# SAFE STREETS AND ROADS FOR ALL

# SAFETY ACTION PLAN

HUNTINGTON COUNTY, IN

AUGUST 2024

# Acknowledgements


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# Overview

# 1. Overview

## 1. LEADERSHIP COMMITMENT AND GOAL SETTING

**HUNTINGTON COUNTY**
**BOARD OF COMMISSIONERS**

201 North Jefferson Street, Room 103A, Huntington, Indiana 46750
(260) 358-4822 | (260) 358-4823 fax | commissioners@huntington.in.us

July 30, 2024

As your County Commissioners, we are deeply committed to the safety and well-being of all our residents. Today we are proud to announce Huntington County's ambitious goal to reduce fatal vehicle crashes and serious injuries to the lowest possible levels, with the aim of achieving zero roadway fatalities and serious injuries.

Currently, our fatality rate stands at 22.4 per 100,000 people annually. Over the next decade, we are resolutely dedicated to lowering this rate to under 2.7 per 100,000 people. This goal represents our unwavering commitment to enhancing roadway safety and protecting our community.

To achieve this, we will undertake a comprehensive approach. The first crucial step in this process involves thoroughly characterizing our roadway safety issues and developing a robust Safety Action Plan. This plan will identify specific strategies and interventions designed to address the root causes of crashes and improve overall safety.

As part of our initial efforts, we have applied for Highway Safety Improvement Program (HSIP) funds to upgrade our roadway signage. Improved signage will play a vital role in alerting drivers to potential hazards and ensuring that safety measures are clear and effective.

In addition, we are in the process of developing a Countywide Master Trails Plan. This initiative aims to create safer routes for pedestrians and cyclists, promoting alternative transportation methods while reducing the risk of accidents involving vulnerable road users.

Together, these actions mark the beginning of our comprehensive strategy to make our roads safer. We will continue to engage with community stakeholders, monitor progress, and adapt our approach to ensure that we move closer to our goal of zero fatalities and serious injuries.

Your safety is our priority, and with these initiatives, we are taking significant steps toward a safer and more secure future for everyone in Huntington County.

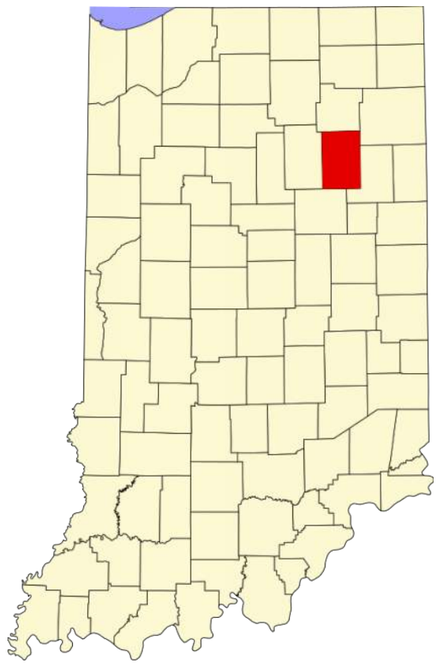
Tom Wall, President
Huntington County Commissioners

**Commissioner Tom Wall, President** **Commissioner Terry Stoffel, Vice President** **Commissioner Rob Miller**

**2. PLANNING STRUCTURE**
This comprehensive Safety Action Plan has a planning structure, through a committee consisting of: Huntington County Commissioners, Huntington County Highway, Region 3A Development and Regional Planning Commission, and VS Engineering, charged with the oversight of the Action Plan development and implementation.

**3. PROJECT PURPOSE**
The purpose of this safety action plan is to characterize roadway safety problems within Huntington County and identify strategies to be implemented, aimed at reducing and eliminating serious injury and fatal crashes.

**4. PROJECT NEED**
Huntington County had, in a 5-year period between 2018 and 2019, 5,900 total reported crashes. Those crashes resulted in 1,125 injured people, and tragically, 41 fatalities. That makes the five-year average 8.2, and with a population of 36,662 translates into a fatality rate of 22.4 per 100,000 people on an annualized basis.



# Engagement, Collaboration, and Equity

## 2. Engagement and Collaboration, and Equity

**1. STAKEHOLDER INPUT**

The Safety Action Plan Committee identified Stakeholders within the County whose experiences provide unique perspectives. The Stakeholders consisted of Public Safety Official: law enforcement, firefighters, EMS responders, and 911 dispatchers; City and local Community Officials: Mayor, Public Works, County Highway, Town Managers and Superintendents, and Town Clerks; and the Indiana Department of Transportation. Meetings were held with the stakeholders to identify locations and causes of unsafe roadway conditions within the County and to strategize ways to implement solutions.

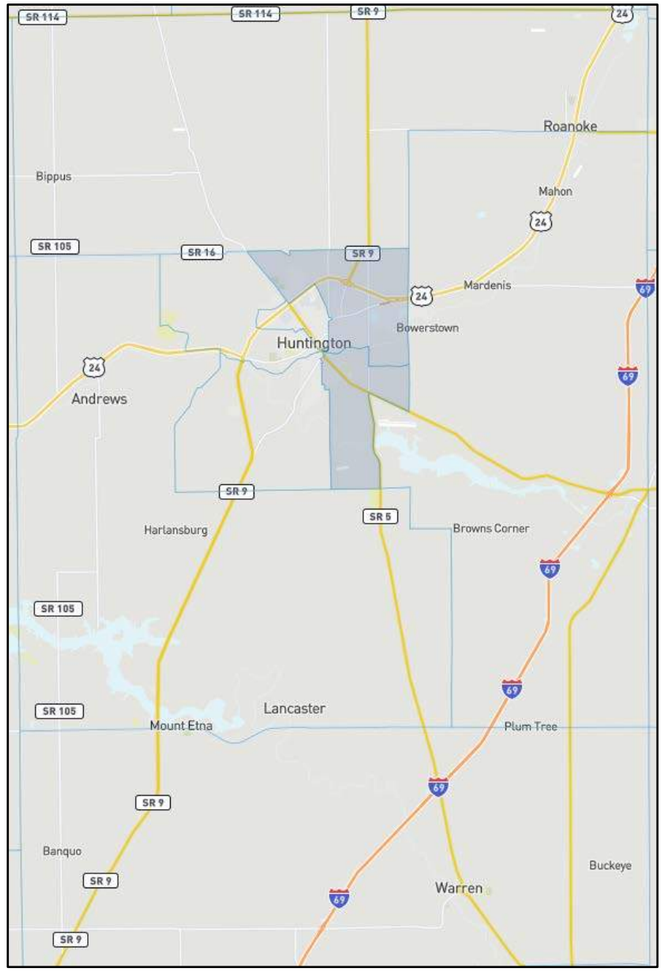
During the stakeholder meetings some of the common concerns included stop-controlled intersections, pedestrians walking along or across busy state highways, intersections with awkward or unconventional geometry, and vehicles running red lights on US 24 at high speed.

**2. EQUITY ANALYSIS**

As a part of developing this study, the Safety Team will review the demographics of those most impacted by accidents and fatalities. If the data shows that in certain areas minorities are impacted at a greater rate, those areas will be prioritized when considering construction projects. It should be noted that the county is 96.5% white, but the County is committed to ensuring racial equity. Huntington County has a population of approximately 36,662 according to 2020 census data meaning they meet the definition of a rural community as they are outside of an urbanized area. There are nine census tracts in Huntington County. None of them meet the definition of underserved, but seven are considered transportation disadvantaged according to Office of Management and Budget's Interim Guidance for the Justice40 Initiative and Historically Disadvantaged Community designation. The seven transportation disadvantaged tracts represent 77% of the population in the County.

The transportation disadvantage in Huntington County limits residents' earning potential. The U.S. Census Bureau (ACS 5-year PCMI) data for 2020 shows that the per capita income for residents in Huntington County is 77.2% of the U.S. per capita income.

Within these disadvantaged areas, busy intersections like Market St and First St lack adequate pedestrian facilities to ensure safe crossing. Projects should look to protect vulnerable users in these areas to enhance safety and promote equity for alternate forms of transportation. Improvements in disadvantaged areas should be carefully considered to avoid further contributing to factors creating disadvantages.




Disadvantaged census tracts in Huntington County


Sight distance obstructed for drivers looking north from Division Rd at SR 9


SR 16 section with 8' eastbound and 10' westbound lane near SR 5


CR 200 N westbound approaching Rangeline Rd on downslope

# Safety Analysis

# 3. Safety Analysis

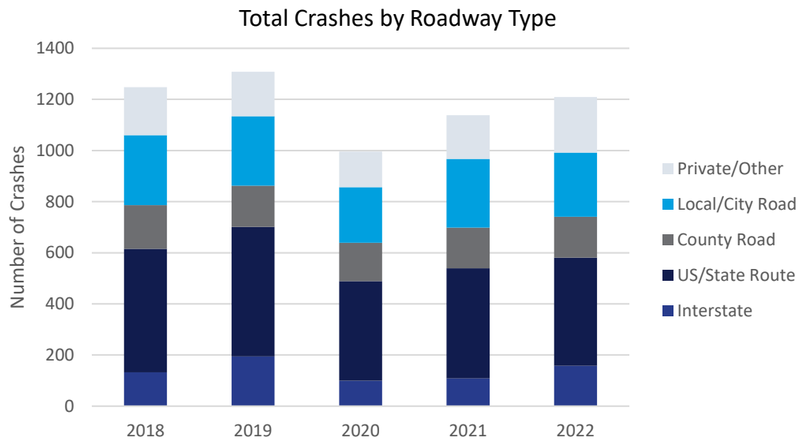
**1. EXISTING CRASH ANALYSIS**

Crash data was provided by Purdue LTAP for all roadways within Huntington County from 2018 through 2022. The data was used to determine the locations and routes with frequent and severe accidents, the manner of collisions associated with severe crashes, and the factors leading to collisions. Using these results, areas of concern can be identified and solutions for those areas can be developed.

Approximately half (49.6%) of all Huntington County crashes occurred on state-maintained highways, with the other half (50.4%) occurring on local or private roads. Locally maintained routes make up 1463 miles (88.5%) while state routes make up 190 miles (11.5%) in the county. The proportion of injury and fatal crashes is much higher on state maintained routes, on which 523 injury crashes (62.5%) and 27 fatal crashes (73.0%) occurred. The higher frequency and severity on state routes is likely due to higher traffic counts and higher design speed when compared to county and city roads. The annual number of fatal accidents on local roads never exceeded 3 in any given year, and the number of fatal accidents on state-maintained highways was never lower than 4 in any given year.

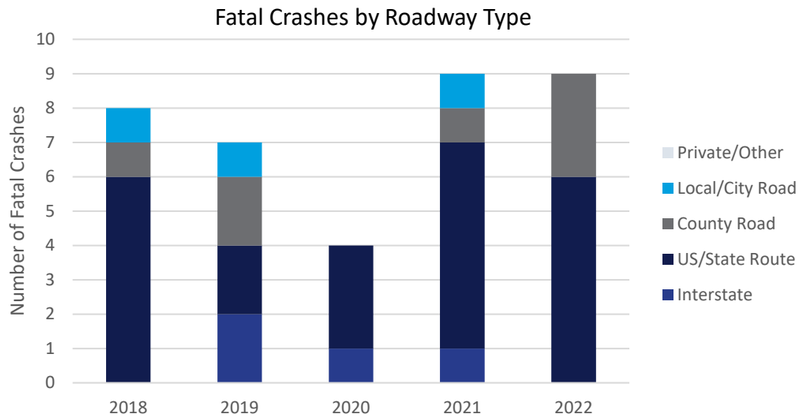
Total Crashes by Roadway Type

| Roadway Type | 2018 | 2019 | 2020 | 2021 | 2022 | TOTAL |
|---|---|---|---|---|---|---|
| Interstate | 132 | 194 | 100 | 108 | 158 | 692 |
| US/State Route | 483 | 507 | 389 | 431 | 423 | 2233 |
| County Road | 171 | 162 | 150 | 159 | 160 | 802 |
| Local/City Road | 274 | 271 | 218 | 269 | 251 | 1283 |
| Private/Other | 188 | 174 | 139 | 171 | 217 | 889 |
| TOTAL | 1248 | 1308 | 996 | 1138 | 1209 | 5899 |



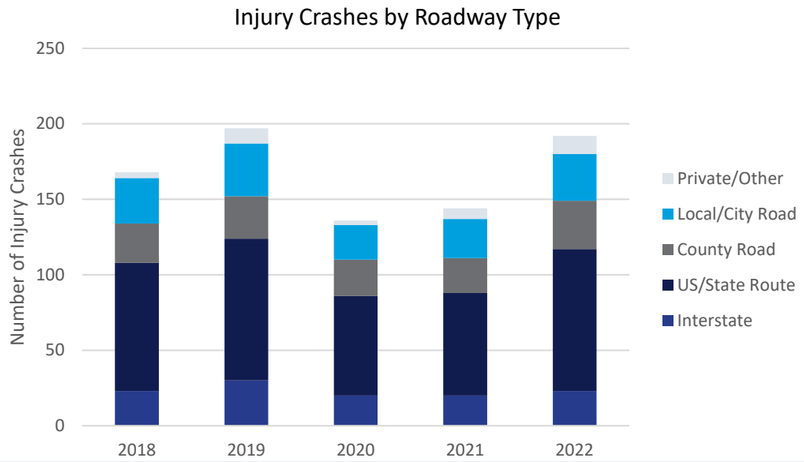

Fatal Crashes by Roadway Type

| Roadway Type | 2018 | 2019 | 2020 | 2021 | 2022 | TOTAL |
|---|---|---|---|---|---|---|
| Interstate | 0 | 2 | 1 | 1 | 0 | 4 |
| US/State Route | 6 | 2 | 3 | 6 | 6 | 23 |
| County Road | 1 | 2 | 0 | 1 | 3 | 7 |
| Local/City Road | 1 | 1 | 0 | 1 | 0 | 3 |
| Private/Other | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 8 | 7 | 4 | 9 | 9 | 37 |




Injury Crashes by Roadway Type

| Roadway Type | 2018 | 2019 | 2020 | 2021 | 2022 | TOTAL |
|---|---|---|---|---|---|---|
| Interstate | 23 | 30 | 20 | 20 | 23 | 116 |
| US/State Route | 85 | 94 | 66 | 68 | 94 | 407 |
| County Road | 26 | 28 | 24 | 23 | 32 | 133 |
| Local/City Road | 30 | 35 | 23 | 26 | 31 | 145 |
| Private/Other | 4 | 10 | 3 | 7 | 12 | 36 |
| TOTAL | 168 | 197 | 136 | 144 | 192 | 837 |



# 3. Safety Analysis

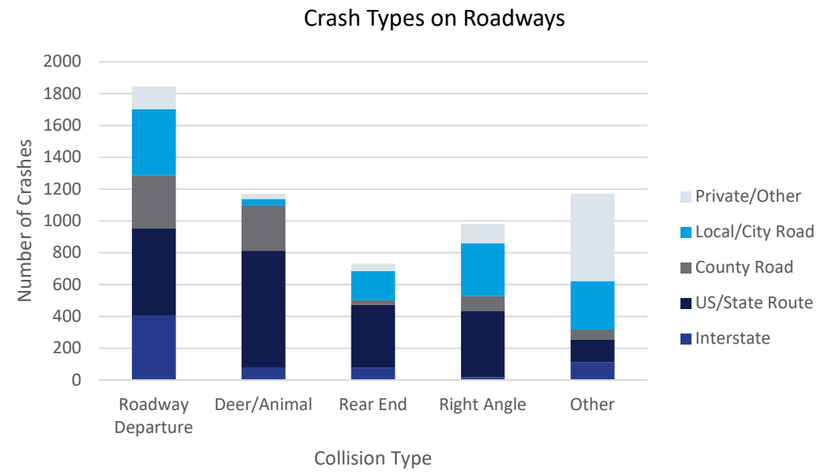
**1. EXISTING CRASH ANALYSIS**

Roadway departure crashes were the most prevalent manner of collision on Huntington County highways totaling 1846 crashes, making up 31.3% of the county total. Deer/Animal collisions were the second most common with 1170 crashes, or 19.8% overall. Most deer crashes (69.4%) occurred on state routes, likely attributable to long woodside portions of US 24, US 224, and SR 5. Right angle collisions were the third most prevalent crash type, with 981 crashes, or 16.6% overall. Rear end accidents are the fourth leading collision type, totaling 731 crashes, or 12.4% overall. Roadway departure crashes are common for all state, city, and county-maintained routes. State routes are prone to each of the four leading types of collisions, which make up 91.3% of all state route crashes. County roads are more prone to departure and deer collisions, making up 616 of 802 county road crashes (76.8%). City maintained roads are more prone to departure, right angle, and rear end collisions due to increased prevalence of street parking and higher intersection density. These three crash types make up 73.0% of city crashes. Backing crashes made up 606 of the county's 5899 total crashes, though most of these crashes were contained to private roads or parking lots, with some occurring on city roads near driveways.

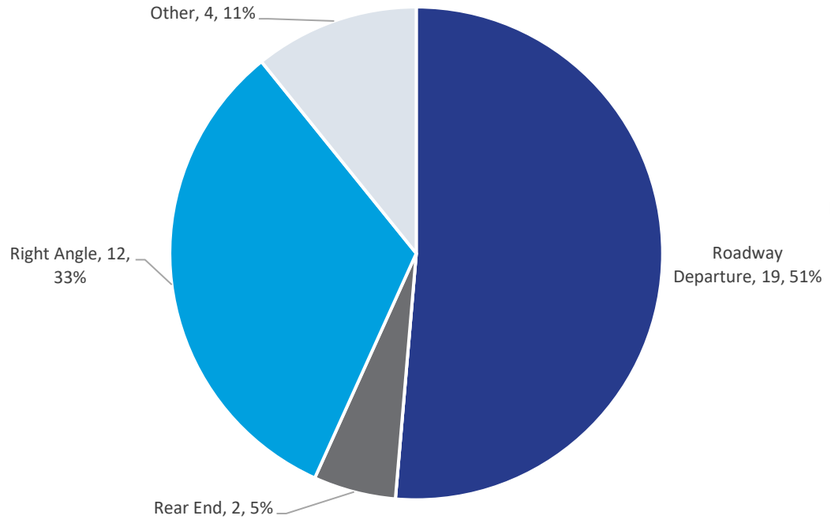
Together, roadway departure and right-angle collisions account for 31 of 37 fatal crashes (84%) and 608 of 837 injury crashes (72%). These crash types are prone to higher rates of injury and death due to the increased speed and direct collisions associated with roadway departure and right-angle accidents. Rear end collisions account for 12% of injury crashes, and both fatal rear end collisions involved either a motorcycle or bicycle.

Crash Types on Roadways

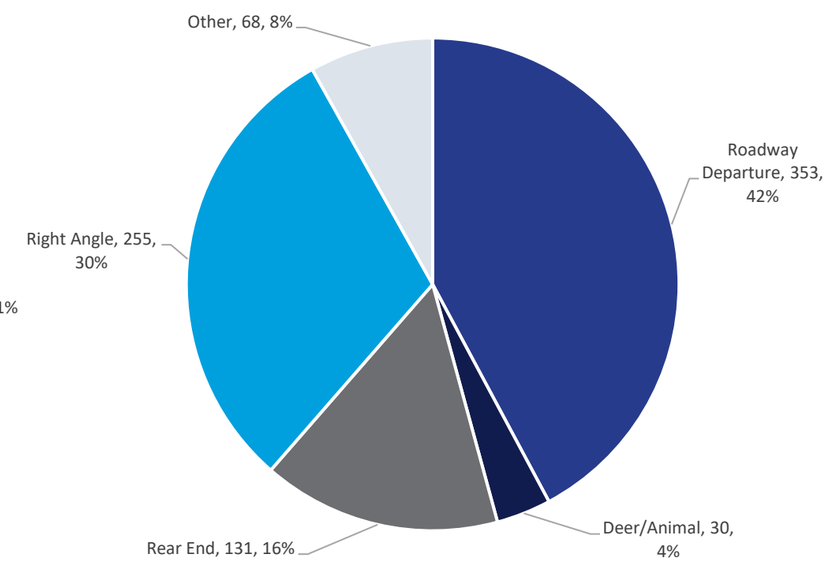
| Roadway Type | Roadway Departure | Deer/Animal | Rear End | Right Angle | Other | TOTAL |
|---|---|---|---|---|---|---|
| Interstate | 406 | 79 | 76 | 18 | 113 | 692 |
| US/State Route | 547 | 733 | 395 | 416 | 142 | 2233 |
| County Road | 332 | 284 | 31 | 93 | 62 | 802 |
| Local/City Road | 419 | 42 | 183 | 334 | 305 | 1283 |
| Private/Other | 142 | 32 | 46 | 120 | 549 | 889 |
| TOTAL | 1846 | 1170 | 731 | 981 | 1171 | 5899 |




Fatal Crashes by Crash Type




Injury Crashes by Crash Type




Severe Crashes by Crash Type

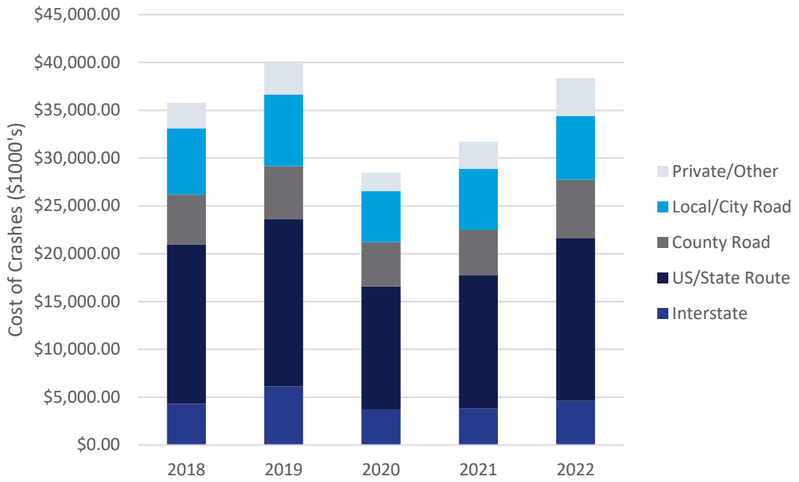
| Roadway Type | Roadway Departure | Deer/Animal | Rear End | Right Angle | Other | TOTAL |
|---|---|---|---|---|---|---|
| Injury | 353 | 30 | 131 | 255 | 68 | 837 |
| Fatal | 19 | 0 | 2 | 12 | 4 | 37 |

# 3. Safety Analysis

**1. EXISTING CRASH ANALYSIS**

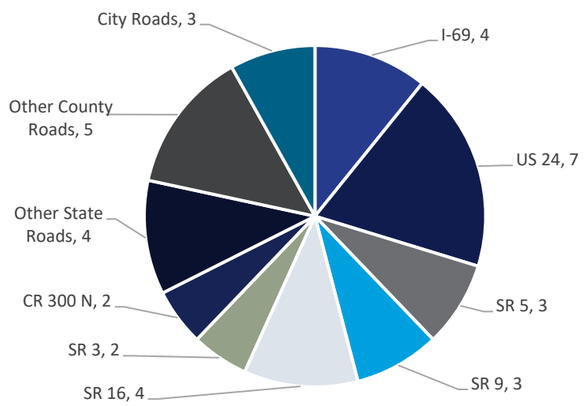
The estimated cost of crashes for the period 2018-2022 was calculated using chapter 50 of the Indiana Design Manual (Economic Analysis). Using costs of $133,050 for fatal and injury crashes and $11,530 for property damage only (PDO) crashes, the estimated crash cost for Huntington County was determined to be $174,228,980 in 2024 dollars. State maintained routes contributed to $100,563,630 (57.7%) of that total. Local/City roads made up $32,779,090 and county roads made up $26,260,520 in damages.

The crash data was analyzed further to determine which routes were contributing to the fatal and injury crash totals. US 24 has the highest fatal and injury crash total of any road in the county with 7 fatal and 142 injury crashes. US 24 is the primary thoroughfare between Wabash, Huntington, and Fort Wayne. US 24 is a rural 4 lane divided highway with a typical speed limit of 60 mph. The road contains a high number of intersections, offering more opportunities for traffic conflicts. I-69 is second for fatal and injury accidents with 4 fatal and 116 injury crashes. I-69 has twice the vehicular volume of US-24, however due to its lack of intersections and increased design standards there are less conflict points for interstate travelers to navigate. SR 16 is tied with I-69 with 4 fatal crashes despite having less than 1% of I-69's daily vehicle miles traveled (VMT). SR 16 has the lowest design standard of any state-maintained highway in the county including a 30-mph curve near Clear Creek that experienced 2 fatal crashes. SR 5 had 3 fatal crashes and 55 injury crashes, and SR 9 had 3 fatal crashes and 46 injury crashes. SR 9 has higher traffic volume than SR 5, though in places SR 9 is built to a higher design standard. SR 9 has also been improved in some locations during the latter years of the study period to improve safety. SR 5 has an increased number of crashes near Clear Creek and Bracken Rd where the road is narrower and contains sharp curves.



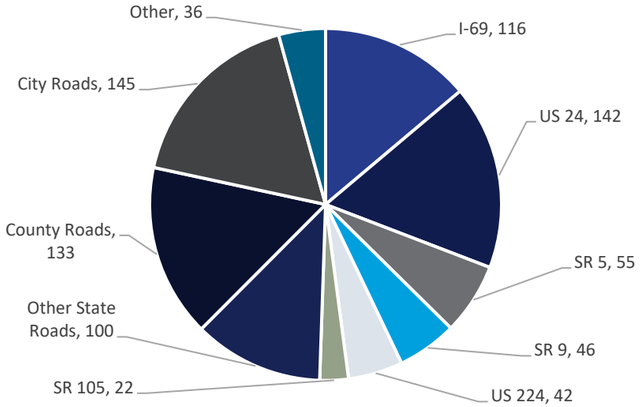

Cost of Crashes by Roadway Type ($1000s)

| Roadway Type | 2018 | 2019 | 2020 | 2021 | 2022 | TOTAL |
|---|---|---|---|---|---|---|
| Interstate | $4,317.03 | $6,125.62 | $3,705.00 | $3,797.25 | $4,616.84 | $22,561.73 |
| US/State Route | $16,627.70 | $17,512.04 | $12,870.37 | $13,962.27 | $17,029.51 | $78,001.89 |
| County Road | $5,252.81 | $5,513.59 | $4,646.11 | $4,749.89 | $6,098.13 | $26,260.52 |
| Local/City Road | $6,926.58 | $7,499.59 | $5,308.70 | $6,382.85 | $6,661.37 | $32,779.09 |
| Private/Other | $2,653.90 | $3,221.58 | $1,967.37 | $2,822.43 | $3,960.46 | $14,625.74 |
| TOTAL | $35,778.03 | $39,872.42 | $28,497.54 | $31,714.69 | $38,366.30 | $174,228.98 |




Fatal Crashes by Route

| Route | Fatal |
|---|---|
| I-69 | 4 |
| US 24 | 7 |
| SR 5 | 3 |
| SR 9 | 3 |
| SR 16 | 4 |
| SR 3 | 2 |
| CR 300 N | 2 |
| Other State Roads | 4 |
| Other County Roads | 5 |
| City Roads | 3 |
| TOTAL | 37 |




Injury Crashes by Route

| Route | Injury |
|---|---|
| I-69 | 116 |
| US 24 | 142 |
| SR 5 | 55 |
| SR 9 | 46 |
| US 224 | 42 |
| SR 105 | 22 |
| Other State Road | 100 |
| County Roads | 133 |
| City Roads | 145 |
| Other | 36 |
| TOTAL | 837 |

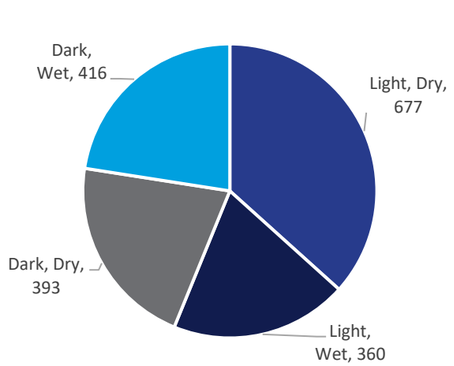
# 3. Safety Analysis

**1. EXISTING CRASH ANALYSIS**

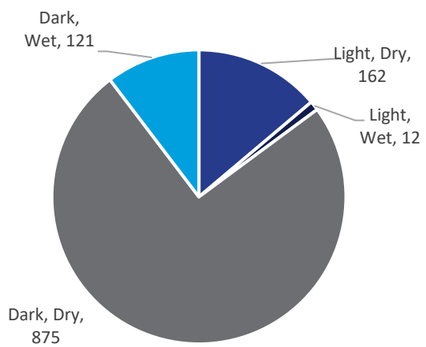
Part of the crash analysis examined the weather conditions at the time of crash. 77.9% of crashes occurred in dry conditions, and 71.1% of crashes occurred under daylight. Right angle, rear end, and other crashes follow this pattern closely, with 73-77% of crashes under daylight and dry conditions. Roadway departure and deer collisions deviate from this pattern, with only 56.8% of departure crashes in daylight and 42.0% occurring in wet conditions. Departures are more likely to occur in dark or wet conditions as the roadway boundaries become obscured by water and glare from the sun or headlights. Deer crashes were uncommon during daylight hours, with 85.1% of deer collisions occurring in the dark. During daylight hours, 23 of 37 (62.2%) fatal crashes occurred, while 6 fatal crashes occurred during wet conditions. Injury crashes follow the same trend as fatal crashes, except wet conditions make up a greater percentage (12.9%) of daylight injury crashes.

Light and Surface Conditions of Crashes

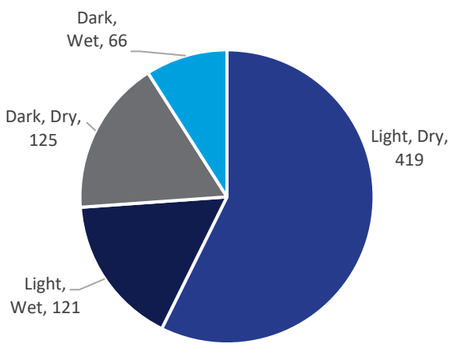
| Roadway Class | Roadway Departure | Deer/Animal | Rear End | Right Angle | Other | TOTAL |
|---|---|---|---|---|---|---|
| Light, Dry | 677 | 162 | 419 | 604 | 680 | 2542 |
| Light, Wet | 360 | 12 | 121 | 147 | 152 | 792 |
| Dark, Dry | 393 | 875 | 125 | 153 | 232 | 1778 |
| Dark, Wet | 416 | 121 | 66 | 77 | 107 | 787 |
| TOTAL | 1846 | 1170 | 731 | 981 | 1171 | 5899 |



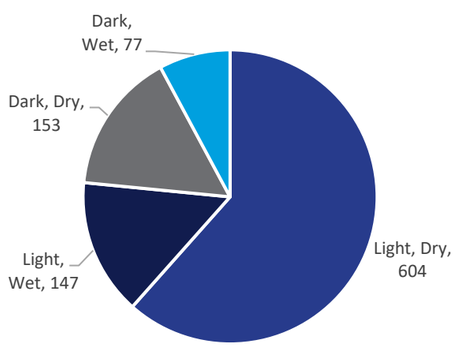

Roadway Departure Crashes



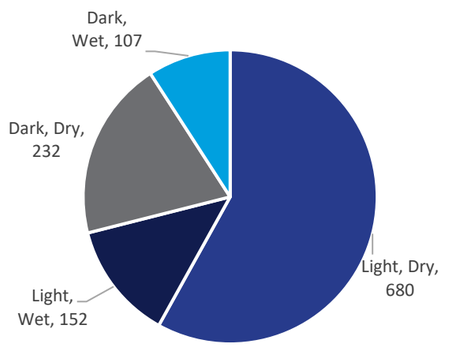

Deer/Animal Crashes




Rear End Crashes




Right Angle Crashes




Other Crashes

The highest contributing factor of collision in Huntington County was animals or objects in the road, with 1323 (22.4%) crashes. While the most prevalent, animal/object collisions are only 27% as likely to cause injury to vehicle occupants, and none of these crashes have resulted in human death. The leading human-caused factor was failure to yield right of way, leading to 617 (10.5%) accidents. Drivers veering left of center or running off the road to the right led to 13 fatal crashes (35.1%) despite making up just 562 (9.5%) of the total 5899 crashes in the county. Drivers running off the road or into an adjacent lane led to potential departure crashes including sideswipe and head-on collisions with other vehicles or roadside structures which have increased chances of death or serious injury.

Most accidents in Huntington County do not occur at intersections, where only 24.5% of accidents occur. Four way and T-intersections account for 22.1% of all accidents, 29.7% of fatal accidents, and 31.8% of injury accidents. Of the accidents that occurred at intersections, 85.7% of fatal crashes and 45.2% of injury crashes occurred at stop-controlled intersections, which make up 42.4% of intersections in the county. Signalized intersections make up 35% of intersection crashes, with 14.3% of intersection fatal crashes and 36.5% of intersection injury crashes. A potential explanation to the higher rate of fatal crashes to injury crashes at stop signs compared to traffic signals could be due to the prevailing use of stop control in rural areas, as county and state routes make up 91.9% of fatal crashes due to increased crash energy from higher travel speeds.

Crashes by Junction Type

| Roadway Junction Type | Total | Fatal | Injury | % Total | % Fatal | % Injury |
|---|---|---|---|---|---|---|
| No Junction | 4451 | 26 | 547 | 75.5% | 70.3% | 65.4% |
| Four-Way Intersection | 844 | 9 | 202 | 14.3% | 24.3% | 24.1% |
| T-intersection | 460 | 2 | 64 | 7.8% | 5.4% | 7.6% |
| Other | 144 | 0 | 24 | 2.4% | 0.0% | 2.9% |

Crashes by Traffic Control Type

| Traffic Control | Total | Fatal | Injury | %Total | %Fatal | %Injury |
|---|---|---|---|---|---|---|
| Traffic Signal | 380 | 1 | 80 | 6.4% | 2.7% | 9.6% |
| None | 4787 | 30 | 618 | 81.1% | 81.1% | 73.8% |
| Stop Sign | 471 | 6 | 99 | 8.0% | 16.2% | 11.8% |
| Other | 261 | 0 | 40 | 4.4% | 0.0% | 4.8% |

# Strategy and Project Selections

# 4. Strategy and Project Selections

**1. PROJECT IDENTIFICATION**

The projects selected for improvements through the SS4A grant program will be identified through a data-based selection process that includes county crash data, evidence of effectiveness from noteworthy projects, stakeholder input, and equity considerations. These projects will address the safety problems described in the Action Plan. The strategies and countermeasures to be implemented should focus on a Safe System Approach and effective interventions while also considering multidisciplinary activities.

The projects will be prioritized into short term and long-term improvements and strategies for infrastructure, behavioral, and operational safety.

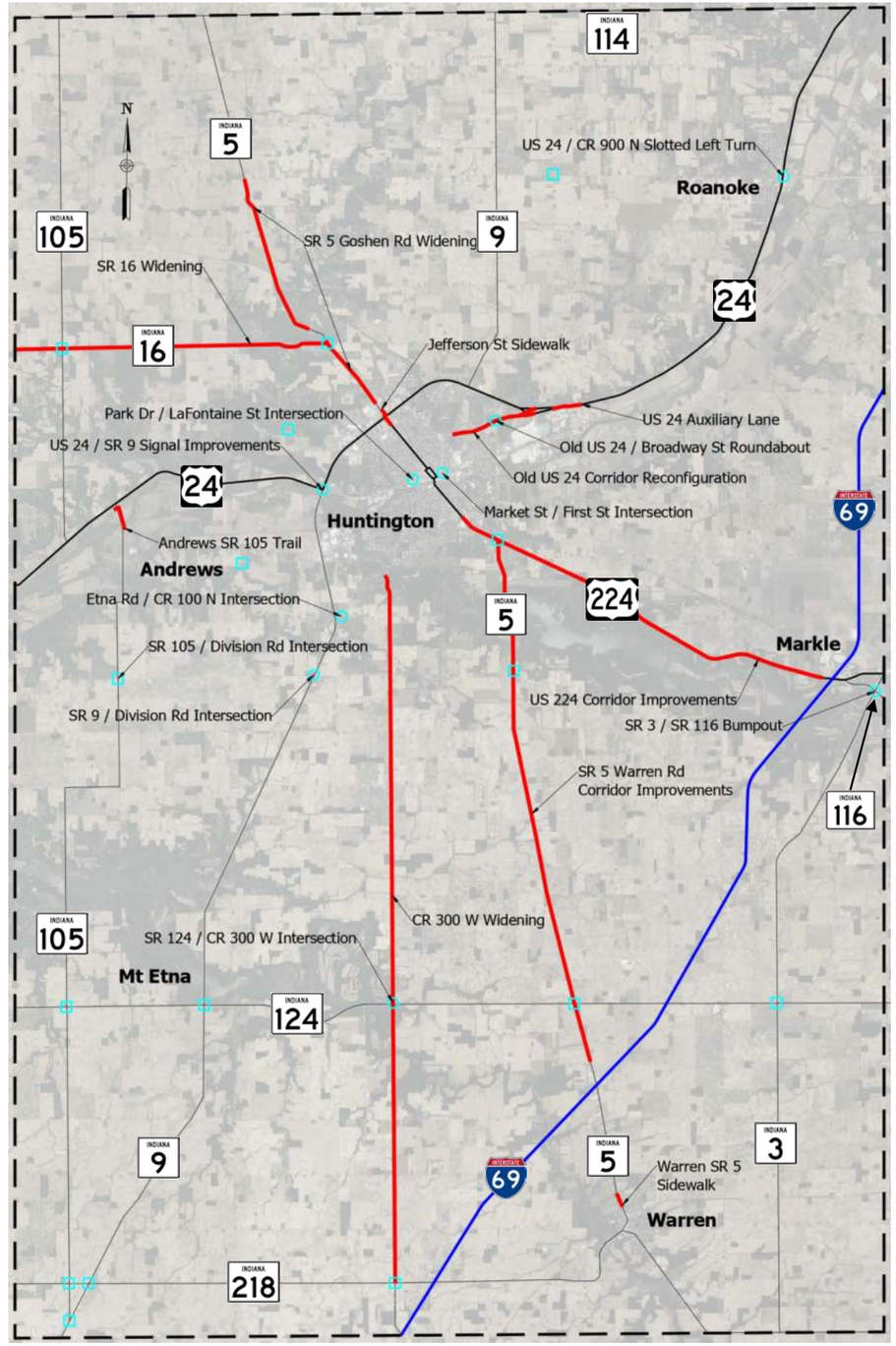
Several projects were implemented in Huntington County in the last 2 years of the crash study. These include the reconfiguration of the SR 9 / CR 600 N / Broadway St intersection, slotted left turns on US 24 at SR 9, and flashing stop signs at the CR 300 N / CR 200 E intersection. These projects are early examples that can be used to preview the effectiveness of proven safety countermeasures as they are implemented in Huntington County.

**2. PROJECTS SELECTED FOR IMPROVEMENTS**

The following sections contain the areas identified to receive improvements. Each project page includes the project background, crash history (where applicable), existing conditions, and proposed short and/or long-term improvements. Smaller scale systemic improvements are not included in the dedicated slides. A map of the project areas selected is on the right side of this page.

Selected Projects

| Project Name | Project Time Range for Deployment | Project Jurisdiction and Agencies | Tier / Prioritization |
|---|---|---|---|
| Division Rd / SR 105 Intersection | Short | Huntington County Highway Department, INDOT | 1 |
| SR 5 Warren Rd Corridor Improvements | Mid | INDOT | 1 |
| US 224 Corridor Improvements | Mid/Long | INDOT | 1 |
| SR 16 Widening | Short/Long | INDOT | 1 |
| Old 24 Corridor Reconfiguration | Long | City of Huntington, INDOT | 1 |
| SR 9 / Division Rd Intersection | Short/Long | Huntington County Highway Department, INDOT | 1 |
| Low-Cost Signage Improvements | Short/Mid | Huntington County Highway Department, City of Huntington, INDOT | 1 |
| Park Dr / LaFontaine St Intersection | Mid | City of Huntington | 2 |
| US 24 / SR 9 Signal Improvements | Short | INDOT | 2 |
| Etna Rd / CR 100 N Intersection | Long | Huntington County Highway Department | 2 |
| US 24 Auxiliary Lane | Long | INDOT | 2 |
| Market St / First St Intersection | Short/Long | City of Huntington | 2 |
| SR 5 Goshen Rd Widening | Long | INDOT | 2 |
| US 24 / CR 900 N Slotted Left Turn | Mid | INDOT | 3 |
| SR 3 / SR 116 Bumpout | Mid | INDOT, Town of Markle | 3 |
| CR 300 W Widening | Long | Huntington County Highway Department, INDOT | 3 |
| Jefferson St Sidewalk | Mid | INDOT, City of Huntington | 3 |
| Andrews SR 105 Trail | Mid | INDOT, Town of Andrews | 3 |
| Warren SR 5 Sidewalk | Mid | INDOT, Town of Warren | 3 |



# 4. Strategy and Project Selections

**3. SR 105 / DIVISION RD INTERSECTION**

The purpose of the SR 105 / Division Road intersection improvements is to prevent right angle collisions at the intersection. A crash analysis from 2018-2022 revealed 6 crashes occurred at the intersection during that period. Of those, 1 crash resulted in a fatality and 4 crashes resulted in injury. There were 3 right angle crashes, resulting in 1 fatal crash and 2 injury crashes. An additional fatal crash was recorded after the study period on July 29, 2024, resulting in 1 fatality and 3 injuries. Both fatal crashes, as well as two injury crashes, occurred when crops were high, limiting sightlines.

The existing intersection is two-way stop controlled, with SR 105 as the primary route. The roads meet at a right angle, and there are no auxiliary lanes present at the intersection. The only signage at the intersection are two stop signs on Division Road (one for each approach) and a name plaque for Division Rd.

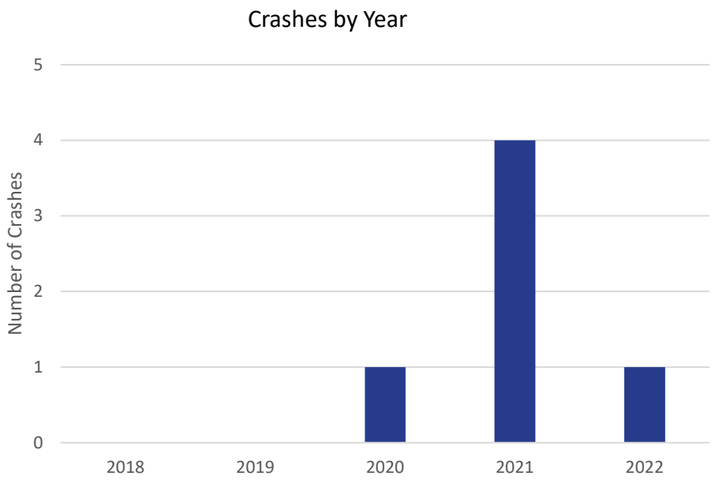
The proposed improvements to the SR 105 / Division Road intersection are to convert the intersection from two-way stop controlled to all-way stop controlled and add additional signage along both SR 105 and Division Road. Signage improvements would consist of implementing up-sized stop signs, stop ahead signs with name plaques, doubled-up signage, and painted stop bars. Right of way acquisition is also considered to improve sightlines at the intersection. The improvements proposed at the SR 105 / Division Road intersection will improve sight distance, awareness of the intersection hazards, and reduce the speed of vehicles entering the intersection to limit the occurrence of high-energy right-angle collisions.

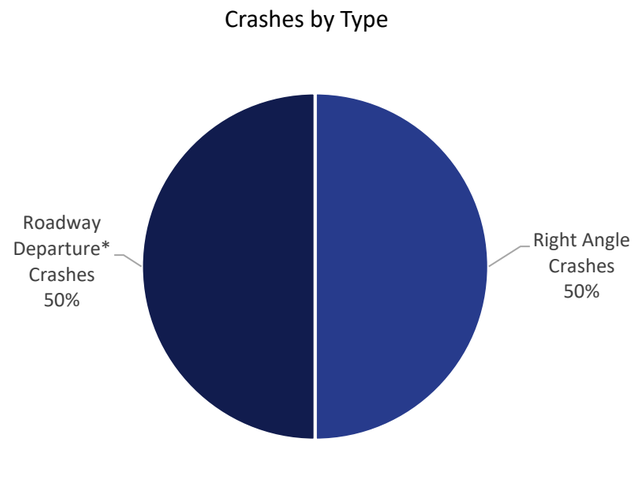

View looking south on SR 105

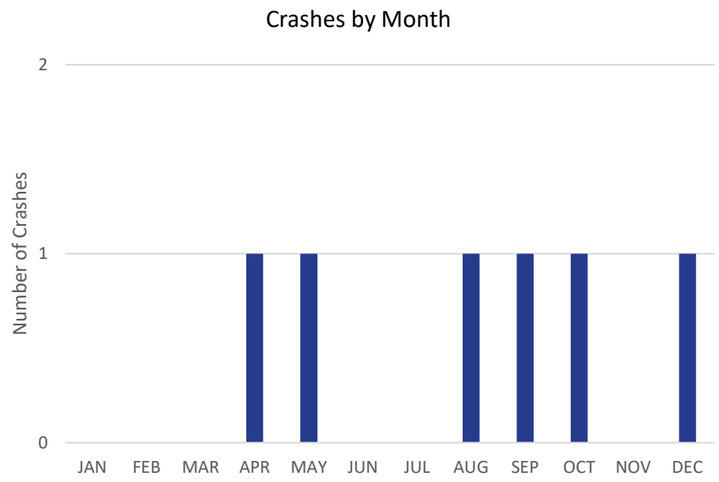

View looking east on Division Rd

| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **6** | - | 0 | 0 | 1 | 4 | 1 |
| Right Angle Crashes | **3** | **50%** | 0 | 0 | 0 | 3 | 0 |
| Roadway Departure* Crashes | **3** | **50%** | 0 | 0 | 1 | 1 | 1 |
| Fatal Crashes | **1** | **17%** | 0 | 0 | 0 | 1 | 0 |
| Injury Crashes | **4** | **67%** | 0 | 0 | 1 | 2 | 1 |
| PDO Crashes | **1** | **17%** | 0 | 0 | 0 | 1 | 0 |

**includes Run Off Road, Head-On and Sideswipe Crashes*



**4. SR 5 WARREN RD CORRIDOR IMPROVEMENTS**

The purpose of the milled corrugations on the SR 5 corridor is to improve the safety of motorists and prevent fatal departure related accidents. The studied corridor includes portions of SR 5 between CR 700 S and US 224, totaling 9.8 miles. A crash analysis for 2018-2022 determined that there were 122 crashes on SR 5, with 3 resulting in fatalities and 25 resulting in injuries. Roadway departure crashes were the leading manner of collision, with 41 accidents. Departure related crashes were responsible for all 3 fatal accidents along the corridor.

The existing roadway consists of 12’ travel lanes with 2’-3’ shoulders in each direction for a total width of 28’. This width meets INDOT’s rural arterial standards and is adequate for a two-lane facility. SR 5 maintains right of way at all intersections except for US 224 and SR 124 (both AWSC). The posted speed limit is 55 mph and there is little elevation change or curvature along the corridor. There are no corrugations or other countermeasures to prevent roadway departure incidents.

The proposed improvements to SR 5 are to add edge and centerline corrugations to the roadway from US 224 south to the commercial area at the I-69 interchange. These corrugations would act as a preventative countermeasure to roadway departure incidents, which are responsible for all 3 fatal crashes and are the leading manner of collision on SR 5. A potential addition to the corrugations is to add buzz strips on the approaches to the all-way stop-controlled intersections (US 224, SR 124). There were 11 accidents on SR 5 at the SR 124 intersection and 14 accidents at the US 224 intersection; buzz strips would increase awareness of the need to stop at and safely navigate these intersections.

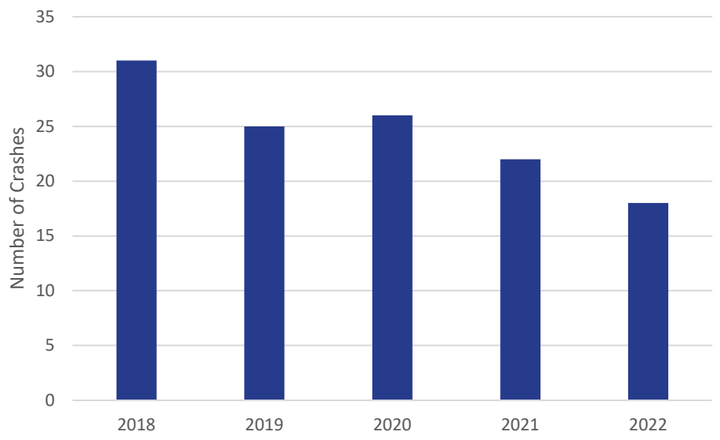
Sinusoidal centerline rumble stripes

Existing section of SR 5 with 12’ travel lanes and 2’-3’ shoulders

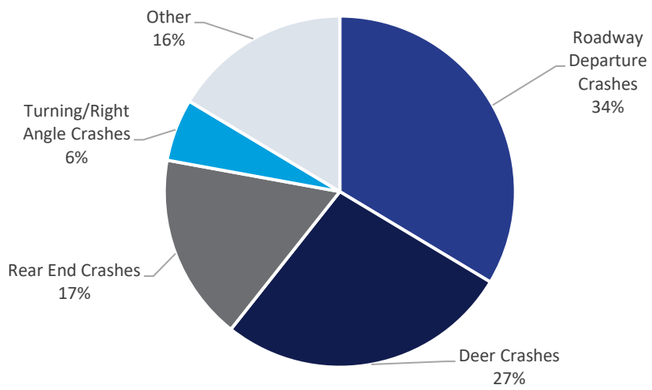
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **122** | **-** | 31 | 25 | 26 | 22 | 18 |
| Roadway Departure Crashes | **41** | **34%** | 14 | 5 | 12 | 4 | 6 |
| Deer Crashes | **33** | **27%** | 8 | 10 | 2 | 8 | 5 |
| Rear End Crashes | **21** | **17%** | 4 | 3 | 6 | 4 | 4 |
| Turning/Right Angle Crashes | **7** | **6%** | 2 | 0 | 4 | 1 | 0 |
| Other | **20** | **16%** | 3 | 7 | 2 | 5 | 3 |
| Fatal Crashes | **3** | **2%** | 0 | 1 | 1 | 0 | 1 |
| Injury Crashes | **25** | **20%** | 3 | 8 | 5 | 4 | 5 |
| PDO Crashes | **97** | **80%** | 28 | 16 | 20 | 18 | 12 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

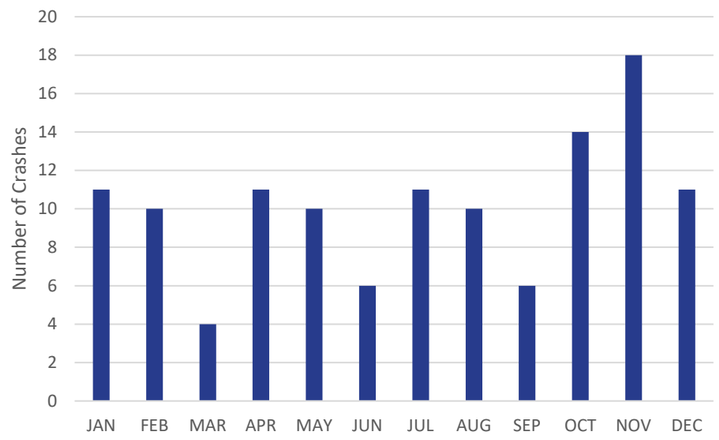
Crashes by Year




Crashes by Type




Crashes by Month



**5. US 224 CORRIDOR IMPROVEMENTS**

The purpose of the US 224 improvements is to increase the level of safety for motorists, residents, and businesses along the US 224 corridor from Huntington to Markle. A crash analysis was performed for 2018-2022 to determine the causes of accidents along the corridor. The analysis found 183 crashes along the 8-mile segment, with 27 resulting in injuries. The leading cause of accidents were deer, accounting for 62 crashes (34%). The leading non-deer crash type were roadway departure crashes with 40 (22%) crashes in five years. Turning/Right Angle crashes accounted for 32 accidents (17%).

The corridor under consideration consists of US 224 between Briant Street in Huntington and SR 116 in Markle, for a total distance of 8 miles. There are 19 intersections and an interchange with I-69 in the 8-mile stretch. The existing cross section of US 224 has two 12' travel lanes and 2'-3' outside shoulders. US 224 widens to include a center turn lane between Joe St and Briant St as well as in the vicinity of the I-69 interchange. These sections meet the geometric requirements for a rural arterial.


Traffic at US 224 / SR 5 all-way stop-controlled intersection with flashing overhead beacons

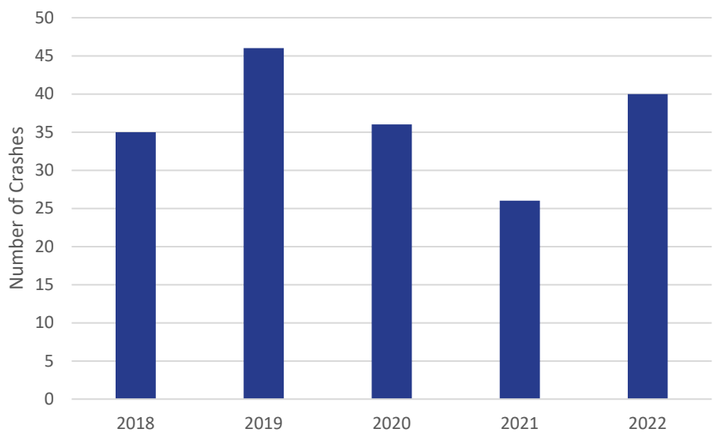
View of US 224 looking west from the entrance to American Legion Post 85

US 224 section view with 12' travel lanes and 2'-3' shoulders

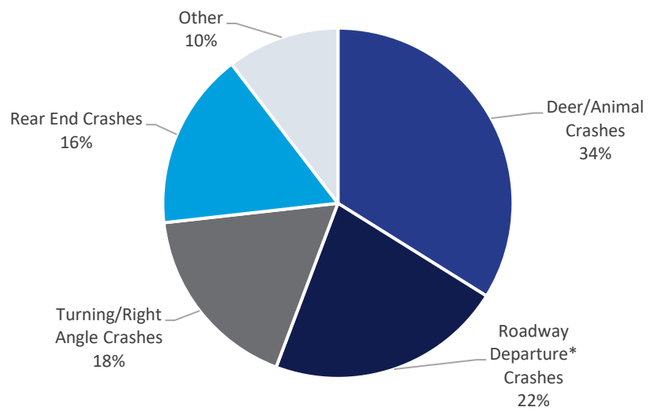
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **183** | - | 35 | 46 | 36 | 26 | 40 |
| Deer/Animal Crashes | **62** | **34%** | 10 | 19 | 11 | 4 | 18 |
| Roadway Departure* Crashes | **40** | **22%** | 5 | 6 | 11 | 3 | 15 |
| Turning/Right Angle Crashes | **32** | **17%** | 14 | 7 | 4 | 6 | 1 |
| Rear End Crashes | **30** | **16%** | 5 | 8 | 8 | 7 | 2 |
| Other | **19** | **10%** | 1 | 6 | 2 | 6 | 4 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **27** | **15%** | 5 | 7 | 3 | 6 | 6 |
| PDO Crashes | **156** | **85%** | 33 | 39 | 33 | 21 | 34 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

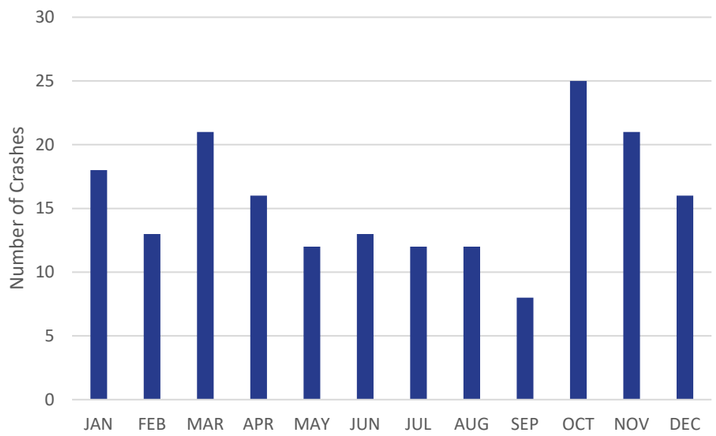
Crashes by Year




Crashes by Type

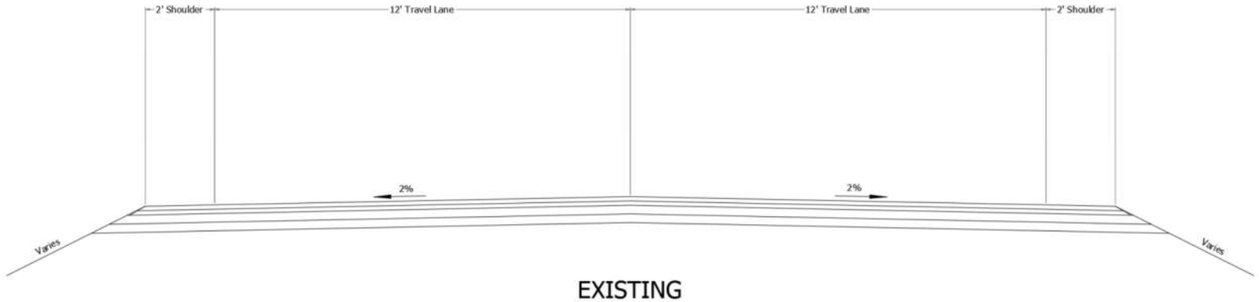



Crashes by Month

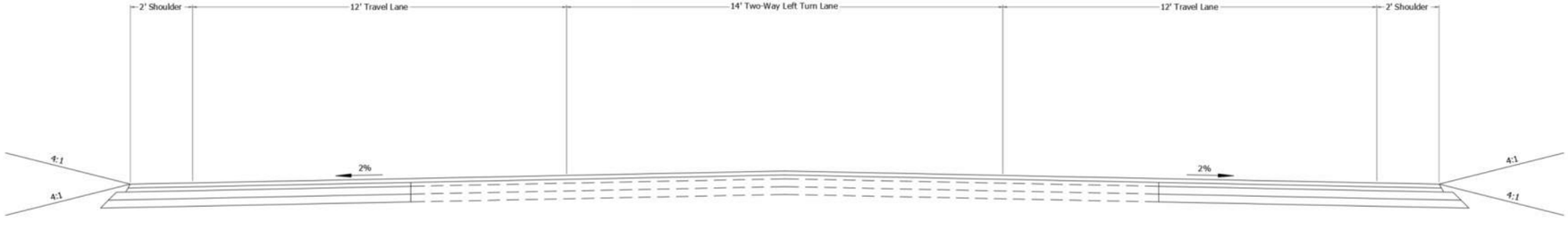


**5. US 224 CORRIDOR IMPROVEMENTS**

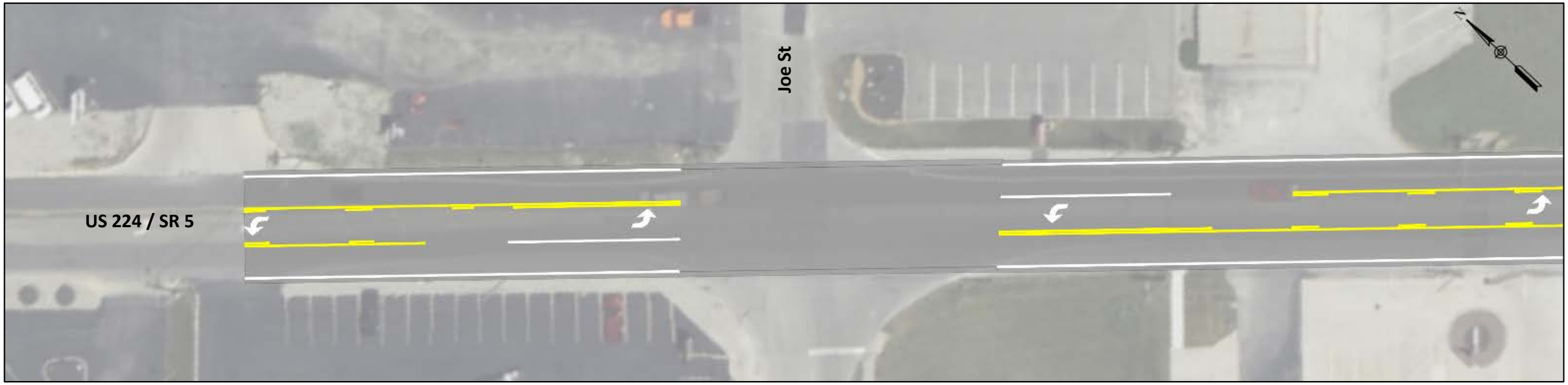
The proposed improvements will target right angle and departure-related crashes. The center turn lane between Briant Rd and Joe Street would be extended 800’ to the east, terminating at the American Legion Post. This extension aims to reduce right angle and rear end accidents occurring when motorists turn into or out of businesses on the east side of Huntington. In the 800’ between the end of the existing turn lane and the American Legion Post there were 17 recorded accidents, most of which were right angle accidents. The center turn lane will allow motorists more space and time to judge their turns and reduce accidents.




EXISTING




PROPOSED




Proposed US 224 center turn lane improvement at Joe St intersection

**5. US 224 CORRIDOR IMPROVEMENTS**

The only intersection between Briant St and SR 116 that is not free flowing for US 224 is the all-way stop at SR 5. There were 14 crashes at this intersection during the study period, with most accidents due to drivers being unable to stop safely at the intersection. The proposed improvement is to add buzz strips to the mainline pavement of US 224 to alert drivers of the upcoming stop sign. The intersection already has overhead flashing warning beacons. This should reduce the number of accidents due to short stopping distance by providing adequate advance warning of the intersection.

Aside from deer, the remainder of the US 224 corridor to I-69 experiences mostly departure related crashes. These accidents are primarily caused due to the combination of sharp curves and adjacent intersections. These curves are not delineated with any markers, and intersections are not marked with advance intersection warning signs. There are three elements to the proposed improvements for the corridor. First, edge and center line corrugations will be added to alert departing drivers. Second, curves will be delineated with curve delineation markers to warn drivers of curves around the wooded areas with visual obstruction. The third element is the addition of advance warning signs for intersections along US 224. These will alert motorists of the intersections along curves which are difficult for motorists to spot while keeping their vehicles in their respective lanes. The elements listed are low-cost fixes to a high crash corridor that will reduce the number of head on collisions, sideswipes, and instances of driving off the road.


Summary map of US 224 corridor improvements. Example curve delineators on US 224 (inset)


Example curve intersection warning signs

# 4. Strategy and Project Selections

**6. SR 16 WIDENING**

The purpose of the SR 16 widening project is to prevent future fatalities involving motor vehicles on SR 16. A crash analysis of highways in Huntington County from 2018-2022 determined SR 16 to be the most dangerous road in the county by fatalities. The 5.8-mile segment of SR 16 experienced 36 crashes, 4 of which were fatal accidents killing a total of 5 people. Of the 36 crashes, 20 involved deer, and 12 involved departure related incidents. 3 of the 4 fatal accidents were a result of running off the road or into an oncoming lane.

The existing SR 16 roadway consists of one 9’ wide lane in each direction with no shoulders. Field measurements determined locations east of CR 600W where the striped eastbound lane width was 7.5’-8’ and the striped westbound lane width was 10’. The road traverses hilly terrain, and only 1400’ of the 5.8 miles in Huntington County are suitable for passing from either side. In the area near Clear Creek there is a series of sharp horizontal curves where two of the fatalities occurred. These curves have advisory speeds of 30 mph, and the corridor has a posted speed limit of 55 mph. SR 16 maintains right-of-way at all intersections except for SR 5 (two-way stop controlled) and SR 105 (all way stop controlled).

View of westbound curve on SR 16 where two fatal crashes occurred

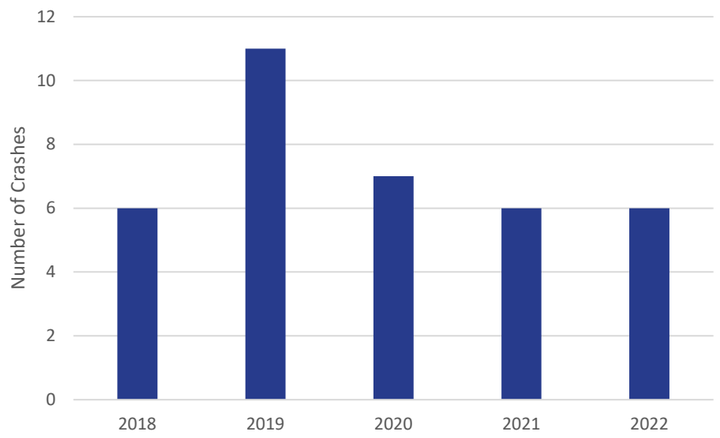
Semi truck left of center when making turn on SR 16 eastbound curve

Narrow section view of SR 16 with 9’ travel lanes

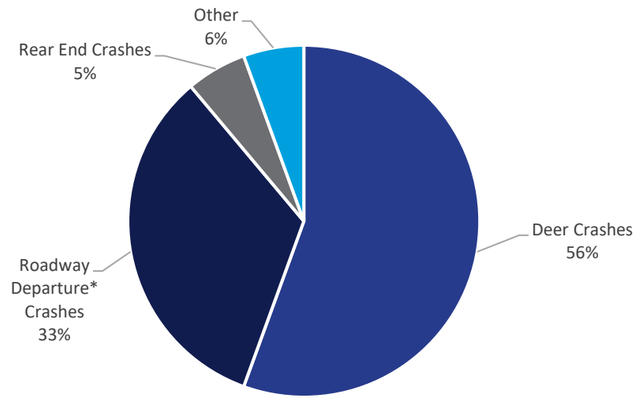
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **36** | - | 6 | 11 | 7 | 6 | 6 |
| Deer Crashes | **20** | **56%** | 3 | 7 | 5 | 3 | 2 |
| Roadway Departure* Crashes | **12** | **33%** | 2 | 3 | 2 | 2 | 3 |
| Rear End Crashes | **2** | **6%** | 1 | 0 | 0 | 0 | 1 |
| Other | **2** | **6%** | 0 | 1 | 0 | 1 | 0 |
| Fatal Crashes | **4** | **11%** | 2 | 0 | 0 | 0 | 2 |
| Injury Crashes | **2** | **6%** | 0 | 0 | 0 | 1 | 1 |
| PDO Crashes | **30** | **83%** | 4 | 11 | 7 | 5 | 3 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

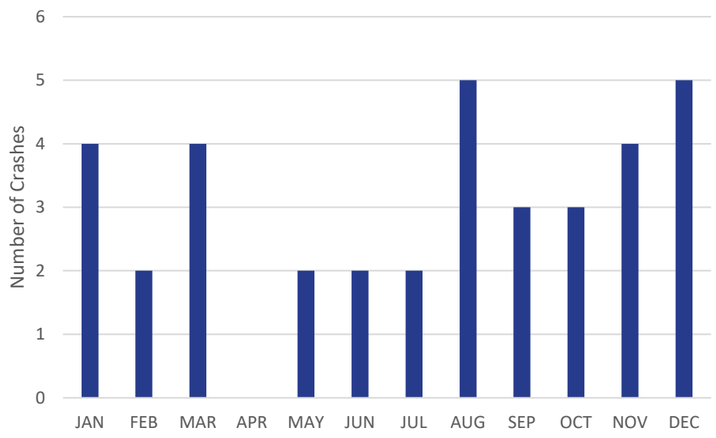
Crashes by Year




Crashes by Type




Crashes by Month

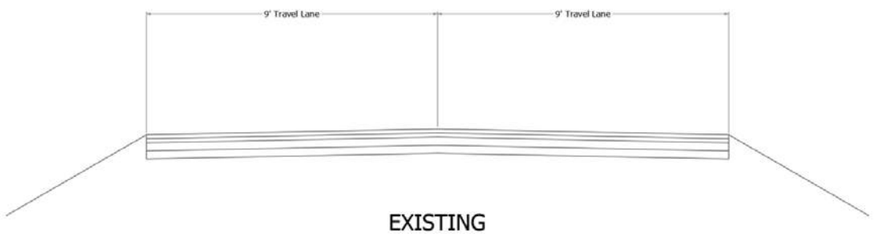


# 4. Strategy and Project Selections

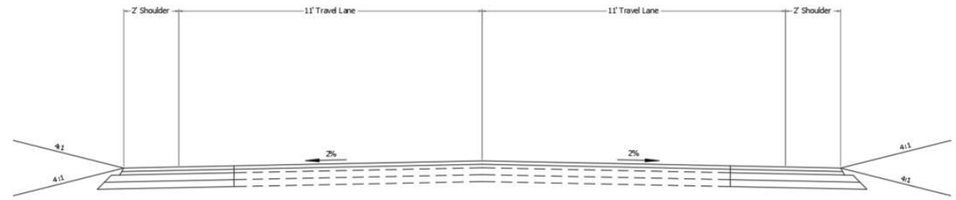
**6. SR 16 WIDENING**

The proposed improvements include widening SR 16 to include an 11’ travel lane and 2’ shoulder in each direction, for a total width of 26’. Center and edge line corrugations will be added as a warning measure for lane departures. The current design criteria for a rural collector with 400-3,000 vehicles per day (vpd) requires a minimum lane width of 11’, and for segments over 1,000 vpd a 2’ paved shoulder is required. The eastern segment of SR 16 near Clear Creek is above 1,000 vpd and the western segment averages 700-800 vpd. The project will also involve realigning the eastern curve near Clear Creek to a 50-mph design speed, matching the western curve. These improvements are expected to increase the forgiveness of the roadway and prevent future departure related accidents, which have a 25% fatality rate on SR 16.

There are short term alternatives that can be applied to improve safety of the curve near Clear Creek. These include clearing trees from the clear zone to allow more visibility and lessen the number of trees to crash into, adding a guardrail to the outer edge of the curve, and applying high-friction surface treatment (HFST) to the roadway. The curve itself could also be realigned to a higher design speed independent of a county-wide widening project.

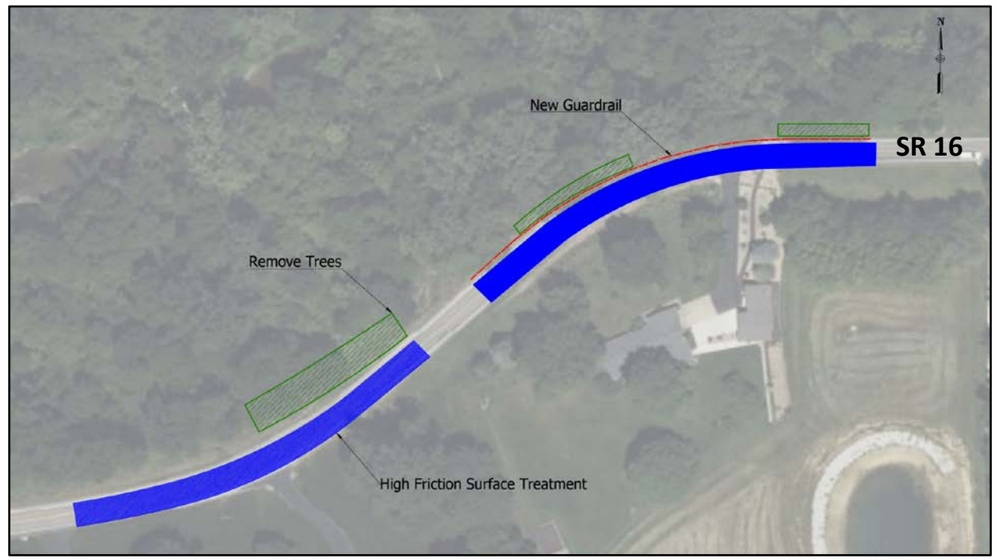



EXISTING




PROPOSED


Plan view of proposed widening and curve realignment of SR 16 to include 11’ travel lanes and 2’ shoulders




Plan view of proposed short-term improvements to SR 16 including added guardrail, HFST, and tree removal


Plan view of western limits of SR 16 widening at Wabash County line


Plan view of eastern limits of SR 16 widening at SR 5 (SR 5 widening shown)

# 4. Strategy and Project Selections

**7. OLD 24 CORRIDOR RECONFIGURATION**

The purpose of the Old US 24 improvements is to increase the safety level of the road for motorists and non-motorized trail users. A crash analysis was performed for the period 2018-2022 to determine the type of improvements necessary to improve safety. The half mile corridor of Old US 24 between US 24 and First street experienced 48 crashes in the five-year period, with 6 resulting in injuries. Right angle and Departure crashes accounted for 25 of the 48 accidents reported.

The existing Old US 24 roadway consists of the former multilane divided highway alignment of US 24. There are two westbound travel lanes with a 10' shoulder, separated from the eastbound lanes by a grass median. The eastbound lanes consist of a single travel lane with frequent auxiliary lanes for turning movements. The eastbound direction was reconfigured from 2 lanes with a 10' shoulder in 2018 to accommodate the new trail on the south side of the roadway. The westbound lanes are formed at a left-hand exit from US 24 and approach the Broadway St intersection from the east. The speed limit on US 24 is 55 mph, and on Old 24 this speed drops to 45 mph. The Broadway Street intersection is controlled by an all-way stop with flashing red lights. The westbound lanes continue past the intersection with Old SR 9 and ultimately split into Stults Rd and First St.

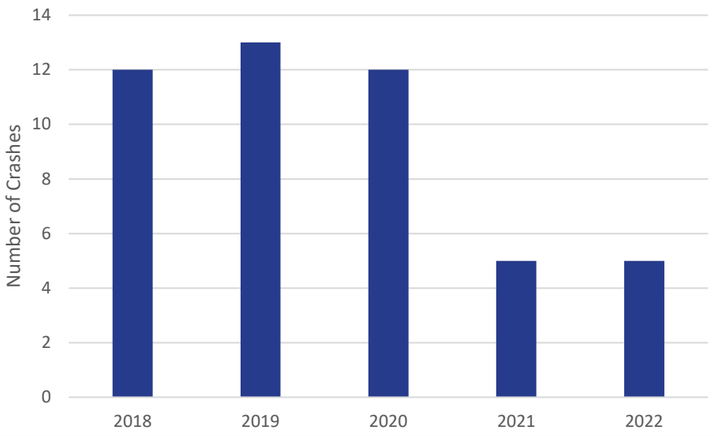
Existing westbound section with two 12' travel lanes and 10' outside shoulder

View from westbound left turn lane on Old 24 at Broadway

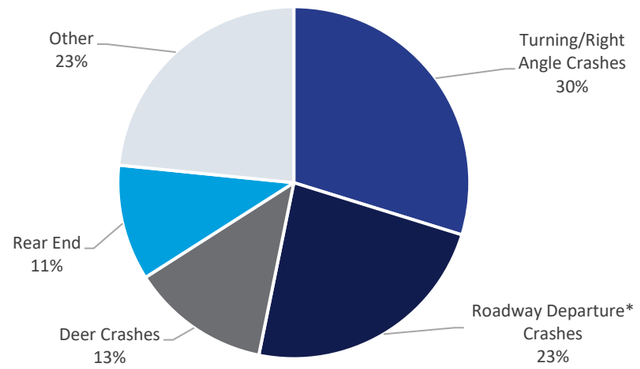
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **48** | - | 12 | 13 | 12 | 5 | 5 |
| Turning/Right Angle Crashes | **14** | **29%** | 5 | 4 | 4 | 0 | 1 |
| Roadway Departure* Crashes | **11** | **23%** | 0 | 5 | 4 | 1 | 1 |
| Deer Crashes | **6** | **13%** | 2 | 0 | 1 | 1 | 2 |
| Rear End | **5** | **10%** | 1 | 1 | 2 | 1 | 0 |
| Other | **11** | **23%** | 4 | 3 | 1 | 2 | 1 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **6** | **13%** | 1 | 1 | 3 | 0 | 1 |
| PDO Crashes | **42** | **88%** | 11 | 12 | 9 | 5 | 4 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

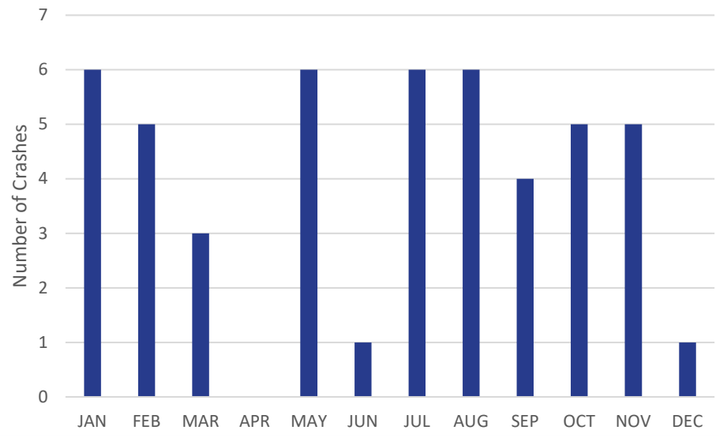
Crashes by Year




Crashes by Type

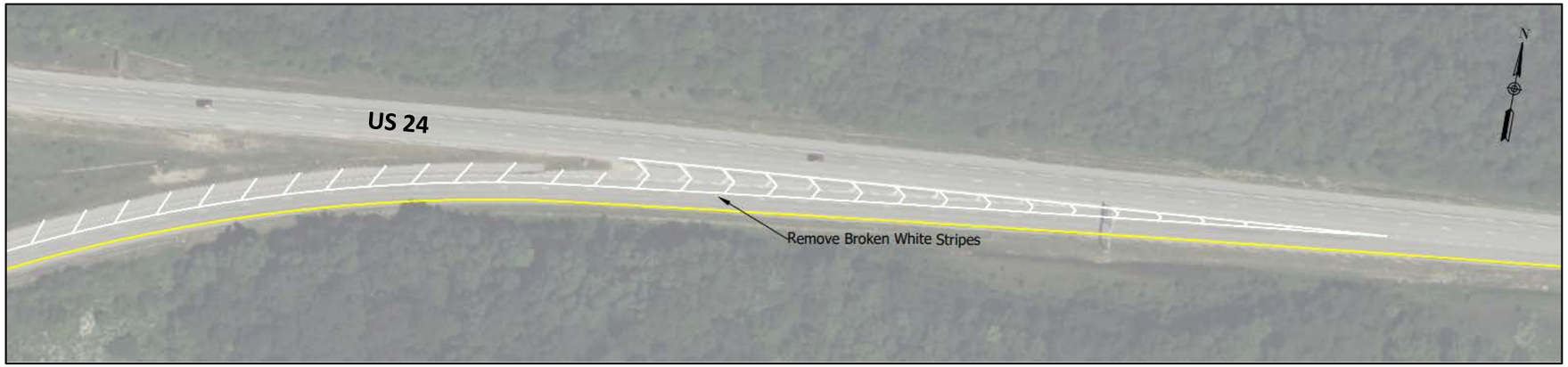



Crashes by Month



**7. OLD 24 CORRIDOR RECONFIGURATION**

The improvements to the Old US 24 corridor will make the westbound lanes reflect the eastbound lanes, with the road reconfigured to have one through lane with auxiliary lanes for turning movements. This will involve removing pavement on city-maintained road and striping gores onto state-maintained road to reduce the width from two lanes to one lane in each direction. Existing traffic counts on Old US 24 are sufficiently low to allow for a dieting of the road. The objective of dieting the road is to allow the road to better reflect a city street rather than a rural highway through context sensitive design. By shrinking the width to look like a city road, drivers will be less likely to travel at high rates of speed and will pay more attention to motor vehicles on cross streets and driveway approaches. This alternative also comes with the added benefit of reducing future maintenance costs as there will be less road that needs to be maintained. Stop signs on Old 24 at Broadway St should be replaced with larger signs, and the speed limit 45 signs should be doubled and largened on the east approach.




Proposed striped gore area on existing two-lane ramp to reduce to one 16’ ramp lane


Decreased footprint of Broadway St / Old 24 intersection


Plan view of proposed reconfiguration of Old US 24 between Old SR 9 and Condit St

# 4. Strategy and Project Selections

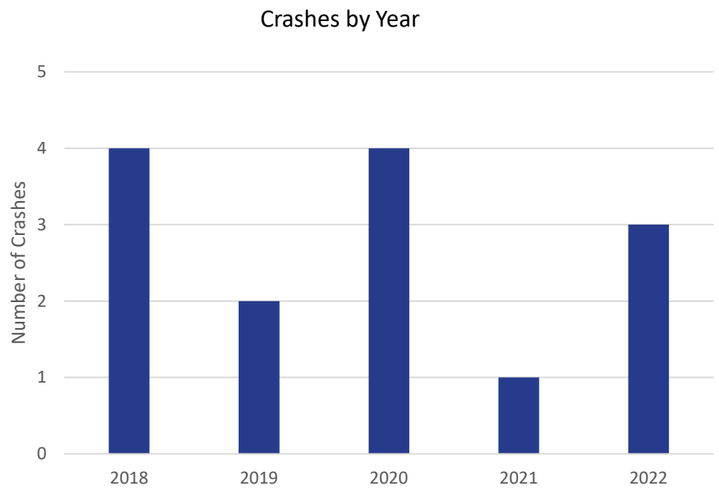
**7. OLD 24 CORRIDOR RECONFIGURATION**

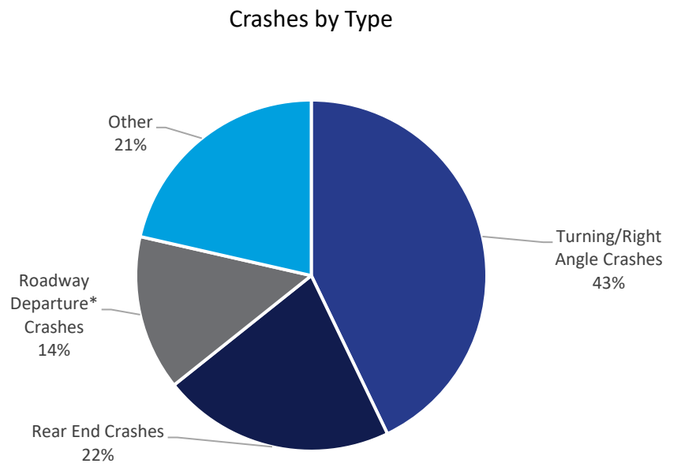
A potential alternative for this corridor is to convert the Broadway St intersection from an all-way stop to a roundabout. The existing intersection is wide and contains four lanes on the westbound approach, leading to confusion on whose turn it is at the intersection. Additionally, as the westbound roadway enters from US 24 there have been two instances of drivers blowing through the stop sign at high-speed causing right angle crashes with injuries. The implementation of a roundabout would reduce the chances of right-angle collisions and act as a transition from highway to city street. The trail that currently dead ends into the intersection would be able to intersect Broadway St south of the roundabout, with a refuge island between lanes. This would allow safer crossing of the road when a future trail extension is built to the east or south.

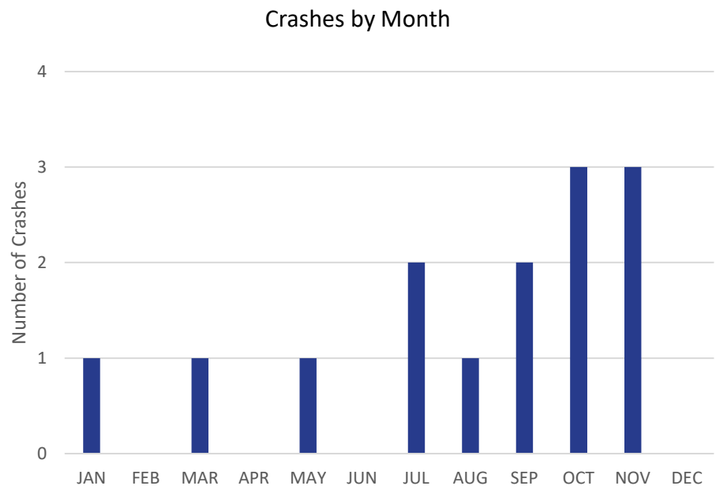
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **14** | - | 4 | 2 | 4 | 1 | 3 |
| Turning/Right Angle Crashes | **6** | **43%** | 2 | 1 | 2 | 0 | 1 |
| Rear End Crashes | **3** | **21%** | 0 | 0 | 2 | 0 | 1 |
| Roadway Departure* Crashes | **2** | **14%** | 1 | 1 | 0 | 0 | 0 |
| Other | **3** | **21%** | 1 | 0 | 0 | 1 | 1 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **2** | **14%** | 0 | 0 | 2 | 0 | 0 |
| PDO Crashes | **12** | **86%** | 4 | 2 | 2 | 1 | 3 |

**includes Run Off Road, Head-On and Sideswipe Crashes*


Plan view of proposed Broadway St / Old 24 roundabout alternative



# 4. Strategy and Project Selections

**8. SR 9 / DIVISION RD INTERSECTION**

The purpose of the SR 9 / Division Road intersection improvements is to prevent right angle collisions at the intersection. A crash analysis from 2018-2022 revealed 11 crashes occurred at the intersection during that period. Of those, 1 crash resulted in a fatality and 4 crashes resulted in injury. There were 8 right angle crashes, with 7 of those resulting from a driver on Division Road crossing over the median. Right angle collisions were the source of each fatality and injury.

The existing intersection is skewed 66 degrees with SR 9 as the primary route and Division Rd as the secondary route. SR 9 is a multilane divided highway with a speed limit of 60 mph, and Division Rd is a two-lane paved road with a speed limit of 55 mph. The west approach of Division Rd emerges from a wooded area, and partially blocks sightlines of SR 9 (7 of 9 multivehicle collisions involved vehicles from the west approach). The space between the north and southbound lanes on SR 9 is 48’ at the median crossover, and there are no left turn lanes on SR 9.


Overhead plan view of existing SR 9 / Division Rd intersection

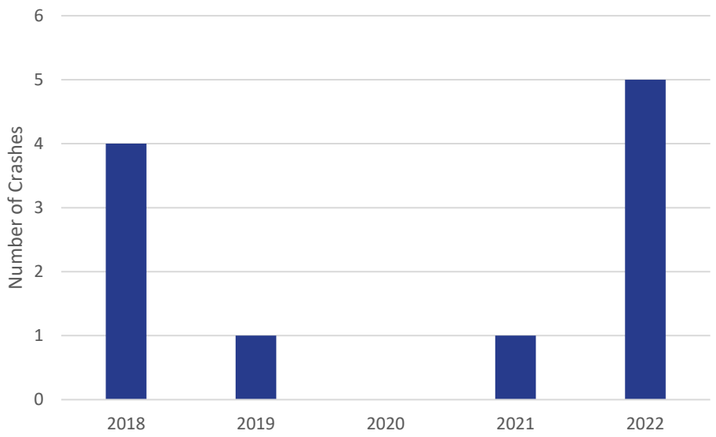

Drivers’ view looking north from eastbound Division Rd

Drivers’ view looking south from eastbound Division Rd

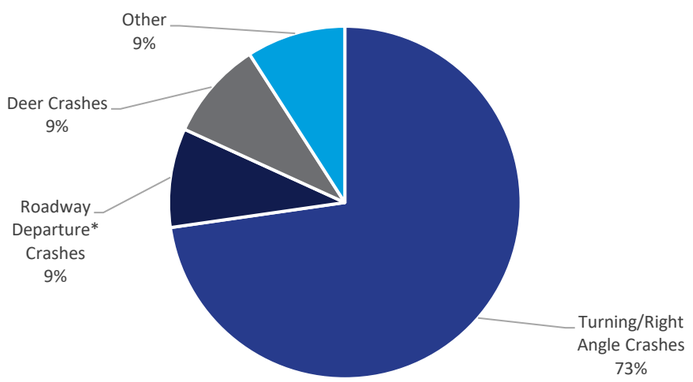
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **11** | **-** | 4 | 1 | 0 | 1 | 5 |
| Turning/Right Angle Crashes | **8** | **73%** | 3 | 0 | 0 | 1 | 4 |
| Roadway Departure* Crashes | **1** | **9%** | 0 | 0 | 0 | 0 | 1 |
| Deer Crashes | **1** | **9%** | 1 | 0 | 0 | 0 | 0 |
| Other | **1** | **9%** | 0 | 1 | 0 | 0 | 0 |
| Fatal Crashes | **1** | **9%** | 0 | 0 | 0 | 1 | 0 |
| Injury Crashes | **4** | **36%** | 2 | 0 | 0 | 0 | 2 |
| PDO Crashes | **5** | **45%** | 2 | 1 | 0 | 0 | 3 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

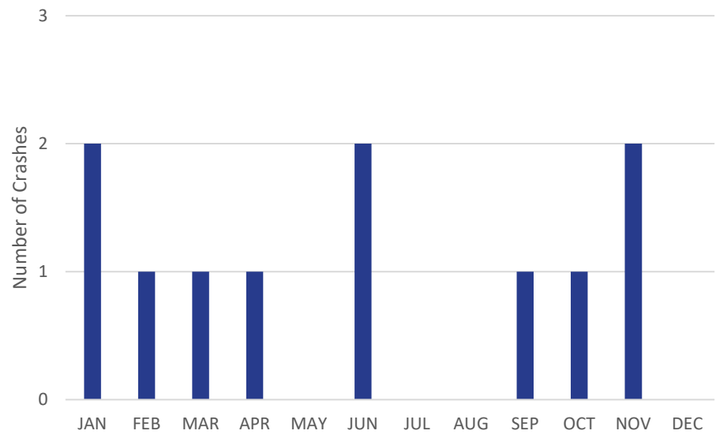
Crashes by Year




Crashes by Type



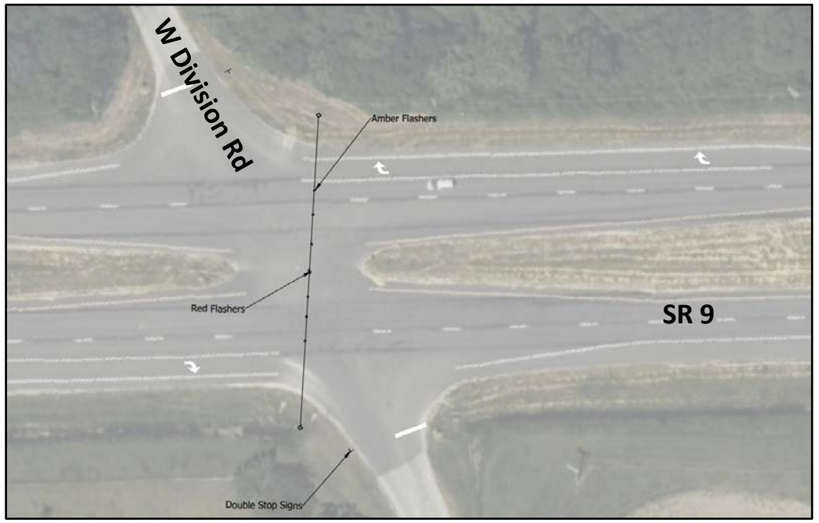

Crashes by Month



**8. SR 9 / DIVISION RD INTERSECTION**

There are two proposed alternatives for the intersection. The first alternative is to add overhead flashing beacons and enhanced signage to increase awareness of the danger of the intersection. Signage improvements would involve doubling up on stop signs along Division Rd. Flashers would involve two flashing beacons for each approach, with the SR 9 approaches receiving amber flashers and Division Rd receiving red flashers.

The second alternative would convert the existing four-way intersection into a reduced conflict intersection (RCI). This alternative would add left turn lanes on SR 9 and eliminate the median crossover on the alignment of Division Rd. Additional crossovers would be placed 700’ on either side of the intersection to facilitate the left turn and crossing movements. The RCI should eliminate the dangers of drivers trying to cross in front of traffic and separates the intersections with each direction of SR 9 to isolate drivers’ concentration on one direction at a time. This alternative would be more expensive than the flashing beacons, however the RCI is anticipated to provide the highest safety benefit.




Plan view of proposed flashing amber and red beacons


Proposed reduced conflict intersection (RCI) plan view

**9. LOW-COST SIGNAGE IMPROVEMENTS**

Huntington County contains intersections with higher crash rates compared to other county road intersections. These intersections are usually between one or more low volume roads, and do not have crash frequency rates high enough to make major intersection modifications feasible. Lower volume intersections should be evaluated for low-cost high reward improvements, notably signage.

The following intersections have preliminarily been identified for signage improvements based off their traffic volume and crash history:

- CR 900 N at Meridian Rd
- Rangeline Rd at CR 200 N
- Rangeline Rd at Hauenstein Rd
- Division Rd at SR 5

These improvements could include doubled up signage, flashing stop signs, conversions to all way stop control, advance warning signs, and improved sightlines or positioning of signage.

Additional signage recommendations for state routes include doubling up advance warning signs for stop-controlled intersections and buzz strips on state routes and major collectors. A general driver expectation on a state route is prolonged stretches without having to stop. Buzz strips and advance warning signs are low-cost measures to ensure that drivers are alerted to the upcoming stops on an otherwise free flowing corridor. Intersections where state routes are stop-controlled are indicated on the summary map.


Existing stop sign on eastbound Division Rd at SR 5

Drivers' view looking north from eastbound CR 200 N at Rangeline Rd intersection

Buzz strips preceding a sharp curve on SR 1 in Leo. There are no known buzz strips in use in Huntington County

Drivers' view looking south from eastbound CR 900 N at Meridian Rd intersection. Drivers must advance beyond stop sign to gain clear sightlines


Flashing stop sign at CR 300 E / CR 200 N. The signs were installed after 2 fatal crashes

Doubled up stop ahead signs on SR 3 approaching SR 124

Drivers' obstructed view looking south from westbound Hauenstein Rd at Rangeline Rd intersection

# 4. Strategy and Project Selections

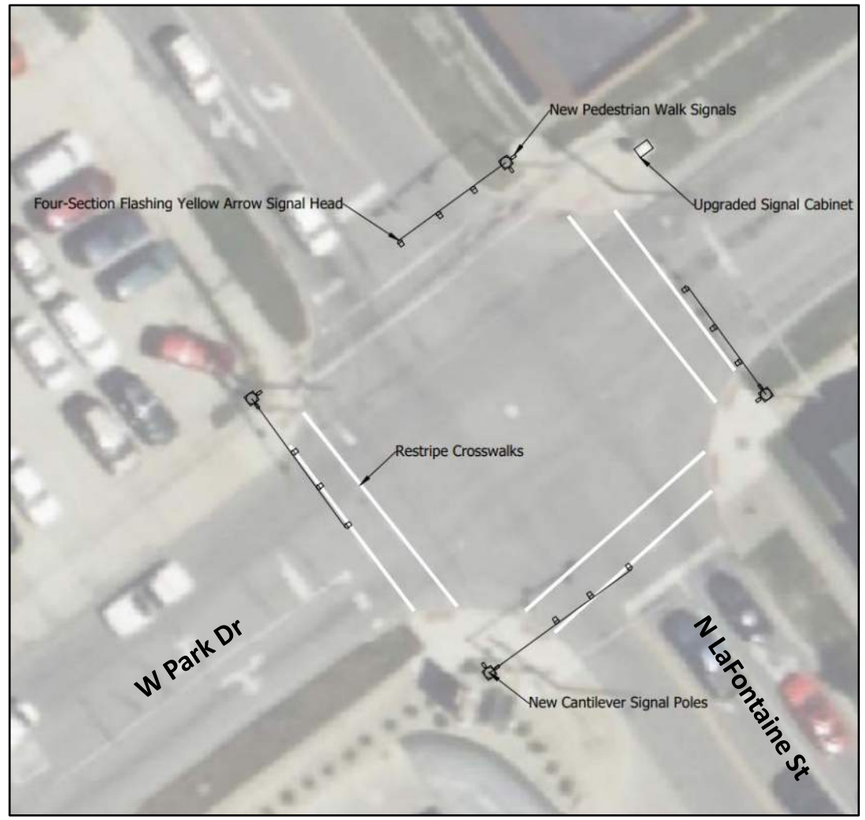
**10. PARK DR / LAFONTAINE ST INTERSECTION**

The intersection of Park Drive and Lafontaine Street in Huntington has been identified as an intersection requiring improvements. Crashes for this intersection were analyzed for the period 2018-2022. From this analysis, there were 29 crashes at the intersection during the study period, with 4 resulting in injuries. The leading crash type were right angle crashes, with 14 of the 29 accidents being right angle collisions. The existing intersection is controlled by a two-phase traffic signal, with no separate turn phases. Each approach to the intersection has a left turn lane and a right/thru lane. The recommended alternative is to modify the traffic signals to retime the light cycles and potentially add turn phases. Added turn phases would reduce the number of actively conflicting movements at the intersection and reduce the number of right-angle crashes. An ongoing project is reconstructing the intersection as part of a utilities project, though signal modifications are not within the project scope.

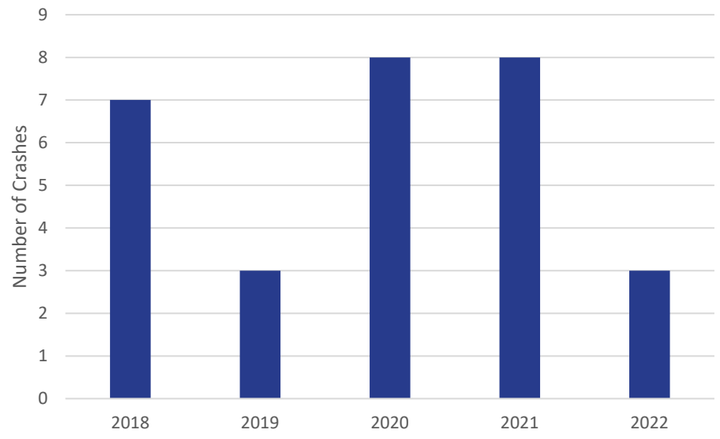

Ongoing reconstruction work at Park Dr / LaFontaine St intersection

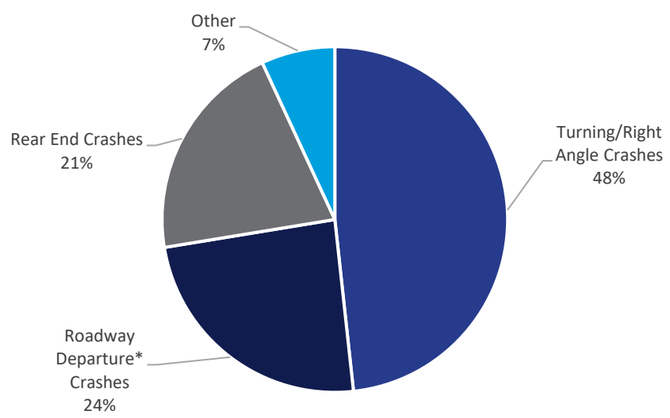
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **29** | - | 7 | 3 | 8 | 8 | 3 |
| Turning/Right Angle Crashes | **14** | **48%** | 3 | 1 | 6 | 3 | 1 |
| Roadway Departure* Crashes | **7** | **24%** | 2 | 2 | 1 | 1 | 1 |
| Rear End Crashes | **6** | **21%** | 2 | 0 | 1 | 3 | 0 |
| Other | **2** | **7%** | 0 | 0 | 0 | 1 | 1 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **4** | **14%** | 1 | 0 | 1 | 1 | 1 |
| PDO Crashes | **25** | **86%** | 6 | 3 | 7 | 7 | 2 |

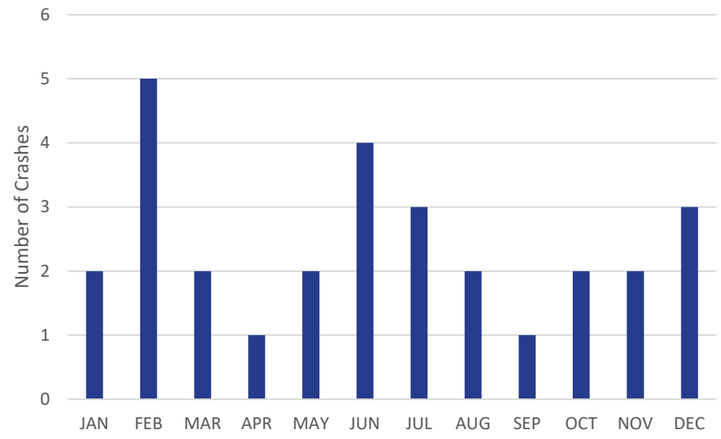
**includes Run Off Road, Head-On and Sideswipe Crashes*




Proposed signal changes to Park Dr / LaFontaine St intersection



## 4. Strategy and Project Selections

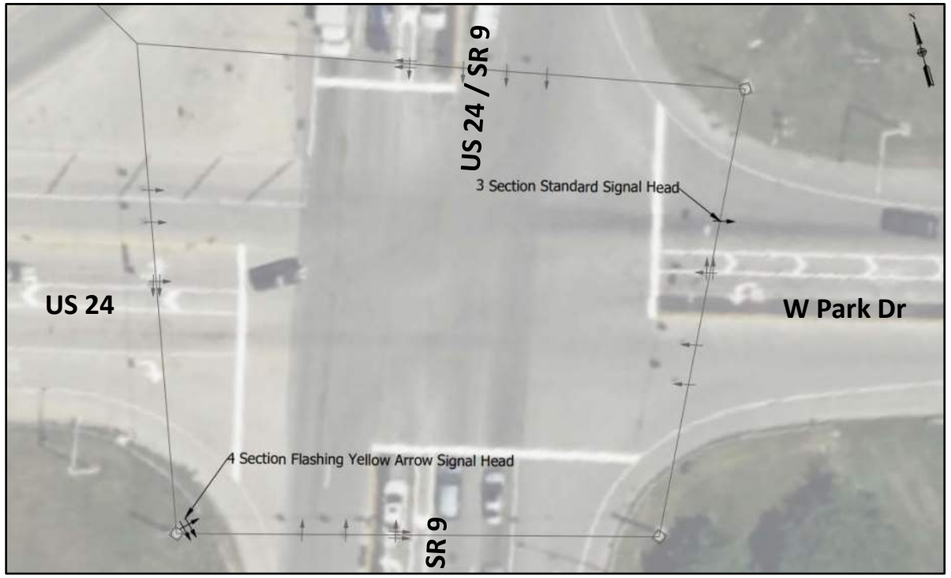
**11. US 24 / SR 9 SIGNAL IMPROVEMENTS**

The purpose of the US 24 / SR 9 intersection improvements is to increase safety for motorists within the intersection. A crash analysis performed for the period 2018-2022 found 54 crashes at the intersection, with 19 rear end and 15 right angle collisions. The analysis also found that 45 of the 54 accidents occurred from 2018-2020, with only 9 between 2021-2022. This is due mostly to the slotted left turn improvements made to this intersection in early 2021. The proposed changes would add two signal heads facing the east approach of the intersection. These heads are to be positioned in locations that increase visibility to drivers when the sun sets to the west, as this lack of visibility is a leading concern at the intersection. Summer months with longer, later sunsets have significantly more crashes than the winter months. The proposed improvements are perceived as low-cost high-reward and can further reduce crashes at one of the county's three busiest signalized intersections.


View looking west from Park Dr

Pedestal mounted signal


Sunlight glare behind traffic signal for westbound Park Dr

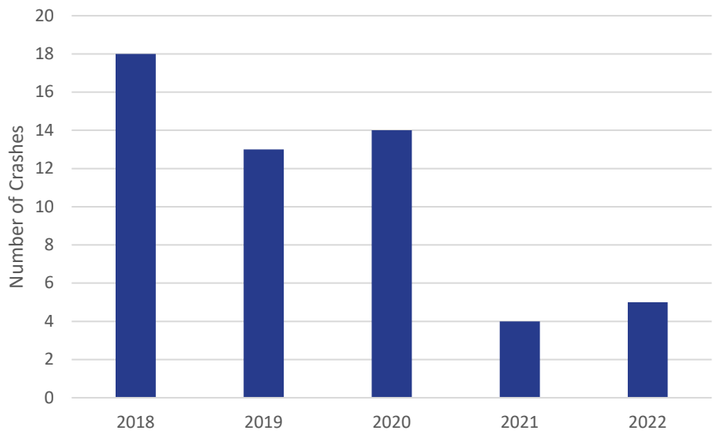



Plan view of proposed added traffic signals

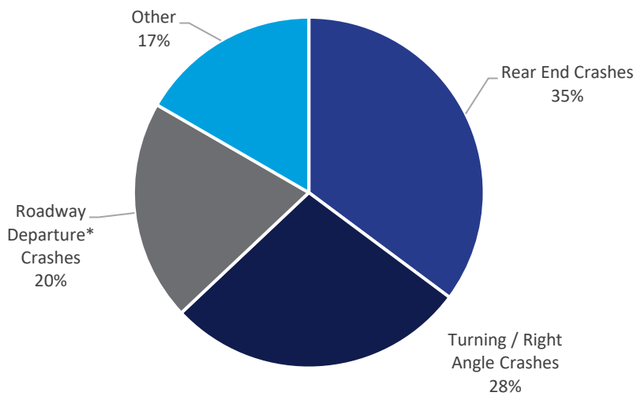
| Type of Collision | 5-yr Total Crashes | % Crashes | Number of Crashes per Year | | | | |
|---|---|---|---|---|---|---|---|
| | | | 2018 | 2019 | 2020 | 2021 | 2022 |
| Total Crashes | **54** | - | 18 | 13 | 14 | 4 | 5 |
| Rear End Crashes | **19** | **35%** | 3 | 5 | 8 | 1 | 2 |
| Turning / Right Angle Crashes | **15** | **28%** | 4 | 2 | 5 | 3 | 1 |
| Roadway Departure* Crashes | **11** | **20%** | 5 | 3 | 1 | 0 | 2 |
| Other | **9** | **17%** | 6 | 3 | 0 | 0 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **12** | **22%** | 2 | 4 | 3 | 1 | 2 |
| PDO Crashes | **42** | **78%** | 16 | 9 | 11 | 3 | 3 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

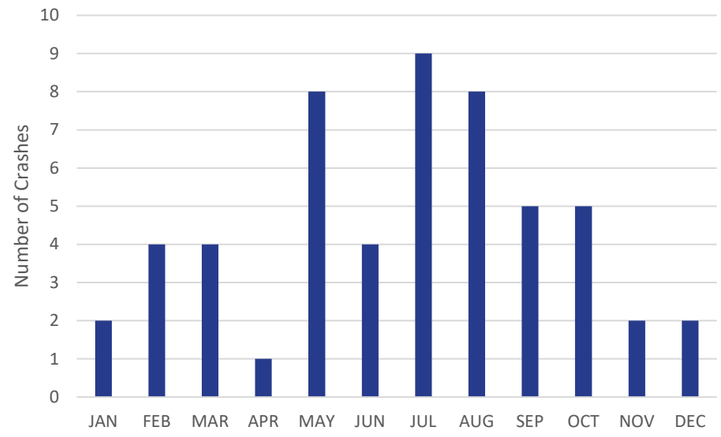
Crashes by Year




Crashes by Type




Crashes by Month



# 4. Strategy and Project Selections

**12. ETNA RD / CR 100 N INTERSECTION**

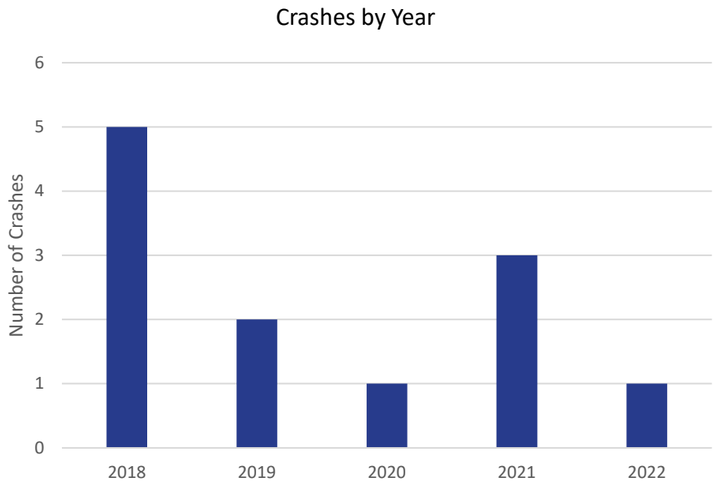
The purpose of the Etna Rd/CR 100N intersection reconstruction is to improve safety for motorists navigating the intersection. An analysis of the crash data for 2018-2022 was performed to determine the crash frequencies at this intersection. There were 11 crashes at the intersection with 6 resulting in injuries. 7 of the crashes were right angle crashes.

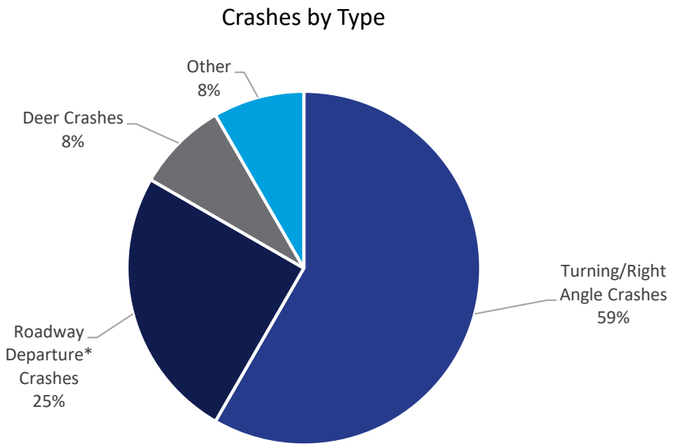
The existing intersection prioritizes the traffic movement from Etna Rd to SR 9 resulting in an unconventional intersection with geometry confusing to the other intersection users. Currently the ramp from SR 9 and the curve from southbound Etna Rd to westbound 100N are not stop-controlled and carry 50+ mph speeds through the intersection. The line of sight for drivers approaching on CR 100 from the east, looking south along the SR 9 ramp, is partially blocked by trees, making it difficult for drivers to safely enter the intersection.

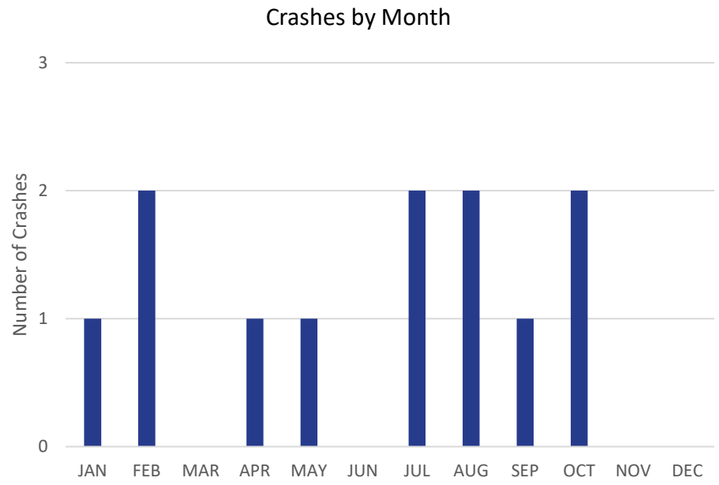
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **12** | - | 5 | 2 | 1 | 3 | 1 |
| Turning/Right Angle Crashes | **7** | **58%** | 5 | 1 | 0 | 1 | 0 |
| Roadway Departure* Crashes | **3** | **25%** | 0 | 1 | 0 | 1 | 1 |
| Deer Crashes | **1** | **8%** | 0 | 0 | 1 | 0 | 0 |
| Other | **1** | **8%** | 0 | 0 | 0 | 1 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **6** | **50%** | 3 | 1 | 0 | 1 | 1 |
| PDO Crashes | **6** | **50%** | 2 | 1 | 1 | 2 | 0 |

**includes Run Off Road, Head-On and Sideswipe Crashes*


Plan view of Etna Rd / CR 100 N intersection (above). Drivers' perspective of intersection from westbound CR 100 N (above left)



**12. ETNA RD / CR 100 N INTERSECTION**

The selected improvement is to reconstruct the intersection into a more conventional configuration and implement all-way stop control. The intersection would be rebuilt into a standard four-way intersection with channelized right turns on the north side of the intersection to favor the south to west movement (the west to north movement would utilize existing pavement). The intersection will utilize all-way stop control to slow down motorists and reduce high impact right angle crashes. Additional advance warning signage would be recommended to increase awareness of the all-way stop.


Plan view of proposed reconfiguration of Etna Rd / CR 100 N intersection to a conventional All Way Stop Controlled intersection.

# 4. Strategy and Project Selections

**13. US 24 AUXILIARY LANE**

The purpose of the US 24 auxiliary lane is to improve the safety of motorists on US 24 between the Old 24 interchange and Thurman Poe Way. An analysis of the crash data for the corridor was performed for the years 2018-2022. There were 38 crashes along the studied section of US 24, with only 4 resulting in injuries. There were 14 roadway departure crashes, 10 deer crashes, and 8 right angle crashes. The corridor begins with the interchange between Old 24 and US 24, and contains three closely spaced intersections with Meridian Road, an entrance to Gladieux Energy, and Thurman Poe Way. The road is prone to frequent accidents in this area involving merging traffic, including slow trucks, attempting to merge to/from turn lanes and the on ramp to/from travel lanes.

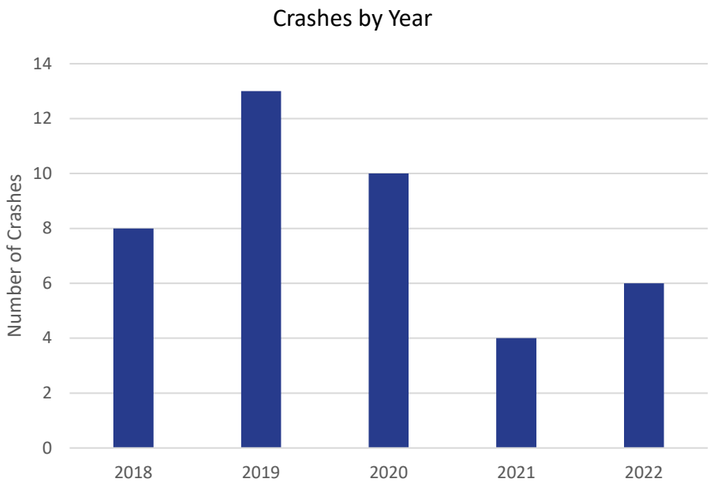

Overhead plan view of existing US 24 / Thurman Poe Way intersection

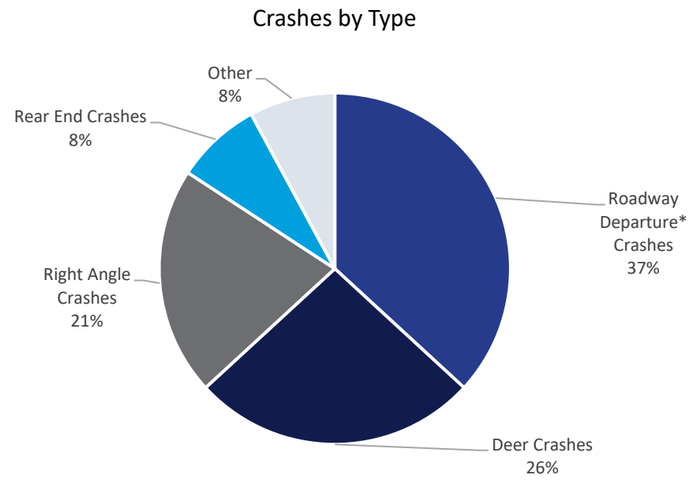

Tanker truck turning from Gladieux Energy to US 24

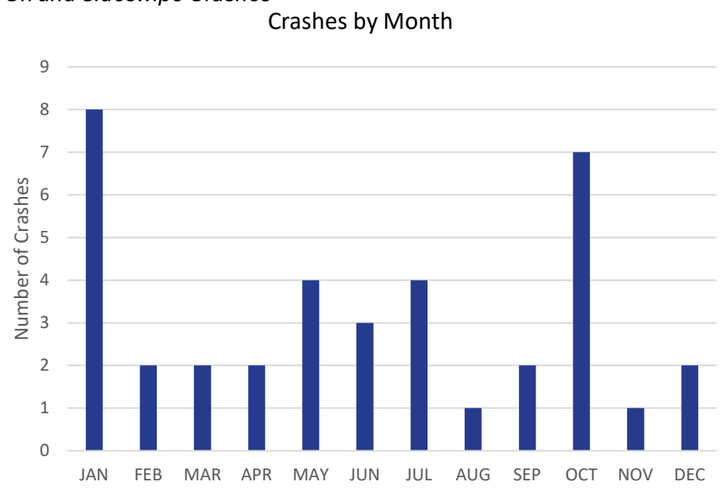

Overhead plan view of US 24 from Meridian Rd to Gladieux Energy entrance

| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **38** | **-** | 8 | 13 | 10 | 4 | 6 |
| Roadway Departure* Crashes | **14** | **37%** | 2 | 5 | 4 | 2 | 1 |
| Deer Crashes | **10** | **26%** | 4 | 2 | 2 | 0 | 2 |
| Right Angle Crashes | **8** | **21%** | 1 | 4 | 4 | 1 | 1 |
| Rear End Crashes | **3** | **8%** | 1 | 1 | 0 | 0 | 1 |
| Other | **3** | **8%** | 0 | 1 | 0 | 1 | 1 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **4** | **11%** | 0 | 1 | 1 | 1 | 1 |
| PDO Crashes | **34** | **89%** | 8 | 12 | 9 | 3 | 5 |

**includes Run Off Road, Head-On and Sideswipe Crashes*



**13. US 24 AUXILIARY LANE**

The proposed solution is to join the disjointed turn lanes and on ramp merge lane into a continuous auxiliary lane, serving as an acceleration/deceleration lane for vehicles entering and exiting the highway from the city and the industrial facilities to the south of US 24. This solution would create a single 3,000' long auxiliary lane that is 12' wide with a 10' outside shoulder. The new shoulder would receive corrugations on the edge line to warn motorists potentially departing the roadway. A similar lane exists in the westbound direction as a long-left turn lane into the facilities and the new lane would imitate that in the eastbound direction.

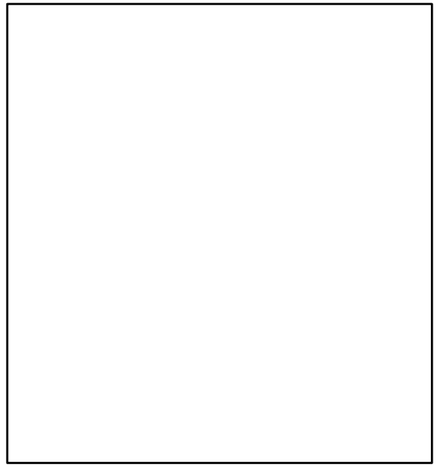

Proposed auxiliary lane near Meridian Rd


Proposed auxiliary lane near Thurman Poe Way

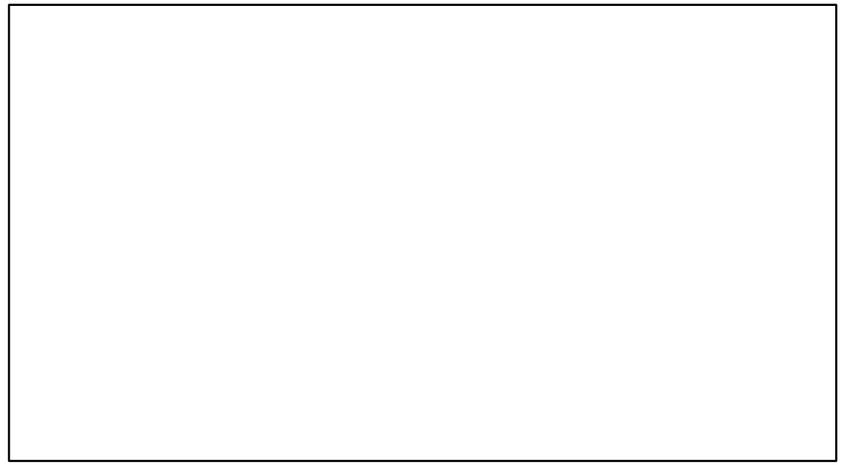
# 4. Strategy and Project Selections

**14. MARKET ST / FIRST ST INTERSECTION**

The intersection of Market St and First St in Huntington has been identified as an intersection requiring further study to properly improve the intersection. The intersection had 10 accidents between 2018-2022 with 4 resulting in injuries. The ideal improvement for this intersection would be a roundabout; however, due to existing right-of-way and building constraints a standard sized roundabout is not feasible. Improving the intersection will be carried out in a multistep process. The first step would be to add pavement markings to the intersection to clarify the intended vehicle paths, define stop lines, and identify crosswalks. If striping improvements prove to be inadequate, signal modifications should be the second step. This would involve changes to signal timing and potentially adding turn phases on Market St to avoid right angle collisions.



No pedestrian signals or painted crosswalks

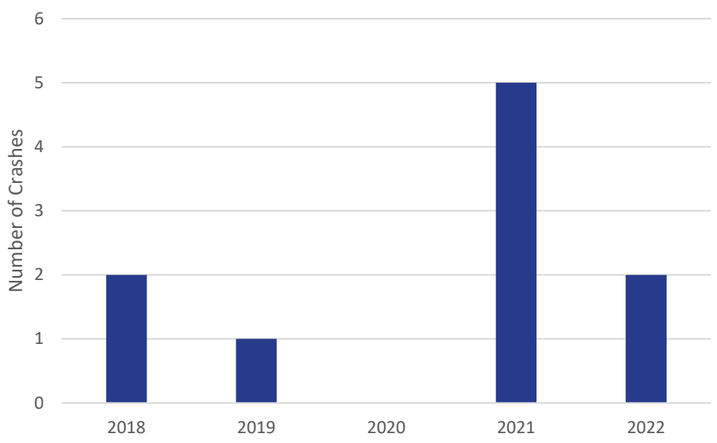


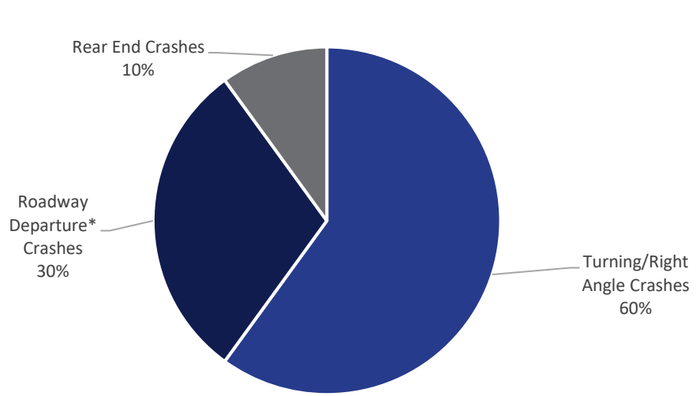
Tire marks encroaching into eastbound lanes of Market St from westbound traffic

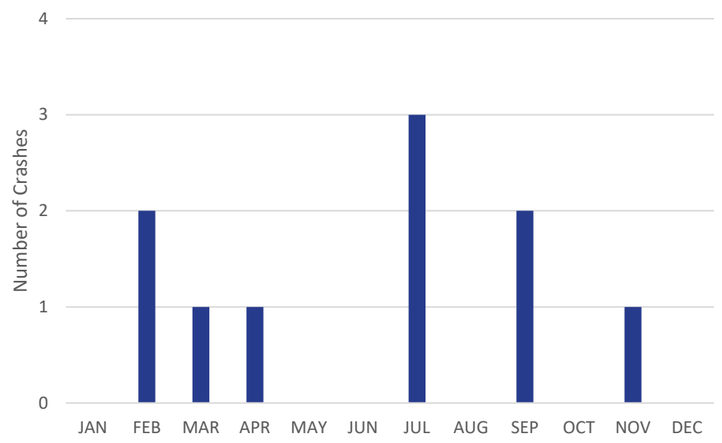
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **10** | **-** | 2 | 1 | 0 | 5 | 2 |
| Turning/Right Angle Crashes | **6** | **46%** | 0 | 3 | 0 | 3 | 2 |
| Roadway Departure* Crashes | **3** | **23%** | 1 | 0 | 0 | 2 | 0 |
| Rear End Crashes | **1** | **8%** | 1 | 0 | 0 | 0 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **3** | **31%** | 1 | 0 | 0 | 2 | 0 |
| PDO Crashes | **7** | **69%** | 1 | 1 | 0 | 3 | 2 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

Drivers' perspective of First St intersection from westbound Market St

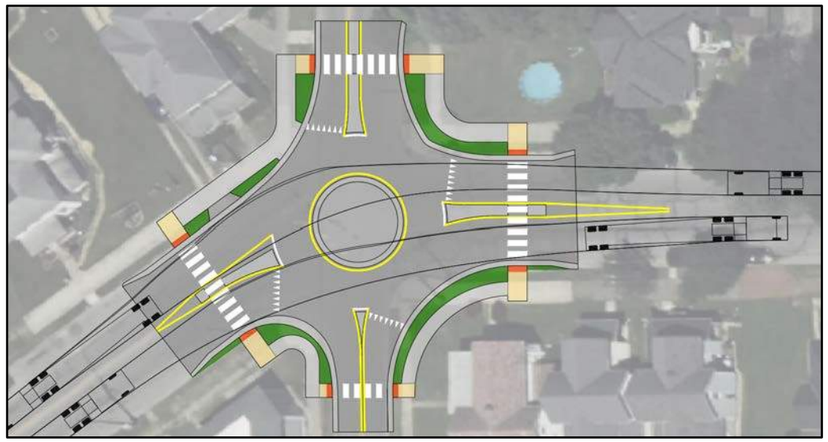


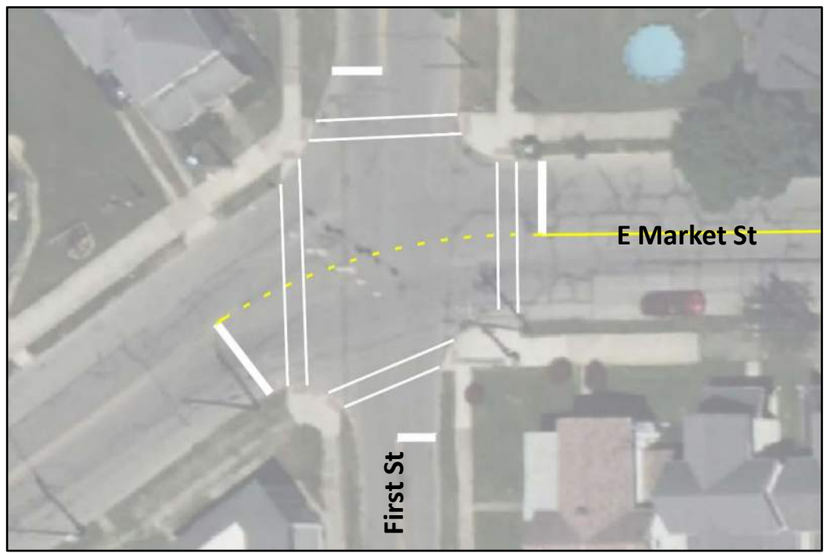



**14. MARKET ST / FIRST ST INTERSECTION**

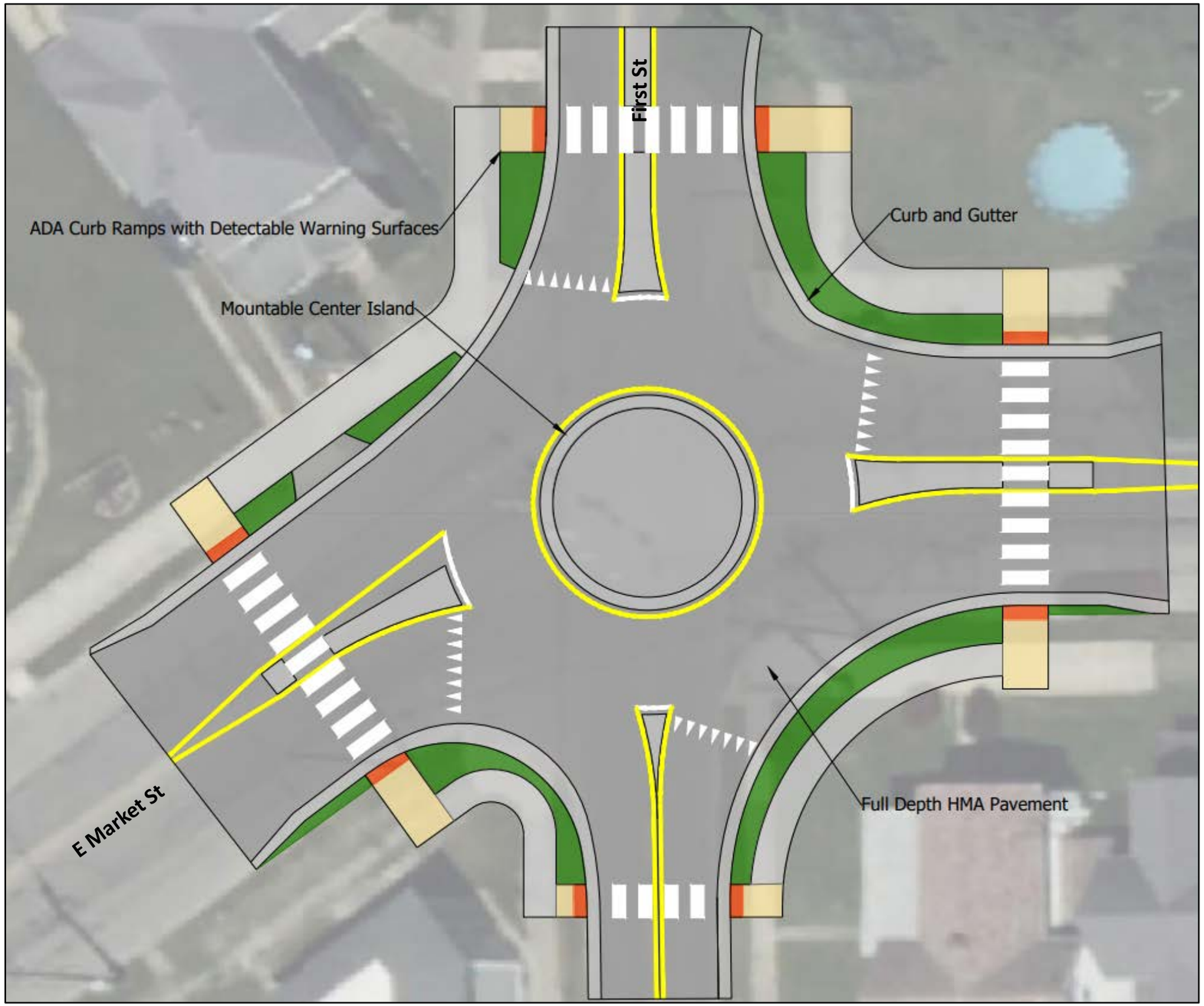
If striping and signal modifications prove to be inadequate, a roundabout should be considered. The roundabout alternative would provide adequate traffic benefit and is recommended as the ideal solution from a traffic standpoint; however, there are limitations to how a roundabout could be implemented. A mini roundabout would take minimal right-of-way and would accommodate truck turning movements along Market St through the roundabout with a fully mountable center island.



Truck turning movements for proposed roundabout




Phase I striping improvements for Market St / First St intersection



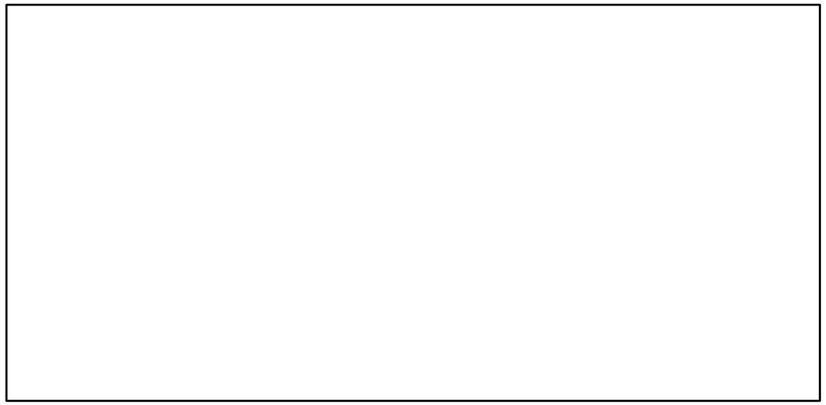

Plan view of proposed mini roundabout for Market St / First St intersection

# 4. Strategy and Project Selections

**15. SR 5 GOSHEN RD WIDENING**

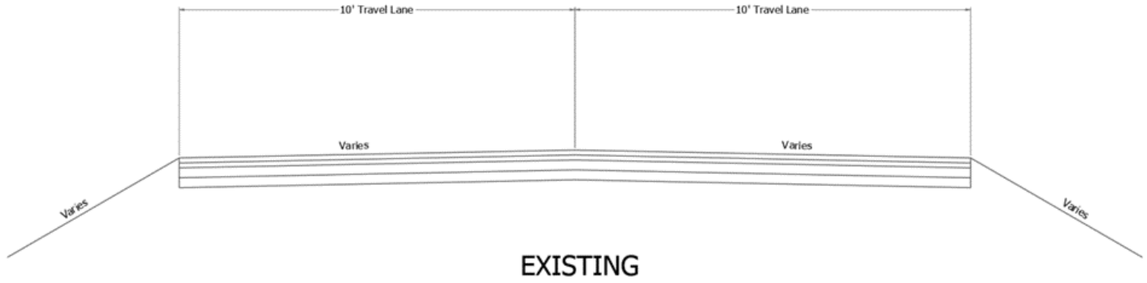
The purpose of the SR 5 widening project is to improve safety for motorists navigating the corridor between US 24 and CR 900N. An analysis of the crash data for 2018-2022 was performed to determine the crash frequencies along the corridor. The specified segment of SR 5 experienced 86 crashes in the five-year period, with 15 resulting in injuries. The most common crash type was roadway departure related, of which there were 47 such incidents. Deer accounted for 19 crashes.

The existing facility consists of one 10’ lane in each direction with no shoulder. The road has several sharp curves near Clear Creek and Bracken Rd. The area near the Clear Creek bridge experiences multiple elevation changes and foliage encroaching on the edge of the road.



Drivers’ view of southbound SR 5 curve at Bracken Rd with 10’ travel lanes

Drivers’ view of truck turning on SR 5 northbound west of Clear Creek

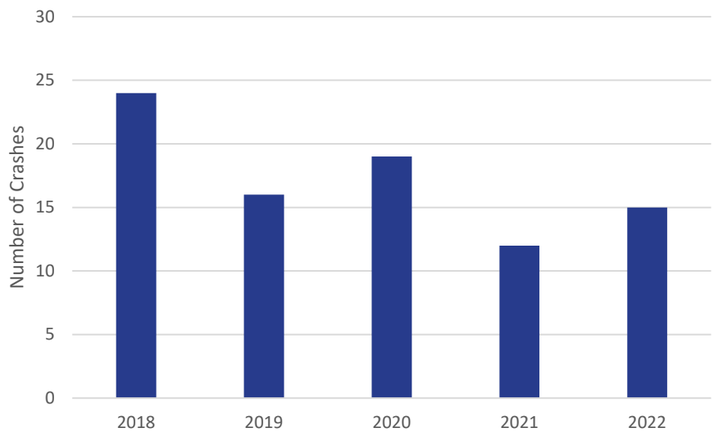



EXISTING

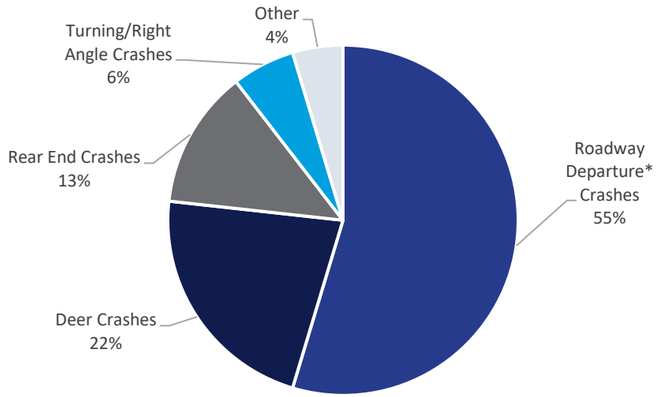
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **86** | - | 24 | 16 | 19 | 12 | 15 |
| Roadway Departure* Crashes | **47** | **55%** | 14 | 7 | 10 | 7 | 9 |
| Deer Crashes | **19** | **22%** | 4 | 5 | 6 | 2 | 2 |
| Rear End Crashes | **11** | **13%** | 4 | 2 | 1 | 1 | 3 |
| Turning/Right Angle Crashes | **5** | **6%** | 1 | 0 | 1 | 2 | 1 |
| Other | **4** | **5%** | 1 | 2 | 1 | 0 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **15** | **17%** | 5 | 3 | 5 | 1 | 1 |
| PDO Crashes | **71** | **83%** | 19 | 13 | 14 | 11 | 14 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

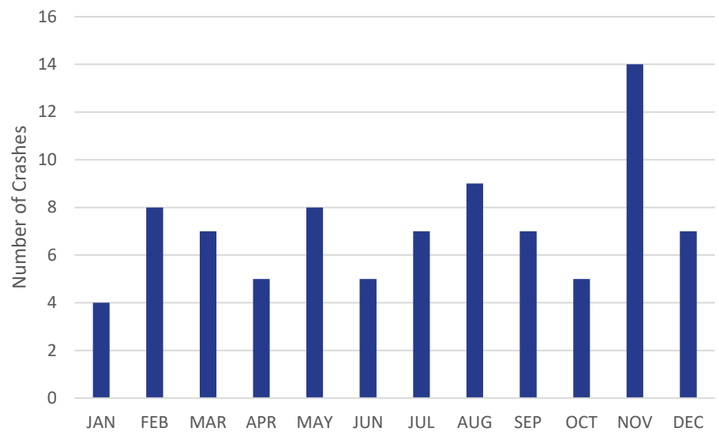
Crashes by Year




Crashes by Type

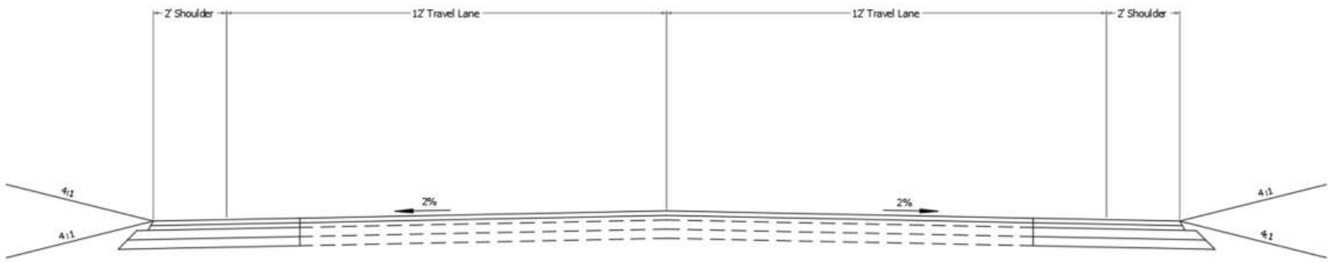



Crashes by Month



**15. SR 5 GOSHEN RD WIDENING**

The proposed improvement for SR 5 is to widen the existing roadway to contain 12’ travel lanes (one in each direction) and 2’ shoulders on either side of the roadway. As a part of the widening project, corrugations will be milled into the edge and centerlines of the road to provide additional warning to motorists departing their lanes. Existing curve delineators and guardrail will need to be relocated as a part of this project. SR 5 is classified as a major collector, of which the Indiana Design Manual requires minimum 11’ lanes and 2’ shoulders for roads with an AADT above 400 (with 12’ lane width desirable). Additionally, the IDM requires an arterial with a design speed above 50 mph and an AADT above 1500 to have a minimum obstruction-free-zone width of 20’ from the edge of travel way, or from the edge of travel way to the right-of-way line. A smaller widening project was completed in 2023 that widened the curve and approaches to the Clear Creek bridge to  include 12’ travel lanes and 5’ shoulders




PROPOSED


Plan view of proposed SR 5 widening at Bracken Rd intersection


Southern limits of proposed widening north of William E. Zahn Ave

Widened SR 5 bridge and approach over Clear Creek to 12’ travel lanes and 5’ shoulders, completed in 2023


Plan view of proposed widening to curve west of Clear Creek. Road would be widened to include 12’ travel lanes and 2’ shoulders on each side

## 4. Strategy and Project Selections

**16. US 24 / CR 900 N SLOTTED LEFT TURN**

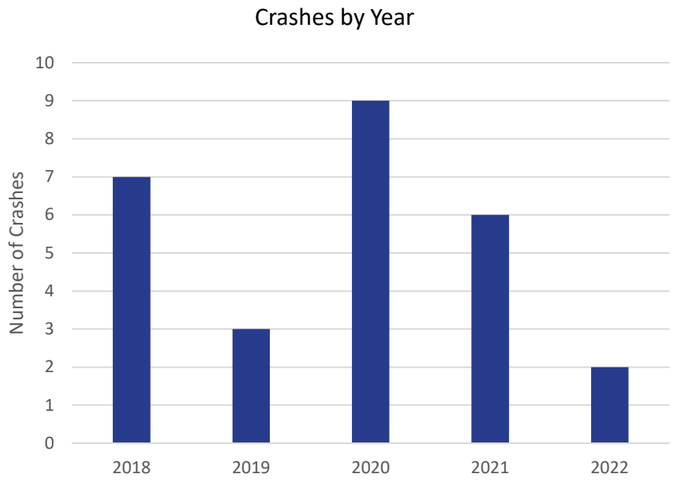
The purpose of the US-24/CR 900N intersection improvements is to improve safety for motorists while navigating the intersection. An analysis of the crash data provided for 2018-2022 was performed to determine the crash frequencies at this intersection. There were 27 crashes at the intersection in the five-year study period, with 3 resulting in injuries and none resulting in fatalities. The highest number of crashes was reported in 2020 with 9 crashes at the intersection, including 4 turning and 2 rear end collisions. Across the five years, it was determined that turning and right-angle crashes were the leading crash type, accounting for 37 percent of crashes at this intersection. Furthermore, 6 of these crashes involved vehicles in the southbound left turn lane for vehicles on US-24 to CR 900, in 3 instances the driver couldn't see and in 3 instances the driver misjudged their ability to safely clear the intersection. There is currently a bridge deck overlay project on the north approach, though no reconfigurations are being made.

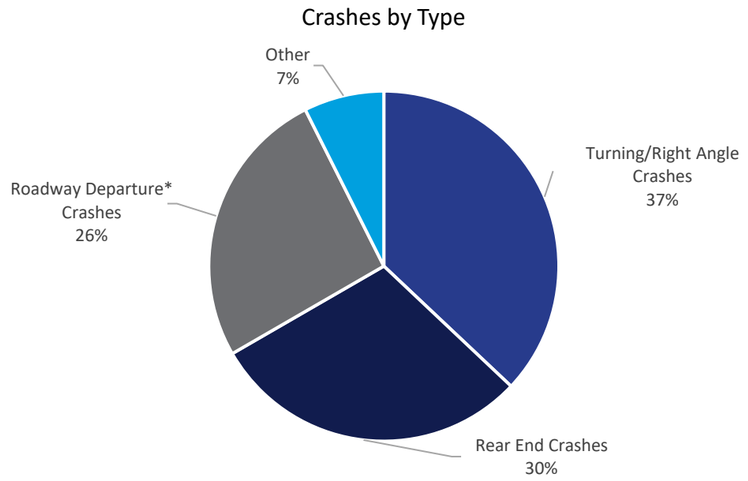
US 24 bridge deck overlay, looking south at CR 900 N intersection

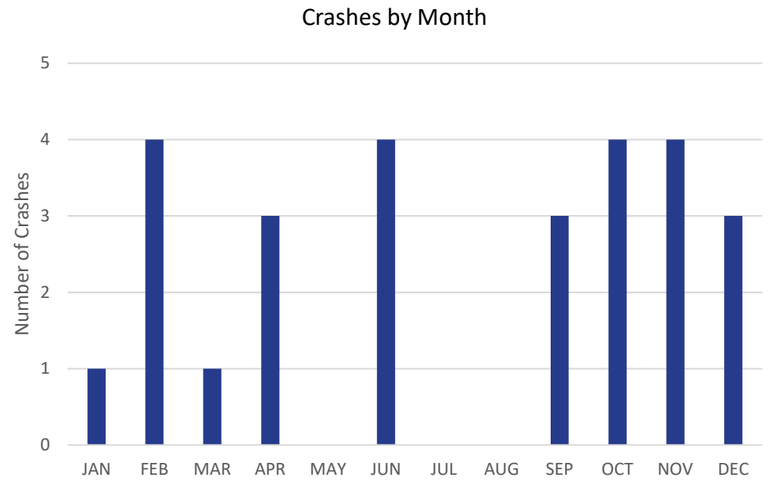

View of existing southbound turn lane at US 24 / CR 900 N intersection

| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **27** | **-** | 7 | 3 | 9 | 6 | 2 |
| Turning/Right Angle Crashes | **10** | **37%** | 2 | 0 | 4 | 3 | 1 |
| Rear End Crashes | **8** | **30%** | 4 | 2 | 2 | 0 | 0 |
| Roadway Departure* Crashes | **7** | **26%** | 1 | 1 | 2 | 2 | 0 |
| Other | **2** | **7%** | 0 | 0 | 1 | 1 | 1 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **3** | **11%** | 0 | 0 | 2 | 0 | 1 |
| PDO Crashes | **24** | **89%** | 7 | 3 | 7 | 6 | 1 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

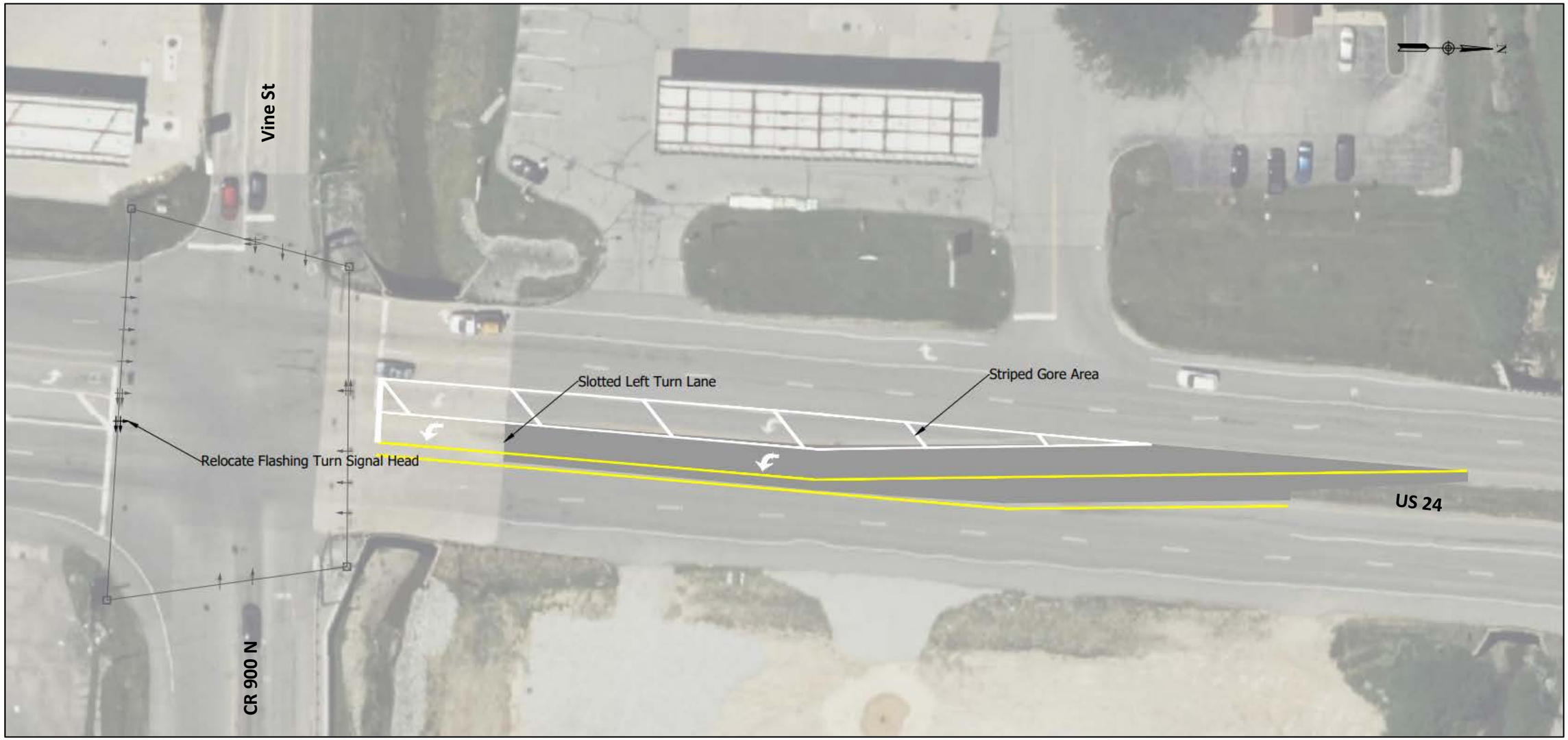


**16. US 24 / CR 900 N SLOTTED LEFT TURN**

The selected improvement is the modification of the existing left turn lane in the southbound direction on US-24 into a slotted left turn lane. The slotted left turn lane will offset the existing left turn lane 12’ towards the northbound travel lanes of US-24. The channel for the turn lane will form approximately 325’ north of the intersection and will taper to 12’ of separation from the travel lanes 200’ north of the intersection. The separation will limit visual obstruction of the travel lanes on US-24 by providing better sightlines to vehicles in the travel lanes from the eastbound and westbound left turn lanes. This will also reduce the distance vehicles must travel to safely complete a left turn onto eastbound CR 900N by 12’ (or 0.55 seconds at 15 mph). The anticipated impact of the improvements will improve driver judgement with improved visibility and less distance to judge. The shorter turn length will also provide a half-second of forgiveness to drivers who misjudge their turns.




Plan view of proposed southbound slotted left turn lane improvement

# 4. Strategy and Project Selections

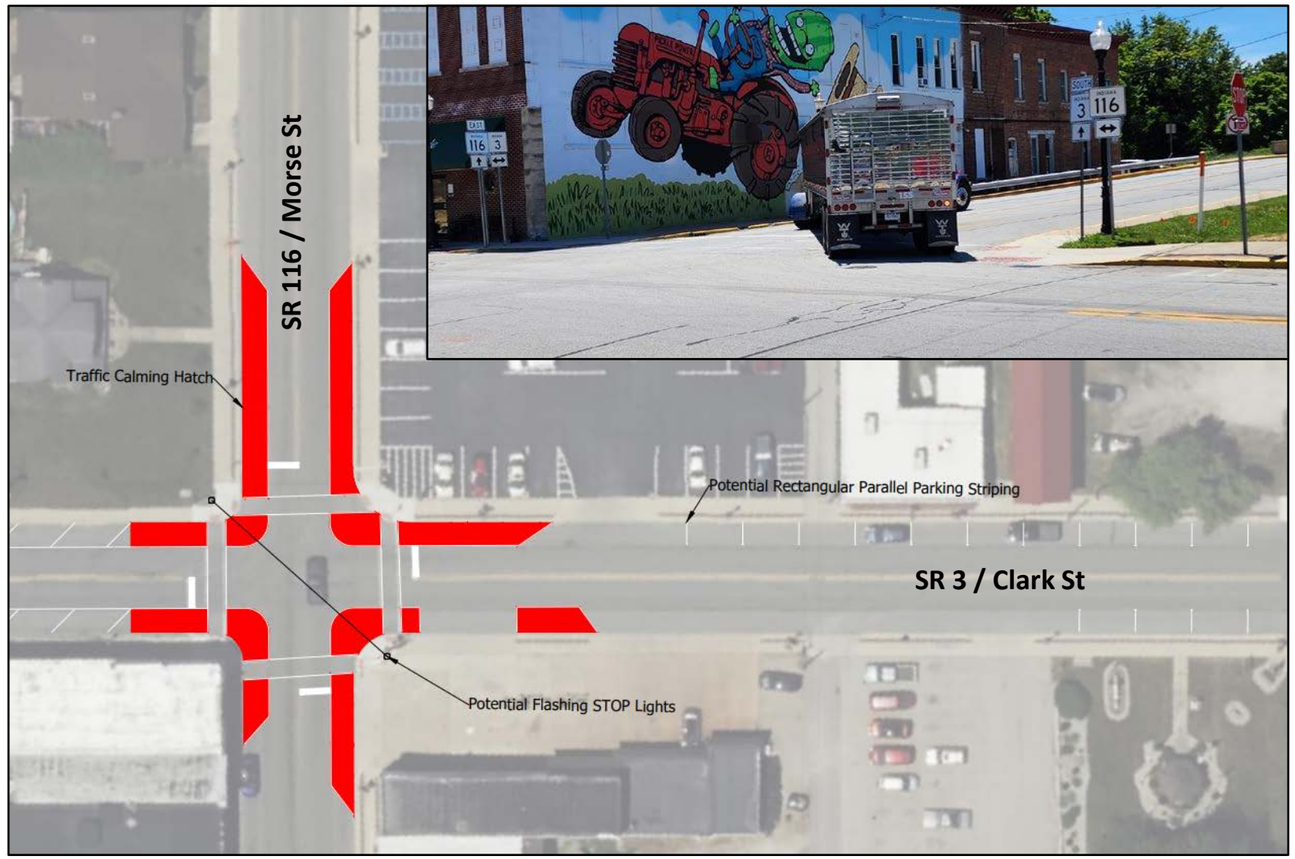
**17. SR 3 / SR 116 BUMPOUT**

The purpose of the SR 3 / SR 116 intersection bump out is to improve safety for motorists and pedestrians at the intersection. A crash analysis during the period 2018-2022 revealed 10 crashes at the intersection, with two resulting in injuries. Right angle collisions made up 4 out of 10 accidents. The existing approaches at the intersection consist of 20' of pavement on each side, leading to confusion about whether there is one or two lanes.

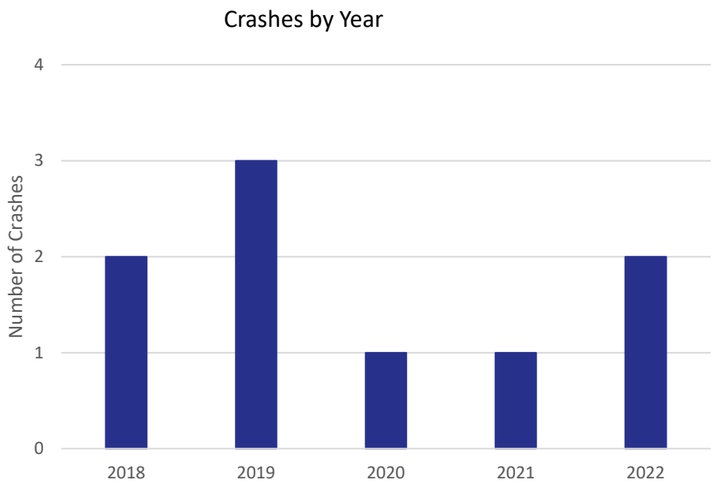
The proposed improvement is to create a painted bump out at the intersection. This bump out would tighten the intersection and clearly define the usable lane on each approach. The bump out would be striped rather than use a curb to allow for tractor trailer turning movements. Additional traffic calming measures that would be implemented include flashing stop lights above the intersection, hatched striping on the shoulder of SR 3 in no parking zones and striping to define street parking spaces.

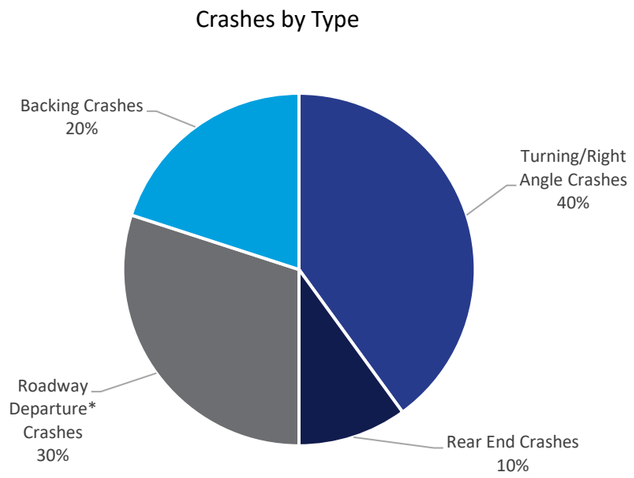
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **10** | - | 2 | 3 | 1 | 1 | 2 |
| Turning/Right Angle Crashes | **4** | **40%** | 2 | 0 | 0 | 0 | 2 |
| Rear End Crashes | **1** | **10%** | 0 | 0 | 1 | 0 | 0 |
| Roadway Departure* Crashes | **3** | **30%** | 0 | 1 | 0 | 1 | 1 |
| Backing Crashes | **2** | **20%** | 0 | 2 | 0 | 0 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 0 |
| Injury Crashes | **2** | **20%** | 0 | 0 | 0 | 1 | 1 |
| PDO Crashes | **8** | **80%** | 2 | 3 | 1 | 0 | 1 |

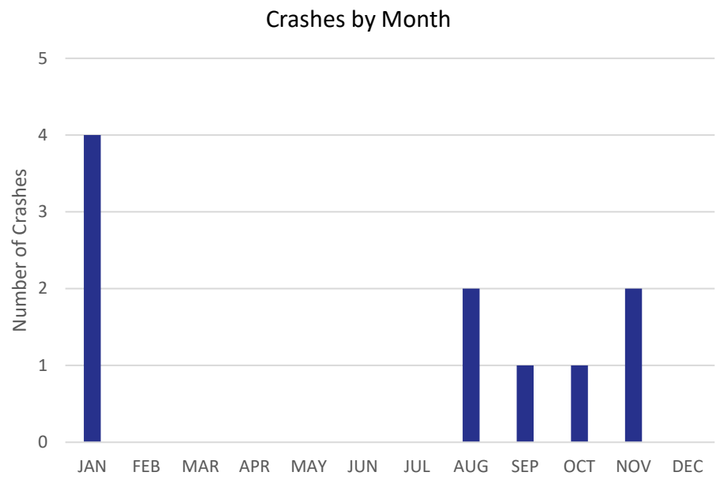
**includes Run Off Road, Head-On and Sideswipe Crashes*




Plan view of proposed painted bumpout at SR 3 / SR 116 intersection. Truck making wide turn from eastbound SR 116 to southbound SR 3 (inset)



# 4. Strategy and Project Selections

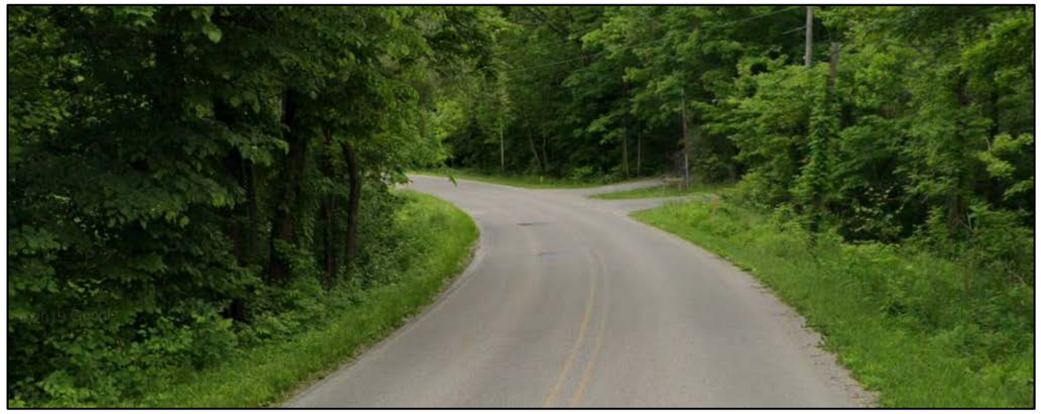
**18. CR 300 W WIDENING**

The purpose of the CR 300W corridor improvements are to improve the safety of motorists while navigating the 13-mile corridor beginning at SR 218 and ending at Etna Road. An analysis of the crash data provided for 2018-2022 was performed to determine the crash frequencies along the corridor. During the five-year study period there were 54 crashes, with 10 resulting in injuries and none resulting in fatalities. The highest number of crashes in any year was in 2020 with 12 crashes, including 6 animal related and 5 departure related crashes. Across the five years, animal related crashes were the most prevalent resulting in 52 percent of all crashes along the corridor. Roadway departure crashes were the most common non-animal crash type, making up 77 percent of non-animal related crashes and 37 percent of all crashes.

Drivers' perspective of CR 300 W north of CR 800 S

View looking north on CR 300 W from CR 900 S intersection. Trucks are restricted from CR 300 W


CR 300 W continues from SR 5 as the most direct route to Huntington

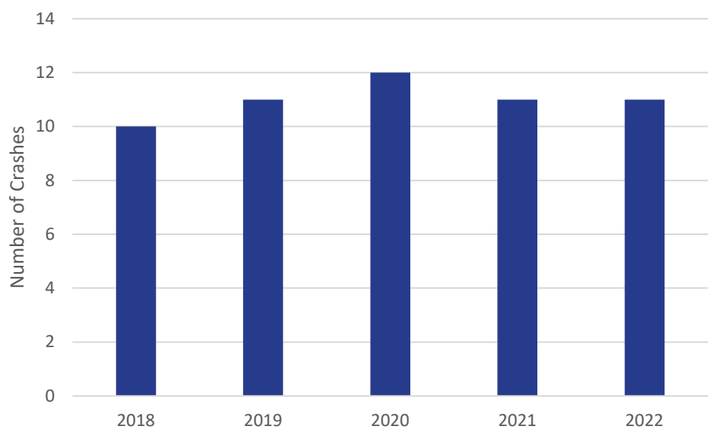


Sharp curves along CR 300 W between CR 100 N and Etna Rd

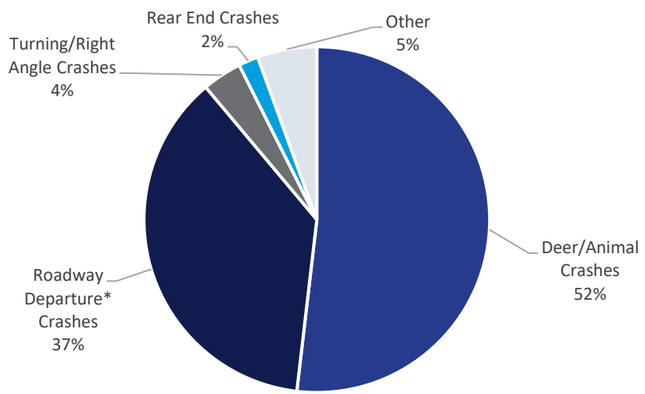
| Type of Collision | *5-yr Total Crashes* | *% Crashes* | *Number of Crashes per Year* | | | | |
|---|---|---|---|---|---|---|---|
| | | | *2018* | *2019* | *2020* | *2021* | *2022* |
| Total Crashes | **54** | **-** | 10 | 11 | 12 | 11 | 11 |
| Deer/Animal Crashes | **28** | **52%** | 4 | 6 | 6 | 7 | 5 |
| Roadway Departure* Crashes | **20** | **37%** | 4 | 4 | 5 | 3 | 4 |
| Turning/Right Angle Crashes | **2** | **4%** | 0 | 1 | 0 | 0 | 2 |
| Rear End Crashes | **1** | **2%** | 1 | 0 | 0 | 0 | 0 |
| Other | **3** | **6%** | 1 | 0 | 1 | 1 | 0 |
| Fatal Crashes | **0** | **0%** | 0 | 0 | 0 | 0 | 1 |
| Injury Crashes | **10** | **19%** | 1 | 2 | 4 | 0 | 3 |
| PDO Crashes | **44** | **81%** | 9 | 9 | 8 | 11 | 7 |

**includes Run Off Road, Head-On and Sideswipe Crashes*

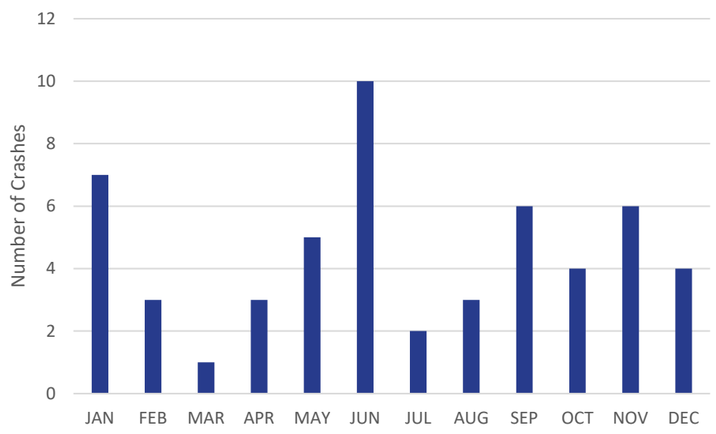
Crashes by Year




Crashes by Type




Crashes by Month



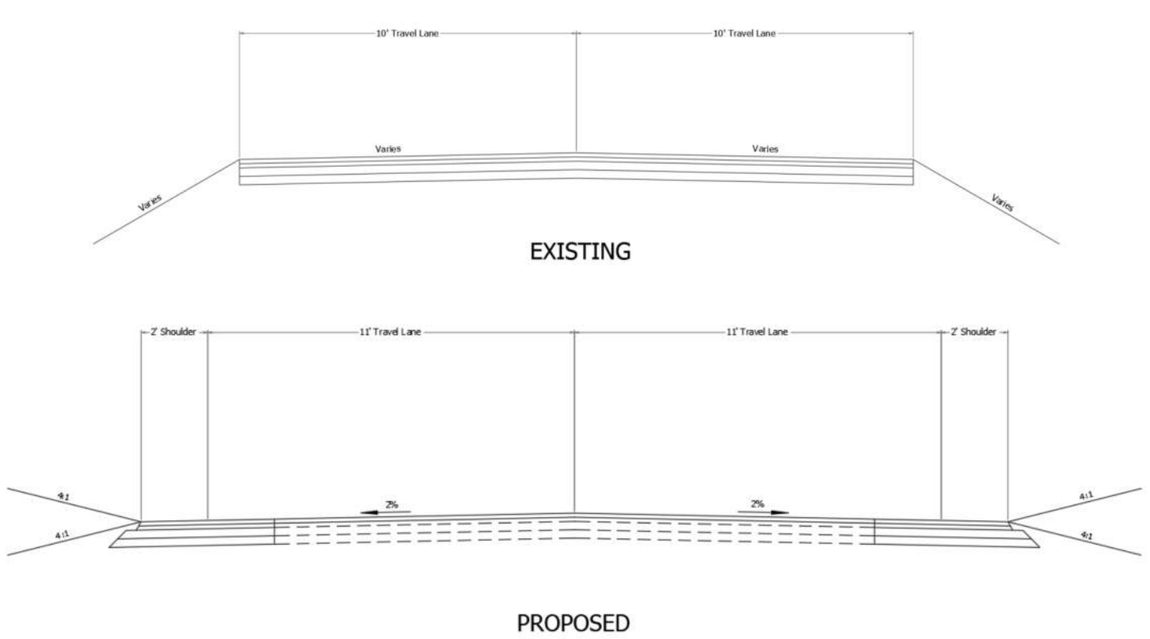
# 4. Strategy and Project Selections

**18. CR 300 W WIDENING**

There are multiple recommended improvements for the CR 300W corridor. The primary improvement consists of a 4’ widening on each side of the roadway from SR 218 to CR 100N. As a part of the widening project, the existing pavement in the widened area will receive mill and overlay treatment. The remainder of CR 300W from CR 100N to Etna Road would receive mill and overlay treatment but no widening. Additionally, SafetyEdge technology would be implemented on the edge of the roadway. The widening improvement would expand the road from two 10’ lanes to two 11’ lanes with 2’ outside shoulders with SafetyEdge. Corrugations would be added along the edge and center lines to reduce the likelihood of departure related crashes. The widened roadway would allow for a more forgiving design to a corridor prone to departure related crashes. The SafetyEdge shoulder treatment would slope the pavement 30 degrees from the edge of pavement to eliminate drop off, further enabling the ability for departing vehicles to safely return to the roadway. SafetyEdge can reduce departure related crashes by an average of 20 percent. Additional measures along the corridor include added signage, curve delineators, and all-way stop conversions.


Plan view of widened CR 300 W at Division Rd

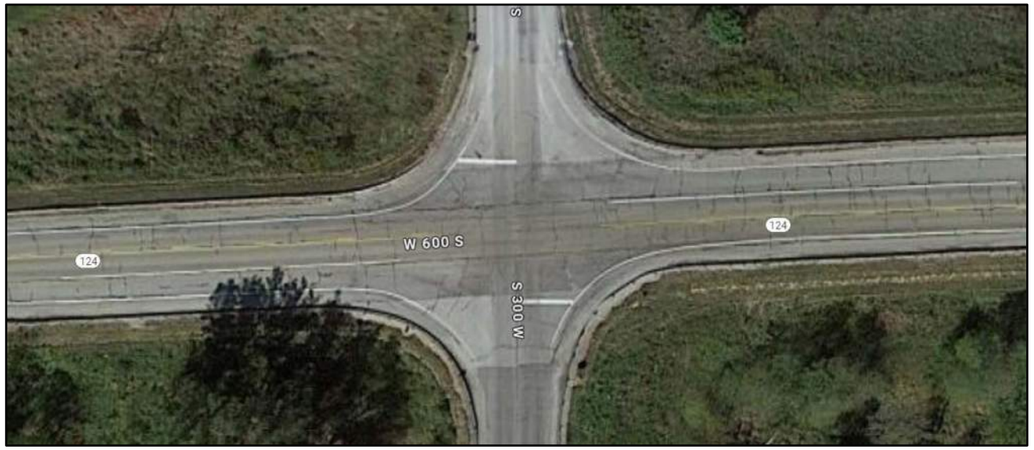

Plan view of resurfaced CR 300 W with SafetyEdge near Etna Rd



## 4. Strategy and Project Selections

**18. CR 300 W WIDENING**

Added signage would include “STOP AHEAD” signs at the SR 124 intersection and would double up the existing southbound sign to enhance visibility. Curve delineators would be added to the curves between W 100N and Etna Road where tight curves and trees limit visibility of the roadway. The intersection between SR 124 (600S) and CR 300W is considered a candidate for all-way stop conversion due to poor sightlines on the approaches from CR 300W. All-way stop control would reduce the likelihood of severe multivehicle accidents and high-speed collisions. There were five right angle collisions at this intersection during the study period, resulting in a fatal crash that killed two people and another crash resulting in injury. Overhead flashing beacons should be considered for this intersection whether it remains two-way stop controlled or converts to all-way stop controlled.




Existing overhead plan view of CR 300 W / SR 124 intersection

Stop Ahead sign on southbound CR 300 W

View of CR 300 W intersection from eastbound SR 124

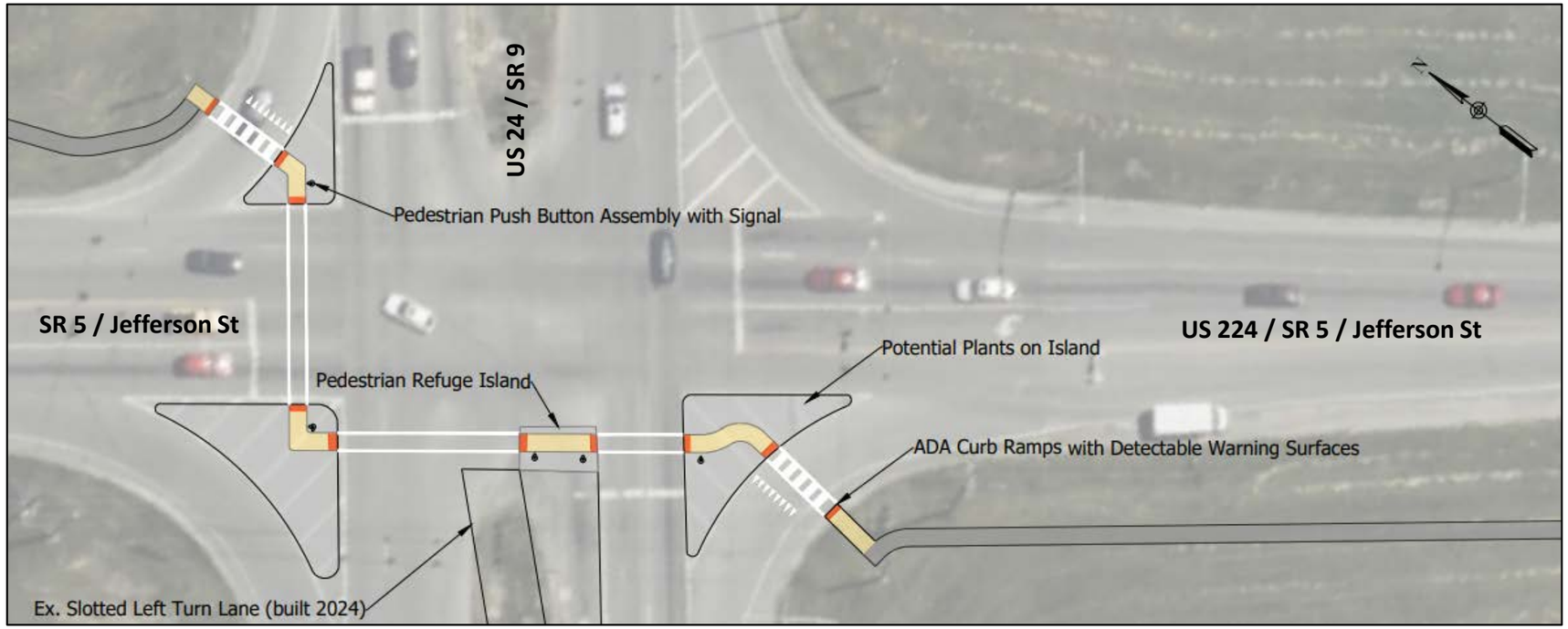

View of SR 124 intersection from southbound CR 300 W


Plan view of proposed widening signage, and flashing beacon improvements

**19. JEFFERSON ST SIDEWALK**

The purpose of the Jefferson Street sidewalk is to enhance safety for pedestrians crossing US 24 to and from the shopping center north of US 24. The existing intersection at Jefferson St (US 224/SR 5) and US 24 is signalized, with US 24 being a divided highway and each right turn movement utilizing separate turning roadways. In 2023 there was a project to add slotted left turn lanes to each approach on US 24, which was completed by April 2024. There are no existing pedestrian facilities at this intersection. The intersection is a common pedestrian crossing point for people crossing US 24 to walk from their neighborhood to the shopping area and vice versa. The nearest crosswalk across US 24 is at Guilford St, 1,400 ft east of the intersection with Jefferson St. However, pedestrians must walk a half mile south of US 24 before another sidewalk connects them to Jefferson St. The intersections with Hauenstein Rd and Viking Ln (the first intersections north and south of US 24 respectively) both have sidewalks/trails connecting to at least one approach.

The Jefferson St sidewalk project would construct a new sidewalk to connect the pedestrian facilities at the Hauenstein Rd and Viking Ln intersections through a safe crossing point on US 24. The sidewalk would start on the south corner of the Viking Ln intersection and follow the west side of Jefferson St to US 24. This side was selected as there are fewer above ground utility conflicts and better access to the strip mall on the west side of Jefferson St. The sidewalk would cross both US 24 and Jefferson St at the intersection, ending up on the north corner of the intersection. This crossing is needed as the south corner of the Hauenstein Rd intersection has skewed geometry that would make a practical pedestrian crossing difficult. The sidewalk would meander around the poles on the east corner of the intersection to tie into the new curb ramp on the Frontage Rd trail.




Plan view of proposed sidewalk and curb ramps at US 24 / Jefferson St (SR 5) intersection

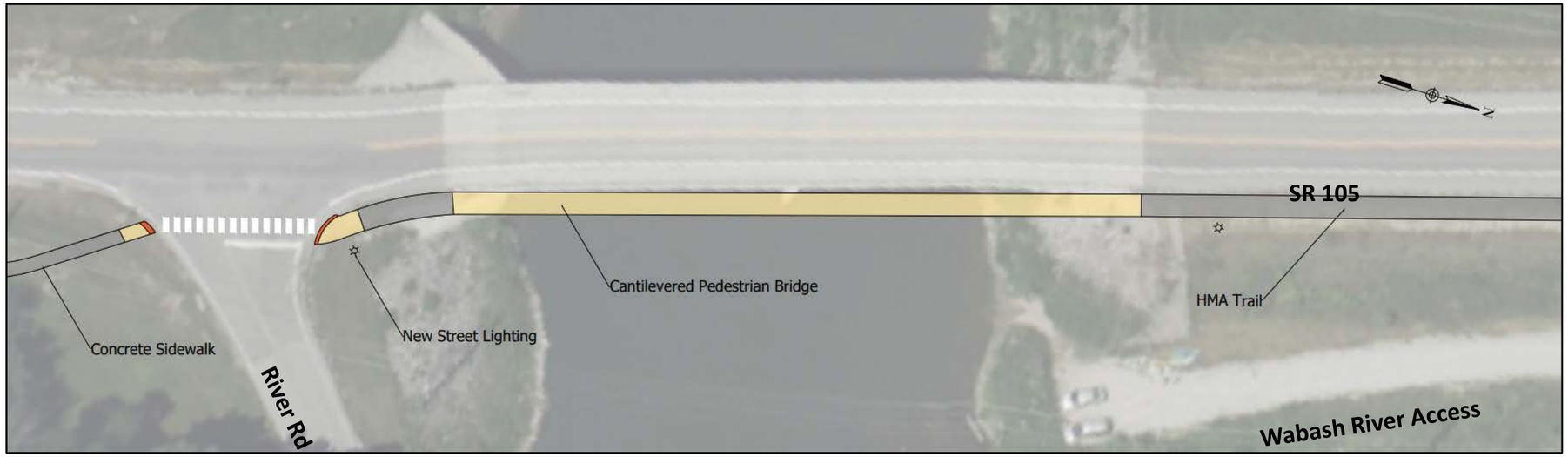
Pedestrian view looking north along Jefferson St (SR 5) from southwest gore area


Plan view of proposed sidewalk and curb ramps at Viking Ln / Jefferson St intersection

**20. ANDREWS SR 105 TRAIL**

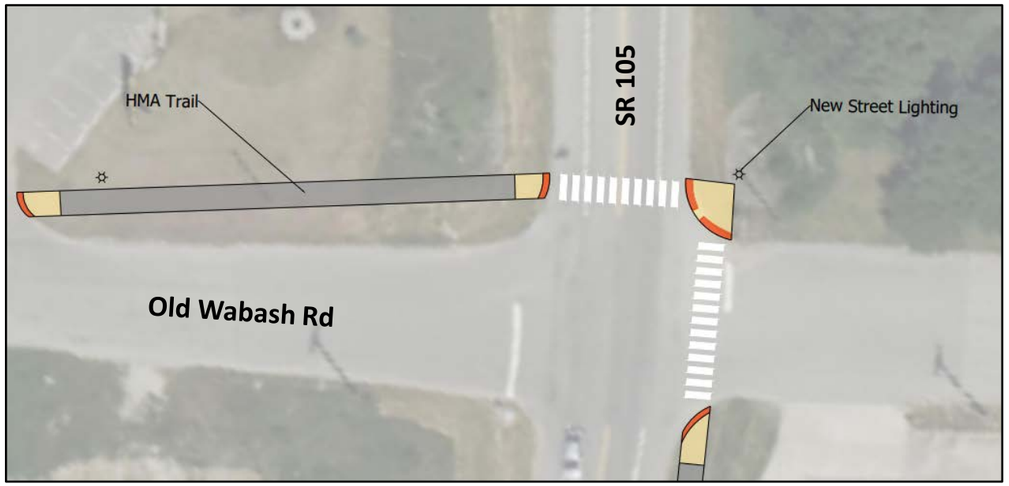
The purpose of the SR 105 trail project is to provide a safe walking route from the town of Andrews to the Dollar General store located adjacent to US 24 and the Wabash River boat ramp. This route has experienced multiple near misses with pedestrians, including incidents involving seniors and children. Improvements are anticipated to act as a preventative measure to near-misses becoming collisions. The Dollar General store opened in 2022 on Old Wabash Road next to US 24. The store is the only general store in the area around Andrews but does not fall within town limits. The boat ramp is also located across the Wabash River from the town. SR 105 is maintained by INDOT, meaning that the town has no control of the route between town limits and the store. Due to the location near US 24, any future business development is anticipated to happen near SR 105 and Old Wabash Rd. The trail would provide safe pedestrian access from the town to the store and provide opportunities for growth.

There are two options to span the trail cross the river. The first is to realign the road across the bridge to fit the trail. The trail would be separated by a plastic barrier. The second option is to build a cantilevered sidewalk bridge attached to the roadway bridge. This would provide further separation from the roadway at an added cost.




Plan view of proposed cantilevered sidewalk along SR 105 bridge over Wabash River

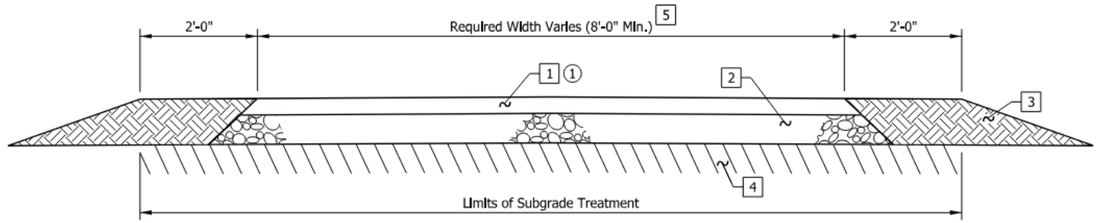
View of northbound shoulder width on SR 105 bridge over Wabash River




Proposed trail and curb ramp plan view at SR 105 / Old Wabash Rd intersection

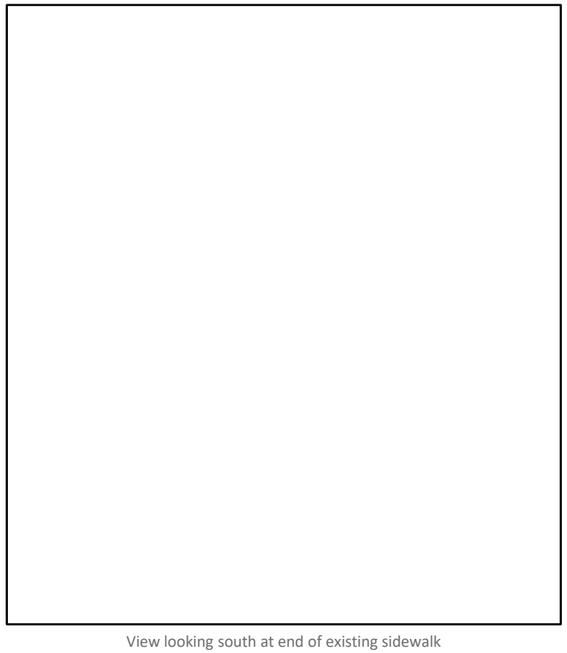

Signs guiding bicycles to follow SR 105 viewed from River Rd

Example cantilevered sidewalk bridge (Creative Composites Group)

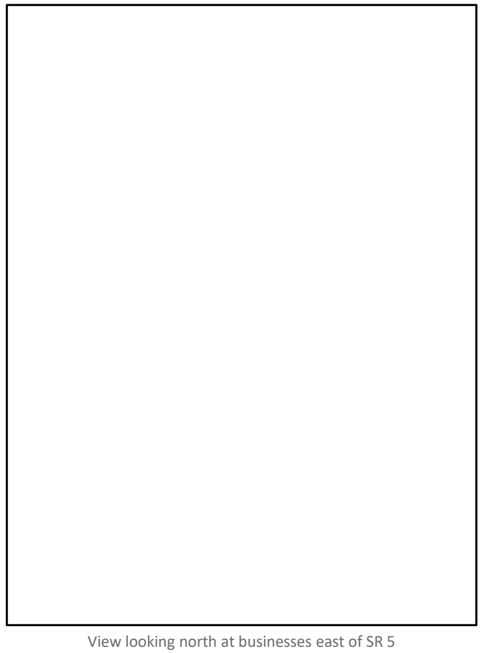


**21. WARREN SR 5 SIDEWALK**

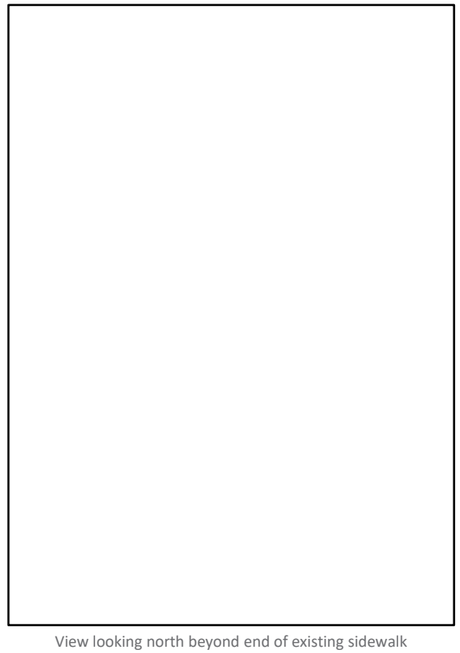
The Warren SR 5 sidewalk project aims to connect the existing sidewalk on SR 5 with the business area on the north side of Warren. This location was identified by stakeholders as an area of concern for pedestrian traffic due to the lack of pedestrian facilities along a state road. The existing sidewalk is on the east side of SR 5 and ends at the Mossburg Dr intersection, 650’ short of the Dollar General store. There is a sidewalk on the west side of SR 5 between Mossburg Dr and 11th St but utilizing this route would result in pedestrians crossing SR 5 twice within 330’. The new sidewalk would connect the businesses to the existing sidewalk without forcing users to cross the state road and thus enhance walkability within the town. A potential northward extension to Salamonie School may be considered if pedestrian demand warrants. The school is 0.5 miles north of the end of the existing sidewalk.



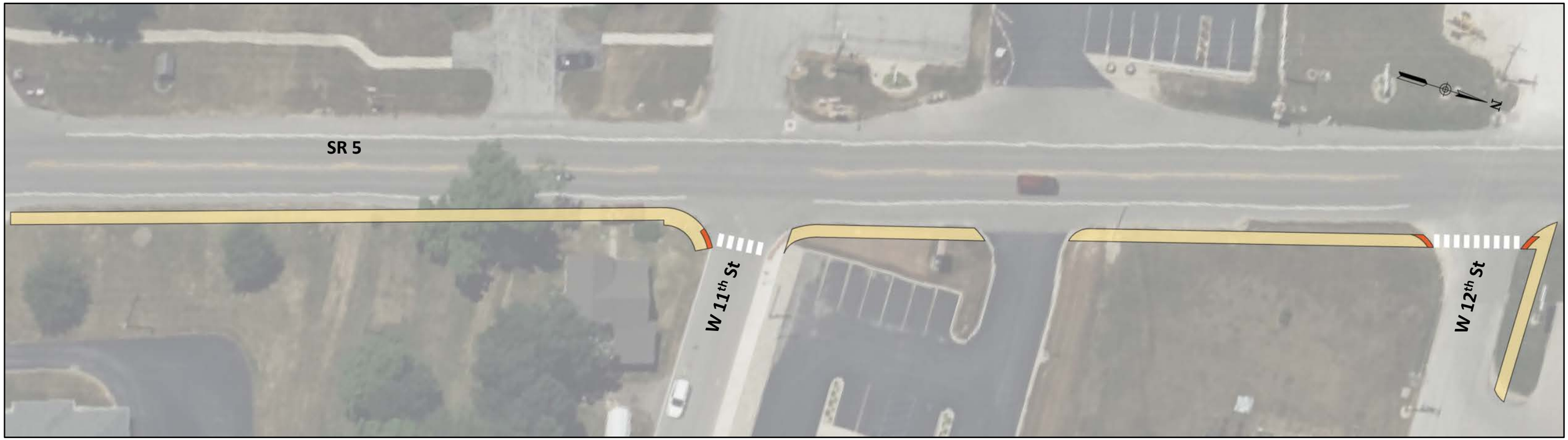
View looking south at end of existing sidewalk



View looking north at businesses east of SR 5



View looking north beyond end of existing sidewalk




Plan view of proposed sidewalk extension

# Policies, Processes, Progress and Transparency

# 5. Policies, Processes, Progress and Transparency

**1. CURRENT PROCESSES**

Huntington County does not currently have a safety action plan. The implementation of this plan should serve as a baseline for future safety evaluations in Huntington County. Additionally, the recommended practices and processes contained in this report should be adopted by the county as standard practices.

**2. MEASURING PROGRESS**

The measurement of the SS4A implementation's progress will be carried out in a similar manner to the safety analysis contained in this report. Crash data will be analyzed from the target areas of SS4A improvements rather than county wide to determine the effectiveness of the program's infrastructure improvements. In project areas, the analysis will look to compare fatal and injury crash rates before and after each improvement is implemented to determine whether the improvements reduced the fatal and injury crash frequency.

**3. TRANSPARENCY**

To meet the transparency requirements of the SS4A action program, annual reports will be issued from the county. These reports should state the improvements made that year, impacts projects have made to county crash rates before and after improvements, and an outlook on the following year's projects, projected crash rates, and impact on fatalities and injuries.

The SS4A action plan, as well as all annual reports, should be made available and easily accessible online for the public.

**4. POLICY ADOPTION / BEST PRACTICES**

In addition to following current Indiana Design Manual guidelines, the following safety countermeasures should be implemented in future projects going forward, paving the way for a modern and safe county highway system.

**Added STOP AHEAD signs on county routes**. Added signage can increase awareness of an upcoming stop sign, especially in areas with sightline obstructions.

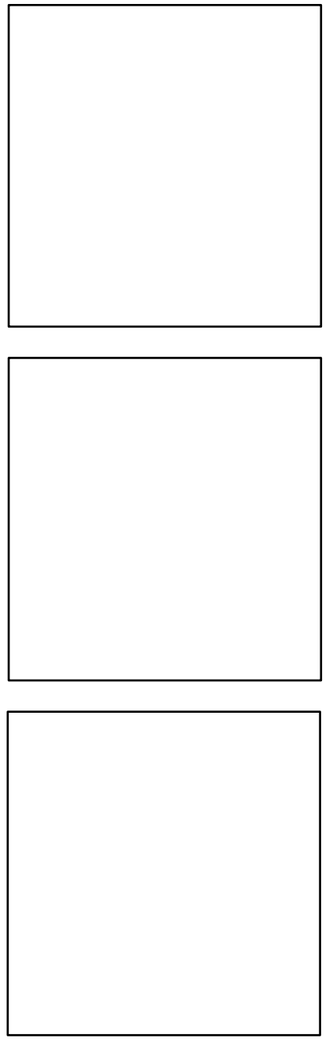
**Stop sign/bar placement for adequate sightlines**. Of the intersections observed in this report, several (notably Etna/CR 100 N, SR 9/Division, CR 900 N/Meridian, Rangeline/Hauenstein, Rangeline/CR 200 N) have stop signs and stop bars in locations where drivers cannot see oncoming traffic.

**Added buzz strips for stop-controlled intersections on state routes**. Buzz strips can audibly and physically alert drivers of upcoming changes in the road. State routes have higher design speeds and higher traffic counts, leading to an increased risk of high energy collisions at stop-controlled intersections.

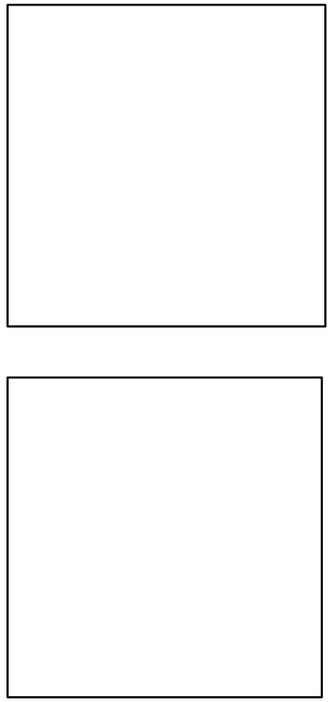
**Added rumble stripes on resurfacing projects**. Rumble stripes are a proven safety countermeasure acting against roadway departure crashes, which are the leading type of fatal accident in Huntington County. Rumble stripes are a low-cost, high-reward option to prevent drivers from leaving their lanes. Rumble stripes should be considered on all resurfacing projects where the road meets the minimum width requirements.

**Use of SafetyEdge on resurfacing/reconstruction projects for non-curbed pavement sections**. SafetyEdge is another proven safety countermeasure to prevent roadway departure crashes. SafetyEdge allows drivers who have already left the roadway a 21% better chance to return to the roadway.

**Stripe Centerlines and Edge Lines**. Most Huntington County roads are unstriped, meaning the limits of lanes and the roadway are up to the determination of the driver. Widening edge lines from 4" to 6" can reduce crashes up to 37% for non-intersection, fatal, and injury crashes on rural two-lane roads. Adding edge lines where they aren't currently in use should reduce crashes by this much or more.



**Complete Pedestrian Facilities**. Most intersections lack proper pedestrian facilities for safe crossing. Facilities include pedestrian signals, painted crosswalks, and ADA-compliant curb ramps. Curb ramps that fail to meet ADA standards should be modernized, crosswalks should be painted, and signalized intersections should have pedestrian walk signals.



# Appendices

# APPENDIX A: Proven Safety Countermeasures

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## Proven Safety Countermeasures

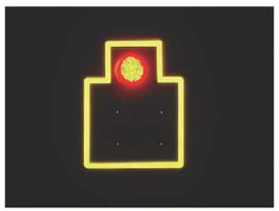
**Safety Benefits:**

**15%**
reduction in total crashes.[1]

### Backplates with Retroreflective Borders

Backplates added to a traffic signal head improve the visibility of the illuminated face of the signal by introducing a controlled-contrast background. The improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a 1- to 3-inch yellow retroreflective border. Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions.

This treatment is recognized as a human factors enhancement of traffic signal visibility, conspicuity, and orientation for both older and color vision deficient drivers. This countermeasure is also advantageous during periods of power outages when the signals would otherwise be dark, providing a visible cue for motorists to stop at the intersection ahead.

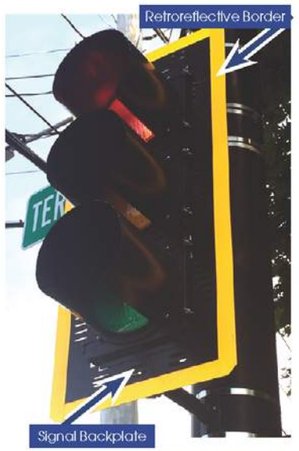


Retroreflective borders are highly visible during the night. Source: South Carolina DOT

#### Considerations

Transportation agencies should consider backplates with retroreflective borders as part of their efforts to systematically improve safety performance at signalized intersections. Adding a retroreflective border to an existing signal backplate is a very low-cost safety treatment. This can be done by either adding retroreflective tape to an existing backplate or purchasing a new backplate with a retroreflective border already incorporated. The most efficient means of implementing this proven safety countermeasure is to adopt it as a standard treatment for signalized intersections across a jurisdiction or State.

Implementation challenges include minimizing installation time, accessing existing signal heads, and structural limitations due to added wind load in instances where an entire backplate is added. Agencies should consider the design of the existing signal support structure to determine if the design is sufficient to support the added wind load.




Signal backplate framed with a retroreflective border. Source: FHWA

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://rosap.ntl.bts.gov/view/dot/42807.**

FHWA-SA-21-039

1 (CMF ID: 1410) Sayed, T., Leur, P., and Pump, J., "Safety Impact of Increased Traffic Signal Backboards Conspicuity," 2005 TRB 84th Annual Meeting: Compendium of Papers CD-ROM, Vol. TRB#05-16, Washington, D.C., (2005).

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## Proven Safety Countermeasures

**Safety Benefits:**

**Chevron Signs**
**25%** reduction in nighttime crashes.[1]
**16%** reduction in non-intersection fatal and injury crashes.[2]

**Oversized Chevron Signs**
**15%** reduction in fatal and injury crashes.[3]

**Sequential Dynamic Chevrons**
**60%** reduction in fatal and injury crashes.[4]

**In-Lane Curve Warning Pavement Markings**
**35 - 38%** reduction in all crashes.[5]

**New Fluorescent Curve Signs or Upgrade Existing Curve Signs to Fluorescent Sheeting**
**18%** reduction in non-intersection, head-on, run-off-road, and sideswipe in rural areas.[1]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/horizontal-curve-safety.**

FHWA-SA-21-035

### Enhanced Delineation for Horizontal Curves

Enhanced delineation at horizontal curves includes a variety of potential strategies that can be implemented in advance of or within curves, in combination, or individually.

| Potential Strategies | In Advance of Curve | Within Curve |
|---|---|---|
| Pavement markings (standard width or wider) | ✓ | ✓ |
| In-lane curve warning pavement markings | ✓ | |
| Retroreflective strips on sign posts | ✓ | ✓ |
| Delineators | | ✓ |
| Chevron signs | | ✓ |
| Enhanced Conspicuity (larger, fluorescent, and/or retroreflective signs) | ✓ | ✓ |
| Dynamic curve warning signs (including speed radar feedback signs) | ✓ | |
| Sequential dynamic chevrons | | ✓ |

Enhanced delineation treatments can alert drivers to upcoming curves, the direction and sharpness of the curve, and appropriate operating speed.

Agencies can take the following steps to implement enhanced delineation strategies:

1. Review signing practices and policies to ensure they comply with the Manual on Uniform Traffic Control Devices (MUTCD) principles of traffic control devices. Consistent practice for similar curves sets the appropriate driver expectancy.
2. Use the systemic approach to identify and treat problem curves. For example, Minnesota uses risk factors that include curve radii between 500 and 1,200 ft, traffic volumes between 500 and 1,000 vehicles per day, intersection in the curve, and presence of a visual trap.[1]
3. Match the appropriate strategy to the identified problem(s), considering the full range of enhanced delineation treatments. Once the MUTCD requirements and recommendations have been met, an incremental approach is often beneficial to avoid excessive cost.

Chevron signs with retroreflective strips on sign posts installed along a curve. Source: FHWA

1 (CMF ID: 2439,2431,2432) Albin et al. Low-Cost Treatments for Horizontal Curve Safety 2016. FHWA-SA-16-084. (2016).
2 (CMF ID: 2438) Srinivasan et al. Safety Evaluation of Improved Curve Delineation. FHWA-HRT-09-045. (2009).
3 (CMF ID: 8978) Lyon et al. Safety Evaluation of Two Curve Warning Treatments: In-Lane Curve Warning Pavement Markings and Oversized Chevron Signs. Presented at the 96th TRB Annual Meeting, Paper No. 17-00432, (2017).
4 (CMF ID: 10362) Hallmark, S. Evaluation of Sequential Dynamic Chevrons on Rural Two-lane Highways. FHWA, (2017).
5 (CMF ID: 10312,9167) Donnell et al. Reducing Roadway Departure Crashes at Horizontal Curve Sections on Two-lane Rural Highways. FHWA-SA-19-006, (2019).

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# APPENDIX A: Proven Safety Countermeasures

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## Proven Safety Countermeasures

### Lighting

The number of fatal crashes occurring in daylight is about the same as those that occur in darkness. However, the nighttime fatality rate is three times the daytime rate because only 25 percent of vehicle miles traveled (VMT) occur at night. At nighttime, vehicles traveling at higher speeds may not have the ability to stop once a hazard or change in the road ahead becomes visible by the headlights. Therefore, lighting can be applied continuously along segments and at spot locations such as intersections and pedestrian crossings in order to reduce the chances of a crash.

Adequate lighting (i.e., at or above minimum acceptable standards) is based on research recommending horizontal and vertical illuminance levels to provide safety benefits to all users of the roadway environment. Adequate lighting can also provide benefits in terms of personal security for pedestrians, wheelchair and other mobility device users, bicyclists, and transit users as they travel along and across roadways.

**Safety Benefits:**
**Lighting can reduce crashes up to:**

**42%**
for nighttime injury pedestrian crashes at intersections.[1]

**33-38%**
for nighttime crashes at rural and urban intersections.[2,1]

**28%**
for nighttime injury crashes on rural and urban highways.[1]

Source: FHWA

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/visibility/roadway-lighting-resources.**

FHWA-SA-21-050

#### Applications

**Roadway Segments**

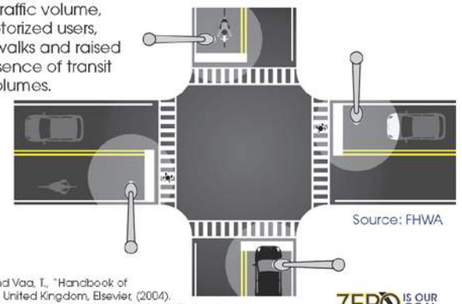
Research indicates that continuous lighting on both rural and urban highways (including freeways) has an established safety benefit for motorized vehicles.[1] Agencies can provide adequate visibility of the roadway and its users through the uniform application of lighting that provides full coverage along the roadway and the strategic placement of lighting where it is needed the most.

**Intersections and Pedestrian Crossings**

Increased visibility at intersections at nighttime is important since various modes of travel cross paths at these locations. Agencies should consider providing lighting to intersections based on factors such as a history of crashes at nighttime, traffic volume, the volume of non-motorized users, the presence of crosswalks and raised medians, and the presence of transit stops and boarding volumes.

#### Considerations

Most new lighting installations are made with breakaway features, shielded, or placed far enough from the roadway to reduce the probability and/or severity of fixed-object crashes. Modern lighting technology gives precise control with minimal excessive light affecting the nighttime sky or spilling over to adjacent properties. Agencies can equitably engage with underserved communities to determine where and how new and improved lighting can most benefit the community by considering their priorities, including eliminating crash disparities, connecting to essential neighborhood services, improving active transportation routes, and promoting personal safety.



Source: FHWA

1 (CMF ID: 436,433,192) Elvik, R. and Vaa, T., "Handbook of Road Safety Measures." Oxford, United Kingdom, Elsevier. (2004).
2 (CMF ID: 2376) Ye et al. A Simultaneous Equations Model of Crash Frequency By Collision Type for Rural Intersections, 87th Annual Meeting of the Transportation Research Board, (2008).

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## Proven Safety Countermeasures

### Local Road Safety Plans

A local road safety plan (LRSP) provides a framework for identifying, analyzing, and prioritizing roadway safety improvements on local roads. The LRSP development process and content are tailored to local issues and needs. The process results in a prioritized list of issues, risks, actions, and improvements that can be used to reduce fatalities and serious injuries on local roads. FHWA has developed several resources including an LRSP Do-It-Yourself website which further explains the process and includes resources local agencies and their partners need to create and implement an LRSP.[1]

**Safety Benefits:**

**Agencies have experienced the following benefits after LRSP implementation:**

**25%**
reduction in county road fatalities in Minnesota.

**17%**
reduction in fatal and serious injury crashes on county-owned roads in Washington State.

**35%**
reduction in severe curve crashes in Thurston County, WA.

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/local-rural/local-road-safety-plans.**

FHWA-SA-21-033

Approximately 75 percent of rural roads are owned by local agencies.[2] While local roads are less traveled than State highways, they have a much higher rate of fatal and serious injury crashes.[2] Developing an LRSP is an effective strategy to improve local road safety for all road users and support the goals of a State's overall Strategic Highway Safety Plan (SHSP).

Although the development process and resulting plan can vary depending on the local agency's needs, available resources, and targeted crash types, aspects common to LRSPs include:

- Stakeholder engagement representing the 4E's: engineering, enforcement, education, and emergency medical services.
- Collaboration among municipal, county, Tribal, State, and/or Federal entities to leverage expertise and resources.
- Identification of target crash types and crash risk with corresponding recommended proven safety countermeasures.
- Timeline and goals for implementation and evaluation.

Local road agencies should consider developing an LRSP to be used as a tool for reducing roadway fatalities, injuries, and crashes.[3] LRSPs can help agencies create a prioritized list of improvements. LRSPs are also a proactive risk management technique to demonstrate an agency's responsiveness. The plan should be viewed as a living document that can be updated to reflect changing local needs and priorities.


Infographic showing the LRSP process. Source: FHWA

1 https://highways.dot.gov/safety/local-rural/local-road-safety-plans
2 Anderson et al. Noteworthy Practices: Addressing Safety on Locally-Owned and Maintained Roads A Domestic Scan, FHWA-SA-09-019, (2010).
3 Developing Safety Plans: A Manual for Local Rural Road Owners, FHWA-SA-12-017, provides guidance on developing an LRSP.

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# Proven Safety Countermeasures

## Longitudinal Rumble Strips and Stripes

**Longitudinal rumble strips** are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicle has left the travel lane. They can be installed on the shoulder, edge line, or at or near the center line of an undivided roadway.

**Rumble stripes** are edge line or center line rumble strips where the pavement marking is placed over the rumble strip. This can increase the visibility and durability of the pavement marking during wet, nighttime conditions, and can improve the durability of the marking on roads with snowplowing operations.

**Safety Benefits:**

**Center Line Rumble Strips**
**44-64%**
reduction in head-on fatal and injury crashes on two-lane rural roads.[4]

**Shoulder Rumble Strips**
**13-51%**
reduction in single vehicle, run-off-road fatal and injury crashes on two-lane rural roads.[4]

With roadway departure crashes accounting for more than half of the fatal roadway crashes annually in the United States, rumble strips and stripes are designed to address these crashes by alerting distracted, drowsy, or otherwise inattentive drivers who drift from their lane. They are most effective when deployed systemically.

Transportation agencies should consider milled center line rumble strips (including in passing zone areas) and milled edge line or shoulder rumble strips with bicycle gaps for systemic safety projects, location-specific corridor safety improvements, as well as reconstruction or resurfacing projects.

### Considerations

- Rumble strips are relatively low-cost, and economic analyses have indicated benefit/cost ratios that exceed 100.[1]
- Where rumble strips cannot be placed due to noise concerns, agencies may consider a design using an oscillating sine wave pattern (also known as "mumble strips") that reduces noise outside of the vehicle. However, the safety benefits of this design need more study.[2]
- Maintenance concerns:
  - Where rumble strips are placed along a pavement joint, there are typically no issues with joint stability if the pavement structure and joint was already in good condition.
  - Studies have shown no evidence of issues related to snow, ice, or rain build-up in the rumble strip.[3]

Shoulder rumble strips and center line rumble stripes are installed on this roadway. Source: FHWA

Example of an edge line rumble stripe. Source: Missouri DOT

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/rumble-strips.**

FHWA-SA-21-036

1 Himes, S., and McGee, H. Decision Support Guide for the Installation of Shoulder and Center Line Rumble Strips on Non-Freeways. Federal Highway Administration Report No. FHWA-SA-16-116. (August 2016).
2 Bedsole et al. ***Did You Hear That?*** Public Roads Magazine, Volume 80, No. 4. FHWA Publication No. FHWA-HRT-17-002. (2017).
3 NCHRP Synthesis 339: Centerline Rumble Strips – A Synthesis of Highway Practices, (2005
4 (CMF ID: 3358, 3356, 3425, 3648) NCHRP Report 641: Guidance for the Design and Application of Shoulder and Centerline Rumble Strips, (2009).

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# Proven Safety Countermeasures

## Medians and Pedestrian Refuge Islands in Urban and Suburban Areas

A **median** is the area between opposing lanes of traffic, excluding turn lanes. Medians in urban and suburban areas can be defined by pavement markings, raised medians, or islands to separate motorized and non-motorized road users.

A **pedestrian refuge island** (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road.

**Safety Benefits:**

**Median with Marked Crosswalk**
**46%**
reduction in pedestrian crashes.[2]

**Pedestrian Refuge Island**
**56%**
reduction in pedestrian crashes.[2]

Pedestrian crashes account for approximately 17 percent of all traffic fatalities annually, and 74 percent of these occur at non-intersection locations.[1] For pedestrians to safely cross a roadway, they must estimate vehicle speeds, determine acceptable gaps in traffic based on their walking speed, and predict vehicle paths. Installing a median or pedestrian refuge island can help improve safety by allowing pedestrians to cross one direction of traffic at a time.

Transportation agencies should consider medians or pedestrian refuge islands in curbed sections of urban and suburban multilane roadways, particularly in areas with a significant mix of pedestrian and vehicle traffic, traffic volumes over 9,000 vehicles per day, and travel speeds 35 mph or greater. Medians/refuge islands should be at least 4-ft wide, but preferably 8 ft for pedestrian comfort. Some example locations that may benefit from medians or pedestrian refuge islands include:

- Mid-block crossings.
- Approaches to multilane intersections.
- Areas near transit stops or other pedestrian-focused sites.

Example of a road with a median and pedestrian refuge islands. Source: City of Charlotte, NC

Median and pedestrian refuge island near a roundabout. Source: www.pedbikeimages.org / Dan Burden

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-08/techSheet_PedRefugeIsland2018.pdf.**

FHWA-SA-21-044

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 850). National Highway Traffic Safety Administration
2 (CMF ID: 176) Desktop Reference for Crash Reduction Factors, FHWA-SA-08-011, September 2008, Table 11.

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# APPENDIX A: Proven Safety Countermeasures

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## Proven Safety Countermeasures

### Pavement Friction Management

Friction is a critical characteristic of a pavement that affects how vehicles interact with the roadway, including the frequency of crashes. Measuring, monitoring, and maintaining pavement friction—especially at locations where vehicles are frequently turning, slowing, and stopping—can prevent many roadway departure, intersection, and pedestrian-related crashes.

Pavement friction treatments, such as High Friction Surface Treatment (HFST), can be better targeted and result in more efficient and effective installations when using continuous pavement friction data along with crash and roadway data.

**Safety Benefits:**
**HFST can reduce crashes up to:**

**63%**
for injury crashes at ramps.[2]

**48%**
for injury crashes at horizontal curves.[2]

**20%**
for total crashes at intersections.[3]

Automated application of HFST.
Source: FHWA

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/keep-vehicles-road/pavement-friction/hfst.**

FHWA-SA-21-052

#### Continuous Pavement Friction Measurement

Friction data for safety performance is best measured with Continuous Pavement Friction Measurement (CPFM) equipment. Spot friction measurement devices, like locked-wheel skid trailers, cannot safely and accurately collect friction data in curves or intersections, where the pavement polishes more quickly and adequate friction is so much more critical. Without CPFM equipment, agencies will assume the same friction over a mile or more.

CPFM technology measures friction continuously at highway speeds and provides both network and segment level data. Practitioners can analyze the friction, crash, and roadway data to better understand and predict where friction-related crashes will occur to better target locations and more effectively install treatments.[1]

#### High Friction Surface Treatment

HFST consists of a layer of durable, anti-abrasion, and polish-resistant aggregate over a thermosetting polymer resin binder that locks the aggregate in place to restore or enhance friction and skid resistance. Calcined bauxite is the aggregate shown to yield the best results and should be used with HFST applications.

#### Applications

HFST should be applied in locations with increased friction demand, including:

- Horizontal curves.
- Interchange ramps.
- Intersection approaches.
  - Higher-speed signalized and stop-controlled intersections.
  - Steep downward grades.
- Locations with a history of rear-end, failure to yield, wet-weather, or red-light-running crashes.
- Crosswalk approaches.

#### Considerations

- HFST is applied on existing pavement, so no new pavement is added.
- If the underlying pavement structure is unstable, then the HFST life cycle may be shortened, resulting in pre-mature failure.
- The automated installation method is preferred as it minimizes issues often associated with manual installation: human error due to fatigue, inadequate binder mixing, improper and uneven binder thickness, delayed aggregate placement, and inadequate aggregate coverage.
- The cost can be reduced when bundling installations at multiple locations.

1 Izeppi et al. Continuous Friction Measurement Equipment as a Tool for Improving Crash Rate Prediction: A Pilot Study. Virginia Department of Transportation. (2016).
2 (CMF ID: 10342,10333) Merritt et al. Development of Crash Modification Factors for High Friction Surface Treatments. FHWA. (2020).
3 (CMF ID: 2259) NCHRP Report 617: Accident Modification Factors for Traffic Engineering and ITS Improvements. (2008).

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## Proven Safety Countermeasures

### Reduced Left-Turn Conflict Intersections

Reduced left-turn conflict intersections are geometric designs that alter how left-turn movements occur. These intersections simplify decision-making for drivers and minimize the potential for higher severity crash types, such as head-on and angle. Two highly effective designs that rely on U-turns to complete certain left-turn movements are known as the Restricted Crossing U-turn (RCUT) and the Median U-turn (MUT).

**Safety Benefits:**

**RCUT**
Two-Way Stop-Controlled to RCUT:

**54%**
reduction in fatal and injury crashes.[2]

Signalized Intersection to Signalized RCUT:

**22%**
reduction in fatal and injury crashes.[3]

Unsignalized Intersection to Unsignalized RCUT:

**63%**
reduction in fatal and injury crashes. [4]

**MUT**

**30%**
reduction in intersection-related injury crash rate.[5]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/intersection-safety/intersection-types/reduced-left-turn-conflict-intersections.**

FHWA-SA-21-030

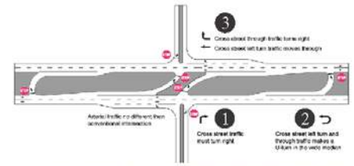
#### Restricted Crossing U-turn

The RCUT intersection, also known as a J-Turn, Superstreet, or Reduced Conflict Intersection, modifies the direct left-turn and through movements from cross-street approaches. Minor road traffic makes a right turn followed by a U-turn at a designated location—either signalized or unsignalized—to continue in the desired direction. The RCUT is suitable for and adaptable to a wide variety of circumstances, ranging from isolated rural, high-speed locations to urban and suburban high-volume, multimodal corridors. It is a competitive and less costly alternative to constructing an interchange. RCUTs work well when consistently used along a corridor, but also can be used effectively at individual intersections. Studies have shown that installing an RCUT can result in a 30-percent increase in throughput and a 40-percent reduction in network intersection travel time.[1]

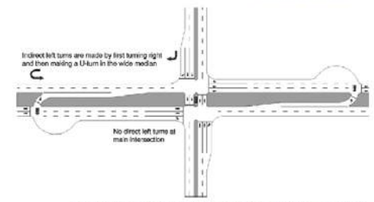
#### Median U-turn

The MUT intersection modifies direct left turns from the major approaches. Vehicles proceed through the main intersection, make a U-turn a short distance downstream, followed by a right turn at the main intersection. The U-turns can also be used for modifying the cross-street left turns, similar to the RCUT.

The MUT is an excellent choice for intersections with heavy through traffic and moderate left-turn volumes. Studies have shown a 20- to 50-percent improvement in intersection throughput for various lane configurations as a result of implementing the MUT design. When implemented at multiple intersections along a corridor, the efficient two-phase signal operation of the MUT can reduce delay, improve travel times, and create more crossing opportunities for pedestrians and bicyclists.




Example of a unsignalized RCUT intersection.
Source: FHWA




Example of a MUT intersection. Source: FHWA

1 Hugher and Jagannathan. Restricted Crossing U-Turn Intersection. FHWA-HRT-09-059. (2009).
2 (CMF ID: 6666) Edara et al. Evaluation of J-turn Intersection Design Performance in Missouri. MoDOT. (2013).
3 (CMF ID: 9985) Hummer and Rao. Safety Evaluation of a Signalized Restricted Crossing U-Turn. FHWA-HRT-17-082. (2017).
4 (CMF ID: 4884) Hummer et al. Superstreet Benefits and Capacities. FHWA/NC/2009-06, NC State University. (2010).
5 (CMF ID: 10867) Synthesis of the Median U-Turn Treatment, Safety, and Operational Benefits. FHWA-HRT-07-033. (2007).

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# Proven Safety Countermeasures

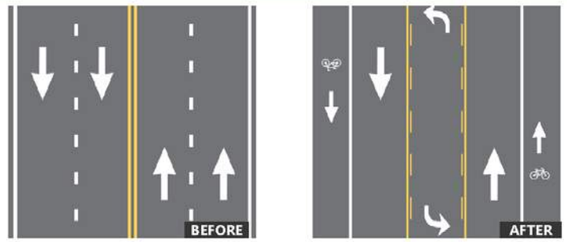
**Safety Benefits:**

**4-Lane to 3-Lane Road Diet Conversions**

**19-47%**
reduction in total crashes.[1]

## Road Diets (Roadway Reconfiguration)

A Road Diet, or roadway reconfiguration, can improve safety, calm traffic, provide better mobility and access for all road users, and enhance overall quality of life. A Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL).




Before and after example of a Road Diet. Source: FHWA

**Benefits of Road Diet installations may include:**

- Reduction of rear-end and left-turn crashes due to the dedicated left-turn lane.
- Reduced right-angle crashes as side street motorists cross three versus four travel lanes.
- Fewer lanes for pedestrians to cross.
- Opportunity to install pedestrian refuge islands, bicycle lanes, on-street parking, or transit stops.
- Traffic calming and more consistent speeds.
- A more community-focused, Complete Streets environment that better accommodates the needs of all road users.

A Road Diet can be a low-cost safety solution when planned in conjunction with a simple pavement overlay, and the reconfiguration can be accomplished at no additional cost. Typically, a Road Diet is implemented on a roadway with a current and future average daily traffic of 25,000 or less.

Road Diet project in Honolulu, Hawaii. Source: Leidos

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/road-diets.**

1 (CMF ID: 5554,2841) *Evaluation of Lane Reduction "Road Diet" Measures on Crashes*, FHWA-HRT-10-053, (2010).

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FHWA-SA-21-046

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# Proven Safety Countermeasures

**Safety Benefits:**

**10-60%**
reduction in total crashes.[1]

## Road Safety Audit

While most transportation agencies have established traditional safety review procedures, a road safety audit (RSA) or assessment is unique. RSAs are performed by a multidisciplinary team independent of the project. RSAs consider all road users, account for human factors and road user capabilities, are documented in a formal report, and require a formal response from the road owner. (See the eight steps for conducting an RSA below.)


Source: FHWA

**RSAs provide the following benefits:**

- Reduced number and severity of crashes due to safer designs.
- Reduced costs resulting from early identification and mitigation of safety issues before projects are built.
- Increased opportunities to integrate multimodal safety strategies and proven safety countermeasures.
- Expanded ability to consider human factors in all facets of design.
- Increased communication and collaboration among safety stakeholders.
- Objective review by independent multidisciplinary team.

RSAs can be performed in any phase of project development, from planning through construction. Agencies may focus RSAs specifically on motorized vehicles, pedestrians, bicyclists, motorcyclists, or a combination of these roadway users. Agencies are encouraged to conduct an RSA at the earliest stage possible, as all roadway design options and alternatives are being explored.

Multidisciplinary team performs field review during an RSA. Source: FHWA

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/data-analysis-tools/systemic/road-safety-audits-rsa.**

1 Road Safety Audits: An Evaluation of RSA Programs and Projects, FHWA-SA-12-037; and FHWA Road Safety Audit Guidelines, FHWA-SA-06-06.

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FHWA-SA-21-048

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# Proven Safety Countermeasures

## Roadside Design Improvements at Curves

Horizontal curves account for 27 percent of all fatal crashes and 80 percent of all fatal crashes at curves are roadway departure crashes.[1] Roadside design improvements at curves is a strategy encompassing several treatments that target the high-risk roadside environment along the outside of horizontal curves. These treatments can reduce roadway departure fatalities and serious injuries by giving vehicles the opportunity to recover safely and by reducing crash severity.

Roadside design improvements can be implemented alone or in combination, and are particularly recommended at horizontal curves—where data indicates a higher risk for roadway departure fatalities and serious injuries.

**Safety Benefits:**

**Flatten sideslope from 1V:3H to 1V:4H:**
**8%**
reduction for single-vehicle crashes.[2]

**Flatten sideslope from 1V:4H to 1V:6H:**
**12%**
reduction for single-vehicle crashes.[2]

**Increase the distance to roadside features from 3.3 ft to 16.7 ft:**
**22%**
reduction for all crashes.[3]

**Increase the distance to roadside features from 16.7 ft to 30 ft:**
**44%**
reduction for all crashes.[3]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/provide-safe-recovery/clear-zones/clear-zones.**

FHWA-SA-21-029

### Roadside Design Improvements to Provide for a Safe Recovery

In cases where a vehicle leaves the roadway, having strategic roadside design elements, including an added or widened shoulder, flattened sideslopes, or a widened clear zone can provide drivers with an opportunity to regain control and re-enter the roadway in their lane or come to a safe stop before rolling over or encountering a fixed object.

- A **clear zone** is an unobstructed, traversable roadside area that allows a driver to stop safely or regain control of a vehicle that has left the roadway. Agencies should avoid adding new fixed objects such as trees and utility cabinets or poles in the clear zone. AASHTO's *Roadside Design Guide* details the clear zone width adjustment factors to be applied at horizontal curves.
- **Slope flattening** reduces the steepness of the sideslope to increase drivers' ability to keep the vehicle stable, regain control of the vehicle, and avoid obstacles. Slopes of 1V:4H or flatter are considered recoverable (i.e., drivers can retain control of a vehicle by slowing or stopping). Slopes between 1V:3H and 1V:4H are generally considered traversable, but non-recoverable (i.e., errant vehicle will continue to the bottom of the slope).
- **Adding or widening shoulders** gives drivers more recovery area to regain control in the event of a roadway departure.

### Roadside Design Improvements to Reduce Crash Severity

Since not all roadside hazards can be removed, relocated, or redesigned at curves, installing roadside barriers to shield unmovable objects or steep embankments may be an appropriate treatment. Three common types of roadside barriers are:

- **Cable barrier** is a flexible barrier made from steel cables mounted on weak steel posts. Flexible barriers are more forgiving and have the most deflection.
- **Metal-beam guardrail** is a semi-rigid barrier where a W-beam or box-beam is mounted on steel or timber posts. These deflect less than cable barriers, so they can be located closer to objects where space is limited.
- **Concrete barrier** is a rigid barrier that has little to no deflection.

Clear zone provided on the outside of the curve. Source: FHWA.

1 Fatality Analysis Reporting System.
2 (CMF ID: 4627,4632) NCHRP Report 617: Accident Modification Factors for Traffic Engineering and ITS Improvements. (2008).
3 (CMF ID: 35,36) Elvik, R., and Vaa, T. Handbook of Road Safety Measures. (2004).

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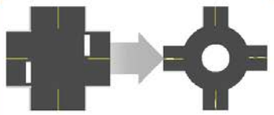
# Proven Safety Countermeasures

## Roundabouts

The modern roundabout is an intersection with a circular configuration that safely and efficiently moves traffic. Roundabouts feature channelized, curved approaches that reduce vehicle speed, entry yield control that gives right-of-way to circulating traffic, and counterclockwise flow around a central island that minimizes conflict points. The net result of lower speeds and reduced conflicts at roundabouts is an environment where crashes that cause injury or fatality are substantially reduced.

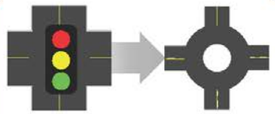
**Safety Benefits:**

**Two-Way Stop-Controlled Intersection to a Roundabout**



**82%**
reduction in fatal and injury crashes.[1]

**Signalized Intersection to a Roundabout**



**78%**
reduction in fatal and injury crashes.[1]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/intersection-safety/intersection-types/roundabouts.**

FHWA-SA-21-042

Roundabouts are not only a safer type of intersection; they are also efficient in terms of keeping people moving. Even while calming traffic, they can reduce delay and queuing when compared to other intersection alternatives. Furthermore, the lower vehicular speeds and reduced conflict environment can create a more suitable environment for walking and bicycling.

Roundabouts can be implemented in both urban and rural areas under a wide range of traffic conditions. They can replace signals, two-way stop controls, and all-way stop controls. Roundabouts are an effective option for managing speed and transitioning traffic from high-speed to low-speed environments, such as freeway interchange ramp terminals, and rural intersections along high-speed roads.

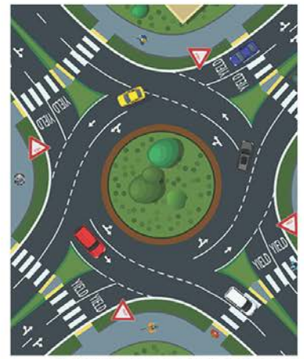


Illustration of a multilane roundabout. Source: FHWA

Example of a single-lane roundabout. Source: FHWA

1 (CMF ID: 211,226) AASHTO. The Highway Safety Manual, American Association of State Highway Transportation Professionals. Washington, D.C., (2010).

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# APPENDIX A: Proven Safety Countermeasures

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## Proven Safety Countermeasures

### SafetyEdge℠

The SafetyEdge℠ technology shapes the edge of the pavement at approximately 30 degrees from the pavement cross slope during the paving process. This safety practice eliminates the potential for vertical drop-off at the pavement edge, has minimal effect on project cost, and can improve pavement durability by reducing edge raveling of asphalt.

**Safety Benefits:**

**11%**
reduction in fatal and injury crashes.[2]

**21%**
reduction in run-off-road crashes.[2]

**19%**
reduction in head-on crashes.[2]

**Benefit-Cost Ratio Range[3]**

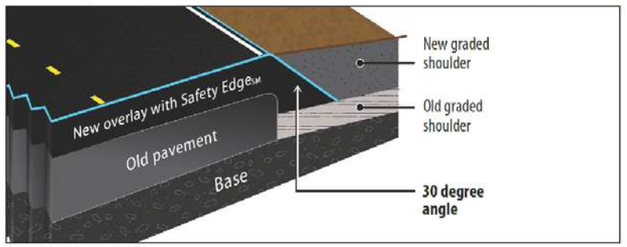
**700:1 to 1,500:1**

Rural road crashes involving edge drop-offs are 2-4 times more likely to include a fatality than other crashes on similar roads.[1] Vehicles may leave the roadway for various reasons ranging from distracted driver errors to low visibility, or to the presence of an animal on the road. Exposed vertical pavement edges can cause vehicles to become unstable and prevent their safe return to the roadway. The SafetyEdge℠ gives drivers the opportunity to return to their travel lane while maintaining control of their vehicle.

The SafetyEdge℠ technology only requires adding one of several commercially available devices to the screed or endgate when placing hot-mix asphalt. Forms for shaping the edge of concrete pavement are simpler and can be made on site by the contractor. Some agencies allow the SafetyEdge℠ to remain exposed while a segment is under construction, unlike conventional pavement edges. However, before construction ends, agencies should bring the adjacent roadside flush with the top of the pavement for both the SafetyEdge℠ and traditional pavement edge. Over time, regardless of the edge type, the edge may become exposed due to settling, erosion, and tire wear. When this occurs, the gentle slope provided by the SafetyEdge℠ is preferred versus the traditional vertical pavement edge.

Transportation agencies should develop standards for implementing the SafetyEdge℠ systemwide on all new asphalt paving and resurfacing projects where curbs and/or guardrail are not present, while also encouraging standard application for concrete pavements.

Example of the SafetyEdge℠ after backfill material settles or erodes. Source: FHWA




Cross-section view of an overlay with the SafetyEdge℠. Source: FHWA-SA-17-044

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/rwd/provide-safe-recovery/safetyedge.**

FHWA-SA-21-038

1 Hallmark et al. Safety Impacts of Pavement Edge Drop-offs, (Washington, DC: AAA Foundation for Traffic Safety: 2006), p. 93.
2 (CMF ID: 9206, 9211, 9217) Donnell et al. Development of Crash Modification Factors for the Application of the SafetyEdge℠ on Two-Lane Rural Roads. FHWA-HRT-17-081. (2017).
3 Safety Effects of the SafetyEdge℠, FHWA-SA-17-044, (2017).

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## Proven Safety Countermeasures


### Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections

This systemic approach to intersection safety involves deploying a package of multiple low-cost countermeasures, including enhanced signing and pavement markings, at a large number of stop-controlled intersections within a jurisdiction. These countermeasures increase driver awareness and recognition of the intersections and potential conflicts.

**Safety Benefits:**

**10%**
reduction of fatal and injury crashes at all locations/types/areas.

**15%**
reduction of nighttime crashes at all locations/types/areas.

**27%**
reduction of fatal and injury crashes at rural intersections.

**19%**
reduction of fatal and injury crashes at 2-lane by 2-lane intersections.

**Average Benefit-Cost Ratio**

**12:1**

There are several benefits to systemically applying multiple low-cost countermeasures at stop-controlled intersections, including,

- Resources are maximized because the treatments are low cost.
- A high number of intersections can receive treatment.
- Improvements are highly cost-effective, with an average benefit-cost ratio of 12:1, even assuming a conservative 3-year service life.

Example of countermeasures on the through approach. Source: South Carolina DOT

Example of countermeasures on the stop approach. Source: South Carolina DOT

The low-cost countermeasures for stop-controlled intersections generally consist of the following treatments:

**On the Through Approach**

- Doubled-up (left and right), oversized advance intersection warning signs, with supplemental street name plaques (can also include flashing beacon).
- Retroreflective sheeting on sign posts.
- Enhanced pavement markings that delineate through lane edge lines.

**On the Stop Approach**

- Doubled-up (left and right), oversized advance "Stop Ahead" intersection warning signs (can also include flashing beacon).
- Doubled-up (left and right), oversized Stop signs.
- Retroreflective sheeting on sign posts.
- Properly placed stop bar.
- Removal of vegetation, parking, or obstructions that limit sight distance.
- Double arrow warning sign at stem of T-intersections.

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/fhwasa18047.pdf.**

FHWA-SA-21-031

Source: (CMF ID: 8867, 8870, 8874, 8893) T. Le et al. "Safety Effects of Low-Cost Systemic Safety Improvements at Signalized and Stop-Controlled Intersections," 96th Annual Meeting of the Transportation Research Board, Paper Number 17-05379, January 2017.

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# Proven Safety Countermeasures

**Safety Benefits:**

**Sidewalks**

**65-89%**

reduction in crashes involving pedestrians walking along roadways.[3]

**Paved Shoulders**

**71%**

reduction in crashes involving pedestrians walking along roadways.[3]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=1.**

FHWA-SA-21-047

## Walkways

A walkway is any type of defined space or pathway for use by a person traveling by foot or using a wheelchair. These may be pedestrian walkways, shared use paths, sidewalks, or roadway shoulders.

With more than 6,200 pedestrian fatalities and 75,000 pedestrian injuries occurring in roadway crashes annually,[1] it is important for transportation agencies to improve conditions and safety for pedestrians and to integrate walkways more fully into the transportation system. Research shows people living in low-income communities are less likely to encounter walkways and other pedestrian-friendly features.[2]

Well-designed pedestrian walkways, shared use paths, and sidewalks improve the safety and mobility of pedestrians. Pedestrians should have direct and connected network of walking routes to desired destinations without gaps or abrupt changes. In some rural or suburban areas, where these types of walkways are not feasible, roadway shoulders provide an area for pedestrians to walk next to the roadway, although these are not preferable.

Transportation agencies should work towards incorporating pedestrian facilities into all roadway projects unless exceptional circumstances exist. It is important to provide and maintain accessible walkways along both sides of the road in urban areas, particularly near school zones and transit locations, and where there is a large amount of pedestrian activity. Walkable shoulders should also be considered along both sides of rural highways when routinely used by pedestrians.

Example of a sidewalk in a residential area. Source: pedbikeimages.org / Burden

Paved shoulder used as a walkway. Source: pedbikeimages.org / Burden

1 National Center for Statistics and Analysis. (2020, March). Pedestrians: 2018 data (Traffic Safety Facts. Report No. DOT HS 812 850). National Highway Traffic Safety Administration.
2 Gibbs, et all. Income Disparities in Street Features that Encourage Walking. Bridging the Gap, (2012, March).
3 Gan et al. Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects. Florida DOT, (2005).

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**Safety Benefits:**

**Wider edge lines can reduce crashes up to:**

**37%**

for non-intersection, fatal and injury crashes on rural, two-lane roads.[2]

**22%**

for fatal and injury crashes on rural freeways.[3]

**Benefit Cost Ratio**

**25:1**

for fatal and serious injury crashes on two-lane rural roads.[4]

**For more information on this and other FHWA Proven Safety Countermeasures, please visit https://highways.dot.gov/safety/proven-safety-countermeasures and https://highways.dot.gov/safety/other/visibility/pavement-markings.**

FHWA-SA-21-055

## Wider Edge Lines

Roadway departures account for over half of all traffic fatalities in the United States. If drivers cannot clearly identify the edge of the travel lanes and see the road alignment ahead, the risk of roadway departure may be greater. Wider edge lines enhance the visibility of travel lane boundaries compared to traditional edge lines. Edge lines are considered "wider" when the marking width is increased from the minimum normal line width of 4 inches to the maximum normal line width of 6 inches.[1]

### Applications

Wider edge lines increase drivers' perception of the edge of the travel lane and can provide a safety benefit to all facility types (e.g., freeways, multilane divided and undivided highways, two-lane highways) in both urban and rural areas.[2] Wider edge lines are most effective in reducing crashes on rural two-lane highways, especially for single-vehicle crashes.[3] Agencies should also consider implementing a systemic approach to wider edge line installation based roadway departure crash risk factors. Potential risk factors for two-lane rural roads include:

- Pavement and shoulder widths.
- Presence of curves.
- Traffic volumes.
- History of nighttime crashes.

### Considerations

- Wider edge lines are relatively low cost.
- Wider edge lines can be implemented using existing equipment during maintenance procedures like re-striping and resurfacing, with the only cost increase being the additional material.
- Paint may have a lower initial cost, but more durable materials (e.g., thermoplastic) may result in a lower life cycle cost based on their longer service life.
- As the number of automated vehicles increases on roadways, wider edge lines may provide better guidance for these vehicles' sensors.

Source: Texas Transportation Institute

1 Manual on Uniform Traffic Control Devices (MUTCD), Section 3A.04. FHWA, (2023).
2 (CMF ID: 4737) Park et al. "Safety effects of wider edge lines on rural, two-lane highways." Accident Analysis and Prevention Vol. 48, pp.317-325, (2012).
3 Potts et al. Benefit/Cost Evaluation of MoDOT's Total Striping and Delineation Program: Phase II. Missouri Department of Transportation, (2011).
4 Abdel-Rahim et al. Safety Impacts of Using Wider Pavement Markings on Two-Lane Rural Highways in Idaho. Idaho Transportation Department, (2018).

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# APPENDIX B: Project Scoring Matrix

| Project | Crash Rates | Public Engagement | Reward/Cost Ratio | Disadvantaged Communities | SCORE | RANK | TIER |
|---|---|---|---|---|---|---|---|
| Division Rd / SR 105 Intersection | 30 | 5 | 5 | 0 | 90 | 1 | 1 |
| SR 5 Warren Rd Corridor Improvements | 29 | 3 | 4 | 3 | 85 | 2 | 1 |
| US 224 Corridor Improvements | 24 | 1 | 5 | 3 | 72 | 3 | 1 |
| SR 16 Widening | 25.2 | 2 | 4 | 0 | 68.4 | 4 | 1 |
| Old 24 Corridor Reconfiguration | 23 | 3 | 1 | 5 | 68 | 5 | 1 |
| SR 9 / Division Rd Intersection | 23.3 | 4 | 3 | 0 | 67.6 | 6 | 1 |
| Low-Cost Signage Improvements | 19 | 4 | 3 | 3 | 65 | 7 | 1 |
| Park Dr / LaFontaine St Intersection | 22.3 | 1 | 4 | 0 | 59.6 | 8 | 2 |
| US 24 / SR 9 Signal Improvements | 20.1 | 2 | 4 | 0 | 58.2 | 9 | 2 |
| Etna Rd / CR 100 N Intersection | 20.7 | 1 | 4 | 0 | 56.4 | 10 | 2 |
| US 24 Auxiliary Lane | 15.5 | 2 | 3 | 3 | 52 | 11 | 2 |
| Market St / First St Intersection | 14 | 1 | 3 | 5 | 50 | 12 | 2 |
| SR 5 Goshen Rd Widening | 17.2 | 1 | 2 | 2 | 47.4 | 13 | 2 |
| US 24 / CR 900 N Slotted Left Turn | 10.9 | 3 | 3 | 0 | 39.8 | 14 | 3 |
| SR 3 / SR 116 Bumpout | 10 | 2 | 4 | 0 | 38 | 15 | 3 |
| CR 300 W Widening | 10 | 2 | 2 | 0 | 32 | 16 | 3 |
| Jefferson St Sidewalk | 0 | 2 | 3 | 2 | 19 | 17 | 3 |
| Andrews SR 105 Trail | 0 | 2 | 3 | 0 | 15 | 18 | 3 |
| Warren SR 5 Sidewalk | 0 | 1 | 3 | 0 | 12 | 19 | 3 |
| **MULTIPLIER** | **2** | **3** | **3** | **2** | | | |

To determine the priority of each project, the involved roadways were scored out of 100 points by crash rates, public engagement, cost effectiveness, and service to underserved communities. As the primary goal of the SS4A action plan is to reduce crash rates, particularly fatal crashes, most of the score (60 points) consists of crash ratings. Crashes were scored by their severity and frequency to determine the most dangerous intersections and corridors, with increased points for fatal and injury crashes. Public engagement involves scoring projects (out of 15 points) on stakeholder input, with projects earning additional points for holding greater public concern. The project's cost effectiveness, or reward/cost ratio, was scored (out of 15 points) to determine which projects would most effectively use SS4A grant money. Projects that would utilize low-cost countermeasures and address more severe crashes scored higher than projects involving full depth reconstruction and lower severity crashes. Projects were also scored (out of 10 points) on service to underserved communities. Part of the SS4A program is providing improvements to census tracts designated as transportation disadvantaged, projects in these locations receive additional points for making significant improvements in underserved communities.