



Purpose and Need

Planning and Environmental Linkages Study

7/8/2026



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Executive Summary

The Illinois Department of Transportation (IDOT) as sponsor, in cooperation with the Federal Highway Administration (FHWA), is conducting a Planning and Environmental Linkages Study (PEL) to consider future transportation improvements for Illinois Routes (IL) 3 and IL 154, referred to as the Southwest Connector (SWC). The PEL study area is approximately 48 miles long and includes IL 3 from south of Waterloo to Red Bud and IL 154 from Red Bud to the planned improvement of IL 13/127 in Pinckneyville. The PEL study area connects the communities of Waterloo, Red Bud, Baldwin, Sparta, and Pinckneyville within IDOT District 8 and District 9 in Monroe, Randolph, and Perry counties.

A PEL is a collaborative transportation approach that integrates environmental, community, and economic goals into early planning, allowing data to directly inform future environmental reviews. This approach streamlines project delivery, reduces duplication of effort, and fosters stakeholder engagement, aimed at creating efficient, environmentally responsible, and faster infrastructure development. The PEL study will identify and evaluate potential transportation system improvements that are needed to improve safety on IL 3 and IL 154, correct deficient roadway and intersection geometry, alleviate current and future congestion and bottlenecks accommodating a projected increase in traffic and freight volumes and support freight mobility.

Safety

This corridor has long faced challenges related to roadway safety and design deficiencies. Out of the 1,186 crashes between 2017 and 2024, approximately 22.1 percent resulted in injury or fatality. IDOT's Safer Road Index is a data-driven method for ranking intersections and road segments by crash frequency and severity to measure road safety and prioritize improvements at high-risk locations. Intersections and road segments are categorized into safety tiers based on their level of safety performance and potential for improvement. Five roadway segments are ranked as High Safety Tiers¹, including IL 3 in Red Bud, IL 154 near the Kaskaskia Regional Port District and Kaskaskia River crossing, IL 154 through Sparta and Eden, and IL 154 at Rose of Sharon Road west of Pinckneyville. Five intersections between Sparta and the Randolph and Perry County line are rated as High on the Safety Rating Index because of the number of fatal and incapacitating injury crashes. There were 13 fatal crashes between 2017 and 2024, typically resulting from high-speed impacts or loss of vehicle control. Fixed object, angle, and front to front crashes were the most frequent severe crash types and indicate ongoing safety challenges with serious crash outcomes.

Geometric Roadway Deficiencies

There are numerous roadway deficiencies and characteristics that impact safety and travel within the corridor and contribute to fatal and severe injury crashes. Deficiencies include 9 horizontal curves that do not meet design criteria requirements, 72 vertical curves that cause sight distance issues, narrow shoulders, and limited opportunities to safely pass slow moving traffic. There are 16 side roads and entrances per mile, many of which intersect the study corridor at skewed angles that do not meet design criteria and impact line of sight.

¹ A "High" Safety Tier designation indicates substantial safety concerns and high potential for improvements.

Existing and Future Traffic Volumes

IL 3 between Waterloo and Kaskaskia Road west of Red Bud experiences the highest traffic volumes in the corridor, with 9,850 Annual Average Daily Traffic (AADT). Capacity analyses to evaluate corridor-level operations under existing and 2050 No-Build conditions determined that IL 3 From Market Street (Waterloo) to the west limits of Red Bud currently operates at a Level of Service (LOS) C². Under the 2050 No-Build condition, Market Street to Kaskaskia Road is projected to operate at LOS D. At this LOS, travelers would experience a significant increase in platooning, high passing demand with passing capacity that approaches zero, noticeable time spent following, and substantial delays.

The intersection of IL 3/IL 159/IL 154 operates at an acceptable LOS C today but is projected to degrade to LOS D with noticeable increases in delay on the eastbound and northbound approaches by 2030, and further degrade to LOS F by 2050. This intersection was identified in the District 8 2023 Freight Plan as a High Freight Need due to the geometry at this intersection that limits larger vehicles and results in reduced truck travel time reliability, with a Truck Travel Time Index of 2.73. The intersection of IL 154 and IL 4 in Sparta is projected to have increases in delay under the 2050 No-Build condition, with southbound approach projected to operate at and unacceptable LOS E,

Based on the defined needs, the primary purposes of the project are to:

- Reduce the frequency and severity of crashes, specifically targeting high-risk intersections, geometric flaws, and animal-related and other collisions at identified High Safety Tier locations;
- Address existing roadway geometric deficiencies that contribute to safety and operational issues; and
- Accommodate future traffic capacity and freight volumes on IL 3 between Waterloo and Kaskaskia Road, at the intersection of IL 3, IL 154, and IL 159 in Red Bud, and the intersection of IL 154 and IL 4 in Sparta; and
- Improve freight mobility and bottlenecks.

The primary purposes of the project are related to the following secondary purposes that would benefit communities in Southern Illinois:

- Improved travel time and reliability for all roadway users, including emergency response and essential services workers;
- Provide a roadway that promotes efficient access to essential services, such as healthcare, jobs, and education;
- Provide a roadway that promotes efficient access to entertainment and cultural centers;
- Provide a roadway that expands and supports existing modal interrelationships, including transit, and bicycle/pedestrian facilities; and
- Provide a roadway that supports economic development and growth in Southern Illinois.

² LOS is evaluated on a scale from A to F, where A represents the best range of operating conditions with minimal traffic interruption and low delay, and F represents poor operating conditions.

1 Introduction

The Illinois Department of Transportation (IDOT) as sponsor, in cooperation with the Federal Highway Administration (FHWA), is conducting a Planning and Environmental Linkages Study (PEL) to consider future transportation improvements for Illinois Routes (IL) 3 and 154 referred to as the Southwest Connector (SWC). The PEL study area is approximately 48 miles long and includes IL 3 from south of Waterloo to Red Bud and IL 154 from Red Bud to the planned improvement of IL 13/127 in Pinckneyville (see **Figure 1**). The PEL study area connects the communities of Waterloo, Red Bud, Baldwin, Sparta, and Pinckneyville within IDOT District 8 and District 9 in Monroe, Randolph, and Perry counties.

Within the PEL study area, IL 3 and IL 154 are two-lane undivided highways and Class II state-maintained truck routes that serve southwestern Illinois. The western limit of the study area is east of the IL 3 at Market Street intersection south of Waterloo, where IL 3 transitions from an improved four-lane undivided highway with a bidirectional turn lane to a two-lane undivided highway. The eastern limit of the study area is at the planned improvement of IL 13/127 and IL 154 interchange, near Oxbow Road in western Pinckneyville.

IL 3 and IL 154 between Waterloo and Pinckneyville have a long history of crashes throughout the corridor. IDOT's Safer Road Index uses a data-driven classification system to categorize roadway segments and intersections into safety tiers based on their level of safety performance (crash frequency and severity) and potential for improvement. It helps transportation officials identify high-risk locations that warrant targeted safety enhancements. Safety tier categories include High, Medium, Low, or Minimal designations. A High safety tier designation indicates a locations or segment with substantial safety concerns and high potential for improvements. A Minimal designation indicates that a location or segment is less likely to have safety benefits from treatments. IDOT identified 10 locations as "High Safety Tier" areas on the Safety Rating Index, indicating a need for further analysis. These 10 locations have a history of multiple crashes with fatalities and incapacitating injuries. The most frequently occurring crash types, except for those involving animal collisions, are those that are generally attributable to roadway geometric deficiencies, such as deficient horizontal and vertical curves. Sections of the corridor experience platooning behind farm equipment, trucks, and school buses, with limited areas to safely pass. Crash hot spots include IL 3 between Waterloo and Red Bud, horizontal curves east of Sparta at IL 154/IL 153 Wye and Eden Road, and the intersection of IL 154/County Line Road and the curve between Porcupine Road and Rose of Sharon Road west of Pinckneyville.

The purpose of the PEL study is to identify and evaluate potential comprehensive transportation system improvements that would reduce the frequency and severity of crashes, address geometric roadway deficiencies that contribute to safety and operational issues, accommodate future traffic capacity and freight volumes where warranted, improve freight mobility and reduce bottlenecks. Transportation improvements are needed to improve safety, address deficient roadway and intersection geometry, alleviate current and projected congestion and freight bottlenecks, and support freight mobility.

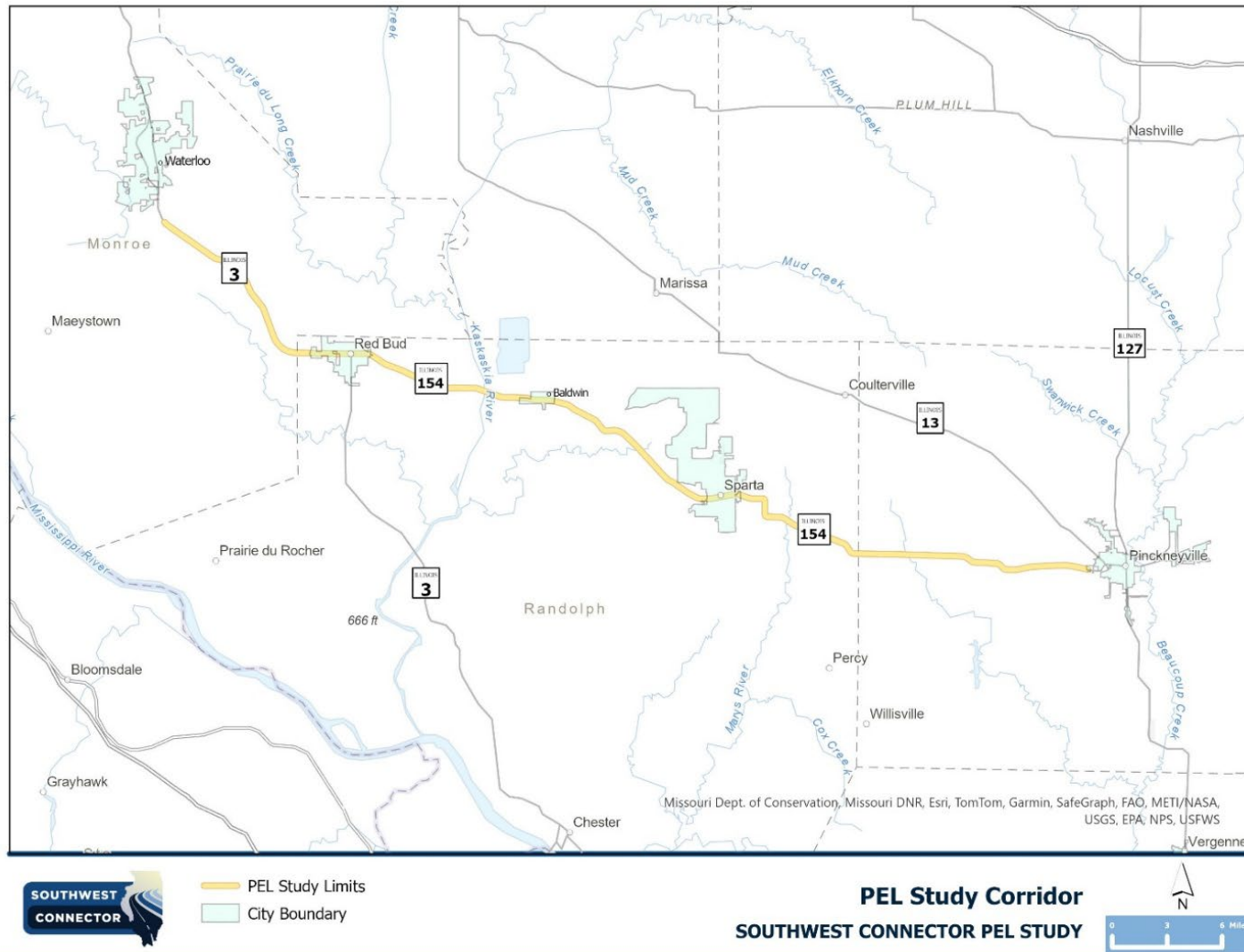


Figure 1. PEL Study Corridor

1.1 History of the Corridor

Transportation improvements in the PEL study area have been the focus of numerous studies since 1967. Previous studies proposed transportation improvements from East St. Louis to Marion as part of a supplemental highway system needed to provide adequate state highways in southwestern Illinois and accommodate predicted traffic demands associated with increased population growth and development. Studies included the following:

- 1967: Southern Illinois Corridor Study
- 1972: Draft Environmental Impact Statement, Columbia to Carbondale
- 1976: Illinois Supplement Freeway System and State Highway Needs Study
- 1986: Economic Development Strategy for Southwestern Illinois
- 1995: Proposed Southwest Illinois Tollway (SWIFT): Feasibility Study
- 1996: Proposed Southwest Illinois Tollway (SWIFT)
- 2019: Southwest Illinois Connector Highway Task Force Report

The 1972 Draft Environmental Impact Statement identified a preferred 100-mile corridor (the Pinckneyville Corridor) that followed the IL 3 corridor from north of Columbia south and southeasterly to Red Bud and generally following the current IL 154 corridor from Red Bud to Pinckneyville, and south from Pinckneyville to Carbondale and Marion. This corridor was selected because it is centrally located in the region, serving most of the larger communities in the area. This corridor provided direct access to St. Louis and two Mississippi River crossings, equally serving people on the eastern and western boundaries of the study area. The Pinckneyville Corridor would serve more people and industries than the four other alternative corridors evaluated.

Improvements to IL 3 and within the preferred corridor were proposed to increase capacity, address roadway deficiencies, including operational speeds, vertical and horizontal alignments, shoulder widths, and drainage. Improvements were also proposed to accommodate projected traffic volumes and improve safety.

Sections of roadways within the preferred corridor have been constructed and improved over the years, including Interstate 255, the expansion of IL 3 from Interstate 64 to south of Waterloo, and expansion of IL 13 from north of Murphysboro to Carbondale. Improvements to IL 13/127 from Pinckneyville to north of Murphysboro advanced through Phase I project development, including preparation of an Environmental Assessment that resulted in a Finding of No Significant Impact in 2008. A one-mile section of IL 13/127 north of Murphysboro and replacement of a bridge over Beaucoup Creek were constructed as projects with independent utility and logical termini. Due to statewide funding constraints and project prioritization, funding has not been secured to complete proposed improvements to IL 13/127 or advance previous studies that evaluated improvements within the Waterloo to Pinckneyville sections of the corridor.

The 2019 Southwest Illinois Connector Highway Task Force Report was prepared by a Four County Coalition organized to advance transportation improvements along IL 3, IL 154, and IL 13/127.

Representatives from Monroe County, Randolph County, Perry County, and Jackson County have championed the need for improvements to address safety, roadway deficiencies, and areas of congestion within the study area. There has been widespread support for roadway improvements, with resolutions in support of a project passed by the towns and villages along the route, as well as businesses, healthcare institutions, elected officials, and citizens. While the Task Force Report identified a preferred alternative, a detailed environmental planning and review process is required to comply with the requirements of the National Environmental Policy Act (NEPA).

The Southwest Connector PEL study was initiated by IDOT in 2025 after receiving funding through a Congressionally Directed Spending request made by the Four County Coalition. The Southwest Connector PEL study is being conducted to accelerate and streamline project delivery by allowing planning-level analyses to directly inform the NEPA environmental review process.

1.2 Project Description

IDOT is conducting this PEL study to evaluate existing and future transportation needs along the SWC corridor and identify a range of feasible improvements that have independent utility and logical termini that can be implemented through a strategically phased program. A PEL study is a collaborative approach to transportation decision-making that allows for consideration of environmental issues, community context, and economic and development goals early in the planning process. This integrated approach allows for the results of the PEL study to be carried forward into subsequent project development and environmental review processes. The PEL process can minimize duplication of effort, promote environmental stewardship, encourage meaningful engagement with the public and other stakeholders, and reduce delays in project implementation.

The following planning products and analyses will be developed as part of this study and adopted or incorporated by reference into the subsequent National Environmental Policy Act (NEPA) review, per 23 USC 168(c)(1) and 168(c)(2):

- Planning products
 - The Purpose and Need for the proposed action(s);
 - Preliminary screening of alternatives;
 - A basic description of the environmental setting;
 - A decision with respect to methodologies for planning analysis;
- Analyses
 - Travel demand;
 - Crash data and Predictive Safety design modeling;
 - Multi-modal transportation alternatives;
 - Regional development and growth;
 - Local land use, growth management, and development;
 - Population and employment;
 - Natural and built environmental conditions;
 - Environmental resources and environmentally sensitive areas;

- Potential environmental effects, including the identification of resources of concern and potential direct effects on those resources; and
- Potential mitigation needs for a proposed project.

The Purpose and Need has been developed based on available data, input from stakeholders, a Community Advisory Group (CAG), and the public. A preliminary range of initial improvement alternatives will be developed and evaluated through a screening process to advance potential feasible improvements that best support the project's goals. The screening process will evaluate an alternative's ability to meet the Purpose and Need and will estimate project costs, consider constructability, and whether it can avoid or minimize environmental impacts. Alternatives will be evaluated against defined criteria and presented to project stakeholders, the CAG, and the public for input. The result of the alternatives evaluation, along with consideration of public and stakeholder input, will determine which alternatives should be eliminated due to a fatal flaw or failure to meet the Purpose and Need, and which alternatives are recommended to be carried forward into subsequent project development and NEPA phases.

The SWC PEL Study follows FHWA PEL guidance regarding the integration of transportation planning and the NEPA process, which encourages the use of planning studies to provide information for incorporation into future NEPA documents (23 Code of Federal Regulations [CFR] 450). This study is following IDOT's PEL process outlined in IDOT's Bureau of Design and Environment (BDE) Manual Section 11-7.04(b).

1.3 Description of the Project Study Area

Transportation Setting

IL 3 from Waterloo to Red Bud is classified as an Other Principal Arterial. This section of IL 3 is on the National Highway System (NHS) and is a part of the Great River Road Scenic Byway - National Scenic Byway. Pavement rating conditions are good in this section of IL 3. The speed limit is primarily 55 miles per hour (mph) and reduces to 25-45 mph within municipal limits. The 2025 Annual Average Daily Traffic (AADT) varies from 6,300 to 9,850 vehicles per day (vpd). The two-lane road experiences platooning as a result of freight trucks, slow-moving farm equipment during planting and harvesting seasons, vertical and horizontal curves with reduced speeds and limited sight distances, and higher traffic volumes.

IL 154 from Red Bud to Pinckneyville is classified as a Minor Arterial roadway. The speed limit is primarily 55 mph and reduces to 25-45 mph within municipal limits. The AADT varies from 1,600 to 7,100 vpd. Pavement condition ratings are poor from Red Bud to Sparta and fair from Randolph County line to Pinckneyville.

The cross streets along the IL 3 and IL 154 corridors include state, county, township, municipal, and private roads.

IDOT's data-driven method for ranking intersections and road segments by crash frequency and severity identified five intersections in or near Sparta as High on the Safety Rating Index because of the number of fatal and incapacitating injury crashes. Two of the five intersections are located at

Eden, just east of Sparta, and one is at the Randolph/Perry County line. Roadway segments ranked as High Safety Tiers include IL 3 in Red Bud, IL 154 near the Kaskaskia Regional Port District and Kaskaskia River crossing, IL 154 through Sparta and Eden, and IL 154 from west of Porcupine Road to approximately New Church Road, west of Pinckneyville.

The Kaskaskia Regional Port District, which includes all of Randolph and Monroe counties among other adjacent areas, is a designated Marine Highway (M-3) on the U.S. Marine Highway Program and is the 11th largest inland port in the country. Kaskaskia Regional Port District Dock 2, located between Red Bud and Baldwin with direct access to the study corridor via IL 154, currently handles 80-100 trucks per day, which is expected to increase with new tenants, products, and expansion that is currently under construction. The Port District expects to increase truck traffic by approximately 20 trucks per day, or 20 percent for gypsum throughput. In addition, The Port District projects an annual increase of throughput of 200,000 tons of fertilizer and a potential of up to 2 million tons of steel, an increase of 10 percent and 30 percent, respectively. A second entrance road from IL 154 was recently completed to safely accommodate an increase in truck traffic. In addition, a second dock is proposed and a new intermodal rail line expansion is in progress to accommodate increased operations and freight movement.

The Kaskaskia River and the Canadian National rail lines that cross the study corridor are a part of the U.S. DOT National Multimodal Freight Network. Oil, gas, coal, and metal manufacturing industries generate large amounts of freight tonnage in IDOT Districts 8 and 9 and approximately 10%-15% of the traffic on the study area routes are trucks. IL 3 and IL 154 provide access to a growing number of industrial developments, as well as mines, agricultural production, freight facilities, and rail lines.

There are limited pedestrian and no designated bicycle facilities within the study corridor. There are some pedestrian sidewalks within the urban areas, some of which are not compliant with current Public Right of Way Accessibility Guidelines. The 2025 IDOT Bicycle Level of Service Maps classify state routes as “Most Suitable for Bicycling”, “Caution Advised”, or “Not Recommended”. The majority of IL 3 and IL 154 is classified as Not Recommended for bicyclists, with small sections classified as suitable for bicycling within Red Bud and Sparta. Strava heat maps from summer 2025 reflect little to no usage along rural sections of IL 3 and IL 154, with higher usage within Red Bud and Sparta. There are sections of light usage on IL 3 between J Drive and Doyle Road west of Red Bud, and at the Kaskaskia river crossing. Bicycle and pedestrian facilities will be evaluated where warranted during development of a range of preliminary alternatives.

Portions of the PEL study area are served by two public transportation providers. South Central Transit provides westbound service from Carbondale through Pinckneyville continuing toward Sparta, offering direct access to Pinckneyville Community Hospital and the Du Quoin Amtrak station. The Monroe-Randolph Transit District offers demand-response service throughout Monroe and Randolph Counties, including access to the Sparta Community Airport and approved Medicaid medical trips at no cost to riders. As part of an initiative to provide mobility options within an interconnected transportation network, IDOT’s Office of Intermodal Project Implementation is working with these and other transit providers to streamline connected services to assist with

cross-county trips throughout Southern Illinois. While current transit service scheduled as demand response, service plan alternatives are under consideration by Monroe-Randolph Transit District that could implement regional flex routes, shared ride taxi service, or fixed route circulators. High transit demand areas include central and northwest Sparta and areas near the hospital in Red Bud.

Socioeconomic Setting

Population trends in the PEL study area have been generally unchanged, with a slight decline in two of the three study area counties between 2020 and 2023 as shown in **Table 1**. In total, population for the counties within the study area declined approximately 0.17 percent between 2020 and 2023 (U.S. Census Bureau 2020, 2023). According to the Illinois Department of Health’s 2023 Population Projections, population is projected to increase in two of the three study area counties by 2035, with a total projected population increase in the study counties of 3.85 percent as shown in **Table 2**. The ten-year projected employment change between 2022 and 2032 for the study area Economic Development Regions is approximately 1.4 percent (Illinois Department of Employment Security 2022).

Table 1. Population Trends by County

	Monroe County	Randolph County	Perry County	Study Area Counties (Total)
2020 Census	34,962	30,163	20,945	86,070
2023 American Community Survey	34,969	30,142	20,812	85,923
Growth/(Decline)	0.09%	(0.03%)	(0.05%)	(0.17%)

Source: U.S. Census Bureau 2020, American Community Survey, 2018-2023 5-year estimates

Table 2. Projected Population Trends by County

	Monroe County	Randolph County	Perry County	Study Area Counties (Total)
Projected Population 2035	38,219	29,167	21,852	89,238
Growth/(Decline)	9.32%	(3.30%)	4.33%	3.85%

Source: Illinois Department of Health Population projections 2023

Populations that are more vulnerable to safety concerns, mobility, and access to essential services and employment centers include elderly, unemployed, and low-income populations. Community impacts will be considered in the development of the range of preliminary alternatives that would provide a roadway that promotes efficient access to essential services such as jobs, healthcare, education, and community resources, and supports economic development and growth in Southern Illinois.

Within the study area counties, 19.7 percent of the population is 65 or older, slightly higher than the State’s 65 plus population, which is 17.5 percent. This population may have an increased frequency of accessing specialty medical services and rely on family members or transit providers

to access healthcare. Monroe Randolph Transit District indicates that its riders are most likely to use the service to access healthcare and the following types of destinations:

- Social service agencies
- Big box stores
- Large healthcare facilities
- Low Income Housing complexes
- Large employers
- Grocery stores
- Mobile home parks

The area east of Sparta within Randolph County has the highest unemployment rate, at 16.1 percent. In comparison, the unemployment rate across the state is 4.7 percent. The Baldwin and Sparta areas have the highest percentage of people below poverty level, which are between 19.2 percent and 18.2 percent, respectively. Approximately 11.6 percent of the state population is below poverty level. The percentage of low-income households that are at 200 percent of the poverty level range from 13.5 percent near Waterloo to 38.5 percent in Sparta. Monroe County and Randolph County have less jobs than residents, with approximately 69% of residents leaving the area for work. Connections to employment at industrial hubs, employment centers, and high-growth areas for unemployed or economically disadvantaged individuals will be considered during the development of a range of alternatives.

There are areas within the PEL study area with higher concentrations of households with no vehicles that rely on transit, most notably in Red Bud and Sparta, with households without access to a vehicle ranging from 7.9 percent in Red Bud to 14.0 percent in Sparta (ACS 2023). Coordination with Monroe Randolph Transit District will continue to continue consideration of transit services during development of a range of alternatives.

Land Use and Environmental Setting

Land uses within the study area include single and multi-family residential, commercial, institutional, industrial, transportation/utilities/communication, agricultural, open space, water, recreational, and vacant land. The most prominent land use within the study area outside the municipal core areas are agricultural. There are numerous solar farms planned and in development in Monroe, Randolph, and Perry counties, including a 2,711-acre facility northeast of Sparta.

The PEL study area is rich in sensitive environmental and community resources, including streams, lakes, wetlands, and numerous protected lands. The corridor crosses the Kaskaskia River, a navigable water, and there are extensive wetlands. The study area includes state land at state parks, including the World Shooting and Recreational Complex, Kaskaskia River State Fish and Wildlife Area, Baldwin Lake State Fish and Wildlife Area, and Pyramid State Park. These special lands are protected for their recreational qualities and for their environmental or historical importance and are also valued deeply by residents and other stakeholders. In addition, the study area has experienced extensive mining activities both at surface and below surface.

Primary industries within the study area include:

- Machinist and fabrication companies
- Mining, extraction, and processing of raw materials
- Warehousing and distribution for food products
- Chemical processing
- Construction companies
- Industrial suppliers
- Agriculture

These industries rely heavily on transportation infrastructure. Enterprise zones and Transportation Increment Financing districts have been established in Monroe and Randolph counties, Sparta, and Pinckneyville to provide funding mechanisms for public infrastructure and support business development. The Southwestern Illinois Development Authority (SWIDA) is a regional economic development authority that services much of the PEL study area. SWIDA identifies IL 3 from Waterloo to Red Bud as a critically important corridor for economic development in the region.

Tourism is growing in the PEL study area as interest in the environmental and community resources grows. Discover Downstate Illinois reports an increase in the economic impact of domestic travel in 2023, with a 2.6 percent increase in Monroe County, an 8.8 percent increase in Perry County, and a 4.4 percent increase in Randolph County. As a result of economic development and marketing efforts to draw visitors increase, the Illinois Department of Commerce and Economic Opportunity has provided more than \$9 million in tourism grants to Southern Illinois since 2023. The World Shooting and Recreational Complex is owned and managed by the Illinois Department of Natural Resources and hosts the annual World Trapshooting Championships. In 2024, this event drew over 3,000 competitors from across the globe. The competitors, visitors, and spectators were accommodated in part by the complex's 1,000 camping sites and 4,000 parking spaces.

1.4 Stakeholder and Public Outreach

As part of the ongoing stakeholder involvement efforts that will be scheduled throughout the SWC PEL Study process, an initial public informational meeting was conducted online from July 28, 2025 through August 11, 2025. Stakeholders were encouraged to provide input on issues within the SWC corridor and were invited to help define the area's needs by completing an online survey. A total of 3,386 users visited the online meeting and 969 visits involved viewing two or more pages or taking action like completing a form or survey. Input was received from 78 webpage forms, map, or email responses, and through 398 survey submissions. Survey responses identified the St. Louis Metro Area as the top typical destination for those using the corridor, and the typical time periods for travel in the corridor were during the afternoon, midday, and morning commutes. Approximately 33 percent of respondents travel the corridor daily. The top five desired improvements include added travel lanes, bypasses around a community or multiple communities, a roadway that allows for higher traffic speeds, more passing opportunities, and access control. Two additional public information meetings are planned with the intent of conducting meaningful public involvement during the PEL Study process.

A CAG has been established to help engage stakeholders. Membership in the CAG includes 36 representatives from local governments, community groups, special interest groups, and residents. A series of CAG meetings will be held strategically during the SWC PEL Study. Two CAG meetings have been held to date. The first CAG meeting was held on June 24, 2025, to introduce the project, discuss goals and objectives, and obtain input on the needs in the corridor. Roadway improvements that support economic development and growth was by and large the most frequent need mentioned by CAG members. The second CAG meeting was held on October 2, 2025, to review a draft problem statement prepared based on input from the first CAG meeting and a preliminary draft purpose and need statement. Discussion was held to obtain ideas about potential alternatives to be evaluated and to explain the screening process. Based on the comments received, the following issues and concerns were identified by the CAG and members of public as areas the communities would like to see addressed:

- Safety improvements for the traveling public
- Address horizontal and vertical curves that limit sight distances
- Improved travel time and travel time reliability within the communities along the corridor to support access to healthcare, jobs, education, recreation areas, and essential services
- Safe pedestrian and bicycle facilities
- Expanded transit options
- Reduction in delays related to truck traffic, farm equipment, school buses, and at intersections through towns
- Safe routes for trucks
- Adequate routes to support freight traffic
- Addressed bottlenecks caused by freight turning movements at constrained intersections and low vertical clearance restrictions
- Infrastructure that supports economic opportunities and growth throughout the corridor
- Avoidance or minimization of impacts to natural resources

Input from the public, CAG, and other stakeholders are reflected in this Purpose and Need. Public engagement materials are posted to the SWC PEL Study website at southwestconnector.com.

2 Purpose and Need for the Improvements

The purpose and need statement articulates the purpose for the project by defining the transportation problems (needs) to be addressed and presenting the desired outcomes (purposes) that address the needs for the project. The purpose and need statement is used to develop and evaluate a range of potential solutions, otherwise known as alternatives. Alternatives that do not meet the project's purpose and need will be deemed unreasonable and eliminated from detailed study. All reasonable alternatives will be carried forward into subsequent Phase I and NEPA processes.

The purpose and need statement in an environmental document presents why the proposed action, with its inherent costs and environmental impacts, is being pursued. Where properly described, it also limits the range of alternatives that may be considered reasonable, prudent, and practicable in compliance with Section 4(f), the Executive Orders on Wetlands and Floodplains, and the Section 404(b)(1) guidelines. The purpose and need statement also indicates the problems that will result where a project is not implemented.

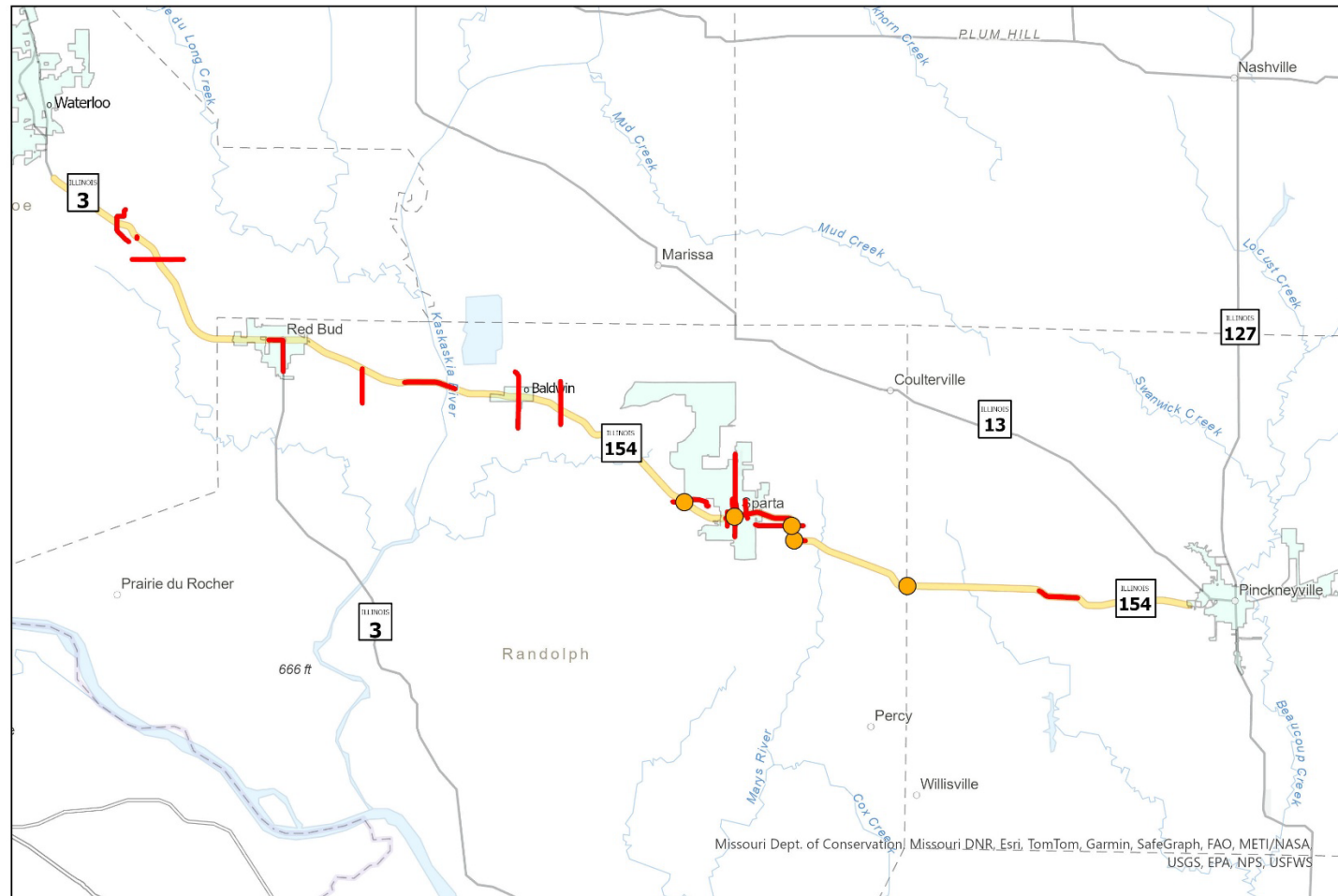
2.1 Project Needs

Transportation system improvements are needed in the PEL study area to improve safety, address deficient roadway and intersection geometry, alleviate current and projected congestion and freight bottlenecks, and improve freight mobility. The project needs are described in more detail below.

2.1.1 IMPROVE SAFETY

Safety Tier Assessment

IDOT uses quantitative safety data to rank intersections and road segments by crash frequency and severity to identify locations with potential for safety improvements that merit further analysis. IDOT's Safer Road Index and Safety Tiers provide an annual ranking (e.g., High, Medium, Low, Minimal) that is used to prioritize locations for funding based on safety performance and opportunity for improvement. The designation provides the ability to compare relative safety performance between similar roadway sections. The IDOT 2024 Safety Tier Assessment classified multiple areas of the corridor as High on the Safety Rating Index related to the number of fatal and incapacitating injury crashes. The High safety tier areas include 5 roadway segments, 5 intersections, and 11 intersecting segments (see **Figure 2**).



- PEL Study Limits
- City Boundary
- Safety Tier Intersection - High
- Safety Tier Segment - High

IDOT Safety Tier Assessment (2024)
SOUTHWEST CONNECTOR PEL STUDY

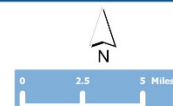


Figure 2. IDOT Safety Tier Assessment – High Safety Tier Locations

Increased number of crashes in 2017-2024 compared to 2012-2019

This corridor has long faced challenges related to roadway safety and design deficiencies. The Southwest Illinois Connector Highway Task Force was created in 2018 to study the feasibility and cost of roadway improvements. The Task Force's 2019 report evaluated 2012-2019 crash data along a 70-mile corridor that includes the 48-mile PEL study area. Findings were largely consistent with the crash data from 2017 to 2024. Crash data from 2017 to 2024 was compared to the 2019 Task Force Report to identify persistent trends or inconsistencies in the PEL study area. Crash trends were largely consistent across both data sets, with similar rates of fatal and severe injuries. Fixed objects, angle, and front to front crashes were the most frequent severe crash types and indicate ongoing safety challenges with serious crash outcomes. Across both data sets, the most frequently occurring crash types, except for those involving animal collisions, are those that are generally attributable to narrow rural highways with deficient horizontal curves, lack of shoulders, and a lack of turn lanes at intersections. The Crash Analysis Report is provided in **Appendix A**.

Crash Rates

The segment total and fatal / serious injury crash rates were calculated along the project corridor using data from 2017 to 2024 to compare crash incidence using a uniform metric and determine locations where crash incidence is high relative to the vehicle miles traveled (VMT) on a segment. Segments were identified and were typically bound by municipal boundaries and areas where roadways, environment, or speed characteristics changed significantly, i.e., transitioning between rural and urban segments. Total and fatal/serious injury crash rates are represented as crashes/hundred million VMT (HMVMT), as shown in **Table 3**.

The highest total rural crash rates are on IL 154 between Sparta/Eden and Pinckneyville, which correspond to the highest fatal/serious injury crash rates. The rural segment between Baldwin and Sparta also has elevated total crash rates and fatal and serious injury crash rates. Urban segments of IL 154 in Sparta has the highest total crash rate, followed by elevated crash rates on IL 154 east of Sparta in Eden. The highest fatal/serious injury crash rate is in Baldwin. While the total crash rate in Baldwin is low, the crashes that do occur typically result in higher injury severity.

Table 3: Segment Crash Rates

Segment Crash Rates (2017 – 2024)	Total Crash Rate (crashes/HMVMT)	Fatal/Serious Injury Crash Rate (crashes/HMVMT)
Rural Segments		
Waterloo to Red Bud (IL 3)	139.33	6.86
Red Bud to Baldwin (IL 154)	109.46	11.23
Baldwin to Sparta (IL 154)	205.45	18.05
East of Sparta to Randolph/Perry County Line (IL 154)	327.97	24.85
Randolph/Perry County Line to West of Pinckneyville (IL 154)	276.57	27.97
Urban/Urban Fringe Segments		
Red Bud (IL 3 and IL 154)	228.59	13.45
Baldwin (IL 154)	147.03	25.35
Sparta (IL 154)	501.74	12.14
East of Sparta/Eden (IL 154)	356.45	22.63
West of Pinckneyville (IL 154)	304.00	0.00

Segments with a high total number of truck-involved crash rates and truck-involved fatal and serious injury crashes mirror the overall crash rate patterns. IDOT’s 2026 Competitive Freight Program’s Priority Freight Network Map indicates that IL 154 from the Randolph/Perry County line to Pinckneyville has 20 truck-involved crashes with severe injury or fatality per HMVMT, which is scored as high for a rural area. Truck-involved fatal and severe injury crash rates on IL 154 from Red Bud to the Randolph/Perry County line is 9 crashes/HMVMT, which is scored on the Priority Freight Network Map as medium for a rural area. In Sparta, Market Street between IL 154 and IL 13 has a high truck-involved crash rate with 43 fatal and severe injury crashes/HMVMT.

Crash Types

IDOT’s crash data provided shows that 1,186 crashes occurred within the SWC corridor between 2017 and 2024. **Table 4** summarizes the overall crash types that were reported in the analysis period from 2017 to 2024. Animal-related crashes accounted for 36.1 percent of the total crashes and occur throughout the SWC corridor with seasonal increases. Fixed object crashes accounted for 17.9 percent, the second largest number of crashes for the corridor. Front-to-rear crashes were the third largest type of crash at 13.0 percent of crashes, followed by turning crashes at 9.4 percent, and angle crashes at 8.4 percent. The top five crash types account for approximately 85 percent of all crashes within the corridor.

Table 4: Crashes by Crash Type, 2017-2024

Crash Type	Number of Crashes	Percent of Total Crashes (%)
Animal Related	428	36.1
Fixed Object	212	17.9
Front-To-Rear	154	13.0
Turning	111	9.4
Angle	99	8.4
Sideswipe (Same & Opposite Direction)	53	4.9
Overtaken	33	2.8
Parked Motor Vehicle	32	2.7
Other Non-Collision	18	1.5
Other Object	17	1.4
Front-to-Front	14	1.2
Pedal cyclists	4	0.3
Pedestrians	4	0.3
Rear-to-Front	4	0.3
Rear-to-Side	2	0.2
Total	1, 186	100.0

Speed data from *Streetlight* indicate vehicles travel in excess of the posted speed limit throughout the PEL study area, including through several horizontal curves (See Table 6 in **Appendix C**). The majority of drivers in the rural areas travel faster than the posted speed limits. The higher speeds may be contributing to drivers losing control and leaving the roadway or crossing the centerline. The narrow shoulders, lack of separation between travel lanes, and limited roadside safety treatments increase the risk for crashes that result from road departures due to speeding vehicles.

Injuries and Fatalities

Out of the 1,186 crashes between 2017 and 2024, 263 resulted in an injury or fatality, which accounts for approximately 22.1 percent of all crashes. Higher concentrations of fatal and injury crashes occurred near Red Bud, Sparta, Pinckneyville, and various curves and intersections along rural segments. A crash severity heat map is provided in **Figure 3**.

There were 13 fatal crashes within the corridor between 2017 and 2024, as shown in **Figure 4**. The types of crashes that were primarily associated with the fatalities (front to front, overturned, angle, fixed object, and front to rear) indicate that these crashes typically resulted from high-speed

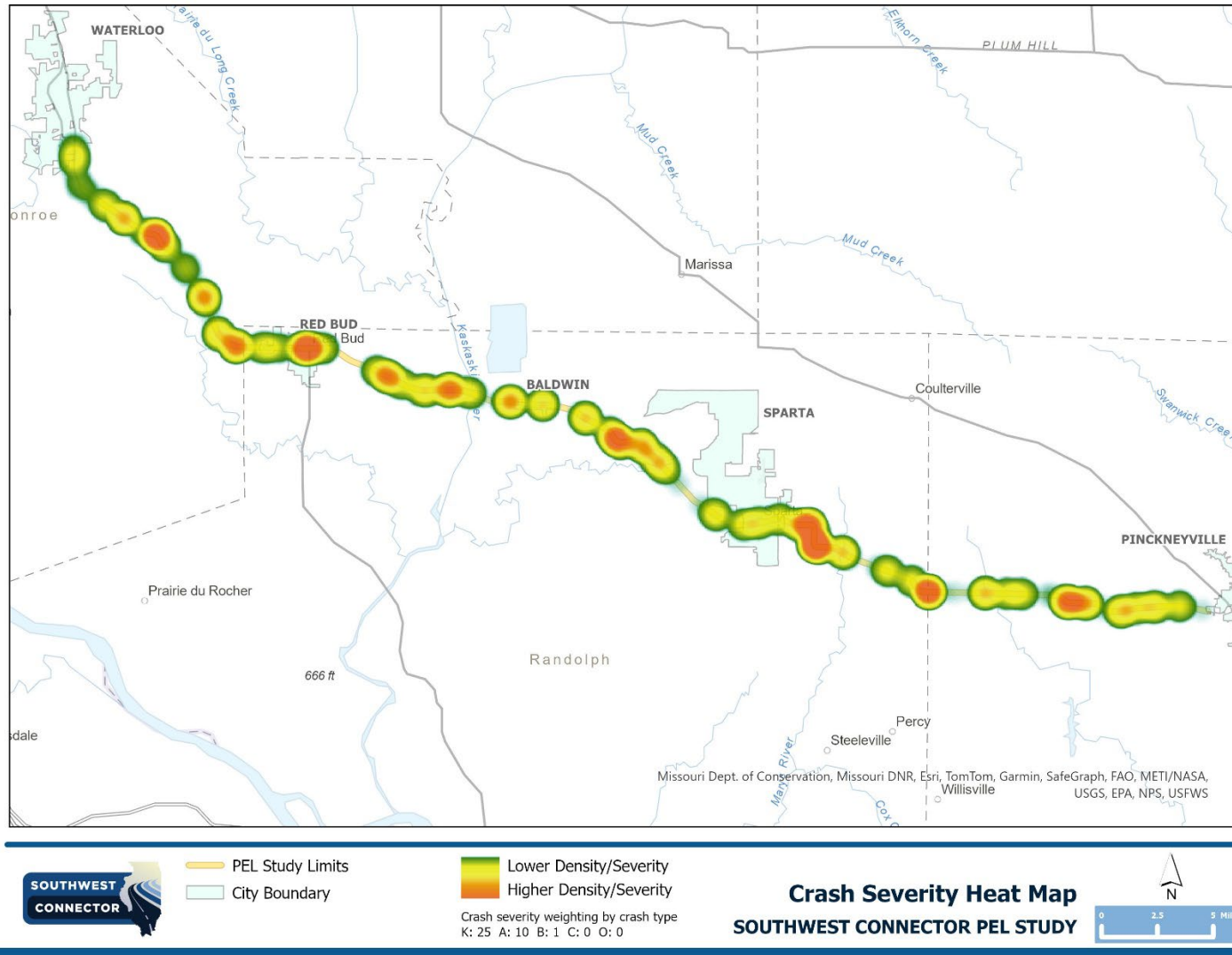
impacts or loss of vehicle control. Animal-related crashes did not result in any fatal crashes. While fatal crashes are largely evenly distributed across the corridor, some concentrations of fatal crashes were observed at the following locations:

- IL 3 between Waterloo and Red Bud, including:
 - The curve between KK Road / Kern Road and Crook Road
 - The intersection of IL 3 and Doyle Road / Old State Route 3
- The two horizontal curves east of Sparta in Eden (IL 154/IL 153 Wye & Eden Rd)
- IL 154 between the Randolph/Perry County Line and West of Pinckneyville, including:
 - The intersection of IL 154 and County Line Road
 - The curve between Porcupine Road and Rose of Sharon Road

During the 8-year time frame reviewed for this PEL study, there were 70 A-injury (incapacitating) crashes. A-Injury crashes represent serious, life-altering events such as skull fractures, chest injuries, or amputations. A-Injury crashes were most prevalent along the rural segments of IL 154 between Baldwin and Sparta, East of Sparta to West of Pinckneyville, and within municipal areas like Baldwin, and East of Sparta/Eden. The A-injury (incapacitating) crash patterns emphasize that fixed objects and angle-related collisions, especially on curves or unsignalized intersections, are critical contributors to crash severity.

There were a total of eight pedestrian / pedal cyclist fatal crashes between 2017 and 2024. Of those, four occurred within municipal limits where the roadway speeds were 40 mph or less.





Note: Crash density are weighted by severity. Areas in orange/red generally indicate locations with one or more fatal crashes, a fatal crash and an incapacitating injury crash, or multiple fatal or incapacitating injury crashes.

Figure 3. Crash Severity Heat Map

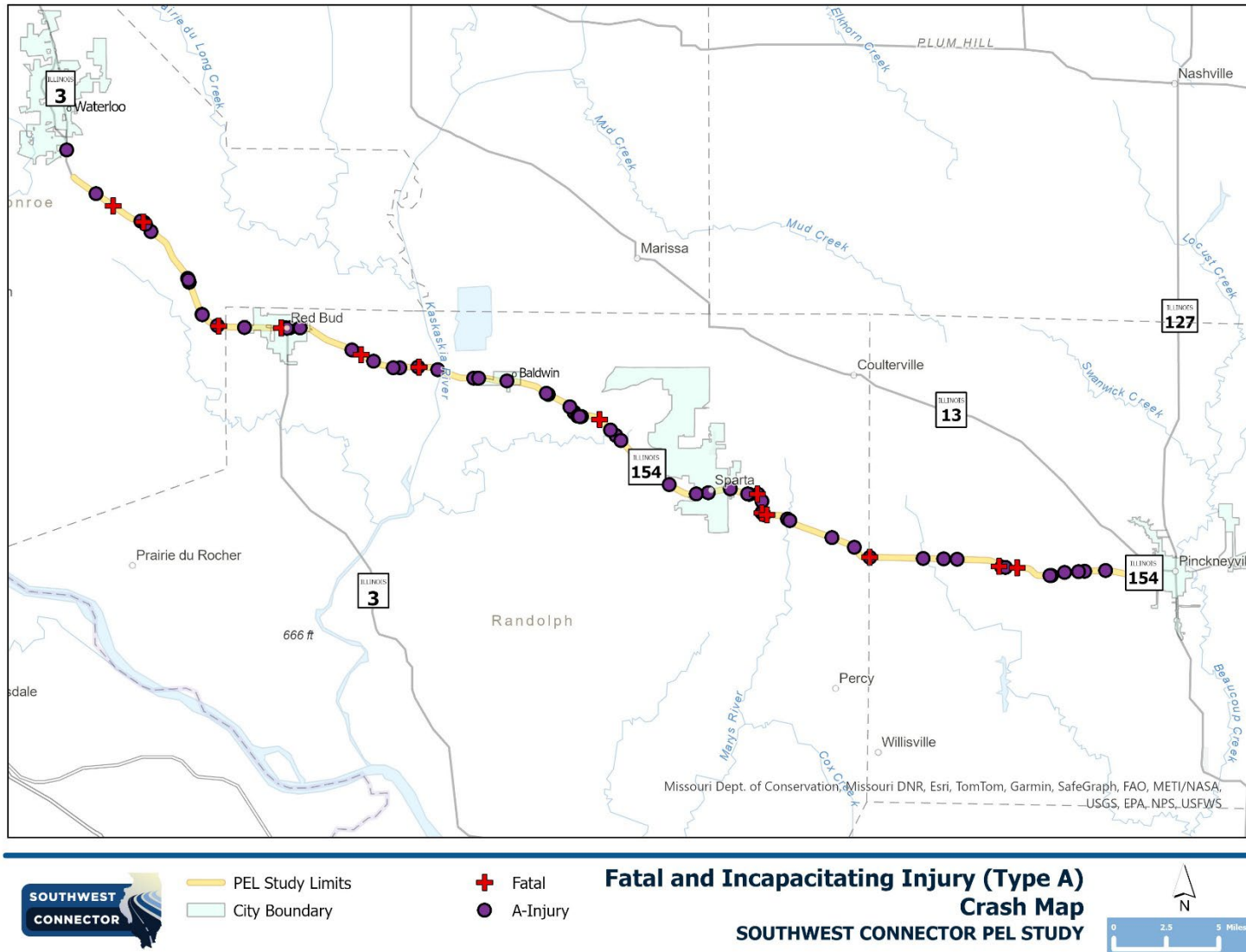


Figure 4. Fatal and Incapacitating Injury Crash Map

2.1.2 ADDRESS ROADWAY DEFICIENCIES

There are numerous roadway deficiencies and characteristics that impact safety and travel within the corridor and contribute to fatal crashes. Deficiencies include horizontal curves that do not meet BDE Manual design criteria requirements, vertical curves with sight distance issues, narrow shoulders, and limited areas to pass. Additionally, there are a relatively high number of side roads and entrances that intersect the study corridor at skewed angles that do not meet design criteria. These deficiencies are discussed below in more detail.

Horizontal and Vertical Roadway Deficiencies

Geometric deficiencies were identified by comparing the horizontal and vertical alignments against the minimum curve radius or length and K-value requirements identified in the BDE Manual. There are 9 horizontal alignment deficiencies and 72 vertical curves within the PEL study area that do not meet the minimum vertical curve length and K-value criteria identified in the BDE Manual. These locations are listed in **Appendix B** and shown on **Figure 5** and **Figure 6**.

Roadway deficiencies in the corridor generally correspond with the High designations in the Safety Tier Assessment as shown in **Figure 2**, and high crash locations. Areas of deficiencies that have a history of severe and fatal crashes include the following locations:

- South of Waterloo on IL 3, an S-curve between Kern Road and Crook Drive is a high crash location with fatalities and severe injuries. Fatal and injury crashes accounted for 30 percent of all crashes.
- Between Griggs Road and the Kaskaskia River near the entrance to the Kaskaskia River Port District, there are vertical curves on IL 154 that result in sight distance issues and severe and fatal crashes. Fatal and injury crashes accounted for 41 percent of all crashes.
- Between Sparta and Pinckneyville along IL 154, there are multiple areas of deficiencies, such as the two 90-degree curves at Eden that have histories of severe and fatal crashes. Fatal and injury crashes accounted for 23 percent of all crashes.
- Horizontal curves between Rose of Sharon Road and New Church Road, west of Pinckneyville correspond

Horizontal curves are areas where a road curves to the left or right. Design parameters for horizontal curves consider design speeds, curve radius and banking, road surface type, climate, terrain, and types of vehicles and traffic. Design parameters are established for safety and comfort when traveling at the posted speed limit. Deficiencies are identified when curves do not meet current design parameters (e.g., curves are sharper or the banking of the curve is less than required by design parameters). Deficient horizontal curve design can result in blind spots and or require sudden driving adjustments or speed reduction.

Vertical curves are areas where a road goes over a hill or through a valley. Design parameters are established for safety and comfort when traveling at the posted speed limit. Vertical curve design parameters include the K-value, which is the horizontal distance needed to produce a 1.0% change in gradient. The K-value represents how flat or sharp a vertical curve is. A higher K-value represents a longer, flatter, gentler curve. A lower K-value represents a shorter, sharper, abrupt curve (e.g., roller coaster). Deficient vertical curve design can result in reduced driving comfort, safety, and visibility.

with a higher frequency of incapacitating and fatal crashes, as shown on **Figure 4**. Injury crashes accounted for 25 percent of all crashes and there was one fatality.

Additionally, the Illinois 2023 District 8 Freight Plan identified improvements to IL 154 from Red Bud to Baldwin, as a Freight Significant Highway Project with a high need for safety and shoulder improvements. This section of IL 154 provides access to Kaskaskia River Port District Dock 2, which is projected to expand services and increase truck traffic by 10 to 30 percent at the Dock. There are 10 vertical deficiencies in this section of IL 154. Within this section of the corridor, there were 78 crashes between 2017 and 2024, two of which resulted in three deaths. Seven crashes resulted in incapacitating injuries.

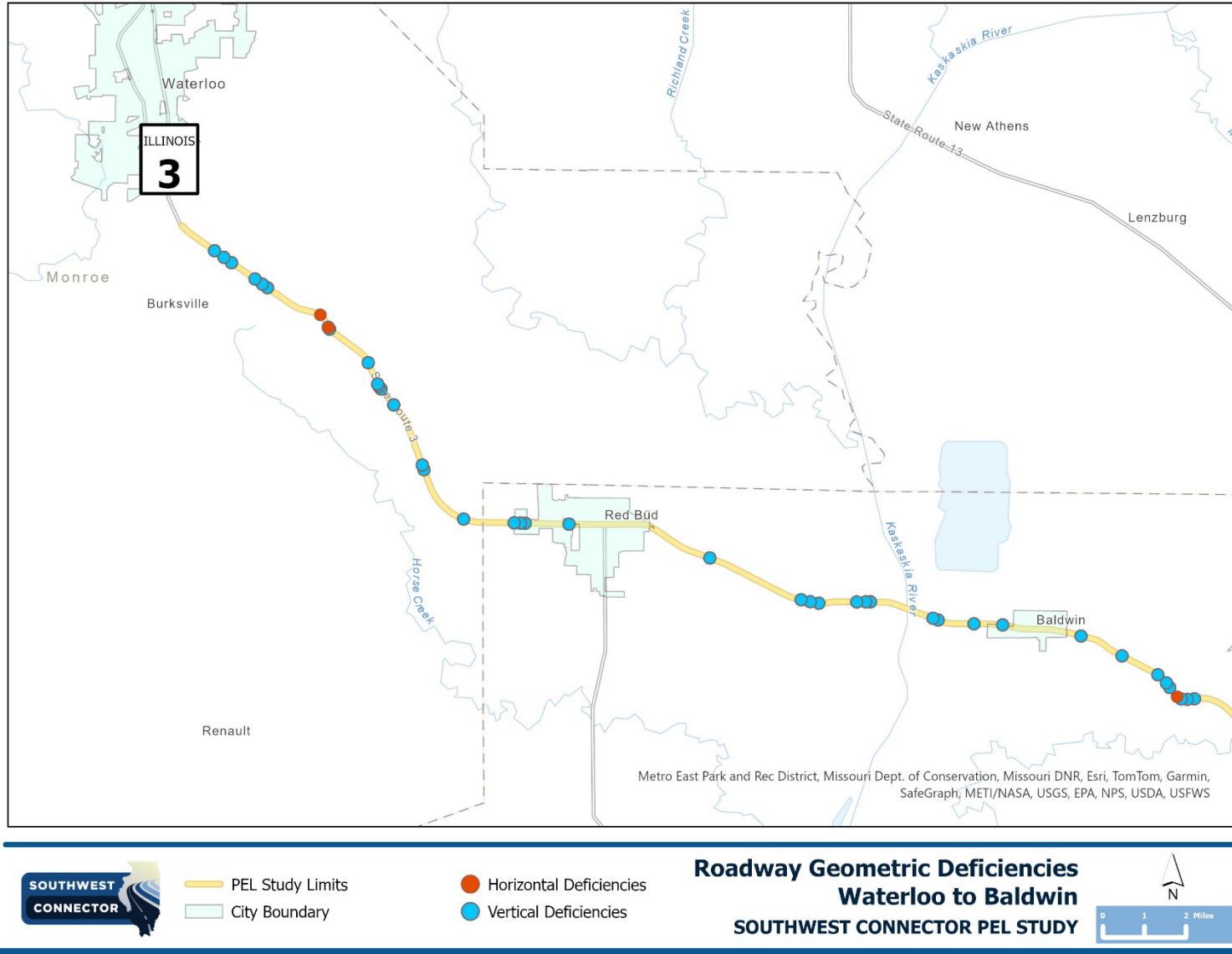


Figure 5. Roadway Geometric Deficiencies - Waterloo to Baldwin

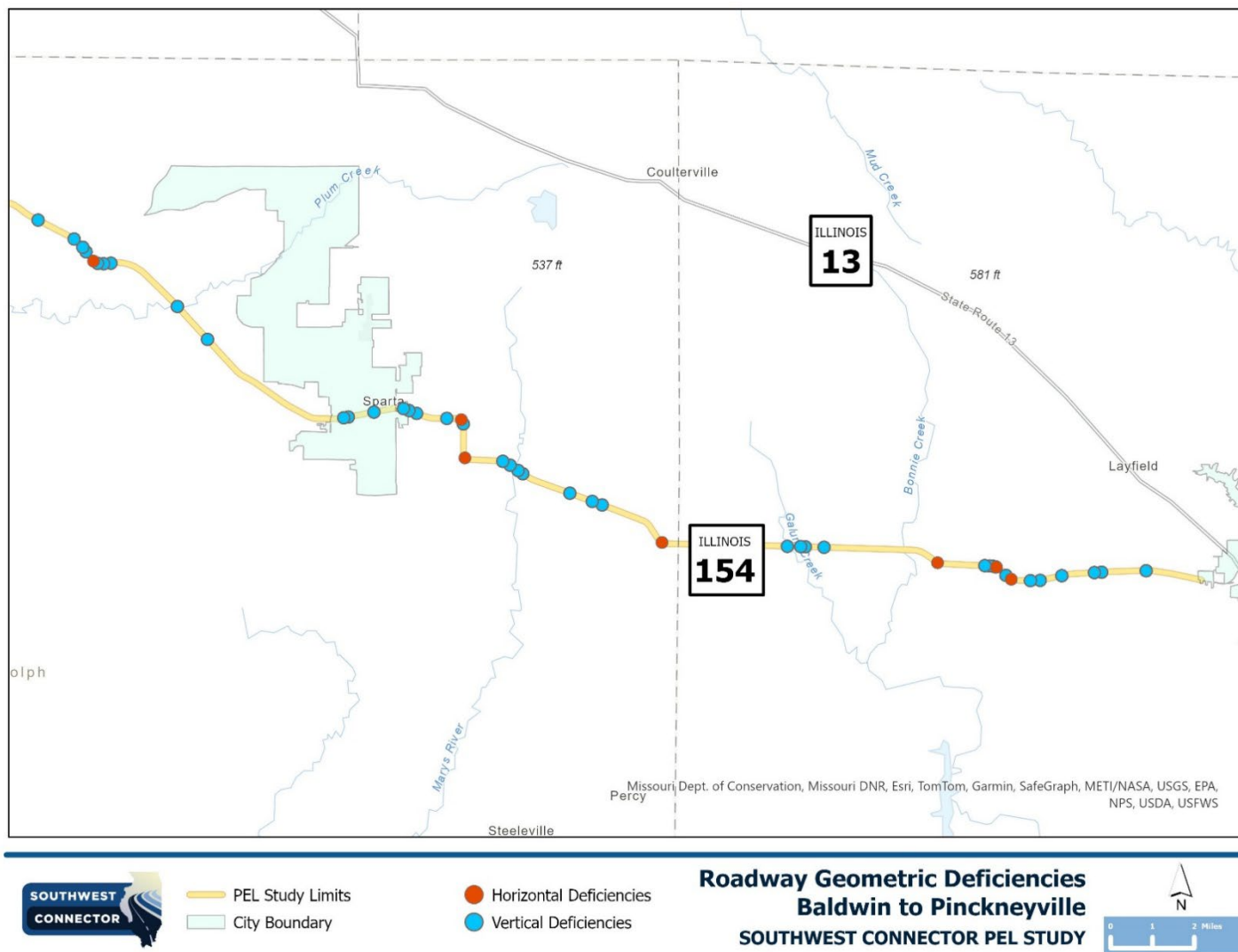


Figure 6. Geometric Deficiencies - Baldwin to Pinckneyville

Limited Passing Zones

There are limited passing zones within the PEL study area. Approximately 53 percent of the 48-mile section between Waterloo and Pinckneyville lacks passing zones. With a single lane, limited areas to pass, and narrow or non-existent shoulders, traffic bottlenecks caused by freight traffic, seasonal agricultural traffic, and school buses are common. The bottlenecks cause safety concerns from platooning and as drivers attempt to pass in no passing zones and in areas with sight distance issues. At a meeting with healthcare and emergency response providers held on November 25, 2025, first responders indicated that slow moving farm equipment on IL 3 can cause significant delays for emergency medical services and other medical transport because there are limited areas to navigate around vehicles in areas with limited sight distances and curves. With relatively high truck percentage averaging 12.3 percent along the corridor, these typically slower accelerating and moving vehicles can cause passenger vehicle drivers to make poor decisions to overtake a slower moving vehicle. There were 51 crashes involving tractor-trailer vehicles between 2017 and 2024.

Side Roads and Entrances

In addition to side roads, existing entrances (commercial, private, and field) that intersect the main corridor alignment present traffic conflict points. There are 753 entrances along the corridor, which is approximately 16 turnouts per mile along the corridor. There are more side entrances between Waterloo and Red Bud (19 turnouts per mile) and Houston and County Line Road (18 turnouts per mile) than in other sections of the corridor. The majority of these locations have no turn lanes / deceleration lanes along the corridor, which can cause following drivers to make poor decisions to pass or follow too closely resulting in sideswipe or front to rear crashes.

Along the project corridor, some cross streets tie into the main route on a skewed alignment creating sight distance issues. Per BDE Manual Section 36-1.05(a), the preferred angle of intersection should be within 15 degrees (75-degree angle) perpendicular. Of the 122 side roads, 36 (30 percent) do not meet the preferred angle of intersection, which can cause safety issues from restricted sightlines, increased conflict area, and sharper turns.

Additional deficiencies noted along the corridor include clearance at railroad crossings and narrow viaducts.

2.1.3 REDUCE CONGESTION

Annual Average Daily Traffic (AADT) along the Southwest Connector range from 1,400 to 9,900 vehicles per day, with higher volumes in Red Bud, Sparta, Pinckneyville, and between Red Bud and Waterloo, and lower volumes in rural areas (IDOT 2025). AADT weighted by length of segment is shown in **Table 5**. Model outputs from the Illinois Statewide Travel Demand Model were used for the purpose of establishing growth rates for 2030 and 2050 traffic projections following methodology outlined in the Existing and No- Build Traffic Operations Report provided as **Appendix C**.

Table 5. Existing AADT and Future Growth

Route	Segment	Growth Rate	Wght. Avg. 2025 AADT*	2030 AADT	2050 AADT
IL 3	South Limits of Waterloo to Kaskaskia Road	0.4%	9,800	10,000	10,850
IL 3	Kaskaskia Road to West Limits of Red Bud	0.4%	6,650	6,800	7,350
IL 3/IL 154	Within Red Bud	0.4%	6,500	6,650	7,200
IL 154	East Limits of Red Bud to West Limits of Baldwin	0.4%	3,550	3,600	3,900
IL 154	Within Baldwin	0.3%	3,300	3,350	3,550
IL 154	East Limits of Baldwin to West Limits of Sparta	0.3%	2,850	2,900	3,050
IL 154	Within Sparta	0.3%	5,450	5,550	5,850
IL 154	East Limits of Sparta to IL 153 Intersection	0.3%	5,050	5,150	5,450
IL 154	IL 153 Intersection to Randolph/Perry County Line	0.3%	2,900	2,950	3,150
IL 154	Randolph/Perry County Line to East Limits at Oxbow Road	0.3%	2,100	2,150	2,250

*Average of AADTs along segment weighted by their length, used in further segment analysis.

Level of service (LOS) was considered to measure traffic flow and maneuverability for the existing condition, 2030 No-Build, and 2050 No-Build. LOS is evaluated on a scale from A to F, where A represents the best range of operating conditions with minimal traffic interruption and low delay, and F represents poor operating conditions with significant congestion or a volume-to-capacity ratio that exceeds 1.0. Detailed capacity analysis information for intersections and highway segments is provided in **Appendix C**.

Capacity analyses were completed for the PM Peak Hour at intersections where the mainline is interrupted by a stop, yield, or signal control. Capacity analyses for the PM Peak Hour were completed for the following intersections:

- IL 3 / IL 154 at IL 159 in Red Bud (All-Way Stop), PM Peak Hour 4:30 to 5:30 PM
- IL 154 at IL 4 in Sparta (All-Way Stop), PM Peak Hour 3:00 to 4:00 PM

Under existing PM peak hour conditions, the all-way stop controlled intersection of IL 3/IL 154 at IL 159 (Main Street) in Red Bud operates at an overall LOS C, with moderate delays and balanced operations on all approaches. By 2030 under No-Build conditions, increased traffic volumes result in a degradation of operations to LOS D, with noticeable increases in delay on the eastbound and northbound approaches. Under 2050 No-Build condition, continued traffic growth results in a substantial increase in delay and an overall LOS F, as shown in **Table 6**. This intersection will have excessive delays and queueing observed on all approaches, particularly along the eastbound IL 3 approach, which experiences the highest delays and queue lengths. The No-Build condition will be insufficient to accommodate future traffic demand.

The IDOT District 8 2023 Freight Plan also identified the intersection of IL 3/IL 159/IL 154 as a High Freight Need due to the truck bottleneck that is controlled by a four-way stop. While not a factor directly used to measure LOS, the geometry at this intersection limits larger vehicles and results in reduced travel time reliability, with a Truck Travel Time Index of 2.73 (IDOT Priority Freight Network Map). The Truck Travel Time Index indicates areas of congestion and inconsistent travel times, which impacts freight service and deliveries. As noted in the City of Red Bud 2026 Comprehensive Plan Update, smaller vehicles frequently have to back up to provide space for large trucks to be able to turn at the intersection. This further degrades the operation of the intersection and consequently introduces a safety concern, as 6 of the 20 crashes that occurred at this intersection between 2017 and 2024 involved tractor-trailers.

Table 6. Summary of Existing and 2050 No-Build Intersection Capacity Results

Intersection	Control Type	Data Year (Source)	Overall LOS	Avg. Delay (s/veh)	No Build Projected 2050 LOS	Avg. Delay (s/veh)	Signal Warrants Met?
IL 3/IL 154 at IL 159 (Main Street), Red Bud	All-Way Stop	2025 (IDOT D8)	C	23.4	F	65.0	Yes
IL 154 at IL 4 (Market Street), Sparta	All-Way Stop	2025 (IDOT D8)	C	16.7	C	24.2	Yes

The intersection of IL 154 and IL 4 in Sparta is projected to have increases in delay under the 2050 No-Build condition, with southbound approach projected to operate at LOS E, as shown in **Table 7**.

Table 7. Existing and 2050 No-Build Approach Level of Service

Intersection	IL 3/IL 154 at IL 159		IL 154 at IL 4	
Year	2025	2050	2025	2050
EB LOS	D	F	C	C
WB LOS	C	E	B	C
NB LOS	D	F	B	C
SB LOS	C	E	C	E

For two-lane highway segments, LOS is defined in the Highway Capacity Manual based on traffic flow characteristics, platooning, passing opportunities, and operating speeds. Capacity analyses to evaluate corridor-level operations under existing and 2050 No-Build conditions determined that IL 3 From Market Street (Waterloo) to the west limits of Red Bud currently operates at LOS C, shown in **Table 8**. Under the 2050 No-Build condition, IL 3 from Market Street to Kaskaskia Road is projected to operate at LOS D. At this LOS, travelers would experience a significant increase in platooning, high passing demand with passing capacity that approaches zero, noticeable time spent following, and substantial delays.

Table 8. Existing and 2050 No-Build Two-Lane Highway Segment Level of Service

Segment	Scenario	Follower Density (followers/mi)	LOS
IL 3 from Market Street (S. Limits of Waterloo) to Kaskaskia Road	Existing	7.4	C
	No-Build	8.8	D
IL 3 from Kaskaskia Road to West Limits of Red Bud	Existing	5.2	C
	No-Build	6.1	C
IL 154 from East Limits of Red Bud to West Limits of Sparta	Existing	0.9	A
	No-Build	1.0	A
IL 154 from East Limits of Sparta to West Limits of Pinckneyville	Existing	1.1	A
	No-Build	1.2	A

2.2 Project Purpose

Based on the project's needs, the following **primary purposes** were identified:

- Reduce the frequency and severity of crashes, specifically targeting high-risk intersections, geometric flaws, head-on and other collisions at identified High Safety Tier locations
- Address existing roadway geometric deficiencies that contribute to safety and operational issues
- Accommodate future traffic capacity and freight volumes on IL 3 between Waterloo and Kaskaskia Road, at the intersection of IL 3, IL 154, and IL 159 in Red Bud, and the intersection of IL 154 and IL 4 in Sparta
- Improve freight mobility and bottlenecks

Based on public input and study area context, the following **secondary purposes** are related to the primary purposes and are recommended to benefit communities in Southern Illinois.

- Improved travel time reliability for all roadway users, including emergency response and essential services workers
- Provide a roadway that promotes efficient access to essential services, such as healthcare, jobs, and education
- Provide a roadway that promotes efficient access to entertainment and cultural centers
- Provide a roadway that expands and supports existing modal interrelationships, including transit and bicycle/pedestrian facilities
- Provide a roadway that supports economic development and growth in Southern Illinois



Appendix A. Crash Analysis Report



Crash Analysis

Illinois Department of Transportation

12/31/2025



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Appendix A.2 – Fatal and Incapacitating Injury (K and A) Crashes

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Appendix A.4 – Fatal/Incapacitating Injury (K and A) Segment Crash Rates

Appendix A.5 – 2024 IDOT Statewide Safety Tier Maps (Intersections and Segments)

Appendix A.6 – Animal Related Crash Heat Map

Appendix A.7 – Animal Related Crashes

Appendix A.8 – Crashes Involving Trucks and Motorcycles

Appendix A.9 – Fixed Object Crash Heat Map

Appendix A.10 – Front to Rear Crashes

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Appendix B – Crash Rate Calculations

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Appendix D – Detailed Crash Analysis Maps

Introduction

This document summarizes key crash data findings and recommended countermeasures for the Southwest Connector Highway, defined by routes IL 3, IL 154, and IL 13/127 from Waterloo to Murphysboro. A study area map depicting the location of the project is included as **Figure 1**. The corridor has been identified by the Illinois Department of Transportation (IDOT) as having some of the highest-crash two-lane highway segments in Illinois, with several segments falling into a *high safety tier*¹ resulting from fatal and incapacitating injury crashes. The 2024 IDOT safety tier maps of the segments and intersections within the study area are included in ‘Appendix A – Crash Maps’. This analysis includes an assessment and comparison of two sets of crash data – data from 2012 to 2019 analyzed in the 2019 Southwest Illinois Connector Highway Task Force Report and data from 2017 to 2024 obtained from IDOT for this study. While the typical analysis period for crash data is five years, since the 2019 Task Force Report covers eight years of crash data, the same span was selected for the latest crash data used in this study, from **2017 to 2024**. The key findings from the 2019 Task Force Report are described in the section ‘2019 Task Force Report Crash Summary and Findings (2012–2019)’.

The crash data was reviewed and tabulated according by year, type, and severity. Crash severity is classified using the **KABCO** scale, which categorizes crashes as described below:

- **Fatal (K)** – crashes involving at least one death within 30 days.
- **Incapacitating Injury (A)** – severe injuries preventing normal activities such as walking or driving (e.g., broken limbs, skull or chest injuries).
- **Non-incapacitating Injury (B)** – visible but minor injuries such as abrasions, bruises, or minor lacerations.
- **Reported/Not Evident Injury (C)** – injuries reported or claimed but not visible, such as pain, nausea, or momentary unconsciousness.
- **No Indication of Injury (O)** – crashes where no injury is reported or observed.

¹ Illinois Department of Transportation – 2024 Safety Tier Data

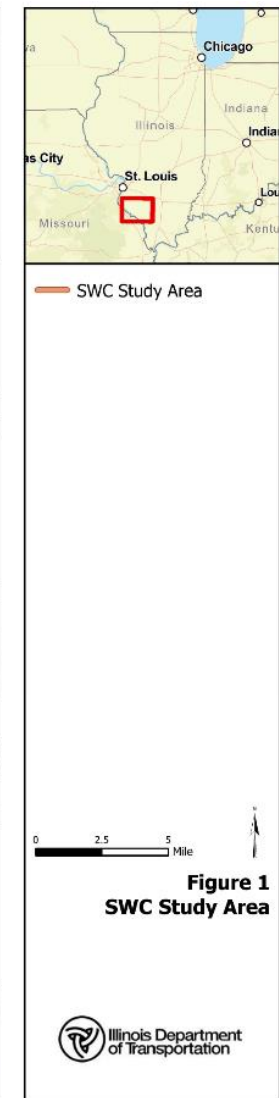
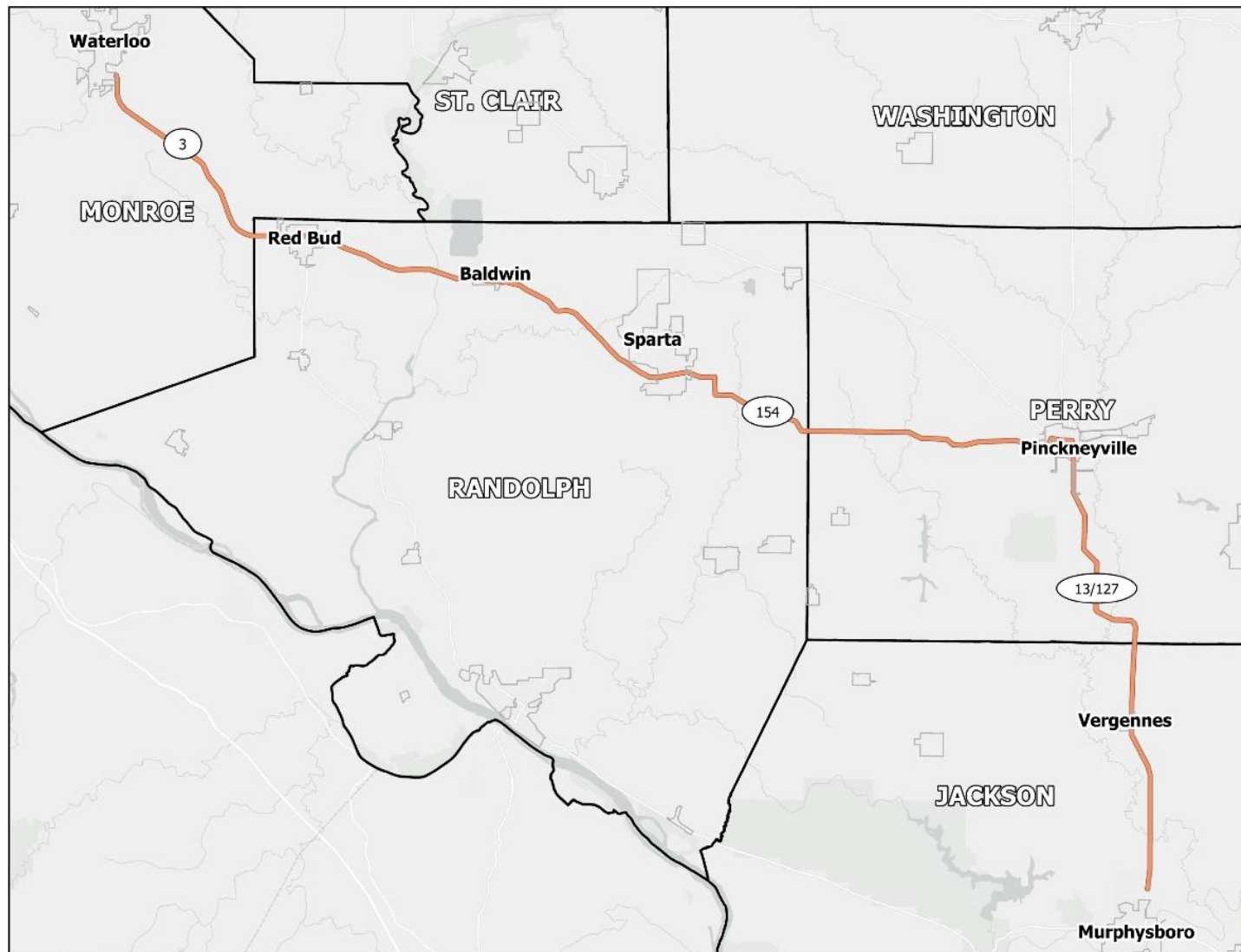


Figure 1. Study Area

2019 Task Force Report Crash Summary and Findings (2012–2019)

The Southwest Illinois Connector Task Force was created with the passage of Senate Joint Resolution No. 54 during the 2018 veto session. Members of the task force included IDOT staff, elected officials, county commissioners, industry representatives, and collegiate members of the community. The crash data from the 2019 Task Force Report, which covers the period from **2012 to 2019**, is included as a comparison set of data to this study data set from 2017 to 2024. This helps identify persistent crash trends between the two sets of data, or conversely, any inconsistencies or anomalies within the crash data along the routes within the study limits.

Crash Data Findings

The 2019 Task Force Report crash data from 2012 to 2019 indicates a total of 1,617 crashes along IL 3, IL 154, and IL 13/127. Of these crashes, **17** were **fatal**, resulting in 22 deaths, and **119** were categorized as '**A-Injury**' crashes, leading to 210 incapacitating injuries. The most frequent types of crashes include, Fixed Object, Front to Rear, Front to Front, and Angle crashes. In particular, crash severity is significantly elevated in areas with poor geometric design, such as sharp horizontal curves, inadequate shoulders, and complex intersections. IDOT identified five critical crash segments within this corridor as being in the worst 5% for crash severity across the state.

Primary Crash Types (K & A Severity)

Analysis of the most severe crashes by year (K – Fatal and A – Incapacitating Injury) in **Table 1** indicates the most frequent crash types among them were **Fixed Object**, **Angle**, and **Front to Front**, which together accounted for approximately **58% of all severe crashes** between 2012 and 2019.

Table 1. Task Force Report K and A Crashes

Crash Type	2012	2013	2014	2015	2016	2017	2018	2019	Total
Fixed Object	5	5	5	5	8	6	7	1	42
Angle	1		4	6	3	3	1	1	19
Front to Front	3	3	4		3	2	2	1	18
Front to Rear	2		3	5		1	3		14
Turning	2	2		2	1	3	2		12
Overtaken	2	4	2	1		1		2	12
Sideswipe Opposite Direction		1	1	1			1	1	5
Other Object			2	1					3
Sideswipe Same Direction			1	2					3
Pedestrian	1			1	1				3
Animal				1		1	1		3
Parked Motor Vehicle				1		1			2
Total	16	15	22	26	16	18	17	6	136

Safety Countermeasures from Task Force Report

The following countermeasures were described in the Task Force Report and are explored further as part of this study, along with additional safety countermeasures that were identified.

Widening the existing two-lane highway to a four-lane divided expressway with a grass median

- Reduces head-on crash risk
- Improves traffic flow and capacity
- Increases spacing between vehicles

Installing median barriers to prevent head-on and cross-median crashes

- Prevents vehicles from entering opposing lanes during loss-of-control events
- Reduces crossover and head-on crash risk on high-speed rural expressways

Reconstructing deficient horizontal curves (especially Sparta to Pinckneyville)

- Reduces lane departure and overturning crash risk
- Improves driver navigation and sight distance

Redesigning high-risk intersections (e.g., IL 154/IL 153 Wye & Eden Rd)

- Improves intersection geometry and sight distance
- Reduces angle and turning-related crash risk

Constructing dedicated turn lanes at key intersections

- Reduces front to rear and turning crash risk
- Separates turning traffic from through lanes to improve flow

Overall, the 2019 Task Force Report findings show crash trends largely consistent with the latest crash data from 2017 to 2024. Fixed object, angle, and front to front crashes remain the most frequent severe crash types, while animal-related crashes continue to be the most frequent overall. More detailed comparison between the two sets of data is provided in the section ‘Crash Data Comparison: 2012–2019 vs. 2017–2024’.

Current Crash Summary and Findings (2017–2024)

This section details the crash data and findings in the Southwest Connector Highway study area for the 2017 through 2024 data collected by IDOT. The data consists of all crashes within 150 feet of the corridors shown in **Figure 1**. Maps detailing several notable characteristics of the crash data are shown in ‘Appendix A – Crash Maps’.

An error in this crash data was identified within downtown Pinckneyville near the intersection of IL 154 / Water Street and IL 13 / IL 127 / Main Street. 44 crashes had their locations recorded around the Perry County jail building southeast of the intersection. The crash reports for these 44 crashes were manually reviewed, finding that 39 crashes occurred outside the study area and 5 crashes occurred on other corridor segments within the study area. Tables, figures, and calculations from the current data set that follow reflect the removal and correction of the erroneous crashes.

Total Crashes and Injury Types

In the crash data from 2017 to 2024, a total of **1,704 crashes** were recorded across the corridor. The crash severity is shown in **Table 2** below broken down by year.

Table 2. Crash Severity

Crash Type	2017	2018	2019	2020	2021	2022	2023	2024	Total
K	2	0	3	0	1	3	2	4	15
A	16	17	13	10	10	11	8	11	96
B	19	19	21	21	27	22	17	30	176
C	10	10	8	7	13	11	6	12	77
O	181	185	195	138	153	172	151	165	1,340
Total	228	231	240	176	204	219	184	222	1,704

Out of the 1,704 crashes, **364** resulted in an injury or fatality accounting for approximately **21.4%** of all crashes, highlighting persistent safety challenges along the routes in this study.

Frequent Crash Types

The most common crash types (all severities) across the 8-year period are included in **Table 3** below.

Table 3. Frequent Crash Types

Crash Type	2017	2018	2019	2020	2021	2022	2023	2024	Total
Animal	100	87	99	71	61	75	63	79	635
Fixed Object	28	37	46	28	32	37	25	32	265
Front to Rear	26	41	28	19	28	32	25	30	229
Turning	23	18	20	18	22	23	27	23	174
Angle	16	23	20	19	23	16	15	17	149
Sideswipe Opposite Direction	7	2	5	3	7	7	8	6	45
Overturned	6	3	5	3	6	9	2	10	44
Parked Motor Vehicle	5	7	5	2	9	5	4	2	39
Sideswipe Same Direction	7	2	1	2	2	3	5	11	33
Other Non-Collision	3	2	2	5	6	3	2	3	26
Other Object	3	4	3	2	1	2	5	4	24
Front to Front	2	5	2	2	3	1	1	2	18
Rear to Side			1			3	1	1	6
Rear to Front			2	1	1	1		1	6
Pedestrian	1			1	2	1			5
Pedalcyclist	1		1		1			1	4
Rear to Rear						1	1		2
Total	228	231	240	176	204	219	184	222	1,704

Crash frequency peaked in 2019 (240 crashes), while the lowest crash frequency was in 2020 (176 crashes), which may be a result of reduced traffic volumes during the COVID-19 pandemic.

Crash Summary by Month

Figure 2 through Figure 5 show a summary of various crash attributes by month.

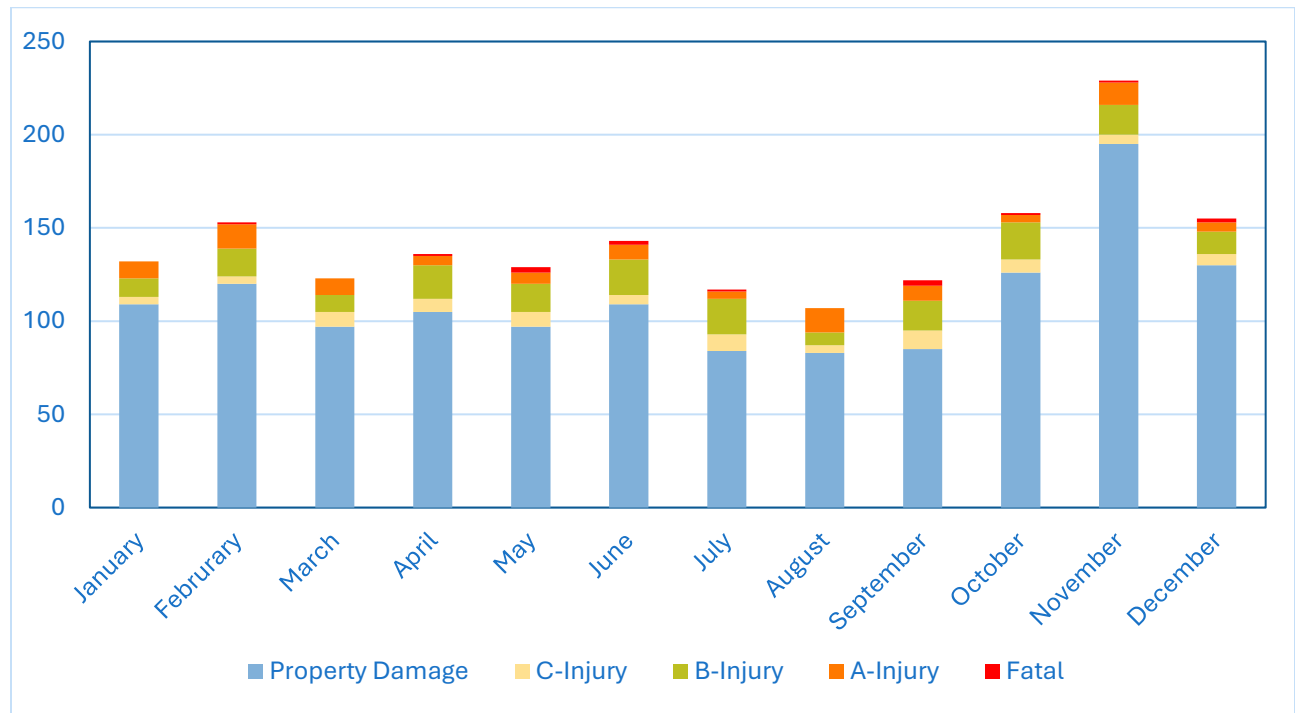


Figure 2. Crash Severity (2017–2024)

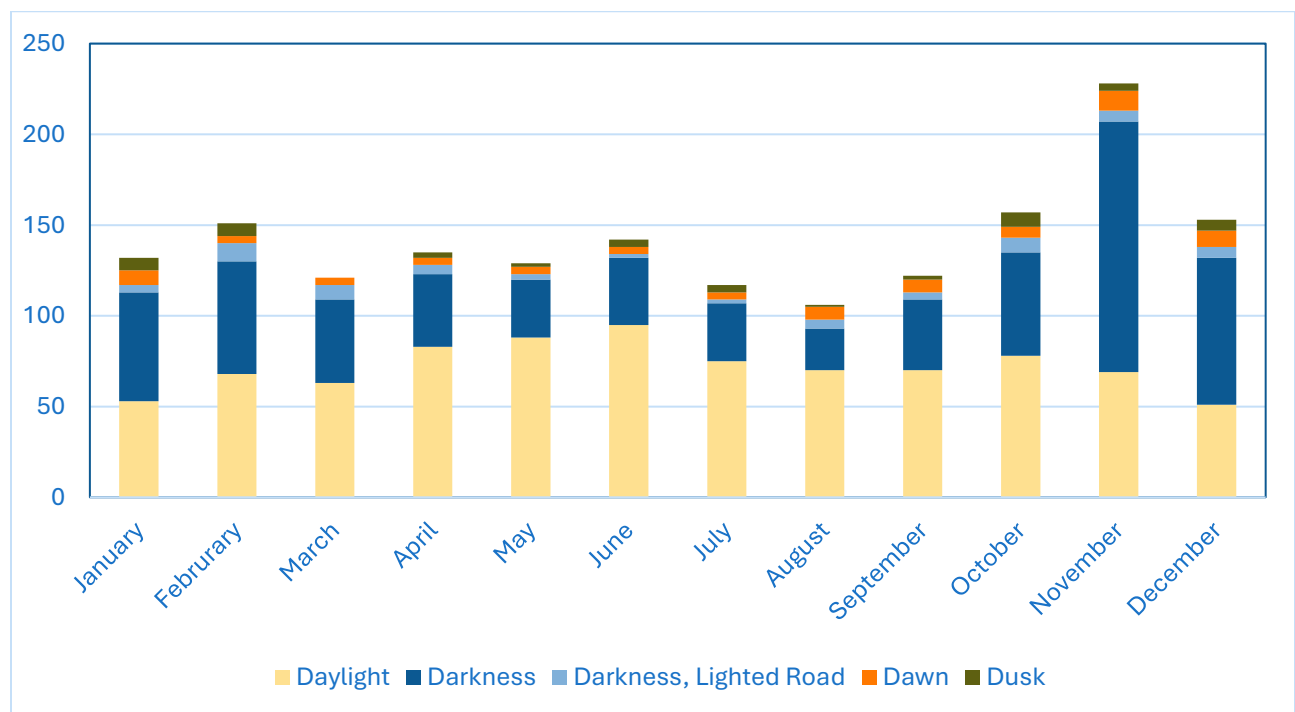


Figure 3. Crash Lighting Conditions (2017–2024)

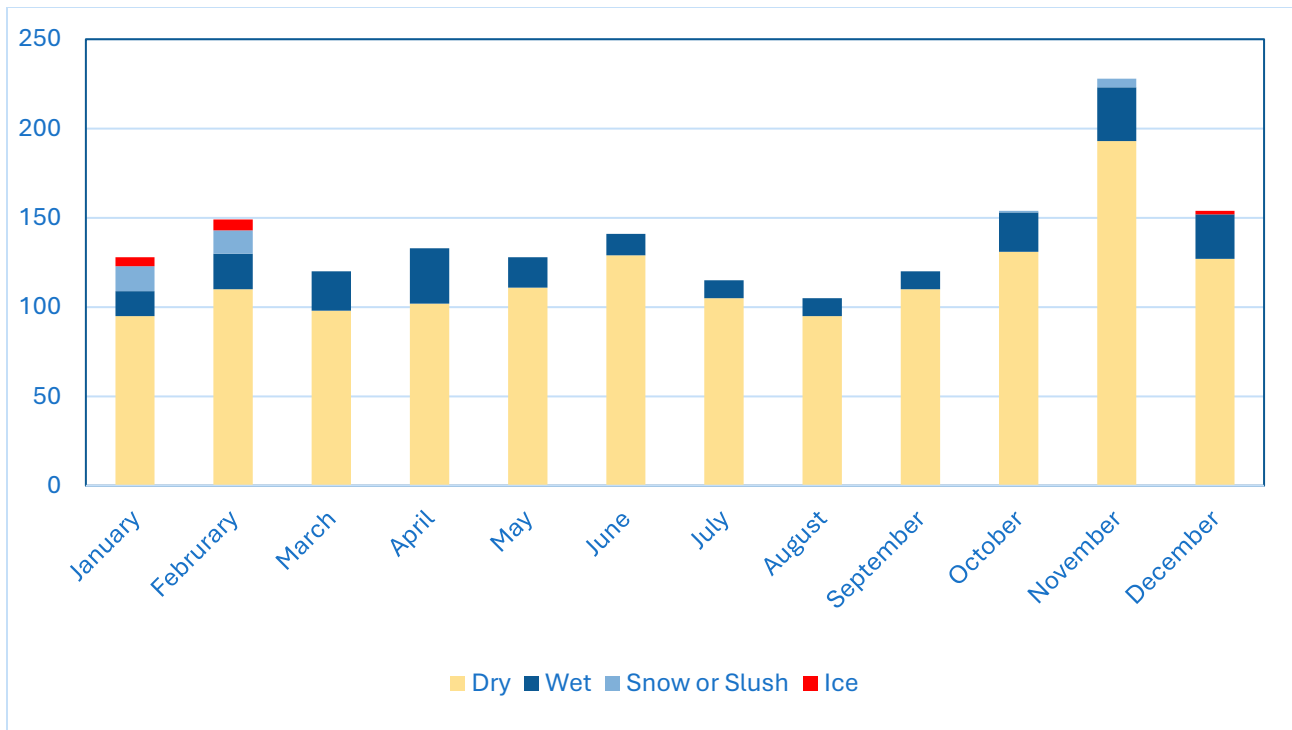


Figure 4. Crash Surface Conditions (2017–2024)

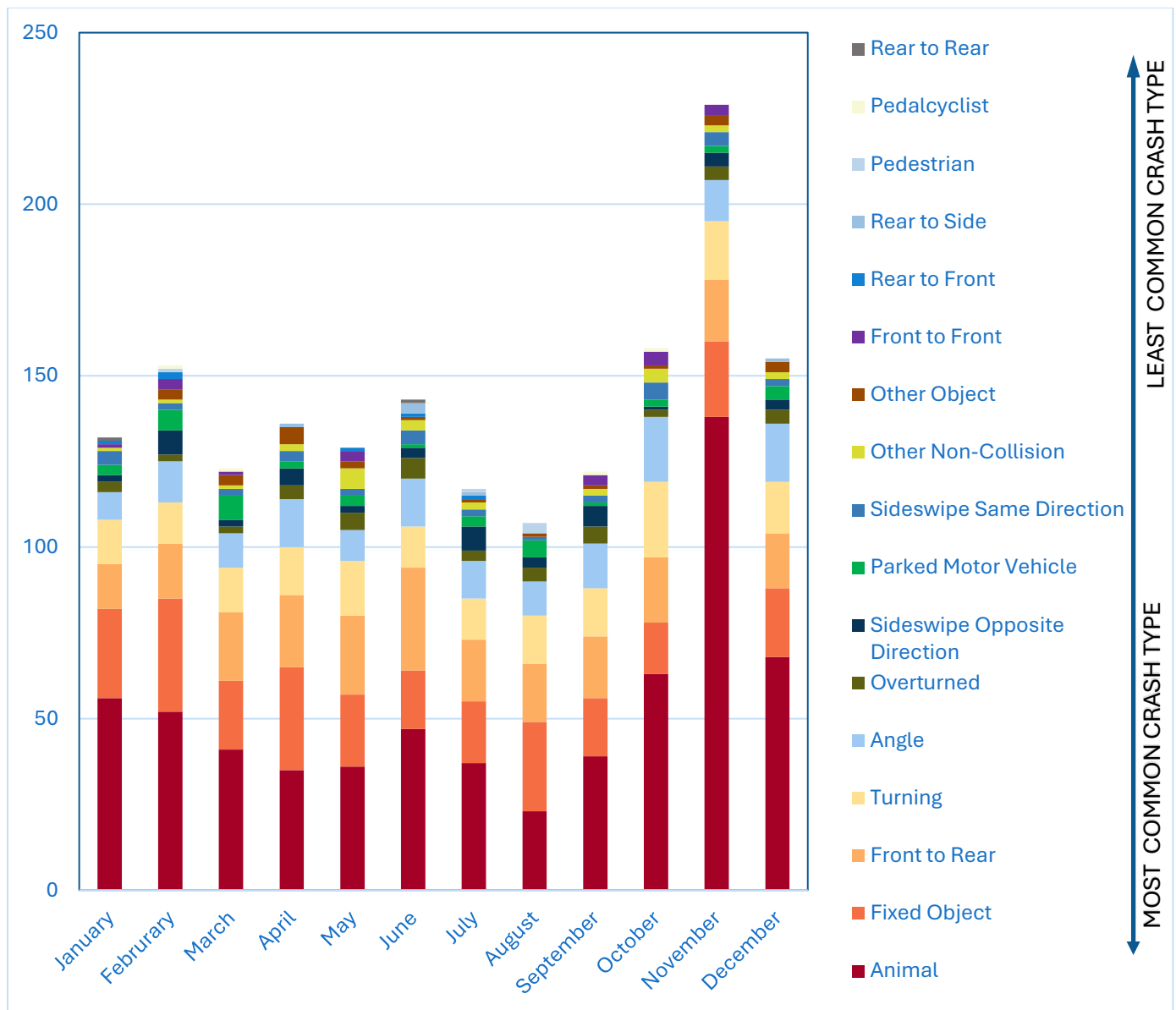


Figure 5. Crash Type (2017–2024)

Crash volumes remain consistent throughout most of the year, with a notable spike in **November** which had the highest number of crashes primarily due to increased **animal-related crashes** and **crashes occurring in dark conditions**. This suggests seasonal patterns linked to daylight reduction/earlier sunset and wildlife activity. Other months show moderate variability, but no other significant crash trends by month are evident.

Crash Data Mapping

Crash data was categorized into the following crash attributes and mapped to identify trends across the Southwest Connector Highway. Notable observations are included:

- **Crash Heat Map (weighted by severity)** – Noted below.
- **Fatal and Incapacitating Injury (K and A) Crashes** – High concentrations of these crashes near Red Bud, Sparta, Pinckneyville, and various curves and intersections along rural segments.
- **Total and Fatal/Incapacitating Injury (K and A) Segment Crash Rates** – See ‘Segment Crash Rates (2017–2024)’ section.
- **2024 IDOT Statewide Safety Tier Map** – Intersections and Segments
- **Animal-related Crashes (including a Heat Map)** – Concentrated along rural segments, with more severe Animal crashes occurring 4.5 miles west of Sparta, 6.5 miles south of Pinckneyville, and 2.5 miles south of Vergennes.
- **Crashes Involving Trucks and Motorcycles** – Truck-related crashes are most frequent between Sparta and Pinckneyville and between Waterloo and Red Bud. Motorcycle crashes are more evenly dispersed with some occurring at notable curves in the rural segments.
- **Fixed Object Crash Heat Map** – Concentrated in urban areas like Red Bud, Sparta, and Pinckneyville where roadside hazards are present and at various locations on rural segments. More severe crashes occurring at rural segment curves following roadway departures where there are narrow aggregate shoulders and substandard foreslopes.
- **Front to Rear Crashes** – Concentrated between Waterloo and Red Bud and in urban areas like Sparta and Pinckneyville, particularly on the edges of the urban areas where speed transitions and higher access density occurs.
- **Passing Maneuver Crashes** – Mostly concentrated between Waterloo and Red Bud where higher volumes are present on a rural two-lane roadway, but also between Pinckneyville and Vergennes.

These maps provide a comprehensive overview of crash patterns and are included in ‘Appendix A – Crash Maps’.

A crash severity heat map is provided in **Figure 6** that illustrates the density and severity of crashes along the corridor. Only higher severity injury crashes were included, with a weighted scale applied based on severity to emphasize higher severity crash locations. **The weighting scale is 25 for K–Fatal crashes, 10 for A–Injury crashes, 1 for B–Injury crashes, and 0 for C–Injury and O–Property Damage crashes.** Red clusters highlight areas of both higher crash frequency/density and higher severity, particularly near major intersections, on urban segments, and on certain curves. This helps identify areas with the greatest safety concerns for detailed review and targeted countermeasures.

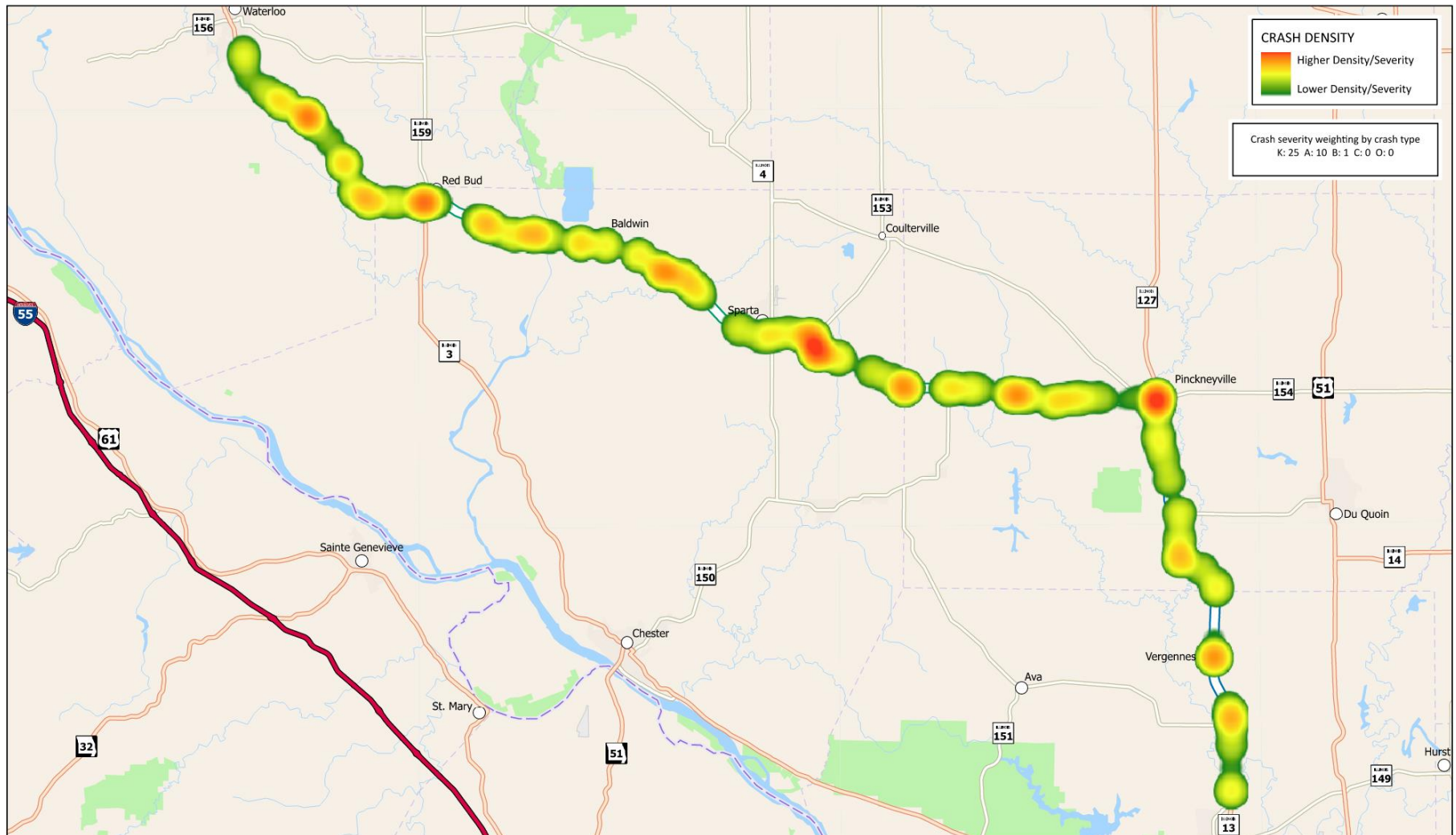


Figure 6. Crash Severity Heat Map

Fatal and A-Injury Crash Details

A total of **111 severe crashes (15 fatal and 96 A-injury)** occurred along the study corridor, with some locations showing a concentration of these crashes. These crash types and locations are listed in the following sections.

FATAL CRASHES

Fatal crashes were associated with the following crash types, shown in **Table 4**.

Table 4. Fatal Crashes

Crash Type	2017	2019	2021	2022	2023	2024	Total
Front to Front	1	2	1			2	6
Overtaken		1		2			3
Angle	1			1		1	3
Fixed Object					1	1	2
Front to Rear					1		1
Total	2	3	1	3	2	4	15

While fatal crashes are largely evenly distributed across the corridor, some concentrations of fatal crashes were observed at the following locations:

- IL 3 between Waterloo and Red Bud, including:
 - The curve between KK Road / Kern Road and Crook Road
 - The intersection of IL 3 and Doyle Road / Old State Route 3
- The two horizontal curves east of Sparta in Eden (IL 154/IL 153 Wye & Eden Rd)
- IL 154 between the Randolph/Perry County Line and West of Pinckneyville, including:
 - The intersection of IL 154 and County Line Road
 - The curve between Porcupine Road and Rose of Sharon Road

A-INJURY CRASHES

A-Injury crashes represent serious, life-altering events such as skull fractures, chest injuries, or amputations. The crash types for A-Injuries are shown in **Table 5**.

Table 5. A-Injury Crash Types

Crash Type	2017	2018	2019	2020	2021	2022	2023	2024	Total
Fixed Object	5	7	3	2	2	4	4	1	28
Angle	2	1	3		2	1	1	4	14
Turning	3	2		2	2	1	3		13
Front to Rear	1	3	1	2		2		1	10
Overtaken	1		3			2		1	7
Front to Front	1	2		1	2				6
Sideswipe Opposite Direction	1	1	1					2	5
Animal	1	1		1					3
Pedestrian				1	2				3
Pedalcyclist			1					1	2
Parked Motor Vehicle	1							1	2
Other Object				1		1			2
Other Non-Collision			1						1
Total	16	17	13	10	10	11	8	11	96

Fixed object and angle crashes, especially on rural segment curves or at unsignalized intersections, are common contributors to severe crashes. A-Injury crashes were most prevalent along the rural segments of **IL 154 between Baldwin and Sparta, East of Sparta to West of Pinckneyville**, and **IL 13/IL 127 from the Perry/Jackson County Line to Vergennes**, and within urban areas like **Baldwin, East of Sparta/Eden, and Pinckneyville along Main Street**.

Pedestrian and Bicycle Crash Details

PEDESTRIAN CRASHES

A review of pedestrian-related crashes identified several isolated incidents occurring at both rural and urban locations. These crashes typically involved a single vehicle striking a pedestrian on the roadway, with events occurring under a range of conditions. The five pedestrian crashes within the study area from 2017 to 2024 are described below:

- **In August 2021, an A-injury crash** occurred on IL 3 near J Road when a southbound pickup truck traveling straight struck a pedestrian running down the center of the roadway. The pedestrian was reported to be under the influence of narcotics. The crash occurred during dawn hours under clear weather and dry pavement conditions. IL 3 has a 55-mph posted speed limit. The location consists of a straight roadway segment with narrow aggregate shoulders. The surrounding land use is predominantly agricultural and rural residential.
- **In August 2021, an A-injury crash** was reported near the western IL 3 and Old State Route 3 intersection. A northbound pickup truck travelling straight pulled over after running out of gas. A passenger exited the vehicle and attempted to push the disabled vehicle but fell down and was run over by the vehicle.
- **In February 2022, a B-injury crash** occurred at the IL 3 and Locust Street intersection in Red Bud when a pedestrian crossed the street at or near the designated crossing and was struck by a westbound passenger vehicle traveling straight. The pedestrian entered the crossing after an eastbound truck had passed, restricting visibility to westbound traffic. The crossing west of Locust Street is a crosswalk with a pedestrian-activated warning beacon and school crossing signage. The report does not specify if the pedestrian was within the crosswalk or if the beacon was activated. The crash occurred in daylight under clear weather and wet pavement conditions. The posted speed limit on IL 3 is 35 mph with on-street parking and sidewalks. Land use is mainly urban residential and commercial.
- **In August 2020, an A-injury crash** occurred at the IL 154 and Valley Steel Road intersection east of Sparta in Eden when a westbound pickup truck traveling straight struck a pedestrian that entered the road. The crash occurred in daylight under clear weather and dry pavement conditions. The posted speed limit on IL 154 is 45 mph. The intersection has two-way stop-control with nearby rural agricultural, residential, and commercial land uses (including a bar and a church), no pedestrian facilities, and narrow aggregate shoulders.
- **In July 2017, a C-injury crash** occurred at the IL 13 / IL 127 and Hawkins Street intersection in Pinckneyville when a northbound van/mini-van traveling straight struck a pedestrian crossing the street. The crash occurred in daylight under clear weather and dry pavement conditions. The posted speed limit on IL 13 / IL 127 is 30 mph with two through lanes and sidewalks. In 2017, there was also one parking lane, but today, parking is prohibited to accommodate bike lanes to the north. The intersection is three-legged with minor-street stop control on Hawkins Street and no mainline pedestrian crossing/curb ramps. The land use is urban commercial with nearby residential.

BICYCLE CRASHES

A review of the bicycle crashes (listed as ‘pedalcyclist’ in the data) shows that these events occurred under a range of environments, including at signalized intersections, two-way stop-controlled urban/fringe intersections, and rural high-speed roadway segments. Most crashes took place under clear weather and dry pavement conditions. The crashes involved a mix of **turning conflicts at intersections** and **straight-ahead vehicle paths on rural roadways**. The crashes highlight typical vulnerability patterns for cyclists, with conflicts occurring where there are no dedicated bicycle facilities. The four bicycle crashes are described below:

- **In March 2021, a B-injury crash** occurred at the signalized intersection of IL 3 and South Market Street in Waterloo when a southbound left-turning SUV struck a cyclist within the intersection. The crash occurred in daylight under clear weather and dry pavement conditions. The cyclist was reported to have entered the intersection during a protected-left vehicle phase. The cyclist crossed where crosswalks and pedestrian signals were absent. The intersection includes crosswalks on the northbound and eastbound approaches as well as across the northbound and southbound right turn channels, and is located within a rural agricultural area that is expected to develop into fringe urban commercial and residential, potentially increasing bicycle activity.
- **In September 2019, an A-injury crash** occurred along a segment of IL 3 approximately one-quarter mile south of South Market Street when a southbound farm vehicle traveling straight struck a cyclist on the roadway. The farm vehicle was attempting to pass the cyclist, but due to oncoming traffic, it merged back into the travel lane causing its trailing equipment to strike the cyclist. The crash occurred in daylight under clear weather and dry pavement conditions. IL 3 has two lanes with narrow paved and aggregate shoulders and 55 mph posted speed limit. The land use is primarily agricultural with rural residences.
- **In February 2024, an A-injury crash** occurred at the IL 154 and Orange Street intersection in Red Bud when an eastbound pickup truck turning left struck a cyclist within the intersection. The crash occurred in darkness under clear weather and dry pavement conditions. The intersection is three-legged with minor-street stop control on Orange Street. IL 154 is two-lane and has on-street parking and sidewalks on both sides with only decorative lighting. The posted speed limit on IL 154 is 25 mph. The land use is urban residential and commercial typical of the Red Bud urban fringe area.
- **In October 2017, a C-injury crash** occurred at the IL 154 and St. Louis Street intersection in Sparta when a cyclist was struck by an unknown vehicle within the intersection. The crash occurred in daylight under clear weather and dry pavement conditions. The intersection is an all-way stop-controlled intersection with flashing warning beacons above the stop signs on the IL 154 approaches. There are two lanes with on-street parking in the northeast, southeast, and southwest quadrants, and a 6-ft shoulder in the northwest quadrant. The land use is urban commercial with nearby residential in downtown Sparta.

PEDESTRIAN AND BICYCLE COUNTERMEASURES

While the corridors in this study are not designated as bicycle routes² and mostly consist of rural environments, pedestrian and bicycle traffic is still to be expected, especially within and immediately outside of the urban communities in the study area. To address the existing pedestrian and bicycle crash patterns and proactively improve active transportation safety, the following countermeasures are recommended:

- **Enhance pedestrian and bicycle visibility** – Install high-visibility pavement/crosswalk markings, advance stop/yield lines, warning signs at locations with higher pedestrian activity, and improved lighting in urban areas, particularly at intersections and designated crossings. Crosswalks should be installed on all approaches of all-way stop control and signalized intersections.
- **Reduce crossing distance and vehicle exposure** – At stop-controlled or uncontrolled intersections, install curb extensions and median refuge islands, where possible, to reduce crossing distances. Prohibit parking near intersections/crossings (also called ‘daylighting’).
- **Reduce/manage vehicle speeds** – In urban and speed transition areas, create visual cues to slow vehicles by narrowing lanes and providing curb extensions. Additional space or wide shoulders in urban areas should be striped to provide bike lanes. Raised crossings/speed tables may also be considered in locations with high pedestrian activity.
- **Pedestrian signals/beacons** – Install pedestrian signals with crosswalks for all approaches at signalized intersections. In areas of high crossing activity, consider adding a flashing beacon, such as a rectangular rapid flashing beacon (RRFB), to enhance warning.
- **Sidewalk improvements** – Sidewalks should be extended throughout the urban and fringe urban areas to provide connectivity to residential/commercial areas. Improve existing curb ramps to bring them to current accessibility standards. Also consider streetscape improvements like landscaping and benches to improve walking environment and further contribute to speed management.
- **Access management** – Consolidate access points whenever possible to reduce conflicts and construct driveway aprons that minimize disruption to the sidewalk.
- **Wide paved shoulders** – Install wide paved shoulders, wide edge lines, and improved lane delineation on rural and urban fringe roadways, especially those that have pedestrian / bicycle generators without dedicated off-street facilities. If rumble strips are considered, their placement within the shoulder or on the edge line should maximize riding space for cyclists.
- **Roundabout treatments** – At locations with proposed roundabouts, provide off-street accommodations for pedestrians and cyclists to traverse safely and comfortably. This includes transition ramps, sidewalks or paths, and crosswalks.

These strategies help mitigate the predominant crash types involving turning vehicles, visibility limitations, and straight-ahead conflicts between vehicles and vulnerable road users.

² [Illinois Department of Transportation – Bicycle Maps](#)

Crash Data Comparison: 2012–2019 vs. 2017–2024

Table 6 provides a comparison between the 2019 Task Force Report crash data and the current data from 2017 to 2024.

Table 6. Crash Data Comparison

Category	2012–2019	2017–2024	Key Observations
Total Crashes	1,617	1,704	Crashes increased by 5%, indicating ongoing safety challenges.
Fatal Crashes	17	15	Fatal crashes slightly lower, but corridor still shows similar crash outcomes. Fatal crashes patterns are similar between the data sets with fatal crashes occurring near the IL 154 / IL 153 Wye intersection, IL 154 at County Line Rd, and rural segments with deficient horizontal curves and roadside treatments.
A-Injury Crashes	119	96	Modest reduction in A-Injuries; incapacitating injuries remain a concern.
Total Severe / Fatal Crashes	136	111	Although severe crash count slightly lower, high severity risks persist.
Top Severe Crash Types	Fixed Object, Angle, Front to Front	Fixed Object, Angle, Front to Front	Severe crash patterns reinforce the need for focused countermeasures to improve roadside safety, provide dedicated turn lanes, and provide separation between higher speed traffic.
Most Frequent Overall Types	Animal, Front to Rear, Fixed Object	Animal, Front to Rear, Fixed Object	Animal crashes remain the most frequent, followed by Front to Rear and Fixed Object crashes.
Severity Breakdown	Not fully itemized	Fatal: 15 A: 96 B: 176 C: 77 O: 1,340	21% of crashes resulted in injury or fatality (364 of 1,704).
Crash Distribution Trend	Annual details not included	Highest in 2019 (240), generally steady	Crash volume peaked in 2019; remained consistently elevated through 2023.

Overall, the data shows that the total number of crashes increased by 5% between the two study periods while the number of severe crashes declined modestly. The 2017 to 2024 crash data also spans the COVID-19 pandemic, which due to the reduced volumes results in a greater increase in total crash rate. The persistence of fatal and A-injury crashes, along with recurring patterns such as animal-related, front to rear, and fixed object crashes, highlights that significant safety concerns are still present across the corridor. **Animal-related crashes** continue to be the most frequent crash type, reinforcing the need for targeted wildlife mitigation strategies such as vegetation clearing, fencing, warning signage, and driver awareness campaigns in rural segments throughout the study limits.

Segment Crash Rates (2017–2024)

The segment total and fatal / serious injury crash rates were calculated along the project corridor using the data from 2017 to 2024 to compare crash incidence using a uniform metric and determine locations where crash incidence is high relative to the vehicle miles traveled (VMT) on a segment. Total and fatal/serious injury crash rates are represented as crashes/100 million VMT (HMOVMT).

Segments were identified and were typically bounded by municipal boundaries and areas where roadway, environment, or speed characteristics changed significantly, i.e. transitioning between rural and urban segments. The VMT between 2017 and 2024 for each segment was calculated from annual average daily traffic (AADT) data obtained from IDOT for the years 2017, 2019, 2021, and 2023, with AADT for 2018, 2022, and 2024 being estimated using exponential interpolation/extrapolation and AADT for 2020 being estimated using Streetlight data to conservatively replicate the reduction in vehicle volume due to the COVID-19 pandemic.

The crash rates by segment encompassing all years are shown below in **Table 7**. Crash rate calculations by individual year and volume assumptions are provided in ‘Appendix B – Crash Rate Calculations’.

Table 7. Segment Crash Rates

Segment Crash Rates (2017–2024)	Total Crash Rate (crashes/HMVT)	Fatal/Serious Injury Crash Rate (crashes/HMVT)
Rural Segments		
Waterloo to Red Bud (IL 3)	139.33	6.86
Red Bud to Baldwin (IL 154)	109.46	11.23
Baldwin to Sparta (IL 154)	205.45	18.05
East of Sparta to Randolph/Perry County Line (IL 154)	327.97	24.85
Randolph/Perry County Line to West of Pinckneyville (IL 154)	276.57	27.97
Pinckneyville to Perry/Jackson County Line (IL 13 / IL 127)	137.09	9.49
Perry/Jackson County Line to Vergennes (IL 13 / IL 127)	171.95	17.49
Vergennes to North of Murphysboro (IL 13 / IL 127)	122.90	8.88
Urban/Fringe Urban Segments		
Red Bud (IL 3 & IL 154)	228.59	13.45
Baldwin (IL 154)	147.03	25.35
Sparta (IL 154)	501.74	12.14
East of Sparta/Eden (IL 154)	356.45	22.63
West of Pinckneyville (IL 154)	304.00	0.00
Pinckneyville (Kennedy Dr/Water St) (IL 154 / IL 13)	379.45	0.00
Pinckneyville (Main St) (IL 13 / IL 127)	387.32	17.84
Vergennes (IL 13 / IL 127)	88.09	0.00

Among rural segments, the segments with the highest total crash rates are on IL 154 between Sparta/Eden and Pinckneyville, which also corresponds to the highest fatal/serious injury crash rates. Other segments with elevated crash rates are ‘Baldwin to Sparta’ and ‘Perry/Jackson County Line to Vergennes’.

Among urban segments, IL 154 in Sparta experienced the highest total crash rate, followed by elevated crash rates on Main Street/IL 13/IL 127 and Kennedy Drive/Water Street/IL 154 in Pinckneyville, and IL 154 east of Sparta in Eden. IL 154 in Baldwin experienced the highest fatal/serious injury crash rate, followed by IL 154 east of Sparta in Eden and Main Street/IL 13/IL 127 in Pinckneyville. While the fatal/serious injury crash rate is highest in Baldwin, the total crash rate is relatively low, indicating that while few crashes occur on this segment, those that do typically result in higher severity of injury. These findings are illustrated in the crash maps provided in ‘Appendix A – Crash Maps’.

Speed Data

Excess vehicle speed may be a contributing factor for crashes along the corridor, particularly higher severity crashes. The contribution of excess vehicle speed to crashes can be noted within the data attributes of each crash, however it is often difficult to identify the vehicle speeds achieved at the time of the crash during the post-crash assessment by first responders and thus that attribute is likely not a reliable source. Among the **1,704 crashes** reported between 2017 and 2024, only **9 crashes** were recorded by the reporting officer as having excess speeds contributing to the crash. To supplement crash data, streetlight speed data was examined to determine if excess speeds are potentially present along the corridor.

Several spot locations for speed data were selected for having relatively high crash frequency. This includes certain horizontal curves on rural segments of the corridor, speed transition areas on the periphery of municipalities, and downtown areas/business districts. An additional location for data includes an industrial facility immediately west of the Kaskaskia River where high truck volumes are present. The 85th percentile speed from the Streetlight data was compared to the posted or advisory speeds at the location and if the 85th percentile speed exceeds the posted/advisory speed by more than 5 mph (or 10 mph above the lower speed at transition areas), excess speeds are likely present within those segments.

The Streetlight data locations and their respective posted/advisory and 85th percentile speeds are shown below in **Table 8**. A map of locations is provided in 'Appendix C – Streetlight Speed Locations'.

Table 8. Streetlight Speed Data

Speed Collection Location	Posted/Advisory Speed (mph)	85 th Percentile Speed (mph)
Curves		
#1 - IL 3 – 7.5 miles west of IL 159/IL 3 in Red Bud	55	62
#2 - IL 3 – 3.0 miles west of IL 159/IL 3 in Red Bud	55	64
#3 - IL 154 – 3.0 miles east of 5 th St in Baldwin	55	64
#4 - IL 154 – at IL 153 in Eden	40	49
#5 - IL 154 – 0.7 miles south/east of IL 153 in Eden	40	50
#6 - IL 154 – 4.8 miles south/east of IL 153 in Eden	45	61
#7 - IL 154 – 7.0 miles west of IL 13 in Pinckneyville	55	65
#8 - IL 13 – 6.0 miles north of Cherry Ave in Vergennes	55	65
#9 - IL 13 – 2.3 miles south of Cherry Ave in Vergennes	55	67
Speed Transitions		
#1 - West of Red Bud (0.4 miles west of IL 159/IL 3)	45 → 35	44
#2 - East of Red Bud (0.5 miles east of IL 159/IL 3)	45 → 35	43
#3 - West of Sparta (0.6 miles west of IL 4)	45 → 35	38
#4 - East of Sparta (0.6 miles east of IL 4)	55 → 35	41
#5 - South of Pinckneyville (0.6 miles south of IL 154/13)	45 → 35	41
Downtown		
#1 - Red Bud – IL 154 between Bloom St and Vine St	25	31
#2 - Sparta – IL 154 between St. Louis St and Market St/IL 4	25	23
#3 - Pinckneyville – IL 154/13 between Mill St and Perry St	30	34
#4 - Pinckneyville – IL 13 between Randolph St and South St	30	33
Other		
Kaskaskia River Port District west of Kaskaskia River	55	63

As shown in the Streetlight data, the 85th percentile exceeds the posted/advisory speed by over 5 mph at all curve locations, at the industrial facility, and in downtown Red Bud. With respect to the curves and industrial facility, which are located on rural sections, the recorded excess speeds may be indicative of speeds along the rural segments of the corridor generally. Substandard geometry and sight distance may exacerbate speed-related crashes along these segments, particularly single-vehicle road departure crashes at curves (fixed object and overturn crashes) or front to rear and angle crashes at rural intersections/driveways.

While excess speeds were recorded in downtown Red Bud, this was over the threshold for consideration by just 1 mph, and speeds at speed transitions and in other downtown areas were not noted as excessive. While speed may have contributed to some crashes, speed is likely not the primary contributing factor for crashes in urban areas.

Detailed Crash Analysis by Location

A comprehensive crash analysis was conducted for multiple roadway segments and intersections within the study area that had higher crash rates and frequency of severe crashes. Each location was reviewed in detail to assess crash frequency, severity, and type, with particular attention given to recurring crash patterns. Environmental conditions including lighting, weather, and surface condition were also examined to understand their influence on crash occurrence. For locations with higher crash concentrations, an in-depth assessment was performed to identify geometric, operational, or access-related factors contributing to crash trends. The findings provide a data-driven basis for recommending potential safety and design improvements across the corridor.

The following locations are highlighted due to higher crash rates and severe crash frequency (organized from Waterloo to Murphysboro):

- IL 3 from KK Road / Kern Road to Crook Road
- IL 3 and Doyle Road / Old State Route 3 Intersection
- IL 3 and IL 154 from Locust Street to Vine Street
- IL 154 from Prairie Road to Kaskaskia River
- IL 154 and Fifth Street Intersection
- IL 154 from Springview Road to Hickory Grove Road
- IL 154 East of Sparta (Eden)
- IL 154 and County Line Road Intersection
- IL 154 from East of County Line Road to Lost Prairie Road
- IL 154 from Porcupine Road to Rose of Sharon Road
- IL 13 / IL 127 from Randolph Street to Railroad Crossing
- IL 13 / IL 127 and Beaucoup Road / Elkhart Road Intersection

Maps that show the locations and severities of crashes in the detailed analysis areas are included in 'Appendix D – Detailed Crash Analysis Maps'.

IL 3 from KK Road / Kern Road to Crook Road

The segment of IL 3 from KK Road / Kern Road to Crook Road is approximately 1.25 miles long, consisting of two lanes with no shoulders and open roadside ditches typical of agricultural areas. The segment lies east of Waterloo, with a posted speed limit of 55 mph and an average AADT of 6,700 vehicles per day.

A total of 56 crashes were reported along this section, with Animal and Fixed Object crashes each representing 30% of all crashes.

- Fatal and injury crashes accounted for 30% of all crashes as shown in **Table 9**.
- Most crashes occurred in clear weather conditions 86% as shown in **Table 10**.
- Crashes in dark lighting accounted for 41% as shown in **Table 11**.
- Crashes occurred predominantly on dry pavement surfaces 82% as shown in **Table 12**.

The segment includes a long tangent followed by a horizontal curve, which may contribute to run-off-road and fixed object crashes, including one overturned crash reported in the data set.

ANIMAL CRASHES

Animal-related crashes were the most frequent, with 17 total crashes primarily involving deer. These occurred mainly under clear and dry conditions and were concentrated during darkness, indicating limited nighttime visibility along this rural section. Most of these crashes involved personal vehicles traveling straight ahead and resulted in property damage only.

FIXED OBJECT

Fixed object crashes were the other most frequent crash type, accounting for 17 crashes, often linked to run-off-road maneuvers into ditches, culverts, trees, or mailboxes. A majority occurred under clear and dry weather, suggesting driver error, distraction/inattentiveness, or excessive speed rather than surface conditions. Several involved vehicles negotiating a curve or losing control, with a few resulting in A- and B-injuries.

FATAL CRASH

The fatal crash occurred when a motorcycle overturned during daylight and clear weather on a dry surface. The vehicle was traveling northwest and overturned on the pavement, leading to the rider being transported by first responders.

STREETLIGHT SPEED DATA

The 85th percentile speeds from Streetlight indicate vehicles are traveling in excess of the posted speed limit through this section of the corridor. The higher speeds may be contributing to drivers losing control and leaving the roadway or crossing the centerline. The narrow shoulders, lack of separation between travel lanes, and limited roadside safety treatments increase the risk for crashes that result from road departures due to speeding vehicles.

Table 9. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Animal					17	17
Fixed Object		3	4	1	9	17
Front to Rear		1		1	7	9
Overtaken	1		2	1		4
Turning			1		2	3
Angle			1		1	2
Other Non-Collision					2	2
Front to Front			1			1
Sideswipe Opposite Direction					1	1
Total	1	4	9	3	39	56

Table 10. Weather Conditions

Weather Condition	Total
Clear	48
Rain	4
Cloudy/Overcast	2
Blowing Snow	1
Snow	1
Total	56

Table 11. Lighting Conditions

Lighting Conditions	Total
Daylight	29
Darkness	23
Dawn	2
Dusk	1
Darkness, Lighted Road	1
Total	56

Table 12. Surface Conditions

Surface Conditions	Total
Dry	46
Wet	7
Snow or Slush	3
Total	56

SUMMARY AND COUNTERMEASURES

Crash patterns along this segment are dominated by roadway-departure events leading to fixed object crashes and animal crashes concentrated along the long tangent and approaching the horizontal curve, with several occurring during darkness. To address these concerns, FHWA Proven Safety Countermeasures including Enhanced Delineation for Horizontal Curves to improve driver awareness and reduce run-off-road incidents, and implementing Wider Edge Lines to further strengthen lane guidance along the rural tangent and curve transition. A summary of the recommended countermeasures for IL 3 from KK Road / Kern Road to Crook Road is provided in **Table 13**.

Table 13: Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Improve or eliminate horizontal curves • Install wider paved shoulders • Flatten or maintain foreslopes at 1:4 maximum • Remove hazards from the clear zone • Provide median to separate opposing travel directions • Consider turn lanes at KK Road / Kern Road if volumes warrant them • Widen to provide passing lanes or four-lane roadway
Enhanced Delineation for Horizontal Curves	• Install chevrons and post-mounted delineators • Retroreflective strips on sign posts
Wider Edge Lines	• Implement wider edge lines per the MUTCD 11th Edition
Longitudinal Rumble Strips and Stripes	• Install shoulder rumble strip (where possible) • Install centerline rumble stripes

Additional countermeasures to address the high number of animal crashes include the following:

- Install animal crossing warning signs near segments where animal activity is elevated
- Improve sight distance and visibility of the area within the clear zone
- Install fencing along the horizontal curve where sight distance is lower

IL 3 and Doyle Road / Old State Route 3 Intersection

The intersection of IL 3 and Doyle Road / Old State Route 3 is a rural, four-leg intersection where IL 3 serves as the principal arterial and Doyle Road / Old State Route 3 operates as the minor street under two-way stop control. Each approach consists of one lane in each direction with a posted speed limit of 55 mph on IL 3 and an average AADT of 6,300 vehicles per day. The intersection is located within a long curve on IL 3 that is improved from Old State Route 3. IL 3 includes centerline and edge line pavement markings with no shoulders or turn lanes, while the minor approach lacks pavement markings and stop bars, limiting visual guidance for turning and crossing movements. The intersection is surrounded by open agricultural land, providing clear sight distance, though minor edge deterioration was noted near the intersection.

A total of eight crashes were recorded at the intersection with turning crashes as the highest crash type, representing 25% of all crashes.

- Fatal and injury crashes accounted for 25% of all crashes as shown in **Table 14**.
- All crashes occurred in clear weather conditions as shown in **Table 15**.
- Crashes under darkness accounted for 50% as shown in **Table 16**.
- All crashes occurred on dry pavement surfaces as shown in **Table 17**.

FATAL CRASH

A fatal angle crash occurred at this intersection during daylight under clear and dry conditions, involving a northbound pickup truck on Old State Route 3 and a westbound SUV on IL 3. Both vehicles were traveling straight ahead when they collided within the intersection, resulting in one fatality and four injuries. Two passengers were ejected in the crash resulting in one passenger being fatally wounded.

Table 14. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Turning					2	2
Front to Rear					1	1
Angle	1					1
Animal					1	1
Sideswipe Opposite Direction					1	1
Fixed Object					1	1
Front to Front		1				1
Total	1	1	0	0	6	8

Table 15. Weather Conditions

Weather Condition	Total
Clear	8
Total	8

Table 16. Lighting Conditions

Lighting Conditions	Total
Daylight	4
Darkness	3
Darkness, Lighted Road	1
Total	8

Table 17. Surface Conditions

Surface Conditions	Total
Dry	8
Total	8

SUMMARY AND COUNTERMEASURES

Crash patterns indicate visibility limitations, insufficient intersection recognition, and driver decision errors. To address these concerns, FHWA Proven Safety Countermeasures including Systemic Low-Cost Stop-Controlled Intersection Enhancements and Enhanced Intersection Delineation would increase early recognition of the intersection and better highlight conflict points for both through and turning movements. A summary of the recommended countermeasures for IL 3 and Doyle Road / Old State Route 3 is provided in **Table 18**.

Table 18. Recommended Proven Safety Countermeasures

Countermeasure	Application
Intersection Enhancements	• Install oversized stop signs or a secondary stop sign on the other side of the approach • Install supplemental signs and retroreflective posts
Intersection Delineation	• Install oversized intersection warning signs • Remove passing zones near intersection • Install stop bars on minor approach
Roadway/Roadside Design Improvements	• Improve intersection skew angle • Provide median to separate opposing travel directions • Consider turn lanes if volumes warrant them
Lighting	• Provide adequate lighting at the intersection

IL 3 and IL 154 from Locust Street to Vine Street

This 0.2-mile urban segment through downtown Red Bud extends between Locust Street and Vine Street, where the western portion functions as IL 3 and transitions to IL 154 east of Main Street. Daily traffic volumes range from 8,600 to 6,050 vehicles per day, consistent with small downtown arterial activity. The corridor operates as a principal and minor arterial with one lane in each direction with on-street parking on both sides and a posted speed limit that decreases from 35 mph to 25 mph within the downtown core. Within the downtown segment, the intersection of IL 3 / IL 154 / IL 159 is an all-way stop-controlled intersection with an overhead flashing beacon. The roadway includes curb-and-gutter, continuous sidewalks, and typical downtown pavement markings. On-street parking along both sides of the corridor may restrict sight distance at side-street stop-controlled approaches, particularly at Oak Street, Bloom Street, and locations where buildings or parked vehicles are positioned close to the roadway edge. There are no dedicated turn lanes at the intersections. Land use along the corridor is predominantly commercial with adjacent residential properties, resulting in moderate pedestrian activity and frequent turning movements. These conditions contribute to reduced operating speeds and greater potential for low-speed turning and front to rear crashes.

A total of 55 crashes were recorded within the segment limits with turning crashes as the highest crash type at 22%, followed by front to rear crashes at 20%.

- Injury crashes accounted for 18% as shown in **Table 19**.
- Most crashes occurred in clear weather conditions 96% as shown in **Table 20**.
- Daylight was the most common lighting condition 82% as shown in **Table 21**.
- Crashes occurred predominantly on dry pavement surfaces at 98% as shown in **Table 22**.

TURNING CRASHES

Turning crashes were the most frequent, mostly occurring at intersections during daylight under clear and dry conditions. These involved vehicles turning left or right at intersections into through traffic, indicating driver misjudgment or failure to yield as primary factors.

FRONT TO REAR CRASHES

Front to rear crashes were the next most common, primarily under clear and dry conditions along IL 3 & IL 154. Most occurred when vehicles were slowing or stopping in traffic, suggesting driver inattention and short following distances as contributing causes.

PARKED MOTOR VEHICLE

Both A-injury crashes resulted from drivers under alcohol impairment where the vehicle left the travel lane and struck a parked vehicle.

Table 19. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Turning		1			11	12
Front to Rear			2	1	8	11
Angle				1	7	8
Parked Motor Vehicle		2			6	8
Fixed Object		1	1		5	7
Sideswipe Same Direction					4	4
Rear to Front					3	3
Rear to Side					1	1
Pedestrian			1			1
Total	0	4	4	2	45	55

Table 20. Weather Conditions

Weather Condition	Total
Clear	53
Cloudy/Overcast	1
Fog/Smoke/Haze	1
Total	55

Table 21. Lighting Conditions

Lighting Conditions	Total
Daylight	45
Darkness, Lighted Road	6
Darkness	2
Dusk	1
Dawn	1
Total	55

Table 22. Surface Conditions

Surface Conditions	Total
Dry	54
Wet	1
Total	55

SUMMARY AND COUNTERMEASURES

Crash patterns indicate restricted sight distance caused by on-street parking and buildings positioned close to the roadway edge, lack of dedicated turn lanes, and inadequate signage / pavement markings. To address these concerns, FHWA Proven Safety Countermeasures such as targeted parking restrictions near intersections would enhance sight distance and reduce low speed turning conflicts. A summary of the recommended countermeasures for IL 3 and IL 154 from Locust Street to Vine Street is provided in **Table 23**.

Table 23. Recommended Proven Safety Countermeasures

Countermeasure	Application
Corridor Access Management	Review on-street parking adjacent to intersections and remove to improve sight distance ('Daylighting')
Intersection Enhancement	- Curb extensions for pedestrian crossing at Locust St and at Main St intersection. Consider curb extensions at other intersections with high pedestrian activity - Upgrade pedestrian crossing at Locust St to Rapid Rectangular Flashing Beacon (RRFB)
Intersection Delineation	- Install stop bars on minor approaches - Add striping to intersection corners between curb and traveled way where parking is prohibited and daylighting is proposed. Reduce turning radii whenever possible
Roadway/Roadside Design Improvements	Stripe narrowed lanes to manage vehicle speeds and provide visual cues to slow down

IL 154 from Prairie Road to Kaskaskia River

This 3-mile rural segment of IL 154 consists of two lanes with a posted speed limit of 55 mph and an average AADT of 3,900 vehicles per day with about 10% heavy vehicles. The roadway includes long tangent sections with minimal curvature, narrow aggregate shoulders, drainage ditches, and no street lighting. The roadway profile includes vertical curves with a gentle rolling terrain down to the Kaskaskia River. Land use is open agricultural fields transitioning to wooded areas near the Kaskaskia River crossing. The Kaskaskia Port District is located on the south side of IL 154 west of the river which generates daily truck traffic. There is an at-grade railroad crossing with gates and signals for the port district rail spur.

A total of 51 crashes were recorded along this segment with fixed object crashes as the highest crash type, representing 31% of all crashes, followed by angle and animal crashes, each representing 18%.

- Fatal and injury crashes accounted for 41% of all crashes as shown in **Table 24**.
- Most crashes occurred in clear weather conditions at 90% as shown in **Table 25**.
- Daylight conditions represented 53% of all crashes as shown in **Table 26**.
- Crashes occurred predominantly on dry pavement at 86% as shown in **Table 27**.

FIXED OBJECT CRASHES

Most fixed object crashes occurred outside intersections under clear and dry conditions, involving vehicles running off the roadway and striking ditches, embankments, or culverts. A few crashes involved impacts with utility poles or railroad gates, with crashes distributed in both directions of travel. Three of the sixteen crashes included an A-injury when the vehicle exited the road. The fixed object crash patterns indicate lane departure and roadside recovery issues.

FRONT TO FRONT CRASHES

All three crashes resulted in a fatality (1) or serious injury (2). All crashes occurred under darkness with two crashes on wet pavement. Two crashes occurred east of Griggs Road where an elevated roadway profile reduces available sight distance. The fatal crash involved a pickup truck crossing the centerline and striking a motorcycle with drug impairment noted.

IL 154 AT PRAIRIE ROAD

One fatal crash included an angle crash during rain under daylight when a northbound passenger vehicle did not stop and entered the intersection striking an SUV traveling eastbound on IL 154. Half of all crashes occurred under darkness, indicating there is a need to evaluate lighting at the intersection. Angle and turning crashes represent eight of the twelve (67%) total crashes indicating there is a need to evaluate countermeasures to improve safety for crossing and turning traffic.

STREETLIGHT SPEED DATA

The 85th Percentile speeds from Streetlight indicate vehicles are traveling in excess of the posted speed limit through this section of the corridor. The higher speeds may be contributing to drivers losing control and leaving the roadway or crossing the centerline. The narrow shoulders, lack of

separation between travel lanes, and limited roadside safety treatments increase the risk for crashes that result from road departures due to speeding vehicles.

Table 24. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Fixed Object		3	2	1	10	16
Angle	1		3		5	9
Animal				1	8	9
Other Non-Collision			2		1	3
Turning			1		2	3
Front to Front	1	2				3
Front to Rear					3	3
Overturned			2			2
Other Object			1		1	2
Sideswipe Same Direction				1		1
Total	2	5	11	3	30	51

Table 25. Weather Conditions

Weather Condition	Total
Clear	46
Rain	4
Fog/Smoke/Haze	1
Total	51

Table 26. Lighting Conditions

Lighting Conditions	Total
Daylight	27
Darkness	21
Dawn	1
Dusk	1
Darkness, Lighted Road	1
Total	51

Table 27. Surface Conditions

Surface Conditions	Total
Dry	44
Wet	6
Other	1
Total	51

SUMMARY AND COUNTERMEASURES

Crash patterns indicate the need to provide means of warning and recovery for vehicles leaving the travel lane. To address these concerns, FHWA Proven Safety Countermeasures including Roadside Design Improvements, Enhanced Curve Delineation, Longitudinal Rumble Strips and Rumble Stripes, Intersection Enhancement, Intersection Delineation, and Lighting are all applicable to this section of the corridor. A summary of the recommended countermeasures for IL 154 from Prairie Road to Kaskaskia River is provided in **Table 28**.

Table 28. Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Flatten vertical curves • Install wider paved shoulders • Flatten or maintain foreslopes at 1:4 maximum • Remove hazards from the clear zone • Provide median to separate opposing travel directions • Widen to provide passing lanes or four-lane roadway
Enhanced Curve Delineation	• Install chevrons and post-mounted delineators • Retroreflective strips on sign posts
Longitudinal Rumble Strips and Rumble Stripes	• Install shoulder rumble strip (where possible) • Install centerline rumble stripes
Intersection Enhancements	• Install oversized stop signs and reflective posts on Prairie Rd • Evaluate alternative intersection type at Prairie Rd to reduce conflicts with crossing and left turn movements and address skew
Intersection Delineation	• Install stop bars and improved delineation for minor approaches at uncontrolled intersections
Lighting	• Improve lighting at the Prairie Rd intersection

IL 154 and Fifth Street Intersection

The intersection of IL 154 at Fifth Street in Baldwin operates as a two-way stop-controlled intersection with a posted speed limit of 35 mph and an AADT of 2,950 vehicles per day. IL 154 carries two lanes with on-street parking west of the intersection. Fifth Street carries two lanes with on-street parking on both sides of the road and has supplemental “CROSS TRAFFIC DOES NOT STOP” plaques below the stop signs. IL 154 has white edge lines and yellow skip-dash centerline pavement markings with no crosswalks or stop bars on Fifth Street. The northeast corner contains a general store and gas station that generates frequent turning movements and surrounding land use transitions from residential along Fifth Street to light commercial along IL 154, with overhead utilities, sidewalks, and curb-and-gutter present around the intersection. Several utility poles are positioned near the IL 154 edge of pavement restricting sight distance on Fifth Street.

A total of 11 crashes were recorded at the intersection with angle crashes as the highest crash type, representing 82% of all crashes.

- Injury crashes accounted for 27% of all crashes as shown in **Table 29**.
- Most crashes occurred in clear weather conditions at 91% as shown in **Table 30**.
- Daylight was the most common lighting condition at 82% as shown in **Table 31**.
- Crashes occurred predominantly on dry pavement surfaces 91% as shown in **Table 32**.

ANGLE CRASHES

Most angle crashes occurred in daylight under clear weather conditions, typically involving vehicles crossing through the intersection or entering from side streets. The crashes mainly resulted in property damage only, though **two A-injury** and **one C-injury** crash were recorded. The recurring pattern of straight-through and crossing movements suggests that driver misjudgment of gaps or failure to yield may be contributing factors.

Table 29. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Angle		2		1	6	9
Fixed Object					1	1
Turning					1	1
Total	0	2	0	1	8	11

Table 30. Weather Conditions

Weather Condition	Total
Clear	10
Rain	1
Total	11

Table 31. Lighting Conditions

Lighting Conditions	Total
Daylight	9
Darkness, Lighted Road	1
Dusk	1
Total	11

Table 32. Surface Conditions

Surface Conditions	Total
Dry	10
Wet	1
Total	11

SUMMARY AND COUNTERMEASURES

Crash patterns are dominated by angle crashes occurring under clear and dry daylight conditions, influenced by limited pavement markings, absence of stop bars, restricted sight distance, and multiple driveways generating frequent turning movements. To address these concerns, FHWA Proven Safety Countermeasures including Systemic Low-Cost Stop-Controlled Intersection Enhancements and Roadside Design Improvements are recommended to improve safety. A summary of the recommended countermeasures for IL 154 and Fifth Street is provided in **Table 33**.

Table 33. Recommend Proven Safety Countermeasures

Countermeasure	Application
Intersection Enhancements	Install reflective post panels on stop signs
Intersection Delineation	- Install stop bars and crosswalks on Fifth St approaches - Add striping to intersection corners between curb and traveled way where parking is prohibited to provide visual cues to slow down and provide daylighting to improve sight
Roadway/Roadside Design Improvements	Relocate or remove utility poles near intersection

IL 154 from Springview Road to Hickory Grove Road

IL 154 from Springview Road to Hickory Grove Road is a 0.7-mile rural segment with two lanes, a posted speed limit of 55 mph, and an average AADT of 2,950. Narrow unpaved shoulders with open drainage ditches line both sides, pavement markings are visible but slightly faded, and access is limited to a few residential and field driveways with no auxiliary turn lanes or street lighting. The roadway includes a horizontal curve combined with vertical curvature through the curve and is bordered by agricultural fields transitioning to wooded areas near the curve. Visibility through the curve is challenging, with restrictions due to roadside vegetation, embankments, and the crest vertical curve.

A total of 28 crashes were recorded along this segment with animal crashes representing 39% of all crashes followed by fixed object at 29%.

- Severe injury crashes accounted for 21% of all crashes as shown in **Table 34**.
- Most crashes occurred in clear weather conditions at 82% as shown in **Table 35**.
- Daylight was the most common lighting condition at 61% as shown in **Table 36**.
- Crashes occurred predominantly on dry pavement surfaces at 75% as shown in **Table 37**.

ANIMAL CRASHES

Animal crashes occurred in clear weather and predominantly during darkness, with most crashes taking place on dry road surfaces. These incidents involved vehicles traveling straight along the roadway with collisions occurring on the pavement. Vehicle types mainly included passenger cars, pickups, and SUVs, with deer identified as the striking object in all cases. None of the crashes resulted in injuries, and most occurred along open rural segments, including a few near bridge locations.

INJURY CRASHES

Of the seven injury crashes, four of them are a result of the vehicle leaving the roadway. The sideswipe opposite direction occurred when a vehicle crossed the centerline towards the outside of the curve, and one front to rear crash occurred when a vehicle was stopped waiting to turn left onto Springview Road.

Table 34. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Animal					11	11
Fixed Object		2			6	8
Sideswipe Opposite Direction		1			2	3
Front to Rear		2			1	3
Overturned		1	1			2
Other Object					1	1
Total	0	6	1	0	21	28

Table 35. Weather Conditions

Weather Condition	Total
Clear	23
Rain	4
Snow	1
Total	28

Table 36. Lighting Conditions

Lighting Conditions	Total
Daylight	17
Darkness	11
Total	28

Table 37. Surface Conditions

Surface Conditions	Total
Dry	21
Ice	2
Snow or Slush	1
Wet	4
Total	28

SUMMARY AND COUNTERMEASURES

Crash patterns along this rural segment are characterized by frequent animal crashes and roadway-departure events including fixed object, sideswipe, and overturn crashes occurring under clear, dry conditions, with many taking place during darkness where no roadway lighting is present. Narrow unpaved shoulders with open drainage ditches provide limited recovery space, contributing to the severity of departure-related crashes. To address these concerns, FHWA Proven Safety Countermeasures including Roadside Design Improvements, Wider Edge Lines, Enhanced Delineation for Horizontal Curves, and Longitudinal Rumble Strips and Rumble Stripes are some of the recommended countermeasures. A summary of the recommended countermeasures for IL 154 from Springview Road to Hickory Grove Road is provided in **Table 38**.

Table 38. Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Improve horizontal curves • Install wider paved shoulders • Remove hazards from the clear zone • Extend guardrail through curve to cover steep fill slope area • Provide median to separate opposing travel directions • Widen bridges to provide full shoulder width • Adjust profile west of Hickory Grove Rd to improve sight distance • Regrade embankment on insides of curves to improve horizontal offset sight distance
Wider Edge Lines	• Install wider edge lines in accordance with the MUTCD 11th Edition
Enhanced Curve Delineation	• Install chevrons and post-mounted delineators
Longitudinal Rumble Strips and Rumble Stripes	• Install shoulder rumble strip (where possible) • Install centerline rumble stripes

Additional countermeasures to address the high number of animal crashes include the following:

- Install animal crossing warning signs near bridges where animal activity is elevated.
- Improve sight distance and visibility of the area within the clear zone.
- Install fencing along the horizontal curve where sight distance is lower.

IL 154 East of Sparta (Eden)

The East of Sparta (Eden) segment of IL 154 extends approximately 2.2 miles and carries an AADT of about 4,300 vehicles per day. The roadway includes a series of horizontal curves and gradual profile changes as the corridor transitions between open agricultural land and scattered residential properties. The corridor features narrow shoulders, open drainage ditches, no designated pedestrian or bicycle facilities, and intersections with two-way stop control on the minor legs. Crash concentrations are elevated near the IL 154/IL 153 Wye intersections, and several severe and fatal crashes have occurred along the curved sections south of Eden, where roadway geometry and speed transitions may influence crash occurrence.

A total of 99 crashes were recorded along this segment with fixed object crashes as the highest crash type, representing 29% of all crashes, followed by animal crashes at 21% and front to rear crashes at 17%.

- Fatal and injury crashes accounted for 23% of all crashes as shown in **Table 39**.
- Most crashes occurred in clear weather conditions at 72% as shown in **Table 40**.
- Daylight lighting conditions accounted for 58% of crashes as shown in **Table 41**.
- Crashes occurred on dry pavement surfaces in 60% of crashes as shown in **Table 42**.

FIXED OBJECT CRASHES

Most fixed object crashes were single-vehicle run-off-road incidents under clear and dry conditions, often during darkness without lighting, involving vehicles striking ditches, culverts, utility poles, or guardrails. These crashes were concentrated along the southern curve at Eden Road and around the intersection with Valley Steel Road/Michael Road. There were **1 fatal, 2 A-injury, and 3 B-injury** crashes, with a few uncommon events including 1 parked-vehicle crash, 1 overturn, and 1 fence collision.

ANIMAL CRASHES

Animal-related crashes primarily involved vehicles striking deer while traveling straight ahead under clear and dry conditions, frequently during darkness without lighting. Most animal crashes along this segment occurred between the Sparta city limits and the IL 154 / IL 153 Wye intersection. All crashes resulted in property damage only, with no reported injuries. Animal crashes account for 46% of crashes under darkness lighting conditions.

FRONT TO REAR CRASHES

Front to rear crashes occurred mainly in daylight and clear weather. The crashes were mostly property damage only, with **1 A-injury and 4 B-injury** crashes recorded, including an isolated alcohol-impaired crash. Many front to rear crashes occurred on the southbound to westbound approach (toward Sparta) of the IL 154 / IL 153 Wye intersection, and most others occurring at various roadway intersections and accesses throughout the segment.

Table 39. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Fixed Object	1	2	3		23	29
Animal					21	21
Front to Rear		1	4		12	17
Turning		1	1	1	6	9
Sideswipe Opposite Direction			1		6	7
Overturned	2		1		2	5
Front to Front		2	1		1	4
Angle					3	3
Pedestrian		1				1
Other Object		1				1
Rear to Front					1	1
Other Non-Collision					1	1
Total	3	8	11	1	76	99

Table 40. Weather Conditions

Weather Condition	Total
Clear	71
Rain	23
Snow	3
Cloudy/Overcast	1
Fog/Smoke/Haze	1
Total	99

Table 41. Lighting Conditions

Lighting Conditions	Total
Daylight	57
Darkness	35
Darkness, Lighted Road	4
Dawn	2
Dusk	1
Total	99

Table 42. Surface Conditions

Surface Conditions	Total
Dry	56
Wet	29
Snow or Slush	4
Total	99

SUMMARY AND COUNTERMEASURES

Crash patterns along this segment are a result of unconventional intersection geometry, lack of intersection channelization, tight horizontal curvature, minimal roadside treatments such as shoulders, and high access/intersection density near curves and major intersections. To address these concerns, several FHWA Proven Safety Countermeasures are recommended. A summary of the recommended countermeasures for IL 154 East of Sparta is provided in **Table 43**.

Table 43. Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Install wider paved shoulders • Flatten or maintain foreslopes at 1:4 maximum • Remove hazards from the clear zone • Provide median to separate opposing travel directions • Align intersections of Valley Steel Rd and Michael Rd to remove offset
Wider Edge Lines	• Install wider edge lines in accordance with the MUTCD 11th Edition
Enhanced Curve Delineation	• Install chevrons and post-mounted delineators
Longitudinal Rumble Strips and Rumble Stripes	• Install shoulder rumble strips (where possible) • Install centerline rumble stripes
Roundabouts	• Install roundabouts at the two 90° curve intersections and eliminate horizontal curves
Corridor Access Management	• Remove/revise access points near IL 154 at IL 153 Wye intersection
Dedicated Left- and Right-Turn Lanes	• Consider turn lanes on IL 154 at Moffat Rd and Valley Steel Rd/Michael Rd intersections if volumes warrant them

IL 154 and County Line Road Intersection

The intersection is located at the Randolph and Perry County line about 6.3 miles east of Sparta. IL 154 is a two-lane minor arterial with an AADT of 1,600. County Line Road is a two-lane major collector under county jurisdiction. The intersection is a two-way stop control with no turn lanes on either approach with supplemental “CROSS TRAFFIC DOES NOT STOP” plaques below the stop signs. The stop signs on County Line Rd have a flashing beacon mounted above the stop signs. Stop bar pavement markings on the County Line Rd approaches are faded. Stop bars were recently re-painted in 2025 to replace the faded stop bars that were present during the crash data years.

The intersection was previously identified as a high-crash location. A total of 22 crashes were recorded during the study period with angle crashes representing 50% of all reported crashes, including all three fatal or severe crashes at the intersection.

- Fatal and injury crashes accounted for 55% of all crashes as shown in **Table 44**.
- Most crashes took place under clear weather conditions at 86% as shown in **Table 45**.
- Daylight lighting conditions accounted for 50% of all crashes as shown in **Table 46**.
- Crashes occurred predominantly on dry pavement surfaces at 91% as shown in **Table 47**.

Most of the crashes involved northbound and southbound vehicles on the minor approach failing to yield to through traffic on IL 154. Several crashes involved passenger vehicles and pickups, with a few incidents including commercial trucks.

INJURY CRASHES

Half of the twelve injury crashes occurred either under darkness, dawn, or dusk daylight. There is no existing lighting at the intersection. Two of the twelve injury crashes involved a vehicle turning at the intersection.

One **fatal crash** occurred under **clear and dusk** conditions, involving a van/minivan traveling southbound colliding with an eastbound vehicle on IL 154. This crash highlights the potential for severe outcomes when vehicles on the minor approach fail to stop or fail to recognize fast-moving through traffic on the major route.

Table 44. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Angle	1	2	4		4	11
Animal					4	4
Turning			2		1	3
Fixed Object			1		1	2
Front to Rear			1			1
Overtaken			1			1
Total	1	2	9	0	10	22

Table 45. Weather Conditions

Weather Condition	Total
Clear	19
Rain	2
Fog/Smoke/Haze	1
Total	22

Table 46. Lighting Conditions

Lighting Conditions	Total
Daylight	11
Darkness	7
Dawn	2
Dusk	1
Darkness, Lighted Road	1
Total	22

Table 47. Surface Conditions

Surface Conditions	Total
Dry	20
Wet	2
Total	22

SUMMARY AND COUNTERMEASURES

Crash patterns at this intersection show a high frequency of angle crashes when vehicles on the minor approach failed to yield to IL 154 traffic. To address these concerns, intersection enhancements and delineation, lighting, and reduced conflict intersections should be evaluated to improve safety. A summary of the recommended countermeasures for IL 154 and County Line Road is provided in **Table 48**.

Table 48. Recommended Proven Safety Countermeasures

Countermeasure	Application
Intersection Enhancements	• Install oversized stop signs and retroreflective posts or a secondary stop sign on the other side of the approach • Evaluate alternative intersection type to reduce conflicts with crossing and left turn movements
Intersection Delineation	• Install oversized intersection advance warning signs • Install supplemental intersection advance warning signs • Remove passing zones near intersection
Lighting	• Provide adequate lighting at the intersection
Roundabouts	• Install roundabout to address severe crash history and reduce high-speed, high-injury conflicts

IL 154 from East of County Line Road to Lost Prairie Road

IL 154 from east of County Line Road to Lost Prairie Road is a 3.3-mile rural segment with two lanes, a posted speed limit of 55 mph, and an average AADT of 1,900. The corridor traverses flat agricultural land with narrow unpaved shoulders, open drainage ditches, and clear sight distances typical of rural highway conditions. Land use is more wooded near Galum Creek with two waterway crossings that are narrow with guardrail.

A total of 68 crashes were recorded along the segment with animal crashes as the highest crash type at 63%, followed by fixed object crashes at 18%.

- Injury crashes accounted for 21% of all crashes as shown in **Table 49**.
- Most crashes occurred under clear weather conditions at 82% as shown in **Table 50**.
- Darkness was the most common lighting condition at 54% as shown in **Table 51**.
- Crashes occurred predominantly on dry pavement surfaces at 84% as shown in **Table 52**.

ANIMAL CRASHES

These crashes occurred along this segment; most involving deer strikes. Most crashes happened under clear and dark conditions on dry road surfaces, suggesting limited visibility at night as a key contributing factor. Nearly all vehicles were traveling straight ahead, indicating that drivers encountered animals unexpectedly while in motion. These crashes were predominantly single-vehicle property-damage-only incidents, involving passenger cars, SUVs, and pickup trucks. A few crashes occurred under wet or rainy conditions, further increasing the risk of loss of control or braking limitations.

FIXED OBJECT CRASHES

Several fixed object crashes were also reported along the segment, often resulting from vehicles running off the roadway. These incidents primarily occurred under clear weather and darkness, with most vehicles traveling east or west before departing the lane. Common objects struck included ditches, embankments, trees, utility poles, and guardrail ends, typically following a loss of control or lane departure. Some drivers were noted as fatigued, with no road surface defects reported, implying driver error or inattention as major contributing factors. While most crashes involved property damage, a few resulted in **A- or B-injury levels**, emphasizing the safety risks posed by unprotected roadside hazards.

STREETLIGHT SPEED DATA

The 85th percentile speeds from Streetlight indicate vehicles are traveling in excess of the posted speed limit through this section of the corridor. The higher speeds may be contributing to drivers losing control and leaving the roadway or having inadequate reaction time to avoid animals in the roadway. The narrow shoulders increase the risk for crashes that result from road departures due to speeding vehicles.

Table 49. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Animal			2	1	40	43
Fixed Object		2	2		8	12
Turning			1		2	3
Overturned			1	1		2
Front to Rear		1			1	2
Sideswipe Opposite Direction		1				1
Angle					1	1
Sideswipe Same Direction				1		1
Other Object					1	1
Front to Front			1			1
Other Non-Collision					1	1
Total		4	7	3	54	68

Table 50. Weather Conditions

Weather Condition	Total
Clear	56
Rain	5
Cloudy/Overcast	2
Snow	1
Blowing Snow	1
Sleet/Hail	1
Freezing Rain	1
Fog/Smoke/Haze	1
Total	68

Table 51. Lighting Conditions

Lighting Conditions	Total
Daylight	21
Darkness	37
Dawn	5
Dusk	5
Total	68

Table 52. Surface Conditions

Surface Conditions	Total
Dry	57
Wet	9
Snow or Slush	1
Ice	1
Total	68

SUMMARY AND COUNTERMEASURES

This rural segment experiences a high frequency of animal crashes and roadway-departure-related fixed object crashes, many occurring during darkness with limited visibility and no roadway lighting present. Narrow unpaved shoulders, drainage ditches, and lack of roadside protection increase the severity of run-off-road and overturn crashes. To address these concerns, roadside design improvements, wider edge lines, longitudinal rumble strips, and wildlife strategies are recommended. A summary of the recommended countermeasures for IL 154 from East of County Line Road to Lost Prairie Road is provided in **Table 53**.

Table 53. Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Install wider paved shoulders • Flatten or maintain foreslopes at 1:4 maximum • Remove hazards from the clear zone • Improve/flatten vertical curves east of IL 150 / Galum Creek
Wider Edge Lines	• Install wider edge lines in accordance with the MUTCD 11th Edition
Longitudinal Rumble Strips and Rumble Stripes	• Install shoulder rumble strip (where possible) • Install centerline rumble stripes

Additional countermeasures to address the high number of animal crashes include the following:

- Install animal crossing warning signs and fencing near bridges / culverts where animal activity is elevated.
- Improve sight distance and visibility of the area within the clear zone.

IL 154 from Porcupine Road to Rose of Sharon Road

IL 154 from Porcupine Road to east of Rose of Sharon Road is a 0.35-mile rural segment with two lanes, a posted speed limit of 55 mph, and an average AADT of 2,150. The segment features a horizontal curve with open agricultural land on both sides and narrow unpaved shoulders and no turn lanes at the intersections within the segment. The segment includes open roadside ditches, a few driveways and field access, and no street lighting.

A total of 16 crashes were recorded along this segment with animal and fixed object crashes as the highest crash types, each representing 44% of all crashes.

- Injury crashes accounted for 25% of all crashes as shown in **Table 54**.
- Most crashes occurred under clear weather conditions at 69% as shown in **Table 55**.
- Daylight was the most common lighting condition at 50% as shown in **Table 56**.
- Crashes occurred predominantly on dry pavement surfaces at 69% as shown in **Table 57**.

Recorded crashes typically occurred along open rural stretches or near bridge locations, involved eastbound and westbound vehicles traveling straight, and primarily resulted from deer strikes. All reported crashes were property-damage-only with no injuries or fatalities.

ANIMAL CRASHES

A total of seven animal crashes occurred along this segment under clear weather conditions, primarily during darkness, and mostly on dry road surfaces. A few crashes took place near bridge locations, while the remainder occurred along open rural stretches of roadway. These crashes involved vehicles traveling straight, mainly in the eastbound and westbound directions, with deer being the primary object struck. All incidents resulted in property damage only, with no reported injuries or fatalities.

FIXED OBJECT CRASHES

A total of seven fixed object crashes occurred along this segment, all involving single vehicles running off the roadway most commonly to the right and striking ditches, embankments, culverts, or bridge structures. Conditions varied, with most crashes occurring under clear, dry daylight, one during darkness, and one during snow/ice. Vehicle types included predominantly passenger vehicles and SUVs, with one motorcycle and one tractor/semi-trailer, resulting in one fatal injury, one B-injury, and the remaining crashes classified as property damage only.

The single fatal crash involved a passenger vehicle traveling eastbound under clear daylight conditions on a dry surface. The vehicle ran off the roadway to the left, striking a ditch/embankment and overturning off the pavement. The crash occurred along the open rural portion of the segment, away from intersections, and resulted in one fatality.

STREETLIGHT SPEED DATA

The 85th percentile speeds from Streetlight indicate vehicles are traveling in excess of the posted speed limit through this section of the corridor. The higher speeds may be contributing to drivers losing control and leaving the roadway or having inadequate reaction time to avoid animals in the roadway. The narrow shoulders increase the risk for crashes that result from road departures due to speeding vehicles.

Table 54. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Animal					7	7
Fixed Object	1	1	1		4	7
Overturned		1			1	2
Total	1	2	1	0	12	16

Table 55. Weather Conditions

Weather Condition	Total
Clear	11
Rain	2
Snow	1
Cloudy/Overcast	1
Fog/Smoke/Haze	1
Total	16

Table 56. Lighting Conditions

Lighting Conditions	Total
Daylight	8
Darkness	7
Dawn	1
Total	16

Table 57. Surface Conditions

Surface Conditions	Total
Dry	11
Wet	4
Ice	1
Total	16

SUMMARY AND COUNTERMEASURES

This rural segment experiences a high frequency of Animal crashes and roadway-departure-related Fixed Object crashes, many occurring during darkness with limited visibility and no roadway lighting present. Narrow unpaved shoulders, drainage ditches, and lack of roadside protection increase the severity of run-off-road and overturn crashes. To address these concerns, roadside design improvements, wider edge lines, longitudinal rumble strips, and wildlife strategies are recommended. A summary of the recommended countermeasures for IL 154 from Porcupine Road to Rose of Sharon Road is provided in **Table 58**.

Table 58. Recommended Proven Safety Countermeasures

Countermeasure	Application
Roadway/Roadside Design Improvements	• Improve horizontal curves • Install wider paved shoulders • Flatten or maintain foreslopes at 1:4 maximum • Remove hazards from the clear zone • Align the intersection approaches of Rose of Sharon Road
Enhanced Delineation for Horizontal Curves	• Install chevrons and post-mounted delineators • Retroreflective strips on sign posts
Wider Edge Lines	• Install wider edge lines in accordance with the MUTCD 11th Edition
Longitudinal Rumble Strips and Rumble Stripes	• Install shoulder rumble strip (where possible) • Install centerline rumble stripes

Additional countermeasures to address the high number of animal crashes include the following:

- Install animal crossing warning signs to warn drivers of animal activity.
- Improve sight distance and visibility of the area within the clear zone.

IL 13 / IL 127 from Randolph Street to Railroad Crossing

IL 13 / IL 127 from Randolph Street to the railroad crossing represents a 0.7-mile urban segment immediately south of the Pinckneyville Main Street and Water Street intersection. The segment has a posted speed limit of 30 mph and an average AADT of 6,350 vehicles per day. The segment currently consists of two lanes, on-street bike lanes in each direction, and sidewalks. The segment serves residential and light commercial land uses with multiple two-way stop control intersections and driveways. **IDOT completed a resurfacing and roadway reconfiguration project between 2022 and 2023 (Contract 78624) alongside the Main Street and Water Street intersection improvements.** Prior to the construction project, which represents the time during a greater portion of crash data studied, IL 13 / IL 127 included two lanes with on-street parking on the southbound side of the street from Mulberry Street to Hawkins Street and no bicycle facilities. The current bike lanes end at Grand Avenue where the roadway width narrows to 24' in total width.

Crash patterns along this segment show front to rear crashes as the highest crash type at 20%, followed by angle and turning crashes at 18% each. Injury crashes primarily occur at intersections.

- Injury crashes account for 18% of all crash types as shown in **Table 59**.
- Total crashes and injury crashes have reduced since the completion of the roadway reconfiguration project in 2023 as shown in **Table 60**.
- Most crashes occurred under clear weather conditions at 76% as shown in **Table 61**.
- Daylight was the most common lighting condition at 76% as shown in **Table 62**.
- Crashes occurred predominantly on dry pavement surfaces at 80% as shown in **Table 63**.

FRONT TO REAR CRASHES

Front to rear crashes occurred mostly under clear and dry daylight conditions, often at intersections or driveways where vehicles were slowing or stopped in traffic. These crashes resulted in 1 A-injury, 1 B-injury, and 1 C-injury, with the remainder being property damage only. The trend indicates driver inattention and short following distances as key contributing factors along this segment.

ANGLE CRASHES

Most angle crashes occurred at uncontrolled intersections in Pinckneyville under clear, dry, daylight conditions, typically involving vehicles traveling straight through or entering from side streets. These crashes resulted in 1 A-injury, 2 B-injury, and 1 C-injury, with the remainder being property damage only. The pattern suggests driver failure to yield and misjudgment at intersections as common contributing factors.

TURNING CRASHES

Turning crashes primarily involved left- and right-turning vehicles colliding with oncoming or through traffic at intersections. Most occurred under clear weather and dry daylight conditions, producing 1 A-injury and 1 C-injury crash, while others were property damage only. The crashes reflect typical low speed conflicts in areas with multiple access points and stop controls.

Table 59. Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Front to Rear		1	1	1	12	15
Angle		1	2	1	9	13
Turning		1		1	11	13
Fixed Object			1		10	11
Animal					9	9
Overturned			1		1	2
Other Object			1		1	2
Parked Motor Vehicle					2	2
Pedestrian				1		1
Sideswipe Same Direction					1	1
Sideswipe Opposite Direction					1	1
Rear to Front					1	1
Front to Front					1	1
Rear to Rear					1	1
Rear to Side					1	1
Total	0	3	6	4	61	74

Table 60. Severity By Year

Injury Type	2017	2018	2019	2020	2021	2022	2023	2024	Total
K									0
A	2		1						3
B		1	2	1			1	1	6
C	2	1			1				4
O	1	9	17	3	7	10	6	8	61
Total	5	11	20	4	8	10	7	9	74

Table 61. Weather Conditions

Weather Condition	Total
Clear	56
Rain	10
Snow	4
Cloudy/Overcast	2
Other	2
Total	74

Table 62. Lighting Conditions

Lighting Conditions	Total
Daylight	56
Darkness	13
Dawn	3
Dusk	1
Darkness, Lighted Road	1
Total	74

Table 63. Surface Conditions

Surface Conditions	Total
Dry	59
Ice	2
Snow or Slush	2
Wet	11
Total	74

SUMMARY AND COUNTERMEASURES

The crash data in future years should be reviewed to determine if the roadway reconfiguration project completed in 2023 for the corridor continues to be effective at reducing and eliminating injury crashes. If traffic volumes increase, there is higher potential for crashes without dedicated turn lanes or intersection channelization through the corridor. If crash concerns persist, the corridor should be re-evaluated to determine additional mitigating countermeasures.

Due to the narrow cross section with space taken by the through lanes and bike lanes, curb extensions at intersections to reduce pedestrian crossing distance are not feasible. There are limited pedestrian facilities to cross IL 13 / IL 127, thus Rectangular Rapid Flashing Beacon (RRFB) crossings at intersections that experience higher pedestrian activity should be considered. Pedestrian crossings at uncontrolled intersections should be evaluated for potential safety and risk concerns and implemented following Department policy.

IL 13 / IL 127 and Beaucoup Road / Elkhville Road Intersection

The intersection of IL 13 / IL 127 and Beaucoup Rd / Elkhville Rd is in Jackson County at the north end of the Village of Vergennes. IL 13 / IL 127 is a two-lane principal arterial with an AADT of 3,850. Beaucoup Rd / Elkhville Rd is a two-lane major collector with AADTs of 500 and 1,100 west and east of the intersection, respectively. The intersection is a two-way stop control with no turn lanes on any approach, no street lighting, or supplemental signs or plaques. There are advanced intersection warning signs (without specifying the street) on IL 13 / IL 127. The surrounding land use is primarily agricultural with a farm equipment supplier located east of the intersection and Elverado Intermediate and Elementary school located ½ mile west of the intersection. The posted speed limit on IL 13 / IL 127 is 55 mph with reduced speeds to 50 mph about 1,000 feet south of the intersection.

A total of 12 crashes were recorded during the study period with angle crashes representing 50% of all reported crashes, including three severe crashes at the intersection.

- Fatal and injury crashes accounted for 75% of all crashes as shown in **Table 64**.
- Most crashes took place under clear weather conditions at 83% as shown in **Table 65**.
- Daylight lighting conditions only accounted for 42% of all crashes as shown in **Table 66**.
- Crashes occurred predominantly on dry pavement surfaces at 83% as shown in **Table 67**.

All injury crashes occurred in daylight under clear conditions. Several crashes occurred when drivers failed to stop or yield the right-of-way causing an angle crash.

Table 64: Crash Type and Severity

Crash Type	K	A	B	C	O	Total
Angle		3	2	1		6
Turning		1	1		2	4
Front to Rear			1			1
Sideswipe Opposite Direction					1	1
Total	0	4	4	1	3	12

Table 65: Weather Conditions

Weather Condition	Total
Clear	10
Fog/Smoke/Haze	1
Rain	1
Total	12

Table 66: Lighting Conditions

Lighting Conditions	Total
Daylight	5
Darkness	5
Darkness, Lighted Road	1
Dusk	1
Total	12

Table 67: Surface Conditions

Surface Conditions	Total
Dry	10
Wet	2
Total	12

SUMMARY AND COUNTERMEASURES

Crash patterns at this intersection show a high frequency of angle crashes when vehicles on the minor approach failed to yield to IL 13 / IL 127 traffic. To address these concerns, intersection enhancements, delineation, and reduced conflict intersections should be evaluated to improve safety. A summary of the recommended countermeasures for the IL 13 / IL 127 and Beaucoup Rd / Elkhville Rd intersection is provided in **Table 68**.

Table 68: Recommended Proven Safety Countermeasures

Countermeasure	Application
Intersection Enhancements	• Install oversized stop signs with flashing beacon or a secondary stop sign on the other side of the approach • Install supplemental signs and retroreflective posts • Evaluate alternative intersection type to reduce conflicts with crossing and left turn movements
Intersection Delineation	• Install oversized intersection advance warning signs • Install supplemental intersection advance warning signs • Remove passing zones near intersection
Lighting	• Provide adequate lighting at the intersection
Roundabouts	• Install roundabout to address severe crash history and reduce high-speed, high-injury conflicts

Conclusions

The Southwest Connector Highway has long faced challenges related to roadway safety and design deficiencies. This crash summary underscores the need for comprehensive improvements to reduce crash frequency and severity, and to enhance overall roadway function. Between the latest crash data set from 2017 to 2024 and the 2019 Task Force Report (2012 – 2019), crash patterns were generally consistent with similar conclusions.

Crash Summary

The crash data from 2017 to 2024 indicates that animal crashes are by far the most common crash type in the study area, primarily concentrated in rural areas, however rural areas also tend to experience high frequencies of crashes related to lane/roadway departure such as fixed object, overturning, sideswipe opposite direction, and front to front type crashes, as well as some intersection-related crashes like front to rear, turning, and angle crashes, which were most prevalent at rural stop-controlled intersections. Lane/roadway departure crashes can be attributed to the corridor's deficient shoulders, limited means of recovery, objects within the clear zone, and at some locations deficient horizontal and vertical curvature. Intersection-related crashes can be attributed to the presence of high-speed conflict points and the judgement necessary to navigate two-way stop control intersections, often with no turn lane channelization.

Within urban areas, the most common crash types are front to rear, turning, and angle crashes, as well as some parked motor vehicle crashes. These crashes can be attributed to the high density of accesses and intersections on the downtown corridors, high speeds at the transition areas entering the downtowns, and close following behavior.

The most common crash types associated with fatal and A-injury crashes in the study area are front to front, fixed object, overturning, angle, turning, and front to rear crashes, due to the high speeds at which they typically occur. Pedestrian and bicycle crashes typically occurred in rural areas with limited active transportation facilities or in urban areas at intersections or designated crossings and most commonly resulted in A-injury crashes.

Recommendations

Countermeasures were examined to address the crash concerns at selected locations based on their higher frequency of crashes (see the section 'Detailed Crash Analysis by Location'), particularly fatal and A-injury crashes, as well as the concerns for pedestrian and bicycle safety. While the selected locations received countermeasures to address specific concerns there, many countermeasures were found to be consistent across locations with similar characteristics. Countermeasures can generally be categorized between rural and urban roadway segments/ environments. If other facilities within the study area exhibit similar characteristics and crash patterns, then these countermeasures may also be applicable and should be considered. Countermeasures related to speed management and reduction were also explored and were sourced from the report titled *Speed Management Toolbox for Rural Communities*³.

³ CTRE, Iowa State University – [Speed Management Toolbox for Rural Communities – 2013](#)

RURAL SEGMENTS

For rural road segments, which constitute the majority of roadway segments in the study area, the following common countermeasures were recommended:

- Countermeasures to mitigate crashes to lane/roadway departure (fixed object, overturning)
 - Improve or eliminate/flatten substandard horizontal and vertical curves
 - Install chevrons and post-mounted delineators with retroreflective strips on posts
 - Implement wider edge lines per the MUTCD 11th Edition
 - Install wider paved shoulders (also mitigates roadside pedestrian/bicycle crashes)
 - Install shoulder rumble strips where possible (consider placement with respect to shoulder use by cyclists)
 - Flatten or maintain foreslopes at 1:4 maximum
 - Remove hazards from the clear zone
 - Install guardrail and advisory signs where geometric improvements are infeasible
- Countermeasures to mitigate crashes where vehicles cross the centerline (sideswipe opposite direction, front to front)
 - Install centerline rumble stripes
 - Provide median or buffer space to separate opposing lanes
 - Widen roadway to provide passing lanes or four-lane divided roadway
- Countermeasures to mitigate intersection-related crashes (front to rear, turning, angle)
 - Install turn lanes where warranted
 - Remove passing zones near intersections
 - Install oversized, secondary (on other side of approaches), or supplemental stop and intersection warning signs with retroreflective strips on posts
 - Install stop bars on minor approaches
 - Provide adequate intersection lighting
 - Improve/eliminate intersection skew angle and close offset intersections
 - Install roundabouts or alternative intersection types where traffic control improvements are warranted
 - Provide raised medians and channelization to prohibit turning movements with sight challenges
- Countermeasures to mitigate animal crashes
 - Install animal crossing warning signs near elevated animal activity, particularly near bridges and culverts, including advisory speed plaques lower than posted speed
 - Improve sight distance and visibility within the clear zone, particularly with respect to clearing vegetation
 - Install wildlife fencing where visibility is restricted with means of animal egress
- Speed management countermeasures to mitigate/lessen severity of all crash types
 - Narrowed through lanes
 - Transverse lane markings or optical speed bars prior to potential hazards
 - Speed enforcement strategies

URBAN SEGMENTS

For urban road segments, which are found in the downtown and urban fringe areas of Red Bud, Baldwin, Sparta, and Pinckneyville, and Vergennes, the following common countermeasures were recommended:

- Countermeasures to mitigate intersection/access-related crashes (front to rear, turning, angle)
 - Install turn lanes where warranted
 - Review on-street parking adjacent to intersections and remove to improve sight distance ('Daylighting', also improves pedestrian visibility). Add striping to areas of daylighting to delineate parking prohibitions
 - Install stop bars on minor street approaches
 - Install supplemental warning signs and reflective strips on sign posts including on stop signs
 - Relocate/remove utility poles and visual obstructions within lines of sight
 - Access management strategies and remove accesses near intersections
- Countermeasures to mitigate crashes related to excess speed (front to rear, turning, angle, parked motor vehicle)
 - Stripe narrowed lanes to provide visual cues to slow vehicles down
 - Reduce turning radii at intersections
 - Speed humps, speed tables, or in areas with high pedestrian activity, raised crosswalks (Speed bumps are not appropriate for this corridor since they reduce speeds to under 10 mph. Speed humps and tables are designed for higher speeds.)
 - Speed management countermeasures in rural to urban transition areas
 - Dynamic speed feedback signs
 - Transverse lane markings or optical speed bars
 - Chicanes or Chokers (raised curbside and/or center islands, flexposts)
 - Speed enforcement strategies
- Countermeasures to mitigate pedestrian/bicycle crashes
 - Install curb extensions and/or median refuges at pedestrian crossings/areas of high pedestrian activity
 - Enhanced pedestrian crossing facilities including high visibility crosswalks on all stop/signal-controlled approaches, warning signs, and RRFBs where high pedestrian activity is present
 - Install improved lighting along urban corridors, particularly at pedestrian crossing locations
 - Install bike lanes where extra lane width/a wide shoulder is present (in conjunction with lane narrowing)
 - Extend sidewalk throughout entire urban area, improve existing curb ramps, and consider streetscape improvements and gateway signage/treatments (also helps reduce vehicle speeds)



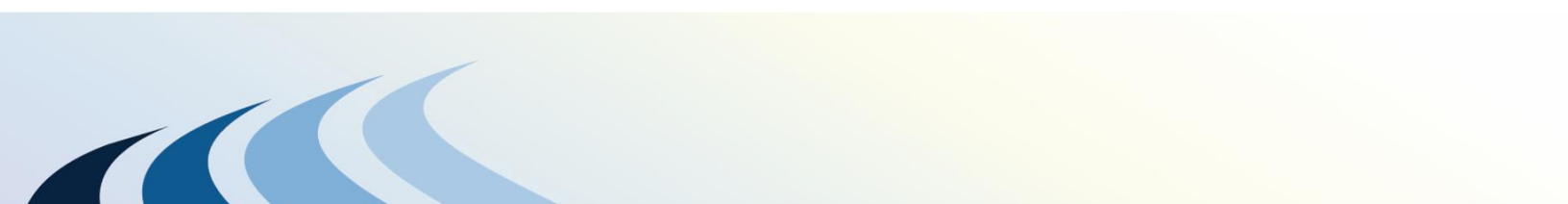
Crash Analysis Appendices

Illinois Department of Transportation

12/31/2025



Appendices



Appendix A – Crash Maps

Appendix A.1 – Crash Heat Map

Appendix A.2 – Fatal and Incapacitating Injury (K and A) Crashes

Appendix A.3 – Total Segment Crash Rates

Appendix A.4 – Fatal/Incapacitating Injury (K and A) Segment Crash Rates

Appendix A.5 – 2024 IDOT Statewide Safety Tier Maps (Intersections and Segments)

Appendix A.6 – Animal Related Crash Heat Map

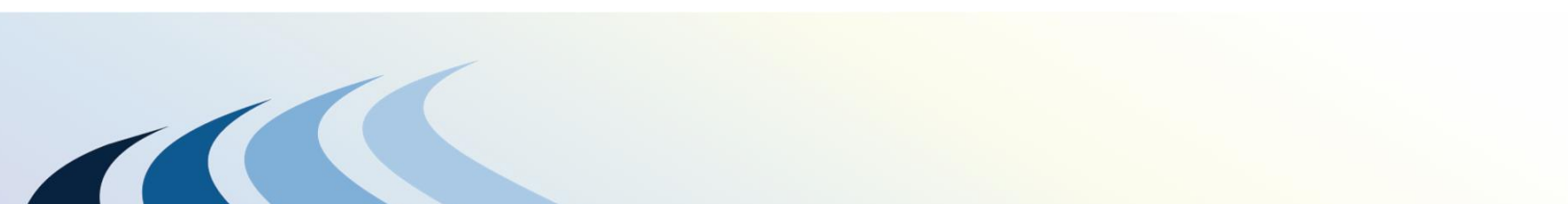
Appendix A.7 – Animal Related Crashes

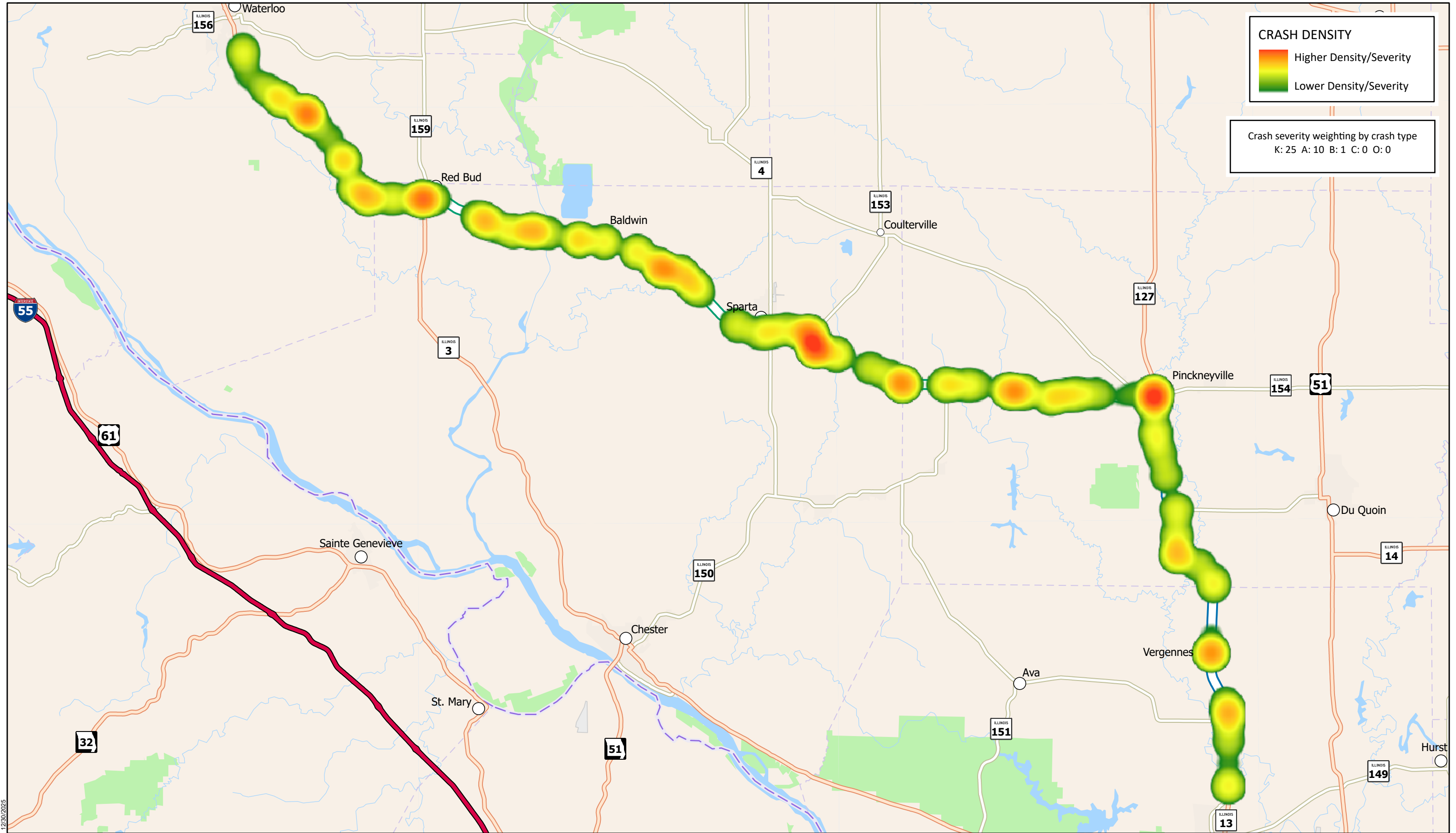
Appendix A.8 – Crashes Involving Trucks and Motorcycles

Appendix A.9 – Fixed Object Crash Heat Map

Appendix A.10 – Front to Rear Crashes

Appendix A.11 – Passing Maneuver Crashes





CRASH DENSITY

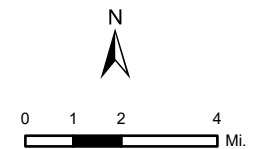
Higher Density/Severity

Lower Density/Severity

Crash severity weighting by crash type
K: 25 A: 10 B: 1 C: 0 O: 0

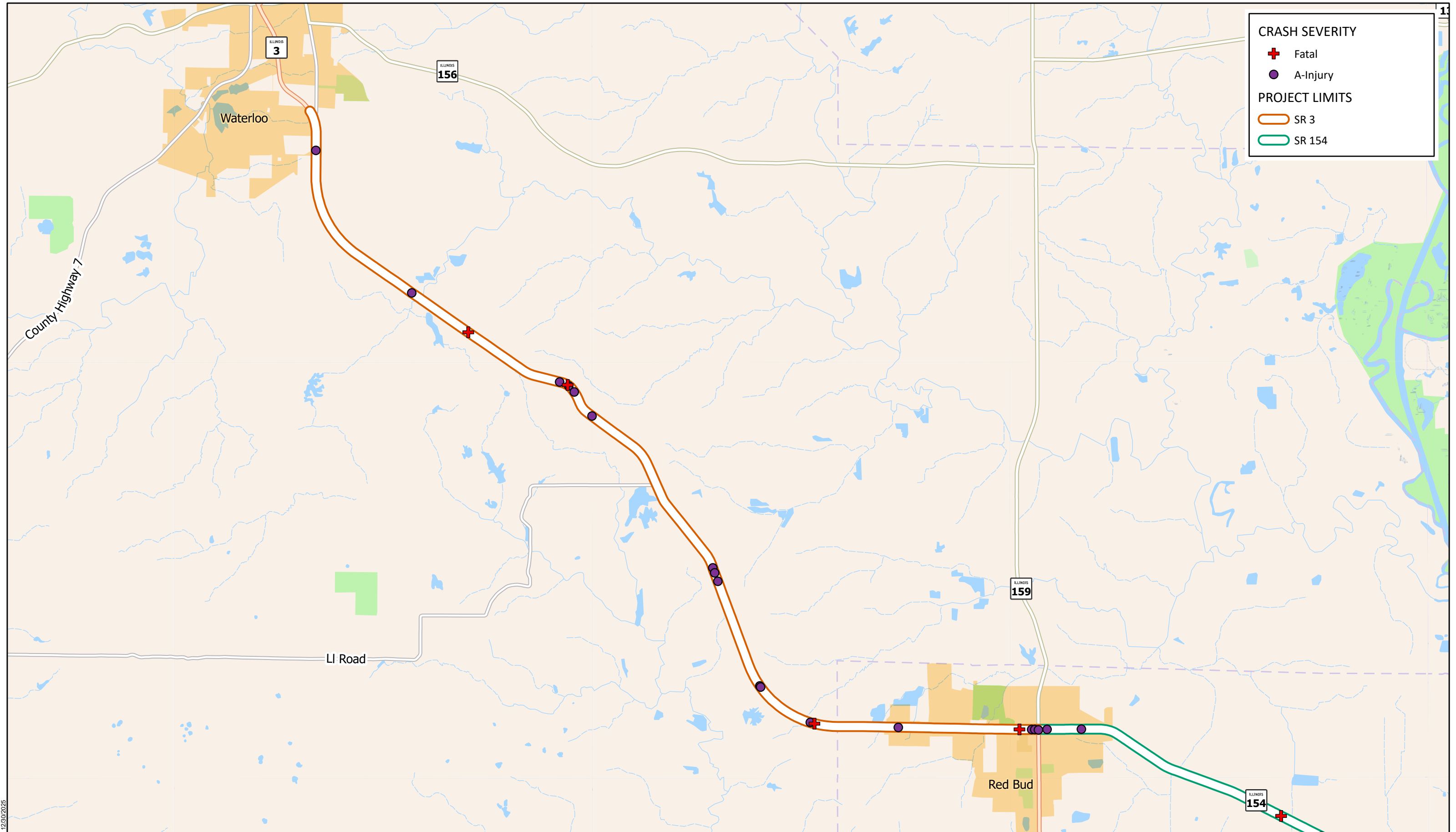


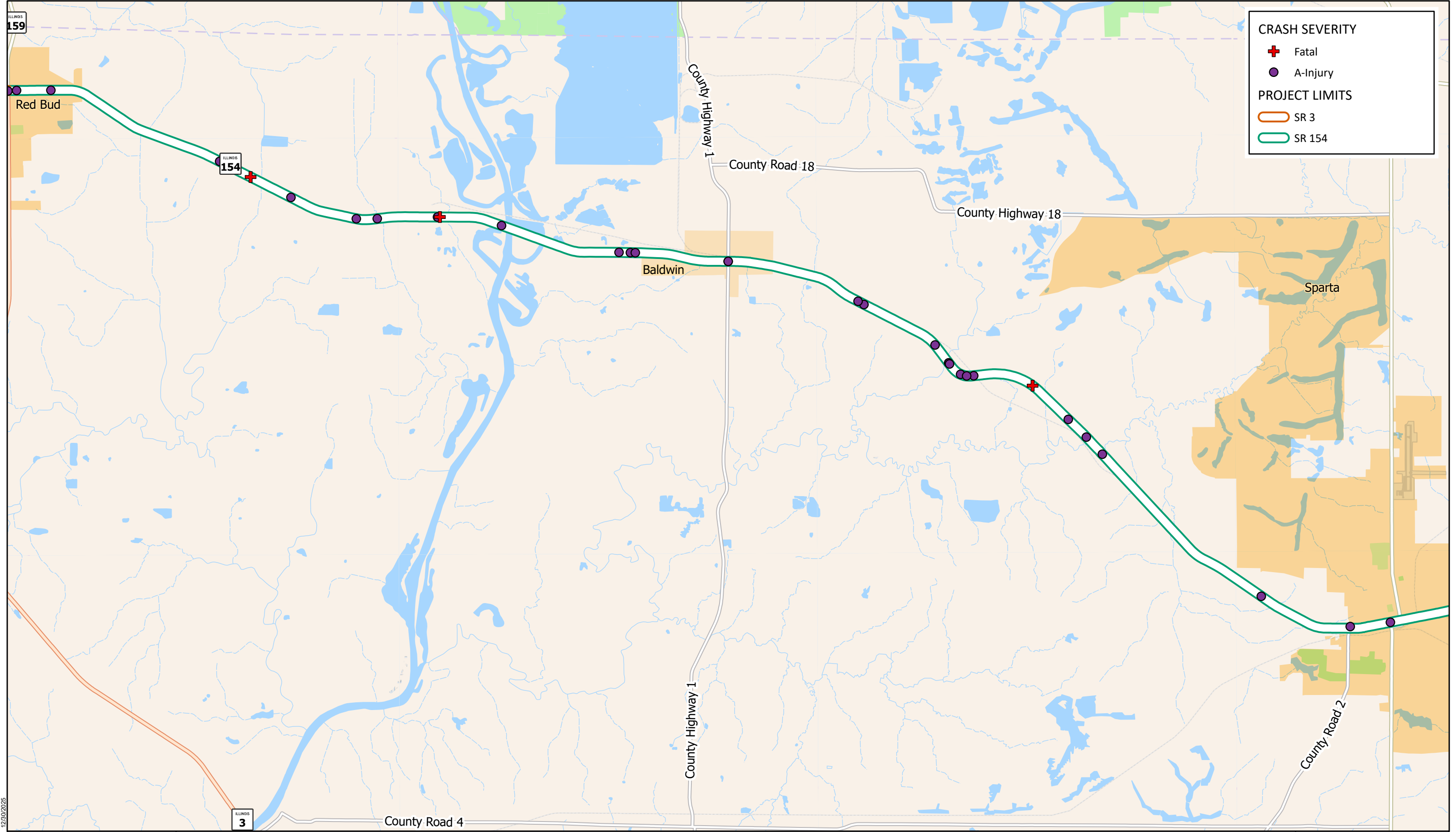
SOUTHWEST CONNECTOR HIGHWAY
Crash Heatmap (Weighted by Severity)



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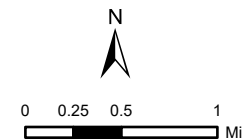


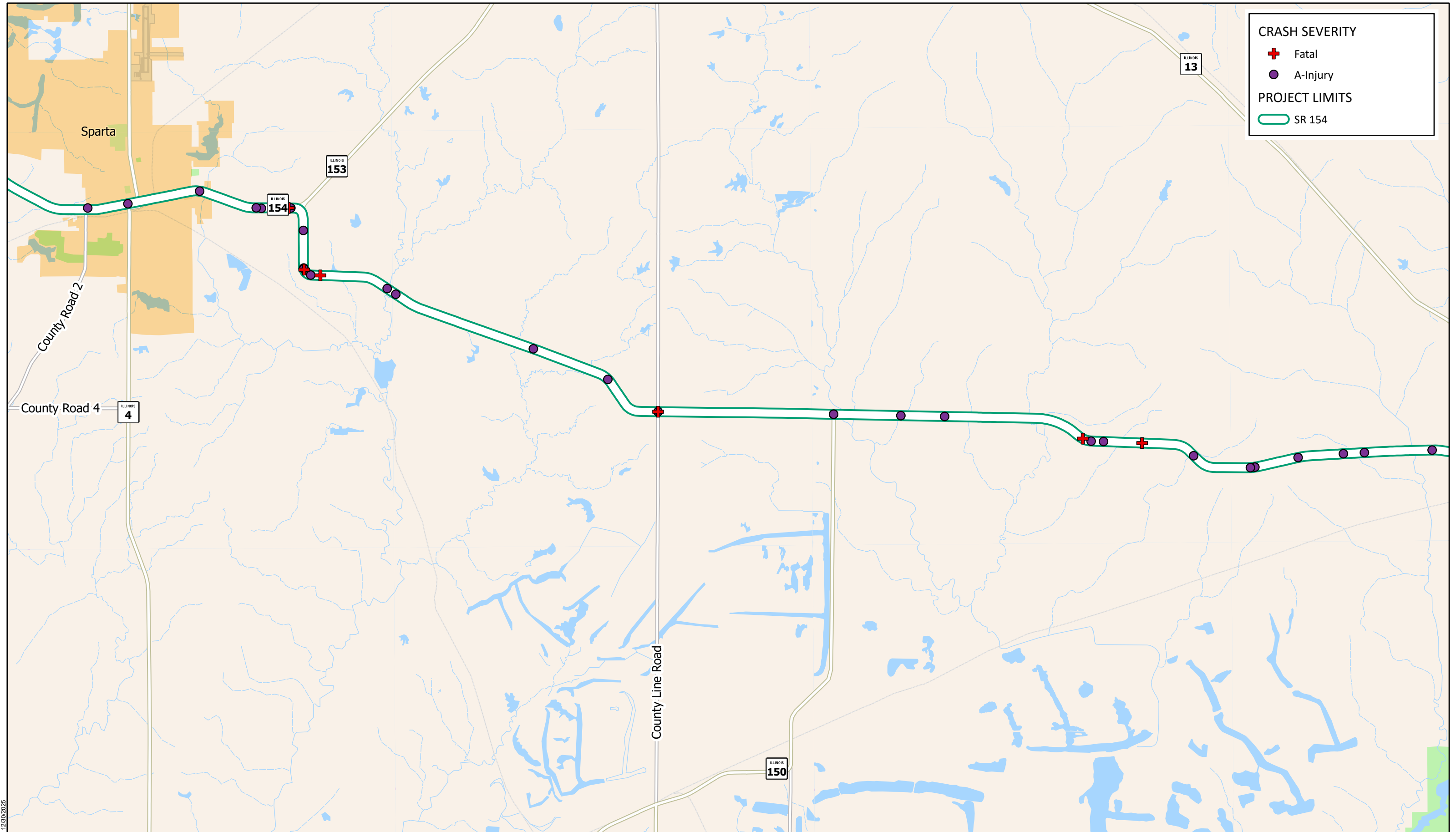
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SOUTHWEST CONNECTOR HIGHWAY

K and A Severity Crash Locations



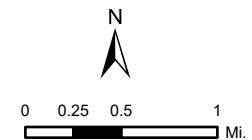


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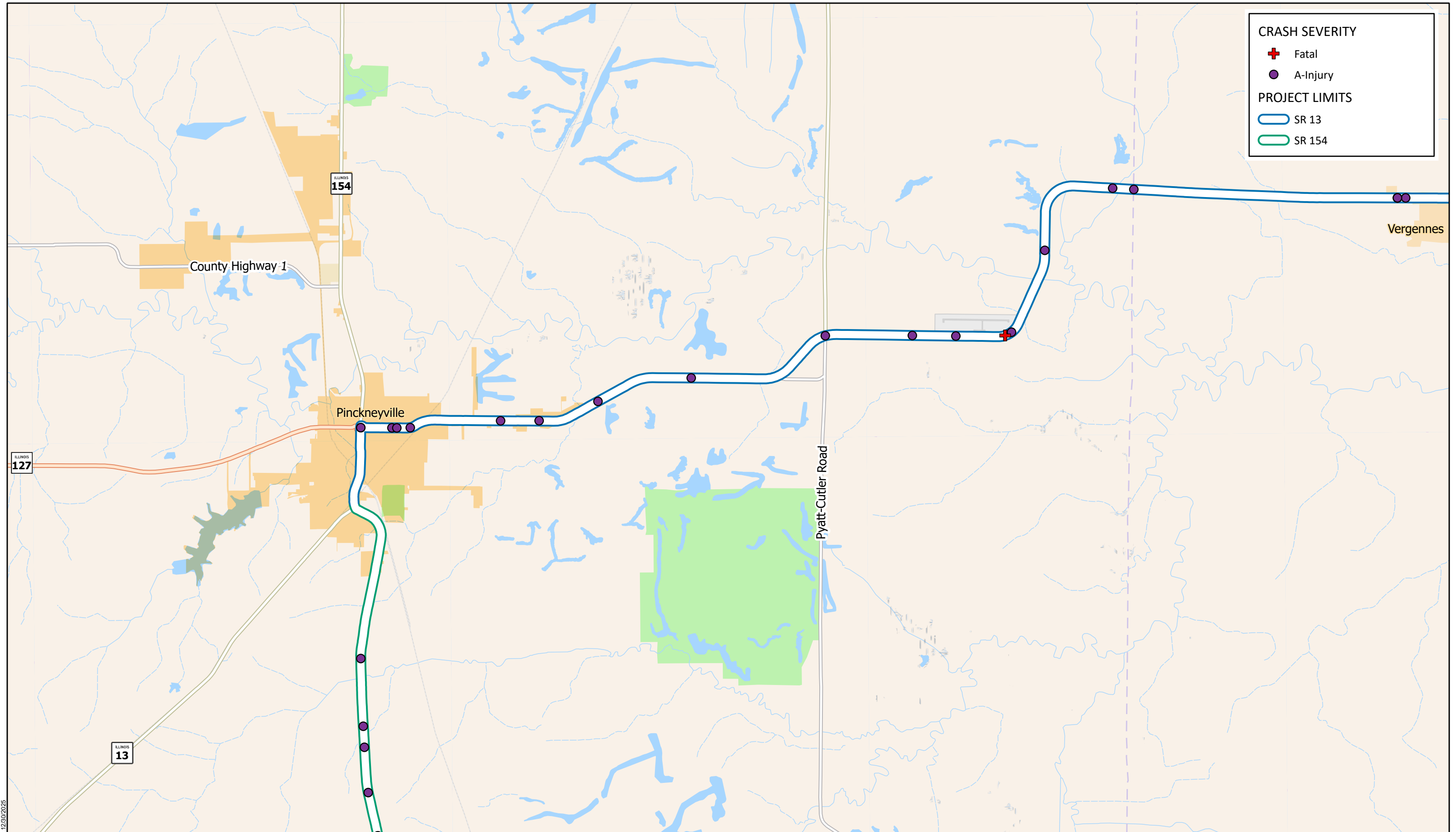


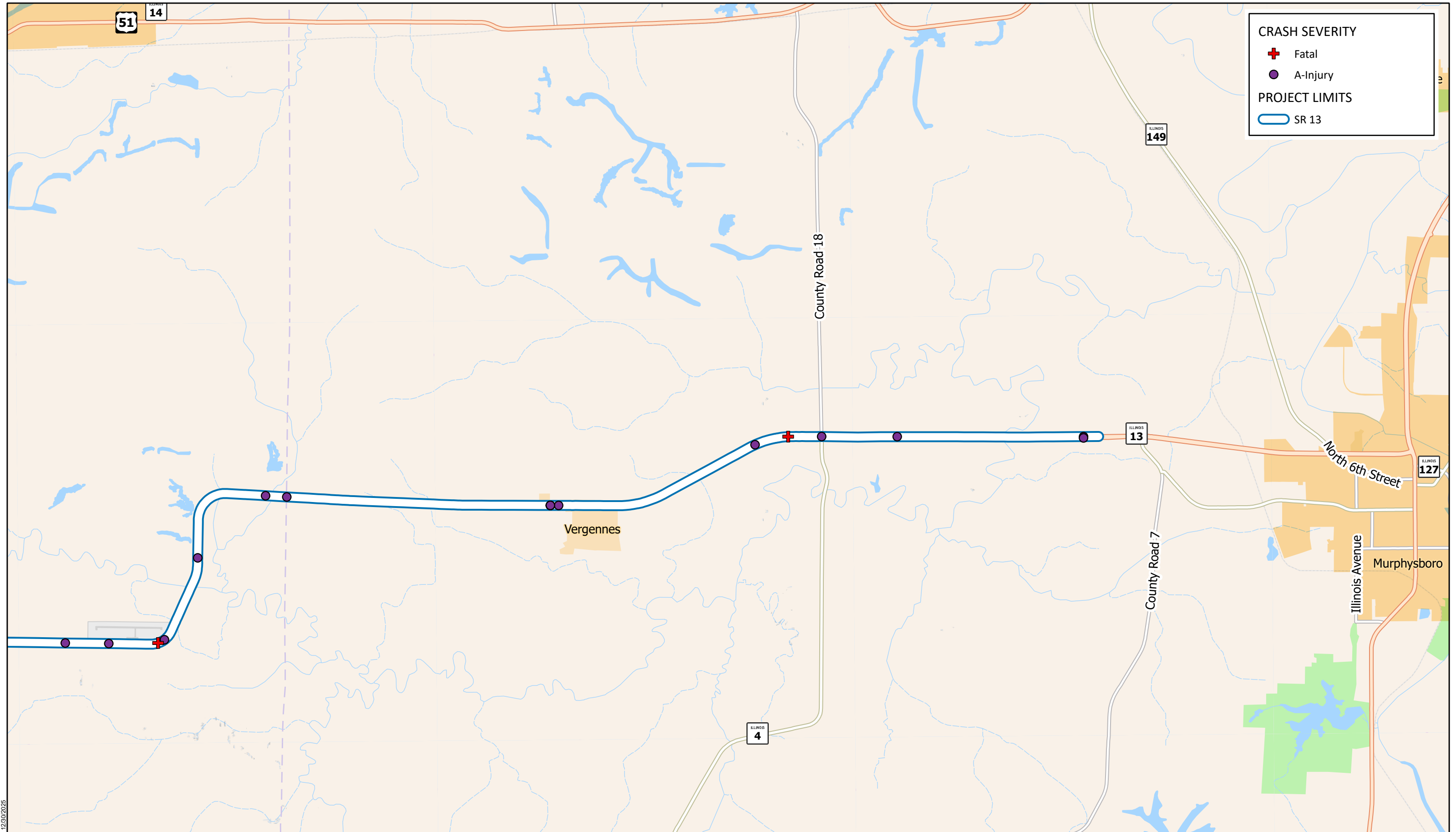
SOUTHWEST CONNECTOR HIGHWAY

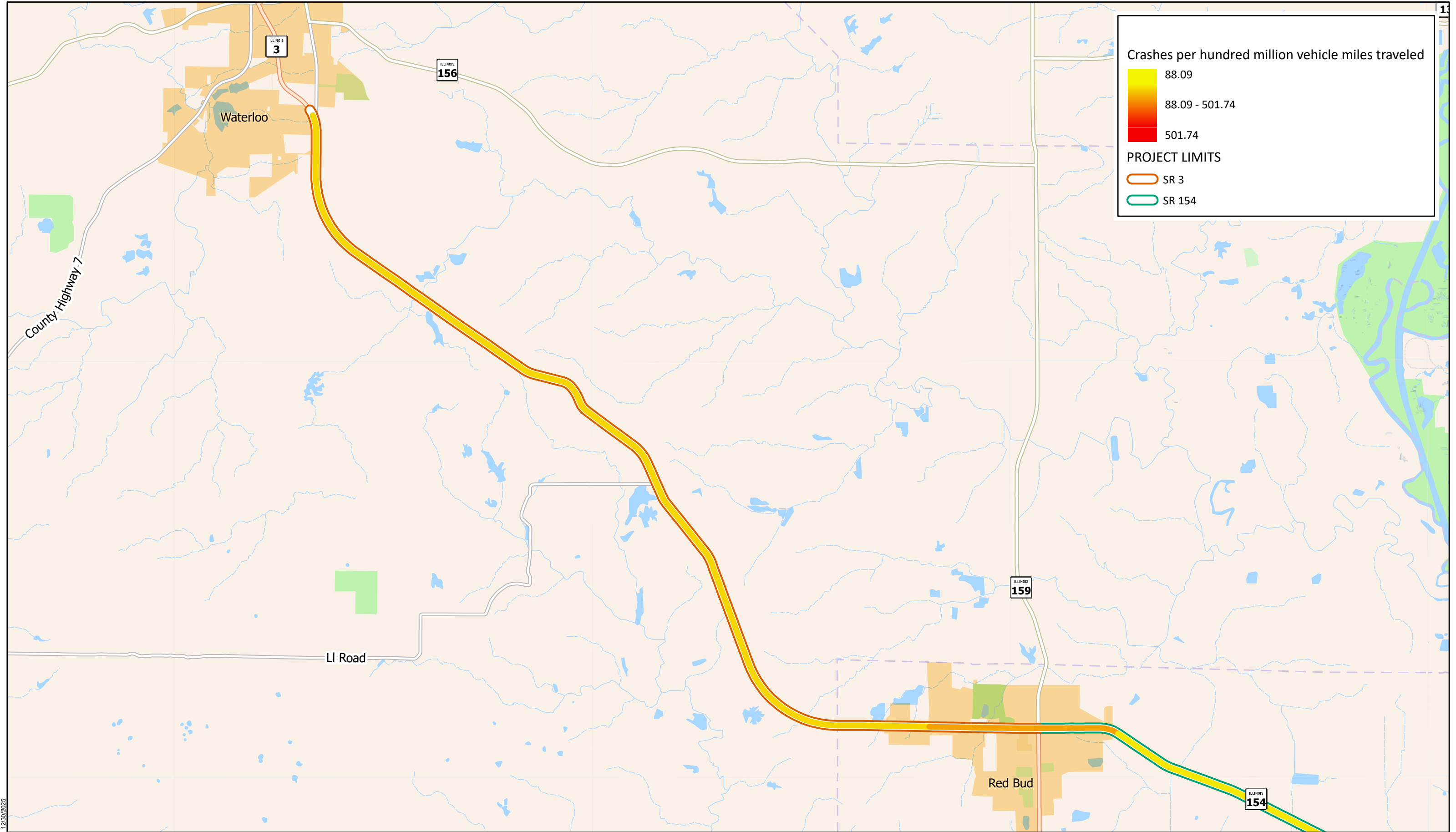
K and A Severity Crash Locations



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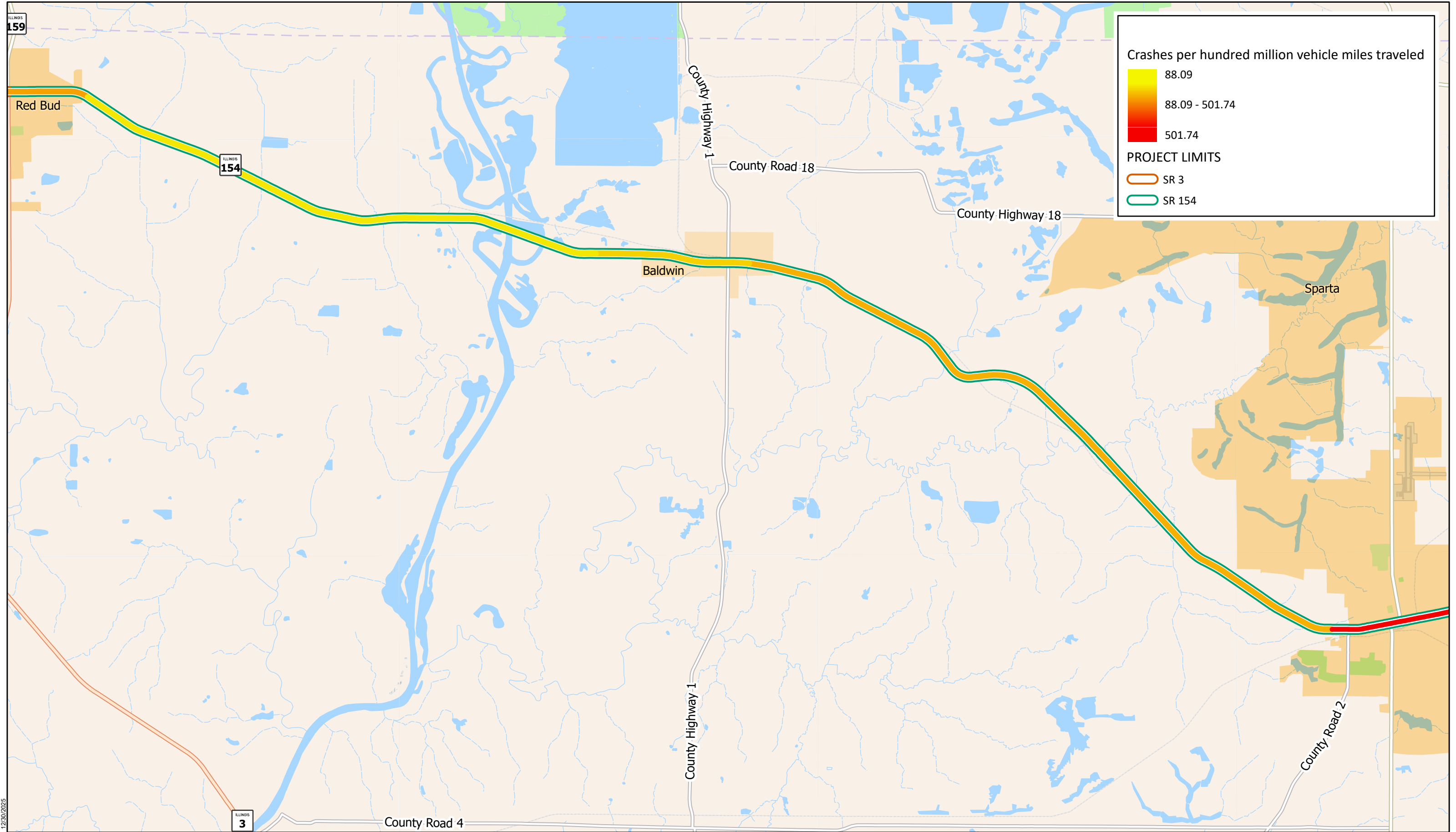


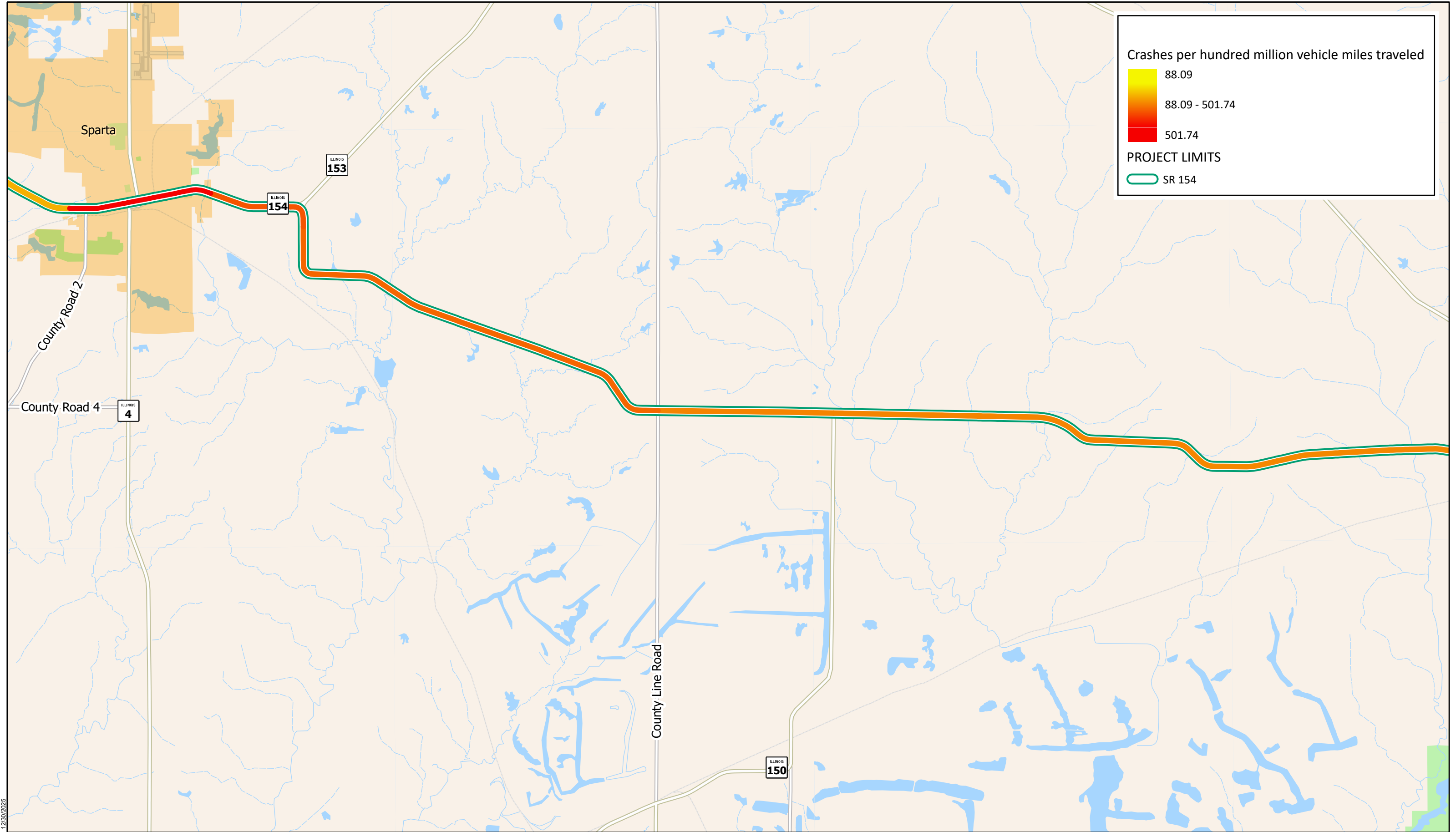
Crashes per hundred million vehicle miles traveled

Yellow	88.09
Orange	88.09 - 501.74
Red	501.74

PROJECT LIMITS

- SR 3
- SR 154



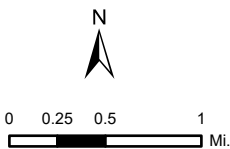


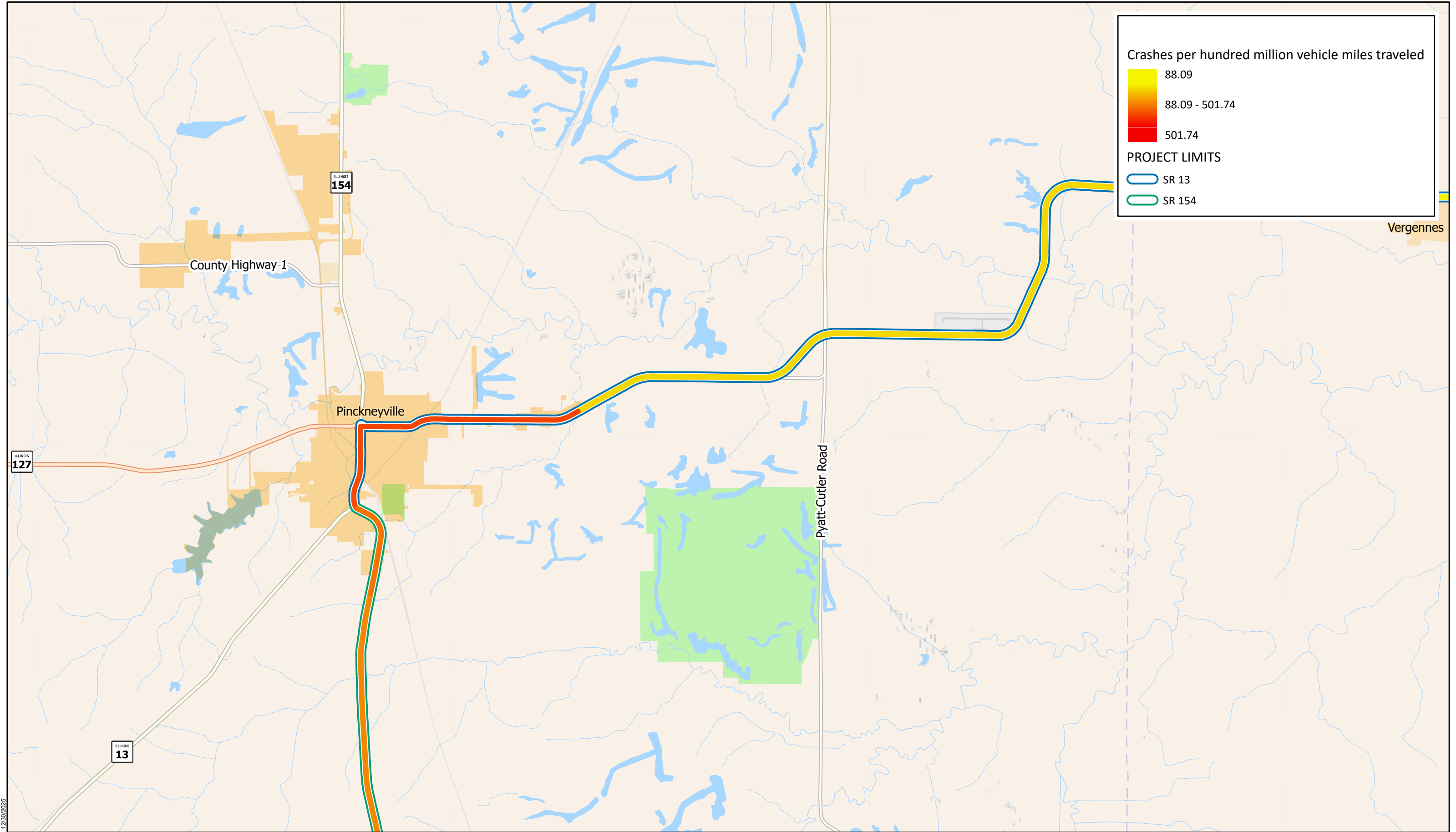
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SOUTHWEST CONNECTOR HIGHWAY

Segment Crash Rates (All Crashes)





Crashes per hundred million vehicle miles traveled

88.09

88.09 - 501.74

501.74

PROJECT LIMITS

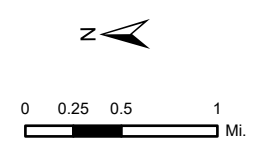
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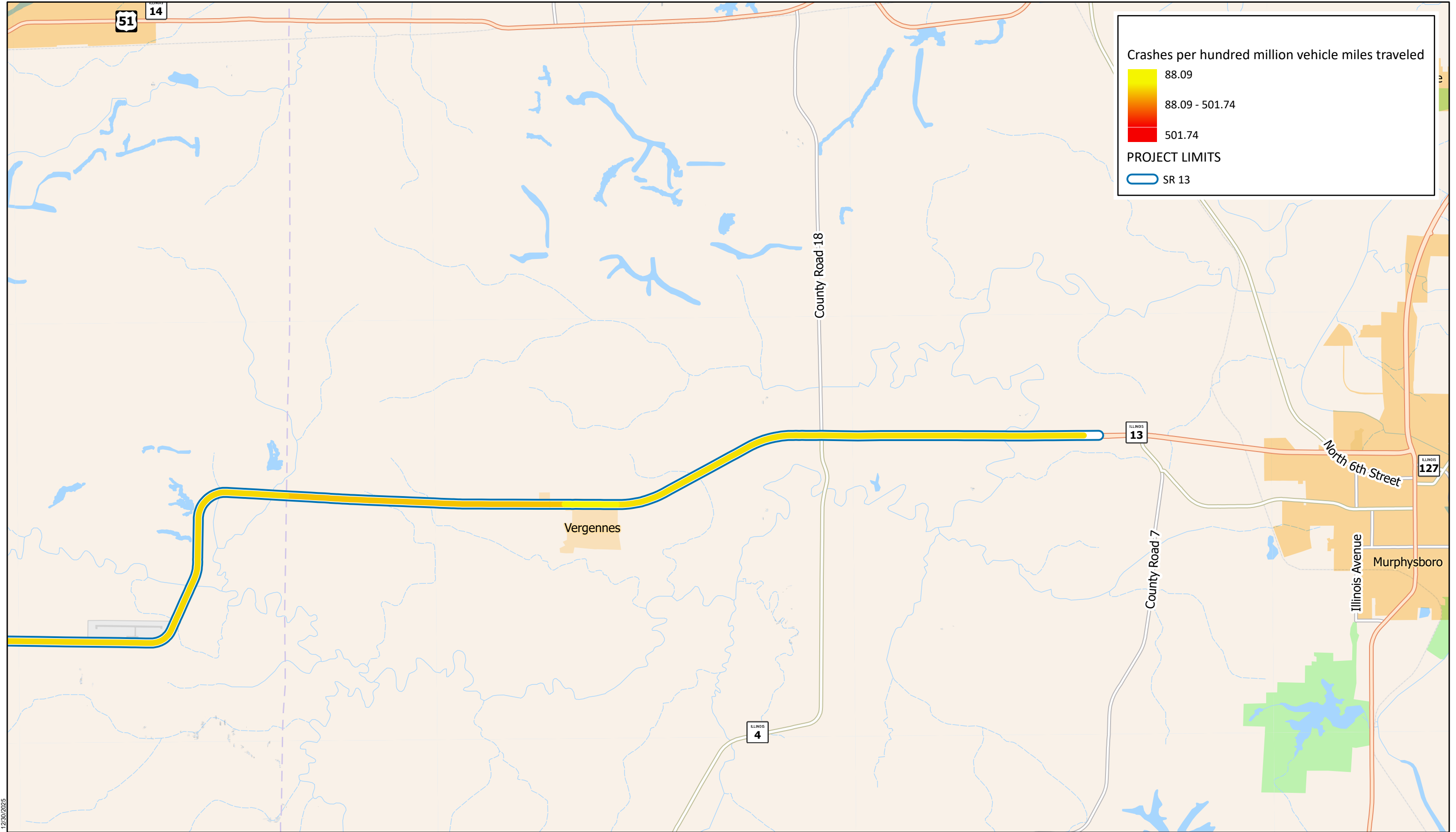
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SOUTHWEST CONNECTOR HIGHWAY
Segment Crash Rates (All Crashes)



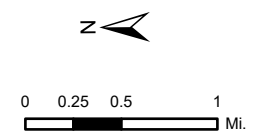


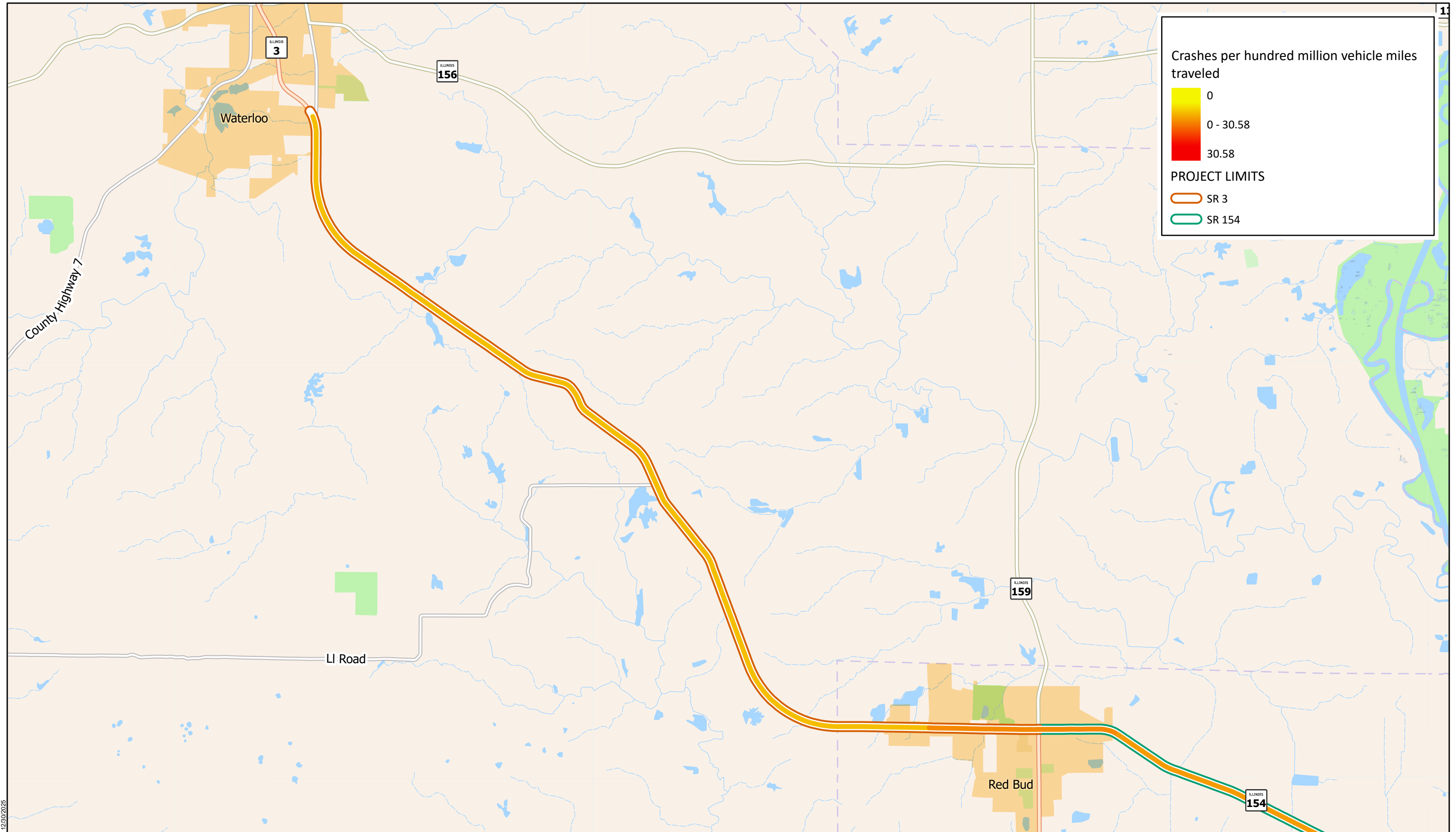
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Segment Crash Rates (All Crashes)





Crashes per hundred million vehicle miles traveled

0
0 - 30.58
30.58

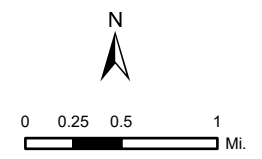
PROJECT LIMITS

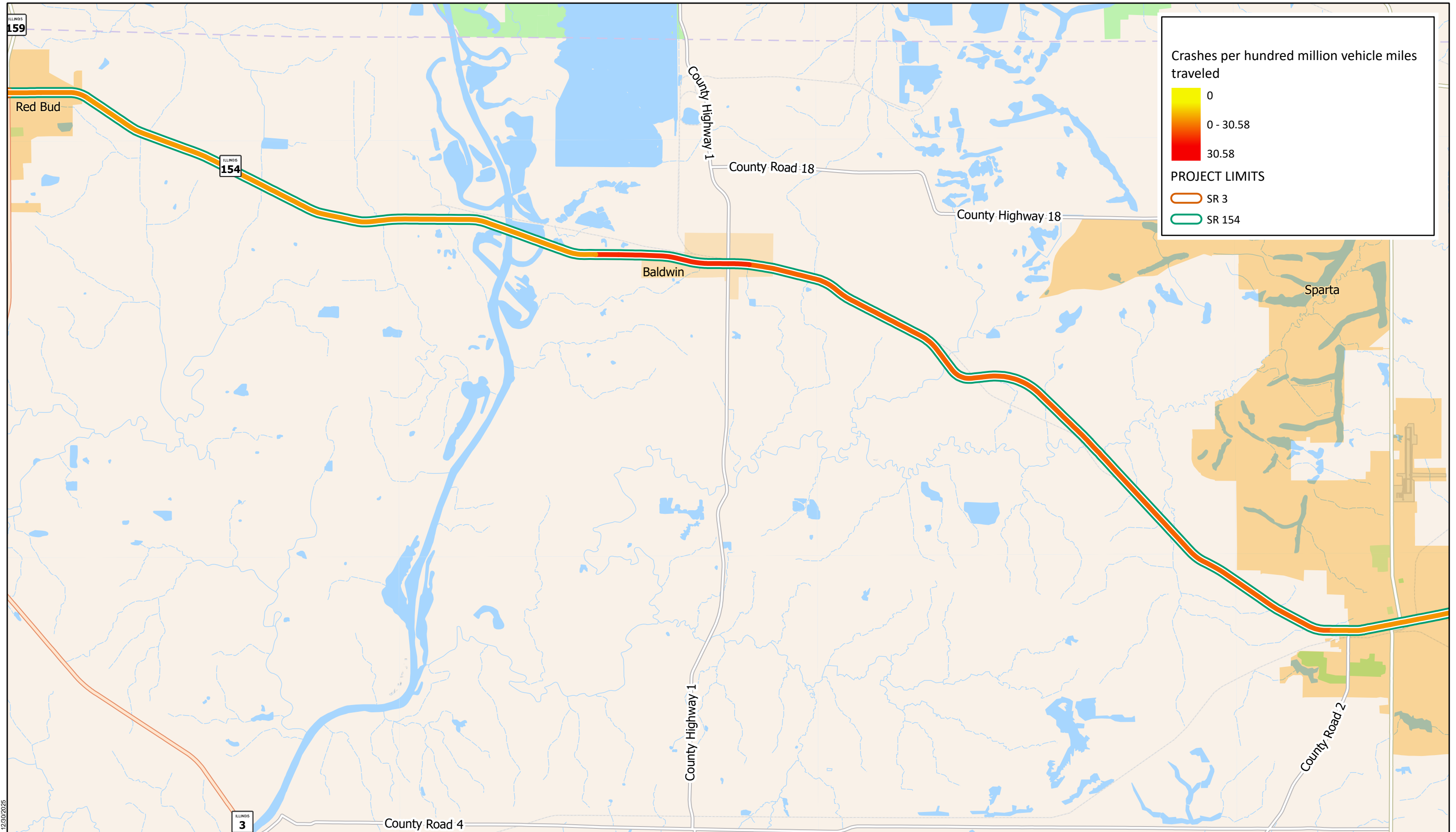
SR 3
SR 154

SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Segment Crash Rates (K and A Severity Crashes)

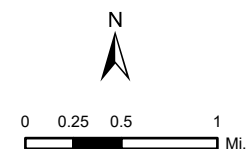


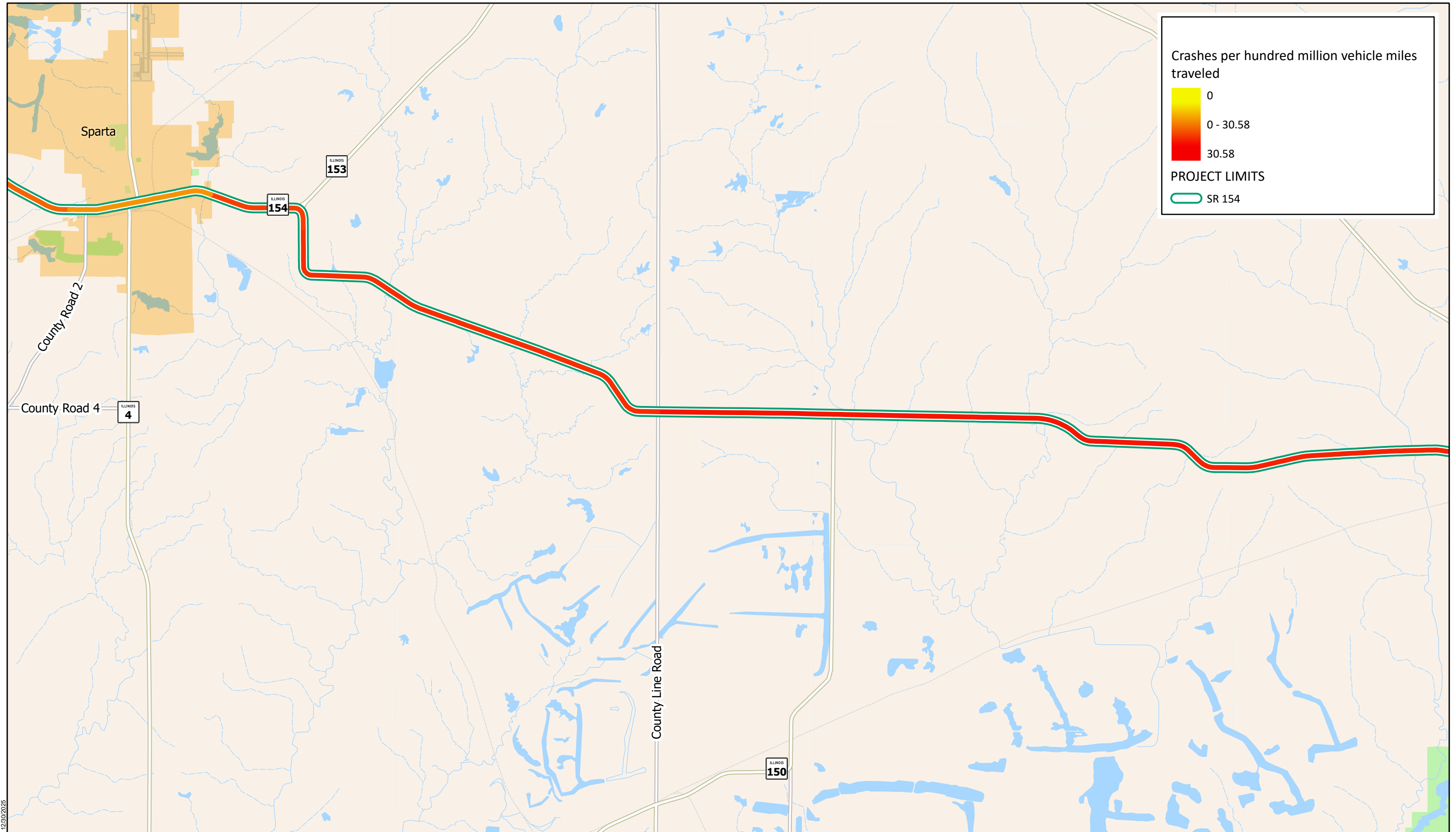


SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Segment Crash Rates (K and A Severity Crashes)





Crashes per hundred million vehicle miles traveled

0
0 - 30.58
30.58

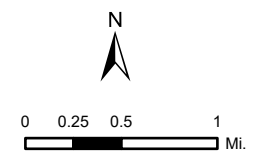
PROJECT LIMITS

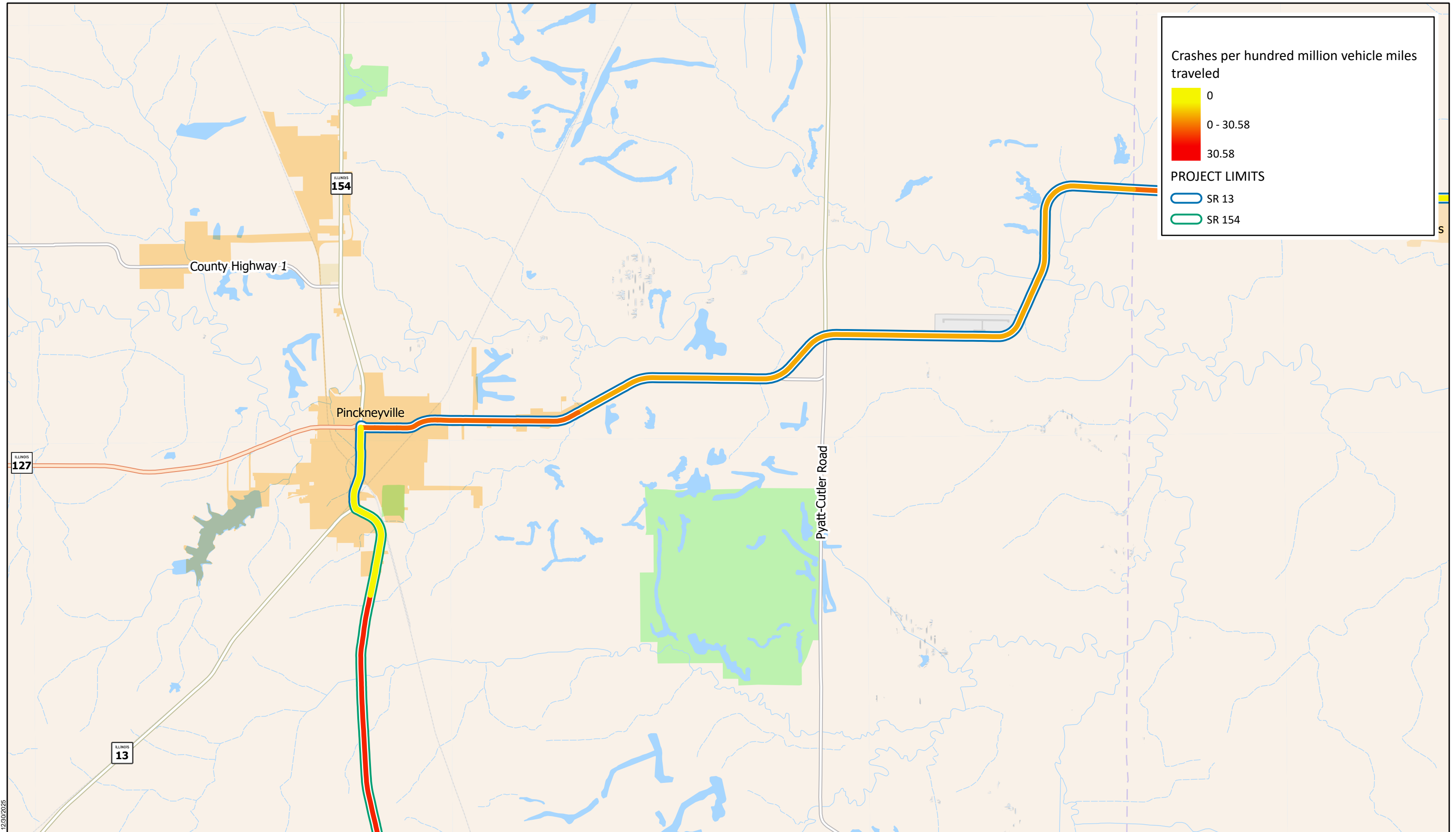
SR 154

SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Segment Crash Rates (K and A Severity Crashes)



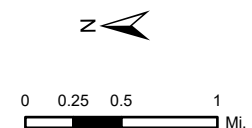


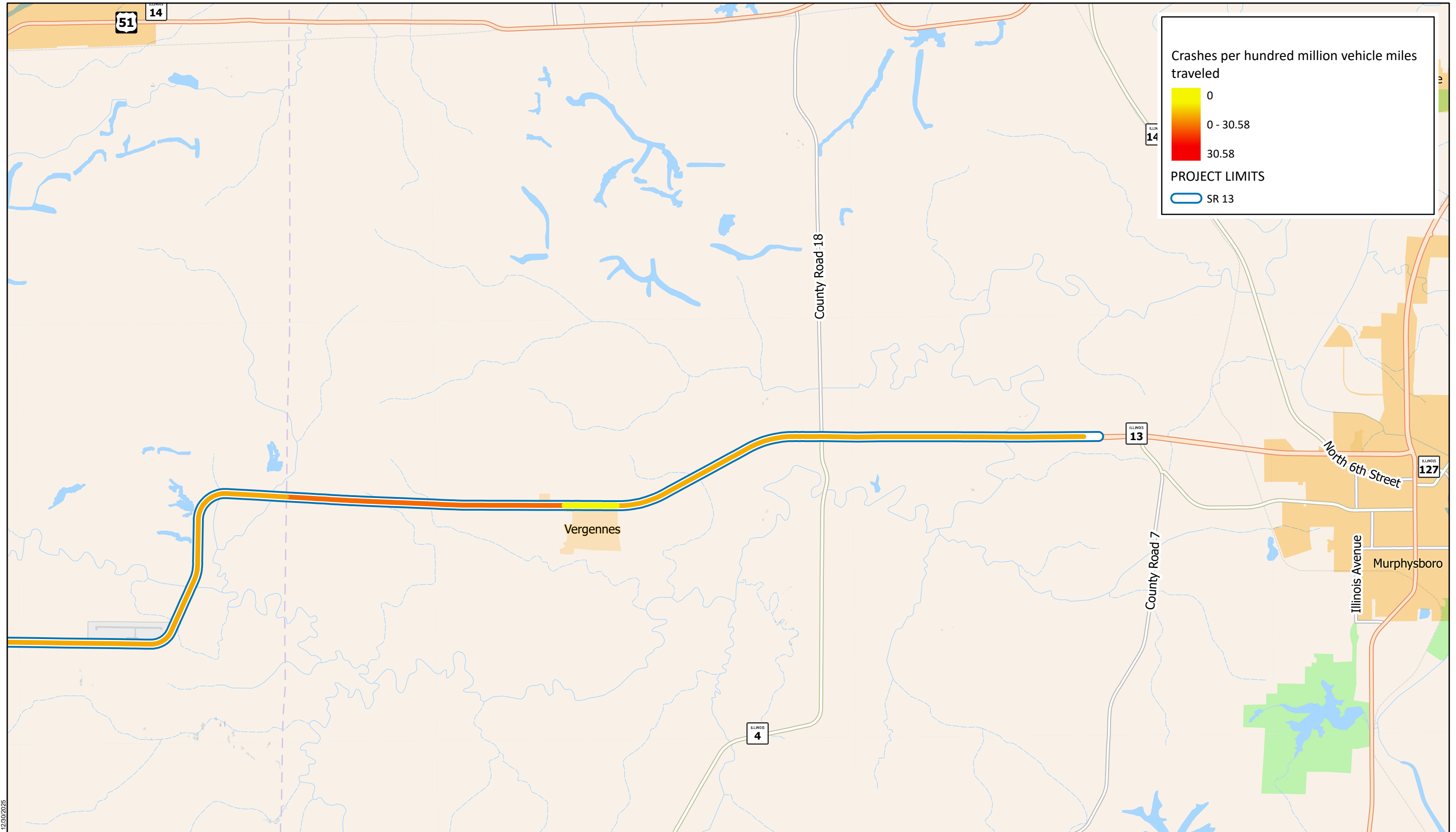
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Segment Crash Rates (K and A Severity Crashes)



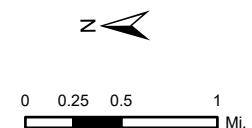


SWConnectorGIS Figures.aprx 12/30/2025

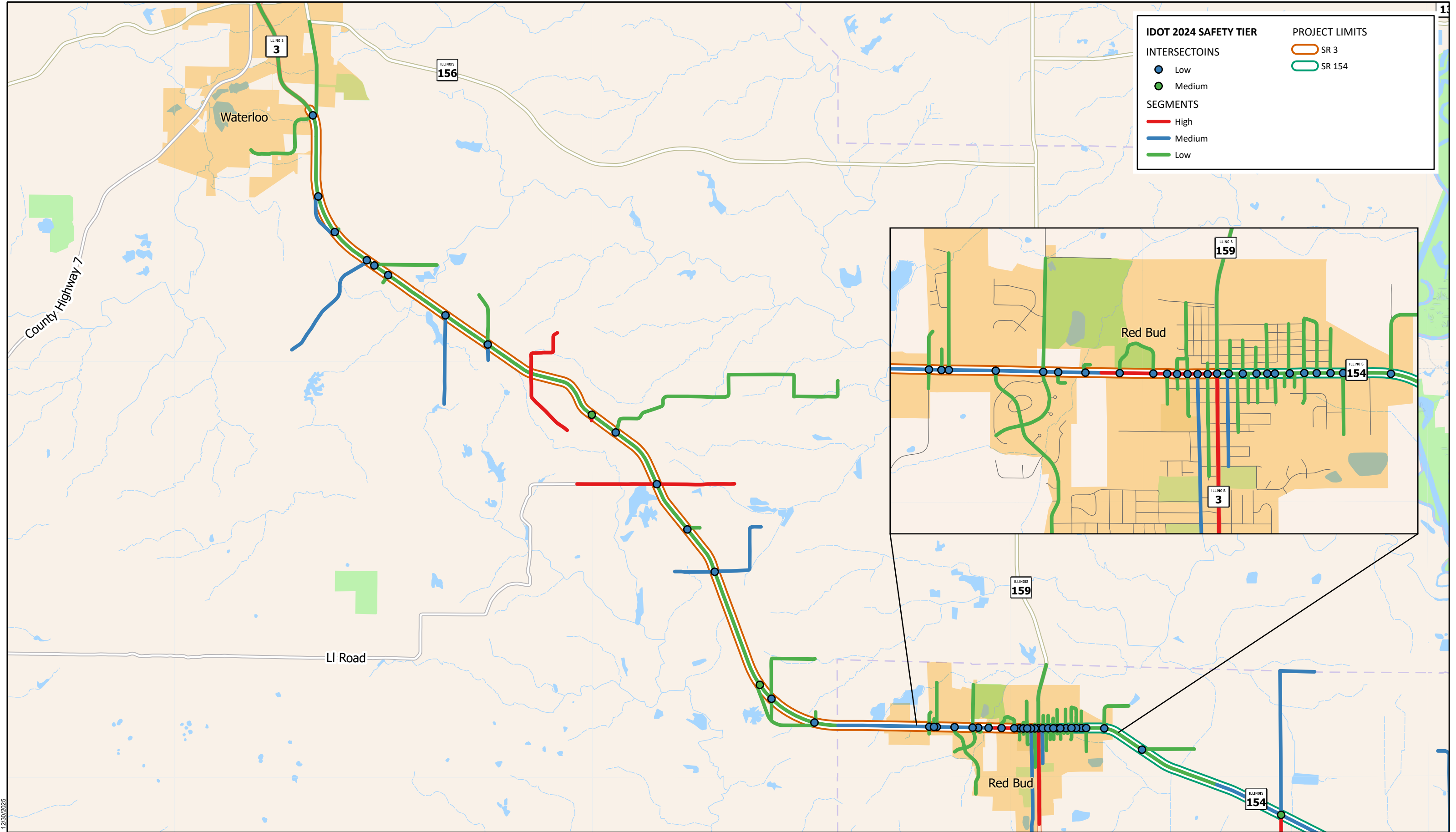


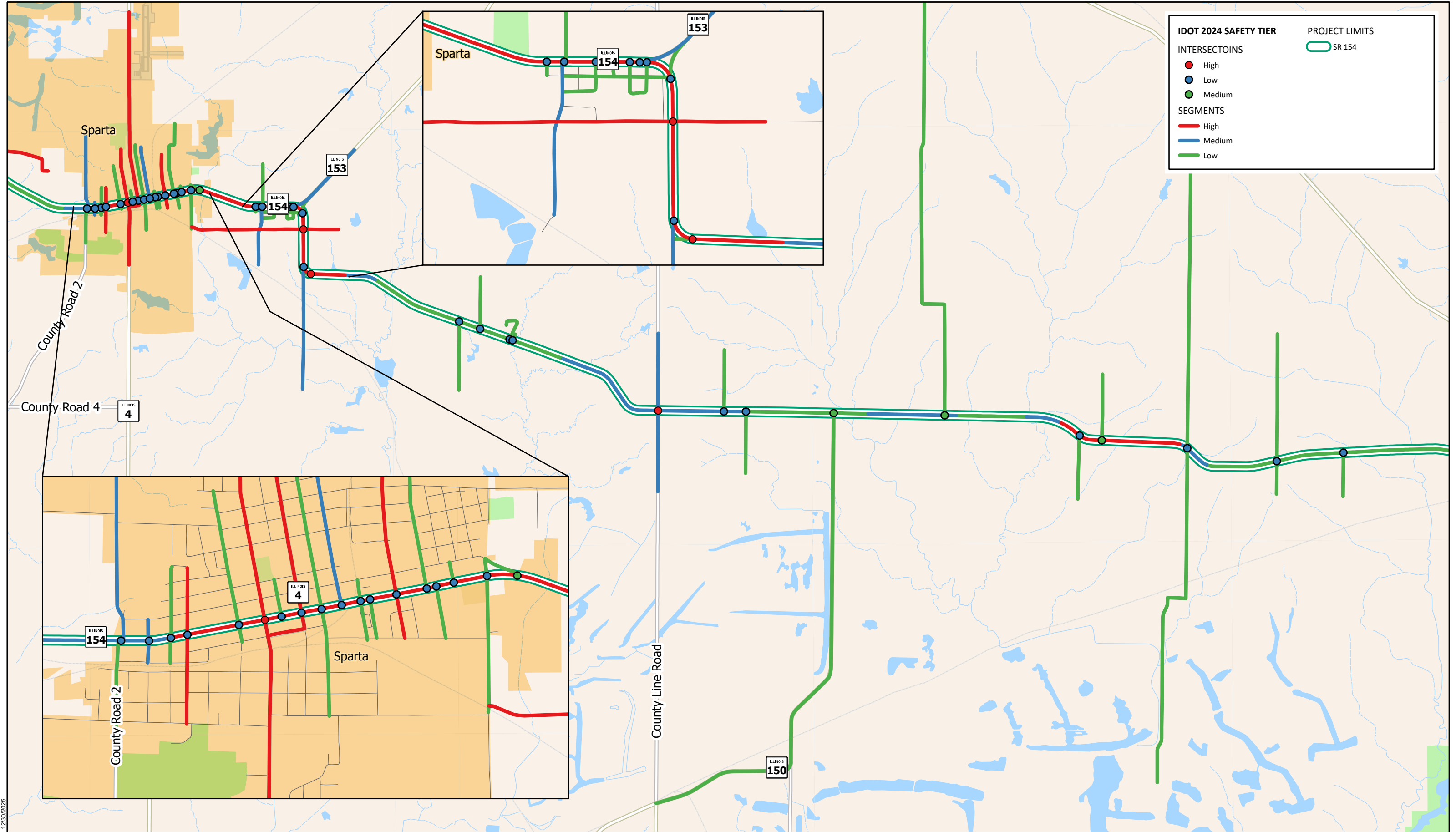
SOUTHWEST CONNECTOR HIGHWAY

Segment Crash Rates (K and A Severity Crashes)



SWConnectorGIS_Figures.aprx 12/30/2025

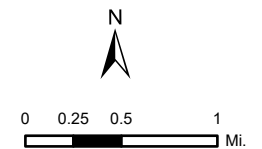




SWConnectorGIS_Figures.aprx 12/30/2025



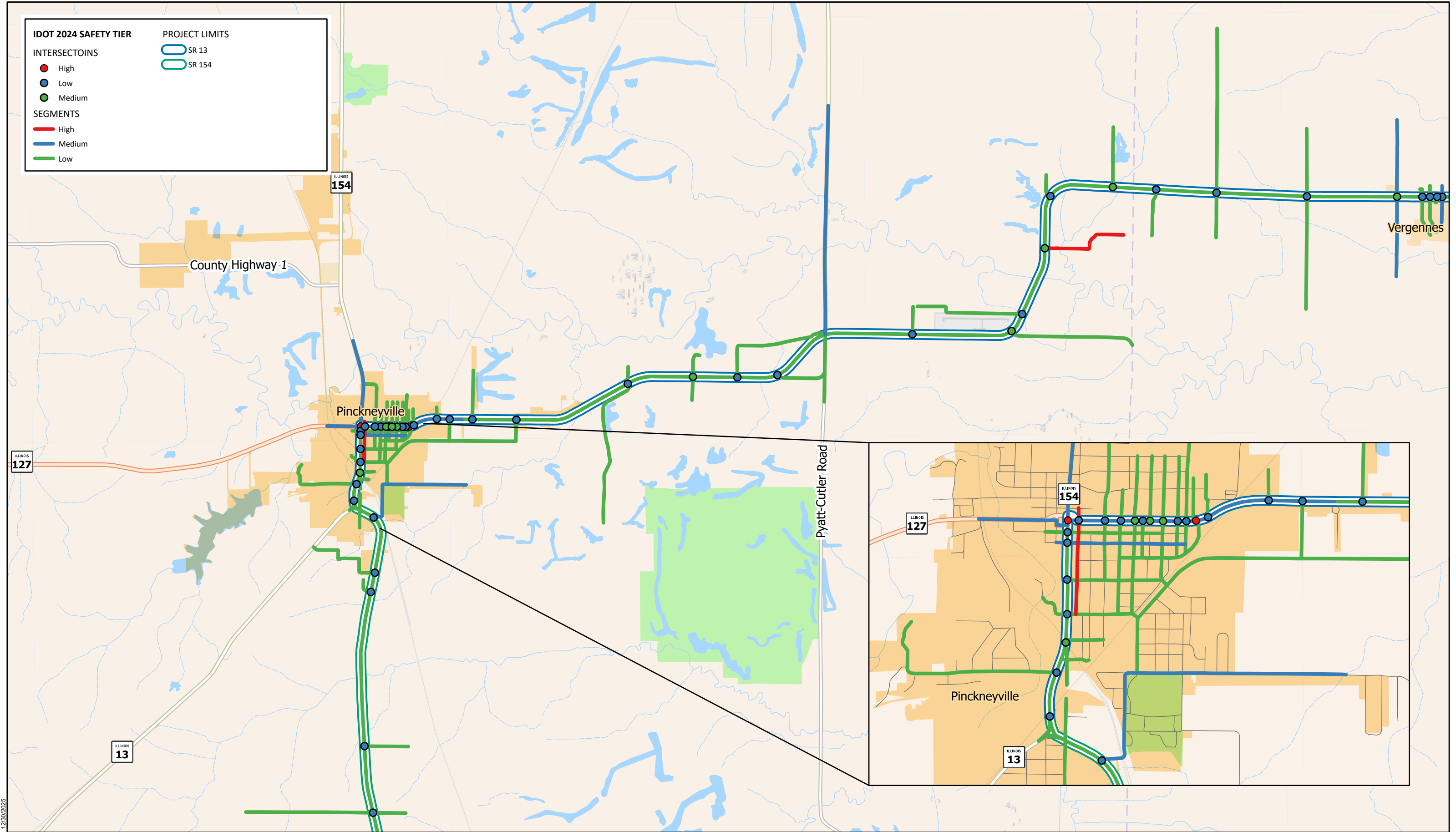
SOUTHWEST CONNECTOR HIGHWAY
2024 IDOT Statewide Safety Tier Map



SWConnectorGIS_Figures.aprx 12/30/2025

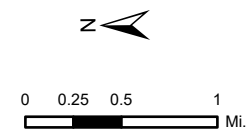
IDOT 2024 SAFETY TIER
INTERSECTIONS
● High
● Low
● Medium
SEGMENTS
— High
— Medium
— Low

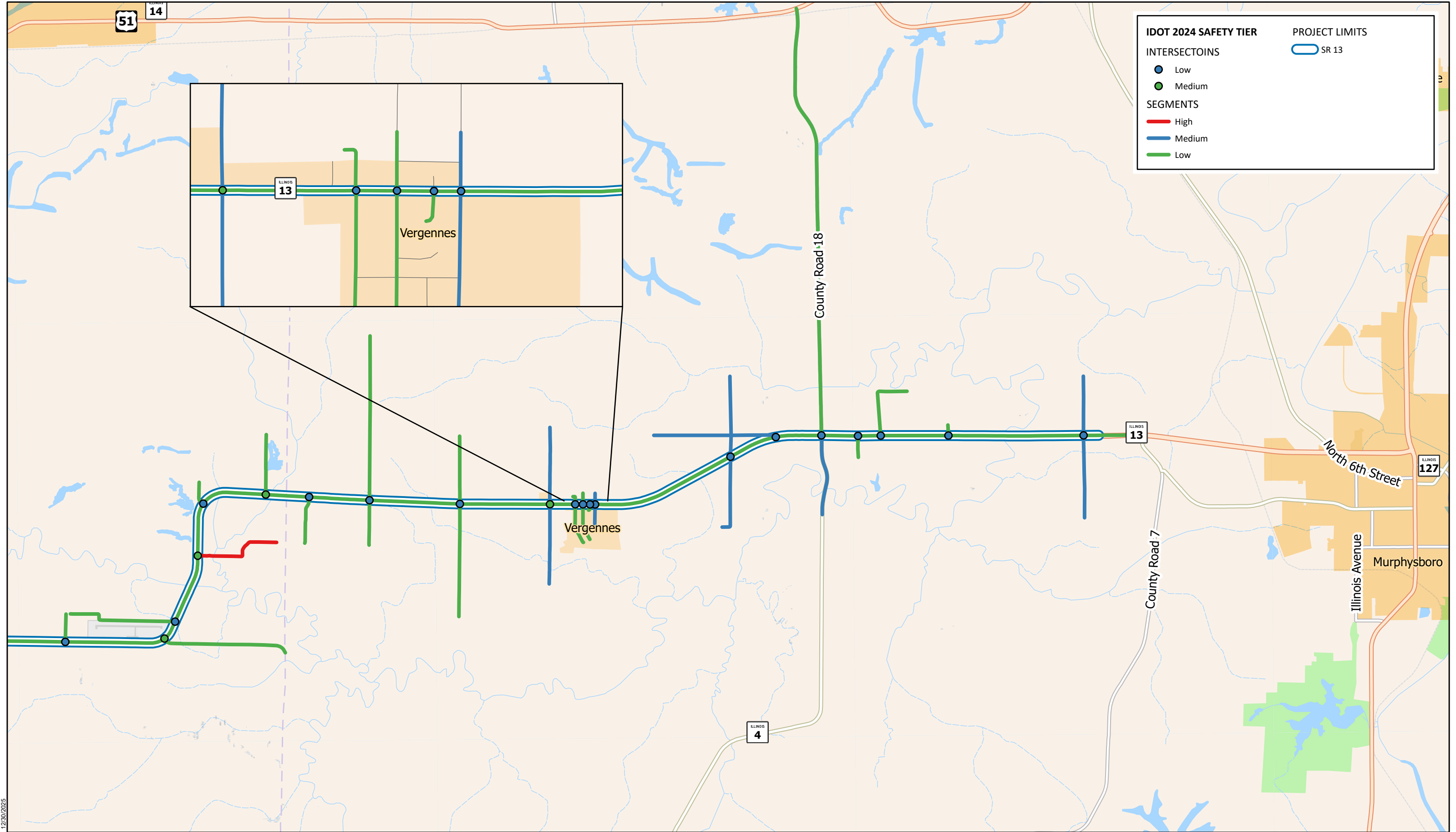
PROJECT LIMITS
SR 13
SR 154



SOUTHWEST CONNECTOR HIGHWAY

2024 IDOT Statewide Safety Tier Map

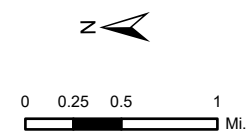


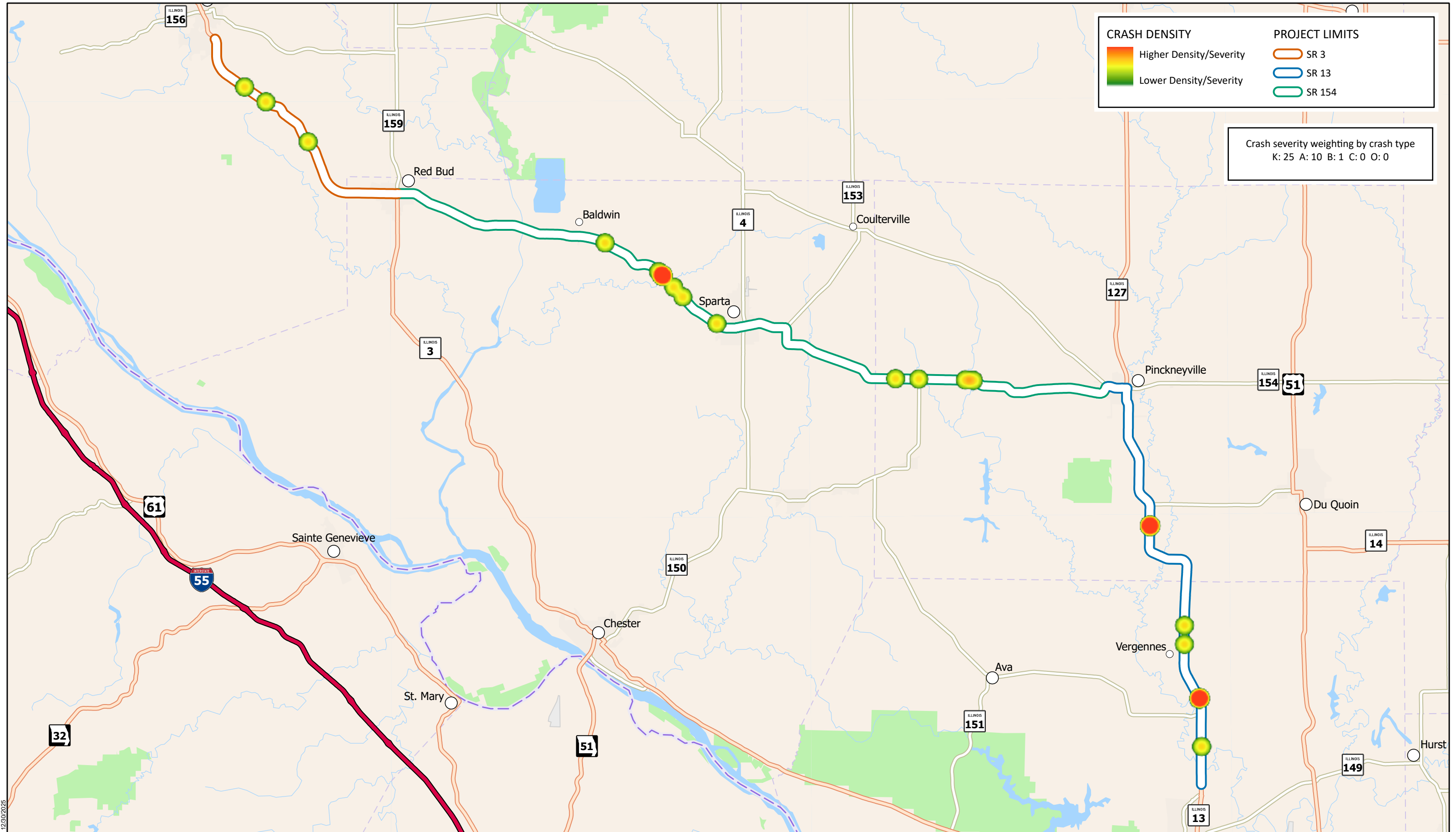


SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
2024 IDOT Statewide Safety Tier Map





CRASH DENSITY

- Higher Density/Severity
- Lower Density/Severity

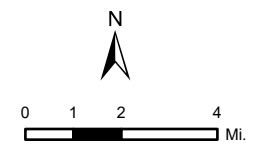
PROJECT LIMITS

- SR 3
- SR 13
- SR 154

Crash severity weighting by crash type
K: 25 A: 10 B: 1 C: 0 O: 0

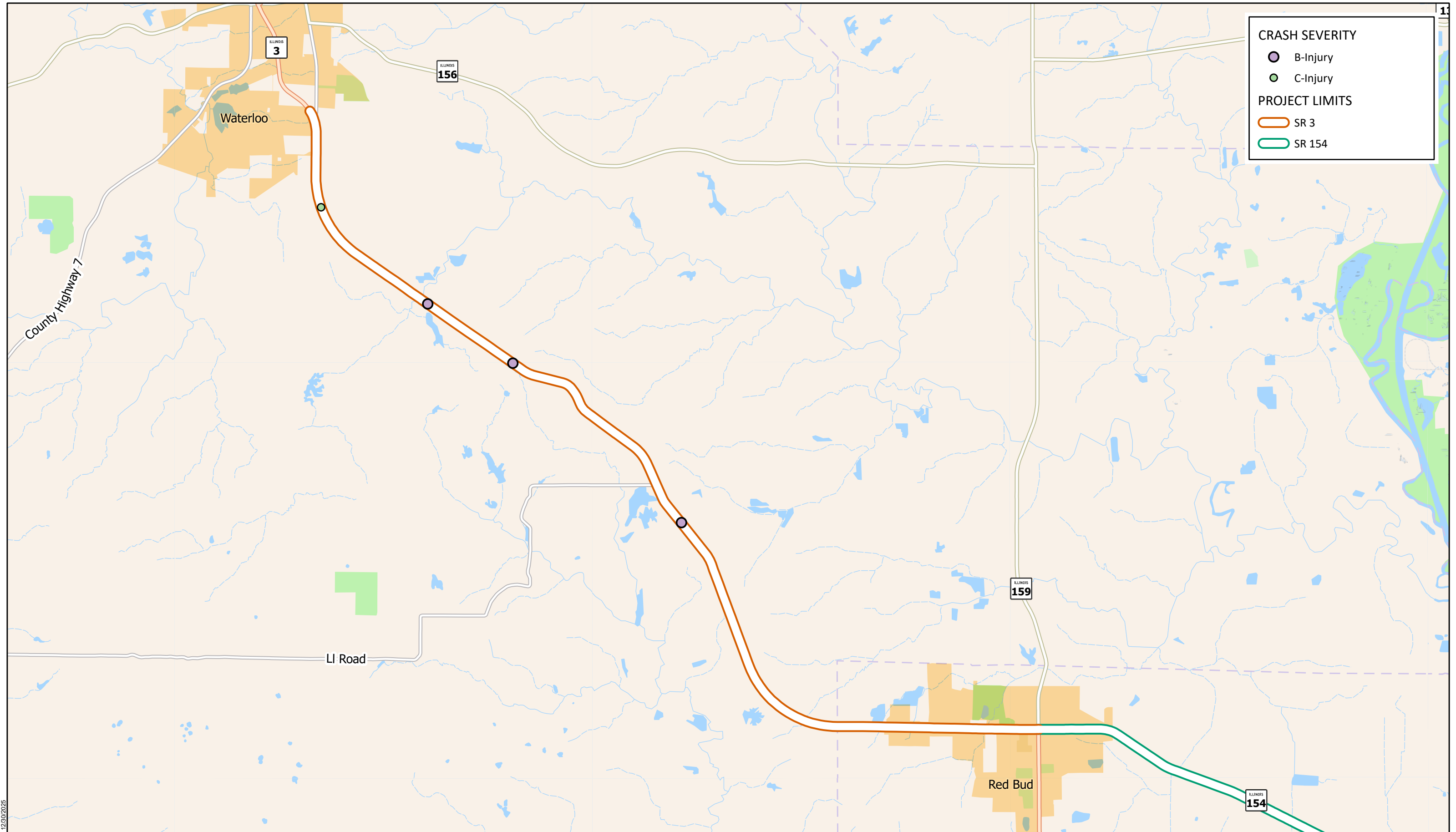
SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Heat Map



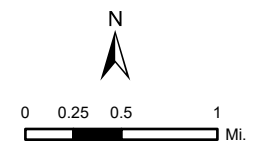
SWConnectorGIS_Figures.aprx 12/30/2025

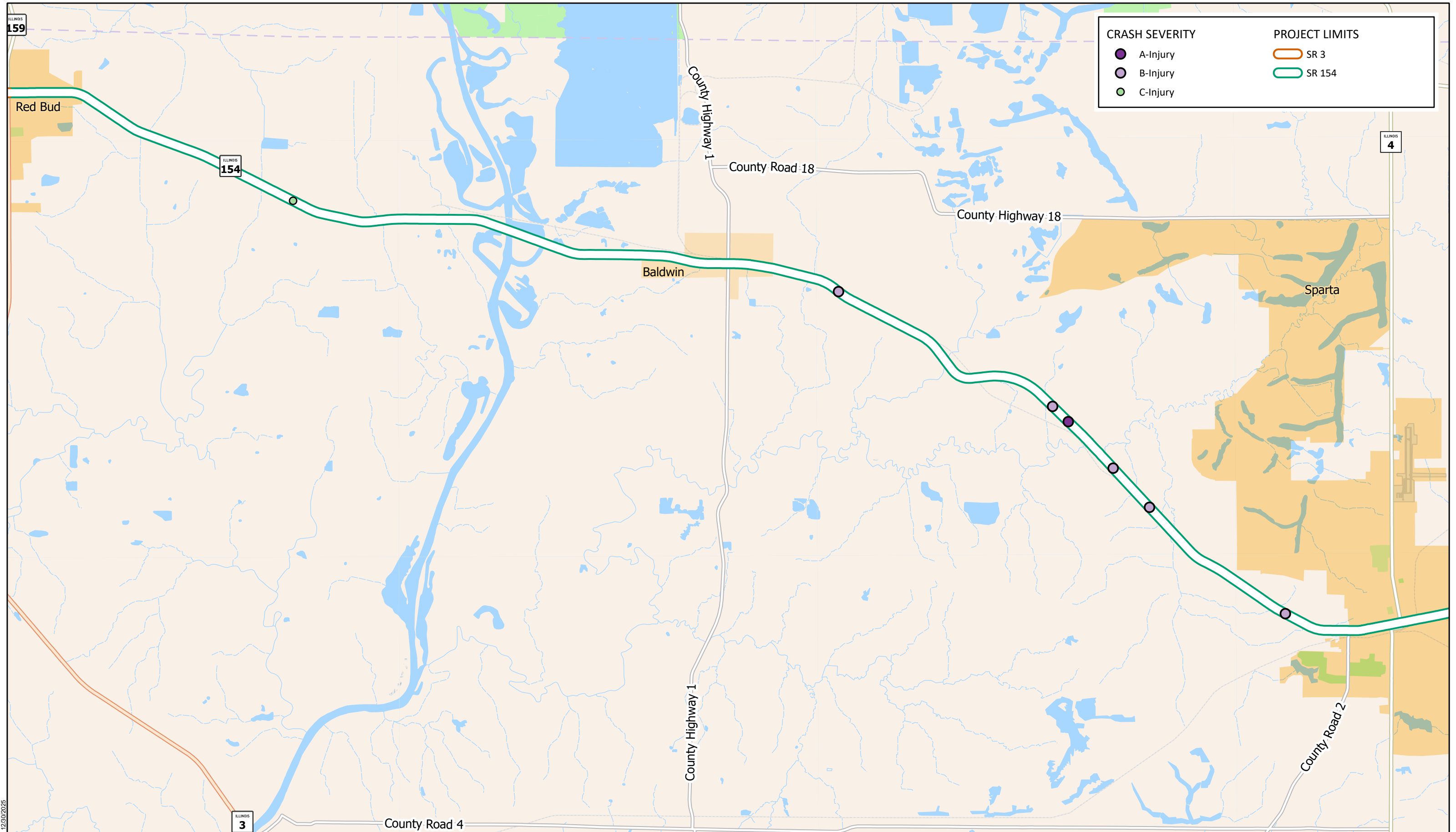
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Locations



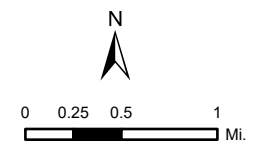


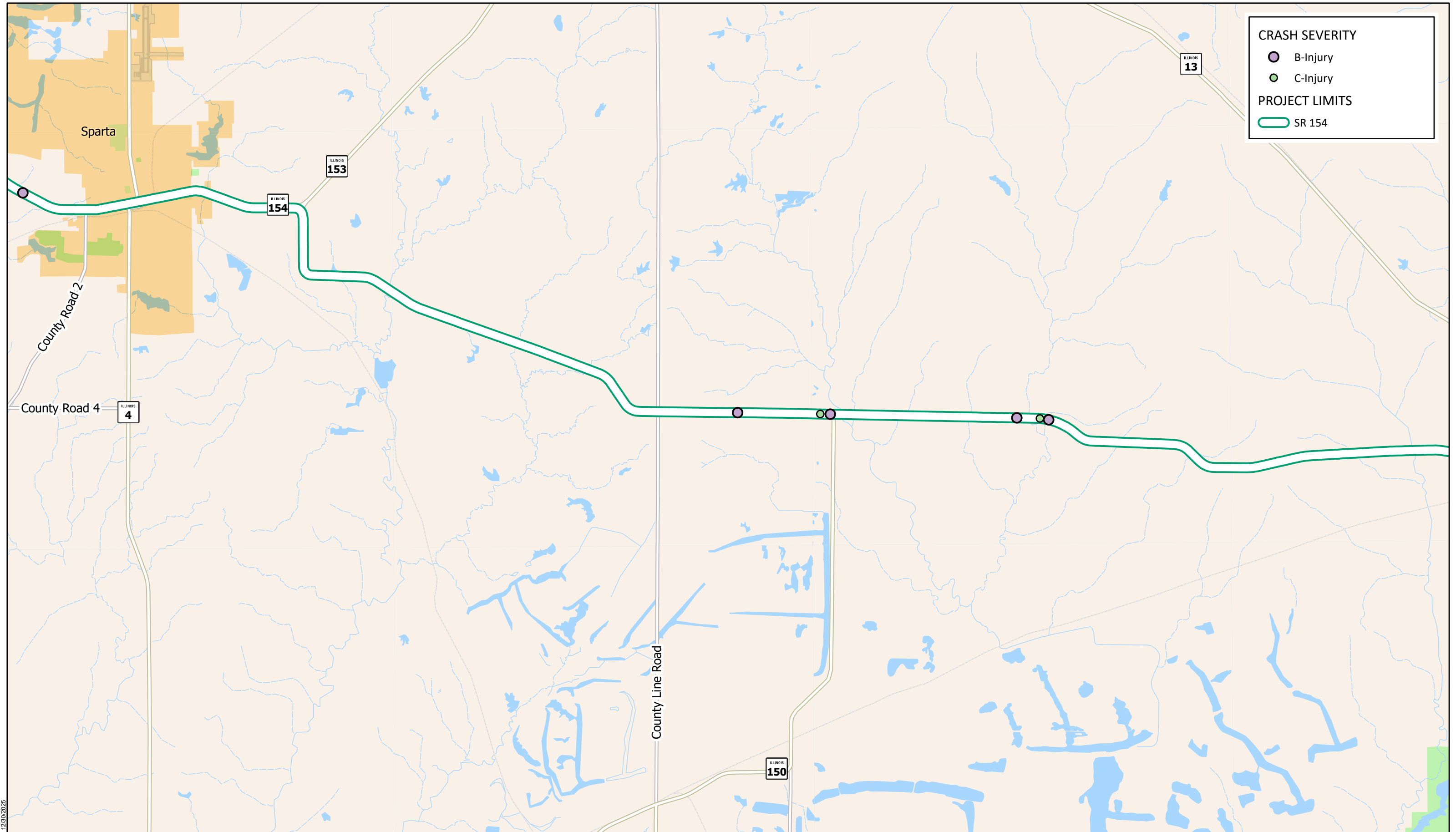
SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Locations



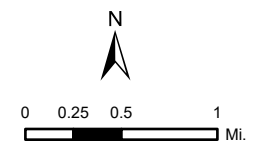


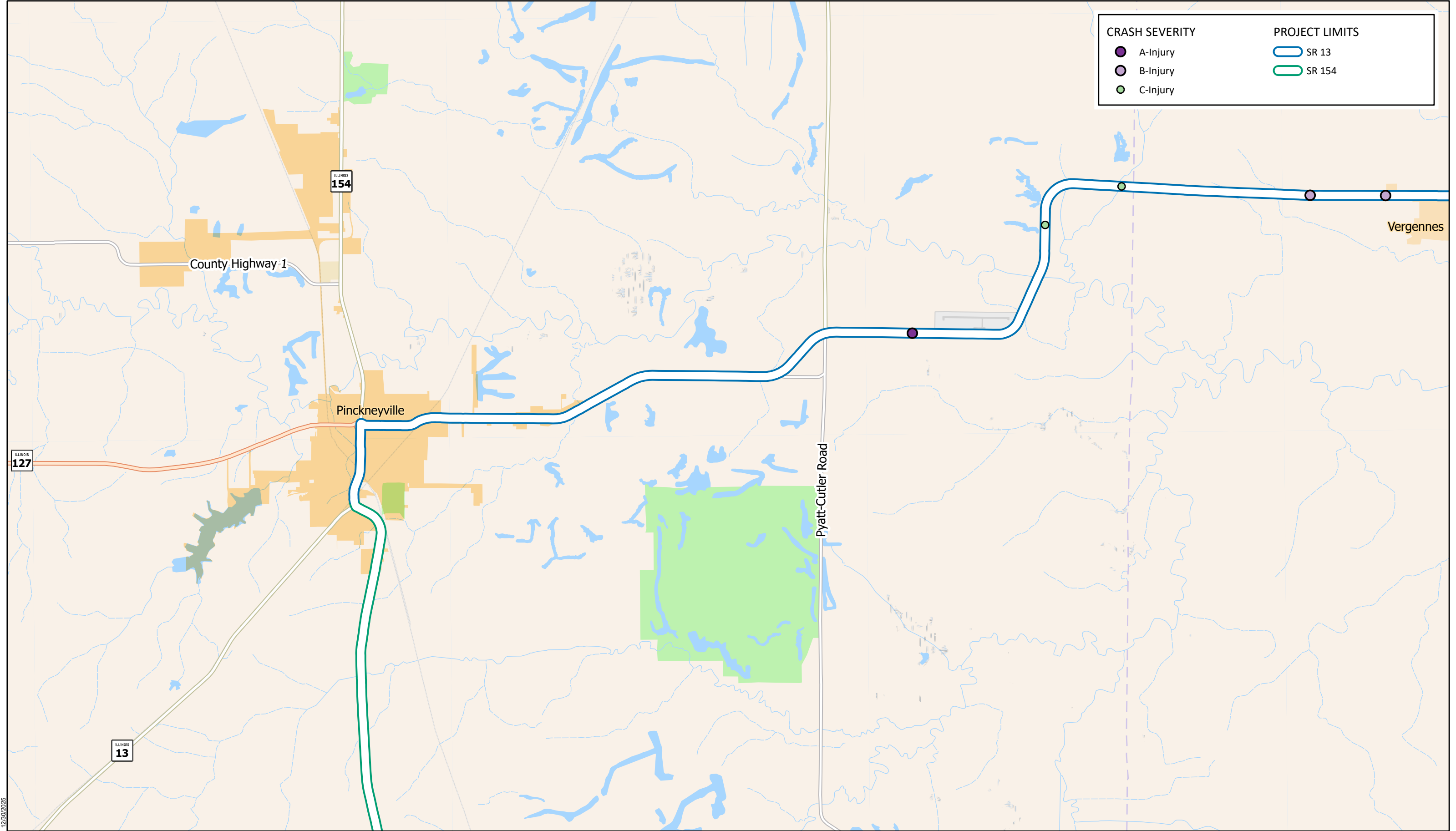
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SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Locations



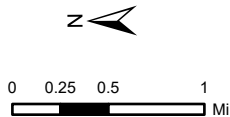


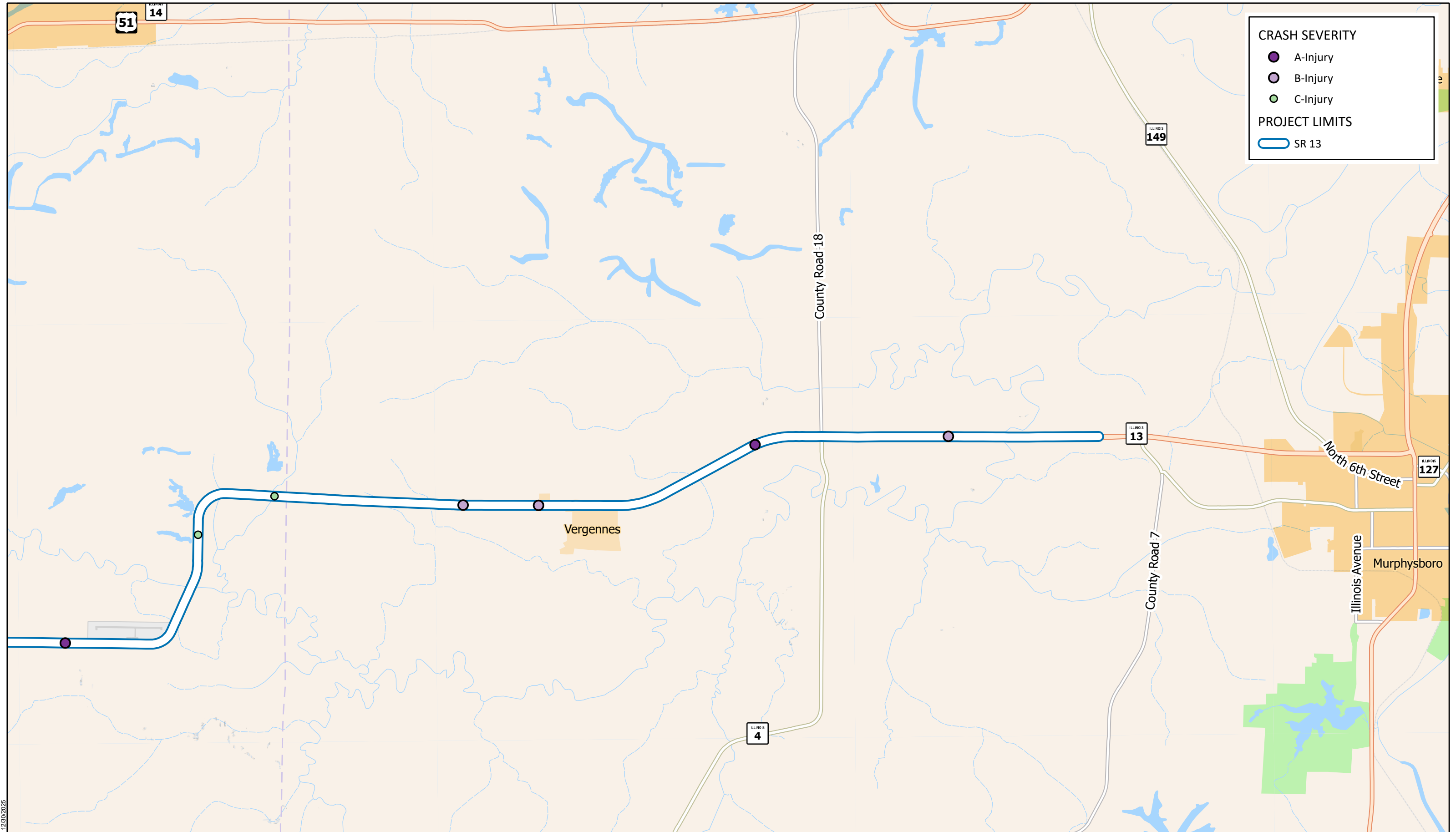
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Locations



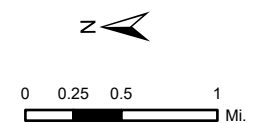


SWConnectorGIS_Figures.aprx 12/30/2025

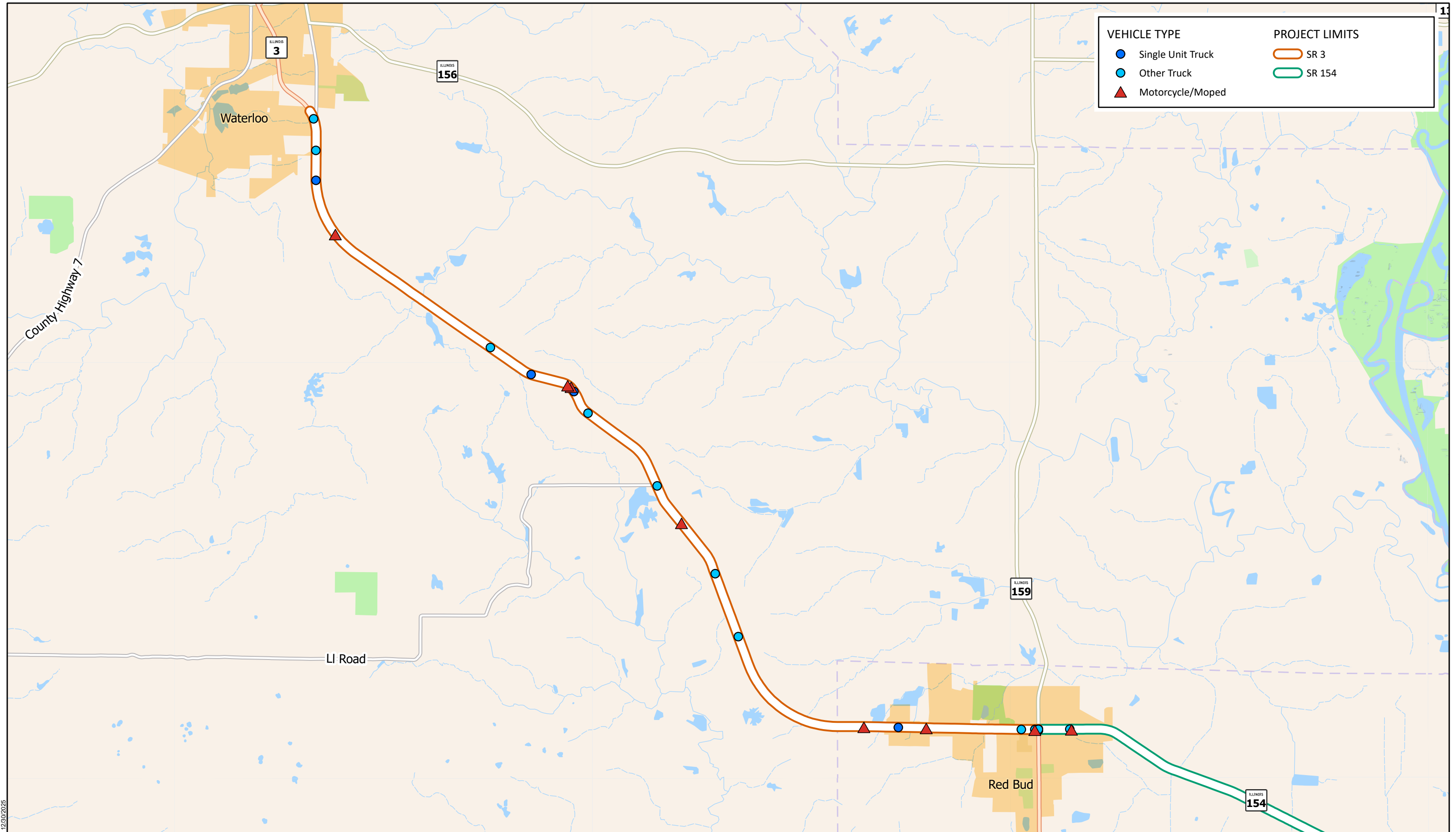


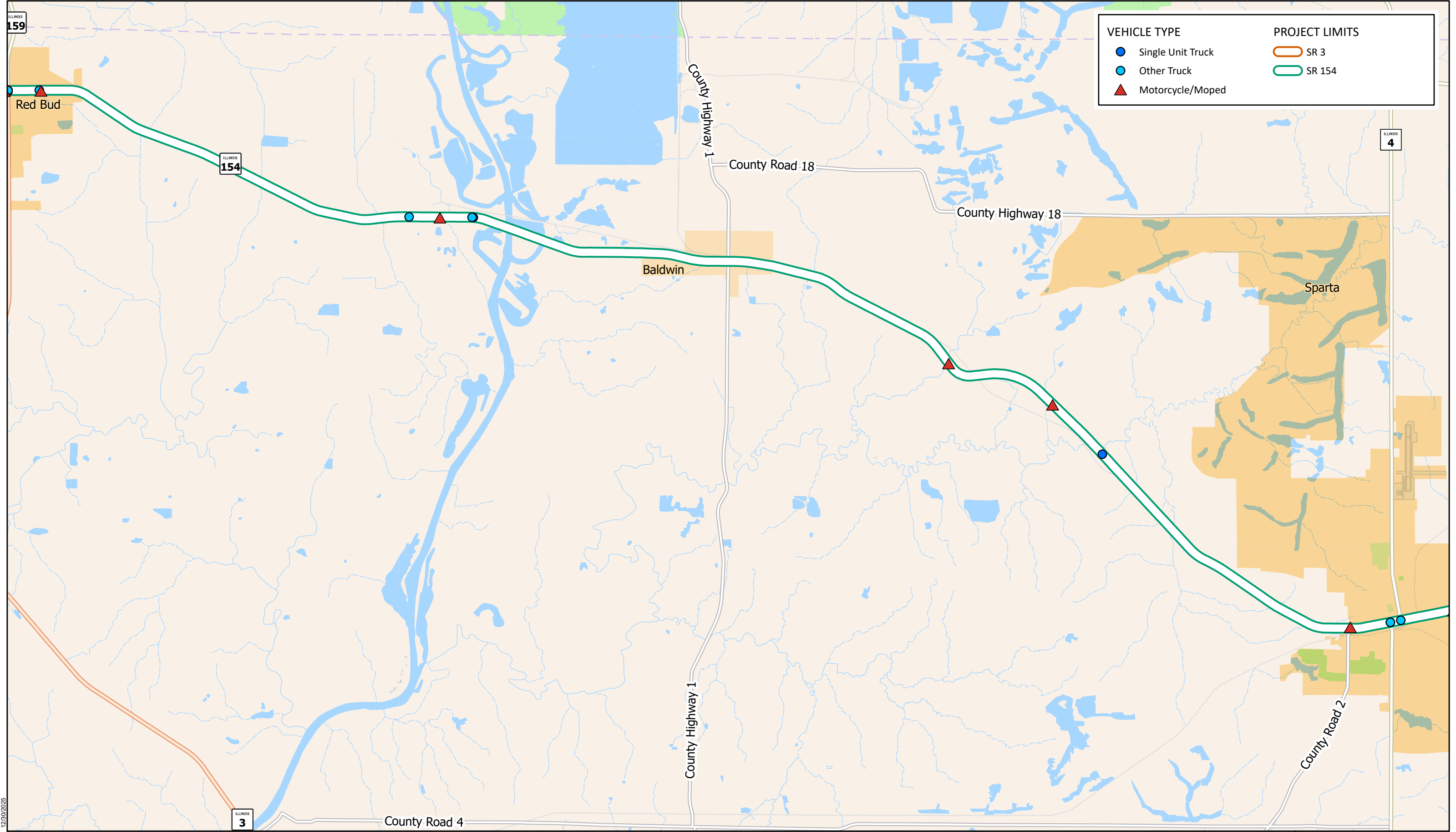
SOUTHWEST CONNECTOR HIGHWAY

Animal-Related Crash Locations



SWConnectorGIS_Figures.aprx 12/30/2025

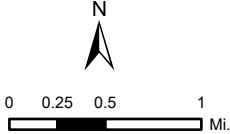


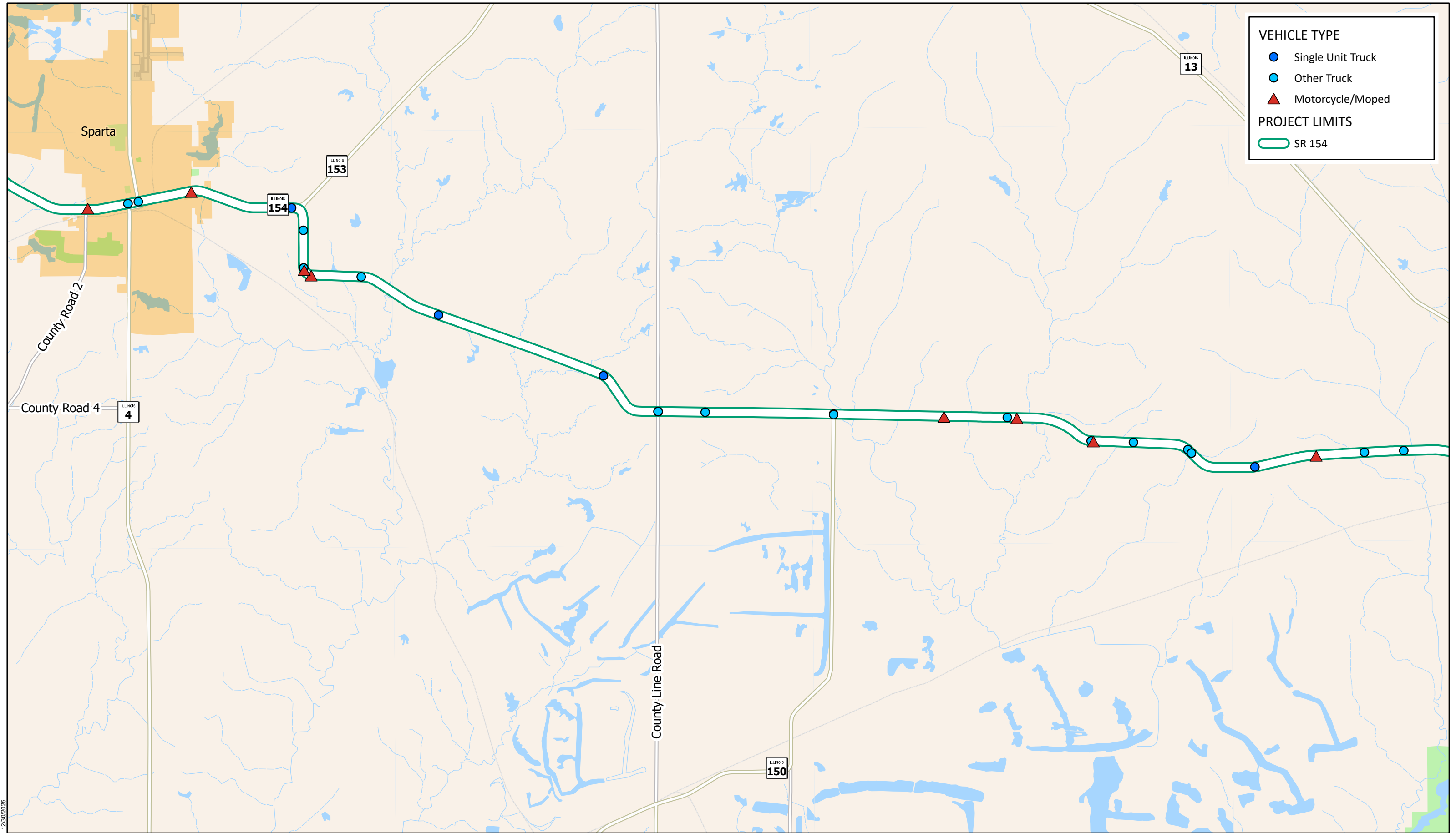


SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Truck and Motorcycle Crash Locations

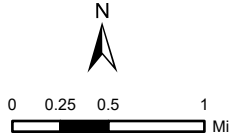


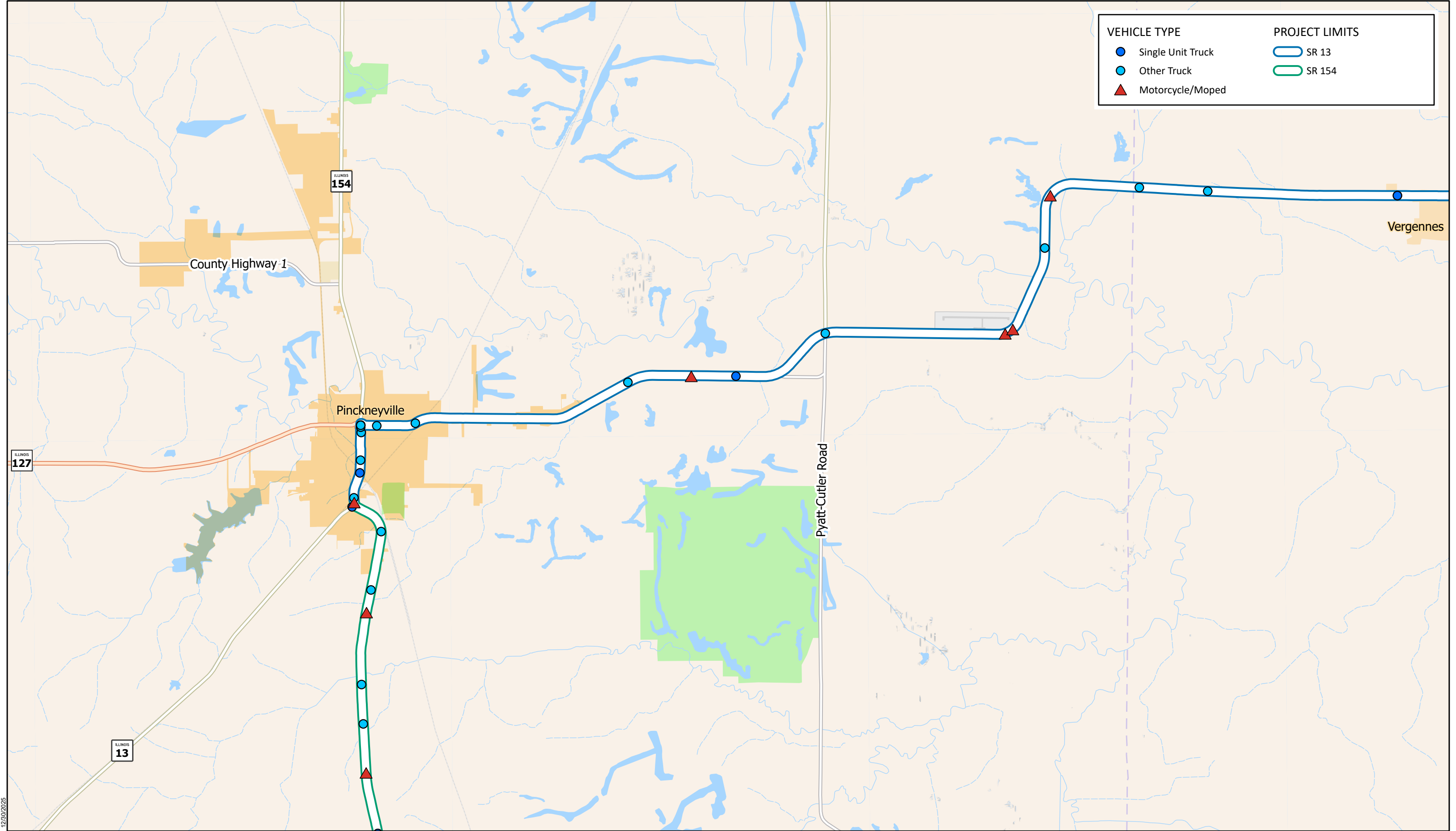


SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Truck and Motorcycle Crash Locations

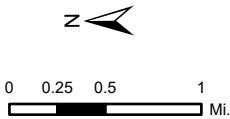


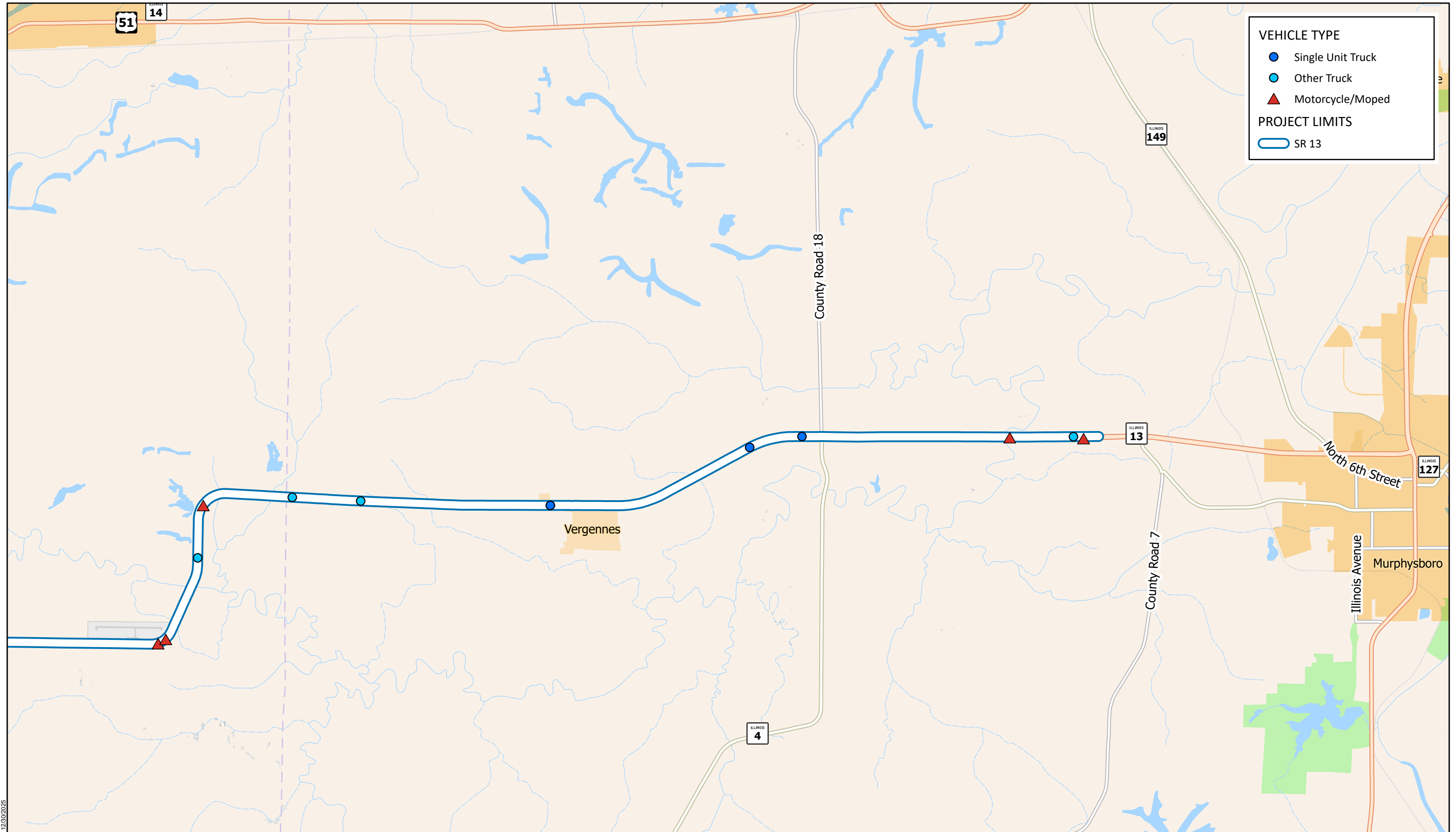


SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Truck and Motorcycle Crash Locations



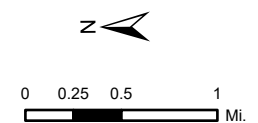


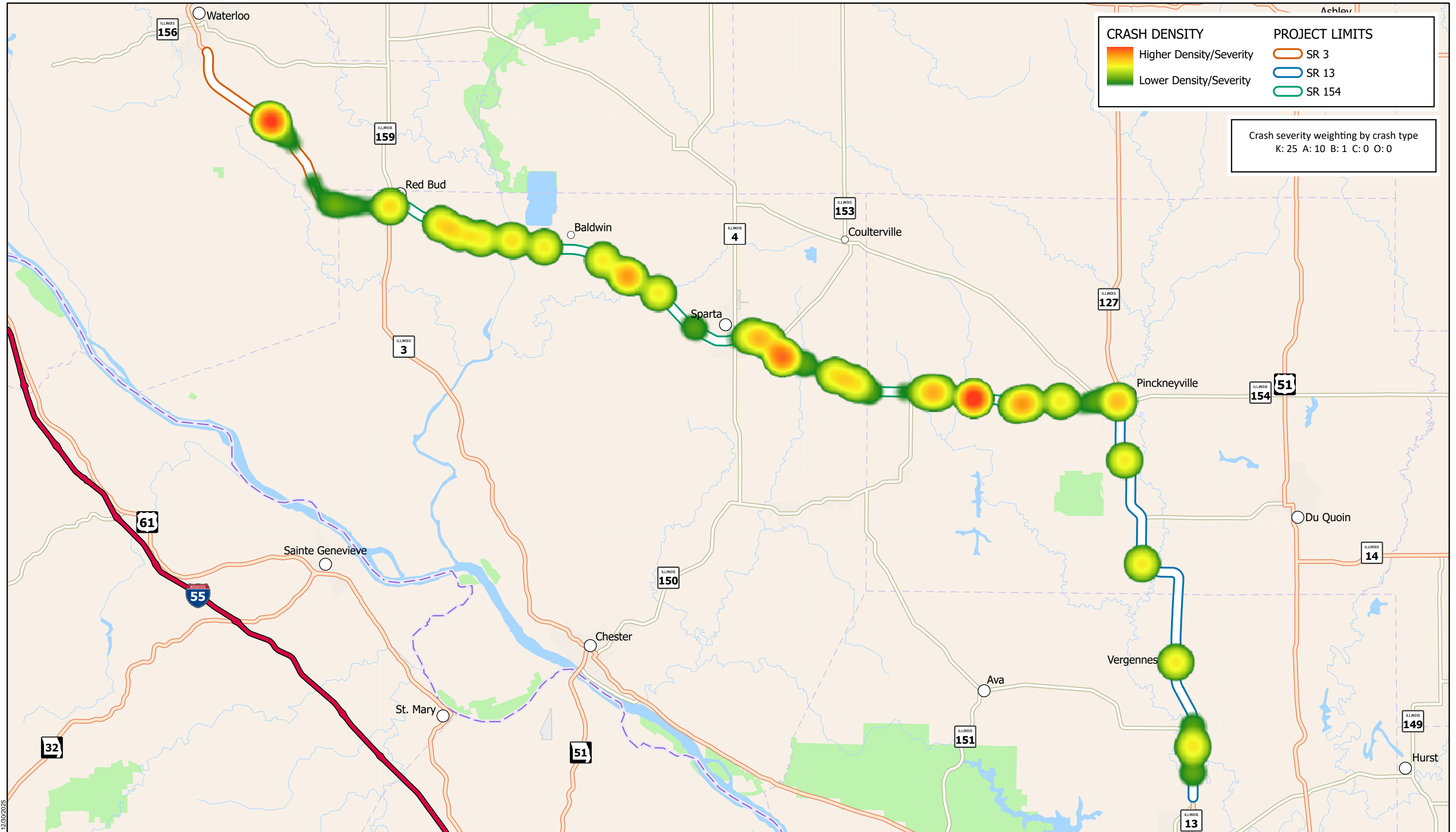
SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Truck and Motorcycle Crash Locations





CRASH DENSITY

- Higher Density/Severity
- Lower Density/Severity

PROJECT LIMITS

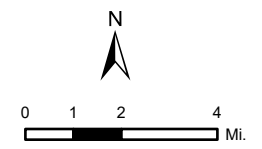
- SR 3
- SR 13
- SR 154

Crash severity weighting by crash type
K: 25 A: 10 B: 1 C: 0 O: 0

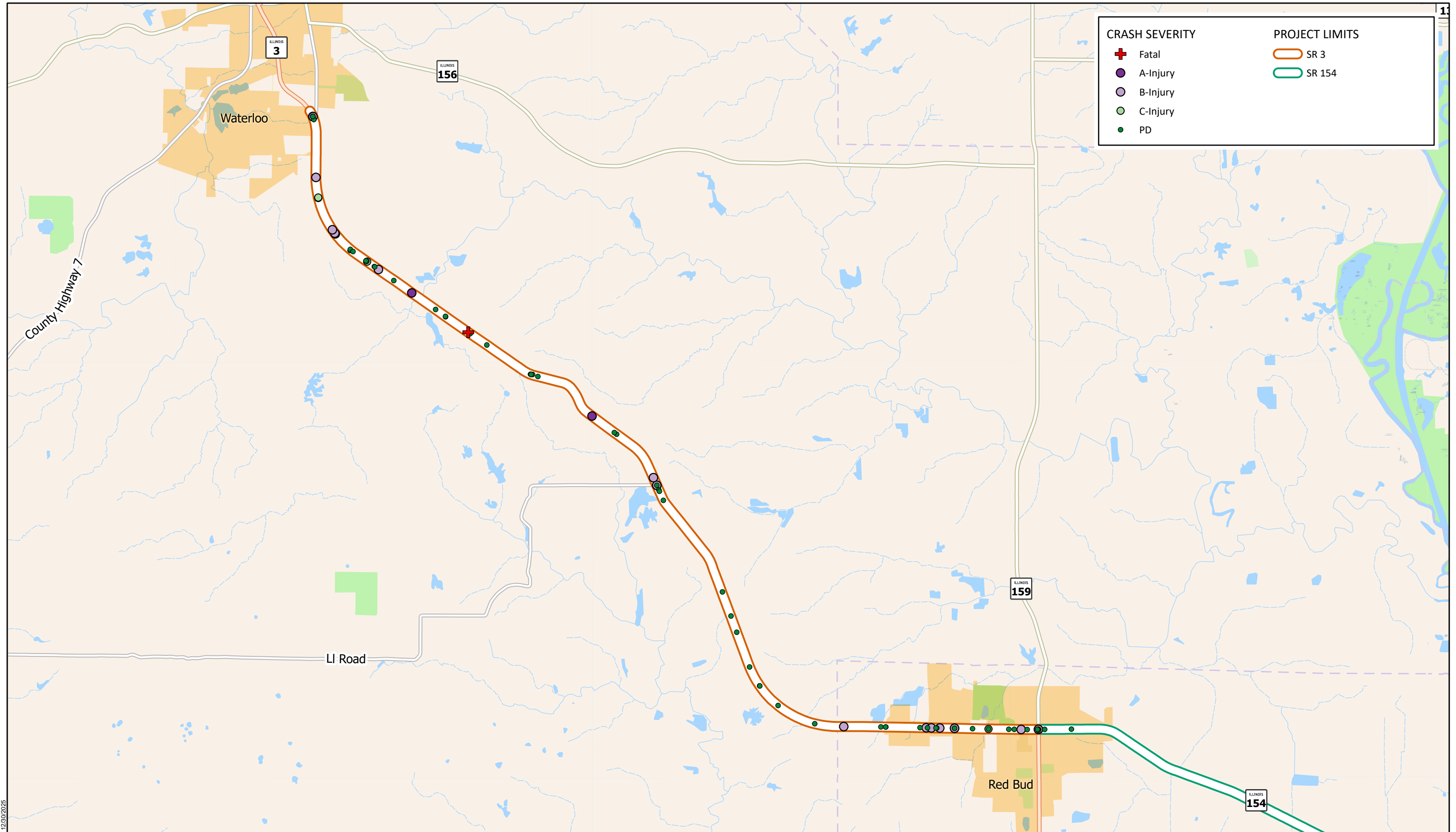
SWConnectorGIS_Figures.aprx 12/30/2025

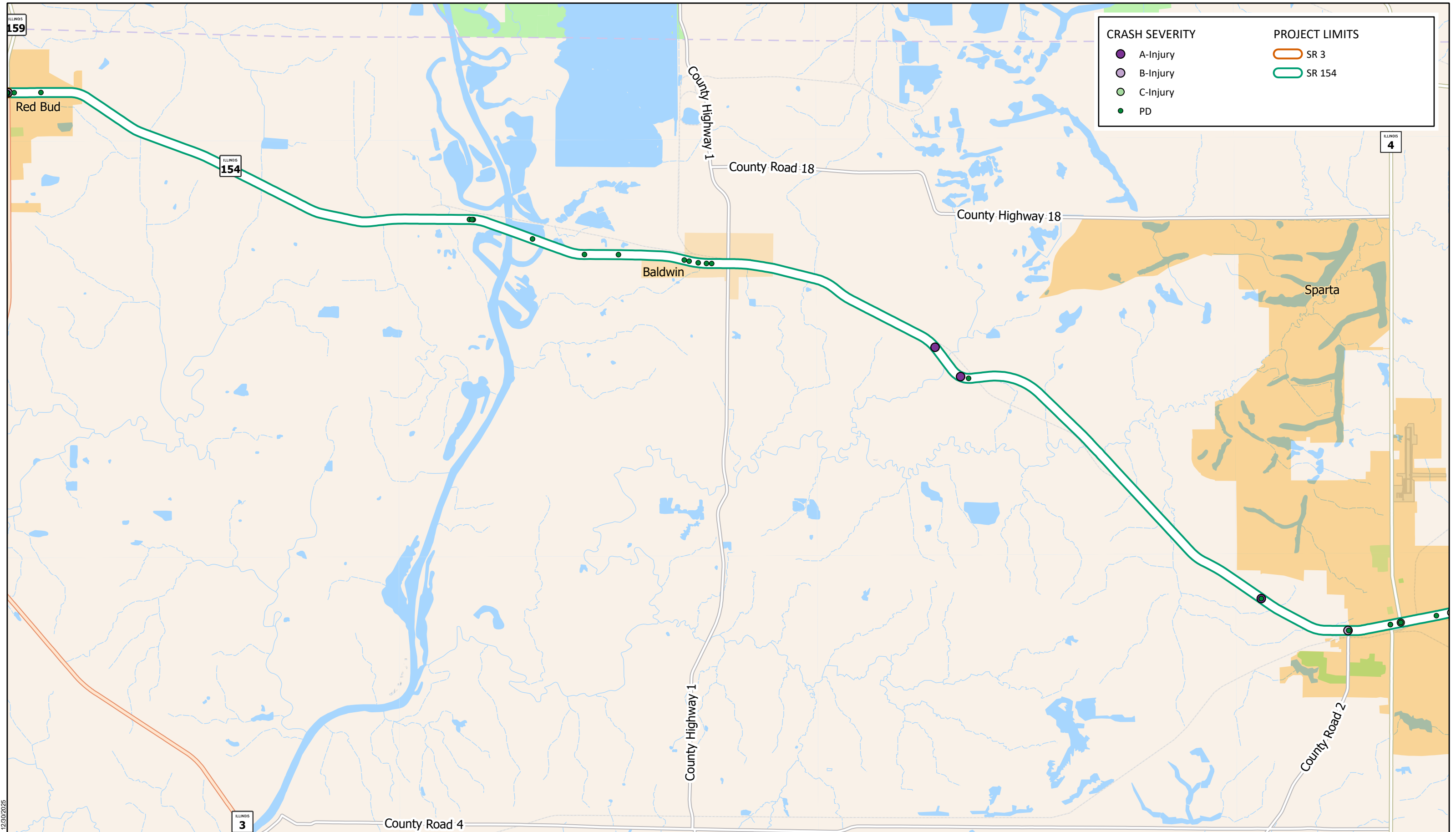


SOUTHWEST CONNECTOR HIGHWAY
Fixed-Object Crash Heat Map



SWConnectorGIS_Figures.aprx 12/30/2025



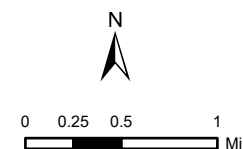


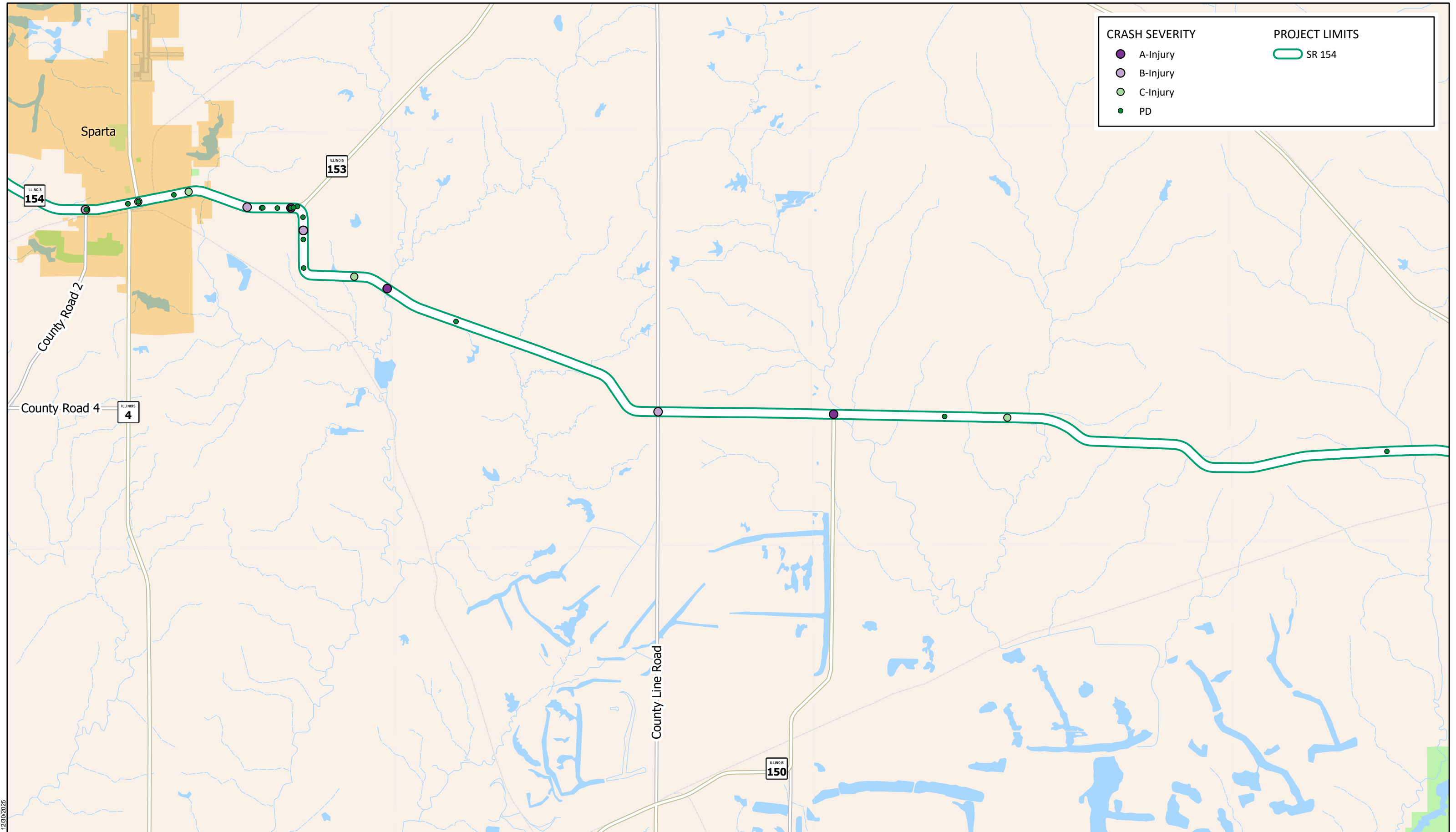
SWConnectorGIS Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Front-to-Rear Crash Locations

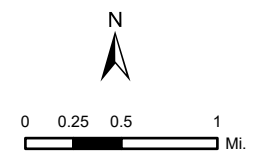


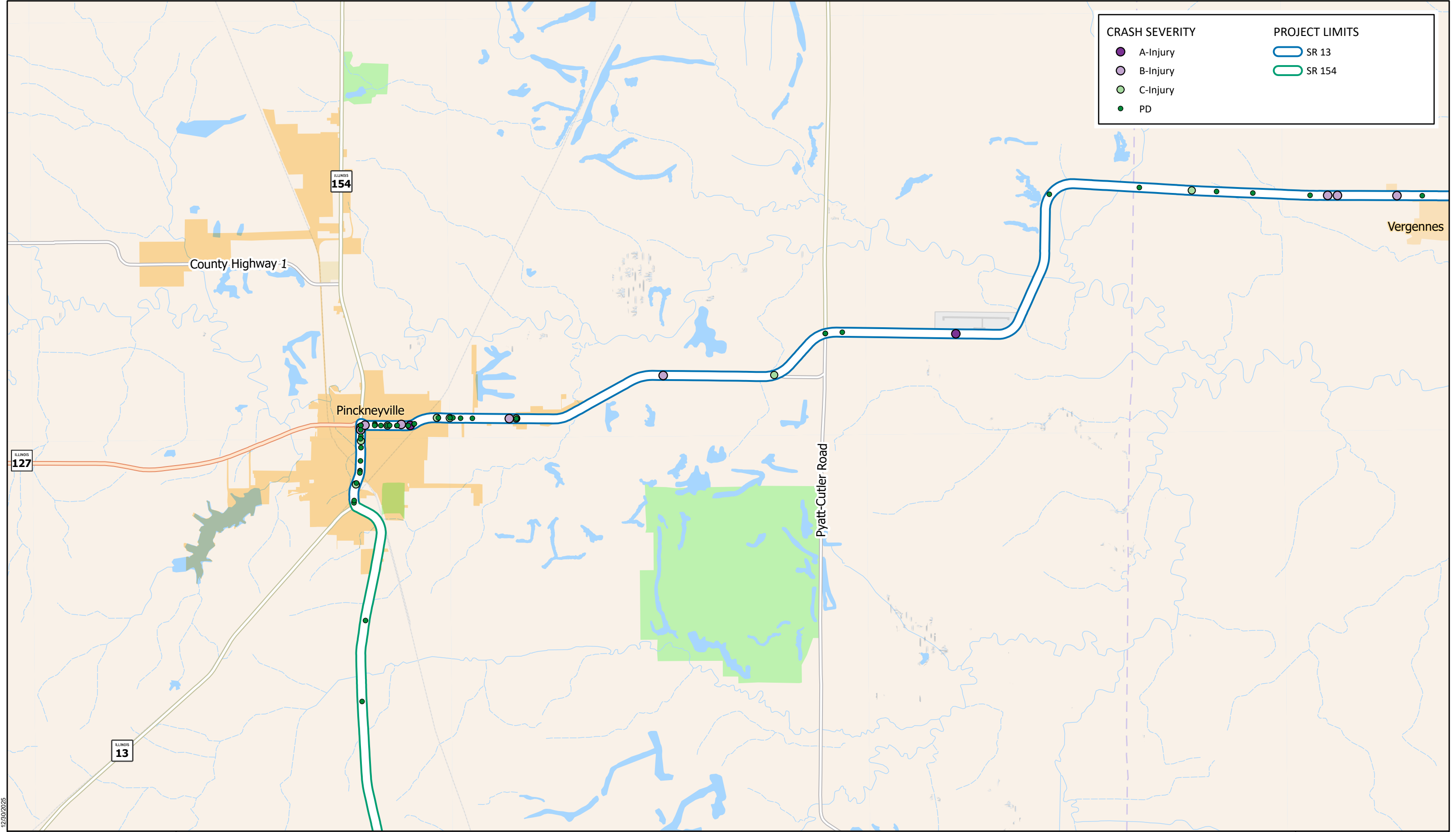


SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Front-to-Rear Crash Locations





CRASH SEVERITY

- A-Injury
- B-Injury
- C-Injury
- PD

PROJECT LIMITS

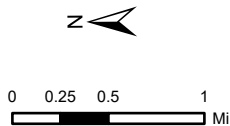
- SR 13
- SR 154

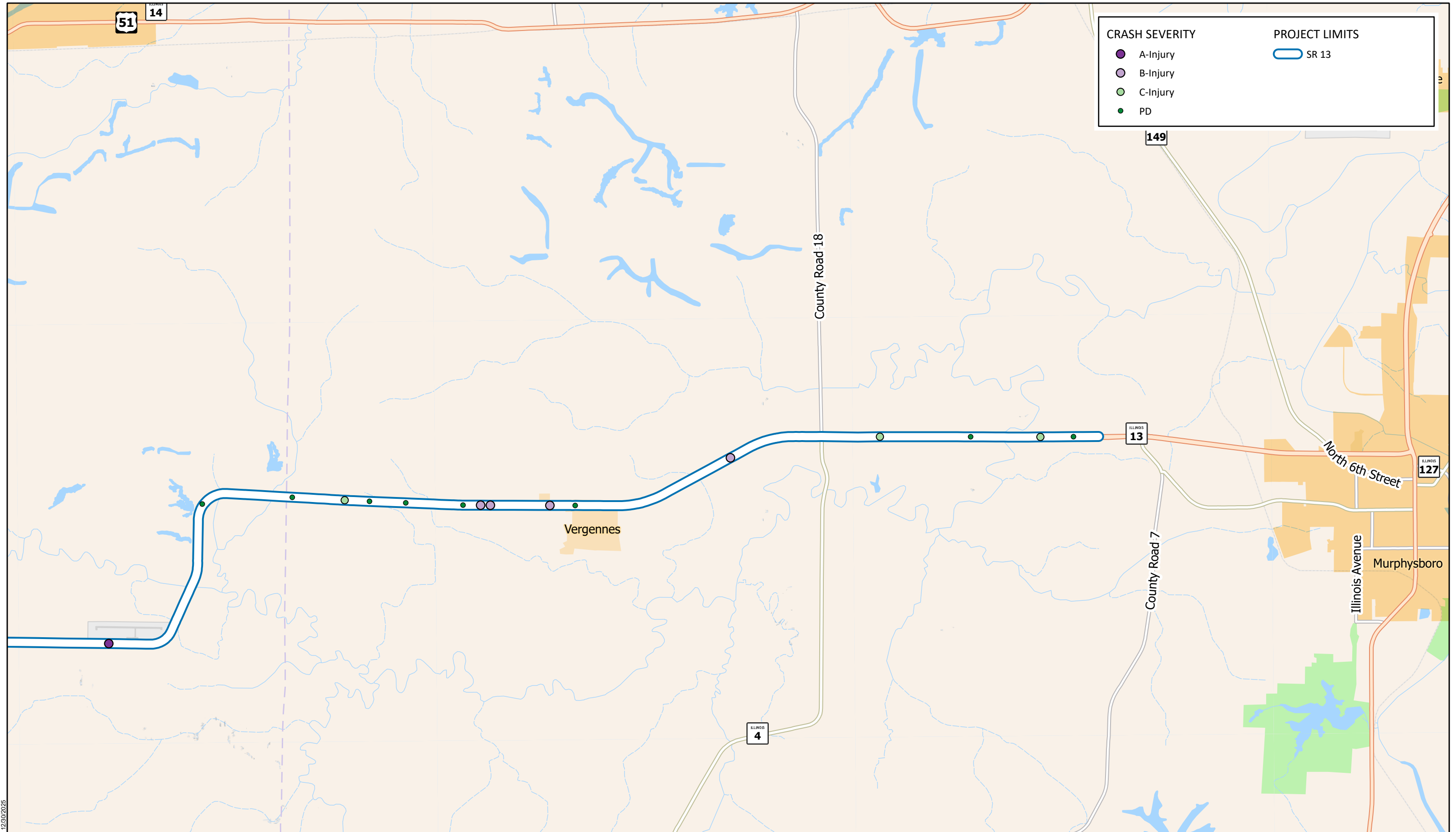
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Front-to-Rear Crash Locations



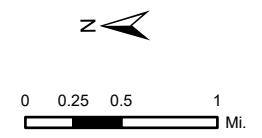


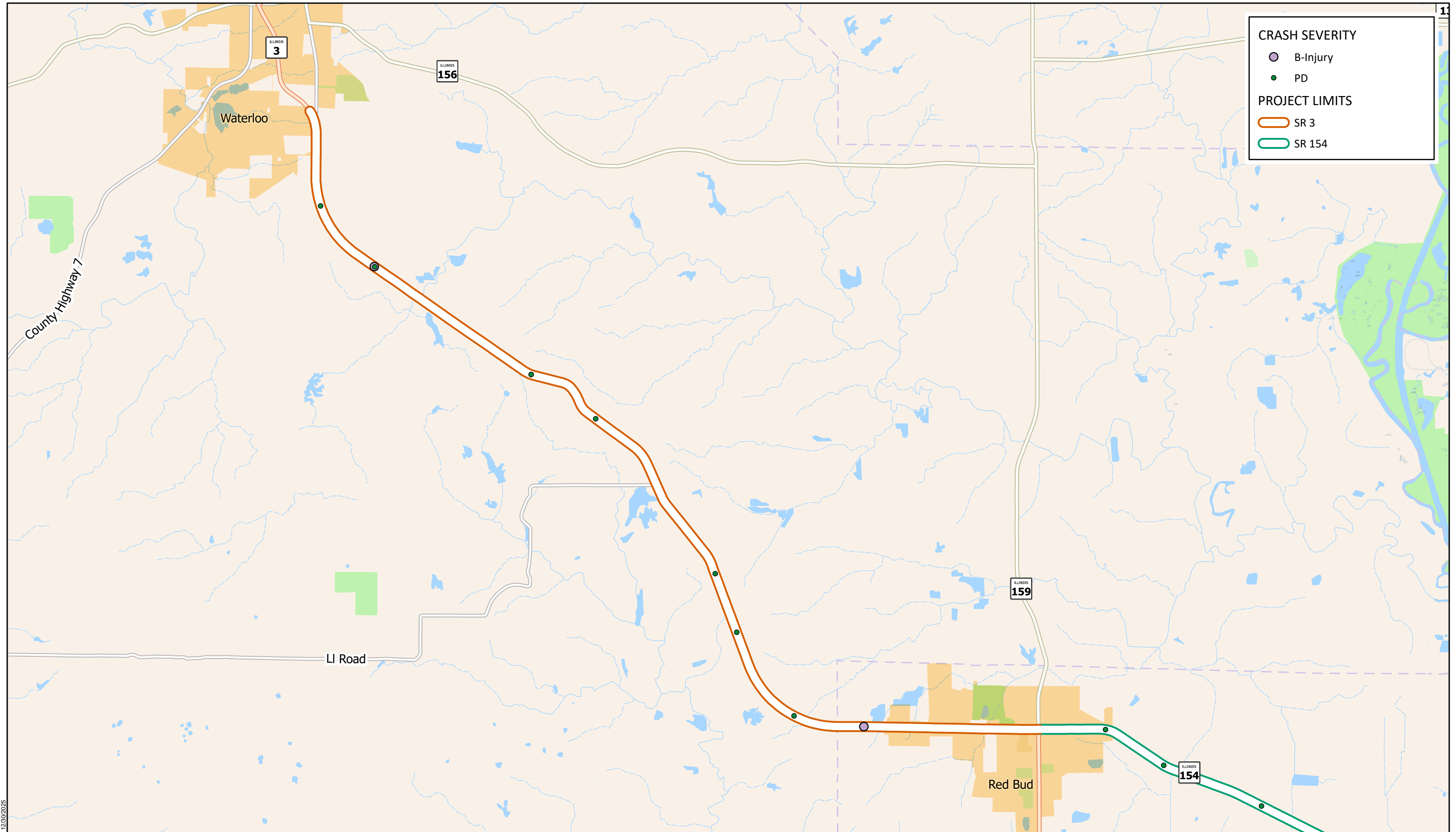
SWConnectorGIS Figures.aprx 12/30/2025

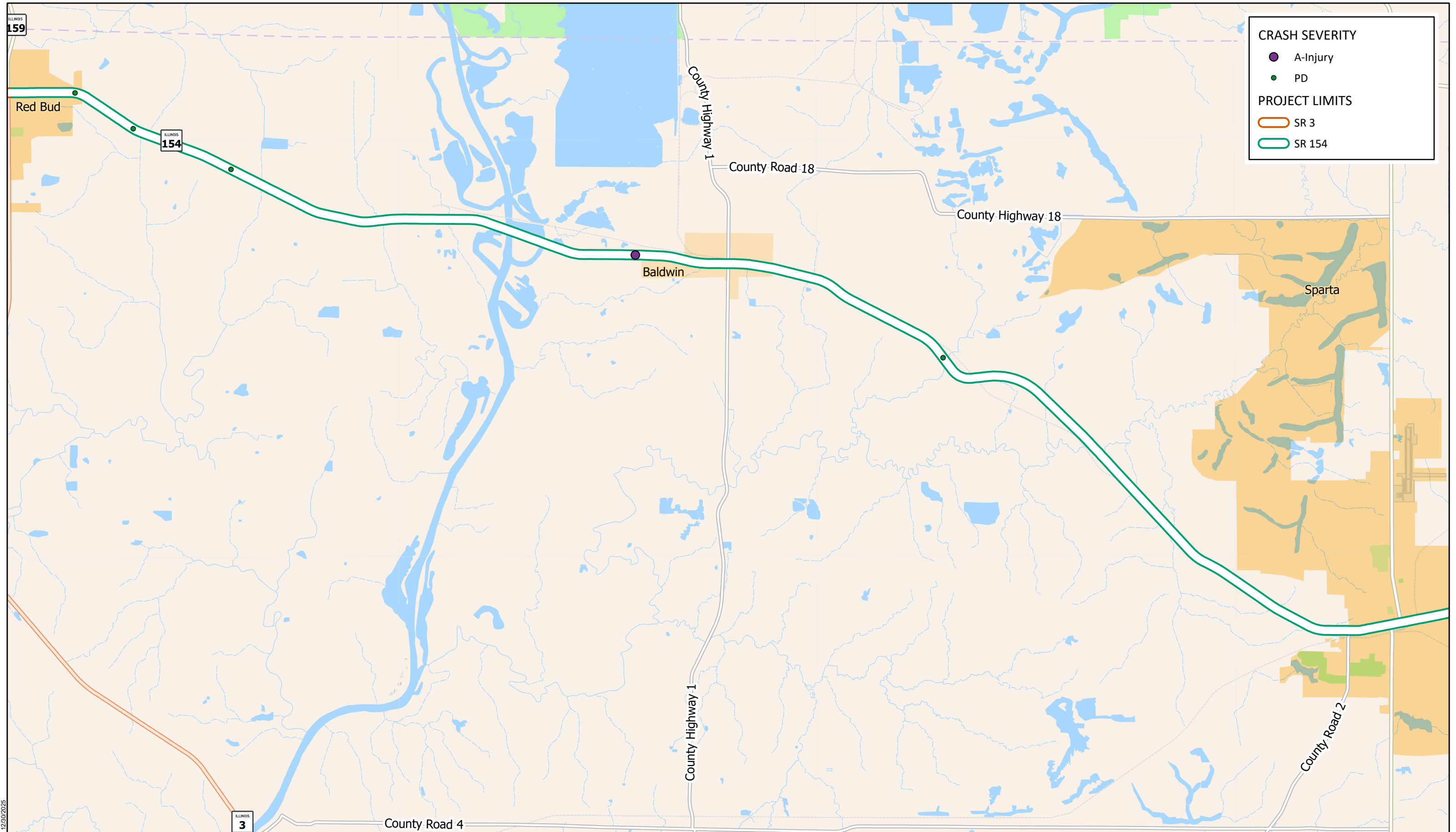


SOUTHWEST CONNECTOR HIGHWAY

Front-to-Rear Crash Locations





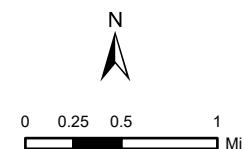


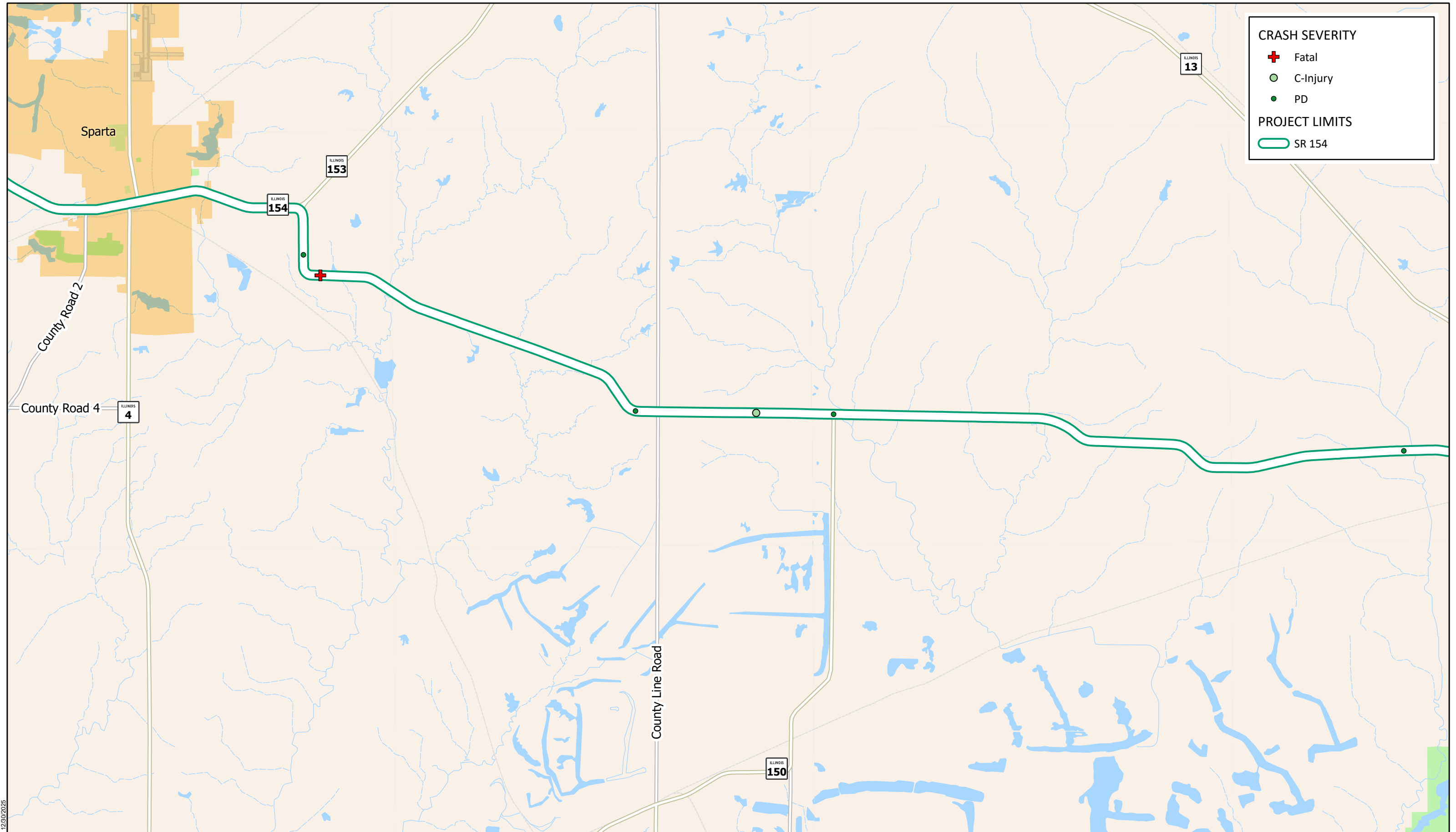
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

Passing Maneuver Crashes

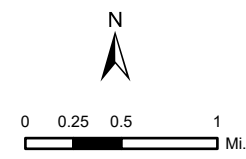




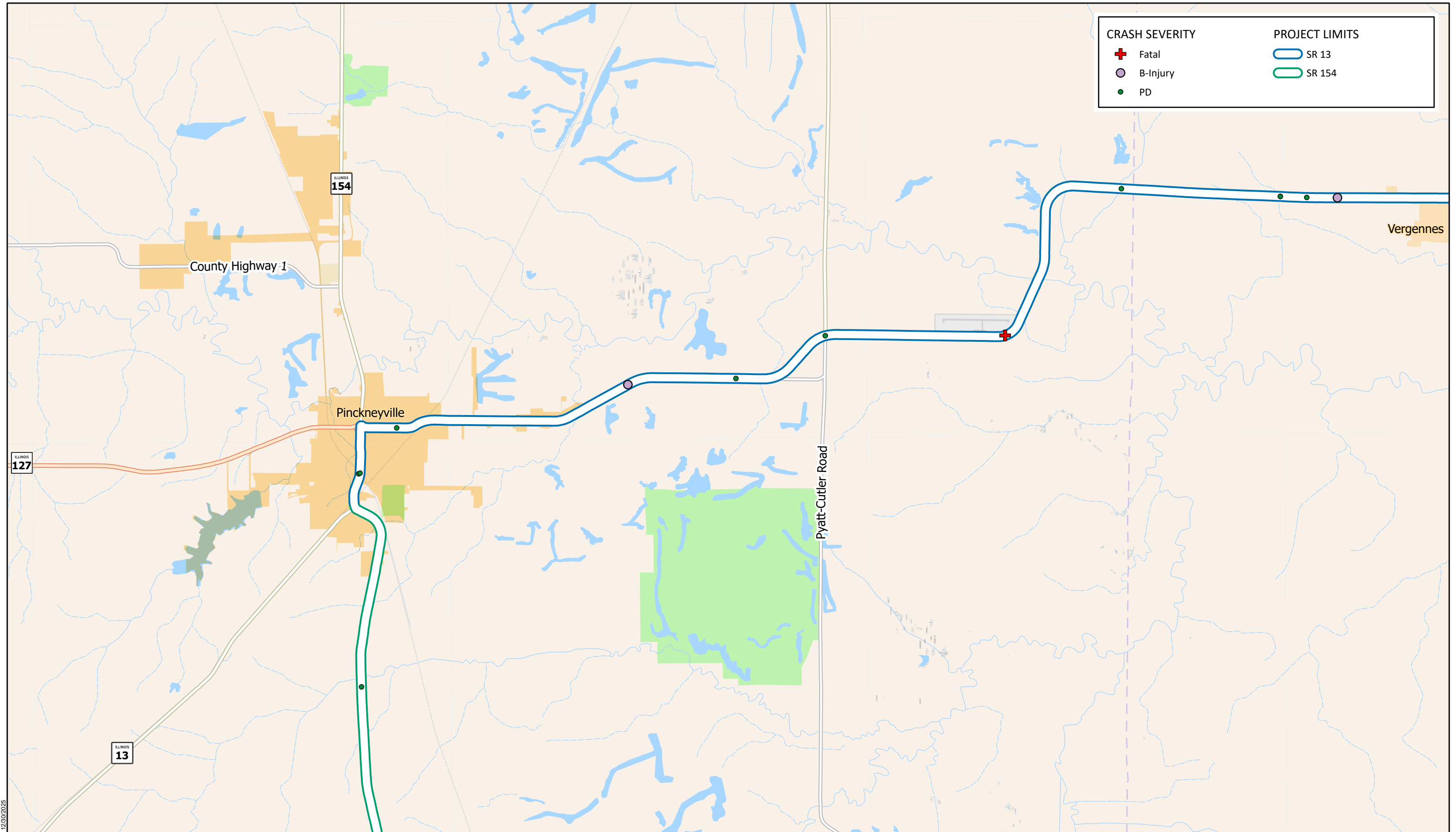
SWConnectorGIS Figures.aprx 12/30/2025

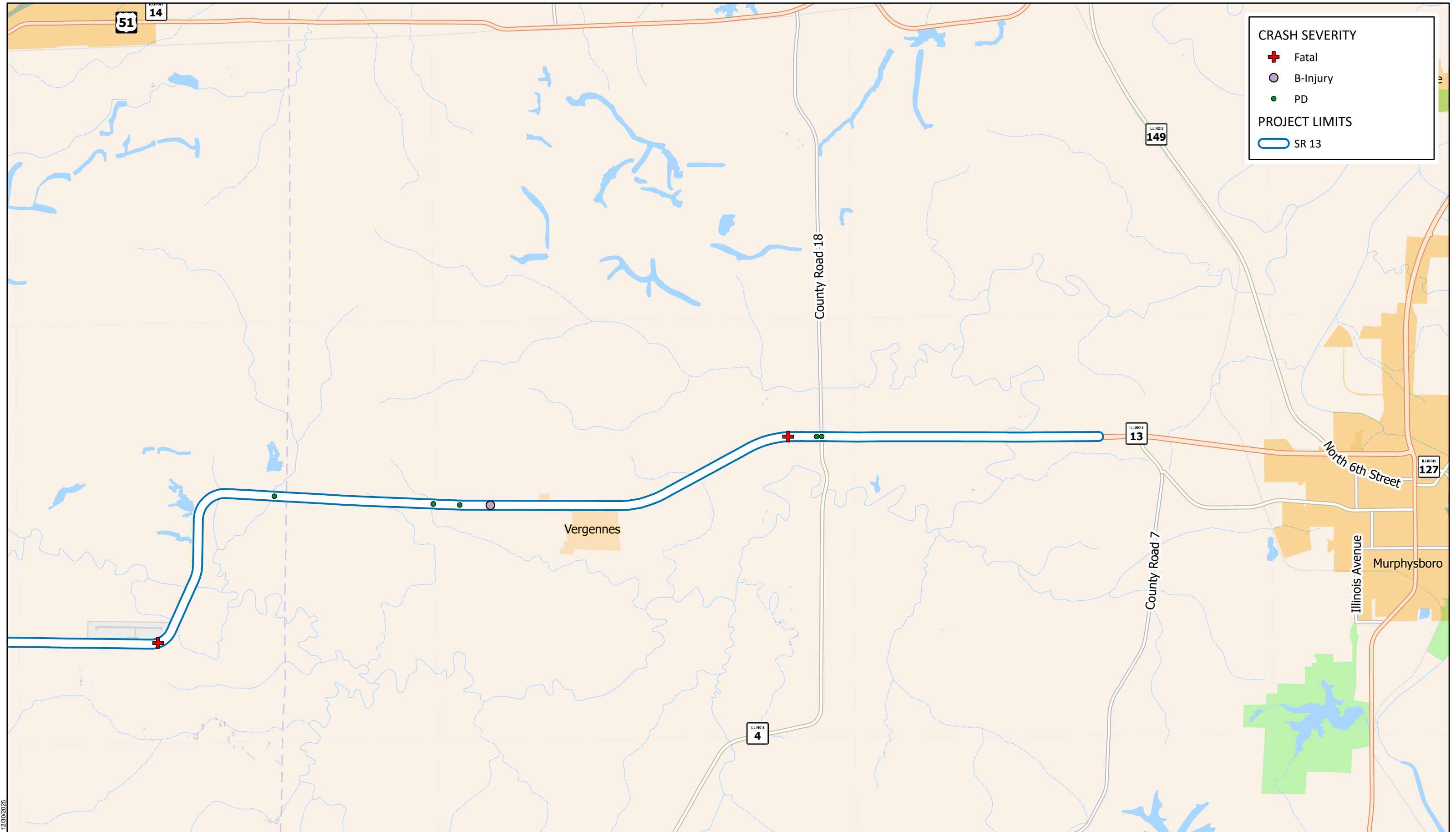


SOUTHWEST CONNECTOR HIGHWAY
Passing Maneuver Crashes



SWConnectorGIS_Figures.aprx 12/30/2025

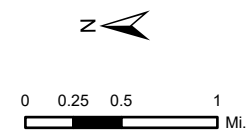




SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY
Passing Maneuver Crashes



Appendix B – Crash Rate Calculations



Segment Descriptions

1	IL 3	Rural	between Waterloo and Red Bud
2	IL 3/IL 154	Urban	within Red Bud
3	IL 154	Rural	between Red Bud and Baldwin
4	IL 154	Urban	within Baldwin
5	IL 154	Rural	between Baldwin and Sparta
6	IL 154	Urban	within Sparta
16	IL 154	Fringe Urban	east of Sparta (Eden)
7	IL 154	Rural	between east of Sparta and Randolph/Perry County Line
8	IL 154	Rural	between Randolph/Perry County Line and west of Pinckneyville
9	IL 154	Fringe Urban	west of Pinckneyville
10	IL 154/IL 13	Urban	within Pinckneyville (Kennedy Dr/Water St)
11	IL 13	Urban	within Pinckneyville (Main St)
12	IL 13	Rural	between Pinckneyville and Perry/Jackson County Line
13	IL 13	Rural	between Perry/Jackson County Line and Vergennes
14	IL 13	Fringe Urban	within Vergennes
15	IL 13	Rural	between Vergennes and north of Murphysboro (Somerset)

Total Crashes		Segment															
		1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
Year	2017	46	10	11	7	18	16	8	15	27	8	3	12	27	6	3	11
	2018	36	16	8	4	18	21	10	20	22	1	8	24	16	10	1	16
	2019	40	14	12	6	23	21	7	17	16	2	7	29	18	10	0	18
	2020	35	5	12	1	21	8	11	16	20	4	8	9	13	6	0	7
	2021	38	14	11	1	17	17	8	15	16	5	7	20	14	9	0	12
	2022	37	11	8	6	13	20	7	13	26	2	24	22	12	7	1	10
	2023	39	12	6	4	17	12	6	17	17	4	7	18	14	6	0	5
	2024	54	20	10	0	21	9	6	19	34	0	5	18	16	5	1	4
TOTAL		325	102	78	29	148	124	63	132	178	26	69	152	130	59	6	83

K&A Crashes		Segment															
		1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
Year	2017	3	1	2	0	2	0	0	0	3	0	0	4	2	1	0	0
	2018	2	1	3	2	2	0	0	3	2	0	0	0	0	1	0	1
	2019	2	0	1	1	2	1	1	0	2	0	0	1	2	1	0	2
	2020	2	0	2	0	3	1	1	1	0	0	0	0	0	0	0	0
	2021	2	1	0	0	1	0	0	3	0	0	0	1	1	1	0	1
	2022	2	0	0	1	0	1	1	1	5	0	0	0	1	1	0	1
	2023	3	0	0	1	1	0	0	0	2	0	0	1	2	0	0	0
	2024	0	3	0	0	2	0	1	2	4	0	0	0	1	1	0	1
TOTAL		16	6	8	5	13	3	4	10	18	0	0	7	9	6	0	6

VMT		Segment															
		1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
Year	2017	3.04E+07	5.83E+06	9.29E+06	2.50E+06	8.70E+06	3.31E+06	2.45E+06	5.52E+06	8.06E+06	1.06E+06	2.25E+06	5.23E+06	1.28E+07	4.63E+06	8.92E+05	8.82E+06
	2018	3.06E+07	5.88E+06	9.73E+06	2.67E+06	9.78E+06	3.36E+06	2.43E+06	5.55E+06	8.38E+06	1.07E+06	2.31E+06	5.12E+06	1.24E+07	4.38E+06	8.63E+05	8.53E+06
	2019	3.08E+07	5.93E+06	1.02E+07	2.86E+06	1.10E+07	3.41E+06	2.42E+06	5.58E+06	8.70E+06	1.09E+06	2.38E+06	5.00E+06	1.20E+07	4.14E+06	8.36E+05	8.25E+06
	2020	2.76E+07	5.21E+06	7.81E+06	2.24E+06	8.58E+06	2.96E+06	2.11E+06	4.82E+06	7.40E+06	9.28E+05	2.03E+06	4.54E+06	1.09E+07	3.76E+06	7.58E+05	7.49E+06
	2021	2.82E+07	5.28E+06	7.70E+06	2.14E+06	7.87E+06	2.93E+06	2.09E+06	4.50E+06	8.11E+06	1.13E+06	2.37E+06	4.85E+06	1.21E+07	4.26E+06	8.57E+05	8.62E+06
	2022	2.84E+07	5.39E+06	8.25E+06	2.28E+06	8.27E+06	2.92E+06	2.07E+06	4.63E+06	8.00E+06	1.11E+06	2.32E+06	4.84E+06	1.18E+07	4.32E+06	8.63E+05	8.61E+06
	2023	2.86E+07	5.50E+06	8.83E+06	2.44E+06	8.69E+06	2.91E+06	2.06E+06	4.76E+06	7.90E+06	1.09E+06	2.28E+06	4.83E+06	1.16E+07	4.38E+06	8.68E+05	8.61E+06
	2024	2.87E+07	5.61E+06	9.46E+06	2.60E+06	9.14E+06	2.90E+06	2.05E+06	4.90E+06	7.80E+06	1.07E+06	2.24E+06	4.82E+06	1.13E+07	4.43E+06	8.74E+05	8.60E+06
TOTAL		2.33E+08	4.46E+07	7.13E+07	1.97E+07	7.20E+07	2.47E+07	1.77E+07	4.02E+07	6.44E+07	8.55E+06	1.82E+07	3.92E+07	9.48E+07	3.43E+07	6.81E+06	6.75E+07

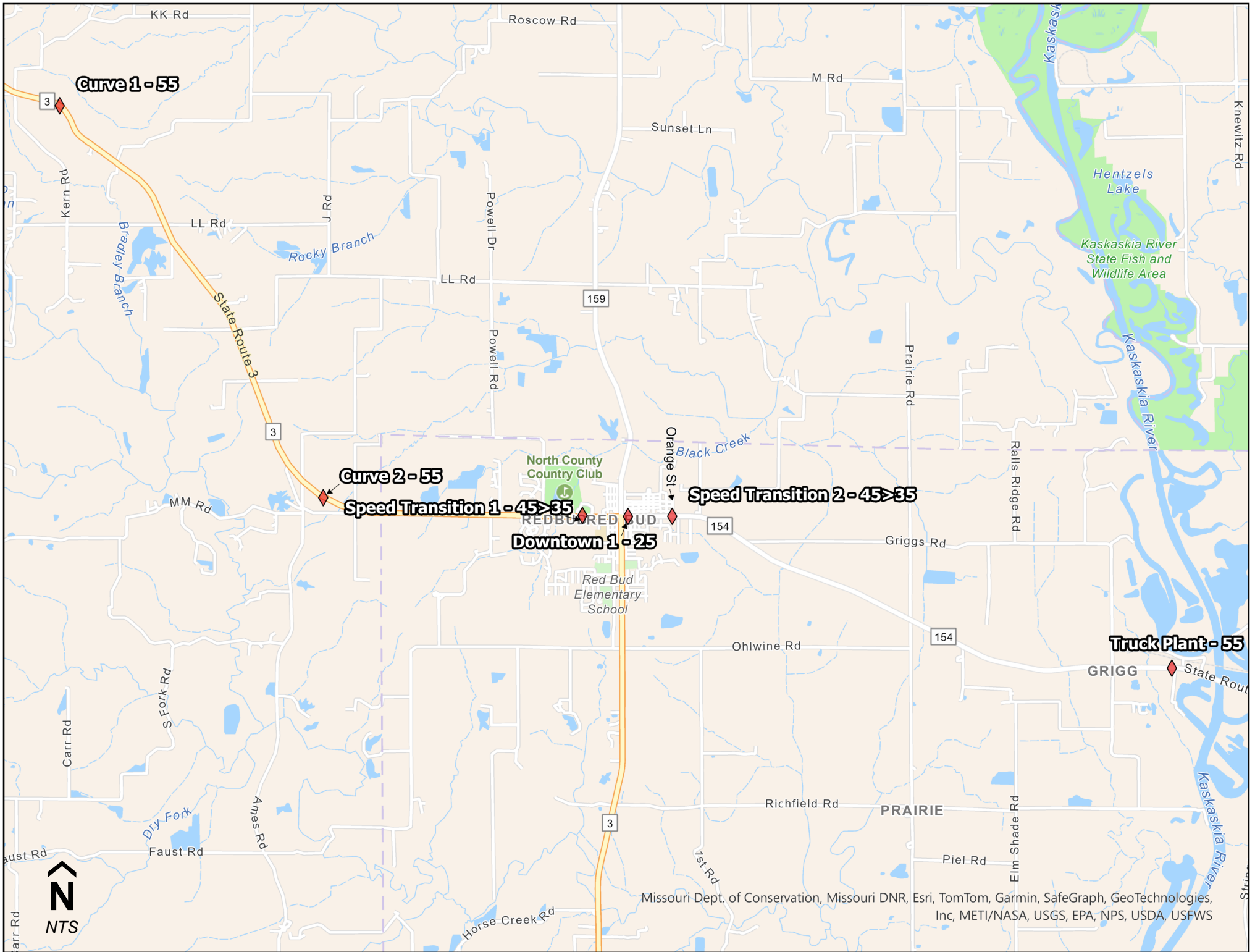
Total Crash Rate (crashes/HMVT)		Segment															
		1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
Year	2017	151.47	171.66	118.46	280.18	206.78	483.40	327.19	271.94	334.96	755.47	133.58	229.39	211.02	129.54	336.24	124.78
	2018	117.65	272.27	82.24	149.69	183.97	624.94	411.02	360.51	262.63	93.03	345.68	469.04	129.29	228.25	115.82	187.56
	2019	129.74	236.17	117.75	209.94	209.13	615.55	289.15	304.68	183.80	183.31	293.52	579.43	150.39	241.30	0.00	218.07
	2020	126.96	95.93	153.65	44.67	244.62	270.27	522.35	332.24	270.17	431.12	394.46	198.11	119.66	159.50	0.00	93.43
	2021	134.54	265.02	142.83	46.82	216.06	579.30	383.11	333.33	197.30	442.73	295.74	412.34	115.41	211.10	0.00	139.27
	2022	130.29	204.11	96.99	263.00	157.20	684.10	337.47	280.84	324.81	180.25	1032.87	454.40	101.32	162.05	115.92	116.11
	2023	136.60	218.25	67.92	164.15	195.58	412.01	291.21	357.03	215.15	366.93	306.86	372.46	121.07	137.09	0.00	58.09
	2024	188.13	356.55	105.69	0.00	229.86	310.17	293.17	387.93	435.92	0.00	223.27	373.14	141.72	112.76	114.47	46.49
RATE, ALL YEARS		139.33	228.59	109.46	147.03	205.45	501.74	356.45	327.97	276.57	304.00	379.45	387.32	137.09	171.95	88.09	122.90

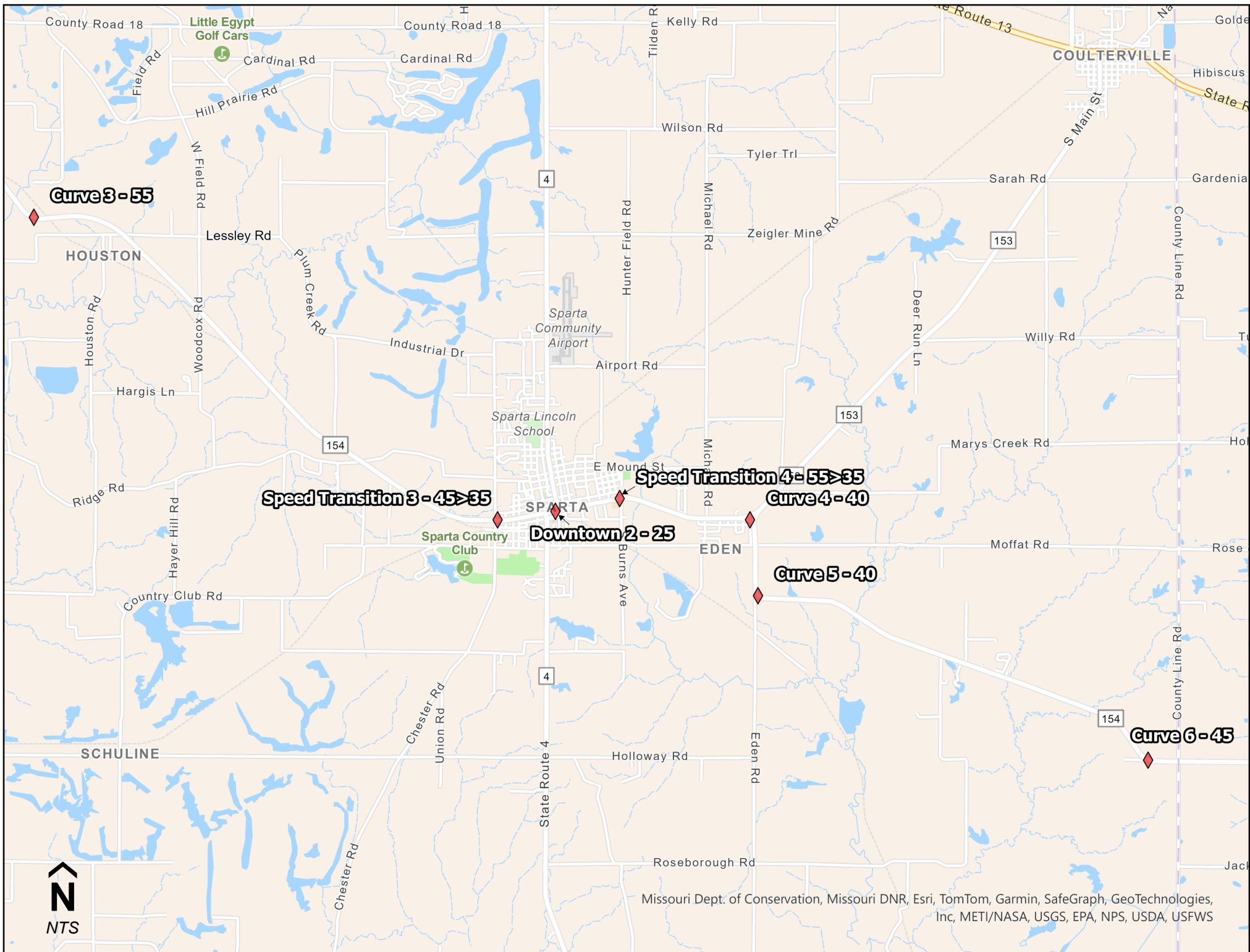
K&A Rate (crashes/HMVT)		Segment															
		1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
Year	2017	9.88	17.17	21.54	0.00	22.98	0.00	0.00	0.00	37.22	0.00	0.00	76.46	15.63	21.59	0.00	0.00
	2018	6.54	17.02	30.84	74.85	20.44	0.00	0.00	54.08	23.88	0.00	0.00	0.00	0.00	22.82	0.00	11.72
	2019	6.49	0.00	9.81	34.99	18.19	29.31	41.31	0.00	22.98	0.00	0.00	19.98	16.71	24.13	0.00	24.23
	2020	7.26	0.00	25.61	0.00	34.95	33.78	47.49	20.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2021	7.08	18.93	0.00	0.00	12.71	0.00	0.00	66.67	0.00	0.00	0.00	20.62	8.24	23.46	0.00	11.61
	2022	7.04	0.00	0.00	43.83	0.00	34.20	48.21	21.60	62.46	0.00	0.00	0.00	8.44	23.15	0.00	11.61
	2023	10.51	0.00	0.00	41.04	11.50	0.00	0.00	0.00	25.31	0.00	0.00	20.69	17.30	0.00	0.00	0.00
	2024	0.00	53.48	0.00	0.00	21.89	0.00	48.86	40.83	51.28	0.00	0.00	0.00	8.86	22.55	0.00	11.62
RATE, ALL YEARS		6.86	13.45	11.23	25.35	18.05	12.14	22.63	24.85	27.97	0.00	0.00	17.84	9.49	17.49	0.00	8.88

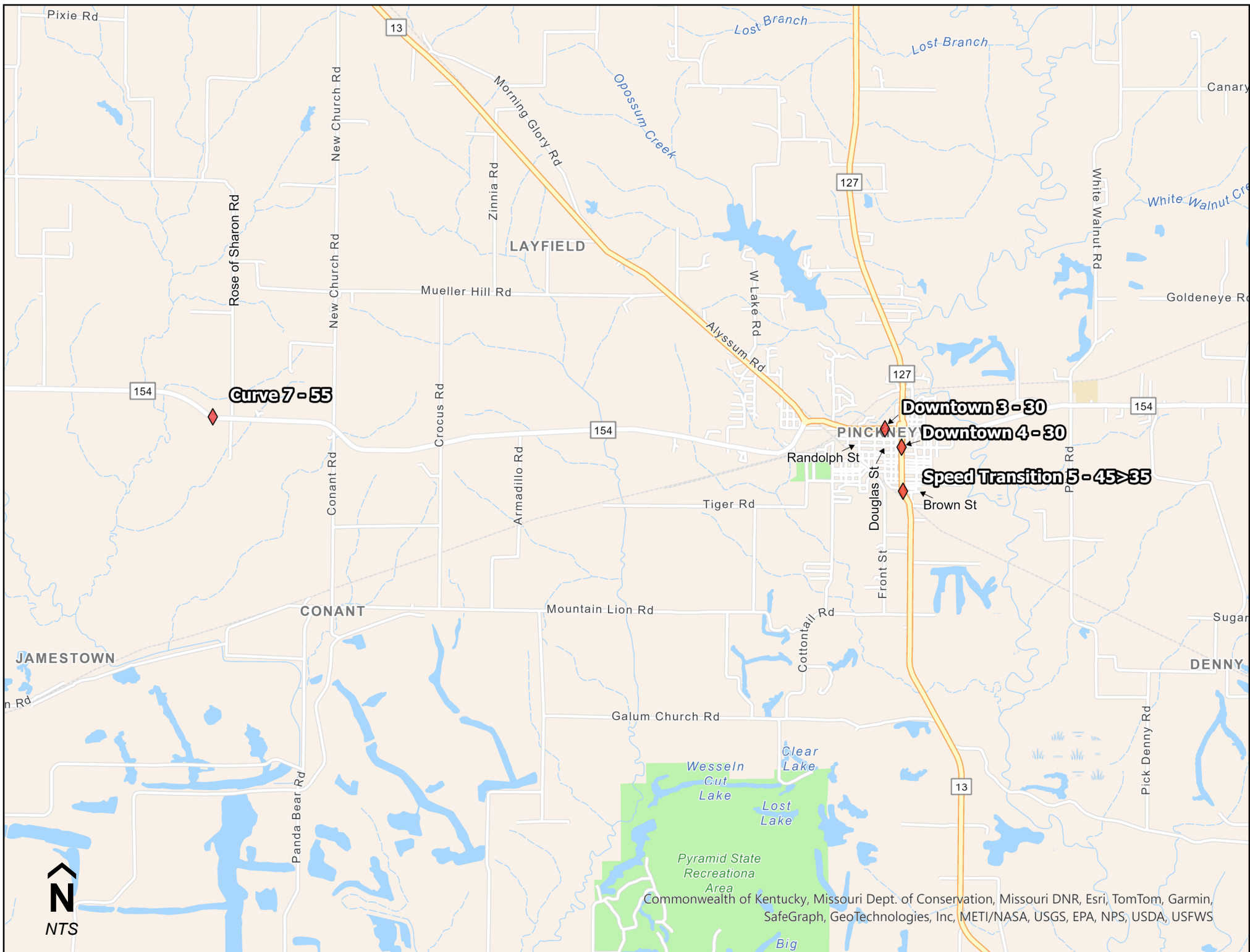
From VMT																
	1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
2019	3.08E+07	5.93E+06	1.02E+07	2.86E+06	1.10E+07	3.41E+06	2.42E+06	5.58E+06	8.70E+06	1.09E+06	2.38E+06	5.00E+06	1.20E+07	4.14E+06	8.36E+05	8.25E+06
	-8.38%	-10.88%	-24.43%	-25.27%	-28.46%	-13.98%	-13.74%	-19.35%	-6.84%	3.51%	-0.75%	-3.09%	1.35%	2.87%	2.59%	4.39%
2021	2.82E+07	5.28E+06	7.70E+06	2.14E+06	7.87E+06	2.93E+06	2.09E+06	4.50E+06	8.11E+06	1.13E+06	2.37E+06	4.85E+06	1.21E+07	4.26E+06	8.57E+05	8.62E+06
From Streetlight																
	1/2	2/3	3	3/4	4	4/5	4/5	5	6	6	6	8	8	8	8	8
2019-2021	-9.90%	-8.26%	-14.97%	-16.05%	-17.12%	-14.20%	-14.20%	-11.28%	-5.00%	-5.00%	-5.00%	-11.56%	-11.56%	-11.56%	-11.56%	-11.56%
2019-2020	-12.50%	-12.07%	-14.32%	-13.76%	-13.20%	-13.45%	-13.45%	-13.69%	-14.96%	-14.96%	-14.96%	-16.25%	-16.25%	-16.25%	-16.25%	-16.25%
2020-2021	2.77%	4.21%	-0.76%	-2.64%	-4.52%	-0.86%	-0.86%	2.79%	11.71%	11.71%	11.71%	5.60%	5.60%	5.60%	5.60%	5.60%
Modified Factors																
	1	2	3	4	5	6	16	7	8	9	10	11	12	13	14	15
2019-2021	-8.38%	-8.26%	-24.43%	-25.27%	-28.46%	-13.98%	-13.74%	-11.28%	-5.00%	-5.00%	-5.00%	-3.09%	-3.09%	-3.09%	-3.09%	-3.09%
2019-2020	-10.58%	-12.07%	-23.36%	-21.67%	-21.94%	-13.24%	-13.01%	-13.69%	-14.96%	-14.96%	-14.96%	-9.23%	-9.23%	-9.23%	-9.23%	-9.23%
Method	Proportional	Conservative	Proportional	Proportional	Proportional	Proportional	Proportional	Conservative	Conservative	Conservative	Conservative	Proportional to Streetlight 6	Same as 11	Same as 11	Same as 11	Same as 11

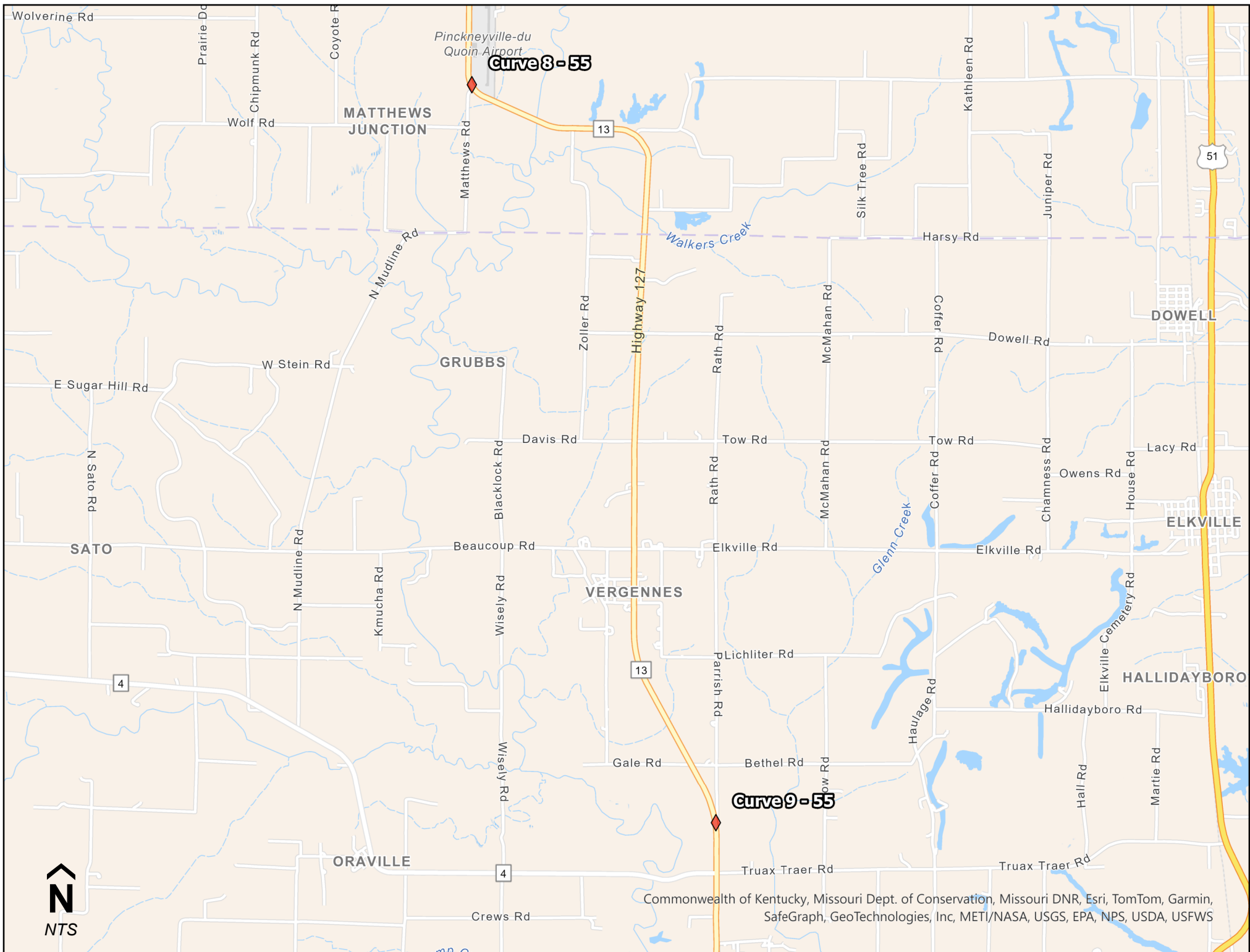
Appendix C – Streetlight Speed Locations











Appendix D – Detailed Crash Analysis Maps





Fatal

A-Injury

B-Injury

C-Injury

PD

High Crash Location Limits

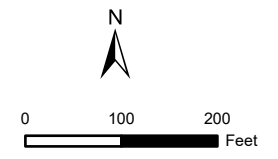


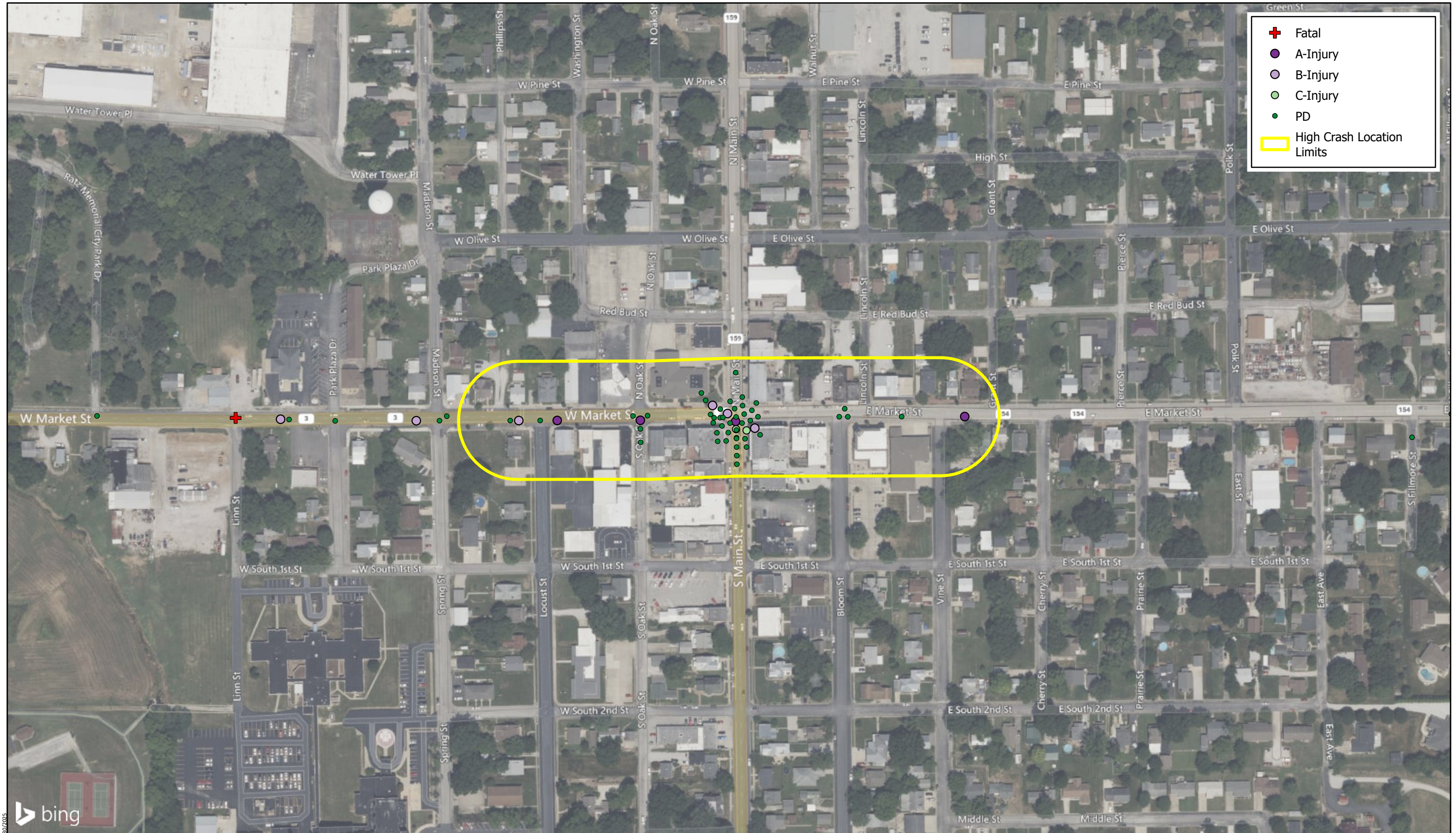
- ✚ Fatal
- A-Injury
- B-Injury
- PD
- ▭ High Crash Location Limits

SOUTHWEST CONNECTOR HIGHWAY

IL 3 and Doyle Road / Old State Route 3 Intersection

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





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SOUTHWEST CONNECTOR HIGHWAY

IL 3 and IL 154 from Locust Street to Vine Street

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display



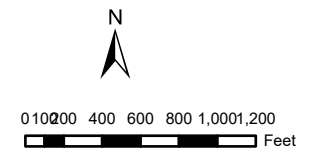
SWConnectorGIS_Figures.aprx 12/30/2025



SOUTHWEST CONNECTOR HIGHWAY

IL 154 from Prairie Road to Kaskaskia River Crossing

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





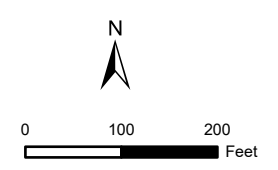
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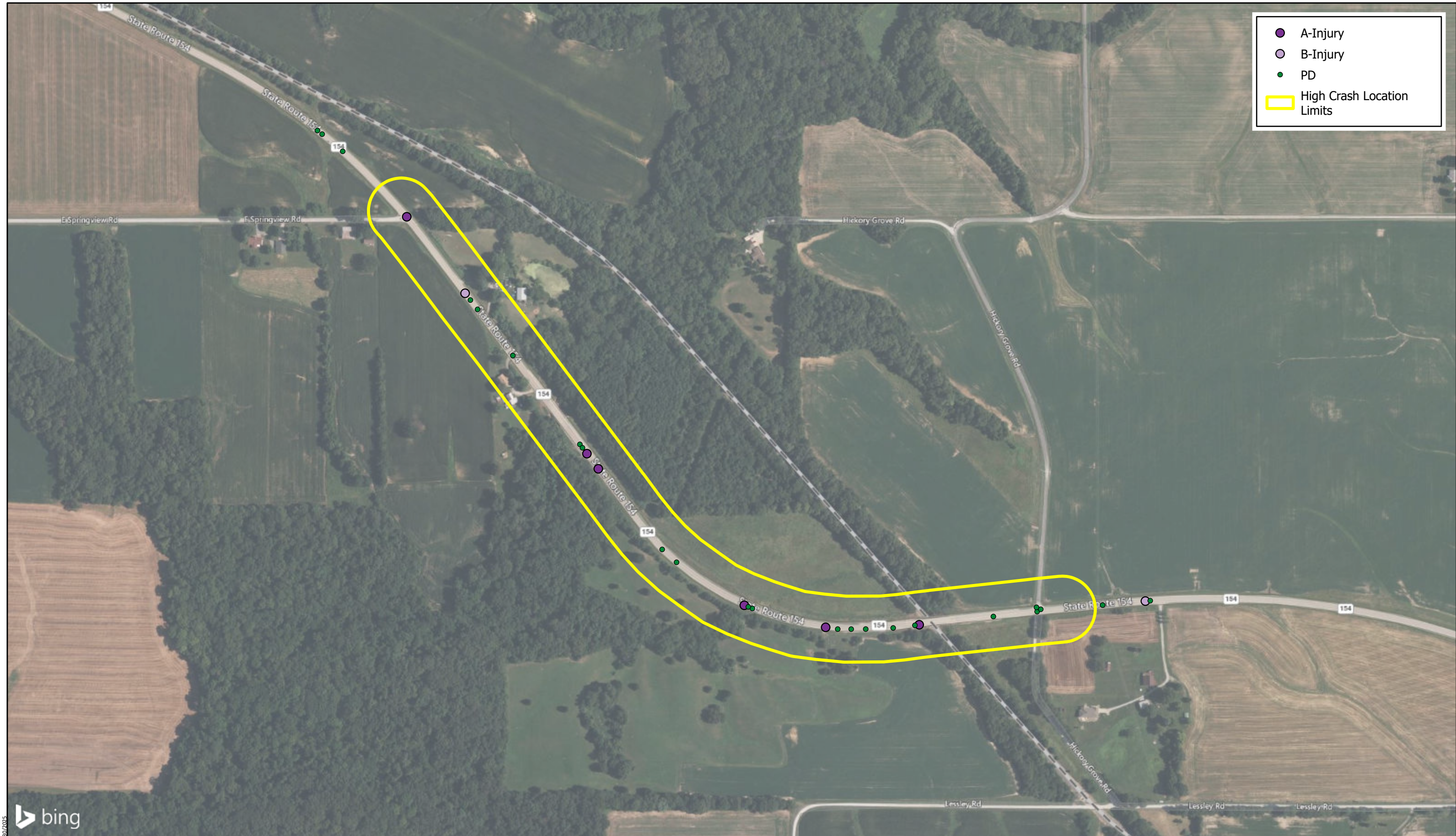


SOUTHWEST CONNECTOR HIGHWAY

IL 154 and Fifth Street Intersection

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





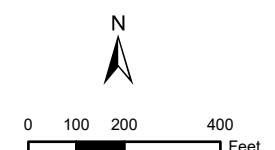
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SOUTHWEST CONNECTOR HIGHWAY

IL 154 from Springview Road to Hickory Grove Road

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display



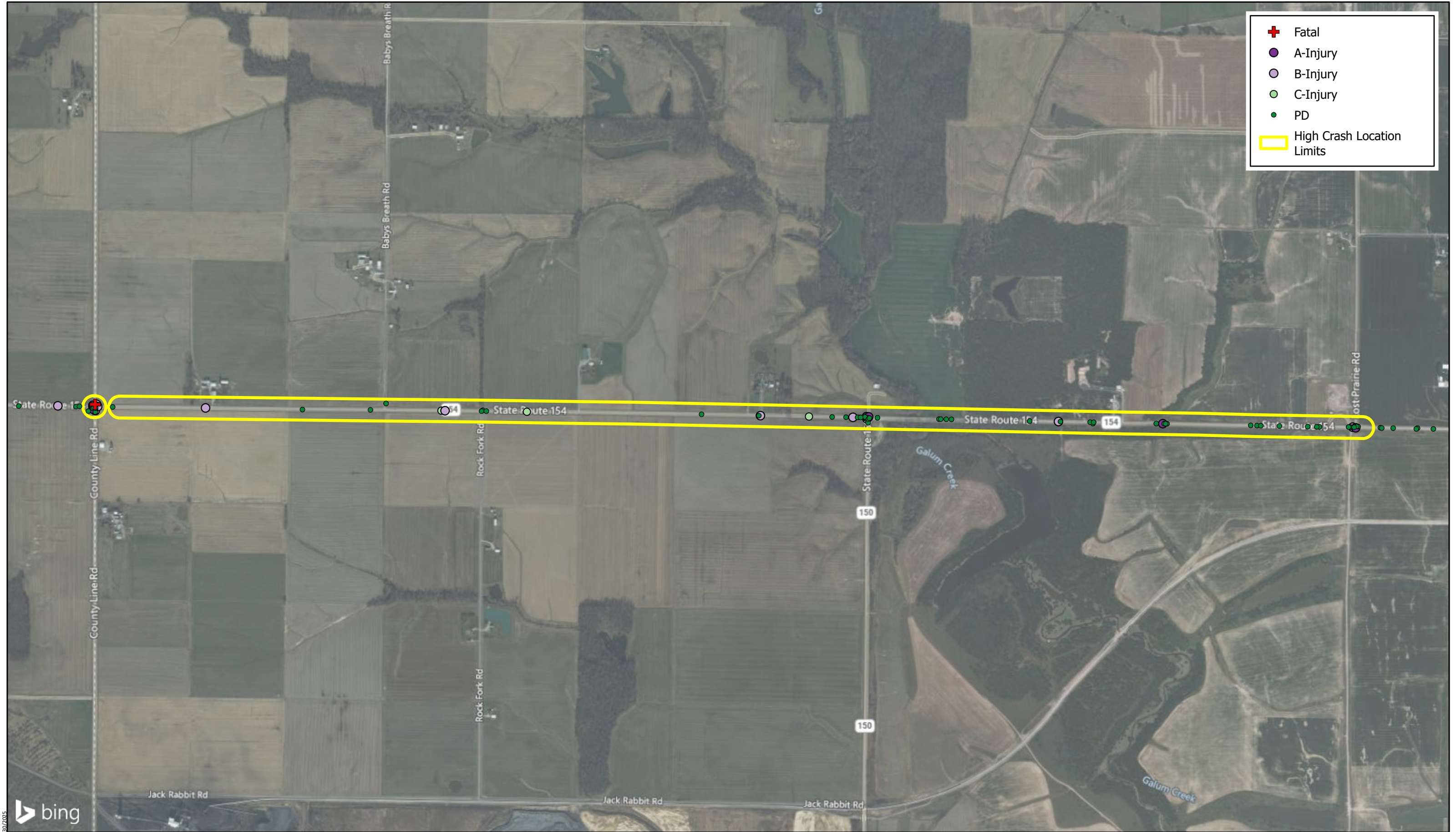


SVComasterGIS_Figures.aprx 12/30/2025

SOUTHWEST CONNECTOR HIGHWAY

IL 154 East of Sparta (Eden)

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display



Fatal

A-Injury

B-Injury

C-Injury

PD

High Crash Location Limits



- ✚ Fatal
- A-Injury
- B-Injury
- PD
- High Crash Location Limits

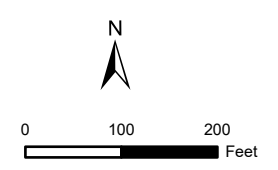
bing

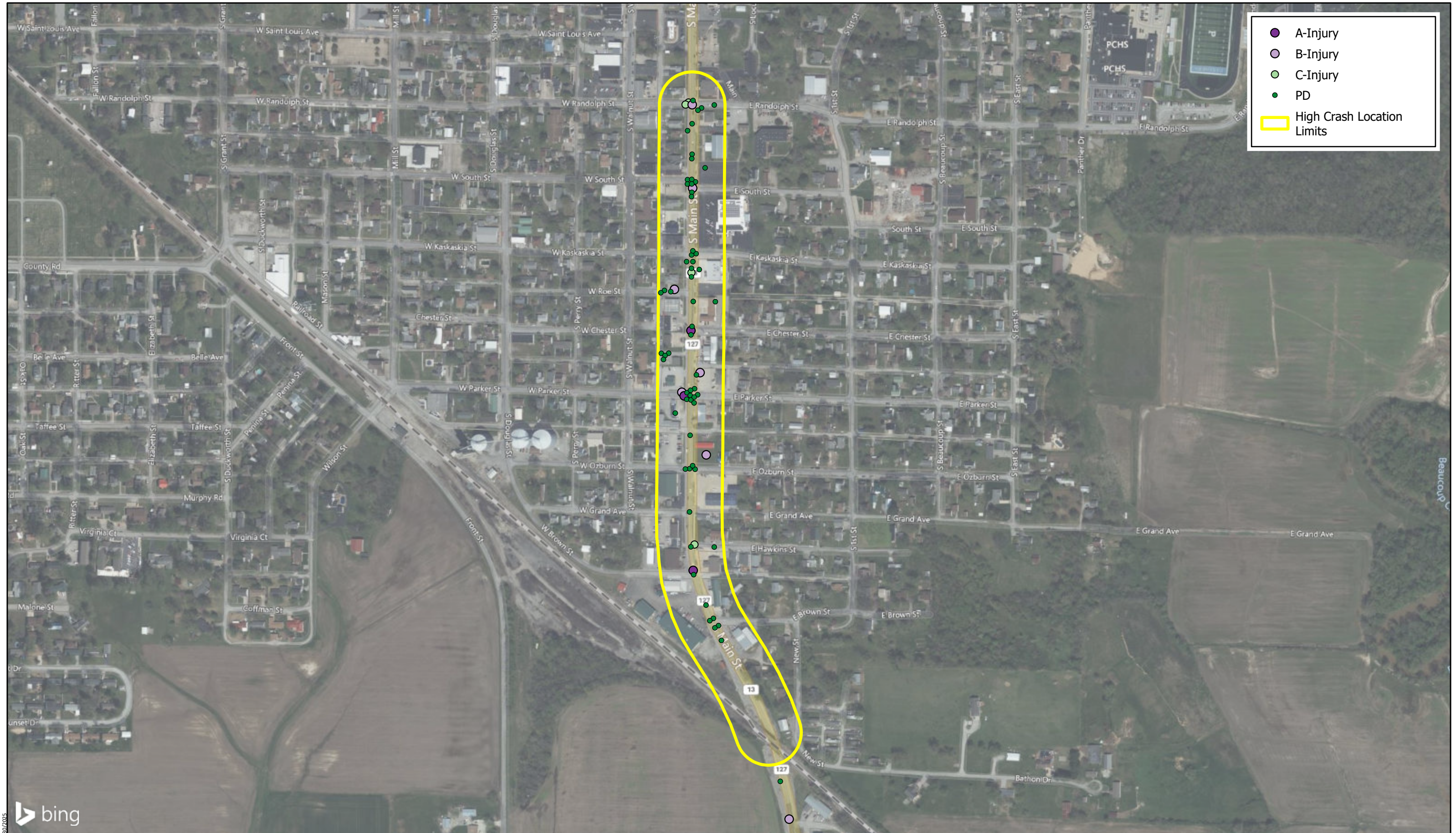


SOUTHWEST CONNECTOR HIGHWAY

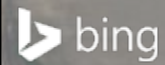
IL 154 from Porcupine Road to Rose of Sharon Road

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





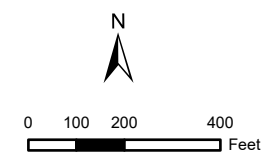
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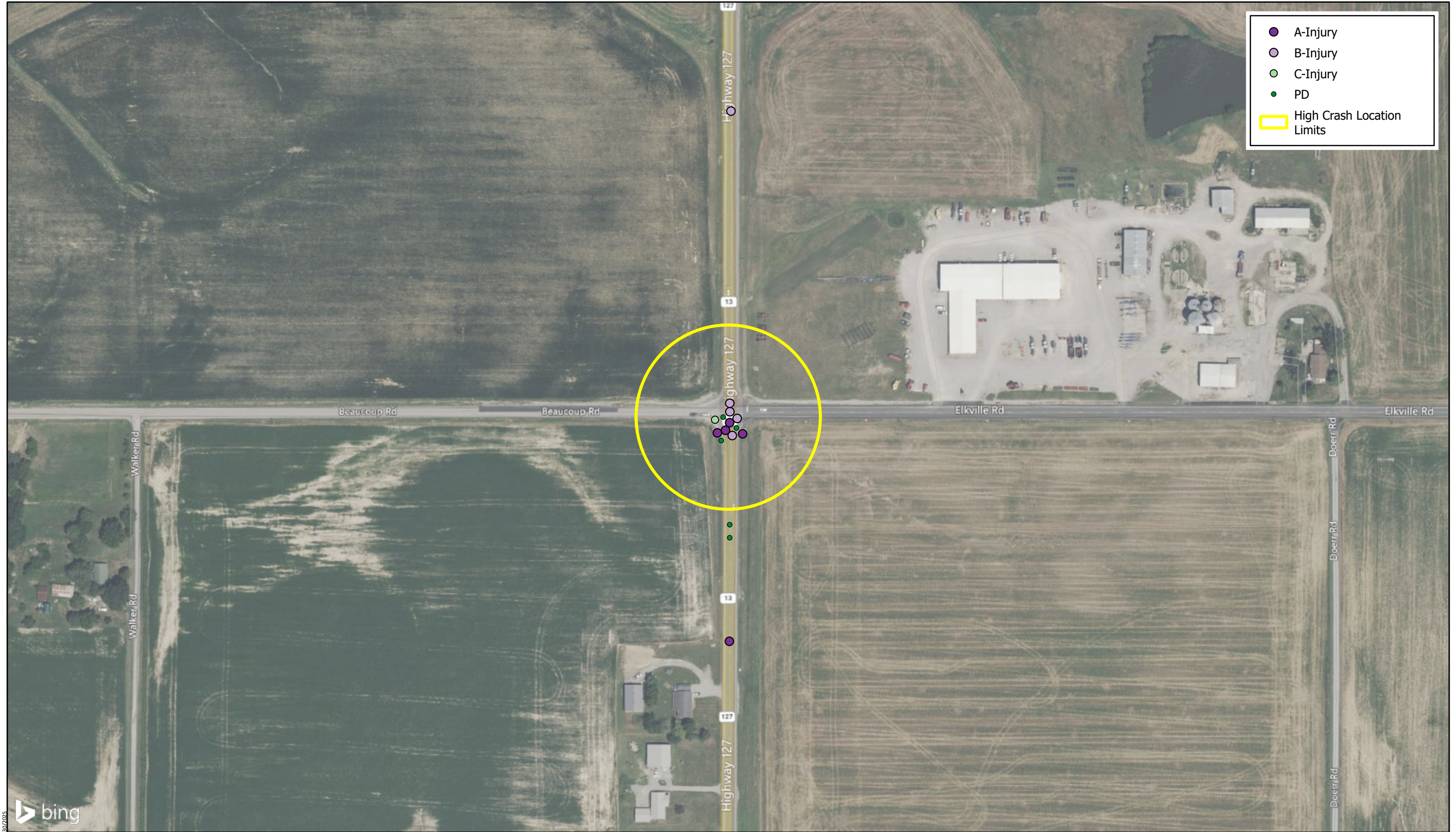


SOUTHWEST CONNECTOR HIGHWAY

IL 13 / IL 127 from Randolph Street to Railroad Crossing

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





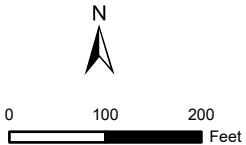
- A-Injury
- B-Injury
- C-Injury
- PD
- High Crash Location Limits

bing



SOUTHWEST CONNECTOR HIGHWAY
IL 13 / IL 127 and Beaucoup Road / Elkvile Road Intersection

NOTE: In high density crash areas, the crash points have been artificially dispersed to enhance display





Appendix B. List of Geometric Roadway Deficiencies

Southwest Connector – List of Roadway Deficiencies

For reference, the project alignment begins at the intersection of Vandebrook Drive/Market Street and State Route 3, with a starting station of 10000+00.00.

Key Mileposts:

• Vandebrook Dr/Market St at IL 3 (west project limit)	STA 10000+00.00
• LL Rd at IL 3	STA 10325+80.00
• IL 3 (Market St) at IL 159 (Main St)	STA 10639+97.00
• IL 154 at Kaskaskia River	STA 10962+00.00
• IL 154 (Myrtle St) at Fifth St	STA 11097+25.00
• IL 154 at Lessley Rd	STA 11306+75.00
• IL 154 (Broadway) at IL 4 (Market St)	STA 11582+15.00
• IL 154 at IL 153	STA 11685+00.00
• IL 154 at County Line Rd	STA 11956+70.00
• IL 154 at IL 150	STA 12063+00.00
• IL 154 at Crocus Rd	STA 12339+00.00
• IL 154 at IL 13 Roundabout	STA 12533+50.00

Horizontal Alignment Deficiencies:

The horizontal alignment was evaluated to ensure compliance with minimum curve radius requirements as defined in the Bureau of Design and Environment (BDE) Manual.

For rural two-lane highway segments, a minimum radius of 1,330 feet corresponding to a design speed of 60 mph (BDE 47-2.M) was used. The following curves were identified as deficient based on this criterion:

Station	Description	Radius (ft)
10239+42.86	1st curve between Kern Rd and Crook Rd	1050
10256+10.04	3rd curve between Kern Rd and Crook Rd	1300
11251+98.06	1st curve before bridge over the railroad between Springview Rd and Hickory Grove Rd	1200
11935+27.53	Curve before County Line Rd	1017
12218+00.65	Curve at Porcupine Rd	1248
12272+11.14	Curve before Conant/New Church Rd	1312
12291+31.55	Curve after Conant/New Church Rd	1269

For low-speed urban street segments, the minimum radius criterion was established based on the posted speed limit within these areas. The following deficient curves are located within urban sections posted at 40 mph. A design speed of 45 mph was applied for evaluation, resulting in a minimum required radius of 710 feet (BDE 48-5.B).

Station	Description	Radius (ft)
11678+65.48	Curve between Francene St and Crown St	504
11716+95.07	Curve at Eden Rd	518

Vertical Alignment Deficiencies:

The vertical alignment was evaluated to ensure compliance with minimum curve length and K-Value requirements as defined in the BDE Manual.

For rural two-lane highway segments, a minimum vertical curve length of 180 feet was applied based on a design speed of 60 mph (BDE 33-4). For crest curves on level grade, a minimum K-value of 151 was used, and for sag curves on level grade, a minimum K-value of 136 was used, as outlined in BDE Figures 33-4.A and 33-4.E. For locations with downgrades greater than 3%, minimum K-values were recalculated to reflect the steeper grade conditions. The following curves were identified as deficient under these criteria:

Station	Description	Curve Type	Length (ft)	Actual K- Value	Calculated K-Value
10116+85.76	200 ft south of Plaza Pkwy	Crest	364	113	167
10127+81.29	0.5 mile south of Plaza Pkwy	Crest	485	144	176
10136+28.56	0.25 mile north of Oak Ln	Sag	565	62	150
10166+45.91	0.15 mile south of Sportsman Rd	Crest	270	98	151
10178+09.56	0.35 mile south of Sportsman Rd	Sag	359	121	136
10182+30.86	0.5 mile south of Sportsman Rd	Crest	115	76	151
10257+18.06	0.25 mile north of Polacek Dr	Crest	126	164	151
10259+49.78	0.2 mile north of Polacek Dr	Sag	105	159	136
10311+09.59	0.3 mile north of LL Rd	Sag	108	56	136
10334+59.60	100 ft north of Cari Ln	Sag	62	131	136
10336+75.39	100 ft south of Cari Ln	Sag	110	148	136
10339+71.03	400 ft south of Cari Ln	Crest	225	102	151
10360+34.28	140 ft south of Schreder Ln	Crest	143	169	151

Station	Description	Curve Type	Length (ft)	Actual K- Value	Calculated K-Value
10427+24.96	0.2 mile south of Amberwood/Matzenbacher Ln	Crest	154	166	151
10432+40.56	0.3 mile south of Amberwood/Matzenbacher Ln	Sag	98	115	136
10497+84.82	650 ft west of Doyle Rd/Old State Rt 3	Sag	163	272	136
10548+67.46	0.5 mile west of Violet Dr/Huntfield Rd	Crest	160	124	151
10555+51.84	0.35 mile west of Violet Dr/Huntfield Rd	Crest	54	108	151
10558+70.41	0.30 mile west of Violet Dr/Huntfield Rd	Sag	401	130	136
10753+15.72	0.9 mile west of Prairie Rd	Sag	92	117	136
10852+20.71	0.45 mile east of Elm Shade Rd	Crest	381	74	176
10860+77.03	0.65 mile east of Elm Shade Rd	Sag	555	117	148
10870+89.15	0.8 mile east of Elm Shade Rd	Crest	290	88	151
10908+31.71	150 ft east of Griggs Rd	Sag	342	116	136
10917+23.60	0.2 mile east of Griggs Rd	Crest	439	61	193
10922+47.03	0.3 mile east of Griggs Rd	Sag	313	48	156

Station	Description	Curve Type	Length (ft)	Actual K- Value	Calculated K-Value
10985+73.82	At Rabe Dr	Sag	677	138	151
10993+02.50	300 ft east of Rabe Dr	Crest	323	63	181
11028+77.97	At Stringtown Rd	Crest	458	98	151
11137+33.74	0.25 mile west of Degen Ln	Crest	365	131	151
11183+25.48	300 ft east of Cheridan Rd	Sag	375	114	136
11225+09.67	0.33 mile east of Spreitler Ln	Crest	101	270	151
11235+68.11	100 ft east of Springview Rd	Crest	360	142	170
11241+38.55	670 ft east of Springview Rd	Sag	300	94	145
11258+67.89	825 ft west of railroad crossing between Springview Rd & Hickory Grove Rd	Sag	198	63	157
11261+65.30	At railroad crossing between Springview Rd & Hickory Grove Rd	Crest	859	81	193
11271+46.99	At Hickory Grove Rd	Sag	296	77	148
11355+07.20	650 ft west of Woodcox Rd	Crest	38	38	151

Station	Description	Curve Type	Length (ft)	Actual K- Value	Calculated K-Value
11397+37.82	0.7 mile east of Woodcox Rd	Crest	387	115	151
11561+95.11	At Oak St	Crest	78	156	151
11566+63.91	Between Oak St & James St	Sag	55	30	136
11592+58.27	Between Baird St & Dickey St	Crest	62	29	151
11621+41.01	170 ft east of Main St	Sag	275	57	151
11627+23.98	750 ft east of Main St	Sag	278	101	136
11635+38.34	0.3 mile east of Main St	Crest	246	115	151
11665+76.24	At Washington St	Crest	350	140	151
11684+98.12	At Crown St	Crest	364	77	176
11756+97.38	0.7 mile east of Eden Rd	Crest	423	124	151
11765+83.33	1 mile east of Eden Rd	Sag	299	116	136
11776+14.68	0.85 mile west of Roseborough Rd	Sag	133	201	136
11781+20.97	0.75 mile west of Roseborough Rd	Sag	260	114	136

Station	Description	Curve Type	Length (ft)	Actual K- Value	Calculated K-Value
11830+90.08	From Gemini Ct to Tanglewood Rd	Crest	474	121	151
11855+20.80	At Forrest Ln	Sag	330	118	136
11865+92.40	0.2 mile east of Forest Ln	Crest	327	135	151
12063+97.48	100 ft east of State Route 150	Sag	240	125	136
12077+17.96	0.27 mile east of State Route 150	Sag	230	52	149
12081+23.91	0.35 mile east of State Route 150	Crest	351	65	179
12099+72.11	0.57 mile west of Lost Prairie Rd	Sag	384	117	136
12264+58.65	0.3 mile west of New Church Rd	Crest	112	217	151
12268+91.13	0.2 mile west of New Church Rd	Sag	252	110	136
12272+38.14	0.15 mile west of New Church Rd	Sag	41	101	136
12273+30.53	0.14 mile west of New Church Rd	Crest	608	112	151
12289+20.99	0.15 mile east of New Church Rd	Sag	56	81	136
12313+37.72	0.5 mile west Crocus Rd	Crest	365	97	176

Station	Description	Curve Type	Length (ft)	Actual K-Value	Calculated K-Value
12323+24.29	0.3 mile west Crocus Rd	Crest	344.916	107.748	151
12344+64.41	0.1 mile east Crocus Rd	Crest	485.365	126.363	151
12377+54.97	At Armadillo Rd	Crest	429.695	139.97	173
12384+08.76	440 ft east of Armadillo Rd	Sag	587.378	103.335	147
12429+71.17	0.95 mile east of Armadillo Rd	Sag	291.371	120.173	136

For urban street segments, the minimum vertical curve length and K-value criteria were determined based on the posted speed limits within these areas. The following curves located within urban sections were identified as deficient under these requirements:

Station	Description	Speed Limit	Curve Type	Length (ft)	Actual K-Value	Calculated K-Value
10603+20.09	At Park Dr	45	Sag	240	71	103
11059+24.59	0.35 mile east of Sandy Dr	35	Crest	28	62	44
11059+86.40	0.36 mile east of Sandy Dr	35	Sag	22	50	64



Appendix C. Existing and No- Build Traffic Operations Report



Existing and No-Build Traffic Operations Report

Illinois Department of Transportation

1/25/2026



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Appendix A – Streetlight Origin-Destination Data

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Introduction

This document summarizes existing and future traffic data, travel time information, and operations for the segments and intersections for the Southwest Connector, defined by routes IL 3, IL 154, and IL 13 / IL 127 from Waterloo to Murphysboro. The corridor is primarily a two-lane facility with posted speeds of 55 miles per hour (mph) in the rural areas and reduced speeds through cities.

This report documents the existing and future no-build traffic volumes, origins and destinations along the corridor, operating speeds, travel times, and level of service along the corridor and at key intersections with interrupted flow. The corridor begins at the intersection of IL 3 and Market Street south of Waterloo and ends at the four-lane section of IL 13 / IL 127 north of Murphysboro near Grange Hall Road.

Existing and Future Traffic Volumes

Figure 1 shows the Annual Average Daily Traffic (AADT) along the Southwest Connector, based on 2025 traffic data provided by Illinois Department of Transportation (IDOT). Volumes range from 1,400 to 9,900 vehicles per day, with higher volumes in Red Bud, Sparta, Pinckneyville, and between Red Bud and Waterloo, and lower volumes in rural areas.

To support the development of future traffic volumes and the evaluation of potential corridor alternatives, the traffic team coordinated with IDOT to obtain model outputs from the Illinois Statewide Travel Demand Model (ILSTDM). The ILSTDM supplies the basis for estimating future travel demand throughout the corridor, identifying regional travel patterns, and informing the forecasts used in subsequent operational analyses and alternative development. The ILSTDM future year volumes are based on traffic data from 2018 which was consistently higher than more recent post-Covid traffic counts. Traffic volumes from the ILSTDM for future years were used for the purposes of establishing growth rates for 2030 and 2050 traffic projections. The ILSTDM traffic growth percentages from 2025 to 2030 were normalized to be consistent between cities. The growth percentages were applied to the IDOT 2025 traffic volumes for both 2030 and 2050 future years. **Table 1** lists the 2025, 2030 and 2050 AADTs that were derived using information from the ILSTDM with the identified growth percentage for each segment. Note that 2025 AADT, and thus subsequent future year AADT, are represented as a weighted average AADT in **Table 1** weighted by segment length, for the broader segment groupings used for further segment analysis.

Turning movement counts were provided by IDOT Districts 8 and 9 at key intersections along the corridor. District 8 counts were 24-hour counts at IL 3 / IL 154 at IL 159 (Main Street) in Red Bud and IL 154 at IL 4 (Market Street) in Sparta, while District 9 counts were 12-hour counts at the IL 154 and IL 13 roundabout and IL 154 at IL 13 / IL 127 signalized intersection in Pinckneyville. These counts were used to perform operational analyses under existing conditions using Highway Capacity Software (HCS), with results shown in the section '**Capacity Analysis**'.

Table 1. Existing AADT And Future Growth

Route	Segment	Growth Rate	Wght. Avg. 2025 AADT*	2030 AADT	2050 AADT
IL 3	South Limits of Waterloo to Kaskaskia Road	0.4%	9,800	10,000	10,850
IL 3	Kaskaskia Road to West Limits of Red Bud	0.4%	6,650	6,800	7,350
IL 3/IL 154	Within Red Bud	0.4%	6,500	6,650	7,200
IL 154	East Limits of Red Bud to West Limits of Baldwin	0.4%	3,550	3,600	3,900
IL 154	Within Baldwin	0.3%	3,300	3,350	3,550
IL 154	East Limits of Baldwin to West Limits of Sparta	0.3%	2,850	2,900	3,050
IL 154	Within Sparta	0.3%	5,450	5,550	5,850
IL 154	East Limits of Sparta to IL 153 Intersection	0.3%	5,050	5,150	5,450
IL 154	IL 153 Intersection to Randolph/Perry County Line	0.3%	2,900	2,950	3,150
IL 154	Randolph/Perry County Line to IL 13 Roundabout	0.3%	2,100	2,150	2,250
IL 154/IL 13	IL 13 Roundabout to Main Street Intersection	0.3%	6,800	6,900	7,350
IL 13/IL 127	Main Street Int. to South Limits of Pinckneyville	0.2%	6,050	6,100	6,350
IL 13/IL 127	S. Limits of P'ville to Perry/Jackson County Line	0.2%	4,550	4,600	4,800
IL 13/IL 127	Perry/Jackson Co. Line to N. Limits of Vergennes	0.2%	3,850	3,900	4,050
IL 13/IL 127	Within Vergennes	0.2%	3,750	3,800	3,950
IL 13/IL 127	S. Limits of Vergennes to N. Limits of Murphysboro	0.2%	4,000	4,050	4,200

*Average of AADTs along segment weighted by their length, used in further segment analysis.

Pedestrian and Bicycle Volumes

Available pedestrian and bicycle volume data from IDOT District 9 was reviewed to assess non-motorized activity along the corridor. Based on the available information, bicycle activity along the corridor appears to be minimal, with no more than two bicycles recorded at any of the 12-hour count locations outside of the urban areas. The highest bicycle activity was recorded at the signalized intersection of IL 154 and IL 13 / IL 127 in downtown Pinckneyville, where eight bicycles were recorded during the 12-hour count period.

Pedestrian activity along the corridor was minimal and was generally not observed at most intersection count locations. The only location with recorded pedestrian activity in the intersection turning-movement counts was the signalized intersection of IL 154 and IL 13 / IL 127 in downtown Pinckneyville, where a total of 55 pedestrian crossing movements were recorded during the 12-hour count period. When categorized by corridor direction, 34 pedestrian movements were along the IL 13 / IL 127 (north-south) corridor and 21 movements were along the IL 154 (east-west) corridor. Outside of this location, no pedestrian activity was recorded at the remaining intersections along the corridor.

Given the localized nature and overall low magnitude of non-motorized activity along the corridor, a qualitative discussion of existing facilities is considered appropriate, and no corridor-wide pedestrian or bicycle volume analysis was performed. Safety analysis for these users is performed in the '**Southwest Connector Crash Analysis**' report completed in December 2025.

Origin-Destination Analysis

The origins and destinations of trips traveling through each town were assessed to understand travel patterns along the study corridor. Origin-destination data was collected using Streetlight software by creating zone boundaries around the towns and establishing gates at the major entry points to the towns, typically being the study corridor or other state highways. By determining the proportion of traffic passing through each destination gate from a selected origin, the most frequently traveled routes through each town can be identified. Data from Streetlight consists of typical weekday traffic, Monday through Thursday, travelling at all times-of-day during the months of April 2024 and October 2024, which are typical months that experience minimal seasonal variability. The Streetlight data examined is primarily sourced from Connected Vehicle Data.

Table 2 shows the percentage of vehicles traveling to a destination gate through the specified origin gate. These are also illustrated in **Figure 2** through **Figure 5**. Arrows represent the distribution of traffic in each direction based on the origin.

Table 2. Origin-Destination Table

Red Bud		
Destination	Origin	
	W of Red Bud (IL 3)	E of Red Bud (IL 154)
N of Red Bud (IL 159)	11.3%	18.8%
E of Red Bud (IL 154)	45.0%	-
S of Red Bud (IL 3)	43.7%	6.2%
W of Red Bud (IL 3)	-	75.0%
Baldwin		
Destination	Origin	
	W of Baldwin (IL 154)	E of Baldwin (IL 154)
N of Baldwin (1st Rd or 5th St)	20.8%	17.3%
E of Baldwin (IL 154)	67.9%	-
S of Baldwin (S 5th St)	11.3%	2.8%
W of Baldwin (IL 154)	-	79.9%
Sparta		
Destination	Origin	
	W of Sparta (IL 154)	E of Sparta (IL 154)
N of Sparta (IL 4)	4.3%	10.1%
NE of Sparta (IL 153)	8.6%	46.5%
E of Sparta (IL 154)	50.1%	-
S of Sparta (IL 4)	27.1%	3.1%
S of Sparta (Chester Rd)	6.5%	1.0%
W of Sparta (Country Club Rd)	3.4%	0.4%
W of Sparta (IL 154)	-	38.1%
W of Sparta (Industrial Dr)	-	0.8%
Pinckneyville		
Destination	Origin	
	W of Pinckneyville (IL 154)	S of Pinckneyville (IL 13)
NW of Pinckneyville (IL 13 + Airport Rd)	1.2%	16.5%
N of Pinckneyville (IL 127)	11.7%	59.7%
E of Pinckneyville (IL 154)	66.5%	15.9%
S of Pinckneyville (IL 13)	20.6%	-
W of Pinckneyville (IL 154)	-	7.9%

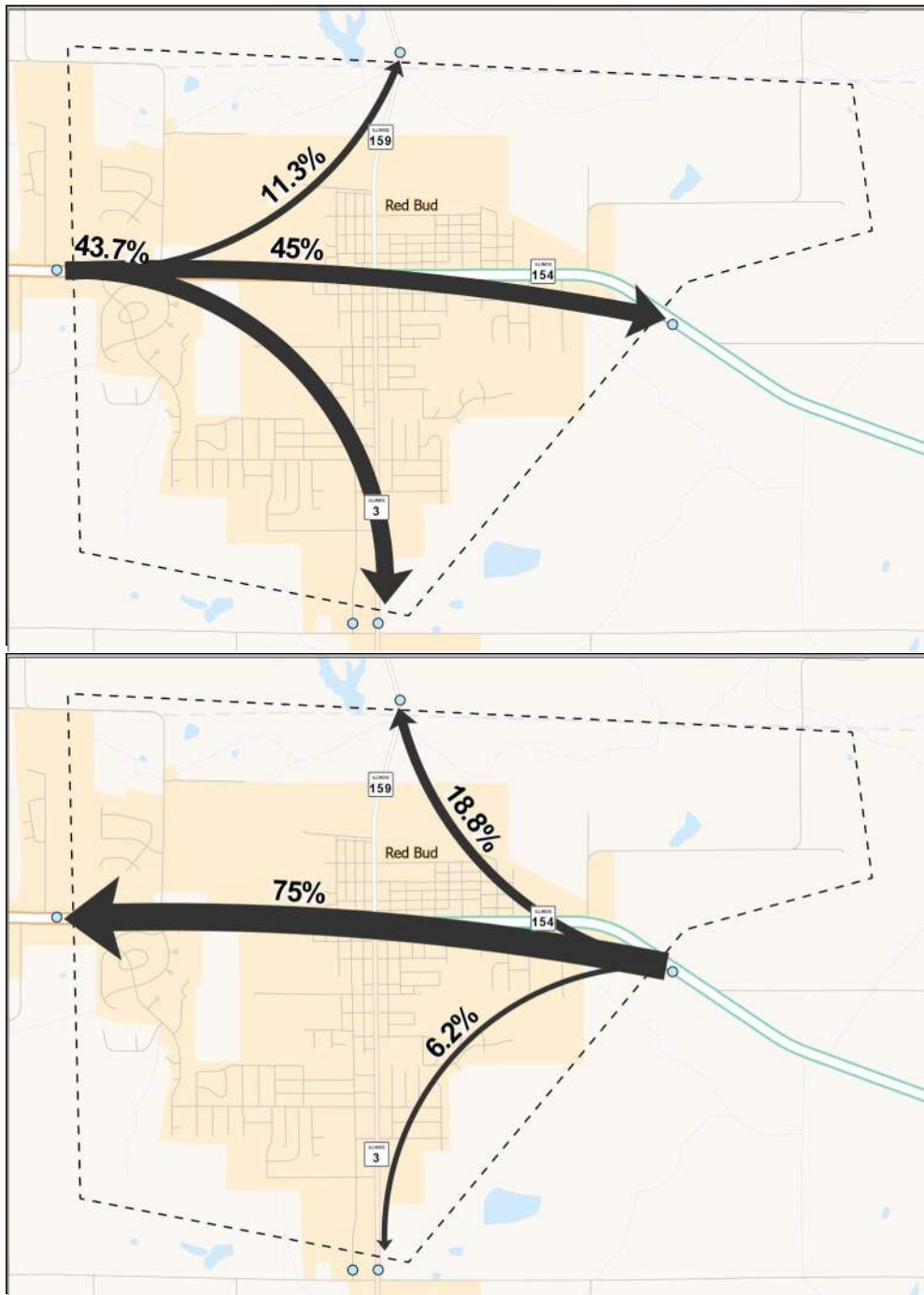


Figure 2. Red Bud Origin-Destination Map

Trips traveling through Red Bud from the west (IL 3) have a relatively even split of the majority traveling to the east (IL 154) or south (IL 3), while trips from the east (IL 154) primarily travel to the west (IL 3) with a smaller but notable portion traveling to the north (IL 159).

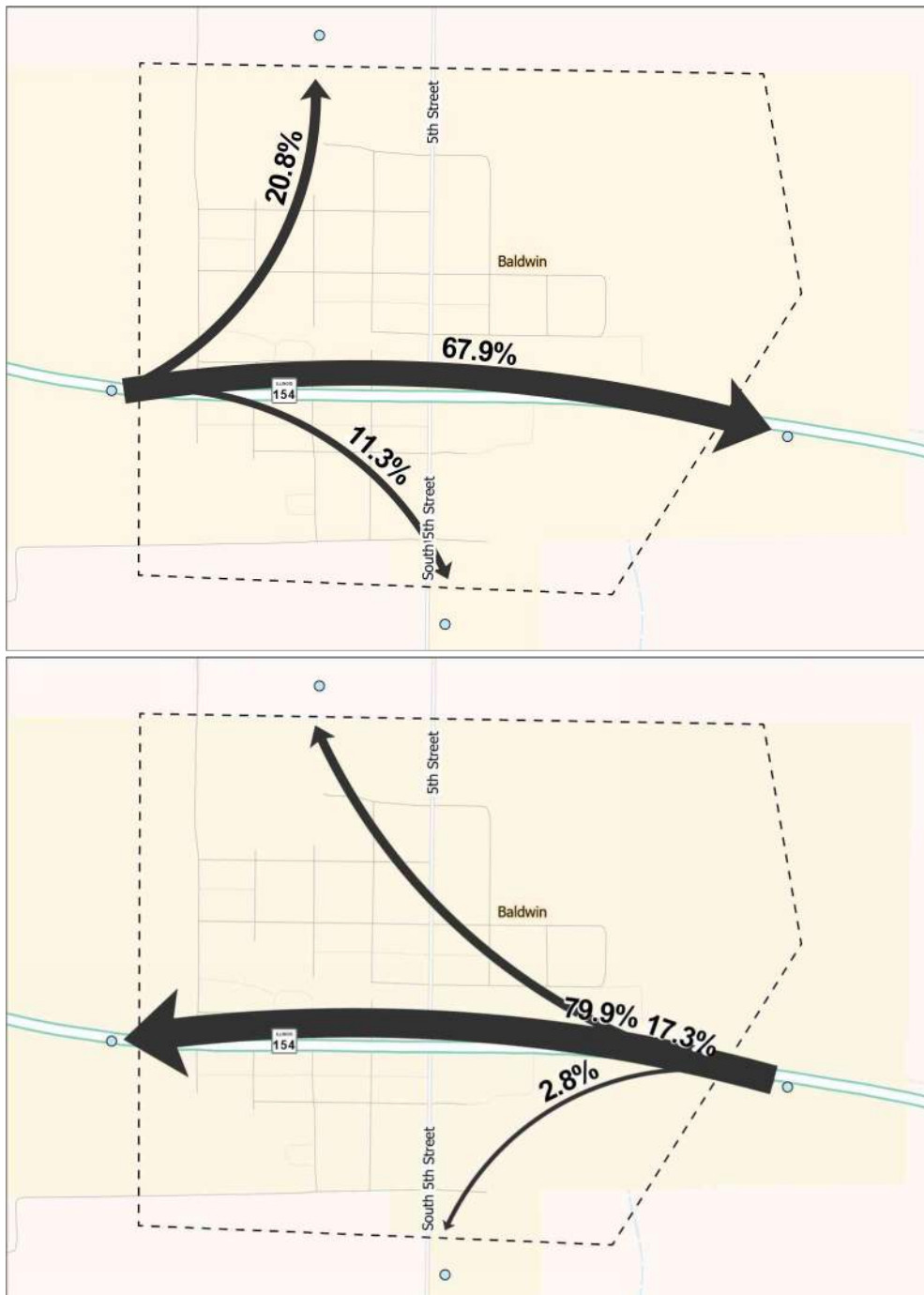


Figure 3. Baldwin Origin-Destination Map

Trips traveling through Baldwin from the east (IL 154) or west (IL 154) primarily continue straight through, however a smaller but notable portion of vehicles from both origins travel to the north (Baldwin Rd/5th Street and 1st Street).

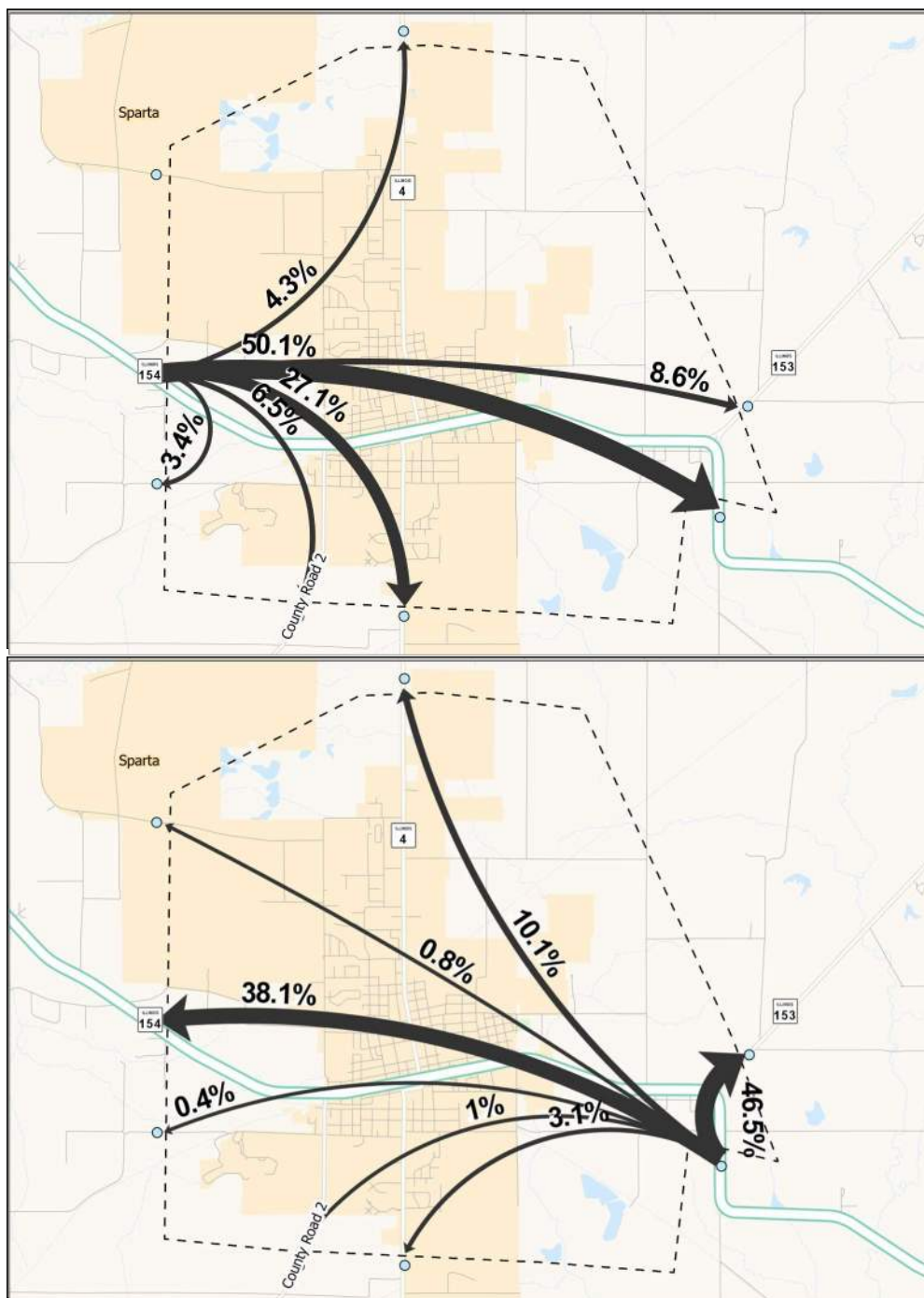


Figure 4. Sparta Origin-Destination Map

Trips traveling through Sparta from the west (IL 154) primarily continue through to the east (IL 154) or south (IL 4), with about half of trips going east (IL 154) on the study corridor. Trips from the east (IL 154) primarily turn to the northeast through Eden (IL 153) before entering downtown Sparta, but those who continue downtown are primarily destined for the west (IL 154).

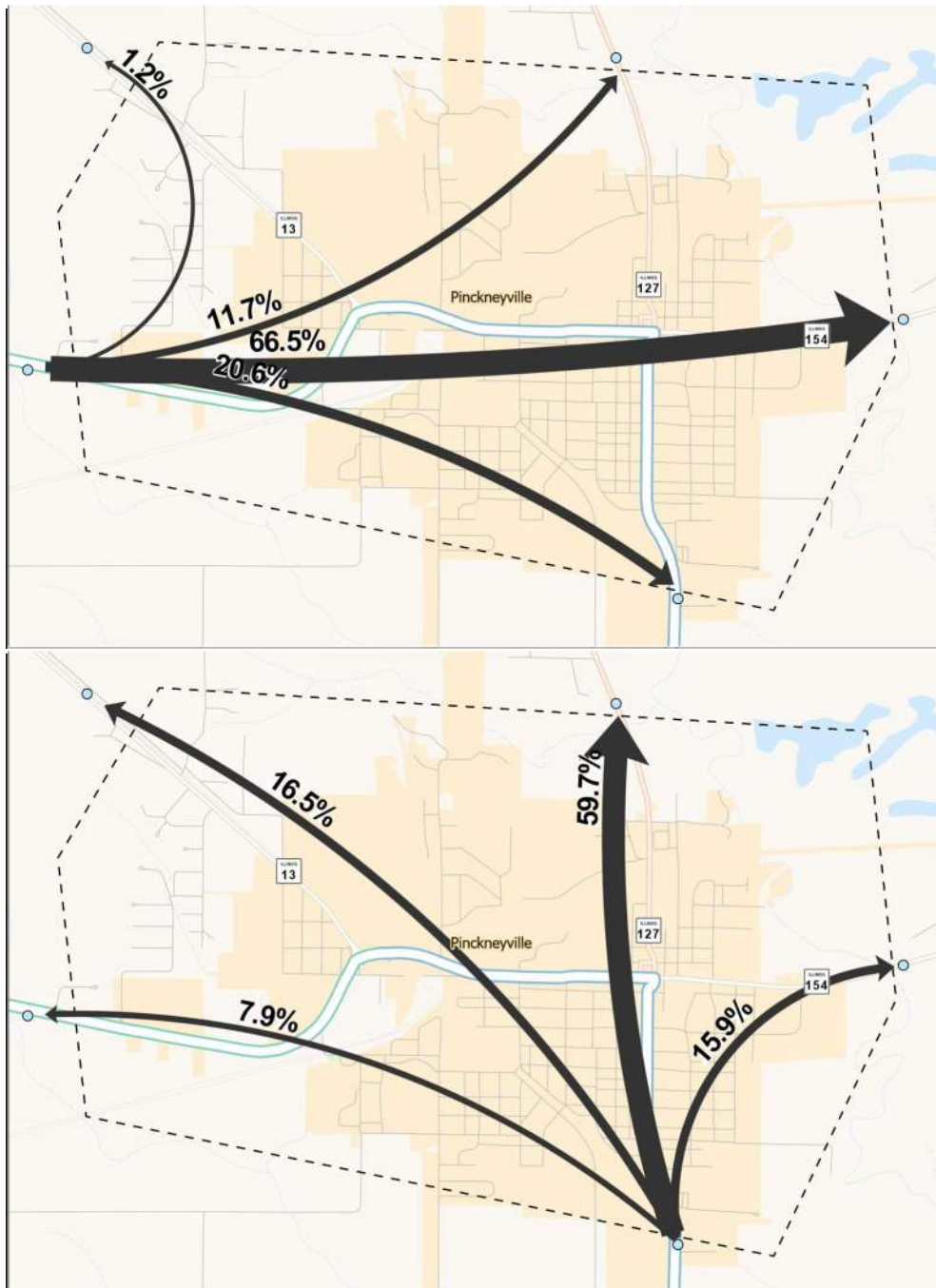


Figure 5. Pinckneyville Origin-Destination Map

Trips traveling through Pinckneyville from the west (IL 154) primarily continue east (IL 154) with a smaller but notable portion of trips continuing to the south (IL 13 / IL 127). Similarly, trips from the south (IL 13 / IL 127) primarily continue through to the north (IL 127) with nearly equal smaller but notable portions traveling to the east (IL 154) or northwest (IL 13), however fewer trips from the south continue west (IL 154).

Additionally, top routes through the entire study area from certain gates were examined to understand broader trip patterns and use of the corridor. Detailed analysis by gate that shows the respective proportions of destination traffic is included in **Appendix A**.

For Red Bud, **Figure 6** shows routes from the east on IL 154, demonstrating that while vehicles are traveling through the corridor, volumes significantly drop off after Sparta, and some continue south to Murphysboro via County Line Road through Willisville. **Figure 7** shows Red Bud routes both from the east on IL 154 and from the south on IL 3, demonstrating a split upon entering Red Bud, with many going south on IL 3 to Chester and over the Mississippi River to Missouri.

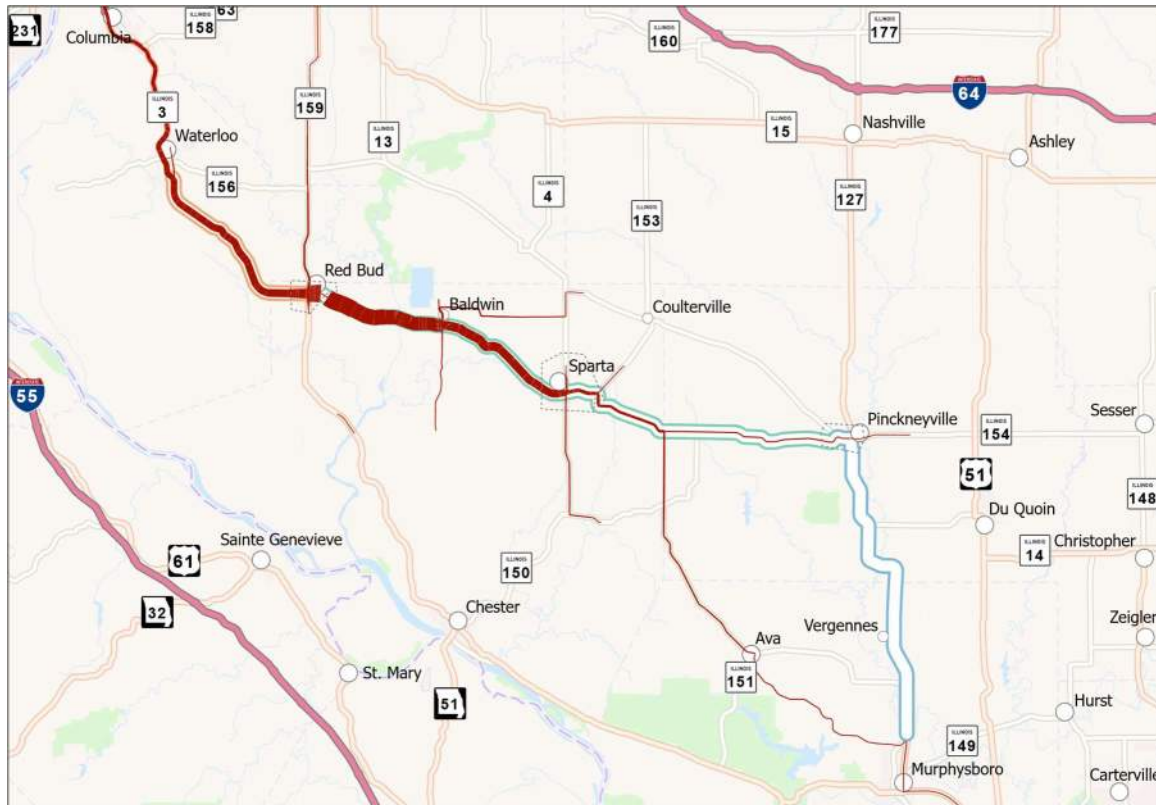


Figure 6. Red Bud East (IL 154) Top Routes

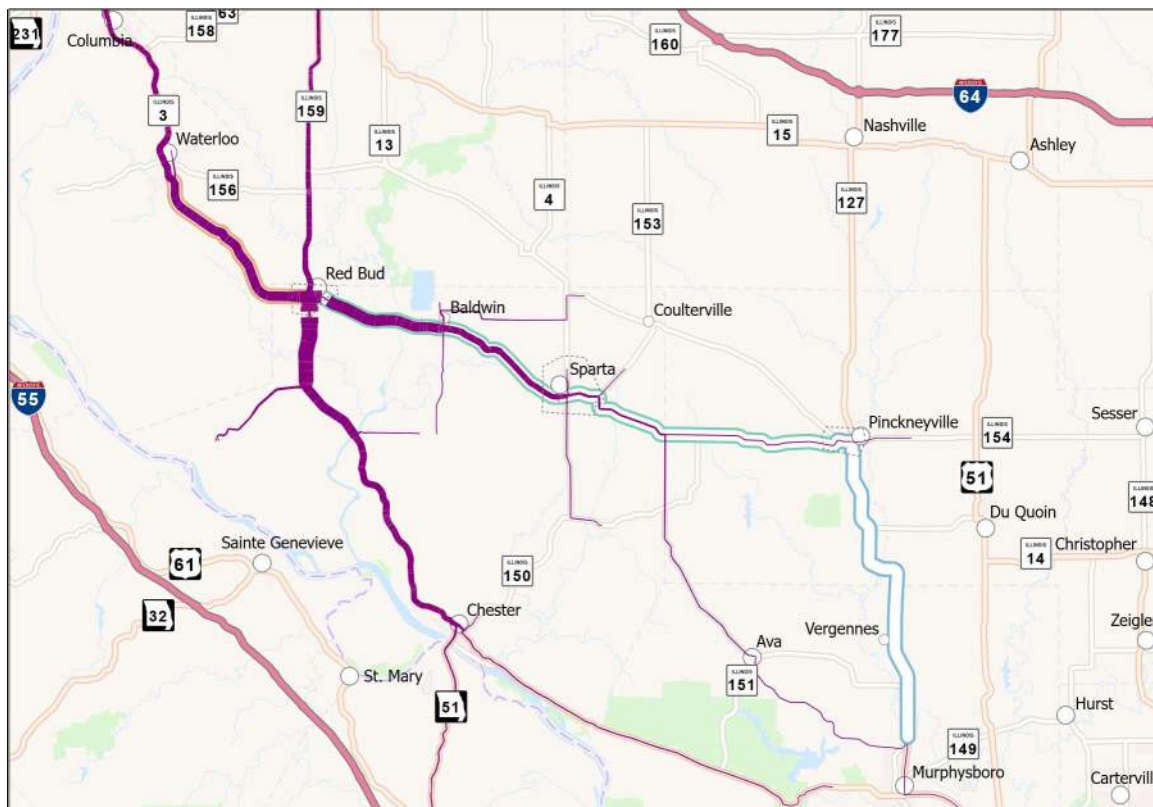


Figure 7. Red Bud East (IL 154) and South (IL 3) Top Routes

For Sparta, **Figure 8** shows routes from the east and west on IL 154. From the west, many in Sparta travel to Red Bud and beyond, but some also turn north in Baldwin to head to IL 13 and further north towards St. Louis. From the east, a split continues to be observed with vehicles heading both east to Pinckneyville on IL 154 and south on County Line Road via Willisville towards Murphysboro. This demonstrates that not many vehicles travel from the study corridor to Murphysboro via Pinckneyville.

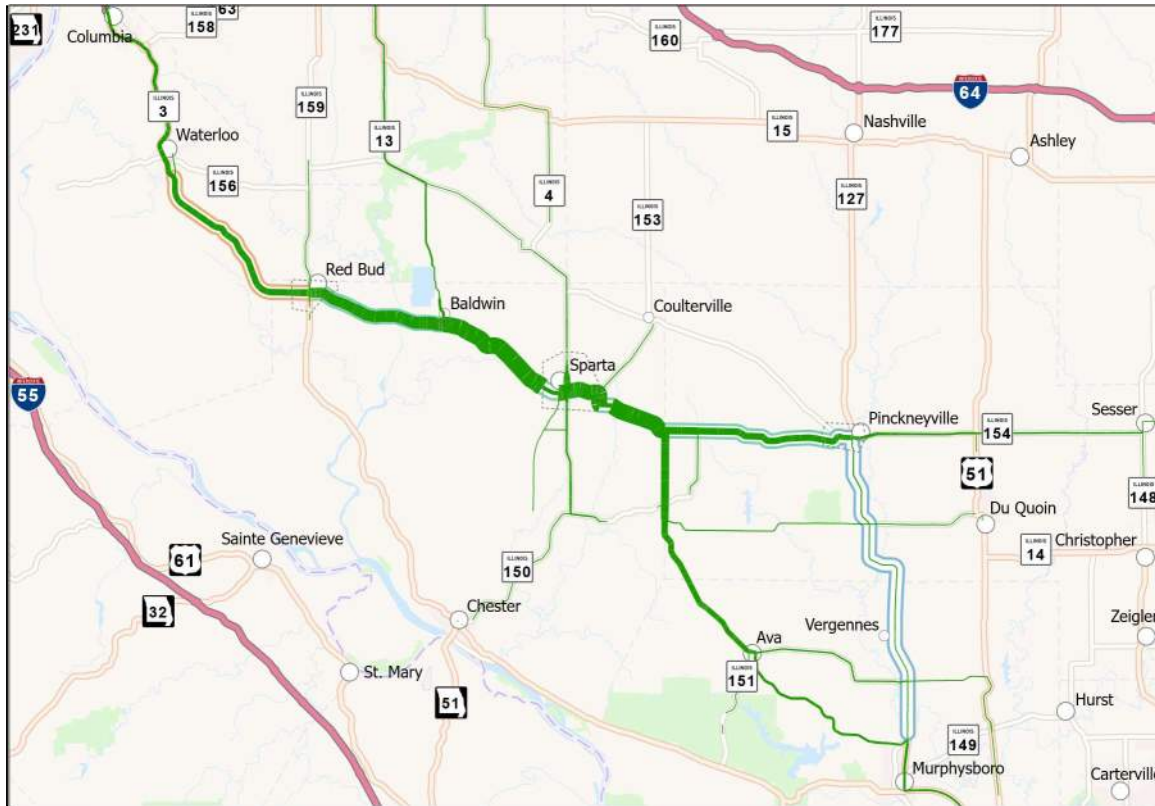
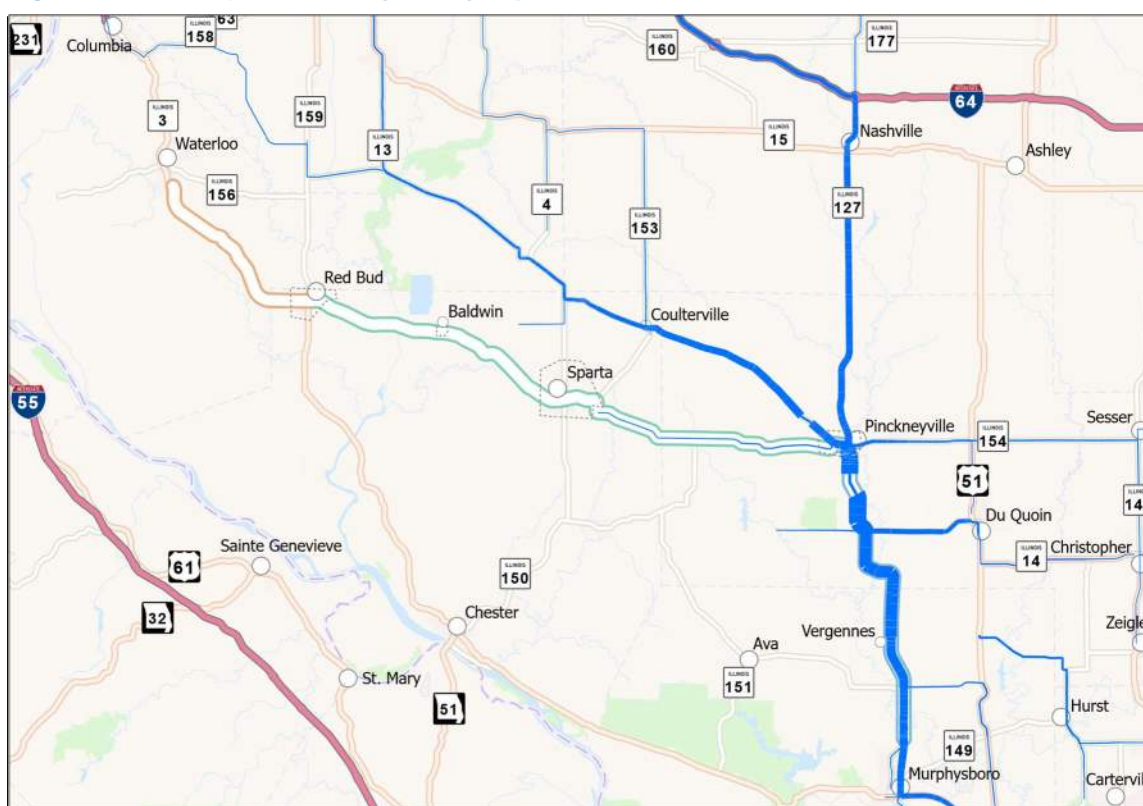
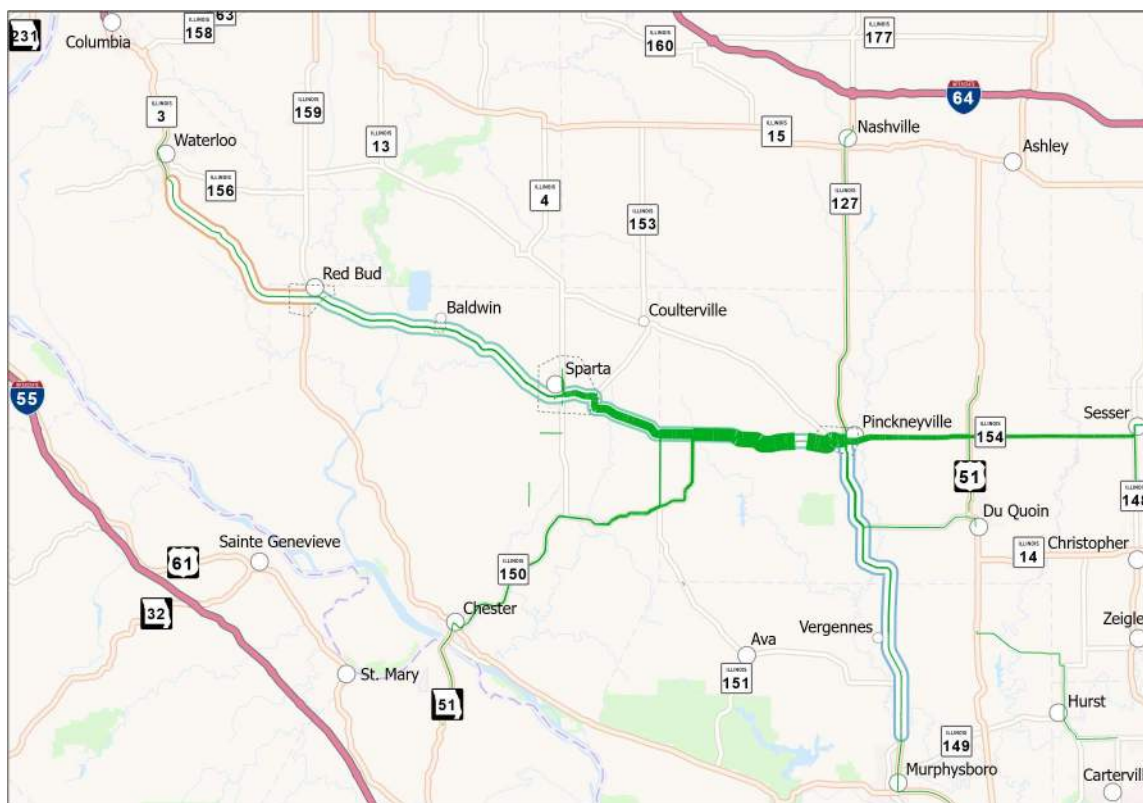


Figure 8. Sparta East and West (IL 154) Top Routes

For Pinckneyville, **Figure 9** shows routes from the west on IL 154, demonstrating that while vehicles are traveling west to Sparta, volumes drop off west of the city and many do not continue traveling on the study corridor towards Red Bud. Routes also show that many vehicles turn south onto County Line Road or IL 150 and travel via Steeleville to Chester and beyond to Missouri. **Figure 10** shows routes from the south and northwest on IL 13, further demonstrating that not many vehicles from the south travel west onto the study corridor along IL 154, but rather continue north on IL 127 towards Nashville or northwest on IL 13 towards Coulterville.



Existing Speeds and Travel Times

Posted speeds for the Southwest Connector were obtained from the IDOT's Illinois Roadway Analysis Database System (IROADS) data inventory and were verified using the latest images from Google Street View. Speed and travel time data was collected from the Streetlight Insight platform. The Streetlight segment analysis module was used with Streetlight's Connected Vehicle Data (CVD+) source. The CVD+ data is primarily derived from connected vehicles that have location tracking technology, plus proprietary data sources. The analysis included data averaged over all Tuesdays, Wednesdays, and Thursdays in 2022 for all hours of the day.

Speeds

The corridor posted speed limits are generally 55 mph between cities. Within cities, speed limits step down to lower speeds. The posted speeds along the corridor are shown in **Figure 11**. The lowest posted speed limit within each city is as follows:

- Red Bud: 25 mph
- Baldwin: 35 mph
- Sparta: 25 mph
- Eden: 45 mph
- Pinckneyville: 20 mph
- Vergennes: 50 mph

The Streetlight data provided 15th percentile and 85th percentile speeds for the analysis corridor. The 15th percentile travel speed represents the speed at or below which 15% of vehicles are traveling. This speed represents the speed that some of the slowest traffic on the road is travelling. Conversely, the 85th percentile speed is the speed at or below which 85% of vehicles are travelling (i.e. 15% of vehicles are travelling faster than this speed). This speed represents some of the fastest speeds, and generally is the speed when traffic is free flowing.

The 15th percentile speeds are depicted in **Figure 12**. Between city limits, the 15th percentile speeds generally range from 54 to 58 mph. The speeds slow considerably within cities to under 10 mph at the slowest points. The average speed includes time spent stopped waiting at stop signs, signals, and roundabouts.

The 85th percentile speeds are depicted in **Figure 13**. Between cities, the 85th percentile speeds exceed 60 mph, with some locations having speeds exceeding 65 mph. This shows that a significant portion of traffic is exceeding the speed limit through the rural areas of the analysis corridor. Within cities, the 85th percentile speeds range from around 15 to 45 mph.

The 15th percentile speeds, 85th percentile speeds, and weighted averages of posted speed limits are shown in **Table 3**. The weighted averages of posted speeds are calculated from the posted speeds within each segment weighted by their respective duration length to account for speed limit changes and transition areas. The weighted average is used to calculate and compare travel times between the speed categories listed below, which is further detailed in the section titled ‘Travel Times’.

Table 3. Existing Travel Speeds

Segment	Length (Miles)	Wght. Avg. of Posted Speed*	15 th Percentile Speed	85 th Percentile Speed
South Limits of Waterloo to West Limits of Red Bud	10.94	55	51	62
Within Red Bud	2.17	39	31	42
East Limits of Red Bud to West Limits of Baldwin	6.22	55	54	65
Within Baldwin	1.76	43	39	51
East Limits of Baldwin to West Limits of Sparta	8.15	55	56	65
Within Sparta	1.65	35	29	39
East Limits of Sparta to IL 153 Intersection	1.29	51	49	60
IL 153 Intersection to Randolph/Perry County Line	5.03	55	55	66
Randolph/Perry County Line to West Limits of Pinckneyville	9.97	46	38	50
West Limits of Pinckneyville to IL 13 Roundabout	0.87	35	24	33
IL 13 Roundabout to Main Street Intersection	0.99	42	37	47
Main Street Intersection to South Limits of Pinckneyville	2.57	55	56	65
South Limits of Pinckneyville to Perry/Jackson County Line	7.88	55	52	64
Perry/Jackson County Line to North Limits of Vergennes	3.17	51	48	59
Within Vergennes	0.59	55	54	65
South Limits of Vergennes to North Limits of Murphysboro	5.68	48	43	56

*Average of posted speeds along segment weighted by their length, used to calculate travel times.

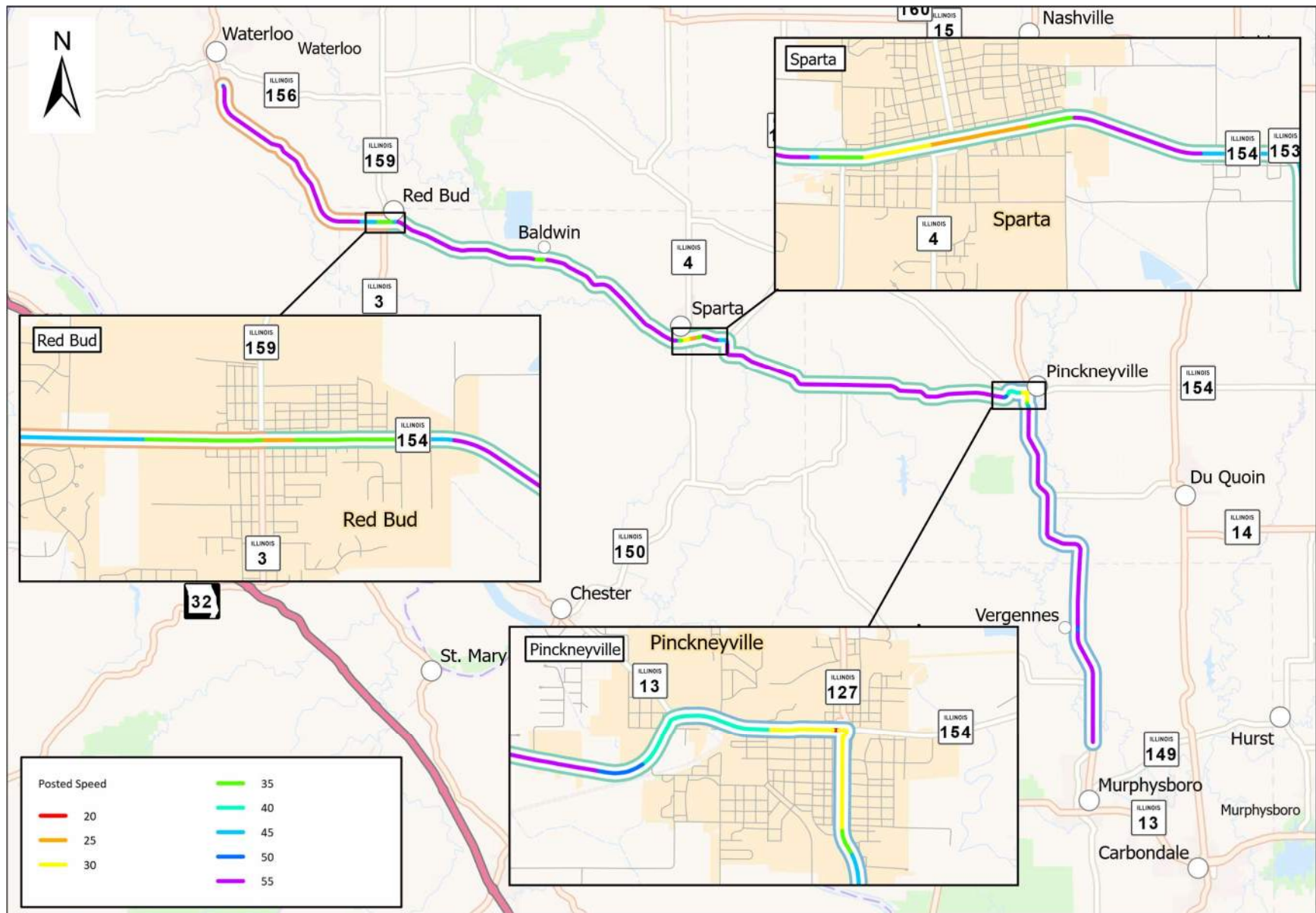


Figure 11. Posted Speed Limit

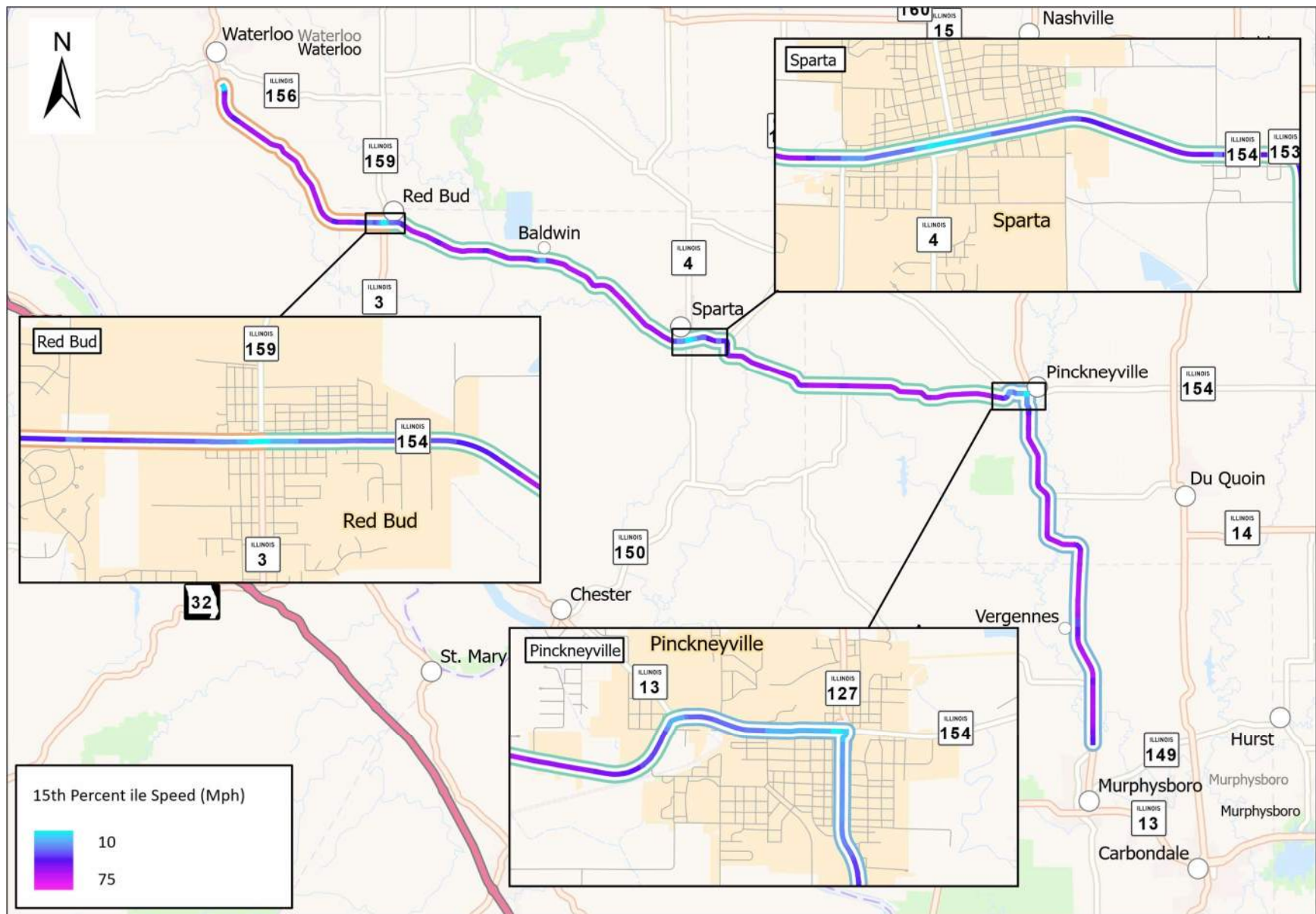


Figure 12. 15th Percentile Speed

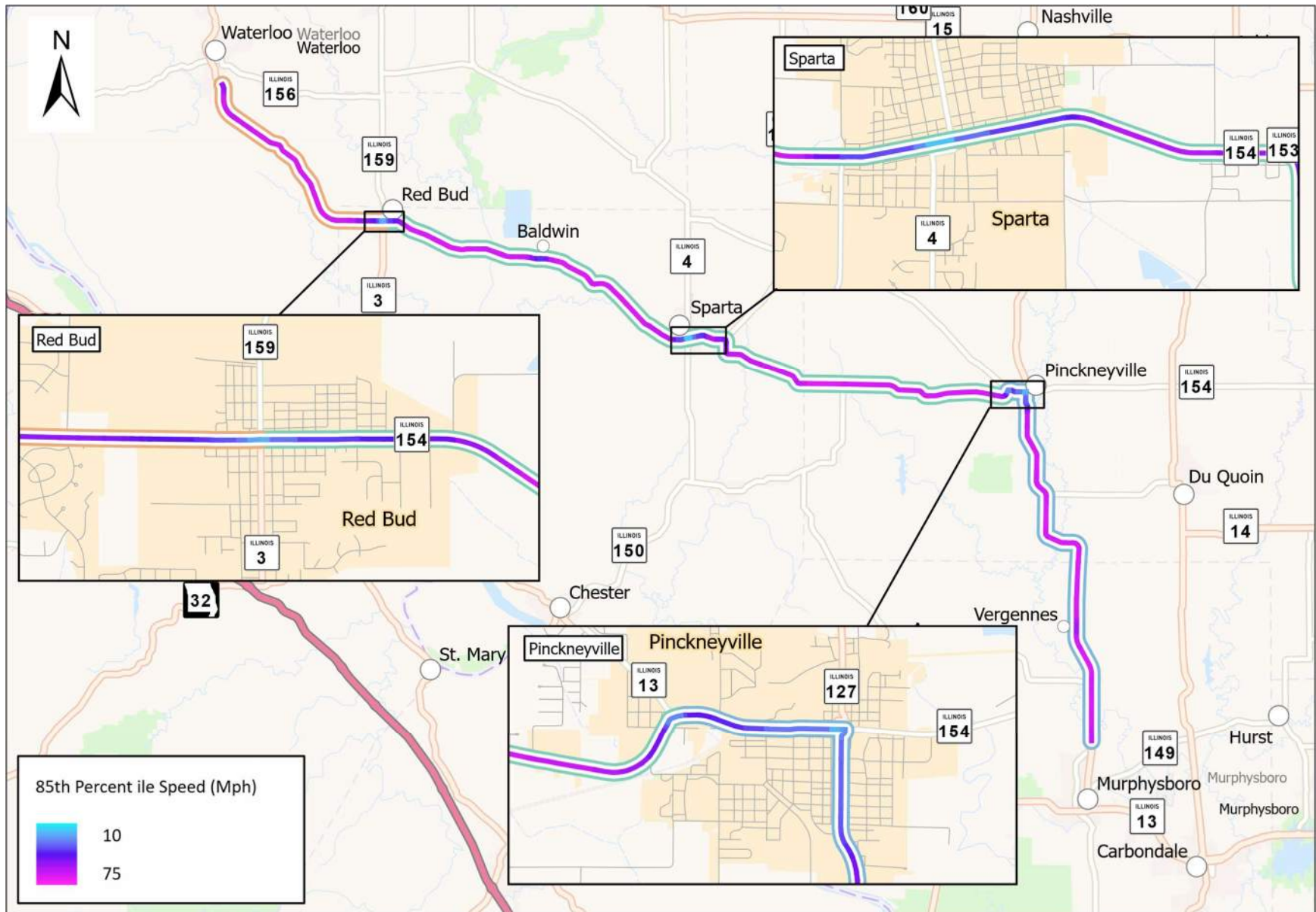


Figure 13. 85th Percentile Speed

Travel Times

Travel time analysis along the Southwest Connector shows a total corridor travel time of approximately **79 minutes** at posted speeds, compared to **82 minutes** at the 15th percentile and **68 minutes** at the 85th percentile. Urban segments such as Red Bud, Sparta, Baldwin, Pinckneyville, and Vergennes generally record longer travel times in relation to distance due to lower posted speeds and congestion, and rural segments like South of Waterloo to West of Red Bud and Randolph/Perry County Line to West of Pinckneyville account for the longest continuous overall travel times due to their length. The differences between the posted, 15th, and 85th percentile values indicate that while slower-moving traffic increases overall time, the majority of drivers in rural sections travel faster than posted speed limits, reducing actual travel times compared to posted speed travel time as seen in **Table 4**.

Table 4. Travel Times

Segment	Length (Miles)	Travel Time at Posted Speed (MM:SS)	Travel Time at 15 th pct. Speed	Travel Time at 85 th pct. Speed
South Limits of Waterloo to West Limits of Red Bud	10.94	11:58	12:17	10:20
Within Red Bud	2.17	03:19	04:29	03:03
East Limits of Red Bud to West Limits of Baldwin	6.22	06:47	06:42	05:43
Within Baldwin	1.76	02:23	02:28	01:56
East Limits of Baldwin to West Limits of Sparta	8.15	08:53	08:42	07:33
Within Sparta	1.65	03:11	03:56	02:49
East Limits of Sparta to IL 153 Intersection	1.29	01:35	01:45	01:24
IL 153 Intersection to Randolph/Perry County Line	5.03	05:32	05:39	04:50
Randolph/Perry County Line to West Limits of Pinckneyville	9.97	10:53	10:33	09:09
West Limits of Pinckneyville to IL 13 Roundabout	0.87	01:05	01:11	00:57
IL 13 Roundabout to Main Street Intersection	0.99	01:44	02:36	01:49
Main Street Intersection to South Limits of Pinckneyville	2.57	03:25	03:52	03:04
South Limits of Pinckneyville to Perry/Jackson County Line	7.88	08:36	08:22	07:12
Perry/Jackson County Line to North Limits of Vergennes	3.17	03:27	03:26	02:54
Within Vergennes	0.59	00:41	00:45	00:37
South Limits of Vergennes to North Limits of Murphysboro	5.68	06:12	06:11	05:15
Total	68.93	79:42	82:53	68:35

Travel Time Reliability

The reliability of a transportation system is significant for many users, including freight shippers. If a system is more reliable, the user will tend to choose that route more often because travel times are more predictable with less volatility. Travel time reliability is often measured as Travel Time Index (TTI) which is defined as the ratio of travel time during peak periods to the time required to make the same trip at free-flow speeds. For example, TTI of 1.2 indicates that a trip that takes 24 minutes during peak traffic will take 20 minutes under free-flow conditions. This index helps measure the impact of congestion on travel times, providing insight into how much longer trips take during busy periods compared to when traffic is light.

The travel time reliability analysis was completed using available Regional Integrated Transportation Information System (RITIS) data following methodology from *NCHRP 1102: Reliability and Quality of Service Evaluation Methods for Rural Highways: A Guide*¹. Overall, the corridor exhibits consistent travel times in the higher speed rural segments with more congestion in the cities where there is stop control or signalized intersections. Urban areas with interrupted flow commonly will see an increase in travel times during peak hours compared to free-flow periods during the day. **Table 5** shows the TTI for segments along the corridor in each travel direction. The highest TTI values are at the stop-controlled intersection segments in Red Bud and Sparta and signalized intersection in Pinckneyville. There is a marginal increase in TTI for eastbound traffic approaching Pinckneyville and westbound traffic approaching Waterloo. Additional details of the travel time reliability analysis, including segment-level TTI results and supporting plots, are provided in **Appendix B**.

¹ NCHRP 1102 publication: nationalacademies.org/publications/27895

Table 5: Travel Time Reliability Index from S. of Waterloo to N. of Murphysboro

Route	From	To	Length (miles)	Weekday 90% TTI Reliability	
				EB / SB	WB / NB
IL 3	Market St	Kaskaskia Rd	1.88	1.10	1.20
IL 3	Kaskaskia Rd	Old State Route 3 / Doyle Rd	7.68	1.10	1.18
IL 3	Old State Route 3 / Doyle Rd	IL 154 / IL 159 / Market St / N Main St	2.57	1.20	1.10
IL 154	IL 154 / IL 159 / Market St / N Main St Intersection		0.01	1.43	1.15
IL 154	IL 154 / IL 159 / Market St / N Main St	Prairie Rd	3.00	1.10	1.15
IL 154	Prairie Rd	S St Louis St	17.7	1.10	1.10
IL 154	S St Louis St	IL 4 / S Market St	0.12	1.45	1.28
IL 154	IL 4 / S Market St	IL 153 West	1.79	1.10	1.10
IL 154	IL 153 West Intersection		0.20	1.10	1.10
IL 154	IL 153 East	County Line Rd	5.11	1.10	1.10
IL 154	County Line Rd	IL 150	2.01	1.10	1.10
IL 154	IL 150	Lost Prairie Rd / Swanwick Rd	1.27	1.10	1.10
IL 154	Lost Prairie Rd / Swanwick Rd	IL 13 / Kennedy Dr	7.64	1.18	1.10
IL 154 / IL 13	IL 13 / Kennedy Dr	IL 13 / IL 127 / Main St / N Locust St	0.93	1.18	1.15
IL 13 / IL 127	IL 13 / IL 127 / Main St and IL 154 / Water St Intersection		0.03	1.10	1.38
IL 13 / IL 127	IL 154 / Water St	IL 152 / Pyatt-Cutler Rd	5.62	1.10	1.10
IL 13 / IL 127	IL 152 / Pyatt-Cutler Rd	Matthews Rd	2.14	1.10	1.10
IL 13 / IL 127	Matthews Rd	Beaucoup Rd/Elkville Rd	5.66	1.10	1.10
IL 13 / IL 127	Beaucoup Rd/Elkville Rd	IL 4 / Truax Traer Rd	3.20	1.10	1.10
IL 13 / IL 127	IL 4 / Truax Traer Rd Intersection		0.17	1.10	1.10
IL 13 / IL 127	IL 4 / Truax Traer Rd	E Grange Hall Rd	2.54	1.10	1.10

Capacity Analysis

Intersection Capacity Analysis

Capacity analyses were completed for the PM Peak Hour at intersections where the mainline is interrupted by a stop, yield, or signal control. HCS Version 8.4 was used for completing the analyses. Capacity analysis was completed at the following intersections, and detailed intersection analysis outputs are provided in **Appendix C**:

- IL 3 / IL 154 at IL 159 in Red Bud (All-Way Stop)
- IL 154 at IL 4 in Sparta (All-Way Stop)
- IL 154 at IL 13 in Pinckneyville (Roundabout)
- IL 154 at IL 13 / IL 127 in Pinckneyville (Signalized)

Turning movement counts were not available for the following intersections to complete capacity analysis:

- IL 154 at St Louis Street in Sparta (All-Way Stop)
- IL 154 at Walnut Street in Pinckneyville (All-Way Stop)

These intersections are near adjacent stop-controlled or signalized intersections. The delays at these intersections are captured in the Streetlight data as part of the travel time analysis. The difference in travel time between the 15th percentile and posted speed limit is a rough approximation of the total delay experienced by vehicles through a corridor.

Level of service (LOS) is a measure of traffic flow and maneuverability and is evaluated on a scale from A to F, where A represents the best range of operating conditions with minimal traffic interruption and low control delay, and F represents poor operating conditions with significant congestion due to high control delay or a volume-to-capacity ratio that exceeds 1.0. **Table 6** describes the LOS delay criteria for signalized and unsignalized intersections. For the analyzed intersections, summaries of the overall intersection performance and approach-level LOS are provided in **Table 7** and **Table 8**, respectively.

Table 6: Intersection Level of Service Delay Criteria

LOS	Signalized Intersections (control delay, sec/veh)	Unsignalized Intersections/ Roundabouts (control delay, sec/veh)
A	≤ 10	≤ 10
B	>10 – 20	>10 – 15
C	>20 – 35	>15 – 25
D	>35 – 55	>25 – 35
E	>55 – 80	>35 – 50
F	>80	>50

IL 3 / IL 154 at IL 159 in Red Bud

Under existing PM peak-hour conditions, the all-way stop-controlled intersection of IL 3 / IL 154 at IL 159 (Main Street) operates at an overall LOS C, with moderate delays and balanced operations on all approaches. By the year 2030 under No-Build conditions, increased traffic volumes result in a degradation of operations to LOS D, with noticeable increases in delay on the eastbound and northbound approaches. Under 2050 No-Build conditions, continued traffic growth causes the intersection to operate at LOS F, with excessive delays and queuing observed on all approaches, particularly along the eastbound IL 3 approach, which experiences the highest delays and queue lengths. These results indicate that while the existing all-way stop configuration is adequate under current conditions, it will be insufficient to accommodate future traffic demand without operational or geometric improvements.

IL 154 at IL 4 in Sparta

Under existing PM peak-hour conditions, the all-way stop-controlled intersection of IL 154 at IL 4 (Market Street) operates at an overall LOS B, with low delays and stable operations on all approaches. Under 2050 No-Build conditions, projected traffic growth results in a minor increase in average delay resulting in the intersection operating at LOS C, however this indicates that the existing all-way stop control remains adequate to accommodate future traffic demand. Overall delays remain moderate, with no approach experiencing excessive queuing or operational deficiencies.

IL 154 at IL 13 in Pinckneyville

Under existing PM peak-hour conditions, the roundabout at IL 154 and IL 13 operates at an overall LOS A, with very low delays and efficient operations on all approaches. Under 2050 No-Build conditions, projected traffic growth results in a slight increase in average delay, however the roundabout continues to operate at LOS A, with minimal queuing and minimal operational deficiencies observed. The low volume-to-capacity ratios and stable approach delays indicate that the roundabout configuration effectively accommodates both existing and future traffic demand.

IL 154 at IL 13 / IL 127 in Pinckneyville

Under existing PM peak-hour conditions, the signalized intersection of IL 154 at IL 13 / IL 127 (Main Street) operates at an overall LOS B, with low delays and stable operations on all approaches.

Under 2050 No-Build conditions, projected traffic growth results in minor increases in approach delays, however the intersection continues to operate at LOS B, indicating that the existing signal timing and lane configuration adequately accommodate future traffic demand. No critical queuing or capacity deficiencies are observed under the projected conditions, and operations remain stable across all approaches.

COMPARISON OF INTERSECTION CAPACITY ANALYSIS

Table 7 summarizes the results of the intersection capacity analyses conducted at the four analyzed intersections along the Southwest Connector. The comparison highlights differences in intersection control type, data year, existing LOS, average delay, and projected 2050 no-build operating conditions. This table provides an overview of how each intersection is expected to perform under future no-build conditions and identifies locations where operational deficiencies may emerge or where continued monitoring may be warranted. Approach-level LOS is summarized in **Table 8**.

Table 7. Summary of Existing and 2050 No-Build Intersection Capacity Results

Intersection	Control Type	Data Year* (Source)	Overall LOS	Avg. Delay (s/veh)	No Build Projected 2050 LOS	Avg. Delay (s/veh)	Notes
IL 3 / IL 154 at IL 159 (Main Street) in Red Bud	All-Way Stop	2019 (IDOT D8)	C	22.4	F	61.8	Under 2050 no-build conditions, projected volumes result in a substantial increase in delay and result in overall LOS F, identifying this intersection as the primary operational constraint within the corridor.
IL 154 at IL 4 (Market Street) in Sparta	All-Way Stop	2021 (IDOT D8)	B	13	B	15.1	The intersection maintains stable operations with a minor increase in delay and continues to operate at LOS B under 2050 no-build conditions.
IL 154 at IL 13 (Pinckneyville)	Roundabout	2025 (IDOT D9)	A	4.5	A	4.9	The roundabout continues to operate efficiently with minimal delay increase and LOS A under projected 2050 no-build volumes.
IL 154 at IL 13 / IL 127 (Pinckneyville)	Signalized	2023 (IDOT D9)	B	19.1	B	19.3	The signalized intersection maintains LOS B with minimal increase in delay under 2050 no-build conditions.

*Data years shown reflect the most recent available intersection-specific traffic counts for each location and vary based on data availability from the districts. The IL 154 and IL 13 roundabout analysis reflects post-installation traffic conditions, and the listed year denotes the analysis year rather than a full calendar-year dataset.

Table 8. Existing and 2050 No-Build Approach Level of Service

Intersection	IL 3 / IL 154 at IL 159 (All-Way Stop)		IL 154 at IL 4 (All-Way Stop)		IL 154 at IL 13 (Roundabout)		IL 154 at IL 13 / IL 127 (Signalized)	
Year	2019	2050	2021	2050	2025	2050	2023	2050
EB LOS	C	F	B	B	A	A	C	C
WB LOS	C	F	B	B	A	A	C	C
NB LOS	C	F	B	B	-	-	B	B
SB LOS	C	F	C	C	A	A	B	B

Existing and 2050 No-Build Two-Lane Highway Operations

Two-lane highway capacity analyses were conducted to evaluate corridor-level operations under existing and 2050 no-build conditions for the Southwest Connector. The analyses were performed using observed peak-hour directional traffic volumes obtained from the IDOT Traffic Data Portal², with heavy vehicle percentages derived from IDOT IROADS AADT classification data³. 2050 no-build peak-hour volumes were developed by applying segment-specific compound annual growth rates, as shown in **Table 1**, to the existing peak-hour volumes, consistent with corridor-level traffic trends.

For evaluation purposes, the corridor was divided into five two-lane highway segments between urban areas. Detailed segment analysis outputs are provided in **Appendix C**:

- IL 3 From Market Street (Waterloo) to Kaskaskia Road
- IL 3 From Kaskaskia Road to West Limits of Red Bud
- IL 154 from East Limits of Red Bud to West Limits of Sparta
- IL 154 from East Limits of Sparta to West Limits of Pinckneyville
- IL 13 / IL 127 from South Limits of Pinckneyville to North Limits of Murphysboro

For two-lane highway segments, LOS is defined in the Highway Capacity Manual based on traffic flow characteristics, platooning, passing opportunities, and operating speeds as noted in **Table 9**.

Table 9. Segment Level of Service Descriptions for Two-Lane Highways

Level of Service ⁴		Description
A	≤2.0	Motorists experience high operating/free-flow speeds on Class I highways and little difficulty in passing. Platoons of three or more vehicles are rare. On Class II highways, speed would be controlled primarily by roadway conditions. A small amount of platooning would be expected.
B	>2.0 – 4.0	Passing demand and passing capacity are balanced. On both Class I and Class II highways, the degree of platooning becomes noticeable. Some speed reductions are present on Class I highways but are relatively small.
C	>4.0 – 8.0	Stable operations where most vehicles are traveling in platoons. Speeds are noticeably curtailed on all classes of two-lane highway.
D	>8.0 – 12.0	Platooning increases significantly. Passing demand is high on both Class I and II facilities but passing capacity approaches zero. A high percentage vehicles are now traveling in platoons, and time spent following is quite noticeable. Small increases in flow begin to cause substantial increases in delay.
E	>12.0	Demand is approaching capacity with the lower limit of this LOS representing the nominal capacity. Passing on Class I and II highways is virtually impossible, and time spent following is high. Speeds are seriously curtailed.
F	N/A	This LOS exists whenever demand flow in one or both directions exceeds the capacity of the segment. Operating conditions are unstable, and heavy congestion exists on all classes of two-lane highway.

² <https://idottrafficdata.drakewell.com/publicmultinodemap.asp>

³ <https://webapps.dot.illinois.gov/IROADS/>

⁴ LOS Criteria for Two-Lane Highways: Follower Density (followers / mi) for Posted Speed Limit ≥ 50 mph

IL 3 from Market Street (Waterloo) to Kaskaskia Road

The two-lane highway capacity analysis for IL 3 from Market Street in Waterloo to Kaskaskia Road reflects higher peak-hour traffic volumes relative to the remainder of the corridor. Future-year (2050) no-build peak-hour volumes were developed by applying a compound annual growth rate of 0.4 percent to existing volumes. Operating performance along this segment degrades under no-build conditions, with overall LOS declining from LOS C under existing conditions to LOS D in 2050.

IL 3 from Kaskaskia Road to West Limits of Red Bud

The two-lane highway capacity analysis for IL 3 from Kaskaskia Road to the west limits of Red Bud reflects consistent peak-hour traffic volumes throughout the segment. 2050 no-build peak-hour volumes were developed using a compound annual growth rate of 0.4 percent, consistent with corridor-level trends. This segment maintains a comparable LOS under both existing and future no-build conditions, indicating stable operating performance through the planning horizon.

IL 154 from East Limits of Red Bud to West Limits of Sparta

The two-lane highway capacity analysis for IL 154 from the east limits of Red Bud to the west limits of Sparta was conducted, with the segment treated as a continuous facility with relatively consistent traffic volumes throughout its length. 2050 no-build peak-hour volumes were developed by applying a compound annual growth rate of 0.3 percent to the existing peak-hour volumes, consistent with corridor-level traffic trends. The two-lane highway analysis indicates that this segment maintains acceptable operating conditions under both existing and future no-build scenarios.

IL 154 from East Limits of Sparta to West Limits of Pinckneyville

The two-lane highway capacity analysis for IL 154 from the east limits of Sparta to the west limits of Pinckneyville was conducted, with the segment treated as a continuous two-lane facility with relatively consistent traffic volumes throughout its length. 2050 no-build peak-hour volumes were developed by applying a compound annual growth rate of approximately 0.2 percent to the existing peak-hour volumes, consistent with corridor-level traffic trends. The two-lane highway analysis indicates that this segment maintains acceptable operating conditions under both existing and future no-build scenarios.

IL 13 / IL 127 from South Limits of Pinckneyville to North Limits of Murphysboro

The two-lane highway capacity analysis for IL 13 / IL 127 from the south limits of Pinckneyville to the north limits of Murphysboro was conducted, with the segment treated as a continuous two-lane facility with relatively consistent traffic volumes throughout its length. 2050 no-build peak-hour volumes were developed by applying a compound annual growth rate of approximately 0.2 percent to the existing peak-hour volumes, consistent with corridor-level traffic trends. The two-lane highway analysis indicates that this segment maintains acceptable operating conditions under both existing and future no-build scenarios.

Summary of Analysis

Table 10 summarizes the segment LOS results for the detailed segment analyses. Analysis was completed for existing (2025) and 2050 no-build conditions. The highest traffic volume from each of the segments was used for the analysis.

Table 10. Existing and 2050 No-Build Two-Lane Highway Segment Level of Service⁵

Segment	Scenario	Follower Density (followers/mi)	LOS	Notes
IL 3 from Market Street (S. Limits of Waterloo) to Kaskaskia Road	Existing	7.4	C	Under no-build conditions, segment operations degrade compared to existing conditions, resulting in a lower overall LOS.
	No-Build	8.8	D	
IL 3 from Kaskaskia Road to West Limits of Red Bud	Existing	5.2	C	Overall LOS under no-build conditions remains consistent with existing operations.
	No-Build	6.1	C	
IL 154 from East Limits of Red Bud to West Limits of Sparta	Existing	0.9	A	The segment maintains the same high LOS under both existing and no-build conditions.
	No-Build	1.0	A	
IL 154 from East Limits of Sparta to West Limits of Pinckneyville	Existing	1.1	A	The segment maintains the same high LOS under both existing and no-build conditions.
	No-Build	1.2	A	
IL 13 / IL 127 from South Limits of Pinckneyville to North Limits of Murphysboro	Existing	2.6	B	The segment continues to operate at a similar LOS under both existing and no-build conditions.
	No-Build	2.9	B	

⁵ Analysis completed using Highway Capacity Software Version 8.4

Generalized Daily Service Volumes

Roadway segments were also evaluated using the generalized service tables in the Highway Capacity Manual (HCM) for comparison to the HCS analysis results show in **Summary of Analysis**

Table 10 summarizes the segment LOS results for the detailed segment analyses. Analysis was completed for existing (2025) and 2050 no-build conditions. The highest traffic volume from each of the segments was used for the analysis.

The HCM provides generalized service tables for different roadway facility types: urban streets, two-lane highways, multi-lane highways, and freeway segments. Volume thresholds for each facility type are provided for various roadway characteristics such as number of lanes, speed limit, highway classification, terrain, context, and K and D factors. The roadway types represented in the study area include urban streets, two-lane highways, and multi-lane highways and are described below⁶.

Urban Streets

Urban streets are typically classified as an arterial or collector road in an urban setting with traffic control no more than two miles apart such as signalized intersections, stop-controlled intersections, or roundabouts.

Due to the shorter urban street sections and interrupted flow within these segments of the project, the delay in these sections is primarily from the stop-controlled or signalized intersection in each city. For the generalized service analysis for this project, only higher-speed rural sections were included in the evaluation.

Rural Segments

Rural roadway segments are classified in the HCM as either two-lane highways or multi-lane highways depending on lane configuration and uninterrupted-flow conditions. These segments typically feature higher posted speeds, longer distances between traffic control, and operations governed by running speed, platooning, and passing opportunities. Signalized and stop-controlled intersections within rural segments are evaluated separately using intersection-level methodologies.

Two-Lane Highways

Two-lane highways have one through lane in each direction. Passing maneuvers are limited by the availability of gaps in the opposing traffic stream and by the availability of sufficient sight distance for a driver to safely discern the approach of an opposing vehicle.

Two-Lane Highways Class I – Level Terrain

Class I includes highways where motorists expect to travel at relatively high speeds. Two-lane highways that are major intercity routes, primary connectors of major traffic generators, daily commuter routes, or major links in state or national highway networks are generally assigned to

⁶ Highway Capacity Manual: A Guide for Multimodal Mobility Analysis, 7th Edition

Class I. These facilities serve mostly long-distance trips or provide connections between facilities that serve long-distance trips⁷.

Two-Lane Highways Class II

Class II includes highways where motorists are not necessarily expected to travel at high speeds. Two-lane highways that are access routes to Class I facilities, that serve as scenic or recreational routes (and not as primary arterials), or that pass through rugged terrain (where high-speed operation would be less achievable) are assigned to Class II. These facilities most often serve relatively short trips, the beginning or ending portions of longer trips, or trips for which sightseeing plays a significant role.

Multi-Lane Highways

Multi-lane highways have at least two through lanes in each direction and traffic control is at least two miles apart. Multi-lane highways may be divided by various median types, may be undivided, or may have a two-way left-turn lane. They are typically located in suburban areas, leading into central cities, or along high-volume rural corridors.

CORRIDOR SERVICE VOLUME ANALYSIS

Traffic data for the study corridor was obtained from IDOT's IROADS database. Directional and hourly factors were computed for each segment to determine representative design-hour volumes. Based on the analysis, an average **K-factor of 0.11** and **D-factor of 0.60** were adopted for the corridor. Considering the roadway's characteristics and terrain, Class I Level Terrain LOS criteria from the HCM were applied. **Table 11** summarizes the maximum daily service volumes for each LOS category by facility type.

Table 11: HCM Generalized Daily Service Volumes

LOS	Two-Lane Highways ⁸			Multi-Lane Highways
	Class I Level	Class I Rolling Terrain	Class II Rolling Terrain	Rural Rolling Terrain Four-Lane
A	-	-	-	-
B	3,600	3,100	3,800	20,300
C	6,700	6,900	8,400	29,400
D	11,400	12,800	16,000	38,600
E	22,600	25,800	26,000	45,200

The generalized LOS for segments along the Southwest Connector under 2025 AADTs, as well as existing intersection LOS determined in the section '**Intersection Capacity Analysis**' is shown in **Figure 14**.

⁷ NCHRP Report 825, Planning and Preliminary Engineering Application Guide to the Highway Capacity Manual (2016)

⁸ This method has not been updated in the HCM 7th Edition, generalized volumes from the HCM 6th Edition are used for this analysis

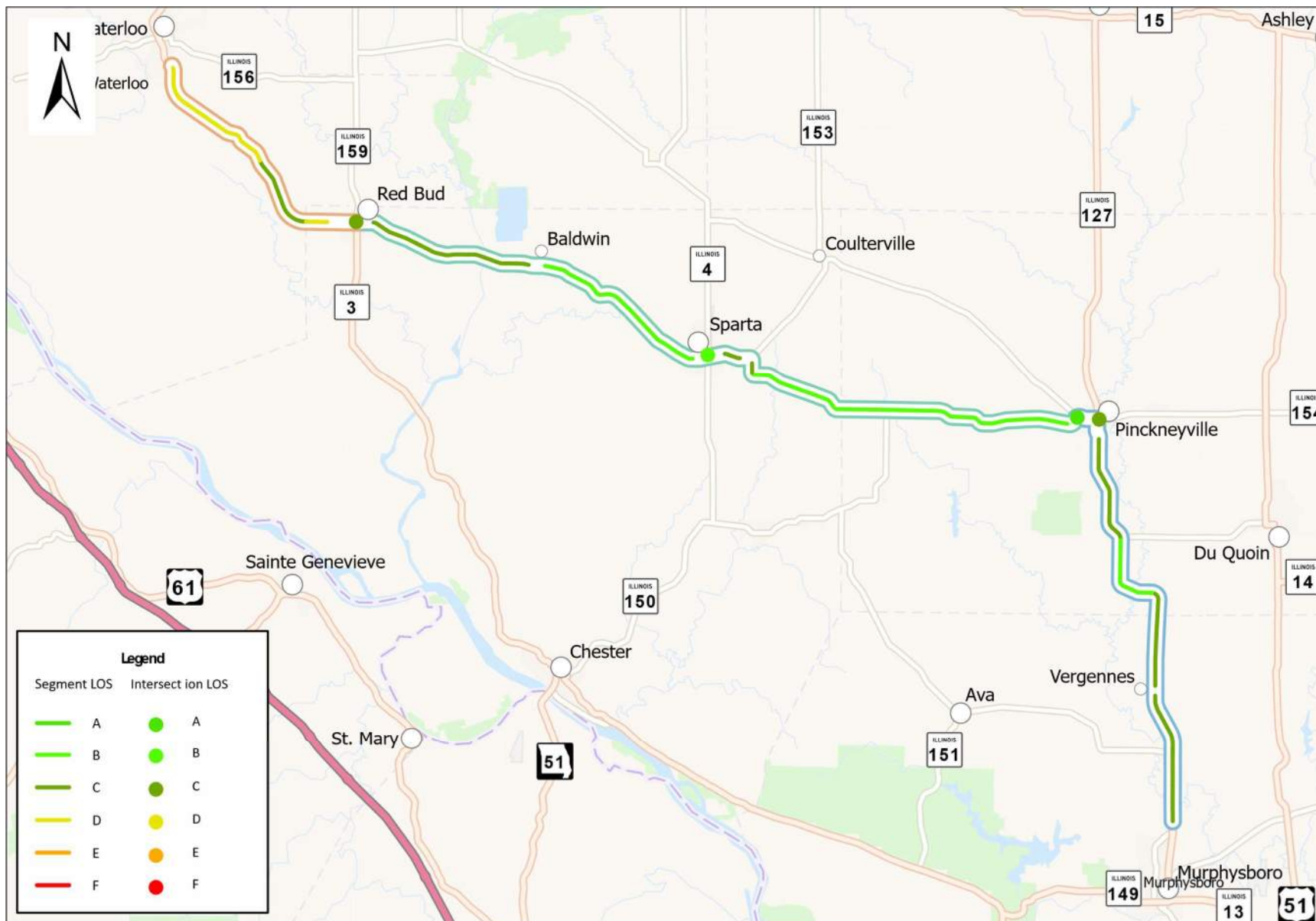


Figure 14. Generalized Level of Service

Appendices

Appendix A – Streetlight Origin-Destination Data

Index

Zone #	Pass Thru?	Zone Name
001	Yes	S of Waterloo
100	No	Red Bud
101	Yes	W of Red Bud (SR 3)
102	Yes	N of Red Bud (SR 159)
103	Yes	E of Red Bud (SR 154)
104	Yes	S of Red Bud (SR 3)
105	Yes	S of Red Bud (Locust St)
200	No	Baldwin
201	Yes	W of Baldwin (SR 154)
202	Yes	N of Baldwin (1st Rd or 5th St)
203	Yes	E of Baldwin (SR 154)
204	Yes	S of Baldwin (S 5th St)
300	No	Sparta
301	Yes	W of Sparts (Country Club Rd))
302	Yes	W of Sparta (SR 154)
303	Yes	W of Sparta (Ridge Rd)
304	Yes	W of Sparta (Industrial Dr)
305	Yes	N of Sparta (SR 4)
306	Yes	NE of Sparta (SR 153)
307	Yes	E of Sparta (SR 154)
308	Yes	S of Sparta (SR 4)
309	Yes	S of Sparta (Chester Rd)
400	No	Coulterville
401	Yes	W of Coulterville (SR 14)
402	Yes	N of Coulterville (SR 153)
403	Yes	NE of Coulterville (Nashville Rd)
404	Yes	E of Coulterville (SR 13)
405	Yes	S of Coulterville (SR 153)
500	No	Pickneyville
501	Yes	W of Pickneyville (SR 154)
502	Yes	NW of Pickneyville (SR 13 + Airport Rd)
503	Yes	N of Pickneyville (SR 127)
505	Yes	E of Pickneyville (SR 154)
506	Yes	S of Pickneyville (SR 13)
600	Yes	N of Murphysboro

Zones for each city (100, 200, 300, 400, & 500) are not pass through and only include trip ends within zone

Origin Destination data between cities

Weekday trips, 24 hr

001	S of Waterloo	Percent of all trips	27.6%
		Trip O-D	O-D %
100	Red Bud	1446	85.8%
200	Baldwin	40	2.4%
300	Sparta	176	10.4%
400	Coulterville	11	0.7%
500	Pickneyville	6	0.4%
600	N of Murphysboro	7	0.4%
	Total	1686	

100	Red Bud	Percent of all trips	29.5%
		input	O-D
001	S of Waterloo	1444	80.2%
200	Baldwin	68	3.8%
300	Sparta	266	14.8%
400	Coulterville	17	0.9%
500	Pickneyville	5	0.3%
600	N of Murphysboro	1	0.1%
	Total	1801	

200	Baldwin	Percent of all trips	3.1%
		input	O-D
001	S of Waterloo	43	22.8%
100	Red Bud	62	32.8%
300	Sparta	80	42.3%
400	Coulterville	1	0.5%
500	Pickneyville	1	0.5%
600	N of Murphysboro	2	1.1%
	Total	189	

300	Sparta	Percent of all trips	17.1%
		input	O-D
001	S of Waterloo	177	16.9%
100	Red Bud	250	23.9%
200	Baldwin	75	7.2%
400	Coulterville	356	34.0%
500	Pickneyville	153	14.6%
600	N of Murphysboro	35	3.3%
	Total	1046	

400	Coulterville	Percent of all trips	7.3%
		input	O-D
001	S of Waterloo	5	1.1%
100	Red Bud	9	2.0%
200	Baldwin	1	0.2%
300	Sparta	360	81.1%
500	Pickneyville	48	10.8%
600	N of Murphysboro	21	4.7%
	Total	444	

500	Pickneyville	Percent of all trips	9.0%
		input	O-D
001	S of Waterloo	9	1.6%
100	Red Bud	6	1.1%
200	Baldwin	1	0.2%
300	Sparta	151	27.5%
400	Coulterville	46	8.4%
600	N of Murphysboro	336	61.2%
	Total	549	

600	N of Murphysboro	Percent of all trips	6.4%
		input	O-D
001	S of Waterloo	12	3.1%
100	Red Bud	1	0.3%
200	Baldwin	5	1.3%
300	Sparta	29	7.4%
400	Coulterville	16	4.1%
500	Pickneyville	328	83.9%
	Total	391	
	Grand Tot	6106	

Origin Destination data between and to routes outside of cities

Weekday trips, 24 hr

101	W of Red Bud (SR 3)	Percent of all trips	17.6%
		Trip O-D	O-D %
102	N of Red Bud (SR 159)	181	13.1%
104	S of Red Bud (SR 3)	663	48.0%
200	Baldwin	63	4.6%
202	N of Baldwin (1st Rd or 5th St)	50	3.6%
204	S of Baldwin (S 5th St)	58	4.2%
300	Sparta	219	15.8%
305	N of Sparta (SR 4)	6	0.4%
308	S of Sparta (SR 4)	56	4.1%
309	S of Sparta (Chester Rd)	10	0.7%
400	Coulterville	15	1.1%
401	W of Coulterville (SR 14)	10	0.7%
402	N of Coulterville (SR 153)	3	0.2%
403	NE of Coulterville (Nashville Rd)	1	0.1%
500	Pickneyville	8	0.6%
503	N of Pickneyville (SR 127)	1	0.1%
505	E of Pickneyville (SR 154)	20	1.4%
506	S of Pickneyville (SR 13)	8	0.6%
600	N of Murphysboro	10	0.7%
	Total	1382	

100	Red Bud	Percent of all trips	9.3%
		input	O-D
200	Baldwin	68	9.3%
202	N of Baldwin (1st Rd or 5th St)	190	26.0%
204	S of Baldwin (S 5th St)	61	8.4%
300	Sparta	266	36.4%
305	N of Sparta (SR 4)	8	1.1%
308	S of Sparta (SR 4)	45	6.2%
309	S of Sparta (Chester Rd)	13	1.8%
400	Coulterville	17	2.3%
401	W of Coulterville (SR 14)	22	3.0%
402	N of Coulterville (SR 153)	8	1.1%
403	NE of Coulterville (Nashville Rd)	8	1.1%
500	Pickneyville	5	0.7%
503	N of Pickneyville (SR 127)	0	0.0%
505	E of Pickneyville (SR 154)	17	2.3%
506	S of Pickneyville (SR 13)	1	0.1%
600	N of Murphysboro	1	0.1%

Total 730

200	Baldwin	Percent of all trips	3.7%
		input	O-D
100	Red Bud	62	21.0%
101	W of Red Bud (SR 3)	62	21.0%
102	N of Red Bud (SR 159)	7	2.4%
104	S of Red Bud (SR 3)	25	8.5%
300	Sparta	80	27.1%
305	N of Sparta (SR 4)	6	2.0%
308	S of Sparta (SR 4)	8	2.7%
309	S of Sparta (Chester Rd)	0	0.0%
400	Coulterville	1	0.3%
401	W of Coulterville (SR 14)	11	3.7%
402	N of Coulterville (SR 153)	0	0.0%
403	NE of Coulterville (Nashville Rd)	9	3.1%
500	Pickneyville	1	0.3%
503	N of Pickneyville (SR 127)	0	0.0%
505	E of Pickneyville (SR 154)	19	6.4%
506	S of Pickneyville (SR 13)	2	0.7%
600	N of Murphysboro	2	0.7%
	Total	295	

300	Sparta	Percent of all trips	25.3%
		input	O-D
100	Red Bud	250	12.6%
101	W of Red Bud (SR 3)	225	11.3%
102	N of Red Bud (SR 159)	33	1.7%
104	S of Red Bud (SR 3)	42	2.1%
200	Baldwin	75	3.8%
202	N of Baldwin (1st Rd or 5th St)	125	6.3%
204	S of Baldwin (S 5th St)	38	1.9%
400	Coulterville	356	17.9%
401	W of Coulterville (SR 14)	183	9.2%
402	N of Coulterville (SR 153)	108	5.4%
403	NE of Coulterville (Nashville Rd)	163	8.2%
500	Pickneyville	153	7.7%
503	N of Pickneyville (SR 127)	16	0.8%
505	E of Pickneyville (SR 154)	143	7.2%
506	S of Pickneyville (SR 13)	47	2.4%
600	N of Murphysboro	35	1.8%
	Total	1992	

400	Coulterville	Percent of all trips	10.0%
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		input	O-D
100	Red Bud	9	1.1%
101	W of Red Bud (SR 3)	11	1.4%
102	N of Red Bud (SR 159)	1	0.1%
104	S of Red Bud (SR 3)	1	0.1%
200	Baldwin	1	0.1%
202	N of Baldwin (1st Rd or 5th St)	11	1.4%
204	S of Baldwin (S 5th St)	0	0.0%
300	Sparta	360	45.7%
305	N of Sparta (SR 4)	196	24.9%
308	S of Sparta (SR 4)	24	3.0%
309	S of Sparta (Chester Rd)	20	2.5%
500	Pickneyville	48	6.1%
503	N of Pickneyville (SR 127)	6	0.8%
505	E of Pickneyville (SR 154)	42	5.3%
506	S of Pickneyville (SR 13)	36	4.6%
600	N of Murphysboro	21	2.7%
	Total	787	

500	Pickneyville	Percent of all trips	10.3%
		input	O-D
100	Red Bud	6	0.7%
101	W of Red Bud (SR 3)	12	1.5%
102	N of Red Bud (SR 159)	0	0.0%
104	S of Red Bud (SR 3)	0	0.0%
200	Baldwin	1	0.1%
202	N of Baldwin (1st Rd or 5th St)	1	0.1%
204	S of Baldwin (S 5th St)	0	0.0%
300	Sparta	151	18.7%
305	N of Sparta (SR 4)	8	1.0%
308	S of Sparta (SR 4)	2	0.2%
309	S of Sparta (Chester Rd)	0	0.0%
400	Coulterville	46	5.7%
401	W of Coulterville (SR 14)	174	21.6%
402	N of Coulterville (SR 153)	59	7.3%
403	NE of Coulterville (Nashville Rd)	11	1.4%
600	N of Murphysboro	336	41.6%
	Total	807	

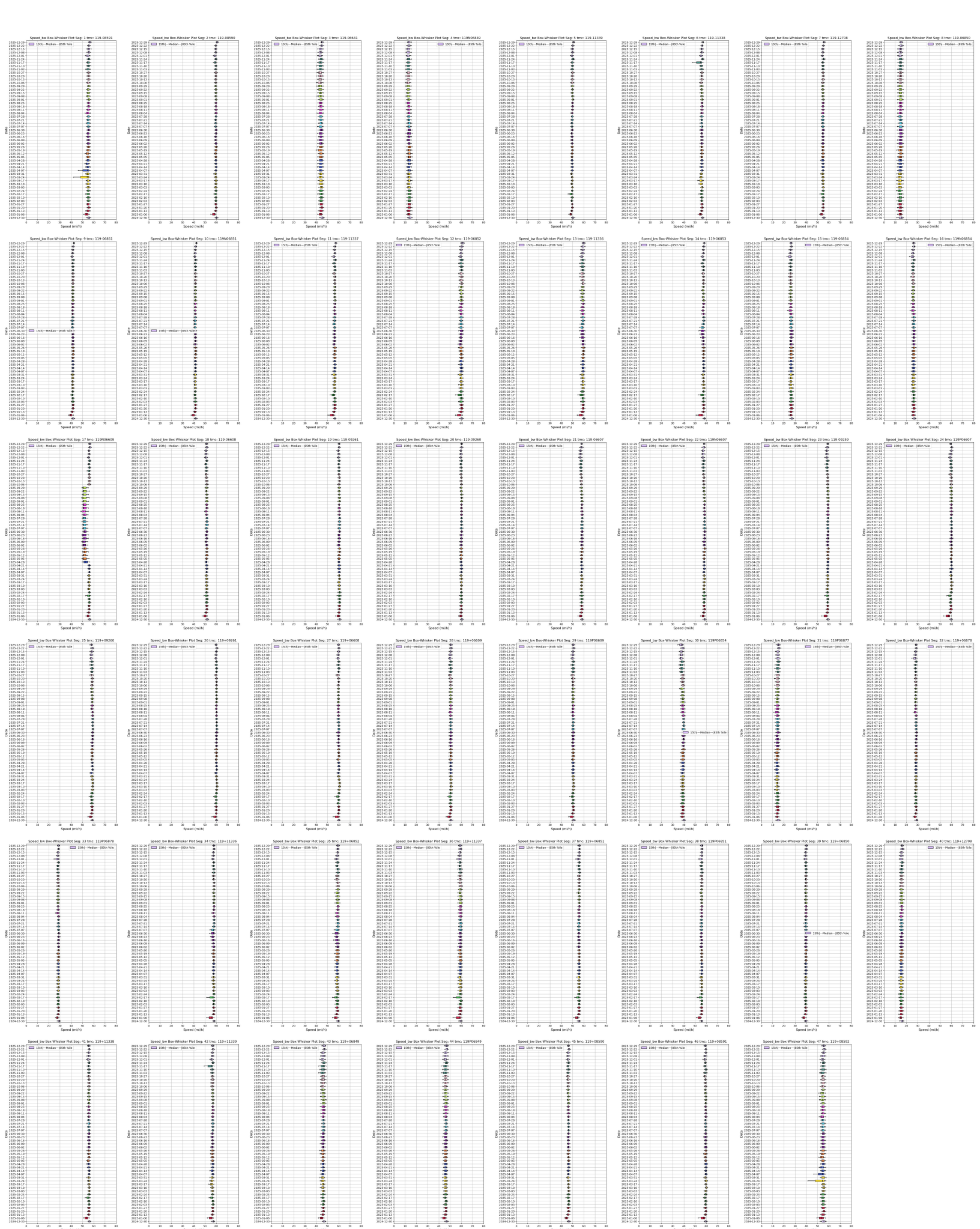
506	S of Pickneyville (SR 13)	Percent of all trips	23.8%
		input	O-D
100	Red Bud	1	0.1%
101	W of Red Bud (SR 3)	8	0.4%
102	N of Red Bud (SR 159)	1	0.1%

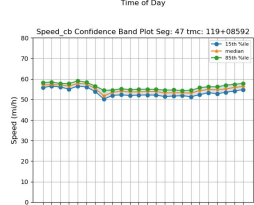
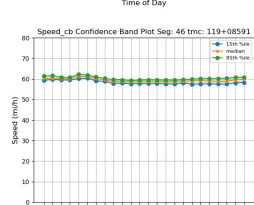
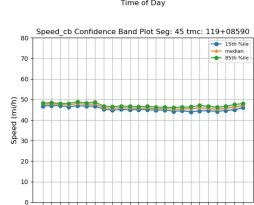
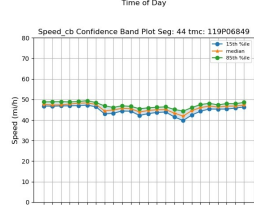
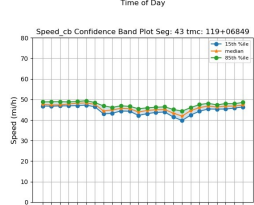
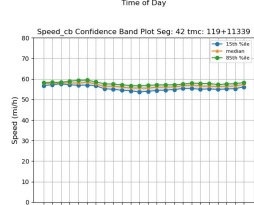
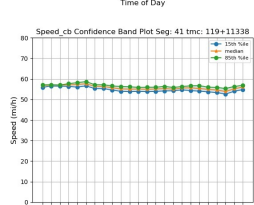
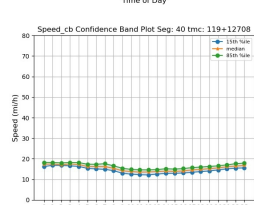
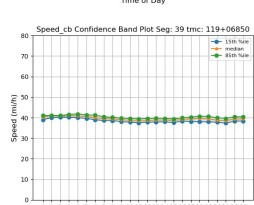
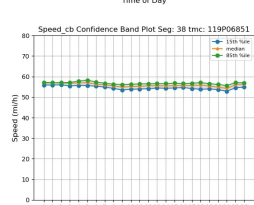
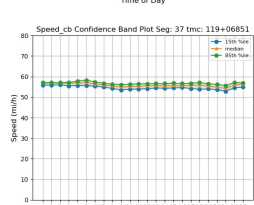
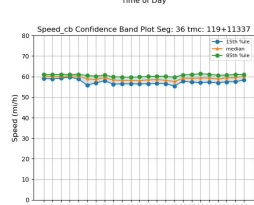
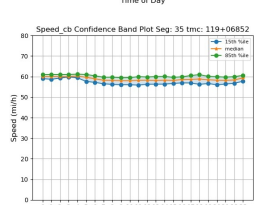
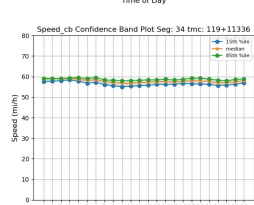
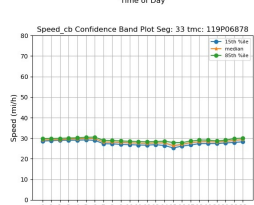
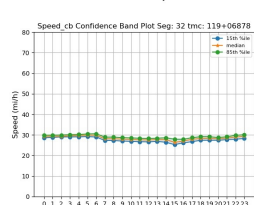
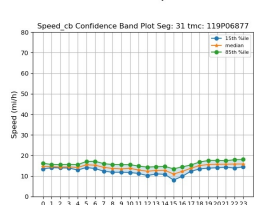
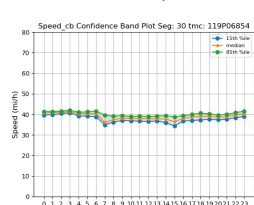
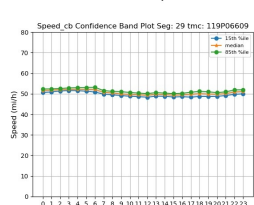
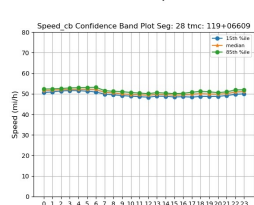
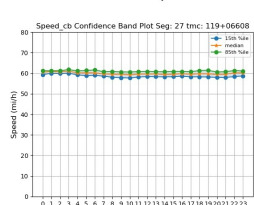
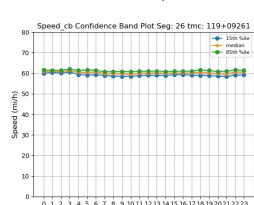
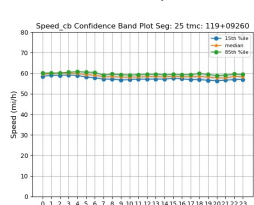
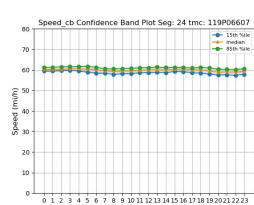
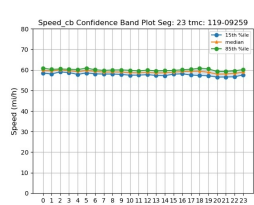
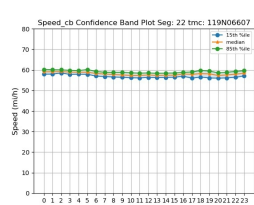
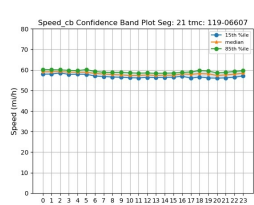
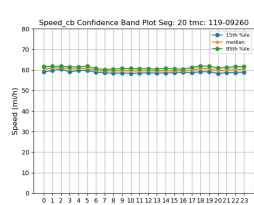
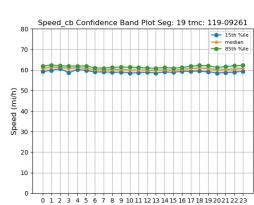
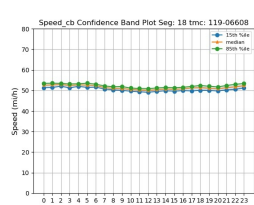
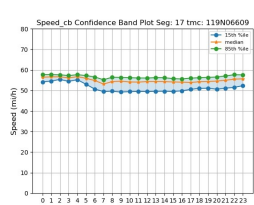
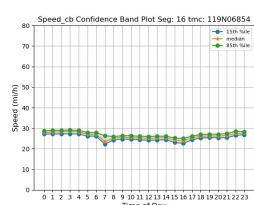
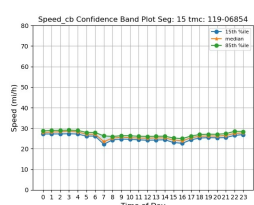
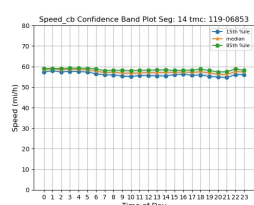
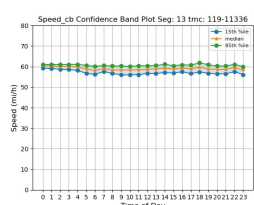
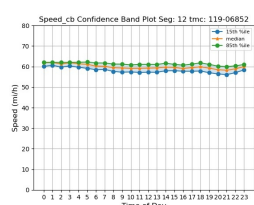
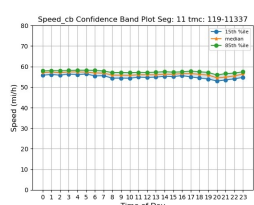
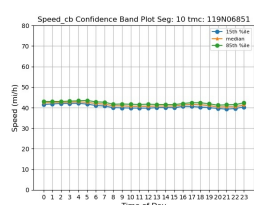
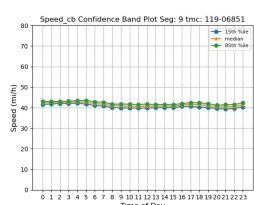
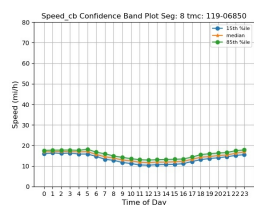
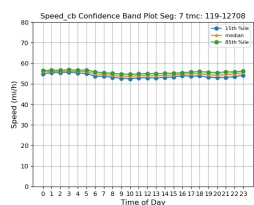
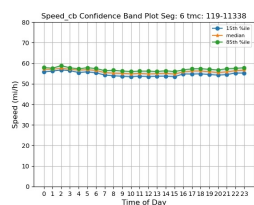
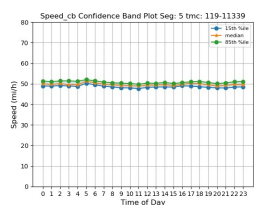
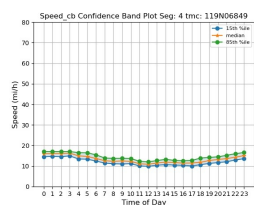
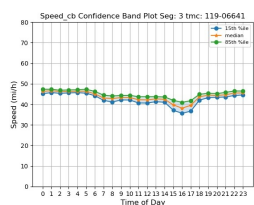
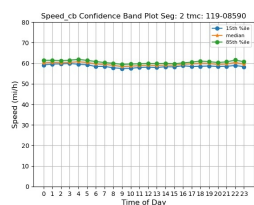
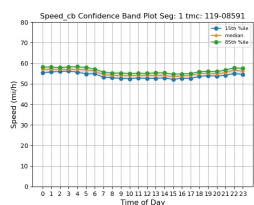
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200	Baldwin	0	0.0%
202	N of Baldwin (1st Rd or 5th St)	1	0.1%
204	S of Baldwin (S 5th St)	0	0.0%
300	Sparta	51	2.7%
305	N of Sparta (SR 4)	4	0.2%
308	S of Sparta (SR 4)	0	0.0%
309	S of Sparta (Chester Rd)	2	0.1%
400	Coulterville	34	1.8%
401	W of Coulterville (SR 14)	186	9.9%
402	N of Coulterville (SR 153)	36	1.9%
403	NE of Coulterville (Nashville Rd)	5	0.3%
503	N of Pickneyville (SR 127)	1220	65.1%
505	E of Pickneyville (SR 154)	325	17.3%
	Total	1875	
	Grand Tot	7868	

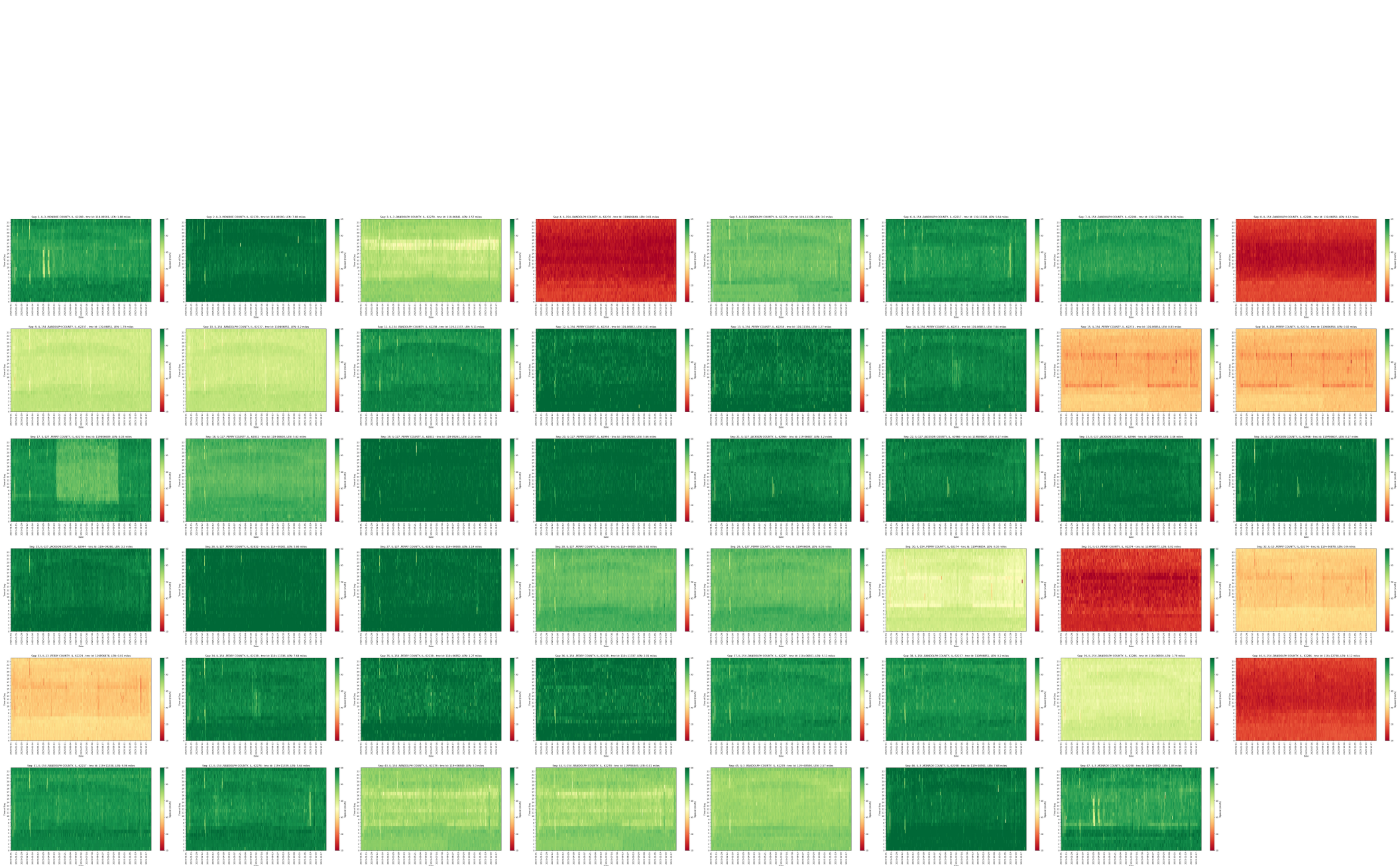
600	N of Murphysboro		
		input	O-D
100	Red Bud	1	0.0%
101	W of Red Bud (SR 3)	13	0.5%
102	N of Red Bud (SR 159)	2	0.1%
104	S of Red Bud (SR 3)	0	0.0%
200	Baldwin	5	0.2%
202	N of Baldwin (1st Rd or 5th St)	2	0.1%
204	S of Baldwin (S 5th St)	0	0.0%
300	Sparta	29	1.1%
305	N of Sparta (SR 4)	3	0.1%
308	S of Sparta (SR 4)	2	0.1%
309	S of Sparta (Chester Rd)	1	0.0%
400	Coulterville	16	0.6%
401	W of Coulterville (SR 14)	89	3.3%
402	N of Coulterville (SR 153)	17	0.6%
403	NE of Coulterville (Nashville Rd)	0	0.0%
500	Pickneyville	328	12.3%
503	N of Pickneyville (SR 127)	752	28.1%
505	E of Pickneyville (SR 154)	90	3.4%
506	S of Pickneyville (SR 13)	1325	49.5%
	Total	2675	

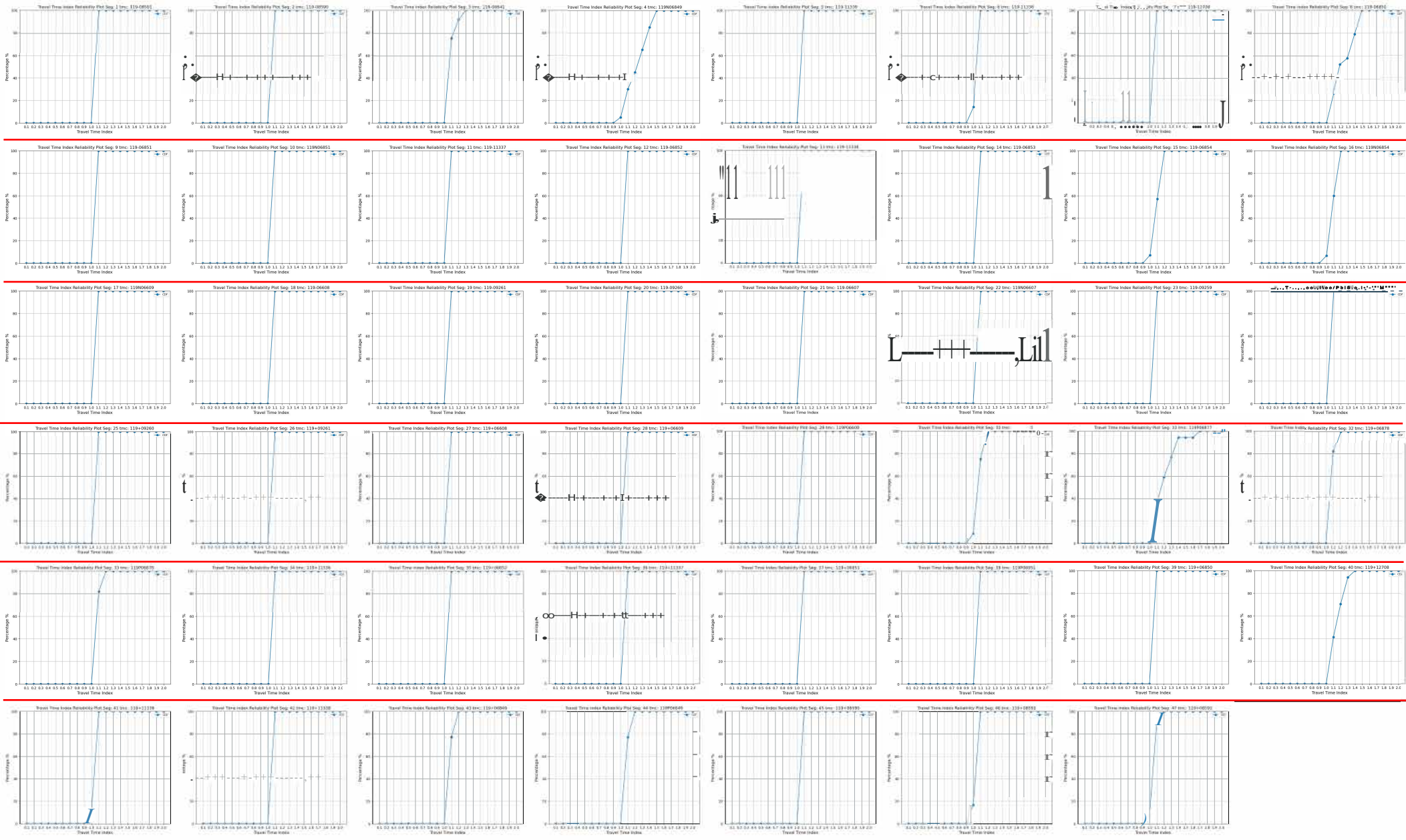
Appendix B – Travel Time Reliability

tmc	road	direction	intersection	state	county	start_latitude	start_longitude	end_latitude	end_longitude	miles	road_order	Direction	Weekday 90% TTI Reliability
119-08591	IL-3	SOUTHBOUND	CR-1/KASKASKIA RD	IL	MONROE	38.31352	-90.1467	38.28949	-90.1353	1.876902	1	South	1.1
119-08590	IL-3	SOUTHBOUND	CR-5/OLD IL-3/DOYLE RD	IL	MONROE	38.28949	-90.1353	38.21273	-90.0412	7.679886	2	South	1.1
119-06641	IL-3	SOUTHBOUND	IL-154/IL-159/MARKET ST/N MAIN ST	IL	RANDOLPH	38.21273	-90.0412	38.21171	-89.9941	2.566899	3	South	1.2
119N06849	IL-154	EASTBOUND	IL-159/IL-3/GREAT RIVER RD/MAIN ST	IL	RANDOLPH	38.21171	-89.9941	38.21171	-89.9938	0.014693	4	South	1.43
119-11339	IL-154	EASTBOUND	CR-10/PRAIRIE RD	IL	RANDOLPH	38.21171	-89.9938	38.19726	-89.9431	3.004025	5	South	1.1
119-11338	IL-154	EASTBOUND	CR-1/5TH ST	IL	RANDOLPH	38.19726	-89.9431	38.18303	-89.8427	5.64287	6	South	1.1
119-12708	IL-154	EASTBOUND	S ST LOUIS ST	IL	RANDOLPH	38.18303	-89.8427	38.12268	-89.7039	9.064186	7	South	1.1
119-06850	IL-154	EASTBOUND	IL-4/S MARKET ST	IL	RANDOLPH	38.12268	-89.7039	38.12301	-89.7017	0.12178	8	South	1.45
119-06851	IL-154	EASTBOUND	IL-153	IL	RANDOLPH	38.12301	-89.7017	38.12183	-89.6697	1.788227	9	South	1.1
119N06851	IL-154	EASTBOUND	IL-153	IL	RANDOLPH	38.12183	-89.6697	38.12033	-89.6672	0.200062	10	South	1.1
119-11337	IL-154	EASTBOUND	CR-11/COUNTY LINE RD	IL	RANDOLPH	38.12033	-89.6672	38.08768	-89.5928	5.109422	11	South	1.1
119-06852	IL-154	EASTBOUND	IL-150	IL	PERRY	38.08768	-89.5928	38.08708	-89.556	2.008659	12	South	1.1
119-11336	IL-154	EASTBOUND	LOST PRARIE RD/SWANWICK RD	IL	PERRY	38.08708	-89.556	38.08659	-89.5327	1.270585	13	South	1.1
119-06853	IL-154	EASTBOUND	IL-13/KENNEDY DR	IL	PERRY	38.08659	-89.5327	38.0811	-89.3989	7.636317	14	South	1.18
119-06854	IL-154	EASTBOUND	IL-127/IL-13/MAIN ST/N LOCUST ST	IL	PERRY	38.08114	-89.3987	38.0801	-89.382	0.925408	15	South	1.18
119N06854	IL-154	EASTBOUND	IL-127/IL-13/MAIN ST/N LOCUST ST	IL	PERRY	38.0801	-89.382	38.08009	-89.3816	0.022363	16	South	1.1
119N06609	IL-127	SOUTHBOUND	IL-154/WATER ST	IL	PERRY	38.08009	-89.3816	38.07979	-89.382	0.030459	17	South	1.1
119-06608	IL-127	SOUTHBOUND	IL-152/CR-4/PYATT-CUTLER RD	IL	PERRY	38.07979	-89.382	38.0029	-89.3635	5.615667	18	South	1.1
119-09261	IL-127	SOUTHBOUND	CR-18/MATTHEWS RD	IL	PERRY	38.0029	-89.3635	37.972	-89.3631	2.143376	19	South	1.1
119-09260	IL-127	SOUTHBOUND	CR-8/BEAUCOUP RD/ELKVILLE RD	IL	PERRY	37.972	-89.3631	37.90785	-89.3357	5.65903	20	South	1.1
119-06607	IL-127	SOUTHBOUND	IL-4/CR-18/TRUAX TRAER RD	IL	JACKSON	37.90785	-89.3357	37.8639	-89.3218	3.202811	21	South	1.1
119N06607	IL-127	SOUTHBOUND	IL-4/CR-18/TRUAX TRAER RD	IL	JACKSON	37.8639	-89.3218	37.86144	-89.3218	0.169686	22	South	1.1
119-09259	IL-127	SOUTHBOUND	CR-15/KIMMEL BRIDGE RD/AVA RD	IL	JACKSON	37.86144	-89.3218	37.81125	-89.3223	3.461902	23	South	1.1
119P06607	IL-127	NORTHBOUND	IL-4/CR-18/TRUAX TRAER RD	IL	JACKSON	37.86144	-89.3218	37.8639	-89.3218	0.169686	24	North	1.1
119+09260	IL-127	NORTHBOUND	CR-8/BEAUCOUP RD/ELKVILLE RD	IL	JACKSON	37.8639	-89.3218	37.90785	-89.3357	3.202811	25	North	1.1
119+09261	IL-127	NORTHBOUND	CR-18/MATTHEWS RD	IL	PERRY	37.90785	-89.3357	37.972	-89.3631	5.65903	26	North	1.1
119+06608	IL-127	NORTHBOUND	IL-152/CR-4/PYATT-CUTLER RD	IL	PERRY	37.972	-89.3631	38.0029	-89.3635	2.143376	27	North	1.1
119+06609	IL-127	NORTHBOUND	IL-154/WATER ST	IL	PERRY	38.0029	-89.3635	38.07979	-89.382	5.615667	28	North	1.1
119P06609	IL-127	NORTHBOUND	IL-154/WATER ST	IL	PERRY	38.07979	-89.382	38.08009	-89.3816	0.030459	29	North	1.1
119P06854	IL-154	WESTBOUND	IL-127/IL-13/MAIN ST/N LOCUST ST	IL	PERRY	38.08009	-89.3816	38.0801	-89.382	0.022363	30	North	1.15
119P06877	IL-13	WESTBOUND	IL-127/IL-154/MAIN ST/WATER ST	IL	PERRY	38.0801	-89.382	38.08011	-89.3823	0.018549	31	North	1.38
119+06878	IL-13	WESTBOUND	IL-154	IL	PERRY	38.08011	-89.3823	38.08141	-89.3987	0.904977	32	North	1.15
119P06878	IL-13	WESTBOUND	IL-154	IL	PERRY	38.08141	-89.3987	38.08148	-89.3988	0.008641	33	North	1.15
119+11336	IL-154	WESTBOUND	LOST PRARIE RD/SWANWICK RD	IL	PERRY	38.08124	-89.3991	38.08659	-89.5327	7.640868	34	North	1.1
119+06852	IL-154	WESTBOUND	IL-150	IL	PERRY	38.08659	-89.5327	38.08708	-89.556	1.270585	35	North	1.1
119+11337	IL-154	WESTBOUND	CR-11/COUNTY LINE RD	IL	PERRY	38.08708	-89.556	38.08768	-89.5928	2.008659	36	North	1.1
119+06851	IL-154	WESTBOUND	IL-153	IL	RANDOLPH	38.08768	-89.5928	38.12033	-89.6672	5.109422	37	North	1.1
119P06851	IL-154	WESTBOUND	IL-153	IL	RANDOLPH	38.12033	-89.6672	38.12183	-89.6697	0.200062	38	North	1.1
119+06850	IL-154	WESTBOUND	IL-4/S MARKET ST	IL	RANDOLPH	38.12183	-89.6697	38.12301	-89.7017	1.788227	39	North	1.1
119+12708	IL-154	WESTBOUND	S ST LOUIS ST	IL	RANDOLPH	38.12301	-89.7017	38.12268	-89.7039	0.12178	40	North	1.28
119+11338	IL-154	WESTBOUND	CR-1/5TH ST	IL	RANDOLPH	38.12268	-89.7039	38.18303	-89.8427	9.064186	41	North	1.1
119+11339	IL-154	WESTBOUND	CR-10/PRAIRIE RD	IL	RANDOLPH	38.18303	-89.8427	38.19726	-89.9431	5.64287	42	North	1.1
119+06849	IL-154	WESTBOUND	IL-159/IL-3/GREAT RIVER RD/MAIN ST	IL	RANDOLPH	38.19726	-89.9431	38.21171	-89.9938	3.004025	43	North	1.15
119P06849	IL-154	WESTBOUND	IL-159/IL-3/GREAT RIVER RD/MAIN ST	IL	RANDOLPH	38.21171	-89.9938	38.21171	-89.9941	0.014693	44	North	1.15
119+08590	IL-3	NORTHBOUND	CR-5/OLD IL-3/DOYLE RD	IL	RANDOLPH	38.21171	-89.9941	38.21273	-90.0412	2.566899	45	North	1.1
119+08591	IL-3	NORTHBOUND	CR-1/KASKASKIA RD	IL	MONROE	38.21273	-90.0412	38.28949	-90.1353	7.679886	46	North	1.18
119+08592	IL-3	NORTHBOUND	S MARKET ST	IL	MONROE	38.28949	-90.1353	38.31352	-90.1467	1.876902	47	North	1.2







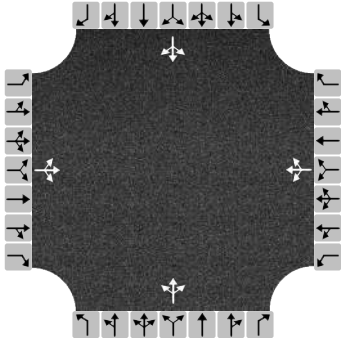


Appendix C – Highway Capacity Software (HCS) Reports

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	SCI	Intersection	IL 3 at IL 159 and IL 154
Agency/Co.	IDOT	Jurisdiction	IDOT
Date Performed		East/West Street	IL 3 / IL 154
Analysis Year	2025	North/South Street	IL 159 / IL 3
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.97
Time Analyzed	3:45 PM To 4:45 PM		
Project Description	SOUTHWEST ILLINOIS CONNECTOR HIGHWAY		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	36	187	123	104	152	39	116	137	65	44	194	49
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	357			304			328			296		
Percent Heavy Vehicles	4			3			3			3		

Departure Headway and Service Time

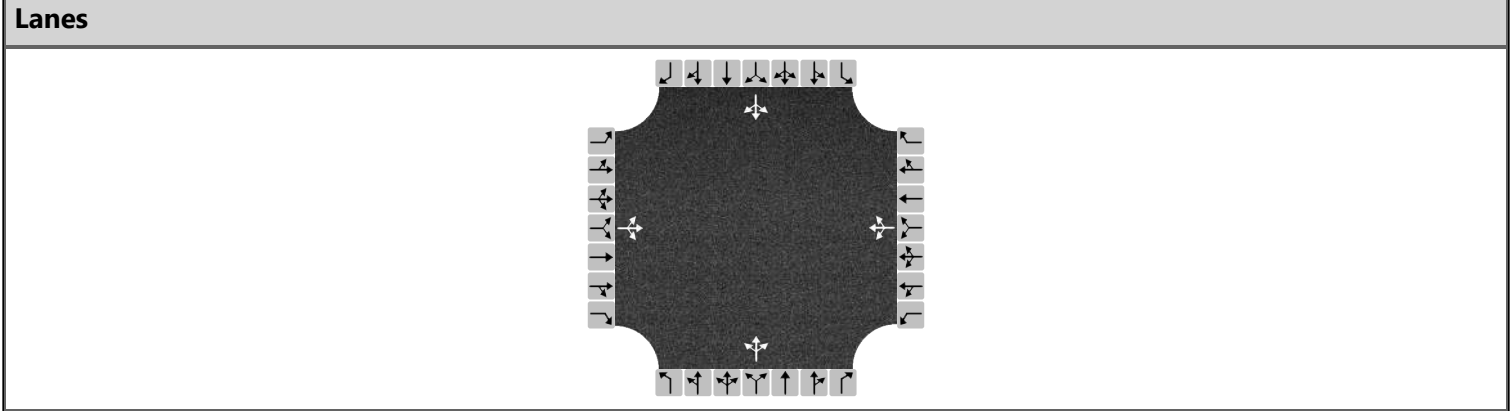
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.317			0.270			0.291			0.263		
Final Departure Headway, hd (s)	7.00			7.30			7.21			7.30		
Final Degree of Utilization, x	0.694			0.617			0.657			0.600		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	5.00			5.30			5.21			5.30		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	357			304			328			296		
Capacity	514			493			499			493		
95% Queue Length, Q ₉₅ (veh)	5.3			4.1			4.7			3.9		
Control Delay (s/veh)	24.3			21.4			23.0			20.6		
Level of Service, LOS	C			C			C			C		
Approach Delay (s/veh)	24.3			21.4			23.0			20.6		
Approach LOS	C			C			C			C		
Intersection Delay, s/veh LOS	22.4						C					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	SCI	Intersection	IL 3 at IL 159 and IL 154
Agency/Co.	IDOT	Jurisdiction	IDOT
Date Performed		East/West Street	IL 3 / IL 154
Analysis Year	2030	North/South Street	IL 159 / IL 3
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.97
Time Analyzed	3:45 PM To 4:45 PM		
Project Description	SOUTHWEST ILLINOIS CONNECTOR HIGHWAY		



Vehicle Volume and Adjustments												
Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	40	195	130	110	160	40	120	140	70	45	200	50
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	376			320			340			304		
Percent Heavy Vehicles	4			3			3			3		

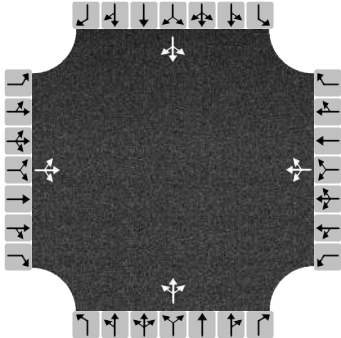
Departure Headway and Service Time												
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.334			0.284			0.302			0.270		
Final Departure Headway, hd (s)	7.40			7.75			7.66			7.78		
Final Degree of Utilization, x	0.774			0.688			0.724			0.657		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	5.40			5.75			5.66			5.78		

Capacity, Delay and Level of Service												
Flow Rate, v (veh/h)	376			320			340			304		
Capacity	486			465			470			463		
95% Queue Length, Q ₉₅ (veh)	6.8			5.1			5.8			4.7		
Control Delay (s/veh)	31.4			26.1			28.3			24.5		
Level of Service, LOS	D			D			D			C		
Approach Delay (s/veh)	31.4			26.1			28.3			24.5		
Approach LOS	D			D			D			C		
Intersection Delay, s/veh LOS	27.8						D					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	SCI	Intersection	IL 3 at IL 159 and IL 154
Agency/Co.	IDOT	Jurisdiction	IDOT
Date Performed		East/West Street	IL 3 / IL 154
Analysis Year	2050	North/South Street	IL 159 / IL 3
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.97
Time Analyzed	3:45 PM To 4:45 PM		
Project Description	SOUTHWEST ILLINOIS CONNECTOR HIGHWAY		

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	45	215	145	120	175	45	130	155	80	50	220	55
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			LTR		
Flow Rate, v (veh/h)	418			351			376			335		
Percent Heavy Vehicles	4			3			3			3		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20		
Initial Degree of Utilization, x	0.371			0.312			0.334			0.298		
Final Departure Headway, hd (s)	8.88			9.13			8.94			9.14		
Final Degree of Utilization, x	1.030			0.889			0.935			0.851		
Move-Up Time, m (s)	2.0			2.0			2.0			2.0		
Service Time, ts (s)	6.88			7.13			6.94			7.14		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	418			351			376			335		
Capacity	405			394			403			394		
95% Queue Length, Q ₉₅ (veh)	13.3			9.0			10.3			8.1		
Control Delay (s/veh)	83.0			52.5			60.3			46.7		
Level of Service, LOS	F			F			F			E		
Approach Delay (s/veh)	83.0			52.5			60.3			46.7		
Approach LOS	F			F			F			E		
Intersection Delay, s/veh LOS	61.8						F					

HCS7 All-Way Stop Control Report

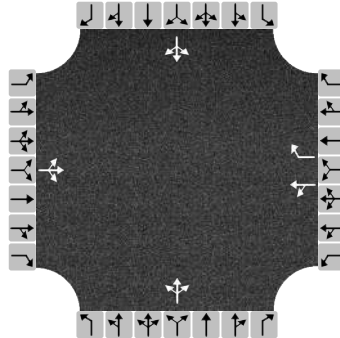
General Information

Analyst	SCI
Agency/Co.	IDOT
Date Performed	9/10/2025
Analysis Year	2025
Analysis Time Period (hrs)	0.25
Time Analyzed	3:00 PM to 4:00 PM
Project Description	SOUTHWEST ILLINOIS CONNECTOR HIGHWAY

Site Information

Intersection	IL 4 (Market S) at IL 154
Jurisdiction	IDOT
East/West Street	IL 154
North/South Street	IL 4 (Market St)
Peak Hour Factor	0.92

Lanes



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	99	102	2	30	111	106	13	128	27	101	131	94
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LTR		
Flow Rate, v (veh/h)	221			153	115		183			354		
Percent Heavy Vehicles	3			0	1		4			2		

Departure Headway and Service Time

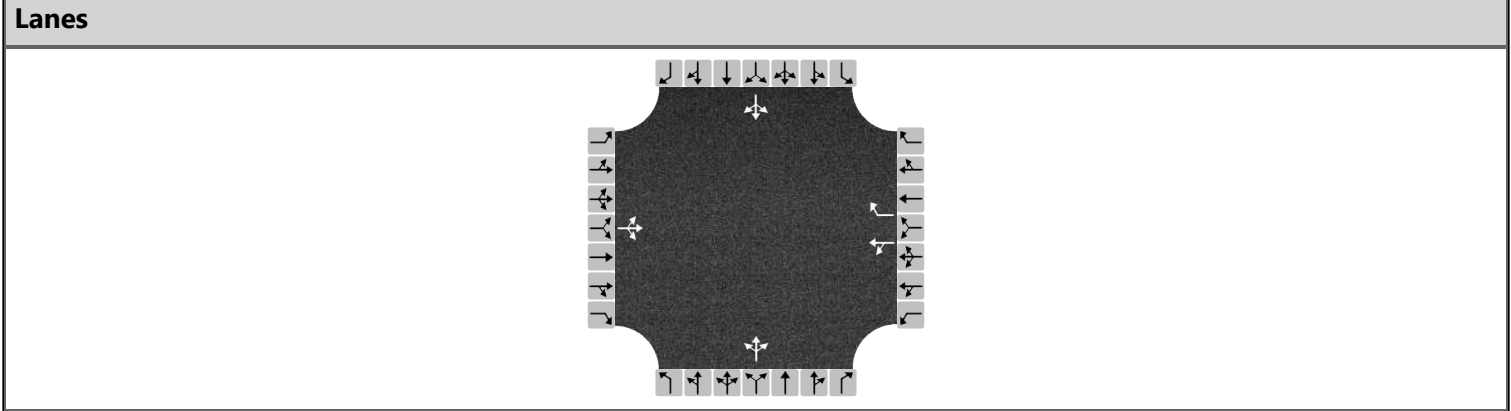
Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20		
Initial Degree of Utilization, x	0.196			0.136	0.102		0.162			0.315		
Final Departure Headway, hd (s)	6.24			6.60	5.79		6.01			5.61		
Final Degree of Utilization, x	0.382			0.281	0.185		0.305			0.552		
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.0		
Service Time, ts (s)	4.24			4.30	3.49		4.01			3.61		

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	221			153	115		183			354		
Capacity	577			545	621		599			641		
95% Queue Length, Q ₉₅ (veh)	1.8			1.1	0.7		1.3			3.4		
Control Delay (s/veh)	13.1			11.9	9.8		11.6			15.3		
Level of Service, LOS	B			B	A		B			C		
Approach Delay (s/veh)	13.1			11.0			11.6			15.3		
Approach LOS	B			B			B			C		
Intersection Delay, s/veh LOS	13.0						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	SCI	Intersection	IL 4 (Market S) at IL 154
Agency/Co.	IDOT	Jurisdiction	IDOT
Date Performed	9/10/2025	East/West Street	IL 154
Analysis Year	2050	North/South Street	IL 4 (Market St)
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	3:00 PM to 4:00 PM		
Project Description	SOUTHWEST ILLINOIS CONNECTOR HIGHWAY		



Vehicle Volume and Adjustments												
Approach	Eastbound			Westbound			Northbound			Southbound		
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Volume	115	61	9	40	125	120	20	140	35	115	145	110
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LT	R		LTR			LTR		
Flow Rate, v (veh/h)	201			179	130		212			402		
Percent Heavy Vehicles	3			0	1		4			2		

Departure Headway and Service Time												
Initial Departure Headway, hd (s)	3.20			3.20	3.20		3.20			3.20		
Initial Degree of Utilization, x	0.179			0.159	0.116		0.188			0.357		
Final Departure Headway, hd (s)	6.72			6.95	6.13		6.31			5.84		
Final Degree of Utilization, x	0.375			0.346	0.222		0.372			0.653		
Move-Up Time, m (s)	2.0			2.3	2.3		2.0			2.0		
Service Time, ts (s)	4.72			4.65	3.83		4.31			3.84		

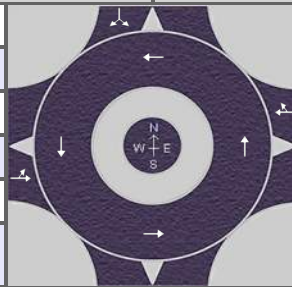
Capacity, Delay and Level of Service												
Flow Rate, v (veh/h)	201			179	130		212			402		
Capacity	536			518	588		570			616		
95% Queue Length, Q ₉₅ (veh)	1.7			1.5	0.8		1.7			4.8		
Control Delay (s/veh)	13.7			13.3	10.6		13.0			19.2		
Level of Service, LOS	B			B	B		B			C		
Approach Delay (s/veh)	13.7			12.1			13.0			19.2		
Approach LOS	B			B			B			C		
Intersection Delay, s/veh LOS	15.1						C					

HCS7 Roundabouts Report

General Information

Analyst	SCI
Agency or Co.	IDOT
Date Performed	9/10/2025
Analysis Year	2025
Time Analyzed	2:00 PM to 3:00 PM
Project Description	SOUTHWEST ILLINOIS CON...

Site Information



Intersection	IL 13 AND IL 154
E/W Street Name	IL 154
N/S Street Name	IL 13
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	IDOT

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0
Lane Assignment	LT				TR								LR			
Volume (V), veh/h	0	15	172		0		148	119					0	123		9
Percent Heavy Vehicles, %	3	3	3		3		3	3					3	3		3
Flow Rate (V_{PCE}), pc/h	0	17	193		0		166	133					0	138		10
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1								1			
Pedestrians Crossing, p/h	0				0								0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763						4.9763	
Follow-Up Headway (s)		2.6087			2.6087						2.6087	

Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		210			299						148	
Entry Volume, veh/h		204			290						144	
Circulating Flow (v_c), pc/h	138			17			348			166		
Exiting Flow (v_{ex}), pc/h	331			176			150			0		
Capacity (C_{PCE}), pc/h		1199			1356						1165	
Capacity (c), veh/h		1164			1317						1131	
v/c Ratio (x)		0.18			0.22						0.13	

Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		4.6			4.6						4.3	
Lane LOS		A			A						A	
95% Queue, veh		0.6			0.8						0.4	
Approach Delay, s/veh	4.6			4.6						4.3		
Approach LOS	A			A						A		
Intersection Delay, s/veh LOS	4.5						A					

HCS7 Roundabouts Report

General Information

Analyst	SCI
Agency or Co.	IDOT
Date Performed	9/10/2025
Analysis Year	2050
Time Analyzed	2:00 PM to 3:00 PM
Project Description	SOUTHWEST ILLINOIS CON...



Site Information

Intersection	IL 13 and IL 154
E/W Street Name	IL 154
N/S Street Name	IL 13
Analysis Time Period (hrs)	0.25
Peak Hour Factor	0.92
Jurisdiction	IDOT

Volume Adjustments and Site Characteristics

Approach	EB				WB				NB				SB			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Number of Lanes (N)	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0
Lane Assignment	LT				TR								LR			
Volume (V), veh/h	0	25	190		0		165	135					0	135		15
Percent Heavy Vehicles, %	3	3	3		3		3	3					3	3		3
Flow Rate (V_{PCE}), pc/h	0	28	213		0		185	151					0	151		17
Right-Turn Bypass	None				None				None				None			
Conflicting Lanes	1				1								1			
Pedestrians Crossing, p/h	0				0								0			

Critical and Follow-Up Headway Adjustment

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Critical Headway (s)		4.9763			4.9763						4.9763	
Follow-Up Headway (s)		2.6087			2.6087						2.6087	

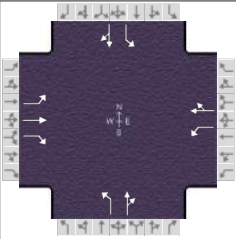
Flow Computations, Capacity and v/c Ratios

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Entry Flow (v_e), pc/h		241			336						168	
Entry Volume, veh/h		234			326						163	
Circulating Flow (v_c), pc/h	151			28			392			185		
Exiting Flow (v_{ex}), pc/h	364			202			179			0		
Capacity (C_{PCE}), pc/h		1183			1341						1143	
Capacity (c), veh/h		1149			1302						1109	
v/c Ratio (x)		0.20			0.25						0.15	

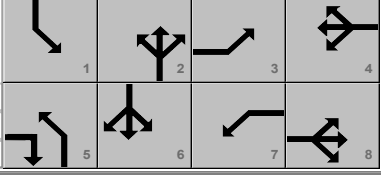
Delay and Level of Service

Approach	EB			WB			NB			SB		
Lane	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass	Left	Right	Bypass
Lane Control Delay (d), s/veh		5.0			4.9						4.5	
Lane LOS		A			A						A	
95% Queue, veh		0.8			1.0						0.5	
Approach Delay, s/veh	5.0			4.9						4.5		
Approach LOS	A			A						A		
Intersection Delay, s/veh LOS	4.9						A					

HCS7 Signalized Intersection Input Data

General Information								Intersection Information						
Agency	IDOT			Duration, h	0.250									
Analyst	SCI		Analysis Date	9/26/2025		Area Type	Other							
Jurisdiction	IDOT		Time Period	1:00 PM to 2:00 PM		PHF	0.92							
Urban Street	IL127/IL13 (Main Street)		Analysis Year	2025		Analysis Period	1 > 7:00							
Intersection	IL127/IL13 and IL154		File Name	Existing ADT-IL127-IL13 and IL154.xus										
Project Description								IL127/IL13 and IL154						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	168	127	128	201	62	70	144	99	33	111	9

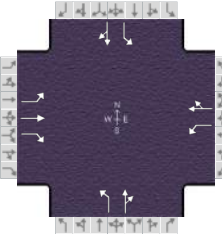
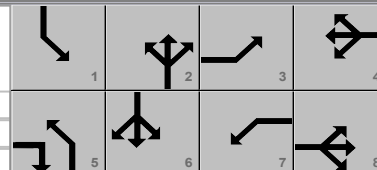
Signal Information															
Cycle, s	0.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	168	127	128	201	62	70	144	99	33	111	9
Initial Queue (Q_b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s_o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N_m), man/h	None			None			None			R 0		
Heavy Vehicles (P_{HV}), %	0	0	0	0	0		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N_b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	140	0	176	85	0		105	0		80	0	
Grade (P_g), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	30	30	30	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G_{max}) or Phase Split, s	24.0	26.0	10.0	12.0	12.0	13.0	11.0	12.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R_c), s	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
Minimum Green (G_{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk ($Walk$), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information						Intersection Information									
Agency		IDOT				Duration, h		0.250							
Analyst		SCI		Analysis Date		9/26/2025		Area Type			Other				
Jurisdiction		IDOT		Time Period		1:00 PM to 2:00 PM		PHF			0.92				
Urban Street		IL127/IL13 (Main Street)		Analysis Year		2025		Analysis Period			1> 7:00				
Intersection		IL127/IL13 and IL154		File Name		Existing ADT-IL127-IL13 and IL154.xus									
Project Description		IL127/IL13 and IL154													
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				31	168	127	128	201	62	70	144	99	33	111	9
Signal Information															
Cycle, s	0.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
				Green	0.0	0.0	0.0	0.0	0.0	0.0					
				Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
				Red	0.0	0.0	0.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				3	8	7	4	5	2	1	6				
Case Number				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Phase Duration, s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Change Period, (Y+R c), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Max Allow Headway (MAH), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Queue Clearance Time (g s), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Green Extension Time (g e), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Phase Call Probability				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Max Out Probability				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	7	4	14	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				0	0	0	0	0		0	0		0	0	
Adjusted Saturation Flow Rate (s), veh/h/ln				0	0	0	0	0		0	0		0	0	
Queue Service Time (g s), s				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Cycle Queue Clearance Time (g c), s				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Green Ratio (g/C)															
Capacity (c), veh/h				0	0	0	0	0		0	0		0	0	
Volume-to-Capacity Ratio (X)				0.000	0.000	0.000	0.000	0.000		0.000	0.000		0.000	0.000	
Back of Queue (Q), ft/ln (95 th percentile)				0	0	0	0	0		0	0		0	0	
Back of Queue (Q), veh/ln (95 th percentile)				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d 1), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Incremental Delay (d 2), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Initial Queue Delay (d 3), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service (LOS)															
Approach Delay, s/veh / LOS				0.0			0.0			0.0			0.0		
Intersection Delay, s/veh / LOS				0.0					A						
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				0.00		A	0.00		A	0.00		A	0.00		A
Bicycle LOS Score / LOS				0.00		A	0.00		A	0.00		A	0.00		A

HCS7 Signalized Intersection Intermediate Values

General Information						Intersection Information							
Agency	IDOT			Duration, h	0.250								
Analyst	SCI	Analysis Date	9/26/2025	Area Type	Other								
Jurisdiction	IDOT	Time Period	1:00 PM to 2:00 PM	PHF	0.92								
Urban Street	IL127/IL13 (Main Street)	Analysis Year	2025	Analysis Period	1 > 7:00								
Intersection	IL127/IL13 and IL154	File Name	Existing ADT-IL127-IL13 and IL154.xus										
Project Description						IL127/IL13 and IL154							

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	168	127	128	201	62	70	144	99	33	111	9

Signal Information													
Cycle, s	0.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	0.0	0.0	0.0	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0			

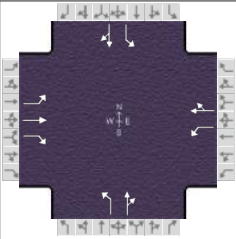
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)												
Heavy Vehicles and Grade Factor (f_{HVg})												
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)												
Lane Utilization Adjustment Factor (f_{LU})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Work Zone Adjustment Factor (f_{WZ})												
DDI Factor (f_{DDI})												
Movement Saturation Flow Rate (s), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incremental Delay Factor (k)	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (g/C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln	0	0	0	0	0	0	0	0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Protected Right Saturation Flow (s_R), veh/h/ln	0	0	0	0	0	0	0	0
Protected Right Effective Green Time (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal	EB	WB	NB	SB
Pedestrian F_w / F_v	0.000	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.000	0.000	0.000
Pedestrian M_{corner} / M_{cw}		0.00		0.00
Bicycle c_b / d_b	0.00	0.00	0.00	0.00
Bicycle F_w / F_v	0.00	0.00	0.00	0.00

HCS7 Signalized Intersection Results Graphical Summary

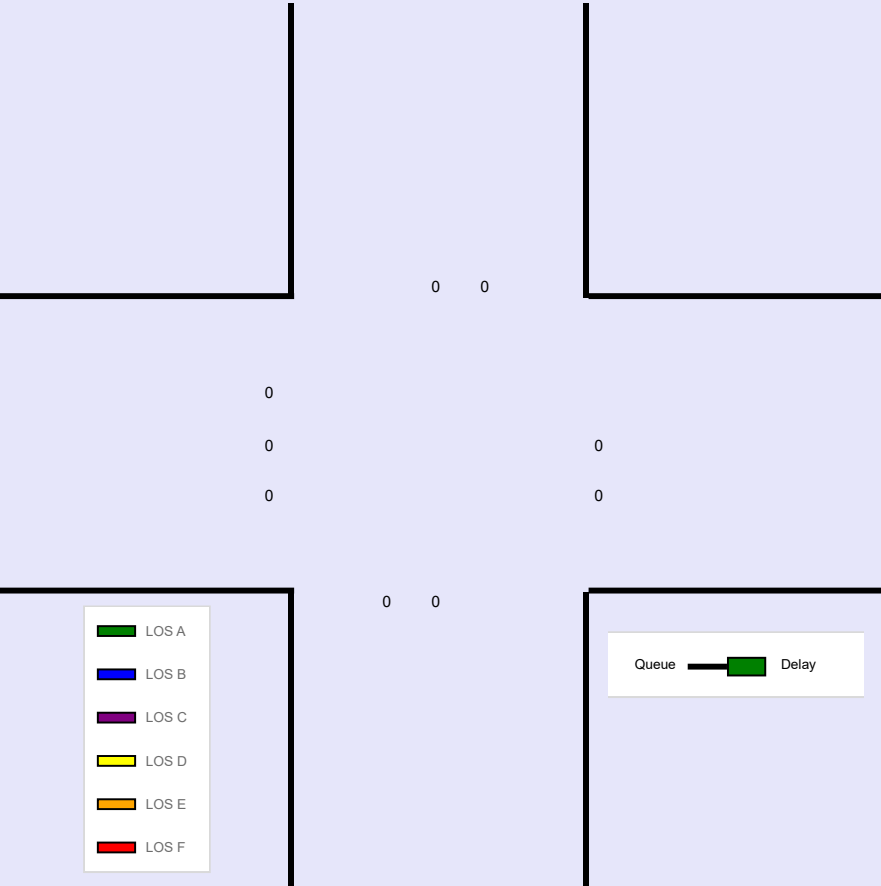
General Information				Intersection Information		
Agency	IDOT			Duration, h	0.250	
Analyst	SCI	Analysis Date	9/26/2025	Area Type	Other	
Jurisdiction	IDOT	Time Period	1:00 PM to 2:00 PM	PHF	0.92	
Urban Street	IL127/IL13 (Main Street)	Analysis Year	2025	Analysis Period	1 > 7:00	
Intersection	IL127/IL13 and IL154	File Name	Existing ADT-IL127-IL13 and IL154.xus			
Project Description	IL127/IL13 and IL154					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	31	168	127	128	201	62	70	144	99	33	111	9

Signal Information													
Cycle, s	0.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0			
				Red	0.0	0.0	0.0	0.0	0.0	0.0			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (Q), ft/ln (95 th percentile)	0	0	0	0	0		0	0		0	0	
Back of Queue (Q), veh/ln (95 th percentile)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service (LOS)												
Approach Delay, s/veh / LOS	0.0			0.0			0.0			0.0		
Intersection Delay, s/veh / LOS	0.0						A					



HCS7 Signalized Intersection Input Data

General Information								Intersection Information						
Agency	IDOT			Duration, h	0.250									
Analyst	SCI	Analysis Date	9/26/2025	Area Type	Other									
Jurisdiction	IDOT	Time Period	1:00 PM to 2:00 PM	PHF	0.92									
Urban Street	IL127/IL13 (Main Street)		Analysis Year	2050	Analysis Period	1> 7:00								
Intersection	IL127/IL13 and IL154		File Name	2050 No Build-IL127-IL13 and IL154.xus										
Project Description								IL127/IL13 and IL154						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	180	140	140	215	70	80	160	105	40	120	15

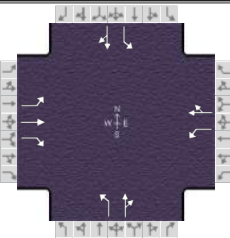
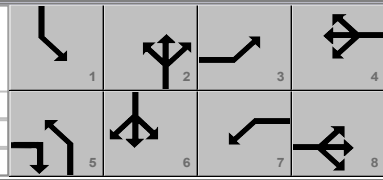
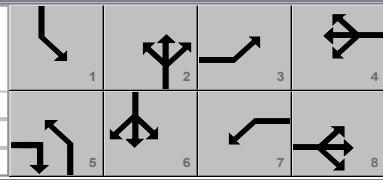
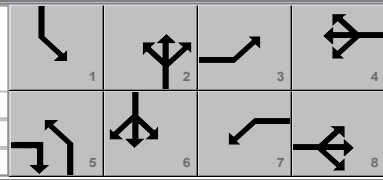
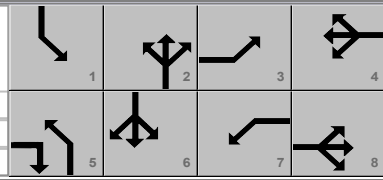
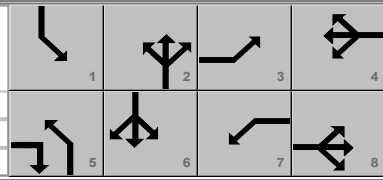
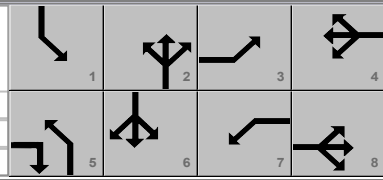
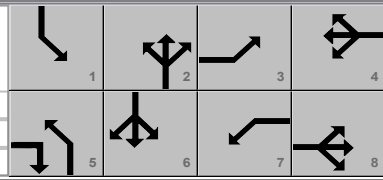
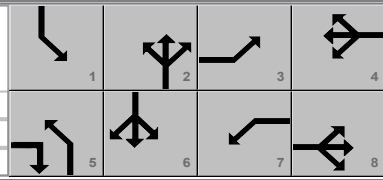
Signal Information															
Cycle, s	0.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	180	140	140	215	70	80	160	105	40	120	15
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s _o), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			R 0		
Heavy Vehicles (P _{HV}), %	0	0	0	0	0		0	0		0	0	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	140	0	176	85	0		105	0		80	0	
Grade (P _g), %		0			0			0			0	
Speed Limit, mi/h	30	30	30	30	30	30	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	24.0	26.0	10.0	12.0	12.0	13.0	11.0	12.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	0.0	2.0	0.0	2.0	0.0	2.0	0.0	2.0
Minimum Green (G _{min}), s	6	6	6	6	6	6	6	6
Start-Up Lost Time (lt), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s		0.0		0.0		0.0		0.0
Pedestrian Clearance Time (PC), s		0.0		0.0		0.0		0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50		No	0.50		No	0.50		No	0.50	

HCS7 Signalized Intersection Results Summary

General Information						Intersection Information									
Agency		IDOT				Duration, h		0.250							
Analyst		SCI		Analysis Date		9/26/2025		Area Type			Other				
Jurisdiction		IDOT		Time Period		1:00 PM to 2:00 PM		PHF			0.92				
Urban Street		IL127/IL13 (Main Street)		Analysis Year		2050		Analysis Period			1> 7:00				
Intersection		IL127/IL13 and IL154		File Name		2050 No Build-IL127-IL13 and IL154.xus									
Project Description		IL127/IL13 and IL154													
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				40	180	140	140	215	70	80	160	105	40	120	15
Signal Information															
Cycle, s	0.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				3	8	7	4	5	2	1	6				
Case Number				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Phase Duration, s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Change Period, ($Y+R_c$), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Max Allow Headway (MAH), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Queue Clearance Time (g_s), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Green Extension Time (g_e), s				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Phase Call Probability				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Max Out Probability				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3	8	18	7	4	14	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h				0	0	0	0	0		0	0		0	0	
Adjusted Saturation Flow Rate (s), veh/h/ln				0	0	0	0	0		0	0		0	0	
Queue Service Time (g_s), s				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Cycle Queue Clearance Time (g_c), s				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Green Ratio (g/C)															
Capacity (c), veh/h				0	0	0	0	0		0	0		0	0	
Volume-to-Capacity Ratio (X)				0.000	0.000	0.000	0.000	0.000		0.000	0.000		0.000	0.000	
Back of Queue (Q), ft/ln (50 th percentile)				0	0	0	0	0		0	0		0	0	
Back of Queue (Q), veh/ln (50 th percentile)				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Queue Storage Ratio (RQ) (50 th percentile)				0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Incremental Delay (d_2), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Initial Queue Delay (d_3), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service (LOS)															
Approach Delay, s/veh / LOS				0.0			0.0			0.0			0.0		
Intersection Delay, s/veh / LOS				0.0				A							
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				0.00		A	0.00		A	0.00		A	0.00		A
Bicycle LOS Score / LOS				0.00		A	0.00		A	0.00		A	0.00		A

HCS7 Signalized Intersection Intermediate Values

General Information						Intersection Information							
Agency	IDOT			Duration, h	0.250								
Analyst	SCI	Analysis Date	9/26/2025		Area Type	Other							
Jurisdiction	IDOT	Time Period	1:00 PM to 2:00 PM		PHF	0.92							
Urban Street	IL127/IL13 (Main Street)		Analysis Year	2050		Analysis Period	1 > 7:00						
Intersection	IL127/IL13 and IL154		File Name	2050 No Build-IL127-IL13 and IL154.xus									
Project Description						IL127/IL13 and IL154							

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	180	140	140	215	70	80	160	105	40	120	15

Signal Information													
Cycle, s	0.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	0.0	0.0	0.0	0.0	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0			

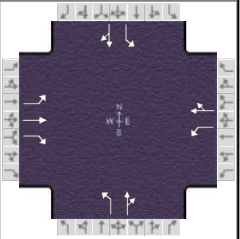
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)												
Heavy Vehicles and Grade Factor (f_{HVg})												
Parking Activity Adjustment Factor (f_p)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Bus Blockage Adjustment Factor (f_{bb})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Area Type Adjustment Factor (f_a)												
Lane Utilization Adjustment Factor (f_{LU})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Left-Turn Adjustment Factor (f_{LT})	0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000	0.000		0.000	0.000		0.000	0.000		0.000	0.000
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Work Zone Adjustment Factor (f_{WZ})												
DDI Factor (f_{DDI})												
Movement Saturation Flow Rate (s), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Proportion of Vehicles Arriving on Green (P)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Incremental Delay Factor (k)	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (g/C)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0	0	0	0	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln	0	0	0	0	0	0	0	0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Permitted Queue Service Time (g_{ps}), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Protected Right Saturation Flow (s_R), veh/h/ln	0	0	0	0	0	0	0	0
Protected Right Effective Green Time (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal	EB	WB	NB	SB
Pedestrian F_w / F_v	0.000	0.000	0.000	0.000
Pedestrian F_s / F_{delay}	0.000	0.000	0.000	0.000
Pedestrian M_{corner} / M_{cw}		0.00		0.00
Bicycle c_b / d_b	0.00	0.00	0.00	0.00
Bicycle F_w / F_v	0.00	0.00	0.00	0.00

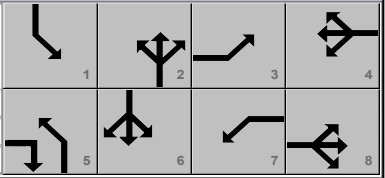
HCS7 Signalized Intersection Results Graphical Summary

General Information				Intersection Information	
Agency	IDOT			Duration, h	0.250
Analyst	SCI	Analysis Date	9/26/2025	Area Type	Other
Jurisdiction	IDOT	Time Period	1:00 PM to 2:00 PM	PHF	0.92
Urban Street	IL127/IL13 (Main Street)	Analysis Year	2050	Analysis Period	1> 7:00
Intersection	IL127/IL13 and IL154	File Name	2050 No Build-IL127-IL13 and IL154.xus		
Project Description	IL127/IL13 and IL154				

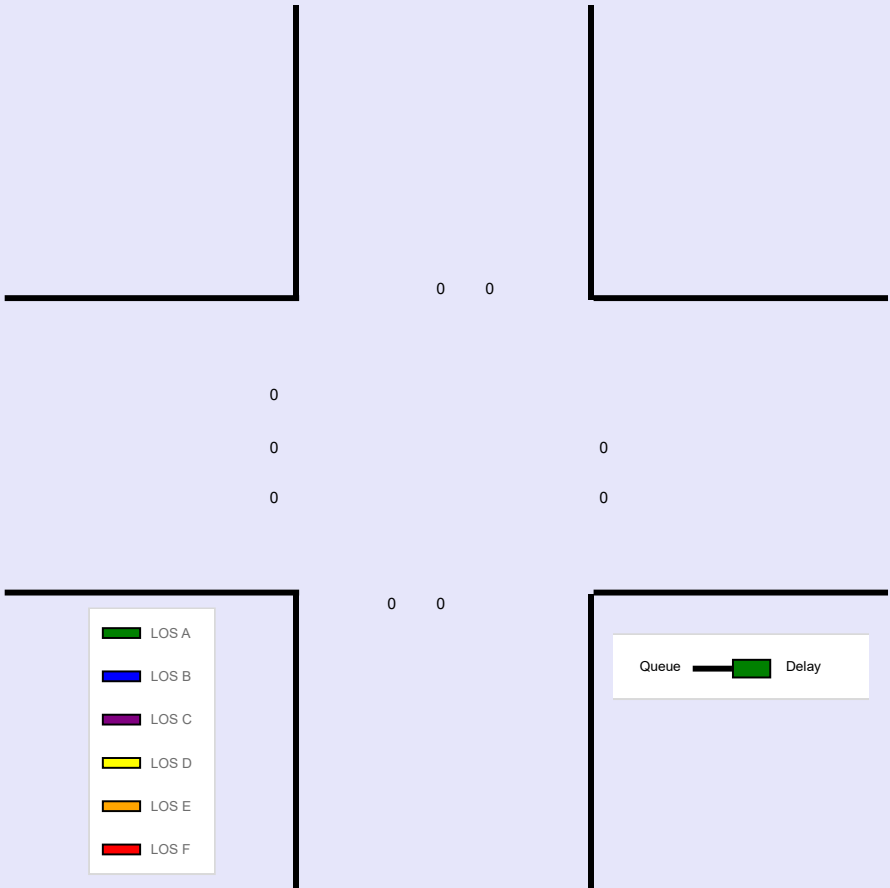


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	180	140	140	215	70	80	160	105	40	120	15

Signal Information											
Cycle, s	0.0	Reference Phase	2	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								
				Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0



Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Back of Queue (Q), ft/ln (50 th percentile)	0	0	0	0	0		0	0		0	0	
Back of Queue (Q), veh/ln (50 th percentile)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	
Control Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Level of Service (LOS)												
Approach Delay, s/veh / LOS	0.0			0.0			0.0			0.0		
Intersection Delay, s/veh / LOS	0.0						A					



HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2025
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 3 From Market Street to Kaskaskia Road	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	10560
Lane Width, ft	12	Shoulder Width, ft	4
Speed Limit, mi/h	55	Access Point Density, pts/mi	6.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	689	Opposing Demand Flow Rate, veh/h	417
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.41

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.5
Speed Slope Coefficient	3.63612	Speed Power Coefficient	0.49410
PF Slope Coefficient	-1.25892	PF Power Coefficient	0.76831
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	7.4
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	10560	-	-	56.7

Vehicle Results

Average Speed, mi/h	56.7	Percent Followers, %	61.2
Segment Travel Time, minutes	2.12	Follower Density, followers/mi/ln	7.4
Vehicle LOS	C		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	689	Bicycle Effective Width, ft	20
Bicycle LOS Score	6.49	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	7.4	C

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2050
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 3 From Market Street to Kaskaskia Road	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Zone	Length, ft	10560
Lane Width, ft	12	Shoulder Width, ft	4
Speed Limit, mi/h	55	Access Point Density, pts/mi	6.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	771	Opposing Demand Flow Rate, veh/h	463
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.45

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.5
Speed Slope Coefficient	3.64743	Speed Power Coefficient	0.48722
PF Slope Coefficient	-1.26458	PF Power Coefficient	0.76609
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	8.8
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	10560	-	-	56.5

Vehicle Results

Average Speed, mi/h	56.5	Percent Followers, %	64.5
Segment Travel Time, minutes	2.13	Follower Density, followers/mi/ln	8.8
Vehicle LOS	D		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	771	Bicycle Effective Width, ft	20
Bicycle LOS Score	6.55	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	8.8	D

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2025
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 3 From Kaskaskia Road to West of Red Bud	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	29040
Lane Width, ft	12	Shoulder Width, ft	4
Speed Limit, mi/h	55	Access Point Density, pts/mi	4.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	516	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	14.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.30

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.8
Speed Slope Coefficient	3.87759	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.36704	PF Power Coefficient	0.68266
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	5.2
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	29040	-	-	57.1

Vehicle Results

Average Speed, mi/h	57.1	Percent Followers, %	58.1
Segment Travel Time, minutes	5.78	Follower Density, followers/mi/ln	5.2
Vehicle LOS	C		

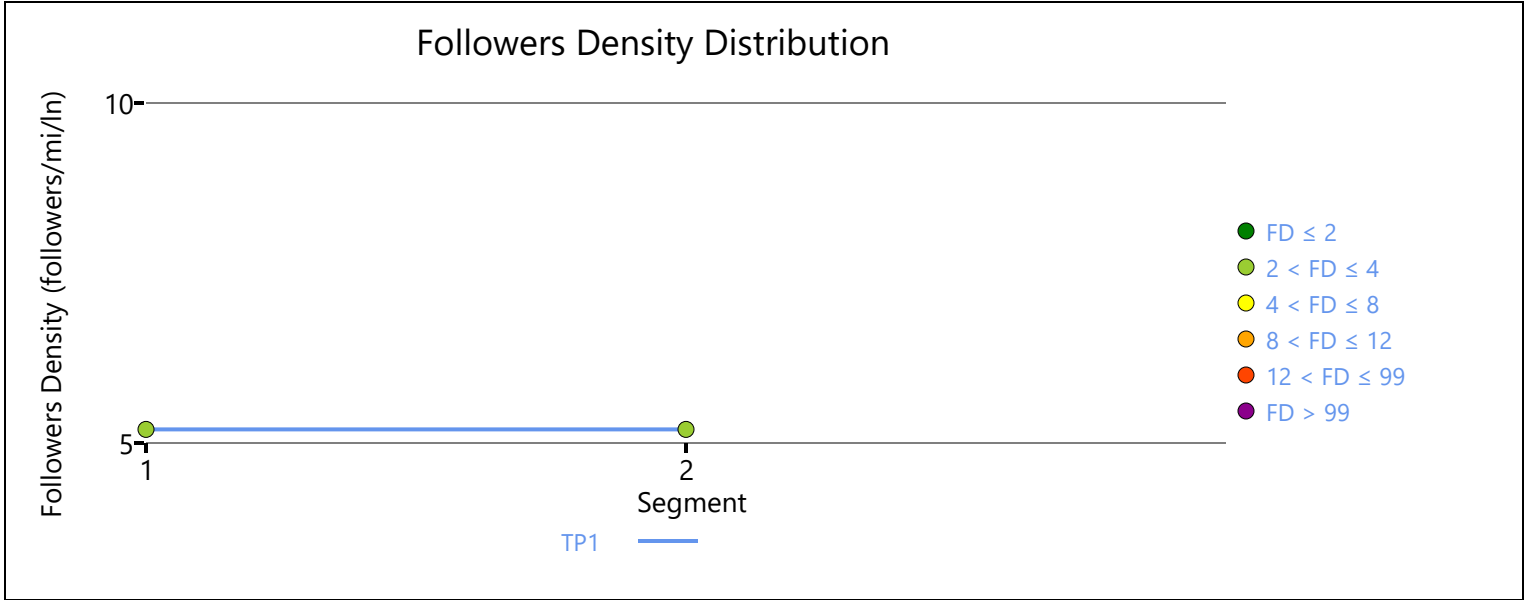
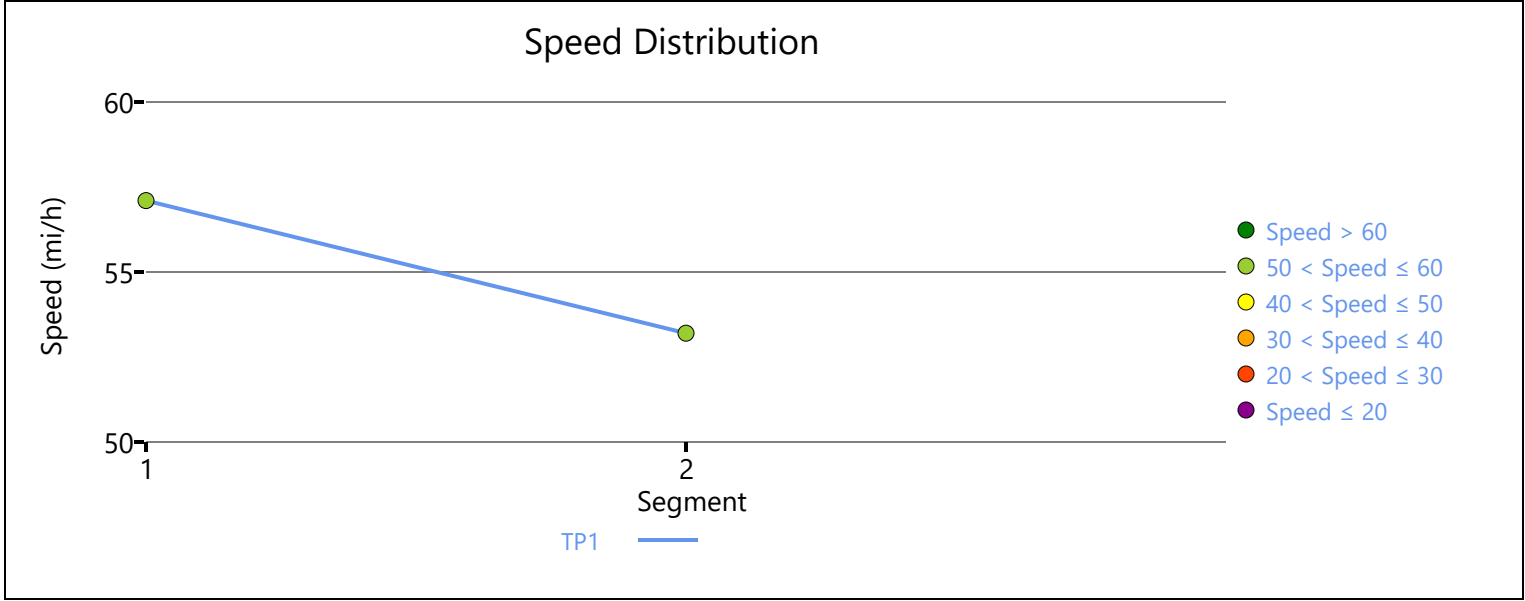
Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	516	Bicycle Effective Width, ft	20
Bicycle LOS Score	8.38	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Segment 2

Vehicle Inputs

Segment Type		Passing Zone		Length, ft		29040	
Lane Width, ft		11		Shoulder Width, ft		6	
Speed Limit, mi/h		55		Access Point Density, pts/mi		25.0	
Demand and Capacity							
Directional Demand Flow Rate, veh/h		516		Opposing Demand Flow Rate, veh/h		320	
Peak Hour Factor		0.94		Total Trucks, %		14.50	
Segment Capacity, veh/h		1700		Demand/Capacity (D/C)		0.30	
Intermediate Results							
Segment Vertical Class		1		Free-Flow Speed, mi/h		55.4	
Speed Slope Coefficient		3.38772		Speed Power Coefficient		0.51112	
PF Slope Coefficient		-1.26225		PF Power Coefficient		0.76247	
In Passing Lane Effective Length?		No		Total Segment Density, veh/mi/ln		5.2	
%Improved % Followers		0.0		% Improved Avg Speed		0.0	
Subsegment Data							
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h		
1	Tangent	29040	-	-	53.2		
Vehicle Results							
Average Speed, mi/h		53.2		Percent Followers, %		53.3	
Segment Travel Time, minutes		6.20		Follower Density, followers/mi/ln		5.2	
Vehicle LOS		C					
Bicycle Results							
Percent Occupied Parking		0		Pavement Condition Rating		4	
Flow Rate Outside Lane, veh/h		516		Bicycle Effective Width, ft		23	
Bicycle LOS Score		7.73		Bicycle Effective Speed Factor		4.79	
Bicycle LOS		F					
Facility Results							
T	Follower Density, followers/mi/ln			LOS			
1	5.2			C			



HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2050
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 3 From Kaskaskia Road to West of Red Bud	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	29040
Lane Width, ft	12	Shoulder Width, ft	4
Speed Limit, mi/h	55	Access Point Density, pts/mi	4.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	574	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	14.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.34

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	59.8
Speed Slope Coefficient	3.87759	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.36704	PF Power Coefficient	0.68266
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	6.1
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	29040	-	-	57.0

Vehicle Results

Average Speed, mi/h	57.0	Percent Followers, %	60.8
Segment Travel Time, minutes	5.79	Follower Density, followers/mi/ln	6.1
Vehicle LOS	C		

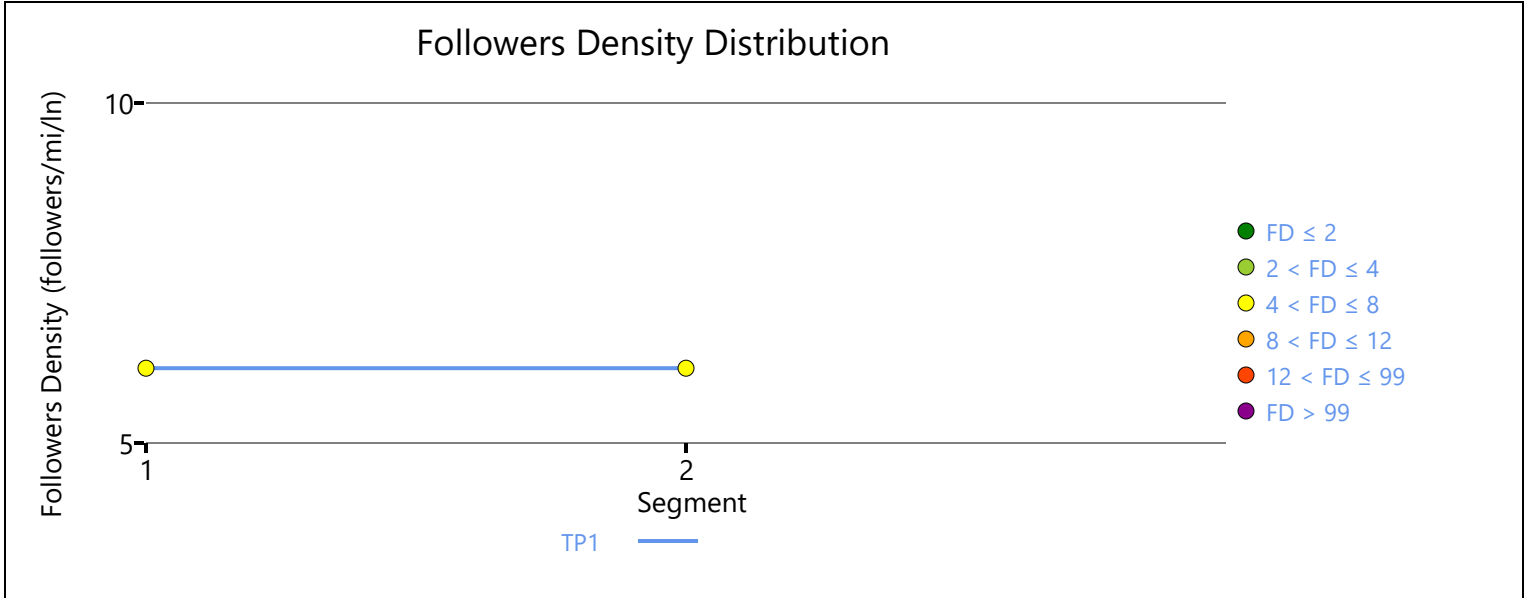
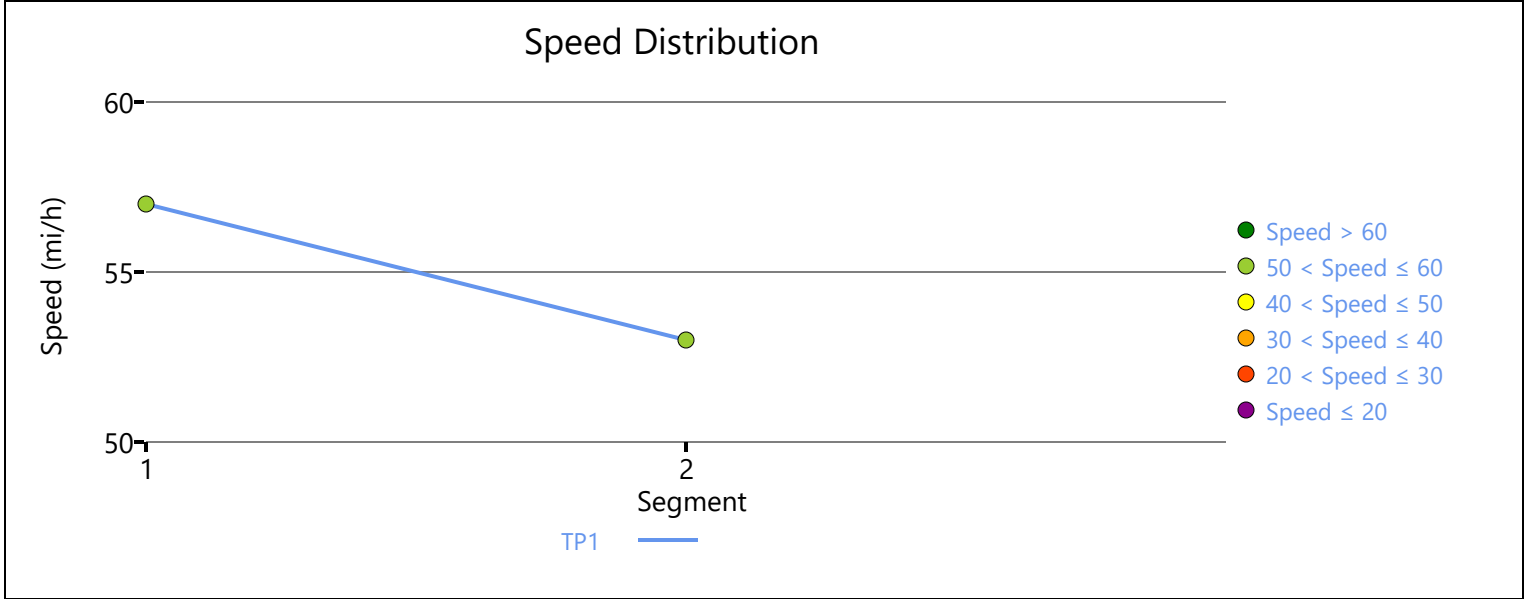
Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	574	Bicycle Effective Width, ft	20
Bicycle LOS Score	8.43	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Segment 2

Vehicle Inputs

Segment Type		Passing Zone		Length, ft		29040	
Lane Width, ft		11		Shoulder Width, ft		6	
Speed Limit, mi/h		55		Access Point Density, pts/mi		25.0	
Demand and Capacity							
Directional Demand Flow Rate, veh/h		574		Opposing Demand Flow Rate, veh/h		362	
Peak Hour Factor		0.94		Total Trucks, %		14.50	
Segment Capacity, veh/h		1700		Demand/Capacity (D/C)		0.34	
Intermediate Results							
Segment Vertical Class		1		Free-Flow Speed, mi/h		55.4	
Speed Slope Coefficient		3.39937		Speed Power Coefficient		0.50336	
PF Slope Coefficient		-1.26935		PF Power Coefficient		0.76019	
In Passing Lane Effective Length?		No		Total Segment Density, veh/mi/ln		6.1	
%Improved % Followers		0.0		% Improved Avg Speed		0.0	
Subsegment Data							
#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h		
1	Tangent	29040	-	-	53.0		
Vehicle Results							
Average Speed, mi/h		53.0		Percent Followers, %		56.5	
Segment Travel Time, minutes		6.22		Follower Density, followers/mi/ln		6.1	
Vehicle LOS		C					
Bicycle Results							
Percent Occupied Parking		0		Pavement Condition Rating		4	
Flow Rate Outside Lane, veh/h		574		Bicycle Effective Width, ft		23	
Bicycle LOS Score		7.79		Bicycle Effective Speed Factor		4.79	
Bicycle LOS		F					
Facility Results							
T	Follower Density, followers/mi/ln			LOS			
1	6.1			C			



HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2025
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 154 from East of Red Bud to West of Sparta	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	92045
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	2.5

Demand and Capacity

Directional Demand Flow Rate, veh/h	160	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	4.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.09

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.7
Speed Slope Coefficient	3.76420	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.38630	PF Power Coefficient	0.67614
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	0.9
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	92045	-	-	56.6

Vehicle Results

Average Speed, mi/h	56.6	Percent Followers, %	33.0
Segment Travel Time, minutes	18.49	Follower Density, followers/mi/ln	0.9
Vehicle LOS	A		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	160	Bicycle Effective Width, ft	15
Bicycle LOS Score	4.71	Bicycle Effective Speed Factor	4.79
Bicycle LOS	E		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	0.9	A

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2050
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 154 from East of Red Bud to West of Sparta	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	92045
Lane Width, ft	12	Shoulder Width, ft	4
Speed Limit, mi/h	55	Access Point Density, pts/mi	2.5

Demand and Capacity

Directional Demand Flow Rate, veh/h	176	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	4.50
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.10

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	60.5
Speed Slope Coefficient	3.91596	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.36198	PF Power Coefficient	0.68294
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	1.0
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	92045	-	-	59.2

Vehicle Results

Average Speed, mi/h	59.2	Percent Followers, %	34.0
Segment Travel Time, minutes	17.67	Follower Density, followers/mi/ln	1.0
Vehicle LOS	A		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	176	Bicycle Effective Width, ft	20
Bicycle LOS Score	3.88	Bicycle Effective Speed Factor	4.79
Bicycle LOS	D		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	1.0	A

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2025
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 154 from East of Sparta to West of Pinckneyville	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	95250
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	3.7

Demand and Capacity

Directional Demand Flow Rate, veh/h	171	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.10

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.2
Speed Slope Coefficient	3.73802	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.38957	PF Power Coefficient	0.67571
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	1.1
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	95250	-	-	56.0

Vehicle Results

Average Speed, mi/h	56.0	Percent Followers, %	34.4
Segment Travel Time, minutes	19.33	Follower Density, followers/mi/ln	1.1
Vehicle LOS	A		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	171	Bicycle Effective Width, ft	12
Bicycle LOS Score	7.07	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	1.1	A

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/13/2026
Agency	IDOT	Analysis Year	2050
Jurisdiction	IDOT	Time Analyzed	
Project Description	IL 154 from East of Sparta to West of Pinckneyville	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	95250
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	3.7

Demand and Capacity

Directional Demand Flow Rate, veh/h	186	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.11

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	57.2
Speed Slope Coefficient	3.73802	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.38957	PF Power Coefficient	0.67571
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	1.2
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	95250	-	-	55.9

Vehicle Results

Average Speed, mi/h	55.9	Percent Followers, %	36.0
Segment Travel Time, minutes	19.36	Follower Density, followers/mi/ln	1.2
Vehicle LOS	A		

Bicycle Results

Percent Occupied Parking	0	Pavement Condition Rating	4
Flow Rate Outside Lane, veh/h	186	Bicycle Effective Width, ft	12
Bicycle LOS Score	7.11	Bicycle Effective Speed Factor	4.79
Bicycle LOS	F		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	1.2	A

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2025
Jurisdiction	IDOT	Time Analyzed	
Project Description	13/IL127 From South of Pinckneyville to North of Murphysboro	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	85600
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	305	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.18

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.4
Speed Slope Coefficient	3.69330	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.39621	PF Power Coefficient	0.67364
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	2.6
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	85600	-	-	54.5

Vehicle Results

Average Speed, mi/h	54.5	Percent Followers, %	46.6
Segment Travel Time, minutes	17.85	Follower Density, followers/mi/ln	2.6
Vehicle LOS	B		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	2.6	B

HCS7 Two-Lane Highway Report

Project Information

Analyst	SCI	Date	1/7/2026
Agency	IDOT	Analysis Year	2050
Jurisdiction	IDOT	Time Analyzed	
Project Description	13/IL127 From South of Pinckneyville to North of Murphysboro	Units	U.S. Customary

Segment 1

Vehicle Inputs

Segment Type	Passing Constrained	Length, ft	85600
Lane Width, ft	12	Shoulder Width, ft	0
Speed Limit, mi/h	55	Access Point Density, pts/mi	7.0

Demand and Capacity

Directional Demand Flow Rate, veh/h	324	Opposing Demand Flow Rate, veh/h	-
Peak Hour Factor	0.94	Total Trucks, %	10.00
Segment Capacity, veh/h	1700	Demand/Capacity (D/C)	0.19

Intermediate Results

Segment Vertical Class	1	Free-Flow Speed, mi/h	56.4
Speed Slope Coefficient	3.69330	Speed Power Coefficient	0.41674
PF Slope Coefficient	-1.39621	PF Power Coefficient	0.67364
In Passing Lane Effective Length?	No	Total Segment Density, veh/mi/ln	2.9
%Improved % Followers	0.0	% Improved Avg Speed	0.0

Subsegment Data

#	Segment Type	Length, ft	Radius, ft	Superelevation, %	Average Speed, mi/h
1	Tangent	85600	-	-	54.4

Vehicle Results

Average Speed, mi/h	54.4	Percent Followers, %	48.0
Segment Travel Time, minutes	17.87	Follower Density, followers/mi/ln	2.9
Vehicle LOS	B		

Facility Results

T	Follower Density, followers/mi/ln	LOS
1	2.9	B