HANCOCK COUNTY

Safety Action Plan

July 2025

HANCOCK COUNTY SAFETY ACTION PLAN

Prepared for:

Hancock County IOWA

855 State Street,
Garner, IA 50438

Prepared by:

Kimley»Horn

Kimley-Horn and Associates, Inc.
767 Eustis Street
Suite 100
Saint Paul, MN 55114
651.645.4197

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Hancock County Safety Action Plan

ACKNOWLEDGEMENTS

The Hancock County employees and partners were instrumental in the development, review, and refinement of this Safety Action Plan. Iowa County Engineers Association and Kimley-Horn would like to express their appreciation to the supporting staff and partners for their participation and contributions. The identified partners are responsible for monitoring and implementing the plan in collaboration with ICEA and the Iowa DOT.

Iowa County Engineers Association (ICEA)
Andrew McGuire, Vice President
Brian Moore, Executive Director
Lindsey Schroeder, Grants Coordinator
Lee Bjerke, Secondary Roads Research Engineer

Consultant Team
Kimley-Horn
InTrans
LT Leon

Partners
Jeremy Purvis, County Engineer
Bret Bredlow, Assistant Engineer
Shaun Hackman, Assistant Engineer
Andy Buffington, Emergency Management Coordinator
Bud Jermeland, Supervisor Candidate
Chris Diggins, North Iowa Council of Governments
Jim Francis, Road Superintendent
Rob Gerdes, Sheriff's Office

STATUTORY NOTICE

23U.S.C. § 407: US Code - Section 407: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway-highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

E. EXECUTIVE SUMMARY

In the United States over 40,000 people lost their lives in motor vehicle crashes in 2023. According to the Federal Highway Administration (FHWA), rural fatalities account for 40 percent of all fatalities across the United States, yet less than 20 percent of the population lives in rural areas. In addition, the fatality rate on rural roads is 1.5 times higher than the fatality rate on roads in urban areas, resulting in a focus on rural road safety.

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> ***FHWA - Office of Traffic Safety***

In Iowa, while county roads account for 17% of the total statewide vehicle miles of travel (VMT), they account for 78% of the mileage and 35% of the fatal and serious injury crashes. These serious crashes are overrepresented based on VMT and are spread over an extensive roadway network. County road crash patterns are typically characterized by similar types of crashes that occur at unique locations. In Hancock County, there was an average of 4.4 fatal and serious injury crashes per year on approximately 1,000 miles of county roads between 2019-2023. Therefore, Hancock County, in consultation with partners, prepared this Comprehensive Safety Action Plan (SAP) to present a holistic, well-defined strategy to reduce roadway fatalities and serious injuries in the county. Consistent with strategies included within Iowa's Five-Year Strategic Highway Safety Plan (SHSP) 2024-2028, this SAP identifies high-risk locations and prioritizes strategies to address them, allowing for the proactive implementation of safety countermeasures. The County has also pledged their commitment to a goal zero roadway fatalities and serious injuries by 2050. The signed pledge is included in **Appendix A**.

E.1. Hancock County

Hancock County is located in north central Iowa and was named for John Hancock, a founding father and a leader of the Continental Congress during the American Revolution. According to the 2020 census, the population of Hancock County is 10,795. The county seat is Garner which is the site of famous evangelist Billy Sunday's first meetings in 1896. Hancock County is home to Pilot Knob state park, one of the oldest state parks in Iowa. According to the Iowa Department of Transportation (Iowa DOT), the county maintains 1,010 miles of county roads which includes 254 miles of paved roads. From 2019 to 2023 there were 207 crashes on Hancock county roads of which 22 crashes resulted in fatal and serious injuries.

E.2. Safe Streets and Roads for All (SS4A) Program

This SAP was prepared with funding from the Safe Street and Roads for All (SS4A) discretionary program as well as a local match from Iowa DOT Traffic & Safety Bureau. The Iowa County Engineers Association (ICEA), with lead applicant Mahaska County, received an SS4A planning grant to prepare SAPs for 97 counties in the state. The Bipartisan Infrastructure Law (BIL) established the SS4A discretionary program to fund improvements and strategies to prevent roadway fatalities and serious injuries of all users of highways, streets, and roadways: pedestrians, bicyclists, public transportation users, motorists, personal conveyance and micro-mobility users, and commercial vehicle operators. The SS4A program supports the U.S. Department of Transportation's (USDOT's) National Roadway Safety Strategy (NRSS) and a goal of zero roadway deaths using a Safe System Approach. The program includes $5 billion in appropriated funds over five years: 2022-2026. This SAP meets eligibility requirements that allow local jurisdictions to apply for implementation grants and additional funding through the USDOT SS4A discretionary program.

E.2.1. Safe System Approach

The USDOT has adopted a Safe System Approach as the guiding paradigm to address roadway safety. The Safe System Approach has been embraced as an effective way to address and mitigate the risks inherent in our complex transportation system. It works by building and reinforcing multiple layers of protection to both prevent crashes from happening in the first place and minimize the harm caused to those involved when crashes do occur. The Safe System Approach is founded on the principles that humans make mistakes and that human bodies have limited ability to tolerate crashes. It provides a holistic and comprehensive approach to roadway safety and is governed by the framework shown in **Figure E-1** to make places safer for people. The Safe System Approach is a shift from the conventional approach to roadway safety because it focuses on both human mistakes and human vulnerability, and designs for a system with many redundancies in place to protect everyone.

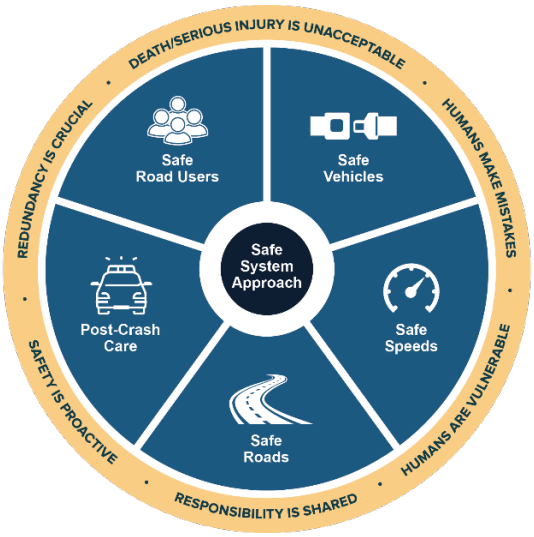

Figure E-1 - USDOT Safe System Approach

E.2.2. National Roadway Safety Strategy (NRSS)

USDOT's NRSS is a comprehensive approach to reduce fatal and serious injuries on highways, roads, and streets. This strategy outlines the USDOT's long-term goal of reaching zero roadway fatalities, the adoption of the Safe System Approach, and actions the department will take to target urgent problems. The NRSS states that across the nation, rural roads face safety impacts that largely outnumber their relative population and number of miles traveled. This leads to a fatality rate that is approximately two times higher on rural roads than on urban roads.

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A Safety Action Plan (SAP) is intended to result in holistic, well-defined strategies intended to reduce roadway fatalities and serious injuries within a specific locality, tribal area, or region. SAPs can take many forms; however, to be eligible for Implementation and/or Planning and Demonstration funding through the USDOT SS4A discretionary grant program, the SAP is required to be completed within the time period specified for the Notice of Funding Opportunity (NOFO) period (generally within the last five years) and must include the following two components: (1) Safety Analysis and (2) Strategy and Project Selections, as well as at least three of the following elements:

- Leadership commitment and goal setting
- Planning structure
- Engagement and collaboration
- Policy and process changes
- Progress and transparency

More information about SAPs is available on the USDOT SS4A website.

This SAP uses a risk factor analysis to identify and prioritize locations for proactive safety improvements that can be implemented by the county, allowing practitioners to make informed, prioritized safety decisions. The recommendations focus on systemic transportation improvements with high crash reduction benefits and include driver-related countermeasures.

Figure E-2 - Iowa's Five Es of Safety

The planning process takes into consideration constraints within the local county network and incorporates feedback from the County Engineer and local stakeholders, including partners within Iowa's 5 Es of safety (Engineering, Emergency Response, Education, Enforcement, and Everyone), as shown in **Figure E-2**. While engineering improvements can make the roadways safer, engineering improvements alone cannot prevent all motor vehicle crashes. According to the National Highway Traffic Safety Administration (NHTSA), over 90 percent of all crashes are the result of driver-related factors. Because such a high percentage of crashes are a result of driver-related factors, making roadways safer requires all five Es to be involved.

E.4. SAP Development Process

The development of this SAP includes seven primary steps as illustrated in **Figure E-3**. More detailed descriptions of the process are included in subsequent sections of this document.

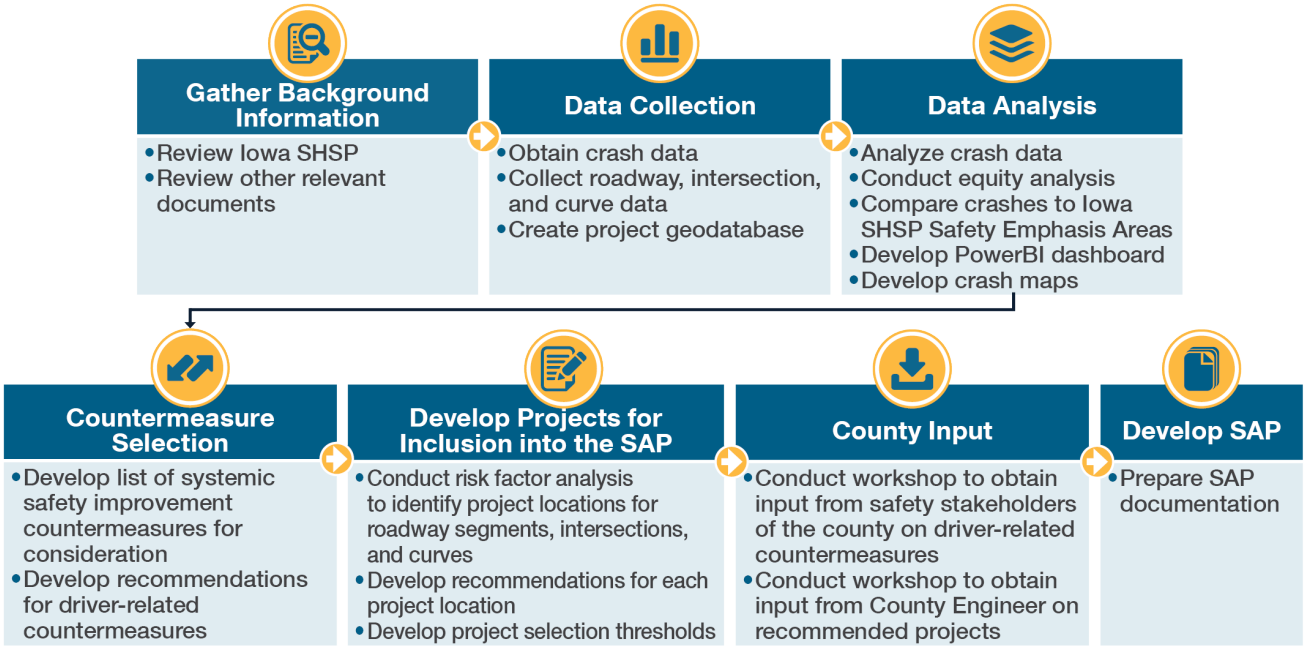

Figure E-3 - SAP Project Process

E.5. Recommendations

This SAP identifies both engineering and driver-related countermeasures intended to be implemented over the next five to ten years. The following sections summarize the recommended countermeasures and improvements for Hancock County.

E.5.1. Engineering Countermeasures

Systemic safety improvement projects were developed with input from the county for high-ranking roadway segments, intersections, and horizontal curves on Hancock County paved roads. Each project location is shown in **Figure E-4**, and **Table E-1** provides a cost summary of the recommended projects. Detailed information for each safety countermeasure is provided in **Section 6**, as well as in **Appendix B1**, **Appendix C1**, and **Appendix D1.** Detailed information for each project is provided in **Section 6**, as well as in project sheets in **Appendix B2**, **Appendix C2**, and **Appendix D2** for roadway segments, intersections, and horizontal curves, respectively. These sheets may require updating for funding applications in future years. The County Engineer may also make changes to the prepared project sheets based on local knowledge of the site, available funding, and/or specific needs.

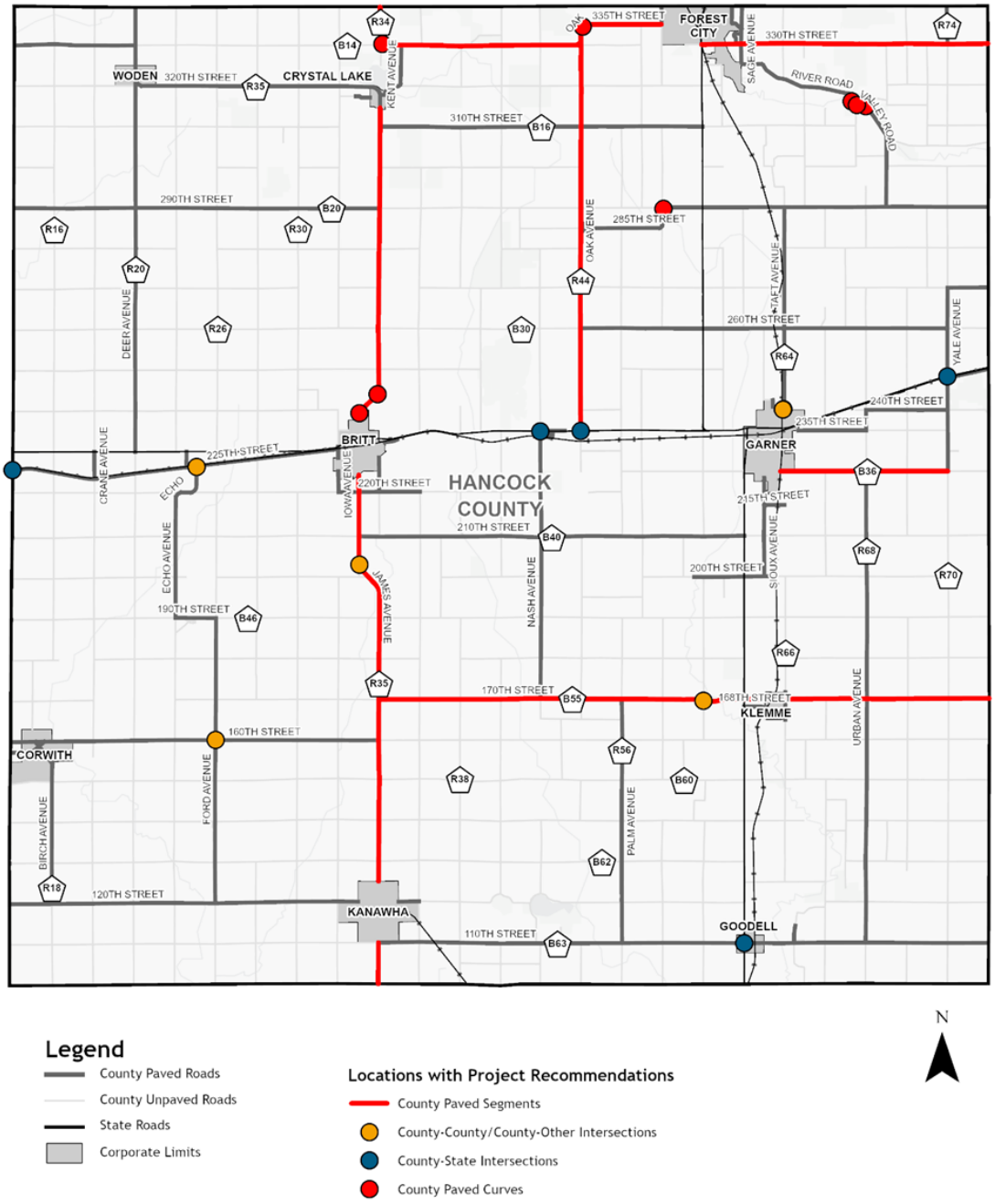

Figure E-4 - Hancock County Prioritized Project Locations Selection Summary

Table E-1 - Engineering Countermeasure Cost Summary

Facility Type	Number of Locations	Estimated Project Cost
Segment	9	$18,628,000
Intersection	10	$362,000
Curve	9	$488,000
Total Improvement Costs	**29**	**$19,478,000**

E.5.2. Driver-Related Countermeasures

A workshop was conducted in Hancock County on Wednesday, October 16, 2024, to discuss driver related crashes occurring in the county and to identify strategies aimed at improving driver behavior to enhance road safety. A wide range of individuals were invited to the workshop, including elected officials, partner agencies that operate within the County, stakeholders representing the 5 Es of traffic safety, and the general public. The flyer used to publicize the workshop and the sign-in sheet is included in **Appendix F**. A summary of the workshop discussion is provided in **Section 5.2.** Based on these discussions, the status of implementing driver-related strategies in the county is summarized in **Table E-2.** It is recommended that the county partner with all five Es of safety to implement countermeasures that are not currently underway/ongoing and look for opportunities to introduce additional countermeasures that are not currently being implemented.

Table E-2 - County Driver-Related Countermeasures Summary

Countermeasure	Status
Speed Related	
Conduct targeted speed enforcement	Opportunity
Prosecute and impose sanctions on drivers not obeying school bus stop bars	Ongoing/Opportunity
Conduct education and awareness campaigns	Opportunity
Occupant Protection	
Conduct targeted enforcement of restraint use	Opportunity
Instruction in proper child restraint use	Opportunity
Check for proper child restraint use in all motorist encounters	Ongoing/Opportunity
Positive reinforcement	Completed in the Past
Conduct education and awareness campaigns	Opportunity
Younger Drivers	
Enforcement of minor school license and graduated driver's license laws	Underway/Ongoing
Additional training in schools	Ongoing/Opportunity
Conduct education awareness campaigns	Opportunity
Impairment Involved	
Conduct targeted OWI enforcement	Opportunity
Compliance checks for alcohol sales	Ongoing/Opportunity
Alternative transportation choices	Opportunity
Prosecute, impose sanctions on, and treat OWI offenders	Opportunity
Conduct education and awareness campaigns	Opportunity
Older Drivers	
Promote safe mobility choices	Ongoing/Opportunity
Encourage external reporting of at-risk drivers to licensing authorities	Underway/Ongoing
Conduct education and awareness campaigns	Opportunity
Distracted Driving	
Visibly enforce existing statutes to deter distracted driving	Opportunity
Agency policy for hands-free devices	Ongoing/Opportunity
Mobile simulator for distracted driving	Opportunity
Conduct education and awareness campaigns	Opportunity

E.6. Implementation

The SAP project aims to provide a document that is both practical and frequently referenced by the county for requesting funding and completing traffic safety improvement projects on county-maintained roads. The following outlines key opportunities that can be used to implement the recommendations included within this plan. ICEA staff is available to assist counties in identifying and pursuing funding opportunities.

SS4A Implementation Grant: With the completion of this SAP, Hancock County is eligible to apply for additional funding through the SS4A program. An SS4A Implementation Grant provides federal funds to implement projects and strategies identified in an SAP to address roadway safety issues, including infrastructural, behavioral, and/or operational activities. The county should consider applying for an Implementation Grant to secure funding to implement the engineering projects and driver-related strategies recommended in this plan.

Iowa Transportation Funding Opportunities: The county should leverage funding opportunities available through Iowa DOT local funding programs such as Highway Safety Improvement Program – Local (HSIP-Local) or the Traffic Safety Improvement Program (TSIP) to implement the projects identified in this plan. The various funding opportunities are outlined in **Section 2.2**.

Five-Year Transportation Improvement Program: The county should review projects within the five-year program and consider including safety recommendations from the project sheets into those projects, where applicable. In future cycles of the program, it is recommended that safety projects included on the project sheets are considered for inclusion.

Maintenance Activities: Maintenance activities and upcoming design projects offer a great opportunity to incorporate safety countermeasures into already funded projects, often with minimal increases to the overall project cost. As such, it is recommended that when the county is designing projects and/or addressing a maintenance issue, the countermeasure selection thresholds (detailed in **Section 6.1.3**) are reviewed and countermeasures appropriate for the location are incorporated into the design. Doing so can help prioritize projects and emphasize safety in design and maintenance activities. In addition, the countermeasure information within this document should be used to provide instruction or education to maintenance crews about their ability to enhance safety in the county through their work.

Countywide Partnerships: It is recommended that the County continue to foster cooperation with safety stakeholders and look for opportunities to improve and expand the implementation of driver-related countermeasures.

E.7. Next Steps

The county should continue its history of implementing safety improvement projects annually. Based on current funding levels, it is anticipated that many of the engineering improvements listed in this plan could be implemented within five to ten years, or sooner. Additionally, this SAP should be updated within five to ten years to reflect improvements that have been implemented, additional availability of roadway feature data, and changes in crash types and patterns.

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A	Serious Injury
APP	Area of Persistent Poverty
ADT	Average Daily Traffic
ARIDE	Advance Roadside Impaired Driving Enforcement
BIL	Bipartisan Infrastructure Law
CEJST	Climate and Economic Justice Screening Tool
CLCH	Candidate Locations based on Crash History
CMF	Crash Modification Factor
CRF	Crash Reduction Factor
C-STEP	County-State Traffic Engineering Program
DEV	Daily Entering Volume
DOT	Department of Transportation
EMS	Emergency Medical Services
ETC	Equitable Transportation Community
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
Five Es	Engineering, Emergency Response, Education, Enforcement, and Everyone
GIS	Geographic Information System
GPS	Global Positioning System
GTSB	Governor's Traffic Safety Bureau
HFST	High Friction Surface Treatment
HSIP-Local	Highway Safety Improvement Program - Local
HSM	Highway Safety Manual
HMVMT	Hundred Million Vehicle Miles Traveled
ICAT	Iowa DOT Crash Analysis Tool
ICE	Intersection Control Evaluation
ICEA	Iowa County Engineers Association
ICWS	Intersection Conflict Warning System
InTrans	Institute for Transportation at Iowa State University
IRI	International Roughness Index
K	Fatality
KABCO	K = Fatality; A = Serious Injury; B = Minor Injury; C = Possible Injury; O = Uninjured
LED	Light-Emitting Diode
LRS	Linear Referencing System

LRSP	Local Road Safety Plan
LTAP	Local Technical Assistance Program
MIRE	Model Inventory of Roadway Elements
MDST	Multi-Disciplinary Safety Team
mph	Miles Per Hour
MUTCD	Manual on Uniform Traffic Control Devices
NHTSA	National Highway Traffic Safety Administration
NOFO	Notice of Funding Opportunity
NRSS	National Roadway Safety Strategy
OWI	Operating While Intoxicated
PCR	Potential for Crash Reduction
RAMS	Roadway Asset Management System
RSA	Roadway Safety Audit
SAG	Iowa DOT Safety Analysis Guide
SAIPE	Small Area Income Poverty Estimates
SAP	Comprehensive Safety Action Plan
SHSP	Strategic Highway Safety Plan
SPF	Safety Performance Functions
SS4A	Safe Streets and Roads for All
STEP	Selective Traffic Enforcement Programs
TEAP	Traffic Engineering Assistance Program
TSIP	Traffic Safety Improvement Program
VMT	Vehicle Miles Traveled
USDOT	US Department of Transportation

1. INTRODUCTION

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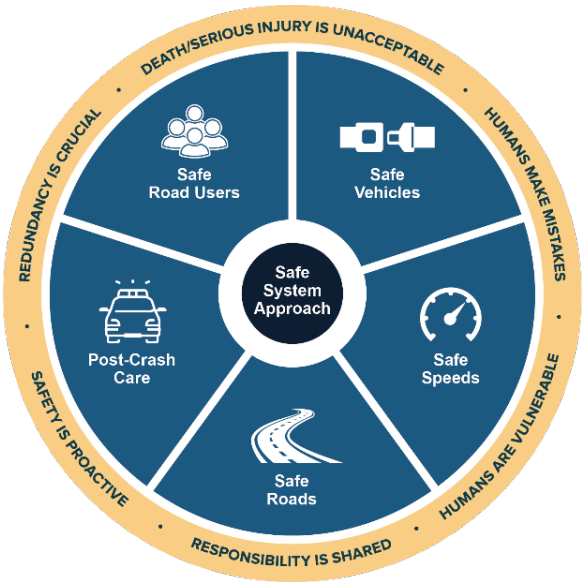

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Figure 2 - Iowa's Five Es of Safety

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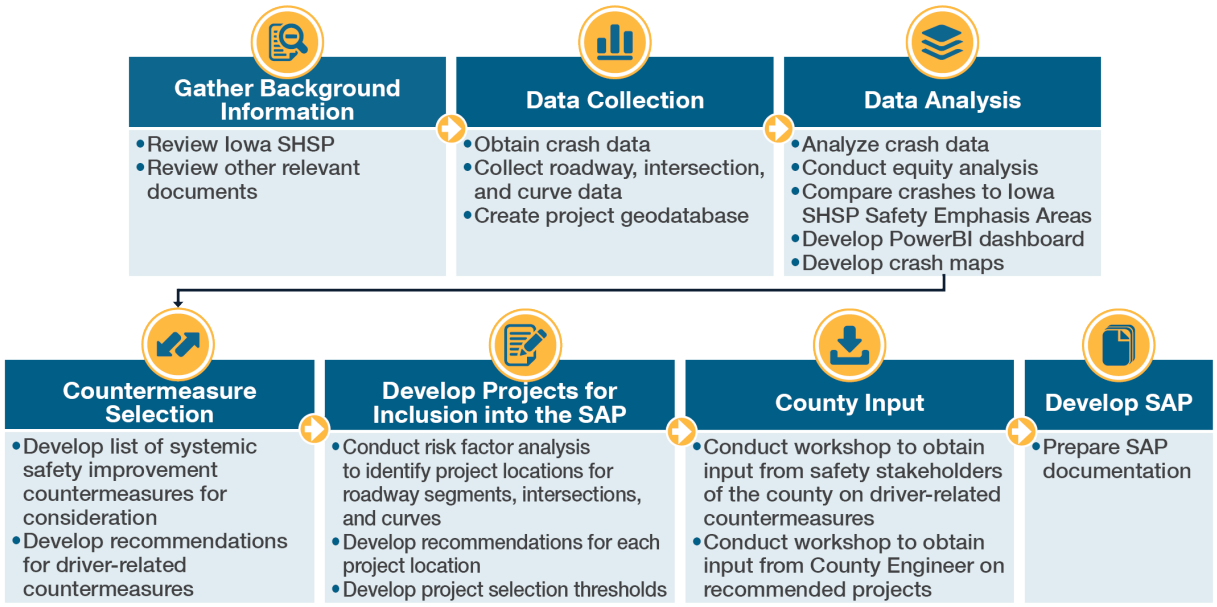


Figure 3 - SAP Development Process

1.5. Document Organization

This document is organized into the following sections:

- **Section 1. Introduction:** introduces SAPs and their purpose.
- **Section 2. Background:** provides a summary of relevant background information reviewed as part of the study.
- **Section 3. Data Collection:** summarizes the data collected and geodatabase developed for the analysis.
- **Section 4. Data Analysis:** describes the county crash data analysis.
- **Section 5. Countermeasure Selection:** provides a summary of potential engineering countermeasures and a summary of the driver-related countermeasure discussion from the Stakeholder Workshop.
- **Section 6. Safety Project Development:** describes the data analysis methodology used to select project locations and to identify safety improvements for roadway segments, intersections, and horizontal curves.
- **Section 7. Candidate Locations Based on Crash History (CLCH):** includes a list of high-crash segments, intersections, and curves for reference.
- **Section 8. Summary:** includes a summary of recommended improvements, implementation methods, and next steps.

2. BACKGROUND

Relevant safety documents were reviewed to gather background information for the SAP, including the Iowa SHSP, Iowa safety funding opportunities, and safety resources. The following subsections summarize the background information gathered from each document.

2.1. Iowa SHSP

Iowa released its Five-Year SHSP 2024-2028, to meet the significant challenge of reducing fatal and serious injury crashes on public roadways within the state, shown in **Figure 4**. To understand fatality and serious injury trends within the state, the SHSP reviewed and analyzed five years of crash data for crashes resulting in fatalities and serious injuries from 2017 to 2021. The SHSP used a data-driven process that included input from safety stakeholders to determine seven Key Emphasis Areas, which are emphasis areas that have the greatest potential to reduce fatalities and serious injuries on public roads. The plan includes strategies, developed with input from professionals across the state, to address safety for each of the seven Key Emphasis Areas and to support the targets and goals defined annually by the state in support of Iowa's long-term vision of Zero Fatalities[1].

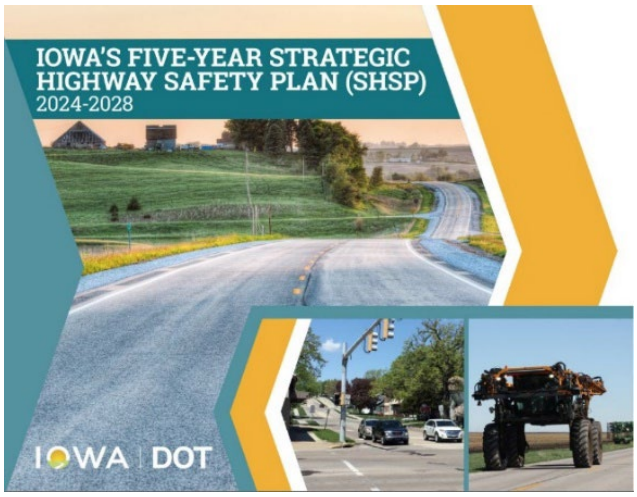


Figure 4 - Iowa's Five-Year SHSP

2.2. Iowa Safety Funding Opportunities

There are a wide variety of transportation safety funding sources available to counties within the State of Iowa. These funding programs can be used to implement treatments and recommendations for roadways and locations identified for improvements as part of this SAP. The following safety programs are available for the County to apply for funding to aid in implementation of the safety countermeasures identified within this SAP.

2.2.1. County-State Traffic Engineering Program (C-STEP)

C-STEP helps solve traffic operation and safety problems involving primary roads outside incorporated cities. Project types include both spot and linear improvements.
https://iowadot.gov/grants-programs/County-State-Traffic-Engineering-Program

2.2.2. Governor's Traffic Safety Bureau (GTSB)

GTSB is a subdivision of the Iowa Department of Public Safety. GTSB's mission is to identify traffic safety issues through partnership with city, county, state, and local organizations to develop and implement strategies to reduce serious injury and fatal crashes on Iowa's roads.
https://dps.iowa.gov/bureaus-iowa-department-public-safety/gtsb

[1] https://zerofatalities.com/

2.2.3. Highway Safety Improvement Program – Local (HSIP-Local)

This program promotes the installation of low-cost to medium-cost systemic improvements, with the goal of reducing fatal and serious injury crashes. HSIP-Local overlaps with TSIP but is more focused on implementing systemic, risk-factor improvements.
https://iowadot.gov/traffic/sections/hsip

2.2.4. Iowa DOT Roundabout Design Review

The Iowa DOT offers complimentary roundabout design review services to municipalities and counties throughout Iowa. Representatives from a nationally-known roundabout consulting firm are able to provide assistance during the feasibility, planning, concept, design, and operational planning stages of roundabout projects to help ensure early success.
https://iowadot.gov/traffic/roundabouts/roundabout-resources

2.2.5. Sign Replacement Program for Cities and Counties

This program provides funds to replace damaged, worn out, obsolete, or substandard signs and signposts for cities and counties in Iowa. The grant program is not used for ordering new signs that do not exist at the location specified in the application.
https://iowadot.gov/local_systems/City-Reports-Funding-and-Resources/Sign-Replacement-Program

2.2.6. Traffic Safety Improvement Program (TSIP)

The TSIP distributes funds for roadway safety improvements, traffic control devices, studies, and outreach. TSIP provides safety funds to cities, counties, and the Iowa DOT in three separate categories: site-specific, traffic control devices, and studies and outreach. TSIP overlaps with HSIP-Local but is more focused on reactive improvements based on a location's documented crash-history and the proposed project's benefit-cost ratio.
https://iowadot.gov/traffic/traffic-and-safety-programs/tsip/tsip-program

2.2.7. Traffic Engineering Assistance Program (TEAP)

TEAP provides up to 150 hours of free traffic engineering expertise to local units of government in the form of a traffic study. Studies identify cost-effective traffic safety and operational improvements as well as potential funding sources to implement the recommendations.
https://iowadot.gov/traffic/traffic-and-safety-programs/traffic-engineering-assistance-program-teap

2.3. Safety Resources

This section describes various transportation safety resources that are available for counties to improve safety on their roadways. It is recommended that the County Engineer review these resources and find programs or resources that are valuable and could be applied within the county.

2.3.1. Bike Safety

The Blank Children's Hospital has an *All Heads Covered: Our Wheeled-Sports Safety Program*. This program includes a curriculum kit that is designed to help educators teach bike and wheeled-sports safety in the classroom or community for elementary-aged children. They also have a Bike Safety Van that houses all the equipment to host a bike rodeo and is offered free of charge. Additionally, low-cost helmets are available through the program.
https://www.unitypoint.org/locations/unitypoint-health---blank-childrens-hospital/advocacy-and-outreach/safe-kids#helmetsafety

2.3.2. Child Passenger Safety

The Unity Point Health – Blank Children's Hospital, Center for Advocacy & Outreach provides an entire webpage focused on child passenger safety in Iowa for parents and caregivers.
https://www.unitypoint.org/blankchildrens/child-passenger-safety.aspx

2.3.3. Diminished Driving

The Iowa DOT has resources intended for family members, caregivers, or other concerned individuals who are responsible for evaluating the options for older Iowans, particularly those dealing with dementia. It provides useful information on how dementia can impact driving safety and what actions can be taken to protect both the affected individual and the community.
https://iowadot.gov/drivers-licenses-ids/other-services/safety-concerns

2.3.4. Fatality Analysis Reporting System (FARS)

FARS is a nationwide census that provides yearly data regarding fatal injuries suffered in motor vehicle traffic crashes. Users are able to create their own data run online by using the query system.
https://www.nhtsa.gov/research-data/fatality-analysis-reporting-system-fars

2.3.5. Iowa Department of Public Safety

The Iowa Department of Public Safety has traffic safety information available for the public to review, which includes access to crash reports, real-time roadway conditions, construction, rode closures, and more.
https://dps.iowa.gov/

2.3.6. Iowa DOT Crash Analysis Tool (ICAT)

The Iowa DOT crash mapping website, ICAT, can be used to develop crash maps and summarize data to compare crash history within a county. Crash maps and data summaries can be created by anyone with an internet connection.
https://icat.iowadot.gov/

2.3.7. Iowa DOT Potential for Crash Reduction (PCR)

The Iowa DOT PCR website can be used to understand the potential for safety improvement or PCR at intersections as well as primary and secondary roadway segments within the state. The tool compares segments or intersections with similar sites in the same category (e.g. speed, cross-section, traffic control). Archives of prior 5-year PCR maps are also available.
https://pcr.iowadot.gov/

2.3.8. Iowa DOT Roadside Chats

The Iowa DOT has created Roadside Chats, a traffic safety campaign that focuses on specific areas where drivers can make a difference in decreasing the number of fatalities: buckle up, slow down, drive sober, and pay attention.
http://www.transportationmatters.iowadot.gov/

2.3.9. Iowa DOT Safety Analysis Guide

Iowa DOT Safety Analysis Guide (SAG) for Practitioners, was developed to assist practitioners with conducting safety analyses in Iowa.
https://iowadot.gov/media/1597/download?inline=

2.3.10. Iowa Strategic Highway Safety Plan

As previously summarized, the Iowa SHSP was developed to meet the significant challenge of reducing fatal and serious injury crashes on public roadways within the state. The document establishes statewide goals, objectives and key emphasis areas developed in consultation with federal, state, local and private sector safety stakeholders.
https://iowadot.gov/traffic/shsp/home

2.3.11. Multi-Disciplinary Safety Teams (MDSTs)

Iowa's MDST Program facilitates the development and operations of local multi-discipline safety teams to help identify and resolve local crash causes and enhance local crash response practices. By coordinating communication and collaborating with other stakeholders, participants gain a broader perspective on safety issues and learn best practices from professionals outside their area of expertise. This ultimately leads to the development of solutions that may not have been considered otherwise.

If you are interested in developing an MDST for your area, contact the Statewide MDST Facilitator for more information. Contact information for the Statewide MDST Facilitator is available on the program website. As of November 2024, the Statewide MDST Facilitator is Theresa Litteral (515.294.7465 or litteral@iastate.edu).
http://www.iowaltap.iastate.edu/MDST/

2.3.12. NHTSA

NHTSA offers materials for numerous traffic safety campaigns, including drunk driving, car seats, vehicle safety, distracted driving, and motorcycles. These marketing tools offer a way to get involved through traditional media and online media.
https://www.nhtsa.gov/

2.3.13. NRSS

The USDOT NRSS outlines the Department’s comprehensive approach to significantly reducing serious injuries and deaths on our nation’s highways, roads, and streets. This is the first step in working toward an ambitious long-term goal of reaching zero roadway fatalities.
https://www.transportation.gov/NRSS

2.3.14. Road Safety Audits (RSAs)

An RSA is a formal safety performance examination that reviews, in detail, the geometry of a roadway facility. As part of an RSA, an independent, multi-disciplinary team assesses the condition of a given roadway and provides short-, mid-, and long-term recommendations for safety improvements for all modes provided or planned to be provided by the facility. RSAs have been conducted throughout the United States and are generally accepted as a proactive, low-cost approach to improve safety. This countermeasure cost estimate listed in the project sheets does not include the cost of implementing the recommendations of the RSA.

If you are interested in identifying funding for and conducting an RSA in your county, contact the Local Technical Assistance Program (LTAP) Safety Circuit Rider for more information. Contact information for the LTAP Safety Circuit Rider is available on the program website. As of November 2024, the LTAP Safety Circuit Rider is David Veneziano (dvenez@iastate.edu or 515.294.5480).
https://iowaltap.iastate.edu/safety-circuit-rider/

2.3.15. Teen Drive 365

Teen Drive 365 provides safe driving tips for educators, teens, and parents. It is a free resource that helps promote defensive driving behavior among the youngest drivers on the road. Teen Drive 365 created an educational program called HeadsUP, which is an online distracted driving challenge.
https://www.teendrive365inschool.com/sites/default/files/headsup/index.html

2.3.16. Teen Driving Safety Resource Guide

This resource guide provides drivers with organizations, programs, publications, and resources focused on teen driving safety.
https://www.childrenssafetynetwork.org/resources/teen-driving-safety-resource-guide

2.3.17. Traffic Safety Marketing

Traffic Safety Marketing is an online resource for safety materials that can be used for safety campaigns. There are various materials that are free of charge and others that can be purchased. Counties are encouraged to download and use the traffic safety materials provided during campaigns and throughout the year.
https://www.trafficsafetymarketing.gov/

3. DATA COLLECTION

As part of the SAP project, a comprehensive geographic information system (GIS) project database was developed utilizing available crash, roadway, and disadvantaged community databases. The following sections describe the databases utilized for creation of the project geodatabase and later used for analysis.

3.1. Crash Data

The Iowa DOT statewide crash database includes crash history for all crashes occurring on a public roadway in the state that involve a personal injury or that satisfy a minimum property damage threshold of $1,500. The Iowa DOT ICAT tool was used to obtain crashes occurring on roadways of interest between January 1, 2014 and December 31, 2023. The crash database provides crash-, vehicle-, and person-level attributes. The crash database also includes several derived crash-level attributes, such as key emphasis area indicators. All crashes are geocoded with respect to the Iowa DOT Roadway Asset Management System (RAMS) roadway database.

This SAP utilizes five years (2019-2023) of crash data for analysis purposes and ten years (2014-2023) of data for crash mapping. Crashes included in the crash database were identified based on their "County" and "Concatenated System" attribute values. "Concatenated System" is an Iowa DOT-derived attribute, conveying the roadway system(s) on which a crash was located. The three roadway systems in Iowa are the Primary System (State-owned), the Secondary System (County-owned or maintained), and the Municipal System (City-owned). All crashes with a "Concatenated System" value containing "Secondary," including intersections with state roadways, were selected for analysis. "County" attributes were added to the database to clearly identify on which system a crash likely occurred, as well as address any possible ambiguities in the initial "Concatenated System" derivation. This was initially accomplished by analyzing the spatial proximity of crashes with respect to secondary roads, as defined in the RAMS database. Additional analysis was performed for a limited number of crashes not identified through this technique.

3.2. Roadway Data

Various databases were used that contain different roadway data elements, including the RAMS, horizontal curve, intersection, and pavement management databases. Information on the locations of existing stop signs and updates to the databases were also considered.

3.2.1. RAMS Database

The Iowa DOT RAMS database includes various roadway characteristics for all public roads in Iowa. Roadway attributes are regularly updated by the Iowa DOT from various sources, including local agency submittals. The Iowa DOT regularly updates a road network snapshot with integrated RAMS attributes and publishes it on the Iowa DOT Open Data Portal. This SAP utilized a 2023 road network snapshot.

3.2.2. Horizontal Curve Database

A horizontal curve geospatial database was created for the Iowa DOT by Pathway Services Inc. in conjunction with their video log and pavement distress collection efforts. Kimley-Horn reviewed and refined the horizontal curve dataset for this SAP.

3.2.3. Intersection Database

In August 2017, the Institute for Transportation at Iowa State University (InTrans) and the Iowa DOT completed initial development of an intersection database. The foundation of this database was a GIS-based intersection point file created by the Iowa DOT's Traffic and Safety Bureau. A selected set of Model Inventory Roadway Elements (MIRE) were captured for each intersection and each intersection approach, including aerial imagery and street-level images.

The Iowa DOT Research and Analytics Bureau has been in the process of developing a new intersection database based on, and integrated with, the RAMS linear referencing system (LRS). In this database, a single functional intersection may be represented by multiple points. For example, the intersection of two divided roads, with no channelization, is represented by four intersection points, comprising a "complex" intersection. InTrans has collaborated with the Research and Analytics Bureau to conflate the original intersection database and corresponding elements to a May 2023 RAMS-based intersection database version. Intersection database elements have not been compressively updated since completion of the original intersection database; however, elements for a limited number of intersections (included in the May 2023 RAMS-based version) have been updated as part of other research efforts.

3.2.4. PCR Paved Public Road Intersection Database

The Iowa DOT Traffic and Safety Bureau, with assistance from InTrans, has developed safety performance functions (SPFs) for paved public road intersections by category. An SPF predicts the average number of crashes at an intersection based on various characteristics (e.g. speed, cross-section, and traffic control) and exposure (traffic volume). The difference between the SPF predicted crashes and adjusted, observed crashes at an intersection represents the Potential for Crash Reduction (PCR). The Traffic and Safety Bureau has established three categories for resulting PCR values: negligible, medium and high. Additionally, the KABCO Injury Classification Scale was utilized, where K represents fatal crashes, A represents serious injury, B represents minor injury, C represents possible injury, and O represents uninjured.

Two types of SPFs, one that includes all crashes and another that includes fatal, serious injury, and minor injury crashes, were first developed for the 2014 to 2018 analysis period and then the 2016-2018 analysis period based on the August 2017 intersection database and intersection crash definition. More recently, three types of SPFs, one that includes all crashes, another that includes fatal, serious injury, and minor injury crashes, and a third that includes possible injury and property damage crashes, were developed for a 2018 to 2022 analysis period, based on the May 2023 RAMS-based intersection database and an updated intersection crash definition.

This SAP utilizes the resulting 2018 to 2022 intersection KABCO PCR values for all crashes.

3.2.5. PCR Paved Secondary Road Database

Similar to the SPFs developed for paved public road intersections, Iowa DOT's Traffic and Safety Bureau has also developed SPFs for paved secondary road segments by category with assistance from InTrans. Two types of SPFs, one that includes all crashes and another that includes fatal, serious, and minor injury crashes, were developed for a 2016 to 2020 analysis period, considering only non-intersection crashes.

This SAP utilizes the resulting 2016 to 2020 paved secondary road KABCO PCR values for all crashes.

3.2.6. International Roughness Index (IRI) Database

InTrans summarized IRI data for paved secondary road segment and horizontal curve datasets provided by Kimley-Horn. Raw pavement condition data, collected by Pathway Services Inc. from 2018 to 2023 were utilized to provide the highest possible coverage. The most recent data was used to compute the summarized IRI. Invalid IRI measurements were excluded, and raw data was excluded within 75 feet of paved intersections.

The *Highway Safety Manual* (HSM) suggests that pavement in better condition provides a lower potential for crashes. The use of this database and the recorded IRI help determine additional potential for crashes along roadway segments and curves.

3.2.7. 911 Address Database

The Hancock County 911 address database documents driveway addresses for businesses, homes, and structures within the county. It was utilized to obtain driveway locations along the County's paved roadway system for this project. While this database does not document all access points along the roadway system, such as farm access roadways, it does capture locations with a higher number of vehicular turning movements, such as homes and businesses. Roadway segments with a greater number of access points have a higher risk for crashes, due to increased potential for vehicle conflicts.

3.2.8. Stop Sign Locations

While the intersection database contains the control type for the intersection (all-way stop, two-way stop, one-way stop, etc.), stop control at the approach level is not included. ICEA provided information indicating where stop signs were located along the county paved roadway system. This information was geocoded into the GIS database.

3.2.9. Existing Condition Updates

Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made.

3.3. Demographic Data

3.3.1. Underserved Communities

As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria:

- The County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets:
  - The 1990 decennial census;
  - The 2000 decennial census; and
  - The most recent Small Area Income Poverty Estimates (SAIPE); or
- The Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; or
- Any territory or possession of the United States.

US Census Bureau Data

The *Population by Poverty Status in 1989/1999 for Counties* dataset was obtained from the US Census Bureau website for the 1990 and 2000 Decennial Census. These datasets include a geographic distribution of poverty in 1989 and 1999, respectively, with data available at the county and census tract levels. The county-level data was used to identify if greater than or equal to 20% of the county was below the poverty level.

Small Area Income Poverty Estimates (SAIPE)

The Small Area Income Poverty Estimates 2023 Poverty and Median Household Income Estimates for counties, states, and national was obtained from the US Census Bureau website. The dataset includes a geographic distribution of poverty in 2023, with data available at the county, state, and national level. The county-level data was used to identify if greater than or equal to 20% of the county was below the poverty level.

SS4A Underserved Communities Tool

The SS4A Underserved Communities tool was used to download data at the census tract level for Iowa to identify the areas that met the SS4A definition of an underserved community.

Based on a review of the US Census Bureau and SAIPE datasets, no counties in Iowa have a poverty rate of 20 percent or greater. Therefore, only the data from the SS4A Underserved Communities Tool was used to determine underserved communities in this analysis.

3.3.2. Equity Updates

When the SS4A program was established in 2022, an equity analysis was included as an optional component of an SAP. As such the Equitable Transportation Community Explorer and the Climate and Economic Justice Screening Tool were used to identify disadvantaged areas within Hancock County. As of January 2025, the demographic data tools websites are currently unavailable. This information is included in this SAP as it was included as an element of the project based on the grant agreement signed with FHWA in 2023.

USDOT Equitable Transportation Community (ETC) Explorer

The USDOT ETC provided census tract data related to transportation insecurity, environmental burden, social vulnerability, health vulnerability, and climate and disaster risk burden to identify locations that can benefit from safety improvement projects. A census tract was considered in need if the final index score places it in the 65 percent of all US census tracts. USDOT ETC data was based on the 2020 US Census. The five scoring components included:

- Transportation Insecurity
- Environmental Burden
- Social Vulnerability
- Health Vulnerability
- Climate and Disaster Risk

Climate and Economic Justice Screening Tool (CEJST)

The CEJST provided census tract level data related to climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development to identify locations that are disadvantaged. A community was considered in need if it is at or above a predetermined threshold for a burden within any of the key categories, as well as being at or above a predetermined threshold for an associated socioeconomic burden. Thresholds for the categories vary, and data sources range from 2010 to 2022. The eight scoring components included:

- Climate Change
- Energy
- Health
- Housing
- Legacy Pollution
- Transportation
- Water and Wastewater
- Workforce Development

4. DATA ANALYSIS

From January 1, 2019 to December 31, 2023, there were a total of 207 crashes on county roads in Hancock County, of which 22 resulted in serious injuries and fatalities. The following sections contain crash maps and summarize the data analysis prepared for the county, noting how it compares to the state of Iowa as a whole. High-crash locations and additional crash data analyses are included in this section.

4.1. Comparison of County Crashes to SHSP Safety Emphasis Areas

As part of Iowa's Five-Year SHSP 2024-2028, five years of crash data for crashes resulting in fatalities and serious injuries were separated into safety emphasis areas. This process determined the safety emphasis areas with the greatest number of crashes within Iowa and resulted in the focused opportunities for safety improvements on Iowa roadways. To align with the national shift to the Safe System Approach, the Iowa SHSP grouped each emphasis area into the five Safe System elements: Safer People, Safer Speeds, Safer Roads, Safer Vehicles, and Post-Crash Care. Iowa's Emphasis Areas grouped by the Safe System Approach are shown in **Figure 5**.

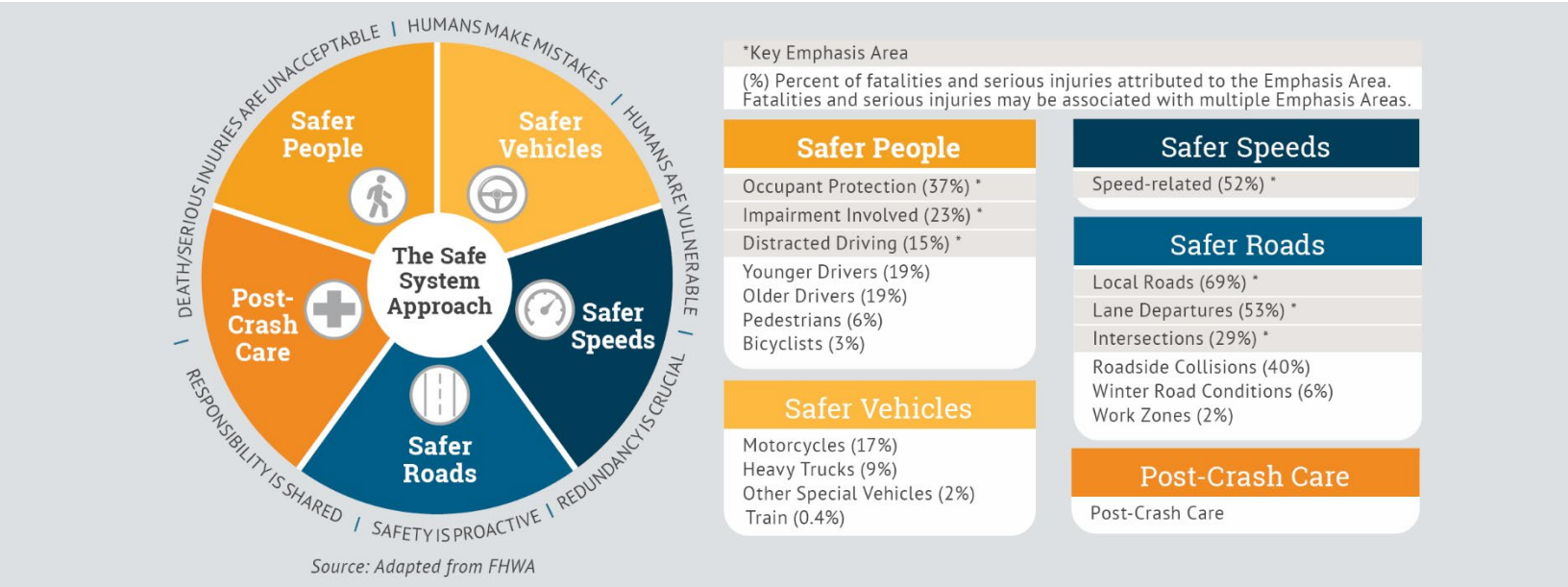


Figure 5 - Iowa's 2024 SHSP Emphasis Areas

Table 1 contains a comparison of Hancock County crashes resulting in fatalities and serious injuries to the emphasis areas from Iowa's Five-Year SHSP 2024-2028. Because the latest SHSP was based on five years of crash data, five years of crash data (2019-2023) for the county was utilized to compare the crashes to the Iowa SHSP emphasis areas. For comparison, **Table 2** shows the change in rank between the county and the state. As shown in **Table 1** and **Table 2**, the impairment involved, heavy trucks, other special vehicles, trains, and work zones emphasis areas rank higher for Hancock County than the statewide totals. Additionally, motorcycles ranked lower for Hancock County than the statewide totals. It should be noted that this analysis includes all fatal and serious injury crashes within the county, not just those that occurred on county roads.

Table 1 - Hancock County Fatalities and Serious Injuries by Safety Emphasis Area

Category	Emphasis Area	Hancock County			Statewide Totals			Iowa DOT Key Emphasis Area
		Fatal & Serious Injury	% of Total	Rank	Fatal & Serious Injury	% of Total	Rank	
		27	100%	N/A	8,653	100%	N/A	
Safer People	Occupant Protection	7	26%	7	3,428	40%	5	X
	Impairment Involved	12	44%	3	2,042	24%	7	X
	Distracted Driving	4	15%	11	1,264	15%	11	X
	Younger Drivers	5	19%	8	1,582	18%	9	
	Older Drivers	5	19%	8	1,628	19%	8	
	Pedestrians	0	0%	13	511	6%	14	
	Bicyclists	0	0%	13	199	2%	15	
Safer Vehicles	Motorcycles	0	0%	13	1,577	18%	10	
	Heavy Trucks	5	19%	8	757	9%	12	
	Other Special Vehicle	0	0%	13	149	2%	17	
	Trains	0	0%	13	32	0%	18	
Safer Speeds	Speed-Related	11	41%	4	4,547	53%	2	X
Safer Roads	Local Roads	26	96%	1	6,405	74%	1	X
	Lane Departures	17	63%	2	4,537	52%	3	X
	Intersections	9	33%	6	2,532	29%	6	X
	Roadside Collisions	11	41%	4	3,540	41%	4	
	Winter Road Conditions	1	4%	12	512	6%	13	
	Work Zones	0	0%	13	166	2%	16	

Numbers in the columns may not add up to the totals because the injuries in one crash may be associated with multiple emphasis areas. For example, there could be a lane departure crash with serious injuries involving an impaired young driver on a local road.
Source: Iowa Crash Analysis Tool (ICAT) 2019-2023

Table 2 – Hancock County Fatalities and Serious Injuries Rank by Safety Emphasis Area

Category	Emphasis Area	Rank			Key Emphasis Area
		County	State	Change in Rank	
Safer People	Occupant Protection	7	5	+2	X
	Impairment Involved	3	7	-4	X
	Distracted Driving	11	11	-	X
	Younger Drivers	8	9	-1	
	Older Drivers	8	8	-	
	Pedestrians	13	14	-1	
	Bicyclists	13	15	-2	
Safer Vehicles	Motorcycles	13	10	+3	
	Heavy Trucks	8	12	-4	
	Other Special Vehicle	13	17	-4	
	Trains	13	18	-5	
Safer Speeds	Speed-Related	4	2	+2	X
Safer Roads	Local Roads	1	1	-	X
	Lane Departures	2	3	-1	X
	Intersections	6	6	-	X
	Roadside Collisions	4	4	-	
	Winter Road Conditions	12	13	-1	
	Work Zones	13	16	-3	

Source: Iowa Crash Analysis Tool (ICAT) 2019-2023

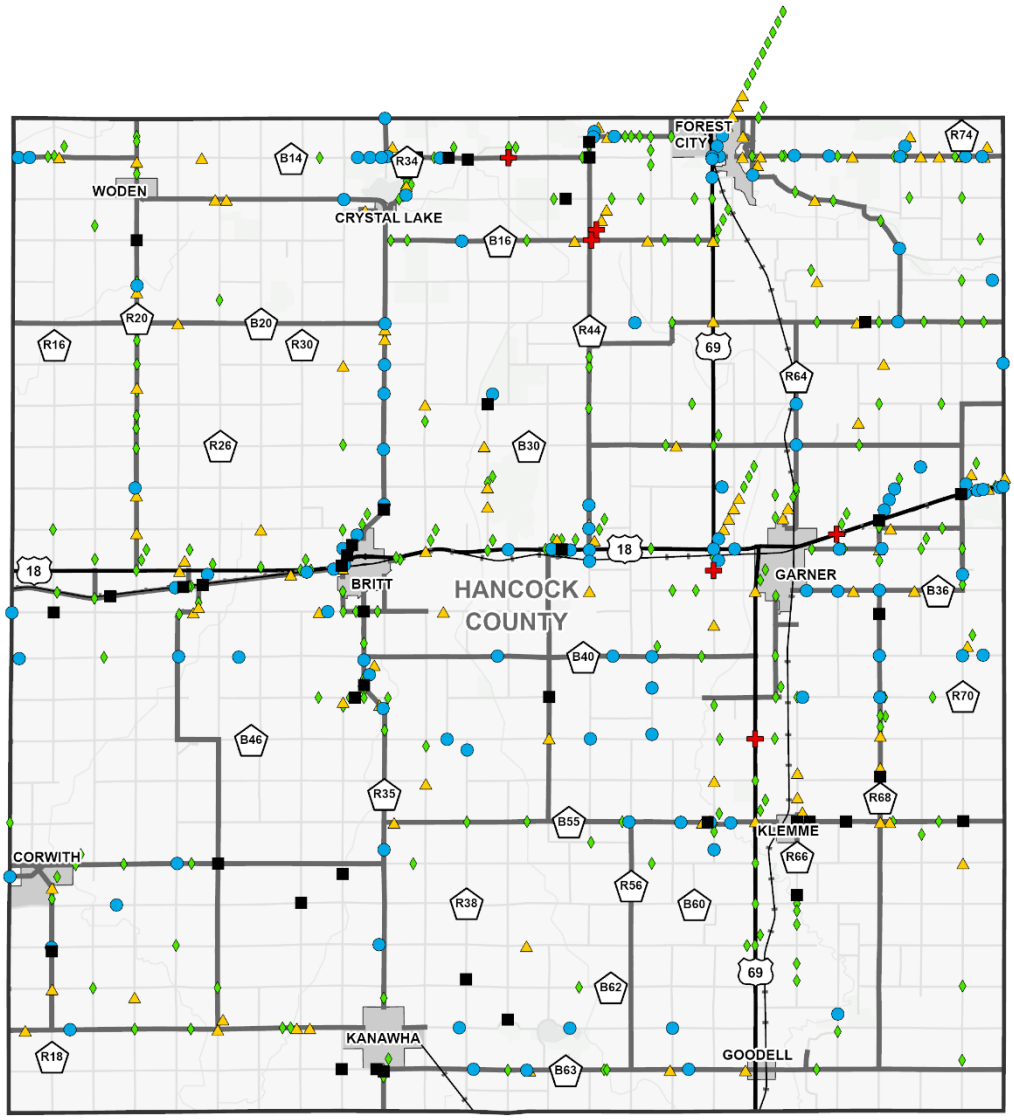
4.2. Crashes on County Roads

The following sections summarize crashes occurring on county roads (2014-2023) and provide a comparison of crashes by roadway type and jurisdiction (2019-2023). The term "county roads" refers to roads defined by the Iowa DOT as Secondary Roads or roadways maintained by the county.

4.2.1. Crash Maps

Crash severity maps for the county were created by employing an InTrans-developed, GIS-based crash stacking tool. The purpose of this tool is to produce maps in which spatially proximate crashes are vertically offset to produce crash "stacks," better conveying crash experience and severity at higher frequency locations. All crashes indicated as "County" or located within 250 feet of a secondary road, with some refinement, were selected and stacked by ascending severity. In other words, the more serious crashes were located at the bottom of the crash stack, nearer to the actual crash location on the roadway. Given the small map scale (county level), a 250-foot spatial proximity was utilized to more accurately convey crash locations.

Figure 6 contains a map illustrating all crashes on county roads within the county stacked by ascending severity. **Figure 7** contains a map illustrating all fatal and serious injury crashes stacked by ascending severity.



The information contained in this map was estimated from the April 15, 2024 Iowa DOT crash database.

N

Legend

- County Paved Roads
- County Unpaved Roads
- State Roads
- Corporate Limits
- Fatal Crashes (6)
- Serious Injury Crashes (42)
- Minor Injury Crashes (119)
- Possible/Unknown Injury Crashes (109)
- Property Damage Only Crashes (248)

Figure 6 - Total Crashes Hancock County Roads (2014-2023)

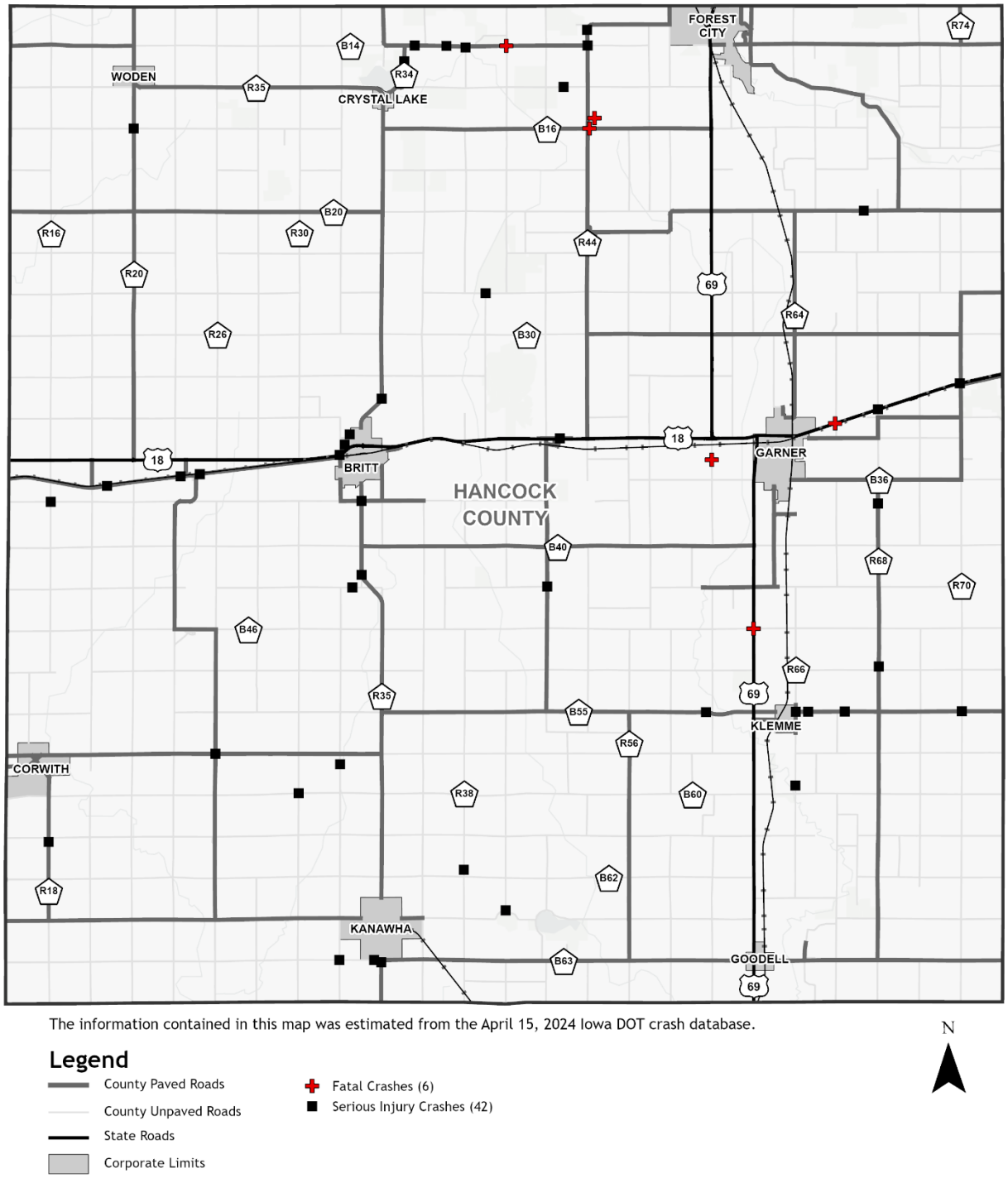


Figure 7 - Fatal and Serious Injury Crashes Hancock County Roads (2014-2023)

4.2.2. Comparison by Roadway Type

As shown in the previous maps, the majority of the county road crashes occurred on county paved roads as opposed to unpaved roads. **Table 3** contains a tabular summary of the county crashes by roadway type and **Figure 8** contains a graphical summary of the county crashes by roadway type. K denotes a fatality, and A denotes a serious injury.

Table 3 - Hancock County Crashes by Roadway Type (2019-2023)

Hancock County					
Roadway Type		Total Crashes		Fatal and Serious Injury (K & A) Crashes	
		Count	Percent	Count	Percent
County Paved	Intersection	44	21%	7	32%
	Curve	8	4%	1	5%
	Segment	91	44%	5	23%
	Subtotal	**143**	**69%**	**13**	**59%**
County Unpaved	Intersection	21	10%	2	9%
	Curve	1	0%	0	0%
	Segment	42	20%	7	32%
	Subtotal	**64**	**31%**	**9**	**41%**
Total		**207**		**22**	

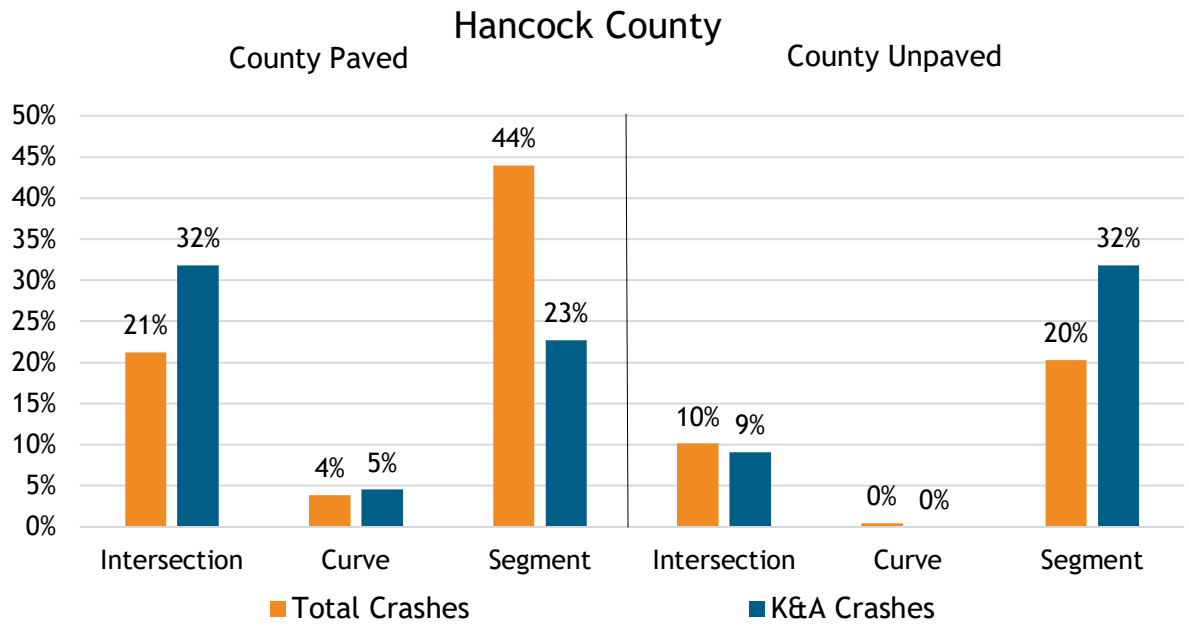


Figure 8 - Hancock County Crashes by Roadway Type (2019-2023)

4.2.3. Crash Rate Comparisons

The following sections provide a comparison of crash rates on county roads and across the state for all crash severities and fatal and serious injury crashes.

Total Five-Year Crash Rates

From 2019 to 2023 there were a total of 207 crashes on county roadways within Hancock County. A comparison of the five-year crash rate on county roads in Hancock County to the rates on all roads in the county and all roads in Iowa during the same timeframe is illustrated in **Figure 9**. The Hancock County crash rate on county roads was lower than the Iowa crash rate during the study period.

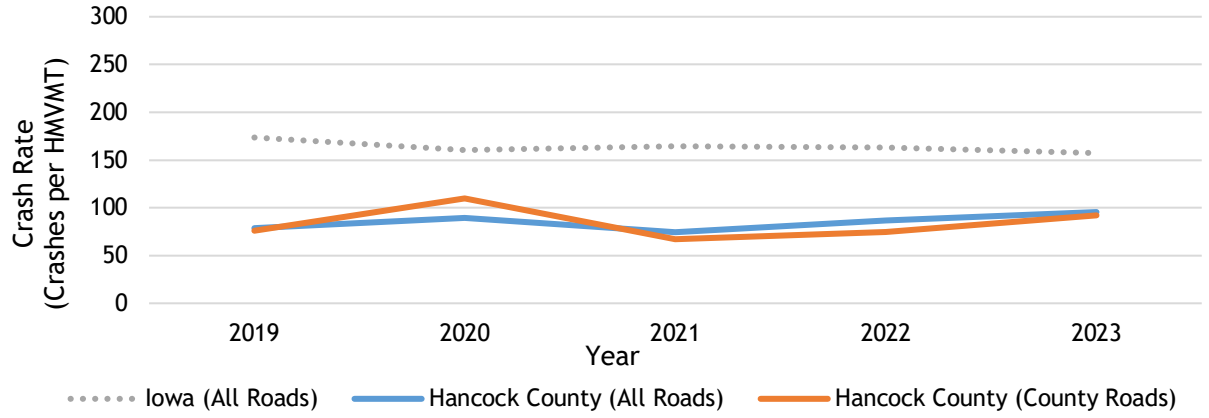


Figure 9 - Total 5-Year Crash Rates (2019-2023)

Fatal and Serious Injury Five-Year Crash Rates

From 2019 to 2023 there were a total of 22 fatal and serious injury crashes within Hancock County. Fatal and serious injury five-year crash rates for all roads in Hancock County, the county owned roads, and all roads in Iowa are illustrated in **Figure 10**. The Hancock County fatal and serious injury five-year crash rate on county roads was higher than the five-year Iowa crash rate during the study period.

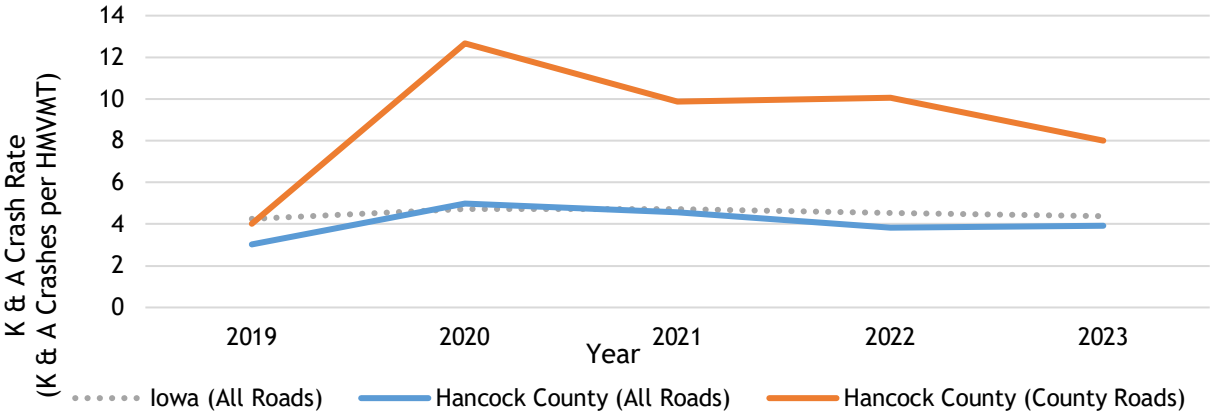


Figure 10 - Fatal and Serious Injury 5-Year Crash Rate (2019-2023)

Average 5-Year Crash Rates

Figure 11 shows the average crash rates for all crashes as well as fatal and serious injuries for county roads compared to all roads in Iowa from 2019 to 2023. As illustrated, the county road crash rate for all crashes is lower than the statewide crash rate and the fatal and serious injury crash rate on county roads is higher than the fatal and serious injury crash rate statewide, demonstrating the importance of a focus on fatal and serious injury crashes on county roads.

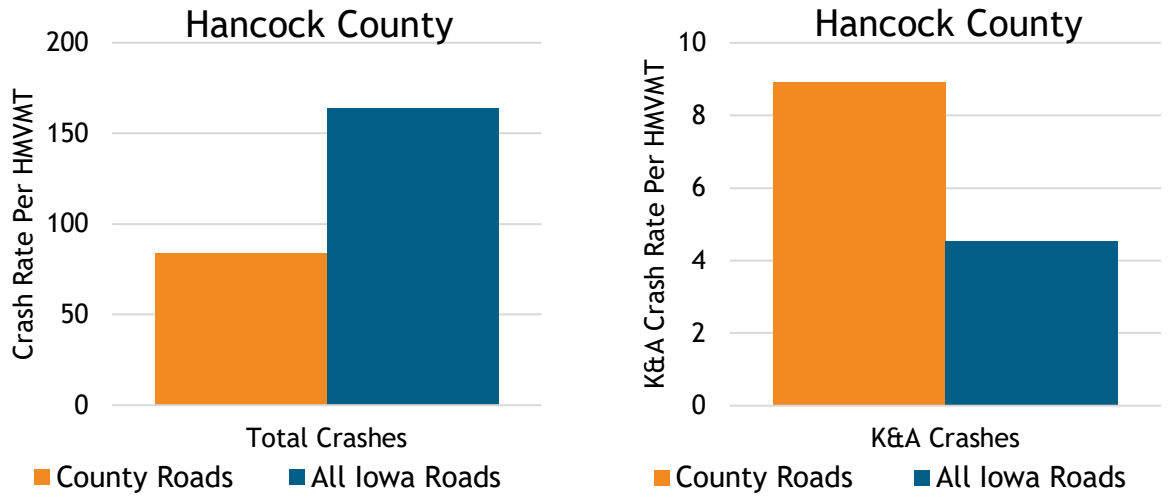


Figure 11 – Comparison of Hancock County Roads to All Iowa Roads (2019-2023)

4.3. PowerBI Dashboard

An interactive dashboard was created using PowerBI that provides a comprehensive overview of crash data on secondary roads in Hancock County. The dashboard provides a visual way to review crash trends and findings through charts and graphics. Users have the ability to filter the data by various attributes to find insights and trends associated with their selection(s) and the ability to export results. The dashboard includes crash data from 2019 to 2023.

The dashboard can be accessed via the secure portal on the ICEA website (https://www.iceasb.org/) by following these steps:

- Click on News & Updates
- Click on Headlines (which is under the News category)
- In the search bar type “crash”
- Click on headline: “County Safety Action Plans – ICEA Crash Data Dashboard”
- Click on the dashboard link: “ICEA Crash Data Dashboard”
- Bookmark the link for easy future access

4.4. County-Specific Data Analysis

After reviewing the crash data analysis, the county requested the following additional crash data information be prepared to aid them in efforts to reduce fatalities and serious injuries along county roads. The following information has been prepared to address their requests:

- Map of winter condition-related crashes (**Figure 12**)
- Map of younger driver-related crashes (**Figure 13**)

It should be noted that the Iowa DOT has made crash data available through a crash mapping website, which can be used to develop additional crash maps: https://icat.iowadot.gov. Crash maps can also be requested through the Iowa Traffic Safety Data Service (ITSDS). More information is available on the following website: www.ctre.iastate.edu/itsds/.

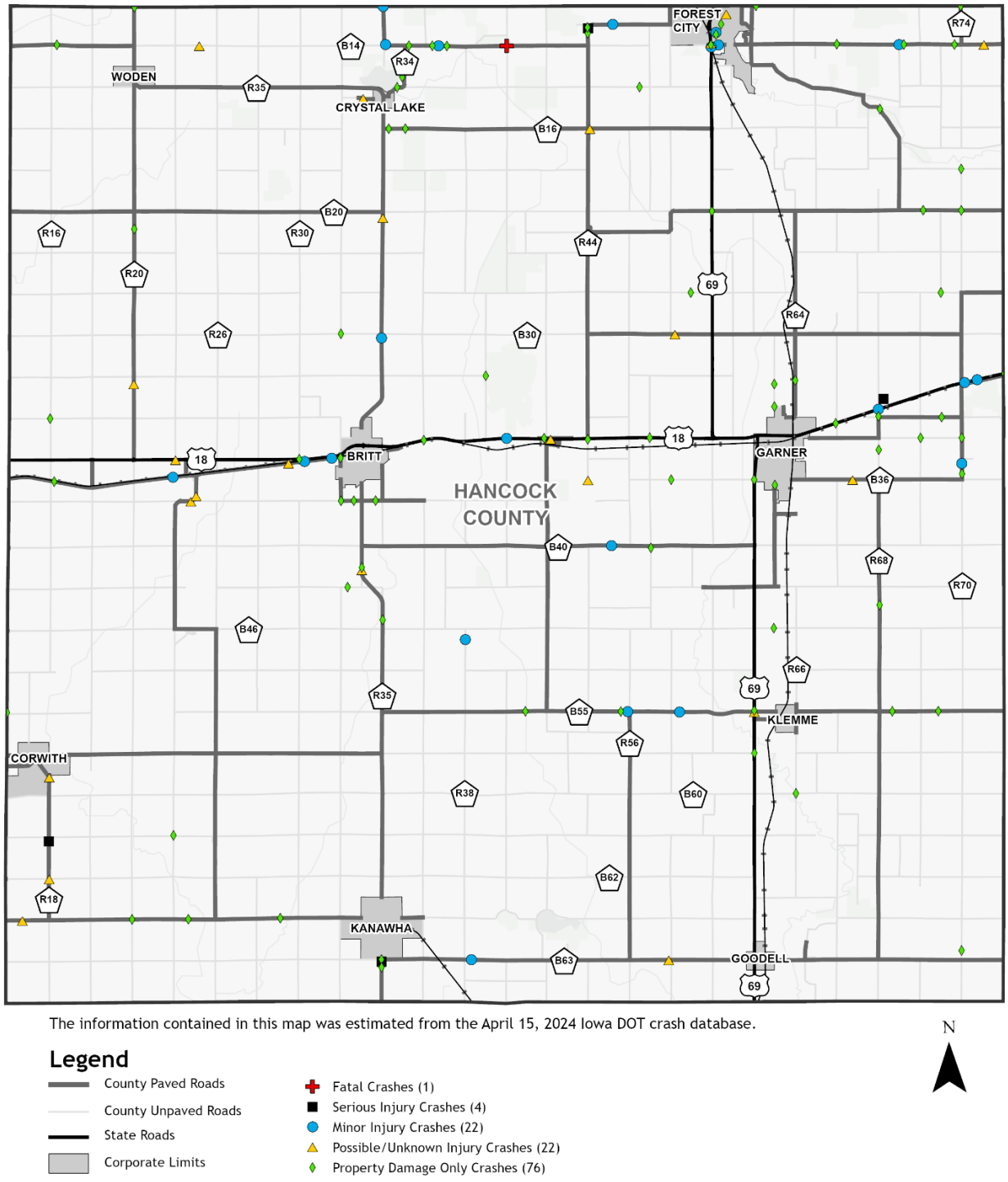


Figure 12 - Map of Winter Weather Related Crashes (2014-2023)

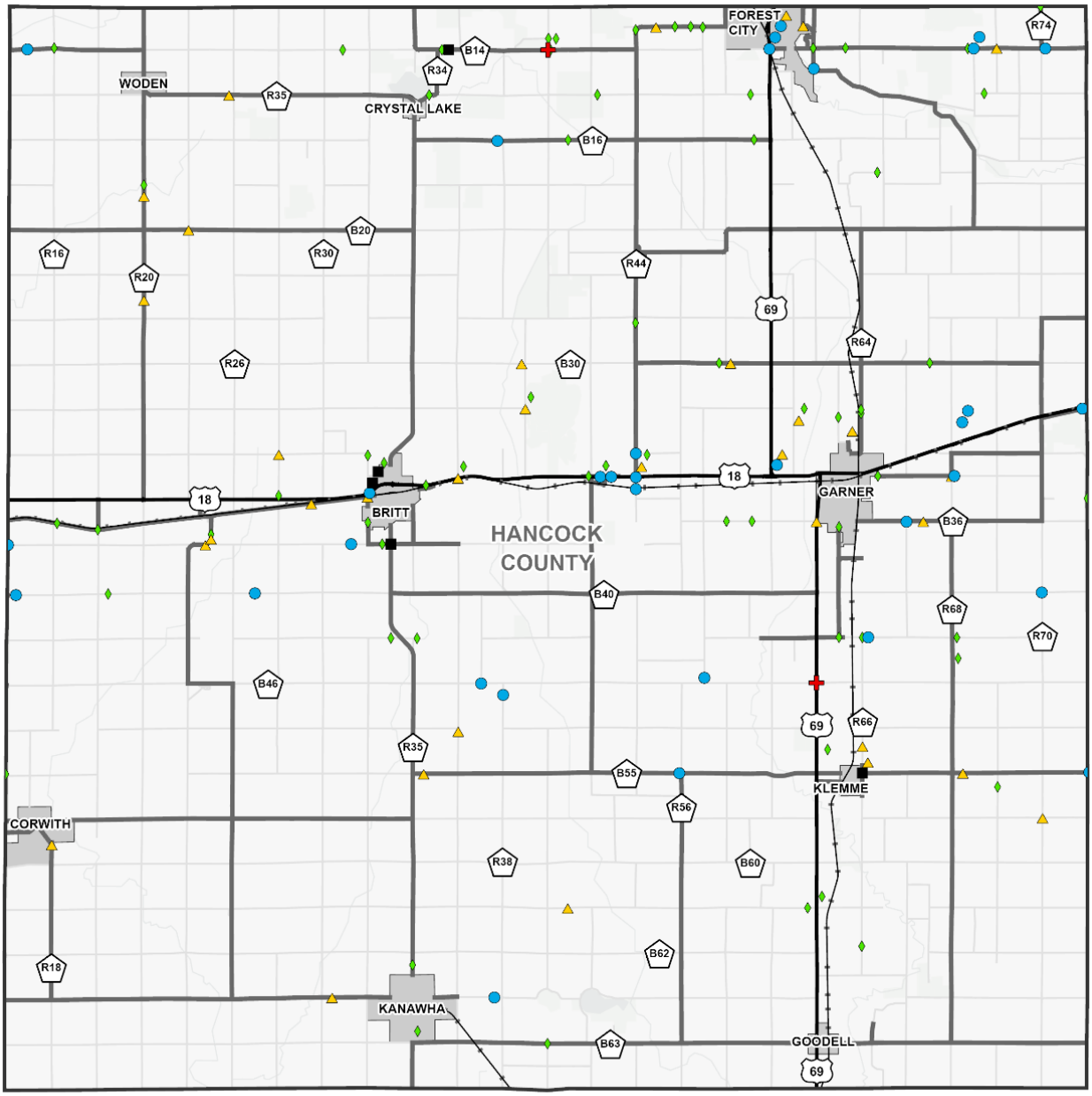


Figure 13 - Map of Younger Driver Related Crashes (2014-2023)

4.5. Underserved Community Analysis

Based on the SS4A definition of Underserved Communities and the corresponding SS4A Underserved Communities tool, it was determined that Hancock County does not contain any Underserved Communities as shown in **Figure 14.** Projects located in underserved communities are given higher priority in the SS4A grant program, as these areas could benefit from additional investment.

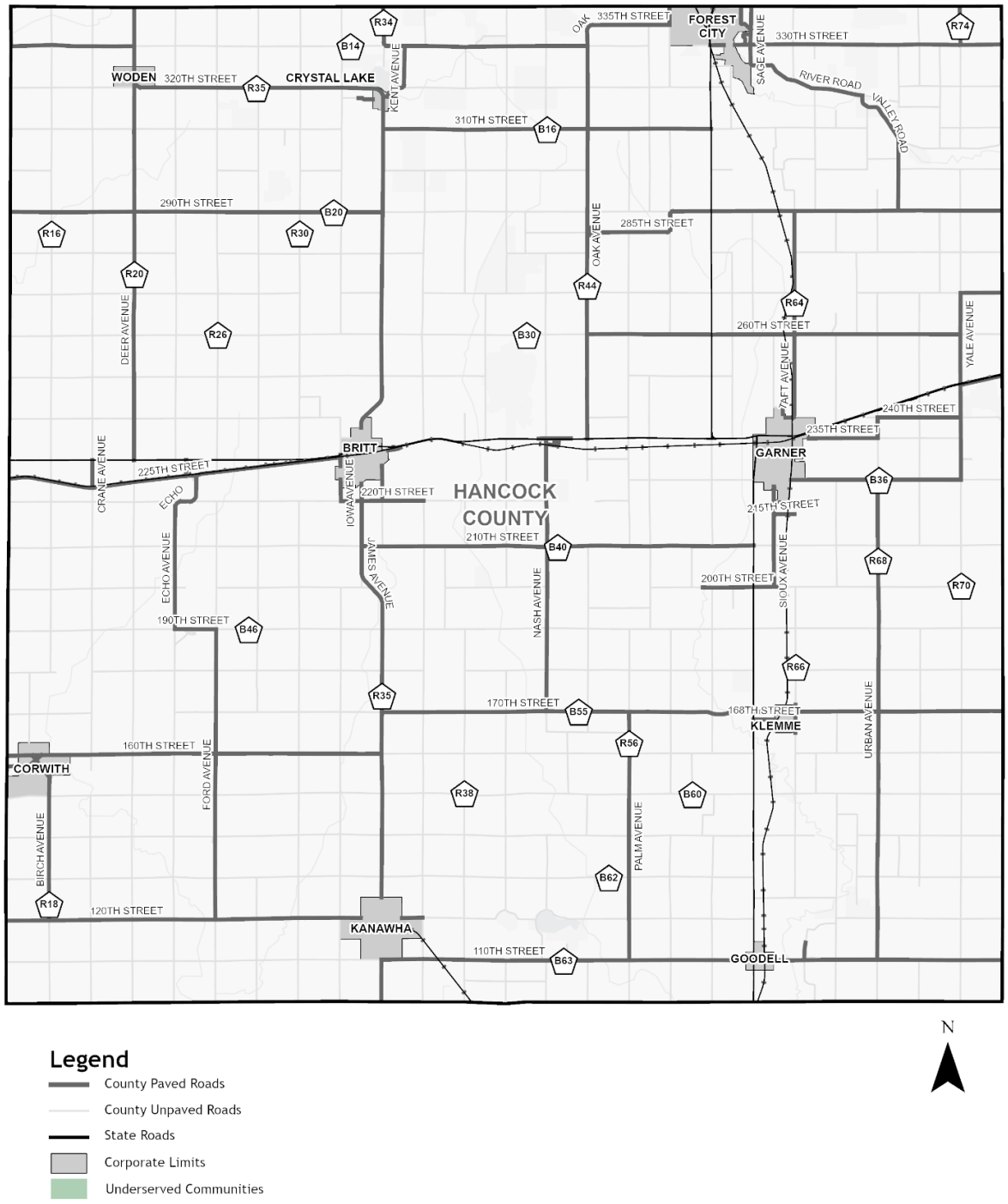


Figure 14 - Hancock County Underserved Communities

4.6. Equity Analysis

Consistent with SS4A guidance at the start of this planning process, as well as agreed upon in the executed grant agreement with FHWA for this SAP, equity data was collected using the USDOT ETC and CEJST to identify disadvantaged areas in Hancock County, which are shown in **Figure 15**. Portions of Hancock County near Britt, Crystal Lake, Forest City, Klemme, Goodell, and Garner are considered to be disadvantaged based on the CEJST and ETC screening tools.

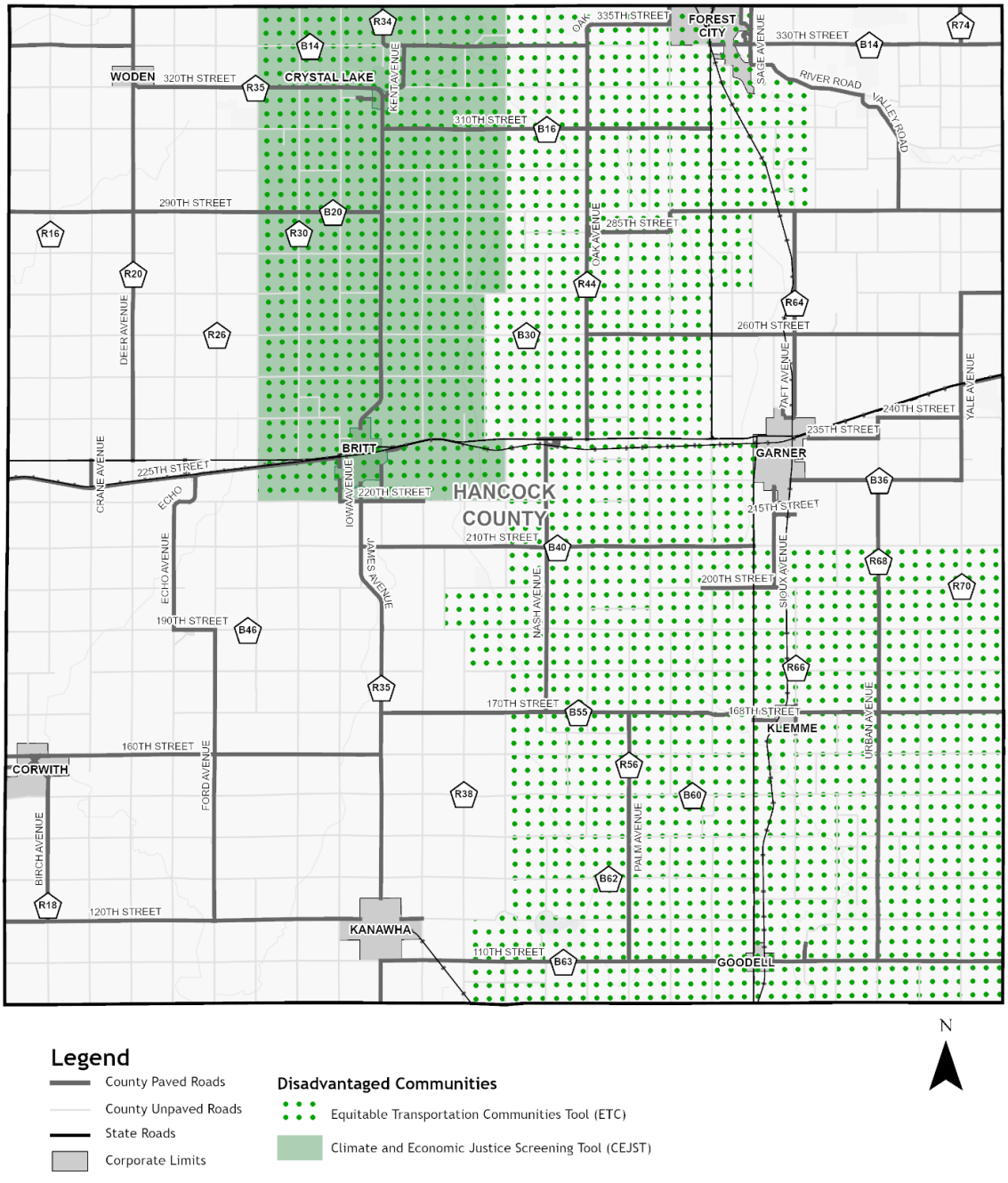


Figure 15 - Hancock County Disadvantaged Communities

5. COUNTERMEASURE SELECTION

The following sections summarize engineering and driver-related safety improvement countermeasures considered for the SAP.

5.1. Potential Engineering Countermeasures

The engineering countermeasures proposed for consideration at each of the project locations are described in this section. Countermeasures are grouped by implementation at the systemic level and those that should be considered on a case-by-case basis by the County Engineer depending on the specific issues at a particular location. Nationally, there are relatively low percentages of fatal and serious injury crashes that occur on unpaved roadways when compared to paved roadways. As such, safety research has focused on paved roadways. The lack of research on the unpaved system results in very few Crash Modification Factors (CMFs) defined for safety countermeasures on unpaved roadways.

5.1.1. Countermeasure Effectiveness

The information about CMFs in this section is based on the Iowa DOT's Safety Analysis Guide and is provided for reference to demonstrate the potential positive impact the countermeasures can have on safety, if applied. The countermeasures recommended for consideration were chosen because of their effectiveness in reducing crashes. Some safety countermeasures recommended do not yet have CMF ratings (indicated by "CMF not defined" within this document), due to the amount of data and peer review that is required; however, preliminary studies show safety benefits as a result of these countermeasures. FHWA has also published a list of Proven Safety Countermeasures which is "a collection of countermeasures and strategies effective in reducing roadway fatalities and serious injuries. Transportation agencies are strongly encouraged to consider widespread implementation of [Proven Safety Countermeasures] to accelerate the achievement of local, State, and National Safety goals." https://safety.fhwa.dot.gov/provencountermeasures/

When identifying potential safety improvements, it is important to consider CMFs relevant to the proposed improvements using the CMF Method which is detailed in Part D of the HSM. CMFs are defined as the ratio of effectiveness of one condition compared to another and represent the relative change in crash frequency due to a change in a specific condition. In other words, a CMF is a multiplicative factor used to determine the anticipated number of crashes after implementing a particular countermeasure at a specific location. Countermeasures with CMFs less than one are anticipated to reduce crashes if applied, while those countermeasures with CMFs greater than one are anticipated to increase crashes. **Figure 16** illustrates the definition of CMFs.

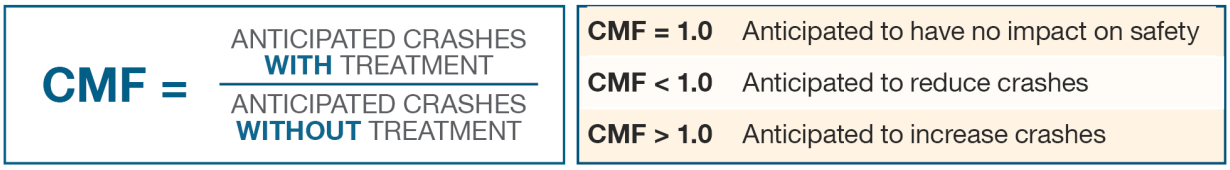


Figure 16 - CMF Calculation

The CMF Method is used to calculate the anticipated number of crashes by multiplying the observed number of crashes by the applicable CMF for the proposed countermeasure. It is recommended to apply CMFs to a minimum of three years of crash data for urban and suburban

locations, and five years of crash data for rural locations. **Figure 17** provides an example calculation of the CMF method, demonstrating the application of a single CMF to a specific location for a single year.

10.1 crashes / year x 0.91 (CMF) =	9.2 crashes / year: a reduction of 0.9 total crashes per year and a CRF of 9%

Figure 17 - CMF Application

A Crash Reduction Factor (CRF) is analogous to a CMF, but it is expressed differently. A CRF represents the percentage of crash reduction anticipated after the implementation of a specific countermeasure at a particular location. **Figure 18** illustrates the calculation of a CRF in relationship to a CMF.

$$\mathbf{CRF} = (1 - \text{CMF}) \times 100$$

Figure 18 - CRF Calculation

Caution should be used when selecting appropriate CMFs. Section 2.3 of the Iowa DOT Safety Analysis Guide offers guidance for selecting and applying CMFs, including the following considerations:

- CMFs should primarily be selected from the Iowa Planning-Level CRF List (https://iowadot.gov/traffic/pdfs/CRFListVersion.pdf). If the desired CMF is not available in the list, then CMFs should be selected from the CMF Clearinghouse (http://www.cmfclearinghouse.org) using the guidance provided in Section 2.3.3 of the Iowa DOT Safety Analysis Guide.
- Only CMFs with a three-star rating or higher should be considered for use in analysis.
- The countermeasure abstract should be used to determine if the CMF is applicable to the proposed improvement.
- Be sure the selected CMF is applicable to the set of crash data being used for analysis. Some CMFs may only be applicable to a subset of the crash data.
- The application of multiple CMFs can overestimate the expected crash reduction. Unless each CMF addresses independent crash types, CMF should be combined using the methodologies described in Section 2.3.4 of the Iowa DOT Safety Analysis Guide. It is suggested that no more than three CMFs are applied to a particular site.

5.1.2. County Paved Roadway Segment Countermeasures

The following roadway segment safety countermeasures were identified:

Systemic

- Conduct an RSA
- Conduct an access control analysis
- Install groove-in retroreflective pavement markings
- Install wider, retroreflective, pavement markings

Location Specific

- Flatten and widen foreslopes
- Provide on-pavement markings for speed control
- Delineate roadside hazards (trees or utility poles) with retroreflective strips

Systemic (continued)

- Increase shoulder width
- Install safety edge
- Install edgeline rumble strips
- Install centerline rumble strips
- Install/enhance curve chevron, advanced curve warning, and advisory speed signs
- Remove obstructions within right-of way (clearing and grubbing)
- Improve sight distance (clearing and grubbing)

Location Specific (continued)

- Install guardrails
- Install post-mounted delineators
- Install retroreflective strips on chevron signposts
- Install transverse rumble strips prior to curves
- Remove/relocate objects in hazardous locations
- Correct superelevation on curves
- Install High Friction Surface Treatment (HFST) on curves
- Install speed-activated flashers on chevron signs

5.1.3. County Paved Intersection Countermeasures

The following paved intersection safety countermeasures were identified:

Systemic

- Coordinate with local jurisdiction on signal modifications
- Conduct signal warrant analysis to consider removal of signal
- Conduct Intersection Control Evaluation (ICE)
- Implement the results of ICE
- Conduct all-way stop analysis to convert two-way stop to all-way stop or remove stop signs
- Install destination lighting
- Increase size and/or retroreflectivity of stop signs
- Duplicate signage
- Install groove-in retroreflective pavement markings
- Install wider, retroreflective pavement markings
- Install flashing beacons or LED flashing lights on stop/yield signs
- Install transverse rumble strips
- Install intersection warning signs and advanced street name plaques
- Improve sight distance (clearing and grubbing)

Location Specific

- Provide right-turn and/or left-turn lanes
- Realign intersection approaches to reduce or eliminate skew
- Provide bypass lane on shoulder at T-intersections
- Convert offset T-intersections to four-legged intersections
- Use indirect left-turn treatments to minimize conflicts at divided highway intersections
- Convert four-legged intersections to offset T-intersections
- Install flashing beacon on intersection warning signs
- Install low-cost Intersection Conflict Warning Systems (ICWS)
- Install a roundabout
- Increase shoulder width
- Install safety edge
- Install retroreflective markers for trees or utility poles
- Install guardrails
- Install retroreflective strips on stop signposts
- Implement access management

5.1.4. County Paved Curve Countermeasures

The following horizontal curve safety countermeasures were identified:

Systemic

- Install groove-in retroreflective pavement markings
- Install wider, groove-in retroreflective, pavement markings
- Increase shoulder width (paved)
- Install safety edge
- Install edgeline rumble strips
- Install centerline rumble strips
- Install/enhance curve chevron signs
- Provide advance warning signage
- Remove obstructions within right of way (clearing and grubbing)

Location Specific

- Install additional curve signage
- Install retroreflective strips on chevron signposts
- Install transverse rumble strips prior to curve
- Correct superelevation
- Install HFST on curves
- Install speed-activated flashers on chevron signs
- Install guardrails
- Install on-pavement markings for speed control
- Install post-mounted delineators

5.1.5. Additional Potential Safety Countermeasures

For each location, there are safety enhancements that could be considered even though they were not recommended as part of this project due to the availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. These types of improvements are included when requested by the County Engineer.

5.2. Driver-Related Countermeasures

The subsequent sections discuss the driver-related workshop conducted within the county and identify driver-related countermeasures for implementation in the county as well as their current implementation status. Driver-related countermeasures are strategies aimed at improving driver behavior to enhance road safety. The 2024 Iowa SHSP has 19 Safety Emphasis Areas, six of which are driver-related as shown in **Figure 19**. Countermeasure recommendations are included to address each of the driver-related emphasis areas.

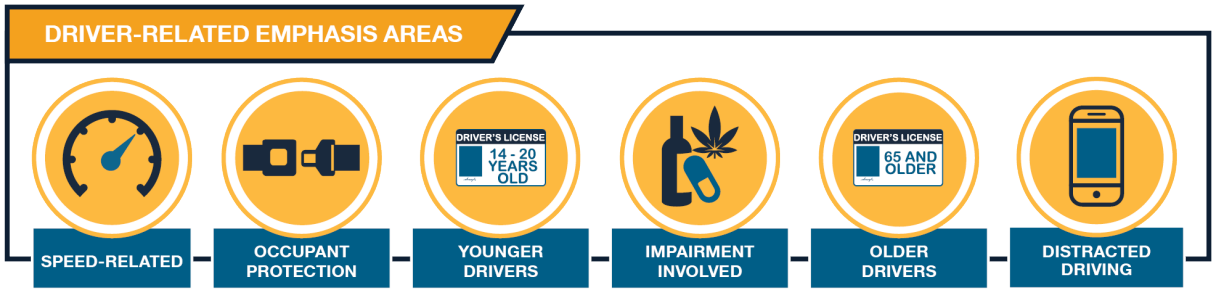


Figure 19 – Driver-Related Emphasis Areas

5.2.1. Stakeholder Workshop

A workshop was conducted in Hancock County on Wednesday, October 16, 2024, aimed at fostering a culture of safety within the county and identifying activities occurring in the county to address driver-related emphasis areas. A wide range of individuals were invited to the workshop, including elected officials, partner agencies that operate within the County,

stakeholders representing the 5 Es of traffic safety, and the general public. The flyer used to publicize the workshop and the sign-in sheet is included in **Appendix F**. During the workshop, participants discussed each of the driver-related emphasis areas and reviewed how fatal and serious injury crashes in the county aligned with statewide trends. Potential countermeasures from the NHTSA document, Countermeasures That Work, as well as previous planning efforts in the state were provided to stakeholders to facilitate discussions for each of the driver-related emphasis areas. Participants were invited to share their insights into the county's efforts to improve safety in each emphasis area and to discuss opportunities for further impact. An image from the workshop is shown in **Figure 20**. Stakeholders at the workshop included:

- Jeremy Purvis, County Engineer
- Bret Bredlow, Assistant Engineer
- Shaun Hackman, Assistant Engineer
- Andy Buffington, Emergency Management Coordinator
- Bud Jermeland, Supervisor Candidate
- Chris Diggins, North Iowa Council of Governments
- Jim Francis, Road Superintendent
- Rob Gerdes, Sheriff's Office

Figure 20 - Hancock County Workshop

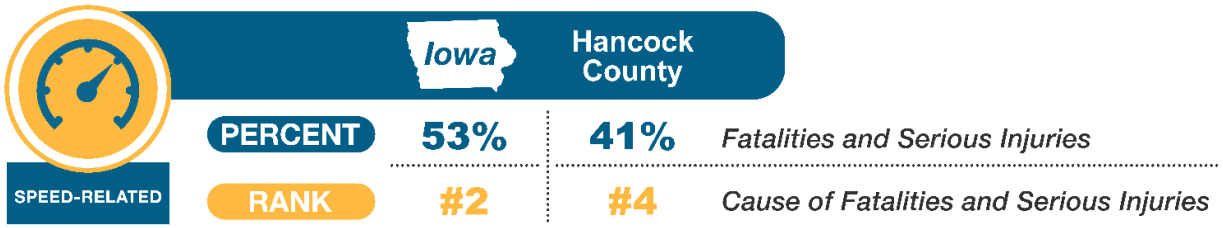
Based on the discussion, the following statuses of implementation were assigned for each of the driver-related countermeasures discussed in the workshop:

- Underway/Ongoing (currently being done)
- Ongoing/Opportunity (ongoing, but could be enhanced)
- Opportunity (not being done, but could be implemented)
- Completed in the Past (has been completed in the past, but not planned to be implemented in the future)

It is recommended that the county continue to implement countermeasures that are currently underway/ongoing and look for additional opportunities to implement countermeasures that are not currently being implemented. This will require input from and coordination with all five Es of safety.

5.2.2. Speed-Related Countermeasures

Speed-related crashes account for 53 percent of fatal and serious injuries across the state of Iowa, and 41 percent of the fatalities and serious injuries in Hancock County.



The Iowa SHSP recommends identifying corridors with a high frequency of speed-related crashes and implementing high-visibility enforcement in those areas. Cities within the county use the dynamic speed sign only in incorporated areas, but the County has no speed feedback signs. Hancock County currently does not conduct targeted speed enforcement based on historical speed-related data. Iowa SHSP recommends implementing speed feedback signs at targeted locations as a speed-related countermeasure. The Iowa DOT has a program that allows eligible cities to partner with the DOT to install permanent speed feedback signs on state roadways within their city limits, and GTSB has grants available for counties to acquire mobile speed enforcement trailers. There is an opportunity for Hancock County to participate in GTSB funding, however. Additionally, the Iowa DOT is implementing other speed reduction strategies as recommended in the SHSP, including using traffic calming practices such as lane reductions and installing medians, to help reduce speeds and improve safety in communities.

During the workshop, one topic of discussion involving speed-related incidents revolved around drivers illegally passing school buses. While law enforcement in most counties are ticketing drivers for illegally passing school buses, the Sherrif's Department noted they cite people for breaking the Keep Aware Driving – Youth Need School Safety Act (Kadyn's Law). This law states that driving privileges will be suspended for 30 days for a first conviction, 90 days for a second conviction, and 180 days for a third or subsequent conviction along with fines. The Sheriff's department noted that most buses have external cameras. The Sheriff's department stated that many people in the County hire an attorney and end up being found not guilty.

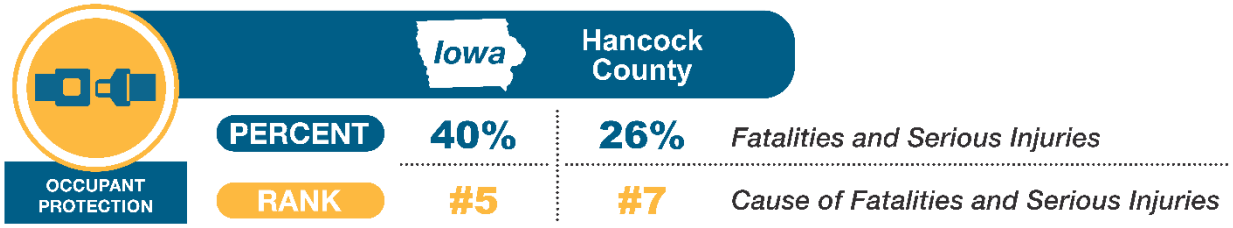
A summary of the speed-related countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 4.**

Table 4 - Speed-Related Countermeasures

Countermeasure	Status
Conduct targeted speed enforcement • Opportunity for Hancock County agencies to participate in GTSB funding • GTSB has grants available for funding to acquire mobile speed enforcement trailers	Opportunity
Prosecute and impose sanctions on drivers not obeying school bus stop bars • The Keep Aware Driving – Youth Need School Safety Act (Kadyn's Law) is being actively enforced • Some buses in the county are equipped with cameras	Ongoing/Opportunity
Conduct education and awareness campaigns • Opportunity to develop safety education programs within the county at the elementary, middle, or junior high level	Opportunity

5.2.3. Occupant Protection Countermeasures

Occupant protection crashes account for 40 percent of fatal and serious injuries across the state of Iowa, and 26 percent of the fatalities and serious injuries in Hancock County.



The Sherrif's Department does not use GTSB funding for occupant protection enforcement and noted that they do not conduct seatbelt surveys. Law enforcement does not currently conduct targeted seatbelt or child restraint enforcement, but noted that they have received complaints about improper child restraint. There is an opportunity for the county to use GTSB grant funding for occupant protection enforcement. Over the last ten years, typical seatbelt compliance was reported to be between 90 and 97 percent based on 2024 Iowa Seat Belt Use Report, meaning 3 to 10 percent of drivers and front-seat passengers were observed not wearing a seat belt. Conversely, 40 percent of fatalities and serious injuries across Iowa are related to occupant protection. Compared to seat belt usage, the fatalities and serious injuries from occupant protection crashes are overrepresented; therefore, there is an opportunity for education on the importance of proper restraints or protective devices (seat belts, child restraint systems, helmets, or other devices).

The Sheriff's Department currently does not have a permanent location where parents can have their child's restraints inspected to determine if they are installed properly; however,

attendees noted the City of Clear Lake has personnel trained for inspection and holds events for this activity. The Sheriff's Department noted they do check for proper restraints when conducting traffic stops. They noted they previously had reference "cheat sheets" from GTSB on hand to help with child restraint laws, but the material now lives online.

Positive reinforcement has been offered through programs that distribute ice cream coupons for those practicing occupant protection. This is an excellent opportunity for positive reinforcement and encouragement for children to wear helmets and seatbelts. The Sherriff's Department noted that Hardee's has done ice cream rewards in the past.

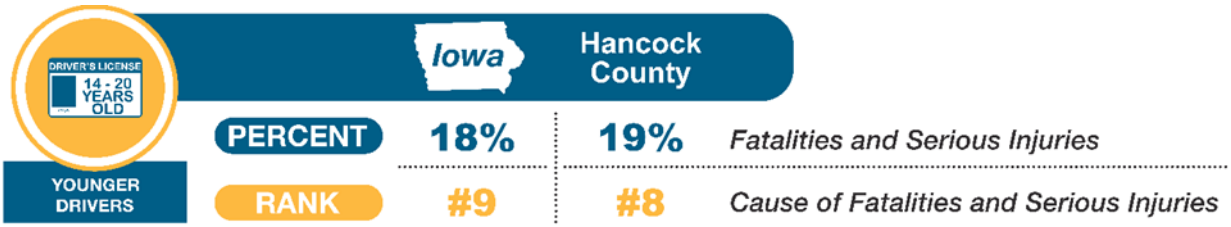
A summary of the occupant protection countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 5**.

Table 5 – Occupant Protection Countermeasures

Countermeasure	Status
Conduct targeted enforcement of restraint use • Opportunity to conduct targeted seat belt enforcement	Opportunity
Instruction in proper child restraint use • Opportunity to provide permanent locations in the county where child restraints can be inspected • There are no hospitals in the county that deliver babies	Opportunity
Check for proper child restraint use in all motorist encounters • Opportunity to provide Officers with printed "cheat sheets" to enforce child restraint laws • Officers are told to check for proper child restraint use	Ongoing/Opportunity
Positive reinforcement • Local Hardee's has provided ice cream rewards in the past for seatbelt compliance	Completed in the Past
Conduct education and awareness campaigns	Opportunity

5.2.4. Younger Drivers Countermeasures

Younger driver crashes account for 18 percent of fatal and serious injuries across the state of Iowa and 19 percent of the fatalities and serious injuries in Hancock County.



Iowa passed a new law that allows 14.5-year-olds to drive to and from school/work/home. This law went into effect on July 1, 2024. Attendees noted the parent led drivers' education is much less driving than what is required in school led drivers' education. The Sheriff's Department noted they do issue citations for non-compliance with minor school license laws.

The State has education programs and strategies for young drivers. Attendees could not confirm educational topics covered in drivers' education classes taught in the county schools. Attendees noted that Forest City Schools use driving simulators or "drunk goggles" for hands-on demonstrations of the effects of drunk driving. Conducting a mock crash is another tool used by schools in the county, but there are public complaints surrounding this program, citing the potential to inflict trauma on students. Attendees also noted a "don't veer for deer" campaign that runs on the local radio. It was noted that formal drivers' education classes are in decline with students and parents opting to do parent-led drivers' education. A similar concern voiced by the attendees stated that parents are not well versed in the law, and are teaching their teens rules that are more lenient than the law. Attendees could not comment on whether the school system has the opportunity for students to sign a pledge (e.g., no texting and driving, no impaired driving, etc.)

Iowa DOT stated that they work with an online map provider to show road closures due to construction; however, there is still an opportunity for education with young drivers on how to drive in a construction zone or around trucks/farm equipment. These can be found at a public location like the public library and the Iowa DOT office.

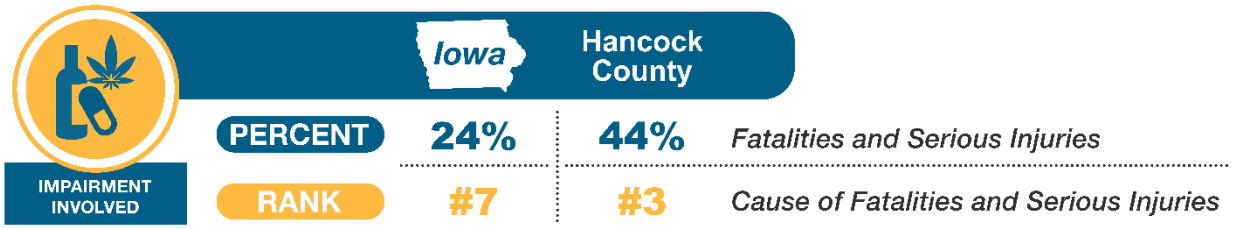
A summary of the younger driver countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 6**.

Table 6 - Younger Driver-Related Countermeasures

Countermeasure	Status
Enforcement of minor school license and graduated driver's license laws • Law enforcement issues citations for non-compliance with minor school license laws	Underway/Ongoing
Additional training in schools • Forest City uses "drunk goggles" in educational training • Mock crashes are held at schools in the county	Ongoing/Opportunity
Conduct education awareness campaigns • Opportunity to have students sign a no texting and driving/no impaired driving pledge	Opportunity

5.2.5. Impairment Involved Countermeasures

Impaired driving crashes account for 24 percent of fatal and serious injuries across the state of Iowa, and 44 percent of the fatalities and serious injuries in Hancock County.



Law enforcement in Hancock County does not conduct location specific Operating While Intoxicated (OWI) targeted enforcement during events. Advanced Roadside Impaired Driving Enforcement (ARIDE) is a course designed such that officers become more proficient at detecting, apprehending, testing, and successfully prosecuting impaired drivers. The Sherriff's Department noted six officers in the County that are ARIDE trained.

There is an opportunity for the agency to conduct safety checkpoints on a regular basis, and high-visibility saturation patrols, which is when a larger number of officers patrol specific areas and times of day looking for impairment involved driving. Attendees noted some cities as well as the state patrol compliance checks in alcohol sales to ensure alcohol vendors are following the law by asking for valid identification when selling alcohol, but could not confirm if checks were being conducted at drinking establishments for over-served patrons. There are currently no alternative transportation options available in Hancock County. Attendees felt that the minimum penalty imposed by Iowa OWI laws was to lenient, and cited Missouri's OWI laws as an example of increased penalties for OWI violations.

A summary of the impaired driving countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 7**.

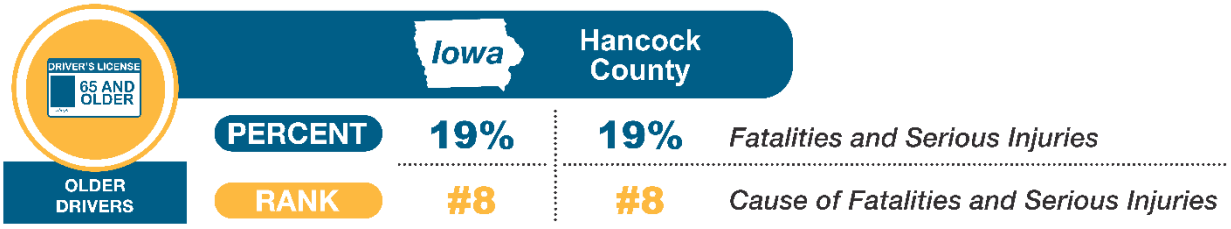
Table 7 - Impaired Driving Countermeasures

Countermeasure	Status
Conduct targeted OWI enforcement • Opportunity for targeted OWI enforcement to be conducted during the County Fair, holidays, sporting events, etc. • Opportunity for OWI enforcement to be targeted to specific locations based on past information such as prior OWIs or alcohol-related crashes	Opportunity
Compliance checks for alcohol sales • Underage compliance checks are conducted on alcohol retailers • Opportunity to conduct over-serving compliance checks at drinking establishments	Ongoing/Opportunity

Alternative transportation choices • Opportunity to provide alternative transportation within the County	Opportunity
Prosecute, impose sanctions on, and treat OWI offenders • Attendees cited Missouri's OWI laws as an example of increased penalties for OWI violations	Opportunity
Conduct education and awareness campaigns	Opportunity

5.2.6. Older Drivers Countermeasures

Older driver crashes account for 19 percent of fatal and serious injuries across the state of Iowa, and 19 percent of the fatalities and serious injuries in Hancock County.



Hancock County provides safe mobility options for older drivers. Attendees noted Region 2 transit during working hours and weekdays as well as an assisted living center with a paratransit bus. Attendees also noted that the Family Alliance For Veterans of America (FAVA) provides veterans in Forest City with rides to doctors' appointments.

The Sheriff's Department encourages the external reporting of at-risk drivers to licensing authorities for reevaluation and requests retesting for older drivers determined to be at fault in a crash or after receiving a driving citation. The Sherriff's Department noted that they have seen older drivers driving after their license has been revoked.

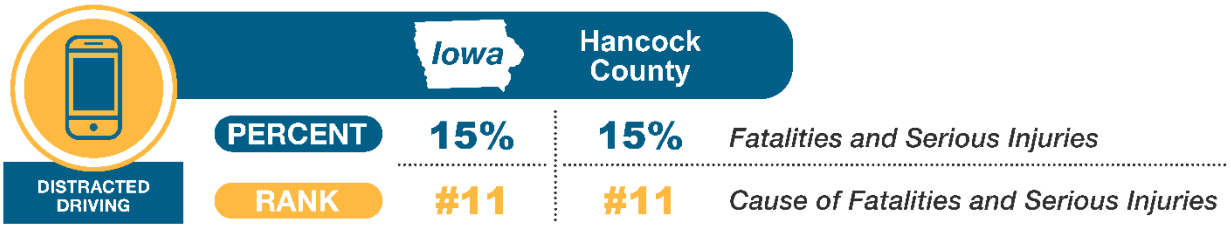
A summary of the older driver countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 8**.

Table 8 - Older Driver Countermeasures

Countermeasure	Status
Promote safe mobility choices • Paratransit service materials available • The FAVA offers rides for veterans in Forest City • Opportunity to use the Farm Bureau, veterans' groups, American Association of Retired Persons, etc. to communicate transportation options to older drivers	Ongoing/Opportunity
Encourage external reporting of at-risk drivers to licensing authorities • Law enforcement request retesting of drivers as appropriate	Underway/Ongoing
Conduct education and awareness campaigns	Opportunity

5.2.7. Distracted Driving Countermeasures

Distracted driving accounts for 15 percent of fatal and serious injuries across the state of Iowa, and 15 percent of the fatalities and serious injuries in Hancock County.



Iowa passed a new law on April 2, 2025, which will go into effect on July 1, 2025, that prohibits the use of handheld cellphones while driving. The law replaces previous legislation that only prohibited texting while driving. During the workshop, participants discussed the difficulty for law enforcement to prove distracted driving has occurred. Attendees noted parents need to take more responsibility in teaching kids not to text and drive, including not doing it themselves.

Iowa DOT employees must be hands-free or may only use one earbud. Workshop confirmed that their agencies have policies that require their employees to be hands-free when driving, but that they do not provide headsets, though some employee vehicles are equipped with Bluetooth connection. There is an opportunity to promote education around distracted driving, particularly with the new hands-free law. Mobile driving simulators can be obtained via GTSB and can be used to demonstrate the effects of driving while distracted, but attendees were not aware of any instance of a simulator being used in the County.

A summary of the distracted driving countermeasures discussed during the workshop along with the county's status of implementation is included in **Table 9**.

Table 9 - Distracted Driving Countermeasures

Countermeasure	Status
Visibly enforce existing statutes to deter distracted driving	Opportunity
Agency policy for hands-free devices • County does have a policy in their handbook • Opportunity to provide hands-free equipment in the county vehicles • GTSB has sample policies for guidance	Ongoing/Opportunity
Mobile simulator for distracted driving • Opportunity to utilize GTSB mobile simulator that can be used, free of charge • Various downloadable simulators are available online	Opportunity
Conduct education and awareness campaigns	Opportunity

6. SAFETY PROJECT DEVELOPMENT

Safety improvement projects were developed at high-priority locations along paved roadway segments, intersections, and horizontal curves within the county. Due to limited available data, low traffic volumes, and constraints on the types of systemic safety improvement projects that can be implemented on unpaved roads, location-specific recommendations were not developed for these roadways. Nevertheless, this Safety Action Plan includes safety recommendations that may be considered for implementation on the unpaved roadway system by the County Engineer. This section describes the data analysis methodology used to select project locations and to identify safety improvements for paved roadway segments, intersections, and horizontal curves.

6.1. Methodology

As shown in **Figure 21**, GIS data, as described in **Section 3**, was used to rank each of the county paved roadway segments, intersections, and curves based on risk factors. Following the ranking process, safety improvement recommendations were formulated for the highest-risk locations. Draft project sheets were created for these highest-risk locations to summarize the recommendations and estimated implementation costs. These project sheets were then provided to the County for review and feedback, before being finalized. Each step of the methodology is detailed in the following sections.

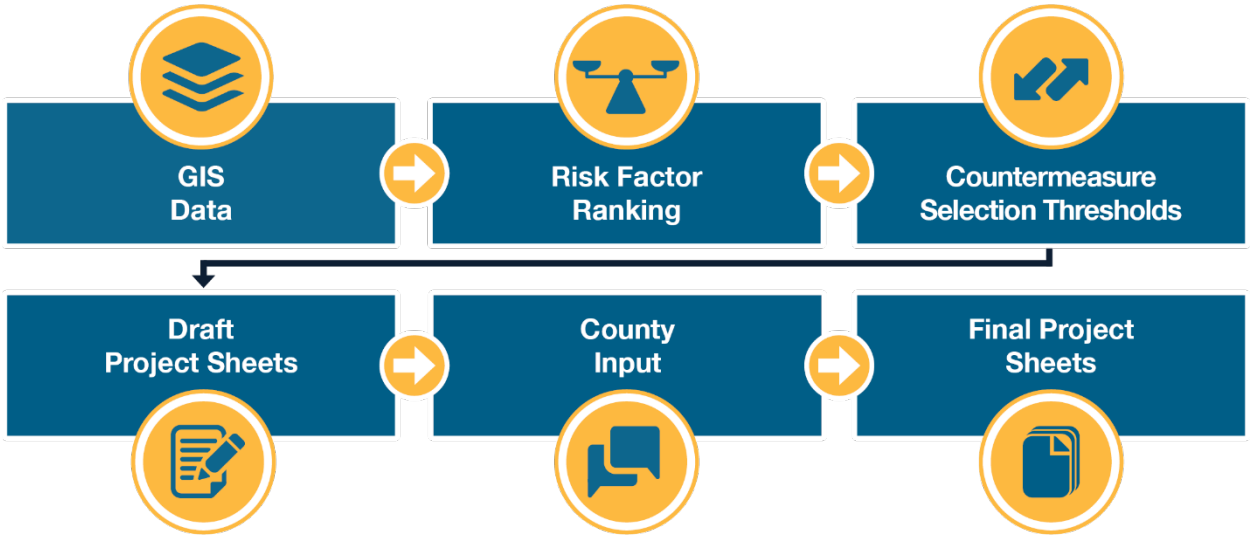


Figure 21 - Project Development Methodology

6.1.1. GIS Data

GIS data for the county paved road segments, intersections, and curves were used to perform a systemic analysis of the county-owned roadway facilities. Databases were obtained through collaboration and coordination with InTrans, the Iowa DOT, and the County. Descriptions of these databases are in **Section 3**. The data was analyzed using ArcGIS Pro software as described in the following sections. Every roadway segment, intersection, and curve of the county-owned paved roadway system was analyzed.

6.1.2. Risk Factor Ranking

This SAP uses a systemic approach to identify comprehensive safety enhancements on county roads. A systemic approach considers risk across the entire roadway network, instead of focusing improvements solely on locations with a history of crashes. As such, risk factors along roadway segments, at intersections, and along curves were assessed to determine locations that may be more susceptible to future crashes involving serious injuries and/or fatalities. Various attributes were considered in this risk assessment.

FHWA has compiled a list of potential risk factors in their Systemic Safety Project Selection Tool. The list can assist with identifying areas that might benefit from systemic safety improvements. While not all the risk factors are used for the SAP due to data limitations and the specific crash types being targeted, they are provided here for reference. The evaluated attributes that were evaluated for the SAP are detailed in the subsequent sections pertaining to segments, intersections, and curves.

> ***"The systemic approach to safety involves widely implemented improvements based on high-risk roadway features correlated with specific severe crash types. The approach provides a more comprehensive method for safety planning and implementation that supplements and complements traditional site analysis. It helps agencies broaden their traffic safety efforts and consider risk as well as crash history when identifying where to make low-cost safety improvements."***
>
> ***FHWA - Office of Traffic Safety***

- Roadway and Intersection Features
  - Number of lanes
  - Lane width
  - Shoulder surface width and type
  - Median width and type
  - Horizontal curvature, superelevation, delineation, or advanced warning devices
  - Horizontal curve density
  - Horizontal curve and tangent speed differential
  - Presence of a visual trap at a curve or combinations of vertical grade and horizontal curvature
  - Roadway gradient
  - Pavement condition and friction
  - Roadside or edge hazard rating (potentially including sideslope design)
  - Driveway presence, design, and density
  - Presence of shoulder or centerline rumble strips
  - Presence of lighting
  - Presence of on-street parking
  - Intersection skew angle
  - Intersection traffic control device
  - Number of signal heads vs. number of lanes
  - Presence of backplates
  - Presence of advanced warning signs
  - Intersection located in or near horizontal curve
  - Presence of left-turn or right-turn lanes
  - Left-turn phasing
  - Allowance of right-turn-on-red
  - Overhead vs. pedestal-mounted signal heads

    - Pedestrian crosswalk presence, crossing distance, signal head type
- Traffic Volume
    - Average Daily Traffic volumes (ADT)
    - Average Daily Entering Vehicles (DEV)
    - Proportion of commercial vehicles in traffic stream
- Other Features
    - Posted speed limit or operating speed
    - Presence of nearby railroad crossing
    - Presence of automated enforcement
    - Adjacent land use type (e.g., schools, commercial, or alcohol-sales establishments)
    - Location and presence of bus stops

6.1.3. Countermeasure Selection Thresholds

To aid in the systemic selection of safety improvement recommendations for segments, intersections, and curves, project selection thresholds were developed and are shown in **Table 10** for segments, **Table 11** for intersections, and **Table 12** for curves. These tables were used to identify safety improvement recommendations for each of the prioritized project locations. Some countermeasures specific to curves are included with the segment countermeasures to address potential risk at curves within a certain segment. For each of the specified safety countermeasures, the tables list an associated CMF, a planning-level cost estimate, the implementation timeframe, and the project selection threshold criteria for the improvement. A more detailed description for each safety countermeasure is provided in **Appendix B1** for segments, **Appendix C1** for intersections, and **Appendix D1** for curves.

At times, the CMFs in the table are provided as a range, showing the range of potential crash modification the countermeasure can have based on differing research, specific crash types, or specific volume-level roadways (i.e., CMFs can vary based on the amount of traffic on the road, vary based on reducing crash severity, or vary between rear-end and run-off-road crashes). The SAP project does not include predictive crash analysis based on calculating the number of crashes that will be reduced by applying a specific countermeasure. The CMFs have been provided for reference to aid the counties in understanding potential reductions from crashes by different countermeasures. The planning-level costs included in the table are high-level estimates that were reviewed and approved by the County Engineer.

Countermeasures selected using the thresholds shown in the tables are shown on the front side of the project sheet. Additional data is needed to assess the suitability of some countermeasures, as this project only provides high-level data. When additional information is needed, the threshold is listed as “County Engineer’s discretion,” and the countermeasures are listed on the back side of the project sheet. These are included at the County Engineer’s request and considering their local knowledge of the roadway network. Additional potential improvements requested by the County Engineer are also included on the back side of the project sheet.

Table 10 - Segment Countermeasure Project Selection Thresholds

Safety Countermeasure	CMF	Cost	Short-Term	Long-Term	Threshold
Conduct Road Safety Assessment (RSA)	CMF varies based on recommendations	$40,000/each	X		K and A crash rate ≥ 14.41 HMVMT AND Total cash rate ≥ 179 HMVMT
Conduct Access Control Analysis	CMF varies based on recommendations	$30,000/each	X		Access Density ≥ 24 mile AND Total crash rate ≥ 179 HMVMT
Install 4" Retroreflective Centerline and Edgeline (Both Sides of Road)	0.76 when installed in combination with Edgelines	$3,000/mile (centerline) $3,000/mile (edgeline)	X		All paved roads with lane Width < 12 feet
Install 6" Retroreflective Edgeline (Both Sides of Road)	0.63 – 0.78 FHWA Proven Safety Countermeasure	$6,000/mile	X		All paved roads with lane width ≥ 12 feet
Pave 2' Shoulder with Safety Edge (Both Sides of Road – Includes Earthwork)	0.79 – 0.89 FHWA Proven Safety Countermeasure	$150,000/mile		X	Paved roads with speed limit ≥ 40 mph AND length > 0.5 miles without existing paved shoulder AND existing shoulder width ≥ 2 feet AND ADT ≥ 200 with lanes < 11 feet wide OR ADT ≥ 1000
Install Edgeline Rumble Strips (Both Sides of Road)	0.49 – 0.87 FHWA Proven Safety Countermeasure	$5,000/mile		X	All paved roads with speed limit ≥ 40 mph AND length > 0.5 miles AND ADT ≥ 200 or when recommending to Pave 2' Shoulder with Safety Edge
Install Centerline Rumble Strips	0.36 – 0.56 FHWA Proven Safety Countermeasure	$2,000/mile		X	All paved roads with speed limit ≥ 40 mph AND length > 0.5 miles AND ADT ≥ 200
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0.59 – 0.84 FHWA Proven Safety Countermeasure	$3,500/curve	X		On all curves within the segment that do not have signage
Review and Upgrade Curve Signage (Warning signs, Speed Advisory plaques, Chevrons) to meet Manual on Uniform Traffic Control Devices (MUTCD) and Iowa DOT standards	0.59 – 0.84 FHWA Proven Safety Countermeasure	$1,000/curve	X		On all curves within the segment that currently have signage
Clear and Grub (15 ft Both Sides of Road)	0.78	$30,000/mile	X		All paved roads with speed limit ≥ 40 mph AND length > 0.5 miles
Flattening and Widening Foreslopes (Excludes Culvert Extensions)	0.88 – 0.92 FHWA Proven Safety Countermeasure	$85,000/mile		X	County Engineer's discretion
On-Pavement Marking for Speed Control	CMF not defined	$3,000/each	X		County Engineer's discretion
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape	CMF not defined	$100/each	X		County Engineer's discretion
Guardrail	0.53 – 0.56 New Guardrail along Embankment	$80/foot		X	County Engineer's discretion
Install Post-Mounted Delineators	0.55 when installed in combination with edgelines and centerlines	$5,000/mile	X		County Engineer's discretion
Retroreflective Strip on Chevron Signpost	CMF not defined	$500/curve	X		County Engineer's discretion
Transverse Rumble Strips Prior to Curve	CMF not defined	$5,000/curve	X		Segments prior to curves; County Engineer's discretion
Remove/Relocate Object in Hazardous Location	0.56 – 0.78 FHWA Proven Safety Countermeasure	$1,000/each		X	All (County Engineer's discretion)
Superelevation Correction on Curve	CMF not defined	$50,000/curve	X		County Engineer's discretion
Install High Friction Surface Treatment (HFST) on Curve	0.28 – 0.52 FHWA Proven Safety Countermeasure	$50,000/curve		X	County Engineer's discretion
Speed Activated Flashers on Chevron Sign	CMF not defined	$4,000 /each	X		County Engineer's discretion

Table 11 - Intersection Countermeasure Project Selection Thresholds

Safety Countermeasure	CMF	Cost	Short-Term	Long-Term	Threshold
Coordinate with Local Jurisdiction on Signal Modifications	CMF not defined	$2,500/each	X		Signalized and DEV > 10,000
Signal Warrant Analysis to Consider Removal of Signal	CMF not defined	$5,000/each		X	Signalized and DEV < 10,000
Intersection Configuration Evaluation (ICE)	CMF not defined	$25,000/each	X		One or more K or A crash, DEV > 5,000 and All approaches are county maintained OR Five or more approaches
Implement Results of ICE	CMF not defined	$750,000/each		X	County engineer's discretion
All-Way Stop Warrant Analysis and Converting Two-Way Stop to All-Way Stop	0.52 – 1.12	$5,000/each	X		Unsignalized, Total DEV > 4,500, Minor ADT > 500, Crashes >0, Major ADT = Minor ADT (within 10%) and right angle, rear end, or turning crashes > 0
All-Way Stop Warrant Analysis and Removal of Stop Signs on Major Approach	CMF not defined	$5,000/each	X		All way stop AND; Total DEV <4,500, or Minor ADT < 500, or crashes < 1
Install Destination Lighting	0.58 - 0.72 FHWA Proven Safety Countermeasure	$5,500/each		X	Unsignalized, Destination lighting not currently installed, and Minor ADT > 200
Upgrade Signs and Pavement Markings (Paved Approach)	0.34 - 0.91 FHWA Proven Safety Countermeasure	$2,200/leg (paved $1,100/leg (unpaved)	X		All unsignalized (signs only for unpaved approaches)
Install Second Stop Sign and Stop Ahead Sign	0.73 FHWA Proven Safety Countermeasure	$1,500/leg	X		Unsignalized, and Minor ADT > 200 Or; Distance from previous stop sign = 1.5 miles or more
Install Solar-Powered Beacon on Stop Signs or Stop Sign with LED Flashing Lights	0.84 - 0.95 "Beacon on Stop Sign"	$2,500/each	X		Unsignalized, Total DEV > 4,500, Minor ADT > 500, Crashes >0, Major ADT = Minor ADT (within 10%), and right angle, rear end, or turning crashes > 0 Or; Destination lighting installed, and Minor ADT > 500 Or; Destination lighting not currently installed, Major ADT > 1,000, and Minor ADT > 500
Install Transverse Rumble Strips	0.71 – 0.79	$2,500/leg	X		All paved, Unsignalized approaches
Install Intersection Warning Sign and Advance Street Name Plaque on Major Approach	CMF not defined	$1,200/leg	X		Unsignalized, and Minor ADT > 200
Clear and Grub within Sight Triangle	0.78	$5,000/leg	X		All unsignalized intersections
Provide Left-Turn Lane at Intersection	0.73	$150,000/leg		X	County Engineer's discretion
Provide Right-Turn Lane at Intersection	0.90 – 0.99	$150,000/leg		X	County Engineer's discretion
Realign Intersection Approaches to Reduce or Eliminate Skew (Paved and unpaved)	0.57 - 0.67	$100,000/leg (unpaved) $300,000/leg (paved)		X	County Engineer's discretion
Provide Bypass Lane on Shoulder at T-Intersection	CMF not defined	$100,000/each		X	County Engineer's discretion
Convert Offset T-Intersection to Four-Legged Intersection (Paved)	CMF not defined	$300,000/each		X	County Engineer's discretion
Use Indirect Left-Turn Treatments to Minimize Conflicts at Divided Highway Intersection	CMF not defined	$75,000/leg		X	County Engineer's discretion
Convert Four-Legged Intersection to Offset T-Intersection	CMF not defined	$300,000/each		X	County Engineer's discretion
Install Solar-Powered Flashing Beacon on Intersection Warning Sign	CMF not defined	$2,500/leg	X		County Engineer's discretion
Install Retroreflective Strip on Stop Sign Post	CMF not defined	$500/intersection	X		County Engineer's discretion
Low-Cost Intersection Conflict Warning System (ICWS)	0.69 – 0.95	$100,000/each		X	County Engineer's discretion
Flashing Beacon on Intersection Warning Sign	CMF not defined	$2,500/sign	X		County Engineer's discretion

Table 12 - Horizontal Curve Countermeasure Project Selection Thresholds

Safety Countermeasure	CMF	Cost	Short-Term	Long-Term	Threshold
Install 4” Retroreflective Edgeline and Centerline	0.76 when installed in combination with edgelines	$3,000/mile (centerline) $3,000/mile (edgeline)	X		All paved curves (centerline) Lane width < 12 feet (edgeline)
Install 6” Retroreflective Edgeline (Both Sides of Road)	0.63 - 0.78 FHWA Proven Safety Countermeasure	$6,000/mile	X		All paved curves, Lane width ≥ 12 feet
Pave 2' Shoulder with Safety Edge (Both Sides of Road – Includes Earthwork)	0.79 - 0.89 FHWA Proven Safety Countermeasure	$150,000/mile		X	On paved curve, ADT ≥ 200, existing shoulder width > 2 feet
Install Edgeline Rumble Strips (Both Sides of Road)	0.49 – 0.87 FHWA Proven Safety Countermeasure	$5,000/mile		X	On paved curve, ADT ≥ 200
Install Centerline Rumble Strips	0.36 – 0.56 FHWA Proven Safety Countermeasure	$2,000/mile		X	On paved curve, ADT ≥ 1,000
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0.59 - 0.84 FHWA Proven Safety Countermeasure	$3,500/curve	X		On all curves that do not have signage
Review and Upgrade Curve Chevrons, Curve Warning Signs, and Speed Advisory Plaques to Meet MUTCD and Iowa DOT Standards, if Needed	0.59 - 0.84 FHWA Proven Safety Countermeasure	$1,000/curve	X		On all curves that currently have signage
Clear and Grub (15 ft Both Sides of Road)	0.78	$5,000/curve	X		All
Additional Curve Signage	CMF not defined	$1,000/curve	X		County Engineer’s discretion
Install Retroreflective Strips on Chevron Signpost	CMF not defined	$500/curve	X		County Engineer’s discretion
Transverse Rumble Strips Prior to Curve	CMF not defined	$5,000/curve	X		County Engineer’s discretion
Superelevation Correction	CMF not defined	$50,000/each		X	County Engineer’s discretion
Install High Friction Surface Treatment (HFST)	0.27 - 0.58 FHWA Proven Safety Countermeasure	$60,000/curve		X	County Engineer’s discretion
Speed Activated Flashers on Chevron Sign	CMF not defined	$4,000/each	X		County Engineer’s discretion
Guardrail	0.53 - 0.56 New Guardrail along Embankment	$80/foot		X	County Engineer’s discretion
On-Pavement Marking for Speed Control	CMF not defined	$3,000/each	X		County Engineer’s discretion
Install Post-Mounted Delineators	0.55 when installed in combination with edgelines and centerlines	$5,000/mile	X		County Engineer’s discretion

6.1.4. Draft Project Sheets

Using the data gathered for this plan, draft project sheets were created for roadway segments, intersections, and curves within the county that had the highest risk factor scores. These sheets compile the data used in the risk factor analysis and outline the recommended countermeasures for each location. They are designed to provide information that could be useful for future grant applications, including the project location, systematic ranking data, crash data, geometric data, whether the project is in a disadvantaged community, and an opinion of probable cost for the recommended safety improvements. **Figure 22** summarizes the general organization and information contained within the project sheets.

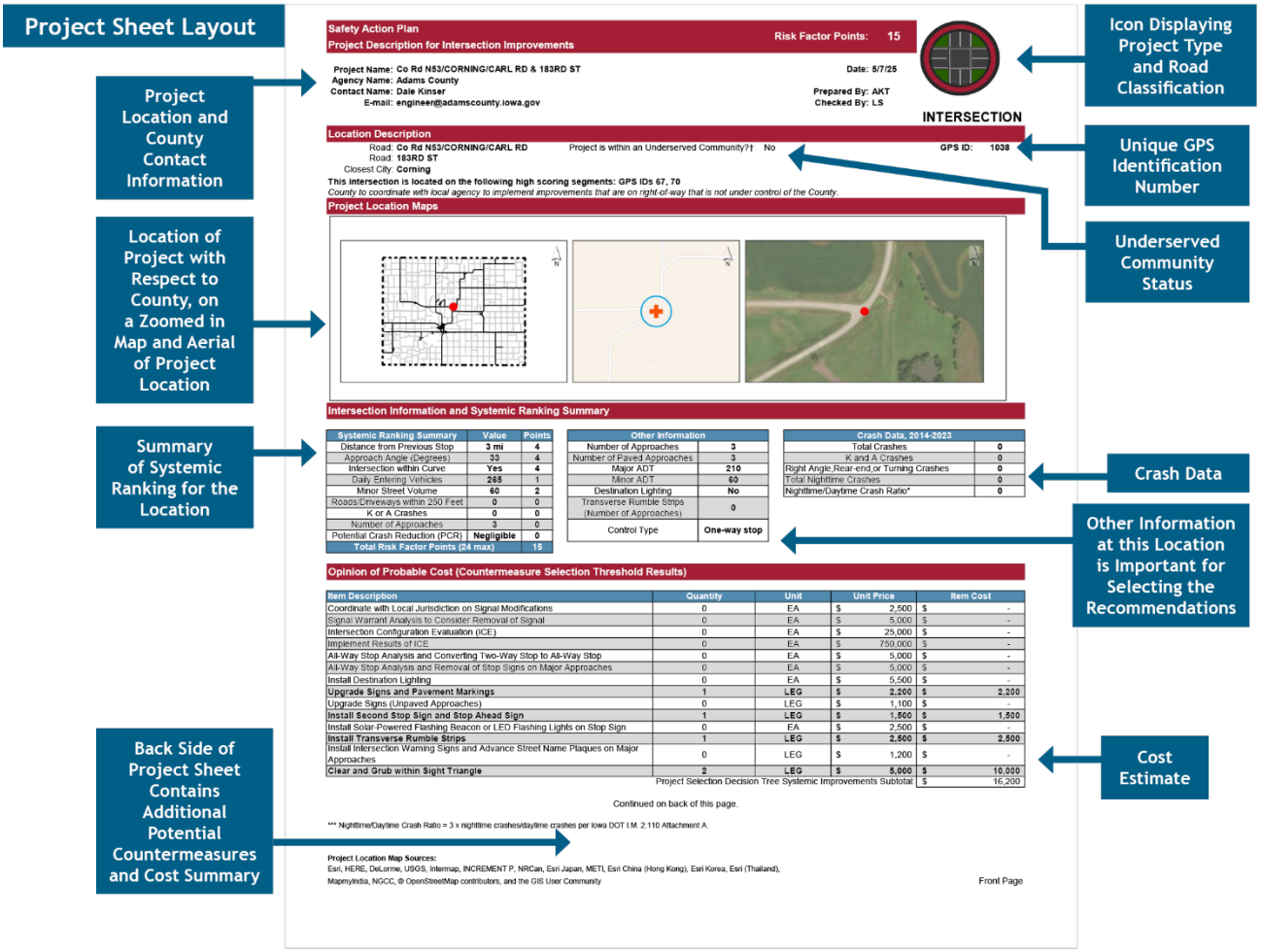


Figure 22 - Project Sheet Layout

6.1.5. County Input

An in-person workshop was conducted in Hancock County on Wednesday, October 16, 2024, to discuss location-specific countermeasures recommended for the high-risk roadway segment, intersection, and curve locations included on the draft project sheets. Detailed data used in the risk factor analysis and countermeasure selection threshold tables were reviewed for accuracy with the County Engineer, and necessary revisions were documented. Additionally, improvements requested by the County Engineer were noted for inclusion on the back side of the project sheet.

6.1.6. Final Project Sheets

After addressing the comments from the county, the project sheets for segments, intersections, and curves were finalized. These project sheets are included in **Appendix B2, Appendix C2,** and **Appendix D2.**

Project Recommendations Disclaimer

The recommended improvements contained in the project sheets were developed through a system-wide GIS database risk assessment, as described previously. Kimley-Horn could not confirm or control the accuracy of the GIS databases nor the suitability of the specific improvements for the location. Our team provided recommended improvements for consideration by the County Engineer. Site surveys were not conducted at the specific locations detailed in the project sheets.

The County Engineer may use these project sheets as part of due diligence, but these project sheets should not be used as the sole basis for the County Engineer's decision-making. The County Engineer can make changes to the prepared project sheets using discretion for each individual location. Kimley-Horn endeavored to research issues and constraints to the extent practical given the project's scope, budget, and schedule. This assessment is largely based on information provided by others (Iowa DOT, County staff, etc.) and therefore is only as accurate and complete as the information provided.

6.2. Segments

The methodology described in **Section 6.1** was followed for county-wide analysis of roadway segments based on the determined risk factors. The road segment limits were determined based on relevant roadway attribute changes along a roadway including pavement width, shoulder width, and street name.

6.2.1. Risk Factor Summary

Each county paved road segment is assigned risk factor points based on the following seven roadway attributes:

- **Traffic Volume (ADT):** The daily average number of vehicles along the roadway segment. The average daily traffic (ADT) for all segments within the county were compared to assign higher risk factor points to segments with higher ADTs.
- **Pavement and Shoulder Width:** The width of pavement and shoulders were used to assign risk factor points to each segment. Segments with narrower pavement and shoulder widths were assigned more risk factor points. **Table 13** further describes the number of points assigned for various width combinations. No differentiation in scoring was given to the shoulder type (paved vs. gravel).
- **Access Density:** Risk factor points were assessed based on the number of driveways and/or intersections per mile. Segments with higher access densities were assigned more points.
- **Curve Density:** The number of curves per mile with a radius less than 1,000 feet and with a length greater than 100 feet. Segments with a higher curve density were assigned more risk factor points.
- **Pavement Condition:** The average of the recorded roughness indices for the length of the segment. Segments with an IRI value over 95 could potentially cause safety concerns and were assigned risk factor points. Per the FHWA, roadways with IRI values less than 95

are considered “good” condition, 95-170 are “acceptable,” and less than 170 are “poor”. Risk factor points were assigned to roadways with acceptable or poor ratings. Research has shown that a rougher ride can contribute to loss of control of a vehicle, particularly when braking or turning.

- **Crash Experience:** The number of lane departure crashes for each segment in the county was reviewed to assign risk factor points to segments where there was a history of lane departure crashes.
- **Potential for Crash Reduction (PCR):** PCR is a value that estimates the potential for safety improvements at a location based on the difference between the predicted average number of crashes per year and the actual number of crashes per year at comparable locations in the same category.

Recommendations were only made where segments were greater than 0.5 miles in length and where the posted speed limit was 40 miles per hour (mph) or higher. This was agreed upon based on the nature of the recommendations, which are more applicable to rural roadway segments, and to provide segments of sufficient length to justify mobilization of construction/maintenance crews and equipment.

Table 13 shows the risk factors for the SAP projects. The maximum possible risk factor score for a segment is 21 points.

Table 13 - Segment Risk Factor Scores

Risk Factor	Measurement	Points	Max Points Available
Traffic volume	Average Daily Traffic (ADT)	0: ADT percentile is 0%-14.3%	6
		1: ADT percentile is 14.3%-28.6%	
		2: ADT percentile is 28.6%-42.9%	
		3: ADT percentile is 42.9%-57.1%	
		4: ADT percentile is 57.1%-71.4%	
		5: ADT percentile is 71.4%-85.7%	
		6: ADT percentile is 85.7%-100%	
Pavement and shoulder width	Pavement and shoulder width in feet (ft)	0: Pavement width ≥ 22 ft and shoulder width ≥ 2 ft	4
		0: Pavement width > 18 ft and < 22 ft, and shoulder width ≥ 4 ft	
		2: Pavement width ≥ 22 ft and shoulder width < 2 ft	
		2: Pavement width > 18 ft and < 22 ft and shoulder width ≥ 2 ft and < 4 ft	
		2: Pavement width ≤ 18 ft and shoulder width ≥ 4 ft	
		4: Pavement width > 18 ft and < 22 ft, and shoulder width < 2 ft	
		4: Pavement width ≤ 18 ft and shoulder width < 4 ft	
Potential for Crash Reduction (PCR)	Iowa DOT PCR level definition for all crashes	0: High (less than 0.2)	2
		1: Medium (0.2 to 0.99)	
		2: Negligible (1 or greater)	
Access density	Number of intersections and driveways per mile (driveway location per 911 address database)	0: Bottom fourth of the access density Crash Modification Factor (CMF) *	3
		1: Second lowest fourth of the access density CMF *	
		2: Second highest fourth of the access density CMF *	
		3: Top fourth of the access density CMF *	
Curve density	Number of curves per mile with a radius less than 1,000 ft	0: Segments with no curves	2
		1: Curve density percentile is 1%-50% of segments with curves	
		2: Curve density percentile is more than 50% of segments with curves	
Pavement condition	Average International Roughness Index (IRI)	0: Less than 95	**2**
		1: 95 to 170	
		2: More than 170	
Crash experience	Presence of a lane departure crash	0: No lane departure crashes	**2**
		2: One or more lane departure crashes	
Total available points			**21**

* Access density CMF equation as presented in the HSM (Equation 13-7)

6.2.2. Risk Factor Rankings

Segment risk factor ranking calculations were performed on all county paved roadway segments (greater than 0.5 miles in length and with posted speed limits of 40 mph or greater). The results of the rankings are shown in **Figure 23. Figure 24** shows the location and summary of risk factor ranking of each of the roadway segments analyzed within the SAP. Segments were identified as high, medium-high, medium-low, or low based on the risk factor points they received. These categories were determined by comparing the scores of the segments against each other. If a segment was manually selected by the County to include as a prioritized segment, it is automatically categorized as a high-risk segment.

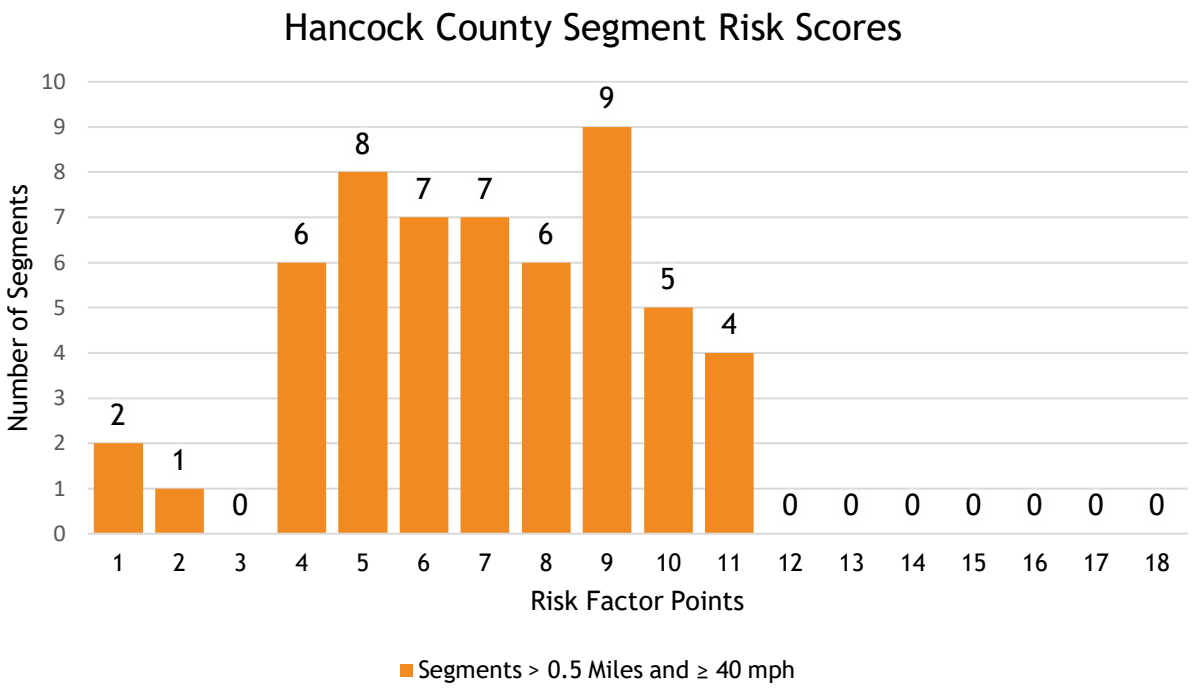


Figure 23 – Hancock County Segment Risk Factor Scores

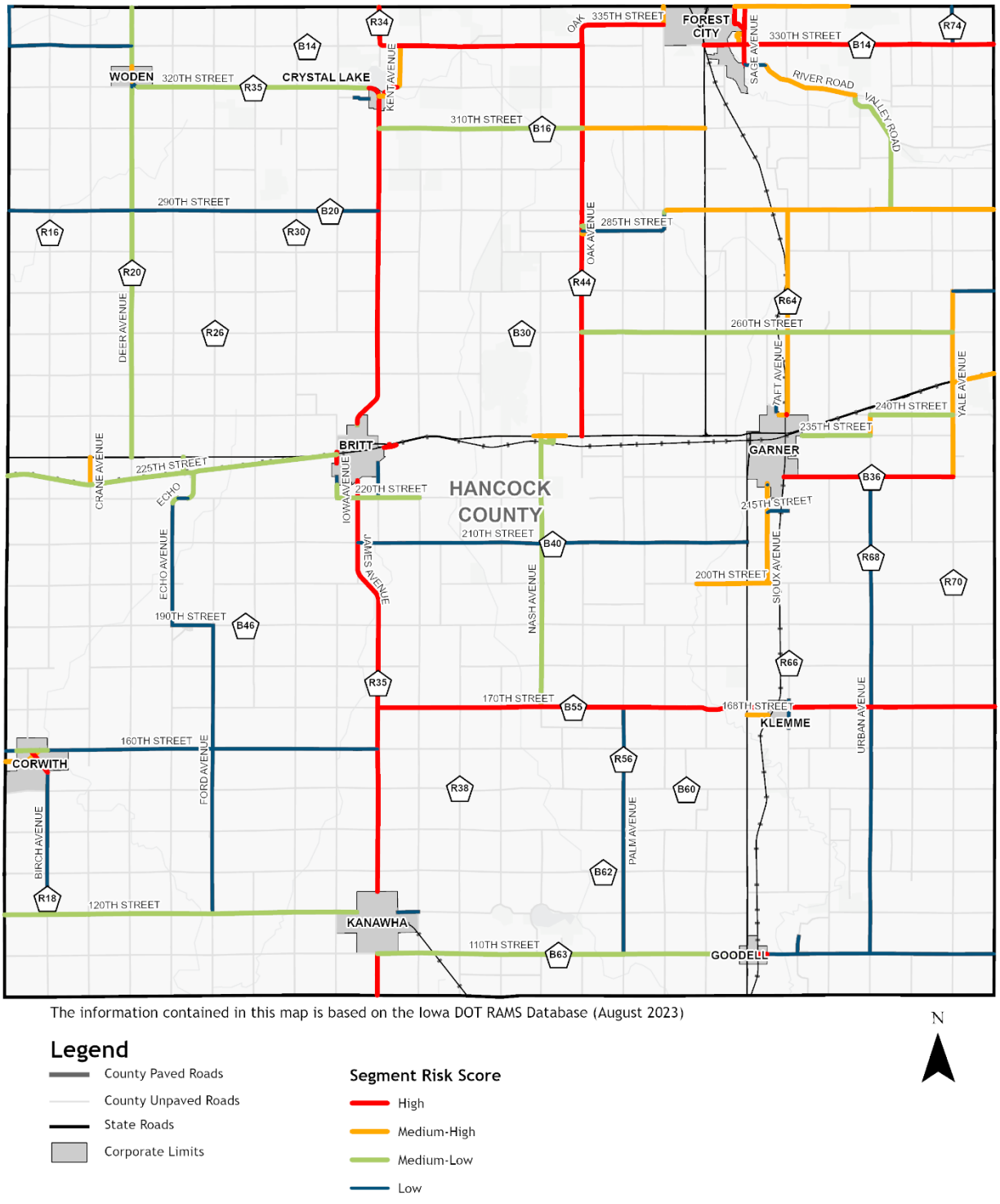


Figure 24 - Hancock County Segment Risk Factor Map

6.2.3. Prioritized Segment Recommendations

Project sheets were developed for segment locations with the greatest amount of risk factor points. The segments for which project sheets were developed (those with the greatest amount of risk factor points) are summarized in **Table 14** and the project sheets are included in **Appendix B2**. Also included in the table are the high-scoring intersections and high-scoring curves that fall within the segments.

Table 14 - Prioritized Segment Recommendations

GPS ID	Segment	Segment Length (miles)	Risk Factor Points	High Scoring Intersections (GPS ID)	High Scoring Curves (GPS ID)	Estimated Project Cost
3573	330th Street between Highway 69 and Apple Avenue	7	11			$3,547,000
3495-3496	James Avenue between 100Th St And 500 Feet S Of 7th St SW	11	11			$2,763,000
3545-3546	225th Street between Garner Corporate Limits and Co Road R70/Yale Avenue	4	11			$1,065,000
3574	330th Street between North County Line and Oak Avenue	6	11		2368	$1,484,000
3570	335th Street between 330th Street & Oak Avenue and Quail Avenue	3	10		2444	$654,000
3497	James Avenue between Britt Municipal Limit and Crystal Lake Municipal Limit	8	10		2353, 2363	$2,018,000
3537	170th Street between Highway 69 and Apple Avenue	6	10			$1,554,000
3505	Oak Avenue between US 18 and 355th Street	10	10	33964		$2,447,000
3536	170th Street between James Avenue and Highway 69	9	9	34127		$3,096,000
Total (9 Segments)						**$18,628,000**

Figure 25 shows the locations of the roadway segments with highest risk factor ranking, where project sheets and specific segment recommendations were made. The segment risk factor ranking results and relevant data for every analyzed roadway segment is included in **Appendix B3**.

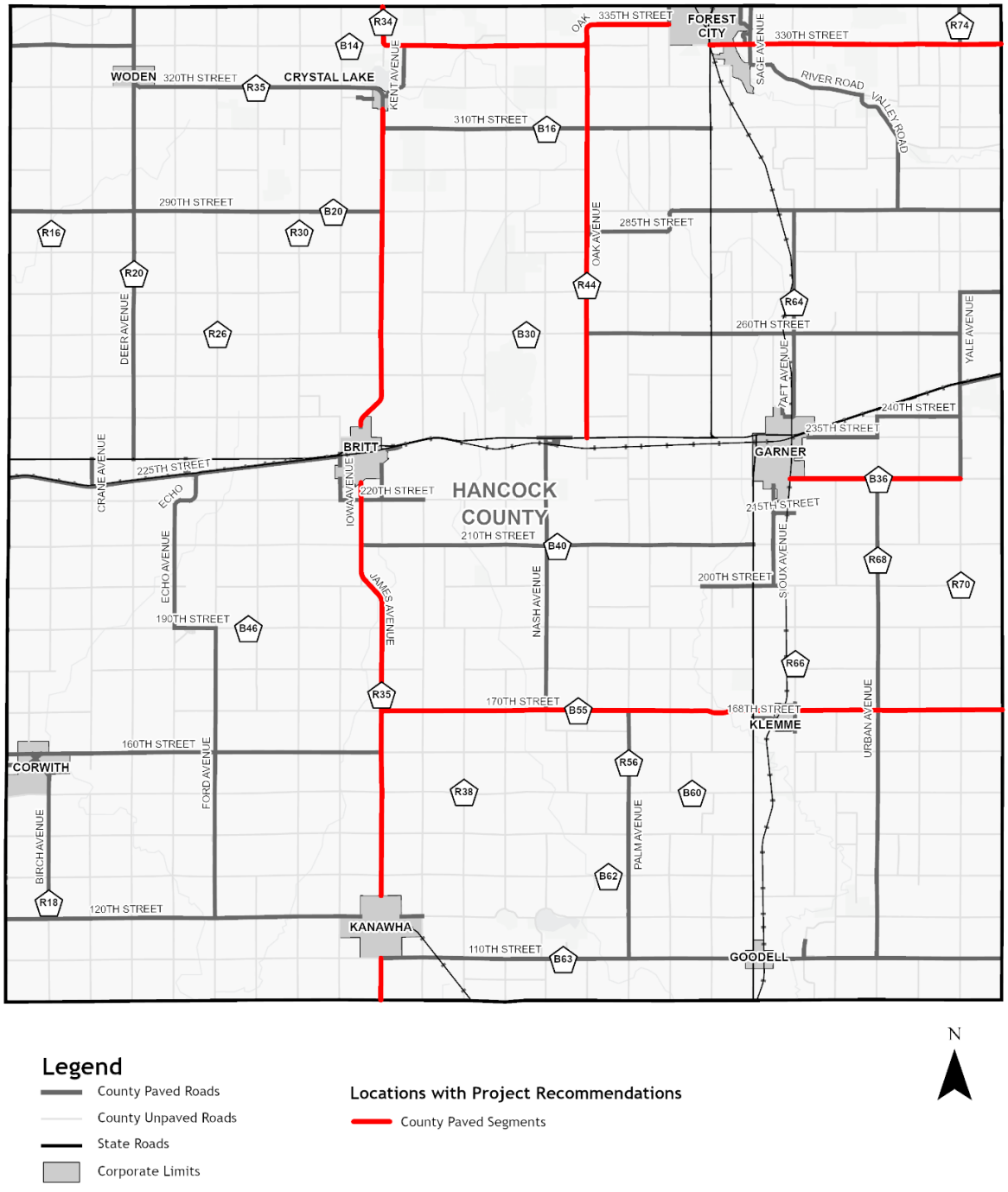


Figure 25 – Hancock County Prioritized Segment Project Locations Map

6.3. Intersections

The methodology described in **Section 6.1** was followed for a systematic analysis of county paved intersections based on the determined risk factors. Additional details on the risk factor calculations, risk factor ranking results, project selection decision tree, and project sheets are described in the following sections.

6.3.1. Risk Factor Summary

Every intersection within each county containing at least one County-maintained paved roadway leg is analyzed for risk according to the following nine key attributes:

- **Distance from Previous Stop Sign:** if any stop-controlled approach had a distance of at least 1.5 miles from the previous stop sign, risk points were assigned. The longer the distance a driver travels without stopping, the more likely they are to fail to stop at the next stop sign because they are not expecting it.
- **Intersection Skew:** the intersection was assigned risk factor points if any of the side roads had an approach angle (skew) of less than 85 degrees. Based on Iowa crash data analyzed by InTrans, crash experience increases at intersections with skew at 85 degrees and 70 degrees. According to the *Highway Design Handbook for Older Drivers and Pedestrians*, "Skew angles in excess of 75 degrees often create special problems at stop-controlled rural intersections. The angle complicates the vision triangle for the stopped vehicle; increases the time to cross the through road; and results in a larger, more potentially confusing intersection."
- **Horizontal Curvature:** the number of curves (with length more than 100 feet and radius less than 1,000 feet) within 250 feet of the intersection on any County- or State-maintained approach. Risk factor points were assigned to intersections with one or more curves within close proximity of the intersection. Roadway curves in close proximity to intersections can limit sight distance, increasing crash potential.
- **Traffic Volume (DEV):** the average number of vehicles entering the intersection per day. The daily entering volume (DEVs) for all the intersections in the county were compared against each other to assign higher risk factor points to intersections with higher DEVs within the county. It is understood that more vehicles entering an intersection creates more exposure and, therefore, increases the risk of a crash.
- **Minor Street Volume:** with a higher minor street volume, there is an increase in crash exposure, specifically with angle crashes. The third highest approach volume was used for the minor street volume. Minor street volumes for all the intersections in the county were compared against each other to assign higher risk factor points to intersections with higher minor street volumes within the county.
- **Access Management:** risk points were assigned if an access point (driveway or other intersection) was located within 250 feet of the intersection. Driveways and other access points located within the functional area of intersections create additional opportunities for conflict points and cause drivers to make more decisions within the functional area of an intersection, increasing risk for a crash.
- **Crash Experience:** each intersection was assigned risk factor points if a K or A crash occurred within 150 feet of the intersection. This attribute accounts for crash history, which may be indicative of improvement needs.

- **Intersection Configuration:** as an additional risk factor to capture potential conflicts at an intersection, the number of approaches were considered as a risk factor. If an intersection had four or more approaches, it was assigned a risk factor point.
- **PCR:** a value that estimates the potential for safety improvements at a location based on the difference between the predicted average number of crashes per year and the actual number of crashes per year at comparable locations in the same category.

Table 15 shows the risk factors for the SAP projects. The maximum possible risk factor score for an intersection is 24 points.

Table 15 - Intersection Risk Factor Scores

Risk Factor	Measurement	Points	Max Points Available
Distance from previous stop sign	Stop sign locations based on information provided by the County Engineer	0: Less than 1.5 miles	4
		4: 1.5 miles or more	
Intersection skew	Skew angle of most skewed approach	0: 85-90 degrees	4
		2: 70-85 degrees	
		4: Less than 70 degrees	
Horizontal curvature	Intersection on or within 250 feet of a curve (length > 100' and radius < 1,000')	0: None	4
		4: 1 or more	
Traffic volume	DEV	0: DEV percentile is 0%-25%	3
		1: DEV percentile is 25%-50%	
		2: DEV percentile is 50%-75%	
		3: DEV percentile is 75%-100%	
Minor street volume	ADT	0: Bottom third of county minor street ADTs	2
		1: Middle third of county minor street ADTs	
		2: Top third of county minor street ADTs	
Access management	Driveways or another intersection within 250 feet of the intersection	0: None	2
		1: 1 or 2	
		2: More than 2	
Crash experience	Fatal or serious injury (K or A) crash within 150 feet of the intersection	0: None	2
		2: 1 or more	
Intersection configuration	Number of approaches	0: Less than 4 approaches	1
		1: 4 or more approaches	
PCR	Iowa DOT PCR level definition for all crashes	0: High (less than 0.2)	2
		1: Medium (0.2 to 0.99)	
		2: Negligible (1 or greater)	
Total available points			**24**

6.3.2. Risk Factor Rankings

Risk factor calculations were performed for each of the intersections in the county containing at least one County-maintained paved approach. The results of the risk factor rankings are provided in **Figure 26**. To further aid the county in determining which projects they may want to pursue, the intersections were divided into two categories:

- **County-State:** This includes intersections of county roads with Iowa DOT-maintained roads.
- **County-County and County-Other:** This includes intersections of county roads with other county roads as well as intersections of county roads with other roads that are not maintained by the County or the Iowa DOT (such as city streets).

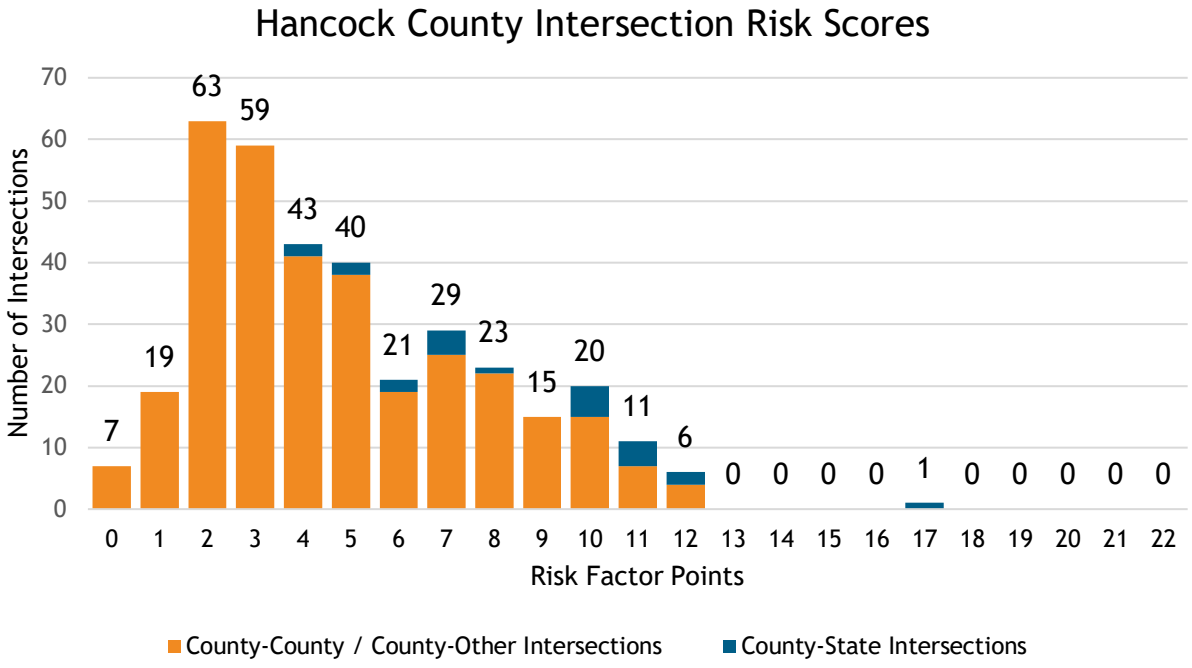


Figure 26 - Hancock County Intersection Risk Factor Scores

Figure 27 on the following page shows the location and risk factor score of each intersection analyzed within the SAP. Intersections were identified as high, medium-high, medium-low, or low based on the risk factor points they received. These categories were determined by comparing the scores of the intersections against each other. If an intersection was manually selected by the County to include as a prioritized intersection, it is automatically categorized as a high-risk intersection.

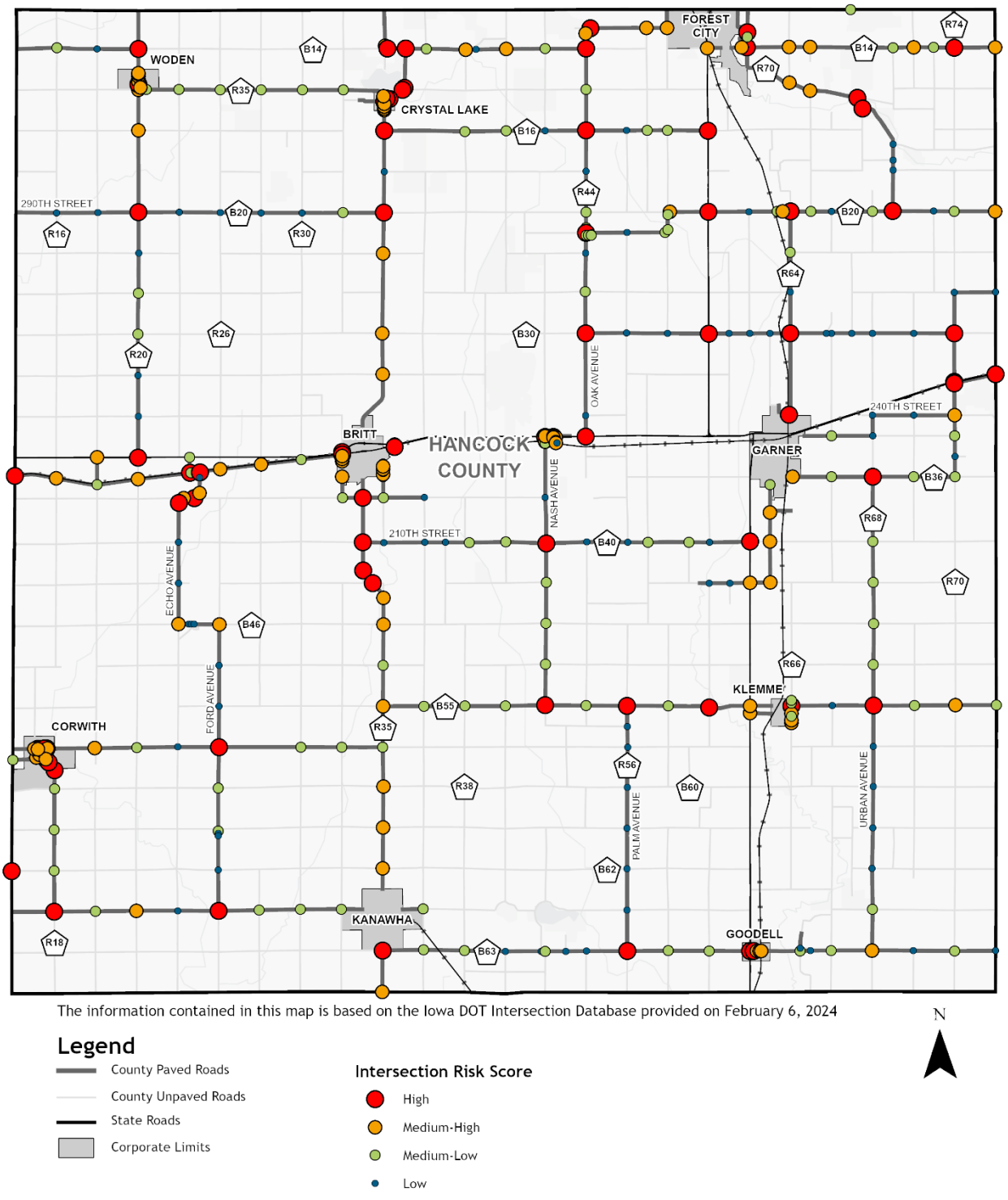


Figure 27 - Hancock County Intersection Risk Factor Map

6.3.3. Prioritized Intersection Recommendations

Project sheets were developed for intersection locations with the greatest amount of risk factor points. The intersections for which project sheets were developed (those with the greatest amount of risk factor points) are summarized in **Table 16** and the project sheets are in **Appendix C2**. For intersections located on a high-scoring roadway segment, the GPS ID of the segment is listed in the table.

Table 16 - Prioritized Intersection Recommendations

GPS ID	Intersection	Risk Factor Points	High Scoring Segment (GPS ID)	Estimated Project Cost
County-County / County-Other Intersections				
34377*	Elm Street & Main Street	12		-
34276*	Co Road B16/310 & Co Road R44/Oak Avenue	12	3505	-
34127	Co Road B55/170 & Rake Avenue	12	3536	$45,000
34232	Co Road R26/Estate Avenue & Co Road R26/225	12		$24,000
34243*	Co Road B14/330 & Co Road R70/Sage Avenue	11	3573	-
34134	Co Road R35/James Avenue & Co Road R35/James Avenue	11	3496	$17,000
109506	Co Road R64/Taft Avenue/240 & Country Club Drive	11		$27,000
34068**	Co Road B55/160 & Co Road R26/Ford Avenue	10		$38,000
County-County / County-Other Total (8 Intersections)†				**$151,000**
County-State Intersections				
33955*	US 18 & Iowa Avenue	17		-
33978	US 69 & Willow Street	12		$45,000
34016	IA 17 & 225 & Old 18	12		$52,000
33976	US 18 & Co Road R70/Yale Avenue	11		$41,000
33964	US 18 & Co Road R44/Oak Avenue	11	3505	$35,000
33962	US 18 & Co Road R44/Nash Avenue	11		$38,000
County-State Total (6 Intersections)†				**$211,000**
Intersection Total (14 Intersections)†				**$362,000**

*Intersection removed at the request of the County Engineer. No project sheets will be developed.
**Intersection added at the request of the County Engineer.
†Total cost excludes intersections that are no longer prioritized.

Figure 28 illustrates the locations of the intersections with highest risk factor ranking, where project sheets and specific intersection improvement recommendations were made. The intersection risk factor ranking results and relevant data for every analyzed intersection is included in the summary spreadsheet included in **Appendix C3**.

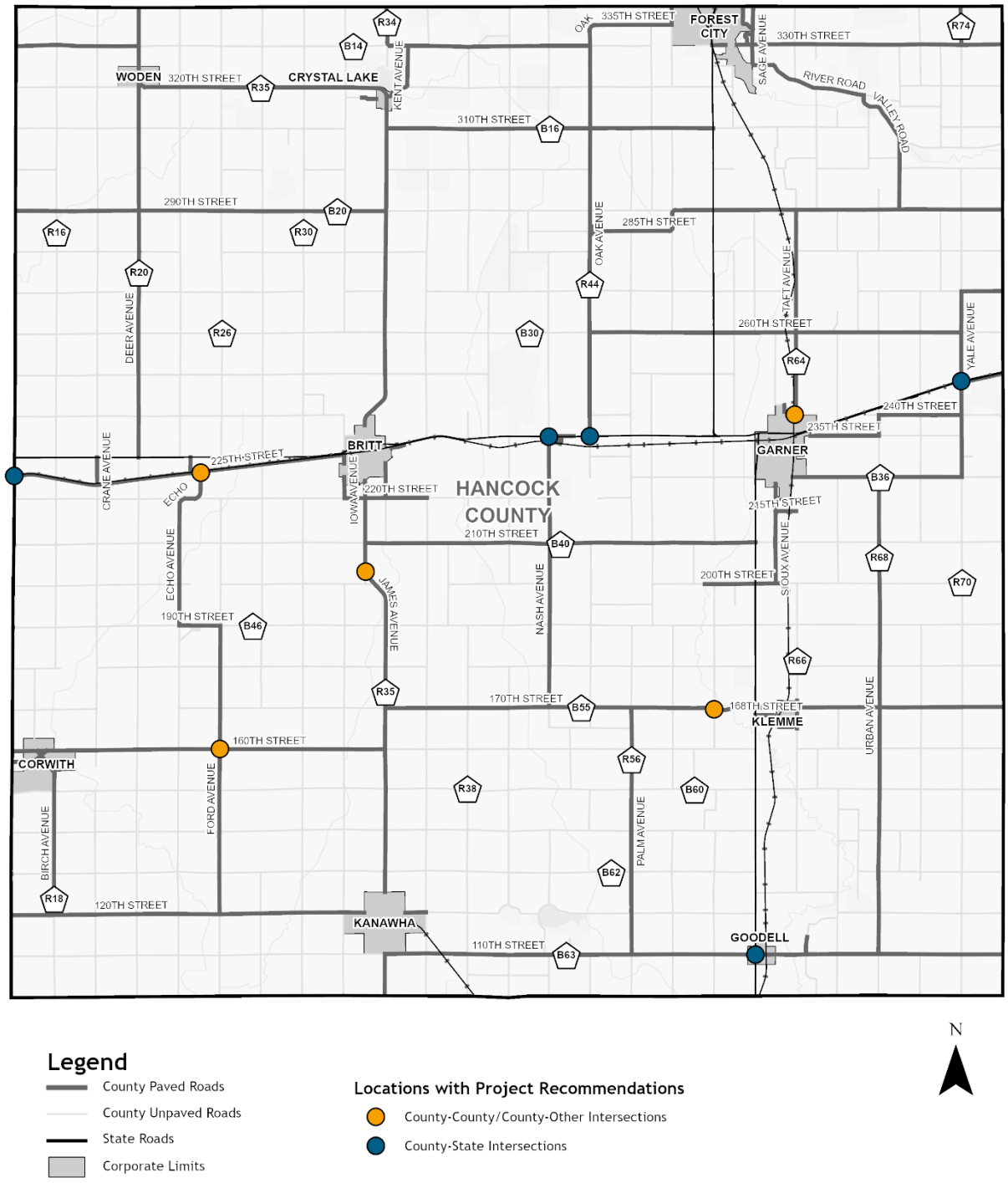


Figure 28 - Hancock County Prioritized Intersection Project Locations Map

6.4. Horizontal Curves

The methodology described in **Section 6.1** was followed by county-wide analysis of paved horizontal curves based on the determined risk factors. Additional details on the risk factor calculations, risk factor ranking results, project selection decision tree, and project sheets are described in the following sections.

6.4.1. Risk Factor Summary

Each paved horizontal curve that was identified in the horizontal curve database within the county is systematically analyzed for risk according to the following six key attributes:

- **Traffic Volume (ADT):** the average number of vehicles per day along the roadway curve. The ADTs for all curves within the county were compared to assign higher risk factors to curves with a higher ADT. It is understood that more vehicles traveling along a curve increases the risk of a crash.
- **Curve Radius:** all curves with radii smaller than 2,500 feet and with a length greater than 100 feet were assessed as risk factor points. Curves with smaller radii were assigned additional points based on the crash data reviewed for county paved horizontal curves, showing more crashes on curves with smaller radii.
- **Shoulder Width:** risk factor points were assigned to all curves with shoulder widths less than six feet, with more risk factor points associated with narrower shoulders. This was based on the HSM Chapter 10, Table 10-9 and 10-10, which illustrates that with wider shoulders, crash risk is reduced. No differentiation in scoring was given to the shoulder type (paved vs. gravel).
- **Access Management:** risk was assessed if a driveway was within 250 feet of the curve. Additional risk points were assessed if an intersection was within 250 feet of the curve. Driveways and other access points located on or near curves create additional opportunities for conflict points and cause drivers to make additional decisions within the curve, with a potential for reduced sight distance, increasing risk of a crash.
- **Pavement Condition:** the average of the recorded roughness indices for the length of the segment. Pavement with an IRI value over 95 could potentially cause safety concerns and were assigned risk factor points.
- **Crash Experience:** each curve was assigned risk factor points if a K or A crash occurred within 150 feet of the curve. This attribute accounts for crash history, which may be indicative of improvement needs.

Table 17 shows the risk factors in the SAP projects. The maximum possible risk factor score for a horizontal curve is 21 points.

Table 17 - Horizontal Curve Risk Factor Scores

Risk Factor	Measurement	Points	Max Points Available
Traffic volume	ADT	0: ADT percentile is 0%-14.3%	6
		1: ADT percentile is 14.3%-28.6%	
		2: ADT percentile is 28.6%-42.9%	
		3: ADT percentile is 42.9%-57.1%	
		4: ADT percentile is 57.1%-71.4%	
		5: ADT percentile is 71.4%-85.7%	
		6: ADT percentile is 85.7%-100%	
Curve radius	Radius of curve in feet	0: Greater than 2,500 feet	4
		1: 1,000 to 2,500 feet	
		3: 500 to 1,000 feet	
		4: Less than or equal to 500 feet	
Shoulder width	Shoulder width in feet	0: 6-foot shoulder and greater	4
		2: 2-foot shoulder to 6-foot shoulder	
		4: less than 2-foot shoulder	
Access management	Intersections and driveways within 250 feet of the curve	0: no intersection or driveway within 250 feet	3
		1: driveway within 250 feet	
		3: intersection within 250 feet	
Pavement condition	Average IRI	0: Less than 95	2
		1: 95 to 170	
		2: More than 170	
Crash experience	Fatal or serious injury (K or A) crash within 150 feet of the curve	0: none	2
		2:1 or more	
Total available points			**21**

6.4.2. Risk Factor Rankings

The risk factor calculations were performed on each of the curves on paved roads in the county which have a length greater than or equal to 100 feet and a radius less than 2,500 feet. The results of the risk factor rankings are provided in **Figure 29**. **Figure 30** on the following page shows the location and risk factor ranking of each curve analyzed within the SAP. Curves were identified as high, medium-high, medium-low, or low based on the risk factor points they received. These categories were determined by comparing the scores of the curves against each other. If a curve was manually selected by the County to include as a prioritized curve, it is automatically categorized as a high-risk curve.

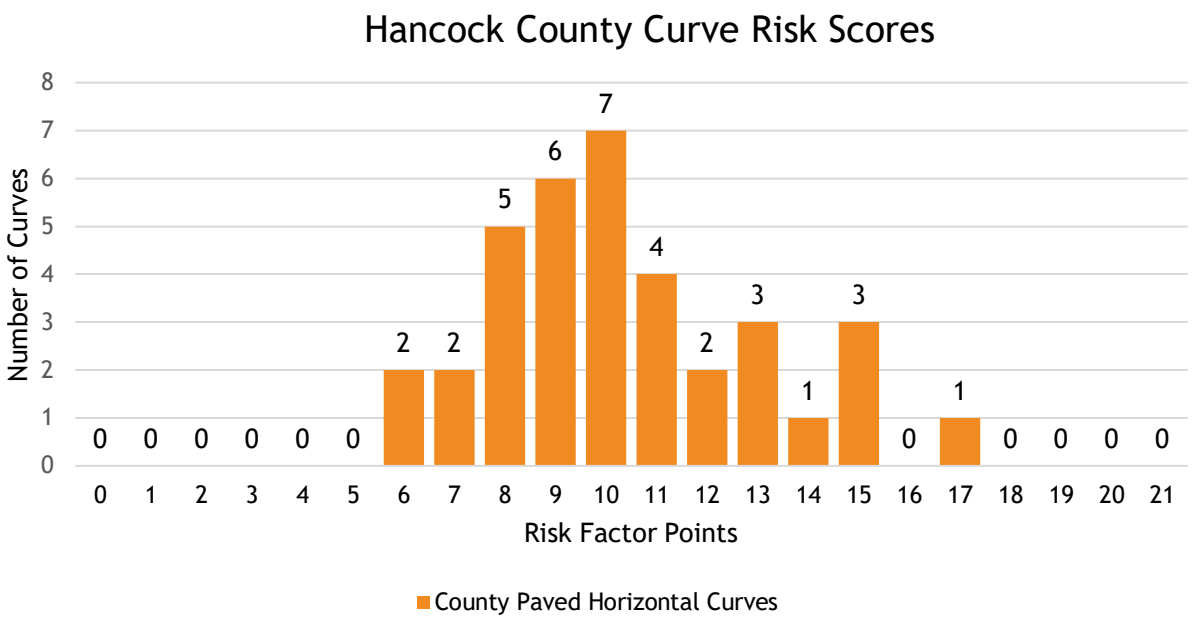
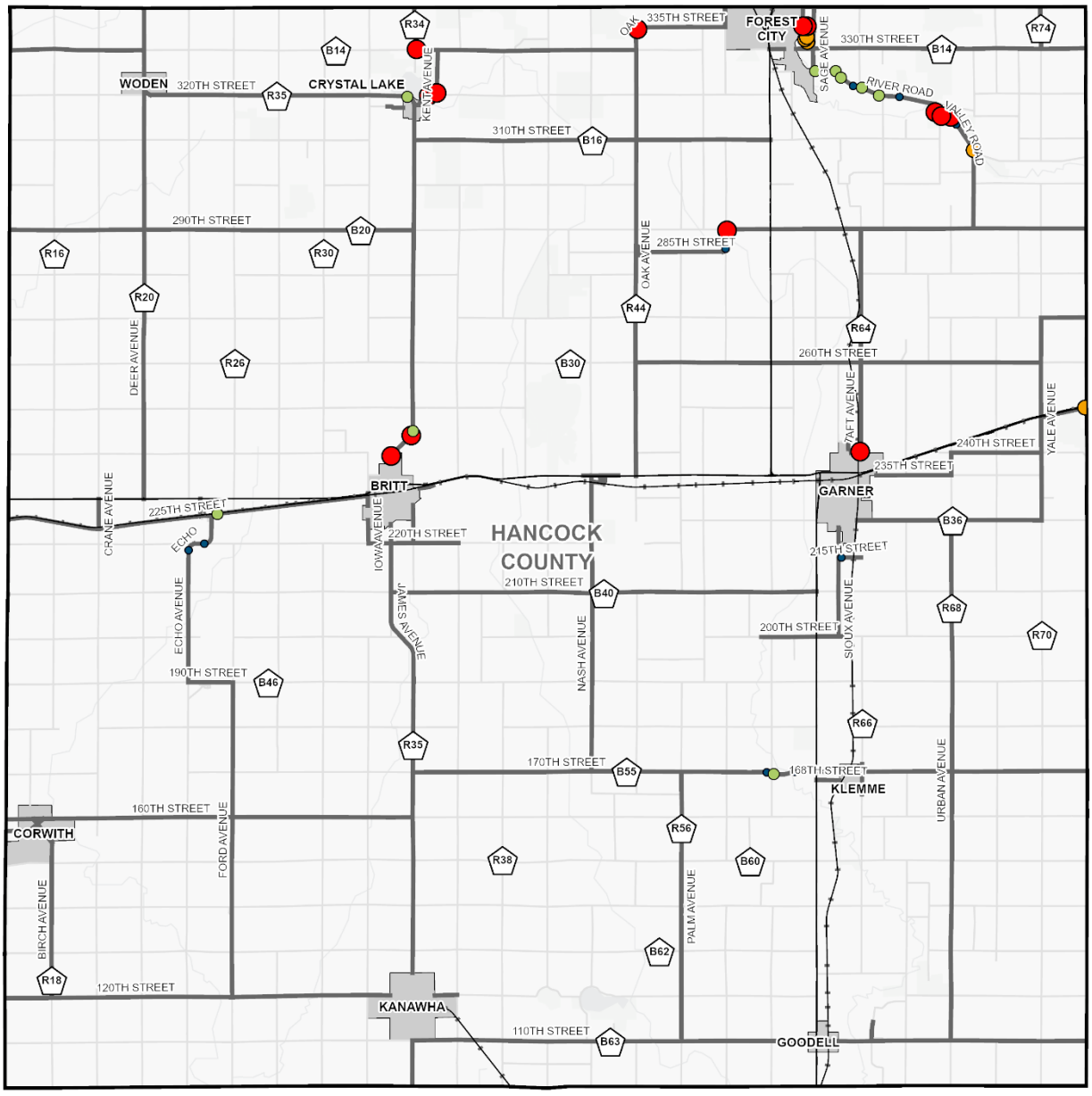


Figure 29 - Hancock County Horizontal Curve Risk Scores



The information contained in this map is based on the Iowa DOT Curves Database provided on February 6, 2024.

Legend

- County Paved Roads
- County Unpaved Roads
- State Roads
- Corporate Limits

Curve Risk Score

- High
- Medium-High
- Medium-Low
- Low

Figure 30 – Hancock County Horizontal Curve Risk Factor Map

6.4.3. Prioritized Horizontal Curve Recommendations

Project sheets were developed for curve locations with the greatest amount of risk factor points. The curves with the greatest amount of risk factor points are shown in **Table 18** and project sheets are in **Appendix D2**. For curves located on a high-scoring roadway segment, the GPS ID of the segment is listed in the table.

Table 18 – Prioritized Horizontal Curve Recommendations

GPS ID	Curve	Risk Factor Points	High Scoring Segment (GPS ID)	Estimated Project Cost
2536	Curve 2536 on Taft Avenue	17		$52,000
2371*	Curve 2371 on 320th Street	15		-
2375*	Curve 2375 on Kent Avenue	15		-
2504*	Curve 2504 on Sage Drive	15		-
2511*	Curve 2511 on Sage Drive	14		-
2368	Curve 2368 on 330th Street	13	3574	$114,000
2479	Curve 2479 on 290th Street	13		$55,000
2562	Curve 2562 on Valley Road	13		$28,000
2444	Curve 2444 on 335th Street	12	3570	$122,000
2607*	Curve 2607 on 250th Street	12		-
2561**	Curve 2561 on Valley Road	10		$13,000
2565**	Curve 2565 on Valley Road	10		$13,000
2353**	Curve 2353 on Main Avenue North	9	3497	$50,000
2363**	Curve 2363 on James Avenue	9	3497	$41,000
Total (14 Curves)†				**$488,000**

*Curve removed at the request of the County Engineer. No project sheets will be developed.
**Curve added at the request of the County Engineer.
†Total cost excludes curves that are no longer prioritized.

Figure 31 shows the locations of the curves where project sheets and specific curve improvement recommendations were made. The risk factor ranking results and relevant data for every analyzed curve is included in **Appendix D3.**

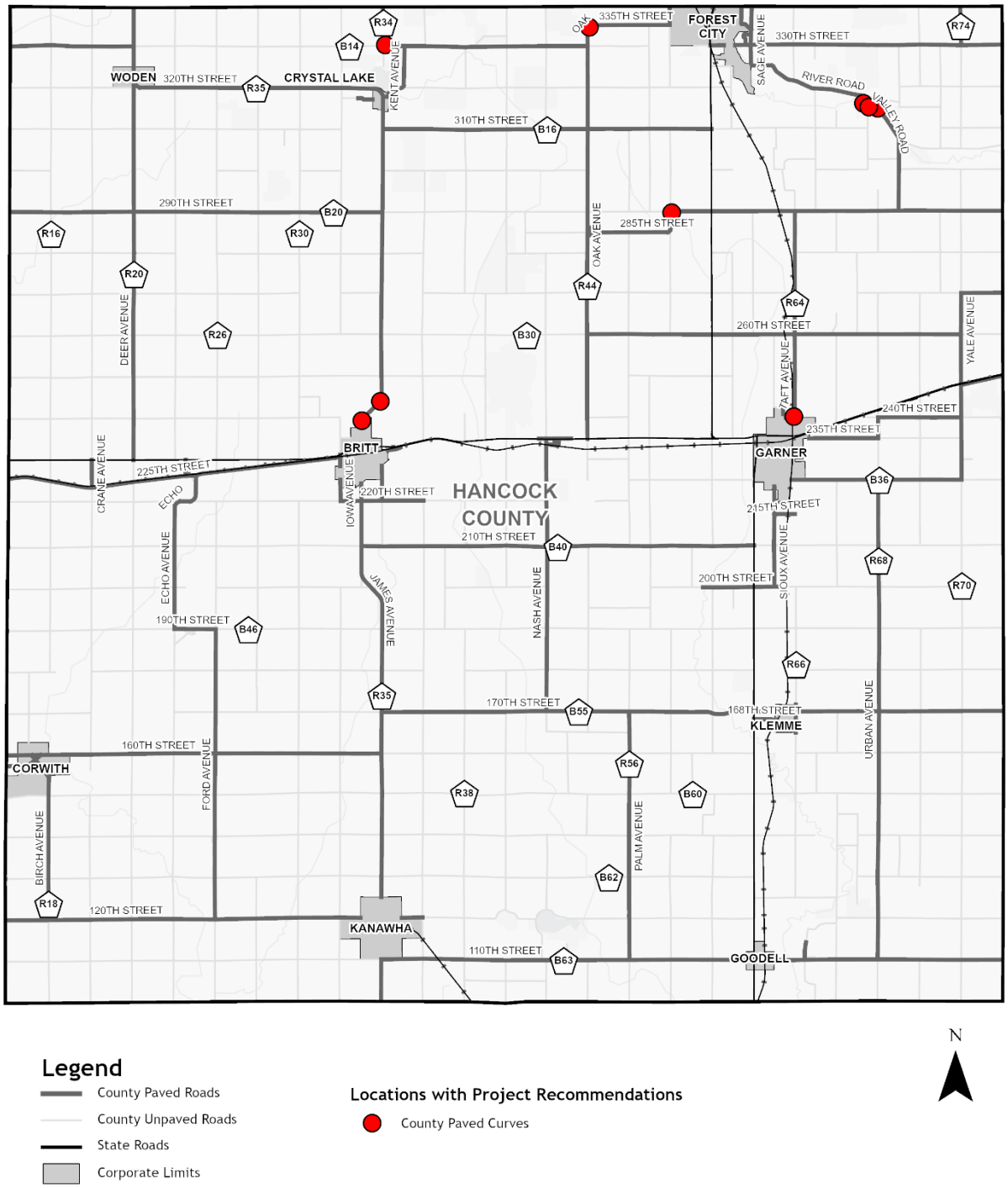


Figure 31 - Prioritized Horizontal Curve Project Locations Map

6.5. Unpaved Roadways

Hancock County maintains 1,010 miles of county roads, of which 756 miles are unpaved (75%). Crashes on unpaved roads accounted for 64 of the 207 crashes (31%) in Hancock County from 2019 to 2023. Unpaved roadways were not included in the analysis based on limited data availability, low traffic volumes, and limited types of safety improvements that can be systemically implemented on unpaved roads. Even though location-specific recommendations were not made as part of this project, safety along unpaved segments, at unpaved intersections, and along unpaved curves is also important. Potential projects and/or activities that could be implemented on unpaved roadways include the following items:

- Maintenance of gravel
- Major rehabilitation
- Upgrade signs
- Realign intersection
- Improve/increase shoulder/lane width
- Delineate roadside hazards with retroreflective markers
- Curve chevrons
- Advance curve warning signs and speed advisory plaques
- Driveway entrance policy
- Clear and grub
- Winter maintenance

Descriptions of each of these unpaved roadway safety countermeasures are provided in **Appendix E**.

7. CANDIDATE LOCATIONS BASED ON CRASH HISTORY (CLCH)

While the intent of the SAP is to identify systemic safety improvements at segments, intersections, and curves throughout the county, the following tables provide a list of high-crash locations which were identified using a crash experience methodology for roadway segments (**Table 19**), intersections (**Table 20**), and curves (**Table 21**). For the purposes of this project, the CLCH methodology included ten years of crash data, and was modified and applied to segments and curves, normalizing the analysis by crashes per mile.

It is recommended that the County Engineer consider applying for TSIP funding at these locations because TSIP more heavily weights benefit-cost analysis using the most recent 5-years of crash data. The County Engineer can review these locations to determine if safety improvements, similar to the ones outlined within **Section 6.2**, **Section 6.3**, and **Section 6.4** are applicable, and develop a TSIP application based on the recommended improvements.

Table 19 - Segment High-Crash Locations

Rank	GPS ID	Segment	Length (mi)	Identified as High-Risk Location
1	3554	US Highway 18 Frontage Road between 900 feet west of Nash Avenue and 2000 feet east of Nation Avenue	0.77	No
2	3501	Kent Avenue between 200 feet north of 320th Street and 330th Street	0.96	No
3	3495	James Avenue between 100th Street and Co Road B63/110	1.01	Yes
4	3563	310th Street between Co Road R44/Oak Avenue and US 69	2.97	No
5	3532	1st Street between IA 17 and 1st Street/Jay Street	0.92	No
6	3520	Taft Avenue between 400 feet south of E Arthurs Lane and E Dakota Street	0.67	No
7	3574	330th Street between North County Line and Oak Avenue	4.84	Yes
8	3585	Willow Avenue between 1000 feet west of US 69 and 1100 feet east of 4th Street	0.67	No
9	3543	220th Street between Iowa Avenue and Kent Avenue	1.99	No
10	3577	Elm Street between Standring Street / Birch Avenue and Mckinley Street	0.67	No

Table 20 - Intersection High-Crash Locations

Rank	GPS ID	Intersection	Control Type	Identified as High-Risk Location
1	34276	Co Road B16/310 & Co Road R44/Oak Avenue	Two-way stop	No
2	33955	US 18 & Iowa Avenue	Two-way stop	No
3	34134	Co Road R35/James Avenue & Co Road R35/James Avenue	One-way stop	Yes
4	34272	Co Road B14/330 & Maple Avenue	Two-way stop	No
5	34001	US 69 & Co Road B14/330th Street	Other	No
6	152836	340 & 205th Avenue & Pilot Knob	Two-way stop	No
7	34104	Co Road B55/170 & E Jerusalem Street & Co Road R66/Taft Avenue	Two-way stop	No
8	33978	US 69 & Willow Street	Two-way stop	Yes
9	33976	US 18 & Co Road R70/Yale Avenue	Two-way stop	Yes
10	34112	Co Road R44/Nash Avenue & 200	One-way stop	No

Table 21 - Curve High-Crash Candidate Locations

Rank	GPS ID	Roadway	Nearest Town	Length (ft)	Radius (ft)	Identified as High-Risk Location
1	2273	225th Street	Britt	193	1221	No
2	2488	170th Street	Klemme	572	1697	No
3	2572	Valley Road	Forest City	366	679	No
4	2363	James Avenue	Britt	691	1272	Yes
5	2366	James Avenue	Britt	306	1339	No
6	2444	335th Street	Forest City	141	1061	Yes
7	2607	250th Street	Ventura	211	1044	No
8	2266	220th Street	Britt	218	1619	No
9	2546	River Road	Forest City	369	967	No
10	2491	170th Street	Klemme	514	1743	No

8. SUMMARY

The Hancock County SAP was developed to aid County leaders in identifying and prioritizing safety improvement projects for their paved, county-maintained roadways and to build a culture of safety within the county.

8.1. Overview of SAP Development Process

The SAP was developed through a seven-step process as outlined below.

- **Gather Background Information:** The Iowa SHSP was reviewed, and data was requested from the county to provide the location and presence of rumble strips, destination lighting, stop signs, and other pertinent safety improvements.
- **Data Collection:** A comprehensive GIS project database was developed utilizing the following databases as provided by Iowa DOT, the County, or collected as part of this project:
  - Crash
  - Roadway
  - Pavement management
  - Roadside hazard
  - Horizontal curve
  - County stop sign locations
  - Intersection
- **Data Analysis:** After development of the comprehensive GIS project database, county crash data was analyzed. Crashes were compared to the Iowa SHSP Safety Emphasis Areas and maps were prepared for the County as well as the PowerBI dashboard.
- **Countermeasure Selection:** A list of systemic safety improvement countermeasures was developed as well as list of safety topics and potential driver-related countermeasures, which were shared with County safety stakeholders for review.
- **Develop Projects for Inclusion into the SAP:** A risk factor ranking process was developed for segments, intersections, and curves, and risk factor scores were calculated for all the segments, intersections, and curves within Hancock County. After conducting the risk factor analysis, safety improvement recommendations were developed for the feature types and summarized in location-specific project sheets. These project sheets, detailing the recommended safety improvements at specific locations, were then provided to the County Engineer for review.
- **County Input:** A workshop was held with the County's safety stakeholders. At the workshop, driver-related countermeasures were reviewed and stakeholders discussed existing and proposed driver-related countermeasures. In addition, a workshop was held with the County Engineer to obtain input on the developed projects. Draft project sheets were reviewed at the workshop and the County Engineer provided input for additional safety countermeasures based on engineering judgment and site-specific knowledge.
- **Develop SAP:** An SAP was developed for Hancock County including a summary of the SAP process along with recommended safety projects for implementation by the County.

8.2. Recommended Improvements

The following sections summarize the engineering and driver-related countermeasures identified as part of this SAP that should be explored for implementation in the county over the next five to ten years.

8.2.1. Engineering Countermeasures

Systemic safety improvement projects were developed with input from the county for high-ranking roadway segments, intersections, and horizontal curves on Hancock County paved roads. Each project location is shown in **Figure 32**, and **Table 22** provides a cost summary of the recommended projects. Detailed information for each safety countermeasure is provided in **Section 6**, as well as in **Appendix B1**, **Appendix C1**, and **Appendix D1.** Detailed information for each project is provided in **Section 6**, as well as in project sheets in **Appendix B2, Appendix C2,** and **Appendix D2** for roadway segments, intersections, and horizontal curves, respectively. These sheets may require updating for funding applications in future years. The County Engineer may also make changes to the prepared project sheets based on local knowledge of the site, available funding, and/or specific needs.

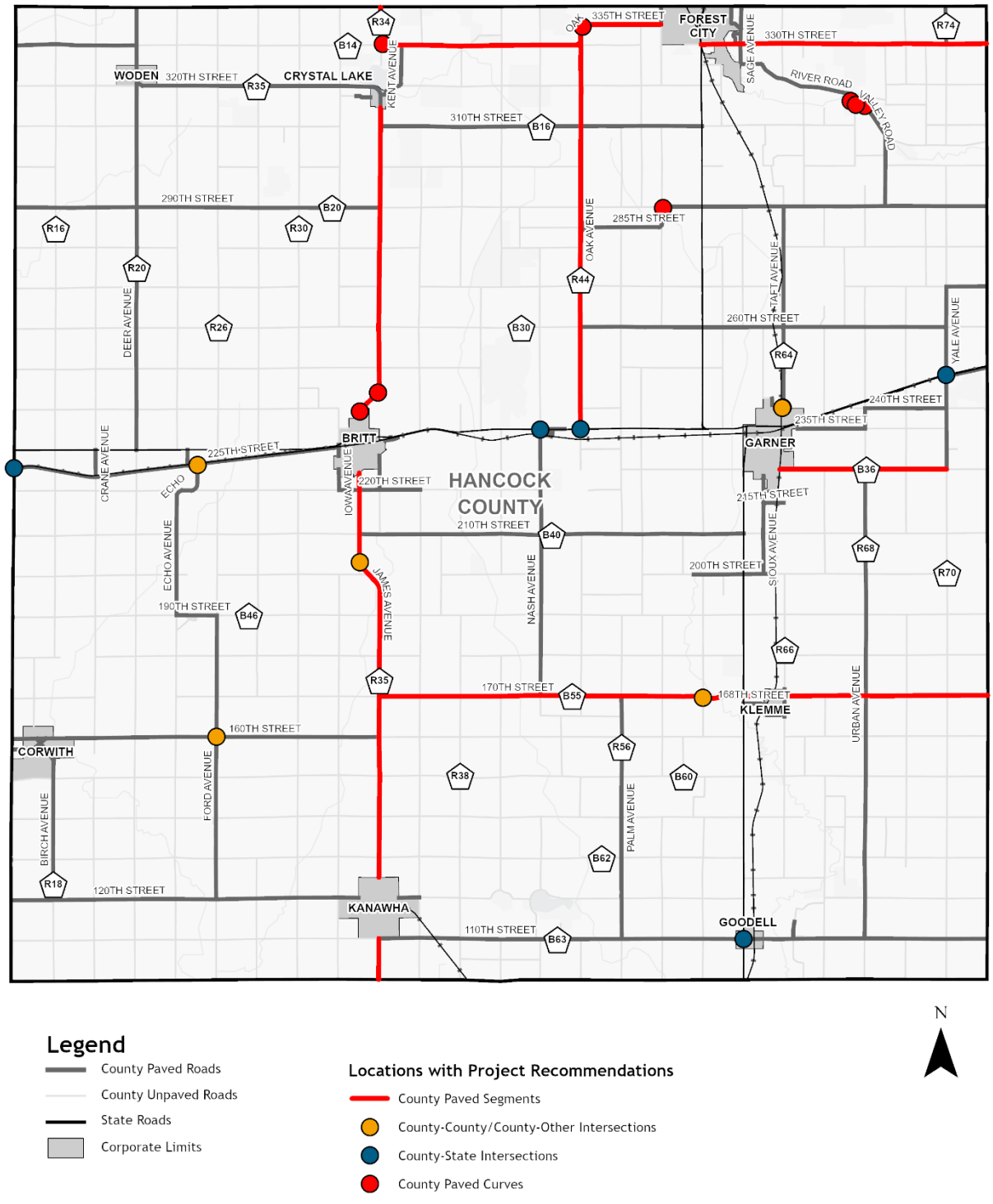


Figure 32 - Prioritized Project Locations

Table 22 - Engineering Countermeasure Cost Summary

Facility Type	Number of Locations	Estimated Project Cost
Segment	9	$18,628,000
Intersection	10	$362,000
Curve	9	$488,000
Total Improvement Costs	**29**	**$19,478,000**

While improvements were identified for the prioritized locations, low-cost countermeasures are recommended to be implemented for all paved roadway segments, intersections, and curves as funding becomes available. The countermeasure selection threshold tables (**Table 10** for segments, **Table 11** for intersections, and **Table 12** for curves) should be used to identify appropriate safety improvement recommendations for those locations.

8.2.2. Driver-Related Countermeasures

A workshop was conducted in Hancock County on Wednesday, October 16, 2024, to discuss driver-related crashes occurring in the county and to identify strategies aimed at improving driver behavior to enhance road safety. A summary of the workshop discussion is provided in **Section 6**. Based on these discussions, the status of implementing driver-related strategies in the county is summarized in **Table 23.** It is recommended that the county partner with all five Es of safety to implement countermeasures that are not currently underway/ongoing and look for opportunities to introduce additional countermeasures that are not currently being implemented.

Table 23 - County Driver-Related Countermeasures Summary

Countermeasure	Status
Speed Related	
Conduct targeted speed enforcement	Opportunity
Prosecute and impose sanctions on drivers not obeying school bus stop bars	Ongoing/Opportunity
Conduct education and awareness campaigns	Opportunity
Occupant Protection	
Conduct targeted enforcement of restraint use	Opportunity
Instruction in proper child restraint use	Opportunity
Check for proper child restraint use in all motorist encounters	Ongoing/Opportunity
Positive reinforcement	Completed in the Past
Conduct education and awareness campaigns	Opportunity
Younger Drivers	
Enforcement of minor school license and graduated driver's license laws	Underway/Ongoing
Additional training in schools	Ongoing/Opportunity
Conduct education awareness campaigns	Opportunity
Impairment Involved	
Conduct targeted OWI enforcement	Opportunity
Compliance checks for alcohol sales	Ongoing/Opportunity
Alternative transportation choices	Opportunity
Prosecute, impose sanctions on, and treat OWI offenders	Opportunity
Conduct education and awareness campaigns	Opportunity
Older Drivers	
Promote safe mobility choices	Ongoing/Opportunity
Encourage external reporting of at-risk drivers to licensing authorities	Underway/Ongoing
Conduct education and awareness campaigns	Opportunity
Distracted Driving	
Visibly enforce existing statutes to deter distracted driving	Opportunity
Agency policy for hands-free devices	Ongoing/Opportunity
Mobile simulator for distracted driving	Opportunity
Conduct education and awareness campaigns	Opportunity

8.3. Implementation

The SAP project aims to provide a document that is both practical and frequently referenced by the county for requesting funding and completing traffic safety improvement projects on county-maintained roads. The following outlines key opportunities that can be used to implement the recommendations included within this plan. ICEA staff is available to assist counties in identifying and pursuing funding opportunities.

- **SS4A Implementation Grant:** With the completion of this SAP, Hancock County is eligible to apply for additional funding through the SS4A program. An SS4A Implementation Grant provides federal funds to implement projects and strategies identified in an SAP to address roadway safety issues, including infrastructural, behavioral, and/or operational activities. The county should consider applying for an Implementation Grant to secure funding to implement the engineering projects and driver-related strategies recommended in this plan.
- **Iowa Transportation Funding Opportunities:** The county should leverage funding opportunities available through Iowa DOT funding programs such as HSIP-Local or TSIP, to implement the projects identified in this plan. The various funding opportunities are outlined in **Section 2.2**.
- **Five-Year Transportation Improvement Program:** The county should review projects within the five-year program and consider including safety recommendations from the project sheets into those projects, where applicable. In future cycles of the program, it is recommended that safety projects included on the project sheets are considered for inclusion.
- **Maintenance Activities:** Maintenance activities and upcoming design projects offer a great opportunity to incorporate safety countermeasures into already funded projects, often with minimal increases to the overall project cost. As such, it is recommended that when the county is designing projects and/or addressing a maintenance issue, the countermeasure selection thresholds (detailed in **Section 6.1.3**) are reviewed and countermeasures appropriate for the location are incorporated into the design. Doing so can help prioritize projects and emphasize safety in design and maintenance activities. In addition, the countermeasure information within this document should be used to provide instruction or education to maintenance crews about their ability to enhance safety in the county through their work.
- **Countywide Partnerships:** It is recommended that the County continue to foster cooperation with safety stakeholders and look for opportunities to improve and expand the implementation of driver-related countermeasures.

8.4. Next Steps

The county should continue its history of implementing safety improvement projects annually. Based on current funding levels, it is anticipated that many of the engineering improvements listed in this plan could be implemented within five to ten years, or sooner. Additionally, this SAP should be updated within five to ten years to reflect improvements that have been implemented, additional availability of roadway feature data, and changes in crash types and patterns.

APPENDIX A
COUNTY COMMITMENT PLEDGE

HANCOCK COUNTY PLEDGE

In this pledge, we formalize Hancock County's support of the strategies outlined in Iowa's Five-Year Strategic Highway Safety Plan (SHSP) 2024-2028 and the overall vision of Zero Fatalities on Iowa's public roadways. In addition, we reaffirm Hancock County's goal of a dramatic decrease in roadway fatalities and serious injuries by the years 2030 and 2050, respectively, as detailed in the resolution adopted in 2022 by our Board of Supervisors for participation in the Iowa County Engineers Association (ICEA) Safe Streets for All (SS4A) Grant Application. Hancock County is committed to implementing the safety strategies outlined in this Safety Action Plan (SAP), which will assist road users with staying safe while driving, walking, or riding in Hancock County. Hancock County is dedicated to measuring its progress towards these goals and providing quantitative metrics as we continue to take the necessary steps to improve safety on the county's roadways in order to realize our eventual goal of zero roadway fatalities and serious injuries by 2050.

Jeremy Purvis, P.E.

Hancock County Engineer

APPENDIX B1

SEGMENT SAFETY COUNTERMEASURES

COUNTY PAVED ROADWAY SEGMENT COUNTERMEASURES

This appendix summarizes the **segment** safety countermeasures for consideration and provides detailed descriptions for each countermeasure from both the risk factor analysis as well as the additional potential improvements listed on the back side of the project sheets.

Systematic Countermeasures

The countermeasures in this section were included in the risk factor analysis and recommended on the segment project sheets based on the criteria described in **Section 5.1.2.**

Conduct a Road Safety Assessment (RSA)

An RSA is a formal safety performance examination that reviews, in detail, the geometry of a roadway facility. As part of an RSA, an independent, multi-disciplinary team assesses the condition of a given roadway and provides short-, mid-, and long-term recommendations for safety improvements for all modes currently or planned to be provided by the facility. RSAs have been conducted throughout the United States and are generally accepted as a proactive, low-cost approach to improve safety. This countermeasure cost estimate does not include the cost of implementing the recommendations of the RSA.

Conduct Access Control Analysis

An access control analysis can aid in determining access management decisions along a corridor. This countermeasure is intended to provide additional information on a specific facility as to the most appropriate access control treatments. Consolidating driveways reduces the number of conflict points on a given roadway and concentrates access where through-drivers can expect and anticipate left and/or right-turning vehicles, thus improving safety. The cost estimate associated with this countermeasure does not include implementing the findings of the access control analysis.

New Pavement Markings

This safety countermeasure includes new groove-in centerline and edgeline retroreflective pavement markings. The updated markings can clarify and further delineate the segment or curve, reducing the risk of a lane departure crash. If the lanes were 12 feet or wider, new edgeline pavement markings of six inches were recommended; Research suggests that widening pavement markings from four to six inches in rural areas results in a CMF of 0.64 to 0.83. Otherwise, new four-inch pavement markings were recommended. Research suggests that installing new 4” pavement markings in rural areas results in a CMF of 0.61 to 0.74.

Increase Shoulder Width/Safety Edge

Constructing or increasing the width of an existing paved shoulder can reduce the potential for a severe crash as the result of a lane departure. CMFs associated with paving the shoulder in rural areas range from 0.75 to 0.99. At locations where paved shoulders are recommended, it is suggested that the County Engineer consider a minimum of a two-foot shoulder; however, based on right-of-way and roadway characteristics, the County Engineer may choose to install a wider shoulder. According to the FHWA, a Safety Edge is “a simple but effective solution that can help save lives by allowing drivers who drift off [roadways] to return to the road safely. Instead of a vertical drop-off, the Safety Edge shapes the edge of pavement to 30 degrees.” The installation of a Safety Edge has CMFs of 0.77 - 0.96 and is an FHWA Proven Safety Countermeasure.

Edgeline Rumble Strips

Edgeline rumble strips provide tactile and audible warning to a driver if they are beginning to depart the lane. This safety improvement has recorded CMFs in the range of 0.61 to 0.67. Depending on the conditions of the roadway, the County Engineer may choose to install rumble strips placed in the shoulder offset from the edgeline, or they may place the rumble strips on the edgeline and provide pavement markings over them, resulting in edgeline rumble stripes. For purposes of this document, both will be called rumble strips.

Centerline Rumble Strips

CMFs of 0.55 to 0.91 represent the safety benefit from the installation of centerline rumble strips. In Iowa, rumble strips placed in the centerline of the roadway generally have pavement markings over them. To be consistent with the Iowa DOT Design Manual 3C-5, centerline rumble strips will be referred to as rumble strips even though in circumstances they may technically be “rumble stripes”. This safety improvement provides an audible and tactile warning to drivers when crossing the centerline and can aid in the avoidance of some high-severity lane departure crashes.

Curve Chevron Advanced Curve Warning or Advisory Speed Signs

This countermeasure includes the installation of Curve Chevron signs—static or dynamic—and Advisory Speed Signs to improve driver awareness and navigation through horizontal curves. As identified by the Federal Highway Administration (FHWA), these treatments are Proven Safety Countermeasures that significantly reduce crash risks, particularly on rural and county roads. Chevron signs, especially when enhanced with retroreflective materials or deployed in sequential dynamic formats, can reduce fatal and injury crashes by up to 60 percent. Advisory Speed Signs complement these by clearly communicating safe travel speeds based on curve geometry, helping drivers adjust their behavior in advance. Together, these low-cost, high-impact interventions provide continuous visual guidance, and improve nighttime and low-visibility navigation.

Clear and Grub

This countermeasure includes clearing and grubbing the areas within the clear zone of the roadway (defined here as 15 feet on each side of the road). This safety countermeasure decreases the hazard of a run-off-the-road crash by reducing the number of obstructions a vehicle could impact after a lane departure. A 0.78 CMF has been documented as the distance from roadside features was increased.

For descriptions on curve countermeasures see **Appendix D1**.

Location Specific Countermeasures

Safety improvements not included on the first page of the roadway segment project sheet may still merit consideration at a specific location. There are a variety of other safety improvements that could be considered that were not included in the risk factor analysis due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed at road segments throughout the county. The following sections additional roadway segment safety improvements that could be considered appropriate by the county and that were included on the back side of the project sheets.

Flattening and Widening Foreslopes

This improvement includes flattening the foreslopes of the roadway edge from 2V:1H (typical) to 3V:1H to increase the ability of a driver after a lane departure to return to the roadway safely. CMFs for flattening side slopes are in the range of 0.9, while flattening to 4:1 or 6:1 are in the range of 0.58 to 0.71.

On-pavement Markings for Speed Control

This improvement includes installing in-lane pavement markings, including the speed limit, to reinforce the posted speed limit. On-pavement markings can serve as additional information and reminders to drivers of the posted speed limit and the importance of observing their speed. A CMF of 0.62 has been recorded for adding additional on-pavement markings.

Delineate Roadside Hazards with Retroreflective Markers

Retroreflective markers can be applied to roadside objects and trees, increasing the visibility of hazards, and helping delineate the roadway where minimal delineation may exist.

Guardrail

Installing guardrail can help redirect vehicles after a lane departure to remain on the roadway and avoid roadside hazards. CMFs in the range of 0.53 to 0.56 have been recorded for installing new guardrail along an embankment.

Post-Mounted Delineators

As stated in the MUTCD, “delineators are particularly beneficial at locations where the [roadway] alignment might be confusing or unexpected, such as at lane-reduction transitions and curves. Delineators are effective guidance devices at night and during adverse weather. An important advantage of delineators in certain locations is that they remain visible when the roadway is wet, or snow covered.” Providing post-mounted retroreflective delineators along the roadway can give additional information to drivers as to the location of the roadside edge and alignment. The CMF for installing post-mounted delineators in combination with edgelines and centerlines has been recorded at 0.55.

Retroreflective Strips on Chevron Signposts

This countermeasure involves the application of retroreflective strips directly onto the vertical posts of Chevron Alignment signs to enhance nighttime and low-visibility curve delineation. Retroreflective strips increase the visibility of signposts from a wider range of angles and distances, providing drivers with earlier and clearer recognition of horizontal curves. This added conspicuity is especially beneficial in dark or adverse weather conditions, where traditional signage may be less effective. As a low-cost enhancement, retroreflective post treatments support the Safe System Approach by reinforcing multiple layers of visual guidance, ultimately helping to reduce crash severity and improve overall roadway safety.

Transverse Rumble Strips Prior to Curves

This countermeasure involves the installation of transverse rumble strips—raised or grooved patterns placed across the travel lane in advance of horizontal curves—to alert drivers through sound and vibration. According to the Federal Highway Administration (FHWA), transverse rumble strips are an effective low-cost treatment for reducing vehicle speeds and enhancing driver alertness before entering curves, particularly in rural areas where roadway departure crashes are prevalent. These strips provide a tactile and audible warning that prompts drivers to reduce speed and focus attention, especially in conditions of low visibility or driver fatigue.

Their use has been associated with measurable reductions in speed-related crashes and improved compliance with advisory speeds.

Remove/Relocate Objects in Hazardous Locations

This countermeasure includes removing or relocating objects from within the clear zone of the roadside. This allows drivers who run off the road to potentially return to the road or have a less severe consequence when departing the roadway. A CMF of 0.62 is associated with this countermeasure.

Superelevation on Curves

This countermeasure involves adjusting the roadway's cross slope (superelevation) to help vehicles safely navigate horizontal curves by counteracting lateral acceleration. Proper superelevation design significantly improves vehicle stability and reduces the likelihood of roadway departure crashes, particularly on rural two-lane highways. Superelevation allows vehicles to maintain safer speeds through curves by aligning the road surface with the natural path of travel, thereby reducing side friction demand and the risk of skidding or rollover. Correcting the superelevation variance demonstrates a measurable reduction in crash frequency when curves are properly banked.

High Friction Surface Treatment (HFST) on Curves

This countermeasure involves applying a thin layer of durable, polish-resistant aggregate—typically calcined bauxite—bonded with a high-strength resin to the pavement surface at horizontal curves. HFST dramatically improves pavement friction, especially in wet or high-demand braking conditions, helping drivers maintain control and reduce stopping distances. Though curves make up only about 5 percent of U.S. roadway miles, they account for over 25 percent of fatal crashes, underscoring the need for targeted safety interventions. HFST has been shown to reduce injury and fatal crashes by approximately 50 percent. Its long service life, rapid installation, and minimal environmental impact make it a cost-effective solution for high-risk locations.

Speed Flashers on Chevron Signs

This countermeasure involves the installation of speed-activated flashing lights on chevron alignment signs to alert drivers approaching horizontal curves at unsafe speeds. These systems, known as Sequential Dynamic Curve Warning Systems (SDCWS), use solar-powered LEDs embedded in chevron signs that flash in sequence as a vehicle approaches, creating a dynamic visual cue that enhances driver awareness and encourages speed reduction. Field studies show that these systems can reduce mean operating speeds by up to 2.6 mph even 12 months after installation, with sustained speed reductions observed up to 24 months later. By providing real-time, speed-responsive feedback, these signs are particularly effective on rural two-lane highways where roadway departure crashes are common.

For descriptions on additional curve countermeasures see **Appendix D1**.

APPENDIX B2
SEGMENT PROJECT SHEETS

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 330TH STREET between HWY 69 and APPLE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

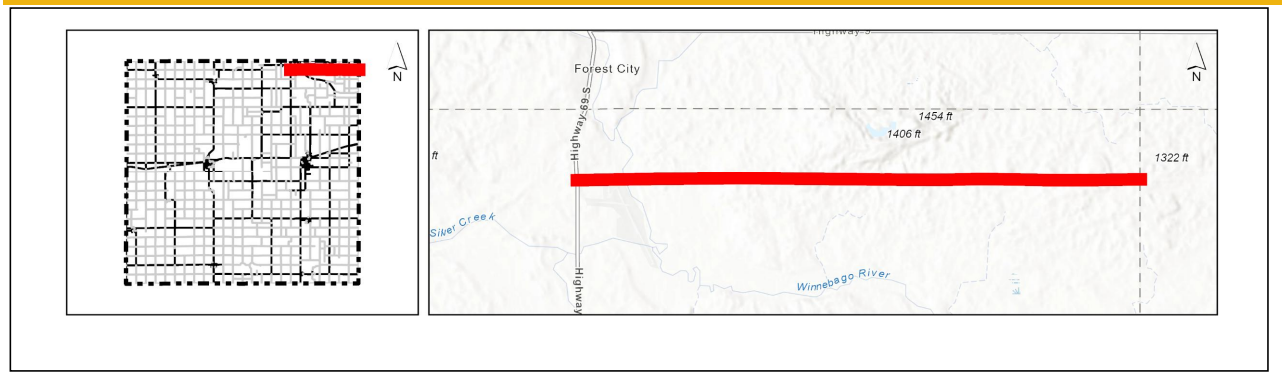
Road: **330TH STREET**
From: **HWY 69**
To: **APPLE AVE**
Length (miles): **6.95**

Project is within an Underserved Community?↑No

GPS ID: 3573

This segment does not contain high scoring intersections.
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	1,730	6
Pavement | Shoulder Width (ft)	22' | 6'	0
Potential Crash Reduction (PCR)	Negligible	0
Access Points per Mile	6.7	3
High Risk Curve Density/Mile	0.0	0
Avg. Pavement Condition (IRI)	85	0
Lane Departure Crashes	10	2
Total Risk Factor Points (21 max)		**11**

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', R≤1,000')	0
Curves with Chevrons	0

Crash Data, 2014-2023	
Total Crashes	24
K and A Crashes	0
Lane Departure Crashes	10
Lane Departure K and A Crashes	0
Total Crash Rate (per HMVMT)	59.1
K and A Crash Rate (per HMVMT)	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**6.95**	**MILE**	**$ 3,000**	**$ 20,850**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**6.95**	**MILE**	**$ 3,000**	**$ 20,850**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**6.95**	**MILE**	**$ 150,000**	**$ 1,042,500**
Install Edgeline Rumble Strips (Both Sides of Road)	**6.95**	**MILE**	**$ 5,000**	**$ 34,750**
Install Centerline Rumble Strips	**6.95**	**MILE**	**$ 2,000**	**$ 13,900**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**6.95**	**MILE**	**$ 30,000**	**$ 208,500**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 1,341,350

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 330TH STREET between HWY 69 and APPLE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3573

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)	**6.95**	**MILE**	**$ 85,000**	**$ 590,750**
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail	**10,560**	**FOOT**	**$ 80**	**$ 844,800**
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other:				
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 1,435,550
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 1,341,350
			Subtotal:	$ 2,776,900
			Mobilization: (% +/-)* 10%	$ 75,000
			Traffic Control: (% +/-) 5%	$ 139,020
			Contingency: (% +/-) 20%	$ 556,080
			Estimated Project Cost	**$ 3,547,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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. Kimley-Horn endeavored to research issues and constraints to the extent practical given the scope, budget, and schedule agreed to with the Client. The 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 July 2024.

End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: JAMES AVENUE between 100TH ST and 500 feet S of 7th St SW
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

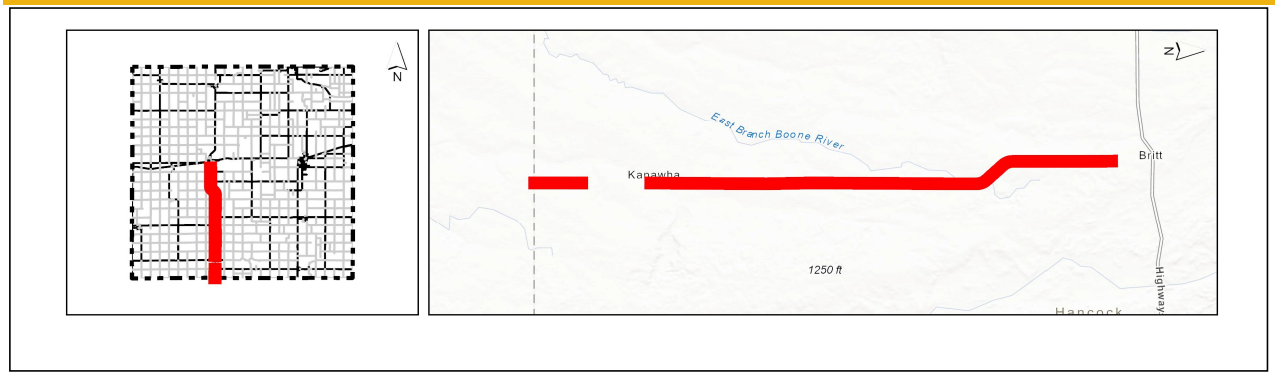
Road: **JAMES AVENUE**
From: **100TH ST**
To: **500 feet S of 7th St SW**
Length (miles): **11.14**

Project is within an Underserved Community?↑No

GPS ID: 3495-3496

This segment does not contain high scoring intersections.
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**910**	**6**
Pavement | Shoulder Width (ft)	**22' | 6'**	**0**
Potential Crash Reduction (PCR)	**Medium**	**1**
Access Points per Mile	**4.0**	**1**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**110**	**1**
Lane Departure Crashes	**1**	**2**
Total Risk Factor Points (21 max)		**11**

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', R≤1,000')	**0**
Curves with Chevrons	**0**

Crash Data, 2014-2023	
Total Crashes	**18**
K and A Crashes	**3**
Lane Departure Crashes	**14**
Lane Departure K and A Crashes	**2**
Total Crash Rate (per HMVMT)	**177.6**
K and A Crash Rate (per HMVMT)	**29.6**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**11.14**	**MILE**	**$ 3,000**	**$ 33,420**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**11.14**	**MILE**	**$ 3,000**	**$ 33,420**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**11.14**	**MILE**	**$ 5,000**	**$ 55,700**
Install Centerline Rumble Strips	**11.14**	**MILE**	**$ 2,000**	**$ 22,280**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**11.14**	**MILE**	**$ 30,000**	**$ 334,200**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 479,020

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan

Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: JAMES AVENUE between 100TH ST and 500 feet S of 7th St SW
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3495-3496

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**11.14**	**MILE**	**$ 150,000**	**$ 1,671,000**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 1,671,000
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 479,020
Subtotal:		$ 2,150,020
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 107,596
Contingency: (% +/-)	20%	$ 430,384
Estimated Project Cost		**$ 2,763,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 225TH STREET between Garner Corporate Limits and Co Rd R70/YALE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

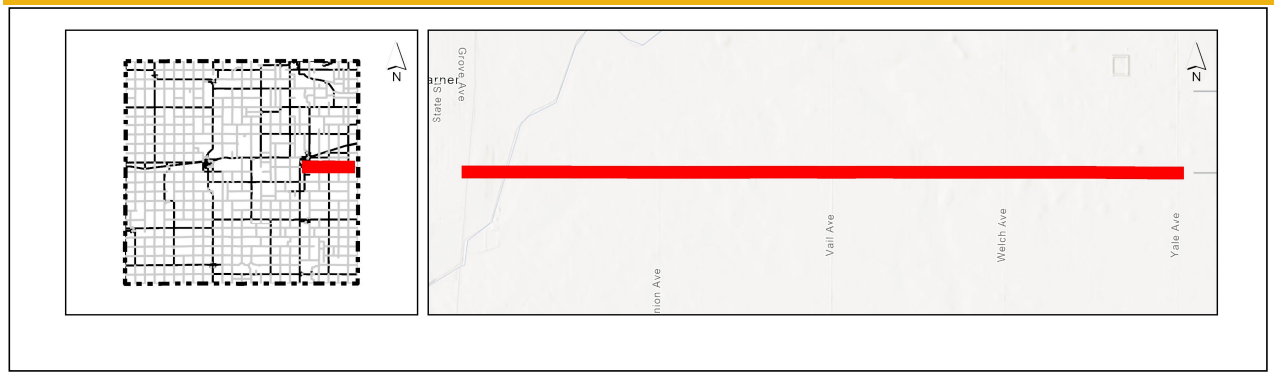
Road: **225TH STREET**
From: **Garner Corporate Limits**
To: **Co Rd R70/YALE AVE**
Length (miles): **4.10**

Project is within an Underserved Community?↑No

GPS ID: 3545-3546

This segment contains the following high scoring intersection: GPS ID 34134
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**870**	**6**
Pavement | Shoulder Width (ft)	**22' | 4'**	**0**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Access Points per Mile	**5.7**	**2**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**134**	**1**
Lane Departure Crashes	**2**	**2**
Total Risk Factor Points (21 max)		**11**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**4**
Speed Limit (mph)	**55**
Lane Width (ft)	**11**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Curves (L>100', R≤1,000')	**0**
Curves with Chevrons	**0**

Crash Data, 2014-2023	
Total Crashes	**4**
K and A Crashes	**0**
Lane Departure Crashes	**2**
Lane Departure K and A Crashes	**0**
Total Crash Rate (per HMVMT)	**71.8**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**4.10**	**MILE**	**$ 3,000**	**$ 12,300**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**4.10**	**MILE**	**$ 3,000**	**$ 12,300**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**4.10**	**MILE**	**$ 5,000**	**$ 20,500**
Install Centerline Rumble Strips	**4.10**	**MILE**	**$ 2,000**	**$ 8,200**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**4.10**	**MILE**	**$ 30,000**	**$ 123,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 176,300

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 225TH STREET between Garner Corporate Limits and Co Rd R70/YALE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3545-3546

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**4.1**	**MILE**	**$ 150,000**	**$ 615,000**
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 615,000
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 176,300
			Subtotal:	$ 791,300
			Mobilization: (% +/-)* 10%	$ 75,000
			Traffic Control: (% +/-) 5%	$ 39,740
			Contingency: (% +/-) 20%	$ 158,960
			Estimated Project Cost	**$ 1,065,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 330TH STREET between North County Line and Oak Ave
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

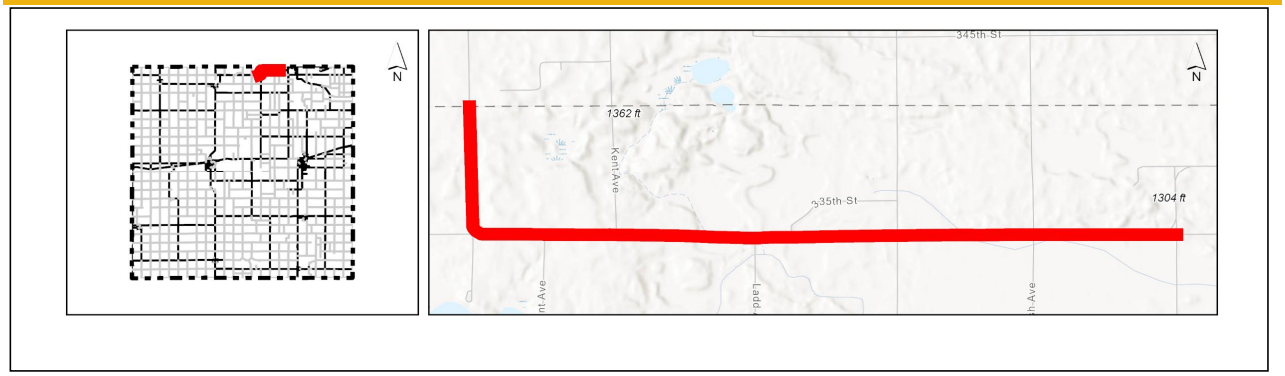
Road: **330TH STREET**
From: **North County Line**
To: **Oak Ave**
Length (miles): **5.83**

Project is within an Underserved Community?↑No

GPS ID: 3574

This segment does not contain high scoring intersections.
This segment contains the following high scoring curve: GPS ID 2368

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	770	6
Pavement | Shoulder Width (ft)	22' | 5'	0
Potential Crash Reduction (PCR)	Negligible	0
Access Points per Mile	3.8	2
High Risk Curve Density/Mile	0.2	1
Avg. Pavement Condition (IRI)	70	0
Lane Departure Crashes	10	2
Total Risk Factor Points (21 max)		**11**

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	5
Speed Limit (mph)	55
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Curves (L>100', R≤1,000')	1
Curves with Chevrons	1

Crash Data, 2014-2023	
Total Crashes	12
K and A Crashes	5
Lane Departure Crashes	10
Lane Departure K and A Crashes	5
Total Crash Rate (per HMVMT)	87.9
K and A Crash Rate (per HMVMT)	36.6

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**5.83**	**MILE**	**$ 3,000**	**$ 17,490**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**5.83**	**MILE**	**$ 3,000**	**$ 17,490**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**5.83**	**MILE**	**$ 5,000**	**$ 29,150**
Install Centerline Rumble Strips	**5.83**	**MILE**	**$ 2,000**	**$ 11,660**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)**	**5.83**	**MILE**	**$ 30,000**	**$ 174,900**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 251,690

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 11

Project Name: 330TH STREET between North County Line and Oak Ave
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3574

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**5.83**	**MILE**	**$ 150,000**	**$ 874,500**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 875,000
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 251,690
Subtotal:		$ 1,126,690
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 56,462
Contingency: (% +/-)	20%	$ 225,848
Estimated Project Cost		**$ 1,484,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: 335TH STREET between 330th St & Oak Ave and QUAIL AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

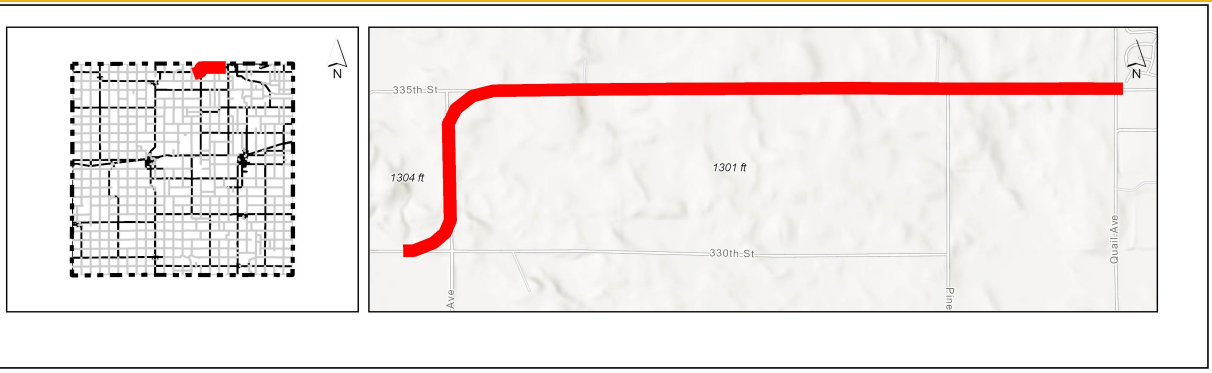
Road: **335TH STREET**
From: **330th St & Oak Ave**
To: **QUAIL AVE**
Length (miles): **2.50**

Project is within an Underserved Community?↑No

GPS ID: 3570

This segment does not contain high scoring intersections.
This segment contains the following high scoring curve: GPS ID 2444

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	1,110	6
Pavement | Shoulder Width (ft)	22' | 5'	0
Potential Crash Reduction (PCR)	Negligible	0
Access Points per Mile	4.4	2
High Risk Curve Density/Mile	0.0	0
Avg. Pavement Condition (IRI)	68	0
Lane Departure Crashes	8	2
Total Risk Factor Points (21 max)		**10**

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	5
Speed Limit (mph)	55
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Curves (L>100', R≤1,000')	0
Curves with Chevrons	1

Crash Data, 2014-2023	
Total Crashes	10
K and A Crashes	0
Lane Departure Crashes	8
Lane Departure K and A Crashes	0
Total Crash Rate (per HMVMT)	131.8
K and A Crash Rate (per HMVMT)	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**2.50**	**MILE**	**$ 3,000**	**$ 7,500**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**2.50**	**MILE**	**$ 3,000**	**$ 7,500**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**2.50**	**MILE**	**$ 150,000**	**$ 375,000**
Install Edgeline Rumble Strips (Both Sides of Road)	**2.50**	**MILE**	**$ 5,000**	**$ 12,500**
Install Centerline Rumble Strips	**2.50**	**MILE**	**$ 2,000**	**$ 5,000**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)**	**2.50**	**MILE**	**$ 30,000**	**$ 75,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 483,500

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: 335TH STREET between 330th St & Oak Ave and QUAIL AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

GPS ID: 3570

Opinion of Probable Cost (Additional Potential Improvements)

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 483,500
Subtotal:		$ 484,000
Mobilization: (% +/-)*	10%	$ 48,400
Traffic Control: (% +/-)	5%	$ 24,320
Contingency: (% +/-)	20%	$ 97,280
Estimated Project Cost		**$ 654,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: JAMES AVENUE between Britt Municipal Limit and Crystal Lake Municipal Limit
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

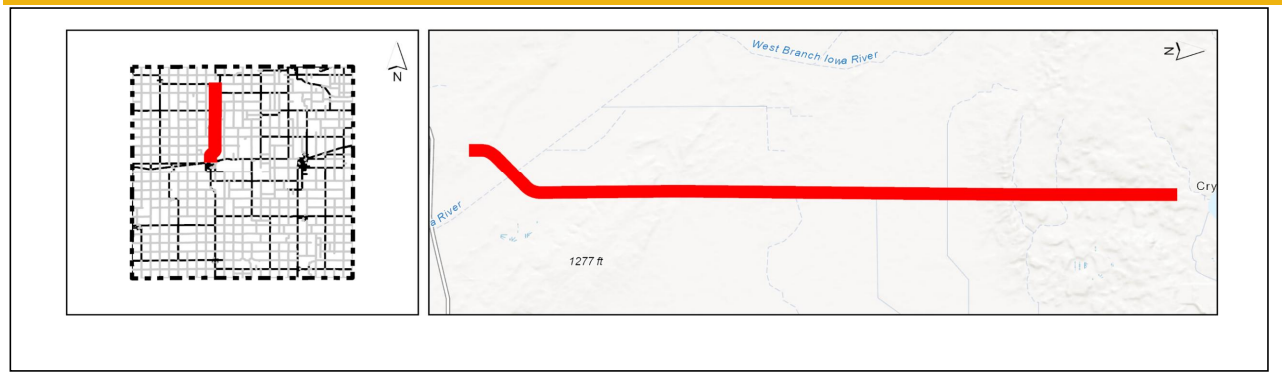
Road: **JAMES AVENUE**
From: **Britt Municipal Limit**
To: **Crystal Lake Municipal Limit**
Length (miles): **7.93**

Project is within an Underserved Community?↑No

GPS ID: 3497

This segment does not contain high scoring intersections.
This segment contains the following high scoring curves: GPS IDs 2353, 2363

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**800**	**6**
Pavement | Shoulder Width (ft)	**24' | 6'**	**0**
Potential Crash Reduction (PCR)	**Medium**	**1**
Access Points per Mile	**3.4**	**1**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**88**	**0**
Lane Departure Crashes	**7**	**2**
Total Risk Factor Points (21 max)		**10**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**6**
Speed Limit (mph)	**55**
Lane Width (ft)	**12**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Curves (L>100', R≤1,000')	**0**
Curves with Chevrons	**0**

Crash Data, 2014-2023	
Total Crashes	**8**
K and A Crashes	**1**
Lane Departure Crashes	**7**
Lane Departure K and A Crashes	**1**
Total Crash Rate (per HMVMT)	**36.1**
K and A Crash Rate (per HMVMT)	**4.5**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**7.93**	**MILE**	**$ 6,000**	**$ 47,580**
Install 4" Retroreflective Centerline	**7.93**	**MILE**	**$ 3,000**	**$ 23,790**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**7.93**	**MILE**	**$ 5,000**	**$ 39,650**
Install Centerline Rumble Strips	**7.93**	**MILE**	**$ 2,000**	**$ 15,860**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**7.93**	**MILE**	**$ 30,000**	**$ 237,900**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 364,780

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: JAMES AVENUE between Britt Municipal Limit and Crystal Lake Municipal Limit
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3497

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**7.93**	**MILE**	**$ 150,000**	**$ 1,189,500**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 1,189,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 364,780
Subtotal:		$ 1,554,280
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 77,744
Contingency: (% +/-)	20%	$ 310,976
Estimated Project Cost		**$ 2,018,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: 170TH STREET between HWY 69 and APPLE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

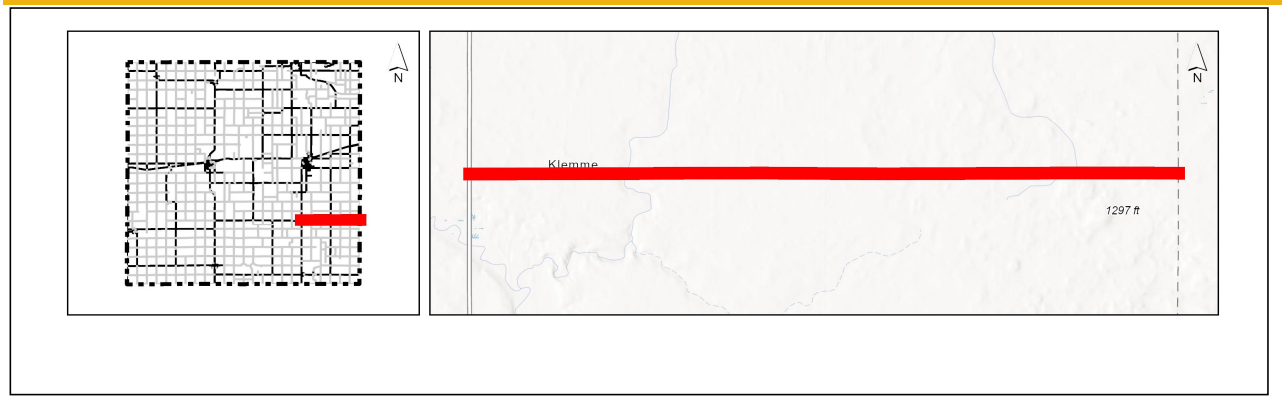
Road: **170TH STREET**
From: **HWY 69**
To: **APPLE AVE**
Length (miles): **6.13**

Project is within an Underserved Community?↑No

GPS ID: 3537

This segment does not contain high scoring intersections.
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**680**	**6**
Pavement | Shoulder Width (ft)	**22' | 6'**	**0**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Access Points per Mile	**4.8**	**2**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**72**	**0**
Lane Departure Crashes	**5**	**2**
Total Risk Factor Points (21 max)		**10**

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', R≤1,000')	**0**
Curves with Chevrons	**0**

Crash Data, 2014-2023	
Total Crashes	**9**
K and A Crashes	**4**
Lane Departure Crashes	**5**
Lane Departure K and A Crashes	**2**
Total Crash Rate (per HMVMT)	**72.7**
K and A Crash Rate (per HMVMT)	**32.3**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**6.13**	**MILE**	**$ 3,000**	**$ 18,390**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**6.13**	**MILE**	**$ 3,000**	**$ 18,390**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**6.13**	**MILE**	**$ 5,000**	**$ 30,650**
Install Centerline Rumble Strips	**6.13**	**MILE**	**$ 2,000**	**$ 12,260**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**6.13**	**MILE**	**$ 30,000**	**$ 183,900**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 263,590

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: 170TH STREET between HWY 69 and APPLE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

GPS ID: 3537

Opinion of Probable Cost (Additional Potential Improvements)

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**6.13**	**MILE**	**$ 150,000**	**$ 919,500**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 919,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 263,590
Subtotal:		$ 1,183,090
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 59,182
Contingency: (% +/-)	20%	$ 236,728
Estimated Project Cost		**$ 1,554,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: OAK AVENUE between US 18 and 355th St
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

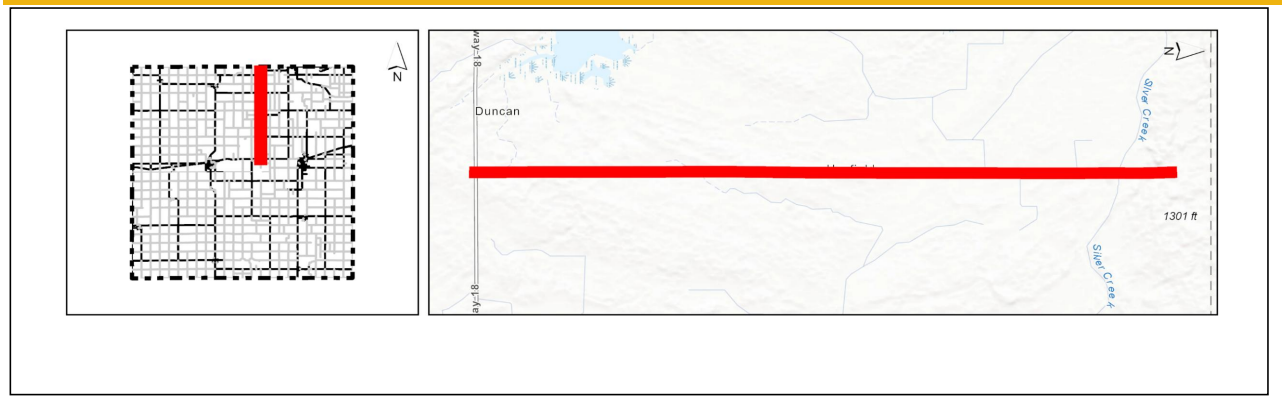
Road: **OAK AVENUE**
From: **US 18**
To: **355th St**
Length (miles): **9.83**

Project is within an Underserved Community?↑No

GPS ID: 3505

This segment contains the following high scoring intersection: GPS ID 33964
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**540**	**5**
Pavement | Shoulder Width (ft)	**22' | 6'**	**0**
Potential Crash Reduction (PCR)	**Medium**	**1**
Access Points per Mile	**5.1**	**2**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**69**	**0**
Lane Departure Crashes	**7**	**2**
Total Risk Factor Points (21 max)		**10**

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', R≤1,000')	**0**
Curves with Chevrons	**0**

Crash Data, 2014-2023	
Total Crashes	**17**
K and A Crashes	**3**
Lane Departure Crashes	**7**
Lane Departure K and A Crashes	**1**
Total Crash Rate (per HMVMT)	**88.2**
K and A Crash Rate (per HMVMT)	**15.6**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**9.83**	**MILE**	**$ 3,000**	**$ 29,490**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**9.83**	**MILE**	**$ 3,000**	**$ 29,490**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**9.83**	**MILE**	**$ 5,000**	**$ 49,150**
Install Centerline Rumble Strips	**9.83**	**MILE**	**$ 2,000**	**$ 19,660**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)**	**9.83**	**MILE**	**$ 30,000**	**$ 294,900**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 422,690

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 10

Project Name: OAK AVENUE between US 18 and 355th St
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3505

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts		CURVE	$ 500	$ -
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**9.83**	**MILE**	**$ 150,000**	**$ 1,474,500**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 1,474,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 422,690
Subtotal:		$ 1,897,190
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 94,962
Contingency: (% +/-)	20%	$ 379,848
Estimated Project Cost		**$ 2,447,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 9

Project Name: 170TH STREET between James Ave and HWY 69
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

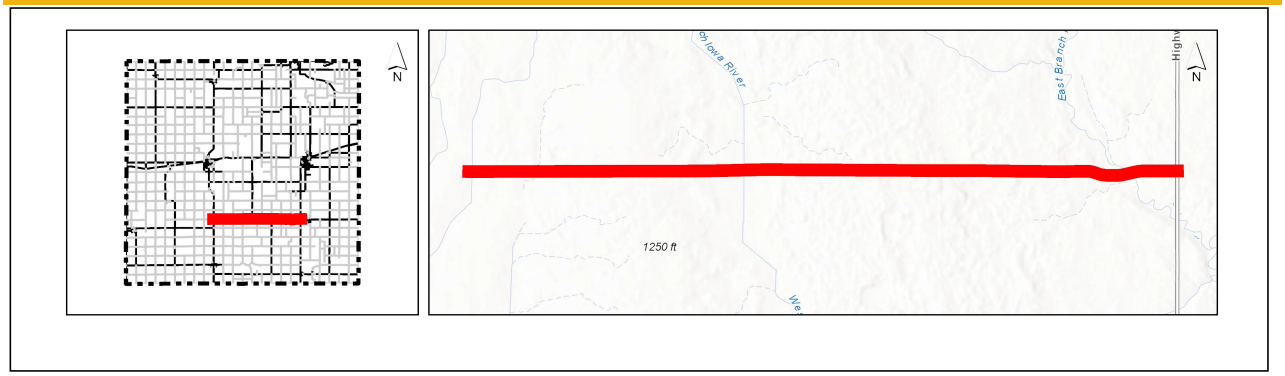
Road: **170TH STREET**
From: **James Ave**
To: **HWY 69**
Length (miles): **9.00**

Project is within an Underserved Community?↑No

GPS ID: 3536

This segment contains the following high scoring intersection: GPS ID 34127
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**600**	**5**
Pavement | Shoulder Width (ft)	**22' | 6'**	**0**
Potential Crash Reduction (PCR)	**High**	**2**
Access Points per Mile	**2.2**	**0**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**75**	**0**
Lane Departure Crashes	**10**	**2**
Total Risk Factor Points (21 max)		**9**

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', R≤1,000')	**0**
Curves with Chevrons	**3**

Crash Data, 2014-2023	
Total Crashes	**15**
K and A Crashes	**1**
Lane Departure Crashes	**10**
Lane Departure K and A Crashes	**1**
Total Crash Rate (per HMVMT)	**72.0**
K and A Crash Rate (per HMVMT)	**4.8**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**9.00**	**MILE**	**$ 3,000**	**$ 27,000**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**9.00**	**MILE**	**$ 3,000**	**$ 27,000**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**9.00**	**MILE**	**$ 5,000**	**$ 45,000**
Install Centerline Rumble Strips	**9.00**	**MILE**	**$ 2,000**	**$ 18,000**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**3**	**CURVE**	**$ 1,000**	**$ 3,000**
Clear and Grub (15 ft Both Sides of Road)**	**9.00**	**MILE**	**$ 30,000**	**$ 270,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 390,000

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 9

Project Name: 170TH STREET between James Ave and HWY 69
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 6/25/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3536

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts	**3**	**CURVE**	**$ 500**	**$ 1,500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 3' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**9**	**MILE**	**$ 225,000**	**$ 2,025,000**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 2,026,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 390,000
Subtotal:		$ 2,416,500
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 120,900
Contingency: (% +/-)	20%	$ 483,600
Estimated Project Cost		**$ 3,096,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

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End of Project Description

Back Page

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 9

Project Name: 170TH STREET between James Ave and HWY 69
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Location Description

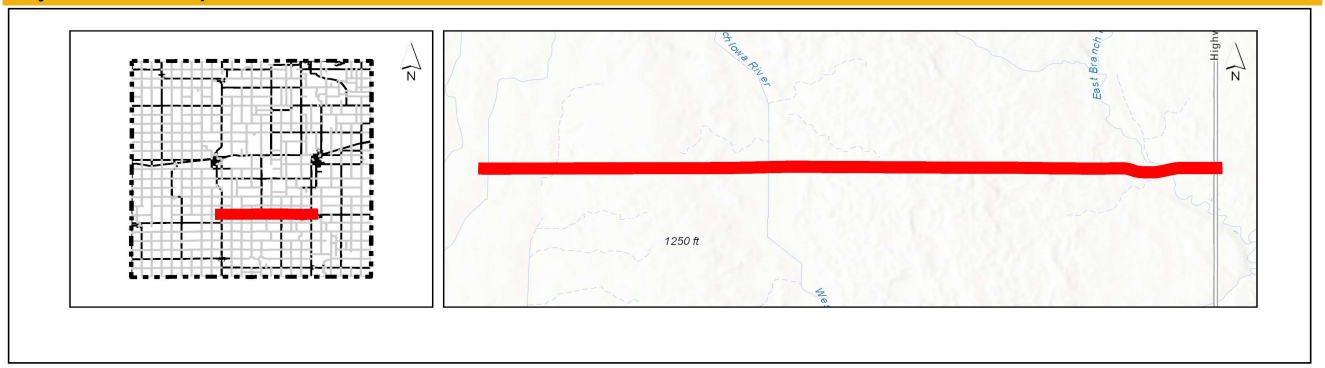
Road: **170TH STREET**
From: **James Ave**
To: **HWY 69**
Length (miles): **9.00**

Project is within an Underserved Community?†: No

GPS ID: 3536

This segment contains the following high scoring intersection: GPS ID 34127
This segment does not contain high scoring curves.

Project Location Maps



Segment Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**600**	**5**
Pavement | Shoulder Width (ft)	**22' | 6'**	**0**
Potential Crash Reduction (PCR)	**High**	**2**
Access Points per Mile	**2.2**	**0**
High Risk Curve Density/Mile	**0.0**	**0**
Avg. Pavement Condition (IRI)	**75**	**0**
Lane Departure Crashes	**10**	**2**
Total Risk Factor Points (21 max)		**9**

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', R≤1,000')	**0**
Curves with Chevrons	**3**

Crash Data, 2014-2023	
Total Crashes	**15**
K and A Crashes	**1**
Lane Departure Crashes	**10**
Lane Departure K and A Crashes	**1**
Total Crash Rate (per HMVMT)	**72.0**
K and A Crash Rate (per HMVMT)	**4.8**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Conduct Road Safety Audit (RSA)	0	EA	$ 40,000	$ -
Conduct Access Control Analysis	0	EA	$ 30,000	$ -
Install 4" Retroreflective Edgeline (Both Sides of Road)	**9.00**	**MILE**	**$ 3,000**	**$ 27,000**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**9.00**	**MILE**	**$ 3,000**	**$ 27,000**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**9.00**	**MILE**	**$ 5,000**	**$ 45,000**
Install Centerline Rumble Strips	**9.00**	**MILE**	**$ 2,000**	**$ 18,000**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**3**	**CURVE**	**$ 1,000**	**$ 3,000**
Clear and Grub (15 ft Both Sides of Road)**	**9.00**	**MILE**	**$ 30,000**	**$ 270,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 390,000

Continued on back of this page.

** Unit price varies based on average roadside risk score.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Roadway Segment Improvements

Risk Factor Points: 9

Project Name: 170TH STREET between James Ave and HWY 69
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

SEGMENT

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 3536

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Flatten and Widen Foreslopes (both sides of road)		MILE	$ 85,000	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Delineate Roadside Hazard (tree or utility pole) with Retroreflective Tape		EA	$ 100	$ -
Guardrail		FOOT	$ 80	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Retroreflective Strips on Chevron Sign Posts	**3**	**CURVE**	**$ 500**	**$ 1,500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Remove/Relocate Object in Hazardous Location		EA	$ 1,000	$ -
Superelevation Correction on Curve		CURVE	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 50,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Other: Pave 3' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**9**	**MILE**	**$ 225,000**	**$ 2,025,000**
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 2,026,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 390,000
Subtotal:		$ 2,416,500
Mobilization: (% +/-)*	10%	$ 75,000
Traffic Control: (% +/-)	5%	$ 120,900
Contingency: (% +/-)	20%	$ 483,600
Estimated Project Cost		**$ 3,096,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

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APPENDIX B3

SEGMENT RISK FACTOR RANKING RESULTS

Hancock County
Safety Action Plan
Segment Risk Factor Points

GPS ID	Paved Road	Beginning of Segment	End of Segment	Length (mi)	Risk Factor Points	Average Daily Traffic (Value)	Average Daily Traffic (Points)	Pavement Width (ft) (Value)	Shoulder Width (ft) (Value)	Pavement and Shoulder Width (ft) (Points)	Pavement Condition (Value)	Pavement Condition (Points)	KABCO PCR Level (Value)	KABCO PCR Level (Points)	Access Density (points/mile) (Value)	Access Density (points/mile) (Points)	Curve Density (Value)	Curve Density (Points)	Lane Departure Crashes (Value)	Lane Departure Crashes (Points)	Total Crashes	K and A	Paved Shoulder	Speed Limit	Number of Lanes	Edgeline Rumble Strips	Centerline Rumble Strips
3514	SAGE DRIVE	SAGE AVE	340th St	0.72	**14**	640	**5**	22	1	**2**	99	**1**	Negligible	**0**	37.6	**3**	2.79	**1**	1	**2**	1	0	No	55	2	No	No
3495	JAMES AVENUE	100TH ST	Co Rd B63/110	1.01	**11**	910	**6**	22	6	**0**	110	**1**	Medium	**1**	4.0	**1**	0.00	**0**	1	**2**	4	1	No	55	2	No	No
3545	225TH STREET	Jewel St	Vail Ave	1.75	**11**	870	**6**	22	4	**0**	134	**1**	Negligible	**0**	5.7	**2**	0.00	**0**	2	**2**	4	0	No	55	2	No	No
3573	330TH STREET	HWY 69	APPLE AVE	6.43	**11**	1,730	**6**	22	6	**0**	85	**0**	Negligible	**0**	6.7	**3**	0.00	**0**	10	**2**	24	0	No	55	2	No	No
3574	330TH STREET	North County Line	Oak Ave	5.83	**11**	772	**6**	22	5	**0**	70	**0**	Negligible	**0**	3.8	**2**	0.21	**1**	10	**2**	12	5	No	55	2	No	No
3496	JAMES AVENUE	0.3 miles S of N Sunset St	500 feet S of 7th St SW	10.13	**10**	1,234	**6**	24	6	**0**	68	**0**	Medium	**1**	3.8	**1**	0.00	**0**	13	**2**	14	2	No	55	2	No	No
3497	JAMES AVENUE	Britt Municipal Limit	Crystal Lake Municipal Limit	7.93	**10**	800	**6**	24	6	**0**	88	**0**	Medium	**1**	3.4	**1**	0.00	**0**	7	**2**	8	1	No	55	2	No	No
3505	OAK AVENUE	US 18	355th St	9.83	**10**	537	**5**	22	6	**0**	69	**0**	Medium	**1**	5.1	**2**	0.00	**0**	7	**2**	17	3	No	55	2	No	No
3516	SAGE AVENUE	0.5 miles of Co Rd R70/SAGE AVE	SAGE AVE	1.42	**10**	344	**3**	22	6	**0**	133	**1**	Medium	**1**	14.1	**3**	0.00	**0**	3	**2**	3	0	No	55	2	No	No
3537	170TH STREET	TAFT AVE	APPLE AVE	5.00	**10**	678	**6**	22	6	**0**	72	**0**	Negligible	**0**	4.8	**2**	0.00	**0**	5	**2**	9	4	No	55	2	No	No
3546	225TH STREET	Co Rd R68/VAIL AVE	Co Rd R70/YALE AVE	2.00	**10**	530	**5**	22	8	**0**	142	**1**	Negligible	**0**	4.5	**2**	0.00	**0**	1	**2**	2	0	No	55	2	No	No
3570	335TH STREET	330th St & Oak Ave	QUAIL AVE	2.50	**10**	1,110	**6**	22	5	**0**	68	**0**	Negligible	**0**	4.4	**2**	0.00	**0**	8	**2**	10	0	No	55	2	No	No
3501	KENT AVENUE	200 feet N of 320th St	330th St	0.96	**9**	850	**6**	22	4	**0**	60	**0**	Medium	**1**	2.1	**0**	0.00	**0**	4	**2**	5	1	No	55	2	No	No
3519	TAFT AVENUE	400 feet of N STATE AVE & TOUCHSTONE ENERGY DR & SIOUX AVE	Co Rd R64/TAFT AVE	5.15	**9**	485	**4**	22	5	**0**	53	**0**	Negligible	**0**	6.8	**3**	0.00	**0**	4	**2**	5	0	No	55	2	No	No
3532	1ST STREET	IA 17	1ST ST/JAY ST	0.92	**9**	268	**3**	22	4	**0**	147	**1**	Negligible	**0**	37.9	**3**	0.00	**0**	3	**2**	6	0	No	45	2	No	No
3536	170TH STREET	James Ave	800 feet W of N Railroad St	9.48	**9**	602	**5**	22	6	**0**	75	**0**	High	**2**	2.2	**0**	0.00	**0**	10	**2**	15	1	No	55	2	No	No
3539	200TH STREET	1200 feet of RAKE AVE	400 feet of SIOUX AVE	1.80	**9**	322	**3**	34	6	**0**	141	**1**	Negligible	**0**	6.1	**3**	0.00	**0**	1	**2**	2	0	No	55	2	No	No
3554	US HIGHWAY 18 FRONTAGE ROAD	900 FEET W OF NASH AVE	2000 feet E of Nation Ave	0.77	**9**	47	**0**	20	2	**2**	316	**2**	Negligible	**0**	24.6	**3**	0.00	**0**	4	**2**	11	1	No	55	2	No	No
3561	290TH STREET	Co Rd B20/QUAIL AVE/290	APPLE AVE	7.93	**9**	353	**3**	22	4	**0**	64	**0**	Medium	**1**	5.9	**2**	0.13	**1**	6	**2**	9	1	No	55	2	No	No
3563	310TH STREET	Co Rd R44/OAK AVE	US 69	2.97	**9**	530	**5**	22	5	**0**	75	**0**	Negligible	**0**	5.0	**2**	0.00	**0**	3	**2**	12	2	No	55	2	No	No
3576	340TH STREET	SAGE DR	205TH AVE & PILOT KNOB	2.75	**9**	280	**3**	22	5	**0**	107	**1**	Negligible	**0**	11.6	**3**	0.00	**0**	3	**2**	3	1	Yes	55	2	No	No
3481	CRANE AVENUE	CRANE AVE	Crane Ave	0.67	**8**	50	**0**	22	1	**2**	134	**1**	Negligible	**0**	7.5	**3**	0.00	**0**	1	**2**	1	0	No	55	2	No	No
3518	SIOUX AVENUE	SIOUX AVE	W HENSCHEN ST	2.41	**8**	234	**2**	22	4	**0**	117	**1**	Negligible	**0**	9.1	**3**	0.00	**0**	2	**2**	4	0	No	55	2	No	No
3527	YALE AVENUE	Co Rd R70/YALE AVE	270	4.49	**8**	430	**4**	22	7	**0**	104	**1**	Negligible	**0**	3.8	**1**	0.00	**0**	3	**2**	7	1	No	55	2	No	No
3535	168TH STREET	168TH ST	800 feet of S FRONT ST	0.51	**8**	590	**5**	22	3	**0**	156	**1**	Negligible	**0**	5.9	**2**	0.00	**0**	0	**0**	0	0	No	45	2	No	No
3556	250TH STREET	250	250TH ST	1.03	**8**	460	**4**	21	5	**0**	134	**1**	Negligible	**0**	3.9	**1**	0.00	**0**	4	**2**	6	0	No	55	2	No	No
3565	RIVER ROAD	0.6 miles of TAFT AVE	Co Rd R70/VALLEY RD	2.36	**8**	190	**1**	22	4	**0**	120	**1**	Negligible	**0**	8.5	**3**	1.27	**1**	1	**2**	3	0	No	55	2	No	No
3482	DEER AVENUE	500 feet of 1ST AVE	340	1.42	**7**	530	**5**	22	5	**0**	50	**0**	Negligible	**0**	2.8	**0**	0.00	**0**	6	**2**	7	0	No	55	2	No	No
3523	VALLEY ROAD	Co Rd R70/VAN AVE	Co Rd R70/VALLEY RD	3.20	**7**	190	**1**	26	1	**2**	65	**0**	Negligible	**0**	4.4	**1**	1.25	**1**	2	**2**	2	0	No	55	2	No	No
3529	110TH STREET	Co Rd R35/JAMES AVE & S MAIN ST	1000 feet of WILLOW ST	8.78	**7**	449	**4**	22	6	**0**	70	**0**	Negligible	**0**	3.4	**1**	0.00	**0**	6	**2**	11	0	No	55	2	No	No
3531	120TH STREET	120 St	0.3 miles of N WALNUT ST	8.54	**7**	455	**4**	22	6	**0**	70	**0**	Negligible	**0**	3.5	**1**	0.00	**0**	7	**2**	10	0	No	55	2	No	No
3553	235TH STREET	400 feet of HIGHLAND PL	235	1.66	**7**	200	**2**	21	4	**0**	119	**1**	Negligible	**0**	6.0	**2**	0.00	**0**	1	**2**	4	0	No	55	2	No	No
3555	240TH STREET	240	240	2.00	**7**	200	**2**	21	5	**0**	145	**1**	Negligible	**0**	6.0	**2**	0.00	**0**	2	**2**	3	0	No	55	2	No	No
3568	320TH STREET	300 feet of HOWARD AVE	0.3 miles of 2ND PL N	5.60	**7**	589	**5**	24	6	**0**	71	**0**	Negligible	**0**	2.9	**0**	0.00	**0**	2	**2**	3	0	No	55	2	No	No
3483	DEER AVENUE	R20/Deer Ave	320	8.97	**6**	417	**4**	22	3	**0**	46	**0**	Negligible	**0**	2.9	**0**	0.00	**0**	11	**2**	16	1	No	55	2	No	No
3494	JAMES AVENUE	Co Rd R34/330	0.9 miles of Co Rd R34/330	0.87	**6**	490	**4**	22	4	**0**	74	**0**	Negligible	**0**	4.6	**2**	0.00	**0**	0	**0**	1	0	No	55	2	No	No
3502	NASH AVENUE	Co Rd R44/NASH AVE	Co Rd R44/NASH AVE & NO NAME	6.55	**6**	242	**2**	22	4	**0**	92	**0**	Negligible	**0**	4.4	**2**	0.00	**0**	1	**2**	4	1	No	55	2	No	No
3543	220TH STREET	IOWA AVE	KENT AVE	1.99	**6**	197	**1**	22	5	**0**	127	**1**	Negligible	**0**	6.0	**2**	0.00	**0**	4	**2**	4	1	No	55	2	No	No
3547	225TH STREET	225 & Old 18	IOWA AVE	8.05	**6**	377	**3**	20	6	**0**	130	**1**	Negligible	**0**	3.4	**0**	0.00	**0**	12	**2**	20	3	No	55	2	No	No
3557	260TH STREET	Co Rd R44/OAK AVE	Co Rd R70/YALE AVE	8.99	**6**	202	**2**	22	5	**0**	112	**1**	Negligible	**0**	4.2	**1**	0.00	**0**	4	**2**	6	0	No	55	2	No	No
3564	310TH STREET	Co Rd R35/JAMES AVE	Co Rd R44/OAK AVE	4.93	**6**	470	**4**	22	4	**0**	78	**0**	Negligible	**0**	3.2	**0**	0.00	**0**	5	**2**	9	2	No	55	2	No	No
3480	BIRCH AVENUE	Co Rd R18/BIRCH AVE	200 feet of ELM ST	3.49	**5**	241	**2**	22	4	**0**	66	**0**	Negligible	**0**	4.3	**1**	0.00	**0**	2	**2**	6	1	No	55	2	No	No
3498	JEWEL AVENUE	JEWEL AVE	2ND ST SE	0.85	**5**	226	**2**	22	4	**0**	67	**0**	Negligible	**0**	24.8	**3**	0.00	**0**	0	**0**	0	0	No	55	2	No	No
3525	URBAN AVENUE	Co Rd R68/VAIL AVE	Co Rd R68/VAIL AVE	11.55	**5**	203	**2**	22	3	**0**	106	**1**	Negligible	**0**	2.1	**0**	0.00	**0**	6	**2**	11	2	No	55	2	No	No
3526	YALE AVENUE	Co Rd R74/YALE AVE	340	0.93	**5**	190	**1**	22	6	**0**	79	**0**	Negligible	**0**	5.4	**2**	0.00	**0**	1	**2**	3	0	No	55	2	No	No
3534	160TH STREET	900 feet of STANDRING ST	Co Rd R35/JAMES AVE	8.00	**5**	315	**3**	22	6	**0**	65	**0**	Negligible	**0**	2.9	**0**	0.00	**0**	3	**2**	6	1	No	55	2	No	No
3540	210TH STREET	Co Rd R35/JAMES AVE	0.5 RD B40/210TH ST	9.44	**5**	217	**2**	22	5	**0**	102	**1**	Negligible	**0**	3.3	**0**	0.00	**0**	2	**2**	4	0	No	55	2	No	No
3541	215TH STREET	215	0.5 miles of E CARDINAL ST	0.51	**5**	50	**0**	22	3	**0**	126	**1**	Negligible	**0**	7.8	**3**	1.96	**1**	0	**0**	0	0	No	45	2	No	No
3571	330TH STREET	AMES AVE	DEER AVE	2.97	**5**	360	**3**	22	4	**0**	46	**0**	Negligible	**0**	2.0	**0**	0.00	**0**	5	**2**	6	0	No	55	2	No	No
3489	FORD AVENUE	Co Rd R26/FORD AVE	Co Rd R26/FORD AVE	6.99	**4**	104	**0**	22	6	**0**	116	**1**	Negligible	**0**	3.7	**1**	0.00	**0**	2	**2**	4	1	No	55	2	No	No
3528	110TH STREET	1100 feet of 4TH ST	APPLE AVE	5.50	**4**	348	**3**	22	6	**0**	61	**0**	Negligible	**0**	3.5	**1**	0.00	**0**	1	**0**	1	0	No	55	2	No	No
3538	190TH STREET	Co Rd R26/ECHO AVE	Co Rd R26/FORD AVE	0.99	**4**	110	**0**	22	6	**0**	120	**1**	Negligible	**0**	10.1	**3**	0.00	**0**	0	**0**	0	0	No	55	2	No	No
3560	285TH STREET	Co Rd R44/OAK AVE	Co Rd B20/285	1.93	**4**	130	**1**	22	6	**0**	59	**0**	Negligible	**0**	8.8	**3**	0.00	**0**	0	**0**	0	0	No	55	2	No	No
3562	290TH STREET	1 miles of AMES AVE	Co Rd R35/JAMES AVE	8.95	**4**	170	**1**	22	5	**0**	108	**1**	Negligible	**0**	2.9	**0**	0.00	**0**	2	**2**	2	0	No	55	2	No	No
3569	325TH STREET	0.5 miles of Co Rd R70/SAGE AVE	0.6 miles of TAFT AVE	0.50	**4**	190	**1**	22	4	**0**	150	**1**	Negligible	**0**	0.0	**0**	3.98	**2**	0	**0**	0	0	No	55	2	No	No
3479	AMES AVENUE	AMES AVE	AMES AVE/250TH AVE	0.96	**2**	45	**0**	22	6	**0**	118	**1**	Negligible	**0**	4.2	**1**	0.00	**0**	0	**0**	0	0	No	55	2	No	No
3485	ECHO AVENUE	Co Rd R26/ECHO AVE	Co Rd R26/ECHO AVE	2.95	**1**	110	**0**	22	6	**0**	115	**1**	Negligible	**0**	2.4	**0**	0.00	**0**	0	**0**	1	0	No	55	2	No	No
3558	270TH STREET	270	APPLE AVE	1.00	**1**	100	**0**	20	4	**0**	67	**0**	Negligible	**0**	4.0	**1**	0.00	**0**	0	**0**	0	0	No	55	2	No	No
3509	PALM AVENUE	Co Rd R56/PALM AVE	Co Rd R56/PALM AVE	5.98	**0**	120	**0**	22	6	**0**	92	**0**	Negligible	**0**	3.3	**0**	0.00	**0**	0	**0**	0	0	No	55	2	No	No

Disclaimer: Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made. As such the information in this table may vary from final information presented on the project sheets. Priority locations selected for project sheets were selected in coordination with the County and may not align with the highest scoring locations.

APPENDIX C1

INTERSECTION SAFETY COUNTERMEASURES

COUNTY PAVED ROADWAY INTERSECTION COUNTERMEASURES

This appendix summarizes the **intersection** safety countermeasures for consideration and provides detailed descriptions for each countermeasure from both the risk factor analysis as well as the additional potential improvements listed on the back side of the project sheets.

Systematic Countermeasures

The countermeasures in this section were included in the risk factor analysis and recommended on the intersection project sheets based on the criteria described in **Section 5.1.2.**

Coordinate with Local Jurisdiction on Signal Modifications

Although there are not many traffic signals along the county road system that are operated and maintained by the county, the recommendations from this Safety Action Plan (SAP) include a coordination item with the local jurisdiction at locations where signalized intersections scored high on the risk factor rankings. This coordination could include the installation of retroreflective backplates, installing larger signal heads, signal retiming, flashing yellow arrow implementation, and/or overhead signal installation.

Signal Warrant Analysis to Consider Removal of Signal

At locations where a signalized intersection may not be warranted, based on reported daily entering vehicles (DEVs), it is recommended that a signal warrant analysis, including the required traffic counts, be conducted to determine if the traffic signal is warranted. Removing an unwarranted traffic signal has a documented crash modification factor (CMF) as high as 0.76. The cost associated with this recommendation includes only the counts and analysis, not the physical removal of the traffic signal.

Intersection Control Evaluation (ICE)

Per the Minnesota Department of Transportation (MnDOT),

“ICE is a process that identifies the best intersection control through a comprehensive analysis and documentation of the technical (safety and operational), economic, and political issues of viable alternatives” (https://www.dot.state.mn.us/trafficeng/safety/ice/).

This evaluation broadens the framework for considering intersection control beyond the traditional traffic signal. Through this process, the optimal control is recommended based on an objective analysis. Possible outcomes of an ICE include stop signs, yield signs, channelized movements, access control, grade separation, roundabouts, or fully signalized intersections. MnDOT’s most recent guidance on ICE is available on their official ICE webpage (linked above), which outlines the current process and expectations for ICE studies.

Many states now require ICE to be completed prior to determining intersection control and configurations, including California, Indiana, Florida, Minnesota, Washington, and Wisconsin. Iowa is also in the process of finalizing its own ICE guidelines.

The recommended ICE process includes identifying intersections, collecting data, performing warrant analyses, analyzing alternatives, and selecting a preferred option. This is followed by conceptual design, right-of-way assessment, life-cycle cost estimation, political impact consideration, reevaluation of alternatives, and staff approval. The final step is compiling an ICE report that documents the entire process and its conclusions.

Additional guidance on ICE can be found in the FHWA ICE Primer, which provides a comprehensive overview of the Intersection Control Evaluation process, including its purpose, benefits, and implementation. (https://highways.fhwa.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa18076.pdf).

Implement Results of ICE

Along with the recommendation of the ICE, this recommendation includes implementing the selected intersection configuration. Since the evaluation is necessary to determine which configuration to implement, the cost associated with this recommendation is the estimated average of potential intersection configurations. Intersection configurations that could be considered include: roundabouts, multi-way stop control, traffic signals, restricting left-turn movements, median U-turn intersections, and grade separation.

All-Way Stop Warrant Analysis (Install)

This safety countermeasure includes conducting an all-way stop warrant analysis on an existing minor-leg stop-controlled intersection. The analysis should include a review of traffic volumes, crash history and sight distance as detailed in the Manual of Uniform Traffic Control Devices (MUTCD) for an intersection that is not currently controlled by stop signs for all approaches. This safety countermeasure was recommended based on the CMFs in the range of 0.39 for converting a two-way stop-controlled intersection to all-way stop control. An engineering study is required to warrant the installation of all-way stop control. Only the analysis was recommended in the risk factor analysis, based on traffic volumes that could potentially meet the minimum volume thresholds for an all-way stop to be warranted.

All-Way Stop Warrant Analysis (Remove)

This safety countermeasure includes conducting an all-way stop warrant analysis on an existing all-way stop-controlled intersection. The analysis should include a review of traffic volumes, crash history and sight distance as detailed in the MUTCD. An engineering study is required to warrant the removal of all-way stop control, converting to minor-leg stop-control. Only the analysis was recommended in the risk factor analysis, based on traffic volumes that would potentially not meet the minimum volume thresholds for an all-way stop to be warranted.

Destination Lighting

The Iowa DOT has a Destination Lighting Specifics and Best Practices (2018) document that should be consulted prior to installation of destination lighting. Various options are available including replacing existing High-Pressure Sodium (HPS) lights, new installations, and solar installations. The document provides detail on luminaire type, pole design, mounting height, pole placement, preferred luminaires, and sample specifications.

Destination lighting is different than typical intersection lighting, in that the purpose of destination lighting is to inform drivers, from a distance, that an intersection is located near the light. HPS lighting option has traditionally provided a better spreading of light to the approaching driver when the Light-Emitting Diode (LED) system does not have a drop lens. LED lighting options without a drop lens dissipate less light outward and typically focus light down, towards the roadway. For the purpose of destination lighting, HPS or LED with drop lenses are preferred due to their dispersion of light. In rural situations, especially during nighttime conditions, intersections can be difficult to identify without the presence of destination lighting. For this purpose, destination lighting is recommended when certain volume thresholds defined in the risk factor analysis are exceeded.

Larger/Retroreflective Stop Signs

This countermeasure includes the use of oversized Stop signs and Stop signs with enhanced retroreflective sheeting to improve visibility and driver compliance at stop-controlled intersections. According to the Federal Highway Administration (FHWA), intersections account for over 40 percent of all reported crashes, with a significant portion occurring due to drivers failing to recognize or respond to stop control. Larger Stop signs increase conspicuity, especially in rural or high-speed environments, while retroreflective materials enhance nighttime and low-visibility recognition by reflecting headlights directly back toward the driver's eyes. FHWA evaluations have shown that Stop signs with higher retro-reflectivity can significantly reduce crashes related to driver unawareness, particularly at unsignalized intersections.

Duplicate Signage

Installing a second stop sign and stop ahead sign on the left side of the roadway for reinforcement of the stop-controlled condition was another safety countermeasure that was suggested where certain volume thresholds were met. Installing the second stop sign and stop ahead signs on the left side of the roadway provides for additional visibility and reinforces the stop-controlled condition ahead.

New Pavement Markings

This countermeasure includes the installation of groove-in retroreflective pavement markings and the use of wider, high-visibility markings at intersections to improve lane guidance and driver awareness, particularly in low-light and wet conditions. Retroreflective pavement markings significantly enhance nighttime visibility by reflecting headlights back toward the driver, improving lane discipline and reducing lane departure crashes. Grooving the markings into the pavement protects them from snowplow damage and wear, extending their service life and maintaining visibility in adverse weather. Additionally, wider markings—typically 6 inches or more—at intersections and stop bars increase conspicuity and help drivers better identify lane boundaries and stopping points.

Flashing Beacons/LED Lights on Stop Signs

This countermeasure includes installing flashing beacons on top of all stop signs and/or yield signs at an intersection. It is anticipated that the flashing beacons would be solar-power LED beacons to expedite the installation and reduce the monthly cost associated with power for the lights. This countermeasure provides enhanced visibility and reinforcement of the stop/yield-controlled condition.

Transverse Rumble Strips

Installing transverse rumble strips can alert drivers of an upcoming stop sign. In the case of an all-way stop-controlled intersection, rumble strips are recommended on all approaches. For a one-way or two-way stop-controlled intersection, only the minor paved approaches (those that are stop-controlled) are recommended for rumble strip installation. Installing transverse rumble strips on stop-controlled approaches in rural areas has a CMF of 0.79 to 0.87.

Advanced Intersection Warning Signs

This safety countermeasure includes the installation of cross street name signs with the intersection warning signs in advance of an intersection on the major approaches to provide additional information to drivers, increasing their decision time and distance. This improvement also provides additional emphasis of an upcoming intersection.

Clear and Grub

This includes clearing and grubbing the areas within the sight triangles of the vehicles that approach stop signs at a given intersection. This safety countermeasure increases the sight distance for vehicles prior to entering an intersection. This is particularly beneficial under two-way stop-controlled or uncontrolled situations where conflicting vehicles may not stop or yield. A budgetary cost has been included in the project sheets; however, it is recommended that the County Engineer confirm the need to clear and grub as projects move forward.

Location Specific Countermeasures

Safety improvements not included on the first page of the roadway intersection project sheet may still merit consideration at a specific location. There are a variety of other safety improvements that could be considered that were not included in the risk factor analysis due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed at intersections throughout the county. The following sections describe several other roadway intersection safety improvements that could be considered appropriate by the county and that were included on the back side of the project sheets.

Construction of Turn Lanes

Providing right- and left-turn lanes to remove slowing or turning vehicles from the through lanes has CMFs ranging from 0.52 to 0.74. This safety countermeasure needs to be evaluated on a case-by-case basis based on turning movement volumes, which were not available as part of this project. This improvement can be particularly effective where there are high amounts of conflicting movements at intersections. When considering turn lanes for a specific location, right-of-way constraints will need to be considered.

Realignment of Intersection to Reduce or Eliminate Skew

Intersection skew was reviewed as part of the risk factor analysis, but realignment of specific intersections was not recommended, due to constraints such as right-of-way and geometrics that could not be determined from a systemic approach. Depending on existing site conditions, this countermeasure could be particularly beneficial and should be considered where feasible. The CMF for intersection geometry reconfiguration is included in the Highway Safety Manual (HSM) and varies based on the existing skew angle. With the optimal 90-degree intersection configuration sight triangles are maximized, crossing distance is minimized, and the intersection meets typical driver expectations.

Provide Bypass Lane on Shoulder at T-Intersection

A bypass lane at a T-intersection allows through traffic a separate lane of travel from those vehicles intending to turn left at the intersection. This improvement removes some conflict points and has the potential to reduce the frequency of rear-end crashes.

Convert Offset T-Intersection to Four-Legged Intersection

Where two offset T-intersections are within close proximity, this countermeasure suggests combining the two intersections into a single four-legged intersection. The consolidation of the two intersections into one reduces conflict points and aligns better with driver expectations.

Use Indirect Left-Turn Treatments

Restricting or eliminating turning maneuvers by providing channelization or closing median openings can have significant safety benefits. This safety countermeasure could be

implemented as part of an access management policy, referenced below. A CMF of 0.8 has been determined for providing indirect left-turn treatments.

Convert Four-Legged Intersections to T-Intersections

Where a four-legged intersection has high opposing turning movements, two offset T-intersections may provide the needed traffic flow while reducing conflicts.

Install LED Flashing Beacons on Intersection Warning Signs

Flashing beacons draw the attention of drivers to the associated signage. This improvement enhances the conspicuity of intersection warning signs for drivers approaching the intersection. This sign/beacon combination can help increase awareness of drivers to potential upcoming vehicle conflicts. Flashing beacons on stop signs and curve chevron signs have measured safety benefits and are expected to provide safety benefits when applied to intersection warning signs as well.

Low-Cost Intersection Conflict Warning System (ICWS)

This safety improvement warns vehicles on the major approach of a two-way stop-controlled intersection when there is a vehicle present/stopped at the upcoming intersection. According to the FHWA,

"These systems usually use a double set of detectors on the stop approach to identify approaching and stopped vehicles and warn traffic on the through approach of their presence using activated flashing beacons on passive intersection warning signs to indicate that a vehicle from the cross street may enter the intersection. They are often deployed at rural stop-controlled intersections that have either a history of crash experience or limited sight distance. Missouri, Minnesota, North Carolina, Pennsylvania, and Virginia have deployed these systems or variations of them."

The FHWA also states that, this technology "has been successfully deployed… at a relatively low cost per intersection and has generally resulted in substantial intersection crash reductions."

Install a Roundabout

Roundabouts are a Federal Highway Administration (FHWA) proven safety countermeasure with marked safety improvements thoroughly documented. CMFs for converting a stop-controlled rural intersection to a roundabout have been recorded from 0.18 - 0.42 showing reductions in crashes as high as 82%. In addition to providing significant safety benefits, roundabouts are also able to accommodate abnormal intersections, such as intersections with more than four approaches or an angled minor or major approach. Many of the safety benefits of roundabouts stem from the fact that they have fewer conflict points as compared to a four-legged intersection. In a conventional intersection, 32 conflict points exist at which a crash may occur. This is reduced to eight conflict points in a typical one-lane roundabout. Furthermore, the vehicle conflict points at a roundabout are unlikely to result in right-angle or head-on collisions which tend to be more severe crash types. Instead, the majority of crashes are rear-end or side-swipe collisions. In addition to less-severe crash types, crashes at roundabouts tend to occur at lower speeds which results in fewer injuries and fatalities.

Increase Shoulder Width/Safety Edge

Constructing or increasing the width of an existing paved shoulder can reduce the potential for a severe crash as the result of a lane departure. CMFs associated with paving the shoulder in

rural areas range from 0.75 to 0.99. At locations where paved shoulders are recommended, it is suggested that the County Engineer consider a minimum of a two-foot shoulder; however, based on right-of-way and roadway characteristics, the County Engineer may choose to install a wider shoulder. According to the FHWA, a Safety Edge is "a simple but effective solution that can help save lives by allowing drivers who drift off [roadways] to return to the road safely. Instead of a vertical dropoff, the Safety Edge shapes the edge of pavement to 30 degrees." The installation of a Safety Edge has CMFs of 0.77 - 0.96 and is an FHWA Proven Safety Countermeasure.

Guardrails

Installing guardrail can help redirect vehicles after a lane departure to remain on the roadway and avoid roadside hazards. CMFs in the range of 0.53 to 0.56 have been recorded for installing new guardrail along an embankment.

Retroreflective Strips on Stop Signposts

This countermeasure includes the installation of retroreflective strips on the posts of stop signs. The strips can increase the visibility of the stop signs and increase driver awareness of a stop-controlled intersection.

Access Management

According to the Transportation Research Board, "Access management is the systematic control of the location, spacing, design and operation of driveways, median openings, interchanges, and street connections to a roadway." Various counties throughout Iowa have access management policies in place and substantial research has been conducted supporting the safety, operations, economic, and environmental effects of access management.

The functional area of an intersection includes regions where vehicle speeds vary in order to change lanes and complete turns. Queues may also develop on the approach legs of the intersection. Driveways should be located outside of the functional area of the intersection so as not to negatively impact the operations of the intersection.

In rural scenarios, access management is best applied by limiting left-turn movements onto highspeed roadways and providing sufficient spacing between roadway access points. Please refer to the Statewide Urban Design and Specifications (SUDAS) and AASHTO's *A Policy on Geometric Design of Highways and Streets* (Green Book) for more information.

APPENDIX C2
INTERSECTION PROJECT SHEETS

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12

Project Name: Co Rd B55/170 & RAKE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **Co Rd B55/170**
Road: **RAKE AVE**
Closest City: **Klemme**

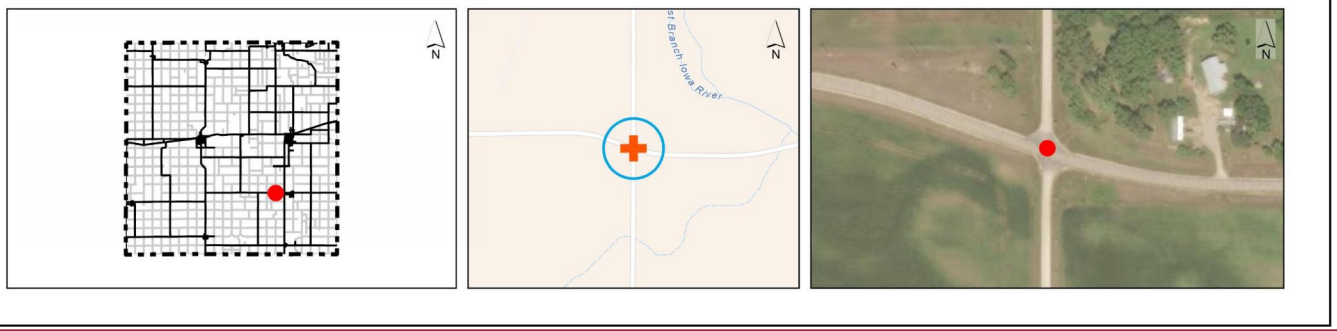
Project is within an Underserved Community?† No

GPS ID: 34127

This intersection is located on the following high scoring segment: GPS ID 3536

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	< 1.5 mi	0
Approach Angle (Degrees)	69	4
Intersection within Curve	Yes	4
Daily Entering Vehicles	685	2
Minor Street Volume	25	1
Roads/Driveways within 250 Feet	0	0
K or A Crashes	0	0
Number of Approaches	4	1
Potential Crash Reduction (PCR)	Negligible	0
Total Risk Factor Points (24 max)		**12**

Other Information	
Number of Approaches	4
Number of Paved Approaches	4
Major ADT	650
Minor ADT	25
Destination Lighting	No
Transverse Rumble Strips (Number of Approaches)	0
Control Type	Two-way stop

Crash Data, 2014-2023	
Total Crashes	2
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	0
Total Nighttime Crashes	1
Nighttime/Daytime Crash Ratio*	3.0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**2**	**LEG**	**$ 2,200**	**$ 4,400**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**2**	**LEG**	**$ 1,500**	**$ 3,000**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**2**	**LEG**	**$ 2,500**	**$ 5,000**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 32,400

Continued on back of this page.

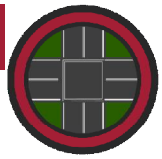
* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12



Project Name: Co Rd B55/170 & RAKE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 34127

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	**x**	**x**			**1**	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 32,400**
Subtotal:		**$ 32,900**
Mobilization: (% +/-)*	10%	**$ 3,290**
Traffic Control: (% +/-)	5%	**$ 1,762**
Contingency: (% +/-)	20%	**$ 7,048**
Estimated Project Cost		**$ 45,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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. Kimley-Horn endeavored to research issues and constraints to the extent practical given the scope, budget, and schedule agreed to with the Client. The 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 July 2024.

End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12

Project Name: Co Rd R26/ESTATE AVE & Co Rd R26/225
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

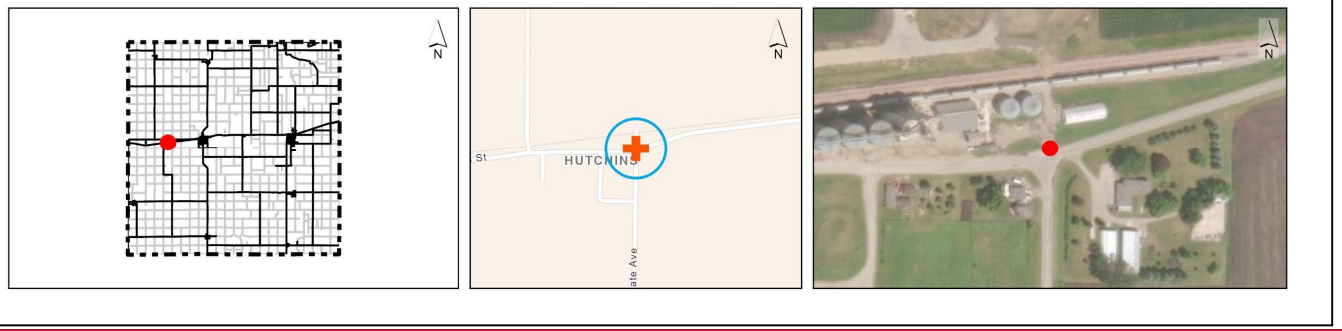
Road: **Co Rd R26/ESTATE AVE**
Road: **Co Rd R26/225**
Closest City: **Britt**

Project is within an Underserved Community?† No

GPS ID: 34232

This intersection does not contain high scoring segments.
County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	4.07 mi	4
Approach Angle (Degrees)	77	2
Intersection within Curve	No	0
Daily Entering Vehicles	475	2
Minor Street Volume	55	2
Roads/Driveways within 250 Feet	3	2
K or A Crashes	0	0
Number of Approaches	3	0
Potential Crash Reduction (PCR)	Negligible	0
Total Risk Factor Points (24 max)		**12**

Other Information	
Number of Approaches	3
Number of Paved Approaches	3
Major ADT	460
Minor ADT	55
Destination Lighting	No
Transverse Rumble Strips (Number of Approaches)	0
Control Type	Two-way stop

Crash Data, 2014-2023	
Total Crashes	0
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	0
Total Nighttime Crashes	0
Nighttime/Daytime Crash Ratio*	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**1**	**LEG**	**$ 2,200**	**$ 2,200**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**1**	**LEG**	**$ 1,500**	**$ 1,500**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**1**	**LEG**	**$ 2,500**	**$ 2,500**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**2**	**LEG**	**$ 5,000**	**$ 10,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 16,200

Continued on back of this page.

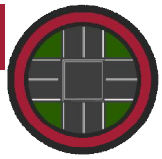
* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12



Project Name: Co Rd R26/ESTATE AVE & Co Rd R26/225
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 34232

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	x	x			1	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								
							Additional Potential Improvements Subtotal:	**$ 500**
							Project Selection Decision Tree Systemic Improvements Subtotal:	**$ 16,200**
							Subtotal:	**$ 16,700**
							Mobilization: (% +/-)* 10%	**$ 2,500**
							Traffic Control: (% +/-) 5%	**$ 960**
							Contingency: (% +/-) 20%	**$ 3,840**
							Estimated Project Cost	**$ 24,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: Co Rd R35/JAMES AVE & Co Rd R35/JAMES AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **Co Rd R35/JAMES AVE**
Road: **Co Rd R35/JAMES AVE**
Closest City: **Britt**

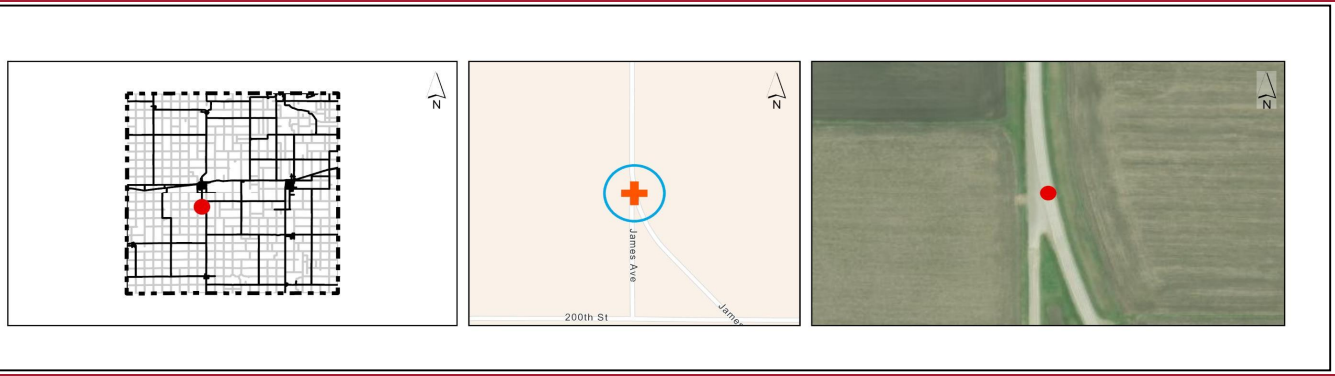
Project is within an Underserved Community?† No

GPS ID: 34134

This intersection is located on the following high scoring segment: GPS ID 3496

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	**< 1.5 mi**	**0**
Approach Angle (Degrees)	**25**	**4**
Intersection within Curve	**No**	**0**
Daily Entering Vehicles	**1,265**	**3**
Minor Street Volume	**55**	**2**
Roads/Driveways within 250 Feet	**0**	**0**
K or A Crashes	**1**	**2**
Number of Approaches	**3**	**0**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Total Risk Factor Points (24 max)		**11**

Other Information	
Number of Approaches	**3**
Number of Paved Approaches	**2**
Major ADT	**1,205**
Minor ADT	**55**
Destination Lighting	**No**
Transverse Rumble Strips (Number of Approaches)	**0**
Control Type	**One-way stop**

Crash Data, 2014-2023	
Total Crashes	**3**
K and A Crashes	**1**
Right Angle,Rear-end,or Turning Crashes	**0**
Total Nighttime Crashes	**3**
Nighttime/Daytime Crash Ratio*	**9.0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	0	LEG	$ 2,200	$ -
Upgrade Signs (Unpaved Approaches)	**1**	**LEG**	**$ 1,100**	**$ 1,100**
Install Second Stop Sign and Stop Ahead Sign	0	LEG	$ 1,500	$ -
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	0	LEG	$ 2,500	$ -
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**2**	**LEG**	**$ 5,000**	**$ 10,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 11,100

Continued on back of this page.

* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: Co Rd R35/JAMES AVE & Co Rd R35/JAMES AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 34134

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	x				1	INT	$ 500	$ 500
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		$ 500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 11,100
Subtotal:		$ 11,600
Mobilization: (% +/-)*	10%	$ 2,500
Traffic Control: (% +/-)	5%	$ 580
Contingency: (% +/-)	20%	$ 2,320
Estimated Project Cost		$ 17,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: Co Rd R64/TAFT AVE/240 & COUNTRY CLUB DR
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **Co Rd R64/TAFT AVE/240**
Road: **COUNTRY CLUB DR**
Closest City: **Garner**

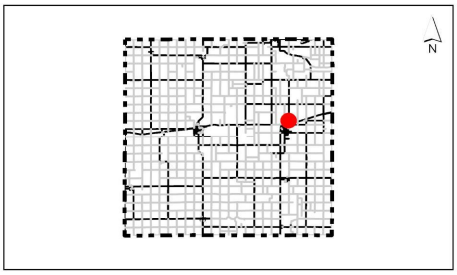
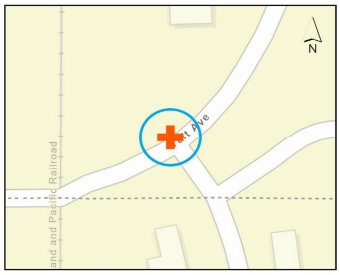
Project is within an Underserved Community?† No

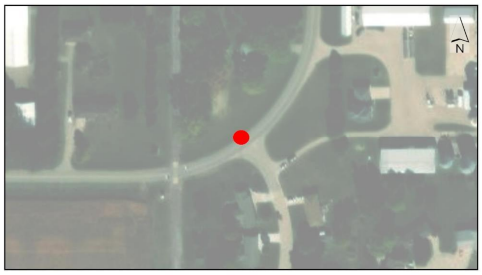
GPS ID: 109506

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	< 1.5 mi	0
Approach Angle (Degrees)	108	0
Intersection within Curve	Yes	4
Daily Entering Vehicles	1,020	3
Minor Street Volume	320	2
Roads/Driveways within 250 Feet	3	2
K or A Crashes	0	0
Number of Approaches	3	0
Potential Crash Reduction (PCR)	Negligible	0
Total Risk Factor Points (24 max)		**11**

Other Information	
Number of Approaches	3
Number of Paved Approaches	3
Major ADT	710
Minor ADT	320
Destination Lighting	Yes
Transverse Rumble Strips (Number of Approaches)	0
Control Type	One-way stop

Crash Data, 2014-2023	
Total Crashes	0
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	0
Total Nighttime Crashes	0
Nighttime/Daytime Crash Ratio*	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**1**	**LEG**	**$ 2,200**	**$ 2,200**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**1**	**LEG**	**$ 1,500**	**$ 1,500**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**1**	**LEG**	**$ 2,500**	**$ 2,500**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	**2**	**LEG**	**$ 1,200**	**$ 2,400**
Clear and Grub within Sight Triangle	**2**	**LEG**	**$ 5,000**	**$ 10,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 18,600

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* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: Co Rd R64/TAFT AVE/240 & COUNTRY CLUB DR
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 109506

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	x				1	INT	$ 500	$ 500
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		$ 500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 18,600
Subtotal:		$ 19,100
Mobilization: (% +/-)*	10%	$ 2,500
Traffic Control: (% +/-)	5%	$ 1,080
Contingency: (% +/-)	20%	$ 4,320
Estimated Project Cost		$ 27,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 10

Project Name: Co Rd B55/160 & Co Rd R26/FORD AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **Co Rd B55/160**
Road: **Co Rd R26/FORD AVE**
Closest City: **Corwith**

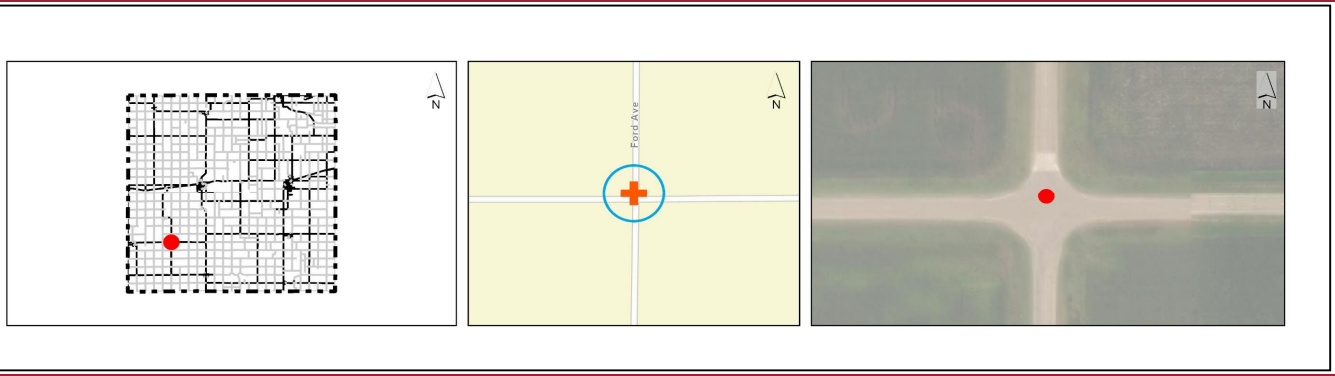
Project is within an Underserved Community?† No

GPS ID: 34068

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	**3.99 mi**	**4**
Approach Angle (Degrees)	**90**	**0**
Intersection within Curve	**No**	**0**
Daily Entering Vehicles	**420**	**1**
Minor Street Volume	**100**	**2**
Roads/Driveways within 250 Feet	**0**	**0**
K or A Crashes	**1**	**2**
Number of Approaches	**4**	**1**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Total Risk Factor Points (24 max)		**10**

Other Information	
Number of Approaches	**4**
Number of Paved Approaches	**4**
Major ADT	**330**
Minor ADT	**100**
Destination Lighting	**Yes**
Transverse Rumble Strips (Number of Approaches)	**2**
Control Type	**Two-way stop**

Crash Data, 2014-2023	
Total Crashes	**1**
K and A Crashes	**1**
Right Angle,Rear-end,or Turning Crashes	**1**
Total Nighttime Crashes	**0**
Nighttime/Daytime Crash Ratio*	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**2**	**LEG**	**$ 2,200**	**$ 4,400**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**2**	**LEG**	**$ 1,500**	**$ 3,000**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	0	LEG	$ 2,500	$ -
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 27,400

Continued on back of this page.

* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 10

Project Name: Co Rd B55/160 & Co Rd R26/FORD AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 34068

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	x	x			1	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 27,400**
Subtotal:		**$ 27,900**
Mobilization: (% +/-)*	10%	**$ 2,790**
Traffic Control: (% +/-)	5%	**$ 1,462**
Contingency: (% +/-)	20%	**$ 5,848**
Estimated Project Cost		**$ 38,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12

Project Name: US 69 & WILLOW ST
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **US 69**
Road: **WILLOW ST**
Closest City: **Goodell**

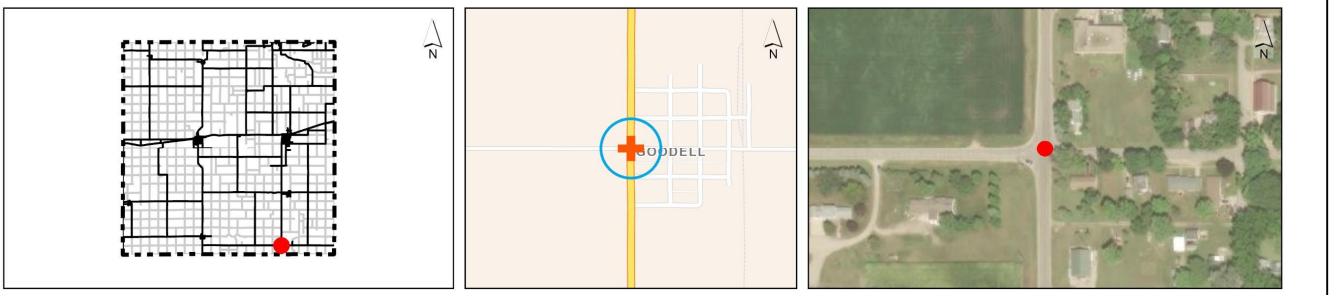
Project is within an Underserved Community?† No

GPS ID: 33978

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	8.46 mi	4
Approach Angle (Degrees)	90	0
Intersection within Curve	No	0
Daily Entering Vehicles	2,350	3
Minor Street Volume	470	2
Roads/Driveways within 250 Feet	3	2
K or A Crashes	0	0
Number of Approaches	4	1
Potential Crash Reduction (PCR)	Negligible	0
Total Risk Factor Points (24 max)		**12**

Other Information	
Number of Approaches	4
Number of Paved Approaches	4
Major ADT	2,070
Minor ADT	470
Destination Lighting	Yes
Transverse Rumble Strips (Number of Approaches)	1
Control Type	Two-way stop

Crash Data, 2014-2023	
Total Crashes	5
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	1
Total Nighttime Crashes	1
Nighttime/Daytime Crash Ratio*	0.8

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**2**	**LEG**	**$ 2,200**	**$ 4,400**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**2**	**LEG**	**$ 1,500**	**$ 3,000**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**1**	**LEG**	**$ 2,500**	**$ 2,500**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	**2**	**LEG**	**$ 1,200**	**$ 2,400**
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 32,300

Continued on back of this page.

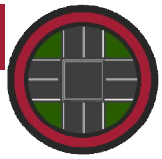
* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12



Project Name: US 69 & WILLOW ST
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 33978

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post			x	x	1	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 32,300**
Subtotal:		**$ 32,800**
Mobilization: (% +/-)*	10%	**$ 3,280**
Traffic Control: (% +/-)	5%	**$ 1,784**
Contingency: (% +/-)	20%	**$ 7,136**
Estimated Project Cost		**$ 45,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12

Project Name: IA 17 & 225 & Old 18
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **IA 17**
Road: **225 & Old 18**
Closest City: **Wesley**

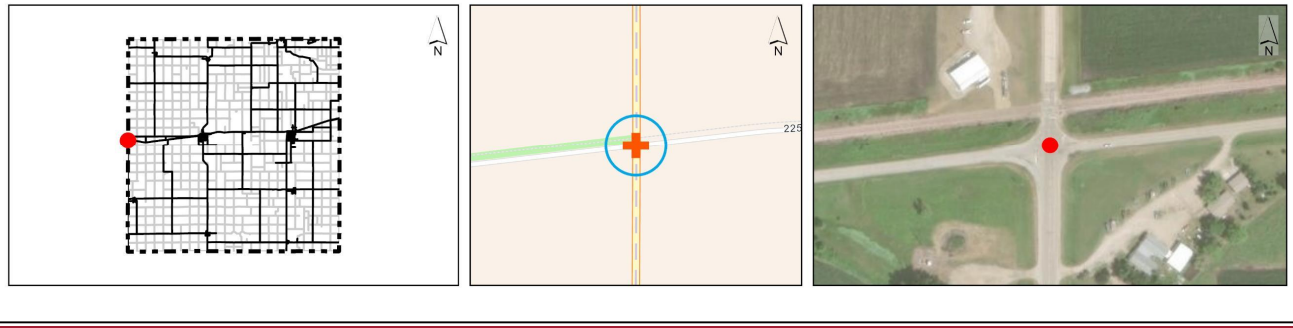
Project is within an Underserved Community?† No

GPS ID: 34016

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps



Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	4.31 mi	4
Approach Angle (Degrees)	80	2
Intersection within Curve	No	0
Daily Entering Vehicles	1,290	3
Minor Street Volume	310	2
Roads/Driveways within 250 Feet	0	0
K or A Crashes	0	0
Number of Approaches	4	1
Potential Crash Reduction (PCR)	Negligible	0
Total Risk Factor Points (24 max)		**12**

Other Information	
Number of Approaches	4
Number of Paved Approaches	4
Major ADT	780
Minor ADT	310
Destination Lighting	No
Transverse Rumble Strips (Number of Approaches)	1
Control Type	Two-way stop

Crash Data, 2014-2023	
Total Crashes	3
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	2
Total Nighttime Crashes	1
Nighttime/Daytime Crash Ratio*	1.5

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	**1**	**EA**	**$ 5,500**	**$ 5,500**
Upgrade Signs and Pavement Markings	**2**	**LEG**	**$ 2,200**	**$ 4,400**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**2**	**LEG**	**$ 1,500**	**$ 3,000**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**1**	**LEG**	**$ 2,500**	**$ 2,500**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	**2**	**LEG**	**$ 1,200**	**$ 2,400**
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 37,800

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* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

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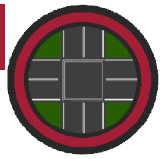
Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 12



Project Name: IA 17 & 225 & Old 18
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 34016

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post			x	x	1	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 37,800**
Subtotal:		**$ 38,300**
Mobilization: (% +/-)*	10%	**$ 3,830**
Traffic Control: (% +/-)	5%	**$ 1,974**
Contingency: (% +/-)	20%	**$ 7,896**
Estimated Project Cost		**$ 52,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: US 18 & Co Rd R70/YALE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **US 18**
Road: **Co Rd R70/YALE AVE**
Closest City: **Ventura**

Project is within an Underserved Community?† No

GPS ID: 33976

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps

Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	**1.18 mi**	**0**
Approach Angle (Degrees)	**79**	**2**
Intersection within Curve	**No**	**0**
Daily Entering Vehicles	**6,465**	**3**
Minor Street Volume	**260**	**2**
Roads/Driveways within 250 Feet	1	**1**
K or A Crashes	1	**2**
Number of Approaches	**4**	**1**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Total Risk Factor Points (24 max)		**11**

Other Information	
Number of Approaches	**4**
Number of Paved Approaches	**4**
Major ADT	**6,000**
Minor ADT	**260**
Destination Lighting	**Yes**
Transverse Rumble Strips (Number of Approaches)	**2**
Control Type	**Two-way stop**

Crash Data, 2014-2023	
Total Crashes	**4**
K and A Crashes	**1**
Right Angle,Rear-end,or Turning Crashes	**3**
Total Nighttime Crashes	**1**
Nighttime/Daytime Crash Ratio*	**1.0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**2**	**LEG**	**$ 2,200**	**$ 4,400**
Upgrade Signs (Unpaved Approaches)	0	LEG	$ 1,100	$ -
Install Second Stop Sign and Stop Ahead Sign	**2**	**LEG**	**$ 1,500**	**$ 3,000**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	0	LEG	$ 2,500	$ -
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	**2**	**LEG**	**$ 1,200**	**$ 2,400**
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 29,800

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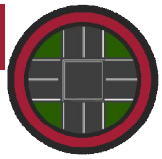
* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11



Project Name: US 18 & Co Rd R70/YALE AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 33976

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Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	**x**	**x**			**1**	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 29,800**
Subtotal:		**$ 30,300**
Mobilization: (% +/-)*	10%	**$ 3,030**
Traffic Control: (% +/-)	5%	**$ 1,534**
Contingency: (% +/-)	20%	**$ 6,136**
Estimated Project Cost		**$ 41,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: US 18 & Co Rd R44/OAK AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **US 18**
Road: **Co Rd R44/OAK AVE**
Closest City: **Garner**

Project is within an Underserved Community?† No

GPS ID: 33964

This intersection is located on the following high scoring segment: GPS ID 3505

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps

Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	7.46 mi	4
Approach Angle (Degrees)	90	0
Intersection within Curve	No	0
Daily Entering Vehicles	5,490	3
Minor Street Volume	50	2
Roads/Driveways within 250 Feet	0	0
K or A Crashes	0	0
Number of Approaches	4	1
Potential Crash Reduction (PCR)	Medium	1
Total Risk Factor Points (24 max)		**11**

Other Information	
Number of Approaches	4
Number of Paved Approaches	3
Major ADT	5,200
Minor ADT	50
Destination Lighting	Yes
Transverse Rumble Strips (Number of Approaches)	1
Control Type	Two-way stop

Crash Data, 2014-2023	
Total Crashes	4
K and A Crashes	0
Right Angle,Rear-end,or Turning Crashes	3
Total Nighttime Crashes	0
Nighttime/Daytime Crash Ratio*	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**1**	**LEG**	**$ 2,200**	**$ 2,200**
Upgrade Signs (Unpaved Approaches)	**1**	**LEG**	**$ 1,100**	**$ 1,100**
Install Second Stop Sign and Stop Ahead Sign	**1**	**LEG**	**$ 1,500**	**$ 1,500**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	0	LEG	$ 2,500	$ -
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 24,800

Continued on back of this page.

* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: US 18 & Co Rd R44/OAK AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 33964

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	**x**	**x**			**1**	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 24,800**
Subtotal:		**$ 25,300**
Mobilization: (% +/-)*	10%	**$ 2,530**
Traffic Control: (% +/-)	5%	**$ 1,434**
Contingency: (% +/-)	20%	**$ 5,736**
Estimated Project Cost		**$ 35,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: US 18 & Co Rd R44/NASH AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Location Description

Road: **US 18**
Road: **Co Rd R44/NASH AVE**
Closest City: **Britt**

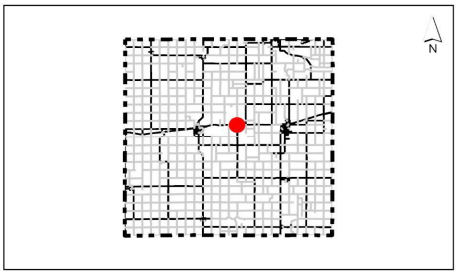
Project is within an Underserved Community?† No

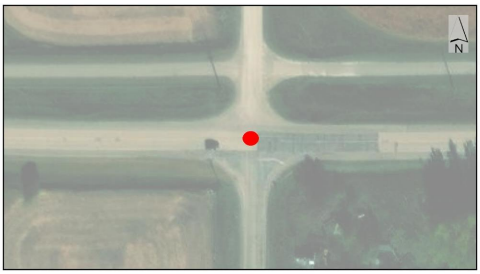
GPS ID: 33962

This intersection does not contain high scoring segments.

County to coordinate with local agency to implement improvements that are on right-of-way that is not under control of the County.

Project Location Maps





Intersection Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Distance from Previous Stop	**6.55 mi**	**4**
Approach Angle (Degrees)	**90**	**0**
Intersection within Curve	**No**	**0**
Daily Entering Vehicles	**5,385**	**3**
Minor Street Volume	**110**	**2**
Roads/Driveways within 250 Feet	**1**	**1**
K or A Crashes	**0**	**0**
Number of Approaches	**4**	**1**
Potential Crash Reduction (PCR)	**Negligible**	**0**
Total Risk Factor Points (24 max)		**11**

Other Information	
Number of Approaches	**4**
Number of Paved Approaches	**3**
Major ADT	**5,200**
Minor ADT	**110**
Destination Lighting	**No**
Transverse Rumble Strips (Number of Approaches)	**0**
Control Type	**Two-way stop**

Crash Data, 2014-2023	
Total Crashes	**2**
K and A Crashes	**0**
Right Angle,Rear-end,or Turning Crashes	**1**
Total Nighttime Crashes	**0**
Nighttime/Daytime Crash Ratio*	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Coordinate with Local Jurisdiction on Signal Modifications	0	EA	$ 2,500	$ -
Signal Warrant Analysis to Consider Removal of Signal	0	EA	$ 5,000	$ -
Intersection Configuration Evaluation (ICE)	0	EA	$ 25,000	$ -
Implement Results of ICE	0	EA	$ 750,000	$ -
All-Way Stop Analysis and Converting Two-Way Stop to All-Way Stop	0	EA	$ 5,000	$ -
All-Way Stop Analysis and Removal of Stop Signs on Major Approaches	0	EA	$ 5,000	$ -
Install Destination Lighting	0	EA	$ 5,500	$ -
Upgrade Signs and Pavement Markings	**1**	**LEG**	**$ 2,200**	**$ 2,200**
Upgrade Signs (Unpaved Approaches)	**1**	**LEG**	**$ 1,100**	**$ 1,100**
Install Second Stop Sign and Stop Ahead Sign	**1**	**LEG**	**$ 1,500**	**$ 1,500**
Install Solar-Powered Flashing Beacon or LED Flashing Lights on Stop Sign	0	EA	$ 2,500	$ -
Install Transverse Rumble Strips	**1**	**LEG**	**$ 2,500**	**$ 2,500**
Install Intersection Warning Signs and Advance Street Name Plaques on Major Approaches	0	LEG	$ 1,200	$ -
Clear and Grub within Sight Triangle	**4**	**LEG**	**$ 5,000**	**$ 20,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 27,300

Continued on back of this page.

* Nighttime/Daytime Crash Ratio = 3 x nighttime crashes/daytime crashes per Iowa DOT I.M. 2.110 Attachment A.

Project Location Map Sources:
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Kimley»Horn

Safety Action Plan
Project Description for Intersection Improvements

Risk Factor Points: 11

Project Name: US 18 & Co Rd R44/NASH AVE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/22/25
Prepared By: FJC
Checked By: DVM

INTERSECTION

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 33962

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	NB	SB	EB	WB	Quantity	Unit	Unit Price	Item Cost
Provide Left-Turn Lane at Intersection						LEG	$ 150,000	$ -
Provide Right-Turn Lane at Intersection						LEG	$ 150,000	$ -
Realign Intersection Approach to Reduce or Eliminate Intersection Skew (Paved)						LEG	$ 300,000	$ -
Provide Bypass Lane on Shoulder at T-intersection						EA	$ 50,000	$ -
Convert Offset T-Intersection to Four-Legged Intersection (Paved)						EA	$ 300,000	$ -
Use Indirect Left-Turn Treatment to Minimize Conflicts at Divided Highway Intersection						LEG	$ 75,000	$ -
Convert Four-Legged Intersection to Offset T-Intersection						EA	$ 300,000	$ -
Install Solar-Powered Flashing Beacon on Intersection Warning Sign						LEG	$ 2,500	$ -
Install Retroreflective Strip on Stop Sign Post	x	x			1	**INT**	**$ 500**	**$ 500**
Low-Cost Intersection Conflict Warning System (ICWS)						EA	$ 100,000	$ -
Flashing Beacon on Intersection Warning Sign						SIGN	$ 2,500	$ -
Other:								
Other:								

Additional Potential Improvements Subtotal:		**$ 500**
Project Selection Decision Tree Systemic Improvements Subtotal:		**$ 27,300**
Subtotal:		**$ 27,800**
Mobilization: (% +/-)*	10%	**$ 2,780**
Traffic Control: (% +/-)	5%	**$ 1,484**
Contingency: (% +/-)	20%	**$ 5,936**
Estimated Project Cost		**$ 38,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

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APPENDIX C3

INTERSECTION RISK FACTOR RANKING RESULTS

Hancock County
Safety Action Plan
Intersection Risk Factor Points

INTID	Paved Road	Intersecting Road	Risk Factor Points	Previous STOP Distance (miles) (Value)	Previous STOP Distance (miles) (Points)	Skew (degrees) (Value)	Skew (degrees) (Points)	Intersection in Curve (Value)	Intersection in Curve (Points)	Daily Entering Vehicles (Value)	Daily Entering Vehicles (Points)	Minor Street Volume (Value)	Minor Street Volume (Points)	Access Management (250 ft) (Value)	Access Management (250 ft) (Points)	KA Crashes (Value)	KA Crashes (Points)	Approaches (Value)	Approaches (Points)	KABCO PCR Level (Value)	KABCO PCR Level (Points)	Total Crashes	Right Angle, Rear-end, or Turning Crashes	Major ADT	Destination Lighting	Transverse Rumble Strips	Control Type
2017033955	US 18	IOWA AVE	17	< 1.5	0	63	4	2	4	4,910	3	145	2	0	0	3	2	4	1	Medium	1	6	1	2,980	No	0	Two-way stop
2017033978	US 69	WILLOW ST	12	8.5	4	90	0	0	0	2,350	3	470	2	3	2	0	0	4	1	Negligible	0	5	1	2,070	No	0	Two-way stop
2017034016	IA 17	225 & Old 18	12	4.3	4	80	2	0	0	1,290	3	310	2	0	0	0	0	4	1	Negligible	0	3	2	780	No	0	Two-way stop
2017034127	Co Rd B55/170	RAKE AVE	12	< 1.5	0	69	4	1	4	685	2	25	1	0	0	0	0	4	1	Negligible	0	2	0	650	No	0	Two-way stop
2017034232	Co Rd R26/ESTATE AVE	Co Rd R26/225	12	4.1	4	77	2	0	0	475	2	55	2	3	2	0	0	3	0	Negligible	0	0	0	460	No	0	Two-way stop
2017034276	Co Rd B16/310	Co Rd R44/OAK AVE	12	7.5	4	90	0	0	0	950	3	390	2	0	0	2	2	4	1	Negligible	0	4	3	530	Yes	2	Two-way stop
2017034377	ELM ST	MAIN ST	12	3.9	4	90	0	0	0	1,125	3	390	2	7	2	0	0	4	1	Negligible	0	0	0	610	No	0	Two-way stop
2017033962	US 18	Co Rd R44/NASH AVE	11	6.6	4	90	0	0	0	5,385	3	110	2	1	1	0	0	4	1	Negligible	0	2	1	5,200	No	0	Two-way stop
2017033964	US 18	Co Rd R44/OAK AVE	11	7.5	4	90	0	0	0	5,490	3	50	2	0	0	0	0	4	1	Medium	1	4	3	5,200	No	0	Two-way stop
2017033976	US 18	Co Rd R70/YALE AVE	11	< 1.5	0	79	2	0	0	6,465	3	260	2	1	1	1	2	4	1	Negligible	0	4	3	6,000	No	0	Two-way stop
2017033998	US 69	B16/310th St.	11	7.9	4	90	0	0	0	2,980	3	135	2	2	1	0	0	4	1	Negligible	0	4	3	2,830	No	0	Two-way stop
2017034102	Co Rd B55/170	Co Rd R68/VAIL AVE	11	6.0	4	90	0	0	0	885	3	150	2	1	1	0	0	4	1	Negligible	0	1	1	690	Yes	2	Two-way stop
2017034134	Co Rd R35/JAMES AVE	Co Rd R35/JAMES AVE	11	< 1.5	0	25	4	0	0	1,265	3	55	2	0	0	1	2	3	0	Negligible	0	3	0	1,205	No	0	One-way stop
2017034243	Co Rd B14/330	Co Rd R70/SAGE AVE	11	3.3	4	90	0	0	0	2,370	3	190	2	2	1	0	0	4	1	Negligible	0	1	0	2,285	No	1	Two-way stop
2017034287	Co Rd B20/285	Co Rd R44/OAK AVE	11	3.4	4	90	0	0	0	575	2	90	2	6	2	0	0	4	1	Negligible	0	0	0	540	No	0	Two-way stop
2017034311	Co Rd B20/290	Co Rd R35/JAMES AVE	11	6.0	4	90	0	0	0	910	3	45	2	1	1	0	0	4	1	Negligible	0	1	0	830	No	1	Two-way stop
2017109506	Co Rd R64/TAFT AVE/240	COUNTRY CLUB DR	11	< 1.5	0	108	0	3	4	1,020	3	320	2	3	2	0	0	3	0	Negligible	0	0	0	710	Yes	0	One-way stop
2017109618	MCKINLEY ST	OAK ST/CLARK ST	11	< 1.5	0	51	4	0	0	980	3	230	2	2	1	0	0	4	1	Negligible	0	0	0	785	Yes	0	Two-way stop
2017033949	US 18	R20/Deer Ave	10	9.1	4	90	0	0	0	3,420	3	50	2	0	0	0	0	4	1	Negligible	0	3	1	2,980	No	0	Two-way stop
2017033990	US 69	CO RD B40/210TH ST	10	5.0	4	90	0	0	0	2,610	3	60	2	0	0	0	0	4	1	Negligible	0	0	0	2,450	No	0	Two-way stop
2017033993	US 69	B30/260th St.	10	3.0	4	90	0	0	0	2,655	3	160	2	0	0	0	0	4	1	Negligible	0	2	0	2,470	Yes	0	Two-way stop
2017033996	US 69	B20/290th St.	10	3.4	4	90	0	0	0	2,730	3	130	2	0	0	0	0	4	1	Negligible	0	1	1	2,470	No	0	Two-way stop
2017034005	IA 17	130 St	10	6.0	4	90	0	0	0	1,010	3	45	2	0	0	0	0	4	1	Negligible	0	0	0	870	Yes	0	Two-way stop
2017034065	Co Rd B63/110	Co Rd R35/JAMES AVE & S MAIN ST	10	9.0	4	90	0	0	0	1,350	3	135	2	0	0	0	0	4	1	Negligible	0	2	2	1,175	Yes	1	Two-way stop
2017034068	Co Rd B55/160	Co Rd R26/FORD AVE	10	4.0	4	90	0	0	0	420	1	100	2	0	0	1	2	4	1	Negligible	0	1	1	330	No	2	Two-way stop
2017034131	Co Rd B46/220	Co Rd R35/JAMES AVE	10	< 1.5	0	90	0	0	0	1,625	3	190	2	5	2	1	2	4	1	Negligible	0	1	1	1,475	No	0	Two-way stop
2017034132	Co Rd B40/210	Co Rd R35/JAMES AVE	10	4.5	4	90	0	0	0	1,455	3	50	2	0	0	0	0	4	1	Negligible	0	0	0	1,475	No	1	Two-way stop
2017034167	Co Rd B30/260	Co Rd R70/YALE AVE	10	4.0	4	90	0	0	0	295	1	50	2	5	2	0	0	4	1	Negligible	0	0	0	260	Yes	3	All-way stop
2017034185	Co Rd B36/225	Co Rd R68/VAIL AVE	10	5.6	4	90	0	0	0	870	3	80	2	0	0	0	0	4	1	Negligible	0	1	1	870	No	0	Two-way stop
2017034215	225 & 2ND ST NW	IOWA AVE	10	< 1.5	0	83	2	0	0	1,440	3	460	2	4	2	0	0	4	1	Negligible	0	4	3	960	No	0	Two-way stop
2017034299	Co Rd B14/330	Co Rd R34/JAMES AVE	10	1.5	4	90	0	0	0	1,070	3	245	2	1	1	0	0	3	0	Negligible	0	0	0	850	Yes	0	One-way stop
2017034305	Co Rd B16/310	Co Rd R35/JAMES AVE	10	7.9	4	90	0	0	0	950	3	235	2	2	1	0	0	3	0	Negligible	0	0	0	750	Yes	1	One-way stop
2017034375	ELM ST	NICOLLE AVE	10	< 1.5	0	57	4	0	0	525	2	115	2	11	2	0	0	3	0	Negligible	0	0	0	365	No	0	One-way stop
2017034382	MCKINLEY ST	1ST ST/JAY ST	10	< 1.5	0	41	4	0	0	640	2	220	2	2	1	0	0	4	1	Negligible	0	2	0	315	No	0	Other
2017034385	MCKINLEY ST	ELM ST	10	< 1.5	0	50	4	0	0	720	2	175	2	8	2	0	0	3	0	Negligible	0	0	0	490	Yes	0	One-way stop
2017034480	BUSH AVE	OLD HWY 111	10	9.1	4	17	2	0	0	850	2	210	2	0	0	0	0	3	0	Negligible	0	0	0	675	No	0	One-way stop
2017034736	Co Rd B14/OAK AVE/330	Co Rd R44	10	5.8	4	90	0	0	0	1,215	3	5	0	0	0	1	2	4	1	Negligible	0	1	0	1,110	Yes	0	Two-way stop
2017109623	ELM ST	ST LOUIS BLVD	10	< 1.5	0	58	4	0	0	525	2	115	2	8	2	0	0	3	0	Negligible	0	0	0	365	No	0	One-way stop
2017034074	Co Rd R18/BIRCH AVE	ELM ST	9	< 1.5	0	43	4	0	0	460	1	120	2	4	2	0	0	3	0	Negligible	0	2	1	365	No	0	One-way stop
2017034083	Co Rd B63/120	Co Rd R18/BIRCH AVE	9	3.9	4	90	0	0	0	530	2	60	2	0	0	0	0	4	1	Negligible	0	0	0	410	No	0	Two-way stop
2017034084	Co Rd B63/120	Co Rd R26/FORD AVE	9	4.0	4	90	0	0	0	550	2	35	1	1	1	0	0	4	1	Negligible	0	2	1	520	No	1	Two-way stop
2017034104	Co Rd B55/170 & E JERUSALEM ST	Co Rd R66/TAFT AVE	9	< 1.5	0	90	0	0	0	955	3	175	2	1	1	1	2	4	1	Negligible	0	2	2	775	Yes	0	Two-way stop
2017034121	Co Rd B55/170	Co Rd R44/NASH AVE	9	6.6	4	90	0	0	0	685	2	15	1	1	1	0	0	4	1	Negligible	0	0	0	570	Yes	1	Two-way stop
2017034146	Co Rd R26/ESTATE AVE	Co Rd R26/ESTATE AVE/220	9	< 1.5	0	27	4	1	4	115	0	5	0	1	1	0	0	3	0	Negligible	0	1	0	110	No	0	One-way stop
2017034166	Co Rd B30/260	Co Rd R64/TAFT AVE	9	4.0	4	90	0	0	0	735	2	210	2	0	0	0	0	4	1	Negligible	0	1	1	710	No	2	Two-way stop
2017034190	Co Rd B30/260	Co Rd R44/OAK AVE	9	3.0	4	90	0	0	0	705	2	70	2	0	0	0	0	4	1	Negligible	0	0	0	640	No	0	Two-way stop
2017034211	NO NAME	DIAGONAL ST	9	< 1.5	0	83	2	0	0	1,050	3	335	2	4	2	0	0	3	0	Negligible	0	0	0	790	No	0	One-way stop
2017034237	Co Rd B14/330	Co Rd R74/YALE AVE	9	2.0	4	90	0	0	0	1,760	3	35	1	0	0	0	0	4	1	Negligible	0	2	2	1,715	No	1	Two-way stop
2017034249	Co Rd R70/VALLEY RD	VAIL AVE	9	< 1.5	0	60	4	1	4	205	0	15	1	0	0	0	0	3	0	Negligible	0	0	0	190	No	0	One-way stop
2017034260	Co Rd B20/290	Co Rd R64/TAFT AVE	9	5.2	4	90	0	0	0	575	2	20	1	2	1	0	0	4	1	Negligible	0	0	0	420	Yes	0	All-way stop
2017034318	Co Rd B14/330	DEER AVE	9	3.0	4	90	0	0	0	780	2	60	2	0	0	0	0	4	1	Negligible	0	0	0	700	Yes	0	Two-way stop
2017034327	Co Rd B20/290	Co Rd R20/DEER AVE	9	6.0	4	90	0	0	0	565	2	130	2	0	0	0	0	4	1	Negligible	0	0	0	440	Yes	2	Two-way stop
2017034717	SAGE AVE	SAGE DR	9	< 1.5	0	52	4	0	0	765	2	180	2	2	1	0	0	3	0	Negligible	0	0	0	655	No	0	One-way stop
2017014681	APPLE AVE	250TH ST	8	< 1.5	0	90	0	1	4	495	2	35	1	1	1	0	0	3	0	Negligible	0	1	0	450	No	0	One-way stop
2017033963	US 18	NO NAME & NETTLE AVE & NATION AVE	8	< 1.5	0	90	0	0	0	5,475	3	45	2	8	2	0	0	4	1	Negligible	0	2	2	5,200	Yes	0	Two-way stop
2017034040	Co Rd B63/110	Co Rd R56/PALM AVE	8	6.0	4	90	0	0	0	540	2	35	1	0	0	0	0	4	1	Negligible	0	0	0	490	No	1	Two-way stop
2017034109	Co Rd B40/210	Co Rd R44/NASH AVE	8	5.0	4	90	0	0	0	460	1	170	2	0	0	0	0	4	1	Negligible	0	0	0	260	No	1	Two-way stop
2017034124	Co Rd B55/170	Co Rd R56/PALM AVE	8	6.0	4	90	0	0	0	670	2	15	1	0	0	0	0	4	1	Negligible	0	0	0	650	Yes	1	Two-way stop
2017034135	Co Rd R35/JAMES AVE	200	8	< 1.5	0	45	4	0	0	1,240	3	10	0	0	0	0	0	4	1	Negligible	0	0	0	1,205	No	0	Two-way stop
2017034148	Co Rd R26/ECHO AVE	Co Rd R26/ECHO AVE	8	< 1.5	0	24	4	1	4	165	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	110	No	0	One-way stop
2017034176	Co Rd R70/YALE AVE	250	8	< 1.5	0	73	2	0	0	925	3	225	2	1	1	0	0	3	0	Negligible	0	1	1	720	No	0	One-way stop
2017034229	225	EDEN AVE	8	4.3	4	90	0	0	0	535	2	40	1	2	1	0	0	3	0	Negligible	0	1	1	380	No	1	Two-way stop
2017034248	Co Rd R70/RIVER RD	Co Rd R70/VALLEY RD	8	3.3	4	84	2	0	0	210	0	20	1	1	1	0	0	3	0	Negligible	0	0	0	190	No	0	One-way stop
2017034257	Co Rd B20/290	Co Rd R70/VAN AVE	8	3.2	4	90	0	0	0	475	2	95	2	0	0	0	0	3	0	Negligible	0	1	0	420	No	0	One-way stop
2017034269	Co Rd B14/OAK AVE/335	Co Rd B14/OAK AVE/335	8	< 1.5	0	25	4	0	0	1,115	3	5	0	1	1	0	0	3	0	Negligible	0	2	0	1,110	No	0	One-way stop
2017034298	Co Rd B14/330	Co Rd R34	8	< 1.5	0	25	4	0	0	515	2	245	2	0	0	0	0	3	0	Negligible	0	1	0	490	No	0	One-way stop
2017034300	Co Rd R34/JAMES AVE	Co Rd R34/JAMES AVE	8	< 1.5	0	25	4	0	0	875	3	25	1	0	0	0	0	3	0	Negligible	0	0	0	850	No	0	One-way stop
2017034302	Co Rd R34/JAMES AVE/320	Co Rd R34/320	8	< 1.5	0	24	4	0	0	1,275	3	25	1	0	0	0	0	3	0	Negligible	0	0	0	850	No	0	One-way stop
2017034380	1ST ST	ELM ST	8	< 1.5	0	90	0	0	0	1,190	3	490	2	8	2	0	0	4	1	Negligible	0	3	2	610	No	0	Uncontrolled
2017034381	1ST ST	MAPLE ST	8	< 1.5	0	90	0	0	0	1,430	3	220	2	7	2	0	0	4	1	Negligible	0	0	0	785	No	0	Two-way stop
2017034392	S SUMMIT AVE	2ND ST	8	< 1.5	0	90	0	0	0	945	3	65	2	7	2	0	0	4	1	Negligible	0	0	0	775	Yes	0	Two-way stop
2017034395	1ST ST	N STATE AVE/S STATE AVE	8	< 1.5	0	90	0	0	0	4,195	3	725	2	10	2	0	0	4	1	Negligible	0	1	0	5,245	Yes	0	One-way stop
2017109613	1ST ST	OAK ST	8	< 1.5	0	90	0	0	0	895	3	220	2	3	2	0	0	4	1	Negligible	0	0	0	785	No	0	Two-way stop
2017109617	MCKINLEY ST	MAPLE ST/ADAMS ST	8	< 1.5	0	90	0	0	0	995	3	230	2	7	2	0	0	4	1	Negligible	0	0	0	785	Yes	0	Two-way stop
2017109636	1ST ST	N PARK AVE/S PARK AVE	8	< 1.5	0	90	0	0	0	1,090	3	230	2	5	2	0	0	4	1	Negligible	0	0	0	725	Yes	0	Two-way stop
2017109724	WILLOW ST	1ST ST	8	< 1.5	0	90	0	0	0	1,095	3	230	2	8	2	0	0	4	1	Negligible	0	0	0	520	Yes	0	Two-way stop
2017014805	Co Rd B20/290TH ST	APPLE AVE	7	5.0	4	90	0	0	0	370	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	335	No	0	Two-way stop
2017033989	US 69	R66/200th St.	7	< 1.5	0	90	0	0	0	2,735	3	170	2	2	1	0	0	4	1	Negligible	0	0	0	2,450	No	0	Two-way stop
2017034001	US 69	CO RD B14/330TH ST	7	< 1.5	0	90	0	0	0	4,890	3	60	2	0	0	0	0	4	1	Medium	1	13	11	4,600	Yes	0	Other
2017034029	Co Rd B63/110	Co Rd R66/VAIL AVE	7	6.0	4	90	0	0	0	425	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	340	No	1	Two-way stop
2017034066	R35	CO RD R35/JAMES AVE/JACKSON AVE & 100TH ST	7	4.3	4	90	0	0	0	920	3	10	0	0	0	0	0	3	0	Negligible	0	0	0	910	No	0	One-way stop
2017034137	Co Rd R35/JAMES AVE	Co Rd R35/JAMES AVE	7	< 1.5	0	26	4	0	0	1,215	3	5	0	0	0	0	0	3	0	Negligible	0	0	0	1,205	No	0	One-way stop
2017034214	225	GRANT AVE	7	< 1.5	0	83	2	0	0	505	2	40	1	1	1	0	0	4	1	Negligible	0	0	0	460	No	0	Two-way stop
2017034245	Co Rd R70/RIVER RD	TAFT AVE	7	< 1.5	0	78	2	1	4	210	0	20	1	0	0	0	0	3	0	Negligible	0	1	0	190	No	0	One-way stop
2017034250	Co Rd R70/RIVER RD	TAYLOR AVE	7	< 1.5	0	87	0	1	4	235	0	45	2	1	1	0	0	3	0	Negligible	0	1	0	190	No	0	One-way stop
2017034270	Co Rd B14/OAK AVE	Co Rd B14/OAK AVE	7	< 1.5	0	25	4	0	0	1,115	3	5	0	0	0	0	0	3	0	Negligible	0	1	0	1,110	No	0	One-way stop
2017034297	Co Rd R34/JAMES AVE/330	Co Rd R34/330	7	< 1.5	0	23	4	0	0	515	2	25	1	0	0	0	0	3	0	Negligible	0	0	0	490	No	0	One-way stop
2017034384	ELM ST	2ND ST	7	< 1.5	0	90	0	0	0	810	2	230	2	6	2	0	0	4	1	Negligible	0	0	0	490	No	0	Uncontrolled
2017034389	S SUMMIT AVE	5TH ST	7	< 1.5	0	90	0	0	0	1,030	3	135	2	7	2	0	0	3	0	Negligible	0	0	0	660	Yes	0	One-way stop
2017034396	1ST ST	N SUMMIT AVE/S SUMMIT AVE	7	< 1.5	0	98	0	0	0	1,080	3	280	2	4	2	0	0	3	0	Negligible	0	0	0	775	Yes	0	One-way stop
2017034477	BUSH AVE	3RD ST	7	< 1.5	0	90	0	0	0	905	3	110	2	8	2	0	0	3	0	Negligible	0	0	0	795	Yes	0	One-way stop
2017034674	US 18	Co Rd R44/NASH AVE & NO NAME	7	< 1.5	0	90	0	0	0	5,385	3	110	2	1	1	0	0	4	1	Negligible	0	2	1	5,200	No	0	Uncontrolled
2017034675	US 18	NO NAME & NATION AVE	7	< 1.5	0	90	0	0	0	5,410	3	45	2	9	2	0	0	3	0	Negligible	0	2	2	5,200	No	0	Uncontrolled
2017109612	1ST ST	LINN ST	7	< 1.5	0	90	0	0	0	750	2	50	2	6	2	0	0	4	1	Negligible	0	0	0	495	No	0	Two-way stop
2017109615	MCKINLEY ST	LINN ST	7	< 1.5	0	57	4	0	0	430	1	25	1	2	1	0	0	3	0	Negligible	0	0	0	385	Yes	0	One-way stop
2017109624	ELM ST	CLINTON ST	7	< 1.5	0	90	0	0	0	695	2	75	2	13	2	0	0	4	1	Negligible	0	0	0	610	No	0	Two-way stop
2017109640	S SUMMIT AVE	4TH ST	7	< 1.5	0	90	0	0	0	925	3	155	2	13	2	0	0	3	0	Negligible	0	0	0	775	Yes	0	One-way stop
2017109641	S SUMMIT AVE	3RD ST	7	< 1.5	0	90	0	0	0	860	3	50	2	12	2	0	0	3	0	Negligible	0	0	0	775	Yes	0	One-way stop
2017109726	WILLOW ST	3RD ST	7	< 1.5	0	90	0	0	0	725	2	50	2	6	2	0	0	4	1	Negligible	0	0	0	520	Yes	0	Two-way stop
2017109795	BUSH AVE	1ST ST	7	< 1.5	0	90	0	0	0	970	3	80	2	5	2	0	0	3	0	Negligible	0	0	0	585	Yes	0	One-way stop
2017109796	BUSH AVE	1ST AVE	7	< 1.5	0	90	0	0	0	970	3	60	2	4	2	0	0	3	0	Negligible	0	0	0	670	Yes	0	One-way stop
2017109804	OLD HWY 111	MAIN AVE	7	< 1.5	0	73	2	0	0	625	2	115	2	2	1	0	0	3	0	Negligible	0	0	0	480	No	0	One-way stop
2017109814	IOWA AVE	1ST ST SW	7	< 1.5	0	90	0	0	0	1,075	3	115	2	4	2	0	0	3	0	Negligible	0	0	0	950	No	0	One-way stop
2017109815	IOWA AVE	CENTER ST W	7	< 1.5	0	90	0	0	0	1,015	3	70	2	5	2	0	0	3	0	Negligible	0	0	0	950	No	0	One-way stop
2017109816	IOWA AVE	1ST ST NW	7	< 1.5	0	90	0	0	0	1,075	3	115	2	4	2	0	0	3	0	Negligible	0	4	3	950	No	0	One-way stop
2017033957	US 18	NO NAME	6	< 1.5	0	90	0	0	0	4,935	3	335	2	1	1	0	0	3	0	Negligible	0	1	1	5,200	No	0	One-way stop
2017033986	US 69	B55/170th St.	6	< 1.5	0	90	0	0	0	2,760	3	650	2	0	0	0	0	4	1	Negligible	0	3	2	2,450	No	0	Two-way stop
2017034073	Co Rd B55/160	CRANE AVE	6	< 1.5	0	42	4	0	0	335	1	5	0	2	1	0	0	3	0	Negligible	0	0	0	330	No	0	One-way stop
2017034094	Co Rd R66/200	SIOUX AVE	6	2.6	4	90	0	0	0	235	0	35	1	1	1	0	0	3	0	Negligible	0	2	0	230	No	0	One-way stop
2017034101	Co Rd B55/170	Co Rd R70/YALE AVE	6	< 1.5	0	90	0	0	0	715	2	35	1	0	0	1	2	4	1	Negligible	0	1	1	660	No	0	Two-way stop
2017034151	Co Rd B46/190	Co Rd R26/ECHO AVE	6	4.1	4	90	0	0	0	140	0	20	1	0	0	0	0	4	1	Negligible	0	0	0	110	No	0	Two-way stop
2017034196	Co Rd R44/NASH AVE	233RD ST	6	< 1.5	0	84	2	0	0	290	1	30	1	3	2	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034242	Co Rd B14/330	TAFT AVE	6	< 1.5	0	90	0	0	0	1,760	3	40	1	1	1	0	0	4	1	Negligible	0	1	0	1,715	No	0	Two-way stop
2017034267	Co Rd B14/335 & CRYSTAL LAKE RD	QUAIL AVE	6	< 1.5	0	90	0	0	0	2,000	3	150	2	0	0	0	0	4	1	Negligible	0	1	0	3,500	Yes	0	Two-way stop
2017034272	Co Rd B14/330	MAPLE AVE	6	< 1.5	0	90	0	0	0	840	2	30	1	0	0	1	2	4	1	Negligible	0	2	1	795	No	0	Two-way stop
2017034303	Co Rd B14/330	LADD AVE	6	< 1.5	0	90	0	0	0	850	2	50	2	0	0	1	2	3	0	Negligible	0	1	0	795	No	0	One-way stop
2017034325	Co Rd R20/DEER AVE	310	6	< 1.5	0	90	0	0	0	400	1	20	1	1	1	1	2	4	1	Negligible	0	1	0	370	No	0	Two-way stop
2017034677	US 18	NETTLE AVE & NATION AVE	6	< 1.5	0	90	0	0	0	5,410	3	20	1	7	2	0	0	3	0	Negligible	0	2	2	410	No	0	Uncontrolled
2017109611	1ST ST	J & M PL	6	< 1.5	0	90	0	0	0	510	2	70	2	6	2	0	0	3	0	Negligible	0	0	0	495	No	0	Uncontrolled
2017109616	MCKINLEY ST	BENTON ST	6	< 1.5	0	90	0	0	0	505	2	115	2	8	2	0	0	3	0	Negligible	0	0	0	345	Yes	0	One-way stop
2017109625	ELM ST	3RD ST	6	< 1.5	0	90	0	0	0	720	2	115	2	10	2	0	0	3	0	Negligible	0	0	0	490	Yes	0	Uncontrolled
2017109639	S SUMMIT AVE	5TH ST	6	< 1.5	0	90	0	0	0	845	2	115	2	11	2	0	0	3	0	Negligible	0	0	0	660	Yes	0	One-way stop
2017109725	WILLOW ST	2ND ST	6	< 1.5	0	90	0	0	0	705	2	20	1	9	2	0	0	4	1	Negligible	0	0	0	520	Yes	0	Two-way stop
2017109727	WILLOW ST	4TH ST	6	< 1.5	0	90	0	0	0	620	2	115	2	3	2	0	0	3	0	Negligible	0	0	0	520	Yes	0	One-way stop

Disclaimer: Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made. As such the information in this table may vary from final information presented on the project sheets. Priority locations selected for project sheets were selected in coordination with the County and may not align with the highest scoring locations.

Hancock County
Safety Action Plan
Intersection Risk Factor Points

INTID	Paved Road	Intersecting Road	Risk Factor Points	Previous STOP Distance (miles) (Value)	Previous STOP Distance (miles) (Points)	Skew (degrees) (Value)	Skew (degrees) (Points)	Intersection in Curve (Value)	Intersection in Curve (Points)	Daily Entering Vehicles (Value)	Daily Entering Vehicles (Points)	Minor Street Volume (Value)	Minor Street Volume (Points)	Access Management (250 ft) (Value)	Access Management (250 ft) (Points)	KA Crashes (Value)	KA Crashes (Points)	Approaches (Value)	Approaches (Points)	KABCO PCR Level (Value)	KABCO PCR Level (Points)	Total Crashes	Right Angle, Rear-end, or Turning Crashes	Major ADT	Destination Lighting	Transverse Rumble Strips	Control Type
2017109794	BUSH AVE	2ND ST	6	< 1.5	0	90	0	0	0	800	2	60	2	8	2	0	0	3	0	Negligible	0	0	0	795	Yes	0	One-way stop
2017150873	N SUMMIT AVE	2ND PL N	6	< 1.5	0	78	2	0	0	775	2	145	2	0	0	0	0	3	0	Negligible	0	0	0	565	Yes	0	One-way stop
2017014791	Co Rd B14/330TH ST	APPLE AVE	5	< 1.5	0	90	0	0	0	1,610	3	40	1	0	0	0	0	4	1	Negligible	0	1	0	1,540	No	0	Two-way stop
2017033948	US 18	Crane Ave	5	< 1.5	0	90	0	0	0	3,025	3	40	1	0	0	0	0	4	1	Negligible	0	0	0	2,980	No	0	Two-way stop
2017033985	US 69	168TH ST	5	< 1.5	0	90	0	0	0	1,945	3	295	2	0	0	0	0	3	0	Negligible	0	0	0	1,650	Yes	0	One-way stop
2017034052	Co Rd B60/150	Co Rd R35/JAMES AVE	5	< 1.5	0	90	0	0	0	1,160	3	20	1	0	0	0	0	4	1	Negligible	0	0	0	1,125	No	0	Two-way stop
2017034055	Co Rd B60/140	Co Rd R35/JAMES AVE	5	< 1.5	0	90	0	0	0	1,150	3	15	1	0	0	0	0	4	1	Negligible	0	0	0	1,125	No	0	Two-way stop
2017034058	Co Rd R35/JAMES AVE	130	5	< 1.5	0	90	0	0	0	1,165	3	30	1	0	0	0	0	4	1	Negligible	0	0	0	1,125	No	0	Two-way stop
2017034086	Co Rd B63/120	DEER AVE	5	< 1.5	0	90	0	0	0	555	2	25	1	1	1	0	0	4	1	Negligible	0	1	0	440	No	0	Two-way stop
2017034092	SIOUX AVE	215	5	< 1.5	0	57	4	0	0	255	0	25	1	0	0	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017034093	SIOUX AVE	210	5	< 1.5	0	90	0	0	0	290	1	60	2	2	1	0	0	4	1	Negligible	0	1	0	230	No	0	Two-way stop
2017034105	Co Rd R66/TAFT AVE	E MAIN ST	5	< 1.5	0	90	0	0	0	355	1	115	2	5	2	0	0	3	0	Negligible	0	0	0	240	No	0	One-way stop
2017034138	Co Rd R35/JAMES AVE	Co Rd R38/190	5	< 1.5	0	90	0	0	0	1,250	3	35	1	0	0	0	0	4	1	Negligible	0	0	0	1,205	No	0	Two-way stop
2017034143	Co Rd B55/170	Co Rd R35/JAMES AVE	5	< 1.5	0	90	0	0	0	1,620	3	35	1	0	0	0	0	4	1	Negligible	0	0	0	1,415	Yes	1	Two-way stop
2017034147	Co Rd R26/220/ECHO AVE	Co Rd R26/ECHO AVE	5	< 1.5	0	27	4	0	0	165	0	10	0	1	1	0	0	3	0	Negligible	0	0	0	110	No	0	One-way stop
2017034159	Co Rd B46/190	Co Rd R26/FORD AVE	5	3.0	4	90	0	0	0	130	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	110	No	0	Two-way stop
2017034177	Co Rd R70/YALE AVE	240	5	< 1.5	0	90	0	0	0	810	2	200	2	0	0	0	0	4	1	Negligible	0	0	0	720	No	1	Two-way stop
2017034200	Co Rd R35/JAMES AVE	280	5	< 1.5	0	90	0	0	0	855	3	10	0	1	1	0	0	4	1	Negligible	0	1	0	830	No	0	Two-way stop
2017034201	Co Rd B30/260	Co Rd R35/JAMES AVE	5	< 1.5	0	90	0	0	0	880	3	25	1	0	0	0	0	4	1	Negligible	0	0	0	830	No	0	Two-way stop
2017034205	Co Rd R35/JAMES AVE	250	5	< 1.5	0	90	0	0	0	865	3	15	1	0	0	0	0	4	1	Negligible	0	0	0	830	No	0	Two-way stop
2017034226	225	BIRCH AVE	5	< 1.5	0	79	2	0	0	345	1	30	1	0	0	0	0	4	1	Negligible	0	0	0	310	No	0	Two-way stop
2017034228	225	DEER AVE	5	< 1.5	0	83	2	0	0	350	1	25	1	0	0	0	0	4	1	Negligible	0	0	0	310	No	0	Two-way stop
2017034234	Co Rd R26/225	Co Rd R26/FORD AVE	5	< 1.5	0	83	2	0	0	475	2	15	1	0	0	0	0	3	0	Negligible	0	0	0	460	No	0	One-way stop
2017034235	Co Rd R26/ESTATE AVE	Co Rd R26/ESTATE AVE	5	< 1.5	0	27	4	0	0	125	0	15	1	0	0	0	0	3	0	Negligible	0	1	0	110	No	0	One-way stop
2017034239	Co Rd B14/330	WELCH AVE	5	< 1.5	0	90	0	0	0	1,750	3	15	1	0	0	0	0	4	1	Negligible	0	1	1	1,715	No	0	Two-way stop
2017034244	Co Rd B14/330	TAYLOR AVE	5	< 1.5	0	90	0	0	0	1,725	3	5	0	3	2	0	0	3	0	Negligible	0	0	0	1,715	No	0	One-way stop
2017034268	Co Rd B14/335	PINE AVE	5	< 1.5	0	90	0	0	0	1,130	3	20	1	1	1	0	0	3	0	Negligible	0	1	0	1,110	No	0	One-way stop
2017034273	Co Rd B14/330	KNOLLWOOD CT	5	< 1.5	0	90	0	0	0	2,320	3	30	1	1	1	0	0	3	0	Negligible	0	0	0	2,285	No	0	One-way stop
2017034295	Co Rd B20/QUAIL AVE/290	Co Rd B20/QUAIL AVE/290	5	< 1.5	0	31	4	0	0	150	0	20	1	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034324	Co Rd R20/DEER AVE & BUSH AVE	320	5	< 1.5	0	90	0	0	0	755	2	80	2	0	0	0	0	4	1	Negligible	0	0	0	635	No	0	Two-way stop
2017034334	IOWA AVE/9TH AVE SW	7TH ST SW	5	< 1.5	0	90	0	0	0	410	1	60	2	5	2	0	0	3	0	Negligible	0	1	0	380	No	0	One-way stop
2017034461	Co Rd R66/TAFT AVE	E ARTHURS LN	5	< 1.5	0	90	0	0	0	375	1	115	2	4	2	0	0	3	0	Negligible	0	0	0	235	No	0	One-way stop
2017034462	Co Rd R66/TAFT AVE	E PAULS DR	5	< 1.5	0	90	0	0	0	375	1	115	2	3	2	0	0	3	0	Negligible	0	0	0	235	No	0	One-way stop
2017034676	US 18	NETTLE AVE & NAVY AVE	5	< 1.5	0	90	0	0	0	2,635	3	10	0	6	2	0	0	3	0	Negligible	0	0	0	40	No	0	Uncontrolled
2017034682	223RD ST/NETTLE AVE	NAVY AVE	5	< 1.5	0	80	2	0	0	40	0	15	1	5	2	0	0	3	0	Negligible	0	0	0	30	No	0	One-way stop
2017109619	MCKINLEY ST	WILLOW ST	5	< 1.5	0	90	0	0	0	495	2	115	2	1	1	0	0	3	0	Negligible	0	2	0	315	No	0	One-way stop
2017109650	Co Rd B36/E LYONS ST	CROWN ST	5	< 1.5	0	90	0	0	0	905	3	10	0	3	2	0	0	3	0	Negligible	0	0	0	850	Yes	0	One-way stop
2017109793	BUSH AVE	4TH ST	5	< 1.5	0	90	0	0	0	750	2	30	1	5	2	0	0	3	0	Negligible	0	0	0	675	Yes	0	One-way stop
2017109817	JEWEL AVE	6TH ST SE	5	< 1.5	0	90	0	0	0	325	1	95	2	3	2	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017109819	JEWEL AVE	4TH ST SE	5	< 1.5	0	90	0	0	0	325	1	95	2	4	2	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017109820	JEWEL AVE	3RD ST SE	5	< 1.5	0	90	0	0	0	465	1	95	2	4	2	0	0	3	0	Negligible	0	0	0	375	No	0	One-way stop
2017150365	Co Rd B20/290	NO NAME	5	< 1.5	0	90	0	0	0	390	1	390	2	4	2	0	0	3	0	No Data	0	0	0	0	No	0	Uncontrolled
2017033951	US 18	EDEN AVE	4	< 1.5	0	90	0	0	0	3,020	3	40	1	0	0	0	0	3	0	Negligible	0	0	0	2,980	No	0	One-way stop
2017034008	IA 17	1st St	4	< 1.5	0	90	0	0	0	850	2	75	2	0	0	0	0	3	0	Negligible	0	1	0	680	No	0	One-way stop
2017034030	Co Rd B63/110	TIMBER DR	4	< 1.5	0	90	0	0	0	505	2	20	1	0	0	0	0	4	1	Negligible	0	0	0	400	No	1	Two-way stop
2017034032	Co Rd B63/110	UNION AVE	4	< 1.5	0	90	0	0	0	380	1	30	1	1	1	0	0	4	1	Negligible	0	0	0	340	No	0	Two-way stop
2017034047	Co Rd B63/110	QUAIL AVE	4	< 1.5	0	90	0	0	0	525	2	25	1	0	0	0	0	4	1	Negligible	0	0	0	490	No	0	Two-way stop
2017034048	Co Rd B63/110	RAKE AVE	4	< 1.5	0	90	0	0	0	505	2	15	1	0	0	0	0	4	1	Negligible	0	0	0	490	No	0	Two-way stop
2017034051	Co Rd B55/160	Co Rd R35/JAMES AVE	4	< 1.5	0	90	0	0	0	1,430	3	10	0	0	0	0	0	4	1	Negligible	0	0	0	1,415	Yes	1	Two-way stop
2017034062	Co Rd B63/120	IOWA AVE	4	< 1.5	0	90	0	0	0	560	2	35	1	0	0	0	0	4	1	Negligible	0	0	0	520	No	0	Two-way stop
2017034063	Co Rd B63/120	HILL AVE	4	< 1.5	0	90	0	0	0	555	2	30	1	0	0	0	0	4	1	Negligible	0	0	0	520	No	0	Two-way stop
2017034082	Co Rd R18/BIRCH AVE	130	4	< 1.5	0	90	0	0	0	335	1	45	2	0	0	0	0	4	1	Negligible	0	1	0	240	No	0	Two-way stop
2017034088	Co Rd B63/120	CRANE AVE	4	< 1.5	0	90	0	0	0	440	1	15	1	1	1	0	0	4	1	Negligible	0	0	0	410	No	0	Two-way stop
2017034112	Co Rd R44/NASH AVE	200	4	< 1.5	0	90	0	0	0	250	0	20	1	1	1	1	2	3	0	Negligible	0	1	0	230	No	0	One-way stop
2017034123	Co Rd B55/170	OAK AVE	4	< 1.5	0	90	0	0	0	595	2	30	1	0	0	0	0	4	1	Negligible	0	0	0	550	No	0	Two-way stop
2017034125	Co Rd B55/170	QUAIL AVE	4	< 1.5	0	90	0	0	0	670	2	15	1	0	0	0	0	4	1	Negligible	0	0	0	650	No	0	Two-way stop
2017034142	Co Rd R35/JAMES AVE	180	4	< 1.5	0	90	0	0	0	1,225	3	5	0	0	0	0	0	4	1	Negligible	0	0	0	1,205	No	0	Two-way stop
2017034144	Co Rd B55/170	KENT AVE	4	< 1.5	0	90	0	0	0	595	2	20	1	0	0	0	0	4	1	Negligible	0	0	0	570	No	0	Two-way stop
2017034184	Co Rd B36/225	UNION AVE	4	< 1.5	0	90	0	0	0	885	3	15	1	0	0	0	0	3	0	Negligible	0	1	0	870	No	0	One-way stop
2017034187	Co Rd B36/225	Co Rd R70/YALE AVE	4	< 1.5	0	90	0	0	0	650	2	35	1	0	0	0	0	4	1	Negligible	0	0	0	660	No	1	Two-way stop
2017034197	Co Rd R44/NASH AVE	231ST ST	4	< 1.5	0	81	2	0	0	265	1	5	0	2	1	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034216	JEWEL AVE	7TH ST SE	4	< 1.5	0	90	0	0	0	355	1	95	2	2	1	0	0	3	0	Negligible	0	0	0	240	No	0	One-way stop
2017034218	Co Rd R20/DEER AVE	270	4	< 1.5	0	90	0	0	0	485	2	30	1	0	0	0	0	4	1	Negligible	0	0	0	440	No	0	Two-way stop
2017034219	Co Rd B30/260	Co Rd R20/DEER AVE	4	< 1.5	0	90	0	0	0	485	2	40	1	0	0	0	0	4	1	Negligible	0	0	0	440	No	0	Two-way stop
2017034275	Co Rd B16/310	MAPLE AVE	4	< 1.5	0	90	0	0	0	505	2	30	1	0	0	0	0	4	1	Negligible	0	0	0	470	No	0	Two-way stop
2017034289	Co Rd R44/OAK AVE	284TH ST	4	< 1.5	0	90	0	0	0	570	2	30	1	2	1	0	0	3	0	Negligible	0	0	0	540	No	0	One-way stop
2017034293	Co Rd B20/285	Co Rd B20/285	4	< 1.5	0	36	4	0	0	140	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034294	Co Rd B20/285/QUAIL AVE	Co Rd B20/285/QUAIL AVE	4	< 1.5	0	31	4	0	0	140	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034296	Co Rd B20/QUAIL AVE	Co Rd B20/QUAIL AVE	4	< 1.5	0	30	4	0	0	140	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034306	Co Rd R35/320	IOWA AVE	4	< 1.5	0	90	0	0	0	630	2	30	1	0	0	0	0	4	1	Negligible	0	1	0	590	No	0	Two-way stop
2017034307	Co Rd R30/HILL AVE	Co Rd R35/320	4	< 1.5	0	90	0	0	0	655	2	40	1	0	0	0	0	4	1	Negligible	0	0	0	590	No	0	Two-way stop
2017034308	Co Rd R35/320	GRANT AVE	4	< 1.5	0	90	0	0	0	605	2	15	1	0	0	0	0	4	1	Negligible	0	0	0	590	No	0	Two-way stop
2017034322	Co Rd R26/FORD AVE	Co Rd R35/320	4	< 1.5	0	90	0	0	0	610	2	20	1	0	0	0	0	4	1	Negligible	0	0	0	590	No	0	Two-way stop
2017034326	Co Rd R35/320 & OLD HWY 111	HOWARD AVE	4	< 1.5	0	90	0	0	0	610	2	150	2	0	0	0	0	3	0	No Data	0	0	0	460	Yes	0	One-way stop
2017034350	JEWEL AVE	2ND ST SE	4	< 1.5	0	90	0	0	0	420	1	95	2	1	1	0	0	3	0	Negligible	0	0	0	280	No	0	One-way stop
2017034467	Co Rd R66/TAFT AVE	E HANCOCK ST	4	< 1.5	0	90	0	0	0	375	1	115	2	2	1	0	0	3	0	Negligible	0	0	0	235	No	0	One-way stop
2017034473	Co Rd R66/TAFT AVE	E STATE ST	4	< 1.5	0	90	0	0	0	315	1	85	2	2	1	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017034679	234TH ST	NAVY AVE	4	< 1.5	0	90	0	0	0	55	0	25	1	15	2	0	0	4	1	Negligible	0	0	0	30	No	0	Uncontrolled
2017034741	Co Rd R44/OAK AVE	320	4	< 1.5	0	90	0	0	0	525	2	15	1	0	0	0	0	4	1	Negligible	0	0	0	520	No	0	Two-way stop
2017109503	Co Rd B40/210	LADD AVE	4	< 1.5	0	51	4	0	0	180	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	170	No	0	One-way stop
2017109614	MCKINLEY ST	GAINES ST	4	< 1.5	0	90	0	0	0	440	1	35	1	7	2	0	0	3	0	Negligible	0	0	0	385	Yes	0	One-way stop
2017109813	Co Rd R66/TAFT AVE	E DAKOTA ST	4	< 1.5	0	90	0	0	0	315	1	85	2	2	1	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017109818	JEWEL AVE	5TH ST SE	4	< 1.5	0	90	0	0	0	325	1	95	2	2	1	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017151209	KNOLLWOOD CT	SAGE AVE	4	< 1.5	0	90	0	0	0	570	2	30	1	2	1	0	0	3	0	Negligible	0	0	0	550	No	0	One-way stop
2017152836	340	205TH AVE & PILOT KNOB	4	< 1.5	0	90	0	0	0	190	0	0	0	2	1	1	2	4	1	No Data	0	1	0	190	No	2	Two-way stop
2017014615	Co Rd B55/170TH ST	APPLE AVE	3	< 1.5	0	90	0	0	0	685	2	15	1	0	0	0	0	3	0	Negligible	0	1	0	660	No	0	One-way stop
2017034026	Co Rd R68/VAIL AVE	120	3	< 1.5	0	90	0	0	0	195	0	45	2	0	0	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034028	Co Rd B63/110	Co Rd R70/YALE AVE	3	< 1.5	0	90	0	0	0	370	1	25	1	0	0	0	0	4	1	Negligible	0	0	0	335	No	0	Two-way stop
2017034044	Co Rd B63/110	NASH AVE	3	< 1.5	0	90	0	0	0	470	1	40	1	1	1	0	0	3	0	Negligible	0	0	0	430	No	0	One-way stop
2017034053	Co Rd B55/160	IOWA AVE	3	< 1.5	0	90	0	0	0	320	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	300	No	0	Two-way stop
2017034054	Co Rd B55/160	HILL AVE	3	< 1.5	0	90	0	0	0	315	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	300	No	0	Two-way stop
2017034060	Co Rd B63/110	LADD AVE	3	< 1.5	0	90	0	0	0	470	1	35	1	0	0	0	0	4	1	Negligible	0	0	0	430	No	0	Two-way stop
2017034061	120TH ST	KENT AVE	3	< 1.5	0	90	0	0	0	135	0	20	1	1	1	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034064	Co Rd B63/120	GRANT AVE	3	< 1.5	0	90	0	0	0	535	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	520	No	0	Two-way stop
2017034067	Co Rd B63/110	KENT AVE	3	< 1.5	0	90	0	0	0	460	1	20	1	0	0	0	0	4	1	Negligible	0	0	0	430	No	0	Two-way stop
2017034069	Co Rd R26/FORD AVE	150	3	< 1.5	0	90	0	0	0	130	0	20	1	1	1	0	0	4	1	Negligible	0	0	0	100	No	0	Two-way stop
2017034071	Co Rd B55/160	DEER AVE	3	< 1.5	0	90	0	0	0	355	1	20	1	0	0	0	0	4	1	Negligible	0	0	0	330	No	0	Two-way stop
2017034072	Co Rd B55/160	CRANE AVE	3	< 1.5	0	90	0	0	0	340	1	5	0	2	1	0	0	4	1	Negligible	0	0	0	330	No	0	One-way stop
2017034075	Co Rd R18/BIRCH AVE	150	3	< 1.5	0	90	0	0	0	285	1	35	1	0	0	0	0	4	1	Negligible	0	0	0	240	No	0	Two-way stop
2017034076	Co Rd B60/140	Co Rd R18/BIRCH AVE	3	< 1.5	0	90	0	0	0	260	1	20	1	0	0	0	0	4	1	Negligible	0	1	1	240	No	0	Two-way stop
2017034078	Co Rd R26/FORD AVE	NO NAME	3	< 1.5	0	90	0	0	0	110	0	20	1	3	2	0	0	3	0	No Data	0	0	0	90	No	0	Uncontrolled
2017034091	Co Rd R68/VAIL AVE	210	3	< 1.5	0	90	0	0	0	315	1	40	1	0	0	0	0	4	1	Negligible	0	1	1	260	No	0	Two-way stop
2017034095	Co Rd R68/VAIL AVE	200	3	< 1.5	0	90	0	0	0	285	1	20	1	0	0	0	0	4	1	Negligible	0	1	1	260	No	0	Two-way stop
2017034098	Co Rd R68/VAIL AVE	190	3	< 1.5	0	90	0	0	0	290	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	260	No	0	Two-way stop
2017034099	Co Rd R68/VAIL AVE	180	3	< 1.5	0	90	0	0	0	295	1	25	1	0	0	0	0	4	1	Negligible	0	0	0	260	No	0	Two-way stop
2017034106	Co Rd B55/170	WELCH AVE	3	< 1.5	0	90	0	0	0	690	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	660	No	0	Two-way stop
2017034107	Co Rd B40/210	Co Rd R56/PINE AVE	3	< 1.5	0	90	0	0	0	300	1	20	1	0	0	0	0	4	1	Negligible	0	1	0	260	No	0	Two-way stop
2017034110	Co Rd B40/210	MAPLE AVE	3	< 1.5	0	90	0	0	0	195	0	15	1	1	1	0	0	4	1	Negligible	0	0	0	170	No	0	Two-way stop
2017034114	Co Rd B40/210	QUINCY AVE	3	< 1.5	0	90	0	0	0	275	1	15	1	1	1	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034119	Co Rd R44/NASH AVE	190	3	< 1.5	0	90	0	0	0	255	0	20	1	1	1	0	0	4	1	Negligible	0	1	0	230	No	0	Two-way stop
2017034120	Co Rd R44/NASH AVE	180	3	< 1.5	0	90	0	0	0	265	1	20	1	0	0	0	0	4	1	Negligible	0	0	0	230	No	0	Two-way stop
2017034122	Co Rd B55/170	MAPLE AVE	3	< 1.5	0	90	0	0	0	595	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	570	No	0	Two-way stop
2017034130	220	JEWEL AVE	3	< 1.5	0	90	0	0	0	290	1	15	1	0	0	0	0	4	1	Negligible	0	0	0	240	No	0	Two-way stop
2017034145	Co Rd B55/170	Co Rd R38/LADD AVE	3	< 1.5	0	90	0	0	0	590	2	10	0	0	0	0	0	4	1	Negligible	0	1	1	570	No	0	Two-way stop
2017034164	Co Rd R64/TAFT AVE	280	3	< 1.5	0	90	0	0	0	340	1	20	1	1	1	0	0	3	0	Negligible	0	0	0	320	No	0	One-way stop
2017034178	Co Rd R70/YALE AVE	235	3	< 1.5	0	90	0	0	0	680	2	20	1	0	0	0	0	3	0	Negligible	0	1	0	660	No	0	One-way stop
2017034182	235	UNION AVE	3	< 1.5	0	90	0	0	0	245	0	45	2	1	1	0	0	3	0	Negligible	0	1	0	200	No	0	One-way stop
2017034186	Co Rd B36/225	WELCH AVE	3	< 1.5	0	90	0	0	0	545	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	530	No	0	Two-way stop
2017034189	Co Rd R44/OAK AVE	270	3	< 1.5	0	90	0	0	0	560	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	540	No	0	Two-way stop
2017034213	225	HILL AVE	3	< 1.5	0	86	0	0	0	480	2	20	1	0	0	0	0	3	0	Negligible	0	0	0	460	No	0	One-way stop
2017034227	225	CRANE AVE	3	< 1.5	0	86	0	0	0	355	1	35	1	0	0	0	0	4	1	Negligible	0	1	0	310	No	0	Two-way stop
2017034230	225	ELDER AVE	3	< 1.5	0	90	0	0	0	535	2	5	0	2	1	0	0	3	0	Negligible	0	2	1	380	No	0	One-way stop
2017034231	225	ELK AVE	3	< 1.5	0	90	0	0	0	385	1	5	0	4	2	0	0	3	0	Negligible	0	0	0	380	No	0	One-way stop
2017034246	Co Rd B14/330	VAN AVE	3	< 1.5	0	90	0	0	0	1,730	3	10	0	0	0	0	0	3	0	Negligible	0	2	1	1,715	No	0	One-way stop

Disclaimer: Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made. As such the information in this table may vary from final information presented on the project sheets. Priority locations selected for project sheets were selected in coordination with the County and may not align with the highest scoring locations.

Hancock County
Safety Action Plan
Intersection Risk Factor Points

INTID	Paved Road	Intersecting Road	Risk Factor Points	Previous STOP Distance (miles) (Value)	Previous STOP Distance (miles) (Points)	Skew (degrees) (Value)	Skew (degrees) (Points)	Intersection in Curve (Value)	Intersection in Curve (Points)	Daily Entering Vehicles (Value)	Daily Entering Vehicles (Points)	Minor Street Volume (Value)	Minor Street Volume (Points)	Access Management (250 ft) (Value)	Access Management (250 ft) (Points)	KA Crashes (Value)	KA Crashes (Points)	Approaches (Value)	Approaches (Points)	KABCO PCR Level (Value)	KABCO PCR Level (Points)	Total Crashes	Right Angle, Rear-end, or Turning Crashes	Major ADT	Destination Lighting	Transverse Rumble Strips	Control Type
2017034247	Co Rd 814/330	WOOD AVE	3	< 1.5	0	90	0	0	0	1,725	3	5	0	0	0	0	0	3	0	Negligible	0	0	0	1,715	No	0	One-way stop
2017034258	Co Rd 820/290	TAYLOR AVE	3	< 1.5	0	90	0	0	0	465	1	45	2	0	0	0	0	3	0	Negligible	0	1	1	420	No	0	One-way stop
2017034262	Co Rd 820/290	VAIL AVE	3	< 1.5	0	90	0	0	0	465	1	10	0	1	1	0	0	4	1	Negligible	0	1	0	420	No	0	Two-way stop
2017034264	Co Rd 820/290	Co Rd R70/YALE AVE	3	< 1.5	0	90	0	0	0	370	1	20	1	0	0	0	0	4	1	Negligible	0	1	0	335	No	0	Two-way stop
2017034271	Co Rd 814/330	NASH AVE	3	< 1.5	0	90	0	0	0	820	2	5	0	0	0	0	0	4	1	Negligible	0	0	0	795	No	0	Two-way stop
2017034279	Co Rd 816/310	PINE AVE	3	< 1.5	0	90	0	0	0	540	2	5	0	0	0	0	0	4	1	Negligible	0	0	0	530	No	0	Two-way stop
2017034280	Co Rd 816/310	QUAIL AVE	3	< 1.5	0	90	0	0	0	545	2	15	1	0	0	0	0	3	0	Negligible	0	0	0	530	No	0	One-way stop
2017034281	Co Rd 820/290	Co Rd R44/OAK AVE	3	< 1.5	0	90	0	0	0	430	1	30	1	0	0	0	0	4	1	Negligible	0	0	0	390	No	0	Two-way stop
2017034285	Co Rd R44/OAK AVE	ORR AVE	3	< 1.5	0	90	0	0	0	395	1	5	0	5	2	0	0	3	0	Negligible	0	0	0	390	No	0	One-way stop
2017034286	Co Rd 820/285	ORR AVE	3	< 1.5	0	90	0	0	0	145	0	10	0	5	2	0	0	4	1	Negligible	0	0	0	130	Yes	0	Two-way stop
2017034301	Co Rd 814/330	KENT AVE	3	< 1.5	0	90	0	0	0	815	2	15	1	0	0	0	0	3	0	Negligible	0	0	0	795	No	0	One-way stop
2017034310	Co Rd 816/310	LADD AVE	3	< 1.5	0	90	0	0	0	495	2	25	1	0	0	0	0	3	0	Negligible	0	0	0	470	No	0	One-way stop
2017034314	Co Rd 820/290	IOWA AVE	3	< 1.5	0	90	0	0	0	220	0	15	1	1	1	0	0	4	1	Negligible	0	0	0	190	No	0	Two-way stop
2017034319	Co Rd 814/330	Co Rd R16/BIRCH AVE	3	< 1.5	0	87	0	0	0	400	1	35	1	0	0	0	0	4	1	Negligible	0	1	0	360	No	0	Two-way stop
2017034323	Co Rd R35/320	ECHO AVE	3	< 1.5	0	90	0	0	0	600	2	10	0	0	0	0	0	4	1	Negligible	0	0	0	590	No	0	Two-way stop
2017034603	Co Rd 846/220	IOWA AVE	3	< 1.5	0	90	0	0	0	430	1	70	2	0	0	0	0	3	0	Negligible	0	1	0	380	No	0	One-way stop
2017034748	284TH ST	ORR AVE	3	< 1.5	0	90	0	0	0	70	0	10	0	4	2	0	0	4	1	Negligible	0	0	0	60	No	0	Uncontrolled
2017034749	284TH ST	OTTO AVE	3	< 1.5	0	90	0	0	0	65	0	20	1	5	2	0	0	3	0	Negligible	0	0	0	45	No	0	One-way stop
2017150364	Co Rd 820/290	NO NAME	3	< 1.5	0	90	0	0	0	395	1	5	0	7	2	0	0	3	0	Negligible	0	0	0	390	Yes	0	Uncontrolled
2017156620	SIOUX AVE & FRONT ST	W CARDINAL ST	3	< 1.5	0	90	0	0	0	385	1	5	0	3	2	0	0	3	0	Negligible	0	0	0	520	Yes	0	One-way stop
2017014543	Co Rd 863/110TH ST	APPLE AVE	2	< 1.5	0	90	0	0	0	350	1	10	0	1	1	0	0	3	0	Negligible	0	0	0	335	No	0	One-way stop
2017014678	270TH ST	APPLE AVE	2	< 1.5	0	90	0	0	0	145	0	30	1	0	0	0	0	4	1	Negligible	0	0	0	100	No	0	Two-way stop
2017034021	Co Rd 860/150	Co Rd R68/VAIL AVE	2	< 1.5	0	90	0	0	0	180	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034022	Co Rd R68/VAIL AVE	140	2	< 1.5	0	90	0	0	0	195	0	40	1	0	0	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034036	Co Rd 860/150	Co Rd R56/PALM AVE	2	< 1.5	0	90	0	0	0	160	0	35	1	0	0	0	0	4	1	Negligible	0	0	0	120	No	0	Two-way stop
2017034037	Co Rd R56/PALM AVE	140	2	< 1.5	0	90	0	0	0	160	0	40	1	0	0	0	0	4	1	Negligible	0	0	0	120	No	0	Two-way stop
2017034038	Co Rd 862/130	Co Rd R56/PALM AVE	2	< 1.5	0	90	0	0	0	155	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	120	No	0	Two-way stop
2017034039	Co Rd R56/PALM AVE	120	2	< 1.5	0	90	0	0	0	150	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	120	No	0	Two-way stop
2017034041	Co Rd 863/110	Co Rd R38/NASH AVE	2	< 1.5	0	90	0	0	0	470	1	40	1	0	0	0	0	3	0	Negligible	0	0	0	430	No	0	One-way stop
2017034042	Co Rd 863/110	Co Rd R38/MAPLE AVE	2	< 1.5	0	90	0	0	0	455	1	25	1	0	0	0	0	3	0	Negligible	0	1	1	430	No	0	One-way stop
2017034046	Co Rd 863/110	OAK AVE	2	< 1.5	0	90	0	0	0	445	1	25	1	0	0	0	0	3	0	No Data	0	0	0	420	No	0	One-way stop
2017034070	Co Rd 855/160	ECHO AVE	2	< 1.5	0	90	0	0	0	350	1	5	0	0	0	0	0	4	1	Negligible	0	1	1	330	No	0	Two-way stop
2017034079	Co Rd R26/FORD AVE	NO NAME	2	< 1.5	0	90	0	0	0	110	0	15	1	1	1	0	0	3	0	No Data	0	0	0	95	No	0	Uncontrolled
2017034081	Co Rd R26/FORD AVE	130	2	< 1.5	0	90	0	0	0	125	0	35	1	0	0	0	0	4	1	Negligible	0	1	1	100	No	0	Two-way stop
2017034085	Co Rd 863/120	ECHO AVE	2	< 1.5	0	90	0	0	0	455	1	10	0	0	0	0	0	4	1	Negligible	0	0	0	440	No	0	Two-way stop
2017034103	Co Rd 855/170	UNION AVE	2	< 1.5	0	90	0	0	0	695	2	5	0	0	0	0	0	3	0	Negligible	0	0	0	690	No	0	One-way stop
2017034108	Co Rd R44/NASH AVE	200	2	< 1.5	0	90	0	0	0	275	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034111	Co Rd 840/210	OAK AVE	2	< 1.5	0	90	0	0	0	275	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034113	Co Rd 840/210	PALM AVE	2	< 1.5	0	90	0	0	0	275	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034115	Co Rd 840/210	RAKE AVE	2	< 1.5	0	90	0	0	0	275	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	260	No	0	One-way stop
2017034117	200	RAKE AVE	2	< 1.5	0	90	0	0	0	415	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	400	No	0	One-way stop
2017034126	Co Rd R56/PALM AVE	165	2	< 1.5	0	90	0	0	0	135	0	15	1	1	1	0	0	3	0	Negligible	0	0	0	120	No	0	One-way stop
2017034136	Co Rd 840/210	KING AVE	2	< 1.5	0	90	0	0	0	195	0	25	1	1	1	0	0	3	0	Negligible	0	0	0	170	No	0	One-way stop
2017034149	Co Rd R26/ECHO AVE	210	2	< 1.5	0	90	0	0	0	130	0	15	1	0	0	0	0	4	1	Negligible	0	1	1	110	No	0	Two-way stop
2017034158	Co Rd 846/190	NO NAME	2	< 1.5	0	90	0	0	0	125	0	15	1	1	1	0	0	3	0	Negligible	0	0	0	110	No	0	Uncontrolled
2017034160	Co Rd R26/FORD AVE	180	2	< 1.5	0	90	0	0	0	125	0	10	0	1	1	0	0	4	1	Negligible	0	0	0	110	No	0	Two-way stop
2017034163	Co Rd R70/YALE AVE	270	2	< 1.5	0	90	0	0	0	110	0	30	1	0	0	0	0	4	1	Negligible	0	0	0	100	No	1	Two-way stop
2017034165	Co Rd R64/TAFT AVE	270	2	< 1.5	0	90	0	0	0	325	1	5	0	1	1	0	0	3	0	Negligible	0	1	0	320	No	0	One-way stop
2017034168	Co Rd 830/260	WELCH AVE	2	< 1.5	0	90	0	0	0	250	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	230	No	0	Two-way stop
2017034169	Co Rd 830/260	VAIL AVE	2	< 1.5	0	90	0	0	0	250	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	230	No	0	Two-way stop
2017034170	Co Rd 830/260	URBAN AVE	2	< 1.5	0	90	0	0	0	250	0	20	1	1	1	0	0	3	0	Negligible	0	1	0	230	No	0	One-way stop
2017034171	Co Rd 830/260	UNION AVE	2	< 1.5	0	90	0	0	0	270	1	40	1	0	0	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017034175	Co Rd R68/VAIL AVE	240	2	< 1.5	0	90	0	0	0	235	0	10	0	1	1	0	0	4	1	Negligible	0	1	0	200	No	0	One-way stop
2017034179	Co Rd R70/YALE AVE	230	2	< 1.5	0	90	0	0	0	670	2	10	0	0	0	0	0	3	0	Negligible	0	0	0	660	No	0	One-way stop
2017034180	240	WELCH AVE	2	< 1.5	0	90	0	0	0	225	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	200	No	0	Two-way stop
2017034181	Co Rd R68/VAIL AVE	235	2	< 1.5	0	90	0	0	0	250	0	20	1	0	0	0	0	4	1	Negligible	0	1	0	200	No	0	Two-way stop
2017034188	Co Rd R44/OAK AVE	280	2	< 1.5	0	90	0	0	0	550	2	10	0	0	0	0	0	3	0	Negligible	0	0	0	540	No	0	One-way stop
2017034191	Co Rd 830/260	REED AVE	2	< 1.5	0	90	0	0	0	245	0	25	1	0	0	0	0	4	1	Negligible	0	0	0	210	No	0	Two-way stop
2017034193	Co Rd 830/260	PALM AVE	2	< 1.5	0	90	0	0	0	185	0	20	1	0	0	0	0	4	1	Negligible	0	0	0	160	No	0	Two-way stop
2017034195	Co Rd R44/OAK AVE	240	2	< 1.5	0	90	0	0	0	590	2	5	0	0	0	0	0	3	0	Negligible	0	1	0	640	No	0	One-way stop
2017034217	Co Rd R20/DEER AVE	280	2	< 1.5	0	90	0	0	0	460	1	5	0	0	0	0	0	4	1	Negligible	0	1	0	440	No	0	Two-way stop
2017034222	Co Rd R20/DEER AVE	250	2	< 1.5	0	90	0	0	0	470	1	10	0	0	0	0	0	4	1	Negligible	0	1	0	440	No	0	Two-way stop
2017034225	Co Rd R20/DEER AVE	240	2	< 1.5	0	90	0	0	0	455	1	5	0	0	0	0	0	4	1	Negligible	0	0	0	440	No	0	Two-way stop
2017034233	Co Rd R26/ESTATE AVE	224TH ST	2	< 1.5	0	90	0	0	0	115	0	5	0	3	2	0	0	3	0	Negligible	0	0	0	110	No	0	One-way stop
2017034254	Co Rd R70/VALLEY RD/VAN AVE	305	2	< 1.5	0	90	0	0	0	230	0	40	1	2	1	0	0	3	0	Negligible	0	0	0	190	No	0	One-way stop
2017034261	Co Rd 820/290	UNION AVE	2	< 1.5	0	90	0	0	0	430	1	10	0	1	1	0	0	3	0	Negligible	0	0	0	420	No	0	Uncontrolled
2017034263	Co Rd 820/290	WOOD AVE	2	< 1.5	0	90	0	0	0	355	1	15	1	0	0	0	0	3	0	Negligible	0	0	0	335	No	0	One-way stop
2017034274	Co Rd 816/310	NASH AVE	2	< 1.5	0	90	0	0	0	475	2	5	0	0	0	0	0	3	0	Negligible	0	0	0	470	No	0	One-way stop
2017034277	Co Rd 816/310	PALM AVE	2	< 1.5	0	90	0	0	0	535	2	5	0	0	0	0	0	3	0	Negligible	0	0	0	530	No	0	One-way stop
2017034288	Co Rd 820/285	OTTO AVE	2	< 1.5	0	90	0	0	0	155	0	25	1	2	1	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034304	Co Rd 814/330	335	2	< 1.5	0	90	0	0	0	805	2	5	0	0	0	0	0	3	0	Negligible	0	0	0	795	No	0	One-way stop
2017034309	Co Rd R35/JAMES AVE	300	2	< 1.5	0	90	0	0	0	760	2	10	0	0	0	0	0	3	0	Negligible	0	0	0	750	No	0	One-way stop
2017034312	Co Rd 820/290	HILL AVE	2	< 1.5	0	90	0	0	0	215	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	190	No	0	Two-way stop
2017034313	Co Rd 820/290	GRANT AVE	2	< 1.5	0	90	0	0	0	220	0	25	1	0	0	0	0	4	1	Negligible	0	0	0	190	No	0	Two-way stop
2017034321	Co Rd 814/330	CRANE AVE	2	< 1.5	0	90	0	0	0	380	1	10	0	0	0	0	0	4	1	Negligible	0	0	0	360	No	0	Two-way stop
2017034328	Co Rd 820/290	Co Rd R16/BIRCH AVE	2	< 1.5	0	90	0	0	0	175	0	35	1	0	0	0	0	4	1	Negligible	0	0	0	130	No	0	Two-way stop
2017034329	Co Rd 820/290	CRANE AVE	2	< 1.5	0	90	0	0	0	155	0	15	1	0	0	0	0	4	1	Negligible	0	0	0	130	No	0	Two-way stop
2017034330	Co Rd 820/290	ECHO AVE	2	< 1.5	0	90	0	0	0	215	0	20	1	0	0	0	0	4	1	Negligible	0	1	0	190	No	0	Two-way stop
2017034331	Co Rd 820/290	FORD AVE	2	< 1.5	0	90	0	0	0	225	0	30	1	0	0	0	0	4	1	Negligible	0	0	0	190	No	0	Two-way stop
2017034678	NETTLE AVE	234TH ST	2	< 1.5	0	86	0	0	0	40	0	10	0	9	2	0	0	3	0	Negligible	0	0	0	30	No	0	Uncontrolled
2017034680	234TH ST	NATION AVE	2	< 1.5	0	90	0	0	0	85	0	10	0	4	2	0	0	3	0	Negligible	0	0	0	135	No	0	One-way stop
2017034681	223RD ST	NATION AVE	2	< 1.5	0	86	0	0	0	50	0	10	0	3	2	0	0	3	0	Negligible	0	0	0	60	No	0	One-way stop
2017034683	223RD ST/NETTLE AVE	231ST ST	2	< 1.5	0	90	0	0	0	40	0	5	0	4	2	0	0	3	0	Negligible	0	0	0	30	No	0	Uncontrolled
2017034020	Co Rd R68/VAIL AVE	160	1	< 1.5	0	90	0	0	0	170	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034025	Co Rd R68/VAIL AVE	130	1	< 1.5	0	90	0	0	0	165	0	5	0	0	0	0	0	4	1	Negligible	0	0	0	150	No	0	Two-way stop
2017034031	Co Rd 863/110	TIMBER WAY	1	< 1.5	0	90	0	0	0	345	1	5	0	0	0	0	0	3	0	Negligible	0	1	0	340	No	0	One-way stop
2017034033	Co Rd 863/110	Co Rd R70/WELCH AVE	1	< 1.5	0	90	0	0	0	350	1	10	0	0	0	0	0	3	0	Negligible	0	0	0	335	No	0	One-way stop
2017034035	Co Rd R56/PALM AVE	160	1	< 1.5	0	90	0	0	0	150	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	120	No	0	Two-way stop
2017034077	Co Rd 860/140	Co Rd R26/FORD AVE	1	< 1.5	0	90	0	0	0	115	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	100	No	0	Two-way stop
2017034080	Co Rd R26/FORD AVE	NO NAME	1	< 1.5	0	90	0	0	0	105	0	10	0	2	1	0	0	3	0	No Data	0	0	0	95	No	0	Uncontrolled
2017034116	200	REED AVE	1	< 1.5	0	90	0	0	0	405	1	5	0	0	0	0	0	3	0	Negligible	0	0	0	400	No	0	One-way stop
2017034128	KENT AVE	220	1	< 1.5	0	90	0	0	0	125	0	20	1	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034129	Co Rd 840/210	KENT AVE	1	< 1.5	0	90	0	0	0	195	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	170	No	0	Two-way stop
2017034133	Co Rd 840/210	JEWEL AVE	1	< 1.5	0	90	0	0	0	180	0	10	0	1	1	0	0	3	0	Negligible	0	0	0	170	No	0	One-way stop
2017034150	Co Rd R26/ECHO AVE	200	1	< 1.5	0	90	0	0	0	130	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	110	No	0	Two-way stop
2017034156	Co Rd 846/190	NO NAME	1	< 1.5	0	90	0	0	0	115	0	5	0	2	1	0	0	3	0	Negligible	0	0	0	110	No	0	Uncontrolled
2017034157	Co Rd 846/190	NO NAME	1	< 1.5	0	90	0	0	0	120	0	10	0	2	1	0	0	3	0	Negligible	0	0	0	110	No	0	Uncontrolled
2017034161	Co Rd R26/FORD AVE	170	1	< 1.5	0	90	0	0	0	135	0	10	0	0	0	0	0	4	1	Negligible	0	0	0	110	No	0	Two-way stop
2017034173	Co Rd 830/260	SIOUX AVE	1	< 1.5	0	90	0	0	0	235	0	25	1	0	0	0	0	3	0	Negligible	0	0	0	210	No	0	One-way stop
2017034174	Co Rd 830/260	SAGE AVE	1	< 1.5	0	90	0	0	0	230	0	20	1	0	0	0	0	3	0	Negligible	0	0	0	210	No	0	One-way stop
2017034259	Co Rd 820/290	SAGE AVE	1	< 1.5	0	90	0	0	0	400	1	10	0	0	0	0	0	3	0	Negligible	0	0	0	390	No	0	One-way stop
2017034278	Co Rd R44/OAK AVE	300	1	< 1.5	0	90	0	0	0	395	1	5	0	0	0	0	0	3	0	Negligible	0	0	0	390	No	0	One-way stop
2017034045	Co Rd 863/110	NAVY AVE	0	< 1.5	0	90	0	0	0	220	0	5	0	0	0	0	0	3	0	Negligible	0	0	0	430	No	0	One-way stop
2017034172	Co Rd 830/260	UNION AVE	0	< 1.5	0	90	0	0	0	240	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	230	No	0	One-way stop
2017034192	Co Rd 830/260	QUAIL AVE	0	< 1.5	0	90	0	0	0	170	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	160	No	0	One-way stop
2017034255	Co Rd R70/VAN AVE	300	0	< 1.5	0	90	0	0	0	195	0	5	0	0	0	0	0	3	0	Negligible	0	0	0	190	No	0	One-way stop
2017034256	Co Rd R70/VAN AVE	300	0	< 1.5	0	90	0	0	0	200	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	190	No	0	One-way stop
2017034290	Co Rd 820/285	PALM AVE	0	< 1.5	0	90	0	0	0	140	0	10	0	0	0	0	0	3	0	Negligible	0	0	0	130	No	0	One-way stop
2017034505	TIMBER WAY	TIMBER DR	0	< 1.5	0	90	0	0	0	255	0	5	0	0	0	0	0	3	0	Negligible	0	0	0	255	No	0	One-way stop

Disclaimer: Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made. As such the information in this table may vary from final information presented on the project sheets. Priority locations selected for project sheets were selected in coordination with the County and may not align with the highest scoring locations.

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APPENDIX D1

CURVE SAFETY COUNTERMEASURES

COUNTY PAVED ROADWAY CURVE COUNTERMEASURES

This appendix summarizes the **curve** safety countermeasures for consideration and provides detailed descriptions for each countermeasure from both the risk factor analysis as well as the additional potential improvements listed on the back side of the project sheets.

Systematic Countermeasures

The countermeasures in this section were included in the risk factor analysis and recommended on the curve project sheets based on the criteria described in **Section 5.1.2.**

New Pavement Markings

This safety countermeasure includes new centerline and edgeline pavement markings along the curve. The updated markings can clarify and further delineate the curve, reducing the risk of a lane departure crash. If the lanes were 12 feet or wider, new edgeline pavement markings of six inches were recommended; Research suggests that widening pavement markings from four to six inches in rural areas results in a crash modification factor (CMF) of 0.64 to 0.83. Otherwise, new four-inch pavement markings were recommended. Research suggests that installing new 4' pavement markings in rural areas results in a CMF of 0.61 to 0.74.

Pave Shoulder with Safety Edge

Constructing or increasing the width of an existing paved shoulder can reduce the potential for a severe crash as the result of a lane departure. CMFs associated with paving the shoulder in rural areas range from 0.82 to 0.9. At locations where paved shoulders are recommended, it is suggested that the County Engineer consider a minimum of a two-foot shoulder; however, based on right-of-way and roadway characteristics, the County Engineer may choose to install a wider shoulder.

According to the Federal Highway Administration (FHWA), a Safety Edge is "a simple but effective solution that can help save lives by allowing drivers who drift off [roadways] to return to the road safely. Instead of a vertical drop-off, the Safety Edge shapes the edge of pavement to 30 degrees." The installation of a Safety Edge has CMFs ranging from 0.85 to 0.92. According to the FHWA, from a maintenance standpoint, "because the Safety Edge provides an additional level of consolidation on the edge, edge raveling is decreased. This contributes to longer pavement life."

Edgeline Rumble Strips

Edgeline rumble strips provide tactile and audible warning to a driver if they are beginning to depart the lane. This safety improvement has recorded CMFs in the range of 0.61 to 0.67 for rural run-off-the-road injury crashes. Depending on the conditions of the roadway, the County Engineer may choose to install rumble strips placed in the shoulder offset from the edgeline, or they may place the rumble strips on the edgeline and provide pavement markings over them, resulting in edgeline rumble stripes. For purposes of this document, both will be called rumble strips.

Centerline Rumble Strips

CMFs of 0.55 to 0.91 represent the safety benefit from the installation of centerline rumble strips. In Iowa, rumble strips placed in the centerline of the roadway generally have pavement markings over them. To be consistent with the Iowa DOT Design Manual 3C-5, centerline rumble strips will be referred to as rumble strips even though in circumstances they may technically

be “rumble stripes”. This safety improvement provides an audible and tactile warning to drivers when crossing the centerline and can aid in the avoidance of some high-severity lane departure crashes on curves.

Curve Chevron Advanced Curve Warning or Advisory Speed Signs

This countermeasure includes the installation of Curve Chevron signs—static or dynamic—and Advisory Speed Signs to improve driver awareness and navigation through horizontal curves. As identified by the FHWA, these treatments are proven safety countermeasures that significantly reduce crash risks, particularly on rural and county roads. Chevron signs, especially when enhanced with retroreflective materials or deployed in sequential dynamic formats, can reduce fatal and injury crashes by up to 60 percent. Advisory Speed Signs complement these by clearly communicating safe travel speeds based on curve geometry, helping drivers adjust behavior in advance. Together, these low-cost, high-impact interventions provide continuous visual guidance, and improve nighttime and low-visibility navigation.

Clear and Grub

Clearing and grubbing the areas within the clear zone of the roadway increases the sight distance for vehicles prior to entering, during, and after exiting a curve. This safety countermeasure also reduces the hazard of a run-off-the-road crash by reducing the number of obstructions a vehicle could impact after a lane departure. A 0.78 CMF has been documented as distance from roadside features was increased.

Location Specific Countermeasures

Safety improvements not included on the first page of the curve project sheet may still merit consideration at a specific location. There are a variety of other safety improvements that could be considered that were not included in the risk factor analysis due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed at curves throughout the county. The following sections describe several other curve safety improvements that could be considered appropriate by the county and that were included on the back side of the project sheets.

Additional Curve Signage

Curve signage in addition to the signage included in the project sheets could be considered, including the one direction large arrow sign (W1-6 48”x24”) and the combination horizontal alignment/advisory speed sign (W1-1a 36”x36”). This additional curve signage could be appropriate in some situations to provide further emphasis to the change in horizontal alignment of the roadway.

Retroreflective Strips on Chevron Signposts

The installation of retroreflective strips on signposts is currently under study by Iowa State University (InTrans) and the preliminary results are positive. This countermeasure includes the installation of retroreflective strips on the posts of curve chevron signs. The strips can increase the visibility of curve chevron signs and increase driver awareness of changes in horizontal alignment. Public response to this countermeasure has been very positive.

Transverse Rumble Strips Prior to Curve

This treatment can provide additional tactile and audible warning to the driver of an upcoming curve. It is recommended that this treatment be used with caution as the driver may misinterpret the warning since transverse rumble strips in Iowa are typically installed prior to

stop-controlled intersections. Transverse rumble strips installed as a traffic calming device have seen CMFs of 0.66.

Superelevation Correction

The use of superelevation, where none exists, or the correction of existing superelevation, can provide a safety benefit, helping to keep vehicles within the travel lanes while negotiating a curve, particularly at high speeds. This countermeasure requires substantial reconstruction of a curve and could reduce the amount of friction needed for vehicles to remain on the roadway in wet or snowy conditions. This recommendation is site-specific and would need additional attention by the County Engineer in order to be implemented at a specific location.

High Friction Surface Treatment (HFST)

This countermeasure involves applying a thin layer of durable, polish-resistant aggregate—typically calcined bauxite—bonded with a high-strength resin to the pavement surface at horizontal curves. HFST dramatically improves pavement friction, especially in wet or high demand braking conditions, helping drivers maintain control and reduce stopping distances. Though curves make up only about 5 percent of U.S. roadway miles, they account for over 25 percent of fatal crashes, underscoring the need for targeted safety interventions. HFST has been shown to reduce injury and fatal crashes by approximately 50 percent. Its long service life, rapid installation, and minimal environmental impact make it a cost-effective solution for high-risk locations.

Speed Activated Flashers on Chevron Signs

This countermeasure includes the installation of speed activated flashers either as beacons or as LED lights around the border of curve chevron signs. This improvement can provide additional warning to drivers exceeding the suggested speed limit prior to a curved section of roadway. The flashers can increase the visibility of curve chevron signs and increase driver awareness of changes in horizontal alignment, specifically when they are exceeding a designated speed. Where speed activated flashers have been installed in combination with curve chevrons and curve warning signage, CMFs of 0.59 to 0.61 have been recorded.

Guardrail

Installing guardrail can help redirect vehicles after a lane departure to remain on the roadway and avoid roadside hazards. CMFs in the range of 0.53 have been recorded for installing new guardrail along an embankment.

On-pavement Markings for Speed Control

This improvement includes painting the speed limit on the pavement to reinforce the posted speed limit. On-pavement markings can serve as additional information and reminders to drivers of the posted speed limit and the importance of observing their speed. Research has shown a CMF of 0.62 for additional in-lane pavement markings.

Post-Mounted Delineators

As stated in the MUTCD, “delineators are particularly beneficial at locations where the [roadway] alignment might be confusing or unexpected, such as at lane-reduction transitions and curves. Delineators are effective guidance devices at night and during adverse weather. An important advantage of delineators in certain locations is that they remain visible when the roadway is wet, or snow covered.” Providing post-mounted retroreflective delineators along the roadway can give additional information to drivers as to the location of the roadside edge

and alignment. The CMF for installing post-mounted delineators in combination with edgelines and centerlines has been recorded at 0.55.

APPENDIX D2
CURVE PROJECT SHEETS

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 17

Project Name: Curve 2536 on TAFT AVENUE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

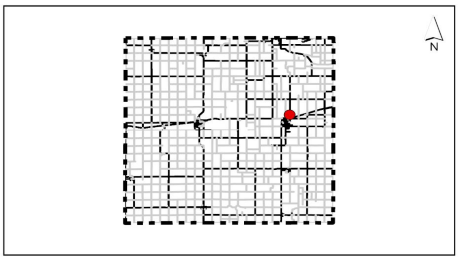
Road: **TAFT AVENUE**
Length (feet): **520** Length (Miles): **0.10**
Closest City: **Garner**

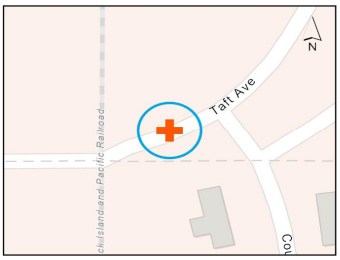
Project is within an Underserved Community?†: No

GPS ID: 2536

This curve does not contain high scoring segments.

Project Location Maps





Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**620**	**5**
Curve Radius (ft)	**363**	**4**
Shoulder Width (ft)	**2**	**4**
Avg. Pavement Condition (IRI)	**108**	**1**
Intersections | Driveways	**1 | 1**	**3**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**17**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**2**
Speed Limit (mph)	**35**
Lane Width (ft)	**13.5**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
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**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.10**	**MILE**	**$ 6,000**	**$ 600**
Install 4" Retroreflective Centerline	**0.10**	**MILE**	**$ 3,000**	**$ 300**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	**0.10**	**MILE**	**$ 150,000**	**$ 15,000**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.10**	**MILE**	**$ 5,000**	**$ 500**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 22,400

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

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Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 17

Project Name: Curve 2536 on TAFT AVENUE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2536

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other: Upgrade to 4' Shoulder with Safety Edge (2' Additional - Both Sides of Road - Includes Earth Work)	**0.10**	**MILE**	**$ 150,000**	**$ 15,000**
Other:				
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 15,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 22,400
Subtotal:		$ 37,900
Mobilization: (% +/-)*	10%	$ 3,790
Traffic Control: (% +/-)	5%	$ 2,062
Contingency: (% +/-)	20%	$ 8,248
Estimated Project Cost		**$ 52,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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. Kimley-Horn endeavored to research issues and constraints to the extent practical given the scope, budget, and schedule agreed to with the Client. The 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 July 2024.

End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2368 on 330TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

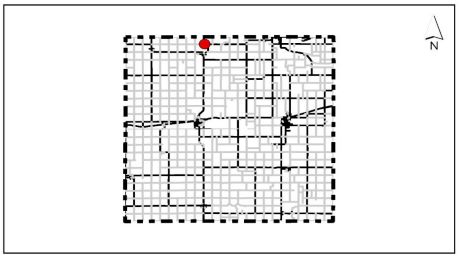
Date: 5/29/25
Prepared By: FJC
Checked By: DVM

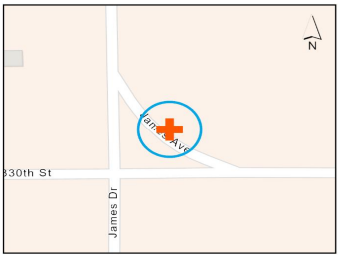
CURVE

Location Description

Road: **330TH STREET** Project is within an Underserved Community?†: No **GPS ID: 2368**
Length (feet): **650** Length (Miles): **0.12**
Closest City: **Crystal Lake**
This curve is located within the following high scoring segment: GPS ID 3574

Project Location Maps





Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**772**	**5**
Curve Radius (ft)	**677**	**3**
Shoulder Width (ft)	**5**	**2**
Avg. Pavement Condition (IRI)	**66**	**0**
Intersections | Driveways	**1 | 0**	**3**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**13**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**5**
Speed Limit (mph)	**55**
Lane Width (ft)	**11**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
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**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	**0.12**	**MILE**	**$ 3,000**	**$ 360**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**0.12**	**MILE**	**$ 3,000**	**$ 360**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	**0.12**	**MILE**	**$ 150,000**	**$ 18,000**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.12**	**MILE**	**$ 5,000**	**$ 600**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 25,320

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2368 on 330TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2368

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign	**10**	**EA**	**$ 4,000**	**$ 40,000**
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other: Upgrade to 4' Shoulder with Safety Edge (2' Additional - Both Sides of Road - Includes Earth Work)	**0.12**	**MILE**	**$ 150,000**	**$ 18,000**
Other:				
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 58,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 25,320
Subtotal:		$ 83,820
Mobilization: (% +/-)*	10%	$ 8,390
Traffic Control: (% +/-)	5%	$ 4,358
Contingency: (% +/-)	20%	$ 17,432
Estimated Project Cost		**$ 114,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

Opinion of Probable Construction Cost Disclaimer:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2479 on 290TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

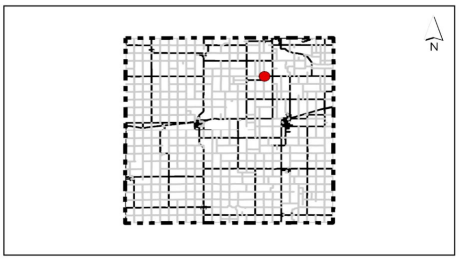
Road: **290TH STREET**
Length (feet): **570** Length (Miles): **0.11**
Closest City: **Forest City**

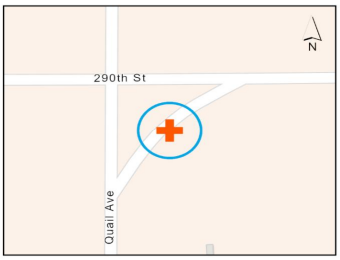
Project is within an Underserved Community?†: No

GPS ID: 2479

This curve does not contain high scoring segments.

Project Location Maps





Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	353	3
Curve Radius (ft)	466	4
Shoulder Width (ft)	4	2
Avg. Pavement Condition (IRI)	134	1
Intersections | Driveways	1 | 0	3
K or A Crash	0	0
Total Risk Factor Points (21 max)		**13**

Other Information	
Paved Shoulder	No
Shoulder Width (ft)	4
Speed Limit (mph)	55
Lane Width (ft)	11
Number of Lanes	2
Edgeline Rumble Strips	No
Centerline Rumble Strips	No
Existing Curve Chevrons	Yes

Crash Data, 2014-2023	
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
K and A Crash Rate (per HMVMT)	0

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	**0.11**	**MILE**	**$ 3,000**	**$ 330**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**0.11**	**MILE**	**$ 3,000**	**$ 330**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**0.11**	**MILE**	**$ 150,000**	**$ 16,500**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.11**	**MILE**	**$ 5,000**	**$ 550**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 23,710

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2479 on 290TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2479

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other: Upgrade to 4' Shoulder with Safety Edge (2' Additional - Both Sides of Road - Includes Earth Work)	**0.11**	**MILE**	**$ 150,000**	**$ 16,500**
Other:				
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:	$ 17,000
Project Selection Decision Tree Systemic Improvements Subtotal:	$ 23,710
Subtotal:	$ 40,710
Mobilization: (% +/-)* 10%	$ 4,080
Traffic Control: (% +/-) 5%	$ 2,042
Contingency: (% +/-) 20%	$ 8,168
Estimated Project Cost	**$ 55,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2562 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

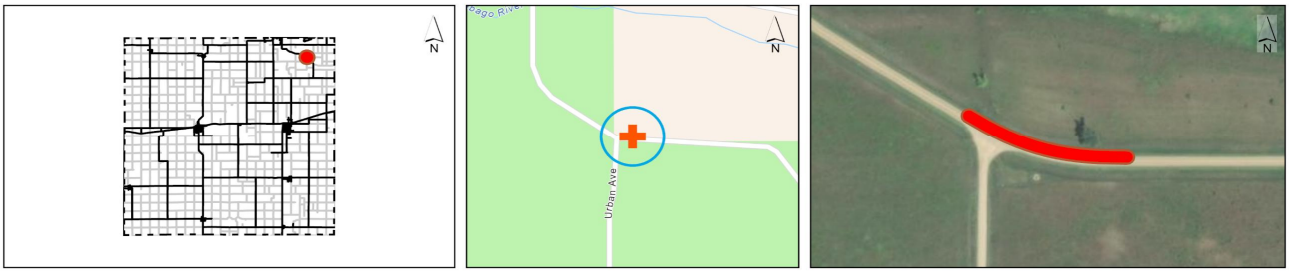
CURVE

Location Description

Road: **VALLEY ROAD**
Length (feet): **400** Length (Miles): **0.08**
Closest City: **Forest City**
Project is within an Underserved Community?†: No
GPS ID: 2562

This curve does not contain high scoring segments.

Project Location Maps



Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**190**	**3**
Curve Radius (ft)	**711**	**3**
Shoulder Width (ft)	**1**	**4**
Avg. Pavement Condition (IRI)	**58**	**0**
Intersections | Driveways	**1 | 0**	**3**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**13**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**1**
Speed Limit (mph)	**55**
Lane Width (ft)	**13**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
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**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.08**	**MILE**	**$ 6,000**	**$ 480**
Install 4" Retroreflective Centerline	**0.08**	**MILE**	**$ 3,000**	**$ 240**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**0.08**	**MILE**	**$ 5,000**	**$ 400**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 7,120

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Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Front Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 13

Project Name: Curve 2562 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2562

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other: Pave 2' Shoulder with Safety Edge (Both Sides of Road - Includes Earth Work)	**0.08**	**MILE**	**$ 150,000**	**$ 12,000**
Other:				
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 12,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 7,120
Subtotal:		$ 19,620
Mobilization: (% +/-)*	10%	$ 2,500
Traffic Control: (% +/-)	5%	$ 1,176
Contingency: (% +/-)	20%	$ 4,704
Estimated Project Cost		**$ 28,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 12

Project Name: Curve 2444 on 335TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

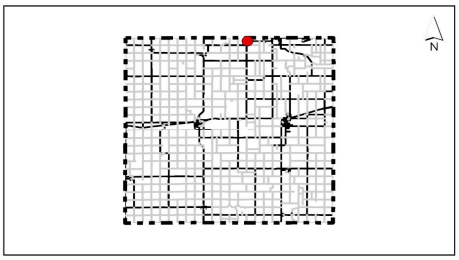
CURVE

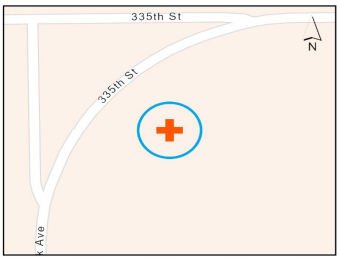
Location Description

Road: **335TH STREET** Project is within an Underserved Community?†: No **GPS ID: 2444**
Length (feet): **730** Length (Miles): **0.14**
Closest City: **Forest City**

This curve is located within the following high scoring segment: GPS ID 3570

Project Location Maps





Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**1,110**	**6**
Curve Radius (ft)	**1,061**	**1**
Shoulder Width (ft)	**5**	**2**
Avg. Pavement Condition (IRI)	**92**	**0**
Intersections | Driveways	**1 | 1**	**3**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**12**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**5**
Speed Limit (mph)	**55**
Lane Width (ft)	**11**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
Total Crashes	**2**
K and A Crashes	**0**
Lane Departure Crashes	**2**
Lane Departure K and A Crashes	**0**
Total Crash Rate (per HMVMT)	**352.6**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	**0.14**	**MILE**	**$ 3,000**	**$ 420**
Install 6" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 6,000	$ -
Install 4" Retroreflective Centerline	**0.14**	**MILE**	**$ 3,000**	**$ 420**
Pave 2' Shoulder with Safety Edge (Both Sides of Road - includes Earth Work)	**0.14**	**MILE**	**$ 150,000**	**$ 21,000**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.14**	**MILE**	**$ 5,000**	**$ 700**
Install Centerline Rumble Strips	**0.14**	**MILE**	**$ 2,000**	**$ 280**
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 28,820

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 12

Project Name: Curve 2444 on 335TH STREET
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2444

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign	**10**	**EA**	**$ 4,000**	**$ 40,000**
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other: Upgrade to 4' Shoulder with Safety Edge (2' Additional - Both Sides of Road - Includes Earth Work)	**0.14**	**MILE**	**$ 150,000**	**$ 21,000**
Other:				
Other:				
Other:				
Other:				
Other:				

Additional Potential Improvements Subtotal:		$ 61,500
Project Selection Decision Tree Systemic Improvements Subtotal:		$ 28,820
Subtotal:		$ 90,320
Mobilization: (% +/-)*	10%	$ 9,040
Traffic Control: (% +/-)	5%	$ 4,528
Contingency: (% +/-)	20%	$ 18,112
Estimated Project Cost		**$ 122,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 10

Project Name: Curve 2561 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

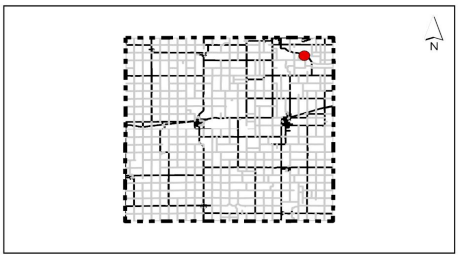
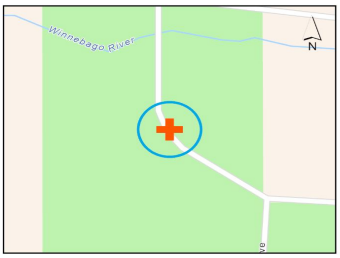
Road: **VALLEY ROAD**
Length (feet): **480** Length (Miles): **0.09**
Closest City: **Forest City**

Project is within an Underserved Community?†: No

GPS ID: 2561

This curve does not contain high scoring segments.

Project Location Maps

Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**190**	**3**
Curve Radius (ft)	**540**	**3**
Shoulder Width (ft)	**2**	**4**
Avg. Pavement Condition (IRI)	**74**	**0**
Intersections | Driveways	**0 | 0**	**0**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**10**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**1**
Speed Limit (mph)	**55**
Lane Width (ft)	**13**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
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**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.09**	**MILE**	**$ 6,000**	**$ 540**
Install 4" Retroreflective Centerline	**0.09**	**MILE**	**$ 3,000**	**$ 270**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**0.09**	**MILE**	**$ 5,000**	**$ 450**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 7,260

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 10

Project Name: Curve 2561 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2561

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other:				
Other:				
Other:				
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 500
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 7,260
			Subtotal:	$ 7,760
			Mobilization: (% +/-)* 10%	$ 2,500
			Traffic Control: (% +/-) 5%	$ 548
			Contingency: (% +/-) 20%	$ 2,192
			Estimated Project Cost	**$ 13,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 10

Project Name: Curve 2565 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

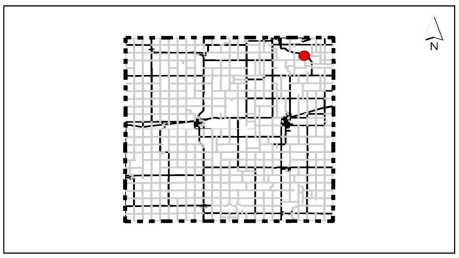
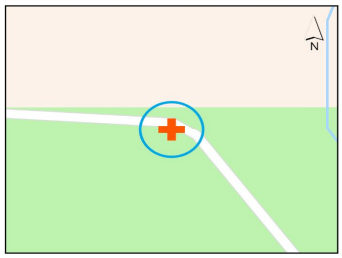
Road: **VALLEY ROAD**
Length (feet): **630** Length (Miles): **0.12**
Closest City: **Forest City**

Project is within an Underserved Community?†: No

GPS ID: 2565

This curve does not contain high scoring segments.

Project Location Maps


Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**190**	**3**
Curve Radius (ft)	**616**	**3**
Shoulder Width (ft)	**2**	**4**
Avg. Pavement Condition (IRI)	**52**	**0**
Intersections | Driveways	**0 | 0**	**0**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**10**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**1**
Speed Limit (mph)	**55**
Lane Width (ft)	**13**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**Yes**

Crash Data, 2014-2023	
Total Crashes	**1**
K and A Crashes	**0**
Lane Departure Crashes	**1**
Lane Departure K and A Crashes	**0**
Total Crash Rate (per HMVMT)	**1,201.6**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.12**	**MILE**	**$ 6,000**	**$ 720**
Install 4" Retroreflective Centerline	**0.12**	**MILE**	**$ 3,000**	**$ 360**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	0	MILE	$ 150,000	$ -
Install Edgeline Rumble Strips (Both Sides of Road)	**0.12**	**MILE**	**$ 5,000**	**$ 600**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 3,500	$ -
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 1,000**	**$ 1,000**
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
Project Selection Decision Tree Systemic Improvements Subtotal:				$ 7,680

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 10

Project Name: Curve 2565 on VALLEY ROAD
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2565

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other:				
Other:				
Other:				
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 500
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 7,680
			Subtotal:	$ 8,180
			Mobilization: (% +/-)* 10%	$ 2,500
			Traffic Control: (% +/-) 5%	$ 464
			Contingency: (% +/-) 20%	$ 1,856
			Estimated Project Cost	**$ 13,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 9

Project Name: Curve 2353 on MAIN AVENUE NORTH
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

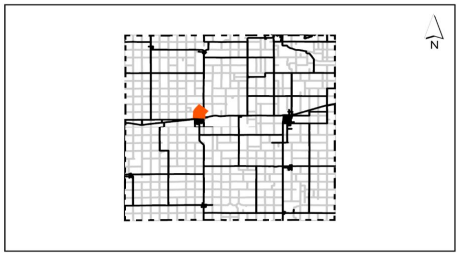
Road: **MAIN AVENUE NORTH**
Length (feet): **910** Length (Miles): **0.17**
Closest City: **Britt**

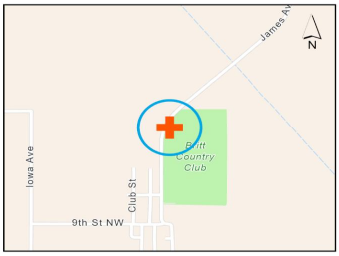
Project is within an Underserved Community?†: No

GPS ID: 2353

This curve is located within the following high scoring segment: GPS ID 3497

Project Location Maps





Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**830**	**6**
Curve Radius (ft)	**1,196**	**1**
Shoulder Width (ft)	**2**	**0**
Avg. Pavement Condition (IRI)	**105**	**1**
Intersections | Driveways	**0 | 2**	**1**
K or A Crash	**0**	**0**
Total Risk Factor Points (21 max)		**9**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**6**
Speed Limit (mph)	**55**
Lane Width (ft)	**12**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**No**

Crash Data, 2014-2023	
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**
K and A Crash Rate (per HMVMT)	**0**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.17**	**MILE**	**$ 6,000**	**$ 1,020**
Install 4" Retroreflective Centerline	**0.17**	**MILE**	**$ 3,000**	**$ 510**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	**0.17**	**MILE**	**$ 150,000**	**$ 25,500**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.17**	**MILE**	**$ 5,000**	**$ 850**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 3,500**	**$ 3,500**
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 36,380

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 9

Project Name: Curve 2353 on MAIN AVENUE NORTH
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2353

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other:				
Other:				
Other:				
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 500
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 36,380
			Subtotal:	$ 36,880
			Mobilization: (% +/-)* 10%	$ 3,690
			Traffic Control: (% +/-) 5%	$ 1,886
			Contingency: (% +/-) 20%	$ 7,544
			Estimated Project Cost	**$ 50,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

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End of Project Description

Back Page

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 9

Project Name: Curve 2363 on JAMES AVENUE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Location Description

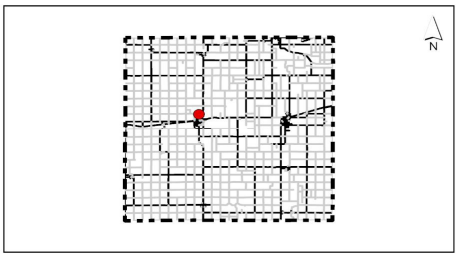
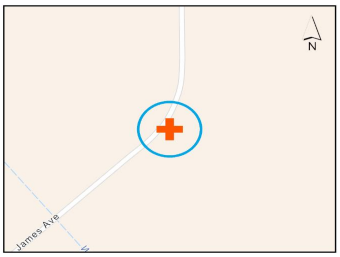
Road: **JAMES AVENUE**
Length (feet): **690** Length (Miles): **0.13**
Closest City: **Britt**

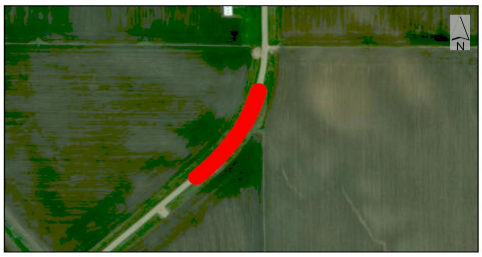
Project is within an Underserved Community?†: No

GPS ID: 2363

This curve is located within the following high scoring segment: GPS ID 3497

Project Location Maps



Curve Information and Systemic Ranking Summary

Systemic Ranking Summary	Value	Points
Average Daily Traffic (ADT)	**800**	**6**
Curve Radius (ft)	**1,272**	**1**
Shoulder Width (ft)	**2**	**0**
Avg. Pavement Condition (IRI)	**85**	**0**
Intersections | Driveways	**0 | 0**	**0**
K or A Crash	**1**	**2**
Total Risk Factor Points (21 max)		**9**

Other Information	
Paved Shoulder	**No**
Shoulder Width (ft)	**6**
Speed Limit (mph)	**55**
Lane Width (ft)	**12**
Number of Lanes	**2**
Edgeline Rumble Strips	**No**
Centerline Rumble Strips	**No**
Existing Curve Chevrons	**No**

Crash Data, 2014-2023	
Total Crashes	**1**
K and A Crashes	**1**
Lane Departure Crashes	**1**
Lane Departure K and A Crashes	**1**
Total Crash Rate (per HMVMT)	**263.4**
K and A Crash Rate (per HMVMT)	**263.4**

Opinion of Probable Cost (Countermeasure Selection Threshold Results)

Item Description	Quantity	Unit	Unit Price	Item Cost
Install 4" Retroreflective Edgeline (Both Sides of Road)	0	MILE	$ 3,000	$ -
Install 6" Retroreflective Edgeline (Both Sides of Road)	**0.13**	**MILE**	**$ 6,000**	**$ 780**
Install 4" Retroreflective Centerline	**0.13**	**MILE**	**$ 3,000**	**$ 390**
Pave 2' Shoulder with Safety Edge (Both Sides of Road)	**0.13**	**MILE**	**$ 150,000**	**$ 19,500**
Install Edgeline Rumble Strips (Both Sides of Road)	**0.13**	**MILE**	**$ 5,000**	**$ 650**
Install Centerline Rumble Strips	0	MILE	$ 2,000	$ -
Review Curve and Provide Signage to Meet MUTCD and Iowa DOT Standards, if Needed	**1**	**CURVE**	**$ 3,500**	**$ 3,500**
Review and Upgrade Curve Signage to Meet MUTCD and Iowa DOT Standards, if Needed	0	CURVE	$ 1,000	$ -
Clear and Grub (15 ft Both Sides of Road)	**1.00**	**CURVE**	**$ 5,000**	**$ 5,000**
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 29,820

Continued on back of this page.

Project Location Map Sources:
Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community

Kimley»Horn

Safety Action Plan
Project Description for Curve Improvements

Risk Factor Points: 9

Project Name: Curve 2363 on JAMES AVENUE
Agency Name: Hancock County
Contact Name: Jeremy Purvis
E-mail: jeremy.purvis@hancockcountyia.org

Date: 5/29/25
Prepared By: FJC
Checked By: DVM

CURVE

Opinion of Probable Cost (Additional Potential Improvements)

GPS ID: 2363

There are a variety of other safety improvements that could be considered that were not included on the front page of the project sheet due to availability of data, the need for site-specific information, and/or the appetite for the countermeasure to be deployed throughout the county. The following countermeasures could be considered appropriate by the county and included below as additional potential improvements.

Item Description	Quantity	Unit	Unit Price	Item Cost
Additional Curve Signage		CURVE	$ 1,000	$ -
Retroreflective Strip on Chevron Sign Post	**1**	**CURVE**	**$ 500**	**$ 500**
Transverse Rumble Strips Prior to Curve		CURVE	$ 5,000	$ -
Superelevation Correction		EA	$ 50,000	$ -
Install High Friction Surface Treatment (HFST) on Curve		CURVE	$ 60,000	$ -
Speed Activated Flasher on Chevron Sign		EA	$ 4,000	$ -
Guardrail		FOOT	$ 80	$ -
On-Pavement Marking for Speed Control		EA	$ 3,000	$ -
Post-Mounted Delineators		MILE	$ 5,000	$ -
Other:				
Other:				
Other:				
Other:				
Other:				
Other:				
			Additional Potential Improvements Subtotal:	$ 500
			Project Selection Decision Tree Systemic Improvements Subtotal:	$ 29,820
			Subtotal:	$ 30,320
			Mobilization: (% +/-)* 10%	$ 3,040
			Traffic Control: (% +/-) 5%	$ 1,528
			Contingency: (% +/-) 20%	$ 6,112
			Estimated Project Cost	**$ 41,000**

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000

†Note on Underserved Communities Indicator:
As part of the SS4A program an Underserved Community shares the same definition as an Area of Persistent Poverty (APP). According to the Bipartisan Infrastructure Law, an area is defined as an APP if it meets the following criteria: (A) the County consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: the 1990 decennial census, the 2000 decennial census; and the most recent (2023, for the purposes of this report) Small Area Income Poverty Estimates; OR (B) the Census Tract has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; OR (C) any territory or possession of the United States.

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. Kimley-Horn endeavored to research issues and constraints to the extent practical given the scope, budget, and schedule agreed to with the Client. The 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 July 2024.

End of Project Description

Back Page

APPENDIX D3

CURVE RISK FACTOR RANKING RESULTS

Hancock County
Safety Action Plan
Curve Risk Factor Points

Curve ID	Paved Road	Length (ft)	Risk Factor Points	Average Daily Traffic (Value)	Average Daily Traffic (Points)	Curve Radius (ft) (Value)	Curve Radius (Points)	Shoulder Width (ft) (Value)	Shoulder Width (Points)	Pavement Condition IRI (Value)	Pavement Condition (Points)	Intersections | Driveways (Value)	Intersections | Driveways Risk (Points)	K or A Crash (Value)	K or A Crash Risk (Points)	Total Crashes	K and A	Paved Shoulder	Speed Limit	Rumble Strips	Existing Curve Chevrons	Lane Width (ft)
2536	TAFT AVENUE	518.0	**17**	620	**5**	363	**4**	0	**4**	108	**1**	1 | 1	**3**	0	**0**	0	0	No	25	No	Yes	13.5
2371	320TH STREET	225.5	**15**	850	**6**	344	**4**	2	**2**	273	**2**	0 | 2	**1**	0	**0**	2	0	No	55	No	Yes	12
2375	KENT AVENUE	40.7	**15**	850	**6**	351	**4**	4	**2**	63	**0**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	11
2504	SAGE DRIVE	180.6	**15**	640	**5**	114	**4**	1	**4**	138	**1**	0 | 3	**1**	0	**0**	1	0	No	55	No	No	11
2511	SAGE DRIVE	203.7	**14**	640	**5**	280	**4**	1	**4**	94	**0**	0 | 3	**1**	0	**0**	0	0	No	55	No	No	11
2368	330TH STREET	650.0	**13**	772	**5**	677	**3**	5	**2**	66	**0**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	11
2479	290TH STREET	570.0	**13**	353	**3**	466	**4**	4	**2**	134	**1**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	11
2562	VALLEY ROAD	397.2	**13**	190	**3**	711	**3**	1	**4**	58	**0**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	13
2444	335TH STREET	730.0	**12**	1,110	**6**	1,061	**1**	5	**2**	92	**0**	1 | 1	**3**	0	**0**	2	0	No	55	No	Yes	11
2607	250TH STREET	211.0	**12**	460	**4**	1,044	**1**	5	**2**	178	**2**	1 | 1	**3**	0	**0**	1	0	No	55	No	No	10.5
2506	KNOLLWOOD COURT	302.1	**11**	60	**0**	251	**4**	1	**4**	316	**2**	0 | 5	**1**	0	**0**	0	0	No	55	No	No	11
2507	KNOLLWOOD COURT	365.6	**11**	60	**0**	240	**4**	1	**4**	360	**2**	0 | 6	**1**	0	**0**	0	0	No	55	No	No	11
2509	KNOLLWOOD COURT	260.8	**11**	60	**0**	286	**4**	1	**4**	291	**2**	0 | 4	**1**	0	**0**	0	0	No	55	No	No	11
2572	VALLEY ROAD	366.4	**11**	190	**3**	679	**3**	1	**4**	82	**0**	0 | 1	**1**	0	**0**	1	0	No	55	No	No	13
2516	325TH STREET	292.4	**10**	190	**3**	389	**4**	4	**2**	115	**1**	0 | 0	**0**	0	**0**	0	0	No	55	No	Yes	11
2530	325TH STREET	208.6	**10**	190	**3**	447	**4**	4	**2**	123	**1**	0 | 0	**0**	0	**0**	0	0	No	55	No	Yes	11
2533	RIVER ROAD	306.3	**10**	190	**3**	841	**3**	4	**2**	120	**1**	0 | 1	**1**	0	**0**	0	0	No	55	No	Yes	11
2539	RIVER ROAD	312.0	**10**	190	**3**	1,270	**1**	4	**2**	121	**1**	1 | 1	**3**	0	**0**	1	0	No	55	No	Yes	11
2546	RIVER ROAD	368.9	**10**	190	**3**	967	**3**	4	**2**	104	**1**	0 | 3	**1**	0	**0**	1	0	No	55	No	Yes	11
2561	VALLEY ROAD	475.7	**10**	190	**3**	540	**3**	1	**4**	74	**0**	0 | 0	**0**	0	**0**	0	0	No	55	No	Yes	13
2565	VALLEY ROAD	628.4	**10**	190	**3**	616	**3**	1	**4**	52	**0**	0 | 0	**0**	0	**0**	1	0	No	55	No	Yes	13
2273	225TH STREET	192.7	**9**	377	**4**	1,221	**1**	6	**0**	176	**2**	0 | 0	**0**	1	**2**	2	1	No	55	No	Yes	10
2353	MAIN AVENUE NORTH	905.6	**9**	830	**6**	1,196	**1**	6	**0**	105	**1**	0 | 2	**1**	0	**0**	0	0	No	55	No	No	12
2362	NORTH SUMMIT AVENUE	562.8	**9**	590	**4**	1,266	**1**	1	**4**	91	**0**	0 | 0	**0**	0	**0**	1	0	No	25	No	No	12
2363	JAMES AVENUE	690.5	**9**	800	**6**	1,272	**1**	6	**0**	85	**0**	0 | 0	**0**	1	**2**	1	1	No	55	No	No	12
2366	JAMES AVENUE	306.1	**9**	800	**6**	1,339	**1**	6	**0**	81	**0**	0 | 0	**0**	1	**2**	1	1	No	55	No	No	12
2491	170TH STREET	513.9	**9**	602	**5**	1,743	**1**	6	**0**	40	**0**	1 | 1	**3**	0	**0**	2	0	No	55	No	Yes	11
2477	QUAIL AVENUE	55.0	**8**	130	**1**	480	**4**	6	**0**	51	**0**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	11
2488	170TH STREET	572.4	**8**	602	**5**	1,697	**1**	6	**0**	52	**0**	0 | 0	**0**	1	**2**	2	1	No	55	No	Yes	11
2535	RIVER ROAD	307.0	**8**	190	**3**	736	**3**	4	**2**	90	**0**	0 | 0	**0**	0	**0**	0	0	No	55	No	Yes	11
2552	RIVER ROAD	277.4	**8**	190	**3**	2,084	**1**	4	**2**	161	**1**	0 | 1	**1**	0	**0**	1	0	No	55	No	No	11
2566	VALLEY ROAD	232.6	**8**	190	**3**	1,406	**1**	1	**4**	68	**0**	0 | 0	**0**	0	**0**	0	0	No	55	No	No	13
2261	ECHO AVENUE	208.7	**7**	110	**1**	1,366	**1**	6	**0**	186	**2**	1 | 0	**3**	0	**0**	0	0	No	55	No	Yes	11
2532	215TH STREET	222.0	**7**	50	**0**	358	**4**	3	**2**	128	**1**	0 | 0	**0**	0	**0**	0	0	No	45	No	Yes	11
2266	220TH STREET	217.7	**6**	110	**1**	1,619	**1**	6	**0**	133	**1**	1 | 0	**3**	0	**0**	1	0	No	55	No	Yes	11
2499	170TH STREET	360.3	**6**	602	**5**	2,241	**1**	6	**0**	47	**0**	0 | 0	**0**	0	**0**	0	0	No	55	No	Yes	11

Disclaimer: Throughout the SAP process, the County Engineer provided feedback on locations where the information contained within the existing databases was not current (for example, location of rumble strips, shoulder type and/or width, etc.). When these locations were identified, updates to the project sheets were made. As such the information in this table may vary from final information presented on the project sheets. Priority locations selected for project sheets were selected in coordination with the County and may not align with the highest scoring locations.

APPENDIX E

UNPAVED ROADWAY COUNTERMEASURES

COUNTY UNPAVED ROADWAY COUNTERMEASURES

This appendix summarizes various unpaved road safety countermeasures for consideration and provides descriptions for each countermeasure.

Gravel Roads Construction & Maintenance Guide

Federal Highway Administration (FWHA) 2015

A thorough resource on unpaved roads is provided by the FHWA entitled: ***Gravel Roads Construction & Maintenance Guide***, which can be found at the following website: https://www.fhwa.dot.gov/construction/pubs/ots15002.pdf. This guide is quoted throughout this appendix. The guide includes detailed sections on the following topics:

- Routine Maintenance and Rehabilitation
- Drainage
- Surface Gravel
- Dust Control/Stabilization
- Innovations

The summary of the guide states: "The first and most basic thing to understand in road maintenance and construction is proper shape of the cross section. The road surface must have enough crown to drain water to the shoulder, but not excessive crown which impacts roadway safety." "When proper shape is established and good surface gravel is placed, many gravel road maintenance problems simply go away, and road users are provided the best possible service from gravel roads" (Gravel Roads Construction & Maintenance Guide, FHWA, 2015).

Unpaved Roadway Safety Countermeasures

The following sections provide general information on additional safety countermeasures for unpaved roadways.

Maintenance of Gravel

It is important to preserve and maintain a proper road crown (four to six percent) for proper drainage to avoid ponding in potholes and/or ruts. Regular grading can help keep the roadway surface maintained, reducing water infiltration, and enhancing erosion control. According to the FHWA, "improper maintenance can lead to very quick deterioration of a gravel road, especially in wet weather". It is also important to perform preventive maintenance to ensure that high shoulders, secondary ditches, berms, or curbs do not form. Per the FHWA, "when a gravel road develops high shoulders, it restricts the surface water from draining into the designed ditch. This creates a serious safety hazard. The time spent in eliminating a high shoulder (secondary ditch) will result in a road that is easier to maintain afterwards."

Similar to the information provided on the paved Safety Edge, the maintenance of edge slopes on unpaved roads can allow vehicles that depart the travel lane to safely return to the roadway.

Major Rehabilitation

"At certain intervals, virtually every gravel road requires some major rehabilitation" (FHWA, 2015). This countermeasure involves not only reshaping the road surface, but the shoulder, foreslope and ditches. It is important that the redeveloped cross section be uniform, and that good drainage is provided, prior to replacing the surface gravel – failure to provide proper

drainage or crown in the road surface can lead to corrugation or washboarding, which can lead to loss of vehicle control.

The use of electronic slope controls has proven useful in gravel road maintenance, rehabilitation, and basic reconstruction. It is recommended that the county consider installing electronic slope controls on existing equipment to create a proper profile for new surfaces more efficiently.

Upgrade Signs

The following countermeasures relate to potential sign upgrades on the unpaved roadway system.

Stop Signs

A low-cost safety countermeasure that could be considered along unpaved roadways includes upgrading existing stop signs. Increasing the retroreflectivity of stop signs (or replacing signs with new signs) has crash modification factors (CMFs) from 0.75 to 0.91. This improvement increases the visibility of the signs, giving drivers more time to react to the stop-controlled condition.

Curve Chevron

This safety countermeasure includes the installation of curve chevrons placed along the outer radius of the curved roadway segment. In some instances, County Engineers have relocated older curve chevrons, when replaced on their paved system, along curves located on their unpaved system. Installing curve chevron signs has CMFs ranging from 0.75 to 0.96, and when installed in combination with other advance warning signage, has CMFs ranging from 0.59 to 0.61.

Advance Curve Warning Signs and Speed Advisory Plaques

Providing advance warning of unexpected changes in horizontal alignment in conjunction with curve chevron signs has reported CMFs ranging from 0.59 to 0.61.

Delineate Roadside Hazards with Retroreflective Markers

Retroreflective markers can be applied to roadside objects and trees, increasing the visibility of hazards and helping delineate the roadway where minimal delineation may exist.

Realign Intersection

Based on right-of-way and site conditions, this countermeasure could be particularly beneficial and should be considered where feasible at locations where there is intersection skew. The CMF for intersection geometry reconfiguration is included in the Highway Safety Manual (HSM) and varies based on the existing skew angle. With the optimal 90-degree intersection configuration, sight triangles are maximized, crossing distance is minimized, and the intersection meets typical driver expectations.

Improve/Increase Shoulder/Lane Width

The County Engineer could consider the recommendation to improve/increase the shoulder width or lane width to accommodate traffic volumes and/or speed. This countermeasure could add safety benefits when applied properly, but could also encourage driving in excess of the speed limit, so it should be applied with caution.

Driveway Entrance Policy

It is recommended by the FHWA that, "to reduce maintenance problems [at driveways along unpaved roadways], [counties should] implement a permitting process. It should address the proper control of grade to match road edge, adequate width, and drainage."

Clear and Grub

Vegetation should be kept clear of the roadway, although a natural vegetation buffer between the roadway and any ditches or waterways can help reduce runoff velocity and provide some erosion control. This safety countermeasure reduces the hazard of a run-off-the-road crash by reducing the number of obstructions a vehicle could impact after a lane departure. In addition, clearing and grubbing the areas within the sight triangles of the vehicles at intersections should also be considered. This safety countermeasure increases the sight distance for vehicles prior to entering an intersection. This is particularly beneficial under two-way stop controlled or uncontrolled situations where conflicting vehicles may not stop or yield. Per the FHWA, "there is yet another great benefit of mowing [clearing and grubbing]; by removing the standing vegetation, drifting snow will not be trapped on the roadway, resulting in drastically reduced snow removal costs."

Winter Maintenance

As salt cannot be used on gravel roads and frozen ground cannot be graded, sand is recommended for increased traction on curves and corners during winter events.

APPENDIX F
WORKSHOP MATERIALS

County Safety Workshop

WHAT IS A SAFETY ACTION PLAN (SAP)?

A Safety Action Plan (SAP) is a document that provides local governments the means to make strategic roadway safety improvements. The plan will identify the most significant roadway safety concerns in your community and outline the projects and strategies to address them. In addition to assisting local practitioners in understanding crash trends within their jurisdiction, a SAP will also be a locally focused plan for practitioners to make informed, prioritized safety decisions.

WHAT IS SAFE STREETS AND ROADS FOR ALL (SS4A)?

The Safe Streets and Roads for All (SS4A) discretionary grant program was established by the Bipartisan Infrastructure Law (BIL) and has $5M in appropriated funds for the 5-year period from 2022 to 2026. This federal grant supports local jurisdictions planning, infrastructure, behavioral, and operational initiatives to prevent death and serious injury for all roadway users, with an emphasis on equity to improve roads and streets under local ownership.

WHAT ARE THE BENEFITS OF A SAP?

- The results will allow local jurisdictions to apply for SS4A funding
- Strengthens a community's approach to eliminating roadway fatalities and serious injuries
- Focus on all of the five Es of safety (Enforcement, Engineering, Emergency Response, Education and Everyone)
- Provides the opportunity to prioritize safety improvements and justify investment decisions in coordination with various partner agencies.

DRIVER-RELATED EMPHASIS AREAS

YOU ARE INVITED TO PARTICIPATE, WE NEED YOUR HELP!

While engineering improvements can make the roads safer, they cannot prevent motor vehicle crashes alone. Because a high percentage of crashes are a result of driver-related factors, making roadways safer requires individuals representing the Es of safety (education, emergency medical services, engineering, and enforcement) to be involved. Each discipline has a unique perspective on improving traffic safety while also remaining connected to the other disciplines. The success of your SAP relies on input from roadway safety stakeholders as your input will help define driver-related countermeasures to improve safety in your county.

WORKSHOP INFORMATION:

When:

8:30am - 11:30am
Wednesday October 16, 2024

Location:

Contact:

Jeremy Purvis
jeremy.purvis@hancockcountyia.org
641-923-2243

Kimley»Horn

HANCOCK COUNTY STAKEHOLDER WORKSHOP SIGN-IN SHEET

Date/Time: October 16, 2024, 8:30 AM - 11:30 AM

Location: Hancock County Courthouse Board of Supervisors' Room, 855 State Street, Garner IA 50438

Initials	Name	Agency/Role	E-Mail	Phone Number
BB	Bret Bredlow		bret.bredlow@hancockcountyia.org	
AB	Andy Buffington	EMA	buffingtona@hancocklaw-ia.com	641-923-2702
	Tim Buhr	Garner Ambulance Service		641-923-2546
	Tim Dodge	Garner Police Department		641-923-2621
JF	Jim Francis		jim.francis@hancockcountyia.org	
RG	Rob Gerdes	Sheriff's Office	rgerdes@hancocklaw-ia.com	641-923-2621
	Rachel Ginbey	Hancock County Attorney		641-923-4198
	Florence "Sis" Greiman	Hancock County Board of Supervisors	showcows@comm1net.net	641-923-3224
SH	Shaun Hackman		shaun.hackman@hancockcountyia.org	
	Ken Kasper	Garner-Hayfield-Ventura	kkasper@ghvschools.org	941-923-2718
	Wayne Kronemann	West Hancock	wkronemann@whancock.org	641-843-3833 ext. 366

HANCOCK COUNTY STAKEHOLDER WORKSHOP SIGN-IN SHEET

Date/Time: October 16, 2024, 8:30 AM - 11:30 AM

Location: Hancock County Courthouse Board of Supervisors' Room, 855 State Street, Garner IA 50438

Initials	Name	Agency/Role	E-Mail	Phone Number
	Rachel Martinez		rachel.martinez@hancocklaw-ia.com	
✓	Devin Moore	Kimley-Horn	devin.moore@kimley-horn.com	702-553-4869
JP	Jeremy Purvis	County Engineer	jeremy.purvis@hancockcountyia.org	641-923-2243
	Gary Rayhons	Hancock County Board of Supervisors	gary.rayhons@hancockcountyia.org	641-923-3421
SM	~~Zane Sadauskis~~	LT Leon	~~zsadauskis~~@ltleon.com	515-422-7016
	Chelcee Schleuger		chelcee.schleuger@mercyhealth.com	
	Lindsey Schroeder	ICEA	lindsey.schroeder@iceasb.org	319-230-8444
	Jerry Tlach	Hancock County Board of Supervisors	Jctla@wctatel.net	641-565-3778
	Brad Upmeyer	Garner Fire Department		641-923-2588
	James Welsh	Hancock County Veterans Affairs	James.welsh@hancockcountyia.org	641-923-4427
	Tom Williams	Public Resource Officers	twilliam@dps.state.ia.us	641-424-3625

HANCOCK COUNTY STAKEHOLDER WORKSHOP SIGN-IN SHEET

Date/Time: October 16, 2024, 8:30 AM - 11:30 AM

Location: Hancock County Courthouse Board of Supervisors' Room, 855 State Street, Garner IA 50438

Initials	Name	Agency/Role	E-Mail	Phone Number
BJ	Bud Jermeland	Supervisor candidate	jerm@wcbtel.net	641-257-1977
✓	Chris Diggins	NIACOG	cdiggins@niacog.org	641-423-0491 ext 215