# GREATER EGYPT REGIONAL PLANNING AND DEVELOPMENT COMMISSION SAFETY STUDY

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## INTRODUCTION

This Final Report summarizes the background, methodology and recommendations of the Greater Egypt Safety Study. This study evaluated 5-years of crash data (204-2018) within an area comprising four counties of the Greater Egypt Regional Planning and Development Commission (GERPDC). The purpose of the safety study was to identify overrepresented crash types, prioritize high crash areas on the local roadway network and at-grade rail crossings, recommend improvements to mitigate crashes at the highest-priority locations, and submit applications to obtain funding to construct improvements.

This study was conducted in coordination and would not be possible without the local knowledge and assistance provided by the GEPDC staff and the member agencies including Jefferson, Jackson, Perry and Franklin Counties.

The body of the report is divided into 3 sections:

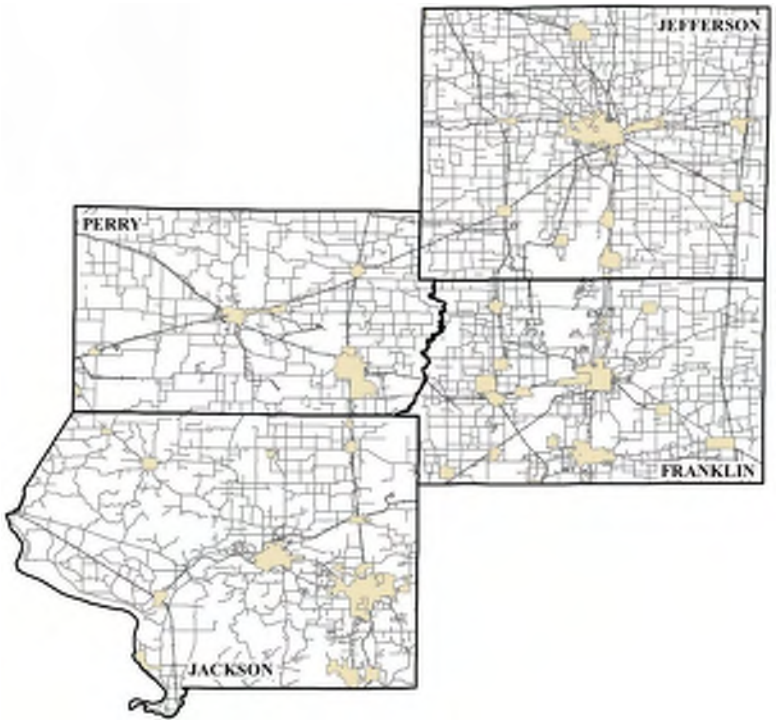
1. GERPDC-wide crash analysis and methodologies used in developing a priority ranking for high crash locations on the local roadway network
2. GERPDC-wide crash analysis and methodologies used in developing a priority ranking for high hazard rail crossings on local roads.
3. The Appendix section of the report provides site specific analysis of the crash patterns and existing conditions at the priority locations.

Safety countermeasures have been identified for each location, focusing on low-cost improvements that have the potential to mitigate the high crash frequency.

## STUDY AREA

The study area for the safety study consisted of all county maintained roadways within four counties: Jefferson, Jackson, Perry and Franklin. Roadways maintained by the Illinois DOT and local cities and villages were not included within the study area. Additionally, Williamson County did not participate in the study. The four study counties of are shown in **Figure 1**.

FIGURE 1: GREATER EGYPT STUDY AREA




## HIGHWAY SAFETY DATA

Highway crash data for the entire study area was provided to the GEPDC by IDOT District 9. This data was provided in a Geographic Information System

(GIS) shapefile with location data for each crash. The crash database is compiled every year from the local and state police crash records submitted to the Illinois Department of Transportation (IDOT) Division of Traffic Safety. The crash data files contain information required to identify and analyze the crash records:

- crash ID
- street codes
- day of crash
- time of crash
- road feature
- light condition
- type of collision
- direction
- maneuvers
- type of vehicle
- crash severity
- road surface condition
- number of persons injured/ killed

One of the goals of the Federal Highway Administration and Illinois DOT is to address fatal and serious injury crashes. Crashes are categorized by injury severity, as K, A, B or C injury or Property Damage Only (PDO). The definition of each of these severities is summarized below.

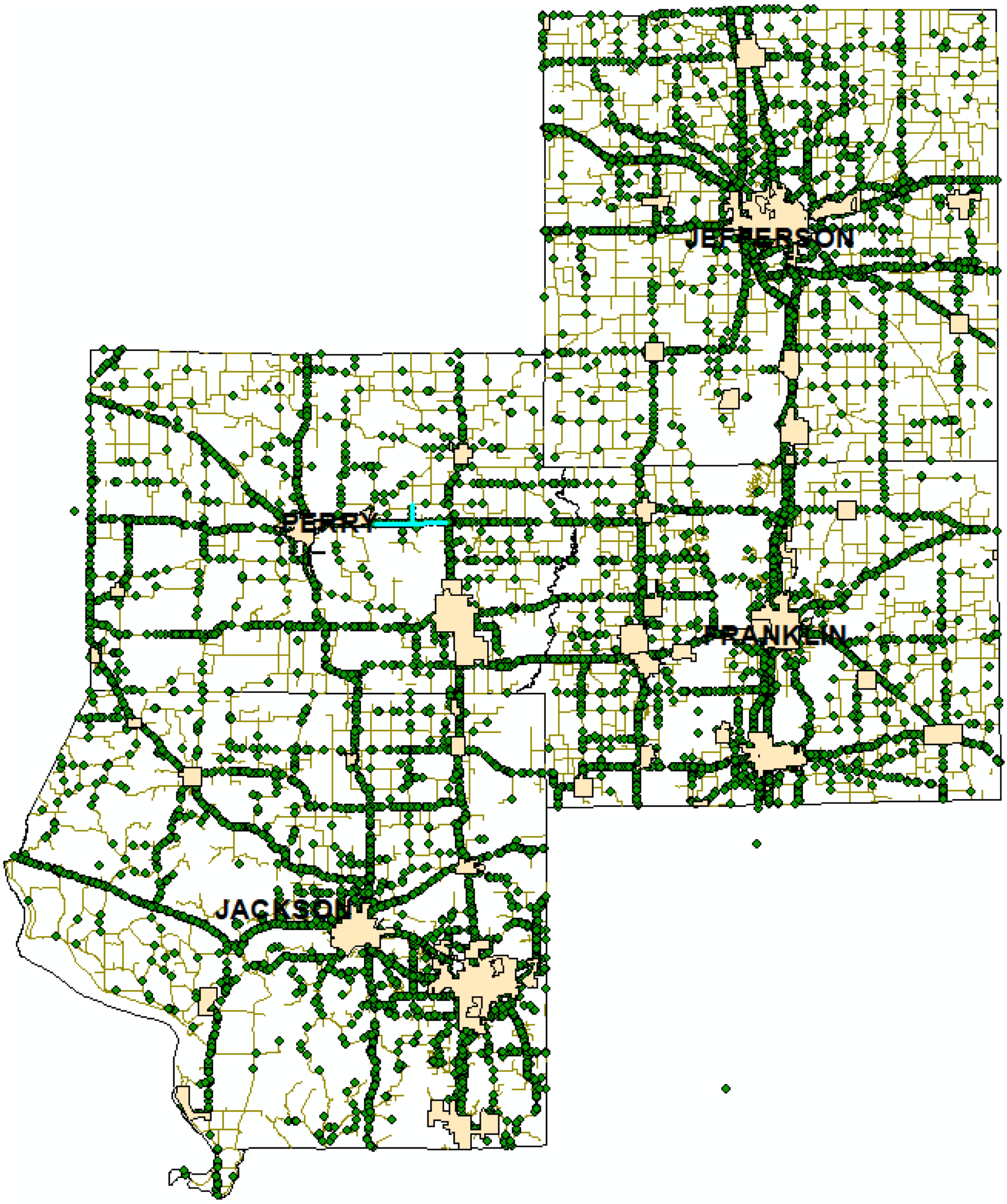
1. Fatal Crash: A motor vehicle crash (single or multiple) that results in the death of one or more persons.
2. Injury Crash: Any motor vehicle crash that results in one or more non-fatal injuries.
    - A-Injury (Incapacitating Injury): Any injury, other than a fatal injury, which prevents the injured person from walking, driving, or normally continuing the activities he/she was capable of performing before the injury occurred. Type A crashes includes severe lacerations, broken limbs, skull or chest injuries, and abdominal injuries.
    - B-Injury (Non-incapacitating Injury): Any injury other than a fatal or incapacitating injury, which is evident to observers at the scene of the crash. Includes lump on head, abrasions, bruises, minor lacerations.
    - C-Injury (Possible Injury): Any injury reported or claimed which is not either of the above injuries. It includes momentary unconsciousness, claims of injuries not evident, limping, complaint of pain, nausea, and hysteria.
3. PDO: Property-damage only crash.

Roadway data was pulled from the Illinois Roadway Information System (IRIS) database. In addition to the physical location of the roadway provided in a GIS shapefile, IRIS data provides basic information such as functional classification and roadway ownership. Additional information such as roadway width, Average Daily Traffic (ADT) and condition rating may be provided but primarily on state-maintained roadways. This more detailed information was not available for the local roadways within the study area. The IRIS GIS shapefile also segments roadways based on logical roadway termini, such as intersections or changes in road classification. This segmentation was used as the basis for identification of high crash roadway segments.

## HIGHWAY SAFETY ANALYSIS

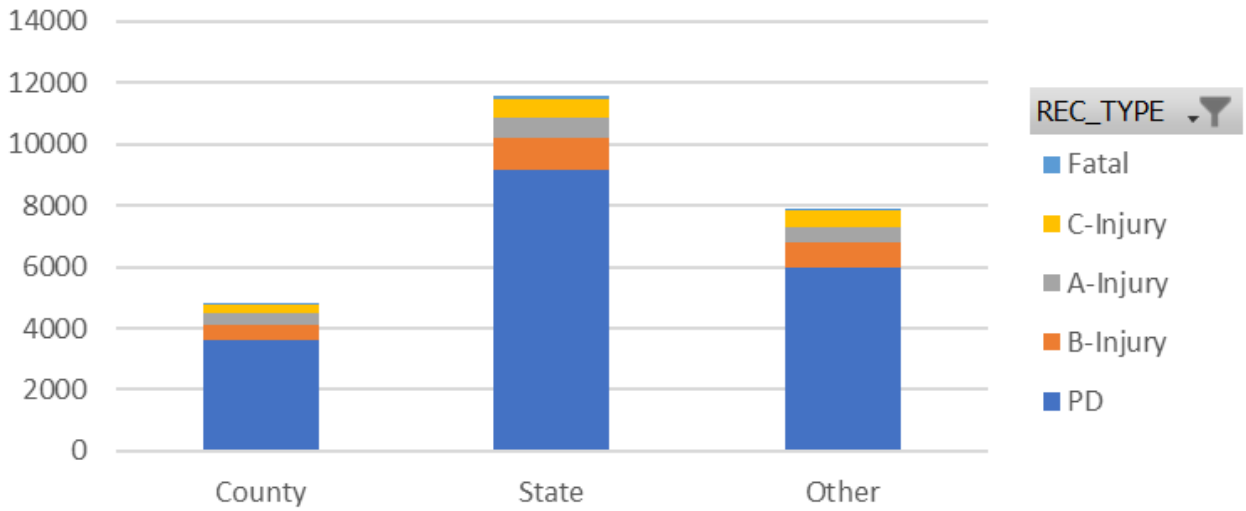
Crash analysis was conducted to identify the priority locations within the GERPDC roadway system. Suing crash data from January 1, 2014 - December 31, 2018. **Figure 2** shows all crashes in the database for the study counties.

FIGURE 2: CRASH DATA 2014-2018



Prior to the identification of high crash locations area wide crash analysis was completed to determine emphasis areas within the MPO roadways that may be the focus of the safety efforts. **Figure 3** shows a comparison of crash severity on county roads vs state roadways and other local agencies. As shown in the figure, the crash frequency is lower than state routes, but has injury and fatality rates similar to state routes.

FIGURE 3: CRASH FREQUENCY AND SEVERITY BY ROUTE TYPE




When comparing the type of crash on the two systems (**Figure 4**), the county-maintained system is dominated by animal and fixed object crashes, while intersection type crashes (turning and angle) are higher on the state system and city roadways. Fixed object crashes were over 2x higher than on the state system. Fixed object crashes also represent the highest frequency of fatal crashes on the county system with 25 fatal crashes out of 1762 crashes. The second most frequent type of fatal crashes on the local system was overturned crashes, with 10 fatal crashes, though only having 404 total crashes.

FIGURE 4: CRASH TYPE BY ROADWAY TYPE

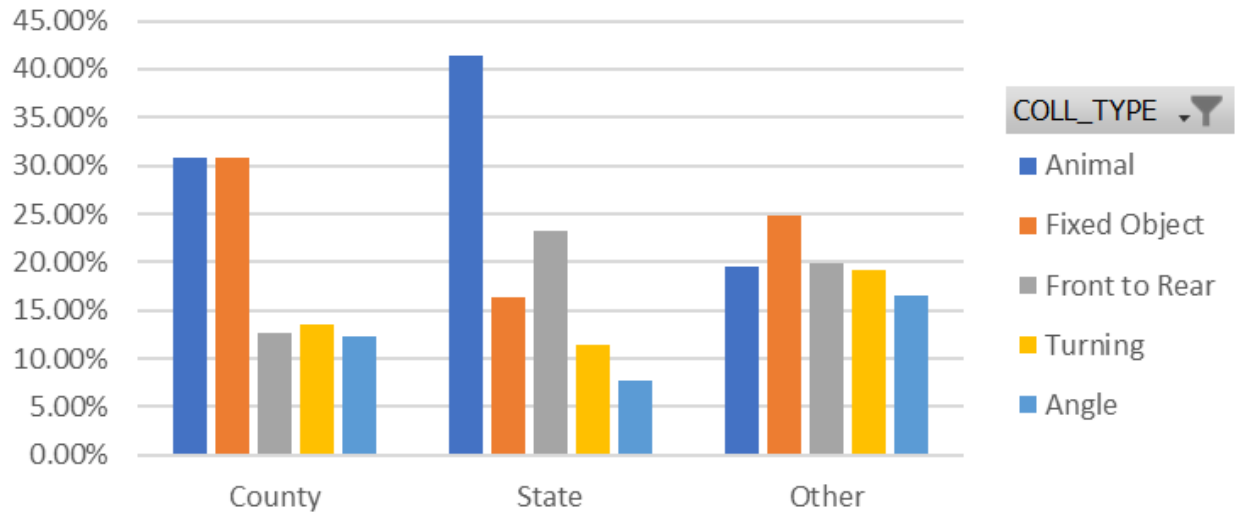
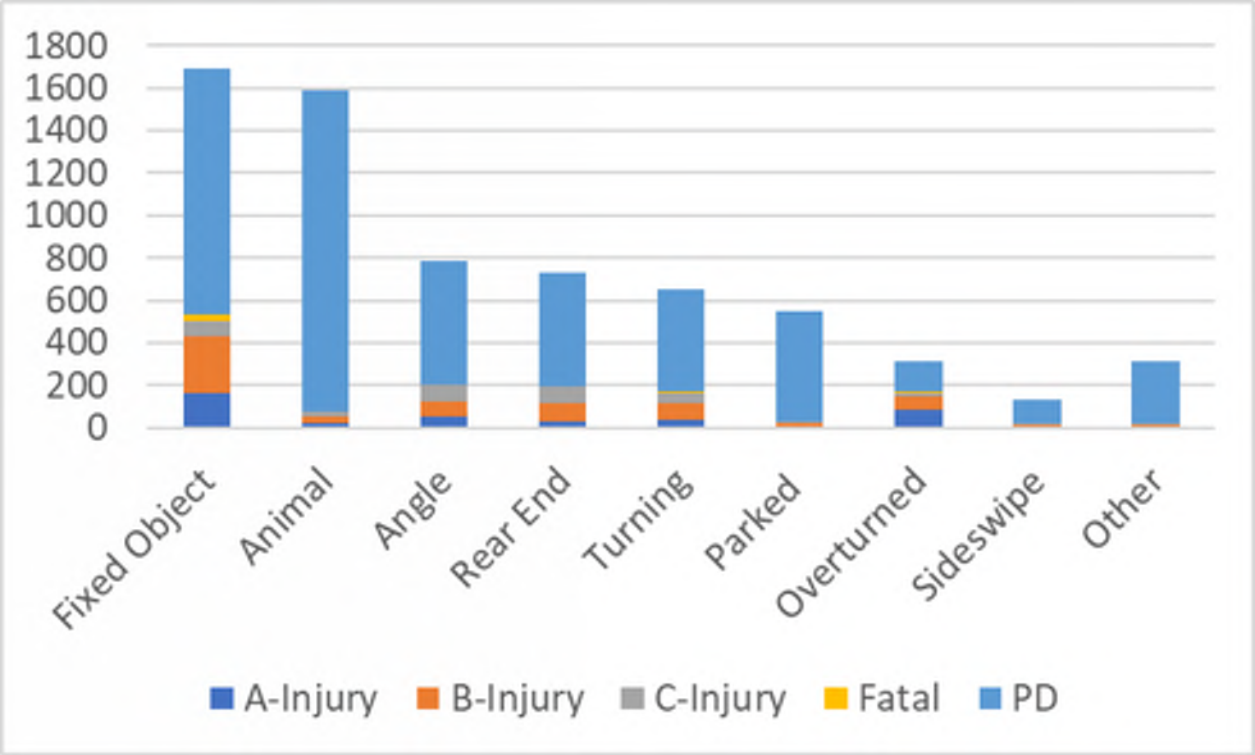



**Figure 5** shows the frequency and severity for all county roadways within the study area.

## FIGURE 5: COUNTY ROAD CRASH TYPE AND SEVERITY




Crash data was also analyzed to identify other patterns within the crash data that may assist in the identification of priority locations. **Figure 6** shows the frequency of crash type by County. All Counties have comparable total crash frequencies; however, it is noted that Jefferson County has a slightly higher number of overturned crashes compared to the other counties. Jackson has the highest number of Fixed Object crashes almost doubling other county frequencies.

## FIGURE 6: CRASH TYPE BY COUNTY

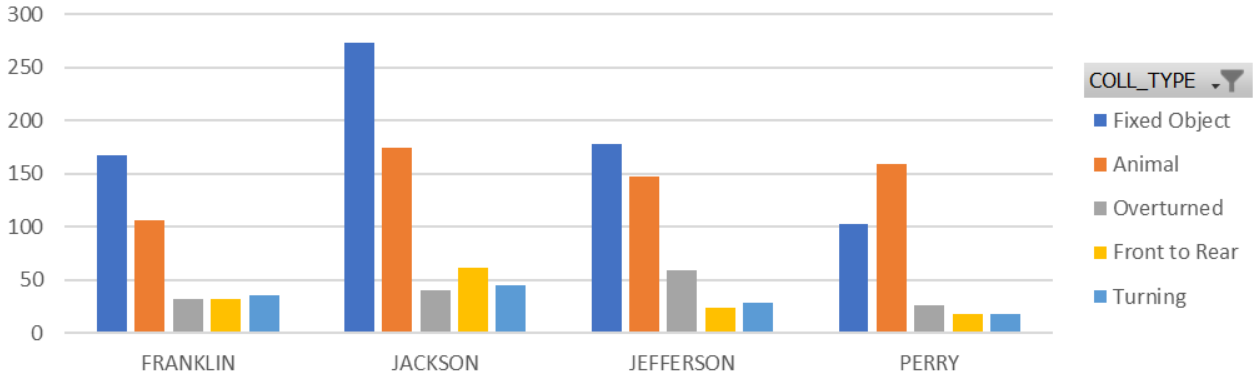
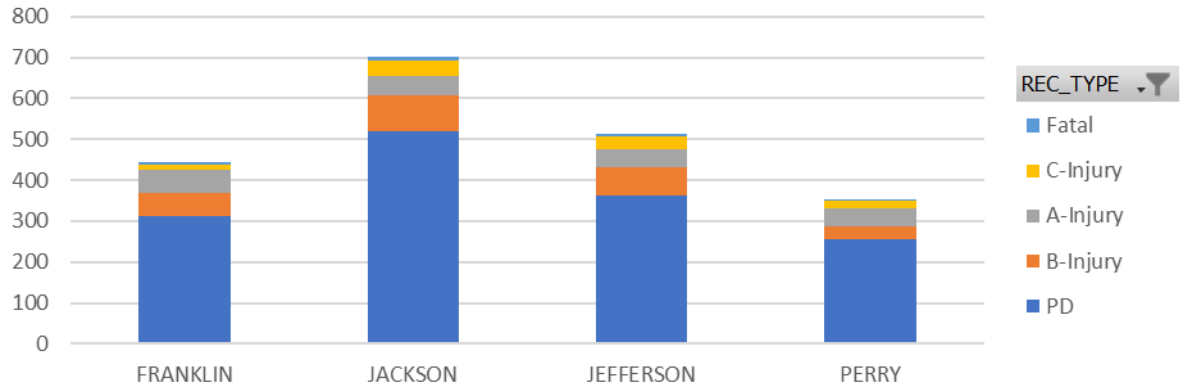


**Figure 7** shows the severity by county. As shown, Jackson and Jefferson have the highest severe injury rates which is likely attributed to the high frequency of fixed object and overturned crashes noted above.

FIGURE 7: CRASH SEVERITY BY COUNTY



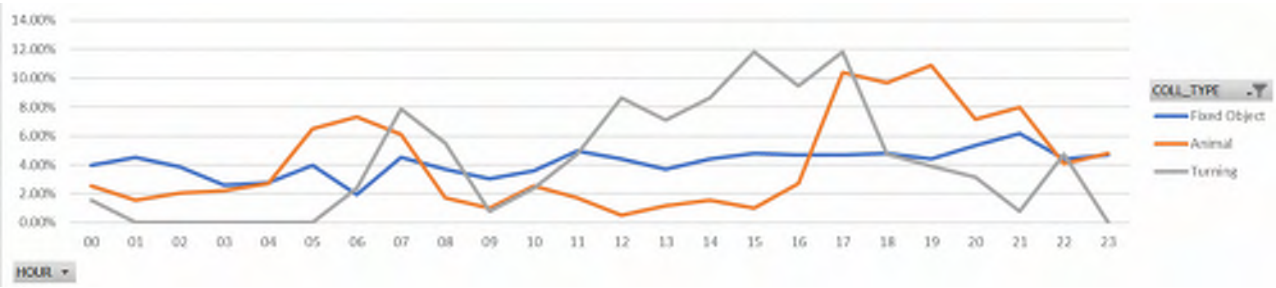

Crashes were also analyzed by time of day. For this analysis, crashes were categorized into 3 groups:

- Lane Departure which included fixed object, overturned, head on or opposite direction sideswipe
- Intersection Crashes which included rear end, angle and turning crashes
- Animal Crashes

**Figure 8** shows the frequency of crashes by time of day for these crashes. As can be seen, intersection crashes follow traditional volume peaks with a small peak in the AM, increasing throughout the day and the highest peak correlating with the PM peak period. Conversely, lane departure crashes peak before the AM peak and after the PM peak, likely associated with the increased speed that is possible in the off-peak hours. Animal crashes remain relatively consistent throughout all time periods with a small increase around the AM and PM peak periods, likely attributed to the increase in exposure.

Due to the prevalence of Animal crashes and the lack of engineering solutions to these types of crashes, Animal crashes were removed from the dataset in determining the priority safety locations.

FIGURE 8: CRASH FREQUENCY AND TYPE BY TIME OF DAY



## SITE SELECTION METHODOLOGY

A data driven approach was used to identify the priority locations for in depth review and the identification of safety countermeasures. As noted above, roadway segments were based on the underlying GIS layer segmentation. Segmentation is based on logical termini of the roadway section, such as intersections, or changes in typical section, functional classification etc. Lengths generally range from 0.5 miles to 1.5 miles in length.

An Equivalent Property Damage Only (EPDO) measure was used to rank each intersection and segment. The EPDO ranking addresses the need to focus on higher crash severities as opposed to locations with high crash frequency but low severity. The EPDO assigns a weight based on the crash severity. For the purposes of this analysis, a weight of 25 was used for fatal crashes and a weight of 10 for A Injury crashes. All other crashes were weighted as one (1). Equation 1 below shows the calculation to determine the EPDO which was used on all roadway segments and intersections. This methodology is consistent with the EPDO ranking used by the Illinois DOT Highway Safety Improvement Program (HSIP).

### EQUATION 1: EPDO CRASH CALCULATION

$$\frac{(25)*(\#\text{ of FA}) + 10*(\#\text{ of AA}) + (\#\text{ of BA}) + (\#\text{ of CA}) + (\#\text{ of PDO})}{\text{Total Crashes}}$$

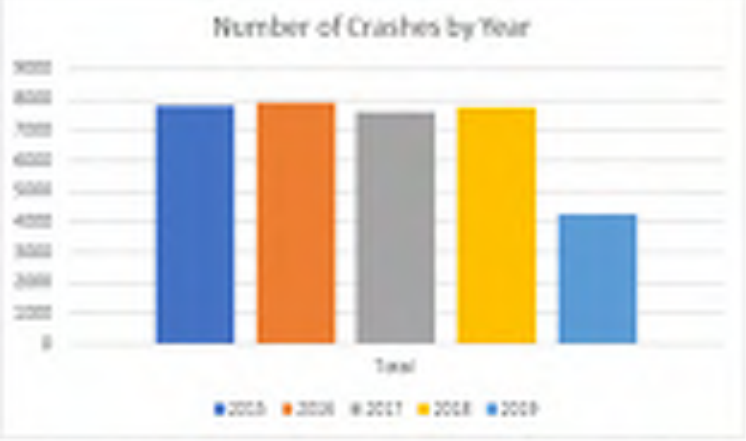
Where,

FA=Fatal crashes
AA=Crash where the most severe injury is an A injury
BA=Crash where the most severe injury is a B injury
CA=Crash where the most severe injury is a C injury
PDO=Property Damage Only

Once EPDO rankings were determined based on the crash data set, sites were also reviewed to determine if they met the Illinois DOT HSIP eligibility requirements. This requires having a minimum of 1 fatal crash or 2 Type A Injury crashes over a 5-year period. **Crashes were reviewed from the 5-year period from January 1, 2014 to December 31, 2018 for this analysis.**

Updated crash data including 2019 data was obtained by GEPDC staff from IDOT on March 17, 2020. The purpose was to use the most recent crash data when selecting priority safety locations. A closer review of the 2019 dataset found the typical number of annual crashes where about 40% lower for 2019 (see **Figure 9**) indicating the dataset was not complete.

### FIGURE 9: 2019 DATA COMPARION (3/17/20)



A similar inquiry about the status of 2019 crash data was made of IDOT on February 17, 2021. The 2019 and the 2020 were nearly complete at that time. Therefore, the 2014-2018 dataset was used for all analysis to prioritize the highway safety locations.

## HSIP PRIORITY LISTING

CMT provided the initial safety priority listing to GERPDC staff and the County Engineers on March 3, 2020. The top locations for each county were presented to the committee based on the data driven approach outlined above and initial field reviews of these sites. Based on input from the committee the priority list was refined. These adjustments were based on the following reasons.

1. Locations did not meet eligibility for IDOT HSIP funding assistance which requires a minimum of 1 fatal crash or 2 Type A injury crashes within the last 5-years.
2. Safety countermeasures were implemented within the last 3 years thus may have improved the safety performance in the future.
3. Locations initially identified as under local ownership were in fact under the jurisdiction of non-county agencies.

An updated priority list of safety locations was developed for each County that combined the Segment and Intersections lists into a consolidated Top 20 list. The top 4 locations were selected to conduct a more detailed evaluation of the crash data to determine if feasible countermeasures could be developed to receive IDOT Highway Safety Improvement Program (HSIP) funding. The top location from each county was the basis for a funding application for the IDOT FY2022 Highway Safety Improvement Program (HSIP) funding round.

The safety applications for FY2022 were submitted to IDOT on June 12, 2020. Counties were informed by IDOT of the status of the safety application on August 21, 2020. The following applications were successful in securing funding for construction:

**Perry County.** The project, identified by IDOT as HSIP #202012024, involves paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs along Pyatt Cutler Road. Included in this approval are the improvements outlined in the supplemental 1 and 2 packages included in the application (mile 00.00 – 12.80). The federal HSIP commitment for this project will not exceed $2,268,066. See **Appendix 01 PER Pyatt Culter** for additional information.

**Jackson County.** The project, identified by IDOT as HSIP #202012019, involves re-profiling railroad crossings within or near horizontal curves, paved shoulders with longitudinal rumble strips, and curve warning signs along North Marion Street between Glade Lane and Fisher Street. Included in this approval is the combined Alternative 1 and Alternative 2 proposals submitted as part of the application package. The federal HSIP commitment for this project will not exceed $644,022. See Appendix 01 JAC N. Marion Ext for additional information.

**Jefferson County.** The project, identified by IDOT as HSIP #202012017, involves paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs along Dix Irvington Road from US 51 to 0.5 Miles east of Copple Lane. IDOT prefers the project to be continuous along Dix Irvington Road thus additional funding is provided to complete safety improvements between the two segments outlined in the application. The federal HSIP

commitment for this project will not exceed $1,616,009. See **Appendix 01 JEF Dix Irvington** for additional information.

**Tables 1-4** show the priority list used to select priority locations for safety applications for each county. The priority lists are color coded to represent the information:

| | |
|---|---|
| | HSIP eligible locations |
| | FY2022 safety funding award |
| | FY2023 safety funding application |
| | non-HSIP eligible locations |

A similar process was applied when selecting priority locations for safety applications for the IDOT FY 2023 Highway Safety Improvement Program (HSIP) funding round. Safety data used for the second round of safety applications were due May 7, 2021 and were based on 2015-2019 safety data. The 2019 dataset was complete to perform detailed safety analyses at the project level. Preparation of a safety application may not have resulted in the submission of the application to IDOT for various reason including other safety priorities of the county at the time applications were due. For example, the N. Marion Street application was initially prepared in 2019 but was not submitted to IDOT until June 2020.

See the following appendix sections for those studies and applications that were developed for the FY2023 round:

**Appendix 02 PER Greens Mkt**

**Appendix 02 JAC Airport**

**Appendix 02 JEF Richview**

**Appendix 02 FRA Akin Blacktop**

Final scoring of the FY2023 applications by IDOT have not been received at the time of this report.

This safety data was used to identify potential safety countermeasures based on the FHWA's Proven Safety Countermeasures, the Highway Safety Manual, and the Manual on Uniform Traffic Control Devices (MUTCD). Countermeasures were also developed with a focus on low-cost safety measures such as signing and striping. However, where appropriate or necessary higher cost countermeasure may be identified, if warranted by the frequency and severity of the safety performance issue. The appendix sections include the detailed studies and applications resulting from the analysis outlined above.

## TABLE 1: PRIORITY HSIP LOCATIONS (PERRY COUNTY)

| RANK | ROAD_NAME | BEG_STA | END_STA | AADT | JUR_TYPE | TWP | Fatal | A Injury | B or C Injury | PDO | EPDO | HSIP Eligible | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | COUNTY LINE RD | 6.48 | 7.48 | 2100 | 6 | CO UNIT RD | 0 | 3 | 8 | 7 | 45 | Yes | Randolph Co maintenance |
| 2 | E TAMAROA RD | 0.86 | 2.63 | 275 | 3 | CO UNIT RD | 1 | 1 | 0 | 1 | 36 | Yes | Rank #2 |
| 2 | WHITE WALNUT RD | 5.26 | 6.14 | 850 | 3 | CO UNIT RD | 1 | 1 | 0 | 1 | 36 | Yes | Rank #3 |
| 4 | COUNTY LINE RD | 9.49 | 10.92 | 3200 | 6 | CO UNIT RD | 0 | 2 | 3 | 9 | 32 | Yes | Randolph Co maintenance |
| 5 | CUTLER-TRICO RD | 0 | 2 | 650 | 9 | CO UNIT RD | 0 | 2 | 1 | 6 | 27 | Yes | Rank #4. Location includes Cutlre-Trico Rd/ Pyatt-Cutler Rd intersection (Int Rank #3) and Cutler-Trico Rd/ School St (Int Rank #18) |
| 5 | PYATT-CUTLER RD | 8.51 | 12.47 | 1650 | 3 | CO UNIT RD | 0 | 2 | 3 | 4 | 27 | Yes | Rank #1. |
| 5 | GREENS MARKET RD | 2.24 | 3.51 | 450 | 9 | CO UNIT RD | 1 | 0 | 1 | 1 | 27 | Yes | Rank #5. Location includes Kathleen Rd/ Greens Market Rd (Int Rank #1). Combine with Segment #11. |
| 8 | HOLLYHOCK RD | 1.28 | 2.25 | 75 | 9 | CO UNIT RD | 1 | 0 | 0 | 0 | 25 | Yes | Rank #6. |
| 8 | ROBIN RD | 1.47 | 2.33 | 75 | 9 | CO UNIT RD | 1 | 0 | 0 | 0 | 25 | Yes | Rank #7. |
| 8 | WHITE TAIL RD | 2.28 | 4.01 | 100 | 9 | CO UNIT RD | 1 | 0 | 0 | 0 | 25 | Yes | Rank #8. |
| 11 | GREENS MARKET RD | 2.75 | 3.2 | 1000 | 3 | CO UNIT RD | 0 | 2 | 0 | 1 | 21 | Yes | Combine with Segment #5. Location includes Greens Market Rd/ Wells St Rd (Int Rank #4). |
| 11 | E PARK ST RD | 0.5 | 2.45 | 1000 | 3 | CO UNIT RD | 0 | 1 | 3 | 8 | 21 | No | |
| 13 | REESES HILL RD | 0 | 1.04 | 200 | 9 | CO UNIT RD | 0 | 1 | 1 | 4 | 15 | No | |
| 13 | BETHEL CHURCH RD | 3.29 | 4.4 | 275 | 9 | CO UNIT RD | 0 | 1 | 1 | 4 | 15 | No | |
| 13 | WELLS ST RD | 0 | 1.53 | 450 | 3 | CO UNIT RD | 0 | 1 | 2 | 3 | 15 | No | |
| 16 | NASHVILLE RD | 0.44 | 1.79 | 1000 | 3 | CO UNIT RD | 0 | 1 | 0 | 4 | 14 | No | |
| 17 | TODDS MILL RD | 0 | 1.74 | 350 | 3 | CO UNIT RD | 0 | 1 | 0 | 2 | 12 | No | |
| 17 | PYATT-CUTLER RD | 2.59 | 5.22 | 1350 | 3 | CO UNIT RD | 0 | 1 | 1 | 1 | 12 | No | |
| 17 | NASHVILLE RD | 0.07 | 0.44 | 1000 | 3 | CO UNIT RD | 0 | 1 | 1 | 1 | 12 | No | |
| 17 | SPRUCE RD | 0 | 1.04 | 0 | 9 | CO UNIT RD | 0 | 1 | 2 | 0 | 12 | No | |
| 17 | OLD DU QUOIN RD | 0.29 | 1.27 | 1050 | 3 | CO UNIT RD | 0 | 1 | 2 | 0 | 12 | No | |
| 17 | PANDA BEAR RD | 8.05 | 10.35 | 150 | 9 | CO UNIT RD | 0 | 1 | 1 | 1 | 12 | No | |

## TABLE 2: PRIORITY HSIP LOCATIONS (JACKSON COUNTY)

| RANK | ROAD_NAME | BEG_STA | END_STA | AADT | JUR_ TYPE | TOWNSHIP | Fatal | A Injury | B or C Injury | PDO | EPDO | HSIP Eligible | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TOWN CREEK RD | 3.04 | 4.42 | 1000 | 3 | SAND RIDGE | 2 | 1 | 2 | 7 | 69 | Yes | Rank #1. Location includes Town Creek Rd/ Pond Ridge Rd intersection (Int Rank #4). Combine with Town Creek Rd (Seg Rank #19). |
| 2 | E PLEASANT HILL RD | 1.61 | 2.33 | 5500 | 9 | CARBONDALE | 1 | 2 | 6 | 8 | 59 | Yes | previously studied 2019. Location includes E. Pleasant Hill/ Warren Rd (Int Rank #2) and E. Pleasant Hill/ Wall St (Int Rank #7) |
| | BRICK PLANT ROAD | | | | | | | | | | | | |
| 3 | COUNTRY CLUB RD | 2.04 | 3.1 | 1900 | 9 | MURPHYSBORO | 0 | 4 | 6 | 7 | 53 | Yes | Rank #4: Location includes Chautauqua Rd/ Country Club Rd intersection (Int Rank #9) |
| 4 | AVA RD | 5.49 | 7.06 | 2750 | 3 | LEVAN | 1 | 1 | 3 | 9 | 47 | Yes | Rank #2. Location includes the following intersections with Ava Road: Wece Ln (Int Rank #3), McLaughlin/ Dunivan Rd (Int Rank #5), and Mudline Rd (Int Rank #12). |
| 5 | AIRPORT RD | 2.03 | 2.99 | 1450 | 9 | CARBONDALE | 1 | 1 | 2 | 4 | 41 | Yes | Rank #5. |
| 6 | ROYALTON RD | 0.57 | 4.25 | 1550 | 3 | ELK | 1 | 1 | 2 | 1 | 38 | Yes | Rank #6. |
| 7 | CHAUTAUQUA RD | 0 | 1.79 | 800 | 9 | MURPHYSBORO | 1 | 0 | 0 | 6 | 31 | Yes | Rank #7. |
| 7 | VAUGHN RD | 0 | 0.54 | 750 | 9 | DESOTO | 1 | 0 | 0 | 5 | 30 | Yes | Previously studied 2019. |
| 9 | POWER PLANT RD | 0.44 | 1.72 | 175 | 9 | GRAND TOWER | 1 | 0 | 1 | 1 | 27 | Yes | Rank #8. |
| 9 | CEDAR CREEK RD | 0.14 | 0.71 | 225 | 3 | MAKANDA | 1 | 0 | 1 | 1 | 27 | Yes | Rank #9. |
| 11 | N MARION ST EXT | 0.62 | 1.14 | 400 | 3 | CARBONDALE | 1 | 0 | 1 | 1 | 27 | Yes | Prevously studied 2019. |
| 11 | NEUNERT RD | 7.71 | 8.55 | 225 | 3 | FOUNTAIN BLUFF | 1 | 0 | 0 | 1 | 26 | Yes | Rank #10. |
| 11 | ASH RD | 0 | 0.25 | 0 | 9 | LEVAN | 1 | 0 | 0 | 0 | 25 | Yes | |
| 11 | SARENSEN RD | 0.2 | 0.22 | 0 | 9 | SAND RIDGE | 1 | 0 | 0 | 0 | 25 | Yes | |
| 15 | LOVERS LA | 4.02 | 4.79 | 50 | 9 | SAND RIDGE | 1 | 0 | 0 | 0 | 25 | Yes | |
| 16 | UNION SCHOOL RD | 0.5 | 1.26 | 250 | 9 | BRADLEY | 1 | 0 | 0 | 0 | 25 | Yes | |
| 16 | MARLBORO RD | 0.54 | 2.72 | 125 | 9 | ORA | 0 | 2 | 1 | 2 | 23 | Yes | |
| 18 | DALLAS RD | 0.7 | 1.29 | 900 | 9 | SOMERSET | 0 | 2 | 1 | 1 | 22 | Yes | |
| 19 | TOWN CREEK RD | 2.6 | 3.03 | 1000 | 3 | SAND RIDGE | 0 | 2 | 0 | 1 | 21 | Yes | Combine with Town Creek Rd segment #1 |
| 19 | PUMP HOUSE RD | 1.02 | 2.2 | 450 | 9 | MURPHYSBORO | 0 | 2 | 0 | 1 | 21 | Yes | |
| 19 | DUNIVAN RD | 4.09 | 4.87 | 900 | 9 | SOMERSET | 0 | 2 | 1 | 0 | 21 | Yes | |

## TABLE 3: PRIORITY HSIP LOCATIONS (JEFFERSON COUNTY)

| RANK | ROAD_NAME | BEG_STA | END_STA | AADT | JUR_ TYPE | TOWNSHIP | Fatal | A Injury | B or C Injury | PDO | EPDO | HSIP Eligible | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | E RICHVIEW RD | 6.48 | 7.34 | 1600 | 3 | SHILOH | 1 | 2 | 3 | 2 | 50 | Yes | Rank #1. Location includes E. Richview Rd/ N. Woodlawn Rd (Int Rank #7) |
| 2 | N ABBOTT LA | 9.94 | 10.77 | 225 | 3 | MOORES PRAIRIE | 0 | 3 | 3 | 4 | 37 | Yes | Rank #2. |
| 3 | E DIX-IRVINGTON RD | 0.25 | 2.53 | 1950 | 3 | GRAND PRAIRIE | 0 | 3 | 1 | 5 | 36 | Yes | Rank #4. Location combined with Segment #6 and #10. |
| 4 | NASON RD | 0 | 1.16 | 500 | 3 | ELK PRAIRIE | 1 | 0 | 0 | 4 | 29 | Yes | Rank #3. Location includes Nason Rd/ E. Sienna Rd intersection (Int Rank #1) |
| 5 | N HALL LA | 0 | 0.57 | 850 | 3 | CASNER | 0 | 2 | 1 | 6 | 27 | Yes | Rank #5. Location includes Hall Rd/ Chopin Rd intersection (Int Rank #10) |
| 6 | E DIX-IRVINGTON RD | 2.76 | 5.28 | 1000 | 3 | GRAND PRAIRIE | 0 | 2 | 2 | 4 | 26 | Yes | Combine with Segment #3. Location includes Dix-Irvington Rd/ Krupp Rd intersection (Int Rank #10). |
| 6 | E STAGECOACH RD | 0 | 1.47 | 125 | 9 | MCCLELLAN | 1 | 0 | 0 | 1 | 26 | Yes | |
| 8 | N AUBURN LA | 0 | 0.28 | 25 | 9 | WEBBER | 1 | 0 | 0 | 0 | 25 | Yes | Rank #7. Location includes Sixth Rd/ Auburn Ln intersection (Int Rank #2) |
| 8 | N PRESLEY LA | 0.69 | 1.47 | 100 | 9 | MCCLELLAN | 1 | 0 | 0 | 0 | 25 | Yes | |
| 10 | LYNCHBERG RD | 3.15 | 4.66 | 175 | 9 | PENDLETON | 0 | 2 | 1 | 2 | 23 | Yes | |
| 10 | LYNCHBERG RD | 1.91 | 3.15 | 375 | 9 | DODDS | 0 | 2 | 1 | 2 | 23 | Yes | |
| 10 | E DIX-IRVINGTON RD | 6.04 | 6.58 | 1400 | 3 | ROME | 0 | 2 | 1 | 2 | 23 | Yes | Combined with Seg #3. Location includes Dix-Irvington Rd/ Palmer Rd intersection (Int Rank #15). |
| 10 | N TOLLE LA | 7.24 | 7.73 | 2400 | 3 | MOUNT VERNON | 0 | 2 | 0 | 3 | 23 | Yes | Rank #6. Location includes Pump House Ln/ Tolle Rd intersection (Int Rank #2) and Loyola Rd/ Tolle Rd intersection (Int Rank #15). |
| 14 | N RICHVIEW LA | 2.54 | 4.2 | 1250 | 3 | GRAND PRAIRIE | 0 | 2 | 0 | 2 | 22 | Yes | |
| 15 | E IDLEWOOD RD | 1.73 | 3 | 325 | 9 | MOUNT VERNON | 0 | 2 | 0 | 1 | 21 | Yes | |
| 15 | N SPRING GARDEN LA | 2.04 | 3.68 | 150 | 9 | SPRING GARDEN | 0 | 2 | 1 | 0 | 21 | Yes | |
| 17 | N MILLER LAKE LA | 3.21 | 4.49 | 600 | 3 | MOUNT VERNON | 0 | 1 | 1 | 7 | 18 | No | |
| 18 | WOODLAND DR | 0.88 | 1.73 | 600 | 3 | DODDS | 0 | 1 | 2 | 4 | 16 | No | |
| 18 | N BOYD LA | 1.91 | 3.82 | 900 | 3 | ROME | 0 | 1 | 4 | 2 | 16 | No | |
| 20 | E RICHVIEW RD | 8.68 | 10.38 | 2350 | 3 | SHILOH | 0 | 1 | 0 | 5 | 15 | No | |

## TABLE 4: PRIORITY HSIP LOCATIONS (FRANKLIN COUNTY)

| RANK | ROAD_NAME | BEG_STA | END_STA | AADT | JUR_ TYPE | TOWNSHIP | Fatal | A Injury | B or C Injury | PDO | EPDO | HSIP Eligible | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AKIN BLACKTOP | 2.65 | 5.43 | 750 | 3 | EASTERN | 2 | 1 | 2 | 8 | 70 | Yes | Rank #4. Location includes Akin Blacktop/ Bessie Rd intersection (Int Rank #2) |
| 2 | N THOMPSONVILLE RD | 9.44 | 10.57 | 1200 | 3 | NORTHERN | 0 | 4 | 2 | 5 | 47 | Yes | Rank #6. Segment only crashes. Confirm if intersection related crashes |
| 3 | ORIENT RD. | 0 | 0.16 | 1500 | 3 | DENNING | 1 | 2 | 0 | 1 | 46 | Yes | Rank #1. Location includes the Orient/Carr intersection (Int Rank #3) and the Orient/Lincoln intersection (Int Rank #8) |
| 4 | YELLOW BANKS RD | 6.45 | 6.75 | 850 | 3 | DENNING | 1 | 2 | 0 | 0 | 45 | Yes | Rank #2. Location includes Akin Blacktop/ Bessie Rd intersection (Int Rank #2) |
|  | ORIENT BLACKTOP & YELLOW BANKS RD |  |  |  |  |  | 0 | 4 | 0 | 2 | 42 | Yes | Rank #3. |
| 6 | PARK STREET RD | 6.34 | 8.36 | 1150 | 3 | BROWNING | 0 | 3 | 0 | 5 | 35 | Yes | Rank #7. Location includes Park Street Rd/ Water Rd inttersection (Int Rank #18) |
| 7 | NUMBER 9 BLACKTOP | 3.47 | 6.56 | 375 | 3 | CAVE | 0 | 3 | 1 | 3 | 34 | Yes | Rank #8. |
| 8 | MCLEANSBORO RD | 0.05 | 0.9 | 1200 | 3 | BENTON | 1 | 0 | 0 | 4 | 29 | Yes |  |
| 8 | N THOMPSONVILLE RD | 12.66 | 14.8 | 1200 | 3 | EASTERN | 1 | 0 | 1 | 3 | 29 | Yes | Rank #5. Location includes Knob Prairie/ Thompsonville Rd intersection (Int Rank #4) |
| 9 | AKIN BLACKTOP | 0 | 2.41 | 950 | 3 | BENTON | 0 | 1 | 1 | 15 | 26 | No |  |
| 9 | JEFFERSON ST | 0 | 0.5 | 700 | 9 | TYRONE | 1 | 0 | 0 | 1 | 26 | Yes |  |
| 11 | DEERING RD | 1.91 | 2.26 | 1250 | 3 | BENTON | 0 | 2 | 1 | 4 | 25 | Yes | Rank #9. Location includes Deering Rd/ Ruembler Crossing Rd intersection (Int Rank #4) |
| 12 | LOGAN RD | 3.81 | 4.02 | 25 | 9 | FRANKFORT | 1 | 0 | 0 | 0 | 25 | Yes |  |
| 12 | ROAD NUMBER 10 | 0 | 0.57 | 0 | 9 | BENTON | 1 | 0 | 0 | 0 | 25 | Yes |  |
| 12 | FRANKLIN AVE | 0 | 0.5 | 325 | 9 | DENNING | 1 | 0 | 0 | 0 | 25 | Yes |  |
| 15 | CREEK NATION BLKTOP | 1.78 | 3.05 | 650 | 3 | SIX MILE | 0 | 2 | 1 | 1 | 22 | Yes |  |
| 16 | WEBB HILL RD | 0 | 1.78 | 300 | 3 | NORTHERN | 0 | 2 | 0 | 1 | 21 | Yes | Rank #10. Location includes Webb Hill Rd/ Webb Hill Rd/ Ewing Rd (Int Rank #8) |
| 17 | CARLYLE RD | 0.82 | 1.77 | 450 | 3 | CAVE | 0 | 2 | 1 | 0 | 21 | Yes |  |
| 18 | EWING RD | 0.3 | 0.47 | 2100 | 3 | EWING | 0 | 2 | 0 | 0 | 20 | Yes |  |
| 19 | DEERING RD | 2.26 | 3.7 | 1250 | 3 | FRANKFORT | 0 | 1 | 4 | 3 | 17 | **No** |  |
| 19 | DEERING RD | 0.92 | 1.91 | 1200 | 3 | BENTON | 0 | 1 | 3 | 4 | 17 | **No** |  |

## RAILROAD CRASH DATA

Railroad Crash Data for the entire study area was derived from the Federal Rail Administration's (FRA) Crossing Inventory and Accident Report Database1. The FRA's database is a national collection of all crash occurrences between a train and vehicle at highway-rail crossings and is updated quarterly. U.S. Federal Regulation requires all rail accidents/incidents to be reported to the FRA. Crash data includes crashes occurring between January 1990. The crash data contains the following information required to identify and analyze crash records:

[1] As of February 2020

- Crossing Location
- Crash Date/Time
- Reporting Railroad
- Personal Injury Status (Fatal/Injury/Property Damage)
- Vehicle Type, Speed & Direction
- Air Temperature, Visibility & Weather present
- Train Speed
- Number of Train Locomotives & Cars
- Warning Devices Present
- Observed Cause of Crash

Crashes in each study jurisdiction (Franklin, Jackson, Jefferson & Perry Counties) were categorized by crash severity, and Highway-Rail Grade Crossings were ranked based on the number of crash occurrences. Crossing locations in municipal or township jurisdictions were excluded from the study and those with a greater frequency of crash occurrences were elevated on the list. Crossings with high crash frequency were considered to have enhanced safety concerns, with a total of 10 crossings being further analyzed for existing safety conditions. In certain cases where crossings with crash history have had safety enhancements addresses, additional grade crossings were added to the priority analysis. **Figure 10** shows the location of all highway-rail crossings in the study area – with the top priority rail crossings highlighted in red.

Roadway Crossing data was retrieved from the FRA's Highway-Rail Crossing Inventory Database, providing data such as traffic volumes, speeds, geometry, warning devices, and crossing type. This data was utilized to derive the IDOT Hazard Index Rating and Crash Prediction Models to prioritize the need for crossing safety enhancements.

## RAIL CRASH ANALYSIS

Rail crash analysis was conducted to identify priority rail locations of the top 10 highway-rail crossings with high crash frequencies. **Figure 11** shows all rail accidents in the Franklin, Jackson, Jefferson & Perry County's roadway jurisdictions since 1990 and corresponding average crash prediction. Crashes occurring previous to 1990 were not included in this analysis, as crossing conditions have likely changed since many occurred.

Rail crashes occur far less frequently than roadway vehicle crashes, and often result in serious injuries or fatalities. Due to this, any vehicle-train crash is considered significant. Crossings with crash history were analyzed based on crash frequency, date of occurrence, and resulting injury status.

FIGURE 10: AT-GRADE RAIL CROSSINGS WITHIN STUDY AREA (COUNTY JURISDICTION)

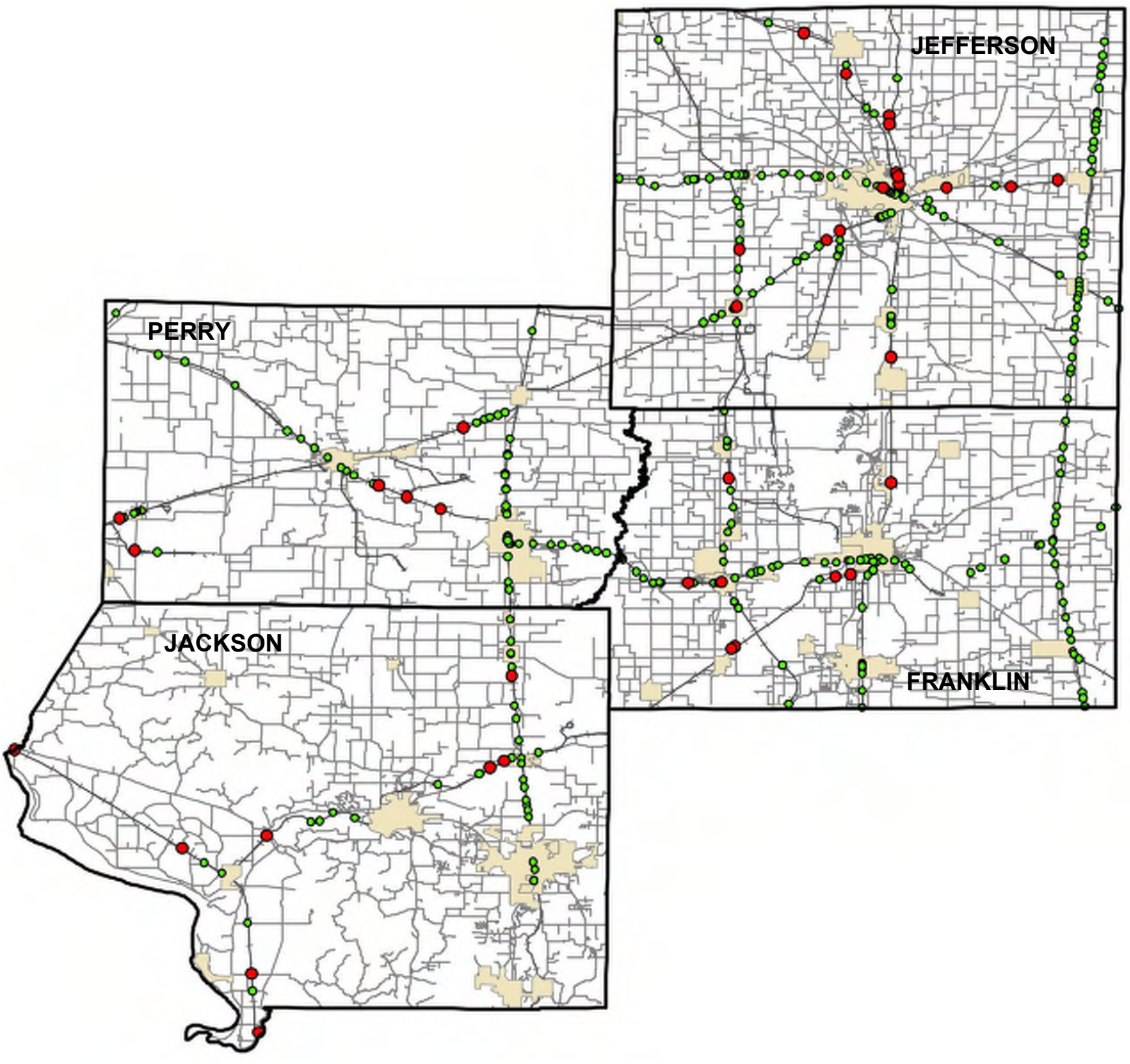
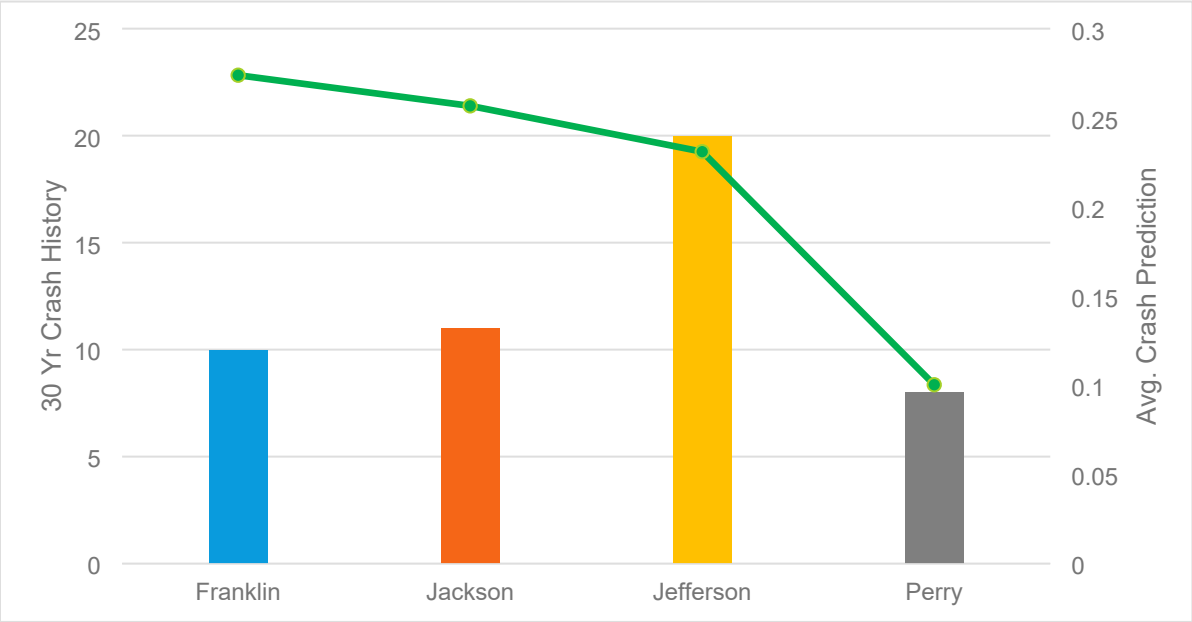
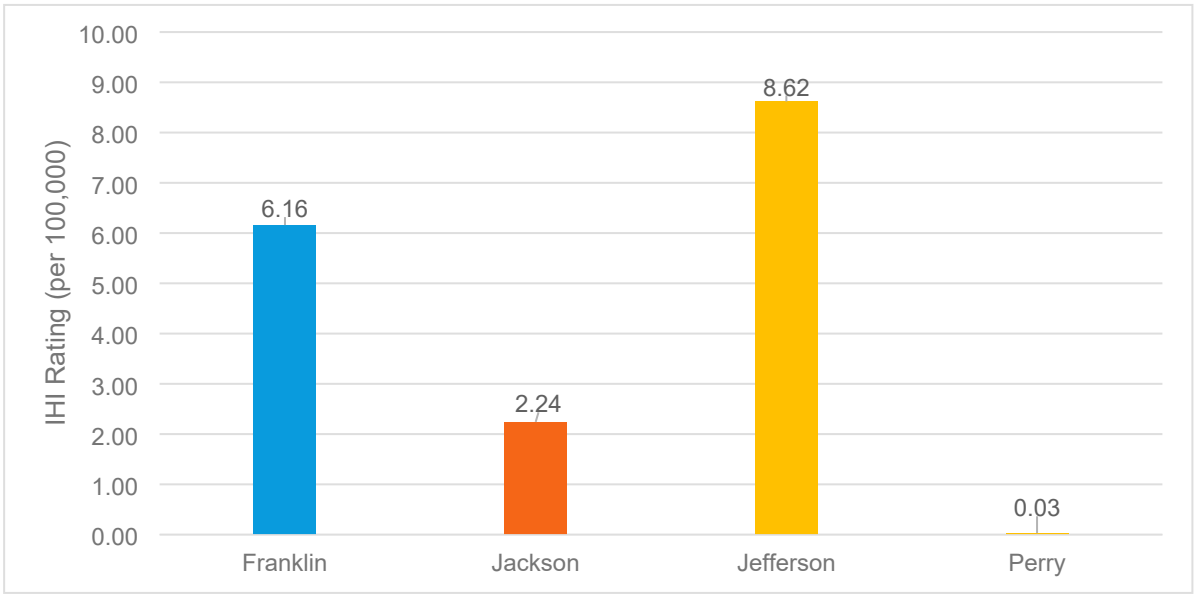


FIGURE 11: RAIL CRASH FREQUENCY & AVG. CRASH PREDICTION BY COUNTY




The rail Crossing safety analysis was performed based on the USDOT Highway-Rail Grade Crossing Handbook (3rd Edition) and utilizes the USDOT Crash Prediction formulas. Additionally, the Illinois Hazard Index (IHI) Rating was performed for each of the 10 crossings. The IHI formula results in a numeric value that reflects the generalized safety of the highway-rail grade crossing – quantifying the exposure hazards between a train and vehicle. The higher the IHI, the greater exposure/hazard risk exists whereas the lower the rating results in a lesser exposure/hazard risk. **Figure 12** shows the average IHI Rating in each county.

FIGURE 12: AVERAGE ILLINOIS HAZARD INDEX RATING BY COUNTY



## SITE SELECTION METHODOLOGY

The objective of the analysis was to identify crossings which have had previous vehicle-train crashes and/or those that have significant safety concerns present. A data-driven approach was taken to identify priority locations where a further in-depth review would occur to identify safety countermeasures. The analysis often resulted in crossings with minimal warning devices, high roadway traffic volumes, and/or high rail traffic volumes to have a higher priority ranking.

The initial rail crossing priority ranking was shared with SIMPO and County staff in November 2020, when crossings were identified and recommended to be included in an Illinois Commerce Commission (ICC) Grade Crossing Protection Fund (GCPF) application for funding. Adjustments were made based on conversations with local county staff and the priority list was refined. Adjustments were based on the following reasons:

1. ICC funding previously secured for crossing improvements and will be implemented within the next 5 years.
2. The railroad recently (since study began) upgraded and installed warning devices.
3. Initial priority locations were in fact under an IDOT or municipal jurisdiction.

ICC GCPF applications were developed and submitted for one (1) crossing per county, with the exception of Franklin County which two (2) applications were submitted. Funding for safety countermeasures at railroad grade crossings included: warning device upgrades, crossing panel replacement, roadway widening, roadway realignment, parallel roadway turn lanes, pavement marking, and signing.

Upon review of funding applications submitted, ICC GCPF funding was successfully secured & programed into the ICC's 5-Year Crossing Safety Improvement Plan (FY 2022-2026) for five (5) crossings:

1. Auburn Lane | DOT #724755V | M.P. 95.25 (Jefferson County – Bluford)
2. Old DuQuoin Road | DOT #293679L | M.P. 73.24 (Perry County – DuQuoin)
3. Eaton Road | DOT # 295225U | M.P. 101.90 (Franklin County – Thompsonville)
4. Valier Lake Road | DOT #069258L | M.P. 157.01 (Franklin County – Valier)
5. Falcon Lane | DOT #724756C | M.P. 94.76 (Jefferson County – Bluford)

Additionally, while a funding request/application was not submitted, after reviewing all applications and county prioritization lists, the ICC is recommending an additional nearby crossing to Auburn Lane, Falcon Lane (724756C), to be programmed in the 5-Year Plan for active lights and gates safety improvements.

## FINAL PRIORITY LISTING

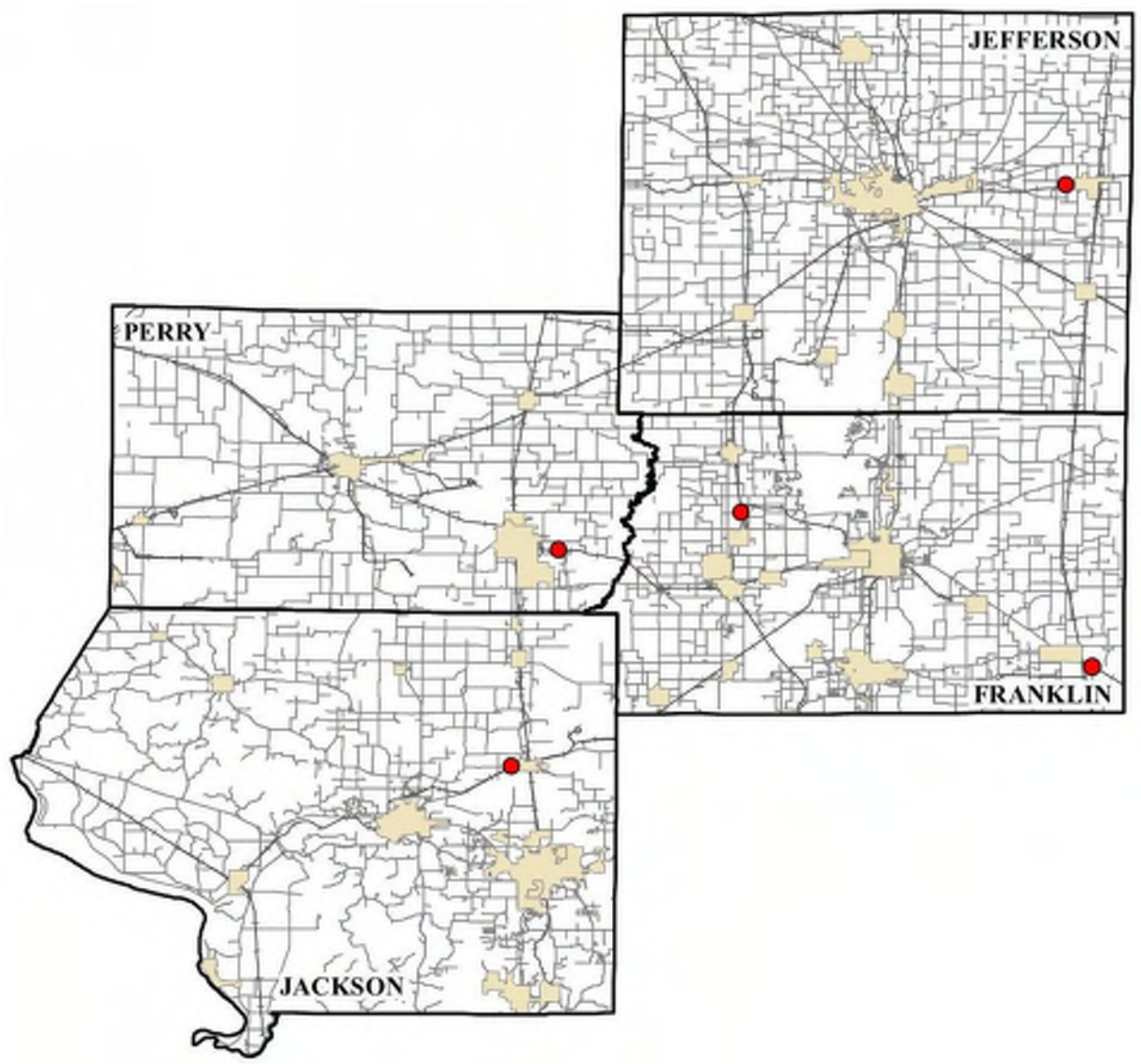
Based on the methodology presented above, rail crossings priorities were identified per county. **Table 5** and **Figure 13** shows the highest priorities, and those submitted for ICC GCPF funding requests. **Tables 6 – 9** show the priority list of crossings identified in each crossing. As future funding opportunities become available, these lists are designed to be utilized as a reference for safety enhancement recommendations. Improvements of at-grade rail crossings often consist of warning device upgrades (Automatic Flashing Lights & gates), roadway approach widening & profile adjustments, pavement marking, and signing.

## TABLE 5: TOP PRIORITIZED CROSSINGS & ICC GCPF FUNDING SUBMITTALS

| Jurisdiction | Road Name | USDOT # | RR | RR M.P. | Current Protection | Avg. Daily Traffic |
|---|---|---|---|---|---|---|
| Franklin | Eaton Road | 295225U | CN | 101.9 | Crossbucks | 25 |
| | Valier Lake Road | 069258L | BNSF | 157.01 | Crossbucks | 25 |
| Jackson | Crane Road | 431060Y | UP | 321.02 | Gates | 200 |
| Jefferson | Auburn Lane | 724755V | NS | 95.25 | Crossbucks | 25 |
| Perry | Old DuQuoin Road | 293679L | CN | 73.24 | Crossbucks | 700 |

Successful ICC Funding Programmed (FY 2022-2026)

## FIGURE 13: LOCATION OF HIGHEST PRIORITY CROSSINGS



## TABLE 6: RAIL CROSSING PRIORITIES (FRANKLIN COUNTY)

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | St. Joseph Rd. (Benton) | 431091X | UP | 300.65 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 |
| 1 | Linn Rd. (Benton) | 431095A | UP | 299.92 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 |
| 3 | Dry Road (Ziegler) | 431086B | UP | 307.35 | Flashing Lights | 100 | 1 | 0.4813 | 0.0678 | 0.1449 | 332,325 |
| 4 | Creek Nation Blacktop (Zeigler) | 431085U | UP | 307.57 | Flashing Lights | 75 | 1 | 0.4602 | 0.0648 | 0.1349 | 157,711 |
| 5 | Akin Blacktop (Logan) | 295232E | CN | 96.74 | Flashing Lights | 950 | 0 | 0.3729 | 0.3729 | 0.3729 | 1,240,307 |
| 6 | Vine Road (Sesser) | 069252V | BNSF | 155.23 | Flashing Lights | 75 | 2 | 0.2805 | 0.0272 | 0.0864 | 397 |
| 7 | River Road (Royalton) | 431077C | Mid America | 311.46 | Flashing Lights | 275 | 0 | 0.2543 | 0.2543 | 0.2543 | 11,720 |
| 8 | Lake Benton Rd (Whittington) | 167613S | UP | 293.55 | Gates | 200 | 1 | 0.2346 | 0.0327 | 0.0654 | 830,087 |
| 9 | Izaac Walton Rd (Valier) | 069260M | BNSF | 159.58 | Crossbucks | 650 | 0 | 0.2309 | 0.2309 | 0.2309 | 133,964 |
| 10 | Urbain Rd (Christopher) | 293700P | CN | 82.96 | Gates | 400 | 2 | 0.1922 | 0.0158 | 0.0602 | 64,749 |
| 11 | Bessie Road (Logan) | 295233L | CN | 96.9 | Flashing Lights | 150 | 0 | 0.1841 | 0.1841 | 0.1841 | 372 |
| 12 | West End Road (Thompsonville) | 295215N | CN | 71.32 | Flashing Lights | 25 | 0 | 0.1689 | 0.1689 | 0.1689 | 100 |
| 13 | Fairview Road (Christopher) | 293693G | CN | 80.7 | Gates | 125 | 1 | 0.1422 | 0.0117 | 0.0430 | 4,796 |
| 14 | Valier Lake Rd (Valier) | 069258L | BNSF | 157.01 | Crossbucks | 25 | 0 | 0.1030 | 0.1030 | 0.1030 | 29 |
| 15 | Baseline Road (Logan) | 295231X | CN | 96.64 | Crossbucks | 100 | 0 | 0.1014 | 0.1014 | 0.1014 | 163 |
| 16 | Eaton Road (Thompsonville) | 295225U | CN | 101.9 | Crossbucks | 25 | 0 | 0.0776 | 0.0776 | 0.0776 | 5 |
| | ICC Grade Crossing Improvement Funding Previously Secured | | | | | | | | | | |

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## TABLE 7: RAIL CROSSING PRIORITIES (JACKSON COUNTY)

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Levee Road (Jacob) | 436221J | UP | 71.66 | Gates | 175 | 2 | 0.3813 | 0.0555 | 0.1056 | 271,480 |
| 2 | Big Lake Rd (Jacob) | 436208V | UP | 81.7 | Gates | 50 | 1 | 0.2721 | 0.0462 | 0.0751 | 115,243 |
| 3 | Crane Rd (De Soto) | 431060Y | UP | 321.02 | Gates | 200 | 1 | 0.2718 | 0.0315 | 0.0820 | 1,071,561 |
| 4 | Hallidaboro Rd (Hallidaboro) | 295068D | CN | 296.8 | Gates | 300 | 1 | 0.2574 | 0.0364 | 0.0809 | 210,960 |
| 5 | Bowlby Road (De Soto) | 431059E | UP | 321.8 | Gates | 125 | 2 | 0.2451 | 0.0284 | 0.0739 | 58,447 |
| 6 | Lovers Lane (Grimsby) | 430978W | UP | 335.61 | Gates | 50 | 1 | 0.2288 | 0.0304 | 0.0643 | 5,771 |
| 7 | Howardton Rd (Grand Tower) | 445810X | UP | 90.6 | Gates | 25 | 1 | 0.1986 | 0.0345 | 0.0589 | 30,499 |
| 8 | Big Muddy Levee Rd (Grand Tower) | 445805B | UP | 94.19 | Gates | 25 | 2 | 0.1985 | 0.0296 | 0.0592 | 30,048 |
| | ICC Grade Crossing Improvement Funding Previously Secured | | | | | | | | | | |

## TABLE 8: RAIL CROSSING PRIORITIES (JEFFERSON COUNTY)

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | North St (Mt. Vernon) | 724772L | NS | 86.94 | Flashing Lights | 225 | 1 | 0.4424 | 0.0429 | 0.1363 | 117,937 |
| 2 | Tolle Rd (Mt. Vernon) | 724774A | NS | 86.21 | Gates | 1300 | 2 | 0.3300 | 0.0320 | 0.1017 | 6,045,910 |
| 3 | Wells Bypass (Mt. Vernon) | 431021H | UP | 121.57 | Gates | 3050 | 1 | 0.3258 | 0.0055 | 0.0840 | 2,736,753 |
| 4 | Idlewood Rd (Mt. Vernon) | 167748X | UP | 271.24 | Gates | 325 | 1 | 0.3230 | 0.0451 | 0.0974 | 2,920,247 |
| 5 | East Stagecoach Road (Waltonville) | 069232J | BNSF | 141.12 | Crossbucks | 125 | 2 | 0.3072 | 0.0298 | 0.0947 | 1,870 |
| 6 | Chestnut Ln (Opdyke) | 724762F | NS | 89.88 | Gates | 950 | 1 | 0.2873 | 0.0278 | 0.0885 | 1,778,837 |
| 7 | E Oakton Road (Mt. Vernon) | 167747R | UP | 271.75 | Gates | 150 | 2 | 0.2725 | 0.0380 | 0.0822 | 97,486 |
| 8 | Auburn Lane (Bluford) | 724755V | NS | 95.25 | Crossbucks | 25 | 2 | 0.2119 | 0.0205 | 0.0653 | 2,122 |
| 9 | Beal Rd (Dix) | 724806D | NS | 79.63 | Gates | 175 | 1 | 0.2088 | 0.0202 | 0.0643 | 33,500 |
| 10 | Stanford Ln (Bluford) | 724758R | NS | 92.94 | Gates | 150 | 1 | 0.2010 | 0.0195 | 0.0619 | 22,470 |
| 11 | Douthit Ln (Dix) | 724779J | NS | 75.98 | Gates | 125 | 1 | 0.1921 | 0.0186 | 0.0592 | 14,010 |
| 12 | Park Ave (Mt. Vernon) | 724773T | NS | 86.48 | Gates | 100 | 1 | 0.1815 | 0.0176 | 0.0559 | 7,441 |
| 13 | East Midnight Road (Bonnie) | 167602E | UP | 285.96 | Gates | 25 | 1 | 0.1767 | 0.0247 | 0.0533 | 3,796 |
| 14 | Dubois Rd (Waltonville) | 072320X | BNSF | 144.655 | Gates | 75 | 1 | 0.1323 | 0.0103 | 0.0371 | 280 |
| 15 | E Freesia Rd (Mt. Vernon) | 431022P | UP | 120.68 | Crossbucks | 175 | 1 | 0.0829 | 0.0058 | 0.0254 | 4,377 |
| 16 | Main St. (Mt. Vernon) | 915458F | EVWR | 407.81 | Crossbucks | 400 | 1 | 0.0199 | 0.0001 | 0.0061 | - |
| | ICC Grade Crossing Improvement Funding Previously Secured | | | | | | | | | | |

## TABLE 9: RAIL CROSSING PRIORITIES (PERRY COUNTY)

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Pick Road (Pinckneyville) | 296166X | CN | 63.31 | Gates | 125 | 2 | 0.1508 | 0.0171 | 0.0463 | 3,499 |
| 2 | Old Du Quoin Road (Du Quoin) | 293679L | CN | 73.24 | Crossbucks | 700 | 0 | 0.1415 | 0.1415 | 0.1415 | 26,367 |
| 3 | Valier Carpet Rd (Tamaroa) | 430969X | UP | 99.28 | Crossbucks | 100 | 1 | 0.1048 | 0.0087 | 0.0328 | 1,047 |
| 4 | Cutler-Trico Rd (Percy) | 294880T | CN | 581.25 | Crossbucks | 99 | 1 | 0.1045 | 0.0020 | 0.0269 | 275 |
| 5 | Tanglefoot Road (Du Quoin) | 296169T | CN | 64.84 | Crossbucks | 25 | 2 | 0.1006 | 0.0114 | 0.0309 | 124 |
| 6 | Lazy W Rd (Du Quoin) | 296176D | CN | 66.64 | Gates | 25 | 1 | 0.0972 | 0.0122 | 0.0298 | 36 |
| 7 | District 204 Road (Pinckneyville) | 430972F | Mid America | 97.72 | Crossbucks | 75 | 0 | 0.0962 | 0.0962 | 0.0962 | 498 |
| 8 | Camel Road (Cutler) | 431177G | Mid America | 83.01 | Crossbucks | 50 | 0 | 0.0851 | 0.0851 | 0.0851 | 174 |
| 9 | Kangaroo Road (Cutler) | 431178N | Mid America | 83.23 | Crossbucks | 50 | 0 | 0.0851 | 0.0851 | 0.0851 | 149 |
| 10 | Crocus Road (Pickneyville) | 431188U | Mid America | 88.64 | Crossbucks | 25 | 0 | 0.0688 | 0.0688 | 0.0688 | 29 |
| 11 | Vole Rd (Cutler) | 431166U | UP | 81.85 | Crossbucks | 25 | 1 | 0.0687 | 0.0067 | 0.0212 | 29 |
| | ICC Grade Crossing Improvement Funding Previously Secured | | | | | | | | | | |

# GREATER EGYPT SAFETY STUDY

## APPENDIX 01: PER PYATT CULTER ROAD

CMT

Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

August 21, 2020

Mr. Brian Otten
Perry County Engineer
3698 State Route 13/127
Pinckneyville, Illinois 62274

Mr. Brian Otten,

The Illinois Department of Transportation is pleased to inform you that your project has been selected for local Highway Safety Improvement Program (HSIP) funding. The project, identified by the Department as HSIP #202012024, involves paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs along Pyatt Cutler Road. Included in this approval are the improvements outlined in the supplemental 1 and 2 packages included in the application (mile 00.00 – 12.80).

The federal HSIP commitment for this project will not exceed $2,268,066. The deadline for this award to be federally authorized is October 6, 2023 or funds will be rescinded.

Please contact Mr. J. Travis Emery, District 9 Local Roads Engineer at (618) 351-5260, or at James.Emery@illinois.gov to discuss program requirements and preparation of any agreements and / or contracts. Projects located within a Metropolitan Planning Organization (MPO) planning boundary are required to be listed in the local MPO's Transportation Improvement Program (TIP). Questions regarding the HSIP may be directed to Ms. Melinda Kos in the Central Bureau of Local Roads and Streets by telephone at (217) 785-5178.

All HSIP grant recipients must be registered with the State of Illinois to comply with the Grant Accountability and Transparency Act (GATA) 30 ILCS 708. Full GATA compliance is required, including the completion of all pre-award GATA paperwork. You may send inquiries to the Central Bureau of Local Roads and Streets or to DOT.GATA@illinois.gov for further assistance.

An important element of the HSIP is feedback on the safety performance of improved locations. Review and reporting of the crash history at this project location before and after the completion of construction will involve your agency. IDOT will coordinate this review approximately four years after construction is completed.

Sincerely,

Stephane B. Seck-Birhame, P.E., PTOE
Acting Bureau Chief of Local Roads and Streets

cc: Alan Ho, FHWA – Illinois Division
Cynthia Watters, IDOT – Bureau of Safety Programs and Engineering
J. Travis Emery, IDOT District 9
File

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2022**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 6/1/20 |
| **District:** 9 | **County:** Perry | | **City:** NA |
| **Key route:** | **Marked route:** NA | | |
| **Road Name:** Pyatt Cutler Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 3.80 miles (2 segments) | ☐ N/A | | **Mile station:** 0.00 to 8.10 |

**Location Description:** Pyatt Cutler Rd (IL4 to Trico-Cutler Road;Union School Rd to Whitetail Road)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 600 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 1: Rural, 2 way segment, 2 segments ☐ N/A

**Other:** 2020 Greater Egypt Priority Location Report for Perry Co; 2017 IDOT High Safety Tier segment (mile 5.02-7.52)

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2014 | 7 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 2 |
| 2015 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2017 | 6 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 3 | 2 | 4 |
| 2018 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| **Total** | 16 | 0 | 0 | 3 | 3 | 3 | 3 | 1 | 1 | 9 | 6 | 7 |

**Location Description:** Rural roadway connecting IL4 to IL 13/ IL 127/ IL 152

**Problem Description:** Pavement drop-offs contribute to Road Departure crashes having a 48% injury rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (7), Overturn (3) and Angle (3) crashes

**Proposed Improvement(s):** Add paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs (4 curves)

**Estimated Project Cost ($000's):** $760,000 **Benefit-Cost Ratio:** 3.20

**Local Projects:** FY2022 resurfacing project (0.00-6.25) using STR funds; FY 2024 STR funds also secured for resurfacing between Union School Road and the IL 13/ IL 127/ IL 152 intersection.

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 0.00 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 78.9

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**

**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Pyatt-Cutler Road | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Perry | *City:* | *Date* | 5/20/2020 |
| *Key Route:* | 864 | *Marked Route:* | | *MilePost:* | *Current AADT:* | 600 |
| *Location:* | Pyatt-Cutler Road | | | | | |
| | | | | | *Length (miles):* | 3.8 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2014 | to | 2018 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | 1 | | 1 | | | | | | | | | | | | 1 | | | 0 | 2 | 3 |
| B-Injury Crashes | | 1 | | | | | | | 1 | | | | | | | | 1 | | 1 | 1 | 3 |
| C-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 1 | 1 |
| PDO Crashes | | 1 | | 5 | | | | | 2 | | | | 1 | | | | | | 4 | 3 | 9 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.96 | ROR, FO, HO, OVT, SOD, SSD | $83,433 | 7.6 | Miles | $634,091 | 15 | $634,091 | $57,050 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $14,063 | 7.6 | Miles | $106,882 | 8 | $184,979 | $16,650 |
| 4.6.7.S1.1 - Curves - Install chevron signs on horizontal curves | 0.84 | FO, HO, OtherNC, OtherO, OVT, SSD, SOD | $19,500 | 1 | Unit Qnty | $19,500 | 10 | $32,674 | $2,950 |
| | | All | | | | | | | |
| | | | | | | | | | |
| ***TOTAL BENEFIT*** | ***$244,200*** | | ***TOTAL COST*** | | | | | | ***$76,650*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **3.20** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.00** | **TOTAL FATALITIES PREVENTED** | **0.00** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - PYATT-CUTLER ROAD

Project: Pyatt-Cutler Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Perry
Section:

| Item No. | Item Description / Name | Total Quantity | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 9,000.0 | | | 9,000.0 | SQ YD | $40.00 | $360,000.00 |
| 2 | Earth Excavation | 1,500.0 | | | 1,500.0 | CU YD | $25.00 | $37,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 800.0 | | | 800.0 | CU YD | $25.00 | $20,000.00 |
| 4 | Grading and Shaping Ditches | 40,128.0 | | | 40,128.0 | FOOT | $1.00 | $40,128.00 |
| 5 | Pavement Removal | 400.0 | | | 400.0 | SQ YD | $15.00 | $6,000.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 40,128.0 | | 40,128.0 | | FOOT | $2.00 | $80,256.00 |
| 7 | Traffic Signage | 24.0 | 24.0 | | | EACH | $500.00 | $12,000.00 |
| 8 | Traffic Control | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $5,000.00 | $5,000.00 |
| 9 | Construction Layout | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $5,000.00 | $5,000.00 |
| 10 | Mobilization | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $50,000.00 | $50,000.00 |
| | Construction Subtotal (1-10): | | $15,000.00 | $86,256.00 | $514,628.00 | | | **$615,884.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | **$0.00** |
| | Contingency (10%): | | $1,500.00 | $8,625.60 | $51,462.80 | | | **$61,588.40** |
| | Preliminary Engineering: | | $2,000.00 | $7,000.00 | $42,000.00 | | | **$51,000.00** |
| | Construction Engineering: | | $1,000.00 | $5,000.00 | $26,000.00 | | | **$32,000.00** |
| | Project Total: | | $19,500.00 | $106,881.60 | $634,090.80 | | | **$760,472.40** |

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Pyatt-Cutler Road (SUPPLEMENTAL 1) | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Perry | *City:* | *Date* | 5/20/2020 |
| *Key Route:* | 864 | *Marked Route:* | | *MilePost:* | *Current AADT:* | 600 |
| *Location:* | Pyatt-Cutler Road | | | | | |
| | | | | | *Length (miles):* | 4.3 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2014 | to | 2018 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | *Interest rate* | 4.0% |

*Messages*

Please provide a detailed cost estimation for all countermeasures along with this summary sheet.

The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | | | 2 | | | | | | | | | | | | | | | 2 | 0 | 2 |
| B-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| C-Injury Crashes | | | | | | | | | | | | 1 | | | | | | | 1 | 0 | 1 |
| PDO Crashes | | | | 2 | | | | 1 | | | | | | | | | | | 2 | 1 | 3 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.96 | ROR, FO, HO, OVT, SOD, SSD | $82,964 | 8.6 | Miles | $713,492 | 15 | $713,492 | $64,200 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $14,661 | 8.6 | Miles | $126,085 | 8 | $218,214 | $19,650 |
| | | All | | | | | | | |
| | | All | | | | | | | |
| | | | | | | | | | |
| ***TOTAL BENEFIT*** ***$61,700*** | | | ***TOTAL COST*** | | | | | | ***$83,850*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **0.70** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.00** | **TOTAL FATALITIES PREVENTED** | **0.00** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - PYATT-CUTLER ROAD - SUPPLEMENTAL 1

Project: Pyatt-Cutler Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Perry
Section:

| Item No. | Item Description / Name | Total Quantity | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 10,100.0 | | 10,100.0 | SQ YD | $40.00 | $404,000.00 |
| 2 | Earth Excavation | 1,700.0 | | 1,700.0 | CU YD | $25.00 | $42,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 900.0 | | 900.0 | CU YD | $25.00 | $22,500.00 |
| 4 | Grading and Shaping Ditches | 45,408.0 | | 45,408.0 | FOOT | $1.00 | $45,408.00 |
| 5 | Pavement Removal | 500.0 | | 500.0 | SQ YD | $15.00 | $7,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 45,408.0 | 45,408.0 | | FOOT | $2.00 | $90,816.00 |
| 7 | Traffic Control | 1.0 | 0.15 | 0.85 | L SUM | $5,650.00 | $5,650.00 |
| 8 | Construction Layout | 1.0 | 0.15 | 0.85 | L SUM | $5,650.00 | $5,650.00 |
| 9 | Mobilization | 1.0 | 0.15 | 0.85 | L SUM | $56,500.00 | $56,500.00 |
| | Construction Subtotal (1-9): | | $100,986.00 | $579,538.00 | | | **$680,524.00** |
| | Utility Relocation & Land Acquisition: | | | | | | **$0.00** |
| | Contingency (10%): | | $10,098.60 | $57,953.80 | | | **$68,052.40** |
| | Preliminary Engineering: | | $9,000.00 | $47,000.00 | | | **$56,000.00** |
| | Construction Engineering: | | $6,000.00 | $29,000.00 | | | **$35,000.00** |
| | Project Total: | | $126,084.60 | $713,491.80 | | | **$839,576.40** |

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Pyatt-Cutler Road (SUPPLEMENTAL 2) | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Perry | *City:* | *Date* | 5/20/2020 |
| *Key Route:* | 864 | *Marked Route:* | | *MilePost:* | *Current AADT:* | 600 |
| *Location:* | Pyatt-Cutler Road | | | | | |
| | | | | | *Length (miles):* | 4.7 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2014 | to | 2018 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | *Interest rate* | 4.0% |

*Messages*

Please provide a detailed cost estimation for all countermeasures along with this summary sheet.

The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | | | 2 | | | | | | | | | | | | | | | 1 | 0 | 2 |
| B-Injury Crashes | | | | 1 | | | | | | | | | | | | 1 | | | 0 | 1 | 2 |
| C-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 1 | 1 |
| PDO Crashes | | | | 3 | | | | | | | | | | | 1 | | | | 1 | 1 | 4 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.96 | ROR, FO, HO, OVT, SOD, SSD | $83,357 | 9.4 | Miles | $783,559 | 15 | $783,559 | $70,500 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $14,518 | 9.4 | Miles | $136,466 | 8 | $236,181 | $21,250 |
| | | | All | | | | | | | |
| | | | All | | | | | | | |
| | | | | | | | | | | |
| *TOTAL BENEFIT* | *$73,800* | | | *TOTAL COST* | | | | | | *$91,750* |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **0.80** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.00** | **TOTAL FATALITIES PREVENTED** | **0.00** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - PYATT-CUTLER ROAD - SUPPLEMENTAL 2

Project: Pyatt-Cutler Road
Description: Pre-Design Estimate

Project #:
Municipality:
Road Dist: Nine
County: Perry
Section:

| | | |
|---|---|---|
| Estimate By: | BMB (CMT) | 5/20/2020 |
| Checked By: | SPH (CMT) | 5/20/2020 |

| Item No. | Item Description / Name | Total Quantity | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 11,100.0 | | 11,100.0 | SQ YD | $40.00 | $444,000.00 |
| 2 | Earth Excavation | 1,900.0 | | 1,900.0 | CU YD | $25.00 | $47,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 1,000.0 | | 1,000.0 | CU YD | $25.00 | $25,000.00 |
| 4 | Grading and Shaping Ditches | 49,632.0 | | 49,632.0 | FOOT | $1.00 | $49,632.00 |
| 5 | Pavement Removal | 500.0 | | 500.0 | SQ YD | $15.00 | $7,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 49,632.0 | 49,632.0 | | FOOT | $2.00 | $99,264.00 |
| 7 | Traffic Control | 1.0 | 0.15 | 0.85 | L SUM | $6,200.00 | $6,200.00 |
| 8 | Construction Layout | 1.0 | 0.15 | 0.85 | L SUM | $6,200.00 | $6,200.00 |
| 9 | Mobilization | 1.0 | 0.15 | 0.85 | L SUM | $62,000.00 | $62,000.00 |

| | | | |
|---|---|---|---|
| Construction Subtotal (1-9): | $110,424.00 | $636,872.00 | **$747,296.00** |
| Utility Relocation & Land Acquisition: | | | **$0.00** |
| Contingency (10%): | $11,042.40 | $63,687.20 | **$74,729.60** |
| Preliminary Engineering: | $9,000.00 | $51,000.00 | **$60,000.00** |
| Construction Engineering: | $6,000.00 | $32,000.00 | **$38,000.00** |
| Project Total: | $136,466.40 | $783,559.20 | **$920,025.60** |

| CASE_ID | YR | INJ | FAT | COLL_ TYPE | WEATHER | LIGHT | SURF_ COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_ DIR | VEH1_ MANUV | VEH1_ EVNT1 | VEH1_LOC1 | VEH1_ EVNT2 | VEH1_ LOC2 | VEH1_ EVNT3 | VEH2_ DIR | VEH2_ EVNT1 | VEH2_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201400197430 | 14 | 0 | 0 | Rear End | Rain | Daylight | Wet | 0.00 | Normal | Pickup | West | Skid/Ctrl Loss | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | PD | 2461573.255670 | 488722.140643 |
| 201400131906 | 14 | 0 | 0 | Fixed Object | Clear | Daylight | Snow or Slush | 0.54 | Normal | Passenger | West | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | Mtr Veh In Traffic | | PD | 2464338.980970 | 487950.315441 |
| 201400095589 | 14 | 1 | 0 | Fixed Object | Clear | Daylight | Ice | 0.65 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Tree or Shrub | Off Pvmt - Left | | | Mtr Veh In Traffic | | C-Injury | 2464881.118030 | 487863.183839 |
| 201400458777 | 14 | 1 | 0 | Sideswipe Opp Dir | Cloudy/ Overcast | Daylight | Wet | 0.80 | Fatigued | Passenger | West | Straight Ahead | Mtr Veh In Traffic | Off Pvmt - Left | | | | East | Mtr Veh In Traffic | Off Pvmt - Left | A-Injury | 2465661.364840 | 487891.082121 |
| 201701363549 | 17 | 0 | 0 | Fixed Object | Snow | Darkness | Snow or Slush | 1.54 | Normal | Pickup | West | Negotiate A Curve | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | Utility Pole | | Mtr Veh In Traffic | | PD | 2468454.839390 | 485612.130362 |
| 201400084836 | 14 | 0 | 0 | Overturn | Clear | Darkness | Dry | 1.70 | Fatigued | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Overturn | Off Pvmt - Left | | | Mtr Veh In Traffic | | PD | 2469319.723000 | 485557.200153 |
| 201601473437 | 16 | 0 | 0 | Angle | Clear | Daylight | Dry | 1.76 | Normal | Van/Mini-Van | South | Starting In Traffic | Mtr Veh In Traffic | Intersection | | | | East | Mtr Veh In Traffic | Intersection | PD | 2469620.997540 | 485563.304107 |
| 201501326279 | 15 | 1 | 0 | Angle | Cloudy/ Overcast | Daylight | Wet | 1.76 | Normal | Passenger | South | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | A-Injury | 2469620.999870 | 485563.841614 |
| 201400390410 | 14 | 1 | 0 | Angle | Clear | Daylight | Dry | 1.76 | Normal | Passenger | North | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | B-Injury | 2469621.000030 | 485563.876394 |
| 201701425287 | 17 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 1.76 | Normal | Motorcycle (+150cc) | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/Embankment | Off Pvmt - Right | Fence | | | | A-Injury | 2469621.000030 | 485563.876394 |
| 201601310598 | 16 | 0 | 0 | Other Object | Sleet/ Hail | Daylight | Ice | 3.79 | Normal | Passenger | East | Skid/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | | | | | | | PD | 2480333.863380 | 485436.193803 |
| 201601456407 | 16 | 3 | 0 | Fixed Object | Clear | Dawn | Dry | 5.00 | Other | Passenger | East | Straight Ahead | Other Fxd Obj | Off Pvmt - Right | Tree or Shrub | Off Pvmt - Right | | | | | A-Injury | 2486727.818620 | 485354.927636 |
| 201400088380 | 14 | 2 | 0 | Parked Vehicle | Clear | Darkness | Dry | 5.01 | Alcohol Impaired | Pickup | East | Straight Ahead | Hit Park Veh | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | C-Injury | 2486784.854190 | 485352.801364 |
| 201601349562 | 16 | 0 | 0 | Fixed Object | Cloudy/ Overcast | Darkness | Ice | 5.37 | Normal | Pickup | West | Skid/ Ctrl Loss | Other Fxd Obj | Off Pvmt - Left | | | | | | | PD | 2488664.545660 | 485312.187884 |
| 201501326298 | 15 | 1 | 0 | Fixed Object | Clear | Darkness | Dry | 5.68 | Normal | Van/ Mini-Van | West | Skid/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | | | A-Injury | 2490322.900490 | 485306.595229 |
| 201400233504 | 14 | 0 | 0 | Fixed Object | Rain | Dawn | Wet | 5.95 | Normal | Passenger | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | | | PD | 2491733.991480 | 485300.764259 |
| 201801100120 | 18 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 6.92 | Normal | SUV | West | Negotiate A Curve | Other Fxd Obj | Off Pvmt - Right | | | | | | | PD | 2496844.176740 | 485291.216189 |
| 201701388051 | 17 | 0 | 0 | Overturn | Clear | Darkness | Dry | 7.47 | Been Drinking | Pickup | West | Negotiate A Curve | Overturn | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | | | PD | 2498560.333210 | 487593.091573 |
| 201701363547 | 17 | 0 | 0 | Fixed Object | Snow | Darkness | | 7.53 | Other/ Unknown | Passenger | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch / Embankment | Off Pvmt - Right | Tree or Shrub | | | | PD | 2498833.942430 | 487734.732611 |
| 201701454952 | 17 | 1 | 0 | Overturn | Clear | Darkness | Dry | 7.55 | Normal | SUV | North-west | U-Turn | Ran Off Roadway | Off Pvmt - Right | Overturn | Off Pvmt - Right | Ditch/ Embankment | | | | B-Injury | 2498936.327100 | 487763.646021 |
| 201400062631 | 14 | 0 | 0 | Fixed Object | Snow | Daylight | Snow or Slush | 7.57 | Normal | Pickup | East | Skidd/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Fence | Off Pvmt - Left | Overturn | | | | PD | 2499030.108890 | 487774.514388 |
| 201701118453 | 17 | 1 | 0 | Turning | Clear | Daylight | Wet | 8.04 | Normal | SUV | East | Avoid Veh/ Obj | Mtr Veh In Traffic | Intersection | | | | East | Mtr Veh In Traffic | Intersection | B-Injury | 2501481.498970 | 487802.250198 |
| 201400083385 | 14 | 2 | 0 | Fixed Object | Clear | Darkness | Dry | 9.11 | Other | SUV | West | Unknown | Ran Off Roadway | Off Pvmt - Left | Culvert | Off Pvmt - Right | Overturn | | | | A-Injury | 2507172.462700 | 487784.993953 |

| CASE_ID | YR | INJ | FAT | COLL_ TYPE | WEATHER | LIGHT | SURF_ COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_ DIR | VEH1_ MANUV | VEH1_ EVNT1 | VEH1_LOC1 | VEH1_ EVNT2 | VEH1_ LOC2 | VEH1_ EVNT3 | VEH2_ DIR | VEH2_ EVNT1 | VEH2_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201400228561 | 14 | 1 | 0 | Sideswipe Opp Dir | Clear | Daylight | Dry | 9.14 | Other/ Unknown | Passenger | East | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | B-Injury | 2507289.207520 | 487786.077805 |
| 201400458508 | 14 | 1 | 0 | Fixed Object | Rain | Daylight | Wet | 9.52 | Normal | SUV | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Other Pole or Post | Off Pvmt - Right | Ditch/ Embankment | | | | B-Injury | 2509290.557980 | 487804.658213 |
| 201400407765 | 14 | 1 | 0 | Fixed Object | Rain | Daylight | Wet | 10.11 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Other | Ditch/ Embankment | Other | | | | | C-Injury | 2512442.363490 | 487801.690455 |
| 201601404550 | 16 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 10.17 | Normal | Other | West | Backing | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Other Fixed Object | | | | PD | 2512742.521600 | 487799.791008 |
| 201701470955 | 17 | 0 | 0 | Sideswipe Same Dir | Clear | Daylight | Dry | 10.43 | Normal | Motorcycle (+150cc) | West | Pass/ Overtake | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | PD | 2514108.487600 | 487796.458063 |
| 201801028247 | 18 | 0 | 0 | Fixed Object | Clear | Daylight | Ice | 11.43 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Other Pole or Post | Off Pvmt - Right | | | | | PD | 2519422.411620 | 487762.523221 |
| 201400314675 | 14 | 0 | 0 | Fixed Object | Fog/ Smoke/ Haze | Darkness | Dry | 11.91 | Fatigued | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Culvert | Off Pvmt - Left | Ditch/ Embankment | | | | PD | 2521939.152610 | 487676.202318 |
| 201701416479 | 17 | 3 | 0 | Fixed Object | Clear | Daylight | Dry | 12.23 | Other/ Unknown | Passenger | West | Skid/ Cntrl Loss | Ran Off Roadway | Off Pvmt - Left | Culvert | Off Pvmt - Left | Ditch/ Embankment | | | | A-Injury | 2523607.562610 | 487600.635095 |

West Project Limits -- shoulder and warning signs (0.00-1.85) PRIMARY countermeasures
East Project Limits -- shoulder and warning signs (6.15-8.10) PRIMARY countermeasures
West Project Limits -- shoulder widening (1.85-6.15) SUPPLEMENTAL 1 countermeasure
East Project Limits -- shoulder widening (8.10-12.80) SUPPLEMENTAL 2 countermeasure

**Pyatt-Cutler Road**

**Perry County**

**June 2020**

## INTRODUCTION

Pyatt-Cutler Road was identified as the highest ranked segment within Perry County as part of a Greater Egypt Regional Planning and Development Commission safety analysis using the most current crash dataset (2014-2018). The Cutler-Trico Road intersection within the study limits was also ranked high on the local priority list using the same dataset. Safety analysis using 5 years of crash data (2011-2015) was completed by IDOT in 2017 and identified the following Safety Tier classifications at similar locations:

1. A 2.5 mile segment of Pyatt-Cutler Road was classified as one of 3 High Safety Tier segments. The 2017 segment was located between the Denmark Road/ Panda Bear Road intersection (5.02) and the Red Squirrel Road intersection (7.52). No segments were classified in the Critical Safety Tier.
2. The Cutler-Trico Road and Pyatt-Cutler Road intersection (1.75) was classified as the only low Safety Tier location. One other intersection in Perry County was classified as a medium Safety Tier location (Shamrock Road at Bob White Road).

The priority rankings using 2014-2018 crash data and the correlation to the 2017 Safety Tier lists were factors to an application for safety funding on Pyatt-Cutler Road as shown in **Figure 1**.

## EXISTING CONDITIONS

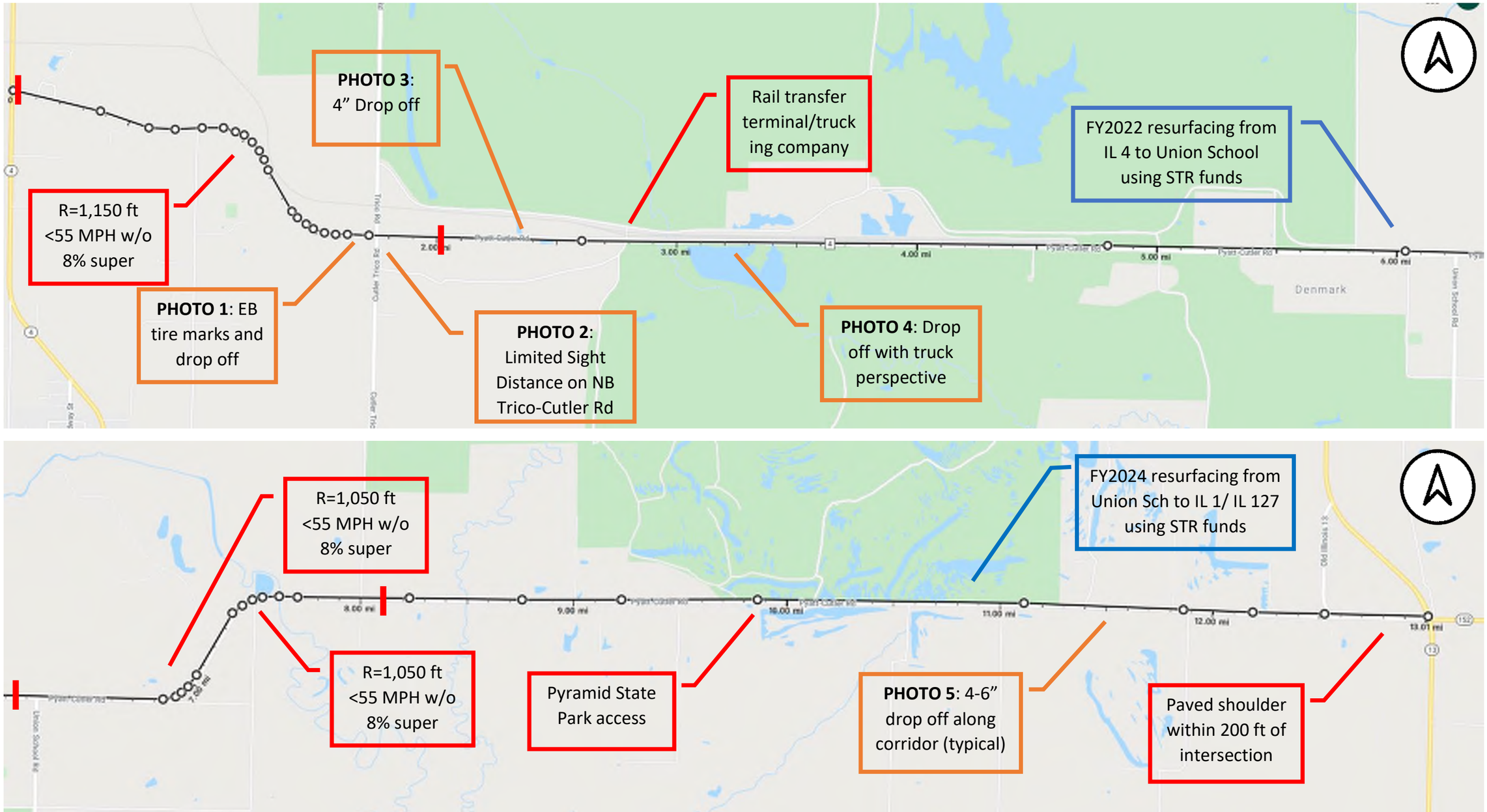
Pyatt Cutler Road (PCR) is a county route (CR 4) providing east/west connectivity between IL 4 and IL 13/ IL 127/ IL 152. The roadway width is 22 feet with a painted centerline and edge lines for the 13.0-mile length. An aggregate shoulder averages 1-2 feet. The legal speed is 55 MPH. Intermittent No Passing zones exist within the study area due to intersections, horizontal curves, or rolling terrain.

**A factor that contributes to the safety performance of the corridor is 4-6 inch drop offs along the edge of pavement.** Rutting occurs along the inside of horizontal curves and on straight segments due in part to lane widths of 11 feet. County maintenance forces are not able to retain aggregate shoulders due to trucks on the high-speed route resulting in rutting of non-paved surfaces. Truck trailers regularly encroach onto the aggregate shoulders especially when meeting oncoming trucks. The 2019 ADT is 550 vehicles of which 80 are trucks.

Land use is a mix between residential, industrial, and undeveloped parcels. Items of interest shown on **Figure 1** are supplemented with the following information:

1. A rail transfer terminal/ trucking company is located on the west end of the corridor which contributes to a truck percentage of 14.5%.
2. The Trico-Cutler Road (TCR) intersection is a 2-way stop controlled intersection. A vertical curve on the south leg of TCR restricts sight distance of the stop condition within 270 feet of PCR.
3. Pyramid State Park is located on the east end of the corridor. The entrance is located 2.5 miles from the IL 13/ IL 127/ IL 152 intersection. The 2019 ADT is 600 vehicles having a truck percentage of 5%.
4. Horizontal curves may have design speeds less than 55 MPH if superelevation is less than 8%.

FIGURE 1: STUDY AREA



## PHOTO 1: EB APPROACH OF TRICO-CUTLER ROAD INTERSECTION (MILE 1.70)


## PHOTO 2: NB TRICO-CUTLER RD (500 FT FROM PYATT-CUTLER RD)

## PHOTO 3: DROP OFF WEST OF RAIL TRANSFER TERMINAL

## PHOTO 4: MEETING TRUCK EAST OF RAIL TRANSFER TERMINAL (NO AGG SHOULDER)

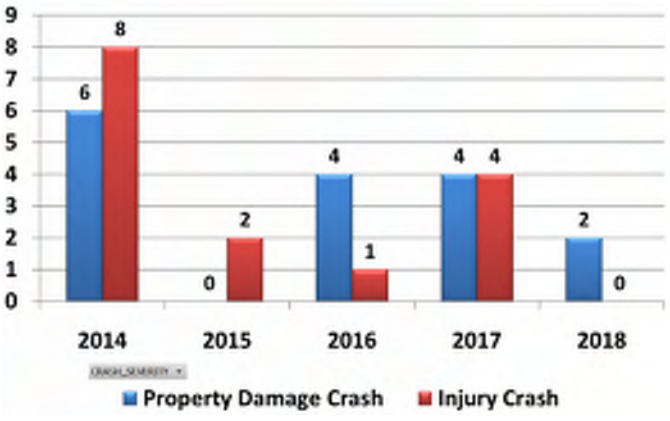
## PHOTO 5: DROP OFF EAST OF PYRAMID STATE PARK (TYPICAL CONDITION)


The Emphasis Area analysis in 2017 identified Road Departure crashes on local and county routes as the most frequent crash type (73.7%) resulting in Type A injuries.

## SAFETY ANALYSIS

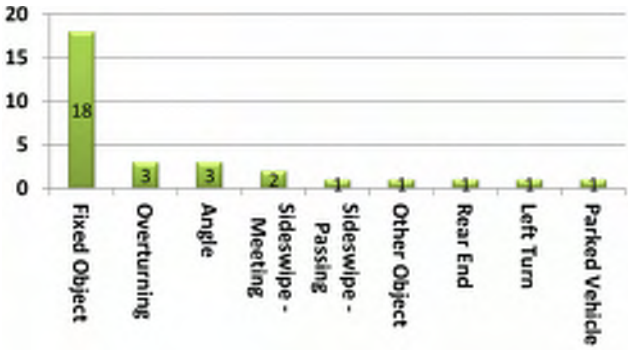
A total of 31 crashes occurred within the study area over a 5-year period (2014-2018). The frequency of crashes by year is summarized on **Figure 2**. No fatal crashes occurred over the 5-year period.

Injury crashes represent 48 percent of the total crashes. The injury crashes comprise 7 Type A injuries, 5 Type B injuries, and 3 Type C injuries.



Road departure crashes (fixed object, overturning, sidewipe-meeting) comprise 74% of all crashes within the study area as shown in **Figure 3**. The subset of only Road Departure crashes resulted in 6 Type A injuries, 3 Type B injuries and 2 Type C injuries. The primary countermeasure will address Road Departure crashes due to crash frequency and severity. Low cost countermeasures can be implemented to address other crash types such as angle crashes.

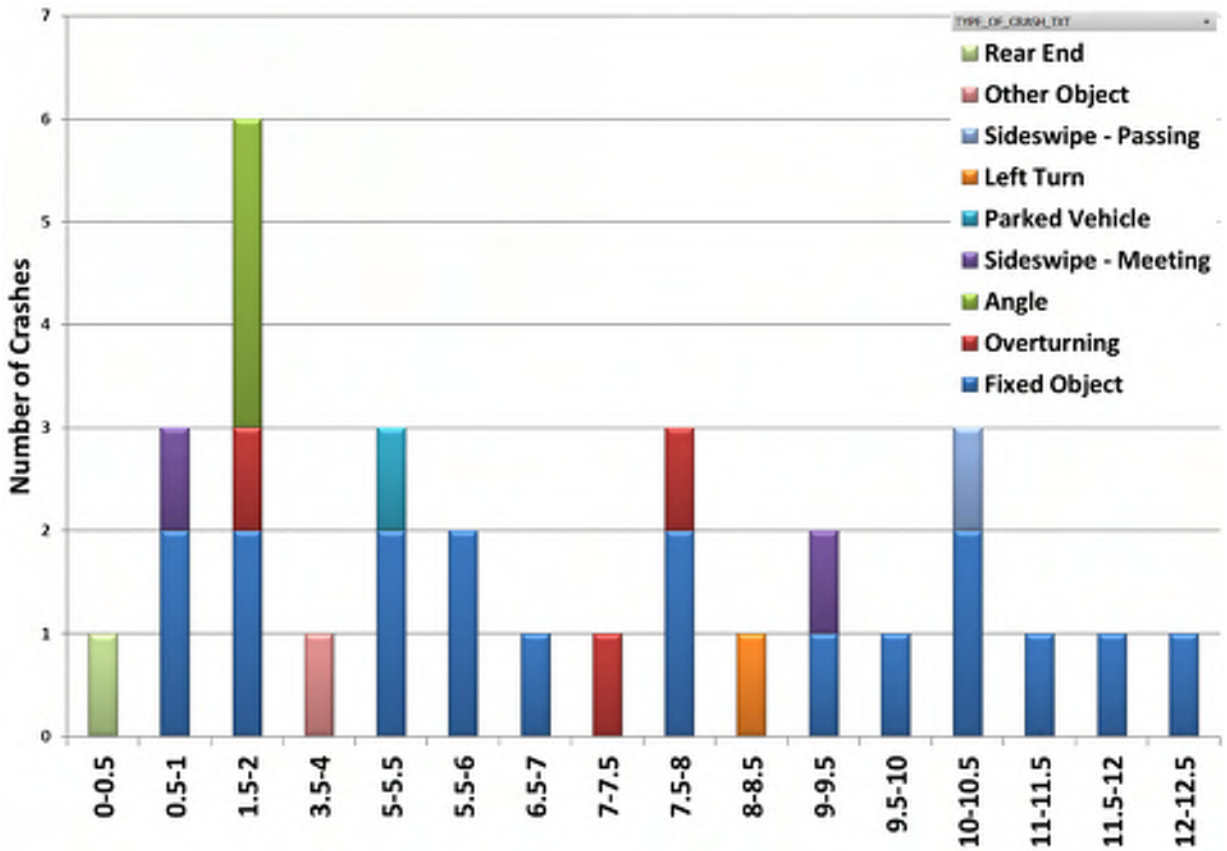
FIGURE 3: CRASH FREQUENCY BY TYPE




Note that angle crashes associated with the IL 13/ IL 127/ IL 152 intersection were excluded from the database. Angle crashes (3) at the Trico-Cutler Road intersection remained within the dataset. In addition to the crashes within the 5-year dataset (2014-2018), another angle crash involving a NB vehicle failing to yield and being struck by an eastbound semi-truck occurred on 5/26/20.

**Figure 4** shows the location of crashes at 0.5-mile intervals by crash type. The overturning crashes occurred within segments having horizontal curves. The distribution of Road Departure crashes is balanced except for the 3.0 to 5.0 segment without crashes between 2014 and 2018. The crash frequency and location vary which favors a systemic solution.

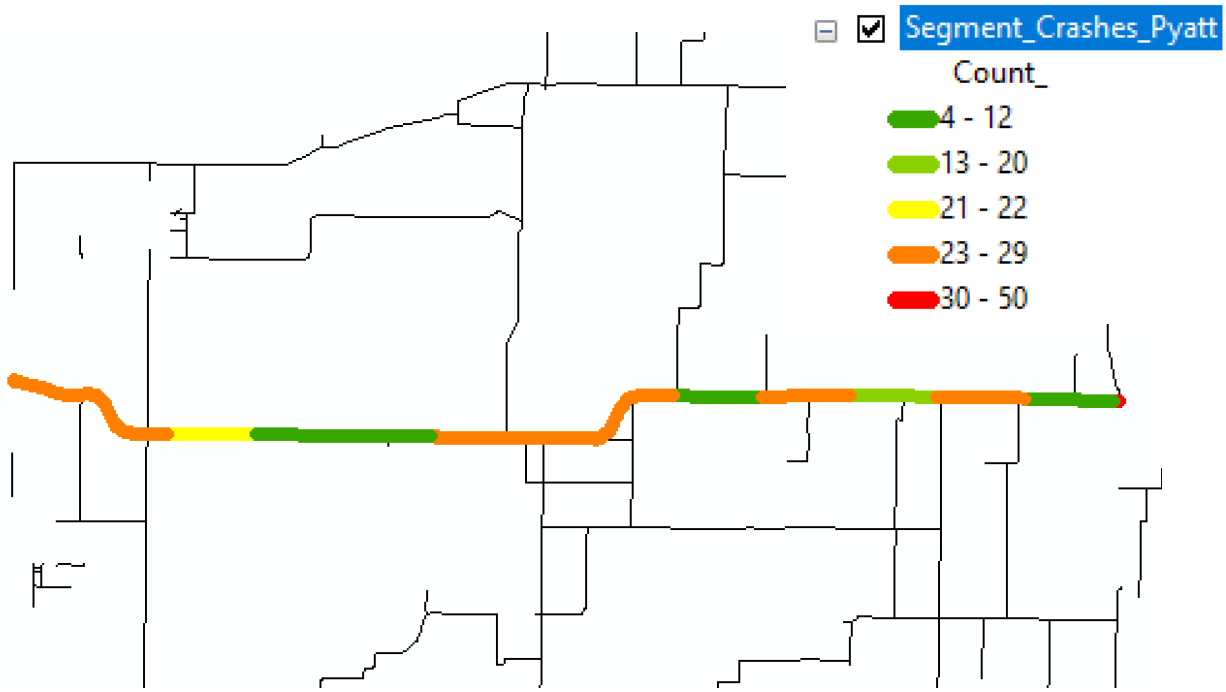
FIGURE 4: LOCATION FREQUENCY BY CRASH TYPE



The dataset was expanded to include 15 years of data between 2005 and 2019 to assess long term trends. The output from the 15-year dataset (**Figure 5**) was compared to the current 5-year dataset shown on **Figure 4**. The segments having lower crash frequencies over the 5-year time period is similar to the crash frequency over a 15-year time period especially for the 3.0-5.0 segment. Other than the 3.0-5.0 gap,

**Figure 5** indicates that the crashes are not focused at a specific location but rather are distributed across the entire length of the corridor. This information may help determine where more targeted countermeasures can be implemented even if the countermeasures are systemic by design.

FIGURE 5: LOCATION FREQUENCY BY SEVERITY




## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasure are systemic in nature, the countermeasures are targeted to segments having a higher frequency of crashes. Three primary countermeasures are proposed as summarized below.

### DUAL STOP SIGN COUNTERMEASURE

A short-term countermeasure enhances the stop sign on both Trico-Cutler Road approaches to mitigate 3 angle crashes at the subject intersection. Three upgrades to the stop signs are summarized below:

- Install dual stop signs on both approaches of Trico-Cutler Road. The existing traffic control consists of a single, right side mounted stop sign which meets Manual of Uniform Traffic Control Devices (MUTCD) guidance. Dual stop signs are recommended to mitigate angle crashes.

- Stack 2 stop signs on a frangible wood post on the NB approach of Trico-Cutler Road. The profile of NB Trico-Cutler Road obstructs the visibility of the stop signs at the intersection. Stacking 2 stop signs will provide greater visibility of the stop signs before the crest of the vertical curve.
- Relocate stop ahead warning signs on the NB Trico-Cutler Road approach from 475 feet to 350 ft in accordance with Table 2C-4 of the MUTCD.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[6] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[6] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

## CURVE WARNING SIGN COUNTERMEASURE

All overturning crashes occurred within the proximity of two locations having reverse horizontal curves separated by more than 600 feet.

1. Mile 1.5 to 2.0. The horizontal curves having a radius of 1,150 feet accommodates a 2,300 ft shift of the Pyatt-Cutler Road alignment. No chevrons exist at this location despite the existing alignment being less than 55 MPH.
2. Mile 6.8 to 7.8. The horizontal curves having a minimum radius of 1,050 feet accommodates a 2,600 ft shift of the Pyatt-Cutler Road alignment. Curve warning signs exist on the approaches to the horizontal curves. No advisory speed plaque exists. A limited number of chevrons exist.

A short-term countermeasure would be to install or upgrade curve warning signs and chevrons at horizontal curves to provide a warning to drivers about the edge of pavement. The installation of curve warning signs is a proven safety countermeasure. The following countermeasures for the reverse curves at the west end of the study area are recommended:

- Install curve warning, speed advisory plaques (if applicable), and/or chevrons in accordance with **Table 2C-5** of the MUTCD for the 2 sets of reverse curves. Chevrons are recommended even if the advisory speed is 10 MPH less than the speed limit. A ball bank study to confirm the advisory speed at this location is recommended.

- Upgrade reverse curve warning, speed advisory plaques, and/or chevrons in accordance with **Table 2C-5** of the MUTCD for the curves near Mile 6.8 to 7.8. A ball bank study to confirm the advisory speed at this location is recommended.

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

- Relocate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Existing signs are located 500 feet in advance of the horizontal curves. Section 2C.05 emphasizes that signs are not placed too far in advance of the condition.

## PAVED SHOULDER COUNTERMEASURE

The frequency of crashes occurring beyond the limits of the horizontal curves suggests other factors contribute to the safety performance on Pyatt-Cutler Road (i.e., edge of pavement drop offs). A medium-term countermeasure reconstructs the aggregate shoulder as a paved shoulder to address pavement drop offs in conjunction with longitudinal rumble strips at the following locations:

- IL4 to Trico Cutler Road (0.00 to 1.85).
- Union School Road to Whitetail Road (6.15 to 8.10)

Drop offs at the edge of pavement occur where the aggregate shoulder has been dispersed or rutted due to higher speed vehicles driving on a non-improved surface. The drop off at the edge of pavement has been an on-going maintenance issue due, in part, to the high speeds and lack of paved shoulders.

The following targeted countermeasures are proposed on the Pyatt-Cutler Road corridor:

- Replace the aggregate shoulder with a 2 ft paved shoulder (full depth).
- Add longitudinal rumble strips to increase driver attention.

**Implementing the proposed countermeasures as part of separately funded pavement rehabilitation project on rural, high speed roadways is recommended as a best practice to leverage safety funds. The proposed countermeasures are to be constructed in conjunction with a funded resurfacing project using FY2022 STR funds from IL 4 to Union School Road (mile 6.25). Combining shoulder improvement projects as part of a larger pavement rehabilitation project can achieve an economy of scale.**


Context Sensitive Design (CSD) principles are applicable to the Pyatt-Cutler Road corridor due to the impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based guidance from the *National Cooperative Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

Of the broad categories of transportation issues that are most applicable to the Pyatt-Cutler Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section complies with IDOT design criteria for shoulder widths (BLR Figure 33-3B). The preferred design criteria for reconstruction projects (BLR Figure 32-2B) are not met.
2) Substantive Safety – The actual performance of the Pyatt-Cutler Road corridor is compared to similar facilities to assess relative performance. Crash statistics for corridors having a similar typical section such as Old DuQuoin Road does not experience the number of crashes or appear on the 2017 Safety Tier for segments.

In the case of Pyatt Cutler Road, nominal safety criteria (i.e., 4 ft shoulders) are generally met as noted in Item 1. However, the substantive safety performance of Pyatt Cutler Road is worse than comparable roadways due to the presence of pavement drop offs. **Figure 6** shows a decision matrix of nominal and substantive safety countermeasures.

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (70 feet). Targeted safety countermeasures are recommended since the existing typical section is consistent with Figure 33-3B of the BLR for roadways having an ADT 400-750 vehicles:

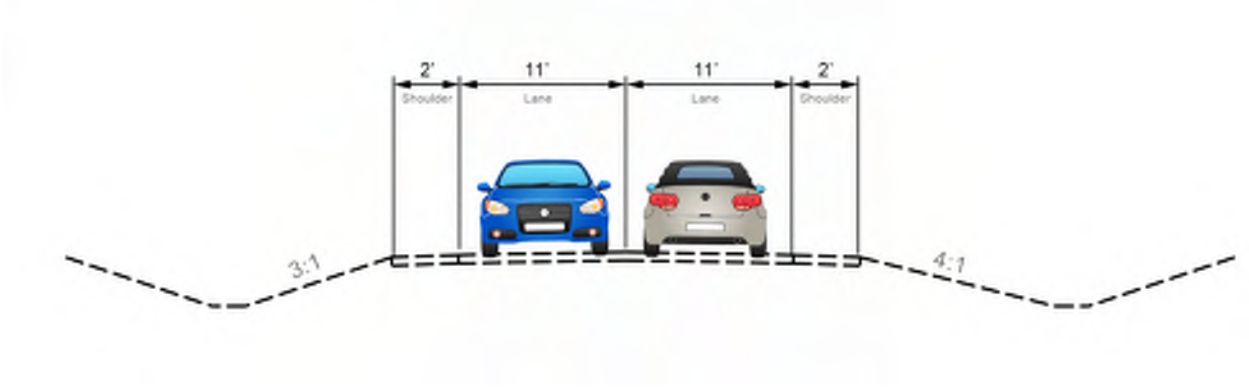
- Traveled way width of 22 feet
- Shoulder width of 4 feet having an aggregrete or turf shoulder
- Side slopes having front slopes of 1V:3H in cut sections

**Figure 7** shows the proposed typical section for Pyatt-Cutler Road.

FIGURE 6: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS

| Substantive Safety Criteria | Nominal Safety Criteria: Meets | Nominal Safety Criteria: Does Not Meet |
|---|---|---|
| Meets | • Infrastructure improvements only (no need or justification for geometric revisions) based on safety | • 3R criteria may be considered<br>• Incorporate only low cost safety enhancements<br>• "Upgrade" to full standards may not be cost effective (consider design exceptions to avoid costs and impacts) |
| Does Not Meet | • Targeted safety improvements (low or high cost depending on extent of problem)<br>• Focus on cost-effective solutions to safety problems | • Complete reconstruction to current criteria probably warranted (no or very minimal design exceptions)<br>• Consider special targeted safety enhancements |

FIGURE 7: PYATT CUTLER ROAD COUNTERMEASURE



## BENEFIT COST ANALYSIS

The PRIMARY countermeasures while systemic are limited to a total segment length of 3.80 miles (2 segments) on Pyatt-Cutler Road. The project data used to perform the benefit cost analysis is based on the following assumptions.

1. The crash dataset used to calculate the benefit cost ratio for the PRIMARY countermeasures included two segments: mile 0.00 to 1.85 including the Trico-Cutler Road intersection; mile 6.15 to 8.10 including the Union School Road intersection and the Whitetail Road intersection. The subset includes 16 crashes. **Note that STR funds are secured for resurfacing of Pyatt-Cutler Road for FY 2024 between Union School Road and IL 13/ IL 127/ IL 152.**
2. The CMF for Install Chevron Signs is proposed since signs do not exist or a limited number exists on the horizontal curves having a radius less then 1,200 feet. The addition of curve warning signs is applicable on 4 horizontal curve (2 pairs of reverse curves) within the study area.
3. Upgrading to a 2 ft paved shoulder along the 3.80 mile segment is proposed to improve safety performance of the existing roadway having an effective width of 22 feet +/-. The cost estimate include minor regrading of shoulders within existing right of way. The improvements are to be constructed in conjunction with a STR funded resurfacing project within similar project limits.
4. Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Pyatt-Cutler Road is a not a designed bicycle route. No bicycle crashes were documented as part of the crash analysis.

   The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Dix Irvington Road. Note that no bicycle crashes were reported during the 5-year study period and Pyatt Cutler Road is not a designated bicycle route.

   Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

The total cost for the overall 3.8 mile segment is estimated to be $760,000 with a Benefit Cost ratio of 3.20, calculated from the IDOT HSIP BOC analysis tool. A detailed cost estimate and BOC calculations are included as an attachment to this report.

## SUPPLEMENTAL BENEFIT COST ANALYSIS

Shoulder improvements would benefit other segments between the reverse curves within the study limits. Therefore, the addition of a 2 ft paved shoulder is proposed to further improve safety performance. The PRIMARY countermeasures are limited to the reverse curves on the west and east ends of the project. The following SUPPLEMENTAL improvements are proposed if additional funds are available to further mitigate crashes within the following segments:

1. Two Type A crashes between mile 1.85 and mile 6.15. This segment is located within the resurfacing limits of Pyatt-Cutler Road using STR funds for FY 2022. Improvements within this segment is identified as the SUPPLEMENTAL 1 countermeasure.
2. Two Type A crashes and two Type B crashes between mile 8.10 and mile 12.8. This segment is located within the resurfacing limits of Pyatt-Cutler Road using STR funds for FY 2024. Improvements within this segment is identified as the SUPPLEMENTAL 2 countermeasure.

These improvements are proposed in addition to the PRIMARY countermeasures listed in the Benefit Cost Analysis section of the safety study.

- Upgrading to a 2 ft paved shoulder is proposed to improve safety performance of the existing roadway having an effective width of 21 feet +/-. The cost estimate include regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B. The improvements are to be constructed in conjunction with STR funded resurfacing projects within the project limits.
- Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Pyatt Cutler Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis. The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Dix Irvington Road. Note that no bicycle crashes were reported during the 5-year study period and Dix Irvington Road is not a designated bicycle route.

  Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

These SUPPLEMENTAL countermeasures eliminate gaps between the reverse curves on either end of the study area. The paved shoulders are considered to be more systemic safety solutions.

1. The total cost for the 4.3 mile segment of the SUPPLEMENTAL 1 project is estimated to be $840,000 with a Benefit Cost ratio of 0.70, calculated from the IDOT HSIP BOC analysis tool. A separate cost estimate and benefit cost analysis are included as part of this funding application and is labeled as a SUPPLEMENTAL 1 countermeasure.
2. The total cost for the 4.7 mile segment of the SUPPLEMENTAL 2 project is estimated to be $920,000 with a Benefit Cost ratio of 0.80.

# Greater Egypt Safety Study

## APPENDIX 01: JAC N. MARION STREET

Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

August 21, 2020

Mr. Mitch Burdick
Jackson County Engineer
1200 Enterprise Avenue
Murphysboro, Illinois 62966

Mr. Mitch Burdick,

The Illinois Department of Transportation is pleased to inform you that your project has been selected for local Highway Safety Improvement Program (HSIP) funding. The project, identified by the Department as HSIP #202012019, involves re-profiling railroad crossings within or near horizontal curves, paved shoulders with longitudinal rumble strips, and curve warning signs along North Marion Street between Glade Lane and Fisher Street. Included in this approval is the combined Alternative 1 and Alternative 2 proposals submitted as part of the application package. Congratulations on your successful application.

The federal HSIP commitment for this project will not exceed $644,022. The deadline for this award to be federally authorized is October 6, 2023 or funds will be rescinded.

Please contact Mr. J. Travis Emery, District 9 Local Roads Engineer at (618) 351-5260, or at James.Emery@illinois.gov to discuss program requirements and preparation of any agreements and / or contracts. Projects located within a Metropolitan Planning Organization (MPO) planning boundary are required to be listed in the local MPO's Transportation Improvement Program (TIP). Questions regarding the HSIP may be directed to Ms. Melinda Kos in the Central Bureau of Local Roads and Streets by telephone at (217) 785-5178.

All HSIP grant recipients must be registered with the State of Illinois to comply with the Grant Accountability and Transparency Act (GATA) 30 ILCS 708. Full GATA compliance is required, including the completion of all pre-award GATA paperwork. You may send inquiries to the Central Bureau of Local Roads and Streets or to DOT.GATA@illinois.gov for further assistance.

An important element of the HSIP is feedback on the safety performance of improved locations. Review and reporting of the crash history at this project location before and after the completion of construction will involve your agency. IDOT will coordinate this review approximately four years after construction is completed.

Sincerely,

Stephane B. Seck-Birhame, P.E., PTOE
Acting Bureau Chief of Local Roads and Streets

cc: Alan Ho, FHWA – Illinois Division
Cynthia Watters, IDOT – Bureau of Safety Programs and Engineering
J. Travis Emery, IDOT District 9
File

Illinois Department of Transportation

# HSIP Candidate Form

FY 2022

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 6/1/20 |
| **District:** 9 | **County:** Jackson | | **City:** NA |
| **Key route:** | **Marked route:** NA | | |
| **Road Name:** N. Marion Street | **Intersecting Roadway:** N/A ☐ | | |
| **Length:** 0.60 mile (3 segments) ALT 1 ☐ N/A | | | **Mile station:** 0.40 to 1.65 |

**Location Description:** N. Marion Street north of Fisher St

| | | |
|---|---|---|
| ☒ **Rural** ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 400 | **Total Entering AADT (Intersection): NA** | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N |

**CHSP Emphasis Area(s):** Road Departure ☐ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 1 -- rural, 2 way segment, 3 segments ☐ N/A

**Other:** 2020 Greater Egypt Priority Location Report for Jackson Co; 2017 IDOT Critical Safety Tier segment

**Crashes Details**

| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 2017 | 2 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2018 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| **Total** | 8 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 3 | 0 | 3 |

**Location Description:** Rural roadway between Carbondale and future casino site in Williamson Co (2022/2023)

**Problem Description:** Combination of horizontal/vertical curves contribute to Road Departure crashes having a 48% injury rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (5), Overturn (2), and Sideswipe Meeting (1)

**Proposed Improvement(s):** Alternative 1 adds paved shoulders (2 feet), minor reprofile of old railroad crossings (2), longitudinal rumble strips, and curve warning signs (3 curves)

**Estimated Project Cost ($000's):** $434,000 **Benefit-Cost Ratio:** 18.90

**Local Projects:** Jackson County sponsored improvements not identified at this time

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 166.7 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 333.3

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project: | North Marion Street (ALT 1) | | | | | Prepared by: | CMT |
| District: | 9 | County: | Jackson | City: | Carbondale | Date: | 5/20/2020 |
| Key Route: | 11 | Marked Route: | | Mile/Post: | | Current AADT: | 400 |
| Location: | North Marion Street | | | | | | |
| | | | | | | Length (miles): | 0.6 |
| Crash data: | 5 | Years | | | | Begin Station: | |
| | From: | 2014 | to | 2018 | | End Station: | |
| | | | | | | Traffic Growth factor: | 3.0% |
| Peer Group: | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | | Interest rate: | 4.0% |

**Messages**

Please provide a detailed cost estimation for all countermeasures along with this summary sheet.
The combined effect of multiple countermeasures is limited to 0.50 or the smallest CMF

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| Crash Type | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| Crash Severity | ALL | AG | AN | FO | HO | LT | OtherNC | OtherO | OVT | PD | PDC | PKV | RE | RT | SSD | SOD | T | TR | NGT | WP | TOT |
| Fatal Crashes | | | | | | | | | 1 | | | | | | | | | | 0 | 0 | 1 |
| A-Injury Crashes | | | | 2 | | | | | | | | | | | | | | | 1 | 0 | 2 |
| B-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | 1 | | | 0 | 0 | 1 |
| PDO Crashes | | | | 2 | | | | | 1 | | | | | | | | | | 0 | 0 | 3 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| COUNTERMEASURE | CMF * | Crash Type affected by this improvement | Unit Cost | Quantity | Units | Total Cost | Service Life | Present worth | AUAC ** |
| 4.1.28.AL.1 - Pavement Treatments - Flatten Crest Vertical Curve | 0.80 | All | $202,218 | 1 | Unit Only | $202,218 | 20 | $202,218 | $14,900 |
| 4.6.7.S1.1 - Curves - Install chevron signs on horizontal curves | 0.84 | FO, HO, OtherNC, OtherO, OVT, SSD, SOD | $19,500 | 1 | Unit Only | $19,500 | 10 | $32,674 | $2,450 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $16,816 | 1 | Miles | $16,816 | 8 | $29,103 | $2,150 |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.85 | ROR, FO, HO, OVT, SOD, SSD | $195,297 | 1 | Miles | $195,297 | 15 | $195,297 | $14,400 |
| | | | | | | | | | |
| TOTAL BENEFIT | $647,350 | | TOTAL COST | | | | | | $33,900 |

| | |
|---|---|
| BENEFIT/ COST | 18.90 |

| | |
|---|---|
| ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED | 0.09 |

| | |
|---|---|
| TOTAL FATALITIES PREVENTED | 0.45 |

* CMF = Crash Modification Factor
** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - NORTH MARION STREET - ALTERNATIVE 1

Project: North Marion Street
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Jackson
Section:

| Item No. | Item Description / Name | Total Quantity | Flatten Vertical Curve | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 1,800.0 | | | | 1,800.0 | SQ YD | $40.00 | $72,000.00 |
| 2 | Earth Excavation | 800.0 | 500.0 | | | 300.0 | CU YD | $25.00 | $20,000.00 |
| 3 | Removal & Disposal of Unsuitable Materia | 800.0 | 500.0 | | | 300.0 | CU YD | $25.00 | $20,000.00 |
| 4 | Grading and Shaping Ditches | 7,236.0 | 900.0 | | | 6,336.0 | FOOT | $7.00 | $50,652.00 |
| 5 | Pavement Removal | 1,500.0 | 1,200.0 | | | 300.0 | SQ YD | $15.00 | $22,500.00 |
| 6 | HMA Full-Depth Pavement, 8" | 1,200.0 | 1,200.0 | | | | SQ YD | $50.00 | $60,000.00 |
| 7 | Subbase Granular Material, 12" | 1,300.0 | 1,300.0 | | | | SQ YD | $25.00 | $32,500.00 |
| 8 | Shoulder Rumble Strips, 8 Inch | 5,280.0 | | | 5,280.0 | | FOOT | $2.00 | $10,560.00 |
| 9 | Pavement Marking | 6,180.0 | 900.0 | | | 5,280.0 | FOOT | $1.25 | $7,725.00 |
| 10 | Traffic Signs | 22.0 | | 22.0 | | | EACH | $500.00 | $11,000.00 |
| 11 | Remove Existing Signs | 8.0 | | 8.0 | | | EACH | $250.00 | $2,000.00 |
| 12 | Traffic Control | 1.0 | 0.5 | 0.05 | 0.05 | 0.4 | L SUM | $5,000.00 | $5,000.00 |
| 13 | Construction Layout | 1.0 | 0.5 | 0.05 | 0.05 | 0.4 | L SUM | $4,000.00 | $4,000.00 |
| 14 | Mobilization | 1.0 | 0.5 | 0.05 | 0.05 | 0.4 | L SUM | $31,000.00 | $31,000.00 |
| | Construction Subtotal (1-14): | | $162,925.00 | $15,000.00 | $12,560.00 | $158,452.00 | | | **$348,937.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | | **$0.00** |
| | Contingency (10%): | | $16,292.50 | $1,500.00 | $1,256.00 | $15,845.20 | | | **$34,893.70** |
| | Preliminary Engineering: | | $14,000.00 | $2,000.00 | $2,000.00 | $13,000.00 | | | **$31,000.00** |
| | Construction Engineering: | | $9,000.00 | $1,000.00 | $1,000.00 | $8,000.00 | | | **$19,000.00** |
| | Project Total: | | $202,217.50 | $19,500.00 | $16,816.00 | $195,297.20 | | | **$433,830.70** |

Illinois Department of Transportation

# HSIP Candidate Form

FY 2022

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 6/1/20 |
| **District:** 9 | **County:** Jackson | | **City:** NA |
| **Key route:** | **Marked route:** NA | | |
| **Road Name:** N. Marion Street | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 1.25 mile | ☐ N/A | | **Mile station:** 0.40 to 1.65 |

**Location Description:** N. Marion Street from E. Fisher St to Glade Ln (ALT 1+2)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 400 | **Total Entering AADT (Intersection):** NA | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | | **Lighting Present:** ☐ Y ☒ N |

**CHSP Emphasis Area(s):** Road Departure ☐ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 1 – rural, 2 way segment, 1 segment ☐ N/A

**Other:** 2020 Greater Egypt Priority Location Report for Jackson Co; 2017 IDOT Critical Safety Tier segment

**Crashes Details**

| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2016 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 2017 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2018 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| **Total** | 9 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 | 4 | 0 | 3 |

**Location Description:** Rural roadway between Carbondale and future casino site in Williamson Co (2022/2023)

**Problem Description:** Combination of horizontal/vertical curves contribute to Road Departure crashes having a 48% injury rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (6), Overturn (2), and Sideswipe Meeting (1)

**Proposed Improvement(s):** Alternative 1+2 adds paved shoulders (2 feet), minor reprofile of old railroad crossings (2), longitudinal rumble strips, and curve warning signs (3 curves) along 1.25 mile segment

**Estimated Project Cost ($000's):** $716,000 **Benefit-Cost Ratio:** 11.50

**Local Projects:** Jackson County sponsored improvements not identified at this time

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 80 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 160

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project: | North Marion Street (ALT 2) | | | | Prepared by: | CMT |
| District: | 9 | County: | Jackson | City: | Carbondale | Date: | 5/26/2020 |
| Key Route: | 11 | Marked Route: | | MilePost: | | Current AADT: | 400 |
| Location: | North Marion Street | | | | | | |
| | | | | | | Length (miles): | 1.3 |
| Crash data: | 5 | Years | | | | Begin Station: | |
| | From | 2014 | to | 2018 | | End Station: | |
| | | | | | | Traffic Growth factor: | 3.0% |
| Peer Group: | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | | Interest rate: | 4.0% |

| Messages |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| Crash Type | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| Crash Severity | ALL | AG | AN | FO | HO | LT | OtherNC | OtherO | OVT | PD | PDC | PKV | RE | RT | SSD | SOD | T | TR | NGT | WP | TOT |
| Fatal Crashes | | | | | | | | | 1 | | | | | | | | | | 0 | 0 | 1 |
| A-Injury Crashes | | | | 2 | | | | | | | | | | | | | | | 1 | 0 | 2 |
| B-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | 1 | | | 0 | 0 | 1 |
| PDO Crashes | | | | 3 | | | | | 1 | | | | | | | | | | 2 | 0 | 4 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| COUNTERMEASURE | | CMF * | Crash Type affected by this improvement | Unit Cost | Quantity | Units | Total Cost | Service Life | Present worth | EUAC ** |
| 4.1.28.AL.1 - Pavement Treatments - Flatten Crest Vertical Curve | | 0.80 | All | $188,926 | 1 | Unit Qnty | $188,926 | 20 | $188,926 | $13,950 |
| 4.6.7.S1.1 - Curves - Install chevron signs on horizontal curves | | 0.84 | FO, HO, OtherNC, OtherO, OVT, SSD, SOD | $19,478 | 1 | Unit Qnty | $19,478 | 10 | $32,637 | $2,450 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $15,068 | 2.5 | Miles | $37,670 | 8 | $65,165 | $4,800 |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.85 | ROR, FO, HO, OVT, SOD, SSD | $187,802 | 2.5 | Miles | $469,506 | 15 | $469,506 | $34,550 |
| | | | | | | | | | | |
| TOTAL BENEFIT | $641,350 | | | TOTAL COST | | | | | | $55,750 |

| BENEFIT/ COST | 11.50 |
|---|---|

| ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED | 0.09 |
|---|---|

| TOTAL FATALITIES PREVENTED | 0.45 |
|---|---|

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - NORTH MARION STREET - ALTERNATIVE 1+2

Project: North Marion Street
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Jackson
Section:

| Item No. | Item Description / Name | Total Quantity | Flatten Vertical Curve | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 4,400.0 | | | | 4,400.0 | SQ YD | $40.00 | $176,000.00 |
| 2 | Earth Excavation | 1,300.0 | 500.0 | | | 800.0 | CU YD | $25.00 | $32,500.00 |
| 3 | Removal & Disposal of Unsuitable Materia | 1,300.0 | 500.0 | | | 800.0 | CU YD | $25.00 | $32,500.00 |
| 4 | Grading and Shaping Ditches | 13,200.0 | | | | 13,200.0 | FOOT | $7.00 | $92,400.00 |
| 5 | Pavement Removal | 2,000.0 | 1,200.0 | | | 800.0 | SQ YD | $15.00 | $30,000.00 |
| 6 | HMA Full-Depth Pavement, 8" | 1,200.0 | 1,200.0 | | | | SQ YD | $50.00 | $60,000.00 |
| 7 | Subbase Granular Material, 12" | 1,300.0 | 1,300.0 | | | | SQ YD | $25.00 | $32,500.00 |
| 8 | Shoulder Rumble Strips, 8 Inch | 13,200.0 | | | 13,200.0 | | FOOT | $2.00 | $26,400.00 |
| 9 | Pavement Marking | 13,200.0 | | | | 13,200.0 | FOOT | $1.25 | $16,500.00 |
| 10 | Traffic Signs | 22.0 | | 22.0 | | | EACH | $500.00 | $11,000.00 |
| 11 | Remove Existing Signs | 8.0 | | 8.0 | | | EACH | $250.00 | $2,000.00 |
| 12 | Traffic Control | 1.0 | 0.26 | 0.03 | 0.05 | 0.66 | L SUM | $8,000.00 | $8,000.00 |
| 13 | Construction Layout | 1.0 | 0.26 | 0.03 | 0.05 | 0.66 | L SUM | $6,000.00 | $6,000.00 |
| 14 | Mobilization | 1.0 | 0.26 | 0.03 | 0.05 | 0.66 | L SUM | $52,000.00 | $52,000.00 |
| | Construction Subtotal (1-14): | | $152,660.00 | $14,980.00 | $29,700.00 | $380,460.00 | | | **$577,800.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | | **$0.00** |
| | Contingency (10%): | | $15,266.00 | $1,498.00 | $2,970.00 | $38,046.00 | | | **$57,780.00** |
| | Preliminary Engineering: | | $13,000.00 | $2,000.00 | $3,000.00 | $31,000.00 | | | **$49,000.00** |
| | Construction Engineering: | | $8,000.00 | $1,000.00 | $2,000.00 | $20,000.00 | | | **$31,000.00** |
| | Project Total: | | $188,926.00 | $19,478.00 | $37,670.00 | $469,506.00 | | | **$715,580.00** |

**Jackson County**
**Department of Highways**

1200 Enterprise Avenue, Murphysboro, Illinois 62966
618.684.4141 www.jacksoncounty-il.gov

# North Marion Street Improvement Project

## Anticipated Project Timeline

| | |
|---|---|
| Project Selection | Fall 2020 |
| Start Phase I/ Phase II | December 2020 |
| Purchase ROW | December 2021 |
| Project Utility Adjustments | January 2021 |
| Construction Letting | April 2022 |
| Construction Contract Completion | May 2022 |
| Construction Start | June 2022 |
| Construction Completion | August 2022 |
| Project Close-out | September 2022 |

| CASE_ID | YEAR | UNJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_LOC2 | VEH1_EVNT3 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201501428746 | 15 | 0 | 0 | Turning | Clear | Daylight | Dry | 0.00 | Normal | North-west | Turning Left | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | PD | 2573734.034910 | 399638.344177 |
| 201801465397 | 18 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 0.00 | Other/ Unknown | North | Unknown | Ran Off Roadway | Other | | | | PD | 2573734.034910 | 399638.344177 |
| 201400239796 | 14 | 2 | 0 | Turning | Clear | Dusk | Dry | 0.00 | Normal | South | Turning Left | Mtr Veh In Traffic | Intersection | | | | C-Injury | 2573733.379200 | 399638.331887 |
| 201801408602 | 18 | 0 | 0 | Head On | Clear | Daylight | Dry | 0.17 | Normal | South | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | PD | 2573730.865510 | 398750.760752 |
| 201701372912 | 17 | 1 | 0 | Fixed Object | Clear | Darkness | Dry | 0.46 | Other/ Unknown | North-east | Negotiate A Curve | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Overturn | A-Injury | 2573725.418730 | 397225.413105 |
| 201400398564 | 14 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 0.49 | Other/ Unknown | South | Avoid Veh/Obj | Ran Off Roadway | Off Pvmt - Right | Culvert | Off Pvmt - Right | | PD | 2573724.714220 | 397028.087852 |
| 201601312955 | 16 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 0.53 | Normal | North | Unknown | Ran Off Roadway | Off Pvmt - Right | Tree or Shrub | Off Pvmt - Right | | B-Injury | 2573724.284730 | 396843.813258 |
| 201701187785 | 17 | 2 | 1 | Overturn | Clear | Daylight | Dry | 0.60 | Drug Impaired | North | Negotiate A Curve | Ran Off Roadway | Off Pvmt - Right | Overturn | Off Pvmt - Right | | Fatal | 2573724.099550 | 396462.596733 |
| 201801339729 | 18 | 0 | 0 | Overturn | Clear | Darkness | Dry | 0.69 | Other/ Unknown | North | Negotiate A Curve | Ran Off Roadway | Off Pvmt - Right | Overturn | Off Pvmt - Left | | PD | 2573698.127550 | 395977.975661 |
| 201801445346 | 18 | 2 | 0 | Fixed Object | Clear | Daylight | Dry | 1.06 | Normal | | Negotiate A Curve | Other Fxd Obj | Off Pvmt - Right | | | | A-Injury | 2572517.059570 | 394462.638413 |
| 201601440589 | 16 | 1 | 0 | Angle | Clear | Dark, Lighted Rd | Dry | 1.14 | Normal | South | Slow/Stop In Traffic | Mtr Veh In Traffic | Off Pvmt - Right | | | | C-Injury | 2572243.957740 | 394100.655381 |
| 201801477170 | 18 | 1 | 0 | Sideswipe Opp Dir | Clear | Daylight | Dry | 1.46 | Normal | North | Negotiate A Curve | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | C-Injury | 2571842.574600 | 392500.317316 |
| 201601472653 | 16 | 0 | 0 | Fixed Object | | Darkness | | 1.47 | Other/ Unknown | North | Avoid Veh/Obj | Other Fxd Obj | Off Pvmt - Right | | | | PD | 2571843.235540 | 392474.416330 |
| 201701387048 | 17 | 0 | 0 | Fixed Object | Clear | | Dry | 1.60 | Other/ Unknown | North-east | Unknown | Ran Off Roadway | Off Pvmt - Right | Utility Pole | Off Pvmt - Right | | PD | 2571862.347050 | 391792.071938 |

Crashes within curves/profile adjustments of Alternative 1
Crashes within Alternative 2 project limits (0.40-1.65)
Omit from BOC analysis

**N. Marion Street (Dillinger Road to E. Fisher Street)**

**Segment Priority #1**

**June 2020**

## INTRODUCTION

The segment of N. Marion Street located within Jackson County was identified as the highest ranked segment as part of a Greater Egypt Regional Planning and Development Commission (Greater Eqypt) safety analysis using the most current crash dataset (2014-2018). The study area extends north from Dillinger Road and south to the E. Fisher Street intersection. The total study area length is 1.65 miles.

A factor contributing to the priority ranking in addition to the crash frequency and severity within the study limits is future traffic volume increases associated with the new Walker's Bluff Resort casino. N. Marion Street will be a direct connection between the City of Carbondale and the casino site in western Williamson County/ Carterville. The future safety performance of N. Marion Street is expected to decrease when Phase 1 of the casino opens which is tentatively planned for 2022/2023.

## EXISTING CONDITIONS

The adjacent land use is a combination of agricultural (north), industrial, and residential (south) within the study area. The section of N. Marion Street extends from Dillinger Road (north) to Fisher Street (south) end of the study area. Land use is predominately industrial and residential in this section.

Marion Street is a roadway having an average width of 20 feet. Aggregate shoulders vary between 0 and 2 feet in width. The roadway is a two-lane facility with a centerline stripe in most locations. **Photos 1-5** show the existing horizontal and vertical curves within the study area. The approximate location of each photo is numbered on **Figure 1.**

1. The horizontal curve at the north end of the study area (mile 0.70) has advance curve signs (30 MPH advisory speed plaque) and chevrons on the outside of the curve – see **Photo 1**. A vertical curve exists within the horizontal curve limits and is ballast of a former railroad crossing of the Illinois Central railroad.
2. **Photo 2** shows the curve at the north end of the study area looking north (mile 0.75). The vertical alignment adds a level of complexity to the curve which is a contributing factor to a 2017 fatality.
3. A Winding Road (W1-5) sign is shown in **Photo 3** (mile 1.1) . The Winding Road (W1-5) sign typically is used instead of multiple Turn (W1-1) or Curve (W1-2) signs where there are three or more changes in roadway alignment each separated by a tangent distance of less than 600 feet.
4. **Photo 4** shows the curve at the south end of the study area (mile 1.4). The advance sign for this curve in the southbound direction is shown on **Photo 3** – 1,700 feet north of this location.
5. **Photo 5** shows that a vertical curve exists near the horizontal curve on the south end of the study area similar to the north end – ballast of a former railroad crossing associated with the Carbondale rail yard.

FIGURE 1: STUDY AREA

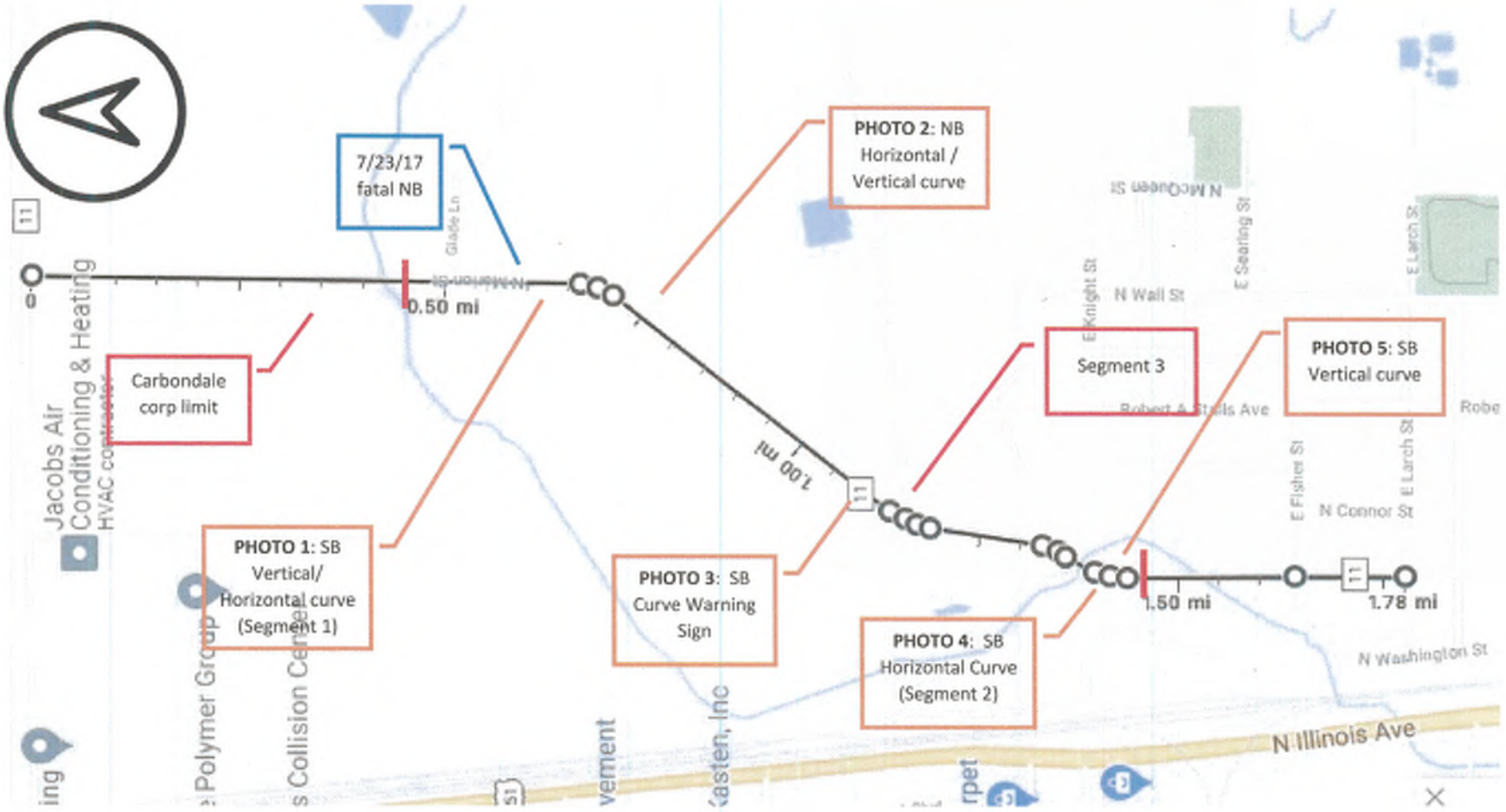


PHOTO 1: SB VERTICAL/HORIZONTAL CURVE (MILE 0.65)

PHOTO 2: NB VERTICAL/HORIZONTAL CURVE (MILE 0.75)

PHOTO 3: SB HORIZONTAL CURVE (MILE 1.1)


PHOTO 4: SB HORIZONTAL CURVE (MILE 1.4)

## PHOTO 5: SB VERTICAL CURVE (MILE 1.45)

The legal speed limit on N. Marion Street is 55 miles per hour. A posted speed of 30 miles per hour exists for N. Marion Street south of E. Fisher Street within the City of Carbondale.

## SAFETY ANALYSIS

A total of 14 crashes occurred within the study area over a 5-year period (2014-2018). The severity of crashes by year is summarized on **Figure 2**. Injury/fatality crashes account for 50 percent of all crashes over the 5-year period. One fatality occurred at mile 0.60 of the study area.

A fatality occurred Sunday, July 23, 2017 when the young driver of an SUV lost control north of the curve at Mile 0.70. The crash report was coded as the vehicle navigating a curve before rolling over. The driver was drug impaired. The curve shown in **Photo 1 and 2** has an advisory speed of 30 MPH and is a contributing factor to the crash.

One of the 2 Type A injury crashes occurred near Glade Lane. The single vehicle crash occurred when a northbound vehicle drove off the right side of the road and struck a tree. A Type B crash also occurred just north of the curve (Mile 0.53).

### FIGURE 2: CRASH FREQUENCY BY SEVERITY/ YEAR

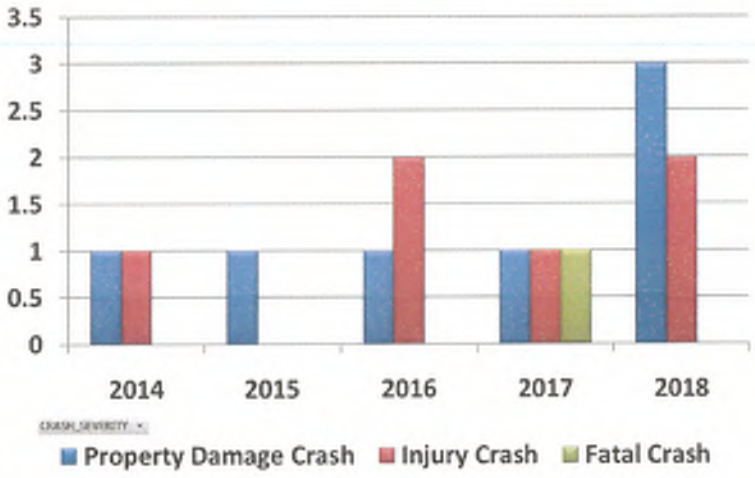
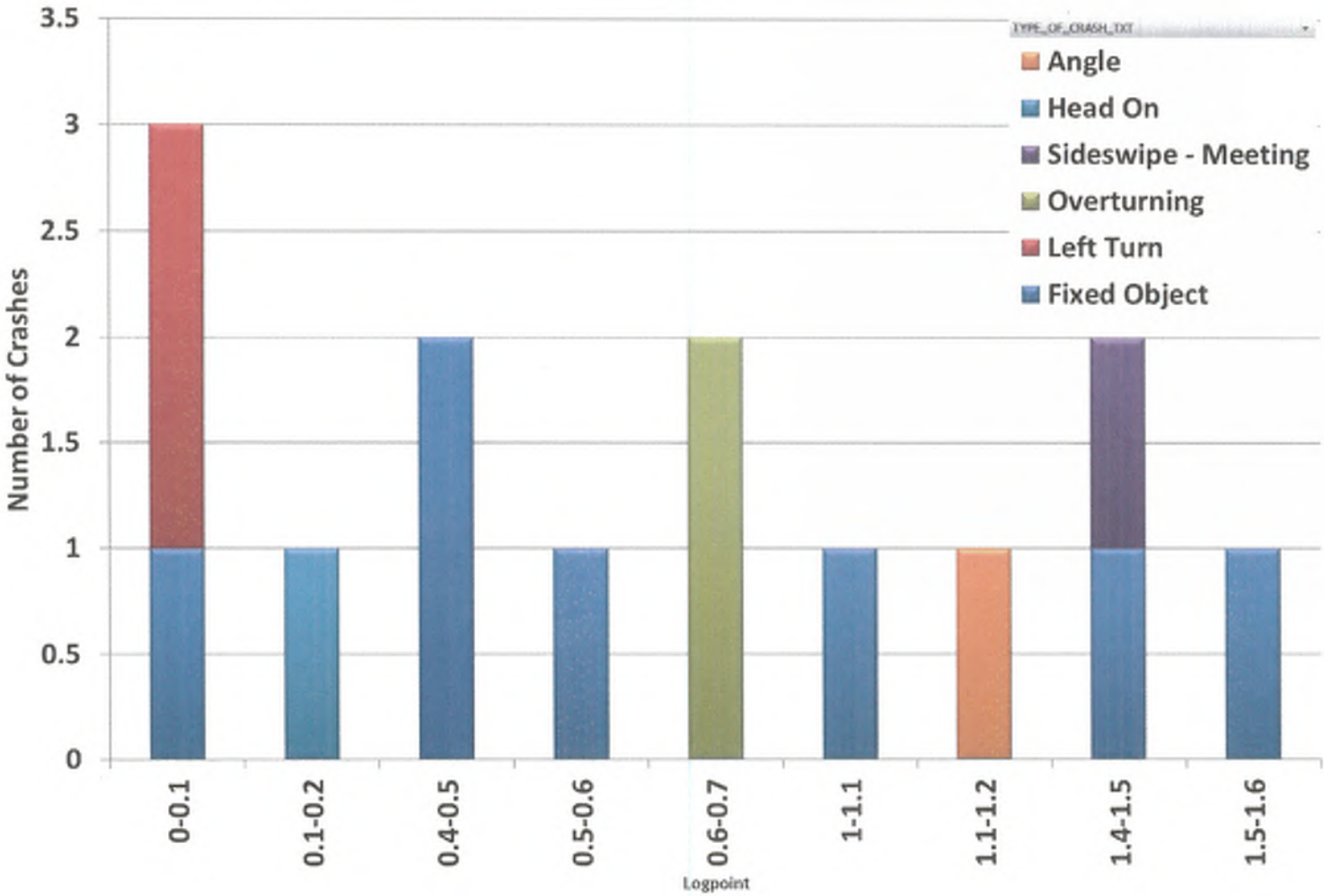



**Figure 3** shows histogram of the location and crash type plotted on an aerial map of the study area. The majority of crashes are single vehicle crashes where the vehicle leaves the roadway.

FIGURE 5: CRASH SEVERITY AND LOCATION MAP



## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasure are systemic in nature, the countermeasures are targeted to segments having a higher probability of crashes: segments of horizontal and vertical curves. Three primary countermeasures are proposed as summarized below:

1. Construct paved shoulders (3 ft width) on horizontal curves to accommodate longitudinal rumble strips
2. Reprofile short sections to remove bumps of old rail ballast located within or directly in advance of horizontal curves.
3. Upgrade pavement markings along curves (edge line markings) and curve warning signs/chevrons that are consistent with the Manual of Uniform Traffic Control Devices (MUTCD). Compliance with the MUTCD will reduce driver workload thus improve safety performance.

The total length of improvements is 1.25 miles of the 1.65-mile corridor.

## NORTH CURVE COUNTERMEASURE (MILE 0.45 - 0.75) SEGMENT 1

The horizontal and vertical curve shown in **Photos 1 and 2** has a 250 ft radius. Three crashes occurred in proximity to this curve including one fatality. Two other fixed object crashes occurred north of the horizontal curve.

A medium-term countermeasure would include the following improvements:

- Reconstruct the vertical curve (250 ft length) by revising the profile on N. Marion Street. The vertical curve adds a level of complexity to the driving task that could be removed thus improve safety performance.
- Add 3 ft paved shoulders, longitudinal rumble stripes, and edge lines to a 0.30-mile segment The existing roadway requires cyclists to use the travel lane since no shoulder exists. An 8 inch rumble stripe on the edge line is proposed with 10 ft gaps to better accommodate bicyclists. Despite these bicycle accommodations, the proposed design assumes cyclists would use the travel lane as done in the existing condition.
- The existing curve has advance warning signs and a 30 MPH advisory speed plaque. A ball bank study to confirm the advisory speed at this location is recommended.

## MIDDLE CURVE COUNTERMEASURE (MILE 1.10 – 1.20) SEGMENT 3

The horizontal and vertical curve shown in **Photo 3** has an 820 ft radius. One road departure crash occurred in proximity to this curve. A medium-term countermeasure would include the following improvements:

- Convert the Winding Road sign to a standard Curve Warning sign (W1-2) for the curve shown in **Photo 3.** The tangent length south of the middle curve is about 600 feet which is the minimum distance between successive curves. Installing more targeted curve warning with an appropriate advisory speed is recommended to provide more curve specific information to the driver.

- The existing curve has advance warning signs and a 30 MPH advisory speed plaque . A ball bank study to confirm the advisory speed at this location is recommended since the current advisory speed on the Winding Curve sign is applicable to the curves near Mile 1.4. The addition of paved shoulders, longitudinal rumble stripes, and edge lines as recommended at other locations are not supported by the crash history at this location. Therefore, a recoverable fore slope is proposed to mitigate Road Departure crashes within this segment.
- Regrading on both sides of N. Marion Street is proposed to mitigate a fixed object crash near Mile 1.14.

No CMF is applied for the regrading of shoulder countermeasure (1.10-1.20), but the costs are included in the overall project resulting in a conservative benefit/ cost ratio.

## SOUTH CURVE COUNTERMEASURE (MILE 1.25 – 1.45) SEGMENT 2

**Photo 3** shows the Winding Road sign with an advisory plaque of 30 MPH. The use of the W1-5 sign meets the MUTCD guidance when a roadway changes direction more than 3 times. The following countermeasures for the reverse curves at the south end of the study area are recommended:

- Install curve warning, speed advisory plaques, and/or chevrons in accordance with **Table 2C-5** of the MUTCD along N. Marion Street especially for the south end of the study area.
- Add a reverse curve sign for the 2 curves at the south end of the study area. The smallest radius curve is 215 feet. The vertical curve at the south end is also a contributing factor to a sideswipe meeting crash.
- The addition of chevrons is proposed for the south curves due to the size of the radii (320 feet).

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

- Relocate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Existing signs are

located 400 feet in advance of the horizontal curves. Section 2C.05 emphasizes that signs are not placed too far in advance of the condition.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[5] | N/A[1] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[5] | N/A[1] | N/A[1] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[5] | N/A[1] | N/A[1] | — | — | — | — | — |
| 35 mph | 585 ft | 100 ft[5] | N/A[1] | N/A[1] | N/A[1] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[5] | 100 ft[5] | N/A[1] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[5] | 100 ft[5] | N/A[1] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[5] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[1] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[5] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[5] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[5] |

- Reconstruct the vertical curve (200 ft length) by revising the profile on N. Marion Street. The vertical curve obscures the horizontal curve immediately north of the old railroad bed. Flattening the vertical curve would mitigate the sideswipe-meeting crash and fixed object crash to improve safety performance.
- Add 3 ft paved shoulders, longitudinal rumble strips, and edge lines to a 0.20 -mile segment See narrative as part of the North Curve section of the report for additional discussion regarding the longitudinal rumble strip design.

**Figure 6** shows the proposed typical section on N. Marion Street.

## FIGURE 6: N. MARION STREET TYPICAL SECTION


## BENEFIT COST ANALYSIS

Countermeasures are proposed on N. Marion Street to improve the safety performance of the corridor. The project data used to perform the benefit cost analysis is based on the following assumptions.

1. The crash dataset was scrubbed to include only Road Departure crashes (Fixed Object,Overturning, Sideswipe Meeting) for the benefit cost analysis.

2. Applying both CMFs for Install Chevron Signs and for Install Advance Curve Warning Signs was not done to over reporting safety benefits. The addition of curve warning and chevron signs is most beneficial between mile 1.1 and 1.5 whereas safety increases of the existing curve warning signs and chevrons at the north curve (mile 0.70) would be less. Therefore, only one sign related CMF was applied to all Road Departure crashes within the 1.25 mile segment. The CMF to Install Chevron Signs was used instead of Install Advance Curve Warning Signs.
3. The CMF for profile improvements is considered to be low for the expected benefits. The removal of the vertical curves will significantly improve visibility of the horizontal curve and vehicle control when navigating the horizontal curve. The vertical curve at the north curve (mile 0.70) was a contributing factor of the overturning crash resulting in a fatality. These benefits are not believed to be acccounted for with the CMF thus resulting in a conservative benefit/cost ratio.
4. Minor pavement widening is proposed to improve safety performance of the existing roadway having an effective width of 20 feet +/-.
5. Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Dix Irvington Road is a not a designed bicycle route. No bicycle crashes were documented as part of the crash analysis.

   The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as N. Marion Street. Note that no bicycle crashes were reported during the 5-year study period and N. Marion Street is not a designated bicycle route.

   Non-perfomring this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

Two alternatives were considered for the benefit cost analysis:

1. ALTERNATIVE 1: Curve/Profile Adjustments Only (0.60-mile length). The improvements listed above were only applied to the North, Middle and South curves as described in the Countermeasures section. The total cost for the 0.60 mile segment is estimated to be $434,000 with a Benefit Cost ratio of 18.90 calculated from the IDOT HSIP BOC analysis tool.
2. ALTERNATIVE 1+2: Systemic Safety Improvements (1.25-mile length). The improvements listed above were applied to the study segment between mile 0.40 and mile 1.65. Shoulder widening was applied to the Curve/Profile segments and to segments between the curves. The total cost for the 1.25 mile segment is estimated to be $716,000 with a Benefit Cost ratio of 11.50 calculated from the IDOT HSIP BOC analysis tool. A detailed cost estimate and BOC calculations are included as an attachment to this report.

While the systemic improvement (ALT 1+2) provides a more comprehensive safety solution, the targeted countermeasures outlined in ALT 1 would improve the safety performance of the corridor as well.

# Greater Egypt Safety Study

## APPENDIX 01: JEF DIX IRVINGTON ROAD

CMT

Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

August 21, 2020

Mr. Brandon Simmons
Jefferson County Engineer
750 Old Fairfield Road
Mt. Vernon, Illinois 62864

Mr. Brandon Simmons,

The Illinois Department of Transportation is pleased to inform you that your project has been selected for local Highway Safety Improvement Program (HSIP) funding. The project, identified by the Department as HSIP #202012017, involves paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs along Dix Irvington Road from US 51 to 0.5 Miles east of Copple Lane. Please note it is the Department's preference for the project to be continuous along Dix Irvington Road. Thus, additional funding is provided to complete safety improvements between the two segments outlined in the application. Congratulations on your successful application.

The federal HSIP commitment for this project will not exceed $1,616,009. The deadline for this award to be federally authorized is October 6, 2023 or funds will be rescinded.

Please contact Mr. J. Travis Emery, District 9 Local Roads Engineer at (618) 351-5260, or at James.Emery@illinois.gov to discuss program requirements and preparation of any agreements and / or contracts. Projects located within a Metropolitan Planning Organization (MPO) planning boundary are required to be listed in the local MPO's Transportation Improvement Program (TIP). Questions regarding the HSIP may be directed to Ms. Melinda Kos in the Central Bureau of Local Roads and Streets by telephone at (217) 785-5178.

All HSIP grant recipients must be registered with the State of Illinois to comply with the Grant Accountability and Transparency Act (GATA) 30 ILCS 708. Full GATA compliance is required, including the completion of all pre-award GATA paperwork. You may send inquiries to the Central Bureau of Local Roads and Streets or to DOT.GATA@illinois.gov for further assistance.

An important element of the HSIP is feedback on the safety performance of improved locations. Review and reporting of the crash history at this project location before and after the completion of construction will involve your agency. IDOT will coordinate this review approximately four years after construction is completed.

Sincerely,

Stephane B. Seck-Birhame, P.E., PTOE
Acting Bureau Chief of Local Roads and Streets

cc: Alan Ho, FHWA – Illinois Division
Cynthia Watters, IDOT – Bureau of Safety Programs and Engineering
J. Travis Emery, IDOT District 9
File

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2022**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 6/1/20 |
| **District:** 9 | **County:** Jefferson | | **City:** NA |
| **Key route:** | **Marked route:** NA | | |
| **Road Name:** Dix Irvington Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 3.10 miles (2 segments) | ☐ N/A | | **Mile station:** 0.25 to 2.85 |

**Location Description:** Dix Irvington Rd (US51 to Richview Road; Copple Ln east 0.5 mile)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,950 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 1: Rural, 2 way segment, 2 segments ☐ N/A

**Other:** 2020 Greater Egypt Priority Location Report for Jefferson Co; 2017 IDOT Critical Safety Tier segment (17-9-1-007)

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2014 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2015 | 6 | 0 | 0 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 2 |
| 2016 | 3 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 2017 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2018 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| **Total** | 14 | 0 | 0 | 5 | 5 | 2 | 2 | 1 | 1 | 6 | 1 | 6 |

**Location Description:** Rural roadway connecting US Route 51 interchange to the I-57 interchange

**Problem Description:** Pavement drop-offs contribute to Road Departure crashes having a 50% injury rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (8) and Overturn (6) crashes

**Proposed Improvement(s):** Add paved shoulders, longitudinal rumble strips, shoulder regrading and curve warning signs (4 curves)

**Estimated Project Cost ($000's):** $673,000 **Benefit-Cost Ratio:** 3.70

**Local Projects:** FY2021 resurfacing project (0.25-2.75) using STR funds

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 0.00 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 161.3

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Dix Irvington Road | | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Jefferson | *City:* | | *Date* | 5/27/2020 |
| *Key Route:* | 819 | *Marked Route:* | | *MilePost:* | | *Current AADT:* | 1950 |
| *Location:* | Dix Irvington | | | | | | |
| | | | | | | *Length (miles):* | 2.6 |
| *Crash data:* | 5 | Years | | | | *Begin Station:* | |
| | From | 2014 | to | 2018 | | *End Station:* | |
| | | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | | | 1 | | | | | 4 | | | | | | | | | | 2 | 0 | 5 |
| B-Injury Crashes | | | | 2 | | | | | | | | | | | | | | | 0 | 0 | 2 |
| C-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 1 | 0 | 1 |
| PDO Crashes | | | | 4 | | | | | 2 | | | | | | | | | | 4 | 0 | 6 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.82 | ROR, FO, HO, OVT, SOD, SSD | $92,458 | 5.2 | Miles | $480,780 | 15 | $480,780 | $35,400 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $14,043 | 5.2 | Miles | $73,023 | 8 | $126,380 | $9,300 |
| 4.7.3.S1.1 - Roadside Safety - Flatten Sideslopes | | 0.94 | All | $22,145 | 5.2 | Miles | $115,155 | 20 | $115,155 | $8,500 |
| 4.6.5.AL.1 - Curves - Install Advanced Curve Speed/Warning Sign | | 0.87 | All | $4,200 | 1 | Unit Qnty | $4,200 | 10 | $7,037 | $550 |
| | | | | | | | | | | |
| *TOTAL BENEFIT* | *$199,850* | | | *TOTAL COST* | | | | | | *$53,750* |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **3.70** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.00** | **TOTAL FATALITIES PREVENTED** | **0.00** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - DIX IRVINGTON ROAD

Project: Dix Irvington Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Jefferson
Section:

| Item No. | Item Description / Name | Total Quantity | Flatten Sideslopes | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 7,700.0 | | | | 7,700.0 | SQ YD | $40.00 | $308,000.00 |
| 2 | Earth Excavation | 1,300.0 | | | | 1,300.0 | CU YD | $25.00 | $32,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 700.0 | | | | 700.0 | CU YD | $25.00 | $17,500.00 |
| 4 | Grading and Shaping Ditches | 27,456.0 | 27,456.0 | | | | FOOT | $3.00 | $82,368.00 |
| 5 | Pavement Removal | 300.0 | | | | 300.0 | SQ YD | $15.00 | $4,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 27,456.0 | | | 27,456.0 | | FOOT | $2.00 | $54,912.00 |
| 7 | Traffic Signage | 4.0 | | 4.0 | | | EACH | $500.00 | $2,000.00 |
| 8 | Traffic Control | 1.0 | 0.25 | | 0.10 | 0.65 | L SUM | $3,500.00 | $3,500.00 |
| 9 | Construction Layout | 1.0 | 0.25 | | 0.10 | 0.65 | L SUM | $3,500.00 | $3,500.00 |
| 10 | Mobilization | 1.0 | 0.25 | | 0.10 | 0.65 | L SUM | $35,000.00 | $35,000.00 |
| | Construction Subtotal (1-10): | $92,868.00 | $2,000.00 | $59,112.00 | $389,800.00 | | | | **$543,780.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | | **$0.00** |
| | Contingency (10%): | $9,286.80 | $200.00 | $5,911.20 | $38,980.00 | | | | **$54,378.00** |
| | Preliminary Engineering: | $8,000.00 | $1,000.00 | $5,000.00 | $32,000.00 | | | | **$46,000.00** |
| | Construction Engineering: | $5,000.00 | $1,000.00 | $3,000.00 | $20,000.00 | | | | **$29,000.00** |
| | Project Total: | $115,154.80 | $4,200.00 | $73,023.20 | $480,780.00 | | | | **$673,158.00** |

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Project: | Dix Irvington Rd (SUPPLEMENTAL) | | | | Prepared by: | CMT |
| District: | 9 | County: | Jefferson | City: | Date | 5/27/2020 |
| Key Route: | 819 | Marked Route: | | MilePost: | Current AADT: | 1950 |
| Location: | Dix Irvington | | | | | |
| | | | | | Length (miles): | 0.7 |
| Crash data: | 5 | Years | | | Begin Station: | |
| | From | 2014 | to | 2018 | End Station: | |
| | | | | | Traffic Growth factor | 3.0% |
| Peer Group: | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | Interest rate | 4.0% |

| Messages |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| Crash Type | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| Crash Severity | ALL | AG | AN | FO | HO | LT | OtherNC | OtherO | OVT | PD | PDC | PKV | RE | RT | SSD | SOD | T | TR | NGT | WP | TOT |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | | | 1 | | | | | 1 | | | | | | | | | | 1 | 0 | 2 |
| B-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| PDO Crashes | | | | 1 | | | | | 1 | | | | | | | | | | 2 | 0 | 2 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| COUNTERMEASURE | CMF * | Crash Type affected by this improvement | Unit Cost | Quantity | Units | Total Cost | Service Life | Present worth | EUAC ** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.82 | ROR, FO, HO, OVT, SOD, SSD | $95,807 | 1.4 | Miles | $134,130 | 15 | $134,130 | $9,900 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $14,702 | 1.4 | Miles | $20,582 | 8 | $35,621 | $2,650 |
| 4.7.3.S1.1 - Roadside Safety - Flatten Sideslopes | 0.94 | All | $23,353 | 1.4 | Miles | $32,694 | 20 | $32,694 | $2,450 |
| | | All | | | | | | | |
| | | | | | | | | | |
| TOTAL BENEFIT | $82,300 | | TOTAL COST | | | | | | $15,000 |

| BENEFIT/ COST | 5.50 |
|---|---|

| ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED | 0.00 |
|---|---|

| TOTAL FATALITIES PREVENTED | 0.00 |
|---|---|

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - DIX IRVINGTON ROAD - SUPPLEMENTAL

Project: Dix Irvington Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/20/2020
Checked By: SPH (CMT) 5/20/2020

Project #:
Municipality:
Road Dist: Nine
County: Jefferson
Section:

| Item No. | Item Description / Name | Total Quantity | Flatten Sideslopes | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 2,100.0 | | | 2,100.0 | SQ YD | $40.00 | $84,000.00 |
| 2 | Earth Excavation | 400.0 | | | 400.0 | CU YD | $25.00 | $10,000.00 |
| 3 | Removal & Disposal of Unsuitable Material | 200.0 | | | 200.0 | CU YD | $25.00 | $5,000.00 |
| 4 | Grading and Shaping Ditches | 7,392.0 | 7,392.0 | | | FOOT | $3.00 | $22,176.00 |
| 5 | Pavement Removal | 100.0 | | | 100.0 | SQ YD | $15.00 | $1,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 7,392.0 | | 7,392.0 | | FOOT | $2.00 | $14,784.00 |
| 7 | Traffic Control | 1.0 | 0.25 | 0.10 | 0.65 | L SUM | $1,000.00 | $1,000.00 |
| 8 | Construction Layout | 1.0 | 0.25 | 0.10 | 0.65 | L SUM | $1,000.00 | $1,000.00 |
| 9 | Mobilization | 1.0 | 0.25 | 0.10 | 0.65 | L SUM | $10,000.00 | $10,000.00 |
| | Construction Subtotal (1-9): | | $25,176.00 | $15,984.00 | $108,300.00 | | | **$149,460.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | **$0.00** |
| | Contingency (10%): | | $2,517.60 | $1,598.40 | $10,830.00 | | | **$14,946.00** |
| | Preliminary Engineering: | | $3,000.00 | $2,000.00 | $9,000.00 | | | **$14,000.00** |
| | Construction Engineering: | | $2,000.00 | $1,000.00 | $6,000.00 | | | **$9,000.00** |
| | Project Total: | | $32,693.60 | $20,582.40 | $134,130.00 | | | **$187,406.00** |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_LOC2 | VEH1_EVNT3 | VEH2_DIR | VEH2_EVNT1 | VEH2_LOC1 | VEH3_DIR | VEH3_MANUV | VEH3_EVNT1 | VEH3_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201601391422 | 16 | 1 | 0 | Overturned | Clear | Dawn | Dry | 0.42 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Overturn | Off Pvmt - Right | | | | | | | | | A-Injury | 2591625.774010 | 646615.341031 |
| 201501349081 | 15 | 1 | 0 | Overturned | Clear | Daylight | Dry | 0.48 | Normal | Passenger | East | Skid/Ctrl Loss | Overturn | Off Pvmt - Right | | | | | | | | | | | A-Injury | 2591963.351410 | 646669.522734 |
| 201501349142 | 15 | 1 | 0 | Overturned | Clear | Daylight | Dry | 0.73 | Normal | Motorcycle (+150cc) | West | Straight Ahead | Overturn | Off Pvmt - Right | | | | | | | | | | | A-Injury | 2593264.659400 | 646741.445950 |
| 201501338811 | 15 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 0.95 | Normal | Other | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | | | | | | | B-Injury | 2594426.724720 | 646756.738909 |
| 201801485208 | 18 | 0 | 0 | Overturned | Snow | Darkness | Snow or Slush | 1.88 | Normal | SUV | West | Skid/Ctrl Loss | Overturn | On Pvmt (Roadway) | | | | | | | | | | | PD | 2599324.801160 | 646814.242428 |
| 201701452093 | 17 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 1.99 | Normal | Passenger | East | Skid/Ctrl Loss | Ran Off Roadway | Other | Culvert | Off Pvmt - Left | Overturn | | | | | | | | PD | 2599931.050820 | 646830.335609 |
| 201801228101 | 18 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 2.32 | Fatigued | SUV | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | | | | | | | PD | 2601652.129400 | 646861.085471 |
| 201400419274 | 14 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 2.46 | Alcohol Impaired | Pickup | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Overturn | | | | | | | | PD | 2602413.851840 | 646869.961508 |
| 201501235348 | 15 | 1 | 0 | Fixed Object | Clear | Darkness | Ice | 2.72 | Other/ Unknown | Pickup | North | Skid/Ctrl Loss | Ran Off Roadway | Other | Ditch/ Embankment | Other | | | | | | | | | C-Injury | 2603752.616880 | 646889.018753 |
| 201501475104 | 15 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 4.00 | Other/Unknown | Pickup | West | Avoid Veh/Objts | Ran Off Roadway | Off Pvmt - Left | Tree or Shrub | Off Pvmt - Left | Overturn | | | | | | | | PD | 2610533.056840 | 646780.174814 |
| 201501492644 | 15 | 0 | 0 | Other Non-Collision | Rain | Darkness | Wet | 4.24 | Normal | Passenger | East | Straight Ahead | Downhill Runaway | On Pvmt (Roadway) | | | | | | | | | | | PD | 2611764.057770 | 646773.537490 |
| 201400426306 | 14 | 0 | 0 | Turning | Clear | Daylight | Dry | 4.25 | Normal | Passenger | South | Turning Left | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | North | Turning Left | Mtr Veh In Traffic | Intersection | PD | 2611840.753850 | 646774.454218 |
| 201801410359 | 18 | 1 | 0 | Fixed Object | Rain | Darkness | Dry | 4.51 | Other/ Unknown | Passenger | West | Skid/Ctrl Loss | Other Fix Obj | On Pvmt (Roadway) | | | | | | | | | | | A-Injury | 2613223.412490 | 646776.018396 |
| 201801474287 | 18 | 0 | 0 | Opposite Direction | Clear | Daylight | Dry | 5.01 | Normal | Van/Mini-Van | West | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | PD | 2615850.346360 | 646781.335627 |
| 201801443284 | 18 | 0 | 0 | Rear End | Clear | Darkness | Dry | 5.01 | Other/ Unknown | Pickup | West | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | West | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | PD | 2615868.342480 | 646781.552796 |
| 201601463080 | 16 | 1 | 0 | Rear End | Clear | Daylight | Dry | 5.13 | Normal | SUV | East | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | B-Injury | 2616514.997540 | 646791.872970 |
| 201801477673 | 18 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 5.67 | Fatigued | Passenger | East | Other | Other Fixed Obj | Off Pvmt - Left | | | | | | | | | | | B-Injury | 2619331.718630 | 646777.172148 |
| 201601354949 | 16 | 1 | 0 | Overturned | Clear | Darkness | Dry | 6.02 | Normal | Passenger | East | Skid/Ctrl Loss | Overturn | Off Pvmt - Right | | | | | | | | | | | A-Injury | 2621183.412840 | 646781.038770 |
| 201601485387 | 16 | 0 | 0 | Fixed Object | Clear | Darkness | Wet | 6.14 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | | | | | | | PD | 2621791.162000 | 646882.068000 |
| 201501393147 | 15 | 0 | 0 | Overturned | Clear | Darkness | Dry | 6.25 | Other/ Unknown | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | | | | | | | | | | | PD | 2622359.883270 | 646978.291796 |
| 201501457778 | 15 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 6.34 | Removed By EMS | Motorcycle (+150cc) | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | | | | | | | B-Injury | 2622801.465390 | 647138.808386 |
| 201400231541 | 14 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 6.41 | Alcohol Impaired | Passenger | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Utility Pole | Off Pvmt - Right | | | | | | | | | A-Injury | 2623148.432380 | 647376.742781 |
| 201501441951 | 15 | 0 | 0 | Angle | Clear | Daylight | Dry | 7.52 | Normal | Passenger | South-east | Slow/Stop - Left Turn | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | PD | 2628942.247660 | 647580.374539 |
| 201801454291 | 18 | 1 | 0 | Angle | Clear | Daylight | Dry | 8.02 | Normal | Pickup | East | Skid/Ctrl Loss | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | South | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | B-Injury | 2631583.640870 | 647703.405387 |
| 201801470546 | 18 | 0 | 0 | Sideswipe Same Direction | Clear | Daylight | Dry | 8.33 | Normal | Passenger | East | Passing/Overtaking | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | East | Mtr Veh In Traffic | On Pvmt (Roadway) | | | | | PD | 2633215.675990 | 647786.030671 |
| 201801485211 | 18 | 1 | 0 | Fixed Object | Snow | Daylight | Snow or Slush | 8.93 | Normal | Passenger | East | Straight Ahead | Ran Off Roadway | Other | Ditch/ Embankment | Off Pvmt - Left | | | | | | | | | B-Injury | 2636391.781340 | 647926.552748 |

West project limits -- shoulder and warning signs (0.25-2.85) with PRIMARY countermeasures

Omit from analysis

East project limits -- benefits of warning signs (6.0-6.5) included with PRIMARY countermeasures

East project limits -- benefits of 2' paved shoulder (5.9-6.6) included with SUPPLEMENTAL countermeasures

**Dix Irvington Road**

**Jefferson County**

**June 2020**

## INTRODUCTION

A 6.5 mile segment of Dix Irvington Road was identified as the highest ranked segment within Jefferson County as part of a Greater Egypt Regional Planning and Development Commission (Greater Eqypt) safety analysis using the most current crash dataset (2014-2018). Several intersections were also ranked within the top 15 locations within the county: the Krupp Lane intersection (rank #10, mile 4.3) and the Palmer Road intersection (rank #15, mile 6.4)

Safety analysis using 5 years of crash data (2011-2015) was completed by IDOT in 2017 and identified a 2.4-mile segment of Dix Irvington Road as one of 3 Critical Safety Tier segments (17-9-1-007). The 2017 segment was located between the US Route 51 (0.00) interchange and the Richview Road intersection (mile 2.75). No intersections were ranked above the Medium Safety Tier ranking in the county.

The priority rankings using 2014-2018 crash data, the correlation to the 2017 Safety Tier lists and a FY2022 STR funded resurfacing project in were factors to an application for safety funding on Dix Irvington Road as shown in **Figure 1**.

## EXISTING CONDITIONS

Dix Irvington Road (PCR) is a county route (CR 39) providing east/west connectivity between US Route 51 and I-57. The roadway width is 21 feet with a painted centerline and edge lines for the 10.5-mile length. An aggregate shoulder averages 1-3 feet. The legal speed is 55 MPH. Intermittent No Passing zones exist within the study area due to intersections, horizontal curves, or crest vertical curves.

**A factor that contributes to the safety performance of the corridor is 4-6 inch drop offs along the edge of pavement.** County maintenance forces are not able to avoid drop offs with aggregate shoulders due a combination of high-speeds and narrow lanes resulting in rutting of non-paved surfaces. Temporary HMA patches are used to fill pavement drop off areas between the edge of pavement and the displaced aggregate shoulder as shown in **Photos 1-5**. Rutting occurs along the inside of horizontal curves and on straight segments due in part to lane widths of 10.5 feet.

Land use is a mix between residential, institutional, and undeveloped parcels. Location of photos and other items of interest shown on **Figure 1.** The 2016 ADT is 1,950 vehicles of which 60 are trucks west of the Richview Road intersection. The 2016 ADT is 1,000 vehicles east of the Richview Road intersection

### PHOTO 1: SHOULDER REPAIR AT BALDRIDGE RD (MILE 1.0)

FIGURE 1: STUDY AREA

## PHOTO 2: TEMPORARY WB SHOULDER REPAIR AT BALDRIDGE RD (MILE 1.02)

## PHOTO 3: DROP OFF AND REPAIR WEST OF RAILROAD CROSSING (MILE 1.95)


## PHOTO 4: DROP OFF AND REPAIR EAST OF RAILROAD CROSSING (MILE 2.55)


## PHOTO 5: VEHICLE POSITION AT EDGE OF PAVEMENT WHEN PASSING (MILE 6.45)

## SAFETY ANALYSIS

The Emphasis Area analysis in 2017 identified Road Departure crashes as the most frequent crash type (55.8%) resulting in Type A injuries within Jefferson County. A total of 26 crashes occurred within the study area over a 5-year period (2014-2018). The frequency of crashes by year is summarized on **Figure 2**. No fatal crashes occurred over the 5-year period.

Injury crashes represent 50 percent of the total crashes. All injury crashes comprise 6 Type A injuries, 6 Type B injuries, and 6 Type C injuries. The percentage of injury crashes are even higher if the data is limited to 4 years: 17 of the 26 crashes between 2015 and 2018 were injury crashes (65.4 percent).

Road departure crashes (fixed object, overturning, sideswipe-meeting) comprise 73% of all crashes within the study area. The Road Departure crashes resulted in 6 Type A injuries, 4 Type B injuries and 1 Type C injury. Note that angle crashes that occurred at the US Route 51 and I-57 interchanges were excluded from the database.

FIGURE 2: CRASH SEVERITY BY YEAR

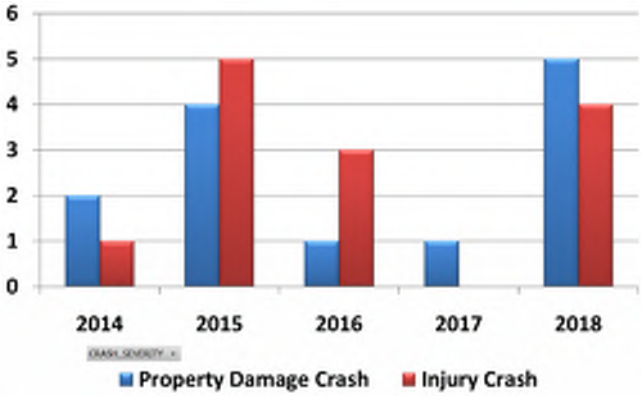



FIGURE 3: CRASH FREQUENCY BY TYPE

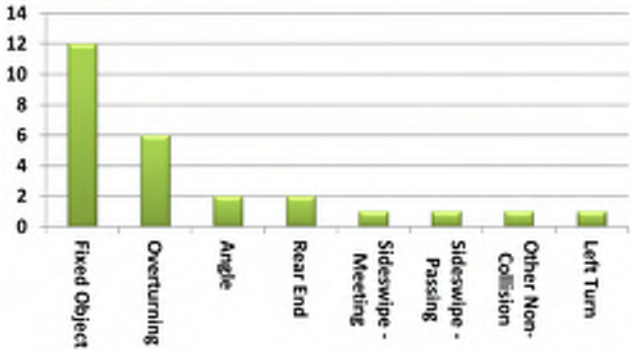
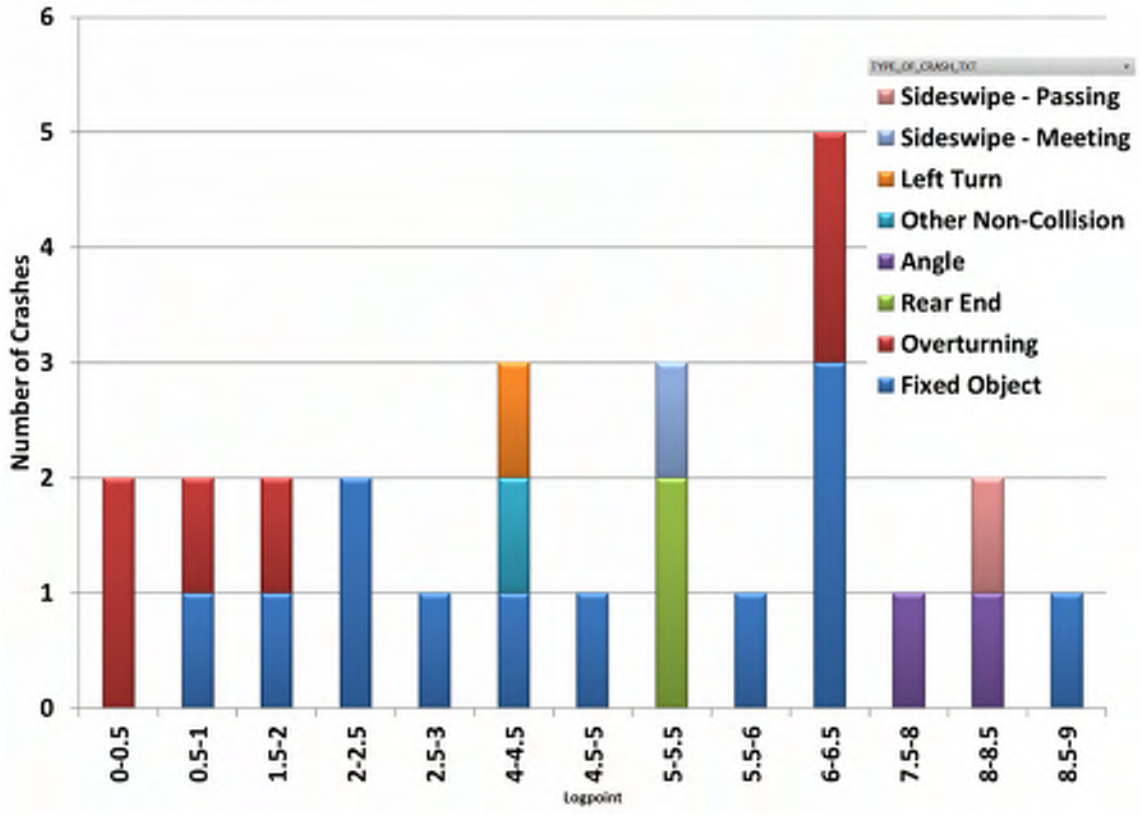



**Figure 4** shows the location of crashes at 0.5-mile intervals by crash type. The overturning crashes primarily occurred within segments having horizontal curves (mile 0.4-0.7;mile 6.0-6.5). The horizontal curves have a 2,000 ft and a 1,5200 radius, respectively. However, Road Departure crashes are distributed across the study area. No crashes occurred within the segment 3.0 to 4.0 and between 6.5 to 7.0 these segments except for animal related crashes.

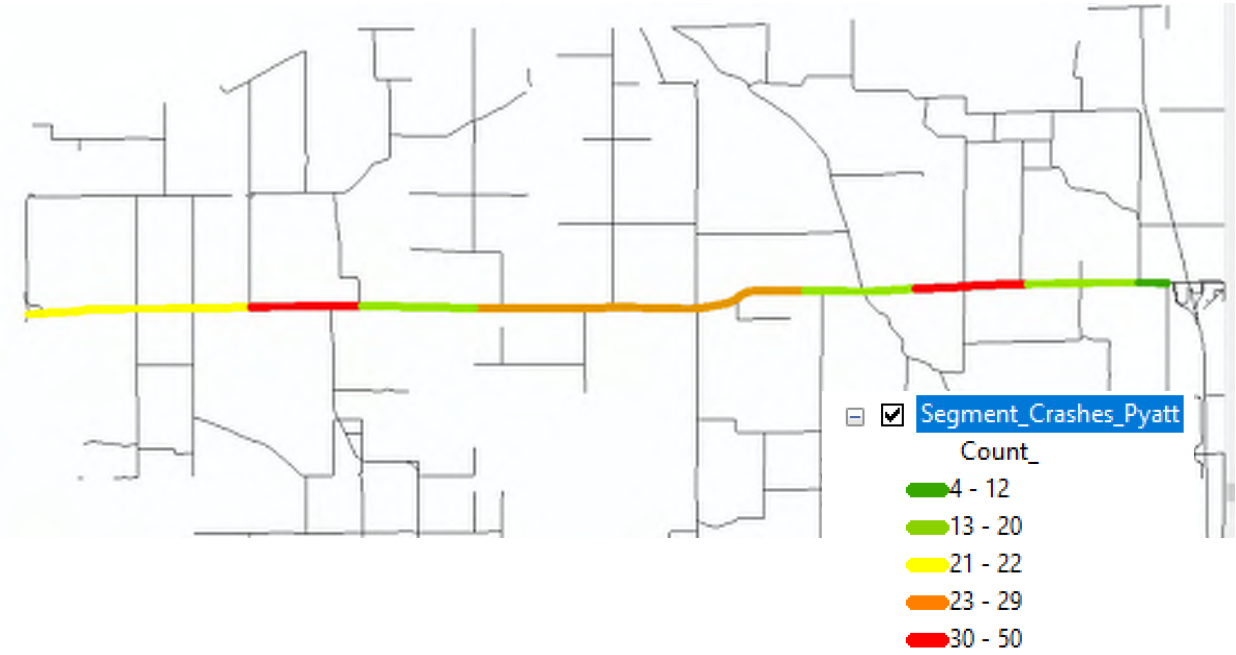
The crash dataset was expanded to include 15 years of data between 2005 and 2019 to assess long term crash trends. The output from the 15-year dataset (**Figure 5**) was compared to the near-term dataset (**Figure 4**) to see if there was any correlation. The segments having lower crash frequencies over the 5-year time period is similar to the crash frequency over a 15-year time period.

**Figure 5** indicates that the crashes are not focused at a specific location but rather are distributed across the entire length of the corridor. This information may help determine where more targeted countermeasures can be implemented even if the countermeasures are systemic by design.

## FIGURE 4: LOCATION FREQUENCY BY CRASH TYPE




## FIGURE 5: LOCATION FREQUENCY BY SEVERITY



## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasure are systemic in nature, the countermeasures are targeted to segments having a higher frequency of crashes. Two primary countermeasures are proposed as summarized below.

### CURVE WARNING SIGN COUNTERMEASURE

All overturning crashes occurred within the proximity of two locations having reverse horizontal curves.

1. Mile 0.4 to 0.7. The flat horizontal curves having a radius of 2,000 feet accommodates a 125 ft shift of the Dix Irvington Road alignment. No curve warning signs exist at this location despite the existing alignment being less than 55 MPH.
2. Mile 6.0 to 6.5. The horizontal curves having a minimum radius of 1,200 feet accommodates a 850 ft shift of the Dix Irvington Road alignment. Reverse Curve warning signs exist on the approaches to the horizontal curves. No advisory speed plaque exists. A limited number of chevrons exist.

A short-term countermeasure installs or upgrades curve warning signs and chevrons at horizontal curves to provide a warning to drivers about the edge of pavement. The installation of curve warning signs is a proven safety countermeasure. The following countermeasures for the reverse curves at the west end of the study area are recommended:

- Install reverse curve warning, speed advisory plaques, and/or chevrons in accordance with **Table 2C-5** of the MUTCD for the 2 curves at the west end of the study area near Mile 0.4 to 0.7. Chevrons are recommended even if the advisory speed is 10 MPH less than the speed limit. A ball bank study to confirm the advisory speed at this location is recommended.

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

- Upgrade reverse curve warning, speed advisory plaques, and/or chevrons in accordance with **Table 2C-5** of the MUTCD for the 2 curves at the east end of the study area near Mile 6.0 to 6.5. A ball bank study to confirm the advisory speed at this location is recommended.
- Relocate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Existing signs are located 700 feet in advance of the horizontal curves. Section 2C.05 emphasizes that signs are not placed too far in advance of the condition.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[6] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[6] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

## PAVED SHOULDER COUNTERMEASURE

The frequency of crashes occurring beyond the limits of the horizontal curves suggests other factors contribute to the safety performance on Dix Irvington Road (i.e., edge of pavement drop offs). **A medium-term countermeasure reconstructs the aggregate shoulder as a paved shoulder from 0.25 to 2.85 (see Figure 1) to address pavement drop offs in conjunction with longitudinal rumble strips.**

Drop offs at the edge of pavement occur where the aggregate shoulder has been dispersed or rutted due to higher speed vehicles driving on a non-improved surface. The drop off at the edge of pavement has been an on-going maintenance issue due, in part, to the high speeds and lack of paved shoulders.

The following targeted countermeasures are proposed on the Dix Irvington Road corridor:

- Replace the aggregate shoulder with a 2 ft paved shoulder (full depth). A paved shoulder width of 2 feet does not require a design exception per BLR Figure 33-3B but does deviate from the IDOT guidance for paved shoulders (ADT < 2,000 vehicles)
- Add a 4 ft graded shoulder where feasible within exiting right of way limits to stabilize the existing pavement and to reduce the frequency of overturn vehicles attributed to fore slopes
- Add longitudinal rumble strips to increase driver attention.

**Implementing the proposed countermeasures as part of separately funded pavement rehabilitation project on rural, high speed roadways is recommended as a best practice to leverage safety funds. The proposed countermeasures are to be constructed in conjunction with a funded resurfacing project using STR funds from US Route 51 to Richview Road (mile 2.75). Combining shoulder improvement projects as part of a larger pavement rehabilitation project can achieve an economy of scale.**


Context Sensitive Design (CSD) principles are applicable to the Dix Irvington Road corridor due to the impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based guidance from the *National Cooperative Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

Of the broad categories of transportation issues that are most applicable to the Dix Irvington Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section complies with IDOT design criteria for shoulder widths (BLR Figure 33-3B). The preferred design criteria for reconstruction projects (BLR Figure 32-2B) are not met.
2) Substantive Safety – The actual performance of the Dix Irvington Road corridor is to be compared to similar facilities to assess relative performance. Crash statistics for a corridor having a similar typical section as Dix Irvington Road does not appear on the priority ranking for the Greater Egypt Regional Planning and Development Commission (Greater Eqypt) safety analysis or the 2017 Safety Tier for segments.

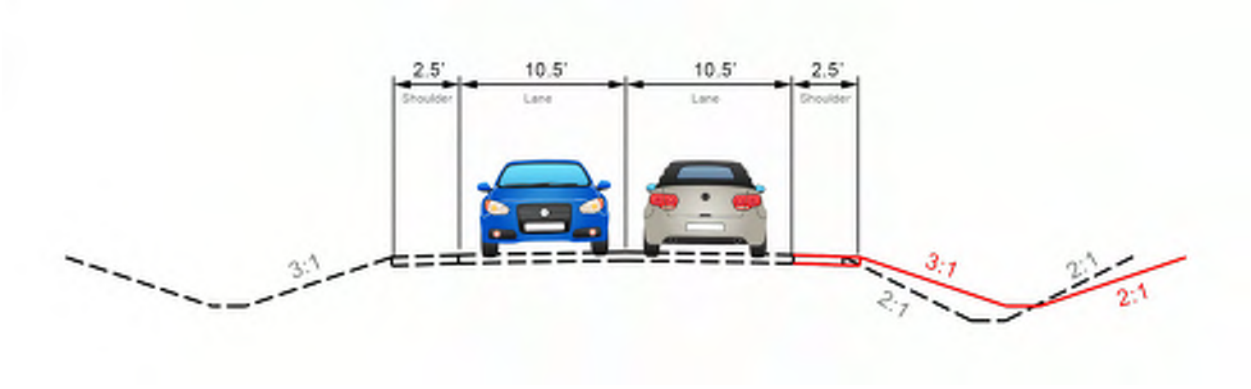
In the case of Dix Irvington Road, the substantive safety performance of Dix Irvington Road is not attributed to the design criteria outlined in BLR Figure 32-2B. Rather, the substantive safety performance of Dix Irvington Road is worse than comparable roadways due to the presence of pavement drop offs. **Figure 6** shows a decision matrix of nominal and substantive safety countermeasures.

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (70 feet).Complete reconstruction is not recommended since the existing typical section is consistent with Figure 33-3B of the BLR for roadways having an ADT < 2,000 vehicles: **Figure 7** shows the proposed typical section for Dix Irvington Road.

FIGURE 6: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS

| Substantive Safety Criteria | Nominal Safety Criteria: Meets | Nominal Safety Criteria: Does Not Meet |
|---|---|---|
| Meets | • Infrastructure improvements only (no need or justification for geometric revisions) based on safety | • 3R criteria may be considered<br>• Incorporate only low cost safety enhancements<br>• "Upgrade" to full standards may not be cost effective (consider design exceptions to avoid costs and impacts) |
| Does Not Meet | • Targeted safety improvements (low or high cost depending on extent of problem)<br>• Focus on cost-effective solutions to safety problems | • Complete reconstruction to current criteria probably warranted (no or very minimal design exceptions)<br>• Consider special targeted safety enhancements |

FIGURE 7: DIX IRVINGTON ROAD TYPICAL SECTION



## BENEFIT COST ANALYSIS

The PRIMARY countermeasures while systemic are limited to a total segment length of 3.10 miles on Dix Irvington Road. The project data used to perform the benefit cost analysis is based on the following assumptions.

- The crash dataset was scrubbed to only include Road Departure crashes (Fixed Object, Overturning, Sideswipe Meeting). The adjusted dataset includes 9 crashes.
- The CMF for Install Advance Curve Warning Signs is proposed since the need for chevrons is not known at this time (which is a separate CMF). The addition of curve warning signs is applicable between mile 0.4 and 0.7. The CMF for Install Advance Curve Warning Signs (0.87) was applied to the adjusted dataset (9 crashes) -- the warning sign upgrades proposed between mile 6.0 and 6.5 are accounted by the 5 crashes between Mile 1.5 and 3.0 (see **Figure 4**).
- Upgrading to a 2 ft paved shoulder along the 0.25 to 2.85 mile segment is proposed to improve safety performance of the existing roadway having an effective width of 21 feet +/-. The cost estimate include regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B. The improvements are to be constructed in conjunction with a STR funded resurfacing project within similar project limits.
- Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Dix Irvington Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis.

  The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Dix Irvington Road. Note that no bicycle crashes were reported during the 5-year study period and Dix Irvington Road is not a designated bicycle route.

  Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

The total cost for the overall 3.1 mile segment (2.6-mile shoulder widening and 0.5-mile curve warning signs) is estimated to be $673,000 with a Benefit Cost ratio of 3.70, calculated from the IDOT HSIP BOC analysis tool. A detailed cost estimate and BOC calculations are included as an attachment to this report.

## SUPPLEMENTAL BENEFIT COST ANALYSIS

Shoulder improvements would benefit other segments within the study limits. Therefore, the addition of a 2 ft paved shoulder along a 0.7-mile segment would further improve safety performance. The PRIMARY countermeasures are limited to the curve warning signs between mile 5.9 and mile 6.6. The following SUPPLEMENTAL improvements are proposed if additional funds are available to further mitigate the 5 fixed object and overturn crashes near the existing reverse curves. These improvements are proposed in addition to the PRIMARY countermeasures listed in the Benefit Cost Analysis section of the safety study.

- Upgrading to a 2 ft paved shoulder along the 5.90 to 6.60 mile segment is proposed to improve safety performance of the existing roadway having an effective width of 21 feet +/-. The cost estimate include regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B. The improvements are to be constructed in conjunction with a STR funded resurfacing project within similar project limits.

- Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Dix Irvington Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis.

  The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Dix Irvington Road. Note that no bicycle crashes were reported during the 5-year study period and Dix Irvington Road is not a designated bicycle route.

  Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

This additional 0.7-mile segment for shoulder widening reduces the length of the gap between shoulder and warning sign improvements between the reverse curves on either end of the study area. The paved shoulders are considered to be more permanent solutions whose need is shown in **Photo 5**.

**The total cost for the overall 0.7 mile segment is estimated to be $188,000 with a Benefit Cost ratio of 5.50, calculated from the IDOT HSIP BOC analysis tool. A separate cost estimate and benefit cost analysis are included as part of this funding application and is labeled as a SUPPLEMENTAL countermeasure.**

A future funding application may be submitted by Jefferson County to mitigate the safety performance issues east of Richview Road. Dix Irvington Road is a route eligible for Truck Access Route Program (TARP) funds which may be leveraged in conjunction with future safety funds.

# Greater Egypt Safety Study

## APPENDIX 02: GREENS MARKET ROAD

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** |
| **District:** 9 | **County:** Perry | | **City:** NA |
| **Key route:** 1824 | **Marked route:** County Highway 27 | | |
| **Road Name:** Greens Market Roadt | **Intersecting Roadway:** N/A ☐ | | |
| **Length:** 2.15 mile (SUPPLEMENTAL) ☐ N/A | | | **Mile station:** 3.42 to 5.82 |

**Location Description:** 2.15 mile segment between Kathleen Rd and US Route 51 (excludes PRIMARY project)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,300 | **Total Entering AADT (Intersection): NA** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | | **Lighting Present:** ☐ Y ☒ N |

**CHSP Emphasis Area(s):** Road Departure/ Angle ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4 -- Rural AADT 1,001-2,500 / two lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Perry Co; 2017 IDOT Medium Safety Tier segment; 2021 RORI Centerline/Edgeline upgrade

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2015 | 4 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 3 | 2 | 2 |
| 2016 | 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 1 |
| 2017 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 10 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 6 | 4 | 4 |

**Location Description:** Bypass of DuQuion between the IL14/ US Route 51 intersection and IL 152

**Problem Description:** Road Departure and Angle crashes having a 40% injury/ fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (4), Overturn (1), Sideswipe Meeting (1) and Turning/Angle (3)

**Proposed Improvement(s):** Adds paved shoulders (2 feet), longitudinal rumble strips, and curve warning signs (1 curve)

**Estimated Project Cost ($000's):** $636.17 **Benefit-Cost Ratio:** 3.70

**Local Projects:** Perry County funding local share of PRIMARY safety project

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 46.5 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 93.0

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**

**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Greens Market Road | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Perry | *City:* | *Date* | 4/30/2021 |
| *Key Route:* | 1824 | *Marked Route:* | | *MilePost:* | *Current AADT:* | 1300 |
| *Location:* | Greens Market Road | | | | | |
| | | | | | *Length (miles):* | 2.2 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | 1 | | | | | | | | | | | | | | | | | 0 | 0 | 1 |
| A-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| B-Injury Crashes | | | | | | | | | | | | | | | | 1 | | | 0 | 0 | 1 |
| C-Injury Crashes | | 1 | | | | | | | | | | | | | | | | | 0 | 0 | 1 |
| PDO Crashes | | | | 3 | | | | | 1 | | | 1 | | | | | 1 | | 0 | 0 | 6 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.90 | ROR, FO, HO, OVT, SOD, SSD | $259,214 | 2.15 | Miles | $557,310 | 15 | $557,310 | $50,150 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $29,507 | 2.15 | Miles | $63,440 | 8 | $109,795 | $9,900 |
| 4.6.5.AL.1 - Curves - Install Advanced Curve Speed/Warning Sign | | 0.87 | All | $15,420 | 1 | Unit Qnty | $15,420 | 10 | $25,837 | $2,350 |
| | | | All | | | | | | | |
| | | | | | | | | | | |
| *TOTAL BENEFIT* | *$230,700* | | | *TOTAL COST* | | | | | | *$62,400* |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **3.70** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.03** | **TOTAL FATALITIES PREVENTED** | **0.15** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - GREENS MARKET ROAD - SUPPLEMENTAL

Project: Greens Market Road (Kathleen Rd to US Route 51/ IL 14)
Description: Pre-Design Estimate

Project #:
Municipality:
Road Dist: Nine
County: Perry
Section:

Estimate By: BMB (CMT) 4/23/2021
Checked By: SPH (CMT) 4/23/2021

| Item No. | Item Description / Name | Total Quantity | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 6,400.0 | | | 6,400.0 | SQ YD | $40.00 | $256,000.00 |
| 2 | Earth Excavation | 900.0 | | | 900.0 | CU YD | $25.00 | $22,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 600.0 | | | 600.0 | CU YD | $25.00 | $15,000.00 |
| 4 | Grading and Shaping Ditches | 22,800.0 | | | 22,800.0 | FOOT | $1.00 | $22,800.00 |
| 5 | Pavement Removal | 1,300.0 | | | 1,300.0 | SQ YD | $15.00 | $19,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 22,200.0 | | 22,200.0 | | FOOT | $2.00 | $44,400.00 |
| 7 | Guardrail Remove/Replace | 1,000.0 | | | 1,000.0 | FOOT | $35.00 | $35,000.00 |
| 8 | Pavement Marking | 22,800.0 | | | 22,800.0 | FOOT | $1.25 | $28,500.00 |
| 9 | Traffic Signage | 22.0 | 22.0 | | | EACH | $500.00 | $11,000.00 |
| 10 | Traffic Control | 1.0 | 0.02 | 0.10 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 11 | Construction Layout | 1.0 | 0.02 | 0.10 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 12 | Mobilization | 1.0 | 0.02 | 0.10 | 0.88 | L SUM | $50,000.00 | $50,000.00 |

| | | | | | |
|---|---|---|---|---|---|
| Construction Subtotal (1-10): | $12,200.00 | $50,400.00 | $452,100.00 | | **$514,700.00** |
| Utility Relocation & Land Acquisition: | | | | | **$0.00** |
| Contingency (10%): | $1,220.00 | $5,040.00 | $45,210.00 | | **$51,470.00** |
| Preliminary Engineering: | $1,000.00 | $5,000.00 | $37,000.00 | | **$43,000.00** |
| Construction Engineering: | $1,000.00 | $3,000.00 | $23,000.00 | | **$27,000.00** |
| Project Total: | $15,420.00 | $63,440.00 | $557,310.00 | | **$636,170.00** |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_LOC2 | VEH1_EVNT3 | VEH2_DIR | VEH2_EVNT1 | VEH2_LOC1 | VEH3_DIR | VEH3_MANUV | VEH3_EVNT1 | VEH3_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201701379926 | 17 | 1 | 0 | Angle | Clear | Darkness | Dry | 3.34 | Had Been Drinking | Pickup | North | Backing | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | East | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | C-Injury | 2552503.461240 | 476667.78207700 |
| 201701362818 | 17 | 0 | 0 | Turning | Clear | Daylight | Dry | 3.48 | Normal | Pickup | West | Turning Left | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | West | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | PD | 2553233.273230 | 476673.98295300 |
| 201501193063 | 15 | 2 | 1 | Angle | Cldy/ Ovrcst | Daylight | Dry | 3.50 | Drug Impaired | Passenger | East | Straight Ahead | Mtr Veh In Traffic | Intersection | Ran Off Roadway | Off Pvmt - Right | | South | Mtr Veh In Traffic | Intersection | | | | | Fatal | 2553332.300350 | 476675.32732800 |
| 201501156631 | 15 | 0 | 0 | Parked Motor Vehicle | Clear | Darkness | Dry | 3.54 | Normal | Pickup | East | Backing | Hit Prkd Veh | On Pvmt (Rdwy) | | | | West | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | PD | 2553531.111450 | 476678.29429200 |
| 201601444109 | 16 | 1 | 0 | Fixed Object | Rain | Daylight | Wet | 4.29 | Normal | Passenger | East | Straight Ahead | Other Fixed Obj | Off Pvmt - Left | Tree or Shrub | Off Pvmt - Left | | | | | | | | | A-Injury | 2557506.749420 | 476740.67875400 |
| 201501477670 | 15 | 0 | 0 | Fixed Object | Rain | Daylight | Wet | 4.60 | Normal | Passenger | West | Ngting A Curve | Ran Off Roadway | Off Pvmt - Right | Culvert | Off Pvmt - Right | | | | | | | | | PD | 2559121.974510 | 476780.54688100 |
| 201601438986 | 16 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 4.72 | Normal | Passenger | West | Skidding/ Ctrl Loss | Other Fixed Obj | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Left | | | | | | | | | PD | 2559751.781910 | 476798.97270100 |
| 201501430116 | 15 | 0 | 0 | Fixed Object | Fog/ Smk/ Hz | Darkness | Wet | 4.84 | Normal | Passenger | West | Ngting A Curve | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Culvert | | | | | | | | PD | 2560417.808890 | 476816.12577000 |
| 201701473284 | 17 | 1 | 0 | Fixed Object | Rain | Daylight | Wet | 4.97 | Normal | Passenger | West | Skidding/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | | | | | | | B-Injury | 2561092.139120 | 476789.94838600 |
| 201601498059 | 16 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 5.09 | Other/Unknown | Passenger | South | Unknown | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Other Fixed Obj | | | | | | | | PD | 2561714.813290 | 476793.38814700 |
| 201901166153 | 19 | 1 | 0 | Fixed Object | Cldy/ Ovrcst | Darkness | Dry | 5.09 | Alcohol Impaired | Unknown | South | Straight Ahead | Other Fixed Obj | Off Pvmt - Right | Fire/ Explosion | | | | | | | | | | A-Injury | 2561633.724960 | 476870.45102500 |
| 201601313485 | 16 | 0 | 0 | Overturned | Other | Daylight | Ice | 5.76 | Normal | SUV | West | Straight Ahead | Overturn | Off Pvmt - Left | | | | | | | | | | | PD | 2565202.945370 | 476786.10542200 |
| 201901477087 | 19 | 1 | 0 | Sideswipe Opp Dir | Clear | Daylight | Dry | 5.76 | Normal | Pickup | Unknown | Avoiding Veh/Objs | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | Unknwn | Mtr Veh In Traffic | On Pvmtt (Rdwy) | | | | | B-Injury | 2565234.838320 | 476785.99795200 |

| | |
|---|---|
| | PRIMARY safety application |
| | SUPPLEMENTAL safety application for Road Departure crashes (segment) and Angle/ Turning crashes (intersection) |

**Greens Market Road**

**Perry County**

**April 2021**

## OVERVIEW SUPPLEMENTAL

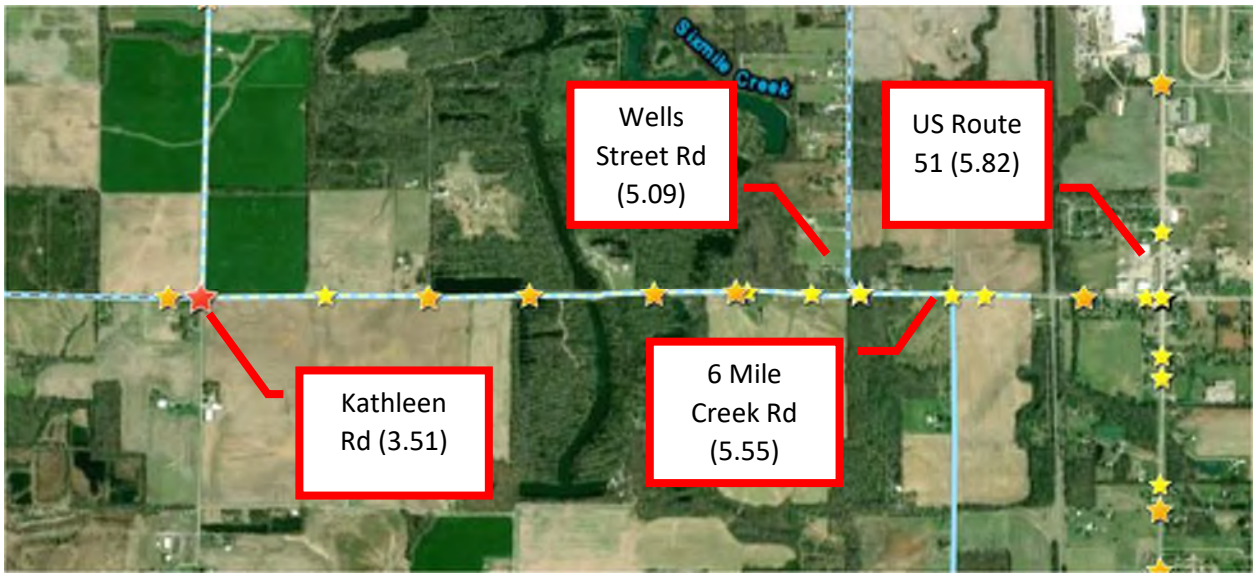
A 3.07-mile segment of Greens Market Road (CH 27) from Sutter Road (mile 2.24) to US Route 51 (mile 5.82) was identified as the highest ranked segment within Perry County as part of a Greater Egypt Regional Planning and Development Commission safety analysis using the most current crash dataset (2014-2018). The Kathleen Road intersection within the study limits was also ranked #1 on the local priority list using the same dataset.

**The PRIMARY improvements are focused on the Greens Market Road/ Wells Street Road intersection (MP 4.90 to MP 5.15). The SUPPLEMENTAL improvement focuses on the Greens Market Road segments (MP 3.42 to MP 5.82) not including the limits of the PRIMARY improvements.**

The priority ranking performed for Perry County was independent of previous analysis performed by the IDOT Bureau of Safety Programs and Engineering (BSPE). Various segments and intersections also have been identified by IDOT as priority safety locations:

1. IDOT 2017 safety analyses (2011-2015) identified a 1.85-mile segment of Greens Market Road as a Medium Safety Tier segment extending from Kathleen Road to east of 6 Mile Creek Road (MP 5.40).
2. The Kathleen Road/ Greens Market intersection was classified as one of 3 Low Safety Tier intersections within the Perry County jurisdiction from the IDOT 2017 safety analysis.
3. The IDOT Run Off the Road Initiative (RORI) identified a 2.80-mile segment on Greens Market Road between Sutter Road (mile 2.24) and east of 6 Mile Creek Road (mile 5.40). The suggested countermeasure from the RORI tool is Centerline Rumble Strips and Update Edge Lines – see limits (dashed blue line) in **Figure 1**.

### FIGURE 1: RORI SEGMENT ON GREENS MARKET ROAD



The 2020 priority rankings using 2014-2018 crash data, the correlation to the 2017 Safety Tier lists and the RORI output were factors to submit an application for safety funding on Greens Market Road.

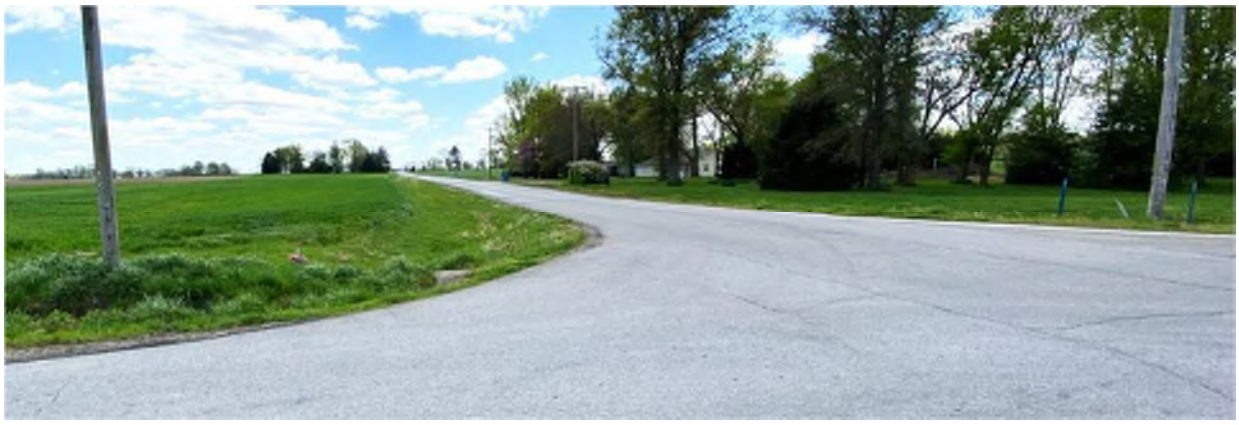
## EXISTING CONDITIONS (SUPPLEMENT)

Greens Market Road (GMR) is a county route that serves as a by-pass of DuQuoin between IL 14/ US Route 51 and IL 152. The roadway width is 20-21 feet with a painted centerline and edge line. An aggregate shoulder averages 0-2 feet. The legal speed is 55 MPH. Intermittent No Passing zones exist within the study area due to intersections, horizontal curves, or rolling terrain.

**A factor that contributes to the safety performance of the corridor are drop offs along the edge of pavement.** The 2019 ADT is 1,300 vehicles. Land use is a mix of residential, agricultural, and undeveloped parcels. Location of photos and other items of interest are shown on **Figure 2.**

### PHOTO 1: EB APPROACH OF KATHLEEN ROAD (MILE 3.48)


### PHOTO 2: WB GREENS MARKET RD LOOKING SOUTH AT KATHLEEN RD (MILE 3.51)



## PHOTO 3: SHOULDER DROP-OFF EAST OF VANCIL CEMETARY RD (MILE 4.55)

## PHOTO 4: EB GREENS MARKET RD @ CURVE (MILE 4.80)

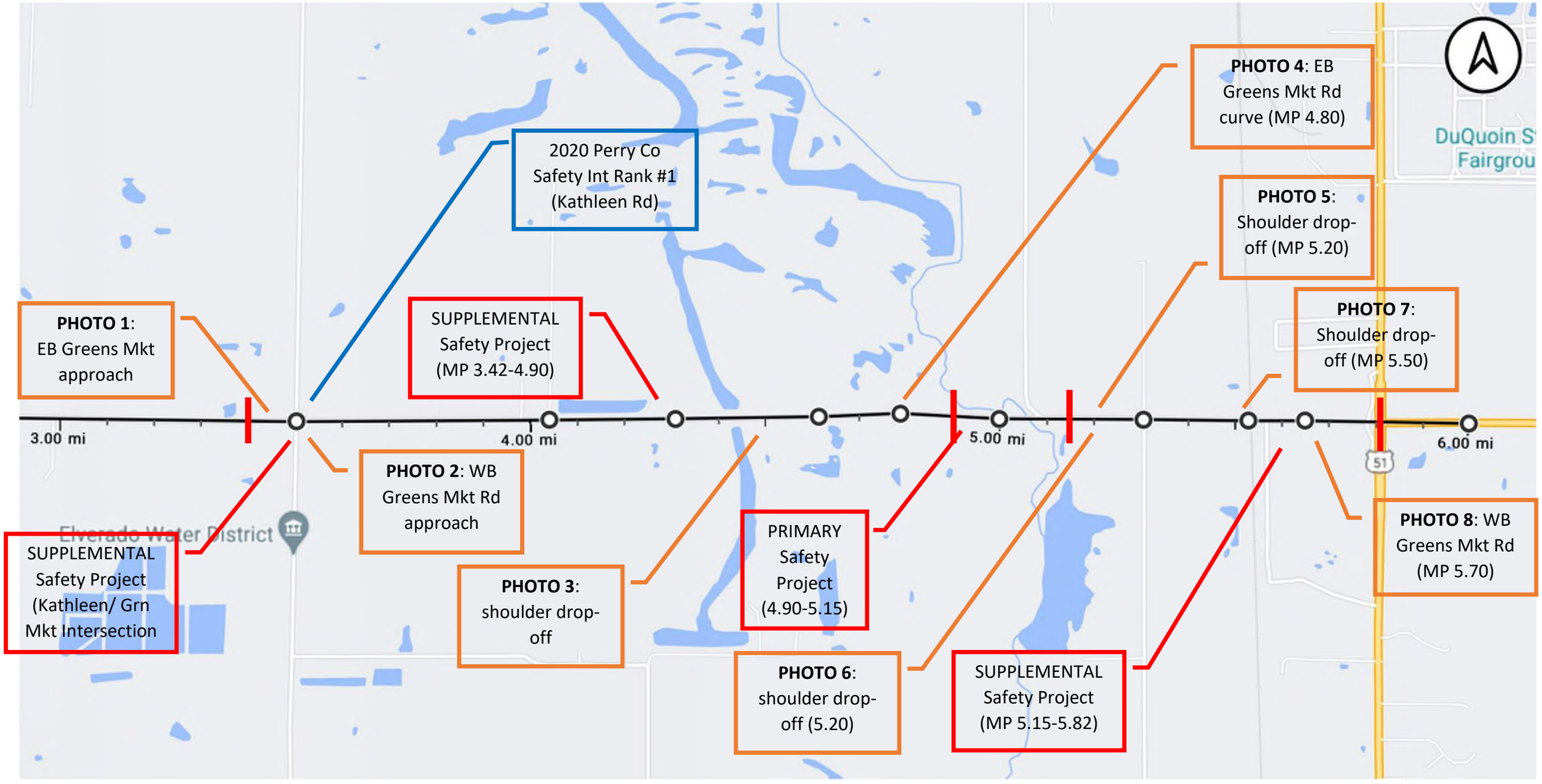
## PHOTO 5: NO SHOULDER EAST OF WELLS STREET RD (MILE 5.20)

## PHOTO 6: SHOULDER DROP-OFF EAST OF WELLS STREET ROAD (MILE 5.20)

## PHOTO 7: SHOULDER DROP-OFF WEST OF RR CROSSING (MILE 5.50)

## PHOTO8: NO SHOULDER ON WB GREENS MARKET ROAD (MILE 5.70)

FIGURE 2: STUDY AREA



## SAFETY ANALYSIS

A total of 13 crashes occurred within the study area over a 5-year period (2015-2019). The frequency of crashes by year is summarized on **Figure 3**.

One fatal crash occurred over the 5-year period – an angle crash at the Kathleen Rd intersection that occurred at 8:04 AM on a Saturday. An eastbound vehicle ran the stop sign and struck a through vehicle on Kathleen Road. The at-fault driver died and a passenger had severe injuries.

Injury/fatal crashes represent 46.2% of the total crashes within the study area. All injury crashes comprise 2 Type A injuries, 2 Type B injuries, and 1 Type C injury.

Road departure crashes (fixed object, overturning, sidewipe-meeting) comprise 69% of all crashes within the study area as shown in **Figure 4**. The subset of only Road Departure crashes resulted in 2 Type A injuries and 2 Type B injuries. The primary countermeasure will address Road Departure crashes due to crash frequency and severity.

FIGURE 3: CRASH SEVERITY BY YEAR

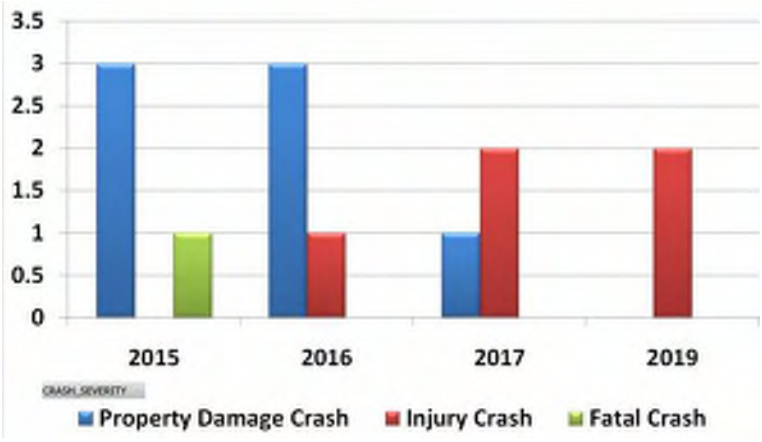
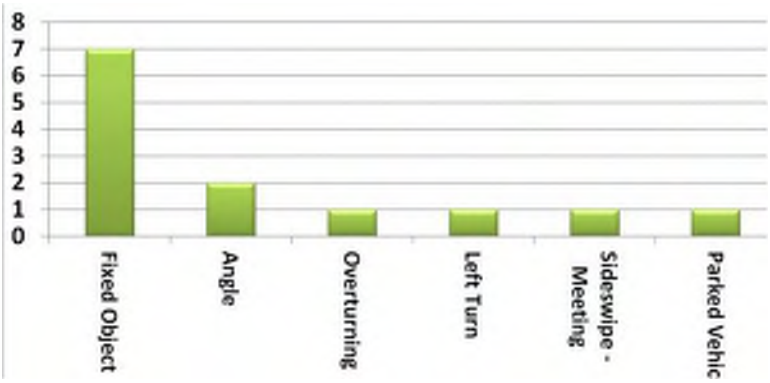



FIGURE 4: CRASH FREQUENCY BY TYPE

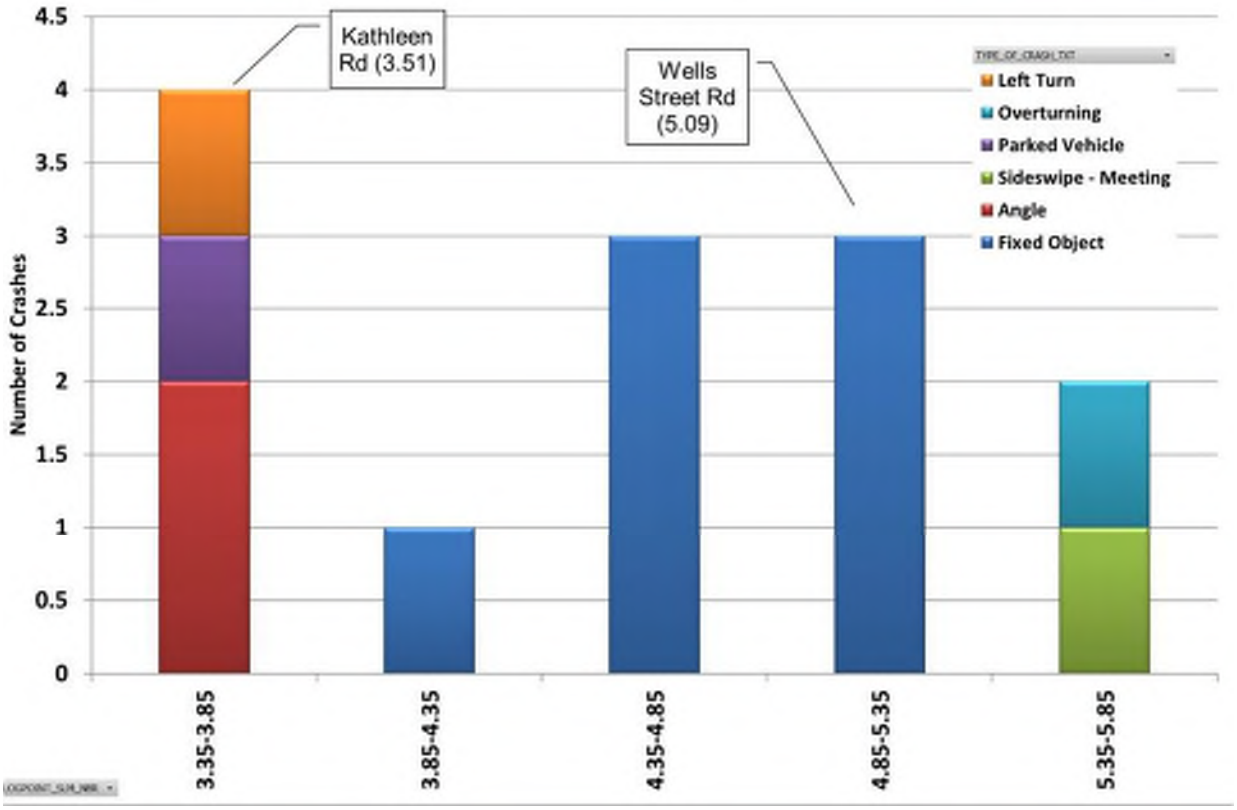



Low-cost countermeasures can be implemented to address other crash types such as angle crashes. Therefore, the angle crashes associated with the Kathleen Road intersection remained within the dataset. Low-cost countermeasure may consist of improved sign visibility and changes to traffic control at the intersection.

A horizontal curve having a radius of 1,300 feet in located near MP 4.80. BLR Figure 29-3B suggests that a 7.5% superelevation rate would be required to meet a design speed of 55 MPH for a 1,275 ft radius. The cross slope of the existing roadway is a normal crown section as shown in **Photo 4** which meets design criteria for 20 MPH.

**Figure 5** shows the location of crashes at 0.5-mile intervals by crash type. The fixed object/ overturning crashes were higher on segments having horizontal curves but occur along the length of the study area. This information may help determine where more targeted countermeasures can be implemented even if the countermeasures are systemic by design.

## FIGURE 5: LOCATION FREQUENCY BY CRASH TYPE




## COUNTERMEASURES (SUPPLEMENTAL)

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasure are systemic in nature, the countermeasures are targeted to segments having a higher frequency of crashes (i.e., between Kathleen Rd and US Route 51). Three SUPPLEMENTAL countermeasures are proposed as summarized below. These countermeasures are combined into a single application that is SUPPLEMENTAL to the PRIMARY application.

### PAVED SHOULDER COUNTERMEASURE (SUPPLEMENTAL)

The frequency of crashes occurring beyond the limits of the Wells Street Road improvement suggests other factors contribute to the safety performance on Greens Market Road (i.e., edge of pavement drop offs). A medium-term countermeasure reconstructs the aggregate shoulder as a paved shoulder to address pavement drop offs in conjunction with longitudinal rumble strips at the following locations:

- Kathleen Road (MP 3.42) to MP 4.90 (west limits of PRIMARY countermeasure). The proposed countermeasures start at the Kathleen Road intersection since the safety study did not find crashes occurring between Kathleen and Sutter Road (MP 2.24).
- MP 5.15 (east limits of PRIMARY countermeasure) to the US Route 51 intersection (MP 5.82)

Drop offs at the edge of pavement occur where the aggregate shoulder has been dispersed or rutted due to higher speed vehicles driving on a non-improved surface. The drop off at the edge of pavement has been an on-going maintenance issue due, in part, to the high speeds and lack of paved shoulders.

The following targeted countermeasures are proposed on the Greens Market Road corridor:

- Replace the aggregate shoulder with a 2 ft paved shoulder (full depth) plus a 2 ft graded shoulder
- Add longitudinal rumble strips to increase driver attention.
- Advance curve warning signs near MP 4.80 (see Curve Signing section)

Context Sensitive Design (CSD) principles are applicable to the Greens Market Road corridor due to the impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based guidance from the *National Cooperative Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

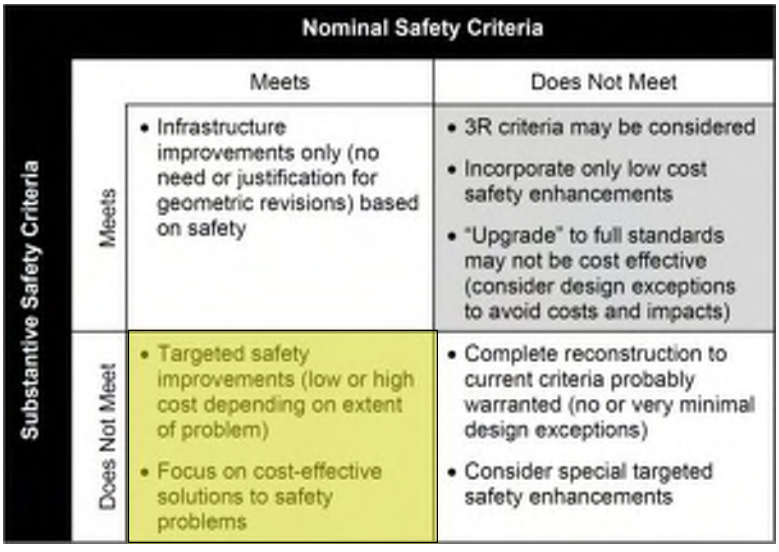
Of the broad categories of transportation issues that are most applicable to the Greens Market Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section complies with IDOT design criteria for shoulder widths (BLR Figure 33-3B). The preferred design criteria for reconstruction projects (BLR Figure 32-2B) are not met.
2) Substantive Safety – The actual performance of the Greens Market Road corridor is compared to similar facilities to assess relative performance. Crash statistics for corridors having a similar typical section such as Old DuQuoin Road does not experience the number of crashes or appear on the 2017 Safety Tier for segments.

In the case of Greens Market Road, nominal safety criteria (i.e., 4 ft shoulders) are generally met as noted in Item 1. However, the substantive safety performance of Greens Market Road is worse than comparable roadways due to the presence of pavement drop offs. **Figure 6** shows a decision matrix of nominal and substantive safety countermeasures.

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (80 feet).

FIGURE 6: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS



Targeted safety countermeasures are recommended since the existing typical section is consistent with Figure 33-3B of the BLR for roadways having an ADT <3,000 vehicles:

- Traveled way width of 20-21 feet
- Shoulder width of 4 feet (2 ft paved, 2 ft graded turf shoulder)
- Side slopes having front slopes of 1V:3H for embankment sections

**Figure 7** shows the proposed typical section for Greens Market Road.

## FIGURE 7: GREENS MARKET ROAD COUNTERMEASURE


## CURVE WARNING SIGN COUNTERMEASURE (SUPPLEMENTAL)

Three (3) Fixed Object crashes occurred within the proximity of a horizontal curve near MP 4.80. No advance curve warning signs or chevrons exist. All crashes occurred at night or during poor weather conditions (fog/ rain).

A short-term countermeasure would be to install or upgrade curve warning signs and chevrons at the horizontal curve to provide a warning to drivers about the change of alignment. The installation of curve warning signs is a proven safety countermeasure. The following countermeasures near MP 4.80 are recommended:

- Install curve warning, speed advisory plaques (if applicable), and/or chevrons in accordance with **Table 2C-5** of the MUTCD for the curve. Chevrons are required assuming the advisory speed is 15 MPH less than the speed limit. A ball bank study to confirm the advisory speed at this location is recommended.

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

- Locate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD).

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[6] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[6] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

## DUAL STOP SIGN COUNTERMEASURE (SUPPLEMENTAL)

A short-term countermeasure upgrades the stop signs on Greens Market Road to mitigate 2 angle crashes and a left turn crash at the Kathleen Road intersection. Three upgrades to the stop signs are summarized below:

- Install dual stop signs (6 ft height to bottom of sign) on both approaches of Greens Market Road. The existing traffic control consists of a single, right side mounted stop sign which meets MUTCD guidance. Dual stop signs are recommended to mitigate angle crashes.
- Relocate stop ahead warning signs on the Greens Market Road approach from 525 feet to 325 ft in accordance with Table 2C-4 of the MUTCD.
- An All-Way stop controlled (AWSC) intersection may be evaluated by Perry County to determine if AWSC warrants are met. Balanced delays on all approaches would be a factor in determining if AWSC is a desirable countermeasure to mitigate angle crashes.

## BENEFIT COST ANALYSIS (SUPPLEMENTAL)

The SUPPLEMENTAL countermeasures while systemic are limited to a total segment length of 2.15 miles (2 segments) on Greens Market Road. The project data used to perform the Benefit Cost analysis is based on the following assumptions.

1. The crash dataset used to calculate the benefit cost ratio for the SUPPLEMENTAL countermeasures included two segments: mile 3.42 to 4.90 including the Kathleen Road intersection; mile 5.15 to 5.82 (not including the US Route 51/ IL 14 Road intersection). The subset of crashes within the SUPPLEMENTAL project limits consists of 10 crashes – another 3 crashes occurred within the PRIMARY project limits (MP 4.90-5.15). and are accounted for as part of a separate BC calculation.
2. The CMF for Install Advance Curve Warning Signs is proposed since signs do not exist on the horizontal curve having a radius of 1,300 feet.
3. Replace the aggregate shoulder with a 2 ft paved shoulder (full depth). Add a 2 ft graded shoulder where feasible within exiting right of way limits to stabilize the existing pavement and to reduce the frequency of overturn vehicles attributed to fore slopes.
4. Provide a minimum Traveled Way width of 20 feet which is permitted for resurfacing projects per BLR Figure 33-3B. (ADT <3,000 vehicles)
5. Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Greens Market Road is a not a designed bicycle route. No bicycle crashes were documented as part of the crash analysis.

   The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Dix Irvington Road. Note that no bicycle crashes were reported during the 5-year study period and Greens Market Road is not a designated bicycle route.

   Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

The total cost for the overall 2.15 mile segment is estimated to be $636,170 with a Benefit Cost ratio of 3.70, calculated from the IDOT HSIP BOC analysis tool. **CMFs for the stop sign upgrades at Kathleen Road are not included in the Benefit Cost calculations resulting in a conservative BC value.**

A detailed cost estimate and BOC calculations are included as an attachment to this report.

# Greater Egypt Safety Study

## APPENDIX 02: AIRPORT ROAD

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Jackson | | **City:** NA |
| **Key route:** 9729 | **Marked route:** NA | | |
| **Road Name:** Airport Roadt | **Intersecting Roadway:** N/A ☐ | | |
| **Length:** 1.07 mile (ALT 1) ☐ N/A | | | **Mile station:** 2.0 to 3.07 |

**Location Description:** 1.07 mile segment west of US Route 51

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,450 | **Total Entering AADT (Intersection): NA** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | | **Lighting Present:** ☐ Y ☒ N |

**CHSP Emphasis Area(s):** Road Departure/ Pedestrian ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4 -- Rural AADT 1,001-2,500 / 2 lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Jackson Co; 2017 IDOT Low Safety Tier segment; 2021 RORI Centerline/ Edgeline upgrade

**Crashes Details**

| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 2016 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 2019 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 6 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 3 | 2 | 2 |

**Location Description:** Rural roadway serving Southern Illinios Airport and Army National Guard

**Problem Description:** Road Departure and Pedestrian crashes having a 50% injury/ fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Pedestrian (2), Fixed Object (2), Overturn (1), and Sideswipe Meeting (1)

**Proposed Improvement(s):** Alternative 1 adds paved shoulders (5 feet), minor pavement widening (1ft) to achieve 10 ft lane widths (min), longitudinal rumble strips, and curve warning signs (1 curve)

**Estimated Project Cost ($000's):** $618.91 **Benefit-Cost Ratio:** 5.70

**Local Projects:** Jackson County funding support dependent on safety funding commitment

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 93.5 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 93.5

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**

**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Airport Road | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Jackson | *City:* | *Date* | 4/23/2021 |
| *Key Route:* | 9729 | *Marked Route.* | | *MilePost:* | *Current AADT:* | 1450 |
| *Location:* | Airport Road | | | | | |
| | | | | | *Length (miles):* | 1.1 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| 4.1.6.AL.1 - Pavement Treatments - Resurfacing alone does not fully match HSM Setting/Facility Type Criteria |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | 1 | | | | | | | | | 1 | 0 | 1 |
| A-Injury Crashes | | | | | | | | | | | | | | | | 1 | | | 0 | 0 | 1 |
| B-Injury Crashes | | | | | | | | | | 1 | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| PDO Crashes | | | | 2 | | | | | 1 | | | | | | | | | | 1 | 2 | 3 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.77 | ROR, FO, HO, OVT, SOD, SSD | $537,546 | 1.07 | Miles | $575,174 | 15 | $575,174 | $51,750 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $33,160 | 1.07 | Miles | $35,481 | 8 | $61,407 | $5,550 |
| 4.3.5.S1.1 - Pavement Markings - Place Edgeline and Centerline Markings | | 0.76 | All | $30,675 | 1.07 | Miles | $32,822 | 1 | $379,528 | $34,150 |
| 4.6.5.AL.1 - Curves - Install Advanced Curve Speed/Warning Sign | | 0.87 | All | $17,520 | 1 | Unit Qnty | $17,520 | 10 | $29,356 | $2,650 |
| | | | | | | | | | | |
| ***TOTAL BENEFIT*** | ***$538,300*** | | | ***TOTAL COST*** | | | | | | ***$94,100*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **5.70** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.08** | **TOTAL FATALITIES PREVENTED** | **0.40** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - AIRPORT ROAD - ALTERNATIVE 1

Project: Airport Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 4/23/2021
Checked By: SPH (CMT) 4/23/2021

Project #:
Municipality:
Road Dist: Nine
County: Jackson
Section:

| Item No. | Item Description / Name | Total Quantity | Traffic Signage | Pavement Marking | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 7,100.0 | | | | 7,100.0 | SQ YD | $40.00 | $284,000.00 |
| 2 | Earth Excavation | 1,500.0 | | | | 1,500.0 | CU YD | $25.00 | $37,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 600.0 | | | | 600.0 | CU YD | $25.00 | $15,000.00 |
| 4 | Grading and Shaping Ditches | 10,560.0 | | | | 10,560.0 | FOOT | $1.00 | $10,560.00 |
| 5 | Pavement Removal | 600.0 | | | | 600.0 | SQ YD | $15.00 | $9,000.00 |
| 6 | PCC Barrier Curb | 800.0 | | | | 800.0 | FOOT | $35.00 | $28,000.00 |
| 7 | Shoulder Rumble Strips, 8 Inch | 11,300.0 | | | 11,300.0 | | FOOT | $2.00 | $22,600.00 |
| 8 | Pavement Marking | 17,000.0 | | 17,000.0 | | | FOOT | $1.25 | $21,250.00 |
| 9 | Traffic Signage | 24.0 | 24.0 | | | | EACH | $500.00 | $12,000.00 |
| 10 | Traffic Control | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 11 | Construction Layout | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 12 | Mobilization | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $50,000.00 | $50,000.00 |
| | Construction Subtotal (1-10): | | $13,200.00 | $24,250.00 | $25,600.00 | $436,860.00 | | | **$499,910.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | | **$0.00** |
| | Contingency (10%): | | $1,320.00 | $2,425.00 | $2,560.00 | $43,686.00 | | | **$49,991.00** |
| | Preliminary Engineering: | | $2,000.00 | $2,000.00 | $3,000.00 | $35,000.00 | | | **$42,000.00** |
| | Construction Engineering: | | $1,000.00 | $2,000.00 | $2,000.00 | $22,000.00 | | | **$27,000.00** |
| | Project Total: | | $17,520.00 | $30,675.00 | $33,160.00 | $537,546.00 | | | **$618,901.00** |

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Jackson | | **City:** NA |
| **Key route:** 9729 | **Marked route:** NA | | |
| **Road Name:** Airport Roadt | **Intersecting Roadway:** N/A ☐ | | |
| **Length:** 1.07 mile (ALT 1+2) ☐ N/A | | | **Mile station:** 2.0 to 3.07 |

**Location Description:** 1.07 mile segment west of US Route 51

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,450 | **Total Entering AADT (Intersection): NA** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | | **Lighting Present:** ☐ Y ☒ N |

**CHSP Emphasis Area(s):** Road Departure/ Pedestrian ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4 -- Rural AADT 1,001-2,500 / 2 lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Jackson Co; 2017 IDOT Low Safety Tier segment; 2021 RORI Centerline/ Edgeline upgrade

**Crashes Details**

| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 2016 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 2019 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | 6 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 3 | 2 | 2 |

**Location Description:** Rural roadway serving Southern Illinios Airport and Army National Guard

**Problem Description:** Road Departure and Pedestrian crashes having a 50% injury/ fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Pedestrian (2), Fixed Object (2), Overturn (1), and Sideswipe Meeting (1)

**Proposed Improvement(s):** Alternative 1 adds paved shoulders (5 feet), minor pavement widening (1ft) to achieve 10 ft lane widths (min), longitudinal rumble strips, and curve warning signs (1 curve); Alternative 2 resurfaces remaining pavement surface

**Estimated Project Cost ($000's):** $801.92 **Benefit-Cost Ratio:** 4.80

**Local Projects:** Jackson County funding support dependent on safety funding commitment

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 93.5 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 93.5

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**

**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Airport Road | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Jackson | *City:* | *Date* | 4/23/2021 |
| *Key Route:* | 9729 | *Marked Route.* | | *MilePost:* | *Current AADT:* | 1450 |
| *Location:* | Airport Road | | | | | |
| | | | | | *Length (miles):* | 1.1 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| 4.1.6.AL.1 - Pavement Treatments - Resurfacing alone does not fully match HSM Setting/Facility Type Criteria |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | 1 | | | | | | | | | 1 | 0 | 1 |
| A-Injury Crashes | | | | | | | | | | | | | | | | 1 | | | 0 | 0 | 1 |
| B-Injury Crashes | | | | | | | | | | 1 | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| PDO Crashes | | | | 2 | | | | | 1 | | | | | | | | | | 1 | 2 | 3 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.77 | ROR, FO, HO, OVT, SOD, SSD | $720,566 | 1.07 | Miles | $771,006 | 15 | $771,006 | $69,350 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $33,160 | 1.07 | Miles | $35,481 | 8 | $61,407 | $5,550 |
| 4.3.5.S1.1 - Pavement Markings - Place Edgeline and Centerline Markings | | 0.76 | All | $30,675 | 1.07 | Miles | $32,822 | 1 | $379,528 | $34,150 |
| 4.6.5.AL.1 - Curves - Install Advanced Curve Speed/Warning Sign | | 0.87 | All | $17,520 | 1 | Unit Qnty | $17,520 | 10 | $29,356 | $2,650 |
| | | | | | | | | | | |
| ***TOTAL BENEFIT*** | ***$538,300*** | | | ***TOTAL COST*** | | | | | | ***$111,700*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **4.80** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.08** | **TOTAL FATALITIES PREVENTED** | **0.40** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - AIRPORT ROAD - ALTERNATIVE 1 & 2

Project: Airport Road
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 4/23/2021
Checked By: SPH (CMT) 4/23/2021

Project #:
Municipality:
Road Dist: Nine
County: Jackson
Section:

| Item No. | Item Description / Name | Total Quantity | Traffic Signage | Pavement Marking | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 7,100.0 | | | | 7,100.0 | SQ YD | $40.00 | $284,000.00 |
| 2 | Earth Excavation | 1,500.0 | | | | 1,500.0 | CU YD | $25.00 | $37,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 600.0 | | | | 600.0 | CU YD | $25.00 | $15,000.00 |
| 4 | Grading and Shaping Ditches | 10,560.0 | | | | 10,560.0 | FOOT | $1.00 | $10,560.00 |
| 5 | Pavement Removal | 600.0 | | | | 600.0 | SQ YD | $15.00 | $9,000.00 |
| 6 | PCC Barrier Curb | 800.0 | | | | 800.0 | FOOT | $35.00 | $28,000.00 |
| 7 | HMA Surface Removal, 2" | 11,300.0 | | | | 11,300.0 | SQ YD | $3.00 | $33,900.00 |
| 8 | HMA Surface, 2" | 1,270.0 | | | | 1,270.0 | TON | $90.00 | $114,300.00 |
| 9 | Shoulder Rumble Strips, 8 Inch | 11,300.0 | | | 11,300.0 | | FOOT | $2.00 | $22,600.00 |
| 10 | Pavement Marking | 17,000.0 | | 17,000.0 | | | FOOT | $1.25 | $21,250.00 |
| 11 | Traffic Signage | 24.0 | 24.0 | | | | EACH | $500.00 | $12,000.00 |
| 12 | Traffic Control | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 13 | Construction Layout | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $5,000.00 | $5,000.00 |
| 14 | Mobilization | 1.0 | 0.02 | 0.05 | 0.05 | 0.88 | L SUM | $50,000.00 | $50,000.00 |
| | Construction Subtotal (1-10): | | $13,200.00 | $24,250.00 | $25,600.00 | $585,060.00 | | | **$648,110.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | | **$0.00** |
| | Contingency (10%): | | $1,320.00 | $2,425.00 | $2,560.00 | $58,506.00 | | | **$64,811.00** |
| | Preliminary Engineering: | | $2,000.00 | $2,000.00 | $3,000.00 | $47,000.00 | | | **$54,000.00** |
| | Construction Engineering: | | $1,000.00 | $2,000.00 | $2,000.00 | $30,000.00 | | | **$35,000.00** |
| | Project Total: | | $17,520.00 | $30,675.00 | $33,160.00 | $720,566.00 | | | **$801,921.00** |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_ LOC2 | VEH1_EVNT3 | VEH2_DIR | VEH2_EVNT1 | VEH2_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201501294669 | 15 | 0 | 0 | Fixed Object | Clear | Dark, lit Road | Dry | 2.74 | Normal | Passenger | East | Avoiding Veh/ Objs | Ran Off Roadway | Off Pvmt - Right | Guardrail Face | Off Pvmt - Right | | | | | PD | 2568169.645100 | 402196.69065300 |
| 201601214023 | 16 | 0 | 0 | Fixed Object | Rain | Daylight | Wet | 2.09 | Other/ Unknown | Passenger | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | Culvert | | | | PD | 2564723.395870 | 402136.77791800 |
| 201501278335 | 15 | 0 | 0 | Overturned | Clear | Daylight | Wet | 2.23 | Normal | Pickup | West | Skidding/ Ctrl Loss | Overturn | Off Pvmt - Left | | | | | | | PD | 2565459.326150 | 402151.13990200 |
| 201601282329 | 16 | 1 | 1 | Pedestrian | Clear | Darkness | Dry | 2.74 | Normal | Pickup | West | Straight Ahead | Ped | On Pvmt (Rdwy) | Pedestrian | On Pvmt (Rdwy) | | N/A | N/A | N/A | Fatal | 2568164.551810 | 402196.61753500 |
| 201801339737 | 18 | 1 | 0 | Pedestrian | Clear | Daylight | Dry | 2.13 | Normal | Bus over 15 seats | West | Ent Traffic Lane Fr | Ped | Other | | | | N/A | N/A | N/A | B-Injury | 2564944.218760 | 402141.15370900 |
| 201801357629 | 18 | 1 | 0 | Sideswipe Opp Direction | Clear | Daylight | Dry | 2.93 | Normal | Motorcycle | East | Ngoting A Curve | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | West | Mtr Veh In Traffic | On Pavement (Roadway) | A-Injury | 2569181.837880 | 402189.00658300 |

**Airport Road**

**Jackson County**

**May 2021**

## INTRODUCTION

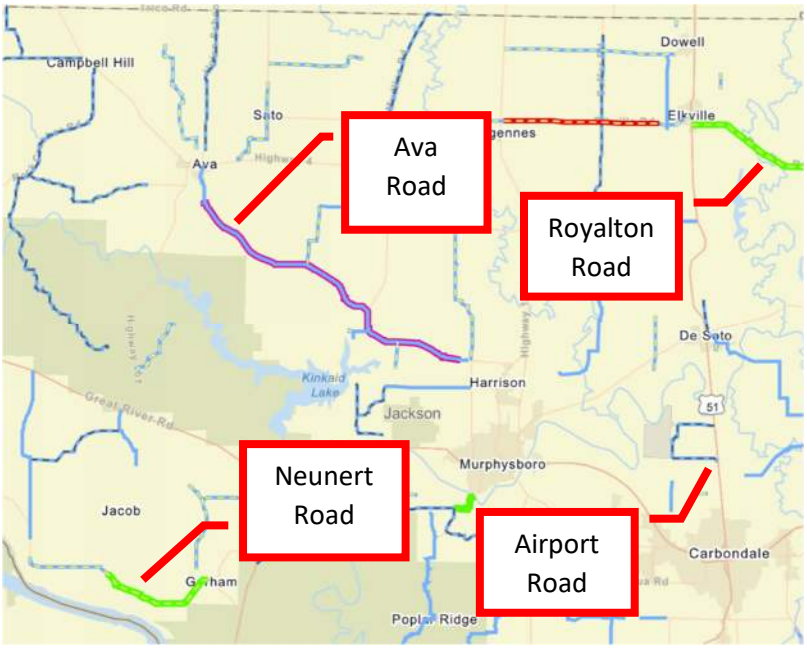
The 1.07-mile segment of Airport Road located within Jackson County was identified as the highest ranked segment as part of a Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis using the most current crash dataset (2014-2018). The study area extends from a point 0.27 miles east of New Era Road (MP 2.00) to US Route 51/ Illinois Avenue (MP 3.07).

Jackson County realigned Airport Road in 2018 west of the current study area. The Airport Road realignment project extended Flightline Road and New Era Road. A 5 ft bike path was also added along both sides of the 1.09 length of Airport Road. The typical section of the realigned roadway consisted of 2-12 ft lanes and 5 ft bike lanes.

The priority ranking performed for Jackson County was independent of a previous analysis performed by the IDOT Bureau of Safety Programs and Engineering (BSPE). IDOT 2017 safety analyses (2011-2015) identified a 1.8-mile segment of Airport Road as Low Safety Tier extending east from N. Airport Road to US Route 51.

The IDOT Run Off the Road Initiative (RORI) identified several segments proposing a treatment to Add or Widen Paved Shoulders – see limits (green line) shown in **Figure 1**. The Airport Road corridor was ranked above the following locations based on the 2020 dataset for various reasons:

FIGURE 1: RORI SEGMENTS (JACKSON CO)




**Ava Road** was ranked one position higher than Airport Road. However, the suggested countermeasure of edge line rumble strips already exists on the majority of the roadway.

**Royalton Road** was ranked one position below Airport Road. Crash frequency and type between the corridors were similar but PDOs were higher for Airport Road and Royalton Road has centerline and edge line markers whereas Airport Road does not.

**Neunert Road** was ranked below Airport Road. Airport Road corridor is a stronger safety candidate due to several crash types (K, A and B) whereas Neunert Road only had a K crash (2014-1028 dataset).

## EXISTING CONDITIONS

Airport Road provides east/west connectivity from IL 13 to US Route 51 in addition to access to the Southern Illinois Airport and National Guard . The roadway width is 19-21 feet with no painted centerline or edge lines for the 1.07-mile length. An aggregate shoulder averages 0-2 feet. The legal speed is 55 MPH. The roadway is a two-lane facility. **Photos 1-5** show the existing conditions within the study area.

The 2018 AADT is 1,450 vehicles of which 210 are trucks west of the US Route 51 intersection.

**A factor that contributes to the safety performance of the corridor is the minimal shoulder width along the edge of pavement.** The presence and type of a shoulder is variable within the project limits as shown in **Photos 1-5**. Pedestrians are present within this segment of roadway and visibility is restricted along the roadway due the vertical and horizontal curves.

1. The existing typical section consists of a pavement width of 19 feet and 1 ft shoulder width on the west end of the project limits – see **Photo 1**.

### PHOTO 1: EB ROADWAY SECTION (MILE 2.10)

2. **Photo 2** shows shoulder repairs along Airport Rd (north side of roadway).

### PHOTO 2: SHOULDER REPAIR (MILE 2.45)

3. A crest vertical curve is shown in **Photo 3**. The roadway section is in a cut section. Sight distance is less than the legal speed of the roadway.

### PHOTO 3: VERTICAL CURVE (MILE 2.80)

4. **Photo 4** shows an existing bridge at the east end of the study area. The width of the existing deck is 26 feet. Note the advance stop sign in the eastbound direction near MP 2.9. Opposite the Stop Ahead sign is a special Hill Blocks View sign (WB Airport Road).

### PHOTO 4: EXISTING BRIDGE (MILE 2.85)

5. **Photo 5** shows a horizontal curve (230 ft radius) exists near the east end of the study area. No advance curve warning signs exist for this curve. Chevrons delineate the outside of the curve.

### PHOTO 5: HORIZONTAL CURVE (MILE 2.95)

The approximate location of each photo is numbered on **Figure 2.**

FIGURE 2: STUDY AREA

## SAFETY ANALYSIS

A total of 6 crashes occurred within the study area over a 5-year period (2015-2018). The severity of crashes by year is summarized on **Figure 3**. Injury/fatality crashes account for 50 percent of all crashes over the 5-year period. Two pedestrians were struck resulting in a fatality at mile 2.74 of the study area.

A fatality occurred Friday, November 25, 2016 at 7PM when a hit/run driver struck two pedestrians walking WB on Airport Road near Mile 2.74. The vertical curve shown in **Photo 3** was a contributing factor to the crash. A second WB pedestrian injury occurred on Friday, October 27, 2018 at 12PM near Mile 2.13 resulting in a Type B injury.

No crashes occurred in years 2017 and 2019 as shown in **Figure 3**.

**Figure 4** shows the frequency of crashes by type of crash. Pedestrian crashes within the study area (1F, 2 injury or 43%) are over represented when compared to the IDOT Emphasis Area analysis (2014-2018) for Jackson County (%F, 3 injury or 3%). One fatal and two injuries resulted from crashes involving pedestrians over the 5-year study period.

Road Departure crashes (fixed object, overturning, sideswipe opposite direction) comprise 76.9% of all crashes within the study area. The Road Departure crashes resulted in one Type A injury.

FIGURE 3: FREQUENCY BY SEVERITY/ YEAR

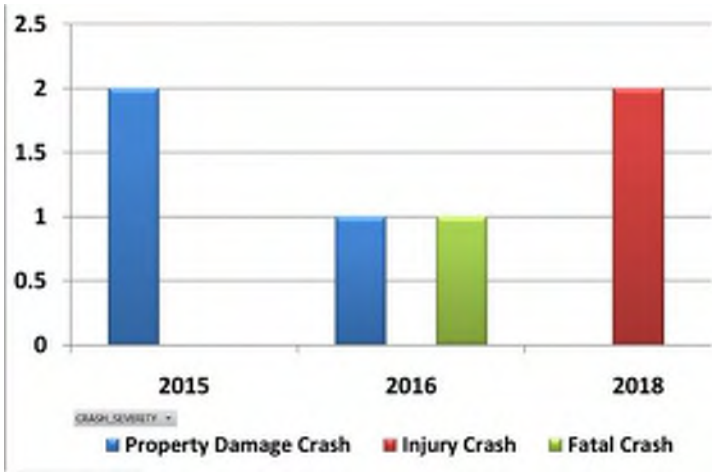



FIGURE 4: FREQUENCY BY CRASH TYPE

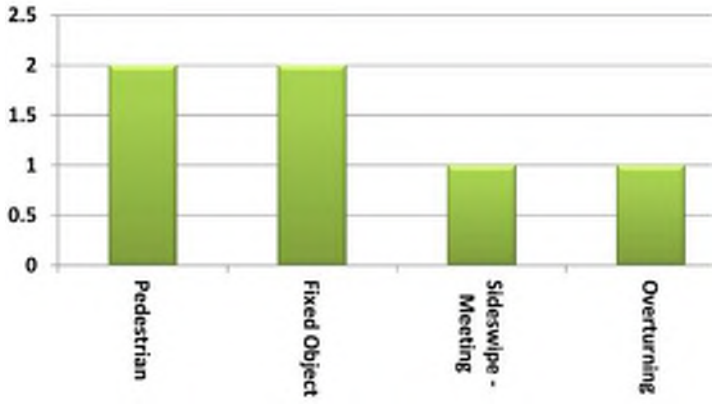
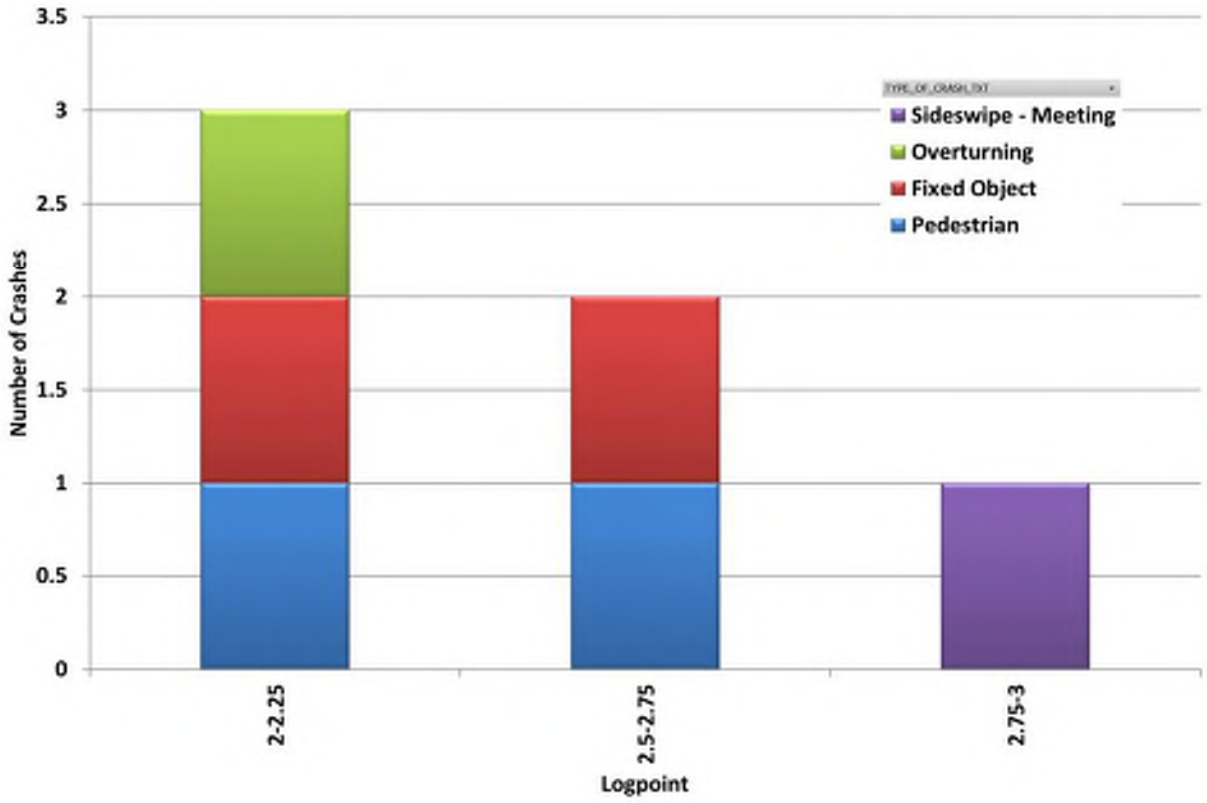


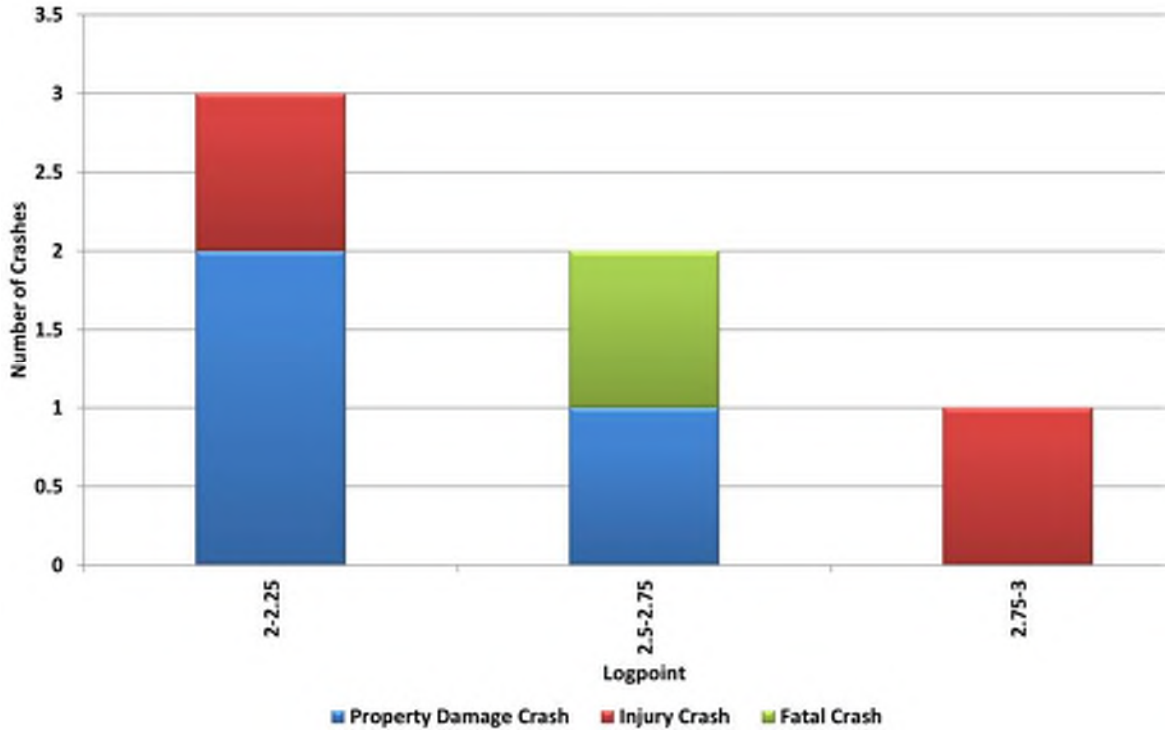

**Figure 5** shows a histogram of the location and crash type. The majority of crashes are single vehicle crashes where the vehicle leaves the roadway (3) or strikes a pedestrian (2). The Road Departure crashes are distributed across all segments of the study area regardless of the presence of horizontal curves. Note that no crashes occurred within the 2.25 and 2.50 segment of the study area.

**Figure 6** shows the severity of crashes are not focused on a specific location but rather are distributed across the length of the study area. This information may help determine if more targeted countermeasures can be implemented even if the countermeasures are systemic by design.

## FIGURE 5: LOCATION FREQUENCY BY CRASH TYPE




## FIGURE 6: LOCATION FREQUENCY BY SEVERITY



## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasures are systemic in nature, the countermeasures are targeted to segments having a higher crash frequency and segments with horizontal and vertical curves. Two primary countermeasures are proposed as summarized below:

1. Construct bike lane/ pedestrian (5 ft width) on roadway segment to mitigate both Roadway Departure crashes and Pedestrian crashes.
2. Upgrade pavement markings (edge line markings), curve warning signs/chevrons, and advance stop ahead sign placement that are consistent with the Manual of Uniform Traffic Control Devices (MUTCD). Compliance with the MUTCD will reduce driver workload thus improve safety performance.

The total length of improvements is 1.05 miles.

## EAST CURVE COUNTERMEASURE (MILE 2.85 – 3.00)

The horizontal curve shown in **Photos 5** has a 230 ft radius. The following countermeasures for the horizontal curve at the east end of the study area is recommended:

- Install curve warning, speed advisory plaque, and replace chevrons in accordance with **Table 2C-5** of the MUTCD along the existing horizontal curve on Airport Road. A ball bank study to confirm the advisory speed at this location is recommended.

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

- Relocate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Advance warning signs do not exist in advance of the horizontal curves. Section 2C.05 emphasizes that signs are not placed too far in advance of the condition.

- Relocate advance stop warning sign no more than 325 feet in advance of the US Route 51 intersection.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[5] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[5] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

This countermeasure mitigates a sideswipe meeting crash involving a motorcycle and resulting in a type A-injury.

## PAVED SHOULDER COUNTERMEASURE (MILE 2.0 – 3.05)

The majority of crashes (5 of 6 crashes) occur beyond the limits of the horizontal curves suggests other factors contribute to the safety performance on Airport Road (i.e., edge of pavement drop offs and/ or lack of shoulders). A medium-term countermeasure constructs paved shoulders to address pavement drop offs and to better accommodate pedestrians/ bicyclists**.**

The following targeted countermeasures are proposed on the Airport Road corridor:

- Replace the aggregate shoulder with a 5 ft paved shoulder (full depth). Shoulder width to be reduced to 3 feet across the existing bridge.
- Provide a minimum Traveled Way width of 20 feet which is permitted for resurfacing projects per BLR Figure 33-3B. (ADT < 3,000 vehicles)
- Add a 2 ft graded shoulder where feasible within exiting right of way limits to stabilize the existing pavement and to reduce the frequency of overturn vehicles attributed to fore slopes. In cut sections, add curb to enable grading within the existing right of way.
- Add longitudinal rumble strips to increase driver attention.

Context Sensitive Design (CSD) principles are applicable to the Airport Road corridor due to the impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based on guidance from the *National Cooperative*

*Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

Of the broad categories of transportation issues that are most applicable to the Airport Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section does not meet IDOT design criteria for traveled way width (20 ft, minimum) and shoulder widths (BLR Figure 33-3B). The preferred design criteria traveled way (22 feet) and shoulder (6 feet) widths on reconstruction projects (BLR Figure 32-2B) are not met.
2) Substantive Safety – The actual performance of the Airport Road corridor is compared to similar facilities to assess relative performance. Crash statistics for corridors having a similar typical section as Airport Road (i.e., Fox Road, parallel roadway to the north) do not appear on the priority ranking for the Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis or the 2017 Safety Tier for segments.

In the case of Airport Road, the substantive safety performance of Airport Road is not attributed to design criteria being non-compliant as outlined in BLR Figure 32-2B. Rather, the substantive safety performance of Airportt Road is worse than comparable roadways due to the presence of pedestrian traffic. Overturn and Fixed Object crashes also would benefit from the increased shoulder width by mitigating factors attributed to pavement drop offs.

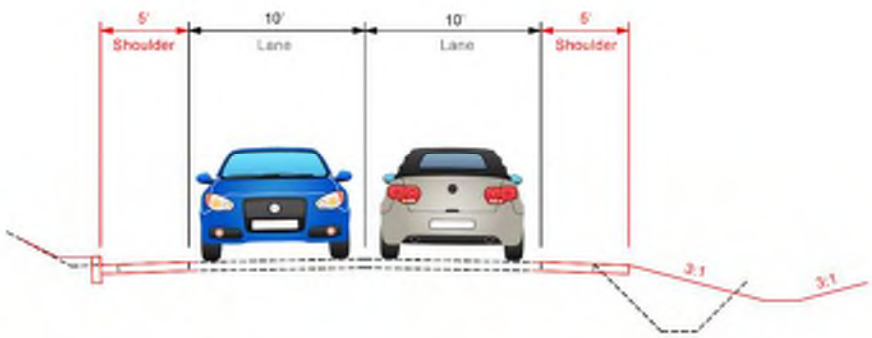
**Figure 7** shows a decision matrix of nominal and substantive safety countermeasures.

FIGURE 7: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS

| Substantive Safety Criteria | Nominal Safety Criteria: Meets | Nominal Safety Criteria: Does Not Meet |
|---|---|---|
| Meets | • Infrastructure improvements only (no need or justification for geometric revisions) based on safety | • 3R criteria may be considered<br>• Incorporate only low cost safety enhancements<br>• "Upgrade" to full standards may not be cost effective (consider design exceptions to avoid costs and impacts) |
| Does Not Meet | • Targeted safety improvements (low or high cost depending on extent of problem)<br>• Focus on cost-effective solutions to safety problems | • Complete reconstruction to current criteria probably warranted (no or very minimal design exceptions)<br>• Consider special targeted safety enhancements |

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (50 feet). Complete reconstruction is not recommended since the proposed countermeasures mitigate specific safety performance issues and is consistent with Figure 33-3B of the BLR for roadways having an ADT < 2,000 vehicles: **Figure 8** shows the proposed typical section for Airport Road.

## FIGURE 8: AIRPORT ROAD TYPICAL SECTION




## BENEFIT COST ANALYSIS

Countermeasures are proposed on Airport Road to improve the safety performance of the corridor. The project data used to perform the benefit cost analysis is based on the following assumptions.

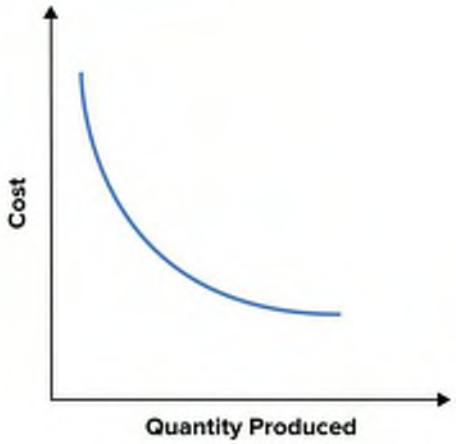
1. The crash dataset was scrubbed to include only Road Departure crashes (Fixed Object,Overturning, Sideswipe Meeting) for the benefit cost analysis.
2. The Advance Curve Warning Signs for the horizontal curve near MP 2.95 would mitigate a sideswipe meeting crash in addition to the shoulder widening with longitudinal rumble strips.
3. The removal of the vertical curve near MP 2.74 would improve visibility of pedestrians. The vertical curve was a contributing factor of the pedestrian crash resulting in a fatality. However, the CMF for profile improvements was not considered to be a cost effective countermeasure. Benefits achieved with reprofiling can be achieved with the proposed shoulder widening countermeasure.
4. Minor pavement widening of the traveled way is proposed to improve safety performance of the existing roadway having an effective width that varies between 19 to 21 feet +/-. The proposed shoulder width is an average of pavement widening for the traveled way and proposed shoulder.
5. Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to use the new shoulder. While Airport Road is a not a designed bicycle route, the standard bike lane width which matches the existing typical section west of the study area is also available for pedestrian use.

Two alternatives were considered for the benefit cost analysis:

1. ALTERNATIVE 1: Shoulder widening (5 ft), minimal traveled way widening (0-1 ft) to achieve a minimum traveled way width of 20 ft per BLR Figure 33-3B (note 2), and curve warning signing upgrades. The countermeasures listed above were applied to the length of the study area as described in the Countermeasures section. The total cost for the 1.07 mile segment is estimated to be $618,901 with a Benefit Cost ratio of 5.70 calculated from the IDOT HSIP BOC analysis tool.

2. ALTERNATIVE 1+2: Resurfacing of unimproved roadway. Resurfacing of the existing bituminous treated pavement is proposed to avoid construction joints within the traveled way. The total cost for the 1.07 mile segment is estimated to be $801,921 with a Benefit Cost ratio of 4.80 calculated from the IDOT HSIP BOC analysis tool.

   **If safety funding is not available for resurfacing of the roadway in conjunction with the new shoulders, Jackson County is prepared to separately fund pavement rehabilitation of the remaining pavement for the 1.07-mile segment. Resurfacing of the existing roadway using local funding will effectively leverage safety funds for safety specific countermeasures. The proposed countermeasures would be constructed in conjunction with the locally funded resurfacing project Combining the proposed shoulder improvements as part of a larger pavement rehabilitation project will achieve an economy of scale.**



# Greater Egypt Safety Study

## APPENDIX 02: JEF RICHVIEW ROAD

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Jefferson | | **City:** NA |
| **Key route:** 826 | **Marked route:** CR 10 | | |
| **Road Name:** E. Richview Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 4.15 miles (PRIMARY) | ☐ N/A | | **Mile station:** 6.27 to 10.42 |

**Location Description:** E. Richview Rd (Woodlawn Ln to Shiloh Drive)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,600 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4: Rural AADT 1,001-2,500 / two lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Jefferson Co; 2017 IDOT Critical Safety Tier (17-9-1-0003); RORI Widen Shoulder segment

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2015 | 5 | 0 | 0 | 1 | 2 | 2 | 2 | 0 | 0 | 2 | 2 | 2 |
| 2016 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 2017 | 4 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 2018 | 5 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 2 |
| 2019 | 8 | 0 | 0 | 3 | 3 | 1 | 1 | 1 | 2 | 3 | 2 | 5 |
| **Total** | 24 | 1 | 1 | 6 | 7 | 5 | 5 | 1 | 2 | 9 | 7 | 10 |

**Location Description:** Rural roadway connecting Mt Vernon to Irvington

**Problem Description:** Pavement drop-offs contribute to Road Departure crashes having a 54% injury/fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (19) and Overturn (5) crashes

**Proposed Improvement(s):** Add paved shoulders, longitudinal rumble strips, and curve warning signs (3 curves)

**Estimated Project Cost ($000's):** $1,061.18 **Benefit-Cost Ratio:** 8.20

**Local Projects:** NA

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 24.1 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 144.6

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | |
|---|---|---|---|---|---|
| *Project:* | E. Richview Road | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Jefferson | *City:* | | *Date* | 4/23/2021 |
| *Key Route:* | 826 | *Marked Route:* | | *MilePost:* | | *Current AADT:* | 2350 |
| *Location:* | E. Richview Road | | | | | | |
| | | | | | | *Length (miles):* | 4.2 |
| *Crash data:* | 5 | Years | | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | | *End Station:* | |
| | | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| A-Injury Crashes | | | | 5 | | | | | 1 | | | | | | | | | | 0 | 0 | 6 |
| B-Injury Crashes | | | | 2 | | | | | 3 | | | | | | | | | | 0 | 0 | 5 |
| C-Injury Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| PDO Crashes | | | | 10 | | | | | 1 | | | | | | | | | | 0 | 0 | 11 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.87 | ROR, FO, HO, OVT, SOD, SSD | $224,049 | 4.15 | Miles | $929,803 | 15 | $929,803 | $83,650 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $27,995 | 4.15 | Miles | $116,180 | 8 | $201,072 | $18,100 |
| 4.6.7.S1.1 - Curves - Install chevron signs on horizontal curves | 0.84 | FO, HO, OtherNC, OtherO, OVT, SSD, SOD | $15,200 | 1 | Unit Qnty | $15,200 | 10 | $25,469 | $2,300 |
| | | All | | | | | | | |
| | | | | | | | | | |
| ***TOTAL BENEFIT*** | ***$852,800*** | | ***TOTAL COST*** | | | | | | ***$104,050*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **8.20** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.09** | **TOTAL FATALITIES PREVENTED** | **0.45** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - E. RICHVIEW ROAD - PRIMARY

Project: E. Richview Road (Woodlawn to Shiloh)
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 4/23/2021
Checked By: SPH (CMT) 4/23/2021

Project #:
Municipality:
Road Dist: Nine
County: Jefferson
Section:

| Item No. | Item Description / Name | Total Quantity | Traffic Signage | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 12,200.0 | | | 12,200.0 | SQ YD | $40.00 | $488,000.00 |
| 2 | Earth Excavation | 2,100.0 | | | 2,100.0 | CU YD | $25.00 | $52,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 1,100.0 | | | 1,100.0 | CU YD | $25.00 | $27,500.00 |
| 4 | Grading and Shaping Ditches | 43,900.0 | | | 43,900.0 | FOOT | $1.00 | $43,900.00 |
| 5 | Pavement Removal | 2,500.0 | | | 2,500.0 | SQ YD | $15.00 | $37,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 43,900.0 | | 43,900.0 | | FOOT | $2.00 | $87,800.00 |
| 7 | Pavement Marking | 43,900.0 | | | 43,900.0 | FOOT | $1.25 | $54,875.00 |
| 8 | Traffic Signage | 18.0 | 18.0 | | | EACH | $500.00 | $9,000.00 |
| 9 | Traffic Control | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $5,000.00 | $5,000.00 |
| 10 | Construction Layout | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $5,000.00 | $5,000.00 |
| 11 | Mobilization | 1.0 | 0.05 | 0.10 | 0.85 | L SUM | $50,000.00 | $50,000.00 |
| | Construction Subtotal (1-10): | | $12,000.00 | $93,800.00 | $755,275.00 | | | **$861,075.00** |
| | Utility Relocation & Land Acquisition: | | | | | | | **$0.00** |
| | Contingency (10%): | | $1,200.00 | $9,380.00 | $75,527.50 | | | **$86,107.50** |
| | Preliminary Engineering: | | $1,000.00 | $8,000.00 | $61,000.00 | | | **$70,000.00** |
| | Construction Engineering: | | $1,000.00 | $5,000.00 | $38,000.00 | | | **$44,000.00** |
| | Project Total: | | $15,200.00 | $116,180.00 | $929,802.50 | | | **$1,061,182.50** |

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Jefferson | | **City:** NA |
| **Key route:** 826 | **Marked route:** NA | | |
| **Road Name:** E. Richview Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 2.10 miles (SUPPLEMENT) ☐ N/A | | | **Mile station:** 4.17 to 6.27 |

**Location Description:** E. Richview Rd (Fairdrive Lane Woodlawn Ln)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,250 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4: Rural AADT 1,001-2,500 / two lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Jefferson Co; 2017 IDOT Medium Safety Tier

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2015 | 3 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 2016 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| **Total** | 6 | 0 | 0 | 2 | 7 | 1 | 1 | 0 | 0 | 3 | 1 | 4 |

**Location Description:** Rural roadway connecting Mt Vernon to Irvington

**Problem Description:** Pavement drop-offs contribute to Road Departure crashes having a 50% injury/fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (4) and Overturn (2) crashes

**Proposed Improvement(s):** Add paved shoulders and longitudinal rumble strips

**Estimated Project Cost ($000's):** $574,000 **Benefit-Cost Ratio:** 1.40

**Local Projects:** NA

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** xxxx **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** xxxx

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Jefferson | | **City:** NA |
| **Key route:** 826 | **Marked route:** NA | | |
| **Road Name:** E. Richview Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 2.10 miles (SUPPLEMENT) ☐ N/A | | | **Mile station:** 4.17 to 6.27 |

**Location Description:** E. Richview Rd (Fairdrive Lane Woodlawn Ln)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 1,250 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 4: Rural AADT 1,001-2,500 / two lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Jefferson Co; 2017 IDOT Medium Safety Tier

| | | Crashes Details | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
| 2015 | 3 | 0 | 0 | 2 | 7 | 0 | 0 | 0 | 0 | 1 | 0 | 2 |
| 2016 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2019 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| **Total** | 6 | 0 | 0 | 2 | 7 | 1 | 1 | 0 | 0 | 3 | 1 | 4 |

**Location Description:** Rural roadway connecting Mt Vernon to Irvington

**Problem Description:** Pavement drop-offs contribute to Road Departure crashes having a 50% injury/fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (4) and Overturn (2) crashes

**Proposed Improvement(s):** Add paved shoulders and longitudinal rumble strips

**Estimated Project Cost ($000's):** $573.79 **Benefit-Cost Ratio:** 1.40

**Local Projects:** NA

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 0.00 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 93.0

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**
**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | |
|---|---|---|---|---|---|
| *Project:* | E. Richview Road | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Jefferson | *City:* | | *Date* | 4/23/2021 |
| *Key Route:* | 826 | *Marked Route:* | | *MilePost:* | | *Current AADT:* | 1250 |
| *Location:* | E. Richview Road | | | | | | |
| | | | | | | *Length (miles):* | 2.1 |
| *Crash data:* | 5 | Years | | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | | *End Station:* | |
| | | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 4 - Rural AADT 1,001-2,500 / two lanes | | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |
| The combined effect of multiple countermeasures is limited to 0.60 or the smallest CMF |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| A-Injury Crashes | | | | 1 | | | | | 1 | | | | | | | | | | 0 | 0 | 2 |
| B-Injury Crashes | | | | | | | | | 1 | | | | | | | | | | 0 | 0 | 1 |
| C-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| PDO Crashes | | | | 3 | | | | | | | | | | | | | | | 0 | 0 | 3 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | 0.91 | ROR, FO, HO, OVT, SOD, SSD | $243,021 | 2.1 | Miles | $510,345 | 15 | $510,345 | $45,950 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | 0.67 | FO, OVT | $30,210 | 2.1 | Miles | $63,440 | 8 | $109,795 | $9,900 |
| | | All | | | | | | | |
| | | All | | | | | | | |
| | | | | | | | | | |
| ***TOTAL BENEFIT*** | ***$80,600*** | | ***TOTAL COST*** | | | | | | ***$55,850*** |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **1.40** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.00** | **TOTAL FATALITIES PREVENTED** | **0.00** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - E. RICHVIEW ROAD - SUPPLEMENTAL

Project: E. Richview Road (Woodlawn to Shiloh)
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 4/23/2021
Checked By: SPH (CMT) 4/23/2021

Project #:
Municipality:
Road Dist: Nine
County: Jefferson
Section:

| Item No. | Item Description / Name | Total Quantity | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 6,200.0 | | 6,200.0 | SQ YD | $40.00 | $248,000.00 |
| 2 | Earth Excavation | 1,100.0 | | 1,100.0 | CU YD | $25.00 | $27,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 600.0 | | 600.0 | CU YD | $25.00 | $15,000.00 |
| 4 | Grading and Shaping Ditches | 22,200.0 | | 22,200.0 | FOOT | $1.00 | $22,200.00 |
| 5 | Pavement Removal | 1,300.0 | | 1,300.0 | SQ YD | $15.00 | $19,500.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 22,200.0 | 22,200.0 | | FOOT | $2.00 | $44,400.00 |
| 7 | Pavement Marking | 22,200.0 | | 22,200.0 | FOOT | $1.25 | $27,750.00 |
| 8 | Traffic Control | 1.0 | 0.10 | 0.90 | L SUM | $5,000.00 | $5,000.00 |
| 9 | Construction Layout | 1.0 | 0.10 | 0.90 | L SUM | $5,000.00 | $5,000.00 |
| 10 | Mobilization | 1.0 | 0.10 | 0.90 | L SUM | $50,000.00 | $50,000.00 |

| | | | |
|---|---|---|---|
| Construction Subtotal (1-10): | $50,400.00 | $413,950.00 | **$464,350.00** |
| Utility Relocation & Land Acquisition: | | | **$0.00** |
| Contingency (10%): | $5,040.00 | $41,395.00 | **$46,435.00** |
| Preliminary Engineering: | $5,000.00 | $34,000.00 | **$39,000.00** |
| Construction Engineering: | $3,000.00 | $21,000.00 | **$24,000.00** |
| Project Total: | $63,440.00 | $510,345.00 | **$573,785.00** |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_SPECL | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_ LOC2 | VEH1_ EVNT3 | VEH1_ LOC3 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201901482688 | 19 | 1 | 0 Overturned | Clear | Daylight | Dry | | 4.20 | Normal | SUV | Personal | East | Skid/Ctrl Loss | Overturn | On Pvmt (Rdwy) | | | | | B-Injury | 2610600.506450 | 628236.35546600 |
| 201901145652 | 19 | 0 | 0 Fixed Object | Clear | Darkness | Ice | | 4.21 | Other/ Unknown | Passenger | Personal | East | Skid/Ctrl Loss | Other Fxd Obj | Off Pvmt - Left | | | | | PD | 2610655.419730 | 628237.90717900 |
| 201501251289 | 15 | 6 | 0 Fixed Object | Clear | Darkness | Dry | | 4.44 | Normal | Passenger | Personal | South | Straight Ahead | Ran Off Roadway | Other | Ditch/ Embankment | Other | | | A-Injury | 2611854.774840 | 628241.73429000 |
| 201601456143 | 16 | 0 | 0 Fixed Object | Clear | Darkness | Dry | | 5.29 | Normal | Pickup | Personal | North | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | PD | 2615943.457960 | 626600.14340000 |
| 201701361838 | 17 | 0 | 0 Turning | Clear | Daylight | Dry | | 5.34 | Normal | Bus 9 to 15 seats | Mass Transit | South | Turning Left | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | PD | 2616141.584540 | 626479.94027700 |
| 201501424744 | 15 | 0 | 0 Fixed Object | Clear | Darkness | Dry | | 5.50 | Other/ Unknown | Passenger | Personal | West | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | | | | | PD | 2616879.526100 | 626038.90843600 |
| 201501330382 | 15 | 1 | 0 Overturned | Clear | Daylight | Dry | | 6.09 | Normal | Motorcycle | Personal | East | Straight Ahead | Overturn | Off Pvmt - Left | | | | | A-Injury | 2619820.512560 | 625123.42090600 |
| 201701381873 | 17 | 1 | 0 Overturned | Clear | Daylight | Dry | | 6.33 | Normal | SUV | Personal | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Left | | | | | A-Injury | 2621067.461650 | 625174.38901100 |
| 201701488268 | 17 | 0 | 0 Front to Rear | Clear | Daylight | Dry | | 6.34 | Normal | SUV | Personal | North | Slow/Stop In Traffic | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | PD | 2621112.748550 | 625191.68375200 |
| 201901483186 | 19 | 0 | 0 Fixed Object | Cldy/ Ovrcst | Darkness | Wet | | 6.34 | Normal | Passenger | Personal | North | Turning Right | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | PD | 2621112.748550 | 625191.68375200 |
| 201801412566 | 18 | 0 | 0 Overturned | Snow | Darkness | Snow or Slush | | 6.35 | Normal | Passenger | Personal | East | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Overturn | Off Pvmt - Left | Ditch/ Embkmt | Off Pavement - Left | PD | 2621185.179390 | 625220.44649800 |
| 201501300656 | 15 | 0 | 0 Fixed Object | Clear | Daylight | Ice | | 6.46 | Normal | Pickup | Personal | East | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Tree or Shrub | Off Pvmt - Right | | | PD | 2621725.862470 | 625351.91608600 |
| 201901215742 | 19 | 1 | 0 Fixed Object | Clear | Darkness | Dry | | 6.47 | Other/ Unknown | Passenger | Personal | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | A-Injury | 2621761.889250 | 625355.53354300 |
| 201501300649 | 15 | 1 | 0 Fixed Object | Clear | Darkness | Ice | | 6.59 | Normal | Pickup | Personal | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | B-Injury | 2622426.190200 | 625427.30952000 |
| 201701435380 | 17 | 1 | 0 Fixed Object | Clear | Daylight | Dry | | 6.59 | Normal | SUV | Personal | West | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | A-Injury | 2622427.974250 | 625427.45898100 |
| 201601413047 | 16 | 1 | 0 Overturned | Clear | Daylight | Dry | | 6.60 | Normal | Passenger | Personal | West | Skid/Ctrl Loss | Overturn | Off Pvmt - Right | | | | | B-Injury | 2622433.675740 | 625428.12843500 |
| 201901310965 | 19 | 1 | 0 Turning | Clear | Daylight | Dry | | 6.68 | Normal | Passenger | Personal | West | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | B-Injury | 2622868.920030 | 625478.17836300 |
| 201701271375 | 17 | 0 | 1 Fixed Object | | | Dry | | 6.84 | Alcohol Impaired | Pickup | Personal | West | Negotiate A Curve | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Overturn | Off Pavement - Right | Fatal | 2623701.205650 | 625494.49336100 |
| 201801438944 | 18 | 0 | 0 Fixed Object | Clear | Daylight | Dry | | 6.85 | Normal | Passenger | Personal | East | Avoiding Veh/Obj | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | PD | 2623774.884560 | 625476.74238000 |
| 201901145511 | 19 | 0 | 0 Fixed Object | Clear | Darkness | Ice | | 6.86 | Normal | Pickup | Personal | East | Skid/Ctrl Loss | Other Fxd Obj | On Pvmt (Rdwy) | | | | | PD | 2623801.899180 | 625469.86516800 |
| 201501336924 | 15 | 2 | 0 Fixed Object | Clear | Daylight | Dry | | 6.96 | Normal | SUV | Personal | East | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Guardrail End | Off Pvmt - Right | Tree or Shrub | Off Pavement - Right | A-Injury | 2624302.362510 | 625322.95792700 |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_SPECL | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_ LOC2 | VEH1_ EVNT3 | VEH1_ LOC3 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201801418443 | 18 | 1 | 0 | Overturned | Clear | Daylight | Dry | 8.27 | Illness | Pickup | Personal | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | | | | | B-Injury | 2630735.883110 | 622884.08513800 |
| 201901152671 | 19 | 0 | 0 | Fixed Object | Snow | Darkness | Snow or Slush | 8.38 | Normal | SUV | Personal | West | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | PD | 2631323.606940 | 622753.26455900 |
| 201801423522 | 18 | 0 | 0 | Fixed Object | Clear | Darkness | Wet | 8.46 | Other/ Unknown | Pickup | Personal | West | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Fence | Pavement - Right | PD | 2631717.476300 | 622673.98586600 |
| 201901199180 | 19 | 1 | 0 | Fixed Object | Clear | Darkness | Dry | 8.51 | Removed By EMS | Passenger | Personal | Unkwn | Straight Ahead | Other Fxd Obj | Off Pvmt - Right | | | | | A-Injury | 2632010.811430 | 622599.76141800 |
| 201501325183 | 15 | 1 | 0 | Overturned | Clear | Darkness | Dry | 8.66 | Other/ Unknown | Passenger | Personal | West | Changing Lanes | Overturn | Off Pvmt - Left | Ditch/ Embankment | Off Pvmt - Left | | | B-Injury | 2632717.765720 | 622336.51220500 |
| 201801150309 | 18 | 0 | 0 | Other Object | Clear | Daylight | Dry | 8.72 | Other/ Unknown | Unknown | Unknown | West | Other | Falling Load | On Pvmt (Rdwy) | | | | | PD | 2633000.978020 | 622186.33521900 |
| 201701473891 | 17 | 0 | 0 | Fixed Object | Clear | Daylight | | 8.81 | Normal | Passenger | Personal | South-East | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Tree or Shrub | Off Pvmt - Right | | | PD | 2633431.092260 | 621944.37312400 |
| 201601050236 | 16 | 0 | 0 | Turning | Other | Daylight | Ice | 9.39 | Normal | Bus 9 to 15 seats | Mass Transit | South-east | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | PD | 2636108.721470 | 620451.76274700 |
| 201901310192 | 19 | 1 | 0 | Fixed Object | Clear | Daylight | Dry | 9.43 | Drug Impaired | Passenger | Personal | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Fence | Off Pvmt - Right | | | B-Injury | 2636306.017110 | 620342.46977000 |
| 201901349012 | 19 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 9.68 | Normal | SUV | Personal | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Fence | Off Pvmt - Right | Fire/Explosion | Pavement - Right | PD | 2637392.545550 | 619657.19867100 |
| 201801451689 | 18 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 9.80 | Normal | Passenger | Personal | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | | | | | PD | 2637896.145400 | 619263.31189100 |
| 201901216966 | 19 | 2 | 0 | Fixed Object | Clear | Daylight | Dry | 10.04 | Normal | Passenger | Personal | East | Skid/Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Ran Off Roadway | Off Pvmt - Right | Tree or Shrub | Pavement - Right | C-Injury | 2638901.593730 | 618473.38365300 |
| 201601500604 | 16 | 0 | 0 | Fixed Object | Rain | Darkness | Ice | 10.14 | Normal | SUV | Personal | West | Unknown | Other Fxd Obj | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | | | PD | 2639293.113180 | 618144.25247100 |
| 201901169606 | 19 | 1 | 0 | Front to Front | Snow | Daylight | Snow or Slush | 10.35 | Normal | Pickup | Personal | West | Slow/Stop In Traffic | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | A-Injury | 2640055.763260 | 617328.63291100 |
| 201901374718 | 19 | 1 | 0 | Fixed Object | Clear | Darkness | Dry | 10.37 | Alcohol Impaired | Passenger | Personal | East | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Guardrail Face | Off Pvmt - Right | Guardrail Face | Pavement - Left | A-Injury | 2640125.490620 | 617248.67081700 |
| 201501439353 | 15 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 10.39 | Normal | Passenger | Personal | West | Avoiding Veh/Obj | Other Fxd Obj | Off Pvmt - Right | | | | | PD | 2640183.248790 | 617182.43500700 |

East project limits --2' paved shoulder and warning signs (6.27-10.42) included with PRIMARY countermeasures

Omit from BC analysis

West project limits -- 2' paved shoulder (4.17-6.27) included with SUPPLEMENTAL countermeasures

**E. Richview Road**

**Jefferson County**

**May 2021**

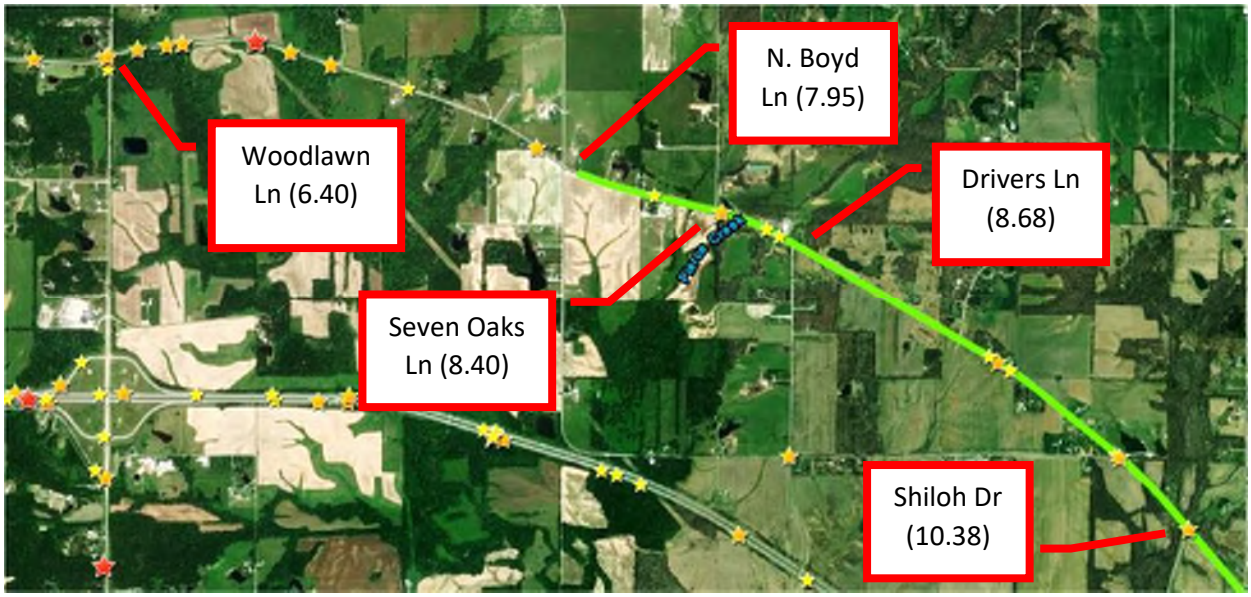
## INTRODUCTION

A 6.25-mile segment of E. Richview Road was identified as the highest ranked segment within Jefferson County as part of a Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis using the most current crash dataset (2014-2018). Two intersections within the study area were also ranked within the top 15 locations within the county: the Woodlawn Lane intersection (rank #7, mile 6.40) and the Seven Oaks Lane/ CR 800E intersection (rank #15, mile 8.40).

The priority ranking performed for Jefferson County was independent of a previous analysis performed by the IDOT Bureau of Safety Programs and Engineering (BSPE). Various segments and intersections also have been identified by IDOT as priority safety locations:

- IDOT 2017 safety analyses (2011-2015) identified a 1.2-mile segment of Richview Road as one of three Critical Safety Tier segments (17-9-1-0003) extending east from the Woodlawn Ln intersection. A Medium Safety Tier was also identified on a 2.2-mile segment between the Fairdrive Lane/ CR 400E intersection (mile 4.21) and the Woodlawn Lane intersection.
- The Shiloh Lane (mile 10.38) and the N. Drivers Lane/ CR 825E (mile 8.68) intersections were ranked in 2017 as Medium Safety Tier intersections in the county. There were no High or Critical Safety Tier intersections within the county jurisdiction.
- The IDOT Run Off the Road Initiative (RORI) identified a 2.4-mile segment on E. Richview Road between N. Boyd Lane (mile 7.95) and N. Shiloh Drive (mile 10.38). The suggested countermeasure is to Add or Widen Paved Shoulders – see limits (green line) in **Figure 1**.

### FIGURE 1: RORI SEGMENT ON RICHVIEW ROAD




The Greater Egypt priority rankings using 2014-2018 crash data, the correlation to the 2017 Safety Tier lists and the RORI output were factors to submit an application for safety funding on E. Richview Road.

## EXISTING CONDITIONS

Richview Road is a county route (CR 10) providing east/west connectivity from Mt Vernon to Irvington and points further north via US Route 51. The roadway width is 22 feet with a painted centerline and edge lines for the 6.25-mile length. An aggregate shoulder width is in a range between 0-4 feet. The legal speed is 55 MPH. Three No Passing zones exist within the study area: 1) a horizontal curve near Birmingham Lane (0.23 mile long), a horizontal curve near Seven Oaks Lane (0.44 miles long) and, 2) a crest vertical curve east of Woodlawn Drive (0.38 miles long).

**A factor that contributes to the safety performance of the corridor is the lack of a shoulder and drop offs along the edge of pavement.** The presence, type and condition of shoulder is variable within the project limits as shown in **Photos 1-7**. The shoulder treatments along the Richview Road segment ranges from no shoulder, aggregate shoulder, to a paved shoulder at driveways depending upon the location.

Land use is a mix between residential, agricultural and undeveloped parcels. Location of photos and other items of interest are shown on **Figure 2.** The 2016 AADT is 2,350 vehicles of which 160 are trucks west of the Shiloh Road intersection. The 2016 AADT is 1,600 vehicles (110 trucks) east of the Woodlawn Drive intersection.

### PHOTO 1: SHOULDER DROP-OFF EAST OF FAIRDRIVE LANE (MILE 4.60)

## PHOTO 2: SHOULDER DROP-OFF WEST OF BIRMINGHAM LN (MILE 5.70)

## PHOTO 3: HORIZONTAL CURVE EAST OF WOODLAWN LN (MILE 6.40)


## PHOTO 4: SHOULDER DROP OFF WEST OF SEVEN OAKS LN INTERSECTION (MILE 8.40)

## PHOTO 5: NO SHOULDER/ DROP OFF EAST OF DRIVERS LN INTERSECTION (MILE 9.30)

## PHOTO 6: SHOULDER DROP-OFF EAST OF E. BOYD RD INTERSECTION (MILE 9.95)

## PHOTO 7 SHOULDER DROP-OFF AT SHILOH LANE LN INTERSECTION (MILE 10.38)

FIGURE 2A: STUDY AREA (MP 4.17-7.25)

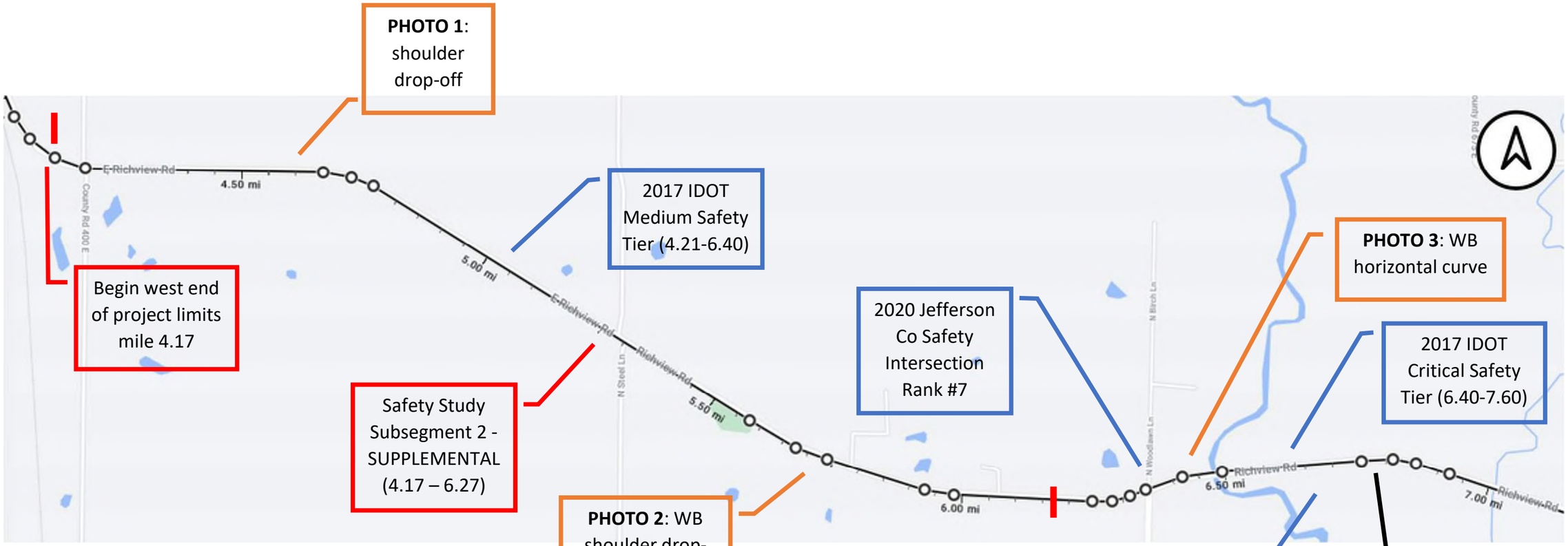
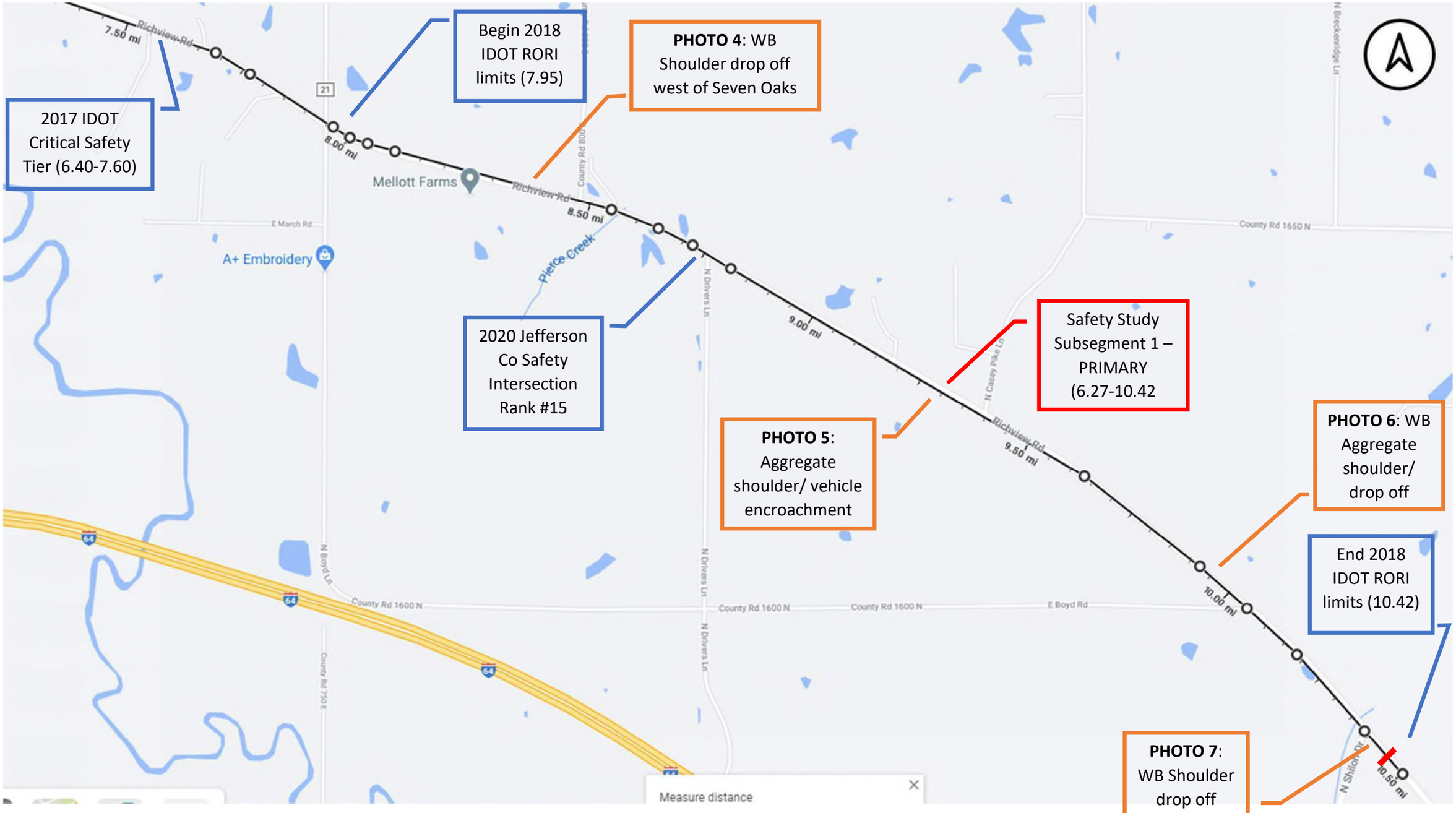


FIGURE 2B: STUDY AREA (7.25-10



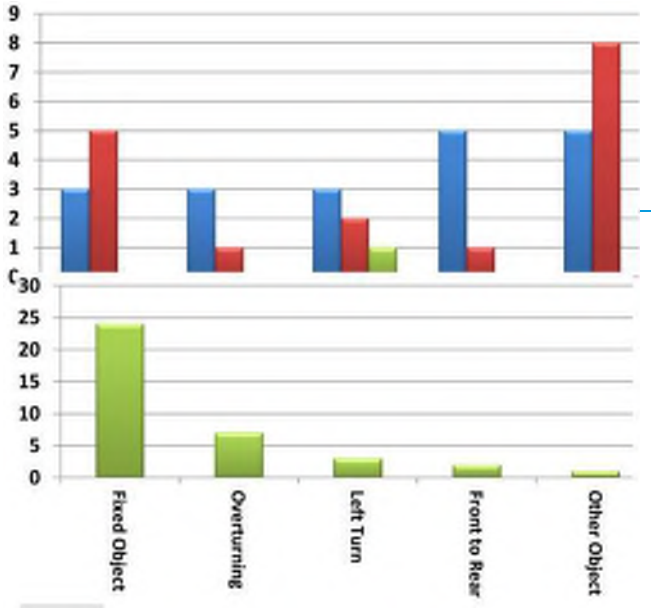
## SAFETY ANALYSIS

A total of 37 crashes occurred within the study area over a 5-year period (2015-2019). The frequency of crashes by year is summarized on **Figure 3**. One fatal crash occurred over the 5-year period.

Injury/fatal crashes represent 48.6% of the total crashes within the study area. All injury crashes comprise 9 Type A injuries, 7 Type B injuries, and 1 Type C injuries.

The IDOT Emphasis Area analysis (2014-2018) identified Road Departure crashes as the most frequent crash type resulting in Type A injuries (50.4%) and fatalities (64.3%) on local roadways within IDOT District 9.

FIGURE 3: CRASH SEVERITY BY YEAR




Road Departure crashes (fixed object, overturning) comprise 81.6% of all crashes within the study area. The Road Departure crashes resulted in 1 Fatal, 8 Type A injuries, 6 Type B injuries and 1 Type C injury.

**Figure 5** shows the location of crashes at 0.5-mile intervals by crash type. The highest frequency of fixed object and overturning crashes occurred within the following two segments:

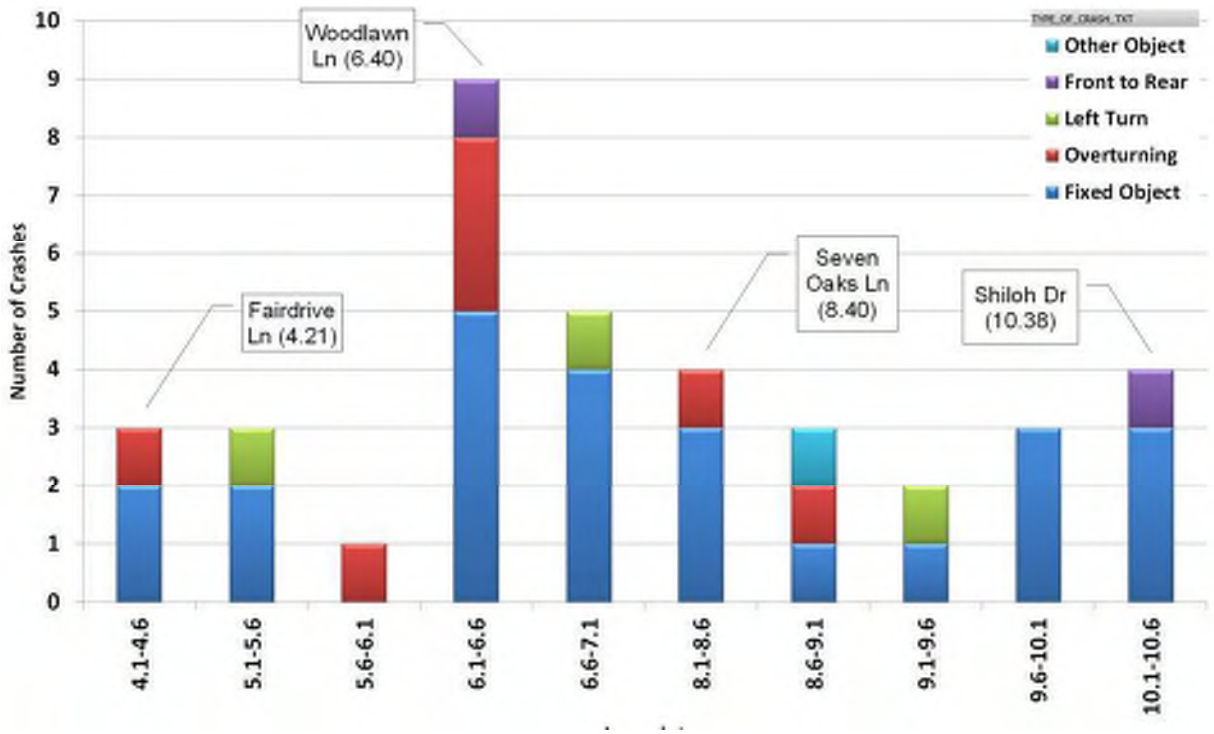
- Segment A (MP 6.1-6.6) having reverse curves with radii of 1,200 ft and of 1,000 feet, respectively. Reverse curve warning signs (W1-4) signs exist in advance of the curves.
- Segment B (MP 6.6 to 7.1) has a horizontal curve with a 1,300 ft radius. Curve warning signs (W1-2) exist in advance of the curve.

BLR Figure 29-3B suggests that a 7.5% superelevation rate would be required to meet a design speed of 55 MPH for a 1,275 ft radius. The cross slope of the existing roadway is a reverse crown within Segment A which meets design criteria for 20 MPH.

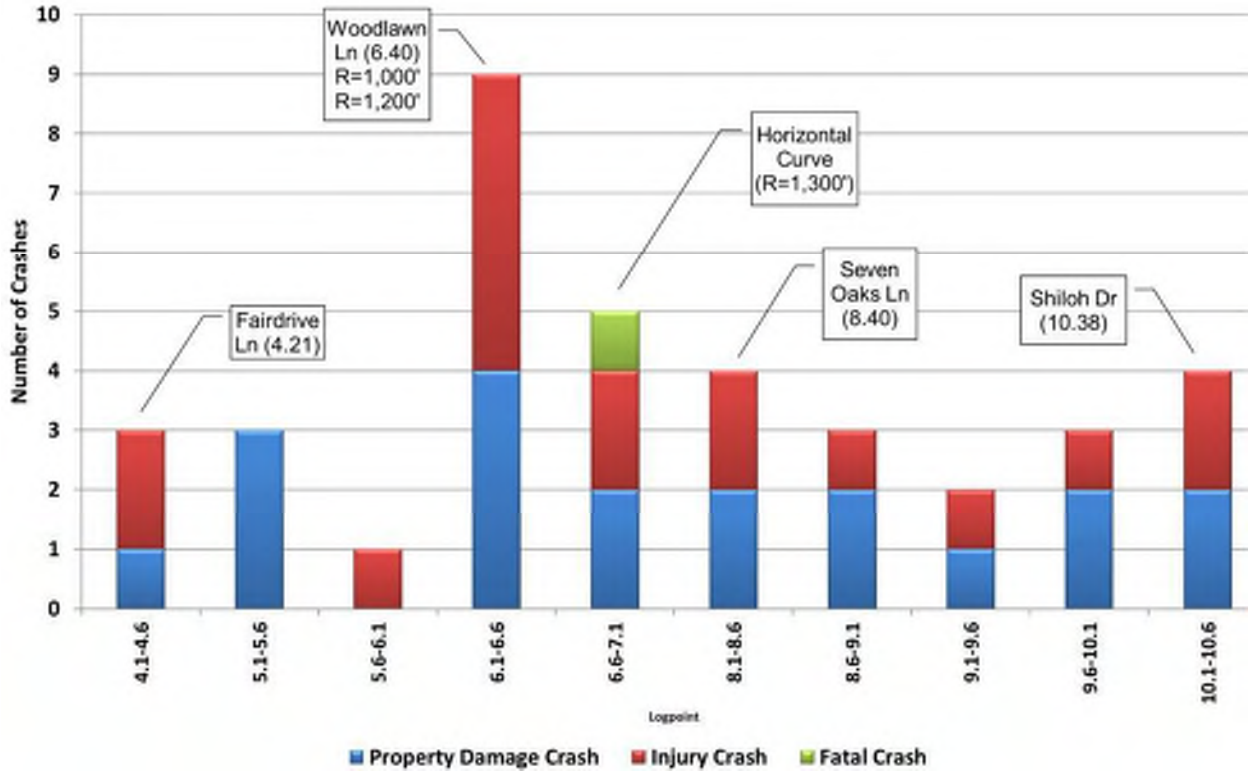
While Road Departure crashes may be concentrated at smaller radii horizontal curves, they are distributed across all segments of the study area regardless of the presence of horizontal curves or the size of the curve. Note that no crashes occurred within the MP 4.6-5.1 segment the MP 7.1-8.1 segment.

**Figure 6** shows the severity of crashes are not focused at a specific location but rather are distributed across the entire length of the corridor. This information may help determine where more targeted countermeasures can be implemented even if the countermeasures are systemic by design.

## FIGURE 5: LOCATION FREQUENCY BY CRASH TYPE




## FIGURE 6: LOCATION FREQUENCY BY SEVERITY



## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasures are systemic in nature, the countermeasures are targeted to segments having a higher frequency of crashes. Two primary countermeasures are proposed as summarized below.

## CURVE WARNING SIGN COUNTERMEASURE

The majority of overturning crashes occurred within the proximity of two locations having reverse horizontal curves.

- Segment A (MP 6.1-6.6) having reverse curves with radii of 1,200 ft and of 1,000 feet, respectively. Reverse curve warning signs (W1-4) signs exist in advance of the curves. No chevrons or advisory speed plaques exist at these locations despite the design speed of the existing horizontal alignments being more than 15 MPH lower than the legal speed of 55 MPH.
- Segment B (MP 6.6 to 7.1) has a horizontal curve with a 1,300 ft radius. Curve warning signs (W1-2) exist in advance of the curve. No chevrons or advisory speed plaques exist at this location despite the design speed of the existing horizontal alignments being more than 15 MPH lower than the legal speed of 55 MPH.

A short-term countermeasure installs or upgrades curve warning signs and chevrons at horizontal curves to provide a warning to drivers about the edge of pavement. The installation of curve warning signs is a proven safety countermeasure. The following countermeasures for the curves between MP 6.1 and 7.1 are recommended, as a minimum:

1. Install reverse curve warning, speed advisory plaques, and/or chevrons in accordance with **Table 2C-5** of the MUTCD. A ball bank study to confirm the advisory speed at these locations are recommended.

**Table 2C-5. Horizontal Alignment Sign Selection**

| Type of Horizontal Alignment Sign | Difference Between Speed Limit and Advisory Speed | | | | |
|---|---|---|---|---|---|
| | 5 mph | 10 mph | 15 mph | 20 mph | 25 mph or more |
| Turn (W1-1), Curve (W1-2), Reverse Turn (W1-3), Reverse Curve (W1-4), Winding Road (W1-5), and Combination Horizontal Alignment/Intersection (W10-1) (see Section 2C.07 to determine which sign to use) | Recommended | Required | Required | Required | Required |
| Advisory Speed Plaque (W13-1P) | Recommended | Required | Required | Required | Required |
| Chevrons (W1-8) and/or One Direction Large Arrow (W1-6) | Optional | Recommended | Required | Required | Required |
| Exit Speed (W13-2) and Ramp Speed (W13-3) on exit ramp | Optional | Optional | Recommended | Required | Required |

Note: Required means that the sign and/or plaque shall be used, recommended means that the sign and/or plaque should be used, and optional means that the sign and/or plaque may be used.

See Section 2C.06 for roadways with less than 1,000 ADT.

2. Relocate advance warning signs no more than 225 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Existing signs are located 750 feet in advance of the horizontal curves at some locations. Section 2C.05 emphasizes that signs are not to be placed too far in advance of the condition.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[6] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[6] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[6] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

## PAVED SHOULDER COUNTERMEASURE

The frequency of crashes occurring beyond the limits of the horizontal curves suggests other factors contribute to the safety performance on Richview Road (i.e., edge of pavement drop offs). **A medium-term countermeasure reconstructs a paved shoulder from 6.27 to 10.42 (see Figure 2) to mitigate pavement drop offs or to provide a shoulder.**

Drop offs at the edge of pavement occur where the aggregate shoulder has been dispersed or rutted due to higher speed vehicles driving on a non-improved surface. The drop off at the edge of pavement has been an on-going maintenance issue due, in part, to the high speeds and lack of paved shoulders.

The following targeted countermeasures are proposed on the Richview Road corridor:

- Upgrade the aggregate shoulder with a 2 ft paved shoulder (full depth). A paved shoulder width of 2 feet does not require a design exception per BLR Figure 33-3B but does deviate from the IDOT guidance for paved shoulders (BLR Figure 32-2B, ADT < 3,000 vehicles)
- Add a 4 ft graded shoulder where feasible within exiting right of way limits to stabilize the existing pavement and to reduce the frequency of overturn vehicles attributed to foreslopes
- Add longitudinal rumble strips to increase driver attention.

The existing pavement has been resurfaced within the last 3 years. Therefore, the shoulder improvements will have a clean pavement joint near the existing edge line.

Context Sensitive Design (CSD) principles are applicable to the Richview Road corridor due to the cost and environmental impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based on guidance from the

*National Cooperative Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

Of the broad categories of transportation issues that are most applicable to the Richview Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section on segments of Richview Road where turf shoulders exist does not comply with IDOT design criteria (BLR Figure 33-3B). The preferred design criteria for shoulder widths on reconstruction projects (BLR Figure 32-2B) also are not met when compared to existing conditions.
2) Substantive Safety – The actual performance of the Richview Road corridor is to be compared to similar facilities to assess relative performance. Crash statistics for a corridor having a similar typical section as Richview Road does not appear on the priority ranking for the Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis or the 2017 Safety Tier for segments.

In the case of Richview Road, the substantive safety performance of Richview Road is not attributed to the design criteria outlined in BLR Figure 32-2B. Rather, the substantive safety performance of Richview Road is worse than comparable roadways due to drop-offs from the edge of pavement and/or absence of paved shoulders. **Figure 7** shows a decision matrix of nominal and substantive safety countermeasures.

## FIGURE 7: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS

| Substantive Safety Criteria | Nominal Safety Criteria: Meets | Nominal Safety Criteria: Does Not Meet |
|---|---|---|
| Meets | • Infrastructure improvements only (no need or justification for geometric revisions) based on safety | • 3R criteria may be considered<br>• Incorporate only low cost safety enhancements<br>• "Upgrade" to full standards may not be cost effective (consider design exceptions to avoid costs and impacts) |
| Does Not Meet | • Targeted safety improvements (low or high cost depending on extent of problem)<br>• Focus on cost-effective solutions to safety problems | • Complete reconstruction to current criteria probably warranted (no or very minimal design exceptions)<br>• Consider special targeted safety enhancements |

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (70 feet). Complete reconstruction is not recommended since the proposed countermeasures results in the typical section to be consistent with Figure 33-3B of the BLR for roadways having an ADT < 3,000 vehicles: **Figure 8** shows the proposed typical section for Richview Road.

## FIGURE 8: RICHVIEW ROAD TYPICAL SECTION

## BENEFIT COST ANALYSIS

The PRIMARY countermeasures while systemic are limited to a total segment length of 4.15 miles on Richview Road. The project data used to perform the benefit cost analysis is based on the following assumptions.

- The crash dataset was scrubbed to only include Road Departure crashes (Fixed Object, Overturning) on Richview Road. The adjusted dataset includes 24 crashes.
- While chevrons and advisory speed plaques are recommended to delineate curves between Mile 6.1 and 7.1, the shoulder widening with longitudinal rumble strips would provide a greater benefit. Therefore, no CMF was applied for the warning sign upgrades which will result in a conservative benefit/cost ratio.
- Upgrading to a 2 ft paved shoulder along the 4.15 mile segment is proposed to improve safety performance of the existing roadway having an effective width of 22 feet +/-. The cost estimate includes regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B.
- Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to use the travel lane as is done for the existing condition. Richview Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis.

  The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies to not limit themselves to the use of longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Richview Road.

  Not implementing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

**The total cost for the overall 4.15 mile segment is estimated to be $1,061,000 with a Benefit Cost ratio of 8.20, calculated from the IDOT HSIP BOC analysis tool.** A detailed cost estimate and BOC calculations are included as an attachment to this report.

## SUPPLEMENTAL BENEFIT COST ANALYSIS

Shoulder improvements would benefit other segments within the study limits. Therefore, the addition of a 2 ft paved shoulder along a 2.1-mile segment would further improve safety performance. The following SUPPLEMENTAL improvements are proposed if additional funds are available to further mitigate the four (4) fixed object and two (2) overturn crashes. These improvements are proposed in addition to the PRIMARY countermeasures listed in the Benefit Cost Analysis section of the safety study.

- Upgrading to a 2 ft paved shoulder along the 2.1 mile segment (MP 4.17-6.27) is proposed to improve safety performance of the existing roadway having an effective width of 22 feet +/-. The cost estimate includes regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B.
- Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the use travel lane as is done for the existing condition. Richview Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis.

  The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies to not limit themselves to the use of longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Richview Road.

  Not implementing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

This additional 2.1-mile segment for shoulder widening mitigates the segment identified as a Medium Safety Tier between the Fairdrive Lane/ CR 400E intersection (mile 4.21) and the Woodlawn Lane intersection

**The total cost for the overall 2.1 mile segment is estimated to be $574,000 with a Benefit Cost ratio of 1.40, calculated from the IDOT HSIP BOC analysis tool.** A separate cost estimate and benefit cost analysis are included as part of this funding application and is labeled as a SUPPLEMENTAL countermeasure.

# Greater Egypt Safety Study

## APPENDIX 02: FRA AKIN BLACKTOP ROAD

Illinois Department of Transportation

# HSIP Candidate Form

**FY 2023**

| | | | |
|---|---|---|---|
| **ID:** | **Contract:** | **Award Date:** | **Completion Date:** 5/3/21 |
| **District:** 9 | **County:** Franklin | | **City:** NA |
| **Key route:** 873 | **Marked route:** County Road 3 | | |
| **Road Name:** Akin Blacktop Road | **Intersecting Roadway:** N/A | | ☐ |
| **Length:** 2.90 miles | ☐ N/A | | **Mile station:** 2.60 to 5.50 |

**Location Description:** Akin Blacktop Rd (Bessie Road to N. Thompsonville Road)

| | | | |
|---|---|---|---|
| ☒ **Rural** | ☐ **Urban** | **Lanes:** 2 | |
| **AADT(Segment):** 850 | **Total Entering AADT (Intersection):** | | **Speed Limit:** 55 mph |
| **Friction Test Results:** | ☒ N/A | **Lighting Present:** ☐ Y ☒ N | |

**CHSP Emphasis Area(s):** Road Departure, Angle ☒ District Documentation ☒ Systematic Improvements ☐ N/A

**Peer Group:** Peer Group 3: Rural AADT 2511-1,000 / two lanes ☐ N/A

**Other:** 2020 Greater Egypt Priority Location for Franklin Co; 2017 IDOT Critical Safety Tier Intersection (17-9-1-0021) at Bessie Road; 2021 RORI Refresh/ Install Edgeline Pavement Markings and Install Centerline Rumble Strip segment

**Crashes Details**

| Year | Total Crashes | Fatal Crashes | Fatalities | A-Injury Crashes | A-Injuries | B-Injury Crashes | B-Injuries | C-Injury Crashes | C-Injuries | PDO | Wet-Weather Crashes | Darkness (Not lighted) Crashes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015 | 7 | 1 | 1 | 1 | 2 | 1 | 3 | 0 | 0 | 4 | 2 | 5 |
| 2016 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 2 |
| 2017 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 2019 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| **Total** | 13 | 1 | 1 | 2 | 4 | 2 | 5 | 0 | 0 | 8 | 4 | 9 |

**Location Description:** Rural, 2-lane roadway connecting Benton to Akin (unicorporated)

**Problem Description:** Pavement drop-offs, lack of shoulder, steep foreslopes contribute to Road Departure crashes having a 40% injury/fatality rate

**Previous Safety Improvements:** NA

**Collision Diagram:** ☐ Y ☒ N **Images:** ☒ Y ☐ N

**Predominant Crash Types:** Fixed Object (10), Overturn (1) and Angle/Turning (3) crashes

**Proposed Improvement(s):** Add paved shoulders, longitudinal rumble strips, regrading foreslopes and advance warning signs (5 approaches)

**Estimated Project Cost ($000's):** $1,126.30 **Benefit-Cost Ratio:** 5.10

**Local Projects:** NA

**Annual Fatal Crash Rate (Fatal Crashes/100 Miles):** 34.5 **Annual A-Injury Crash Rate (A-Injury Crashes/100 Miles):** 69.0

**Local Roads Rural Functional Class:** Major Collector

**Approved:** **Central HSIP Approval Date:**

**Signed:**

**State Safety Engineer**

**Funding:** ☐ HSIP ☐ HRRR ☐ RAIL

**Comment:**

**Distribution:** ☐ OPP ☐ District ☐ BSPE ☐ LRS ☐ BDE

## PROJECT DESCRIPTION - PROJECT DATA INPUT (LOCAL SEGMENTS)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Project:* | Akin-Blacktop Road | | | | *Prepared by:* | CMT |
| *District:* | 9 | *County:* | Franklin | *City:* | *Date* | 5/3/2021 |
| *Key Route:* | 873 | *Marked Route:* | CR 3 | *MilePost:* | *Current AADT:* | 850 |
| *Location:* | Akin-Blacktop Road | | | | | |
| | | | | | *Length (miles):* | 2.9 |
| *Crash data:* | 5 | Years | | | *Begin Station:* | |
| | From | 2015 | to | 2019 | *End Station:* | |
| | | | | | *Traffic Growth factor* | 3.0% |
| *Peer Group:* | Peer Group 3 - Rural AADT 251-1,000 / two lanes | | | | *Interest rate* | 4.0% |

| *Messages* |
|---|
| Please provide a detailed cost estimation for all countermeasures along with this summary sheet. |

## LOCAL SEGMENTS CRASH SEVERITY DISTRIBUTION BY CRASH TYPE FOR ANALYSIS PERIOD

| *Crash Type* | All Crashes (Aggregated crash input only) | CRASH TYPE | | | | | | | | | | | | | | | | | SPECIAL CASE | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Angle | Animal | Fixed Object | Head On | Left Turn | Other Noncollision | Other Object | Overturned | Pedestrian | Pedalcyclist | Parked Vehicle | Rear End | Right Turn | Sideswipe Same Direction | Sideswipe Opposite Direction | Turning | Train | Night Time | Wet Pavement | |
| *Crash Severity* | *ALL* | *AG* | *AN* | *FO* | *HO* | *LT* | *OtherNC* | *OtherO* | *OVT* | *PD* | *PDC* | *PKV* | *RE* | *RT* | *SSD* | *SOD* | *T* | *TR* | *NGT* | *WP* | *TOT* |
| Fatal Crashes | | | | 1 | | | | | | | | | | | | | | | 0 | 0 | 1 |
| A-Injury Crashes | | 1 | | | | | | | | | | | | | | | 1 | | 0 | 0 | 2 |
| B-Injury Crashes | | | | 1 | | | | | 1 | | | | | | | | | | 0 | 0 | 2 |
| C-Injury Crashes | | | | | | | | | | | | | | | | | | | 0 | 0 | 0 |
| PDO Crashes | | | | 7 | | | | | | | | | | | | | 1 | | 0 | 0 | 8 |

## LOCAL SEGMENTS BENEFIT COST ANALYSIS

| BENEFIT CALCULATIONS | | | | COUNTERMEASURE COST CALCULATIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *COUNTERMEASURE* | | *CMF ** | *Crash Type affected by this improvement* | *Unit Cost* | *Quantity* | *Units* | *Total Cost* | *Service Life* | *Present worth* | *EUAC *** |
| 4.1.3.S1.1 - Pavement Treatments - Add or Widen Paved Shoulder | | 0.94 | ROR, FO, HO, OVT, SOD, SSD | $179,686 | 5.8 | Miles | $1,042,178 | 15 | $1,042,178 | $93,750 |
| 4.1.9.S1.1 - Pavement Treatments - Install Rumble Strips (Shoulder) | | 0.67 | FO, OVT | $14,507 | 5.8 | Miles | $84,140 | 8 | $145,620 | $13,100 |
| | | | All | | | | | | | |
| | | | All | | | | | | | |
| | | | | | | | | | | |
| *TOTAL BENEFIT* | *$545,500* | | | *TOTAL COST* | | | | | | *$106,850* |

| | | | | | |
|---|---|---|---|---|---|
| **BENEFIT/ COST** | **5.10** | **ANNUAL NUMBER OF FATALITIES POTENTIALLY PREVENTED** | **0.08** | **TOTAL FATALITIES PREVENTED** | **0.40** |

* CMF = Crash Modification Factor

** EUAC = Estimated Uniform Annual Cost

# COST ESTIMATE - AKIN BLACKTOP ROAD

Project: Akin Blacktop Rd
Description: Pre-Design Estimate

Estimate By: BMB (CMT) 5/3/2021
Checked By: SPH (CMT) 5/3/2021

Project #:
Municipality:
Road Dist: Nine
County: Franklin
Section:

| Item No. | Item Description / Name | Total Quantity | Rumble Strips (Shoulder) | Add Paved Shoulder | Unit | Unit Price | Extended Price |
|---|---|---|---|---|---|---|---|
| 1 | HMA Shoulders, 6" | 8,600.0 | | 8,600.0 | SQ YD | $40.00 | $344,000.00 |
| 2 | Earth Excavation | 1,500.0 | | 1,500.0 | CU YD | $25.00 | $37,500.00 |
| 3 | Removal & Disposal of Unsuitable Material | 800.0 | | 800.0 | CU YD | $25.00 | $20,000.00 |
| 4 | Grading and Shaping Ditches | 30,700.0 | | 30,700.0 | FOOT | $9.50 | $291,650.00 |
| 5 | Pavement Removal | 1,800.0 | | 1,800.0 | SQ YD | $15.00 | $27,000.00 |
| 6 | Shoulder Rumble Strips, 8 Inch | 30,700.0 | 30,700.0 | | FOOT | $2.00 | $61,400.00 |
| 7 | Guardrail | 600.0 | | 600.0 | FOOT | $50.00 | $30,000.00 |
| 8 | Pavement Marking | 30,700.0 | | 30,700.0 | FOOT | $1.25 | $38,375.00 |
| 9 | Traffic Signage | 8.0 | | 8.0 | EACH | $500.00 | $4,000.00 |
| 10 | Traffic Control | 1.0 | 0.10 | 0.90 | L SUM | $5,000.00 | $5,000.00 |
| 11 | Construction Layout | 1.0 | 0.10 | 0.90 | L SUM | $5,000.00 | $5,000.00 |
| 12 | Mobilization | 1.0 | 0.10 | 0.90 | L SUM | $50,000.00 | $50,000.00 |

| | | | |
|---|---|---|---|
| Construction Subtotal (1-12): | $67,400.00 | $846,525.00 | **$913,925.00** |
| Utility Relocation & Land Acquisition: | | | **$0.00** |
| Contingency (10%): | $6,740.00 | $84,652.50 | **$91,392.50** |
| Preliminary Engineering: | $6,000.00 | $68,000.00 | **$74,000.00** |
| Construction Engineering: | $4,000.00 | $43,000.00 | **$47,000.00** |
| Project Total: | $84,140.00 | $1,042,177.50 | **$1,126,317.50** |

| CASE_ID | YEAR | INJ | FAT | COLL_TYPE | WEATHER | LIGHTING | SURF_COND | MILE | DRIVER_1 | VEH1_TYPE | VEH1_SPECL | VEH1_DIR | VEH1_MANUV | VEH1_EVNT1 | VEH1_LOC1 | VEH1_EVNT2 | VEH1_LOC2 | VEH1_EVNT3 | VEH1_LOC3 | DRIVER_2 | VEH2_TYPE | VEH2_SPECL | VEH2_DIR | VEH2_EVNT1 | VEH2_LOC1 | REC_TYPE | XCOORD | YCOORD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 201801479635 | 18 | 0 | 0 | Fixed Object | Clear | Darkness | Wet | 2.66 | Other/ Unknown | Passenger | Personal | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Other Pole or Post | Off Pvmt - Right | Ditch/ Embkmt | Off Pvmt - Right | | | | | | | PD | 2686871.248440 | 483970.5408900 |
| 201501294427 | 15 | 2 | 1 | Fixed Object | Clear | Dark, lit Road | Dry | 2.66 | Alcohol Impaired | Pickup | Personal | South | Straight Ahead | Ran Off Roadway | Other | Tree or Shrub | Other | Building/S tructure | Other | | | | | | | Fatal | 2686871.544600 | 483969.9485810 |
| 201501337403 | 15 | 3 | 0 | Turning | Clear | Daylight | Dry | 2.66 | Other/ Unknown | Pickup | Personal | South-east | Turning Left | Mtr Veh In Traffic | Intersection | Overturn | Off Pvmt - Right | | | Normal | Passenger | Personal | West | Mtr Veh In Traffic | Intersection | A-Injury | 2686871.6766100 | 483970.3501500 |
| 201501490317 | 15 | 0 | 0 | Front to Rear | Clear | Daylight | Dry | 2.66 | Normal | Passenger | Personal | East | Straight Ahead | Mtr Veh In Traffic | On Pvmt (Rdwy) | | | | | Normal | Pickup | Personal | East | Mtr Veh In Traffic | On Pvmt (Rdwy) | PD | 2686872.401880 | 483970.3111900 |
| 201501283403 | 15 | 0 | 0 | Fixed Object | Clear | Darkness | Dry | 2.67 | Had Been Drinking | Pickup | Personal | West | Avoiding Veh/ Objs | Ran Off Roadway | Other | Ditch/ Embankment | Other | | | | | | | | | PD | 2686946.452610 | 483966.3333200 |
| 201501196641 | 15 | 0 | 1 | Fixed Object | Clear | Darkness | Dry | 2.90 | Drug Impaired | Pickup | Personal | West | Skidding/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Right | Ditch/ Embankment | Off Pvmt - Right | Overturn | Off Pvmt - Right | | | | | | | Fatal | 2688176.912380 | 483876.6747050 |
| 201501487611 | 15 | 0 | 0 | Fixed Object | Rain | Darkness | Wet | 2.91 | Had Been Drinking | Passenger | Personal | West | Straight Ahead | Ran Off Roadway | Off Pvmt - Right | Culvert | Off Pvmt - Right | Fence | Off Pvmt - Right | | | | | | | PD | 2688193.348170 | 483876.2318220 |
| 201601349668 | 16 | 0 | 0 | Fixed Object | Sev Crs Wind | Daylight | Dry | 3.92 | Other/ Unknown | Passenger | Personal | West | Skidding/ Ctrl Loss | RR SIG/ Gates | On Pvmt (Rdwy) | | | | | | | | | | | PD | 2693540.116570 | 483897.0319580 |
| 201501346910 | 15 | 2 | 0 | Fixed Object | Clear | Darkness | Dry | 4.68 | Normal | Passenger | Personal | East | Skidding/ Ctrl Loss | Ran Off Roadway | Off Pvmt - Left | Culvert | Off Pvmt - Left | Overturn | Off Pvmt - Left | | | | | | | B-Injury | 2697551.963020 | 483973.4309290 |
| 201801451627 | 18 | 0 | 0 | Fixed Object | Clear | Daylight | Dry | 4.78 | Other/ Unknown | Passenger | Personal | East | Straight Ahead | Other Fixed Obj | Off Pvmt - Left | | | | | | | | | | | PD | 2698109.988600 | 483979.4044850 |
| 201601499998 | 16 | 0 | 0 | Fixed Object | Sleet/Hail | Darkness | Ice | 4.84 | Normal | Passenger | Personal | East | Skidding/ Ctrl Loss | Other Fixed Obj | On Pvmt (Rdwy) | | | | | | | | | | | PD | 2698378.519630 | 483982.2003350 |
| 201601384240 | 16 | 1 | 0 | Overturned | Clear | Darkness | | 4.93 | Alcohol Impaired | Pickup | Personal | East | Skidding/ Ctrl Loss | Overturn | Off Pvmt - Right | | | | | | | | | | | B-Injury | 2698886.057780 | 483987.6220500 |
| 201501429581 | 15 | 0 | 0 | Fixed Object | Clear | Dusk | Dry | 5.40 | Other/ Unknown | Passenger | Personal | East | Unknown | Ran Off Roadway | Off Pvmt - Right | Mailbox | Off Pvmt - Right | Ditch/ Embkmt | Off Pvmt - Right | | | | | | | PD | 2701342.398420 | 484019.7971810 |
| 201901471428 | 19 | 3 | 0 | Angle | Clear | Darkness | Dry | 5.43 | Normal | SUV | Personal | North | Straight Ahead | Mtr Veh In Traffic | Intersection | | | | | Normal | Passenger | Personal | West | Mtr Veh In Traffic | Intersection | A-Injury | 2701541.001070 | 484023.9371050 |
| 201501089084 | 15 | 0 | 0 | Turning | Clear | Daylight | Wet | 5.43 | Normal | Passenger | Personal | South-west | U-Turn | Mtr Veh In Traffic | Intersection | | | | | Normal | Pickup | Personal | East | Mtr Veh In Traffic | Intersection | PD | 2701541.007190 | 484023.7353730 |

Omit from BC analysis

**Akin-Blacktop Road**

**Franklin County**

**May 2021**

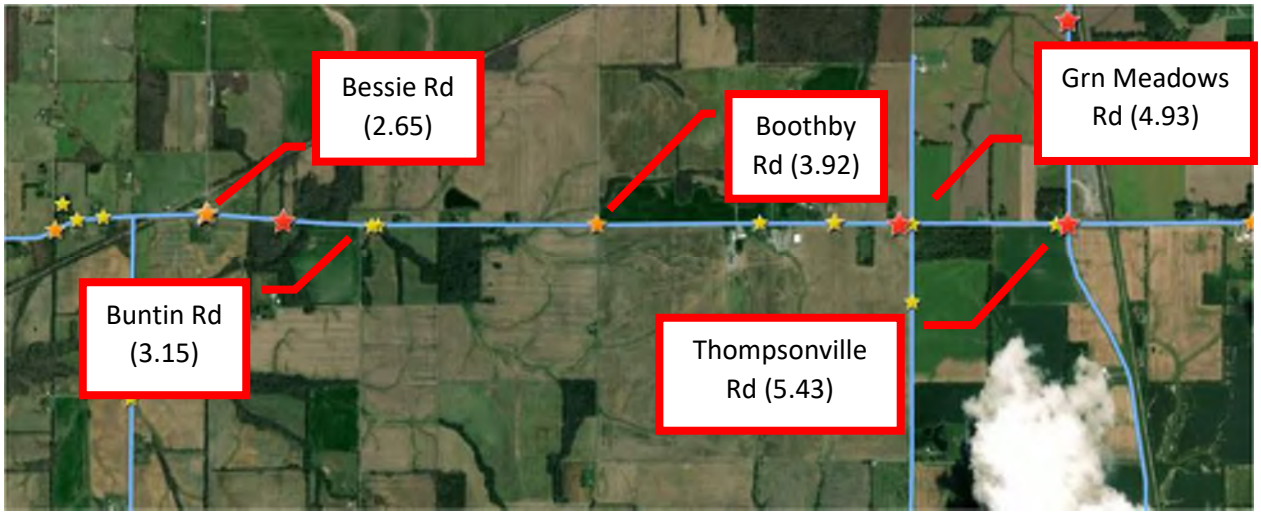
## INTRODUCTION

A 2.9-mile segment of Akin-Blacktop Road/ CR 3 was identified as the highest ranked segment within Franklin County as part of a Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis using the most current crash dataset (2014-2018). The Bessie Road intersection (MP 2.65) within the study area was ranked #2 within the county.

The priority ranking performed for Franklin County was independent of previous analysis performed by the IDOT Bureau of Safety Programs and Engineering (BSPE). Various segments and intersections within the current study limits also have been identified by IDOT as priority safety locations:

- IDOT 2017 safety analyses (2011-2015) identified a 2.9-mile segment of Akin-Blacktop Road as one of 7 Critical Safety Tier segments (17-9-1-0035) between Bessie Road and Thompsonville Road.
- The Bessie Road intersection was ranked in 2017 as the only Critical Safety Tier intersection (17_9_1_0021) in the county.
- The IDOT Run Off the Road Initiative (RORI) identified the study area on Akin-Blacktop Road between Bessie Road (mile 2.65) and Thompsonville Road (mile 5.43). The suggested countermeasure is to Refresh/ Install Edgeline Pavement Markings and Install Centerline Rumble Strips – see limits (blue line) in **Figure 1**. Note the existing roadway has painted edge lines and center lines.

### FIGURE 1: RORI SEGMENT ON AKIN-BLACKTOP ROAD




Several corridors were identified in the RORI database as being high crash locations. The following locations were not included in the 2020 safety ranking performed by Franklin County (2014-2018 dataset) for the following reasons:

- Crocker Road shows one type A injury crash and one type B injury crash which makes the corridor less attractive for safety funding application (< 2 Type A crashes).
- Peach Orchard Road has a total of three type A injury crashes and four type B injury crashes. These crashes are distributed over a 6-mile corridor resulted in a lower score than Akin Blacktop Road.
- Rend City Road has one type A injury crash which makes it less attractive for a safety funding application.

The priority rankings using 2014-2018 crash data, the correlation to the 2017 Safety Tier lists and the RORI output were factors to submit an application for safety funding on Akin-Blacktop Road.

## EXISTING CONDITIONS

Akin-Blacktop Road is a county route (CR 3) providing east/west connectivity between IL 34 and IL 142. The roadway width is 22 feet with a painted centerline and edge lines for the 2.90-mile length. An aggregate shoulder averages 0-1 feet. The legal speed is 55 MPH. Several No Passing zones exist within the study area:

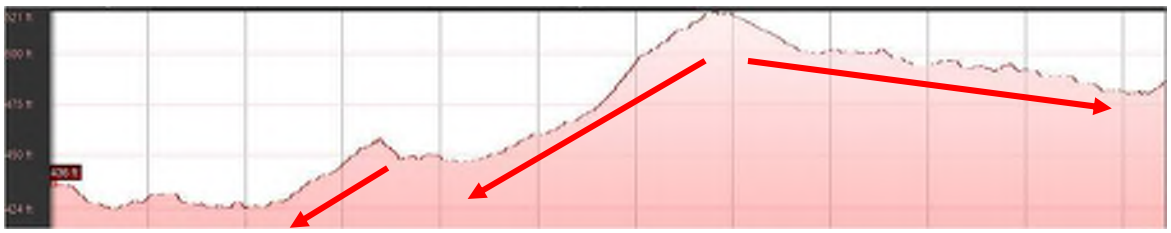
- Vertical curve east of Bessie Road (MP 2.92)
- Vertical curve east of Boothby Rd (MP 4.15) – highest elevation within the study limits
- Vertical curve east of Boothby Rd (MP 4.32) – highest elevation within the study limits

Two factors contribute to the safety performance of the corridor:

1. The roadway profile has grades that encourages higher operating speeds. **Figure 2** shows the profile of Akin Blacktop Road between Bessie Road and Thompsonville Road. The elevation difference between the crest vertical curves at MP 4.15/4.32 (highest elevation) and the low point is nearly 100 feet.

   Note the directional split of EB and WB crashes at the MP 4.15/ 4.32 point as discussed in the Crash Analysis section.

### FIGURE 2: AKIN-BLACKTOP ROAD PROFILE



2. The lack of a shoulder along the edge of pavement and roadside grading. The presence and type of a shoulder is variable within the project limits as shown in **Photos 1-5**. The shoulder treatments along the Akin-Blacktop Road segment ranges from no shoulder, aggregate shoulder, to a paved shoulder at driveways depending upon the location within the corridor.

## PHOTO 1: FIXED OBJECT EAST OF BESSIE RD (MILE 2.82)


## PHOTO 2: VERTICAL/ HORIZONTAL CURVE (MILE 3.05) NEAR FATAL CRASH

## PHOTO 3: NO AGGREGATE SHOULDER (MILE 3.20)

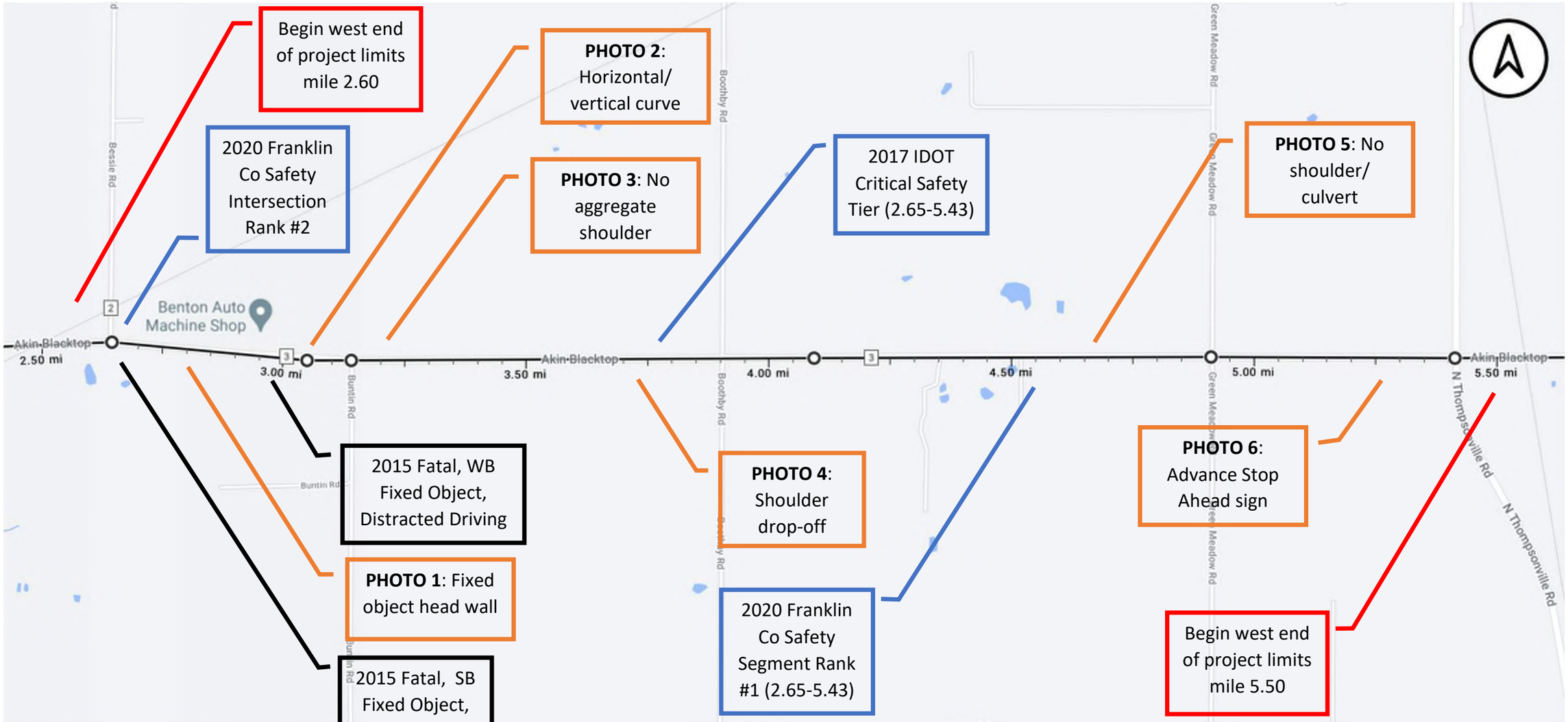
## PHOTO 4: SHOULDER DROP OFF/ REPAIR (MILE 3.72)

## PHOTO 5: CULVERT HEADWALL CRASH LOCATION (MILE 4.65)

## PHOTO 6: ADVANCE WARNING SIGN 1,000 FT FROM THOMPSONVILLE RD (MILE 5.25)

Land use is a mix between residential, agricultural and undeveloped parcels. Location of photos and other items of interest are shown on **Figure 3.** The 2019 AADT is 850 vehicles of which 90 are trucks east of the Bessie Road intersection.

FIGURE 3: STUDY AREA (MP 2.60 TO 5.50)



## SAFETY ANALYSIS

A total of 15 crashes occurred within the study area over a 5-year period (2015-2019). The frequency of crashes by year is summarized on **Figure 4**. Two fatal crashes occurred over the 5-year period.

A fatality occurred on Friday, August 21, 2015 at 11 PM about ¼ mile east of the Bessie Road intersection. The location is near a vertical and horizontal curve on Akin Blacktop Road. The single vehicle crash involved a teenage driver who struck a utility pole (overturn). Distracted driving attributed to texting and drug impairment were contributing factors.

A second fatality occurred Saturday, October 24, 2015 at 11PM when a teenage driver ran a stop sign on the Bessie Road approach and struck a house. Two other people were injured in the crash. Alcohol and speeding were contributing factors.

The IDOT Emphasis Area analysis (2014-2018) identified Road Departure crashes as the most frequent crash type resulting in Type A injuries (50.4%) and fatalities (64.3%) on local roadways within IDOT District 9.

FIGURE 4: CRASH SEVERITY BY YEAR

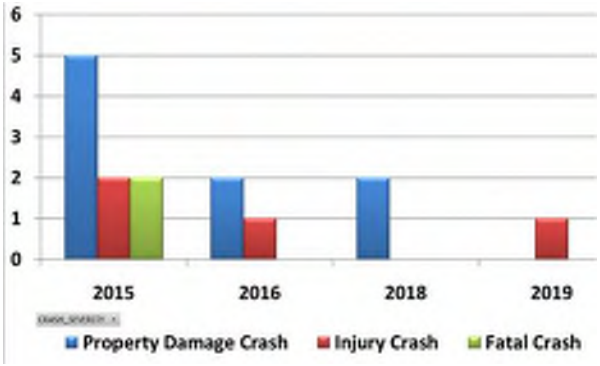
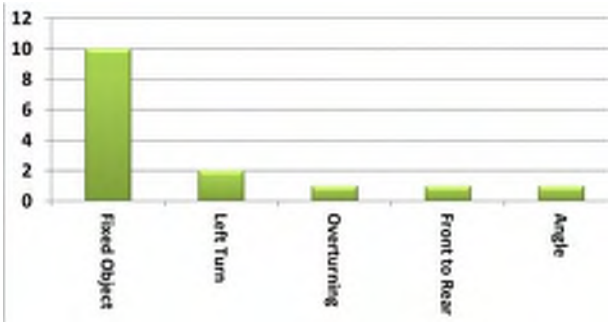



FIGURE 5: CRASH FREQUENCY BY TYPE



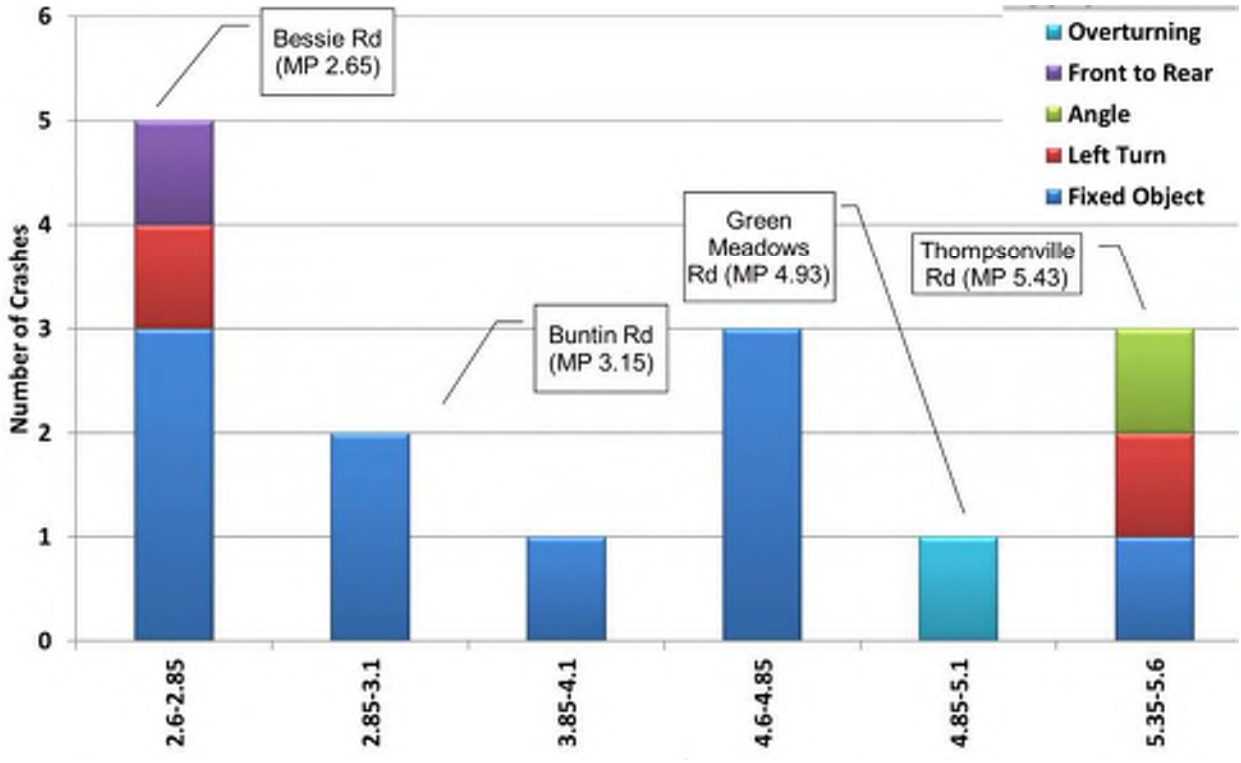

- Injury/fatal crashes represent 40.0% of the total crashes on Akin Blacktop Road. All fatal/ injury crashes comprise 2 fatal, 2 Type A injuries, and 2 Type B injuries.
- Road Departure crashes (fixed object, overturning) comprise 73.3% of all crashes within the study area as shown in **Figure 5**. The Road Departure crashes resulted in 2 Fatal and 2 Type B injuries.

**Figure 6** shows the location of crashes at 0.25-mile intervals by crash type. **Figure 7** shows the crash type by direction. Road Departure crashes occurred roadway segments on negative grades (see **Figure 2**) which suggest higher speeds may contribute to crash frequency:

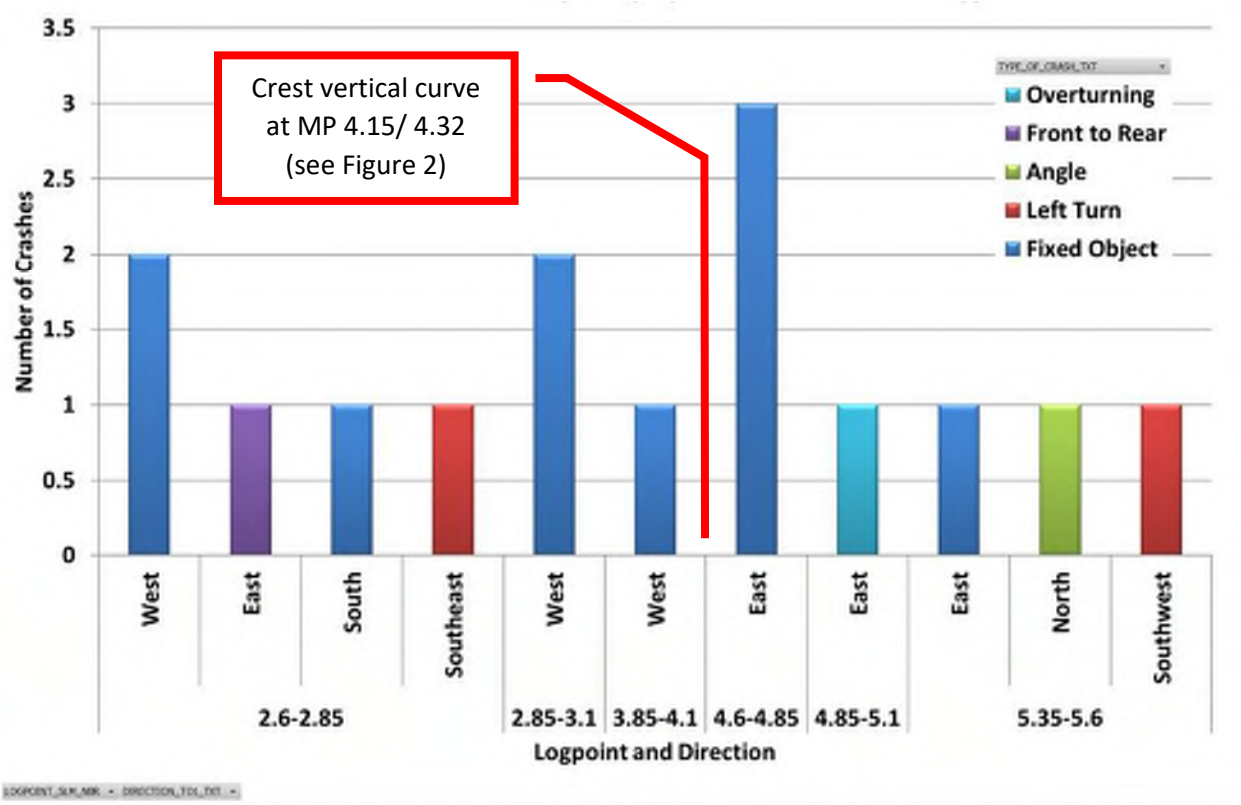
- Road Departure crashes favored WB Akin Blacktop Road between MP 2.65 and 4.32
- Road Departure crashes favored EB Akin Blacktop Road between MP 4.32 and 5.43

While Road Departure crashes occur directionally on negative grades, they are distributed across most segments of the study area regardless of the magnitude of the profile grade. Note that no crashes occurred within the 4.1 and 4.6 segment.

## FIGURE6: LOCATION FREQUENCY BY CRASH TYPE




## FIGURE 7: LOCATION FREQUENCY BY SEVERITY



## COUNTERMEASURES

Countermeasures are identified that improve safety performance by focusing on the crash types having the greatest potential for mitigation. The proposed countermeasures are directly linked to historical crash patterns. While the low and moderate cost countermeasure are systemic in nature, the countermeasures are targeted to segments having a higher frequency of crashes. Two primary countermeasures are proposed as summarized below.

### STOP AHEAD WARNING SIGN COUNTERMEASURE

A short-term countermeasure installs or upgrades Stop Ahead warning signs to provide a warning to drivers about the stop condition. Relocate advance warning Stop Ahead signs no more than 325 feet in advance of the curves to be consistent with **Table 2C-4** of the Manual of Uniform Traffic Control Devices (MUTCD). Existing signs are located 1,000 feet in advance of the SB Bessie Rd/ Akin Blacktop Road intersection and on the EB Akin Blacktop/Thompsonville Rd intersection.

**Table 2C-4. Guidelines for Advance Placement of Warning Signs**

| Posted or 85th-Percentile Speed | Advance Placement Distance[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Condition A: Speed reduction and lane changing in heavy traffic[2] | Condition B: Deceleration to the listed advisory speed (mph) for the condition | | | | | | | |
| | | 0[3] | 10[4] | 20[4] | 30[4] | 40[4] | 50[4] | 60[4] | 70[4] |
| 20 mph | 225 ft | 100 ft[5] | N/A[5] | — | — | — | — | — | — |
| 25 mph | 325 ft | 100 ft[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 30 mph | 460 ft | 100 ft[5] | N/A[5] | N/A[5] | — | — | — | — | — |
| 35 mph | 565 ft | 100 ft[5] | N/A[5] | N/A[5] | N/A[5] | — | — | — | — |
| 40 mph | 670 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — | — |
| 45 mph | 775 ft | 175 ft | 125 ft | 100 ft[6] | 100 ft[6] | N/A[5] | — | — | — |
| 50 mph | 885 ft | 250 ft | 200 ft | 175 ft | 125 ft | 100 ft[6] | — | — | — |
| 55 mph | 990 ft | 325 ft | 275 ft | 225 ft | 200 ft | 125 ft | N/A[5] | — | — |
| 60 mph | 1,100 ft | 400 ft | 350 ft | 325 ft | 275 ft | 200 ft | 100 ft[6] | — | — |
| 65 mph | 1,200 ft | 475 ft | 450 ft | 400 ft | 350 ft | 275 ft | 200 ft | 100 ft[6] | — |
| 70 mph | 1,250 ft | 550 ft | 525 ft | 500 ft | 450 ft | 375 ft | 275 ft | 150 ft | — |
| 75 mph | 1,350 ft | 650 ft | 625 ft | 600 ft | 550 ft | 475 ft | 375 ft | 250 ft | 100 ft[6] |

Section 2C.05 emphasizes that signs are not to be placed too far in advance of the condition.

Dual stop signs are also proposed on the following approaches:

- SB Bessie Road approach due, in part, to the profile of the at-grade railroad crossing located 340 feet north of Akin Blacktop Road.
- NB Thompsonville Road approach due, in part, to the horizontal curve located within 250 feet of Akin Blacktop Road.

## PAVED SHOULDER COUNTERMEASURE

The frequency of crashes distributed throughout the study limits suggests a systemic type of solution is needed to improve the safety performance on Akin-Blacktop Road (i.e., edge of pavement drop offs and lack of aggregate/ paved shoulders). **A medium-term countermeasure reconstructs a paved shoulder from 2.60 to 5.50 (see Figure 3) to address pavement drop offs in conjunction with longitudinal rumble strips and regrading of the foreslopes within right-of-way.**

The following targeted countermeasures are proposed on the Akin-Blacktop Road corridor:

- Replace the aggregate shoulder with a 2 ft paved shoulder (full depth). A paved shoulder width of 2 feet does not require a design exception per BLR Figure 33-3B but does deviate from the IDOT guidance for paved shoulders (ADT < 1,000 vehicles)
- Add a 4 ft graded shoulder where feasible within exiting right of way limits to stabilize the existing pavement and to reduce the frequency of overturn vehicles attributed to steep front slopes.
- Add longitudinal rumble strips to increase driver attention.
- Advance Stop Ahead warning signs and dual Stop Signs on critical approaches.
- Guardrail at headwalls of culverts (2 locations)

Context Sensitive Design (CSD) principles are applicable to the Akin-Blacktop Road corridor due to the impacts associated with design guidance provided by the BLR for reconstruction projects. The development of a context sensitive countermeasure that is systemic is based guidance from the *National Cooperative Highway Research Program (NCHRP) Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions* (2002) and the *AASHTO Highway Safety Design and Operations Guide* (1997).

Of the broad categories of transportation issues that are most applicable to the Akin-Blacktop Road study area, improving safety performance is the purpose of the project. Two aspects are to be addressed when evaluating safety countermeasures: nominal and substantive safety. Both nominal and substantive safety are important to include in the decision-making process.

1) Nominal Safety – A countermeasure's adherence to design criteria and/or standards as published in the AASHTO policy, the *Manual of Uniform Control Devices* (MUTCD) and/or the BLR. The existing typical section complies with IDOT design criteria for shoulder widths (BLR Figure 33-3B). The preferred design criteria for reconstruction projects (BLR Figure 32-2B) are not met.
2) Substantive Safety – The actual performance of the Akin-Blacktop Road corridor is to be compared to similar facilities to assess relative performance. Crash statistics for a corridor having a similar typical section as Akin-Blacktop Road does not appear on the priority ranking for the Greater Egypt Regional Planning and Development Commission (Greater Egypt) safety analysis or the 2017 Safety Tier for segments.

In the case of Akin-Blacktop Road, the substantive safety performance of Akin-Blacktop Road is not attributed to the design criteria outlined in BLR Figure 32-2B. Rather, the substantive safety performance of Akin-Blacktop Road is worse than comparable roadways due to the absence of paved shoulders and graded foreslopes.

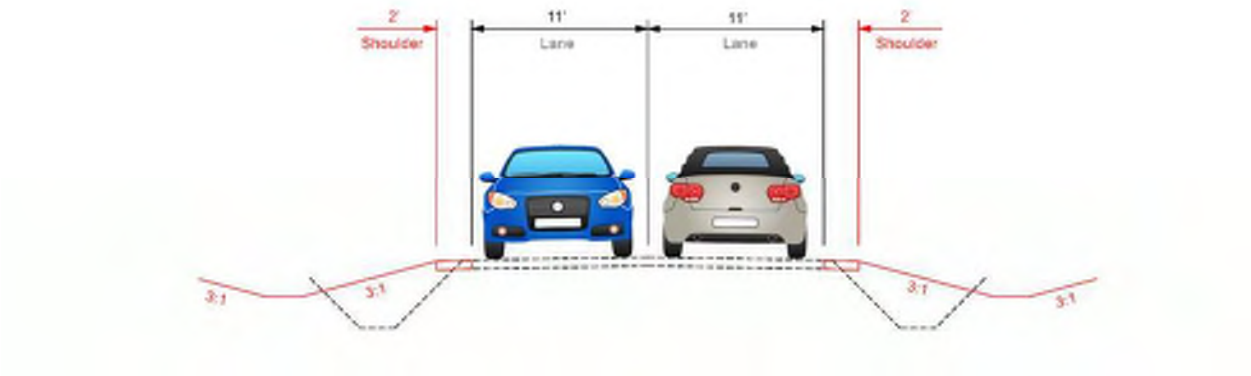
**Figure 8** shows a decision matrix of nominal and substantive safety countermeasures.

## FIGURE 8: APPLYING SAFETY TO PROBLEM DEFINITION AND SOLUTIONS

| Substantive Safety Criteria | Nominal Safety Criteria: Meets | Nominal Safety Criteria: Does Not Meet |
|---|---|---|
| Meets | • Infrastructure improvements only (no need or justification for geometric revisions) based on safety | • 3R criteria may be considered<br>• Incorporate only low cost safety enhancements<br>• "Upgrade" to full standards may not be cost effective (consider design exceptions to avoid costs and impacts) |
| Does Not Meet | • Targeted safety improvements (low or high cost depending on extent of problem)<br>• Focus on cost-effective solutions to safety problems | • Complete reconstruction to current criteria probably warranted (no or very minimal design exceptions)<br>• Consider special targeted safety enhancements |

The proposed typical section is consistent with the guidance in the IDOT Bureau of Local Roads & Streets manual (BLR) in order to maximize the length of safety related improvements within the existing ROW width (70 feet). Complete reconstruction is not recommended since the existing typical section is consistent with Figure 33-3B of the BLR for roadways having an ADT < 1,000 vehicles: **Figure 9** shows the proposed typical section for Akin-Blacktop Road.

## FIGURE 9: AKIN-BLACKTOP ROAD TYPICAL SECTION



## BENEFIT COST ANALYSIS

The countermeasures while systemic and include a total segment length of 2.90 miles on Akin-Blacktop Road. The project data used to perform the benefit cost analysis is based on the following assumptions.

1. The crash dataset was scrubbed to only include Road Departure crashes (Fixed Object, Overturning) and Angle crashes at intersections – Animal, Front to Rear, and a side street Fixed Object crash (MP 2.66) were removed from the BC dataset. The adjusted Benefit Cost dataset includes 13 crashes.
2. Upgrading to a 2 ft paved shoulder along the 2.90 mile segment is proposed to improve safety performance of the existing roadway having an effective width of 22 feet +/-. The cost estimate include regrading of shoulders within existing right of way to be more compliant with BLR Figure 32-2B.
3. The cost estimate includes costs for regrading of the foreslopes and guardrail protection of headwalls. Object markers should be installed as a minimum at the headwall locations.
4. Longitudinal rumble strips on the edge line are proposed having 10 ft gaps. Bicycle traffic, if present, is expected to the travel lane as done for the existing condition. Akin-Blacktop Road is a not a designated bicycle route. No bicycle crashes were documented as part of the crash analysis.

   The cost and environmental impact of widening the roadway cross-section to meet an FHWA best practice of a 4 ft paved shoulder (plus minimum travel lane with of 22 feet) is prohibitive. FHWA directs agencies not limit themselves to use longitudinal rumble stripes on roadways where these standard applications provide sufficient space, as flexibility from a standard rumble strip design may provide the opportunity to improve overall safety on a wider variety of roads such as Akin-Blacktop Road. Note that no bicycle crashes were reported during the 5-year study period and Akin-Blacktop Road is not a designated bicycle route.

   Non-performing this design element would adversely impact the benefit cost analysis calculations supporting the value of this low cost countermeasure. Refinements to the proposed design can occur if the project receives safety funding.

The total cost for the overall 2.9 mile segment is estimated to be $1,126,317 with a Benefit Cost ratio of 5.10 as calculated from the IDOT HSIP BOC analysis tool. The Benefit Cost calculation is conservative for at least two reasons:

- The Fixed Object crash at Mile 2.66 occurred on the SB Bessie Road approach. Although sign upgrades are proposed on Bessie Road to be more compliant with MUTCD guidance for advance waring signs, the primary costs are attributed to the paved shoulder improvements on Akin Blacktop Road. Crashes were focused on Akin Blacktop Road. Including this crash in the BC calculations would have resulted in a BC of 10.
- Sign upgrades are proposed on critical approaches within the study area: Bessie Road, Akin Blacktop Road and Thompsonville Road. CMFs for the stop sign upgrades were not included in the BC calculations.

A detailed cost estimate and BOC calculations are included as an attachment to this report.

# GREATER EGYPT SAFETY STUDY

## APPENDIX 03: FRA EATON ROAD

CMT

# STATE OF ILLINOIS

# ILLINOIS COMMERCE COMMISSION
# TRANSPORTATION BUREAU / RAIL SAFETY SECTION

*Brian Vercruysse* *Rail Safety Program Administrator*

January 26, 2021

Mr. Larry Miller, Chairman
Franklin County Board
901 Public Square
Benton, IL 62812

Dear Mr. Miller:

This is in response to the Grade Crossing Protection Fund (GCPF) Grade Crossing Project applications that Franklin County recently submitted for our review and consideration. The applications propose projects to install automatic flashing light signals and gates at the Eaton Road (**AAR/DOT #295225U, railroad milepost 101.90-GE**), located near Thompsonville, and Valier Lake Road (**AAR/DOT #069258L, railroad milepost 157.01-Y**) highway-rail grade crossings of the BNSF Railway's (BNSF) track, located near Valier.

Commission Staff (Staff) will recommend that the projects be included in the Commission's FY 2022-2026 Crossing Safety Improvement Program 5-Year Plan (Plan). The Commission's review of the Plan will take place in late March with final selection of projects and publication in April 2021.

Based on available funding, Staff will recommend to the Commission that the GCPF be used to pay 95% of the eligible costs, with the BNSF responsible for the remaining installation costs. The railroad is also responsible for all future maintenance costs associated with the new automatic warning devices.

I trust this information will be helpful. If you have any questions, or need additional information, please contact me at (312) 636-7760 or Brian.Vercruysse@illinois.gov.

Very truly yours,

Brian Vercruysse

Brian Vercruysse
Rail Safety Program Administrator

cc: Michael Rolla, Franklin County Engineer

**ILLINOIS COMMERCE COMMISSION**

**CROSSING SAFETY IMPROVEMENT PROGRAM**

**2021 GRADE CROSSING PROTECTION FUND PROJECT APPLICATION**

# EATON ROAD GRADE CROSSING

**USDOT: 295225U / M.P. 101.90 (BNSF Railway)**

**FRANKLIN COUNTY, IL**

**JANUARY 22, 2021**

**ICC USE ONLY**
*Received:* _____
*Staff:* _____

# ILLINOIS COMMERCE COMMISSION
## CROSSING SAFETY IMPROVEMENT PROGRAM
## GRADE CROSSING PROTECTION FUND PROJECT INFORMATION
*Public Highway - Rail Grade Crossings*

## I. General Information

Applicant Type: ☐ City ☐ Village ☐ Town ☑ County ☐ Township ☐ Railroad
Resubmission: ☐ Yes ☐ No RR Company: **CN Railroad**
Date: _____ Applicant: County of Franklin Population: **38,923**
Chief Elected Official: Larry Miller Title: County Board Chariman
Business Address: 901 Public Square
City: Benton State: **IL** Zip: 62812
Business Phone: (618) 435-9800 Business Fax: (618) 439-3741
Email Address (if applicable): gaylaskink@franklincountyil.org
State Legislative District: House District 117 / Senate District 59

## II. Project Administrator

Contact Person: Mike Rolla Title: County Engineer
Company: Franklin County, IL
Address: 13034 Odd Fellows Lane
City: Benton State: IL Zip: 62812
Business Phone: 618.439.0331 Business Fax: (618) 439-6411
Email Address (if applicable): coengfranklincohwy@frontier.com

## III. General Project Information

(Note: Attach separate sheet listing all crossings if applying for more than one crossing improvement)
County: Franklin ☐ In City ☑ Near City City: Thompsonville
Street / Roadway Name: Eaton Road
Railroad: CN Railway Crossing Number: 295225U Railroad Milepost 101.90

Average Daily Traffic (ADT): 25 (Number of Cars per Day over the Crossing) Daily Train Traffic: 2 (Number of Trains per Day)
Number of School Buses over Crossing per Day: 0
Do vehicles carrying hazardous materials use crossing: ☐ Yes ☑ No
If yes, list the type and approximate number of hazardous material vehicles per day:

Number of tracks through crossing: 1
Distance to, and street name of, the two nearest existing grade separations from location being applied for:
None (East) / 0.70 Miles IL 34 (West)
Crossing is currently: ☐ Grade Separation ☑ Highway-Rail Grade Crossing ☐ No Crossing
Existing warning devices at crossing:

☐ None ☐ Center Median or Median Barriers ☐ Automatic Flashing Light Signals and Gates
☐ Automatic Flashing Light Signals ☐ STOP Signs Only ☑ Crossbucks Only
☐ Other (please specify) _____

Are railroad signals interconnected with traffic signals at this location: ☐ Yes ☐ No ☑ N/A
If crossing is currently a grade separation, provide the following information:
☐ Highway Over Railroad ☐ Highway Under Railroad
Number of Traffic Lanes _____ Width of Pavement _____
Vertical Clearance _____

## IV. Project Location Map and/or Photographs

A project location map shall be included with the application. The project location map should show the crossing(s) for which application is being made, as well as any other improvements that are being submitted in conjunction with this application. If project is a part of a "corridor" project, indicate the limits of the entire "corridor" on the map. Paper size shall not exceed 11 x 17 inches. **Please provide a minimum of 4 digital photos of the existing crossing (photos should show the existing warning devices, the existing crossing surface, and the existing highway approaches).**

## V. Project Summary.

Application to (check all that apply):

- ☐ Upgrade Circuitry
- ☐ Close Adjacent Crossing
- ☑ Upgrade Warning Devices
- ☐ Other (please specify) _____
- ☐ Interconnect Railroad and Traffic Signals at Nearby Intersection
- ☐ Construct a Connecting Road Between Crossings
- ☐ Construct Barrier Medians at Crossing

Is application for: ☐ Design Only ☐ Construction only ☑ Design and Construction

Is application part of a larger "corridor" project: ☐ Yes ☑ No

Use the space below to provide a narrative of the proposed project. Items to include in this section are extenuating circumstances unique to this crossing, such as heavier seasonal traffic, visibility restrictions caused by trees, buildings, etc., proximity of schools and public buildings, etc., which explain why this crossing should be funded. Explain any work to by done by the local agency, such as roadway improvements in the immediate vicinity of the grade separation project. Approximate costs must be listed for each item of work to be done.

The proposed Eaton Road Grade Crossing Project will improve safety by upgrading the warning devices from passive Crossbucks Only to Automatic Flashing Light Signals & Gates (See Appendix A for Proposed Layout Exhibit and Appendix C for Associated Cost Estimates).

## VI. Evidence of Community Effort and Support

Any preliminary engineering or planning studies, along with cost estimates, that have been prepared for this project should be included with your application. List any past efforts to improve safety at railroad crossings within applicant's jurisdiction. Any studies that have been conducted, regarding railroad crossing elimination or consolidation, must also be included.

A Crossing Safety Analysis and Study was commenced in 2020 by the Greater Egypt Regional Planning and Development Commission, in partnership with Franklin County. The study was performed by a consultant, and identified rail crossing locations that have a history of vehicle-train crashes, or have a high exposure index.

The study ranked this crossing in the Top 16 Crossing Safety Priority. While the crossing does not have a history of crashes, the study identified the Eaton Road crossing with a reduced safety rating due presence of only passive Crossbuck Warning Devices. The crossing has an existing annualized crash prediction of 0.08 (See Appendix A for Crossing Priority List).

## VII. Financial Need

This narrative must justify the local government's need for assistance from the GCPF. One copy of the applicant's most recent financial audit must be included with your application (local government agencies only).

The County has limited funds available, with hundreds of miles roadway jurisdiction to maintain for basic operations. While this crossing is of high safety concern, the county has limited funds available to share costs in upgrading Railroad crossing warning devices. Securing GCPF funds would allow for the project timeline to move up and improve safety for all users.

The County's recent financial audit is available upon request.

## VIII. Project Schedule

Provide information on when this project is anticipated to commence, or when improvements must be implemented. Provide an approximate timeline listing key milestones concerning the design and/or construction phases of the project.

A preliminary Project Schedule has been developed with key Project Milestones identified below. The Project Schedule can be accelerated or delayed, depending on the ICC's required funding schedule.

- GCPF Award Notice: 4/2021
- CN RR Coordination: Ongoing (4/2021 - Project Close)
- Project Construction Begins: 9/2021*
- Project Completion: 11/2021*

*Project Schedule assumes the responsibility of project implementation will be borne by the CN Railway for all Crossing Pad rehabilitation and Automatic Flashing Light Signals & Gates installation.

Forms may be submitted by electronic mail or regular mail. Mailing addresses are noted below:

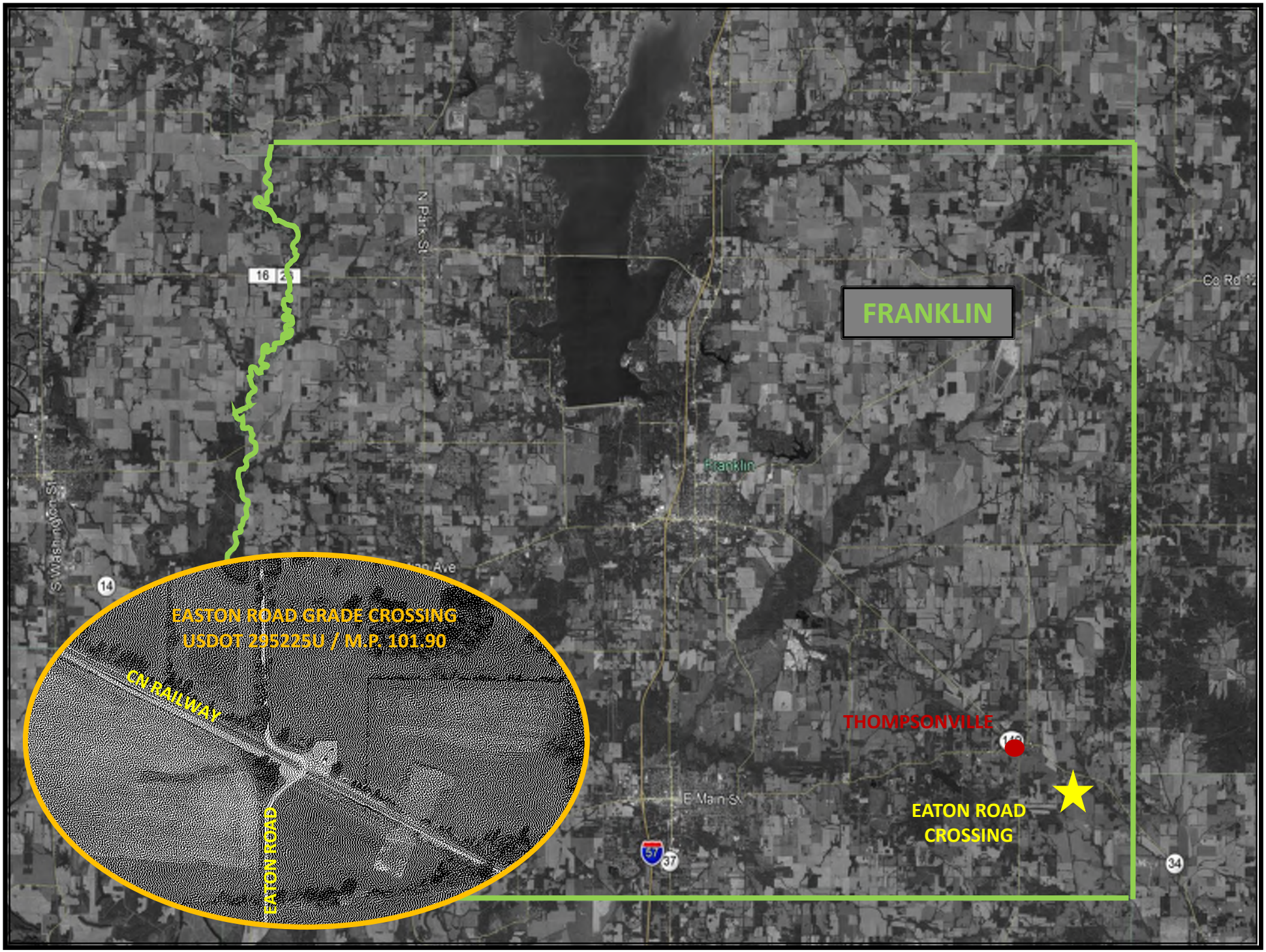
Email: Submit by Email to ICC.Railsafety@illinois.gov

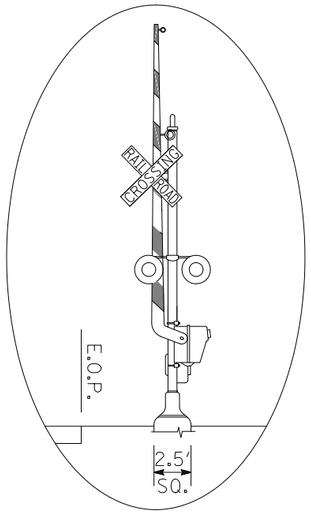
Regular Mail: Rail Safety Program Administrator
Illinois Commerce Commission
527 E. Capitol Avenue
Springfield, Illinois 62701

**[NOTE: ALL APPLICATIONS MUST INCLUDE DIGITAL PHOTOS OF THE GRADE CROSSING, HIGHWAY-RAIL BRIDGE, or PEDESTRIAN-RAIL BRIDGE THAT IS THE SUBJECT OF THE APPLICATION. ANY APPLICATIONS SUBMITTED WITHOUT THE PHOTOS WILL NOT BE CONSIDERED UNTIL THE PHOTOS HAVE BEEN RECEIVED BY THE ICC RAIL SAFETY SECTION.]**

Print Reset Form

# APPENDIX A –
# PROJECT LOCATION MAP & EXHIBITS


FRANKLIN
EASTON ROAD GRADE CROSSING
USDOT 295225U / M.P. 101.90
CN RAILWAY
EATON ROAD
THOMPSONVILLE
EATON ROAD
CROSSING
N Park St
Franklin
E Main St
Co Rd 1
18
14
57
37
34




TYP. GATE/SIGNAL
N.T.S.

TYP. GATE/SIGNAL
N.T.S.

0 40 80 Feet

N

APPROX. EXIST. R.O.W.

APPROX. EXIST. R.O.W.

16'
EXIST

APPROX. EXIST. RR R.O.W.

PROP. AUTOMATIC
FLASHING LIGHTS W/
CANTILEVER GATES

APPROX. EXIST. RR R.O.W.

℄ CN RAILWAY

16'
EXIST

APPROX. EXIST. R.O.W.

LEGEND

- BELL
- FLASHING LIGHTS
- CROSSING GATES
- BUNGALOW

EATON ROAD
AT-GRADE CROSSING
USDOT # 295225U M.P. 101.90

Franklin County Rail Crossing Priority List
January 13, 2021

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | St. Joseph Rd. (Benton) | 431091X | UP | 300.65 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 | |
| 1 | Linn Rd. (Benton) | 431095A | UP | 299.92 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 | |
| 3 | Dry Road (Ziegler) | 431086B | UP | 307.35 | Flashing Lights | 100 | 1 | 0.4813 | 0.0678 | 0.1449 | 332,325 | |
| 4 | Creek Nation Blacktop (Zeigler) | 431085U | UP | 307.57 | Flashing Lights | 75 | 1 | 0.4602 | 0.0648 | 0.1349 | 157,711 | |
| 5 | Akin Blacktop (Logan) | 295232E | CN | 96.74 | Flashing Lights | 950 | 0 | 0.3729 | 0.3729 | 0.3729 | 1,240,307 | |
| 6 | Vine Road (Sesser) | 069252V | BNSF | 155.23 | Flashing Lights | 75 | 2 | 0.2805 | 0.0272 | 0.0864 | 397 | |
| 7 | River Road (Royalton) | 431077C | Mid America | 311.46 | Flashing Lights | 275 | 0 | 0.2543 | 0.2543 | 0.2543 | 11,720 | |
| 8 | Lake Benton Rd (Whittington) | 167613S | UP | 293.55 | Gates | 200 | 1 | 0.2346 | 0.0327 | 0.0654 | 830,087 | |
| 9 | Izaac Walton Rd (Valier) | 069260M | BNSF | 159.58 | Crossbucks | 650 | 0 | 0.2309 | 0.2309 | 0.2309 | 133,964 | |
| 10 | Urbain Rd (Christopher) | 293700P | CN | 82.96 | Gates | 400 | 2 | 0.1922 | 0.0158 | 0.0602 | 64,749 | |
| 11 | Bessie Road (Logan) | 295233L | CN | 96.9 | Flashing Lights | 150 | 0 | 0.1841 | 0.1841 | 0.1841 | 372 | |
| 12 | West End Road (Thompsonville) | 295215N | CN | 71.32 | Flashing Lights | 25 | 0 | 0.1689 | 0.1689 | 0.1689 | 100 | |
| 13 | Fairview Road (Christopher) | 293693G | CN | 80.7 | Gates | 125 | 1 | 0.1422 | 0.0117 | 0.0430 | 4,796 | |
| 14 | Valier Lake Rd (Valier) | 069258L | BNSF | 157.01 | Crossbucks | 25 | 0 | 0.1030 | 0.1030 | 0.1030 | 29 | |
| 15 | Baseline Road (Logan) | 295231X | CN | 96.64 | Crossbucks | 100 | 0 | 0.1014 | 0.1014 | 0.1014 | 163 | |
| 16 | Eaton Road (Thompsonville) | 295225U | CN | 101.9 | Crossbucks | 25 | 0 | 0.0776 | 0.0776 | 0.0776 | 5 | |

ICC Grade Crossing Improvement Funding Previously Secured

# APPENDIX B –
# CROSSING PHOTOS


RAIL
CROSSING
ROAD
YIELD

# APPENDIX C –
# PROJECT COST ESTIMATE

| EATON ROAD AT-GRADE HWY-RAIL CROSSING IMPROVEMENTS | | | | |
|---|---|---|---|---|
| GRADE CROSSING PROTECTION FUND APPLICATION | | | | |
| FRANKLIN COUNTY, ILLINOIS | | | | |
| CONCEPT-LEVEL COST ESTIMATE | | | | |
| Item | Unit | Cost Per Unit | Quantity | Total Cost |
| Removals | LS | $1,000.00 | 1 | $1,000.00 |
| RR Warning Lights & Gates | EA | $275,000.00 | 1 | $275,000.00 |
| Signing | LS | $2,000.00 | 1 | $2,000.00 |
| Roadway Traffic Control | LS | $2,000.00 | 1 | $2,000.00 |
| RR Flagging | LS | $3,000.00 | 1 | $3,000.00 |
| RR Insurance | LS | $10,000.00 | 1 | $10,000.00 |
| | | | **SUB-TOTAL** | **$293,000** |
| | | | **CONTINGENCY (15%)** | **$43,950** |
| | | | **DESIGN ENGINEERING** | **$11,720** |
| | | | **CONSTRUCTION ENGINEERING** | **$14,650** |
| | | | **TOTAL COST** | **$363,320** |

# Greater Egypt Safety Study

## APPENDIX 03: FRA VALIER LAKE ROAD

# STATE OF ILLINOIS

# ILLINOIS COMMERCE COMMISSION
# TRANSPORTATION BUREAU / RAIL SAFETY SECTION

*Brian Vercruysse* *Rail Safety Program Administrator*

January 26, 2021

Mr. Larry Miller, Chairman
Franklin County Board
901 Public Square
Benton, IL 62812

Dear Mr. Miller:

This is in response to the Grade Crossing Protection Fund (GCPF) Grade Crossing Project applications that Franklin County recently submitted for our review and consideration. The applications propose projects to install automatic flashing light signals and gates at the Eaton Road (**AAR/DOT #295225U, railroad milepost 101.90-GE**), located near Thompsonville, and Valier Lake Road (**AAR/DOT #069258L, railroad milepost 157.01-Y**) highway-rail grade crossings of the BNSF Railway's (BNSF) track, located near Valier.

Commission Staff (Staff) will recommend that the projects be included in the Commission's FY 2022-2026 Crossing Safety Improvement Program 5-Year Plan (Plan). The Commission's review of the Plan will take place in late March with final selection of projects and publication in April 2021.

Based on available funding, Staff will recommend to the Commission that the GCPF be used to pay 95% of the eligible costs, with the BNSF responsible for the remaining installation costs. The railroad is also responsible for all future maintenance costs associated with the new automatic warning devices.

I trust this information will be helpful. If you have any questions, or need additional information, please contact me at (312) 636-7760 or Brian.Vercruysse@illinois.gov.

Very truly yours,

Brian Vercruysse

Brian Vercruysse
Rail Safety Program Administrator

cc: Michael Rolla, Franklin County Engineer

**ILLINOIS COMMERCE COMMISSION**

**CROSSING SAFETY IMPROVEMENT PROGRAM**

**2021 GRADE CROSSING PROTECTION FUND PROJECT APPLICATION**

# VALIER LAKE ROAD GRADE CROSSING

**USDOT: 069258L / M.P. 157.01 (BNSF Railway)**

**FRANKLIN COUNTY, IL**

**JANUARY 22, 2021**

**ICC USE ONLY**
*Received:* _____
*Staff:* _____

# ILLINOIS COMMERCE COMMISSION
## CROSSING SAFETY IMPROVEMENT PROGRAM
## GRADE CROSSING PROTECTION FUND PROJECT INFORMATION
*Public Highway - Rail Grade Crossings*

## I. General Information

Applicant Type: ☐ City ☐ Village ☐ Town ☑ County ☐ Township ☐ Railroad
Resubmission: ☐ Yes ☑ No RR Company: **BNSF Raiway**
Date: _____ Applicant: County of Franklin Population: **38,923**
Chief Elected Official: Larry Miller Title: County Board Chariman
Business Address: 901 Public Square
City: Benton State: **IL** Zip: 62812
Business Phone: (618) 435-9800 Business Fax: (618) 439-3741
Email Address (if applicable): gaylaskink@franklincountyil.org
State Legislative District: House District 117 / Senate District 59

## II. Project Administrator

Contact Person: Mike Rolla Title: County Engineer
Company: Franklin County, IL
Address: 13034 Odd Fellows Lane
City: Benton State: IL Zip: 62812
Business Phone: 618.439.0331 Business Fax: (618) 439-6411
Email Address (if applicable): coengfranklincohwy@frontier.com

## III. General Project Information

(Note: Attach separate sheet listing all crossings if applying for more than one crossing improvement)
County: Franklin ☐ In City ☑ Near City City: Valier
Street / Roadway Name: Valier Lake Road
Railroad: BNSF Railway Crossing Number: 069258L Railroad Milepost 157.01

Average Daily Traffic (ADT): 25 (Number of Cars per Day over the Crossing) Daily Train Traffic: 4 (Number of Trains per Day)
Number of School Buses over Crossing per Day: 0
Do vehicles carrying hazardous materials use crossing: ☐ Yes ☑ No
If yes, list the type and approximate number of hazardous material vehicles per day:

Number of tracks through crossing: 1
Distance to, and street name of, the two nearest existing grade separations from location being applied for:
10+ Miles (East) / 1.6 Miles Overhead Bridge Rd (South)
Crossing is currently: ☐ Grade Separation ☑ Highway-Rail Grade Crossing ☐ No Crossing
Existing warning devices at crossing:

☐ None ☐ Center Median or Median Barriers ☐ Automatic Flashing Light Signals and Gates
☐ Automatic Flashing Light Signals ☐ STOP Signs Only ☑ Crossbucks Only
☐ Other (please specify) _____

Are railroad signals interconnected with traffic signals at this location: ☐ Yes ☐ No ☑ N/A
If crossing is currently a grade separation, provide the following information:
☐ Highway Over Railroad ☐ Highway Under Railroad
Number of Traffic Lanes _____ Width of Pavement _____
Vertical Clearance _____

## IV. Project Location Map and/or Photographs

A project location map shall be included with the application. The project location map should show the crossing(s) for which application is being made, as well as any other improvements that are being submitted in conjunction with this application. If project is a part of a "corridor" project, indicate the limits of the entire "corridor" on the map. Paper size shall not exceed 11 x 17 inches. **Please provide a minimum of 4 digital photos of the existing crossing (photos should show the existing warning devices, the existing crossing surface, and the existing highway approaches).**

## V. Project Summary.

Application to (check all that apply):

- ☐ Upgrade Circuitry
- ☐ Close Adjacent Crossing
- ☑ Upgrade Warning Devices
- ☐ Other (please specify) _____
- ☐ Interconnect Railroad and Traffic Signals at Nearby Intersection
- ☐ Construct a Connecting Road Between Crossings
- ☐ Construct Barrier Medians at Crossing

Is application for: ☐ Design Only ☐ Construction only ☑ Design and Construction

Is application part of a larger "corridor" project: ☐ Yes ☑ No

Use the space below to provide a narrative of the proposed project. Items to include in this section are extenuating circumstances unique to this crossing, such as heavier seasonal traffic, visibility restrictions caused by trees, buildings, etc., proximity of schools and public buildings, etc., which explain why this crossing should be funded. Explain any work to by done by the local agency, such as roadway improvements in the immediate vicinity of the grade separation project. Approximate costs must be listed for each item of work to be done.

The proposed Valier Lake Road Grade Crossing Project will improve safety by upgrading the warning devices from passive Crossbucks Only to Automatic Flashing Light Signals & Gates (See Appendix A for Proposed Layout Exhibit and Appendix C for Associated Cost Estimates).

## VI. Evidence of Community Effort and Support

Any preliminary engineering or planning studies, along with cost estimates, that have been prepared for this project should be included with your application. List any past efforts to improve safety at railroad crossings within applicant's jurisdiction. Any studies that have been conducted, regarding railroad crossing elimination or consolidation, must also be included.

A Crossing Safety Analysis and Study was commenced in 2020 by the Greater Egypt Regional Planning and Development Commission, in partnership with Franklin County. The study was performed by a consultant, and identified rail crossing locations that have a history of vehicle-train crashes, or have a high exposure index.

The study ranked this crossing in the Top 14 Crossing Safety Priority within the county. While the crossing does not have a history of crashes, the study identified the Eaton Road crossing with a reduced safety rating due presence of only passive Crossbuck Warning Devices. The crossing has an existing annualized crash prediction of 0.10 (See Appendix A for Crossing Priority List).

## VII. Financial Need

This narrative must justify the local government's need for assistance from the GCPF. One copy of the applicant's most recent financial audit must be included with your application (local government agencies only).

The County has limited funds available, with hundreds of miles roadway jurisdiction to maintain for basic operations. While this crossing is of high safety concern, the county has limited funds available to share costs in upgrading Railroad crossing warning devices. Securing GCPF funds would allow for the project timeline to move up and improve safety for all users.

The County's recent financial audit is available upon request.

## VIII. Project Schedule

Provide information on when this project is anticipated to commence, or when improvements must be implemented. Provide an approximate timeline listing key milestones concerning the design and/or construction phases of the project.

A preliminary Project Schedule has been developed with key Project Milestones identified below. The Project Schedule can be accelerated or delayed, depending on the ICC's required funding schedule.

- GCPF Award Notice: 4/2021
- CN RR Coordination: Ongoing (4/2021 - Project Close)
- Project Construction Begins: 9/2021*
- Project Completion: 11/2021*

*Project Schedule assumes the responsibility of project implementation will be borne by the CN Railway for all Crossing Pad rehabilitation and Automatic Flashing Light Signals & Gates installation.

Forms may be submitted by electronic mail or regular mail. Mailing addresses are noted below:

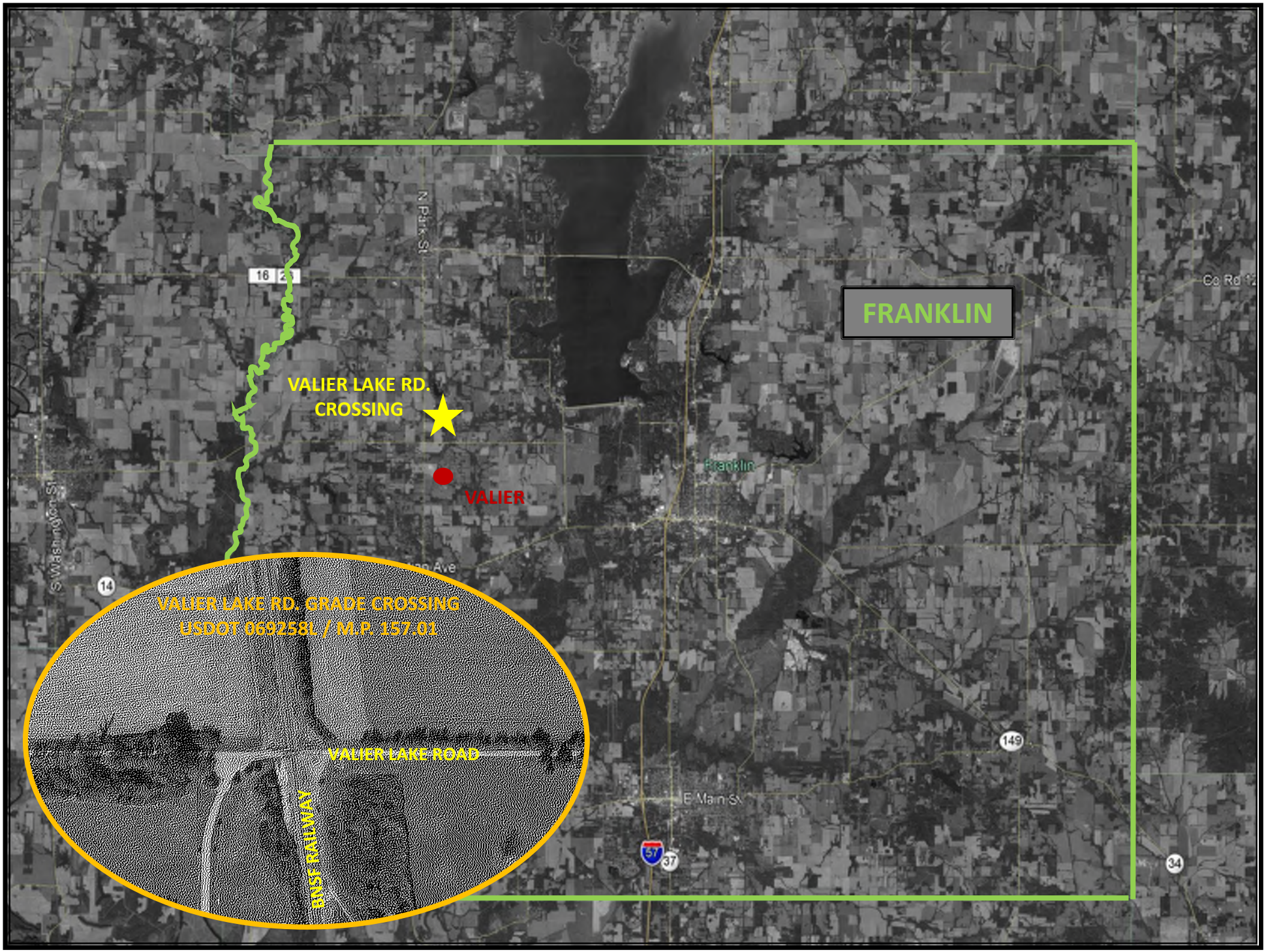
Email: Submit by Email to ICC.Railsafety@illinois.gov

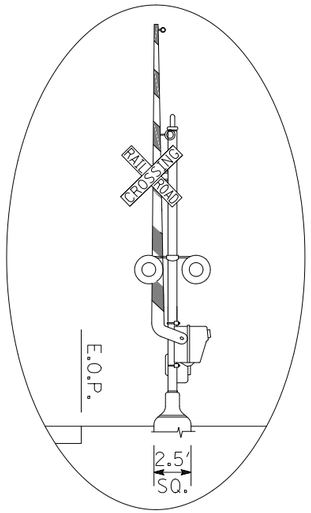
Regular Mail: Rail Safety Program Administrator
Illinois Commerce Commission
527 E. Capitol Avenue
Springfield, Illinois 62701

**[NOTE: ALL APPLICATIONS MUST INCLUDE DIGITAL PHOTOS OF THE GRADE CROSSING, HIGHWAY-RAIL BRIDGE, or PEDESTRIAN-RAIL BRIDGE THAT IS THE SUBJECT OF THE APPLICATION. ANY APPLICATIONS SUBMITTED WITHOUT THE PHOTOS WILL NOT BE CONSIDERED UNTIL THE PHOTOS HAVE BEEN RECEIVED BY THE ICC RAIL SAFETY SECTION.]**

Print Reset Form

# APPENDIX A –
# PROJECT LOCATION MAP & EXHIBITS


FRANKLIN
VALIER LAKE RD.
CROSSING
VALIER
VALIER LAKE RD. GRADE CROSSING
USDOT 069258L / M.P. 157.01
VALIER LAKE ROAD
BNSF RAILWAY
N Park St
Franklin
E Main St
Co Rd 1
18
14
149
57
37
34




TYP. GATE/SIGNAL
N.T.S.

0 40 80 Feet

N

PROP. AUTOMATIC
FLASHING LIGHTS W/
CANTILEVER GATES

VALIER LAKE ROAD

14'
EXIST

14'
EXIST

℄ BNSF
RAILWAY

LEGEND

- BELL
- FLASHING LIGHTS
- CROSSING GATES
- BUNGALOW

VALIER LAKE ROAD
AT-GRADE CROSSING
USDOT # 069258L
M.P. 157.01

Franklin County Rail Crossing Priority List
January 13, 2021

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | St. Joseph Rd. (Benton) | 431091X | UP | 300.65 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 | |
| 1 | Linn Rd. (Benton) | 431095A | UP | 299.92 | Flashing Lights | 250 | 1 | 0.5487 | 0.0697 | 0.1658 | 3,539,337 | |
| 3 | Dry Road (Ziegler) | 431086B | UP | 307.35 | Flashing Lights | 100 | 1 | 0.4813 | 0.0678 | 0.1449 | 332,325 | |
| 4 | Creek Nation Blacktop (Zeigler) | 431085U | UP | 307.57 | Flashing Lights | 75 | 1 | 0.4602 | 0.0648 | 0.1349 | 157,711 | |
| 5 | Akin Blacktop (Logan) | 295232E | CN | 96.74 | Flashing Lights | 950 | 0 | 0.3729 | 0.3729 | 0.3729 | 1,240,307 | |
| 6 | Vine Road (Sesser) | 069252V | BNSF | 155.23 | Flashing Lights | 75 | 2 | 0.2805 | 0.0272 | 0.0864 | 397 | |
| 7 | River Road (Royalton) | 431077C | Mid America | 311.46 | Flashing Lights | 275 | 0 | 0.2543 | 0.2543 | 0.2543 | 11,720 | |
| 8 | Lake Benton Rd (Whittington) | 167613S | UP | 293.55 | Gates | 200 | 1 | 0.2346 | 0.0327 | 0.0654 | 830,087 | |
| 9 | Izaac Walton Rd (Valier) | 069260M | BNSF | 159.58 | Crossbucks | 650 | 0 | 0.2309 | 0.2309 | 0.2309 | 133,964 | |
| 10 | Urbain Rd (Christopher) | 293700P | CN | 82.96 | Gates | 400 | 2 | 0.1922 | 0.0158 | 0.0602 | 64,749 | |
| 11 | Bessie Road (Logan) | 295233L | CN | 96.9 | Flashing Lights | 150 | 0 | 0.1841 | 0.1841 | 0.1841 | 372 | |
| 12 | West End Road (Thompsonville) | 295215N | CN | 71.32 | Flashing Lights | 25 | 0 | 0.1689 | 0.1689 | 0.1689 | 100 | |
| 13 | Fairview Road (Christopher) | 293693G | CN | 80.7 | Gates | 125 | 1 | 0.1422 | 0.0117 | 0.0430 | 4,796 | |
| 14 | Valier Lake Rd (Valier) | 069258L | BNSF | 157.01 | Crossbucks | 25 | 0 | 0.1030 | 0.1030 | 0.1030 | 29 | |
| 15 | Baseline Road (Logan) | 295231X | CN | 96.64 | Crossbucks | 100 | 0 | 0.1014 | 0.1014 | 0.1014 | 163 | |
| 16 | Eaton Road (Thompsonville) | 295225U | CN | 101.9 | Crossbucks | 25 | 0 | 0.0776 | 0.0776 | 0.0776 | 5 | |

ICC Grade Crossing Improvement Funding Previously Secured

# APPENDIX B –
# CROSSING PHOTOS


RAIL ROAD
CROSSING


RAILROAD
CROSSING


RAIL ROAD
CROSSING
YIELD

# APPENDIX C –
# PROJECT COST ESTIMATE

| VALIER LAKE ROAD AT-GRADE HWY-RAIL CROSSING IMPROVEMENTS | | | | |
|---|---|---|---|---|
| GRADE CROSSING PROTECTION FUND APPLICATION | | | | |
| FRANKLIN COUNTY, ILLINOIS | | | | |
| CONCEPT-LEVEL COST ESTIMATE | | | | |
| Item | Unit | Cost Per Unit | Quantity | Total Cost |
| Removals | LS | $1,000.00 | 1 | $1,000.00 |
| RR Warning Lights & Gates | EA | $275,000.00 | 1 | $275,000.00 |
| Signing | LS | $2,000.00 | 1 | $2,000.00 |
| Roadway Traffic Control | LS | $2,000.00 | 1 | $2,000.00 |
| RR Flagging | LS | $3,000.00 | 1 | $3,000.00 |
| RR Insurance | LS | $10,000.00 | 1 | $10,000.00 |
| | | | **SUB-TOTAL** | **$293,000** |
| | | | **CONTINGENCY (15%)** | **$43,950** |
| | | | **DESIGN ENGINEERING** | **$11,720** |
| | | | **CONSTRUCTION ENGINEERING** | **$14,650** |
| | | | **TOTAL COST** | **$363,320** |

# Greater Egypt Safety Study

## APPENDIX 03: JAC CRANE ROAD

CMT

**ILLINOIS COMMERCE COMMISSION**

**CROSSING SAFETY IMPROVEMENT PROGRAM**

**2021 GRADE CROSSING PROTECTION FUND PROJECT APPLICATION**

# CRANE ROAD GRADE CROSSING

**USDOT: 431060Y / M.P. 321.02 (UNION PACIFIC)**

Jackson County
ILLINOIS

**JANUARY 15, 2021**

**ICC USE ONLY**
*Received:* _____
*Staff:* _____

# ILLINOIS COMMERCE COMMISSION
## CROSSING SAFETY IMPROVEMENT PROGRAM
## GRADE CROSSING PROTECTION FUND PROJECT INFORMATION
*Public Highway - Rail Grade Crossings*

## I. General Information

Applicant Type: ☐ City ☐ Village ☐ Town ☑ County ☐ Township ☐ Railroad
Resubmission: ☐ Yes ☐ No RR Company: **Union Pacific Railroad**
Date: 01/15/21 Applicant: County of Jackson, Illinois Population: **56,750**
Chief Elected Official: Keith Larkin Title: County Chairman
Business Address: Jackson County Board, 1001 Walnut St.
City: Murphysboro State: **IL** Zip: 62966
Business Phone: (618) 687-7240 Business Fax: (618) 687-7271
Email Address (if applicable):
State Legislative District: House District 115 / Senate District 58

## II. Project Administrator

Contact Person: Mitch Burdick, P.E. Title: County Engineer
Company: Jackson County, Illinois
Address: Jackson County Highway Department, 1200 Enterprise Avenue
City: Murphysboro State: IL Zip: 62966
Business Phone: (618) 684-4141 Business Fax: (618) 687-1513
Email Address (if applicable): Mitch.Burdick@jacksoncounty-il.gov

## III. General Project Information

(Note: Attach separate sheet listing all crossings if applying for more than one crossing improvement)
County: Jackson ☐ In City ☑ Near City City: De Soto
Street / Roadway Name: Crane Road
Railroad: Union Pacific Crossing Number: 431060Y Railroad Milepost 321.02

Average Daily Traffic (ADT): 200 (Number of Cars per Day over the Crossing) Daily Train Traffic: 40 (Number of Trains per Day)
Number of School Buses over Crossing per Day: 0
Do vehicles carrying hazardous materials use crossing: ☐ Yes ☑ No
If yes, list the type and approximate number of hazardous material vehicles per day:

Number of tracks through crossing: 1
Distance to, and street name of, the two nearest existing grade separations from location being applied for:
0.70 Miles N Hickory St. (West) / 4.4 Miles Maes Rd. (East)
Crossing is currently: ☐ Grade Separation ☑ Highway-Rail Grade Crossing ☐ No Crossing
Existing warning devices at crossing:

☐ None ☐ Center Median or Median Barriers ☑ Automatic Flashing Light Signals and Gates
☐ Automatic Flashing Light Signals ☐ STOP Signs Only ☐ Crossbucks Only
☐ Other (please specify) _____

Are railroad signals interconnected with traffic signals at this location: ☐ Yes ☐ No ☑ N/A
If crossing is currently a grade separation, provide the following information:
☐ Highway Over Railroad ☐ Highway Under Railroad
Number of Traffic Lanes _____ Width of Pavement _____
Vertical Clearance _____

## IV. Project Location Map and/or Photographs

A project location map shall be included with the application. The project location map should show the crossing(s) for which application is being made, as well as any other improvements that are being submitted in conjunction with this application. If project is a part of a "corridor" project, indicate the limits of the entire "corridor" on the map. Paper size shall not exceed 11 x 17 inches. **Please provide a minimum of 4 digital photos of the existing crossing (photos should show the existing warning devices, the existing crossing surface, and the existing highway approaches).**

## V. Project Summary.

Application to (check all that apply):

- ☐ Upgrade Circuitry
- ☐ Close Adjacent Crossing
- ☑ Upgrade Warning Devices
- ☑ Other (please specify) Realign Crane Road with IL 149, Add Right Turn Lane & Relocate Rail Crossing
- ☐ Interconnect Railroad and Traffic Signals at Nearby Intersection
- ☐ Construct a Connecting Road Between Crossings
- ☐ Construct Barrier Medians at Crossing

Is application for: ☐ Design Only ☐ Construction only ☑ Design and Construction

Is application part of a larger "corridor" project: ☐ Yes ☑ No

Use the space below to provide a narrative of the proposed project. Items to include in this section are extenuating circumstances unique to this crossing, such as heavier seasonal traffic, visibility restrictions caused by trees, buildings, etc., proximity of schools and public buildings, etc., which explain why this crossing should be funded. Explain any work to by done by the local agency, such as roadway improvements in the immediate vicinity of the grade separation project. Approximate costs must be listed for each item of work to be done.

The proposed Crane Road Crossing Project will realign Crane road to IL 149, add a right turn lane on IL 149, and relocate the Highway-Rail Crossing with Automatic Flashing Light Signals & Gates (See Appendix A for Proposed Layout Exhibit & Appendix C for Associated Cost Estimates).

The existing skew between Crane Road and the tracks and the intersecting IL 149 results in an increased safety concern and exposure rating. Additionally, the limited distance (90 FT) between IL 149 and the nearest crossing arm creates significant safety hazards when vehicles queue onto IL 149 during times of rail traffic. There is significant traffic that utilizes the crossing on Sunday and Wednesday during services at the adjacent Christ the King Lutheran Church.

## VI. Evidence of Community Effort and Support

Any preliminary engineering or planning studies, along with cost estimates, that have been prepared for this project should be included with your application. List any past efforts to improve safety at railroad crossings within applicant's jurisdiction. Any studies that have been conducted, regarding railroad crossing elimination or consolidation, must also be included.

A Crossing Safety Analysis and Study was commenced by the Greater Egypt Regional Planning and Development Commission, in partnership with Jackson County. The study was performed by a consultant, and identified rail crossing locations that have a history of vehicle-train crashes, or have a high exposure index.

In addition 1 previous crash at this location, this crossing was elevated on the final list due to a history of community feedback on the short distance between IL 149 and the tracks, resulting in vehicle queues onto IL 149 when rail traffic is present. The Crane Road crossing was identified as Priority #3, yet has the highest Illinois Hazard Index Rating (See Appendix A for Crossing Priority List).

## VII. Financial Need

This narrative must justify the local government's need for assistance from the GCPF. One copy of the applicant's most recent financial audit must be included with your application (local government agencies only).

The County has limited funds available, with hundreds of miles roadway jurisdiction to maintain for basic operations. While this crossing is of high safety concern, the county has limited funds available to implement the project in the near future. Securing GCPF funds would allow for the project timeline to move up and improve safety for all users.

The County's recent financial audit is available upon request.

## VIII. Project Schedule

Provide information on when this project is anticipated to commence, or when improvements must be implemented. Provide an approximate timeline listing key milestones concerning the design and/or construction phases of the project.

A preliminary Project Schedule has been developed with key Project Milestones identified below. The Project Schedule can be accelerated or delayed, depending on the ICC's required funding schedule.

- GCPF Award Notice: 4/2021
- Union Pacific RR Coordination: Ongoing (4/2021 - Project Close)
- Design Engineer Consultant Selected: 10/2021
- Preliminary & ROW Roadway Design (60%): 3/2022
- Right of Way Acquisition: 6/2022
- Final PS&E Design (100%): 8/2022
- Project Construction Bid Opening: 10/2022
- Project Construction: 11/2022
- Project Completion: 6/2023

Forms may be submitted by electronic mail or regular mail. Mailing addresses are noted below:

Email: Submit by Email to ICC.Railsafety@illinois.gov

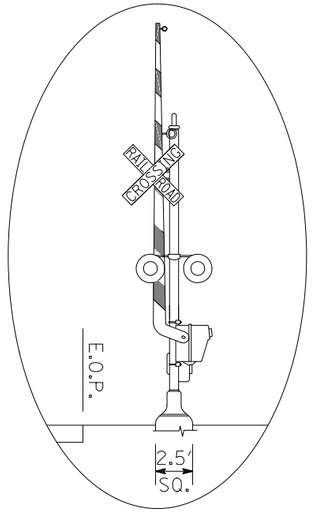
Regular Mail: Rail Safety Program Administrator
Illinois Commerce Commission
527 E. Capitol Avenue
Springfield, Illinois 62701

**[NOTE: ALL APPLICATIONS MUST INCLUDE DIGITAL PHOTOS OF THE GRADE CROSSING, HIGHWAY-RAIL BRIDGE, or PEDESTRIAN-RAIL BRIDGE THAT IS THE SUBJECT OF THE APPLICATION. ANY APPLICATIONS SUBMITTED WITHOUT THE PHOTOS WILL NOT BE CONSIDERED UNTIL THE PHOTOS HAVE BEEN RECEIVED BY THE ICC RAIL SAFETY SECTION.]**

Print Reset Form

# APPENDIX A –
# PROJECT LOCATION MAP & EXHIBITS


JACKSON
DE SOTO
CRANE RD. CROSSING
CRANE RD. GRADE CROSSING
USDOT 431060Y / M.P. 321.02
CRANE RD.
IL 149
Jackson
Egyptian Ave
S Main St
N Pine Ave
W Main St
Google Earth
© 2020 Google




TYP. GATE/SIGNAL

N.T.S.

0 30 60 Feet

N

APPROX. EXIST. RR R.O.W.

APPROX. EXIST. R.O.W.

APPROX. EXIST. R.O.W.

℄ UNION PACIFIC RAILWAY

(R) EX. CROSSING AND SIGNALS

2' SHDR

APPROX. EXIST. R.O.W.

12'

CRANE ROAD

12'

2' SHDR.

APPROX. EXIST. R.O.W.

PROP. R.O.W

NEW CONC. CROSSING PANELS – 32 LF

90°

APPROX. EXIST. R.O.W.

APPROX. EXIST. R.O.W.

APPROX. EXIST. RR R.O.W.

APPROX. EXIST. R.O.W.

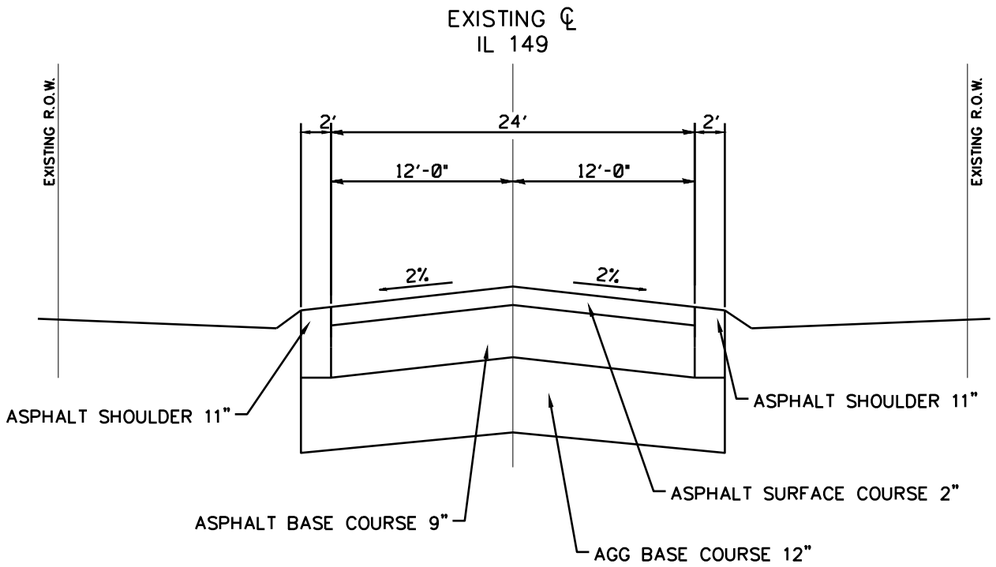
LEGEND

- BELL
- FLASHING LIGHTS
- CROSSING GATES
- BUNGALOW
- NEW ASPHALT PAVEMENT - 2" BIT. SURFACE COURSE, 7" BIT. BASE COURSE, 4" TYPE A AGG BASE (SY)

CRANE ROAD
AT-GRADE CROSSING

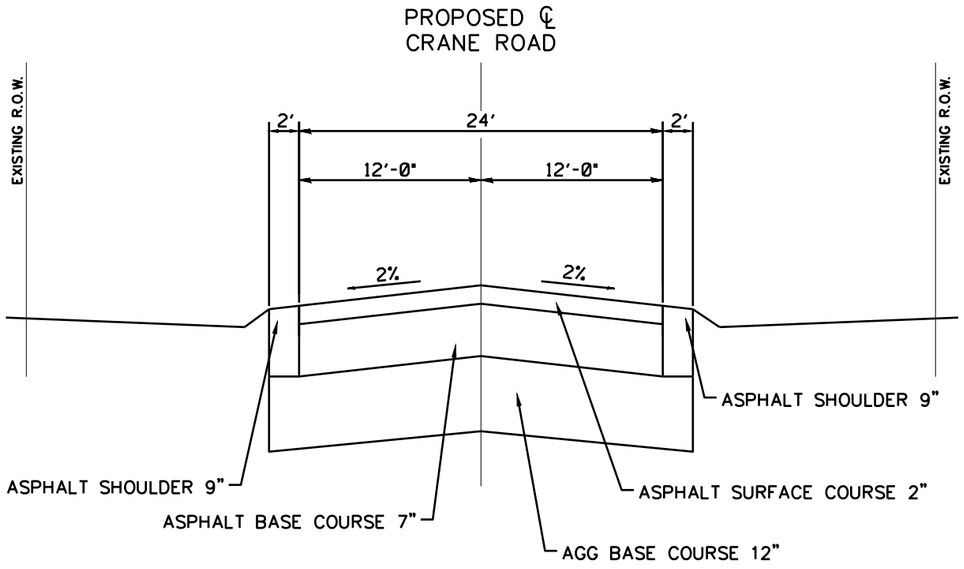
USDOT # 431060Y

M.P. 321.02



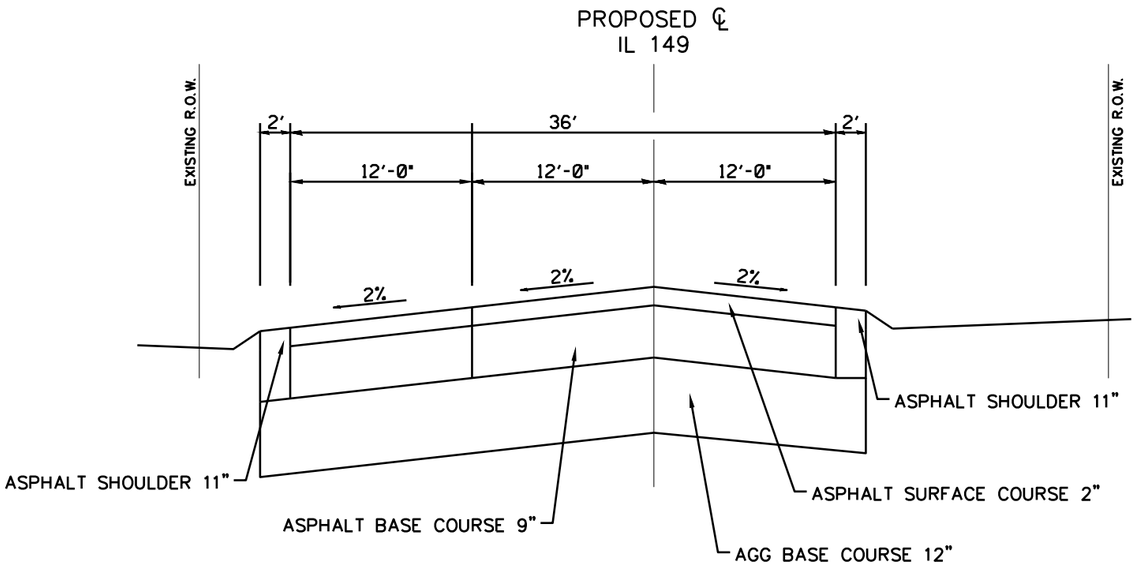

EXISTING IL 149

LOOKING NORTH




PROPOSED CRANE ROAD

LOOKING EAST




PROPOSED IL 149

LOOKING NORTH

CRANE ROAD
AT-GRADE CROSSING
USDOT # 431060Y M.P. 321.02

Jackson County Priority List
November 12, 2020

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Levee Road (Jacob) | 436221J | UP | 71.66 | Gates | 175 | 2 | 0.3813 | 0.0555 | 0.1056 | 271,480 | |
| 2 | Big Lake Rd (Jacob) | 436208V | UP | 81.7 | Gates | 50 | 1 | 0.2721 | 0.0462 | 0.0751 | 115,243 | |
| 3 | Crane Rd (De Soto) | 431060Y | UP | 321.02 | Gates | 200 | 1 | 0.2718 | 0.0315 | 0.0820 | 1,071,561 | |
| 4 | Hallidaboro Rd (Hallidaboro) | 295068D | CN | 296.8 | Gates | 300 | 1 | 0.2574 | 0.0364 | 0.0809 | 210,960 | |
| 5 | Bowlby Road (De Soto) | 431059E | UP | 321.8 | Gates | 125 | 2 | 0.2451 | 0.0284 | 0.0739 | 58,447 | |
| 6 | Lovers Lane (Grimsby) | 430978W | UP | 335.605 | Gates | 50 | 1 | 0.2288 | 0.0304 | 0.0643 | 5,771 | |
| 7 | Howardton Rd (Grand Tower) | 445810X | UP | 90.6 | Gates | 25 | 1 | 0.1986 | 0.0345 | 0.0589 | 30,499 | |
| 8 | Big Muddy Levee Rd (Grand Tower) | 445805B | UP | 94.19 | Gates | 25 | 2 | 0.1985 | 0.0296 | 0.0592 | 30,048 | |

ICC Grade Crossing Improvement Funding Previously Secured

# APPENDIX B –
# CROSSING PHOTOS


149


RAILROAD
CROSSING


RAIL
CROSSIN
ROA

# APPENDIX C –
# PROJECT COST ESTIMATE

| CRANE ROAD AT-GRADE HWY-RAIL CROSSING IMPROVEMENTS | | | | |
|---|---|---|---|---|
| GRADE CROSSING PROTECTION FUND APPLICATION | | | | |
| JACKSON COUNTY, ILLINOIS | | | | |
| CONCEPT-LEVEL COST ESTIMATE | | | | |
| Item | Unit | Cost Per Unit | Quantity | Total Cost |
| Removals | LS | $20,000.00 | 1 | $20,000.00 |
| Earth Embankment | CY | $20.00 | 1920 | $38,400.00 |
| HMA Surface Course (2") | SY | $15.00 | 1940 | $29,100.00 |
| HMA Base Course (7") | SY | $35.00 | 1065 | $37,275.00 |
| HMA Base Course (9") | SY | $60.00 | 880 | $52,800.00 |
| Aggregate Base Course, Type B 12" | SY | $50.00 | 2200 | $110,000.00 |
| HMA Shoulders 9" | SY | $45.00 | 125 | $5,625.00 |
| HMA Shoulders 11" | SY | $60.00 | 140 | $8,400.00 |
| RR Crossing Removal | EA | $5,000.00 | 1 | $5,000.00 |
| RR Concrete Crossing Panels | LF | $1,200.00 | 32 | $38,400.00 |
| RR Warning Lights & Gates | EA | $275,000.00 | 1 | $275,000.00 |
| Pavement Marking | LS | $10,000.00 | 1 | $10,000.00 |
| Signing | LS | $2,000.00 | 1 | $2,000.00 |
| Roadway Traffic Control | LS | $5,000.00 | 1 | $5,000.00 |
| Seeding & Erosion Control | LS | $2,000.00 | 1 | $2,000.00 |
| RR Flagging | LS | $3,000.00 | 1 | $3,000.00 |
| RR Insurance | LS | $15,000.00 | 1 | $15,000.00 |
| Right of Way/Easement | AC | $5,000.00 | 0.34 | $1,720.00 |
| | | | **SUB-TOTAL** | **$658,720** |
| | | | **CONTINGENCY (15%)** | **$98,808** |
| | | | **UTILITY RELOCATION** | **$25,000** |
| | | | **ENGINEERING** | **$52,500** |
| | | | **CONSTRUCTION ENGINEERING** | **$33,000** |
| | | | **TOTAL COST** | **$868,028** |

# Greater Egypt Safety Study

## APPENDIX 03: JEF AUBURN LANE

CMT

# STATE OF ILLINOIS

# ILLINOIS COMMERCE COMMISSION
# TRANSPORTATION BUREAU / RAIL SAFETY SECTION

*Brian Vercruysse* *Rail Safety Program Administrator*

February 9, 2021

Mr. Tim Marlow, Chairman
Jefferson County Highway Board
750 Old Fairfield Road
Mt. Vernon, IL 62864

Dear Mr. Marlow:

This is in response to the Grade Crossing Protection Fund (GCPF) Grade Crossing Project application that Jefferson County recently submitted for our review and consideration. The application proposes a project to install automatic flashing light signals and gates at the Auburn Lane highway-rail grade crossing (**AAR/DOT #724755V, railroad milepost 95.25-W**) of the Norfolk Southern Railway Company's (NS) track, located near Bluford, Jefferson County.

Commission Staff (Staff) will recommend that the project be included in the Commission's FY 2022-2026 Crossing Safety Improvement Program 5-Year Plan (Plan). Staff will also recommend that a project to install automatic flashing light signals and gates at the Falcon Lane grade crossing (**AAR/DOT #724756C, railroad milepost 94.76-W**) of the NS's track, near Bluford, be included in the Plan.

The Commission's review of the Plan will take place in late March with final selection of projects and publication in April 2021. Based on available funding, Staff will recommend to the Commission that the GCPF be used to pay 95% of the eligible costs, with the NS responsible for the remaining installation costs, at both the Auburn Lane and Falcon Lane crossings. The railroad is also responsible for all future maintenance costs associated with the new automatic warning devices at both locations.

I trust this information will be helpful. If you have any questions, or need additional information, please contact me at (312) 636-7760 or Brian.Vercruysse@illinois.gov.

Very truly yours,

Brian Vercruysse

Brian Vercruysse
Rail Safety Program Administrator

cc: Brandon Simmons, Jefferson County Engineer

**ILLINOIS COMMERCE COMMISSION**

**CROSSING SAFETY IMPROVEMENT PROGRAM**

**2021 GRADE CROSSING PROTECTION FUND PROJECT APPLICATION**

# AUBURN LANE GRADE CROSSING

**USDOT: 724755V / M.P. 95.25 (NORFOLK SOUTHERN)**

**JEFFERSON COUNTY, IL**

**JANUARY 29, 2021**

**ICC USE ONLY**
*Received:* _____
*Staff:* _____

# ILLINOIS COMMERCE COMMISSION
## CROSSING SAFETY IMPROVEMENT PROGRAM
## GRADE CROSSING PROTECTION FUND PROJECT INFORMATION
*Public Highway - Rail Grade Crossings*

## I. General Information

Applicant Type: ☐ City ☐ Village ☐ Town ☑ County ☐ Township ☐ Railroad
Resubmission: ☐ Yes ☐ No RR Company: **Norkfolk Southern**
Date: 01/29/21 Applicant: County of Jefferson, Illinois Population: **37,684**
Chief Elected Official: Tim Marlow Title: Highway Board Chairman
Business Address: 750 Old Fairfield Road
City: Mt. Vernon State: **Illinois** Zip: 62864
Business Phone: (618) 244-8031 Business Fax: (618) 242-3392
Email Address (if applicable):
State Legislative District: House District 115 / Senate District 58

## II. Project Administrator

Contact Person: Brandon Simmons Title: County Engineer
Company:
Address: 750 Old Fairfield Road
City: Mt. Vernon State: Illinois Zip: 62864
Business Phone: (618) 244-8031 Business Fax:
Email Address (if applicable): countyengineer@jeffil.us

## III. General Project Information

(Note: Attach separate sheet listing all crossings if applying for more than one crossing improvement)
County: Jefferson ☐ In City ☑ Near City City: Bluford
Street / Roadway Name: Auburn Lane
Railroad: Norfolk Southern Crossing Number: 724755V Railroad Milepost 95.25

Average Daily Traffic (ADT): 25 (Number of Cars per Day over the Crossing) Daily Train Traffic: 8 (Number of Trains per Day)
Number of School Buses over Crossing per Day:
Do vehicles carrying hazardous materials use crossing: ☐ Yes ☐ No
If yes, list the type and approximate number of hazardous material vehicles per day:

Number of tracks through crossing: 1
Distance to, and street name of, the two nearest existing grade separations from location being applied for:
None within 30+ Miles (East) / 10.6 Miles E Green Rd (West)
Crossing is currently: ☐ Grade Separation ☑ Highway-Rail Grade Crossing ☐ No Crossing
Existing warning devices at crossing:

☐ None ☐ Center Median or Median Barriers ☐ Automatic Flashing Light Signals and Gates
☐ Automatic Flashing Light Signals ☐ STOP Signs Only ☑ Crossbucks Only
☐ Other (please specify)

Are railroad signals interconnected with traffic signals at this location: ☐ Yes ☐ No ☑ N/A
If crossing is currently a grade separation, provide the following information:
☐ Highway Over Railroad ☐ Highway Under Railroad
Number of Traffic Lanes Width of Pavement
Vertical Clearance

## IV. Project Location Map and/or Photographs

A project location map shall be included with the application. The project location map should show the crossing(s) for which application is being made, as well as any other improvements that are being submitted in conjunction with this application. If project is a part of a "corridor" project, indicate the limits of the entire "corridor" on the map. Paper size shall not exceed 11 x 17 inches. **Please provide a minimum of 4 digital photos of the existing crossing (photos should show the existing warning devices, the existing crossing surface, and the existing highway approaches).**

## V. Project Summary.

Application to (check all that apply):

- ☐ Upgrade Circuitry
- ☐ Interconnect Railroad and Traffic Signals at Nearby Intersection
- ☐ Close Adjacent Crossing
- ☐ Construct a Connecting Road Between Crossings
- ☑ Upgrade Warning Devices
- ☐ Construct Barrier Medians at Crossing
- ☑ Other (please specify) Widen Roadway Approach

Is application for: ☐ Design Only ☐ Construction only ☑ Design and Construction

Is application part of a larger "corridor" project: ☐ Yes ☑ No

Use the space below to provide a narrative of the proposed project. Items to include in this section are extenuating circumstances unique to this crossing, such as heavier seasonal traffic, visibility restrictions caused by trees, buildings, etc., proximity of schools and public buildings, etc., which explain why this crossing should be funded. Explain any work to by done by the local agency, such as roadway improvements in the immediate vicinity of the grade separation project. Approximate costs must be listed for each item of work to be done.

The proposed Auburn Lane Grade Crossing Project will improve safety by upgrading the warning devices from passive warning (Crossbucks) to Automatic Flashing Signals & Gates, widening the roadway approach, and lengthening RR Crossing Pad (See Appendix B for Proposed Layout Exhibit and Appendix C for Associated Cost Estimates).

## VI. Evidence of Community Effort and Support

Any preliminary engineering or planning studies, along with cost estimates, that have been prepared for this project should be included with your application. List any past efforts to improve safety at railroad crossings within applicant's jurisdiction. Any studies that have been conducted, regarding railroad crossing elimination or consolidation, must also be included.

A Crossing Safety Analysis and Study was commenced by the Greater Egypt Regional Planning and Development Commission, in partnership with Jefferson County. The study was performed by a consultant, and identified rail crossing locations that have a history of vehicle-train crashes, or have a high exposure index.

The study ranked the Auburn Lane grade crossing at 8th overall, but as the number one (1) safety priority crossing with passive only warning devices. The crossing has two (2) vehicle-train crash recorded. The crossing has a 0.21 annualized existing crash prediction and an Illinois Hazard Index Rating of 2,122 (See Appendix B for Crossing Priority List).

## VII. Financial Need

This narrative must justify the local government's need for assistance from the GCPF. One copy of the applicant's most recent financial audit must be included with your application (local government agencies only).

The County has limited funds available, with hundreds of miles roadway jurisdiction to maintain for basic operations. While this crossing is of high safety concern, the county has limited funds available to implement the project in the near future. Securing GCPF funds would allow for the project timeline to move up and improve safety for all users.

The County's recent financial audit is available upon request.

## VIII. Project Schedule

Provide information on when this project is anticipated to commence, or when improvements must be implemented. Provide an approximate timeline listing key milestones concerning the design and/or construction phases of the project.

A preliminary Project Schedule has been developed with key Project Milestones identified below. The Project Schedule can be accelerated or delayed, depending on the ICC's required funding schedule.

- GCPF Award Notice: 4/2021
- Norfolk Southern RR Coordination: Ongoing (4/2021 - Project Close)
- County Highway Department Project Coordination: Ongoing (4/2021 - Project Close)*
- Project Construction Begins: 9/2021*
- Project Completion: 11/2021*

*Project Schedule assumes the responsibility of all project coordination, equipment & personnel will be borne by the County Highway Department for all roadway pavement reconstruction/widening. All RR signals and Crossing Pad is assumed to be installed by the RR.

Forms may be submitted by electronic mail or regular mail. Mailing addresses are noted below:

Email: Submit by Email to ICC.Railsafety@illinois.gov

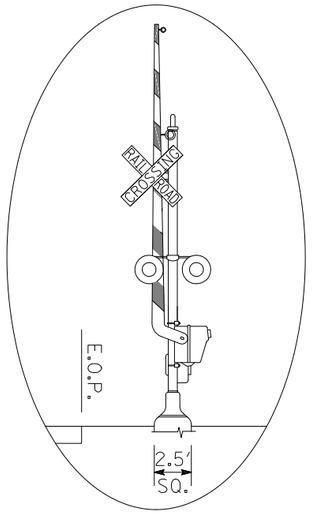
Regular Mail: Rail Safety Program Administrator
Illinois Commerce Commission
527 E. Capitol Avenue
Springfield, Illinois 62701

**[NOTE: ALL APPLICATIONS MUST INCLUDE DIGITAL PHOTOS OF THE GRADE CROSSING, HIGHWAY-RAIL BRIDGE, or PEDESTRIAN-RAIL BRIDGE THAT IS THE SUBJECT OF THE APPLICATION. ANY APPLICATIONS SUBMITTED WITHOUT THE PHOTOS WILL NOT BE CONSIDERED UNTIL THE PHOTOS HAVE BEEN RECEIVED BY THE ICC RAIL SAFETY SECTION.]**

Print Reset Form

# APPENDIX A –
# PROJECT LOCATION MAP & EXHIBITS


JEFFERSON
BLUFORD
AUBURN LN. CROSSING
57
15
37
Jefferson
AUBURN LN. GRADE CROSSING
USDOT 724755V / M.P. 95.25
AUBURN LN
E 6TH RD
NORFOLK SOUTHERN
AUBURN LN




TYP. GATE/SIGNAL

N.T.S.




AUBURN LANE
AT-GRADE CROSSING

USDOT # 724755V

M.P. 95.25

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | North St (Mt. Vernon) | 724772L | NS | 86.94 | Flashing Lights | 225 | 1 | 0.4424 | 0.0429 | 0.1363 | 117,937 | |
| 2 | Tolle Rd (Mt. Vernon) | 724774A | NS | 86.21 | Gates | 1300 | 2 | 0.3300 | 0.0320 | 0.1017 | 6,045,910 | |
| 3 | Wells Bypass (Mt. Vernon) | 431021H | UP | 121.57 | Gates | 3050 | 1 | 0.3258 | 0.0055 | 0.0840 | 2,736,753 | |
| 4 | Idlewood Rd (Mt. Vernon) | 167748X | UP | 271.24 | Gates | 325 | 1 | 0.3230 | 0.0451 | 0.0974 | 2,920,247 | |
| 5 | East Stagecoach Road (Waltonville) | 069232J | BNSF | 141.12 | Crossbucks | 125 | 2 | 0.3072 | 0.0298 | 0.0947 | 1,870 | |
| 6 | Chestnut Ln (Opdyke) | 724762F | NS | 89.88 | Gates | 950 | 1 | 0.2873 | 0.0278 | 0.0885 | 1,778,837 | |
| 7 | E Oakton Road (Mt. Vernon) | 167747R | UP | 271.75 | Gates | 150 | 2 | 0.2725 | 0.0380 | 0.0822 | 97,486 | |
| 8 | Auburn Lane (Bluford) | 724755V | NS | 95.25 | Crossbucks | 25 | 2 | 0.2119 | 0.0205 | 0.0653 | 2,122 | |
| 9 | Beal Rd (Dix) | 724806D | NS | 79.63 | Gates | 175 | 1 | 0.2088 | 0.0202 | 0.0643 | 33,500 | |
| 10 | Stanford Ln (Bluford) | 724758R | NS | 92.94 | Gates | 150 | 1 | 0.2010 | 0.0195 | 0.0619 | 22,470 | |
| 11 | Douthit Ln (Dix) | 724779J | NS | 75.98 | Gates | 125 | 1 | 0.1921 | 0.0186 | 0.0592 | 14,010 | |
| 12 | Park Ave (Mt. Vernon) | 724773T | NS | 86.48 | Gates | 100 | 1 | 0.1815 | 0.0176 | 0.0559 | 7,441 | |
| 13 | East Midnight Road (Bonnie) | 167602E | UP | 285.96 | Gates | 25 | 1 | 0.1767 | 0.0247 | 0.0533 | 3,796 | |
| 14 | Dubois Rd (Waltonville) | 072320X | BNSF | 144.655 | Gates | 75 | 1 | 0.1323 | 0.0103 | 0.0371 | 280 | |
| 15 | E Freesia Rd (Mt. Vernon) | 431022P | UP | 120.68 | Crossbucks | 175 | 1 | 0.0829 | 0.0058 | 0.0254 | 4,377 | |
| 16 | Main St. (Mt. Vernon) | 915458F | EVWR | 407.81 | Crossbucks | 400 | 1 | 0.0199 | 0.0001 | 0.0061 | - | |

ICC Grade Crossing Improvement Funding Previously Secured

# APPENDIX B –
# CROSSING PHOTOS


Co Rd 2100 E
Google Earth
© 2020 Google


RAILROAD
CROSSING


RAIL
ROAD
CROSSING
YIELD
STOP

# APPENDIX C –
# PROJECT COST ESTIMATE

| AUBURN LANE AT-GRADE HWY-RAIL CROSSING IMPROVEMENTS | | | | |
|---|---|---|---|---|
| GRADE CROSSING PROTECTION FUND APPLICATION | | | | |
| JEFFERSON COUNTY, ILLINOIS | | | | |
| CONCEPT-LEVEL COST ESTIMATE | | | | |
| Item | Unit | Cost Per Unit | Quantity | Total Cost |
| Removals | LS | $15,000.00 | 1 | $15,000.00 |
| Earth Excavation | CY | $35.00 | 100 | $3,500.00 |
| HMA Surface Course (2") | SY | $15.00 | 493 | $7,395.00 |
| HMA Base Course (7") | SY | $35.00 | 493 | $17,255.00 |
| Aggregate Base Course, Type B 12" | SY | $55.00 | 493 | $27,115.00 |
| RR Concrete Crossing Pad | LF | $1,200.00 | 32 | $38,400.00 |
| RR Warning Lights & Gates | EA | $275,000.00 | 1 | $275,000.00 |
| Pavement Marking | LS | $5,000.00 | 1 | $5,000.00 |
| Signing | LS | $2,500.00 | 1 | $2,500.00 |
| Roadway Traffic Control | LS | $2,500.00 | 1 | $2,500.00 |
| Seeding & Erosion Control | LS | $2,500.00 | 1 | $2,500.00 |
| RR Flagging | LS | $3,000.00 | 1 | $3,000.00 |
| RR Insurance | LS | $10,000.00 | 1 | $10,000.00 |
| | | | **SUB-TOTAL** | **$409,165** |
| | | | **CONTINGENCY (15%)** | **$61,375** |
| | | | **DESIGN ENGINEERING** | **$43,000** |
| | | | **CONSTRUCTION ENGINEERING** | **$27,000.00** |
| | | | **TOTAL COST** | **$540,539.75** |

# Greater Egypt Safety Study

## APPENDIX 03: PER OLD DUQUOIN ROAD

# STATE OF ILLINOIS

# ILLINOIS COMMERCE COMMISSION
# TRANSPORTATION BUREAU / RAIL SAFETY SECTION

*Brian Vercruysse* *Rail Safety Program Administrator*

January 26, 2021

Mr. Bobby Kelly, Chairman
Perry County Commission
3698 State Route 13/127
Pinckneyville, IL 62274

Dear Mr. Kelly:

This is in response to the Grade Crossing Protection Fund (GCPF) Grade Crossing Project application that Perry County recently submitted for our review and consideration. The application proposes a project to install automatic flashing light signals and gates at the Old DuQuoin Road highway-rail grade crossing (**AAR/DOT #293679L, railroad milepost 73.24-GE**) of the Illinois Central Railroad's (IC) track, located near DuQuoin, Perry County.

Commission Staff (Staff) will recommend that the project be included in the Commission's FY 2022-2026 Crossing Safety Improvement Program 5-Year Plan (Plan). The Commission's review of the Plan will take place in late March with final selection of projects and publication in April 2021.

Based on available funding, Staff will recommend to the Commission that the GCPF be used to pay 95% of the eligible costs, with the IC responsible for the remaining installation costs. The railroad is also responsible for all future maintenance costs associated with the new automatic warning devices.

I trust this information will be helpful. If you have any questions, or need additional information, please contact me at (312) 636-7760 or Brian.Vercruysse@illinois.gov.

Very truly yours,

Brian Vercruysse
Rail Safety Program Administrator

cc: Brian Otten, Perry County Engineer

**ILLINOIS COMMERCE COMMISSION**

**CROSSING SAFETY IMPROVEMENT PROGRAM**

**2021 GRADE CROSSING PROTECTION FUND PROJECT APPLICATION**

# OLD DU QUOIN ROAD GRADE CROSSING

**USDOT: 293679L / M.P. 73.24 (CN RAILWAY)**

**PERRY COUNTY, IL**

**JANUARY 15, 2021**

**ICC USE ONLY**
*Received:* _____
*Staff:* _____

# ILLINOIS COMMERCE COMMISSION
## CROSSING SAFETY IMPROVEMENT PROGRAM
## GRADE CROSSING PROTECTION FUND PROJECT INFORMATION
*Public Highway - Rail Grade Crossings*

## I. General Information

Applicant Type: ☐ City ☐ Village ☐ Town ☑ County ☐ Township ☐ Railroad
Resubmission: ☐ Yes ☑ No RR Company: **CN Railway**
Date: 01/15/21 Applicant: County of Perry, Illinois Population: **21,174**
Chief Elected Official: Bobby Kelly Title: County Commission Chairman
Business Address: 3698 State Route 13/127
City: Pinckneyville State: **Illinois** Zip: 62274
Business Phone: (618) 318-0689 Business Fax: _____
Email Address (if applicable): botten@perryil.com
State Legislative District: House Districts 115 & 116 / Senate District 58

## II. Project Administrator

Contact Person: Mr. Brian Otten Title: County Engineer
Company: County Of Perry, Illinois
Address: 3698 State Route 13/127
City: Pinkneyville State: Illinois Zip: 62274
Business Phone: (618) 318-0689 Business Fax: _____
Email Address (if applicable): botten@perryil.com

## III. General Project Information

(Note: Attach separate sheet listing all crossings if applying for more than one crossing improvement)
County: Perry County ☐ In City ☑ Near City City: DuQuoin
Street / Roadway Name: Old DuQuoin Road
Railroad: CN Railway Crossing Number: 293679L Railroad Milepost 73.24

Average Daily Traffic (ADT): 700 (Number of Cars per Day over the Crossing) Daily Train Traffic: 2 (Number of Trains per Day)
Number of School Buses over Crossing per Day: 2
Do vehicles carrying hazardous materials use crossing: ☐ Yes ☑ No
If yes, list the type and approximate number of hazardous material vehicles per day:

Number of tracks through crossing: 1
Distance to, and street name of, the two nearest existing grade separations from location being applied for:
20+ Miles (East) / 2.3 Miles E Poplar St. (West)
Crossing is currently: ☐ Grade Separation ☑ Highway-Rail Grade Crossing ☐ No Crossing
Existing warning devices at crossing:

☐ None ☐ Center Median or Median Barriers ☐ Automatic Flashing Light Signals and Gates
☑ Automatic Flashing Light Signals ☐ STOP Signs Only ☐ Crossbucks Only
☐ Other (please specify) _____

Are railroad signals interconnected with traffic signals at this location: ☐ Yes ☐ No ☑ N/A
If crossing is currently a grade separation, provide the following information:
☐ Highway Over Railroad ☐ Highway Under Railroad
Number of Traffic Lanes _____ Width of Pavement _____
Vertical Clearance _____

## IV. Project Location Map and/or Photographs

A project location map shall be included with the application. The project location map should show the crossing(s) for which application is being made, as well as any other improvements that are being submitted in conjunction with this application. If project is a part of a "corridor" project, indicate the limits of the entire "corridor" on the map. Paper size shall not exceed 11 x 17 inches. **Please provide a minimum of 4 digital photos of the existing crossing (photos should show the existing warning devices, the existing crossing surface, and the existing highway approaches).**

## V. Project Summary.

Application to (check all that apply):

- ☐ Upgrade Circuitry
- ☐ Close Adjacent Crossing
- ☑ Upgrade Warning Devices
- ☐ Other (please specify) _____
- ☐ Interconnect Railroad and Traffic Signals at Nearby Intersection
- ☐ Construct a Connecting Road Between Crossings
- ☐ Construct Barrier Medians at Crossing

Is application for: ☐ Design Only ☐ Construction only ☑ Design and Construction

Is application part of a larger "corridor" project: ☐ Yes ☑ No

Use the space below to provide a narrative of the proposed project. Items to include in this section are extenuating circumstances unique to this crossing, such as heavier seasonal traffic, visibility restrictions caused by trees, buildings, etc., proximity of schools and public buildings, etc., which explain why this crossing should be funded. Explain any work to by done by the local agency, such as roadway improvements in the immediate vicinity of the grade separation project. Approximate costs must be listed for each item of work to be done.

The proposed Old DuQuoin Road Grade Crossing Project will improve safety a by upgrading the warning devices from Flashing Automatic Light Signals to Automatic Flashing Light Signals & Gates (See Appendix A for Proposed Layout Exhibit and Appendix C for Associated Cost Estimates).

This crossing has significant daily traffic (700 ADT) compared to other adjacent county highway-rail grade crossings. The study

## VI. Evidence of Community Effort and Support

Any preliminary engineering or planning studies, along with cost estimates, that have been prepared for this project should be included with your application. List any past efforts to improve safety at railroad crossings within applicant's jurisdiction. Any studies that have been conducted, regarding railroad crossing elimination or consolidation, must also be included.

A Crossing Safety Analysis and Study was commenced in 2020 by the Greater Egypt Regional Planning and Development Commission, in partnership with Perry County. The study was performed by a consultant, and identified rail crossing locations that have a history of vehicle-train crashes, or have a high exposure index.

The study ranked this crossing as 3rd overall, but as number one (1) of county maintained roadways. While the crossing does not have a history of crashes, the study identified the Old Du Quoin crossing with a reduced safety rating due to the significant daily roadway traffic. The crossing has an existing annualized crash prediction of 0.14 (See Appendix A for Crossing Priority List).

## VII. Financial Need

This narrative must justify the local government's need for assistance from the GCPF. One copy of the applicant's most recent financial audit must be included with your application (local government agencies only).

The County has limited funds available, with hundreds of miles roadway jurisdiction to maintain for basic operations. While this crossing is of high safety concern, the county has limited funds available to share costs in upgrading Railroad crossing warning devices. Securing GCPF funds would allow for the project timeline to move up and improve safety for all users.

The County's recent financial audit is available upon request.

## VIII. Project Schedule

Provide information on when this project is anticipated to commence, or when improvements must be implemented. Provide an approximate timeline listing key milestones concerning the design and/or construction phases of the project.

A preliminary Project Schedule has been developed with key Project Milestones identified below. The Project Schedule can be accelerated or delayed, depending on the ICC's required funding schedule.

- GCPF Award Notice: 4/2021
- Union Pacific RR Coordination: Ongoing (4/2021 - Project Close)
- Project Construction Begins: 9/2021*
- Project Completion: 11/2021*

*Project Schedule assumes the responsibility of project implementation will be borne by the CN Railway for all Crossing Pad rehabilitation and Automatic Flashing Light Signals & Gates installation.

Forms may be submitted by electronic mail or regular mail. Mailing addresses are noted below:

Email: Submit by Email to ICC.Railsafety@illinois.gov

Regular Mail: Rail Safety Program Administrator
Illinois Commerce Commission
527 E. Capitol Avenue
Springfield, Illinois 62701

**[NOTE: ALL APPLICATIONS MUST INCLUDE DIGITAL PHOTOS OF THE GRADE CROSSING, HIGHWAY-RAIL BRIDGE, or PEDESTRIAN-RAIL BRIDGE THAT IS THE SUBJECT OF THE APPLICATION. ANY APPLICATIONS SUBMITTED WITHOUT THE PHOTOS WILL NOT BE CONSIDERED UNTIL THE PHOTOS HAVE BEEN RECEIVED BY THE ICC RAIL SAFETY SECTION.]**

Print Reset Form

# APPENDIX A –
# PROJECT LOCATION MAP & EXHIBITS


PERRY
S Main St
Perry
DU QUOIN
W Main St
152
S Washington St
OLD DU QUOIN RD.
CROSSING
14
51
16
OLD DU QUOIN RD.
CN RAILWAY
OLD DU QUOIN RD. GRADE CROSSING
USDOT 293679L / M.P. 73.24

0 20 40 Feet

N

APPROX. EXIST. RR R.O.W.

APPROX. EXIST. R.O.W.

1' SHDR.

11'

11'

1' SHDR.

90°

APPROX. EXIST. R.O.W.

APPROX. EXIST. R.O.W.

1' SHDR.

11'

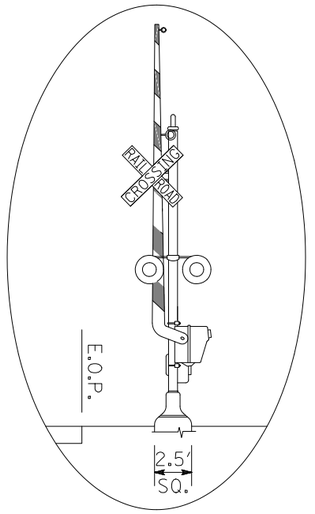
11'

1' SHDR.

OLD DU QUOIN RD

APPROX. EXIST. R.O.W.

℄ CN RAILWAY




TYP. GATE/SIGNAL

N.T.S.

LEGEND

- BELL
- FLASHING LIGHTS
- CROSSING GATES
- BUNGALOW

OLD DU QUOIN ROAD
AT-GRADE CROSSING

USDOT # 293679L

M.P. 73.24

Perry County Priority List
December 1, 2020

| RANK | ROAD NAME (NEAR TOWNSHIP) | USDOT # | RR | RR M.P. | EXISTING PROTECTION | ADT | 30-YEAR CRASH HISTORY | EX. CRASH PREDICTION (30-YEAR ANNUALIZED) | FATAL | INJURY | ILLINOIS HAZARD INDEX | LATITUDE | LONGITUDE | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | W Parker St. (Pickneyville) | 840401T | CN | 61.1 | Crossbucks | 2050 | 0 | 0.3272 | 0.3272 | 0.3272 | - | - | - | |
| 2 | Pick Road (Pinckneyville) | 296166X | CN | 63.31 | Gates | 125 | 2 | 0.1508 | 0.0171 | 0.0463 | 3,499 | 38.0571500 | -89.3525850 | |
| 3 | Old Du Quoin Road (Du Quoin) | 293679L | CN | 73.24 | Crossbucks | 700 | 0 | 0.1415 | 0.1415 | 0.1415 | - | - | - | |
| 4 | Valier Carpet Rd (Tamaroa) | 430969X | UP | 99.28 | Crossbucks | 100 | 1 | 0.1048 | 0.0087 | 0.0328 | 1,047 | 38.1078480 | -89.2786770 | |
| 5 | Cutler-Trico Rd (Percy) | 294880T | CN | 581.25 | Crossbucks | 99 | 1 | 0.1045 | 0.0020 | 0.0269 | 275 | 38.0005940 | -89.5660990 | |
| 6 | Tanglefoot Road (Du Quoin) | 296169T | CN | 64.84 | Crossbucks | 25 | 2 | 0.1006 | 0.0114 | 0.0309 | 124 | 38.0474550 | -89.3272900 | |
| 7 | Lazy W Rd (Du Quoin) | 296176D | CN | 66.64 | Gates | 25 | 1 | 0.0972 | 0.0122 | 0.0298 | 36 | 38.0360340 | -89.2976500 | |
| 8 | District 204 Road (Pinckneyville) | 430972F | Mid America | 97.72 | Crossbucks | 75 | 0 | 0.0962 | 0.0962 | 0.0962 | - | - | - | |
| 9 | Camel Road (Cutler) | 431177G | Mid America | 83.01 | Crossbucks | 50 | 0 | 0.0851 | 0.0851 | 0.0851 | - | - | - | |
| 10 | Kangaroo Road (Cutler) | 431178N | Mid America | 83.23 | Crossbucks | 50 | 0 | 0.0851 | 0.0851 | 0.0851 | - | - | - | |
| 11 | Crocus Road (Pickneyville) | 431188U | Mid America | 88.64 | Crossbucks | 25 | 0 | 0.0688 | 0.0688 | 0.0688 | - | - | - | |
| 12 | Vole Rd (Cutler) | 431166U | UP | 81.85 | Crossbucks | 25 | 1 | 0.0687 | 0.0067 | 0.0212 | 29 | 38.0281510 | -89.5795560 | |
| 13 | Division St. (Du Quoin) | 293675J | CN | 71.23 | Crossbucks | 400 | 0 | 0.0088 | 0.0088 | 0.0088 | - | - | - | |
| 14 | Washington (Du Quoin) | 293676R | CN | 71.42 | Crossbucks | 12500 | 1 | 0.0088 | 0.0088 | 0.0088 | - | - | - | |

ICC Grade Crossing Improvement Funding Previously Secured
Crossing Located within Township/Municipality

# APPENDIX B –
# CROSSING PHOTOS

# APPENDIX C –
# PROJECT COST ESTIMATE

| OLD DU QUOIN ROAD AT-GRADE HWY-RAIL CROSSING IMPROVEMENTS | | | | |
|---|---|---|---|---|
| GRADE CROSSING PROTECTION FUND APPLICATION | | | | |
| PERRY COUNTY, ILLINOIS | | | | |
| CONCEPT-LEVEL COST ESTIMATE | | | | |
| Item | Unit | Cost Per Unit | Quantity | Total Cost |
| Removals | LS | $5,000.00 | 1 | $5,000.00 |
| RR Warning Lights & Gates | EA | $275,000.00 | 1 | $275,000.00 |
| Signing | LS | $2,000.00 | 1 | $2,000.00 |
| Roadway Traffic Control | LS | $5,000.00 | 1 | $5,000.00 |
| RR Flagging | LS | $3,000.00 | 1 | $3,000.00 |
| RR Insurance | LS | $10,000.00 | 1 | $10,000.00 |
| | | | **SUB-TOTAL** | **$300,000** |
| | | | **CONTINGENCY (15%)** | **$45,000** |
| | | | **DESIGN ENGINEERING** | **$12,000** |
| | | | **CONSTRUCTION ENGINEERING** | **$15,000** |
| | | | **TOTAL COST** | **$372,000** |