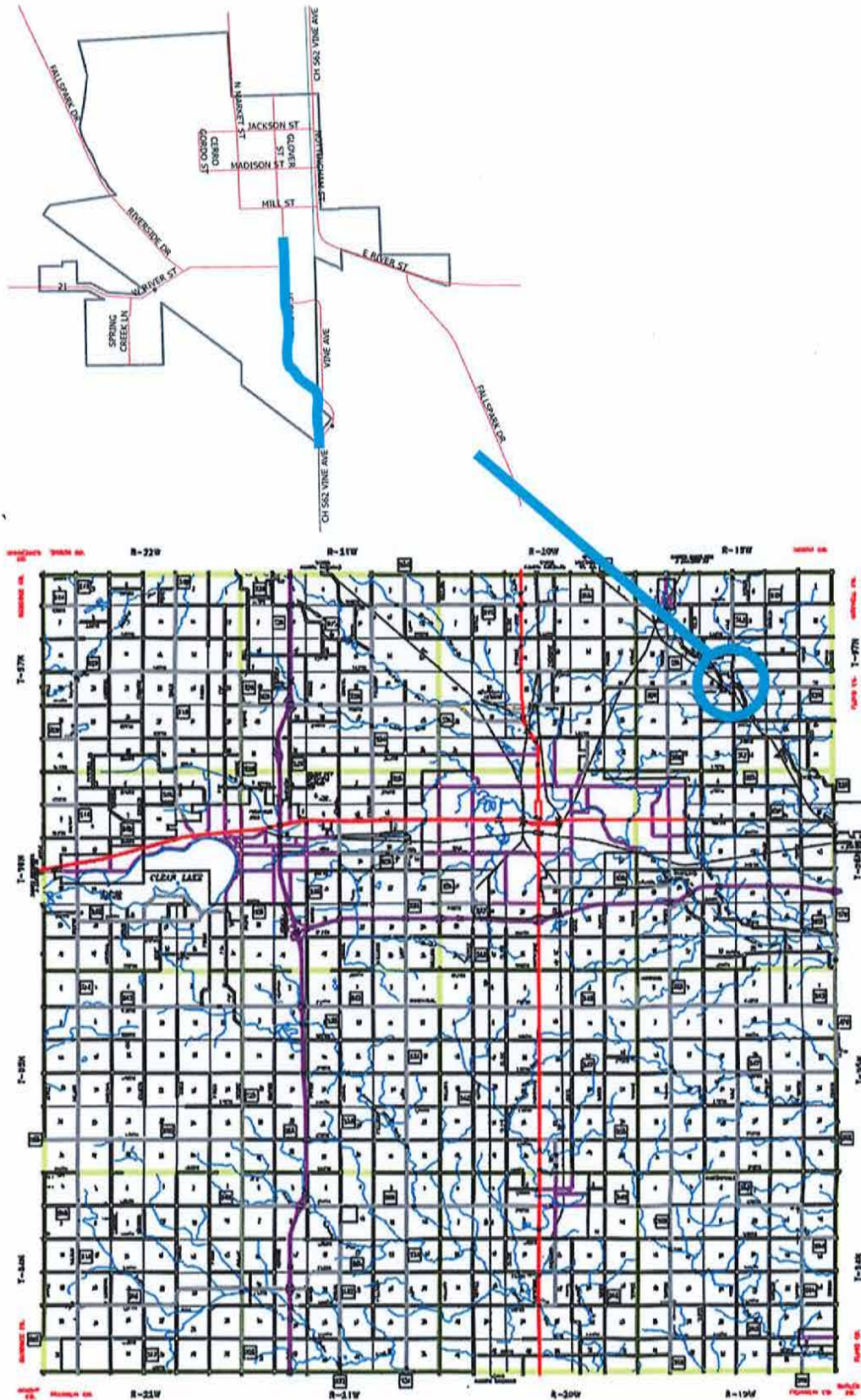
County, with other monies, will be seeding the disturbed ground and securing 2 easements with property owners for right of way encroachments and an agreement/easement with Northern Iowa Railway Company.

ESTIMATE OF COST

Item	Item Number	Description	Units	Quantity	Eng Est	Cost	TSIP Cost
1	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	1226.7	\$29.00	\$35,574.30	\$35,574.30
2	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	50	\$31.00	\$1,550.00	\$1,550.00
3	2102-2712015	EXCAVATION, CLASS 12, BOULDERS OR ROCK FRAGMENTS	CY	5	\$67.00	\$335.00	\$335.00
4	2102-5020010	OBUTERATE OLD ROADBED	STA	5.60	\$1,295.00	\$7,252.00	\$7,252.00
5	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	759	\$52.87	\$40,128.33	\$40,128.33
6	2107-0875000	COMPACTION WITH MOISTURE AND DENSITY CONTROL	CY	1091.2	\$7.50	\$8,184.00	\$8,184.00
7	2113-0001100	SUBGRADE STABILIZATION MATERIAL, POLYMER GRID	SY	1850.3	\$2.57	\$4,755.27	\$4,755.27
8	2115-0100000	MODIFIED SUBBASE	CY	92	\$44.33	\$4,078.36	\$4,078.36
9	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	200	\$47.00	\$9,400.00	\$9,400.00
10	2122-5500060	PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.	SY	522.9	\$43.57	\$22,782.75	\$22,782.75
11	2123-7450020	SHOULDER FINISHING, EARTH	STA	8.54	\$140.00	\$1,195.60	\$1,195.60
12	2210-0475290	MACADAM STONE BASE	TON	784	\$57.45	\$45,040.80	\$45,040.80
13	2210-0475105	CHOKE STONE	TON	588	\$54.98	\$32,328.24	\$32,328.24
14	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	89.22	\$15.65	\$1,396.29	\$1,396.29
15	2213-8200000	BASE WIDENING, HOT MIX ASPHALT MIXTURE	TON	55	\$83.00	\$4,565.00	\$4,565.00
16	2214-5145150	PAVEMENT SCARIFICATION	SY	2920	\$15.63	\$45,639.60	\$45,639.60
17	2303-0001000	HMA, WEDGE, LEVELING OR STRENGTHENING COURSE	TON	162	\$135.50	\$21,951.00	\$21,951.00
18	2303-1031750	HMA STANDARD TRAFFIC, BASE COURSE, 3/4 IN. MIX	TON	250	\$84.25	\$21,062.50	\$21,062.50
19	2303-1032500	HMA STANDARD TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MIX	TON	93	\$91.10	\$8,472.30	\$8,472.30
20	2303-1033500	HMA STANDARD TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, NO SPECIAL FR	TON	450	\$99.80	\$44,910.00	\$44,910.00
21	2303-1258283	ASPHALT BINDER, PG 58-28S, STANDARD TRAFFIC	TON	48	\$630.00	\$30,240.00	\$30,240.00
22	2308-1000010	ASPHALT EMULSION FOR FOG SEAL (SHOULDERS RUMBLE STRIPS)	GAL	22.4	\$46.80	\$1,048.32	\$1,048.32
23	2416-0100024	APRONS, CONCRETE, 24 IN DIA.	EACH	4	\$147.65	\$590.60	\$590.60
24	2416-1180024	CULVERT, CONCRETE ROADWAY PIPE, 24 IN. DIA	LF	108	\$104.25	\$11,259.00	\$11,259.00
25	2417-1040015	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 15 IN. DIA.	LF	34	\$95.65	\$3,252.10	\$3,252.10
26	2510-6745850	REMOVAL OF PAVEMENT	SY	2145	\$10.55	\$22,629.75	\$22,629.75
27	2526-8285000	CONSTRUCTION SURVEY	LS	1	\$10,300.00	\$10,300.00	
28	2527-9263117	PAINTED PAVEMENT MARKING, DURABLE	STA	81.80	\$183.45	\$15,006.21	\$15,006.21
29	2528-8445110	TRAFFIC CONTROL	LS	1.00	\$5,000.00	\$5,000.00	\$5,000.00
30	2528-2518000	SAFETY CLOSURE	EACH	4	\$450.00	\$1,800.00	\$1,800.00
31	2533-4980005	MOBILIZATION	LS	1	\$37,000.00	\$37,000.00	\$37,000.00
32	2548-0000100	MILLED SHOULDER RUMBLE STRIPS, HMA SURFACE	STA	15.52	\$107.60	\$1,669.95	\$1,669.95
33	2548-0000110	ASPHALT EMULSION FOR FOG SEAL (SHOULDER RUMBLE STRIPS)	GAL	22.4	\$26.05	\$583.52	\$583.52

WITH 7% CONTINGENCY \$500,980.80 \$490,680.80  
 \$536,049.45 \$525,028.45  
**\$ 500,000.00**  
 MAXIMUM ALLOWED

June 2023	TSIP application submittal
January 2024	Iowa DOT Approval of TSIP application
February-May 2024	Project Engineering, Secure R/W
July 2024	Project Letting (local)
August 2024 -September 2025	Railroad Crossing relocation
August 2024 -September 2025	Project Construction





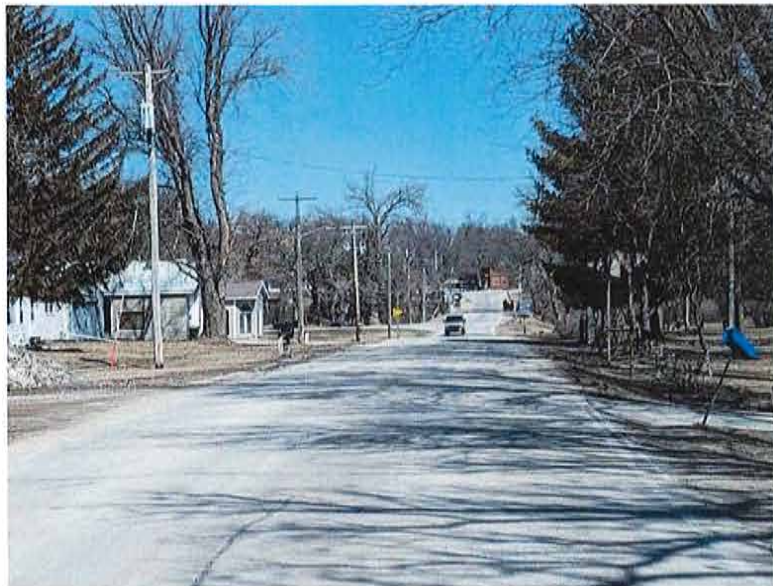
Traveling North bound  
South half of the project









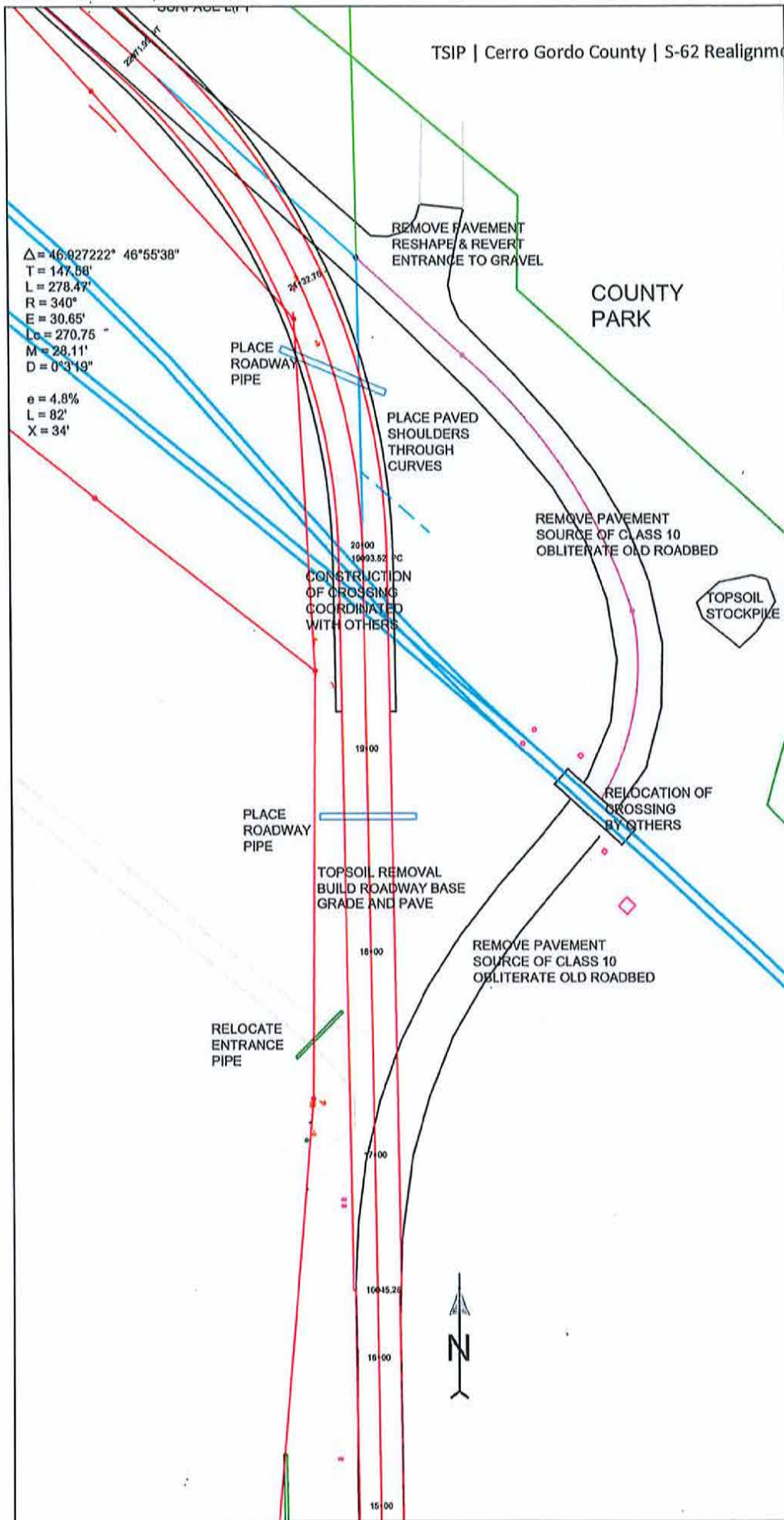


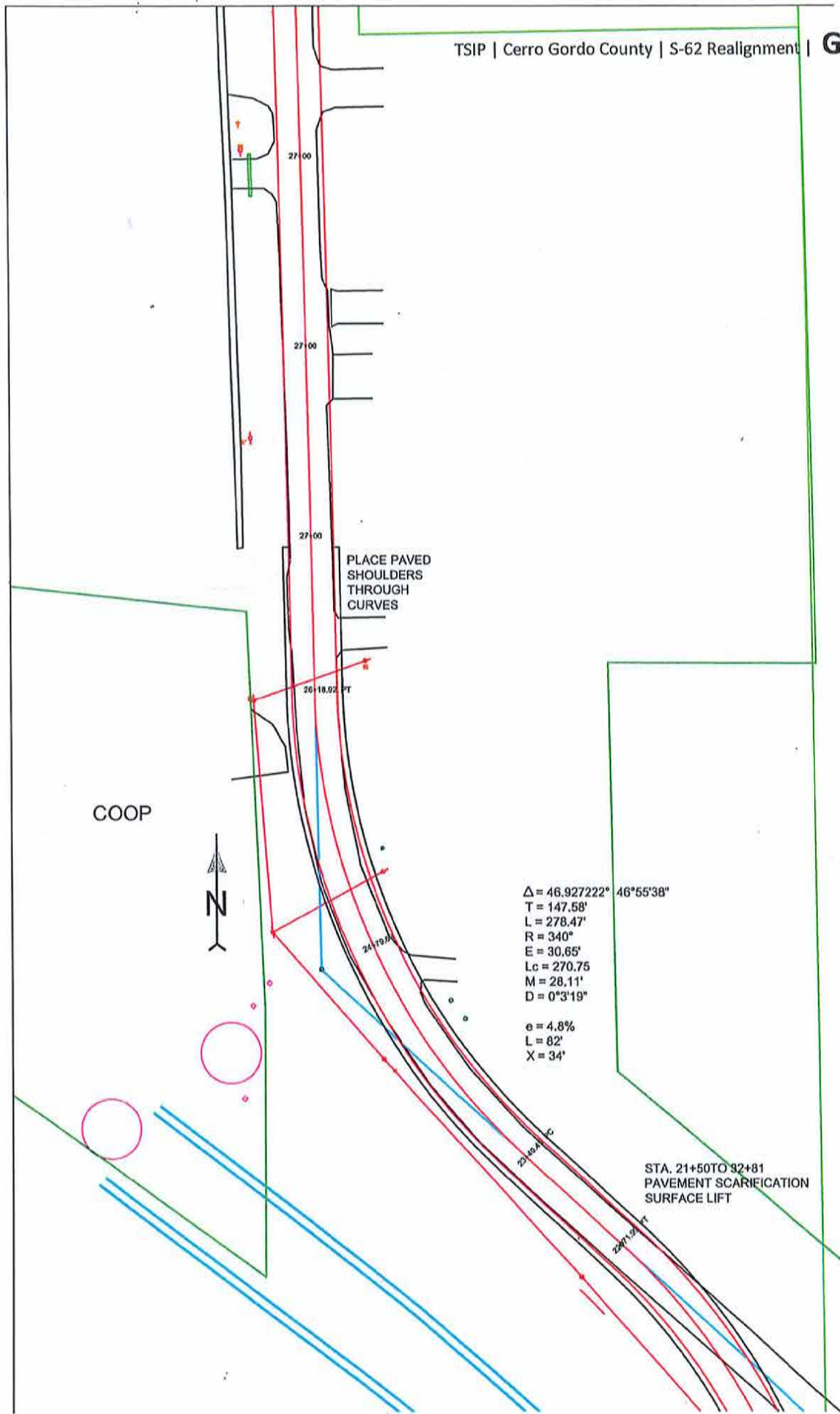


Traveling North bound.  
North half of the project.  
Note poor alignment.



North half of the project.  
Severe edge rut and pavement  
break-away





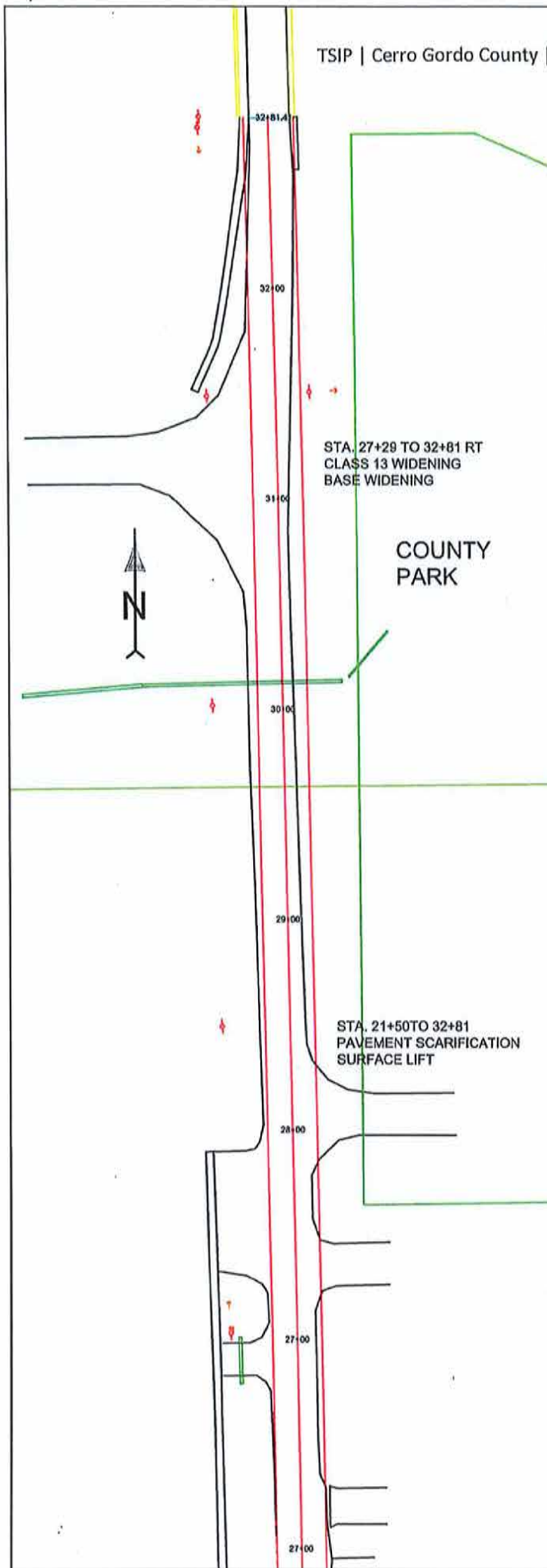
PLACE PAVED SHOULDERS THROUGH CURVES

COOP



$\Delta = 46.927222^\circ$  46°55'38"  
T = 147.58'  
L = 278.47'  
R = 340°  
E = 30.65'  
Lc = 270.75'  
M = 28.11'  
D = 0°3'19"  
e = 4.8%  
L = 82'  
X = 34'

STA. 21+50 TO 32+81  
PAVEMENT SCARIFICATION  
SURFACE LIFT







Iowa Crash Analysis Tool  
Quick Report  
2019-2023

<b>Crash Severity</b>	<b>6</b>	<b>Injury Status Summary</b>	<b>1</b>
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	0	Suspected serious/incapacitating	0
Suspected Minor Injury Crash	0	Suspected minor/non-incapacitating	0
Possible/Unknown Injury Crash	1	Possible (complaint of pain/injury)	0
Property Damage Only	5	Unknown	1

<b>Property/Vehicles/Occupants</b>		<b>Average Severity</b>	
Property Damage Total (dollars):	120,500.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	20,083.33	Fatalities/Crash:	0.00
Total Vehicles	7.00	Injuries/Crash:	0.00
Average (per crash):	1.17	Major Injuries/Crash:	0.00
Total Occupants:	9.00	Minor Injuries/Crash:	0.00
Average (per crash):	1.50	Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2019-2023

Major Cause		6	
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	2
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	1	Ran off road - left	2
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		





Iowa Crash Analysis Tool  
Quick Report  
2019-2023

Time of Day/Day of Week														Total	
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported		
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Wednesday	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Thursday	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Friday	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Saturday	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	1	0	0	2	0	2	0	1	0	0	6

Manner of Crash Collision		6	Surface Conditions		6
Non-collision (single vehicle)		5	Dry		3
Head-on (front to front)		0	Wet		0
Rear-end (front to rear)		0	Ice/frost		2
Angle, oncoming left turn		0	Snow		1
Broadside (front to side)		0	Slush		0
Sideswipe, same direction		0	Mud, dirt		0
Sideswipe, opposite direction		1	Water (standing or moving)		0
Rear to rear		0	Sand		0
Rear to side		0	Oil		0
Not reported		0	Gravel		0
Other		0	Not reported		0
Unknown		0	Other		0
			Unknown		0

Fixed Object Struck		7	
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	0
Ditch	2	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	0	Guardrail - end	0
Concrete traffic barrier (median or right sid...	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	0
Traffic signal support	1	Other post/pole/support	1
Fire hydrant	0	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	1	None (no fixed object struck)	2



Iowa Crash Analysis Tool  
Quick Report  
2019-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	1	0	0	0	1
= 17	1	0	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	1	0	0	1
>= 45 and <= 49	1	0	0	0	1
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	1	0	1
<b>Total</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>7</b>

Alcohol Test Given	7
None	8
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

Drug Test Given	7
None	8
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

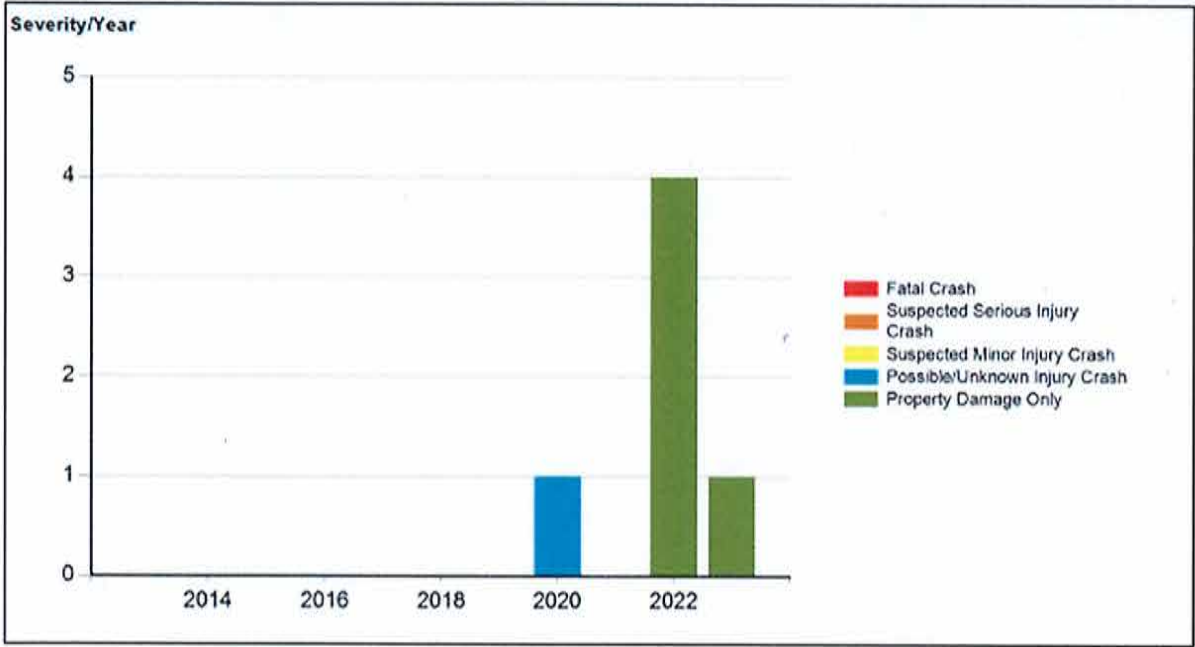
Drug Test Result	7
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	7
Other	0

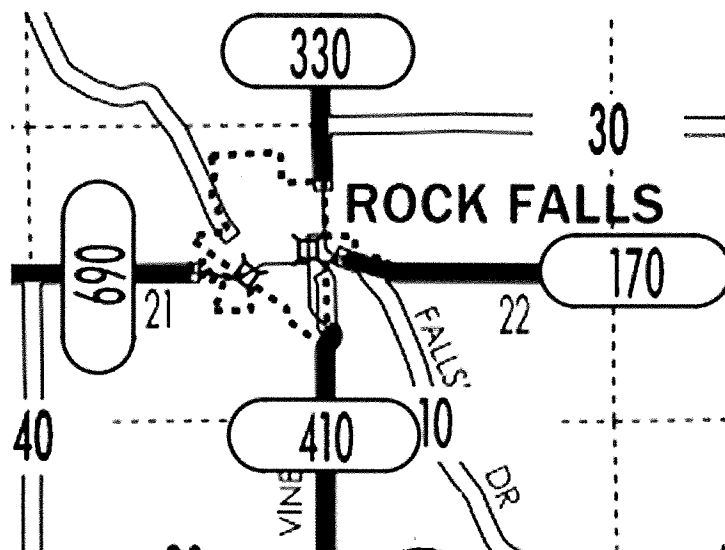
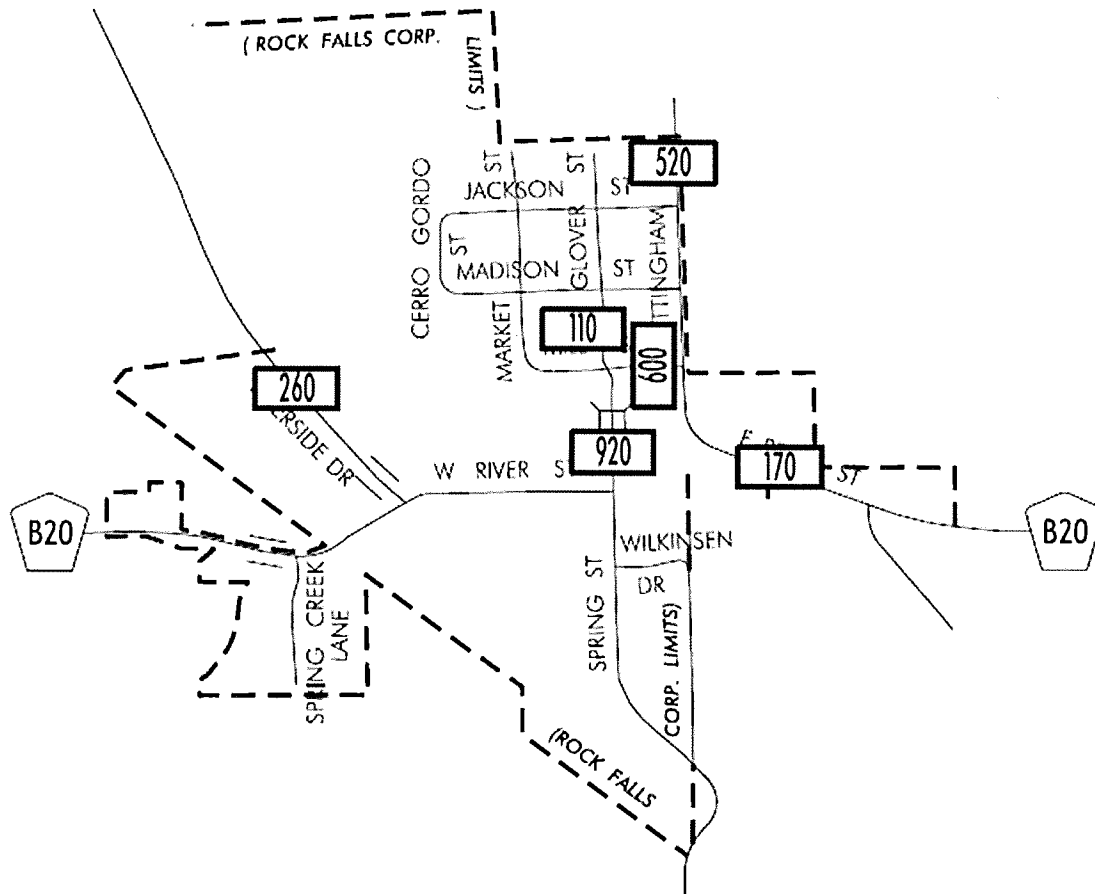
Drug/Alcohol Related	6
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	6



Iowa Crash Analysis Tool  
Quick Report  
2019-2023

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	0	0	0	0
2022	0	0	0	0	4	4
2023	0	0	0	0	1	1
<b>Total</b>	0	0	0	1	5	6







Safety Benefit-Cost Ratio

County:	Cerro Gordo	Prepared By:	Mary Arndt		
Location:	S-62 thru Roack Falls	Date Prepared:	6/23/2023		
Proposed Improvements:	Grade and pave new curve alignments, bring superelevation to standard, pave shoulders, straighten tangents, add safety edge and shoulder rumble				
Estimated Improvement Cost:	\$ 525,028				
Inflation on Crash Costs:	4%	Annual Maintenance:	2%		
Discount Rate:	4%	(% of Improvement Cost)			
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 10,501		
<b>Service Life List</b>					
Method Choice:	CRF Method	The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.			
<b>Crash Reduction Factor (CRF) Method</b>		<a href="#">Learn More</a>	<a href="#">CRF Sources</a>		
Traffic Growth Factor:	1%				
Number of CRFs:	3				
Years of Crash History:	5				
<b>Combined CRF (Dominant Common Residuals Method)</b>		<small>Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.</small>			
	CRF 1:	CRF 2:	CRF 3:	<b>Combined CRF</b>	
CRF Value (%)	15	10	7	25.1	
Crash Severity	Rounded Societal	Crash History	CRF (from above)	Crash History -	Crashes Saved
Fatal (K)	\$ 4,000,000		25.1	0.00	0.00
Serious Injury (A)	\$ 4,000,000		25.1	0.00	0.00
Minor Injury (B)	\$ 265,000	1	25.1	0.20	0.05
Possible/Unknown Injury (C)	\$ 125,000		25.1	0.00	0.00
Property Damage Only (D)	\$ 20,000	5	25.1	1.00	0.25
Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ 13,318				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (D)	\$ 5,025				
<b>Total Benefits and Costs</b>					
		Implementation Cost	\$ 525,028		
		Present Value of Maint.	\$ 142,706		
Present Value Benefits (Societal Benefits)	\$ 270,939	Present Value Costs (Impl. and Maint. Costs)	\$ 667,734		
Present Value Net Return	\$ (396,795)				
<b>Benefit Cost Ratio</b>	<b>0.41</b>				

Form continues on next page



**Application for  
Transportation Safety Improvement Program  
Iowa Department of Transportation**



**S Ankeny Boulevard/US 69 Improvements –  
SE Peterson Drive to 1<sup>st</sup> Street**

**Ankeny, Iowa**

**August 15, 2023**





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

 DATE: August 14, 2023

 Location / Title of Project S Ankeny Boulevard Improvements –  
SE Peterson Drive to 1<sup>st</sup> Street

 Applicant City of Ankeny

 Contact Person Mark Mueller, P.E. Title Director of Public Works

 Complete Mailing Address 1210 NW Prairie Ridge Drive  
Ankeny, IA 50023

 Phone (515) 963-3522 E-Mail MMueller@ankenyiowa.gov  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

 Co-Applicant(s) Iowa Department of Transportation (Iowa DOT) District 1

 Contact Person Benjamin Adey Title South Area Engineer

 Complete Mailing Address 2300 SE 17<sup>th</sup> St, Grimes, Iowa 50111

 Phone 515-239-1194 E-Mail benjamin.adey@iowadot.us  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**
**Funding Amount**

 Total Safety Cost \$ 1,107,000

 Total Project Cost \$ 8,751,000
**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain Traffic Operations and Safety Study US Highway 69/S Ankeny Boulevard Corridor, August 2020 – HR Green/Iowa DOT
 No



# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Ankeny

Signed: Mark Mueller 8/09/2023  
Signature Date Signed

Mark Mueller, P.E.  
Printed Name

Attest: Leslie Hart 8/9/23  
Signature Date Signed

Leslie Hart, P.E.  
Printed Name

**RESOLUTION 2023-297**

**A RESOLUTION AUTHORIZING THE CITY OF ANKENY, IOWA, TO MAKE AN APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION'S (IOWA DOT) TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) FOR THE PARTIAL FUNDING OF SOUTH ANKENY BOULEVARD IMPROVEMENTS – SE PETERSON DRIVE TO 1<sup>ST</sup> STREET WITHIN THE CITY LIMITS OF ANKENY.**

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**WHEREAS**, the Traffic Safety Improvement Program is established by the Iowa Department of Transportation; and

**WHEREAS**, said program allows for funding to be provided to cities, counties and the Iowa DOT for eligible projects or programs that will contribute to improving traffic safety and operations; and

**WHEREAS**, The City of Ankeny has determined that improvements along South Ankeny Boulevard, between and including SE Peterson Drive and 1<sup>st</sup> Street intersections, will improve traffic safety and operations. Proposed improvements include replacing the four-lane undivided roadway with a four-lane divided roadway with left- and right-turn lanes where applicable, replacement or relocation of impacted City infrastructure such as traffic signals, water main or storm sewer, providing ADA-compliant pedestrian ramps and sidewalk, and other associated work.

**NOW, THEREFORE, BE IT RESOLVED**, by the Council of the City of Ankeny, Iowa, that:

1. The City Council supports and approves the application for Traffic Safety Improvement Program funding.
2. The City Council hereby commits the additional funds necessary for construction of the project beyond any Traffic Safety Improvement Program funding, and subject to any associated agreements with Iowa Department of Transportation.
3. The City Council hereby commits to accepting and maintaining these improvements in accordance with Iowa DOT's Transportation Safety Improvement Program.
4. The Mayor, or Mayor's designee, is hereby authorized to sign and execute the application on behalf of the City.

**DATED** at Ankeny, Iowa, this 17<sup>th</sup> day of July, 2023.

DocuSigned by:



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Mark E. Holm, Mayor

ATTEST:

DocuSigned by:



7E497FC63C464A9...

Michelle Yuska, City Clerk

## 1. EXISTING CONDITIONS

S Ankeny Boulevard is US Highway 69, a north/south principal arterial in central Ankeny. This funding application focuses on the segment from SE Peterson Drive to 1<sup>st</sup> Street, which has a 4-lane undivided urban cross-section. S Ankeny Boulevard provides access to commercial and residential land uses between 1<sup>st</sup> Street and SE Peterson Drive. Beyond the project limits, US Highway 69 connects traffic to the I-35/80 interchange and continues south to the Des Moines metropolitan area, as well as north toward the City of Ames and beyond.

The existing speed limit along S Ankeny Boulevard is 35 mph. Speed limits for side street approaches are 25 mph except for 1<sup>st</sup> Street which is 35 mph.

Due to corridor safety and traffic operational concerns, deteriorating pavement conditions, and projected traffic growth, the City of Ankeny and Iowa DOT plan to reconstruct S Ankeny Boulevard as a 4-lane divided urban cross-section with left- and right-turn lanes from 1<sup>st</sup> Street to SE Peterson Drive.

## 2. TRAFFIC DATA

Iowa DOT 2000 – 2016 annual average daily traffic (AADT) on S Ankeny Boulevard, is shown below. As part of this project, traffic counts were conducted in December 2022. Based on the traffic counts, 2022 AADT was calculated, using Iowa DOT expansion factors, and is also shown below. Detailed count data is provided in Section J of this application.

Year	1 <sup>st</sup> St to SE 3 <sup>rd</sup> St	SE 3 <sup>rd</sup> St to SE 8 <sup>th</sup> St
2000	16,600	16,300
2004	19,700	17,700
2008	20,100	20,600
2012	21,900	22,300
2016	17,700	17,800
2022 ( <i>Snyder</i> )	22,910	22,030

## 3. CRASH HISTORY

January 2018 - December 2022 (5 years) crash data was analyzed using the Iowa DOT Iowa Crash Analysis Tool (ICAT) application. During this period, 229 reported crashes occurred along the S Ankeny Boulevard segment, resulting in two (2) fatalities, two (2) suspected serious/incapacitating injuries, 22 suspected minor injuries and 54 possible/unknown injuries. Detailed crash data is provided in Section I of this application.

The predominant crash types along the corridor were rear-end (120 crashes), broadside (42 crashes), angle oncoming left-turn (28 crashes), sideswipe (19 crashes), and 21 additional crashes of varying crash types. Rear-end, left-turn, and sideswipe crashes are typical of undivided four-lane streets, due to vehicles slowing to turn and side street vehicles choosing inadequate gaps. Approximately 10% (24/229 crashes) of the crashes occurred within the segment between the 1<sup>st</sup> Street and SW 2<sup>nd</sup> Street intersections, with 7% (15/229 crashes) within the segment between the SW 2<sup>nd</sup> Street and 3<sup>rd</sup> Street intersections, and 22% (50/229 crashes) within the segment between the 3<sup>rd</sup> Street and SE Peterson Drive intersections. The remainder (61%) of crashes occurred within the individual intersection geometries.

Two of the intersections within the project limits, 1<sup>st</sup> Street and 3<sup>rd</sup> Street, have a “High” PCR Level for 2016-2020, for all crashes and severe crashes. A safety improvement project was completed in 2019 at the 1st Street intersection to mitigate the intersection’s crash incidence. On 1st Street, the WB approach was modified from two left-turn lanes and two thru lanes to one left-turn lane, two thru lanes and a right-turn lane. On the EB approach, median modifications were made to align the approach with the WB approach. Improvements on S Ankeny Boulevard were limited to the SB approach, where the SB left-turn lane was lengthened.

The S Ankeny Boulevard corridor from SE Peterson Drive to SW 2<sup>nd</sup> Street has a segment PCR Level at the “High” level for all crashes and for severe crashes for 2016-2020. The intersections with SW 2<sup>nd</sup> Street and SE Peterson Drive have PCR levels of “negligible”.

#### **4. PROPOSED IMPROVEMENTS**

The proposed corridor safety improvements project includes widening and reconstruction of S Ankeny Boulevard as a 4-lane divided urban cross-section. The existing raised median between 1<sup>st</sup> Street and SW 2<sup>nd</sup> Street will be extended to the SE Peterson Drive intersection. Turn lanes are proposed to be added at the following intersections; widening for right-turn lanes is pending final design, right-of-way acquisition, and review of property impacts:

- SE Peterson Drive
  - NB right-turn lane
  - SB left-turn lane
  - WB right-turn lane
- 3<sup>rd</sup> Street
  - NB/SB left-turn lanes
  - NB/SB right-turn lanes
  - WB left turn-lane
  - EB existing thru/left-turn lane will be changed to a left-turn lane and existing right-turn lane will become a thru/right-turn lane.
- 1<sup>st</sup> Street
  - NB right-turn lane
  - Existing NB left-turn lane will be lengthened.

Left-turn lanes will be constructed with a zero offset.

The preliminary design includes a continuous raised median between intersections (no median breaks), restricting all existing commercial access locations to right-in/right-out access. It is possible that one full-access or two three-quarter-access median breaks may be provided between 3<sup>rd</sup> Street and SE Peterson Drive in the final design based on discussions between the City and Iowa DOT, and outcome of access consolidation. The SW 2<sup>nd</sup> Street intersection will also be right-in/right-out with no break in the median for the intersection.

Existing access locations will be consolidated where possible and agreed to by the City, Iowa DOT, and property owners.

Proposed improvements are shown in Sections G and K of this application.

Expected safety benefits of the proposed improvements include the following. Specific crash reduction calculations are discussed in Section L:

- Reduction in rear-end and sideswipe crashes due to construction of mainline left-turn and right-turn lanes on S Ankeny Boulevard through separation of right- and left-turning traffic from through traffic.
- Reduction in potential for crashes at the access locations with the construction of the raised median restricting the access to right-in/right-out movements. If median breaks are allowed in the median at select location(s) as described previously, the extent of the potential crash reduction may be lower than if no median breaks are included in the project.
- Reduction in crashes due to the elimination and/or consolidation of access, reducing the access density in the corridor.

## ITEMIZED COSTS S ANKENY BOULEVARD IMPROVEMENTS – SE PETERSON DRIVE TO 1<sup>ST</sup> STREET ANKENY, IOWA

ENGINEER'S CONCEPTUAL OPINION OF PROBABLE PROJECT COSTS



S ANKENY BLVD/US89 4-LANE DIVIDED FROM SW PETERSON DR. TO 1ST ST.  
TSIP Conceptual  
Ankeny, IA  
August 15, 2023

ITEM #	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY - DOT ELIGIBLE	QUANTITY - NON-DOT ELIGIBLE	EXTENDED PRICE - DOT ELIGIBLE	EXTENDED PRICE - NON-DOT ELIGIBLE	TOTAL PRICE	SAFETY PORTION	ESTIMATED SAFETY COST	COMMENTS
<b>EARTHWORK</b>											
2.1	Excavation, Class 10	CY	\$ 20	13,600		\$ 272,000	\$ -	\$ 272,000			
2.2	Topsoil, Import	CY	\$ 40	1,800		\$ 72,000	\$ -	\$ 72,000			8" Depth
2.3	Subgrade Preparation, 12" Depth	SY	\$ 6	19,500		\$ 117,000	\$ -	\$ 117,000	12%	\$ 13,320	
2.4	Subbase, Modified, 12" Depth	CY	\$ 50	6,158		\$ 307,900	\$ -	\$ 307,900	44%	\$ 135,476	
2.5	Compaction Testing	LS	\$ 30,000	0.9	0.1	\$ 27,000	\$ 3,000	\$ 30,000			
<b>SEWERS AND DRAINS</b>											
4.1	Sanitary Sewer, Trenched (8" Diameter)	(1) LF	\$ 125		1,800	\$ -	\$ -	\$ 225,000			Assumes all existing sanitary sewer will be replaced
4.2	Sanitary Sewer, Trenched (16" Diameter)	LF	\$ 200		350	\$ -	\$ -	\$ 70,000			For SE 3rd St Crossing
4.3	Sanitary Sewer Services, Remove and Replace	EA	\$ 5,000		32	\$ -	\$ -	\$ 160,000			
4.4	Storm Sewer, Trenched (15"-24" Diameter)	LF	\$ 125	500		\$ 62,500	\$ -	\$ 62,500			Assumes all existing storm sewer will be replaced
4.5	Storm Sewer, Trenched (24"-42" Diameter)	LF	\$ 200	1,000		\$ 200,000	\$ -	\$ 200,000			Assumes all existing storm sewer will be replaced
4.7	Storm Sewer, Trenched (16"-42" Diameter)	LF	\$ 300	150		\$ 45,000	\$ -	\$ 45,000			Assumes all existing storm sewer will be replaced
4.8	Subdrain, HDPE, Case C, 6" Diameter	LF	\$ 25	3,900		\$ 97,500	\$ -	\$ 97,500			
4.9	Subdrain Outlets and Connections, to Structure	EA	\$ 600	44		\$ 26,400	\$ -	\$ 26,400			
4.10	Sanitary Sewer Removals	LF	\$ 30		2,040	\$ -	\$ -	\$ 61,200			Includes main and services
4.11	Storm Sewer Removals	LF	\$ 25	2,100		\$ 52,500	\$ -	\$ 52,500			
<b>WATERMAIN AND APPURTENANCES</b>											
5.1	Fire Hydrant Assembly	EA	\$ 8,000		3	\$ -	\$ -	\$ 24,000			
5.2	Gate Valve, 16" Dia.	EA	\$ 15,000		7	\$ -	\$ -	\$ 105,000			
5.3	Water Main, Trenched, PVC, < 12 In. Dia.	LF	\$ 110		360	\$ -	\$ -	\$ 39,600			Includes fittings, connections and services
5.4	Water Main, Trenched, PVC, 16 In. Dia.	(2) LF	\$ 180		1,000	\$ -	\$ -	\$ 180,000			Includes fittings, connections and services
5.5	Water Main Removals	LF	\$ 20		1,360	\$ -	\$ -	\$ 27,200			Includes fittings, connections and services
5.6	Fire Hydrant & Water MH Removals	EA	\$ 1,500		3	\$ -	\$ -	\$ 4,500			
<b>STRUCTURES FOR SANITARY AND STORM</b>											
6.1	Manhole, San. (48"-72" Diameter)	EA	\$ 10,000		7	\$ -	\$ -	\$ 70,000			
6.2	Manhole, SW-401 (48"-72" Diameter)	EA	\$ 8,500		4	\$ 34,000	\$ -	\$ 34,000			
6.3	Intake, SW-529	EA	\$ 9,500		8	\$ 76,000	\$ -	\$ 76,000			
6.4	Intake, SW-541	EA	\$ 10,000		8	\$ 80,000	\$ -	\$ 80,000			
6.5	Adjustment of Fixtures	EA	\$ 1,500		5	\$ 7,500	\$ -	\$ 7,500			
6.6	Remove Storm Manholes	EA	\$ 2,000		7	\$ 14,000	\$ -	\$ 14,000			
6.7	Remove Sanitary Manholes	EA	\$ 3,000		4	\$ 12,000	\$ -	\$ 12,000			
6.8	Remove Intake	EA	\$ 1,500		16	\$ 24,000	\$ -	\$ 24,000			
<b>STREETS AND RELATED WORK</b>											
7.1	Pavement, PCC, 10" Depth - NB & SB THRU LNS	SY	\$ 100	12,900		\$ 1,290,000	\$ -	\$ 1,290,000			
	Pavement, PCC, 10" Depth - 1ST ST NB LTL	SY	\$ 100	693		\$ 69,300	\$ -	\$ 69,300	100%	\$ 69,300	
	Pavement, PCC, 10" Depth - 3RD ST NB LTL	SY	\$ 100	413		\$ 41,300	\$ -	\$ 41,300	100%	\$ 41,300	
	Pavement, PCC, 10" Depth - 3RD ST NB RTL	SY	\$ 100	289		\$ 28,900	\$ -	\$ 28,900	100%	\$ 28,900	
	Pavement, PCC, 10" Depth - 3RD ST SB LTL	SY	\$ 100	354		\$ 35,400	\$ -	\$ 35,400	100%	\$ 35,400	
	Pavement, PCC, 10" Depth - 3RD ST SB RTL	SY	\$ 100	188		\$ 18,800	\$ -	\$ 18,800	100%	\$ 18,800	
	Pavement, PCC, 10" Depth - SB LTL, PETERSON	SY	\$ 100	258		\$ 25,800	\$ -	\$ 25,800	100%	\$ 25,800	
7.2	Pavement, PCC, 8" Depth - WB & EB SIDE ROADS	SY	\$ 95	1,820		\$ 172,900	\$ -	\$ 172,900			
	Pavement, PCC, 8" Depth - 3RD ST WB LTL	SY	\$ 95	80		\$ 7,600	\$ -	\$ 7,600	100%	\$ 7,600	
7.3	Concrete Median, 6" Depth, Integral Raised	SY	\$ 110	311		\$ 34,210	\$ -	\$ 34,210	100%	\$ 34,210	
	Earth Median, 6" Depth, Raised	SY	\$ 60	137		\$ 8,220	\$ -	\$ 8,220	100%	\$ 8,220	
7.4	Full Depth Patches	SY	\$ 150	500		\$ 75,000	\$ -	\$ 75,000			For intersection and median tie-ins
7.5	Sidewalk, PCC, 6" Depth, 8' Width	SY	\$ 60	1,300		\$ 78,000	\$ -	\$ 78,000			Westside
7.6	Sidewalk, PCC, 5" Depth, 8' Width	SY	\$ 50	1,500		\$ 75,000	\$ -	\$ 75,000			Eastside
7.7	Drive & Parking Lots, PCC	SY	\$ 75	2,100		\$ 157,500	\$ -	\$ 157,500			Drive Approach & Parking Lot Replacements
7.8	Removal of Sidewalk, Driveways, & Parking Lots	SY	\$ 10	5,500		\$ 55,000	\$ -	\$ 55,000			
7.9	Median Removal	SY	\$ 20	200		\$ 4,000	\$ -	\$ 4,000	100%	\$ 4,000	
7.10	Pavement Removal	SY	\$ 14	14,400		\$ 201,600	\$ -	\$ 201,600			
<b>TRAFFIC CONTROL</b>											
8.1	Temporary Traffic Signal	EA	\$ 15,000		2	\$ 30,000	\$ -	\$ 30,000			
8.2	Traffic Signals Replacement	EA	\$ 400,000		2	\$ 800,000	\$ -	\$ 800,000	1%	\$ 8,000	SW 1st & 3rd St. (include removals)
8.3	Painted Pavement Markings, Durable	LS	\$ 15,000		1	\$ 15,000	\$ -	\$ 15,000			Includes Lines & Symbols
8.4	Temporary Traffic Control (5%)	LS	\$ 325,000	0.9	0.1	\$ 292,500	\$ 32,500	\$ 325,000	6%	\$ 19,500	TLSS, PDMS, TC, and TBR included
8.5	Signage	LS	\$ 40,000		1	\$ 40,000	\$ -	\$ 40,000			
<b>SITE WORK AND LANDSCAPING</b>											
9.1	Surface Restoration (Seeding)	AC	\$ 6,000		1.2	\$ 7,200	\$ -	\$ 7,200			
9.2	Erosion Control (2%)	LS	\$ 125,000	0.9	0.1	\$ 112,500	\$ 12,500	\$ 125,000			
<b>MISCELLANEOUS</b>											
11.1	Mobilization (6%)	LS	\$ 480,000	0.9	0.1	\$ 432,000	\$ 48,000	\$ 480,000	6%	\$ 28,800	Includes staging costs
<b>RIGHT-OF-WAY</b>											
	Total Right of Way Permanent Acquisitions	SF	\$ 15	29,370.6		\$ 440,559	\$ -	\$ 440,559	79%	\$ 348,042	
	Temporary Construction Easement	LS	\$ 144,000	1.0		\$ 144,000	\$ -	\$ 144,000	66%	\$ 95,040	
						<b>Subtotal:</b>	\$ 6,237,000	\$ 1,055,000	\$ 7,292,000	\$ 922,000	Rounded
						Contingency (20%):	\$ 1,248,000	\$ 211,000	\$ 1,459,000	\$ 185,000	Rounded
(3) CONSTRUCTION TOTAL:						\$ 7,485,000	\$ 1,266,000	\$ 8,751,000	\$ 1,107,000	Rounded	

**Notes:**

- (1) A new 8" sanitary sewer main will replace the existing main along S Ankeny Blvd from 1st St to Peterson Dr.
- (2) 16" Water Main is proposed between SE 3rd Street and the north side of Ordinance Road. This Project Phase will include the water main between SE 3rd St and Peterson Dr.
- (3) Based on July 2023 dollars. Other costs anticipated but not identified: preliminary engineering, construction engineering, street lighting, possible joint utility trench, possible MidAm underground conversion, and construction inflation.

**Safety Cost Notes:**

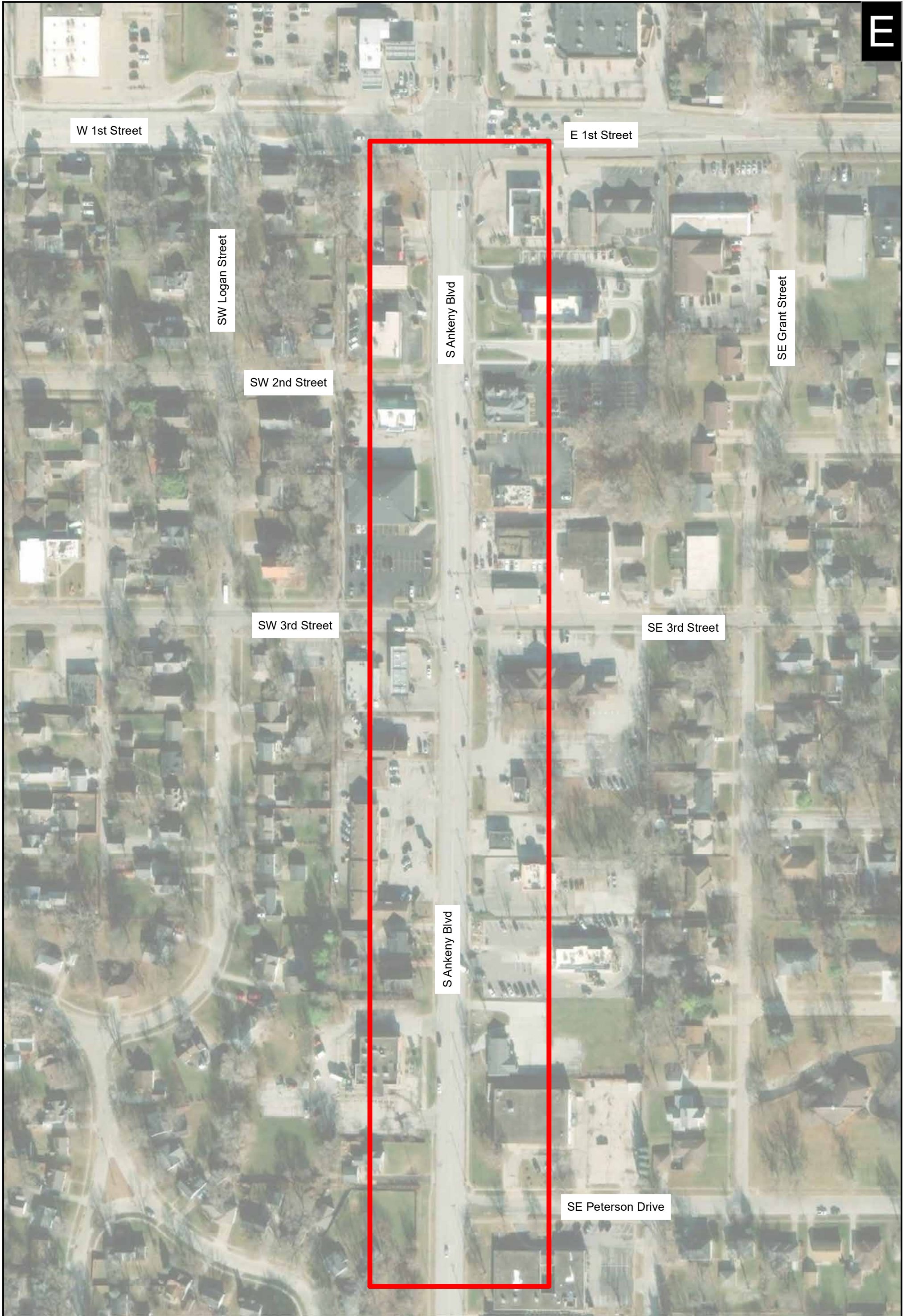
- Items related to the raised median and turn lanes are included as 100% safety costs.
- ROW costs were determined based on the costs associated with the safety improvements - 79% for permanent acquisitions and xx% for temporary construction easement.
- Traffic Control and Mobilization items based on safety cost / total construction cost = 6%
- Traffic Signal not a "Safety Cost" except Flashing Yellow Arrow at 3rd Street intersection. Four (4) 4-section heads safety cost at 1%.

**PROPOSED FUNDING SOURCES**

Source	Amount
Transportation Safety Improvement Program (TSIP) Funding	\$ 500,000
Highway Safety Improvement Program Local (HSIP/L) Funding	\$ 4,000,000
Illinois State Traffic Engineering Program (I-ST/EP) Funding	\$ 400,000
Local Match I-ST/EP	\$ 327,300
Iowa DOT 3R Funding	\$ 1,500,000
Iowa DOT NR Funding	\$ 631,000
Local Funding	\$ 631,000
<b>Total</b>	<b>\$ 8,751,000</b>

**PROPOSED PROJECT SCHEDULE  
S ANKENY BOULEVARD IMPROVEMENTS –  
SE PETERSON DRIVE TO 1<sup>ST</sup> STREET  
ANKENY, IOWA**

August 2023	TSIP Application
January 2024	Iowa DOT Approval TSIP
May 2023 – August 2025	Project Engineering
September 2025	Project Letting (pending right-of-way acquisition and utility relocation)



**PHOTOS**  
**S ANKENY BOULEVARD IMPROVEMENTS –**  
**SE PETERSON DRIVE TO 1<sup>ST</sup> STREET**  
**ANKENY, IOWA**

**S Ankeny Boulevard viewing  
South at 1<sup>st</sup> Street**



**S Ankeny Boulevard viewing  
North at SW 2<sup>nd</sup> Street**



**S Ankeny Boulevard viewing  
South at SW 2<sup>nd</sup> Street**



**S Ankeny Boulevard viewing  
North at 3<sup>rd</sup> Street**





**PHOTOS**  
**S ANKENY BOULEVARD IMPROVEMENTS –**  
**FROM SE PETERSON DRIVE TO 1<sup>ST</sup> STREET**  
**ANKENY, IA**

**S Ankeny Boulevard viewing  
South at 3<sup>rd</sup> Street**



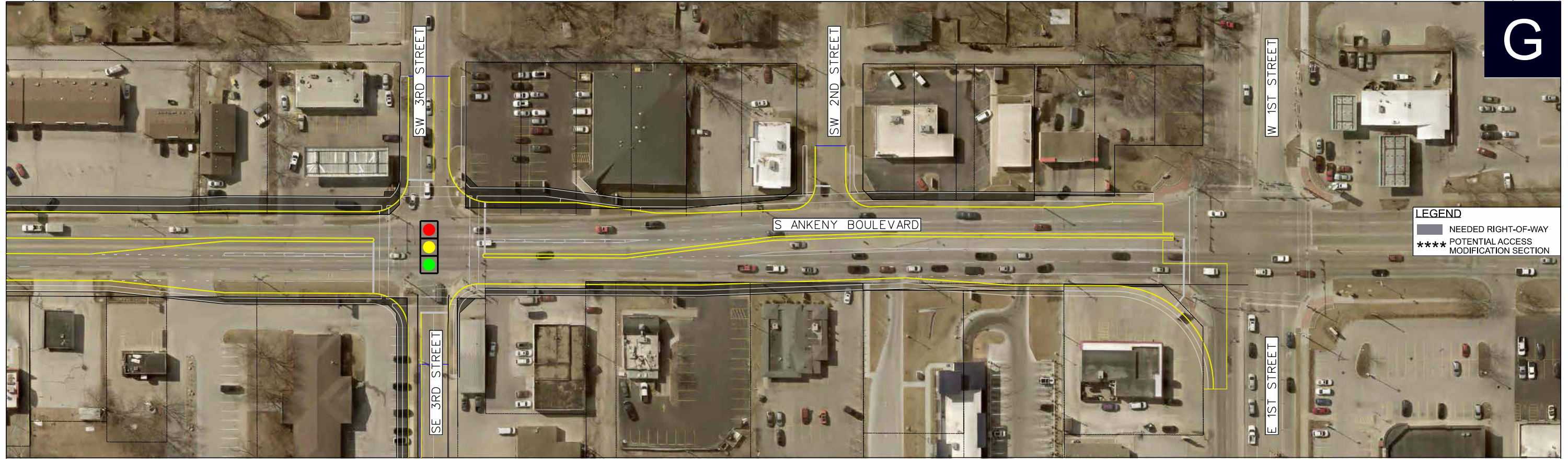
**S Ankeny Boulevard viewing  
North at SE Peterson Drive**



**S Ankeny Boulevard viewing  
South at SE Peterson Drive**



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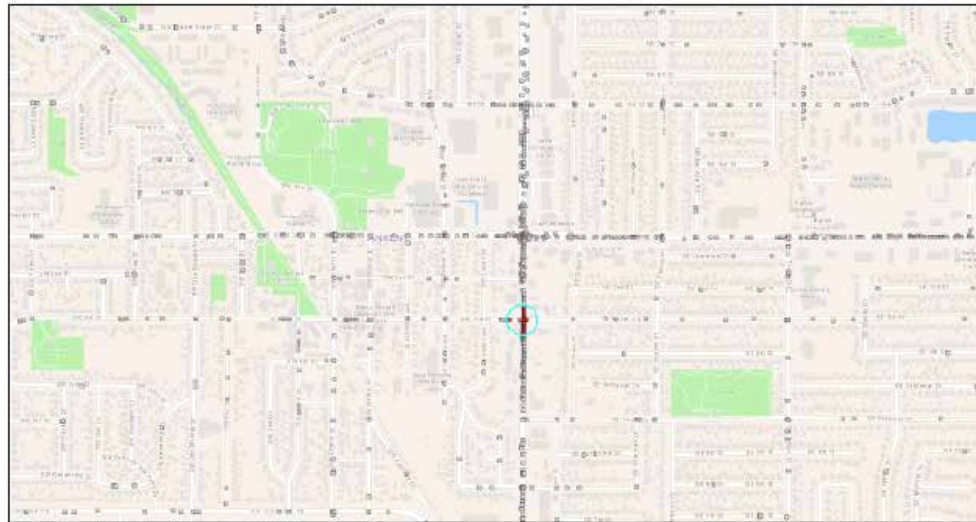


Intersection Report - S Ankeny Blvd & 3rd St



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Crash Severity</b>	<b>74</b>	<b>Injury Status Summary</b>	<b>31</b>
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	0	Suspected serious/incapacitating	0
Suspected Minor Injury Crash	8	Suspected minor/non-incapacitating	9
Possible/Unknown Injury Crash	16	Possible (complaint of pain/injury)	22
Property Damage Only	50	Unknown	0
<b>Property/Vehicles/Occupants</b>		<b>Average Severity</b>	
Property Damage Total (dollars):	445,400.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	6,018.92	Fatalities/Crash:	0.00
Total Vehicles:	158.00	Injuries/Crash:	0.42
Average (per crash):	2.11	Major Injuries/Crash:	0.00
Total Occupants:	228.00	Minor Injuries/Crash:	0.12
Average (per crash):	3.05	Possible/Unknown Injuries/Crash:	0.30



Intersection Report - S Ankeny Blvd & 3rd St



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Major Cause</b>	<b>74</b>
Animal	0
Ran stop sign	0
FTYROW: At uncontrolled intersection	0
FTYROW: From stop sign	0
FTYROW: Making left turn	12
FTYROW: From parked position	0
FTYROW: Other	0
Disregarded RR Signal	0
Crossed median (divided)	0
Aggressive driving/road rage	0
Exceeded authorized speed	0
Operating vehicle in an reckless, erratic, ca...	0
Passing: On wrong side	0
Passing: With insufficient distance/inadequa...	0
Passing: Other passing	1
Driver Distraction: Manual operation of an e...	0
Driver Distraction: Talking on a hands free ...	0
Driver Distraction: Other electronic device ...	0
Driver Distraction: Unrestrained animal	0
Driver Distraction: Inattentive/lost in thou...	1
Driver Distraction: Exterior distraction	1
Ran off road - straight	0
Lost control	0
Over correcting/over steering	0
Failure to signal intentions	0
Vehicle stopped on railroad tracks	0
Other: Improper operation	0
Other: Disregarded signs/road markings	0
Downhill runaway	0
Towing improperly	0
Equipment failure	0
Other: Getting off/out of vehicle	0
Improper backing	0
Illegally parked/unattended	0
Operator inexperience	0
Unknown	3
Other: No improper action	4
0 Ran traffic signal	11
0 Failed to yield to emergency vehicle	0
0 FTYROW: Making right turn on red signal	0
0 FTYROW: From yield sign	0
0 FTYROW: From driveway	1
0 FTYROW: To pedestrian	0
0 Drove around RR grade crossing gates	0
0 Crossed centerline (undivided)	0
0 Traveling wrong way or on wrong side of road	0
0 Driving too fast for conditions	2
0 Improper or erratic lane changing	3
0 Followed too close	22
0 Passing: Where prohibited by signs/markings	0
0 Passing: Through/around barrier	1
1 Made improper turn	3
0 Driver Distraction: Talking on a hand-held d...	0
0 Driver Distraction: Adjusting devices (radio...	0
0 Driver Distraction: Passenger	0
0 Driver Distraction: Reaching for object(s)/f...	0
1 Driver Distraction: Other interior distracti...	4
1 Ran off road - right	0
0 Ran off road - left	0
0 Swerving/Evasive Action	1
0 Failed to keep in proper lane	0
0 Traveling on prohibited traffic way	0
0 Other: Vision obstructed	0
0 Other: Disregarded warning sign	0
0 Other: Illegal off-road driving	0
0 Separation of units	0
0 Cargo/equipment loss or shift	0
0 Oversized load/vehicle	0
0 Failure to dim lights/have lights on	0
0 Improper starting	0
0 Driving less than the posted speed limit	0
0 Other	4
3 Not reported	0

Intersection Report - S Ankeny Blvd & 3rd St



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Time of Day/Day of Week														Total
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	
Sunday	0	0	0	0	0	2	1	1	0	0	0	0	0	4
Monday	0	0	0	0	0	2	4	1	2	1	0	0	0	10
Tuesday	0	0	0	0	2	1	3	4	5	1	0	0	0	16
Wednesday	0	0	0	1	3	3	2	1	3	1	0	0	0	14
Thursday	0	0	0	0	2	2	3	1	4	0	2	0	0	14
Friday	0	0	0	0	3	1	2	2	4	0	0	0	0	12
Saturday	0	0	0	0	0	3	0	0	0	0	1	0	0	4
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>14</b>	<b>15</b>	<b>10</b>	<b>18</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>74</b>

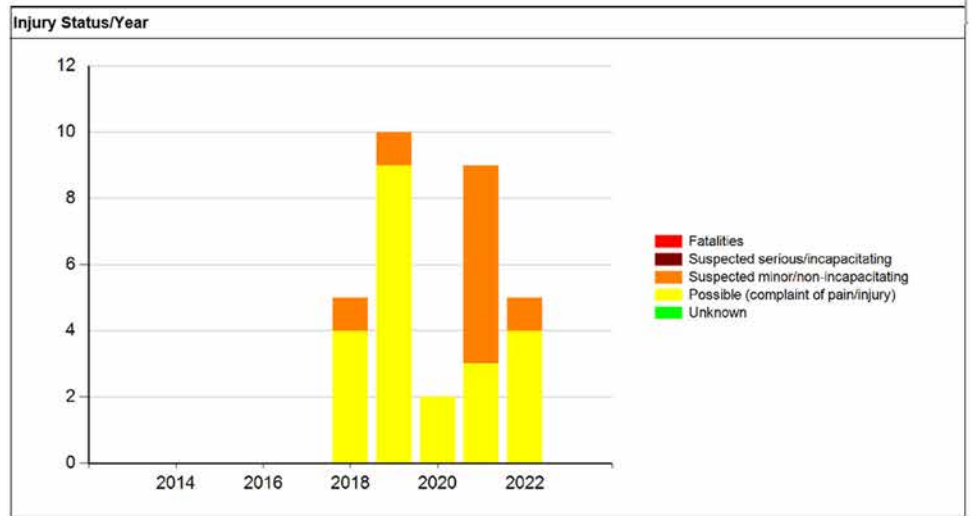
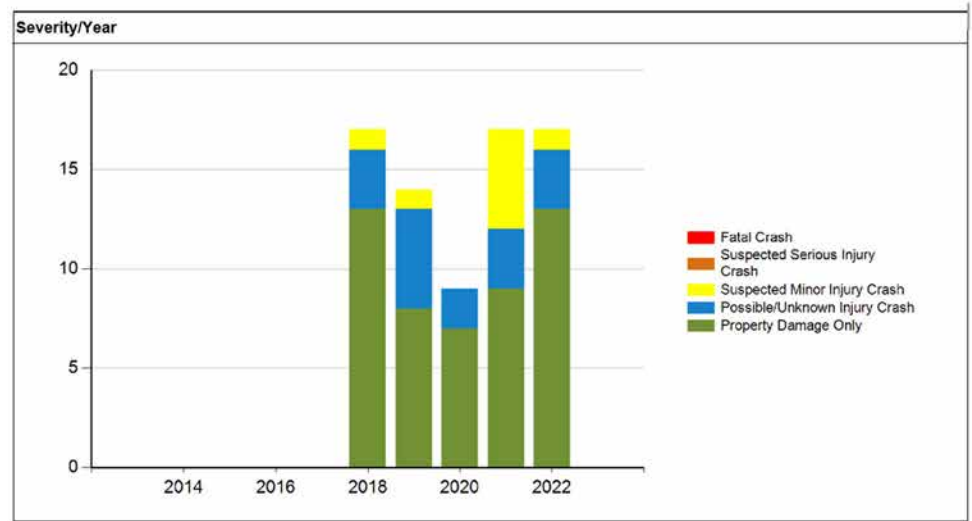
Manner of Crash Collision	74	Surface Conditions	74
Non-collision (single vehicle)	1	Dry	55
Head-on (front to front)	1	Wet	16
Rear-end (front to rear)	38	Ice/frost	2
Angle, oncoming left turn	8	Snow	1
Broadside (front to side)	20	Slush	0
Sideswipe, same direction	4	Mud, dirt	0
Sideswipe, opposite direction	0	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	1	Oil	0
Not reported	0	Gravel	0
Other	3	Not reported	0
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	156
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	156

Intersection Report - S Ankeny Blvd & 3rd St



Iowa Crash Analysis Tool  
Quick Report  
2018-2022



Corridor Report - S Ankeny Blvd from 2nd St to Peterson Dr

I

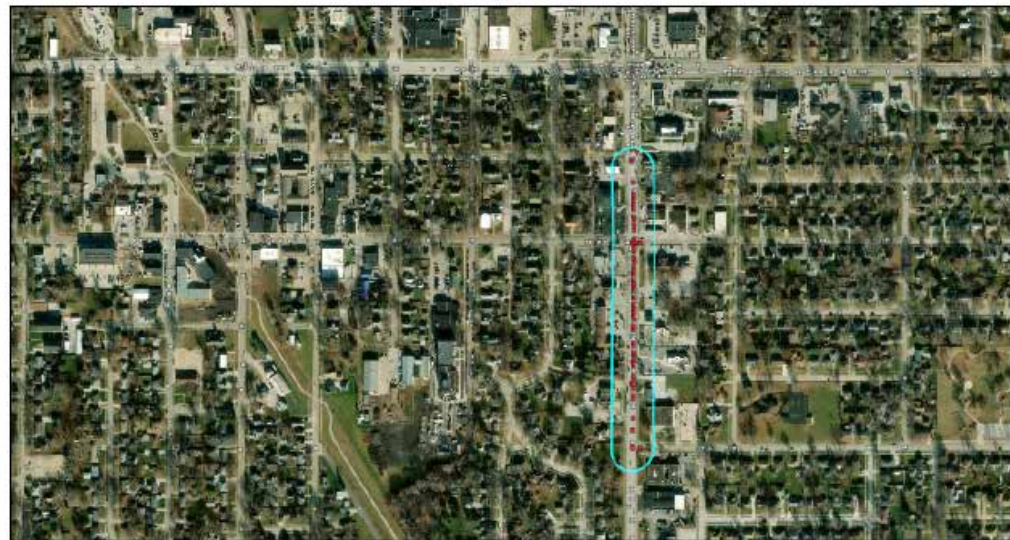
Corridor Report - S Ankeny Blvd from 2nd St to Peterson Dr

I



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Crash Severity</b>	<b>144</b>	<b>Injury Status Summary</b>	<b>57</b>
Fatal Crash	1	Fatalities	2
Suspected Serious Injury Crash	1	Suspected serious/incapacitating	1
Suspected Minor Injury Crash	13	Suspected minor/non-incapacitating	16
Possible/Unknown Injury Crash	27	Possible (complaint of pain/injury)	37
Property Damage Only	102	Unknown	1
<b>Property/Vehicles/Occupants</b>		<b>Average Severity</b>	
Property Damage Total (dollars):	902,557.00	Fatalities/Fatal Crash:	2.00
Average (per crash dollars):	6,267.76	Fatalities/Crash:	0.01
Total Vehicles:	307.00	Injuries/Crash:	0.38
Average (per crash):	2.13	Major Injuries/Crash:	0.01
Total Occupants:	448.00	Minor Injuries/Crash:	0.11
Average (per crash):	3.11	Possible/Unknown Injuries/Crash:	0.26



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Major Cause</b>		<b>144</b>	
Animal	0	Ran traffic signal	11
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	14	FTYROW: From driveway	7
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	1
Aggressive driving/road rage	0	Driving too fast for conditions	6
Exceeded authorized speed	0	Improper or erratic lane changing	7
Operating vehicle in an reckless, erratic, ca...	1	Followed too close	43
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	1
Passing: Other passing	1	Made improper turn	7
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	1
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	2	Driver Distraction: Other interior distracti...	9
Driver Distraction: Exterior distraction	2	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	2
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	1	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	19
Unknown	4	Not reported	0
Other: No improper action	5		

Corridor Report - S Ankeny Blvd from 2nd St to Peterson Dr



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Time of Day/Day of Week														Total
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	
Sunday	0	0	0	0	0	2	1	1	1	0	0	0	0	5
Monday	0	0	0	0	1	3	4	7	4	3	1	0	0	23
Tuesday	0	0	0	0	2	1	6	6	9	1	0	0	0	25
Wednesday	0	0	0	1	5	4	7	2	7	2	1	0	0	29
Thursday	0	0	0	0	2	2	4	3	6	3	2	0	0	22
Friday	0	0	0	2	5	4	2	6	7	0	0	0	0	26
Saturday	0	0	0	0	0	6	0	3	1	1	2	1	0	14
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>15</b>	<b>22</b>	<b>24</b>	<b>28</b>	<b>35</b>	<b>10</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>144</b>

Manner of Crash Collision	144
Non-collision (single vehicle)	2
Head-on (front to front)	2
Rear-end (front to rear)	83
Angle, oncoming left turn	10
Broadside (front to side)	30
Sideswipe, same direction	11
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	1
Not reported	0
Other	5
Unknown	0

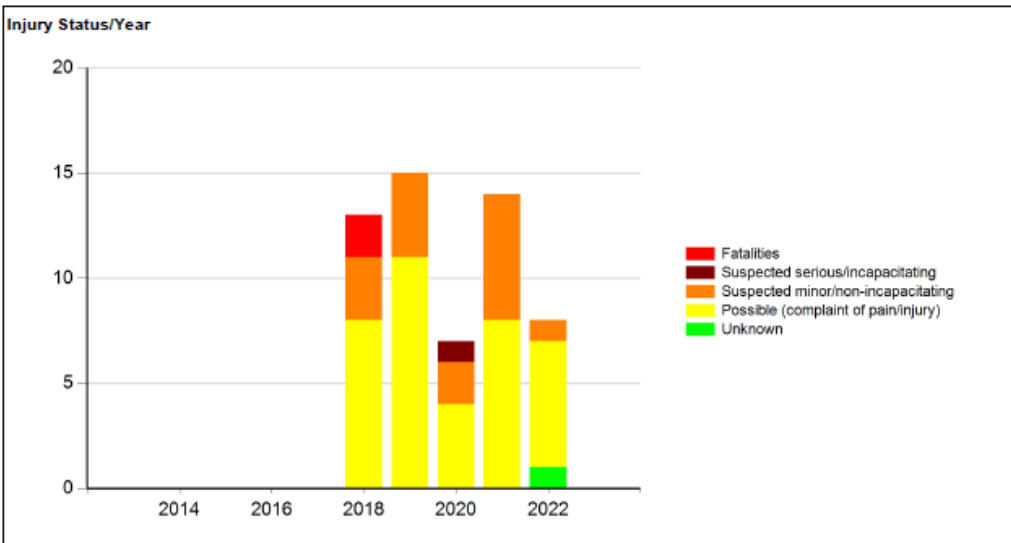
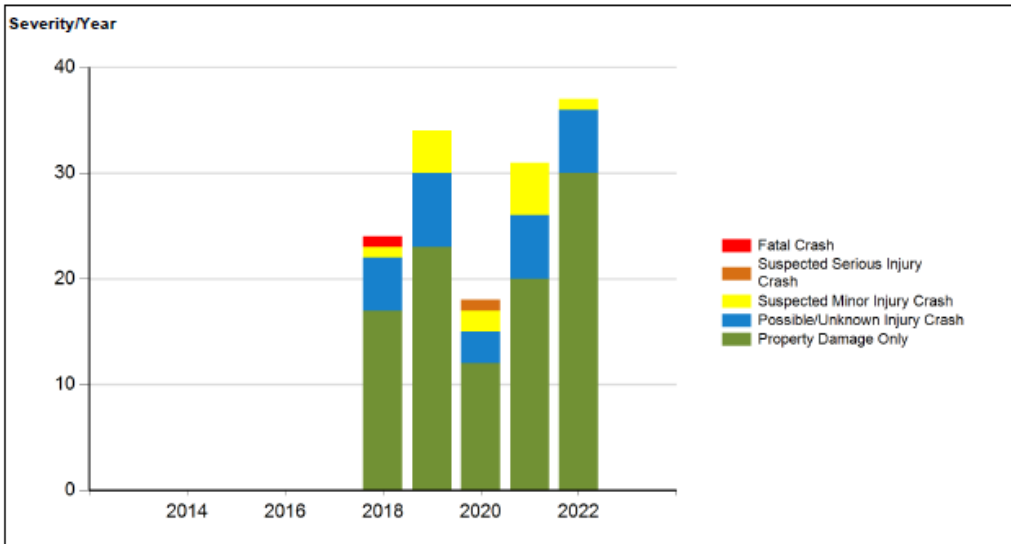
Surface Conditions	144
Dry	111
Wet	26
Ice/frost	5
Snow	2
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	307
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	1
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	1
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	305

Corridor Report - S Ankeny Blvd from 2nd St to Peterson Dr



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

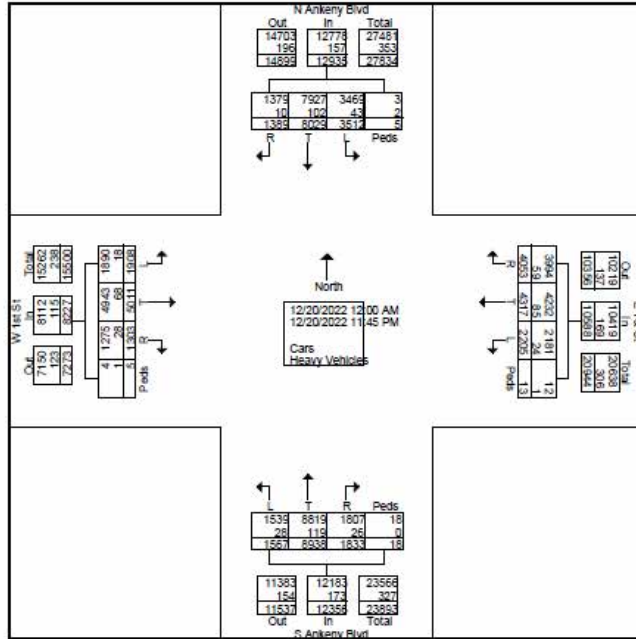




**Snyder & Associates**  
2727 SW Snyder Blvd  
Ankeny, IA 50023

N/S Ankeny Blvd & E/W 1st St  
S Ankeny Blvd Reconstruction  
Ankeny, IA  
122.1663.01

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Start Date : 12/20/2022  
Page No : 4



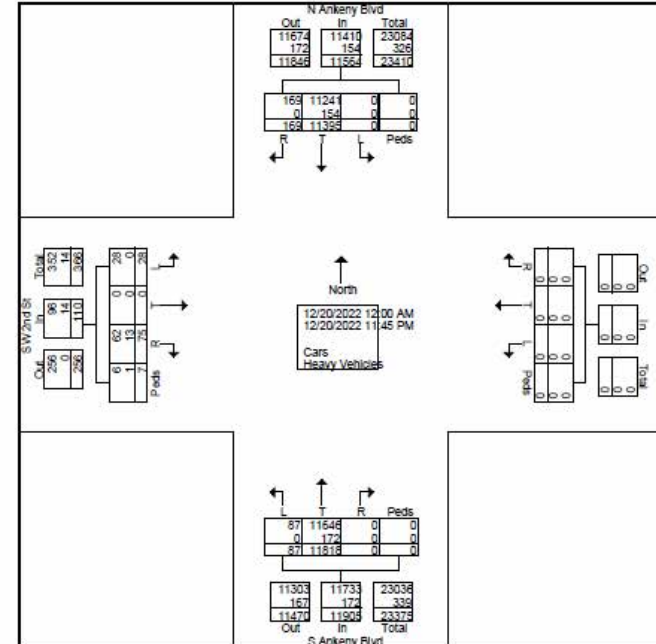
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**Snyder & Associates**  
2727 SW Snyder Blvd  
Ankeny, IA 50023

S Ankeny Blvd & SW 2nd St  
S Ankeny Blvd Reconstruction  
Ankeny, IA  
122.1663.01

File Name : CNT\_Ankeny Blvd-2nd St\_2022-12-20  
Site Code :  
Start Date : 12/20/2022  
Page No : 4



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### Snyder & Associates

2727 SW Snyder Blvd  
Ankeny, IA 50023

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### Snyder & Associates

2727 SW Snyder Blvd  
Ankeny, IA 50023

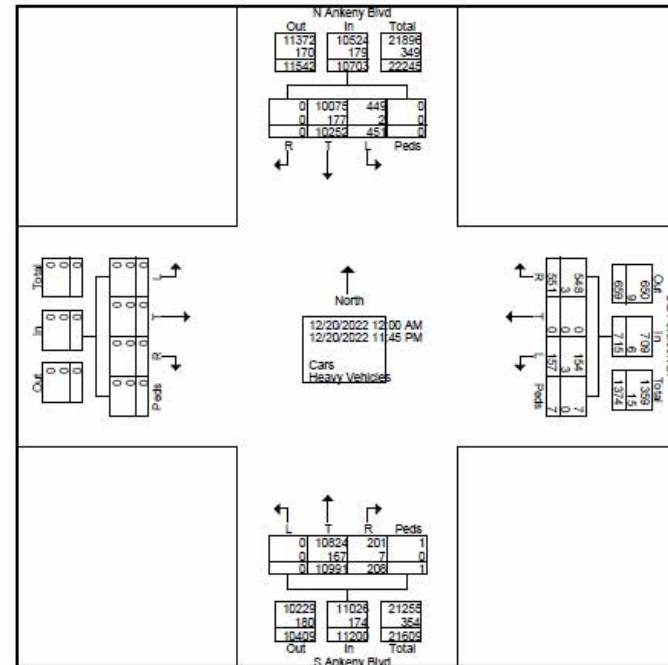
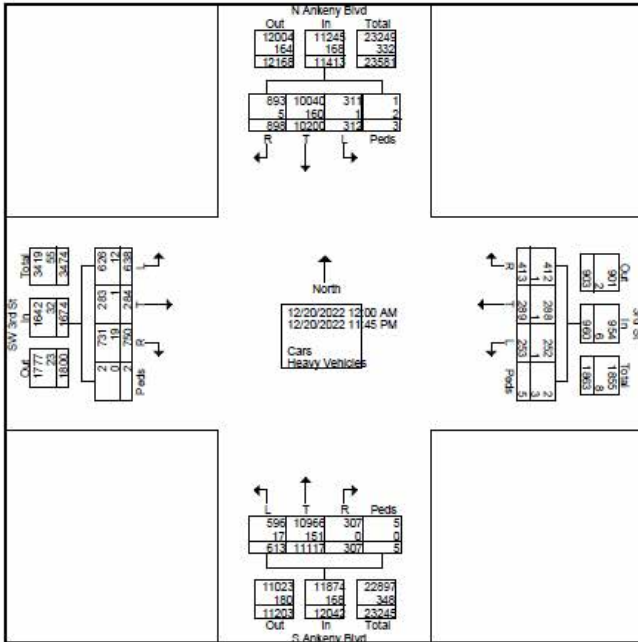
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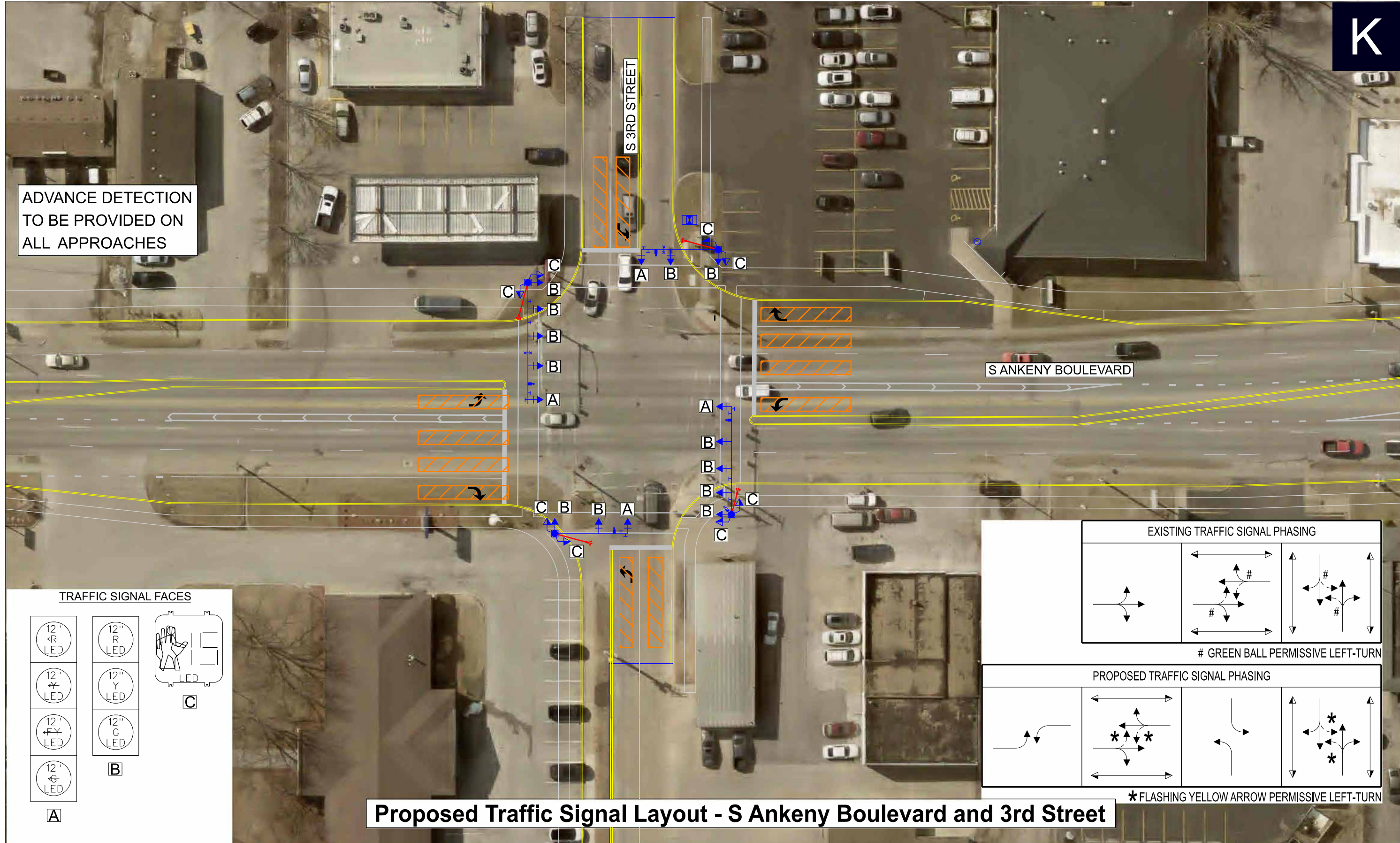
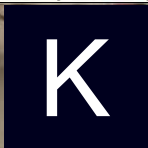
S Ankeny Blvd & SW 3rd St  
S Ankeny Blvd Reconstruction  
Ankeny, IA  
122.1663.01

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Site Code :  
Start Date : 12/20/2022  
Page No : 4

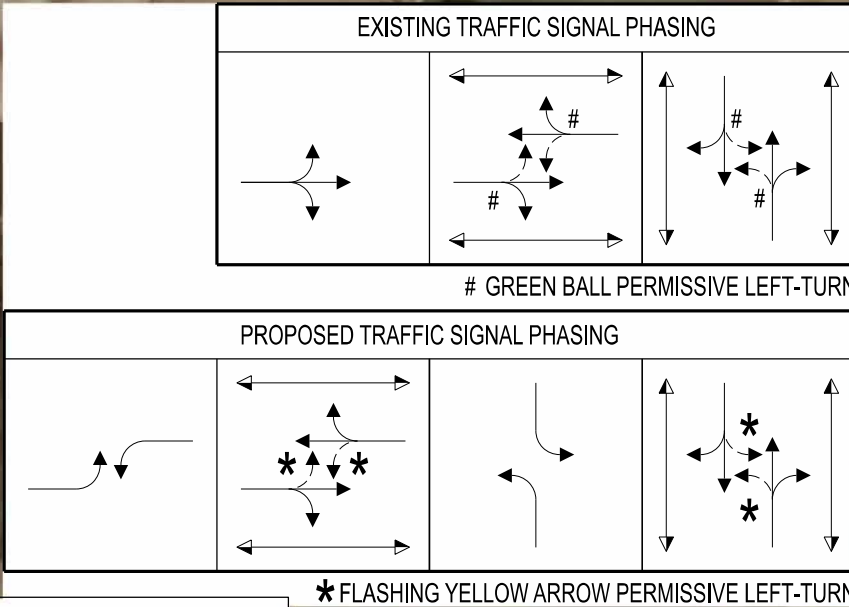
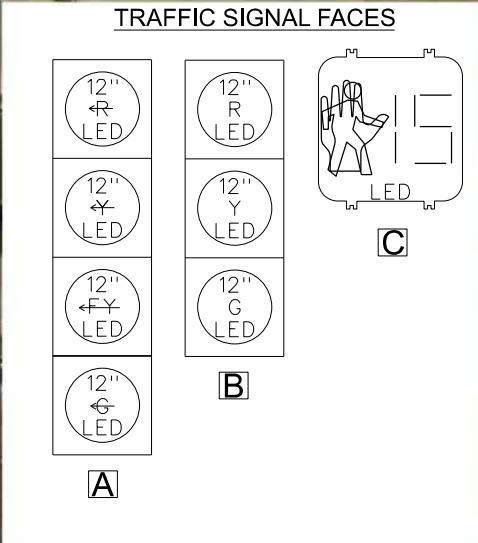
S Ankeny Blvd & SE Peterson Dr  
S Ankeny Blvd Reconstruction  
Ankeny, IA  
122.1663.01

File Name : CNT\_Ankeny Blvd-Peterson Dr\_2022-12-20  
Site Code :  
Start Date : 12/20/2022  
Page No : 4





ADVANCE DETECTION  
 TO BE PROVIDED ON  
 ALL APPROACHES



**Proposed Traffic Signal Layout - S Ankeny Boulevard and 3rd Street**

**BENEFIT/COST ANALYSIS**  
**S ANKENY BOULEVARD IMPROVEMENTS –**  
**SE PETERSON DRIVE TO 1<sup>ST</sup> STREET**  
**ANKENY, IOWA**

For purposes of the benefit/cost analysis, an estimated improvement life of 20 years was selected based on Iowa DOT recommended TSIP service life for road segment improvements, added lane improvements with the proposed addition of a raised median and turn lanes. A 1.64% annual traffic growth rate is used, based on historic Iowa DOT traffic counts, 2022 traffic counts collected for the City, and discussion with the City of Ankeny considering population and traffic growth projections.

Two separate benefit/cost analyses were completed for the project, intersection improvements at the 3<sup>rd</sup> Street intersection, and the construction of the raised median from SE Peterson Drive to SW 2<sup>nd</sup> Street. The cost estimate includes a 20% contingency as the estimate is based on conceptual design for the project, prior to field exam (D2 in the DOT design schedule). The Iowa DOT Design Manual Section 1B-6 provides guidance to use 25% for projects at the D2 milestone in the schedule.

S Ankeny Blvd & 3<sup>rd</sup> Street benefit/cost - Based on review of the Iowa DOT document *Planning Level Crash Reduction Factor (CRF) List (July 22, 2019)*, a combined crash reduction (CRF) of 28.9 (28.9% reduction) was applied for the proposed safety improvements at the 3<sup>rd</sup> Street intersection. Applicable crash reduction factor data include the following:

Countermeasure	CRF	Source	Crash Type	Crash Severity	Area Type
Install Left-Turn Lane on Major Approach when Warranted	25	Iowa DOT (SI-41)	All	All	Urban
Install Right-Turn Lane Major Approach when Warranted	6	Iowa DOT (SI-43)	All	All	All
Convert to Flashing Yellow Arrow Left-Turn Display	10	Iowa DOT (SI-20)	All	All	Urban

The safety improvements considered for the intersection included the construction NB/SB left-turn lanes, NB/SB right-turn lanes, and left-turn lanes on 3<sup>rd</sup> Street. Additionally, the traffic signal will be reconstructed, and the flashing yellow arrow display will be used for protected/permissive left-turn phasing. With an estimated safety improvement cost of \$400,000, the resultant safety benefit/cost (B/C) ratio is **9.08:1**.

S Ankeny Boulevard from SE Peterson Drive to SW 2<sup>nd</sup> Street - Based on review of the Iowa DOT document *Planning Level Crash Reduction Factor (CRF) List (July 22, 2019)*, a crash reduction (CRF) is not available for construction of a raised median. A search of the Crash Modification Factors (CMF) Clearinghouse website found a CRF for providing a raised median. The CRF has a 2-star rating and is applicable to principal arterials divided by a two way left turn lane (TWLTL) with a speed limit of 35 to 40 mph. S Ankeny Boulevard is a 4-lane undivided roadway, without a TWLTL, however, it is expected the crash reduction would be similar, or greater than the applicable CRF used. Applicable crash reduction factor data include the following:

Countermeasure	CRF	Source	Crash Type	Crash Severity	Area Type
Provide a raised median	31.8	CMF Clearinghouse ( <a href="#">CMF ID: 5130</a> )	All	All	Urban/Suburban

The safety improvements considered for the corridor from SE Peterson Drive to SW 2<sup>nd</sup> Street included the construction of a raised median between intersections with dedicated turn lanes on S Ankeny Boulevard. With an estimated safety improvement cost of \$540,000, the resultant safety benefit/cost (B/C) ratio is **24.36:1**.

County:	Polk	Prepared By:	Snyder & Associate
Location:	South Ankeny Boulevard, Ankeny, IA	Date Prepared:	8/1/2023
Proposed Improvements:	3rd St Intersection - Construction of NB/SB left turn lanes and right turn lanes, and EB left turn lane on 3rd St		
Estimated Improvement Cost:	\$ 400,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 8,000

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1.64%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	25	10	6	28.9	
	Rounded	Crash History	CRF (from	Crash History -	Crashes Saved
Crash Severity	Societal Costs	(Total):	above)	Annual Avg	Annually
Fatal (K)	\$ 4,000,000	0	28.9	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	28.9	0.00	0.00
Minor Injury (B)	\$ 265,000	8	28.9	1.60	0.46
Possible/Unknown Injury (C)	\$ 125,000	16	28.9	3.20	0.93
Property Damage Only (O)	\$ 20,000	50	28.9	10.00	2.89

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 122,568
Possible/Unknown Injury (C)	\$ 115,630
Property Damage Only (O)	\$ 57,815

### Total Benefits and Costs

		Implementation Cost	\$ 400,000
		Present Value of Maint.	\$ 108,723
Present Value Benefits (Societal Benefits)	\$ 4,617,451	Present Value Costs (Impl. and Maint. Costs)	\$ 508,723
Present Value Net Return	\$ 4,108,728		
<b>Benefit Cost Ratio</b>	<b>9.08</b>		

Form continues on next page

County: Polk  
Location: South Ankeny Boulevard, Ankeny, IA  
Prepared By: Snyder & Associate:  
Date Prepared: 8/1/2023

## User Input Required - Custom Values Used

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

Justification for deviation from default Traffic Growth Rate A 1.64% annual traffic growth rate is used, based on historic Iowa DOT traffic counts, 2022 traffic counts collected for the city, and discussion with the City of Ankeny considering population and traffic growth projections.

No change to Crash History

County:	Polk	Prepared By:	Snyder & Associate
Location:	South Ankeny Boulevard, Ankeny, IA	Date Prepared:	8/1/2023
Proposed Improvements:	S Ankeny Blvd - Construction of a raised median from SE Peterson Dr to SW 2nd St		
Estimated Improvement Cost:	\$ 540,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 10,800

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1.64%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1: 31.8	Combined CRF 31.8
---------------	----------------	----------------------

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	1	31.8	0.20	0.06
Serious Injury (A)	\$ 4,000,000	1	31.8	0.20	0.06
Minor Injury (B)	\$ 265,000	13	31.8	2.60	0.83
Possible/Unknown Injury (C)	\$ 125,000	27	31.8	5.40	1.72
Property Damage Only (O)	\$ 20,000	102	31.8	20.40	6.49

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ 254,400
Serious Injury (A)	\$ 254,400
Minor Injury (B)	\$ 219,102
Possible/Unknown Injury (C)	\$ 214,650
Property Damage Only (O)	\$ 129,744

### Total Benefits and Costs

Implementation Cost	\$ 540,000
Present Value of Maint.	\$ 146,776
Present Value Benefits (Societal Benefits)	\$ 16,726,547
Present Value Costs (Impl. and Maint. Costs)	\$ 686,776
Present Value Net Return	\$ 16,039,771
<b>Benefit Cost Ratio</b>	<b>24.36</b>

Form continues on next page

County: Polk  
Location: South Ankeny Boulevard, Ankeny, IA

Prepared By: Snyder & Associate:  
Date Prepared: 8/1/2023

## User Input Required - Custom Values Used

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

Justification for deviation from default Traffic Growth Rate A 1.64% annual traffic growth rate is used, based on historic Iowa DOT traffic counts, 2022 traffic counts collected for the city, and discussion with the City of Ankeny considering population and traffic growth projections.

No change to Crash History

**Application for  
Traffic Safety Improvement Program Funding**

**Iowa Department of Transportation**



**Viking Road and Prairie Parkway Roundabout  
Cedar Falls, Iowa**

**August 15, 2023**





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

 DATE: 8/15/2023

 Location / Title of Project Viking Road and Prairie Parkway Roundabout

 Applicant Cedar Falls, IA

 Contact Person Chase Schrage Title Director of Public Works

 Complete Mailing Address 2200 Technology Parkway
Cedar Falls, IA 50613

 Phone (319) 268-5170 E-Mail chase.schrage@cedarfalls.com  
 (Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

 Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
 (Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**
**Funding Amount**

 Total Safety Cost \$ 507,000

 Total Project Cost \$ 3,023,000
**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain The Intersection Lifecycle Cost Comparison Analysis - Viking Road & Prairie Parkway compared traffic signal and roundabout alternatives, and recommended a roundabout.

No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Cedar Falls

Signed:  7 AUG 23  
Signature Date Signed

Rob Green, Mayor  
Printed Name

Attest:  August 7, 2023  
Signature Date Signed

Jacqueline Danielsen, City Clerk  
Printed Name

**RESOLUTION 23,272**

**RESOLUTION AUTHORIZING THE CITY OF CEDAR FALLS, IOWA, TO MAKE AN APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) FOR THE PARTIAL FUNDING OF THE PRAIRIE PARKWAY AND VIKING ROAD INTERSECTION IMPROVEMENTS, WHICH INCLUDES RECONSTRUCTING THE INTERSECTION AS A ROUNDABOUT.**

**WHEREAS**, the Iowa Department of Transportation has established the TSIP and provides funding for locations where vehicular safety is a concern and documented; and


**WHEREAS**, said program allows for funding to be provided to local jurisdictions for eligible transportation projects or programs that will improve traffic safety at a specific site or corridor with a crash history; and

**WHEREAS**, the City of Cedar Falls has determined that by reconstructing the intersection of Prairie Parkway and Viking Road as a roundabout will help reduce crashes, thus improving safety:


**NOW THEREFORE**, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CEDAR FALLS, IOWA, THAT:

1. The City Council supports and approves the attached application for TSIP funding.
2. The City Council hereby commits the additional City funds necessary for construction of the project beyond any TSIP funding.
3. The City Council hereby commits to accepting and maintaining these improvements.
4. The Mayor is hereby authorized to execute the application on behalf of the City.

**PASSED AND APPROVED** this 7<sup>th</sup> day of August, 2023.

  
 \_\_\_\_\_  
 Robert M. Green, Mayor

**ATTEST:**

  
 Jacqueline Danielsen, MMC, City Clerk

## **NARRATIVE**

A multilane roundabout is planned for the intersection of Viking Road and Prairie Parkway in Cedar Falls. The existing T-intersection is located in the southeast portion of the City, approximately 3000' east of the recently completed IA 58 Viking Road interchange, in a rapidly developing commercial and industrial area. A roundabout was selected as the preferred alternative for this intersection based on a lifecycle cost comparison analysis (LCCA) that compared roundabout and signalized intersection alternative costs, including safety costs.

### **Existing Conditions**

West of Prairie Parkway, Viking Road is four-lane minor arterial street with a painted median and an eastbound left turn lane at the Prairie Parkway intersection. East of Prairie Parkway, Viking Road is divided four-lane minor arterial with a raised grass median. Prairie Parkway is four-lane divided collector/local street with a raised grass median, extending from Viking Road north to Greenhill Road. Prairie Parkway provides access to a wide range of businesses and residential areas. STOP control is currently provided for southbound Prairie Parkway approach to Viking Road. The Prairie Parkway southbound through lanes become separate left and right turn lanes at this T-intersection. Existing 10' wide multi-use trails are provided along the north side of Viking Road and the west side Prairie Parkway. A 5' wide sidewalk is also provided along the east side of Prairie Parkway.

Existing roundabouts currently exist on Prairie Parkway approximately 530' and 2,300' north of Viking Road. Existing roundabouts are also provided on Viking Road/ Cedar Heights Dr approximately 5,600', 7,400' and 9,900' northeast of the Prairie Parkway intersection.

Posted speed limits on Viking Road are 35 mph west of Prairie Parkway and 45 mph to the east. The Prairie Parkway speed limit is 30 mph. Annual Average Daily Traffic (AADT) on Viking Road east of IA 58 was 17,800 vehicles per day (vpd) in 2021. East of Prairie Parkway, the 2021 Viking Road AADT was 8,300 vpd. The 2022 ADT on Prairie Parkway was estimated to be 3,500 vpd.

### **Crash History**

In the eight-year 2015-2022 period, there were nine reported crashes at the Viking Road and Prairie Parkway intersection, resulting in two possible injuries. Five of these crashes were broadside crashes due to failure to yield right-of-way from a stop sign. With significant developable land in the area and increasing traffic volumes, crashes and crash severity are expected to increase if intersection improvements are not constructed. The LCCA analysis projected a \$614,000 20-year crash cost reduction for a roundabout compared to the signalized intersection alternative. The planned roundabout is expected to significantly reduce crash potential, particularly for injury crashes.

## **Proposed Improvements**

Design of the planned roundabout is currently proceeding based on the LCCA and the concept design (Attachment G) developed. The roundabout is planned to be a multilane (2x1) roundabout to preserve east-west lane continuity and accommodate future traffic growth. The center of the approximately 180' inscribed circle diameter (ICD) will be shifted south of the existing Viking Road centerline to minimize property impacts in the northwest and northeast quadrants of the intersection. This will require reconstruction of all approaches to the roundabout, particularly the westbound approach, to provide proper speed control.

For the eastbound approach, a long (approximately 600') splitter island is planned to reinforce right-in/right-out only operation at the adjacent Viking Road and Winterberry Dr intersection. The southbound approach will continue to have separate left and right turn lanes. Within the roundabout, one circulating lane will be provided for southbound left turns and eastbound left turns. The northbound exit will be single lane that widens to the existing two-lane configuration north of the proposed crosswalk.

With lower speeds at a roundabout, clear zone requirements are minimal. According to the SUDAS Design Manual, the minimum clear zone for low-speed (40 mph or less Design Speed) is 6' preferred and 4' acceptable from back of curb. East of the roundabout, where the existing speed limit is 45 mph, the applicable clear zone will be determined considering AASHTO acceleration and deceleration distances to/from the roundabout.

Crosswalks for pedestrians and bicyclists will be provided at all three legs of the roundabout. With pedestrian refuge areas in the roundabout splitter islands and two-stage crossings, pedestrians only need to monitor low speed roundabout vehicular traffic from one direction at a time. An 8' wide sidewalk is planned along the south side of the roundabout and could be extended to the east and west along Viking Road in the future.

The project is expected to significantly improve safety at the intersection, while also improving traffic operations in this growing part of the City. The majority of crashes at the intersection are broadside crashes due to southbound drivers failing to yield at the STOP sign. With a roundabout, speeds are significantly reduced, and broadside crashes are often eliminated. If roundabout crashes do occur, they are normally less severe sideswipe crashes associated with a merge.

Iowa DOT planning level crash reduction factors (CRF) indicate that replacing an unsignalized intersection in an urban area with a roundabout would be expected to provide an average crash reduction of 45% for all crashes. For fatal and injury crashes, the expected crash reduction is 75%. The planned roundabout offers a significant safety improvement over the existing unsignalized intersection and the alternative signalized intersection.

## ORDER OF MAGNITUDE COST OPINION

Safety related costs for this project were determined by comparison of two alternatives. The estimated construction cost of the preferred roundabout alternative was compared to estimated construction cost to signalize the intersection (including radius improvements, sidewalks, and raised median for the west leg). Fifty percent of the additional cost to construct the roundabout was determined to be the safety cost, because the proposed roundabout will provide both safety and operational benefits compared to the traffic signal alternative. The below tables summarize estimated construction costs for the two alternatives, the resultant safety cost for the roundabout and proposed project funding sources.

### Roundabout Safety Cost

Roundabout Alternative Construction Cost	\$1,658,000
Traffic Signal Alternative Construction Cost	\$644,000
Roundabout Alternative Additional Cost	\$1,014,000
Safety Cost (50% of Roundabout Alternative Additional Cost)	\$507,000

### Proposed Project Funding Sources

Traffic Safety Improvement Program Funding	\$500,000
City Funding – Construction (Estimated)	\$1,158,000
City Funding – Other Costs (Estimated)	\$1,465,000
TOTAL	\$3,123,000

Detailed cost opinions for the roundabout and traffic signal alternatives are provided on the following page.

ORDER OF MAGNITUDE COST OPINION



Intersection Viking Road & Prairie Parkway  
 Roundabout Alternative  
 CEDAR FALLS, IOWA  
 PROJECT NO. 122.1702.08

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	9500	CY	\$ 12.00	\$ 114,000.00
2	Subgrade Preparation	8750	SY	\$ 4.00	\$ 35,000.00
3	Modified Subbase (1)	8750	SY	\$ 15.00	\$ 131,250.00
4	Topsoil, Strip, Salvage and Respread (2)	830	CY	\$ 9.00	\$ 7,470.00
5	Remove Existing Storm Intake (3)	8	EA	\$ 1,000.00	\$ 8,000.00
6	Remove Existing Storm Sewer, RCP <24"	1940	LF	\$ 25.00	\$ 48,500.00
7	Storm Sewer, RCP, <24"	2130	LF	\$ 72.50	\$ 154,425.00
8	Storm Sewer Intake (3)	10	EA	\$ 5,000.00	\$ 50,000.00
9	Removal of Pavement	7100	SY	\$ 10.00	\$ 71,000.00
10	PCC Pavement, 8"	7000	SY	\$ 65.00	\$ 455,000.00
11	Concrete Median, Colored Concrete	290	SY	\$ 110.00	\$ 31,900.00
12	Truck Apron, Colored Concrete	440	SY	\$ 115.00	\$ 50,600.00
13	Pavement Markings	60	STA	\$ 160.00	\$ 9,600.00
14	Painted Symbols and Legends	12	EA	\$ 220.00	\$ 2,640.00
15	Removal of Sidewalk	630	SY	\$ 10.00	\$ 6,300.00
16	Sidewalk, 6"	1040	SY	\$ 70.00	\$ 72,800.00
17	Detectable Warnings	240	SF	\$ 50.00	\$ 12,000.00
19	Mobilization	1	LS	\$ 80,000.00	\$ 80,000.00
20	Traffic Control	1	LS	\$ 25,000.00	\$ 25,000.00
21	Surface Restoration	1	LS	\$ 5,000.00	\$ 5,000.00
22	Erosion Control	1	LS	\$ 8,000.00	\$ 8,000.00
Subtotal:					\$ 1,378,485.00
Contingency (20%):					\$ 280,000.00
CONSTRUCTION TOTAL:					\$ 1,658,485.00
<u>Other Project Costs</u>					
Intersection Lighting <sup>4</sup>					\$ 100,000.00
Right of Way <sup>5</sup>					\$ 235,000.00
Landscaping Improvements <sup>6</sup>					\$ 250,000.00
Utility Relocations <sup>7</sup>					\$ 880,000.00
<b>TOTAL PROJECT COST (ROUNDED):</b>					<b>\$ 3,123,000.00</b>

Notes - Viking Road & Prairie Parkway Roundabout

- (1) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (2) Assumes 8" of topsoil strip and placement within the construction limits.
- (3) Remove and replace intakes to new back of curb.
- (4) Assumes the addition of 6 standard light poles for intersection lighting.
- (5) The following unit prices were used for the acquisitions: \$9/SF south of Viking Rd, \$11/SF north of Viking Rd
- (6) Estimated cost is based on pricing from the Hudson Road & W Ridgeway Avenue Intersection Improvements Project due to the similar size and scope of work.
- (7) Includes the relocation of the transmission, distribution, and communication lines and structures. Cost was provided by CFU on 02/14/2022. Price has been inflated 10% to account for a bid year of 2024.

ORDER OF MAGNITUDE COST OPINION



Intersection Viking Road & Prairie Parkway  
 Traffic Signal Alternative  
 CEDAR FALLS, IOWA  
 PROJECT NO. 122.1702.08

ITEM #	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED PRICE
1	Excavation, Class 10	1125	CY	\$ 15.00	\$ 16,875.00
2	Subgrade Preparation	1025	SY	\$ 5.00	\$ 5,125.00
3	Modified Subbase (1)	1025	SY	\$ 18.75	\$ 19,218.75
4	Topsoil, Strip, Salvage and Respread (2)	120	CY	\$ 15.00	\$ 1,800.00
5	Pavement, PCC, 8"	460	SY	\$ 82.00	\$ 37,720.00
6	Curb and Gutter, 2.0' Width, 8" Thickness	1290	LF	\$ 32.00	\$ 41,280.00
7	Concrete Median, 4'	40	SY	\$ 135.00	\$ 5,400.00
8	Removal of Sidewalk	110	SY	\$ 12.50	\$ 1,375.00
9	Shared Use Path, PCC, 6"	275	SY	\$ 85.00	\$ 23,375.00
10	Detectable Warning	120	SF	\$ 55.00	\$ 6,600.00
11	Pavement Removal	1425	SY	\$ 12.50	\$ 17,812.50
12	Traffic Signal	1	LS	\$ 300,000.00	\$ 300,000.00
13	Painted Pavement Markings, Solvent/Waterborne	50	STA	\$ 200.00	\$ 10,000.00
14	Painted Symbols and Legends	1	EA	\$ 275.00	\$ 275.00
15	Temporary Traffic Control	1	LS	\$ 12,500.00	\$ 12,500.00
16	Mobilization	1	LS	\$ 35,000.00	\$ 35,000.00
Subtotal:					\$ 534,356.25
Contingency (20%):					\$ 110,000.00
CONSTRUCTION TOTAL:					\$ 644,356.25
<u>Other Project Costs</u>					
Right of Way <sup>3</sup>					\$ 47,000.00
Utility Relocations <sup>4</sup>					\$ 440,000.00
<b>TOTAL PROJECT COST (ROUNDED):</b>					<b>\$ 1,131,000.00</b>

Notes - Viking Road & Prairie Parkway Traffic Signal

- (1) Assumes a minimum of 6" of modified subbase extended 2' beyond the back of curb.
- (2) Assumes 8" of topsoil strip and placement within the construction limits.
- (3) The following unit prices were used for the acquisitions: \$9/SF south of Viking Rd, \$11/SF north of Viking Rd
- (4) Includes the relocation of the transmission, distribution, and communication lines and structures. Cost was provided by CFU on 02/14/2022 for relocation of four poles. Signal is assumed to impact two poles (50% as much). Price has been inflated 10% to account for a bid year of 2024.

**SCHEDULE**

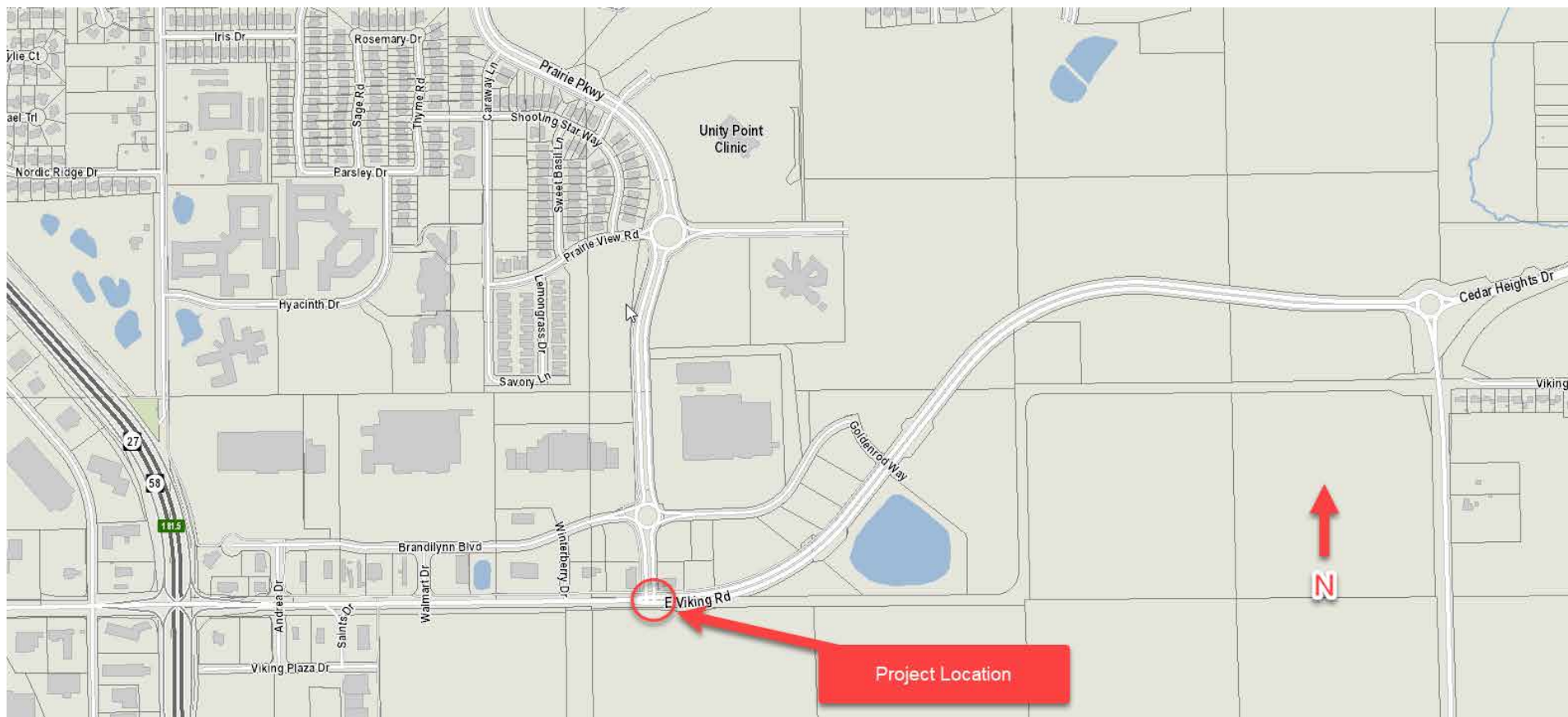
Following is the anticipated schedule of major project events for this project.

Design	Present – June 2024
TSIP Funding Application	August 2023
TSIP Funding Award	January 2024
TSIP Agreement	March 2024
Right-of-Way Acquisition Completed	March 2024
Project Letting - TSIP Funding Available	July 2024
Project Construction	August 2024 – August 2025
Project Completed	August 2025



### MAP

Below is a map of a portion of Cedar Falls with the E Viking Rd and Prairie Pkwy intersection shown.



**Project Location Map**  
Source: gis.cedarfalls.com

**SITE PICTURES**



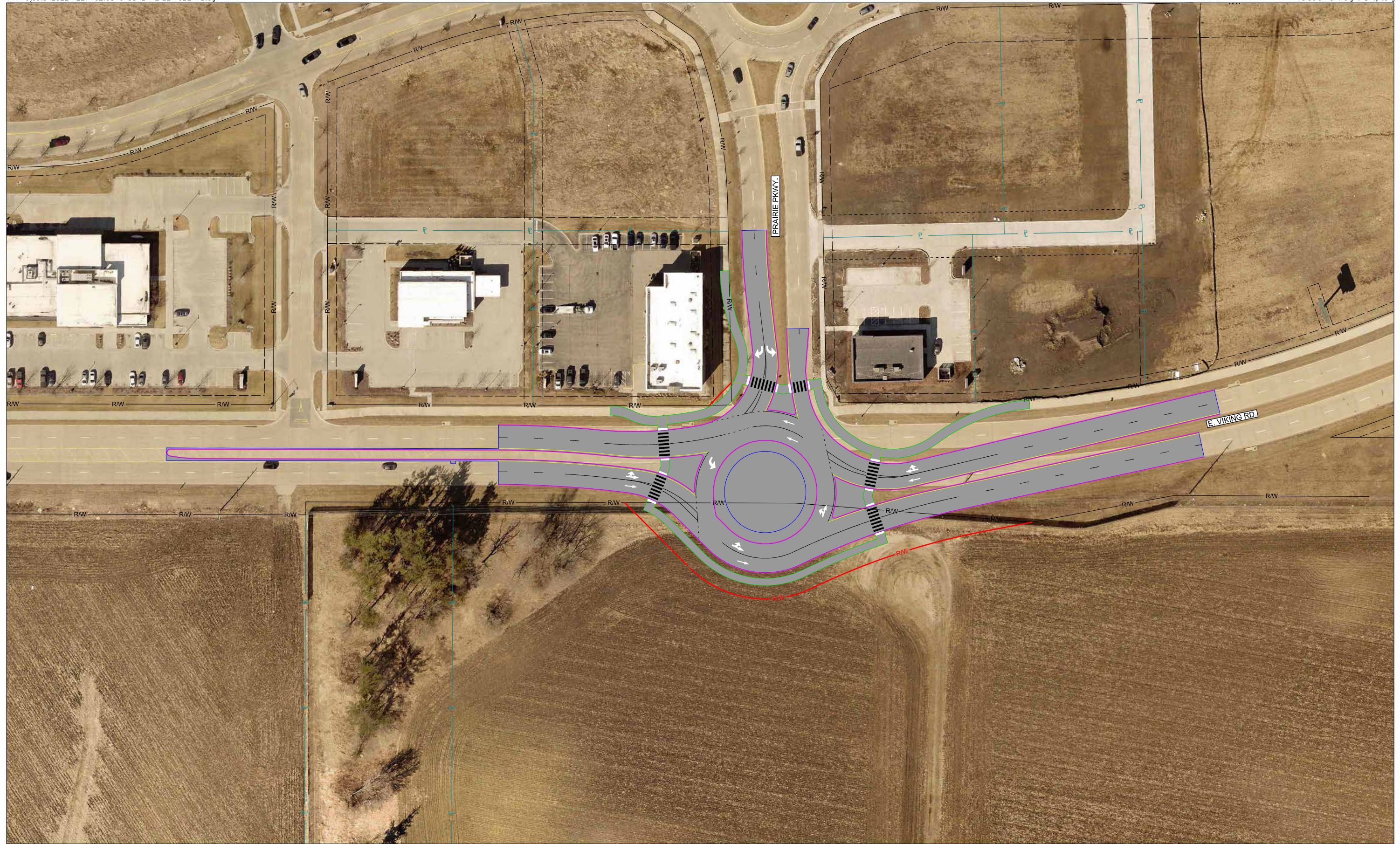
**View of the intersection from the west**

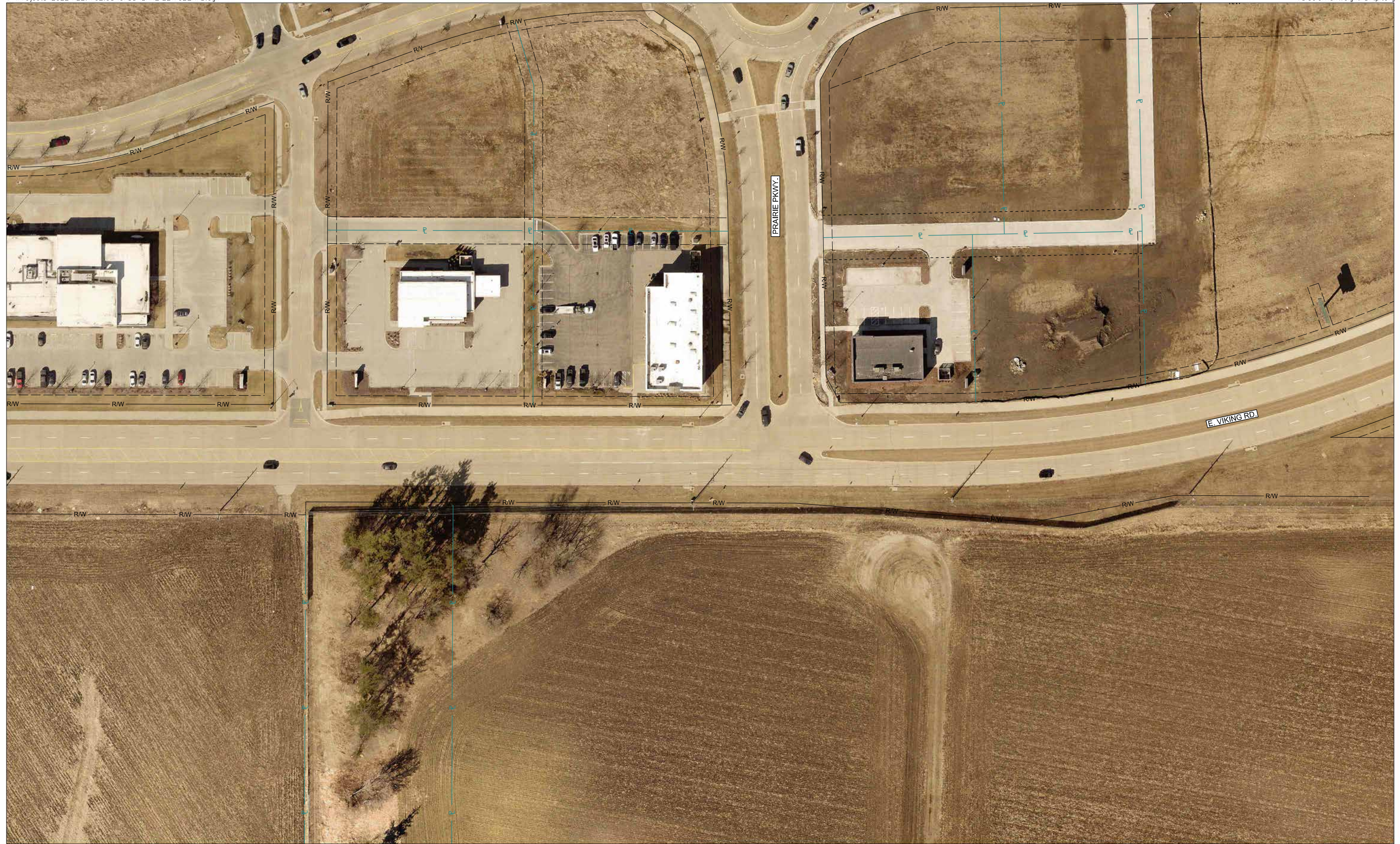


**View of the intersection from the east**



**View of the intersection from the north**







Iowa Crash Analysis Tool  
Quick Report  
2015-2022

<b>Crash Severity</b>	<b>9</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	2
Property Damage Only	7

<b>Injury Status Summary</b>	<b>2</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	2
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	52,500.00
Average (per crash dollars):	5,833.33
Total Vehicles:	17.00
Average (per crash):	1.89
Total Occupants:	19.00
Average (per crash):	2.11

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.22
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.22





Iowa Crash Analysis Tool  
Quick Report  
2015-2022

Major Cause			9
Animal	1	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	5	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	1
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		



Iowa Crash Analysis Tool  
Quick Report  
2015-2022

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Monday	0	0	0	0	0	0	0	0	2	0	1	0	0	3
Tuesday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Wednesday	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Thursday	0	0	0	0	1	0	0	0	1	0	0	0	0	2
Friday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	2	0	2	0	4	0	1	0	0	9

Manner of Crash Collision	9
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	5
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	1
Not reported	1
Other	1
Unknown	0

Surface Conditions	9
Dry	4
Wet	0
Ice/frost	0
Snow	3
Slush	1
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	1
Other	0
Unknown	0

Fixed Object Struck	17
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	17



Iowa Crash Analysis Tool  
Quick Report  
2015-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	1	0	0	1
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	1	0	0	0	1
>= 40 and <= 44	3	1	0	0	4
>= 45 and <= 49	0	5	0	0	5
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	2	0	0	2
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>6</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>17</b>

Alcohol Test Given	17
None	17
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	17
None	17
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	9
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	9
Other	0

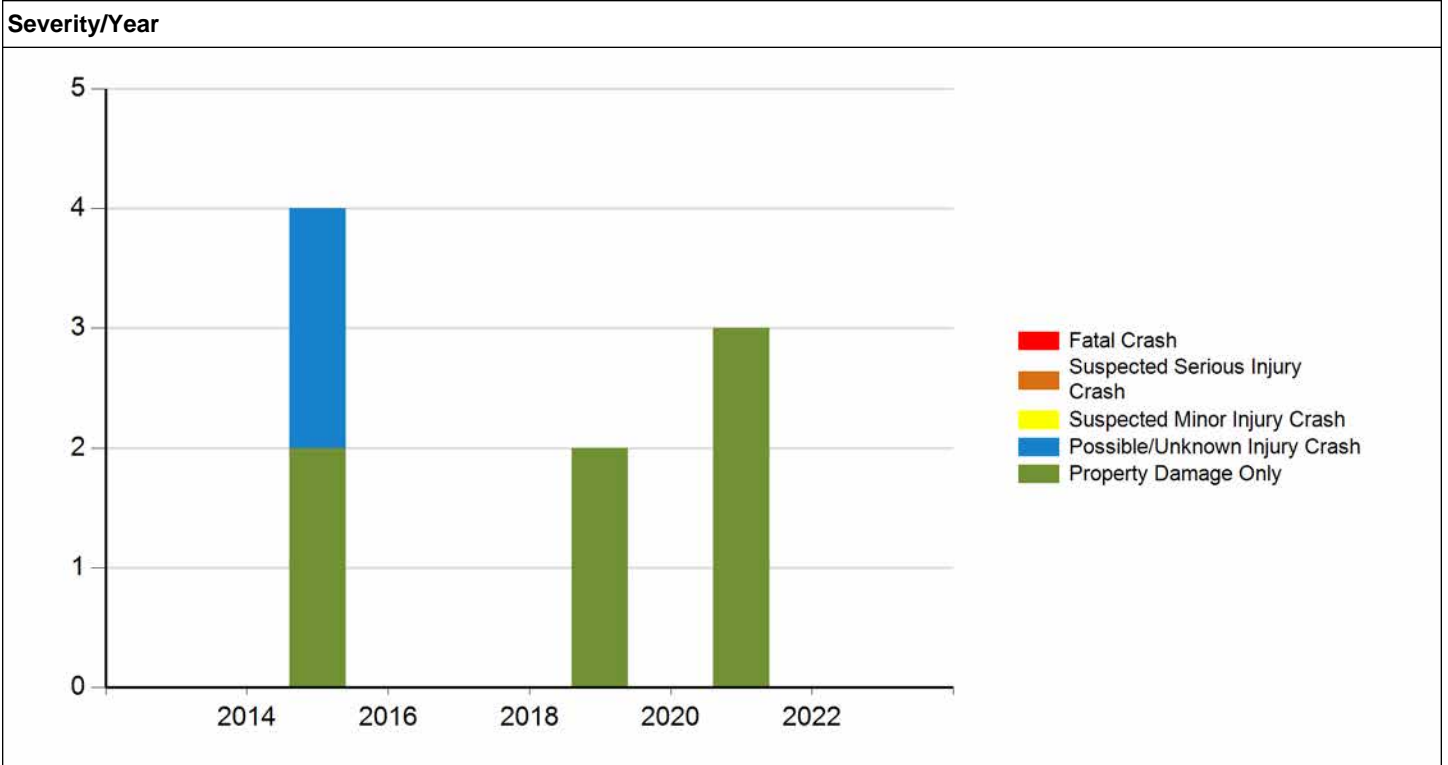
Drug/Alcohol Related	9
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	9





Iowa Crash Analysis Tool  
Quick Report  
2015-2022

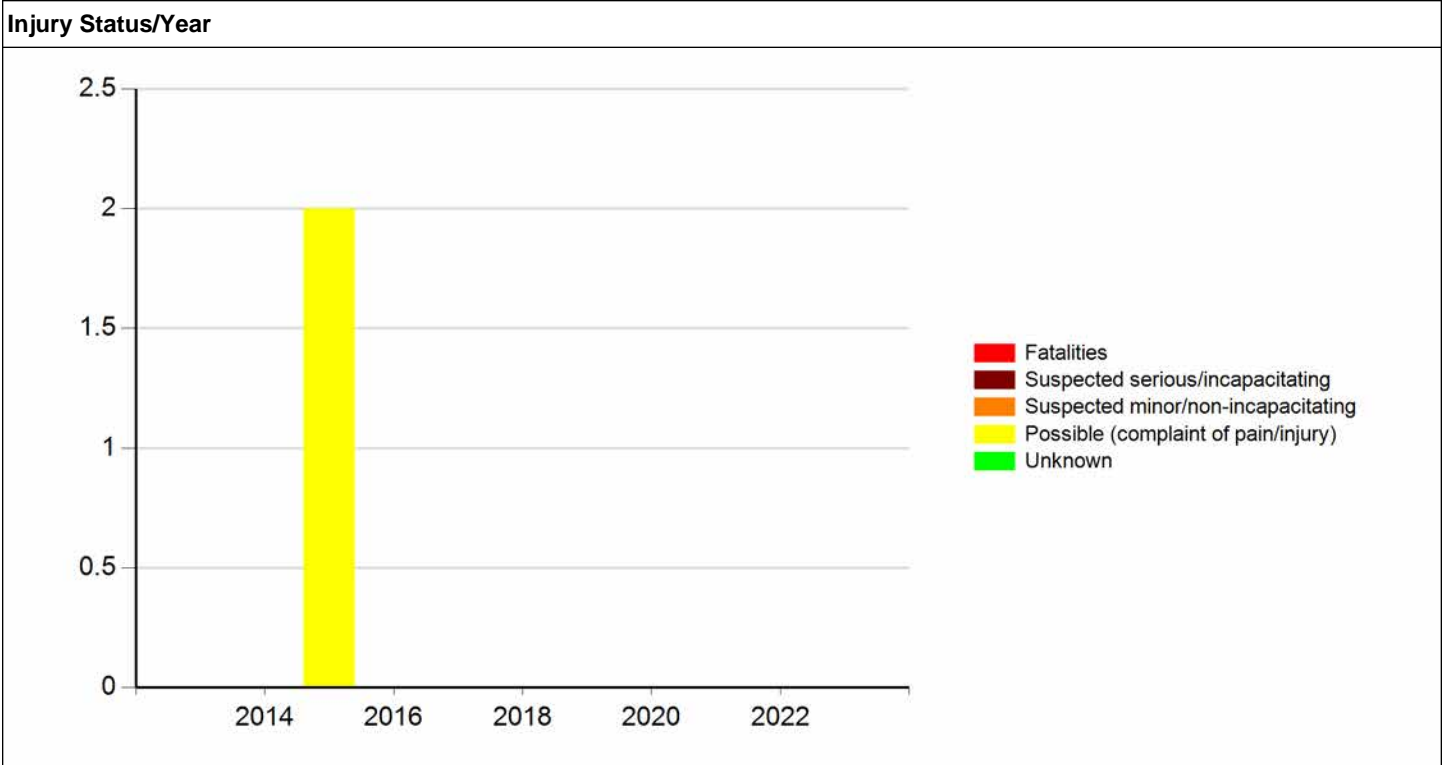
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	2	2	4
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	2	2
2020	0	0	0	0	0	0
2021	0	0	0	0	3	3
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	2	7	9





Iowa Crash Analysis Tool  
Quick Report  
2015-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	2	0	2
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	2	0	2





Iowa Crash Analysis Tool  
Quick Report  
2015-2022

**Meeting the following criteria**

Jurisdiction: Statewide  
Year: 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**

Viking Rd & Prairie Pkwy  
Cedar Falls

Turning Movement Traffic Count 2016  
 Viking Road & Prairie Parkway  
 Cedar Falls, IA

File Name : DATA\_Viking\_Prairie\_2016\_TM  
 Site Code : 00000000  
 Start Date : 6/28/2016  
 Page No : 1

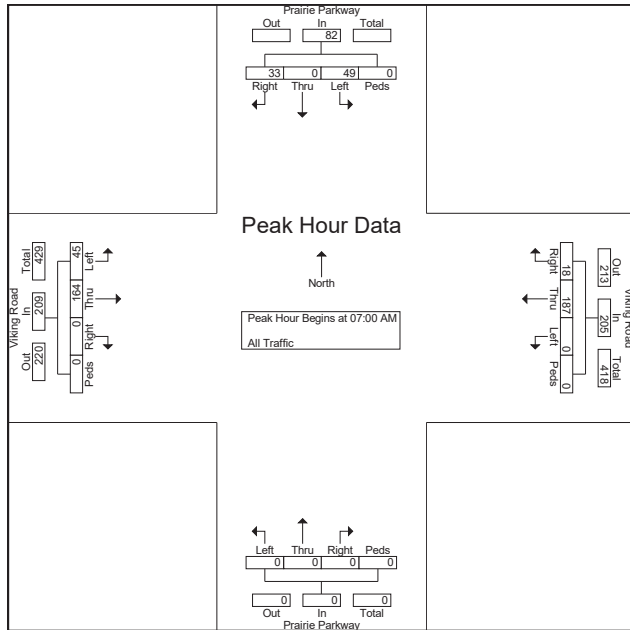
Groups Printed- All Traffic

Start Time	Prairie Parkway Southbound					Viking Road Westbound					Prairie Parkway Northbound					Viking Road Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
*** BREAK ***																					
07:00 AM	16	0	7	0	23	0	30	5	0	35	0	0	0	0	0	10	43	0	0	53	111
07:15 AM	17	0	8	0	25	0	45	7	0	52	0	0	0	0	0	8	54	0	0	62	139
07:30 AM	8	0	10	0	18	0	33	3	0	36	0	0	0	0	0	6	32	0	0	38	92
07:45 AM	8	0	8	0	16	0	79	3	0	82	0	0	0	0	0	21	35	0	0	56	154
Total	49	0	33	0	82	0	187	18	0	205	0	0	0	0	0	45	164	0	0	209	496
08:00 AM	13	0	7	0	20	0	32	5	0	37	0	0	0	0	0	18	31	0	0	49	106
08:15 AM	2	0	11	0	13	0	45	5	0	50	0	0	0	0	0	8	21	0	0	29	92
08:30 AM	8	0	21	0	29	0	35	6	0	41	0	0	0	0	0	14	23	0	0	37	107
08:45 AM	5	0	8	0	13	0	52	2	0	54	0	0	0	0	0	19	30	0	0	49	116
Total	28	0	47	0	75	0	164	18	0	182	0	0	0	0	0	59	105	0	0	164	421
*** BREAK ***																					
11:00 AM	17	0	20	0	37	0	59	8	0	67	0	0	0	0	0	35	43	0	0	78	182
11:15 AM	10	0	23	0	33	0	55	8	0	63	0	0	0	0	0	32	45	0	0	77	173
11:30 AM	20	0	32	0	52	0	52	5	0	57	0	0	0	0	0	33	64	0	0	97	206
11:45 AM	13	0	21	0	34	0	70	9	0	79	0	0	0	0	0	37	52	0	0	89	202
Total	60	0	96	0	156	0	236	30	0	266	0	0	0	0	0	137	204	0	0	341	763
12:00 PM	17	0	24	0	41	0	51	6	0	57	0	0	0	0	0	40	61	0	0	101	199
12:15 PM	15	0	25	0	40	0	77	8	0	85	0	0	0	0	0	34	54	0	0	88	213
12:30 PM	26	0	16	0	42	0	49	13	0	62	0	0	0	0	0	40	63	0	0	103	207
12:45 PM	17	0	28	0	45	0	60	9	0	69	0	0	0	0	0	25	61	0	0	86	200
Total	75	0	93	0	168	0	237	36	0	273	0	0	0	0	0	139	239	0	0	378	819
01:00 PM	18	0	17	0	35	0	49	7	0	56	0	0	0	0	0	26	46	0	0	72	163
01:15 PM	11	0	17	0	28	0	46	13	0	59	0	0	0	0	0	27	67	0	0	94	181
01:30 PM	19	0	19	0	38	0	35	14	0	49	0	0	0	0	0	19	65	0	0	84	171
01:45 PM	14	0	24	0	38	0	41	8	0	49	0	0	0	0	0	30	44	0	0	74	161
Total	62	0	77	0	139	0	171	42	0	213	0	0	0	0	0	102	222	0	0	324	676
*** BREAK ***																					
03:00 PM	11	0	27	0	38	0	56	6	0	62	0	0	0	0	0	33	54	0	0	87	187
03:15 PM	19	0	21	0	40	0	62	9	0	71	0	0	0	0	0	26	50	0	0	76	187
03:30 PM	20	0	30	0	50	0	73	20	0	93	0	0	0	0	0	23	77	0	0	100	243
03:45 PM	12	0	29	0	41	0	69	20	0	89	0	0	0	0	0	22	42	0	0	64	194
Total	62	0	107	0	169	0	260	55	0	315	0	0	0	0	0	104	223	0	0	327	811
04:00 PM	24	0	22	0	46	0	71	15	0	86	0	0	0	0	0	35	73	0	0	108	240
04:15 PM	15	0	31	0	46	0	64	18	0	82	0	0	0	0	0	30	63	0	0	93	221
04:30 PM	18	0	27	0	45	0	62	17	0	79	0	0	0	0	0	37	71	0	0	108	232
04:45 PM	20	0	28	0	48	0	88	16	0	104	0	0	0	0	0	33	66	0	0	99	251
Total	77	0	108	0	185	0	285	66	0	351	0	0	0	0	0	135	273	0	0	408	944
05:00 PM	20	0	25	0	45	0	70	21	0	91	0	0	0	0	0	42	78	0	0	120	256
05:15 PM	10	0	23	0	33	0	48	13	0	61	0	0	0	0	0	27	70	0	0	97	191
05:30 PM	18	0	19	0	37	0	73	10	0	83	0	0	0	0	0	30	76	0	0	106	226
05:45 PM	16	0	18	0	34	0	57	11	0	68	0	0	0	0	0	21	62	0	0	83	185
Total	64	0	85	0	149	0	248	55	0	303	0	0	0	0	0	120	286	0	0	406	858
*** BREAK ***																					
Grand Total	477	0	646	0	1123	0	1788	320	0	2108	0	0	0	0	0	841	1716	0	0	2557	5788
Apprch %	42.5	0	57.5	0		0	84.8	15.2	0		0	0	0	0		32.9	67.1	0	0		
Total %	8.2	0	11.2	0	19.4	0	30.9	5.5	0	36.4	0	0	0	0	0	14.5	29.6	0	0	44.2	

Turning Movement Traffic Count 2016  
 Viking Road & Prairie Parkway  
 Cedar Falls, IA

File Name : DATA\_Viking\_Prairie\_2016\_TM  
 Site Code : 00000000  
 Start Date : 6/28/2016  
 Page No : 3

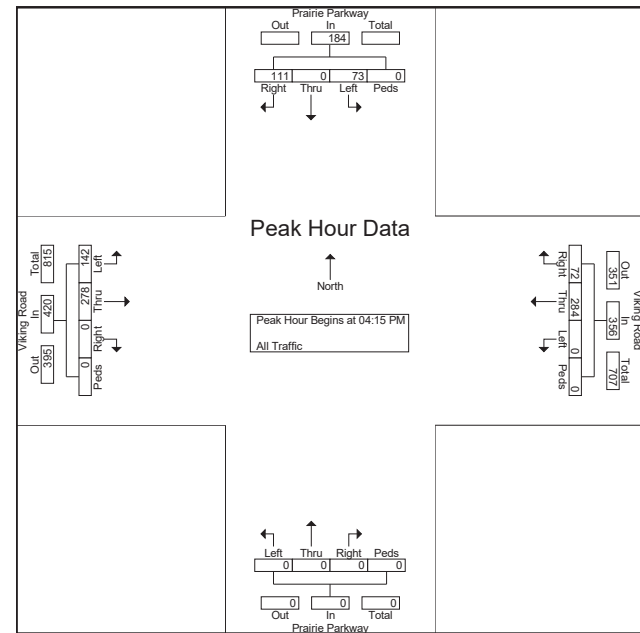
Start Time	Prairie Parkway Southbound					Viking Road Westbound					Prairie Parkway Northbound					Viking Road Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 12:00 AM to 07:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	16	0	7	0	23	0	30	5	0	35	0	0	0	0	0	10	43	0	0	53	111
07:15 AM	17	0	8	0	25	0	45	7	0	52	0	0	0	0	0	8	54	0	0	62	139
07:30 AM	8	0	10	0	18	0	33	3	0	36	0	0	0	0	0	6	32	0	0	38	92
07:45 AM	8	0	8	0	16	0	79	3	0	82	0	0	0	0	0	21	35	0	0	56	154
Total Volume	49	0	33	0	82	0	187	18	0	205	0	0	0	0	0	45	164	0	0	209	496
% App. Total	59.8	0	40.2	0	82	0	91.2	8.8	0	205	0	0	0	0	0	21.5	78.5	0	0	56	154
PHF	.721	.000	.825	.000	.820	.000	.592	.643	.000	.625	.000	.000	.000	.000	.000	.536	.759	.000	.000	.843	.805



Turning Movement Traffic Count 2016  
 Viking Road & Prairie Parkway  
 Cedar Falls, IA

File Name : DATA\_Viking\_Prairie\_2016\_TM  
 Site Code : 00000000  
 Start Date : 6/28/2016  
 Page No : 5

Start Time	Prairie Parkway Southbound					Viking Road Westbound					Prairie Parkway Northbound					Viking Road Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 02:00 PM to 11:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	15	0	31	0	46	0	64	18	0	82	0	0	0	0	0	30	63	0	0	93	221
04:30 PM	18	0	27	0	45	0	62	17	0	79	0	0	0	0	0	37	71	0	0	108	232
04:45 PM	20	0	28	0	48	0	88	16	0	104	0	0	0	0	0	33	66	0	0	99	251
05:00 PM	20	0	25	0	45	0	70	21	0	91	0	0	0	0	0	42	78	0	0	120	256
Total Volume	73	0	111	0	184	0	284	72	0	356	0	0	0	0	0	142	278	0	0	420	960
% App. Total	39.7	0	60.3	0	184	0	79.8	20.2	0	356	0	0	0	0	0	33.8	66.2	0	0	120	256
PHF	.913	.000	.895	.000	.958	.000	.807	.857	.000	.856	.000	.000	.000	.000	.000	.845	.891	.000	.000	.875	.938



## **BENEFIT/COST ANALYSIS**

As discussed in Section C, the safety cost for this project was estimated as 50% of the additional cost to construct a roundabout compared to the traffic signal alternative. Only construct funds are applicable to TSIP and the proposed roundabout will provide both safety and operational benefits compared to the traffic signal alternative. Therefore, \$507,000 was used for the cost portion of the benefit/cost analysis.

Per the Iowa DOT Planning Level Crash Reduction Factor (CRF) List, the applicable CRF value for all crashes with constructing a roundabout at an unsignalized intersection is 45 in an urban area. This CRF was used for the analysis. The applicable CRF value for fatal and injury crashes is 75. This indicates that injury crash reduction benefits will likely be higher than shown in the analysis.

Eight years of crash history (2015-2022) were used for the analysis. In 2015, four crashes occurred at the intersection, resulting in two possible injuries. Including the 2015 crashes provides a more accurate representation of the safety performance of the intersection.

An annual traffic growth rate of 2% was used for the analysis. The intersection is within a growing commercial and industrial area of the City, and significant developable land is present near the intersection. Traffic growth is expected to be higher than the 1% default annual growth rate.

Annual maintenance costs for the planned roundabout are expected to be lower than with the traffic signal alternative. Per the life cycle cost analysis performed, projected annual maintenance costs are \$2,500 for the roundabout alternative and \$5,000 for the traffic signal alternative. Therefore, -\$2500 (a maintenance cost savings) was used as the annual maintenance cost for the analysis.

The resulting benefit/cost ratio is 0.75/1. It is likely that actual safety benefits with the roundabout will be higher than the analysis shows. Crash rates and crash severity are likely to increase with expected area development and traffic growth if the proposed roundabout is not constructed.

County:	Black Hawk	Prepared By:	Snyder & Assoc
Location:	Viking Rd & Prairie Pkwy	Date Prepared:	8/4/2023
Proposed Improvements:	Construct Roundabout		
Estimated Improvement Cost:	\$ 507,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	0%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ (2,500)

Method Choice:	CRF Method
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The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	2%
Number of CRFs:	1
Years of Crash History:	8

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF			
	45	45.0			
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000		45.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000		45.0	0.00	0.00
Minor Injury (B)	\$ 265,000		45.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	2	45.0	0.25	0.11
Property Damage Only (O)	\$ 20,000	7	45.0	0.88	0.39

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ -
Possible/Unknown Injury (C)	\$ 14,063
Property Damage Only (O)	\$ 7,875

### Total Benefits and Costs

	Implementation Cost	\$ 507,000	
	Present Value of Maint.	\$ (33,976)	
Present Value Benefits (Societal Benefits)	\$ 353,011	Present Value Costs (Impl. and Maint. Costs)	\$ 473,024
Present Value Net Return	\$ (120,014)		
<b>Benefit Cost Ratio</b>	<b>0.75</b>		

Form continues on next page

County:	Black Hawk	Prepared By:	Snyder & Assoc
Location:	Viking Rd & Prairie Pkwy	Date Prepared:	8/4/2023

## User Input Required - Custom Values Used

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

Justification for deviation from default Maintenance Costs

Annual maintenance cost for the roundabout is estimated \$2,500 less per year, compared to the traffic signal alternative, per life cycle cost analysis performed.

### Method-Specific Customizations

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Justification for deviation from default Traffic Growth Rate

Significant developable land is present near the project intersection. Annual traffic growth is expected to be higher than average.

Justification for deviation from default Crash History

Four crashes occurred in 2015, resulting in two possible injuries. The 2015-2022 crash history is included in the analysis.





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

 DATE: 7-27-2023

 Location / Title of Project INTERSECTION OF 1<sup>ST</sup> AVENUE W AND I-380 SOUTHBOUND  
OFF-RAMP TERMINAL

 Applicant City of Cedar Rapids

 Contact Person Ron Griffith, PE Title Sr. Traffic Engineer

 Complete Mailing Address 500 15<sup>th</sup> Avenue SW
Cedar Rapids, IA 52404

 Phone (319) 286-5154 E-Mail r.griffith@cedar-rapids.org  
 (Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

 Co-Applicant(s) Iowa Department of Transportation

 Contact Person Tom Storey, PE Title Staff Engineer, District 6

 Complete Mailing Address 5455 Kirkwood Blvd SW
Cedar Rapids, IA 52404

 Phone (319) 730-1511 E-Mail Thomas.Storey@iowadot.us  
 (Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**
**Funding Amount**

 Total Safety Cost \$ 495,000

 Total Project Cost \$ 1,104,000
**Safety Funds Requested** \$ 495,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain \_\_\_\_\_

 No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Cedar Rapids

Signed: Brenna Fall 8-15-2023  
Signature Date Signed

Brenna Fall, PE  
Printed Name

Attest: Mary Oehler 8/15/2023  
Signature Date Signed

MARY OEHLE  
Printed Name

RESOLUTION NO. 1249-08-23

RESOLUTION AUTHORIZING APPLICATION FOR A TRAFFIC  
SAFETY IMPROVEMENT PROGRAM (TSIP) GRANT FOR THE  
REALIGNMENT OF THE INTERSECTION OF 1ST AVENUE W  
AND THE I-380 SOUTHBOUND OFF-RAMP TERMINAL

WHEREAS, the Iowa Department of Transportation (Iowa DOT) has established the Transportation Safety Improvement Program (TSIP), which provides funding for locations where vehicular safety is a concern and documented, and

WHEREAS, the Iowa DOT and the City of Cedar Rapids have identified the intersection of 1st Avenue W and the I-380 southbound off-ramp terminal as a location where vehicular safety could be improved and funded with the TSIP grant, and

WHEREAS, the realignment of the intersection of 1st Avenue W and the I-380 southbound off-ramp terminal will reduce the likelihood of vehicular collisions at the intersection and improve traffic operations, and

WHEREAS, the City of Cedar Rapids Public Works Department recommends approval of this resolution.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CEDAR RAPIDS, IOWA,


1. Supports the submission of a Traffic Safety Improvement Program Grant application for the improvement of the intersection of 1<sup>st</sup> Avenue W and the I-380 off-ramp terminal.
2. The City Manager is authorized and directed to execute any and all application materials required for submission.
3. Contingent upon approval of the TSIP funds from the Iowa Department of Transportation, the City Manager is authorized and directed to execute an agreement with the Iowa Department of Transportation for award of funds to the City of Cedar Rapids.

Passed this 8th day of August, 2023.

Voting: Council member Olson (Scott) moved the adoption of the resolution; seconded by Council member Poe. Adopted, Ayes, Council members Hoeger, Loeffler, Olson (Scott), Olson (Tyler), Overland, Poe, Todd, Vanorny and Mayor O'Donnell.

  
\_\_\_\_\_  
Tiffany D. O'Donnell, Mayor

Attest:

  
\_\_\_\_\_  
Alissa Van Sloten, City Clerk

**Background:**

The signalized intersection of 1<sup>st</sup> Avenue W and the I-380 off-ramp terminal is an atypical intersection comprised of an Interstate off-ramp, an arterial city street, and a third local street (3<sup>rd</sup> Street NW). The off-ramp has an advisory speed limit of 35 mph, 1<sup>st</sup> Avenue W has a posted speed limit of 35mph, and 3<sup>rd</sup> Street NW has a posted speed limit of 30 mph and is a one-way street. The intersection is signed such that drivers using the off-ramp legally may only go through or turn right, and drivers using 3<sup>rd</sup> Street NW may only go through or turn left. The functional intent of the intersection is that the off-ramp and 3<sup>rd</sup> Street NW operate as two separate legs of the intersection. Traffic volumes are presented in Exhibit J, in summary, 1<sup>st</sup> Ave carries approximately 11000 vpd, the off-ramp carries approximately 7000 vpd, 3<sup>rd</sup> St. carries 1800 vpd.

**Crash History:**

The alignment of the intersection leads to a higher rate of crashes than normal, due to there being two independent approaches to the signal, the off-ramp and 3<sup>rd</sup> St NW. Available 5-year crash history shows 66 crashes in the past 5 years, resulting in an average of 13.2 crashes per year, with a high percentage of them being due to making improper turns (20%). Although the intersection is properly signed per MUTCD requirements, the rate of occurrence of improper turns is high, leading to the high percentage of crashes due to improper turns.

The Iowa DOT Potential for Crash Reduction (PCR) map describes this intersection as having “high” PCR, or PCR > 1. High PCR is consistent with the historical crash data available for this intersection.

**Proposed Improvements:**

The proposed concept is a re-alignment of the off-ramp terminal which would permanently exclude 3<sup>rd</sup> Street NW as a leg of the intersection. 3<sup>rd</sup> Street NW would be closed to southbound traffic from “E” Avenue NW, and the pavement would be removed. Southbound traffic that would have previously used 3<sup>rd</sup> Street NW will instead utilize the new connection of Ellis Blvd NW to 6<sup>th</sup> St NW (scheduled for completed in fall of 2023) in order to access 1<sup>st</sup> Avenue W. Traffic from the off-ramp will use the intersection in a more traditional manner, and being able to make left turns without conflicting traffic from 3<sup>rd</sup> Street NW.

The ramp realignment will primarily affect the off-ramp southbound to westbound traffic flow by modifying the right turn lane. In its current configuration the angle of approach onto 1<sup>st</sup> Ave W is low, allowing higher speeds and less optimal sight distance for westbound traffic. The new ramp will increase the angle of approach to the intersection to remediate these safety concerns. In particular, this will increase pedestrian safety by improving the sight distance and reducing the speed of oncoming right-turning traffic onto 1<sup>st</sup> Ave W.

Other related work occurring at the intersection includes traffic signal replacement, which will account for the updated lane configuration at the off-ramp terminal. The traffic signal replacement is not part of this TSIP Application. Exhibit C contains cost opinion information which clearly separates the safety-related and non-safety-related costs, Exhibit K shows the updated signal configuration and additional signal information.

Analysis of the intersection shows a clear correlation to the abnormal turn restrictions and the high rate of non-compliance from drivers leading to increased crashes. The proposal effectively eliminates any chances of conflicting movements from southbound traffic using the off-ramp, due to 3<sup>rd</sup> Street NW traffic having a safer and more efficient access to 1<sup>st</sup> Avenue W by way of the new connection of Ellis Boulevard NW and 6<sup>th</sup> Street NW.

To Perform the Benefit-Cost Analysis, appropriate CRFs were chosen, utilizing the DOT-provided planning-level list and the CRF Clearinghouse. Three CRFs were chosen, with the following titles and associated factors:

1. CMF ID: 8428 – Improve Angle of Channelized Right-Turn Lane (44.2)
2. SI-41 – Install Left-Turn Lane on Approach (25)
3. SI-43 – Install Right-Turn Lane on Approach (6)

Using the DOT-provided Benefit-Cost worksheet, with associated project cost and crash history, it was found that the proposed improvements would have a Benefit-Cost Ratio of **2.95**.



**OPINION OF PROBABLE PROJECT COSTS**  
**I-380 EXIT RAMP 19B**  
 CEDAR RAPIDS, IA

ITEM CODE	DESCRIPTION	DOT FUNDING REQUEST QUANTITY	NON- PARTICIPATING QUANTITY	UNIT	UNIT PRICE	TOTAL EXTENDED PRICE DOT	TOTAL EXTENDED PRICE NON- PARTICIPATING
2101-0850002	Clearing and Grubbing		13.6	UNIT	\$ 55.00	\$ -	\$ 748.00
2102-2710090	Excavation, Class 10, Waste	460	17	CY	\$ 35.00	\$ 16,100.00	\$ 595.00
2105-8425005	Topsoil, Furnish and Spread	231	349	CY	\$ 45.00	\$ 10,395.00	\$ 15,705.00
2105-8425015	Topsoil, Strip, Salvage and Spread	347	523	CY	\$ 20.00	\$ 6,940.00	\$ 10,460.00
2113-0001000	Subgrade Stabilization Material, Macadam Stone, 12"	215	26	SY	\$ 30.00	\$ 6,450.00	\$ 780.00
2113-0001100	Subgrade Stabilization Material, Polymer Grid	858	104	SY	\$ 3.00	\$ 2,574.00	\$ 312.00
2115-0100000	Modified Subbase	286	80	CY	\$ 48.00	\$ 13,728.00	\$ 3,840.00
2123-7450020	Shoulder Finishing Earth	7.19	0.87	STA	\$ 440.00	\$ 3,163.60	\$ 382.80
2213-6745500	Removal of Curb	7.25		STA	\$ 2,500.00	\$ 18,125.00	\$ -
2301-1033080	Standard or Slip-Form Portland Cement Concrete Pavement, Class C, Class 3 Durability, 8 In.		51	SY	\$ 80.00	\$ -	\$ 4,080.00
2301-1033100	Standard or Slip-Form Portland Cement Concrete Pavement, Class C, Class 3 Durability, 10 In.	592		SY	\$ 95.00	\$ 56,240.00	\$ -
2301-1083080	Standard or Slip-Form Portland Cement Concrete Pavement, Class M, Class 3 Durability, 8 In.		1	SY	\$ 100.00	\$ -	\$ 100.00
2301-1083100	Standard or Slip-Form Portland Cement Concrete Pavement, Class M, Class 3 Durability, 10 In.	12		SY	\$ 200.00	\$ 2,400.00	\$ -
2435-0130148	Manhole, Sanitary Sewer, SW-301, 48 In.		1	EA	\$ 7,150.00	\$ -	\$ 7,150.00
2435-0140172	Manhole, Storm Sewer, SW-401, 72 In.	4	1	EA	\$ 11,000.00	\$ 44,000.00	\$ 11,000.00
2435-0250700	Intake, SW-507		1	EA	\$ 5,000.00	\$ -	\$ 5,000.00
2435-0250900	Intake, SW-509	2		EA	\$ 6,600.00	\$ 13,200.00	\$ -
2502-8213208	Subdrain, PVC, Standard, Perforated, 8"	170		LF	\$ 30.00	\$ 5,100.00	\$ -
2502-8221303	Subdrain Outlet, DR-303	3		EA	\$ 400.00	\$ 1,200.00	\$ -
2503-0114215	Storm Sewer Gravity Main, Trenched, Reinforced Concrete Pipe (RCP), 2000D (Class III), 15 In.	54	24	LF	\$ 100.00	\$ 5,400.00	\$ 2,400.00
2503-0114224	Storm Sewer Gravity Main, Trenched, Reinforced Concrete Pipe (RCP), 2000D (Class III), 24 In.	8		LF	\$ 160.00	\$ 1,280.00	\$ -
2503-0114224	Storm Sewer Gravity Main, Trenched, Reinforced Concrete Pipe (RCP), 2000D (Class III), 30 In.	24		LF	\$ 270.00	\$ 6,480.00	\$ -
2503-0114224	Storm Sewer Gravity Main, Trenched, Reinforced Concrete Pipe (RCP), 2000D (Class III), 36 In.	40		LF	\$ 250.00	\$ 10,000.00	\$ -
2503-0200036	Remove Storm Sewer Pipe Less than or Equal to 36 In.	166	24	LF	\$ 25.00	\$ 4,150.00	\$ 600.00
2504-0240036	Remove Sanitary Sewer Pipe Less than or Equal to 36 In.		96	LF	\$ 30.00	\$ -	\$ 2,880.00
2507-3250005	Engineering Fabric	89		SY	\$ 3.00	\$ 267.00	\$ -
2510-6745850	Removal of Pavement	2625	927	SY	\$ 12.00	\$ 31,500.00	\$ 11,124.00
2510-6750600	Removal of Intakes and Utility Accesses	7	2	EA	\$ 1,100.00	\$ 7,700.00	\$ 2,200.00
2511-6745900	Removal of Sidewalk		557	SY	\$ 20.00	\$ -	\$ 11,140.00
2511-7526004	Sidewalk, P.C. Concrete, 4 In.		601	SY	\$ 60.00	\$ -	\$ 36,060.00

2511-7526006	Sidewalk, P.C. Concrete, 6 In.		325	SY	\$ 60.00	\$ -	\$ 19,500.00
2511-7528101	Detectable Warning		34	SF	\$ 55.00	\$ -	\$ 1,870.00
2512-1725306	Curb and Gutter, P.C. Concrete, 3.0 FT	606	87	LF	\$ 60.00	\$ 36,360.00	\$ 5,220.00
2515-6745600	Removal of Paved Driveway		251	SY	\$ 20.00	\$ -	\$ 5,020.00
2519-1002084	Fence, Chain Link, 84 In. Height	245		LF	\$ 60.00	\$ 14,700.00	\$ -
2519-4200120	Removal of Fence, Chain Link	276		LF	\$ 5.00	\$ 1,380.00	\$ -
2523-0000310	Handholes and Junction Boxes		1	EA	\$ 2,200.00	\$ -	\$ 2,200.00
2524-6765010	Removal and Reinstall Sign as per Plan	4		EA	\$ 275.00	\$ 1,100.00	\$ -
2524-6765110	Removal of Type A Sign	9	3	EA	\$ 90.00	\$ 810.00	\$ 270.00
2524-9276010	Perforated Square Steel Tube Posts	105	71	LF	\$ 12.00	\$ 1,260.00	\$ 852.00
2524-9276021	Perforated Square Steel Tube Post Anchor, Break-Away Soil Installation	5	7	EA	\$ 90.00	\$ 450.00	\$ 630.00
2524-9276024	Perforated Square Steel Tube Post Anchor, Break-Away Concrete Installation	2		EA	\$ 200.00	\$ 400.00	\$ -
2524-9325001	Type A Signs, Sheet Aluminum	35	51	SF	\$ 25.00	\$ 875.00	\$ 1,275.00
2525-0000100	Traffic Signalization - System C (1st Ave W & L St)		1	LS	\$ 300,000.00	\$ -	\$ 300,000.00
2525-0000120	Removal of Traffic Signalization - System C (1st Ave W & L St)		1	LS	\$ 15,000.00	\$ -	\$ 15,000.00
2526-8285000	Construction Survey		1	LS	\$ 5,500.00	\$ -	\$ 5,500.00
2527-9263117	Painted Pavement Marking, Durable	22.75	0.09	STA	\$ 110.00	\$ 2,502.50	\$ 9.90
2527-9263118	Painted Pavement Markings, Methyl Methcylate (MMA), Two Component Traffic Paint	38.97		STA	\$ 360.00	\$ 14,029.20	\$ -
2527-9263146	Painted Symbols and Legends, Epoxy	11	2	EA	\$ 320.00	\$ 3,520.00	\$ 640.00
2527-9263180	Pavement Markings Removed	27.94		STA	\$ 250.00	\$ 6,985.00	\$ -
2527-9270111	Grooves Cut for Pavement Markings	64.34	0.09	STA	\$ 125.00	\$ 8,042.50	\$ 11.25
2527-9270120	Grooves Cut for Symbols and Legends	9	2	EA	\$ 180.00	\$ 1,620.00	\$ 360.00
2528-2518000	Safety Closure	15		EA	\$ 125.00	\$ 1,875.00	\$ -
2528-8445110	Traffic Control	1		LS	\$ 5,500.00	\$ 5,500.00	\$ -
2533-4980005	Mobilization	1		LS	\$ 96,000.00	\$ 96,000.00	\$ -
2552-0000210	Trench Foundation	5	1	CY	\$ 44.00	\$ 220.00	\$ 44.00
2552-0000220	Replacement of Unsuitable Backfill Material	22	6	CY	\$ 61.00	\$ 1,342.00	\$ 366.00
2552-0000300	Trench Compaction Testing	0.1		LS	\$ 11,000.00	\$ 1,100.00	\$ -
2599-9999018	Decorative Pavers with PCC Base		429	SY	\$ 165.00	\$ -	\$ 70,785.00
2599-9999020	Subgrade Stabilization Material, Class A Roadstone	68	8	TON	\$ 37.00	\$ 2,516.00	\$ 296.00
2601-2636044	Seeding and Fertilizing (Urban)	0.43	0.18	ACRE	\$ 2,640.00	\$ 1,135.20	\$ 475.20
2601-2639010	Sodding		204	SQ	\$ 84.00	\$ -	\$ 17,136.00
2601-2642120	Stabilizing Crop - Seeding and Fertilizing (Urban)	0.22	0.33	ACRE	\$ 2,750.00	\$ 605.00	\$ 907.50
2602-0000309	Perimeter and Slope Sediment Control Device, 9 In. Dia.		796	LF	\$ 2.50	\$ -	\$ 1,990.00
2602-0000351	Removal of Perimeter and Slope Sediment Control Device		796	LF	\$ 0.50	\$ -	\$ 398.00
2602-0000500	Open-Throat Curb Intake Sediment Filter, EC-602		30	LF	\$ 10.00	\$ -	\$ 300.00
2602-0000520	Maintenance of Open-Throat Curb Intake Sediment Filter		7	EA	\$ 6.00	\$ -	\$ 42.00
2602-0000550	Removal of Open-Throat Curb Intake Sediment Filter		7	EA	\$ 6.00	\$ -	\$ 42.00
2602-0010010	Mobilizations, Erosion Control		2	EA	\$ 500.00	\$ -	\$ 1,000.00
2602-0010020	Mobilizations, Emergency Erosion Control		1	EA	\$ 1,000.00	\$ -	\$ 1,000.00
Subtotal (Rounded):						\$ 470,720.00	\$ 579,696.65
Contingency (5% ±):						\$ 24,280.00	\$ 29,303.35
<b>CONSTRUCTION SUBTOTALS:</b>						<b>\$ 495,000.00</b>	<b>\$ 609,000.00</b>
<b>CONSTRUCTION TOTAL:</b>						<b>\$</b>	<b>1,104,000.00</b>



**Cost Opinion Notes for Clarification:**

Costs for Safety-Related Items (that will be funded with TSIP funds) are noted in the column titled, "Total Extended Price DOT"

Non-safety related costs are in the column titled, "Total Extended Price Non-Participating" and will be funded by the City Capital Improvement Program.

## **Time Schedule for Proposed Project**

1<sup>st</sup> Avenue W and I-380 SB Off-Ramp Terminal Intersection Realignment

<b>August 15, 2023</b>	--	<b>TSIP application deadline</b>
<b>January 15, 2023</b>	--	<b>TSIP approval</b>
<b>October 2023</b>	--	<b>Ellis Blvd connection completed (separate project)</b>
<b>June 18, 2024</b>	--	<b>IDOT Bid Letting for project</b>
<b>September 18, 2024</b>	--	<b>Project construction start</b>
<b>December 18, 2024</b>	--	<b>Substantial completion of project</b>



Transportation Safety Improvement Program  
1<sup>st</sup> Avenue W and I-380 Southbound Off-Ramp Intersection  
Realignment



*Exhibit F: COLOR PICTURES of the project site.*



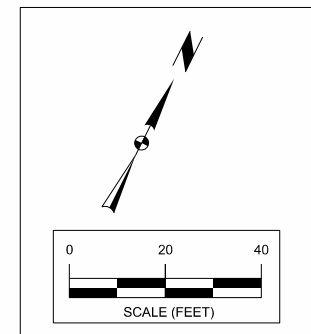
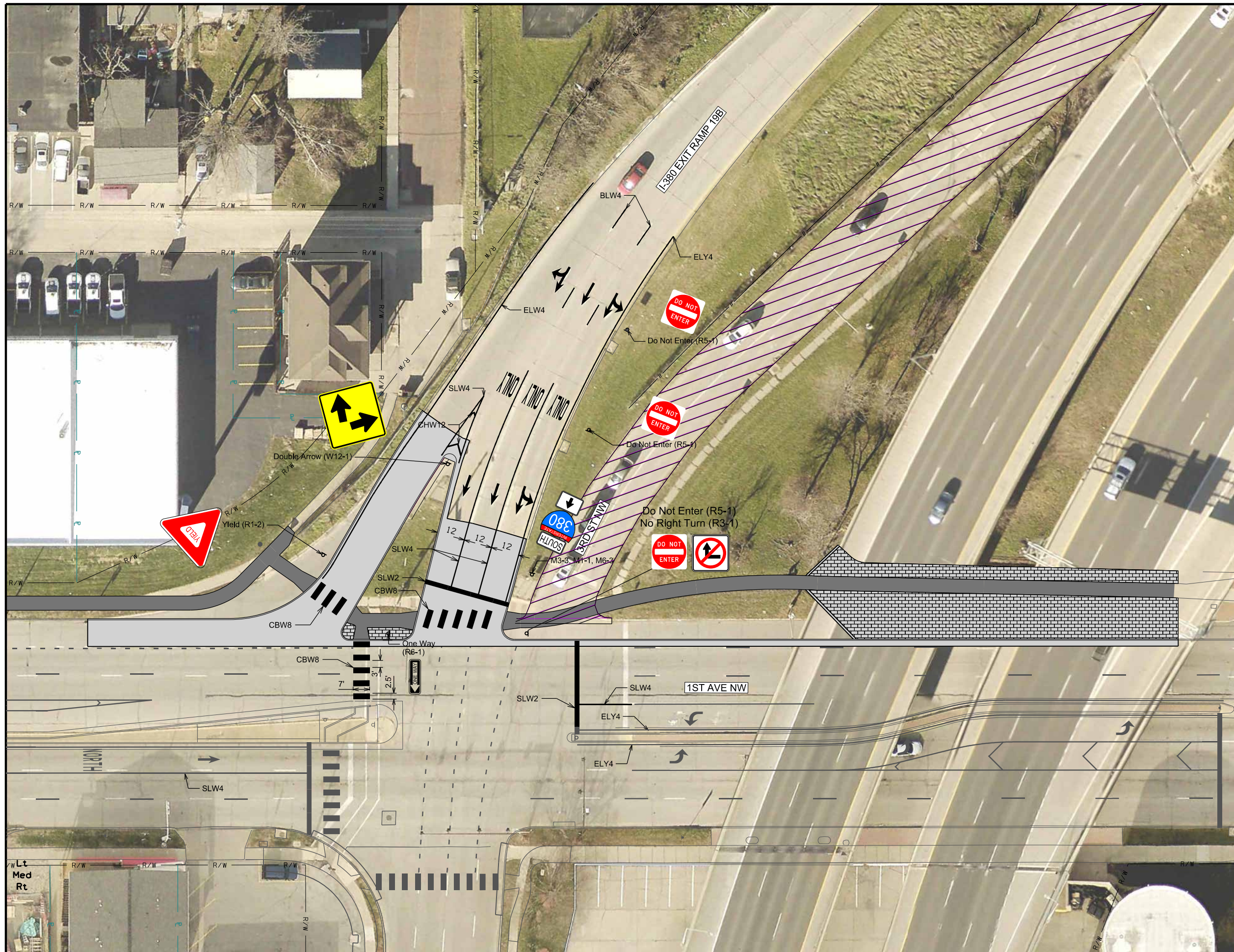
*Figure 1: Street view of intersection from off-ramp*



*Figure 2: Detail of signs showing restricted movements*



*Figure 3: Head-on view of off-ramp terminal and 3rd St NW.*



**LEGEND**

	Proposed Pavement Improvements
	Brick Pavers with PCC Base
	Proposed Sidewalk
	3rd St NW Pavement Removals





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity	66
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	4
Possible/Unknown Injury Crash	11
Property Damage Only	51

Injury Status Summary	22
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	7
Possible (complaint of pain/injury)	14
Unknown	1

Property/Vehicles/Occupants	
Property Damage Total (dollars):	438,770.00
Average (per crash dollars):	6,648.03
Total Vehicles:	135.00
Average (per crash):	2.05
Total Occupants:	194.00
Average (per crash):	2.94

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.32
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.11
Possible/Unknown Injuries/Crash:	0.21







Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			66
Animal	0	Ran traffic signal	6
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	1
FTYROW: Making left turn	4	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	1	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	14
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	13
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	3
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	4	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	1
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	5
Unknown	11	Not reported	0
Other: No improper action	2		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	66
Non-collision (single vehicle)	1
Head-on (front to front)	1
Rear-end (front to rear)	24
Angle, oncoming left turn	4
Broadside (front to side)	14
Sideswipe, same direction	17
Sideswipe, opposite direction	0
Rear to rear	1
Rear to side	0
Not reported	0
Other	4
Unknown	0

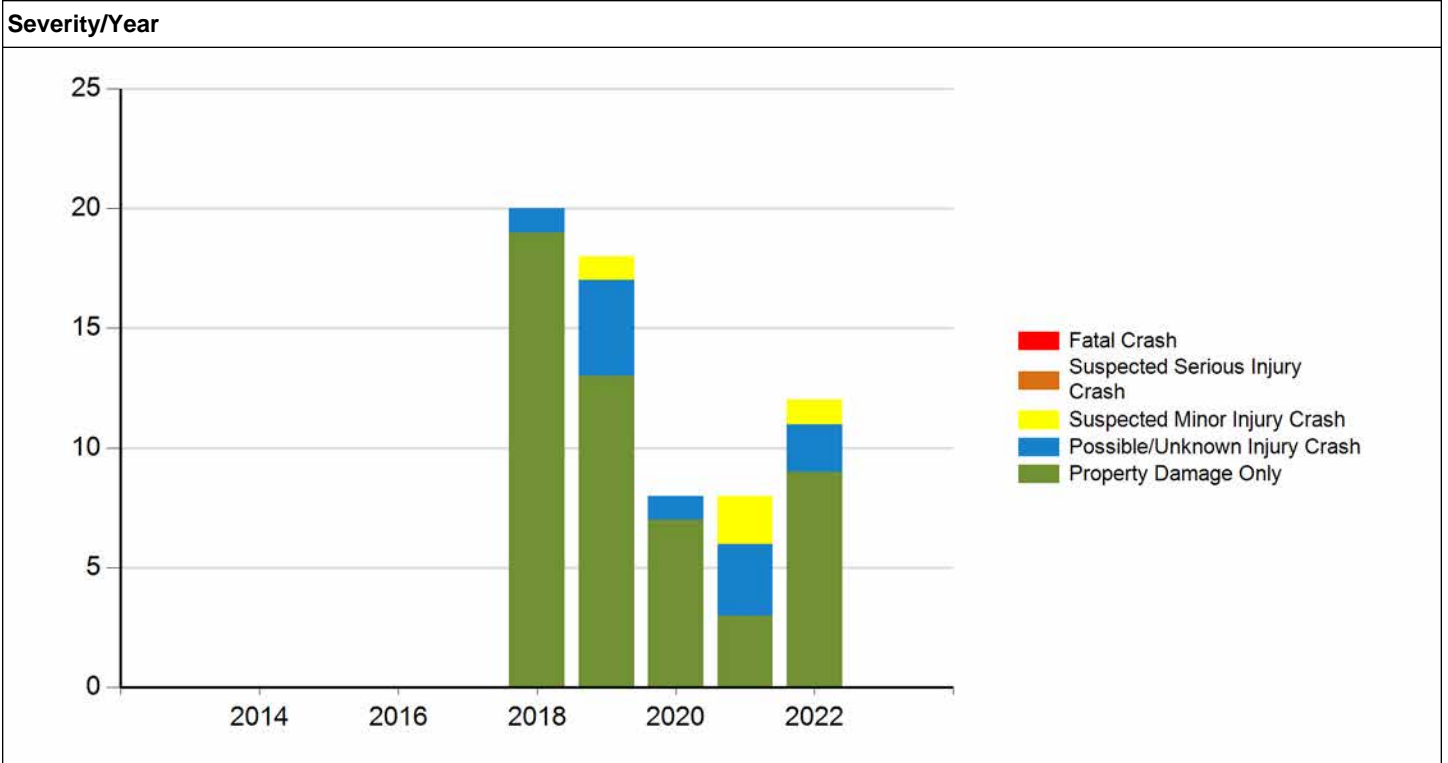
Surface Conditions	66
Dry	57
Wet	5
Ice/frost	1
Snow	2
Slush	1
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	135
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	1
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	1
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	133



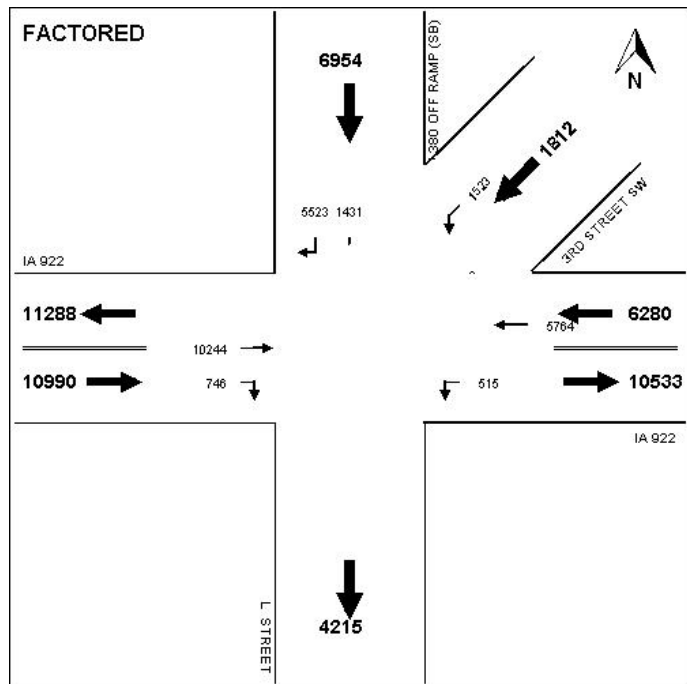
Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only		Total
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	1	19		20
2019	0	0	1	4	13		18
2020	0	0	0	1	7		8
2021	0	0	2	3	3		8
2022	0	0	1	2	9		12
2023	0	0	0	0	0		0
<b>Total</b>	0	0	4	11	51		66

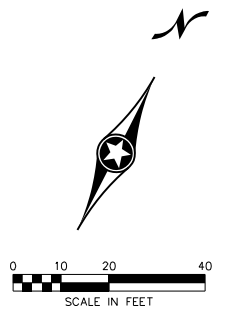


# Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: All Vehicles

Station Number:	57223231699
Count Date:	Monday, July 19, 2021
County:	Linn
Location Description:	I-380, IA 922 & 3RD ST W
Volume Factor:	0.966
Pass Class Factor:	0.989
SU Class Factor:	0.898
Combo Class Factor:	0.923



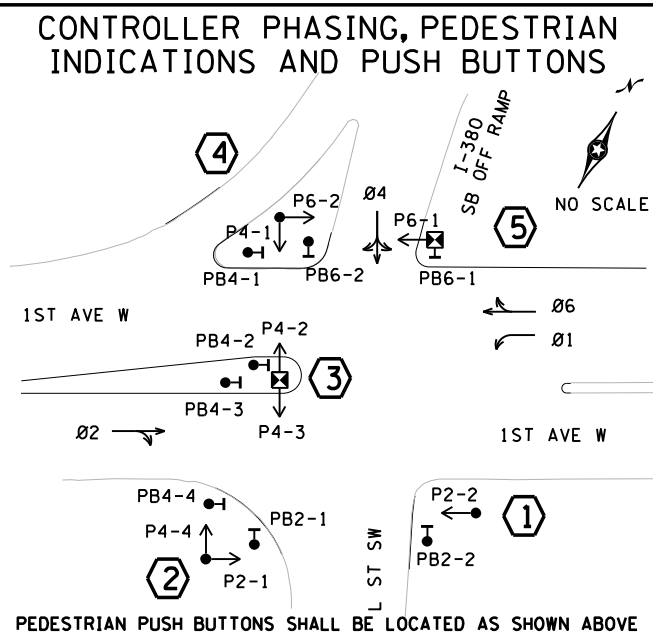
Raw Data		North		North East		East		West	
		T	R	HL	SL	L	T	T	R
All Vehicles									
2021-07-19	00:00	8	36	1	11	6	42	64	6
	01:00	2	17	2	9	0	25	37	9
	02:00	7	15	1	3	3	17	26	7
	03:00	7	15	0	8	2	13	32	5
	04:00	7	24	1	17	4	25	54	16
	05:00	13	80	4	57	8	61	143	20
	06:00	75	270	13	129	18	145	382	35
	07:00	138	369	17	133	28	214	641	47
	08:00	116	347	16	97	30	302	684	55
	09:00	87	268	18	62	43	336	558	31
	10:00	89	318	27	94	36	370	605	35
	11:00	86	345	17	74	32	402	624	57
	12:00	94	357	21	80	28	461	806	62
	13:00	112	329	18	89	37	445	702	40
	14:00	113	379	20	99	46	419	718	43
	15:00	110	424	23	92	36	533	722	49
	16:00	89	465	18	116	33	450	920	45
	17:00	78	442	19	103	45	506	760	54
	18:00	75	296	15	81	18	319	524	39
	19:00	43	259	13	51	13	175	443	36
	20:00	42	215	12	44	22	215	336	13
	21:00	27	150	8	47	21	178	289	32
	22:00	21	92	4	30	4	115	193	15
	23:00	11	83	5	18	10	79	123	7
	<b>Total</b>	1450	5595	293	1544	523	5847	10386	758



SIGNAL HEAD CHART					
FACE	R	Y	FYA	G	G
1-1, 1-2	←	←	←	←	
2-1, 2-2, 2-3, 2-4	●	●			
4-1, 4-2, 4-3	●	●		●	
4-4, 4-5	●	●		●	←
6-1, 6-2, 6-3, 6-4	●	●		●	

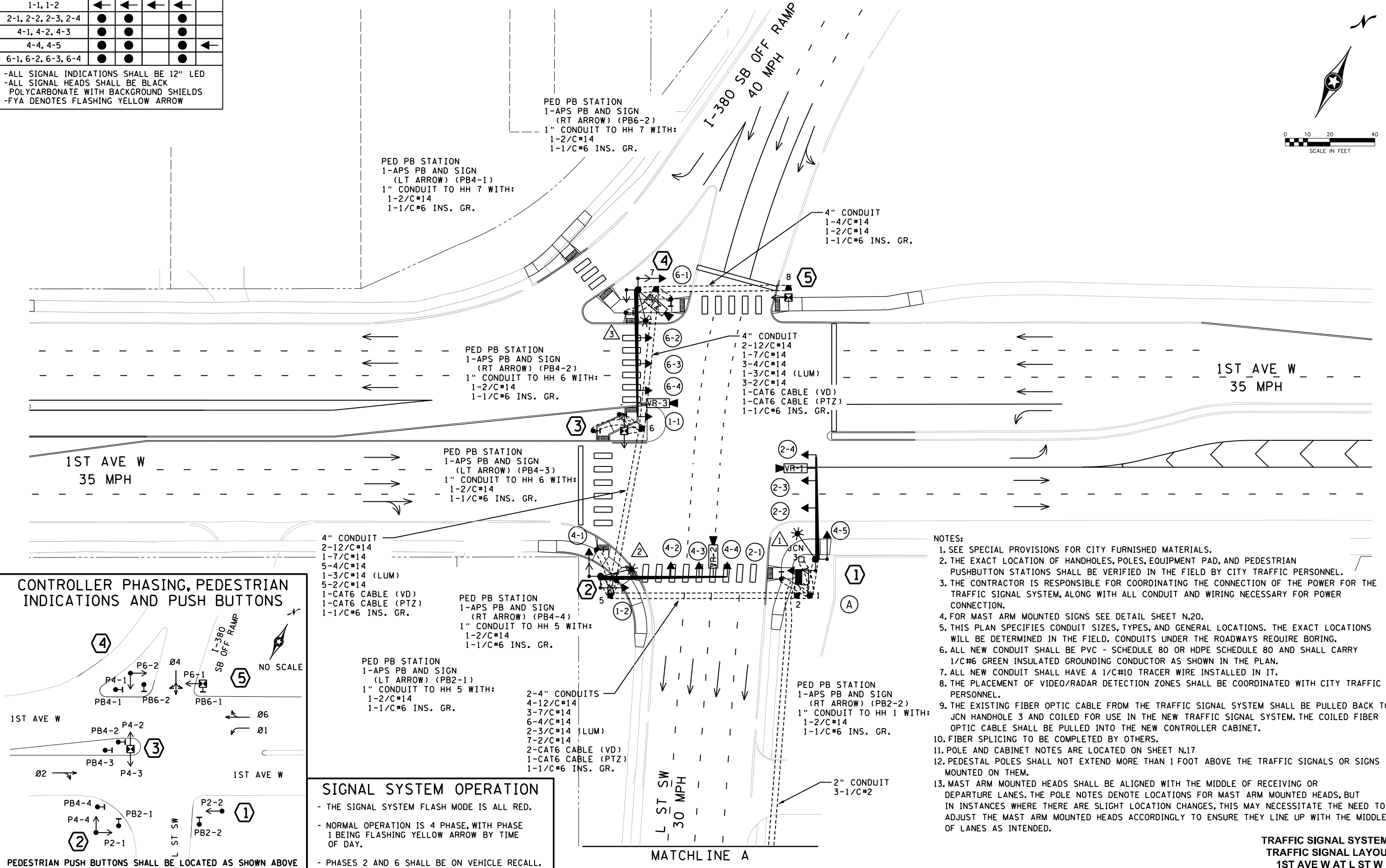
-ALL SIGNAL INDICATIONS SHALL BE 12" LED  
 -ALL SIGNAL HEADS SHALL BE BLACK POLYCARBONATE WITH BACKGROUND SHIELDS  
 -FYA DENOTES FLASHING YELLOW ARROW

cr.fbi  
 \\citycr.local\SHAREDCS\PW\Traffic\LOCATIONS\1st Ave W\1st Ave W - 1st St to 6th St\CAD\plans\N Sheets\301963.sgl002.dgn  
 pdf-BW.pltfcg  
 2/24/2022 1:41:52 PM  
 JEW14241



### SIGNAL SYSTEM OPERATION

- THE SIGNAL SYSTEM FLASH MODE IS ALL RED.
- NORMAL OPERATION IS 4 PHASE, WITH PHASE 1 BEING FLASHING YELLOW ARROW BY TIME OF DAY.
- PHASES 2 AND 6 SHALL BE ON VEHICLE RECALL.



- ### NOTES:
1. SEE SPECIAL PROVISIONS FOR CITY FURNISHED MATERIALS.
  2. THE EXACT LOCATION OF HANDHOLES, POLES, EQUIPMENT PAD, AND PEDESTRIAN PUSHBUTTON STATIONS SHALL BE VERIFIED IN THE FIELD BY CITY TRAFFIC PERSONNEL.
  3. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE CONNECTION OF THE POWER FOR THE TRAFFIC SIGNAL SYSTEM, ALONG WITH ALL CONDUIT AND WIRING NECESSARY FOR POWER CONNECTION.
  4. FOR MAST ARM MOUNTED SIGNS SEE DETAIL SHEET N.20.
  5. THIS PLAN SPECIFIES CONDUIT SIZES, TYPES, AND GENERAL LOCATIONS. THE EXACT LOCATIONS WILL BE DETERMINED IN THE FIELD. CONDUITS UNDER THE ROADWAYS REQUIRE BORING.
  6. ALL NEW CONDUIT SHALL BE PVC - SCHEDULE 80 OR HDPE SCHEDULE 80 AND SHALL CARRY 1/C#6 GREEN INSULATED GROUNDING CONDUCTOR AS SHOWN IN THE PLAN.
  7. ALL NEW CONDUIT SHALL HAVE A 1/C#10 TRACER WIRE INSTALLED IN IT.
  8. THE PLACEMENT OF VIDEO/RADAR DETECTION ZONES SHALL BE COORDINATED WITH CITY TRAFFIC PERSONNEL.
  9. THE EXISTING FIBER OPTIC CABLE FROM THE TRAFFIC SIGNAL SYSTEM SHALL BE PULLED BACK TO JCN HANDHOLE 3 AND COILED FOR USE IN THE NEW TRAFFIC SIGNAL SYSTEM. THE COILED FIBER OPTIC CABLE SHALL BE PULLED INTO THE NEW CONTROLLER CABINET.
  10. FIBER SPLICING TO BE COMPLETED BY OTHERS.
  11. POLE AND CABINET NOTES ARE LOCATED ON SHEET N.17
  12. PEDESTAL POLES SHALL NOT EXTEND MORE THAN 1 FOOT ABOVE THE TRAFFIC SIGNALS OR SIGNS MOUNTED ON THEM.
  13. MAST ARM MOUNTED HEADS SHALL BE ALIGNED WITH THE MIDDLE OF RECEIVING OR DEPARTURE LANES. THE POLE NOTES DENOTE LOCATIONS FOR MAST ARM MOUNTED HEADS, BUT IN INSTANCES WHERE THERE ARE SLIGHT LOCATION CHANGES, THIS MAY NECESSITATE THE NEED TO ADJUST THE MAST ARM MOUNTED HEADS ACCORDINGLY TO ENSURE THEY LINE UP WITH THE MIDDLE OF LANES AS INTENDED.

**TRAFFIC SIGNAL SYSTEM C**  
**TRAFFIC SIGNAL LAYOUT**  
**1ST AVE W AT L ST W**

County:	Linn	Prepared By:	NCK
Location:	1st Ave W and I-380 SB Off-ramp	Date Prepared:	8/14/2023
Proposed Improvements:	Remove 3rd St from intersection, realign off-ramp and delineate new lanes for allowing left and right turns from off-ramp on to 1st Ave W.		
Estimated Improvement Cost:	\$ 1,104,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 22,080

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	44.2	25	6	40.6	
Equivalent CMF	0.56	0.75	0.94		Is Dom. Com. Resd.
Combined CMF, if # used (DR)	0.56	0.62	0.59	0.59	TRUE
Combined CMF, if # used (Mult)	0.56	0.42	0.39		Is data entered befo
Pick Dom Com. Resd. Or Mult. Fo	0.56	0.62	0.59	0.59	FALSE

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	40.6	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	40.6	0.00	0.00
Minor Injury (B)	\$ 265,000	4	40.6	0.80	0.32
Possible/Unknown Injury (C)	\$ 125,000	11	40.6	2.20	0.89
Property Damage Only (O)	\$ 20,000	51	40.6	10.20	4.14

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 86,036
Possible/Unknown Injury (C)	\$ 111,603
Property Damage Only (O)	\$ 82,789

### Total Benefits and Costs

		Implementation Cost	\$ 1,104,000
		Present Value of Maint.	\$ 300,074
Present Value Benefits (Societal Benefits)	\$ 4,142,118	Present Value Costs (Impl. and Maint. Costs)	\$ 1,404,074
Present Value Net Return	\$ 2,738,043		

County: Linn  
Location: 1st Ave W and I-380 SB Off-ramp  
**Benefit Cost Ratio 2.95**

Prepared By: NCK  
Date Prepared: 8/14/2023  
*Form continues on next page*

County: Linn  
Location: 1st Ave W and I-380 SB Off-ramp

Prepared By: NCK  
Date Prepared: 8/14/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

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# Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**DATE: 7-27-2023Location / Title of Project Ellis Rd Guardrail ImprovementsApplicant City of Cedar RapidsContact Person Ron Griffith, PE Title Sr. Traffic EngineerComplete Mailing Address 500 15<sup>th</sup> Ave SW  
Cedar Rapids, IA 52404Phone (319) 286-5176 E-Mail r.griffith@cedar-rapids.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) Linn County Secondary Roads DepartmentContact Person Garret Reddish, PE Title Assistant Engineer IIComplete Mailing Address 1888 County Home Rd.  
Marion, IA 52302Phone 319-892-6400 E-Mail garret.reddish@linncountyiowa.gov  
(Area Code)**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:****Funding Amount**Total Safety Cost \$ 630,087Total Project Cost \$ 630,087**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain \_\_\_\_\_

No

### APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Cedar Rapids

Signed: Brenna Fall 8-15-2023  
Signature Date Signed

Brenna Fall, PE  
Printed Name

Attest: Mary Oehler 8/15/2023  
Signature Date Signed

MARY OEHLE  
Printed Name

RESOLUTION NO. 1250-08-23

RESOLUTION AUTHORIZING APPLICATION FOR A TRAFFIC SAFETY  
IMPROVEMENT PROGRAM (TSIP) GRANT FOR THE CONSTRUCTION  
OF NEW GUARDRAIL ALONG ELLIS ROAD NW FROM RIVER BLUFFS  
DRIVE NW TO ONE MILE WEST OF RIVER BLUFFS DRIVE NW

WHEREAS, the Iowa Department of Transportation has established the Transportation Safety Improvement Program (TSIP), which provides funding for locations where vehicular safety is a concern and documented, and

WHEREAS, the City of Cedar Rapids and Linn County have identified Ellis Road NW from River Bluffs Drive NW to one mile west of River Bluffs Drive NW as a location where vehicular safety could be improved and funded with the TSIP grant, and

WHEREAS, the installation of new guardrail will serve as a barrier between Ellis Road NW and the Cedar River in areas where protection is needed due to the proximity of the roadway to the river, and

WHEREAS, the City of Cedar Rapids Public Works Department recommends approval of this resolution.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF CEDAR RAPIDS, IOWA,


1. Supports the submission of a Traffic Safety Improvement Program Grant application for the improvement of the Ellis Road NW guardrail.
2. The City Manager is authorized and directed to execute any and all application materials required for submission.
3. Contingent upon approval of the TSIP funds from the Iowa Department of Transportation, the City Manager is authorized and directed to execute an agreement with the Iowa Department of Transportation for award of funds to the City of Cedar Rapids.

Passed this 8th day of August, 2023.

Voting: Council member Olson (Scott) moved the adoption of the resolution; seconded by Council member Poe. Adopted, Ayes, Council members Hoeger, Loeffler, Olson (Scott), Olson (Tyler), Overland, Poe, Todd, Vanorny and Mayor O'Donnell.

  
\_\_\_\_\_  
Tiffany D. O'Donnell, Mayor

Attest:

  
\_\_\_\_\_  
Alissa Van Sloten, City Clerk

**Background:** Ellis Road is a 40 mph, 24' wide roadway that serves as a scenic connecting route between Edgewood Road NW and Covington Road NW in Cedar Rapids. The roadway segment of primary concern runs adjacent to the Cedar River. Linn County Secondary Roads Department and the City of Cedar Rapids share jurisdiction of the segment, which is approximately one mile long. AADT is approximately 1430 vpd along Ellis Road. A primary feature of the existing conditions are the non-recoverable slopes on the riverside. The road is built with 2' aggregate shoulders and has generally non-recoverable slopes (3:1 to 4:1) and critical slopes (steeper than 3:1) beyond the shoulder on the river side. Clear Zone requirements described in the Highway Design Manual specify 6:1 slopes or shallower for 16' from the edge of the travel lane or 5:1 – 4:1 for 20' from the edge of the travel lane. Neither requirement is met on this portion of Ellis Road. Generally, due to the proximity of the river and the roadway cross section, a majority of the foreslope beyond the edge of shoulder would be considered non-recoverable (3:1 to 4:1), meaning the driver would not be able to stop the vehicle and would likely proceed to the bottom of the slope which in this case is the river. There are three sections of wooden-beam guardrail that offer some protection for drivers along the curved sections of Ellis Road. These guardrails are non-standard and do not conform to IDOT minimum requirements for guardrail. Especially noteworthy is the predominant riverward tilt of the guardrail, which reduces effectiveness by allowing vehicles to 'vault', or overtop, the guardrail vertically. Object marker signs are present in stretches between guardrail segments (OMR-3) as a secondary safety device.

**Crash History:** Ellis Road NW has had 2 reported crashes in the past 5 years, with one of them being a fatal crash. Both crashes were run-off-road along segments with no guardrail protecting the roadside.

**Project Proposal:** The project is a joint project between the City of Cedar Rapids and Linn County. The proposal includes 3 phases: Remove existing, insufficient guardrail, repair aggregate shoulder, and install BA-225 Standard W-beam Guardrail. Two additional, secondary items are included in the concept. This includes shifting the lanes farther away from the river to give more space for guardrail installation, and installing horizontal alignment warning signs consistent with MUTCD Chapter 2C for the curves. The crash history is directly correlated with an insufficient roadside protection system, and improvements to the guardrail along this corridor will create a much safer environment for vehicles travelling on Ellis Road. A case study for guardrail improvements was referenced to utilize the crash reduction factor using the CMF Clearinghouse system. A link to the reference is provided here:

<https://www.cmfclearinghouse.org/detail.php?facid=11157>

The CRF found for improving roadway segments with guardrail was 57.1 (representing a decrease in all crash types and severities). This crash modification factor was chosen due to the recency of the study, which was published in 2022, and the region specified, which was the State of Wisconsin. The conditions of the study were not limited to highway applications. Overall, the study appeared to be a good representation of the conditions and proposed improvements along Ellis Road.

The high rate of crash reduction results in a calculated Benefit/Cost Ratio of **7.06** (calculations included in Exhibit L, using the IDOT-provided spreadsheet. The presence of a fatality crash lends to a relatively high Benefit/Cost ratio.

**Cost Opinion - Ellis Rd Guardrail Improvement**

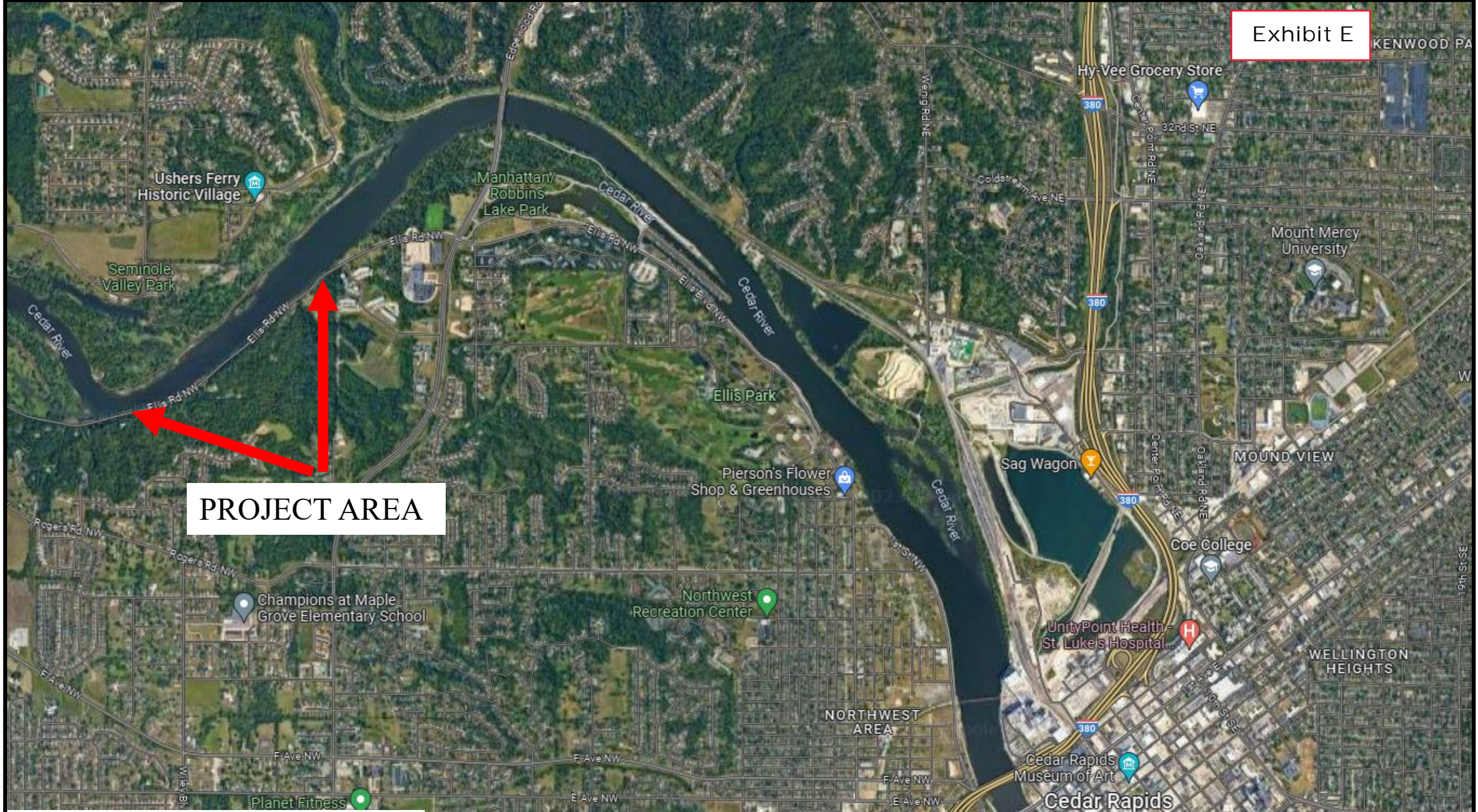
	QTY	Unit	Cost Est.		Notes
Guardrail Removal	1024	LF	\$ 15.00	\$ 15,360.00	Will include removing concrete foundations, depth unknown
Shoulder Repair	50	STA	\$ 1,128.02	\$ 56,401.02	2500 ft of shoulder repair, granular type B
Sign removal		EA			Determined number of object hazard signs to remove
Install W-beam guardrail	5067	LF	\$ 50.00	\$ 253,350.00	Length of roadway segment
End Terminal Sections	2	EA	\$ 3,200.00	\$ 6,400.00	One each end
Pavement Marking Removal	15785	LF	\$ 2.50	\$ 39,462.50	1x edge line, 2x centerlines
Pavement Marking	15785	LF	\$ 4.00	\$ 63,140.00	
			<b>\$ 434,113.52</b>		<i>Cost of primary items</i>
Mobilization	Lump Sum	1	10%	\$ 43,411.35	% assumed at this stage
Contingency	Lump Sum	1	20%	\$ 86,822.70	% assumed at this stage
Traffic Control, new signage	Lump Sum	1	10%	\$ 43,411.35	% assumed at this stage
				<b>\$ 670,898.92</b>	
TSIP Funds:				\$ 500,000.00	
City of Cedar Rapids CIP				\$ 85,449.46	Assumed 50% cost share between City and County at this stage
Linn County				\$ 85,449.46	

100% of costs are considered safety-related. Supplementary project funding will be shared between Linn County and Cedar Rapids Capital Improvement funding sources.

## **Time Schedule for Proposed Project**

Ellis Road NW Guardrail Improvements

<b>August 15, 2023</b>	--	<b>TSIP application deadline</b>
<b>January 15, 2023</b>	--	<b>TSIP approval</b>
<b>June 1, 2024</b>	--	<b>Begin new guardrail installation</b>
<b>September 1, 2024</b>	--	<b>Project complete.</b>



PROJECT AREA



Transportation Safety Improvement Program  
Ellis Road NW  
Guardrail Installation







Figure 1: Typical guardrail section



Figure 3: Showing riverward tilt of existing guardrail



Figure 2: Typical roadway segment with no guardrail



Figure 4: Conditions behind guardrail



File Name: \\cityofcedar-rapids\publicworks\traffic\location\ne\ellis rd ne guardrail\cad\gn\ellis rd ne guardrail.dgn  
 Date: 06/26/2023 10:58:10 AM

PREPARED BY:  
 CITY OF CEDAR RAPIDS, PUBLIC WORKS  
 500 15TH AVENUE SW, CEDAR RAPIDS, IA 52404  
 PHONE: 319-286-5802

XX No.	DESCRIPTION REVISION DESCRIPTION	XXX APPROVED	MM/DD/YYYY DATE



Date: 06/26/2023  
 Drawn By: NCKabal  
 Approved By:  
 CIP No:

**Traffic Safety Improvement Project**  
**Ellis Road NE Guardrail**

Exhibit G

SHEET No.  
**D.1**  
**D.3**



File Name: \\cityofcedar-rapids\publicworks\traffic\locations\ellis rd ne guardrail\cad\gifs\rd\_borders.dgn  
 Plot Date: 6/26/2023 10:58:00 AM

PREPARED BY:  
 CITY OF CEDAR RAPIDS, PUBLIC WORKS  
 500 15TH AVENUE SW, CEDAR RAPIDS, IA 52404  
 PHONE: 319-286-5802

XX No.	DESCRIPTION REVISION DESCRIPTION	XXX APPROVED	MM/DD/YYYY DATE



Date: 06/26/2023  
 Drawn By: NCKabal  
 Approved By:  
 CIP No:

**Traffic Safety Improvement Project**  
**Ellis Road NE Guardrail**

**EXHIBIT G**

SHEET No.  
**D.2**  
**D.3**



File Name: \\cityofcedarapids\publicworks\traffic\location\ellis rd ne guardrail\adign\ellis rd border.dgn  
 Plot Date: 6/26/2023 10:58:10 AM

PREPARED BY:  
 CITY OF CEDAR RAPIDS, PUBLIC WORKS  
 500 15TH AVENUE SW, CEDAR RAPIDS, IA 52404  
 PHONE: 319-286-5802

XX No.	DESCRIPTION REVISION DESCRIPTION	XXX APPROVED	MM/DD/YYYY DATE



Date: 06/26/2023  
 Drawn By: NCKabal  
 Approved By:  
 CIP No:

**Traffic Safety Improvement Project**  
**Ellis Road NE Guardrail**

**EXHIBIT G**

SHEET No.  
**D.3**  
**D.3**



*Figure 7: Aerial photograph, adjusted orientation for clearer delineation of project*



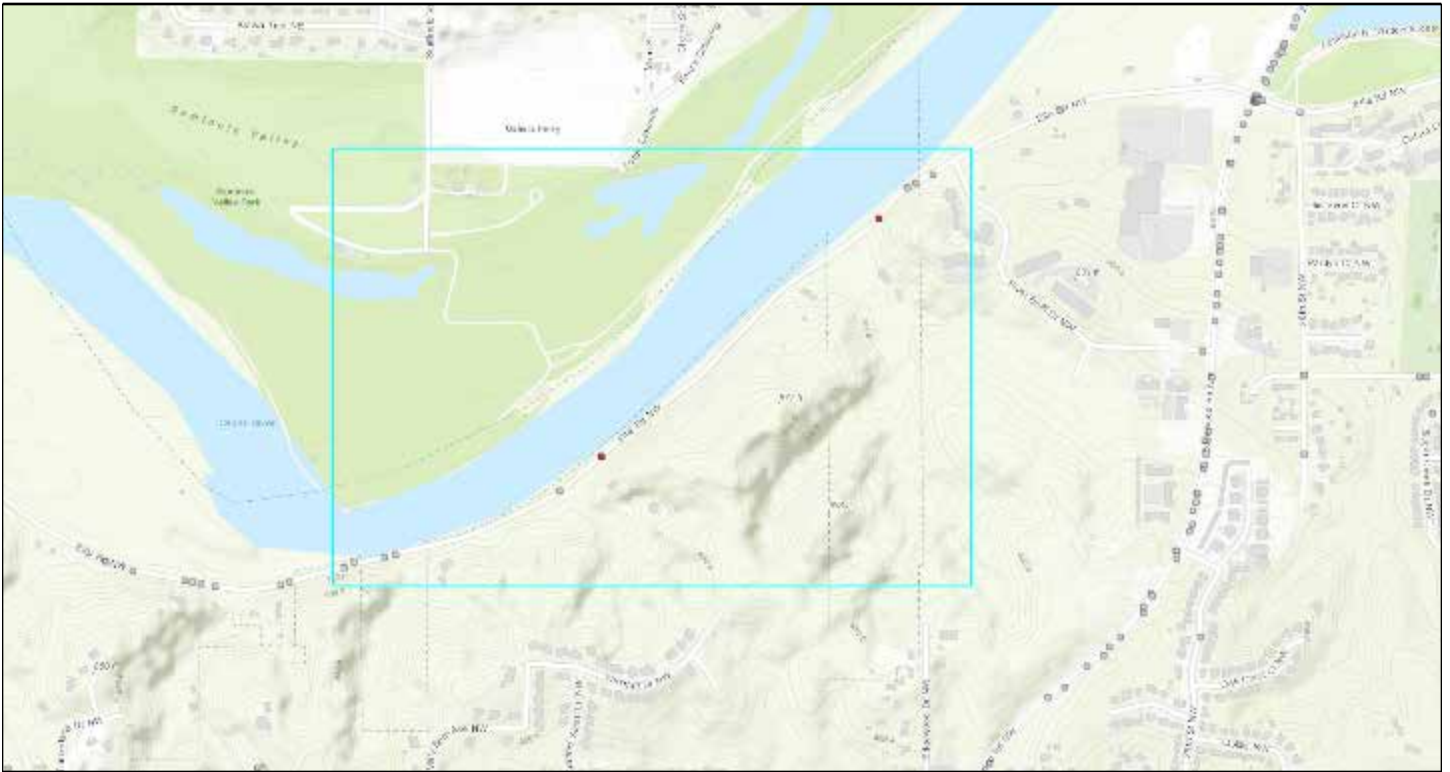
Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity		2
Fatal Crash	1	
Suspected Serious Injury Crash	0	
Suspected Minor Injury Crash	0	
Possible/Unknown Injury Crash	0	
Property Damage Only	1	

Injury Status Summary		1
Fatalities		1
Suspected serious/incapacitating		0
Suspected minor/non-incapacitating		0
Possible (complaint of pain/injury)		0
Unknown		0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	25,000.00
Average (per crash dollars):	12,500.00
Total Vehicles:	2.00
Average (per crash):	1.00
Total Occupants:	3.00
Average (per crash):	1.50

Average Severity	
Fatalities/Fatal Crash:	1.00
Fatalities/Crash:	0.50
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			2
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	2
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	2	0	0	2

Manner of Crash Collision	2
Non-collision (single vehicle)	2
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	2
Dry	1
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

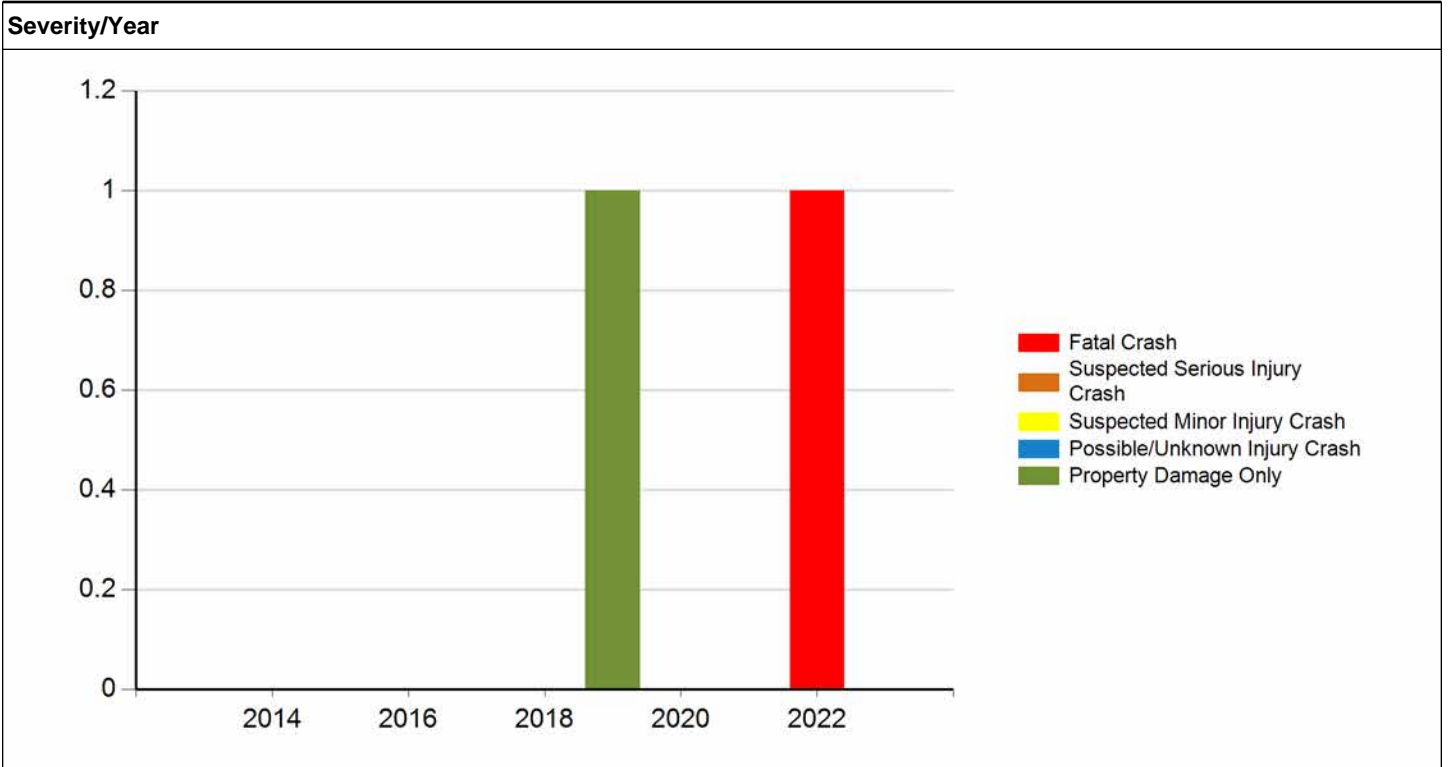
Fixed Object Struck	2
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	2
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	1	1	1
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	1	0	0	0	0	0	1
2023	0	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	1	1	2



# City of Cedar Rapids

500 15th Avenue SW  
Cedar Rapids, IA 52404

Exhibit J

File Name : Eliss Rd NW at River Bluffs Dr NW\_12-12-2017

Site Code :

Start Date : 12/12/2017

Page No : 1

Ellis Rd NW at River Bluffs Dr NW  
Cedar Rapids, IA

Groups Printed- Lights - Mediums - Articulated Trucks

Start Time	Ellis Road NW Westbound			River Bluffs Dr NW Northbound			Ellis Road NW Eastbound				Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Left	Thru	Right	App. Total	
12:00 AM	0	0	0	0	1	1	0	1	0	1	2
12:15 AM	2	1	3	0	1	1	0	1	0	1	5
12:30 AM	0	1	1	0	0	0	0	0	0	0	1
12:45 AM	1	1	2	0	0	0	0	0	0	0	2
Total	3	3	6	0	2	2	0	2	0	2	10
01:00 AM	0	0	0	0	1	1	0	0	0	0	1
01:15 AM	1	0	1	0	0	0	0	1	0	1	2
01:30 AM	0	1	1	0	1	1	0	0	0	0	2
01:45 AM	0	0	0	0	0	0	0	0	0	0	0
Total	1	1	2	0	2	2	0	1	0	1	5
02:00 AM	0	0	0	0	0	0	0	0	0	0	0
02:15 AM	1	0	1	0	0	0	0	1	0	1	2
02:30 AM	0	0	0	0	0	0	0	0	0	0	0
02:45 AM	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	1	0	0	0	0	1	0	1	2
03:00 AM	0	0	0	0	0	0	0	0	0	0	0
03:15 AM	2	0	2	0	0	0	0	0	0	0	2
03:30 AM	0	0	0	2	1	3	0	0	0	0	3
03:45 AM	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	2	2	1	3	0	0	0	0	5
04:00 AM	0	0	0	0	0	0	0	0	0	0	0
04:15 AM	0	0	0	0	1	1	0	0	0	0	1
04:30 AM	0	0	0	0	0	0	0	1	0	1	1
04:45 AM	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	1	0	1	0	1	2
05:00 AM	0	0	0	0	1	1	0	0	0	0	1
05:15 AM	0	1	1	0	0	0	0	3	0	3	4
05:30 AM	0	0	0	0	3	3	0	4	0	4	7
05:45 AM	0	0	0	0	5	5	0	5	0	5	10
Total	0	1	1	0	9	9	0	12	0	12	22
06:00 AM	2	1	3	0	2	2	0	4	0	4	9
06:15 AM	0	5	5	0	4	4	0	9	0	9	18
06:30 AM	1	3	4	0	4	4	0	10	0	10	18
06:45 AM	1	2	3	1	6	7	0	8	0	8	18
Total	4	11	15	1	16	17	0	31	0	31	63
07:00 AM	1	1	2	0	7	7	0	11	0	11	20

# City of Cedar Rapids

500 15th Avenue SW  
Cedar Rapids, IA 52404

File Name : Eliss Rd NW at River Bluffs Dr NW\_12-12-2017

Site Code :

Start Date : 12/12/2017

Page No : 2

Groups Printed- Lights - Mediums - Articulated Trucks

Start Time	Ellis Road NW Westbound			River Bluffs Dr NW Northbound			Ellis Road NW Eastbound				Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Left	Thru	Right	App. Total	
07:15 AM	2	7	9	0	17	17	0	15	0	15	41
07:30 AM	1	10	11	0	13	13	0	31	0	31	55
07:45 AM	0	5	5	0	12	12	0	4	0	4	21
Total	4	23	27	0	49	49	0	61	0	61	137
08:00 AM	4	4	8	0	9	9	0	6	0	6	23
08:15 AM	2	6	8	0	7	7	0	10	1	11	26
08:30 AM	3	5	8	0	3	3	0	8	0	8	19
08:45 AM	3	10	13	0	7	7	0	5	0	5	25
Total	12	25	37	0	26	26	0	29	1	30	93
09:00 AM	1	7	8	0	2	2	0	2	0	2	12
09:15 AM	1	4	5	0	3	3	0	6	0	6	14
09:30 AM	2	2	4	0	6	6	0	4	0	4	14
09:45 AM	2	7	9	0	2	2	0	2	0	2	13
Total	6	20	26	0	13	13	0	14	0	14	53
10:00 AM	1	7	8	0	2	2	0	6	0	6	16
10:15 AM	3	5	8	0	1	1	0	7	0	7	16
10:30 AM	2	6	8	0	2	2	0	2	0	2	12
10:45 AM	0	4	4	0	2	2	0	5	0	5	11
Total	6	22	28	0	7	7	0	20	0	20	55
11:00 AM	0	10	10	0	4	4	0	5	0	5	19
11:15 AM	1	6	7	0	4	4	0	2	1	3	14
11:30 AM	3	6	9	0	5	5	0	6	1	7	21
11:45 AM	2	7	9	0	3	3	0	8	0	8	20
Total	6	29	35	0	16	16	0	21	2	23	74
12:00 PM	4	2	6	1	6	7	0	8	0	8	21
12:15 PM	4	8	12	0	1	1	0	7	0	7	20
12:30 PM	2	10	12	0	8	8	0	8	0	8	28
12:45 PM	3	4	7	0	8	8	0	5	0	5	20
Total	13	24	37	1	23	24	0	28	0	28	89
01:00 PM	4	6	10	0	4	4	0	8	0	8	22
01:15 PM	7	4	11	0	4	4	0	8	0	8	23
01:30 PM	3	11	14	0	3	3	0	7	0	7	24
01:45 PM	2	7	9	0	2	2	0	14	0	14	25
Total	16	28	44	0	13	13	0	37	0	37	94
02:00 PM	4	5	9	0	3	3	0	8	0	8	20
02:15 PM	5	13	18	0	3	3	0	9	1	10	31
02:30 PM	7	11	18	0	1	1	0	10	0	10	29

# City of Cedar Rapids

500 15th Avenue SW  
Cedar Rapids, IA 52404

File Name : Eliss Rd NW at River Bluffs Dr NW\_12-12-2017

Site Code :

Start Date : 12/12/2017

Page No : 3

Groups Printed- Lights - Mediums - Articulated Trucks

Start Time	Ellis Road NW Westbound			River Bluffs Dr NW Northbound			Ellis Road NW Eastbound				Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Left	Thru	Right	App. Total	
02:45 PM	4	8	12	0	3	3	0	9	0	9	24
Total	20	37	57	0	10	10	0	36	1	37	104
03:00 PM	4	10	14	0	3	3	0	6	0	6	23
03:15 PM	4	6	10	0	4	4	0	3	0	3	17
03:30 PM	3	15	18	0	1	1	0	10	0	10	29
03:45 PM	6	14	20	0	1	1	0	8	1	9	30
Total	17	45	62	0	9	9	0	27	1	28	99
04:00 PM	9	13	22	1	1	2	0	16	2	18	42
04:15 PM	5	18	23	0	2	2	0	11	1	12	37
04:30 PM	7	13	20	1	3	4	0	16	0	16	40
04:45 PM	11	10	21	0	2	2	0	10	0	10	33
Total	32	54	86	2	8	10	0	53	3	56	152
05:00 PM	9	6	15	0	4	4	0	6	0	6	25
05:15 PM	10	14	24	0	3	3	0	8	2	10	37
05:30 PM	12	2	14	0	7	7	0	5	0	5	26
05:45 PM	4	5	9	1	2	3	0	7	0	7	19
Total	35	27	62	1	16	17	0	26	2	28	107
06:00 PM	4	3	7	0	1	1	0	4	1	5	13
06:15 PM	10	4	14	1	3	4	0	3	1	4	22
06:30 PM	11	4	15	0	4	4	0	5	2	7	26
06:45 PM	5	2	7	0	4	4	0	3	0	3	14
Total	30	13	43	1	12	13	0	15	4	19	75
07:00 PM	4	5	9	0	0	0	0	2	0	2	11
07:15 PM	7	5	12	0	2	2	0	2	0	2	16
07:30 PM	3	0	3	0	1	1	0	2	2	4	8
07:45 PM	3	4	7	0	2	2	0	9	0	9	18
Total	17	14	31	0	5	5	0	15	2	17	53
08:00 PM	4	8	12	0	1	1	0	2	0	2	15
08:15 PM	4	6	10	0	1	1	0	4	0	4	15
08:30 PM	4	3	7	0	2	2	0	1	0	1	10
08:45 PM	6	3	9	0	2	2	0	1	1	2	13
Total	18	20	38	0	6	6	0	8	1	9	53
09:00 PM	4	5	9	0	1	1	0	1	1	2	12
09:15 PM	4	7	11	0	0	0	0	2	0	2	13
09:30 PM	6	5	11	1	5	6	0	1	1	2	19
09:45 PM	3	6	9	0	0	0	0	1	0	1	10
Total	17	23	40	1	6	7	0	5	2	7	54



County:	Linn	Prepared By:	NCK
Location:	Ellis Rd NW	Date Prepared:	7/25/2023
Proposed Improvements:	New guardrail installation		
Estimated Improvement Cost:	\$ 630,087		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 12,602

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF	
CRF Value (%)	57.1	57.1	
Equivalent CMF	0.43		Is Dom. Com. Resd.
Combined CMF, if # used (DR)	0.43	0.43	TRUE
Combined CMF, if # used (Mult)	0.43		Is data entered befc
Pick Dom Com. Resd. Or Mult. Fo	0.43	0.43	FALSE

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	1	57.1	0.20	0.11
Serious Injury (A)	\$ 4,000,000		57.1	0.00	0.00
Minor Injury (B)	\$ 265,000		57.1	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000		57.1	0.00	0.00
Property Damage Only (O)	\$ 20,000	1	57.1	0.20	0.11

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ 456,800
Serious Injury (A)	\$ -
Minor Injury (B)	\$ -
Possible/Unknown Injury (C)	\$ -
Property Damage Only (O)	\$ 2,284

### Total Benefits and Costs

		Implementation Cost	\$ 630,087
		Present Value of Maint.	\$ 140,111
Present Value Benefits (Societal Benefits)	\$ 5,437,929	Present Value Costs (Impl. and Maint. Costs)	\$ 770,198
Present Value Net Return	\$ 4,667,731		

County: Linn

Location: Ellis Rd NW

Prepared By: NCK

Date Prepared: 7/25/2023

**Benefit Cost Ratio** 7.06

*Form continues on next page*

County:

Linn

Prepared By: NCK

Location:

Ellis Rd NW

Date Prepared: 7/25/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---



**A.**

## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**DATE: May 22, 2023Location / Title of Project 53<sup>rd</sup> Street & Utica Ridge Safety ImprovementsApplicant City of DavenportContact Person Gary Statz Title Traffic EngineerComplete Mailing Address 1200 E 46<sup>th</sup> St  
Davenport, IA 52807Phone 563-326-7754 E-Mail Gary.Statz@davenportiowa.com  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) NA

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_  
\_\_\_\_\_Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:****Funding Amount**Total Safety Cost \$ 899,240.00Total Project Cost \$ 973,279.00**Safety Funds Requested** \$ 500,000.00

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain \_\_\_\_\_ No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

**A.**

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Davenport

Signed:

*[Handwritten Signature]*

6/28/2023

Signature

Date Signed

Mike Matson, Mayor

Printed Name



Attest:

*[Handwritten Signature]*

6/28/2023

Signature

Date Signed

Brian Krup, Deputy City Clerk

Printed Name



Subject: 53<sup>rd</sup> Street & Utica Ridge Road Safety Improvements

## Section B: Narrative

### Existing Conditions

53<sup>rd</sup> Street is a 4-lane, divided, minor arterial, roadway, with turn lanes at most intersections. The speed limit is 40 mph and the adjacent land use is commercial, consisting of large shopping centers, restaurants, financial buildings and office space. Traveling eastbound on 53<sup>rd</sup> Street approaching the signalized intersection of Utica Ridge Road, there are 2 through lanes, 1 left turn lane, and 1 right turn lane. Traveling westbound on 53<sup>rd</sup> Street approaching Utica Ridge Road, there are 2 through lanes, 1 left turn lane and no dedicated right turn lane.

Utica Ridge Road is a 4-lane, undivided, minor arterial, roadway with turn lanes at most intersections. The speed limit is 35 mph. Northbound on Utica Ridge Road approaching the intersection with 53<sup>rd</sup> Street, there are 2 through lanes, 1 left turn only lane, and no dedicated right turn lane. There are 2 receiving lanes for through traffic, but the right receiving lane ends approximately 1,400 feet north of the intersection. Southbound on Utica Ridge Road approaching 53<sup>rd</sup> Street, there is 1 through lane, although there are 2 receiving lanes. There is also a left turn only lane and a right turn only lane.

The traffic signal is fully actuated with pedestrian push buttons and pedestrian signal heads across all four approaches. The left turns in all four directions are protected/permissive with green arrows and left turn traffic yielding on green balls. There is a right turn overlap for southbound traffic on Utica Ridge Road turning right.

In the PM peak hour:

- There are currently 329 vehicles northbound turning left in a single left turn lane
  - The queue for these left turns regularly spills out into the through lanes.
- There are currently 212 vehicles eastbound turning left in a single left turn lane
  - The queue for these left turns sometimes spills out into the through lanes
- There are 773 vehicles westbound going straight and 103 vehicles westbound turning right, for a total of 876 vehicles in 2 lanes
  - These 2 lanes often back up through the nearest intersection of Victoria Avenue.

## Proposed Concept

The proposed concept is:

- To construct dual left turn lanes eastbound on 53<sup>rd</sup> Street and northbound on Utica Ridge Road
- To construct a right turn only lane westbound on 53<sup>rd</sup> Street
- To modify the existing commercial driveways south of the intersection to right-in/right-out.
- To change the left turn phasing from protected/permissive to protected only.

## Safety Justification

Currently the left turns in all directions are protective/permissive to allow some of the left turns to clear on the permissive phase. Otherwise, with protected only left turns, not all of the left turning traffic would clear the intersection in one cycle and delays and queues would increase. With dual left turns in the two directions with the heaviest left turn volume, more traffic can proceed through the intersection during the left turn phase. The left turn phases will be changed to protected only which will increase safety.

Constructing a right turn lane westbound on 53<sup>rd</sup> Street will allow more vehicles to travel through the intersection during each traffic signal cycle, shortening the queues, and decreasing congestion for westbound traffic. Modifying the existing commercial driveways south of the intersection will decrease the conflicts within the functional area of the intersection and improve safety.

The CMF used was from the Crash Modification Factors Clearinghouse CMF ID: 10746, Protected/permissive to protected-only left turn phasing. The study has 3 stars. The CRF is 43.3 and the benefit/cost ratio is 10.79. For this CRF, only crash severity of Fatal, Serious Injury, Minor Injury, and Possible/Unknown Injury was used.

Another CRF, ID 11159, which also has 3 stars, is available and similar to the one used. This one has a CRF 25.5 and results in a benefit/cost ratio of 6.35 which would still indicate that the safety improvements are justified.

There are CMFs available for the addition of a right turn lane; however, they use different crash types or crash severities, so they were not used in the benefit/cost ratio. Therefore, the cost of constructing the right turn lane was also not included in the benefit/cost ratio.

It is believed that safety can be improved at this intersection by:

- Decreasing left turn queues that spill out into through lanes
- Changing the left turn traffic signal phasing to protected only
- Reducing queues that back up through adjacent intersections
- Reducing conflicts at driveways within the functional area of the intersection

Opinion of Probable Construction Costs - 53rd Street & Utica Ridge Road Safety Improvements

Number	Item Description	Unit	Safety Improvements			WB Right Turn Lane			Total Project		
			Quantity	Unit Price	Total Cost	Quantity	Unit Price	Total Cost	Quantity	Unit Price	Total Cost
1	Stabilized Construction Entrance	TON	85	\$ 60.00	\$ 5,100.00		\$ 60.00	\$ -	85	\$ 60.00	\$ 5,100.00
2	Erosion Control	LS	1	\$ 8,500.00	\$ 8,500.00		\$ 8,500.00	\$ -	1	\$ 8,500.00	\$ 8,500.00
3	Earthwork/Grading	CY	170	\$ 40.00	\$ 6,800.00	180	\$ 40.00	\$ 7,200.00	350	\$ 40.00	\$ 14,000.00
4	Topsoil Onsite	CY	265	\$ 18.00	\$ 4,770.00	18	\$ 18.00	\$ 324.00	283	\$ 18.00	\$ 5,094.00
5	Hydraulic Seeding/Fertilizer	SY	1000	\$ 4.00	\$ 4,000.00	35	\$ 4.00	\$ 140.00	1035	\$ 4.00	\$ 4,140.00
6	Pavement Removal	SY	300	\$ 18.00	\$ 5,400.00		\$ 18.00	\$ -	300	\$ 18.00	\$ 5,400.00
7	Median Removal	SY	340	\$ 18.00	\$ 6,120.00		\$ 18.00	\$ -	340	\$ 18.00	\$ 6,120.00
8	Sidewalk Removal	SF	1750	\$ 8.00	\$ 14,000.00		\$ 8.00	\$ -	1750	\$ 8.00	\$ 14,000.00
9	Granular Stabilization	TON	790	\$ 25.00	\$ 19,750.00	110	\$ 25.00	\$ 2,750.00	900	\$ 25.00	\$ 22,500.00
10	Subgrade Treatment, Geogrid	SY	1620	\$ 5.00	\$ 8,100.00	280	\$ 5.00	\$ 1,400.00	1900	\$ 5.00	\$ 9,500.00
11	Modified Subbase	SY	1620	\$ 20.00	\$ 32,400.00	280	\$ 20.00	\$ 5,600.00	1900	\$ 20.00	\$ 38,000.00
12	Pavement, PCC, 10-inch	SY	1620	\$ 120.00	\$ 194,400.00	280	\$ 120.00	\$ 33,600.00	1900	\$ 120.00	\$ 228,000.00
13	Curb	LF	1760	\$ 35.00	\$ 61,600.00	315	\$ 35.00	\$ 11,025.00	2075	\$ 35.00	\$ 72,625.00
14	PCC Sidewalk, 4-inch	SF	1750	\$ 12.00	\$ 21,000.00		\$ 12.00	\$ -	1750	\$ 12.00	\$ 21,000.00
15	Detectable Warnings	SF	40	\$ 50.00	\$ 2,000.00		\$ 50.00	\$ -	40	\$ 50.00	\$ 2,000.00
16	Storm Sewer Removal	LF	100	\$ 18.00	\$ 1,800.00		\$ 18.00	\$ -	100	\$ 18.00	\$ 1,800.00
17	SW-501 Single Grate Intakes	EA	8	\$ 5,500.00	\$ 44,000.00		\$ 5,500.00	\$ -	8	\$ 5,500.00	\$ 44,000.00
18	Remove Intake	EA	8	\$ 1,000.00	\$ 8,000.00		\$ 1,000.00	\$ -	8	\$ 1,000.00	\$ 8,000.00
19	Storm Sewer Pipe	LF	250	\$ 80.00	\$ 20,000.00		\$ 80.00	\$ -	250	\$ 80.00	\$ 20,000.00
20	Manhole Adjustments, Minor	EA	5	\$ 1,500.00	\$ 7,500.00		\$ 1,500.00	\$ -	5	\$ 1,500.00	\$ 7,500.00
21	Traffic Signal Removals	LS	1	\$ 40,000.00	\$ 40,000.00		\$ 40,000.00	\$ -	1	\$ 40,000.00	\$ 40,000.00
22	New Controller/Cabinet	EA	1	\$ 20,000.00	\$ 20,000.00		\$ 20,000.00	\$ -	1	\$ 20,000.00	\$ 20,000.00
23	Traffic Signal Pole with Mast Arm	EA	2	\$ 50,000.00	\$ 100,000.00		\$ 50,000.00	\$ -	2	\$ 50,000.00	\$ 100,000.00
24	Traffic Signal Pole/Mast Arm Relocation	EA	2	\$ 10,000.00	\$ 20,000.00		\$ 10,000.00	\$ -	2	\$ 10,000.00	\$ 20,000.00
25	Electrical Cable and Conduit	LF	160	\$ 75.00	\$ 12,000.00		\$ 75.00	\$ -	160	\$ 75.00	\$ 12,000.00
26	Foundations	EA	4	\$ 7,500.00	\$ 30,000.00		\$ 7,500.00	\$ -	4	\$ 7,500.00	\$ 30,000.00
27	LED Fixtures/Luminaires	EA	4	\$ 5,000.00	\$ 20,000.00		\$ 5,000.00	\$ -	4	\$ 5,000.00	\$ 20,000.00
28	Temporary Traffic Signal (Span Wire)	LS	1	\$ 30,000.00	\$ 30,000.00		\$ 30,000.00	\$ -	1	\$ 30,000.00	\$ 30,000.00
29	Accessible Pedestrian Pushbutton Stations	EA	8	\$ 4,000.00	\$ 32,000.00		\$ 4,000.00	\$ -	8	\$ 4,000.00	\$ 32,000.00
30	Video Detection	EA	2	\$ 3,000.00	\$ 6,000.00		\$ 3,000.00	\$ -	2	\$ 3,000.00	\$ 6,000.00
31	Painted Pavement Markings	LF	4850	\$ 2.00	\$ 9,700.00	150	\$ 2.00	\$ 300.00	5000	\$ 2.00	\$ 10,000.00
32	Temporary Traffic Control	LS	0.9	\$ 50,000.00	\$ 45,000.00	0.1	\$ 50,000.00	\$ 5,000.00	1	\$ 50,000.00	\$ 50,000.00
33	Construction Survey	LS	0.9	\$ 12,000.00	\$ 10,800.00	0.1	\$ 12,000.00	\$ 1,200.00	1	\$ 12,000.00	\$ 12,000.00
34	Sign Removal and Replace	EA	7	\$ 500.00	\$ 3,500.00	1	\$ 500.00	\$ 500.00	8	\$ 500.00	\$ 4,000.00
35	Contingency	LS	0.9	\$ 50,000.00	\$ 45,000.00	0.1	\$ 50,000.00	\$ 5,000.00	1	\$ 50,000.00	\$ 50,000.00
			<b>Total Estimate</b>			<b>\$ 899,240.00</b>			<b>\$ 973,279.00</b>		

Subject: 53<sup>rd</sup> Street & Utica Ridge Road Safety Improvements

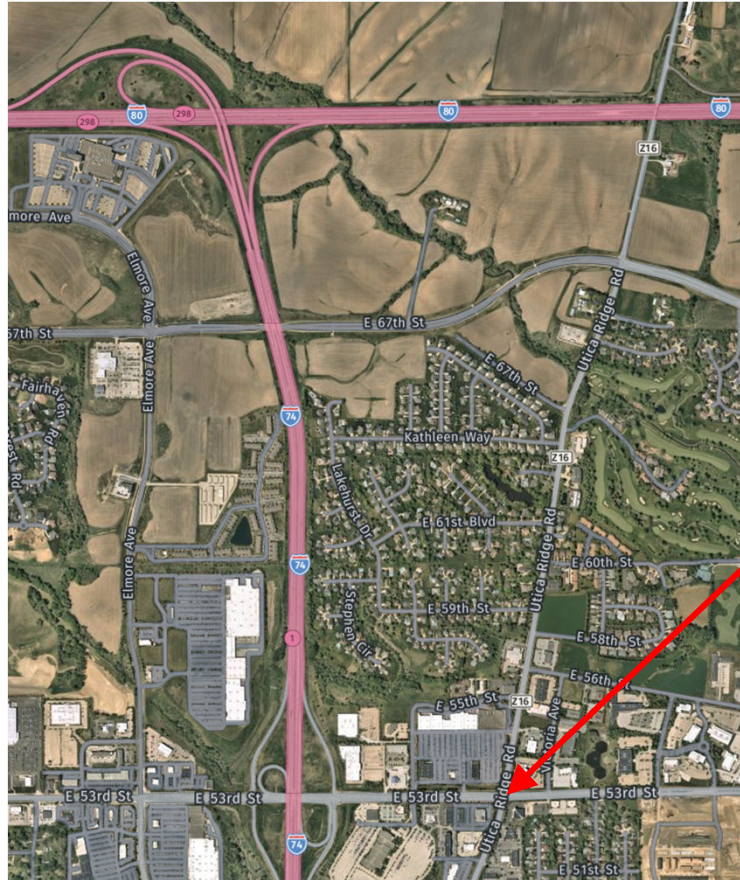
Section D: Time Schedule

Notice of Approval	- Mid-January, 2024
Topo, Preliminary Design, Final Design	- completed by November 1, 2024
Bidding and award of contract	- completed by December 15, 2024
Construction	- completed by October 1, 2025

Subject: 53<sup>rd</sup> Street & Utica Ridge Road Safety Improvements

Section E: Map

City of Davenport, Scott County, Iowa



Project  
Location

F: Color Pictures



Utica Ridge Road,  
looking south

# 53<sup>rd</sup> Street & Utica Ridge Road Safety Improvements

F: Color Pictures, continue



Utica Ridge Road,  
looking north

Utica Ridge Road,  
looking north



53<sup>rd</sup> Street & Utica  
Ridge Road, looking  
southeast



# 53<sup>rd</sup> Street & Utica Ridge Road Safety Improvements

F: Color Pictures, continue



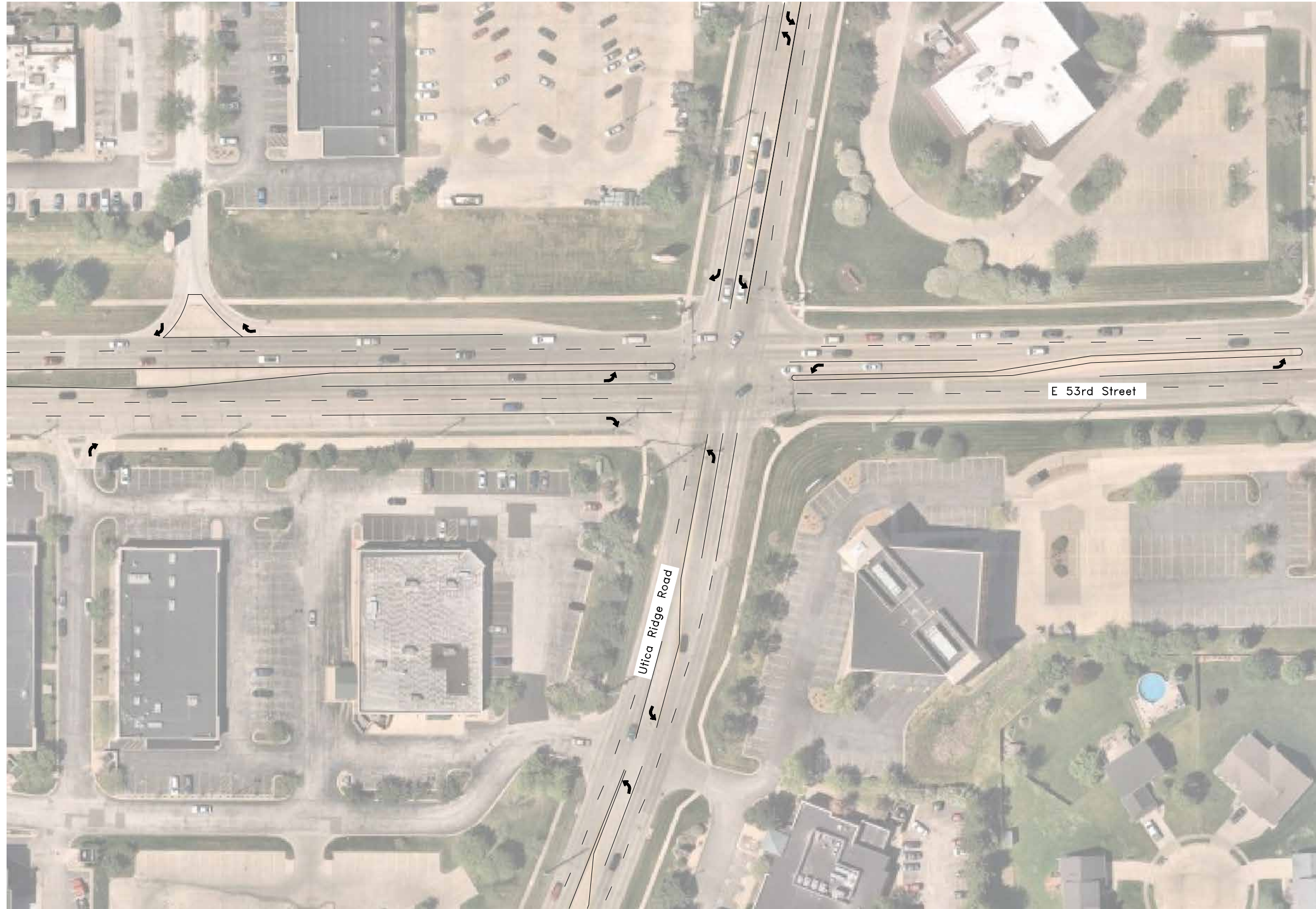
53<sup>rd</sup> Street,  
looking west



53<sup>rd</sup> Street,  
looking west



53<sup>rd</sup> Street,  
looking east



**City of Davenport, Iowa**  
**Engineering Division**

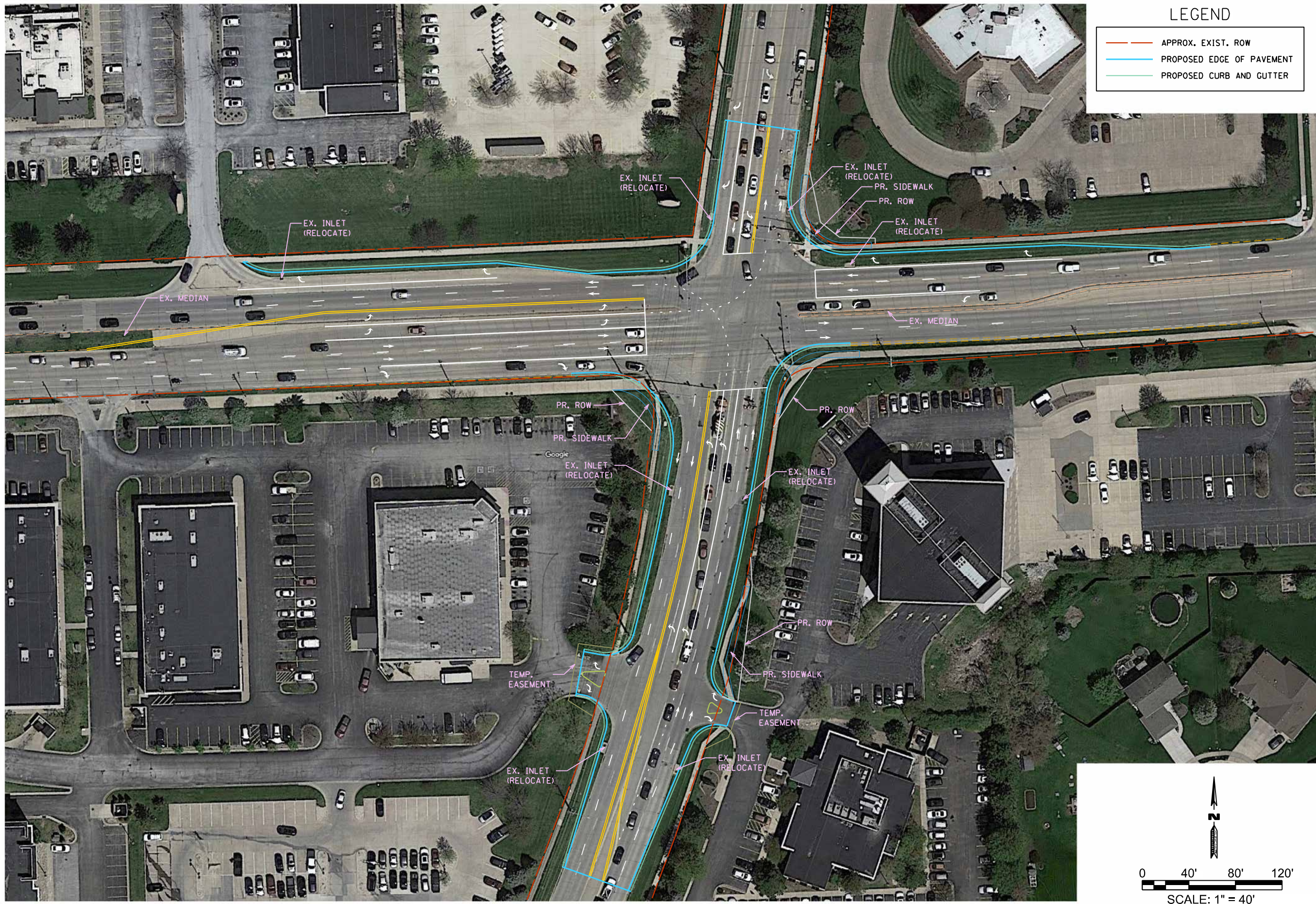
1200 E. 46th Street Davenport, Iowa 52807  
 (563) 326-7729 Fax (563) 327-5182

PROJECT NUMBER:	PLOT DATE: 3/17/2023
CIP NUMBER:	PLOT SCALE: 1"=80'
REVISION:	DESIGNED BY: JMV
	DRAWN BY: JMV
	CHECKED BY: GJS
DWG.FILE :G.Plan View - Existing.dwg	

G. Plan View - Existing  
 53rd Street & Utica Ridge Road  
 Safety Improvements

SHEET NO.

TOTAL SHEET NO.



**LEGEND**

- APPROX. EXIST. ROW
- PROPOSED EDGE OF PAVEMENT
- PROPOSED CURB AND GUTTER

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**REVISION HISTORY**

NO.	DESCRIPTION	DATE	APPROV.

**PRELIMINARY  
NOT FOR  
CONSTRUCTION**

**CONCEPTUAL STUDY AT 53RD STREET & UTICA RIDGE ROAD**  
 CITY OF DAVENPORT  
 1200 EAST 46TH STREET  
 DAVENPORT, IA 52807

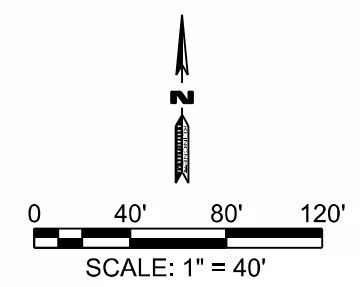
Non-Reduced Sheet Size: 22" x 34"  
 All sheet sizes have been converted using standard scales. Reduced size plans may not conform to standard scales.

DESIGNED	DRAWN
FIELD	FIELD BOOK
CHECKED	CHECK DATE

SHEET TITLE  
**AERIAL DISPLAY**

PROJECT NO.  
 21-8056  
 DRAWING ISSUED DATE:  
 06/15/2021

SHEET  
**1**



# I. ICAT CRASH SUMMARY



## Iowa Crash Analysis Tool Quick Report 2018-2022

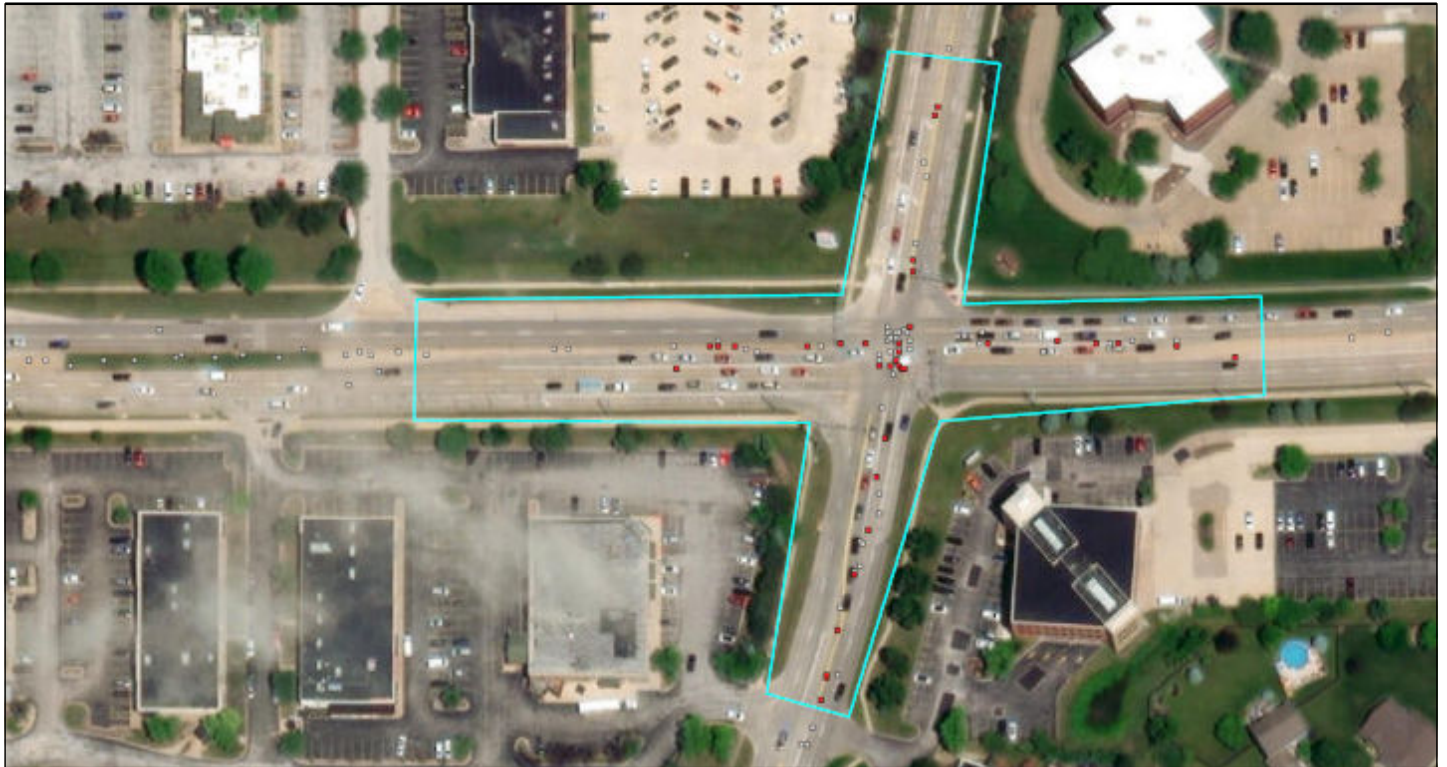


Crash Severity	103
Fatal Crash	0
Suspected Serious Injury Crash	2
Suspected Minor Injury Crash	4
Possible/Unknown Injury Crash	20
Property Damage Only	77

Injury Status Summary	37
Fatalities	0
Suspected serious/incapacitating	2
Suspected minor/non-incapacitating	4
Possible (complaint of pain/injury)	30
Unknown	1

Property/Vehicles/Occupants	
Property Damage Total (dollars):	761,286.00
Average (per crash dollars):	7,391.13
Total Vehicles:	226.00
Average (per crash):	2.19
Total Occupants:	304.00
Average (per crash):	2.95

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.35
Major Injuries/Crash:	0.02
Minor Injuries/Crash:	0.04
Possible/Unknown Injuries/Crash:	0.29



# I. ICAT CRASH SUMMARY



## Iowa Crash Analysis Tool Quick Report 2018-2022



Major Cause			103
Animal	0	Ran traffic signal	9
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	1
FTYROW: From stop sign	1	FTYROW: From yield sign	0
FTYROW: Making left turn	26	FTYROW: From driveway	3
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	1	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	5
Exceeded authorized speed	1	Improper or erratic lane changing	1
Operating vehicle in an reckless, erratic, ca...	2	Followed too close	24
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	1
Passing: Other passing	0	Made improper turn	2
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	1
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	2	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	4	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	1	Improper starting	1
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	11
Unknown	4	Not reported	0
Other: No improper action	2		

# I. ICAT CRASH SUMMARY



## Iowa Crash Analysis Tool Quick Report 2018-2022



Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	1	0	2	1	2	1	2	2	2	0	0	13
Monday	0	0	0	0	0	1	3	3	2	0	1	0	0	10
Tuesday	0	0	0	1	1	2	4	3	7	2	0	0	0	20
Wednesday	0	0	0	1	2	2	5	5	3	2	0	0	0	20
Thursday	0	0	0	0	2	1	5	2	2	2	1	0	0	15
Friday	0	0	0	0	1	2	2	1	6	2	2	0	0	16
Saturday	0	0	0	0	1	1	2	0	1	1	1	2	0	9
<b>Total</b>	0	0	1	2	9	10	23	15	23	11	7	2	0	103

Manner of Crash Collision	103
Non-collision (single vehicle)	2
Head-on (front to front)	3
Rear-end (front to rear)	37
Angle, oncoming left turn	19
Broadside (front to side)	28
Sideswipe, same direction	10
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	1
Not reported	0
Other	3
Unknown	0

Surface Conditions	103
Dry	86
Wet	13
Ice/frost	2
Snow	1
Slush	1
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	226		
Bridge overhead structure	0	Bridge pier or support	0
Bridge/bridge rail parapet	0	Curb/island/raised median	1
Ditch	0	Embankment	0
Ground	0	Culvert/pipe opening	0
Guardrail - face	0	Guardrail - end	0
Concrete traffic barrier (median or right sid...	0	Other traffic barrier	0
Cable barrier	0	Impact attenuator/crash cushion	0
Utility pole/light support	0	Traffic sign support	1
Traffic signal support	0	Other post/pole/support	0
Fire hydrant	0	Mailbox	0
Tree	0	Landscape/shrubbery	0
Snow bank	0	Fence	0
Wall	0	Building	0
Other fixed object	0	None (no fixed object struck)	224

# I. ICAT CRASH SUMMARY



## Iowa Crash Analysis Tool Quick Report 2018-2022



Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	5	4	0	0	9
= 17	5	0	0	0	5
= 18	6	3	0	0	9
= 19	3	5	0	0	8
= 20	0	2	0	0	2
>= 21 and <= 24	14	14	1	0	29
>= 25 and <= 29	13	8	0	0	21
>= 30 and <= 34	9	11	0	0	20
>= 35 and <= 39	13	7	0	0	20
>= 40 and <= 44	9	3	0	0	12
>= 45 and <= 49	9	11	0	0	20
>= 50 and <= 54	9	7	0	0	16
>= 55 and <= 59	5	3	0	0	8
>= 60 and <= 64	5	5	0	0	10
>= 65 and <= 69	6	7	0	0	13
>= 70 and <= 74	3	3	0	0	6
>= 75 and <= 79	3	4	0	0	7
>= 80 and <= 84	0	2	0	0	2
>= 85 and <= 89	0	1	0	0	1
>= 90 and <= 94	2	0	0	0	2
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	119	100	1	0	220

Alcohol Test Given	226
None	214
Blood	0
Urine	0
Breath	1
Vitreous	0
Refused	2
Not reported	9

Drug Test Given	226
None	217
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	9

Drug Test Result	0
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	0
Other	0

Drug/Alcohol Related	103
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	2
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	100

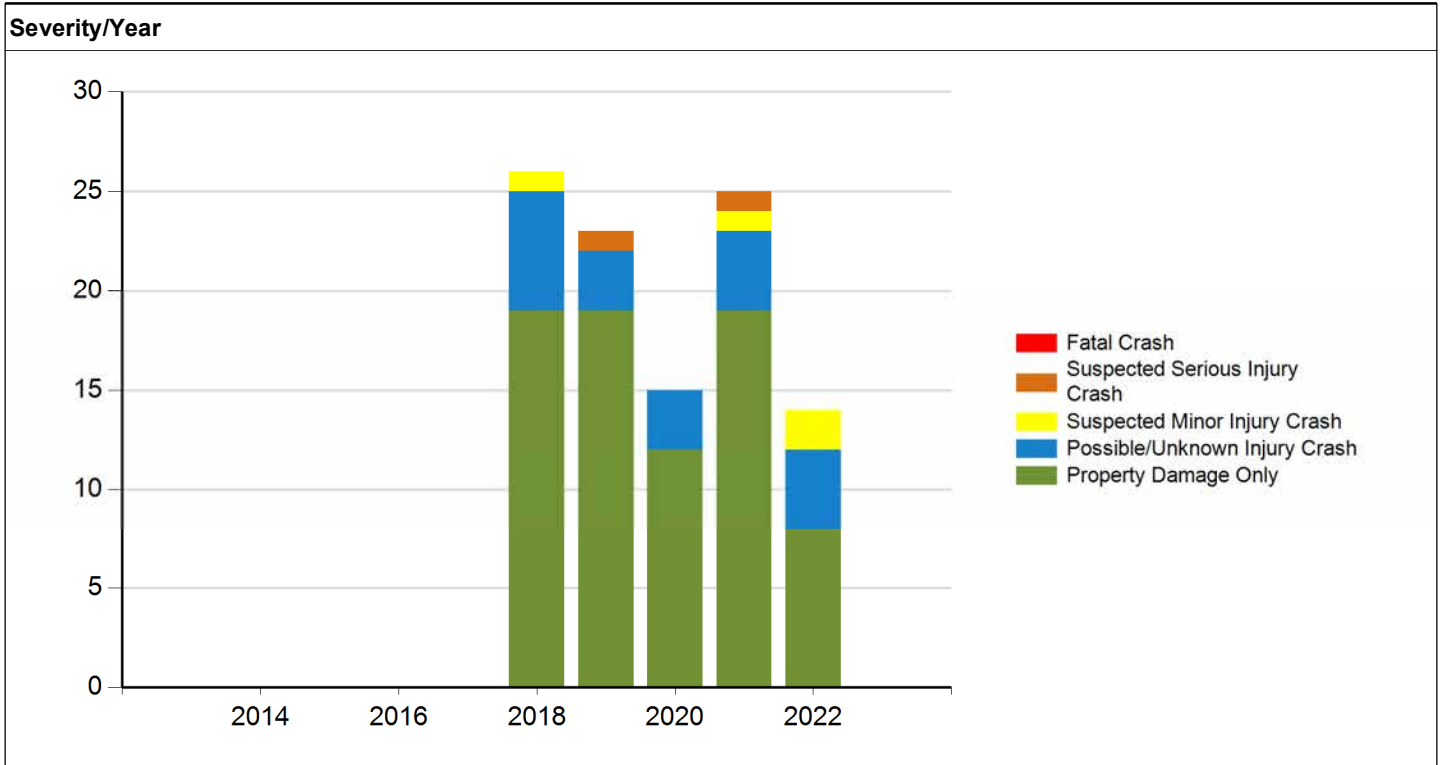
# I. ICAT CRASH SUMMARY



## Iowa Crash Analysis Tool Quick Report 2018-2022



Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only		Total
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	1	6	19		26
2019	0	1	0	3	19		23
2020	0	0	0	3	12		15
2021	0	1	1	4	19		25
2022	0	0	2	4	8		14
2023	0	0	0	0	0		0
<b>Total</b>	0	2	4	20	77		103





# J. Turning Movement Counts

53rd Street & Utica Ridge Road - TMC

Tue Mar 7, 2023

Full Length (6 AM-9 AM, 3 PM-6 PM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1044405, Location: 41.574904, -90.513404



Provided by: Shive-Hattery  
222 Third Avenue SE, Suite 300, Cedar Rapids, IA, 52401, US

Leg Direction	Utica Ridge Road Southbound						E 53rd Street Westbound						Utica Ridge Road Northbound						E 53rd Street Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2023-03-07 6:00AM	18	12	2	0	32	0	9	77	8	0	94	0	5	9	21	0	35	0	17	31	8	0	56	0	217
6:15AM	12	17	3	0	32	0	8	82	5	0	95	0	14	20	24	0	58	0	27	56	5	0	88	0	273
6:30AM	25	13	6	0	44	0	7	104	8	0	119	0	14	18	36	0	68	0	33	77	12	0	122	0	353
6:45AM	24	18	9	0	51	0	12	152	13	0	177	0	15	10	27	0	52	0	40	130	17	0	187	0	467
Hourly Total	79	60	20	0	159	0	36	415	34	0	485	0	48	57	108	0	213	0	117	294	42	0	453	0	1310
7:00AM	24	31	8	0	63	0	7	154	22	0	183	0	15	23	31	0	69	0	42	100	21	0	163	0	478
7:15AM	48	47	17	0	112	1	13	149	22	0	184	0	20	30	36	0	86	0	66	125	28	0	219	0	601
7:30AM	33	31	12	0	76	0	15	163	26	0	204	0	18	35	34	0	87	0	72	185	39	0	296	0	663
7:45AM	26	63	19	0	108	0	12	166	36	0	214	0	26	30	35	0	91	0	107	230	68	0	405	0	818
Hourly Total	131	172	56	0	359	1	47	632	106	0	785	0	79	118	136	0	333	0	287	640	156	0	1083	0	2560
8:00AM	38	50	24	0	112	0	16	181	27	0	224	0	35	37	43	0	115	0	98	182	47	0	327	0	778
8:15AM	34	48	24	0	106	0	18	179	36	0	233	0	26	34	36	0	96	0	86	145	40	0	271	0	706
8:30AM	38	44	14	0	96	0	8	156	28	0	192	0	21	31	58	0	110	0	89	125	29	0	243	0	641
8:45AM	26	45	15	0	86	0	18	150	34	0	202	0	27	41	49	0	117	0	64	137	36	0	237	0	642
Hourly Total	136	187	77	0	400	0	60	666	125	0	851	0	109	143	186	0	438	0	337	589	152	0	1078	0	2767
3:00PM	41	60	50	0	151	0	19	134	20	0	173	0	30	41	69	0	140	0	72	179	36	0	287	0	751
3:15PM	32	64	33	0	129	0	26	186	41	0	253	0	26	42	59	0	127	0	83	178	50	0	311	0	820
3:30PM	40	62	27	0	129	0	26	166	31	0	223	0	39	87	79	0	205	0	61	154	41	0	256	0	813
3:45PM	39	64	41	0	144	0	30	230	32	0	292	0	38	75	69	0	182	1	84	204	37	0	325	0	943
Hourly Total	152	250	151	0	553	0	101	716	124	0	941	0	133	245	276	0	654	1	300	715	164	0	1179	0	3327
4:00PM	56	68	37	0	161	0	21	207	45	0	273	0	26	71	72	0	169	0	84	182	50	0	316	0	919
4:15PM	39	76	45	0	160	0	24	211	32	0	267	0	29	53	65	0	147	0	94	192	50	0	336	0	910
4:30PM	55	60	33	0	148	0	25	201	35	0	261	0	34	84	93	0	211	0	95	221	54	0	370	0	990
4:45PM	53	55	48	0	156	0	30	175	34	0	239	0	54	69	78	0	201	0	92	221	51	0	364	0	960
Hourly Total	203	259	163	0	625	0	100	794	146	0	1040	0	143	277	308	0	728	0	365	816	205	0	1386	0	3779
5:00PM	63	52	49	0	164	0	24	186	32	0	242	0	60	76	93	0	229	0	88	170	57	0	315	1	950
5:15PM	34	59	37	0	130	0	19	189	31	0	239	0	39	53	83	0	175	0	98	192	67	1	358	1	902
5:30PM	44	63	40	0	147	0	22	158	31	0	211	0	51	57	82	0	190	0	98	190	43	0	331	1	879
5:45PM	36	66	38	0	140	0	19	158	19	0	196	0	41	55	59	0	155	0	65	149	43	1	258	0	749
Hourly Total	177	240	164	0	581	0	84	691	113	0	888	0	191	241	317	0	749	0	349	701	210	2	1262	3	3480
<b>Total</b>	878	1168	631	0	2677	1	428	3914	648	0	4990	0	703	1081	1331	0	3115	1	1755	3755	929	2	6441	3	17223
<b>% Approach</b>	32.8%	43.6%	23.6%	0%	-	-	8.6%	78.4%	13.0%	0%	-	-	22.6%	34.7%	42.7%	0%	-	-	27.2%	58.3%	14.4%	0%	-	-	-
<b>% Total</b>	5.1%	6.8%	3.7%	0%	15.5%	-	2.5%	22.7%	3.8%	0%	29.0%	-	4.1%	6.3%	7.7%	0%	18.1%	-	10.2%	21.8%	5.4%	0%	37.4%	-	-
<b>Lights</b>	865	1156	620	0	2641	-	421	3882	637	0	4940	-	699	1067	1319	0	3085	-	1729	3719	917	2	6367	-	17033
<b>% Lights</b>	98.5%	99.0%	98.3%	0%	98.7%	-	98.4%	99.2%	98.3%	0%	99.0%	-	99.4%	98.7%	99.1%	0%	99.0%	-	98.5%	99.0%	98.7%	100%	98.9%	-	98.9%
<b>Articulated Trucks</b>	0	2	2	0	4	-	4	2	0	0	6	-	2	1	2	0	5	-	5	7	2	0	14	-	29
<b>% Articulated Trucks</b>	0%	0.2%	0.3%	0%	0.1%	-	0.9%	0.1%	0%	0%	0.1%	-	0.3%	0.1%	0.2%	0%	0.2%	-	0.3%	0.2%	0.2%	0%	0.2%	-	0.2%
<b>Buses and Single-Unit Trucks</b>	13	10	9	0	32	-	3	30	11	0	44	-	2	13	10	0	25	-	21	29	10	0	60	-	161
<b>% Buses and Single-Unit Trucks</b>	1.5%	0.9%	1.4%	0%	1.2%	-	0.7%	0.8%	1.7%	0%	0.9%	-	0.3%	1.2%	0.8%	0%	0.8%	-	1.2%	0.8%	1.1%	0%	0.9%	-	0.9%
<b>Pedestrians</b>	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-
<b>% Pedestrians</b>	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	100%	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	0%	-

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

J. Turning Movement Counts, cont.

53rd Street & Utica Ridge Road - TMC

Tue Mar 7, 2023

AM Peak (7:30 AM - 8:30 AM)

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1044405, Location: 41.574904, -90.513404



Provided by: Shive-Hattery

222 Third Avenue SE, Suite 300, Cedar Rapids, IA, 52401, US

Leg Direction	Utica Ridge Road Southbound						E 53rd Street Westbound						Utica Ridge Road Northbound						E 53rd Street Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2023-03-07 7:30AM	33	31	12	0	76	0	15	163	26	0	204	0	18	35	34	0	87	0	72	185	39	0	296	0	663
7:45AM	26	63	19	0	108	0	12	166	36	0	214	0	26	30	35	0	91	0	107	230	68	0	405	0	818
8:00AM	38	50	24	0	112	0	16	181	27	0	224	0	35	37	43	0	115	0	98	182	47	0	327	0	778
8:15AM	34	48	24	0	106	0	18	179	36	0	233	0	26	34	36	0	96	0	86	145	40	0	271	0	706
<b>Total</b>	131	192	79	0	402	0	61	689	125	0	875	0	105	136	148	0	389	0	363	742	194	0	1299	0	2965
<b>% Approach</b>	32.6%	47.8%	19.7%	0%	-	-	7.0%	78.7%	14.3%	0%	-	-	27.0%	35.0%	38.0%	0%	-	-	27.9%	57.1%	14.9%	0%	-	-	-
<b>% Total</b>	4.4%	6.5%	2.7%	0%	13.6%	-	2.1%	23.2%	4.2%	0%	29.5%	-	3.5%	4.6%	5.0%	0%	13.1%	-	12.2%	25.0%	6.5%	0%	43.8%	-	-
<b>PHF</b>	0.862	0.762	0.823	-	0.897	-	0.847	0.952	0.868	-	0.939	-	0.750	0.919	0.860	-	0.846	-	0.848	0.807	0.713	-	0.802	-	0.906
<b>Lights</b>	129	187	76	0	392	-	56	680	121	0	857	-	102	133	147	0	382	-	357	729	193	0	1279	-	2910
<b>% Lights</b>	98.5%	97.4%	96.2%	0%	97.5%	-	91.8%	98.7%	96.8%	0%	97.9%	-	97.1%	97.8%	99.3%	0%	98.2%	-	98.3%	98.2%	99.5%	0%	98.5%	-	98.1%
<b>Articulated Trucks</b>	0	0	1	0	1	-	3	2	0	0	5	-	1	0	0	0	1	-	0	1	0	0	1	-	8
<b>% Articulated Trucks</b>	0%	0%	1.3%	0%	0.2%	-	4.9%	0.3%	0%	0%	0.6%	-	1.0%	0%	0%	0%	0.3%	-	0%	0.1%	0%	0%	0.1%	-	0.3%
<b>Buses and Single-Unit Trucks</b>	2	5	2	0	9	-	2	7	4	0	13	-	2	3	1	0	6	-	6	12	1	0	19	-	47
<b>% Buses and Single-Unit Trucks</b>	1.5%	2.6%	2.5%	0%	2.2%	-	3.3%	1.0%	3.2%	0%	1.5%	-	1.9%	2.2%	0.7%	0%	1.5%	-	1.7%	1.6%	0.5%	0%	1.5%	-	1.6%
<b>Pedestrians</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
<b>% Pedestrians</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

J. Turning Movement Counts, cont.  
 53rd Street & Utica Ridge Road - TMC  
 Tue Mar 7, 2023  
 AM Peak (7:30 AM - 8:30 AM)  
 All Classes (Lights, Articulated Trucks, Buses and  
 Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)  
 All Movements  
 ID: 1044405, Location: 41.574904, -90.513404

## [N] Utica Ridge Road

Total: 793

In: 402 Out: 391

131  
192  
79

## [W] E 53rd Street

Total: 2267  
 In: 1299 Out: 968

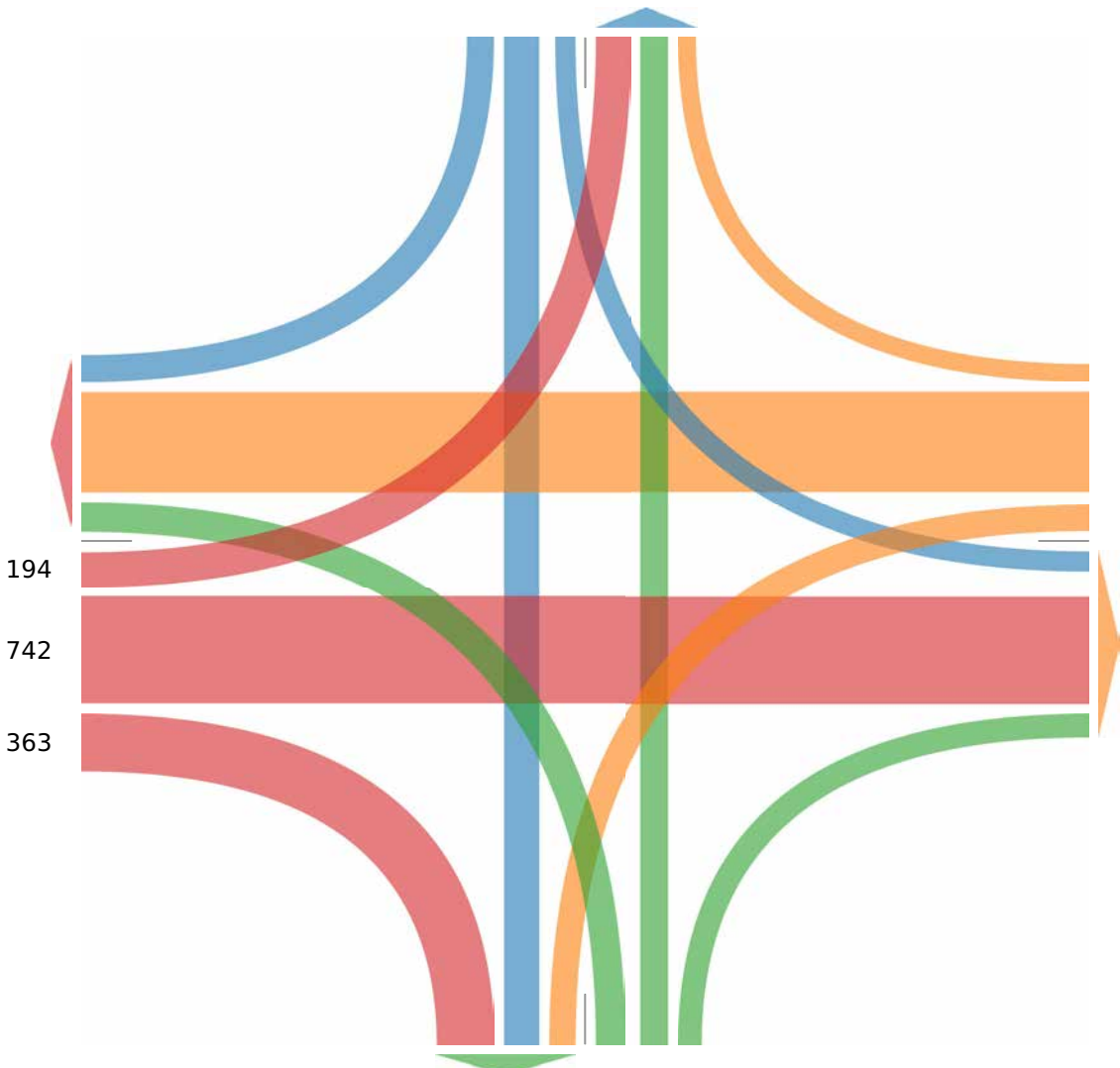
194  
742  
363

61  
689  
125

Out: 926 In: 875  
 Total: 1801  
 [E] E 53rd Street

148  
136  
105

Out: 680 In: 389  
 Total: 1069  
 [S] Utica Ridge Road



J. Turning Movement Counts, cont.

53rd Street & Utica Ridge Road - TMC

Tue Mar 7, 2023

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit

Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1044405, Location: 41.574904, -90.513404



Provided by: Shive-Hattery  
222 Third Avenue SE, Suite 300, Cedar Rapids, IA, 52401, US

Leg Direction	Utica Ridge Road Southbound						E 53rd Street Westbound						Utica Ridge Road Northbound						E 53rd Street Eastbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2023-03-07 4:15PM	39	76	45	0	160	0	24	211	32	0	267	0	29	53	65	0	147	0	94	192	50	0	336	0	910
4:30PM	55	60	33	0	148	0	25	201	35	0	261	0	34	84	93	0	211	0	95	221	54	0	370	0	990
4:45PM	53	55	48	0	156	0	30	175	34	0	239	0	54	69	78	0	201	0	92	221	51	0	364	0	960
5:00PM	63	52	49	0	164	0	24	186	32	0	242	0	60	76	93	0	229	0	88	170	57	0	315	1	950
<b>Total</b>	210	243	175	0	628	0	103	773	133	0	1009	0	177	282	329	0	788	0	369	804	212	0	1385	1	3810
<b>% Approach</b>	33.4%	38.7%	27.9%	0%	-	-	10.2%	76.6%	13.2%	0%	-	-	22.5%	35.8%	41.8%	0%	-	-	26.6%	58.1%	15.3%	0%	-	-	-
<b>% Total</b>	5.5%	6.4%	4.6%	0%	16.5%	-	2.7%	20.3%	3.5%	0%	26.5%	-	4.6%	7.4%	8.6%	0%	20.7%	-	9.7%	21.1%	5.6%	0%	36.4%	-	-
<b>PHF</b>	0.833	0.799	0.893	-	0.957	-	0.858	0.916	0.950	-	0.945	-	0.738	0.839	0.884	-	0.860	-	0.971	0.910	0.930	-	0.936	-	0.962
<b>Lights</b>	209	242	173	0	624	-	103	768	132	0	1003	-	177	281	326	0	784	-	367	801	212	0	1380	-	3791
<b>% Lights</b>	99.5%	99.6%	98.9%	0%	99.4%	-	100%	99.4%	99.2%	0%	99.4%	-	100%	99.6%	99.1%	0%	99.5%	-	99.5%	99.6%	100%	0%	99.6%	-	99.5%
<b>Articulated Trucks</b>	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0
<b>% Articulated Trucks</b>	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%	0%	0%	0%	0%	-	0%
<b>Buses and Single-Unit Trucks</b>	1	1	2	0	4	-	0	5	1	0	6	-	0	1	3	0	4	-	2	3	0	0	5	-	19
<b>% Buses and Single-Unit Trucks</b>	0.5%	0.4%	1.1%	0%	0.6%	-	0%	0.6%	0.8%	0%	0.6%	-	0%	0.4%	0.9%	0%	0.5%	-	0.5%	0.4%	0%	0%	0.4%	-	0.5%
<b>Pedestrians</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-
<b>% Pedestrians</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100%	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-
<b>% Bicycles on Crosswalk</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0%	-

\*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

J. Turning Movement Counts, cont.

53rd Street & Utica Ridge Road - TMC

Tue Mar 7, 2023

PM Peak (4:15 PM - 5:15 PM) - Overall Peak Hour

All Classes (Lights, Articulated Trucks, Buses and Single-Unit Trucks, Pedestrians, Bicycles on Crosswalk)

All Movements

ID: 1044405, Location: 41.574904, -90.513404

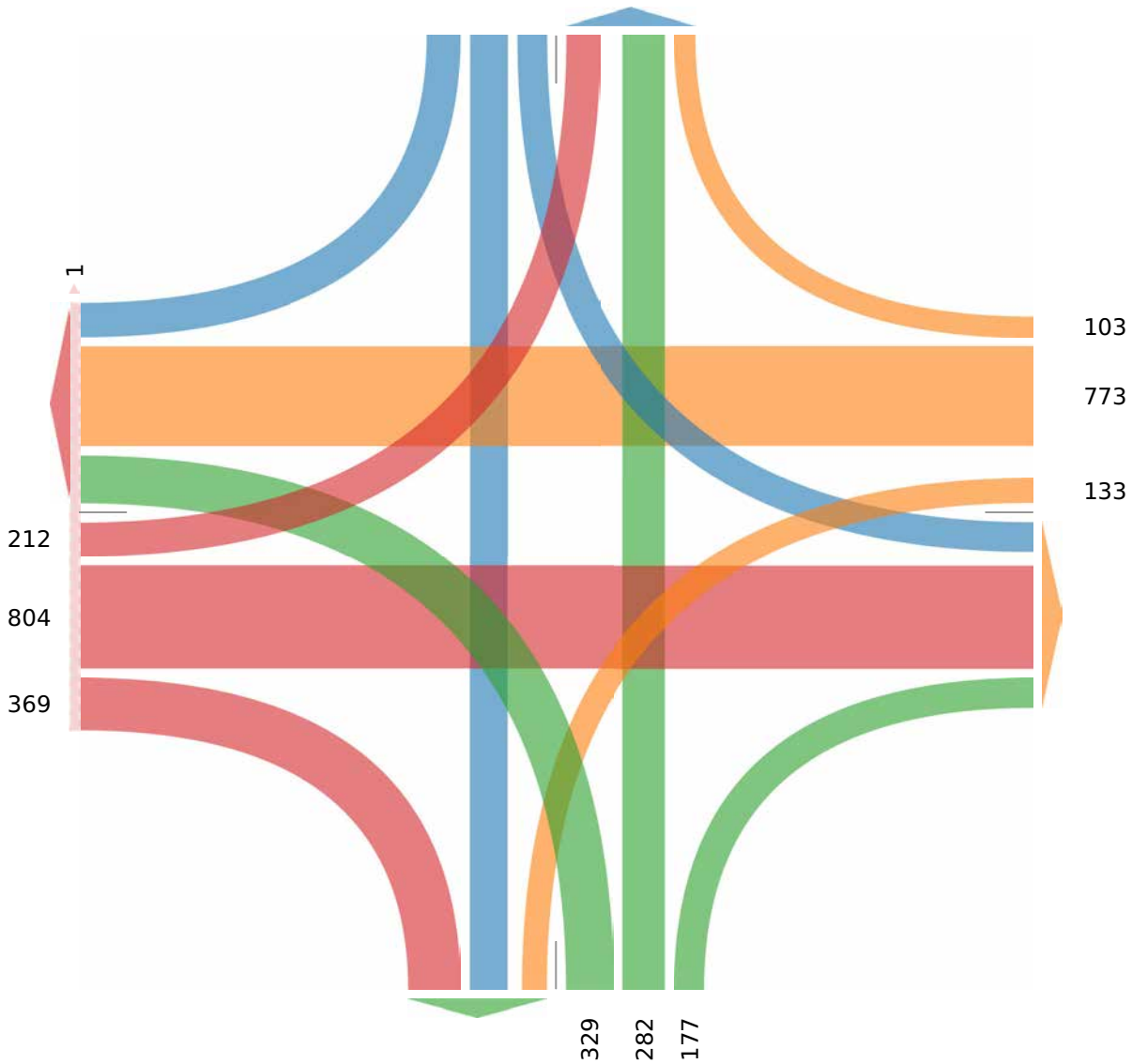
[N] Utica Ridge Road

Total: 1225

In: 628 Out: 597

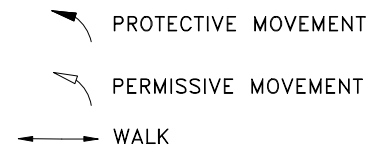
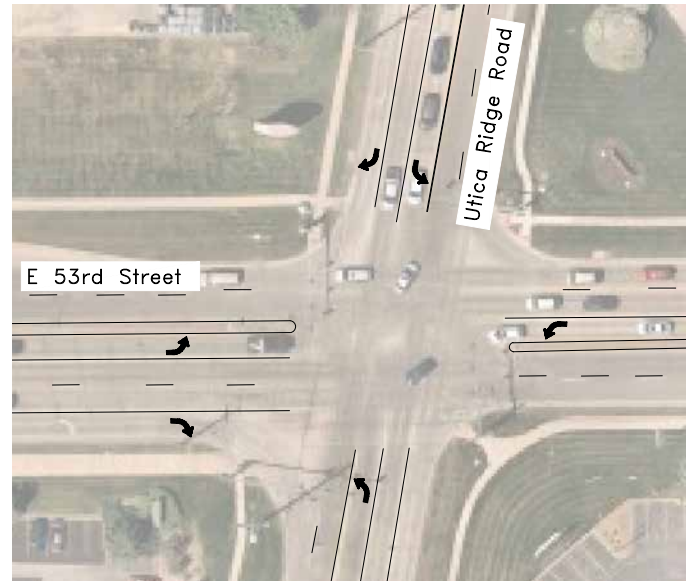
210  
243  
175

[W] E 53rd Street  
Total: 2697  
In: 1385 Out: 1312

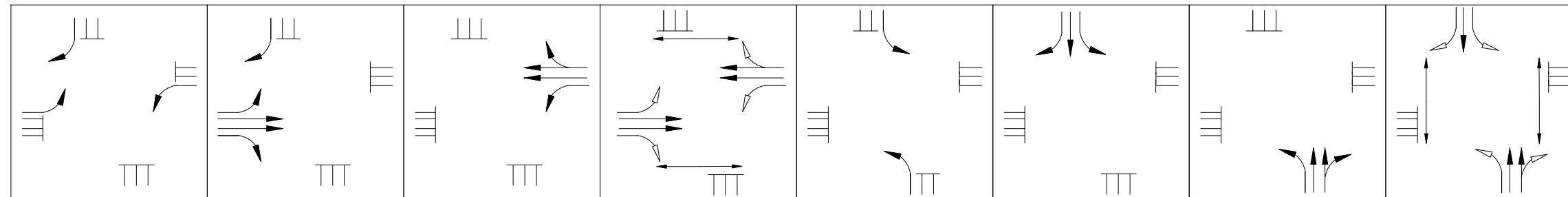


Out: 745 In: 788  
Total: 1533  
[S] Utica Ridge Road

Out: 1156 In: 1009  
Total: 2165  
[E] E 53rd Street

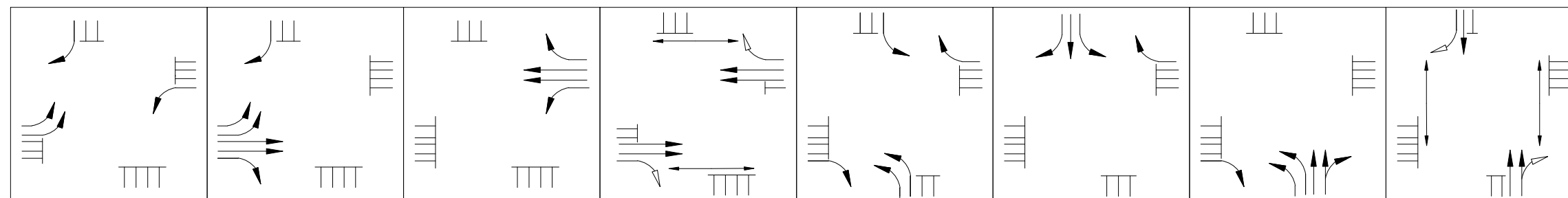


$\phi 1 \& 5$      $\phi 1 \& 6$      $\phi 2 \& 5$      $\phi 2 \& 6$      $\phi 3 \& 7$      $\phi 3 \& 8$      $\phi 4 \& 7$      $\phi 4 \& 8$



EXISTING TRAFFIC SIGNAL PHASING

$\phi 1 \& 5$      $\phi 1 \& 6$      $\phi 2 \& 5$      $\phi 2 \& 6$      $\phi 3 \& 7$      $\phi 3 \& 8$      $\phi 4 \& 7$      $\phi 4 \& 8$



PROPOSED TRAFFIC SIGNAL PHASING



**City of Davenport, Iowa**  
**Engineering Division**

1200 E. 46th Street    Davenport, Iowa 52807  
 (563) 326-7729    Fax (563) 327-5182

PROJECT NUMBER:	PLOT DATE: 3/20/2023
CIP NUMBER:	PLOT SCALE: 1"=80'
REVISION:	DESIGNED BY: JMV
	DRAWN BY: JMV
	CHECKED BY: GIS
DWG. FILE : K.Traffic Signal Layout.dwg	

**K. Traffic Signal Phasing - Existing & Proposed**  
**53rd Street & Utica Ridge Road**  
 Safety Improvements

SHEET NO.

TOTAL SHEET NO.



County:	Scott	Prepared By:	Jeri Vondera
Location:	53rd Street & Utica Ridge Rd	Date Prepared:	3/15/2023
Proposed Improvements:	Construct additional left turn lane NB on Utica Ridge Rd and EB on 53rd St. Change phasing from protective/permissive to protective only.		
Estimated Improvement Cost:	\$ 899,240		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 17,985

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF			
	43.3	43.3			
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	43.3	0.00	0.00
Serious Injury (A)	\$ 4,000,000	2	43.3	0.40	0.17
Minor Injury (B)	\$ 265,000	4	43.3	0.80	0.35
Possible/Unknown Injury (C)	\$ 125,000	20	43.3	4.00	1.73
Property Damage Only (O)	\$ 20,000	0	43.3	0.00	0.00

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ 692,800
Minor Injury (B)	\$ 91,796
Possible/Unknown Injury (C)	\$ 216,500
Property Damage Only (O)	\$ -

### Total Benefits and Costs

		Implementation Cost	\$ 899,240
		Present Value of Maint.	\$ 199,962
Present Value Benefits (Societal Benefits)	\$ 11,858,154	Present Value Costs (Impl. and Maint. Costs)	\$ 1,099,202
Present Value Net Return	\$ 10,758,952		
<b>Benefit Cost Ratio</b>	<b>10.79</b>		

Form continues on next page

County: Scott  
Location: 53rd Street & Utica Ridge Rd

Prepared By: Jeri Vondera  
Date Prepared: 3/15/2023



## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

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No change to Traffic Growth  
Rate

No change to Crash History



***Application for FY2025 Traffic Safety Improvement  
Program (TSIP) Funding  
Iowa Department of Transportation***

***(Site Specific)***

***41st Street and Beaver Avenue***

***Intersection Improvements***



***Des Moines Engineering Department  
Traffic and Transportation Division  
Steve Naber, P.E.  
City Engineer***

***August 15, 2023***

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# IOWA DOT

## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: 7/17/2023

Location / Title of Project 41<sup>st</sup> Street and Beaver Avenue Intersection Improvements

Applicant City of Des Moines

Contact Person Calvin Miller Title Engineering Administrative Manager

Complete Mailing Address 400 Robert D. Ray Drive  
Des Moines, IA 50309-1891

Phone 515-283-4748 E-Mail cbmiller@dmgov.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) N/A

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_  
\_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 775,000

Total Project Cost \$ 775,000

**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain A safety study was completed for this project. Based on the Iowa DOT's Potential for Crash Reduction from 2014-2018, this intersection has a rank of 105 in the state for all intersections and 9 for undivided low speed partial stop control intersections.

No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Des Moines, Iowa

Signed:  August 7, 2023  
Signature Date Signed

T. M. Franklin Cownie, Mayor  
Printed Name

Attest:  August 7, 2023  
Signature Date Signed

Laura Baumgartner, City Clerk  
Printed Name



Roll Call Number

23-1065

Agenda Item Number

9

Date August 7, 2023

APPROVING THE FISCAL YEAR 2025 TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION (IOWA DOT) FOR THE 41ST STREET AND BEAVER AVENUE INTERSECTION IMPROVEMENT PROJECT.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DES MOINES, IOWA:

- 1. That the Fiscal Year 2025 Traffic Safety Improvement Program (TSIP) application for the 41st Street and Beaver Avenue Intersection Improvement Project is approved and the Mayor is hereby authorized and directed to execute the application and the City Clerk to attest to the Mayor's signature.
2. The City Manager is authorized to submit applications to the Iowa DOT for TSIP Funds to cover a portion of the construction and property acquisition costs for 41st Street and Beaver Avenue Intersection Improvement Project.
3. The City understands if the application is approved it will be responsible for any additional funds, if required, to complete the project and the City of Des Moines will provide adequate resources to maintain the improvements for their useful life.

(Council Letter Number 23364 attached) Activity ID 01-2023-003

Moved by Gatto to adopt. Second by Boesen

FORM APPROVED: s/Kathleen Vanderpool

Kathleen Vanderpool Deputy City Attorney

SLN pw

Funding Source: 2023-2024 CIP, Page 141, 41st Street and Beaver Avenue, ST292, G.O. Bonds

Table with 5 columns: COUNCIL ACTION, YEAS, NAYS, PASS, ABSENT. Rows include COWNIE, BOESEN, GATTO, MANDELBAUM, SHEUMAKER, VOSS, WESTERGAARD, and TOTAL.

CERTIFICATE

I, LAURA BAUMGARTNER, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

J. M. Franklin Cownie Mayor

Laura Baumgartner City Clerk

## NARRATIVE

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### Project Description

This project includes realigning 41<sup>st</sup> Street to create a 90 degree “tee” intersection with Beaver Avenue. Currently, 41<sup>st</sup> Street intersects Beaver Avenue on a curve creating a 50-degree skewed intersection. Beaver Avenue is a three-lane street with conventional bike lanes. Realigning this intersection to a perpendicular intersection provides better vision for drivers and better lane identification for bicyclists on Beaver Avenue. The project will also include improved sidewalks and ADA accessible sidewalk ramp.

The total project cost of the 41<sup>st</sup> Street and Beaver Avenue Intersection Improvement project is estimated to be approximately \$755,000. Since realigning the intersection is a safety improvement, the entire project cost, excluding the Engineering and Administrative costs, is eligible for funding consideration. A total of \$500,000 is being requested from State Traffic Safety Improvement Program funds.

### Existing Conditions

Beaver Avenue is a north-south minor arterial street with a posted speed limit of 30 mph. The cross-section is three vehicle lanes with conventional bike lanes. South of 41<sup>st</sup> Street Beaver Avenue angles to the southeast on a diagonal. The 2017 estimated average daily traffic (ADT) on Beaver Avenue was 7,900 south of 41<sup>st</sup> Street and 11,500 north of 41<sup>st</sup> Street.

41<sup>st</sup> Street is a two-lane collector street. Currently, 41<sup>st</sup> Street ties into Beaver Avenue on a curve creating a skewed intersection. The ADT on 41<sup>st</sup> Street in the vicinity of the intersection is approximately 4,000.

Franklin Avenue is a signalized intersection approximately 250 feet north of the intersection of 41<sup>st</sup> Street and Beaver Avenue. This area is a commercial node and includes a grocery store on the north/east side of Beaver Avenue. Outside of the commercial node the adjacent land use is single family residential.

### Project Justification and Proposed Concept

According to the Iowa DOT’s Potential for Crash Reduction (PCR) for the timeframe of 2014-2018, this intersection has a high PCR of approximately 0.92 for all crashes and 0.32 for injurious crashes. This intersection has the 9<sup>th</sup> highest PCR statewide for injurious crashes in the category of undivided low speed, partial control intersections and ranks statewide at 105<sup>th</sup> for all intersection types.

Based on a study completed in 2018, “many close calls were observed at this location of cars wanting to continue straight from 41<sup>st</sup> Street to northbound on Beaver Avenue. It was noted that cars were confused distinguishing which southbound vehicles were continuing south onto 41<sup>st</sup> Street and which vehicles were continuing on Beaver Avenue. Observations indicated many occurrences of abrupt braking to avoid potential crashes.” Additionally, realignment of the intersection would provide more northbound queuing storage at the Beaver Avenue and Franklin Avenue intersection. Southbound right turning traffic onto 41<sup>st</sup> Street would be slowed by the turning radius of the realigned intersection. By defining the southbound turning path, more visual clues for gap decision are provided to northbound traffic on 41<sup>st</sup> Street.

Based on the Crash Modification Factor (CMF) Clearinghouse ([CMF ID: 10070](#)), changing the intersection angle from a 50-degree skew to a 90-degree intersection of a three lane urban intersection

is expected to reduce all crashes by approximately 31%. Background research for this CMF is available in [FHWA's Publication No. FHWA-HRT-20-067 – Impact of Intersection Angle on Highway Safety](#). The Benefit-Cost Ratio for this intersection is 0.87.

Realigning this intersection also improves safety for non-motorists. The realigned intersection reduces confusion for southbound cyclists on Beaver Avenue and provides better sight lines between motorists and cyclists at the intersection. Additionally, the pedestrian crossing distance across 41<sup>st</sup> Street is reduced from approximately 50 feet to 30 feet. The proposed intersection will limit the exposure for pedestrians as well as slow southbound traffic going from Beaver Avenue to 41<sup>st</sup> Street as this now becomes a turning movement rather than a through movement. These improvements do not have an associated CMF to quantify the safety benefit; however, they are expected to improve safety for non-motorists. These improvements are supported by the City's Transportation Master Plan, MoveDSM, and recently adopted [Vision Zero Transportation Safety Action Plan](#).

**ITEMIZED BREAKDOWN OF ALL COSTS**

**PRELIMINARY ESTIMATE**  
**41st Street and Beaver Avenue Intersection Improvements**



DATE: 7/17/2023

ITEM NO.	DESCRIPTION	UNIT	ESTIMATED UNITS	UNIT PRICE	TOTAL AMOUNT
1	CLASS 10 EXCAVATION	CY	875	\$25.00	\$21,875.00
2	MODIFIED SUBBASE	TONS	400	\$45.00	\$18,000.00
3	SUBBASE TREATMENT, GEOGRID, TYPE 2	SY	1,000	\$5.00	\$5,000.00
4	PAVEMENT REMOVAL	SY	2,650	\$15.00	\$39,750.00
5	MILLING	SY	2,700	\$5.00	\$13,500.00
6	CURB & GUTTER, PCC	LF	700	\$75.00	\$52,500.00
7	SIDEWALK, PCC, 5"	SY	360	\$60.00	\$21,600.00
8	SIDEWALK, PCC, 6"	SY	25	\$80.00	\$2,000.00
9	DRIVEWAY, PCC, 6"	SY	130	\$75.00	\$9,750.00
10	DRIVEWAY, PCC, 7"	SY	500	\$85.00	\$42,500.00
11	PAVEMENT, HMA, BASE COURSE	TON	270	\$130.00	\$35,100.00
12	PAVEMENT, HMA, INTERMEDIATE COURSE	TON	270	\$130.00	\$35,100.00
13	PAVEMENT, HMA, SURFACE COURSE	TON	270	\$130.00	\$35,100.00
14	PAVEMENT MARKINGS	STA	15	\$250.00	\$3,750.00
15	TEMPORARY SURFACING	TON	1,000	\$35.00	\$35,000.00
16	SEEDING	ACRE	1	\$7,500.00	\$7,500.00
17	SOD	SQ	200	\$110.00	\$22,000.00
18	FILTER SOCK	LF	600	\$4.00	\$2,400.00
19	TEMPORARY TRAFFIC CONTROL	LS	1	\$3,000.00	\$3,000.00
20	TREE PROTECTION FENCE	LF	300	\$5.00	\$1,500.00
21	MOBILIZATION	LS	1	\$68,075.00	\$68,075.00
<b>TOTAL CONSTRUCTION COST</b>					<b>\$475,000.00</b>
<b>RIGHT-OF-WAY COSTS</b>					<b>\$300,000.00</b>
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$775,000.00</b>

## Notes:

Realigning the intersection from a 50-degree skewed intersection to a 90-degree intersection is the safety improvement. Therefore, it is assumed that all costs associated with the project, excluding the design and administration, are safety related since all construction work is required to realign the intersection.

## Anticipated Funding Sources:

Traffic Safety Improvement Program	\$ 500,000
General Obligation Bonds	\$ 225,000
<b>Total</b>	<b>\$ 775,000</b>

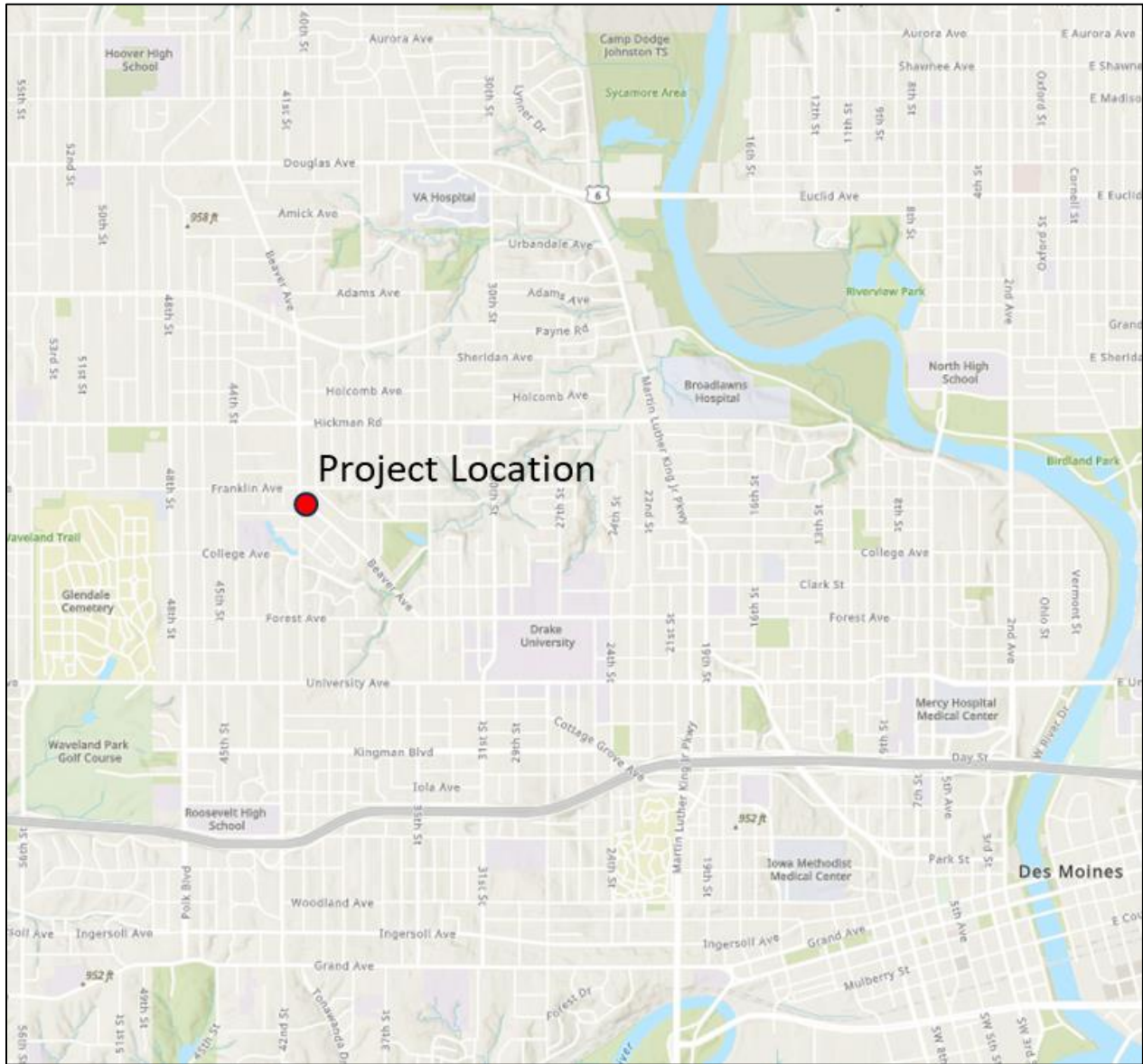


**TIME SCHEDULE**

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Preliminary Plan Design	August 2023 – August 2024
Final Plan Preparation	August 2024 – November 2024
Property Acquisition	August 2023 – November 2024
Plan Approval & Project Letting	November 2024 – January 2024
Construction	March 2025 – December 2025

MAP



**COLOR PICTURES**



41<sup>st</sup> Street – Looking North



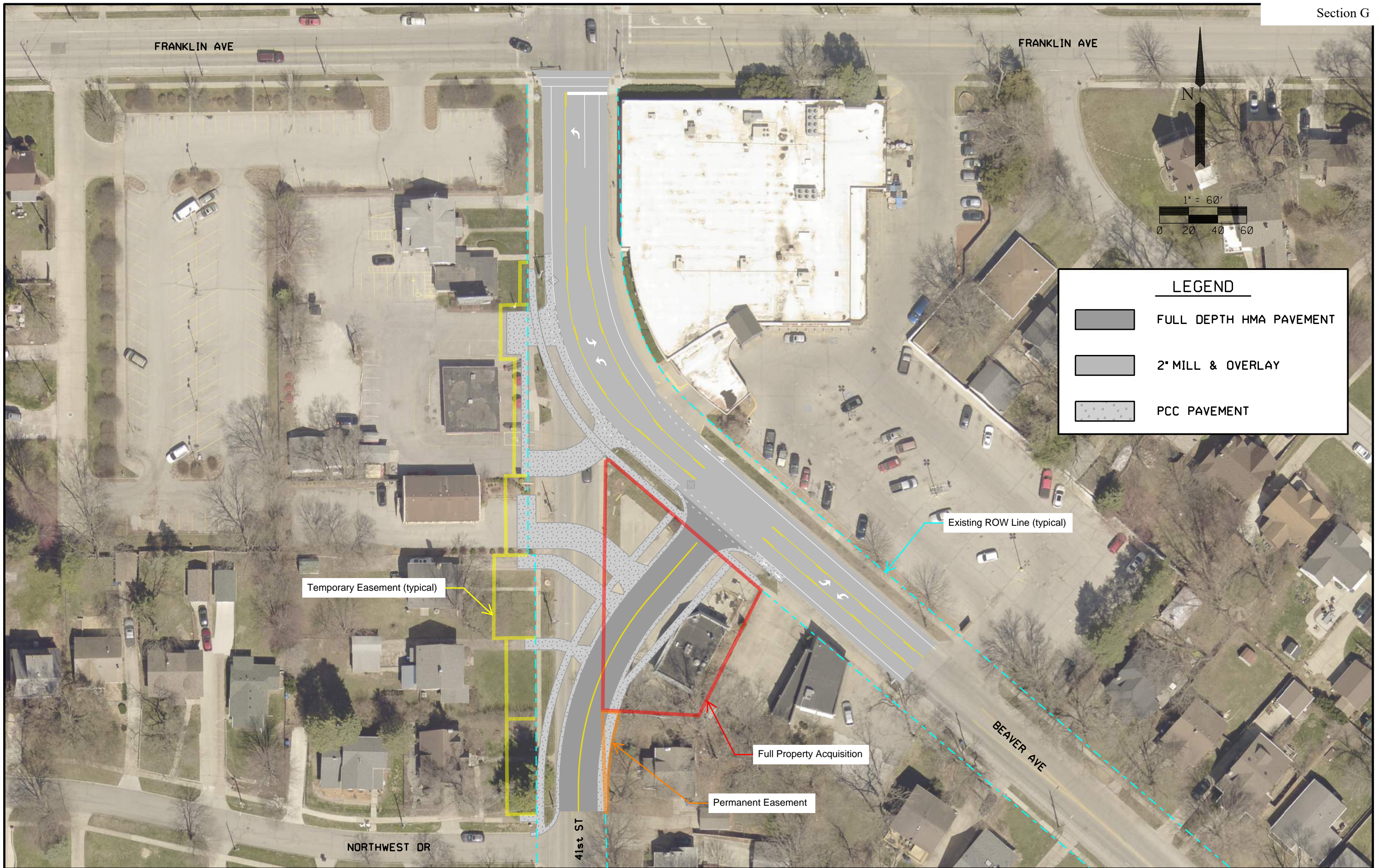
Beaver Avenue – Looking South

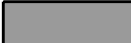



Beaver Avenue – Looking Northwest



Intersection of Beaver Avenue and 41<sup>st</sup> Street – Looking Southeast



LEGEND	
	FULL DEPTH HMA PAVEMENT
	2\"/>

Temporary Easement (typical)

Existing ROW Line (typical)

Full Property Acquisition

Permanent Easement

# 41st Street and Beaver Avenue Intersection Improvement Project



41st Street and Beaver Avenue Intersection - Aerial Photography



**ICAT CRASH SUMMARY OF MOTOR VEHICLE ACCIDENTS**

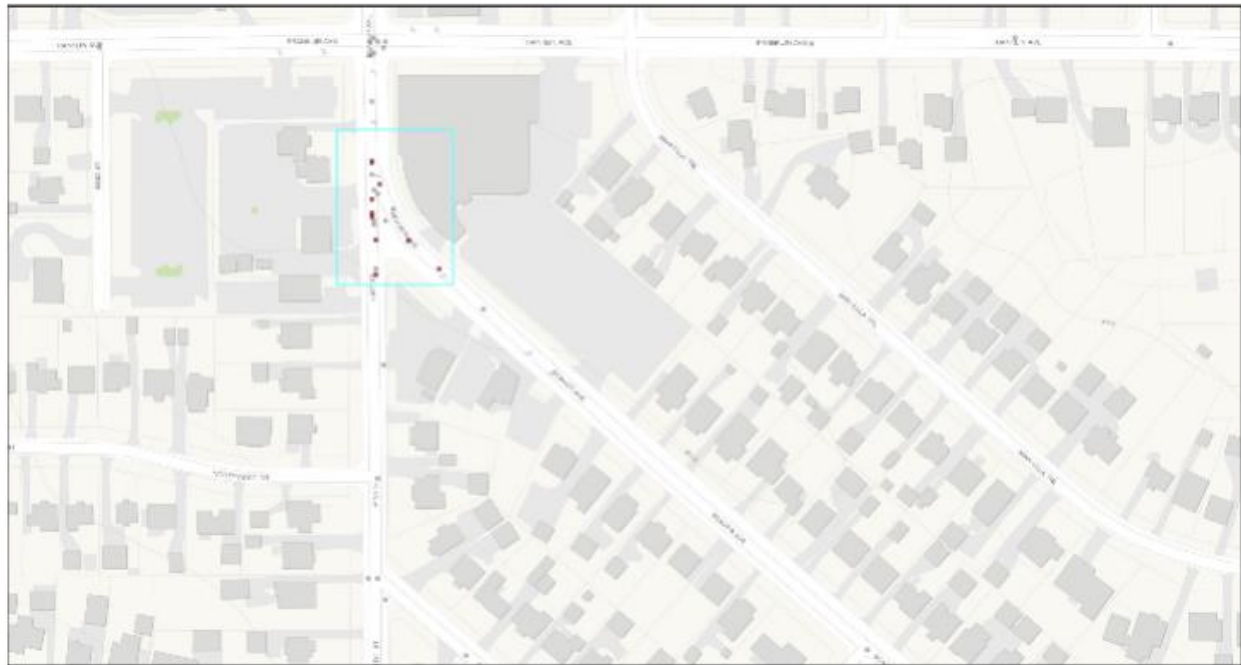


**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

<b>Crash Severity</b>		<b>12</b>	<b>Injury Status Summary</b>		<b>5</b>
Fatal Crash		0	Fatalities		0
Suspected Serious Injury Crash		0	Suspected serious/incapacitating		0
Suspected Minor Injury Crash		2	Suspected minor/non-incapacitating		3
Possible/Unknown Injury Crash		2	Possible (complaint of pain/injury)		1
Property Damage Only		8	Unknown		1

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	94,500.00
Average (per crash dollars):	7,875.00
Total Vehicles:	21.00
Average (per crash):	1.75
Total Occupants:	24.00
Average (per crash):	2.00

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.33
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.25
Possible/Unknown Injuries/Crash:	0.08





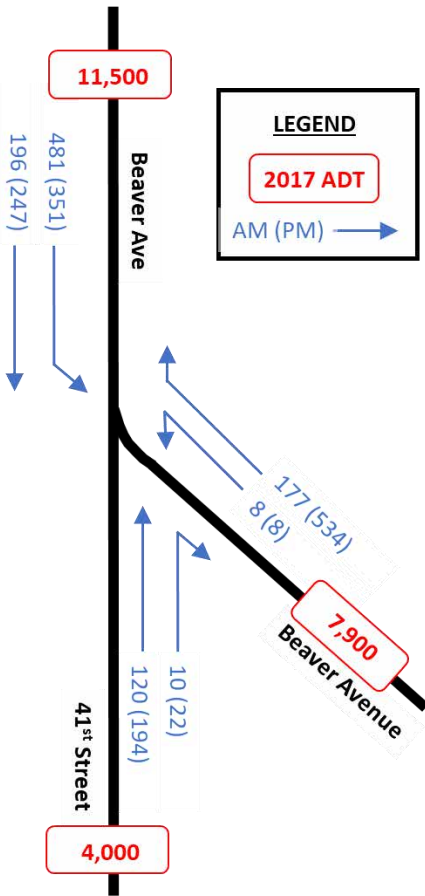
Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			12
Animal	0	Ran traffic signal	0
Ran stop sign	3	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	2	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	1	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	2
Unknown	3	Not reported	0
Other: No improper action	0		

Manner of Crash Collision	12
Non-collision (single vehicle)	3
Head-on (front to front)	2
Rear-end (front to rear)	2
Angle, oncoming left turn	1
Broadside (front to side)	2
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	1
Unknown	1



**TRAFFIC VOLUMES AND TURNING MOVEMENTS**



	Beaver Avenue		Beaver Avenue		41st Street	
	Southbound		Northwestbound		Northbound	
	Thru - 41st	Thru - Beaver	Thru - Beaver	Left - 41st	Right - SB	Left - NB
6:00 AM	21	21	15	0	0	10
6:15 AM	18	32	14	0	0	17
6:30 AM	30	43	26	1	1	12
6:45 AM	26	66	29	0	1	26
7:00 AM	49	75	23	2	1	28
7:15 AM	49	101	39	1	2	30
7:30 AM	45	139	48	0	4	31
7:45 AM	56	121	45	3	3	33
8:00 AM	46	120	45	4	1	26
8:15 AM	41	99	41	2	2	30
8:30 AM	49	91	35	4	1	31
8:45 AM	55	76	27	2	4	38
11:00 AM	41	48	41	3	1	25
11:15 AM	36	46	42	1	4	31
11:30 AM	51	53	55	2	5	37
11:45 AM	36	69	70	3	4	34
12:00 PM	39	58	49	4	5	28
12:15 PM	33	62	42	2	5	40
12:30 PM	41	56	47	7	5	40
12:45 PM	38	65	57	1	2	25
3:00 AM	56	56	66	8	5	52
3:15 AM	33	80	81	2	3	48
3:30 AM	58	67	81	0	5	42
3:45 AM	49	96	87	6	5	49
4:00 AM	59	65	77	2	4	45
4:15 AM	44	80	98	6	9	61
4:30 AM	59	80	126	2	6	44
4:45 AM	64	90	142	3	5	38
5:00 AM	71	94	133	3	5	52
5:15 AM	53	87	133	0	6	60
5:30 AM	44	83	93	1	5	43
5:45 AM	47	84	65	3	4	51

**Traffic Volume Notes:**

- Peak Hour Counts: 12-hr Manual Count on Thursday, September 7, 2017
- ADT Estimated from 12-hr Manual Count
- AM Peak Hour: 7:15am-8:15am, PM Peak Hour: 4:30pm-5:30pm

**BENEFIT/COST**



County:	Polk	Prepared By:	City of DSM
Location:	41st Street and Beaver Avenue	Date Prepared:	7/17/2023
Proposed Improvements:	Realign 50-degree skewed intersection to 90-degree tee-intersection		
Estimated Improvement Cost:	\$ 775,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 15,500

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

**Crash Reduction Factor (CRF) Method**

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

**Combined CRF (Dominant Common Residuals Method)**

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1: 31	<b>Combined CRF</b> <b>31.0</b>
---------------	--------------	------------------------------------

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	31.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	31.0	0.00	0.00
Minor Injury (B)	\$ 265,000	2	31.0	0.40	0.12
Possible/Unknown Injury (C)	\$ 125,000	2	31.0	0.40	0.12
Property Damage Only (O)	\$ 20,000	8	31.0	1.60	0.50

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 32,860
Possible/Unknown Injury (C)	\$ 15,500
Property Damage Only (O)	\$ 9,920

**Total Benefits and Costs**

	Implementation Cost	\$ 775,000	
	Present Value of Maint.	\$ 210,650	
Present Value Benefits (Societal Benefits)	\$ 860,837	Present Value Costs (Impl. and Maint. Costs)	\$ 985,650
Present Value Net Return	\$ (124,813)		
<b>Benefit Cost Ratio</b>	<b>0.87</b>		

***Application for FY2024 Traffic Safety Improvement  
Program (TSIP) Funding  
Iowa Department of Transportation***

***(Site Specific)***

***6<sup>th</sup> Avenue and Day Street***

***Intersection Improvements***



***Des Moines Engineering Department  
Traffic and Transportation Division  
Steve Naber, P.E.  
City Engineer***

***August 15, 2023***

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# Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: 7/24/2023

Location / Title of Project 6<sup>th</sup> Avenue and Day Street Intersection Improvements

Applicant City of Des Moines

Contact Person Calvin Miller Title Engineering Administrative Manager

Complete Mailing Address 400 Robert D. Ray Drive  
Des Moines, IA 50309-1891

Phone 515-283-4748 E-Mail cbmiller@dmgov.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) N/A

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 750,000

Total Project Cost \$ 2.7 million

**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain Based on the Iowa DOT's Potential for Crash Reduction, this intersection has the 4<sup>th</sup> highest PCR in the entire state of Iowa.

No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Des Moines, Iowa

Signed: *T. M. Franklin Cownie* August 7, 2023  
Signature Date Signed

T. M. Franklin Cownie, Mayor  
Printed Name

Attest: *Laura Baumgartner* August 7, 2023  
Signature Date Signed

Laura Baumgartner, City Clerk  
Printed Name



Roll Call Number

23-1064

Agenda Item Number

8

Date August 7, 2023

APPROVING THE FISCAL YEAR 2025 TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION (IOWA DOT) FOR THE INTERSECTION OF 6TH AVENUE AND DAY STREET.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DES MOINES, IOWA:

- 1. That the Fiscal Year 2025 Traffic Safety Improvement Program (TSIP) application for the intersection of 6th Avenue and Day Street is approved and the Mayor is hereby authorized and directed to execute the application and the City Clerk to attest to the Mayor's signature.
2. The City Manager is authorized to submit applications to the Iowa DOT for TSIP Funds to cover a portion of the construction costs for the intersection of 6th Avenue and Day Street.
3. The City understands if the application is approved it will be responsible for any additional funds, if required, to complete the project and the City of Des Moines will provide adequate resources to maintain the improvements for their useful life.

(Council Letter Number 23365 attached) Activity ID 01-2022-018

Moved by Gatto to adopt. Second by Boesen

FORM APPROVED: s/Kathleen Vanderpool Kathleen Vanderpool Deputy City Attorney

SLN

Funding Source: 2023-2024 CIP, Page 122, Sixth Ave. Streetscape, ST266, G.O. Bonds

Table with 5 columns: COUNCIL ACTION, YEAS, NAYS, PASS, ABSENT. Rows include COWNIE, BOESEN, GATTO, MANDELBAUM, SHEUMAKER, VOSS, WESTERGAARD, and TOTAL.

CERTIFICATE

I, LAURA BAUMGARTNER, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

J. M. Franklin Cownie Mayor

Laura Baumgartner City Clerk

## **NARRATIVE**

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### Project Description

This project includes a lane reduction, traffic signal improvements, geometric improvements, and multimodal improvements at the intersection of 6<sup>th</sup> Avenue and Day Street (I-235 on/off-ramps). This intersection work is part of a larger project (6<sup>th</sup> Avenue Streetscape – Phase 3) on 6<sup>th</sup> Avenue from I-235 to University Avenue in Des Moines to reduce vehicle lanes and provide a shared use facility on 6<sup>th</sup> Avenue. The traffic signal improvements include adding additional traffic signal heads, adding backplates with retroreflective borders to all traffic signal heads, and retiming the traffic signal including adjusting the yellow change and red clearance intervals. Geometric improvements include removing the easternmost, northbound through lane, relocating the existing chain-link fence on the southeast corner of the intersection, and improving the northbound dual left turn lane separation. Multimodal improvements include creating a barrier rail separated two-way cycle track across the 6<sup>th</sup> Avenue bridge, colored concrete cycle track, sidewalk curb extensions, and wider sidewalks.

The total project cost of the 6<sup>th</sup> Avenue Streetscape – Phase 3 project is estimated to be approximately \$2,750,000. The portion of the project that is anticipated to improve safety is estimated to be approximately \$750,000. A total of \$500,000 is being requested from State Traffic Safety Improvement Program funds.

### Existing Conditions

6<sup>th</sup> Avenue is a one-way northbound street, classified as a minor arterial with a posted speed limit of 30 mph. 6<sup>th</sup> Avenue includes a left only lane, a left-through lane, and two additional through lanes. The 2016 Average Daily Traffic on 6<sup>th</sup> Avenue was 10,300 vpd south of Day Street and 9,120 vpd north of Day Street.

Day Street is a one-way westbound street which serves as an on/off-ramp for westbound I-235 traffic entering and exiting the downtown exits. Day Street serves as I-235 access for 2<sup>nd</sup> Avenue, 3<sup>rd</sup> Street, 5<sup>th</sup> Avenue, 6<sup>th</sup> Avenue, and 7<sup>th</sup> Street. Day Street includes a right turn only lane onto 6<sup>th</sup> Avenue and two through lanes. The 2016 Average Daily Traffic on Day Street was 6,400 vpd east of 6<sup>th</sup> Avenue and 7,600 vpd west of 6<sup>th</sup> Avenue.

Intersection sight distance at the intersection is restricted due to the bridge parapet, a retaining wall, and chain-link fencing. As a result, right turns are prohibited on red due to the sight distance issue. However, there is low compliance with the right turn on red prohibition.

### Project Justification and Proposed Concept

According to the Iowa DOT's Potential for Crash Reduction (PCR) for the timeframe of 2016-2020, this intersection ranks as the 4<sup>th</sup> highest intersection for potential crash reduction in the entire state of Iowa and 2<sup>nd</sup> highest state-wide for the category of undivided, low-speed traffic signal-controlled intersections. A review of crash data from 2018-2022 showed that there were 62 crashes at this intersection (12/year). Sixty-four percent of these crashes involved a vehicle entering the intersection during the red phase. Of the red-light running crashes, two-thirds were attributed to westbound vehicles. The predominate manner of all crashes at the study intersection was overwhelmingly broadside/angle crashes (88%).

In order to address safety at this intersection, several improvements are proposed to reduce the number and severity of the crashes. Several of these improvements have Crash Reduction Factors



(CRF) associated with the countermeasures. Some countermeasures, however, are best practices that correspond with the Objectives of the Federal Highway Administration’s (FHWA) Safe System Approach, but do not yet have a CRF associated with the countermeasure.

For geometric improvements, the easternmost through lane is proposed to be removed and the existing chain-link fence on the southeast corner of the intersection will be pulled back from the intersection. These improvements will provide greater sight distance at the intersection and potentially reduce vehicle speeds. Additionally, the northbound dual left turn lane will be rebuilt and include dashed pavement markings to provide better separation and lane utilization. These safety improvements do not have a CRF; however, they will improve safety by reducing the number of intersection conflict points as well as doubling the sight lines between northbound and westbound traffic.

Additional traffic signal heads will be added to both the northbound and westbound approaches to improve signal visibility. Based on the Iowa DOT’s planning level Crash Reduction Factors (CRF SI-12), this improvement will reduce all crashes by 15%. Backplates with retroreflective borders are proposed to be added to all traffic signal indications. Based on the [FHWA](#) and the Crash Modification Factor (CMF) Clearinghouse ([CMF ID: 1410](#)), this proven safety countermeasure is estimated to reduce all crashes by 15%.

The traffic signal timings were also reviewed. Based on the ITE Guidelines for Determining Traffic Signal Change and Clearance Intervals, the following signal timing changes are proposed:

		Westbound	Northbound
<b>Yellow Change (sec)</b>	<b>Existing</b>	3.00	3.00
	<b>Proposed</b>	3.70	3.50
<b>Red Clearance (sec)</b>	<b>Existing</b>	2.00	2.00
	<b>Proposed</b>	2.00	2.00

Updating the total traffic signal change interval at this intersection is expected to decrease all crashes by 7.8% ([CMF ID: 4219](#)).

Lastly, several pedestrian and bicycle improvements are proposed at this location including curb extensions to shorten pedestrian crossing distance and enhance visibility of pedestrians, stop bars and crosswalk pavement markings, and a barrier rail-separated two-way cycle track on the 6<sup>th</sup> Avenue bridge. These improvements do not have a CRF associated with them; however, they improve safety and comfort for pedestrians and bicyclists by providing separation between the modes of transportation. These improvements are supported by the City’s Transportation Master Plan, MoveDSM, and recently adopted [Vision Zero Transportation Safety Action Plan](#).

Based on Iowa DOT benefit-cost analysis spreadsheet, the estimated benefit cost for these improvements is 5.0. (See Exhibit L).

## ITEMIZED BREAKDOWN OF ALL COSTS

### PRELIMINARY ESTIMATE 6TH AVENUE STREETScape - PHASE 3 6TH AVENUE & DAY STREET SAFETY IMPROVEMENTS

7/24/2023



ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	TOTAL PROJECT UNITS	TOTAL PROJECT AMOUNT	6TH & DAY TSIP APP UNITS	6TH & DAY TSIP APP AMOUNT
1	Excavation, Class 10 and Topsoil	LS	\$10,000.00	1.0	\$10,000.00	0.1	\$1,000.00
2	Pavement Removal	SY	\$25.00	14,200	\$355,000.00	500	\$12,500.00
3	Sidewalk and Driveway Removal	SY	\$15.00	2,600	\$39,000.00	55	\$825.00
4	2' Curb and Gutter	LF	\$50.00	4,200	\$210,000.00	500	\$25,000.00
5	Pavement, P.C. Concrete	SY	\$100.00	150	\$15,000.00	50	\$5,000.00
6	Sidewalk P.C. Concrete	SY	\$80.00	1,600	\$128,000.00	250	\$20,000.00
7	Cycle Track P.C. Colored Concrete	SY	\$115.00	2,000	\$230,000.00	400	\$46,000.00
8	Driveway, P.C. Concrete	SY	\$75.00	750	\$56,250.00		\$0.00
9	Tape Pavement Marking	STA	\$500.00	100	\$50,000.00	10	\$5,000.00
10	Painted Pavement Marking	STA	\$60.00	50	\$3,000.00	10	\$600.00
11	Painted Symbols and Legends	EACH	\$200.00	10	\$2,000.00	6	\$1,200.00
12	Bridge Rail Modifications	LS	\$500,000.00	1.0	\$500,000.00	1.0	\$500,000.00
13	Traffic Signal Modifications	LS	\$360,000.00	1.0	\$360,000.00	0.15	\$54,000.00
14	Pavement Scarification	SY	\$5.00	7,500	\$37,500.00		\$0.00
15	HMA Overlay - 2-Inches	TON	\$125.00	1,000	\$125,000.00		\$0.00
16	Convert Intake to Manhole	EACH	\$5,000.00	3.0	\$15,000.00		\$0.00
17	Intake	EACH	\$9,000.00	3.0	\$27,000.00		\$0.00
18	Storm Sewer Pipe	LF	\$200.00	50	\$10,000.00		\$0.00
19	Fencing - Remove and Replace	LF	\$250.00	100	\$25,000.00	100	\$25,000.00
20	Sod/Seed	LS	\$10,000.00	1.0	\$10,000.00		\$0.00
21	Traffic Control	LS	\$75,000.00	1.0	\$75,000.00	0.1	\$7,500.00
22	Mobilization	LS	\$150,000.00	1.0	\$150,000.00	0.1	\$15,000.00
23	Contingencies	LS	\$267,250.00	1.0	\$267,250.00	0.1	\$31,375.00
TOTAL CONSTRUCTION COST					\$2,700,000.00		\$750,000.00
RIGHT-OF-WAY COSTS					\$50,000.00		\$0.00
<b>ESTIMATED TOTAL PROJECT COST</b>					<b>\$2,750,000.00</b>		
<b>ESTIMATED SAFETY-RELATED PROJECT COSTS</b>							<b>\$750,000.00</b>

## NOTES:

Safety improvements includes all work from 6th and Day Street intersection to 6th and School Street intersection including all work on the 6th Avenue bridge.  
See narrative (Section B) for description of safety improvement work.  
See plan view exhibit (Section G) for approximate bounds of safety improvements.

## Anticipated Funding Sources:

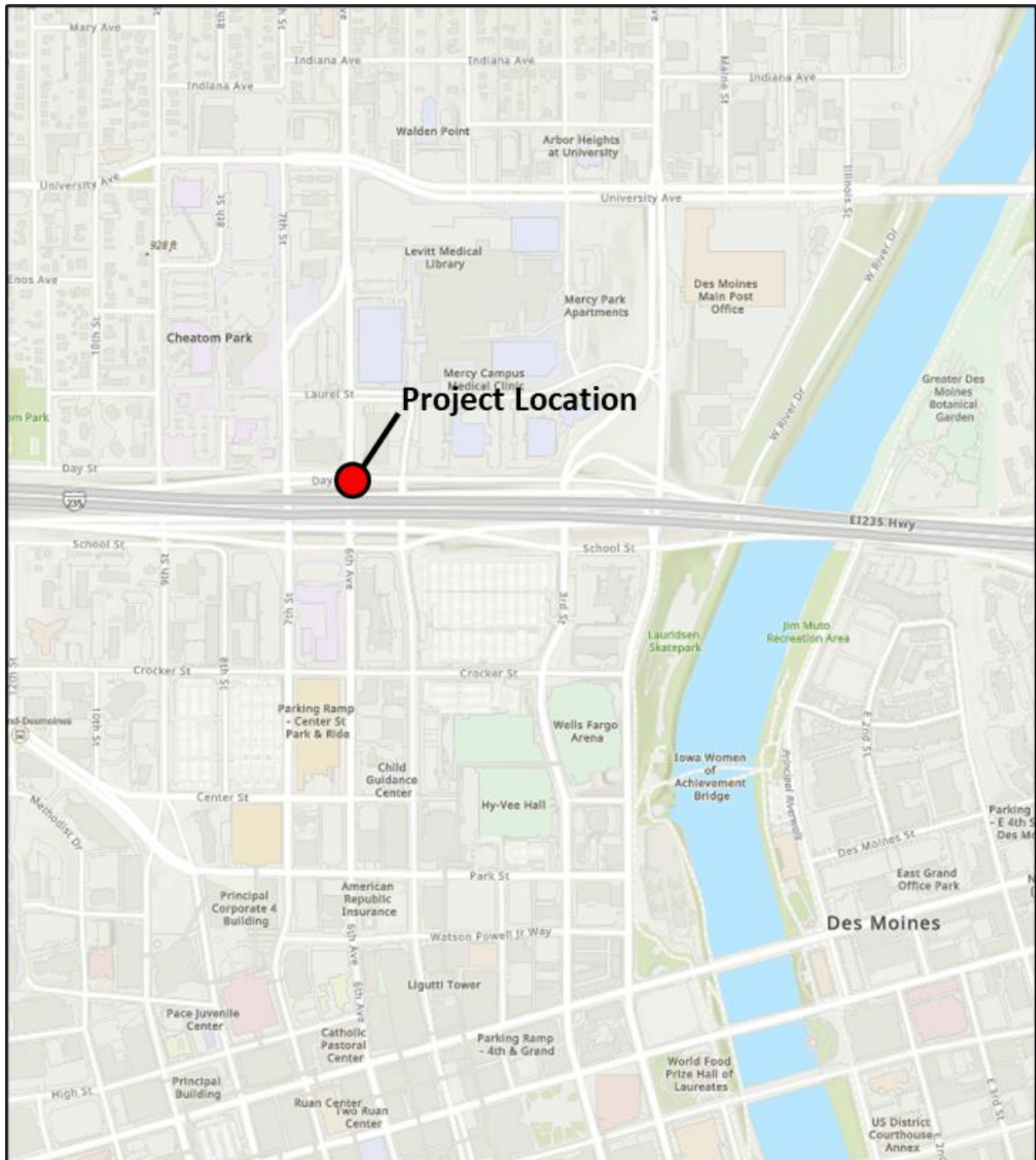
Traffic Safety Improvement Program	\$ 500,000
General Obligation Bonds	\$ 2,250,000
<b>Total</b>	<b>\$ 2,750,000</b>

**TIME SCHEDULE**

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Preliminary Plan Design	August 2023 – August 2024
Final Plan Preparation	August 2024 – November 2024
Plan Approval & Project Letting	November 2024 – January 2024
Construction	March 2025 – December 2025

MAP



**COLOR PICTURES**

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6<sup>th</sup> Avenue – Looking North



6<sup>th</sup> Avenue – Looking South



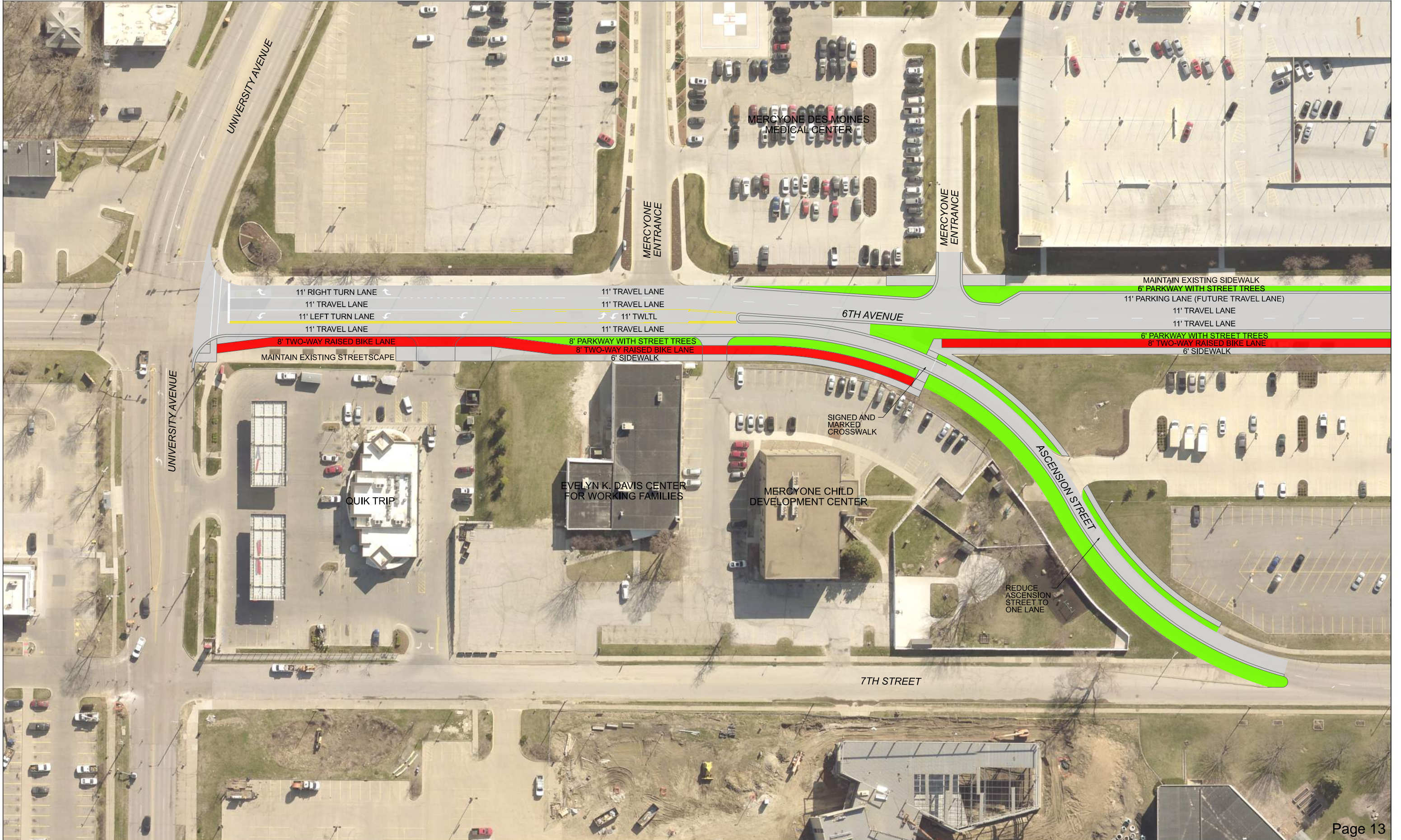
Day Street – Looking West



Day Street – Looking East



# 6TH AVENUE STREETScape CONCEPT PLAN - 6TH AVENUE AND DAY STREET PLAN VIEW



UNIVERSITY AVENUE

UNIVERSITY AVENUE

MERCYONE DES MOINES  
MEDICAL CENTER

MERCYONE  
ENTRANCE

MERCYONE  
ENTRANCE

11' RIGHT TURN LANE  
11' TRAVEL LANE  
11' LEFT TURN LANE  
11' TRAVEL LANE

11' TRAVEL LANE  
11' TRAVEL LANE  
11' TWLTL  
11' TRAVEL LANE

MAINTAIN EXISTING SIDEWALK  
6' PARKWAY WITH STREET TREES  
11' PARKING LANE (FUTURE TRAVEL LANE)  
11' TRAVEL LANE  
11' TRAVEL LANE

8' TWO-WAY RAISED BIKE LANE  
MAINTAIN EXISTING STREETScape

8' PARKWAY WITH STREET TREES  
8' TWO-WAY RAISED BIKE LANE  
6' SIDEWALK

6TH AVENUE

6' PARKWAY WITH STREET TREES  
8' TWO-WAY RAISED BIKE LANE  
6' SIDEWALK

QUIK TRIP

EVELYN K. DAVIS CENTER  
FOR WORKING FAMILIES

MERCYONE CHILD  
DEVELOPMENT CENTER

SIGNED AND  
MARKED  
CROSSWALK

ASCENSION STREET

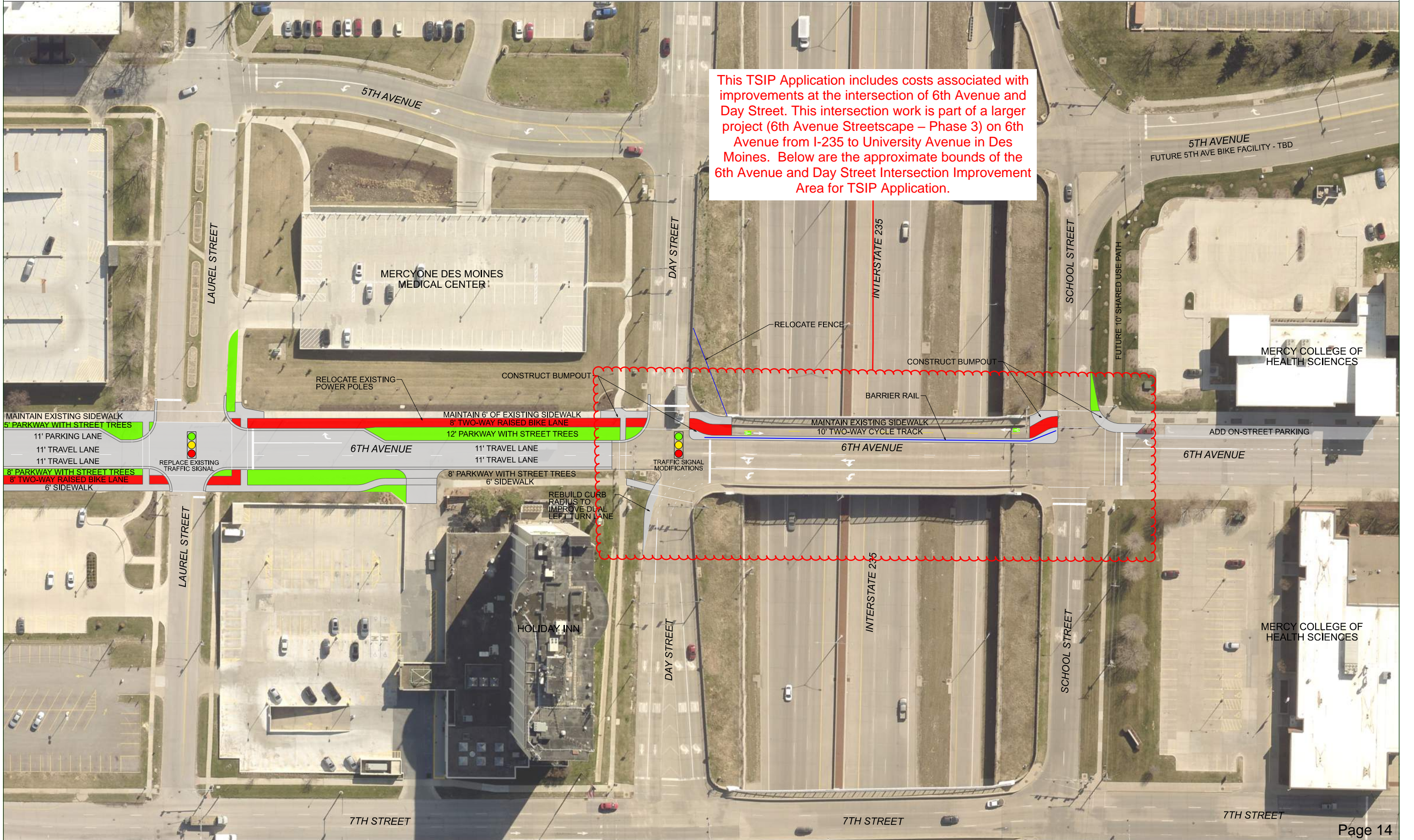
REDUCE  
ASCENSION  
STREET TO  
ONE LANE

7TH STREET



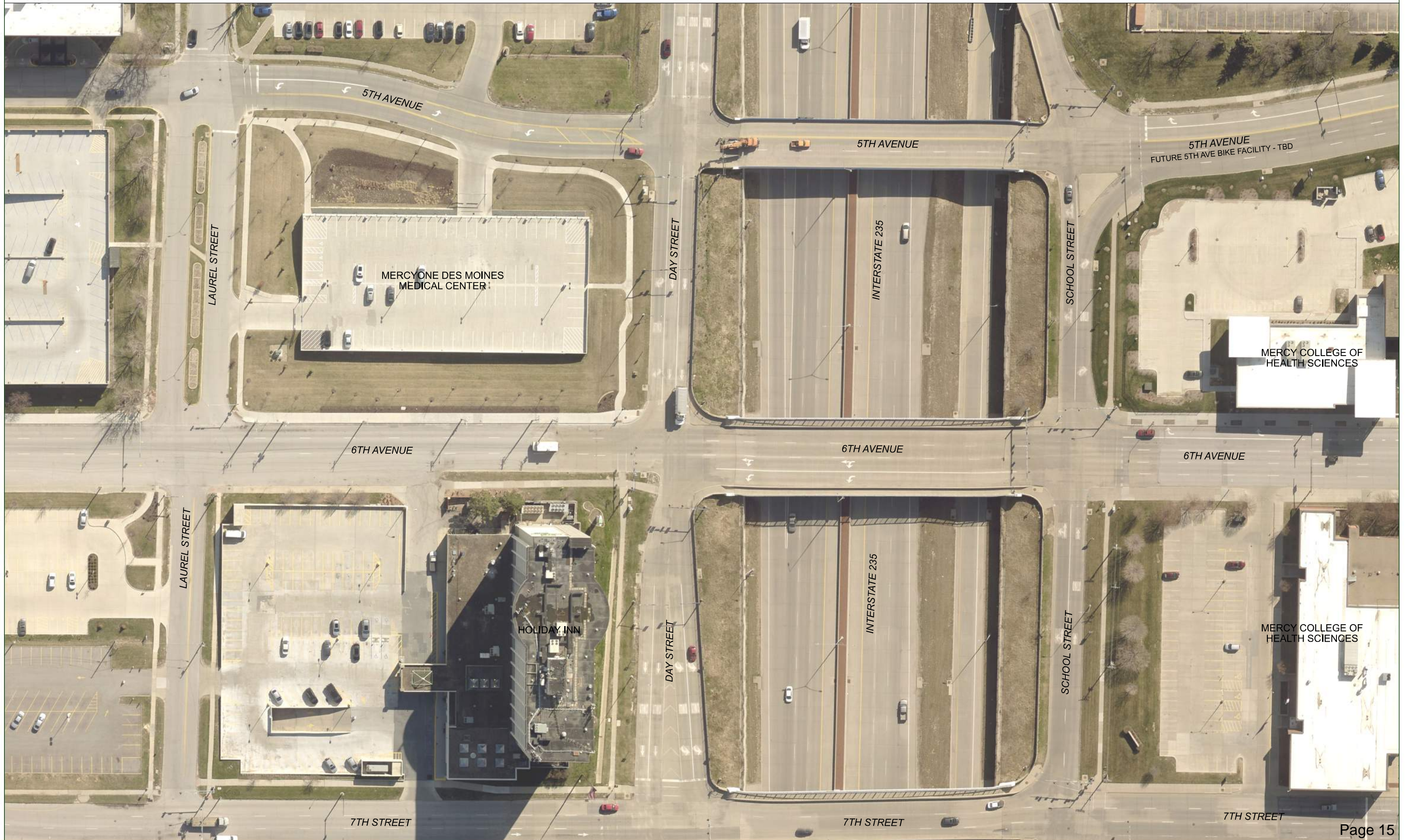
# 6TH AVENUE STREETSCAPE CONCEPT PLAN - 6TH AVENUE AND DAY STREET PLAN VIEW

This TSIP Application includes costs associated with improvements at the intersection of 6th Avenue and Day Street. This intersection work is part of a larger project (6th Avenue Streetscape – Phase 3) on 6th Avenue from I-235 to University Avenue in Des Moines. Below are the approximate bounds of the 6th Avenue and Day Street Intersection Improvement Area for TSIP Application.





# 6TH AVENUE AND DAY STREET AERIAL PHOTOGRAPHY



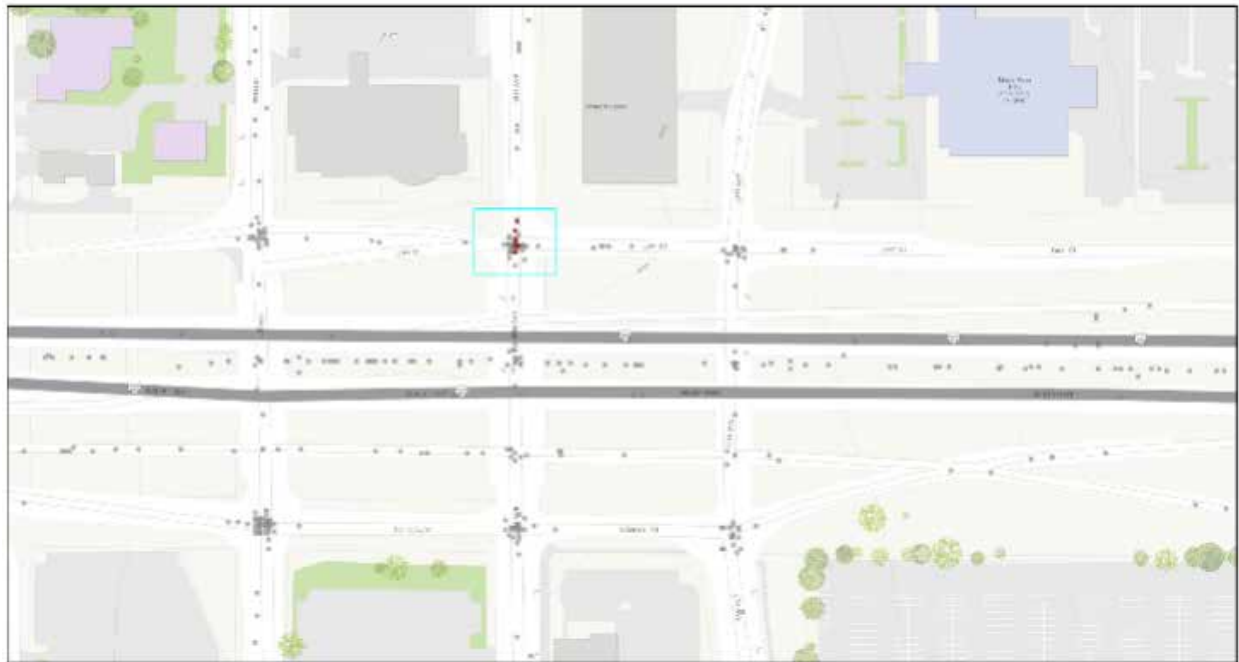
**ICAT CRASH SUMMARY OF MOTOR VEHICLE ACCIDENTS**



**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

<b>Crash Severity</b>		<b>62</b>	<b>Injury Status Summary</b>		<b>50</b>
Fatal Crash	0		Fatalities	0	
Suspected Serious Injury Crash	0		Suspected serious/incapacitating	0	
Suspected Minor Injury Crash	13		Suspected minor/non-incapacitating	16	
Possible/Unknown Injury Crash	21		Possible (complaint of pain/injury)	32	
Property Damage Only	28		Unknown	2	

<b>Property/Vehicles/Occupants</b>		<b>Average Severity</b>	
Property Damage Total (dollars):	556,250.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	8,971.77	Fatalities/Crash:	0.00
Total Vehicles:	126.00	Injuries/Crash:	0.77
Average (per crash):	2.03	Major Injuries/Crash:	0.00
Total Occupants:	182.00	Minor Injuries/Crash:	0.26
Average (per crash):	2.94	Possible/Unknown Injuries/Crash:	0.52



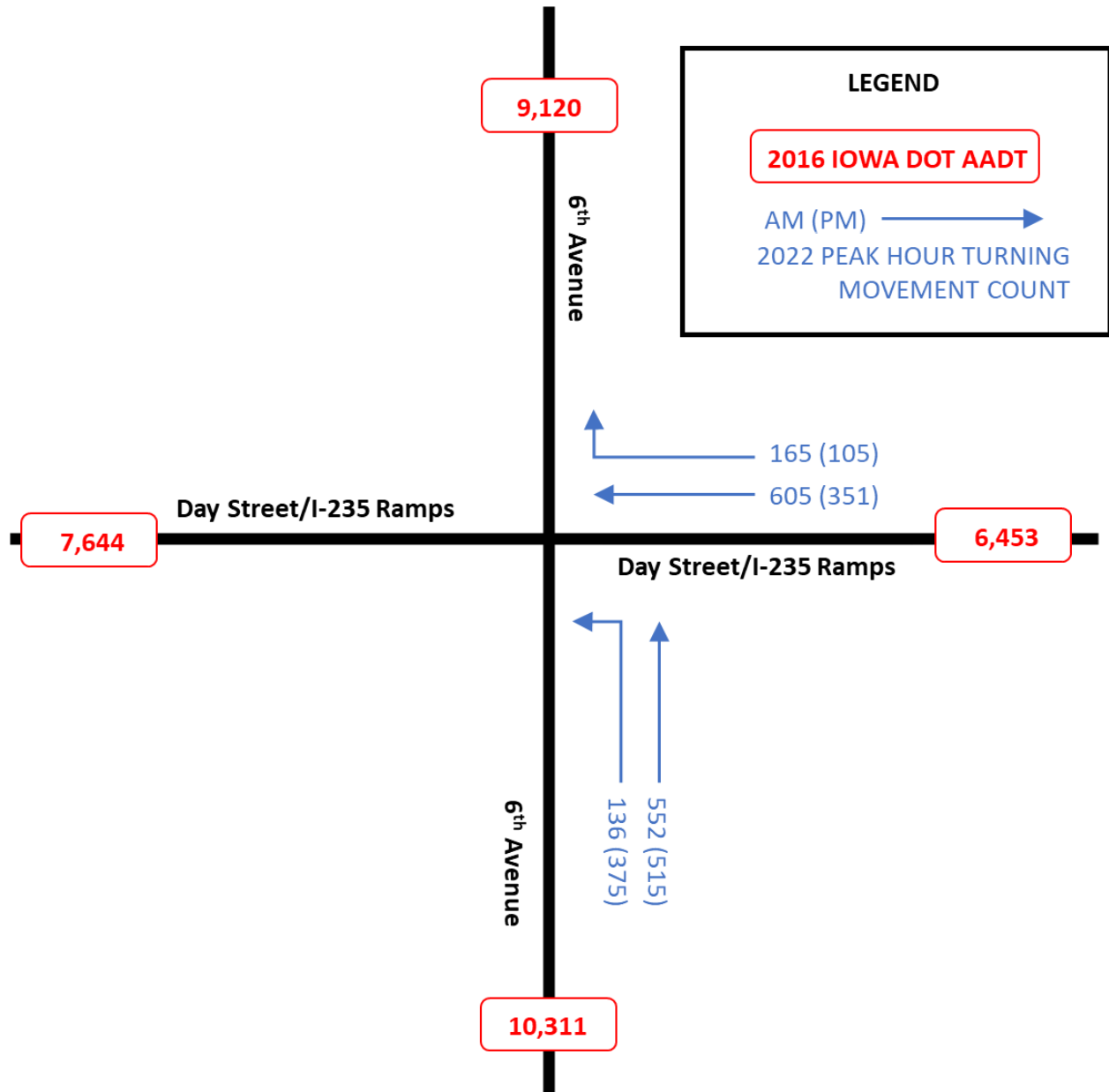


Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause		62
Animal	0	Ran traffic signal 40
Ran stop sign	0	Failed to yield to emergency vehicle 0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal 0
FTYROW: From stop sign	0	FTYROW: From yield sign 0
FTYROW: Making left turn	0	FTYROW: From driveway 0
FTYROW: From parked position	0	FTYROW: To pedestrian 0
FTYROW: Other	1	Drove around RR grade crossing gates 0
Disregarded RR Signal	0	Crossed centerline (undivided) 0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road 2
Aggressive driving/road rage	0	Driving too fast for conditions 0
Exceeded authorized speed	1	Improper or erratic lane changing 0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close 1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings 0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier 0
Passing: Other passing	0	Made improper turn 2
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d... 0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio... 0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger 0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f... 0
Driver Distraction: Inattentive/lost in thou...	1	Driver Distraction: Other interior distracti... 0
Driver Distraction: Exterior distraction	1	Ran off road - right 0
Ran off road - straight	0	Ran off road - left 0
Lost control	0	Swerving/Evasive Action 0
Over correcting/over steering	0	Failed to keep in proper lane 0
Failure to signal intentions	0	Traveling on prohibited traffic way 0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed 0
Other: Improper operation	0	Other: Disregarded warning sign 0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving 0
Downhill runaway	0	Separation of units 0
Towing improperly	0	Cargo/equipment loss or shift 0
Equipment failure	0	Oversized load/vehicle 0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on 0
Improper backing	0	Improper starting 0
Illegally parked/unattended	0	Driving less than the posted speed limit 0
Operator inexperience	0	Other 4
Unknown	9	Not reported 0
Other: No improper action	0	

Manner of Crash Collision	62
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	5
Angle, oncoming left turn	0
Broadside (front to side)	55
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

**TRAFFIC VOLUMES AND TURNING MOVEMENTS**



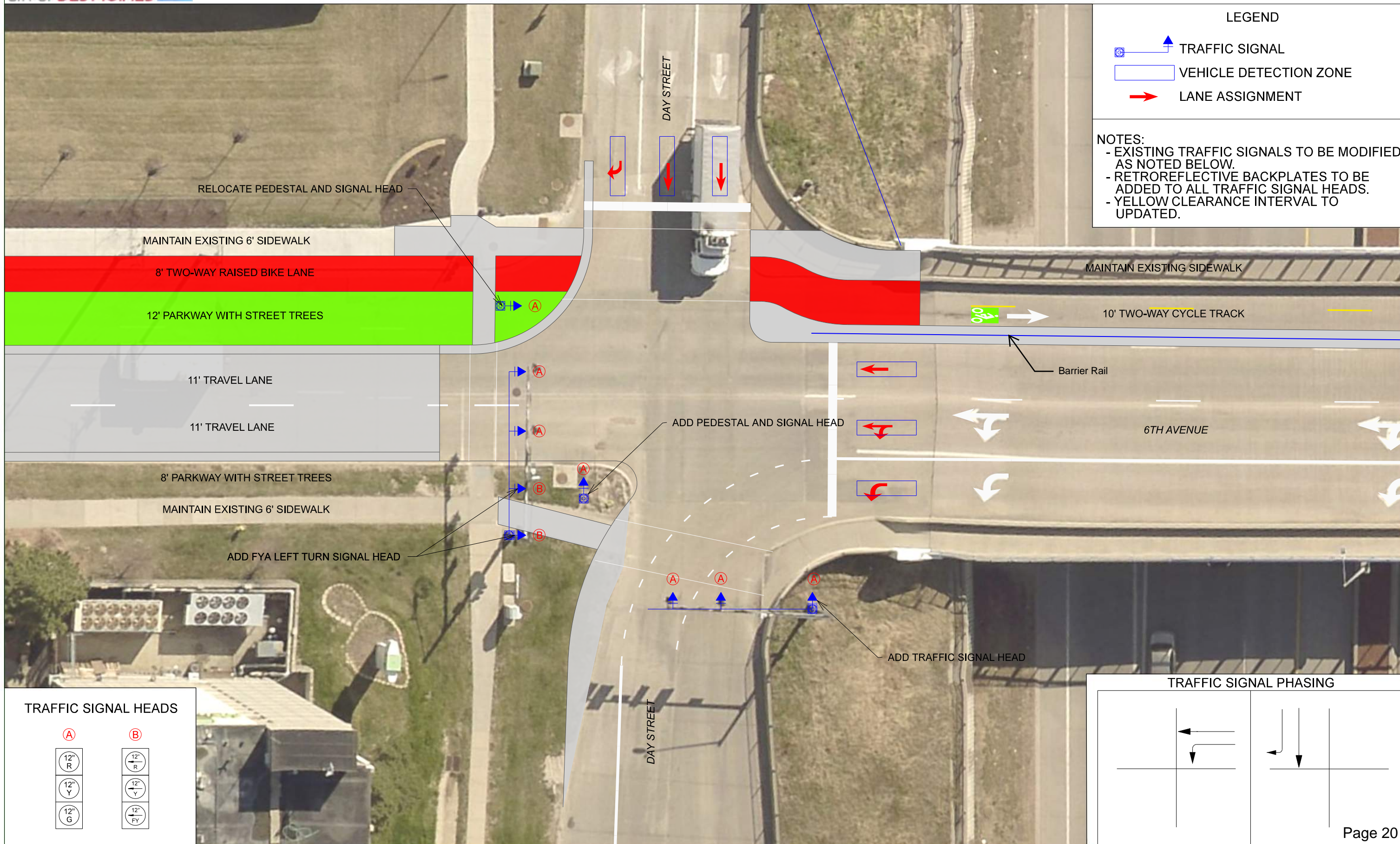
**Traffic Volume Notes:**

- ADT Source: Iowa DOT 2016 Turning Movement Count Summary
- Peak Hour Counts: 12-hr Manual Count on Tuesday, April 19, 2022
- AM Peak Hour: 7am-8am, PM Peak Hour: 4:15pm-5:15pm

Section J

Leg Direction	Day Eastbound						Day Westbound						6th Northbound						6th Southbound						Int
	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	R	T	L	U	App	Ped*	
2022-04-19 6:00AM	0	0	0	0	0	0	13	29	0	0	42	0	0	65	4	0	69	0	0	0	0	0	0	111	
6:15AM	0	0	0	0	0	1	17	52	0	0	69	1	0	110	9	0	119	0	0	0	0	0	0	188	
6:30AM	0	0	0	0	0	0	21	65	0	0	86	0	0	129	14	0	143	0	0	0	0	0	0	229	
6:45AM	0	0	0	0	0	1	27	94	0	0	121	1	0	167	9	0	176	0	0	0	0	0	0	297	
Hourly Total	0	0	0	0	0	2	78	240	0	0	318	2	0	471	36	0	507	0	0	0	0	0	0	825	
7:00AM	0	0	0	0	0	0	40	96	0	0	136	1	0	123	28	0	151	0	0	0	0	0	0	287	
7:15AM	0	0	0	0	0	1	34	122	0	0	156	1	0	143	30	0	173	0	0	0	0	0	0	329	
7:30AM	0	0	0	0	0	0	49	183	0	0	232	0	0	138	40	0	178	0	0	0	0	0	0	410	
7:45AM	0	0	0	0	0	1	42	204	0	0	246	0	0	148	38	0	186	0	0	0	0	0	0	432	
Hourly Total	0	0	0	0	0	2	165	605	0	0	770	2	0	552	136	0	688	0	0	0	0	0	0	1458	
8:00AM	0	0	0	0	0	1	26	99	0	0	125	0	0	124	32	0	156	0	0	0	0	0	0	281	
8:15AM	0	0	0	0	0	2	31	98	0	0	129	0	0	110	28	0	138	0	0	0	0	0	0	267	
8:30AM	0	0	0	0	0	1	22	87	0	0	109	2	0	109	27	0	136	0	0	0	0	0	0	245	
8:45AM	0	0	0	0	0	1	28	78	0	0	106	0	0	98	28	0	126	0	0	0	0	0	0	232	
Hourly Total	0	0	0	0	0	5	107	362	0	0	469	2	0	441	115	0	556	0	0	0	0	0	0	1025	
9:00AM	0	0	0	0	0	0	15	52	0	0	67	6	0	87	18	0	105	0	0	0	0	0	0	172	
9:15AM	0	0	0	0	0	0	22	39	0	0	61	0	0	88	24	0	112	0	0	0	0	0	0	173	
9:30AM	0	0	0	0	0	0	23	39	0	0	62	0	0	90	18	0	108	0	0	0	0	0	0	170	
9:45AM	0	0	0	0	0	0	21	44	0	0	65	0	0	96	41	0	137	0	0	0	0	0	0	202	
Hourly Total	0	0	0	0	0	0	81	174	0	0	255	6	0	361	101	0	462	0	0	0	0	0	0	717	
10:00AM	0	0	0	0	0	1	18	38	0	0	56	0	0	82	25	0	107	0	0	0	0	0	0	163	
10:15AM	0	0	0	0	0	0	20	46	1	1	68	1	0	78	28	0	106	0	0	0	0	0	0	174	
10:30AM	0	0	0	0	0	1	12	49	0	0	61	1	0	88	24	0	112	0	0	0	0	0	0	173	
10:45AM	0	0	0	0	0	3	19	39	0	0	58	0	0	71	33	0	104	0	0	0	0	0	0	162	
Hourly Total	0	0	0	0	0	5	69	172	1	1	243	2	0	319	110	0	429	0	0	0	0	0	0	672	
11:00AM	0	0	0	0	0	1	29	47	0	0	76	0	0	70	36	0	106	0	0	0	0	0	0	182	
11:15AM	0	0	0	0	0	0	21	42	0	0	63	1	0	91	26	0	117	0	0	0	0	0	0	180	
11:30AM	0	0	0	0	0	1	24	40	0	0	64	1	0	83	31	0	114	0	0	0	0	0	0	178	
11:45AM	0	0	0	0	0	0	25	49	0	0	74	1	0	86	39	0	125	0	0	0	0	0	0	199	
Hourly Total	0	0	0	0	0	2	99	178	0	0	277	3	0	330	132	0	462	0	0	0	0	0	0	739	
12:00PM	0	0	0	0	0	0	16	54	0	0	70	0	0	92	36	0	128	0	0	0	0	0	0	198	
12:15PM	0	0	0	0	0	1	16	53	0	0	69	0	0	79	36	0	115	0	0	0	0	0	0	184	
12:30PM	0	0	0	0	0	1	22	44	0	0	66	0	0	93	25	0	118	0	0	0	0	0	0	184	
12:45PM	0	0	0	0	0	0	18	48	0	0	66	0	0	94	23	0	117	0	0	0	0	0	0	183	
Hourly Total	0	0	0	0	0	2	72	199	0	0	271	0	0	358	120	0	478	0	0	0	0	0	0	749	
1:00PM	0	0	0	0	0	0	18	32	0	0	50	0	0	95	39	0	134	0	0	0	0	0	0	184	
1:15PM	0	0	0	0	0	1	19	47	0	0	66	1	0	81	35	0	116	0	0	0	0	0	0	182	
1:30PM	0	0	0	0	0	1	20	48	0	0	68	1	0	79	33	0	112	0	0	0	0	0	0	180	
1:45PM	0	0	0	0	0	2	22	39	0	0	61	0	0	88	23	0	111	0	0	0	0	0	0	172	
Hourly Total	0	0	0	0	0	4	79	166	0	0	245	2	0	343	130	0	473	0	0	0	0	0	0	718	
2:00PM	0	0	0	0	0	0	20	59	0	0	79	0	0	94	42	0	136	0	0	0	0	0	0	215	
2:15PM	0	0	0	0	0	0	30	53	0	0	83	1	0	101	38	0	139	0	0	0	0	0	0	222	
2:30PM	0	0	0	0	0	0	27	64	0	0	91	0	0	89	40	0	129	0	0	0	0	0	0	220	
2:45PM	0	0	0	0	0	2	30	58	0	0	88	0	0	116	35	0	151	0	0	0	0	0	0	239	
Hourly Total	0	0	0	0	0	2	107	234	0	0	341	1	0	400	155	0	555	0	0	0	0	0	0	896	
3:00PM	0	0	0	0	0	1	21	85	0	0	106	1	0	104	49	0	153	0	0	0	0	0	0	259	
3:15PM	0	0	0	0	0	0	22	57	0	0	79	3	0	93	45	0	138	0	0	0	0	0	0	217	
3:30PM	0	0	0	0	0	1	19	99	0	0	118	0	0	110	46	0	156	0	0	0	0	0	0	274	
3:45PM	0	0	0	0	0	1	22	65	0	0	87	3	0	110	65	0	175	0	0	0	0	0	0	262	
Hourly Total	0	0	0	0	0	3	84	306	0	0	390	7	0	417	205	0	622	0	0	0	0	0	0	1012	
4:00PM	0	0	0	0	0	0	20	103	1	0	124	0	0	111	79	0	190	0	0	0	0	0	0	314	
4:15PM	0	0	0	0	0	0	27	75	0	0	102	2	0	115	83	0	198	0	0	0	0	0	0	300	
4:30PM	0	0	0	0	0	0	25	79	0	0	104	1	0	124	111	0	235	0	0	0	0	0	0	339	
4:45PM	0	0	0	0	0	0	32	92	0	0	124	0	0	135	93	0	228	0	0	0	0	0	0	352	
Hourly Total	0	0	0	0	0	0	104	349	1	0	454	3	0	485	366	0	851	0	0	0	0	0	0	1305	
5:00PM	0	0	0	0	0	0	21	105	0	0	126	0	0	141	88	0	229	0	0	0	0	0	0	355	
5:15PM	0	0	0	0	0	2	31	86	0	0	117	2	0	108	75	0	183	0	0	0	0	0	0	300	
5:30PM	0	0	0	0	0	3	27	54	0	0	81	3	0	98	62	0	160	0	0	0	0	0	0	241	
5:45PM	0	0	0	0	0	0	25	53	0	0	78	2	0	86	41	0	127	0	0	0	0	0	0	205	
Hourly Total	0	0	0	0	0	5	104	298	0	0	402	7	0	433	266	0	699	0	0	0	0	0	0	1101	
Total	0	0	0	0	0	32	1149	3283	2	1	4435	37	0	4910	1872	0	6782	0	0	0	0	0	4	11217	
% Approach	0%	0%	0%	0%	0%	-	25.9%	74.0%	0%	0%	-	-	0%	72.4%	27.6%	0%	-	-	0%	0%	0%	0%	-	-	
% Total	0%	0%	0%	0%	0%	0%	10.2%	29.3%	0%	0%	39.5%	-	0%	43.8%	16.7%	0%	60.5%	-	0%	0%	0%	0%	0%	-	
Lights	0	0	0	0	0	0	1112	3210	2	1	4325	-	0	4659	1828	0	6487	-	0	0	0	0	0	10812	
% Lights	0%	0%	0%	0%	0%	-	96.8%	97.8%	100%	100%	97.5%	-	0%	94.9%	97.6%	0%	95.7%	-	0%	0%	0%	0%	0%	96.4%	
Articulated Trucks	0	0	0	0	0	0	5	13	0	0	18	-	0	8	3	0	11	-	0	0	0	0	0	29	
% Articulated Trucks	0%	0%	0%	0%	0%	-	0.4%	0.4%	0%	0%	0.4%	-	0%	0.2%	0.2%	0%	0.2%	-	0%	0%	0%	0%	-	0.3%	
Buses and Single-Unit Trucks	0	0	0	0	0	0	32	60	0	0	92	-	0	243	41	0	284	-	0	0	0	0	0	376	
% Buses and Single-Unit Trucks	0%	0%	0%	0%	0%	-	2.8%	1.8%	0%	0%	2.1%	-	0%	4.9%	2.2%	0%	4.2%	-	0%	0%	0%	0%	-	3.4%	
Pedestrians	-	-	-	-	-	31	-	-	-	-	30	-	-	-	-	-	0	-	-	-	-	-	4		
% Pedestrians	-	-	-	-	-	96.9%	-	-	-	-	81.1%	-	-	-	-	-	-	-	-	-	-	-	100%	-	
Bicycles on Crosswalk	-	-	-	-	-	1	-	-	-	-	7	-	-	-	-	-	0</								

# 6TH AVENUE AND DAY STREET TRAFFIC SIGNAL LAYOUT



**LEGEND**

- TRAFFIC SIGNAL
- VEHICLE DETECTION ZONE
- LANE ASSIGNMENT

**NOTES:**

- EXISTING TRAFFIC SIGNALS TO BE MODIFIED AS NOTED BELOW.
- RETROREFLECTIVE BACKPLATES TO BE ADDED TO ALL TRAFFIC SIGNAL HEADS.
- YELLOW CLEARANCE INTERVAL TO BE UPDATED.

**TRAFFIC SIGNAL HEADS**

<b>(A)</b>	<b>(B)</b>
12" R	12" R
12" Y	12" Y
12" G	12" FY

**TRAFFIC SIGNAL PHASING**

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**BENEFIT/COST**



Safety Benefit-Cost Ratio

County:	Polk	Prepared By:	City of DSM
Location:	6th Avenue & Day Street	Date Prepared:	7/24/2023
Proposed Improvements:	Retroreflective backplates, add traffic signal heads, signal timing changes, geometric improvements		
Estimated Improvement Cost:	\$ 750,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 15,000

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

**Crash Reduction Factor (CRF) Method**

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

**Combined CRF (Dominant Common Residuals Method)**

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	15	15	7.8	29.2	
	Rounded	Crash History	CRF (from	Crash History -	Crashes Saved
	Societal Costs	(Total):	above)	Annual Avg	Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	0	29.2	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	29.2	0.00	0.00
Minor Injury (B)	\$ 265,000	13	29.2	2.60	0.76
Possible/Unknown Injury (C)	\$ 125,000	21	29.2	4.20	1.23
Property Damage Only (O)	\$ 20,000	28	29.2	5.60	1.64

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 201,188
Possible/Unknown Injury (C)	\$ 153,300
Property Damage Only (O)	\$ 32,704

**Total Benefits and Costs**

	Implementation Cost	\$ 750,000	
	Present Value of Maint.	\$ 166,776	
Present Value Benefits (Societal Benefits)	\$ 4,586,351	Present Value Costs (Impl. and Maint. Costs)	\$ 916,776
Present Value Net Return	\$ 3,669,575		
<b>Benefit Cost Ratio</b>	<b>5.00</b>		

Form continues on next page



# Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: 8/15/2023

Location / Title of Project Northwest Arterial and John F. Kennedy Intersection Improvements

Applicant City of Dubuque

Contact Person Robert Schiesl Title Assistant City Engineer

Complete Mailing Address 50 W 13<sup>th</sup> St, Dubuque, IA 52001

Phone (563) 589-4270 E-Mail bschiesl@cityofdubuque.org  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	<u>311,713.60</u>
Total Project Cost	\$	<u>389,642</u>
<b>Safety Funds Requested</b>	<b>\$</b>	<b><u>311,713.60</u></b>




## APPLICATION CERTIFICATION FOR PUBLIC AGENCY

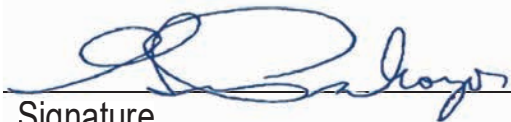
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Dubuque

Signed:  8-15-2023  
Signature Date Signed

Robert Schiesl, Assistant City Engineer  
Printed Name

Attest:  8-15-2023  
Signature Date Signed

Gus Psihoyos, City Engineer  
Printed Name

**RESOLUTION NO. 269-23**

**AUTHORIZING THE FILING OF A GRANT APPLICATION WITH THE IOWA DEPARTMENT OF TRANSPORTATION FOR TRAFFIC SAFETY IMPROVEMENT GRANT FUNDING TO ASSIST WITH FUNDING FOR PROPOSED IMPROVEMENTS TO CONSTRUCT A NEW NORTHWEST ARTERIAL EASTBOUND DEDICATED RIGHT TURN LANE ONTO JOHN F. KENNEDY ROAD**

Whereas, the increasing growth of traffic volumes, along with operational and safety concerns, at the intersection of Northwest Arterial and John F Kennedy (JFK) Road in the City of Dubuque could be improved by constructing a proposed new Northwest Arterial eastbound dedicated right turn lane onto John F. Kennedy Road; and

Whereas, the City of Dubuque has determined that improvements to this intersection, as recommended by the Northwest Arterial Capacity Study, will improve traffic flow efficiency; and

Whereas, the City of Dubuque is seeking the necessary funding for project implementation, and upon completion, in cooperation with the Iowa Department of Transportation, be responsible for adequately maintaining and operating the project for public use during the project's useful life.

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DUBUQUE, IOWA, THAT:

Section 1. The City is hereby authorized to file the grant application with the Iowa Department of Transportation for Traffic Safety Improvement Program funding to assist with funding for proposed improvements to construct a proposed new Northwest Arterial eastbound dedicated right turn lane onto John F. Kennedy Road.

Passed, approved, and adopted this 21<sup>st</sup> day of August 2023

  
Brad M. Cavanagh, Mayor

Attest:

  
Trish L. Gleason, Assistant City Clerk

## B. Narrative

### Existing Conditions

The project proposed is at the intersection of Northwest Arterial and John F Kennedy Rd (JFK Rd) in Dubuque, Iowa. Northwest Arterial is a five-mile-long Principal Arterial that runs north and south across the western portion in the City of Dubuque. Northwest Arterial's northern terminus is an intersection with Iowa 3/Central Ave and to the south it intersects with US Highway 20. JFK Rd is a Minor Arterial running north and south through the City of Dubuque. The Northwest Arterial is one of the most vital transportation corridors in the city of Dubuque as it is one of 4 roads that carry most of the east/west traffic in the city.

### Geometry

- Intersection is a four-way signalized intersection
- East leg of the intersection has one left turn lane and two through lanes
- West leg of the intersection has one left turn lane and two through lanes
- North leg of the intersection has one left turn lane and one through and one right turn lane
- South leg of the intersection has one left turn lane and one through/right turn lane

The west leg of the intersection has two through lanes and one left turn lane. It is the most traveled leg of the intersection, as it is north of other major intersections such as Northwest Arterial and Dodge Street (Highway 20), Northwest Arterial and Pennsylvania Avenue, and Northwest Arterial and Asbury Road. Employers such as John Deere are located further north on the Arterial, while off of JFK Rd is a large residential neighborhood.

HDR Engineering Inc. (HDR) completed an Existing Conditions Analysis in 2006 and a Future Conditions Analysis in 2007. The Iowa Department of Transportation commissioned both studies. These studies both indicated that operational and safety concerns will continue to increase with growth of traffic volumes in the corridor.

### Traffic

The intersection of Northwest Arterial and JFK Rd is very busy, with the south, north, east and west legs averaging 7,500, 8,800, 11,400, and 14,700 drivers respectively according to the 2021 AADT. This results in a total AADT of 42,400. These numbers were 7,000, 7,700, 11,600 and 14,300 respectively in the 2017 AADT, resulting in a total AADT of 40,600 and shows an approximate 4.43% increase in traffic volume over the 4 year period and an annual growth of 1.1%. This shows a marked increase in traffic volume and potential for rear-end collisions.

### Crashes

From the years 2018-2022 there were 36 crashes at the intersection. There were no fatalities during this period, but 17 of the 36 crashes (47.2%) reported some level of injury, with 3 (8.3%) of the crashes reported a suspected minor injury while 12 (38.9%) reported having possible injuries. The total property damage was \$252,000 with an average of \$7,000 per crash.

20 of the 36 crashes (55.6%) were rear-end collisions, while 6 (19.4%) were broadside (front to side) and 3 (8.3%) were sideswipes in the same direction.

The most common reasons for crashes were drivers losing control of their vehicle (10 incidents) and running a traffic signal (7 incidents).

In the Dubuque Metropolitan Area Transportation Study (DMATS) Long Range Transportation Plan 2050, the average crash severity score at the intersection was 4.4 which was the 5<sup>th</sup> highest in the city.

### Project Concept

The proposed improvements at Northwest Arterial and JFK Rd consist of adding a right turn lane to the

## B. Narrative

west leg of the intersection while also increasing sidewalk connectivity between the roadways. This would facilitate free traffic movements for the through lanes, leading to minimized waiting lengths and blockages in the through lanes by right turning vehicles. This would also reduce the risk of rear-end accidents that occur often at the intersection. This concept is based on recommendations from the 2007 Future Conditions Analysis prepared by HDR for the Iowa Department of Transportation.

Pedestrian safety is another key component of the project. The project will move the stop bar along the west leg back to allow for the creation of a crosswalk across the Northwest Arterial. This will come with the completion of sidewalks around the south and north legs of the intersection to connect the sidewalks on JFK Rd to the Northwest Arterial Bike/Hike Trail. This will increase the connectivity of trail networks throughout the city in a safe manner. This proposed component is a part of the 2023 Dubuque Regional Bicycle and Pedestrian Network Plan that seeks to improve the bicycle and pedestrian network as a part of the regional transportation system. While there is no recorded crash history involving pedestrians, the intersection does have many children use the intersection before and after school as the intersection is located close to Eisenhower Elementary School, making it a clear priority area for safety.

The proposed improvement along Northwest Arterial includes a 36-foot clear zone, as measured from the edge of traveled way to the face of the nearest fixed object. Whereas the American Association of State Highway and Transportation Officials (AASHTO) Roadside Design Guide suggest a range of values for the given traffic and design speed of 24 to 28 feet. The slightly larger value was considered appropriate for the current operational charter of Northwest Arterial. The provided clear zone for John F. Kennedy Rd will be at least 10 feet. Iowa Statewide Urban Design and Specifications (SUDAS) guidelines recommend a clear zone from the back of curb of 4 to 6 feet.

The 2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revision Numbers 1, 2 and 3 incorporated, dated July 2022 will be utilized for the construction and design of the proposed improvements. Traffic control (temporary and permanent), signing and pavement marking guidelines from the MUTCD will be used.

The project is expected to reduce crashes by 6% according to the Crash Reduction Factor from the Iowa DOT with the overall cost of the project coming out to be \$389,642 which includes a 10% contingency. The safety costs of the project are equivalent to \$311,713.60. The overall benefits of the project are estimated to be \$518,452 and when including maintenance the overall benefit-cost ratio of the proposal is 1.31.

# C. Itemized Breakdown of All Costs



## ENGINEER'S ESTIMATE OF PROBABLE COST

PROJECT NAME: Northwest Arterial & JFK - Right Turn Lane Project

DATE  
August 7, 2023

BID ITEM NUMBER	BID ITEM REF CODE	DESCRIPTION	UNIT	ESTIMATE QUANTITY	ESTIMATE UNIT COST	ESTIMATE COST
<b>Division 21 - Earthwork, Subgrade, and Subbases</b>						
1	2102-0425070	Special Backfill (T)	TON	30.00	\$ 25.00	\$ 750.00
2	2102-2625001	Embankment-In-Place	CY	150.00	\$ 100.00	\$ 15,000.00
3	2102-2713070	Excavation Cl 13, Rdwy & Borrow	CY	500.00	\$ 25.00	\$ 12,500.00
4	2105-8425005	Topsoil Furnish & Spread	CY	55.00	\$ 55.00	\$ 3,025.00
5	2113-0001000	Subgrade Stabil Mat'l, Geosynthetic	SY	910.00	\$ 8.00	\$ 7,280.00
6	2115-0100000	Modified Subbase	CY	305.00	\$ 25.00	\$ 7,625.00
7	2121-7425010	Shld Granular, Type A	TON	90.00	\$ 25.00	\$ 2,250.00
<b>Sub Total</b>						<b>\$ 48,430.00</b>
<b>Division 23 - Surface Courses</b>						
8	2303-1031500	HOT MIX ASPHALT STANDARD TRAFFIC, BASE COURSE, 1/2 IN. MIX	TON	78.60	\$ 65.00	\$ 5,109.00
9	2303-1041750	HOT MIX ASPHALT STANDARD TRAFFIC, BASE COURSE, 3/4 IN. MIX	TON	235.60	\$ 65.00	\$ 15,314.00
10	2303-1032500	HOT MIX ASPHALT STANDARD TRAFFIC, INTERMEDIATE COURSE, 1/2 IN. MI	TON	78.60	\$ 65.00	\$ 5,109.00
11	2303-1033500	HMA STD TRAFFIC, SURFACE COURSE, 1/2 IN. MIX, FIC L-2	TON	78.60	\$ 65.00	\$ 5,109.00
12	2303-1252343	ASPHALT BINDER, PG 58-34S	TON	18.00	\$ 750.00	\$ 13,500.00
13	2303-1258284	ASPHALT BINDER, PG 58-28H, HIGH TRAFFIC	TON	9.20	\$ 850.00	\$ 7,820.00
14	2303-6911000	HMA Pavement Samples	LS	1.00	\$ 1,000.00	\$ 1,000.00
<b>Sub Total</b>						<b>\$ 52,961.00</b>
<b>Division 24 - Structures</b>						
15	2435-0600010	Manhole Adjustment, Minor	EACH	1.00	\$ 1,500.00	\$ 1,500.00
<b>Sub Total</b>						<b>\$ 1,500.00</b>
<b>Division 25 - Miscellaneous Construction</b>						
16	2510-6745850	Removal Of Pavement	SY	131.00	\$ 15.00	\$ 1,965.00
17	2511-6745900	Rmvl Of Sidewalk	SY	40.00	\$ 35.00	\$ 1,400.00
18	2511-7526004	Sidewalk PCC 4 In	SY	70.00	\$ 85.00	\$ 5,950.00
19	2511-7526006	Sidewalk PCC 6 In	SY	30.00	\$ 125.00	\$ 3,750.00
20	2511-7528101	Detectable Warnings	SF	36.00	\$ 51.00	\$ 1,836.00
21	2512-1725256	Curb+Gutter PCC 2.5'	LF	110.00	\$ 30.00	\$ 3,300.00
22	2524-6765110	Remove and Reinstall Type A Sign	EACH	1.00	\$ 100.00	\$ 100.00
23	2524-9276010	Perforated Square Steel Tube Posts	LF	10.00	\$ 10.00	\$ 100.00
24	2524-9276021	Perforated Square Steel Tube Post Anchor, Break-Away Soil Installation	EACH	1.00	\$ 170.00	\$ 170.00
25	2524-9325001	Type A Signs Alum	SF	5.00	\$ 33.00	\$ 165.00
26	2525-0000100	Traffic Signalization	LS	1.00	\$ 68,444.00	\$ 68,444.00
27	2525-0000120	Removal Of Traffic Signalization	EACH	1.00	\$ 8,200.00	\$ 8,200.00
28	2527-9263109	Painted Pavement Marking Waterborne Or Solvent	STA	10.00	\$ 80.00	\$ 800.00
29	2527-9263137	Painted Symbols And Legends, Waterborne Or Solvent	EACH	3.00	\$ 160.00	\$ 480.00
30	2528-8445110	Traffic Control	LS	1.00	\$ 15,000.00	\$ 15,000.00
31	2528-8445113	Flaggers	EACH	10.00	\$ 465.00	\$ 4,650.00
32	2533-4980005	Mobilization	LS	1.00	\$ 40,000.00	\$ 40,000.00
33	2599-9999005	(Each' Item) Water Valve Fixture, Adjustment	EACH	3.00	\$ 600.00	\$ 1,800.00
<b>Sub Total</b>						<b>\$ 158,110.00</b>
<b>Division 26 - Roadside Development</b>						
34	2601-2634100	Mulching	ACRE	0.50	\$ 15,000.00	\$ 7,500.00
35	2601-2636044	Seeding & Fertilizing (Urban)	ACRE	0.50	\$ 20,000.00	\$ 10,000.00
36	2602-0000312	Perimeter And Slope Sediment Control Device, 12 In. Dia.	LF	650.00	\$ 5.00	\$ 3,250.00
37	2602-0000350	Removal Of Perimeter And Slope Sediment Control Device	LF	650.00	\$ 2.50	\$ 1,625.00
<b>Sub Total</b>						<b>\$ 22,375.00</b>

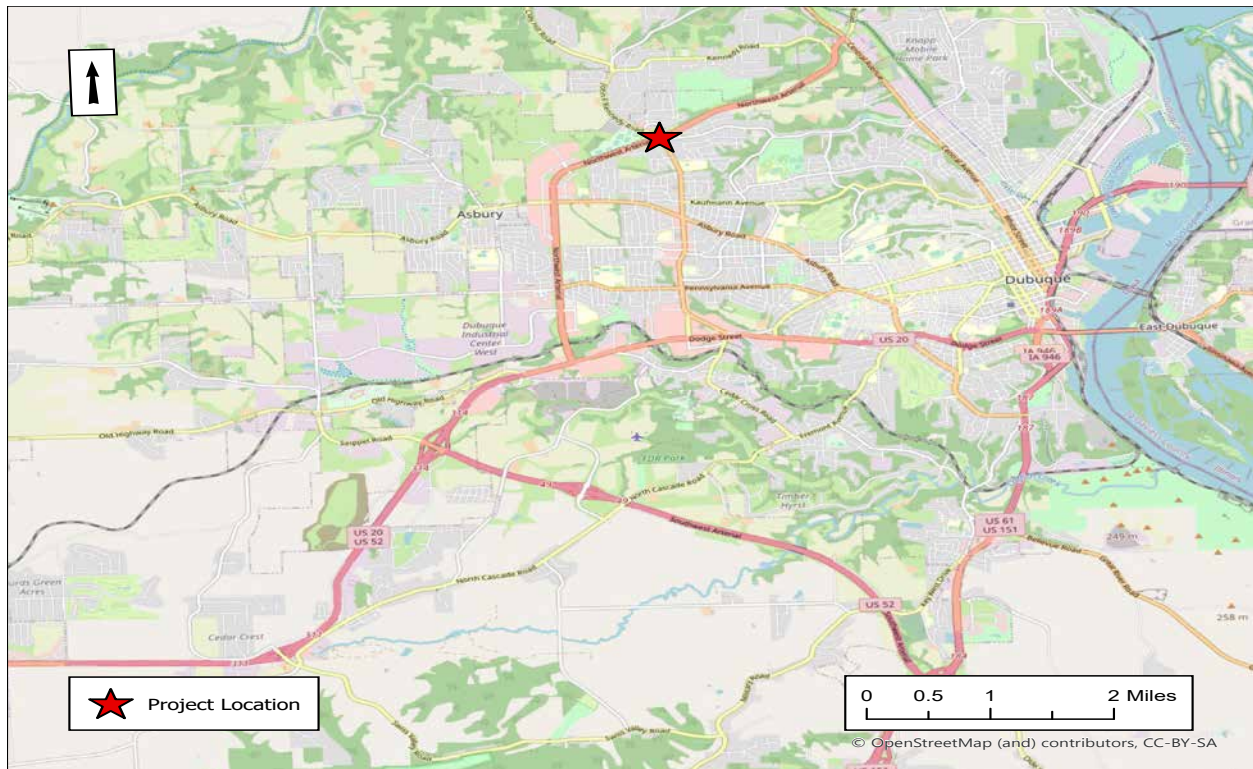
Total Construction Estimate: **\$ 283,376.00**

CONTINGENCY:	10%	<b>\$ 28,337.60</b>
ENGINEERING DESIGN:	10%	<b>\$ 31,171.36</b>
CONSTRUCTION ADMIN & INSPECTION:	15%	<b>\$ 46,757.04</b>
<b>TOTAL PROJECT COST ESTIMATE:</b>		<b>\$ 389,642.00</b>

## D. Time Schedule

Description	Date
Grant Application	August 2023
Notice of Funding	January 2023
Approval of Agreement	July 2024
Construction Plan Preparation	September 2024 – April 2025
Plans Approval	May 2025
Advertise for Bids	October 2025
Open Bid & Award Contract	November 2025
Notice to Proceed	December 2025
Construction	April 2026 – November 2026
Project Closeout	December 2026

## E. Map



## F. Pictures



# F. Pictures

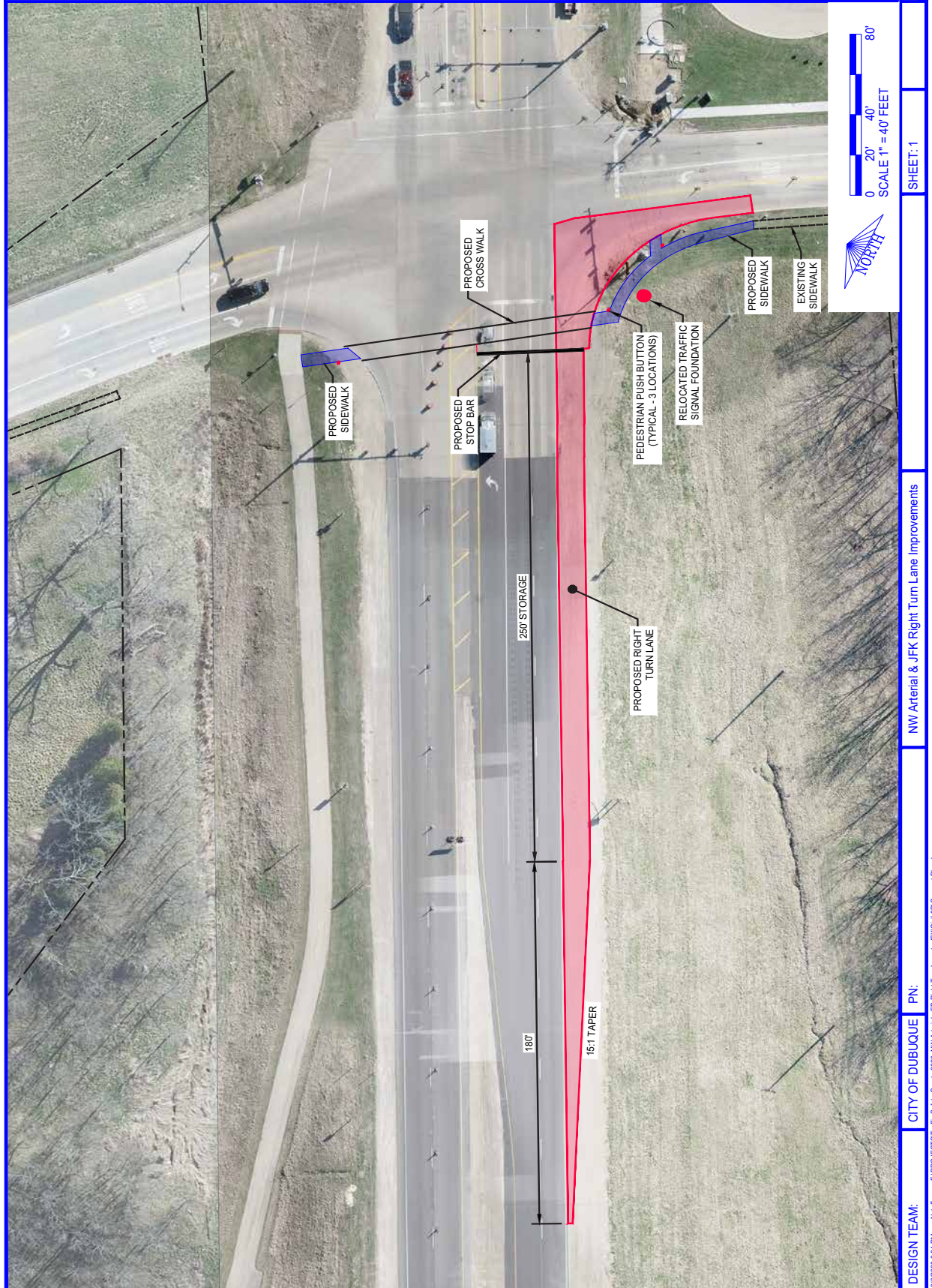




# F. Pictures



# G. Plan View



NW Arterial & JFK Right Turn Lane Improvements

CITY OF DUBUQUE PN:

DESIGN TEAM: Neafien

F:\PROJECTS\Traffic Safety Grant - 2023 NW Arterial - EB Right Turn Lane to JFK\3d\3DConcept Plan.dwg 8/8/2023 3:24 PM

H. Aerial Photograph



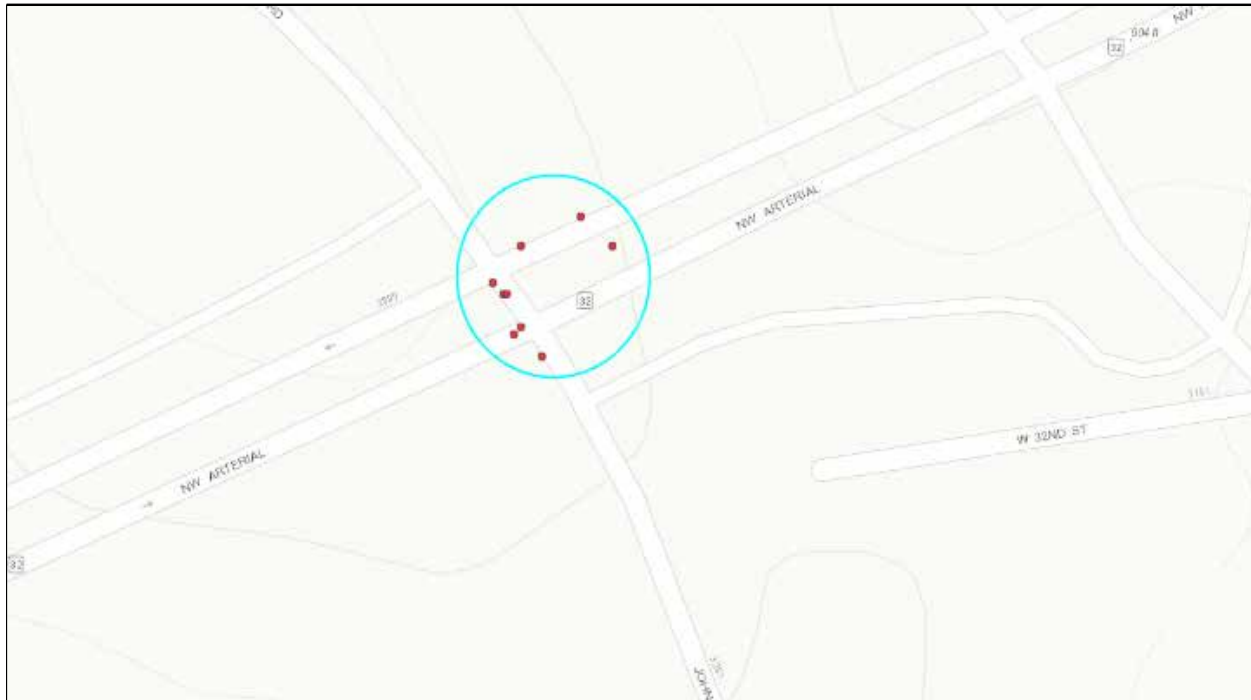
# I. Crash Report



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity	36	Injury Status Summary	27
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	0	Suspected serious/incapacitating	0
Suspected Minor Injury Crash	3	Suspected minor/non-incapacitating	4
Possible/Unknown Injury Crash	14	Possible (complaint of pain/injury)	22
Property Damage Only	19	Unknown	1

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	252,000.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	7,000.00	Fatalities/Crash:	0.00
Total Vehicles:	76.00	Injuries/Crash:	0.72
Average (per crash):	2.11	Major Injuries/Crash:	0.00
Total Occupants:	97.00	Minor Injuries/Crash:	0.11
Average (per crash):	2.69	Possible/Unknown Injuries/Crash:	0.61



# I. Crash Report



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause		36	
Animal	2	Ran traffic signal	8
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	3
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	3
Passing: On wrong side	1	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	1	Driver Distraction: Other interior distracti...	1
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	1
Lost control	12	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	1
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	2		

# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Monday	0	0	0	0	0	0	1	0	3	2	0	0	0	6
Tuesday	0	0	0	0	0	0	1	1	0	0	0	0	0	2
Wednesday	0	0	0	0	0	2	0	0	3	0	0	0	0	5
Thursday	0	0	0	0	0	2	1	3	1	0	0	0	0	7
Friday	0	0	0	3	1	1	0	1	1	1	1	0	0	9
Saturday	0	0	0	0	0	0	2	1	1	0	1	0	0	5
<b>Total</b>	0	0	0	3	1	5	5	8	9	3	2	0	0	36

Manner of Crash Collision	36	Surface Conditions	36
Non-collision (single vehicle)	1	Dry	24
Head-on (front to front)	0	Wet	11
Rear-end (front to rear)	20	Ice/frost	0
Angle, oncoming left turn	0	Snow	0
Broadside (front to side)	7	Slush	0
Sideswipe, same direction	3	Mud, dirt	0
Sideswipe, opposite direction	0	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	1	Oil	0
Not reported	1	Gravel	0
Other	3	Not reported	1
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	76
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	76

# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	1	1	0	0	2
= 17	1	0	0	0	1
= 18	1	2	0	0	3
= 19	2	1	0	0	3
= 20	1	0	1	0	2
>= 21 and <= 24	0	4	0	0	4
>= 25 and <= 29	3	2	0	0	5
>= 30 and <= 34	3	12	0	0	15
>= 35 and <= 39	1	7	0	0	8
>= 40 and <= 44	0	4	0	0	4
>= 45 and <= 49	2	4	0	0	6
>= 50 and <= 54	1	2	0	0	3
>= 55 and <= 59	1	1	0	0	2
>= 60 and <= 64	3	4	0	0	7
>= 65 and <= 69	1	2	0	0	3
>= 70 and <= 74	1	2	0	0	3
>= 75 and <= 79	3	1	0	0	4
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	1	0	0	0	1
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>26</b>	<b>49</b>	<b>1</b>	<b>0</b>	<b>76</b>

Alcohol Test Given	76
None	74
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	76
None	75
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

Drug Test Result	76
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	76
Other	0

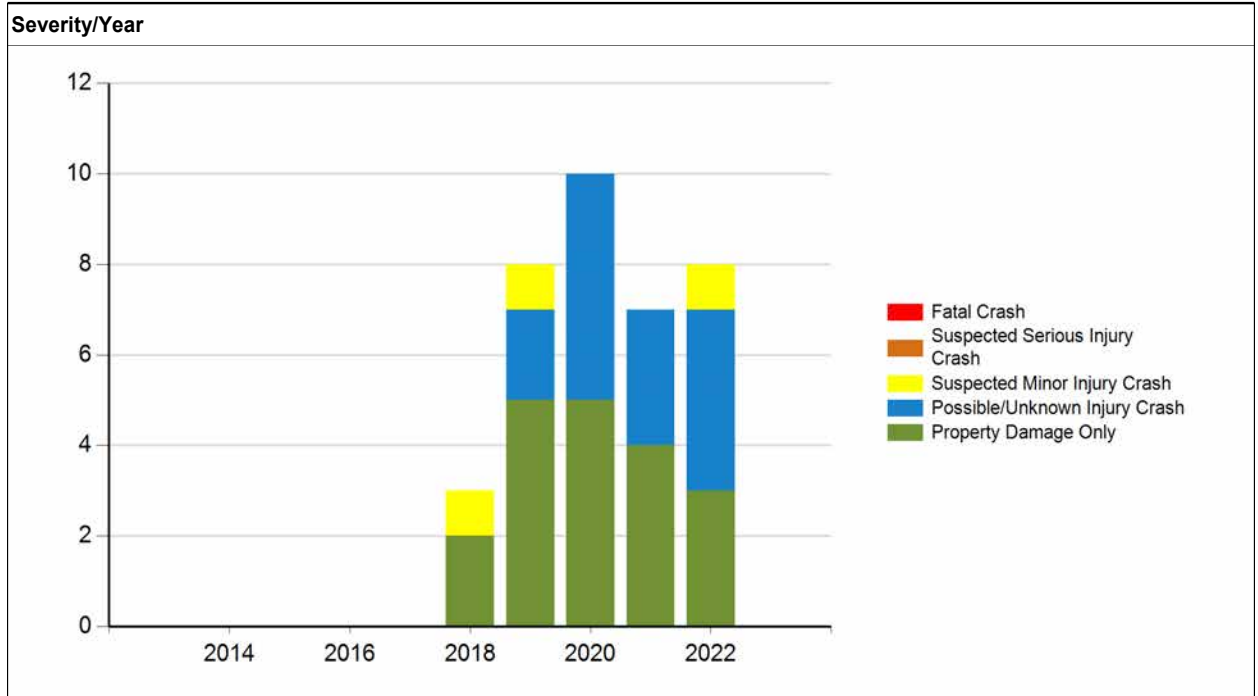
Drug/Alcohol Related	36
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	1
None Indicated	34

# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	1	0	2	3	3
2019	0	0	1	2	5	8	8
2020	0	0	0	5	5	10	10
2021	0	0	0	3	4	7	7
2022	0	0	1	4	3	8	8
2023	0	0	0	0	0	0	0
<b>Total</b>	0	0	3	14	19	36	



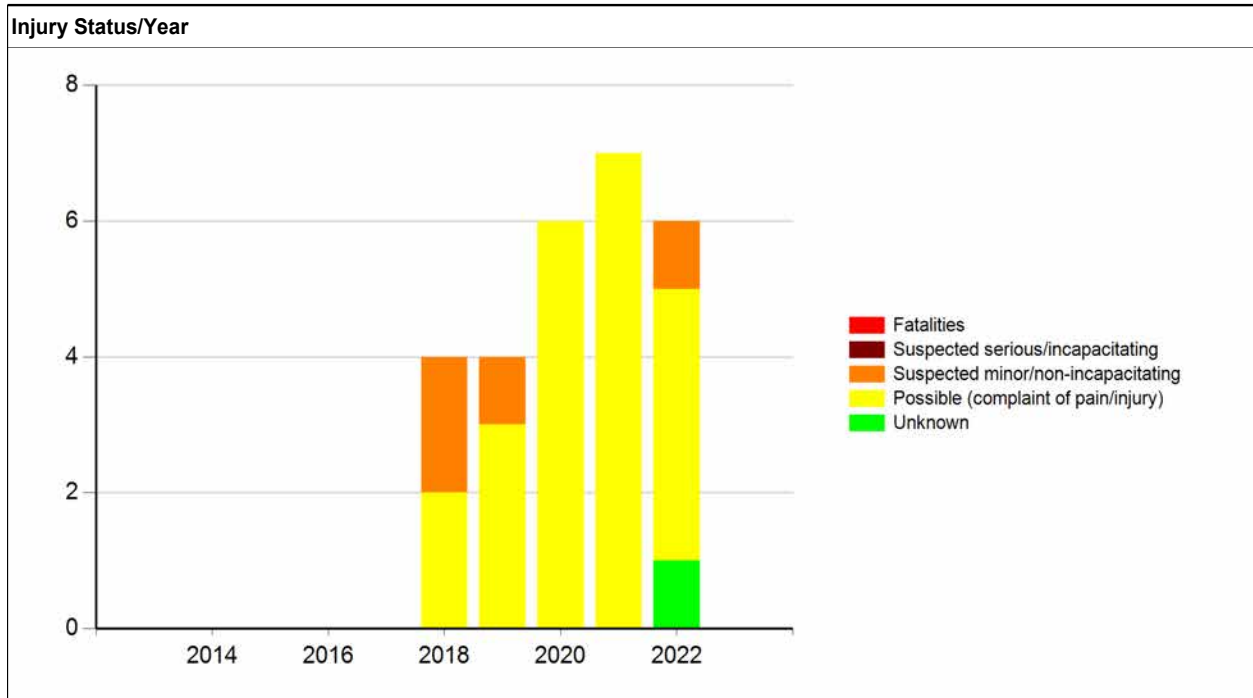


# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	2	2	0	4
2019	0	0	1	3	0	4
2020	0	0	0	6	0	6
2021	0	0	0	7	0	7
2022	0	0	1	4	1	6
2023	0	0	0	0	0	0
<b>Total</b>	0	0	4	22	1	27



# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

### Meeting the following criteria

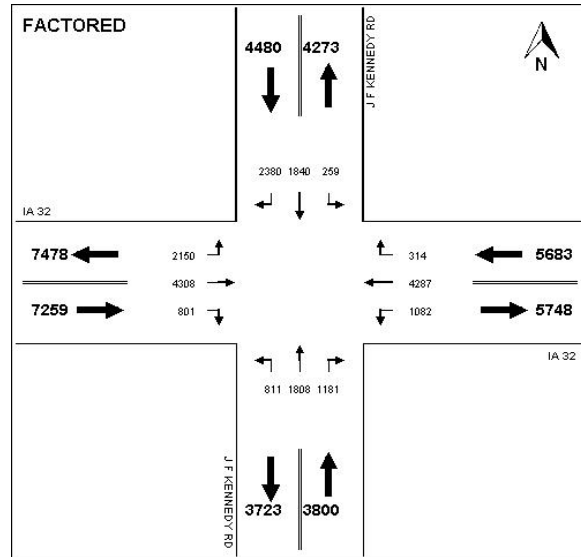
Jurisdiction: Statewide  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

### Analyst Information

# J. Turning Counts

## Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: All Vehicles

Station Number:	31346245099
Count Date:	Wednesday, June 16, 2021
County:	Dubuque
Location Description:	IA 32 & JOHN F KENNEDY RD
Volume Factor:	0.891
Pass Class Factor:	0.903
SU Class Factor:	0.779
Combo Class Factor:	0.689

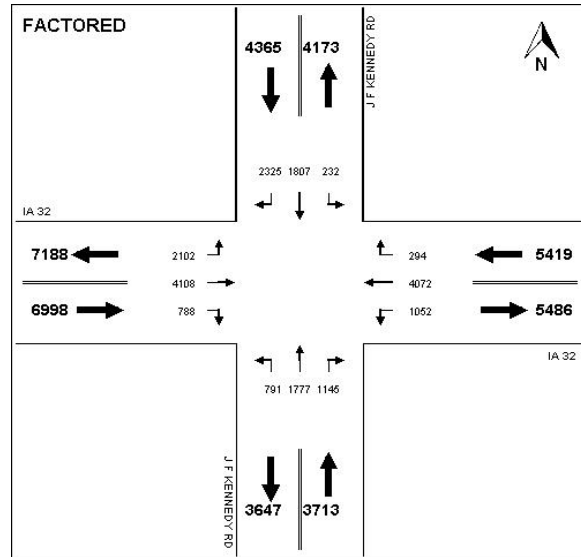


Raw Data	North			East			South			West			
	L	T	R	L	T	R	L	T	R	L	T	R	
2021-06-16	00:00	0	3	8	4	13	1	3	12	4	11	26	7
	01:00	0	2	3	2	12	0	0	3	5	8	51	5
	02:00	2	0	2	1	9	1	1	1	2	4	18	2
	03:00	0	5	5	2	16	0	3	2	8	4	27	1
	04:00	1	4	33	4	108	0	7	8	20	1	51	0
	05:00	9	23	44	17	138	2	14	5	95	6	228	0
	06:00	10	70	94	57	253	7	21	38	58	21	214	11
	07:00	17	147	140	104	310	11	47	48	52	59	202	18
	08:00	14	141	169	70	265	14	43	94	59	93	176	26
	09:00	10	111	153	64	250	15	33	111	74	112	180	36
	10:00	13	124	143	64	272	15	63	129	46	151	250	36
	11:00	20	143	200	70	265	14	65	132	66	183	243	65
	12:00	21	113	138	52	278	23	55	103	72	128	316	64
	13:00	19	137	203	67	290	19	77	125	77	172	304	75
	14:00	22	137	183	116	428	36	63	143	71	150	328	51
	15:00	19	151	181	139	438	27	76	159	94	203	417	69
	16:00	22	138	215	96	430	37	102	191	116	233	407	91
	17:00	21	146	161	72	323	38	76	251	104	302	444	89
	18:00	25	165	225	65	209	50	43	200	72	220	269	68
	19:00	15	116	153	49	151	13	41	95	88	133	212	72
	20:00	29	122	132	34	144	12	36	83	59	79	177	47
	21:00	1	29	37	29	100	11	18	39	40	68	125	35
	22:00	3	11	20	17	79	6	9	28	24	40	120	15
	23:00	0	8	7	10	22	0	6	10	9	12	36	7
	Total	293	2046	2649	1205	4803	352	902	2010	1315	2393	4821	890

# J. Turning Counts

## Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: Passenger

Station Number:	31346245099
Count Date:	Wednesday, June 16, 2021
County:	Dubuque
Location Description:	IA 32 & JOHN F KENNEDY RD
Volume Factor:	0.891
Pass Class Factor:	0.903
SU Class Factor:	0.779
Combo Class Factor:	0.689

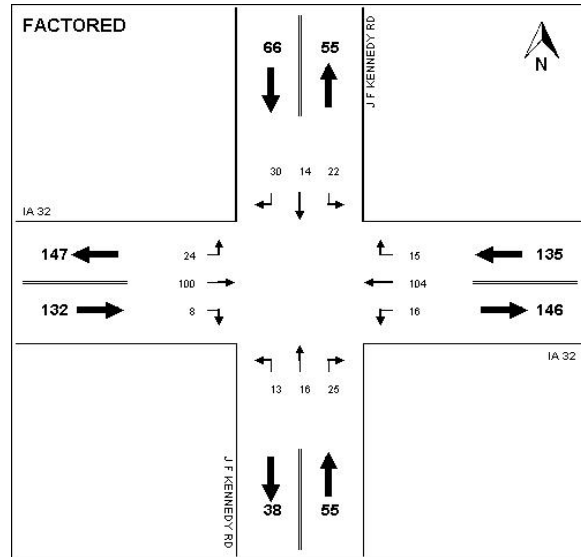


Raw Data	Passenger	North			East			South			West		
		L	T	R	L	T	R	L	T	R	L	T	R
2021-06-16	00:00	0	3	8	4	12	1	3	12	4	11	25	7
	01:00	0	2	3	2	10	0	0	2	5	8	51	5
	02:00	2	0	2	1	8	1	1	1	2	4	17	2
	03:00	0	5	4	2	15	0	3	2	8	2	24	1
	04:00	1	4	32	4	102	0	7	8	20	1	48	0
	05:00	9	23	43	17	130	2	14	5	95	4	219	0
	06:00	8	70	91	55	241	6	21	36	58	16	197	11
	07:00	17	143	136	96	293	11	45	47	50	52	182	18
	08:00	11	136	166	64	244	12	41	89	53	89	152	24
	09:00	8	107	148	60	230	13	33	109	69	104	163	34
	10:00	10	121	138	62	241	15	61	123	45	143	226	34
	11:00	16	139	194	67	245	12	62	131	63	177	221	62
	12:00	16	109	134	52	249	18	55	97	69	127	307	61
	13:00	16	131	195	67	267	16	76	121	71	166	278	73
	14:00	19	131	176	113	408	33	58	141	69	147	299	51
	15:00	17	149	173	135	416	24	74	157	90	200	397	67
	16:00	18	135	212	93	412	34	100	185	110	232	388	90
	17:00	18	145	155	72	307	37	72	250	99	296	438	89
	18:00	25	164	221	64	194	50	42	198	72	218	265	68
	19:00	14	116	148	48	144	13	39	94	86	131	202	71
	20:00	28	120	131	33	143	12	36	83	58	79	174	47
	21:00	1	29	37	27	98	11	18	38	40	68	122	35
	22:00	3	11	20	17	77	5	9	28	23	40	119	15
	23:00	0	8	7	10	22	0	6	10	9	12	34	7
	Total	257	2001	2574	1165	4508	326	876	1967	1268	2327	4548	872

# J. Turning Counts

## Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: Single-Unit

Station Number:	31346245099
Count Date:	Wednesday, June 16, 2021
County:	Dubuque
Location Description:	IA 32 & JOHN F KENNEDY RD
Volume Factor:	0.891
Pass Class Factor:	0.903
SU Class Factor:	0.779
Combo Class Factor:	0.689

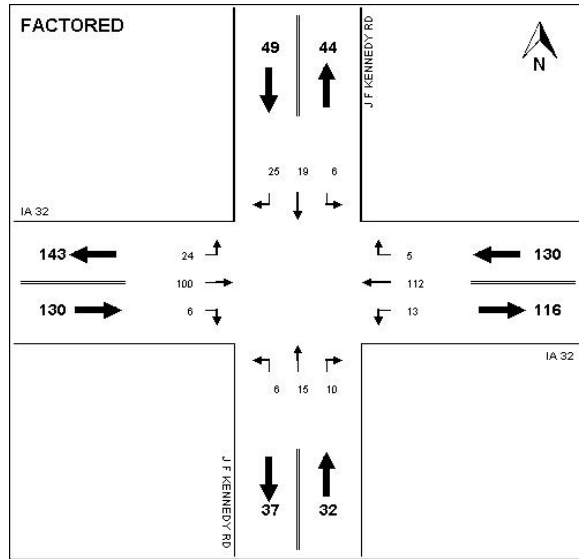


Raw Data		North			East			South			West		
		L	T	R	L	T	R	L	T	R	L	T	R
Single-Unit													
2021-06-16	00:00	0	0	0	0	1	0	0	0	0	0	0	0
	01:00	0	0	0	0	1	0	0	0	0	0	0	0
	02:00	0	0	0	0	1	0	0	0	0	0	0	0
	03:00	0	0	0	0	0	0	0	0	0	0	1	0
	04:00	0	0	0	0	2	0	0	0	0	0	0	0
	05:00	0	0	1	0	6	0	0	0	0	0	4	0
	06:00	0	0	2	1	7	0	0	1	0	4	13	0
	07:00	0	0	1	6	9	0	2	1	2	2	6	0
	08:00	2	3	2	4	8	0	1	4	6	4	10	1
	09:00	1	1	4	1	11	2	0	0	4	6	9	1
	10:00	2	1	3	1	14	0	0	4	0	6	13	2
	11:00	4	1	3	2	7	2	2	0	1	2	10	0
	12:00	4	3	4	0	10	3	0	4	2	0	4	2
	13:00	2	3	3	0	6	3	1	2	4	1	12	1
	14:00	3	3	6	1	12	3	4	1	2	1	18	0
	15:00	2	1	5	4	10	2	1	1	2	2	5	1
	16:00	4	0	1	0	10	3	0	1	4	0	9	1
	17:00	3	0	2	0	7	1	3	0	3	2	1	0
	18:00	0	0	0	0	6	0	1	2	0	1	1	0
	19:00	1	0	2	0	4	0	2	0	1	0	5	1
	20:00	0	2	0	1	0	0	0	0	0	2	0	0
	21:00	0	0	0	0	0	0	0	0	0	3	0	0
	22:00	0	0	0	0	1	0	0	0	1	0	1	0
	23:00	0	0	0	0	0	0	0	0	0	0	1	0
	Total	28	18	39	21	133	19	17	21	32	31	128	10

# J. Turning Counts

## Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: Combo-Unit

Station Number:	31346245099
Count Date:	Wednesday, June 16, 2021
County:	Dubuque
Location Description:	IA 32 & JOHN F KENNEDY RD
Volume Factor:	0.891
Pass Class Factor:	0.903
SU Class Factor:	0.779
Combo Class Factor:	0.689



Raw Data	Combo-Unit	North			East			South			West		
		L	T	R	L	T	R	L	T	R	L	T	R
2021-06-16	00:00	0	0	0	0	0	0	0	0	0	1	0	
	01:00	0	0	0	0	1	0	0	1	0	0	0	
	02:00	0	0	0	0	0	0	0	0	0	1	0	
	03:00	0	0	1	0	1	0	0	0	2	2	0	
	04:00	0	0	1	0	4	0	0	0	0	3	0	
	05:00	0	0	0	0	2	0	0	0	2	5	0	
	06:00	2	0	1	1	5	1	0	1	0	4	0	
	07:00	0	4	3	2	8	0	0	0	5	14	0	
	08:00	1	2	1	2	13	2	1	1	0	14	1	
	09:00	1	3	1	3	9	0	0	2	1	8	1	
	10:00	1	2	2	1	17	0	2	2	1	11	0	
	11:00	0	3	3	1	13	0	1	1	2	12	3	
	12:00	1	1	0	0	19	2	0	2	1	5	1	
	13:00	1	3	5	0	17	0	0	2	2	14	1	
	14:00	0	3	1	2	8	0	1	1	0	11	0	
	15:00	0	1	3	0	12	1	1	1	2	15	1	
	16:00	0	3	2	3	8	0	2	5	2	10	0	
	17:00	0	1	4	0	9	0	1	1	2	5	0	
	18:00	0	1	4	1	9	0	0	0	0	3	0	
	19:00	0	0	3	1	3	0	0	1	1	5	0	
	20:00	1	0	1	0	1	0	0	0	1	1	0	
	21:00	0	0	0	2	2	0	0	1	0	0	0	
	22:00	0	0	0	0	1	1	0	0	0	0	0	
	23:00	0	0	0	0	0	0	0	0	0	1	0	
	Total	8	27	36	19	162	7	9	22	15	145	8	

# L. Benefit-Cost Worksheet



Safety Benefit-Cost Ratio

County:	Dubuque	Prepared By:	ECIA
Location:	Northwest Arterial and John F. Kennedy Rd	Date Prepared:	8/8/2023
Proposed Improvements:	Addition of right turn lane and crosswalk on west leg		
Estimated Improvement Cost:	\$ 311,714	Annual Maintenance:	2%
Inflation on Crash Costs:	4%	(% of Improvement Cost)	
Discount Rate:	4%	Annual Maintenance Cost:	\$ 6,234
Estimated Service Life:	20		

Method Choice:

CRF Method

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

## Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

## Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF
	6	6.0

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000		6.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000		6.0	0.00	0.00
Minor Injury (B)	\$ 265,000	3	6.0	0.60	0.04
Possible/Unknown Injury (C)	\$ 125,000	14	6.0	2.80	0.17
Property Damage Only (O)	\$ 20,000	19	6.0	3.80	0.23

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 9,540
Possible/Unknown Injury (C)	\$ 21,000
Property Damage Only (O)	\$ 4,560

## Total Benefits and Costs

Implementation Cost	\$ 311,714	Present Value Benefits (Societal Benefits)	\$ 518,452
Present Value of Maint.	\$ 84,726	Present Value Costs (Impl. and Maint. Costs)	\$ 396,439
Present Value Net Return	\$ 122,012		
<b>Benefit Cost Ratio</b>	<b>1.31</b>		

Form continues on next page

# L. Benefit-Cost Worksheet



Safety Benefit-Cost Ratio

County: Dubuque Prepared By: ECIA  
Location: Northwest Arterial and John F. Kennedy Rd Date Prepared: 8/8/2023

## **No Input Necessary - No Custom Values In Use**

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### **General Customizations**

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance Costs

### **Method-Specific Customizations**

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No change to Traffic Growth Rate

No change to Crash History



**RESOLUTION NO. 23-140**  
City Council

**RESOLUTION AUTHORIZING THE SUBMITTAL OF AN APPLICATION  
FOR THE IOWA DEPARTMENT OF TRANSPORTATION TRAFFIC  
SAFETY IMPROVEMENT PROGRAM (TSIP) FOR BOYSON ROAD FROM  
HAWKEYE DRIVE TO ROBINS ROAD**

WHEREAS, the Iowa Department of Transportation has established the TSIP and provides funding for locations where vehicular safety is a concern and documented, and

WHEREAS, said program allows for funding to be provided to local jurisdictions for eligible transportation projects or programs that will improve traffic safety at a specific site or corridor with a crash history, and

WHEREAS, the City of Hiawatha has determined that by reconstructing the roadway from Hawkeye Drive to Robins Road by adding a center turn lane, colored crosswalk at the Cedar Valley Nature Trail, and straightening out the tight radii in the current alignment, will help reduce crashes, thus improving safety and operations, and

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF HIAWATHA, IOWA, THAT:

1. The City Council supports and approves the application for TSIP funding.
2. The City Council hereby commits the additional City funds necessary for construction of the project beyond any TSIP funding.
3. The City Council hereby commits to accepting and maintaining these improvements.
4. The Mayor is hereby authorized to execute the application on behalf of the City.

AYES: Jerry Mohwinkle, Steve Dodson, Aime Wichtendahl, Rob Archibald

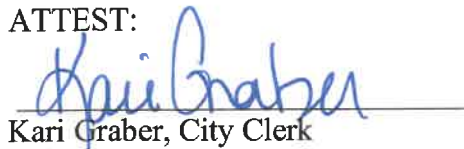
NAYS: None

PASSED AND APPROVED this 19<sup>th</sup> day of July, 2023.



Bill Bennett, Mayor

ATTEST:



Kari Graber, City Clerk

# Traffic Safety Improvement Program Application

**Boyson Road Corridor Between Hawkeye Drive and Robins  
Road**

Hiawatha, Iowa  
August 15, 2023

# Traffic Safety Improvement Program Application

**Boyson Road Corridor Between Hawkeye Drive and Robins  
Road**

Hiawatha, Iowa  
August 15, 2023



## Application for TRAFFIC SAFETY FUNDS

### GENERAL INFORMATION

DATE: August 15, 2023

Location / Title of Project Boyson Road from Hawkeye Drive and Robins Road

Applicant City of Hiawatha

Contact Person Jon Fitch Title City Engineer

Complete Mailing Address 101 Emmons Street

Hiawatha, IA 52233

Phone (319) 393-1515

(Area Code)

E-Mail jfitch@hiawatha-iowa.com

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_

(Area Code)

E-Mail \_\_\_\_\_

### PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

#### Application Type

Site Specific   
 Traffic Control Device   
 Safety Study

#### Funding Amount

Total Safety Cost \$ \$700,923.30

Total Project Cost \$ 1,744,595.68

**Safety Funds Requested** \$ 350,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?  Yes – Explain \_\_\_\_\_

No

# APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Hiawatha

Signed:  7/25/23  
Signature Date Signed

Jon Fitch, City Engineer  
Typed Name

Attest:  7/25/23  
Signature Date Signed

Kari Graber, City Clerk  
Typed Name

### **Background**

The City of Hiawatha is planning to make improvements to the corridor of Boyson Road from Hawkeye Drive to Robins Road. The Boyson Road corridor is 0.25-mile long and currently a two-lane road that transitions to 3-lane road on both ends of the study corridor; the posted speed is 30-mph. Hawkeye Drive is a two-lane road with a 30-mph post speed, and Robins Road is a two-lane road with a 30-mph posted speed. Currently, the road is 24-foot wide with no curb & gutter, and no shoulders. There are sections of sidewalks, but they don't connect to the sidewalk either to the west or to the east. Boyson Road & Hawkeye Dr is currently a 3-leg stop-controlled intersection with no south leg, and Boyson Road & Robins Road is a 4-leg signalized intersection. There are four access points on the north and three on the south side. The road crosses the Cedar Valley Trail, and the Dry Creek Trail will be constructed along the Road. See **Exhibit H** for existing conditions and **Exhibit K** for bike and pedestrian facilities.

### **Crash History**

The existing two-lane configuration in conjunction with the rising traffic volumes has led to a trend of multiple annual crashes. Crash history for this corridor was collected from the Iowa DOT ICAT website and was evaluated from 2018 to 2022 to identify trends and safety issues with the current geometry and operations. In the past 5 years, 9 crashes have been reported resulting in 2 suspected minor injury crashes, 1 possible/unknown injury crashes, and 6 instances of property damage only. Forty-eight vehicles and sixty-three occupants were involved in those crashes. Three crashes were related to driver distraction, and two drove too fast for conditions. The other four crashes were related to run off road, FTYROW, lost control, and other. According to the manner, there were three rear-end, two head-on, one sideswipe, two non-collision, and one other cash. Refer to Section I for a crash history summary.

### **Proposed Improvements**

Due to the amount and types of crashes in the corridor, and the amount of access points, it is proposed to reconstruct the road section as a three-lane road with a middle two-way left-turn lane (TWLTL) to increase safety by removing turning vehicles from the through lanes. Because two-lane roads do not provide refuge for turning vehicles, mostly head-on, rear-end and angle crashes, whose incidence is

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higher in high-volume roads, which supports the recommendation to provide turn lanes. Those roads usually experience high incidence of crash, mostly head-on, rear-end and angle crashes, whose incidence is higher in high-volume roads.

The proposal is to reconstruct the road with an urban cross-section, curb & gutter, and sidewalk on the north and trail on the south side. Crosswalks and curb ramps are proposed to safely accommodate pedestrians on the corridor and connect to existing sidewalks following ADA compliance. The middle lane (TWLTL) will improve safety by removing left-turn vehicles from the through lanes. It will also improve safety for vehicles in and out of the access points. All these proposed modifications are anticipated to reduce crashes. In addition to these improvements, the existing Cedar Valley crossing on Boyson Road will be upgraded to a high-visibility trail-crossing, which will greatly improve the safety of both bicyclists and pedestrians.

According to CMF 2354, adding a TWLTL to a two-lane road has the potential to reduce 50.8% of all crashes on a rural road. Currently, the proposed improvements will also help accommodate bicycle and pedestrian traffic, which is anticipated to increase with the development of the areas nearby and once the new section of Dry Creek Trail is constructed. The Dry Creek Trail will be constructed and connected to the existing Cedar Valley Trail, and to the Dry Creek Trail's existing section, both west of Hawkeye Drive, Refer to **Exhibit K** for the proposed trail location.

### **Conclusion**

The proposed improvements aim to enhance the corridor by accommodating turning vehicles, improve the safety of left turning vehicles and accommodating future traffic growth. These enhancements are anticipated to result in a safer road, effectively reducing the annual number of crashes, particularly those involving rear-end and angle collisions.

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### Estimated Project Cost

Project Name: Boyson Road between Hawkeye Drive and Robins Road  
City of Hiawatha, Iowa

Item #	Item Description	Quantity	Unit	Unit \$	Non-Safety Items \$	Safety Items \$
1	CLEAR+GRUBB	2.8	ACRE	\$3,000		8,400.00
2	SPECIAL BACKFILL	1500	CY	\$35		52,500.00
3	EXCAVATION, CL 10, RDWY+BORROW	2410	CY	\$12		28,920.00
4	TOPSOIL, FURN+SPREAD	400	CY	\$23		9,200.00
5	TOPSOIL, STRIP, SALVAGE+SPREAD	1500	CY	\$8		12,000.00
6	GRANULAR MAT'L	500	TON	\$27		13,500.00
7	MODIFIED SUBBASE	1150	CY	\$35		40,250.00
8	MACADAM STONE BASE	400	TON	\$35		14,000.00
9	RELOCATION OF MAIL BOX	1	EACH	\$174		174.00
10	STD/S-F PCC PAV'T, CL C CL 3, 6"	1280	SY	\$42		53,760.00
11	STD/S-F PCC PAV'T, CL C CL 3, 7"	165	SY	\$46		7,590.00
12	STD/S-F PCC PAV'T, CL C CL 3, 9"	4600	SY	\$52		239,200.00
13	TEMPORARY PAV'T	120	SY	\$69		8,280.00
14	STRUCT CONC (MISCELLANEOUS)	1.4	CY	\$521		729.40
15	PRECAST CONC BOX CULV, 7 FT. X 3 FT.	168	LF	\$637	107,016.00	
16	PRECAST CONC BOX CULV ST END SEC, 7 FT. X 3 FT.	2	EACH	\$3,631	7,262.00	
17	APRON, CONC, 15"	2	EACH	\$926	1,852.00	
18	APRON, CONC, 18"	1	EACH	\$1,158	1,158.00	
19	CULV, CONC ENT PIPE, 15"	30	LF	\$75	2,250.00	
20	MANHOLE, SAN SWR, SW-303, 48"	1	EACH	\$5,209	5,209.00	
21	INTAKE, SW-509	4	EACH	\$5,209	20,836.00	
22	SUBDRAIN CLEANOUT	6	EACH	\$926	5,556.00	
23	MANHOLE ADJUSTMENT, MAJOR	1	EACH	\$1,158	1,158.00	
24	SUBDRAIN, STD, PERFORATED, 6"	1690	LF	\$12	20,280.00	
25	STORM SWR G-MAIN, TRENCHED, RCP 2000D, 15"	500	LF	\$52	26,000.00	
26	STORM SWR G-MAIN, TRENCHED, RCP 2000D, 21"	106	LF	\$81	8,586.00	
27	STORM SWR G-MAIN, TRENCHED, RCP 2000D, 36"	70	LF	\$98	6,860.00	
28	RMV STORM SWR PIPE LE 36"	227	LF	\$17	3,859.00	
29	RMV STORM SWR PIPE GT 36"	75	LF	\$23	1,725.00	
30	SAN SWR G-MAIN, TRENCHED, PVC, 8"	40	LF	\$46	1,840.00	
31	ENGINEER FABRIC	705	SY	\$3	2,115.00	
32	EROSION STONE	56	TON	\$35	1,960.00	
33	RMVL OF PAV'T	3140	SY	\$9		28,260.00
34	RMVL OF INTAKE+UTILITY ACCESS	1	EACH	\$347		347.00
35	RMVL OF RECREATIONAL TRAIL	48	SY	\$7		336.00
36	RECREATIONAL TRAIL, PCC, 6"	1045	SY	\$42		43,890.00
37	RMVL OF SIDEWALK	255	SY	\$7	1,785.00	
38	SIDEWALK, PCC, 4"	285	SY	\$41	11,685.00	
39	DETECTABLE WARNING - CURB RAMP	100	SF	\$41	4,100.00	
40	RMVL OF PAVED DRIVEWAY	240	SY	\$8		1,920.00
41	SAFETY CLOSURE	4	EACH	\$232		928.00
42	RMV+REINSTALL SIGN	9	EACH	\$174		1,566.00
43	PAINTED PAV'T MARK, DURABLE	10	STA	\$58		580.00
44	PAINTED SYMBOL+LEGEND, DURABLE	7	EACH	\$289		2,023.00
45	TRAFFIC CONTROL	1	LS	\$9,261		9,261.00
46	MOBILIZATION	1	LS	\$46,305		46,305.00
47	TRENCH COMPACTION TESTING	1	LS	\$579		579.00
48	WATER MAIN, TRENCHED, DIP, 8"	20	LF	\$64	1,280.00	
49	WATER MAIN, TRENCHED, DIP, 12"	985	LF	\$87	85,695.00	
50	FITTINGS BY COUNT, DIP, VARIOUS SIZES	4	EACH	\$926	3,704.00	
51	WATER SERVICE STUB, COPPER, 3/4"	3	EACH	\$1,158	3,474.00	
52	VALVE, GATE, DIP, 8"	1	EACH	\$1,852	1,852.00	
53	VALVE, GATE, DIP, 12"	4	EACH	\$2,547	10,188.00	
54	FIRE HYDRANT ASSEMBLY, WM-201	2	EACH	\$4,052	8,104.00	
55	MULCH	2.2	ACRE	\$579		
56	SEED+FERTILIZE (URBAN)	2.2	ACRE	\$3,473		7,640.60
57	SLOPE PROTECTION, WOOD EXCELSIOR	62	SQ	\$28		1,736.00
58	TURF REINFORCEMENT MAT	10	SQ	\$52		520.00
59	SILT FENCE	468	LF	\$3		1,404.00
60	RMVL OF SILT FENCE	468	LF	\$1		468.00
61	CLEAN-OUT OF SILT FENCE	468	LF	\$2		936.00
62	RAILROAD CROSSING IMPROVEMENTS	1	LS	\$231,525	231,525.00	
	Construction Sub-Total				588,914.00	637,203.00
	Contingency (10%)				58,891.40	63,720.30
	<b>Construction Total</b>				<b>647,805.40</b>	<b>700,923.30</b>



The schedule proposed for the safety improvements at Boyson Road from Hawkeye Drive to Robins Road is as follows:

- **August 2023** – Submit for 2025 TSIP Funds.
  - **October 2023** – Project is awarded TSIP funds.
  - **January 2024 – November 2025** – Proceed with design of improvements.
  - **July 2024** –TSIP funds are available.
  - **February 2026** –Let Road project.
  - **Spring 2026** – Construction begins.
  - **Fall 2026** – Construction complete.
-





Boyson Road 3-lane road section West of Hawkeye Drive



Boyson Road at Hawkeye Drive Intersection



Boyson Road 3-lane road section West of Hawkeye Drive



End of sidewalk south of Boyson Road and west of Boyson Court



Cedar Valley Trail across Boyson Road



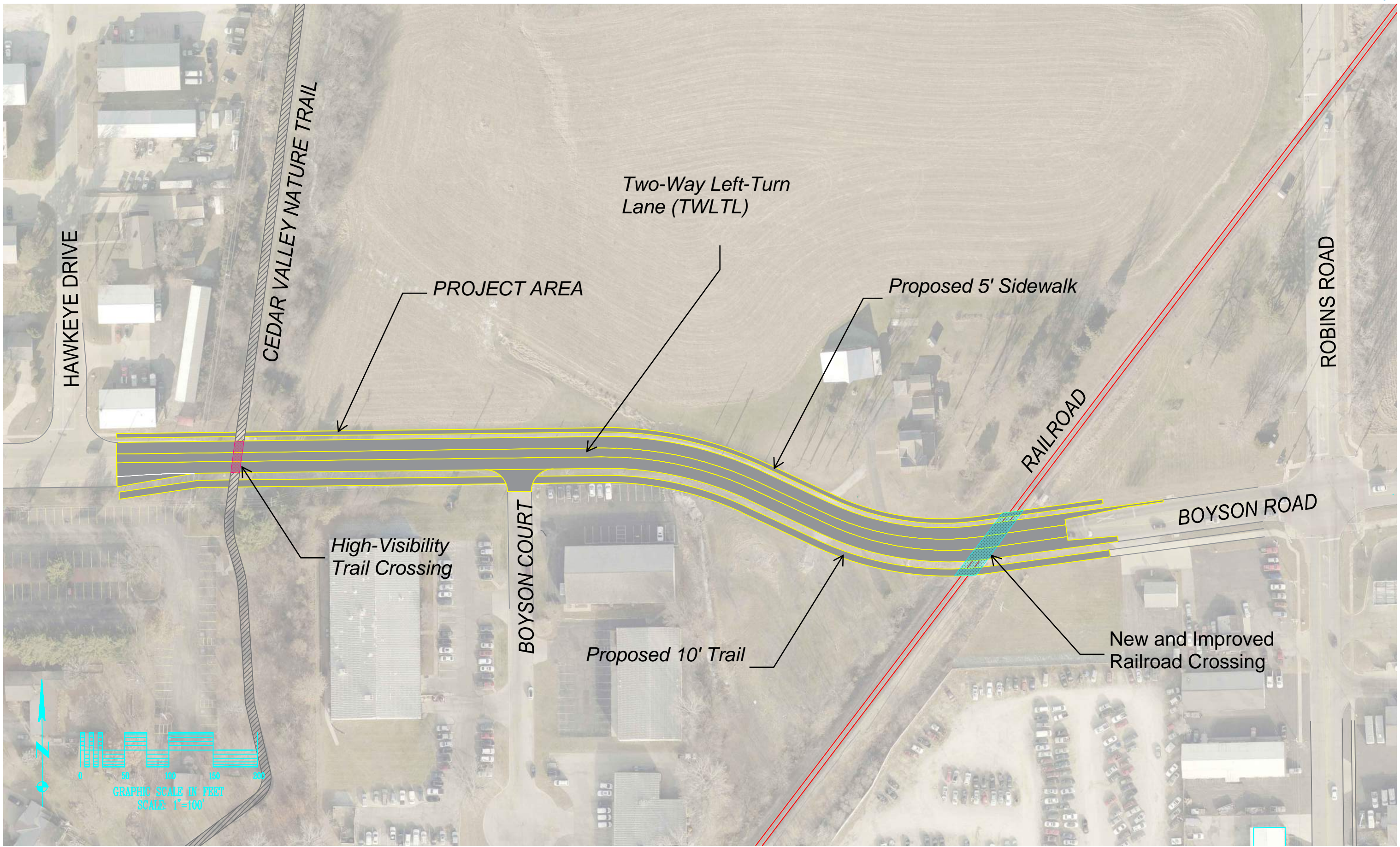
Boyson Road between Hawkeye Drive and railroad crossing



End of sidewalk east of Cedar Valley Trail, north of Boyson Road



Boyson Road 3-lane section west of Robins Rd



# Hiawatha - Boyson Rd Construction Project

07/14/2023





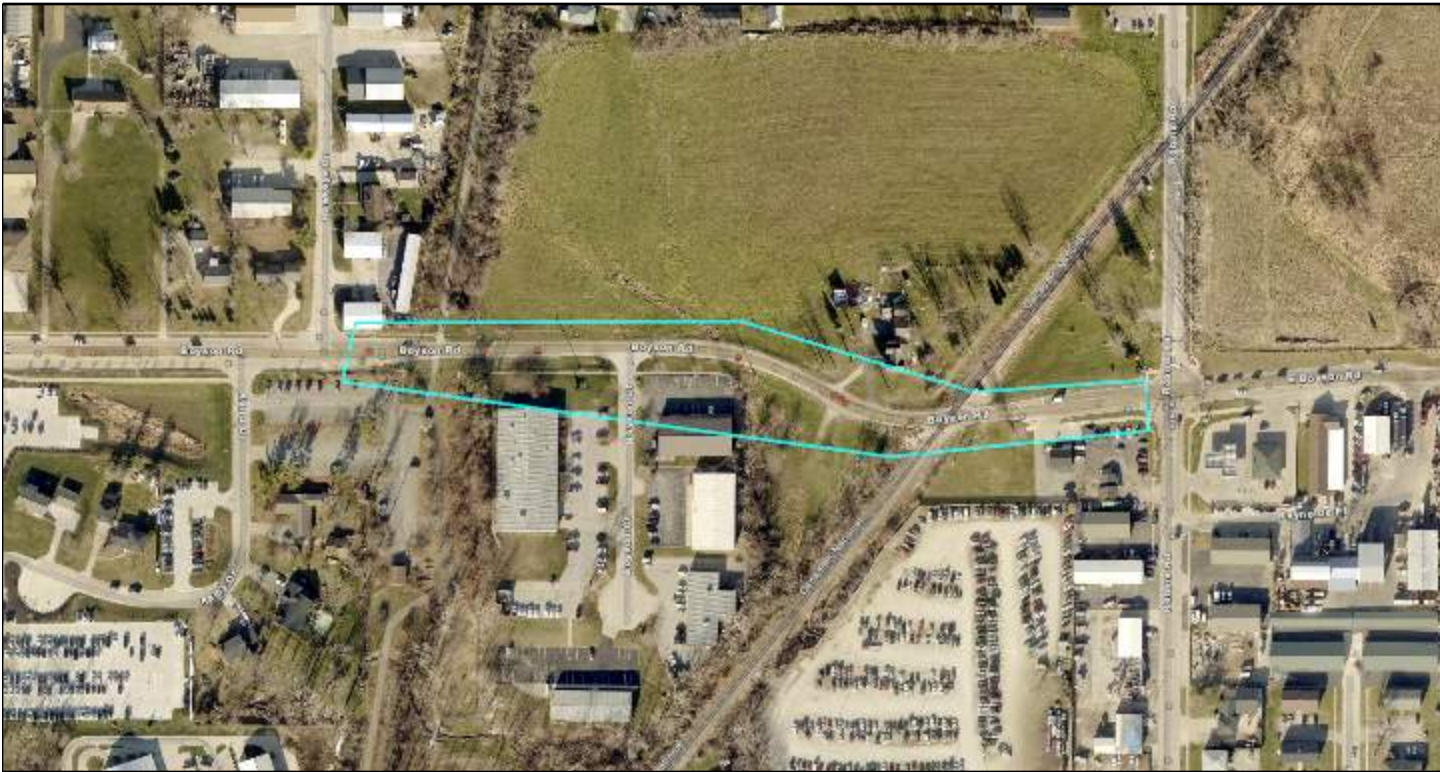
Iowa Crash Analysis Tool  
Quick Report  
2018-2022

<b>Crash Severity</b>	<b>9</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	2
Possible/Unknown Injury Crash	1
Property Damage Only	6

<b>Injury Status Summary</b>	<b>3</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	2
Possible (complaint of pain/injury)	1
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	68,000.00
Average (per crash dollars):	7,555.56
Total Vehicles:	17.00
Average (per crash):	1.89
Total Occupants:	21.00
Average (per crash):	2.33

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.33
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.22
Possible/Unknown Injuries/Crash:	0.11

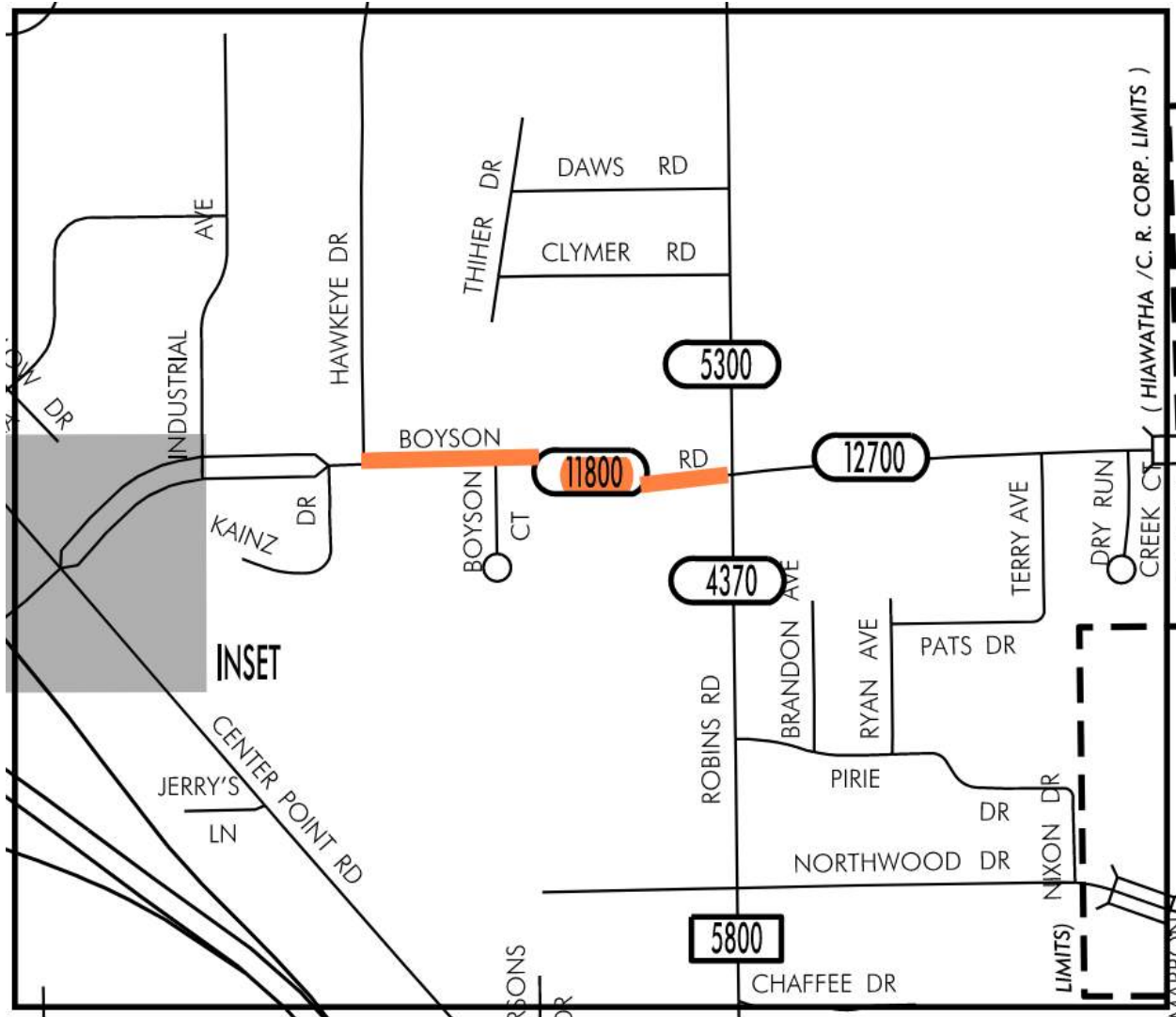




Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			9
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	1
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	2
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	1
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	1
Driver Distraction: Exterior distraction	1	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		





2021 Iowa DOT Traffic Map

Road Name	2021 Iowa DOT AADT
Boyson Road	11,800



County:	Linn	Prepared By:	Shive-Hattery
Location:	Boyson Road, from Hawkeye Dr to Rd	Date Prepared:	7/7/2023
Proposed Improvements:	Reconstruct the road with a 3-lane section		
Estimated Improvement Cost:	\$ 350,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 1,000
Method Choice:	CRF Method	<p>The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.</p>	

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF	
CRF Value (%)	50.8	50.8	
Equivalent CMF	0.49		Is Dom. Com. Resd.
Combined CMF, if # used (DR)	0.49	0.49	TRUE
Combined CMF, if # used (Mult)	0.49		Is data entered befc
Pick Dom Com. Resd. Or Mult. Fo	0.49	0.49	FALSE

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.8	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.8	0.00	0.00
Minor Injury (B)	\$ 265,000	2	50.8	0.40	0.20
Possible/Unknown Injury (C)	\$ 125,000	1	50.8	0.20	0.10
Property Damage Only (O)	\$ 20,000	6	50.8	1.20	0.61

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 53,848
Possible/Unknown Injury (C)	\$ 12,700

County:	<b>Linn</b>	Prepared By:	<b>Shive-Hattery</b>
Location:	<b>Boyson Road, from Hawkeye Dr to Rd</b>	Date Prepared:	<b>7/7/2023</b>
Property Damage Only (O)	<b>\$ 12,192</b>		

### Predictive Method

Existing Condition (All Crashes):	<b>[Redacted]</b>	Location Characteristics:		Please Select
Alternative (All Crashes):	<b>[Redacted]</b>			Please Select
Percent Change in Crashes	<b>n/a</b>			Iowa Crash Distribution 2017-2021

	Crash Distribution Based on Location Characteristics	Existing Condition Expected Crashes - Service Life	Alternative Expected Crashes - Service Life	Crashes Saved Over Service Life	Crashes Saved Annually
Crash Severity					
Fatal (K)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Serious Injury (A)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Minor Injury (B)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Possible/Unknown Injury (C)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Property Damage Only (O)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>

	Rounded Societal Costs	Annual Societal Benefit
Crash Severity		
Fatal (K)	\$ 4,000,000	\$ -
Serious Injury (A)	\$ 4,000,000	\$ -
Minor Injury (B)	\$ 265,000	\$ -
Possible/Unknown Injury (C)	\$ 125,000	\$ -
Property Damage Only (O)	\$ 20,000	\$ -

### Total Benefits and Costs

		Implementation Cost	\$ 350,000
		Present Value of Maint.	\$ 13,590
Present Value Benefits (Societal Benefits)	\$ 1,163,045	Present Value Costs (Impl. and Maint. Costs)	\$ 363,590
Present Value Net Return	\$ 799,455		

<b>Benefit Cost Ratio</b>	<b>3.20</b>
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*Form continues on next page*

County:

Linn

Prepared By: Shive-Hattery

Location:

Boyson Road, from Hawkeye Dr to Rd

Date Prepared: 7/7/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

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# Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: 8/15/2023

Location / Title of Project Main Street and Summitt Street Improvements

Applicant City of Maquoketa

Contact Person Joshua Boldt Title City Manager

Complete Mailing Address 201 East Pleasant St.  
Maquoketa, IA 52060

Phone (563) 652-2484 E-Mail manager@maquoketaia.com  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_  
\_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	<u>531,950</u>
Total Project Cost	\$	<u>531,950</u>
<b>Safety Funds Requested</b>	<b>\$</b>	<b><u>500,000</u></b>

## APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Maquoketa

Signed: Josh Boldt 08/14/2023  
Signature Date Signed

Joshua Boldt, City of Maquoketa  
Printed Name

Attest: Judy Carr 8/14/23  
Signature Date Signed

Judy Carr  
Printed Name

# A. Resolution

## RESOLUTION NO. 2023-89

### RESOLUTION AUTHORIZING THE FILING OF A GRANT APPLICATION WITH THE IOWA DEPARTMENT OF TRANSPORTATION FOR TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) FUNDING FOR THE MAIN STREET AND SUMMIT STREET SAFETY PROJECT

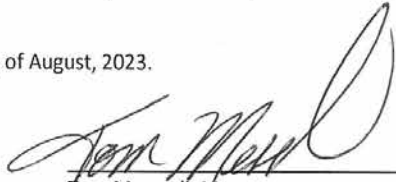
**Whereas**, the City of Maquoketa has identified traffic safety issues at the intersection of Main Street and Summit Street; and

**Whereas**, the Iowa Local Technical Assistance Program Safety Circuit Rider conducted an intersection site safety assessment of the intersection in September 2017 and recommended safety improvements for the intersection; and

**Whereas**, the City of Maquoketa has determined that improvements to the Summit Street and Main Street intersection, as recommended by the intersection site safety assessment, will improve safety; and

**NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MAQUOKETA, IOWA**, that the City Council authorizes the submission of a Traffic Safety Improvement Program Grant application to fund safety improvements at the Main Street and Summit Street intersection and commits to adequately maintain and operate the improvements for public use for the useful life of the project.

Passed and approved this 7<sup>th</sup> day of August, 2023.

  
\_\_\_\_\_  
Tom Messerli, Mayor

ATTEST:

  
\_\_\_\_\_  
Joshua Boldt, City Manager

### CERTIFICATION

I, Joshua Boldt, City Manager, do hereby certify the above is a true and correct copy of Resolution No. 2023-89 which was passed by the Maquoketa City Council this 7<sup>th</sup> day of August, 2023.

  
\_\_\_\_\_  
Joshua Boldt, City Manager



## B. Narrative

### Existing Conditions

Main Street (BUS-61) is a minor arterial that runs north-south through Maquoketa. It begins south of Pershing Road and runs throughout the center of the town, ending at Prairie Creek where it becomes 200<sup>th</sup> Avenue. Summit Street is a minor arterial running west-east through Maquoketa, which begins at US Highway 61 and ends at the east edge of town where it curves into Jacobsen Drive.

The intersection of Main Street and Summit Street is a 4-legged intersection with stop control on all 4 legs that meet at a 90-degree angle. Land use to the south is typically low-density commercial and residential to the north. Maquoketa Middle School is a block north of the intersection and Maquoketa High School is approximately 5 blocks southwest. A school crossing warning sign is posted at the crosswalk on the north leg of the intersection for southbound traffic. There are also recreational facilities near the intersection that are popular with children, as the high school football field and the Maquoketa Area Family YMCA are to the east. An industrial park towards the east of the intersection draws truck traffic throughout the day. The speed limit on both legs is posted at 25 mph.

The traffic counts reported in 2017 at the east, west, north and south legs were approximately 2,470, 3,260, 4,480, 6,500 vehicles per day (VPD) respectively. From years 2018 to 2022 there were 13 reported crashes at the site, with 2 reporting possibly injury. 6 crashes resulted from drivers running a stop sign. 10 of these collisions were broadside (front-to-side) with the other three coming from an oncoming left turn, and two rear-end collisions.

On July 17<sup>th</sup>, 2017, the city in collaboration with the Iowa DOT conducted a traffic study to review the intersection and observed many safety concerns. One of the major problems the study indicated was sight distance issues when drivers from Summit Street attempt to pass through the intersection. According to a 2017 Traffic Study, many drivers at the Summit Street legs were observed making “rolling” stops, where they did not completely come to a halt but rather kept moving to take advantage of a gap on Main Street to complete their maneuver. Other drivers on Summit Street were observed to stop but grew impatient after waiting to cross traffic on Main Street and crossed into a shorter gap than they would have considered to complete their maneuver. One car was observed passing through the intersection going at a speed of 20 mph without coming to a stop.

The truck traffic throughout the day also causes issues for drivers. Most of the truck movements observed in the 2017 Traffic Study were right turns from Main Street to Summit Street and left turns in the opposite direction. These turns often required more lane space to complete a turn, and some truck drivers would wait until traffic in conflicting lanes would pass so they could “swing out” for more room to maneuver. Semis would at times take up the space of the entire intersection due to the smaller size of the turning area. This led to traffic backing up behind these trucks. For a short time, the eastbound approach was striped as two lanes, but configuration was not appropriate for predominant turning movements at the intersection.

Block retaining walls are present on the southwest, northwest, and northeast characters of the intersection, and 150 feet to the south of the intersection (along the east side of Main Street), which impairs the view of stopped drivers on Summit Street from seeing opposing traffic on Main Street which adds to their difficulty judging gaps. Utility poles were observed along the roadside on each street and on the northeast corner of the intersection that have the potential to obstruct the views of drivers of traffic approaching the intersection.

Being located near both Maquoketa Middle School and Maquoketa High school, much of the traffic comes from young drivers as well as children trying to cross the intersection. A “School Crossing” sign is present on the Northwest corner which can impact the sight distance of drivers on the west leg of Summit Street. In Maquoketa’s Traffic Safety Action Plan, adopted by the City Council in 2023, students from the nearby schools unanimously stated they felt that the Main and Summit Intersection was the least safe in the city. The school district itself sees improvements to the intersection as overdue.

## B. Narrative

Pavement markings, including the crosswalks at the intersection were worn. Additionally, the location of the stop bars on Summit Street is not ideal as many drivers would roll past them in order to see further along Main Street, which can be a potential danger for pedestrians. In a 2023 Traffic Safety Action Plan, stakeholders viewed the intersection as by far the biggest priority and was marked “high urgency, high severity”. By a large community consensus, the intersection was considered the most dangerous and therefore requires vast improvement.

### Proposed Improvements

The goal of improving safety at the intersection was examined and it was determined that several improvements be made to the site. These improvements will dramatically help with driver visibility to combat the trend of rolling stops and impatient driving habits, as well as provide protection for pedestrians, especially students at the local middle and high school.

The redesign is the result of an engineering recommendation completed in July 2023. This redesign is based on several recommendations from the 2017 Traffic Study. The project outlines a \$531,950 estimate that includes a 25% contingency and a 6% annual inflation adjustment.

The redesign uses all the right of way available at the intersection to increase the surface area by 6.4%. This will improve oversized turning and improve driver sight angles to prevent any harmful sideswipe accidents. Increasing the turn radius will also combat the trend of trucks “swinging out” to make their maneuver and creating large amounts of traffic behind them.

Pavement markings will be repainted, and striping will be added to delineate the pedestrian pathways along the southeastern quadrant of the intersection. This will improve driver visibility and once again improve pedestrian safety at the intersection. A school crossing sign will also be added at the crosswalk for northbound traffic on Main Street, allowing students at Maquoketa High School and Middle School to travel across the intersection safely. The sign will be relocated from its current site to open the sight distance for drivers on the west leg of Summit Street. The 2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revision Numbers 1, 2 and 3 incorporated, dated July 2022 will be utilized for the construction and design of the proposed improvements. Traffic control (temporary and permanent), signing and pavement marking guidelines from the MUTCD will be used.

The 2017 Traffic Study recommended the city work with property owners with retaining walls on their land to lower the walls to open the intersection sight triangle and allow for continuation of the sidewalk along the southeast quadrant of the intersection. This proposal will follow through on this recommendation. The sidewalks and curb ramps at the intersection would then be improved and maintained for accessibility and to keep it up to Americans with Disabilities Act (ADA) compliance. Tactile dome plate alignment would also be corrected when feasible.

The redesign should reduce yearly crashes at the intersection by 50% based on the combined crash modification factor based on data from CMF Clearinghouse and the project has a benefit-cost ratio of 1.02. The improvements made to the turning radius, pavement markings, and sight distance will create a much safer intersection for everyone, especially children, and dramatically improve traffic safety in Maquoketa.

# C. Itemized Breakdown of Costs

## ENGINEER'S ESTIMATE OF PROBABLE COSTS

MAIN ST AND SUMMIT ST INTERSECTION IMPROVEMENTS  
 RETAINING WALL AND CURB RAMP IMPROVEMENTS  
 CITY OF MAQUOKETA, IOWA

DATE: 7/28/2023

ESTIMATE YEAR: 2023

PROJECT #:

CONSTRUCTION YEAR: 2025

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
1	EXCAVATION, CLASS 13	1	LS	\$ 10,000	\$ 10,000
2	SUBGRADE PREPARATION	1030	SY	\$ 5	\$ 5,150
3	SUBBASE, MACADAM STONE	650	TON	\$ 45	\$ 29,250
4	SUBBASE, SPECIAL BACKFILL	350	TON	\$ 30	\$ 10,500
5	ADJUST WATER VALVE	3	EA	\$ 1,500	\$ 4,500
6	STORM SEWER, TRENCHED, RCP	40	LF	\$ 120	\$ 4,800
7	INTAKE, SW-501	2	EA	\$ 5,000	\$ 10,000
8	REMOVE INTAKE	2	EA	\$ 2,500	\$ 5,000
9	REMOVE STORM SEWER	35	LF	\$ 70	\$ 2,450
10	CURB AND GUTTER, 30" WIDTH	350	LF	\$ 50	\$ 17,500
11	HMA PAVEMENT, BASE COURSE, 1/2" MIX, PG58-28	200	TON	\$ 150	\$ 30,000
12	HMA PAVEMENT, SURFACE COURSE, 3/8" MIX, PG58-28	100	TON	\$ 150	\$ 15,000
13	HMA PAVEMENT SAMPLES AND TESTING	1	LS	\$ 2,500	\$ 2,500
14	SIDEWALK, PCC, 5"	200	SY	\$ 100	\$ 20,000
15	DETECTABLE WARNINGS	90	SF	\$ 100	\$ 9,000
16	PAVEMENT REMOVAL	1250	SY	\$ 25	\$ 31,250
17	PAINTED PAVEMENT MARKINGS, DURABLE	20	STA	\$ 500	\$ 10,000
18	TEMPORARY TRAFFIC CONTROL	1	LS	\$ 20,000	\$ 20,000
19	HYDRAULIC SEEDING, FERTILIZING, MULCHING	200	SY	\$ 30	\$ 6,000
20	WATTLES, 9 IN	200	LF	\$ 5	\$ 1,000
21	SIGN REMOVAL	1	LS	\$ 2,500	\$ 2,500
22	RETAINING WALL REMOVAL	620	SF	\$ 50	\$ 31,000
23	RETAINING WALL INSTALLATION	245	SF	\$ 250	\$ 61,250
24	CONSTRUCTION SURVEY	1	LS	\$ 5,000	\$ 5,000
25	MONUMENT PRESERVATION & PLACEMENT	1	LS	\$ 5,000	\$ 5,000
26	MOBILIZATION	1	LS	\$ 30,000	\$ 30,000
<b>ESTIMATED CONSTRUCTION SUBTOTAL</b>					<b>\$ 378,650</b>
Inflation		6%	per year		\$ 46,900
<b>ESTIMATED CONSTRUCTION COST( 2025 )</b>					<b>\$ 425,550</b>
Contingency 25%					\$ 106,400
<b>TOTAL ESTIMATED PROJECT COST:</b>					<b>\$ 531,950</b>

**Disclaimers & Assumptions**

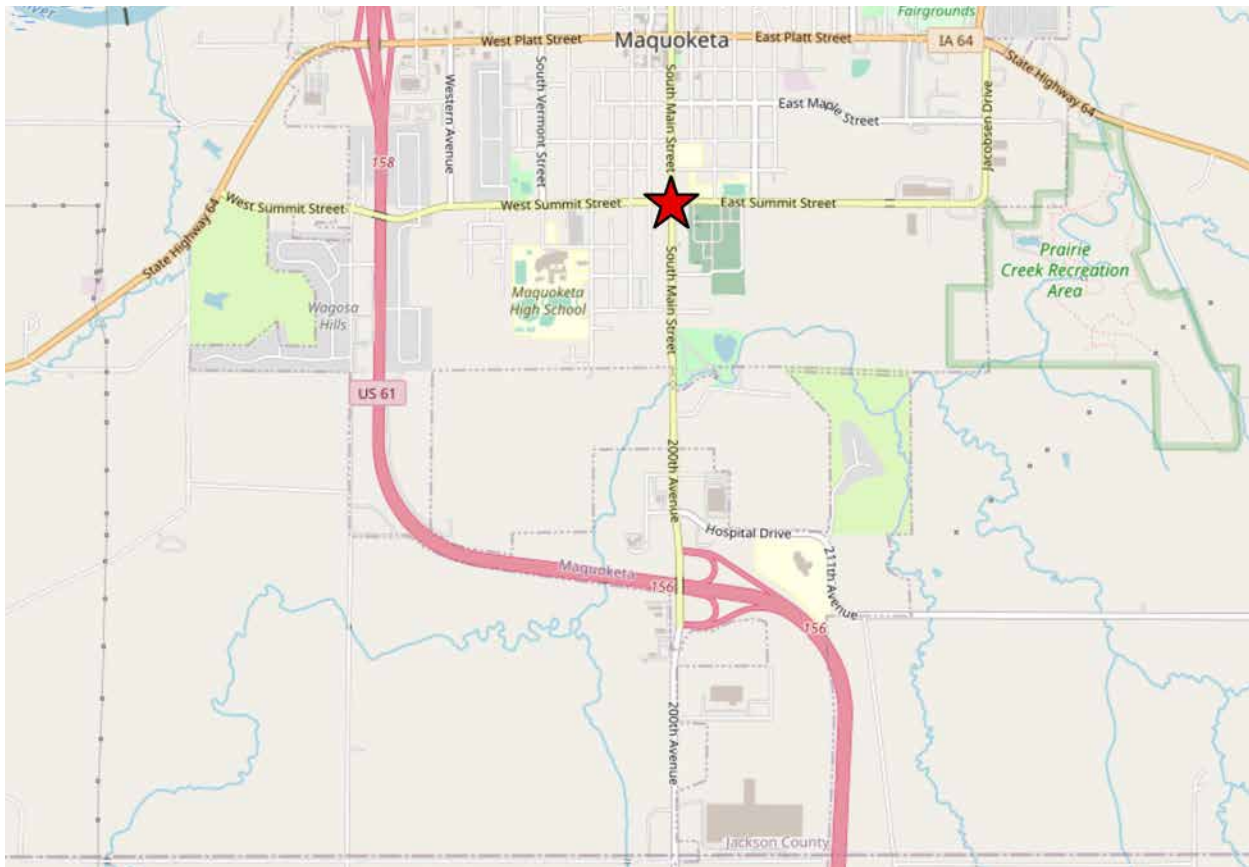
1 This estimate of probable cost is approximate. Actual construction bids may vary significantly from this estimate due to timing of bids, constructural schedule restraints, labor rate increases, material increases, or other factors beyond the control of the estimator.



## D. Time Schedule

Description	Date
Grant Application	August 2023
Notice of Funding	January 2024
Approval of Agreement	July 2024
Construction Plan Preparation	September 2024 – April 2025
Plans Approval	May 2025
Advertise for Bids	October 2025
Open Bid and Award Contract	November 2025
Construction	April 2025 – November 2026
Wrap-Up	December 2026

## E. Map



## F. Pictures





# F. Pictures



**origin**  
ENGINEERS OF IOWA  
800.255.4471  
origin@origin.com

CITY OF  
**MAQUOKETA**  
ONE OF A KIND

**NORTH**  
**EX.1**  
Project No.

SUMMIT STREET & S. MAIN STREET INTERSECTION TRUCK TURNING  
WESTBOUND TURNING SOUTHBOUND  
CITY OF MAQUOKETA, IA

01/20/2019 10:00 AM 10/20/2019 10:00 AM 10/20/2019 10:00 AM

F. Pictures



SUMMIT STREET & S. MAIN STREET INTERSECTION TRUCK TURNING  
 SOUTHBOUND TURNING EASTBOUND  
 CITY OF MAQUOKETA, IA



01/20/2019 10:00 AM 10/20/2019 10:00 AM 10/20/2019 10:00 AM

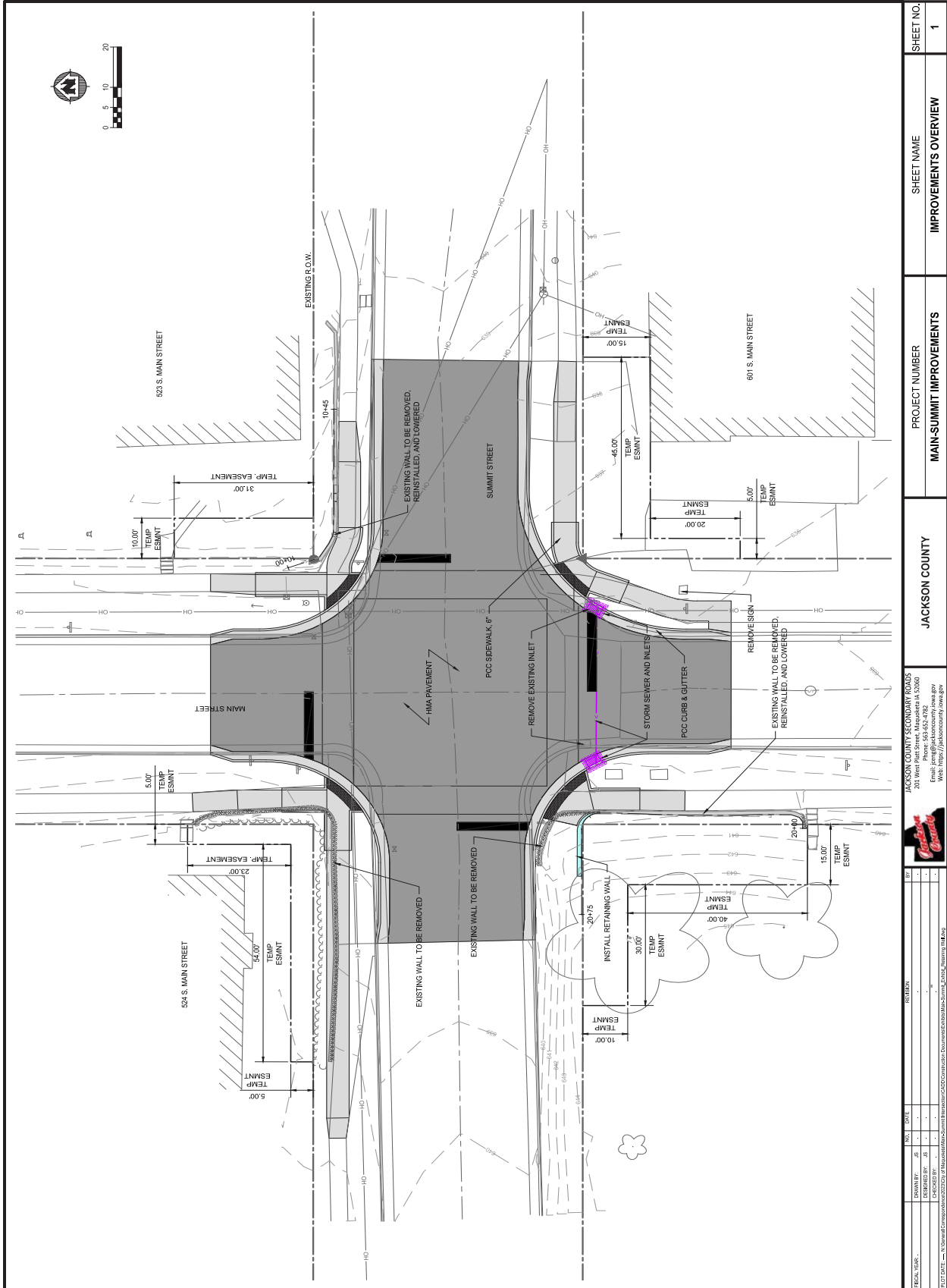


F. Pictures



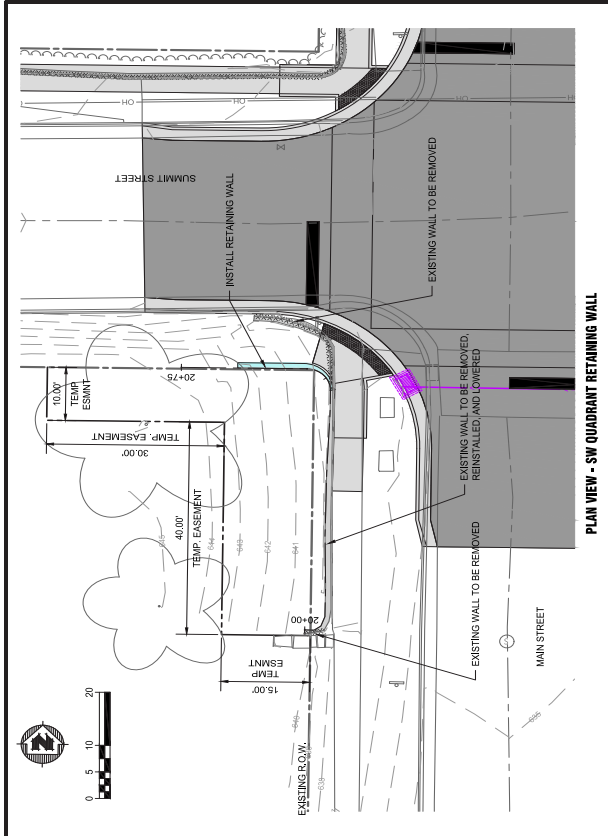
SUMMIT STREET & S. MAIN STREET INTERSECTION TRUCK TURNING  
NORTHBOUND TURNING EASTBOUND  
CITY OF MAQUOKETA, IA

# G. Plan View

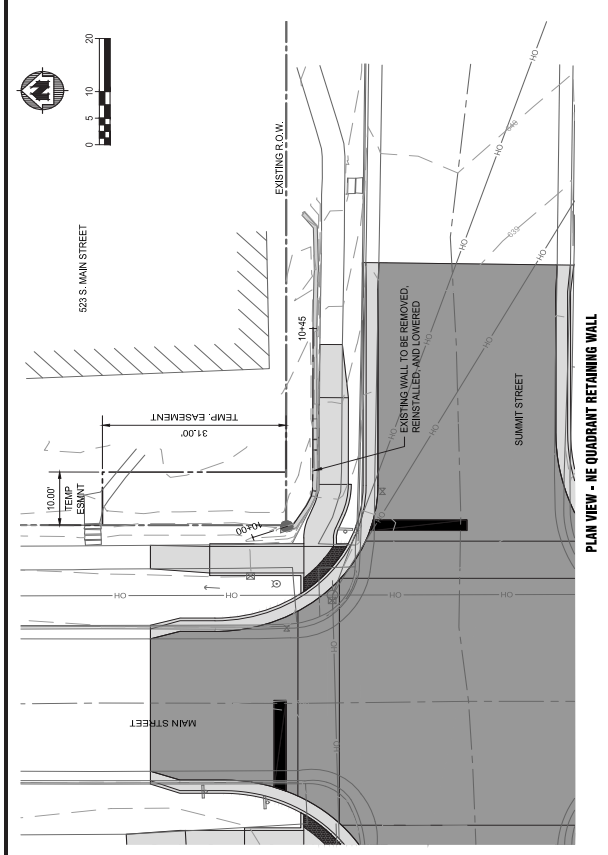


<p>JACKSON COUNTY SECONDARY ROADS          201 West First Street, Murphysville 40359          Email: jeng@jacksoncounty.zenago.gov          Web: https://jacksoncounty.zenago.gov</p>		<p>JACKSON COUNTY  </p>	<p>PROJECT NUMBER  <b>MAIN-SUMMIT IMPROVEMENTS</b></p>	<p>SHEET NAME  <b>IMPROVEMENTS OVERVIEW</b></p>	<p>SHEET NO.  <b>1</b></p>
<p>DATE</p>	<p>BY</p>	<p>REVISION</p>	<p>NO.</p>	<p>DATE</p>	<p>DESCRIPTION</p>
<p>DESIGNED BY</p>	<p>DR</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>1</p>
<p>CHECKED BY</p>	<p>DR</p>	<p>1</p>	<p>1</p>	<p>1</p>	<p>1</p>
<p>DATE</p>	<p>11/15/2024</p>	<p>11/15/2024</p>	<p>11/15/2024</p>	<p>11/15/2024</p>	<p>11/15/2024</p>

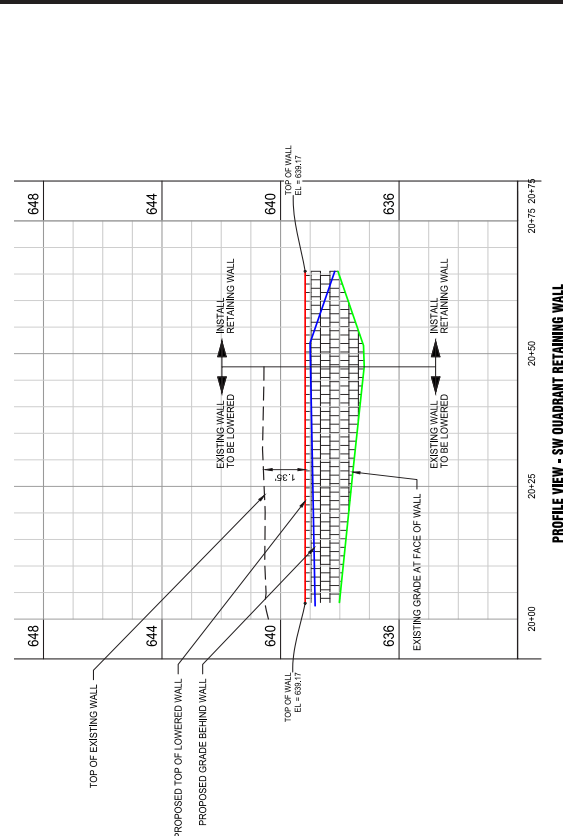
# G. Plan View



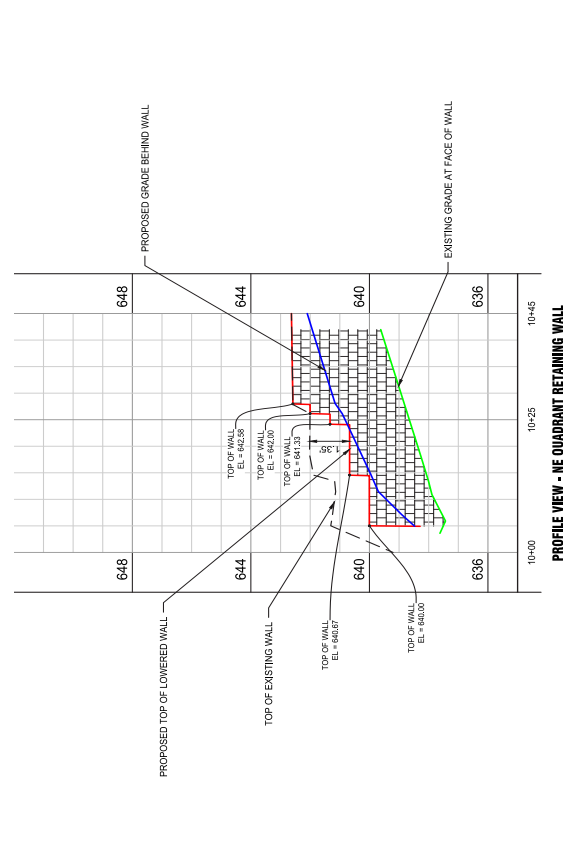
PLAN VIEW - SW QUADRANT RETAINING WALL



PLAN VIEW - NE QUADRANT RETAINING WALL



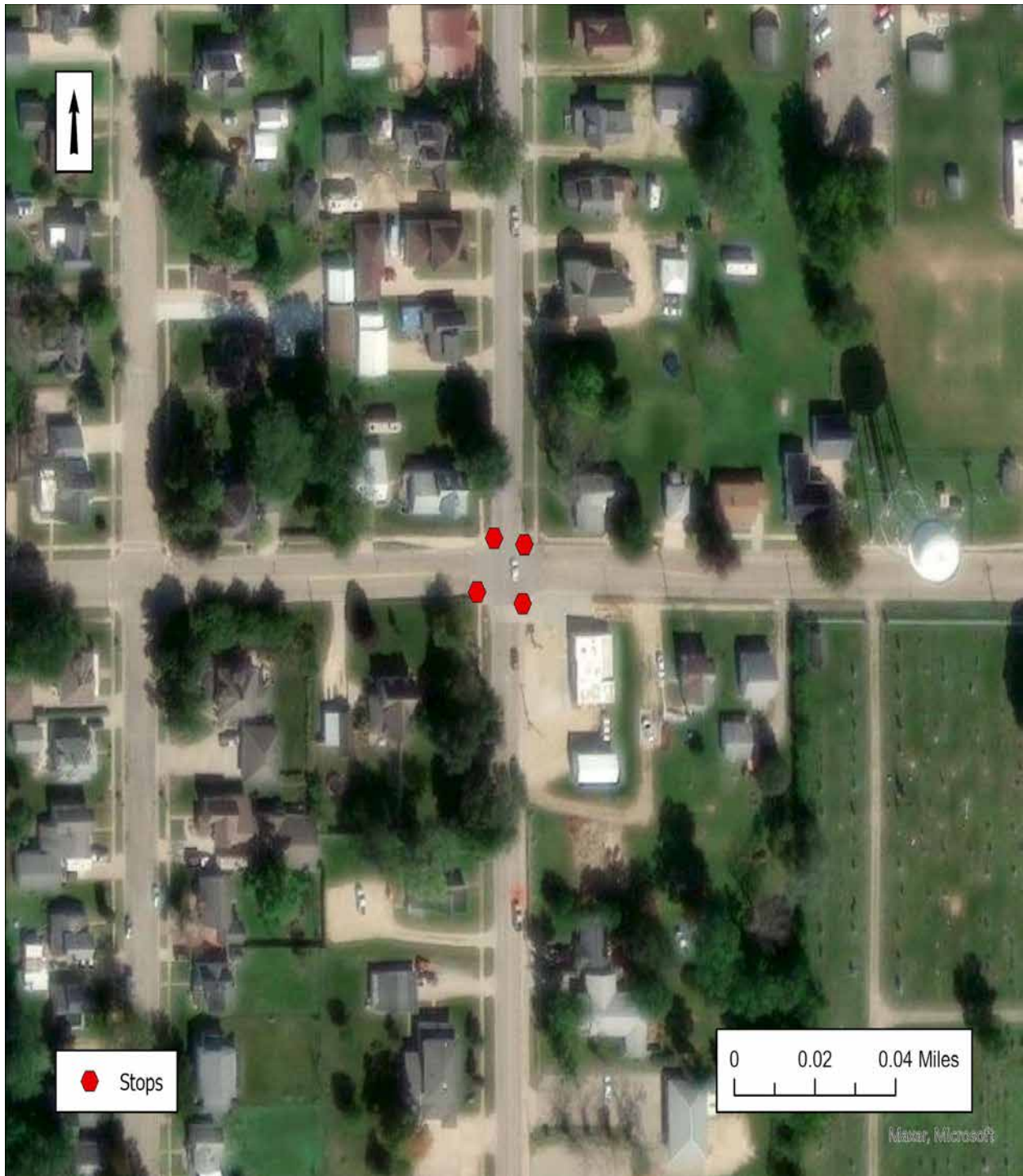
PROFILE VIEW - SW QUADRANT RETAINING WALL



PROFILE VIEW - NE QUADRANT RETAINING WALL

PROJECT NUMBER <b>MAIN-SUMMIT IMPROVEMENTS</b>		SHEET NAME <b>RETAINING WALL LAYOUT</b>		SHEET NO. <b>2</b>
JACKSON COUNTY		PROJECT NUMBER <b>MAIN-SUMMIT IMPROVEMENTS</b>		SHEET NAME <b>RETAINING WALL LAYOUT</b>
JACKSON COUNTY SECONDARY ROADS 201 West First Street, Marietta GA 30067 Email: jcr@gjacksoncounty.ga.gov Web: https://jacksoncounty.ga.gov		PROJECT NUMBER <b>MAIN-SUMMIT IMPROVEMENTS</b>		SHEET NAME <b>RETAINING WALL LAYOUT</b>

# H. Aerial Photograph





# I. Crash Report



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			13
Animal	0	Ran traffic signal	0
Ran stop sign	6	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	3	FTYROW: From yield sign	0
FTYROW: Making left turn	1	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	2
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	1	Not reported	0
Other: No improper action	0		

# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Monday	0	0	0	0	1	0	1	0	0	0	0	0	0	2
Tuesday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Wednesday	0	0	0	0	0	0	1	0	0	1	0	0	0	2
Thursday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Friday	0	0	0	0	2	0	0	1	0	0	0	0	0	3
Saturday	0	0	0	0	0	1	2	0	0	0	0	0	0	3
<b>Total</b>	0	0	0	0	3	1	5	1	2	1	0	0	0	13

Manner of Crash Collision	13	Surface Conditions	13
Non-collision (single vehicle)	0	Dry	11
Head-on (front to front)	0	Wet	2
Rear-end (front to rear)	2	Ice/frost	0
Angle, oncoming left turn	1	Snow	0
Broadside (front to side)	10	Slush	0
Sideswipe, same direction	0	Mud, dirt	0
Sideswipe, opposite direction	0	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	0	Gravel	0
Other	0	Not reported	0
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck	26
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	26

# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	2	0	0	0	2
= 18	1	2	0	0	3
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	2	2	0	0	4
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	1	2	0	0	3
>= 40 and <= 44	1	2	0	0	3
>= 45 and <= 49	1	0	0	0	1
>= 50 and <= 54	1	0	0	0	1
>= 55 and <= 59	1	2	0	0	3
>= 60 and <= 64	2	0	0	0	2
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	1	1	0	0	2
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	2	0	0	2
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>13</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>26</b>

Alcohol Test Given	26
None	26
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	26
None	26
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	26
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	26
Other	0

Drug/Alcohol Related	13
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	13

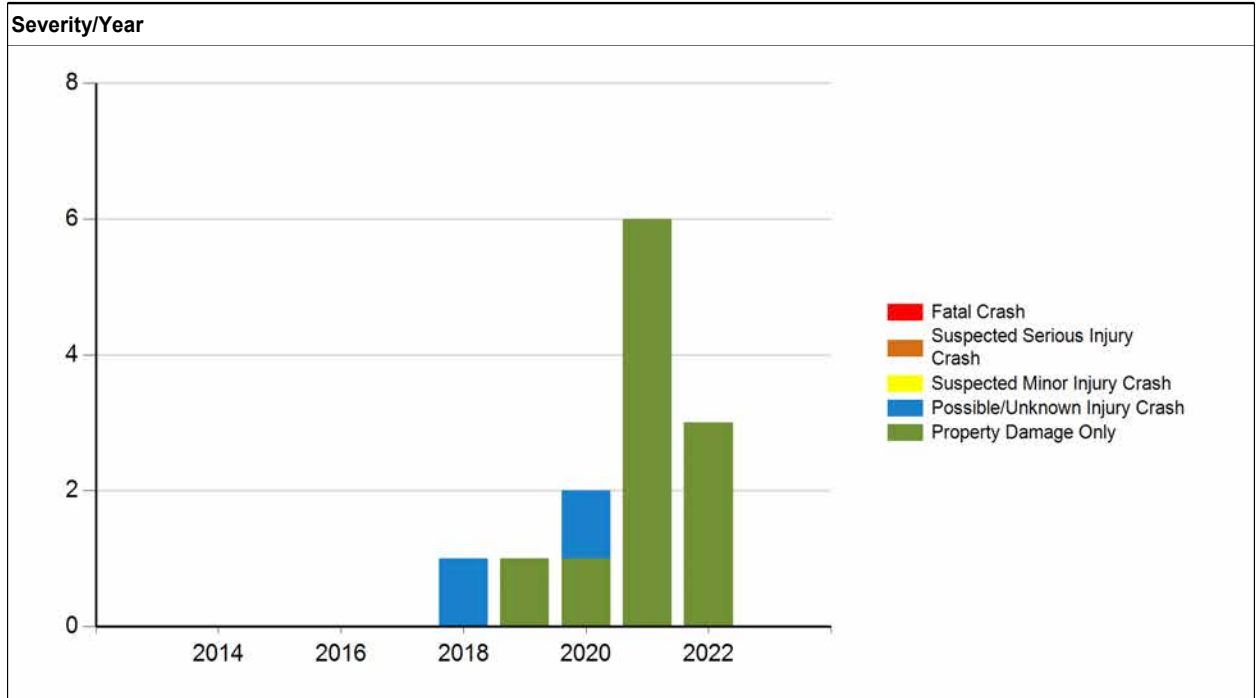


# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	1	0	1
2019	0	0	0	0	1	1
2020	0	0	0	1	1	2
2021	0	0	0	0	6	6
2022	0	0	0	0	3	3
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	2	11	13

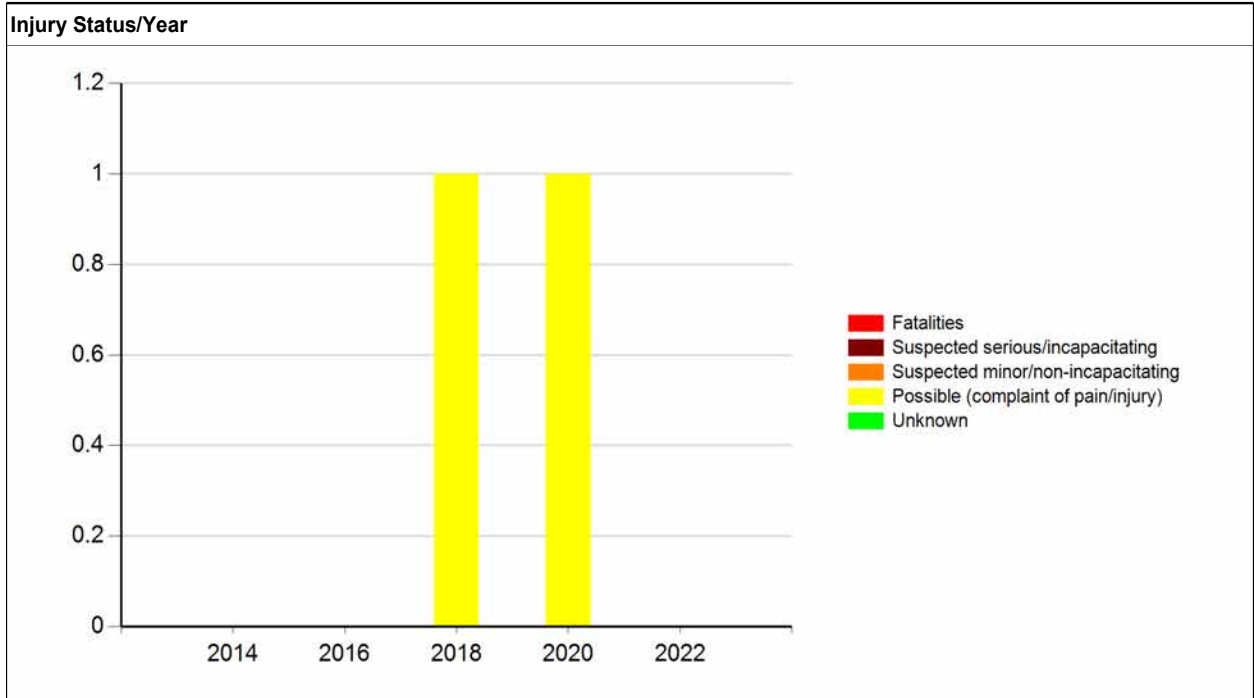


# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	1	0	1
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	2	0	2



# I. Crash Report



## Iowa Crash Analysis Tool Quick Report 2018-2022

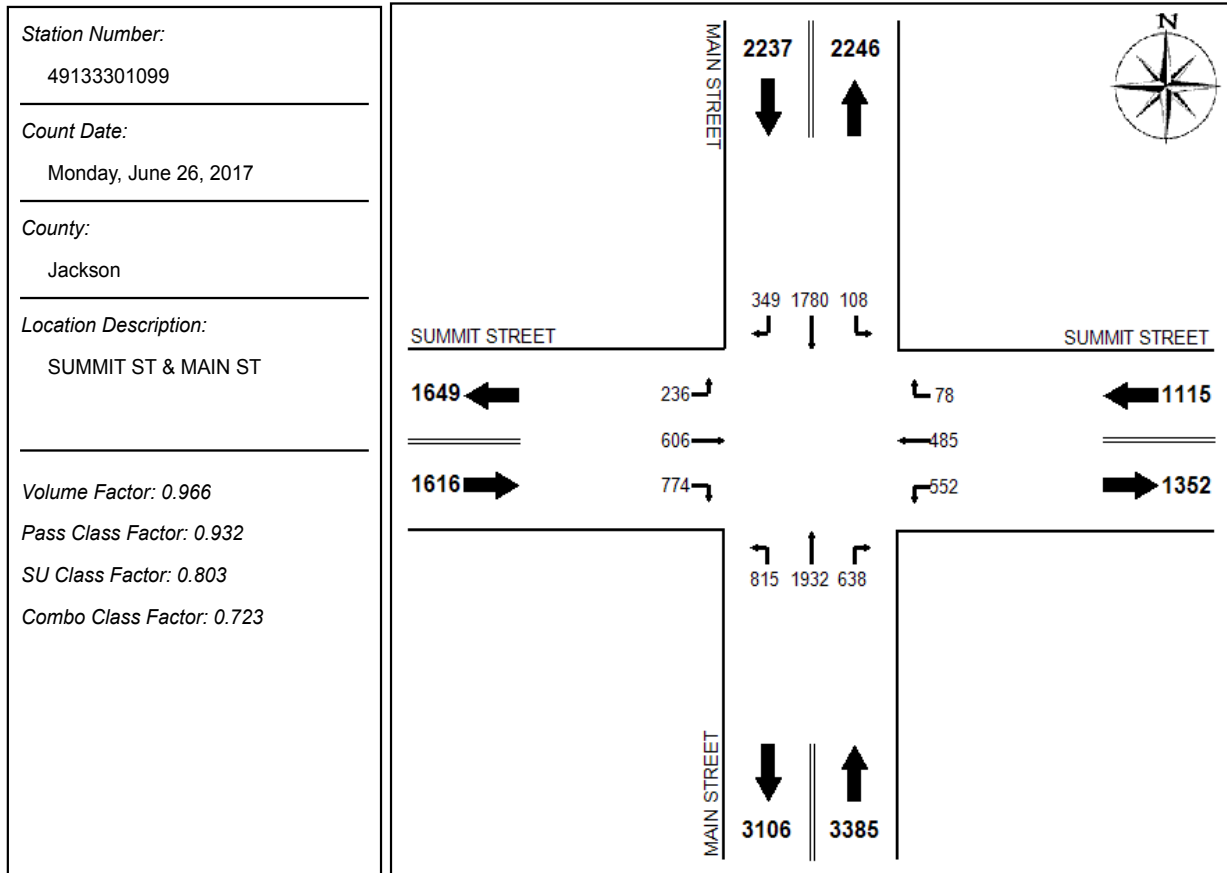
### Meeting the following criteria

Jurisdiction: Cities (Maquoketa)  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

### Analyst Information

# J. Traffic Volumes

## Iowa Department of Transportation Turning Movement Traffic Count Summary Annualized Daily Traffic For All Vehicles



**Raw Data-All Vehicles:**

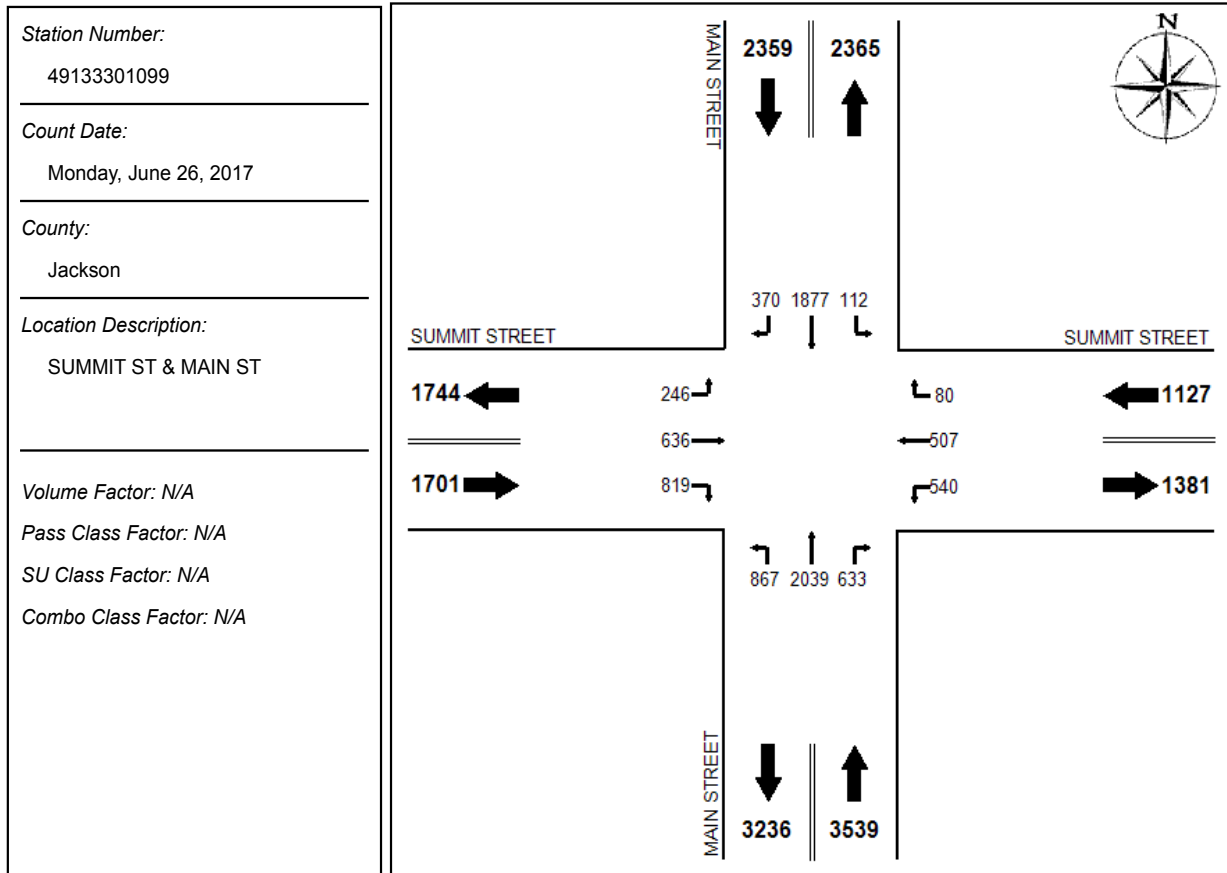
	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
00:00	0	7	4	0	1	1	3	12	2	2	3	3
01:00	1	3	1	3	0	2	1	9	4	2	0	0
02:00	0	4	2	0	0	0	2	2	1	0	1	2
03:00	0	9	1	4	2	1	0	3	1	1	1	3
04:00	1	28	0	12	2	0	3	2	3	2	8	13
05:00	6	35	5	24	6	1	4	16	15	4	39	21
06:00	4	105	5	43	18	2	8	34	13	6	46	52
07:00	7	64	17	31	26	3	29	83	36	11	44	43
08:00	4	86	19	28	36	4	32	102	35	18	56	43
09:00	4	101	16	48	36	3	41	102	37	11	31	50
10:00	9	126	24	41	31	7	52	122	30	22	37	54
11:00	9	114	34	22	39	6	55	119	47	23	40	39
12:00	5	156	25	43	25	7	61	153	48	12	38	63
13:00	11	142	16	42	35	6	70	177	48	19	49	45
14:00	12	158	20	41	34	6	64	173	48	19	26	61
15:00	6	147	20	48	45	9	64	188	63	15	31	49
16:00	11	142	38	33	46	4	100	182	64	14	45	71
17:00	13	154	31	49	46	9	98	166	66	14	47	57
18:00	4	108	34	24	29	3	50	126	45	19	29	48

# J. Traffic Volumes

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>19:00</b>	2	95	28	29	30	6	53	111	29	8	24	37
<b>20:00</b>	4	65	20	18	16	4	40	85	28	17	19	43
<b>21:00</b>	2	29	7	13	11	1	21	45	16	9	15	13
<b>22:00</b>	0	31	7	6	7	0	15	34	8	5	17	16
<b>23:00</b>	1	7	1	3	2	0	10	33	9	1	6	6

# J. Traffic Volumes

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles



**Raw Data-Passenger Vehicles:**

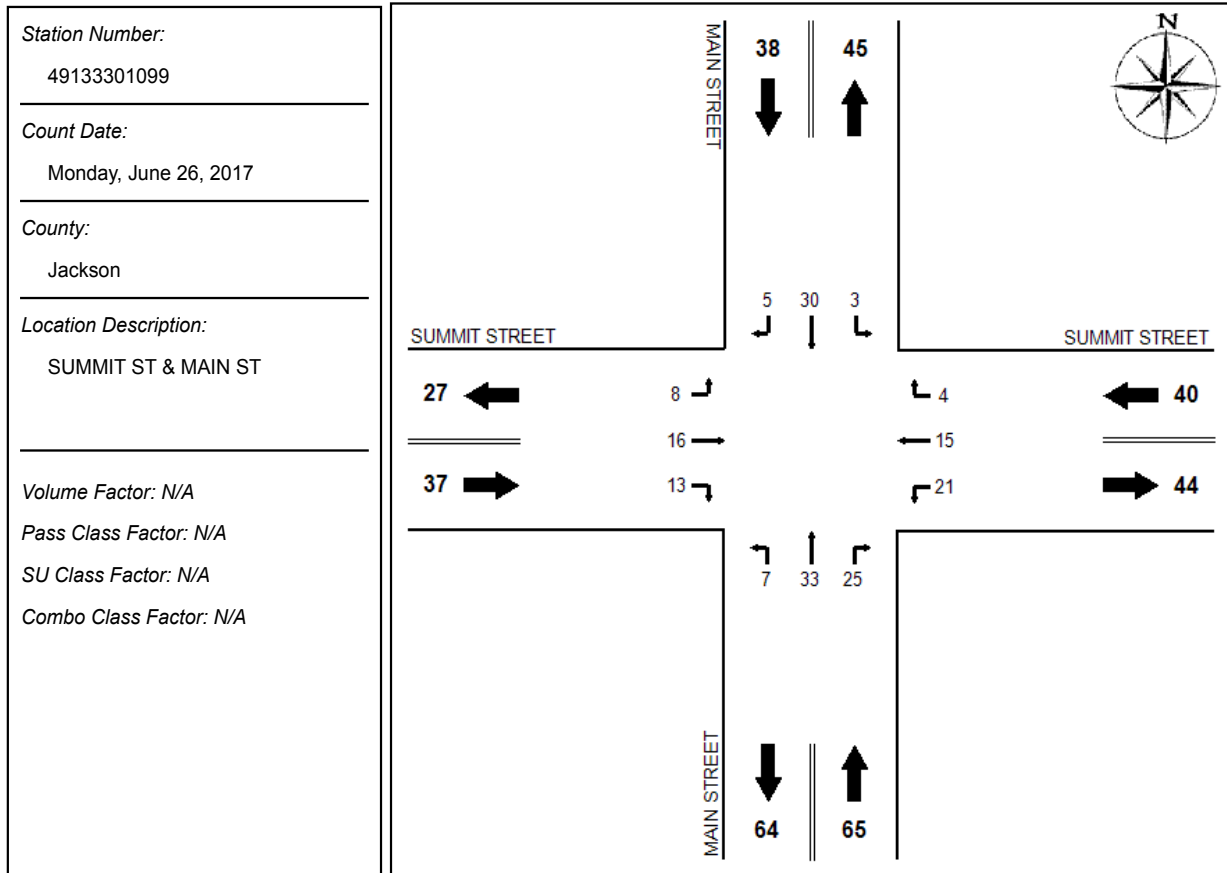
	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
00:00	0	6	4	0	1	1	3	11	2	2	3	3
01:00	1	3	1	3	0	2	1	9	4	2	0	0
02:00	0	3	2	0	0	0	2	2	1	0	1	2
03:00	0	9	1	4	2	1	0	3	1	1	1	3
04:00	1	28	0	11	2	0	3	1	3	2	8	13
05:00	6	35	5	22	6	1	3	16	14	4	39	20
06:00	4	103	5	41	18	2	8	34	12	6	46	52
07:00	6	63	15	27	25	3	29	82	35	11	42	43
08:00	4	83	18	25	34	4	32	98	31	16	53	40
09:00	4	97	15	43	34	3	39	101	31	11	31	49
10:00	8	123	24	35	29	5	52	119	22	21	36	51
11:00	9	110	33	18	37	6	55	114	40	22	39	39
12:00	5	150	25	38	24	7	59	148	42	12	36	62
13:00	9	138	16	33	35	6	70	169	40	17	47	45
14:00	12	156	20	35	33	6	64	168	44	17	25	59
15:00	6	144	20	39	43	7	63	185	57	15	29	49
16:00	11	141	38	29	44	4	100	180	60	14	44	70
17:00	13	151	31	47	46	8	98	166	65	14	46	57
18:00	4	107	34	24	28	3	49	125	42	19	29	48

# J. Traffic Volumes

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>19:00</b>	2	95	28	27	30	6	52	111	28	8	24	36
<b>20:00</b>	4	65	20	18	16	4	40	85	28	17	19	43
<b>21:00</b>	2	29	7	12	11	1	21	45	14	9	15	13
<b>22:00</b>	0	31	7	6	7	0	14	34	8	5	17	16
<b>23:00</b>	1	7	1	3	2	0	10	33	9	1	6	6

# J. Traffic Volumes

## Iowa Department of Transportation Turning Movement Traffic Count Summary Vehicle Type: Single-Unit Trucks



### Raw Data-Single-Unit Trucks:

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
00:00	0	0	0	0	0	0	0	1	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	1	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	1	0	0	0	0	1
06:00	0	2	0	0	0	0	0	0	1	0	0	0
07:00	0	0	2	2	1	0	0	1	0	0	2	0
08:00	0	2	1	1	2	0	0	2	2	2	3	3
09:00	0	1	1	3	1	0	1	1	4	0	0	1
10:00	1	2	0	2	2	2	0	3	3	1	1	3
11:00	0	4	1	2	2	0	0	5	4	1	1	0
12:00	0	5	0	3	1	0	2	3	0	0	2	1
13:00	2	4	0	1	0	0	0	8	4	2	2	0
14:00	0	2	0	0	1	0	0	5	2	2	1	2
15:00	0	2	0	3	2	2	1	2	1	0	2	0
16:00	0	1	0	2	2	0	0	2	3	0	1	1
17:00	0	3	0	1	0	0	0	0	0	0	1	0
18:00	0	1	0	0	1	0	1	0	1	0	0	0

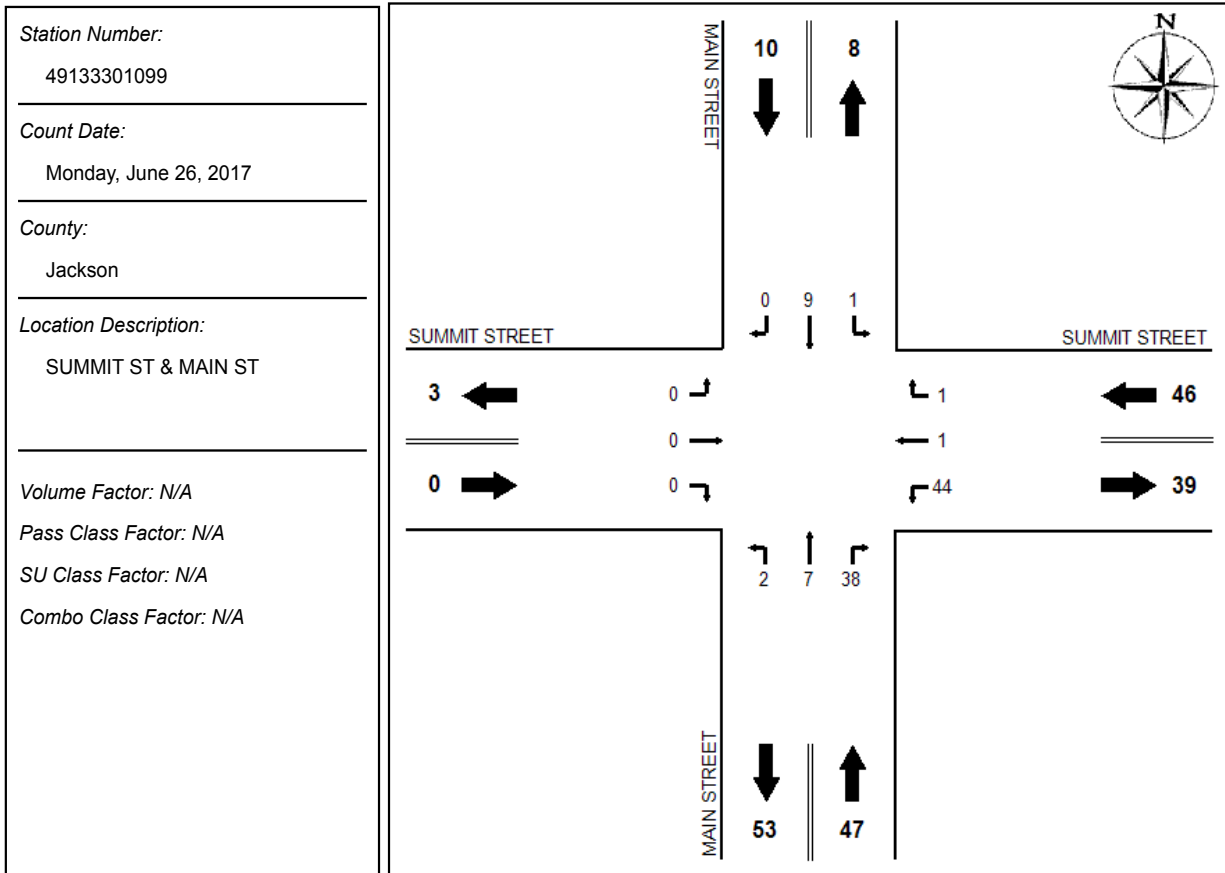


# J. Traffic Volumes

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>19:00</b>	0	0	0	1	0	0	1	0	0	0	0	1
<b>20:00</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>21:00</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>22:00</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>23:00</b>	0	0	0	0	0	0	0	0	0	0	0	0

# J. Traffic Volumes

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks



**Raw Data-Combination Trucks:**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
00:00	0	1	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	1	0	0	0	1	0	0	0	0
05:00	0	0	0	2	0	0	0	0	1	0	0	0
06:00	0	0	0	2	0	0	0	0	0	0	0	0
07:00	1	1	0	2	0	0	0	0	1	0	0	0
08:00	0	1	0	2	0	0	0	2	2	0	0	0
09:00	0	3	0	2	1	0	1	0	2	0	0	0
10:00	0	1	0	4	0	0	0	0	5	0	0	0
11:00	0	0	0	2	0	0	0	0	3	0	0	0
12:00	0	1	0	2	0	0	0	2	6	0	0	0
13:00	0	0	0	8	0	0	0	0	4	0	0	0
14:00	0	0	0	6	0	0	0	0	2	0	0	0
15:00	0	1	0	6	0	0	0	1	5	0	0	0
16:00	0	0	0	2	0	0	0	0	1	0	0	0
17:00	0	0	0	1	0	1	0	0	1	0	0	0
18:00	0	0	0	0	0	0	0	1	2	0	0	0

# J. Traffic Volumes

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>19:00</b>	0	0	0	1	0	0	0	0	1	0	0	0
<b>20:00</b>	0	0	0	0	0	0	0	0	0	0	0	0
<b>21:00</b>	0	0	0	1	0	0	0	0	2	0	0	0
<b>22:00</b>	0	0	0	0	0	0	1	0	0	0	0	0
<b>23:00</b>	0	0	0	0	0	0	0	0	0	0	0	0

# L. Benefit-Cost Worksheet



Safety Benefit-Cost Ratio

County:	Jackson	Prepared By:	ECIA
Location:	South Main Street and Summit Street,	Date Prepared:	8/1/2023
Proposed Improvements:	Increase intersection surface area, add school crossing sign, repaint pavement markings, lower nearby retaining walls, improve sidewalks		
Estimated Improvement Cost:	\$ 531,950		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 10,639

Method Choice: **CRF Method** The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

## Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

## Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	CRF 2:	CRF 3:	Combined CRF
	48	44.2	8	49.7

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000		49.7	0.00	0.00
Serious Injury (A)	\$ 4,000,000		49.7	0.00	0.00
Minor Injury (B)	\$ 265,000		49.7	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	2	49.7	0.40	0.20
Property Damage Only (O)	\$ 20,000	11	49.7	2.20	1.09

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ -
Possible/Unknown Injury (C)	\$ 24,840
Property Damage Only (O)	\$ 21,859

## Total Benefits and Costs

		Implementation Cost	\$ 531,950
		Present Value of Maint.	\$ 144,587
Present Value Benefits (Societal Benefits)	\$ 689,779	Present Value Costs (Impl. and Maint. Costs)	\$ 676,537
Present Value Net Return	\$ 13,242		
<b>Benefit Cost Ratio</b>	<b>1.02</b>		

Form continues on next page

# L. Benefit-Cost Worksheet



Safety Benefit-Cost Ratio

County:

Jackson

Prepared By: ECIA

Location:

South Main Street and Summit Street

Date Prepared: 8/1/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance Costs

### Method-Specific Customizations

---

No change to Traffic Growth Rate

No change to Crash History

# M. Maquoketa Community School District Letter of Support



612 South Vermont Street  
Maquoketa, Iowa 52060  
Phone: (563) 652-4984

State of Iowa, Iowa Department of Transportation  
Traffic Safety Improvement Program

To Whom It May Concern:

The Maquoketa Community School District serves approximately 1,320 students in our four buildings within the City of Maquoketa, Iowa. We strive to ensure that all students and staff are learning at high levels in a culture of collaboration and communication that supports continuous improvement for all.

We strongly support the City's grant request to the Department of Transportation Traffic Safety Improvement Program. We understand this project is for substantial intersection improvements to Main & Summit Street. The intersection is a high-level concern for the District since it is very close to the Maquoketa Middle School and all Eastbound High School traffic stops at this location which then causes various driving and safety concerns for motorists and pedestrians. The students in Maquoketa will uniquely benefit from the intersection improvement because increased roadway safety removes barriers for students to walk or bicycle to educational and after-school activities. The proposed improvement is long overdue for our community.

This is an opportunity for the City of Maquoketa to develop an innovative safety improvement between schools and student homes. It will reduce conflict points for all traffic users including motorists, active transportation users, and school children. The proposed improvement also supports broader community goals of the Maquoketa Community School District. This initiative is evidence the application is an outcome of collaboration between the School and City. With this in mind, The Maquoketa Community School District believes the City of Maquoketa is a worthy partner for the Department of Transportation.

The City has a successful grant execution history including various Community Development Block Grant awards and a Federal BUILD grant in benefit of a State Highway Full Reconstruction. This proves the City is capable of executing a transportation improvement of significant scale. The Maquoketa Community School District endorses the City of Maquoketa's application and recommends the City of Maquoketa for selection.

Sincerely,

*Tara Notz*

Tara Notz, Superintendent  
Maquoketa Community School District

**Tara Notz**  
Superintendent of  
Schools

**Kristy Haxmeier**  
Business Manager

**Stacy Marcus**  
Director of Curriculum/  
Instruction and Student Services

**Dustin Cogan**  
Technology Director

**Scott Hansen**  
Director of Support Services/  
Transportation Director

OUR MISSION: To ensure all students and staff are learning at high levels.  
OUR VISION: To develop a culture of collaboration and communication that supports continuous improvement for all.

## CMF / CRF Details

**CMF ID:** 307

**CMF Name:** Increase triangle sight distance

**Description:**

**Prior Condition:** No Prior Condition(s)

**Category:** Roadside

**Study ID:** [Handbook of Road Safety Measures, Elvik, R. and Vaa, T. 2004](#)

Star Quality Rating	
Star Quality Rating:	4 Stars

Crash Modification Factor (CMF)	
Value:	0.53
Adjusted Standard Error:	0.29
Unadjusted Standard Error:	

Crash Reduction Factor	
Value:	48
Adjusted Standard Error:	29
Unadjusted Standard Error:	

Applicability	
<b>Crash Type:</b>	All
<b>Crash Severity:</b>	A (serious injury),B (minor injury),C (possible injury)
<b>Roadway Types:</b>	Not specified
<b>Minimum Number of Lanes:</b>	
<b>Maximum Number of Lanes:</b>	
<b>Number of Lanes Direction:</b>	
<b>Number of Lanes Comment:</b>	
<b>Road Division Type:</b>	
<b>Minimum Speed Limit:</b>	
<b>Maximum Speed Limit:</b>	
<b>Speed Unit:</b>	
<b>Speed Limit Comment:</b>	
<b>Area Type:</b>	Not specified
<b>Traffic Volume:</b>	
<b>Average Traffic Volume:</b>	
<b>Time of Day:</b>	
<i>If countermeasure is intersection-based.</i>	
<b>Intersection Type:</b>	Roadway/roadway (not interchange related)
<b>Intersection Geometry:</b>	4-leg
<b>Traffic Control:</b>	Not specified
<b>Major Road Traffic Volume:</b>	
<b>Minor Road Traffic Volume:</b>	



<b>Average Major Road Volume:</b>	
<b>Average Minor Road Volume:</b>	

<b>Development Details</b>	
<b>Date Range of Data Used:</b>	
<b>Municipality:</b>	
<b>State:</b>	
<b>Country:</b>	
<b>Type of Methodology Used:</b>	Meta-analysis

<b>Other Details</b>	
<b>Included in HSM:</b>	No
<b>Date Added to Clearinghouse:</b>	Dec 01, 2009
<b>Comments:</b>	

---

This site is funded by the U.S. Department of Transportation Federal Highway Administration and maintained by the University of North Carolina Highway Safety Research Center

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## CMF / CRF Details

**CMF ID: 4775**

**CMF Name: Install wider markings with resurfacing**

**Description: Resurface to improve rideability and install wider pavement markings**

**Prior Condition: No Prior Condition(s)**

**Category: Delineation**

**Study ID:** [Benefit/Cost Evaluation of MoDOT's Total Striping and Delineation Program: Phase II, Potts et al. 2011](#)

Star Quality Rating	
Star Quality Rating:	4 Stars

Crash Modification Factor (CMF)	
Value:	0.92
Adjusted Standard Error:	
Unadjusted Standard Error:	0.022

Crash Reduction Factor	
Value:	8
Adjusted Standard Error:	
Unadjusted Standard Error:	2.2

Applicability	
<b>Crash Type:</b>	All
<b>Crash Severity:</b>	K (fatal),A (serious injury),B (minor injury),C (possible injury)
<b>Roadway Types:</b>	Not specified
<b>Minimum Number of Lanes:</b>	3
<b>Maximum Number of Lanes:</b>	
<b>Number of Lanes Direction:</b>	Both Directions
<b>Number of Lanes Comment:</b>	Multi Lane
<b>Road Division Type:</b>	Undivided
<b>Minimum Speed Limit:</b>	
<b>Maximum Speed Limit:</b>	
<b>Speed Unit:</b>	
<b>Speed Limit Comment:</b>	
<b>Area Type:</b>	Urban
<b>Traffic Volume:</b>	
<b>Average Traffic Volume:</b>	
<b>Time of Day:</b>	All
<i>If countermeasure is intersection-based.</i>	
<b>Intersection Type:</b>	
<b>Intersection Geometry:</b>	
<b>Traffic Control:</b>	
<b>Major Road Traffic Volume:</b>	
<b>Minor Road Traffic Volume:</b>	

<b>Average Major Road Volume:</b>	
<b>Average Minor Road Volume:</b>	

<b>Development Details</b>	
<b>Date Range of Data Used:</b>	2002 to 2009
<b>Municipality:</b>	
<b>State:</b>	MO
<b>Country:</b>	
<b>Type of Methodology Used:</b>	Before/after using empirical Bayes or full Bayes
<b>Sample Size (crashes):</b>	2557 crashes before, 2184 crashes after

<b>Other Details</b>	
<b>Included in HSM:</b>	No
<b>Date Added to Clearinghouse:</b>	May 01, 2013
<b>Comments:</b>	

---

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## CMF / CRF Details

**CMF ID:** 8496

**CMF Name:** Change right-turn lane geometry to increase line of sight (intersect

**Description:** Changes made to study approaches include: sharpening the flat a

**Prior Condition:** Traditional right-turn lane design

**Category:** Intersection geometry

**Study ID:** [Effectiveness Evaluation of a Modified Right-Turn Lane Design at Intersections, Schattler et al. 2016](#)

### Star Quality Rating

Star Quality Rating:	4 Stars
----------------------	---------

### Crash Modification Factor (CMF)

Value:	0.558
Adjusted Standard Error:	
Unadjusted Standard Error:	0.089

### Crash Reduction Factor

Value:	44.2
Adjusted Standard Error:	
Unadjusted Standard Error:	8.95

Applicability	
Crash Type:	All
Crash Severity:	All
Roadway Types:	All
Minimum Number of Lanes:	
Maximum Number of Lanes:	
Number of Lanes Direction:	
Number of Lanes Comment:	
Road Division Type:	
Minimum Speed Limit:	25
Maximum Speed Limit:	45
Speed Unit:	mph
Speed Limit Comment:	
Area Type:	
Traffic Volume:	
Average Traffic Volume:	
Time of Day:	
<i>If countermeasure is intersection-based.</i>	
Intersection Type:	Other
Intersection Geometry:	3-leg,4-leg
Traffic Control:	Other
Major Road Traffic Volume:	
Minor Road Traffic Volume:	

<b>Average Major Road Volume:</b>	
<b>Average Minor Road Volume:</b>	

<b>Development Details</b>	
<b>Date Range of Data Used:</b>	2003 to 2014
<b>Municipality:</b>	
<b>State:</b>	IL
<b>Country:</b>	
<b>Type of Methodology Used:</b>	Before/after using empirical Bayes or full Bayes
<b>Sample Size (crashes):</b>	274 crashes before, 161 crashes after
<b>Sample Size (sites):</b>	6 sites before, 6 sites after
<b>Sample Size (site-years):</b>	site-years before, 18 site-years after

<b>Other Details</b>	
<b>Included in HSM:</b>	No
<b>Date Added to Clearinghouse:</b>	Mar 13, 2017
<b>Comments:</b>	Authors indicate that this CMF should be used with caution, since improvements were made to other approaches. Intersection AADT ranges from 15,558 to 29,992. CMF applies to both stop-controlled and signalized intersections. Roadway/roadway both interchange and not-interchange related.

---

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# City of Muscatine

ITEM NUMBER 2023-0090

## AGENDA ITEM SUMMARY

DATE: 3/2/2023

### STAFF

---

Brian Stineman, Public Works Director

### SUBJECT

---

Request to Submit an Application to the Iowa Department of Transportation for Traffic Safety Funds for Construction of a Mini-Roundabout at W. Fulliam and Houser Street.

### EXECUTIVE SUMMARY

---

Public Works Staff request approval to submit an application to the Iowa Department of Transportation for Traffic Safety Funds to construct a mini-roundabout at W. Fulliam and Houser Streets.

### STAFF RECOMMENDATION

---

Approve the Request

### BACKGROUND/DISCUSSION

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In 2018, the City of Muscatine contracted with Shive-Hattery Architecture and Engineering to design a mini-roundabout and submit an application to the Iowa Department of Transportation for Traffic Safety Funds to reduce traffic congestion at the intersection of Fulliam and Houser Streets. A Traffic Safety Improvement Program (TSIP) grant was approved for construction of the project. In 2019, the city council chose to discontinue the project and not accept the grant award.

The current city council has requested that staff re-investigate the possibility of applying for TSIP funding for this intersection, which necessitates the submittal of this application.

### CITY FINANCIAL IMPACT

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There is no cost to the city to apply for the funding. We have requested funding for 100 percent of the cost of construction. Inspection will be provided by City staff.

### ATTACHMENTS

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1. TSIP Set 2022 c
2. A TSIP App 2022



# Traffic Safety Improvement Program Application

**W Fulliam Avenue and N Houser Street Mini-Roundabout**  
Muscatine, Iowa  
March 3, 2023

Prepared by:

**SHIVEHATTERY**  
ARCHITECTURE + ENGINEERING

2144 56<sup>th</sup> Avenue W  
Bettendorf, IA 52722  
(563) 554-2553



## Application for TRAFFIC SAFETY FUNDS

### GENERAL INFORMATION

DATE: August 15, 2023

Location / Title of Project W Fulliam Avenue and N Houser Street Mini-Roundabout

Applicant City of Muscatine

Contact Person Brian Stineman Title Public Works Director

Complete Mailing Address 1459 Washington Street

Muscatine, IA 5271

Phone (563) 263-8933 E-Mail bstineman@muscatineiowa.gov  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

### PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

#### Application Type

Site Specific   
Traffic Control Device   
Safety Study

#### Funding Amount

Total Safety Cost \$ 314,956

Total Project Cost \$ 314,956

**Safety Funds Requested** \$ 314,956

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?  Yes – Explain \_\_\_\_\_


No

# APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT


To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Muscatine

Signed:  Mar 3, 2023  
Signature Date Signed

Mayor Brad Bark  
Typed Name

Attest:  Mar 3, 2023  
Signature Date Signed

Carol Webb, City Administrator  
Typed Name



### **Background**

The City of Muscatine is planning to make improvements to the intersection of North Houser Street and West Fulliam Avenue. It is a four-way intersection that is stop controlled in two directions. North Houser Street is two lanes and is the through street, with a 30-mph speed limit. West Fulliam Avenue is two lanes and is stop controlled at both approaches to North Houser Street. West Fulliam Avenue has a 25-mph speed limit. See **Exhibit H** for existing conditions.

### **Crash History**

Crash history for this intersection was collected from the Iowa DOT ICAT website and was evaluated from 2013 to 2022 to identify trends and safety issues with the current geometry and operations. In the past 10 years, 12 crashes have been reported resulting in 3 minor injuries, 3 possible injuries, and 6 instances of property damage. Most crashes have been due to broadside collision type, and dry surface conditions. Other crash types include rear-end, sideswipe – same direction collisions. Refer to Section I for a crash history summary.

### **Proposed Improvements**

Due to the amount and types of crashes at the intersection, it is proposed to construct a mini roundabout to increase safety. The mini roundabout will serve as a traffic calming device, which will slow down traffic after the stop signs are removed. Splitter islands will be installed to reduce the intersection speeds and notify motorists of the intersection. Due to the wide streets, the splitter islands will provide adequate deflection which will result in lower intersection speeds. Crosswalks and curb ramps are proposed to safely accommodate pedestrians at the intersection and connect to existing sidewalks according to ADA compliance. The splitter islands will serve as a pedestrian refuge as they will be raised. The central island will be a 3" traversable raised curb to deter motorists from traveling through the intersection; however, will accommodate large trucks and buses. Additionally, the outer edges will be removed, and the mini roundabout will be reconstructed in a way that will control access points to properties near the intersection. This is anticipated to reduce crashes at driveways. Ten acres of existing farmland is anticipated to be converted to residential property in the near future which will result in an increase in

traffic. The proposed improvements will accommodate this increase in traffic. Refer to **Exhibit G** for the proposed improvements. The proposed improvements will also help accommodate pedestrian traffic, which is anticipated to increase once a new section of trail immediately west of the intersection is constructed. This trail will connect to existing trails north and south of the site; refer to **Exhibit K** for the proposed trail location.

### **Conclusion**

The proposed improvements will provide users with an intersection that will reduce speeds, provide accommodations for pedestrians, will aid in providing acceptable gaps for all directions and will accommodate future traffic growth. The proposed improvements are expected to result in a safer intersection and reduce the number of injury crashes per year.

**Muscatine Houser Street and Fulliam Avenue Mini-Roundabout**  
**Opinion of Probable Construction Costs**  
**Quantities - Revised 02/21/2023**

ITEM NO.	ITEM CODE	ITEM	UNIT	UNIT PRICE	TOTAL QUANTITY	TOTAL PRICE
1	2010-C	CLEARING AND GRUBBING	LS	\$ 6,000.00	1	\$ 6,000.00
2	2010-D-3	TOPSOIL OFF-SITE	CY	\$ 30.00	283	\$ 8,490.00
3	2010-E	EXCAVATION, CLASS 10	CY	\$ 15.00	510	\$ 7,650.00
4	2010-F	BELOW GRADE EXCAVATION (CORE OUT)	SY	\$ 60.00	150	\$ 9,000.00
5	2010-G	SUBGRADE PREPARATION	SY	\$ 3.00	1687	\$ 5,061.00
6	2010-H	SUBGRADE TREATMENT, ENGINEERING FABRIC	SY	\$ 3.50	1687	\$ 5,904.50
7	2010-I	SUBBASE, 6", MODIFIED	SY	\$ 14.00	1687	\$ 23,618.00
8	2010-M	STABILIZATION ROCK	TON	\$ 25.00	50	\$ 1,250.00
9	4020-C	REMOVAL OF STORM SEWER, RCP	LF	\$ 30.00	10	\$ 300.00
10	4040-A	SUBDRAIN, 6"	LF	\$ 22.00	370.5	\$ 8,151.00
11	4040-C	SUBDRAIN CLEANOUT, TYPE A-1	EA	\$ 750.00	4	\$ 3,000.00
12	4040-D	SUBDRAIN OUTLETS AND CONNECTIONS	EA	\$ 225.00	4	\$ 900.00
13	6010-B	INTAKE, SW-507	EA	\$ 6,000.00	1	\$ 6,000.00
14	6010-E	MANHOLE ADJUSTMENT, MINOR	EA	\$ 1,400.00	3	\$ 4,200.00
15	6010-E	INTAKE ADJUSTMENT, MAJOR	EA	\$ 1,400.00	1	\$ 1,400.00
16	6010-H	REMOVE INTAKE	EA	\$ 1,000.00	1	\$ 1,000.00
17	7010-A	PAVEMENT, PCC, 8"	SY	\$ 75.00	974.8	\$ 73,110.00
18	7010-A-1	PAVEMENT, COLORED AND STAMPED PCC, 8"	SY	\$ 120.00	150.9	\$ 18,108.00
19	7030-A	REMOVAL OF SIDEWALK	SY	\$ 10.00	138.5	\$ 1,385.00
20	7030-A	REMOVAL OF DRIVEWAY	SY	\$ 10.00	82.7	\$ 827.00
21	7030-E	SIDEWALK, PCC, 5"	SY	\$ 60.00	269.5	\$ 16,170.00
22	7030-G	DETECTABLE WARNING	SF	\$ 50.00	128	\$ 6,400.00
23	7030-H-1	DRIVEWAY, PAVED, PCC, 7"	SY	\$ 70.00	199.6	\$ 13,972.00
24	7040-H	PAVEMENT REMOVAL	SY	\$ 12.00	1018.9	\$ 12,226.80
25	8020-C	PAINTED PAVEMENT MARKINGS, DURABLE	STA	\$ 100.00	28.39	\$ 2,839.00
26	8030-A	TEMPORARY TRAFFIC CONTROL	LS	\$ 8,000.00	1	\$ 8,000.00
27	8040-C	REMOVAL OF TRAFFIC SIGN	EA	\$ 150.00	3	\$ 450.00
28	9010-B	HYDRAULIC SEEDING, FERTILIZING, AND MULCHING - URBAN MIX	AC	\$ 6,500.00	0.35	\$ 2,275.00
29	9040-D-1	COMPOST FILTER SOCK, 12"	LF	\$ 3.50	538	\$ 1,883.00
30	9040-D-2	COMPOST FILTER SOCK REMOVAL	LF	\$ 0.75	538	\$ 403.50
31	9040-T-1	INLET PROTECTION DEVICE, COMPOST SOCK	EA	\$ 250.00	3	\$ 750.00
32	9040-T-1	INLET PROTECTION DEVICE, DROP IN	EA	\$ 300.00	1	\$ 300.00
33	9040-T-2	INLET PROTECTION DEVICE, MAINTENANCE	EA	\$ 75.00	4	\$ 300.00
35	11,020-A	MOBILIZATION	LS	\$ 30,000.00	1	\$ 30,000.00
36	11,030-A	MAINTENANCE OF POSTAL SERVICE	LS	\$ 2,500.00	1	\$ 2,500.00
37	11,050-A	CONCRETE WASHOUT	LS	\$ 2,500.00	1	\$ 2,500.00

CONSTRUCTION SUBTOTAL	\$ 286,324.00
CONTINGENCY (10%)	\$ 28,632.40
<b>TOTAL</b>	<b>\$ 314,956.40</b>

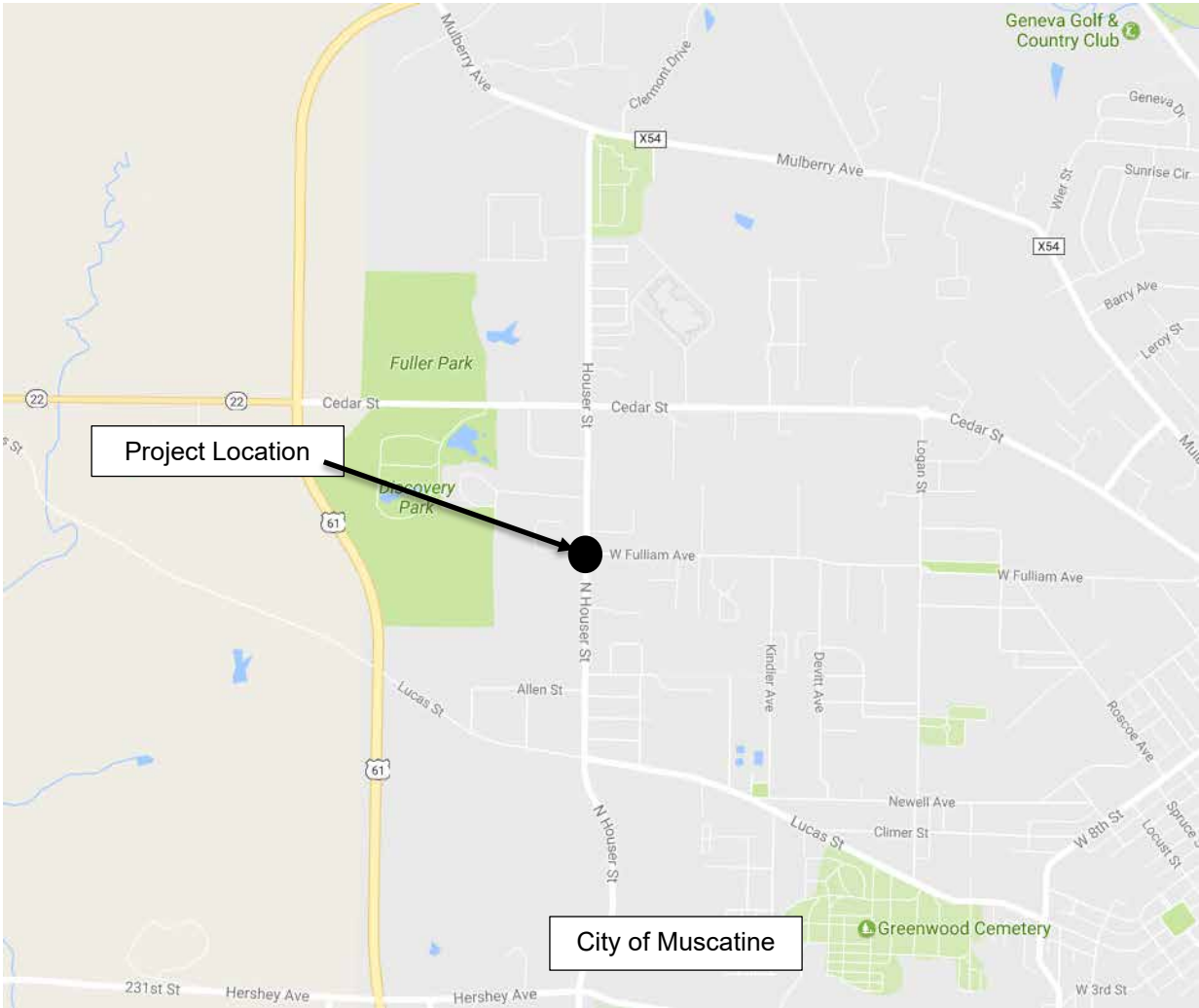
\*The Architect/Engineer, as a design professional familiar with the construction industry, has prepared this opinion of the Probable Cost of Construction. It is recognized, however, that neither the Architect/Engineer nor the Owner has control over the cost of labor, materials, or equipment, over the Contractor's method of determining bid prices, or over competitive bidding, market, or negotiating conditions. Accordingly, the Architect/Engineer cannot and does not warrant or represent which bids or negotiated prices will not vary from the Probable Cost of Construction.



The schedule proposed for the safety improvements at the intersection of W Fulliam Avenue and N Houser Street is as follows:

- **August 2023** – Submit for 2025 TSIP Funds.
- **January 2024** – Project is awarded TSIP funds.
- **January – June 2024** – Proceed with design of improvements in accordance with the Federal Aid Process for an Iowa DOT Letting.
- **July 2024** –TSIP funds are available.
- **July 2024, 2<sup>nd</sup> week** –Let intersection project in accordance with the Iowa DOT, Federal Aid, Minor Project Schedule.
- **Summer/Fall 2024** – Construction begins.
- **November 2024** – Construction complete for mini-roundabout.

E. Project Location





Looking East from West Fulliam Avenue, EB Approach\*



Looking North from North Houser Street, NB Approach\*

\*Source: Google®

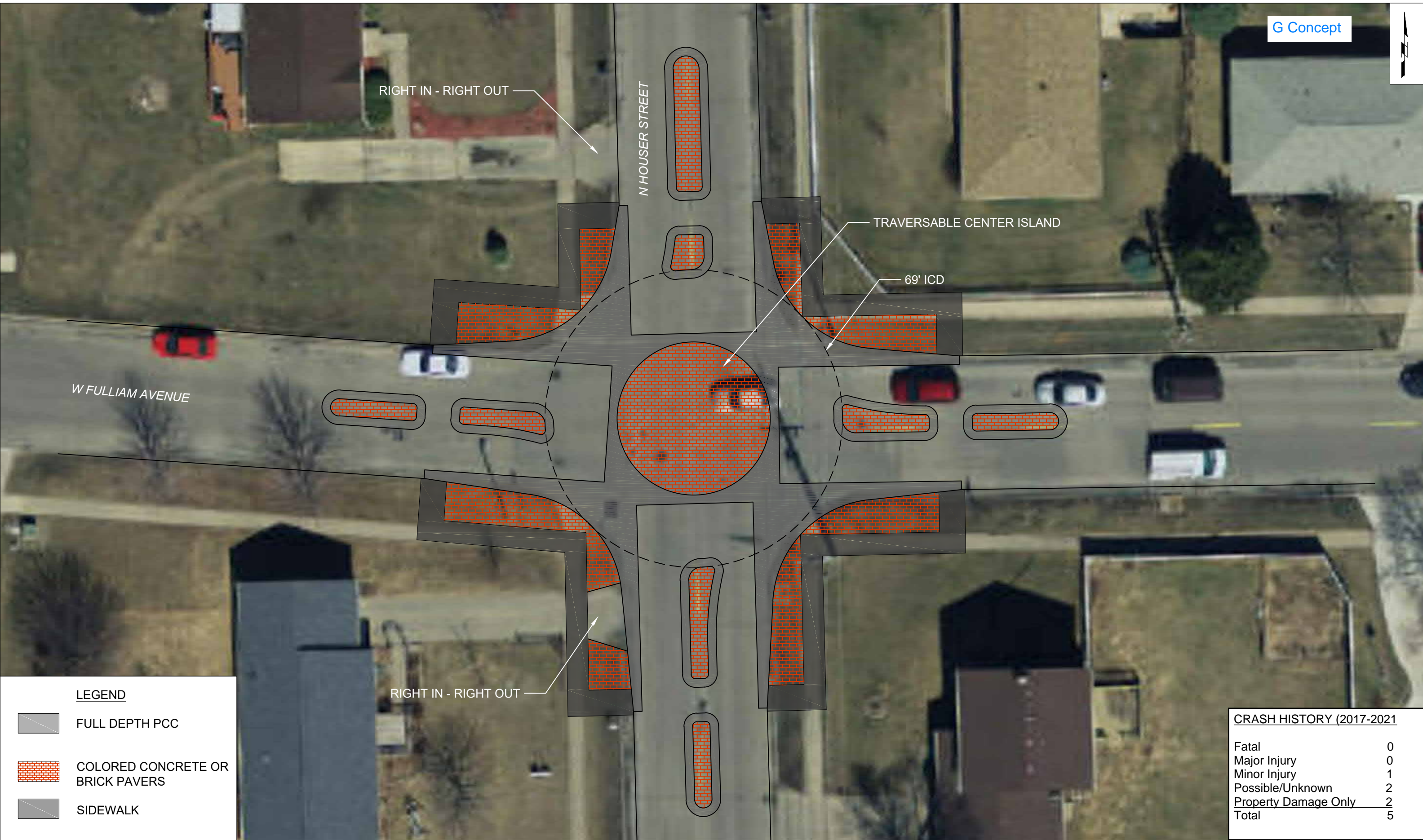


Looking South from North Houser Street, SB Approach\*






Looking West from West Fulliam Avenue, WB Approach\*

\*Source: Google®



LEGEND

-  FULL DEPTH PCC
-  COLORED CONCRETE OR BRICK PAVERS
-  SIDEWALK

CRASH HISTORY (2017-2021)

Fatal	0
Major Injury	0
Minor Injury	1
Possible/Unknown	2
Property Damage Only	2
<b>Total</b>	<b>5</b>





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Crash Severity		7	Injury Status Summary		5
Fatal Crash		0	Fatalities		0
Suspected Serious Injury Crash		0	Suspected serious/incapacitating		0
Suspected Minor Injury Crash		2	Suspected minor/non-incapacitating		2
Possible/Unknown Injury Crash		2	Possible (complaint of pain/injury)		3
Property Damage Only		3	Unknown		0

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	60,500.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	8,642.86	Fatalities/Crash:	0.00
Total Vehicles:	14.00	Injuries/Crash:	0.71
Average (per crash):	2.00	Major Injuries/Crash:	0.00
Total Occupants:	15.00	Minor Injuries/Crash:	0.29
Average (per crash):	2.14	Possible/Unknown Injuries/Crash:	0.43





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			7
Animal	0	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	2	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	1
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	1
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	1
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		





**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Thursday	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Friday	0	0	0	0	1	0	0	0	0	0	1	0	0	2
Saturday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	1	2	1	0	2	0	0	1	0	0	7

Manner of Crash Collision	7
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	2
Angle, oncoming left turn	1
Broadside (front to side)	3
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	7
Dry	6
Wet	0
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	14
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	1
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	13



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	0	0	0	1
= 16	0	1	0	0	1
= 17	0	0	0	0	0
= 18	2	0	0	0	2
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	1	0	0	0	1
>= 45 and <= 49	2	0	0	0	2
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	1	0	0	0	1
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	2	1	0	0	3
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>12</b>

Alcohol Test Given	14
None	12
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	2

Drug Test Given	14
None	12
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	2

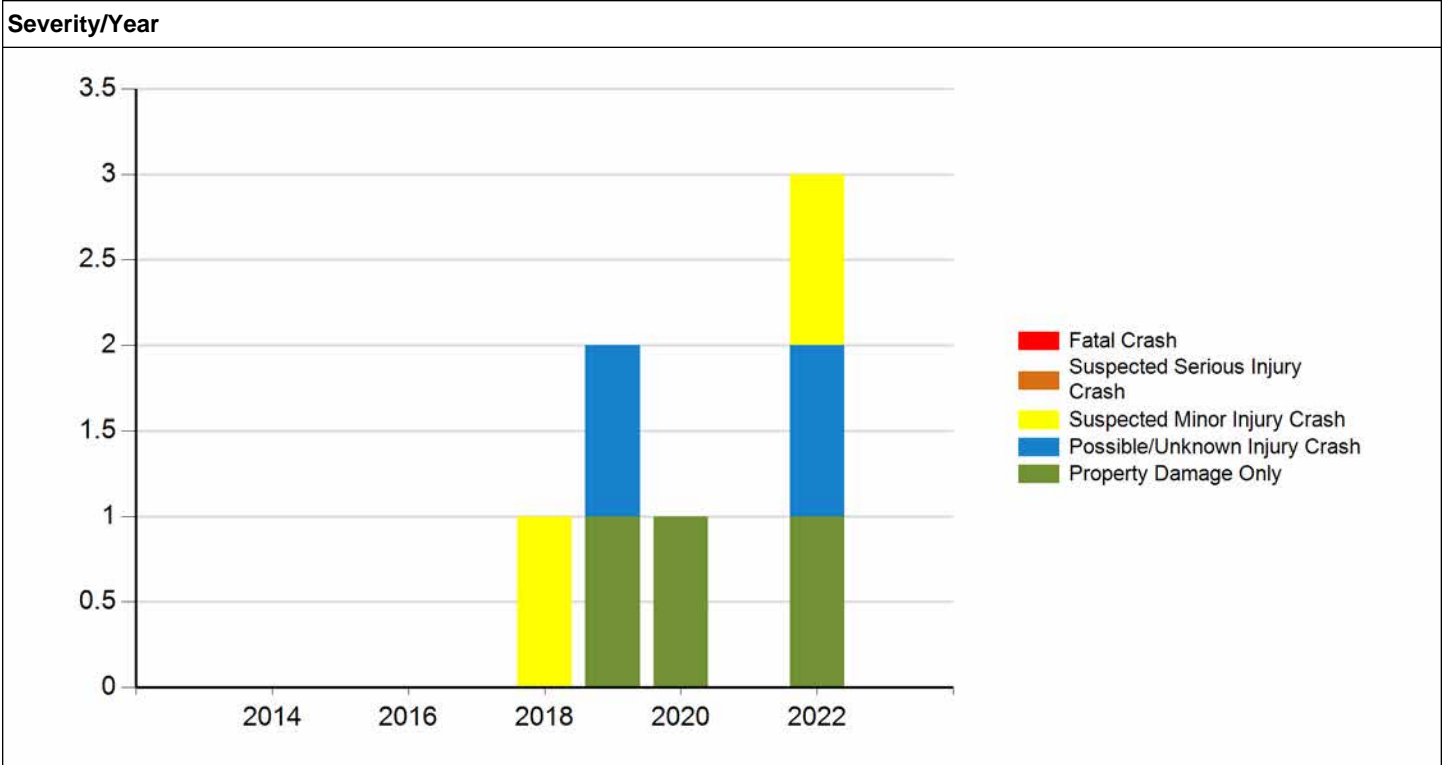
Drug Test Result	0
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	0
Other	0

Drug/Alcohol Related	7
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	7



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

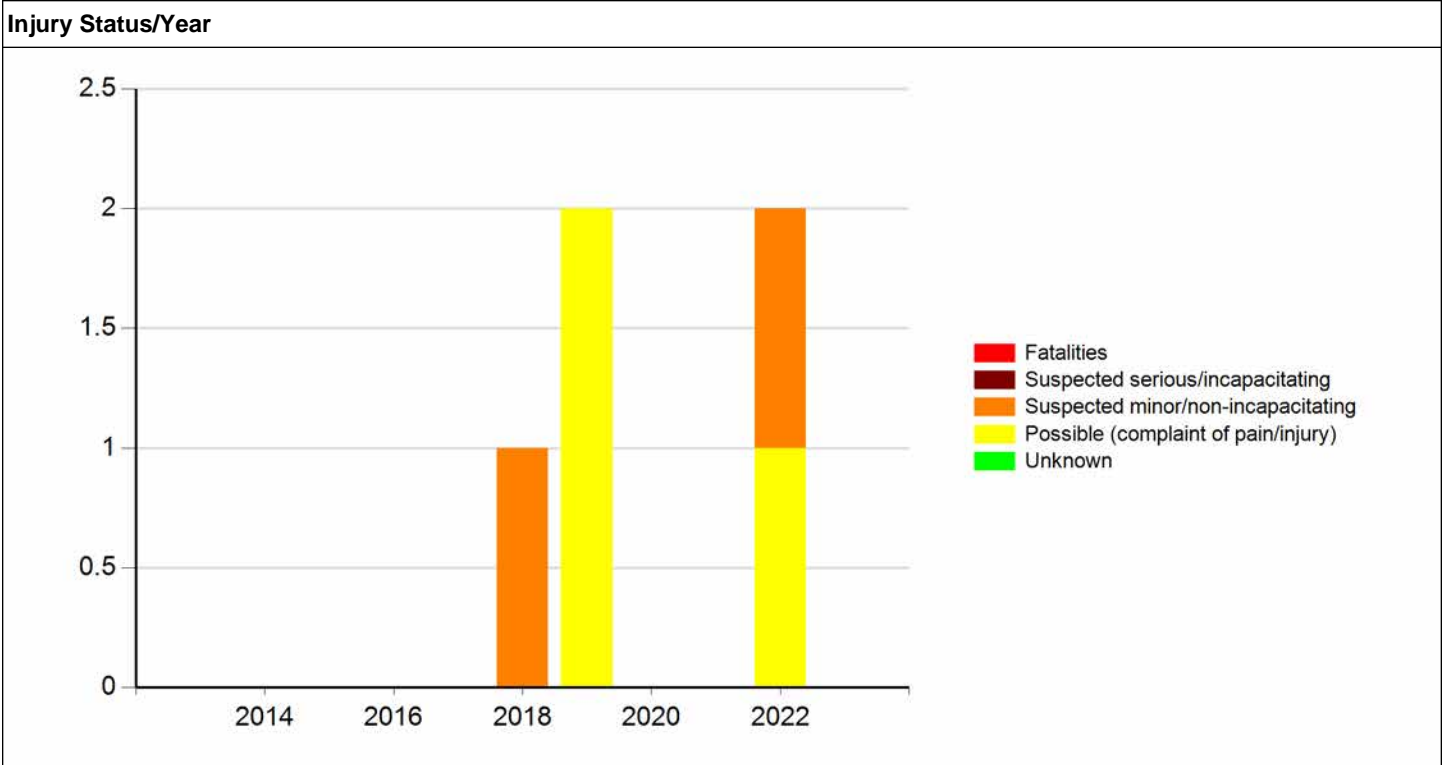
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	1	0	0	1
2019	0	0	0	1	1	2
2020	0	0	0	0	1	1
2021	0	0	0	0	0	0
2022	0	0	1	1	1	3
2023	0	0	0	0	0	0
<b>Total</b>	0	0	2	2	3	7





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	1	0	0	1
2019	0	0	0	2	0	2
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	1	1	0	2
2023	0	0	0	0	0	0
<b>Total</b>	0	0	2	3	0	5

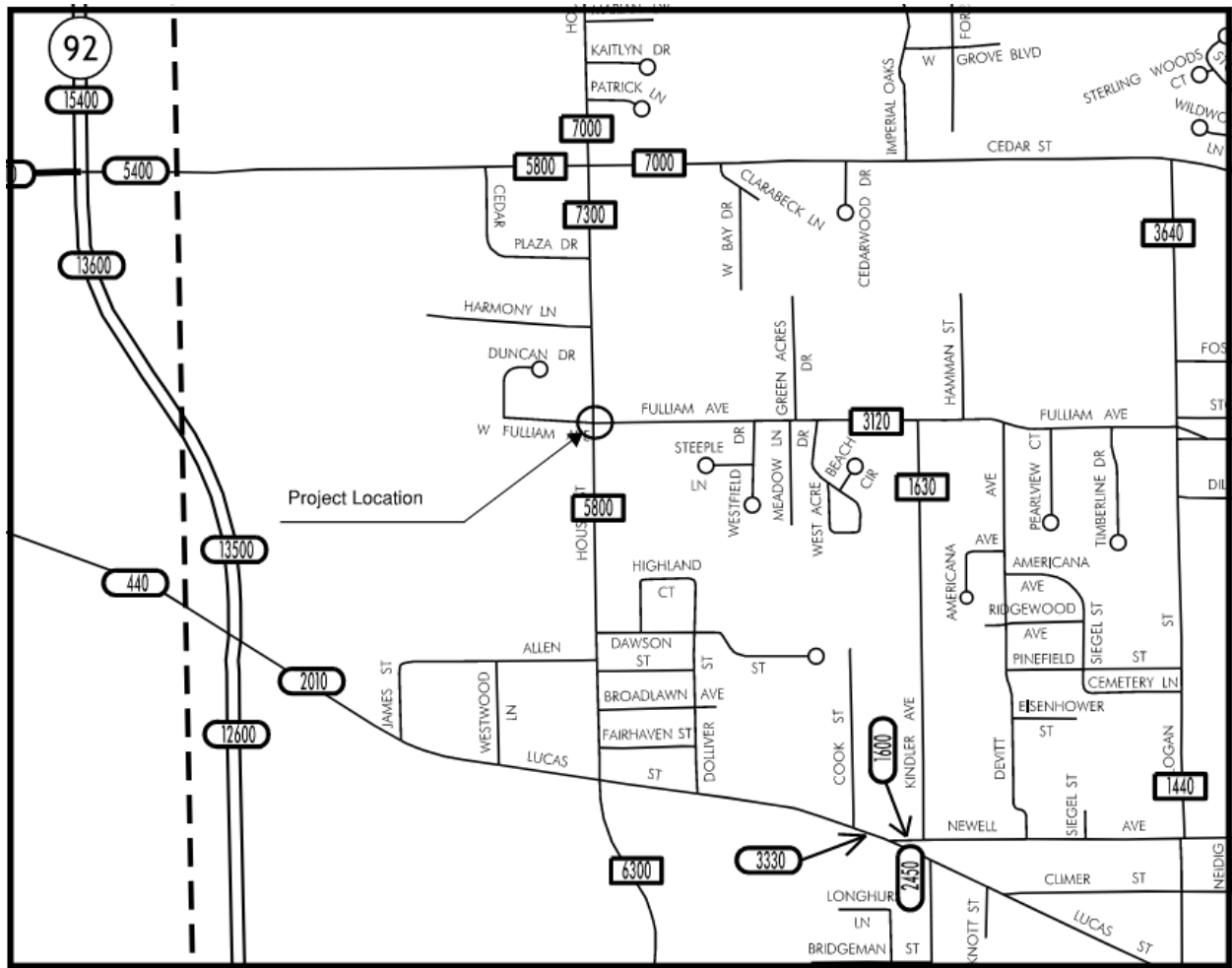




**Meeting the following criteria**

Jurisdiction: Statewide  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**

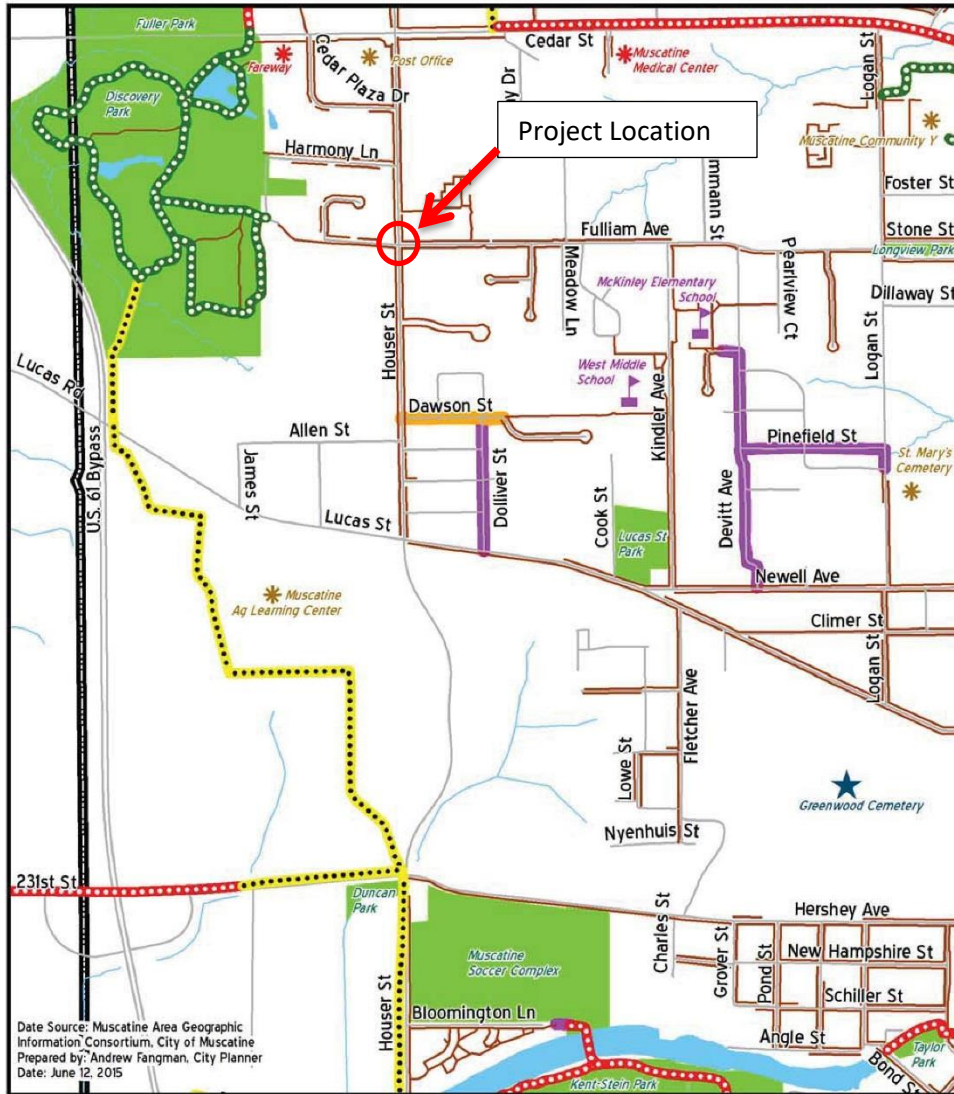


2018 Iowa DOT Traffic Map

Road Name	2014 Iowa DOT AADT
Houser Street	7,300 (N), 5,800 (S)
Fulliam Avenue	3,120 (E)



### City of Muscatine Bike & Pedestrian Master Plan



Date Source: Muscatine Area Geographic Information Consortium, City of Muscatine  
 Prepared by: Andrew Fangman, City Planner  
 Date: June 12, 2015



## Bike and Pedestrian Master Plan



County:	Muscatine	Prepared By:	Shive-Hattery
Location:	Houser & Fulliam Intersection, Musca	Date Prepared:	5/3/2023
Proposed Improvements:	Replace a two-way stop controlled intersection with a roundabout		
Estimated Improvement Cost:	\$ 314,956		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 1,000
Method Choice:	CRF Method	<p>The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.</p>	

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF	
CRF Value (%)	72	72.0	
Equivalent CMF	0.28		Is Dom. Com. Resd.
Combined CMF, if # used (DR)	0.28	0.28	TRUE
Combined CMF, if # used (Mult)	0.28		Is data entered befc
Pick Dom Com. Resd. Or Mult. Fo	0.28	0.28	FALSE

Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	72.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	72.0	0.00	0.00
Minor Injury (B)	\$ 265,000	2	72.0	0.40	0.29
Possible/Unknown Injury (C)	\$ 125,000	2	72.0	0.40	0.29
Property Damage Only (O)	\$ 20,000	3	72.0	0.60	0.43

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 76,320
Possible/Unknown Injury (C)	\$ 36,000



County: Muscatine  
 Location: Houser & Fulliam Intersection, Muscatine  
 Property Damage Only (O) \$ 8,640  
 Prepared By: Shive-Hattery  
 Date Prepared: 5/3/2023

### Predictive Method

Existing Condition (All Crashes):   
 Alternative (All Crashes):   
 Percent Change in Crashes n/a  
 Location Characteristics: Please Select  
 Iowa Crash Distribution 2017-2021

Crash Severity	Crash Distribution Based on Location Characteristics	Existing Condition Expected Crashes - Service Life	Alternative Expected Crashes - Service Life	Crashes Saved	
				Over Service Life	Crashes Saved Annually
Fatal (K)	0.00%	0.00	0.00	0.00	0.00
Serious Injury (A)	0.00%	0.00	0.00	0.00	0.00
Minor Injury (B)	0.00%	0.00	0.00	0.00	0.00
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

Crash Severity	Rounded Societal Costs	Annual Societal Benefit
Fatal (K)	\$ 4,000,000	\$ -
Serious Injury (A)	\$ 4,000,000	\$ -
Minor Injury (B)	\$ 265,000	\$ -
Possible/Unknown Injury (C)	\$ 125,000	\$ -
Property Damage Only (O)	\$ 20,000	\$ -

### Total Benefits and Costs

Implementation Cost	\$ 314,956
Present Value of Maint.	\$ 13,590
Present Value Benefits (Societal Benefits)	\$ 1,786,665
Present Value Costs (Impl. and Maint. Costs)	\$ 328,546
Present Value Net Return	\$ 1,458,118
<b>Benefit Cost Ratio</b>	<b>5.44</b>

Form continues on next page

County:

Muscatine

Prepared By: Shive-Hattery

Location:

Houser &amp; Fulliam Intersection, Musca

Date Prepared: 5/3/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---



## Application for TRAFFIC SAFETY FUNDS

### GENERAL INFORMATION

DATE: August 15, 2023

Location / Title of Project W Fulliam Avenue and N Houser Street Mini-Roundabout

Applicant City of Muscatine

Contact Person Brian Stineman Title Public Works Director

Complete Mailing Address 1459 Washington Street

Muscatine, IA 5271

Phone (563) 263-8933 E-Mail bstineman@muscatineiowa.gov  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

### PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

#### Application Type

Site Specific   
Traffic Control Device   
Safety Study

#### Funding Amount

Total Safety Cost \$ 314,956

Total Project Cost \$ 314,956

**Safety Funds Requested** \$ 314,956

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?  Yes – Explain \_\_\_\_\_


No

# APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT


To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Muscatine

Signed:  Mar 3, 2023  
Signature Date Signed

Mayor Brad Bark  
Typed Name

Attest:  Mar 3, 2023  
Signature Date Signed

Carol Webb, City Administrator  
Typed Name





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** \_\_\_\_\_

Location / Title of Project Mullan Street (US 63) & Sycamore Street Intersection  
Signalization

Applicant City of Waterloo

Contact Person Mohammad Elahi Title Traffic Operations Interim  
Director

Complete Mailing Address 625 Glenwood street, Waterloo, Iowa 50703

Phone (319) 291-4440 E-Mail mohammad.elahi@waterloo-  
(Area Code) ia.org

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 262,000

Total Project Cost \$ 262,000

**Safety Funds Requested** \$ 262,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain \_\_\_\_\_  
 No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Waterloo

Signed: \_\_\_\_\_  
Signature Date Signed

Quentin Hart  
Printed Name

Attest: \_\_\_\_\_  
Signature Date Signed

\_\_\_\_\_  
Printed Name

# TSIP Site-Specific Application

## INTERSECTION OF US 63 (1ST STREET) & SYCAMORE STREET PROPOSED TRAFFIC SAFETY IMPROVEMENTS

City of Waterloo

Summer 2023



Prepared by LeAnn M. Even, Deputy City Clerk, City of Waterloo, 715 Mulberry Street, Waterloo, IA 50703, (319) 291-4323.

RESOLUTION NO. 2023-467


RESOLUTION APPROVING SUBMISSION OF IOWA DEPARTMENT OF TRANSPORTATION TRAFFIC SAFETY GRANT APPLICATION IN THE AMOUNT OF \$262,000.00, FOR TRAFFIC SIGNALIZATION OF 1<sup>ST</sup> STREET (US 63) AND SYCAMORE STREET INTERSECTION AND COMMITTING TO MAINTAINING THE IMPROVEMENTS FOR THE LIFE OF THE PROJECT.

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WATERLOO, IOWA, that submission of the Iowa Department of Transportation Traffic Safety grant application in the amount of \$262,000.00, for Traffic Signalization of 1<sup>st</sup> Street (US 63) and Sycamore Street Intersection and committing to maintaining the improvements for the life of the project, is hereby approved.

PASSED AND ADOPTED this 7<sup>th</sup> day of August 2023.

*Quentin Hart*   
Quentin Hart, Mayor

ATTEST:

*Kelley Felchle*   
Kelley Felchle, City Clerk

SEAL



# Narrative

## Intersection of US 63 and Sycamore Street Traffic Safety Improvements

### EXITING CONDITIONS

Intersection of northbound US 63 and Sycamore Street experiences dangerous right angle crashes with a high frequency and a high severity. It is controlled by 2-way stops. This intersection is located within Waterloo downtown Central Business District. Sycamore Street is 2-way stop controlled and has 1 lane approaches. Northbound Highway U.S. 63 (1st Street) is a 3 lane, 1-way street. 85<sup>th</sup> percentile speed on US 63 is 42 MPH. Sight distance is restricted both by the crest of U.S. 63 bridge over Cedar River and by buildings on the corners. In the 4 years from 2018 to 2022 stop sign control has resulted in 26 crashes. All were right angle, running stop-sign crashes with 16 injuries of which 1 was a serious injury.

### PROPOSED CONCEPT

We propose to signalize this intersection. Traffic signals are very effective in reducing right angle collisions. Almost all of the crashes at this location are right angle collisions. Traffic signals can also help improve safety of pedestrians and bicyclists who across US 63, which is a high volume high speed roadway.

### SAFETY JUSTIFICATION

Traffic signals at this intersection have a proven record of improved safety as well as reduced frequency and severity of crashes. Northbound US 63 at Sycamore Street was formerly controlled by traffic signals boasting a notably low crash history. Counter to, and despite the city's opposition, signals were replaced by 2-way stops as part of a US 63 reconstruction project. Since then a remarkable increase in accident frequency and severity has emerged. The signals were doing exactly what makes the signals warranted which is keeping right angle accidents in check. It is worth to note that traffic signals did not have serious rearend collision experience as there was only 1 rearend crash in 4 years. The consultant recommended removal of the signals because signals did not meet the crash warrant. City rejected that notion arguing signals were the reason behind the low number of crashes. After the signals were removed accidents increased. Signals were indeed making the intersection safer.

Based on crash history with and without signals, the effectiveness of signals in enhancing overall safety is clear. This is a situation where actual before and after data exist. The ramifications of signal removal were severe, leading to a marked surge in the right-angle collisions many of which have caused injuries. The outcome is the fulfillment of MUTCD crash-related signal warrant, underscoring the critical role signals played as a safety measure.

The data show signals were successful in reducing crashes, and have the potential to once again improve traffic safety compared to 2-way stops. Pre- and post-signal data underscores a significantly safer operation when signals were in place.

4 year Crashes Before and After Signal Removal		
	With Signals	2-Way Stops
Right Angle	7	26
Rearend	1	0
Sideswipe	5	0

Right angle crashes at high speeds are very dangerous. The following contribute to the dangers posed by the 2-way stop control: 1) corner sight distance deficiency due the corner building

structures, 2) the sight distance deficiency due to the crest of the U.S. 63 bridge, and 3) three lanes of one-way approach traffic could cause a situation where side street view of far lane might be obscured by high profile vehicles in the near lane.

Crash severity under 2-way stop control is alarming. Injury crashes are higher during the 4 years under stop control compared to the 4 years under signal control (data for construction years excluded). The intersection is not suitable for 2-way stop control.

4 year Injury Crashes Before and After Signal Removal	
Injury Crashes With Signals	Injury Crashes 2-Way Stops
5	11 (includes 1 Serious)

The before and after signal removal data shows a clear picture: traffic signals are essential for improving traffic safety.

**MUTCD Signal Warrants 7 and 1:** The location meets Crash History Warrant (Warrant 7) and Volume Warrant (Warrant 1). The following presents Warrant 7 information.

- A. 2-way stops have failed. A roundabout is neither financially feasible nor plausible in this part of the CBD. US 63 has 3 approach lanes which adds another complication to a roundabout design.
- B. The number of reported angle crashes and pedestrian crashes within a three-year period equals or exceeds the threshold number in Table IA-19-2 for total angle crashes of all severities. The following table pertains to Warrant 7 for urban areas.

Number of through lanes on each approach		Total of Angle and Pedestrian Crashes (all severities) Four Legs		Warrant Met?
Major Street	Minor Street	MUTCD Threshold	Intersection Crashes	Yes
2 or more	1	5	5.25	5.25>5

C.

Sycamore Street Approach				NB US 63	MUTCD Warrant 1 Condition Table 4C-1 (56%)	
Time	WB	EB	Highest	Approach	Met?	Yes Count
02:00 PM	65	52	65	458	Yes	1
03:00 PM	85	91	91	482	Yes	2
04:00 PM	93	109	93	454	Yes	3
05:00 PM	64	61	64	490	Yes	4
06:00 PM	34	26	34	331	-	
07:00 PM	34	28	34	478	Yes	5
08:00 PM	15	10	15	288	-	
09:00 PM	13	7	7	221	-	
10:00 PM	7	9	9	169	-	
11:00 PM	12	13	13	133	-	
12:00 AM	6	7	7	84	-	
01:00 AM	2	22	22	63	-	
02:00 AM	8	1	8	55	-	
03:00 AM	3	9	9	30	-	
04:00 AM	12	17	17	74	-	
05:00 AM	18	16	18	176	-	
06:00 AM	40	23	40	302	-	
07:00 AM	79	21	79	453	Yes	6
08:00 AM	65	41	65	332	-	
09:00 AM	68	55	68	335	-	
10:00 AM	91	56	91	429	Yes	7
11:00 AM	90	60	90	438	Yes	8
12:00 PM	85	74	85	450	Yes	9
01:00 PM	90	70	90	461	Yes	10

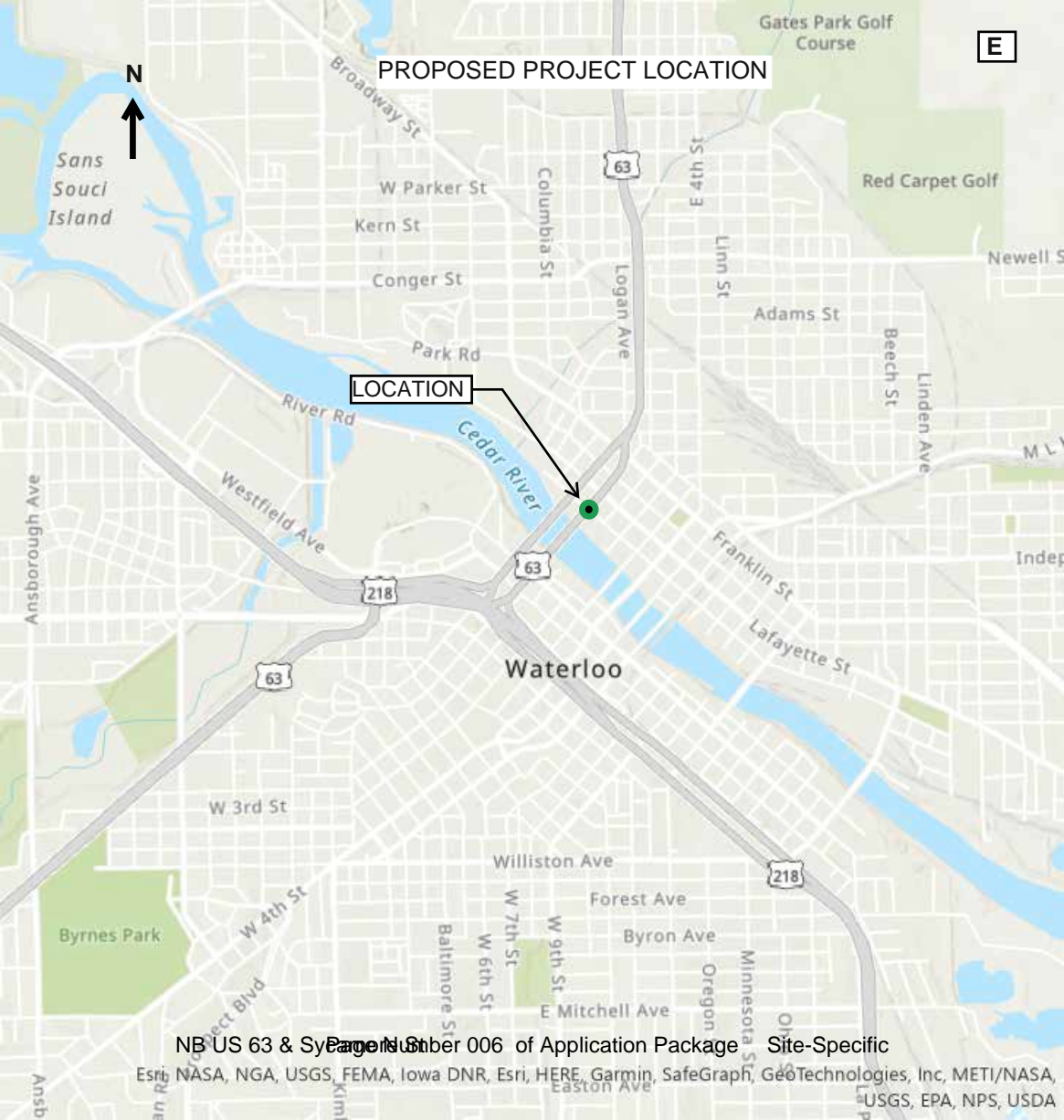
ITEMIZED BREAKDOWN OF COSTS  
TRAFFIC SAFET IMPROVEMENTS AT NB US-63 STREET-SYCAMORE STREET INTERSECTION

No.	DESCRIPTION	QNTY	UNIT	COST	EXTENDED
1	COMBINATION LIGHTING-SIGNAL MAST ARM POLE, COMPLETE, WITH BASE	2	EA	\$ 18,000	\$ 36,000
2	COMBINATION LIGHTING-SIGNAL LONG ARM MAST ARM POLE, COMPLETE, WITH BASE	1	EA	\$ 21,000	\$ 21,000
3	PEDESTAL TRAFFIC SIGNAL POLE, COMPLETE WITH BASE	1	EA	\$ 3,000	\$ 3,000
4	PEDESTRIAN PUSHBUTTON POST COMPLETE WITH BASE	2	EA	\$ 1,400	\$ 2,800
5	TRAFFIC SIGNAL CABINET, COMPLETE WITH BASE	1	EA	\$ 17,000	\$ 17,000
6	ADAPTIVE TRAFFIC SIGNAL CONTROLLER WITH ASCT LICENSE AND ATMS LICENSE	1	EA	\$ 10,000	\$ 10,000
7	DETECTION SYSTEM	1	LS	\$ 40,000	\$ 40,000
8	VEHICULAR SIGNAL HEADS, WITH BACKPLATES AND BRACKETS	11	EA	\$ 1,000	\$ 11,000
9	ADDED COST FOR SNOW-MELT RED SIGNAL HEAD	3	EA	\$ 200	\$ 600
10	PEDESTRIAN SIGNAL HEADS, COMPLETE WITH BRACKETS	8	EA	\$ 500	\$ 4,000
11	PEDESTRIAN PUSH BUTTON	8	EA	\$ 400	\$ 3,200
12	PEDESTRIAN PUSH BUTTON POLE, COMPLETE WITH BASE	2	EA	\$ 1,800	\$ 3,600
13	TRAFFIC MONITORING CAMERAS SYSTEM, COMPLETE	1	LS	\$ 8,800	\$ 8,800
14	EMERGENCY PREEMPTION SYSTEM	1	LS	8000	\$ 8,000
15	FIBER OPTIC CONNECTION, COMPLETE, WITH SWITCH AND PATCH PANEL	1	LS	\$ 12,000	\$ 12,000
16	CONDUITS, BORE	400	FT	\$ 25	\$ 10,000
17	RESTORE DISTURBED SURFACES	1	LS	\$ 2,000	\$ 2,000
18	WIRING	1	LS	\$ 10,000	\$ 10,000
19	HANDHOLES	1	EA	\$ 600	\$ 600
20	FIBER HANDHOLE	1	EA	\$ 900	\$ 900
21	SIGNAGE	1	LS	\$ 1,500	\$ 1,500
22	PAVEMENT MARKINGS	1	LS	\$ 1,000	\$ 1,000
23	LED LUMINAIRE	3	EA	\$ 500	\$ 1,500
24	ADVANCE WARNING SYSTEM, COMPLETE WITH COMMUNICATIONS TO CONTROLLER	1	LS	\$ 10,000	\$ 10,000
25	REMOVAL OF EXISTING STREET LIGHTS AND BASE	3	EA	\$ 500	\$ 1,500
26	RESTORATION OF ADA RAMPS	1	LS	\$ 6,000	\$ 6,000
27	TRAFFIC CONTROL	1	LS	\$ 10,000	\$ 10,000
28	MOBILIZATION	1	LS	\$ 12,000	\$ 12,000
29	INCIDENTALS	1	LS	\$ 2,000	\$ 2,000
TOTAL					\$ 250,000
CONTINGENCY					\$ 12,500
GRAND TOTAL					\$ 262,500
ROUNDED					\$ 262,000

Safety Part of the Proposed Project	100%	\$262,000
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## PROJECT SCHEDULE

FUNDS AVAIAABLE	Jul-23	
CHECK PLANS	Jul-23	Sep-23
DOT REVIEW	Sep-23	Oct-22
FINAL PLANS	Nov-23	
PROJECT LETTING AND AWARD INCLUDING DOT APPROVALS	Nov-23	Dec-23
CONSTRUCTION	May-24	Jan-25



PROPOSED PROJECT LOCATION

E



LOCATION







SYCAMORE STREET SIDE OF WAREHOUSE AT SE CORNER OF THE INTERSECTION



ON WB SYCAMORE STREET LOOKING TOWARDS US 63 NORTHBOUND APPROACH





WESBOUND SYCAMRE AT NB US 63 APPROACH



US 63 APPRAOCH OVER THE BRIDGE

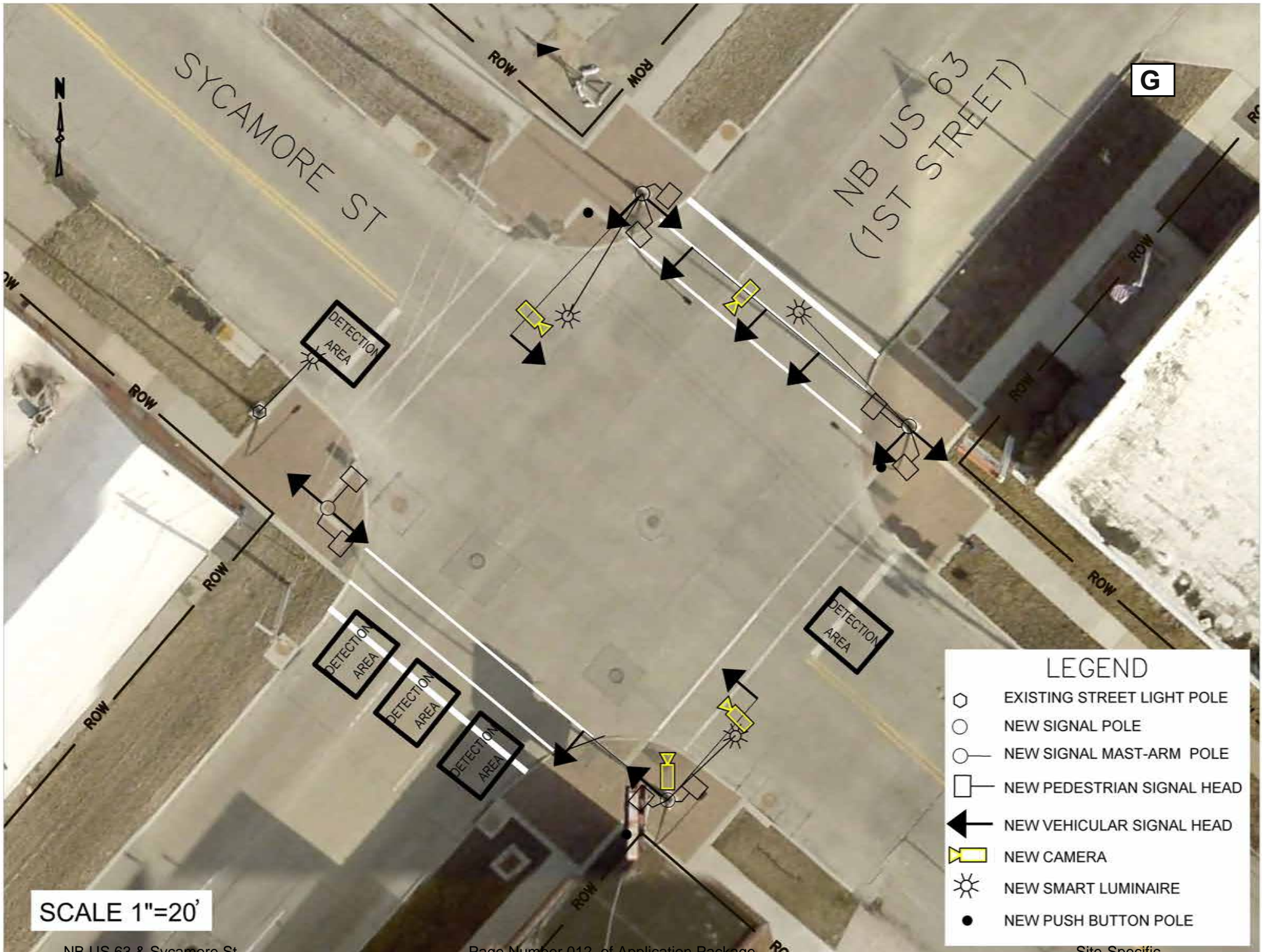


ON EASTBOUND SYCAMORE STREET  
(CROSS TRAFFIC IS FROM RIGHT)



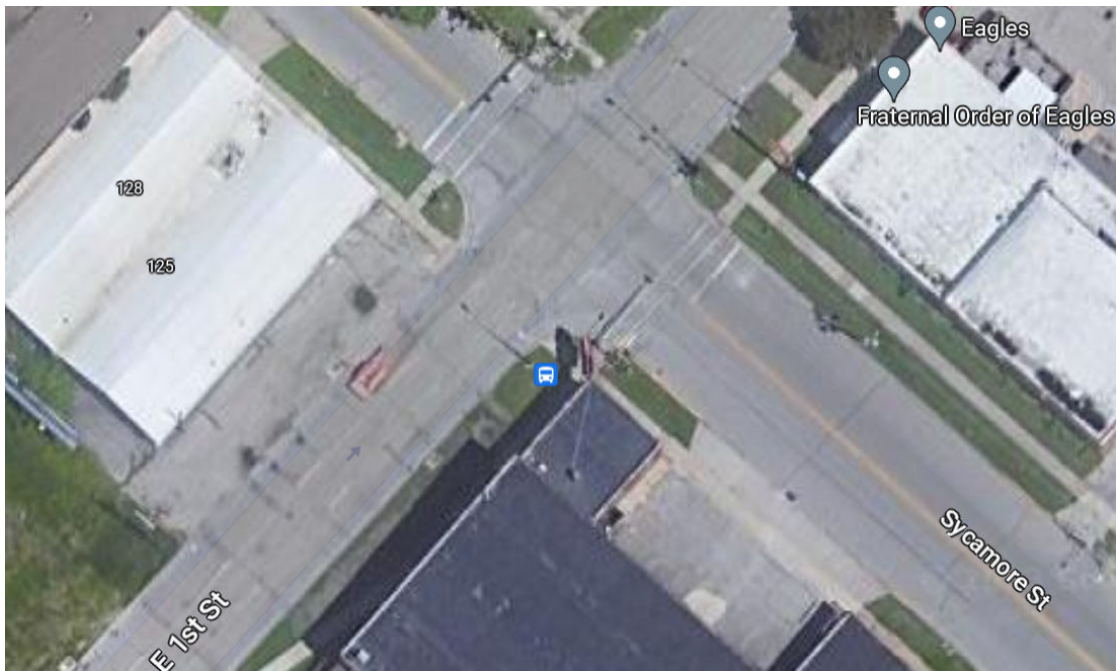
ON EASTBOUND SYCAMORE STREET





SCALE 1"=20'

Aerial View  
(Please Also See G & K)

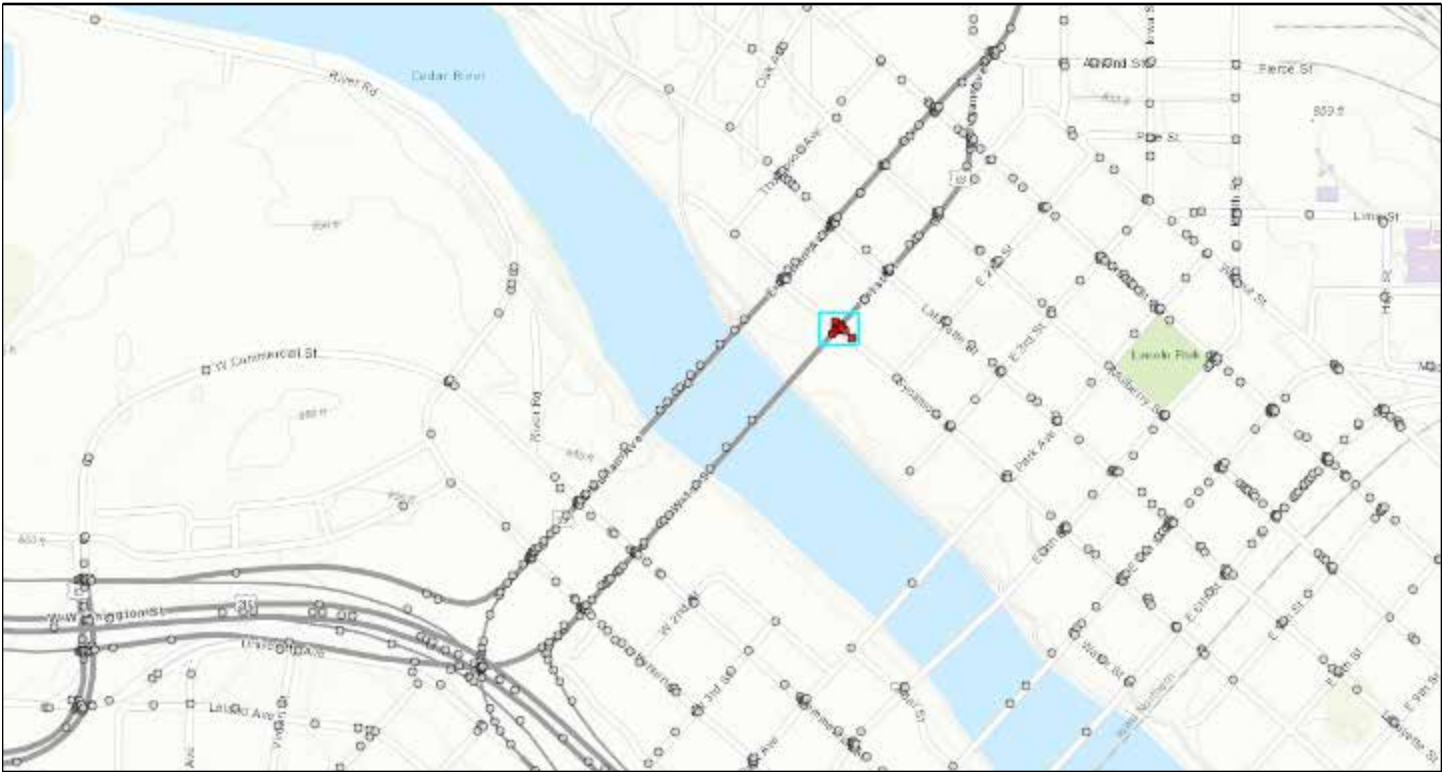


Crash Severity	27
Fatal Crash	0
Suspected Serious Injury Crash	1
Suspected Minor Injury Crash	2
Possible/Unknown Injury Crash	10
Property Damage Only	14

Injury Status Summary	17
Fatalities	0
Suspected serious/incapacitating	1
Suspected minor/non-incapacitating	3
Possible (complaint of pain/injury)	13
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	256,000.00
Average (per crash dollars):	9,481.48
Total Vehicles:	54.00
Average (per crash):	2.00
Total Occupants:	88.00
Average (per crash):	3.26

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.63
Major Injuries/Crash:	0.04
Minor Injuries/Crash:	0.11
Possible/Unknown Injuries/Crash:	0.48





Iowa Crash Analysis Tool  
Quick Report  
2018-2022



Major Cause			27
Animal	0	Ran traffic signal	0
Ran stop sign	18	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	6	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	1
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	1
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**



Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Monday	0	0	0	0	3	2	0	1	1	0	0	0	0	7
Tuesday	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Wednesday	0	0	0	1	1	0	0	1	1	1	0	0	0	5
Thursday	0	0	0	1	0	1	0	0	1	0	0	0	0	3
Friday	0	0	0	0	1	0	3	1	1	0	0	0	0	6
Saturday	0	0	0	0	0	0	1	0	0	1	0	1	0	3
<b>Total</b>	0	1	0	2	5	3	4	4	5	2	0	1	0	27

Manner of Crash Collision	27
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	26
Sideswipe, same direction	1
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	27
Dry	20
Wet	5
Ice/frost	0
Snow	2
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	54
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	2
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	1
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	51





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	2	5	0	0	7
>= 25 and <= 29	2	5	0	0	7
>= 30 and <= 34	1	2	0	0	3
>= 35 and <= 39	1	4	0	0	5
>= 40 and <= 44	2	5	0	0	7
>= 45 and <= 49	3	1	0	0	4
>= 50 and <= 54	1	1	0	0	2
>= 55 and <= 59	6	3	0	0	9
>= 60 and <= 64	1	3	0	0	4
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	2	0	0	0	2
>= 75 and <= 79	0	2	0	0	2
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	1	0	1
<b>Total</b>	21	32	1	0	54

Alcohol Test Given	54
None	53
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

Drug Test Given	54
None	53
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

Drug Test Result	54
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	54
Other	0

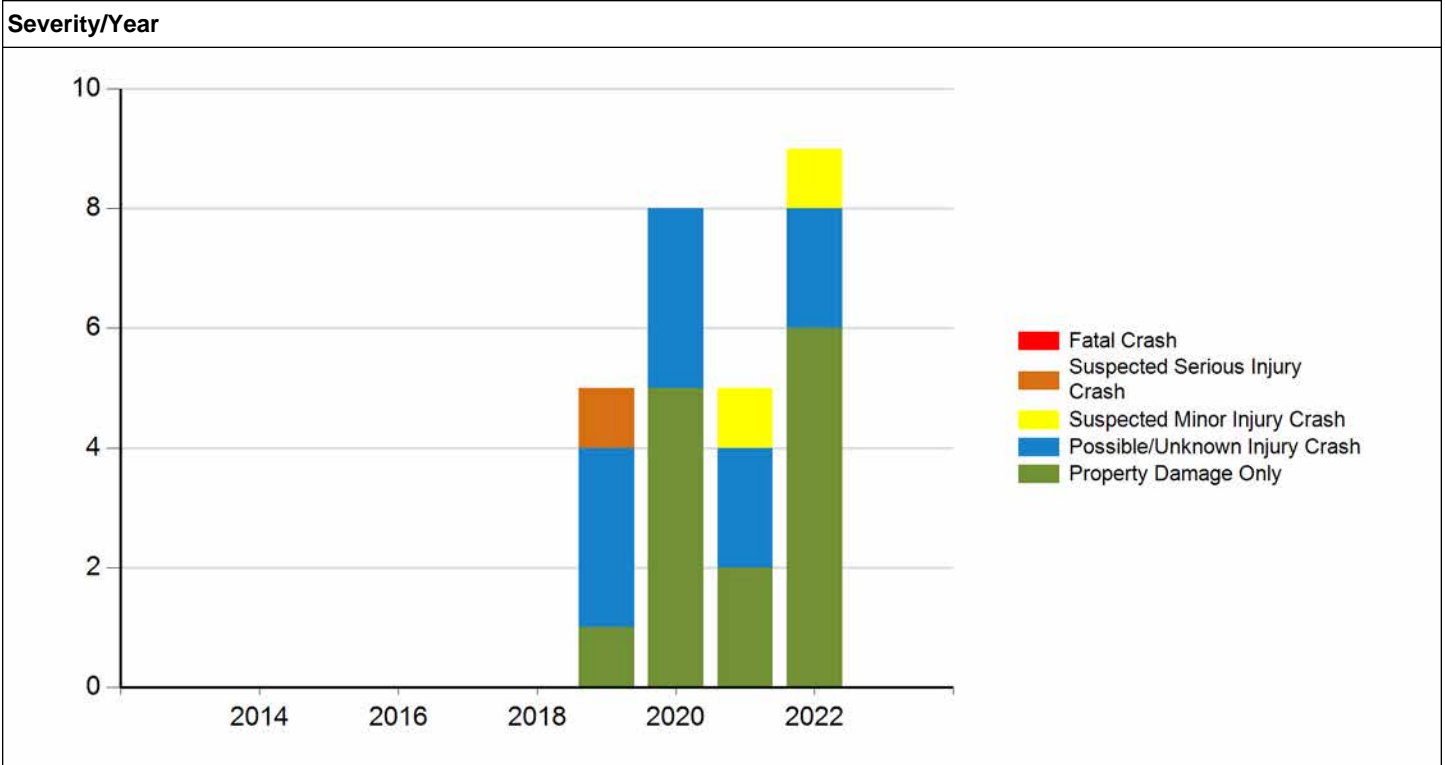
Drug/Alcohol Related	27
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	27



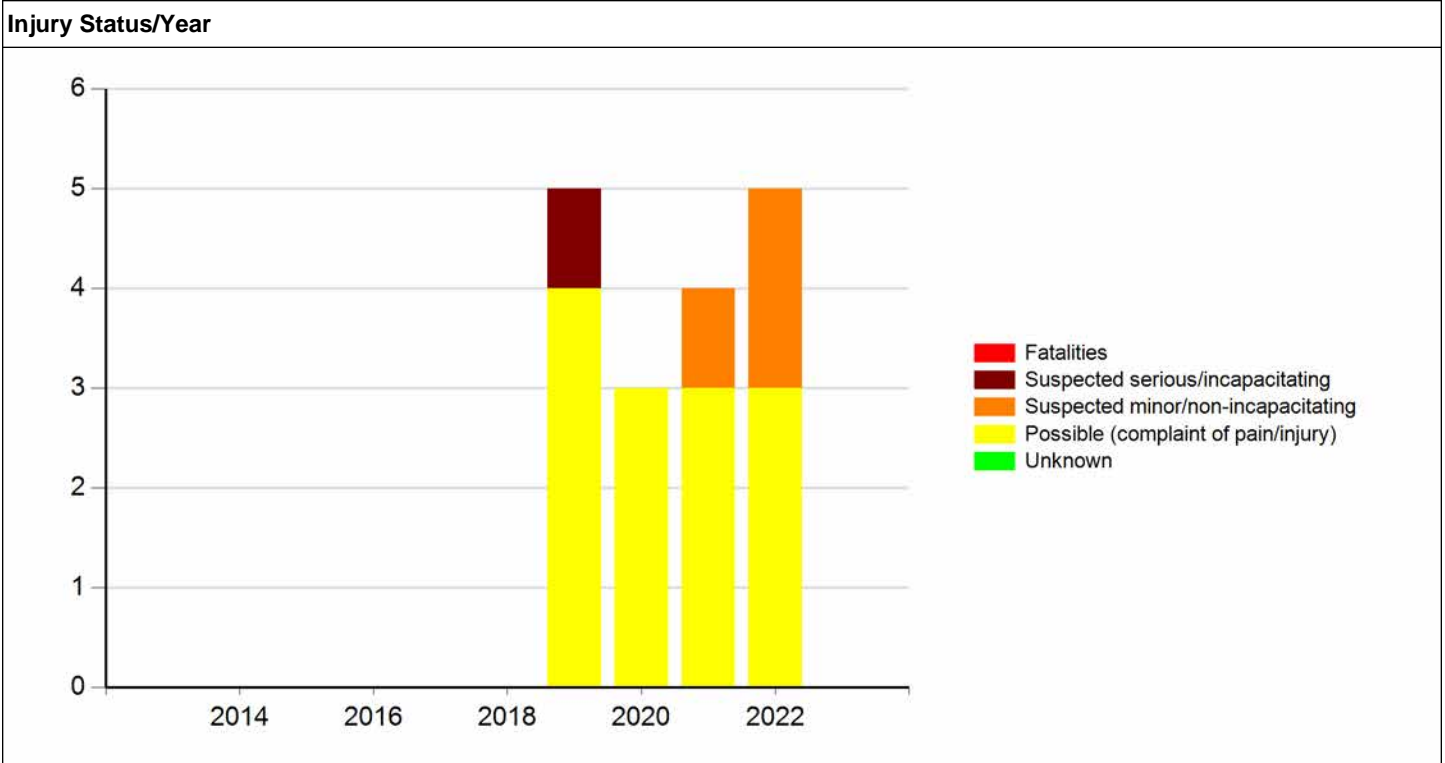
Iowa Crash Analysis Tool  
Quick Report  
2018-2022



Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	1	0	3	1	5
2020	0	0	0	3	5	8
2021	0	0	1	2	2	5
2022	0	0	1	2	6	9
2023	0	0	0	0	0	0
<b>Total</b>	0	1	2	10	14	27



Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	1	0	4	0	5
2020	0	0	0	3	0	3
2021	0	0	1	3	0	4
2022	0	0	2	3	0	5
2023	0	0	0	0	0	0
<b>Total</b>	0	1	3	13	0	17





**Meeting the following criteria**

Jurisdiction: Cities (Waterloo)  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**



118 Sycamore (west leg)

CITY OF WATERLOO TRAFFIC  
625 GLENNWOOD STREET  
WATERLOO, IOWA 50703  
319-291-4440

Site Code: 00000001  
Station ID:

Site-Specific

Latitude: 0' 0.0000 South

Start Time	24-May-21	EB	EB	Tue	EB	EB	Wed	EB	EB	Thu	EB	EB	Fri	EB	EB	Sat	EB	EB	Sun	EB	EB	Week Average	EB	
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	30	5
01:00	*	*	*	*	*	*	*	*	*	38	4	19	34	7	4	35	2	30	35	6	30	36	6	
02:00	*	*	*	*	*	*	*	*	*	35	7	28	28	4	4	40	5	35	35	10	36	26	6	
03:00	*	*	*	*	*	*	*	*	*	32	7	19	19	4	4	29	3	13	13	4	4	4	4	
04:00	*	*	*	*	*	*	*	*	*	28	4	32	32	9	4	20	4	16	16	2	21	31	7	
05:00	*	*	*	*	*	*	*	*	*	48	11	69	69	18	1	25	1	20	20	7	31	58	15	
06:00	*	*	*	*	*	*	*	*	*	104	28	87	87	13	9	40	7	17	17	6	31	81	12	
07:00	*	*	*	*	*	*	*	*	*	167	22	113	113	18	13	39	7	32	32	8	81	99	20	
08:00	*	*	*	*	*	*	*	*	*	170	40	129	129	41	18	69	16	45	45	4	87	126	40	
09:00	*	*	*	*	*	*	*	*	*	86	39	158	158	48	17	96	17	72	72	7	99	126	26	
10:00	*	*	*	*	*	*	*	*	*	146	68	176	176	53	38	130	38	78	78	8	126	134	40	
11:00	*	*	*	*	*	*	*	*	*	137	35	212	212	48	33	145	33	76	76	13	134	148	34	
12:00 PM	*	*	*	*	*	*	*	*	*	157	57	189	189	56	44	144	44	103	103	24	148	170	45	
01:00	*	*	*	*	*	*	*	*	*	145	43	212	212	65	61	199	61	124	124	20	170	174	44	
02:00	*	*	*	*	*	*	*	*	*	128	47	207	207	45	39	240	39	114	114	31	182	191	44	
03:00	*	*	*	*	*	*	*	*	*	241	61	212	212	61	45	201	47	125	125	21	191	179	45	
04:00	*	*	*	*	*	*	*	*	*	245	57	224	224	59	29	191	29	115	115	29	191	160	45	
05:00	*	*	*	*	*	*	*	*	*	270	74	224	224	46	24	144	24	90	90	15	179	160	45	
06:00	*	*	*	*	*	*	*	*	*	237	40	196	196	49	26	138	26	100	100	18	160	120	26	
07:00	*	*	*	*	*	*	*	*	*	147	33	141	141	40	30	123	30	97	97	10	109	88	19	
08:00	*	*	*	*	*	*	*	*	*	136	19	101	101	16	16	101	15	86	86	10	109	88	15	
09:00	*	*	*	*	*	*	*	*	*	116	15	108	108	17	17	72	13	70	70	13	88	69	10	
10:00	*	*	*	*	*	*	*	*	*	93	11	76	76	7	7	75	5	45	45	2	69	59	9	
11:00	*	*	*	*	*	*	*	*	*	55	4	56	56	18	18	56	9	67	67	7	59	45	7	
Lane	0	0	0	0	0	0	1584	327	2426	684	2928	705	2390	505	1566	278	2423	561						
Day	0	0	0	0	0	0	1911	3110	3633	2895	1844	2984												
AM Peak Vol.	-	-	-	-	-	-	16:00	16:00	07:00	09:00	11:00	11:00	10:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00	11:00
PM Peak Vol.	-	-	-	-	-	-	16:00	16:00	16:00	16:00	15:00	12:00	13:00	12:00	13:00	12:00	14:00	13:00	13:00	13:00	15:00	12:00	12:00	12:00
	-	-	-	-	-	-	270	74	166	66	267	65	240	61	125	61	125	31	24	24	191	47	47	47



**CITY OF WATERLOO TRAFFIC**  
 625 GLENNWOOD STREET  
 WATERLOO, IOWA 50703  
 319-291-4440

Site Code: 00000001  
 Station ID:  
 Site-Specific

Latitude: 0' 0.0000 South

Start Time	31-May-21		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	18	2	27	8	34	5	42	10	*	*	*	*	*	*	30	6
01:00	18	8	19	6	37	14	41	10	*	*	*	*	*	*	29	10
02:00	12	0	18	3	29	3	28	4	*	*	*	*	*	*	22	2
03:00	9	1	20	5	34	5	21	4	*	*	*	*	*	*	21	4
04:00	15	4	24	10	33	6	40	10	*	*	*	*	*	*	28	8
05:00	22	2	24	24	98	13	102	14	*	*	*	*	*	*	80	13
06:00	25	2	127	23	190	26	169	37	*	*	*	*	*	*	128	22
07:00	40	10	169	34	217	37	200	28	*	*	*	*	*	*	156	27
08:00	42	6	190	48	200	55	184	53	*	*	*	*	*	*	154	40
09:00	59	11	207	60	187	62	200	63	*	*	*	*	*	*	163	49
10:00	98	26	190	65	208	62	*	*	*	*	*	*	*	*	165	51
11:00	102	21	192	51	210	57	*	*	*	*	*	*	*	*	168	43
12:00 PM	122	25	193	53	221	61	*	*	*	*	*	*	*	*	179	46
01:00	128	27	215	73	189	44	*	*	*	*	*	*	*	*	177	48
02:00	103	31	193	68	231	73	*	*	*	*	*	*	*	*	176	57
03:00	101	27	212	66	229	69	*	*	*	*	*	*	*	*	181	54
04:00	92	17	238	78	297	62	*	*	*	*	*	*	*	*	209	52
05:00	104	25	217	41	195	50	*	*	*	*	*	*	*	*	172	39
06:00	92	28	166	40	166	33	*	*	*	*	*	*	*	*	141	34
07:00	84	29	125	34	121	22	*	*	*	*	*	*	*	*	110	28
08:00	84	7	108	26	106	15	*	*	*	*	*	*	*	*	99	16
09:00	61	14	88	16	89	11	*	*	*	*	*	*	*	*	79	14
10:00	58	8	34	9	67	11	*	*	*	*	*	*	*	*	53	9
11:00	59	14	49	12	48	3	*	*	*	*	*	*	*	*	52	10
Lane	1548	345	3120	853	3436	799	1027	233	0	0	0	0	0	0	2772	682
Day	1893	3973	853	4235	1260	233	0	0	0	0	0	0	0	0	3454	
AM Peak Vol.	102	26	207	65	217	62	200	63	-	-	-	-	-	-	11:00 168	10:00 51
PM Peak Vol.	128	31	238	78	297	73	-	-	-	-	-	-	-	-	16:00 209	14:00 57
Comb. Total	1893	3973	6146	4370	3633	2895	1844	6438								
ADT	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198	ADT 3,198

**225 SYCAMORE STREET (East Leg)**

	A	B	C	D	E
1	Combined				
2	Start Date: 5/26/2021				
3					
4	Number	Date	Time	WB	EB
5	1	5/26/2021	02:00 PM	82	49
6	2	5/26/2021	03:00 PM	82	78
7	3	5/26/2021	04:00 PM	81	84
8	4	5/26/2021	05:00 PM	62	51
9	5	5/26/2021	06:00 PM	44	26
10	6	5/26/2021	07:00 PM	18	19
11	7	5/26/2021	08:00 PM	19	20
12	8	5/26/2021	09:00 PM	15	12
13	9	5/26/2021	10:00 PM	14	9
14	10	5/26/2021	11:00 PM	7	14
15	11	5/27/2021	12:00 AM	5	9
16	12	5/27/2021	01:00 AM	2	15
17	13	5/27/2021	02:00 AM	10	3
18	14	5/27/2021	03:00 AM	4	11
19	15	5/27/2021	04:00 AM	9	15
20	16	5/27/2021	05:00 AM	20	13
21	17	5/27/2021	06:00 AM	38	16
22	18	5/27/2021	07:00 AM	92	164
23	19	5/27/2021	08:00 AM	73	141
24	20	5/27/2021	09:00 AM	66	222
25	21	5/27/2021	10:00 AM	55	308
26	22	5/27/2021	11:00 AM	68	345
27	23	5/27/2021	12:00 PM	72	170
28	24	5/27/2021	01:00 PM	79	134
29	25	5/27/2021	02:00 PM	65	52
30	26	5/27/2021	03:00 PM	85	91
31	27	5/27/2021	04:00 PM	93	109
32	28	5/27/2021	05:00 PM	64	61
33	29	5/27/2021	06:00 PM	34	26
34	30	5/27/2021	07:00 PM	34	28
35	31	5/27/2021	08:00 PM	15	10
36	32	5/27/2021	09:00 PM	13	7
37	33	5/27/2021	10:00 PM	7	9
38	34	5/27/2021	11:00 PM	12	13
39	35	5/28/2021	12:00 AM	6	7
40	36	5/28/2021	01:00 AM	2	22
41	37	5/28/2021	02:00 AM	8	1
42	38	5/28/2021	03:00 AM	3	9
43	39	5/28/2021	04:00 AM	12	17
44	40	5/28/2021	05:00 AM	18	16
45	41	5/28/2021	06:00 AM	40	23
46	42	5/28/2021	07:00 AM	79	21
47	43	5/28/2021	08:00 AM	65	41
48	44	5/28/2021	09:00 AM	68	55
49	45	5/28/2021	10:00 AM	91	56
50	46	5/28/2021	11:00 AM	90	60
51	47	5/28/2021	12:00 PM	85	74
52	48	5/28/2021	01:00 PM	90	70
53	49	5/28/2021	02:00 PM	90	83
54	50	5/28/2021	03:00 PM	90	104
55	51	5/28/2021	04:00 PM	92	91
56	52	5/28/2021	05:00 PM	67	60
57	53	5/28/2021	06:00 PM	52	35
58	54	5/28/2021	07:00 PM	21	25
59	55	5/28/2021	08:00 PM	28	23
60	56	5/28/2021	09:00 PM	18	20
61	57	5/28/2021	10:00 PM	17	21
62	58	5/28/2021	11:00 PM	11	19
63	59	5/29/2021	12:00 AM	6	10
64	60	5/29/2021	01:00 AM	4	15
65	61	5/29/2021	02:00 AM	11	8
66	62	5/29/2021	03:00 AM	5	11
67	63	5/29/2021	04:00 AM	5	17
68	64	5/29/2021	05:00 AM	10	18
69	65	5/29/2021	06:00 AM	11	8
70	66	5/29/2021	07:00 AM	26	21
71	67	5/29/2021	08:00 AM	23	23
72	68	5/29/2021	09:00 AM	52	22
73	69	5/29/2021	10:00 AM	51	41

	A	B	C	D	E
74	70	5/29/2021	11:00 AM	89	38
75	71	5/29/2021	12:00 PM	132	69
76	72	5/29/2021	01:00 PM	86	105
77	73	5/29/2021	02:00 PM	94	99
78	74	5/29/2021	03:00 PM	53	92
79	75	5/29/2021	04:00 PM	39	50
80	76	5/29/2021	05:00 PM	36	37
81	77	5/29/2021	06:00 PM	40	30
82	78	5/29/2021	07:00 PM	29	23
83	79	5/29/2021	08:00 PM	21	11
84	80	5/29/2021	09:00 PM	19	16
85	81	5/29/2021	10:00 PM	13	16
86	82	5/29/2021	11:00 PM	8	9
87	83	5/30/2021	12:00 AM	2	9
88	84	5/30/2021	01:00 AM	3	6
89	85	5/30/2021	02:00 AM	6	2
90	86	5/30/2021	03:00 AM	3	7
91	87	5/30/2021	04:00 AM	7	2
92	88	5/30/2021	05:00 AM	6	9
93	89	5/30/2021	06:00 AM	5	6
94	90	5/30/2021	07:00 AM	5	6
95	91	5/30/2021	08:00 AM	7	11
96	92	5/30/2021	09:00 AM	11	10
97	93	5/30/2021	10:00 AM	20	19
98	94	5/30/2021	11:00 AM	30	19
99	95	5/30/2021	12:00 PM	32	26
100	96	5/30/2021	01:00 PM	37	33
101	97	5/30/2021	02:00 PM	28	27
102	98	5/30/2021	03:00 PM	27	23
103	99	5/30/2021	04:00 PM	25	17
104	100	5/30/2021	05:00 PM	31	19
105	101	5/30/2021	06:00 PM	16	19
106	102	5/30/2021	07:00 PM	13	12
107	103	5/30/2021	08:00 PM	17	16
108	104	5/30/2021	09:00 PM	5	1
109	105	5/30/2021	10:00 PM	6	13
110	106	5/30/2021	11:00 PM	3	8
111	107	5/31/2021	12:00 AM	1	1
112	108	5/31/2021	01:00 AM	3	2
113	109	5/31/2021	02:00 AM	3	3
114	110	5/31/2021	03:00 AM	4	10
115	111	5/31/2021	04:00 AM	5	1
116	112	5/31/2021	05:00 AM	4	6
117	113	5/31/2021	06:00 AM	7	3
118	114	5/31/2021	07:00 AM	8	7
119	115	5/31/2021	08:00 AM	12	6
120	116	5/31/2021	09:00 AM	16	11
121	117	5/31/2021	10:00 AM	25	22
122	118	5/31/2021	11:00 AM	24	17
123	119	5/31/2021	12:00 PM	33	35
124	120	5/31/2021	01:00 PM	31	24
125	121	5/31/2021	02:00 PM	33	21
126	122	5/31/2021	03:00 PM	28	26
127	123	5/31/2021	04:00 PM	19	22
128	124	5/31/2021	05:00 PM	21	20
129	125	5/31/2021	06:00 PM	28	22
130	126	5/31/2021	07:00 PM	32	18
131	127	5/31/2021	08:00 PM	11	11
132	128	5/31/2021	09:00 PM	17	7
133	129	5/31/2021	10:00 PM	11	15
134	130	5/31/2021	11:00 PM	8	14
135	131	6/1/2021	12:00 AM	4	4
136	132	6/1/2021	01:00 AM	2	7
137	133	6/1/2021	02:00 AM	11	0
138	134	6/1/2021	03:00 AM	4	16
139	135	6/1/2021	04:00 AM	9	11
140	136	6/1/2021	05:00 AM	20	28
141	137	6/1/2021	06:00 AM	47	21
142	138	6/1/2021	07:00 AM	100	35
143	139	6/1/2021	08:00 AM	80	63
144	140	6/1/2021	09:00 AM	72	62
145	141	6/1/2021	10:00 AM	92	64
146	142	6/1/2021	11:00 AM	85	56



	A	B	C	D	E
147	143	6/1/2021	12:00 PM	89	66
148	144	6/1/2021	01:00 PM	112	81
149	145	6/1/2021	02:00 PM	104	59
150	146	6/1/2021	03:00 PM	118	69
151	147	6/1/2021	04:00 PM	119	85
152	148	6/1/2021	05:00 PM	58	49
153	149	6/1/2021	06:00 PM	59	40
154	150	6/1/2021	07:00 PM	37	25
155	151	6/1/2021	08:00 PM	28	13
156	152	6/1/2021	09:00 PM	19	13
157	153	6/1/2021	10:00 PM	10	7
158	154	6/1/2021	11:00 PM	13	11
159	155	6/2/2021	12:00 AM	6	7
160	156	6/2/2021	01:00 AM	8	20
161	157	6/2/2021	02:00 AM	12	5
162	158	6/2/2021	03:00 AM	10	13
163	159	6/2/2021	04:00 AM	7	14
164	160	6/2/2021	05:00 AM	15	16
165	161	6/2/2021	06:00 AM	47	28
166	162	6/2/2021	07:00 AM	94	32
167	163	6/2/2021	08:00 AM	71	45
168	164	6/2/2021	09:00 AM	65	51
169	165	6/2/2021	10:00 AM	90	49
170	166	6/2/2021	11:00 AM	86	60
171	167	6/2/2021	12:00 PM	100	60
172	168	6/2/2021	01:00 PM	78	59
173	169	6/2/2021	02:00 PM	79	58
174	170	6/2/2021	03:00 PM	100	64
175	171	6/2/2021	04:00 PM	89	112
176	172	6/2/2021	05:00 PM	60	52
177	173	6/2/2021	06:00 PM	35	39
178	174	6/2/2021	07:00 PM	23	21
179	175	6/2/2021	08:00 PM	19	19
180	176	6/2/2021	09:00 PM	18	15
181	177	6/2/2021	10:00 PM	16	12
182	178	6/2/2021	11:00 PM	8	12
183	179	6/3/2021	12:00 AM	5	12
184	180	6/3/2021	01:00 AM	7	17
185	181	6/3/2021	02:00 AM	9	2
186	182	6/3/2021	03:00 AM	5	15
187	183	6/3/2021	04:00 AM	10	16
188	184	6/3/2021	05:00 AM	17	19
189	185	6/3/2021	06:00 AM	50	28
190	186	6/3/2021	07:00 AM	94	42
191	187	6/3/2021	08:00 AM	63	44
192	188	6/3/2021	09:00 AM	74	47

**1ST STREET (US 63 One-Way Approach)**

**J**

	A	B	C	D	E
1	Combined				
2	Start Date: 5/26/2021				
3					
4	Number	Date	Time	NB	Direction 2
5	1	5/26/2021	02:00 PM	567	0
6	2	5/26/2021	03:00 PM	507	0
7	3	5/26/2021	04:00 PM	439	0
8	4	5/26/2021	05:00 PM	384	0
9	5	5/26/2021	06:00 PM	325	0
10	6	5/26/2021	07:00 PM	268	0
11	7	5/26/2021	08:00 PM	206	0
12	8	5/26/2021	09:00 PM	156	0
13	9	5/26/2021	10:00 PM	94	0
14	10	5/26/2021	11:00 PM	41	0
15	11	5/27/2021	12:00 AM	0	0
16	12	5/27/2021	01:00 AM	47	0
17	13	5/27/2021	02:00 AM	64	0
18	14	5/27/2021	03:00 AM	35	0
19	15	5/27/2021	04:00 AM	78	0
20	16	5/27/2021	05:00 AM	193	0
21	17	5/27/2021	06:00 AM	341	0
22	18	5/27/2021	07:00 AM	436	4
23	19	5/27/2021	08:00 AM	396	11
24	20	5/27/2021	09:00 AM	372	17
25	21	5/27/2021	10:00 AM	390	15
26	22	5/27/2021	11:00 AM	445	1
27	23	5/27/2021	12:00 PM	436	0
28	24	5/27/2021	01:00 PM	446	1
29	25	5/27/2021	02:00 PM	458	0
30	26	5/27/2021	03:00 PM	482	15
31	27	5/27/2021	04:00 PM	454	0
32	28	5/27/2021	05:00 PM	490	0
33	29	5/27/2021	06:00 PM	331	0
34	30	5/27/2021	07:00 PM	478	1
35	31	5/27/2021	08:00 PM	288	0
36	32	5/27/2021	09:00 PM	221	0
37	33	5/27/2021	10:00 PM	169	0
38	34	5/27/2021	11:00 PM	133	0
39	35	5/28/2021	12:00 AM	84	0
40	36	5/28/2021	01:00 AM	63	0
41	37	5/28/2021	02:00 AM	55	0
42	38	5/28/2021	03:00 AM	30	0
43	39	5/28/2021	04:00 AM	74	0
44	40	5/28/2021	05:00 AM	176	0
45	41	5/28/2021	06:00 AM	302	0
46	42	5/28/2021	07:00 AM	453	0
47	43	5/28/2021	08:00 AM	332	0
48	44	5/28/2021	09:00 AM	335	0
49	45	5/28/2021	10:00 AM	429	0
50	46	5/28/2021	11:00 AM	438	0
51	47	5/28/2021	12:00 PM	450	0
52	48	5/28/2021	01:00 PM	461	0
53	49	5/28/2021	02:00 PM	495	0
54	50	5/28/2021	03:00 PM	509	0
55	51	5/28/2021	04:00 PM	480	0
56	52	5/28/2021	05:00 PM	489	0
57	53	5/28/2021	06:00 PM	343	0
58	54	5/28/2021	07:00 PM	328	0
59	55	5/28/2021	08:00 PM	313	0
60	56	5/28/2021	09:00 PM	249	0
61	57	5/28/2021	10:00 PM	203	0
62	58	5/28/2021	11:00 PM	148	0
63	59	5/29/2021	12:00 AM	117	0
64	60	5/29/2021	01:00 AM	100	0
65	61	5/29/2021	02:00 AM	53	0
66	62	5/29/2021	03:00 AM	37	0
67	63	5/29/2021	04:00 AM	50	0
68	64	5/29/2021	05:00 AM	88	0
69	65	5/29/2021	06:00 AM	120	0
70	66	5/29/2021	07:00 AM	161	0
71	NB US 63 & Sycamore St	08:00 AM	Page Number 026 of Application Package		
72	68	5/29/2021	09:00 AM	334	0
73	69	5/29/2021	10:00 AM	345	0

J

	A	B	C	D	E
74	70	5/29/2021	11:00 AM	461	0
75	71	5/29/2021	12:00 PM	523	0
76	72	5/29/2021	01:00 PM	495	0
77	73	5/29/2021	02:00 PM	505	0
78	74	5/29/2021	03:00 PM	464	1
79	75	5/29/2021	04:00 PM	408	0
80	76	5/29/2021	05:00 PM	382	0
81	77	5/29/2021	06:00 PM	373	0
82	78	5/29/2021	07:00 PM	335	0
83	79	5/29/2021	08:00 PM	274	0
84	80	5/29/2021	09:00 PM	243	0
85	81	5/29/2021	10:00 PM	222	0
86	82	5/29/2021	11:00 PM	131	0
87	83	5/30/2021	12:00 AM	141	0
88	84	5/30/2021	01:00 AM	104	0
89	85	5/30/2021	02:00 AM	64	0
90	86	5/30/2021	03:00 AM	52	0
91	87	5/30/2021	04:00 AM	45	0
92	88	5/30/2021	05:00 AM	42	0
93	89	5/30/2021	06:00 AM	90	0
94	90	5/30/2021	07:00 AM	124	0
95	91	5/30/2021	08:00 AM	147	0
96	92	5/30/2021	09:00 AM	212	0
97	93	5/30/2021	10:00 AM	264	0
98	94	5/30/2021	11:00 AM	324	0
99	95	5/30/2021	12:00 PM	346	0
100	96	5/30/2021	01:00 PM	362	0
101	97	5/30/2021	02:00 PM	384	0
102	98	5/30/2021	03:00 PM	394	0
103	99	5/30/2021	04:00 PM	346	0
104	100	5/30/2021	05:00 PM	353	1
105	101	5/30/2021	06:00 PM	311	0
106	102	5/30/2021	07:00 PM	235	0
107	103	5/30/2021	08:00 PM	227	0
108	104	5/30/2021	09:00 PM	203	0
109	105	5/30/2021	10:00 PM	178	0
110	106	5/30/2021	11:00 PM	131	0
111	107	5/31/2021	12:00 AM	84	0
112	108	5/31/2021	01:00 AM	73	0
113	109	5/31/2021	02:00 AM	52	0
114	110	5/31/2021	03:00 AM	29	0
115	111	5/31/2021	04:00 AM	38	0
116	112	5/31/2021	05:00 AM	46	0
117	113	5/31/2021	06:00 AM	89	0
118	114	5/31/2021	07:00 AM	105	0
119	115	5/31/2021	08:00 AM	151	0
120	116	5/31/2021	09:00 AM	198	0
121	117	5/31/2021	10:00 AM	295	0
122	118	5/31/2021	11:00 AM	323	1
123	119	5/31/2021	12:00 PM	331	0
124	120	5/31/2021	01:00 PM	415	0
125	121	5/31/2021	02:00 PM	403	0
126	122	5/31/2021	03:00 PM	367	0
127	123	5/31/2021	04:00 PM	384	0
128	124	5/31/2021	05:00 PM	346	0
129	125	5/31/2021	06:00 PM	314	0
130	126	5/31/2021	07:00 PM	298	0
131	127	5/31/2021	08:00 PM	277	0
132	128	5/31/2021	09:00 PM	232	0
133	129	5/31/2021	10:00 PM	179	0
134	130	5/31/2021	11:00 PM	112	0
135	131	6/1/2021	12:00 AM	64	0
136	132	6/1/2021	01:00 AM	48	0
137	133	6/1/2021	02:00 AM	46	0
138	134	6/1/2021	03:00 AM	33	0
139	135	6/1/2021	04:00 AM	65	0
140	136	6/1/2021	05:00 AM	204	0
141	137	6/1/2021	06:00 AM	327	0
142	138	6/1/2021	07:00 AM	452	0
143	139	6/1/2021	08:00 AM	393	0
144	140	6/1/2021	09:00 AM	407	0
145	141	6/1/2021	10:00 AM	415	0
146	142	6/1/2021	11:00 AM	442	1

	A	B	C	D	E
147	143	6/1/2021	12:00 PM	468	0
148	144	6/1/2021	01:00 PM	466	0
149	145	6/1/2021	02:00 PM	482	0
150	146	6/1/2021	03:00 PM	555	0
151	147	6/1/2021	04:00 PM	542	0
152	148	6/1/2021	05:00 PM	516	0
153	149	6/1/2021	06:00 PM	368	0
154	150	6/1/2021	07:00 PM	334	0
155	151	6/1/2021	08:00 PM	281	0
156	152	6/1/2021	09:00 PM	236	0
157	153	6/1/2021	10:00 PM	168	0
158	154	6/1/2021	11:00 PM	113	0
159	155	6/2/2021	12:00 AM	83	0
160	156	6/2/2021	01:00 AM	59	0
161	157	6/2/2021	02:00 AM	49	0
162	158	6/2/2021	03:00 AM	52	0
163	159	6/2/2021	04:00 AM	57	0
164	160	6/2/2021	05:00 AM	200	0
165	161	6/2/2021	06:00 AM	346	2
166	162	6/2/2021	07:00 AM	465	0
167	163	6/2/2021	08:00 AM	347	0
168	164	6/2/2021	09:00 AM	370	0
169	165	6/2/2021	10:00 AM	398	0
170	166	6/2/2021	11:00 AM	423	0
171	167	6/2/2021	12:00 PM	429	0
172	168	6/2/2021	01:00 PM	426	0
173	169	6/2/2021	02:00 PM	522	1
174	170	6/2/2021	03:00 PM	543	0
175	171	6/2/2021	04:00 PM	540	0
176	172	6/2/2021	05:00 PM	481	0
177	173	6/2/2021	06:00 PM	363	0
178	174	6/2/2021	07:00 PM	309	0
179	175	6/2/2021	08:00 PM	282	0
180	176	6/2/2021	09:00 PM	242	0
181	177	6/2/2021	10:00 PM	193	0
182	178	6/2/2021	11:00 PM	120	0
183	179	6/3/2021	12:00 AM	86	0
184	180	6/3/2021	01:00 AM	63	0
185	181	6/3/2021	02:00 AM	53	0
186	182	6/3/2021	03:00 AM	30	0
187	183	6/3/2021	04:00 AM	65	0
188	184	6/3/2021	05:00 AM	191	0
189	185	6/3/2021	06:00 AM	348	0
190	186	6/3/2021	07:00 AM	458	0
191	187	6/3/2021	08:00 AM	349	0
192	188	6/3/2021	09:00 AM	385	0

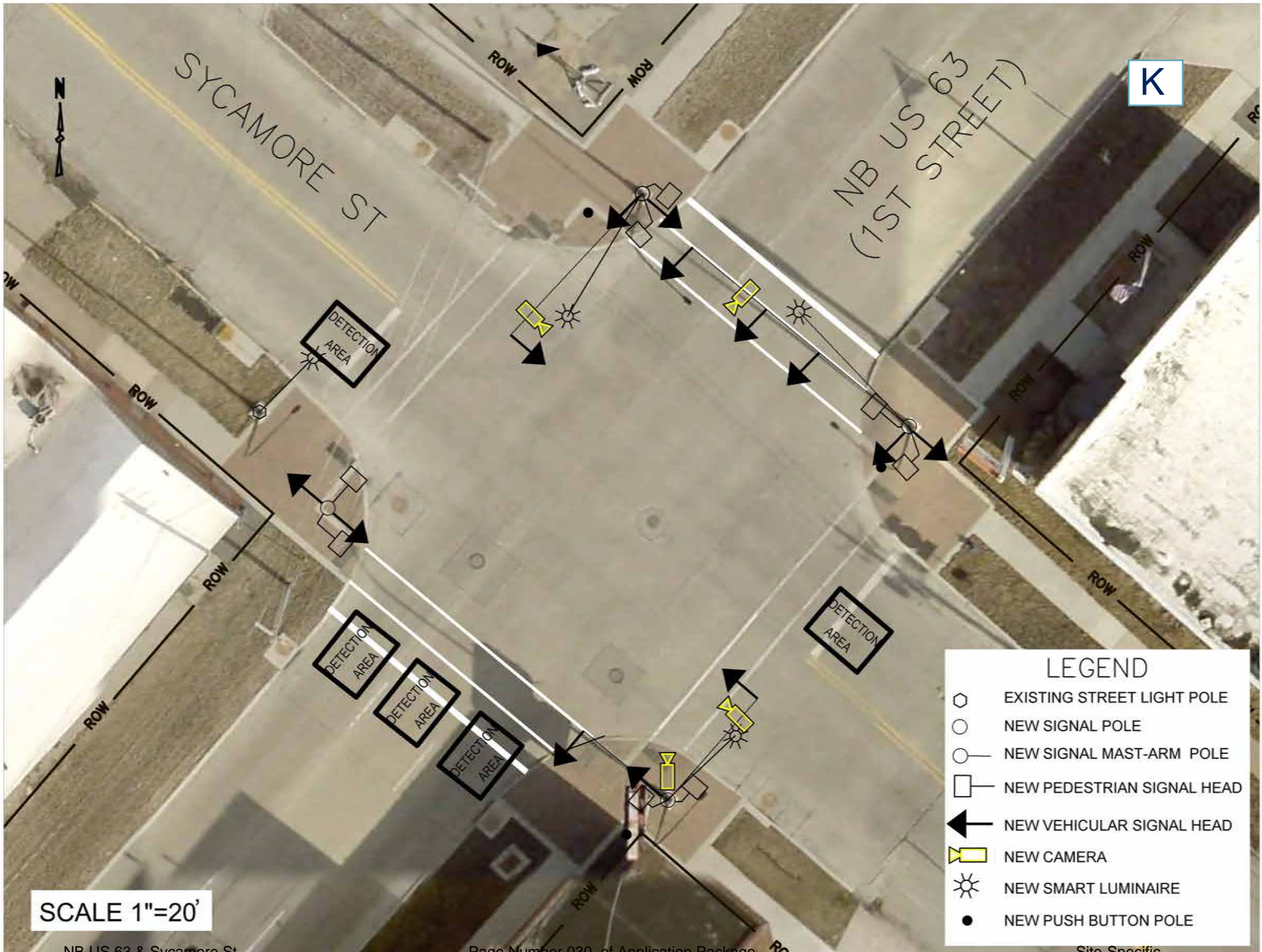
PHASE 1  
US 63 N BOUND

PHASE 2  
SYCAMORE STREET



PHASING AND DETECTOR LOCATIONS  
ACTUATED SIGNALS PART OF US 63 ADAPTIVE SYSTEM

SCALE 1"=80'



BENEFIT COST

This location has data showing signal reduce the crashes. Crashes when there used to be signals were much less in numbers and were less severe than after signals were replaced with 2-way stops. The period when the roadway was under construction is not included in b/c analysis.

<b>4 year Crashes Before and After Signal Removal</b>		
	<b>With Signals</b>	<b>2-Way Stops</b>
Right Angle	7	26
Rearend	1	0
Sideswipe	5	0
Injury Crashes	5	11 (1 Major)

We use [www.cmfclearinghouse.org](http://www.cmfclearinghouse.org) average number. The closest categories were the following:

<b>Urban</b>						
<b>CMF ID</b>	<b>Countermeasure</b>	<b>CRF</b>	<b>CMF</b>	<b>Crash Type</b>	<b>Intersection Geometry</b>	<b>Traffic Control Type</b>
319	Install a traffic signal	23	0.77	All	4-leg	Stop-controlled
320	Install a traffic signal	67	0.33	Angle	4-leg	Stop-controlled

A rudimentary approach to actual before and after data shows a potential for 50% crash reduction, most of which will be of the right angle collision type. This value falls almost in the middle the CMF values.

<b>4 year Crashes Before and After Signal Removal (Data from Proposed Project Location)</b>		
	<b>With Signals (Before)</b>	<b>2-Way Stops (After)</b>
Right Angle	7	26
Rearend	1	0
Sideswipe	5	0
<b>Total</b>	<b>13</b>	<b>26</b>
<b>Total/Year</b>	<b>3.25</b>	<b>6.5</b>
<b>Reduction</b>	<b>50%</b>	
Anticipated Crashes with Improvement= 3.25 Anticipate Crashes Without Improvement= 6.5 Ratio= 0.50		

County:	Black Hawk	Prepared By:	Mohammad Elahi
Location:	Waterloo	Date Prepared:	8/15/2023
Proposed Improvements:	Northbound US 63 and Sycamore Street Intersection Signalization to Replace 2-Way Stops.		
Estimated Improvement Cost:	\$ 262,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 5,240

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:		Combined CRF		
	50		50.0		
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000		50.0	<b>0.00</b>	<b>0.00</b>
Serious Injury (A)	\$ 4,000,000	1	50.0	<b>0.20</b>	<b>0.10</b>
Minor Injury (B)	\$ 265,000	2	50.0	<b>0.40</b>	<b>0.20</b>
Possible/Unknown Injury (C)	\$ 125,000	10	50.0	<b>2.00</b>	<b>1.00</b>
Property Damage Only (O)	\$ 20,000	14	50.0	<b>2.80</b>	<b>1.40</b>

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ <b>400,000</b>
Minor Injury (B)	\$ <b>53,000</b>
Possible/Unknown Injury (C)	\$ <b>125,000</b>
Property Damage Only (O)	\$ <b>28,000</b>

### Total Benefits and Costs

	Implementation Cost	\$ 262,000	
	Present Value of Maint.	\$ 71,213	
Present Value Benefits (Societal Benefits)	\$ 8,951,048	Present Value Costs (Impl. and Maint. Costs)	\$ 333,213
Present Value Net Return	\$ 8,617,835		
<b>Benefit Cost Ratio</b>	<b>26.86</b>		

Form continues on next page



County:

Black Hawk

Prepared By: Mohammad Elahi

Location:

Waterloo

Date Prepared: 8/15/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** 8/11/2023

Location / Title of Project \_\_\_\_\_

Applicant Clayton County

Contact \_\_\_\_\_

Person Casey Stickfort Title County Engineer

Complete Mailing Address 600 Gunder Rd, Elkader, Iowa 52043

Phone 563-245-1782 E-Mail cstickfort@claytoncountya.gov

(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact \_\_\_\_\_

Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ \$652,205

Total Project Cost \$ \$726,579

**Safety Funds Requested** \$ \$500,000

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

**Potential for Crash Reduction (PCR) Information**

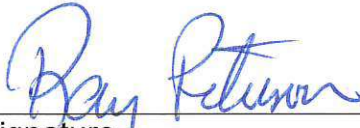
Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

### APPLICATION CERTIFICATION FOR PUBLIC AGENCY

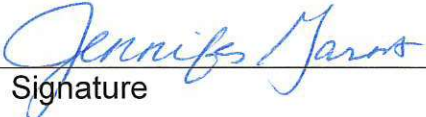
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Clayton County

Signed:  8-15-2023  
Signature Date Signed

Ray Peterson  
Printed Name

Attest:  8/15/2023  
Signature Date Signed

JENNIFER GARMS  
Printed Name

RESOLUTION #40-2023  
TRAFFIC SAFETY IMPROVEMENT PROGRAM  
GRANT APPLICATION FOR CLAYTON ROAD SAFETY IMPROVEMENTS

WHEREAS, the Board of Supervisors of Clayton County is empowered under authority of Iowa Code Section 306.4 to operate and manage the Secondary Road System; and

WHEREAS, the State of Iowa has available Grant funds associated with the Traffic Safety Improvement Program up to a maximum of \$500,000 per location and any project cost above the maximum award shall be paid by the local agency; and

WHEREAS, the Clayton County Engineer recommends application for funding of Paved Shoulders, Safety Edge, Rumble Strips and Painted Pavement Markings project on a portion of Clayton Road east of Garnavillo, Iowa

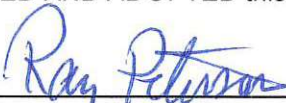
NOW, THEREFORE BE IT RESOLVED, by the Board of Supervisors of Clayton County, Iowa that they declare support for and endorsement of the Grant Application for said project. The Board further endorses the submittal of such application for grant funding and assures that the County will adequately maintain such improvements within the Clayton County Secondary Road System and directs the County Engineer to pursue available funding for said project.


Roll Call:

Steve Doeppke	aye
Ray Peterson	aye
Doug Reimer	aye



PASSED AND ADOPTED this 15th day of August, 2023.

  
\_\_\_\_\_  
Ray Peterson, Board of Supervisors Chair

  
\_\_\_\_\_  
Attest: Jennifer Garms, Clayton County Auditor

**Narrative:**

Clayton County is applying for Traffic Safety Improvement Program (TSIP) funding to improve the safety of one roadway, the Clayton Road (C17). The Clayton Road (C17) carries traffic from the City of Garnavillo to the intersection of the Great River Road. The roadway is approximately 4.2 miles.

The Clayton Road corridor was constructed in 1968. 1968 construction amounted to grading and PCC pavement. In 1986, the roadway surface was repaved with PCC and remains today. The roadway cross section is a 22' wide, 9" thick PCC pavement with 6' wide shoulders. 4' of the shoulder is surfaced with crushed rock. Foreslopes are typically 3:1.

The corridor is vital to our local and state economy connecting State Highway 52 to the Mississippi River. Commodities such as corn, beans, and sand for frac mining that ship on barges transport on this route daily. Salt used as deicing is also transported on this route. The corridor carries recreation traffic such as boat and RV's and local agricultural equipment. The route has a traffic count of 910 VPD with approximately 200 trucks per day.

The topography is challenging to navigate with horizontal curves making up 77% of the route. With that, pavement edge drop offs are difficult to maintain primarily from the amount of truck traffic and curves.

The route's posted speed is 55mph and many of the horizontal curves are signed with the required warning signs, reduced speeds, and chevrons as per MUTCD.

Clayton County is seeking TSIP Funds to provide the following safety improvements:

- 4' paved shoulders along horizontally curves and 2' paved shoulders on tangents
- Edge rumble strips
- 6" white edgeline pavement markings.
- Safety Edge

These improvements are expected to reduce the number of lane departure accidents, provide additional strength to the pavement edge and help with driver comfort. The proposed improvements will also help with 20 years of maintenance efforts.

This proposed project provides a considerable benefit for the cost with a benefit/cost ratio of 6.73. If approved, Clayton County seeks to provide funding to have the entire route paved with 4' wide shoulders.



**Clayton County Secondary Roads  
 Estimated Opinion of Probable Cost  
 Clayton Road Shoulder Improvement From Garnavillo Corporate Limits to Great River Road Intersection  
 Total Length 4.2 Miles**

Safety Quantity Summary: Estimate includes 4' wide paved HMA shoulders 6" thick in curve areas, 2' wide paved HMA shoulders 6" thick in tangents, edge rumble strips, safety edge and 6" wide edge pavement markings. County Quantity Summary: Includes 2' additional paved shoulders in tangents.

NO.	BID ITEM DESCRIPTION	UNITS	SAFETY QUANTITY	COUNTY QUANTITY	UNIT PRICE	Div 1 - Safety	Div 2 - County	TOTAL COST
1	Excavation, Class 13 For Widening	CY	2,894	391	\$ 15.00	\$ 43,410.00	\$ 5,865.00	\$ 49,275
2	Base Widening, HMA Mix	TON	5,666	757	\$ 53.00	\$ 300,298.00	\$ 40,121.00	\$ 340,419
3	Asphalt Binder, PG 58-28S	TON	340	45	\$ 625.00	\$ 212,475.00	\$ 28,387.50	\$ 240,863
4	Hot Mix Asphalt Pavement Samples	LS	1		\$ 2,500.00	\$ 2,500.00	\$ -	\$ 2,500
5	Milled Shoulder Rumble Strips, HMA	STA	444		\$ 20.00	\$ 8,880.00	\$ -	\$ 8,880
6	Granular Shoulders	TON	1,000		\$ 15.00	\$ 15,000.00	\$ -	\$ 15,000
7	Painted Pavement Markings, ELW6	STA	666		\$ 18.00	\$ 11,988.00	\$ -	\$ 11,988
8	Traffic Control	LS	1		\$ 5,000.00	\$ 5,000.00	\$ -	\$ 5,000
9	Flaggers	EA	30		\$ 600.00	\$ 18,000.00	\$ -	\$ 18,000
10	Pilot Car	DAY	15		\$ 834.00	\$ 12,510.00	\$ -	\$ 12,510
11	Mobilization	LS	1		\$ 18,000.00	\$ 18,000.00	\$ -	\$ 18,000
12	Asphalt Emulsion for Fog Seal (Shoulder Rumble Strips)	GAL	592		\$ 7.00	\$ 4,144.00	\$ -	\$ 4,144

**ESTIMATED CONSTRUCTION COST**    \$    652,205    \$    74,374    \$    726,579

Dated: 8/11/2023

**Proposed Project Schedule**  
**Clayton Road Shoulder Improvements**

Submittal of Application:	August, 2023
Project Approval:	February, 2024
Project Letting:	January, 2025
Construction Completion:	October, 2025
Project Closeout:	March, 2026

# Location Map

# CLAYTON COUNTY IOWA

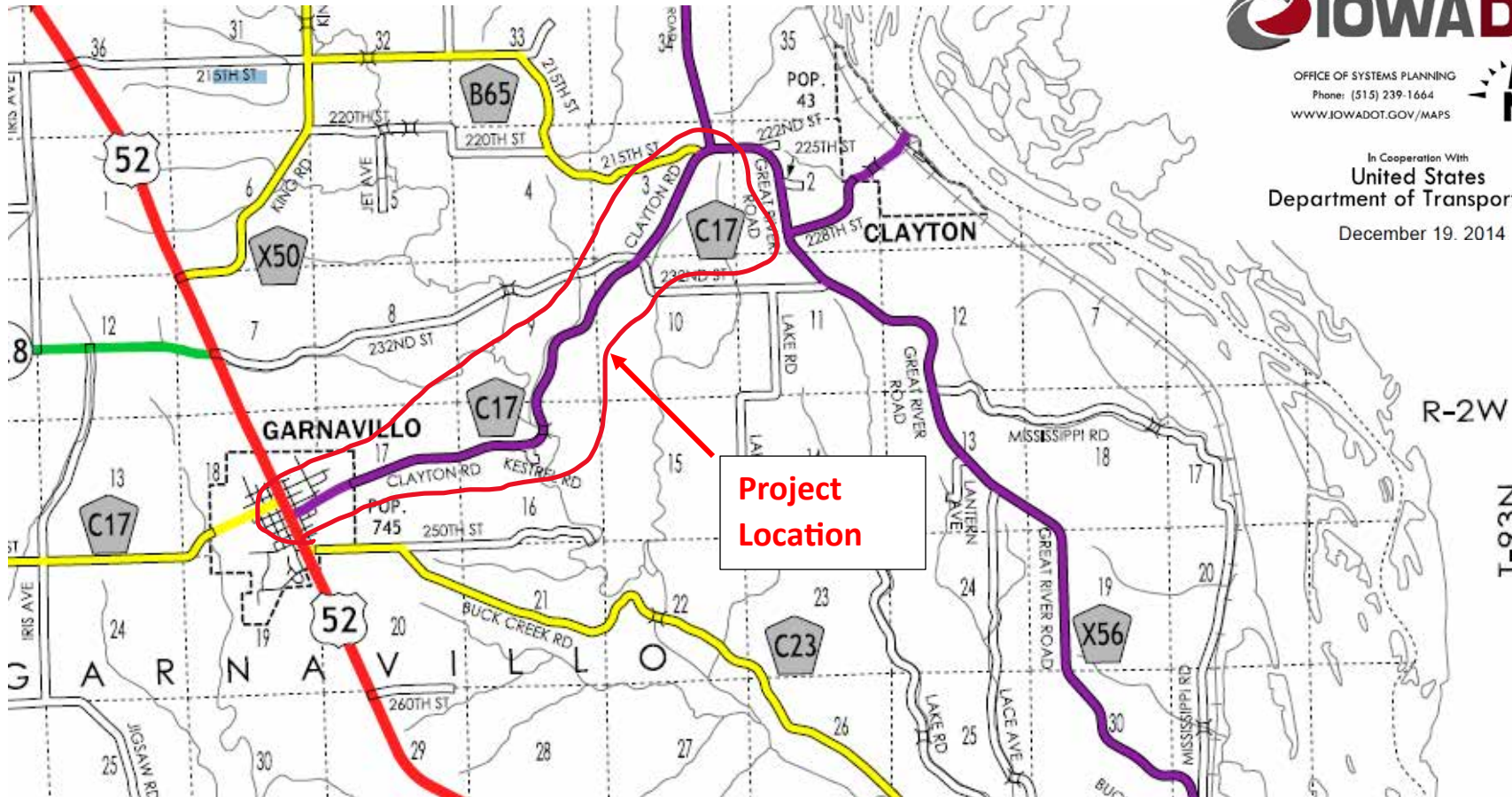


OFFICE OF SYSTEMS PLANNING  
Phone: (515) 239-1664  
WWW.IOWADOT.GOV/MAPS



In Cooperation With  
**United States**  
Department of Transportation

December 19, 2014



**Project  
Location**



**Exhibit F : Color Pictures of the Project Site**



**Exhibit F : Color Pictures of the Project Site**



**Exhibit F : Color Pictures of the Project Site**



**Exhibit F : Color Pictures of the Project Site**



**Clayton Road Shoulder Paving TSIP Project  
Plan View - No Additional ROW Needed**

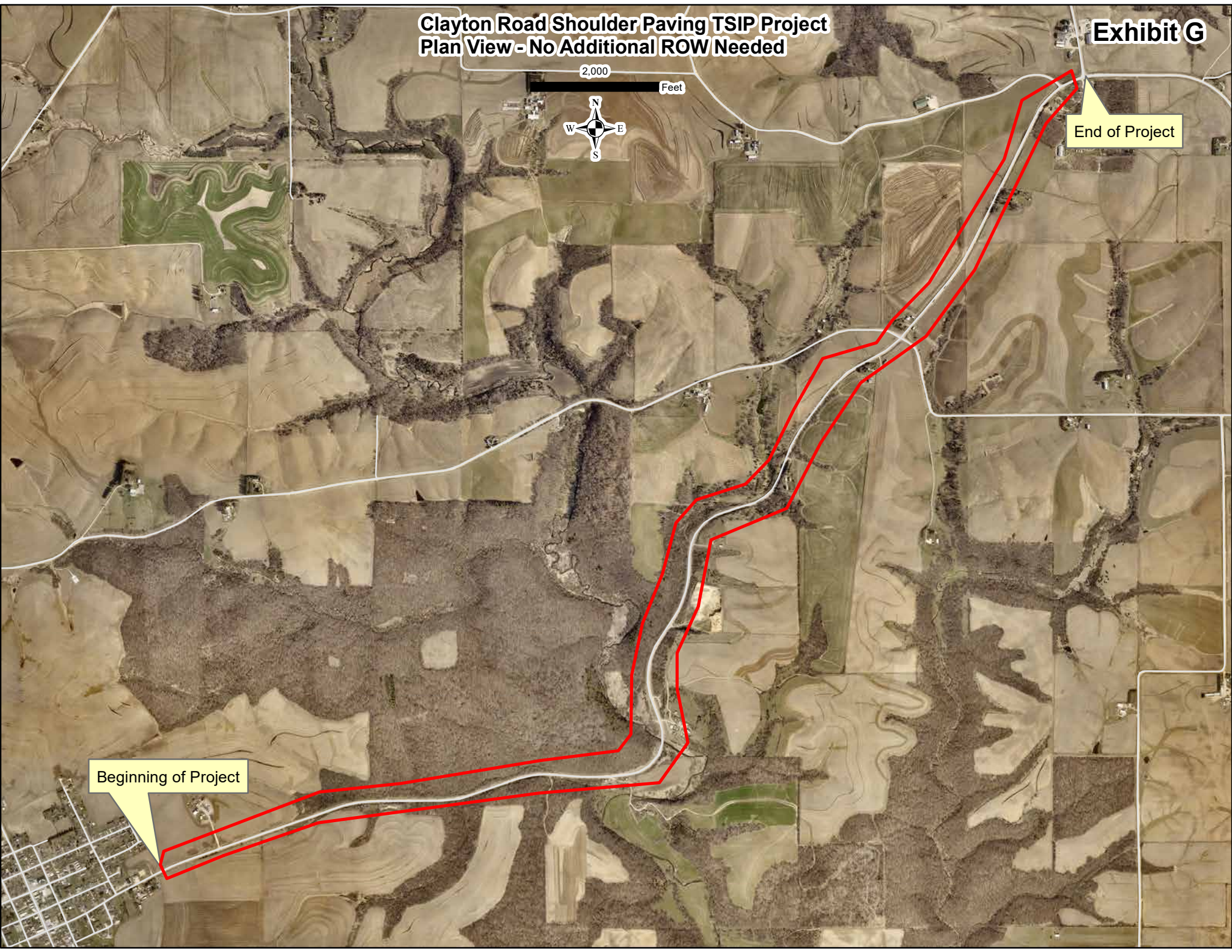
**Exhibit G**

2,000 Feet



End of Project

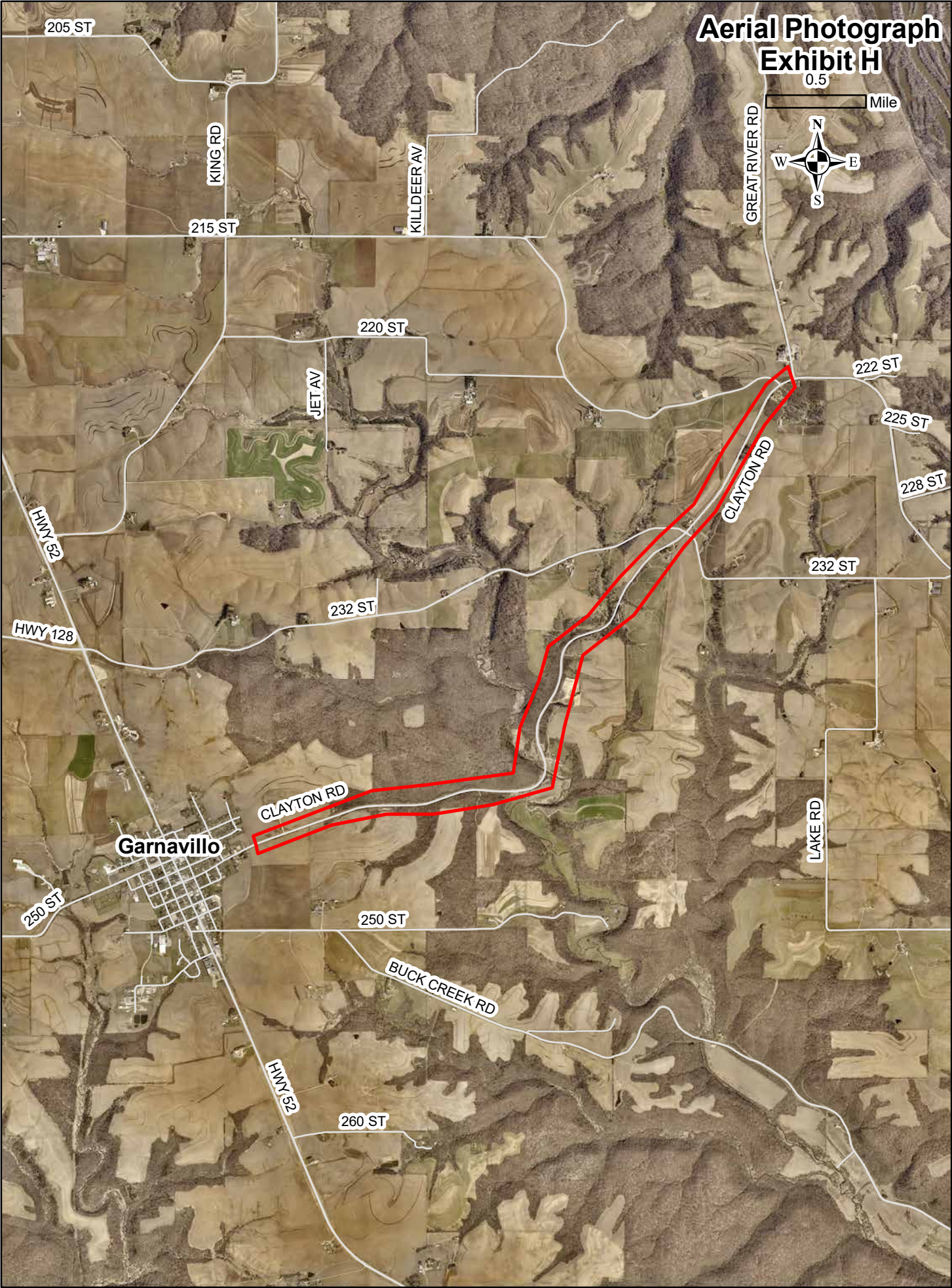
Beginning of Project



# Aerial Photograph Exhibit H

0.5

Mile





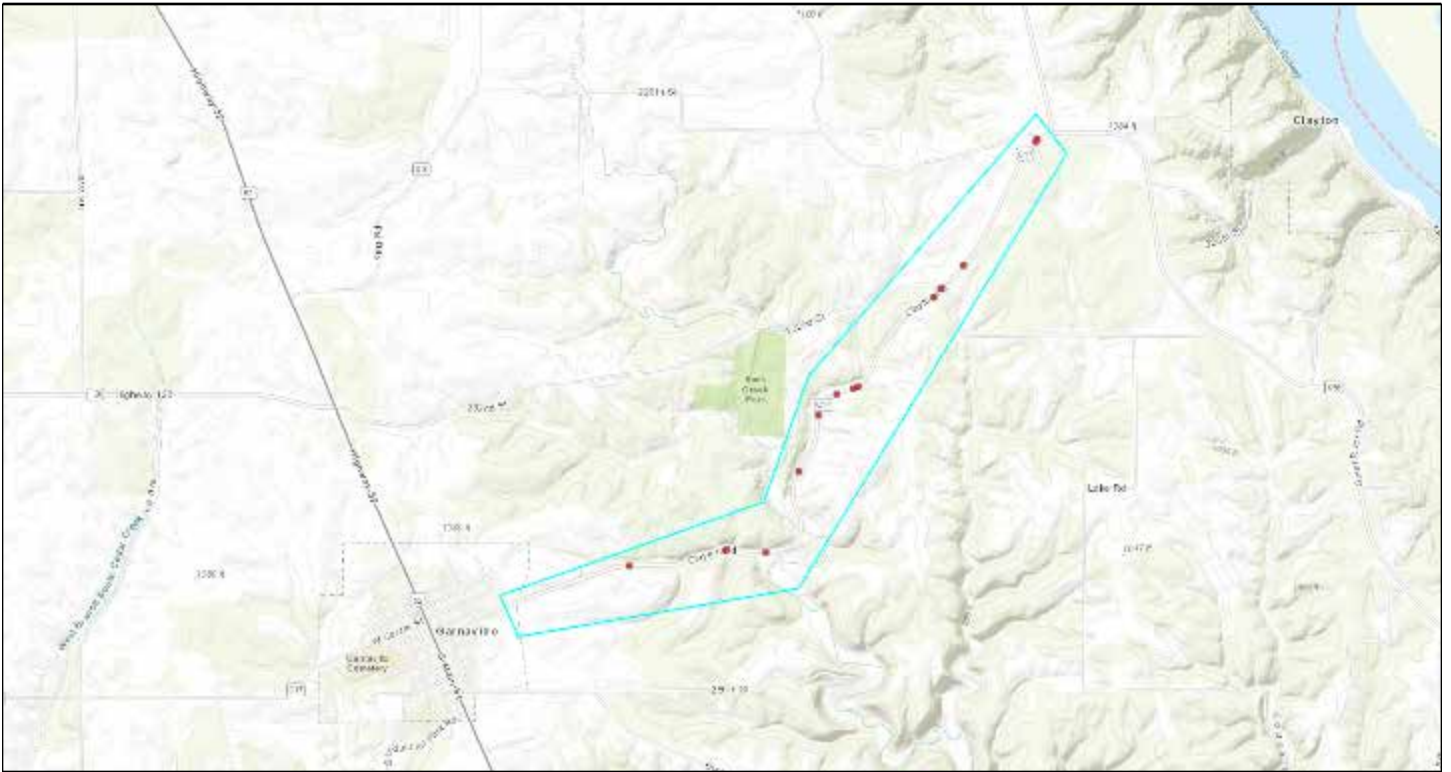
Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Crash Severity	13
Fatal Crash	1
Suspected Serious Injury Crash	1
Suspected Minor Injury Crash	1
Possible/Unknown Injury Crash	0
Property Damage Only	10

Injury Status Summary	3
Fatalities	1
Suspected serious/incapacitating	1
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	0
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	85,200.00
Average (per crash dollars):	6,553.85
Total Vehicles:	15.00
Average (per crash):	1.15
Total Occupants:	17.00
Average (per crash):	1.31

Average Severity	
Fatalities/Fatal Crash:	1.00
Fatalities/Crash:	0.08
Injuries/Crash:	0.15
Major Injuries/Crash:	0.08
Minor Injuries/Crash:	0.08
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			13
Animal	6	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	2
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	0
Lost control	2	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		





**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	13
Non-collision (single vehicle)	7
Head-on (front to front)	2
Rear-end (front to rear)	0
Angle, oncoming left turn	1
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	3
Other	0
Unknown	0

Surface Conditions	13
Dry	7
Wet	0
Ice/frost	1
Snow	2
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	3
Other	0
Unknown	0

Fixed Object Struck	15
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	3
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	1
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	11



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	0	0	0	1
= 16	0	1	0	0	1
= 17	0	0	0	0	0
= 18	0	1	0	0	1
= 19	0	0	0	0	0
= 20	0	1	0	0	1
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	1	2	0	0	3
>= 35 and <= 39	0	3	0	0	3
>= 40 and <= 44	0	1	0	0	1
>= 45 and <= 49	0	2	0	0	2
>= 50 and <= 54	0	1	0	0	1
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	1	0	0	1
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>15</b>

Alcohol Test Given	15
None	11
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	2

Drug Test Given	15
None	11
Blood	2
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	2

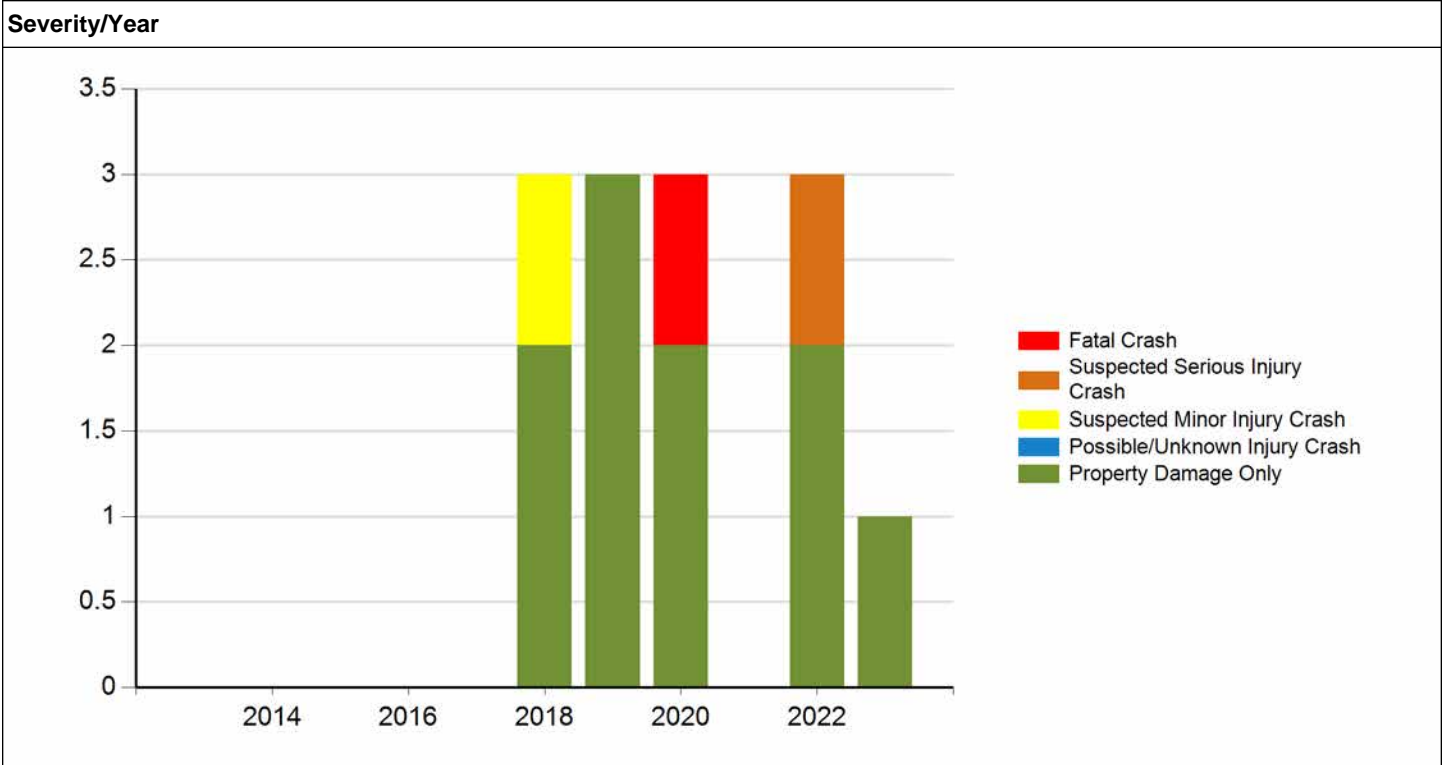
Drug Test Result	15
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	15
Other	0

Drug/Alcohol Related	13
Drug	1
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	1
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	10



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

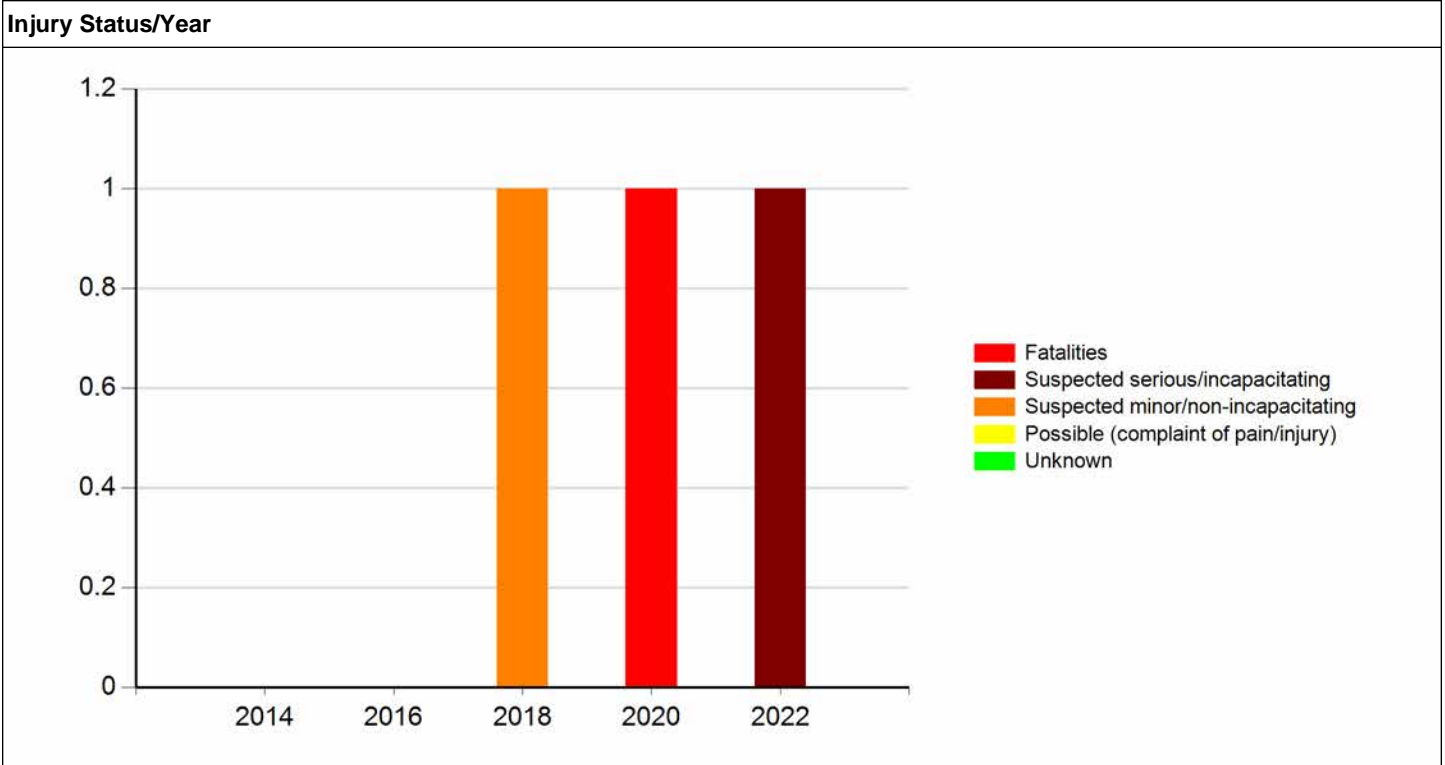
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	1	0	2		3
2019	0	0	0	0	3		3
2020	1	0	0	0	2		3
2021	0	0	0	0	0		0
2022	0	1	0	0	2		3
2023	0	0	0	0	1		1
<b>Total</b>	1	1	1	0	10		13





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	1	0	0	1
2019	0	0	0	0	0	0
2020	1	0	0	0	0	1
2021	0	0	0	0	0	0
2022	0	1	0	0	0	1
2023	0	0	0	0	0	0
<b>Total</b>	1	1	1	0	0	3





**Meeting the following criteria**

Jurisdiction: Counties (Clayton)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**



County:	Clayton	Prepared By:	Casey Stickfort
Location:	Clayton Road	Date Prepared:	8/6/2023
Proposed Improvements:	Paved Shoulders, Rumble Strips, 6" Painted Edge Lines and Safety Edge		
Estimated Improvement Cost:	\$ 652,205		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 13,044

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	15	7	6	22.3	
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	1	22.3	0.20	0.04
Serious Injury (A)	\$ 4,000,000	1	22.3	0.20	0.04
Minor Injury (B)	\$ 265,000	1	22.3	0.20	0.04
Possible/Unknown Injury (C)	\$ 125,000		22.3	0.00	0.00
Property Damage Only (O)	\$ 20,000	10	22.3	2.00	0.45

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ 178,465
Serious Injury (A)	\$ 178,465
Minor Injury (B)	\$ 11,823
Possible/Unknown Injury (C)	\$ -
Property Damage Only (O)	\$ 8,923

### Total Benefits and Costs

	Implementation Cost	\$ 652,205	
	Present Value of Maint.	\$ 177,274	
Present Value Benefits (Societal Benefits)	\$ 5,578,564	Present Value Costs (Impl. and Maint. Costs)	\$ 829,479
Present Value Net Return	\$ 4,749,086		
<b>Benefit Cost Ratio</b>	<b>6.73</b>		

Form continues on next page

County:

Clayton

Prepared By: Casey Stickfort

Location:

Clayton Road

Date Prepared: 8/6/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: August 15, 2023

Location / Title of Project Fayette County: Highway IA 56 and Fayette County Road W 51

Applicant District 2 Office

Contact Person Krista Billhorn Title District Planner

Complete Mailing Address 428 43<sup>rd</sup> Street SW, Mason City, IA 50401

Phone 641-422-9447 E-Mail Krista.Billhorn@iowadot.us  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) Fayette County Secondary Roads

Contact Person Joel Fantz Title County Engineer

Complete Mailing Address 114 N. Vine Street, P.O. Box 269  
West Union, IA 52175

Phone 563-422-3552 E-Mail jfantz@co.fayette.ia.us  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	<u>961,676.00</u>
Total Project Cost	\$	<u>961,676.00</u>
<b>Safety Funds Requested</b>	<b>\$</b>	<b><u>500,000.00</u></b>

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

**Potential for Crash Reduction (PCR) Information**

Potential for Crash Reduction (PCR) Information					
Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
2017027586	Intersection Segment ID 6393	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.33	0.063364
		<input type="checkbox"/>	<input type="checkbox"/>		

### APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Iowa Department of Transportation District 2 Office

Signed:  8/14/2023  
Signature Date Signed

Mary Kelly  
Printed Name

Attest:  8/14/2023  
Signature Date Signed

Krista Billhorn  
Printed Name

### RESOLUTION #534

#### Fayette County Resolution Supporting the Safety Realignment of County Road W51 and Iowa Highway 56 Intersection.

**Whereas** Fayette County's Local Road Safety Plan (LRSP) ranks the intersection of IA 56 and County Road W51 as the top candidate in the County for an intersection safety improvement,

**Whereas** the crash history reflects that the skew of the intersection creates a blind spot for drivers of stopped vehicles, and the hill to the east limits the sight distance at the intersection,

**Whereas** the Fayette County Board of Supervisors, County Engineer and Sheriff support improvements be made at this intersection in partnership with the Iowa Department of Transportation,

**Whereas** the Fayette County Board of Supervisors will financially participate in this spot improvement project in a future C-STEP agreement with the Iowa Department of Transportation,

**It Is Therefore Resolved** by the Fayette County Board of Supervisors that the County strongly supports the Iowa DOT's Traffic Safety Improvement Program application to realign the W51 and Highway 56 intersection.

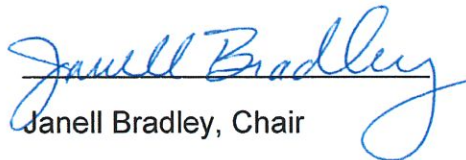
Moved by Lehmann, Seconded by Bunn,  
and passed by the Fayette County Board of Supervisors on: Aug. 14, 2023

Recommended:

Approved:



Joel D. Fantz, P.E.  
Fayette County Engineer



Janell Bradley, Chair

Attest:

  
Jeff Bunn



Lori Moellers  
Fayette County Auditor

  
Bruce Lehmann

## Document B

### Existing Conditions

IA 56 traverses Fayette County as an east/west two-lane principal arterial. County Road W 51 is a two-lane paved north/south roadway. The posted speed limit on both roadways is 55mph. To the east on IA 56 is a vertical grade limiting sight distance, to the west on IA 56 is a horizontal curve. The north leg of W 51 has a slight vertical curve, and the south leg is mostly flat approaching the stop sign.

IA 56 is the through movement, where W 51 traffic must stop. At W 51 northbound, there is a right turn, eastbound slip ramp and an at-grade stop triangle.

The stop signs for traffic on W 51 have “Cross Traffic Does Not Stop” signs. There is an intersection ahead flashing beacon on the IA 56 westbound lanes approaching W 51. There are 3 sets of rumble strips on both legs of W 51 approaching the IA 56 intersection, “Stop Ahead” signs, and directional signage.

The 2019 AADT at this intersection is:

<b>West</b> Leg of IA 56: 590	<b>East</b> Leg of IA 56: 590
<b>North</b> Leg of W 51: 630	<b>South</b> Leg of W 51: 840

According to As Builts, this intersection is skewed at 61 degrees with gradual vertical and horizontal curves on IA 56 east and west of the intersection with W 51. The skew is contributing toward motorists’ sight triangle being obscured by the mirror and door post of the vehicle. Drivers then misjudge the ability to leave the stop condition, the speed of oncoming traffic, or both. There are no objects in the clear area.

The 2016-2020 data on Potential for Crash Reduction, or PCR, ranks this intersection as Medium in Tier 2, and at 0.33 for All Crashes. This PCR data uses earlier data than the Iowa Crash Analysis Tool, ICAT, information used for this application.

The intersection is the top candidate on the Fayette County Local Road Safety Plan for intersection safety improvements. Crashes at this intersection were due to failing to yield at the stop sign, running the stop sign, fail to yield other, and ran off road to the right. The skew angle is contributing to the crashes according to information obtained from local law enforcement and the crash reports.

### Fayette County Local Road Safety Plan Excerpt

Fayette County’s Local Road Safety Plan (LRSP) ranks this intersection as the top candidate in the County for an intersection safety improvement. Below is Table 23 from the County’s LRSP. The LRSP ranks candidates based on road characteristics that predict future crashes. As you can see from the DOT’s application, the theoretical prediction of the LRSP is matched with a high rate of crashes and crash severity. See the Table 23 on the following page.

**Table 23 – Intersection Safety Improvement Candidate Locations**

Rank	GPS ID	Intersection	Control Type	High Scoring Location
1	183483	IA 56/FILMORE RD & Co Rd W51/CEDAR RD	Two-way stop	Yes
2	183257	IA 3/60TH ST & Co Rd V68/W AVE	Two-way stop	Yes
3	54115	IA 281/100TH ST & Co Rd W13/FAIRBANK-AMISH BLVD/T AVE	Two-way stop	No
4	183357	IA 3/35TH ST & Co Rd W33/L AVE	Two-way stop	Yes
5	183263	IA 3/60TH ST & Co Rd W13/T AVE	Two-way stop	No
6	183367	IA 3/40TH ST & Co Rd W33/K AVE	Two-way stop	No
7	183707	IA 150/LINCOLN RD & Co Rd C14/190TH ST	Two-way stop	Yes
8	183379	IA 3/40TH ST & Co Rd W45/G AVE	Two-way stop	No
9	184788	Co Rd W55/ACORN RD & 200TH ST	One-way stop	No
10	184388	Co Rd V68/W AVE & 120TH ST	Two-way stop	No

**The Proposed Concept**

District 2 and Fayette County propose a side road reconstruction to reduce or eliminate the skew angle. County Road W 51 would be realigned for the intersection to meet at a 90-degree angle. Correcting a 61% skew is believed to reduce severe crashes by a factor of 18%. This proposal will eliminate the angle from which a driver views the oncoming vehicles.

As shown on Document G, the realignment will require additional ROW from two property owners to reconstruct the side road. The design will have 12-foot travel lanes, 2-foot paved shoulders and 4-foot granular shoulders to match existing cross section of W 51. A driveway will also be realigned to meet the new W 51 alignment.

Fayette County Board of Supervisors, the county engineer, sheriff, and the regional planning agency, are all in support of the intersection improvement.

**Safety Justification**

The main crash type, failure-to-yield, represents concerns with sight distance, view of oncoming vehicles, and judgement of speed. The crash types and speeds at this intersection are felt by locals to make this the most dangerous intersection in the county. The risk of severe crashes and injuries is high.

The cause of eight crashes at this intersection include: 1 ran stop sign; 4 failure-to-yield right of way from stop sign; 1 failure-to-yield right of way, other; and 2 ran off road to the right. Two of the crashes had suspected minor injury, one had possible/unknown injury and two were property damage only.

The proposed improvement to reconstruct the sideroad to a 90-degree angle will reduce the number of failure-to-yield crashes by providing improved sight distance to view oncoming vehicles as drivers judge to enter or cross IA 56.

### Itemized Costs

Intersection of IA 56 and County W51

	Unit of Measure	Quantity	Cost Per Unit	Cost Per Item
PCC 9"	Square Yards	3900.00	\$ 80.00	\$ 312,000.00
Pavement Removal	Square Yards	3435.00	\$ 11.00	\$ 37,785.00
Subbase (Modified)	Cubic Yards	1730.00	\$ 45.00	\$ 77,850.00
Paved Shoulders	Square Yards	650	\$ 65.00	\$ 42,250.00
Granular Shoulders	Tons	615	\$ 33.00	\$ 20,295.00
Excavation (Class 10)	Cubic Yards	31300	\$ 6.00	\$ 187,800.00
Ditch Reshaping	Stations	14.6	\$ 1,100.00	\$ 16,060.00
Topsoil	Cubic Yards	3270	\$ 8.00	\$ 26,160.00
Concrete Pipe & Aprons	Linear Feet	200	\$ 115.00	\$ 23,000.00
Concrete Pipe Aprons	Each	4	\$ 1,900.00	\$ 7,600.00
Intake Removal	Each	1	\$ 940.00	\$ 940.00
Mobilization	Lump Sum	1		\$ 40,000.00
Traffic Control	Lump Sum	1		\$ 20,000.00
Erosion Control	Lump Sum	1		\$ 15,000.00
Right of Way	Acres	1.9	\$ 5,000.00	\$ 9,500.00
<b>TOTAL</b>				<b>\$ 836,240.00</b>

Plus 15% for Misc and Contingencies

\$ 125,436.00

**Total Cost \$ 961,676.00**

Assumes W-51 traffic detoured during construction

**Intersection Improvement Time Schedule**

Application:	August 2023
Award:	July 2024 for FY2025
Design:	Fall of calendar year 2024
ROW:	Calendar year 2025
Letting:	FY2026
Construction:	Calendar year 2026



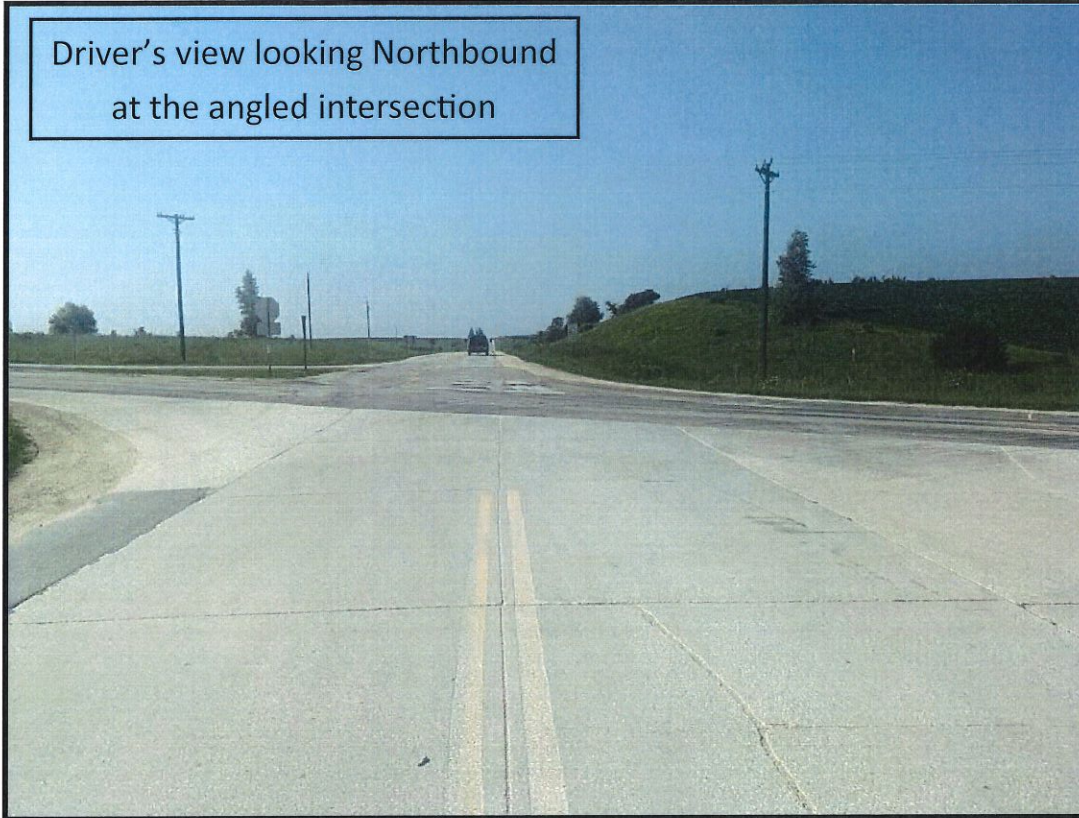


IA 56 and Fayette County Road W 51

Document F -1

Looking Northbound onto IA 56

Driver's view looking Northbound  
at the angled intersection



Google Earth View of intersection



W51 looking Southbound onto IA 56 with an oncoming truck partially hidden by the car post

Document F -2



The oncoming truck remains partially in view seconds later



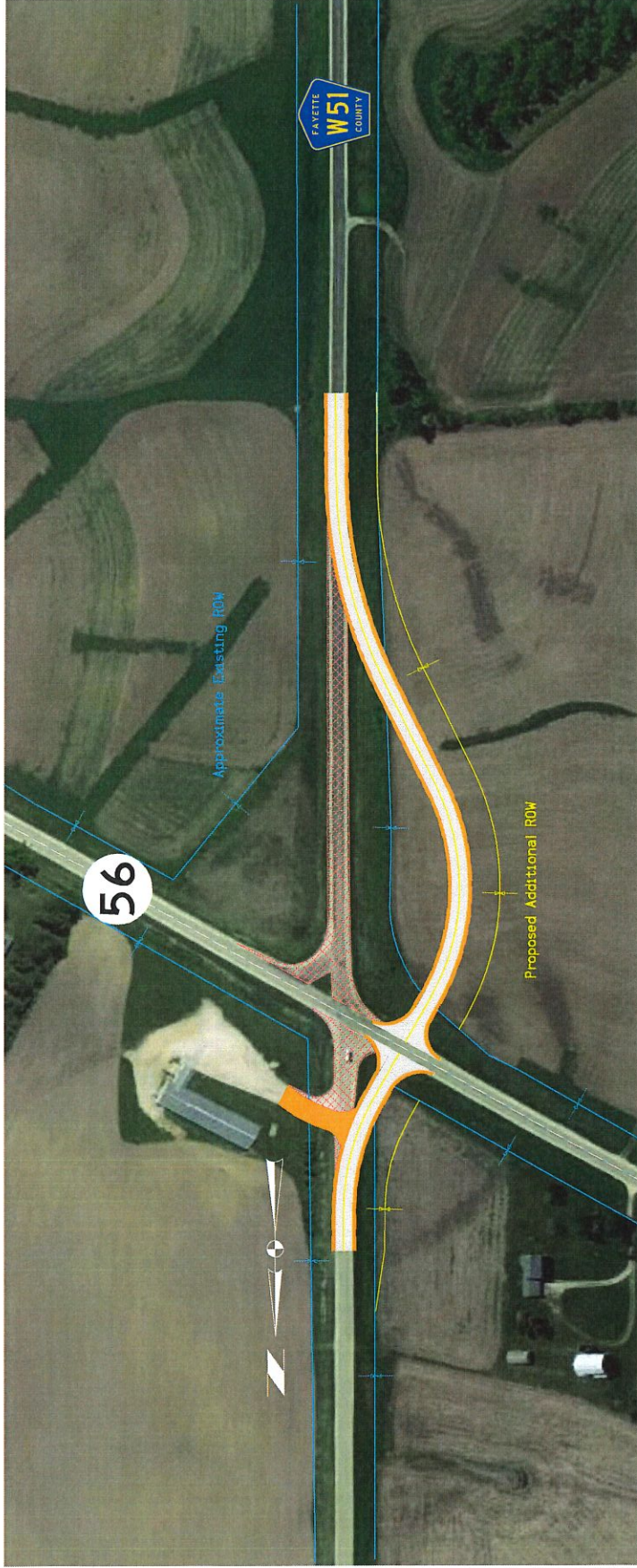
W 51 looking Westbound onto IA 56 toward an oncoming truck hidden behind the car post






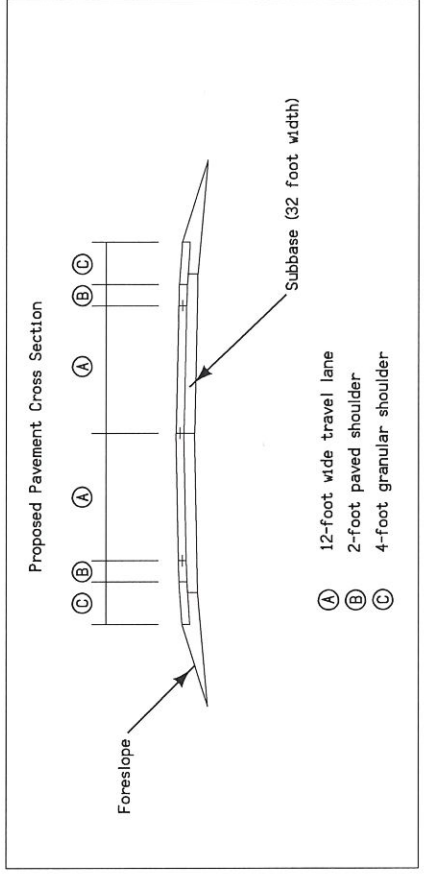
IA 56 Westbound has an intersection ahead flashing beacon

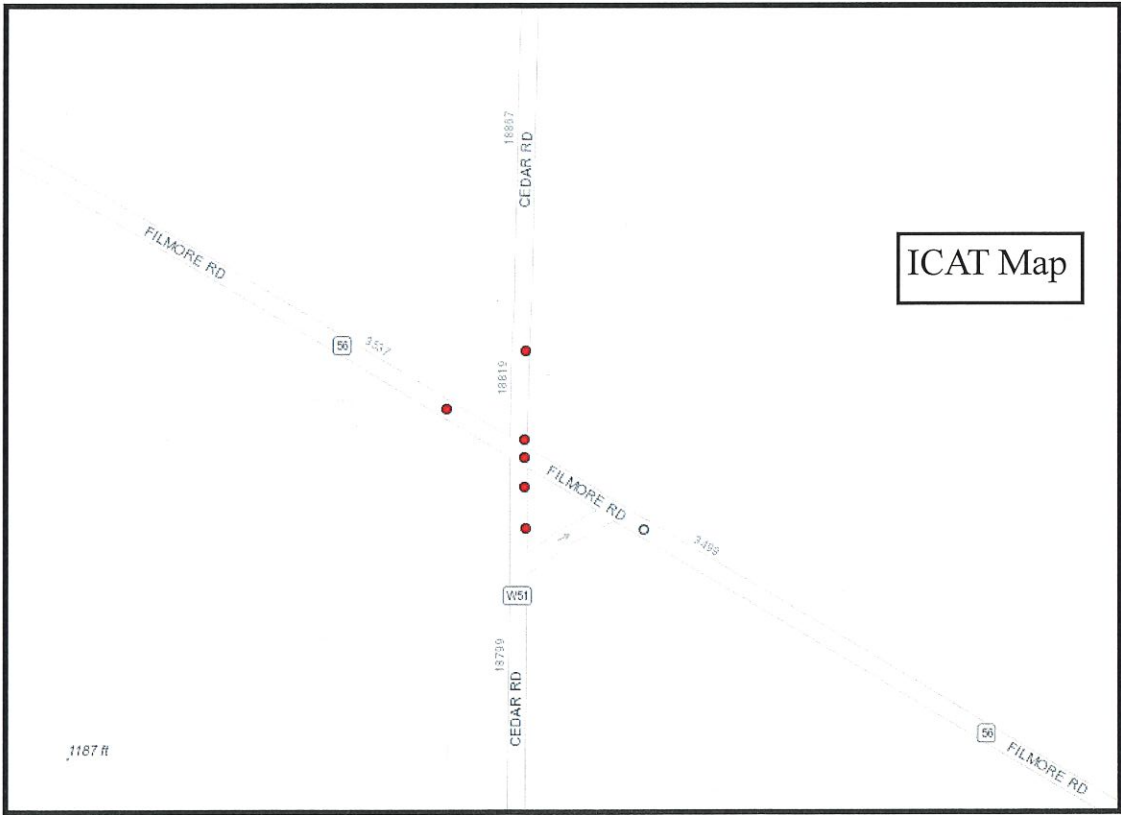


Here is the hidden truck and trailer seconds later



-  Proposed Pavement and Paved Shoulder
-  Proposed Granular Shoulder or Driveway
-  Proposed Pavement Removal Area







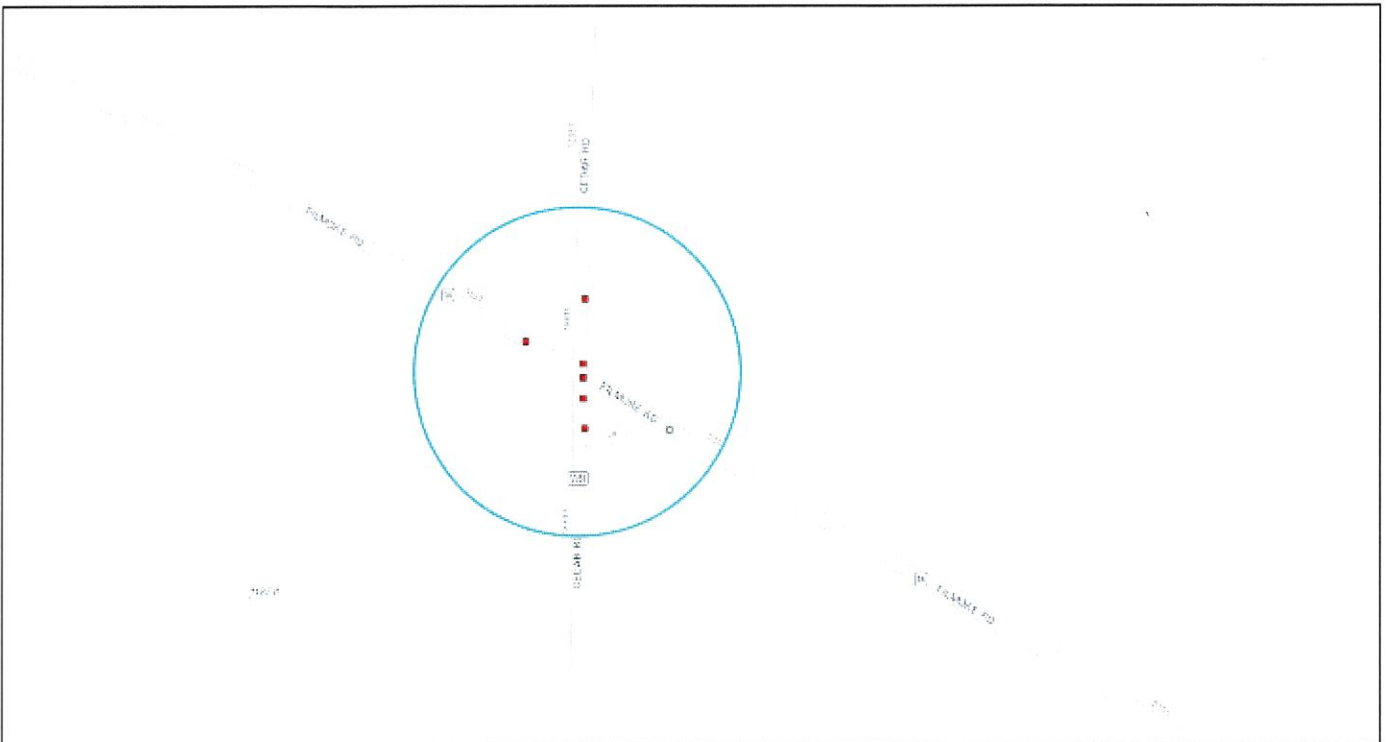
Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Crash Severity	8
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	2
Possible/Unknown Injury Crash	1
Property Damage Only	5

Injury Status Summary	3
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	2
Possible (complaint of pain/injury)	1
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	120,400.00
Average (per crash dollars):	15,050.00
Total Vehicles:	14.00
Average (per crash):	1.75
Total Occupants:	31.00
Average (per crash):	3.88

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.38
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.25
Possible/Unknown Injuries/Crash:	0.13





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			8
Animal	0	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	4	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	1	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	2
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Time of Day/Day of Week															Total
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported		
Sunday	0	0	0	0	0	1	1	0	0	0	0	0	0	2	
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tuesday	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
Wednesday	0	0	0	0	0	1	0	0	0	0	0	0	0	1	
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Friday	0	0	0	0	0	0	0	1	1	0	0	0	0	2	
Saturday	0	0	0	0	2	0	0	0	0	0	0	0	0	2	
<b>Total</b>	0	0	0	0	2	2	2	1	1	0	0	0	0	8	

Manner of Crash Collision	8
Non-collision (single vehicle)	2
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	5
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	8
Dry	6
Wet	1
Ice/frost	1
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	14
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	4
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	10





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	1	0	0	1
= 17	0	1	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	1	1	0	0	2
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	0	1	0	0	1
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	1	0	0	1
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	1	0	0	1
>= 60 and <= 64	1	1	0	0	2
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	2	0	0	2
>= 75 and <= 79	1	0	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>14</b>

Alcohol Test Given	14
None	14
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	14
None	14
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

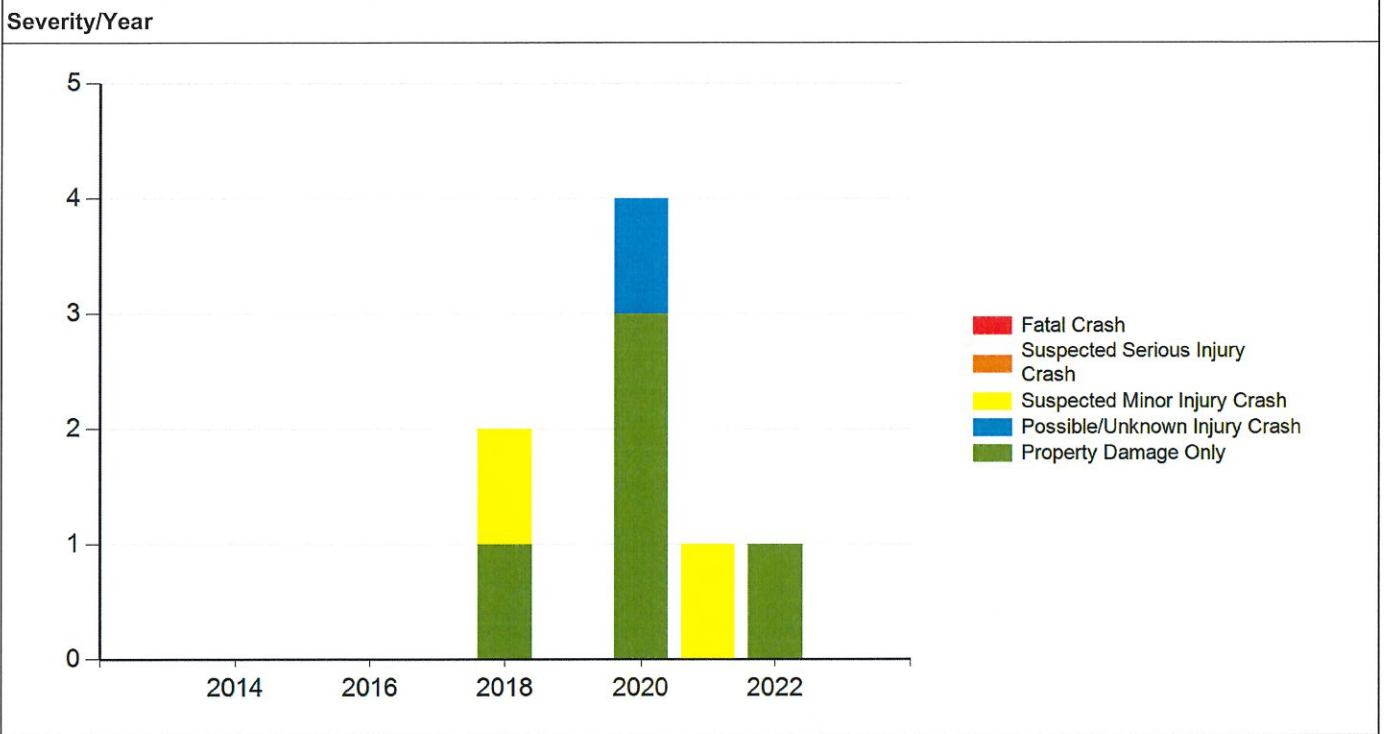
Drug Test Result	14
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	14
Other	0

Drug/Alcohol Related	8
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	8



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

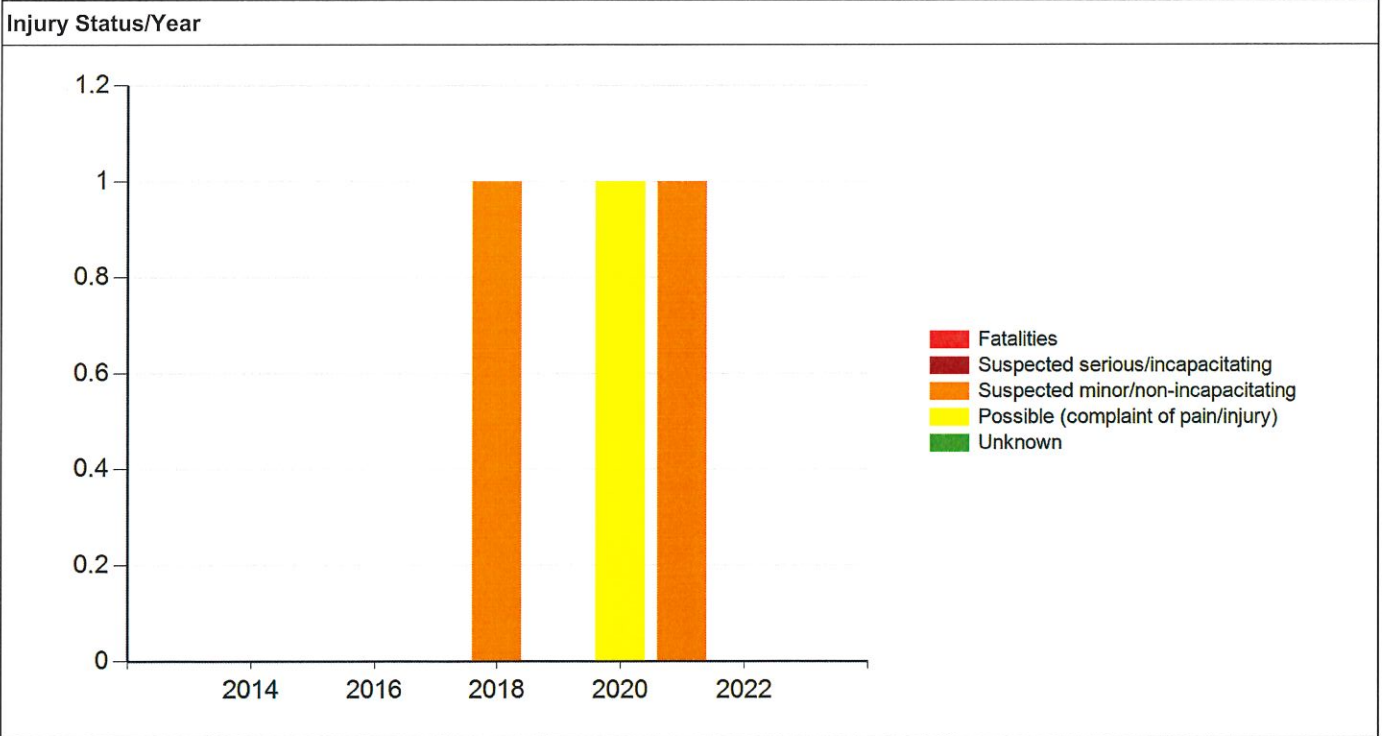
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	1	0	1	2
2019	0	0	0	0	0	0
2020	0	0	0	1	3	4
2021	0	0	1	0	0	1
2022	0	0	0	0	1	1
2023	0	0	0	0	0	0
<b>Total</b>	0	0	2	1	5	8





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	1	0	0	1
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	1	0	0	1
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	2	1	0	3





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

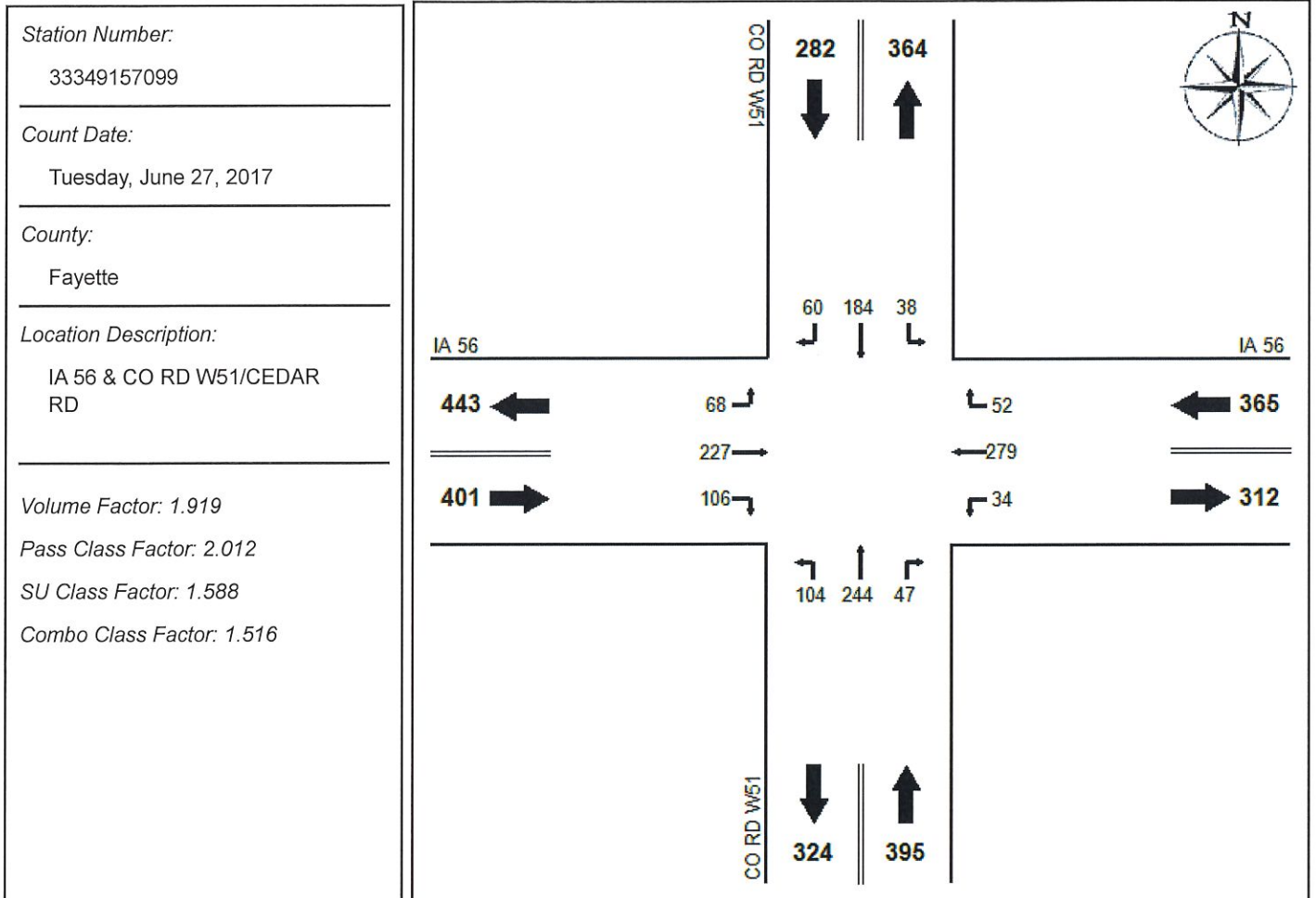
**Meeting the following criteria**

Jurisdiction: Statewide  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

250' buffer

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Annualized Daily Traffic For All Vehicles



**Raw Data-All Vehicles:**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
<b>07:00</b>	4	18	7	3	17	5	15	12	4	3	20	8
<b>08:00</b>	4	7	2	3	20	5	7	10	3	3	19	1
<b>11:00</b>	3	14	6	3	27	3	5	16	5	5	12	5
<b>12:00</b>	2	8	3	0	18	1	5	11	1	7	15	5
<b>15:00</b>	2	13	1	5	20	1	2	18	2	6	12	14
<b>16:00</b>	2	23	5	1	21	6	8	26	4	6	24	11
<b>17:00</b>	3	14	7	2	20	6	11	33	5	6	14	10

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Passenger Vehicles

Station Number:  
33349157099

---

Count Date:  
Tuesday, June 27, 2017

---

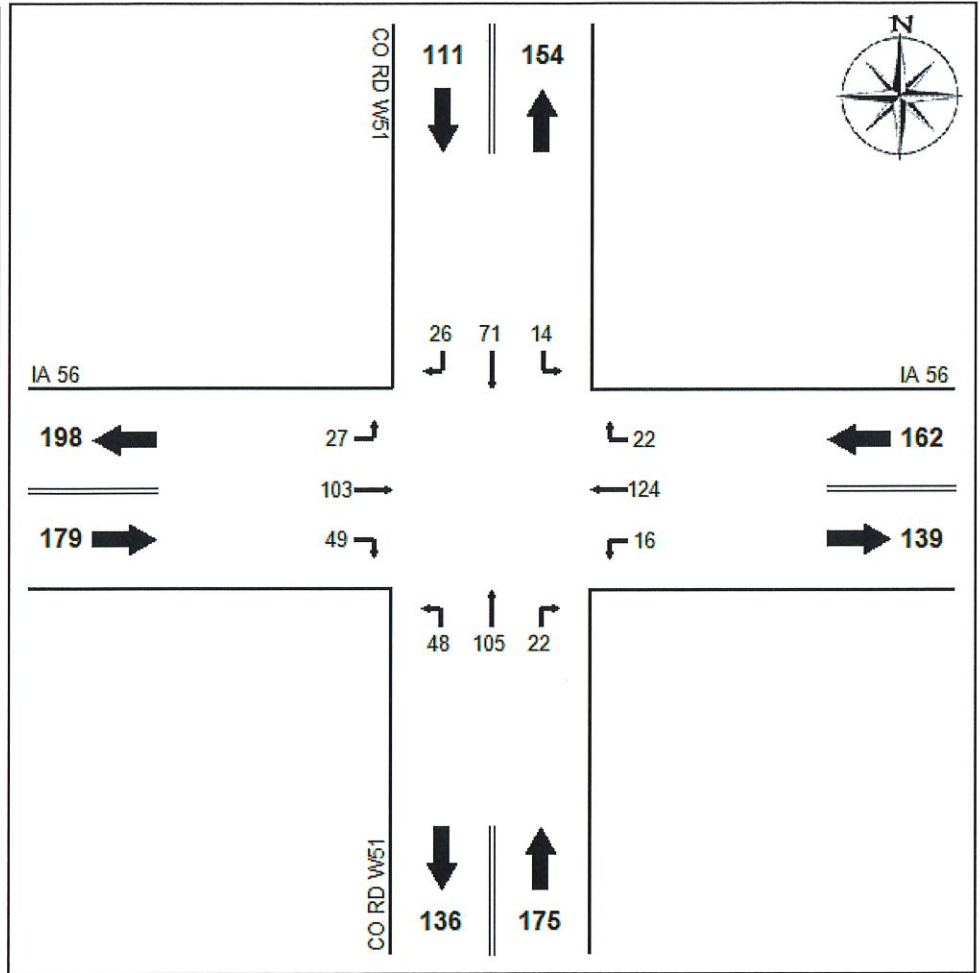
County:  
Fayette

---

Location Description:  
IA 56 & CO RD W51/CEDAR RD

---

Volume Factor: N/A  
 Pass Class Factor: N/A  
 SU Class Factor: N/A  
 Combo Class Factor: N/A



**Raw Data-Passenger Vehicles:**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	4	15	6	3	16	5	12	9	4	3	18	7
08:00	2	5	2	3	18	4	7	9	3	3	16	1
11:00	1	13	6	3	19	2	5	13	5	3	9	4
12:00	1	7	3	0	13	1	5	9	1	4	14	5
15:00	2	8	1	4	19	1	1	16	1	4	10	13
16:00	1	14	3	1	19	4	8	19	4	5	23	9
17:00	3	9	5	2	20	5	10	30	4	5	13	10

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Single-Unit Trucks

Station Number:  
33349157099

---

Count Date:  
Tuesday, June 27, 2017

---

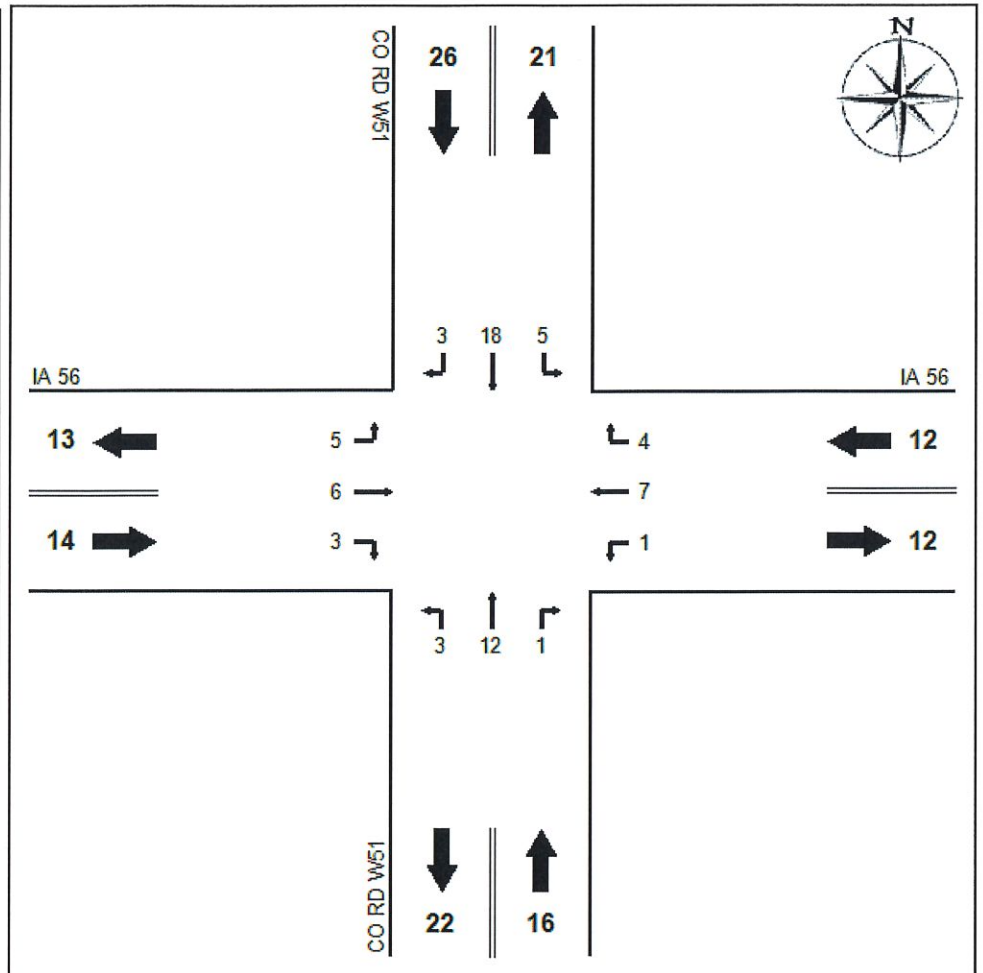
County:  
Fayette

---

Location Description:  
IA 56 & CO RD W51/CEDAR RD

---

Volume Factor: N/A  
 Pass Class Factor: N/A  
 SU Class Factor: N/A  
 Combo Class Factor: N/A



**Raw Data-Single-Unit Trucks:**

	N Leg			E Leg			S Leg			W Leg		
	L	T	R	L	T	R	L	T	R	L	T	R
07:00	0	1	0	0	1	0	1	3	0	0	2	0
08:00	1	2	0	0	0	1	0	0	0	0	2	0
11:00	2	1	0	0	4	1	0	1	0	2	0	1
12:00	1	1	0	0	0	0	0	0	0	1	1	0
15:00	0	3	0	1	0	0	1	2	0	1	1	0
16:00	1	5	2	0	2	1	0	6	0	0	0	2
17:00	0	5	1	0	0	1	1	0	1	1	0	0

**Iowa Department of Transportation**  
**Turning Movement Traffic Count Summary**  
 Vehicle Type: Combination Trucks

*Station Number:*  
33349157099

---

*Count Date:*  
Tuesday, June 27, 2017

---

*County:*  
Fayette

---

*Location Description:*  
IA 56 & CO RD W51/CEDAR RD

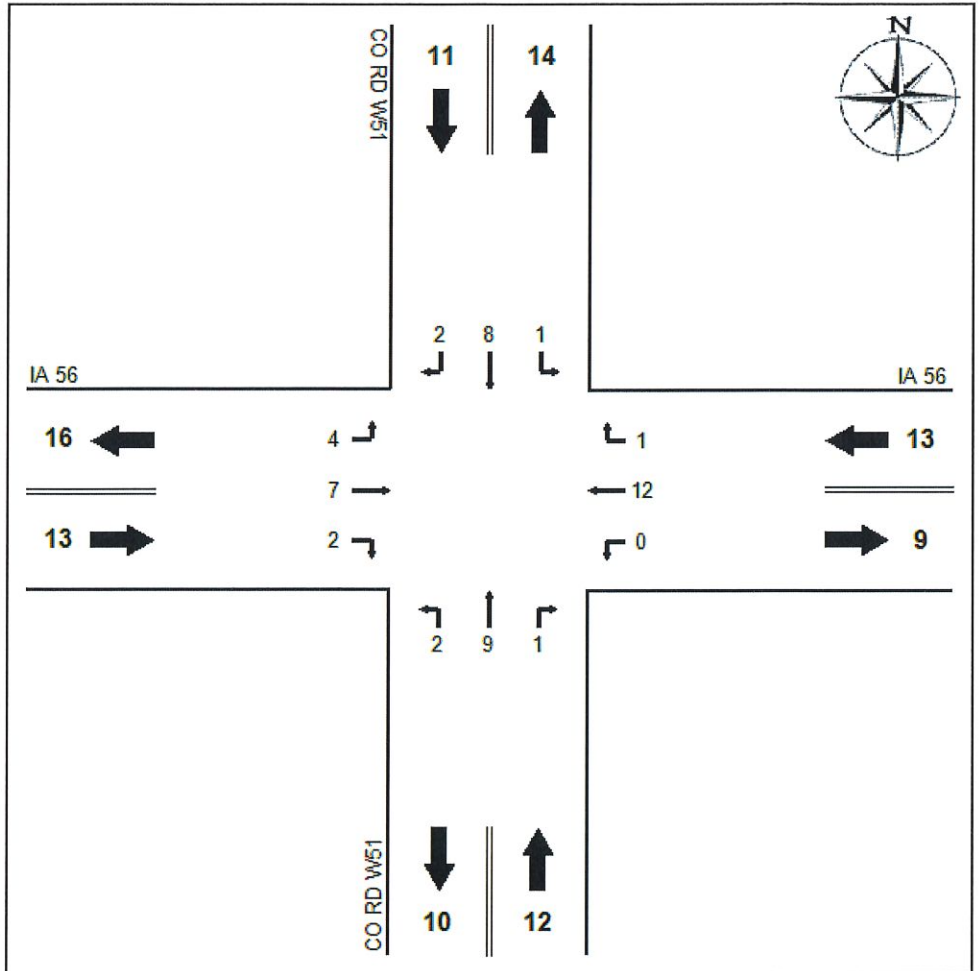
---

*Volume Factor: N/A*

*Pass Class Factor: N/A*

*SU Class Factor: N/A*

*Combo Class Factor: N/A*



**Raw Data-Combination Trucks:**

	N Leg			E Leg			S Leg			W Leg			
	L	T	R	L	T	R	L	T	R	L	T	R	
07:00	0	2	1	0	0	0	0	2	0	0	0	0	1
08:00	1	0	0	0	2	0	0	1	0	0	1	0	0
11:00	0	0	0	0	4	0	0	2	0	0	3	0	0
12:00	0	0	0	0	5	0	0	2	0	2	0	0	0
15:00	0	2	0	0	1	0	0	0	1	1	1	1	1
16:00	0	4	0	0	0	1	0	1	0	1	1	0	0
17:00	0	0	1	0	0	0	0	3	0	0	1	0	0



County:	Fayette	Prepared By:	Nick Humpal
Location:	IA 56/W-51 Intersection	Date Prepared:	8/11/2023
Proposed Improvements:	Sideroad approach angle realignment to 90 degrees		
Estimated Improvement Cost:	\$ 961,676		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 19,234

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF			
	13.36839416	13.4			
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	13.4	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	13.4	0.00	0.00
Minor Injury (B)	\$ 265,000	2	13.4	0.40	0.05
Possible/Unknown Injury (C)	\$ 125,000	1	13.4	0.20	0.03
Property Damage Only (O)	\$ 20,000	5	13.4	1.00	0.13

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 14,170
Possible/Unknown Injury (C)	\$ 3,342
Property Damage Only (O)	\$ 2,674

### Total Benefits and Costs

		Implementation Cost	\$ 961,676
		Present Value of Maint.	\$ 261,390
Present Value Benefits (Societal Benefits)	\$ 298,166	Present Value Costs (Impl. and Maint. Costs)	\$ 1,223,066
Present Value Net Return	\$ (924,900)		
<b>Benefit Cost Ratio</b>	<b>0.24</b>		

Form continues on next page

County: Fayette  
Location: IA 56/W-51 Intersection

Prepared By: Nick Humpal  
Date Prepared: 8/11/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** August 13, 2023

Location / Title of Project IA141 from Charter Oak to US59 (MP 42.62 to MP 52.68)

Applicant Iowa DOT District 3

Contact Person Jessica Felix, P.E. Title D3 District Engineer

Complete Mailing Address 6409 Gordon Drive  
Sioux City, Iowa 51106

Phone 712-202-6591 E-Mail Jessica.Felix@iowadot.us  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_  
\_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 2,350,000 HSIP – 1,700,000

Total Project Cost \$ 2,350,000

**Safety Funds Requested** \$ 500,000

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or “Risk Score”>50% from County/City’s Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

**Potential for Crash Reduction (PCR) Information**

Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Iowa Department of Transportation

Signed:  08/17/2023  
Signature Date Signed

Jessica Felix  
Printed Name

Attest: \_\_\_\_\_  
Signature Date Signed

\_\_\_\_\_  
Printed Name

Narrative – IA 141 from Charter Oak to US 59 (MP 42.62 to MP 52.68)

Iowa Department of Transportation District 3 has acquired Highway Safety Improvement Program (HSIP) funding for paved shoulders along IA 141 from Charter Oak to US 59. The HSIP funding was garnered by the need to reduce lane departures along this route. Within the paved shoulder project, new paint lines, shoulder and centerline rumbles will be incorporated along the 10.06-mile route.

Crash data gathered for the HSIP application from 2018 to 2022 had a fatality and a suspected minor injury crash. Additionally, there have been 4 more possible injuries and 23 property damage crashes. Before 2018, this corridor has had 2 previous fatalities and 6 series injuries. There has been a total of 75 crashes from 2013 to today. For 2018-2022, the cost benefit of adding additional paved width with four-foot paved shoulders is 2.17:1.

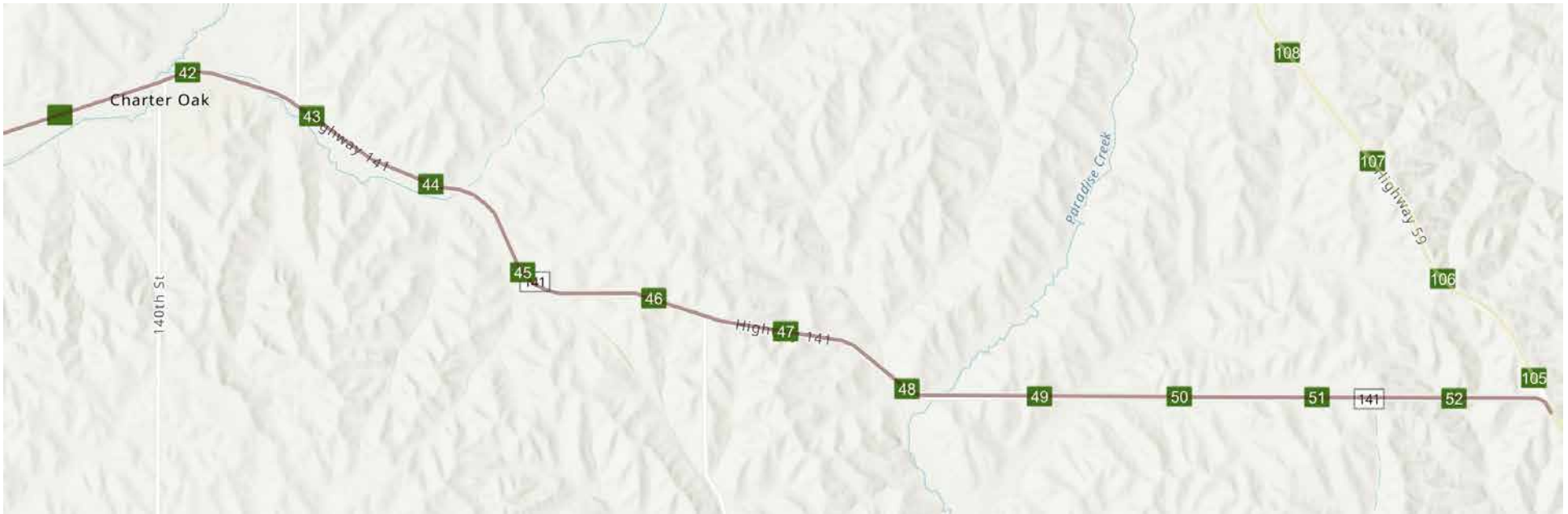
District 3 will additionally have a tied project to mill and resurface the roadway. The 3R project will extend culverts, replace outdated guardrail, remove trees within the clear zone, and flatten driveway slopes as needed.

	Item No.	Units	Quantity/mile	Unit Cost	Per Mile Cost	Total Cost	Description
<b>SHOULDERS</b>							
Paved Shld HMA / per side	2122-5500060	SY	2346.67	\$ 49.73	\$ 116,699.73	\$ 2,347,998.63	PAVED SHLD, HMA, 6"
<b>SUBBASE</b>							
Class 13 Excavation	2213-2713300	CY	1955.56	\$ 22.64	\$ 44,273.78	\$ 445,394.20	EXCAVATION, CL 13, WIDEN
Special Backfill	2102-0425071	CY	977.78	\$ 59.22	\$ 57,904.00	\$ 582,514.24	SPECIAL BACKFILL
<b>RUMBLE STRIPS</b>							
Rumble Strips centerline	2548-0000310	STA	52.80	\$ 18.65	\$ 984.72	\$ 9,906.28	MILLED CENTERLINE RUMBLE STRIP
Rumble Strips shoulder	2548-0000100	STA	52.80	\$ 17.75	\$ 937.20	\$ 18,856.46	MILLED SHLD RUMBLE STRIP

**Total\* \$ 3,404,669.83**

\*From iPDWeb 08-2023

<b>Schedule IA 141 4' Paved Shoulders</b>		
<b>D00</b>	Pre-Design Concept	12/23/2023
<b>D02</b>	Design Field Exam	4/4/2024
<b>D05</b>	Turn-In	10/1/2024
<b>L03</b>	Letting	12/17/2024
<b>C02</b>	Construction Period	6/1/2025

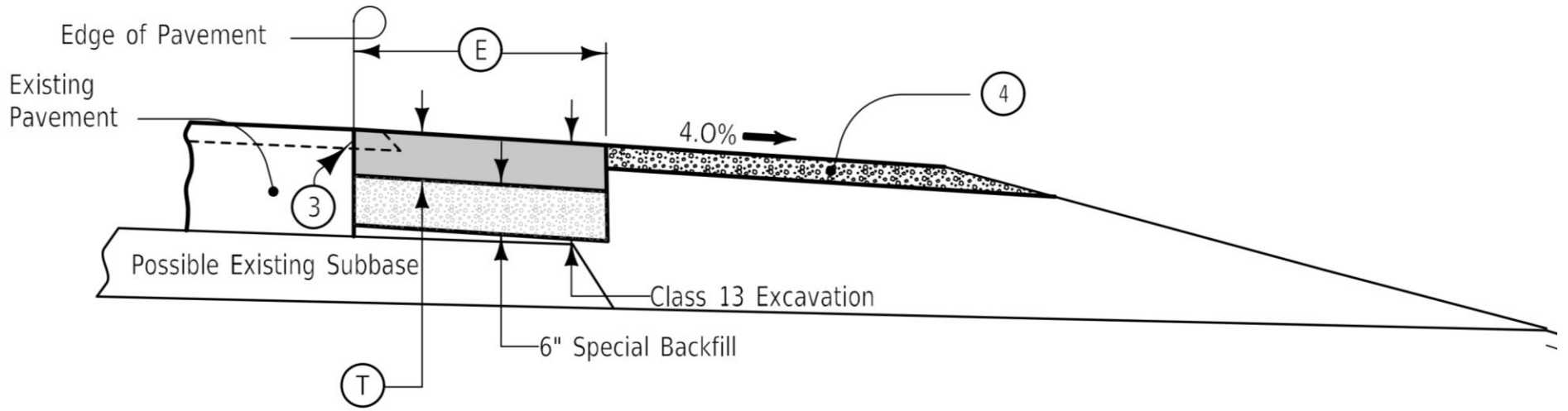


Project Location: IA 141 from MP 42.62 – MP 52.68





IA 141 from Charter Oak to US 59



IA 141 from Charter Oak to US 59



IA 141 from Charter Oak to US 59



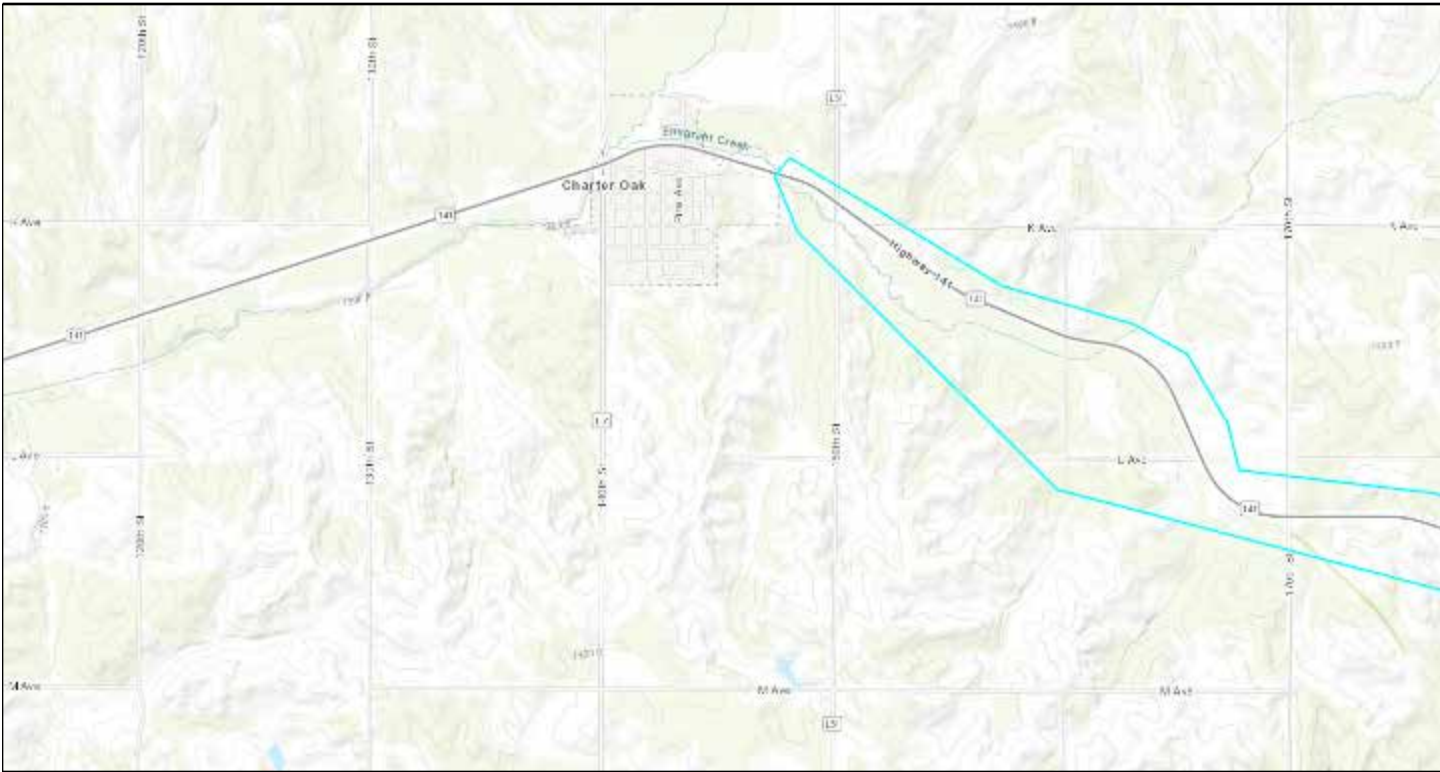
Iowa Crash Analysis Tool  
 Driver Characteristics  
 2018-2022

Crash Severity	29
Fatal Crash	1
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	1
Possible/Unknown Injury Crash	4
Property Damage Only	23

Injury Status Summary	6
Fatalities	1
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	4
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	198,200.00
Average (per crash dollars):	6,834.48
Total Vehicles:	39.00
Average (per crash):	1.34
Total Occupants:	49.00
Average (per crash):	1.69

Average Severity	
Fatalities/Fatal Crash:	1.00
Fatalities/Crash:	0.03
Injuries/Crash:	0.17
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.03
Possible/Unknown Injuries/Crash:	0.14





Iowa Crash Analysis Tool  
Driver Characteristics  
2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	1	0	0	0	1
= 18	1	1	0	0	2
= 19	0	0	0	0	0
= 20	2	0	0	0	2
>= 21 and <= 24	1	0	0	0	1
>= 25 and <= 29	3	1	0	0	4
>= 30 and <= 34	0	1	0	0	1
>= 35 and <= 39	1	5	0	0	6
>= 40 and <= 44	2	3	0	0	5
>= 45 and <= 49	1	0	0	0	1
>= 50 and <= 54	1	0	0	0	1
>= 55 and <= 59	1	2	0	0	3
>= 60 and <= 64	1	5	0	0	6
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	1	0	0	1
>= 75 and <= 79	2	1	0	0	3
>= 80 and <= 84	0	1	0	0	1
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	17	22	0	0	39

Driver Charged	39
Yes	3
No	0
Not applicable	0
Unknown	0
Not reported	36

Driver Condition	39
Apparently normal	25
Emotional (e.g., depressed, angry)	0
Asleep/fatigued	0
Illness/fainted	0
Medical condition (seizure, reaction)	0
Under the influence of alcohol	0
Under the influence of drugs/meds	1
Physical impairment	0
Walks with a cane/crutches	0
Paraplegic/wheelchair restricted	0
Impaired due to previous injury	0
Hearing impaired/deaf	0
Visually impaired	0
Not reported	12
Other	0
Unknown	1

Vision Obscured	39
Not obscured	22
Trees/crops	0
Embankment	0
Hillcrest	0
Building(s)	0
Sign/billboard	0
Parked vehicle(s)	0
Moving vehicle(s)	1
Person/object in or on vehicle	0
Blinded by sun or headlights	1
Broken/dirty windshield	0
Frosted windows/windshield	0
External mirror	0
Blowing snow	3
Fog/smoke/dust	0
Splash/spray of passing vehicle	0
Inadequate vehicle lighting	0
Exterior angle/blind spot on vehicle	0
Not reported	12
Other	0
Unknown	0



Iowa Crash Analysis Tool  
Driver Characteristics  
2018-2022

Driver's License State		39	
Alaska	0	Alabama	0
Arkansas	0	Arizona	0
California	0	Colorado	0
Connecticut	0	Washington DC	0
Delaware	0	Florida	0
Georgia	0	Hawaii	0
Iowa	38	Idaho	0
Illinois	0	Indiana	0
Kansas	0	Kentucky	0
Louisiana	0	Massachusetts	0
Maryland	0	Maine	0
Michigan	0	Minnesota	0
Missouri	0	Mississippi	0
Montana	0	North Carolina	0
North Dakota	0	Nebraska	0
New Hampshire	0	New Jersey	0
New Mexico	0	Nevada	0
New York	0	Ohio	0
Oklahoma	0	Oregon	0
Pennsylvania	0	Rhode Island	0
South Carolina	0	South Dakota	1
Tennessee	0	Texas	0
Utah	0	Virginia	0
Vermont	0	Washington	0
Wisconsin	0	West Virginia	0
Wyoming	0	Not reported	0



Iowa Crash Analysis Tool  
 Driver Characteristics  
 2018-2022

<b>Alcohol Test Given</b>	<b>39</b>
None	39
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

<b>Drug Test Given</b>	<b>39</b>
None	38
Blood	1
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

<b>Driver Distraction</b>	<b>39</b>
Not applicable/no driver	1
Not distracted	33
Electronic: Manual operation of an electroni...	1
Electronic: Talking on hand-held device	0
Electronic: Talking on hands-free device	0
Electronic: Adjusting devices (radio, climat...	0
Other distraction: Passenger	0
Other distraction: Unrestrained animal	0
Other distraction: Eating or drinking relate...	0
Other distraction: Smoking related	0
Other distraction: Reaching for object(s)/fa...	1
Other distraction: Inattentive/lost in thoug...	0
Other distraction: Looked but did not see	1
Not reported	0
Electronic: Other activity with electronic d...	0
Other distraction inside vehicle	0
Distraction outside vehicle	1
Unknown	1

<b>Drug Test Result</b>	<b>39</b>
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	39
Other	0



Iowa Crash Analysis Tool  
 Driver Characteristics  
 2018-2022

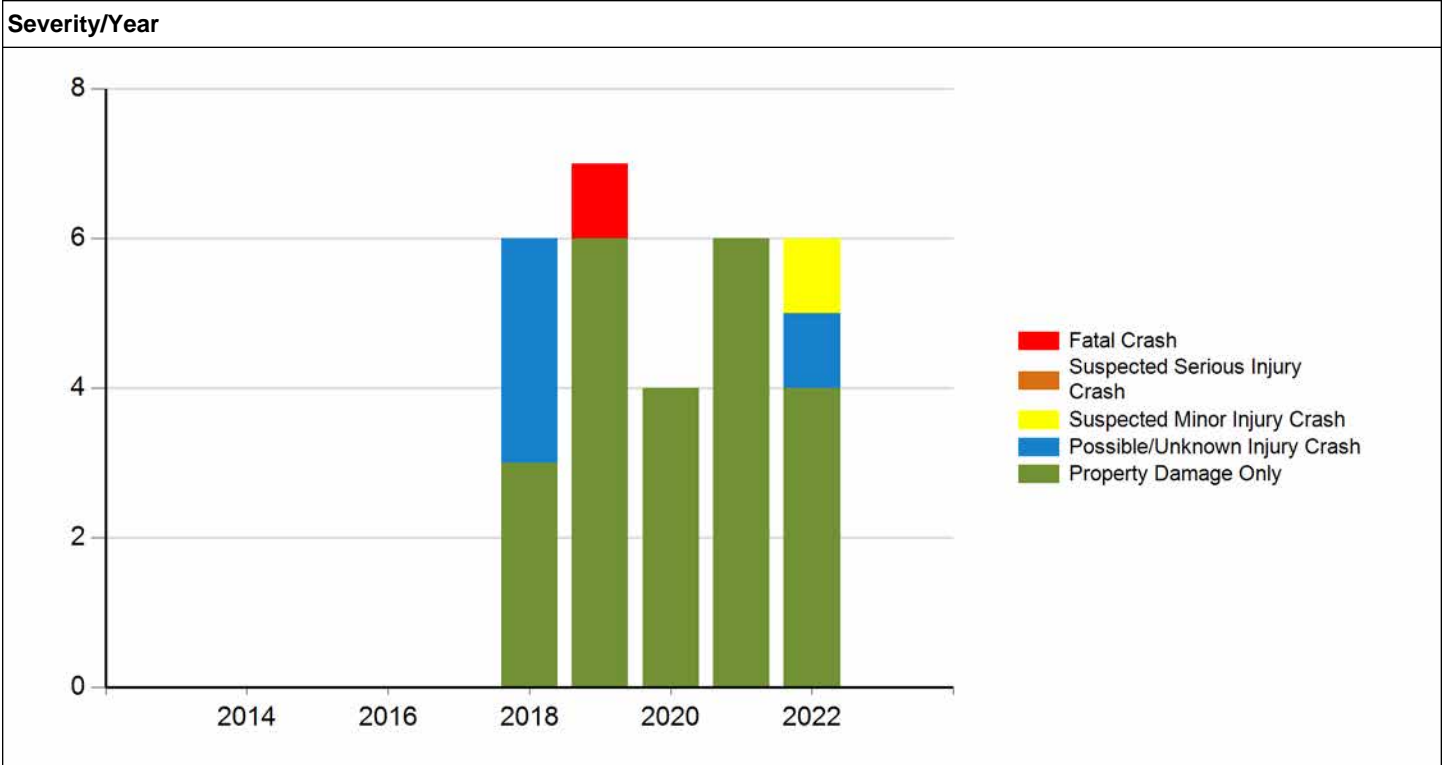
Contributing Circumstance - Driver		39	
Ran traffic signal	0	Ran stop sign	0
Exceeded authorized speed	0	Driving less than the posted speed limit	0
Driving too fast for conditions	0	Lost control	6
Followed too close	1	Operating vehicle in an reckless, erratic, ca...	1
Improper or erratic lane changing	0	Aggressive driving/road rage	0
Made improper turn	0	Failed to yield to emergency vehicle	0
Traveling wrong way/on wrong side	0	Traveling on prohibited traffic way	0
Over-correcting/over-steering	0	Failed to keep in proper lane	1
Failure to signal intentions	0	Swerved to avoid: vehicle, object, non-motori...	0
Starting or backing improperly	0	Failure to dim lights/have lights on	0
Vehicle stopped on railroad tracks	0	Vehicle drove around grade crossing gates	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: Making right turn on red signal	0
FTYROW: From driveway	0	FTYROW: From parked position	0
FTYROW: To non-motorist	0	FTYROW: At uncontrolled intersection	0
Other: Vision obstructed	0	Other: Operating without required equipment	0
Other: Failure to obey displayed vehicle war...	0	Other: Disregarded signs/road markings	0
Other: Illegal off-road driving	0	Other: Towing improperly	0
Other: Getting off/out of vehicle	0	Other: Overloading/improper loading with pas...	0
Operator inexperience	0	Not reported	0
No improper action	25	Passing: Other passing	1
FTYROW: Other FTYROW	0	Other	4
Unknown	0		





Iowa Crash Analysis Tool  
Driver Characteristics  
2018-2022

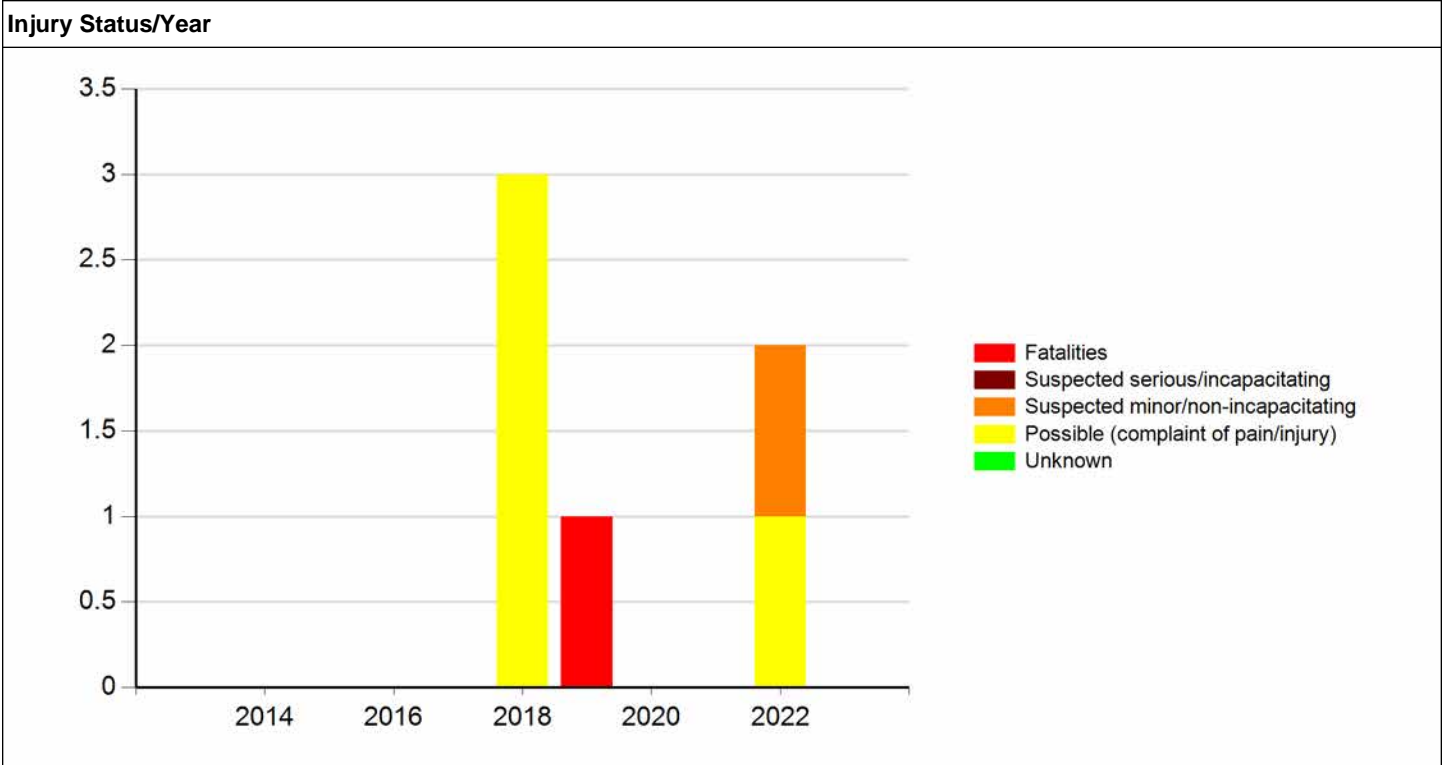
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	3	3	6
2019	1	0	0	0	0	6	7
2020	0	0	0	0	0	4	4
2021	0	0	0	0	0	6	6
2022	0	0	1	1	1	4	6
2023	0	0	0	0	0	0	0
<b>Total</b>	1	0	1	4	23		29





Iowa Crash Analysis Tool  
Driver Characteristics  
2018-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	3	0	3
2019	1	0	0	0	0	1
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	1	1	0	2
2023	0	0	0	0	0	0
<b>Total</b>	1	0	1	4	0	6

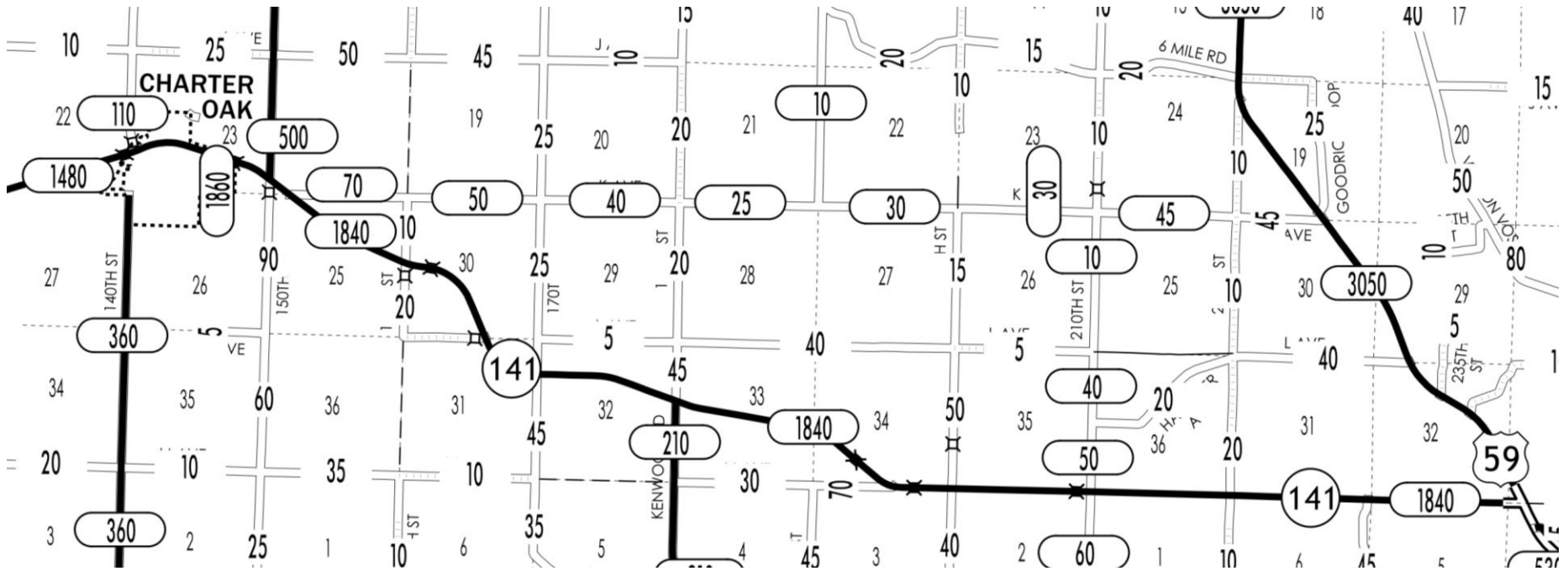




**Meeting the following criteria**

Jurisdiction: Statewide  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**



IA 141 from Charter Oak to US 59

County:	Crawford	Prepared By:	Laura Sievers
Location:	IA 141 from Charter Oak to US 59	Date Prepared:	9/1/2023
Proposed Improvements:	Paved Shoulder with Centerline and Shoulder Rumbles		
Estimated Improvement Cost:	\$ 1,700,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 34,000

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	2
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	CRF 2:	Combined CRF		
	20	7	21.1		
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	1	21.1	0.20	0.04
Serious Injury (A)	\$ 4,000,000		21.1	0.00	0.00
Minor Injury (B)	\$ 265,000	1	21.1	0.20	0.04
Possible/Unknown Injury (C)	\$ 125,000	4	21.1	0.80	0.17
Property Damage Only (O)	\$ 20,000	23	21.1	4.60	0.97

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ 168,536
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 11,166
Possible/Unknown Injury (C)	\$ 21,067
Property Damage Only (O)	\$ 19,382

### Total Benefits and Costs

	Implementation Cost	\$ 1,700,000	
	Present Value of Maint.	\$ 462,071	
Present Value Benefits (Societal Benefits)	\$ 3,251,781	Present Value Costs (Impl. and Maint. Costs)	\$ 2,162,071
Present Value Net Return	\$ 1,089,709		
<b>Benefit Cost Ratio</b>	<b>1.50</b>		

Form continues on next page

County:

Crawford

Prepared By: Laura Sievers

Location:

IA 141 from Charter Oak to US 59

Date Prepared: 9/1/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** 8/08/2023

Location / Title of Project Destination lighting at 11 intersections

Applicant Jackson County

Contact Person Jayden Scheckel Title Assistant Engineer

Complete Mailing Address 201 W Platt Street  
Maquoketa, Iowa 52060

Phone (563) 652-4782 E-Mail jscheckel@jacksoncounty.iowa.gov  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 326,700

Total Project Cost \$ 326,700

**Safety Funds Requested** \$ 326,700

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

- Yes – Explain \_\_\_\_\_  
 No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Jackson County Secondary Roads

Signed: Jayden Scheckel 08/08/2023  
Signature Date Signed

Jayden Scheckel  
Printed Name

Attest: Mike Steines 8-8-23  
Signature Date Signed

Mike Steines – Member Chair  
Printed Name



**JACKSON COUNTY SECONDARY ROAD DEPARTMENT**

**POLICY AND PROCEDURES**

**FOR**

**INSTALLATION OF DESTINATION LIGHTS**

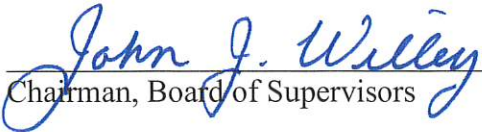
**SUBJECT:** Establish department procedures and policies for installation of destination lights at the intersection of paved roads in Jackson County. Destination lighting is the lighting of an intersection for the purpose of providing a means for the driver of a vehicle to visually locate the intersection at a distance and be guided to the intersection with minimum distraction to through traffic. A destination light installation shall consist of a single luminaire per intersection.

**GENERAL:** The Jackson County Board of Supervisors recognizes the need to improve the visibility of roadway intersections to the traveling public. It is the policy of Jackson County to review roadway intersections and consider intersections for the installation of destination lights. This policy statement will cover the procedures to be followed in accordance with this objective.

**PROCEDURES:** The Jackson County Secondary Road Department will evaluate all paved road intersections and determine if destination lights are warranted. These evaluations will include review of annual daily traffic counts for each intersection approach leg and reported crash history. Requests for destination lights from the public shall be evaluated based on this policy. All existing destination lights within the county will not be subject to this policy for re-evaluation.

Once installed the maintenance cost and energy cost to maintain the lights shall be borne by the Jackson County Secondary Road Department. The continued maintenance and energy costs of the lights are subject to available funding.

APPROVED BY THE JACKSON COUNTY BOARD OF SUPERVISORS

  
Chairman, Board of Supervisors

11-29-22  
Date



**Jackson County Secondary Roads**  
**201 West Platt Street**  
**Maquoketa, IA 52060**  
 Phone 563-652-4782 Fax 563-652-4244  
 Todd Kinney, P.E. Jackson County Engineer

August 08, 2023

TSIP Application – Site Specific  
 Destination Lighting  
 11 Various Intersections

**11 Intersections**

Jackson County is applying for TSIP funding for destination lighting of eleven (11) various intersections. The 11 intersections are listed below in the order of priority for funding with 1 being highest priority and 11 being least priority.

Intersection	Funding Priority
395 <sup>th</sup> Avenue & 308 <sup>th</sup> Street	1
US 61 & 63 <sup>rd</sup> Street	2
IA 62 & Rockdale Road	3
Caves Road (Y31) & 172 <sup>nd</sup> Avenue	4
Bernard Road (Y31) & West Bellevue Cascade Road	5
IA 62 & Bellevue Cascade Road	6
113 <sup>th</sup> Avenue & Bellevue Cascade Road	7
50 <sup>th</sup> Avenue (Y34) & 150 <sup>th</sup> Street (E17)	8
US 52 & Green Island Road	9
IA 62 & 35 <sup>th</sup> Street	10
387 <sup>th</sup> Avenue (Z20) & 150 <sup>th</sup> Street (E17)	11

**Existing Conditions**

All of the intersections currently contain no lighting. The type of roadway, speed limits, and AADT of each intersecting roadway for each intersection is listed in the table below.

Intersection	Roadway Type	Speed Limit	AADT
395 <sup>th</sup> Avenue & 308 <sup>th</sup> Street			
• 395 <sup>th</sup> Avenue	2-lane secondary paved road	40 mph	670 vpd
• 308 <sup>th</sup> Street	2-lane secondary paved road	35 mph	200 vpd
US 61 & 63 <sup>rd</sup> Street			
• US 61	4-lane primary paved road	65 mph	8100 vpd
• 63 <sup>rd</sup> Street	2-lane secondary paved road	40 mph	420 vpd
IA 62 & Rockdale Road			
• IA 62	2-lane primary paved road	55 mph	2030 vpd
• Rockdale Road	2-lane secondary paved road	55 mph	900 vpd
Caves Road (Y31) & 172 <sup>nd</sup> Avenue			
• Caves Road (Y31)	2-lane secondary paved road	55 mph	1250 vpd
• 172 <sup>nd</sup> Avenue	2-lane secondary paved road	55 mph	420 vpd

Intersection	Roadway Type	Speed Limit	AADT
Bernard Road (Y31) & West Bellevue Cascade Road			
• Bernard Road (Y31)	2-lane secondary paved road	55 mph	900 vpd
• West Bellevue Cascade Road	2-lane secondary paved road	55 mph	590 vpd
IA 62 & Bellevue Cascade Road			
• IA 62	2-lane primary paved road	55 mph	1110 vpd
• Bellevue Cascade Road	2-lane secondary paved road	55 mph	610 vpd
113 <sup>th</sup> Avenue & Bellevue Cascade Road			
• 113 <sup>th</sup> Avenue	2-lane secondary paved road	40 mph	430 vpd
• Bellevue Cascade Road	2-lane secondary paved road	55 mph	660 vpd
50 <sup>th</sup> Avenue (Y34) & 150 <sup>th</sup> Street (E17)			
• 50 <sup>th</sup> Avenue (Y34)	2-lane secondary paved road	55 mph	230 vpd
• 150 <sup>th</sup> Street (E17)	2-lane secondary paved road	55 mph	690 vpd
US 52 & Green Island Road			
• US 52	2-lane primary paved road	55 mph	930 vpd
• Green Island Road	2-lane secondary paved road	35 mph	70 vpd
IA 62 & 35 <sup>th</sup> Street			
• IA 62	2-lane primary paved road	55 mph	2030 vpd
• 35 <sup>th</sup> Street	2-lane secondary paved road	55 mph	240 vpd
387 <sup>th</sup> Avenue (Z20) & 150 <sup>th</sup> Street (E17)			
• 387 <sup>th</sup> Avenue (Z20)	2-lane secondary paved road	55 mph	260 vpd
• 150 <sup>th</sup> Street (E17)	2-lane secondary paved road	55 mph	430 vpd

### **Proposed Concept**

The proposed concept for each intersection is listed below:

#### **Intersection of 395<sup>th</sup> Ave & 308<sup>th</sup> St**

- Install a breakaway luminaire pole on the left side of traffic approaching 395<sup>th</sup> Avenue from 308<sup>th</sup> Street. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of 308<sup>th</sup> Street. Luminaire will also be located 48 feet from the near edge of 395<sup>th</sup> Avenue traveled way.

#### **Intersection of US 61 & 63<sup>rd</sup> St**

- Install a breakaway luminaire pole on the left side of traffic approaching US 61 from 63<sup>rd</sup> Street. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of 63<sup>rd</sup> Street. Luminaire will also be located 48 feet from the near edge of US 61 traveled way.

#### **Intersection of IA 62 & Rockdale Rd**

- Install a breakaway luminaire pole on the right side of traffic approaching IA 62 from Rockdale Road. The luminaire will be placed on the right side due to existing overhead wires crossing over Rockdale Road if the luminaire were to be placed on the left side. The pole will be approximately 12 feet beyond the edge-of-pavement of Rockdale Road. Luminaire will also be located 48 feet from the near edge of IA 62 traveled way.

**Intersection of Caves Rd (Y34) & 172<sup>nd</sup> Ave**

- Install a breakaway luminaire pole on the right side of traffic approaching Caves Road (Y31) from 172<sup>nd</sup> Avenue. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of 172<sup>nd</sup> Avenue. Luminaire will also be located 48 feet from the near edge of Caves Road (Y31) traveled way.

**Intersection of Bernard Rd (Y31) & W Bellevue Cascade Rd**

- Install a breakaway luminaire pole on the left side of traffic approaching Bernard Road (Y31) from West Bellevue-Cascade Road. The luminaire will be placed approximately 14 feet beyond the edge-of-pavement of West Bellevue-Cascade Road. Luminaire will also be located 48 feet from the near edge of Bernard Road (Y31) traveled way.

**Intersection of IA 62 & Bellevue Cascade Rd**

- Install a breakaway luminaire pole on the left side of traffic approaching IA 62 from Bellevue-Cascade Road. The luminaire will be placed approximately 14 feet beyond the edge-of-pavement of Bellevue-Cascade Road. Luminaire will also be located 48 feet from the near edge of IA 62 traveled way.

**Intersection of 113<sup>th</sup> Ave & Bellevue Cascade Rd**

- Install a breakaway luminaire pole on the left side of traffic approaching Bellevue-Cascade Road from 113th Avenue. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of 113th Avenue. Luminaire will also be located 48 feet from the near edge of Bellevue-Cascade Road traveled way.

**Intersection of 50<sup>th</sup> Ave (Y34) & 150<sup>th</sup> St (E17)**

- Install a breakaway luminaire pole on the left side of traffic approaching 150th Street (E17) from 50th Avenue (Y34). The luminaire will be placed approximately 12 feet beyond the edge-of-pavement of 50th Avenue. Luminaire will also be located 48 feet from the near edge of 150th Street traveled way.

**Intersection of US 52 & Green Island Rd**

- Install a breakaway luminaire pole on the left side of traffic approaching US 52 from Green Island Road. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of Green Island Road. Luminaire will also be located 48 feet from the near edge of US 52 traveled way.

**Intersection of IA 62 & 35<sup>th</sup> St**

- Install a breakaway luminaire pole on the left side of traffic approaching IA 62 from 35th Street. The luminaire will be placed approximately 10 feet beyond the edge-of-pavement of 35th Street. Luminaire will also be located 48 feet from the near edge of IA 62 traveled way.

**Intersection of 387<sup>th</sup> Ave (Z20) & 150<sup>th</sup> St (E17)**

- Install a breakaway luminaire pole on the left side of traffic approaching 150th Street (E17) from 387th Avenue. The luminaire will be placed approximately 12 feet beyond the edge-of-pavement of 387th Avenue (Z20). Luminaire will also be located 48 feet from the near edge of 150th Street (E17) traveled way.

### **Justification**

Placement of a luminaire at this location will follow Jackson County policy of destination lights at all paved road intersections within the County. Jackson County currently has 14 intersections of paved roads that are unlighted. Of the 14 unlighted intersections, 3 intersections will be lighted with a wood luminaire pole, and the remaining 11 intersections will be lighted with a breakaway luminaire pole. Jackson County is looking for TSIP funding for the 11 breakaway poles, and the remaining 3 wood poles would be paid for with local funds. The luminaire location distance along with the required clear zone is listed for each intersection in the table below.

<b>Intersection</b>	<b>Required Clear Zone (ft)</b>	<b>Luminaire Distance (ft)</b>
395 <sup>th</sup> Avenue & 308 <sup>th</sup> Street	7-10 feet	10 feet
US 61 & 63 <sup>rd</sup> Street	10-12 feet	10 feet
IA 62 & Rockdale Road	20-24 feet	12 feet
Caves Road (Y31) & 172 <sup>nd</sup> Avenue	10-12 feet	10 feet
Bernard Road (Y31) & West Bellevue Cascade Road	16-18 feet	14 feet
IA 62 & Bellevue Cascade Road	16-18 feet	14 feet
113 <sup>th</sup> Avenue & Bellevue Cascade Road	10-12 feet	10 feet
50 <sup>th</sup> Avenue (Y34) & 150 <sup>th</sup> Street (E17)	16-18 feet	12 feet
US 52 & Green Island Road	7-10 feet	10 feet
IA 62 & 35 <sup>th</sup> Street	14-18 feet	10 feet
387 <sup>th</sup> Avenue (Z20) & 150 <sup>th</sup> Street (E17)	16-18 feet	12 feet

### **Cost Estimate**

The cost estimate of the proposed improvements for each intersection is \$29,700; a total of \$326,700 for all 11 intersections. It is proposed to fund the cost of the project with TSIP funds. The project will be constructed within the existing Right-of-Way.

#### Stickley Electric Costs

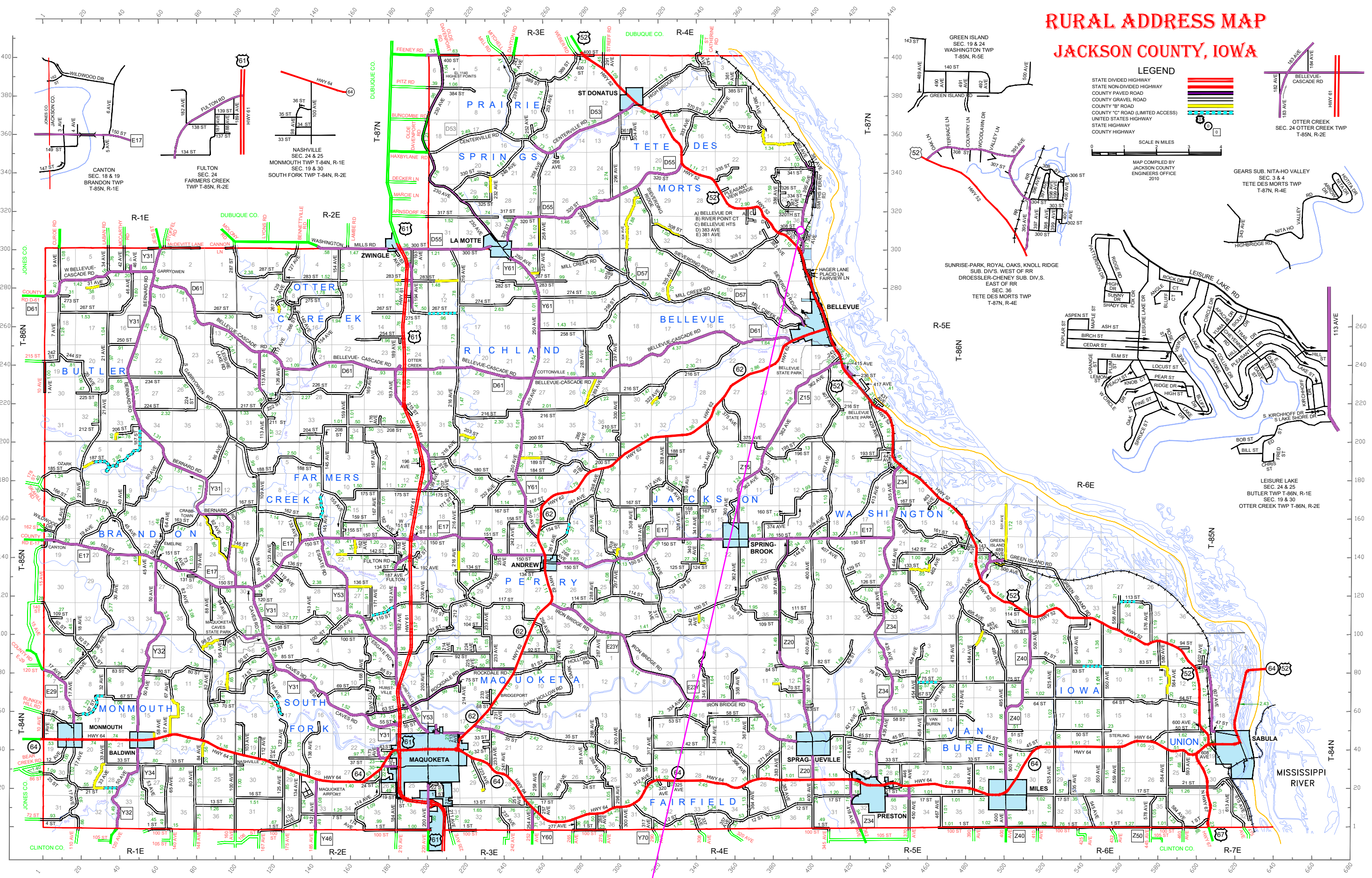
<b>Item</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Cost</b>	<b>Total Cost</b>
(1) Breakaway Pole	11	EA	\$19,000	\$209,000
PCC Base and Wiring	11	EA	\$8,000	\$88,000
10% Contingency				\$29,700
<b>TOTAL</b>				<b>\$326,700</b>

### **Time Schedule**

The project is proposed for fiscal year 2025 with construction anticipated to be completed by the end of fall 2024.

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA

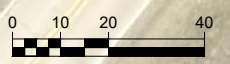


PROJECT LOCATION



Sep 9, 2022 at 1:41:44 PM  
39100-39598 308th St  
Bellevue IA 52031  
United States

PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:	-	-	-	-
CHECKED BY:	-	-	-	-

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**395TH AVENUE & 308TH STREET**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\395th Avenue & 308th Street\CADD\Linework\_395th Ave & 308th St.dwg



Crash Severity		1
Fatal Crash	1	
Suspected Serious Injury Crash	0	
Suspected Minor Injury Crash	0	
Possible/Unknown Injury Crash	0	
Property Damage Only	0	

Injury Status Summary		1
Fatalities	1	
Suspected serious/incapacitating	0	
Suspected minor/non-incapacitating	0	
Possible (complaint of pain/injury)	0	
Unknown	0	

Property/Vehicles/Occupants	
Property Damage Total (dollars):	10,100.00
Average (per crash dollars):	10,100.00
Total Vehicles:	1.00
Average (per crash):	1.00
Total Occupants:	1.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	1.00
Fatalities/Crash:	1.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			1
Animal	0	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week															Total
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported		
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Manner of Crash Collision	1
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	1
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	0	1
Bridge overhead structure	0	0
Bridge/bridge rail parapet	0	0
Ditch	0	0
Ground	0	0
Guardrail - face	0	0
Concrete traffic barrier (median or right sid...	0	0
Cable barrier	0	0
Utility pole/light support	0	0
Traffic signal support	0	0
Fire hydrant	0	0
Tree	1	0
Snow bank	0	0
Wall	0	0
Other fixed object	0	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	1	0	0	1
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	1	0	0	1

Alcohol Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

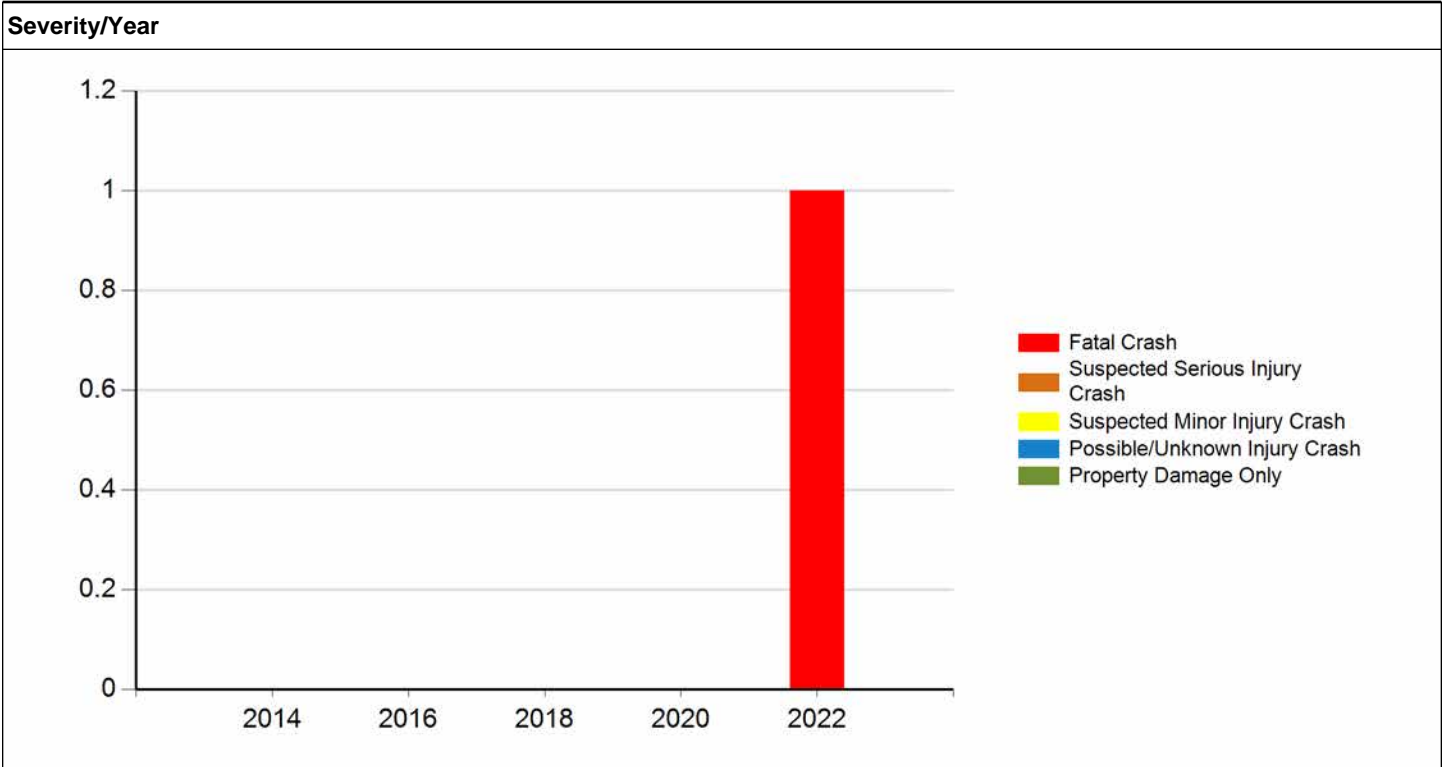
Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	1



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

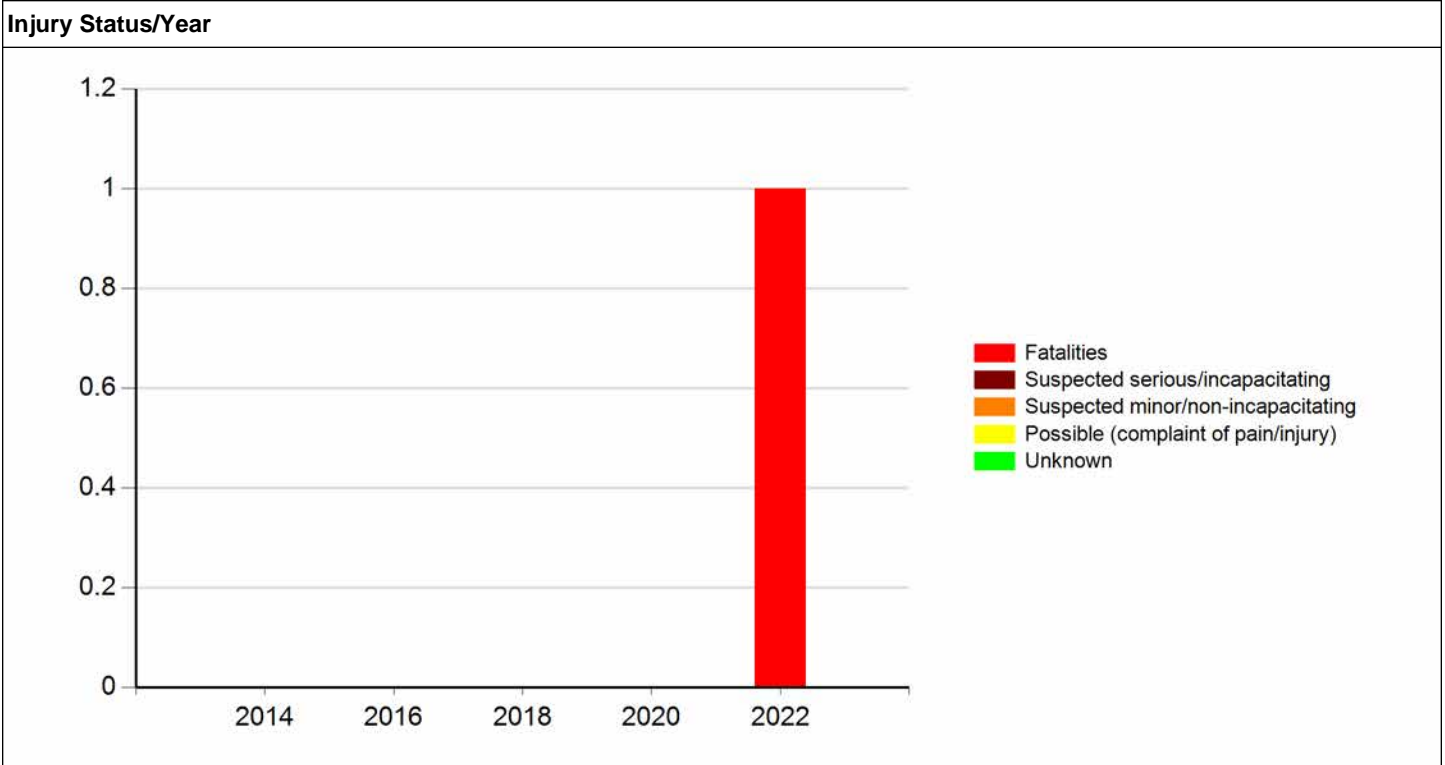
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	1	0	0	0	0	1
2023	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	0	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	1	0	0	0	0	1
2023	0	0	0	0	0	0
<b>Total</b>	1	0	0	0	0	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	<b>JACKSON</b>	Prepared By:	<b>JAYDEN SCHECKEL</b>
Location:	<b>395TH AVENUE &amp; 308TH STREET</b>	Date Prepared:	<b>8/8/2023</b>
Proposed Improvements:	<b>DESTINATION LIGHT AT INTERSECTION</b>		
Estimated Improvement Cost:	<b>\$ 29,700</b>		
Inflation on Crash Costs:	<b>4%</b>	Annual Maintenance:	<b>2%</b>
Discount Rate:	<b>4%</b>	(% of Improvement Cost)	
Estimated Service Life:	<b>15</b>	Annual Maintenance Cost:	<b>\$ 594</b>

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	<b>1%</b>
Number of CRFs:	<b>1</b>
Years of Crash History:	<b>5</b>

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	<b>CRF 1:</b>		<b>Combined CRF</b>
CRF Value (%)	<b>50</b>		<b>50.0</b>

	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	1	50.0	<b>0.20</b>	<b>0.10</b>
Serious Injury (A)	\$ 4,000,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Minor Injury (B)	\$ 265,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Property Damage Only (O)	\$ 20,000	0	50.0	<b>0.00</b>	<b>0.00</b>

	Annual Societal Benefit				
Crash Severity					
Fatal (K)	\$ <b>400,000</b>				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ -				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Property Damage Only (O)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 4,738,069	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ 4,701,764		
<b>Benefit Cost Ratio</b>	<b>130.51</b>		

Form continues on next page



County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

395TH AVENUE &amp; 308TH STREET

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

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No change to Crash Costs

No change to Discount Rate

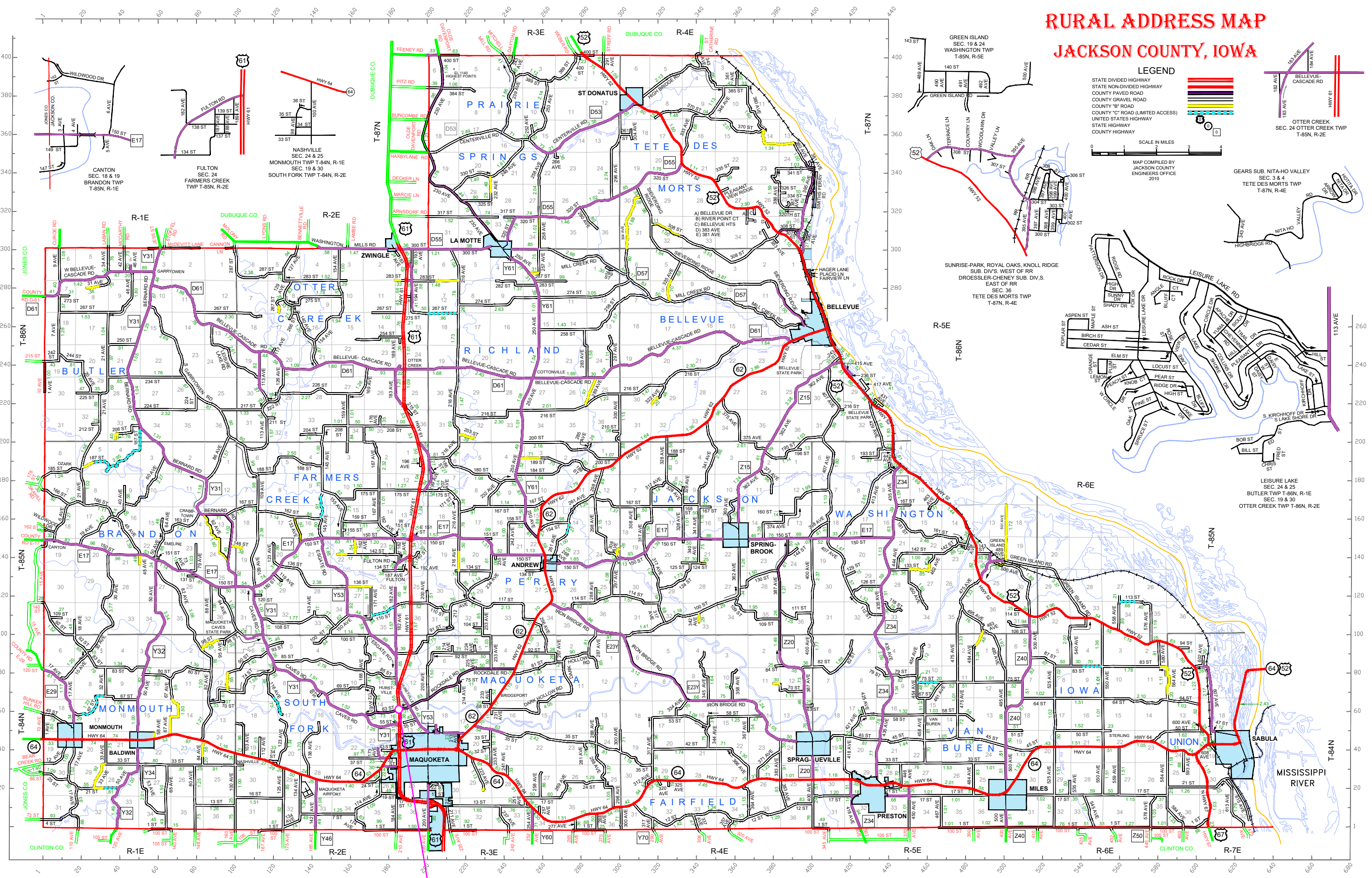
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA

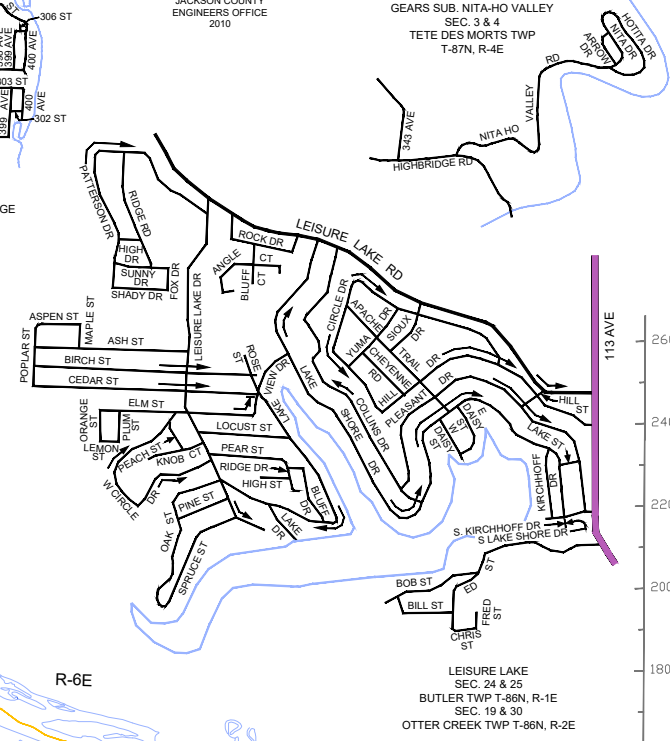
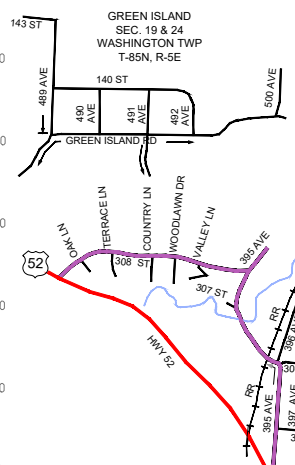
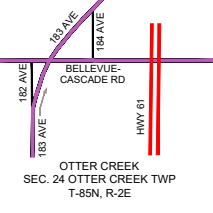


**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

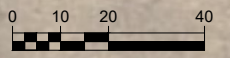
MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010



PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:				
CHECKED BY:				

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**US 61 & 63RD STREET**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\US 61 & 63rd Street\CADD\Linework\_US61 & 63rd St.dwg

<b>Crash Severity</b>	<b>7</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	4
Property Damage Only	3

<b>Injury Status Summary</b>	<b>4</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	4
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	137,000.00
Average (per crash dollars):	19,571.43
Total Vehicles:	13.00
Average (per crash):	1.86
Total Occupants:	14.00
Average (per crash):	2.00

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.57
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.57





Iowa Crash Analysis Tool  
Quick Report  
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Major Cause			7
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	2	FTYROW: From yield sign	2
FTYROW: Making left turn	1	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	1
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	7
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	1
Broadside (front to side)	5
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	7
Dry	6
Wet	0
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	13
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	13



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	1	0	0	0	1
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	1	2	0	0	3
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	3	0	0	3
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	2	1	0	0	3
>= 60 and <= 64	0	2	0	0	2
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	1	0	0	0	1
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>5</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>13</b>

Alcohol Test Given	13
None	13
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	13
None	13
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	13
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	13
Other	0

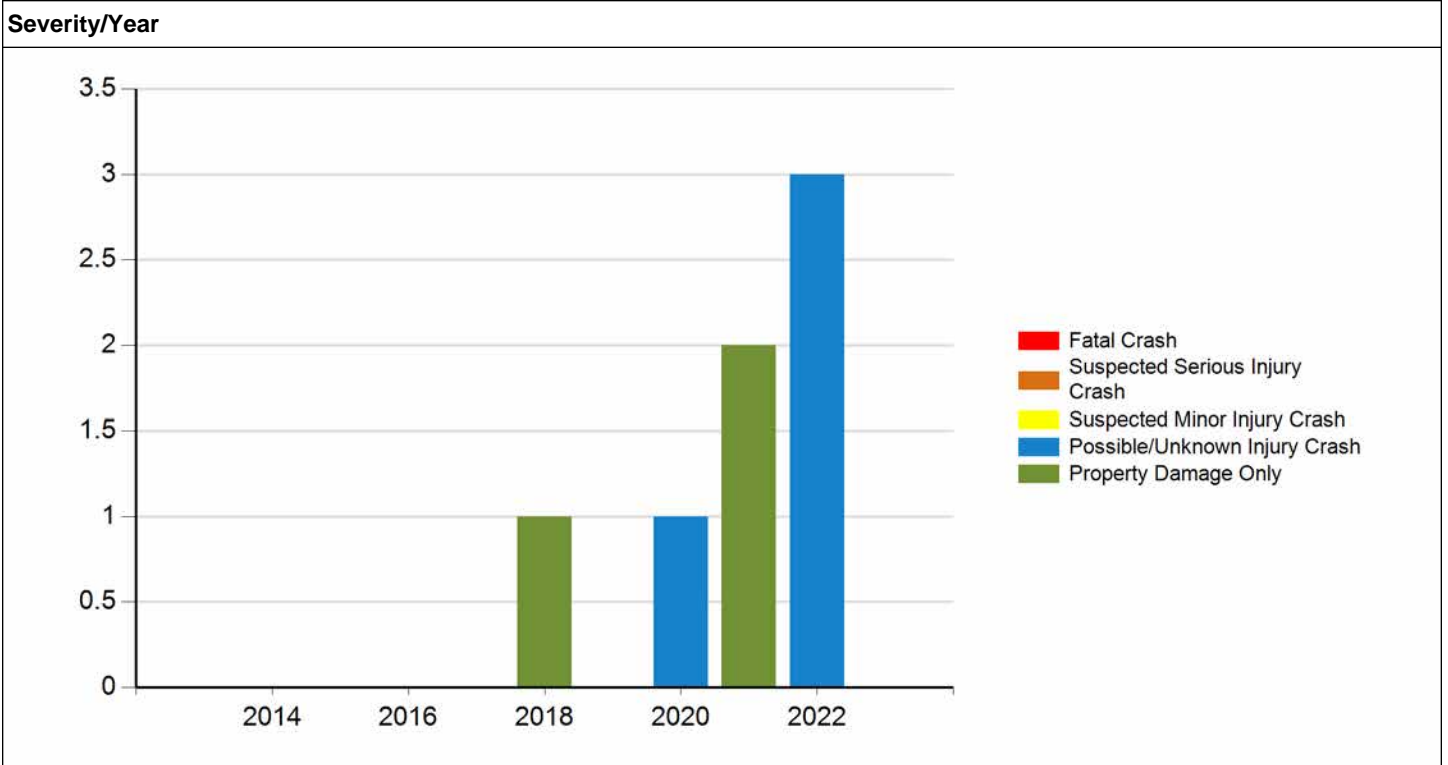
Drug/Alcohol Related	7
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	7





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

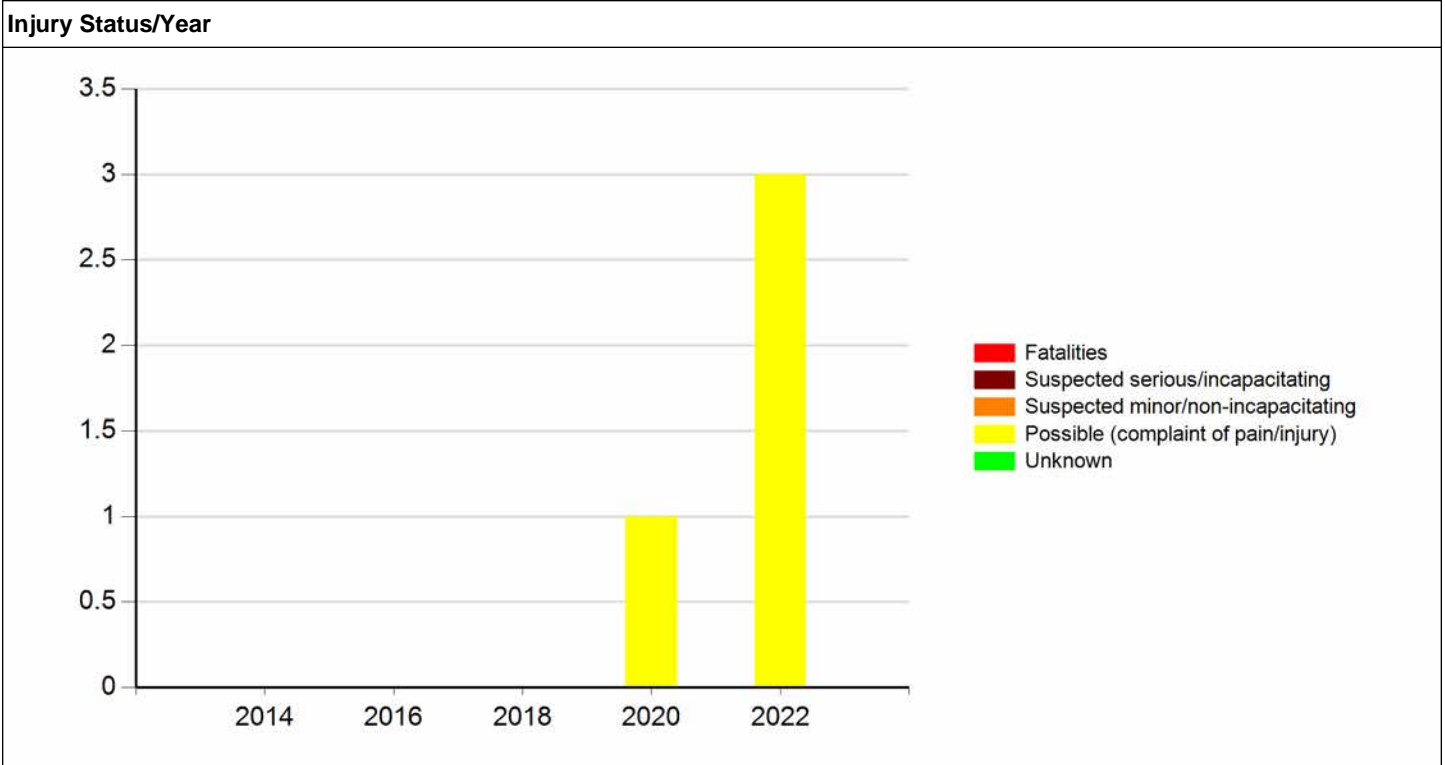
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	1	1
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	0	0	2	2
2022	0	0	0	3	0	3
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	4	3	7





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	0	0	0	0
2022	0	0	0	3	0	3
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	4	0	4





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	US 61 & 63RD STREET	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:		Combined CRF		
CRF Value (%)	50		50.0		
		Rounded	Crash History	CRF (from	Crash History -
		Societal Costs	(Total):	above)	Annual Avg
Crash Severity					Crashes Saved
Fatal (K)	\$ 4,000,000		0	50.0	0.00
Serious Injury (A)	\$ 4,000,000		0	50.0	0.00
Minor Injury (B)	\$ 265,000		0	50.0	0.00
Possible/Unknown Injury (C)	\$ 125,000		4	50.0	0.80
Property Damage Only (O)	\$ 20,000		3	50.0	0.60

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ 50,000				
Property Damage Only (O)	\$ 6,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 663,330	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ 627,025		
<b>Benefit Cost Ratio</b>	<b>18.27</b>		

Form continues on next page

County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

US 61 &amp; 63RD STREET

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

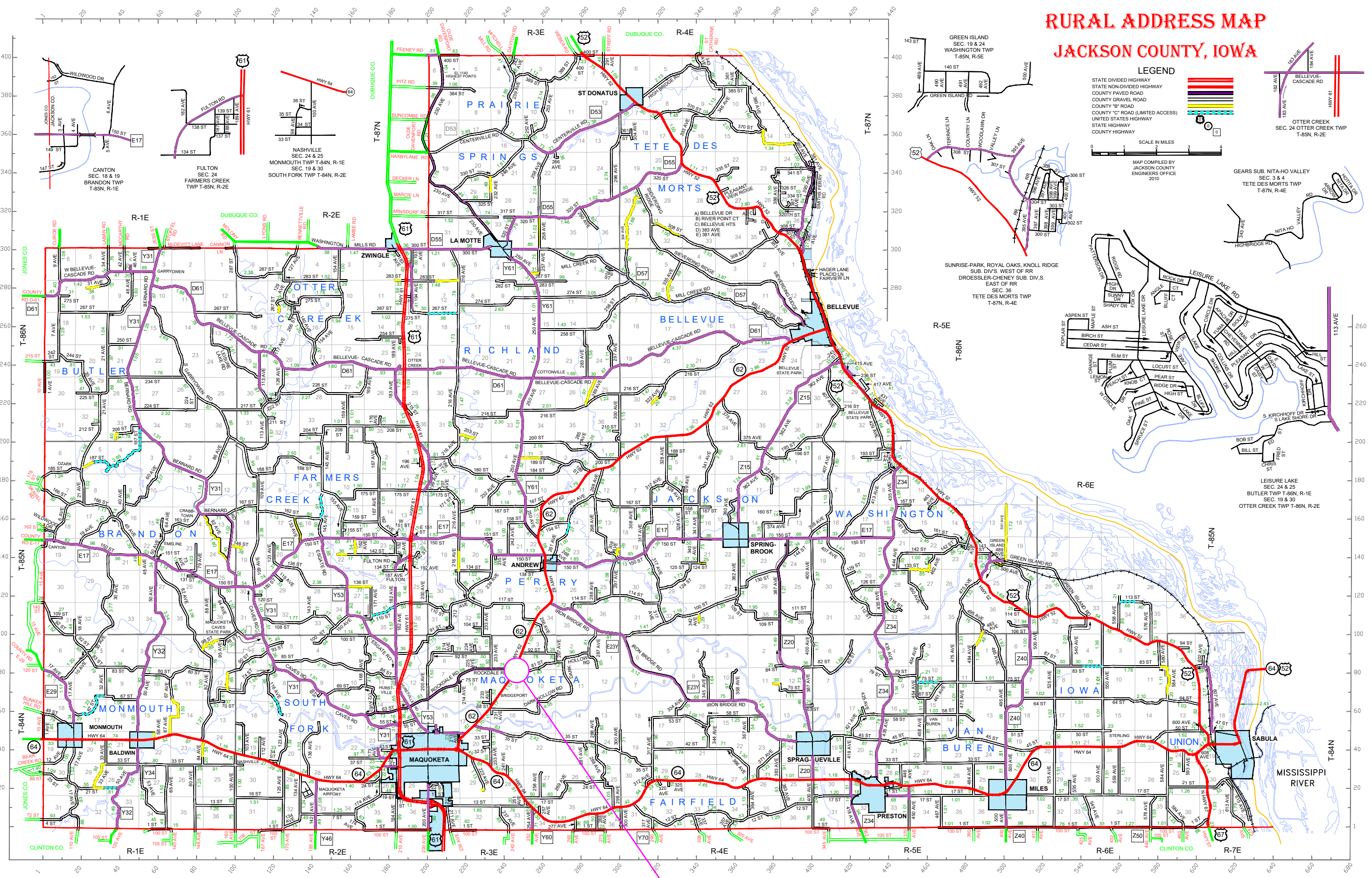
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA



**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

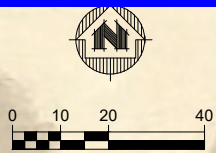
MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010

PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION

**EXHIBIT G & H**



FISCAL YEAR:	NO.	DATE	REVISION	BY:

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**IA 62 AND ROCKDALE ROAD**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\IA 62 & Rockdale Road\CADD\Linework\_IA62&Rockdale.dwg





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Crash Severity	2
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	2

Injury Status Summary	0
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	7,600.00
Average (per crash dollars):	3,800.00
Total Vehicles:	3.00
Average (per crash):	1.50
Total Occupants:	3.00
Average (per crash):	1.50

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			2
Animal	0	Ran traffic signal	0
Ran stop sign	1	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	1
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	1	0	0	0	0	0	0	1	0	0	2

Manner of Crash Collision	2
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	2
Dry	2
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	3
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	1
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...)	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	2



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	1	0	0	1
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	1	0	0	1
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	1	0	0	1
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	3	0	0	3

Alcohol Test Given	3
None	2
Blood	0
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	3
None	3
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

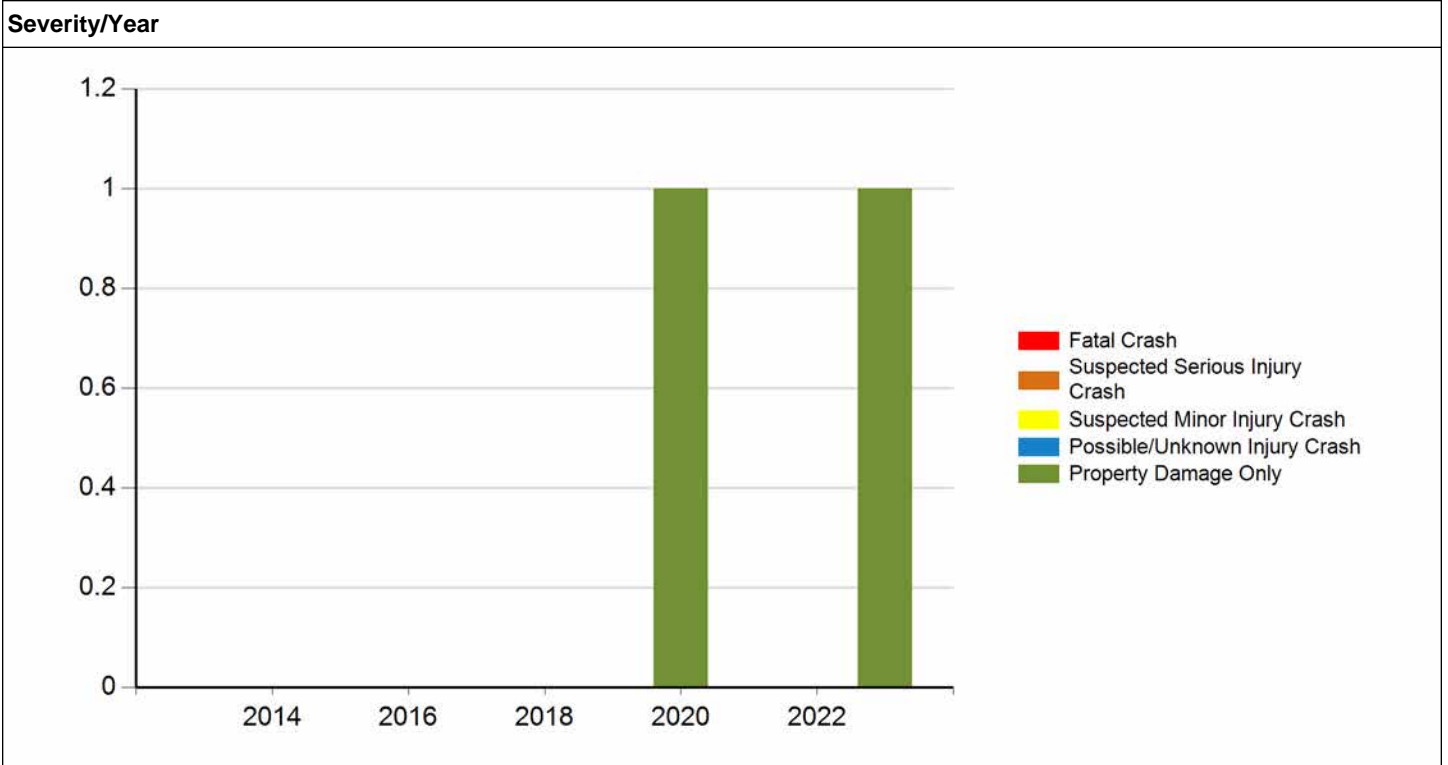
Drug Test Result	3
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	3
Other	0

Drug/Alcohol Related	2
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	2



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

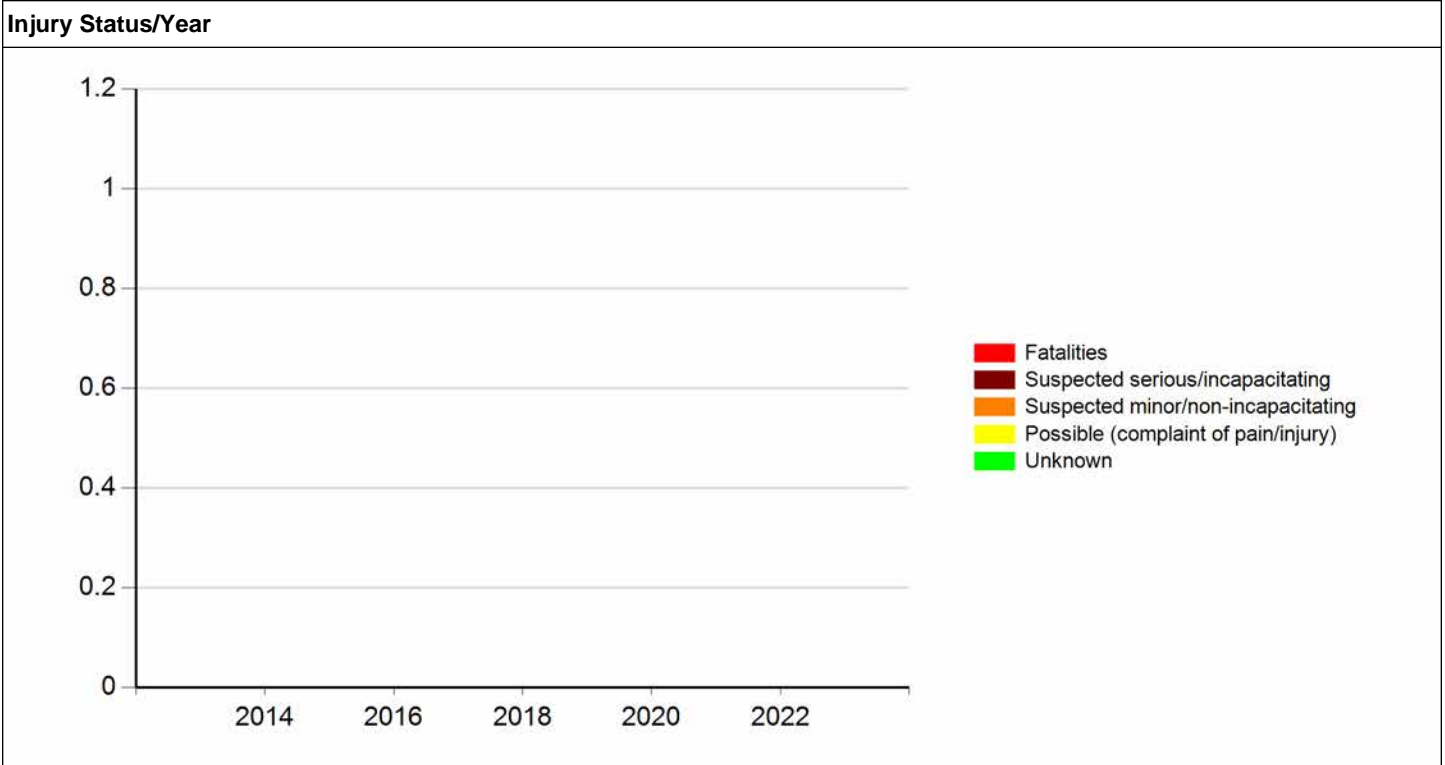
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	1	1
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	1	1
<b>Total</b>	0	0	0	0	2	2





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	IA 62 & ROCKDALE ROAD	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	2	50.0	0.40	0.20

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 4,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 47,381	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ 11,076		
<b>Benefit Cost Ratio</b>	<b>1.31</b>		

Form continues on next page



County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

IA 62 &amp; ROCKDALE ROAD

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

---

No change to Crash Costs

No change to Discount Rate

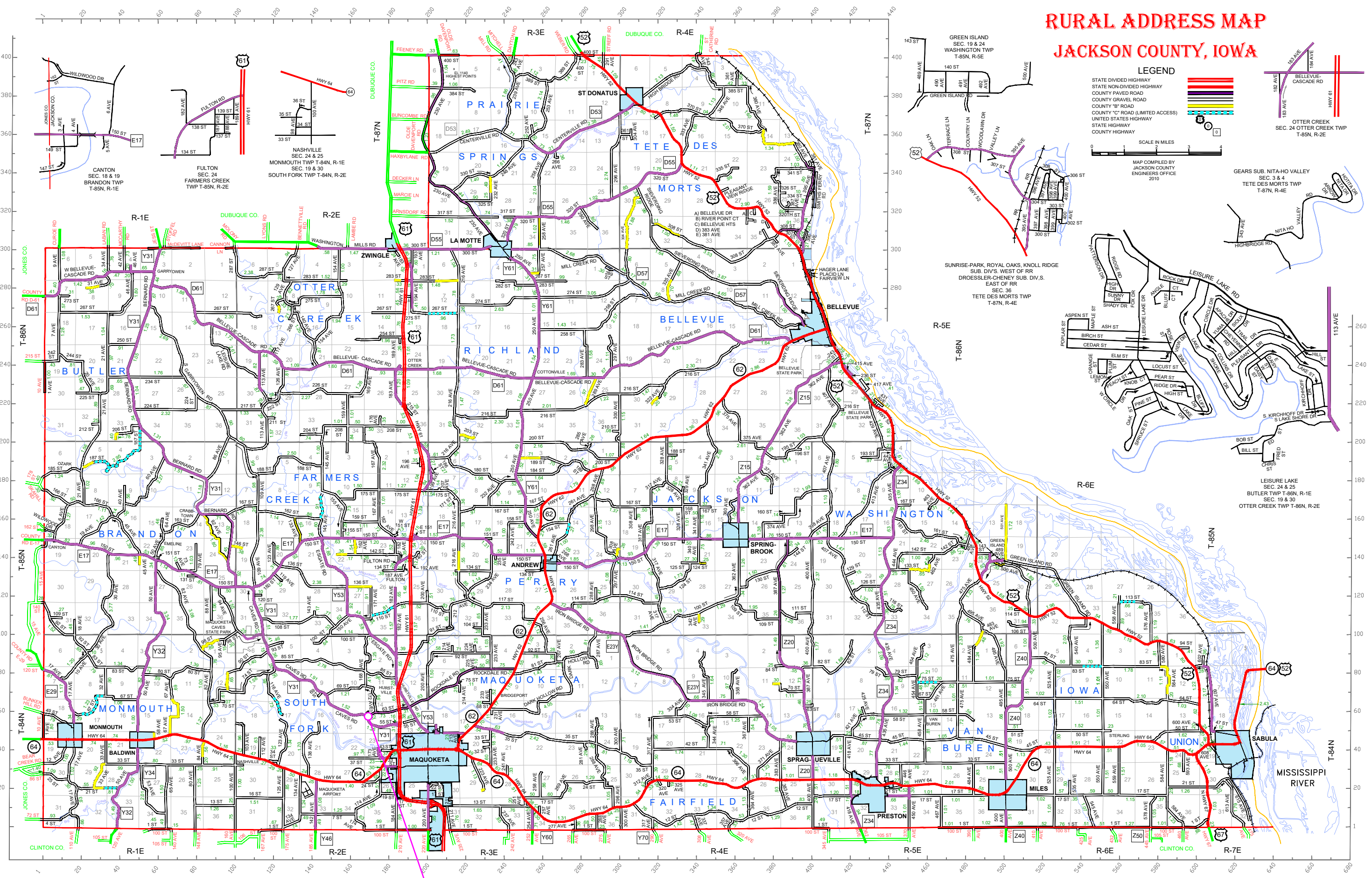
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA



**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

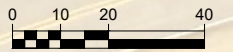
SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010

**PROJECT LOCATION**



PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:				
CHECKED BY:				



JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: [jceng@jacksoncounty.iowa.gov](mailto:jceng@jacksoncounty.iowa.gov)  
 Web: <https://jacksoncounty.iowa.gov>

JACKSON COUNTY

PROJECT NUMBER  
 DESTINATION LIGHTING

SHEET NAME  
 CAVES ROAD (Y31) & 172ND AVE

SHEET NO.  
 1

Crash Severity		1
Fatal Crash	0	
Suspected Serious Injury Crash	0	
Suspected Minor Injury Crash	0	
Possible/Unknown Injury Crash	0	
Property Damage Only	1	

Injury Status Summary		0
Fatalities	0	
Suspected serious/incapacitating	0	
Suspected minor/non-incapacitating	0	
Possible (complaint of pain/injury)	0	
Unknown	0	

Property/Vehicles/Occupants	
Property Damage Total (dollars):	10,000.00
Average (per crash dollars):	10,000.00
Total Vehicles:	1.00
Average (per crash):	1.00
Total Occupants:	1.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause		1
Animal	0	0
Ran stop sign	0	0
FTYROW: At uncontrolled intersection	0	0
FTYROW: From stop sign	0	0
FTYROW: Making left turn	0	0
FTYROW: From parked position	0	0
FTYROW: Other	0	0
Disregarded RR Signal	0	0
Crossed median (divided)	0	0
Aggressive driving/road rage	0	0
Exceeded authorized speed	0	0
Operating vehicle in an reckless, erratic, ca...	0	0
Passing: On wrong side	0	0
Passing: With insufficient distance/inadequa...	0	0
Passing: Other passing	0	0
Driver Distraction: Manual operation of an e...	0	0
Driver Distraction: Talking on a hands free ...	0	0
Driver Distraction: Other electronic device ...	0	0
Driver Distraction: Unrestrained animal	0	0
Driver Distraction: Inattentive/lost in thou...	0	0
Driver Distraction: Exterior distraction	0	0
Ran off road - straight	0	1
Lost control	0	0
Over correcting/over steering	0	0
Failure to signal intentions	0	0
Vehicle stopped on railroad tracks	0	0
Other: Improper operation	0	0
Other: Disregarded signs/road markings	0	0
Downhill runaway	0	0
Towing improperly	0	0
Equipment failure	0	0
Other: Getting off/out of vehicle	0	0
Improper backing	0	0
Illegally parked/unattended	0	0
Operator inexperience	0	0
Unknown	0	0
Other: No improper action	0	0



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	1
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	0
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	1
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	1
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	1	0	0	1

Alcohol Test Given	1
None	0
Blood	0
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

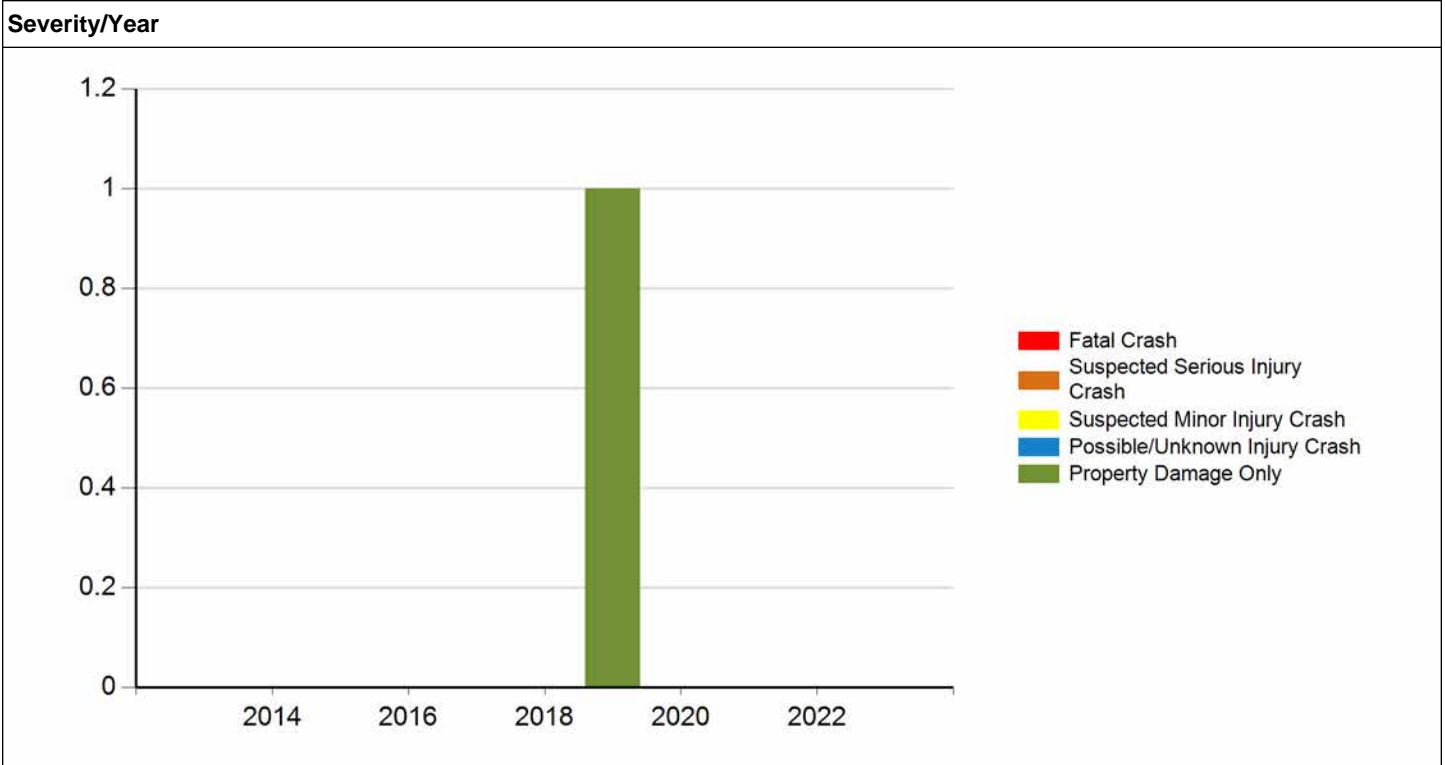
Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

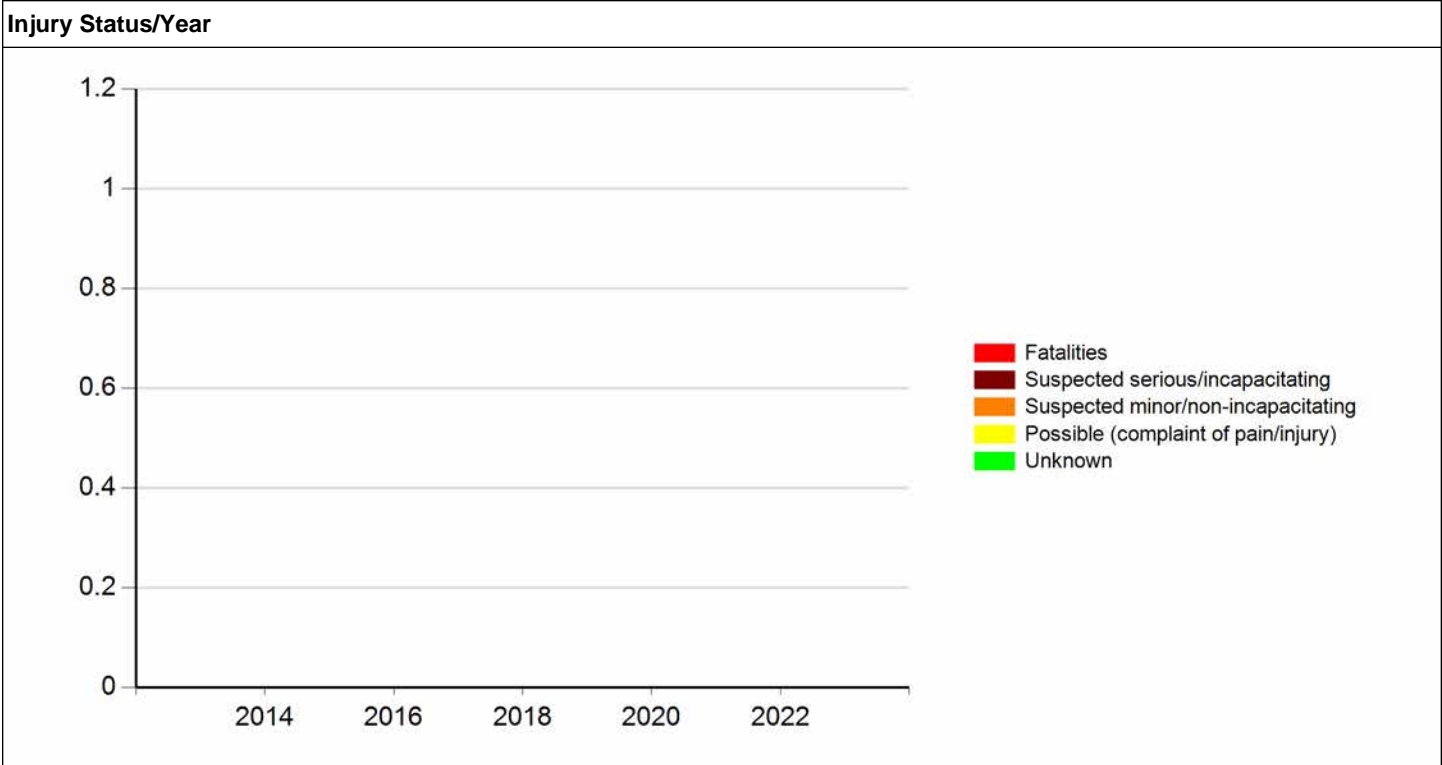
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	1	1
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	CAVES RD (Y31) & 172ND AVE	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

 Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	1	50.0	0.20	0.10

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 2,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 23,690	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (12,614)		
<b>Benefit Cost Ratio</b>	<b>0.65</b>		

Form continues on next page

County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

CAVES RD (Y31) &amp; 172ND AVE

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

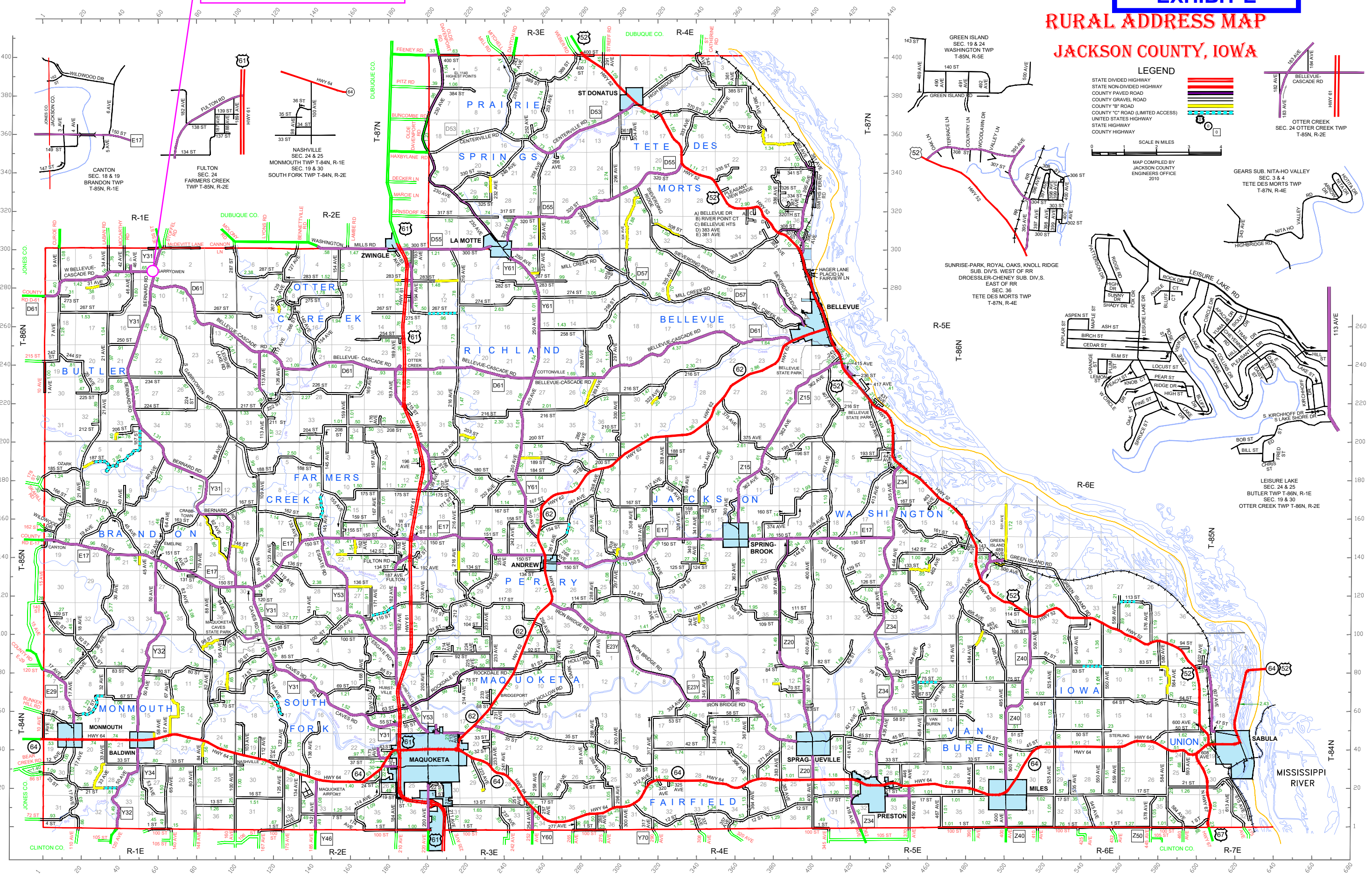
No change to Maintenance  
Costs

### Method-Specific Customizations

---

PROJECT LOCATION

# EXHIBIT E RURAL ADDRESS MAP JACKSON COUNTY, IOWA



**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010

GREEN ISLAND  
SEC. 19 & 24  
WASHINGTON TWP  
T-85N, R-5E

SUNRISE-PARK, ROYAL OAKS, KNOLL RIDGE  
SUB. DIV'S. WEST OF RR  
DROESSLER-CHENEY SUB. DIV.S.  
EAST OF RR  
SEC. 36  
TETE DES MORTS TWP  
T-87N, R-4E

OTTER CREEK  
SEC. 24 OTTER CREEK TWP  
T-85N, R-2E

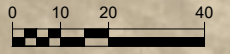
GEARS SUB. NITA-HO VALLEY  
SEC. 3 & 4  
TETE DES MORTS TWP  
T-87N, R-4E

LEISURE LAKE  
SEC. 24 & 25  
BUTLER TWP T-86N, R-1E  
SEC. 19 & 30  
OTTER CREEK TWP T-86N, R-2E

MISSISSIPPI RIVER



PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**Y31 AND BELLEVUE-CASCADE ROAD**

SHEET NO.  
**1**



<b>Crash Severity</b>	<b>2</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	2

<b>Injury Status Summary</b>	<b>0</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	11,800.00
Average (per crash dollars):	5,900.00
Total Vehicles:	2.00
Average (per crash):	1.00
Total Occupants:	2.00
Average (per crash):	1.00

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			2
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	2	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		0



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	2
Non-collision (single vehicle)	2
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	2
Dry	0
Wet	2
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	2
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	2
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	1	0	0	0	1
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

Alcohol Test Given	2
None	2
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	2
None	2
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

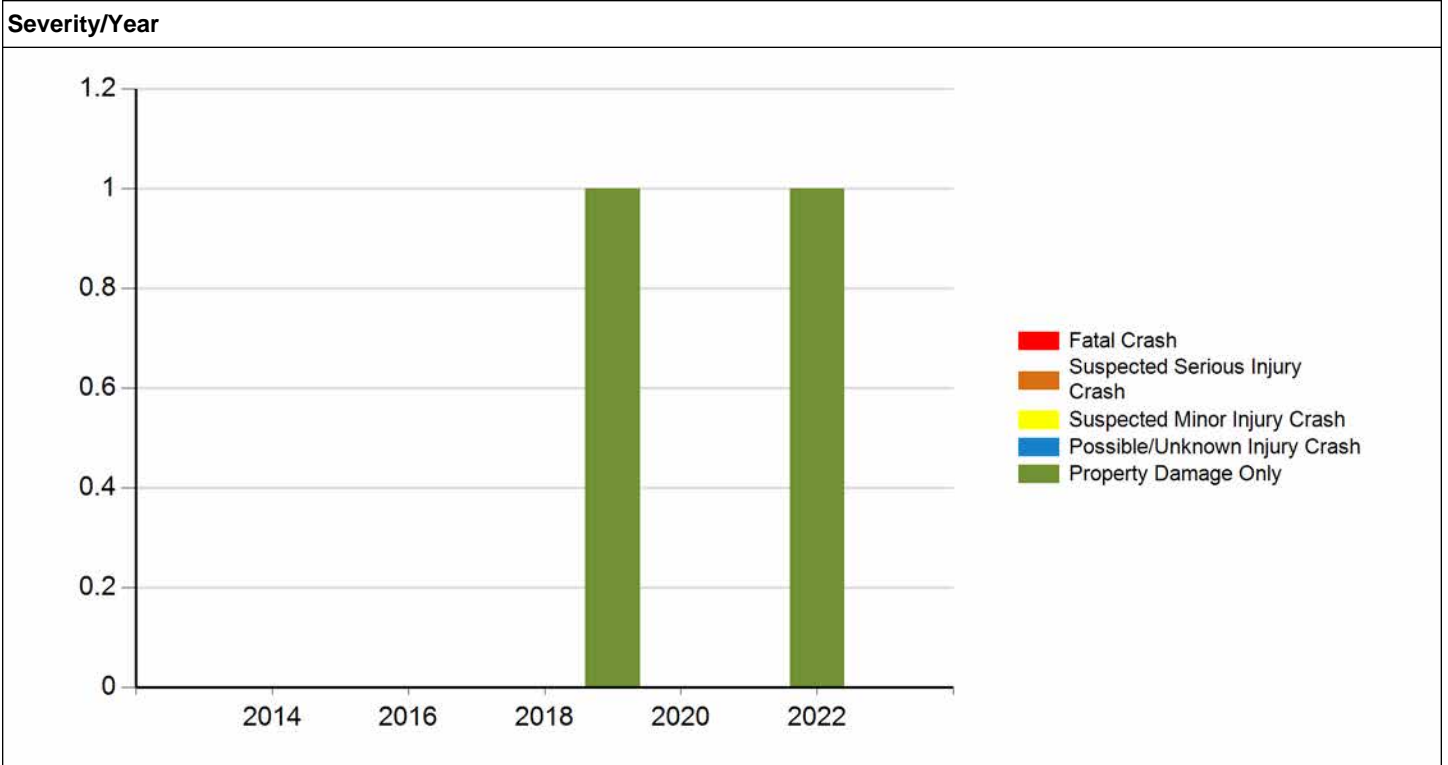
Drug Test Result	2
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	2
Other	0

Drug/Alcohol Related	2
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	2



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

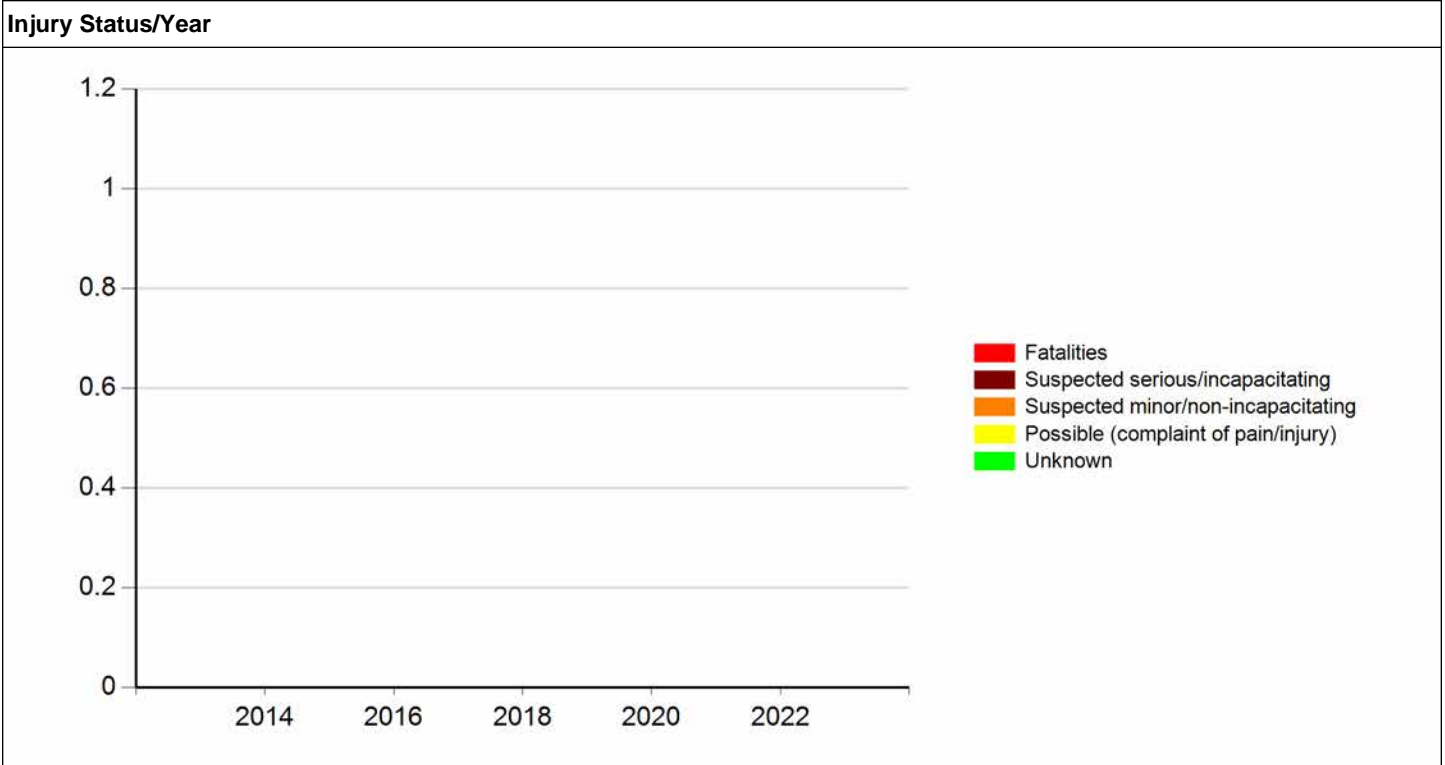
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	1	1
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	1	1
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	2	2





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	Y31 & BELLEVUE CASCADE ROAD	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:		Combined CRF		
CRF Value (%)	50		50.0		
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	2	50.0	0.40	0.20

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 4,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 47,381	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ 11,076		
<b>Benefit Cost Ratio</b>	<b>1.31</b>		

Form continues on next page



County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

Y31 &amp; BELLEVUE CASCADE ROAD

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

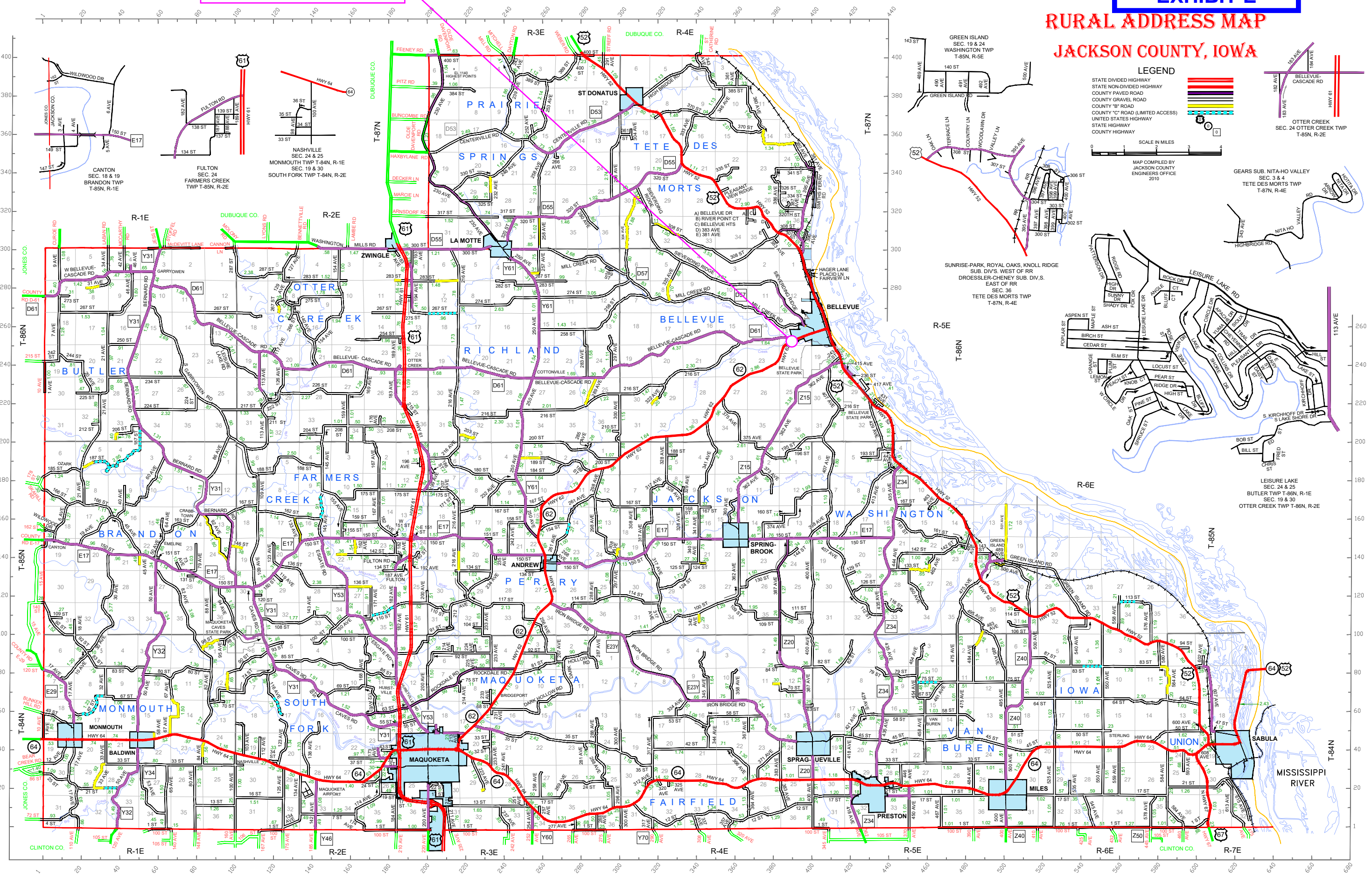
No change to Maintenance  
Costs

### Method-Specific Customizations

---

PROJECT LOCATION

# EXHIBIT E RURAL ADDRESS MAP JACKSON COUNTY, IOWA



**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY JACKSON COUNTY ENGINEERS OFFICE 2010

OTTER CREEK SEC. 24 OTTER CREEK TWP T-85N, R-2E

GEARS SUB. NITA-HO VALLEY SEC. 3 & 4 TETE DES MORTS TWP T-87N, R-4E

GREEN ISLAND SEC. 19 & 24 WASHINGTON TWP T-85N, R-5E

SUNRISE-PARK, ROYAL OAKS, KNOLL RIDGE SUB. DIVS. WEST OF RR DROESSLER-CHENEY SUB. DIVS. EAST OF RR SEC. 36 TETE DES MORTS TWP T-87N, R-4E

LEISURE LAKE SEC. 24 & 25 BUTLER TWP T-88N, R-1E SEC. 19 & 30 OTTER CREEK TWP T-86N, R-2E

LEISURE LAKE SEC. 24 & 25 BUTLER TWP T-88N, R-1E SEC. 19 & 30 OTTER CREEK TWP T-86N, R-2E

CLINTON CO. R-1E R-2E R-3E R-4E R-5E R-6E R-7E

T-84N T-85N T-86N T-87N T-88N



Sep 9, 2022 at 1:26:50 PM  
38618 Bellevue Cascade Rd  
Bellevue IA 52031  
United States

PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:



JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: [jceng@jacksoncounty.iowa.gov](mailto:jceng@jacksoncounty.iowa.gov)  
 Web: <https://jacksoncounty.iowa.gov>

JACKSON COUNTY

PROJECT NUMBER  
 DESTINATION LIGHTING

SHEET NAME  
 IA 62 AND BELLEVUE-CASCADE ROAD

SHEET NO.  
 1

Crash Severity	1
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	1

Injury Status Summary	0
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	6,500.00
Average (per crash dollars):	6,500.00
Total Vehicles:	2.00
Average (per crash):	2.00
Total Occupants:	2.00
Average (per crash):	2.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			1
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	1	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		0



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	1
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	1
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	1
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	2
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	2



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	1	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	1	0	0	1
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	2	0	0	2

Alcohol Test Given	2
None	1
Blood	0
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	2
None	2
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	2
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	2
Other	0

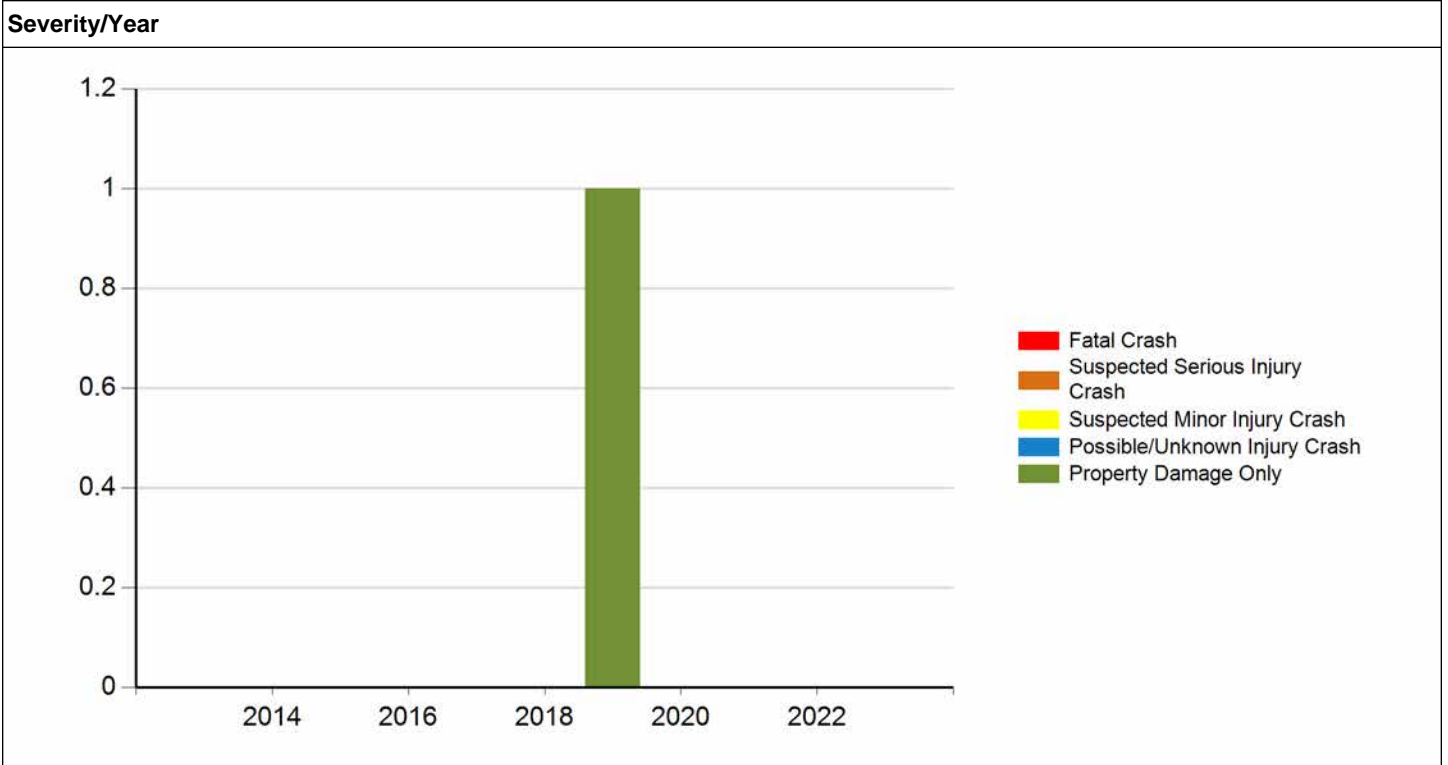
Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

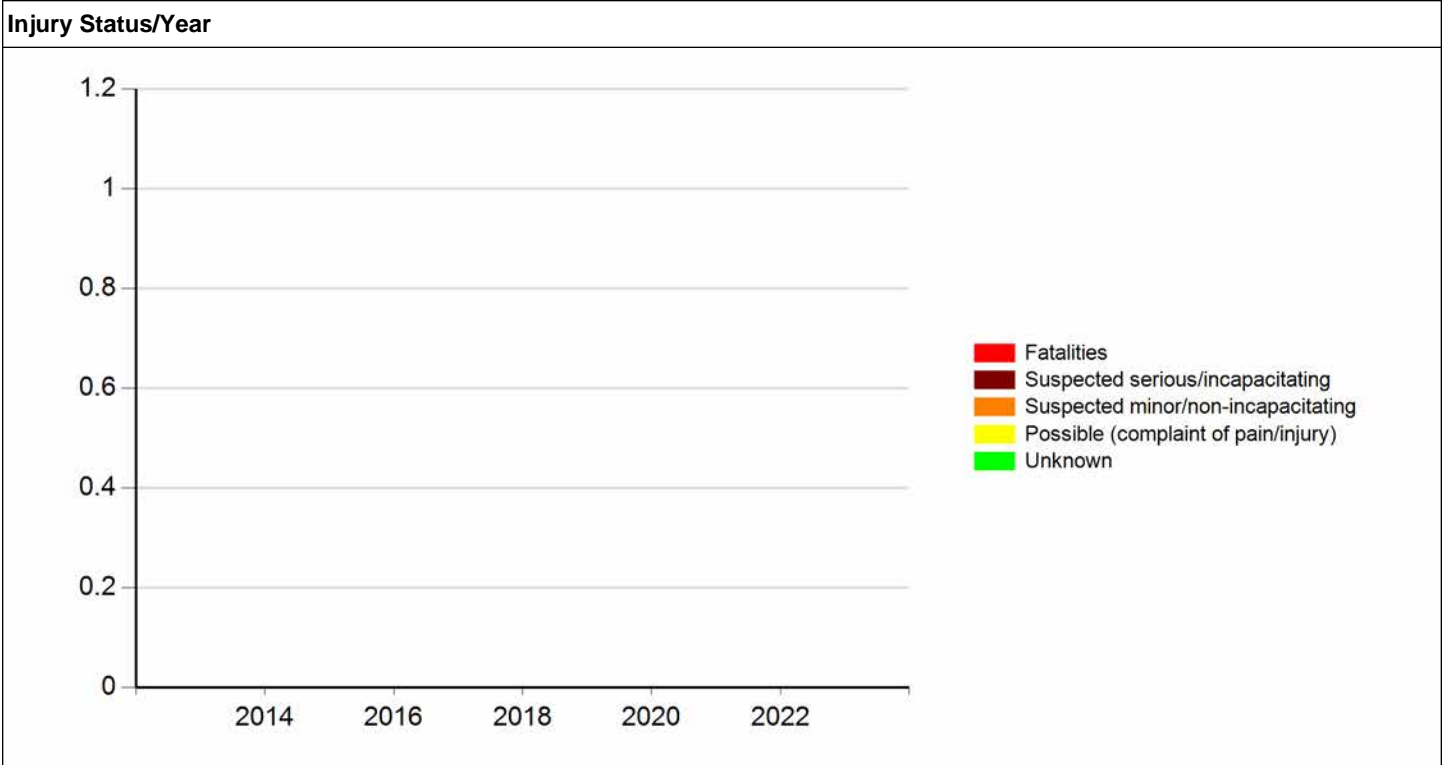
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	1	1	1
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	1	1	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	IA 62 & BELLEVUE CASCADE ROAD	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

 Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	1	50.0	0.20	0.10

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 2,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 23,690	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (12,614)		
<b>Benefit Cost Ratio</b>	<b>0.65</b>		

Form continues on next page

County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

IA 62 &amp; BELLEVUE CASCADE ROAD

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

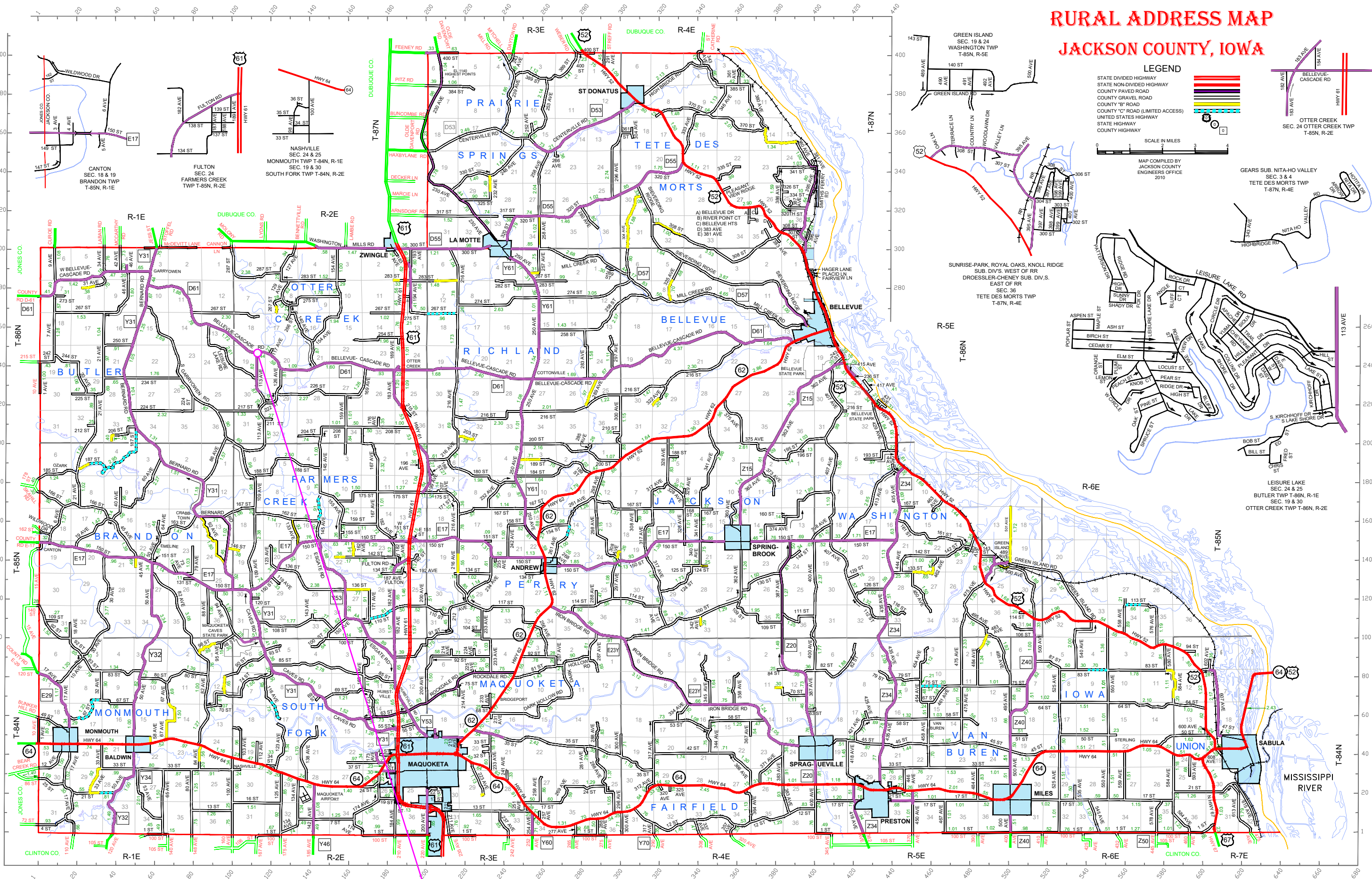
No change to Maintenance  
Costs

### Method-Specific Customizations

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# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA



**PROJECT LOCATION**

**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010

OTTER CREEK  
SEC. 24 OTTER CREEK TWP  
T-85N, R-2E

GEARS SUB. NITA-HO VALLEY  
SEC. 3 & 4  
TETE DES MORTS TWP  
T-87N, R-4E

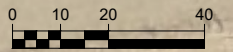
SUNRISE-PARK, ROYAL OAKS, KNOLL RIDGE  
SUB. DIV'S. WEST OF RR  
DROESSLER-CHENEY SUB. DIV'S.  
EAST OF RR  
SEC. 36  
TETE DES MORTS TWP  
T-87N, R-4E

LEISURE LAKE  
SEC. 24 & 25  
BUTLER TWP T-88N, R-1E  
SEC. 19 & 30  
OTTER CREEK TWP T-86N, R-2E

MISSISSIPPI RIVER



PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:				
CHECKED BY:				



JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

JACKSON COUNTY

PROJECT NUMBER  
 DESTINATION LIGHTING

SHEET NAME  
 113TH AVE & BELLEVUE CASCADE RD

SHEET NO.  
 1



Crash Severity		1
Fatal Crash	0	
Suspected Serious Injury Crash	0	
Suspected Minor Injury Crash	0	
Possible/Unknown Injury Crash	0	
Property Damage Only	1	

Injury Status Summary		0
Fatalities	0	
Suspected serious/incapacitating	0	
Suspected minor/non-incapacitating	0	
Possible (complaint of pain/injury)	0	
Unknown	0	

Property/Vehicles/Occupants	
Property Damage Total (dollars):	10,500.00
Average (per crash dollars):	10,500.00
Total Vehicles:	1.00
Average (per crash):	1.00
Total Occupants:	1.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause		1
Animal	0	0
Ran stop sign	0	0
FTYROW: At uncontrolled intersection	0	0
FTYROW: From stop sign	0	0
FTYROW: Making left turn	0	0
FTYROW: From parked position	0	0
FTYROW: Other	0	0
Disregarded RR Signal	0	0
Crossed median (divided)	0	0
Aggressive driving/road rage	0	0
Exceeded authorized speed	0	0
Operating vehicle in an reckless, erratic, ca...	0	0
Passing: On wrong side	0	0
Passing: With insufficient distance/inadequa...	0	0
Passing: Other passing	0	0
Driver Distraction: Manual operation of an e...	0	0
Driver Distraction: Talking on a hands free ...	0	0
Driver Distraction: Other electronic device ...	0	0
Driver Distraction: Unrestrained animal	0	0
Driver Distraction: Inattentive/lost in thou...	0	0
Driver Distraction: Exterior distraction	0	0
Ran off road - straight	1	0
Lost control	0	0
Over correcting/over steering	0	0
Failure to signal intentions	0	0
Vehicle stopped on railroad tracks	0	0
Other: Improper operation	0	0
Other: Disregarded signs/road markings	0	0
Downhill runaway	0	0
Towing improperly	0	0
Equipment failure	0	0
Other: Getting off/out of vehicle	0	0
Improper backing	0	0
Illegally parked/unattended	0	0
Operator inexperience	0	0
Unknown	0	0
Other: No improper action	0	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	1
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	1
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	0	1
Bridge overhead structure	0	0
Bridge/bridge rail parapet	0	0
Ditch	0	0
Ground	0	0
Guardrail - face	0	0
Concrete traffic barrier (median or right sid...	0	0
Cable barrier	0	0
Utility pole/light support	0	0
Traffic signal support	0	0
Fire hydrant	0	0
Tree	0	0
Snow bank	0	1
Wall	0	0
Other fixed object	0	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	1	0	0	1
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	1	0	0	1

Alcohol Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

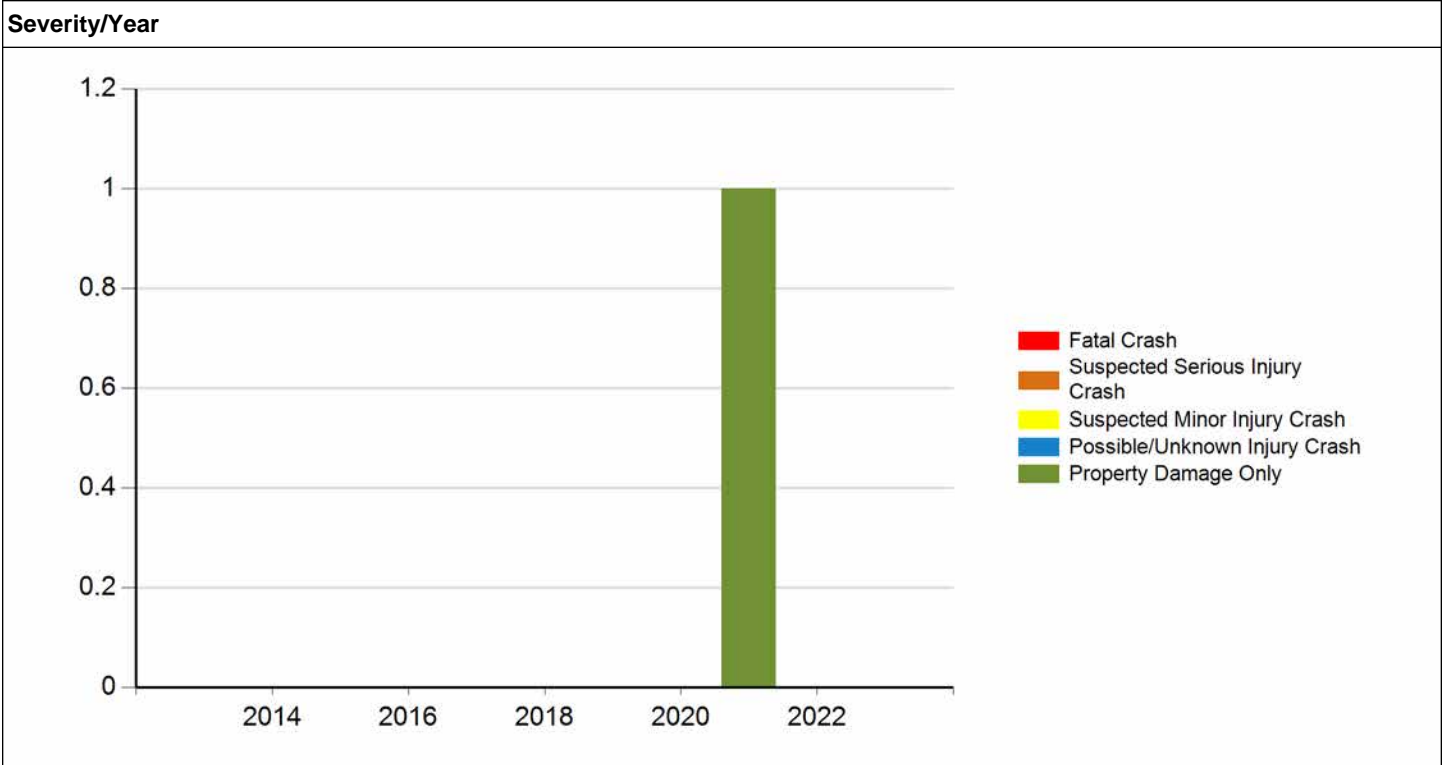
Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	1



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

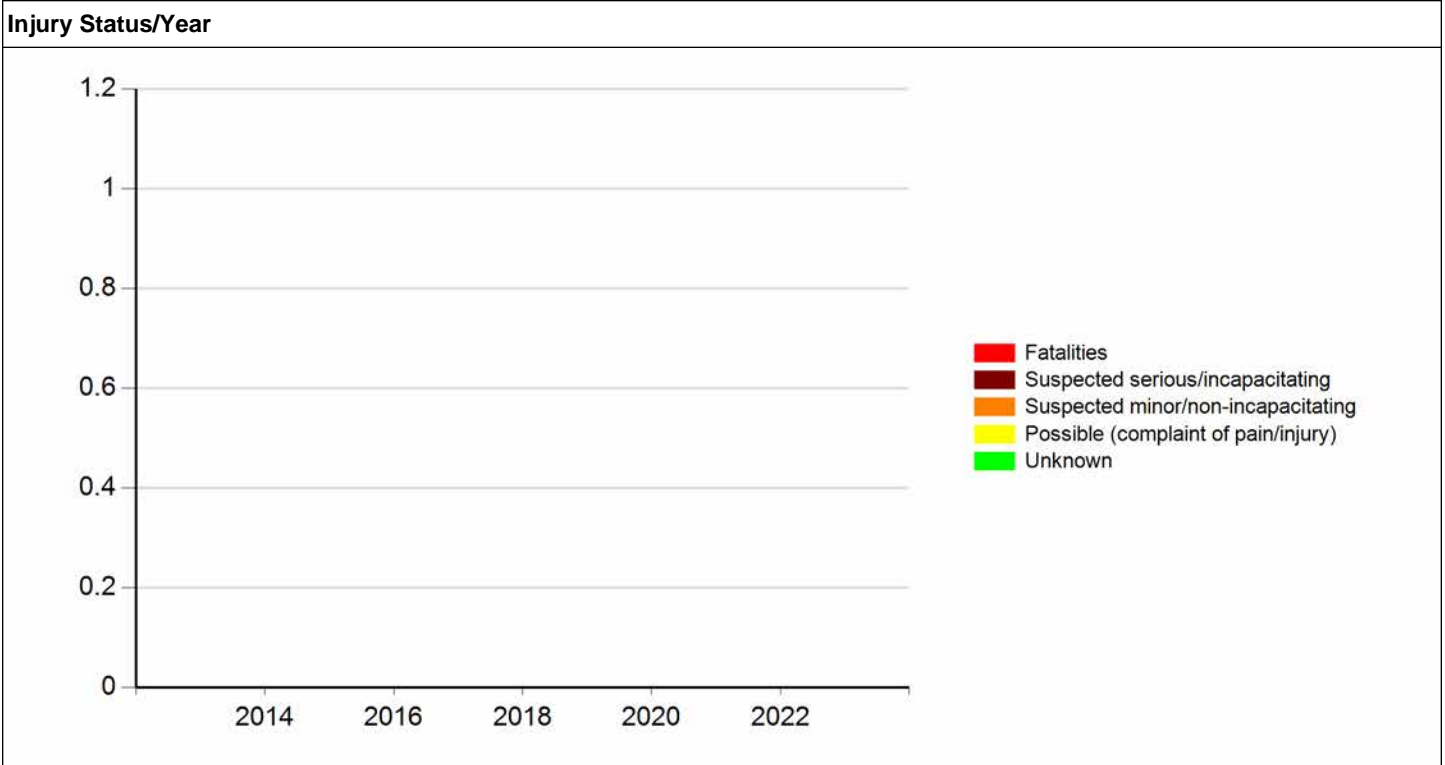
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	1	1
2022	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	113TH AVE & BELLEVUE CASCADE RD	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	1	50.0	0.20	0.10

	Annual Societal Benefit				
Crash Severity					
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 2,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 23,690	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (12,614)		
<b>Benefit Cost Ratio</b>	<b>0.65</b>		

Form continues on next page



County: JACKSON  
Location: 113TH AVE & BELLEVUE CASCADE RD

Prepared By: JAYDEN SCHECKEL  
Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

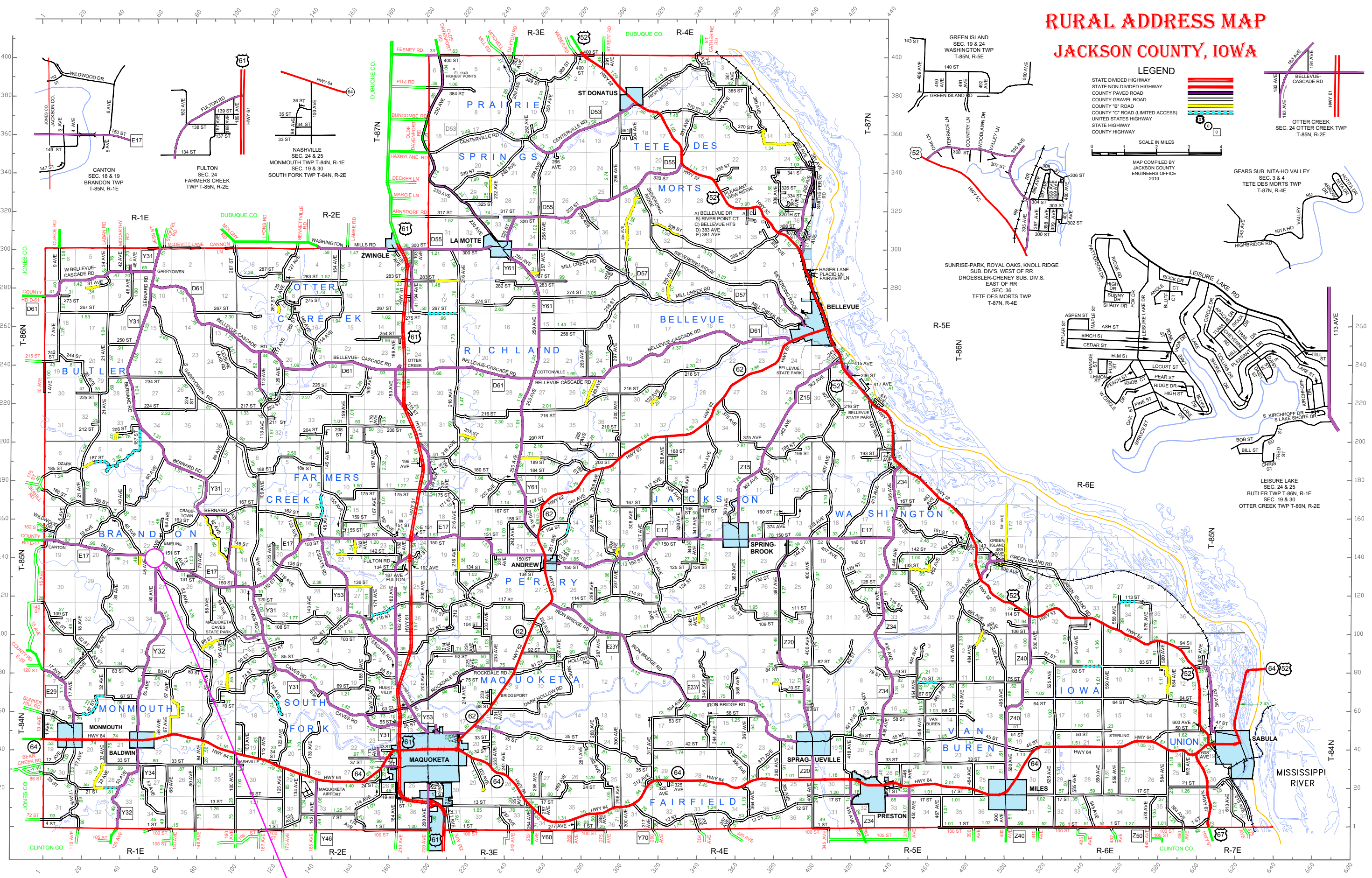
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA

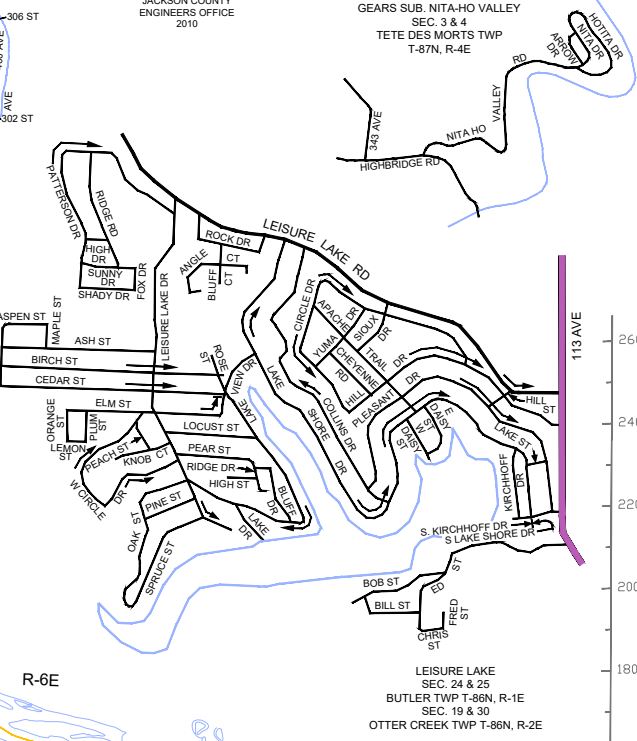
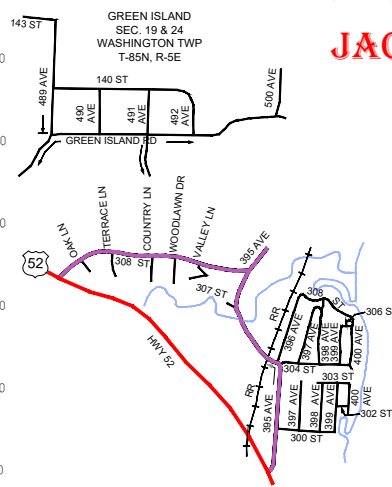
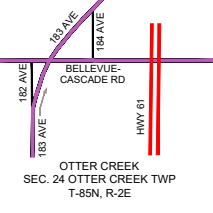


**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010



PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION

**EXHIBIT G & H**



FISCAL YEAR:	NO.	DATE	REVISION	BY:



JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: [jceng@jacksoncounty.iowa.gov](mailto:jceng@jacksoncounty.iowa.gov)  
 Web: <https://jacksoncounty.iowa.gov>

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**50TH AVE (Y34) & 150TH ST (E17)**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\E-17 Caves Road & Y-34 50th Avenue\CADD\Linework\_Y34&E17.dwg



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

<b>Crash Severity</b>	<b>1</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	1

<b>Injury Status Summary</b>	<b>0</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

<b>Property/Vehicles/Occupants</b>	
Property Damage Total (dollars):	11,000.00
Average (per crash dollars):	11,000.00
Total Vehicles:	2.00
Average (per crash):	2.00
Total Occupants:	2.00
Average (per crash):	2.00

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause		1
Animal	0	0
Ran stop sign	0	0
FTYROW: At uncontrolled intersection	0	0
FTYROW: From stop sign	0	0
FTYROW: Making left turn	0	0
FTYROW: From parked position	0	0
FTYROW: Other	0	0
Disregarded RR Signal	0	0
Crossed median (divided)	0	0
Aggressive driving/road rage	0	0
Exceeded authorized speed	0	0
Operating vehicle in an reckless, erratic, ca...	0	0
Passing: On wrong side	0	0
Passing: With insufficient distance/inadequa...	0	0
Passing: Other passing	0	0
Driver Distraction: Manual operation of an e...	0	1
Driver Distraction: Talking on a hands free ...	0	0
Driver Distraction: Other electronic device ...	0	0
Driver Distraction: Unrestrained animal	0	0
Driver Distraction: Inattentive/lost in thou...	0	0
Driver Distraction: Exterior distraction	0	0
Ran off road - straight	0	0
Lost control	0	0
Over correcting/over steering	0	0
Failure to signal intentions	0	0
Vehicle stopped on railroad tracks	0	0
Other: Improper operation	0	0
Other: Disregarded signs/road markings	0	0
Downhill runaway	0	0
Towing improperly	0	0
Equipment failure	0	0
Other: Getting off/out of vehicle	0	0
Improper backing	0	0
Illegally parked/unattended	0	0
Operator inexperience	0	0
Unknown	0	0
Other: No improper action	0	0



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	0	0	0	0	0	0	0	1

Manner of Crash Collision	1
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	1
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	2
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	2



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	1	0	0	1
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	2	0	0	2

Alcohol Test Given	2
None	2
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	2
None	2
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	2
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	2
Other	0

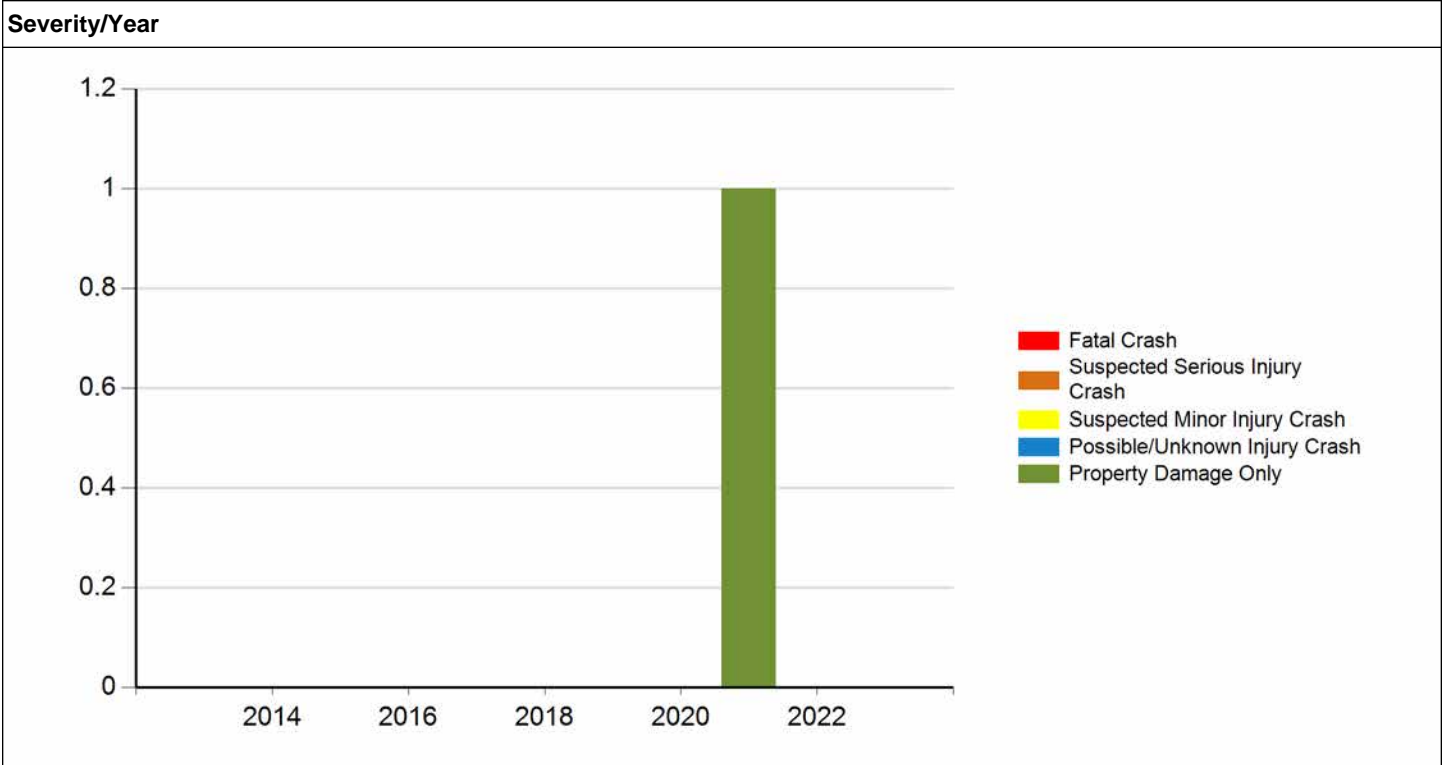
Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

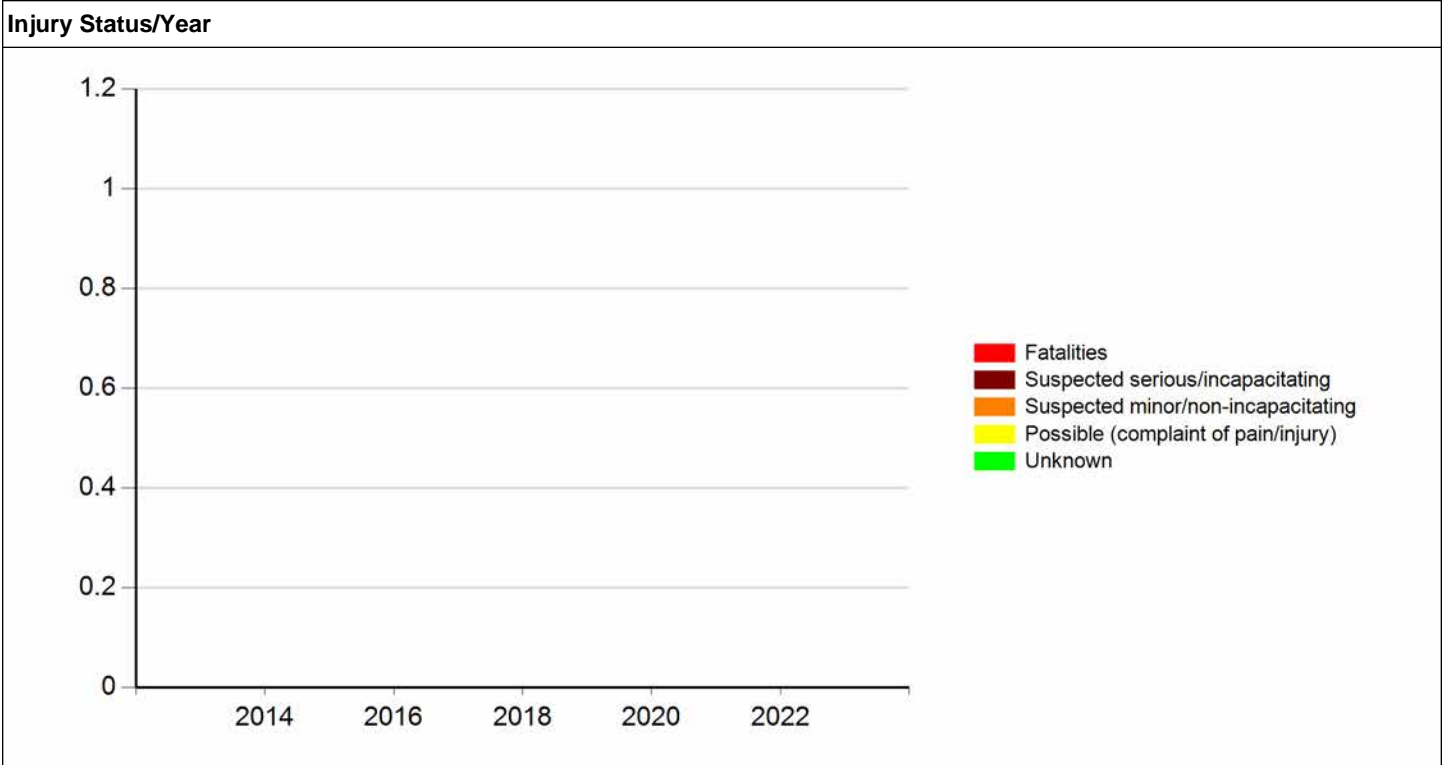
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	1	1
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	1	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	50TH AVE & 150TH STREET	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	1	50.0	0.20	0.10

	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ 2,000				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 23,690	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (12,614)		
<b>Benefit Cost Ratio</b>	<b>0.65</b>		

Form continues on next page

County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

50TH AVE &amp; 150TH STREET

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

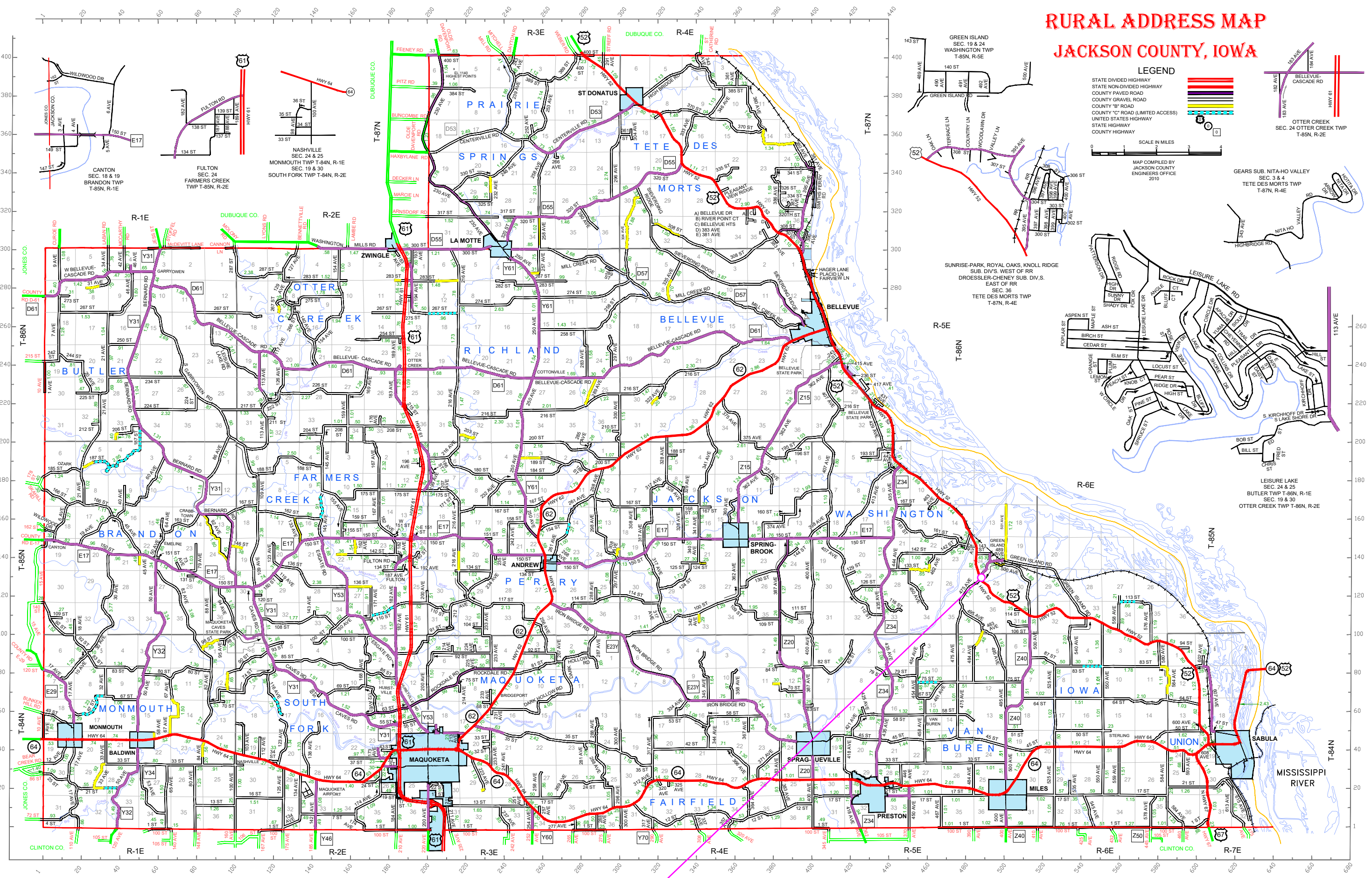
No change to Maintenance  
Costs

### Method-Specific Customizations

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# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA



PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION



FISCAL YEAR:	NO.	DATE	REVISION	BY:

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**US 52 & GREEN ISLAND ROAD**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\US 52 & Green Island Road\CADD\Linework\_US52 & Green Island Rd.dwg



Crash Severity	1
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	1

Injury Status Summary	0
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	5,500.00
Average (per crash dollars):	5,500.00
Total Vehicles:	1.00
Average (per crash):	1.00
Total Occupants:	1.00
Average (per crash):	1.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			1
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	1
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		0



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	1
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	1
Dry	0
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	1
Bridge overhead structure	0
Bridge/bridge rail parapet	1
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	1	0	0	0	1
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>

Alcohol Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	1
None	1
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

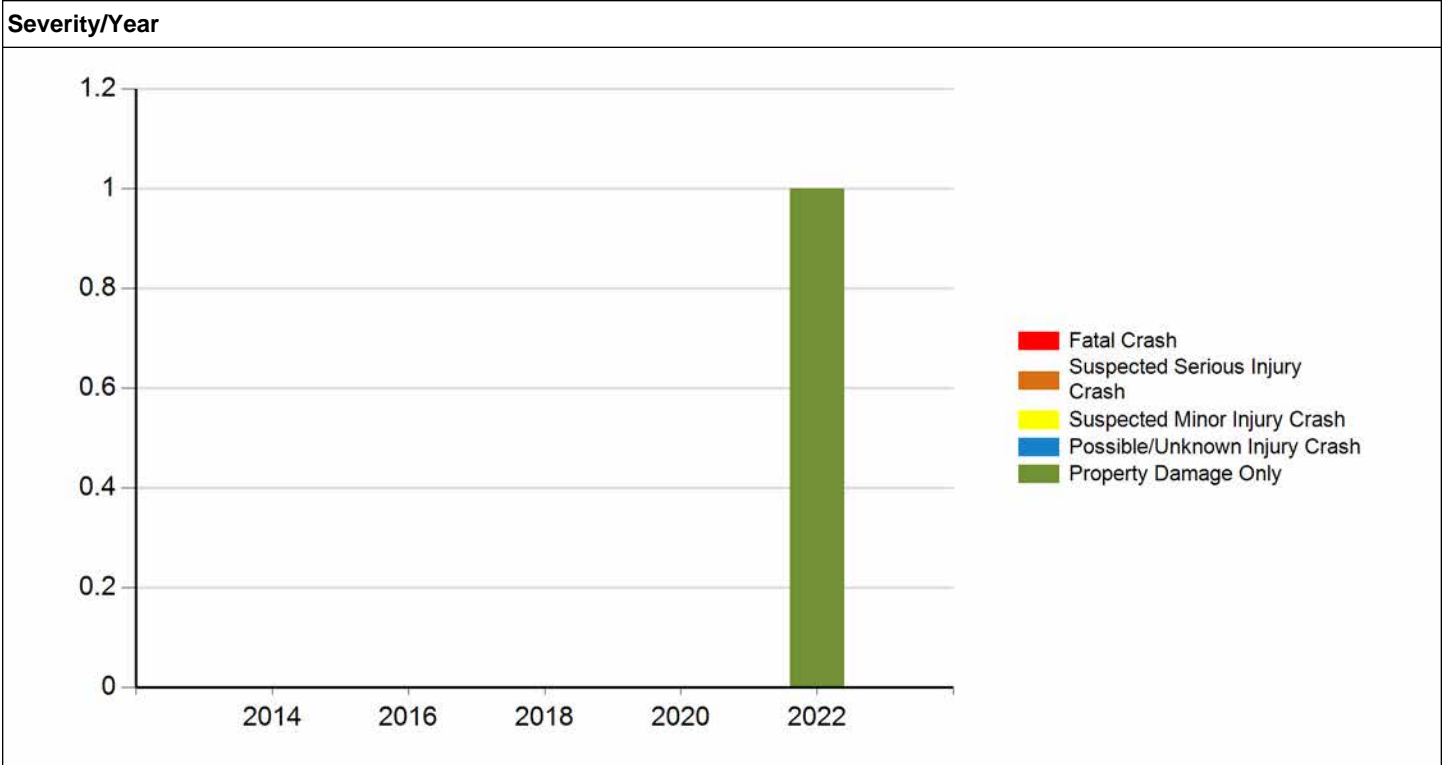
Drug Test Result	1
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	1
Other	0

Drug/Alcohol Related	1
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	1



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

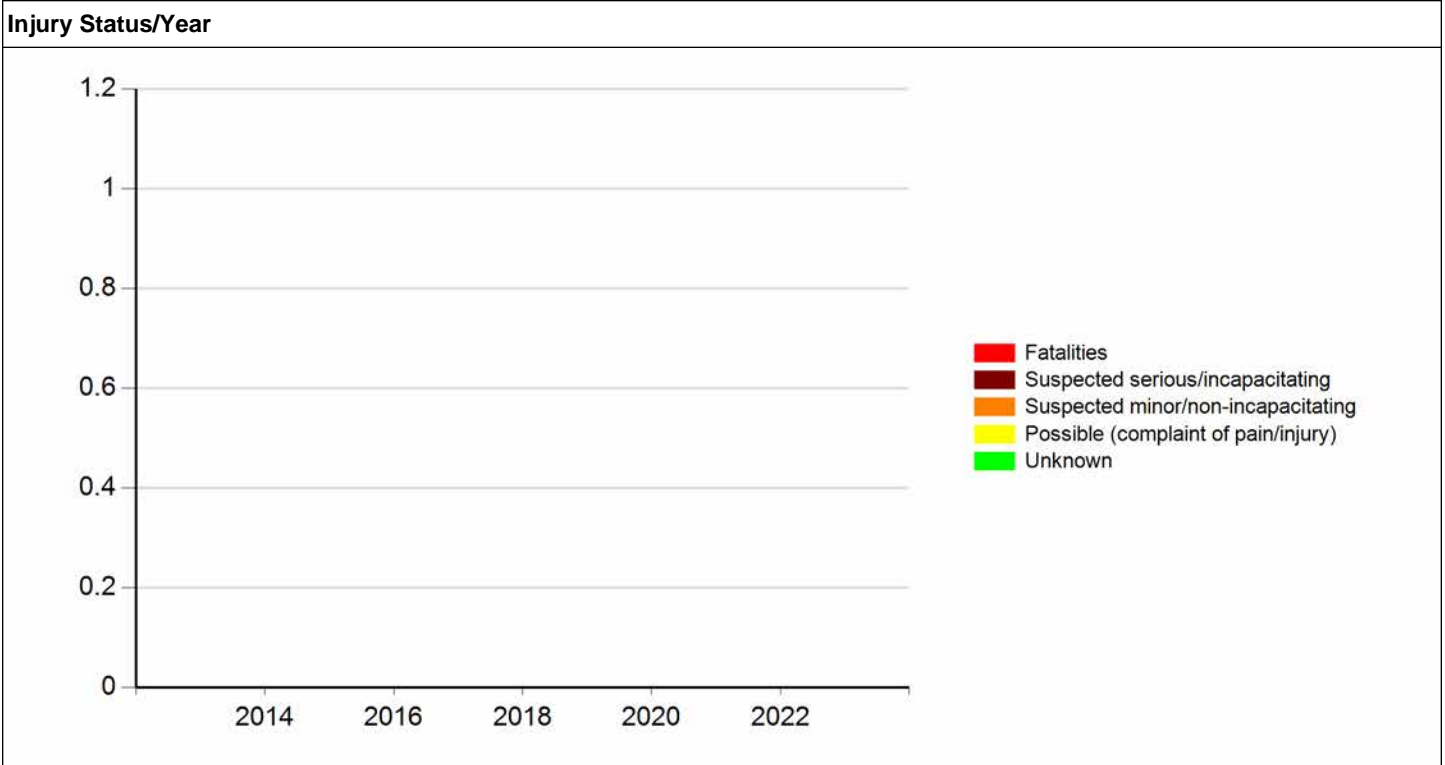
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	0	0	0	1	1
2023	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	1





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	<b>JACKSON</b>	Prepared By:	<b>JAYDEN SCHECKEL</b>
Location:	<b>US 52 &amp; GREEN ISLAND ROAD</b>	Date Prepared:	<b>8/8/2023</b>
Proposed Improvements:	<b>DESTINATION LIGHT AT INTERSECTION</b>		
Estimated Improvement Cost:	<b>\$ 29,700</b>	Annual Maintenance:	<b>2%</b>
Inflation on Crash Costs:	<b>4%</b>	(% of Improvement Cost)	
Discount Rate:	<b>4%</b>	Annual Maintenance Cost:	<b>\$ 594</b>
Estimated Service Life:	<b>15</b>		

Method Choice:	<b>CRF Method</b>
----------------	-------------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	<b>1%</b>
Number of CRFs:	<b>1</b>
Years of Crash History:	<b>5</b>

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	<b>CRF 1:</b>		<b>Combined CRF</b>
CRF Value (%)	<b>50</b>		<b>50.0</b>

	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Serious Injury (A)	\$ 4,000,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Minor Injury (B)	\$ 265,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	<b>0.00</b>	<b>0.00</b>
Property Damage Only (O)	\$ 20,000	1	50.0	<b>0.20</b>	<b>0.10</b>

	Annual Societal Benefit				
Crash Severity					
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ <b>2,000</b>				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>
Property Damage Only (O)	0.00%	0.00	0.00	<b>0.00</b>	<b>0.00</b>

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ 23,690	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (12,614)		
<b>Benefit Cost Ratio</b>	<b>0.65</b>		

*Form continues on next page*



County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

US 52 &amp; GREEN ISLAND ROAD

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

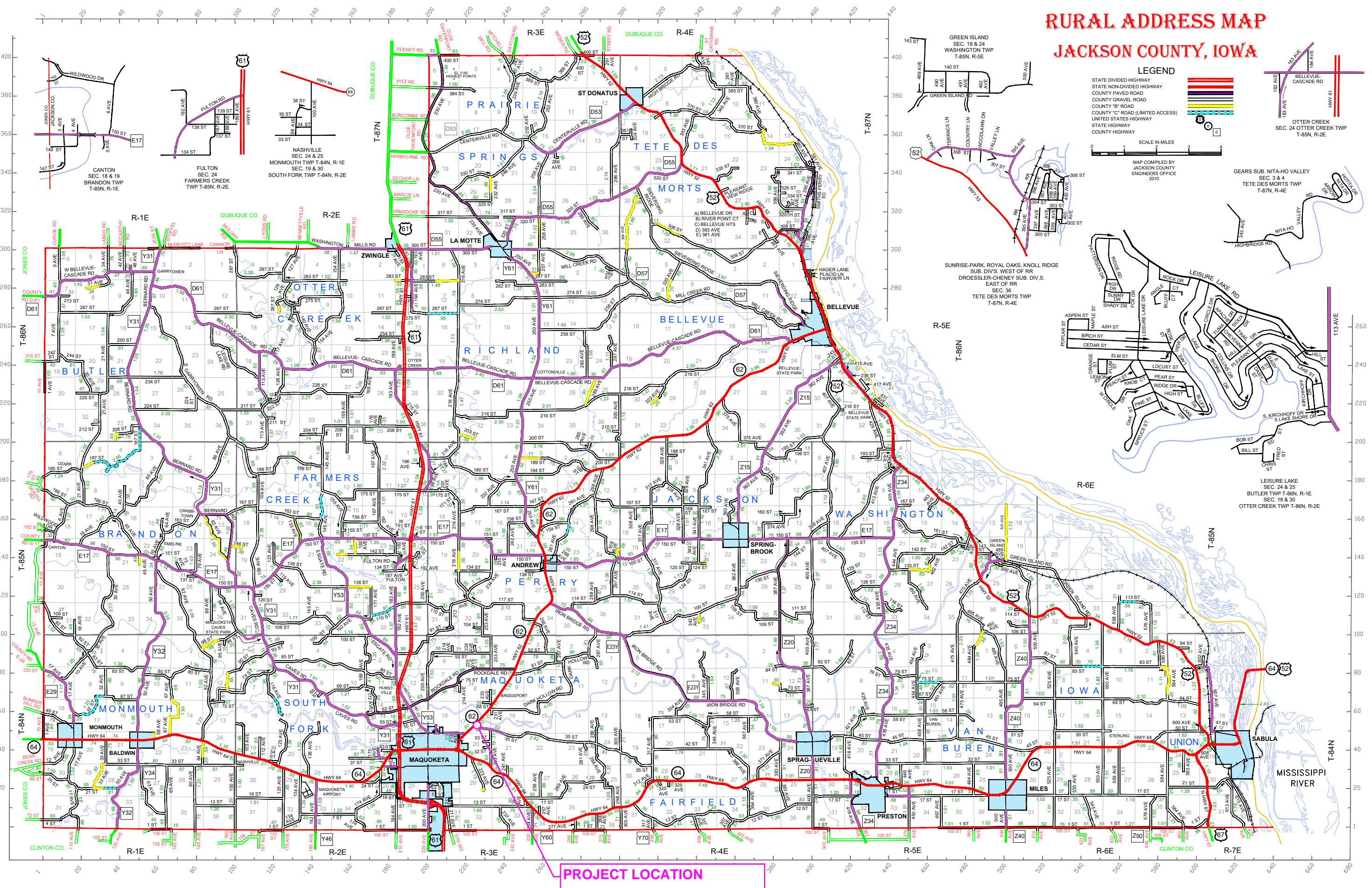
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA

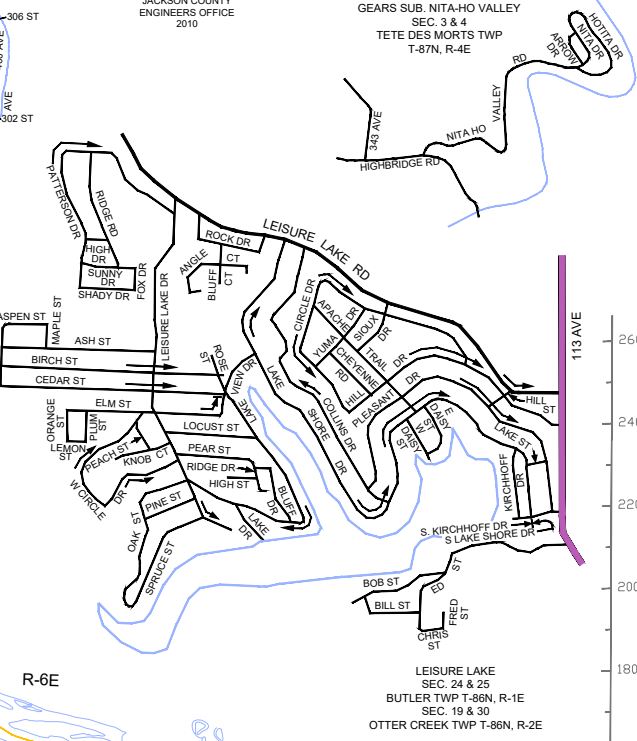
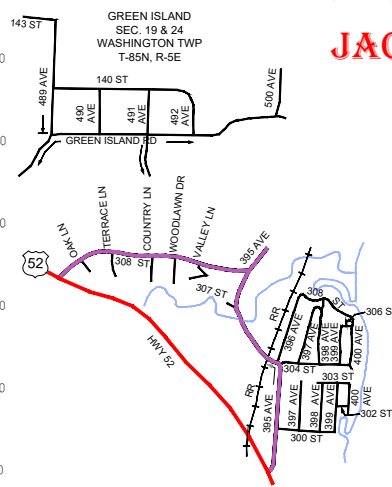
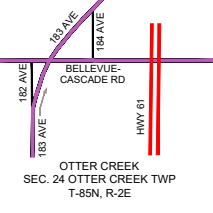


**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010



PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION



**EXHIBIT G & H**

FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:				
CHECKED BY:				



JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: [jceng@jacksoncounty.iowa.gov](mailto:jceng@jacksoncounty.iowa.gov)  
 Web: <https://jacksoncounty.iowa.gov>

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**IA 62 AND 35TH STREET**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\IA 62 & 35th Street\CADD\Linework\_IA62&35th.dwg

<b>Crash Severity</b>	<b>0</b>
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	0

<b>Injury Status Summary</b>	<b>0</b>
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

<b>Property/Vehicles/Occupants</b>
Property Damage Total (dollars):
Average (per crash dollars):
Total Vehicles:
Average (per crash):
Total Occupants:
Average (per crash):

<b>Average Severity</b>	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			0
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	0
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	0
Dry	0
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	0
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	0	0	0	0

Alcohol Test Given	0
None	0
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	0
None	0
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Result	0
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	0
Other	0

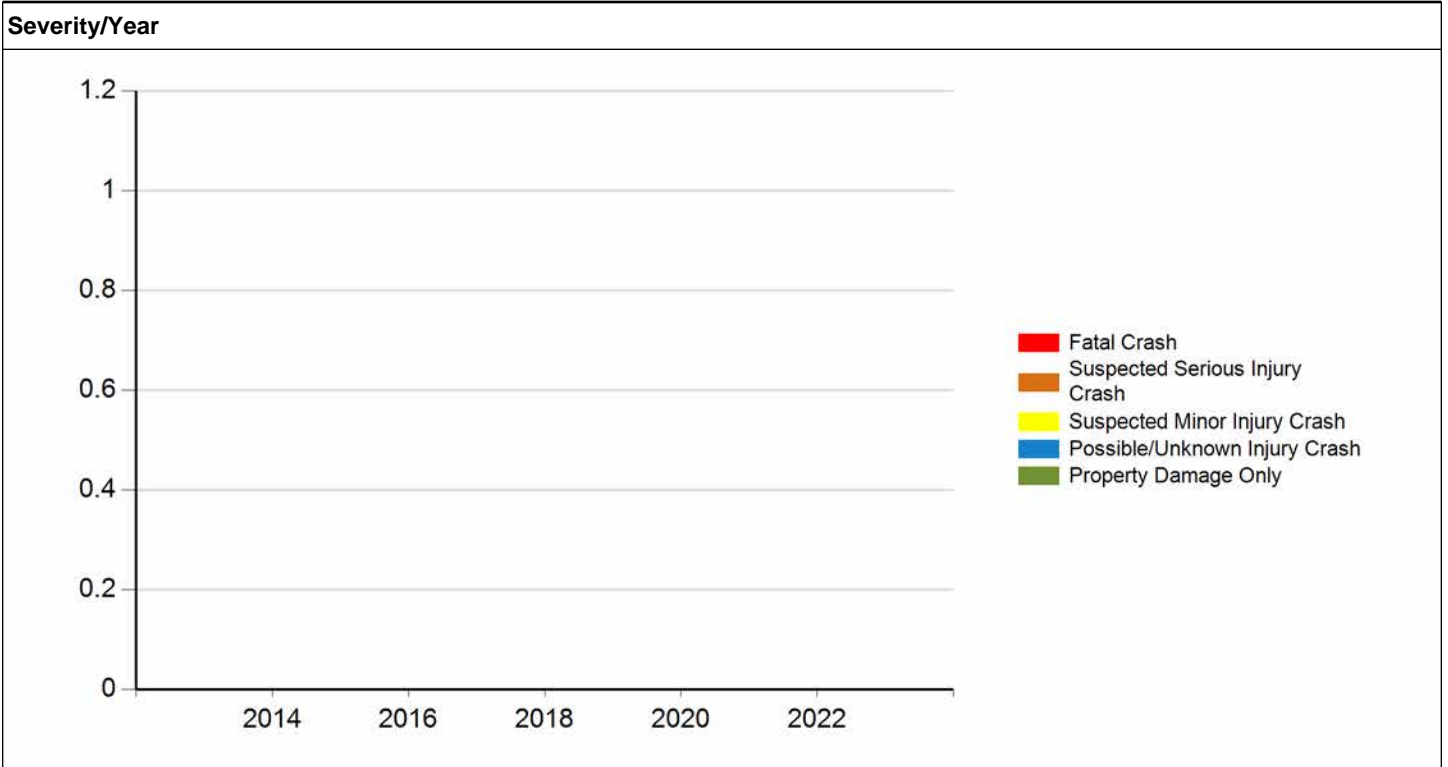
Drug/Alcohol Related	0
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

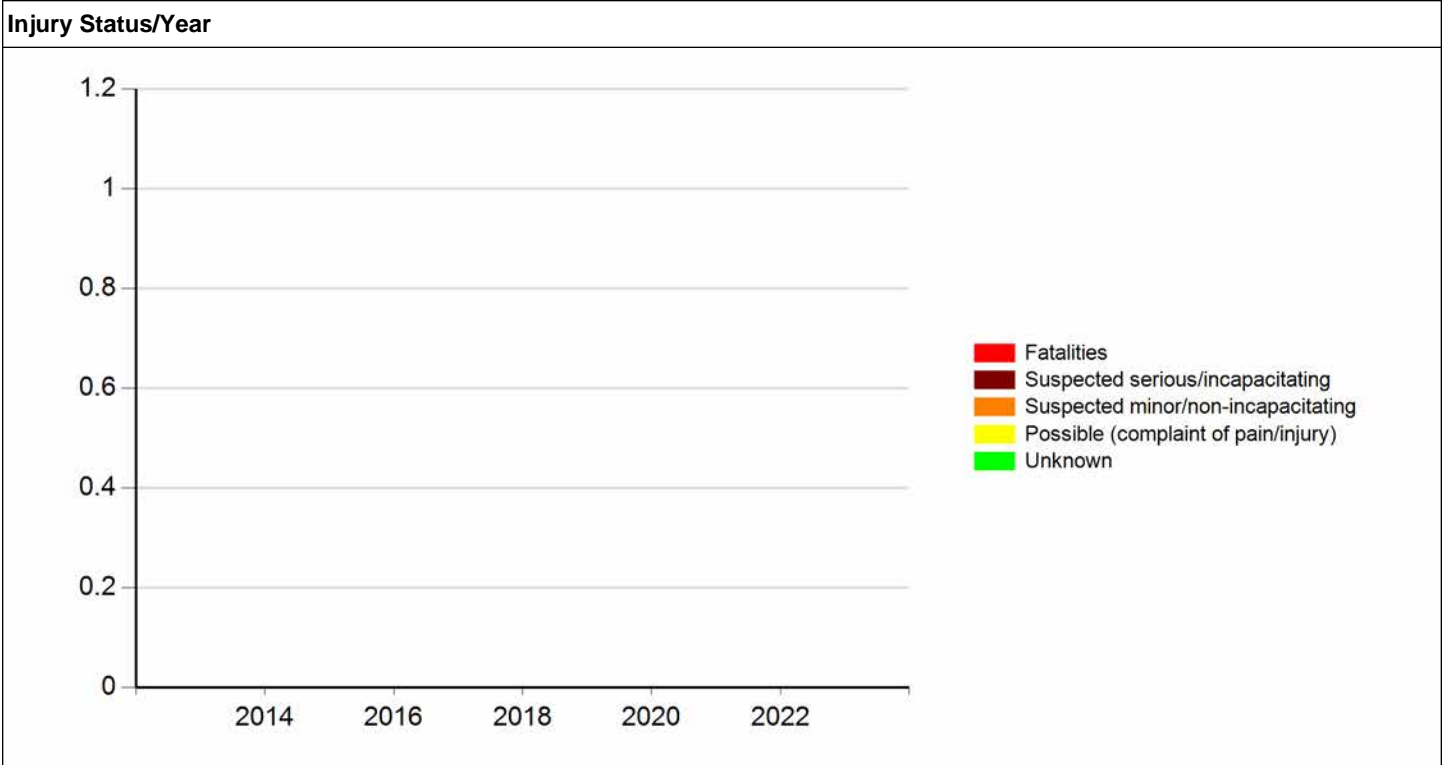
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	IA 62 & 35TH STREET	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

 Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	0	50.0	0.00	0.00

	Annual Societal Benefit				
Crash Severity					
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ -				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ -	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (36,304)		
<b>Benefit Cost Ratio</b>	<b>-</b>		

Form continues on next page

County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

IA 62 &amp; 35TH STREET

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

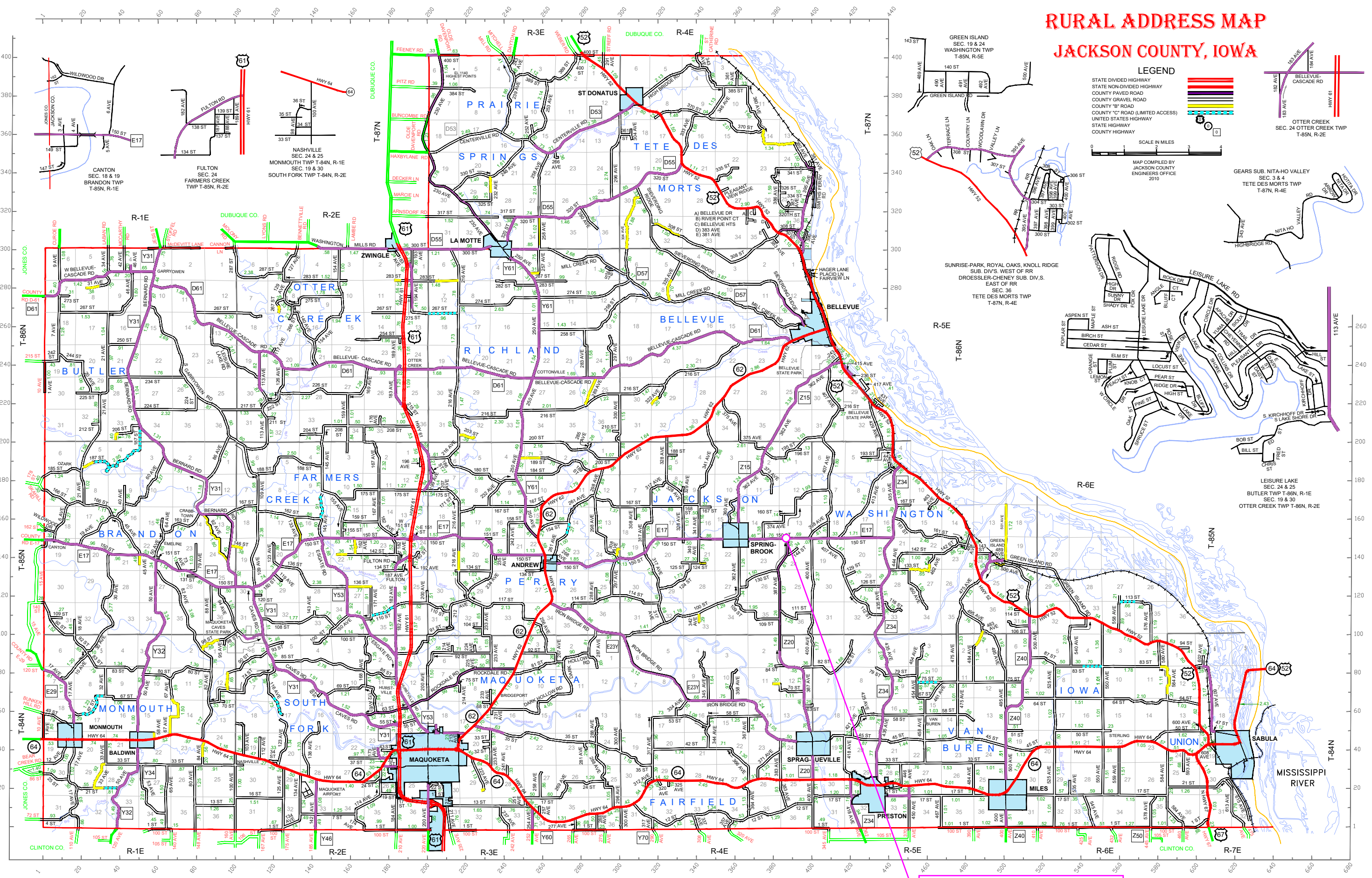
No change to Maintenance  
Costs

### Method-Specific Customizations

---

# EXHIBIT E

## RURAL ADDRESS MAP JACKSON COUNTY, IOWA

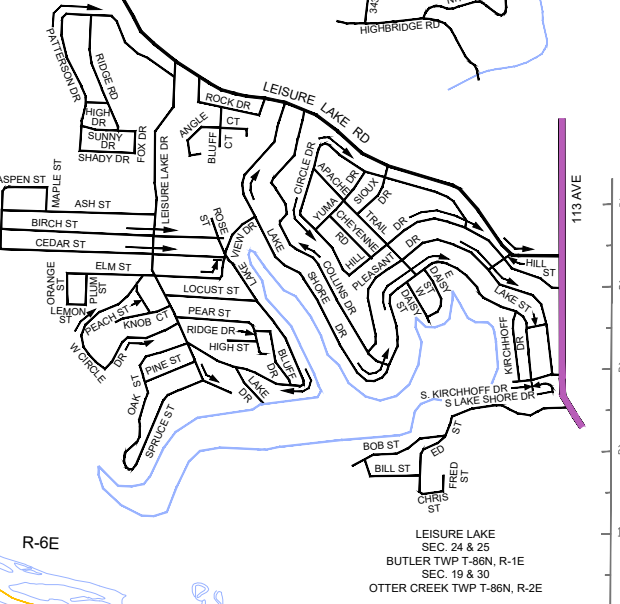
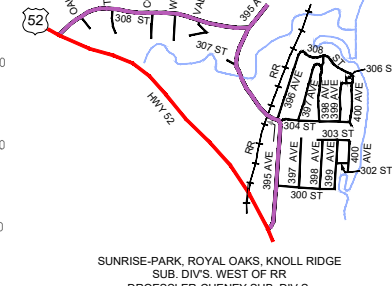
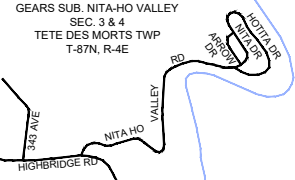
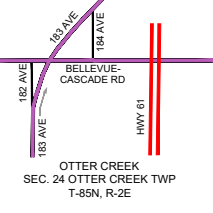


**LEGEND**

- STATE DIVIDED HIGHWAY
- STATE NON-DIVIDED HIGHWAY
- COUNTY PAVED ROAD
- COUNTY GRAVEL ROAD
- COUNTY "B" ROAD
- COUNTY "C" ROAD (LIMITED ACCESS)
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY

SCALE IN MILES

MAP COMPILED BY  
JACKSON COUNTY  
ENGINEERS OFFICE  
2010



PROJECT LOCATION



PHOTO OF PROPOSED LUMINAIRE LOCATION

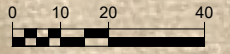


EXHIBIT G & H



FISCAL YEAR:	NO.	DATE	REVISION	BY:
DESIGNED BY:				
CHECKED BY:				

**Jackson County**  
 JACKSON COUNTY SECONDARY ROADS  
 201 West Platt Street, Maquoketa IA 52060  
 Phone: 563-652-4782  
 Email: jceng@jacksoncounty.iowa.gov  
 Web: https://jacksoncounty.iowa.gov

**JACKSON COUNTY**

PROJECT NUMBER  
**DESTINATION LIGHTING**

SHEET NAME  
**387TH AVE (Z20) AND 150TH ST (E17)**

SHEET NO.  
**1**

PLOT DATE: ----, N:\Policies\Destination Lights\Intersections\E-17 150th Street & 387th Avenue\CADD\Linework\_Z20&E17.dwg



Crash Severity	0
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	0
Property Damage Only	0

Injury Status Summary	0
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	0
Possible (complaint of pain/injury)	0
Unknown	0

Property/Vehicles/Occupants
Property Damage Total (dollars):
Average (per crash dollars):
Total Vehicles:
Average (per crash):
Total Occupants:
Average (per crash):

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.00
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.00
Possible/Unknown Injuries/Crash:	0.00





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Major Cause			0
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	0	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	0	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2023**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manner of Crash Collision	0
Non-collision (single vehicle)	0
Head-on (front to front)	0
Rear-end (front to rear)	0
Angle, oncoming left turn	0
Broadside (front to side)	0
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	0
Dry	0
Wet	0
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	0
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	0	0	0	0	0
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	0	0	0	0
>= 50 and <= 54	0	0	0	0	0
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	0	0	0	0
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	0	0	0	0	0

Alcohol Test Given	0
None	0
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	0
None	0
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

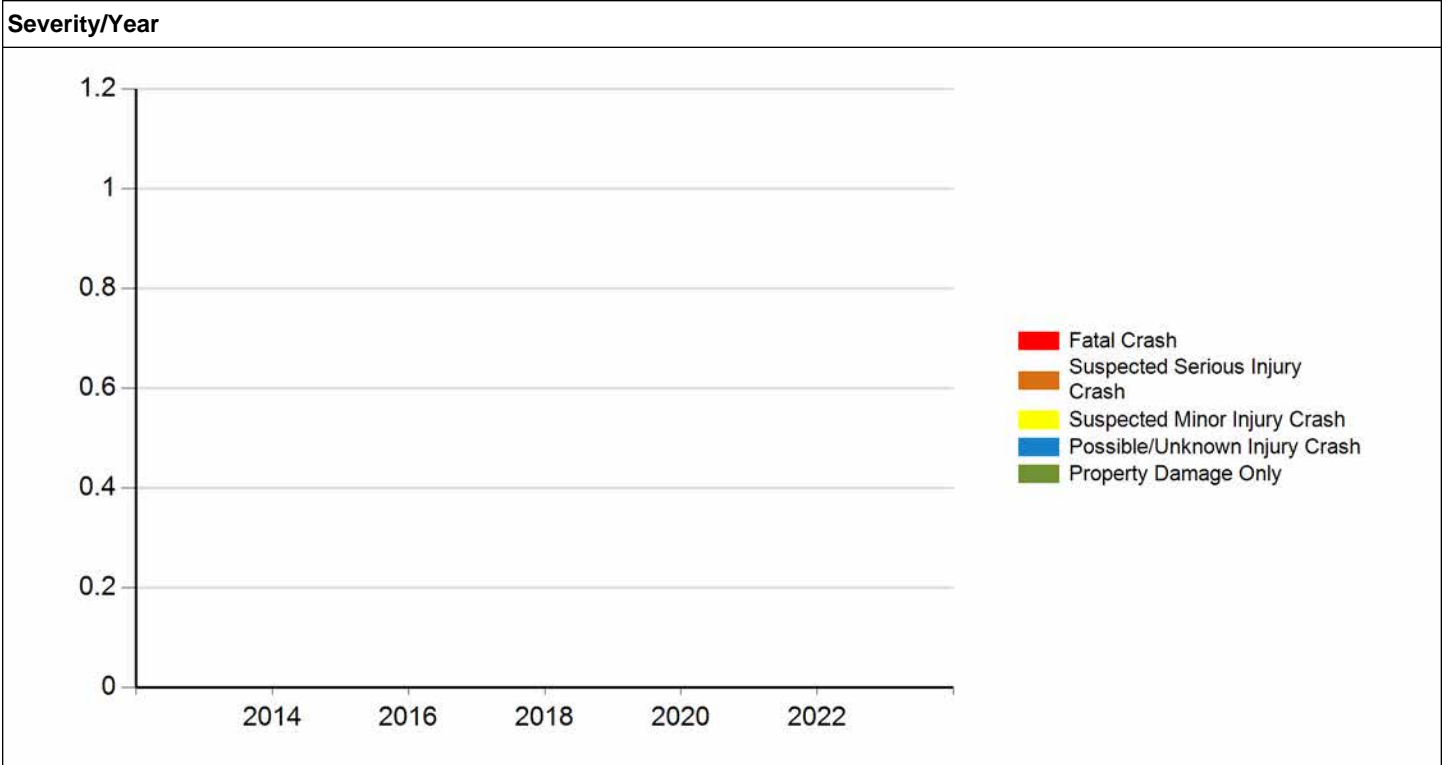
Drug Test Result	0
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	0
Other	0

Drug/Alcohol Related	0
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	0



Iowa Crash Analysis Tool  
Quick Report  
2018-2023

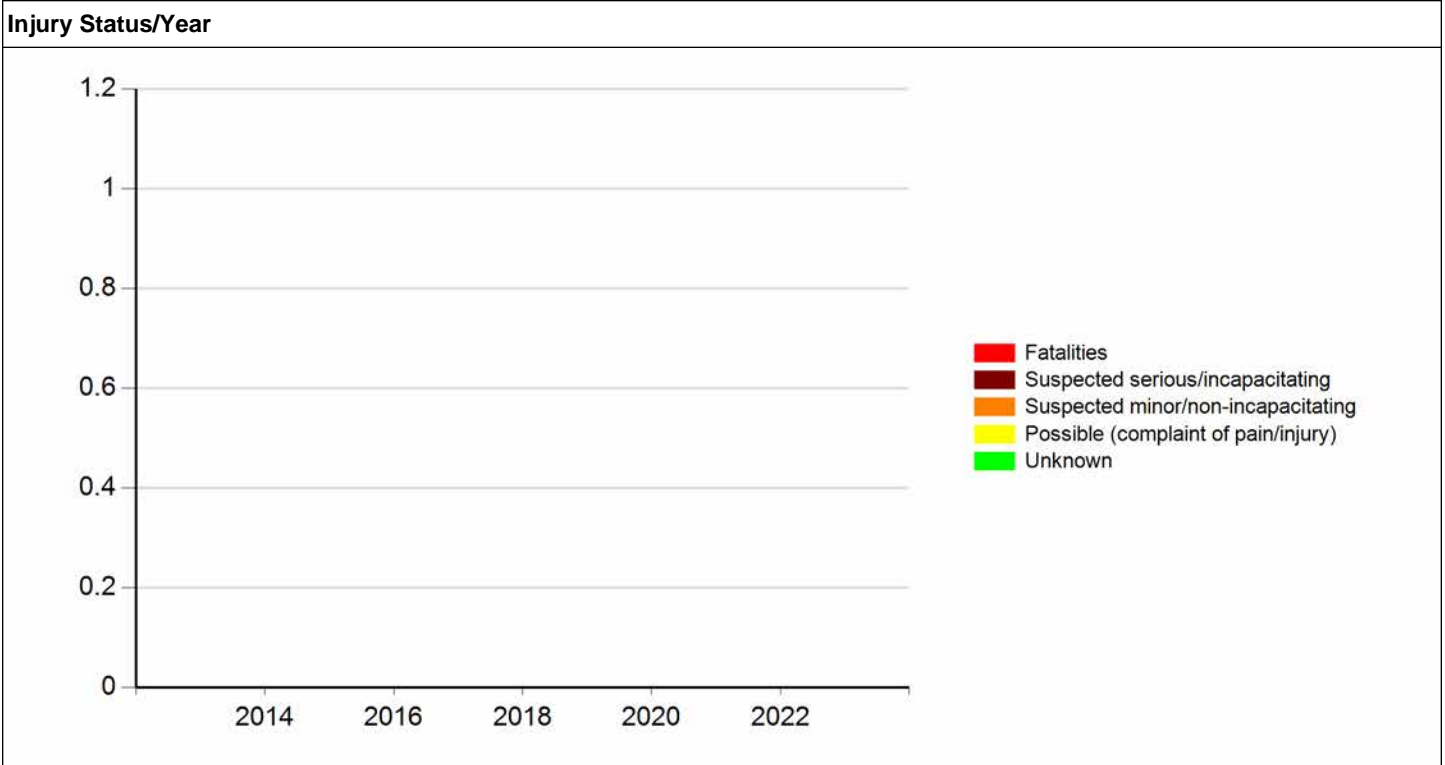
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





Iowa Crash Analysis Tool  
Quick Report  
2018-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0





**Meeting the following criteria**

Jurisdiction: Counties (Jackson)  
Year: 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

**Analyst Information**

County:	JACKSON	Prepared By:	JAYDEN SCHECKEL
Location:	387TH AVE (Z20) & 150TH ST (E17)	Date Prepared:	8/8/2023
Proposed Improvements:	DESTINATION LIGHT AT INTERSECTION		
Estimated Improvement Cost:	\$ 29,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 594

 Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	Combined CRF			
CRF Value (%)	50	50.0			
	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	50.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	50.0	0.00	0.00
Minor Injury (B)	\$ 265,000	0	50.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	0	50.0	0.00	0.00
Property Damage Only (O)	\$ 20,000	0	50.0	0.00	0.00

Crash Severity	Annual Societal Benefit				
Fatal (K)	\$ -				
Serious Injury (A)	\$ -				
Minor Injury (B)	\$ -				
Possible/Unknown Injury (C)	\$ -				
Property Damage Only (O)	\$ -				
Possible/Unknown Injury (C)	0.00%	0.00	0.00	0.00	0.00
Property Damage Only (O)	0.00%	0.00	0.00	0.00	0.00

### Total Benefits and Costs

		Implementation Cost	\$ 29,700
		Present Value of Maint.	\$ 6,604
Present Value Benefits (Societal Benefits)	\$ -	Present Value Costs (Impl. and Maint. Costs)	\$ 36,304
Present Value Net Return	\$ (36,304)		
<b>Benefit Cost Ratio</b>	<b>-</b>		

Form continues on next page



County:

JACKSON

Prepared By: JAYDEN SCHECKEL

Location:

387TH AVE (Z20) &amp; 150TH ST (E17)

Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

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## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** 27 July 2023

Location / Title of Project 210<sup>th</sup> Street & Hwy 1 Intersection Improvements

Applicant Johnson County, Iowa  
Contact

Person Ed Bartels, PE & PLS Title Assistant County Engineer

Complete Mailing Address 4810 Melrose Avenue West  
Iowa City, Iowa 52246

Phone 319.356.6046 E-Mail ebartels@johnsoncountyiowa.gov  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	<u>501,673.01</u>
Total Project Cost	\$	<u>615,389.76</u>
<b>Safety Funds Requested</b>	<b>\$</b>	<b><u>500,000.00</u></b>

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

Potential for Crash Reduction (PCR) Information					
Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
2017043358	IA 1 and 210 <sup>th</sup> Street	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0.24	0.03
		<input type="checkbox"/>	<input type="checkbox"/>		

**APPLICATION CERTIFICATION FOR PUBLIC AGENCY**

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s) where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

Representing the: Johnson County Board of Supervisors

Signed: *Lisa Green-Douglas* 7/27/23  
Signature Date Signed

Lisa Green-Douglas  
Printed Name

Attest: *Travis Weipert by Chris Edwards* 7/27/23  
Signature Date Signed

TRAVIS WEIPERT by CHRIS EDWARDS  
Printed Name

**RESOLUTION NO. 07-27-23-02**  
**RESOLUTION ENDORSING APPLICATION FOR TRAFFIC SAFETY  
IMPROVEMENT PROGRAM GRANT FUNDS FOR TURN LANES FROM  
HIGHWAY 1 ONTO 210TH STREET**

Whereas, the Johnson County Board of Supervisors is empowered under authority of Iowa Code Section 306.4 (2023 Code of Iowa) to operate and manage the secondary road system within Johnson County; and

Whereas, the State of Iowa has available grant funds associated with the Traffic Safety Improvement Program (TSIP) up to a maximum of \$500,000.00 per location; and

Whereas, existing and future growth and development anticipated within the fringe area of the City of Solon, embodied in the Solon Comprehensive Plan adopted April 20, 2016 and the Fringe Area Policy Agreement Between Johnson County and the City of Solon, effective February 9, 2023, may increase traffic along Iowa State Highway 1 (Iowa 1) and through its intersections with 210th Street and Dillons Furrow Road, all in Johnson County; and

Whereas, to enhance the safety of the travelling public now and into the foreseeable future, the County Engineer recommends application for TSIP funding of a turn lane project on Iowa 1 at its intersection with 210th Street in Big Grove Township, Johnson County, Iowa;

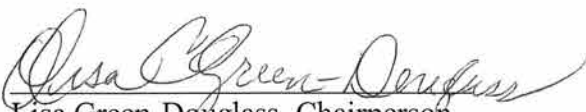
Now therefore, be it Resolved, that the Board of Supervisors of Johnson County do hereby declare support for and endorsement of the Grant Application for said turn lane project, and authorizes the submittal of such application for TSIP grant funding under 761 IAC 164.8 and .9 to the State of Iowa; and

Be it further Resolved, that the County will adequately maintain such improvements as within the Johnson County Secondary Roads system for a minimum of five (5) years; and

Be it further Resolved, that the County Engineer is hereby directed to pursue available funding for said project and to program it as soon as practicable.


It was moved by Sullivan and seconded by Porter the Resolution be adopted this 27th day of July, 2023.

**Roll Call:** Fixmer-Oraiz Absent Green Aye Green-Douglass Aye Porter Aye Sullivan Aye

  
Lisa Green-Douglass, Chairperson  
Board of Supervisors

Date Jul. 27, 2023

**ATTEST:**

  
Travis Weipert, Auditor  
Johnson County, Iowa

## **Traffic Safety Improvement Program (TSIP) Funds Narrative**

### **1 Project Location**

The site is located on Highway 1 south of Solon, at the intersection of 210<sup>th</sup> Street and extending south to the northern intersection of Dillons Furrow Road.

### **2 Existing Conditions**

Highway 1 is a primary State highway with an AADT of 9,500 (as counted in 2018). The roadway is currently asphalt with a 24' width and 8' shoulders (6' paved and 2' granular). 210<sup>th</sup> Street is gravel and classified as a "Minor Collector" and is designated as a "Farm to Market" road west of Highway 1. East of Highway one 210<sup>th</sup> Street is gravel and classified as a local "area service" road. The intersection is a two way stop on 210<sup>th</sup> Street where the through traffic on Highway 1 does not stop.

Visibility facing north on Highway 1 at the 210<sup>th</sup> intersection is unobstructed. The speed limit on Highway 1 at the intersection is 55 mph. Southbound traffic is accelerating one mile from the intersection where the speed limit increases to 55 mph. Facing south from the intersection with 210<sup>th</sup> Street drivers can see northbound Highway 1 traffic from 815' away as it exits a curve to the west and passes the northern Dillons Furrow intersection 630' away. Dillons Furrow is a gravel byway east of the Highway 1 roadway, terminating at two intersections, one 630' south of the intersection of Highway 1 and 210<sup>th</sup> Street and the other one mile to the south. The northern intersection of Dillons Furrow and Highway 1 visibility looking south is limited for passenger vehicles due to a 6' rise in Highway 1 600' south of the intersection. Highway 1 to the north of the northern Dillons Furrow intersection approaches via a sweeping curve after exiting Solon and provides slightly over a mile of visibility in normal conditions.

### **3 Safety history for this stretch of Highway 1**

There were 4 accidents recorded near this intersection from 2018-2022, including 3 fatalities. The county has updated the future land use map to change 270 acres of land at the southeast corner of Highway 1 and 210<sup>th</sup> Street from agricultural to residential. This development of residential subdivisions will have a significant impact on the traffic volume in this area, especially the turning movements. The county has already approved the preliminary plat for Spartan Hollow (a 51 lot subdivision along Dillons Furrow Road). Most accidents in this stretch have been front-to-rear collisions. The next largest category of accidents are head-on, front-to-front collisions.

### **4 Proposed Concept**

This project will add northbound and southbound left turn lanes from Highway 1 onto 210<sup>th</sup> Street. The project will also add northbound and southbound right turn lanes from Highway 1 onto 210<sup>th</sup> Street. The project will include a southbound left turn lane from Highway 1 onto Dillons Furrow Road. The developer of Spartan Hollow Subdivision has agreed to participate in the funding of the southbound left turn lane onto Dillons Furrow Road. The costs of the southbound left turn lane onto Dillons Furrow are not included in the safety cost of the project. The safety cost is the cost of the improvements required

for the turn lanes at 210<sup>th</sup> Street. The total cost includes both the improvements required for 210<sup>th</sup> Street and Dillons Furrow Road. There will be a continuous painted median for the left turn lanes from 210<sup>th</sup> Street to Dillons Furrow Road to avoid having the through lanes tapering in and out. The turn lanes at the intersection will reduce the number of crashes at this intersection by removing the stopped and slower traffic from the through lanes. This grant request is for the cost of the improvements at the intersection of 210<sup>th</sup> Street. The amount of the grant request is \$500,000.

### **PROJECT SCHEDULE**

Submission of TSIP application	July 2023
Start project design	August 2023
Anticipated approval of TSIP funds	January 2024
Final project design	February 2024
Safety funds become available	July 2024
Construction phase	July 2024 – October 2024
Project completion	October 2024

COST ESTIMATE

DESCRIPTION	UNITS	UNIT PRICE	TOTAL QUANTITY	TOTAL COST	SAFETY QUANTITY	SAFETY COST
REMOVE GRAVEL SHOULDER 6"	CY	\$19.87	271.3	\$5,390.66	225.0	\$4,470.75
REMOVE ACC SHOULDER	SY	\$9.62	2570.7	\$24,729.81	2024.9	\$19,479.43
RELOCATE ROADSIDE DITCH	CY	\$6.23	3690.0	\$22,988.70	2865	\$17,848.95
RESHAPE SHOULDERS	STATION	\$328.50	41.5	\$13,632.75	32.2	\$10,590.84
CONSTRUCT ACC SURFACE 1.5"	TON	\$58.04	415.9	\$24,137.93	331.8	\$19,257.49
CONSTRUCT ACC INTERMEDIATE 1.5"	TON	\$57.53	415.9	\$23,925.83	331.8	\$19,088.27
CONSTRUCT ACC BASE 9"	TON	\$52.33	2495.3	\$130,579.38	1990.8	\$104,177.58
CONSTRUCT MODIFIED SUBBASE 12"	CY	\$51.93	1590.0	\$82,568.70	1268.5	\$65,874.17
CONSTRUCT ACC SHOULDER 6"	SY	\$36.83	2631.7	\$96,924.28	2082.7	\$76,704.61
CONSTRUCT MODIFIED SUBBASE 6"	CY	\$51.93	438.6	\$22,777.08	347.1	\$18,025.48
CONSTRUCT GRAVEL SHOULDER 6"	TON	\$38.31	556.7	\$21,326.22	443.4	\$16,985.89
CORE OUT SUBGRADE & DISPOSE 6"	CY	\$15.39	1399.5	\$21,538.02	1125.0	\$17,313.18
PAINT MARKINGS	STATION	\$20.55	142.6	\$2,930.43	80.5	\$1,654.28
MILLED SHOULDER RUMBLE STRIPS	STATION	\$200.00	35.0	\$7,000.00	28.0	\$5,600.00
REMOVE/PREPLACE 18" CMP CULVERT	LF	\$70.00	35.0	\$2,450.00	35.0	\$2,450.00
TRAFFIC CONTROL	LS	\$25,000.00	1.0	\$25,000.00	1.0	\$25,000.00
MOBILIZATION	LS	\$30,000.00	1.0	\$30,000.00	1.0	\$30,000.00

ESTIMATED CONSTRUCTION COST	\$557,899.78	\$454,520.92
CONTINGENCY 10%	\$55,789.98	\$45,452.09
ROW ACQUISITION	\$1,700.00	\$1,700.00
 ESTIMATED TOTAL COST	 \$615,389.76	 \$501,673.01

# AREA MAP





**PHOTOS**



**LOCATION OF 3 FATALITY ACCIDENT**



**HWY 1 SOUTH FROM WEST 210<sup>TH</sup> STREET**



**210<sup>TH</sup> STREET EAST FROM HWY 1**



**210<sup>TH</sup> STREET WEST FROM HWY 1**



**HWY 1 NORTH FROM NORTHERN DILLONS FURROW INTERSECTION**

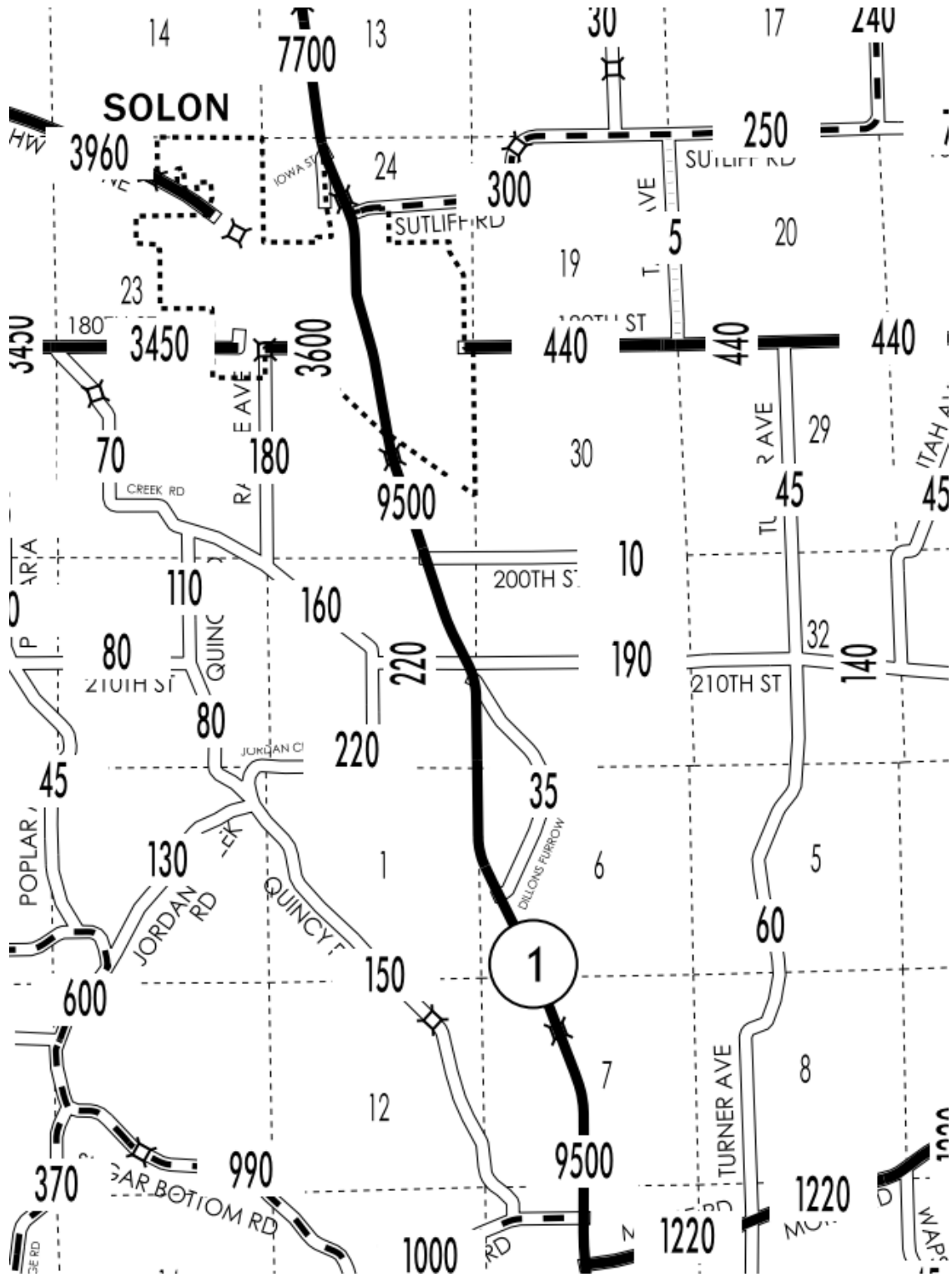


**HIGHWAY 1 SOUTH FROM NORTHERN DILLONS FURROW INTERSECTION**



**DILLONS FURROW FROM NORTHERN INTERSECTION WITH HIGHWAY 1**

# 2018 AADT TRAFFIC COUNTS



Traffic Count  
 Intersection 210th St NE & HWY 1 NE, Solon Iowa  
 MMS Project #9414-017  
 Thursday 06/01/2023 7:00-9:00am

		Eastbound			Northbound			Westbound			Southbound			Intersection Total
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 - 7:15	Total	1	0	1	0	49	0	0	0	1	0	133	0	185
7:15 - 7:30	Total	0	0	0	0	56	0	1	0	3	1	158	1	220
7:30 - 7:45	Total	2	0	0	0	47	0	1	0	5	1	157	0	213
7:45 - 8:00	Total	0	0	0	0	74	0	0	0	3	0	139	0	216
8:00 - 8:15	Total	0	1	2	0	64	0	0	0	4	1	113	1	186
8:15 - 8:30	Total	0	0	0	0	51	1	1	0	0	0	98	1	152
8:30 - 8:45	Total	2	0	0	0	41	0	0	1	1	5	117	1	168
8:45 - 9:00	Total	0	0	1	0	59	0	0	0	2	0	84	1	147
AM Peak Hour		3	1	3	0	241	1	2	1	15	6	587	4	864

Traffic Count  
 Intersection 210th St NE & HWY 1 NE, Solon Iowa  
 MMS Project #9414-017  
 Tuesday 06/01/2023 7:00-9:00am

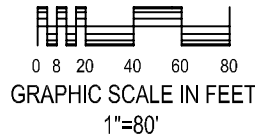
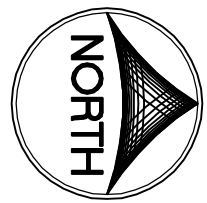
	Eastbound			Northbound			Westbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
7:00 to 8:00	3	0	1	0	226	0	2	0	12	2	587	1
7:15 to 8:15	2	1	2	0	241	0	2	0	15	3	567	2
7:30 to 8:30	2	1	2	0	236	1	2	0	12	2	507	2
7:45 to 8:45	2	1	2	0	230	1	1	1	8	6	467	3
8:00 to 9:00	2	1	3	0	215	1	1	1	7	6	412	4

Traffic Count  
 Intersection 210th St NE & HWY 1 NE, Solon Iowa  
 MMS Project #9414-017  
 Tuesday 06/01/2023 3:00-6:00pm

		Eastbound			Northbound			Westbound			Southbound			Intersection Total
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3:00 - 3:15	Total	3	0	0	2	97	1	0	0	0	2	68	3	176
3:15 - 3:30	Total	1	0	0	0	103	0	0	0	3	3	73	1	184
3:30 - 3:45	Total	1	0	0	1	134	2	0	0	2	1	78	2	221
3:45 - 4:00	Total	1	0	0	3	140	2	1	0	0	6	81	0	234
4:00 - 4:15	Total	1	0	1	2	131	0	0	0	3	3	74	1	216
4:15 - 4:30	Total	2	0	0	1	173	3	0	1	1	3	57	0	241
4:30 - 4:45	Total	0	1	1	0	151	3	0	0	1	1	77	3	238
4:45 - 5:00	Total	1	0	1	0	165	1	0	0	0	2	89	1	260
5:00 - 5:15	Total	0	0	0	1	168	5	0	0	0	2	87	4	267
5:15 - 5:30	Total	0	0	0	0	187	3	0	0	0	1	68	0	259
5:30 - 5:45	Total	2	0	0	4	154	3	0	0	0	4	64	2	233
5:45 - 6:00	Total	0	2	0	0	109	1	0	1	0	3	51	3	170
PM Peak Hour		6	2	3	7	674	12	1	1	8	13	321	9	1057

Traffic Count  
 Intersection 210th St NE & HWY 1 NE, Solon Iowa  
 MMS Project #9414-017  
 Tuesday 06/01/2023 3:00-6:00pm

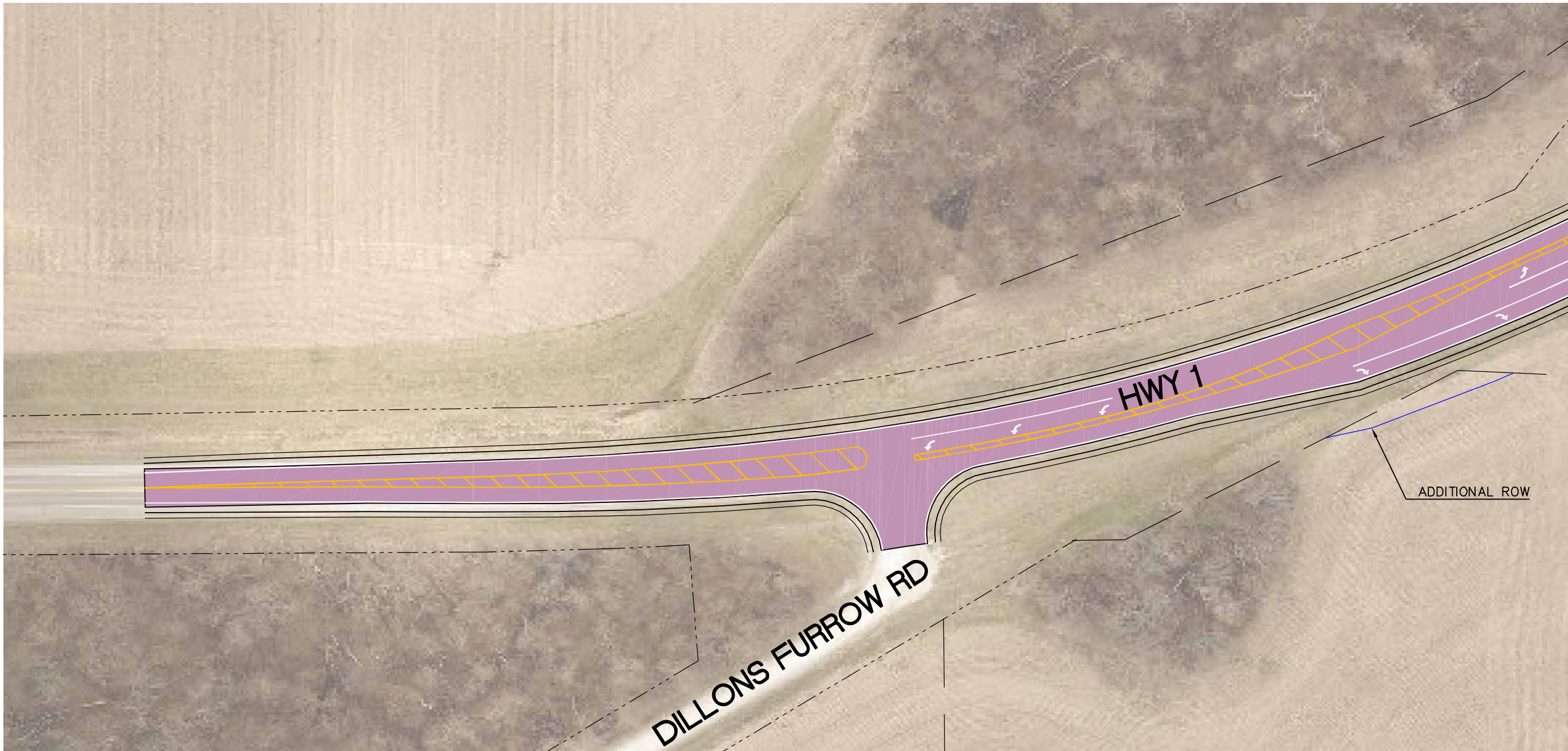
	Eastbound			Northbound			Westbound			Southbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
3:00 to 4:00	6	0	0	6	474	5	1	0	5	12	300	6
3:15 to 4:15	4	0	1	6	508	4	1	0	8	13	306	4
3:30 to 4:30	5	0	1	7	578	7	1	1	6	13	290	3
3:45 to 4:45	4	1	2	6	595	8	1	1	5	13	289	4
4:00 to 5:00	4	1	3	3	620	7	0	1	5	9	297	5
4:15 to 5:15	3	1	2	2	657	12	0	1	2	8	310	8
4:30 to 5:30	1	1	2	1	671	12	0	0	1	6	321	8
4:45 to 5:45	3	0	1	5	674	12	0	0	0	9	308	7
5:00 to 6:00	2	2	0	5	618	12	0	1	0	10	270	9



CIVIL ENGINEERS  
LAND PLANNERS  
LAND SURVEYORS  
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ENVIRONMENTAL SPECIALISTS

1917 S. GILBERT ST.  
IOWA CITY, IOWA 52240  
(319) 351-8282

[www.mmsconsultants.net](http://www.mmsconsultants.net)



Date	Revision
------	----------

## 210TH STREET / HWY 1 TURN LANE EXHIBIT

## DILLONS FURROW ROAD NE

JOHNSON COUNTY  
IOWA

**MMS CONSULTANTS, INC.**

Date: 06-16-2023

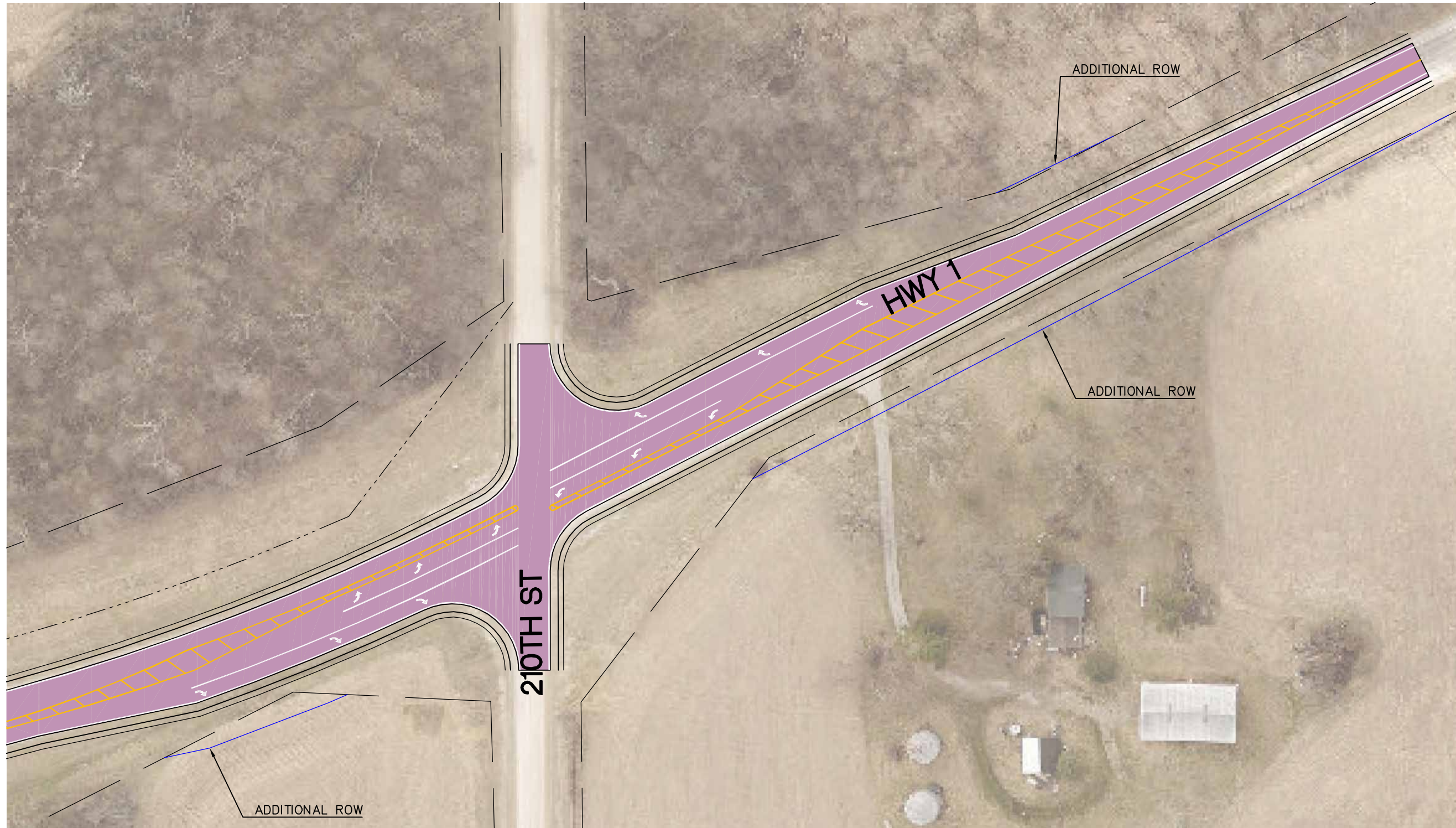
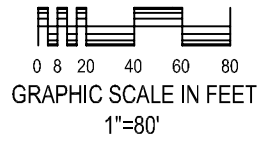
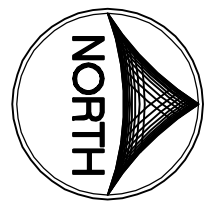
Designed by: PVA Field Book No: FIELDBOOK

Drawn by: ADP Scale: 1"=80'

Checked by: RLA Sheet No: 1

Project No: 9414-017 of: 2





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Date	Revision
------	----------

## 210TH STREET / HWY 1 TURN LANE EXHIBIT

### DILLONS FURROW ROAD NE

JOHNSON COUNTY  
IOWA

**MMS CONSULTANTS, INC.**

Date: **06-16-2023**

Designed by: PVA Field Book No: FIELDBOOK

Drawn by: ADP Scale: 1"=80'

Checked by: RLA Sheet No: 2

Project No: 9414-017 of: 2



Iowa Crash Analysis Tool  
 Quick Report  
 2018-2022

Crash Severity		4
Fatal Crash	1	
Suspected Serious Injury Crash	0	
Suspected Minor Injury Crash	1	
Possible/Unknown Injury Crash	1	
Property Damage Only	1	

Injury Status Summary		6
Fatalities	3	
Suspected serious/incapacitating	0	
Suspected minor/non-incapacitating	2	
Possible (complaint of pain/injury)	1	
Unknown	0	

Property/Vehicles/Occupants	
Property Damage Total (dollars):	96,000.00
Average (per crash dollars):	24,000.00
Total Vehicles:	9.00
Average (per crash):	2.25
Total Occupants:	10.00
Average (per crash):	2.50

Average Severity	
Fatalities/Fatal Crash:	3.00
Fatalities/Crash:	0.75
Injuries/Crash:	0.75
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.50
Possible/Unknown Injuries/Crash:	0.25





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Major Cause			4
Animal	0	Ran traffic signal	0
Ran stop sign	0	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	1	FTYROW: From yield sign	0
FTYROW: Making left turn	1	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	1
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2018-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	1	0	0	0	0	1	0	0	2
Friday	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Saturday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	1	1	0	1	0	1	0	0	4

Manner of Crash Collision	4
Non-collision (single vehicle)	0
Head-on (front to front)	2
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	1
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	0
Other	0
Unknown	0

Surface Conditions	4
Dry	2
Wet	1
Ice/frost	1
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	0
Other	0
Unknown	0

Fixed Object Struck	9
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	9



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	1	0	0	1
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	1	0	0	1
>= 21 and <= 24	0	0	0	0	0
>= 25 and <= 29	0	0	0	0	0
>= 30 and <= 34	1	0	0	0	1
>= 35 and <= 39	0	0	0	0	0
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	1	0	0	1
>= 50 and <= 54	2	1	0	0	3
>= 55 and <= 59	0	0	0	0	0
>= 60 and <= 64	0	0	0	0	0
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	1	0	0	1
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>9</b>

Alcohol Test Given	9
None	7
Blood	2
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

Drug Test Given	9
None	7
Blood	2
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	0

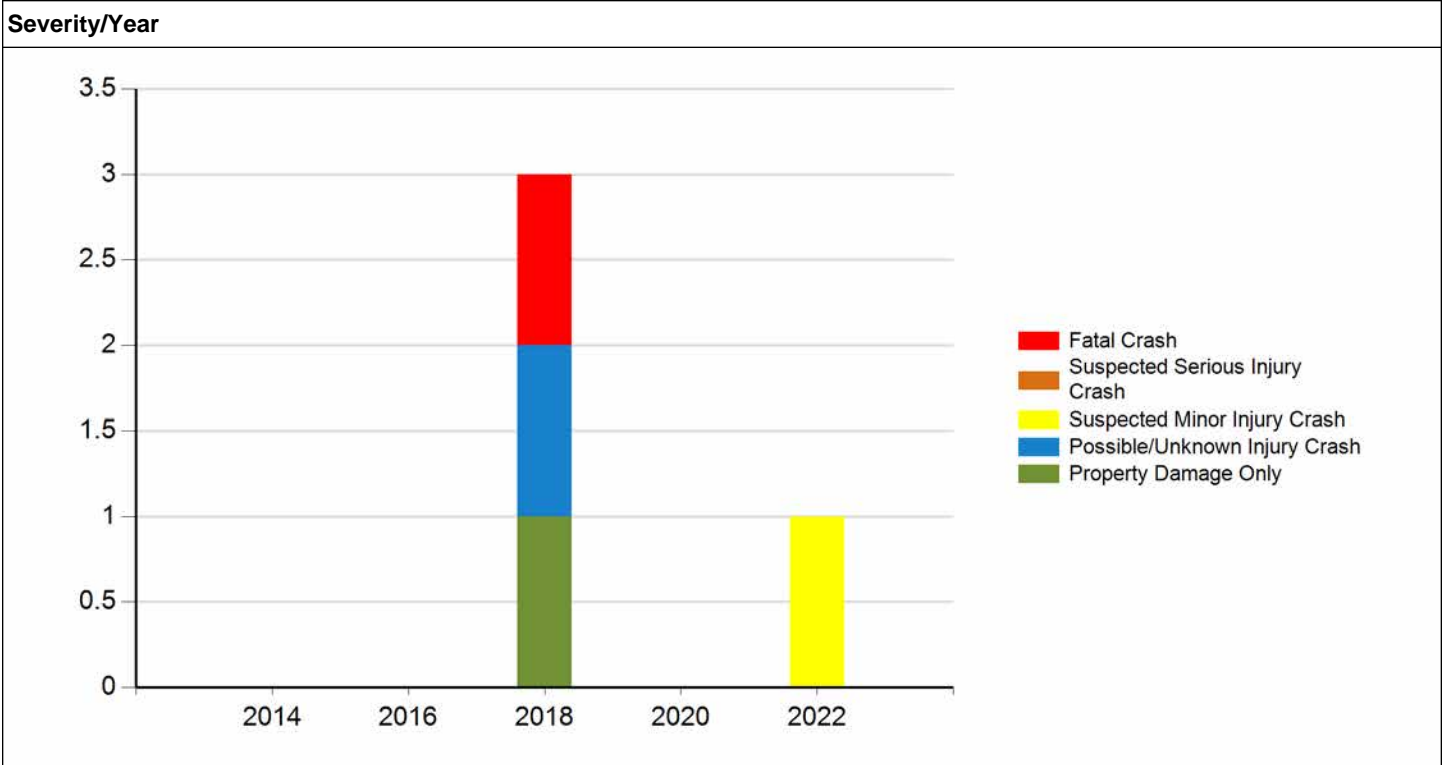
Drug Test Result	9
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	9
Other	0

Drug/Alcohol Related	4
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	0
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	1
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	3



Iowa Crash Analysis Tool  
Quick Report  
2018-2022

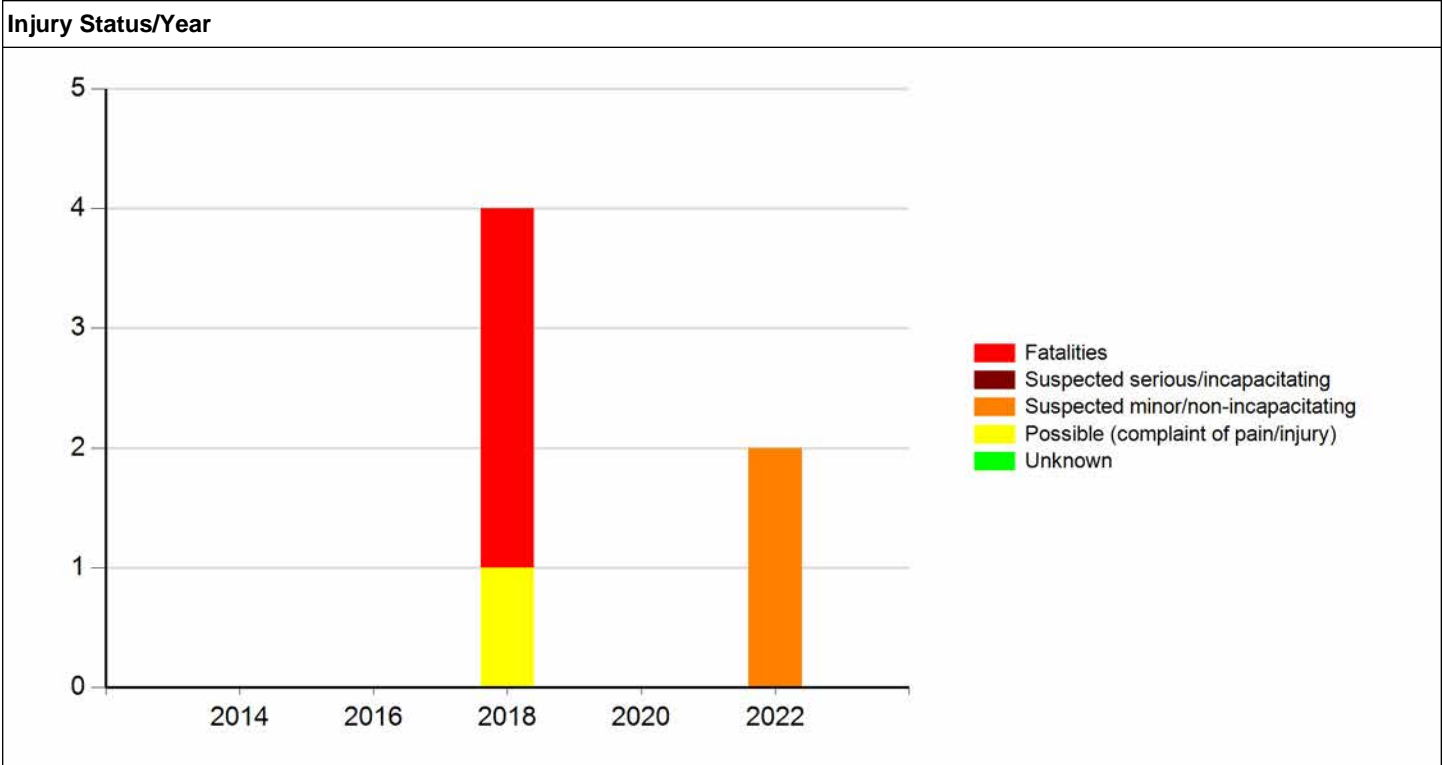
Crash Severity - Annual							
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total	
2013	0	0	0	0	0	0	0
2014	0	0	0	0	0	0	0
2015	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0
2018	1	0	0	1	1	1	3
2019	0	0	0	0	0	0	0
2020	0	0	0	0	0	0	0
2021	0	0	0	0	0	0	0
2022	0	0	1	0	0	0	1
2023	0	0	0	0	0	0	0
<b>Total</b>	1	0	1	1	1	1	4





Iowa Crash Analysis Tool  
Quick Report  
2018-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	3	0	0	1	0	4
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2022	0	0	2	0	0	2
2023	0	0	0	0	0	0
<b>Total</b>	3	0	2	1	0	6





**Meeting the following criteria**

Jurisdiction: Statewide  
Year: 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**

Highway 1 and 210th Street Intersection



County:	Johnson	Prepared By:	Ron Amelon
Location:	Highway 1 and 210th Street	Date Prepared:	7/13/2023
Proposed Improvements:	Left and right turn lanes on Highway 1 at 210th Street		
Estimated Improvement Cost:	\$ 501,673		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	15	Annual Maintenance Cost:	\$ 10,033

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	2
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	Combined CRF		
CRF Value (%)	35	15	<b>32.0</b>		
	Rounded	Crash History	CRF (from	Crash History -	Crashes Saved
Crash Severity	Societal Costs	(Total):	above)	Annual Avg	Annually
Fatal (K)	\$ 4,000,000	1	32.0	<b>0.20</b>	<b>0.06</b>
Serious Injury (A)	\$ 4,000,000		32.0	<b>0.00</b>	<b>0.00</b>
Minor Injury (B)	\$ 265,000	1	32.0	<b>0.20</b>	<b>0.06</b>
Possible/Unknown Injury (C)	\$ 125,000	1	32.0	<b>0.20</b>	<b>0.06</b>
Property Damage Only (O)	\$ 20,000	1	32.0	<b>0.20</b>	<b>0.06</b>

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ <b>255,991</b>
Serious Injury (A)	\$ -
Minor Injury (B)	\$ <b>16,959</b>
Possible/Unknown Injury (C)	\$ <b>8,000</b>
Property Damage Only (O)	\$ <b>1,280</b>

### Total Benefits and Costs

	Implementation Cost	\$ 501,673	
	Present Value of Maint.	\$ 111,556	
Present Value Benefits (Societal Benefits)	\$ 3,343,066	Present Value Costs (Impl. and Maint. Costs)	\$ 613,229
Present Value Net Return	\$ 2,729,837		
<b>Benefit Cost Ratio</b>	<b>5.45</b>		

Form continues on next page

County:

Johnson

Prepared By: Ron Amelon

Location:

Highway 1 and 210th Street

Date Prepared: 7/13/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: 8/3/2023

Location / Title of Project COUNTY ROAD X64 / PCC OVERLAY

Applicant JONES COUNTY

Contact Person DEREK SNEAD Title COUNTY ENGINEER

Complete Mailing Address 19501 HWY 64 E, P.O. BOX 368  
ANAMOSA, IA 52205

Phone (319) 462-3785 E-Mail ENGINEER@JONESCOUNTYIOWA.GOV  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	1,009,000
Total Project Cost	\$	3,750,000
<b>Safety Funds Requested</b>	<b>\$</b>	<b>500,000</b>

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

**Potential for Crash Reduction (PCR) Information**

Potential for Crash Reduction (PCR) Information					
Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the County of Jones

Signed:  8-8-23  
Signature Date Signed

Jeff Swisher, Chairman  
Printed Name

Attest:  8/8/23  
Signature Date Signed

Whitney Hein, County Auditor  
Printed Name

# Traffic Safety Improvement Program (TSIP) Funds Narrative

## **B1. Project Location**

On County Road X-64, from the Cedar County Line, thence north and then east to Massillan Road (4.43 miles).

## **B2. Existing Conditions**

County Road X-64 is a 20-foot-wide PCC roadway that was paved in 1964. The existing 6-inch pavement has no safety edge or paved shoulders. There are three horizontal curves within the project corridor that are posted for reduced speeds of 40 mph and signed according to MUTCD requirements.

## **B3. Proposed Concept**

Local and national research indicates that a high portion of run-off-the-road crashes occur on two lane roadways, and that many of those crashes can be mitigated through the application of low-cost, safety improvements.

Based on the review of existing conditions and accidents, the following improvements have been recommended to enhance safety.

- Edgeline rumble strips will provide drivers with tactile and auditory warnings as they are about to leave their lane of travel, providing a quicker reaction time in which to correct their errant direction.
- Widen narrow pavement lanes from 10-foot to 11-foot.
- Add paved shoulders with safety edge throughout entire roadway (2-foot paved shoulders on the tangential segments and 4-foot paved shoulders in curves).

## **B4. Justification**

This segment of Jones County roadway is the last pavement less than 22-foot in width and has zero paved shoulders. The proposed lane widening and paved shoulder with edge rumbles would warn the drivers of departing the roadway with enough time to restore control without over correcting. If drivers continue to the gravel shoulder file, the added safety edge will also help to ease back onto the paved surface without edge rut concerns.

A crash analysis and benefit/cost calculation has been performed for the proposed safety improvements. The changes will enhance safety and reduce the severity of the crashes. Consideration for funding for these improvements is greatly appreciated.

**ENGINEERING COST OPINION**

ITEM DESCRIPTION	UNITS	TOTAL QUANTITY	SAFETY QUANTITY	UNIT PRICE	TOTAL PROJ COST	SAFETY COST	
MODIFIED SUBBASE	CY	700	0	\$ 50	\$ 35,000	\$ -	
GRANULAR SHOULDERS, TYPE B	TON	7,000	0	\$ 30	\$ 210,000	\$ -	
PAVED SHOULDER, P.C. CONCRETE, 9 IN.	SY	12,200	12,200	\$ 60	\$ 732,000	\$ 732,000	
EXCAVATION, CLASS 13, FOR WIDENING	CY	1,400	1,400	\$ 25	\$ 35,000	\$ 35,000	
BLADING AND SHAPING SHOULDER MATERIAL	STA	470	470	\$ 30	\$ 15,000	\$ 15,000	
STND OR SF PCC PAVEMENT, CL C, CL 3, 7 IN.	SY	4,000	0	\$ 65	\$ 260,000	\$ -	
PCC OVERLAY, FURNISH ONLY	CY	10,800	982	\$ 130	\$ 1,404,000	\$ 128,000	
PCC OVERLAY, PLACEMENT ONLY (UNBONDED)	SY	55,000	5,000	\$ 6	\$ 330,000	\$ 30,000	
PAVEMENT INTERLAYER GEOTEXTILE	SY	68,000	0	\$ 4	\$ 238,000	\$ -	
SURFACING, DRIVEWAY, CL A CRUSHED STONE	TON	200	0	\$ 25	\$ 5,000	\$ -	
PAYMENT ADJ INC/DIS FOR PCC PVMT SMOOTHNESS	EA	41,250	3,750	\$ 1	\$ 42,000	\$ 4,000	
SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	LF	23,000	0	\$ 8	\$ 173,000	\$ -	
SUBDRAIN OUTLET, DR-306	EA	80	0	\$ 400	\$ 32,000	\$ -	
REMOVAL OF PAVEMENT	SY	1,800	0	\$ 10	\$ 18,000	\$ -	
PAINTED PVMT MARKING, WB OR SB	STA	900	0	\$ 50	\$ 45,000	\$ -	
SAFETY CLOSURE	EA	15	0	\$ 250	\$ 4,000	\$ -	
TRAFFIC CONTROL	LS	1	0	\$ 10,000	\$ 10,000	\$ 3,000	
MOBILIZATION	LS	1	0	\$ 135,000	\$ 135,000	\$ 35,000	
MILLED SHOULDER RUMBLE STRIPS	STA	450	450	\$ 60	\$ 27,000	\$ 27,000	
<b>CONSTRUCTION COST OPINION:</b>						<b>\$ 3,750,000</b>	<b>\$ 1,009,000</b>
<b>SOURCES AND AMOUNTS OF FUNDS FOR PROJECT</b>							
<b>TRANSPORTATION SAFETY IMPROVEMENT PROGRAM (TSIP) FUNDS:</b>						<b>\$ 500,000</b>	<b>13%</b>
<b>JONES COUNTY FARM-TO-MARKET (FM) FUNDS:</b>						<b>\$ 3,250,000</b>	<b>87%</b>
<b>TOTAL ANTICIPATED FUNDING:</b>						<b>\$ 3,750,000</b>	

## Time Schedule

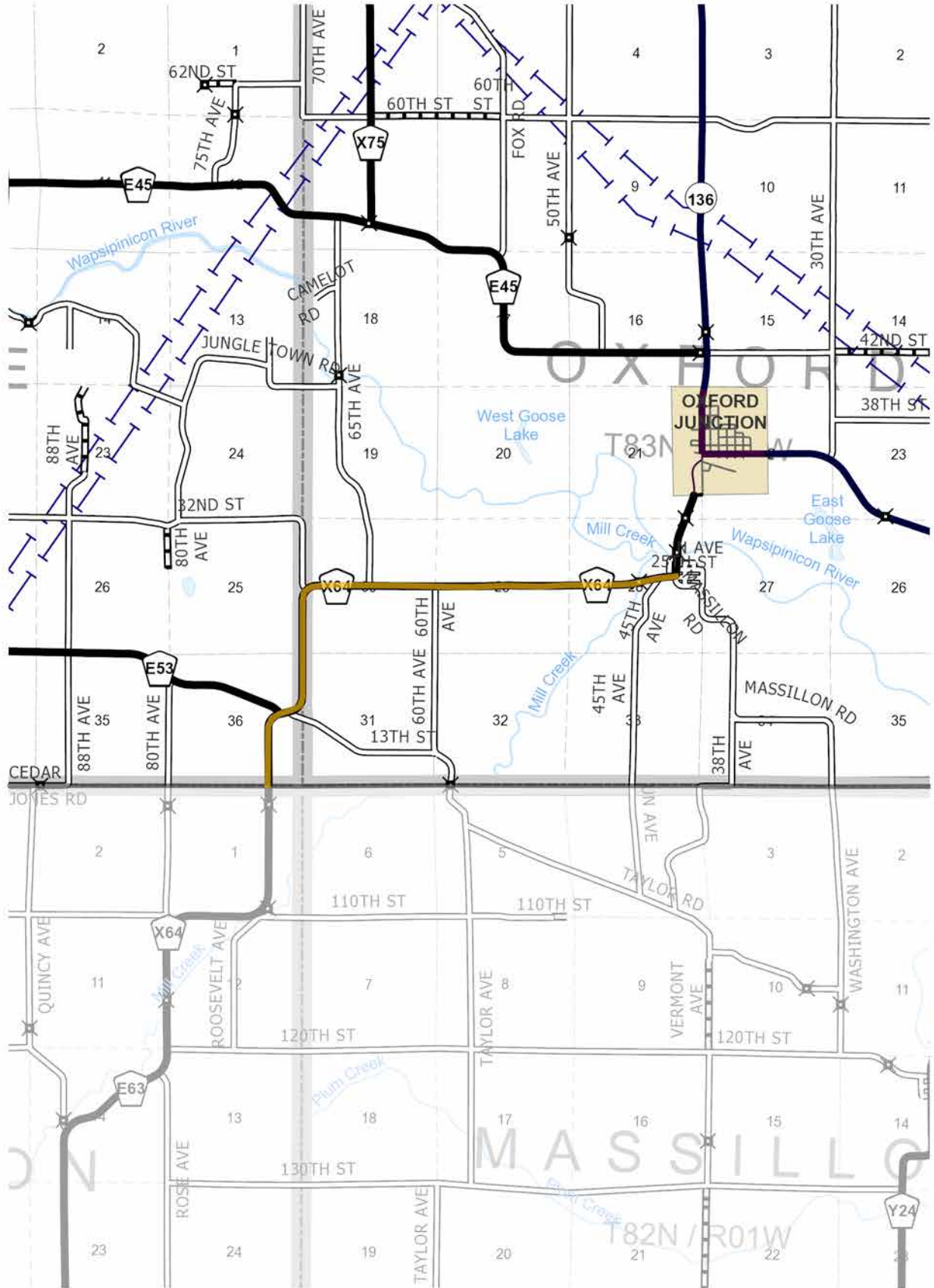
The schedule proposed for the project is as follows:

D1. <u>Submittal of TSIP Application</u>	August 2023
D2. <u>Proceed with Project Design</u>	August 2023 – December 2023
D3. <u>Anticipated Approval of TSIP Funds</u>	December 2023
D4. <u>Final Project Design</u>	December 2023
D5. <u>Project Letting</u>	July 2024
D6. <u>Safety Funds become Available</u>	July 2024
D7. <u>Construction Begins</u>	August 2024
D8. <u>Project Completion</u>	November 2024

Exhibit E

Jones - ICEASB Easy Map

9:04 AM, Fri, Aug 4, 2023

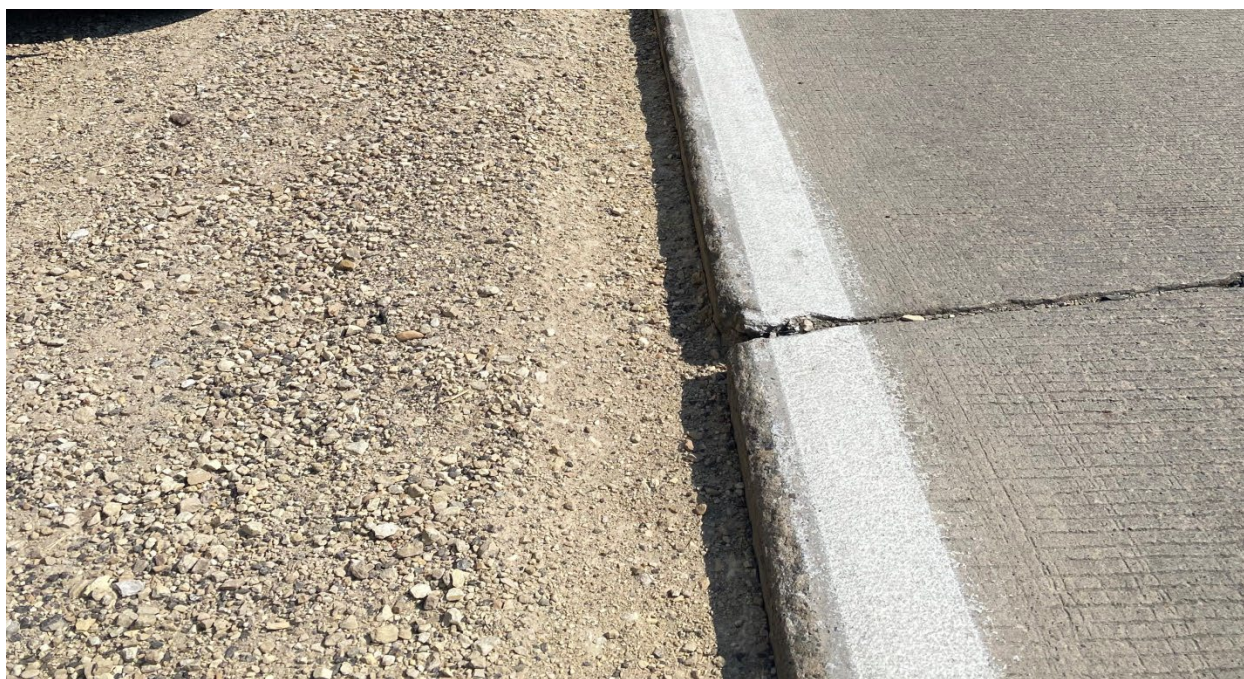




**Color Pictures of the Project Site**



F1. Existing narrow pavement @ Cedar County Line



F2. Edge rutting developing throughout project corridor



F3. Sharp horizontal curve near County Road E53

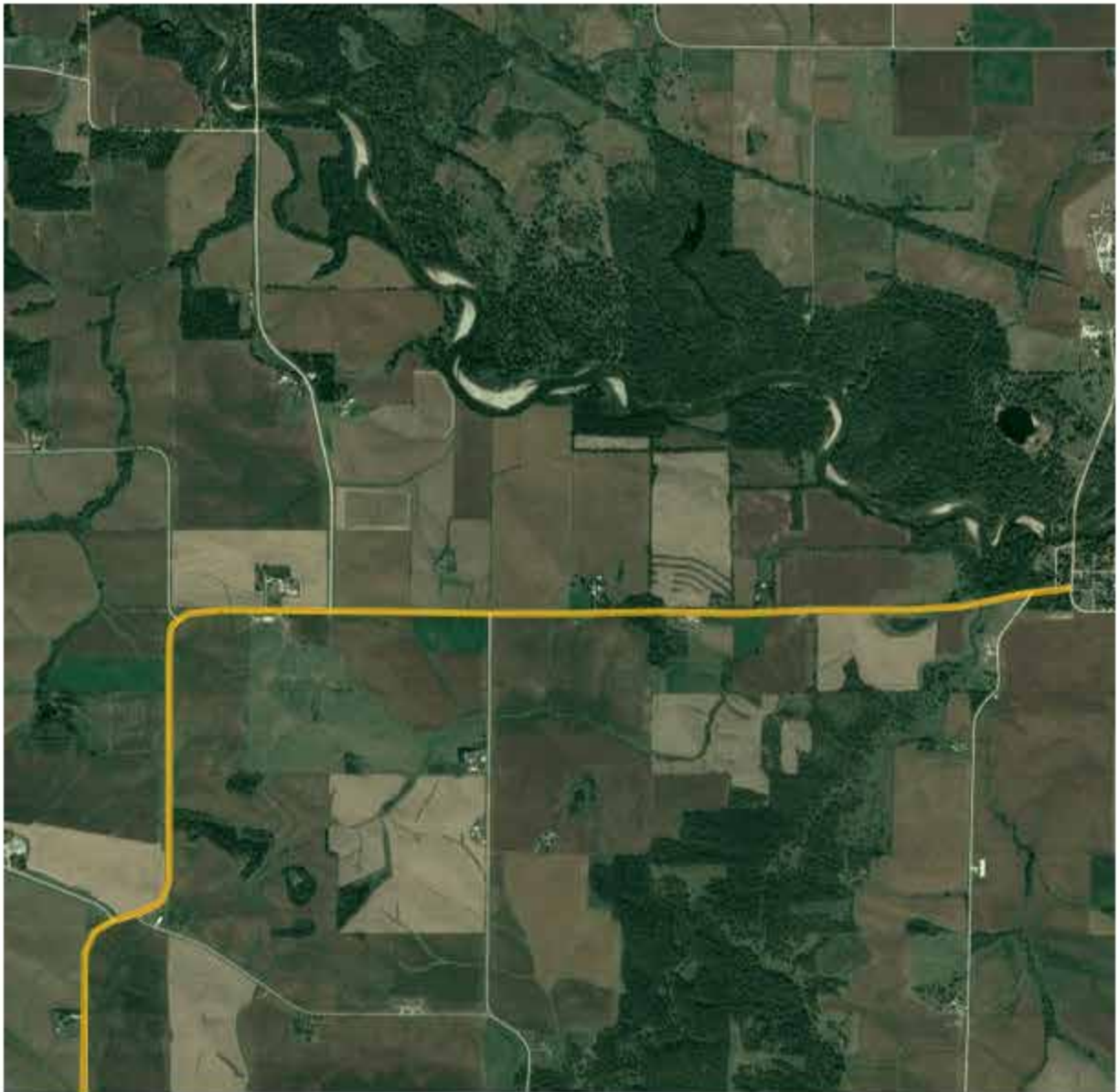


F4. Sharp reverse curve near County Road E53

Exhibit G

9:18 AM, Fri, Aug 4, 2023

Jones - ICEASB Easy Map



Google Earth imagery provided by Airbus, Landsat / Copernicus, Maxar Technologies, USDA/FPAC/GEO

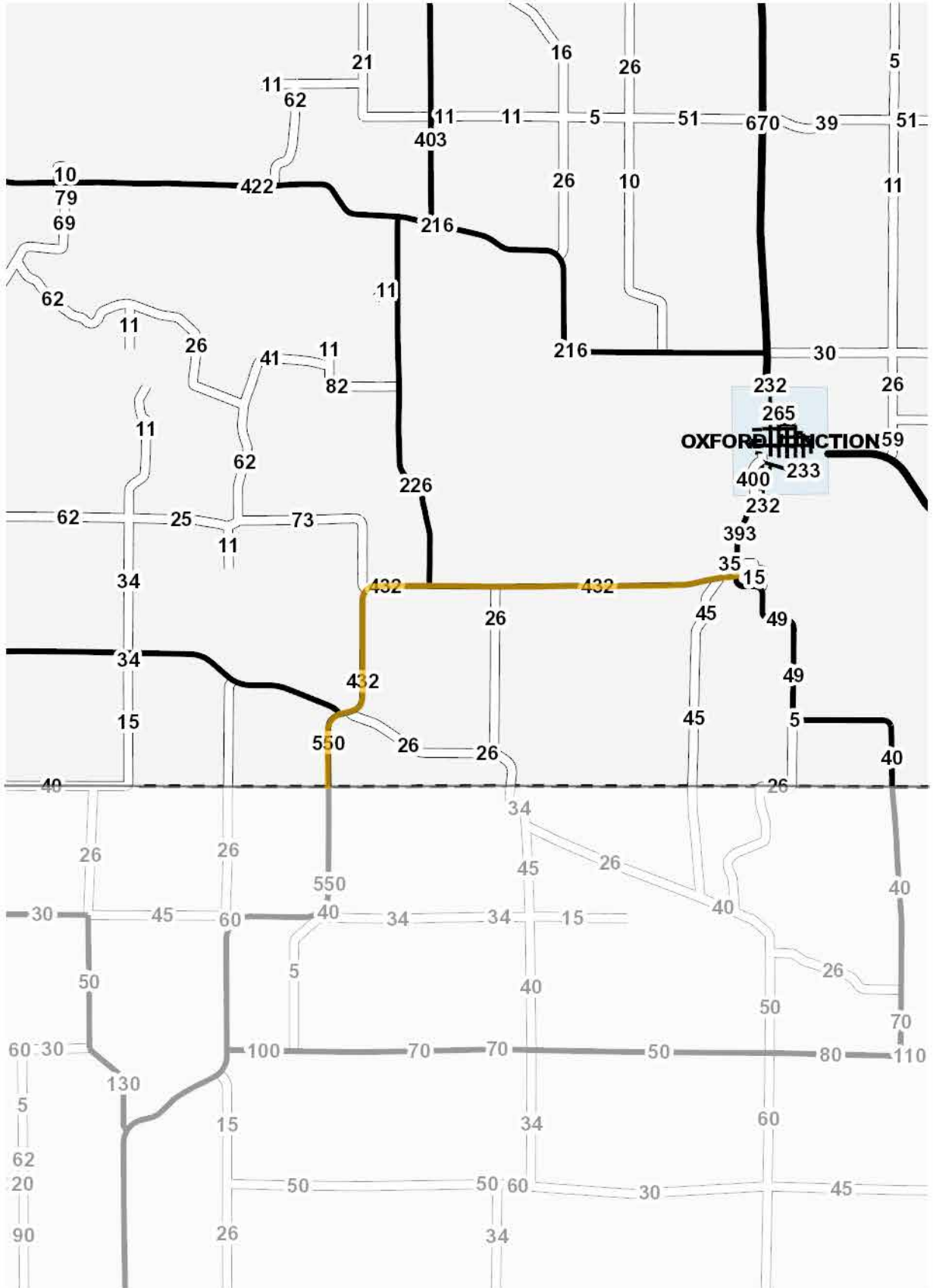
Crash Severity	11
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	2
Possible/Unknown Injury Crash	1
Property Damage Only	8

Injury Status Summary	3
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	2
Possible (complaint of pain/injury)	1
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	60,000.00
Average (per crash dollars):	5,454.55
Total Vehicles:	12.00
Average (per crash):	1.09
Total Occupants:	18.00
Average (per crash):	1.64

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.27
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.18
Possible/Unknown Injuries/Crash:	0.09





County:	JONES	Prepared By:	DEREK SNEAD
Location:	COUNTY ROAD X64	Date Prepared:	8/4/2023
Proposed Improvements:	INSTALL EDGELINE RUBMLE STRIPS, ADD PAVED SHOULDERS WITH SAFETY EDGE, AND INCREASE LANE WIDTH FROM 10 TO 11 FEET		
Estimated Improvement Cost:	\$ 1,009,000		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 20,180

Method Choice: **CRF Method** The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	3
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF	
CRF Value (%)	15	4	6	20.2	
	Rounded	Crash History	CRF (from	Crash History -	Crashes Saved
Crash Severity	Societal Costs	(Total):	above)	Annual Avg	Annually
Fatal (K)	\$ 4,000,000	0	20.2	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	20.2	0.00	0.00
Minor Injury (B)	\$ 265,000	2	20.2	0.40	0.08
Possible/Unknown Injury (C)	\$ 125,000	1	20.2	0.20	0.04
Property Damage Only (O)	\$ 20,000	8	20.2	1.60	0.32

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 21,394
Possible/Unknown Injury (C)	\$ 5,046
Property Damage Only (O)	\$ 6,459

### Total Benefits and Costs

	Implementation Cost	\$ 1,009,000
	Present Value of Maint.	\$ 274,253
Present Value Benefits (Societal Benefits)	\$ 485,931	Present Value Costs (Impl. and Maint. Costs)
		\$ 1,283,253
Present Value Net Return	\$ (797,321)	
<b>Benefit Cost Ratio</b>	<b>0.38</b>	

Form continues on next page

County: JONES  
Location: COUNTY ROAD X64

Prepared By: DEREK SNEAD  
Date Prepared: 8/4/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

**DATE:** 08/15/2023

Location / Title of Project Vulnerable Road User Countermeasures

Applicant Iowa DOT, Traffic & Safety Bureau

Contact Person Larry Grant Title State Safety Planner

Complete Mailing Address 800 Lincoln Way  
Ames, Iowa 50010

Phone 515-239-1349 E-Mail larry.grant@iowadot.us  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_  
\_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost	\$	<u>250,000</u>
Total Project Cost	\$	<u>250,000</u>
<b>Safety Funds Requested</b>	<b>\$</b>	<b><u>250,000</u></b>

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

Potential for Crash Reduction (PCR) Information					
Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		



## Vulnerable Road User Project Fund, FY2025 TSIP

A.

n/a

B.

An Iowa Vulnerable Road User (VRU) assessment is being completed prior to November, 15, 2023. The VRU assessment will be amended to the Iowa Strategic Highway Safety Plan. The VRU assessment is an evaluation of the safety performance of a State with respect to vulnerable road users. All States are required to develop a Vulnerable Road User Safety Assessment as part of their Highway Safety Improvement Program (HSIP) in accordance with 23 U.S.C. 148(l). The definition of a vulnerable road user (VRU) is provided in 23 U.S.C. 148(a)(15) as “a nonmotorist.” It includes pedestrians, bicyclists, other cyclists, and people on personal conveyance. A vulnerable road user may include people walking, biking, or rolling. The definition does not include motorcyclists.

The VRU assessment will include an analysis of crash data, identification of high-risk locations, and a curated collection of potential infrastructure improvement projects. It is the intent of this assessment to create opportunities to improve the safety of VRUs in Iowa.

The intent of the project is to set aside funds for pedestrian and bicyclist safety countermeasure projects as opportunities arise through our detailed safety analysis in the Vulnerable Road User Assessment.

C.

Funds in the amount of \$250,000 are requested in order to implement pedestrian and bicycle infrastructure improving safety for these vulnerable road users.

A rectangular rapid flashing beacon project may cost \$50,000 to install 2 signs for a location.

A speed feedback sign may cost \$15,000 to install 2 signs for a location.

Other projects may include, but are not limited to, pavement markings for crosswalks or bike lanes or sharrows, intersection warning signs, pedestrian signal re-timing.

D.

It is anticipated projects will be complete within 2 years of date of award.

E.

Project locations and details will become available after the VRU assessment is complete in November.

WASHINGTON COUNTY, IOWA

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# Transportation Safety Improvement Program

## FY2025 Grant Application – Site Specific

**Prepared by:**

Washington County Engineer’s Office  
210 West Main Street, Washington, IA 52353

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### INDEX

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# GRANT APPLICATION

Rev. 07/23



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

DATE: August 9, 2023

Location / Title of Project W38 Shoulders – 170<sup>th</sup> St to Wellman

Applicant Washington County

Contact Person Jacob Thorius Title County Engineer

Complete Mailing Address 210 W Main Street  
Washington, IA 52353

Phone 319-653-7731 E-Mail thorius@co.washington.ia.us  
(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) N/A

Contact Person N/A Title N/A

Complete Mailing Address N/A

Phone N/A E-Mail N/A  
(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**

**Funding Amount**

Total Safety Cost \$ 836,735.98

Total Project Cost \$ 2,932,331.35

Safety Funds Requested \$ 500,000

**Additional Project Safety Documentation (when available):**

- Project information sheet(s) or "Risk Score">50% from County/City's Local Road Safety Plan
- FHWA SS4A Safety Action Plan or similar comprehensive transportation safety plan
- Iowa DOT TEAP Study or similar analysis and concept
- Project intersection or segment with High or Medium PCR Level (PCR-All or PCR-Severe) from the Iowa DOT Potential for Crash Reduction (PCR) web-based map tool <https://pcr.iowadot.gov/>

**Potential for Crash Reduction (PCR) Information**

Intersection ID (1234567890) or Segment ID (1234)	Intersection or Segment	PCR Level High	PCR Level Medium	PCR- All value	PCR- Severe value
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

# GRANT APPLICATION


Rev. 07/23


## APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the COUNTY OF WASHINGTON

Signed:  8/9/2023  
Signature Date Signed  
Jacob Thorius  
Printed Name

Attest:  8/9/2023  
Signature Date Signed  
Kathy Dolan  
Printed Name

A. RESOLUTION

RESOLUTION 23-49

APPROVAL OF TRANSPORTATION SAFETY IMPROVEMENT PROGRAM  
APPLICATION FOR PAVED SHOULDERS ON W38 (GINKGO AVENUE)

WHEREAS, the Washington County Board of Supervisors recognizes the need to incorporate safety features in Secondary Roads projects; and

WHEREAS, Transportation Safety Improvement Program (TSIP) Funds are annually made available to qualifying local projects in amounts not to exceed \$500,000 to facilitate the incorporation of said safety features; and

WHEREAS, application for said funds must be submitted to the Iowa Department of Transportation for review and approval, and

WHEREAS, as a part of the application procedure, a commitment of funds and a commitment to maintain the facility for the useful life of the improvement must be made by the applicant; and

THEREFORE, BE IT RESOLVED, that the Board of Supervisors of Washington County, Iowa, as a part of the application for TSIP funds, resolve to commit to the additional funds needed above and beyond those granted to Washington County by the Transportation Safety Improvement Program and to supply the Construction and Engineering cost for the County Road W38 Paved Shoulder Project (beginning at 170<sup>th</sup> Street and extending 3.6 miles to Wellman) from existing county funding and also resolve to maintain the facility for the useful life of the improvement; and

BE IT FURTHER RESOLVED by the Washington County Board of Supervisors that the Washington County Engineer be authorized to execute and submit the application to the Iowa Department of Transportation for Traffic Safety Improvement Program funding.

Adopted this 8<sup>th</sup> day of August, 2023.


The vote on the resolution:

Aye Yoder Seward Fedler Stapp Young

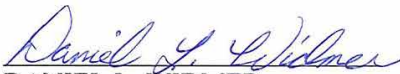
Nay \_\_\_\_\_

Abstain \_\_\_\_\_

Absent \_\_\_\_\_

  
ROBERT C. YODER, CHAIRPERSON  
Washington County, Board of Supervisors

Attest:

  
DANIEL L. WIDMER  
Washington County Auditor



### C. ITEMIZED BREAKDOWN OF ALL COSTS

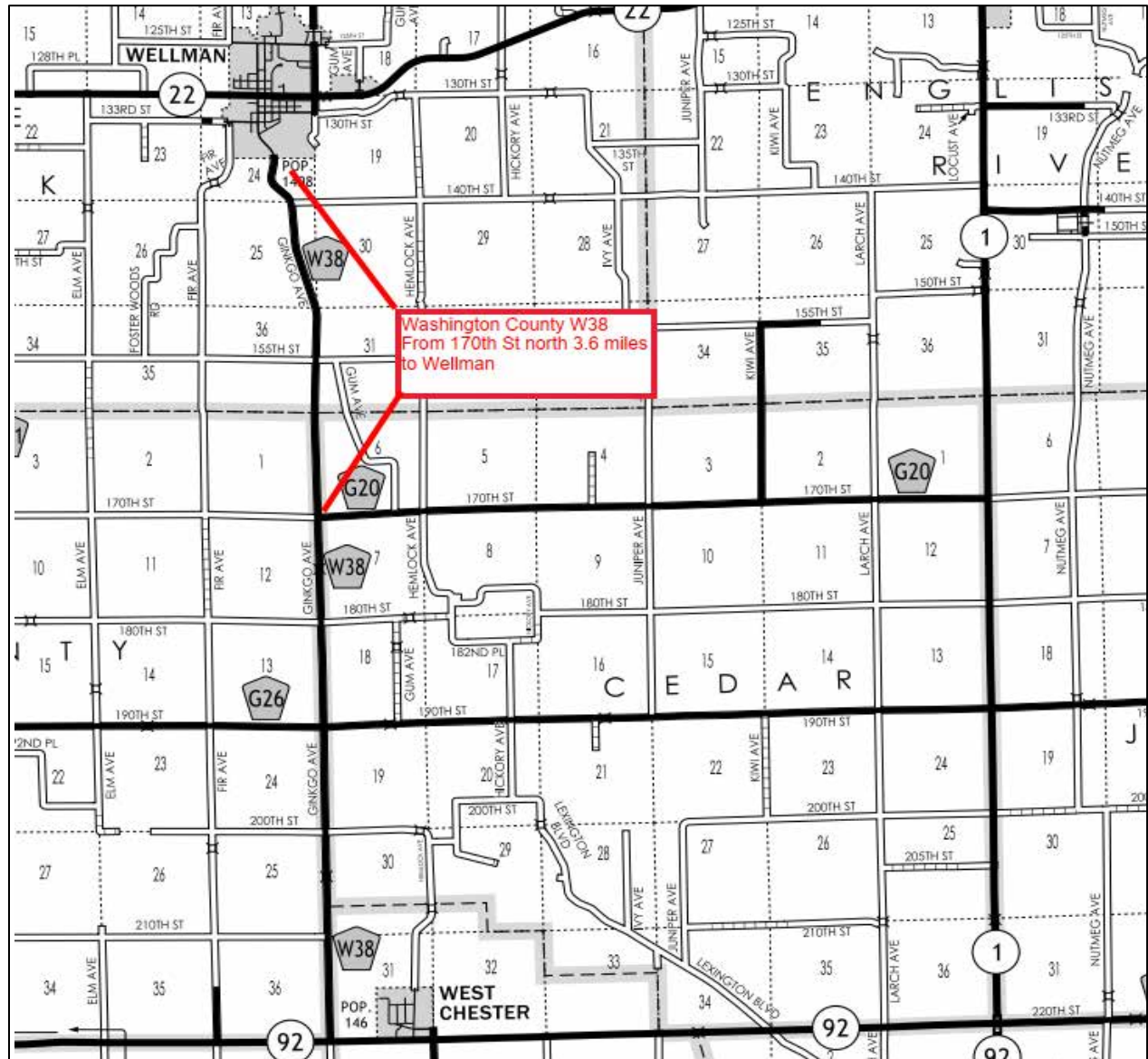
ITEM	BID ITEM	DESCRIPTION	UNIT	OVERLAY +	OVERLAY +	ENGINEER	TOTAL ORIGINAL	TOTAL SAFETY
				GRAVEL	SAFETY			
				SHOULDER	SHOULDER	ESTIMATE	PROJECT	PROJECT
1	2102-0425070	SPECIAL BACKFILL	TON	224	317	23.00	5,152.00	7,291.00
2	2102-2625000	EMBANKMENT-IN-PLACE	CY	150	150	17.00	2,550.00	2,550.00
3	2105-8425005	TOPSOIL, FURNISH AND SPREAD	CY	0	0	18.00	0.00	0.00
4	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	8,649	1,331	26.00	224,874.00	34,606.00
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	380	380	300.00	114,048.00	114,048.00
6	2213-2713300	EXCAVATION, CLASS 13, FOR WIDENING	CY	0	2,816	8.50	0.00	23,936.00
7	2213-7100400	RELOCATION OF MAIL BOXES	EACH	10	10	350.00	3,500.00	3,500.00
8	2301-1034080	STANDARD OR SLIP FORM PORTLAND CEMENT CONCRETE	SY	978	1,422	53.50	52,323.00	76,077.00
9	2310-5151040	PORTLAND CEMENT CONCRETE OVERLAY, FURNISH ONLY	CY	10,108	17,000	123.00	1,243,290.07	2,090,987.85
10	2310-5151045	PORTLAND CEMENT CONCRETE OVERLAY, PLACEMENT ONLY	SY	45,486	66,162	4.70	213,784.20	310,961.40
11	2310-8300550	PAVEMENT INTERLAYER GEOTEXTILE	SY	47,554	47,554	3.40	161,683.60	161,683.60
12	2315-8275025	SURFACING, DRIVEWAY, CLASS A CRUSHED STONE	TON	500	500	21.40	10,700.00	10,700.00
13	2510-6745850	REMOVAL OF PAVEMENT	SY	978	978	7.25	7,090.50	7,090.50
14	2515-6745600	REMOVAL OF PAVED DRIVEWAY	SY	0	0	10.00	0.00	0.00
15	2527-9263109	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT	STA	500	500	35.00	17,500.00	17,500.00
16	2528-8445110	TRAFFIC CONTROL	LS	1	1	5,000.00	5,000.00	5,000.00
17	2533-4980005	MOBILIZATION	LS	1	1	16,350.00	16,350.00	16,350.00
18	2548-0000200	MILLED SHOULDER RUMBLE STRIPS, PCC SURFACE	STA	0	380	60.00	0.00	22,800.00
19	2548-0000320	MILLED CENTERLINE RUMBLE STRIPS, PCC SURFACE	STA	0	190	50.00	0.00	9,500.00
20	2601-2634100	MULCHING	ACRE	7	7	700.00	4,900.00	4,900.00
21	2601-2636043	SEEDING AND FERTILIZING (RURAL)	ACRE	7	7	1,000.00	7,000.00	7,000.00
22	2601-2636044	SEEDING AND FERTILIZING (URBAN)	ACRE	0	0	2,000.00	0.00	0.00
23	2601-2642100	STABILIZING CROP - SEEDING AND FERTILIZING	ACRE	7	7	400.00	2,800.00	2,800.00
24	2601-2642120	STABILIZING CROP - SEEDING AND FERTILIZING (URBAN)	ACRE	0	0	1,500.00	0.00	0.00
25	2602-0000020	SILT FENCE	LF	500	500	3.00	1,500.00	1,500.00
26	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DISTURBANCE	LF	50	50	1.00	50.00	50.00
27	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	1	500.00	500.00	500.00
28	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	1	1,000.00	1,000.00	1,000.00
<b>Total</b>							<b>2,095,595.37</b>	<b>2,932,331.35</b>

**TOTAL ESTIMATE COST OF PROPOSED SAFETY IMPROVEMENTS = 836,735.98**

## D. TIME SCHEDULE

Phase	2024					2025											
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Application Phase	→																
Design Phase						→											
Bid and Award														→			
Construction Phase														→			

## E. PROJECT LOCATION





## F. COLOR PICTURES



Photo 1: Typical straight section showing share the road signage.



Photo 2: Typical edge rutting near curve.



Photo 3: Edge rutting along straight section.

F. COLOR PICTURES (cont.)



Photo 4: Typical curve section.



Photo 5: Typical curve section (note inside edge rutting).



Photo 6: Project curve showing roadway deterioration.



Photo 7: Roadway curve on include.

G. PLAN VIEW (NOTE: All work to be completed within existing ROW.)



# G. PLAN VIEW (cont.)

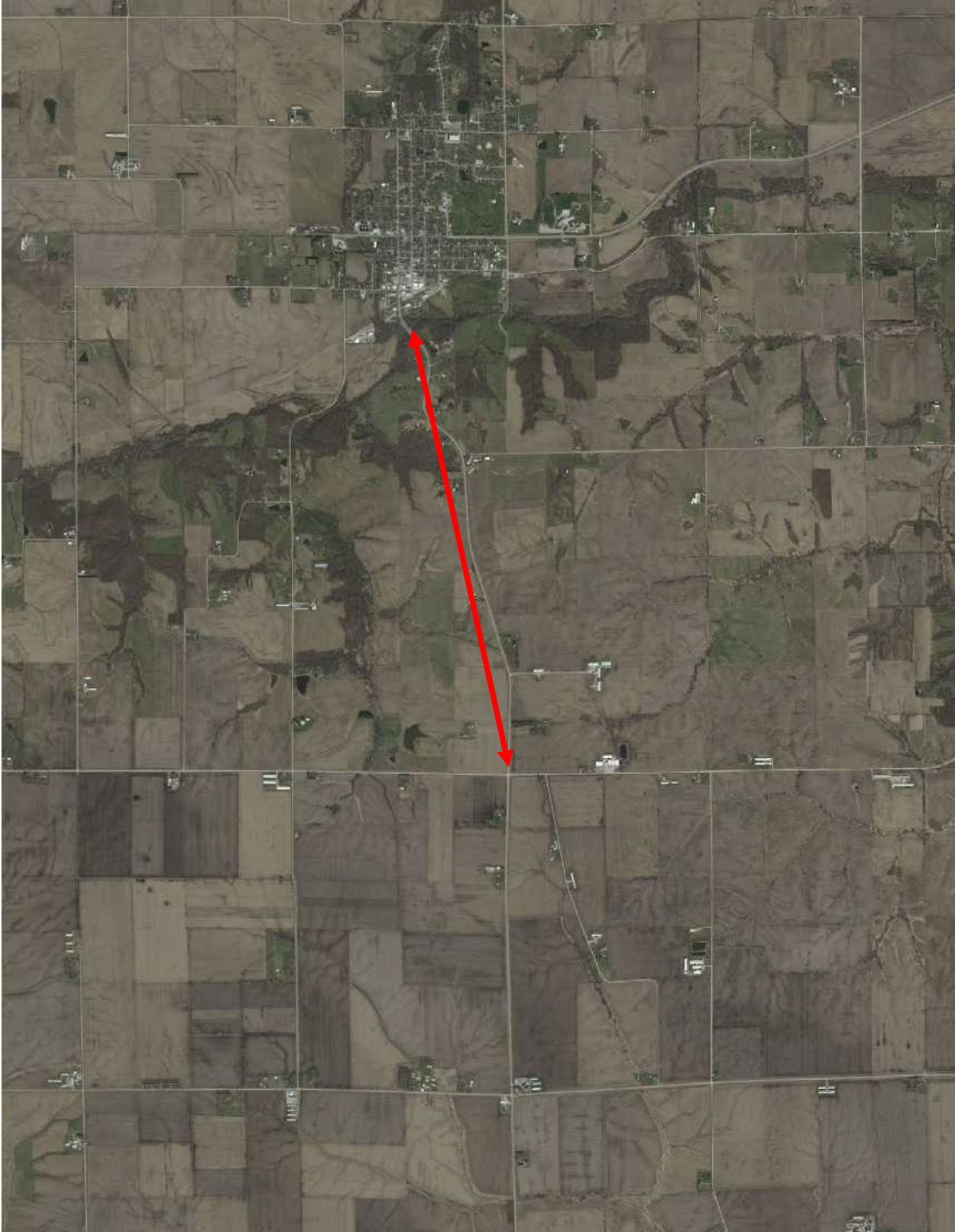


FILE: PLAN SHEETSLONG WASHINGTON COUNTY PROJECT NUMBER: TSIP APPLICATION - G-36 SHEET NUMBER 2

# G. PLAN VIEW (cont.)



# H. AERIAL PHOTOGRAPH



Project begins on W-38 at the City of Wellman and goes south 3.6 miles to G-20.

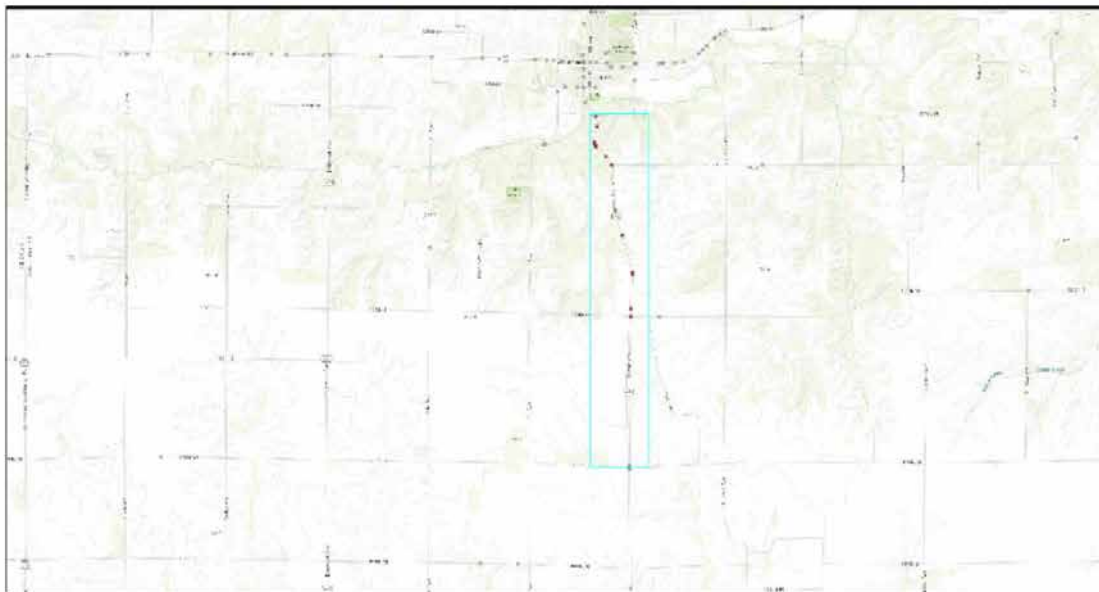
# I. ICAT CRASH SUMMARY



Iowa Crash Analysis Tool  
Quick Report  
2013-2023

Crash Severity	15	Injury Status Summary	13
Fatal Crash	0	Fatalities	0
Suspected Serious Injury Crash	2	Suspected serious/incapacitating	2
Suspected Minor Injury Crash	7	Suspected minor/non-incapacitating	7
Possible/Unknown Injury Crash	2	Possible (complaint of pain/injury)	4
Property Damage Only	4	Unknown	0

Property/Vehicles/Occupants		Average Severity	
Property Damage Total (dollars):	154,755.00	Fatalities/Fatal Crash:	0.00
Average (per crash dollars):	10,317.00	Fatalities/Crash:	0.00
Total Vehicles:	21.00	Injuries/Crash:	0.87
Average (per crash):	1.40	Major Injuries/Crash:	0.13
Total Occupants:	33.00	Minor Injuries/Crash:	0.47
Average (per crash):	2.20	Possible/Unknown Injuries/Crash:	0.27



08/09/2023

1 of 7

# I. ICAT CRASH SUMMARY (cont.)



Iowa Crash Analysis Tool  
Quick Report  
2013-2023

Major Cause		15
Animal	0	Ran traffic signal 0
Ran stop sign	1	Failed to yield to emergency vehicle 0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal 0
FTYROW: From stop sign	0	FTYROW: From yield sign 0
FTYROW: Making left turn	1	FTYROW: From driveway 0
FTYROW: From parked position	0	FTYROW: To pedestrian 0
FTYROW: Other	0	Drove around RR grade crossing gates 0
Disregarded RR Signal	0	Crossed centerline (undivided) 3
Crossed median (divided)	0	Traveling wrong way or on wrong side of road 0
Aggressive driving/road rage	0	Driving too fast for conditions 0
Exceeded authorized speed	0	Improper or erratic lane changing 0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close 0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings 1
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier 0
Passing: Other passing	0	Made improper turn 0
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d... 0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio... 0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger 0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f... 0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti... 1
Driver Distraction: Exterior distraction	0	Ran off road - right 5
Ran off road - straight	0	Ran off road - left 2
Lost control	0	Swerving/Evasive Action 0
Over correcting/over steering	1	Failed to keep in proper lane 0
Failure to signal intentions	0	Traveling on prohibited traffic way 0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed 0
Other: Improper operation	0	Other: Disregarded warning sign 0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving 0
Downhill runaway	0	Separation of units 0
Towing improperly	0	Cargo/equipment loss or shift 0
Equipment failure	0	Oversized load/vehicle 0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on 0
Improper backing	0	Improper starting 0
Illegally parked/unattended	0	Driving less than the posted speed limit 0
Operator inexperience	0	Other 0
Unknown	0	Not reported 0
Other: No improper action	0	

08/09/2023

2 of 7



# I. ICAT CRASH SUMMARY (cont.)



## Iowa Crash Analysis Tool Quick Report 2013-2023

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	1	2	1	0	1	1	0	6
Monday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuesday	0	0	0	1	1	0	0	1	0	0	0	0	0	3
Wednesday	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Thursday	0	0	0	0	0	1	0	0	1	0	0	0	0	2
Friday	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Saturday	0	0	0	0	0	1	0	0	0	0	0	0	0	1
<b>Total</b>	0	0	0	2	1	3	1	4	2	0	1	1	0	15

Manner of Crash Collision	15	Surface Conditions	15
Non-collision (single vehicle)	9	Dry	12
Head-on (front to front)	0	Wet	0
Rear-end (front to rear)	0	Ice/frost	3
Angle, oncoming left turn	1	Snow	0
Broadside (front to side)	1	Slush	0
Sideswipe, same direction	1	Mud, dirt	0
Sideswipe, opposite direction	3	Water (standing or moving)	0
Rear to rear	0	Sand	0
Rear to side	0	Oil	0
Not reported	0	Gravel	0
Other	0	Not reported	0
Unknown	0	Other	0
		Unknown	0

Fixed Object Struck		21
Bridge overhead structure	0	Bridge pier or support
Bridge/bridge rail parapet	0	Curb/island/raised median
Ditch	8	Embankment
Ground	0	Culvert/pipe opening
Guardrail - face	0	Guardrail - end
Concrete traffic barrier (median or right sid...	0	Other traffic barrier
Cable barrier	0	Impact attenuator/crash cushion
Utility pole/light support	0	Traffic sign support
Traffic signal support	0	Other post/pole/support
Fire hydrant	0	Mailbox
Tree	0	Landscape/shrubbery
Snow bank	0	Fence
Wall	0	Building
Other fixed object	0	None (no fixed object struck)

08/09/2023

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# I. ICAT CRASH SUMMARY (cont.)



Iowa Crash Analysis Tool  
Quick Report  
2013-2023

Driver Age/Driver Gender						Alcohol Test Given	
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total		
< 14	0	0	0	0	0	None	18
= 14	0	1	0	0	1	Blood	0
= 15	1	0	0	0	1	Urine	0
= 16	1	0	0	0	1	Breath	3
= 17	1	1	0	0	2	Vitreous	0
= 18	1	1	0	0	2	Refused	0
= 19	0	0	0	0	0	Not reported	0
= 20	0	0	0	0	0	<b>Drug Test Given</b>	
>= 21 and <= 24	0	0	0	0	0	None	21
>= 25 and <= 29	1	2	0	0	3	Blood	0
>= 30 and <= 34	1	1	0	0	2	Urine	0
>= 35 and <= 39	2	1	0	0	3	Breath	0
>= 40 and <= 44	0	2	0	0	2	Vitreous	0
>= 45 and <= 49	0	1	0	0	1	Refused	0
>= 50 and <= 54	1	0	0	0	1	Not reported	1
>= 55 and <= 59	1	1	0	0	2	<b>Drug Test Result</b>	
>= 60 and <= 64	0	0	0	0	0	Negative	0
>= 65 and <= 69	0	0	0	0	0	Cannabis	0
>= 70 and <= 74	0	0	0	0	0	Central Nervous System depressants	0
>= 75 and <= 79	0	0	0	0	0	Central Nervous System stimulants	0
>= 80 and <= 84	0	0	0	0	0	Hallucinogens	0
>= 85 and <= 89	0	0	0	0	0	Inhalants	0
>= 90 and <= 94	0	0	0	0	0	Narcotic Analgesics	0
>= 95	0	0	0	0	0	Dissociative Anesthetic (PCP)	0
Not reported	0	0	0	0	0	Prescription Drug	0
Unknown	0	0	0	0	0	Not reported	21
<b>Total</b>	<b>10</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>21</b>	Other	0

Drug/Alcohol Related	
Drug	0
Alcohol (< Statutory)	1
Alcohol (Statutory)	2
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	12

08/09/2023

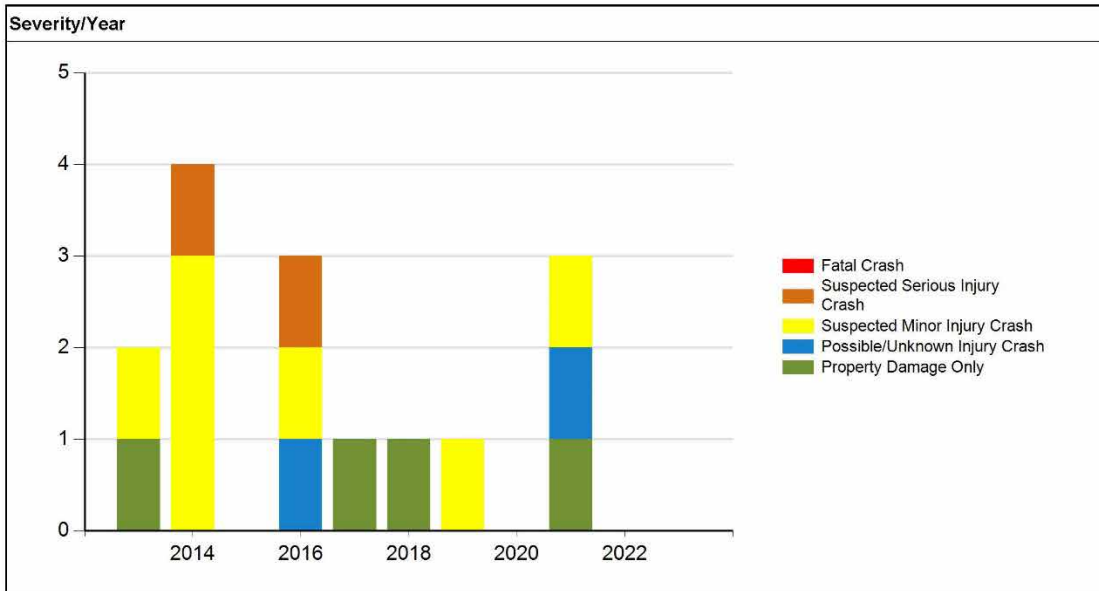
4 of 7

# I. ICAT CRASH SUMMARY (cont.)



## Iowa Crash Analysis Tool Quick Report 2013-2023

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	1	0	1	2
2014	0	1	3	0	0	4
2015	0	0	0	0	0	0
2016	0	1	1	1	0	3
2017	0	0	0	0	1	1
2018	0	0	0	0	1	1
2019	0	0	1	0	0	1
2020	0	0	0	0	0	0
2021	0	0	1	1	1	3
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	2	7	2	4	15



08/09/2023

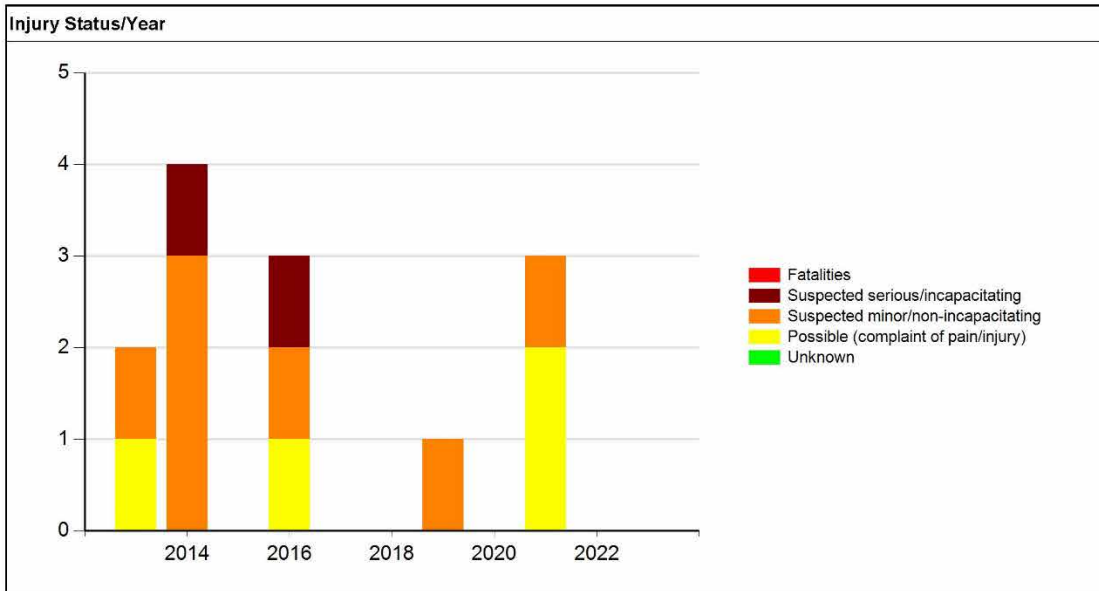
5 of 7

# I. ICAT CRASH SUMMARY (cont.)



## Iowa Crash Analysis Tool Quick Report 2013-2023

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	1	1	0	2
2014	0	1	3	0	0	4
2015	0	0	0	0	0	0
2016	0	1	1	1	0	3
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	1	0	0	1
2020	0	0	0	0	0	0
2021	0	0	1	2	0	3
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	2	7	4	0	13



08/09/2023

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# I. ICAT CRASH SUMMARY (cont.)



Iowa Crash Analysis Tool  
Quick Report  
2013-2023

## Meeting the following criteria

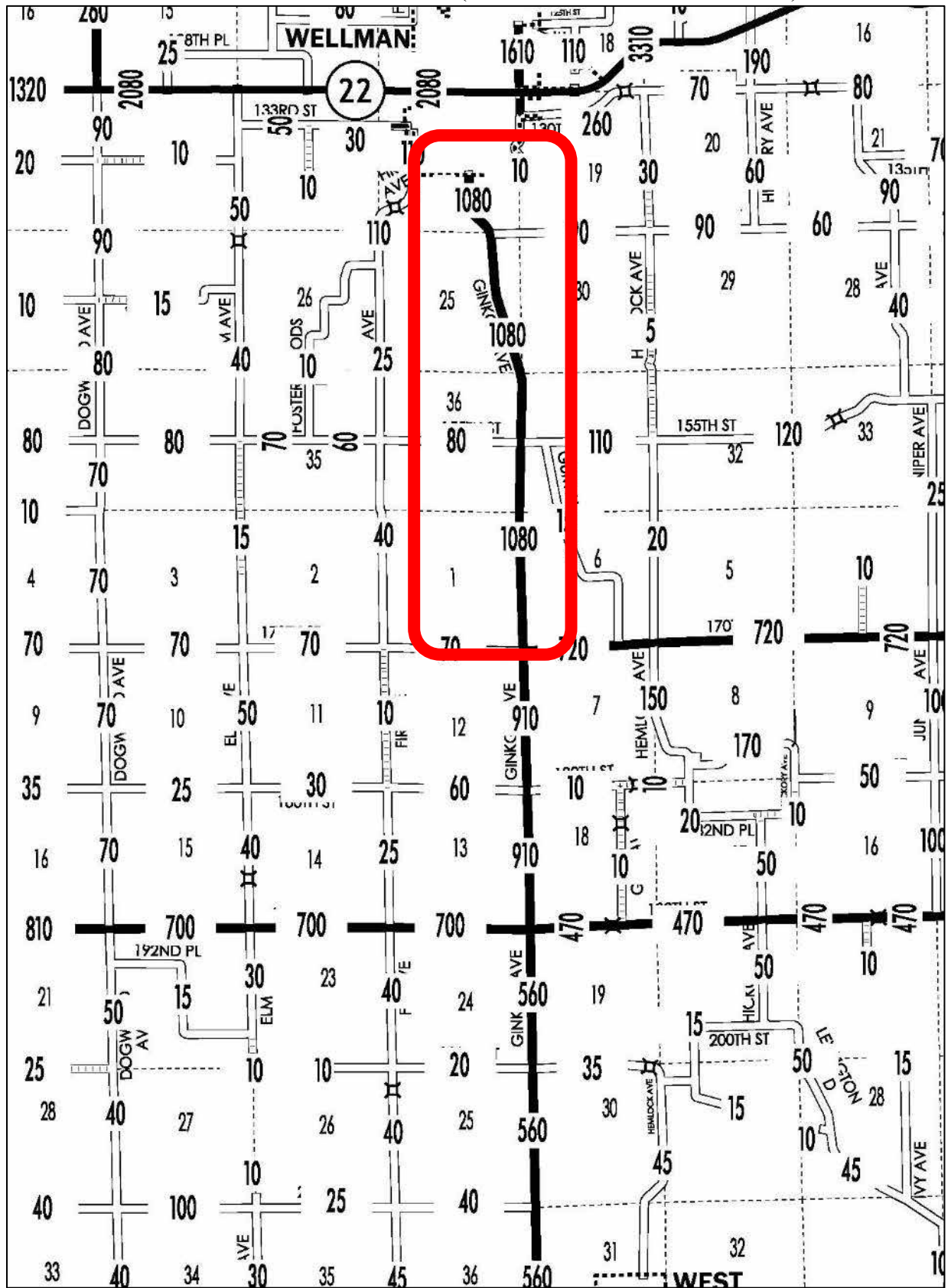
Jurisdiction: Counties (Washington)  
Year: 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023  
Map Selection: Yes  
Filter: None

## Analyst Information

08/09/2023


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J. RECENT TRAFFIC VOLUME (2018 AADT from the Iowa DOT)



## K. SIGNALS (NO Signals Proposed)

## L. BENEFIT/COST RATIO WORKSHEET


Safety Benefit-Cost Ratio

County: **Washington**      Prepared By: **Jacob Thorius, PE**  
 Location: **W38 Shoulders - 170th Street to Wel**      Date Prepared: **8/3/2023**  
 Proposed Improvements: **Widen lanes from 11 feet to 12 feet, add 4 foot pave shoulders as well as shoulder and centerline rumble strips.**

Estimated Improvement Cost: **\$ 836,736**  
 Inflation on Crash Costs: **4%**  
 Discount Rate: **4%**  
 Estimated Service Life: **20**

Annual Maintenance: **2%**  
 (% of Improvement Cost)  
 Annual Maintenance Cost: **\$ 16,735**

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor: **1%**  
 Number of CRFs: **3**  
 Years of Crash History: **10**

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

	CRF 1:	CRF 2:	CRF 3:	Combined CRF
CRF Value (%)	<b>4</b>	<b>4</b>	<b>20</b>	<b>21.6</b>

	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Crash Severity					
Fatal (K)	\$ 4,000,000	0	21.6	0.00	0.00
Serious Injury (A)	\$ 4,000,000	2	21.6	0.20	0.04
Minor Injury (B)	\$ 265,000	7	21.6	0.70	0.15
Possible/Unknown Injury (C)	\$ 125,000	2	21.6	0.20	0.04
Property Damage Only (O)	\$ 20,000	4	21.6	0.40	0.09

	Annual Societal Benefit
Crash Severity	
Fatal (K)	\$ -
Serious Injury (A)	\$ 173,103
Minor Injury (B)	\$ 40,138
Possible/Unknown Injury (C)	\$ 5,409
Property Damage Only (O)	\$ 1,731

### Total Benefits and Costs

Present Value Benefits (Societal Benefits)	\$ 3,255,201	Implementation Cost	\$ 836,736
		Present Value of Maint.	\$ 227,430
Present Value Net Return	\$ 2,191,035	Present Value Costs (Impl. and Maint. Costs)	\$ 1,064,166
<b>Benefit Cost Ratio</b>	<b>3.06</b>		

*Form continues on next page*

Version: Crash costs escalated from 2018

Version 1.1  
Page 1 of 2

# L. BENEFIT/COST RATIO WORKSHEET



Safety Benefit-Cost Ratio

County: Washington Prepared By: Jacob Thorius, PE  
Location: W38 Shoulders - 170th Street to Wel Date Prepared: 8/3/2023

## User Input Required - Custom Values Used

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

Justification for deviation from  
default Crash History

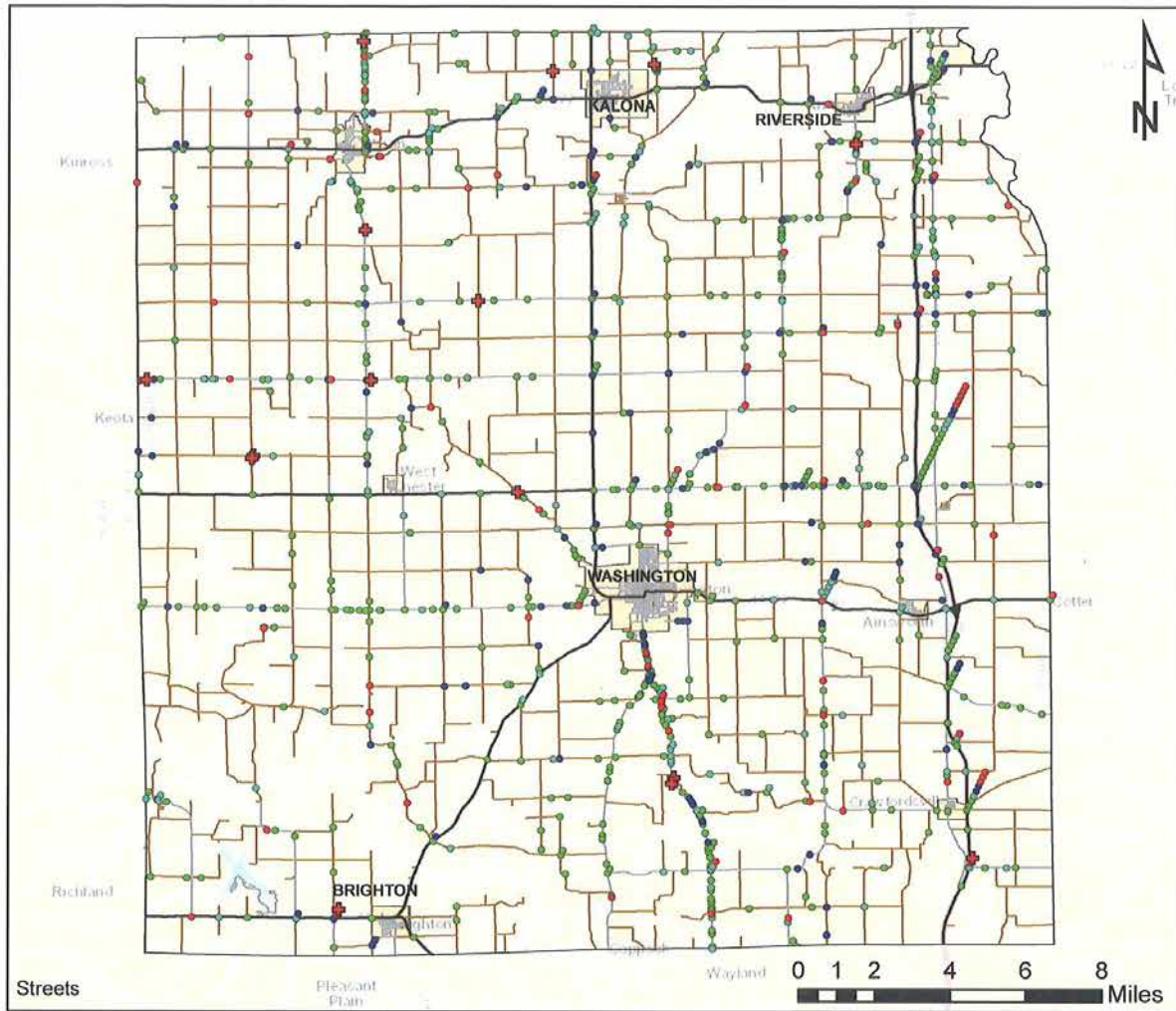
A 10 year crash history was used to show the greater history of crashes on this stretch of road. This change resulted in a tripling of the number of crashes experienced and shows a greater history of run off the road and crossing the centerline crashes, which the safety improvement project is proposing to try and address. In addition, in a reviewing Crash Severity map for Washington County from 2002-2011, prepared by CTRE with information from the Iowa DOT crash database, we count at least 11 more crashes. Most of those crashes are in the area of the curves of the proposed project and one of them resulted in two fatalities.

Version: Crash costs escalated from 2018

Version 1.1  
Page 2 of 2



# L. BENEFIT/COST RATIO WORKSHEET



Primary Roads  
 Other Paved Roads  
 Unpaved Roads  
 Corporate Boundaries

**Crash Severity**

- + Fatal (15)
- Major Injury (78)
- Minor Injury (144)
- Possible/Unknown (151)
- PDO (634)

## Secondary Road Crashes Washington County 2002 - 2011



**Disclaimer:**  
 The information contained in this report was derived from the February 2, 2012, Iowa Department of Transportation crash database. If errors or odd cases are found, please communicate the case number or send a printed crash report to Michael Pawlovich, Iowa DOT, Office of Traffic and Safety, (Michael.Pawlovich@dot.iowa.gov, 515.239.1428). Since the database is actively being updated, edited, and reviewed, some of the fatality totals may differ from the Fatality Analysis Reporting System (FARS). If fatal crash/fatality errors or odd cases are found, please contact Scott Falb, Iowa DOT, Office of Driver Services, (Scott.Falb@dot.iowa.gov, 515.237.3154).

# M. LOCAL ROAD SAFETY PLAN RECOMMENDATIONS

**Local Road Safety Plan** **Risk Factor Points: 13**

**Project Description for Roadway Segment Improvements**

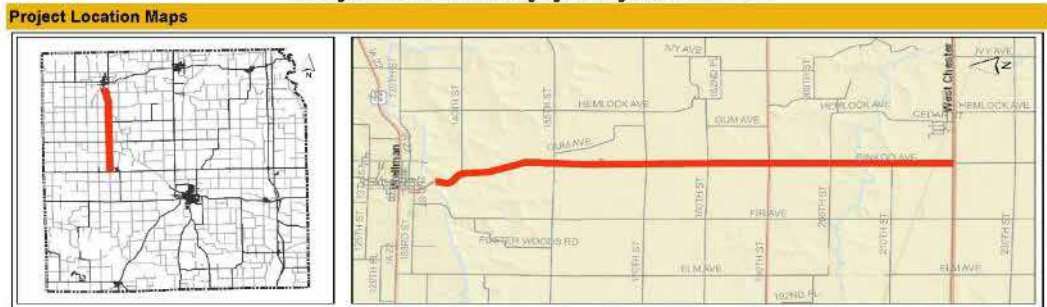
Project Name: GINKGO AVE between IOWA 92 and 1430 ft SE of 1ST ST Date: 10/18/16  
 Agency Name: Washington County Prepared By: DJG/DVM  
 Contact Name: Thorius, Jacob Checked By: MMO  
 E-mail: thorius@co.washington.ia.us



**Location Description** **SEGMENT**

Road: GINKGO AVE **GPS ID: 1345**  
 From: IOWA 92  
 To: 1430 ft SE of 1ST ST  
 Length (miles): 8.54

This segment contains the following high scoring curve: GPS ID 73612



**Segment Information and Systemic Ranking Summary**

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	835	5
Pavement   Shoulder Width (ft)	22'   6'	0
Avg. Pavement Condition (IRI)	186	4
Average Roadside Risk	1.77	2
Access Points per Mile	5.2	1
High Risk Curve Density/Mile	0.2	1
Lane Dept. Crash Rate (HMVMT)	0.0	0
<b>Total Risk Factor Points (25 max)</b>		<b>13</b>

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	6
Speed Limit (mph)	55
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Curves (L>100', 500's R≤1,200')	2
Curves with Chevrons	4

Crash Data, 2006-2015	
Total Crashes	29
K and A Crashes	5
Lane Departure Crashes	0
Lane Departure K and A Crashes	0
Total Crash Rate (per HMVMT)	111.5
K and A Crash Rate (per HMVMT)	19.2

Key Emphasis Areas	
Local Roads	
Lane Departures	
Roadside Collisions	

**Opinion of Probable Cost (Project Selection Decision Tree Results)**

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Assessment (RSA)	0	EA	\$ 30,000	\$ -
Conduct Access Control Analysis	0	EA	\$ 30,000	\$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	8.54	MILE	\$ 1,200	\$ 10,246
Install 6" Retroreflective Edgeline (Both Sides of Road)	0.00	MILE	\$ 1,800	\$ -
Install 4" Retroreflective Centerline	8.54	MILE	\$ 800	\$ 6,831
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0.00	MILE	\$ 65,000	\$ -
Install Edgeline Rumble Strips (Both Sides of Road)	8.54	MILE	\$ 2,000	\$ 17,077
Install Centerline Rumble Strips	0.00	MILE	\$ 1,000	\$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	\$ 5,000	\$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	4	CURVE	\$ 2,500	\$ 10,000
Clear and Grub (15 ft Both Sides of Road)**	8.54	MILE	\$ 10,000	\$ 85,385
<b>Project Selection Decision Tree Systemic Improvements Subtotal</b>				<b>\$ 129,539</b>

Continued on back of this page.

\*\* Unit price varies based on average roadside risk score.

**Project Location Map Sources:**  
 Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013, DigitalGlobe, GeoEye, i-cubed, USDA, AEX, Getmapping, Aerogrip, IGN, IGP, swisstopo, and the GIS User Community



# M. LOCAL ROAD SAFETY PLAN RECOMMENDATIONS (cont.)

Local Road Safety Plan Project Description for Roadway Segment Improvements	Risk Factor Points: <b>13</b>
Project Name: GINKGO AVE between IOWA 92 and 1430 ft SE of 1ST ST Agency Name: Washington County Contact Name: Thorius, Jacob E-mail: thorius@co.washington.ia.us	Date: 10/18/16 Prepared By: DJG/DVM Checked By: MMO
Opinion of Probable Cost (Additional Potential Improvements)	 <b>SEGMENT</b> GPS ID: 1345

County to check the box for those improvements recommended for consideration.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	\$ 75,000	\$ -
On-Pavement Markings for Speed Control		EA	\$ 500	\$ -
Delineate Roadside Hazards (trees or utility poles) with Retroreflective Tape		EA	\$ 500	\$ -
Guardrail		MILE	\$ 50,000	\$ -
Post-Mounted Delineators		MILE	\$ 1,000	\$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed		CURVE	\$ 5,000	\$ -
Retroreflective Strips on Chevron Sign Posts	4	CURVE	\$ 500	\$ 2,000
Transverse Rumble Strips Prior to Curve		EA	\$ 2,000	\$ -
Superelevation Correction on Curves		EA	\$ 100,000	\$ -
Install High Friction Surface Treatment (HFST) on Curves		MILE	\$ 150,000	\$ -
Speed Activated Flashers on Chevron Signs		EA	\$ 2,000	\$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road)	8.54	MILE	\$ 65,000	\$ 555,000
Other:				
Other:				
Other:				
Additional Potential Improvements Subtotal:				\$ 557,000
Project Selection Decision Tree Systemic Improvements Subtotal:				\$ 129,539
Subtotal:				\$ 686,539
Mobilization: (% +/-)*				10% \$ 68,660
Traffic Control: (% +/-)				5% \$ 34,360
Contingency: (% +/-)				20% \$ 137,441
<b>Estimated Project Cost</b>				<b>\$ 927,000</b>

\*Mobilization is 10% +/- of the subtotal with a minimum of \$2,500 and a maximum of \$75,000

**Opinion of Probable Construction Cost Disclaimer:**  
 Kimley-Horn has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Kimley-Horn at this time and represent only Kimley-Horn's judgment as a design professional familiar with the construction industry. Kimley-Horn cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

**Project Description Form Disclaimer:**  
 The recommended improvements contained in this project description form were developed through a Geographic Information System (GIS) database risk assessment and project decision tree selection process, as specifically stated in our scope of services. Kimley-Horn has no control over the accuracy of the GIS databases nor the suitability of the specific improvements for the location, and has provided recommended improvements for consideration by the County Engineer. The County Engineer may use this project description form to aid in the selection and development of projects, but this project description form should not be used as the sole basis for the County Engineer's decision making process. We endeavored to research issues and constraints to the extent practical given the scope, budget, and schedule agreed to with the Client. Our assessment is based in large part on information provided to us by others (DOT, county staff, etc.) and therefore is only as accurate and complete as the information provided to us. No formal assessment was made for the improvement recommendations contained on this page, if in question, it is recommended that a study/analysis of this location be made to warrant the above indicated improvements. This project description form is based on our knowledge as of October 2016.

End of Project Description

Back Page





## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**

 DATE: 8/2/2023

 Location / Title of Project Roundabout at the intersection of P56 & D14

 Applicant Webster County

 Contact Person Mark Condon Title Assistant Engineer

 Complete Mailing Address 703 Central Ave, Suite 3
Fort Dodge, IA 50501

 Phone (515) 576 - 3281 E-Mail mark.condon@webstercountyia.org

(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:**
**Funding Amount**

 Total Safety Cost \$ 1,206,700

 Total Project Cost \$ 1,206,700
**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

 Yes – Explain: IDOT performed a TEAP study on this intersection in 2020 and recommended a roundabout as a long term solution.
 No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Webster County Engineer's Office

Signed: Mark C 8/2/23  
Signature Date Signed

Mark Condon  
Printed Name

Attest: JJ 8/3/23  
Signature Date Signed

Jamie Johl  
Printed Name

**RESOLUTION 2023-33**  
**Transportation Safety Improvement Program**  
**Grant Application**

WHEREAS the Iowa Department of Transportation Traffic Safety Improvement Program operates under the rules of Iowa Administrative Code 761-Ch. 164; and

WHEREAS said program allows for the distribution of traffic safety funds to cities, counties, and the Iowa DOT for roadway safety improvements, research, studies, or public information initiatives; and


WHEREAS the Webster County Engineer has determined that the project funded by this grant would improve the roadway safety in Webster County.

THEREFORE, BE IT RESOLVED BY THE BOARD OF SUPERVISORS OF WEBSTER COUNTY, IOWA that this County does hereby support the attached application for Traffic Safety Improvement Program funding.

Roll Call Vote:

Campbell:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Carlson:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Conrad:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Hayek:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Thode:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>

**PASSED AND APPROVED** on 8/1/2025.

  
\_\_\_\_\_  
Niki Conrad, Chairwoman  
Webster County Board of Supervisors

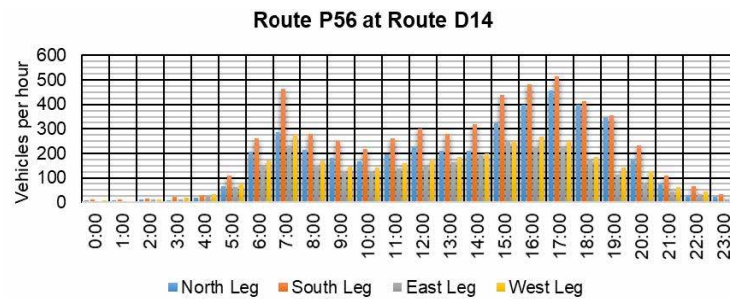
ATTEST:   
\_\_\_\_\_  
Doreen Pliner, Webster County Auditor

## Narrative

### Existing Conditions

P56 (Nelson Ave) and D14 (170<sup>th</sup> St) intersect just north of the city of Fort Dodge. P56 runs north-south at 50 mph and D14 runs east-west at 55 mph. A bike trail also runs north-south along the east side of P56. At this intersection, P56 features a left turn only lane as well as a straight/right turn lane for both the northbound and southbound traffic. D14 features a right turn only and a straight/left turn lane for eastbound traffic and a single lane for westbound traffic. D14 has stop signs for both directions of traffic while cross traffic on P56 does not stop.

In 2020 Webster County had the Iowa DOT perform a Traffic Engineering Assistance Program (TEAP) study regarding this intersection. This study collected a plethora of different information. Within that data, there was a 24 hour traffic count recorded by the Iowa DOT and those results are shown below:



The study totaled approximately 4260 vehicles per day (vpd) on the north leg, 5470 vpd on the south leg, 3130 vpd on the west leg, and 2650 vpd on the east leg.

### Proposed Concept

After the Iowa DOT finished the TEAP study there were a couple different suggested solutions. The study offered short term and long term solutions. The only long term solution this study offered was to reconfigure the intersection geometry to a single lane roundabout design.

### Safety Justification

From 2017 to 2022 there were a total of 23 crashes at this intersection. That comes out to an average of 3.83 crashes per year. A crash diagram of the 23 crashes, which includes 1 suspected serious injury crash, 6 possible injury crashes, and 16 property damage only crashes is attached. Also within those 23 crashes was 1 rear-end crash, 1 “angle, oncoming left turn” crash, and 16 broadside crashes. These crash types account for 78% of all the crashes at this intersection and are all directly prevented by the installation of a roundabout. Therefore, installing a roundabout at this intersection would significantly improve the safety of this intersection.

# Itemized Breakdown of All Costs

[C]

P56 (NELSON AVE) & D14 (170TH ST) INTERSECTION IMPROVEMENTS					
ROUNDBOUT					
Item no.	Item	Unit	Unit Price	Quantity	Safety Cost
1	TOPSOIL, STRIP, SALVAGE, SPREAD	CY	\$ 9.00	6400	\$ 57,600.00
2	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	\$ 12.00	6400	\$ 76,800.00
3	SUBGRADE PREPARATION	LS	\$ 70,000.00	1	\$ 70,000.00
4	SUBBASE, MODIFIED, 12-INCH	SY	\$ 12.00	6400	\$ 76,800.00
5	REMOVAL OF PAVEMENT	SY	\$ 12.00	6400	\$ 76,800.00
6	PAVEMENT, PCC, 9-INCH, CLASS C	SY	\$ 80.00	6400	\$ 512,000.00
7	REMOVAL OF SIDEWALK	SY	\$ 75.00	300	\$ 22,500.00
8	SIDEWALK, PCC, 5-INCH	SY	\$ 125.00	300	\$ 37,500.00
9	DETECTABLE WARNING	SF	\$ 50.00	40	\$ 2,000.00
10	PAVEMENT MARKINGS AND SIGNAGE	LS	\$ 20,000.00	1	\$ 20,000.00
11	TRAFFIC CONTROL	LS	\$ 10,000.00	1	\$ 10,000.00
12	RECTANGULAR RAPID FLASHING BEACON	EA	\$ 5,000.00	2	\$ 10,000.00
13	SWPPP PREPARATION / COMPLIANCE	LS	\$ 25,000.00	1	\$ 25,000.00
14	CONSTRUCTION SURVEY	LS	\$ 15,000.00	1	\$ 15,000.00
15	MOBILIZATION	LS	\$ 85,000.00	1	\$ 85,000.00

NOTE: Implementing a roundabout at this location is the safety improvement and all costs listed here are required to install the roundabout. Therefore, all costs are assumed to be safety costs.

TOTAL	\$ 1,097,000.00
CONTINGENCY (10%)	\$ 109,700.00
TOTAL COST OPINION	\$ 1,206,700.00

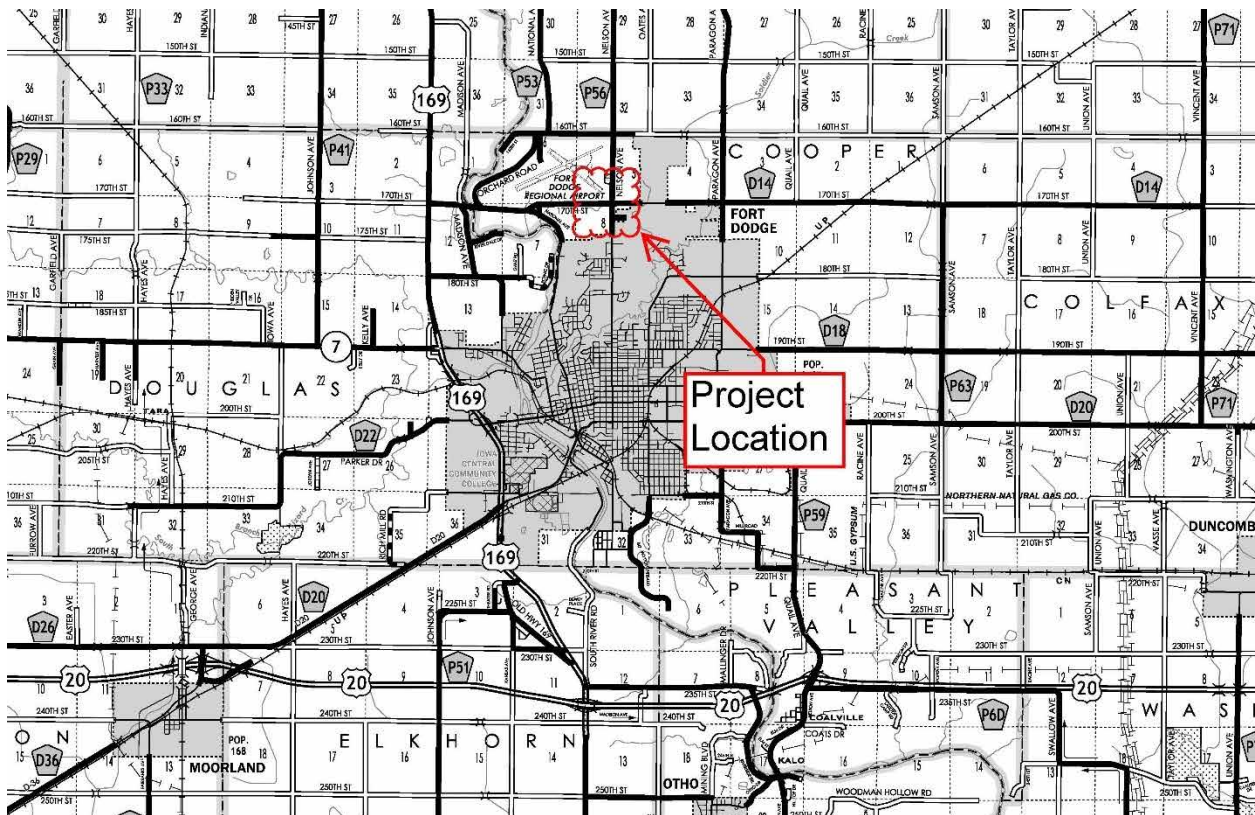
Sources	
TSIP Funds	\$ 500,000.00
Webster County Local Funds	\$ 706,700.00



## Time Schedule

- TSIP Application Due: August 15<sup>th</sup>, 2023
- TSIP Award Notification: Mid-January 2024
- TSIP Funding Available: July 1<sup>st</sup>, 2024
- Letting for Project: November 2024
- Begin Construction: May 2025
- Complete Construction: November 2025

## Map



Color Pictures

P56 Facing North



[F]

P56 Facing East



P56 Facing South



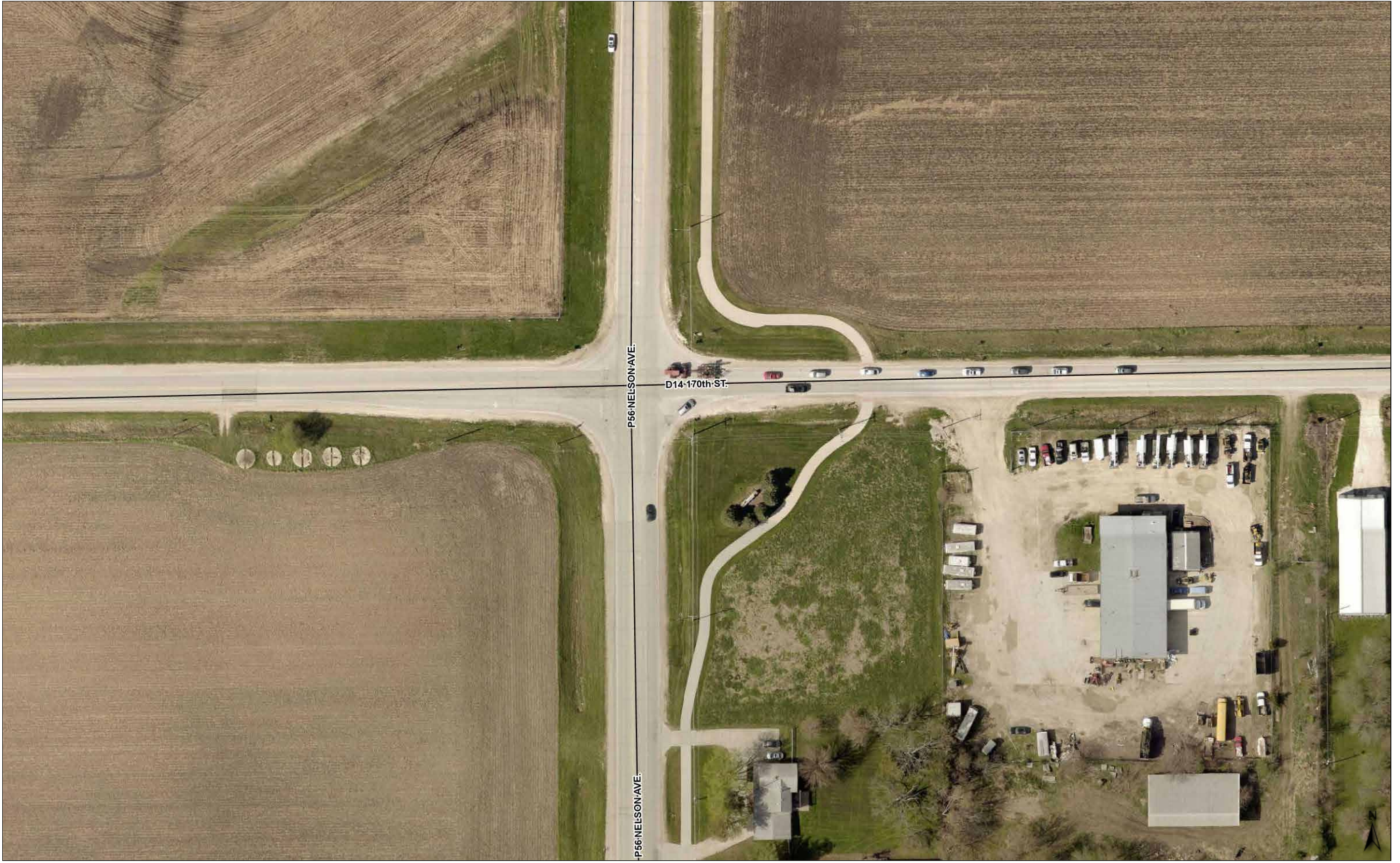
P56 Facing West



# Plan View

[G]





P56-NELSON AVE.

D14-170th ST.

P56-NELSON AVE.



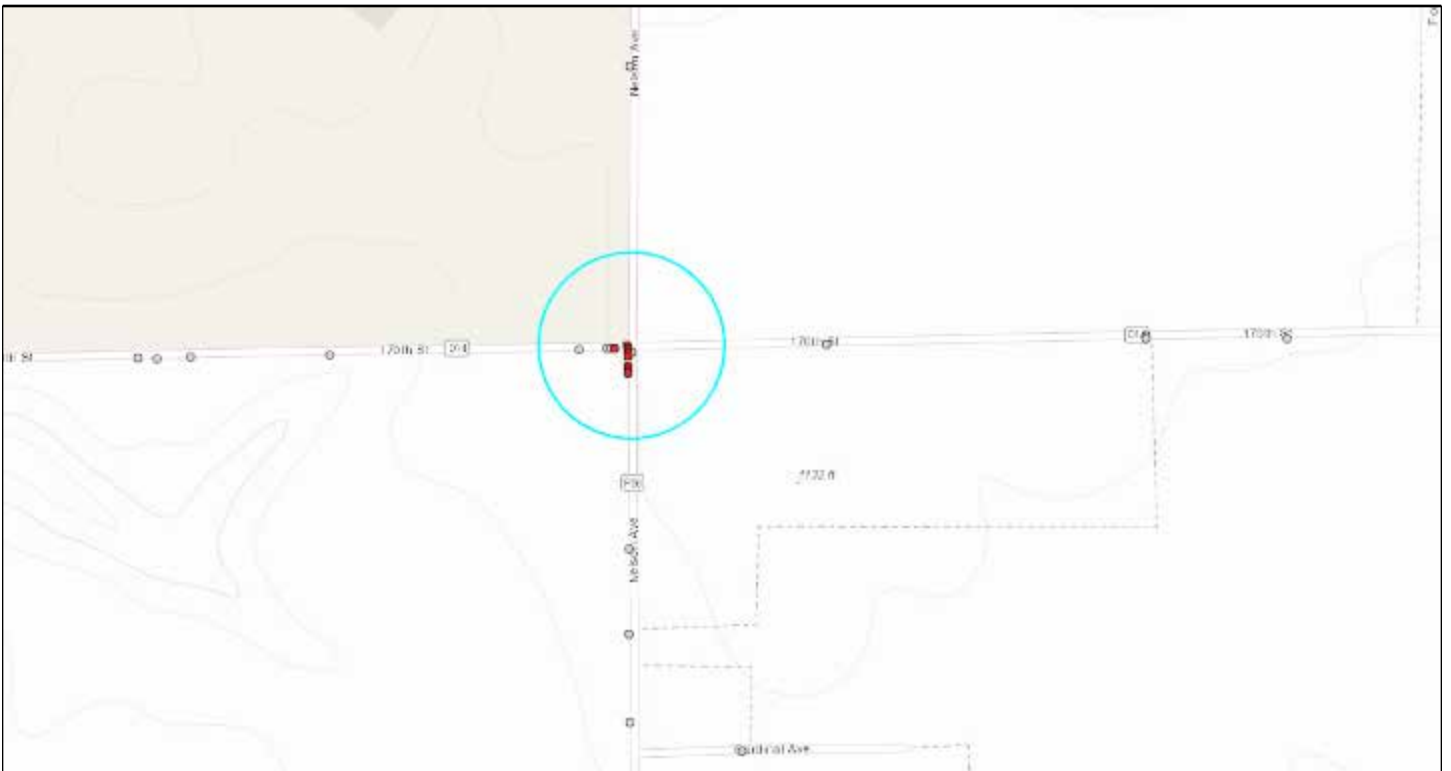
Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Crash Severity	23
Fatal Crash	0
Suspected Serious Injury Crash	1
Suspected Minor Injury Crash	0
Possible/Unknown Injury Crash	6
Property Damage Only	16

Injury Status Summary	18
Fatalities	0
Suspected serious/incapacitating	1
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	16
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	309,000.00
Average (per crash dollars):	13,434.78
Total Vehicles:	45.00
Average (per crash):	1.96
Total Occupants:	74.00
Average (per crash):	3.22

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.78
Major Injuries/Crash:	0.04
Minor Injuries/Crash:	0.04
Possible/Unknown Injuries/Crash:	0.70







Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Major Cause			23
Animal	1	Ran traffic signal	0
Ran stop sign	4	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	13	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	0
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	2
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	1
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	1		



**Iowa Crash Analysis Tool  
Quick Report  
2017-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	2	0	1	1	0	0	0	4
Monday	0	0	0	1	0	1	1	0	0	0	0	0	0	3
Tuesday	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Wednesday	0	0	0	1	0	0	0	1	0	0	0	0	0	2
Thursday	0	0	0	0	0	0	0	2	0	2	0	0	0	4
Friday	0	0	0	0	0	0	0	2	1	1	0	1	0	5
Saturday	0	0	0	0	0	0	2	0	0	1	0	0	0	3
<b>Total</b>	0	0	0	3	0	1	5	6	2	5	0	1	0	23

Manner of Crash Collision	23
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	1
Broadside (front to side)	16
Sideswipe, same direction	2
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	1
Other	1
Unknown	0

Surface Conditions	23
Dry	20
Wet	1
Ice/frost	0
Snow	1
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	1
Other	0
Unknown	0

Fixed Object Struck	45
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	0
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	45



Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	1	0	0	1
= 16	0	0	0	0	0
= 17	0	0	0	0	0
= 18	2	0	0	0	2
= 19	1	1	0	0	2
= 20	0	2	0	0	2
>= 21 and <= 24	1	1	0	0	2
>= 25 and <= 29	1	4	0	0	5
>= 30 and <= 34	1	2	1	0	4
>= 35 and <= 39	1	2	0	0	3
>= 40 and <= 44	0	0	0	0	0
>= 45 and <= 49	0	2	0	0	2
>= 50 and <= 54	2	1	0	0	3
>= 55 and <= 59	2	5	0	0	7
>= 60 and <= 64	2	5	0	0	7
>= 65 and <= 69	1	2	0	0	3
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	1	0	0	0	1
>= 80 and <= 84	0	0	0	0	0
>= 85 and <= 89	0	0	0	0	0
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	1	0	1
<b>Total</b>	15	28	2	0	45

Alcohol Test Given	45
None	41
Blood	1
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	2

Drug Test Given	45
None	43
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	2

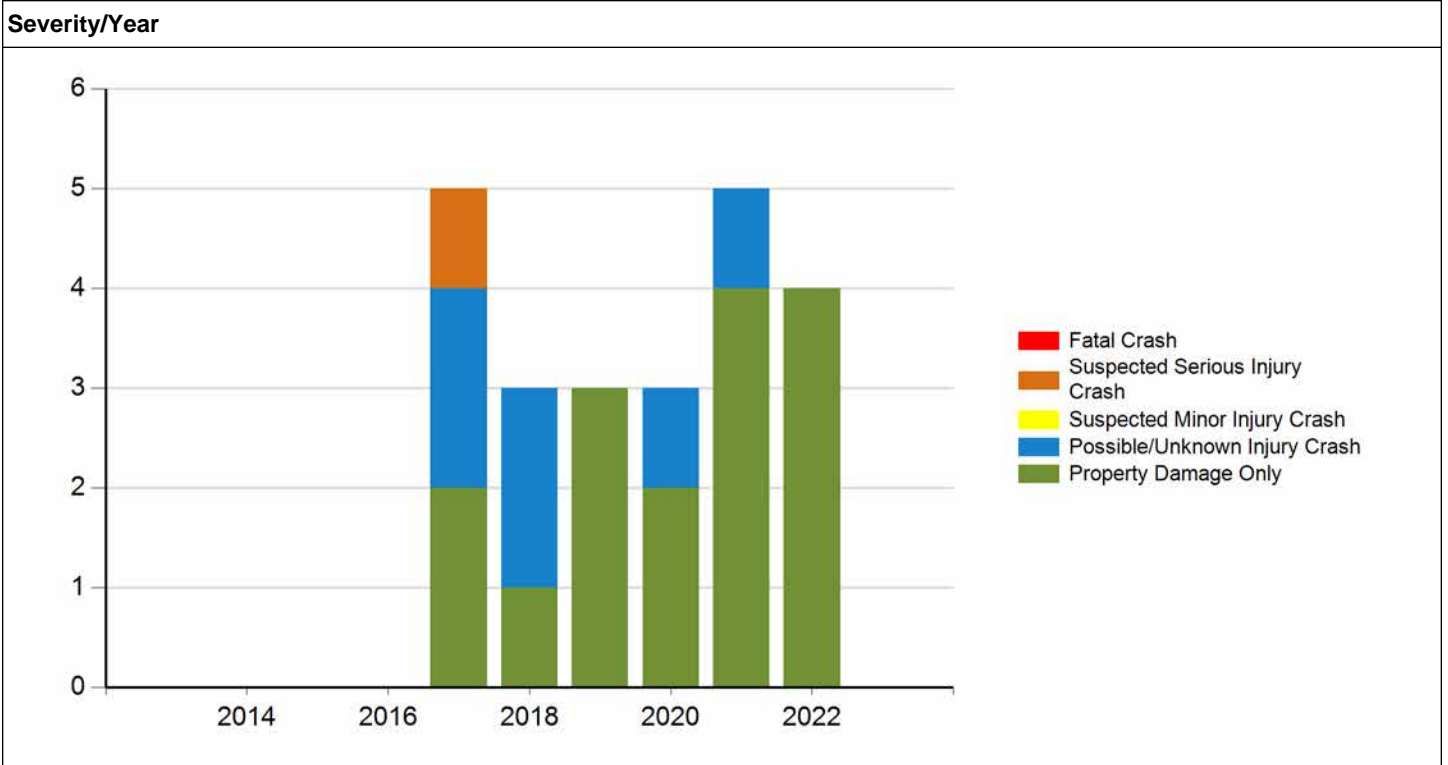
Drug Test Result	45
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	45
Other	0

Drug/Alcohol Related	23
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	22



Iowa Crash Analysis Tool  
Quick Report  
2017-2022

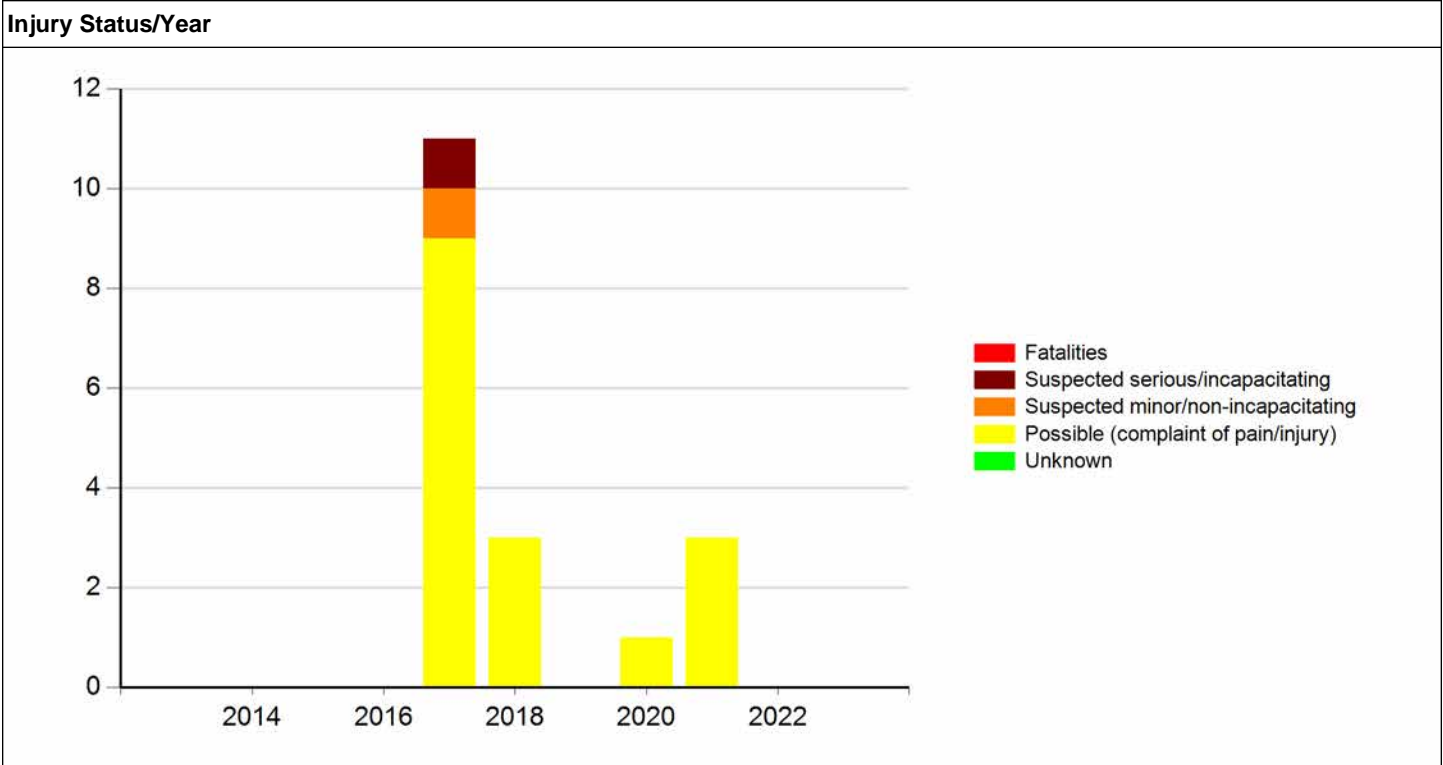
Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	1	0	2	2	5
2018	0	0	0	2	1	3
2019	0	0	0	0	3	3
2020	0	0	0	1	2	3
2021	0	0	0	1	4	5
2022	0	0	0	0	4	4
2023	0	0	0	0	0	0
<b>Total</b>	0	1	0	6	16	23





Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	1	1	9	0	11
2018	0	0	0	3	0	3
2019	0	0	0	0	0	0
2020	0	0	0	1	0	1
2021	0	0	0	3	0	3
2022	0	0	0	0	0	0
2023	0	0	0	0	0	0
<b>Total</b>	0	1	1	16	0	18

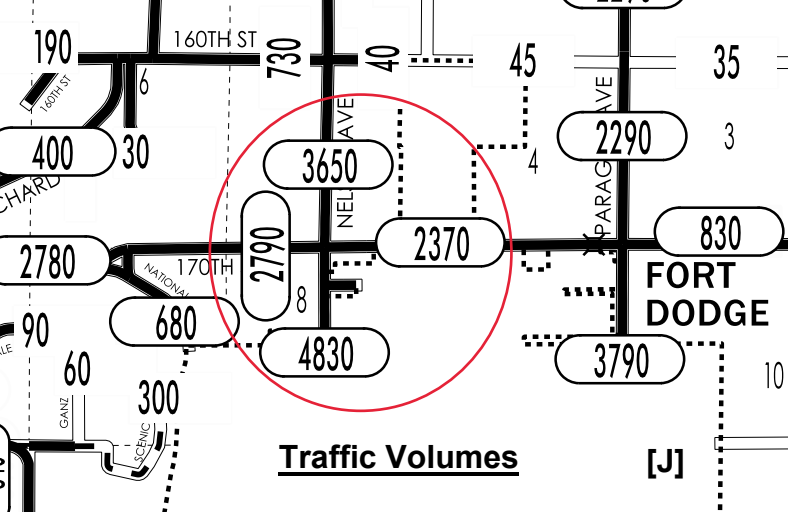




**Meeting the following criteria**

Jurisdiction: Counties (Webster)  
Year: 2017, 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**



Traffic Volumes

[J]

County:	Webster	Prepared By:	Mark Condon
Location:	P56/D14 Intersection	Date Prepared:	8/7/2023
Proposed Improvements:	Conversion from two way stop intersection to roundabout		
Estimated Improvement Cost:	\$ 1,206,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 24,134

Method Choice:	CRF Method
----------------	------------

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

## Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

## Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF			
	65	65.0			
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	65.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	1	65.0	0.20	0.13
Minor Injury (B)	\$ 265,000	0	65.0	0.00	0.00
Possible/Unknown Injury (C)	\$ 125,000	6	65.0	1.20	0.78
Property Damage Only (O)	\$ 20,000	16	65.0	3.20	2.08

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ 520,000
Minor Injury (B)	\$ -
Possible/Unknown Injury (C)	\$ 97,500
Property Damage Only (O)	\$ 41,600

## Total Benefits and Costs

	Implementation Cost	\$ 1,206,700	
	Present Value of Maint.	\$ 327,989	
Present Value Benefits (Societal Benefits)	\$ 9,735,373	Present Value Costs (Impl. and Maint. Costs)	\$ 1,534,689
Present Value Net Return	\$ 8,200,684		
<b>Benefit Cost Ratio</b>	<b>6.34</b>		

Form continues on next page



County:

Webster

Prepared By: Mark Condon

Location:

P56/D14 Intersection

Date Prepared: 8/7/2023

## No Input Necessary - No Custom Values In Use

---

### General Customizations

---

No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

---

No change to Traffic Growth  
Rate

No change to Crash History



## Application for SITE-SPECIFIC TSIP FUNDS

**GENERAL INFORMATION**DATE: 8/2/2023Location / Title of Project Roundabout at the intersection of P59 & D14Applicant Webster County

Contact \_\_\_\_\_

Person Mark Condon Title Assistant Engineer

Complete Mailing \_\_\_\_\_

Address 703 Central Ave, Suite 3Fort Dodge, IA 50501Phone (515) 576 - 3281 E-Mail mark.condon@webstercountyaia.org

(Area Code)

**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) \_\_\_\_\_

Contact Person \_\_\_\_\_ Title \_\_\_\_\_

Complete Mailing Address \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

(Area Code)

**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:****Funding Amount**Total Safety Cost \$ 1,140,700Total Project Cost \$ 1,140,700**Safety Funds Requested** \$ 500,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?

Yes – Explain: IDOT performed a TEAP study on this intersection in 2020 and recommended a roundabout as a long term solution.

No

# APPLICATION CERTIFICATION FOR PUBLIC AGENCY

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Webster County Engineer's Office

Signed: Mark 8/2/23  
Signature Date Signed

Mark Condon  
Printed Name

Attest: [Signature] 8/2/23  
Signature Date Signed

JAMIE JOHLL  
Printed Name

**RESOLUTION 2023-33**  
**Transportation Safety Improvement Program**  
**Grant Application**

WHEREAS the Iowa Department of Transportation Traffic Safety Improvement Program operates under the rules of Iowa Administrative Code 761-Ch. 164; and

WHEREAS said program allows for the distribution of traffic safety funds to cities, counties, and the Iowa DOT for roadway safety improvements, research, studies, or public information initiatives; and


WHEREAS the Webster County Engineer has determined that the project funded by this grant would improve the roadway safety in Webster County.

THEREFORE, BE IT RESOLVED BY THE BOARD OF SUPERVISORS OF WEBSTER COUNTY, IOWA that this County does hereby support the attached application for Traffic Safety Improvement Program funding.

Roll Call Vote:

Campbell:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Carlson:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Conrad:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Hayek:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>
Thode:	Aye	<input checked="" type="checkbox"/>	; Nay	<input type="checkbox"/>	; Abstain	<input type="checkbox"/>	; Absent	<input type="checkbox"/>

**PASSED AND APPROVED** on 8/1/2025.

  
\_\_\_\_\_  
Niki Conrad, Chairwoman  
Webster County Board of Supervisors

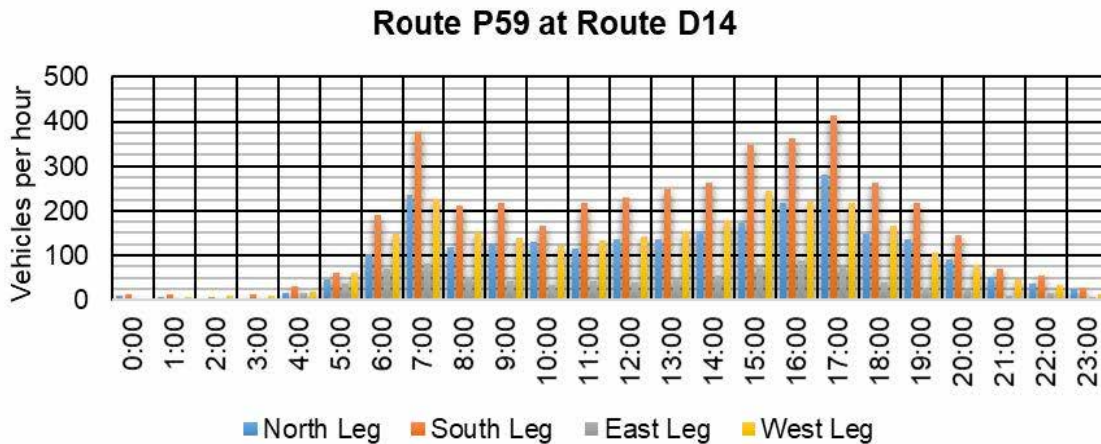
ATTEST:   
\_\_\_\_\_  
Doreen Pliner, Webster County Auditor

## Narrative

### Existing Conditions

P59 (Paragon Ave) and D14 (170<sup>th</sup> St) intersect just north of the city of Fort Dodge. P59 runs north at 55 mph and south at 45 mph while D14 runs east-west at 55 mph. At this intersection, both roads are two lane roads. D14 has stop signs while cross traffic on P59 does not stop.

In 2020 Webster County had the Iowa DOT perform a Traffic Engineering Assistance Program (TEAP) study regarding this intersection. This study collected various amounts of different information. Within that data, there was a 24 hour traffic count recorded by the Iowa DOT and those results are shown below:



According to the study there was approximately 2500 vehicles per day (vpd) on the north leg, 4160 vpd on the south leg, 2650 vpd on the west leg, and 900 vpd on the east leg.

### Proposed Concept

After the Iowa DOT finished the TEAP study there were a couple different suggested solutions. A short term and a long term solution was suggested. The only long term solution this study offered was to reconfigure the intersection geometry to a single lane roundabout design.

### Safety Justification

From 2017 to 2022 there were a total of 9 crashes at this intersection. That comes out to an average of 1.8 crashes per year. A crash diagram of the 9 crashes, which includes 1 suspected minor injury crash, 4 possible injury crashes, and 4 property damage only crashes is attached. Also within those 9 crashes was 1 rear-end crash and 6 broadside crashes. These crash types account for 78% of the total crashes at this intersection and can be directly prevented by the installation of a roundabout. Therefore, installing a roundabout at this intersection would significantly improve the safety of this intersection.

## Itemized Breakdown of All Costs

P59 (PARAGON AVE) & D14 (170TH ST) INTERSECTION IMPROVEMENTS					
ROUNDBABOUT					
Item no.	Item	Unit	Unit Price	Quantity	Safety Cost
1	TOPSOIL, STRIP, SALVAGE, SPREAD	CY	\$ 9.00	6400	\$ 57,600.00
2	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	\$ 12.00	6400	\$ 76,800.00
3	SUBGRADE PREPARATION	LS	\$ 70,000.00	1	\$ 70,000.00
4	SUBBASE, MODIFIED, 12-INCH	SY	\$ 12.00	6400	\$ 76,800.00
5	REMOVAL OF PAVEMENT	SY	\$ 12.00	6400	\$ 76,800.00
6	PAVEMENT, PCC, 9-INCH, CLASS C	SY	\$ 80.00	6400	\$ 512,000.00
7	DETECTABLE WARNING	SF	\$ 50.00	40	\$ 2,000.00
8	PAVEMENT MARKINGS AND SIGNAGE	LS	\$ 20,000.00	1	\$ 20,000.00
9	TRAFFIC CONTROL	LS	\$ 10,000.00	1	\$ 10,000.00
10	RECTANGULAR RAPID FLASHING BEACON	EA	\$ 5,000.00	2	\$ 10,000.00
11	SWPPP PREPARATION / COMPLIANCE	LS	\$ 25,000.00	1	\$ 25,000.00
12	CONSTRUCTION SURVEY	LS	\$ 15,000.00	1	\$ 15,000.00
13	MOBILIZATION	LS	\$ 85,000.00	1	\$ 85,000.00

NOTE: Implementing a roundabout at this location is the safety improvement and all costs listed here are required to install the roundabout. Therefore, all costs are assumed to be safety costs.

TOTAL	\$ 1,037,000.00
CONTINGENCY (10%)	\$ 103,700.00
TOTAL COST OPINION	\$ 1,140,700.00

Sources	
TSIP Funds	\$ 500,000.00
Webster County Local Funds	\$ 640,700.00



**Colored Pictures**

**P59 Facing North**

[F]





P59 Facing East



P59 Facing South



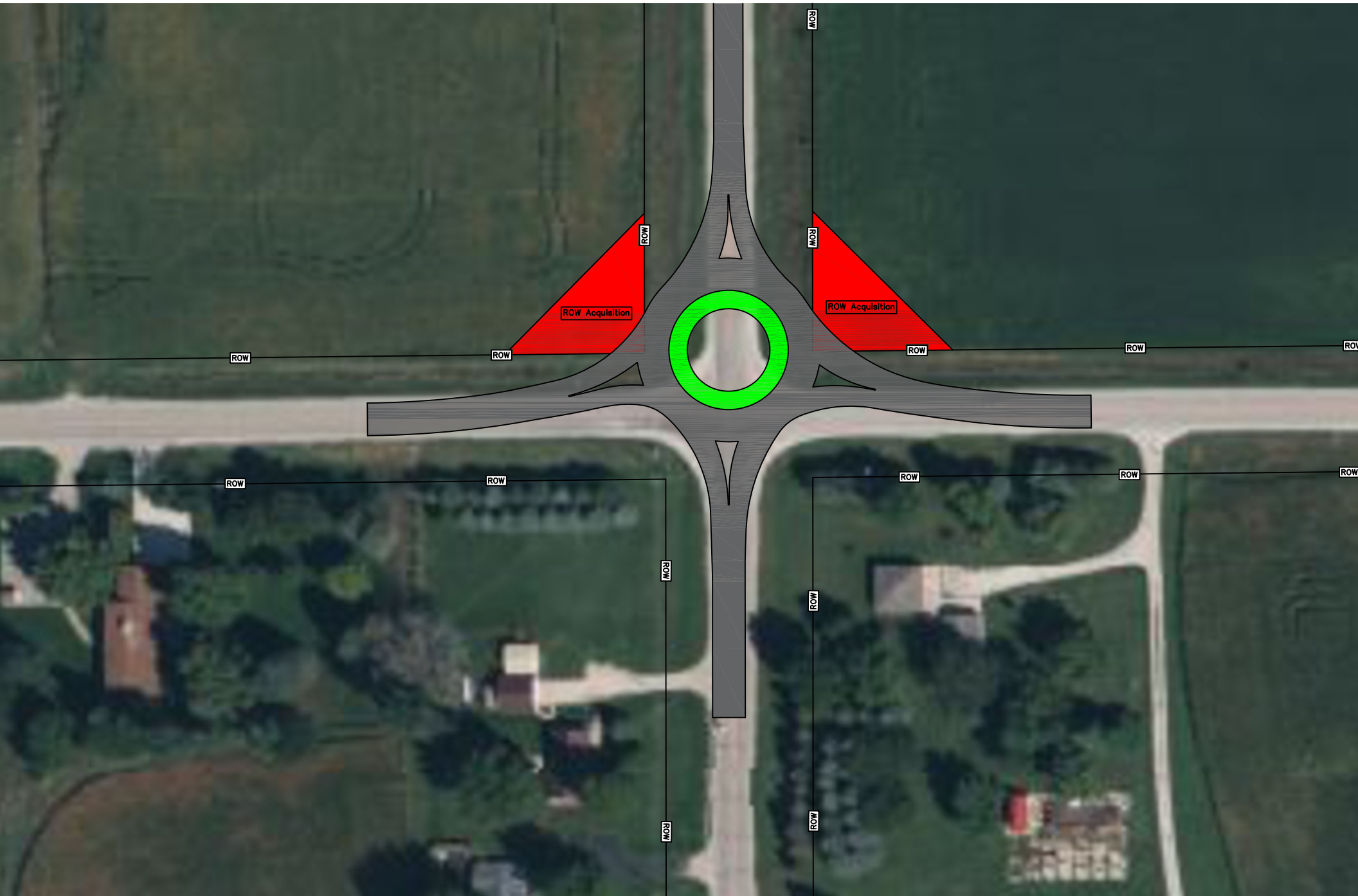
P59 Facing West

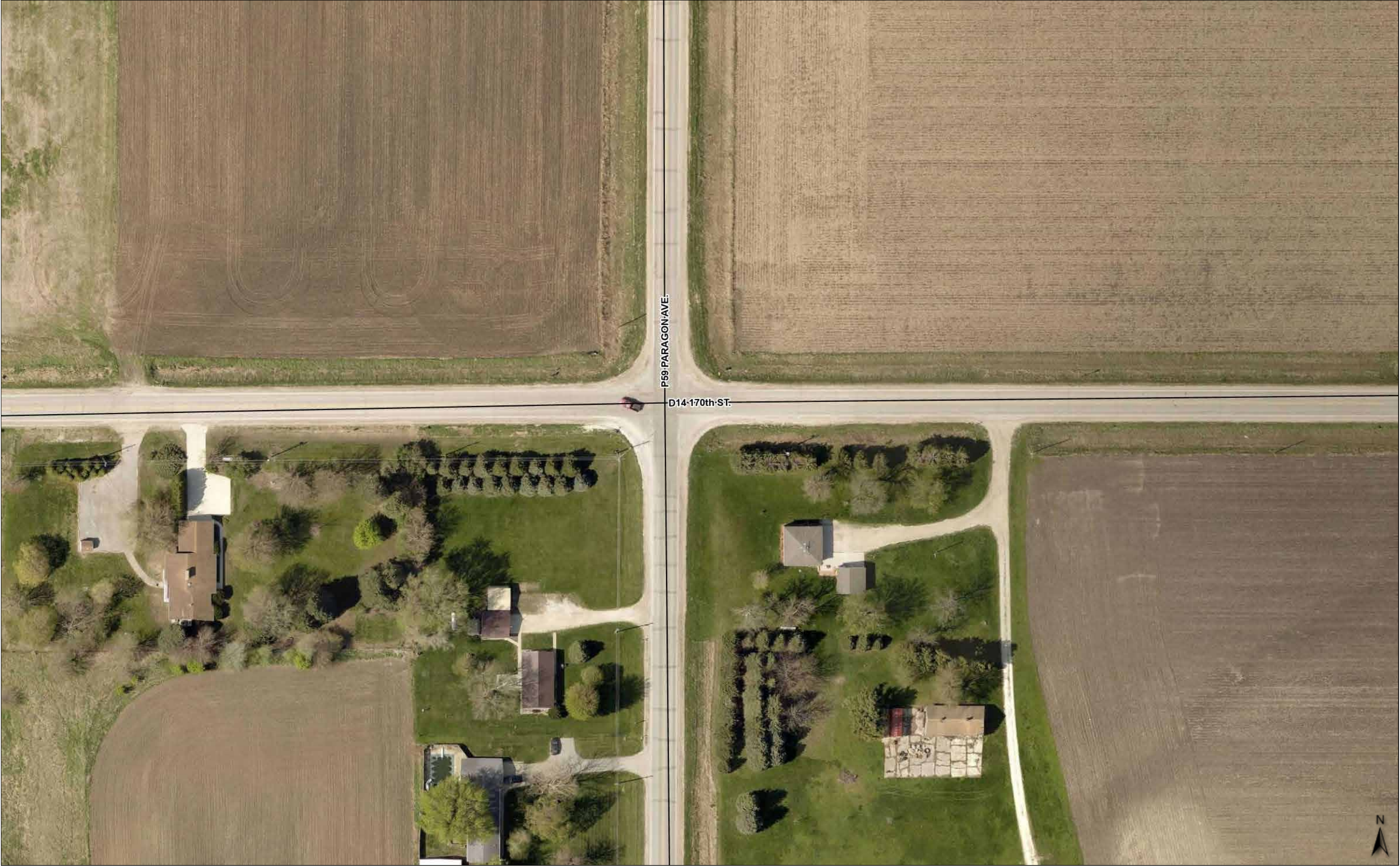
[F]



# Plan View

[G]







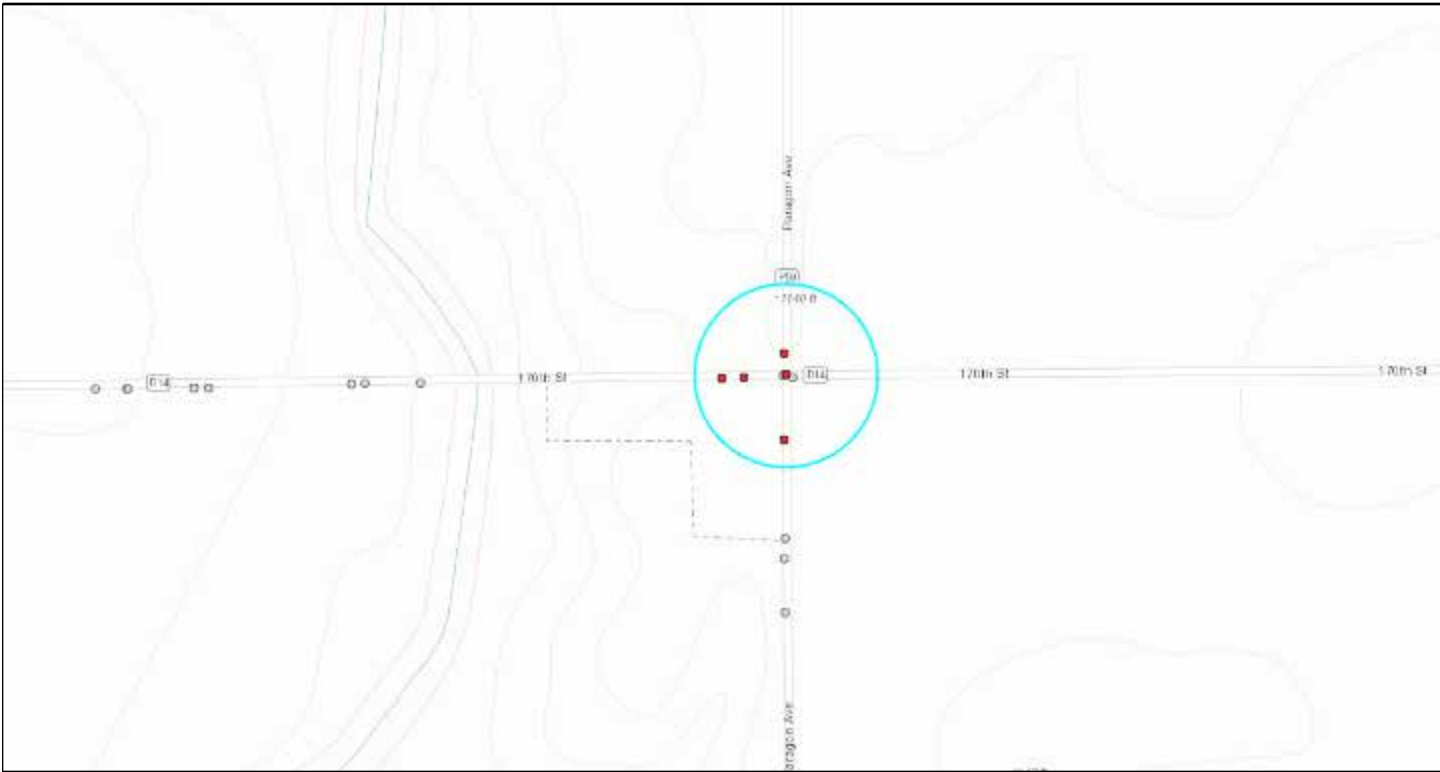
Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Crash Severity	9
Fatal Crash	0
Suspected Serious Injury Crash	0
Suspected Minor Injury Crash	1
Possible/Unknown Injury Crash	4
Property Damage Only	4

Injury Status Summary	6
Fatalities	0
Suspected serious/incapacitating	0
Suspected minor/non-incapacitating	1
Possible (complaint of pain/injury)	5
Unknown	0

Property/Vehicles/Occupants	
Property Damage Total (dollars):	80,800.00
Average (per crash dollars):	8,977.78
Total Vehicles:	18.00
Average (per crash):	2.00
Total Occupants:	27.00
Average (per crash):	3.00

Average Severity	
Fatalities/Fatal Crash:	0.00
Fatalities/Crash:	0.00
Injuries/Crash:	0.67
Major Injuries/Crash:	0.00
Minor Injuries/Crash:	0.11
Possible/Unknown Injuries/Crash:	0.56





Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Major Cause			9
Animal	1	Ran traffic signal	0
Ran stop sign	2	Failed to yield to emergency vehicle	0
FTYROW: At uncontrolled intersection	0	FTYROW: Making right turn on red signal	0
FTYROW: From stop sign	3	FTYROW: From yield sign	0
FTYROW: Making left turn	0	FTYROW: From driveway	0
FTYROW: From parked position	0	FTYROW: To pedestrian	0
FTYROW: Other	0	Drove around RR grade crossing gates	0
Disregarded RR Signal	0	Crossed centerline (undivided)	0
Crossed median (divided)	0	Traveling wrong way or on wrong side of road	0
Aggressive driving/road rage	0	Driving too fast for conditions	0
Exceeded authorized speed	0	Improper or erratic lane changing	0
Operating vehicle in an reckless, erratic, ca...	0	Followed too close	1
Passing: On wrong side	0	Passing: Where prohibited by signs/markings	0
Passing: With insufficient distance/inadequa...	0	Passing: Through/around barrier	0
Passing: Other passing	0	Made improper turn	1
Driver Distraction: Manual operation of an e...	0	Driver Distraction: Talking on a hand-held d...	0
Driver Distraction: Talking on a hands free ...	0	Driver Distraction: Adjusting devices (radio...	0
Driver Distraction: Other electronic device ...	0	Driver Distraction: Passenger	0
Driver Distraction: Unrestrained animal	0	Driver Distraction: Reaching for object(s)/f...	0
Driver Distraction: Inattentive/lost in thou...	0	Driver Distraction: Other interior distracti...	0
Driver Distraction: Exterior distraction	0	Ran off road - right	0
Ran off road - straight	0	Ran off road - left	0
Lost control	1	Swerving/Evasive Action	0
Over correcting/over steering	0	Failed to keep in proper lane	0
Failure to signal intentions	0	Traveling on prohibited traffic way	0
Vehicle stopped on railroad tracks	0	Other: Vision obstructed	0
Other: Improper operation	0	Other: Disregarded warning sign	0
Other: Disregarded signs/road markings	0	Other: Illegal off-road driving	0
Downhill runaway	0	Separation of units	0
Towing improperly	0	Cargo/equipment loss or shift	0
Equipment failure	0	Oversized load/vehicle	0
Other: Getting off/out of vehicle	0	Failure to dim lights/have lights on	0
Improper backing	0	Improper starting	0
Illegally parked/unattended	0	Driving less than the posted speed limit	0
Operator inexperience	0	Other	0
Unknown	0	Not reported	0
Other: No improper action	0		



**Iowa Crash Analysis Tool  
Quick Report  
2017-2022**

Time of Day/Day of Week														
Day of Week	12 AM to 2 AM	2 AM to 4 AM	4 AM to 6 AM	6 AM to 8 AM	8 AM to 10 AM	10 AM to Noon	Noon to 2 PM	2 PM to 4 PM	4 PM to 6 PM	6 PM to 8 PM	8 PM to 10 PM	10 PM to 12 AM	Not reported	Total
Sunday	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Monday	0	0	0	0	0	0	1	0	0	0	1	0	0	2
Tuesday	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Wednesday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thursday	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Friday	0	0	0	0	0	0	0	2	0	1	0	0	0	3
Saturday	0	0	0	0	0	0	0	0	0	1	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	2	2	2	2	1	0	0	9

Manner of Crash Collision	9
Non-collision (single vehicle)	1
Head-on (front to front)	0
Rear-end (front to rear)	1
Angle, oncoming left turn	0
Broadside (front to side)	6
Sideswipe, same direction	0
Sideswipe, opposite direction	0
Rear to rear	0
Rear to side	0
Not reported	1
Other	0
Unknown	0

Surface Conditions	9
Dry	7
Wet	1
Ice/frost	0
Snow	0
Slush	0
Mud, dirt	0
Water (standing or moving)	0
Sand	0
Oil	0
Gravel	0
Not reported	1
Other	0
Unknown	0

Fixed Object Struck	18
Bridge overhead structure	0
Bridge/bridge rail parapet	0
Ditch	1
Ground	0
Guardrail - face	0
Concrete traffic barrier (median or right sid...	0
Cable barrier	0
Utility pole/light support	0
Traffic signal support	0
Fire hydrant	0
Tree	0
Snow bank	0
Wall	0
Other fixed object	0
Bridge pier or support	0
Curb/island/raised median	0
Embankment	0
Culvert/pipe opening	0
Guardrail - end	0
Other traffic barrier	0
Impact attenuator/crash cushion	0
Traffic sign support	0
Other post/pole/support	0
Mailbox	0
Landscape/shrubbery	0
Fence	0
Building	0
None (no fixed object struck)	17





Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Driver Age/Driver Gender					
Driver Age - 5 year Bins	Female	Male	Not reported	Unknown	Total
< 14	0	0	0	0	0
= 14	0	0	0	0	0
= 15	0	0	0	0	0
= 16	0	0	0	0	0
= 17	1	0	0	0	1
= 18	0	0	0	0	0
= 19	0	0	0	0	0
= 20	0	0	0	0	0
>= 21 and <= 24	0	1	0	0	1
>= 25 and <= 29	0	1	0	0	1
>= 30 and <= 34	0	1	0	0	1
>= 35 and <= 39	0	1	0	0	1
>= 40 and <= 44	0	1	0	0	1
>= 45 and <= 49	0	2	1	0	3
>= 50 and <= 54	1	0	0	0	1
>= 55 and <= 59	2	1	0	0	3
>= 60 and <= 64	0	1	0	0	1
>= 65 and <= 69	0	1	0	0	1
>= 70 and <= 74	0	0	0	0	0
>= 75 and <= 79	0	0	0	0	0
>= 80 and <= 84	0	2	0	0	2
>= 85 and <= 89	0	1	0	0	1
>= 90 and <= 94	0	0	0	0	0
>= 95	0	0	0	0	0
Not reported	0	0	0	0	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>18</b>

Alcohol Test Given	18
None	16
Blood	0
Urine	0
Breath	1
Vitreous	0
Refused	0
Not reported	1

Drug Test Given	18
None	17
Blood	0
Urine	0
Breath	0
Vitreous	0
Refused	0
Not reported	1

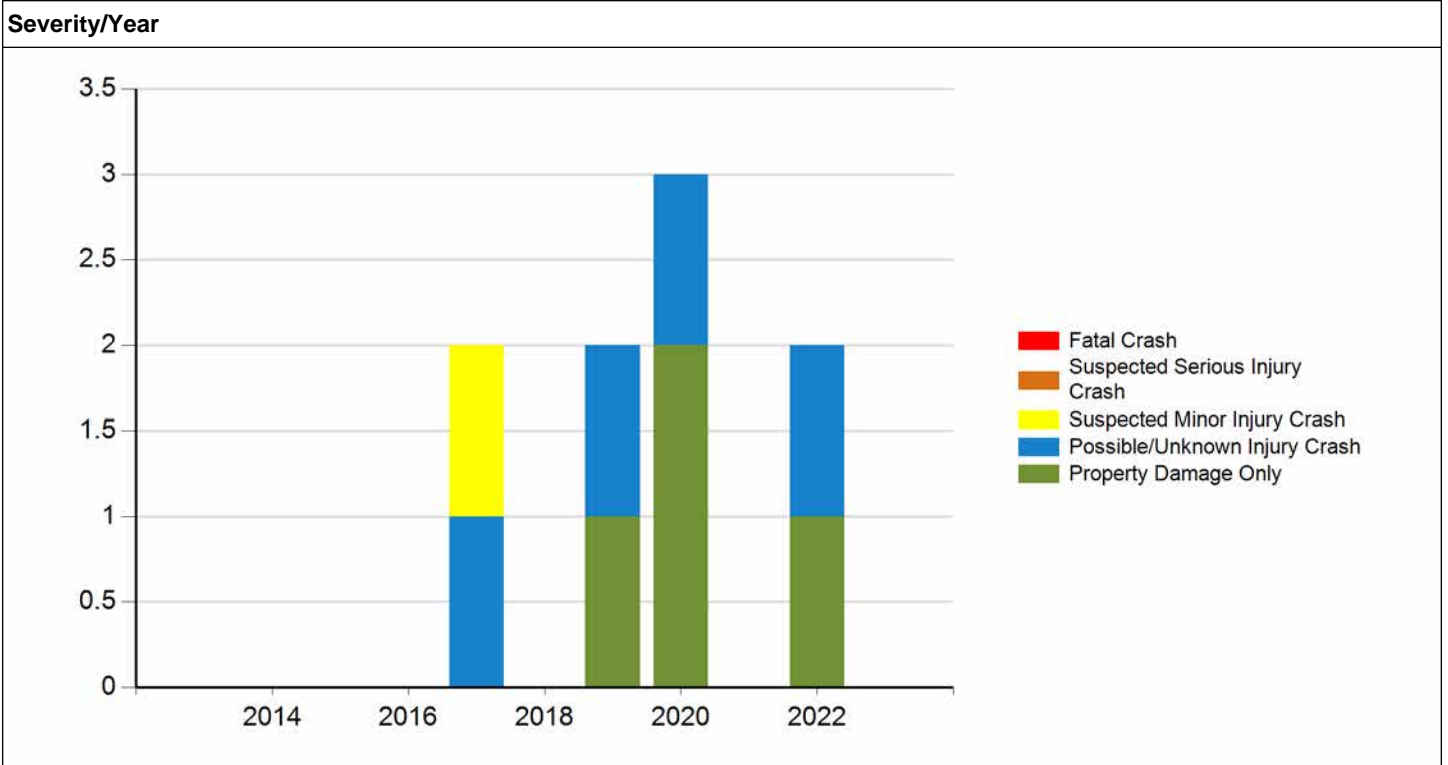
Drug Test Result	18
Negative	0
Cannabis	0
Central Nervous System depressants	0
Central Nervous System stimulants	0
Hallucinogens	0
Inhalants	0
Narcotic Analgesics	0
Dissociative Anesthetic (PCP)	0
Prescription Drug	0
Not reported	18
Other	0

Drug/Alcohol Related	9
Drug	0
Alcohol (< Statutory)	0
Alcohol (Statutory)	1
Drug and Alcohol (< Statutory)	0
Drug and Alcohol (Statutory)	0
Refused	0
Under Influence of Alcohol/Drugs/Medications	0
None Indicated	8

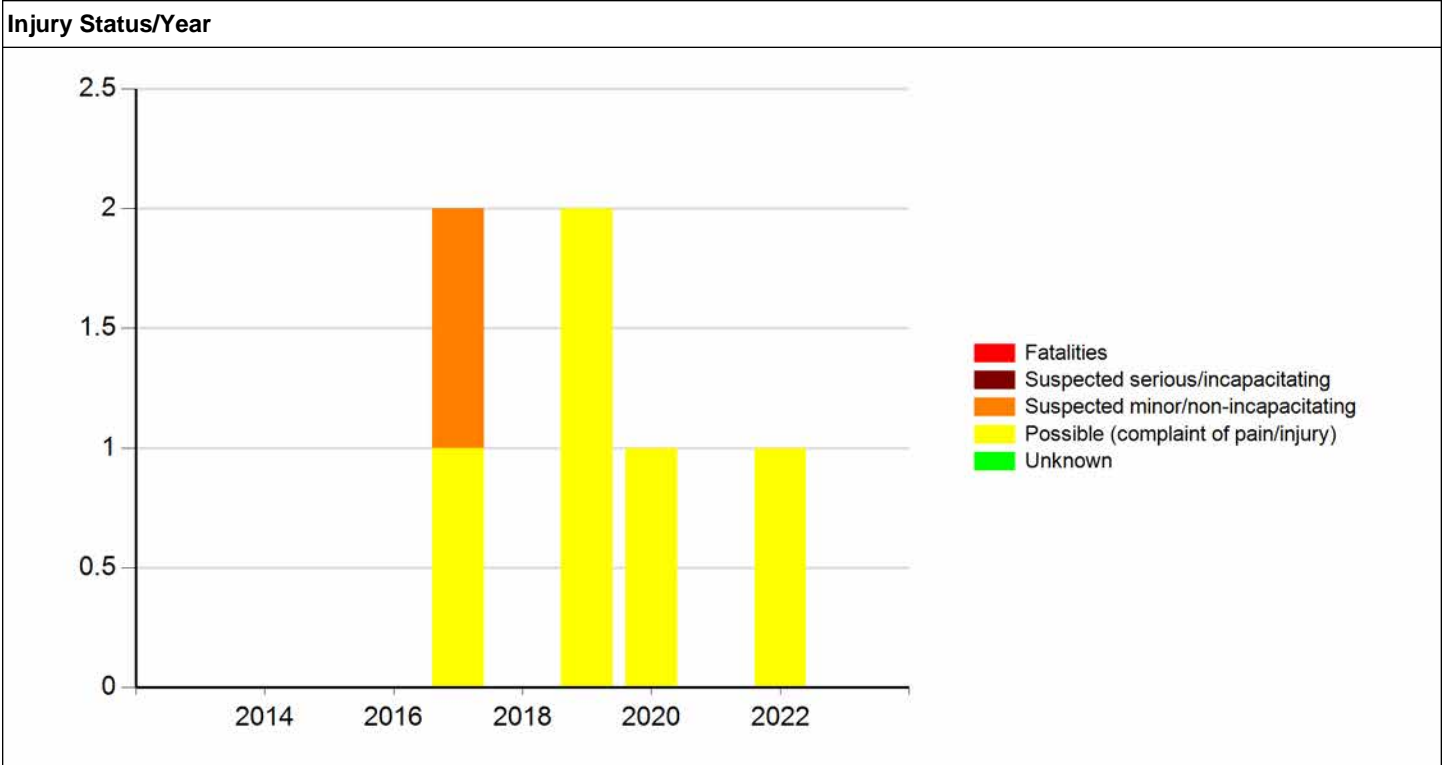


Iowa Crash Analysis Tool  
Quick Report  
2017-2022

Crash Severity - Annual						
Crash Year	Fatal Crash	Suspected Serious Injury Crash	Suspected Minor Injury Crash	Possible/Unknown Injury Crash	Property Damage Only	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	1	1	0	2
2018	0	0	0	0	0	0
2019	0	0	0	1	1	2
2020	0	0	0	1	2	3
2021	0	0	0	0	0	0
2022	0	0	0	1	1	2
2023	0	0	0	0	0	0
<b>Total</b>	0	0	1	4	4	9



Injury Status - Annual						
Crash Year	Fatalities	Suspected serious/incapacitating	Suspected minor/non-incapacitating	Possible (complaint of pain/injury)	Unknown	Total
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	1	1	0	2
2018	0	0	0	0	0	0
2019	0	0	0	2	0	2
2020	0	0	0	1	0	1
2021	0	0	0	0	0	0
2022	0	0	0	1	0	1
2023	0	0	0	0	0	0
<b>Total</b>	0	0	1	5	0	6

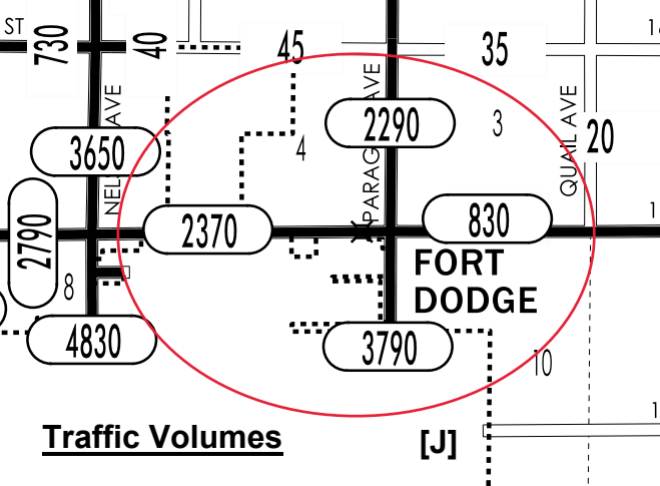




**Meeting the following criteria**

Jurisdiction: Counties (Webster)  
Year: 2017, 2018, 2019, 2020, 2021, 2022  
Map Selection: Yes  
Filter: None

**Analyst Information**



Traffic Volumes

[J]

County:	Webster	Prepared By:	Mark Condon
Location:	P59/D14 Intersection	Date Prepared:	8/8/2023
Proposed Improvements:	Conversion from two way stop intersection to roundabout		
Estimated Improvement Cost:	\$ 1,140,700		
Inflation on Crash Costs:	4%	Annual Maintenance:	2%
Discount Rate:	4%	(% of Improvement Cost)	
Estimated Service Life:	20	Annual Maintenance Cost:	\$ 22,814

Method Choice: **CRF Method**

The Crash Reduction Factor (CRF) Method applies one to three CRFs to historical crashes to estimate reductions in future crashes. Crash Modification Factors (CMFs) can be converted to CRFs. For additional information, click the "Learn More" button.

### Crash Reduction Factor (CRF) Method

Traffic Growth Factor:	1%
Number of CRFs:	1
Years of Crash History:	5

### Combined CRF (Dominant Common Residuals Method)

Iowa DOT's preferred methodology for combining CRFs is Dominant Common Residuals, since it is more conservative than the other options.

CRF Value (%)	CRF 1:	Combined CRF			
	65	65.0			
Crash Severity	Rounded Societal Costs	Crash History (Total):	CRF (from above)	Crash History - Annual Avg	Crashes Saved Annually
Fatal (K)	\$ 4,000,000	0	65.0	0.00	0.00
Serious Injury (A)	\$ 4,000,000	0	65.0	0.00	0.00
Minor Injury (B)	\$ 265,000	1	65.0	0.20	0.13
Possible/Unknown Injury (C)	\$ 125,000	4	65.0	0.80	0.52
Property Damage Only (O)	\$ 20,000	4	65.0	0.80	0.52

Crash Severity	Annual Societal Benefit
Fatal (K)	\$ -
Serious Injury (A)	\$ -
Minor Injury (B)	\$ 34,450
Possible/Unknown Injury (C)	\$ 65,000
Property Damage Only (O)	\$ 10,400

### Total Benefits and Costs

	Implementation Cost	\$ 1,140,700	
	Present Value of Maint.	\$ 310,050	
Present Value Benefits (Societal Benefits)	\$ 1,622,562	Present Value Costs (Impl. and Maint. Costs)	\$ 1,450,750
Present Value Net Return	\$ 171,812		
<b>Benefit Cost Ratio</b>	<b>1.12</b>		

Form continues on next page

County: Webster  
Location: P59/D14 Intersection

Prepared By: Mark Condon  
Date Prepared: 8/8/2023

## No Input Necessary - No Custom Values In Use

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### General Customizations

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No change to Crash Costs

No change to Discount Rate

No change to Maintenance  
Costs

### Method-Specific Customizations

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No change to Traffic Growth  
Rate

No change to Crash History