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Route 47 Conceptual Study
MoDOT No. J6P3661
Franklin County, Missouri

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1. Project Overview

1.1 Project Background

Missouri Departments of Transportation's (MoDOT) Missouri Route 47 (Route 47) is located on the east side of Missouri. **Figure 1** shows the project location in the state. The 12.7 mile study limits are from Route 100, at the northern end, and Interstate 44, at the south end. The study corridor is in Franklin County, Missouri and traverses through the cities of Washington, Union and St. Clair.

Route 47 is characterized by traffic congestion and safety concerns that are expected to worsen as the corridor continues to see an increase in traffic growth. The corridor has sharp curves and sight distance issues that fail to meet modern design criteria. Aging infrastructure is also a concern, with portions of this corridor being built over 60 years ago. MoDOT has allocated approximately $76.1 million for construction of safety and mobility related improvements along the corridor through the Statewide Transportation Improvement Program 2026-2030 (STIP).

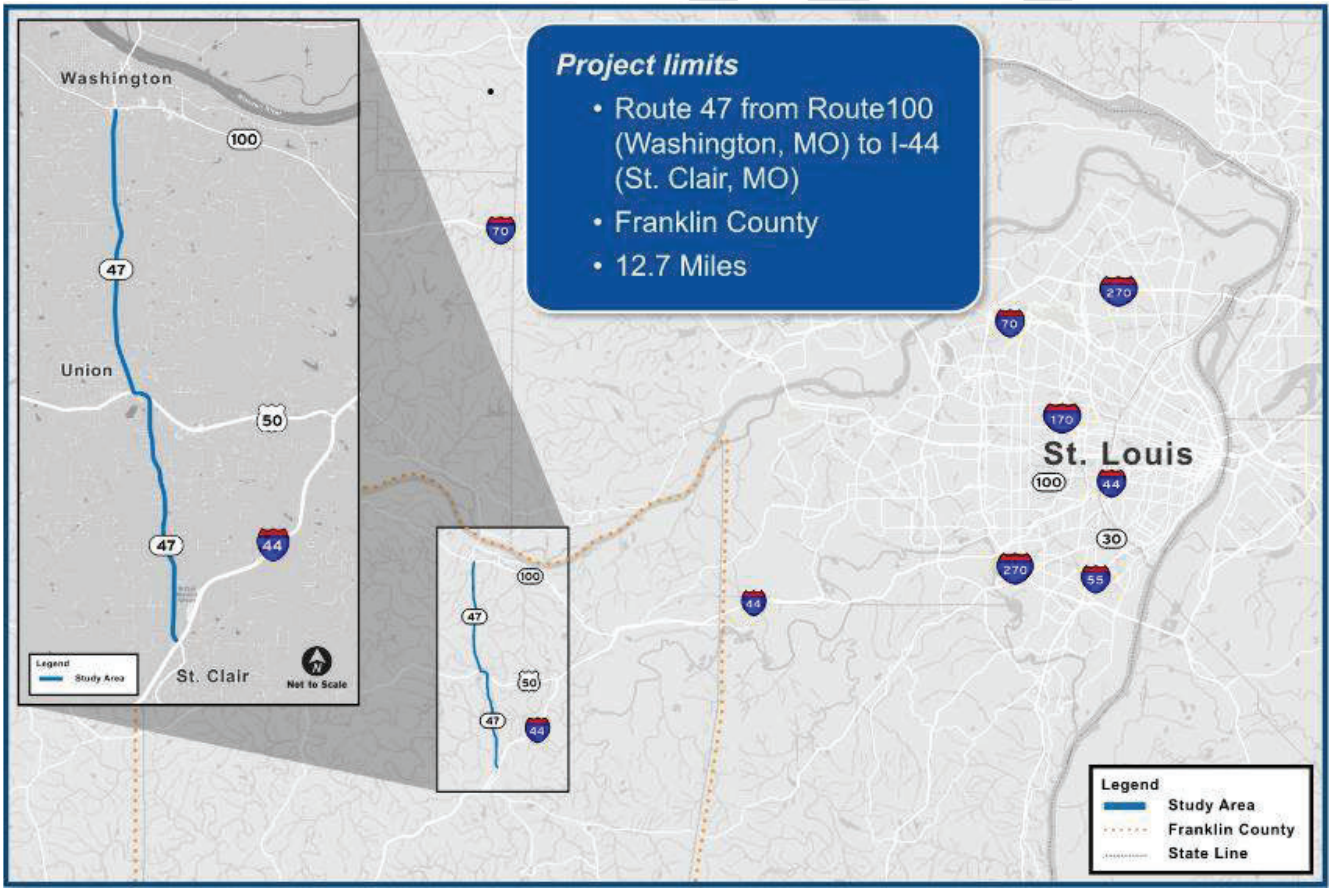

Figure 1: Project Location

1.2 Project Purpose and Goals

The purpose of this conceptual study is to analyze existing and future capacity and access management needs, assess existing infrastructure conditions, seek stakeholder input and identify areas of improvement for safety and mobility for all road users. Identifying these issues and needs will allow for improvements to meet projects goals within the construction budget, while allowing for identification of additional improvements in excess of the budget. Identification of needs will allow for an increase in safety and reduction in congestion along the corridor and increase reliability for north-south regional travel for all users.

The project team established study goals based upon stakeholder input to develop solutions that meet the needs of the community. The goals include:

- Increase safety
- Reduce congestion
- Balance needs for local access, mobility, and economic growth
- Increase reliability of north-south regional travel

2. Design Criteria

2.1 Traffic Design Criteria

Traffic growth data sources are utilized to develop traffic growth rates within the study area. These sources include historic AADT MoDOT Traffic Volume Maps, Franklin County historic population trends and the East-West Gateway Travel Demand Model. **Appendix A** is attached and provides a more complete summary of the traffic forecasting methodology used in developing traffic growth rates for this study. **Table 1** contains a summary of these findings.

Table 1: Traffic Design Criteria

ADT Counts (Base Year 2024)	= 13,000 vpd – 40,000 vpd
ADT Recommended (Design Year 2050)	= 15,000 vpd – 48,000 vpd
AAGR (Average Annual Growth Rate)	= 0.50% – 0.75%
Posted/Design Speed	= 45 mph - Route 100 to Norwood Trailer Court; Happy Sac Road to I-44 Interchange
Posted/Design Speed	= 55 mph - Norwood Trailer Court to Independence Drive; U.S. 50 east intersection to Happy Sac Road

Traffic analysis observes existing and predicts future traffic operations within the corridor, which are defined by the level of service (LOS). **Table 2** defines the level of service based on delay observed at the intersection, which is dependent on the intersection control type. An acceptable

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LOS is considered to be an LOS D or better. Future no-build and build design year is 2050 for this study.

Table 2: LOS Design Criteria

LOS	Signalized Intersection Delay (seconds / vehicle)	Unsignalized Intersection Delay (seconds / vehicle)	Roundabout Delay (seconds / vehicle)
A	≤10	≤10	≤10
B	>10–20	>10–15	>10–15
C	>20–35	>15–25	>15–25
D	>35–55	>25–35	>25–35
E	>55–80	>35–50	>35–50
F	>80	>50	>50

Source: Exhibits 19-8, 20-2, and 22-8, Highway Capacity Manual, 7th Edition (Transportation Research Board, 2022).

2.2 Proposed Roadway Design Criteria

Proposed conceptual alternatives for the Route 47 Conceptual Study are guided by the controlling design criteria which can be referred to in **Appendix G**. Roadways within this corridor are categorized in accordance with the current Functional Classification System. The controlling design criteria guides design of typical sections, horizontal curvatures, and vertical alignments and clearances by each roadway's functional classification.

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3. Existing Conditions & Future No-Build Analysis

For the purpose of this study, the Route 47 corridor is split into five segments to better analyze project needs. **Figure 2** shows the five study segments.

Figure 2: Project Corridor Segmentation

- **Segment 1 (yellow)**: Route 100 to S of Proposed East-West Parkway
- **Segment 2 (green)**: S of Proposed East-West Parkway to North of Independence Drive
- **Segment 3 (orange)**: North of Independence Drive to Route 47/Route 50 (East Intersection)
- **Segment 4 (blue)**: Route 47/Route 50 (East Intersection) to N of College Road
- **Segment 5 (purple)**: N of College Road to I-44 Interchange

The following sections will provide a summary of existing, future no-build and future build for the recommended alternative by discipline. More detailed information of each discipline can be found in the appendix.

3.1 Segment 1: Route 100 to Proposed East-West Parkway

Segment 1 is roughly 0.7 miles of roadway beginning at the northern end of the corridor at Route 100, as shown in **Figure 3**. The southern end of this segment is the location of the Proposed East-West Parkway. Route 47 intersections included in the analysis of Segment 1 include:

- Route 100
- Washington Crossing / Washington Square
- Steutermann Road / Bieker Road

Figure 3: Segment 1 Corridor Map

3.1.1 Roadway Assessment

3.1.1.1 Existing Conditions

Near the southern end of the segment, at Route 47 and Norwood Trailer Court, is a substandard horizontal curve due to the superelevation exceeding the maximum. Immediately south of the Steutermann/Bieker Road intersection, Route 47 consists of a vertical alignment that does not meet current design standards due to a sag curve. Substandard taper lane lengths exist on Route 47 north and south of the Steutermann/Bieker Road intersections. Additionally, traffic turning southbound from Norwood Trailer Court encounter deficient intersection sight distances (ISD). For a more detailed roadway assessment, refer to **Appendix B.** Four existing should sections are within Segment 1. Of these, one is found to be deficient, with a current shoulder width of less than 4 feet. Refer to **Appendix D** for an existing shoulder width exhibit and further design considerations.

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3.1.2 Traffic Analysis

3.1.2.1 Existing Conditions

All three intersections that are analyzed within Segment 1 are signal controlled. The speed limit between Route 100 and the proposed East-West Parkway, located approximately at the Washington city limits is 45 mph. Existing operations conclude that the intersections at Washington Crossing/Square and Steutermann/Bieker Road operate at Level of Service (LOS) D in the PM peak hour, while Route 100 operates at an LOS E. Route 100 and Steutermann/Bieker Rd operate at and LOS D in the AM peak hour, while Washington Crossing/Square operates at an LOS B. Some movements within these intersections operate at levels as low as an LOS F. The 95th percentile queue for the eastbound through movement at Route 100 exceeds capacity in the PM peak hour. Additionally, the southbound through movement at Steutermann/Bieker Rd exceeds capacity and is metered by an upstream signal during the PM peak hour. A detailed existing conditions traffic memorandum can be found in **Appendix C**.

3.1.2.2 Future No-Build Analysis

3.1.3 Safety Analysis

3.1.3.1 Existing Conditions

The intersection of Route 100 observed the most crashes within this segment. Of the total 286 intersection crashes from 2019 to 2023, 186 (67%) occurred at Route 100. About 48 (17%) of total crashes reported within this segment resulted in injuries, with three serious injury crashes and no fatal crashes and the remaining 238 (83%) being property damage only (PDO). Most crashes (59%) occurring in this segment are a result of a rear end, with 40% happening in the late afternoon into the evening. These crashes can be attributed to high traffic volumes, lack of turning bays/lanes, high driving speeds and sight distance issues at curves.

3.1.3.2 Future No-Build Analysis

As traffic volumes increase and no roadway improvements are made, crashes along these intersections are likely to increase at the intersections of Route 100, Washington Crossing and Steutermann Road. **Appendix B** provides a detailed report of existing and future no-build crash and safety analysis throughout the entirety of the corridor.

3.1.4 Environmental and Cultural Assessment

3.1.4.1 Existing Conditions

Eight community resources are located within this segment. Three of these resources are located directly adjacent to Route 47 and are bolded below. Resources that are not bolded represent locations within a quarter of a mile of Route 47 that do not sit adjacent to the roadway. The community resources within the study area include:

- The Sage Bee Prep Academy - 1901 Heritage Hills Drive
- **Little Rascals Preschool – 901 Bieker Road**
- Ms. Rosie's Little Achievers – 5632 Steutermann Road
- Peace Lutheran Church – 5 Scenic Drive

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- Bridge to Faith Lutheran Church – 1008 Bieker Road
- **Elim Romanian Pentecostal Church of Washington – 4245 State Hwy 47**
- **Total Access Urgent Care - Washington – 1717 Madison Avenue**
- Mercy-GoHealth Urgent Care – 555 Washington Square Center

There is one architectural survey previously conducted in this segment, the Washinton CBD Phase IV which was completed in 1992 and is split into two surveys. One of the surveys is located along the study area edge, approximately a half mile northwest of the northernmost point of Route 47 and Route 47. The second survey location is approximately 250 feet west of Route 47 within a parking lot, near what is currently an Applebee's.

There are no surface waters. There are potentially wetlands, including approximately 31 acres of freshwater forested/shrub wetland and two acres of freshwater pond. There are approximately 39 acres of regulatory floodway and 17 acres of 100-year floodplain within the study segment.

Potential habitat for five federally listed species are identified. These include two endangered species of the Gray Bat and Indiana Bat, one proposed endangered species of the Tricolored Bat, and two proposed threatened species of the Monarch Butterfly and Western Regal Fritillary. The study segment also contains dedicated critical habitat for the Indiana Bat.

There are no Section 4(f) resources, prime farmland, or hazardous material sites within the study area. Environmental and cultural constraints can be found in **Appendix I**.

3.1.5 Drainage Assessment

3.1.5.1 Existing Conditions

On the northern end of Segment 1 sits a high point with the intersection of Route 47 and Route 100. Stormwater flows south parallel to Route 47 along the grass ditches on either side of the roadway. The intersection of Route 47 and Steutermann/Bieker Rd is also a highpoint. Water that flows north travels parallel to Route 47 along grass ditches. The stormwater from both intersections converges at an open channel between the Washington Crossing/Square and Steutermann/Bieker Road intersections to the east of Route 47. Several manholes, inlets and open channels exist between Route 100 and Steutermann/Bieker Road to aid in drainage. **Appendix J** contains further drainage analysis, including relevant figures and supplemental information, and is attached for reference.

3.1.6 Utilities

3.1.6.1 Existing Conditions

Existing major utilities present: Ameren (12 kV / 34 kV aerial), Ameren fiber (aerial & buried), AT&T-distribution (buried fiber/copper in small duct bank; aerial copper on Ameren poles), Charter, Lumen, Sho-Me Fiber, Gateway Fiber, Spire (intermediate pressure gas mains), MoDOT (signals/lighting), City of Washington water/sewer, Washington School fiber. Most facilities are in right-of-way, and some are in utility easements. No reimbursable relocations are expected

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except for potential impacts to two Ameren poles just south of 4255 State Hwy 47. **Appendix K** contains a more detailed overview of existing utilities and details of potential utility conflicts.

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3.2 Segment 2: Proposed East-West Parkway to North of Independence Dr

Segment 2 is approximately 5.1 miles from the Proposed East-West Parkway to just north of Independence Drive as shown in **Figure 4**. Route 47 intersections included in the analysis of Segment 2 include:

- Country Club Lane
- Lost Pines
- Clearview Road

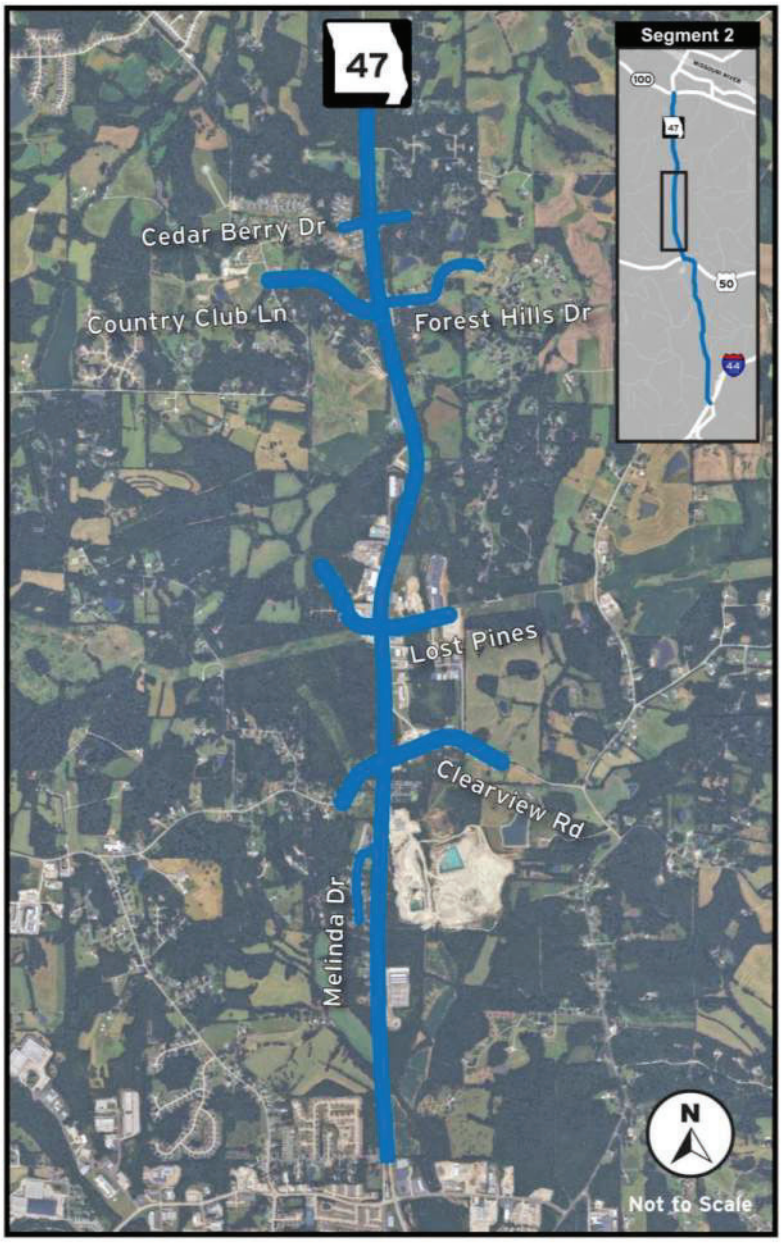

Figure 4: Segment 2 Corridor Map

3.2.1 Roadway Assessment

3.2.1.1 Existing Conditions

No substandard horizontal curves exist within Segment 2. A substandard vertical curve is identified along Route 47 approximately 1900 feet north of Independence Drive due to inadequate sight distance. At the intersection of Country Club Lane, substandard lane and taper lengths are identified in the northbound and southbound directions. Deficient left turn ISD exists at Forest Hills Drive and Melinda Drive and deficient right turn ISD is identified at the driveway east of Cedar Berry Drive, north of the Country Club Lane intersection. For a more detailed roadway assessment, refer to **Appendix B.** Ten shoulder segments are identified throughout this segment. Of the ten, four are deemed deficient due to being less than 8 feet. Refer to **Appendix D** for an existing shoulder width exhibit and further design considerations.

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3.2.2 Traffic Analysis

3.2.2.1 Existing Conditions

Intersections at Country Club Lane and Lost Pines are two-way stop-controlled (TWSC) while Clearview Road is signalized. The speed limit between the proposed East-West Parkway and north of Independence Drive is 55 mph. 2024 base year unsignalized intersection operations at Country Club Lane and Lost Pines operate at LOS F in the AM and PM peak hours. Maximum 95th percentile queues reach 83 feet in the eastbound approach in the AM peak hour at Country Club Lane and 65 feet at the eastbound approach in the PM peak hour at Lost Pines. Signalized operations at Clearview Road show LOS D in the AM peak hour and LOS B in the PM peak hour. The 95th percentile queue at Clearview Road extend approximately 650 feet in the northbound and southbound approaches and the volume exceeds capacity. A detailed existing conditions traffic memorandum can be found in **Appendix C**.

3.2.2.2 Future No-Build Analysis

3.2.3 Safety Analysis

3.2.3.1 Existing Conditions

A total of 273 crashes from 2019 to 2023 that occurred within Segment 2, with only 38 (14%) of these crashes occurring at intersections. Of the intersections located along Segment 2, Clearview Road had the highest frequency of crashes reported. The portion of Route 47 between Clearview Road and Independence had the highest number of crashes with 30 incidents occurring in 2021. Seventy-six of the total crashes resulted in injury, with two fatal, nine serious injury crashes and 197 were PDO. The majority of crashes (72%) are rear-end. Likely causes of rear end crashes are lack of turning bays/lanes, high travel speeds and long distances between traffic signals.

3.2.3.2 Future No-Build Analysis

Crashes are expected to increase in the future no-build condition at the Clearview Road intersection by nearly double. **Appendix B** provides a detailed report of existing and future no-build crash and safety analysis.

3.2.4 Environmental and Cultural Assessment

3.2.4.1 Existing Conditions

Three community resources are located within this segment, none are directly adjacent to Route 47. Resources that are not bolded represent locations within a quarter of a mile of Route 47 that do not sit adjacent to the roadway.

- Trinity Presbyterian Church – 727 Melinda Drive
- The Rock – 517 Commercial Drive
- Scenic Regional Library – Union Branch – 251 Un Plz Drive (partially within segment 3)

There are surface waters, including approximately 8,782 linear feet of Dubois Creek and associated unnamed tributaries and 5,970 linear feet of Fenton Creek and associated unnamed tributaries. There are potentially wetlands, including approximately 18 acres of freshwater

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forested/shrub wetland and 22 acres of freshwater pond. There are approximately 23 acres of regulatory floodway and 76 acres of 100-year floodplain within the study segment. There is approximately 58 acres of prime farmland.

Potential habitat for 11 federally listed species are identified. These include seven endangered species: the Gray Bat, Indiana Bat, Pink Mucket, Scaleshell Mussel, Sheepnose Mussel, Snuffbox Mussel, and Spectaclecase. There are two proposed endangered species, the Tricolored Bat and Salamander Mussel, and two proposed threatened species, the Monarch Butterfly and Western Regal Fritillary. The study area also contains dedicated critical habitat for the Indiana Bat.

There are no Section 4(f) or 6(f) resources, historical sites, or hazardous material sites within the study segment. Additional environmental and cultural constraints can be referenced in **Appendix I**.

3.2.5 Drainage Assessment

3.2.5.1 Existing Conditions

Along the west side of Route 47, parallel to A&E Storage, exists an exposed rock grass ditch connecting to a concrete open channel. This open channel drains into a culvert below Bergil Drive. The east side of the corridor drains into a grass ditch to direct stormwater to a low point wooded area. Just north of Forest Hills Drive to Lost Pines/Hi Line Drive to the south exists a series of rock cuts. North of Forest Hills Drive exists a box culvert in which stormwater from the north drains into from a ditch on the west side of Route 47. Three culverts exist north of High Line Drive. Further to the south, approximately 2,000 ft north of E. Independence Drive, sits a large box culvert that drains within Fenton Creek. **Appendix J** contains further drainage analysis, including relevant figures and supplemental information.

3.2.6 Utilities

3.2.6.1 Existing Conditions

Existing major utilities present: Ameren aerial electric; Ameren underground heavy equipment (two switchgears) at Lost Pines; Ameren transmission H-towers (138 kV / 345 kV); AT&T-d (duct bank and aerial), Charter, Sho-Me, Lumen, Spire, MoDOT, Phillips 66, Marathon, Explorer pipelines, Franklin County PWSD #1, City of Union water/sewer. Three existing pipelines along Route 47 are considered reimbursable (Phillips 66, Marathon, Explorer) though no major conflicts are anticipated in the concept plan. Up to three of the existing Ameren poles within the existing utility easement could be impacted in addition to less than 100 feet of Franklin County PWSD #1 water main on the west side of Route 47. AT&T's duct bank within a rod-wide utility easement outside the existing right-of-way could become reimbursable if significant cut grades occur outside of the right of way. The proximity of Ameren switchgear at Route 47 and Lost Pines requires coordination. **Appendix K** contains a more detailed overview of existing utilities and details of potential utility conflicts.

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3.3 Segment 3: North of Independence Dr to Route 47/Route 50 (East Int)

Segment 3 is 1.6 miles and includes U.S. 50 as shown in **Figure 5**. Route 47 intersections included in Segment 3 are:

- Independence Drive
- Dairy View Drive
- Vondera Avenue
- Central Avenue
- Old County Farm Road
- E Main Street
- US 50 West
- US 50 East

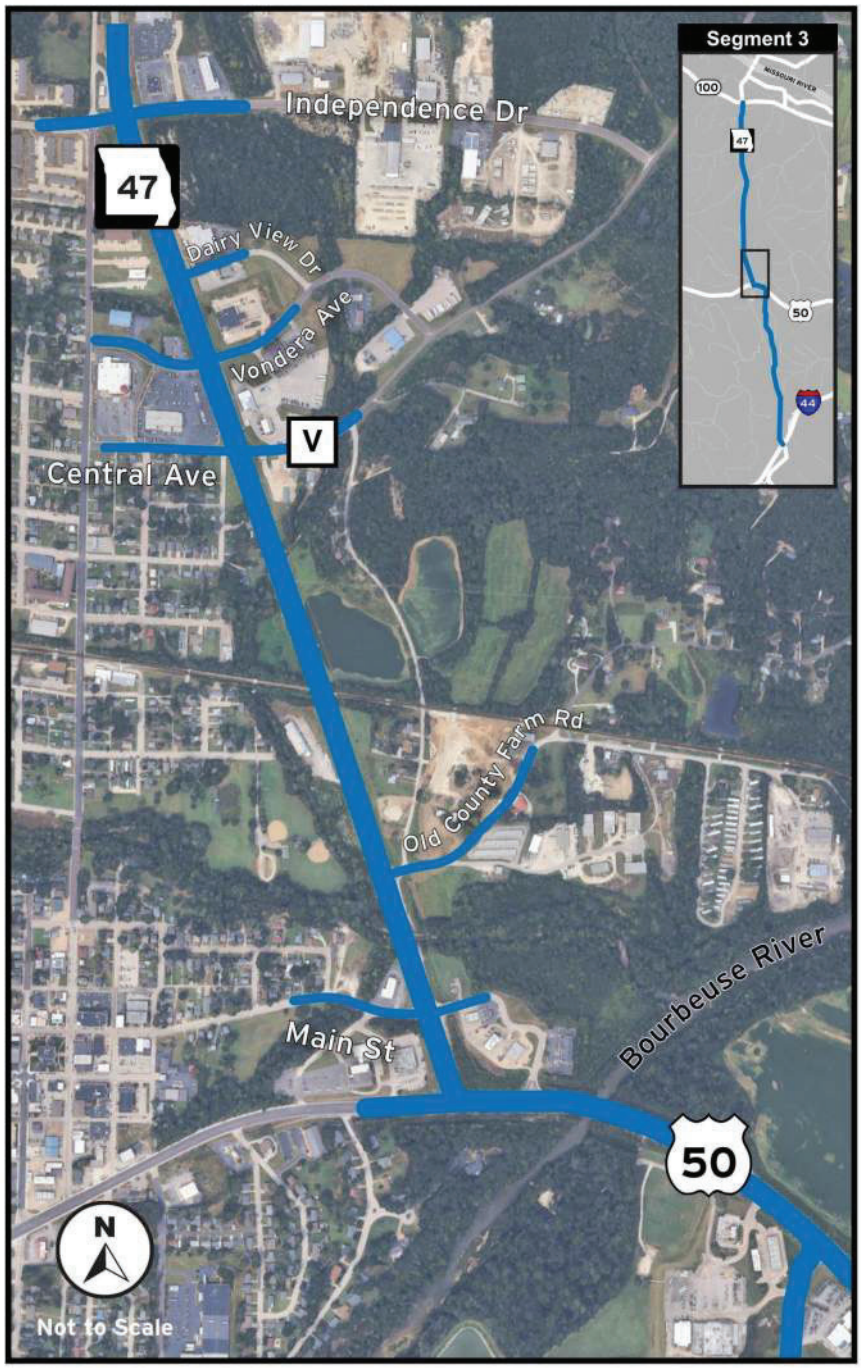

Figure 5: Segment 3 Corridor Map

3.3.1 Roadway Assessment

3.3.1.1 Existing Conditions

Route 47 at Independence Drive is identified to have an existing superelevation that exceeds the maximum. Vertical geometry within this segment is determined to be compliant with current design standards. Several substandard taper lengths and lane lengths are identified throughout this segment. Route 47 southbound north of Independence Drive has a taper length not compliant with the minimum. Route 47 southbound north of Central Avenue, north of Old County Farm Road, north of E Main Street and north of U.S. 50 all contain substandard lane length and taper lengths. Northbound Route 47 south of Independence Drive has an inadequate taper length. Route 47 northbound south of Central Avenue and south of E Main Street are identified to have substandard lane and taper lengths. Eastbound U.S. 50

(West Int) also has a taper length that does not meet minimum design criteria. For a more detailed roadway assessment, refer to **Appendix B**. Along segment 3, eight shoulder segments were identified and three of these are deficient. Should widths deemed deficient vary from being less than 4, 6 and 8 feet, with one segment (19) being a 0-foot shoulder. Refer to **Appendix D** for an existing shoulder width exhibit and further design considerations.

3.3.2 Traffic Analysis

3.3.2.1 Existing Conditions

Segment 3 contains five signalized intersections, including Independence Drive, Central Avenue, Main Street and both the east and west intersections at U.S. 50. Additionally, Vondera Avenue is TWSC and Dairy View Drive and Old County Farm Road are both stop-controlled. Signalized operations at Independence Drive reflect a LOS D in the AM peak hour and an LOS C in the PM peak hour. Both Central Ave and U.S. 50 east intersection operate at an LOS C in the AM and PM peak hours, while Main Street and U.S. 50 west intersection operate at LOS B in the AM peak hour and an LOS C in the PM peak hour. All signalized intersections show acceptable LOS with all intersections operating at LOS C or better. Unsignalized operations at Dairy View reflect LOS D in both peak hours, while Old County Farm Road operates at LOS F in both peak hours for the worst movement at each intersection. 95th percentile queues at the worst movements at Central Avenue and both the east and west intersections at U.S. 50 exceed capacity and back into the upstream intersection during the PM peak hour. A detailed existing conditions traffic memorandum can be found in **Appendix C**.

3.3.2.2 Future No-Build Analysis

3.3.3 Safety Analysis

3.3.3.1 Existing Conditions

Segment 3 contains the highest number of crashes in the Route 47 corridor with a total of 598 crashes from 2019 to 2023. Nearly 81% (484) of these occurred at intersections, with the intersection at U.S. 50 east intersection having the highest frequency of crashes. Of the 121 injury crashes, one was fatal and nine resulted in serious injury and the remaining 477 crashes were PDO. The most prominent crash type is rear-end crashes likely due to higher access density and longer traffic queues at intersections.

3.3.3.2 Future No-Build Analysis

Total crashes are likely to increase at the intersections of Independence Drive, Central Avenue, E Main Street and both U.S. 50 intersections in a future no-build condition. **Appendix B** provides a detailed report of existing and future no-build crash and safety analysis.

3.3.4 Environmental and Cultural Assessment

3.3.4.1 Existing Conditions

The following environmental constraints exist within Segment 3. Twelve community resources are located within the segment, none are directly adjacent to Route 47. Resources that are not

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bolded represent locations within a quarter of a mile of Route 47 that do not sit adjacent to the roadway.

- The CrossWalk – 409 E State Street
- First Baptist Church of Union – 801 US-50
- Immaculate Conception Catholic Church – 111 N Washington Avenue
- First Presbyterian Church – 105 E Main Street
- Grace Family Church, 600 S McKinley Avenue
- Scenic Regional Library – Union Branch – 251 Un Plz Drive (partially within segment 2)
- Union Community Center – 1329 Union Avenue
- Zion United Church of Christ Cemetery – 1122 N Washington Avenue
- Union Cemetery – 1122 N Washington Avenue
- Chiles Cemetery – 600-698 Old Country Farm Road
- Union Police Department – 119 South Church Street
- Union Fire Protection District Station 2 – 201 N Church Street

The Union Access Park is located in the study segment and is identified as a Section 4(f) resource. The park is located in the city of Union along the Bourbeuse River where Route 47 intersects with U.S. 50. There is one architectural survey previously conducted, the African-American Schools, Phase I. The survey was completed in 1999 and is located north of U.S. 50 and approximately 1,800 feet west of Route 47. Two potential hazardous material sites are present, B&S Heating & Cooling (brownfield) and Bartle Smelter Union (environmental notice).

There are surface waters, including approximately 6,594 linear feet of Bourbeuse River and associated unnamed tributaries, 5,862 linear feet of Fenton Creek, and 5,219 linear feet of Flat Creek and associated unnamed tributaries. Bourbeuse River is identified as a Section 303(d) impaired waterway. There are potentially wetlands within the study segment, including approximately 1 acre of freshwater emergent wetland, 3 acres of freshwater pond, 17 acres of lake, and 17 acres of riverine. There are approximately 129 acres of regulatory floodway and 128 acres of 100-year floodplain within the study corridor. There is approximately 5 acres of prime farmland within the study corridor.

Potential habitat for ten federally listed species is identified within the study segment. These include seven endangered species: the Gray Bat, Indiana Bat, Pink Mucket, Scaleshell Mussel, Sheepnose Mussel, Snuffbox Mussel, and Spectaclecase. There are two proposed endangered species, the Tricolored Bat and Salamander Mussel, and one proposed threatened species, the Monarch Butterfly. The study segment contains dedicated critical habitat for the Indiana Bat, Sheepnose Mussel, and Snuffbox Mussel. There is no Section 6(f) resources. Additional environmental and cultural constraints can be referenced in **Appendix I**.

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3.3.5 Drainage Assessment

3.3.5.1 Existing Conditions

The intersection at E. Independence Avenue contains a few manholes, ditches and inlets to allow for proper drainage. On the west side of the intersection, stormwater flows south into an inlet and culvert located along E. Independence Drive. Stormwater east of the intersection flows north to inlets located near the Scenic Regional Library. A Fenton Creek Federal Emergency Management Agency (FEMA) zone spans from Dairy View Drive to south of Central Avenue/Route V. Exposed rock cuts exist parallel to Route 47 on both sides of the corridor between Dairy View Drive and Vondera Avenue. Stormwater flow along these ditches to an existing box culvert which directs the flow to Fenton Creek, located on the east side of Route 47. The intersection at Vondera Avenue has a system of inlets which connect and allow for the flow of water to Fenton Creek. Central Avenue/Route V has a significant amount of existing drainage infrastructure that facilitates the movement of water to Fenton Creek.

Continuing south along Route 47, a FEMA zone can be found where Flat Creek connects with the Bourbeuse River between Old County Farm Road and U.S. 50. At the intersection of E. Main Street and Route 47 there are no existing inlets, but to the west of Route 47, there is an open-channel grass ditch which directs drainage to the parking and ultimately north toward Flat Creek. The east side contains a sanitary sewer lift pump station. The commercial development northeast of the Route 47 and Hwy 50 (West) intersection contains a significant number of inlets. A large detention basin exists between the development and the roadway and collects all the stormwater and directs it to flow east towards the Bourbeuse River. Continuing east to the Route 47 and U.S. 50 east intersection, this location is similarly located in a FEMA zone due to proximity to the Bourbeuse River. Stormwater flow is directed parallel to U.S. 50. **Appendix J** contains further drainage analysis, including relevant figures and supplemental information, and is attached for reference.

3.3.6 Utilities

3.3.6.1 Existing Conditions

Existing major utilities present: Ameren electric and fiber, AT&T-d (duct bank and aerial), Charter, Windstream, Gateway, Lumen, MCI/Verizon, Sho-Me Fiber, Spire, MoDOT, City of Union water/sewer, MoGas 10" high-pressure pipeline crossing Route 50. Up to three Ameren poles within easements may be impacted. Pothole and field investigations and close coordination with MoGas are required. **Appendix K** contains a more detailed overview of existing utilities and details of potential utility conflicts.

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3.4 Segment 4: Route 47/Route 50 (East Int) to College Rd

Segment 4 is a rural portion spanning 1.8 miles south of U.S. 50 as shown in **Figure 6**. No major intersections were analyzed within this segment.

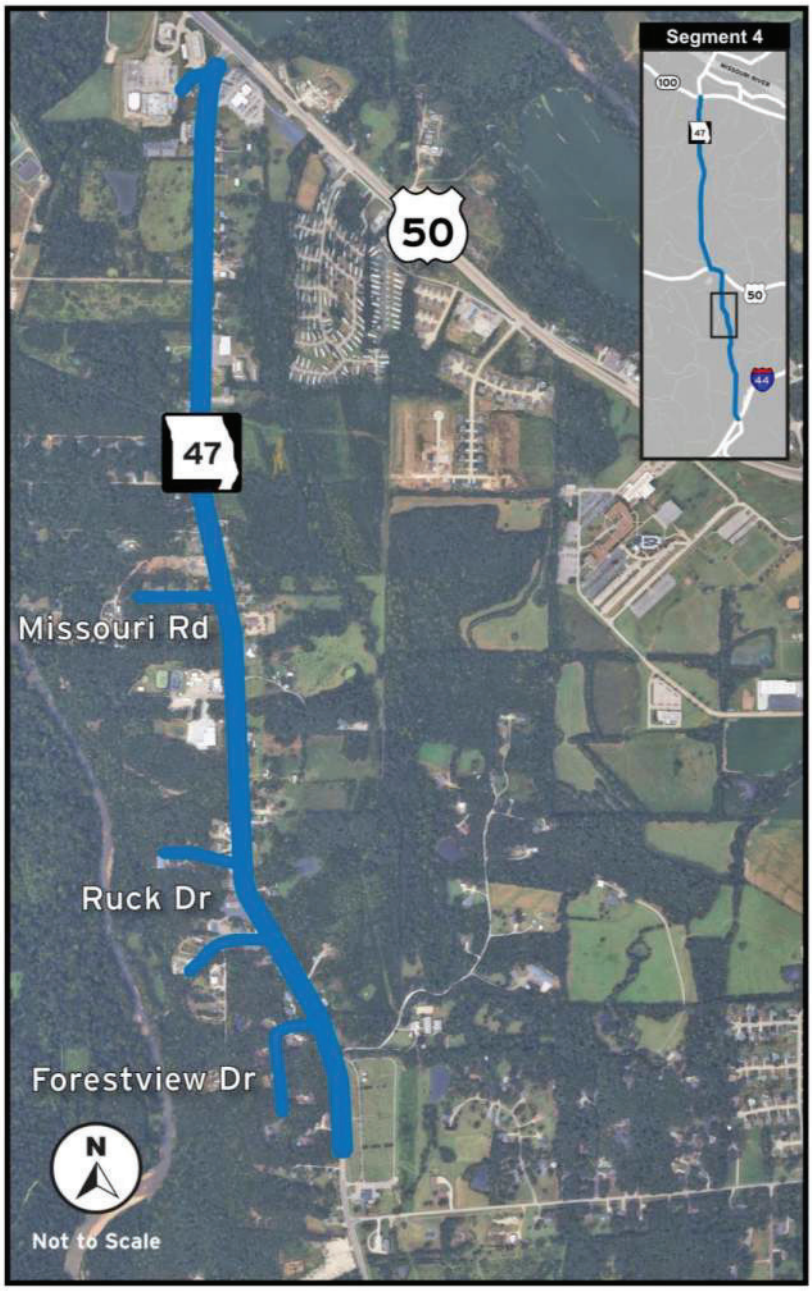

Figure 6: Segment 4 Corridor Map

3.4.1 Roadway Assessment

3.4.1.1 Existing Conditions

Substandard horizontal curves exist at Missouri Road, Ruck Drive (north and south intersections) and Forestview Drive due to the existing radius not meeting the design minimum. No substandard vertical curves are identified. The northbound approach at U.S. 50 east intersection contains a substandard tape length. Deficient ISD exists at the driveway south of Union Village Shopping Center to the west of Route 47. For a more detailed roadway assessment, refer to **Appendix B**. Two shoulder width segments can be identified within the limits of Segment 4. Both of these segments are deficiently designed with a design width of less than 6 feet. Refer to **Appendix D** for an existing shoulder width exhibit and further design considerations.

3.4.2 Traffic Analysis

3.4.2.1 Existing Conditions

No intersections included in the existing conditions traffic analysis are within the limits of Segment 4. A detailed existing conditions traffic memorandum can be found in **Appendix C**.

3.4.2.2 Future No-Build Analysis

3.4.3 Safety Analysis

3.4.3.1 Existing Conditions

This segment experienced a total of 82 crashes from 2019 to 2023, with 24 (29%) resulting in injury. Of the injury crashes, two resulted in serious injury and two fatal injury, with the remaining 58 crashes being PDO.

3.4.3.2 Future No-Build Analysis

No intersections included in the future no-build analysis are within the limits of Segment 4. **Appendix B** provides a detailed report of existing and future no-build crash and safety analysis throughout the entirety of the corridor.

3.4.4 Environmental and Cultural Assessment

3.4.4.1 Existing Conditions

Four community resources are located within the study segment. All four resources are located directly adjacent to Route 47 and are bolded below. Resources that are not bolded represent locations within a quarter of a mile of Route 47 that do not sit adjacent to the roadway. The community resources within the study area include:

- **Little Bears Learning Center - 668 State Hwy 47**
- **Grace Baptist Church – 7145 State Hwy 47**
- **Kingdom Hall of Jehovah Witness – 882 State Hwy 47**
- **Midlawn Memorial Gardens Cemetery – 7280 State Hwy 47**

There are surface waters within the study segment, including approximately 10,241 linear feet of Bourbeuse River and associated unnamed tributaries. Bourbeuse River is identified as a Section 303(d) impaired waterway. There are potentially wetlands within the study segment, including approximately 0.5 acres of freshwater emergent wetland, 21 acres of freshwater forested/shrub wetland, 9 acres of freshwater pond, 11 acres of lake, and 34 acres of riverine. There are approximately 223 acres of regulatory floodway and 49 acres of 100-year floodplain within the study segment. There are approximately 20 acres of prime farmland.

Potential habitat for ten federally listed species are identified. These include seven endangered species: the Gray Bat, Indiana Bat, Pink Mucket, Scaleshell Mussel, Sheepnose Mussel, Snuffbox Mussel, and Spectaclecase. There are two proposed endangered species, the Tricolored Bat and Salamander Mussel, and one proposed threatened species, the Monarch Butterfly. The study

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area also contains dedicated critical habitat for the Indiana Bat, Sheepnose Mussel, and Snuffbox Mussel.

There are no Section 4(f) or 6(f) resources, historical sites, or hazardous material sites within the study segment. Additional environmental and cultural constraints can be referenced in **Appendix I**.

3.4.5 Drainage Assessment

3.4.5.1 Existing Conditions

A detailed drainage assessment was not performed along Segment 4. **Appendix J** contains further drainage analysis, including relevant figures and supplemental information, and is attached for reference.

3.4.6 Utilities

3.4.6.1 Existing Conditions

Existing major utilities present: Ameren electric, AT&T-d, Charter, Sho-Me Fiber, Lumen, Spire, City of Union water/sewer, MoGas 10" HP pipeline crossing ~150' north of Sawmill Road, MoDOT. Up to three Ameren poles located within easements could be affected. Special attention should be made to not disturb AT&T above-ground equipment on the south side of College Road. **Appendix K** contains a more detailed overview of existing utilities and details of potential utility conflicts.

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3.5 Segment 5: College Rd to I-44 Interchange

Segment 5 is approximately 3.9 miles along Route 47 to the southern end of the corridor as shown in **Figure 7**. Route 47 intersections analyzed include:

- College Road
- Route AD / Schuchart Road
- E. Happy Sac Road
- Airport Road
- N. Outer Road
- I-44 WB Ramps
- I-44 EB Ramps

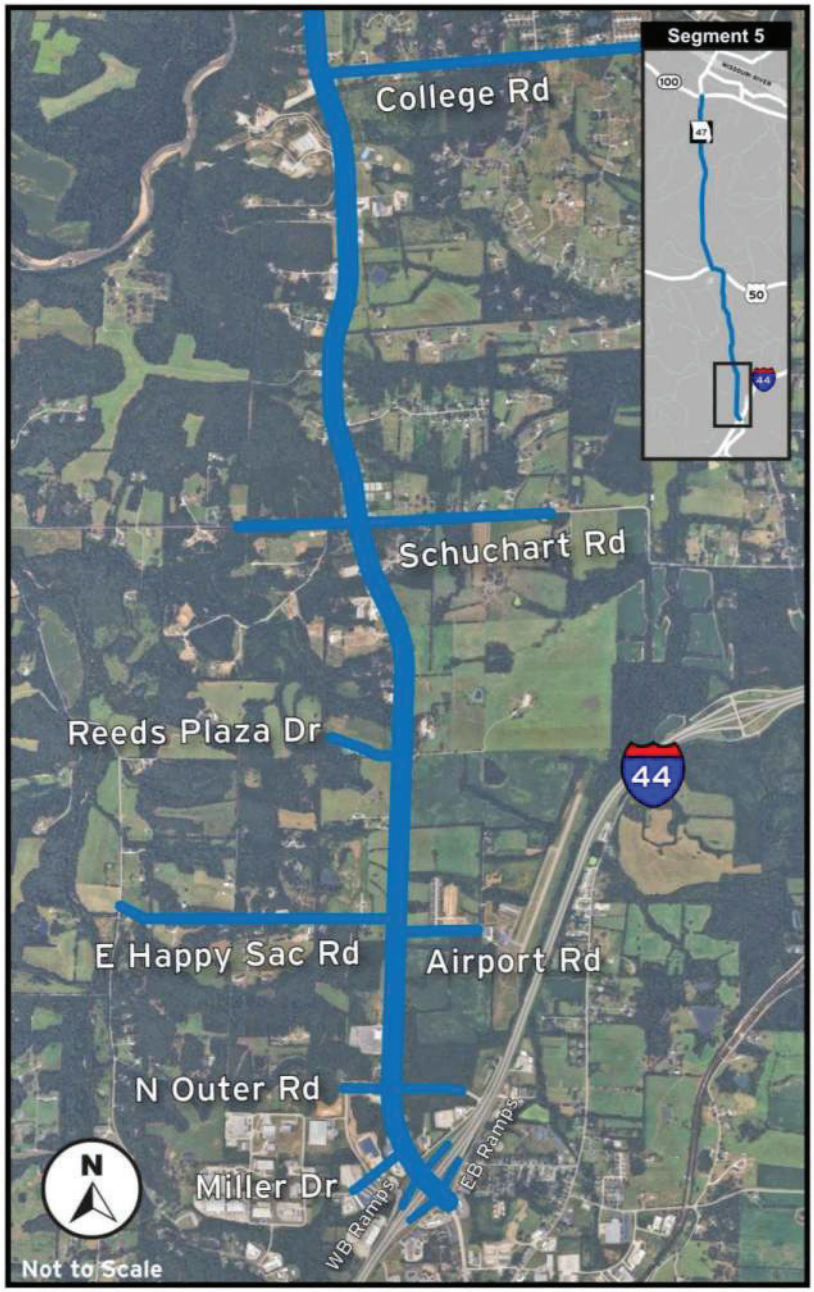

Figure 7: Segment 5 Corridor Map

3.5.1 Roadway Assessment

3.5.1.1 Existing Conditions

Several substandard horizontal curves exist due to the existing radius not meeting design criteria minimums. In the southbound direction these exist south of Walnut Ridge Drive, south of Moreland Drive, north of Route AD / Schuchart Road, north of Reeds Plaza Drive and South Outer Road. Substandard horizontal curves exist northbound at S. Outer Road, Miller Drive and Route AD / Schuchart Road. Two vertical curve clusters, at Airport Road and N. Outer Road, do not meet the sight distance standard with deficient K values. Turn lanes at the northbound and southbound approaches at N. Outer Road do not meet lane length minimums or taper length minimums. Deficient right turn ISD is identified at the driveway 1800 feet north of Reeds Plaza Drive and E. Happy Sac Road. For a more detailed roadway assessment, refer to **Appendix B**. Four shoulder width segments exist

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along Segment 5. Of these four, all are deficient with less than 6 feet of shoulder width. Refer to **Appendix D** for an existing shoulder width exhibit and further design considerations.

3.5.2 Traffic Analysis

3.5.2.1 Existing Conditions

Five intersections, three signalized and two TWSC, are analyzed. The speed limit along Route 47 is 55 mph north of Reeds Plaza Drive and 45 mph south. Unsignalized intersection analysis indicates the worst movement to be the westbound left turn which operates at LOS E in the AM peak hour and LOS F in the PM peak hour. The maximum 95th percentile queue for this movement is 133 ft. Existing signalized operations at N. Outer Road and both I-44 ramp terminals operate at an LOS B or better. Unsignalized intersection operations at Route AD / Schuchart Road operate at LOS F for the eastbound movement during the PM peak hour. The 95th percentile queue at the northbound approach at N. Outer Road exceeds capacity. A detailed existing conditions traffic memorandum can be found in **Appendix C**.

3.5.2.2 Future No-Build Analysis

3.5.3 Safety Analysis

3.5.3.1 Existing Conditions

This segment had 212 observed crashes from 2019-2023. Injury crashes amounted for 35 (17%) of all crashes, with two of these being fatal and the remaining 177 were PDO. Most crashes (46%) reported are a result of a rear-end likely due to areas with higher access density, sight distance and high speeds. The intersection College Road had six total crashes during this time with five of them resulting in injury.

3.5.3.2 Future No-Build Analysis

Traffic incidents are not expected to increase at the I-44 Interchange terminal ramps in a future no-build condition, however intersections at Airport Road and N. Outer Road are likely to see increases. The segment between Route AD / Schuchart Road is anticipated to see increases in crashes and is a segment that currently sees higher crash frequency. In the future no-build condition, crashes are not anticipated to increase at the intersection of College Road. **Appendix B** provides a detailed report of existing and future no-build crash and safety analysis throughout the entirety of the corridor.

3.5.4 Environmental and Cultural Assessment

3.5.4.1 Existing Conditions

Seven community resources are located within the study segment. Two of these resources are located directly adjacent to Route 47 and are bolded below. Resources that are not bolded represent locations within a quarter of a mile of Route 47 that do not sit adjacent to the roadway.

- Holy Trinity Child Care - 1502 S Outer Road E
- **Oak Hill Freewill Baptist Church – 7606 State Hwy 47**

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- **Franklin County Baptist Association Building / Community Church – 785 Butterfield Drive**
- Roots Church, 235 N Service Road W
- Liberty Baptist Church – 219 Airport Road
- Holy Trinity Lutheran Church – 1500 S Outer Road E
- RPCU – 956 Copperfield Drive

There are surface waters, including approximately 4,696 linear feet of Bourbeuse River and associated unnamed tributaries, 18,604 linear feet of Birch Creek, and 11,519 linear feet of Happy Sock and associated unnamed tributaries. Bourbeuse River is identified as a Section 303(d) impaired waterway. There are potential wetlands within the study segment, including approximately 0.2 acres of freshwater emergent wetland, 6 acres of freshwater forested/shrub wetland, 14 acres of freshwater pond, and 4 acres of riverine. There are approximately 7 acres of regulatory floodway and 26 acres of 100-year floodplain. There is approximately 6 acres of prime farmland.

Potential habitat for ten federally listed species are identified. These include seven endangered species: the Gray Bat, Indiana Bat, Pink Mucket, Scaleshell Mussel, Sheepnose Mussel, Snuffbox Mussel, and Spectaclecase. There are two proposed endangered species, the Tricolored Bat and Salamander Mussel, and one proposed threatened species, the Monarch Butterfly. The study area also contains dedicated critical habitat for the Indiana Bat, Sheepnose Mussel, and Snuffbox Mussel. One potential hazardous material site is located within the study segment, Wallis Petroleum #345 (underground storage tank).

There are no Section 4(f) or 6(f) resources or historical sites, within the study area. Additional environmental and cultural constraints can be referenced in **Appendix I**.

3.5.5 Drainage Assessment

3.5.5.1 Existing Conditions

Existing drainage infrastructure at the Outer Road includes rock cuts at the corners of the intersection. Culverts, grate inlets, and an open channel exist along the east side of Route 47 south of Outer Road to the I-44 Interchange WB Off-Ramp. The interchange does not include any further existing drainage infrastructure. **Appendix J** contains further drainage analysis, including relevant figures and supplemental information, and is attached for reference.

3.5.6 Utilities

3.5.6.1 Existing Conditions

Existing major utilities present: Ameren electric, AT&T-d (duct bank; remote terminal cabinet + two copper distribution cabinets south of College Road), Charter, MoDOT, Spire (gas mains and regulator station south of College Road), MoGas 10" HP pipeline (between Reeds Plaza Drive and Happy Sac), City of St. Clair water/sewer. Up to eight Ameren poles within easements may be

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impacted. **Appendix K** contains a more detailed overview of existing utilities and details of potential utility conflicts.

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4. Existing Route 47 Corridor-Wide Analysis

4.1 SAFER Documentation

The intent of the Safety Assessment for Every Roadway (SAFER) checklist is to guide the discussion of safety in all MoDOT projects to incorporate safety measures in all projects. Some of the key issues identified include the need for pedestrian-friendly design, speed concerns, and intersection design elements that should be considered. Limited vulnerable road user (VRU) infrastructure exists within the corridor, additional pedestrian crossings and improving sight distances at access points should be considered. Aside from three signalized intersections at Washington Crossing, Steutermann Rd and E Main St, all other access points along corridor do not sufficiently accommodate for VRUs. Speed management countermeasures and traffic calming measures should also be considered as Segments 2 and 5 rank in the top 50% according to 4th High-Injury Network; 1st Contributing Factor (HIN4-CF1) analysis. for speed related crashes.

Some intersections within the corridor are being considered for roundabouts as a traffic calming measure while others require the addition of turn lanes. Signal timing adjustments are being considered throughout the corridor to improve safety and operations. Sight distance and roadway visibility issues are key issues. Several deficient intersection sight distances exist for VRUs, while several exist along the corridor for drivers at access points mostly due to horizontal and vertical roadway curves that do not meet current design standards. Signs for curve warnings and advance intersection warnings could be beneficial to explore to increase visibility along the roadway. A wet crash problem occurs throughout the corridor, with between 10% to 20% of crashes in each segment occurring during wet conditions. Potential mitigation includes the use of high friction surface treatments (HFST). **Appendix L** contains the SAFER checklist in its entirety.

4.2 Pavement Analysis

4.2.1.1 Existing Conditions

A pavement condition survey is used to investigate existing pavement type and thickness. A total of 21 cores are taken randomly throughout the limits of the corridor with two cores extracted from U.S. 50 between the north and south segments of Route 47. The Pavement Surface Evaluation and Rating (PASER) assigns a value of 1-10 to the surface of the pavement, with a 1 being failure and a 10 being excellent. This corridor has a PASER rating of 4 due to moderate to severe block cracking and transverse and longitudinal cracks which open up to a ½". The pavement specialist observed the north section of Route 47, from Washington to Union, showing the most surface distress. Additionally, due to badly stripped conditions below surface levels of the core samples, a recommendation for a deeper mill and fill treatment is made for the entirety of Route 47. Reference **Appendix M** for the pavement core logs and further core sample analysis. New pavement designs are determined in accordance with necessary pavement improvements along Route 47. For specifications of pavement type selection, refer to **Appendix N**.

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4.3 Noise Assessment

4.3.1.1 Existing Conditions

A desktop-level assessment of traffic noise was performed. FHWA's Noise Abatement Criteria (NAC) is used to categorize noise-sensitive land use and decibel levels that can be considered a noise impact. A total of 401 different properties were identified within 300' of the Route 47 centerline, with 227 of these being identified as noise sensitive. Of these 227, 211 categorized as NAC B, five categorized as NAC C and seven categorized as NAC D. While improvements at an intersection level or median separation do not constitute a Type I project, portions of the corridor being evaluated for additional thru lanes which requires the entire project to be defined as Type I. Four locations are identified where noise impacts may exist, and where noise walls could be constructed as a mitigation effort, though it is unlikely any noise abatement will meet all feasible and reasonableness criteria. Noise impacts can be anticipated within 100' of a roadway with a posted 45 mph speed limit, and 150' of a posted 55 mph speed limit. Approximately 70 noise-sensitive properties exist within the 100' buffer and about 100 exist within the 150' buffer. For a more detailed analysis of this desktop review refer to **Appendix O.**

5. Proposed Alternatives Analysis [Not Included]

5.1 Proposed Route 47 Alternatives Analysis by Segment

5.1.1 Roadway Assessment

5.1.2 Traffic Analysis

5.1.3 Safety Analysis

5.1.4 Environmental & Cultural Assessment

5.1.5 Drainage Assessment

5.1.6 Utilities

5.2 Proposed Route 47 Alternatives Corridor-wide Analysis

5.2.1 Pavement Analysis

5.2.2 Noise Analysis

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6. Conceptual Cost & Funding

A conceptual cost estimate is divided into 10 cost segments. A graphic showing the cost estimate segmentation, and how it correlates to the five project corridor segments, is shown in **Figure 8**.

6.1 Conceptual Design Cost

6.2 Project Funding

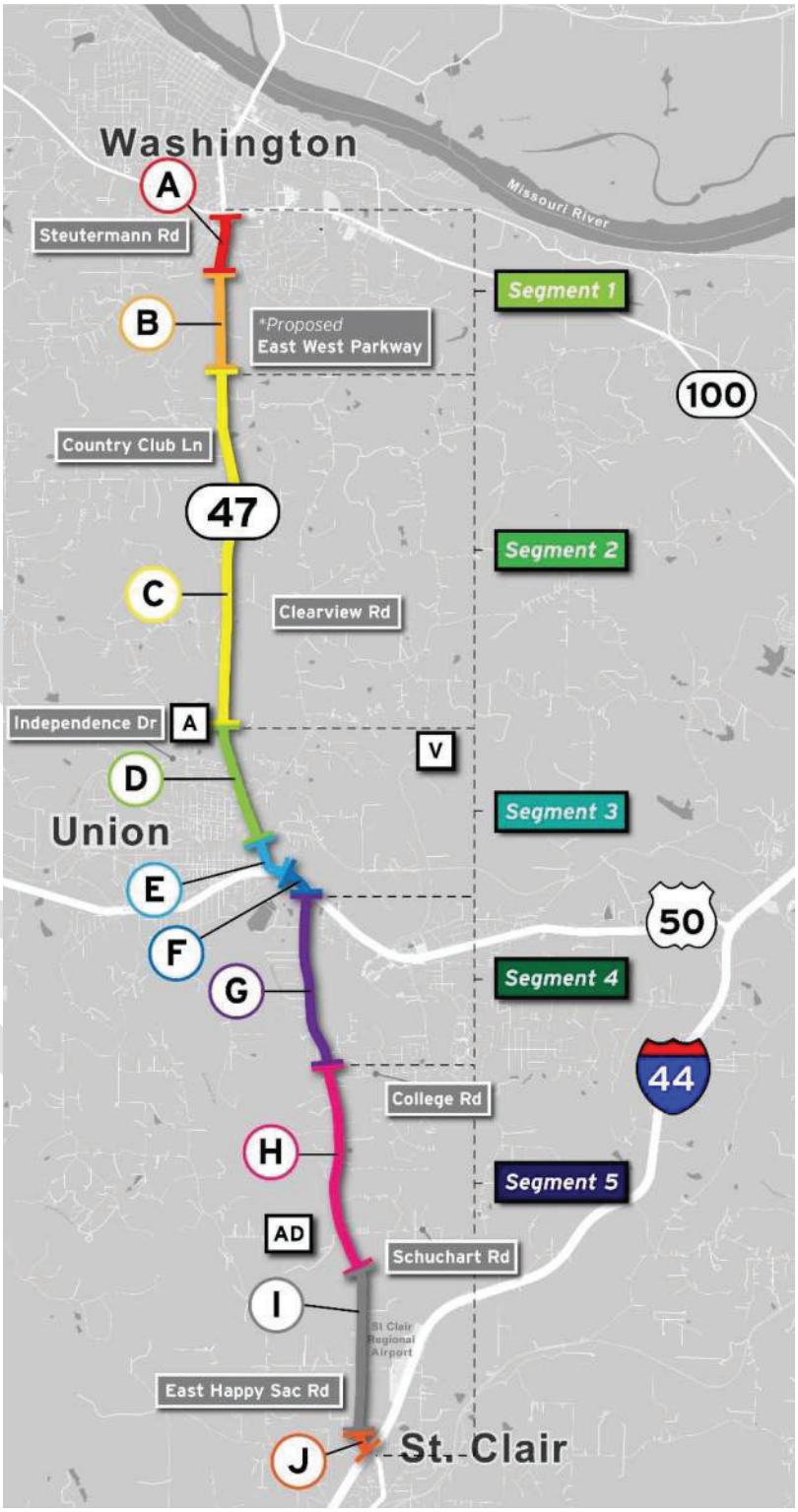

Figure 8: Cost Estimate Segmentation

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7. Public Involvement

Public Involvement is an important component during this phase of the project. MoDOT had a robust public engagement effort for this project to understand the concerns and challenges of the corridor as well as understand the needs of the traveling public. Throughout the study, the engagement activities included:

- 2 Public meetings
- 2 Public surveys in conjunction with the public meetings
- 3 Community Advisory Group (CAG) meetings
- 12 Stakeholder listening sessions

Key stakeholders include but are not limited to:

- Elected Officials: Representatives from local cities and state districts
- City Staff and Community Groups: Local officials, emergency services, and community advisory groups.
- Business Community: Representatives from local businesses along the corridor.

Effective public engagement is monitored through various participation metrics, including public surveys and in-meeting polling methods. Thorough documentation of public engagement ensures transparency and demonstrates how public input shapes aspects of the project. Additional information, including meeting summaries and supplemental public information documents, can be found in Appendix S

7.1 Public Meetings and Surveys

Public Meeting #1

To kick off the study, MoDOT hosted Public Meeting #1 on September 24, 2024, along with a public survey. The meeting was an open house style meeting with no formal presentation. The purpose of this meeting was to provide an overview of the study and initial safety and traffic information and allow for the community to provide input. The public survey was available at the public meeting and available online until October 8, 2024, for the public meeting attendees and the general public to help the project team understand how the community uses and views the Route 47 corridor.

- Approximately 160 people attended the in-person public meeting
- 14 comment forms were submitted via a written comment form, the MoDOT website or emailed
- 190 public survey responses were received

Feedback from the meeting and survey is that the public is generally in support of improvements to Route 47 to increase safety and congestion. A common theme discussed the need for

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additional turn lanes and sight distance issues. The Route 47 and U.S. 50 west intersection was cited for having heavy congestion and backups that impact upstream operations. **Appendix S** contains a complete summary of Public Meeting #1 for more information.

Public Meeting #2

Public Meeting #2 was hosted on October 9, 2025 and was used to present reasonable concept alternatives and gather public input. In addition to the in-person meeting, MoDOT conducted an online survey to gather public input on the proposed improvement concepts.

- Approximately 158 people attended the in-person meeting
- Eight (8) attendees left written comment forms or submitted a comment via the MoDOT website or email
- 287 people participated in the online survey

Key takeaways included that the public has a strong interest in the project and there is community support to improve the corridor. It was noted that the public emphasized the urgency to make the improvements as soon as possible, as well about the development and growth in the area and want to see that the proposed improvements will accommodate traffic well into the future.

The MO 47/U.S. 50 intersection received the most comments related to congestion. The CFI alternative is the most favorable alternative at the intersection, followed by the Southwest Realignment, and the Diverging Diamond Intersection (DDI) was least favored.

. Many participants provided input on roundabouts and the responses showed a 2-to-1 ration in favor of implementing them provided they are placed at logical intersections and able to accommodate oversized loads.

MoDOT also asked for input on potentially reducing the posted speed limits to enhance safety and allow for design flexibility such make changes to lanes, shoulders and intersections. The opinions varied by segment, however, most respondents were either supportive or neutral towards the reduced speed limits.

Lane capacity configurations throughout the corridor received varying comments as some desire the entire corridor to be four lanes while others would support more turning lanes. However, turning lanes were heavily supported in the comments.

Many participants compared Route 47 to other similar growing corridors that have been improved and modernized. Comments noted that Route 47 is no longer a typical rural highway and has a high need for improvement. **Appendix S** contains a complete summary of Public Meeting #2 for more information.

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7.2 Community Advisory Group (CAG)

The Community Advisory Group (CAG) is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members are important as they represent their organizations and their constituents.

The CAG helped the project team understand and address community needs and concerns through the study. This was crucial through the development of the potential improvement alternatives for Route 47.

CAG Meeting #1

The purpose of CAG Meeting #1, hosted on February 6, 2025, was to provide an overview of the study, review initial safety and traffic analysis and gather input to facilitate discussion. Key discussions from CAG #1 included shoulder widths, sight distance concerns, pedestrian safety, roundabouts and additional turn lanes. **Appendix S** contains a complete summary of CAG #1 including the PowerPoint and interactive poll results from the meeting.

CAG Meeting #2

A second CAG meeting was held on April 28, 2025 to collect input on draft project goals and discuss corridor improvement options and initial intersection concepts. A key takeaway from CAG #2 was that the CAG favors a 3-lane with center two-way left turn traffic along Route 47 and the Southwest Realignment option at Route 47 and U.S. 50. Discussion surrounding roundabouts was received more positively than when previously discussed for their benefits with traffic flow and safety. **Appendix S** contains a complete summary of CAG #2 including the PowerPoint and interactive poll results from the meeting.

CAG Meeting #3

The CAG met for a third time on August 28, 2025 to discuss intersection concepts and improvements along the Route 47. Key takeaways from CAG #3 include a shift in favoring a Continuous Flow Intersection (CFI) at Route 47 and U.S. 50 for cost and design adaptability. Roundabouts are still regarded as an acceptable solution in all segments of the corridor, while the group determined Route V to be an area needing more consideration. **Appendix S** contains detailed discussion of intersection concepts and interactive poll results from this meeting.

CAG Alternative Improvements Input

Throughout the three meetings, the CAG provided input on the alternatives development and the potential improvement concepts. Below summarizes the feedback received on the different improvement components.

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Corridor Capacity

The CAG was presented potential capacity corridor options, such as a four-lane option, three-lane that includes one lane in each direction and a middle turn lane, and 2-lane options. The lane capacity may be different throughout the corridor, based on safety and congestion at that specific location. Additional lanes are not recommended through all sections of the MO-47 corridor.

MO 47/U.S. 50

The CAG and the public stated the U.S. 50/47 Intersection was a key location that needs improvement. The current intersection experiences backups and heavy congestion. It is also where there are safety concerns due to crashes. The CAG reviewed several design alternatives at the second and third meetings. During the third CAG meeting, three design alternatives were presented that included:

- Southwest Realignment - A realignment of MO-47 from north of Sawmill Rd. to the existing western intersection of MO-47 and U.S. 50.
- Diverging Diamond Intersection (DDI) - Utilizes cross over intersections similar to a Diverging Diamond Interchange (DDI).
- Continuous Flow Intersection (CFI) - Shifts the U.S. 50 eastbound to MO-47 northbound left turning traffic to the opposite (north) side of oncoming westbound traffic west of the MO-47/US-50 intersection, allowing simultaneous left turns and through movements to reduce delays.

Generally, the CAG noted they were not in favor of a Diverging Diamond Intersection (DDI). The Continuous Flow Intersection (CFI) concept alternative was overwhelmingly supported by the group. This concept improves safety, congestion, as well as limits the right-of-way and environmental impacts and is the most budget friendly. It was also noted that the CFI design may accommodate the Southwest Realignment alternative concept in the future, if needed. The Southwest Realignment of MO-47 was viewed less favorably due to the anticipated right of way impacts, higher construction cost and lesser benefit to traffic operations.

Intersections

Additional improvements may be considered at intersections throughout the corridor. Improvements can include signalized or roundabout intersections, turn improvements, additional lanes, access management, etc. There is support from the CAG to make improvements to enhance safety and congestion. The CAG noted to look at each intersection and do what is best for that specific area. The CAG expressed support for roundabouts in conjunction with additional design and strategy to lower the posted and travel speeds below the 55mph along many portions of MO-47 to help improve safety along the corridor.

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Appendix A: Traffic Forecasting Memorandum

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LOCHMUELLER GROUP
399 South Spring Avenue, Suite 208B
St. Louis, MO 63110

MEMORANDUM

To: Travis Pfeiffer, PE HTNB

From: Chris Beard, PE, PTOE

Date: March 11, 2025

Subject: J6P3661 - MO 47 Corridor Study
Traffic Forecasting Memorandum (FINAL)

This memorandum summarizes the traffic growth rates to be applied to the MO 47 Corridor Study. Analyses for both the Existing Year (2024) and Design Year (2050) will be incorporated into the study. Hence, the need for traffic forecasts to inform the Design Year analysis.

Traffic Growth Data Sources

The following sources were utilized to develop traffic growth rates for the study area:

1. **Historic AADT from MoDOT Traffic Volume Maps**

   MoDOT provides historic traffic counts for major roadways. Counts from 2018 to 2022 are widely available in an online database. Counts from 2000 to 2018 are available on electronic maps. It is assumed that the COVID-19 pandemic may have impacted counts from 2020 to 2023. Therefore, these counts were reported separately and excluded from the historic trendline analysis presented in the next section of this report.

2. **Franklin County Historic Population Trends**

   Historic Franklin County population totals were obtained from the US Census. The historic data was combined with future population forecasts from Woods & Poole, which specializes in demographic forecasting, and plotted in **Figure 1**. As shown, the growth rate for Franklin County population was largest between 1980 and 2000, when growth exceeded 1 percent per year. Since 2000, growth has slowed to approximately 0.55 percent annually. Woods & Poole forecasts a continued decline in the rate of growth, slowing to an average of 0.3 percent per year between now and 2050.

3. **East-West Gateway Travel Demand Model**

   The East-West Gateway Travel Demand Model (EWG TDM) is the regional traffic forecasting model. Model outputs were provided by EWG as loaded traffic volumes on MO 47 for the years 2023 and 2050. Two separate 2050 scenarios were provided: one scenario assumes no change in the posted speed or number of mainline lanes on MO 47 and a second scenario assumed MO 47 is widened to 2 mainline through lanes in each direction (4 through lanes total) between Union and Washington. The purpose was to determine if an expanded roadway would attract increased traffic volume. Both scenarios are represented by pink dots in the figures below. The higher volume of the two pink dots represents the 4-lane scenario and the lower represents the existing 2-lane configuration. The difference in

scenarios is mostly insignificant. In some locations, the two dots are on top of one another such that only one is visible.

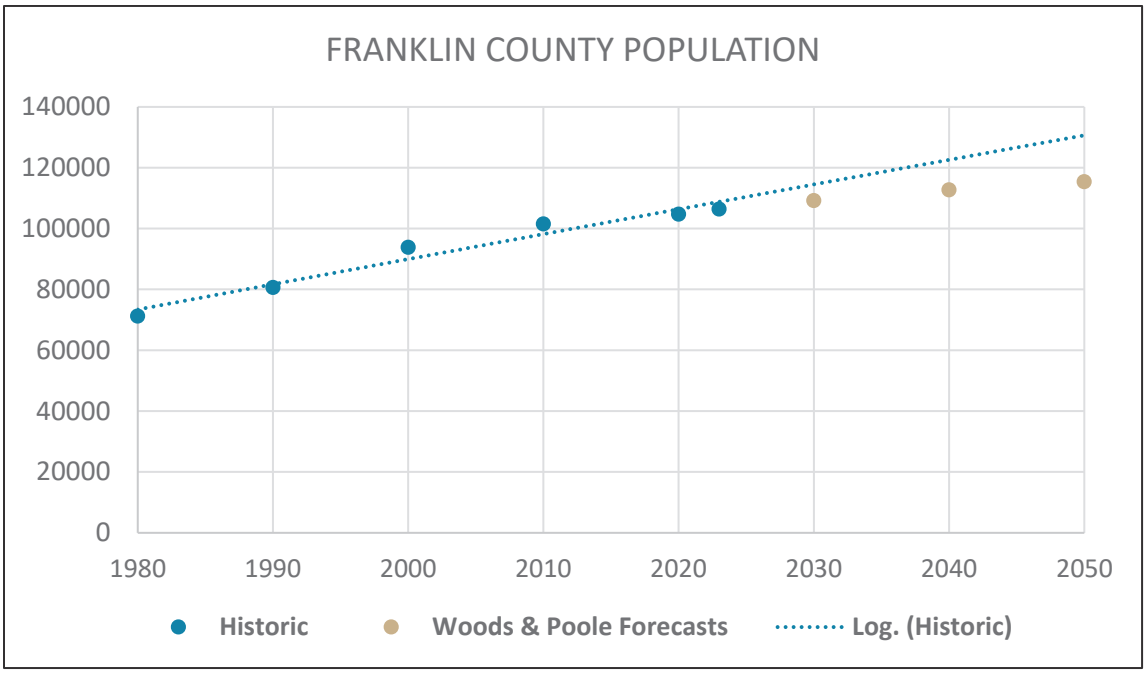

Figure 1: Franklin County Population Data

Annual Traffic Growth Rates

Annualized traffic volume growth rates were obtained by analyzing the data from the preceding sources. Traffic volume growth rates were forecasted for the following locations along the MO 47 corridor arranged from north to south:

i) MO 47 between Steutermann Rd and Country Club Ln
ii) MO 47 between Country Club Ln and Clearview Rd
iii) MO 47 between Clearview Rd and Route V
iv) MO 47 between Route V and US 50 West Junction
v) US 50/MO 47 between West & East Junctions
vi) MO 47 between US 50 East Junction and College Rd
vii) MO 47 between College Rd and Route AD
viii) MO 47 between Route AD and I-44

These locations were selected based on the availability of historic count data. Traffic growth rates were developed considering trendlines extrapolated from historic traffic counts and trendlines connecting future year and base year travel demand model outputs. The recommended growth rates are summarized in **Table 1**. A discussion of each section along with plots of historic counts and travel demand model outputs are provided on the following pages. A detailed summary of forecasting data is provided in **Table 2** at the end of this document.

Table 1: Recommend Traffic Growth Rates

Location ID	Location	Recommended Annual Growth Rate
1	STEUTERMANN RD to COUNTRY CLUB LN	0.75%
2	COUNTRY CLUB LN to CLEARVIEW RD	0.75%
3	CLEARVIEW RD to RT V	0.5%
4	RT V to US 50 W JCT	0.5%
5	US 50 btw 47 WEST & EAST JCTs	0.75%
6	US 50 E JCT to COLLEGE RD	0.5%
7	COLLEGE RD to RT AD	0.5%
8	RT AD to I-44	0.5%

1. MO 47 – Steutermann Rd to Country Club Ln

Traffic volume forecasts for MO 47 between Steutermann Rd and Country Club Ln are illustrated in **Figure 2**. As shown, the historic trendline reflects an annual growth rate of 1.1 percent. The EWG TDM forecasts a more modest growth rate for both 2050 scenarios. A recommended rate of 0.75 percent annually would split the difference and result in a forecast ADT of 22,100 vehicles per day, as indicated by the green triangle.

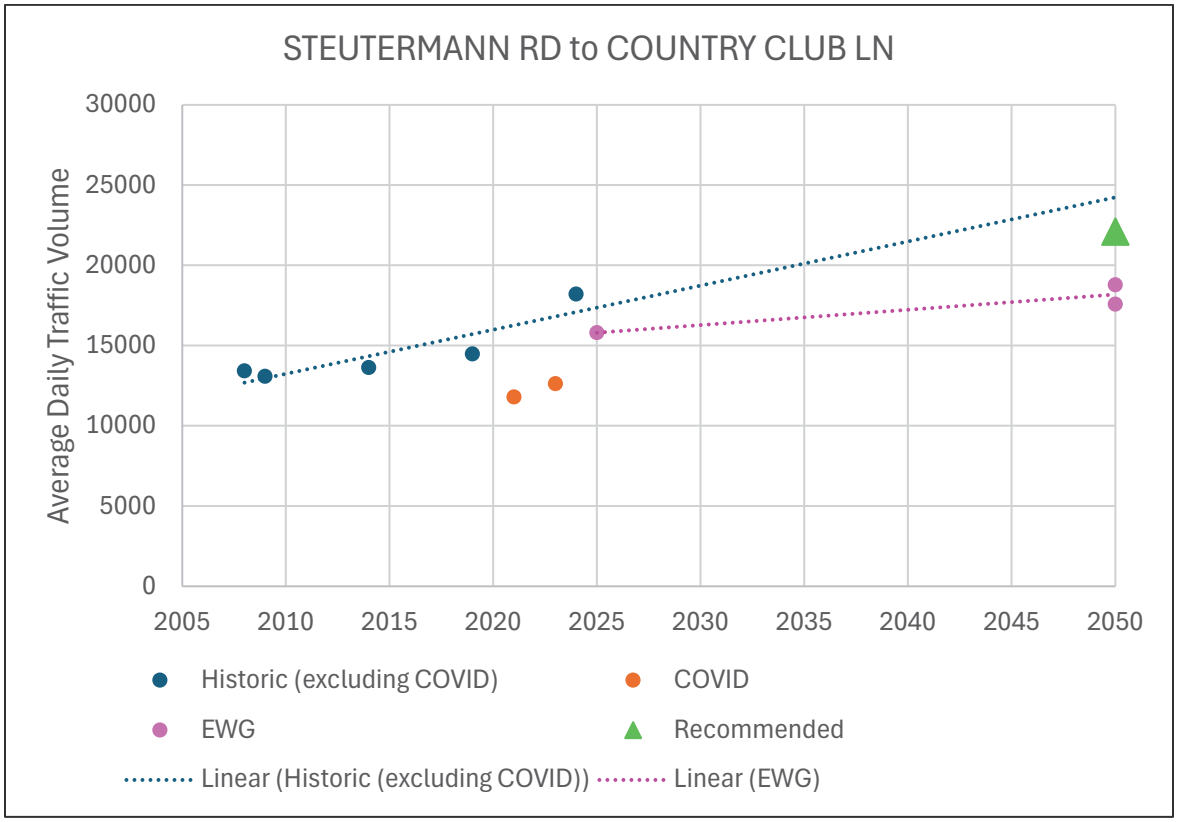

Figure 2: Traffic Volume Trendlines – Steutermann Rd to Country Club Ln

2. MO 47 – Country Club Ln to Clearview Rd

Traffic volume forecasts for MO 47 between Country Club Ln and Clearview Rd are summarized in **Figure 3**. As shown, the historic trendline reflects an annual growth rate of 0.7 percent. The EWG TDM forecasts a moderately lower growth rate for both 2050 scenarios. A recommended growth rate of 0.75 percent annually would be consistent with both the historic trend and the EWG TDM trend (EWG forecasts a lower 2050 ADT due to the base year volume estimate being less than counts). The 0.75 percent annual growth rate would result in a forecast ADT of 21,374 vehicles per day, as indicated by the green triangle.

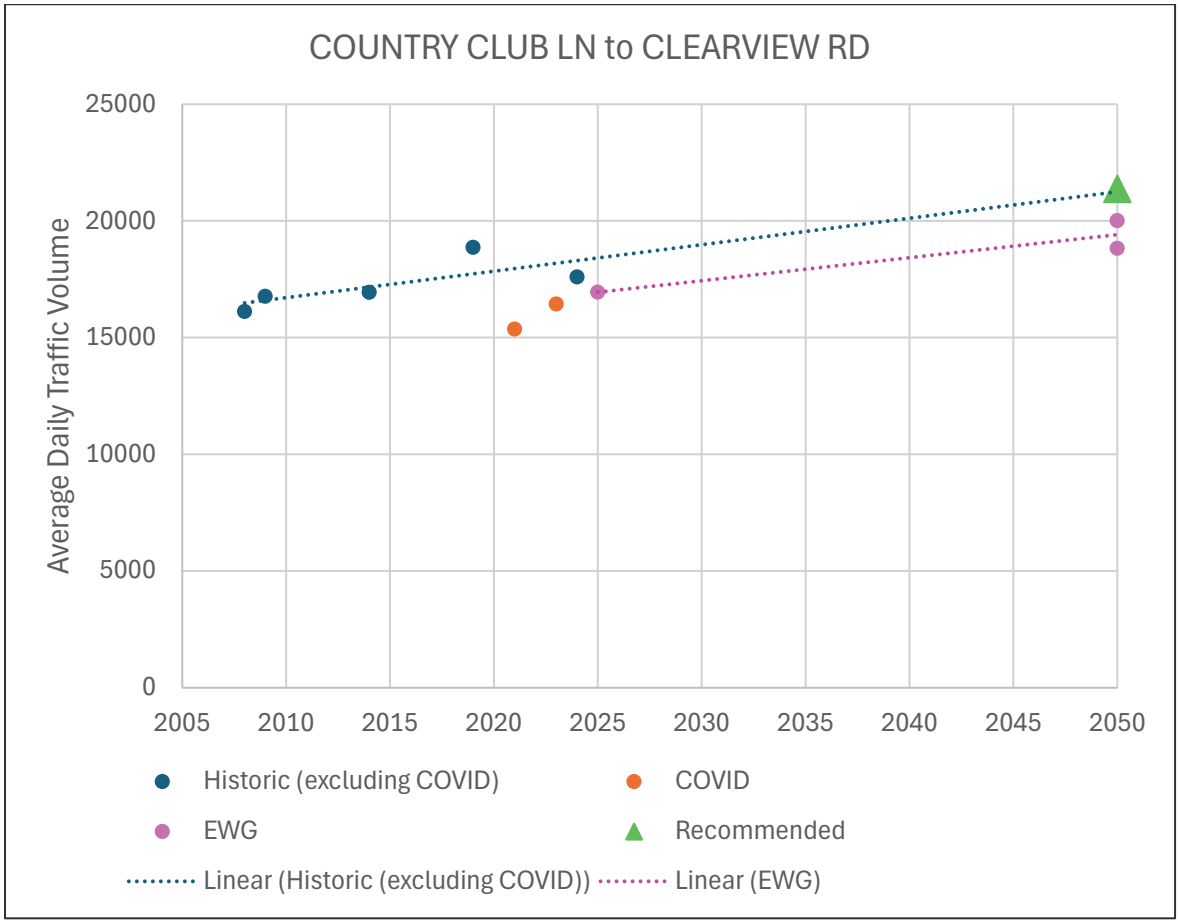

Figure 3: Traffic Volume Trendlines – Country Club Ln to Clearview Rd

3. MO 47 – Clearview Rd to Route V

Traffic volume forecasts for MO 47 between Clearview Rd and Route V are summarized in **Figure 4**. As shown, the historic counts reflect a flat to slightly decreasing trendline. The EWG TDM forecasts a more aggressive growth rate for both 2050 scenarios. A recommended growth rate of 0.5 percent annually would be consistent with the EWG TDM trend. The 0.5 percent annual growth rate would result in a forecast ADT of 19,160 vehicles per day, as indicated by the green triangle. Note that this forecast would be effectively identical to the 2050 EWG forecast for the 4-lane MO 47 scenario (pink dot is under the green triangle).

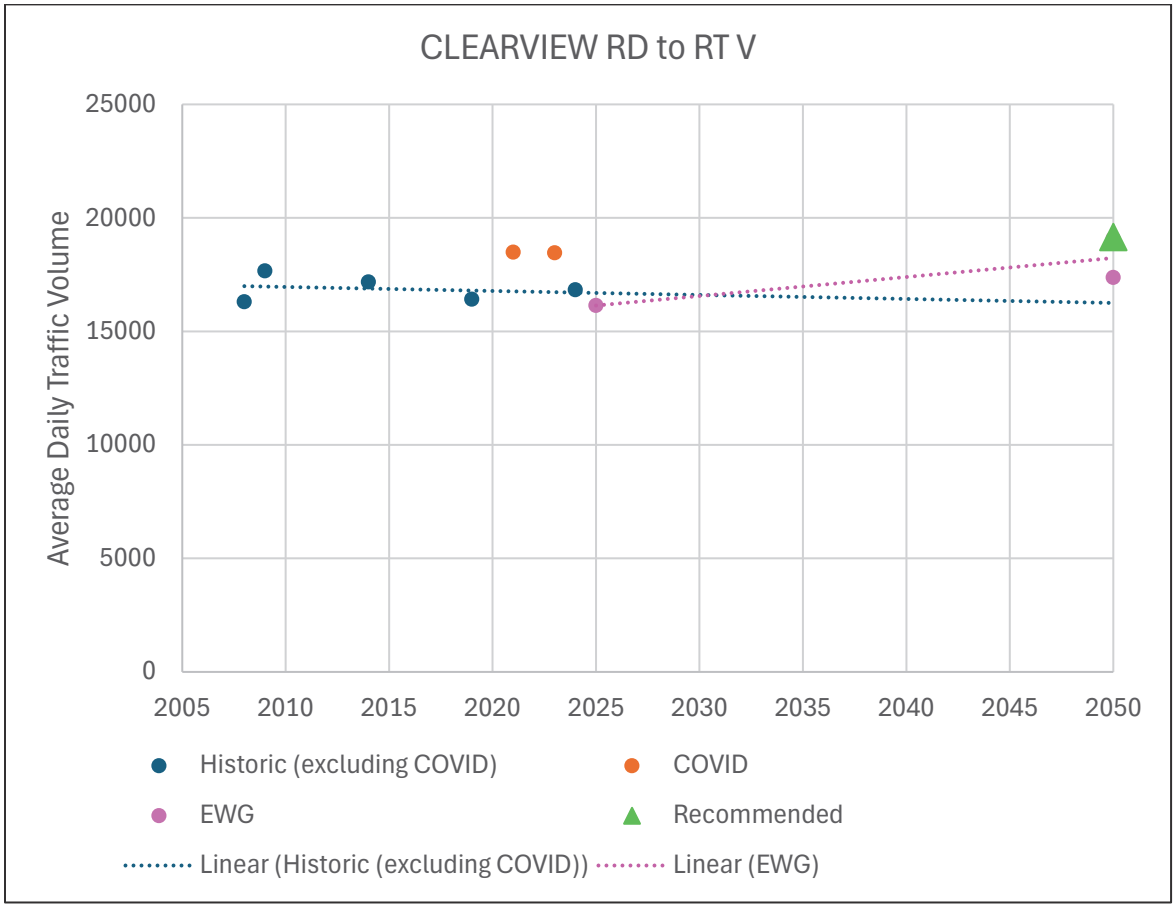

Figure 4: Traffic Volume Trendlines – Clearview Rd to Route V

4. MO 47 – Route V to US 50 West Junction

Traffic volume forecasts for MO 47 between Route V and US 50 West Junction are summarized in **Figure 5**. As shown, the historic and EWG trendlines are of similar slope, indicating comparable rates of growth. The EWG TDM forecasts substantially less 2050 traffic volume than the historic trend due to a lower base year volume that inaccurately represents current traffic. If the EWG TDM base year volume was consistent with traffic counts, the 2050 forecasted volume would approximate the historic trendline projection. Therefore, an annual growth rate of 0.5 percent is recommended, as consistent with both trendlines. This would result in a forecast ADT of 23,452 vehicles per day, as indicated by the green triangle.

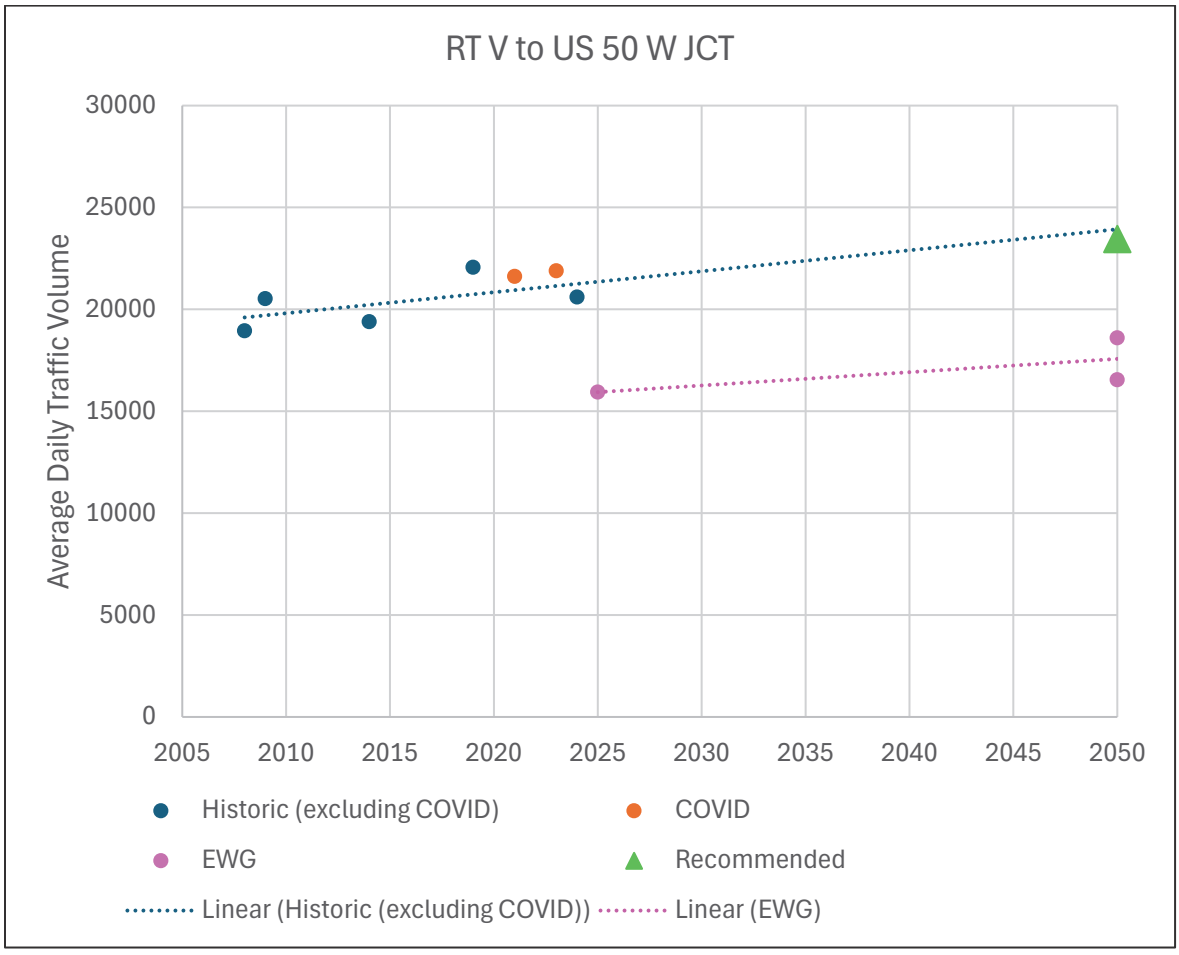

Figure 5: Traffic Volume Trendlines – Route V to US 50 West Junction

5. US 50 between MO 47 West & East Junctions

Traffic volume forecasts for the MO 47 segment shared with US 50 are complicated by the presence of east-west through traffic co-mingled with north-south traffic on MO 47. As illustrated in **Figure 6**, the historic count trendline extrapolation reflects aggressive growth at a rate exceeding 2 percent annually. This is driven by a significant increase in historic traffic volumes occurring between 2014 and 2019. Conversely, the EWG TDM forecasts almost no growth, which seems unlikely given the combination of north-south and east-west through traffic in this segment. EWG also significantly underrepresents existing volume in the segment. An annual growth rate of 0.75 percent would attempt to split the difference between the aggressive historic growth trend and the EWG forecast. This would result in a 2050 ADT of 47,824 vehicles per day.

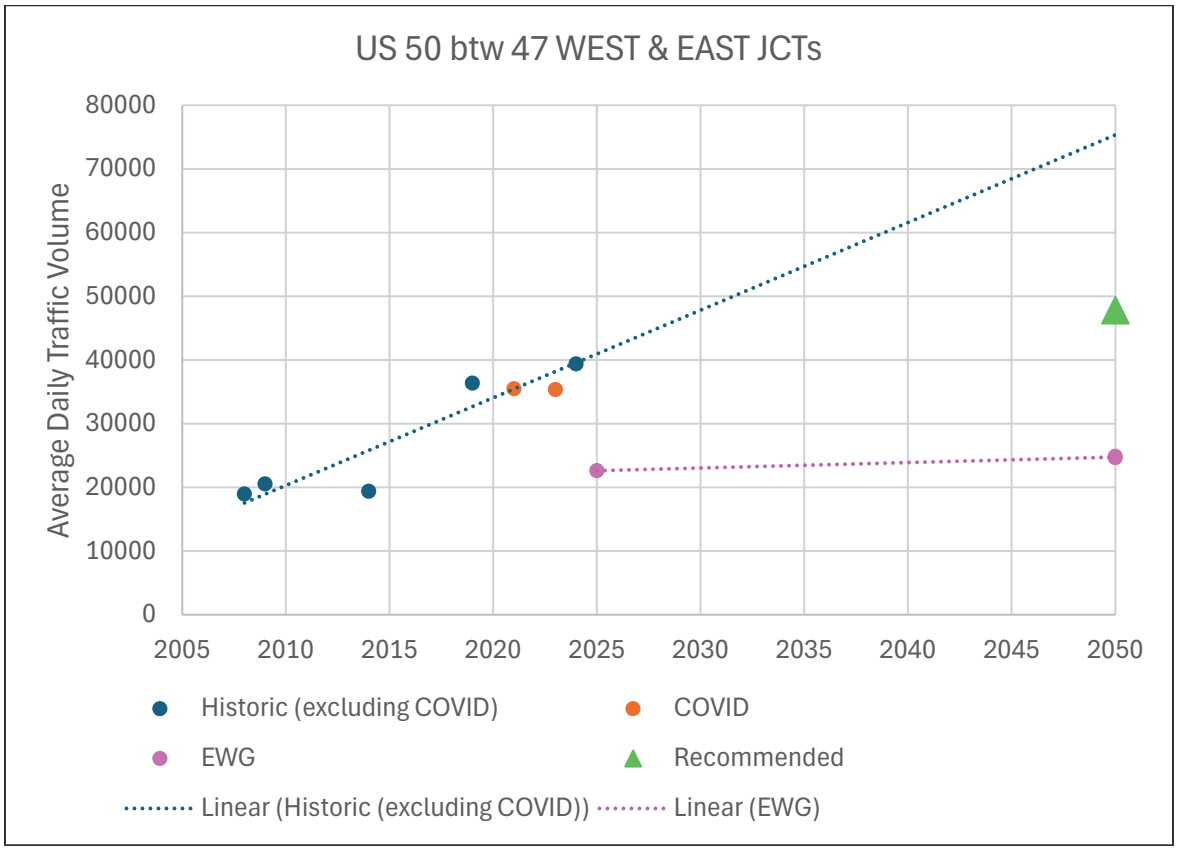

Figure 6: Traffic Volume Trendlines – US 50 between MO 47 West & East Junctions

6. MO 47 – US 50 East Junction to College Rd

Traffic volume forecasts for MO 47 between the US 50 east junction and College Rd are illustrated in **Figure 7**. As shown, the historic traffic counts reflect a slightly decreasing trendline. Conversely, the EWG TDM reports a modestly increasing trendline, but the actual EWG 2050 traffic forecast is affected by the under-representation of base year traffic volume. A recommended growth rate of 0.5 percent annually would be comparable to the rate of growth reflected by the EWG trendline. This would result in a forecast ADT of 16,576 vehicles per day, as indicated by the green triangle.

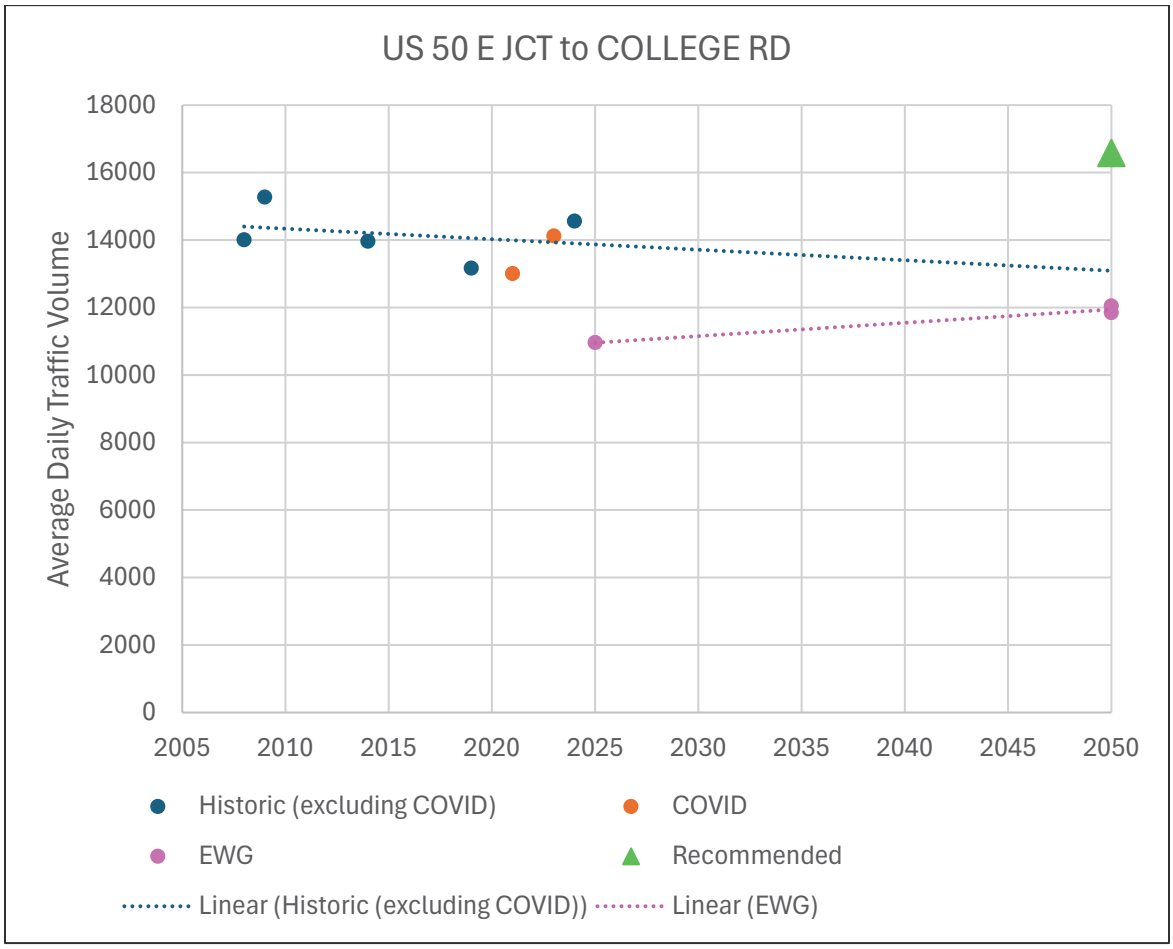

Figure 7: Traffic Volume Trendlines – US 50 East Junction to College Rd

7. MO 47 – College Rd to Route AD

Traffic volume forecasts for MO 47 between the College Rd and Route AD are illustrated in **Figure 8**. As shown, the historic traffic counts reflect a decreasing trendline, influenced by a post-pandemic count below 15,000 vehicles per day. A recommended growth rate of 0.5 percent annually would be consistent with the section north of College Rd and ensure some growth is considered despite the recent trend. This would result in a forecast ADT of 16,644 vehicles per day, as indicated by the green triangle.

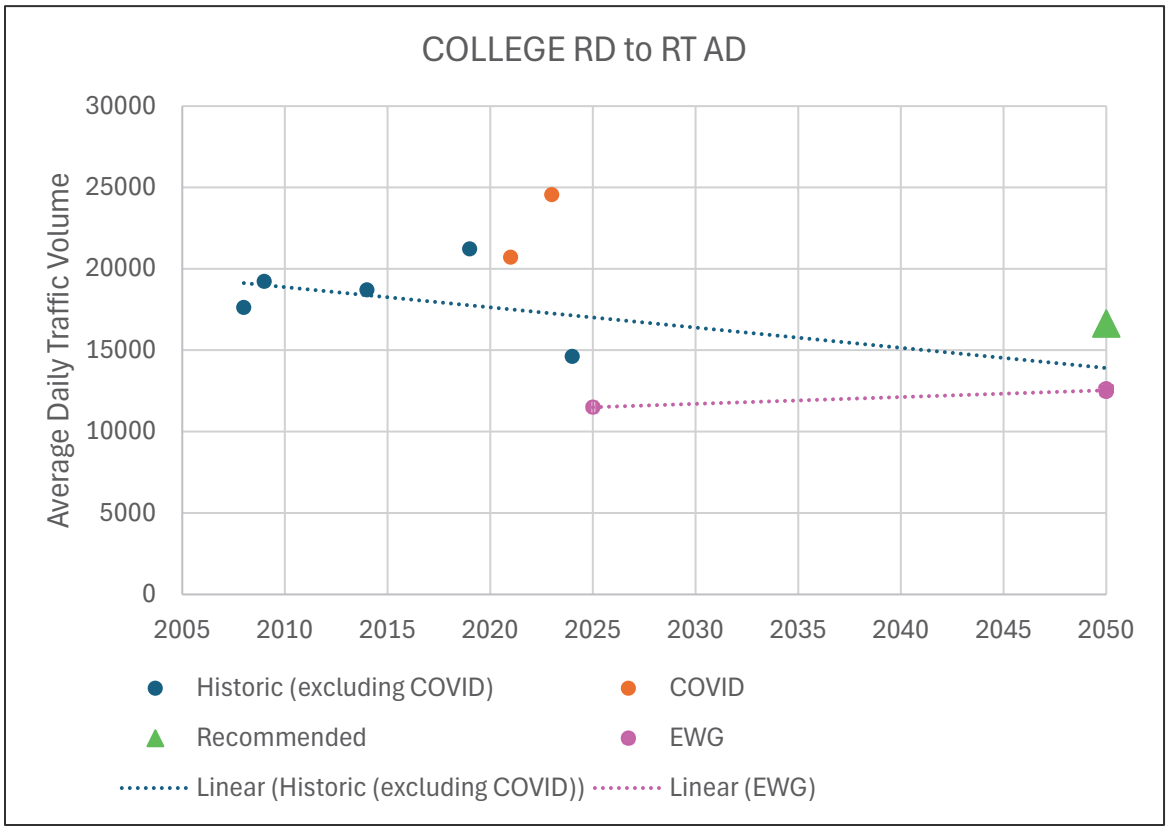

Figure 8: Traffic Volume Trendlines – College Rd to Route AD

8. MO 47 – Route AD to I-44

Traffic volume forecasts for MO 47 between Route AD and I-44 are illustrated in **Figure 9**. As shown, the historic traffic count trendline reflects a 0.5 percent annual rate of increase. This is consistent with the annual rates recommended in the adjacent sections of MO 47 between US 50 and I-44. Therefore, for consistency, a growth rate of 0.5 percent annually is recommended and would result in a forecast ADT of 14,994 vehicles per day, as indicated by the green triangle.

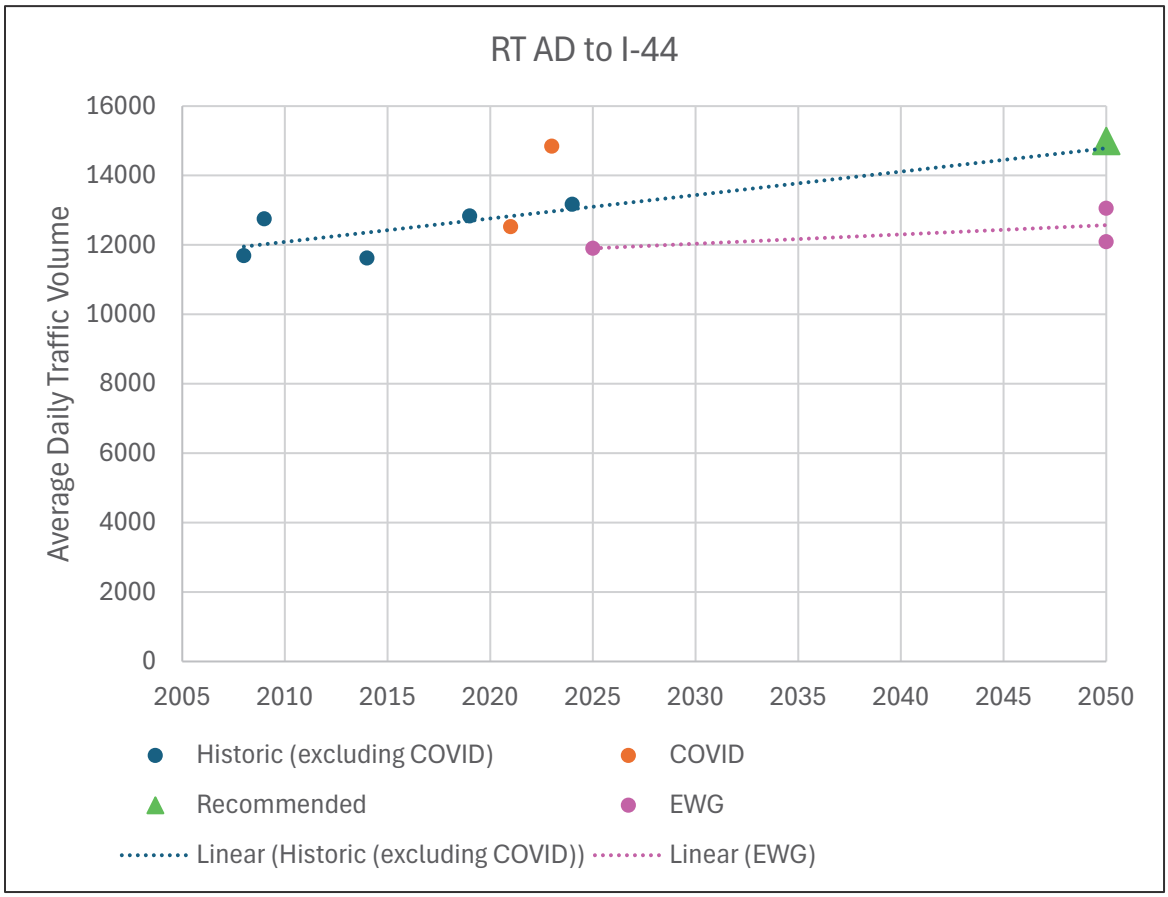

Figure 9: Traffic Volume Trendlines – Route AD to I-44

Lochmueller Group appreciates your review of this document. It is our intent to reach consensus on these traffic forecast growth rates prior to proceeding with the remainder of this study. Don't hesitate to contact us at (314) 621-3395 should you have any questions or require additional information.

Table 2: Summary of Forecasting Data

MO 47 Segment	2050 Recommended		2050 Historic Trendline		2050 EWG 4-Lane Scenario		2050 EWG 2-Lane Scenario		EWG 2025	Counts 2024
	ADT	AAGR	ADT	AAGR	ADT	AAGR	ADT	AAGR	ADT	ADT
STEUTERMANN RD to COUNTRY CLUB LN	22103	0.75%	24229	1.11%	18787	0.70%	17575	0.43%	15798	18200
COUNTRY CLUB LN to CLEARVIEW RD	21374	0.75%	21250	0.73%	20009	0.67%	18823	0.42%	16945	17600
CLEARVIEW RD to RT V	19160	0.50%	16253	-0.13%	19091	0.67%	17378	0.30%	16144	16830
RT V to US 50 W JCT	23452	0.50%	23935	0.58%	18600	0.62%	16539	0.15%	15937	20600
US 50 btw 47 WEST & EAST JCTs	47824	0.75%	75335	2.53%	24852	0.38%	24666	0.35%	22619	39380
US 50 E JCT to COLLEGE RD	16576	0.50%	13091	-0.41%	12043	0.38%	11847	0.31%	10961	14560
COLLEGE RD to RT AD	16644	0.50%	13913	-0.19%	12629	0.37%	12463	0.32%	11504	14620
RT AD to I-44	14994	0.50%	14790	0.45%	13053	0.37%	12091	0.06%	11900	13170

ADT = Average Daily Traffic
AAGR = Average Annual Growth Rate

Appendix B: Existing Crash Analysis Memorandum

DRAFT

J6P3661: MO Route 47
Existing Crash Analysis Memorandum

April 8, 2025

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Introduction

Missouri Route 47 (MO 47) is part of the Missouri State Highway System located in the eastern part of Missouri. This study encompasses the 12.7-mile corridor of MO 47 between Missouri Route 100 in the north (in Washington, MO) and Interstate 44 interchange to the south (in St. Clair, MO). MO 47 also passes through Union, MO where it shares a segment with US 50. The study corridor can be seen in **Figure 1.**

The purpose of this technical memorandum is to provide supporting documentation for the Conceptual Study Report (CSR) that describes the existing traffic safety conditions for the following intersections and their associated segments:

- Signalized
    - MO 47 / Highway 100
    - MO 47 / Washington Crossing
    - MO 47 / Steutermann Road/Bieker Road
    - MO 47 / Clearview Road
    - MO 47 / Independence Drive
    - MO 47 / Central Avenue & Highway V
    - MO 47 / E Main Street
    - MO 47 / US 50 (West)
    - MO 47 / US 50 (East)
    - MO 47 / N Outer Road
    - MO 47 / I-44 WB Ramps (Interchange)
    - MO 47 / I-44 EB Ramps (Interchange)
- Unsignalized
    - MO 47 / Country Club Lane & Forest Hills Drive (north)
    - MO 47 / Lost Pines & Hi-Line Drives
    - MO 47 / Dairy View Drive
    - MO 47 / Vondera Avenue
    - MO 47 / Old County Farm Road
    - MO 47 / College Road & Forestview Drive
    - MO 47 / Rte AD / Schuchart Road
    - MO 47 / E. Happy Sac Road
    - MO 47 / Airport Road

As shown in **Figure 2**, the study corridor was divided into four sections based on variations in roadway characteristics and surrounding land uses. A summary of the four sections can be found below in **Table 1**.

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Table 1: Summary of Study Corridor Sections

Section	Start Point	End Point	Length	# Lanes	AADT	Speed	Street Lighting
A – North Urban	Highway 100	Steutermann Rd	0.3 mi	5	22,440	45	Partial
B – North Rural	Steutermann Rd	Independence Dr	5.1 mi	2	17,399	45-55	Partial
C – Middle Urban	Independence Dr	US 50 (East)	1.6 mi	5	22,391	45	Partial
D – South Rural	US 50 (East)	I-44 EB Ramps	5.7 mi	2	14,836	40-55	Partial

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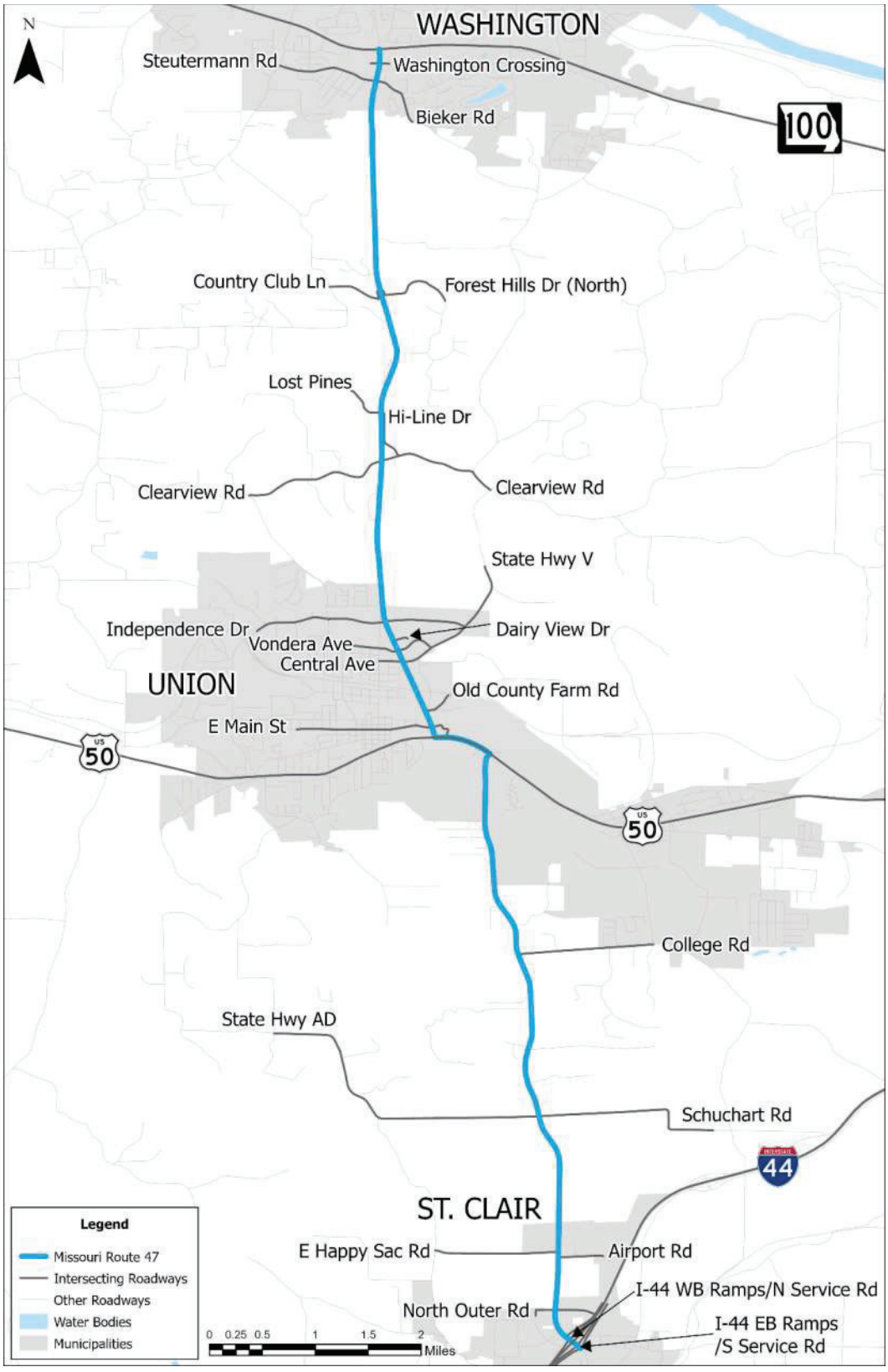

Figure 1: Study Corridor

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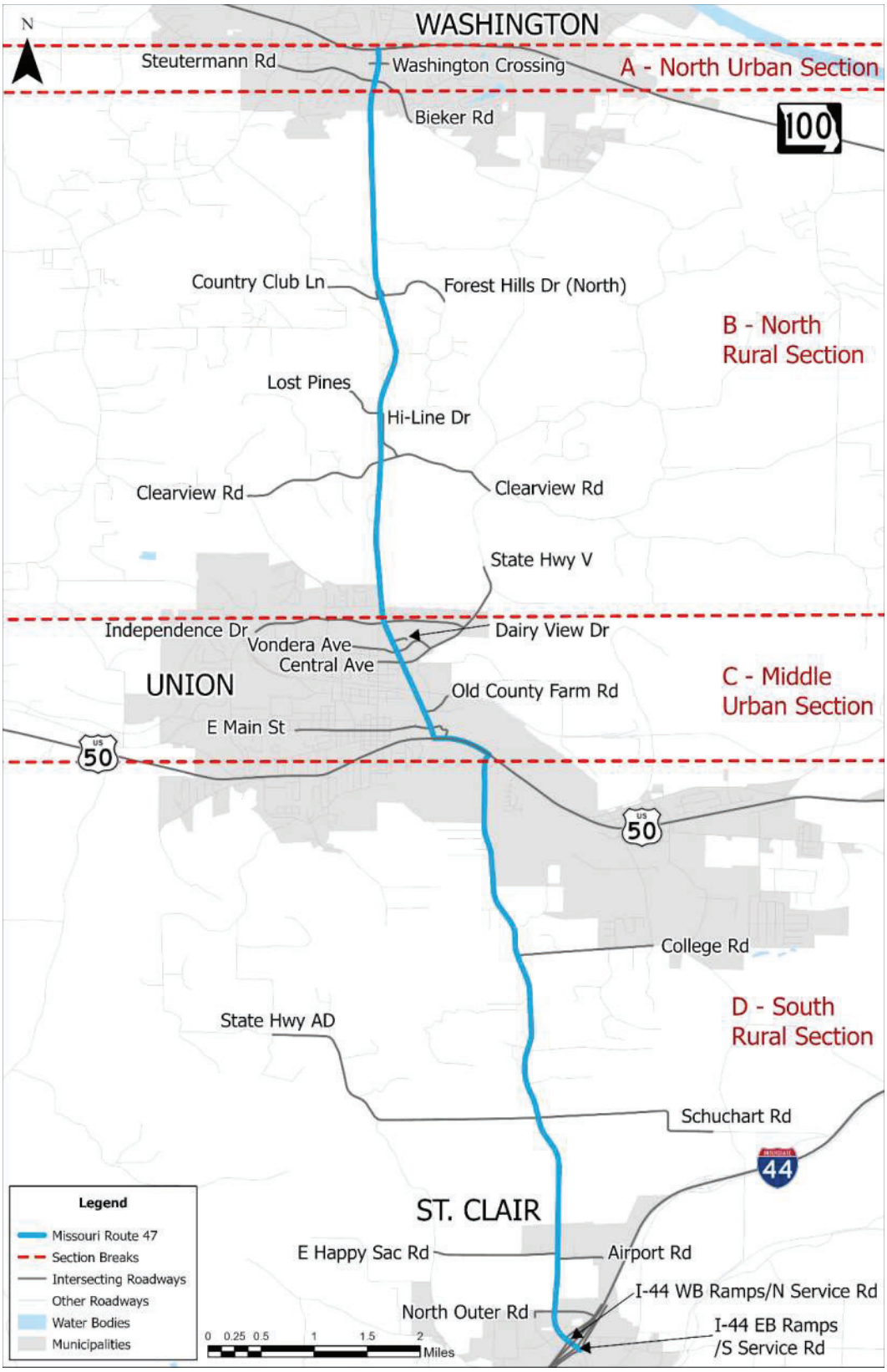

Figure 2: Study Corridor Sections

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Statewide Crash Comparison

Historical statewide crash rates were obtained from Missouri Department of Transportation (MoDOT) to accurately compare the crash rates along the MO 47 corridor for a 1- and 5-year analysis. These crash rates are determined by the total number of crashes per 100 million vehicle miles traveled. The current crash rate for each section of MO 47 through each study area section was calculated using **Equation (1)** as outlined in EPG 905.1.1.1. To determine the crash rate for the four sections along MO 47 the ratio of total number of crashes per 100 million vehicle miles traveled will be used.

$$Crash\ rates\ for\ ranges = \frac{No.\ of\ Crashes\ x\ 100{,}000{,}000}{No.\ of\ Years\ x\ AADT\ x\ Range\ Length\ x\ 365\ days/year} \quad \textbf{(1)}$$

The MO 47 crash rate for each study section was looked at separately to specifically compare that segment to the statewide average crash rates shown in **Table 2**.

Table 2: Statewide Crash Rates

Year	Roadway Type	Geo Area	1 Yr Rate	3 Yr Rate	5 Yr Rate	Centerline	Severity
2023	TWO-LANE	STATE	167.9	173.73	183.01	29,296.48	_
2023	5 LANE SECTION	STATE	299.37	298.93	306.29	238	_
2023	TWO-LANE	STATE	1.93	2.02	2.05	29,296.48	FATAL
2023	5 LANE SECTION	STATE	1.05	1.1	1.07	238	FATAL

Table 3 provides an overview of each section of MO 47 comparing the statewide crash rate for 1 year (2023) and for 5 years (2019-2023) total crash data.

Table 3: Crash Rate per Million Vehicle-Miles of Travel

Section	2023 (1 Year)					2019-2023 (5 Year)				
	Total			Fatal		Total			Fatal	
	Severity Factor	State	MO 47	State	MO 47	Severity Factor	State	MO 47	State	MO 47
A – North Urban*	7.20	299.37	2156.94	1.05	0	7.60	306.29	2327.87	1.07	0
B – North Rural	1.10	167.90	185.25	1.93	0	0.92	183.01	168.58	2.05	1.24
C – Middle Urban	3.01	299.37	902.39	1.05	0	2.99	306.29	914.63	1.07	1.53
D – South Rural	0.91	167.90	152.30	1.93	0	1.04	183.01	190.50	2.05	2.59

** = Crash rates for the North Urban section are disproportionately high due to the segment's short length (0.3 miles), which can exaggerate rate calculations per EPG guidelines. For comparative purposes, segments over one mile are preferred.*

In the North Urban and Middle Urban sections, five-lane segments were used for comparing statewide crash rates. As shown in **Table 3**, observed crash rates are 3 to over 7 times higher than the state averages; however, this discrepancy may be influenced by the shorter segment lengths used in the calculation. Per the EPG, segment lengths of more than one mile are preferred to avoid artificially high crash rates. The proximity of intersections, particularly in the North Urban Section (A), which features three intersections within just 0.3 miles, may also contribute to this variance. For the North Rural and South Rural sections,

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two-lane segments were used for comparison. **Table 3** indicates that observed crash rates over the 5-year period exceeded state averages in three out of four study areas: North Urban, Middle Urban, and South Rural. However, it is worth noting that the South Rural Section (D) had only a 4% higher crash rate compared to the state average. Given the potential impact of short segment lengths, caution should be used when interpreting these crash rates.

In addition to calculating crash rates per Million Vehicle-Miles of Travel (MVMT), a standard metric for evaluating crash exposure based on traffic volume and roadway length, this study also includes crash rates per 100,000 vehicles for each study section. This additional metric provides a different perspective by normalizing crash frequency relative to traffic volume alone, without factoring in segment length. It is particularly useful for understanding crash likelihood in areas with varying traffic densities.

To further contextualize crash occurrence along each study section, **Table 4** presents the average number of crashes occurring per day, week, and month. These values are broken down by total crashes, Property Damage Only (PDO) crashes, and Injury & Fatal crashes. Expressing crash data in this format provides a more intuitive understanding of safety conditions, making it easier to communicate risk levels to decision-makers and the public.

Table 4: Crash Rate Per Thousand Vehicles and Crash Frequency by Severity and Time Period

Section	Crash Rate	Total Crashes			PDO			Injury and Fatal		
		Per Day	Per Week	Per Month	Per Day	Per Week	Per Month	Per Day	Per Week	Per Month
A – North Urban	1274.51	0.2	1.1	4.8	0.1	0.9	4.0	0.0	0.2	0.8
B – North Rural	1568.97	0.1	1.1	4.6	0.1	0.8	3.3	0.0	0.3	1.3
C – Middle Urban	2670.84	0.3	2.3	10.0	0.3	1.8	7.9	0.1	0.5	2.0
D – South Rural	1981.80	0.2	1.1	4.9	0.1	0.9	3.8	0.0	0.2	1.1

Regional Safety Plan Comparison

To align with the East-West Gateway Council of Governments' (EWG) Regional Safety Plan, this study incorporates the High-Injury Network (HIN) analysis, which identifies roadways with the highest frequencies of fatal and serious injury crashes within the EWG region. The HIN methodology synthesizes five years of crash data (2018–2022) to score locations based on crash frequency, highlighting priority areas for safety improvements. The EWG plan developed HINs for multiple focus areas, including All Roads and Modes (HIN 1 - All Modes), Vulnerable Road Users (HIN 2 - VRU), Underserved Communities (HIN 3 - Underserved), Top Contributing Factors (HIN 4 - Contributing Factors), and Interstates & Ramps (HIN 5 - Interstates). Within HIN 4 (Top Contributing Factors), key crash factors analyzed include speeding, failure to yield right-of-way, improper lane usage, impaired driving (alcohol/drug use), and distraction. **Figure 3** illustrates HIN 1 (all-mode crashes) along the study corridor, as well as HIN 4 subcategories: CF1 (Speeding Crashes), CF2 (Failure to Yield ROW), CF3 (Improper Lane Usage), and CF5 (Distraction). This comparison provides critical insights into how the study corridor aligns with regional safety priorities and helps guide data-driven countermeasure recommendations.

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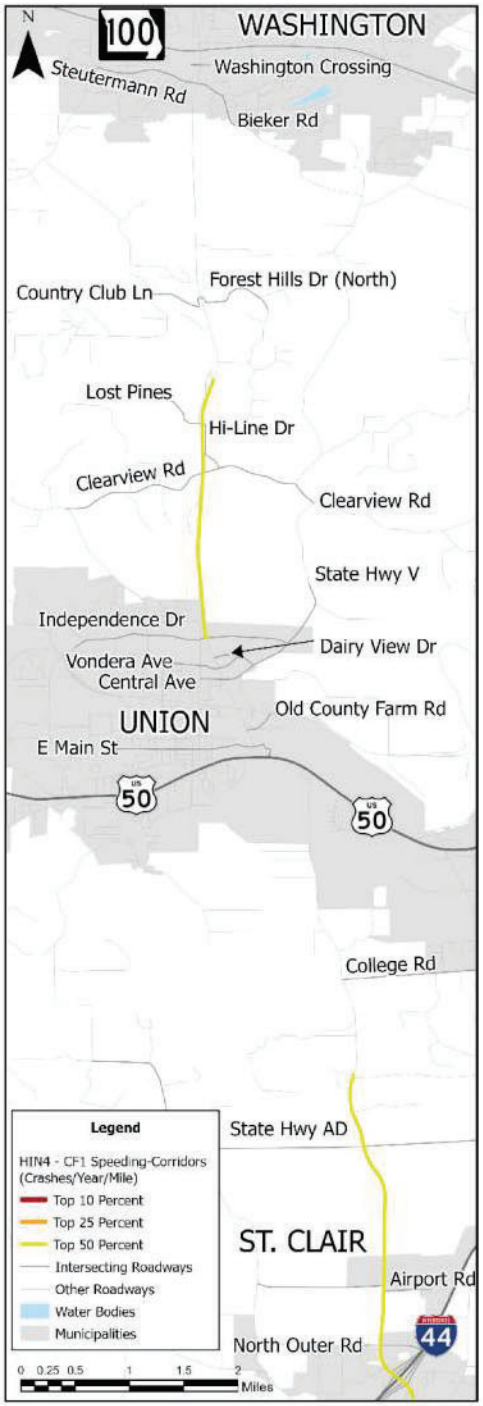
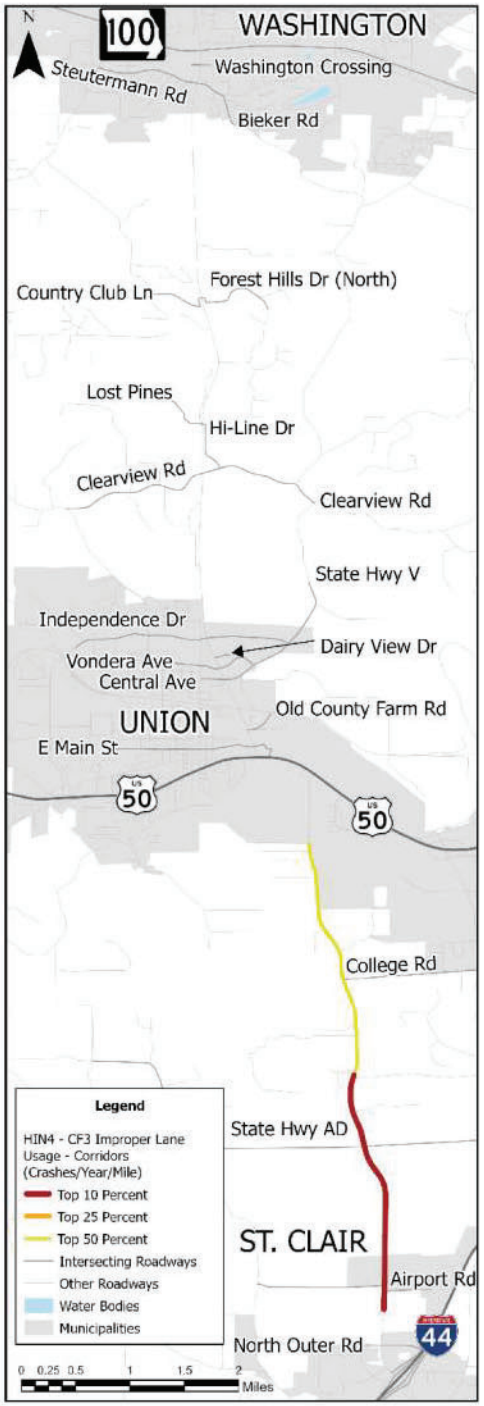
WASHINGTON
Washington Crossing
Bieker Rd
Forest Hills Dr (North)
Hi-Line Dr
Clearview Rd
State Hwy V
Dairy View Dr
Old County Farm Rd
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Miles


N
100
WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF1 Speeding-Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

N
100
WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF2 Failure to Yield ROW - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles


N
100
WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF3 Improper Lane Usage - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

N
100
Steutermann Rd
Country Club Ln
Forest Hills
Lost Pines
Hi-Line Dr
Clearview Rd
Independence Dr
Vondera Ave
Central Ave
UNION
E Main St
50
Legend
HIN4 - CF5 Distraction - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

Methodology

Data Collection

Historical crash data were received from the MoDOT, which are compiled from local and state police crash records. Crashes that occurred between January 1, 2019, and December 31, 2023, were evaluated in the study. At the time of this study, the 2024 statewide crash records had not been finalized and were not considered for analysis. The crash data files contain the following information required to identify and analyze the crash records:

- Crash ID,
- Day and time of crash,
- Crash type,
- Latitude / Longitude,
- Light condition,
- Roadway condition (wet, dry),
- Crash severity (fatal, injury, PDO).

Collected intersection counts from May 9, 2024, were used to estimate the annual average daily traffic (AADT) for each intersection. For the intersection of MO 47 and E. Happy Sac Road, the MoDOT State Highway Patrol Mapping tool was utilized. Recorded AADT values from 2019 to 2023 were used for the study.

Ramp Terminal Analysis

Analysis Tool

The Enhanced Interchange Safety Analysis Tool (ISATe) from AASHTO, which is based on the 2010 Highway Safety Manual (HSM) 1st Edition (2016 Errata) methodology, was used to analyze the existing interchanges. Geometric and site characteristics needed for the analysis were derived from aerial images.

Study Limits

Ramp terminal study limits, as depicted in **Figure 4: Ramp Terminal Study Limits**, were set in accordance with EPG 905.3.6.1.3 for intersection analysis such that crashes that occurred within 150 feet of an intersection along all ramp terminal approaches were considered for analysis; 150 feet was measured from the edge of pavement of the cross-street for each approach.

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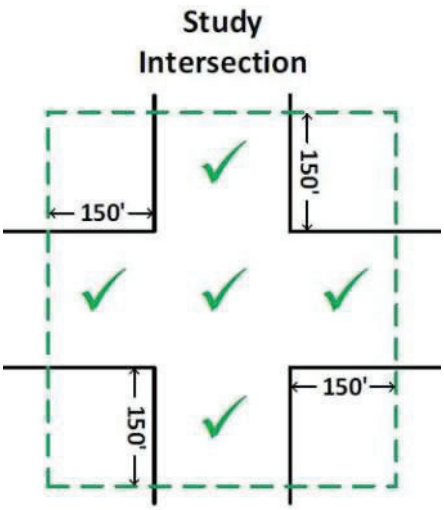

Figure 4: Ramp Terminal Study Limits

Surface Street & Intersection Analysis

Analysis Tool

The predictive method for urban and suburban arterials provided in Chapter 12 of the HSM was used to analyze the conditions and crash history of surface streets and intersections. Spreadsheets that were developed by the National Cooperative Highway Research Program (NCHRP) based on HSM methodologies and safety performance functions (SPFs) were utilized to predict crash frequencies. The Urban and Suburban Arterials NCHRP spreadsheet was used for the study. Geometric and site characteristics needed for the analysis were derived from aerial images. Missouri calibration factors for HSM worksheets that were provided in EPG 905.3.6.2.2 were used.[1]

Study Limits

The segment lengths for surface streets, as depicted in **Figure 5**, were set according to guidance provided in EPG 905.3.6.2.4 and HSM 12.5. Lengths of roadway segments began and ended at the center of intersections or where the homogenous road segment changed. However, to avoid double-counting intersection-related crashes, crashes that occurred within an intersection influence area (150 feet beyond an intersection) were not included in the safety analysis of surface street segments and were only included in the safety analysis of intersections. Crashes that occurred on a surface street segment outside an intersection influence area were considered only in the safety analysis of surface streets.

[1] https://epg.modot.org/files/c/c9/905.3.6.2.2_Summary_spreadsheet.xlsx

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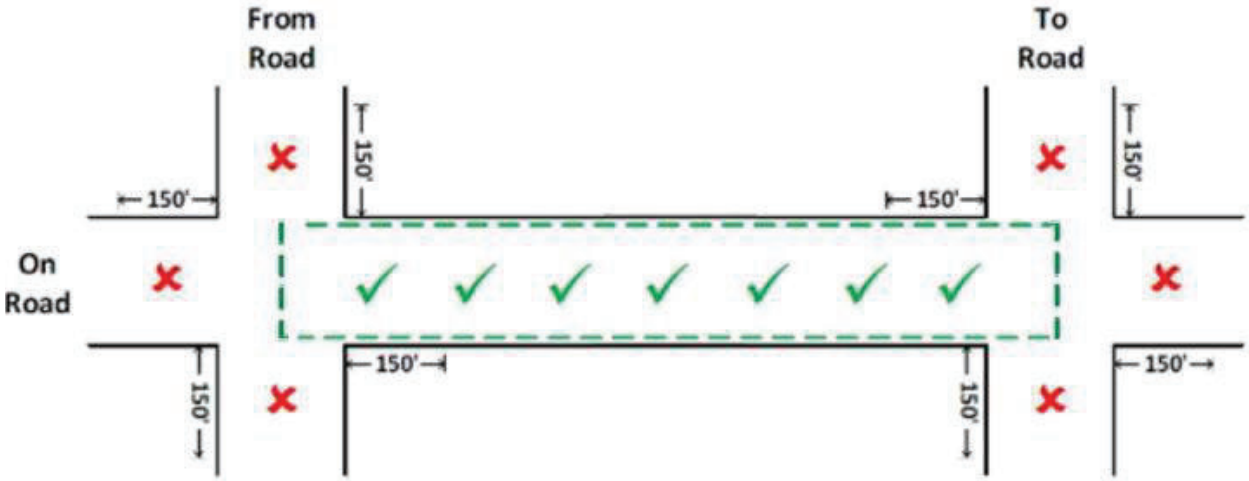

Figure 5: Surface Street Segment Lengths

Intersection study limits, as depicted in **Figure 6**, were set in accordance with EPG 905.3.6.1.3 unless otherwise noted for intersection analysis such that crashes that occurred within 150 feet of an intersection along all approaches were considered for analysis; 150 feet was measured from the edge of pavement of the cross-street for each approach.

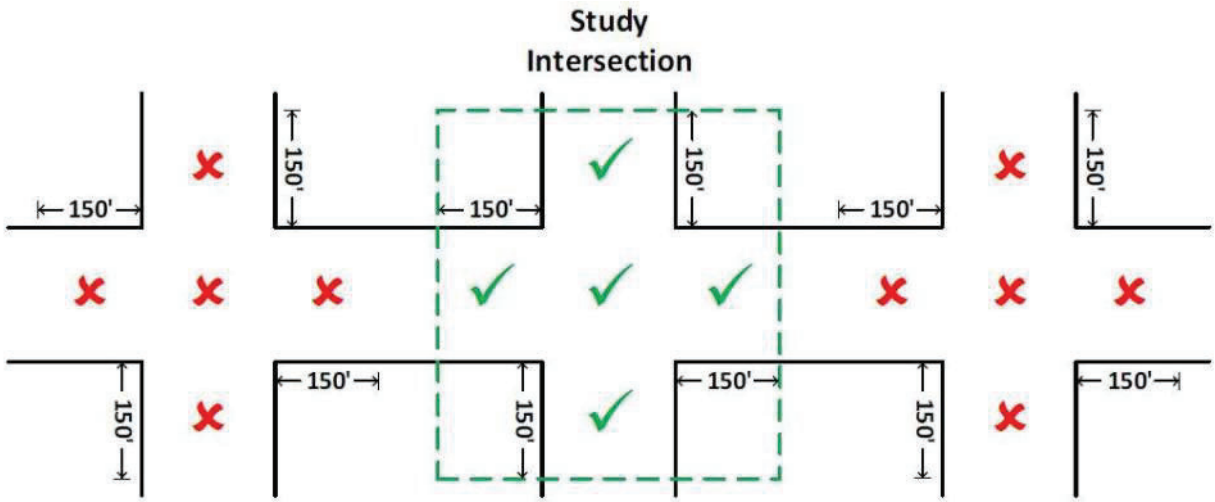

Figure 6: Intersection Study Limits

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Existing and No-Build Safety Analysis

MO Route 47 Corridor

Figure 7 shows the total number of crashes per year within the study corridor from 2019 to 2023. Over the 5-year span, a total of 1,451 crashes occurred. As shown, the total number of crashes along the study corridor range from a low of 252 (2020) to a high of 320 (2021).

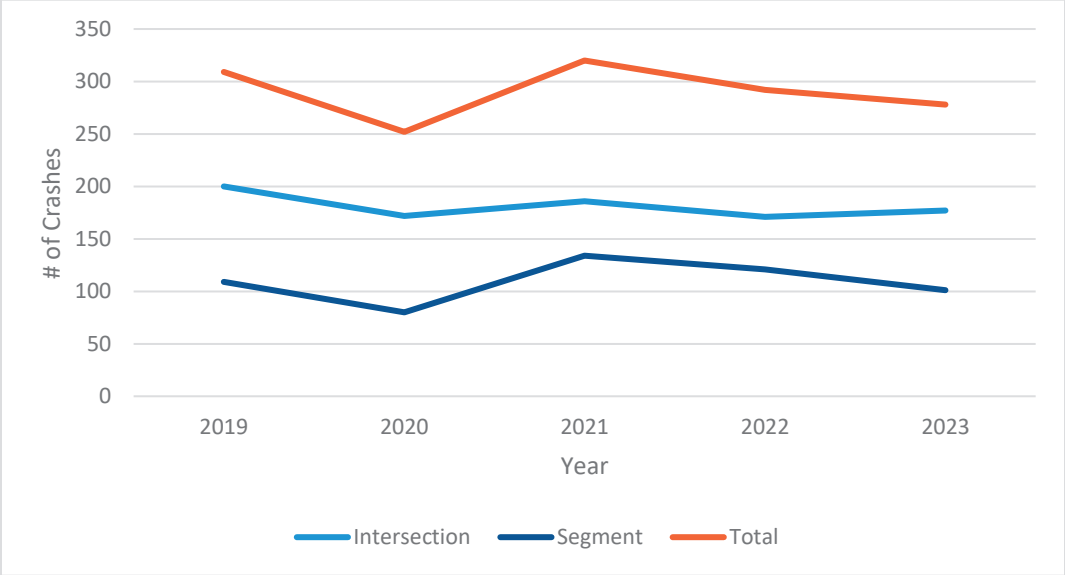

Figure 7: Crash Trends (2019 to 2023)

As can be seen in **Figure 7**, crash trends from 2019 to 2023, highlighting fluctuations in intersection and segment crashes. While total crashes saw a decline in 2020, they peaked in 2021 before gradually decreasing. Segment crashes followed a similar pattern, dropping in 2020, spiking in 2021, and then tapering off. In contrast, intersection crashes remained relatively stable, with minor fluctuations. The spike in 2021 suggests a potential external factor, that temporarily influenced crash rates.

Over the five-year period, there were 45 animal-related crashes across various sections. The North Urban Section (A) reported no incidents, while the North Rural Section (B) had 15 crashes involving deer, including 14 property damage only (PDO) and one minor injury. The Middle Urban Section (C) experienced eight crashes, including six deer involving and two involving dogs, all resulting in PDO. The South Rural Section (D) had 22 crashes, with 21 involving deer (including two minor injuries) and one unspecified animal, all resulting in PDO.

Figure 8 highlights the locations of total crashes at intersections and along roadway segments within the study corridor. Intersection crashes were the greatest at the following intersections with the highest ADT:

- MO 47 and Highway 100 (Section A)
- MO 47 and US 50 West (Section C)

Segment crashes were the highest among the following segments of the study corridor:

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- Between Steutermann Road/Bieker Road and Country Club Lane/Forest Hills Drive (Section A)
- Between Clearview Road and Independence Drive (Section B)
- Between US 50 East and College Road (Section D)

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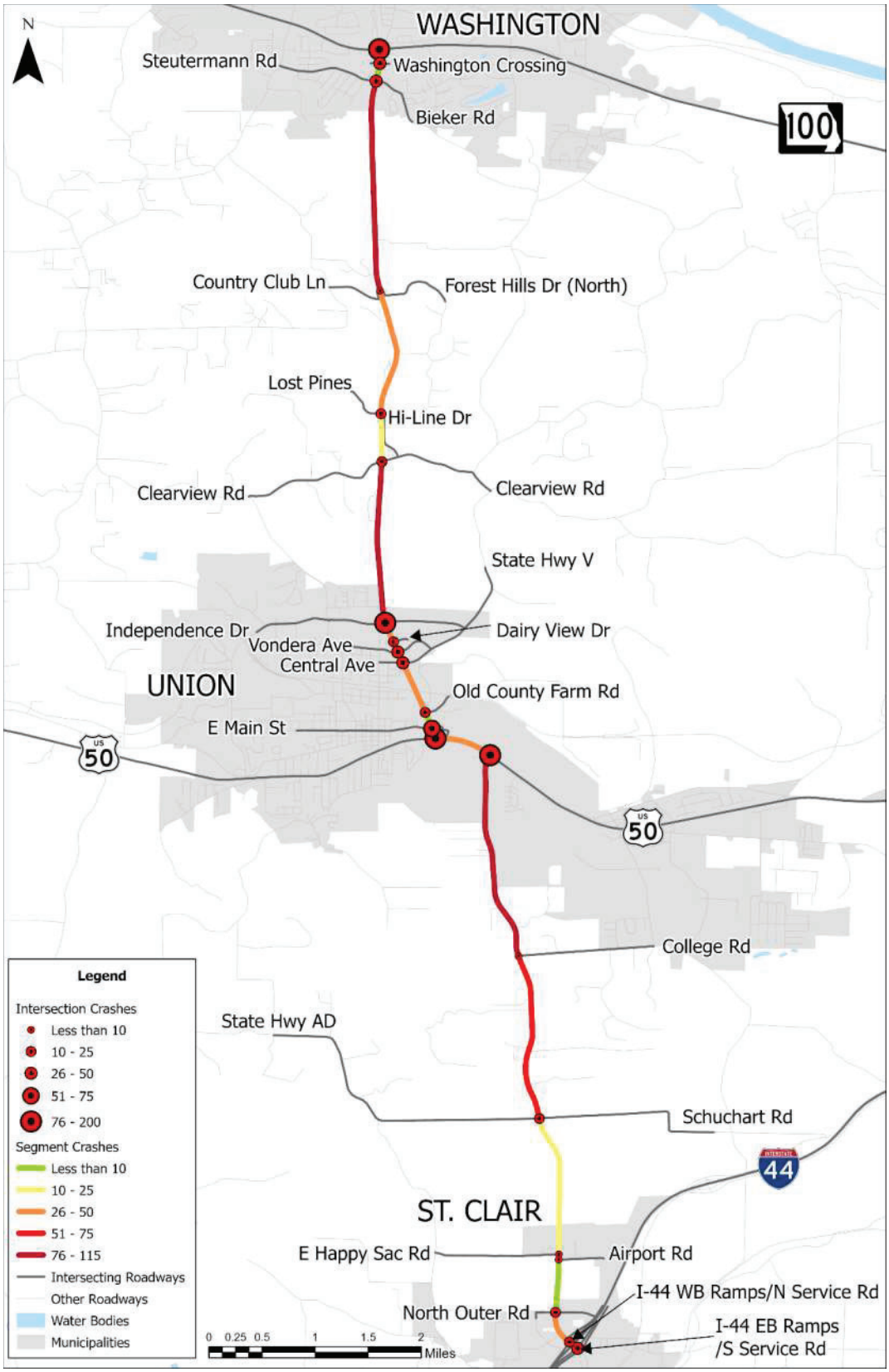

Figure 8: Intersection and Segment Crashes along the Study Corridor

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Crash Severity

According to the State of Missouri's Uniform Crash Report Preparation Manual Version 3.0, crash severity levels fall into the following categories:

- Fatal Injury
- Serious Injury
- Minor Injury
- Property Damage Only

Serious Injury is defined as non-fatal injury, which prevents the injured person from walking, driving, or continuing the activities the person was capable of performing prior to the traffic crash. **Table 5** shows the number of crashes that resulted in injuries along the study corridor.

Table 5: Crashes by Severity and Location

Location	Fatal Injury Crashes	Serious Injury Crashes	Minor Injury Crashes	Property Damage Only Crashes	Total Crashes
Intersection	1	17	166	722	**906**
Segment	6	12	110	417	**545**
Total	**7**	**29**	**276**	**1139**	**1451**

Between 2019 and 2023, the study corridor experienced seven fatal crashes resulting in 11 fatalities and 29 crashes resulting in serious injuries. A detailed analysis of crash severity is provided in the detailed four corridor sections of this report. **Figure 9** summarizes the locations of fatal and serious injury crashes along the study corridor.

During the study period, there were five pedestrian-involved crashes were recorded, all resulting in minor injuries. Two crashes occurred near Steutermann Rd (Section A), where pedestrian crossings are present at the intersection, but sidewalks are absent along MO 47. The remaining three crashes took place near Independence Dr, E Main St, and US 50 (Section C). Independence Dr lacks pedestrian crossings, while E Main St has a marked crosswalk at the intersection but no pedestrian infrastructure along MO 47. At US 50, pedestrian facilities are limited to roadway shoulders. Notably, four of these crashes occurred under dark conditions, highlighting potential visibility and lighting concerns for pedestrian safety.

Additionally, one bicycle-involved crash resulted in a serious injury. This incident also occurred in dark conditions near E. Happy Sac Road (Section D). No bicycle facilities are present on MO 47.

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Figure 9: Fatal and Serious Injury Crashes

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Crash Rates

Traffic crash rates for the intersections and segments along the study corridor were calculated. **Figure 10** shows the intersection and segment crash rates along the study corridor. Segment crash rates are calculated based on the location of intersections, and in some cases, segments have been combined to achieve lengths greater than one mile, in accordance with EPG recommendations. The following corridor segments experienced the highest crash rates along the study corridor:

- Between Clearview Road and Independence Drive (Section B)
- Between Independence Drive and US 50 East (Section C)

The mentioned segments above had crash rates of more than 1.5 crashes per million vehicle-miles of travel.

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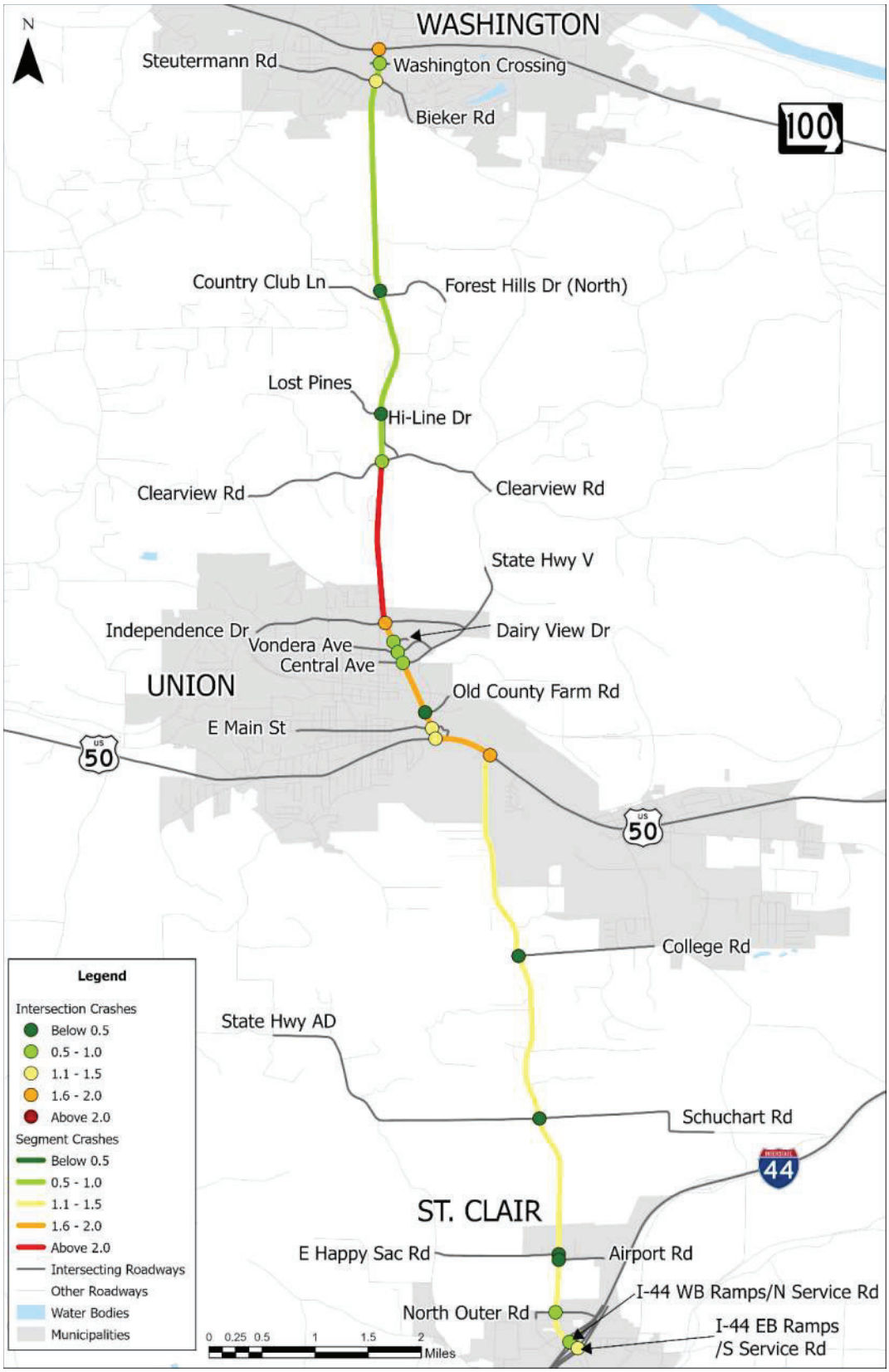

Figure 10: Crash Rates Along the Corridor

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Roadway Design Analysis

Geometrics – Horizontal Alignment

Horizontal alignments along the corridor were studied by comparing existing radii and superelevation to the minimum required radii and minimum required superelevations found in the AASHTO A Policy on Geometric Design of Highways and Streets (Green Book). From Section 3.3.3.2 in the Green Book and per MoDOT Std Plan 203.22, superelevation is not to exceed 8%, and a maximum superelevation of 4% is recommended for urban streets, and superelevation may be omitted on low-speed streets in an urban area. Since the study corridor contains urban and rural areas at varying speeds (with no sections containing low-speed urban areas), it can be determined that the maximum superelevation will vary with each study segment based upon whether it is an urban or rural section. Urban areas will be evaluated using the 4% maximum superelevation, and rural areas of the study area will be evaluated using an 8% maximum superelevation. Using this study criteria, each horizontal curve along the study corridor was analyzed using existing radii and superelevations and comparing them to minimum required radii found in Tables 3-8 and 3-10 in the Green Book. The results of this are shown in **Figures 11a-11h** with analysis in tables in each study segment of this report.

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Figure 11a: MO 47 Horizontal Alignment Locations – North Urban Section (A)

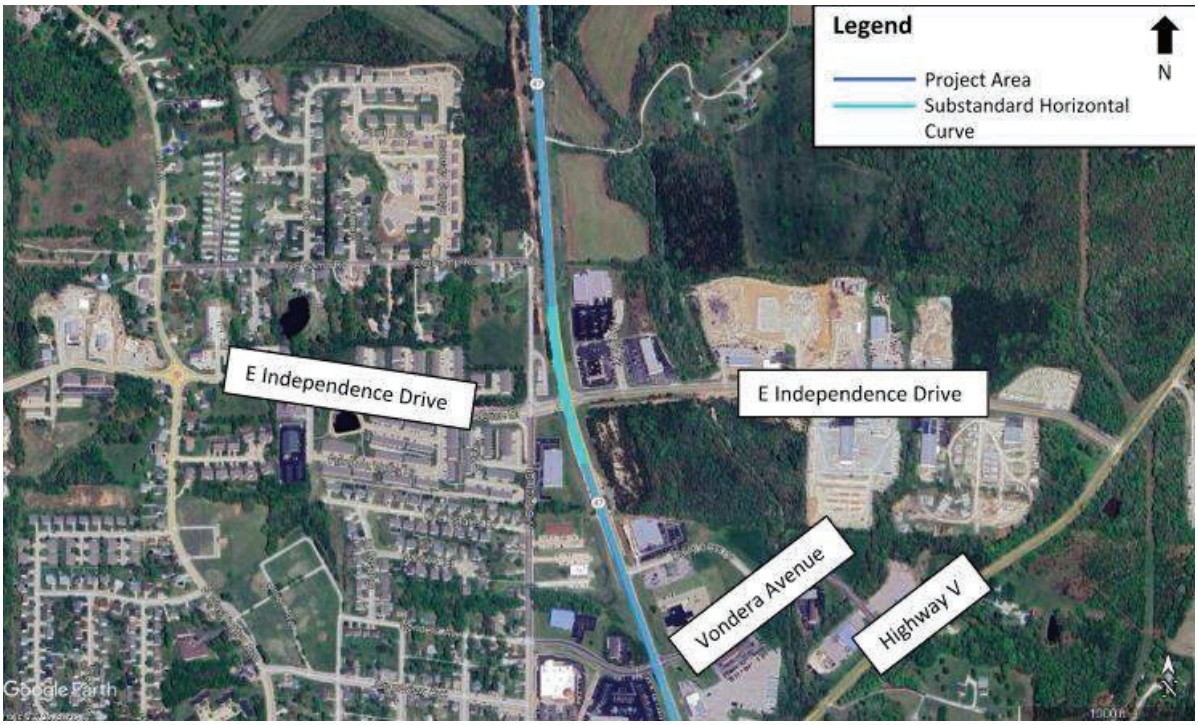

Figure 11b: MO 47 Horizontal Alignment Locations – Middle Urban Section (C)

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Figure 11c: MO 47 Horizontal Alignment Locations – South Rural Section (D)

Figure 11d: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Figure 11e: MO 47 Horizontal Alignment Locations – South Rural Section (D)

Figure 11f: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Figure 11g: MO 47 Horizontal Alignment Locations – South Rural Section (D)

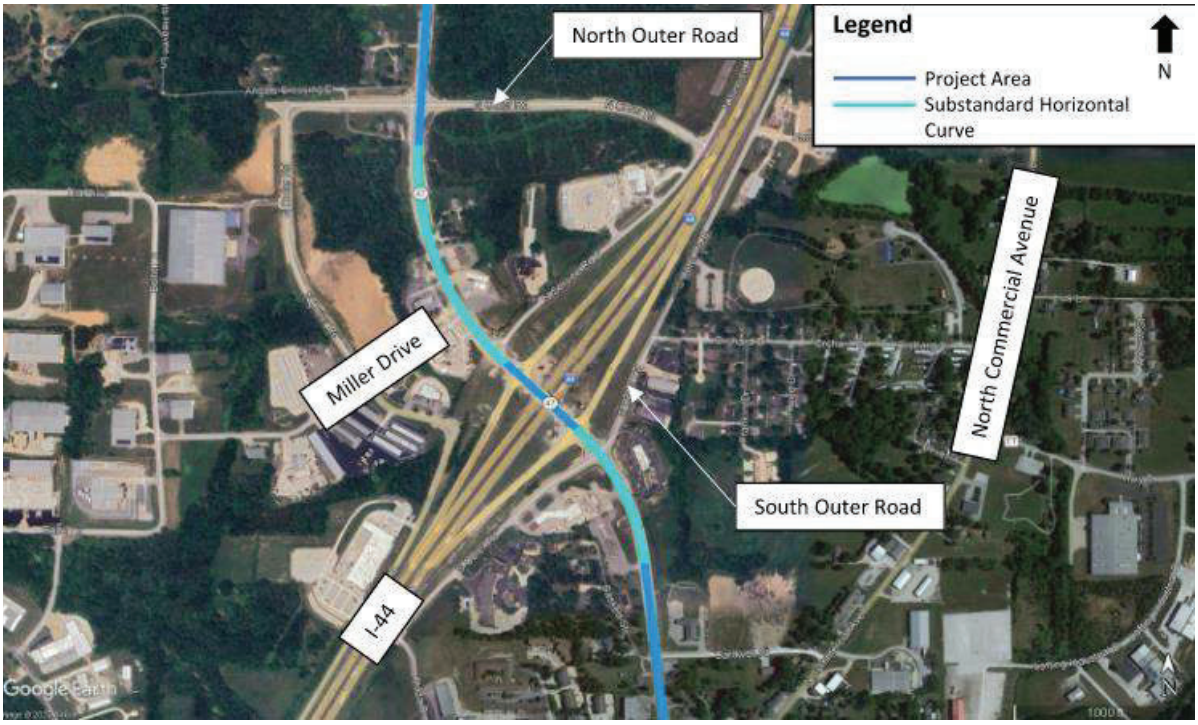

Figure 11h: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Geometrics – Vertical Alignment

Vertical alignments in the study area were analyzed using K-values and stopping sight distances of existing conditions and comparing them to the values from current AASHTO and MoDOT standards. A combination of both substandard crest and sag curves were identified and summarized in the tables, in each of the four sections of the project corridor. Several of the curves were found to be sag curves where one travel direction experienced a lower sight distance than the other travel direction. Most of the crest curves along MO 47 have K-values and stopping sight distances that were acceptable. Exhibits summarizing the locations of the substandard vertical curves can be found in **Figure 12a-12d** below.

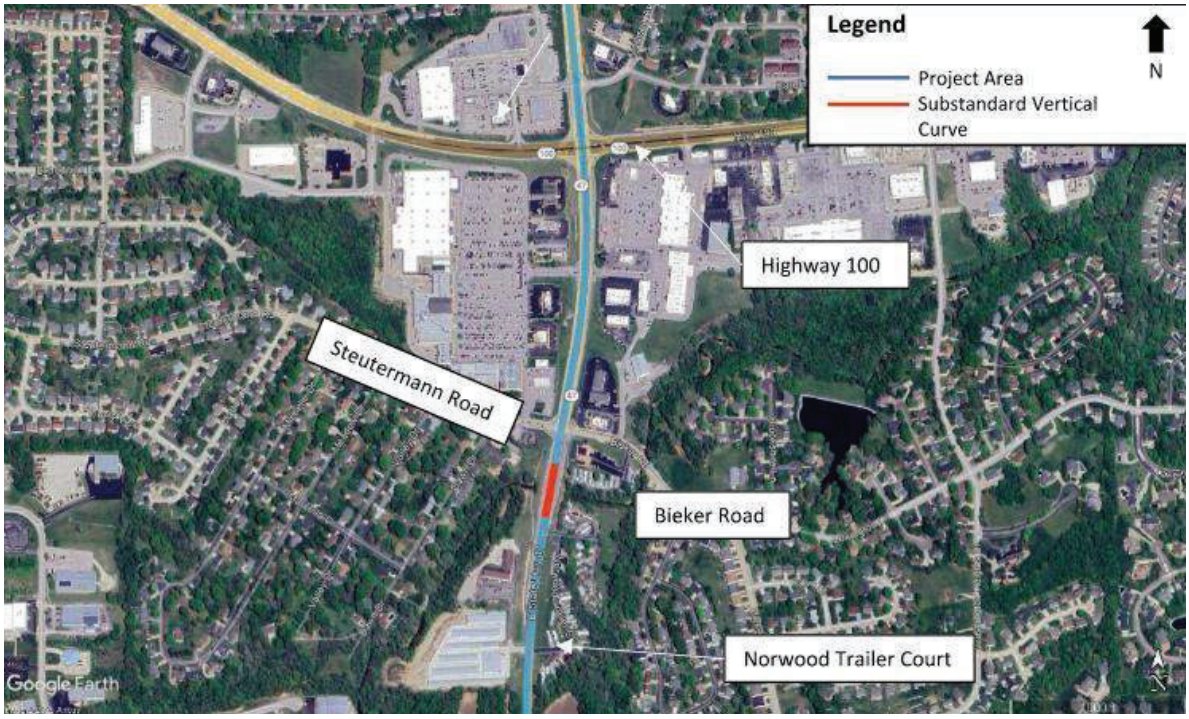

Figure 12a: MO 47 Vertical Alignment Locations – North Urban Section (A)

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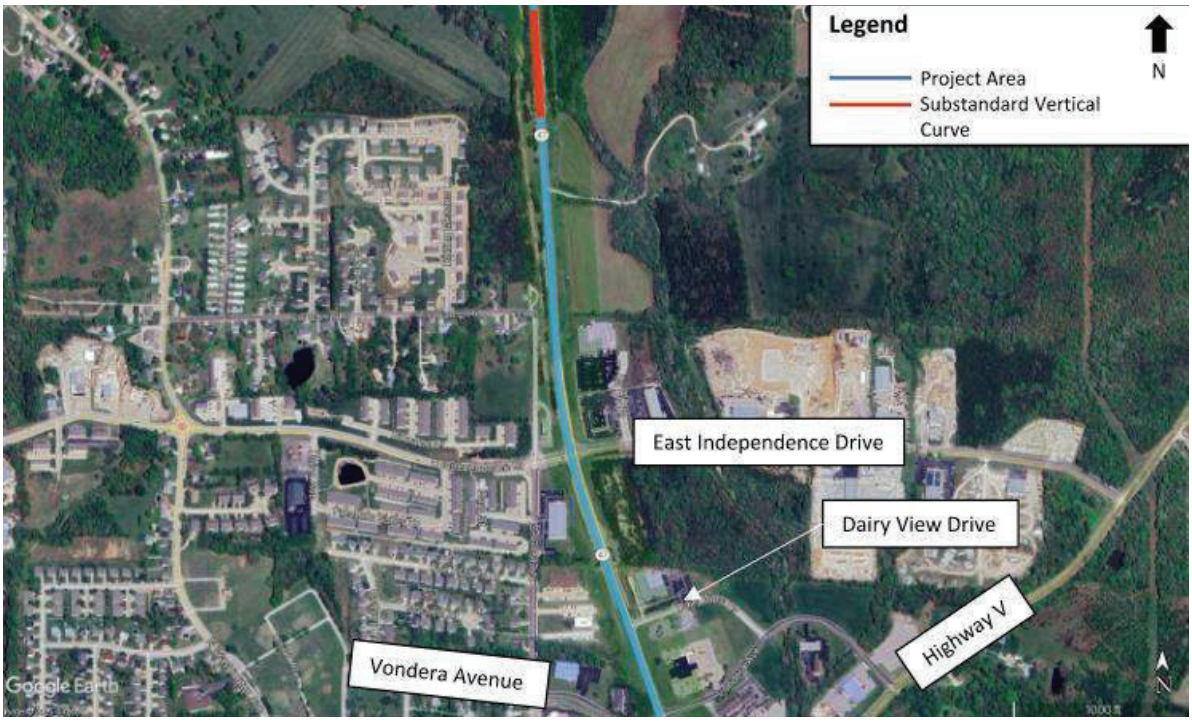

Figure 12b: MO 47 Vertical Alignment Locations – North Rural Section (B)

Figure 12c: MO 47 Vertical Alignment Locations – South Rural Section (D)

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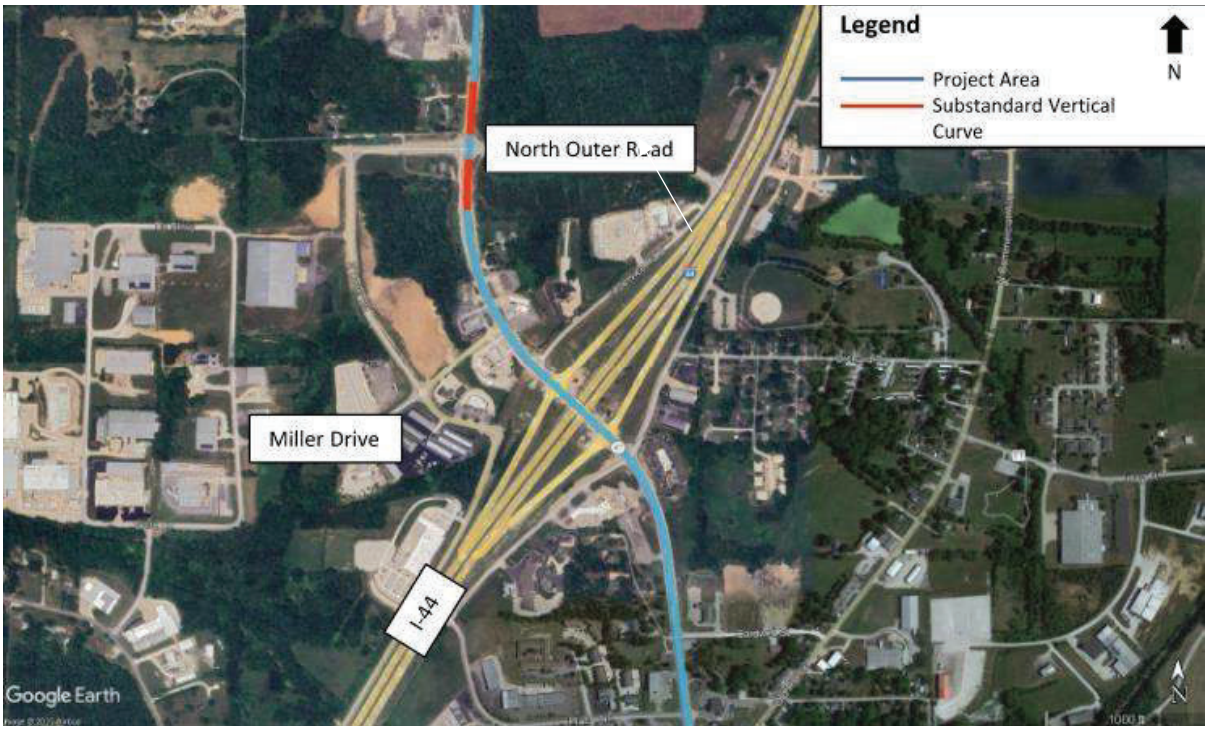

Figure 12d: MO 47 Vertical Alignment Locations – South Rural Section (D)

Deceleration Lanes, Turn Lanes, and Tapers

Throughout the study corridor, deceleration lanes, turn lanes, and tapers were analyzed for taper lengths and lane lengths and compared to minimum values from the AASHTO Green Book (Section 10.9.5.10) and MoDOT Engineering Policy Guide (EPG) (Sections 233 & 234). There are no acceleration lanes within the study limits. Some intersections include deceleration lanes only on the right (for right-turns) and some include deceleration lanes on both the left and right to receive both left- and right-turns. Similarly, deceleration lanes are provided approaching most intersections, enabling turning traffic to decelerate out of the through lanes before completing their turns. When compared to the areas with the most crashes, substandard deceleration lanes were present in the sections of MO 47 near Clearview Road, Independence Drive, and US 50 which fall into North Rural (B) and Middle Urban (C) sections. Like the previous analyses, substandard deceleration lanes, with their respective tapers, will be covered in their respective sections of this report. Locations of these lanes can be seen in **Figure 13a-13f.**

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Figure 13a: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Urban Section (A)

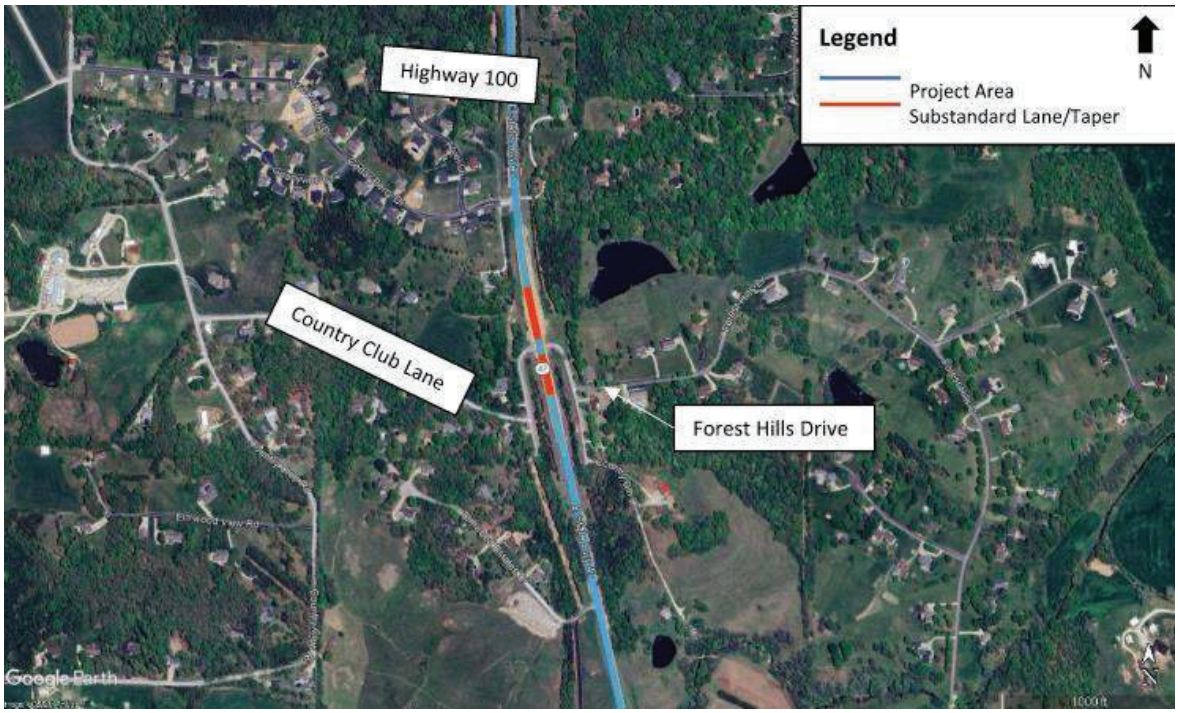

Figure 13b: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

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Figure 13c: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

Figure 13d: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

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Figure 13e: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

Figure 13f: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

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Intersection Sight Distance Analysis

In addition to the major roads listed in the introduction that intersect with MO 47, there are numerous minor roads and driveways that also intersect with MO 47. These intersections were analyzed as part of this study to determine whether there was sufficient Intersection Sight Distance (ISD) for turning movements from the minor road or driveway onto MO 47. For each intersection, a right and left turning movement was analyzed by creating intersection sight triangles using Green Book Section 9.5.2. The sight triangle analysis considered the approach grade from the minor road, the grade of the major road, type of turning movement, design speed of the major road, and the time gap at the design speed of the major road. In total, 13 minor roads/driveways were found to have insufficient ISD. It should be noted that these sight triangles were calculated based on the posted speed limit (45 mph or 55 mph) of the turn in question onto MO 47. If drivers are not adhering to the posted speed limits, the intersection sight distance analysis in this report will not reflect driver behaviors. The locations of turning movements with deficient ISD are shown in **Figures 14a-14j**. Additionally, the locations with deficient ISD are summarized in tables in each study section.

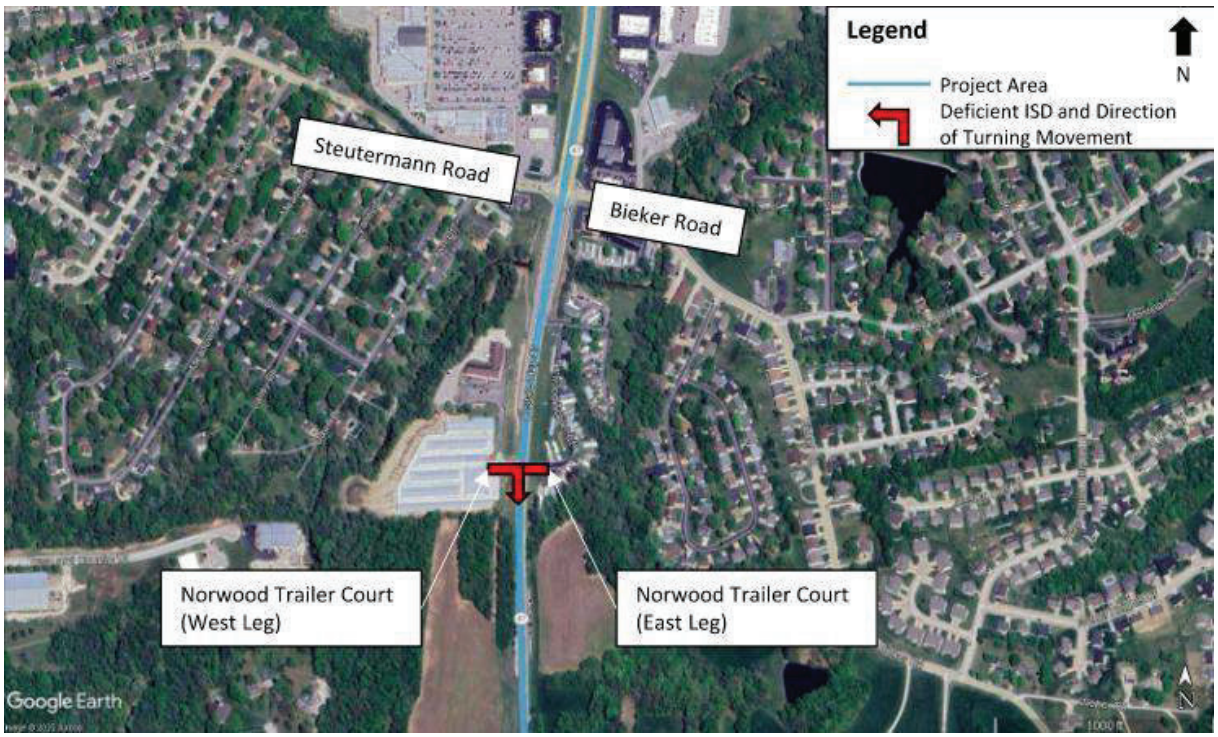

Figure 14a: MO 47 Deficient Intersection Sight Distances – North Urban Section (A)

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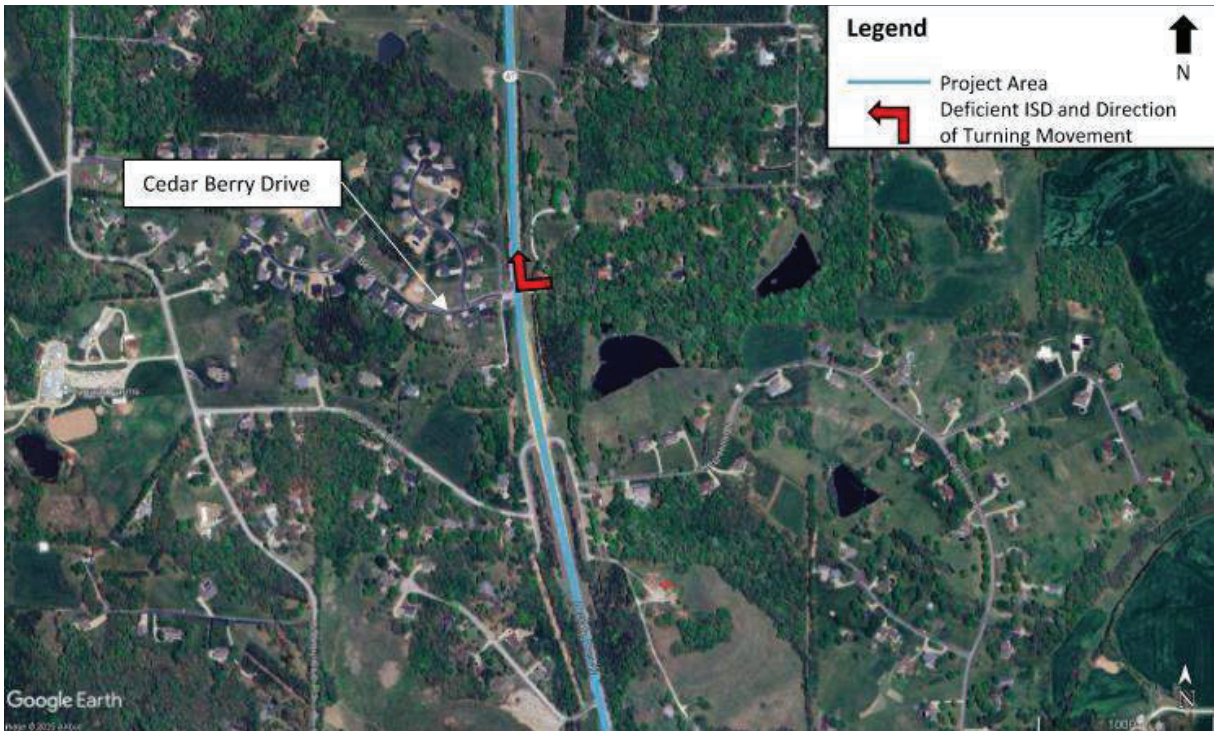

Figure 14b: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

Figure 14c: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

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Figure 14d: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

Figure 14e: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14f: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

Figure 14g: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14h: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

Figure 14i: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14j: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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North Urban Section (A)

This section of the study corridor extends approximately 0.3 miles from Highway 100 to Steutermann/Bieker Road. The typical cross-section includes a four-lane, two-way urban roadway with wide paved shoulders on both sides along the entire segment and a painted center median between intersections.

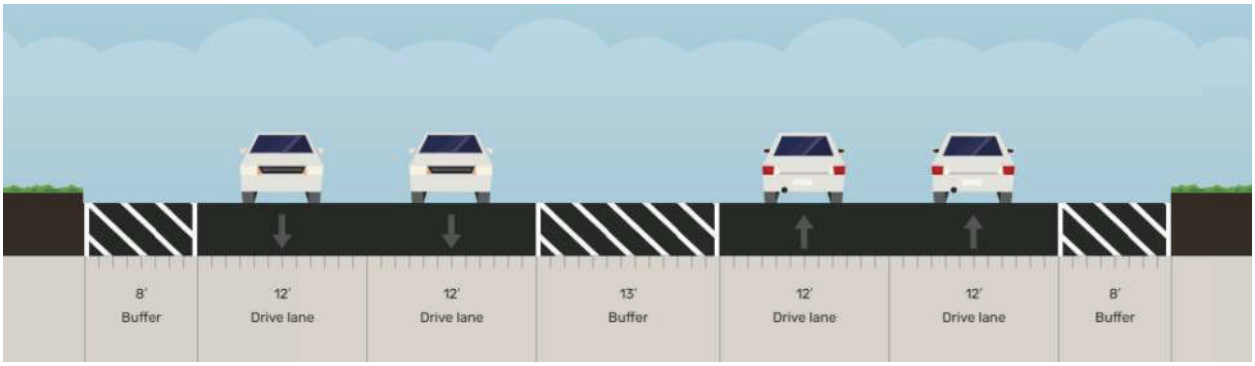

Figure 15 illustrates the dimensions of roadway lanes and paved shoulders. The alignment for this section is relatively straight.

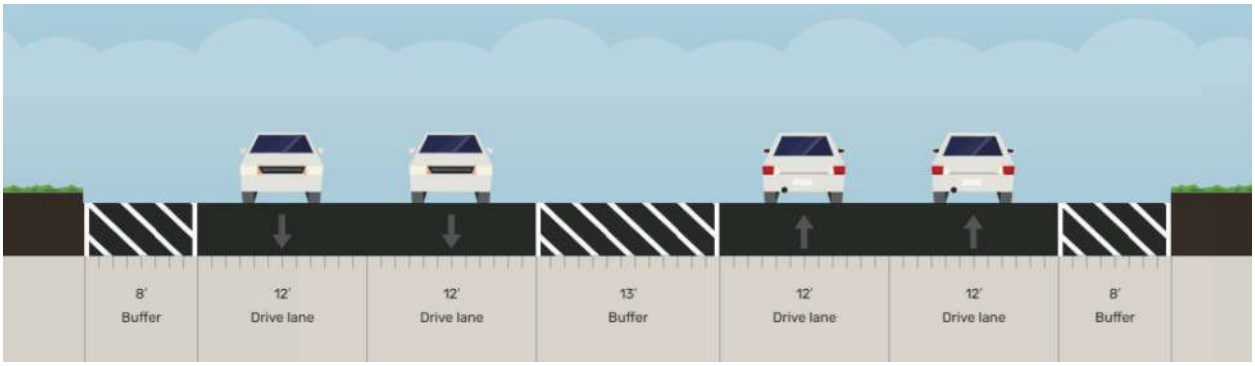

Figure 15: Typical Cross-Section (North Urban Section (A))

The study area for the North Urban Section (A) includes the following intersections:

- Signalized
  - MO 47 / Highway 100
  - MO 47 / Washington Crossing
  - MO 47 / Steutermann Road/Bieker Road

Crash Data Analysis

Figure 16 shows a detailed summary of traffic crash facts for the North Urban Section (A). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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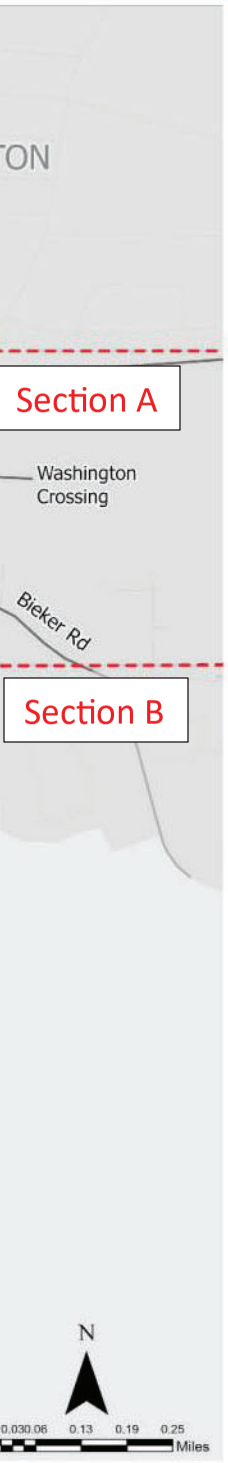
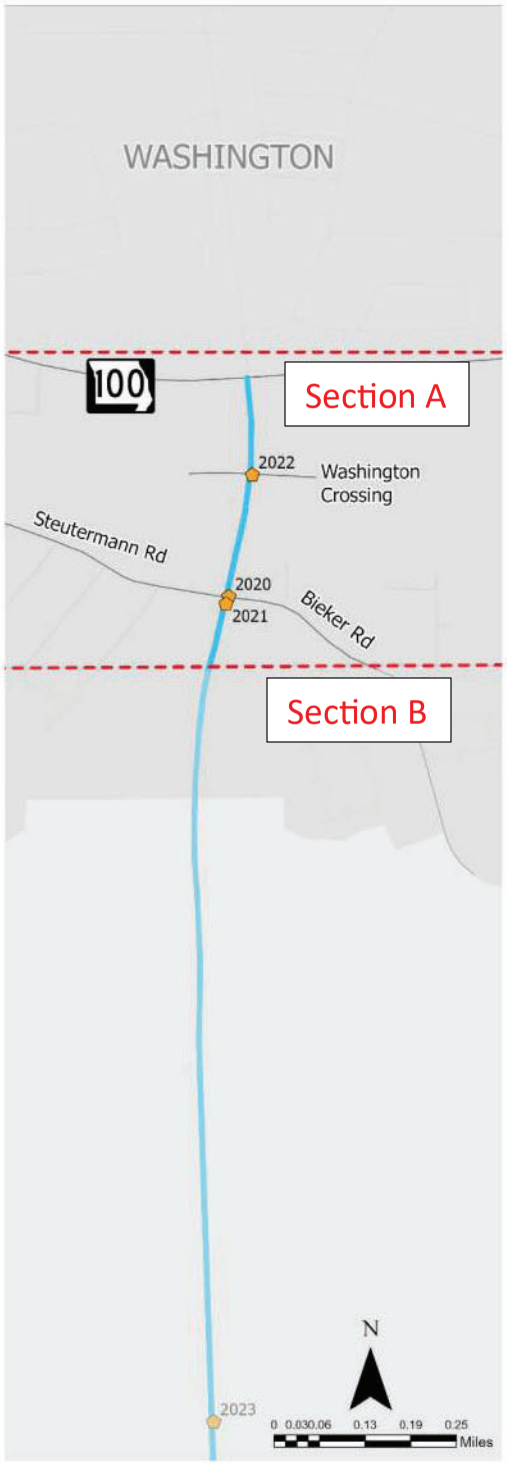
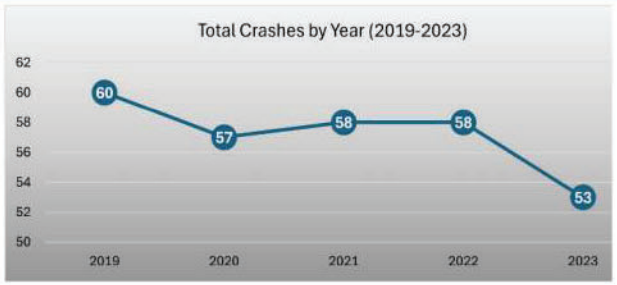
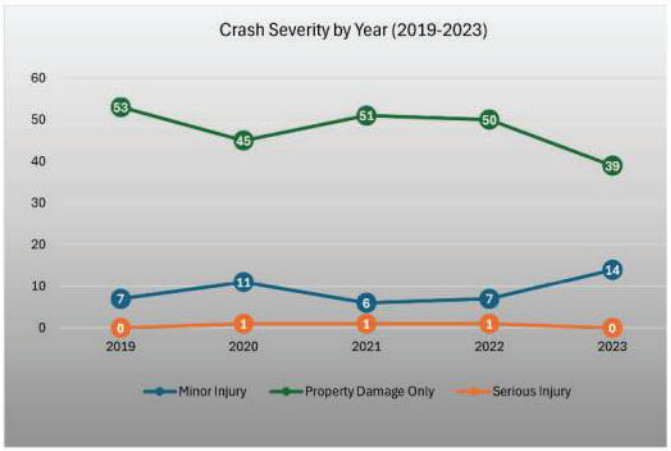

Section A
Washington Crossing
Bieker Rd
Section B
N
0 0.03 0.06 0.13 0.19 0.25
Miles

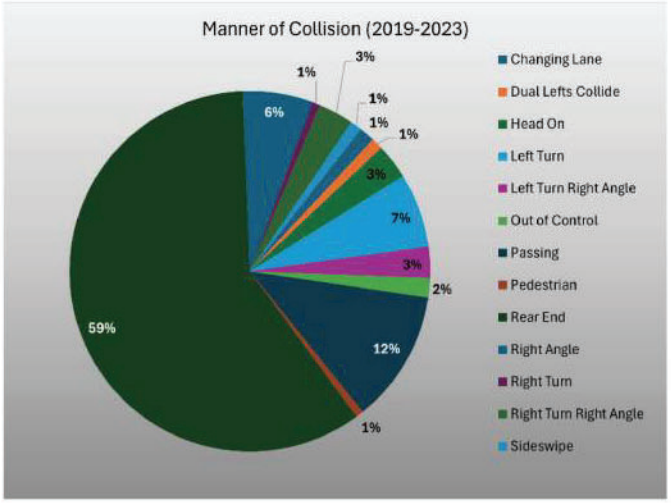

WASHINGTON
100
Section A
2022
Washington Crossing
Steutermann Rd
2020
2021
Bieker Rd
Section B
2023
N
0 0.03 0.06 0.13 0.19 0.25
Miles

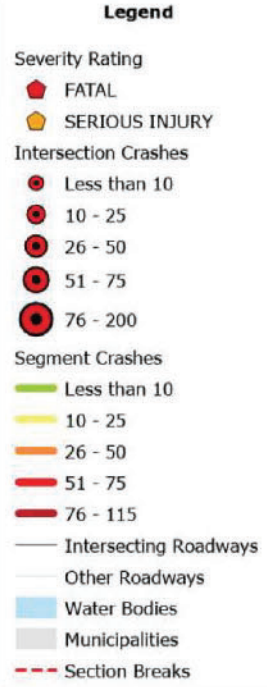

Total Crashes by Year (2019-2023)
62
60
58
56
54
52
50
60
57
58
58
53
2019
2020
2021
2022
2023

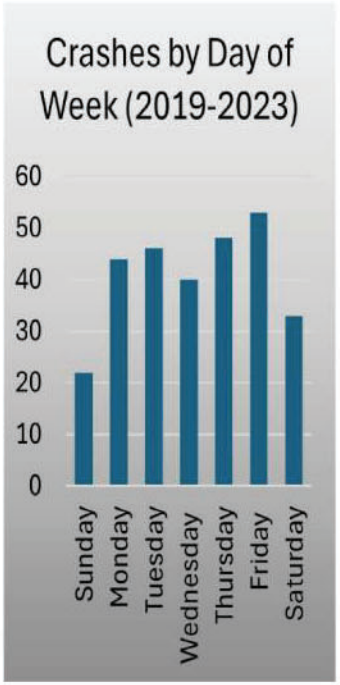
Lighting Condition (2019-2023)
1%
20%
79%
0%
Dark W/ Street Lights Off
Dark W/ Street Lights On
Daylight
Unknown

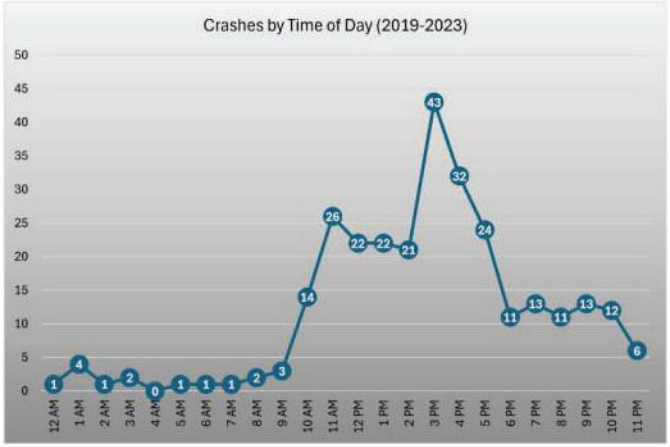
Road Surface Conditions (2019-2023)
0%
1%
83%
16%
Dry
Ice
Snow
Wet


Crash Severity by Year (2019-2023)
60
50
40
30
20
10
0
53
45
51
50
39
7
11
6
7
14
0
1
1
1
0
2019
2020
2021
2022
2023
Minor Injury
Property Damage Only
Serious Injury


Manner of Collision (2019-2023)
6%
1%
3%
1%
1%
1%
3%
7%
3%
2%
12%
1%
59%
Changing Lane
Dual Lefts Collide
Head On
Left Turn
Left Turn Right Angle
Out of Control
Passing
Pedestrian
Rear End
Right Angle
Right Turn
Right Turn Right Angle
Sideswipe


Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersection Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 200
Segment Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section Breaks


Crashes by Day of Week (2019-2023)
60
50
40
30
20
10
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Crashes by Time of Day (2019-2023)
50
45
40
35
30
25
20
15
10
5
0
1
4
1
2
0
1
1
1
2
3
14
26
22
22
21
43
32
24
11
13
11
13
12
6
12 AM
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM

Within the study section, a total of 286 crashes occurred between 2019 and 2023. During the time period analyzed, 277 (97%) of the crashes occurred at intersections. The intersection of MO 47 and Highway 100 had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2021 where 41 crashes occurred. **Table 6** provides additional information on the crash locations and severities within the study area.

Table 6: North Urban Section (A) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**7**	**52**	**11**	**44**	**7**	**50**	**7**	**47**	**13**	**39**	**277**
MO 47 & Highway 100 (S)	3	36	5	32	4	37	5	27	8	29	186
MO 47 & Washington Crossing (S)	2	6	3	6	1	5	1	13	3	2	42
MO 47 & Steutermann /Bieker Rd (S)	2	10	3	6	2	8	1	7	2	8	49
Segment	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**3**	**1**	**-**	**9**
Highway 100 to Washington Crossing	-	1	-	1	-	1	-	1	-	-	4
Washington Crossing to Steutermann/Bieker Rd	-	-	1	-	-	-	1	2	1	-	5
Grand Total	**7**	**53**	**12**	**45**	**7**	**51**	**8**	**50**	**14**	**39**	**286**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, 48 (17%) resulted in injuries (both serious and minor injuries). There were no fatal crashes and three serious injury crashes in this section. The highest frequency of injury crashes occurred at MO 47 and Highway 100 where 8 injury crashes were reported in 2023.

All three serious injury crashes were angle collisions. One occurred when a driver ran a red light, while the other two resulted from drivers failing to yield at a flashing yellow arrow.

A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 16**.

Crash Type

Rear-end crashes were the most prominent type of crash (59%) followed by passing crashes (12%).

The following roadway characteristics and human factors can be attributed to the higher number of rear-end crashes in this section:

- High traffic volume/few gaps in traffic for minor street traffic to enter the major street,

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- Lack of right-turning bays/lanes,
- Higher travel speed,
- Sight distance issue at highway curves, and

Longer distance between traffic signals.**Figure *17*** shows the distribution of crash types within the study area.

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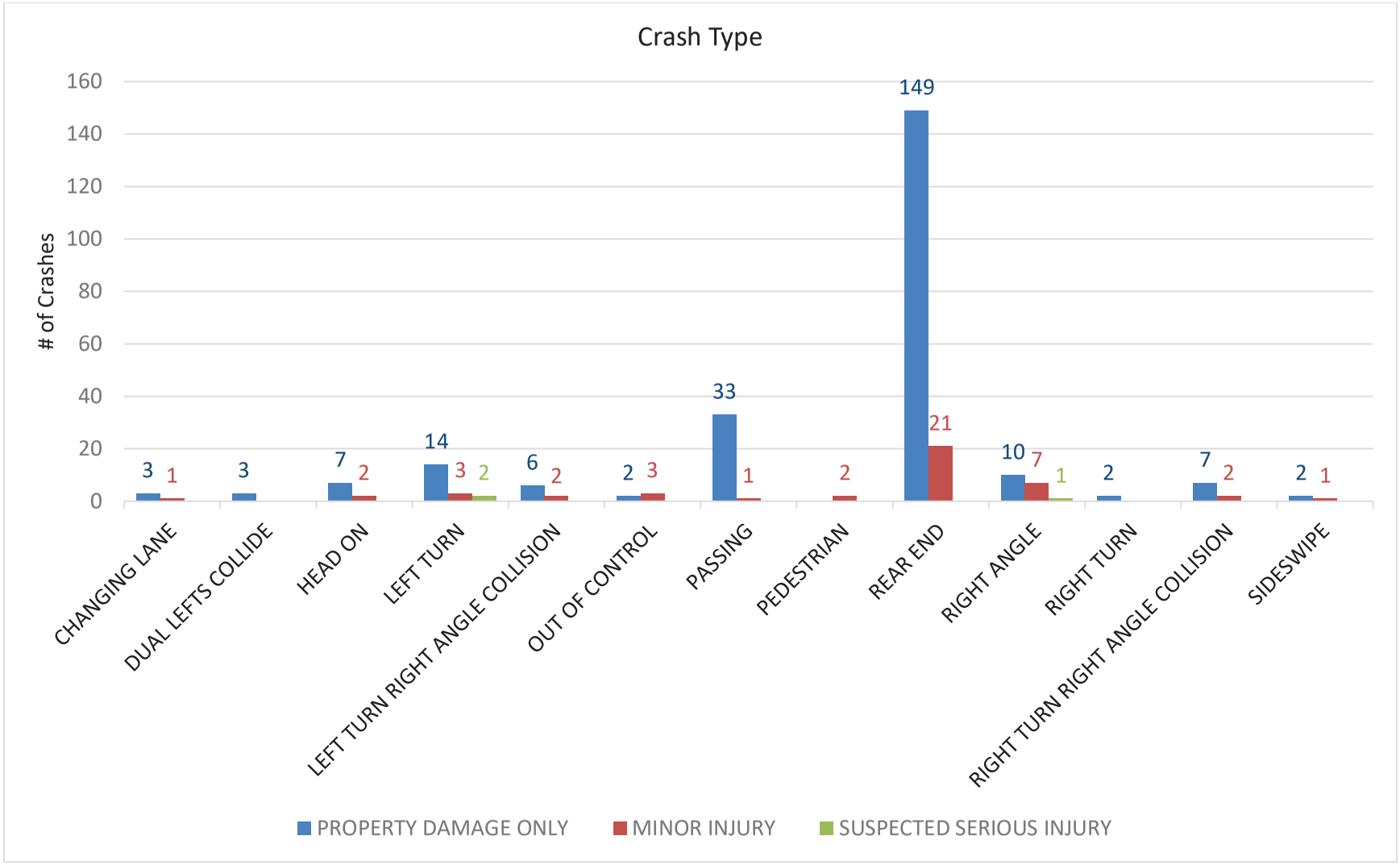

Figure 17: North Urban Section (A) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 26 vehicles occurring in 2020. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 18** displays the breakdown of crashes by time of day according to year.

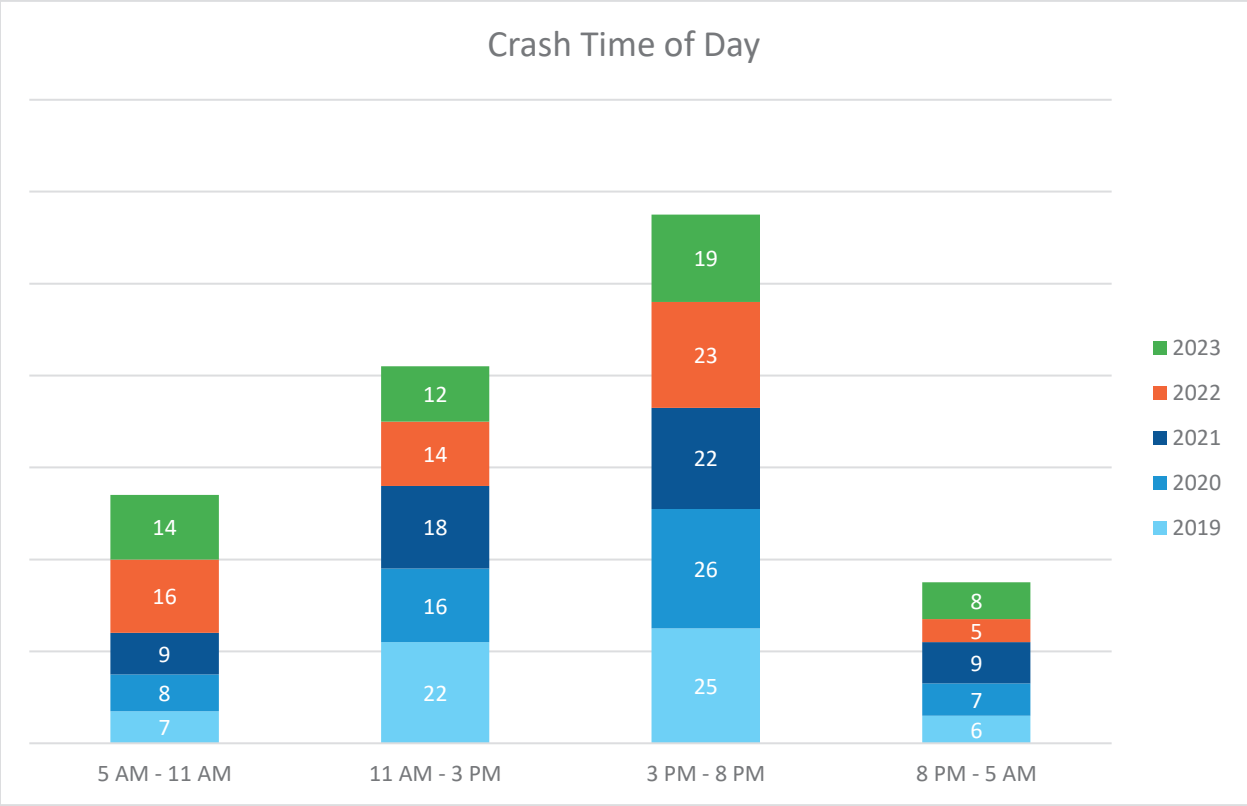

Figure 18: North Urban Section (A) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 226 (79%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 57 (20%) of crashes while 3 (1%) occurred in the dark where streetlights were off.

Approximately 83% of crashes occurred while roads were dry and 17% of crashes occurred while roads were wet or had snow present. **Figure 16** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

The North Urban Section (A) experiences moderate traffic flow, with congestion typically observed during peak travel hours due to its role as a key connector for local commuters and regional traffic. The area includes a mix of residential, commercial, and agricultural land use, resulting in varying traffic patterns throughout the day. The roadway is generally well-maintained, but occasional delays occur at intersections with lower capacity and limited passing opportunities, particularly during morning and evening rush hours.

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Additionally, the presence of school zones and local businesses contribute to stop-and-go traffic. Enhancements in intersection signalization, lane configuration, and signage could improve the overall flow and reduce bottlenecks in this segment.

Roadway Design Analysis

Horizontal Alignment – North Urban Section (A)

The North Urban Section (A) of the project corridor contained one substandard curve near Norwood Trailer Court. While the radius of the horizontal curve was more than sufficient, the superelevation was found to be substandard as it fell outside the range of maximum superelevation of 4%. The results of this section are summarized in **Table 7** below.

Table 7: Substandard Horizontal Curves – North Urban Section (A)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at Norwood Trailer Court	4.35% (4.00%)	6,000' (1190')

Vertical Alignment – North Urban Section (A)

As shown in **Table 8**, one substandard vertical curve was identified in this segment at MO 47 near Bieker Road. It should be noted that the existing conditions are close to the current criteria.

Table 8: Substandard Vertical Curve Clusters – North Urban Section (A)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Minimum)
SB	MO 47 South of Steutermann/ Bieker Road	1	Sag	76 (79)	360' (360')

Deceleration Lanes, Turn Lanes, and Tapers – North Urban Section (A)

One substandard lane was found in the North Urban Section (A) of the study area. While the taper length was found to be sufficient, the lane length was substandard. This intersection, however, was not one of the intersections that was found to have the highest number of crashes. The results of the analysis of this segment are summarized in **Table 9**.

Table 9: Substandard Tapers – North Urban Section (A)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of Steutermann/Bieker Road	106' (120')	119' (100')
NB	MO 47 South of Steutermann/ Bieker Road	184' (120')	97' (100')

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Intersection Sight Distance Analysis

As shown in **Table 10**, there was a total of two turning movements that were found to be deficient in North Urban Section (A) of the Study Area. Both turning movements were found at Norwood Trailer Court.

Table 10: Deficient Intersection Sight Distance – North Urban Section (A)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Norwood Trailer Court - East Leg	X		SB
Norwood Trailer Court - West Leg		X	SB

Existing No-Build Analysis

Table 11 shows the observed and estimated existing annual crash frequency for the MO 47 North Urban Section (A) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Washington Crossing and Steutermann Road.

Table 11: North Urban Section (A) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & HIGHWAY 100	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	5	32.2	37.2
No Build Expected Crashes - Existing Condition	15.1	27.1	42.2
MO 47 & WASHINGTON CROSSING	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.0	6.4	8.4
No Build Expected Crashes - Existing Condition	6.9	13.3	20.2
MO 47 & STEUTERMANN ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.0	7.8	9.8
No Build Expected Crashes - Existing Condition	6.4	12.6	19.1
Segment			
HIGHWAY 100 TO WASHINGTON CROSSING	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.8	0.8
No Build Expected Crashes - Existing Condition	0.1	0.3	0.4
WASHINGTON CROSSING TO STEUTERMANN ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	0.4	1.0
No Build Expected Crashes - Existing Condition	0.1	0.3	0.5

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North Rural Section (B)

This 5.1-mile-long section of the study corridor lies between Steutermann/Bieker Road in the City of Washington and Independence Drive in the City of Union. The typical cross-section includes a two-lane, two-way rural roadway with wide paved shoulders on both sides almost along the entire segment. There are turning lanes at some intersections and a striped median is present for some portions along this section. **Figure 18** illustrates the dimensions of roadway lanes and paved shoulders. The alignment for this section is relatively straight except for a large horizontal curve south of Elmwood Estates Drive near Forest Hills Drive (south).

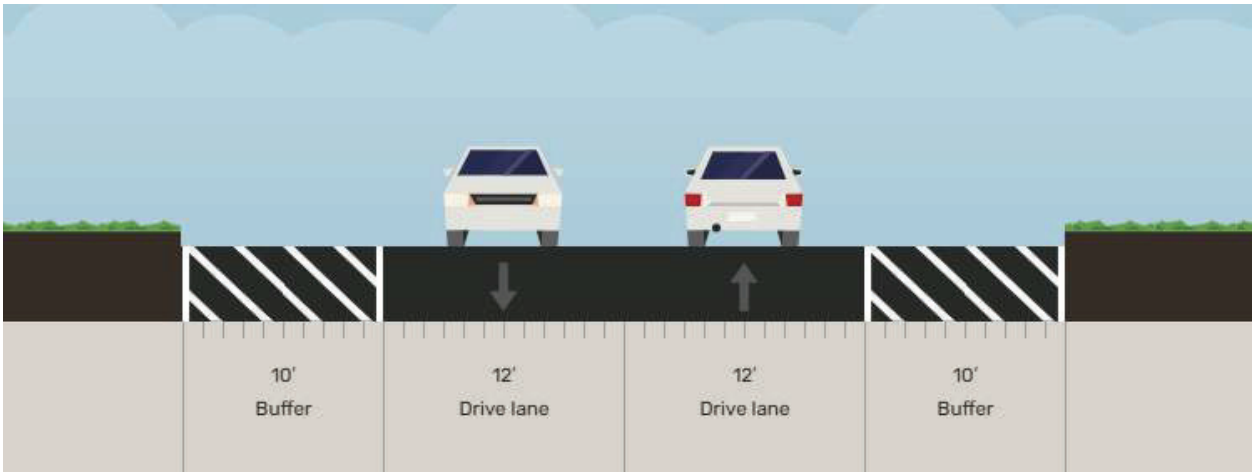

Figure 19: Typical Cross-Section (North Rural Section (B))

The study area for the North Rural Section (B) includes the following intersections:

- Signalized
  - MO 47 / Clearview Road
- Unsignalized
  - MO 47 / Country Club Lane & Forest Hills Drive (north)
  - MO 47 / Lost Pines & Hi-Line Drives

Crash Data Analysis

Figure 20 shows a detailed summary of traffic crash facts for the North Rural Section (B). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed an increasing trend since 2019 along this section.

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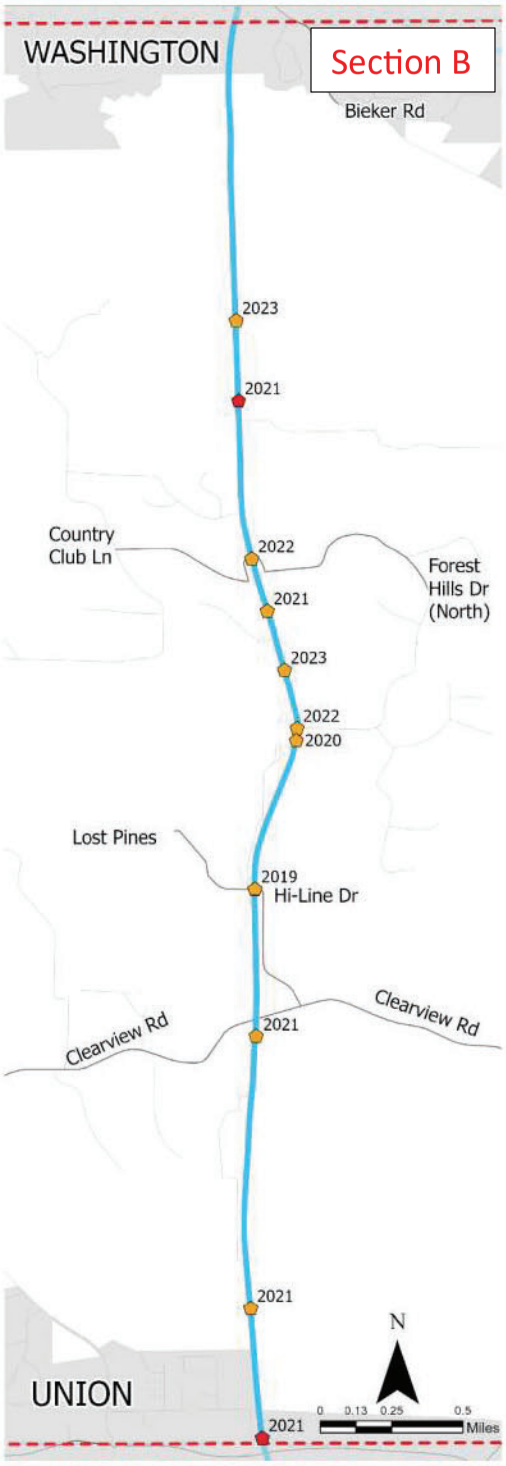
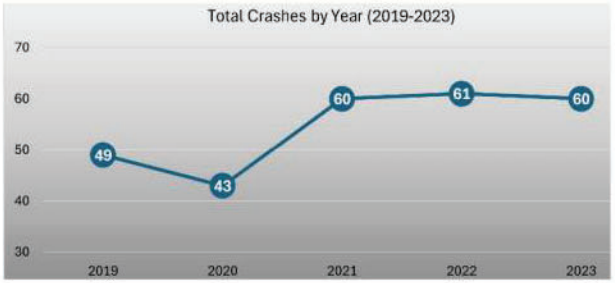
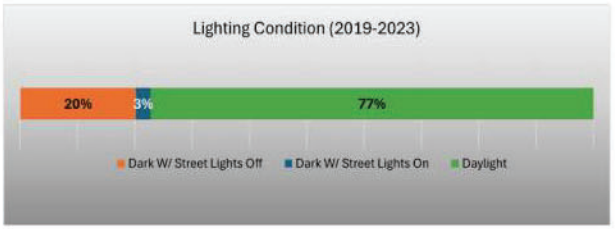
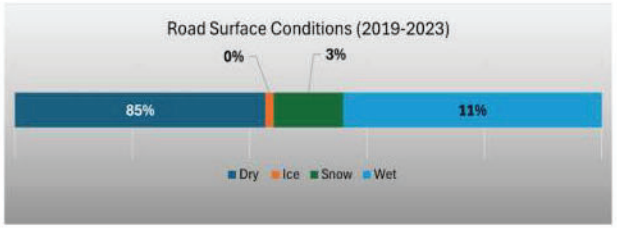






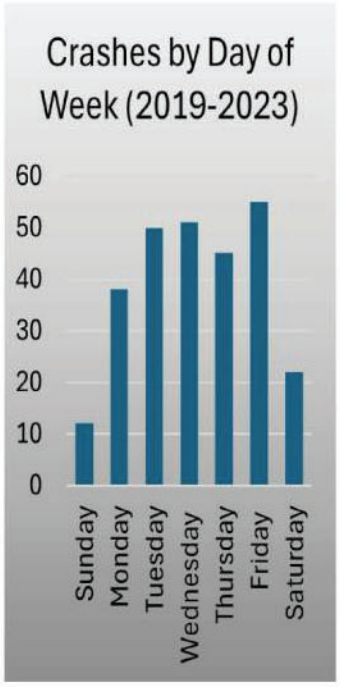


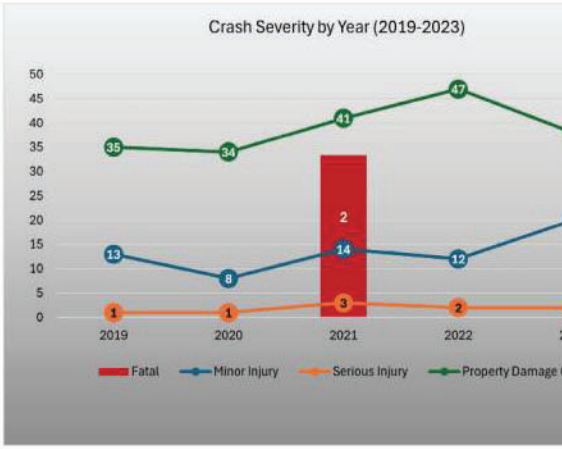
Legend

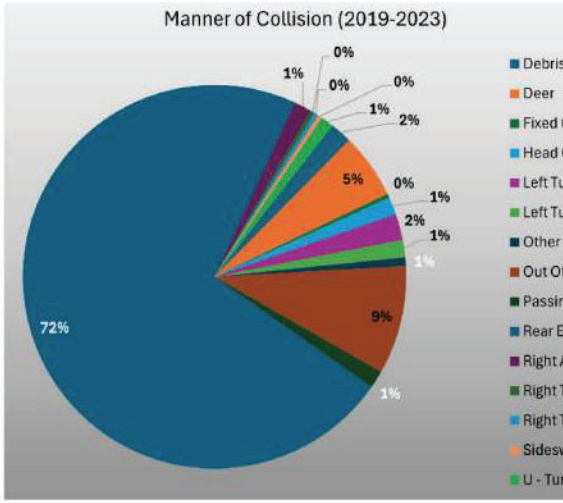
Severity Rating
- FATAL
- SERIOUS INJURY

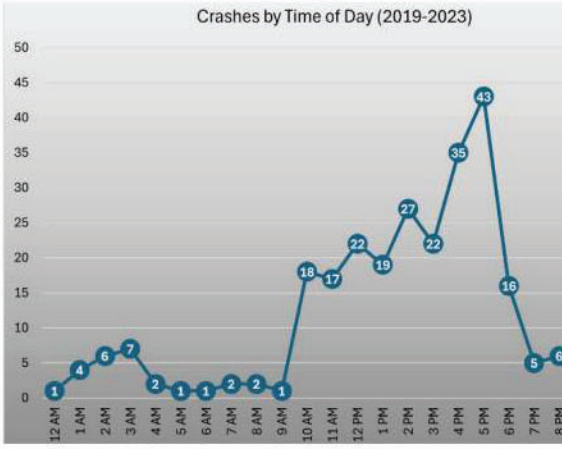
Intersection Crashes
- Less than 10
- 10 - 25
- 26 - 50
- 51 - 75
- 76 - 200

Segment Crashes
- Less than 10
- 10 - 25
- 26 - 50
- 51 - 75
- 76 - 115
- Intersecting Roadways
- Other Roadways
- Water Bodies
- Municipalities
- Section Breaks









Within the study area for the North Rural Section (B), a total of 273 crashes occurred between 2019 and 2023. During the period analyzed, only 38 (14%) crashes occurred at intersections. The intersection of MO 47 and Clearview Road had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2022 when six crashes occurred.

A total of 235 crashes occurred on the segments throughout North Rural Section (B). The segment between Clearview Road and Independence Drive had the highest frequency of crashes, with a total of 30 crashes occurring in 2021.

Table 12 provides additional information on the crash locations and severities within the study area.

Table 12: North Rural Section (B) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**4**	**3**	**1**	**5**	**3**	**3**	**2**	**7**	**2**	**7**	**37**
MO 47 & Country Club Lane (U)	-	-	-	1	1	1	1	-	-	1	5
MO 47 & Lost Pines (U)	2	-	-	-	1	2	-	2	2	4	13
MO 47 & Clearview Road (S)	2	3	1	4	1	-	1	5	-	2	19
Segment	**10**	**32**	**8**	**29**	**14 (2)**	**38**	**12**	**40**	**20**	**31**	**236**
Steutermann/Bieker Rd to Country Club Ln	3	6	5	9	2 (1)	10	5	20	6	9	76
Country Club Lane to Lost Pines	-	7	1	2	2	4	3	4	1	5	29
Lost Pines to Clearview Road	2	3	-	1	-	5	-	2	4	2	19
Clearview Road to Independence Drive	5	16	2	17	10 (1)	19	4	14	9	15	112
Grand Total	**14**	**35**	**9**	**34**	**17 (2)**	**41**	**14**	**47**	**22**	**38**	**273**

(S) = Signalized Intersection
(U) = Unsignalized Intersection(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there were two fatal crashes and nine serious injury crashes in this section. Overall, there were 76 crashes that resulted in injuries. The highest frequency of serious injury crashes occurred between the intersections of Country Club Lane and Lost Pines.

According to the police report, one fatal crash was caused by an unconscious driver traveling on the wrong side of the road, while the other resulted from a distracted driver who failed to reduce speed for slow/stopped traffic and struck vehicles ahead. Of the nine serious injury crashes, seven were attributed to distracted driving and excessive speed, while the remaining two involved failure to yield and loss of control.

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A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 20**.

Crash Type

As can be seen in **Figure 21**, rear-end crashes were the most prominent (72%) followed by out-of-control crashes (9%).

The following roadway and human factors can be attributed to a higher number of rear-end crashes in this section:

- High traffic volume/few gaps in traffic for minor street traffic to enter major streets,
- Lack of turning bays/lanes,
- Higher travel speed,
- Sight distance issue at highway curves, and
- Longer distance between traffic signals.

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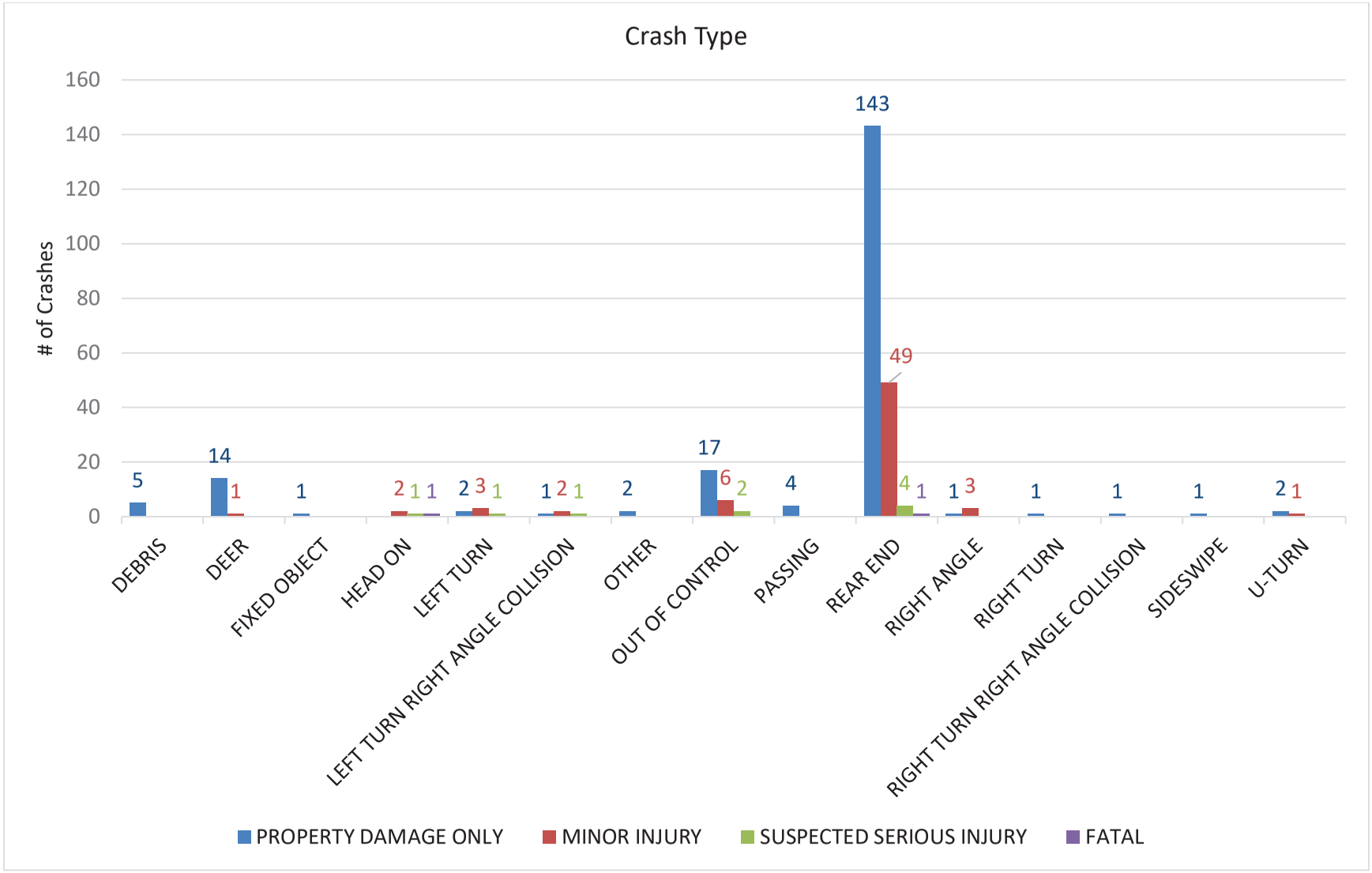

Figure 21: North Rural Section (B) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest number of 30 crashes in 2021. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 22** below displays the breakdown of crashes by time of day according to year.

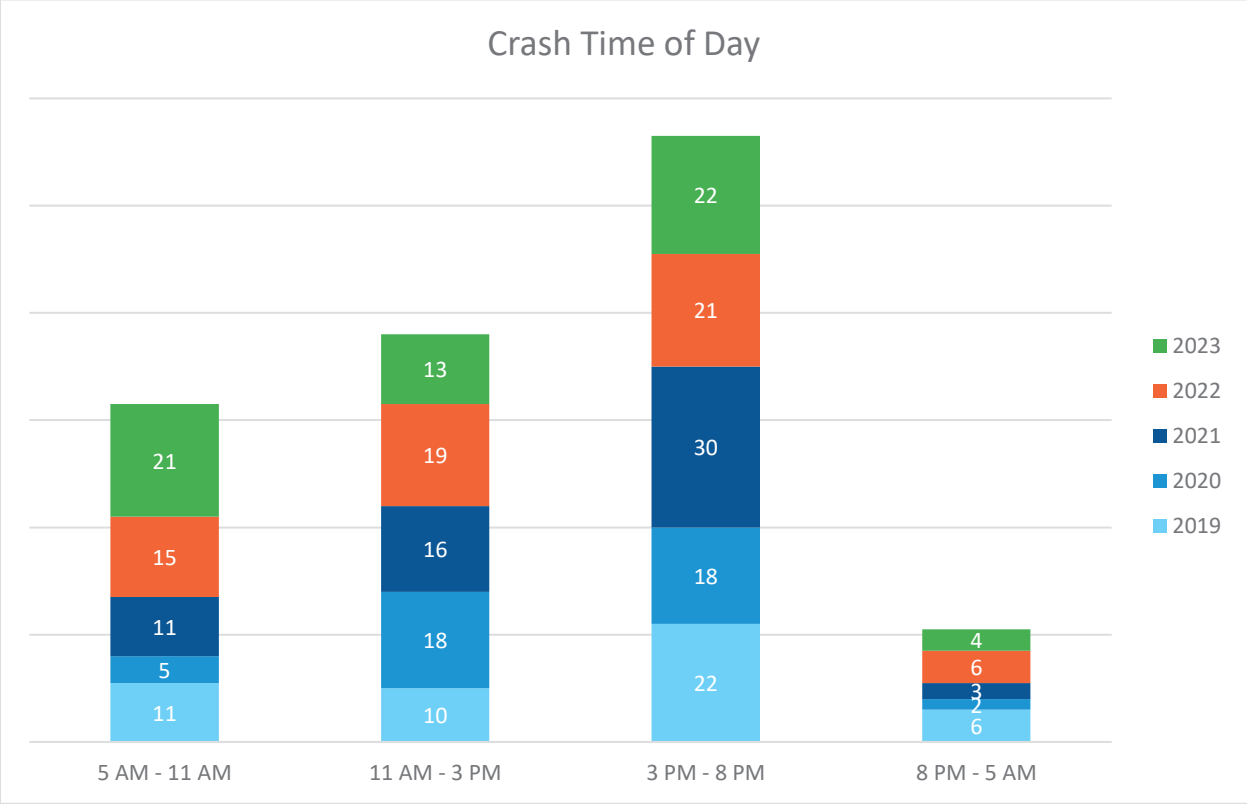

Figure 22: North Rural Section (B) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 210 (77%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 8 (3%) of crashes while 55 (20%) occurred in the dark where streetlights were off.

Approximately 85% of crashes occurred while roads were dry and 15% of crashes occurred while roads were wet or had snow present. **Figure 20** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

The North Rural Section (B) serves as a critical route for both local and regional traffic. While the traffic flow generally remains steady, it can experience congestion during peak hours due to several major intersections, particularly those near residential zones and commercial establishments. This segment of MO 47 encompasses a mix of agricultural and suburban land uses, leading to diverse traffic patterns

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throughout the day, especially from school-related travel and delivery vehicles servicing nearby businesses. The roadway typically supports two lanes of traffic in each direction; however, limited passing opportunities and the presence of larger farm machinery or slow-moving vehicles often result in delays. Additionally, this area includes multiple access points and intersections that could benefit from optimized traffic signal timing and enhanced road signage to mitigate delays and improve overall mobility.

Roadway Design Analysis

Horizontal Alignment – North Rural Section (B)

As this section is a rural area with less traffic than the urban areas, this segment was evaluated using a maximum superelevation of 8%. When comparing the values for minimum radius and maximum allowable superelevation from the Green Book, this segment was found to contain no substandard horizontal curves.

Vertical Alignment – North Rural Section (B)

In **Table 13**, one vertical curve was identified in the North Rural Section (B) to be substandard. The substandard curve, however, was not located in an area where the highest number of crashes were found.

Table 13: Substandard Vertical Curve Clusters – North Rural Section (B)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Minimum)
NB	MO 47 North of East Independence Drive	1	Sag	99 (115)	437' (495')

Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

The North Rural Section (B) of the study area contained six substandard tapers. The substandard elements of each deceleration lane analyzed varied on whether the taper length or lane length was below the calculated design values. The results of this study area are summarized in **Table 14** below.

Table 14: Substandard Tapers – North Rural Section (B)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of Norwood Trailer Court	85' (100')	87' (120')
SB	MO 47 North of Country Club Lane	204' (350')	97' (250')
NB	MO 47 South of Country Club Lane	146' (350')	94' (250')
NB	MO 47 South of Clearview Road	440' (350')	103' (250')
SB	MO 47 North of Clearview Road	200' (350')	107' (250')

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Intersection Sight Distance Analysis

Two turning movements were found to be ISD Deficient in North Rural Section (B). They were located near Cedar Berry Drive and Melinda Drive as shown in **Table 15** below.

Table 15: Deficient Intersection Sight Distance – North Rural Section (B)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Driveway East of Cedar Berry Drive		X	NB
Forest Hills Drive	X		SB
Melinda Drive	X		NB

Existing No-Build Analysis

Table 16 shows the observed and estimated existing annual crash frequency for the MO 47 North Rural Section (B) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes would increase at the intersection of MO 47 and Clearview Road.

Table 16: North Rural Section (B) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & COUNTRY CLUB LANE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.6	1
No Build Expected Crashes - Existing Condition	0.3	0.4	0.7
MO 47 & LOST PINES	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	1.6	2.6
No Build Expected Crashes - Existing Condition	0.6	0.8	1.4
MO 47 & CLEARVIEW ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	2.8	3.8
No Build Expected Crashes - Existing Condition	2.4	4.6	7.0
Segment			
STEUTERMANN ROAD TO COUNTRY CLUB LANE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	4.4	10.8	15.2
No Build Expected Crashes - Existing Condition	2.6	5.6	8.2
COUNTRY CLUB LANE TO LOST PINES	**FATAL/INJURY**	**PDO**	**TOTAL**

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Observed (5 Year Average, 2019-2023)	1.4	4.4	5.8
No Build Expected Crashes - Existing Condition	1.5	3.3	4.8
LOST PINES TO CLEARVIEW ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	2.6	3.8
No Build Expected Crashes - Existing Condition	0.5	1.1	1.6
CLEARVIEW ROAD TO INDEPENDENCE DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	6.2	16.2	22.4
No Build Expected Crashes - Existing Condition	1.8	3.9	5.7

Based on historical crash data and patterns, the MoDOT-recommended calibration factor for a four-legged signalized intersection overpredicted crashes at the intersection of MO 47 and Clearview Road. The crash patterns more similarly reflected those of an urban four-legged stop-controlled intersection. Therefore, the MoDOT-recommended calibration factor for an urban four-legged stop-controlled intersection was used to calculate future crash predictions at the intersection of MO 47 and Clearview Road.

Furthermore, the segments from Steutermann/Bieker Road to Country Club Lane show a lower frequency of crashes for the no-build existing conditions. This could be due to the HSM Rural spreadsheet not allowing an AADT value greater than 17,800 vehicles per day, while the segments correct AADT value is 18,109 vehicles per day. Another factor to note is that the highest shoulder length width available in the HSM spreadsheet is 8’ while the correct measurement is closer to 10’. These factors in the spreadsheet could possibly be predicting incorrect results.

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Middle Urban Section (C)

This section of the study corridor extends approximately 1.6 miles from Independence Drive to US 50. Cross sections for this section vary considerably. The cross-section of the north portion of this section (between Independence Drive and Old County Farm Road) consists of two-lane, two-way roadway with wide paved shoulders on both sides. As shown in **Figure 23**, the segment between Old County Farm Road and the intersection of MO 47 and US 50 consists of 4-lane, bi-directional roadway with paved shoulders. **Figure 24** shows the dimensions of roadway lanes, median, and paved shoulders for the segment running concurrent with US 50.

The alignment of this section is relatively straight from Independence Drive to US 50. The portion that runs parallel to US 50 has a large horizontal curve.

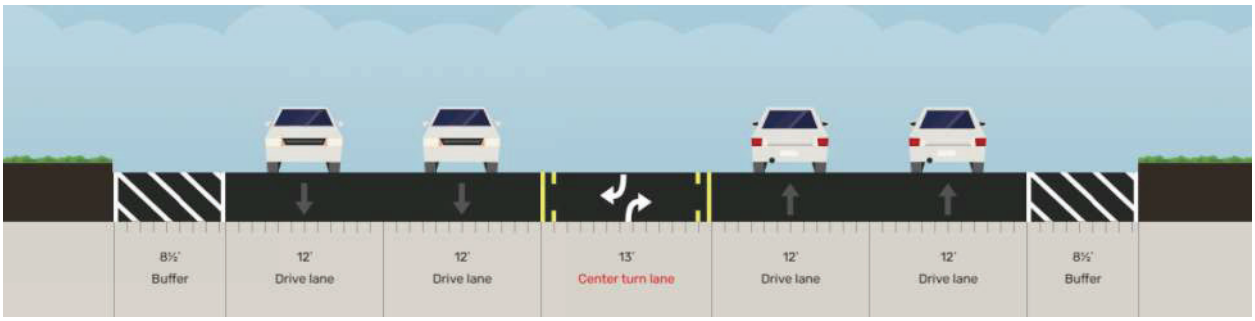

Figure 23: Typical Cross-Section for the Middle Urban Section (C)

Figure 24: Typical Cross-Section (Middle Urban Section (C)) (Concurrent with US 50)

The study area for the Middle Urban Section (C) includes the following intersections:

- Signalized
  - MO 47 / Independence Drive
  - MO 47 / Central Avenue & Highway V
  - MO 47 / E Main Street
  - MO 47 / US 50 (West)
  - MO 47 / US 50 (East)
- Unsignalized
  - MO 47 / Dairy View Drive
  - MO 47 / Vondera Avenue

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- MO 47 / Old County Farm Road

Crash Data Analysis

Figure 25 shows a detailed summary of traffic crash facts for the Middle Urban Section (C). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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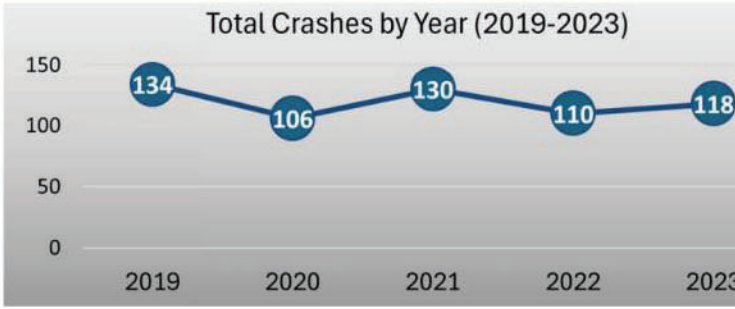
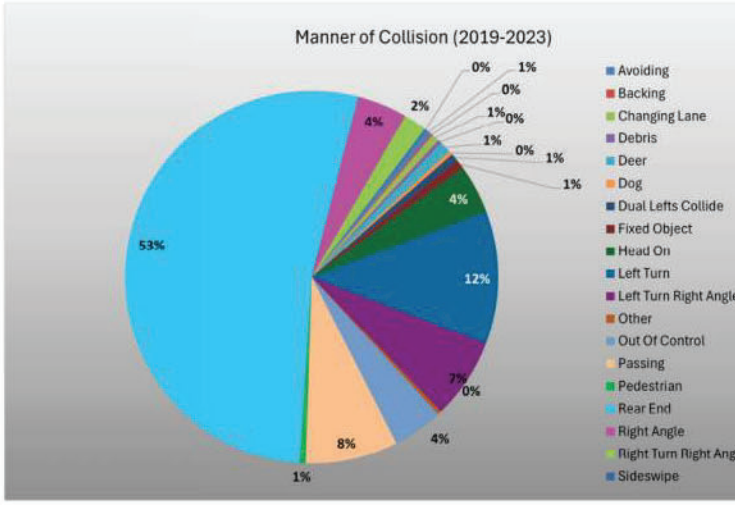
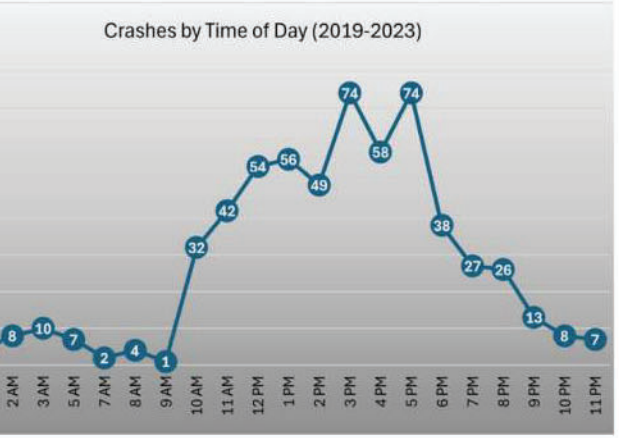
Section C
Independence Dr
Dairy View Dr
State Hwy V
ON
Old County Farm Rd
50
50
Legend
SegmentCrashCount
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section D
0 0.030.06 0.12 0.18 0.25
Miles

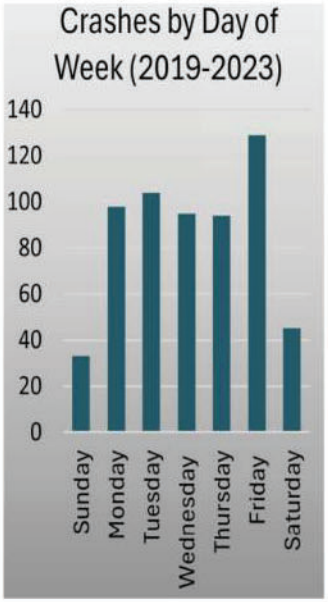
Section C
Independence Dr
Dairy View Dr
State Hwy V
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
2020
2022
2019
2019
2022
50
50
50
2019
2023
2021
Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section D
0 0.030.06 0.12 0.18 0.25
Miles

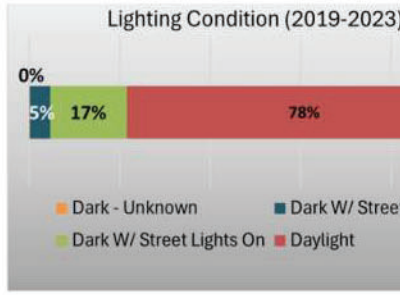

Total Crashes by Year (2019-2023)
150
100
50
0
134
106
130
110
118
2019
2020
2021
2022
2023

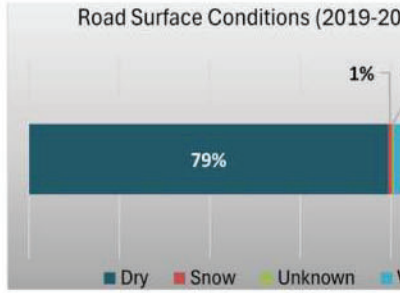

Manner of Collision (2019-2023)
53%
12%
8%
4%
4%
2%
1%
1%
1%
1%
1%
1%
0%
0%
0%
0%
0%
7%
Avoiding
Backing
Changing Lane
Debris
Deer
Dog
Dual Lefts Collide
Fixed Object
Head On
Left Turn
Left Turn Right Angle
Other
Out Of Control
Passing
Pedestrian
Rear End
Right Angle
Right Turn Right Ang
Sideswipe


Crashes by Time of Day (2019-2023)
8
10
7
2
4
1
32
42
54
56
49
74
58
74
38
27
26
13
8
7
2 AM
3 AM
5 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM

Crash Severity by Year (2019-2023)
120
100
80
60
40
20
0
2
1
0
111
89
107
88
81
19
16
1
21
20
36
4
0
2
2
1
0
0
0
0
0
Fatal
Minor Injury
Property Damage Only
Serious Injury


Crashes by Day of Week (2019-2023)
140
120
100
80
60
40
20
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Lighting Condition (2019-2023)
0%
5%
17%
78%
Dark - Unknown
Dark W/ Stree
Dark W/ Street Lights On
Daylight


Road Surface Conditions (2019-20
1%
79%
Dry
Snow
Unknown

Within the study area, a total of 598 crashes occurred between 2019 and 2023. During the time analyzed, 484 (81%) crashes occurred at intersections. The intersection of MO 47 and US 50 East had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2020 when 24 crashes occurred.

Table 17 provides additional information on the crash locations and severities within the study area.

Table 17: Middle Urban Section (C) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**20**	**83**	**15**	**74**	**20**	**82**	**20**	**72**	**31**	**67**	**484**
MO 47 & Independence Drive (S)	3	21	1	11	3	14	2	4	3	12	76
MO 47 & Dairy View Drive (U)	-	2	-	5	1	6	1	5	1	1	22
MO 47 & Vondera Avenue (U)	4	8	-	2	2	4	4	4	1	2	31
MO 47 & Central Avenue (S)	2	7	-	9	2	6	1	7	1	4	39
MO 47 & Old County Farm Road (U)	2	1	-	3	-	1	3	1	1	5	17
MO 47 & E Main Street (S)	3	10	-	10	2	9	4	10	7	13	68
MO 47 & US 50 West (S)	3	20	4	20	2	19	2	21	3	16	110
MO 47 & US 50 East (S)	3	14	10	14	8	23	3	20	14	14	123
Segment	**3**	**28**	**1 (1)**	**15**	**3**	**25**	**2**	**16**	**6**	**14**	**114**
Independence Drive to Dairy View Drive	-	8	-	3	-	10	1	1	3	2	28
Dairy View Drive to Vondera Avenue	-	-	-	-	-	-	-	2	-	1	3
Vondera Avenue to Central Avenue	1	-	1	-	-	-	-	1	-	-	3
Central Avenue to Old County Farm Road	1	7	(1)	3	-	5	1	4	1	4	27
Old County Farm Road to E Main Street	-	1	-	1	-	-	-	-	1	1	4
E Main Street to US 50 West	-	2	-	-	-	2	-	-	-	-	4
US 50 West to US 50 East	1	10	-	8	3	8	-	8	1	6	45
Grand Total	**23**	**111**	**16 (1)**	**89**	**23**	**107**	**22**	**88**	**37**	**81**	**598**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there was one fatal crash and nine serious injury crashes in this section. The highest frequency of injury crashes was near intersections, especially MO 47 and US 50 East.

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According to the crash report, the fatal crash was caused by a driver traveling on the wrong side of the road. Of the serious injury crashes, two were caused by drivers running red lights, one due to distraction and the other due to sun glare, both resulting in collisions with vehicles making left turns. Another crash was caused by excessive speed when a driver failed to stop. The remaining crashes were due to failure to yield, with multiple incidents occurring at flashing yellow arrows or stop signs. One driver failed to slow down and rear-ended a trailer, another was unable to stop due to rain and struck a stopped vehicle, and one crash resulted from a driver intentionally running a red light, colliding with a trailer. A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 25.**

Crash Type

Rear-end crashes were the most prominent type of crash (56%) followed by passing (8%) and left-turn crashes (8%).

The following roadway and human factors can be attributed to the higher number of rear-end:

- Higher access density,
- Longer traffic queues at intersections prompting drivers to perform risky maneuvers at minor approaches, and
- Red light running at signalized intersections.

Figure 26 shows the distribution of crash types within the study area.

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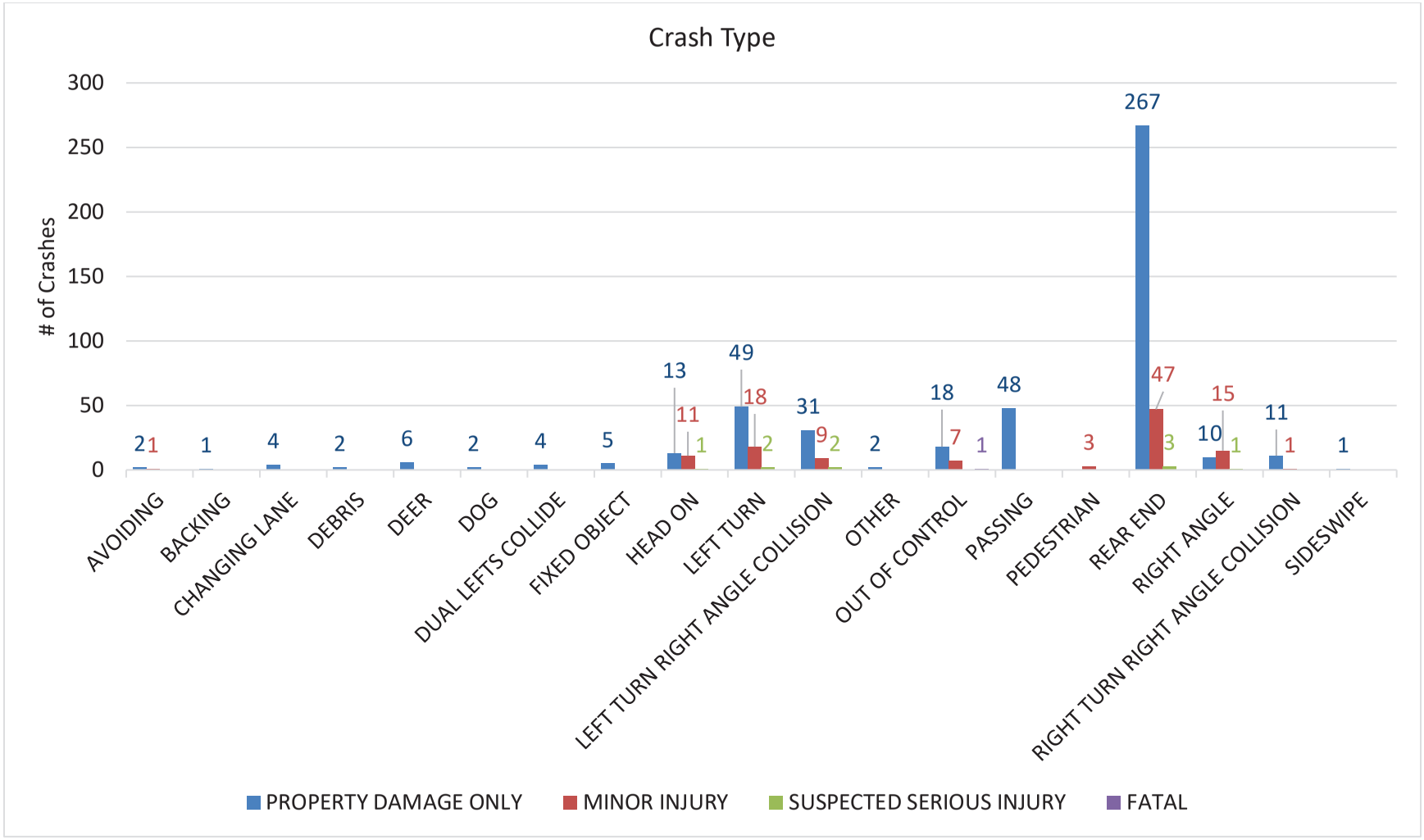

Figure 26: Middle Urban Section (C) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 52 crashes in 2019. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 27** below displays the breakdown of crashes by time of day according to year.

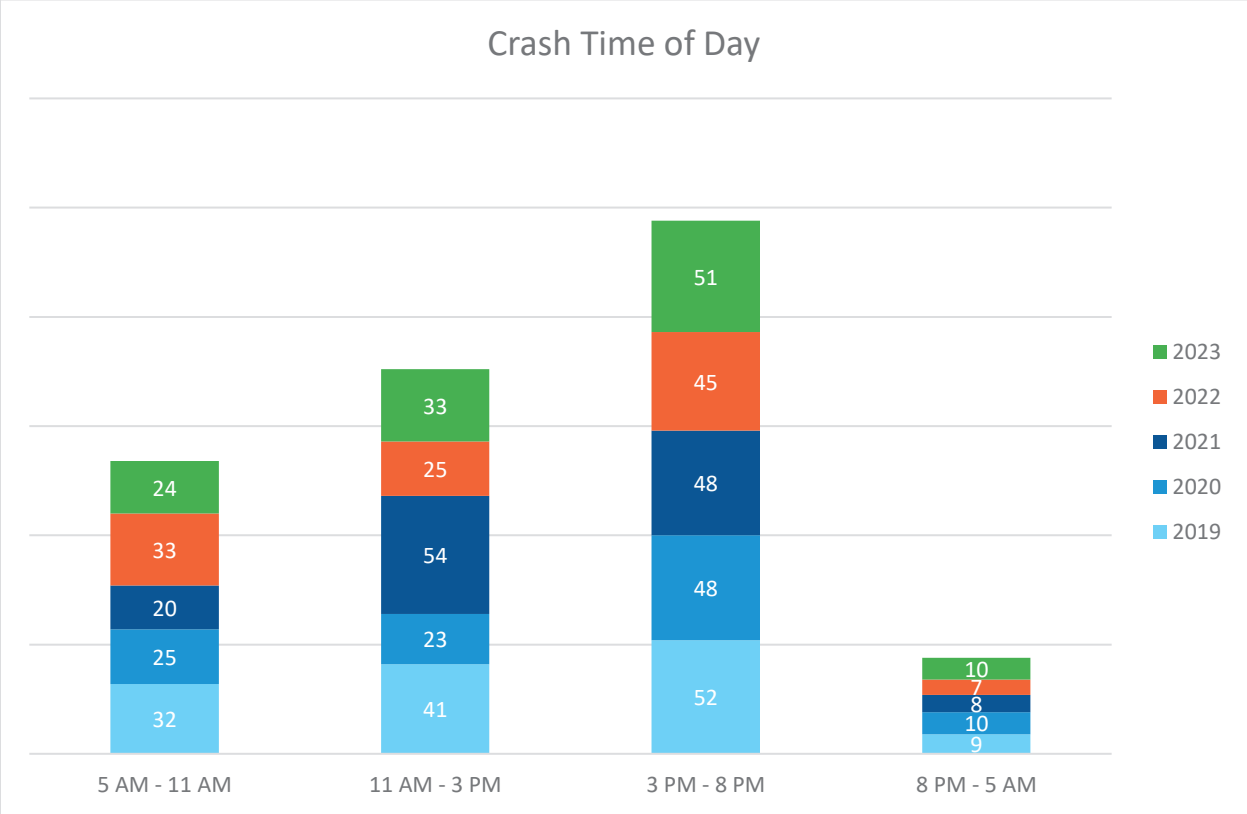

Figure 27: Middle Urban Section (C) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 466 (78%) occurred during daylight hours. Crashes under dark conditions with streetlights on accounts for 101 (17%) of crashes while 30 (5%) occurred in the dark where streetlights were off.

Approximately 79% of crashes occurred while roads were dry, 20% of crashes occurred while roads were wet or had snow present, and 1% was unknown. **Figure 25** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

This section of road has a higher volume of traffic compared to other segments of MO 47, due to its proximity to major regional routes and commercial areas. Traffic flow is typically consistent but can become congested during peak travel times as commuters use this route to access US 50 and nearby amenities. The road features a mix of residential, retail, and light industrial land use, generating varying

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traffic demands throughout the day. Key intersections, especially those near shopping centers and residential areas, can experience delays during rush hours. Additionally, this segment serves as an important connection to US 50, leading to periodic traffic bottlenecks with vehicles turning onto or off the highway. Enhancements in intersection management, signal coordination, and upgrades to turning lanes could improve traffic flow and reduce congestion in this area.

Roadway Design Analysis

Horizontal Alignment – Middle Urban Section (C)

The Middle Urban Section (C) of the project corridor contained no substandard horizontal curves. This segment was analyzed using a 4% maximum superelevation to determine the minimum required radii. This curve is shown in **Table 18** below.

Table 18: Substandard Horizontal Curves – Middle Urban Section (C)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at East Independence Drive	6.0% (4.0%)	3,250' (1,190')

Vertical Geometry – Middle Urban Section (C)

In the Middle Urban Section (C) all vertical geometry was found to be compliant with current standards.

Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

The Middle Urban Section (C) of the study area contained the most substandard deceleration lanes and tapers. This study area also contains several of the areas containing the highest number of crashes. The areas with the highest number of crashes in the Middle Urban Section (C) occur at MO 47 near Independence Drive and US 50. The results of these substandard deceleration lanes and other substandard lanes are summarized in **Table 19**.

Table 19: Substandard Tapers – Middle Urban Section (C)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of East Independence Drive	459' (350')	80' (250')
NB	MO 47 South of East Independence Drive	556' (350')	97' (250')
SB	MO 47 North of Central Avenue and Highway V	154' (350')	51' (250')
NB	MO 47 South of Central Avenue and Highway V	130' (350')	94' (250')
SB	MO 47 North of Old County Farm Road	276' (350')	99' (250')
SB	MO 47 North of East Main Street	164' (350')	134' (250')

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NB	MO 47 South of East Main Street	103' (350')	101' (250')
NB	MO 47 South of East Main Street	126' (350')	90' (250')
SB	MO 47 North of US 50	132' (350')	110' (250')
SB	MO 47 North of US 50	207' (350')	1,010' (250')
EB	US 50 West of MO 47 South	279' (120')	86' (100')

Intersection Sight Distance Analysis

There were no turning movements found to have deficient Intersection Sight Distance in the Middle Urban Section (C) of the study area.

Existing No-Build Analysis

Table 20 shows the observed and estimated existing annual crash frequency for the MO 47 Middle Urban Section (C) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Independence Drive, Central Avenue, E Main Street, US 50 West, and US 50 East.

Table 20: Middle Urban Section (C) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & INDEPENDENCE DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.4	12.4	14.8
No Build Expected Crashes - Existing Condition	5.0	10.1	15.1
MO 47 & DAIRY VIEW DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	3.8	4.4
No Build Expected Crashes - Existing Condition	0.4	0.4	0.8
MO 47 & VONDERA AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.2	4.0	6.2
No Build Expected Crashes - Existing Condition	1.0	1.7	2.7
MO 47 & CENTRAL AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	6.6	7.8
No Build Expected Crashes - Existing Condition	5.5	10.8	16.3
MO 47 & OLD COUNTY FARM ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	2.2	3.4

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No Build Expected Crashes - Existing Condition	0.4	0.6	1.0
MO 47 & E MAIN STREET	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	3.2	10.4	13.6
No Build Expected Crashes - Existing Condition	5.9	11.3	17.2
MO 47 & US 50 WEST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.8	19.2	22
No Build Expected Crashes - Existing Condition	6.5	17.2	23.7
MO 47 & US 50 EAST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	7.6	17.0	24.6
No Build Expected Crashes - Existing Condition	6.1	16.1	22.2
Segment			
INDEPENDENCE DRIVE TO DAIRY VIEW DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.8	5.6
No Build Expected Crashes - Existing Condition	0.2	0.5	0.7
DAIRY VIEW DRIVE TO VONDERA AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.6	0.6
No Build Expected Crashes - Existing Condition	0.1	0.1	0.2
VONDERA AVENUE TO CENTRAL AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.2	0.6
No Build Expected Crashes - Existing Condition	0.1	0.2	0.3
CENTRAL AVENUE TO OLD COUNTY FARM ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.6	5.4
No Build Expected Crashes - Existing Condition	0.9	2.5	3.4
OLD COUNTY FARM ROAD TO E MAIN STREET	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.2	0.6	0.8
No Build Expected Crashes - Existing Condition	0.1	0.3	0.5
E MAIN STREET TO US 50 WEST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.8	0.8
No Build Expected Crashes - Existing Condition	0.0	0.1	0.2
US 50 WEST TO US 50 EAST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	8.0	9.0
No Build Expected Crashes - Existing Condition	1.6	3.9	5.5

The segments from US 50 West to US 50 East show lower frequency of PDO crashes for the no-build existing conditions. This could be due to the HSM Urban spreadsheet value for AADT. The spreadsheet allowed the correct AADT value of 40,600 vehicles per day to be inserted; however, this value is out of range and the maximum AADT value of 40,100 vehicles per day should be used. With that being said, the

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spreadsheet allowed for the correct AADT to be input; however, it may not be calculating the crashes correctly.

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South Rural Section (D)

This section of the study corridor extends between US 50 and I-44 ramp terminals. It is approximately 5.7 miles long. The typical cross-section includes a two-lane, two-way rural roadway with wide paved shoulders on both sides almost along the entire segment. There are turning lanes at some intersections, and striped medians are present for some portions along this section. **Figure 28** shows the dimensions of roadway lanes and paved shoulders for this section.

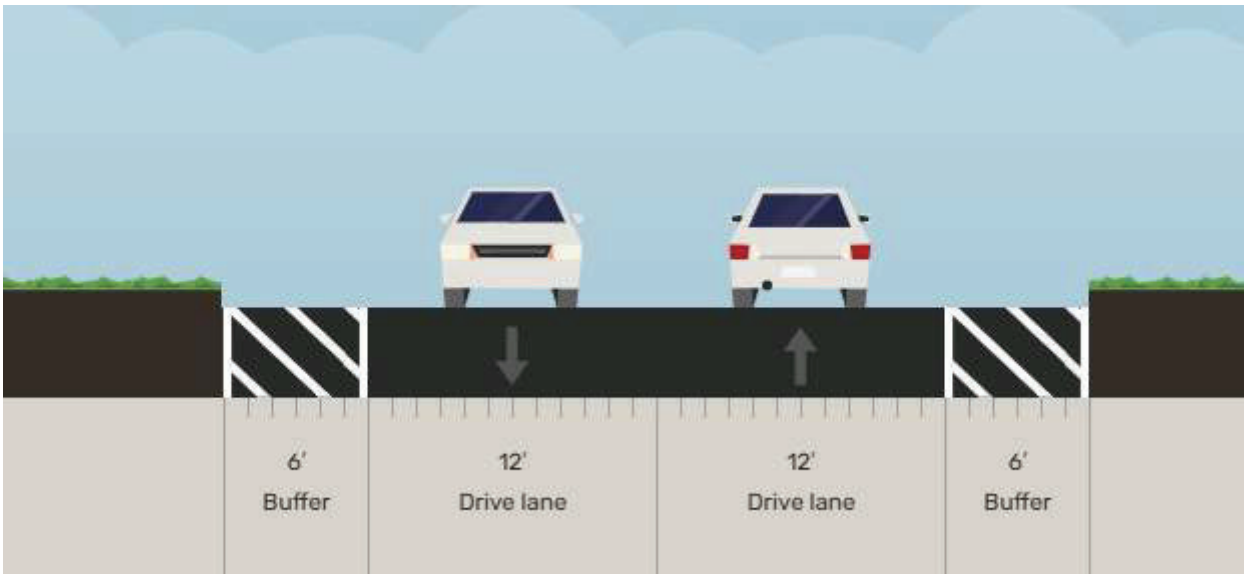

Figure 28: Typical Cross-Sections (South Rural Section (D))

The study area for the South Rural Section (D) includes the following intersections and interchanges:

- Signalized
  - MO 47 / N Outer Road
  - MO 47 / I-44 WB Ramps (Interchange)
  - MO 47 / I-44 EB Ramps (Interchange)
- Unsignalized
  - MO 47 / College Road & Forestview Drive
  - MO 47 / Rte AD / Schuchart Road
  - MO 47 / E. Happy Sac Road
  - MO 47 / Airport Road

Crash Data Analysis

Figure 29 shows the detailed summary of traffic crash facts for the South Rural Section (D). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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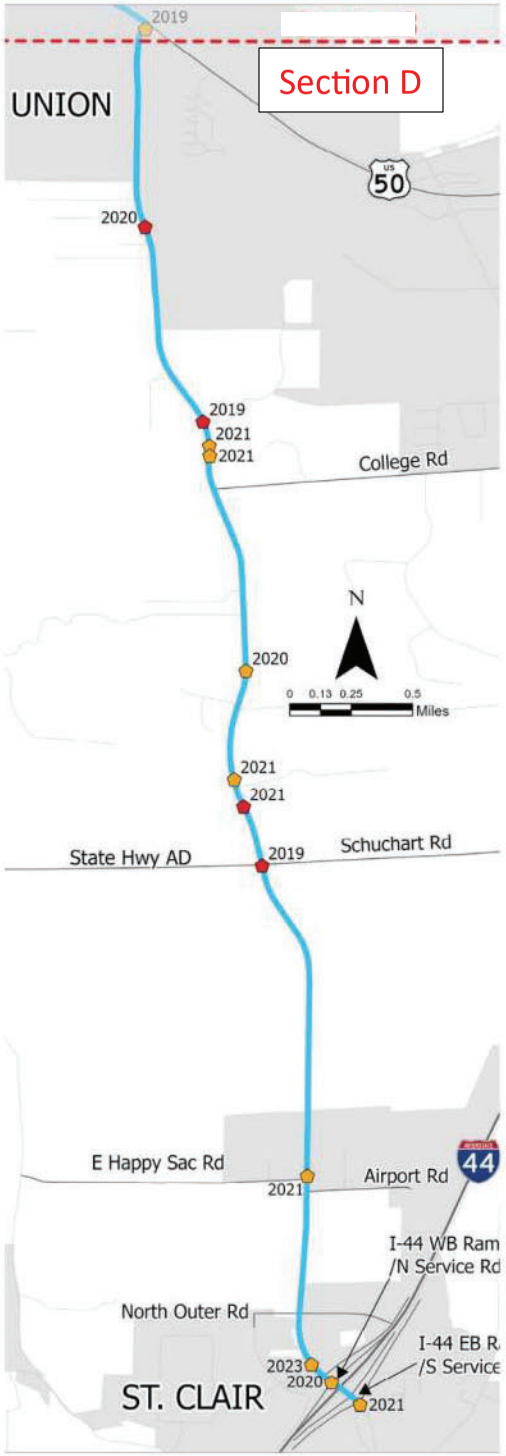
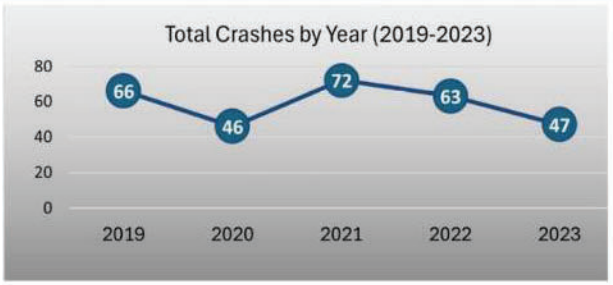
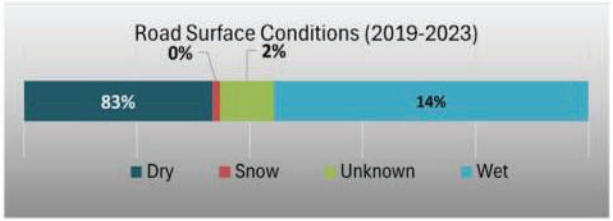
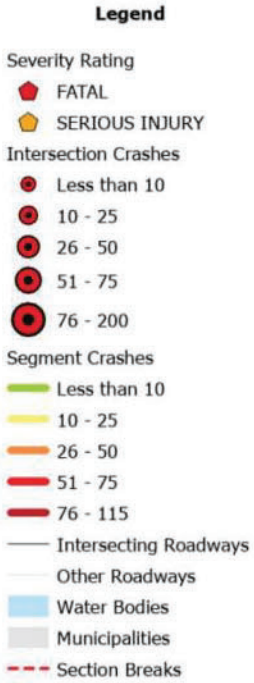
Section D
50
College Rd
N
0 0.13 0.25 0.5 Miles
e Hwy AD
Schuchart Rd
Happy Sac Rd
Airport Rd
44
I-44 WB Ram
/N Service Rd
North Outer Rd
I-44 EB R
/S Service
ST. CLAIR

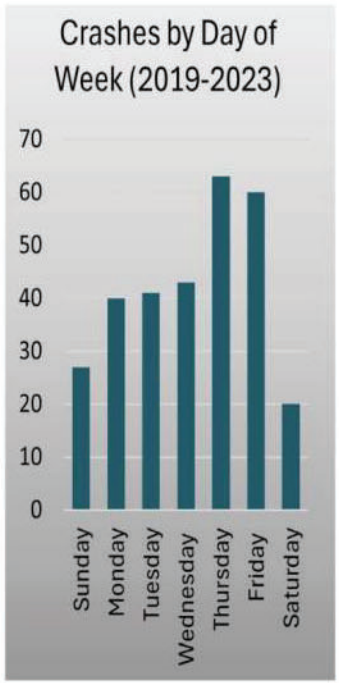

2019
Section D
UNION
50
2020
2019
2021
2021
College Rd
N
0 0.13 0.25 0.5 Miles
2020
2021
2021
State Hwy AD
2019
Schuchart Rd
E Happy Sac Rd
2021
Airport Rd
44
I-44 WB Ram
/N Service Rd
North Outer Rd
I-44 EB R
/S Service
2023
2020
2021
ST. CLAIR

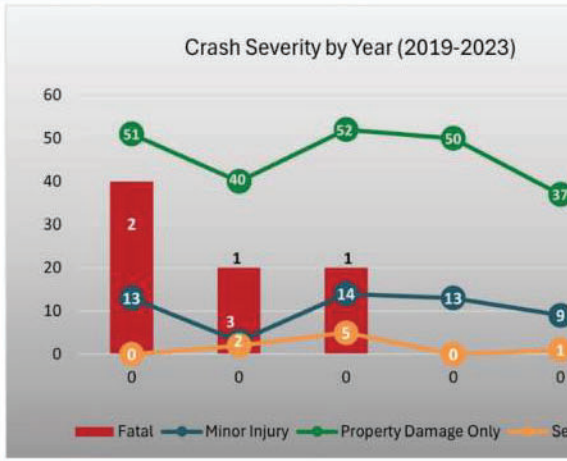

Total Crashes by Year (2019-2023)
80
60
40
20
0
66
46
72
63
47
2019
2020
2021
2022
2023

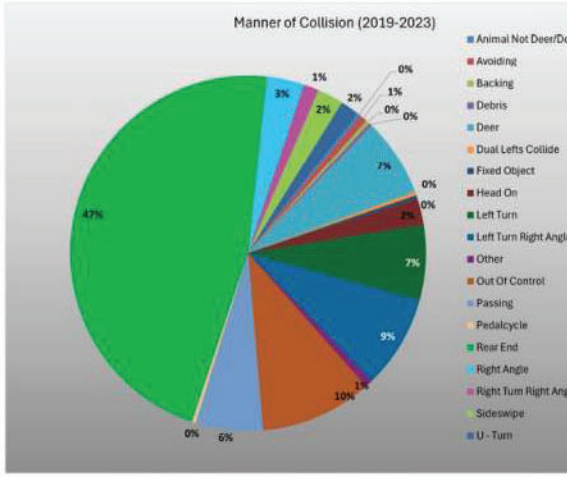
Lighting Condition (2019-2023)
20%
6%
74%
Dark W/ Street Lights Off
Dark W/ Street Lights On
Daylight

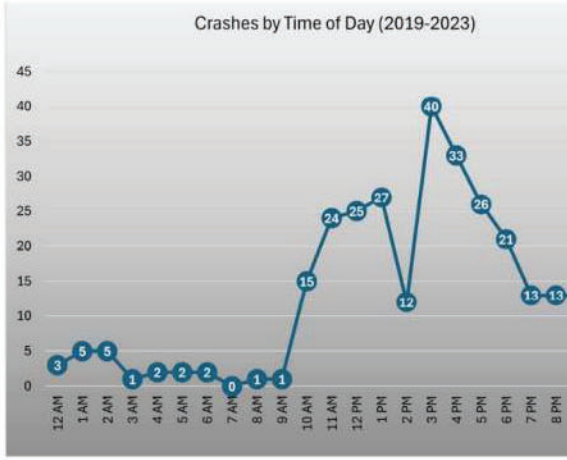

Road Surface Conditions (2019-2023)
0%
2%
83%
14%
Dry
Snow
Unknown
Wet


Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersection Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 200
Segment Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section Breaks


Crashes by Day of Week (2019-2023)
70
60
50
40
30
20
10
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Crash Severity by Year (2019-2023)
60
50
40
30
20
10
0
51
40
52
50
37
13
14
13
9
2
1
1
3
2
5
0
0
1
0
0
0
0
0
Fatal
Minor Injury
Property Damage Only


Manner of Collision (2019-2023)
Animal Not Deer/D
Avoiding
Backing
Debris
Deer
Dual Lefts Collide
Fixed Object
Head On
Left Turn
Left Turn Right Angl
Other
Out Of Control
Passing
Pedalcycle
Rear End
Right Angle
Right Turn Right An
Sideswipe
U - Turn


Crashes by Time of Day (2019-2023)
45
40
35
30
25
20
15
10
5
0
12 AM
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM

Within the study area, a total of 294 crashes occurred between 2019 and 2023. During the time analyzed, 107 (36%) crashes occurred at intersections. The intersection of MO 47 and I-44 EB Ramp had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2020 where 10 crashes occurred.

A total of 187 (64%) crashes occurred at segments in this study area. Based on five years of crash data, this study section recorded the highest number of fatal crashes, with a total of four incidents. **Table 21** provides additional information on the crash locations and severities within the study area.

Table 21: South Rural Section (D) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**5 (1)**	**25**	**2**	**19**	**7**	**14**	**2**	**14**	**4**	**14**	**107**
MO 47 & College Road (U)	3	1	-	-	2	-	-	-	-	-	6
MO 47 & Rte AD / Schuchart Road (U)	(1)	3	-	-	-	1	1	3	-	3	12
MO 47 & E. Happy Sac Road (U)	-	3	-	2	2	1	1	-	-	-	9
MO 47 & Airport Road (U)	1	2	-	1	-	-	-	-	1	-	5
MO 47 & N Outer Road (S)	-	5	1	1	2	3	-	2	-	1	15
MO 47 & I-44 WB Ramps (S)	-	5	1	5	-	5	-	2	3	4	25
MO 47 & I-44 EB Ramps (S)	1	6	-	10	1	4	-	7	-	6	35
Segment	**8 (1)**	**26**	**3 (1)**	**21**	**12 (1)**	**38**	**11**	**36**	**6**	**23**	**187**
US 50 East to College Road	7 (1)	8	(1)	12	6	13	7	10	2	9	76
College Road to Rte AD / Schuchart Road	1	3	2	5	4 (1)	12	2	13	3	7	53
Rte AD / Schuchart Road to E. Happy Sac Road	-	4	1	2	1	6	-	5	-	2	21
Airport Road to N. Outer Road	-	4	-	-	-	2	-	-	-	-	6
N Outer Road to I-44 WB Ramp	-	7	-	2	1	5	2	8	1	5	31
Grand Total	**13 (2)**	**51**	**5 (1)**	**40**	**19 (1)**	**52**	**13**	**50**	**10**	**37**	**294**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there were four fatal crashes and eight serious injury crashes in this section. The highest concentration of fatal crashes, with two incidents, is just north of the MO 47 and Rte AD/Schuchart Road intersection.

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Two fatal crashes involved motorcycles—one caused by a failure to yield, and the other by running a stop sign. The remaining fatalities were due to excessive speed and driving on the wrong side of the road.

Eight serious injury crashes were caused by driver errors and risky behaviors. One involved a driver running a red light at high speed, and another was a motorcycle with worn tires skidding off the road. In a third, a driver failed to yield, colliding with an oncoming vehicle. Distracted driving contributed to several incidents, including a rear-end collision and a driver crossing the centerline. Additional crashes involved a motorcyclist following too closely, another speeding while passing on the shoulder, and a distracted driver veering off the road and overcorrecting into oncoming traffic. One crash involved a bicycle, resulting in serious injuries. Each crash highlights the dangers of distraction, speeding, improper passing, and failure to yield.

A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 29.**

Crash Type

Rear-end crashes were the most prominent type of crash (46%) followed by out-of-control crashes (10%).

The following roadway and human factors can be attributed to the higher number of rear-end at this section:

- Higher access density,
- Sight distance issues at highway curves,
- High speeds,
- High volume/few gaps lead to aggressive driving from minor streets,
- Lack of turning bays/lanes, and
- Lack of intersection lighting.

Figure 30 shows the distribution of crash types within the study area.

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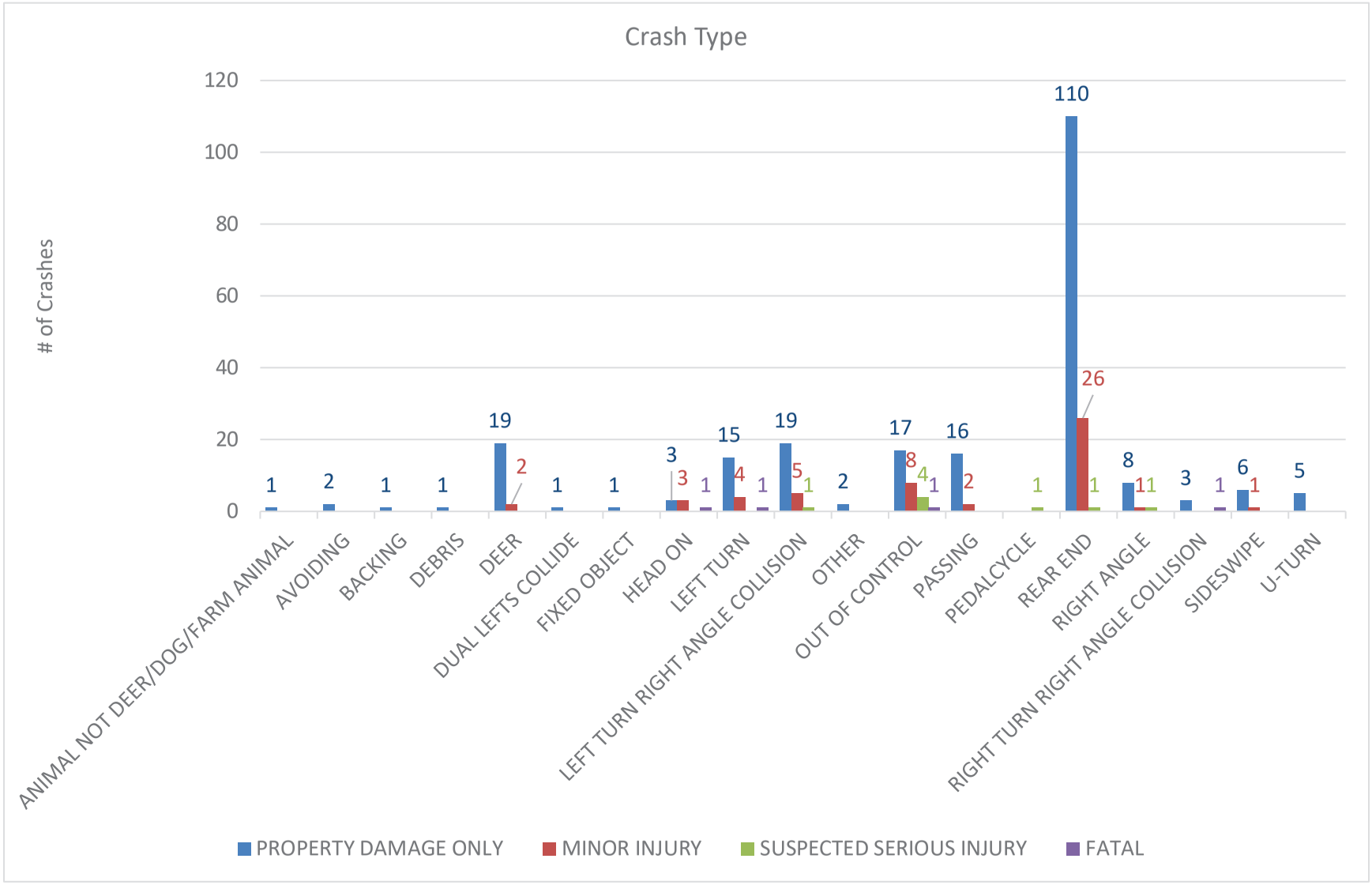

Figure 30: South Rural Section (D) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 29 crashes in 2021. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 31** below displays the breakdown of crashes by time of day according to year.

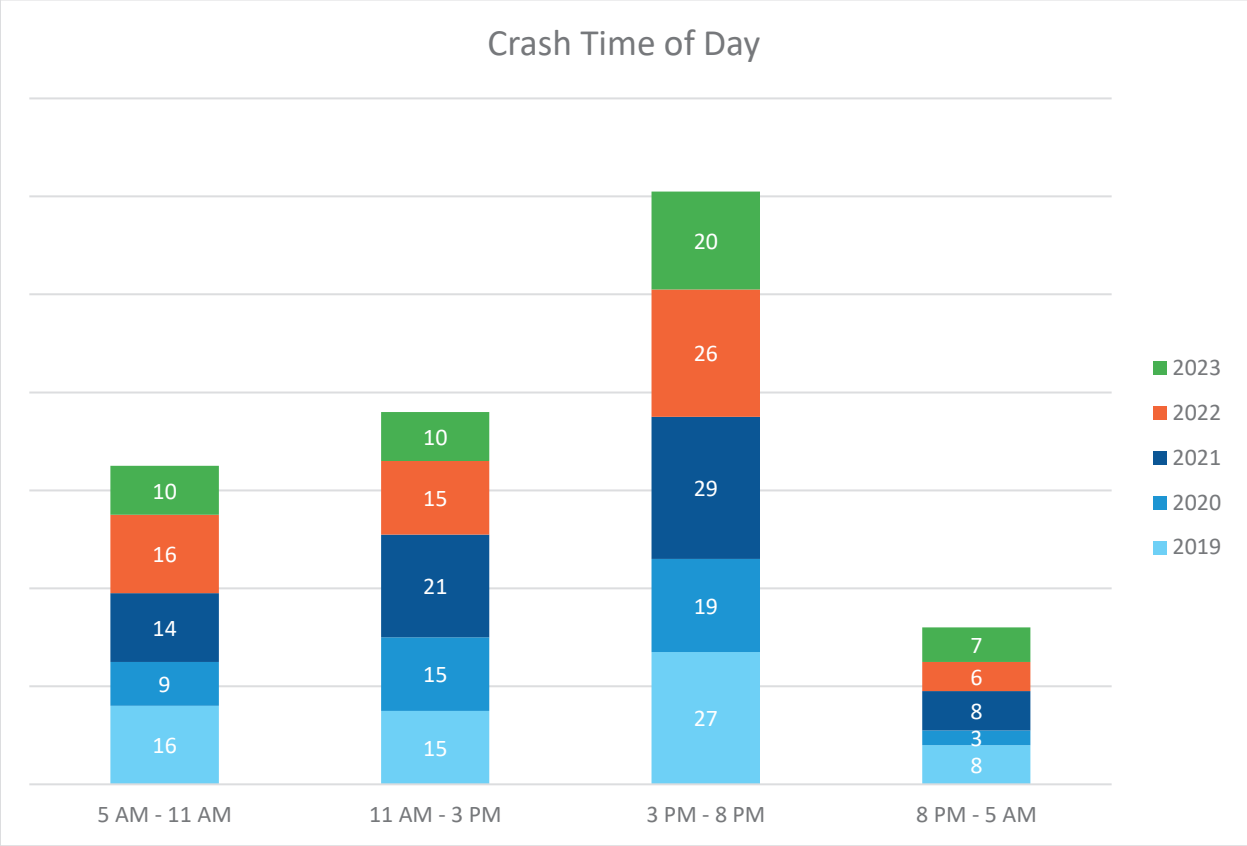

Figure 31: South Rural Section (D) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 221 (75%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 15 (5%) of crashes while 59 (20%) occurred in the dark where streetlights were off.

Approximately 83% of crashes occurred while roads were dry and 16% of crashes occurred while roads were wet or had snow present. **Figure 29** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

This section of road is a high-traffic corridor that serves as a critical access point for travelers entering or exiting I-44, as well as for commuters and freight moving between US 50 and the interstate. Traffic flow is generally steady, but congestion can occur during peak periods, particularly at the US 50 and MO 47

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intersection, and MO 47 and the I-44 ramp terminals, where turning movements and merging traffic cause delays. The road is influenced by the surrounding commercial and industrial developments, which generate frequent short trips and varying traffic volumes throughout the day. Additionally, the proximity to I-44 results in a higher concentration of trucks and larger vehicles, affecting traffic flow. Limited turn lanes, short deceleration zones, and the need for improved traffic signal synchronization at key intersections contribute to occasional bottlenecks. Upgrading ramp design, intersection flow, and overall lane capacity could alleviate congestion and enhance traffic mobility in this segment.

Roadway Design Analysis

Horizontal Alignment – South Rural Section (D)

The South Rural Section (D) is where the most substandard horizontal curves are present. This segment was analyzed using a maximum superelevation of 8%. Due to the existing superelevations combined with the posted speeds of this segment (55 mph north of East Happy Sac Road, and 45 mph south of East Happy Sac Road), there were several curves that were found to be substandard based on the existing radii of the curve, the existing superelevation, and Table 3-10 from the AASHTO Green Book. The substandard curves are summarized in **Table 22** below.

Table 22: Substandard Horizontal Curves – South Rural Section (D)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at Missouri Road	4.8% (8.0%)	2500’ (2,610’)
SB	MO 47 at Ruck Drive	5.8% (8.0%)	1,900' (2,010')
NB	MO 47 at Ruck Drive	4.6% (8.0%)	1,900' (2,750')
SB	MO 47 at Forestview Drive	5.0% (8.0%)	2,000’ (2,470’)
SB	MO 47 South of Walnut Ridge Drive	5.0% (8.0%)	2,000’ (2,470’)
SB	MO 47 South of Moreland Drive	5.4% (8.0%)	2,000’ (2,230’)
SB	MO 47 North of Highway AD / Schuchart Road	4.8% (4.0%)	2,000' (2,610')
NB	MO 47 South of Highway AD / Schuchart Road	5.0% (4.0%)	1,750' (2,470’)
SB	MO 47 North of Reeds Plaza Drive	5.0% (8.0%)	1,800' (2,470')
NB	MO 47 at Miller Drive	6.2% (8.0%)	1,500' (1,820')
NB	MO 47 at South Outer Road	5.8% (4.0%)	1,200' (2,010')
SB	MO 47 at South Outer Road	5.8% (4.0%)	1,200' (2,010')

Vertical Geometry – South Rural Section (D)

In **Table 23**, two vertical curves were found to be substandard in the South Rural Section (D). The curves found to be substandard were located between Airport Road and North Outer Road.

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Table 23: Substandard Vertical Curve Clusters – South Rural Section (D)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Standard)
SB	MO 47 South of Airport Road	1	Sag	65 (79)	312’ (360’)
SB	MO 47 at North Outer Road	2	Sag	70 (79)	332' (360')
				24 (79)	164' (360')

Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

The South Rural Section (D) of the study area did not contain as many substandard deceleration lanes as the previous section but did contain substandard lanes in an area where the most crashes occurred, specifically near US 50. The results of the analysis of the deceleration lanes in this section are summarized in **Table 24** below.

Table 24: Substandard Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
NB	MO 47 South of Highway 50	143' (120')	82' (100')
SB	MO 47 North of North Outer Road	208' (350')	116' (250')
NB	MO 47 South of North Outer Road	233' (350')	107' (250')

Intersection Sight Distance Analysis

The South Rural Section (D) contained the highest number of turning movements with deficient Intersection Sight Distance. A total of eight turning movements were found to have deficient ISDs in this segment of the corridor. These turning movements are summarized in **Table 25** below.

Table 25: Deficient Intersection Sight Distance – South Rural Section (D)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Driveway at 495 State MO 47	X		NB
Eastview Drive	X		SB
Driveway 1700’ South of Highway AD	X		NB
Driveway 1800’ North of Reeds Plaza Drive		X	SB
Reeds Plaza Drive	X		NB
East Happy Sac Road		X	SB
Airport Road	X		SB
Driveway 1200’ North of North Outer Road	X		SB

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Existing No-Build Analysis

Table 26 shows the observed and estimated existing annual crash frequency for the MO 47 and I-44 interchange based on ISATe crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes would either have no change or would decrease on the I-44 ramp terminals.

Table 26: South Rural Section (D) Annual Crash Frequency, ISATe Analysis

MO 47 Annual Crash Frequency (Crashes/Year)			
MO 47 & I-44 WB RAMP TERMINAL	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.2	5.0
No Build Expected Crashes - Existing Condition	1.4	3.6	5.0
MO 47 & I-44 EB RAMP TERMINAL	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	6.6	7.0
No Build Expected Crashes - Existing Condition	1.1	4.7	5.8

Table 27 shows the observed and estimated existing annual crash frequency for the MO 47 South Rural Section (D) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Airport Road and North Outer Road and would increase at the segment of Route AD / Schuchart Road to E. Happy Sac Road.

Table 27: South Rural section (D) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & COLLEGE ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	0.2	1.2
No Build Expected Crashes - Existing Condition	0.4	0.6	1.0
MO 47 & RTE AD / SCHUCHART ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	2.0	2.4
No Build Expected Crashes - Existing Condition	0.4	0.5	0.9
MO 47 & E. HAPPY SAC ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	1.2	1.8
No Build Expected Crashes - Existing Condition	0.7	0.9	1.6
MO 47 & AIRPORT ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.6	1.0

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No Build Expected Crashes - Existing Condition	0.7	0.9	1.6
MO 47 & N OUTER ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	2.4	3.0
No Build Expected Crashes - Existing Condition	1.0	2.1	3.1
Segment			
US 50 EAST TO COLLEGE ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	4.8	10.4	15.2
No Build Expected Crashes - Existing Condition	2.9	6.1	9.0
COLLEGE ROAD TO Rte AD / SCHUCHART ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.6	8.0	10.6
No Build Expected Crashes - Existing Condition	2.1	4.5	6.6
Rte AD / SCHUCHART ROAD TO E. HAPPY SAC ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	3.8	4.2
No Build Expected Crashes - Existing Condition	1.5	3.2	4.7
AIRPORT ROAD TO N OUTER ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	1.2	1.2
No Build Expected Crashes - Existing Condition	0.5	1.0	1.5
N OUTER ROAD TO I-44 WB RAMP	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	5.4	6.2
No Build Expected Crashes - Existing Condition	0.4	0.8	1.2

Based on historical crash data and patterns, the MoDOT-recommended calibration factor for a four-legged signalized intersection overpredicted crashes at the intersection of MO 47 and N Outer Road. The crash patterns more similarly reflected those of an urban four-legged stop-controlled intersection. Therefore, the MoDOT-recommended calibration factor for an urban four-legged stop-controlled intersection was used to calculate future crash predictions at the intersection of MO 47 and N Outer Road.

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Safety Performance

The safety performance analysis along the MO 47 corridor reveals a range of crash rates and safety issues across different sections:

- **The North Urban Section (A)**: Despite its relatively short length of 0.3 miles, exhibits a significantly high crash rate compared to statewide averages, with total of 286 crashes. The majority of crashes (97%) occurred at intersections, with the MO 47 & Highway 100 intersection recording the highest frequency. Rear-end crashes were the most common, primarily due to high traffic volumes, limited gaps for minor street traffic, and insufficient right-turn bays. While no fatal crashes were reported, three serious injury crashes resulted from red-light violations and failure-to-yield incidents. Substandard superelevation and intersection sight distances were noted as potential contributing factors. Future projections indicate a continued high crash frequency unless intersection improvements and traffic flow management measures are implemented.
- **The North Rural Section (B)**: Spanning 5.1 miles, recorded a total of 273 crashes, with the highest frequency occurring along the segment between Clearview Road and Independence Drive. Rear-end crashes (72%) were the predominant type, often attributed to high-speed traffic, limited passing opportunities, and sight distance issues at curves. This section recorded two fatal crashes—one due to an unconscious driver and another caused by distracted driving. Nine serious injury crashes were linked to excessive speed and failure to yield. Substandard horizontal alignment and deceleration lanes were identified as safety concerns. The crash frequency at the Clearview Road intersection is projected to rise without intervention, necessitating signal timing improvements and enhanced road signage.
- **The Middle Urban Section (C)**: Extending 1.6 miles, had the highest total number of crashes 598, with 81% occurring at intersections. The MO 47 & US 50 East intersection recorded the most crashes, with a notable peak in 2020. Rear-end crashes (53%) were most common, attributed to high traffic volumes, red-light running, and long queue lengths at intersections. This section experienced one fatal crash and nine serious injury crashes, primarily caused by distracted driving, failure to yield, and red-light violations. Substandard superelevation, inadequate deceleration lanes, and high access density contributed to safety issues. Future crash projections indicate a continued rise in crashes at major intersections, necessitating intersection redesigns, improved signal coordination, and enhanced turning lanes.
- **The South Rural Section (D)**: The longest segment at 5.7 miles, recorded 294 crashes, including four fatal crashes and eight serious injury crashes. This section had the highest number of fatal incidents, largely attributed to excessive speed, failure to yield, and motorcycle-related crashes. Rear-end crashes (47%) were the most prevalent, often influenced by high speeds, sight distance limitations, and the lack of dedicated turning bays. The intersection at MO 47 & I-44 EB Ramp recorded the highest crash frequency. Substandard horizontal geometry, deficient intersection sight distances, and inadequate deceleration lanes were key safety concerns. Without improvements, crash rates in this section are expected to persist, emphasizing the need for targeted countermeasures such as intersection enhancements, improved lighting, and lane reconfigurations.

Crash trends across all sections indicate that without targeted safety improvements, crash frequencies will remain high, particularly at key intersections and high-speed segments. Addressing geometric deficiencies,

This report contains information that is protected from disclosure by federal law, 23 USC Section 407 and the Missouri Open Records Law (Sunshine Act), Section 610.021 RSMo. Please review MoDOT's policy and procedure manual on the Sunshine Act before releasing any of the information contained herein.

improving intersection safety features, and implementing speed management strategies will be essential to enhancing overall roadway safety along the MO 47 corridor.

This report contains information that is protected from disclosure by federal law, 23 USC Section 407 and the Missouri Open Records Law (Sunshine Act), Section 610.021 RSMo. Please review MoDOT's policy and procedure manual on the Sunshine Act before releasing any of the information contained herein.

Appendix C: Existing Traffic Conditions Memorandum

DRAFT

J6P3661: Route 47 Conceptual Study

Final Existing Traffic Conditions Memo

March 28st 2025

Prepared for:

Prepared by:

HNTB

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A. Volume and Measure of effectiveness (MOE) Graphics

B. Synchro Detailed Report

C. Streetlight Origin-Destination (OD) graphics

ACRONYMS & ABBREVIATIONS

HIN	High Injury Network
MOE	Measure of Effectiveness
NPMRDS	National Performance Management Research Data Set
OD	Origin-Destination
RITIS	Regional Integrated Transportation Information system
STIP	Statewide Transportation Improvement Program
TWSC	Two-Way-Stop-Control

1 Introduction

A conceptual study is currently underway for Route 47 between Highway 100 and I-44, as part of project J6P3661. The two-lane undivided facility in the study area is in Franklin County, Missouri and serves the cities of Washington to the north, St. Clair to the south and Union. The conceptual study aims to evaluate the corridor in terms of safety, traffic operations and geometric considerations and identify areas of improvement.

1.1 Project Background

Route 47 between Highway 100 and I-44 has been identified to have traffic congestion issues especially where the route overlaps with Highway 50, east of the city of Union. Additionally, certain sections of this facility have been identified as part of the high injury network (HIN) by East-west Gateway as part of their Gateway to Safer Roadways initiative. Route 47 between Route 50 and I-44 has significant number of residential and commercial access points which can potentially increase safety related risks on the corridor.

Under the Statewide Transportation Improvement Program (STIP), MoDOT has allocated approximately $75.7 million for safety and congestion related improvements along Route 47 in the study area. The aim of the conceptual study will be to identify these potential improvements and provide analysis on their safety and operational benefits along with the environmental, transportation and financial impacts.

1.2 Study Area

As noted previously, the study area incorporates the Route 47 corridor from Highway 100 on the north end to the I-44 interchange on the south (**Figure 1: Study Area Map**). Currently, the corridor is a two-lane, undivided facility with full access at all intersections and turn lanes in sporadic locations along the corridor. The study area includes approximately 12.7 miles of Route 47. The existing posted speed on the corridor is 45 mph - 55 mph.

Nineteen (19) intersections along the corridor were included in the analysis, including twelve existing signalized intersections. A full list of the study area intersections from the north to the south is included in **Table 1: Study Area Intersections** and illustrated in **Figure 2: Intersection Locations and Control Types**.

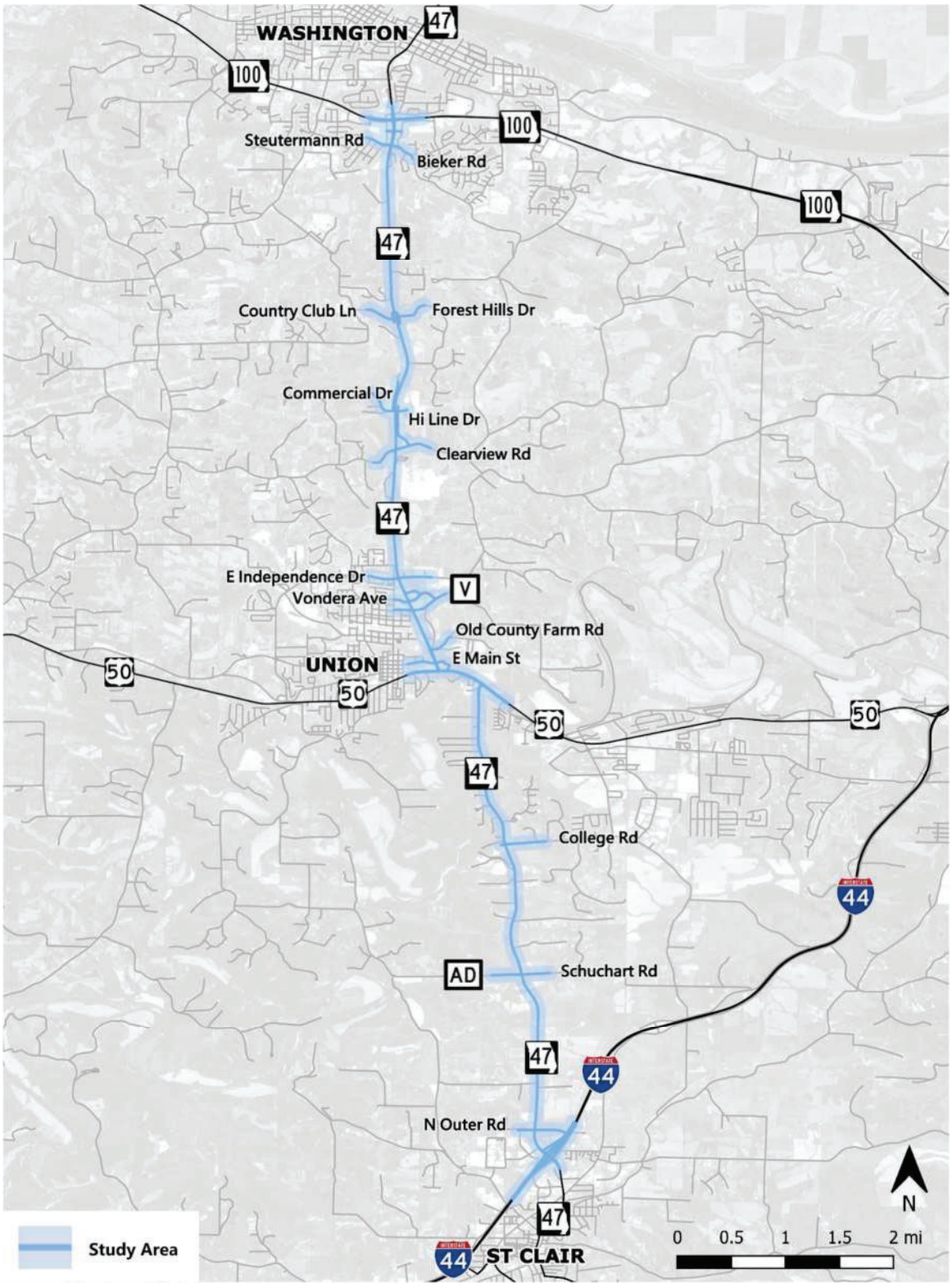


Figure 1: Study Area Map

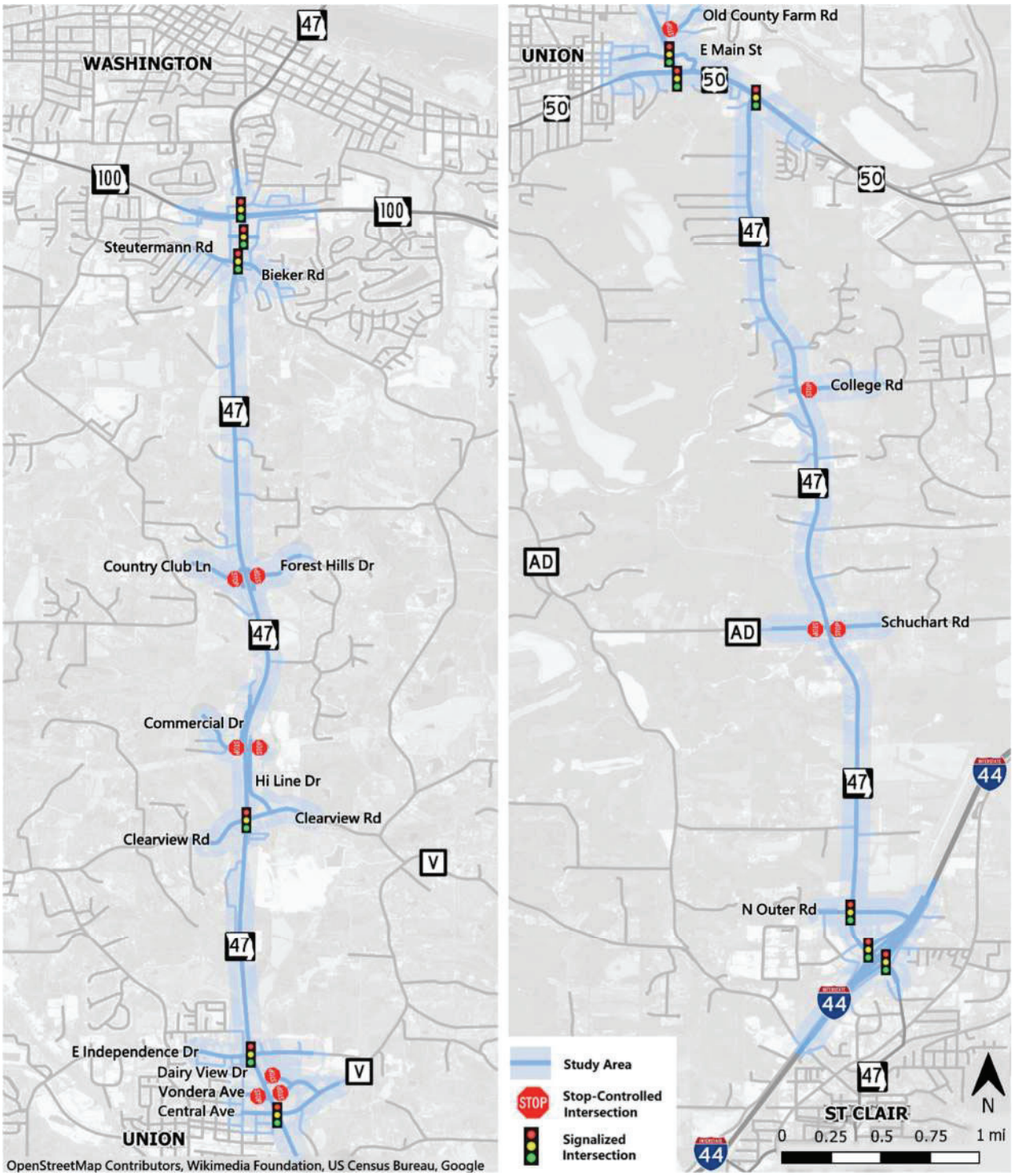


Figure 2: Intersection Locations and Control Types

Table 1: Study Area Intersections

Intersections with Route 47 (North to South)	Control type
Highway 100	Signalized
Washington Crossing / Square	Signalized
Steutermann / Bieker Rd	Signalized
Country Club Ln / Forest Hills Dr	Two-Way Stop-Controlled (TWSC)
Commercial Dr (South Intersection) / Hi-Line Dr	Two-Way Stop-Controlled (TWSC)
Clearview Rd	Signalized
Independence Dr	Signalized
Dairy View Dr	Stop-Controlled
Vondera Ave	Two-Way Stop-Controlled (TWSC)
Central Ave / Highway V	Signalized
Old County Farm Rd	Stop-Controlled
Main St	Signalized
US 50 (West Intersection)	Signalized
US 50 (East Intersection)	Signalized
Driveway/College Rd	Two-Way Stop-Controlled (TWSC)
Highway AD / Schuchart Rd	Two-Way Stop-Controlled (TWSC)
N Outer Rd	Signalized
I-44 WB Ramps	Signalized
I-44 EB Ramps	Signalized

1.3 Problem Definition

The existing roadway has capacity constraints and deficiencies resulting in congestion and safety related issues. As the corridor continues to experience higher traffic in the future these mobility and safety concerns are expected to increase. The existing corridor is also characterized by sharp curves that fail to meet modern design standards. Upgrading this infrastructure is essential to enhance safety, access, and travel efficiency.

2 Existing Traffic Operations Analysis

2.1 Methodology

To analyze the existing and future traffic operations of the corridor, Synchro version 11, build 168, revision 0 software was used. The analysis scenarios included the 2024 Base Year. The existing corridor was modeled in Synchro, and the unbalanced set of traffic volumes developed were input into the Synchro model. Based on a review of the existing traffic volumes, two different peak hour scenarios were analyzed:

- AM Peak Hour (7:15 AM – 8:15 AM)
- PM Peak Hour (3:45 PM – 4:45 PM)

Existing traffic signal timings provided by MoDOT were used in the existing model. Google Maps aerials were used to code the number of lanes and the length of turn lanes. Level of Service (LOS) is a measure of an intersection's operations in terms of average delay. Signalized intersections and roundabouts are generally analyzed in terms of average vehicle delay for an entire intersection whereas the worst movement delay was reported for the intersections with Two-Way-Stop-Control (TWSC). Additionally, any movement with level of service worse than D has been noted in the report. **Table 2: LOS Criteria** below shows the LOS criteria for different intersection types.

Table 2: LOS Criteria

LOS	Signalized Intersection Delay (seconds / vehicle)	Unsignalized Intersection Delay (seconds / vehicle)	Roundabout Delay (seconds / vehicle)
A	≤10	≤10	≤10
B	>10–20	>10–15	>10–15
C	>20–35	>15–25	>15–25
D	>35–55	>25–35	>25–35
E	>55–80	>35–50	>35–50
F	>80	>50	>50

Source: Highway Capacity Manual, Sixth Edition

2.2 Intersection Configurations

This section describes the existing configuration of the signalized and non-signalized intersections within the study area:

Route 47 & Highway 100

As seen in **Figure 3: Highway 100 Existing Intersection LayoutError! Reference source not found.**, the existing geometry at Highway 100 includes:

- 2 through lanes NB/SB along Route 47 and 2 through lanes EB/WB Highway 100.
- Dual left turn lanes NB/SB along Route 47 and dual left turn lanes EB/WB along Highway 100.
- 1 right lane NB/SB along Route 47 and 1 right lane EB/WB along Highway 100.

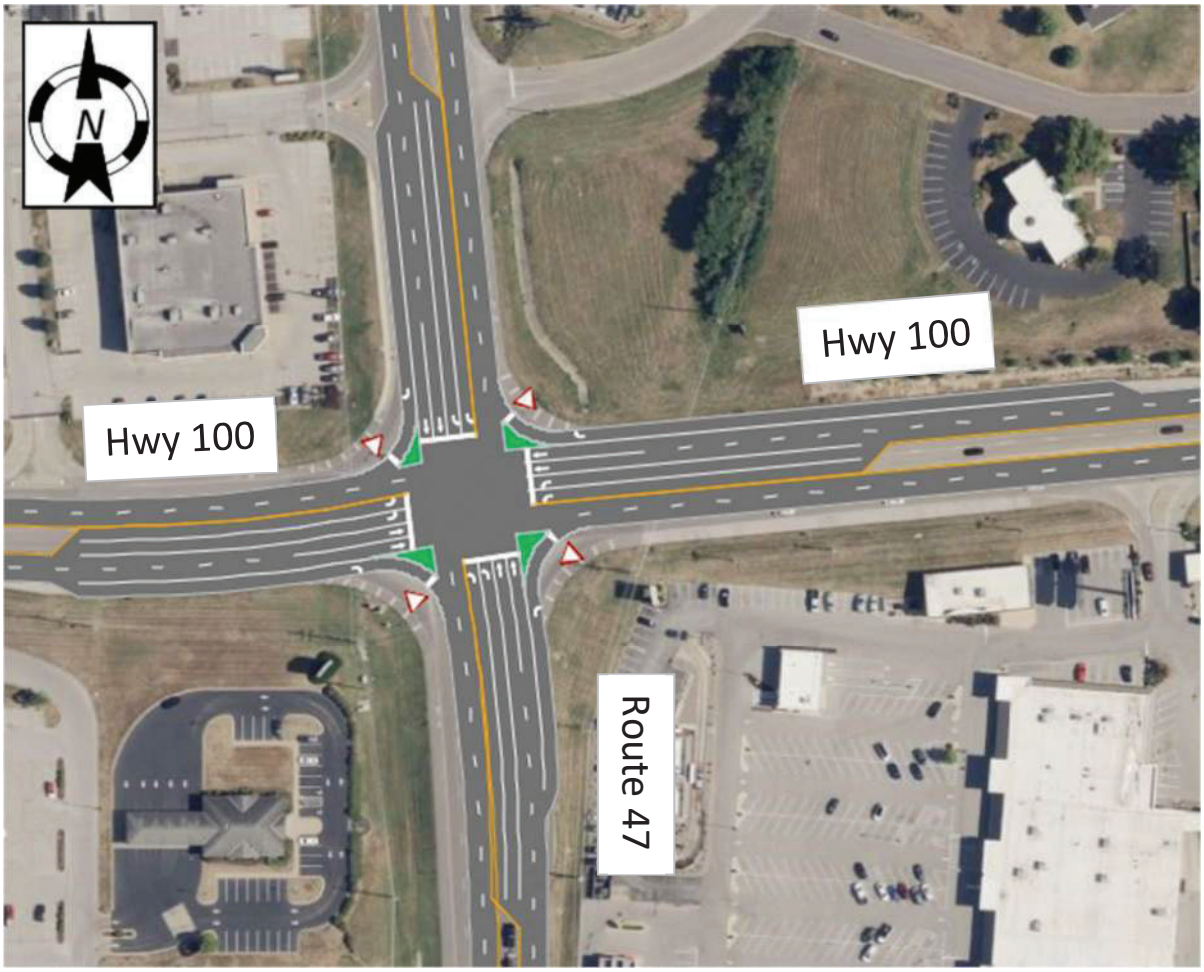


Figure 3: Highway 100 Existing Intersection Layout

Route 47 & Washington Crossing/Washington Square

As seen in **Figure 4: Route 47 & Washington Crossing / Washington Square Existing Intersection Layout**, the existing geometry at Washington Crossing / Washington Square includes:

- 2 through lanes with a shared right lane NB/SB along Route 47.
- 1 left lane NB/SB along Route 47.
- 1 through lane and dual left lanes (one of them is shared with through lane) EB along Washington Crossing.
- 1 through lane with a shared left lane WB along Washington Square.
- 1 right lane EB/WB along Washington Crossing / Washington Square.

Figure 4: Route 47 & Washington Crossing / Washington Square Existing Intersection Layout

Route 47 & Steutermann Road / Bieker Road

As seen in **Figure 5: Route 47 & Steutermann Road / Bieker Road Existing Intersection Layout**Error! Reference source not found., the existing geometry at Steutermann Road / Bieker Road includes:

- 2 through lanes with a shared right lane NB along Route 47.
- 1 left lane NB along Route 47.
- 1 through lane, 1 left lane, and 1 right lane SB along Route 47.
- 1 through lane with a shared right lane EB/WB along Steutermann Road / Bieker Road
- 1 left lane EB/WB along Steutermann Road/Bieker Road.

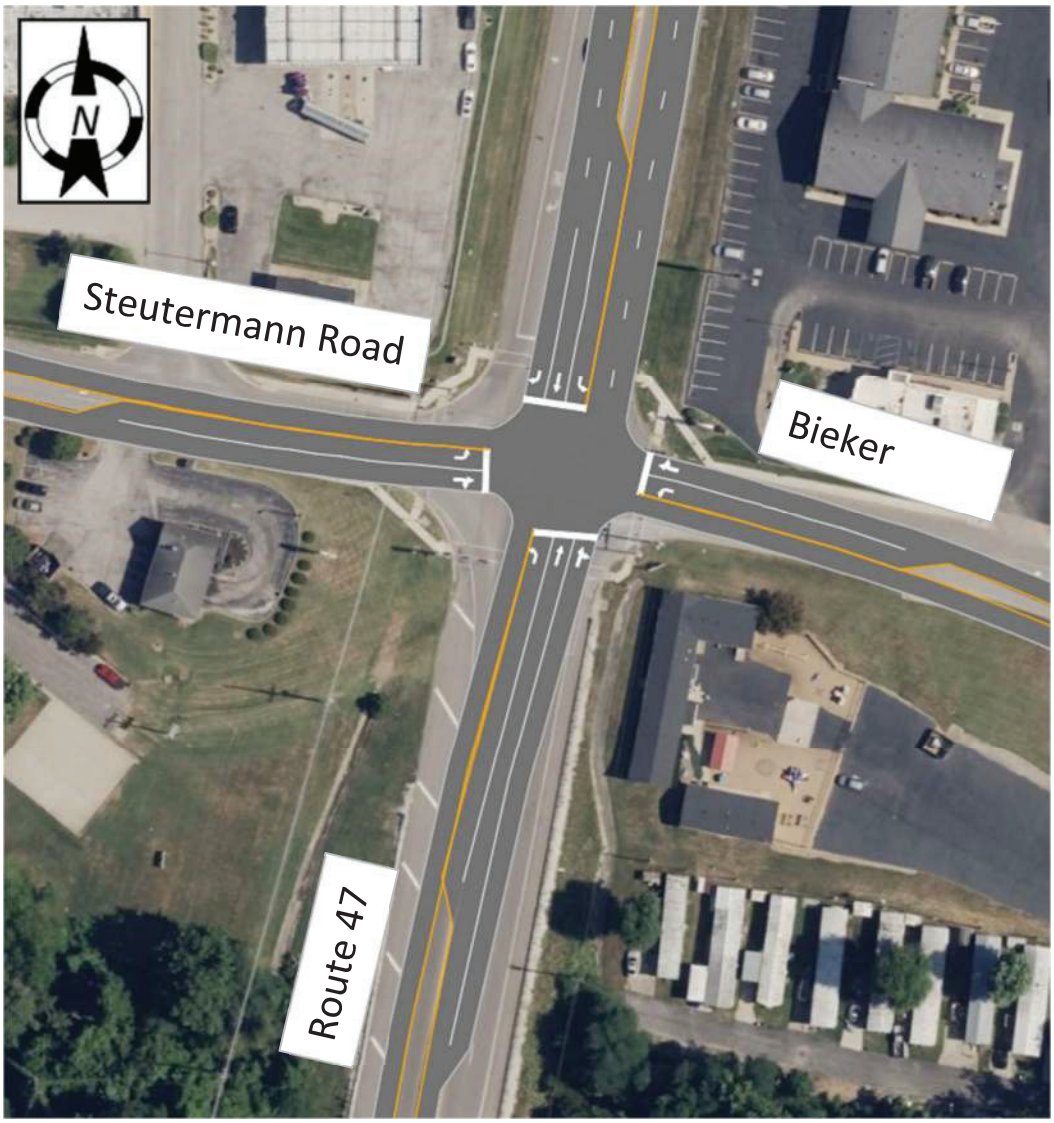


Figure 5: Route 47 & Steutermann Road / Bieker Road Existing Intersection Layout

Route 47 & Country Club Lane / Forest Hills Drive

As seen in **Figure 6: Route 47 & Country Club Lane / Forest Hills Drive Existing Intersection Layout**, the existing geometry at Country Club Lane / Forest Hills Drive includes:

- 1 through lane with a shared right lane and 1 left lane NB along Route 47.
- 1 through lane with a shared right lane and 1 left lane SB along Route 47.
- 1 through lane with a shared right lane / left lane EB/WB along Country Club Lane / Forest Hills Drive

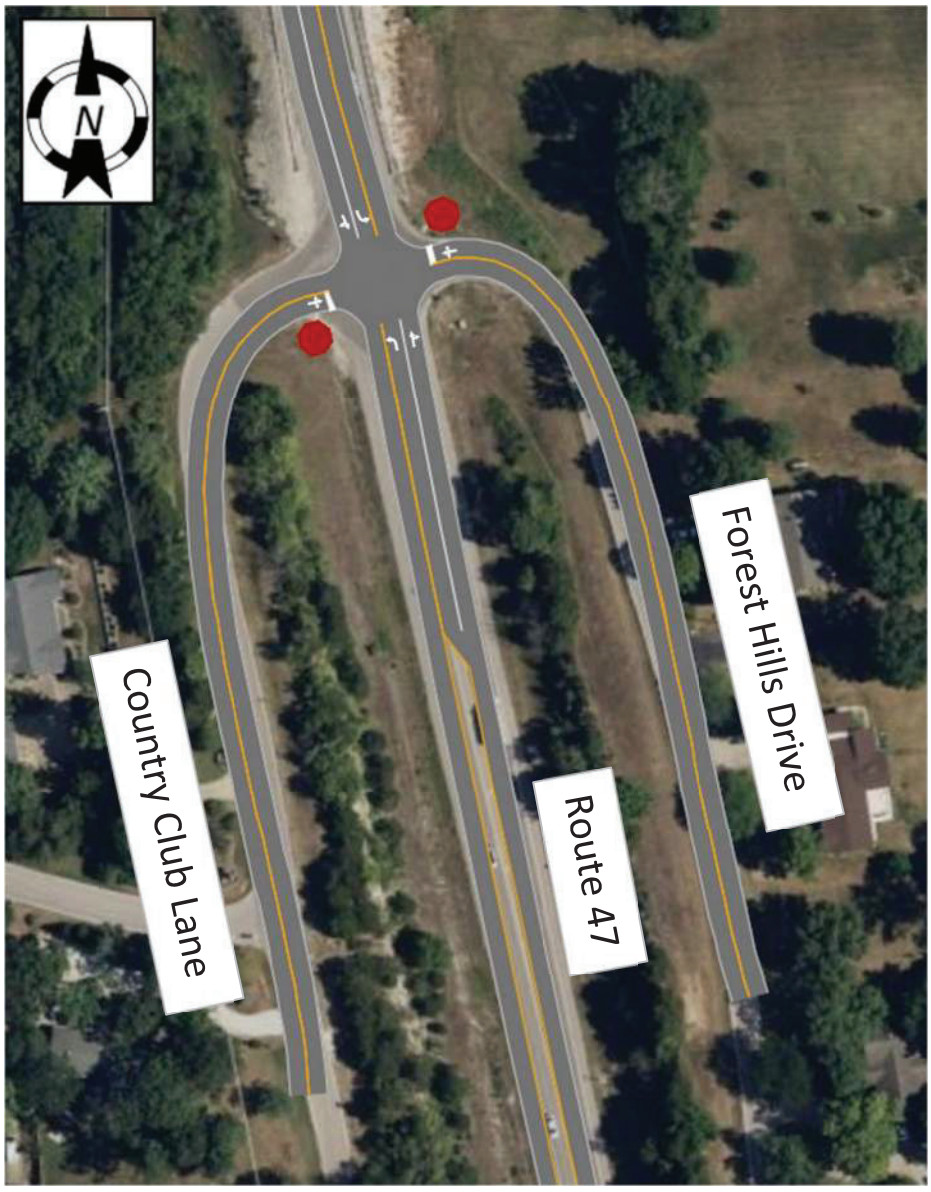


Figure 6: Route 47 & Country Club Lane / Forest Hills Drive Existing Intersection Layout

Route 47 & Commercial Drive (South Intersection) / Hi-Line Drive

As seen in **Figure 7: Route 47 & Commercial Drive (South Intersection) / Hi-Line Drive Existing Intersection Layout**, the existing geometry at Commercial Drive (South Intersection) / Hi-Line Drive includes:

- 1 through lane with a shared right lane / left lane along NB along Route 47.
- 1 through lane with a shared right lane / left lane along SB along Route 47.
- 1 through lane shared with a right lane / left lane EB/WB along Hi-Line / Commercial Drive.

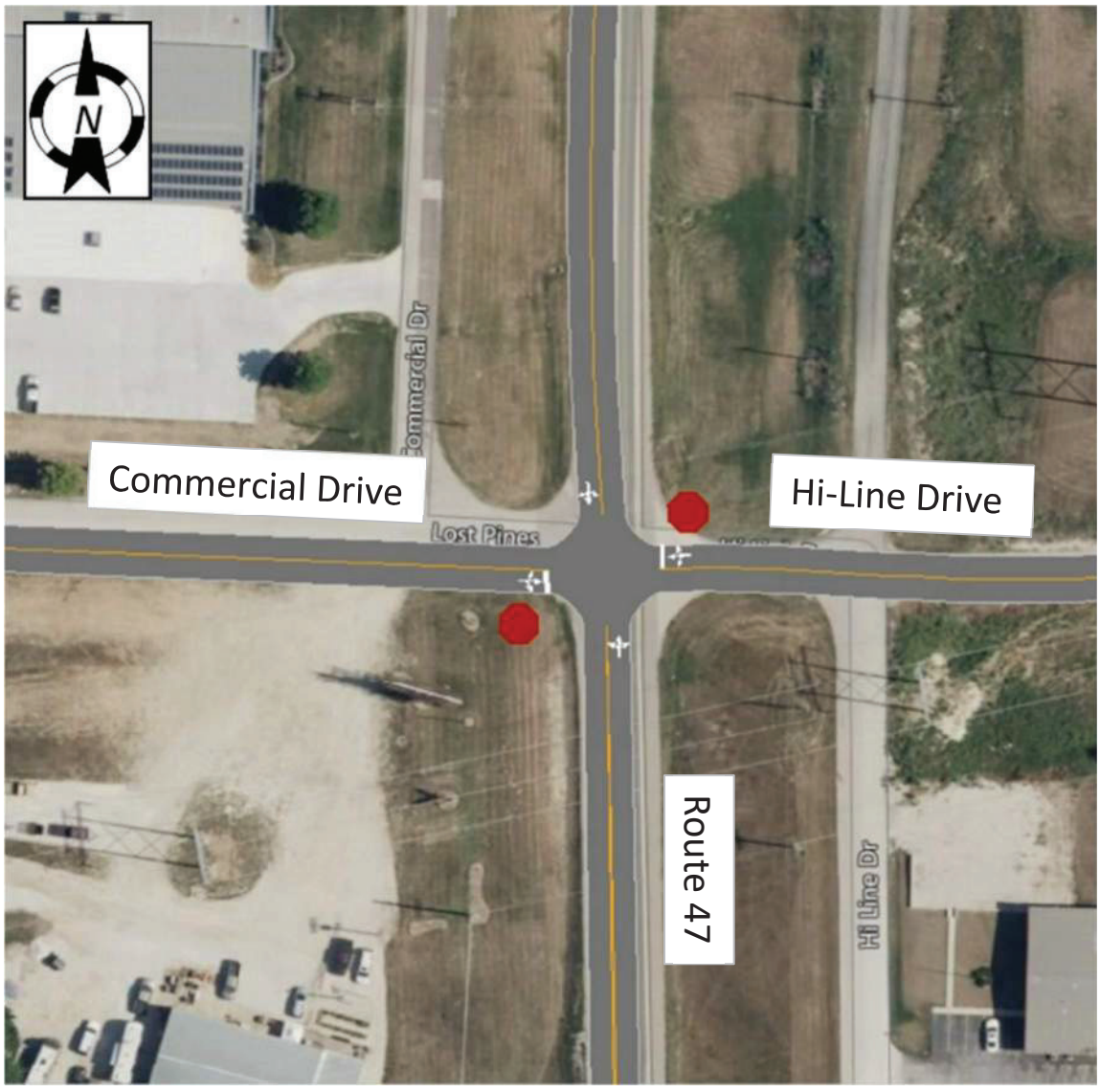


Figure 7: Route 47 & Commercial Drive (South Intersection) / Hi-Line Drive Existing Intersection Layout

Route 47 & Clearview Road

As seen in **Figure 8: Route 47 & Clearview Road Existing Intersection Layout**, the existing geometry at Clearview Road includes:

- 1 through lane with a shared right lane NB/SB along Route 47.
- 1 left lane NB/SB along Route 47.
- 1 through lane with a shared left/right lanes EB/WB along Clearview Road.

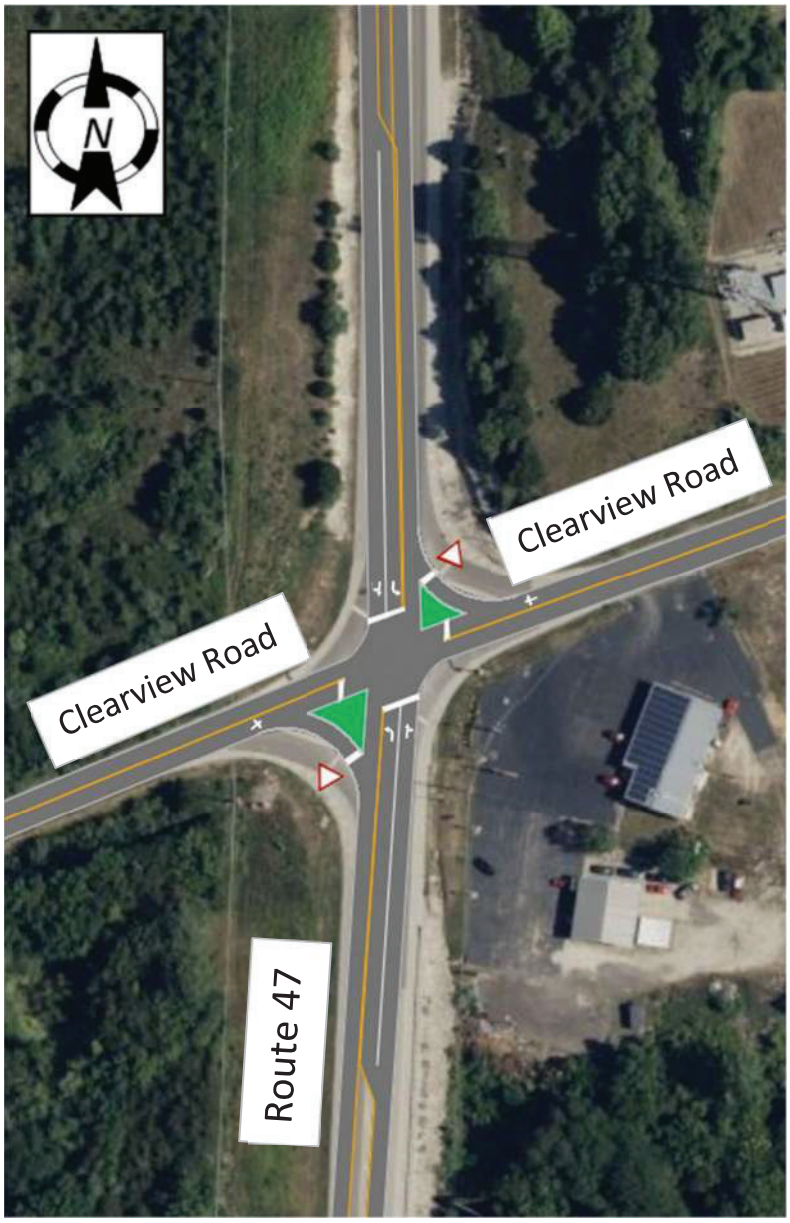


Figure 8: Route 47 & Clearview Road Existing Intersection Layout

Route 47 & Independence Drive

As seen in **Figure 9: Route 47 & Independence Drive Existing Intersection Layout**Error! Reference source not found., the existing geometry at Independence Drive includes:

- 1 through lane with shared right lane NB/SB along Route 47 and EB along Independence Drive.
- 1 left lane NB/SB along Route 47 and EB along Independence Drive.
- 1 through lane, 1 left lane, and 1 right lane WB along Independence Drive.

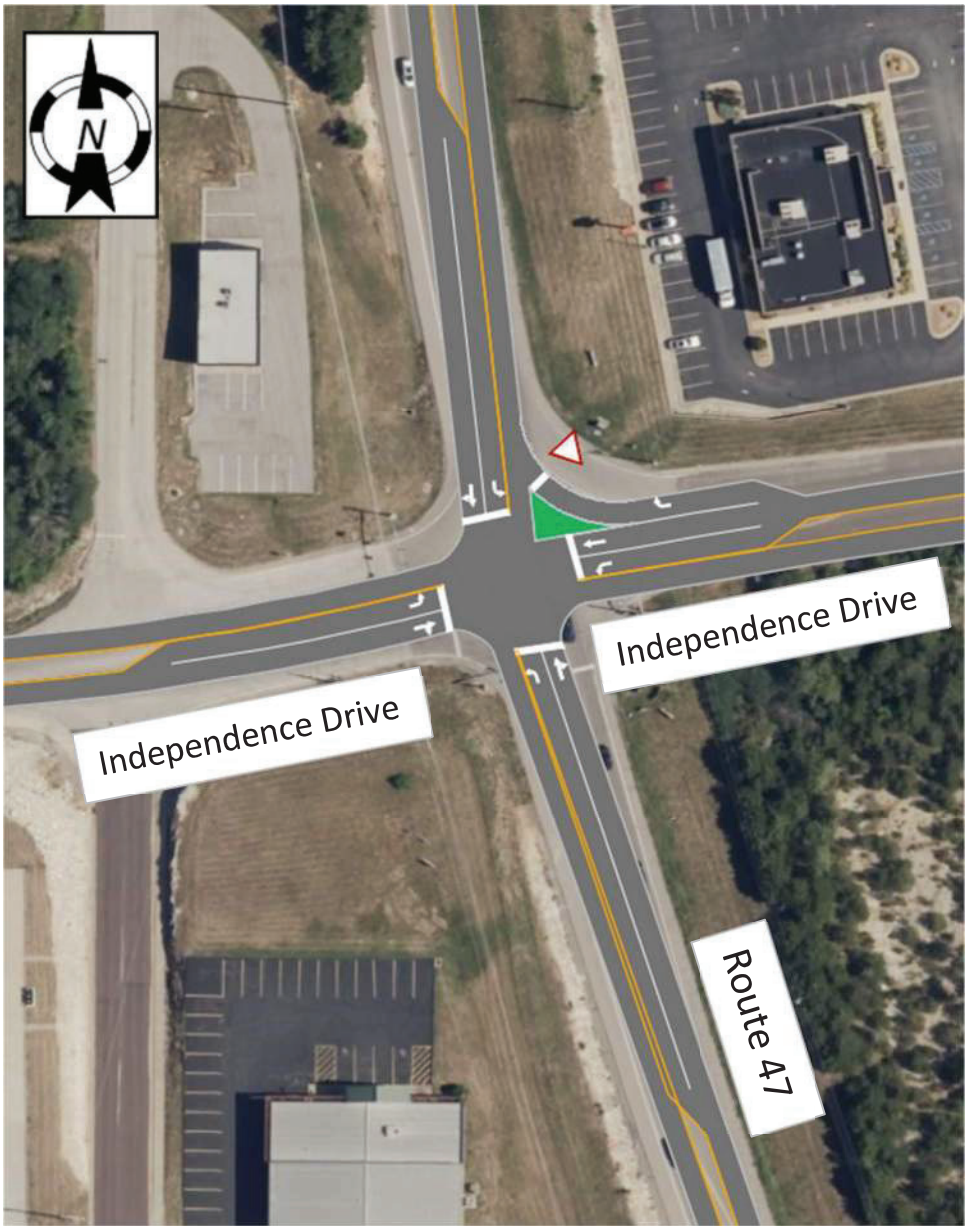


Figure 9: Route 47 & Independence Drive Existing Intersection Layout

Route 47 & Dairy View Drive

As seen in **Figure 10: Route 47 & Dairy View Drive Existing Intersection Layout**, the existing geometry at Dairy View Drive includes:

- 1 through lane with a shared right lane NB along Route 47.
- 1 through lane with a shared left lane SB along Route 47.
- 1 shared left / right lane WB along Dairy View Drive.

Figure 10: Route 47 & Dairy View Drive Existing Intersection Layout

Route 47 & Vondera Avenue

As seen in **Figure 11: Route 47 & Vondera Avenue Existing Intersection Layout**, the existing geometry at Vondera Avenue includes:

- 1 through lane with a shared right lane / left lane NB/SB along Route 47.
- 1 through lane with a shared right lane / left lane EB/WB along Vondera Avenue.

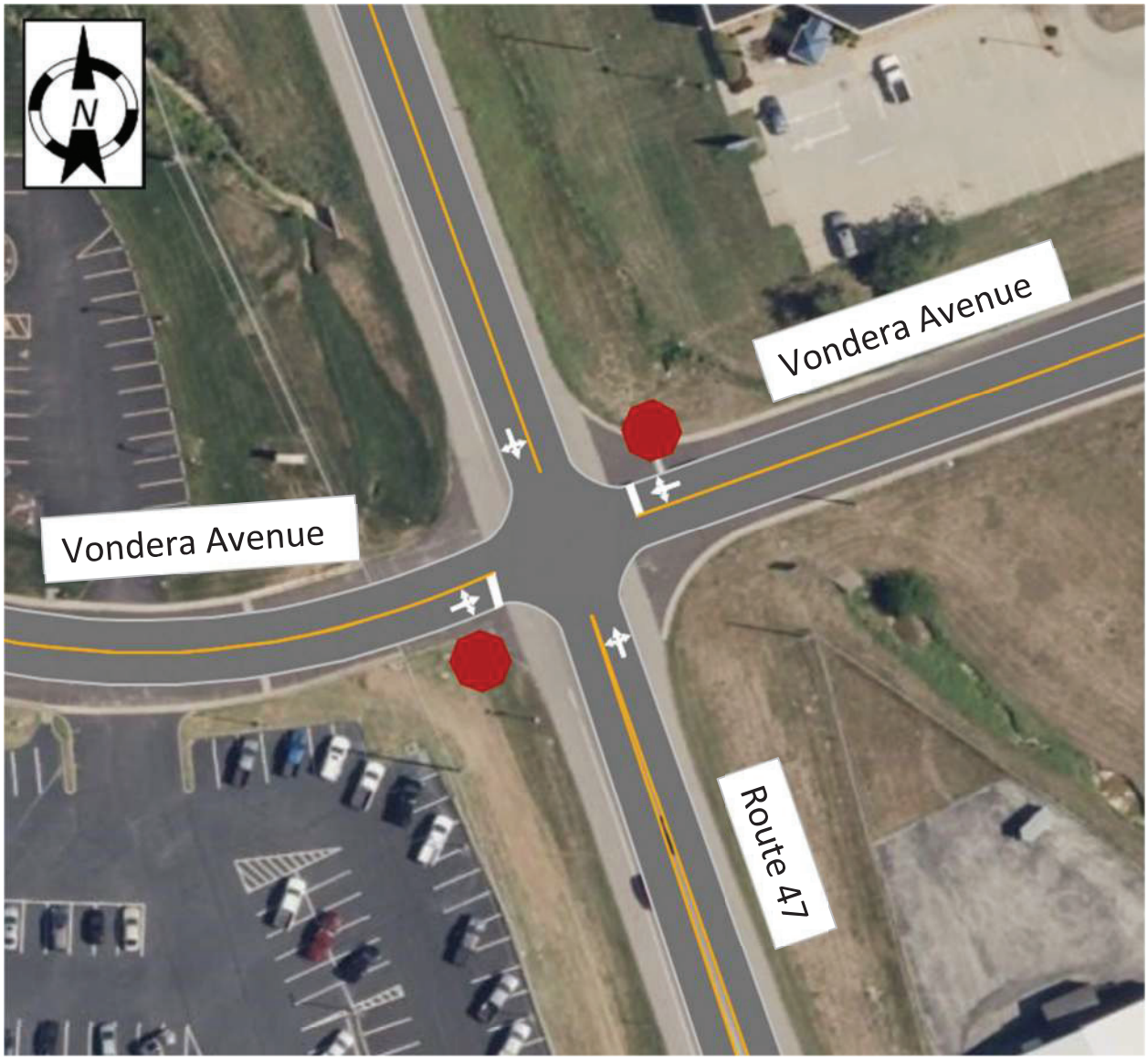


Figure 11: Route 47 & Vondera Avenue Existing Intersection Layout

Route 47 & Central Avenue / Highway V

As seen in **Figure 12: Route 47 & Central Avenue/Highway V Existing Intersection Layout**Error! Reference source not found., the existing geometry at Central Avenue / Highway V includes:

- 1 through lane with a shared right lane NB/SB along Route 47 and EB along Central Avenue.
- 1 left lane NB/SB along Route 47 and EB along Central Avenue.
- 1 through lane with a shared left/right lanes WB along Highway V.

Figure 12: Route 47 & Central Avenue/Highway V Existing Intersection Layout

Route 47 & Old County Farm Road

As seen in **Figure 13: Route 47 & Old County Farm Road Existing Intersection Layout,** the existing geometry at Old County Farm Road includes:

- 1 through lane and 1 right lane NB along Route 47.
- 1 through lane and 1 left lane SB along Route 47.
- 1 shared left lane and right lane WB along Old County Farm Road.

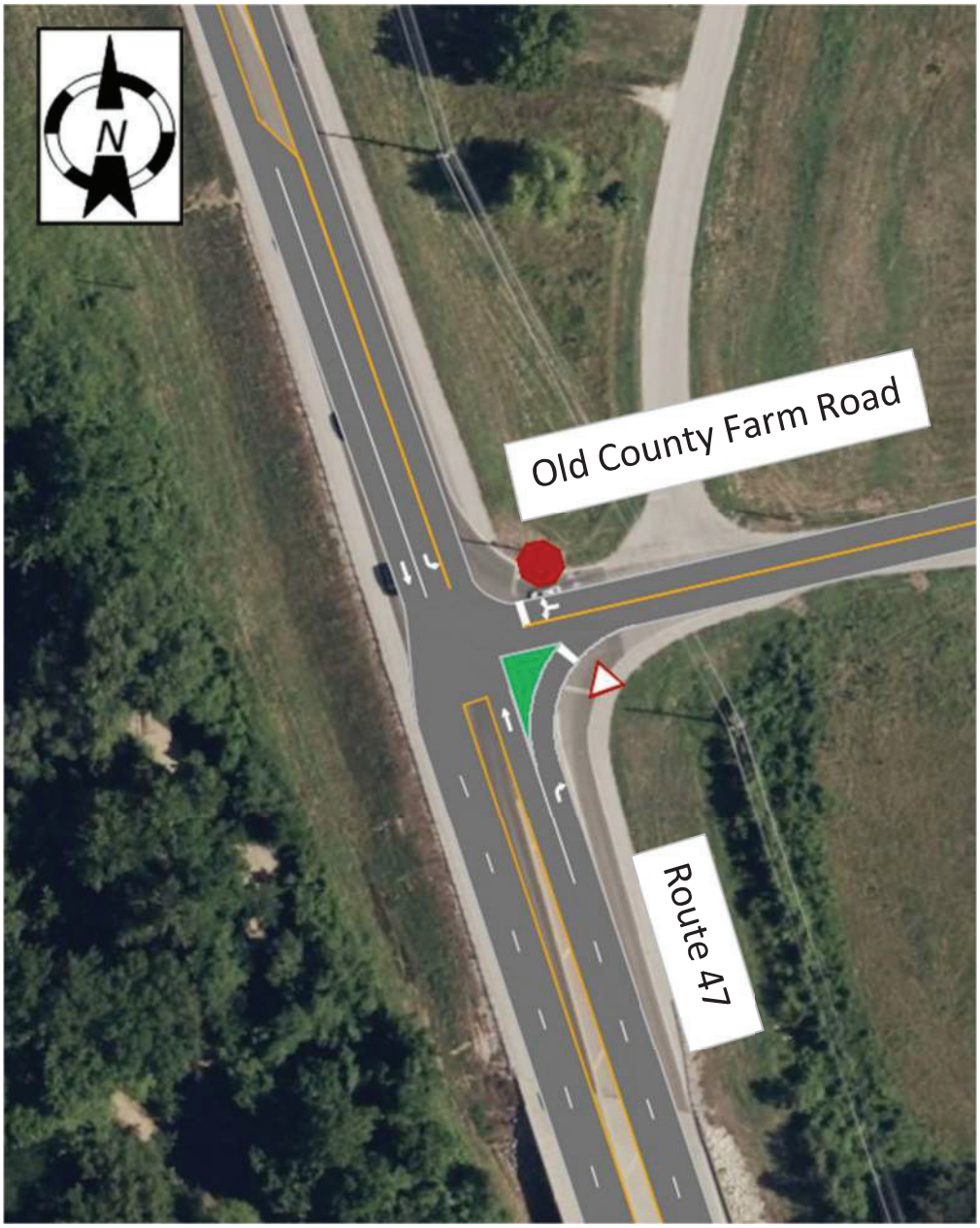


Figure 13: Route 47 & Old County Farm Road Existing Intersection Layout

Route 47 & Main Street

As seen in **Figure 14: Route 47 & Main Street Existing Intersection Layout**, the existing geometry at Main Street includes:

- 2 through lanes, 1 left lane, and 1 right lane NB along Route 47.
- 2 through lanes with a shared right lane and 1 left lane SB along Route 47.
- 1 through lane with a shared right lane and 1 left lane EB along Main Street.
- 1 through lane with a shared left lane and 1 right lane WB along Main Street.

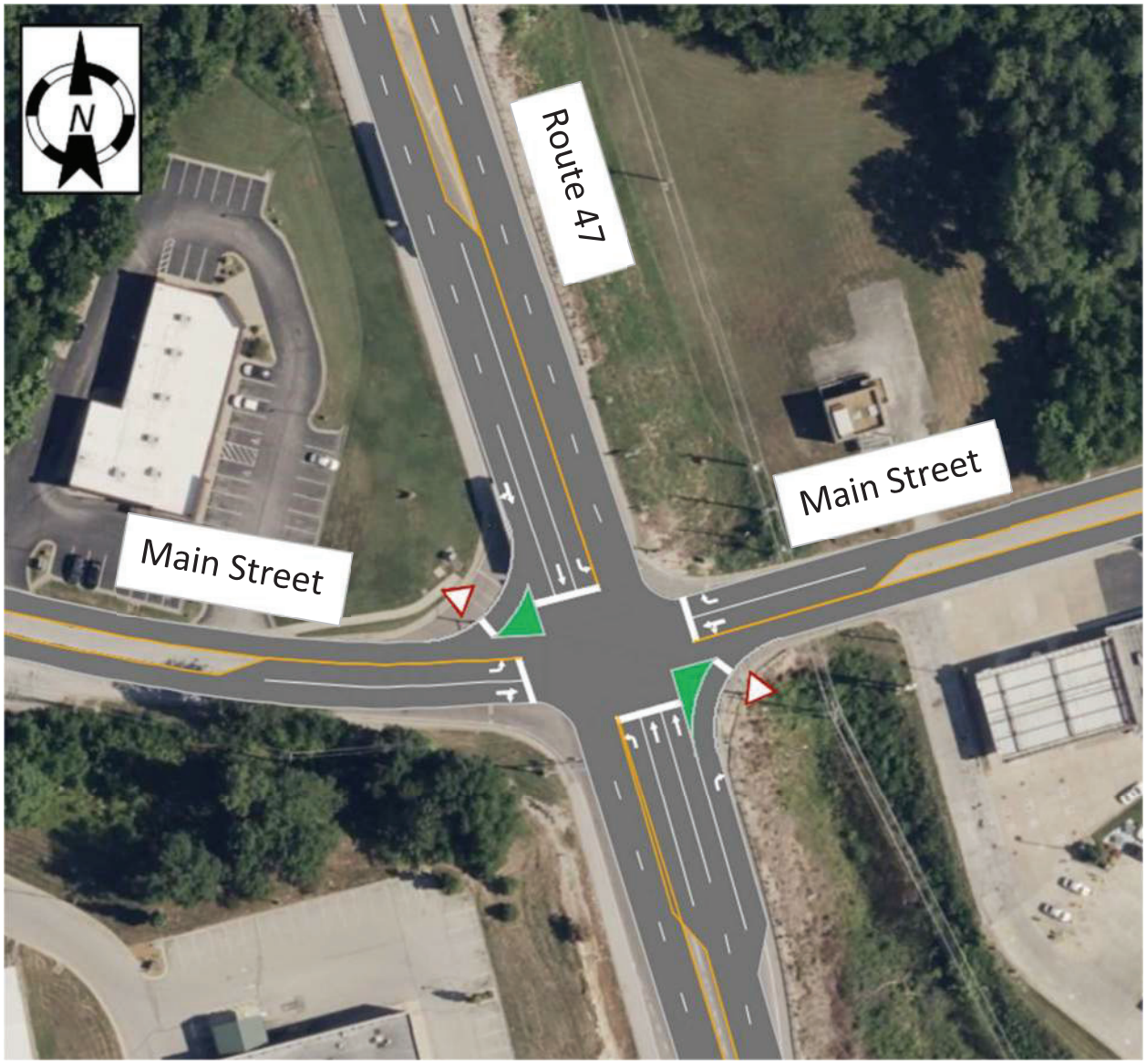


Figure 14: Route 47 & Main Street Existing Intersection Layout

Route 47 & Highway 50 (West)

As seen in **Figure 15: Route 47 & Highway 50 (West) Existing Intersection Layout**, the existing geometry at Highway 50 (west) includes:

- Dual left lanes and 1 right lane SB along Route 47.
- 2 through lanes EB/WB along Highway 50 (west).
- 1 left lane EB along Highway 50 (west) and 1 right lane WB along Highway 50 (west).

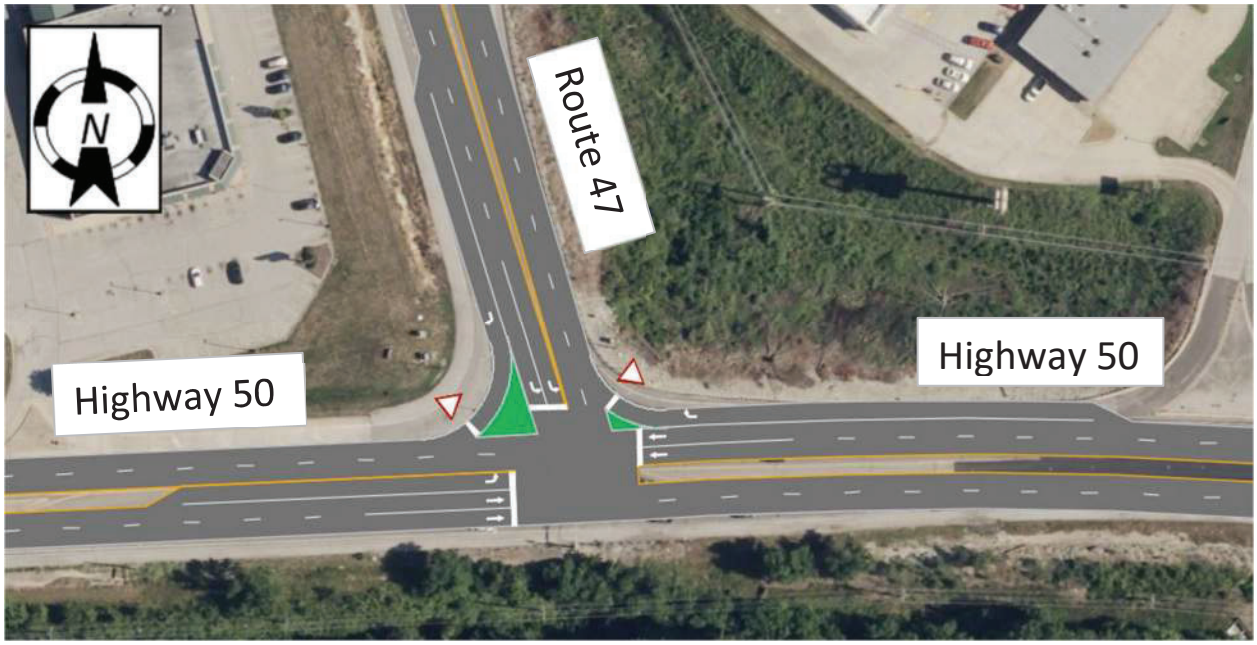


Figure 15: Route 47 & Highway 50 (West) Existing Intersection Layout

Route 47 & Highway 50 (East)

As seen in **Figure 16: Route 47 & Highway 50 (East) Existing Intersection LayoutError! Reference source not found.**, the existing geometry at Highway 50 (east) includes:

- Dual left lanes with 1 right lane NB along Route 47.
- 2 through lanes EB/WB along Highway 50 (east).
- 1 right lane EB along Highway 50 (east) and 1 left lane WB along Highway 50 (east).

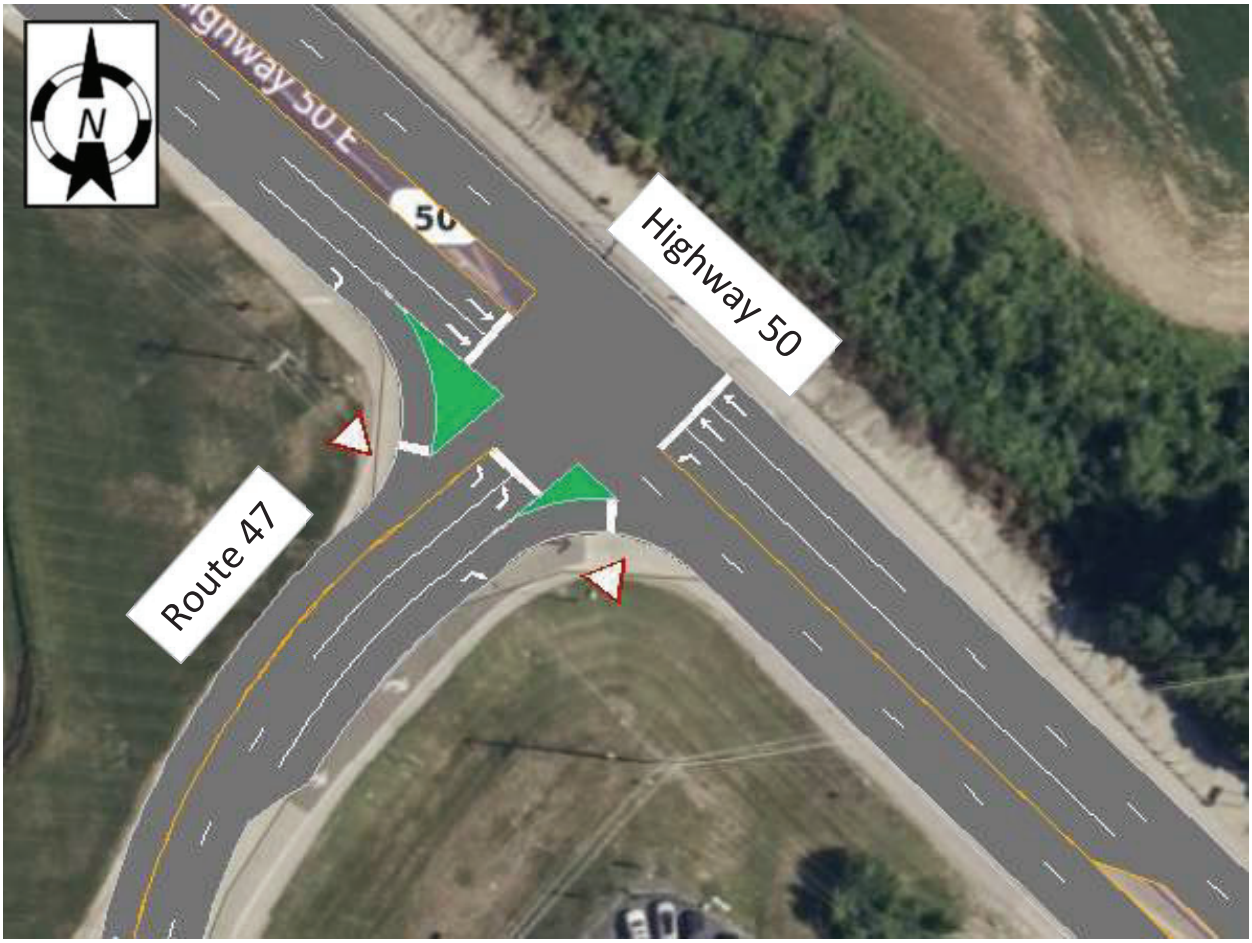


Figure 16: Route 47 & Highway 50 (East) Existing Intersection Layout

Route 47 & Driveway / College Road

As seen in **Figure 17: Route 47 & Driveway / College Road Existing Intersection Layout**, the existing geometry at Highway 50 (east) includes:

- 1 through lane with a shared left lane and 1 right lane at NB Route 47.
- 1 through lane with a shared right lane and one left lane at SB Route 47.
- 1 through lane with a shared right lane / left lane EB along the Driveway.
- 1 through lane shared with a left lane and one right lane WB along College Road.

Figure 17: Route 47 & Driveway / College Road Existing Intersection Layout

Route 47 & Highway AD / Schuchart Road

As seen in **Figure 18: Route 47 & Highway AD / Schuchart Road Existing Intersection Layout,** the existing geometry at Highway 50 (east) includes:

- 1 through lane shared with left lane and 1 right turn lane NB at Route 47.
- 1 through lane shared with left lane and 1 right lane SB at Route 47.
- 1 through lane shared with left lane / right lane EB/WB at Route 47.

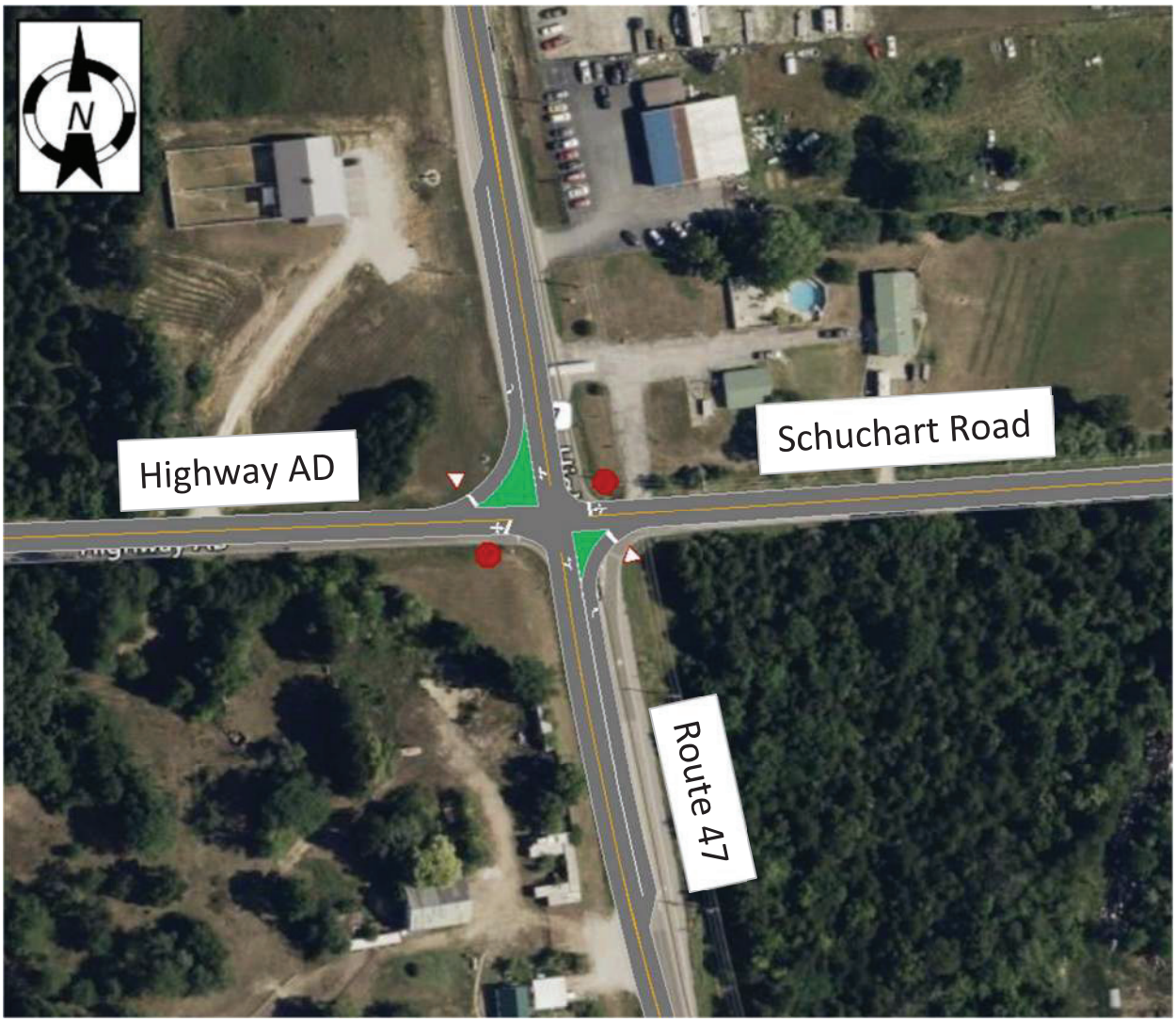


Figure 18: Route 47 & Highway AD / Schuchart Road Existing Intersection Layout

Route 47 & N Outer Road

As seen in **Figure 19: Route 47 & N Outer Road Existing Intersection Layout**Error! Reference source not found., the existing geometry at Route 47 & N Outer Road includes:

- 1 through lane with a shared right lane and 1 left lane NB/SB along Route 47.
- 1 through lane with a shared right lane and 1 left lane EB/WB along N Outer Road.

Figure 19: Route 47 & N Outer Road Existing Intersection Layout

Route 47 & I-44 WB Off-Ramp

As seen in **Figure 20: Route 47 & I-44 WB Off-Ramp Existing Intersection Layout**Error! Reference source not found., the existing geometry at I-44 WB Off-Ramp includes:

- 2 through lanes and 1 left lane NB along Route 47.
- 2 through lane with a shared right lane SB along Route 47.
- 1 left lane and 1 right lane WB along I-44 Off-Ramp.

Figure 20: Route 47 & I-44 WB Off-Ramp Existing Intersection Layout

Route 47 & I-44 EB Off-Ramp

As seen in **Figure 21: Route 47 & I-44 EB Off-Ramp Existing Intersection Layout**Error! Reference source not found., the existing geometry at I-44 EB Off-Ramp includes:

- 2 through lanes with a shared right lane NB along Route 47.
- 2 through lanes and 1 left lane SB along Route 47.
- 1 left lane and 1 right lane EB along I-44 Off-Ramp.

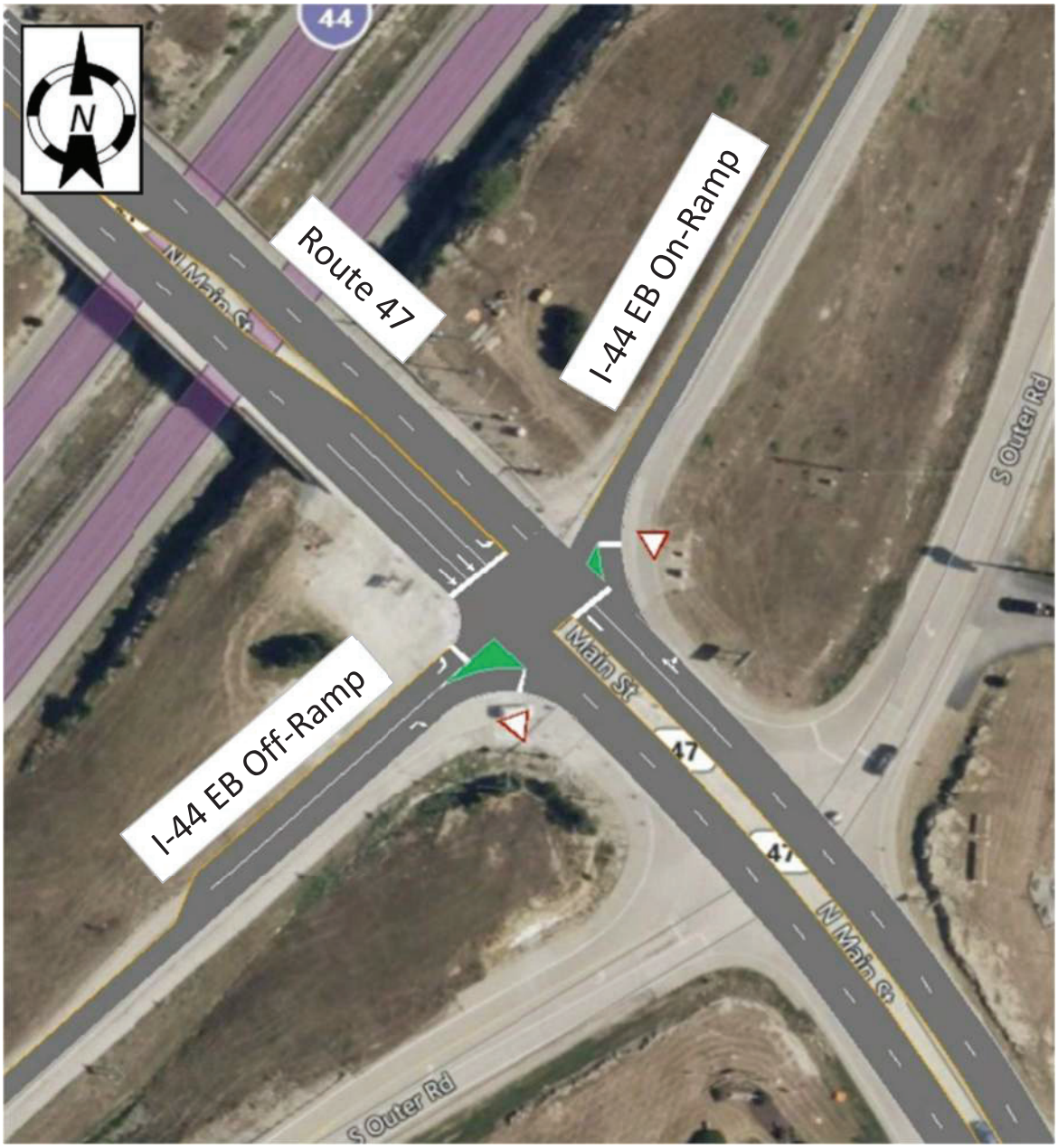


Figure 21: Route 47 & I-44 EB Off-Ramp Existing Intersection Layout

2.3 Intersections Operations

The AM peak model addressed 7:15 AM to 8:15 AM on a typical weekday, while the PM peak model addressed 3:45 PM to 4:45 PM. These two hours are representative of the peak hours for the facilities in the study area. The models were populated with peak hour volumes, peak hour factors, and heavy vehicle percentages. A summary of the 2024 Base Year intersection operations is shown in **Table 3: 2024 Base Year Intersection Operations** and **Table 4: 2024 Base Year Unsignalized Intersection Operations**. More detailed information on intersection operations can be found in **Appendix A** (Volume and Measure of Effectiveness (MOE) Graphics) & **Appendix B** (Detailed Synchro Results).

Table 3: 2024 Base Year Intersection Operations

Intersections with Route 47 (North to South)	Control type	AM Peak		PM Peak	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Highway 100	Signalized	D	45.2	E	56.6
Washington Crossing / Square	Signalized	B	16.9	D	41.2
Steutermann / Bieker Rd	Signalized	D	38.3	D	45.8
Clearview Rd	Signalized	D	28.6	B	17.7
Independence Dr	Signalized	D	43.8	C	25.4
Central Ave / Highway V	Signalized	C	23.6	C	27.2
Main St	Signalized	B	15.7	C	33.7
US 50 (West Intersection)	Signalized	B	19.3	C	32.1
US 50 (East Intersection)	Signalized	C	29.1	C	31
N Outer Rd	Signalized	B	14.1	B	19.3
I-44 WB Ramps	Signalized	A	4.2	A	9.4
I-44 EB Ramps	Signalized	B	16.9	A	7.8

Table 4: *2024 Base Year Unsignalized Intersection Operations*

Intersections with Route 47 (North to South)	Intersection type	AM Peak			PM Peak		
		Worst Movement	LOS (Delay)	95th Queue (ft)	Worst Movement	LOS (Delay)	95th Queue (ft)
Country Club Ln / Forest Hills Dr	Two-Way Stop-Controlled (TWSC)	EB*	F (92.4)	83	EB*	F (78.9)	48
Commercial Dr (South Intersection) / Hi-Line Dr	Two-Way Stop-Controlled (TWSC)	WB*	F (51.2)	30	EB*	F (80.9)	65
Dairy View Dr	Stop-Controlled	WB*	D (26.7)	3	WB*	D (26.3)	5
Old County Farm Rd	Stop-Controlled	WB*	F (115)	120	WB*	F (152.4)	110
Driveway/College Rd	Two-Way Stop-Controlled (TWSC)	WBL	E (45.7)	50	WBL	F (131.7)	133
Highway AD / Schuchart Rd	Two-Way Stop-Controlled (TWSC)	EB*	D (33.4)	40	EB*	F (62.9)	55

* Approach has only one shared lane for the Left, Through, and Right movements

During the AM peak hour, the results of the intersection analysis show that all the signalized intersections with Route 47 are operating at level of service, LOS D or better. At the movement level, some of the approach movements are operating with LOS E such as SBL at Highway 100 and EBL & EBT at Washington Crossing/Washington Square, while some others are operating with LOS F such as the WBT at Washington Crossing/Washington Square, the WBR at Steutermann Road/Bieker Road, and the EBR at Independence Avenue.

For the unsignalized intersections, at the movement level, some of the approach movements are operating with LOS E such as WBL at College Road, while others are operating with LOS F such as EBL at Country Club Lane/N Forest Hill Drive, the WBL at Lost Pines/Hi Line Drive, the WBL at Vendor Avenue, and the WBL at Old Smelter Road. However, the 95th percentile of the queue length are small with the maximum at 83'.

Table 5: 95th Percentile Queue Length for the AM Peak shows the 95th percentile of the queue length that is greater than 300 ft during the AM peak. Although the 95th percentile queue lengths are long, they do not block the upstream intersections.

Table 5: 95th Percentile Queue Length for the AM Peak

Intersections with Route 47	Movement	95th Percentile Queue Length (ft)	Back into the Upstream Intersection (Y/N)
Highway 100	NBT	326	N
Washington Crossing/Washington Square	NBT	387	N
Clearview Road	NBT	725	N
	SBT	360	N
Independence Avenue	NBT	674	N
	SBT	671	N
Central Avenue/Highway V	NBT	#821	N
	SBT	553	N
Highway 50 (east)	EBT	303	N
N Outer Road	NBT	420	N

# Indicates the volume for the 95th percentile cycle exceeds capacity.

During the PM peak hour, the results of the intersection analysis show all but one of the signalized intersections with Route 47 are operating at level of service, LOS D or better. However, the intersection at Highway 100 is operating with LOS E. On the movement level, some of the approach movements are operating with LOS E such as the EBR, WBR, NBT, and NBR at Steutermann Road/Bieker Road, the EBR at Independence Avenue, the WBL at Central Avenue/Highway V, the EBR at Main Street, the NBL at Highway 50 (east), the EBT at Highway 100, and the EBL & EBT at the Washington Crossing/Washington Square. While other movements are operating with LOS F such as the NBL at Highway 100, the WBT at Washington Crossing/Washington Square, and EBL & WBL at Main Street.

For the unsignalized intersections at the movement level, some of the of the approach movements are operating with LOS E such as the WBL at the Country Club Lane/N Forest Hill Drive, the WBL at Lost Pines/Hi Line Drive, the WBL at Vendor Avenue, the WBL at Old Smelter Road, the WBL at College Road, and the WBL at Highway AD/Schuchart Road. Other movements are operating with LOS F such as the EBL at Country Club Lane/N Forest Hill Drive, the EBL Lost Pines/Hi Line Drive, and the EBL Highway AD/Schuchart Road. However, the 95th percentile of the queue length are small with the maximum at 133'.

Table 6: 95th Percentile Queue Length for the PM Peak shows the 95th percentile of the queue length that is greater than 300 ft during the PM peak. Although the 95th percentile queue lengths are long, they do not block the upstream intersections except for the WBT and SBL at Highway 50 (west), EBT at Highway 50 (east) and SBT at Central Ave/Hwy V.

Table 6: 95th Percentile Queue Length for the PM Peak

Intersections with Route 47	Movement	95th Percentile Queue Length (ft)	Back into the Upstream Intersection (Y/N)
Highway 100	EBT	#415	N
	WBT	376	N
	SBT	314	N
Steutermann Road/Bieker Road	NBT	310	N
	SBT	m#585	N
Clearview Road	NBT	#637	N
	SBT	#655	N
Independence Avenue	NBT	m507	N
	SBT	#833	N
Central Avenue/Highway V	NBT	#988	N
	SBT	#955	Y
Highway 50 (west)	EBT	301	N
	WBT	#527	Y
	SBL	#540	Y
Highway 50 (east)	EBT	400	Y
	WBT	308	N
N Outer Road	NBT	375	N
	SBT	#748	N

# Indicates the volume for the 95th percentile cycle exceeds capacity.
m Indicates the volume for the 95th percentile queue is metered by an upstream signal.

2.4 Corridor Travel Times and Origin-Destination (OD) Patterns

2.4.1 Regional Integrated Transportation Information System (RITIS)

An analysis was conducted using data retrieved from NPMRDS (RITIS) for Route 47 between Highway 100 and I-44. RITIS data was collected for both the northbound and southbound directions during the AM and PM peak hours for every Tuesday to Thursday from January to November 2024. The analysis area covered 12.7 miles from north end to south end. During the AM peak hour, the travel in minutes was similar for NB (Northbound) and SB (Southbound), having a travel time of 19.7 minutes NB and 19.9 minutes SB. As for the PM peak hour, the travel time was 20.3 minutes NB and 22.7 minutes SB. Average travel speeds ranged from 32.8 miles per hour in the SB PM to 37.7 miles per hour in the NB AM. Full results are shown in **Table 7: Travel Time Summary (RITIS)** below.

Using RITIS's speed scan tool, the Route 47 corridor was analyzed from where it intersects with I-44 to where it intersects with Highway 100. Data was pulled for every Tuesday, Wednesday, and Thursday from January to November 2024. When looking at the speed scan results, it shows consistently lower speeds between the US-50 east and west intersections with Hwy 47. Along the rest of the corridor, congestion occurs during some of the AM and PM peak periods along Route 47 between US-50 and Highway 100. On the south end of the corridor from where Route 47 intersects US-50 (East Intersection) to where I-44 intersects Route 47, there is little congestion NB or SB throughout the entire analysis period. All the results from the speed scan during the previously mentioned analysis period can be found in **Figure 22: Route 47 Speed Scan** below.

Table 7: Travel Time Summary (RITIS)

Direction	From	To	Distance	Peak Period Travel Times (minutes)	
				AM	PM
SB	Washington (Highway 100)	St. Clair (I-44)	12.7	19.9	22.7
NB	St. Clair (I-44)	Washington (Highway 100)	12.7	19.7	20.3

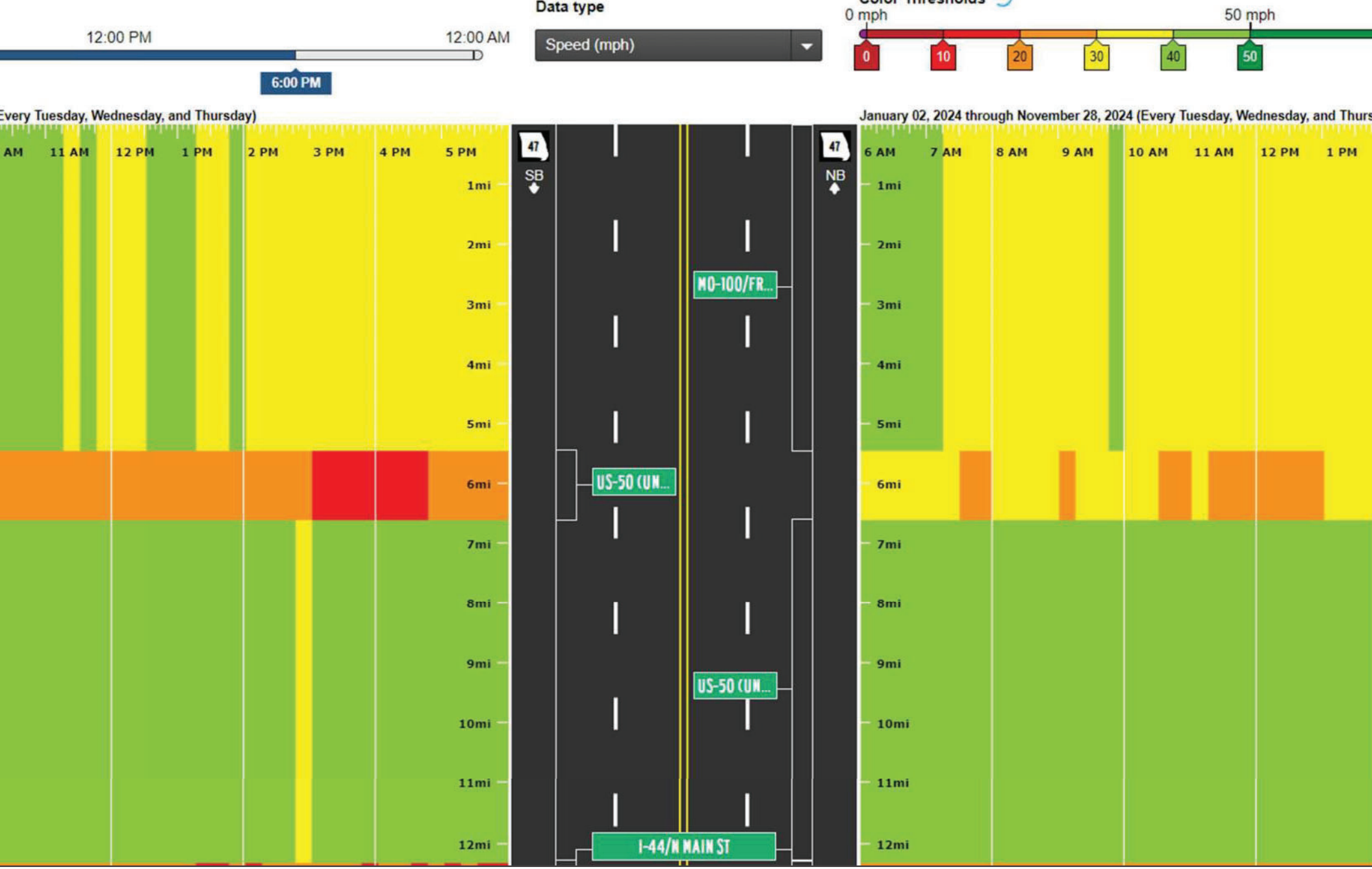


Figure 22: Route 47 Speed Scan

2.4.2 Streetlight

As an addition to the data collected from RITIS for Route 47, data was collected from Streetlight as well. Streetlight data encompassed a larger study area ranging from where I-70 intersects Route 47 in the north to where I-44 intersects Route 47 in the south. The area covers 37.6 miles in total and consisted of data collected during AM and PM peak hours from Monday through Friday in January to October of 2024. The Streetlight data shows the that the travel times for both AM and PM NB and SB is all in the range of 45.3-45.8 minutes, with a majority of those travel times being 45.3 minutes. Peak period average speeds ranged from 49.3 to 49.8 mph. Three of the four peak period speeds were 49.8 mph and one was 49.3. The peak period travel time and peak period speed that was different than the other three was the SB PM. Otherwise, the other three are all the same, as shown in **Table 8: Travel Time Summary (Streetlight)**.

Table 8: Travel Time Summary (Streetlight)

Direction	From	To	Distance	Peak Period Travel Times (minutes)		Peak Period Speed (mph)	
				AM	PM	AM	PM
Streetlight (peak period, Mon-Fri, Jan – Oct, 2024)							
SB	I-70	I-44	37.6	45.3	45.8	49.8	49.3
NB	I-44	I-70	37.6	45.3	45.3	49.8	49.8

In addition to peak period travel times and speed for the AM and PM, OD (origin-destination) pairs were identified for Route 47. The OD pairs that were collected were the pairs that went from I-44 to I-70 or I-70 to I-44 via Route 47. The analysis period used for the OD pairs was 2 hours for each peak. The results show that a very low number of volume uses Route 47 as a connector to get from I-44 to I-70 or the other way around. The highest number of vehicles to use Route 47 as a connector to get from I-44 to I-70 or vice versa was 9 in the NB PM and SB AM and the lowest was 4 in the NB AM. The SB PM had 7 vehicles that used the route during the analysis period. All results can be found in **Table 9: OD Summary – I-70 to I-44** below. Graphics for the major OD traffic demand in the study area can be found in **Appendix C** (Streetlight OD Graphics)

Table 9: OD Summary – I-70 to I-44

Direction	From	To	Volume	
			AM	PM
SB	I-70	I-44	9	7
NB	I-44	I-70	4	9

2.5 Speed Studies

Speed studies were performed for the study corridor in May 2024. 24-hour speed data was collected at 8 locations throughout the corridor, as shown in **Figure 23: Speed Study Data Locations** and listed below in **Table 10: Speed Study Summary – Route 47 Conceptual Study CorridorError! Reference source not found.Error! Reference source not found.**.

The speed data summarized in the table includes the: 85th-percentile, average, and maximum speeds as well as the percent of total vehicles exceeding the posted speed limit for each direction of travel at each speed data location.

Table 10: Speed Study Summary – Route 47 Conceptual Study Corridor

Location	Posted Limit (mph)	NB Speed Profile (mph)				SB Speed Profile (mph)			
		85th-%	Avg.	Max.	% of veh. Exceeding Posted Limit	85th-%	Avg.	Max.	% of veh. Exceeding Posted Limit
N. of Woodland Road	55	67	61	93	84%	59	53	94	33%
S. of Forest Hills Drive	55	71	64	98	93%	59	54	94	42%
S. of Self Storage	55	73	64	97	89%	67	58	95	69%
N. of Central Midland RR	45	52	46	83	50%	56	50	79	76%
US 50 (on bridge)	45	51	44	87	50%	51	45	100	52%
North of Franklin Avenue	55	60	55	168	52%	57	52	88	25%
North of Myrick Manor	55	63	58	108	70%	64	58	125	71%
North of Reeds Plaza	55	62	57	93	65%	63	57	154	67%

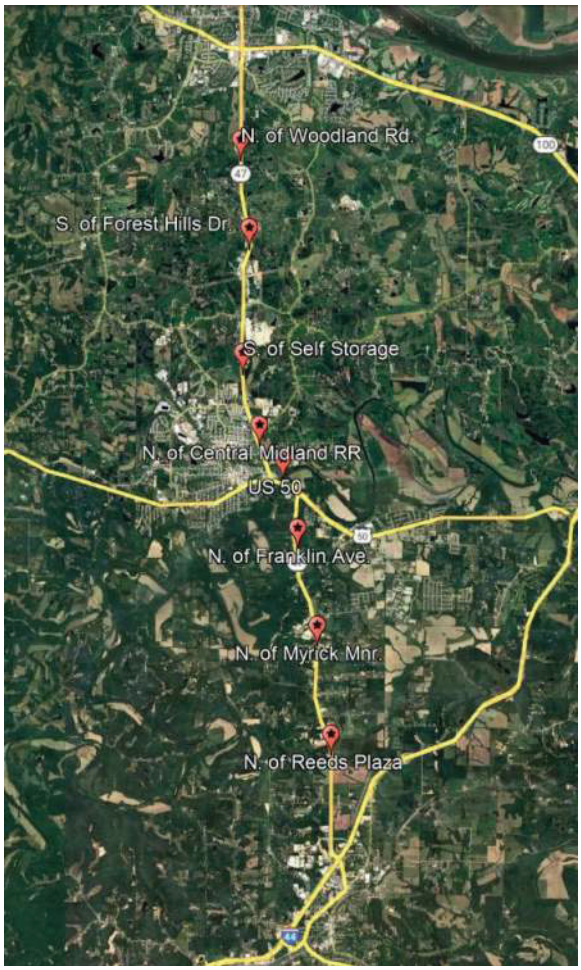


Figure 23: Speed Study Data Locations

2.6 Summary

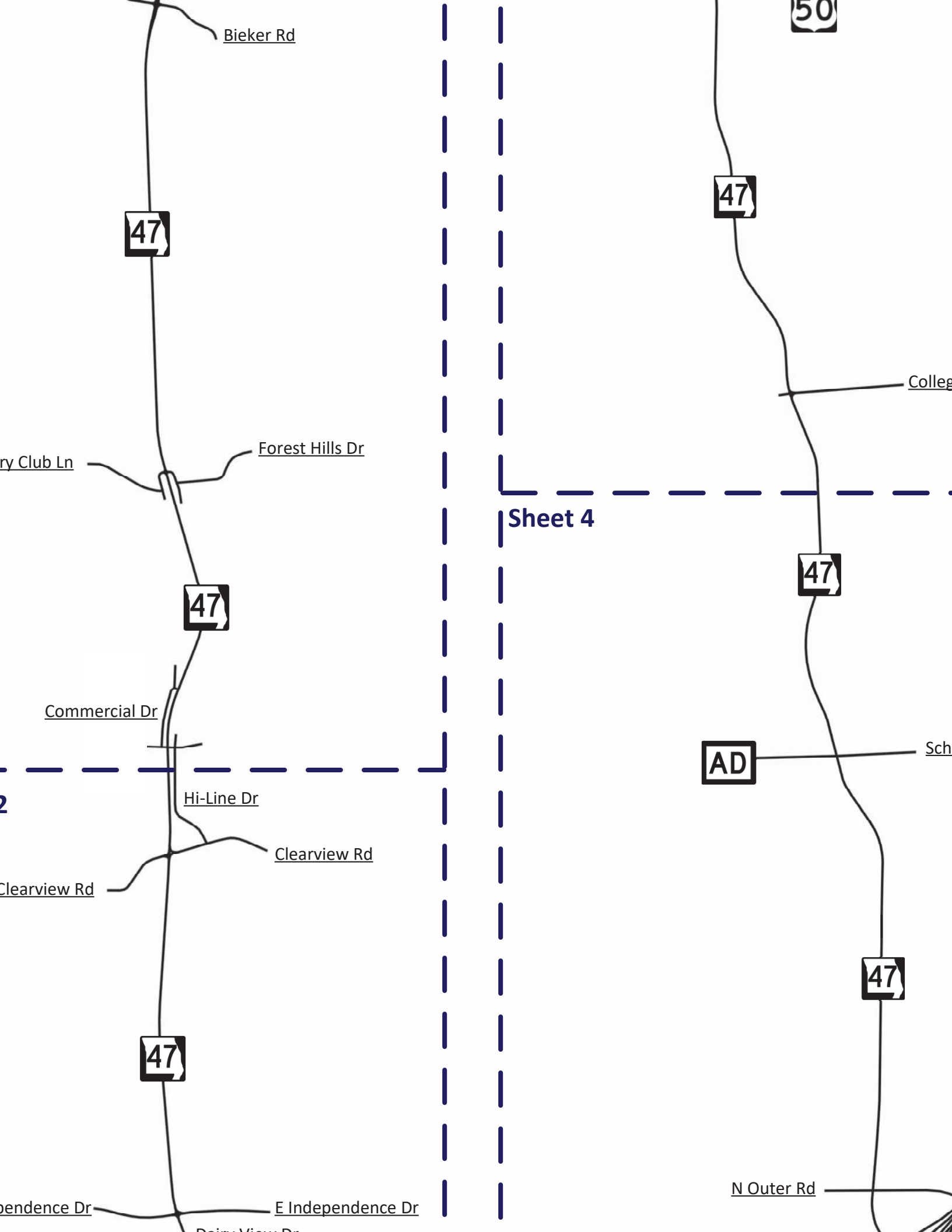
The J6P3661 corridor study examines Route 47 from Highway 100 to I-44, a 12.7-mile segment in Franklin County, Missouri, to address persistent safety concerns, congestion, and geometric deficiencies. The analysis encompassed nineteen intersections, twelve of which are signalized. While most intersections operate at Level of Service (LOS) D or better, the intersection at Highway 100 experiences LOS E during the PM peak hour. Additionally, some individual movements experience LOS E or F resulting in long delay and queues. The analysis identified key congestion hotspots at the intersections with US-50 and Highway 100.

Data from RITIS indicates average travel times of approximately 20 minutes between Highway 100 and I-44. The RITIS data shows congestion in the northern half of the study area along Route 47 which includes the overlap with US-50. Streetlight data shows about 45 minutes when traveling between I-70 and I-44 and very low traffic demand between I-70 and I-44.

3 APPENDIX

A. Volume and Measure of Effectiveness (MOE) Graphics
B. Synchro Detailed Report
C. Streetlight Origin-Destination (OD) graphics

Volume and Measure of Effectiveness (MOE) Graphics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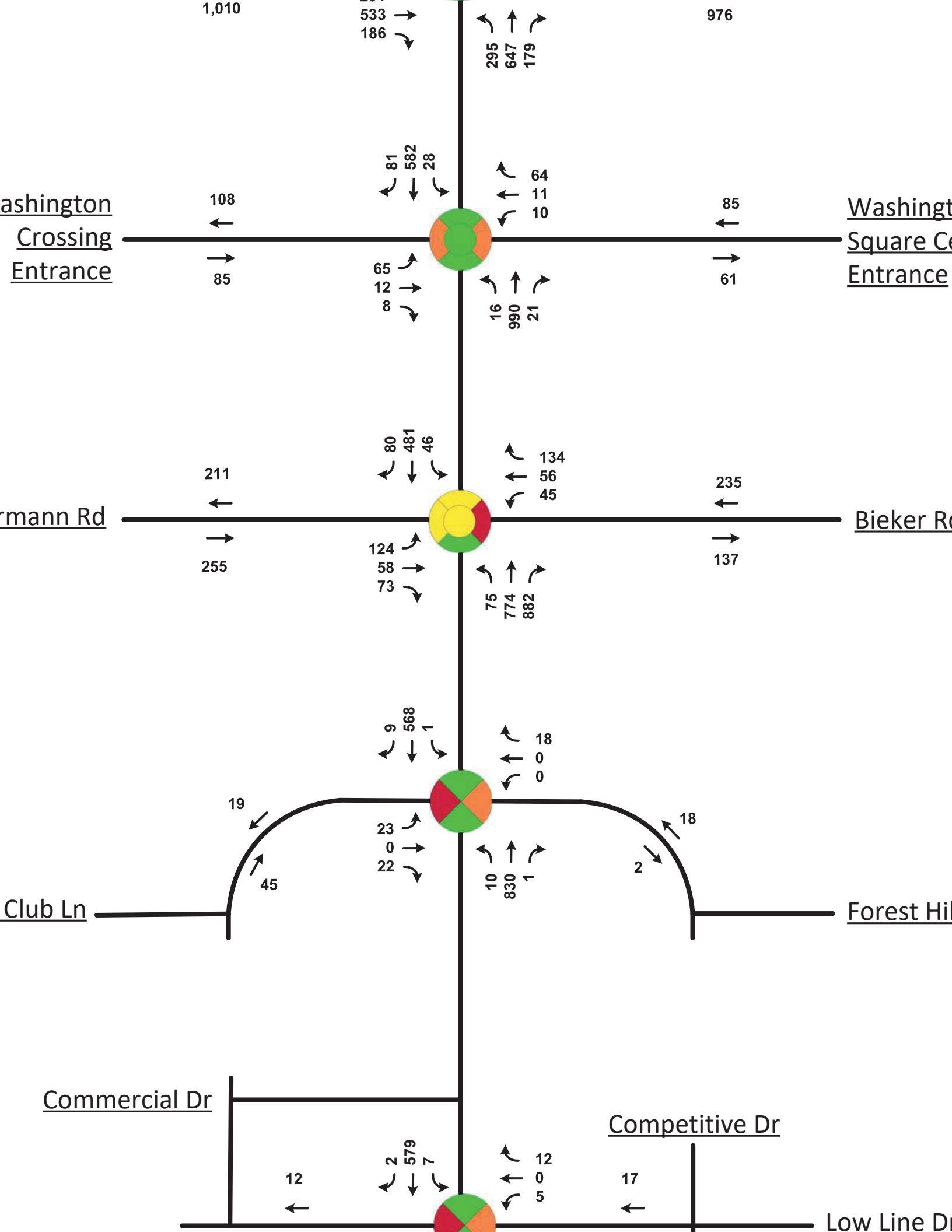
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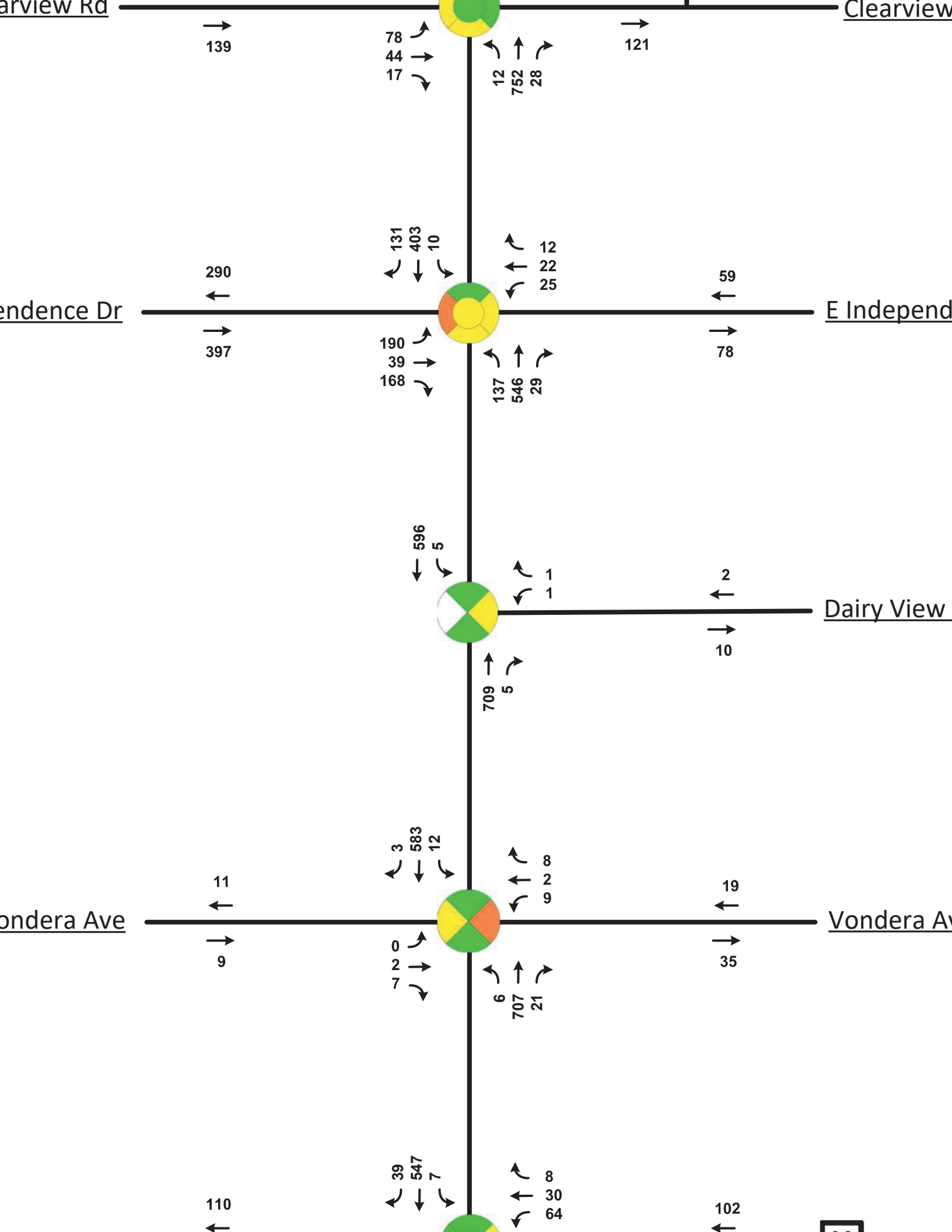
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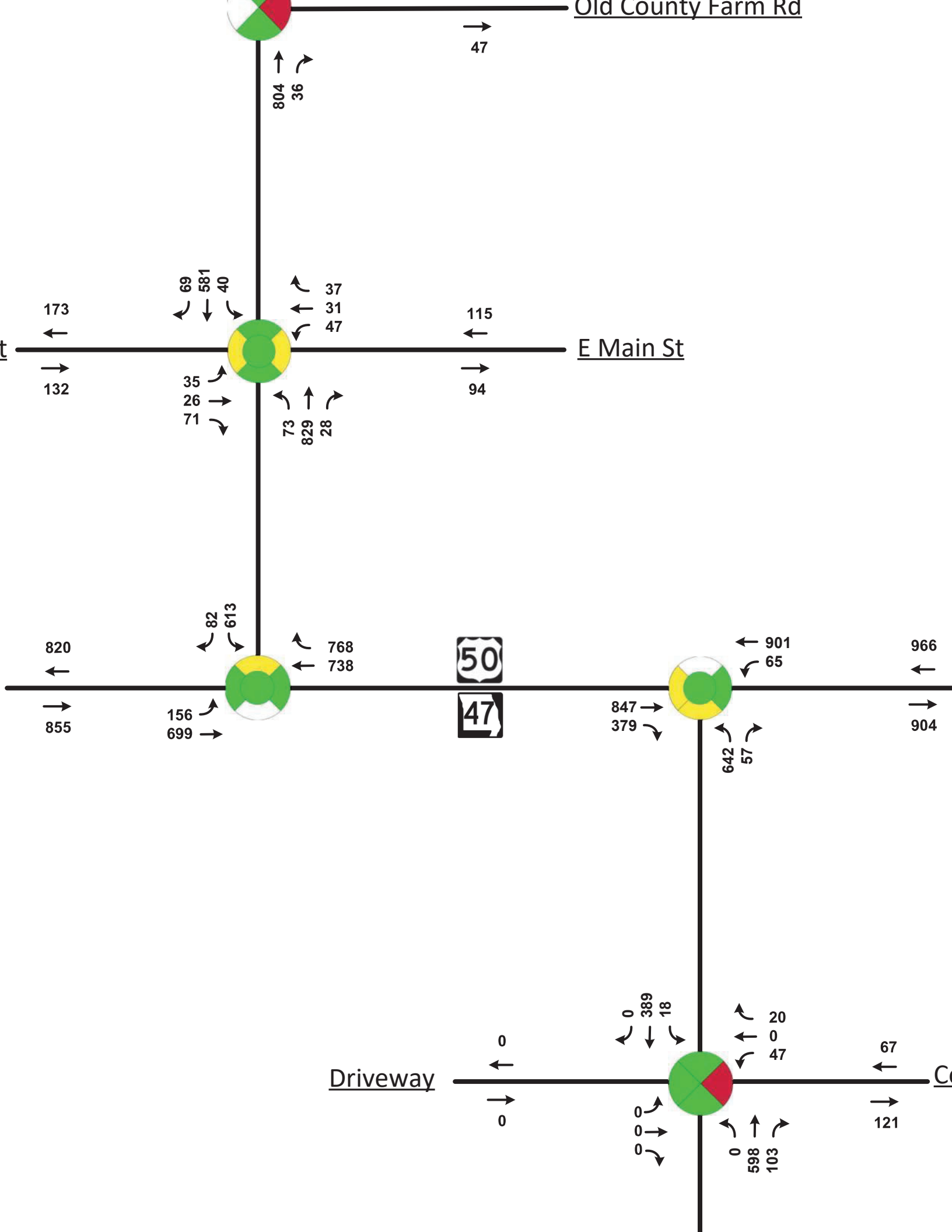
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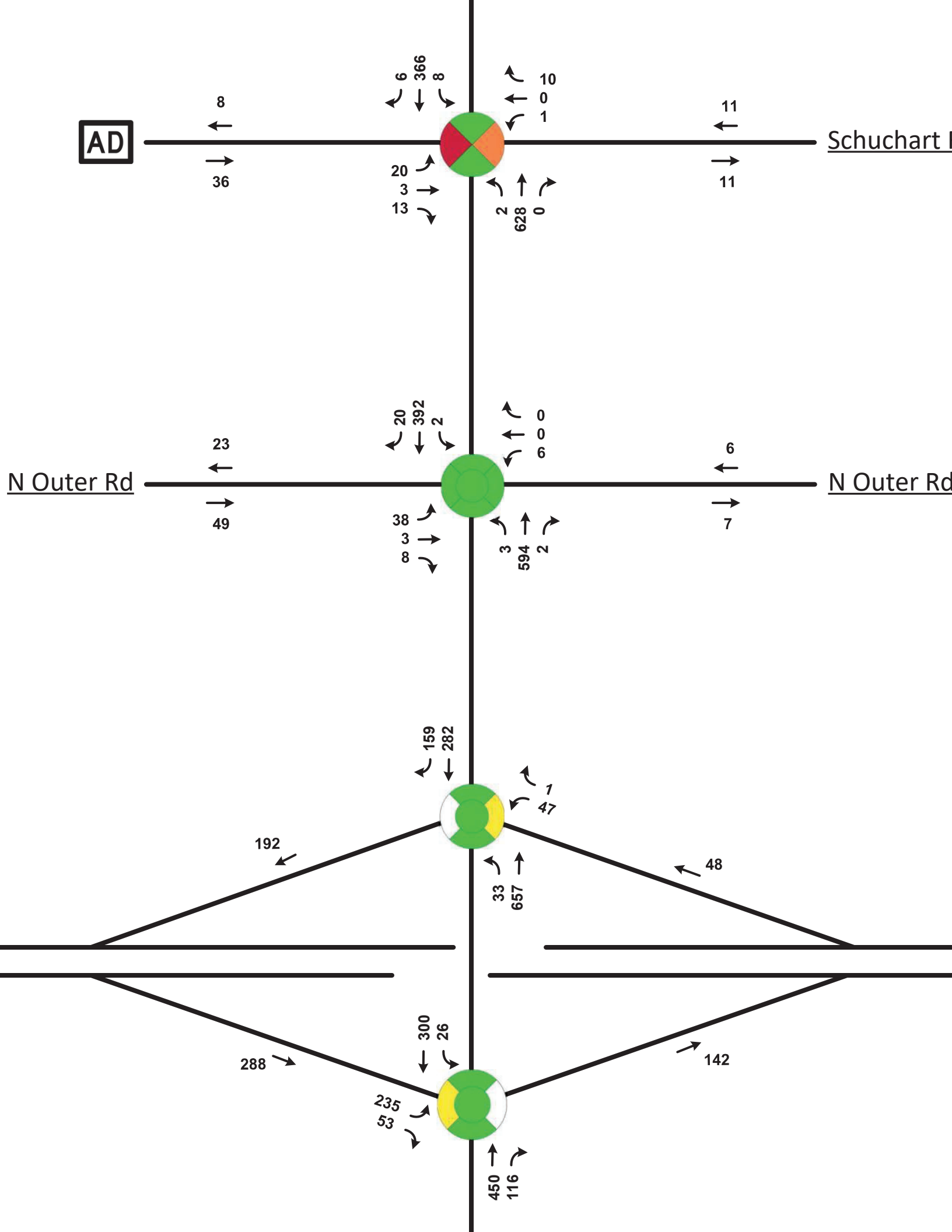
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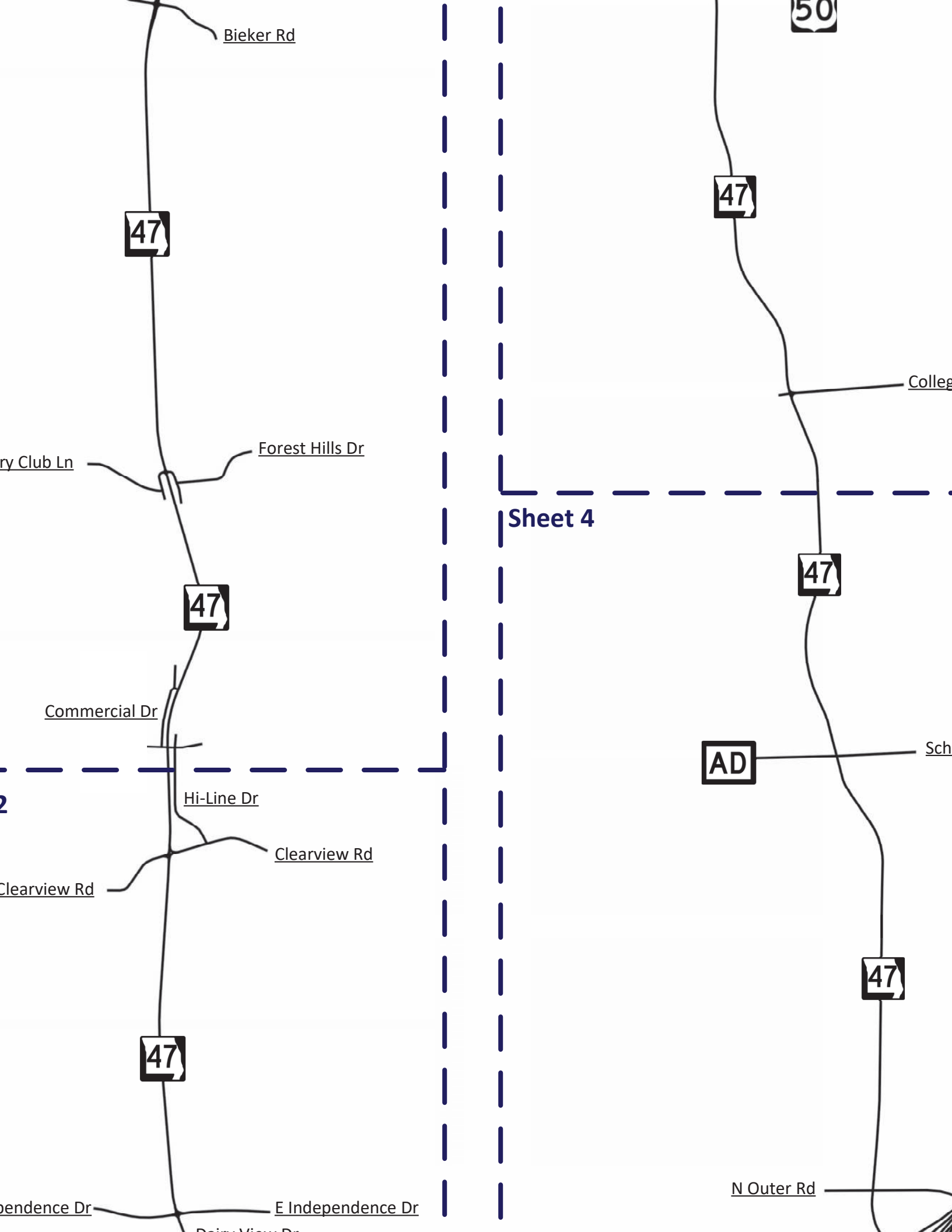
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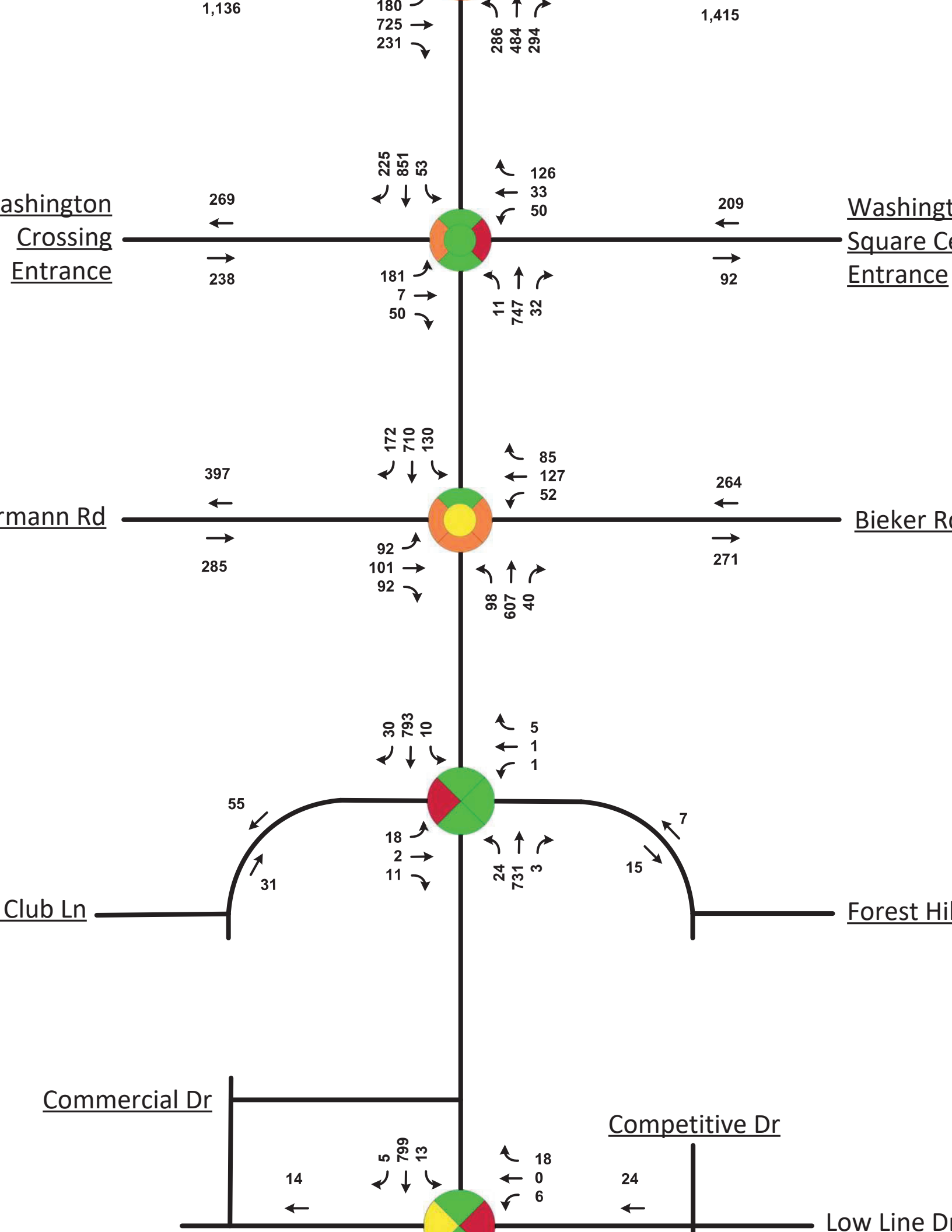
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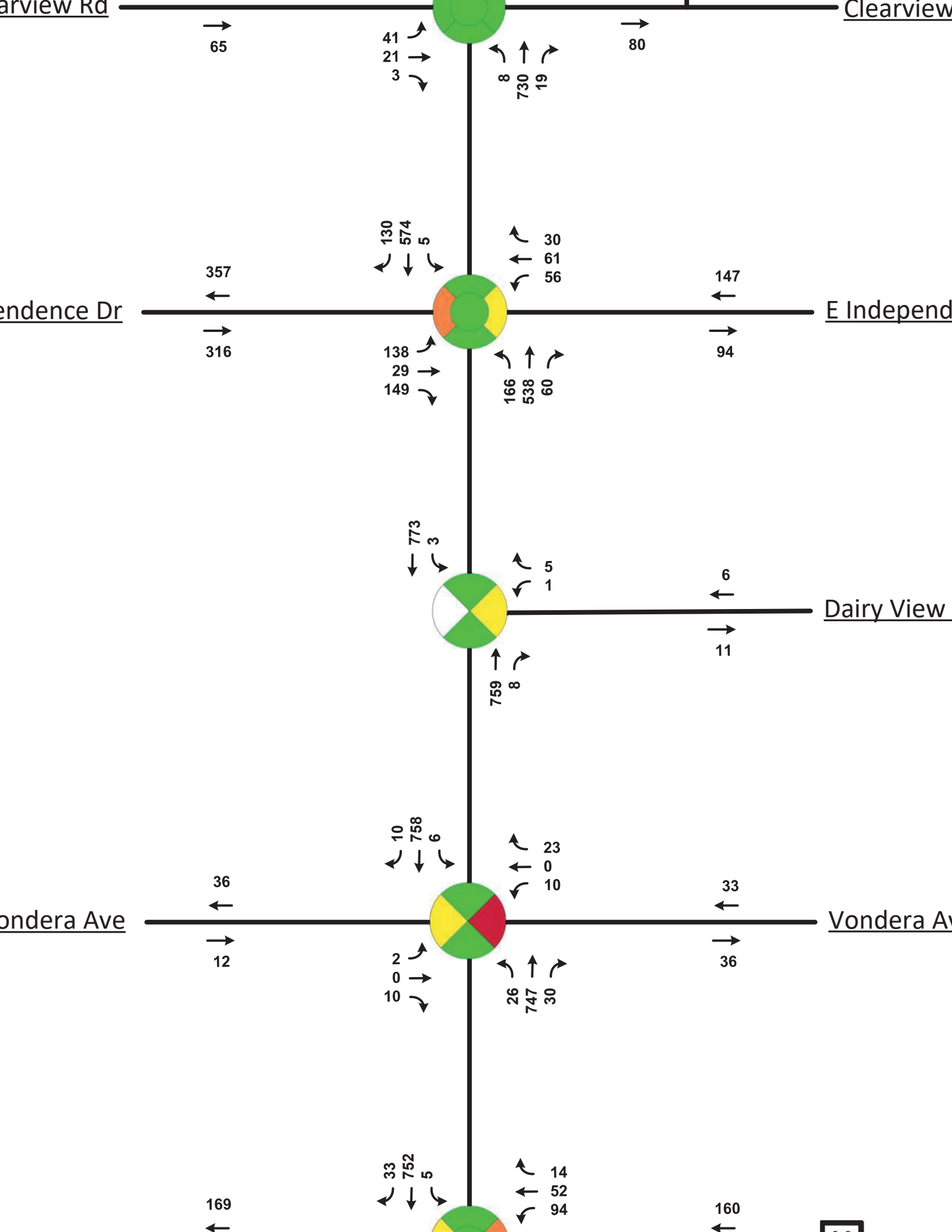
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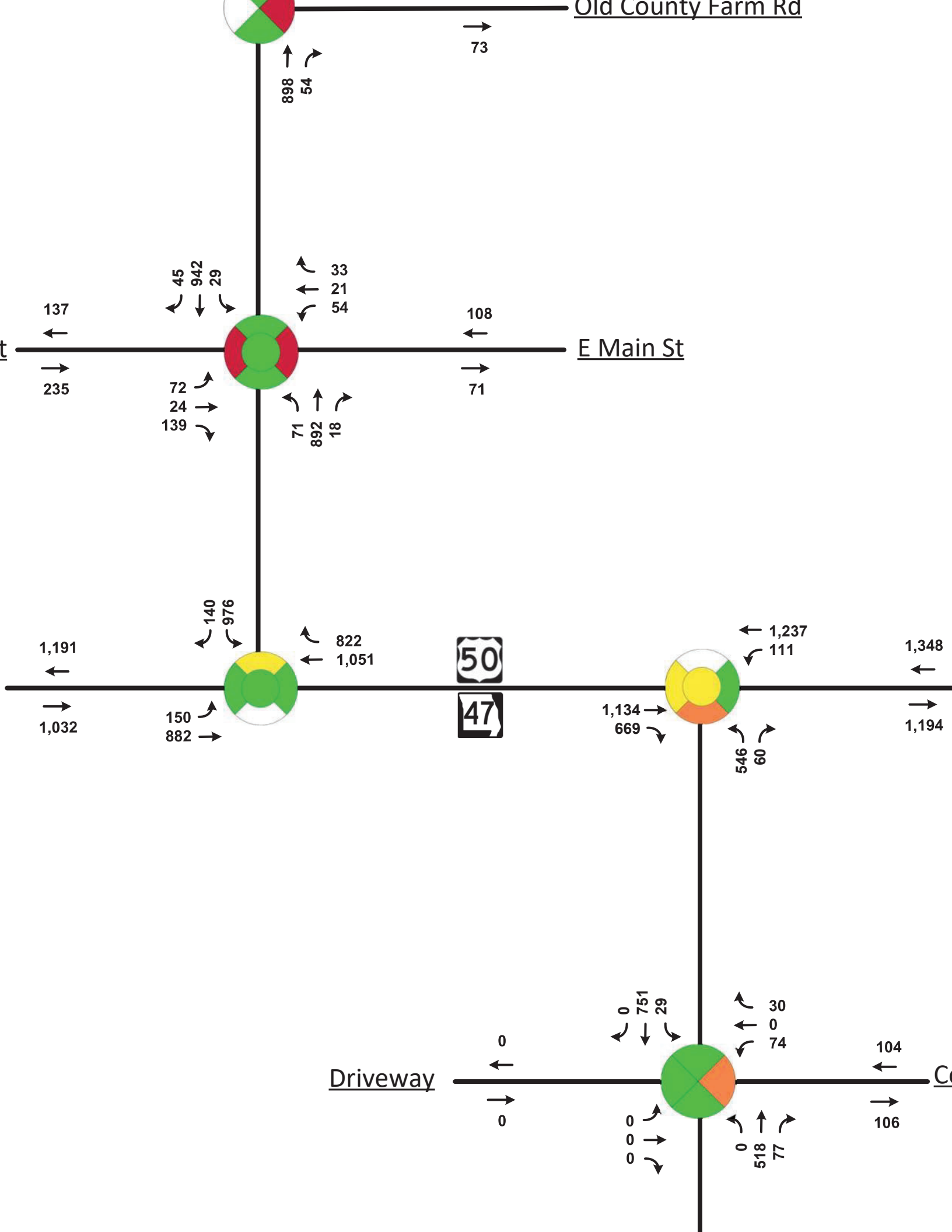
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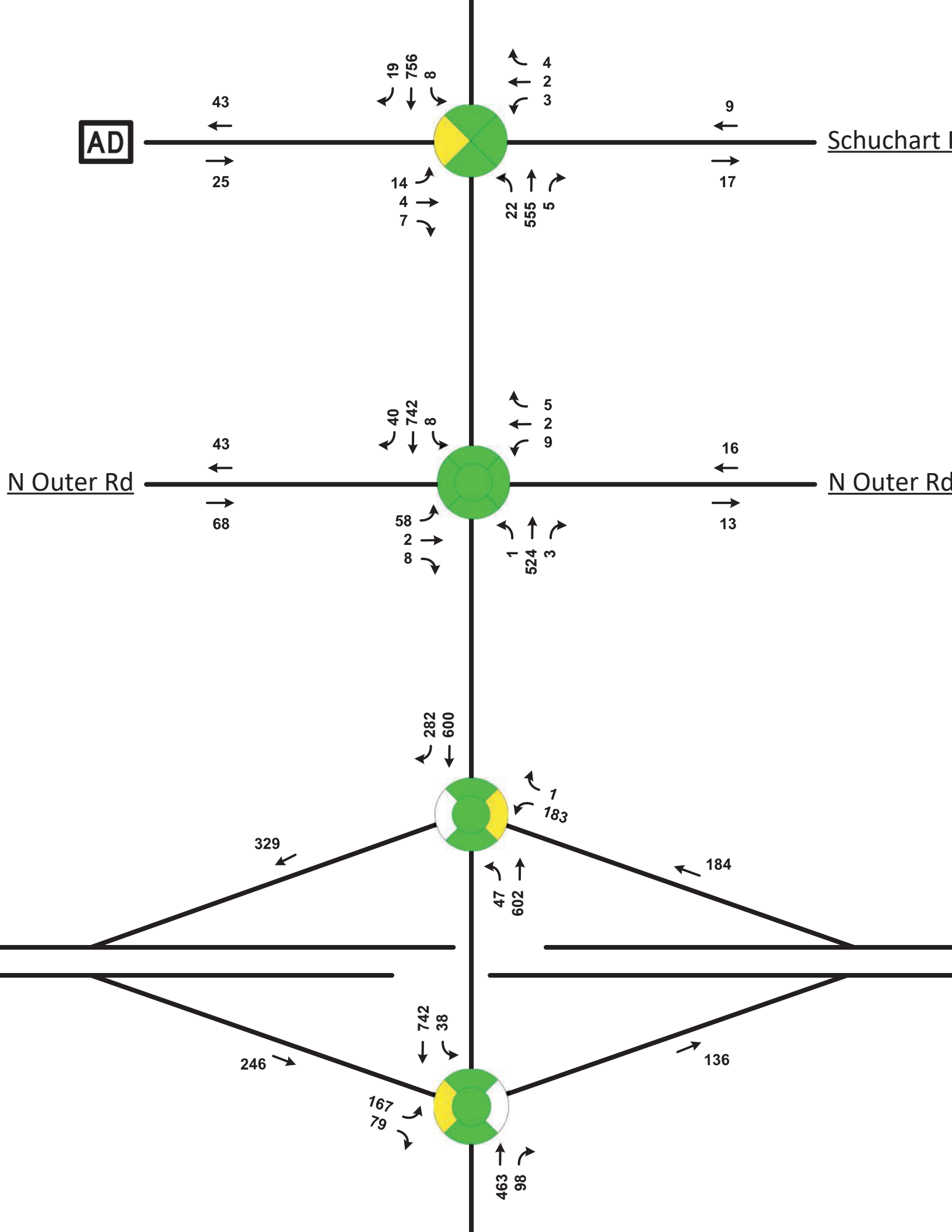
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Synchro Detailed Report

HCM 6th Signalized Intersection Summary
1: Rte 47 & Rte 100

02/21/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	291	533	186	117	526	392	295	647	179	264	411	161
Future Volume (veh/h)	291	533	186	117	526	392	295	647	179	264	411	161
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1796	1796	1796
Adj Flow Rate, veh/h	331	613	0	139	692	0	388	752	0	326	457	0
Peak Hour Factor	0.88	0.87	0.75	0.84	0.76	0.80	0.76	0.86	0.81	0.81	0.90	0.82
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	7	7	7
Cap, veh/h	616	756		651	795		625	857		387	582	
Arrive On Green	0.18	0.22	0.00	0.19	0.23	0.00	0.37	0.49	0.00	0.12	0.17	0.00
Sat Flow, veh/h	3401	3497	1560	3401	3497	1560	3401	3497	1560	3319	3413	1522
Grp Volume(v), veh/h	331	613	0	139	692	0	388	752	0	326	457	0
Grp Sat Flow(s),veh/h/ln	1700	1749	1560	1700	1749	1560	1700	1749	1560	1659	1706	1522
Q Serve(g_s), s	9.7	18.3	0.0	3.8	21.0	0.0	10.3	21.2	0.0	10.6	14.1	0.0
Cycle Q Clear(g_c), s	9.7	18.3	0.0	3.8	21.0	0.0	10.3	21.2	0.0	10.6	14.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	616	756		651	795		625	857		387	582	
V/C Ratio(X)	0.54	0.81		0.21	0.87		0.62	0.88		0.84	0.79	
Avail Cap(c_a), veh/h	616	957		651	865		625	1002		419	828	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.76	0.76	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.8	41.0	0.0	37.5	40.9	0.0	31.6	26.6	0.0	47.6	43.7	0.0
Incr Delay (d2), s/veh	1.2	9.2	0.0	0.2	12.5	0.0	1.7	6.7	0.0	14.4	4.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	8.5	0.0	1.6	10.0	0.0	3.7	6.6	0.0	5.0	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.1	50.2	0.0	37.7	53.5	0.0	33.3	33.3	0.0	62.0	47.8	0.0
LnGrp LOS	D	D		D	D		C	C		E	D	
Approach Vol, veh/h		944			831			1140			783	
Approach Delay, s/veh		47.4			50.8			33.3			53.7	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	32.4	26.8	30.8	27.3	25.1	28.0	29.7
Change Period (Y+Rc), s	7.1	5.5	6.9	5.8	7.1	* 6.3	* 6.9	* 5.9
Max Green Setting (Gmax), s	13.9	31.5	12.1	27.2	18.3	* 27	* 9.3	* 30
Max Q Clear Time (g_c+I1), s	12.6	23.2	11.7	23.0	12.3	16.1	5.8	20.3
Green Ext Time (p_c), s	0.2	3.8	0.1	2.0	1.1	2.6	0.2	3.4

Intersection Summary	
HCM 6th Ctrl Delay	45.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	12	8	10	11	64	16	990	21	28	582	81
Future Volume (vph)	65	12	8	10	11	64	16	990	21	28	582	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0		6.5	6.5	5.8	5.8		7.1	6.5	
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.97	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1716	1583		1778	1553	1736	3457		1656	3243	
Flt Permitted	0.95	0.97	1.00		0.25	1.00	0.38	1.00		0.11	1.00	
Satd. Flow (perm)	1681	1716	1583		455	1553	691	3457		199	3243	
Peak-hour factor, PHF	0.74	0.60	0.50	0.42	0.55	0.80	0.50	0.79	0.58	0.88	0.94	0.81
Adj. Flow (vph)	88	20	16	24	20	80	32	1253	36	32	619	100
RTOR Reduction (vph)	0	0	15	0	0	71	0	2	0	0	12	0
Lane Group Flow (vph)	54	54	1	0	44	9	32	1287	0	32	707	0
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	4%	4%	4%	9%	9%	9%
Turn Type	Split	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases	3	3			4			2		1	6	
Permitted Phases			3	4		4	2			6		
Actuated Green, G (s)	6.5	6.5	6.5		12.4	12.4	60.5	60.5		71.1	71.1	
Effective Green, g (s)	6.5	6.5	6.5		12.4	12.4	60.5	60.5		71.1	71.1	
Actuated g/C Ratio	0.06	0.06	0.06		0.11	0.11	0.55	0.55		0.65	0.65	
Clearance Time (s)	7.0	7.0	7.0		6.5	6.5	5.8	5.8		7.1	6.5	
Vehicle Extension (s)	3.0	3.0	3.0		3.5	3.5	3.0	3.0		2.5	3.0	
Lane Grp Cap (vph)	99	101	93		51	175	380	1901		184	2096	
v/s Ratio Prot	c0.03	0.03						c0.37		0.01	c0.22	
v/s Ratio Perm			0.00		c0.10	0.01	0.05			0.11		
v/c Ratio	0.55	0.53	0.01		0.86	0.05	0.08	0.68		0.17	0.34	
Uniform Delay, d1	50.3	50.3	48.7		48.0	43.6	11.7	17.7		11.9	8.8	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.61	0.80		0.47	0.35	
Incremental Delay, d2	6.0	5.4	0.0		78.0	0.1	0.4	1.7		0.3	0.4	
Delay (s)	56.3	55.6	48.8		126.0	43.7	7.5	15.9		5.9	3.5	
Level of Service	E	E	D		F	D	A	B		A	A	
Approach Delay (s)		55.1			72.9			15.7			3.6	
Approach LOS		E			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	26.4
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	124	58	73	45	56	134	75	774	33	46	481	80
Future Volume (veh/h)	124	58	73	45	56	134	75	774	33	46	481	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1841	1841	1841	1767	1767	1767
Adj Flow Rate, veh/h	172	84	96	68	76	152	80	1046	40	56	534	108
Peak Hour Factor	0.72	0.69	0.76	0.66	0.74	0.88	0.94	0.74	0.82	0.82	0.90	0.74
Percent Heavy Veh, %	1	1	1	2	2	2	4	4	4	9	9	9
Cap, veh/h	227	122	140	229	69	139	507	2092	80	138	565	479
Arrive On Green	0.09	0.15	0.15	0.06	0.12	0.12	0.23	0.61	0.61	0.64	0.64	0.64
Sat Flow, veh/h	1795	803	917	1781	557	1113	1753	3434	131	491	1767	1497
Grp Volume(v), veh/h	172	0	180	68	0	228	80	533	553	56	534	108
Grp Sat Flow(s),veh/h/ln	1795	0	1720	1781	0	1670	1753	1749	1817	491	1767	1497
Q Serve(g_s), s	9.2	0.0	10.9	3.5	0.0	13.7	0.0	18.8	18.8	11.4	30.3	2.5
Cycle Q Clear(g_c), s	9.2	0.0	10.9	3.5	0.0	13.7	0.0	18.8	18.8	30.3	30.3	2.5
Prop In Lane	1.00		0.53	1.00		0.67	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	227	0	262	229	0	208	507	1065	1107	138	565	479
V/C Ratio(X)	0.76	0.00	0.69	0.30	0.00	1.10	0.16	0.50	0.50	0.40	0.94	0.23
Avail Cap(c_a), veh/h	227	0	262	246	0	208	507	1079	1122	221	862	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	38.4	0.0	44.1	36.4	0.0	48.2	31.4	12.1	12.1	27.5	18.9	7.8
Incr Delay (d2), s/veh	12.7	0.0	6.4	0.4	0.0	90.5	0.1	1.7	1.6	8.1	25.6	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	5.1	1.5	0.0	10.9	1.6	6.9	7.2	1.4	9.8	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.1	0.0	50.5	36.8	0.0	138.6	31.5	13.8	13.7	35.6	44.5	8.8
LnGrp LOS	D	A	D	D	A	F	C	B	B	D	D	A
Approach Vol, veh/h		352			296			1166			698	
Approach Delay, s/veh		50.8			115.2			14.9			38.3	
Approach LOS		D			F			B			D	

Timer - Assigned Phs		2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s		73.9	16.0	20.1	32.4	41.5	12.9	23.2				
Change Period (Y+Rc), s		* 6.9	6.1	* 6.4	* 6.9	6.3	* 6.8	6.4				
Max Green Setting (Gmax), s		* 68	9.9	* 14	* 7.1	53.7	* 7.2	15.6				
Max Q Clear Time (g_c+I1), s		20.8	11.2	15.7	2.0	32.3	5.5	12.9				
Green Ext Time (p_c), s		5.0	0.0	0.0	0.0	2.9	0.0	0.2				

Intersection Summary	
HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	44	17	19	51	41	12	752	28	49	508	33
Future Volume (veh/h)	78	44	17	19	51	41	12	752	28	49	508	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1826	1826	1826	1796	1796	1796	1767	1767	1767
Adj Flow Rate, veh/h	177	96	0	24	84	0	16	826	36	88	558	52
Peak Hour Factor	0.44	0.46	0.61	0.79	0.61	0.79	0.75	0.91	0.78	0.56	0.91	0.63
Percent Heavy Veh, %	4	4	4	5	5	5	7	7	7	9	9	9
Cap, veh/h	267	108		100	300		383	869	38	238	893	83
Arrive On Green	0.20	0.20	0.00	0.20	0.20	0.00	0.03	0.51	0.51	0.07	0.56	0.56
Sat Flow, veh/h	973	536	0	236	1492	0	1711	1708	74	1682	1592	148
Grp Volume(v), veh/h	273	0	0	108	0	0	16	0	862	88	0	610
Grp Sat Flow(s),veh/h/ln	1509	0	0	1728	0	0	1711	0	1783	1682	0	1740
Q Serve(g_s), s	10.4	0.0	0.0	0.0	0.0	0.0	0.3	0.0	38.5	1.9	0.0	19.8
Cycle Q Clear(g_c), s	14.6	0.0	0.0	4.2	0.0	0.0	0.3	0.0	38.5	1.9	0.0	19.8
Prop In Lane	0.65		0.00	0.22		0.00	1.00		0.04	1.00		0.09
Lane Grp Cap(c), veh/h	375	0		400	0		383	0	906	238	0	977
V/C Ratio(X)	0.73	0.00		0.27	0.00		0.04	0.00	0.95	0.37	0.00	0.62
Avail Cap(c_a), veh/h	396	0		419	0		748	0	952	507	0	977
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.3	0.0	0.0	28.4	0.0	0.0	9.6	0.0	19.6	17.9	0.0	12.4
Incr Delay (d2), s/veh	5.9	0.0	0.0	0.3	0.0	0.0	0.0	0.0	18.0	0.4	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	0.0	1.8	0.0	0.0	0.1	0.0	16.9	0.7	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	0.0	0.0	28.6	0.0	0.0	9.6	0.0	37.6	18.2	0.0	13.7
LnGrp LOS	D	A		C	A		A	A	D	B	A	B
Approach Vol, veh/h		273			108			878			698	
Approach Delay, s/veh		38.2			28.6			37.1			14.2	
Approach LOS		D			C			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.6	48.0		24.0	7.2	52.5		24.0				
Change Period (Y+Rc), s	5.5	* 5.5		* 7.2	5.0	* 5.5		* 7.2				
Max Green Setting (Gmax), s	19.5	* 45		* 18	20.0	* 45		* 18				
Max Q Clear Time (g_c+I1), s	3.9	40.5		16.6	2.3	21.8		6.2				
Green Ext Time (p_c), s	0.1	2.0		0.2	0.0	3.5		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		28.6
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	39	168	25	22	12	137	546	29	10	403	131
Future Volume (veh/h)	190	39	168	25	22	12	137	546	29	10	403	131
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1574	1574	1574	1811	1811	1811	1811	1811	1811
Adj Flow Rate, veh/h	204	76	240	32	32	0	167	650	44	20	458	156
Peak Hour Factor	0.93	0.51	0.70	0.78	0.69	0.75	0.82	0.84	0.66	0.50	0.88	0.84
Percent Heavy Veh, %	8	8	8	22	22	22	6	6	6	6	6	6
Cap, veh/h	410	76	239	134	180		311	813	55	205	583	198
Arrive On Green	0.12	0.20	0.20	0.04	0.11	0.00	0.02	0.16	0.16	0.03	0.45	0.45
Sat Flow, veh/h	1697	377	1190	1499	1574	1334	1725	1677	114	1725	1292	440
Grp Volume(v), veh/h	204	0	316	32	32	0	167	0	694	20	0	614
Grp Sat Flow(s),veh/h/ln	1697	0	1567	1499	1574	1334	1725	0	1791	1725	0	1732
Q Serve(g_s), s	10.4	0.0	20.1	1.7	1.8	0.0	5.0	0.0	37.3	0.6	0.0	30.2
Cycle Q Clear(g_c), s	10.4	0.0	20.1	1.7	1.8	0.0	5.0	0.0	37.3	0.6	0.0	30.2
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.06	1.00		0.25
Lane Grp Cap(c), veh/h	410	0	315	134	180		311	0	868	205	0	781
V/C Ratio(X)	0.50	0.00	1.00	0.24	0.18		0.54	0.00	0.80	0.10	0.00	0.79
Avail Cap(c_a), veh/h	461	0	315	294	315		413	0	868	314	0	781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.79	0.00	0.79
Uniform Delay (d), s/veh	32.9	0.0	40.0	31.4	40.0	0.0	19.4	0.0	37.3	19.1	0.0	23.3
Incr Delay (d2), s/veh	0.5	0.0	51.5	0.5	0.3	0.0	0.8	0.0	7.6	0.1	0.0	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	11.9	0.6	0.7	0.0	2.0	0.0	19.5	0.2	0.0	12.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	0.0	91.5	31.8	40.3	0.0	20.2	0.0	44.9	19.2	0.0	29.6
LnGrp LOS	C	A	F	C	D		C	A	D	B	A	C
Approach Vol, veh/h		520			64			861			634	
Approach Delay, s/veh		68.7			36.1			40.1			29.3	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	55.0	18.0	17.4	13.1	51.6	9.3	26.0
Change Period (Y+Rc), s	* 6.7	* 6.5	5.5	* 5.9	6.0	* 6.5	* 5.2	* 5.9
Max Green Setting (Gmax), s	* 9.3	* 32	15.5	* 20	13.0	* 29	* 15	* 20
Max Q Clear Time (g_c+I1), s	2.6	39.3	12.4	3.8	7.0	32.2	3.7	22.1
Green Ext Time (p_c), s	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	21	38	64	30	8	41	708	63	7	547	39
Future Volume (veh/h)	22	21	38	64	30	8	41	708	63	7	547	39
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1796	1796	1796	1811	1811	1811	1826	1826	1826
Adj Flow Rate, veh/h	40	36	44	88	48	16	64	863	80	16	629	0
Peak Hour Factor	0.55	0.58	0.86	0.73	0.62	0.50	0.64	0.82	0.79	0.44	0.87	0.70
Percent Heavy Veh, %	1	1	1	7	7	7	6	6	6	5	5	5
Cap, veh/h	306	171	209	152	63	19	589	942	87	175	986	
Arrive On Green	0.05	0.22	0.22	0.12	0.12	0.12	0.06	0.58	0.58	0.05	1.00	0.00
Sat Flow, veh/h	1795	772	943	776	516	152	1725	1633	151	1739	1826	0
Grp Volume(v), veh/h	40	0	80	152	0	0	64	0	943	16	629	0
Grp Sat Flow(s),veh/h/ln	1795	0	1715	1444	0	0	1725	0	1784	1739	1826	0
Q Serve(g_s), s	1.9	0.0	3.8	9.6	0.0	0.0	1.5	0.0	47.4	0.4	0.0	0.0
Cycle Q Clear(g_c), s	1.9	0.0	3.8	10.3	0.0	0.0	1.5	0.0	47.4	0.4	0.0	0.0
Prop In Lane	1.00		0.55	0.58		0.11	1.00		0.08	1.00		0.00
Lane Grp Cap(c), veh/h	306	0	381	234	0	0	589	0	1029	175	986	
V/C Ratio(X)	0.13	0.00	0.21	0.65	0.00	0.00	0.11	0.00	0.92	0.09	0.64	
Avail Cap(c_a), veh/h	398	0	467	239	0	0	637	0	1029	271	986	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.2	0.0	31.8	42.9	0.0	0.0	8.4	0.0	19.0	19.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	6.3	0.0	0.0	0.1	0.0	14.0	0.3	3.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.6	4.0	0.0	0.0	0.5	0.0	20.3	0.2	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	0.0	32.1	49.2	0.0	0.0	8.5	0.0	32.9	19.3	3.2	0.0
LnGrp LOS	D	A	C	D	A	A	A	A	C	B	A	
Approach Vol, veh/h		120			152			1007			645	
Approach Delay, s/veh		33.2			49.2			31.4			3.6	
Approach LOS		C			D			C			A	

Timer - Assigned Phs	1	2	3	4	5	6		8				
Phs Duration (G+Y+Rc), s	8.5	63.5	9.9	18.1	12.2	59.8		28.0				
Change Period (Y+Rc), s	6.0	* 5.8	* 5.2	* 5.8	6.4	* 5.8		* 5.8				
Max Green Setting (Gmax), s	8.0	* 47	* 9.8	* 13	8.6	* 46		* 27				
Max Q Clear Time (g_c+I1), s	2.4	49.4	3.9	12.3	3.5	2.0		5.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	6.7		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	23.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	26	71	47	31	37	73	829	28	40	581	69
Future Volume (veh/h)	35	26	71	47	31	37	73	829	28	40	581	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1826	1826	1826	1796	1796	1796
Adj Flow Rate, veh/h	48	28	88	56	44	56	116	964	0	65	605	0
Peak Hour Factor	0.73	0.93	0.81	0.84	0.70	0.66	0.63	0.86	1.00	0.62	0.96	0.78
Percent Heavy Veh, %	0	0	0	0	0	0	5	5	5	7	7	7
Cap, veh/h	141	64	200	137	93	254	572	2056		416	2015	
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.59	0.00	0.06	0.59	0.00
Sat Flow, veh/h	1315	404	1268	509	588	1610	1739	3469	1547	1711	3503	0
Grp Volume(v), veh/h	48	0	116	100	0	56	116	964	0	65	605	0
Grp Sat Flow(s),veh/h/ln	1315	0	1672	1097	0	1610	1739	1735	1547	1711	1706	0
Q Serve(g_s), s	3.6	0.0	6.3	4.3	0.0	3.0	2.5	15.7	0.0	1.4	8.8	0.0
Cycle Q Clear(g_c), s	14.2	0.0	6.3	10.6	0.0	3.0	2.5	15.7	0.0	1.4	8.8	0.0
Prop In Lane	1.00		0.76	0.56		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	141	0	264	229	0	254	572	2056		416	2015	
V/C Ratio(X)	0.34	0.00	0.44	0.44	0.00	0.22	0.20	0.47		0.16	0.30	
Avail Cap(c_a), veh/h	141	0	264	229	0	254	625	2056		472	2015	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.61	0.61	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	46.6	0.0	38.1	40.6	0.0	36.7	7.1	11.5	0.0	7.7	10.2	0.0
Incr Delay (d2), s/veh	1.4	0.0	1.1	1.3	0.0	0.4	0.1	0.5	0.0	0.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	2.6	2.4	0.0	1.2	0.8	5.3	0.0	0.4	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.1	0.0	39.2	41.9	0.0	37.2	7.2	12.0	0.0	7.9	10.6	0.0
LnGrp LOS	D	A	D	D	A	D	A	B		A	B	
Approach Vol, veh/h		164			156			1080			670	
Approach Delay, s/veh		41.8			40.2			11.5			10.3	
Approach LOS		D			D			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.7	65.9		22.4	12.0	65.6		22.4				
Change Period (Y+Rc), s	* 5.9	* 6.6		* 6.6	* 6.2	* 6.6		6.6				
Max Green Setting (Gmax), s	* 9.1	* 56		* 16	* 8.8	* 57		15.4				
Max Q Clear Time (g_c+I1), s	3.4	17.7		16.2	4.5	10.8		12.6				
Green Ext Time (p_c), s	0.0	7.5		0.0	0.1	4.2		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	156	699	738	768	613	82
Future Volume (veh/h)	156	699	738	768	613	82
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1826	1826	1811	1811	1781	1781
Adj Flow Rate, veh/h	179	752	811	0	626	0
Peak Hour Factor	0.87	0.93	0.91	0.82	0.98	0.79
Percent Heavy Veh, %	5	5	6	6	8	8
Cap, veh/h	447	2291	1830		732	
Arrive On Green	0.07	0.66	0.53	0.00	0.22	0.00
Sat Flow, veh/h	1739	3561	3532	1535	3291	1510
Grp Volume(v), veh/h	179	752	811	0	626	0
Grp Sat Flow(s),veh/h/ln	1739	1735	1721	1535	1646	1510
Q Serve(g_s), s	4.3	9.4	14.4	0.0	18.3	0.0
Cycle Q Clear(g_c), s	4.3	9.4	14.4	0.0	18.3	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	447	2291	1830		732	
V/C Ratio(X)	0.40	0.33	0.44		0.85	
Avail Cap(c_a), veh/h	589	2291	1830		1129	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.95	0.00
Uniform Delay (d), s/veh	9.8	7.4	14.3	0.0	37.3	0.0
Incr Delay (d2), s/veh	0.6	0.4	0.8	0.0	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.9	5.2	0.0	7.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.4	7.7	15.1	0.0	41.2	0.0
LnGrp LOS	B	A	B		D	
Approach Vol, veh/h		931	811		626	
Approach Delay, s/veh		8.3	15.1		41.2	
Approach LOS		A	B		D	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	12.9	59.2			72.0	28.0
Change Period (Y+Rc), s	* 5.9	* 6			6.0	5.7
Max Green Setting (Gmax), s	* 15	* 33			54.0	34.3
Max Q Clear Time (g_c+I1), s	6.3	16.4			11.4	20.3
Green Ext Time (p_c), s	0.3	4.8			5.4	2.0

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	847	379	65	901	642	57
Future Volume (veh/h)	847	379	65	901	642	57
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1826	1826
Adj Flow Rate, veh/h	892	0	80	1036	747	0
Peak Hour Factor	0.95	0.94	0.81	0.87	0.86	0.79
Percent Heavy Veh, %	6	6	6	6	5	5
Cap, veh/h	1069		555	2168	853	
Arrive On Green	0.31	0.00	0.26	0.63	0.25	0.00
Sat Flow, veh/h	3532	1535	1725	3532	3374	1547
Grp Volume(v), veh/h	892	0	80	1036	747	0
Grp Sat Flow(s),veh/h/ln	1721	1535	1725	1721	1687	1547
Q Serve(g_s), s	24.1	0.0	0.0	15.9	21.2	0.0
Cycle Q Clear(g_c), s	24.1	0.0	0.0	15.9	21.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1069		555	2168	853	
V/C Ratio(X)	0.83		0.14	0.48	0.88	
Avail Cap(c_a), veh/h	1397		555	2168	1086	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.1	0.0	25.9	9.8	35.9	0.0
Incr Delay (d2), s/veh	7.7	0.0	0.1	0.8	6.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	1.4	5.2	9.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.8	0.0	26.0	10.5	42.6	0.0
LnGrp LOS	D		C	B	D	
Approach Vol, veh/h	892			1116	747	
Approach Delay, s/veh	39.8			11.6	42.6	
Approach LOS	D			B	D	

Timer - Assigned Phs	2		5	6	8
Phs Duration (G+Y+Rc), s	68.9		31.4	37.5	31.1
Change Period (Y+Rc), s	* 5.9		5.9	* 6.4	5.8
Max Green Setting (Gmax), s	* 56		9.1	* 41	32.2
Max Q Clear Time (g_c+I1), s	17.9		2.0	26.1	23.2
Green Ext Time (p_c), s	8.3		0.1	4.9	2.0

Intersection Summary	
HCM 6th Ctrl Delay	29.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	3	8	6	0	0	3	594	2	2	392	20
Future Volume (veh/h)	38	3	8	6	0	0	3	594	2	2	392	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1663	1663	1663	670	670	670	1826	1826	1826	1811	1811	1811
Adj Flow Rate, veh/h	52	8	0	8	0	0	4	699	0	4	509	0
Peak Hour Factor	0.73	0.38	0.67	0.75	0.75	0.75	0.75	0.85	0.50	0.50	0.77	0.56
Percent Heavy Veh, %	16	16	16	83	83	83	5	5	5	6	6	6
Cap, veh/h	275	129		182	14		358	818		225	821	
Arrive On Green	0.07	0.08	0.00	0.01	0.00	0.00	0.01	0.45	0.00	0.01	0.45	0.00
Sat Flow, veh/h	1584	1663	0	638	670	0	1739	1826	0	1725	1811	0
Grp Volume(v), veh/h	52	8	0	8	0	0	4	699	0	4	509	0
Grp Sat Flow(s),veh/h/ln	1584	1663	0	638	670	0	1739	1826	0	1725	1811	0
Q Serve(g_s), s	1.6	0.2	0.0	0.6	0.0	0.0	0.1	18.2	0.0	0.1	11.3	0.0
Cycle Q Clear(g_c), s	1.6	0.2	0.0	0.6	0.0	0.0	0.1	18.2	0.0	0.1	11.3	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	275	129		182	14		358	818		225	821	
V/C Ratio(X)	0.19	0.06		0.04	0.00		0.01	0.85		0.02	0.62	
Avail Cap(c_a), veh/h	900	743		470	299		1141	1501		992	1488	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.6	22.7	0.0	22.1	0.0	0.0	8.9	13.1	0.0	11.0	11.0	0.0
Incr Delay (d2), s/veh	0.2	0.1	0.0	0.1	0.0	0.0	0.0	2.0	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.0	0.1	0.0	0.0	0.0	5.6	0.0	0.0	3.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.8	22.8	0.0	22.2	0.0	0.0	8.9	15.1	0.0	11.0	11.6	0.0
LnGrp LOS	C	C		C	A		A	B		B	B	
Approach Vol, veh/h		60			8			703			513	
Approach Delay, s/veh		22.8			22.2			15.1			11.6	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	30.2	6.1	10.4	6.1	30.5	9.0	7.4
Change Period (Y+Rc), s	6.0	6.4	* 5.3	* 6.3	* 5.7	6.4	* 5.3	* 6.3
Max Green Setting (Gmax), s	24.0	43.6	* 25	* 24	* 24	43.6	* 25	* 24
Max Q Clear Time (g_c+I1), s	2.1	20.2	2.6	2.2	2.1	13.3	3.6	0.0
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	2.4	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	47	0	1	33	657	0	0	282	159
Future Volume (veh/h)	0	0	0	47	0	1	33	657	0	0	282	159
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1707	0	1707	1841	1841	0	0	1796	1796
Adj Flow Rate, veh/h				68	0	0	44	699	0	0	313	0
Peak Hour Factor				0.69	0.92	0.25	0.75	0.94	0.25	0.25	0.90	0.67
Percent Heavy Veh, %				13	0	13	4	4	0	0	7	7
Cap, veh/h				158	0		803	2641	0	0	2135	
Arrive On Green				0.10	0.00	0.00	0.11	1.00	0.00	0.00	0.63	0.00
Sat Flow, veh/h				1626	0	1447	1753	3589	0	0	3593	0
Grp Volume(v), veh/h				68	0	0	44	699	0	0	313	0
Grp Sat Flow(s),veh/h/ln				1626	0	1447	1753	1749	0	0	1706	0
Q Serve(g_s), s				3.2	0.0	0.0	0.6	0.0	0.0	0.0	3.0	0.0
Cycle Q Clear(g_c), s				3.2	0.0	0.0	0.6	0.0	0.0	0.0	3.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				158	0		803	2641	0	0	2135	
V/C Ratio(X)				0.43	0.00		0.05	0.26	0.00	0.00	0.15	
Avail Cap(c_a), veh/h				297	0		904	2641	0	0	2135	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.91	0.91	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				34.0	0.0	0.0	4.0	0.0	0.0	0.0	6.2	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	0.0	0.2	0.1	0.0	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				35.4	0.0	0.0	4.0	0.2	0.0	0.0	6.3	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					68			743			313	
Approach Delay, s/veh					35.4			0.4			6.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	10.4	56.4				66.8		13.2				
Change Period (Y+Rc), s	6.0	6.4				* 6.4		5.4				
Max Green Setting (Gmax), s	9.0	38.6				* 55		14.6				
Max Q Clear Time (g_c+I1), s	2.6	5.0				2.0		5.2				
Green Ext Time (p_c), s	0.0	1.5				3.9		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	4.2
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	0	53	0	0	0	0	450	116	26	300	0
Future Volume (veh/h)	235	0	53	0	0	0	0	450	116	26	300	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	0	1826				0	1841	1841	1826	1826	0
Adj Flow Rate, veh/h	255	0	0				0	469	0	40	337	0
Peak Hour Factor	0.92	0.92	0.74				0.92	0.96	0.81	0.65	0.89	0.92
Percent Heavy Veh, %	5	0	5				0	4	4	5	5	0
Cap, veh/h	325	0					0	2041		610	2301	0
Arrive On Green	0.19	0.00	0.00				0.00	0.58	0.00	0.01	0.22	0.00
Sat Flow, veh/h	1739	0	1547				0	3681	0	1739	3561	0
Grp Volume(v), veh/h	255	0	0				0	469	0	40	337	0
Grp Sat Flow(s),veh/h/ln	1739	0	1547				0	1749	0	1739	1735	0
Q Serve(g_s), s	11.2	0.0	0.0				0.0	5.2	0.0	0.7	6.3	0.0
Cycle Q Clear(g_c), s	11.2	0.0	0.0				0.0	5.2	0.0	0.7	6.3	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	325	0					0	2041		610	2301	0
V/C Ratio(X)	0.78	0.00					0.00	0.23		0.07	0.15	0.00
Avail Cap(c_a), veh/h	522	0					0	2041		798	2301	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.98	0.98	0.00
Uniform Delay (d), s/veh	31.0	0.0	0.0				0.0	8.0	0.0	6.4	13.0	0.0
Incr Delay (d2), s/veh	8.6	0.0	0.0				0.0	0.3	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	0.0				0.0	1.6	0.0	0.2	2.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.6	0.0	0.0				0.0	8.3	0.0	6.4	13.1	0.0
LnGrp LOS	D	A					A	A		A	B	A
Approach Vol, veh/h		255						469			377	
Approach Delay, s/veh		39.6						8.3			12.4	
Approach LOS		D						A			B	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		59.1		20.9	6.4	52.7						
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0						
Max Green Setting (Gmax), s		44.0		24.0	11.0	29.0						
Max Q Clear Time (g_c+I1), s		8.3		13.2	2.7	7.2						
Green Ext Time (p_c), s		4.1		1.2	0.0	5.1						

Intersection Summary												
HCM 6th Ctrl Delay			16.9									
HCM 6th LOS			B									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	0	22	0	0	18	10	830	1	1	568	9
Future Vol, veh/h	23	0	22	0	0	18	10	830	1	1	568	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	64	69	69	25	25	64	50	79	25	25	92	75
Heavy Vehicles, %	2	2	2	0	0	0	4	4	4	9	9	9
Mvmt Flow	36	0	32	0	0	28	20	1051	4	4	617	12

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1738	1726	623	1740	1730	1053	629	0	0	1055	0	0
Stage 1	631	631	-	1093	1093	-	-	-	-	-	-	-
Stage 2	1107	1095	-	647	637	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.1	6.5	6.2	4.14	-	-	4.19	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.5	4	3.3	2.236	-	-	2.281	-	-
Pot Cap-1 Maneuver	68	89	486	69	89	277	944	-	-	634	-	-
Stage 1	469	474	-	262	293	-	-	-	-	-	-	-
Stage 2	255	290	-	463	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	60	87	486	63	87	277	944	-	-	634	-	-
Mov Cap-2 Maneuver	60	87	-	63	87	-	-	-	-	-	-	-
Stage 1	459	471	-	256	287	-	-	-	-	-	-	-
Stage 2	224	284	-	430	472	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	92.4	19.5	0.2	0.1
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	944	-	-	102	277	634	-	-
HCM Lane V/C Ratio	0.021	-	-	0.665	0.102	0.006	-	-
HCM Control Delay (s)	8.9	-	-	92.4	19.5	10.7	-	-
HCM Lane LOS	A	-	-	F	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	6	5	0	12	10	839	38	7	579	2
Future Vol, veh/h	2	0	6	5	0	12	10	839	38	7	579	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	75	50	31	75	60	50	89	63	58	90	50
Heavy Vehicles, %	0	0	0	12	12	12	6	6	6	9	9	9
Mvmt Flow	4	0	12	16	0	20	20	943	60	12	643	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1692	1712	645	1688	1684	973	647	0	0	1003	0	0
Stage 1	669	669	-	1013	1013	-	-	-	-	-	-	-
Stage 2	1023	1043	-	675	671	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.22	6.62	6.32	4.16	-	-	4.19	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.22	5.62	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.22	5.62	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.608	4.108	3.408	2.254	-	-	2.281	-	-
Pot Cap-1 Maneuver	75	91	476	70	89	293	920	-	-	664	-	-
Stage 1	450	459	-	276	304	-	-	-	-	-	-	-
Stage 2	287	309	-	428	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	66	84	476	64	82	293	920	-	-	664	-	-
Mov Cap-2 Maneuver	66	84	-	64	82	-	-	-	-	-	-	-
Stage 1	428	446	-	262	289	-	-	-	-	-	-	-
Stage 2	254	294	-	406	428	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.2	51.2	0.2	0.2
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	920	-	-	186	113	664	-	-
HCM Lane V/C Ratio	0.022	-	-	0.086	0.32	0.018	-	-
HCM Control Delay (s)	9	0	-	26.2	51.2	10.5	0	-
HCM Lane LOS	A	A	-	D	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	1.2	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	709	5	5	596
Future Vol, veh/h	1	1	709	5	5	596
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	25	83	62	62	83
Heavy Vehicles, %	3	3	6	6	11	11
Mvmt Flow	4	4	854	8	8	718

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1592	858	0	0	862	0
Stage 1	858	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.21	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.299	-
Pot Cap-1 Maneuver	117	355	-	-	743	-
Stage 1	414	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	355	-	-	743	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.7	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	174	743	-
HCM Lane V/C Ratio	-	-	0.046	0.011	-
HCM Control Delay (s)	-	-	26.7	9.9	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	2	7	9	2	8	6	707	21	12	583	3
Future Vol, veh/h	0	2	7	9	2	8	6	707	21	12	583	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	88	75	25	67	50	83	66	50	85	75
Heavy Vehicles, %	11	11	11	5	5	5	6	6	6	7	7	7
Mvmt Flow	0	8	8	12	8	12	12	852	32	24	686	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1638	1644	688	1636	1630	868	690	0	0	884	0	0
Stage 1	736	736	-	892	892	-	-	-	-	-	-	-
Stage 2	902	908	-	744	738	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.61	6.31	7.15	6.55	6.25	4.16	-	-	4.17	-	-
Critical Hdwy Stg 1	6.21	5.61	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.61	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4.099	3.399	3.545	4.045	3.345	2.254	-	-	2.263	-	-
Pot Cap-1 Maneuver	76	95	431	79	100	347	886	-	-	745	-	-
Stage 1	397	412	-	332	356	-	-	-	-	-	-	-
Stage 2	320	342	-	402	420	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	65	88	431	68	92	347	886	-	-	745	-	-
Mov Cap-2 Maneuver	65	88	-	68	92	-	-	-	-	-	-	-
Stage 1	386	391	-	323	346	-	-	-	-	-	-	-
Stage 2	294	333	-	366	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	32.7	52.4	0.1	0.3
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	886	-	-	146	107	745	-	-
HCM Lane V/C Ratio	0.014	-	-	0.109	0.299	0.032	-	-
HCM Control Delay (s)	9.1	0	-	32.7	52.4	10	0	-
HCM Lane LOS	A	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	1.1	0.1	-	-

Intersection	
Int Delay, s/veh	6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	62	5	804	36	11	614
Future Vol, veh/h	62	5	804	36	11	614
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	0	220	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	82	31	86	75	92	90
Heavy Vehicles, %	19	19	6	6	7	7
Mvmt Flow	76	16	935	48	12	682

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1641	935	0	0	935	0
Stage 1	935	-	-	-	-	-
Stage 2	706	-	-	-	-	-
Critical Hdwy	6.59	6.39	-	-	4.17	-
Critical Hdwy Stg 1	5.59	-	-	-	-	-
Critical Hdwy Stg 2	5.59	-	-	-	-	-
Follow-up Hdwy	3.671	3.471	-	-	2.263	-
Pot Cap-1 Maneuver	100	299	-	-	712	-
Stage 1	356	-	-	-	-	-
Stage 2	460	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	299	-	-	712	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	356	-	-	-	-	-
Stage 2	452	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	115	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	111	712	-
HCM Lane V/C Ratio	-	-	0.826	0.017	-
HCM Control Delay (s)	-	-	115	10.1	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	4.8	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	47	0	20	0	598	103	18	389	0
Future Vol, veh/h	0	0	0	47	0	20	0	598	103	18	389	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	70	-	0	-	-	210	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	69	76	62	81	87	76	64	85	94
Heavy Vehicles, %	0	0	0	7	7	7	4	4	4	7	7	7
Mvmt Flow	0	0	0	68	0	32	0	687	136	28	458	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1269	1337	458	1201	1201	687	-	0	0	823	0	0
Stage 1	514	514	-	687	687	-	-	-	-	-	-	-
Stage 2	755	823	-	514	514	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.17	6.57	6.27	-	-	-	4.17	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.17	5.57	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.563	4.063	3.363	-	-	-	2.263	-	-
Pot Cap-1 Maneuver	147	155	607	158	181	438	0	-	-	785	-	-
Stage 1	547	539	-	429	440	-	0	-	-	-	-	-
Stage 2	404	391	-	534	527	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	149	607	154	174	438	-	-	-	785	-	-
Mov Cap-2 Maneuver	132	149	-	154	174	-	-	-	-	-	-	-
Stage 1	547	520	-	429	440	-	-	-	-	-	-	-
Stage 2	374	391	-	515	508	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	35.5	0	0.6
HCM LOS	A	E		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	154	438	785	-	-
HCM Lane V/C Ratio	-	-	-	0.442	0.074	0.036	-	-
HCM Control Delay (s)	-	-	0	45.7	13.9	9.8	-	-
HCM Lane LOS	-	-	A	E	B	A	-	-
HCM 95th %tile Q(veh)	-	-	-	2	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	3	13	1	0	10	2	628	0	8	366	6
Future Vol, veh/h	20	3	13	1	0	10	2	628	0	8	366	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	290	-	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	56	38	46	25	25	42	50	86	25	67	76	75
Heavy Vehicles, %	8	8	8	0	0	0	4	4	4	8	8	8
Mvmt Flow	36	8	28	4	0	24	4	730	0	12	482	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1256	1244	482	1262	1244	730	482	0	0	730	0	0
Stage 1	506	506	-	738	738	-	-	-	-	-	-	-
Stage 2	750	738	-	524	506	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.58	6.28	7.1	6.5	6.2	4.14	-	-	4.18	-	-
Critical Hdwy Stg 1	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.58	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.072	3.372	3.5	4	3.3	2.236	-	-	2.272	-	-
Pot Cap-1 Maneuver	144	170	572	148	176	426	1070	-	-	847	-	-
Stage 1	538	530	-	413	427	-	-	-	-	-	-	-
Stage 2	394	415	-	540	543	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	133	166	572	133	172	426	1070	-	-	847	-	-
Mov Cap-2 Maneuver	133	166	-	133	172	-	-	-	-	-	-	-
Stage 1	535	520	-	411	424	-	-	-	-	-	-	-
Stage 2	370	413	-	496	533	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	33.4	17.2	0	0.2
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1070	-	-	197	323	847	-	-
HCM Lane V/C Ratio	0.004	-	-	0.365	0.086	0.014	-	-
HCM Control Delay (s)	8.4	0	-	33.4	17.2	9.3	0	-
HCM Lane LOS	A	A	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.3	0	-	-

HCM 6th Signalized Intersection Summary
1: Rte 47 & Rte 100

02/21/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	180	725	231	314	730	274	286	484	294	396	644	219
Future Volume (veh/h)	180	725	231	314	730	274	286	484	294	396	644	219
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1856	1856	1856
Adj Flow Rate, veh/h	200	863	0	331	859	0	333	583	0	460	708	0
Peak Hour Factor	0.90	0.84	0.83	0.95	0.85	0.94	0.86	0.83	0.80	0.86	0.91	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	3	3	3
Cap, veh/h	581	916		633	972		328	682		534	867	
Arrive On Green	0.17	0.26	0.00	0.18	0.27	0.00	0.16	0.32	0.00	0.16	0.25	0.00
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1585	3428	3526	1572
Grp Volume(v), veh/h	200	863	0	331	859	0	333	583	0	460	708	0
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1585	1714	1763	1572
Q Serve(g_s), s	6.1	28.6	0.0	10.4	27.8	0.0	11.4	18.4	0.0	15.7	22.7	0.0
Cycle Q Clear(g_c), s	6.1	28.6	0.0	10.4	27.8	0.0	11.4	18.4	0.0	15.7	22.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	581	916		633	972		328	682		534	867	
V/C Ratio(X)	0.34	0.94		0.52	0.88		1.02	0.86		0.86	0.82	
Avail Cap(c_a), veh/h	581	921		633	1042		328	814		626	1108	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	0.88	0.88	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	44.1	43.7	0.0	44.3	41.8	0.0	50.5	39.2	0.0	49.4	42.7	0.0
Incr Delay (d2), s/veh	0.5	18.7	0.0	1.1	11.5	0.0	50.6	7.5	0.0	11.3	4.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	14.4	0.0	4.4	13.2	0.0	6.8	7.4	0.0	7.4	10.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.6	62.4	0.0	45.3	53.3	0.0	101.1	46.7	0.0	60.7	47.1	0.0
LnGrp LOS	D	E		D	D		F	D		E	D	
Approach Vol, veh/h		1063			1190			916			1168	
Approach Delay, s/veh		59.0			51.1			66.5			52.4	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	28.5	27.1	38.6	18.5	35.8	28.9	36.8
Change Period (Y+Rc), s	7.1	5.5	6.9	5.8	7.1	* 6.3	* 6.9	* 5.9
Max Green Setting (Gmax), s	21.9	27.5	10.1	35.2	11.3	* 38	* 14	* 31
Max Q Clear Time (g_c+I1), s	17.7	20.4	8.1	29.8	13.4	24.7	12.4	30.6
Green Ext Time (p_c), s	1.0	2.6	0.2	3.0	0.0	4.8	0.3	0.3

Intersection Summary	
HCM 6th Ctrl Delay	56.6
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	7	50	50	33	126	11	747	32	53	851	225
Future Volume (vph)	181	7	50	50	33	126	11	747	32	53	851	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	7.0	7.0	7.0		6.5	6.5	6.7	5.8		6.5	6.5	
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	0.96	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1715	1734	1615		1847	1615	1770	3515		1770	3423	
Flt Permitted	0.95	0.96	1.00		0.12	1.00	0.10	1.00		0.31	1.00	
Satd. Flow (perm)	1715	1734	1615		224	1615	181	3515		568	3423	
Peak-hour factor, PHF	0.94	0.35	0.78	0.83	0.75	0.85	0.55	0.91	0.80	0.74	0.92	0.87
Adj. Flow (vph)	193	20	64	60	44	148	20	821	40	72	925	259
RTOR Reduction (vph)	0	0	58	0	0	115	0	4	0	0	24	0
Lane Group Flow (vph)	106	107	6	0	104	33	20	857	0	72	1160	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	2%	2%	2%	2%	2%	2%
Turn Type	Split	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	8	8			4		5	2			6	
Permitted Phases			8	4		4	2			6		
Actuated Green, G (s)	10.9	10.9	10.9		26.7	26.7	63.1	63.1		52.9	52.9	
Effective Green, g (s)	10.9	10.9	10.9		26.7	26.7	63.1	63.1		52.9	52.9	
Actuated g/C Ratio	0.09	0.09	0.09		0.22	0.22	0.53	0.53		0.44	0.44	
Clearance Time (s)	7.0	7.0	7.0		6.5	6.5	6.7	5.8		6.5	6.5	
Vehicle Extension (s)	3.0	3.0	3.0		3.5	3.5	2.5	3.0		3.0	3.0	
Lane Grp Cap (vph)	155	157	146		49	359	132	1848		250	1508	
v/s Ratio Prot	c0.06	0.06					0.00	c0.24			c0.34	
v/s Ratio Perm			0.00		c0.46	0.02	0.08			0.13		
v/c Ratio	0.68	0.68	0.04		2.12	0.09	0.15	0.46		0.29	0.77	
Uniform Delay, d1	52.9	52.9	49.8		46.6	37.0	19.2	17.8		21.5	28.4	
Progression Factor	1.00	1.00	1.00		1.00	1.00	0.14	0.25		0.42	0.44	
Incremental Delay, d2	11.8	11.5	0.1		567.0	0.1	0.3	0.7		2.2	2.9	
Delay (s)	64.7	64.4	49.9		613.6	37.2	3.0	5.2		11.3	15.4	
Level of Service	E	E	D		F	D	A	A		B	B	
Approach Delay (s)		61.1			275.1			5.2			15.2	
Approach LOS		E			F			A			B	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	26.7
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	92	101	92	52	127	85	98	607	40	130	710	172
Future Volume (veh/h)	92	101	92	52	127	85	98	607	40	130	710	172
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1870	1870	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	131	125	116	56	148	92	108	660	52	191	780	205
Peak Hour Factor	0.70	0.81	0.79	0.93	0.86	0.92	0.91	0.92	0.77	0.68	0.91	0.84
Percent Heavy Veh, %	1	1	1	2	2	2	3	3	3	3	3	3
Cap, veh/h	198	146	136	179	164	102	322	767	60	681	794	672
Arrive On Green	0.07	0.16	0.16	0.05	0.15	0.15	0.14	0.23	0.23	0.67	0.86	0.86
Sat Flow, veh/h	1795	900	835	1781	1079	671	1767	3311	261	1767	1856	1572
Grp Volume(v), veh/h	131	0	241	56	0	240	108	351	361	191	780	205
Grp Sat Flow(s),veh/h/ln	1795	0	1735	1781	0	1750	1767	1763	1809	1767	1856	1572
Q Serve(g_s), s	7.4	0.0	16.2	3.1	0.0	16.2	1.0	22.9	23.0	0.0	45.8	2.2
Cycle Q Clear(g_c), s	7.4	0.0	16.2	3.1	0.0	16.2	1.0	22.9	23.0	0.0	45.8	2.2
Prop In Lane	1.00		0.48	1.00		0.38	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	198	0	282	179	0	266	322	409	419	681	794	672
V/C Ratio(X)	0.66	0.00	0.85	0.31	0.00	0.90	0.34	0.86	0.86	0.28	0.98	0.30
Avail Cap(c_a), veh/h	198	0	282	198	0	273	322	865	888	681	892	756
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.66	0.66	0.66
Uniform Delay (d), s/veh	40.8	0.0	48.9	39.6	0.0	50.0	44.4	44.2	44.2	12.8	8.3	2.7
Incr Delay (d2), s/veh	6.9	0.0	21.0	0.5	0.0	29.6	0.3	20.4	20.1	0.1	22.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.0	8.6	1.4	0.0	9.2	2.8	12.0	12.3	1.8	8.3	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	0.0	69.9	40.2	0.0	79.6	44.7	64.6	64.3	12.9	30.5	3.5
LnGrp LOS	D	A	E	D	A	E	D	E	E	B	C	A
Approach Vol, veh/h		372			296			820			1176	
Approach Delay, s/veh		62.1			72.1			61.8			22.9	
Approach LOS		E			E			E			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	47.5	33.9	14.0	24.6	24.0	57.4	12.7	25.9
Change Period (Y+Rc), s	* 7.3	* 6.1	6.1	* 6.4	* 7.3	* 6.3	* 6.8	6.4
Max Green Setting (Gmax), s	* 8.7	* 59	7.9	* 19	* 10	* 58	* 7.2	18.6
Max Q Clear Time (g_c+I1), s	2.0	25.0	9.4	18.2	3.0	47.8	5.1	18.2
Green Ext Time (p_c), s	0.2	2.8	0.0	0.1	0.1	3.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.8
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	21	3	36	48	31	8	730	19	40	712	53
Future Volume (veh/h)	41	21	3	36	48	31	8	730	19	40	712	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1678	1678	1678	1870	1870	1870	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	56	32	0	52	64	0	20	880	24	44	774	64
Peak Hour Factor	0.73	0.66	0.38	0.69	0.75	0.78	0.40	0.83	0.79	0.91	0.92	0.83
Percent Heavy Veh, %	15	15	15	2	2	2	4	4	4	4	4	4
Cap, veh/h	180	73		150	114		317	981	27	284	980	81
Arrive On Green	0.11	0.11	0.00	0.11	0.11	0.00	0.03	0.55	0.55	0.06	0.58	0.58
Sat Flow, veh/h	822	689	0	648	1073	0	1753	1783	49	1753	1677	139
Grp Volume(v), veh/h	88	0	0	116	0	0	20	0	904	44	0	838
Grp Sat Flow(s),veh/h/ln	1511	0	0	1721	0	0	1753	0	1832	1753	0	1816
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.0	0.3	0.0	28.1	0.6	0.0	22.8
Cycle Q Clear(g_c), s	3.2	0.0	0.0	3.9	0.0	0.0	0.3	0.0	28.1	0.6	0.0	22.8
Prop In Lane	0.64		0.00	0.45		0.00	1.00		0.03	1.00		0.08
Lane Grp Cap(c), veh/h	253	0		265	0		317	0	1007	284	0	1061
V/C Ratio(X)	0.35	0.00		0.44	0.00		0.06	0.00	0.90	0.15	0.00	0.79
Avail Cap(c_a), veh/h	489	0		541	0		807	0	1279	714	0	1262
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	0.0	0.0	27.3	0.0	0.0	8.9	0.0	12.8	11.6	0.0	10.3
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.8	0.0	0.0	0.0	0.0	7.3	0.1	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	1.7	0.0	0.0	0.1	0.0	9.2	0.2	0.0	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.6	0.0	0.0	28.1	0.0	0.0	9.0	0.0	20.1	11.7	0.0	13.2
LnGrp LOS	C	A		C	A		A	A	C	B	A	B
Approach Vol, veh/h		88			116			924			882	
Approach Delay, s/veh		27.6			28.1			19.8			13.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.3	40.7		14.0	7.1	42.9		14.0				
Change Period (Y+Rc), s	5.5	* 5.5		* 7.2	5.0	* 5.5		* 7.2				
Max Green Setting (Gmax), s	19.5	* 45		* 18	20.0	* 45		* 18				
Max Q Clear Time (g_c+I1), s	2.6	30.1		5.2	2.3	24.8		5.9				
Green Ext Time (p_c), s	0.0	5.1		0.2	0.0	5.3		0.3				

Intersection Summary		
HCM 6th Ctrl Delay		17.7
HCM 6th LOS		B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	138	29	149	56	61	30	166	538	60	5	574	130
Future Volume (veh/h)	138	29	149	56	61	30	166	538	60	5	574	130
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1841	1841	1841	1841	1841	1841	1870	1870	1870
Adj Flow Rate, veh/h	157	36	180	64	80	0	171	640	80	12	645	144
Peak Hour Factor	0.88	0.81	0.83	0.88	0.76	0.68	0.97	0.84	0.75	0.42	0.89	0.90
Percent Heavy Veh, %	3	3	3	4	4	4	4	4	4	2	2	2
Cap, veh/h	313	41	204	174	195		292	922	115	515	794	177
Arrive On Green	0.09	0.15	0.15	0.05	0.11	0.00	0.13	1.00	1.00	0.02	0.54	0.54
Sat Flow, veh/h	1767	269	1345	1753	1841	1560	1753	1604	201	1781	1480	331
Grp Volume(v), veh/h	157	0	216	64	80	0	171	0	720	12	0	789
Grp Sat Flow(s),veh/h/ln	1767	0	1614	1753	1841	1560	1753	0	1805	1781	0	1811
Q Serve(g_s), s	9.4	0.0	15.7	3.6	4.9	0.0	5.4	0.0	0.0	0.3	0.0	42.9
Cycle Q Clear(g_c), s	9.4	0.0	15.7	3.6	4.9	0.0	5.4	0.0	0.0	0.3	0.0	42.9
Prop In Lane	1.00		0.83	1.00		1.00	1.00		0.11	1.00		0.18
Lane Grp Cap(c), veh/h	313	0	245	174	195		292	0	1038	515	0	972
V/C Ratio(X)	0.50	0.00	0.88	0.37	0.41		0.59	0.00	0.69	0.02	0.00	0.81
Avail Cap(c_a), veh/h	359	0	324	227	307		561	0	1038	634	0	972
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.59	0.00	0.59
Uniform Delay (d), s/veh	42.2	0.0	49.8	40.6	50.1	0.0	19.3	0.0	0.0	9.9	0.0	22.8
Incr Delay (d2), s/veh	0.7	0.0	18.0	0.7	1.0	0.0	1.0	0.0	3.8	0.0	0.0	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	7.4	1.6	2.3	0.0	1.8	0.0	1.1	0.1	0.0	17.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.8	0.0	67.9	41.3	51.1	0.0	20.3	0.0	3.8	10.0	0.0	27.3
LnGrp LOS	D	A	E	D	D		C	A	A	A	A	C
Approach Vol, veh/h		373			144			891			801	
Approach Delay, s/veh		57.3			46.8			7.0			27.1	
Approach LOS		E			D			A			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	75.5	16.9	18.6	13.6	70.9	11.4	24.1
Change Period (Y+Rc), s	* 6.7	* 6.5	5.5	* 5.9	6.0	* 6.5	* 5.2	* 5.9
Max Green Setting (Gmax), s	* 10	* 52	14.5	* 20	26.0	* 37	* 9.8	* 24
Max Q Clear Time (g_c+I1), s	2.3	2.0	11.4	6.9	7.4	44.9	5.6	17.7
Green Ext Time (p_c), s	0.0	5.4	0.1	0.2	0.2	0.0	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	40	88	94	52	14	84	726	75	5	752	33
Future Volume (veh/h)	47	40	88	94	52	14	84	726	75	5	752	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1841	1841	1841	1826	1826	1826	1870	1870	1870
Adj Flow Rate, veh/h	107	60	100	116	68	20	100	834	80	12	836	0
Peak Hour Factor	0.44	0.67	0.88	0.81	0.76	0.70	0.84	0.87	0.94	0.42	0.90	0.69
Percent Heavy Veh, %	2	2	2	4	4	4	5	5	5	2	2	2
Cap, veh/h	354	170	283	171	81	22	494	927	89	164	981	
Arrive On Green	0.07	0.27	0.27	0.16	0.16	0.16	0.06	0.56	0.56	0.04	1.00	0.00
Sat Flow, veh/h	1781	630	1051	771	501	138	1739	1640	157	1781	1870	0
Grp Volume(v), veh/h	107	0	160	204	0	0	100	0	914	12	836	0
Grp Sat Flow(s),veh/h/ln	1781	0	1681	1411	0	0	1739	0	1798	1781	1870	0
Q Serve(g_s), s	5.9	0.0	9.2	16.4	0.0	0.0	3.1	0.0	54.0	0.3	0.0	0.0
Cycle Q Clear(g_c), s	5.9	0.0	9.2	17.0	0.0	0.0	3.1	0.0	54.0	0.3	0.0	0.0
Prop In Lane	1.00		0.63	0.57		0.10	1.00		0.09	1.00		0.00
Lane Grp Cap(c), veh/h	354	0	452	274	0	0	494	0	1016	164	981	
V/C Ratio(X)	0.30	0.00	0.35	0.74	0.00	0.00	0.20	0.00	0.90	0.07	0.85	
Avail Cap(c_a), veh/h	414	0	535	301	0	0	550	0	1016	279	981	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.3	0.0	35.4	49.3	0.0	0.0	11.2	0.0	23.1	22.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.6	9.3	0.0	0.0	0.2	0.0	12.5	0.2	9.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	3.8	6.6	0.0	0.0	1.1	0.0	23.9	0.1	2.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.8	0.0	36.0	58.6	0.0	0.0	11.4	0.0	35.6	22.6	9.3	0.0
LnGrp LOS	D	A	D	E	A	A	B	A	D	C	A	
Approach Vol, veh/h		267			204			1014			848	
Approach Delay, s/veh		37.1			58.6			33.2			9.5	
Approach LOS		D			E			C			A	

Timer - Assigned Phs	1	2	3	4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	73.6	13.0	25.1	13.2	68.8		38.1
Change Period (Y+Rc), s	6.0	* 5.8	* 5.2	* 5.8	6.4	* 5.8		* 5.8
Max Green Setting (Gmax), s	10.0	* 54	* 12	* 22	10.6	* 53		* 38
Max Q Clear Time (g_c+I1), s	2.3	56.0	7.9	19.0	5.1	2.0		11.2
Green Ext Time (p_c), s	0.0	0.0	0.1	0.3	0.1	10.8		1.0

Intersection Summary	
HCM 6th Ctrl Delay	27.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	24	139	54	21	33	71	892	18	29	942	45
Future Volume (veh/h)	72	24	139	54	21	33	71	892	18	29	942	45
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1885	1885	1885	1841	1841	1841	1870	1870	1870
Adj Flow Rate, veh/h	88	28	172	68	28	52	80	949	0	36	1013	0
Peak Hour Factor	0.82	0.86	0.81	0.79	0.75	0.63	0.89	0.94	0.64	0.81	0.93	0.70
Percent Heavy Veh, %	0	0	0	1	1	1	4	4	4	2	2	2
Cap, veh/h	60	32	198	71	21	224	423	2309		448	2316	
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.66	0.00	0.04	0.65	0.00
Sat Flow, veh/h	1339	230	1415	142	151	1598	1753	3497	1560	1781	3647	0
Grp Volume(v), veh/h	88	0	200	96	0	52	80	949	0	36	1013	0
Grp Sat Flow(s),veh/h/ln	1339	0	1645	293	0	1598	1753	1749	1560	1781	1777	0
Q Serve(g_s), s	0.0	0.0	14.3	2.5	0.0	3.5	1.7	15.2	0.0	0.7	16.7	0.0
Cycle Q Clear(g_c), s	16.8	0.0	14.3	16.8	0.0	3.5	1.7	15.2	0.0	0.7	16.7	0.0
Prop In Lane	1.00		0.86	0.71		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	60	0	230	92	0	224	423	2309		448	2316	
V/C Ratio(X)	1.47	0.00	0.87	1.04	0.00	0.23	0.19	0.41		0.08	0.44	
Avail Cap(c_a), veh/h	60	0	230	92	0	224	484	2309		525	2316	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.57	0.57	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	60.0	0.0	50.5	57.3	0.0	45.9	7.1	9.5	0.0	6.5	10.2	0.0
Incr Delay (d2), s/veh	280.6	0.0	27.8	105.3	0.0	0.5	0.1	0.3	0.0	0.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	7.7	5.5	0.0	1.4	0.6	5.2	0.0	0.2	5.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	340.6	0.0	78.3	162.6	0.0	46.4	7.2	9.8	0.0	6.6	10.8	0.0
LnGrp LOS	F	A	E	F	A	D	A	A		A	B	
Approach Vol, veh/h		288			148			1029			1049	
Approach Delay, s/veh		158.5			121.8			9.6			10.6	
Approach LOS		F			F			A			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	85.8		23.4	11.8	84.8		23.4				
Change Period (Y+Rc), s	* 5.9	* 6.6		* 6.6	* 6.2	* 6.6		6.6				
Max Green Setting (Gmax), s	* 10	* 74		* 17	* 9.8	* 75		16.4				
Max Q Clear Time (g_c+I1), s	2.7	17.2		18.8	3.7	18.7		18.8				
Green Ext Time (p_c), s	0.0	7.5		0.0	0.1	8.3		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	33.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	882	1051	822	976	140
Future Volume (veh/h)	150	882	1051	822	976	140
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1841	1841	1856	1856	1856	1856
Adj Flow Rate, veh/h	181	1002	1118	0	1084	0
Peak Hour Factor	0.83	0.88	0.94	0.93	0.90	0.78
Percent Heavy Veh, %	4	4	3	3	3	3
Cap, veh/h	278	1971	1558		1162	
Arrive On Green	0.07	0.56	0.44	0.00	0.34	0.00
Sat Flow, veh/h	1753	3589	3618	1572	3428	1572
Grp Volume(v), veh/h	181	1002	1118	0	1084	0
Grp Sat Flow(s),veh/h/ln	1753	1749	1763	1572	1714	1572
Q Serve(g_s), s	6.5	21.0	31.1	0.0	36.7	0.0
Cycle Q Clear(g_c), s	6.5	21.0	31.1	0.0	36.7	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	278	1971	1558		1162	
V/C Ratio(X)	0.65	0.51	0.72		0.93	
Avail Cap(c_a), veh/h	386	1971	1558		1237	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.85	0.00
Uniform Delay (d), s/veh	21.9	16.0	27.4	0.0	38.4	0.0
Incr Delay (d2), s/veh	2.6	0.9	2.9	0.0	10.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	8.0	12.9	0.0	16.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.5	16.9	30.2	0.0	49.3	0.0
LnGrp LOS	C	B	C		D	
Approach Vol, veh/h		1183	1118		1084	
Approach Delay, s/veh		18.1	30.2		49.3	
Approach LOS		B	C		D	

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	14.6	59.0			73.6	46.4
Change Period (Y+Rc), s	* 5.9	* 6			6.0	5.7
Max Green Setting (Gmax), s	* 16	* 43			65.0	43.3
Max Q Clear Time (g_c+I1), s	8.5	33.1			23.0	38.7
Green Ext Time (p_c), s	0.3	5.1			8.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	32.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1134	669	111	1237	546	60
Future Volume (veh/h)	1134	669	111	1237	546	60
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1841	1841
Adj Flow Rate, veh/h	1181	0	141	1289	628	0
Peak Hour Factor	0.96	0.94	0.79	0.96	0.87	0.88
Percent Heavy Veh, %	3	3	3	3	4	4
Cap, veh/h	1392		542	2457	699	
Arrive On Green	0.39	0.00	0.25	0.70	0.21	0.00
Sat Flow, veh/h	3618	1572	1767	3618	3401	1560
Grp Volume(v), veh/h	1181	0	141	1289	628	0
Grp Sat Flow(s),veh/h/ln	1763	1572	1767	1763	1700	1560
Q Serve(g_s), s	36.6	0.0	0.3	21.0	21.6	0.0
Cycle Q Clear(g_c), s	36.6	0.0	0.3	21.0	21.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1392		542	2457	699	
V/C Ratio(X)	0.85		0.26	0.52	0.90	
Avail Cap(c_a), veh/h	1869		542	2457	799	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.0	0.0	32.2	8.7	46.4	0.0
Incr Delay (d2), s/veh	6.6	0.0	0.2	0.8	11.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	0.0	3.1	6.9	10.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.7	0.0	32.4	9.5	58.4	0.0
LnGrp LOS	D		C	A	E	
Approach Vol, veh/h	1181			1430	628	
Approach Delay, s/veh	39.7			11.8	58.4	
Approach LOS	D			B	E	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		89.5			35.7	53.8	30.5
Change Period (Y+Rc), s		* 5.9			5.9	* 6.4	5.8
Max Green Setting (Gmax), s		* 80			10.1	* 64	28.2
Max Q Clear Time (g_c+I1), s		23.0			2.3	38.6	23.6
Green Ext Time (p_c), s		12.2			0.1	8.8	1.1

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	2	8	9	2	5	1	524	3	8	742	40
Future Volume (veh/h)	58	2	8	9	2	5	1	524	3	8	742	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1811	1811	1811	1841	1841	1841	1856	1856	1856
Adj Flow Rate, veh/h	79	4	0	16	4	0	4	595	0	16	873	0
Peak Hour Factor	0.73	0.50	0.67	0.56	0.50	0.42	0.25	0.88	0.75	0.50	0.85	0.91
Percent Heavy Veh, %	4	4	4	6	6	6	4	4	4	3	3	3
Cap, veh/h	299	168		277	68		178	910		362	962	
Arrive On Green	0.08	0.09	0.00	0.03	0.04	0.00	0.01	0.49	0.00	0.03	0.52	0.00
Sat Flow, veh/h	1753	1841	0	1725	1811	0	1753	1841	0	1767	1856	0
Grp Volume(v), veh/h	79	4	0	16	4	0	4	595	0	16	873	0
Grp Sat Flow(s),veh/h/ln	1753	1841	0	1725	1811	0	1753	1841	0	1767	1856	0
Q Serve(g_s), s	2.8	0.1	0.0	0.6	0.1	0.0	0.1	16.1	0.0	0.3	28.5	0.0
Cycle Q Clear(g_c), s	2.8	0.1	0.0	0.6	0.1	0.0	0.1	16.1	0.0	0.3	28.5	0.0
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	299	168		277	68		178	910		362	962	
V/C Ratio(X)	0.26	0.02		0.06	0.06		0.02	0.65		0.04	0.91	
Avail Cap(c_a), veh/h	807	655		870	644		804	1204		951	1214	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.1	27.6	0.0	26.1	30.9	0.0	13.6	12.6	0.0	9.7	14.6	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.6	0.0	0.0	8.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.0	0.2	0.1	0.0	0.0	5.2	0.0	0.1	11.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.4	27.6	0.0	26.2	31.1	0.0	13.7	13.2	0.0	9.7	22.7	0.0
LnGrp LOS	C	C		C	C		B	B		A	C	
Approach Vol, veh/h		83			20			599			889	
Approach Delay, s/veh		27.4			27.2			13.2			22.5	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	39.4	7.1	12.4	6.2	40.9	10.7	8.8
Change Period (Y+Rc), s	6.0	6.4	* 5.3	* 6.3	* 5.7	6.4	* 5.3	* 6.3
Max Green Setting (Gmax), s	24.0	43.6	* 25	* 24	* 24	43.6	* 25	* 24
Max Q Clear Time (g_c+I1), s	2.3	18.1	2.6	2.1	2.1	30.5	4.8	2.1
Green Ext Time (p_c), s	0.0	2.9	0.0	0.0	0.0	4.0	0.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	183	0	1	47	602	0	0	600	282
Future Volume (veh/h)	0	0	0	183	0	1	47	602	0	0	600	282
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1856	0	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h				213	0	0	60	717	0	0	659	0
Peak Hour Factor				0.86	0.25	0.25	0.78	0.84	0.25	0.25	0.91	0.80
Percent Heavy Veh, %				3	0	3	3	3	0	0	3	3
Cap, veh/h				254	0		571	2529	0	0	2061	
Arrive On Green				0.14	0.00	0.00	0.12	1.00	0.00	0.00	0.58	0.00
Sat Flow, veh/h				1767	0	1572	1767	3618	0	0	3711	0
Grp Volume(v), veh/h				213	0	0	60	717	0	0	659	0
Grp Sat Flow(s),veh/h/ln				1767	0	1572	1767	1763	0	0	1763	0
Q Serve(g_s), s				10.0	0.0	0.0	1.0	0.0	0.0	0.0	8.1	0.0
Cycle Q Clear(g_c), s				10.0	0.0	0.0	1.0	0.0	0.0	0.0	8.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				254	0		571	2529	0	0	2061	
V/C Ratio(X)				0.84	0.00		0.11	0.28	0.00	0.00	0.32	
Avail Cap(c_a), veh/h				470	0		689	2529	0	0	2061	
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	0.00	0.93	0.93	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				35.4	0.0	0.0	5.5	0.0	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				5.5	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	0.0	0.3	0.1	0.0	0.0	2.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				40.9	0.0	0.0	5.5	0.3	0.0	0.0	9.4	0.0
LnGrp LOS				D	A		A	A	A	A	A	
Approach Vol, veh/h					213			777			659	
Approach Delay, s/veh					40.9			0.7			9.4	
Approach LOS					D			A			A	

Timer - Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	11.3	56.1				67.4		17.6				
Change Period (Y+Rc), s	6.0	6.4				* 6.4		5.4				
Max Green Setting (Gmax), s	11.0	33.6				* 52		22.6				
Max Q Clear Time (g_c+I1), s	3.0	10.1				2.0		12.0				
Green Ext Time (p_c), s	0.0	3.4				4.0		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	9.4
HCM 6th LOS	A

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	0	79	0	0	0	0	463	98	38	742	0
Future Volume (veh/h)	167	0	79	0	0	0	0	463	98	38	742	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1841	0	1841				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	192	0	0				0	579	0	56	773	0
Peak Hour Factor	0.87	0.92	0.90				0.92	0.80	0.88	0.68	0.96	0.92
Percent Heavy Veh, %	4	0	4				0	2	2	2	2	0
Cap, veh/h	306	0					0	2142		585	2432	0
Arrive On Green	0.17	0.00	0.00				0.00	0.60	0.00	0.07	1.00	0.00
Sat Flow, veh/h	1753	0	1560				0	3741	0	1781	3647	0
Grp Volume(v), veh/h	192	0	0				0	579	0	56	773	0
Grp Sat Flow(s),veh/h/ln	1753	0	1560				0	1777	0	1781	1777	0
Q Serve(g_s), s	8.6	0.0	0.0				0.0	6.6	0.0	1.0	0.0	0.0
Cycle Q Clear(g_c), s	8.6	0.0	0.0				0.0	6.6	0.0	1.0	0.0	0.0
Prop In Lane	1.00		1.00				0.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	306	0					0	2142		585	2432	0
V/C Ratio(X)	0.63	0.00					0.00	0.27		0.10	0.32	0.00
Avail Cap(c_a), veh/h	474	0					0	2142		754	2432	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	2.00	2.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.81	0.81	0.00
Uniform Delay (d), s/veh	32.5	0.0	0.0				0.0	8.0	0.0	5.8	0.0	0.0
Incr Delay (d2), s/veh	4.5	0.0	0.0				0.0	0.3	0.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.0				0.0	2.1	0.0	0.3	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.0	0.0	0.0				0.0	8.3	0.0	5.9	0.3	0.0
LnGrp LOS	D	A					A	A		A	A	A
Approach Vol, veh/h		192						579			829	
Approach Delay, s/veh		37.0						8.3			0.7	
Approach LOS		D						A			A	

Timer - Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		64.2		20.8	6.9	57.2						
Change Period (Y+Rc), s		6.0		6.0	4.0	6.0						
Max Green Setting (Gmax), s		50.0		23.0	11.0	35.0						
Max Q Clear Time (g_c+I1), s		2.0		10.6	3.0	8.6						
Green Ext Time (p_c), s		11.9		0.9	0.0	7.0						

Intersection Summary												
HCM 6th Ctrl Delay			7.8									
HCM 6th LOS			A									

Notes

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	2	11	1	1	5	24	731	3	10	793	30
Future Vol, veh/h	18	2	11	1	1	5	24	731	3	10	793	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	205	-	-	215	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	69	69	25	25	63	60	91	38	50	92	75
Heavy Vehicles, %	0	0	0	0	0	0	2	2	2	5	5	5
Mvmt Flow	20	3	16	4	4	8	40	803	8	20	862	40

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1815	1813	882	1819	1829	807	902	0	0	811	0	0
Stage 1	922	922	-	887	887	-	-	-	-	-	-	-
Stage 2	893	891	-	932	942	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.12	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.218	-	-	2.245	-	-
Pot Cap-1 Maneuver	61	79	348	61	77	385	754	-	-	802	-	-
Stage 1	327	352	-	341	365	-	-	-	-	-	-	-
Stage 2	339	363	-	322	344	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	54	73	348	53	71	385	754	-	-	802	-	-
Mov Cap-2 Maneuver	54	73	-	53	71	-	-	-	-	-	-	-
Stage 1	310	343	-	323	346	-	-	-	-	-	-	-
Stage 2	311	344	-	297	335	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	78.9	45.3	0.5	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	754	-	-	85	105	802	-	-
HCM Lane V/C Ratio	0.053	-	-	0.457	0.152	0.025	-	-
HCM Control Delay (s)	10	-	-	78.9	45.3	9.6	-	-
HCM Lane LOS	B	-	-	F	E	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.9	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	0	17	6	0	18	9	752	33	13	799	5
Future Vol, veh/h	6	0	17	6	0	18	9	752	33	13	799	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	75	53	75	75	90	75	92	69	65	89	63
Heavy Vehicles, %	9	9	9	8	8	8	5	5	5	5	5	5
Mvmt Flow	24	0	32	8	0	20	12	817	48	20	898	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1817	1831	902	1823	1811	841	906	0	0	865	0	0
Stage 1	942	942	-	865	865	-	-	-	-	-	-	-
Stage 2	875	889	-	958	946	-	-	-	-	-	-	-
Critical Hdwy	7.19	6.59	6.29	7.18	6.58	6.28	4.15	-	-	4.15	-	-
Critical Hdwy Stg 1	6.19	5.59	-	6.18	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.19	5.59	-	6.18	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.581	4.081	3.381	3.572	4.072	3.372	2.245	-	-	2.245	-	-
Pot Cap-1 Maneuver	58	73	326	57	76	356	739	-	-	765	-	-
Stage 1	307	332	-	340	363	-	-	-	-	-	-	-
Stage 2	334	352	-	302	332	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	67	326	48	70	356	739	-	-	765	-	-
Mov Cap-2 Maneuver	51	67	-	48	70	-	-	-	-	-	-	-
Stage 1	297	314	-	329	351	-	-	-	-	-	-	-
Stage 2	305	341	-	258	314	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	80.9	41.6	0.1	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	739	-	-	99	126	765	-	-
HCM Lane V/C Ratio	0.016	-	-	0.566	0.222	0.026	-	-
HCM Control Delay (s)	10	0	-	80.9	41.6	9.8	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2.6	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	5	759	8	3	773
Future Vol, veh/h	1	5	759	8	3	773
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	25	63	93	67	38	93
Heavy Vehicles, %	21	21	5	5	11	11
Mvmt Flow	4	8	816	12	8	831

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1669	822	0	0	828	0
Stage 1	822	-	-	-	-	-
Stage 2	847	-	-	-	-	-
Critical Hdwy	6.61	6.41	-	-	4.21	-
Critical Hdwy Stg 1	5.61	-	-	-	-	-
Critical Hdwy Stg 2	5.61	-	-	-	-	-
Follow-up Hdwy	3.689	3.489	-	-	2.299	-
Pot Cap-1 Maneuver	95	346	-	-	766	-
Stage 1	401	-	-	-	-	-
Stage 2	390	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	93	346	-	-	766	-
Mov Cap-2 Maneuver	93	-	-	-	-	-
Stage 1	401	-	-	-	-	-
Stage 2	383	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.3	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	181	766	-
HCM Lane V/C Ratio	-	-	0.066	0.01	-
HCM Control Delay (s)	-	-	26.3	9.7	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	10	10	0	23	26	747	30	6	758	10
Future Vol, veh/h	2	0	10	10	0	23	26	747	30	6	758	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	63	50	63	94	64	65	92	75	50	92	63
Heavy Vehicles, %	0	0	0	0	0	0	4	4	4	3	3	3
Mvmt Flow	4	0	20	16	0	36	40	812	40	12	824	16

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1786	1788	832	1778	1776	832	840	0	0	852	0	0
Stage 1	856	856	-	912	912	-	-	-	-	-	-	-
Stage 2	930	932	-	866	864	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.14	-	-	4.13	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.236	-	-	2.227	-	-
Pot Cap-1 Maneuver	64	82	372	65	84	372	786	-	-	783	-	-
Stage 1	355	377	-	331	355	-	-	-	-	-	-	-
Stage 2	323	348	-	351	374	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	52	72	372	56	74	372	786	-	-	783	-	-
Mov Cap-2 Maneuver	52	72	-	56	74	-	-	-	-	-	-	-
Stage 1	321	366	-	299	321	-	-	-	-	-	-	-
Stage 2	263	314	-	322	363	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.5	46.9	0.4	0.1
HCM LOS	D	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	786	-	-	184	136	783	-	-
HCM Lane V/C Ratio	0.051	-	-	0.13	0.381	0.015	-	-
HCM Control Delay (s)	9.8	0	-	27.5	46.9	9.7	0	-
HCM Lane LOS	A	A	-	D	E	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	1.6	0	-	-

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	41	10	898	54	19	922
Future Vol, veh/h	41	10	898	54	19	922
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	Yield	-	None
Storage Length	0	-	-	0	220	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	50	94	71	68	91
Heavy Vehicles, %	4	4	4	4	2	2
Mvmt Flow	48	20	955	76	28	1013

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2024	955	0	0	955	0
Stage 1	955	-	-	-	-	-
Stage 2	1069	-	-	-	-	-
Critical Hdwy	6.44	6.24	-	-	4.12	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.336	-	-	2.218	-
Pot Cap-1 Maneuver	63	311	-	-	720	-
Stage 1	371	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	61	311	-	-	720	-
Mov Cap-2 Maneuver	61	-	-	-	-	-
Stage 1	371	-	-	-	-	-
Stage 2	314	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	152.4	0	0.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	80	720	-
HCM Lane V/C Ratio	-	-	0.853	0.039	-
HCM Control Delay (s)	-	-	152.4	10.2	-
HCM Lane LOS	-	-	F	B	-
HCM 95th %tile Q(veh)	-	-	4.4	0.1	-

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	74	0	30	0	518	77	29	751	0
Future Vol, veh/h	0	0	0	74	0	30	0	518	77	29	751	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Stop	-	-	None	-	-	None
Storage Length	-	-	-	70	-	0	-	-	210	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	25	25	25	77	76	68	81	96	71	81	92	94
Heavy Vehicles, %	0	0	0	5	5	5	4	4	4	4	4	4
Mvmt Flow	0	0	0	96	0	44	0	540	108	36	816	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1482	1536	816	1428	1428	540	-	0	0	648	0	0
Stage 1	888	888	-	540	540	-	-	-	-	-	-	-
Stage 2	594	648	-	888	888	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.15	6.55	6.25	-	-	-	4.14	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.15	5.55	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.545	4.045	3.345	-	-	-	2.236	-	-
Pot Cap-1 Maneuver	104	117	380	111	133	536	0	-	-	928	-	-
Stage 1	341	365	-	520	516	-	0	-	-	-	-	-
Stage 2	495	469	-	334	358	-	0	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	112	380	108	128	536	-	-	-	928	-	-
Mov Cap-2 Maneuver	93	112	-	108	128	-	-	-	-	-	-	-
Stage 1	341	351	-	520	516	-	-	-	-	-	-	-
Stage 2	454	469	-	321	344	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	94.1	0	0.4
HCM LOS	A	F		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	-	-	-	108	536	928	-	-
HCM Lane V/C Ratio	-	-	-	0.89	0.082	0.039	-	-
HCM Control Delay (s)	-	-	0	131.7	12.3	9	-	-
HCM Lane LOS	-	-	A	F	B	A	-	-
HCM 95th %tile Q(veh)	-	-	-	5.3	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	4	7	3	2	4	22	555	5	8	756	19
Future Vol, veh/h	14	4	7	3	2	4	22	555	5	8	756	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Yield
Storage Length	-	-	-	-	-	-	-	-	290	-	-	250
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	50	50	35	38	50	50	69	94	63	50	87	43
Heavy Vehicles, %	4	4	4	22	22	22	3	3	3	3	3	3
Mvmt Flow	28	8	20	8	4	8	32	590	8	16	869	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1561	1555	869	1569	1555	590	869	0	0	590	0	0
Stage 1	901	901	-	654	654	-	-	-	-	-	-	-
Stage 2	660	654	-	915	901	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.32	6.72	6.42	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.32	5.72	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.32	5.72	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.698	4.198	3.498	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	90	112	348	81	102	472	771	-	-	981	-	-
Stage 1	330	354	-	424	434	-	-	-	-	-	-	-
Stage 2	449	460	-	301	331	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	80	102	348	67	93	472	771	-	-	981	-	-
Mov Cap-2 Maneuver	80	102	-	67	93	-	-	-	-	-	-	-
Stage 1	310	342	-	398	407	-	-	-	-	-	-	-
Stage 2	410	431	-	268	320	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	62.9	44	0.5	0.2
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	771	-	-	115	112	981	-	-
HCM Lane V/C Ratio	0.041	-	-	0.487	0.178	0.016	-	-
HCM Control Delay (s)	9.9	0	-	62.9	44	8.7	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.6	0.1	-	-

Streetlight Origin-Destination (OD) Graphics

AM Peak Period – Routes to Hwy 47/50

AM Peak Period– Routes from Hwy 47/50

PM Peak Period– Routes to Hwy 47/50

PM Peak Period– Routes from Hwy 47/50

Appendix D: Existing Shoulder Width Memorandum

DRAFT

TO: Aaron Groff, PE, MoDOT Project Manager

FROM: Travis Pfeiffer, PE, HNTB Project Manager

DATE: November 6, 2025

SUBJECT: MO-47 Corridor Conceptual Study – Existing Shoulder Width Technical Memo
Job No.: J6P3661
Route: MO-47
County: Franklin

The purpose of this memorandum is to outline the existing shoulder widths throughout the corridor and highlight potential deficiencies. This document is to be used in conjunction with the existing conditions information found within the Traffic and Safety Memo. Tables and exhibits were developed based on provided topographic survey, LiDAR terrain data, and existing as-built information and compared against the MoDOT Engineering Policy Guide, as well as the projects design criteria.

For this exercise, the MO-47 corridor within the project limits was broken up into three (3) sections. An exhibit displaying these sections was provided as part of this submittal, but a summary of the approximate section limits can also be seen below:

- Segment 1 (S1) – MO-100 to Independence Dr
- Segment 2 (S2) – Independence Dr to Sawmill Rd
- Segment 3 (S3) – Sawmill Rd to Interstate 44

The shoulder width deficiencies outlined in this memorandum are based on the recommendations of the MoDOT Engineering Policy Guide (EPG). The MoDOT EPG states that for rural major routes, rehabilitation projects shall provide a four-foot (4') minimum paved shoulder and new construction projects shall provide a four to ten-foot (4'-10') paved shoulder. This criterion is outlined in Tables 1, 2, and 3 below.

Existing shoulder widths were graphically evaluated with Bentley OpenRoads Designer software to determine average shoulder widths of various sections along the corridor. Upon graphical interpretation of these values, the shoulder widths were measured to be variable-width throughout the entire corridor. This was completed to check for deficiencies in comparing the measured widths with the minimum accepted widths as outlined in the design criteria. More details are outlined for each segment below.

List of Tables

Table 1: Segment 1 Shoulder Width Deficiencies 3
Table 2:Segment 2 Shoulder Width Deficiencies 4
Table 3: Segment 3 Shoulder Width Deficiencies 5

Segment 1 (S1)

Segment 1 (S1) follows MO-47 from its intersection with US-100 to Independence Drive. Segment 1 features a wide variety of shoulder widths, ranging from greater than ten feet (10'-0"), to less than four feet (4'-0"). Sixteen (16) different shoulder sections were identified and five (5) were determined to be insufficient as compared to the design criteria. The shoulder widths that did not meet design criteria for Segment 1 can be seen grayed in Table 1 below.

Table 1: Segment 1 Shoulder Width Deficiencies

Segment 1 Shoulder Width Deficiencies			
Shoulder Section Number	Average Width* (ft)	MoDOT Minimum Width** (ft)	Design Criteria Width (ft)
1	2.7	4 - 10	8 - 9
2	11.2	4 - 10	8 - 9
3	10.5	4 - 10	8 - 9
4	20.0	4 - 10	8 - 9
5	8.6	4 - 10	8 - 9
6	8.3	4 - 10	8 - 9
7	6.6	4 - 10	8 - 9
8	8.3	4 - 10	8 - 9
9	8.1	4 - 10	8 - 9
10	8.9	4 - 10	8 - 9
11	7.1	4 - 10	8 - 9
12	6.8	4 - 10	8 - 9
13	8.8	4 - 10	8 - 9
14	6.5	4 - 10	8 - 9
15	8.2	4 - 10	8 - 9
16	8.7	4 - 10	8 - 9

*Average shoulder width was determined by calculating the average value from several points measured along the corridor at regular intervals using survey data
**See MoDOT EPG Section 231.4 for preferred/minimum shoulder widths as recommended by MoDOT

Existing shoulder widths for all sections of the Missouri Route 47 Corridor can be seen in the Existing Shoulder Widths Exhibit in Appendix A.

Segment 2 (S2)

Segment 2 (S2) is defined by three different sections:MO-47 from Independence Dr to US 50 (West), US 50, and MO-47 from US 50 (East) to Sawmill Rd. Segment 2 (S2) features a wide variety of shoulder widths, ranging from greater than ten feet (10'-0"), to less than four feet (4'-0"). For Segment 2, ten (10) different shoulder sections were identified and five (5) were determined to be insufficient as compared to the design criteria. The shoulder widths that did not meet design criteria for Segment 2 can be seen grayed in Table 2 below.

Table 2:Segment 2 Shoulder Width Deficiencies

Segment 2 Shoulder Width Deficiencies			
Shoulder Section Number	Average Width* (ft)	MoDOT Minimum Width** (ft)	Design Criteria Width (ft)
15	8.2	4 - 10	8 - 9
16	8.7	4 - 10	8 - 9
17	6.8	4 - 10	8 - 9
18	8.6	4 - 10	8 - 9
19	0.0	4 - 10	8 - 9
20	7.5	4 - 10	8 - 9
21	10.0	4 - 10	8 - 9
22	8.8	4 - 10	8 - 9
23	5.9	4 - 10	8 - 9
24	5.0	4 - 10	8 - 9

*Average shoulder width was determined by calculating the average value from several points measured along the corridor at regular intervals using survey data
**See MoDOT EPG Section 231.4 for preferred/minimum shoulder widths as recommended by MoDOT

Existing shoulder widths for all sections of the Missouri Route 47 Corridor can be seen in the Existing Shoulder Widths Exhibit in Appendix A.

Segment 3 (S3)

Segment 3 (S3) follows MO-47 from its intersection with Sawmill Road to Interstate 44. Segment 3 (S3) features shoulders ranging from four-foot (4'-0") to six-foot (6'-0") in width. In segment 3, four (4) different shoulder sections were identified, and four (4) were determined to be insufficient as compared to the design criteria. The shoulder widths that did not meet design criteria for Segment 3 can be seen grayed in Table 3 below.

Table 3: Segment 3 Shoulder Width Deficiencies

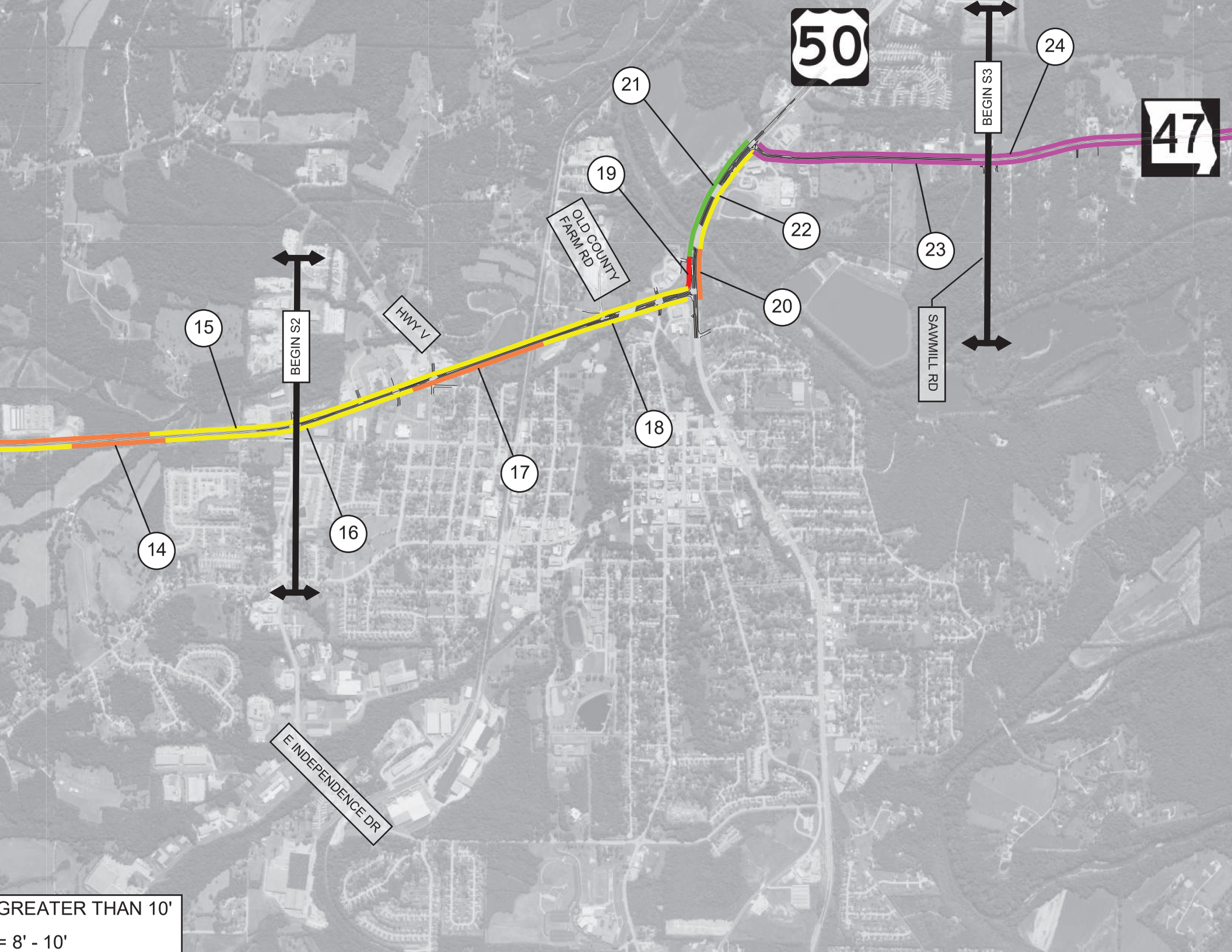
Segment 3 Shoulder Width Deficiencies			
Shoulder Section Number	Average Width*	MoDOT Minimum Width**	Design Criteria Width
	(ft)	(ft)	(ft)
23	5.9	4 - 10	8 - 9
24	5.0	4 - 10	8 - 9
25	5.2	4 - 10	8 - 9
26	5.3	4 - 10	8 - 9
27	4.8	4 - 10	8 – 9
28	4.2	4 – 10	8 – 9

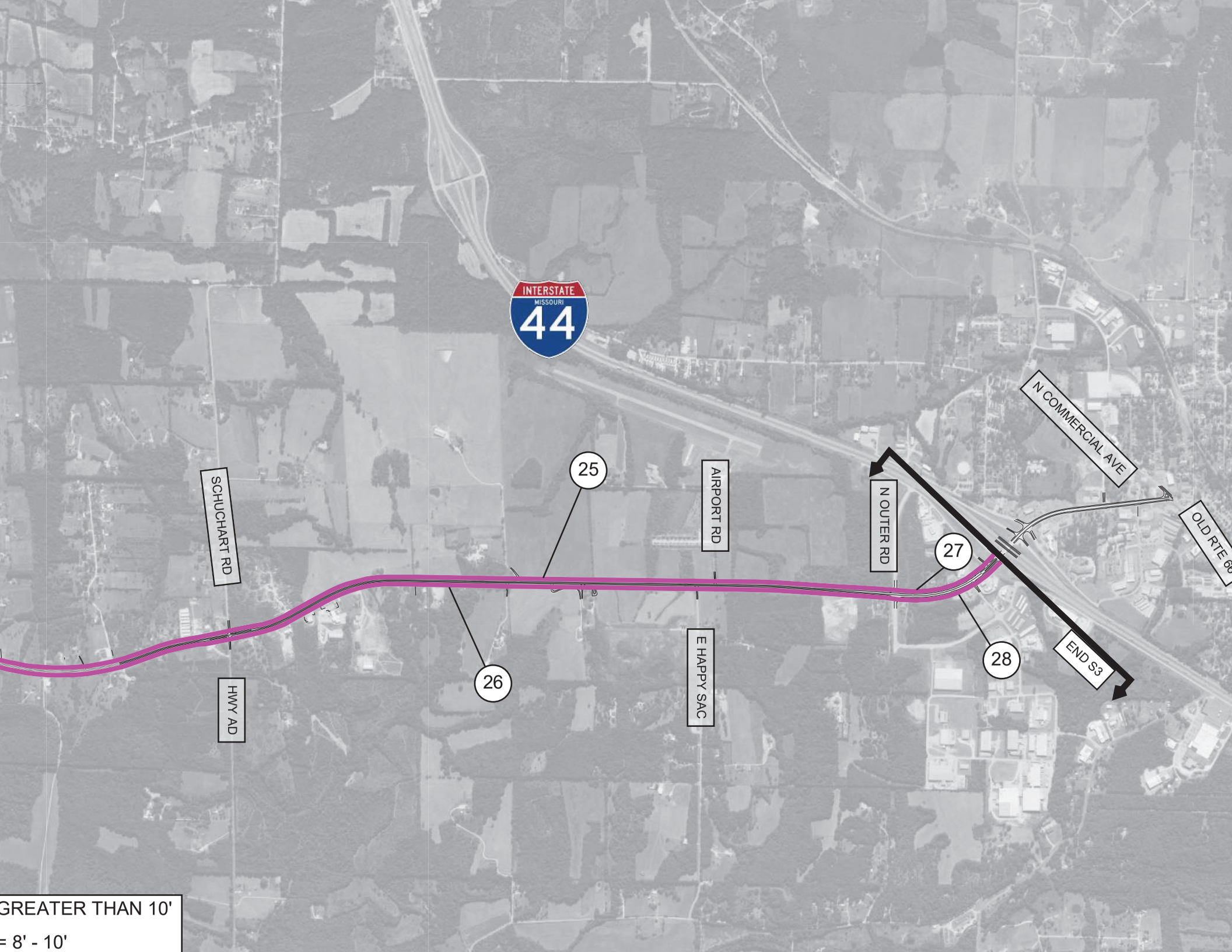
*Average shoulder width was determined by calculating the average value from several points measured along the corridor at regular intervals using survey data
**See MoDOT EPG Section 231.4 for preferred/minimum shoulder widths as recommended by MoDOT

Existing shoulder widths for all sections of the Missouri Route 47 Corridor can be seen in the Existing Shoulder Widths Exhibit in Appendix A.

Appendix A – MO Route 47 Existing Shoulder Width Exhibit

100
BEGIN S1
STEUTERMANN RD
1
2
3
4
6
7
MID AMERICAN LN
8
5
47
COUNTRY CLUB LN
9
FOREST HILLS DR
11
10
GREATER THAN 10'
= 8' - 10'


50
47
BEGIN S2
BEGIN S3
HWY V
OLD COUNTY FARM RD
SAWMILL RD
E INDEPENDENCE DR
14
15
16
17
18
19
20
21
22
23
24
GREATER THAN 10'
= 8' - 10'


INTERSTATE
MISSOURI
44
SCHUCHART RD
HWY AD
25
26
AIRPORT RD
E HAPPY SAC
N OUTER RD
27
28
N COMMERCIAL AVE
OLD RTE 6
END S3
GREATER THAN 10'
= 8' - 10'

Appendix E: Future No-Build Traffic & Safety Analysis Memorandum [Not Included]

DRAFT

Indicates Sections to be included in Final Conceptual Study Report

Appendix F: Proposed Traffic & Safety Analysis Memorandum [Not Included]

DRAFT

Indicates Sections to be included in Final Conceptual Study Report

Appendix G: Proposed Roadway Design Criteria

DRAFT

Design Criteria Memorandum

TO: Aaron Groff, PE, MoDOT Project Manager

CC: Tom Blair, PE, MoDOT SL District Engineer

FROM: Travis Pfeiffer, PE, HNTB Project Manager

DATE: November 11, 2025

SUBJECT: Missouri Route 47 Conceptual Study
Contract ID: 2023-07-80542
Job No.: J6P3661
Route: 47
County: Franklin County

The purpose of this memorandum is to document the controlling design criteria used to guide the proposed conceptual alternatives for the Missouri Route 47 Conceptual Study. The documented design criteria are based on information contained in the current MoDOT Engineering Policy Guide (EPG), AASHTO Interstate Design Standards, AASHTO A Policy on Geometric Design of Highways and Streets (Green Book) 7th Edition, and the AASHTO Roadside Design Guide.

Within this corridor roadways are categorized as Principal Arterial, Minor Arterial, Major Collector, Minor Collector, and Local roads under the current Functional Classification System. The following table summarizes the FHWA controlling design criteria as well as additional pertinent design parameters.

	Urban Principal Arterial			Rural Principal Arterial			Urban Principal Arterial		Urban Minor Arterial West of MO-47		Urban Major Collector
	Major			Major			Major		Major		Minor
	40	45	50	40	45	50	40	45	40	45	30
	Rolling			Rolling			Level		Level		Level
	WB-67			WB-67			WB-67		WB-67		WB-67
	Maximum: 12' Minimum: 11'			Maximum: 12' Minimum: 11'			Maximum: 12' Minimum: 11'		Maximum: 12' Minimum: 11'		Maximum: 12' Minimum: 10'
	9' for 11' Lanes 8' for 12' Lanes			9' for 11' Lanes 8' for 12' Lanes			9' for 11' Lanes 8' for 12' Lanes		10'		6'
	4'			4'			4'		4'		4'
	8'			8'			8'		8'		6'
	2.0%			2.0%			2.0%		2.0%		2.0%
	6' sidewalk where applicable			N/A			6' sidewalk where applicable		N/A		N/A
	305'	360'	425'	305'	360'	425'	305'	360'	305'	360'	200'
	444'	711'	926'	444'	587'	758'	444'	711	444'	587'	214'
	4.0%			8.0%			4.0%		8.0%		8.0%
	0.3%			0.3%			0.3%		0.3%		0.3%
	8.0%	7.0%	7.0%	8.0%	6.0%	5.0%	8.0%	7.0%	7.0%	6.0%	9.0%
	44	61	84	44	61	84	44	61	44	61	19
	64	79	96	64	79	96	64	79	64	79	37
	305'	360'	425'	305'	360'	425'	305'	360'	305'	360'	200'
es	16'-6"			16'-6"			16'-6"		16'-6"		16'-6"
	16'-6"			16'-6"			16'-6"		16'-6"		16'-6"
ds	15'-6"			15'-6"			15'-6"		15'-6"		15'-6"
	17'-6"			17'-6"			17'-6"		17'-6"		17'-6"
	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)			23'-0" 23'-4" (UPRR) 23'-6" (BNSF)			23'-0" 23'-4" (UPRR) 23'-6" (BNSF)		23'-0" 23'-4" (UPRR) 23'-6" (BNSF)		23'-0" 23'-4" (UPRR) 23'-6" (BNSF)
	18	22		18	22		18	22	18	22	14

Full access control on all MoDOT Facilities

* Rt. & Lt. Is referenced looking in the direction of traffic. Final shoulder width to be established following predictive safety analysis.

** Use AASHTO Green Book Table 3-8 for Rural (e_{max} = 4%) and Table 3-10 for Urban (e_{max} = 8%)

	Rural Minor Collector	Rural Local	Rural Local	Rural Local	Urban Major Collector West of MO-47	Urb
e	Minor	Minor	Minor	Minor	Minor	
	30	30	30	30	30	
	Rolling	Rolling	Rolling	Level	Rolling	
	WB-67	WB-67	WB-67	WB-67	WB-67	
	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	
	4'	4'	4'	4'	6'	
Lt.)*	4'	4'	4'	4'	4'	
	4'	4'	4'	4'	6'	
s Slope	2.0%	2.0%	2.0%	2.0%	2.0%	
ons	N/A	N/A	N/A	N/A	N/A	
ft)	200'	200'	200'	200'	200'	
relevation (ft)	214'	214'	214'	214'	214'	
**	8.0%	8.0%	8.0%	8.0%	8.0%	
	0.3%	0.3%	0.3%	0.3%	0.3%	
	9.0%	10.0%	10.0%	7.0%	11.0%	
Value	19	19	19	19	19	
lue***	37	37	37	37	37	
ft)	200'	200'	200'	200'	200'	
pal Arterial Routes	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"	
olumes ≥ 1700 vpd	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"	
Streets, and Roads	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	
ed path	17'-6"	17'-6"	17'-6"	17'-6"	17'-6"	
	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	
	12	12	12	12	12	

Full access control on all MoDOT Facilities

* Rt. & Lt. Is referenced looking in the direction of traffic. Final shoulder width to be established following predictive safety analysis.

** Use AASHTO Green Book Table 3-8 for Rural (e_{max} = 4%) and Table 3-10 for Urban (e_{max} = 8%)

** Assumed Speed Limit Due To No

	Urban Local	Urban Local	Urban Major Collector	Urban Major Collector	Urban Major Collector
	Minor	Minor	Minor	Minor	Minor
	30	30	40	30	30
	Level	Rolling	Rolling	Level	Level
	WB-67	WB-67	WB-67	WB-67	WB-67
	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'
	6'	6'	6'	6'	6'
	4'	4'	4'	4'	4'
	6'	6'	6'	6'	6'
	2.0%	2.0%	2.0%	2.0%	2.0%
	N/A	N/A	N/A	N/A	N/A
	200'	200'	305'	200'	200'
n (ft)	214'	214'	444'	214'	214'
	8.0%	8.0%	8.0%	8.0%	8.0%
	0.3%	0.3%	0.3%	0.3%	0.3%
	7.0%	10.0%	10.0%	9.0%	9.0%
	19	19	44	19	19
	37	37	64	37	37
	200'	200'	305'	200'	200'
ial Routes	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"
1700 vpd	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"
and Roads	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"
	17'-6"	17'-6"	17'-6"	17'-6"	17'-6"
	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)
	12	14	14	12	12

Full access control on all MoDOT Facilities

* Rt. & Lt. Is referenced looking in the direction of traffic. Final shoulder width to be established following predictive safety analysis.

** Use AASHTO Green Book Table 3-8 for Rural (e_{max} = 4%) and Table 3-10 for Urban (e_{max} = 8%)

** Assumed Speed Limit Due To No

sification	Rural Local	Rural Local	Urban Local	Urban Local	Urban Minor Collector	Urb
Minor Route	Minor	Minor	Minor	Minor	Minor	
mph)	40	40	40	30	35	
	Level	Level	Level	Level	Level	
	WB-67	WB-67	WB-67	WB-67	WB-67	W
)	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maximum: 12' Minimum: 10'	Maxi Mini
lder (Rt.)*	4'	4'	6'	6'	6'	
Shoulder (Lt.)*	4'	4'	4'	4'	4'	
e Shoulder	4'	4'	6'	6'	6'	
ement Cross Slope	2.0%	2.0%	2.0%	2.0%	2.0%	
commodations	N/A	N/A	N/A	N/A	N/A	
ature						
t Distance (ft)	305'	305'	305'	200'	250'	
ius w/ Superelevation (ft)	444	444	444	214'	314	
perelevation**	8.0%	8.0%	8.0%	8.0%	8.0%	
nt						
g. Slope	0.3%	0.3%	0.3%	0.3%	0.3%	
g. Slope	10.0%	10.0%	10.0%	10.0%	10.0%	
linimum K-Value	44	44	44	19	29	
himum K-Value***	64	64	64	37	49	
t Distance (ft)	305'	305'	305'	200'	250'	
ce						
e and Prinicpal Arterial Routes	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"	
utes with Volumes ≥ 1700 vpd	16'-6"	16'-6"	16'-6"	16'-6"	16'-6"	
ate Routes, Streets, and Roads	15'-6"	15'-6"	15'-6"	15'-6"	15'-6"	
ructure or ped path	17'-6"	17'-6"	17'-6"	17'-6"	17'-6"	
s	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	23'-0" 23'-4" (UPRR) 23'-6" (BNSF)	2 23'-4 23'-6
***	14	14	14	12	14	

Full access control on all MoDOT Facilities

* Rt. & Lt. Is referenced looking in the direction of traffic. Final shoulder width to be established following predictive safety analysis.

reen Book

** Use AASHTO Green Book Table 3-8 for Rural (e_{max} = 4%) and Table 3-10 for Urban (e_{max} = 8%)

** Assumed Speed Limit Due To No

Appendix H: Proposed Roadway Analysis [Not Included]

DRAFT

Indicates Sections to be included in Final Conceptual Study Report

Appendix I: Environmental Existing Conditions Memorandum

DRAFT

MEMORANDUM

FINAL

To:	MoDOT
From:	Brandon Yarbrough, HNTB
Subject:	**MO-47 Environmental Existing Conditions**
Job No.	J6P3661 & SL0082
Date:	September 11, 2025

1. Introduction

This memo serves as an environmental desktop review for the proposed MO-47 Corridor project (project) to identify any potential environmental constraints that could present challenges to construction of the project improvements. This document includes the range of environmental resources that are typically evaluated within an environmental review for a NEPA document.

1.1 Project Study Area

The study area encompasses a half mile wide and 12.4 mile long portion of MO-47, located entirely within Franklin County, Missouri. The study area extends from the MO-47 and MO-100 intersection southward along MO-47 to the intersection of MO-47 and N Outer Road (**Figure 1 attached**).

1.2 Data Sources

The data used during the review included geographic information system (GIS) data layers, aerial photographs, and published literature. The GIS data utilized included the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), Natural Resources Conservation Service (NRCS) soil survey data for Franklin County, Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) data, the U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) and topographic maps, and the U.S. Environmental Protection Agency (EPA) NEPAssist online tool. Data was accessed during July 2025.

2. Existing Conditions

2.1 Land Use and Zoning

Based on the zoning data from the cities of Washington, Union, and St. Clair as well as Franklin County, the following land uses are present within the study area. In the city of Washington, the study area is primarily split between commercial, manufacturing, and planned development designations. In unincorporated Franklin County, which encompasses areas outside of the three municipalities, approximately 30% of the study area's zoning is residential with the remaining split between manufacturing, commercial, and agricultural designations. For the city of Union, land uses present in the study area consist of residential, industrial, commercial, and non-urban district

designations. For the city of St. Clair, the land uses present in the study area consist of residential, agricultural, commercial, and industrial designations.

Surrounding land uses outside of the study area are generally an extension of what is found within the study area. Over 50% of the area surrounding the study area is dominated by residential land uses. Along US 50 in the study area there are a greater portion of commercial land uses such as those directly related to motorized vehicular activity, community shopping centers, recreational complexes, and/or uses whose operations require large scale open storage.

2.2 Community Resources

Community resources such as schools, places of worship, libraries, hospitals, and emergency responses facilities are located in the study area. Eight of these community resources are located directly adjacent to MO-47 and have the potential to be impacted by project activities. These resources are bolded in the lists below. **Figure 2** attached displays the community resources within the study area.

There are three school districts that cross the study area: the Washington School District, the Union R-XI School District, and St. Clair R-XIII School District. There are five preschool or childcare centers and no other school or educational facilities are located within the study area. The preschool and childcare facilities located within the study area include:

- The Sage Bee Prep Academy - 1901 Heritage Hills Dr, Washington, MO
- **Little Rascals Preschool - 901 Bieker Rd, Washington, MO**
- Ms. Rosie's Little Achievers, 5632 Steutermann Rd, Washington, MO
- **Little Bears Learning Center - 668 State Hwy 47, Union, MO**
- Holy Trinity Child Care - 1502 S Outer Rd E, St Clair, MO

There are seventeen places of worship and religious administration facilities found within the study area. From north to south these include:

- Peace Lutheran Church – 5 Scenic Drive, Washington
- Bridge to Faith Lutheran Church – 1008 Bieker Road, Washington
- Trinity Presbyterian Church – 727 Melinda Drive, Union
- Immaculate Conception Catholic Church – 111 N Washington Avenue, Union
- First Presbyterian Church – 105 E Main Street, Union
- First Baptist Church of Union – 801 US-50, Union
- The Rock – 517 Commercial Dr, Union
- The CrossWalk – 409 E State St, Union
- **Kingdom Hall of Jehovah Witness – 882 State Highway 47, Union**

- Grace Family Church, 600 S McKinley Ave, Union
- **Grace Baptist Church – 7145 State Hwy 47, Union**
- **Franklin County Baptist Association Building / Community Church – 785 Butterfield Drive, Union**
- RPCU – 956 Copperfield Dr, Union
- **Oak Hill Freewill Baptist Church – 7606 State Highway 47, Union**
- Liberty Baptist Church – 219 Airport Rd, St. Clair
- Holy Trinity Lutheran Church – 1500 S Outer Rd E, St. Clair
- Roots Church, 235 N Service Rd W, St. Clair

There is one library within the study area, the Scenic Regional Library – Union Branch, located at 251 Un Plz Drive.

There are two healthcare facilities located within the study area. From north to south these include:

- **Total Access Urgent Care - Washington – 1717 Madison Avenue, Washington**
- Mercy-GoHealth Urgent Care – 555 Washington Square Center, Washington

Within the study area there are four cemeteries. From north to south these include:

- Zion United Church of Christ Cemetery – 1122 N Washington Avenue, Union
- Union Cemetery – 1122 N Washington Avenue, Union
- Chiles Cemetery – 600-698 Old Country Farm Road, Union
- **Midlawn Memorial Gardens Cemetery – 7280 State Highway 47, Union**

The Union Community Center is located at 1329 Union Avenue, Union, MO within the study area.

The Union Police Department is located at 119 South Church Street and is within the study area. The Union Fire Protection District Station 2 is located at 201 N Church Street and is within the study area.

While these facilities don't prohibit expansion of the MO-47 facility, impacts to them during construction and long term as a result of the new facility should be considered during design. Maintaining access to these facilities is desired at all times and failure to do so could be constituted an impact from the project.

2.3 Air Quality

The Clean Air Act (CAA) requires adoption of air quality standards, quality control regions, and state implementation plans (SIPs). The federal government established National Ambient Air Quality Standards (NAAQS) to protect public health, safety, and welfare from known or anticipated effects of sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. Missouri established additional criteria for hydrogen sulfide and sulfuric acid. Transportation can contribute to four of six NAAQS pollutants: ozone, carbon monoxide, particulate matter, and nitrogen dioxide. Transportation conformity with the NAAQS ensures federally

funded or approved transportation plans, programs, and projects conform to air quality objectives established in SIPs. MoDOT is responsible for implementing the conformity regulation in nonattainment and maintenance areas.

A search of the EPA NEPAssist online tool showed the study area is completely located in the 2008 ozone NAAQS 8-hour standards "maintenance" area for the transportation-related pollutants, meaning that the area was previously designated as "nonattainment," but has since improved and demonstrated attainment standards to meet the NAAQS. As a result, air quality is not expected to be limiting factor in the projects development.

As the project progresses through design and construction, air quality standards should me monitored through the EPA and other sources to ensure the project doesn't negatively impact air quality.

2.4 Noise

Noise-sensitive receptors (residences, schools, churches, etc.) are located within study area. For all "Type I" federal, state, or federal-aid highway projects in the State of Missouri, traffic and construction noise impact analysis and abatement assessment is dictated by the United States Code of Federal Regulations Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, and the MoDOT Traffic Noise Policy, located in the Engineering Policy Guide Section 127.13. If the project causes an increase in traffic volumes, or a change in horizontal/vertical alignment, there is potential for the project to result in noise impacts. Noise impacts will be investigated during subsequent project phases and fully analyzed during NEPA clearance.

2.5 Parks, Recreation, and Section 4(f) Resources

The U.S. Department of Transportation (USDOT) refers to publicly owned land from parks, recreation areas, and wildlife and waterfowl refuges, or land from historic sites that are listed or potentially eligible or listing on the National Register of Historic Places (NRHP), as "Section 4(f) properties" because they have special status under the provisions of Section 4(f) of the USDOT Act of 1966 (49 USC Part 303 and 23 CFR Part 774). Section 4(f) states that the administration may not approve the use of a Section 4(f) property unless a determination is made that 1) there is no prudent and feasible avoidance alternative to the use of the property and 2) the action includes all possible planning to minimize harm to the property; or if the use of the property, including any measures to minimize harm (avoidance, minimization, mitigation, or enhancement measures) will have a de minimis impact on the Section 4(f) property. In addition, any public park or recreation land that has used funds from the National Park Service's (NPS) Land and Water Conservation Fund (LWCF) for acquisition or development is protected under Section 6(f) of the LWCF Act.

To be considered a Section 4(f) property, parks, recreation areas, or trails must meet all the following criteria:

- **It must be publicly owned** – The resource must be owned by a local, state, or federal government agency. The Federal Highway Administration (FHWA) recognizes the following three types of public ownership:

  - Fee simple ownership – The land is solely owned by a government entity for park, recreation, or refuge purposes.
  - Permanent easement for Section 4(f) purposes – The government agency does not own the land but possesses an easement for Section 4(f) activities.
  - Lease agreement for Section 4(f) purposes – The government agency does not own the land but has a lease agreement, typically long-term, for Section 4(f) activities.

- **It must be open to the public** – A property is considered to be open to the public if access is permitted to the entire facility (except for wildlife and waterfowl refuges) to the entire public during normal hours of operation. If a publicly owned recreation facility was only open to select groups, it would not be considered open to the public.
- **Its major purpose must be for park, recreation, or refuge activities** – Lands used primarily for non-recreational purposes but where recreational activities are incidental, secondary, occasional, or dispersed activities similar to park, recreation, or refuge activities take place are not considered Section 4(f) activities.
- **It must be significant as a park, recreation area, or refuge** – The term "significant" means that in comparing the availability and function of the park, recreation area, or refuge, with the park, recreation, or refuge objectives of the agency, community, or authority, the property in question plays an important role in meeting those objectives. Properties are presumed to be significant in the absence of a determination by the official determination by the official with jurisdiction over the property. However, the FHWA will ultimately make the determination of significance.

Data from Franklin County, the city of Washington, the city of Union, and the city of St. Clair identified one recreational resource within the study area. One park, the Union Access Nature Reserve (Union Access) was found within the study area. The park is located in the city of Union along the Bourbeuse River where MO-47 intersects with US 50. Additional park information is listed in **Table 1** and the location is shown on **Figure 2.**

Table 1. Parks/Recreational Areas Identified within the Study Area

Name	City\County	Type	Amenities	Designation	Total Acres within Study Area
Union Access	Union\Franklin	Nature Reserve	Fishing and boat access to the Bourbeuse River	4(f)/6(f)	9.90

Part of Union access received LWCF funding and is considered a Section 6(f) resource. Impacts to the Union Access should be avoided if possible to avoid Section 4(f) and Section 6(f) impacts. If impacts cannot be avoided, coordination with FHWA, the Missouri Department of Conservation (MDC), Missouri State Parks, and the National Park Service (NPS) should occur to determine if the impact is *de minimis* or if mitigation or conversion is required.

2.6 Historic Sites/Cultural Resources

A search of the NRHP and Missouri Department of Natural Resources (MoDNR) online map identified two previously conducted architectural surveys within the study area, though no resources are listed on the NRHP. The architectural surveys are listed in **Table 2** and shown on **Figure 2**.

Table 2. Missouri Architectural Surveys within the Study Area

Name	Date Listed	Survey Number	City	County
Washington CBD Phase IV	07/28/1992	FRAS003	Washington	Franklin
African-American Schools, Phase I	06/30/1999	SW-AS-021	Union	Franklin

The Washington CBD Phase IV was completed in 1992 by Thomason and Associates and is split into two surveys within the city of Washington. One of the surveys is located along the study area edge, approximately a half mile northwest of the northern most point of MO-47 within the study area. This area is unlikely to be impacted by the project. The second survey location is approximately 250 feet west of MO-47 within a large parking lot area, near what is currently an Applebees. This location is in close proximity to the project and could have impacts.

The African-American Schools, Phase I was completed in 1999 by Kremer and Rogers. The survey is located just north of US 50 and approximately 1,800 feet west of US 47 within the study area. This area is unlikely to be impacted by the project.

Information on the archaeological resources within the study area is not publicly available and would require coordination with a registered archaeologist. This information will be obtained during the environmental documentation phase once alternatives are chosen.

Should construction activities result in impacts to cultural resources, MoDOT will coordinate with the Missouri State Historic Preservation office (SHPO) related to the Section 106 process during the NEPA phase. At that time, appropriate mitigation strategies should be developed.

2.7 Streams and Water Quality

Section 303(d) of the Clean Water Act (CWA) requires states to identify all water bodies where state water quality standards are not being met. Water quality in Missouri is governed by the Code of State Regulations 10 CSR 20-7.031 and is administered by the MoDNR. The MoDNR maintains an impaired waters list, which was reviewed to determine if any surface waters within or near the project area contained impairments that require a Total Maximum Daily Load (TMDL).

The study area lies within, and is drained by, the Lower Missouri-Crooked (10300200) eight-digit hydrologic unit code (HUC 8) for the north third and the southern two-thirds the Bourbeuse (07140103) HUC-8 subbasins of the Missouri River Basin. Approximate lengths of surface waters within the study area include the following:

- 24,000 feet of the Dubois Creek and associated unnamed tributaries,

- 18,000 feet of Birch Creek and associated unnamed tributaries,
- 34,000 feet of Bourbeuse River and associated unnamed tributaries,
- 35,000 feet of Busch Creek associated unnamed tributaries,
- 29,000 feet of Fenton Creek and associated unnamed tributaries,
- 8,200 feet of Flat Creek and associated unnamed tributaries, and
- 11,500 feet of Happy Sock Creek associated unnamed tributaries.

The water quality of these resources varies depending upon factors such as water permanence, presence or absence of in-flowing streams, surrounding vegetation, and surrounding land use. Only the Bourbeuse River is listed in the Section 303(d) Impaired Waters List with a primary pollutant of atmospheric deposition of pathogens leading to mercury in fish tissue and *E. coli* and is categorized at a level 5. Category 5 waters have not attained water quality standards (WQS), are impaired or threatened for one or more uses, and require a TMDL. Currently, there is no approved TMDL plan in place for the Bourbeuse River. The rivers, streams, and impaired waters are shown on **Figure 3.**

Major influences on water quality are sedimentation, contamination from street surface runoffs, agents for weed, insect, and rodent control, contamination from chemical or other toxic material spills, and groundwater pollution. Sediment loads in rivers, streams, and wetlands can have an impact on drinking water quality and aquatic animals by limiting oxygen absorption. Sedimentation may result from bridge and drainage facility construction and erosion resulting from the proposed project construction. Standard engineering best management practices (BMPs) of mitigation, such as temporary erosion, sediment, and water pollution control, should be utilized during construction to minimize sedimentation and water quality impacts.

There are a total of 209 groundwater wells within the study area. According to the MoDNR's online GeoStrat data, the groundwater elevation throughout the project area ranges from approximately 475 to 575 feet above the mean sea level. Drinking water is supplied to the study area from Franklin County PWSD 1 and 3. During construction, measures should be taken to avoid impacts to groundwater wells.

The MoDNR is responsible for administering the National Pollutant Discharge Elimination System (NPDES) to protect waters of the state from sediment and other contaminants. Any project that disturbs greater than one acre from construction activities requires a stormwater permit from the MoDNR. The primary requirement of the stormwater permit is the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP must specify the BMPs to be employed and what controls will be implemented to minimize the contamination of stormwater runoff associated with construction activity. The Contractor is responsible for developing the SWPPP and obtaining the stormwater permit from the MoDNR. The Contractor will also obtain any site disturbance permits, as necessitated by the cities of Washington, Union, and St. Clair.

Improvements to the MO-47 corridor will require attention to water quality, streams, and groundwater wells specifically during the construction phase. Coordination with MoDNR may be required.

2.8 Wetlands

Wetlands, waterways, lakes, natural ponds, and impoundments are regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA), which requires a permit to authorize the discharge of dredged or filled material into Waters of the United States (WOTUS) (33 U.S. Code § 1344). Executive Order 11990, Protection of Wetlands, directs federal agencies to implement "no net loss" measures for wetlands (42 Federal Register 26951). These no net loss measures include a phased approach to wetland avoidance, then minimization of impacts if wetlands cannot be avoided, and finally mitigation of unavoidable impacts.

The USFWS NWI mapping tool was reviewed to determine locations of potential wetlands within the study area. The types and acreages of the NWI data located within the study area are listed in **Table 3**. NWI wetlands within the study area are shown on **Figure 3.**

Table 3. NWI Data

Water Resource Type	Total within Study Area (Acres)
Freshwater Emergent Wetland	1.7
Freshwater Forested/Shrub Wetland	69.64
Freshwater Pond	49.87
Lake	28.41
Riverine	55.39

At this time the potential for wetland impacts cannot be determined, the presence of wetlands in NWI data needs to be field verified. During a future NEPA phase a field investigation will need to be conducted to determine the presence of wetlands within the project's construction footprint. If impacts to wetlands are determined a 404 permit will need to be obtained from USACE and the appropriate mitigation completed.

2.9 Floodplains

Executive Order 11988 on Floodplain Management directs federal agencies "to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative."

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) and the National Flood Hazard Layer (NFHL) showing mapped 100-year floodplains and regulatory floodways were available The FEMA NFHL GIS data was reviewed to identify floodway and floodplain data within the study area. The NFHL identified 405 acres of regulatory floodway and 295 acres of regulatory 100-year floodplain within the study area. Both floodway and floodplains are located directly adjacent to US 47 along the Bourbeuse River, Flat Creek, and Fenton Creek within the city of Union, along Dubois Creek in unincorporated Franklin County between the cities of Washington and Union, and along a tributary of Busch Creek in the southern portion of the city of Washington. Floodplains and floodways are shown in **Figure 3.**

Impacts to floodplains and floodway should be determined during a future NEPA phase. At this time the appropriate mitigation and permits be identified to be obtained during the construction phase. It is anticipated that floodplain permits will need to be obtained from the Missouri State Emergency Management Agency (SEMA) if floodplains are impacted by construction activities.

2.10 Threatened and Endangered Species

Federally listed threatened and endangered species are subject to the protection under Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16USC 1531 et seq.). The ESA provides protection of animal and plant species that are in population decline and in jeopardy of becoming extinct.

A desktop survey was completed utilizing the USFWS IPaC tool and the MDC Natural Heritage Database in July 2025 to identify the known listed species within the project corridor. The following species were listed based on the above review:

Table 4. Listed Threatened and Endangered Species

Common Name	Scientific Name	Federal Status[1,2]	State Status[2]
Monarch Butterfly	*Danaus plexippus*	Proposed Threatened	Not Listed
Western Regal Fritillary	*Argynnis idalia occidentalis*	Proposed Threatened	Not Listed
Elephantear	*Eleocharis lanceolata*	Not Listed	Endangered
Pink Mucket (pearlymussel)	*Lampsilis abrupta*	Endangered	Endangered
Salamander Mussel	*Simpsonaias ambigua*	Proposed Endangered	Not Listed
Scaleshell Mussel	*Leptodea leptodon*	Endangered	Endangered
Sheepnose Mussel	*Plethobasus cyphyus*	Endangered	Endangered
Snuffbox Mussel	*Epioblasma triquetra*	Endangered	Endangered
Spectaclecase	*Cumberlandia monodonta*	Endangered	Endangered
Winged Mapleleaf	*Quadrula fragosa*	Endangered	Endangered
Ebonyshell	*Reginaia ebenus*	Not Listed	Endangered
Lake Sturgeon	*Acipenser fulvescens*	Not Listed	Endangered
Crystal Darter	*Crystallaria asprella*	Not Listed	Endangered
Flathead Chub	*Platugobio gracilis*	Not Listed	Endangered
Eastern Hellbender	*Cryptobranchus alleganiensis*	Endangered	Endangered
Plains Spotted Skunk	*Spilogale interrupta*	Not Listed	Endangered
Gray Bat	*Myotis grisescens*	Endangered	Endangered
Indiana Bat	*Myotis sodalis*	Endangered	Endangered
Northern Long-eared Bat	*Myotis Septentrionalis*	Endangered	Endangered
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	Not Listed

1 – USFWS IPaC Tool
2 – MDC Natural Heritage Website

According to the IPaC Resource Report, there is one USFWS designated critical habitat (Indiana Bat) and two proposed USFWS designated critical habitats (Sheepnose mussel and Snuffbox mussel) within the study area.

Critical habitat for the Indiana bat includes the entire study area. Specifically cave 009 and 017 in Franklin County according to the Federal Register. The specific locations of the caves are not available, but any commercialization or disturbance of caves or removal of foraging and roosting habitat should be avoided as to not disturb any potential Indiana bats utilizing these caves.

Critical habitat for the Sheepnose and Snuffbox mussels is along the Bourbeuse River within the study area.

Due to requirements for additional protections of the Bald and Golden Eagle as well as migratory birds, further research is included below regarding these species.

Bald Eagle

The bald eagle is not a listed threatened or endangered species; however, it is still afforded protection by the federal government under the Bald and Golden Eagle Protection Act (BGEPA) and the MBTA. The BGEPA provides for the protection of bald and golden eagles by prohibiting the taking, possession, and commerce of such birds, except under certain specified conditions. There is a probability of presence of nesting habitat for bald eagles within the study area, particularly through the breeding season which is October 15th through August 31st. According to the USFWS, bald eagles generally select the tops of the tallest trees to build nests, with limbs strong enough to support them. Nests are four to five feet wide and two to four feet deep but can reach 10 feet across. Eagles tend to use the same nest each year, adding additional material. Additionally, eagles tend to choose nesting spots within clear view of a water body capable of foraging. Due to the lack of nesting trees within or adjacent to the Project Area, the proposed project would not result in the taking of bald or golden eagles.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. Provisions are in place for the protection of migratory birds, parts, nests, eggs, or products. Under the MBTA, “migratory birds” includes all birds native to the U.S. and the regulations pertain to any time of the year, not just during migration. Various bird species could be using existing structures within the Project Area for nesting. To comply with the MBTA, nests of protected species cannot be disturbed when active (eggs or young are present). No bridges are within the study area. If migratory birds are found to be nesting, then a protective Job Special Provision (JSP) will be put in place to avoid conflict with the MBTA and follow up with the MDC will be initiated. In addition, construction will need to be conducted outside of nesting season which is considered April 1st to July 31st in Missouri. Based on the above conservation measures, impacts to migratory birds would be minimal.

All efforts should be made to avoid direct or indirect impacts to threatened or endangered species and their habitat. Continued coordination with USFWS will be necessary during the NEPA, design and construction phases. Additional investigations such as bat or mussel surveys may be required during future phases to assess the potential extent of impacts. Should habitat be impacted, mitigation may be necessary through coordination with USFWS.

2.11 Hazardous Material/Waste Sites

A search of the MoDNR regulated and hazardous petroleum storage tank case data from the online petroleum storage tank portal, updated on March 24, 2020, identified one operating underground storage tank that has a no further action letter issued with restriction and four former underground storage tank facilities having no further action letter issued with restriction within the study area. The operating underground storage tank is listed in **Table 5** and displayed on **Figure 3**. Additionally, the data from the EPA Hazardous Waste facilities explorer and EPA Envirofacts database was used and identified 182 potential hazardous material sites within the study area. Of these listed sites, two were considered as potentially hazardous waste sites, a brownfield site, and an environmental notice site. These are listed in **Table 5** and displayed on **Figure 3**. The remaining EPA listed sites are attached as **Attachment A**.

Table 5. Hazardous Material/Waste Sites within the Study Area

Name	Type	Address	City
Wallis Petroleum #345	Underground Storage Tank	1445 N Main Street	St Clair
B & S Heating & Cooling	Brownfield	219 S. Oak Street	Union
Bartle Smelter Union	Environmental Notice	1360 Riverview Drive	Union

* Source: EPA

Active hazardous waste sites should be avoided to the extent possible. If avoidance is not possible, appropriate mitigation measures should be developed through coordination with MoDNR and MoDOT. The three active hazardous material sites within the study area are not located adjacent to MO-47 and are unlikely to be impacted by the project.

2.12 Geology and Soils

Geotechnical data from the MoDNR and the NRCS was assessed for the study area. The topography is hilly throughout the study area as you move south, approaching the limits of the city of Union the topography is generally flat and remains generally flat with a slight increase until just north of St. Clair where the topography plateaus. The geology of the area consists of limestone and shale, with minor sandstone and coal bedrock. The surficial materials range from 0 – 20 feet thick and consist of moderate to low permeability k-residuum, L-residuum, and e-loess. The GeoSTRAT online interactive map indicated that the uppermost bedrock is Ordovician Cotter Dolomite, Ordovician Jefferson City Dolomite, and Ordovician Roubidoux Formation.

The study area is located in the Washington East, Union, Moselle, and Saint Clair quadrangles. The Washington East quadrangle has a cave density of two, Union quadrangle has a cave density of six, Moselle quadrangle has a cave density of one, and Saint Clair quadrangle has a cave density of four. There is one documented limestone mine located within the study area. The exact location of caves should be determined during a geotechnical investigation during the design phase, efforts should be made to avoid these areas to the extent possible as caves

present challenges to construction, are locations that can cause potential groundwater contamination, and are often habitats for certain species of bats.

The NRCS Soil Survey classifications of the study area are shown in **Table 6**. The soil that is most common throughout the study area consists of Wrengart Silt Loam with 34.5%. The other 65.5% is split between various silt loams, rock outcrop units, complexes, hobson loam, lily-holstein-rampsey loams, sandy loams, pits and quarry, and water. According to the MoDNR and USGS earthquake data, earthquakes occur frequently throughout the state at small scales. MoDNR data indicated that one earthquake was historically recorded near or within the study area. According to the MoDNR GeoSTRAT online database, there are no known or recorded sink holes within the study area.

Table 6. Soil Types in the Study Area

Map Unit Name	Percent in Study Area
Menfro Silt Loam	7.7%
Useful Silt Loam	19.2%
Useful-Gatewood Complex	0.1%
Haymond Silt Loam	9.1%
Haymond-Relf Complex	0.1%
Moko-Rock Outcrop Complex	2.7%
Gatewood Very Gravelly Silt Loam	6.3%
Wrengart Silt Loam	34.5%
Union Silt Loam	2.2%
Beemont Very Gravelly Silt Loam	0.1%
Hobson Loam	0.6%
Lily-Holstein-Ramsey Loams	1.9%
Lily-Hobson-Ramsey Complex	0.6%
Hartville Silt Loam	8.8%
Racoon Silt Loam	0.4%
Possumtrot Fine Sandy Loam	0.9%
Gladden Silt Loam	2.3%
Cedargap Gravelly Silt Loam	0.5%
Pits, Quarry	0.6%
Water	1.3%

*Source: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

A search of the NRCS soil surveys for Franklin County indicated that approximately 300 acres of the soil within the study area is classified as prime farmland. The location of the prime farmland is shown on **Figure 3**.

Coordination with NRCS should be completed during the NEPA phase and during construction to document and gain clearance for impacts to prime farmland.

2.11 Demographics and Title VI

Demographic data from the U.S. Census Bureau's 2023 American Community Survey (ACS) Five-Year Estimates were used to identify the demographics at the block group level within the study area.. The study area is located within the municipal limits of the cities of Washington, Union, and St. Clair, Missouri. The total racial

makeup of the 15 block groups within the study area is greater than 50% of white, non-Hispanic individuals. Census Tract 8006.06, Block Group 1 has the highest percent of minority population (22% of the Block Group population). **Table 7** identifies the percentage of each race for the study area block groups.

All Federal agencies must comply with Title VI of the 1964 Civil Rights Act (Title VI). Under Title VI and related statutes, each Federal agency is required to ensure that no person is excluded from participation in, denied the benefit of, or subjected to the discrimination under any program or activity receiving federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion.

FHWA administers its governing statutes to identify and avoid discrimination by:

1. Identifying and evaluating environmental, public health, and interrelated social and economic effects of FHWA programs, policies, and activities;
2. Considering alternatives to proposed programs, policies, and activities where such alternatives would result in avoiding; and
3. Providing public involvement opportunities and considering the results thereof, including providing meaningful access to public information concerning the human health or environmental impacts and soliciting input from affected populations in considering alternatives during the planning and development of alternatives and decisions."

Census data was utilized to assess the Limited English proficiency (LEP) data for the study area block groups. The LEP percentage is defined as the percentage of all individuals over five years of age who speak a language other than English and speak English less than "very well." As of 2016, Table B16001 (Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over) no longer includes city (place), census tract, or block group data. The smallest geographical area data that is available for the study area is census block groups. Three of the 15 block groups within the study area have LEP population, with Census Tract 8002.02, Block Group 3 having an LEP percentage of approximately 3.7%. **Table 7** identifies the percentage of each minority type and LEP for the study area block groups. The percent of over-all minority population for each block group are shown in **Figure 4** and percent of LEP are shown in **Figure 5**.

Table 7. Racial Makeup and Limited English Proficiency Percentage of the Study Area

Census Area	White Alone	Black or African American Alone	Hispanic or Latino	American Indian and Alaskan Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some Other Race alone	Two or More Races	Limited English Proficiency
CT 8002.02 BG 1	90.9%	0.0%	3.8%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%
CT 8002.02 BG 2	99.8%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%
CT 8002.01 BG 4	83.8%	0.0%	4.4%	0.0%	0.0%	0.0%	0.0%	11.8%	0.0%
CT 8002.01 BG 3	95.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.9%	0.0%

Census Area	White Alone	Black or African American Alone	Hispanic or Latino	American Indian and Alaskan Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some Other Race alone	Two or More Races	Limited English Proficiency
CT 8002.02 BG 3	88.4%	0.0%	8.7%	0.0%	1.1%	0.0%	0.0%	1.9%	3.7%
CT 8006.06 BG 1	78.0%	4.6%	7.0%	0.0%	2.7%	0.0%	0.0%	7.8%	1.2%
CT 8009.03 BG 2	85.6%	1.3%	1.6%	0.0%	0.2%	0.0%	0.0%	11.2%	0.0%
CT 8006.03 BG 2	96.2%	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.4%
CT 8006.06 BG 2	99.1%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CT 8006.05 BG 2	97.2%	0.0%	2.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
CT 8006.04 BG 2	94.6%	0.1%	1.8%	0.0%	3.0%	0.0%	0.0%	0.6%	0.8%
CT 8006.03 BG 1	94.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	0.0%
CT 8006.03 BG 3	88.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.7%	0.0%
CT 8006.04 BG 1	92.3%	0.9%	0.0%	0.3%	0.0%	0.0%	0.2%	6.3%	0.0%
CT 8006.05 BG 3	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

*Source: ACS 5-Year 2023 Data

Disproportionate impacts to communities should be avoided. During the NEPA phase of the project, sensitive communities should be identified and impacts minimized to them.

3. Conclusion

The study area contains several features both socioeconomic and natural environment that could be impacted by this project. Impacts to these features should be minimized and mitigated as necessary during future study phases and construction. Below contains a short summery of these features and future considerations.

- Land Use – The study area primarily contains a mixture of residential, agricultural, and commercial uses.
- Community Resources – The study area contains a mixture of schools, places of worship, libraries, hospitals and emergency response facilities throughout the corridor. Eight of these resources reside directly adjacent to MO-47. Access to these facilities should be maintained during and after construction.
- Air Quality – The study area lies within an attainment area according to the EPA for NAAQS 8-hr Standards. Air quality should be considered during subsequent project phases to ensure negative impacts to the region's air quality would not result.
- Noise – Noise sensitive receptors are present along the MO-47 corridor. A full noise study should be completed, and the necessary mitigation considered during the NEPA, design and construction phases of the project.

- Parks and Recreation Areas – One Section 4(f)/Section 6(f) resource, Union Access, is adjacent to the MO-47 corridor. Additional details will be required to determine the type of Section 4(f) impact and documentation needed for any impacts to Union Access. Impacts to this should be avoided, if they cannot be a *de minimis* determination or mitigation will be required.

- Historic Sites and Cultural Resources – No known listed cultural resource sites or historic structures are located within the study area. Surveys of areas to be impacted by a professional archaeologist and coordination with SHPO, by MoDOT if required, will occur during future phases of the project.

- Streams and Water Quality – Seven streams or rivers are contained within the study area with only the Bourbeuse River having water quality concerns. These concerns should be considered during future project phases. Over 200 groundwater wells are contained within the study area, impacts to these should be avoided or minimized. A NPDES permit will be required during the construction phase of the project.

- Wetlands – Wetlands are present throughout the study area with several wetland complexes adjacent or crossed by MO-47. Impacts to wetlands should be minimized as much as possible. Impacts will require coordination with USACE, a 404 permit, and appropriate mitigation.

- Floodplains – Several floodplains are present throughout the study area with existing MO-47 crossing several. Impacts to floodplains should be minimized, but if impacted these impacts should be appropriately mitigated and floodplain permits obtained from SEMA prior to construction.

- Threatened and Endangered Species – The study area contains critical habitat for several listed threatened or endangered species. Coordination with the USFWS will be necessary during the NEPA, design and construction phases to avoid and mitigate potential impacts to these sensitive species. This could include field investigations such as bat or mussel surveys to determine the extent of potential impacts.

- Hazardous Materials – Three known sites exist within the study area that impacts should be avoided if possible. Coordination with MoDNR and MoDOT will be necessary during subsequent project phases if these sites are impacted.

- Geology and Soils – The study area contains 300 acres of prime farmland. Coordination with the NRCS will be necessary prior to construction to mitigate impacts to prime farmland. Additionally, the area contains a high density of karst topography. The exact location of many of these caves is unknown so investigations of impacted areas will be necessary to minimize impacts to the extent possible.

- Demographics and Title VI – The study area is primarily comprised of people who identify as white alone and the limited English proficiency level is sub 4% throughout the block groups. Though the potential for disproportionate impacts is low, once impacted areas are identified, they should be analyzed to ensure no communities are disproportionately impacted.

Overall, the project has the potential to impact a number of socioeconomic or natural resources. A full investigation of these resources will be necessary prior to construction and documented in an environmental document. None of these resources are a “fatal flaw” that would inhibit the advancement of the project as all can be reasonable mitigated if necessary.

4. References

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MO-47 Environmental Existing Conditions Memo – Attachment A
Hazardous Material Sites

Name	Type	Address	City
Wallis Petroleum #345	Underground Tank	1445 N Main Street	St Clair
B & S Heating & Cooling	Brownfield	219 S. Oak Street	Union
Bartle Smelter Union	Environmental Notice	1360 Riverview Drive	Union
River View Mhp	State Master	Union	union
Atro Engineered Systems	Tri Reporter/ Osha Establishment	6 Bolte Ln	St Clair
Belmont Homes Warehouse	State Master	1931 North Service Road	St Clair
Fast Formliners Inc.	Osha Establishment	1005 Miller Street	St Clair
Hamilton Creek Estates	Icis-Npdes Non-Major, Storm Water Construction	22211 Hwy Ad	St Clair
Jerrys Quality Woodworks Inc	State Master	10 Bolte Ln	St Clair
Sinclair Oil Co	State Master, Unspecified Universe	8290 Hwy 47	St Clair
Tlc Lines Inc	State Master, Unspecified Universe	1 Tlc Parkway	St Clair
Anglin Engineering Dba Jerrys Quality Wood Working	Vsqg	10 Bolte Ln	St Clair
Mobil Serv Sta 05-Kgb	State Master	1445 N Main St	St Clair
Modot St Clair	Unspecified Universe	2273 N Service Rd E	St Clair
Vogelgesang Towing	Icis-Npdes Non-Major, Storm Water Construction	8207 Hwy. 47	St Clair
Casablanca Subdivision	Icis-Npdes Non-Major, State Master, Storm Water Construction	Airport Road	St Clair
Fast Lane St Clair	State Master	8299 Hwy 47	St Clair
Fedex Freight Inc Str	Icis-Npdes Non-Major	9 Bolte Lane	St Clair
Mobil Gas Mart	State Master	1445 N Main	St Clair
River's Edge Products, Inc	Icis-Npdes Non-Major, Storm Water Construction	Highway 47	St Clair
St Clair Municipal Airport	State Master	224 Airport Rd	St Clair
St Clair Regional Airport	State Master	200 Airport Rd	St Clair
Streamline Mhp	State Master	862 S Outer Rd	St Clair
Adolph A Leibach - Union	State Master	Highway 47 R 3 #769	Union
Als Gas & Lube	State Master, Unspecified Universe	Oak St & Hwy 50	Union
Amerenue Franklin District Headquarters	State Master, Vsqg	500 E Independence Ddr	Union
Autozone Development	Icis-Npdes Non-Major, State Master, Storm Water Construction	Se Corner of Hwy 50/Mckin	Union
Bolzenius Tire Llc	State Master	301 Pine St	Union

Name	Type	Address	City
Bourbeuse Flood Removal Epa Vii	State Master, Unspecified Universe	1310 E Independence	Union
Brown Shoe Co	State Master, Tri Reporter, Unspecified Universe	410 South Mckinley	Union
Brush Creek Sewer Dist,	State Master	300 E. Main	Union
Brush Creek Sewer District	Icis-Npdes Unpermitted	400 E Locust Street Room 206	Union
Bud Anderson Buick Pontiac Gmc	Sqg, State Master	1000 N Church St	Union
Cedar Vale Mhp	State Master	Union	Union
Children's Factory Llc	Osha Establishment	510 S. Mckinley Ave	Union
Clearview Elem School	State Master	Union	Union
Climate Express Inc	Air Emissions Classification Unknown, Air Minor	527 Commercial Drive	Union
Counts Bros Ford Body Shop	State Master, Unspecified Universe	400 S Church	Union
Counts Bros Ford Inc	State Master, Unspecified Universe	319 S Church St	Union
Custom Compounders	Compliance Activity, Formal Enforcement Action	60 Hi-Line Drive	Union
Custom Compounders Inc	Pesticide Producer	60 Hiline Dr	Union
Dawson Quarry #1	Air Emissions Classification Unknown, Air Minor, State Master	Highway 47	Union
Dickey Bub	Icis-Npdes Non-Major, Storm Water Construction	1 Union Village Shopping Center	Union
Eagle Valley Subdivision	Icis-Npdes Non-Major, Storm Water Construction	3000's On Hwy 47 From	Union
East Central Truck & Trailer Repair	Air Minor	545 Commercial Drive	Union
Eastern Missouri Concrete-Union Plant #98	Air Minor, State Master	Hwy 47 & College Road	Union
Emc Plant 98 Union	Icis-Npdes Non-Major, State Master, Storm Water Industrial	Route 3, Box 769	Union
Forest Hills Development	Icis-Npdes Non-Major, Storm Water Construction	967 Competitive Drive	Union
Forest Hills Wwtf	Icis-Npdes Non-Major, State Master	Rock Industrial Blvd	Union
Franklin Baptist Assn-Well #1 Treatment	Water Treatment Plant	785 Butterfield Dr	Union
Franklin County Governmen	State Master	400 E Main	Union
Franklin County Highway Dept-Riverview	State Master	1360 Riverview Drive	Union

Name	Type	Address	City
Franklin County Judicial	Icis-Npdes Non-Major, State Master, Storm Water Construction	Block 66	Union
Franklin County Oil Bulk Plant	State Master, Unspecified Universe	8 Franklin	Union
Franklin County Service Board	Icis-Npdes Non-Major, Storm Water Construction	1312 Church St.	Union
Franklin County Storage	Icis-Npdes Non-Major, Storm Water Construction	Highway 47	Union
Franklin Cty Hwy Dept	Icis-Npdes Non-Major, State Master, Storm Water Construction	Union	Union
Franklin Publishing Company	Air Minor, State Master	310 South Oak Street	Union
Fred Weber Inc - Crusher	Icis-Npdes Non-Major, State Master, Storm Water Industrial	Highway 47	Union
Fred Weber Inc - Franklin County Asphalt	Air Emissions Classification Unknown, Air Minor, Icis-Npdes Non-Major, State Master, Storm Water Industrial, Vsqg	517 Commercial Dr	Union
Freise Property	Icis-Npdes Non-Major, State Master, Storm Water Construction	1522 Hwy 50	Union
Frick's Market	Icis-Npdes Non-Major, Storm Water Construction	1000 North Church Street	Union
Frm Chemical	Air Minor	Hwy 47 S, Hi-Line Indstrl Dr	Union
Garris Recycling	State Master	7358 Hwy 47	Union
Glenrich Estates	State Master	1328 North Washington	Union
Guehne Investments Wwtf	Icis-Npdes Non-Major, State Master	672 Sourth Hwy 47	Union
H & H Enterprises	State Master, Transporter	Rt 2 Box 520	Union
Halligan Estates Veteran Housing	Icis-Npdes Non-Major, Storm Water Construction	1035 Halligan Estates Drive	Union
Havin Materials Service - Union	Air Minor, Osha Establishment, State Master	527 East Independence Drive	Union
Horse Shoe Bend Mhp	Icis-Npdes Non-Major, State Master	Hwy 47 South	Union
Hth Companies	Icis-Npdes Non-Major, State Master, Storm Water Construction	239 Rock Industrial Bulivard	Union
Hth Companies Inc	State Master	1191 Clearview Road	Union
Hth Industries	State Master	239 Rock Industrial Boulevard	Union

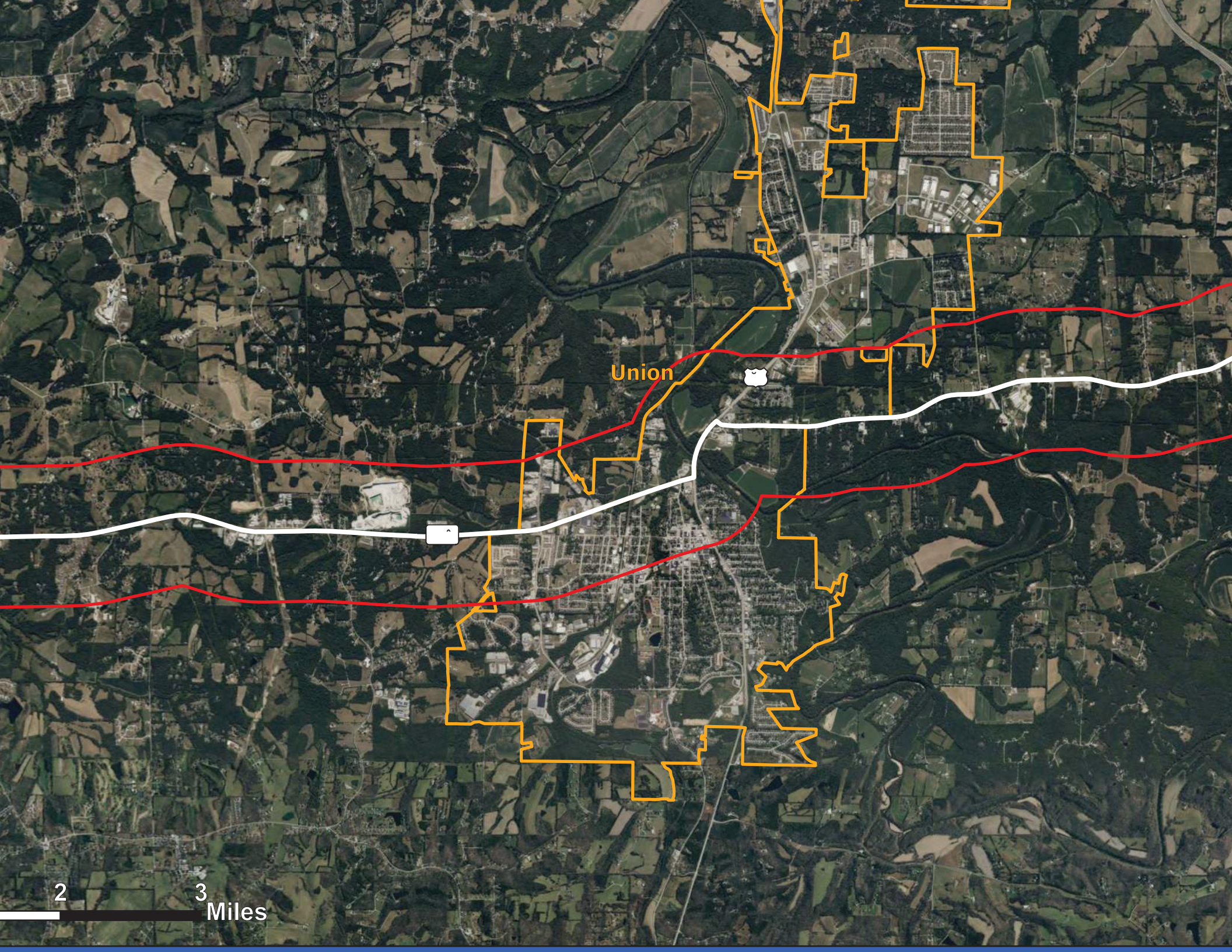
Name	Type	Address	City
Independence Plaza	Icis-Npdes Non-Major, State Master, Storm Water Construction	Hwy 47 & Independence Dr	Union
Independence Valley	Icis-Npdes Non-Major, Storm Water Construction	Independence	Union
Independent Marble - Independent Marble	State Master	1225 Old Smelter Road	Union
Jerry S Auto Body Inc.	State Master, Vsqg	1399 N Church St	Union
Jerrys Auto Body & Sales	State Master, Unspecified Universe	514 E Brown	Union
Jim Trenary Chevrolet	Icis-Npdes Non-Major, Storm Water Construction	1000 N. Church St.	Union
John Thompson Fence Co. Llc	Osha Establishment	189 Kylee Dr.	Union
K R Wilson Const, Union	State Master	Union	Union
K-D Machine & Tool, Inc.	Osha Establishment	806 N. Jefferson Avenue	Union
Kee Estates	Icis-Npdes Non-Major, State Master, Storm Water Construction	Kee Dr	Union
Ken Ruck	State Master	7123 Hwy 47	Union
Key Tire Dump	State Master	416 Hawthorne	Union
Korkees	State Master, Unspecified Universe	820 N Washington	Union
Laidlaw Transit	State Master, Unspecified Universe	1330 E Independence	Union
Laidlaw Transit Etc	State Master, Unspecified Universe	800 N Washington	Union
Lamke Auto Body	State Master, Unspecified Universe	300 Grant St	Union
Lindemann Tire Dump	State Master	766 Hwy 47 S	Union
Linmark Machine Products	State Master	2 Commercial Drive	Union
Linmark Machine Products Inc.	Icis-Npdes Non-Major, Osha Establishment, Storm Water Construction	553 Commercial Drive	Union
Linny's Kennel	Icis-Npdes Unpermitted	783 Meade Farm Rd	Union
Livengood Transmission	State Master, Unspecified Universe	701 N Washington	Union
Magruder Paving Llc Portable Asphalt Plt	Icis-Npdes Non-Major, Storm Water Industrial	Highway 47	Union
Marble	Icis-Npdes Non-Major, Storm Water Construction	1 Marble Ct	Union
Marble D Cor Inc	Lqg	70 Hi Line Dr	Union
Mauntel Metals - Mauntel Metals	State Master	Highway 47 & Clearview Road	Union

Name	Type	Address	City
Mayflower Contract Servic	State Master	800 N Washington	Union
Mer - Union Transload Facility	Icis-Npdes Non-Major, Storm Water Construction	Peters Lane	Union
Mfa Exchange - Union	Air Minor, State Master	700 North Washington Avenue	Union
Mfa Oil Co	State Master	7485 Hwy 47	Union
Midlawn Funeral Home And Gardens	Unspecified Universe	7280 Hwy 47	Union
Midwest Petroleum	State Master	495 S Highway 47	Union
Midwest Woodworking & Fixture Corp	State Master, Vsqg	806 N Jefferson	Union
Missouri Pipeline, Frankl	State Master	Union	Union
Mo Easten Rail Road	Icis-Npdes Non-Major, Storm Water Construction	Rock Road Union Mo 63084	Union
Moss Dickens Incorporated	State Master, Unspecified Universe	20 Highline Industrial Drive	Union
Moss-Dickens Co-Moss-Dickens Co	Air Major, State Master	# 20 Hi-Line Drive	Union
Moss-Dickens Co-Moss-Dickens Co	Hazardous Air Pollutant Major	#20 Hi-Line Drive	Union
Mpc 81	State Master	495 S Hwy 47	Union
Myrick Manor Wwtf	Icis-Npdes Non-Major, State Master	Myrick Manor Drive	Union
Myrick Manor Wwtf	Icis-Npdes Non-Major	Myrick Manor Drive	Union
N. Church	Icis-Npdes Non-Major, Storm Water Construction	1315 N. Church	Union
Norms N C Center Inc	State Master, Unspecified Universe	10 Hi Line Dr	Union
Pace Setter Properties,Ll	State Master	275 Brown St.	Union
Petro Mart Union	State Master	1000 E Main	Union
Pharma Tech Industries	State Master, Unspecified Universe	521 Shilo Dr	Union
Precision Stone Fabricators-Union	Air - Not Applicable, Air Emissions Classification Unknown, Air Minor, State Master	70 Hi-Line Industrial Dr	Union
Pro Body Works Inc	State Master, Vsqg	1028 Halligan Estates	Union
Quik Trip #672	State Master	100 Bourbeuse River Access Dr	Union
Reboot Computers And More	Unspecified Universe	102 N Church St	Union
Robinsons Auto Llc	Unspecified Universe	701 N Washington Ave	Union
Sahm S Mobil	State Master	801 Washington	Union

Name	Type	Address	City
Schmelz Real Estate	Icis-Npdes Non-Major, Storm Water Construction	217 Wittenborn Dr.	Union
Septic Services, Inc.	Biosolids, Icis-Npdes Non-Major, State Master, Storm Water Construction	7059 Hwy 47	Union
Shiloh Treatment Facility	Icis-Npdes Non-Major	521 Shiloh Drive	Union
Stone Ridge Estates	Icis-Npdes Non-Major, Storm Water Construction	Cc Camp Rd And Rolling Meadow Lane	Union
Synisys Inc	Enforcement/Compliance Activity, Icis-Npdes Non-Major, State Master, Tri Reporter	50 Hiline Dr.	Union
The Gala Event Center	Icis-Npdes Non-Major, State Master, Storm Water Construction	Lot 1 Of Prairie Dell Pla	Union
Toolco Inc	State Master, Unspecified Universe	301 S Oak St	Union
Unified Finishing Inc - Unified Finishing Inc	State Master, Unspecified Universe	890 N Oak	Union
Union Feed - Union Feed	State Master	700 N Washington Ave	Union
Union Mhp	State Master	Union	Union
Union Mobile Manor Exp	State Master	Hwy A & C C Camp Rd	Union
Union Pws	Community Water System, Enforcement/Compliance Activity, Icis-Npdes Major, Npdes Pretreatment Program, Potw, State Master, Water Treatment Plant	Highway O	Union
Union Rxi Bus Facility	State Master, Unspecified Universe	806 N Washington	Union
Union Scenic Regional Library	Icis-Npdes Non-Major, Storm Water Construction	251 Union Plaza Drive	Union
Union School Dist	Compliance Activity, State Master	1320 Independence	Union
Union West Sso	State Master	671 Hwy 47	Union
Union, City Of	Biosolids, Formal Enforcement Action, Icis-Npdes Non-Major, State Master	500 E Locust St	Union
Union, Lechateau Mh Village	Icis-Npdes Non-Major, Potw	Highway 50	Union
Union,Strawberry Fields	State Master	Union	Union
United Parcel Service	Icis-Npdes Non-Major, State Master, Storm Water Industrial, Vsqg	Old Smelter Road	Union
United States Postal Service	State Master, Unspecified Universe	315 E Main St	Union

Name	Type	Address	City
Ups Union	Icis-Npdes Non-Major, State Master	1207 Old Smelter Rd	Union
Ups, Union	State Master	1201 Old Smelter Road	Union
Viola Barreth	State Master	301 Pine St	Union
Walnut Ridge Sand And Grave	State Master	Union	Union
Walnut Ridge Storage	Icis-Npdes Non-Major, Storm Water Construction	7289 Highway 47	Union
Warren County Concrete	Air Minor	5420 Hi Line Drive	Union
Washington Ave-Waterbrooks	Icis-Npdes Non-Major, Storm Water Construction	1315 N Washington Ave	Union
Washington Bin	Icis-Npdes Non-Major, Storm Water Industrial	77 Hi Line Drive	Union
Weiss Subdivision	Icis-Npdes Non-Major, Storm Water Construction	Rock Rd.	Union
William D Dawson Inc-Dawson Quarry #2	Air Emissions Classification Unknown, Air Minor, Icis-Npdes Non-Major, State Master, Storm Water Industrial	5662 Highway 47	Union
Wright's Recycling	Icis-Npdes Unpermitted	7792 Highway 47	Union
Young/Keence Tract	Icis-Npdes Non-Major, State Master, Storm Water Construction	Corner Of Hwy 47 & Main S	Union
Sleepy Hollow	Icis-Npdes Non-Major, Storm Water Construction	71 E. Independence Dr.	Union
Advanced Products Technology, Inc	Formal Enforcement Action	50 Highline Industrial Drive	Washington
Aldi Store	State Master	1505 Heritage Hills Dr	Washington
Autozone Store No 10063	Icis-Npdes Non-Major, Storm Water Construction	1900 Bedford Center Drive	Washington
Busch Creek Sanitary Sewe	Icis-Npdes Non-Major, State Master, Storm Water Construction	Between Hwy 47 & Hwy A	Washington
Cedar Berry Estates Wwtp	Icis-Npdes Non-Major	0.1 Mile N Of Gnarlyvine Ct. And Cedar	Washington
Cedar Berry Estates Wwtp	Icis-Npdes Non-Major, State Master	Cedar Berry Drive	Washington
Chris Auffenberg Ford Inc	State Master, Vsqg	5840 Hwy 100	Washington
Citgo Washinton	State Master	1403 S Washington	Washington
Elmwood Golf Course	Icis-Npdes Non-Major, Storm Water Construction	316 Elmwood Estates Drive	Washington
First State Community Ban	State Master	1801 Bedford Center Dr	Washington

Name	Type	Address	City
Frm Chem Inc - Frm Chem Inc	Formal Enforcement Action, State Master	Hwy 47 South	Washington
Ke2 Therm Solutions	Icis-Npdes Non-Major	12 Chamber Drive	Washington
Litzsinger Asphalt-Washington Plant - Litzsinger Asphalt-Washington Plant	Air Emissions Classification Unknown, State Master	Bieker Rd	Washington
Lost Trails	State Master	Karen Lane	Washington
Lowes Of Washington Mo #1648	Sqg, State Master	2023 Washington Crossing	Washington
Magnet Llc-Chamber Dr.	Hazardous Air Pollutant Major	#7 Chamber Drive	Washington
Mcdonalds Restaurant	Icis-Npdes Non-Major, Storm Water Construction	1110 Washington Square	Washington
Mid-American Coaches, Inc	Formal Enforcement Action, Icis-Npdes Non-Major, State Master	Hwy 47 S, Po Box 335	Washington
Paul W Douglas & Dena R Douglas	Formal Enforcement Action, State Master	2133 Matilda Ct	Washington
Pinnacle Mobil	State Master	1980 Washington Crossing	Washington
Reboot Computers And More	Unspecified Universe	1160 Clock Tower Plz	Washington
Roscoe Mayer Contracting Inc	Icis-Npdes Non-Major, State Master, Storm Water Industrial	241 Mayer Dr	Washington
Schnuck Markets	State Master	2073 Washington Crossing	Washington
Starcrest Cleaners - Washington	State Master, Unspecified Universe	1901 Bedford Center Dr	Washington
Wal-Mart Store #172	Icis-Npdes Non-Major, State Master, Storm Water Construction	Hwy 100 & Pearson Dr	Washington
Washington 47 Storage	Icis-Npdes Non-Major, Storm Water Construction	4255 Hwy 47	Washington
Washington Tractor	State Master, Unspecified Universe	Hwy 47 S	Washington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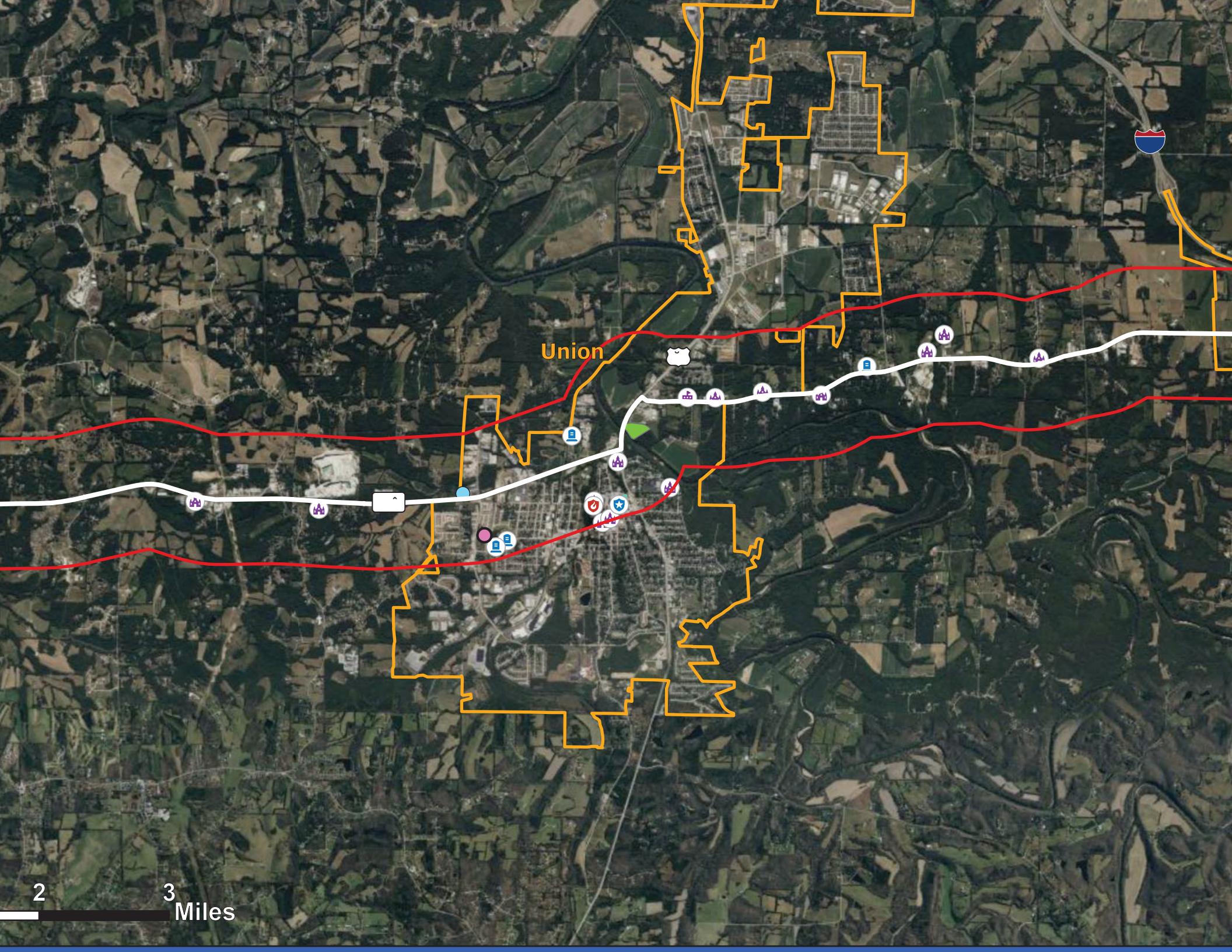
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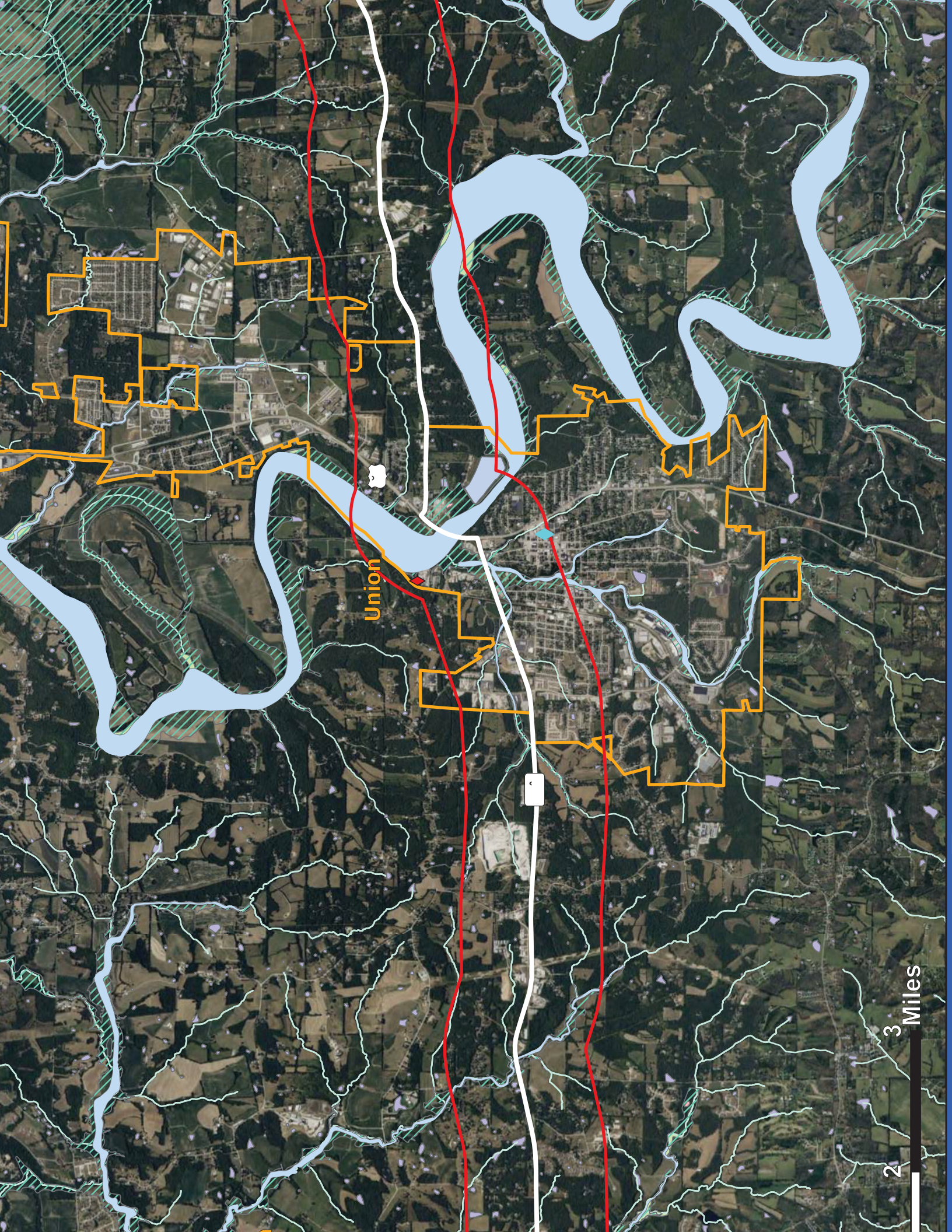
Union
3
Miles
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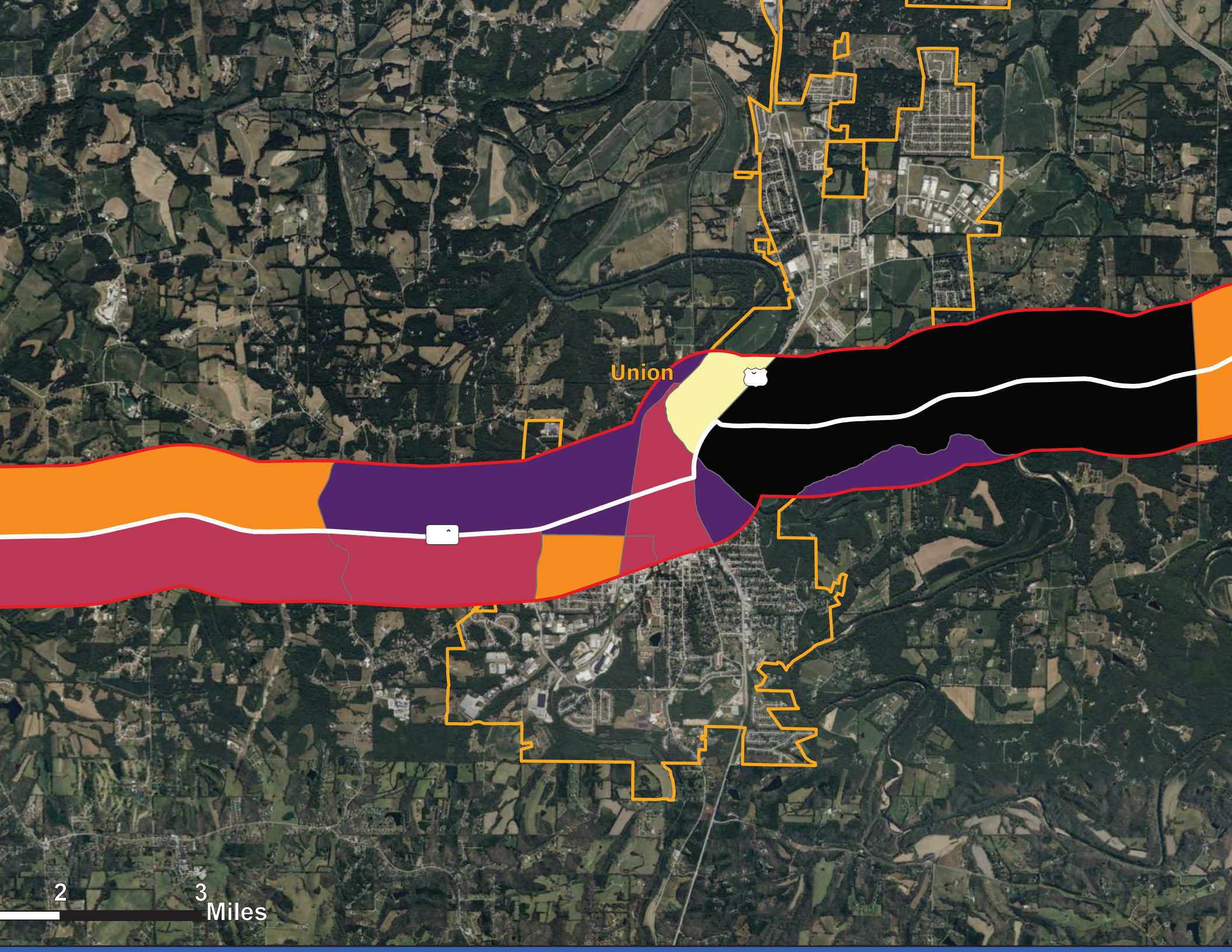
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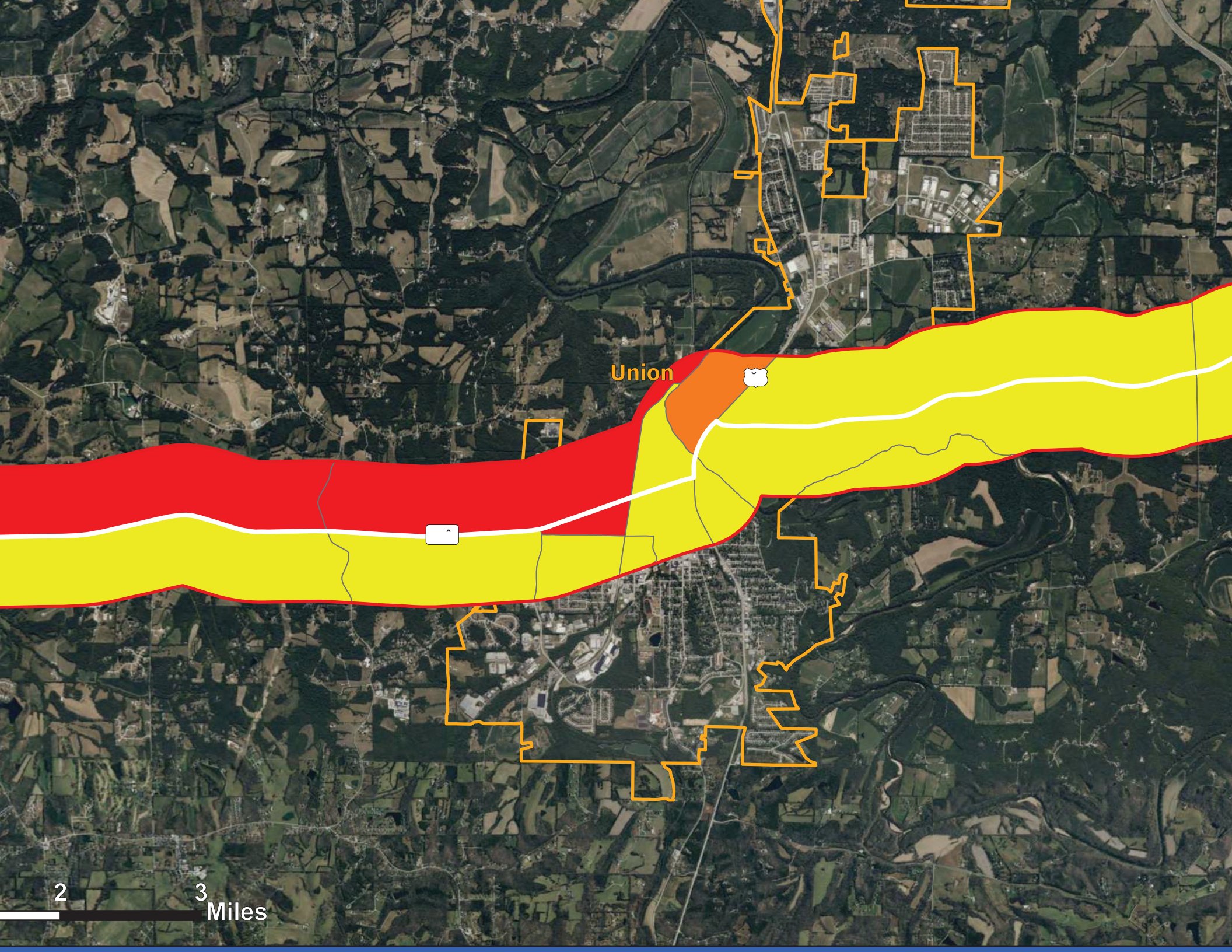
Union
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3
Miles

Appendix J: Route 47 Existing Drainage Assessment

DRAFT

7733 N. Wallace Avenue | Kansas City, MO 64158 | 816.912.4720 | www.HgCons.com

To: Travis Pfeiffer, HNTB

From: Mike Alexander, Hg Consult

Date: June 16, 2025

Subject: Re-Submission of MO-47 Existing Drainage Assessment

Dear Mr. Pfeiffer,

I am pleased to re-submit the Existing Drainage Assessment for the MO-47 Roadway Corridor (MoDOT Job Number J6P3661). This assessment provides a comprehensive analysis of the current drainage condition along the corridor, estimates locations of existing drainage structures, provides information regarding FEMA regulated areas, and provides other pertinent information requested from MoDOT per the review comments of previous submittals.

Please do not hesitate to reach out if you have any questions or need further clarification regarding the assessment. I look forward to your feedback and continued collaboration on this project.

Best regards,

Mike Alexander, PE, ENV SP

Associate Vice President

malexander@hgcons.com

573.578.6742

EXECUTIVE SUMMARY

The MO-47 corridor features a comprehensive drainage system composed of grass and rock-lined ditches, pipe and box culverts, concrete open channels, curb and grate inlets, detention basins, and various natural water features such as creeks and rivers. These drainage structures manage stormwater runoff from residential, commercial, and agricultural areas, ensuring proper conveyance and minimizing flooding impacts along the corridor.

There are five named streams and floodways that cross the study area, many of which are associated with FEMA-designated floodplains including Busch Creek, Dubois Creek, Fenton Creek, Flat Creek, and the Bourbeuse River. Several segments are located within FEMA National Flood Hazard Zones, as highlighted in the appendices. Floodplain zones include Zone AE and Regulatory Floodways, particularly near major crossings such as Fenton Creek, Flat Creek, and the Bourbeuse River.

Among these, Busch Creek, Fenton Creek, and the Bourbeuse River crossings have received more extensive study, with FEMA Firmettes and hydrologic infrastructure presented throughout. These creeks are likely referenced in regional flood hazard delineation and outfall planning reports. Flooding has been a recurring challenge throughout the project corridor. Table 1-1 shows a summary of notable flood events within the project corridor and the roadway impacts. Refer to Appendix B for impacts related to commercial businesses.

Table 1-1 – Corridor Flooding Summary

Date(s)	Estimated Rainfall Amount, Flow, and/or River Elevations	Estimated Storm Frequency	Flood Impacts
August 1915	50,000 CFS; Bourbeuse River Crest: 28.50’	Greater than 100-Year	Businesses along MO-47 begin to be flooded. Information found in 1982 USGS Flood Report (Appendix E)

December 1982	77,000 CFS, Bourbeuse River Crest: 33.80’	Greater than 100-Year	US-50 is closed in both directions of bridge and MO-47 is closed in both directions north of US-50. Due to rapid snow melt and extensive rainfall in Mississippi River Basin
April 1994	Bourbeuse River Crest: 27.77’	Approximate 100-Year	Flooding impacted surrounding community areas but did not impact MO-47
December 29th 2015	Bourbeuse River Crest: 34.31’	Approximate 100-Year	US-50 is closed in both directions of bridge and MO-47 is closed in both directions north of US-50. Refer to Appendix F for photos of flood impacts.
Late April, Early May 2017	6 to 10 inches of Rain, Bourbeuse River Crest: 29.38’	Approximate 100-Year	Flooding impacted surrounding community areas but did not impact MO-47

Key crossings such as at the MO-47 and US-50 interchange, and intersections at Washington Square, Bieker Rd, and Central Ave, involve larger conduits, elevated manholes, box culverts, and open concrete channels. Notable infrastructure includes elevated manholes, "Z"-shaped concrete channels, detention basins, and exposed rock cuts—critical to stormwater control in sloped terrain. Refer to Table 1-2 for a summary of the corridor drainage features.

Table 1-2 – Corridor Drainage Summary

Location	Key Features	FEMA Zone	Waterbody/Notes
Hwy 100 to Bieker Rd	Grass ditches, culverts, open channels	No	Flows to Busch Creek
Bieker Rd to BestBox	Box culverts, rock ditches	Yes (Busch Creek)	Major drainage crossing
A&E Storage	Exposed rock, Z-channel	No	Minimal infrastructure
Forest Hills to Hi Line Dr	Box culverts, Dubois Creek	Partial FEMA Zone	Multiple culverts, rock ditches
2,000-FT N. of E Independence Dr.	Box culvert, Fenton Creek	Yes	FEMA Firmette A5
E Independence Dr.	Ditches, raised manhole, culverts	Yes	Drains to Fenton Creek
Dairy view to Hwy V	Grate inlets, open channels	Yes	Floodway near Fenton Creek
Old County Farm Rd to US – 50	Basin, inlets, large culvert	Yes	Flat Creek & Bourbeuse River
US-50 Intersection	Small basin, culverts	Yes	Large Commercial Area
I-44 Interchange	Rock cuts, culverts, ditch	No	End of Project Extents

Floodplain management within Franklin County and its municipalities is overseen by local governments in coordination with FEMA. Local development activities within floodplains are subject to floodplain permitting requirements, which vary slightly by jurisdiction but generally align with FEMA's NFIP (National Flood Insurance Program). Local land-use policies, particularly in commercial zones, significantly affect runoff volumes and routing, impacting drainage infrastructure along MO-47.

The memo identifies 5 major streams or floodways (Busch Creek, Dubois Creek, Fenton Creek, Flat Creek, Bourbeuse River) and at least 2 detention facilities (one behind Washington commercial developments and another near the US-50 interchange), alongside numerous inlets, culverts, and rock-lined ditches. Refer to the Appendix A for FEMA Floodplain Mapping for the project corridor. Appendix C contains the current FEMA FIS Study for Franklin County. *Note that Franklin County is undergoing a FEMA mapping revision that should be resolved in the next few years.*

The only stream in the project corridor that is listed as a Impaired Stream – 303d is the Bourbeuse River. The Bourbeuse River has the following information listed in the MoDNR Impaired Waters and Total Maximum Daily Loads (TMDL) Viewer:

Table 1-3 – Impaired Waters and Total Maximum Daily Loads (TMDL) Viewer Information

Waterbody Name	Bourbeuse River
Waterbody Identification Number	2034
Pollutant(s)	Escherichia coli (W)
Pollution Source(s)	Nonpoint Source
Water Quality Classification	P
Impaired Beneficial Uses	AQL, CLF, DWS, IRR, LWW, SCR, GEN, HHP

Refer to Appendix D for the EPA Water Quality Report for the Bourbeuse River.

CORRIDOR DRAINAGE CHARACTERIZATION

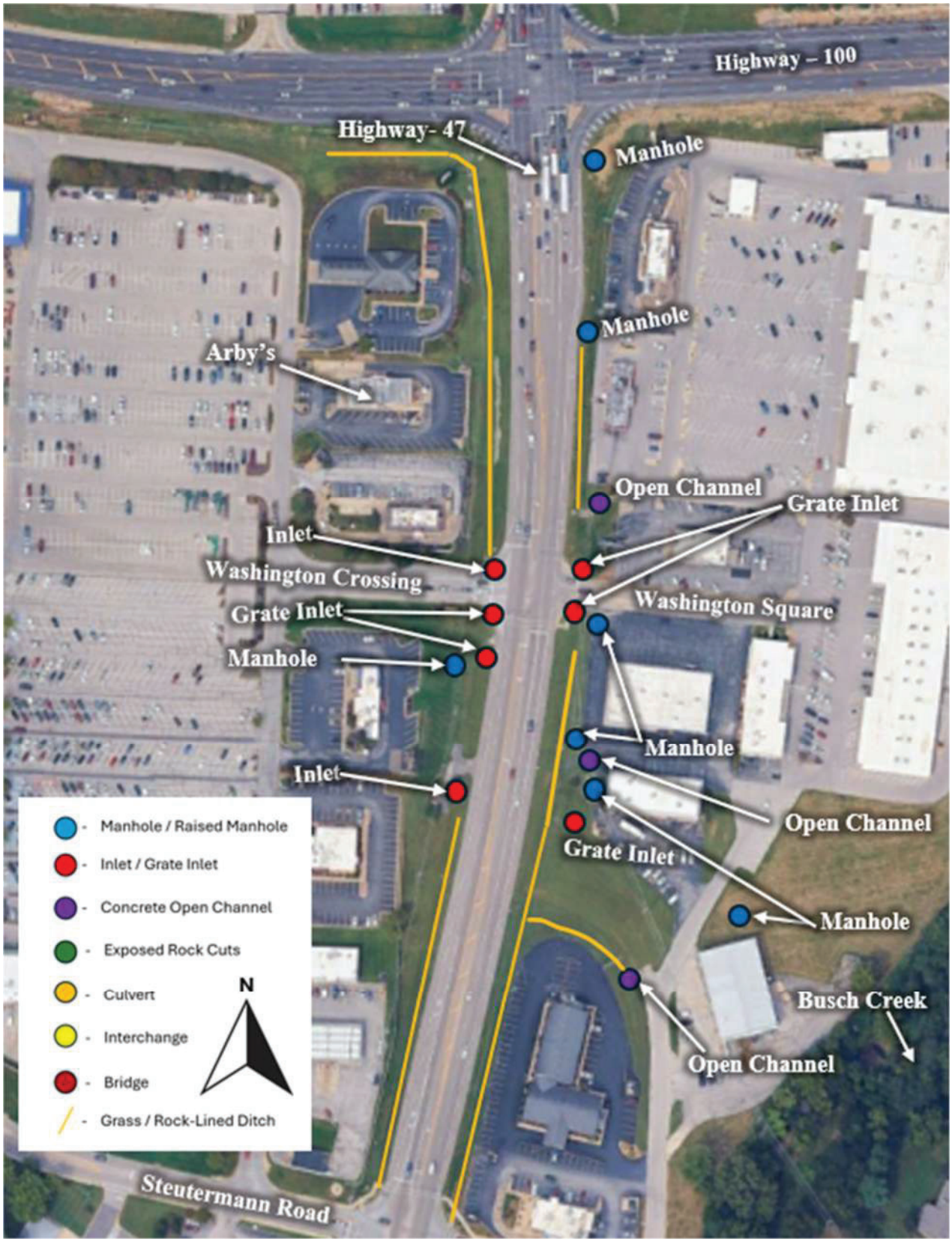
1.1 Washington, MO

1.1.1 Hwy 100 Intersection to Steutermann Rd/Bieker Rd Intersection

The starting north study limit for MO-47 is at the intersection of Hwy 100 and MO Hwy 47. This intersection is a high point where all the stormwater drainage flows south, parallel to MO-47. The road is elevated at a certain distance from the existing parking lots, where two large grass ditches run alongside the corridor. On the west side of the corridor, the downstream flow encounters a rock-lined drainage ditch in front of Arby's, extending 148 feet, before entering a culvert.

Washington Crossing and Washington Square, on the West and East respectively are between the two previously mentioned intersections. Figure 1-1 shows a plan view with labels of all the existing drainage infrastructure in this area. Stormwater from the parking lots drains into the existing ditches through open channels and inlets, which transport the water towards the low point beyond Washington Crossing. There is an existing open channel with an inlet and grate inlet located on the east side of the corridor where stormwater drains into the drainage system flowing south near Washington Square. Also, a total of two inlets, three grate inlets, and two manholes are found surrounding the intersection of MO-47 and Washington Square and Washington Crossing where all stormwater drains into an underground drainage system flowing South along MO-47.

Figure 1-1


Highway – 100
Highway- 47
Manhole
Manhole
Arby's
Open Channel
Grate Inlet
Inlet
Washington Crossing
Grate Inlet
Washington Square
Manhole
Manhole
Inlet
Open Channel
Grate Inlet
Manhole
Busch Creek
Open Channel
Steutermann Road
Manhole / Raised Manhole
Inlet / Grate Inlet
Concrete Open Channel
Exposed Rock Cuts
Culvert
Interchange
Bridge
Grass / Rock-Lined Ditch
N

Stormwater converges at a low point, shown in Figure 1-2, South of Washington Square where the drainage system transports the excess water to Busch Creek. Around this low point, there are elevated manholes, a concrete open channel, and a grate inlet in the middle of the grass area.

The intersection of Steutermann Rd/Bieker Rd is considered a high point, where there is no drainage infrastructure. Traveling north, parallel to MO-47, there are only two large grass ditches that extend north to the low point mentioned earlier. Additionally, the area between these two intersections is not a mapped FEMA zone.

Figure 1-2

1.1.2 Steutermann Rd/Bieker Rd Intersection to BestBox Storage Building

As mentioned before, this intersection is considered as a high point. There are no inlets or grate inlets at this intersection of Steutermann Rd/Bieker Rd Intersection and MO-47. On the contrary, this area is considered as a FEMA National Flood Hazard Layer where a flood map is determined to be shown in Appendix A1. Busch Creek flows through a large box culvert that runs underneath MO-47. All stormwater from the high point flows south, parallel to MO-47, into a concrete open channel (one on each side of the highway) flowing downstream to the creek. The open channel on the west side of the corridor extends approximately 152 feet while the channel on the East side extends around 230 feet.

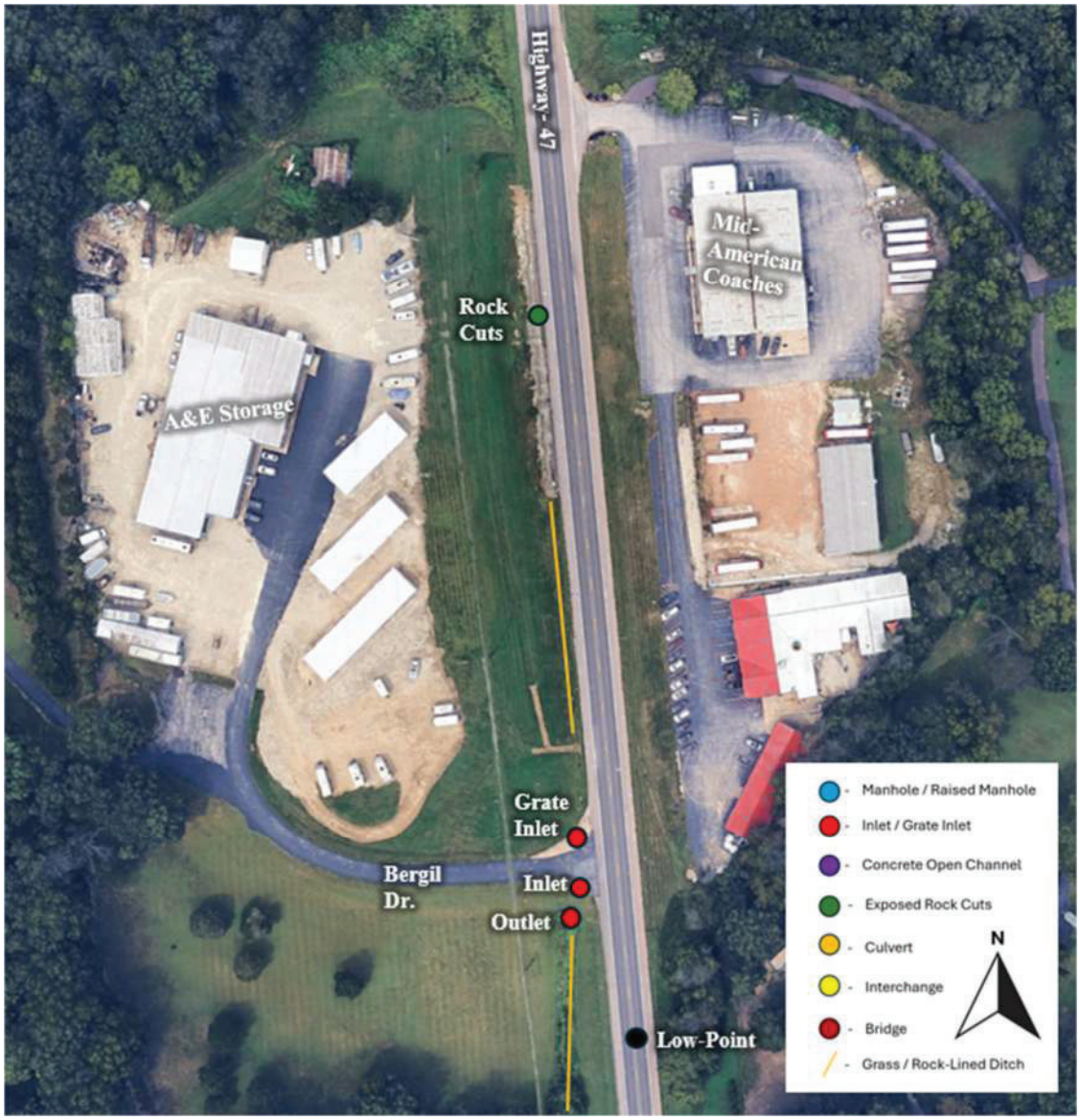
Passing the box culvert, the road slopes upwards where there is another concrete open channel on the West side of the corridor extending 288 feet. Additionally, there is a 445-foot section of rock cut that was estimated using aerial photography. There is a grass/rock ditch that transports the stormwater north to Busch Creek. Figure 1-3 shows a plan view of the existing drainage infrastructure located in this area.

Figure 1-3

1.1.3 A&E Storage Location

This location has a small amount of existing drainage but still needs to be mentioned. Shown in Figure 1-4, the only infrastructure that is found is on the West side of the corridor. A length of 300 feet of exposed rock is found with a grass ditch of 220 feet downstream is encountered traveling south of MO-47. At the end of the ditch there is a concrete open channel in the form of a "Z". The open channel eventually reaches a culvert that runs underneath the Bergil Drive entrance, which includes one grate inlet and one inlet. All water on the East side of the corridor exits from an outlet that drains into a grass ditch which leads the stormwater towards a wooded area at a low point. There are no FEMA flood zones in this area.

Figure 1-4

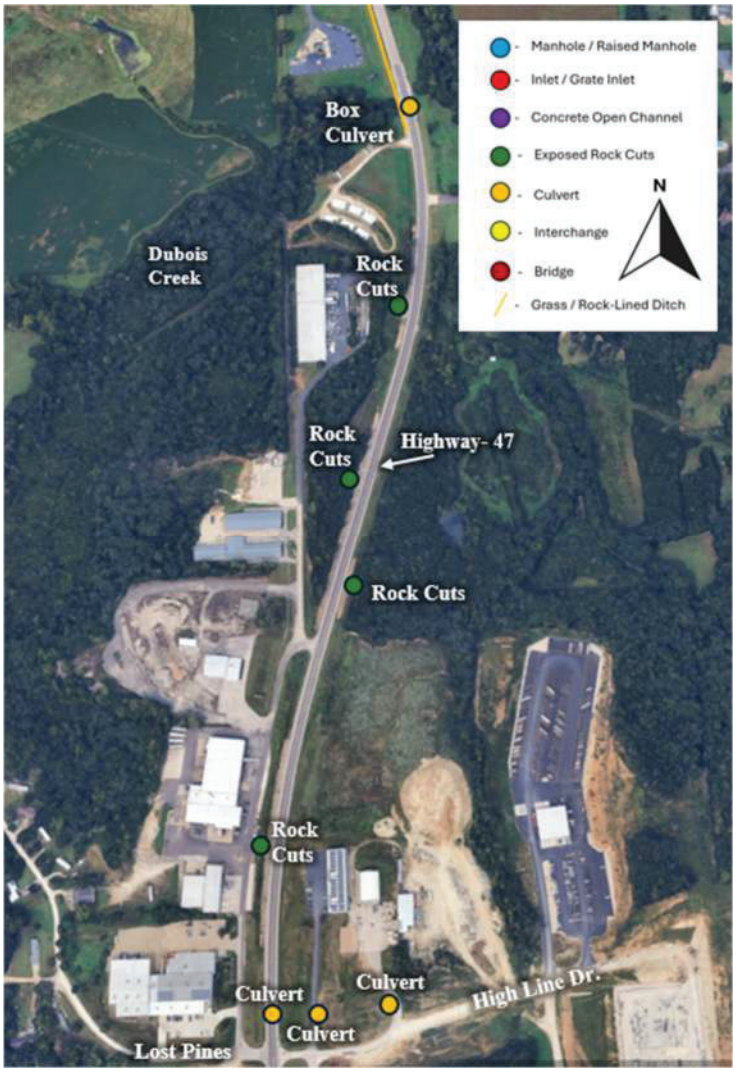


1.1.4 Box Culvert 430' North of Forest Hills Dr. to Lost Pines/Hi Line Dr. & Hwy MO-47 Intersection

Figure 1-5 shows a series of exposed rock cuts running alongside MO-47. The starting point of this location is designated as a FEMA National Flood Hazard Zone, with a flood map provided in the Appendix. A grass ditch on the west side of the corridor, extending 1,123 feet, flows downstream toward a low point where a box culvert is located underneath Hwy MO-47. Traveling north, a grass/rock ditch extending 480 feet with a buried culvert directs water downstream into Dubois Creek.

Further down MO-47, there is an area with multiple commercial buildings. Although this location is not considered a FEMA Zone, there is a series of culverts that run perpendicular to MO-47, starting upstream on the west side of the corridor and traveling east downstream.

Figure 1-5

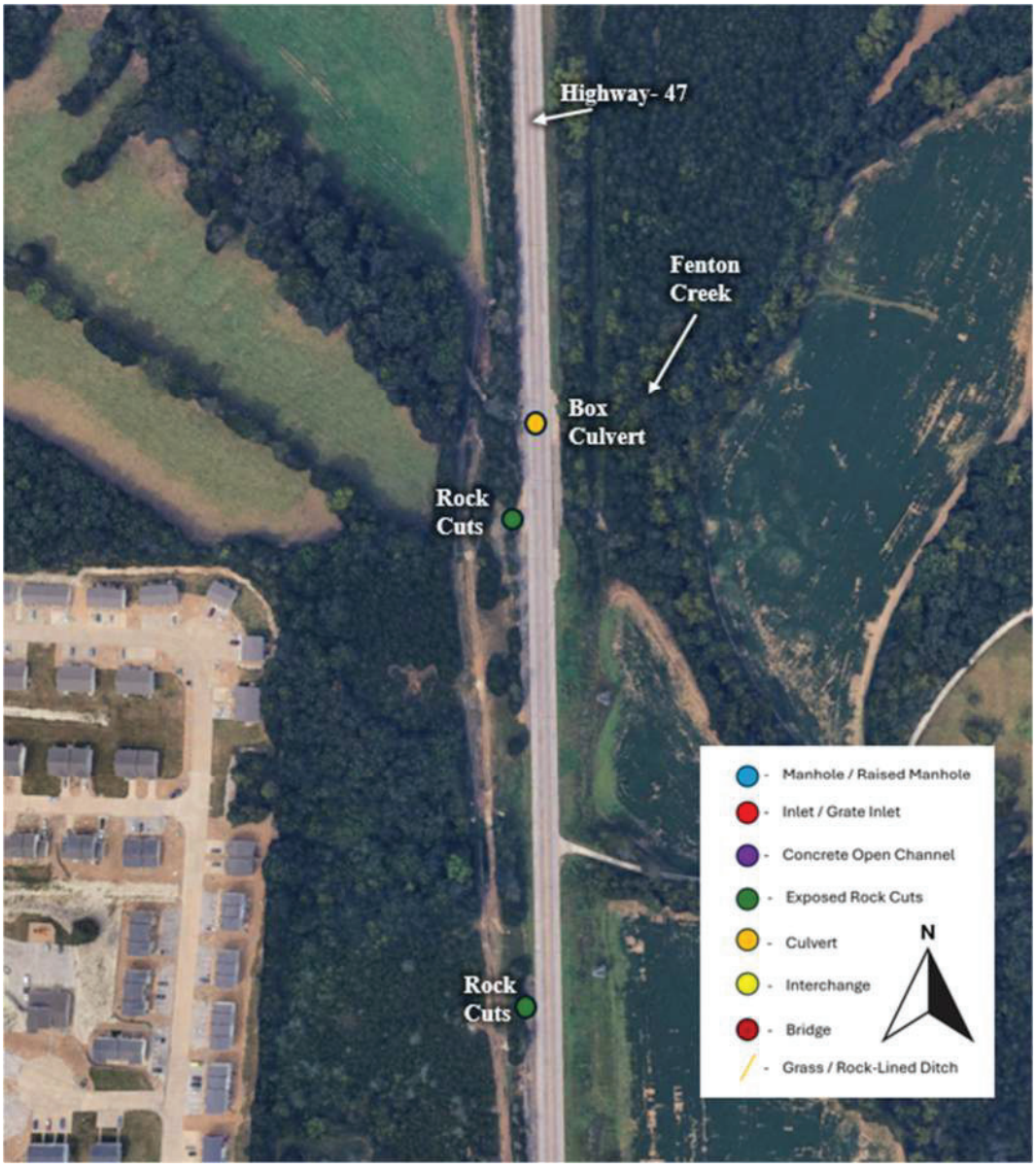


1.2 Union, MO

1.2.1 Culvert 2,000' North of E Independence & MO-47 Intersection

Approximately 2,000 feet north of E Independence Dr on MO-47 there is a large box culvert that drains flow across MO-47 travelling southeast within Fenton Creek. A plan view can be seen of the crossing of Fenton Creek and MO-47 north of Union, MO. The local geography is sloping downwards towards to south. There are also rock cuts to be seen south of the culvert crossing as you approach Union from the north. The FEMA Firmette for this area can be seen within Appendix A5.

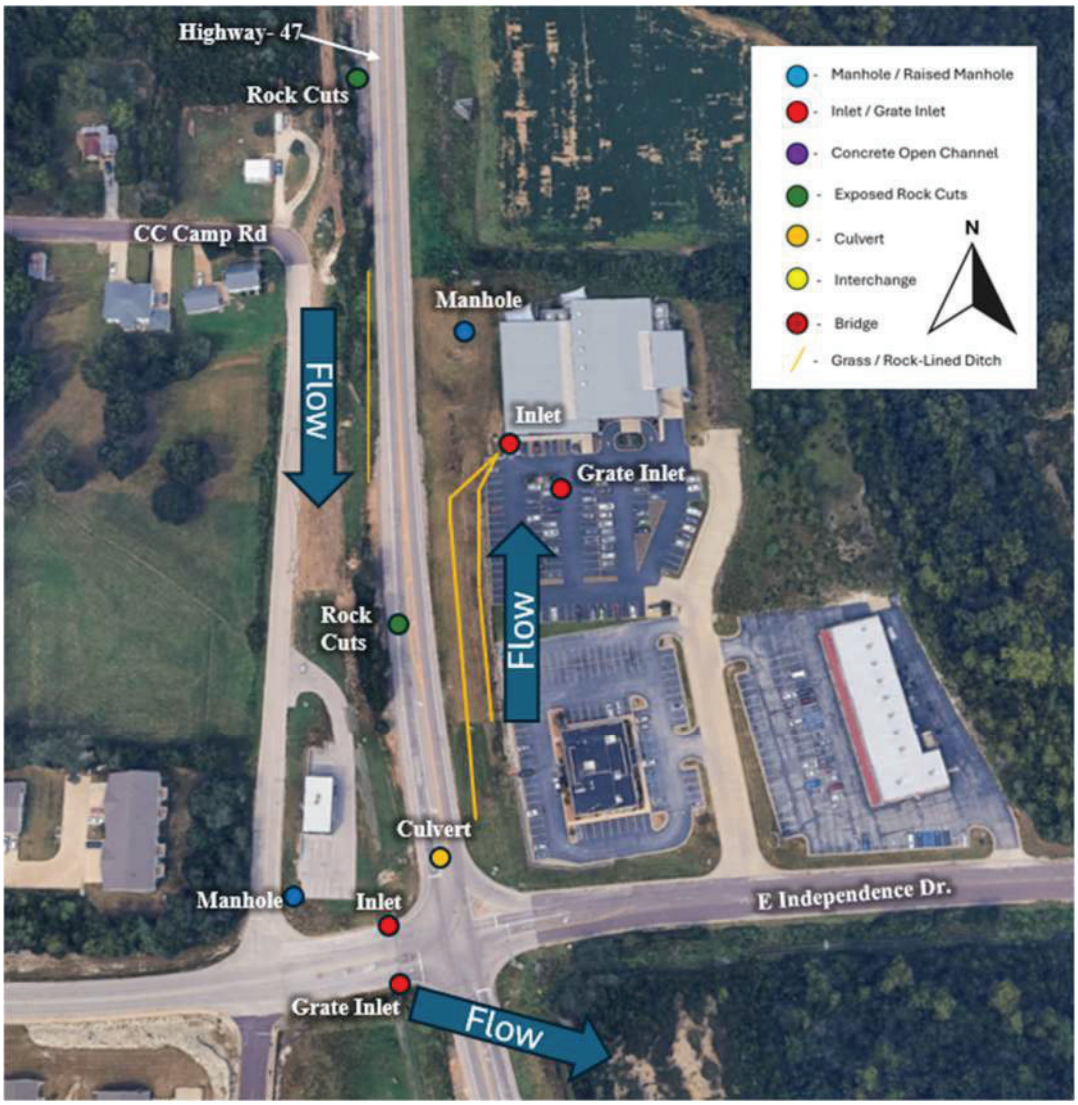
Figure 1-6



1.2.2 E Independence & MO-47 Intersection

Traveling south towards the E Independence & MO-47 intersection, the terrain in this area slopes downward from west to east. On the east side of the corridor, just before reaching the intersection, is the Scenic Regional Library. Water drains into grass ditches that flow downstream towards the library where an inlet is located. This inlet is considered a low point because the parking lot at the library slopes toward this corner, bypassing a parking lot grate inlet. Near these inlets there is a raised manhole where all stormwater drains into a ditch flowing east away from the corridor. Figure 1-7 shows a plan view of the existing drainage infrastructure in this area, along with an assumption of how the drainage system functions at this eastbound intersection. The indicated arrows show the direction of flow in the underground system and ditches. A culvert collects water from the downstream flow traveling south to this intersection where two inlets and manhole are also located.

Figure 1-7



1.2.3 Fenton Creek FEMA Zone Between Dairy View Dr. & South of Rte. V

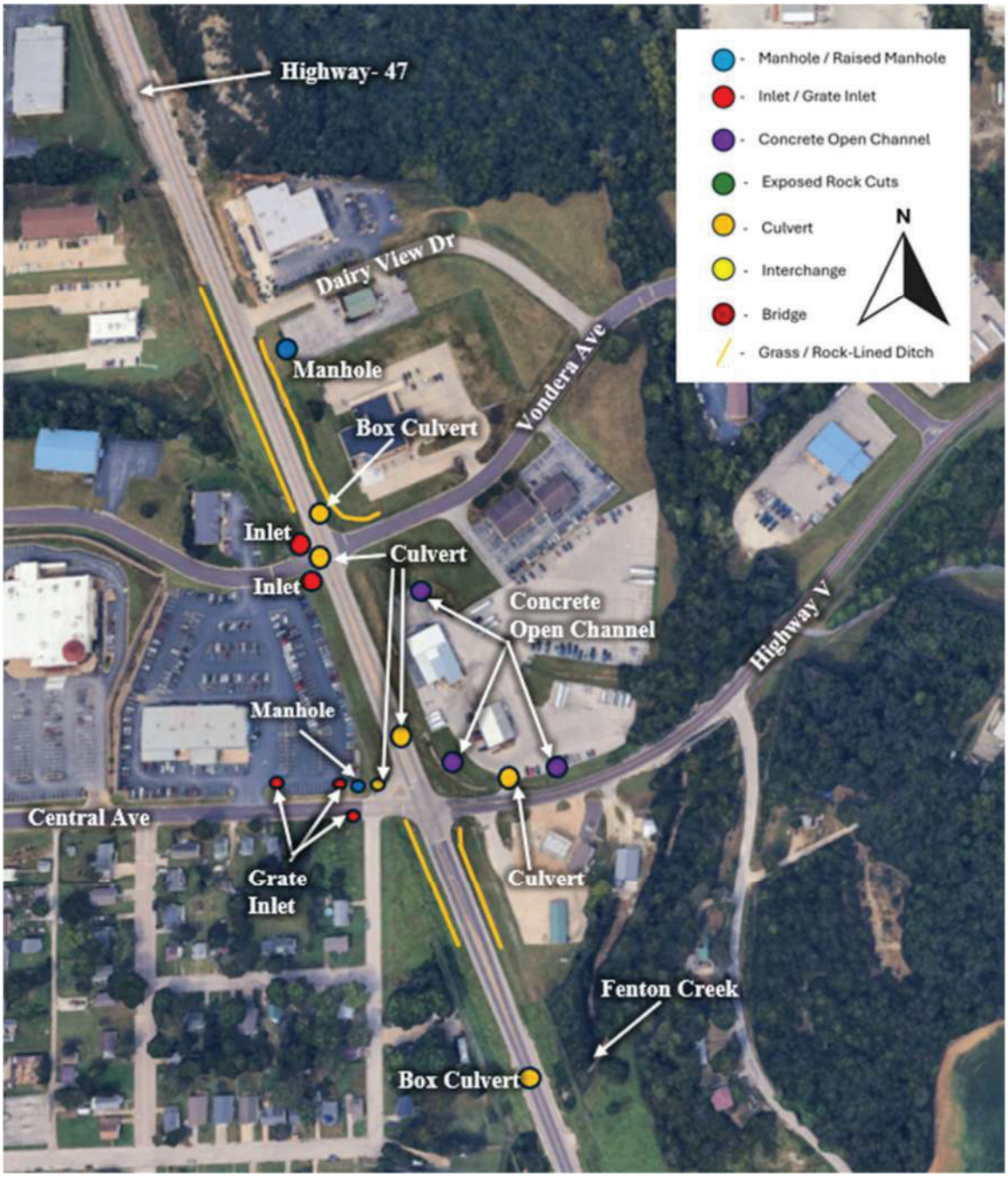
Continuing south, exposed rock cuts are present on both sides of the corridor (760 feet on the west side and 500 feet on the east side), extending parallel to MO-47. The midpoint of these rock cuts represents a high point for the corridor. After passing this high point, the rock on the west side ends, giving way to tall grass. The flow then moves through the tall grass toward an existing box culvert, where a small flow path is encountered which directs all stormwater to Fenton Creek on the east side of the corridor.

At the intersection of Vondera Ave, two inlets are located on each side of the street, with a culvert at the western approach. After passing this intersection, the west-side ditch slopes downward, with water flowing north along MO-47 toward the existing culvert. Stormwater enters the creek and flows through the box culvert that runs diagonally beneath the intersection, heading southeast toward Fenton Creek. On the east side of the corridor, a grass ditch transports flow south along MO-47 toward a culvert that connects to the drainage system.

At the intersection of Central Ave/Hwy V and MO-47, there is significant existing drainage infrastructure. Starting at Central Ave, water travels downstream and encounters a grate inlet in the middle of a street entrance. The water bypasses this grate inlet and flows into a curb and gutter, where another grate inlet directs the flow. This stormwater enters an existing system, where a raised manhole is located. All flow then exits through an outlet into a concrete open channel. Stormwater continues north along MO-47 through a rock-lined drainage ditch, heading toward a box culvert underneath MO-47. The flow then moves east into an existing concrete open channel, where the water is directed to Fenton Creek.

Continuing south, grass ditches on both sides of the corridor slope downward toward an existing box culvert through which Fenton Creek flows. This area is designated as a FEMA National Flood Hazard Zone, with a flood map provided in Appendix A3. Figure 1-8 shows a plan view of the existing drainage infrastructure in this area, along with the FEMA zone location.

Figure 1-8


Highway- 47
Manhole / Raised Manhole
Inlet / Grate Inlet
Concrete Open Channel
Exposed Rock Cuts
Culvert
Interchange
Bridge
Grass / Rock-Lined Ditch
N
Dairy View Dr
Manhole
Vondera Ave
Box Culvert
Inlet
Culvert
Inlet
Concrete
Open Channel
Highway V
Manhole
Central Ave
Grate
Inlet
Culvert
Fenton Creek
Box Culvert

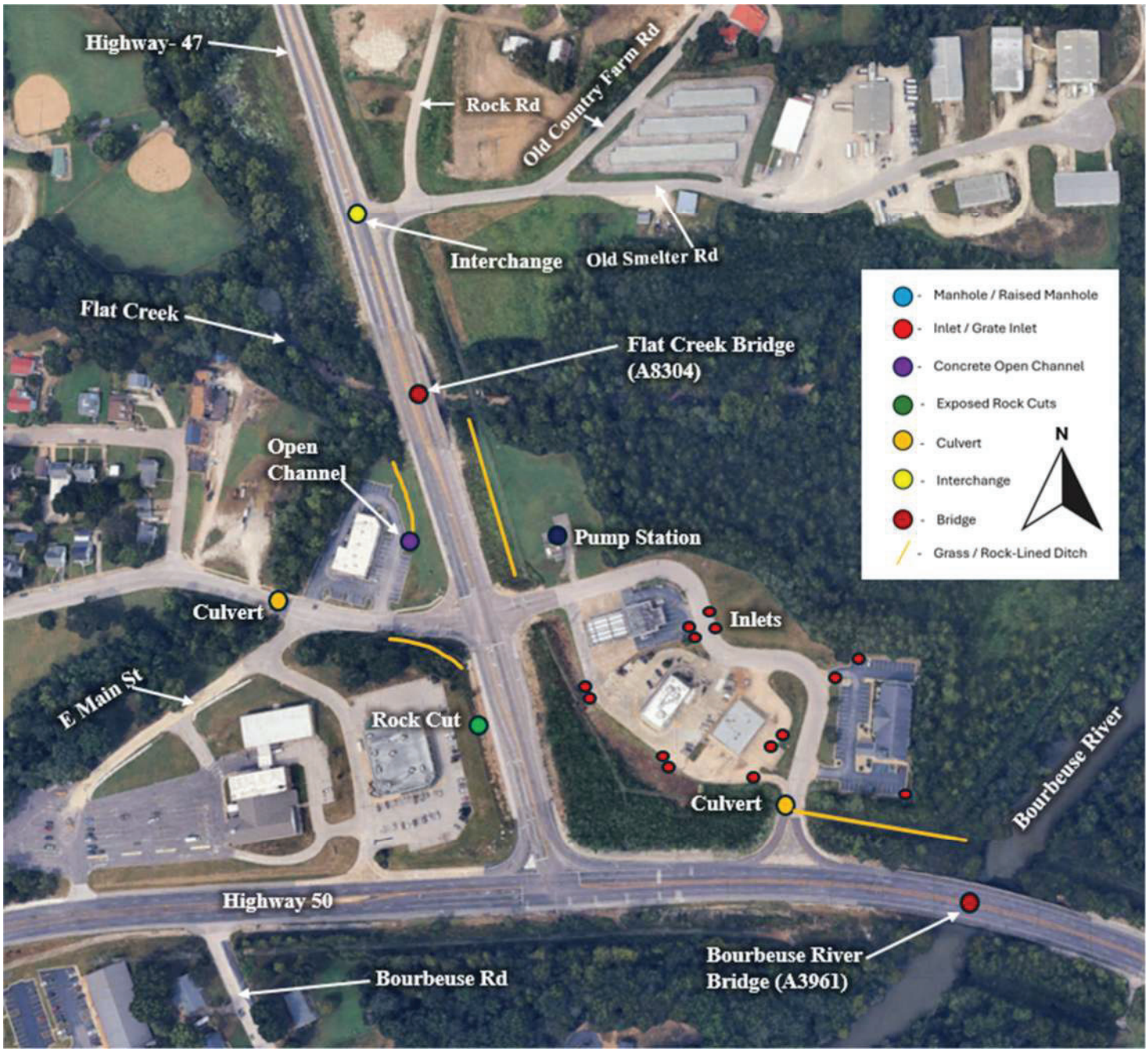
1.2.4 Bourbeuse River FEMA Zone Between N. of Old County Farm Rd. & Hwy 50

This area is a FEMA zone which is shown in Appendix A, as Flat Creek connects with the Bourbeuse River. Traveling south, MoDOT Bridge (A8304) spans over Flat Creek where the corridor meets two intersections. The first intersection is E Main St and MO-47, where only small amounts of drainage infrastructure are present. There are no inlets at this intersection, but on the west side of the corridor, where it connects with a parking lot, there is an open-channel grass ditch that directs the parking lot drainage north toward Flat Creek. On the east side of the corridor, a large ditch is present, where a sanitary sewer lift pump station is also located as shown in Figure 1-9.

Figure 1-9

After passing this intersection, there are 330 feet of exposed rock cuts on the west side of the corridor. Hwy MO-47 overlap with US-50 at this intersection. On the east side of the corridor, there are four large commercial buildings: a Phillips 66 gas station, McDonald's, a liquor store, and a Super 8 hotel. A significant amount of drainage infrastructure is located here, with a total of fourteen inlets collecting stormwater. Between the MO-47 corridor and the commercial buildings, there is a large detention basin filled with trees and shrubs, which collects all the stormwater from the commercial buildings' parking lots and a street that runs behind these buildings. All stormwater is collected in this basin, and it then flows east through a large culvert toward the Bourbeuse River. Figure 1-10 shows a plan view of the existing drainage infrastructure in this area along with the FEMA zone location

Figure 1-10


Highway- 47
Rock Rd
Old Country Farm Rd
Interchange
Old Smelter Rd
Flat Creek
Flat Creek Bridge
(A8304)
Open
Channel
Pump Station
Culvert
Inlets
E Main St
Rock Cut
Culvert
Bourbeuse River
Highway 50
Bourbeuse Rd
Bourbeuse River
Bridge (A3961)
Manhole / Raised Manhole
Inlet / Grate Inlet
Concrete Open Channel
Exposed Rock Cuts
Culvert
Interchange
Bridge
Grass / Rock-Lined Ditch
N

1.2.5 MO-47 and US-50 Intersection

This is another area located within a FEMA zone due to its proximity to the Bourbeuse River. MO-47 travels south, where a gas station is located along with a small basin. Stormwater from the parking lot and US-50 drains into this basin, which leads to a grate inlet within the grass. The water then travels through a culvert underneath MO-47 toward a large grass ditch, which directs flow parallel to US-50.

While traveling southbound on MO-47, the road slopes upward toward a high point. There is no existing drainage infrastructure on the west side of the corridor, but a series of ditches are present on the east side. Stormwater drains into a culvert that runs underneath a parking lot entrance to a car dealership. Runoff from this dealership drains into a concrete open channel, which directs the water to a series of grass and rock-lined ditches. The flow then travels north toward the intersection and continues east parallel to US-50. Figure 1-11 shows a plan view of the existing drainage infrastructure.

Figure 1-11

1.3 St. Clair, MO

1.3.1 Interstate 44 and Hwy MO-47 Interchange

The intersection of N Outer Rd and MO-47 interchange has exposed rock cuts at all four corners. Continuing south, the terrain begins to slope downward, passing the last high point of the corridor, where drainage infrastructure is only present on the east side. A series of culverts, grate inlets, and an open drainage channel are located here, directing stormwater into a ditch. This ditch then leads the stormwater away from MO-47 to N Service Rd E, flowing downstream. Additionally, the entire interchange lacks further existing drainage infrastructure. Figure 1-12 shows a plan view of the existing drainage infrastructure at the final location of the study limit.

Figure 1-12

APPENDIX SUMMARY

APPENDIX A - FEMA FIRM MAPS

APPENDIX B - BOURBEUSE RIVER COMMERCIAL FLOOD IMPACTS

APPENDIX C - CURRENT FEMA FIS STUDY

APPENDIX D - EPA WATER QUALITY REPORT FOR THE BOURBEUSE RIVER

APPENDIX E - 1982 USGS FLOODING REPORT

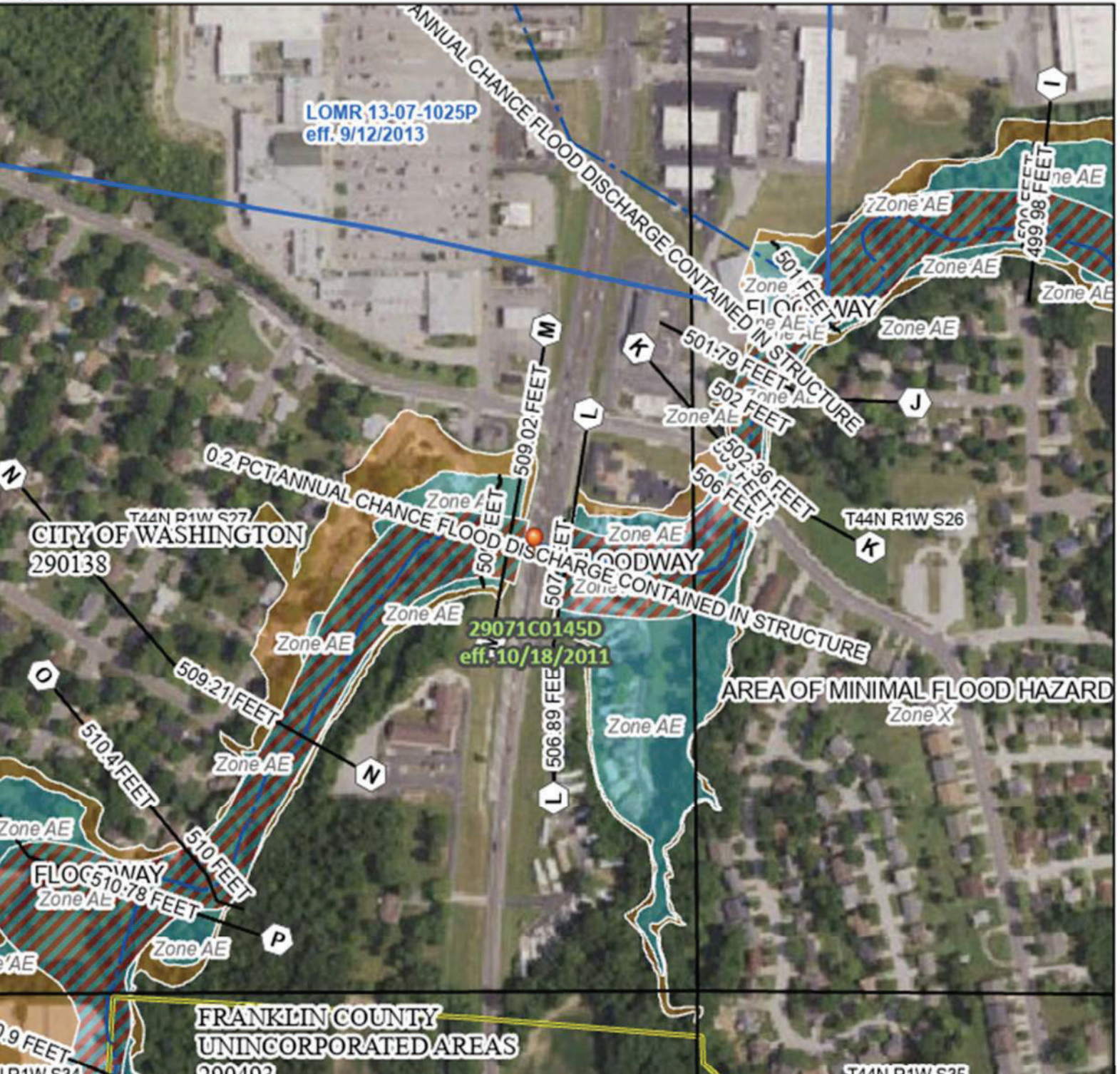
APPENDIX F - DECEMBER 2015 FLOODING PHOTOS

APPENDIX A - FEMA FIRM MAPS

ational Flood Hazard Layer FIRMette

FEMA

W 38°32'13"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PAN

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO,*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood H
- of 1% annual chance flood wi
- depth less than one foot or w
- areas of less than one square
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk Levee. See Notes. *Zone X*
- Area with Flood Risk due to L

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard
- Effective LOMRs
- Area of Undetermined Flood

GENERAL STRUCTURES
- Channel, Culvert, or Storm Se
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annu
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BF
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an a
point selected by the user and does
an authoritative property location.

This map complies with FEMA's standards for the use o
digital flood maps if it is not void as described below.
The basemap shown complies with FEMA's basemap
accuracy standards

The flood hazard information is derived directly from th
authoritative NFHL web services provided by FEMA. This
was exported on 2/1/2025 at 1:38 AM and does not
reflect changes or amendments subsequent to this dat
time. The NFHL and effective information may change
become superseded by new data over time.

This map image is void if the one or more of the followi

ational Flood Hazard Layer FIRMette

FEMA

"W 38°30'8"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM P

- SPECIAL FLOOD HAZARD AREAS
  - Without Base Flood Elevati (Zone A, V, A99)
  - With BFE or Depth (Zone AE, A
  - Regulatory Floodway
- OTHER AREAS OF FLOOD HAZARD
  - 0.2% Annual Chance Flood
  - of 1% annual chance flood
  - depth less than one foot or
  - areas of less than one squa
  - Future Conditions 1% Annu Chance Flood Hazard (Zone X
  - Area with Reduced Flood R Levee. See Notes. (Zone X
  - Area with Flood Risk due to
- OTHER AREAS
  - NO SCREEN: Area of Minimal Flood Haza
  - Effective LOMRs
  - Area of Undetermined Floo
- GENERAL STRUCTURES
  - Channel, Culvert, or Storm
  - Levee, Dike, or Floodwall
- OTHER FEATURES
  - 20.2 / 17.5: Cross Sections with 1% An Water Surface Elevation
  - Coastal Transect
  - Base Flood Elevation Line
  - Limit of Study
  - Jurisdiction Boundary
  - Coastal Transect Baseline
  - Profile Baseline
  - Hydrographic Feature
- MAP PANELS
  - Digital Data Available
  - No Digital Data Available
  - Unmapped

The pin displayed on the map is an point selected by the user and doe an authoritative property location.

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ational Flood Hazard Layer FIRMette

FEMA

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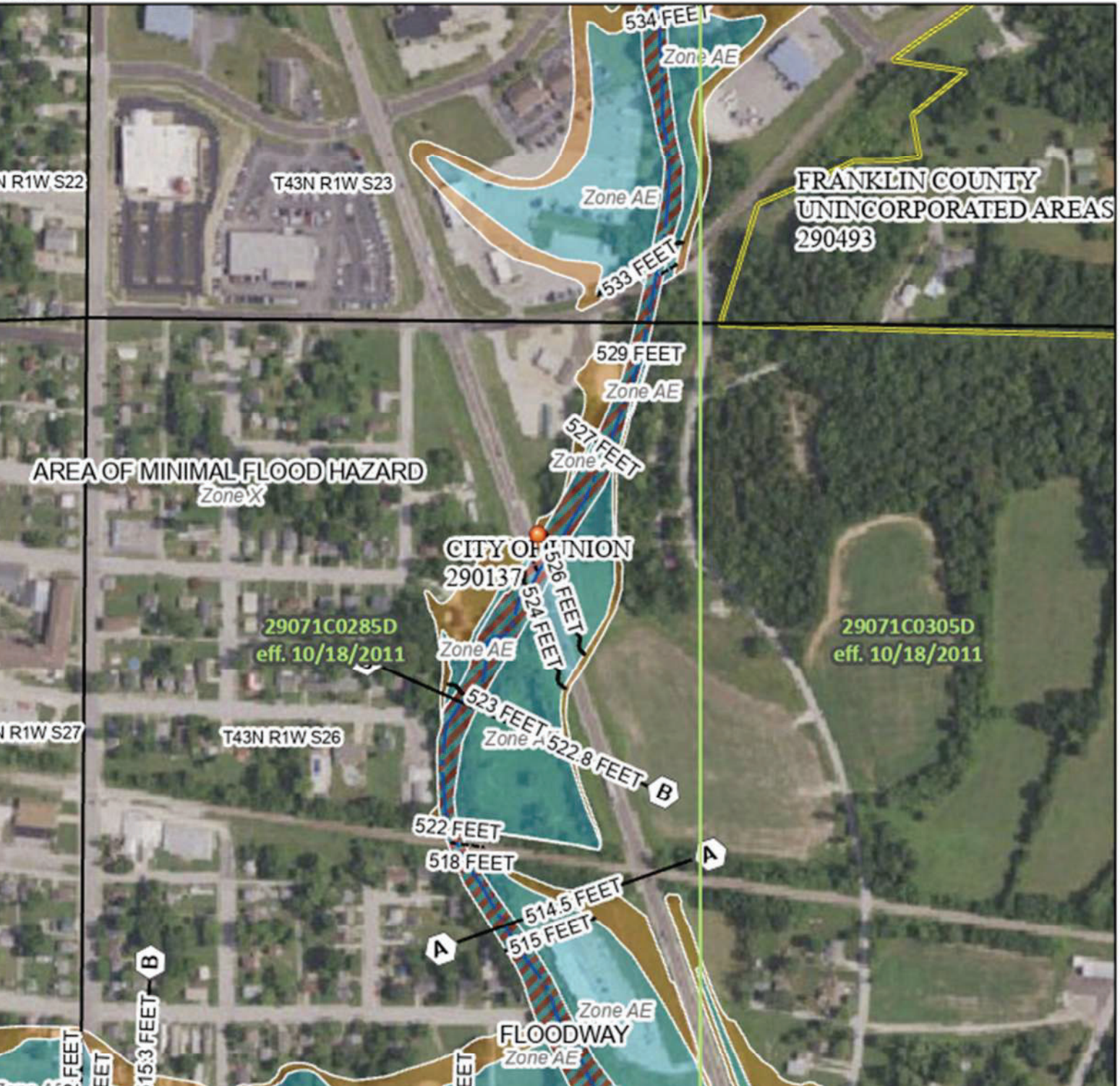

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL L

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BF Zone A, V, A99
- With BFE or Depth Zone AE, AO, AH,
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Haza of 1% annual chance flood with a depth less than one foot or with areas of less than one square mi
- Future Conditions 1% Annual Chance Flood Hazard Zone X
- Area with Reduced Flood Risk du Levee. See Notes. Zone X
- Area with Flood Risk due to Leve

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard Z
- Effective LOMRs
- Area of Undetermined Flood Haz

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewe
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual C / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
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- No Digital Data Available
- Unmapped

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ational Flood Hazard Layer FIRMette

FEMA

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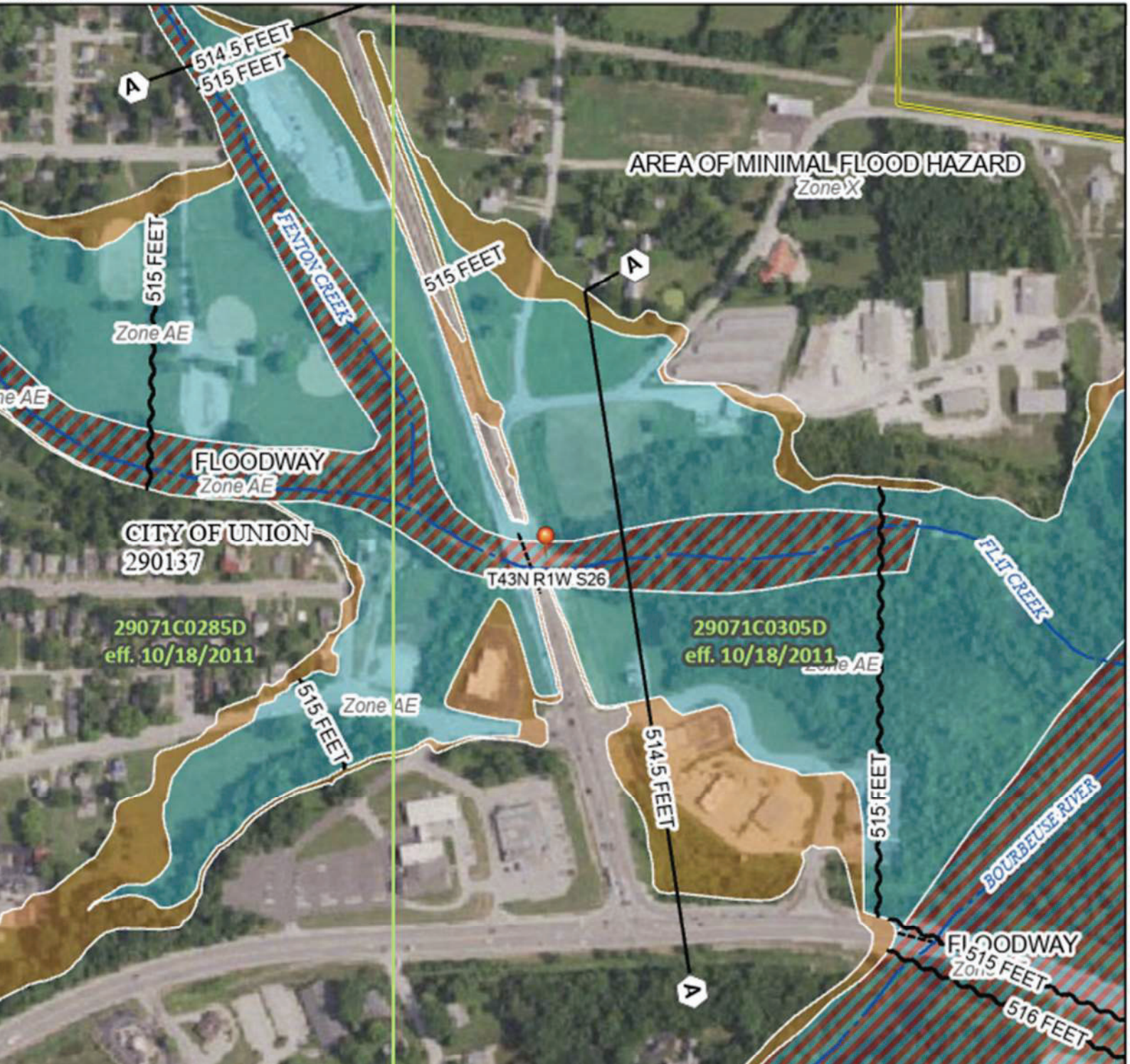

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM P

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevati — Zone A, V, A99
- With BFE or Depth — Zone AE, A
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood — of 1% annual chance flood depth less than one foot or areas of less than one squa
- Future Conditions 1% Annu Chance Flood Hazard — Zone X
- Area with Reduced Flood R Levee. See Notes. — Zone X
- Area with Flood Risk due to

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Haza
- Effective LOMRs
- Area of Undetermined Floo

GENERAL STRUCTURES
- Channel, Culvert, or Storm
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% An
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

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lational Flood Hazard Layer FIRMette

FEMA

'38"W 38°28'11"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PA

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation Zone A, V, A99
- With BFE or Depth Zone AE, AO
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood H
- of 1% annual chance flood w
- depth less than one foot or w
- areas of less than one squar
- Future Conditions 1% Annua Chance Flood Hazard Zone X
- Area with Reduced Flood Ris Levee. See Notes. Zone X
- Area with Flood Risk due to L

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazar
- Effective LOMRs
- Area of Undetermined Flood

GENERAL STRUCTURES
- Channel, Culvert, or Storm S
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annu / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (B
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
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- Unmapped

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This map image is void if the one or more of the follow

APPENDIX B - BOURBEUSE RIVER COMMERCIAL FLOOD IMPACTS

Click **HERE** (https://www.weather.gov/owp/operations) for help with NWPS or our **NEW Flood Mapping Services** (https://water.noaa.gov/fim).

(https://www.noaa.gov/) (https://www.weather.gov/)

NCRFC (/rfc/ncrfc) / LSX (/wfo/lsx) / UNNM7

Bourbeuse River at Union

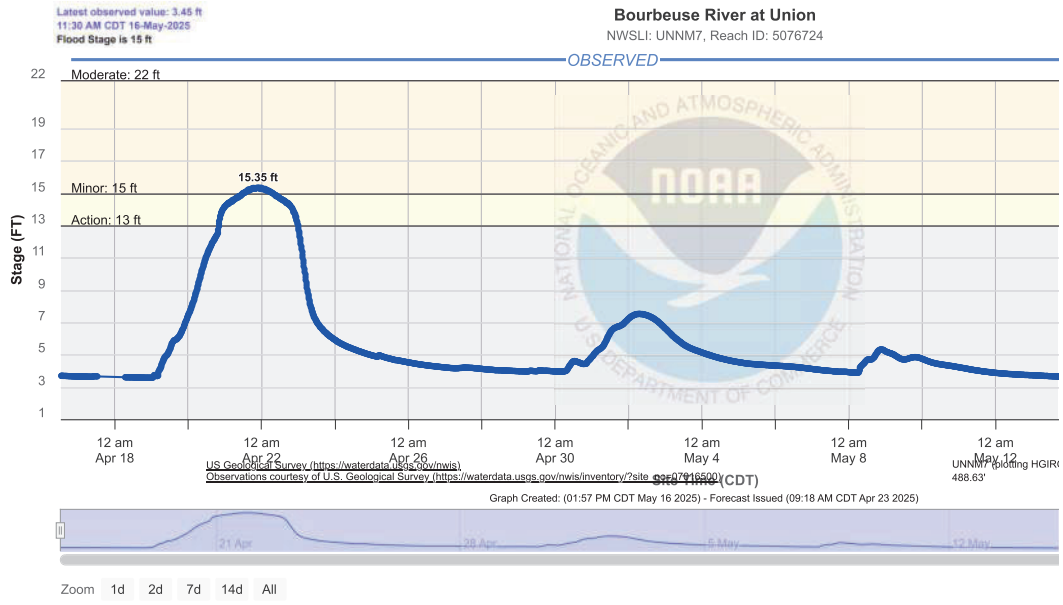
Last updated: May 16, 2025, 12:15 PM CDT

Tornado Watch

Official Forecast | National Water Model Guidance

← UPSTREAM GAUGE (HTGM7)

Downstream gauge unavailable



Zoom 1d 2d 7d 14d All

Scale to Flood Categories

Auto Refresh

Traces and Thresholds Click to turn on/off display

Observed (OBS) 05/16/2025 11:30 AM CDT

Record: 34.3 ft

CATEGORY	STAGE
Major Flooding	26 ft
Moderate Flooding	22 ft
Minor Flooding	15 ft
Action	13 ft

Reliability of the Forecast:

NOTE: Forecasts are issued as needed during times of high water, but are not routinely available.

Flood Impacts

31.7 - At this height, the McDonald's restaurant at U.S. Hwy 50 and Missouri Hwy 47 will begin flooding without additional protection. They can install flood panels around the restaurant to add an additional 3 feet of protection to this height.

31.3 - U.S. Highway 50 will be closed near this height in both directions near the Bourbeuse River bridge.

31 - Near this height...Missouri State Highway 47 will be closed in both directions just north of U.S. Highway 50.

29.6 - Phillips 66 at East Main and Highway 47 North floods at floor level.

29.2 - Shades of Gold salon and the video store on U.S. Highway 50 begin to flood.

28.9 - Mistler's Oak Furniture on Missouri Highway 47 begins to flood from Fenton Creek backwater.

26.9 - Parking lot at Mistlers Oak Furniture begins to flood.

26.6 - Dickey Bub Farm and Home begins to flood at floor level.

26.4 - The store front adjacent to Dickey Bub begins to flood.

25.6 - Water enters the lift station behind the Dickey Bub store.

25.2 - State Highway AT floods near the intersection with State Highway O near the I-44 bridge over the Bourbeuse River.

24.5 - Water begins flooding the streets and property of the Bourbeuse Camp Trailer Park at Missouri Highway AT and U.S. Highway 50.

24.2 - Water enters the upper floor at Crystal Ice and Fuel. Also, North Bend Loop Road south of Union begins flooding near this height.

23.6 - Lower floor of Crystal Ice and Fuel begin to flood.

23.5 - Parking lot at East Main Street and East State Street is covered.

23.4 - East Main Street is closed.

23 - Old Rock Road begins to flood.

22.5 - Water begins covering East Main Street.

22.3 - The lower quarter of the parking lot at the Dickey Bub Farm & Home store is flooded.

21.9 - Water begins covering Old County Farm Road.

21 - Near this height, water begins covering Highway O between Highway AM and American Inn Road.

19.8 - Near this height, Missouri State Route UU is closed in both directions.

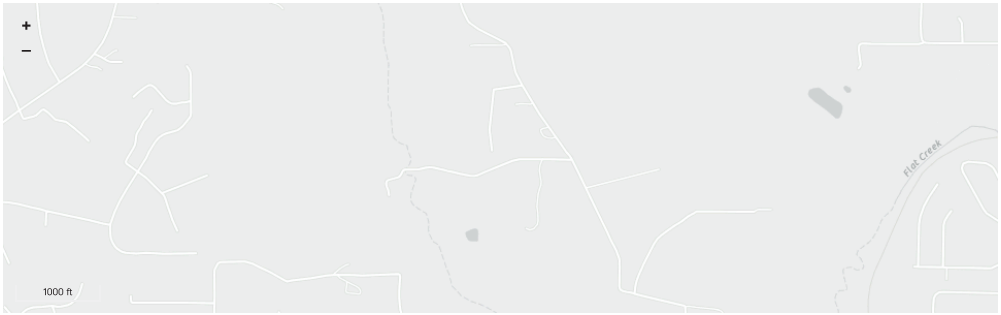
17 - Flat Creek backs up to Smeltzer's Park.

SHOW LESS FLOOD IMPACTS

Gauge Info

Coordinates	38.4442, -90.9956
RFC	NCRFC (/rfc/NCRFC)
State	MO (/state/MO)
WFO	LSX (/wfo/lsx)
County	Franklin
Data Provider(s)	
US Geological Survey	USGS--Water Resources of the United States (https://waterdata.usgs.gov/nwis)
USGS	07016500 (https://waterdata.usgs.gov/nwis/inventory/?site_no=07016500)

Gauge Location



☐ Display UNNM7 marker
☐ Display FEMA's National Flood Hazard Layers

Recent Crests

1. 19.15 ft on 11-07-2024 **(P)**
2. 15.14 ft on 04-04-2024
3. 19.60 ft on 08-05-2023
4. 18.55 ft on 03-30-2023
5. 17.29 ft on 03-06-2023

SHOW ALL

Historic Crests

1. 34.31 ft on 12-29-2015
2. 33.80 ft on 12-05-1982
3. 29.38 ft on 05-02-2017
4. 28.50 ft on 08-22-1915 [1]
5. 27.77 ft on 04-13-1994

SHOW ALL

Vertical Datum Table

TYPE	NAVD88
Major Flooding	514.63 ft

TYPE	NAVD88
Moderate Flooding	510.63 ft
Minor Flooding	503.63 ft
Action	501.63 ft
Latest Value	492.08 ft
Gauge Zero	488.63 ft

Gauge Photos

No Images Found

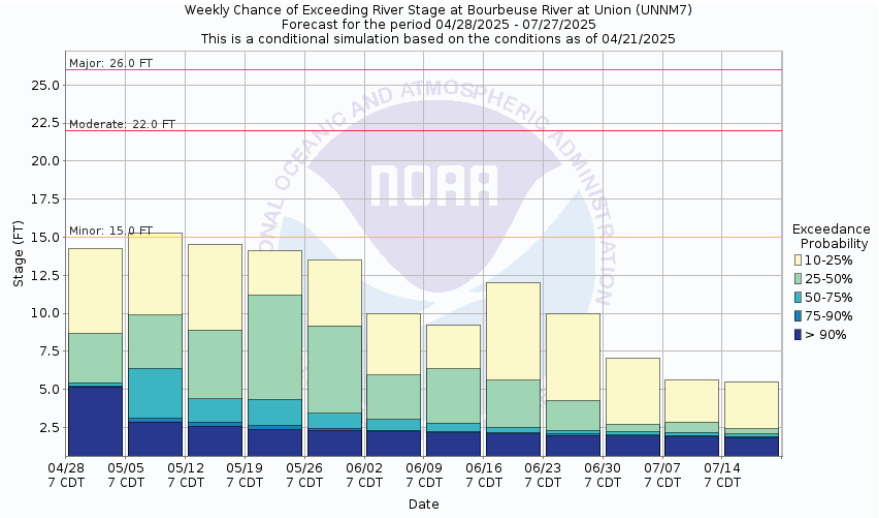
Probability Information

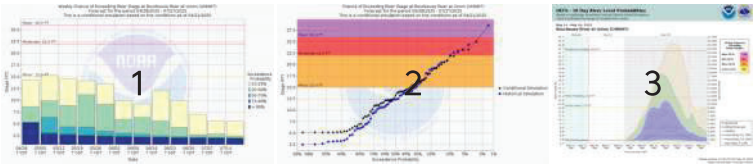
Photo 1 of 3

Weekly Chance of Exceeding Levels

About this graph (/about/weekly-chance-of-exceeding-levels-graphic)

Stage





Unique Local Info

How low could the river get? (http://water.weather.gov/resources/rsync/exceedance/UNNM7.nonexc.90day.gif)

Collaborative Agencies

The National Weather Service prepares its forecasts and other services in collaboration with agencies like the US Geological Survey, US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here (/about/meet-our-partners).

Resources

Hydrologic Resource Links

- River Forecast Centers (/about/rfc)
- Text Products (/about/textprods/LSX)
- Past Precipitation (https://water.noaa.gov/precip)
- Forecast Precipitation (https://www.wpc.ncep.noaa.gov/#page=qpf)
- Inundation Mapping Locations (/about/fim-locations)
- NWS Alert Messaging (http://inws.ncep.noaa.gov/)
- USGS Alert Messaging (http://water.usgs.gov/wateralert)

Additional Resource Links

- NWS Precipitation and River Forecasting (https://www.noaa.gov/jetstream/rfcs)
- Area Hydrographs (/area/LSX)
- Snow Information (http://www.nohrsc.noaa.gov/)

WFO Information

Weather Forecast Office
St. Louis
12 Missouri Research Park Drive
St. Charles, MO 63304
(636) 441-8467 (tel:(636) 441-8467)
Ask Questions/Webmaster (mailto:nws.stlouis@noaa.gov,Mark.Fuchs@noaa.gov?)
Official Homepage (https://www.weather.gov/LSX)

APPENDIX C - CURRENT FEMA FIS STUDY

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BERGER, CITY OF	290132
FRANKLIN COUNTY, UNINCORPORATED AREAS	290493
GERALD, CITY OF*	290734
LESLIE, VILLAGE OF*	290304
MIRAMIGUOA PARK, VILLAGE OF	290992
NEW HAVEN, CITY OF	290133
OAK GROVE, VILLAGE OF	290554
PACIFIC, CITY OF	290134
PARKWAY, VILLAGE OF*	290532
ST. CLAIR, CITY OF	290135
SULLIVAN, CITY OF	290136
UNION, CITY OF	290137
WASHINGTON, CITY OF	290138

*No Special Flood Hazard Areas Identified

FEMA

REVISED:

JUNE 5, 2020

FLOOD INSURANCE STUDY NUMBER
29071CV001C
Version Number 2.4.3.5

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Busch Creek	18P-21P
Calvey Creek	22P-26P
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Dubois Creek	28P-31P
Fenton Creek	32P
Fiddle Creek	33P-36P
Flat Creek	37P-40P
Flat Creek North Tributary	41P
Guenzler Creek	42P
Happy Sock Creek	43P-44P
Labadie Creek	45P
Labadie Creek Tributary	46P
Little Calvey Creek	47P-49P
Little Fox Creek	50P-51P
Little Meramec River	52P-54P
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Published Separately

Flood Insurance Rate Map (FIRM)

FLOOD INSURANCE STUDY REPORT
FRANKLIN COUNTY, MISSOURI

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would

be prohibitively expensive if the premiums were not subsidized by the Federal Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Franklin County, Missouri.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS Report, the location of that data is identified.

The location of flood hazard data for participating communities in multiple jurisdictions is also indicated in the table.

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Berger, City of	290132	10300200	29071C0015D	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Franklin County, Unincorporated areas	290493	10300200, 07140103, 07140102, 07140104	29071C0005D, 29071C0010D 29071C0015D, 29071C0020D 29071C0040D, 29071C0050D 29071C0065D, 29071C0075D	
Franklin County, Unincorporated areas	290493	10300200, 07140103, 07140102, 07140104	29071C0100D, 29071C0105E 29071C0110D, 29071C0125D 29071C0130D, 29071C0135D 29071C0140D, 29071C0145D 29071C0165D, 29071C0170D 29071C0175D, 29071C0180D 29071C0185D, 29071C0190D 29071C0195E, 29071C0205D 29071C0213E, 29071C0215E 29071C0225E, 29071C0250D 29071C0255D, 29071C0260D 29071C0265D, 29071C0270D 29071C0280D, 29071C0285D 29071C0290D, 29071C0295D 29071C0305D, 29071C0310D 29071C0315D, 29071C0316E 29071C0320E, 29071C0330E 29071C0331E, 29071C0332E 29071C0333E, 29071C0334E 29071C0340E, 29071C0345E 29071C0351E, 29071C0353E 29071C0355E, 29071C0365E 29071C0375D, 29071C0380D 29071C0385D, 29071C0390D 29071C0395D, 29071C0405D 29071C0410D, 29071C0415D 29071C0420D, 29071C0430D 29071C0435D, 29071C0440E 29071C0445E, 29071C0451E 29071C0455E, 29071C0460E 29071C0465E, 29071C0470E 29071C0480E, 29071C0485E 29071C0490E, 29071C0495E 29071C0501E, 29071C0525E 29071C0550D, 29071C0555D 29071C0560D, 29071C0575D 29071C0577E, 29071C0580E 29071C0585E, 29071C0600D 29071C0625E, 29071C0650E	
Gerald, City of[1]	290734	07140103, 10300200	29071C0250D	
Leslie, Village of[1]	290304	07140103, 10300200	29071C0265D	

Table 1: Listing of NFIP Jurisdictions (continued)

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Miramiguoa Park, Village of	290992	07140102	29071C0577E, 29071C0585E	
New Haven, City of	290133	10300200	29071C0105E	
Oak Grove, Village of	290554	07140103	29071C0560D	
Pacific, City of	290134	07140102	29071C0213E, 29071C0331E, 29071C0332E, 29071C0334E, 29071C0351E, 29071C0353E, 29071C0355E	
Parkway, Village of[1]	290532	07140102	29071C0455E	
St. Clair, City of	290135	07140103, 07140102	29071C0315D, 29071C0435D, 29071C0451E, 29071C0455E	
Sullivan, City of	290136	0714103, 0714102	29071C0420D, 29071C0555D, 29071C0560D, 29071C0575D[1]	
Union, City of	290137	07140103	29071C0285D, 29071C0295D, 29071C0305D, 29071C0315D, 29071C0316E	
Washington, City of	290138	10300200	29071C0130D, 29071C0135D, 29071C0140D, 29071C0145D, 29071C0165D	

[1] No Special Flood Hazard Areas Identified

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report.

Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, "Map Repositories," within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

  The initial Countywide FIS Report for Franklin County became effective on October 18, 2011. Refer to Table 28 for information about subsequent revisions to the FIRMs.

- Selected FIRM panels for the community may contain information (such as floodways and cross sections) that was previously shown separately on the corresponding Flood Boundary and Floodway Map (FBFM) panels. In addition, former flood hazard zone designations have been changed as follows:

Old Zone	New Zone
A1 through A30	AE
V1 through V30	VE
B	X (shaded)
C	X (unshaded)

The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Visit the FEMA Web site at www.fema.gov/national-flood-insurance-program-community-rating-system or contact your appropriate FEMA Regional office for more information about this program.

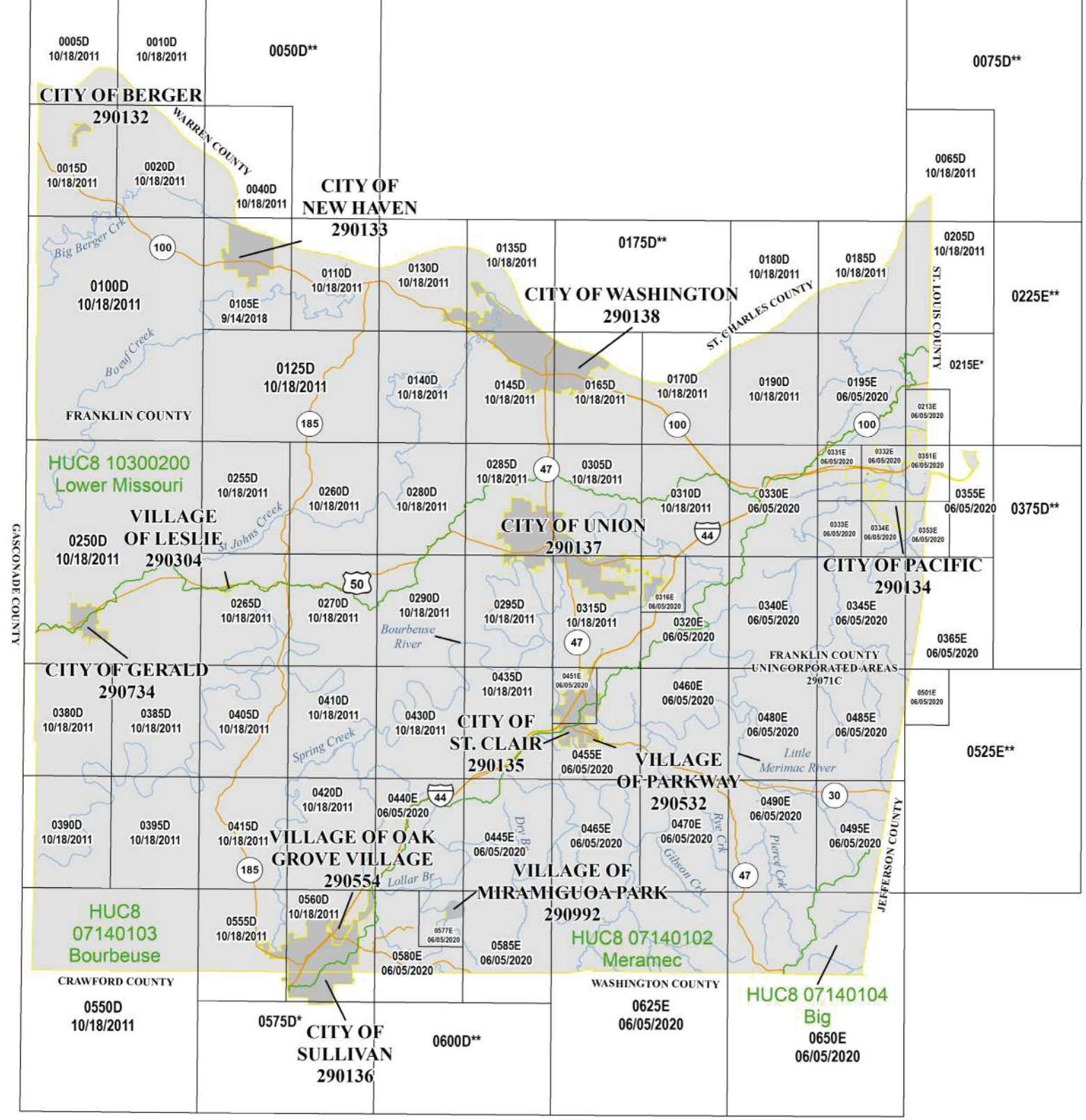
- Previous FIS Reports and FIRMs may have included levees that were accredited as reducing the risk associated with the 1% annual chance flood based on the information available and the mapping standards of the NFIP at that time. For FEMA to continue to accredit the identified levees, the levees must meet the criteria of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), titled "Mapping of Areas Protected by Levee Systems."

  Since the status of levees is subject to change at any time, the user should contact the appropriate agency for the latest information regarding levees presented in Table 9 of this FIS Report. For levees owned or operated by the U.S. Army Corps of Engineers (USACE), information may be obtained from the USACE National Levee Database (nld.usace.army.mil). For all other levees, the user is encouraged to contact the appropriate local community.

Please also note that FEMA has identified one or more levees in this jurisdiction that have not been demonstrated by the community or levee owner to meet the requirements of 44 CFR 65.10, of the NFIP regulations as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. As such, there are temporary actions being taken until such time as FEMA is able to initiate a new flood risk project to apply new levee analysis and mapping procedures to leveed areas. These temporary actions involve using the flood hazard data shown on the previous effective FIRM exactly as shown on that prior FIRM and identifying the area with bounding lines and special map notes. If a vertical datum conversion was executed for the county**,** then the Base Flood Elevations shown on the FIRM will now reflect elevations referenced to the North American Vertical Datum of 1988 (NAVD88). These levees are on FIRM panel 29071C0105D, on the Missouri River, and are identified on FIRM panels as potential areas of flood hazard data changes based on further review. Please refer to Section 4.4 of this FIS Report for more information.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Franklin County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, flooding sources, watershed boundaries, and USGS HUC-8 codes.



1 inch = 23,333 feet 1:280,000

0 6,000 12,000 24,000 36,000 48,000 Feet

p Projection:

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP INDEX

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Missouri State Plane East zone(FIPSZONE 2401)**.** The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988**.** These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988**,** visit the National Geodetic Survey website at www.ngs.noaa.gov.

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by United States Department of Agriculture Farm Service Agency at a scale of 1:5,000. All panels use base map information provided by the U.S. Geological Survey at a scale of 1:12,000. For information about base maps, refer to section 6.2 “Base Map” in the FIS report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Franklin County, Missouri, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.

ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before March 20, 2020.

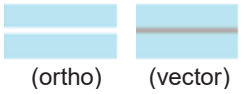
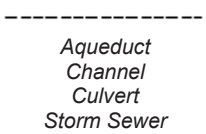
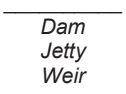
FLOOD RISK REPORT: A Flood Risk Report (FRR) is available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Franklin County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood. See Notes to Users for important information.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

	Levee, Dike, or Floodwall
Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. See Notes to Users for important information.*	
CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)
ZONE AO (DEPTH 2)	Zone designation with Depth

ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}E$	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16’ 52.5”	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Franklin County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Franklin County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Within this jurisdiction, there are one or more levees that have not been demonstrated by the communities or levee owners to meet the requirements of the Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) as it relates to the levee's capacity to provide 1-percent-annual-chance flood protection. As such, the floodplain boundaries in this area are subject to change. Please refer to Section 4.4 of this FIS Report for more information on how this may affect the floodplain boundaries shown on this FIRM.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Birch Creek	Franklin County, Unincorporated Areas; St. Clair, City of; Union, City of	Approximately 0.21 mile downstream of State Highway 50	Prairie Del Road	07140103	3.9		N	VE, AE, AO	1989
Bourbeuse River	Franklin County, Unincorporated Areas; Union, City of	Approximately 0.22 mile downstream of St. Marys Road	Franklin County boundary	07140103	96.0		Y	AE	1997
Bourbeuse River Tributary	Franklin County, Unincorporated Areas; Union, City of	Approximately 0.57 mile downstream of State highway 50	Approximately 1.1 miles upstream of St. Andrews Drive	07140103	2.5		Y	AE	2007
Brown's Branch	Franklin County, Unincorporated Areas	Confluence with Dubois Creek	North Goodes Mill Road	10300200	4.9		N	AE	1997
Brush Creek	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Meramec River	Approximately 909 feet upstream of Robertsville Road	07140102	8.2		Y	AE	2017
Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Dubois Creek	Approximately 1 mile upstream of State Highway 100	10300200	4.9		Y	AE	2010
Calvey Creek	Franklin County, Unincorporated Areas	Confluence with the Meramec River	Jefferson/Franklin County Boundary	07140102	8.0		Y	AE	2017
Calvey Creek and Tributaries	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	1 square mile drainage area of all Zone A streams	07140102	6.2		N	A	2017
Calvey Creek Tributary 1	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Approximately 60 feet downstream of South Shore Drive	07140102	1.4		Y	AE	2017

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Dubois Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Meramec River	Approximately 0.38 mile upstream of Calvey Creek Road	10300200	8.0		N	AE	2010
Fenton Creek	Franklin County, Unincorporated Areas; Union, City of	From approximately 0.27 mile downstream of confluence of Busch Creek	Approximately 1.2 miles upstream of State Highway 47	07140103	1.2		N	AE	2009
Fiddle Creek	Franklin County, Unincorporated Areas	From 165 feet downstream of Labadie Bottom Road	Fiddle Creek Road	10300200	3.8		Y	AE	1984
Flat Creek	Franklin County, Unincorporated Areas; Union, City of	From confluence with Bourbeuse River	Judith Springs Road	07140103	3.8		Y	AE	1981
Flat Creek North Tributary	Franklin County, Unincorporated Areas; Union, City of	From confluence with Flat Creek	Approximately 1.09 miles upstream of Park Avenue	07140103	1.2		Y	AE	1981
Guenzler Creek	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Jefferson/Franklin County Boundary	07140102	1.2		Y	AE	2017
Happy Sock Creek	Franklin County, Unincorporated Areas; St. Clair, City of	From confluence with Bourbeuse River	Approximately 0.27 mile upstream of County Highway AB	07140103	4.2		Y	AE	1984
Indian Creek and Tributaries	Franklin County, Unincorporated Areas	Indian Creek Confluence with Meramec River	1 square mile drainage area of all Zone A streams	07140102	21.6		N	A	2017
Labadie Creek	Franklin County, Unincorporated Areas	From confluence with Missouri River	County Highway MM	10300200	4.3		N	A	1984
Labadie Creek Tributary	Franklin County, Unincorporated Areas	From confluence with Labadie Creek	Approximately 0.63 mile upstream of County Highway T	10300200	0.7		N	A	1984

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Little Fox Creek	Franklin County, Unincorporated Areas	Franklin/St. Louis County boundary	Approximately 2,525 feet upstream of Spring Valley Road	07140102	2.3		Y	AE	2017
Little Calvey Creek	Franklin County, Unincorporated Areas	Confluence with Calvey Creek	Approximately 1.6 miles upstream of Creek Bend Crossing	07140102	6.3		Y	AE	2017
Little Meramec River	Franklin County, Unincorporated Areas	Confluence of Pierce Creek	Approximately 1.6 miles upstream of Mo-F1	07140102	6.8		Y	AE	2017
Little Meramec River and Tributaries	Franklin County, Unincorporated Areas	Confluence with Little Meramec River	1 square mile drainage area of all Zone A streams	07140102	16.3		N	A	2017
Little Tavern Creek	Franklin County, Unincorporated Areas	From Chicago Rock Island Railroad	Approximately 0.46 mile upstream of County Highway T	10300200	1.5		N	AE	1984
Meramec River	Franklin County, Unincorporated Areas	Approximately 0.85 mile downstream of confluence of Wild Horse Creek	Franklin County boundary	07140102	70.5		Y	AE	2017
Meramec River and Tributaries	Franklin County, Unincorporated Areas	Confluence with Meramec River	1 square mile drainage area of all Zone A streams	07140102	48.4		N	A	2017
Missouri River	Franklin County, Unincorporated Areas; New Haven, City of; Washington, City of	From approximately 3.35 miles downstream of the Franklin County boundary	The upstream Franklin County boundary	10300200	44.5		Y	AE	1984
Monroe Branch	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Brush Creek	Approximately 60ft upstream of N Monroe Street	07140102	1.2		Y	AE	2017
Phelan Branch	Franklin County, Unincorporated Areas	Confluence with Meramec River	Jefferson/Franklin County Boundary	07140102	1.3		Y	AE	2017

Table 2: Flooding Sources Included in this FIS Report (continued)

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Pin Oak Creek	Franklin County, Unincorporated Areas	Confluence with Bourbeuse River	County Highway AT	07140103	1.4		Y	AE	1984
Pin Oak Creek Tributary	Franklin County, Unincorporated Areas	Confluence with Pin Oak Creek	Approximately 0.2 mile upstream	07140103	0.2		N	AE	1984
Possum Creek	Franklin County, Unincorporated Areas	Confluence with Flat Creek	Approximately 0.65 mile upstream of Main Street	07140103	1.0		Y	AE	1984
South Branch Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.85 mile upstream of State Highway 100	10300200	1.1		Y	AE	1981
Southwest Branch Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.91 mile upstream of Country Club Road	10300200	4.4		Y	AE	1981
Saint John's Creek	Franklin County, Unincorporated Areas; Washington, City of	Missouri Pacific Railroad	Approximately 1.25 miles upstream of County Highway 100	10300200	3.8		Y	AE	1981
Thornton Branch	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Brush Creek	Approximately 2,119 feet upstream of Viaduct Street	07140102	0.9		Y	AE	2017
Unnamed Tributary to Busch Creek	Franklin County, Unincorporated Areas; Washington, City of	Confluence with Busch Creek	Approximately 0.3 mile upstream	07140102	0.3		Y	AE	1981
Wild Horse Creek	Franklin County, Unincorporated Areas; Pacific, City of	Confluence with Meramec River	Just downstream of Interstate 44	07140102	1.0		N	AE	2017
Winch Creek	Franklin County, Unincorporated Areas	Confluence with Meramec River	Approximately 1,562 feet upstream of Turkey Creek Road	07140102	4.3		Y	AE	2017
Winsel Creek	Franklin County, Unincorporated Areas; Oak Grove, Village of; Sullivan, City of	Bacon Ridge Road	Just upstream of Elmont Road	07140103	7.6		Y	AE	1979

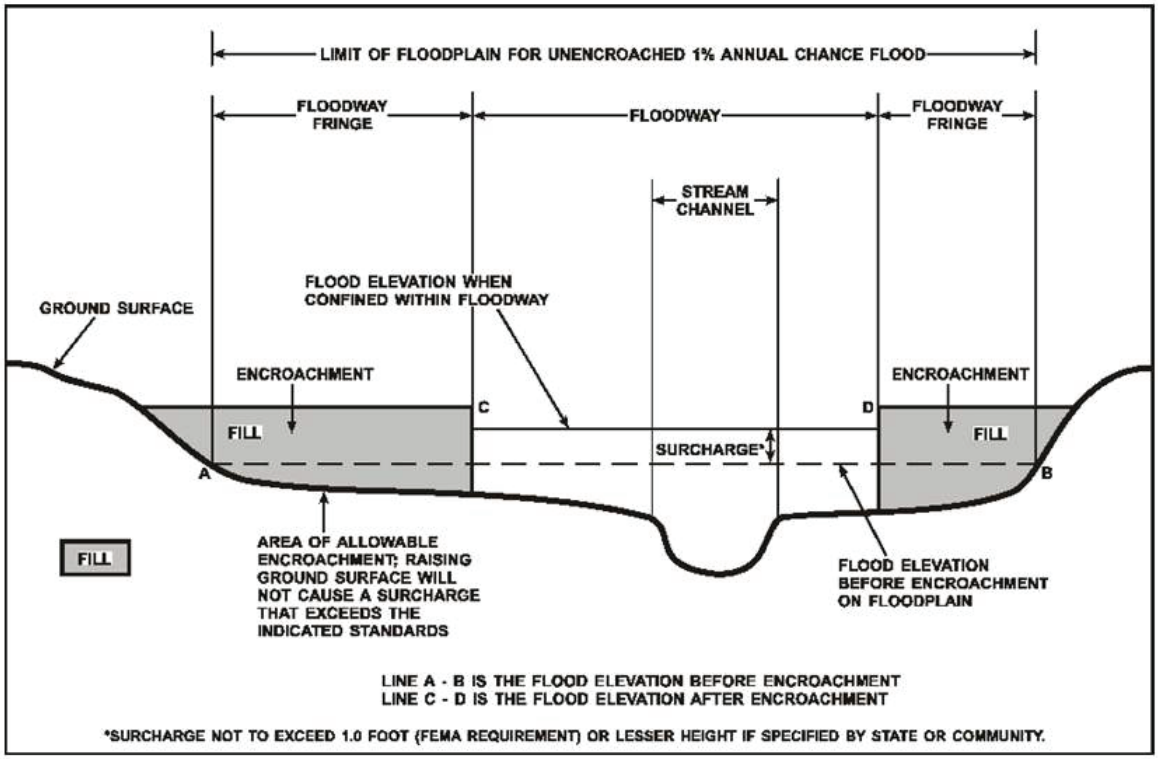
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross

sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3 In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, “Map Legend for FIRM.” Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Franklin County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Berger, City of	A, AE, X
Franklin County, Unincorporated areas	A, AE, X
Gerald, City of	X
Leslie, Village of	X
Miramiguoa Park, Village of	AE, X
New Haven, City of	A, AE, D, X
Oak Grove, Village of	A, AE, X
Pacific, City of	AE, X
Parkway, Village of	X
St. Clair, City of	A, AE, X
Sullivan, City of	A, AE, X
Union, City of	AE, X
Washington, City of	A, AE, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information

[Not applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Lower Missouri Basin	10300200	Missouri River	Affects the northern portion of the county splitting through the middle of the City of Gerald and continues northeast	1,591
Bourbeuse River Basin	07140103	Bourbeuse River	Enters on the west of the county on the southern half of the City of Gerald, it continues east fully encompassing the City of Union, and then cuts back to the southwest bisecting both City of St. Clair and City of Sullivan	844
Meramec River Basin	07140102	Meramec River	Covers the other halves of the City of St. Clair and City of Sullivan and encompasses the southeastern portion of the county	2,150
Big River Basin	07140104	Big River	Smallest watershed within Franklin County, encompassing the southeastern corner of the county	970

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Franklin County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Pryors Branch	Most of the City of Berger in Franklin County is situated in the upland area above the floodplain of the Missouri River. Pryors Branch and its tributaries form the major stream system within the corporate limits. Road and railroad crossings, which constrict the flow during periods of heavy rains, produce flooding at and above the crossings. The area of the city that extends north of the Missouri Pacific Railroad embankment between the Missouri River and the bluff line is vulnerable to floods from the Missouri River. This area is sparsely populated and is used predominantly for agriculture.
Missouri River	Records dating back to 1844 indicate flood heights on the Missouri River at Hermann, Missouri, seven miles upstream, have exceeded flood stage many times. The flood of 1973, which was the highest in the last several years, was considered a 4 percent annual chance event. The flood of 1951 had a peak discharge of 618,000 cubic feet per second (cfs), and was estimated to be approximately the 1 percent annual chance event. In the past 25 years, water levels above flood stage have been recorded in 1951, 1952, 1958, 1960, 1961, 1972 and 1973 and in 1993. The Missouri River is the major source of flooding in Franklin County. In recent times, the elevation of 501.0 feet (approximately 2 percent annual chance event) recorded in 1951, has been the highest stage reached. During this flood, sandbagging prevented the New Haven central business district from being inundated but widespread flooding occurred in basements as a result of seepage and backups. In 1973, the river reached an elevation of 499.4 feet (Approximately 4 percent annual chance event), the highest since 1951. The construction of a levee protection system in 1955, which has an elevation of 504.2 feet, protected the central business district; but due to the prolonged length of time, the river was above flood stage, and seepage into basements and ground settlements caused problems to the city and individuals. The upland streams will experience minor flooding as a result of localized storms. In the Midwest, where large masses of cold and warm air collide, intense thunderstorm activity is common. The flash flooding which results from this activity is characterized by a rapid rise in stream levels with durations usually restricted to several hours. In 1993, what is known as “The Great Flood of 1993” caused unprecedented widespread flooding throughout the upper Mississippi River watershed. The record breaking flood stages caused an estimated $20 billion worth of damage from the Missouri River and Mississippi River. Franklin County sharing its northern border with the Missouri River did not escape the damage.
Localized Rainfall	From December 2015 to January 2016 there was excess rainfall in central and southeastern United States; with more than 20 inches of rain falling in a 19-day period from December 12 to December 31, 2015. This resulted in major flooding, with 172 USGS stream gages recording peaks that ranked in the top 5 all time for the period of record. Franklin County, along with 36 other Missouri Counties and the City of St. Louis was declared Federal Disaster Areas.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Brush Creek	Land along the streams within the City of Pacific, Missouri is subject to flooding; and flood damage has occurred on several occasions in the past. The principal flood problems occur along the eastern edge of the corporate limits due to Meramec River flooding and along the entire reach of Brush Creek that is within the corporate limits.
Winsel Creek	Winsel Creek in Franklin County is another major source of flooding and the floodplains are primarily farmland or undeveloped, therefore, flood problems are limited to the inundation of fields and a few crossroads. The tributaries of Winsel Creek extend into the more urbanized areas of the city and cause minor flooding, generally due to restricted culvert openings. The area's most commonly affected are the intersection of Elmont Road and Springfield Road in the southern end of the city, and at the ends of Grace Avenue and Meramec Drive in the north. Minor flooding also occurs between Clark and Church Streets, northwest of the railroad track in the downtown area. This flooding often extends down Euclid Avenue toward the Elmont Road/Springfield Road area previously mentioned. Flooding in these areas and along Winsel Creek is generally caused by flash flooding from localized storms. Flash flooding results from the intense thunderstorm activity associated with the Midwest where large masses of cold and warm air collide. This type of flooding is characterized by a rapid rise in stream levels with durations usually restricted to several hours. The most recent occurrences of this type occurred on August 26, 1975, and August 10 and 22, 1977. Rainfall amounts for these dates were 3.71, 3.70, and 4.91 inches, respectively.
Missouri River	Much of the City of Washington is situated in the upland area above the floodplain of the Missouri River. Busch Creek, Saint Johns Creek, Dubois Creek and their tributaries also have floodplain areas within the corporate limits. The community has experienced flooding from the Missouri River and the tributary streams that flow through the community. Flooding from the Missouri River has already been covered early in this text.

Table 7 contains information about historic flood elevations in the communities within Franklin County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Bourbeuse River	Highway 50 Bridge, East of Union, MO	34.48	2015	362	USGS gage 07016500
Bourbeuse River	Highway 50 Bridge, East of Union, MO	28.80	2017	60	USGS gage 07016500
Meramec River	Highway F Bridge, South East of Pacific, MO	33.42	2015	100	USGS gage 07017020

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Meramec River	Highway F Bridge, South East of Pacific, MO	33.05	2017	100	USGS gage 07017020

4.3 Non-Levee Flood Protection Measures

Table contains information about non-levee flood protection measures within Franklin County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

[Not Applicable to this Flood Risk Project]

4.4 Levees

For purposes of the NFIP, FEMA only recognizes levee systems that meet, and continue to meet, minimum design, operation, and maintenance standards that are consistent with comprehensive floodplain management criteria. The Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10) describes the information needed for FEMA to determine if a levee system reduces the risk from the 1% annual chance flood. This information must be supplied to FEMA by the community or other party when a flood risk study or restudy is conducted, when FIRMs are revised, or upon FEMA request. FEMA reviews the information for the purpose of establishing the appropriate FIRM flood zone.

Levee systems that are determined to reduce the risk from the 1% annual chance flood are accredited by FEMA. FEMA can also grant provisional accreditation to a levee system that was previously accredited on an effective FIRM and for which FEMA is awaiting data and/or documentation to demonstrate compliance with Section 65.10. These levee systems are referred to as Provisionally Accredited Levees, or PALs. Provisional accreditation provides communities and levee owners with a specified timeframe to obtain the necessary data to confirm the levee's certification status. Accredited levee systems and PALs are shown on the FIRM using the symbology shown in Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Franklin County.
Figure 3 and in Table 9. If the required information for a PAL is not submitted within the required timeframe, or if information indicates that a levee system no longer meets Section 65.10, FEMA will de-accredit the levee system and issue an effective FIRM showing the levee-impacted area as a SFHA.

FEMA coordinates its programs with USACE, who may inspect, maintain, and repair levee systems. The USACE has authority under Public Law 84-99 to supplement local efforts to repair flood control projects that are damaged by floods. Like FEMA, the USACE provides a program to allow public sponsors or operators to address levee system maintenance

deficiencies. Failure to do so within the required timeframe results in the levee system being placed in an inactive status in the USACE Rehabilitation and Inspection Program. Levee systems in an inactive status are ineligible for rehabilitation assistance under Public Law 84-99.

FEMA coordinated with the USACE, the local communities, and other organizations to compile a list of levees that exist within Franklin County. Table 9, “Levees,” lists all accredited levees, PALs, and de-accredited levees shown on the FIRM for this FIS Report. Other categories of levees may also be included in the table. The Levee ID shown in this table may not match numbers based on other identification systems that were listed in previous FIS Reports. Levees identified as PALs in the table are labeled on the FIRM to indicate their provisional status.

Please note that the information presented in Table 9 is subject to change at any time. For that reason, the latest information regarding any USACE structure presented in the table should be obtained by contacting USACE and accessing the USACE National Levee Database. For levees owned and/or operated by someone other than the USACE, contact the local community shown in Table 31.

Please note that FEMA has identified levees in this jurisdiction that have not been demonstrated by the community or levee owner to meet the requirements of 44 CFR 65.10 of the NFIP regulations as it relates to the levee’s capacity to provide 1-percent-annual-chance flood protection. As such, the existing flood hazard analysis in the affected areas has been carried forward from the previously-printed effective FIRM panel(s) and the area has been clearly identified on the FIRM panel with notes and bounding lines. This has been done to inform users that a temporary mapping action has been put in place until such time as FEMA is able to initiate a new flood risk project to apply new flood hazard mapping procedures for leveed areas. These levees occur on FIRM panel(s) 29071C0105E, on the Missouri River, and are identified on the FIRM panel(s) as potential areas of flood hazard data changes based on further review. Levees and their accreditation status are listed in Table 9 of this FIS Report.

Table 9: Levees

Community	Flooding Source	Levee Location	Levee Owner	USACE Levee	Levee ID	Covered Under PL84-99 Program?	FIRM Panel(s)
New Haven, City of	Missouri River	Left Bank	Berger Levee District of Franklin County, Missouri	Yes	3605000117	Yes	29071C0105E

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the “1-percent-plus”, or “1%+”, annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% “plus”). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for

each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brady Creek	At the confluence with Calvey Creek	21.76	1,030	1,460	1,840	2,260	*	3,400
Brady Creek	Approximately 3,270 feet upstream of Calvey Creek Road	3.01	880	1250	1,580	1,940	*	2,970
Brady Creek	At the confluence with Brady Creek Tributary 1	2.17	640	910	1,140	1,420	*	2,200
Brady Creek	At Mount Pleasant Drive	0.4	120	170	210	260	*	390
Brady Creek Tributary 1	At the confluence with Brady Creek	1.29	410	590	750	930	*	1,420
Brady Creek Tributary 1	Approximately 3,500 feet upstream of Calvey Creek Road	0.71	240	350	450	550	*	840
Birch Creek	At confluence with Bourbeuse River	12.3	4,406	*	6,675	7,683	*	12,715
Birch Creek	At Prairie Dell Road	5.7	2,155	*	3,265	3,761	*	6,246
Bourbeuse River	At the confluence with the Meramec River	846	23,300	*	33,900	38,900	*	51,800
Bourbeuse River	Approximately 3.5 miles upstream of Northbend Road	781	26,900	*	40,300	46,400	*	62,500
Bourbeuse River	At County Highway CC	608	31,200	*	51,400	61,800	*	91,000

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Bourbeuse River	Approximately 6.4 miles upstream of County Highway H	471	28,600	*	46,600	55,400	*	79,700
Bourbeuse River	Union Gage at U.S. Highway 50	808	23,700	*	34,500	39,600	*	52,600
Bourbeuse River Tributary	At the confluence with Bourbeuse River	3	1,285	*	1,951	2,248	*	3,729
Brown's Branch	At the confluence with Dubois Creek	14.1	3,450	*	5,300	6,100	*	8,400
Brown's Branch	Upstream of tributary, approximately 0.76 mile downstream of Busch Road	7.9	2,450	*	3,700	4,250	*	6,100
Brown's Branch	Approximately 0.94 mile upstream of North Goodes Mill Road	2.4	1,200	*	1,850	2,100	*	2,900
Brown's Branch	At North Goodes Mill Road	1.1	750	*	1,150	1,300	*	1,800
Brush Creek	Approximately 4,210 feet downstream of Gray Summit Road	3.96	1,170	1,650	2,070	2,590	*	3960
Brush Creek	Approximately 66 feet upstream of South 1st Street	10.58	2,900	4,130	5,190	6,370	*	10,000
Brush Creek	Approximately 64 feet upstream of Denton Road	8.96	2,410	3,440	4,330	5,310	*	8,430

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brush Creek	Approximately 7,111 feet downstream of Gray Summit Road	4.96	1,470	2,070	2,590	3,230	*	4,960
Brush Creek	Approximately 1,447 feet upstream of confluence with Meramec River	10.88	2910	4140	5230	6430	*	10,070
Brush Creek	Approximately 1,640 feet upstream of confluence with Meramec River	10.74	2,870	4,090	5,160	6,350	*	9,940
Brush Creek	At the confluence with Monroe Branch	8.93	2,410	3,440	4,330	5,310	*	8,430
Brush Creek	Approximately 577 feet upstream of Trail House Loop Road	1.73	620	890	1,130	1,400	*	2,130
Brush Creek	Approximately 168 feet upstream of Quarry Road	2.33	750	1,070	1,380	1,710	*	2,660
Brush Creek	Approximately 2,862 feet upstream of Quarry Road	1.82	630	920	1,170	1,440	*	2,200
Brush Creek	Approximately 9,066 feet downstream of Gray Summit Road	5.71	1,660	2,360	2,930	3,620	*	5,640
Brush Creek	At the confluence with Thornton Branch	8.01	2,220	3,150	3,930	4,840	*	7,640
Brush Creek	Approximately 4,973 feet downstream of Gray Summit Road	4.73	1,410	1,990	2,480	3,100	*	4,750

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Brush Creek	Approximately 1,198 feet downstream of Gray Summit Road	3.08	910	1,300	1,650	2,040	*	3,170
Brush Creek	Approximately 4,057 feet downstream of Gray Summit Road	3.25	950	1,350	1,700	2,120	*	3,260
Brush Creek	Approximately 909 feet upstream of Robertsville Road	1.29	480	690	870	1,070	*	1,610
Brush Creek	Approximately 286 feet upstream of Denton Road	9.13	2,460	3,510	4,420	5,420	*	8,590
Brush Creek	At the confluence with the Meramec River	10.9	2,820	4,030	5,090	6,280	*	9,870
Brush Creek	Approximately 2,382 feet downstream of S 1st Street	10.69	2,890	4,110	5,180	6,370	*	9,980
Calvey Creek	At the confluence with the Meramec River	40.93	7,480	10,400	13,330	16,690	*	25,880
Calvey Creek	Approximately 5,840 feet downstream of the confluence with Calvey Creek Tributary 1	39.95	7,490	10,400	13,370	16,750	*	26,000
Calvey Creek	Approximately 2,168 feet downstream of the confluence with Calvey Creek Tributary 1	39.13	7,750	10,690	13,670	17,060	*	26,440

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Calvey Creek	At the confluence with Calvey Creek Tributary 1	38.48	7,700	10,580	13,550	16,930	*	26,240
Calvey Creek	At the confluence with Little Calvey Creek	36.45	7,390	10,170	13,200	16,570	*	25,740
Calvey Creek	Approximately 70 feet downstream of Calvey Crossing Lane	27.74	5,340	7,750	9,920	12240	*	18,640
Calvey Creek	At the confluence with Calvey Creek Tributary 2	26.67	5,200	7,570	9,660	11,930	*	18,190
Calvey Creek	At the confluence with Brady Creek	25.24	5,050	7,400	9,440	11,610	*	17,670
Calvey Creek	Approximately 1,580 feet downstream of the confluence with Guenzler Creek	21.28	4,610	6,770	8,540	10,450	*	15,570
Calvey Creek	At the confluence with Guenzler Creek	21.2	4,650	6,820	8,580	10,480	*	15,670
Calvey Creek	Approximately 470 feet upstream of Highway HH	15.82	3,800	5,520	6,890	8,490	*	12,640
Calvey Creek	Approximately 2,225 feet upstream of Tom Frost Road	13.55	3,450	4,960	6,290	7,780	*	11,720
Calvey Creek	Approximately 470 feet upstream of Highway HH	0.7	220	310	390	480	*	730

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Calvey Creek	Approximately 1,965ft downstream of Calvey Church Road	10.74	3,020	4,290	5,370	6,600	*	9,920
Calvey Creek	Approximately 2,710 feet upstream of Calvey Church Road	5.87	1,630	2,290	2,870	3520	*	5,250
Calvey Creek	Approximately 340 feet upstream of Woodland Road	3.38	940	1,320	1,660	2,040	*	3,050
Calvey Creek	Approximately 630 feet downstream of Gravois Road	0.96	310	430	540	660	*	1,000
Calvey Creek Tributary 1	Approximately 75 feet upstream of the confluence with Calvey Creek	1.69	490	700	880	1,090	*	1,640
Calvey Creek Tributary 1	Approximately 4,165 feet upstream of the confluence with Calvey Creek	1.43	430	610	770	940	*	1,410
Calvey Creek Tributary 1	Approximately 7,265 feet upstream of the confluence with Calvey Creek	0.61	160	230	300	370	*	560
Calvey Creek Tributary 2	Approximately 1,270 feet upstream of the confluence with Calvey Creek	0.95	300	420	530	660	*	1,010

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Dubois Creek	Downstream of confluence with Busch Creek	34.5	13,000	*	20,400	24,100	*	42,200
Dubois Creek	Upstream of confluence with Busch Creek	22.4	7,990	*	13,100	15,600	*	27,500
Dubois Creek	Approximately 0.66 mile downstream of N Goodes Mill Road	7.1	2,050	*	3,100	3,500	*	4,750
Dubois Creek	At Bieker Road	4.0	1,600	*	2,450	2,850	*	3,800
Dubois Creek	At State Highway 47	2.4	1,250	*	1,950	2,250	*	3,000
Dubois Creek	Approximately 1.16 miles upstream of State Highway 47	1.1	780	*	1,200	1,400	*	1,950
Fiddle Creek	At Chicago, Rock Island & Pacific Railroad	9.4	2,900	*	4,600	5,300	*	7,100
Fiddle Creek	Upstream of tributary (near first crossing of Fiddle Creek Road)	5.8	2,400	*	3,750	4,300	*	6,000
Fiddle Creek	At Fiddle Creek Road (second crossing)	3.9	1,800	*	2,750	3,200	*	4,400
Fiddle Creek	At Fiddle Creek Road (fourth crossing)	2.4	1,300	*	2,050	2,400	*	3,250
Flat Creek North Tributary	Confluence with Flat Creek	1.9	1,310	*	1,950	2,230	*	2,660

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Happy Sock Creek	At confluence with Bourbeuse River	8.2	3,200	*	5,500	6,200	*	9,400
Happy Sock Creek	At County Highway AD	6.4	2,800	*	4,850	5,500	*	8,200
Happy Sock Creek	At Happy Sock Road North Crossing	6.7	2,750	*	4,700	5,400	*	7,800
Happy Sock Creek	At Happy Sock Road South Crossing	5.2	2,600	*	4,350	5,100	*	7,200
Happy Sock Creek	At East Happy Sock Road	4.0	2,400	*	3,850	4,450	*	5,200
Happy Sock Creek	Approximately 1,000 feet upstream of County Highway AB	3.1	2,200	*	3,550	4,050	*	5,600
Labadie Creek	At downstream Missouri and Pacific Railroad	15.2	3,500	*	5,400	6,200	*	8,900
Labadie Creek	At Missouri and Pacific Railroad (2,000 feet downstream of County highway MM)	10.5	3,400	*	5,300	6,100	*	8,500
Labadie Creek	At County Highway MM	4.6	1,800	*	2,700	3,150	*	4,200
Labadie Creek Tributary	At confluence with Labadie Creek	1.5	760	*	1,150	1,300	*	1,800
Little Calvey Creek	Just upstream of the confluence with Calvey Creek	8.06	2,310	3,260	4,090	5,030	*	7,380

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Calvey Creek	Approximately 901 feet downstream of Little Calvey Valley Road	7.34	2,160	3,050	3,830	4,720	*	6,980
Little Calvey Creek	Approximately 30 feet downstream of Little Calvey Creek Road	6.6	2,010	2,840	3,580	4,430	*	6,560
Little Calvey Creek	Approximately 2,780 feet downstream of Woodland Hills Road	5.43	1,740	2,470	3,120	3,860	*	5,720
Little Calvey Creek	Approximately 410 feet upstream of Woodland Hills Road	5.25	1,450	2,060	2,590	3,190	*	4,750
Little Calvey Creek	Approximately 15 feet downstream of Finney Road	3.73	1,060	1,500	1,890	2,320	*	3,450
Little Calvey Creek	At Creek Bend Crossing	3.11	890	1,260	1,580	1,940	*	2,880
Little Calvey Creek	Approximately 4,285 feet upstream of Creek Bend Crossing	2.27	650	920	1,150	1,410	*	2,100
Little Calvey Creek	Approximately 7,220 feet upstream of Creek Bend Crossing	1.48	400	570	720	880	*	1,320
Little Calvey Creek	Approximately 8,335 feet upstream of Creek Bend Crossing	0.77	190	270	350	430	*	640

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Fox Creek	Approximately 233 feet downstream of Fox Creek Crossing Drive	4.69	1,190	1,740	2,230	2,780	*	4,260
Little Fox Creek	Approximately 2,525 feet upstream of Spring Valley Road	1.02	260	370	480	590	*	900
Little Fox Creek	Approximately 2,541 feet upstream of Spring Valley Road	1.72	440	630	810	1,010	*	1,540
Little Fox Creek	Approximately 50 feet upstream of the confluence with Fox Creek	5.23	1,310	1,920	2,460	3,070	*	4,710
Little Fox Creek	Approximately 520 feet downstream from State Highway 00	2.44	620	900	1,150	1,440	*	2,200
Little Fox Creek	Approximately 1,373 feet downstream of Spring Valley Drive	3.5	910	1,320	1,690	2,100	*	3,220
Little Meramec River	Approximately 211 feet upstream of the confluence with the Meramec River	35.83	8,010	11,410	14,530	18,060	*	27,860
Little Meramec River	Approximately 1,245 feet downstream of Highway FF	12.78	3,440	4,860	6,170	7,680	*	11,630
Little Meramec River	Approximately 1,333 feet upstream of Project Road	1.36	390	540	680	830	*	1,240

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Meramec River	Approximately 3,292 feet upstream of the confluence with Little Meramec River Tributary 2	4.29	1,210	1,710	2,150	2,650	*	3,960
Little Meramec River	Approximately 5,232 feet upstream of Mill Hill Road	34.25	8,260	11,710	14,830	18,360	*	28,250
Little Meramec River	Approximately 1,267 feet upstream of Highway FF	11.81	3,250	4,600	5,820	7,230	*	10,910
Little Meramec River	Approximately 1,932 feet upstream of Gravois Road	13.58	3,630	5,110	6,490	8,090	*	12,280
Little Meramec River	Approximately 1,300 feet downstream of Mill Hill Road	35.22	8,230	11,640	14,830	18,390	*	28,360
Little Meramec River	Approximately 4,383 feet downstream of the confluence with Pierce Creek	32.57	8,050	11,420	14,460	17,890	*	27,430
Little Meramec River	Approximately 63 feet upstream of the confluence with Pierce Creek	14.31	3,740	5,230	6,630	8,260	*	12,700
Little Meramec River	At the confluence with Little Meramec River Tributary 1	9.15	2,610	3,690	4,650	5,740	*	8,590
Little Meramec River	At the confluence with Little Meramec River Tributary 3	1.82	500	710	900	1,110	*	1,670
Little Meramec River	At the confluence with Little Meramec River Tributary 2	5.28	1,480	2,100	2,640	3,250	*	4,860

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Little Meramec River	Approximately 60 feet upstream of the confluence with Little Meramec Tributary 3	1.5	430	600	750	920	*	1,370
Little Tavern Creek	At Chicago Rock Island & Pacific Railroad	1.7	*	*	*	*	*	*
Little Tavern Creek	Approximately 0.38 mile downstream of County Highway T	1.3	*	*	*	*	*	*
Little Tavern Creek	At County Highway T	0.9	*	*	*	*	*	*
Missouri River	At Creve Coeur Creek	523,969	443,000	*	606,000	674,000	*	829,000
Missouri River	At Femme Osage River	523,801	442,000	*	606,000	674,000	*	830,000
Missouri River	At Charrette Creek	523,423	441,000	*	605,000	674,000	*	831,000
Missouri River	At Lost Creek	523,060	440,000	*	605,000	673,000	*	832,000
Missouri River	At Hermann Gage	522,488	439,000	*	604,000	673,000	*	833,000
Monroe Branch	Approximately 60 feet upstream of N Monroe Street	0.35	120	170	220	280	*	430
Monroe Branch	Approximately 79 feet upstream of Thornton Street	0.56	190	280	360	450	*	700
Monroe Branch	Approximately 68 feet Upstream of the confluence with Brush Creek	0.74	260	380	490	610	*	940
Pin Oak Creek	At confluence with the Bourbeuse River	7.2	2,920	*	4,600	5,300	*	7,300

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Pin Oak Creek	Just downstream of Unnamed Tributary (Approximately 0.95 mile upstream of mouth)	6.1	2,870	*	4,550	5,300	*	7,100
Pin Oak Creek	Approximately 0.38 mile downstream of County Highway AT	4.0	2,130	*	3,390	3,920	*	5,400
Pin Oak Creek	At County Highway AT	1.9	1,170	*	1,830	2,110	*	2,900
Pin Oak Creek Tributary	At confluence with Pin Oak Creek	1.9	950	*	1,560	1,730	*	2,450
Possum Creek	At confluence with Flat Creek	0.5	630	*	920	1,040	*	1,180
South Branch Busch Creek	At confluence with Dubois Creek	2.7	1,760	*	2,800	3,260	*	5,540
South Branch Busch Creek	Approximately 370 miles upstream of State Highway 47	2.6	1,193	*	1,823	2,104	*	3,512
South Branch Busch Creek	Approximately 0.53 mile upstream of State Highway 47	1.4	842	*	1,311	1,521	*	2,585
Southwest Branch Busch Creek	At confluence of Busch Creek	5.6	2,170	*	3,260	4,200	*	7,670
Southwest Branch Busch Creek	Just downstream of State Highway 47	4.8	1,855	*	2,908	3,383	*	5,785

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Southwest Branch Busch Creek	Approximately 0.61 mile upstream of State Highway 47	4.6	2,487	*	3,818	4,413	*	7,407
St. John's Creek	Chicago-Rock Island and Missouri Pacific railroad bridge	85.4	7,000	*	10,000	11,500	*	15,000
St. John's Creek	At State Highway 100	82.6	7,000	*	*	*	*	*
Thornton Branch	Approximately 2,119 feet upstream of Viaduct Street	1.01	280	410	520	650	*	1,020
Thornton Branch	Approximately 52 feet upstream of W Union Street	1.3	390	550	700	860	*	1,350
Thornton Branch	Approximately 41 feet upstream of the confluence with Brush Creek	1.44	430	620	780	950	*	1,450
Unnamed Tributary to Busch Creek	At confluence with Busch Creek	1.0	736	*	1,190	1,400	*	2,430
Wild Horse Creek[1]	At the confluence with Meramec River.	0.84	N/A	N/A	N/A	N/A	N/A	N/A
Wild Horse Creek[1]	Approximately 40 feet downstream of E Sand Street	0.46	150	210	270	340	*	530
Winch Creek	At Phelan Farm Road	5.45	1,410	2,070	2,660	3,240	*	4,820
Winch Creek	Approximately 1,715 feet upstream of Turkey Creek Road	0.98	260	380	480	600	*	910

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Winch Creek	Approximately 90 feet downstream of Turkey Creek Road	1.1	290	420	540	670	*	1,020
Winch Creek	Approximately 2,080 feet downstream of Turkey Creek Road	1.53	420	610	770	960	*	1,460
Winch Creek	At Harmon Hill Lane	2.27	620	890	1,140	1,410	*	2,150
Winch Creek	Approximately 30 feet upstream of Highway 3	2.8	750	1,090	1,390	1,730	*	2,640
Winch Creek	Approximately 2,278 feet downstream of State Highway 0	3.57	960	1,400	1,790	2,210	*	3,360
Winch Creek	Approximately 4,972 feet downstream of State Hwy 0	4.17	1,110	1,620	2,070	2,570	*	3,900
Winch Creek	Approximately 5,884 feet upstream of Phelan Farm Road	4.36	1,150	1,680	2,150	2,670	*	4,050
Winch Creek	Approximately 6,050 feet upstream of Phelan Farm Road	0.54	180	250	320	390	*	590
Winch Creek	Approximately 6,700 feet upstream of Phelan Farm Road	5.1	1,350	1,970	2,530	3,140	*	4,740
Winsel Creek	At Bacon Ridge Road	8.8	2,790	*	4,810	5,520	*	8,200
Winsel Creek	At Interstate Highway 44	6.8	2,520	*	4,100	4,830	*	6,800

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	1% Plus Annual Chance	0.2% Annual Chance
Winsel Creek	Approximately 2,200 feet upstream of Springfield Road	5.5	2,350	*	3,850	4,500	*	6,500
Winsel Creek	At Springfield Road	4.3	2,020	*	3,170	3,870	*	5,600
Winsel Creek	At Acid Mine Road	4.0	1,880	*	3,020	3,630	*	5,200
Winsel Creek	Downstream corporate limits	4.0	1,880	*	3,020	3,630	*	4,814
Winsel Creek	County Highway AF	3.0	1,690	*	2,720	3,240	*	4,120
Winsel Creek	Approximately 7,200 feet upstream of County Highway AF	4.0	1,650	*	2,580	3,050	*	3,700
Winsel Creek	At Elmont Road	4.0	500	*	810	940	*	1,190

*Not calculated for this Flood Risk Project

[1]Hydrology and hydraulics performed using two-dimensional rain-on-grid analysis method in HEC-RAS

Figure 7: Frequency Discharge-Drainage Area Curves

[Not applicable to this Flood Risk Project]

Table 11: Summary of Non-Coastal Stillwater Elevations

[Not applicable to this Flood Risk Project]

Table 12: Stream Gage Information used to Determine Discharges

[Not applicable to this Flood Risk Project]

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 24, “Floodway Data.”

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Birch Creek	Approximately 0.21 mile downstream of State Highway 50	Prairie Del Road	USACE HEC1 Flood Hydrograph Package	HEC-RAS 4.0	1989	VE, AE, AO	
Bourbeuse River	Approximately 0.22 mile downstream of St. Marys Road	Franklin County boundary	Gage Regression	USACE HEC-2 Step-backwater Program	1997	A, AE	
Bourbeuse River Tributary	Approximately 0.57 mile downstream of State Highway 50	Approximately 1.1 miles upstream of St. Andrews Drive	USACE HEC1 Flood Hydrograph Package	HEC-RAS 4.0	2007	A, AE	
Brown's Branch	Confluence with Dubois Creek	North Goodes Mill Road	Rural Regression	USACE HEC-2 Step-backwater Program	1997	A, AE	
Brush Creek	Franklin/St. Louis County Boundary	Approximately 909 feet upstream of Robertsville Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Busch Creek	Confluence with Dubois Creek	Approximately 1 mile upstream of State Highway 100	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2010	A, AE	
Calvey Creek	Confluence with the Meramec River	Jefferson/Franklin County Boundary	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Calvey Creek and Tributaries	Confluence with Calvey Creek	1 square mile drainage area of all Zone A streams	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	A	None
Calvey Creek Tributary 1	Confluence with Calvey Creek	Approximately 60ft downstream of South Shore Drive	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Dubois Creek	Confluence with Meramec River	Approximately 0.38 mile upstream of Calvey Creek Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2010	A, AE	
Fenton Creek	Approximately 0.27 mile downstream of confluence of Busch Creek	Approximately 1.2 miles upstream of State Highway 47	USACE HEC1 Flood Hydrograph Package	Redelineation	2009	A, AE	
Fiddle Creek	165 feet downstream of Labadie Bottom Road	Fiddle Creek Road	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Flat Creek	Confluence with Bourbeuse River	Judith Springs Road	USACE HEC1 Flood Hydrograph Package	Redelineation	2011	A, AE	
Flat Creek North Tributary	Confluence with Flat Creek	Approximately 1.09 miles upstream of Park Avenue	USACE HEC1 Flood Hydrograph Package	Redelineation	2011	A, AE	
Guenzler Creek	Confluence with Calvey Creek	Jefferson/Franklin County Boundary	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Happy Sock Creek	Confluence with Bourbeuse River	Approximately 0.27 mile upstream of County Highway AB	Urban Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Indian Creek and Tributaries	Indian Creek Confluence with Meramec River	1 square mile drainage area of all Zone A streams	Rural Regression	HEC-RAS 4.1	10/1/2017	A	None
Labadie Creek	Confluence with Missouri River	County Highway MM	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A	
Labadie Creek Tributary	Confluence with Labadie Creek	Approximately 0.63 mile upstream of County Highway T	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A	
Little Calvey Creek	Confluence with Calvey Creek	Approximately 1.6 miles upstream of Creek Bend Crossing	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Little Fox Creek	Franklin/St. Louis County Boundary	Approximately 2,525 feet upstream of Spring Valley Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution

Table 13: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Meramec River	Confluence with the Meramec River	Confluence with Little Meramec River Tributary 2	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Little Meramec River and Tributaries	Confluence with Little Meramec River	1 square mile drainage area of all Zone A streams	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	A	
Little Tavern Creek	Chicago Rock Island Railroad	Approximately 0.46 mile upstream of County Highway T	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Meramec River	Franklin/St. Louis County boundary	Crawford/Washington County boundary	Gage-Regression	HEC-RAS 5.0.3	10/1/2017	AE w/ Flood-way	Discharges determined by performing analysis of gage records at USGS 07014500 and USGS 07019000 in accordance with methodologies discussed in USGS Scientific Investigations Report 2014-5165
Meramec River and Tributaries	Confluence with Meramec River	1 square mile drainage area of all Zone A streams	Rural Regression	HEC-RAS 4.1	10/1/2017	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Missouri River	Approximately 3.35 miles downstream of the Franklin County boundary	Upstream Franklin County boundary	Log Pearson Type III Analysis	UNET Unsteady Flow Computer Modeling Program	2003	N/A	
Monroe Branch	Confluence with Brush Creek	Approximately 60 feet upstream of N Monroe Street	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Phelan Branch	Confluence with Meramec River	Jefferson/Franklin County Boundary	Rural Regression	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Region 2 rural regression equations listed in USGS Scientific Investigations Report 2014-5165
Pin Oak Creek	Confluence with Bourbeuse River	County Highway AT	Rural Regression	UNET Unsteady Flow Computer Modeling Program	1984	A, AE	
Pin Oak Creek Tributary	Confluence with Pin Oak Creek	Approximately 0.2 mile upstream	Rural Regression	USACE HEC-2 Step-backwater Program	2011	A, AE	
Possum Creek	Confluence with Flat Creek	Approximately 0.65 mile upstream of Main Street	USACE HEC-1NFlood Hydrograph Package	Redelineation	2011	A, AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses (continued)

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
South Branch Busch Creek	Confluence with Busch Creek	Approximately 0.85 mile upstream of State Highway 100	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2011	A, AE	
Southwest Branch Busch Creek	Confluence with Busch Creek	Approximately 0.91 mile upstream of Country Club Road	Rainfall-Runoff Model (HEC-HMS)	Redelineation	2011	A, AE	
Saint John's Creek	Missouri Pacific Railroad	Approximately 1.25 miles upstream of County Highway 100	Rural Regression	Redelineation	2011	A, AE	
Thornton Branch	Confluence with Brush Creek	Approximately 2,119 feet upstream of Viaduct Street	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Unnamed Tributary to Busch Creek	Confluence with Busch Creek	Approximately 0.3 mile upstream	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.0	2011	A, AE	
Wild Horse Creek	Franklin/St. Louis County Boundary	Downstream of I-44	Excess Rainfall	HEC-RAS 5.0.3	10/1/2017	A, AE	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Winch Creek	Confluence with the Meramec River	Approximately 1,562 feet upstream of Turkey Creek Road	Rainfall-Runoff Model (HEC-HMS)	HEC-RAS 4.1	10/1/2017	AE w/ Flood-way	Rainfall-runoff analysis performed in HEC-HMS using a localized rainfall distribution
Winsel Creek	Bacon Ridge Road	Just upstream of Elmont Road	Empirical Relations based on Regional Regression	USACE HEC-2 Step-backwater Program	2011	A, AE	

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Birch Creek	0.020 – 0.030	0.020 – 0.090
Bourbeuse River	0.030 – 0.060	0.035 – 0.110
Bourbeuse River Tributary	0.020 – 0.030	0.020 – 0.090
Brown’s Branch	0.030 – 0.100	0.030 – 0.180
Brush Creek	0.042 – 0.045	0.020 – 0.120
Busch Creek	0.017 – 0.060	0.020 – 0.100
Calvey Creek	0.015 – 0.120	0.013 – 0.120
Calvey Creek Tributary 1	0.045 – 0.120	0.045 – 0.120
Dubois Creek	0.017 – 0.060	0.020 – 0.100
Fenton Creek	*	*
Fiddle Creek	*	*
Flat Creek	0.045 – 0.065	0.060 – 0.090
Flat Creek North Tributary	*	*
Guenzler Creek	0.045 – 0.120	0.045 – 0.120
Happy Sock Creek	0.045 – 0.065	0.060 – 0.090
Labadie Creek	*	*
Labadie Creek Tributary	*	*
Little Calvey Creek	0.013 – 0.120	0.011 – 0.110
Little Fox Creek	0.045 – 0.120	0.0130 – 0.120
Little Meramec River	0.015 – 0.120	0.015 – 0.120
Little Tavern Creek	*	*
Meramec River	0.035 – 0.040	0.013 – 0.150
Missouri River	0.014 – 0.038	0.030 – 0.200
Monroe Branch	0.045 – 0.120	0.020 – 0.120
Pin Oak Creek	0.045 – 0.065	0.060 – 0.090
Pin Oak Creek Tributary	0.045 – 0.065	0.060 – 0.090
Phelan Branch	0.045 – 0.120	0.060 – 0.120
Possum Creek	*	*
South Branch Busch Creek	0.017 – 0.060	0.020 – 0.100
Southwest Branch Busch Creek	0.017 – 0.060	0.020 – 0.100
St. John’s Creek	0.03 – 0.100	0.030 – 0.180
Thornton Branch	0.045 – 0.110	0.090 – 0.120
Unnamed Tributary to Busch Creek	0.017 – 0.060	0.020 – 0.100
Wild Horse Creek	*	*
Winch Creek	0.045 – 0.120	0.060 – 0.120

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Winsel Creek	0.035 – 0.075	0.035 – 0.085
Various Zone A Streams	0.015 – 0.120	0.015 – 0.120

*Data Not Available

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses

[Not applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not applicable to this Flood Risk Project]

Table 16: Tide Gage Analysis Specifics

[Not applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Coastal Transect Parameters

[Not applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses

[Not applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please visit the NGS website at www.ngs.noaa.gov.

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

Table 21: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's Guidelines and Standards for Flood Risk Analysis and Mapping, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Orthography	NAIP	2016	1:5,000	Location of roads, railroads, bridges, streams, and other physical features shown on the FIRM
Political boundaries	FEMA	2006	1:12,000	Municipal and county boundaries
Public Land Survey System (PLSS)	MDA	2014	1:12,000	Spatial and attribute information for sections and land grants in Franklin County, USA
Transportation Features	MDOT	2014	1:12,000	Spatial and attribute information of transportation features shown on the FIRM
Flood Risk Project Areas	FEMA	2016	1:12,000	Spatial and attribute information of the revised areas in the flood risk project
FIRM Panels	FEMA	2016	1:12,000	Spatial and attribute information about the FIRM panel area

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data

described in Table 23. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. All topographic data used for modeling or mapping has been converted as necessary to NAVD88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-encroachment widths, if calculated, are shown in Table 25, “Flood Hazard and Non-Encroachment Data for Selected Streams.”

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Franklin County, Unincorporated areas	10300200, 07140103, 07140102, 07140104	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Pacific, City of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Miramiguoa Park, Village of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Parkway, Village of	07140102	Light Detection and Ranging data (LiDAR)	18.5 cm RMSE	60 cm RMSE	MSDIS 2015
Union, City of	07140103	Elevation contour data, 2-foot intervals	Unknown	Unknown	City of Union, 1996

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Vertical Accuracy	Horizontal Accuracy	Citation
Washington, City of	10300200	Elevation contour data, 2-foot intervals	Unknown	Unknown	City of Washington, 1996
Berger, City of	10300200	*	*	*	*
Gerald, City of	07140103, 10300200	*	*	*	*
Leslie, Village of	07140103, 10300200	*	*	*	*
New Haven, City of	10300200	*	*	*	*
Oak Grove, Village of	07140103	*	*	*	*
Sullivan, City of	0714103, 0714102	*	*	*	*
St. Clair, City of	07140103, 07140102	*	*	*	*

*Data Not Available

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in areas of ponding and other areas with static base flood elevations.

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,750	288	1,315	5.8	499.0	490.7[2]	491.7	1.0
B	5,086	120	938	8.2	499.0	494.9[2]	494.9	0.0
C	8,000	310	1,203	6.4	500.1	500.1	500.4	0.3
D	9,565	115	959	8.0	503.7	503.7	504.6	0.9
E	12,620	127	585	13.1	510.7	510.7	510.7	0.0
F	13,930	160	1,198	6.4	515.6	515.6	515.6	1.0
G	15,930	95	725	10.6	519.6	519.6	519.7	0.1
H	17,700	63	521	7.2	524.3	524.3	525.0	0.7
I	20,030	61	435	8.6	528.6	528.6	529.5	0.9
J	24,164	42	349	10.8	543.3	543.3	543.3	0.5

[1]Feet above confluence with Bourbeuse River

[2]Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BIRCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,584	810	10,220	3.8	489.9	489.9	490.8	0.9
B	11,933	1,701	26,032	1.5	492.7	492.7	493.7	1.0
C	20,064	543	9,519	4.1	494.1	494.1	495.0	0.9
D	29,462	1,480	22,123	1.8	495.9	495.9	496.8	0.9
E	34,003	681	9,874	3.9	496.8	496.8	497.7	0.9
F	44,352	1,386	16,246	2.4	499.7	499.7	500.6	0.9
G	45,698	433	7,092	5.5	500.3	500.3	501.2	0.9
H	48,628	959	14,564	2.7	502.0	502.0	502.8	0.8
I	53,539	415	6,476	6.0	503.4	503.4	504.3	0.9
J	60,720	1,195	19,039	2.0	507.3	507.3	508.2	0.9
K	67,003	405	6,937	5.6	509.4	509.4	510.3	0.9
L	78,672	1,380	22,980	1.7	514.0	514.0	514.9	0.9
M	83,213	475	8,293	4.8	515.5	515.5	516.1	0.6
N	89,180	1,430	23,392	1.7	519.5	519.5	520.1	0.6
O	95,410	812	14,597	2.7	521.5	521.5	522.3	0.8
P	99,686	2,006	27,744	1.4	523.2	523.2	524.1	0.9
Q	106,181	1,031	15,490	2.8	526.4	526.4	527.3	0.9

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
R	113,520	352	8,580	5.0	532.6	532.6	533.6	1.0
S	122,126	1,094	17,230	2.5	536.4	536.4	537.4	1.0
T	132,000	620	11,925	3.9	540.3	540.3	541.3	1.0
U	136,752	1,400	25,718	1.8	542.2	542.2	543.1	0.9
V	149,424	408	9,413	4.9	548.5	548.5	549.5	1.0
W	166,267	1,222	23,363	2.0	554.9	554.9	555.9	1.0
X	173,237	400	8,092	5.7	558.5	558.5	559.2	0.7
Y	181,738	1,100	17,042	2.7	563.2	563.2	564.0	0.8
Z	195,360	785	17,878	2.6	569.5	569.5	570.4	0.9
AA	205,920	498	11,359	4.1	571.7	571.7	572.7	1.0
AB	216,480	500	9,771	4.7	577.1	577.1	578.0	0.9
AC	227,040	1,050	17,125	2.7	582.4	582.4	583.2	0.8
AD	232,320	450	10,079	4.6	584.1	584.1	585.0	0.9
AE	237,600	935	14,491	3.2	586.9	586.9	587.7	0.8
AF	242,880	475	9,016	6.2	589.9	589.9	590.6	0.7
AG	253,440	990	22,005	2.6	593.4	593.4	594.4	1.0
AH	258,720	275	6,259	9.0	594.6	594.6	595.5	0.9

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AI	269,280	1,365	23,285	2.4	602.1	602.1	603.0	0.9
AJ	285,120	765	13,129	4.3	606.0	606.0	606.9	0.9
AK	290,400	1,415	21,415	2.6	608.3	608.3	609.1	0.8
AL	300,960	669	12,807	4.4	611.4	611.4	612.1	0.7
AM	306,240	1,625	24,122	2.3	612.9	612.9	613.7	0.8
AN	316,800	785	11,666	4.8	618.3	618.3	619.0	0.7
AO	322,080	1,320	22,849	2.5	620.7	620.7	621.5	0.8
AP	337,920	960	17,695	3.3	626.4	626.4	627.1	0.7
AQ	348,480	1,710	22,275	2.6	629.6	629.6	630.4	0.8
AR	353,760	810	10,390	5.7	632.3	632.3	632.9	0.6
AS	364,320	1,410	28,379	2.1	637.9	637.9	638.7	0.8
AT	369,600	823	13,589	4.3	639.0	639.0	639.7	0.7
AU	380,160	1,450	25,162	2.3	644.3	644.3	645.1	0.8
AV	390,720	848	17,695	3.3	647.8	647.8	648.6	0.8
AW	396,000	1,100	11,557	5.1	650.3	650.3	651.2	0.9
AX	406,560	478	9,367	6.3	657.1	657.1	657.9	0.8
AY	416,592	950	14,928	3.9	662.8	662.8	663.7	0.9

[1]Feet above confluence with Meramec River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AZ	421,872	738	12,549	4.9	667.0	667.0	667.6	0.6
BA	430,320	1,409	25,174	2.5	669.8	669.8	670.6	0.8
BB	441,672	1,029	17,839	3.5	673.0	673.0	673.8	0.8
BC	451,176	977	11,691	5.3	675.7	675.7	676.5	0.8
BD	459,466	1,563	25,996	2.4	679.9	679.9	680.8	0.9
BE	475,200	1,041	15,831	3.6	685.3	685.3	686.0	0.7
BF	481,272	1,748	24,713	2.3	687.8	687.8	688.7	0.9
BG	489,456	900	9,449	6.0	690.4	690.4	691.3	0.9
BH	500,544	1,903	21,228	2.6	696.7	696.7	697.4	0.7
BI	506,299	776	12,261	4.5	700.9	700.9	701.6	0.7

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BOURBEUSE RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,050	94	318	7.1	499.5	494.4[2]	494.4[2]	0.0
B	5,980	170	1,063	2.1	510.6	510.6	510.6	0.0
C	8,250	61	213	10.5	517.6	517.6	517.6	0.0
D	9,860	65	370	6.1	526.7	526.7	526.7	0.0
E	10,600	34	248	9.1	528.4	528.4	529.2	0.8
F	10,860	60	385	5.8	531.2	531.2	531.9	0.7
G	13,100	60	277	8.1	535.8	535.8	536.4	0.6
H	14,660	99	374	6.0	541.4	541.4	541.9	0.5
I	15,229	35	174	12.9	544.6	544.6	545.0	0.4
J	15,910	39	184	12.2	549.9	549.9	549.9	0.0

[1]Feet above confluence with Bourbeuse River
[2]Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: BOURBEUSE RIVER TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,531	200	1,437	4.2	491.4	491.4	492.4	1.0
B	6,291	73	993	6.1	496.2	496.2	496.6	0.4
C	8,351	204	1,815	3.4	499.6	499.6	500.6	1.0
D	10,501	137	1,441	2.9	503.4	503.4	504.3	0.9
E	13,171	478	1,958	2.2	506.3	506.3	507.2	0.9
F	15,868	166	651	4.3	512.7	512.7	513.0	0.3
G	19,566	270	636	4.4	521.1	521.1	521.7	0.6
H	21,400	120	502	4.2	527.3	527.3	528.3	1.0
I	24,798	48	296	4.4	549.1	549.1	549.8	0.7
J	25,822	55	192	6.8	556.2	556.2	556.5	0.3

[1]Feet above confluence with Dubois Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BROWN'S BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	15,231	157	969	5.0	482.8	482.8	483.1	0.3
B	16,302	121	900	4.0	485.3	485.3	486.2	0.9
C	19,237	82	623	5.8	492.4	492.4	493.2	0.8
D	22,195	52	414	7.8	501.0	501.0	501.3	0.3
E	24,505	69	431	4.9	509.3	509.3	509.9	0.6
F	24,931	119	885	2.4	513.9	513.9	513.9	0.0
G	28,710	37	259	7.9	525.0	525.0	525.5	0.5
H	28,975	50	324	6.3	527.0	527.0	527.1	0.1
I	30,817	38	306	5.6	532.0	532.0	532.3	0.3
J	32,669	38	224	7.6	537.8	537.8	537.9	0.1
K	33,943	38	254	6.7	543.3	543.3	543.7	0.4
L	34,104	43	259	6.6	544.7	544.7	544.8	0.1
M	34,677	36	220	6.6	546.9	546.9	547.1	0.2
N	35,925	31	171	8.4	552.2	552.2	552.5	0.3
O	37,090	34	181	8.0	557.1	557.1	557.2	0.1
P	39,875	43	277	5.1	567.2	567.2	568.1	0.9
Q	40,096	48	217	6.5	568.9	568.9	569.2	0.3
R	42,488	25	176	6.1	578.1	578.1	578.5	0.4
S	42,944	42	198	5.4	580.8	580.8	580.8	0.0
T	43,491	49	156	6.8	583.6	583.6	584.2	0.6

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BRUSH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	140	244	1,958	6.0	491.3	479.7[2]	480.5	0.8
B	930	243	2,130	5.5	491.3	480.7[2]	481.6	0.9
C	2,750	137	1,910	6.1	491.3	487.2[2]	487.5	0.3
D	3,450	199	2,570	4.6	491.3	488.1[2]	488.6	0.5
E	3,950	362	1,470	8.0	491.3	488.3[2]	488.6	0.3
F	4,400	167	1,750	6.7	491.3	489.2[2]	490.0	0.8
G	5,060	340	3,222	2.7	491.3	490.3[2]	491.3	1.0
H	5,320	397	3,201	2.7	492.6	492.6	493.3	0.7
I	6,070	271	2,059	2.6	492.7	492.7	493.5	0.8
J	6,820	79	1,024	5.2	492.8	492.8	493.6	0.8
K	7,780	65	862	6.1	493.6	493.6	494.3	0.7
L	8,850	87	808	6.5	494.9	494.9	495.6	0.7
M	10,120	90	766	6.9	497.6	497.6	498.5	0.9
N	11,090	76	566	9.3	500.2	500.2	500.9	0.7
O	11,620	174	1,324	4.0	506.2	506.2	506.6	0.4
P	12,000	91	977	5.4	506.4	506.4	506.7	0.3
Q	12,214	93	1,299	3.6	510.4	510.4	510.6	0.2
R	12,850	146	1,544	3.0	510.6	510.6	511.1	0.5
S	13,960	208	1,415	3.3	513.1	513.1	513.6	0.5
T	14,500	117	708	6.5	513.2	513.2	513.8	0.6

[1]Feet above confluence with Dubois Creek
[2]Elevation computed without consideration of backwater effects from Dubois Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
U	14,672	115	583	7.9	513.4	513.4	514.1	0.7
V	14,753	131	994	4.6	516.5	516.5	517.1	0.6
W	15,010	197	1,650	2.8	516.7	516.7	517.5	0.8
X	15,424	123	824	4.4	518.6	518.6	518.9	0.3
Y	15,990	75	426	8.5	518.6	518.6	519.1	0.5
Z	17,190	75	613	5.9	522.4	522.4	522.8	0.4
AA	17,920	61	534	6.8	523.8	523.8	524.1	0.3
AB	18,500	216	979	3.7	526.6	526.6	526.8	0.2
AC	19,062	148	428	8.4	528.4	528.4	528.5	0.1
AD	19,520	204	1,438	2.5	535.2	535.2	535.3	0.1
AE	19,980	158	1,021	3.5	535.4	535.4	535.5	0.1
AF	20,645	131	714	5.1	536.1	536.1	536.5	0.4
AG	20,935	372	5,067	0.5	552.5	552.5	552.5	0.0
AH	21,640	73	728	1.1	552.5	552.5	552.5	0.0
AI	23,290	51	106	7.7	554.5	554.5	554.6	0.1
AJ	26,000	116	223	3.7	581.8	581.8	582.4	0.6

[1]Feet above confluence with Dubois Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY **FRANKLIN COUNTY, MISSOURI** AND INCORPORATED AREAS	**FLOODWAY DATA** **FLOODING SOURCE: BUSCH CREEK**

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	13,772	575	6,306	2.7	483.5	483.5	484.0	0.5
B	19,336	380	3,353	3.7	491.1	491.1	491.6	0.5
C	20,354	370	2,791	4.4	492.2	492.2	493.1	0.9
D	22,469	390	2,928	4.1	495.8	495.8	496.6	0.8
E	27,225	685	3,406	3.4	504.9	504.9	505.5	0.6
F	33,512	500	2,954	3.6	518.8	518.8	519.1	0.3
G	39,343	390	2,067	4.1	532.9	532.9	533.4	0.5
H	40,298	275	1,450	5.9	536.7	536.7	536.9	0.2
I[2]	43,821	353	1,848	4.2	547.8	547.8	548.0	0.2
J[2]	45,019	385	1,459	5.3	550.3	550.3	550.4	0.1
K[2]	50,130	245	1,347	4.9	567.0	567.0	567.2	0.2
L[2]	51,593	332	1,105	6.0	570.8	570.8	571.0	0.2
M[2]	53,658	125	899	7.3	577.1	577.1	577.1	0.0
N[2]	55,713	74	373	9.4	585.5	585.5	585.6	0.1
O[2]	56,312	101	555	6.3	590.0	590.0	590.4	0.4
P	59,301	129	711	5.0	604.5	604.5	604.8	0.3

[1]Feet above confluence with Meramec River

[2]Located in Jefferson County

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: CALVEY CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,639	41	151	5.5	481.2	481.2	481.2	0.0
B	4,049	38	104	8.0	489.0	489.0	489.0	0.0
C	4,284	59	161	5.1	492.2	492.2	492.9	0.7

[1]Feet above confluence with Calvey Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: CALVEY CREEK TRIBUTARY 1

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,770	233	2,065	5.3	491.3	482.1[2]	479.3	1.0
B	5,570	123	2,063	5.3	491.3	485.1[2]	480.6	1.0
C	7,424	202	2,353	3.8	491.3	486.1[2]	482.0	1.0
D	11,745	88	1,145	7.8	491.3	482.0	483.4	0.9
E	14,390	342	2,032	4.4	491.3	485.5[2]	486.3	0.8
F	19,055	418	2,959	1.2	491.3	491.3	491.9	0.6
G	22,495	173	1,538	2.3	496.7	496.7	497.3	0.6
H	25,751	73	680	5.1	501.7	501.7	502.4	0.7
I	27,704	221	1,022	3.4	504.3	504.3	504.9	0.6
J	32,581	124	515	5.5	513.8	513.8	514.3	0.5
K	35,870	62	400	7.1	530.6	530.6	530.7	0.1
L	39,299	84	492	5.8	546.1	546.1	546.7	0.6
M	43,163	59	359	6.3	564.5	564.5	565.4	0.9
N	46,863	59	247	5.7	594.7	594.7	595.4	0.7

[1]Feet above confluence with Missouri River
[2]Elevation computed without consideration of backwater effects from Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: DUBOIS CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,331	59	252	10.9	514.5	514.5	514.6	0.1
B	1,969	50	485	5.7	522.8	522.8	523.3	0.5
C	3,992	68	372	6.5	534.3	534.3	534.7	0.4
D	4,921	55	292	8.3	544.2	544.2	544.5	0.3

[1]Feet above confluence with Flat Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FENTON CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	615	95	838	6.3	479.1	473.9[2]	474.8	0.9
B	1,490	163	1,733	3.1	479.1	477.1[2]	477.9	0.8
C	2,215	389	3,622	1.4	479.1	478.4[2]	479.1	0.7
D	3,570	95	1,241	4.3	479.7	479.7	480.6	0.9
E	4,980	300	3,383	1.6	481.1	481.1	482.0	0.9
F	6,950	135	1,268	4.2	483.6	483.6	484.3	0.7
G	9,750	130	1,680	3.2	488.0	488.0	488.7	0.7
H	12,030	80	850	6.2	491.2	491.2	491.9	0.7
I	13,930	205	1,532	2.8	497.5	497.5	498.0	0.5
J	16,065	176	921	4.7	503.2	503.2	503.7	0.5
K	16,670	62	709	4.5	508.3	508.3	509.3	1.0
L	17,380	175	1,281	2.5	523.0	523.0	523.9	0.9
M	18,230	271	1,282	2.5	524.3	524.3	524.8	0.5
N	18,845	300	1,685	1.9	525.6	525.6	526.0	0.4
O	19,970	200	765	4.2	530.4	530.4	531.2	0.8

[1]Feet above limit of floodway 165 feet downstream from Labadie Bottom Road

[2]Elevation computed without consideration of backwater effects from Missouri River

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY **FRANKLIN COUNTY, MISSOURI** AND INCORPORATED AREAS	**FLOODWAY DATA** **FLOODING SOURCE: FIDDLE CREEK**

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,610	150	1,605	5.5	514.5	505.4[2]	506.3[2]	0.9
B	3,902	65	718	7.8	515.3	515.3	515.8	0.5
C	6,299	155	1,249	4.2	531.0	531.0	531.7	0.7
D	7,450	120	577	5.6	535.9	535.9	536.7	0.8
E	8,817	113	313	10.3	544.4	544.4	545.2	0.8
F	11,030	132	439	7.3	565.7	565.7	565.9	0.2
G	12,471	149	892	3.6	575.6	575.6	576.3	0.7
H	14,900	183	716	3.5	588.7	588.7	589.6	0.9
I	12,235	116	731	2.9	610.2	610.2	611.2	1.0
J	18,545	150	450	4.7	615.7	615.7	616.2	0.5
K	19,960	150	413	5.1	624.2	624.2	624.8	0.6

[1]Feet above confluence with Bourbeuse River
[2]Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FLAT CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	882	55	241	9.2	536.9	536.9	536.9	0.0
B	2,392	65	266	8.4	551.3	551.3	551.7	0.4
C	3,348	65	444	5.0	558.8	558.8	559.7	0.9

[1]Feet above confluence with Flat Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: FLAT CREEK NORTH TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,608	129	263	6.0	521.0	521.0	521.3	0.3
B	2,906	96	314	5.0	529.3	529.3	529.5	0.2
C	4,868	47	232	5.6	539.9	539.9	539.9	0.0

[1]Feet above confluence with Calvey Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: GUENZLER CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,230	190	1,371	4.5	523.6	516.5[2]	517.5	1.0
B	3,100	305	1,827	3.4	523.6	522.7[2]	523.5	0.8
C	4,575	189	953	5.8	527.4	527.4	528.2	0.8
D	6,005	192	991	5.5	534.1	534.1	534.9	0.8
E	6,405	66	584	9. 4	535.7	535.7	536.1	0.4
F	6,960	200	1,312	4.1	538.6	538.6	539.5	0.9
G	8,400	351	2,403	2. 2	543.9	543.9	544.9	1.0
H	8,945	166	852	6.3	546.9	546.9	547.8	0.9
I	10,570	106	527	9.7	556.4	556.4	556.8	0.4
J	12,300	94	458	11.1	566.0	566.0	566.2	0.2
K	12,990	151	593	8.6	570.1	570.1	570.8	0.7
L	14,900	181	818	5.4	585.0	585.0	585.9	0.9
M	16,675	101	590	7.5	595.2	595.2	596.0	0.8
N	19,875	113	566	7.2	615.4	615.4	616.3	0.9
O	21,030	244	1,506	2.7	625.9	625.9	625.9	0.0

[1]Feet above confluence with Bourbeuse River

[2]Elevation computed without consideration of backwater effects from Bourbeuse River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: HAPPY SOCK CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	3,720	200[2]	2,432	2.5	484.8	473.7[3]	474.5	0.8
B	5,390	200[2]	2,013	3.1	484.9	474.2[3]	475.1	0.9
C	8,025	210	1,663	3.7	485.1	476.1[3]	476.9	0.8
D	10,375	180	1,310	4.7	485.4	478.9[3]	479.4	0.5
E	11,245	102	1,161	5.3	485.4	481.2[3]	481.7	0.5
F	12,185	106	998	6.2	485.4	483.6[3]	483.9	0.3
G	13,695	140	1,576	3.9	487.1	487.1	487.3	0.2
H	14,745	160	2,030	3.1	489.0	489.0	489.1	0.1
I	18,705	335	3,586	1.7	495.4	495.4	495.7	0.3
J	19,725	254	2,338	2.7	495.6	495.6	495.9	0.3
K	21,265	325	2,103	2.9	498.8	498.8	499.3	0.5
L	22,455	140	1,017	3.1	499.8	499.8	500.3	0.5

[1]Feet above confluence with Missouri River
[2]Width without considering influence from Missouri River Floodway
[3]Elevation computed without consideration of flooding controlled by Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LABADIE CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	645	34	401	3.2	488.9	486.2[2]	486.2	0.0
B	2,455	60	319	4.1	490.7	490.7	491.0	0.3
C	3,745	59	290	4.5	497.3	497.3	497.8	0.5

[1]Feet above confluence with Labadie Creek
[2]Elevation computed without consideration of backwater effects from Labadie Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LABADIE CREEK TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,461	269	1,220	3.9	495.5	495.5	495.8	0.3
B	7,651	107	745	5.9	504.8	504.8	505.7	0.9
C	11,362	67	471	8.2	519.0	519.0	519.2	0.2
D	15,644	54	384	10.1	534.4	534.4	534.8	0.4
E	18,954	68	447	7.1	551.2	551.2	551.9	0.7
F	20,943	76	466	5.0	561.4	561.4	561.7	0.3
G	22,738	41	231	8.4	571.3	571.3	571.3	0.0
H	26,399	47	235	6.0	592.3	592.3	592.4	0.1
I	28,961	81	271	5.2	608.7	608.7	608.7	0.0
J	30,543	31	115	7.7	617.7	617.7	617.7	0.0
K	32,386	34	124	7.1	629.7	629.7	629.7	0.0
L	33,698	43	86	5.0	644.1	644.1	644.2	0.1

[1]Feet above confluence with Calvey Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LITTLE CALVEY CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
C	8,845	58	324	6.5	559.8	559.8	560.0	0.2
D	11,210	44	168	6.0	578.5	578.5	578.6	0.1
E	12,905	28	150	6.8	595.5	595.5	595.6	0.1
F	14,459	32	167	6.0	612.3	612.3	612.5	0.2
G	15,451	29	120	8.4	621.0	621.0	621.2	0.2
H	17,077	25	75	7.9	641.2	641.2	641.2	0.0
I	19,160	27	114	5.2	666.8	666.8	666.8	0.0

[1]Feet above confluence with Fox Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LITTLE FOX CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,875	950	5,053	3.6	503.9	503.9	504.5	0.6
B	16,086	363	3,633	2.3	523.5	523.5	523.7	0.2
C	21,434	359	1,999	4.1	537.1	537.1	537.3	0.2
D	23,299	254	1,415	5.7	541.6	541.6	541.6	0.0
E	26,777	194	1,274	5.7	553.1	553.1	553.5	0.4
F	27,816	389	2,478	2.9	558.0	558.0	558.1	0.1
G	28,376	258	1,502	4.8	559.1	559.1	559.2	0.1
H	30,235	255	1,548	3.7	564.5	564.5	565.3	0.8
I	31,624	218	1,022	5.6	568.4	568.4	568.8	0.4
J	34,099	222	1,218	2.7	578.5	578.5	578.5	0.0
K	35,850	171	593	5.5	584.1	584.1	584.1	0.0

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LITTLE MERAMEC RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	820	35	309	5.2	477.9	471.0[2]	471.5	0.5
B	1,480	86	527	3.1	477.9	473.4[2]	474.4	1.0
C	2,730	58	376	4.3	480.7	480.7	481.1	0.4
D	3,810	82	446	3.1	488.7	488.7	489.6	0.9
E	4,790	61	331	4.2	496.3	496.3	497.3	1.0
F	5,690	55	275	4.2	501.6	501.6	501.8	0.2
G	6,890	67	295	3.9	510.2	510.2	510.3	0.1
H	7,680	44	179	6.4	517.7	517.7	518.2	0.5

[1]Feet above Chicago Rock Island and Pacific Railroad
[2]Elevation computed without consideration of backwater effects from Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: LITTLE TAVERN CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
AI	263,976	2820 / 1052[2]	47,019	2.9	462.8	462.8	463.7	0.9
AJ	268,654	3107	62,076	2.2	464.7	464.7	465.6	0.9
AK	277,424	2440	59,022	2.2	467.6	467.6	468.4	0.8
AL	282,846	2636	41,354	3.2	470.1	470.1	471.0	0.9
AM	295,012	2409	44,184	3.0	472.8	472.8	473.8	1.0
AN	325,896	1757	37,848	2.7	483.7	483.7	484.5	0.8
AO	335,774	1837	41,883	2.4	485.9	485.9	486.8	0.9
AP	352,066	1821	35,669	2.8	488.8	488.8	489.6	0.8
AQ	359,685	2011	41,109	2.4	492.1	492.1	492.7	0.6
AR	383,048	2368	34,940	2.8	499.0	499.0	499.7	0.7
AS	400,361	2441	39,830	2.5	509.5	509.5	510.4	0.9
AT	405,496	1883	35,019	2.8	512.7	512.7	513.2	0.5
AU	427,060	1120	26,138	3.8	521.6	521.6	522.5	0.9
AV	443,786	1974	41,258	2.4	527.6	527.6	528.4	0.8
AW	464,204	1410	21,438	4.6	535.4	535.4	536.3	0.9
AX	473,651	1503	33,024	2.7	543.2	543.2	543.9	0.7
AY	496,540	2285	31,700	2.8	549.8	549.8	550.5	0.7
AZ	526,612	745	13,660	6.6	563.6	563.6	564.5	0.9
BA	566,565	1305	23,955	3.7	585.2	585.2	586.0	0.8
BB	593,104	743	15,915	5.6	599.3	599.3	600.3	1.0
BC	597,780	1087 / 551[2]	25,518	3.5	603.3	603.3	604.1	0.8

[1]Feet above confluence with Mississippi River
[2]Total width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MERAMEC RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1,2]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	50.02	8,495 / 810	155,566	4.3	476.1	476.1	476.9	0.8
B	51.13	8,159 / 750	152,832	4.4	476.9	476.9	477.9	1.0
C	52.48	8,234 / 870	155,541	4.3	478.4	478.4	479.3	0.9
D	54.03	10,073 / 560	224,377	3.0	480.1	480.1	481.1	1.0
E	55.03	9,741 / 300	180,522	3.7	480.6	480.6	481.5	0.9
F	56.15	10,729 / 10,030	216,049	3.1	481.9	481.9	482.8	0.9
G	58.98	10,629 / 7,325	215,529	3.1	485.4	485.4	486.4	1.0
H	60.40	11,202 / 4,500	220,082	3.1	486.3	486.3	487.3	1.0
I	62.12	10,307 / 835	198,569	3.4	487.5	487.5	488.5	1.0
J	63.56	9,467 / 585	173,886	3. 9	488.6	488.6	489.6	1.0
K	64.86	8,052 / 865	179,402	3.8	490.5	490.5	491.5	1.0
L	66.85	7,849 / 950	179, 919	3.8	492.7	492.7	493.7	1.0
M	68.26	9,458 / 1,160	184,095	3.7	493.5	493.5	494.5	1.0
N	69.21	10,564 / 820	211,231	3.2	494.3	494.3	495.2	0.9
O	70.65	12,036 / 4,286	229,928	2.9	495.1	495.1	496.0	0.9
P	71.96	9,225 / 4,337	181,661	3.7	496.0	496.0	496.9	0.9
Q	73.18	8,263 / 2,130	160,999	4.2	496.7	496.7	497.7	1.0

[1]Feet above confluence with Mississippi River

[2]Distance based on the 1960 River Mile stationing, which may not match the measured distance along the profile baseline shown on the maps

[3]Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY **FRANKLIN COUNTY, MISSOURI** AND INCORPORATED AREAS	**FLOODWAY DATA** **FLOODING SOURCE: MISSOURI RIVER**

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1,2]	WIDTH[3] (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
R	74.39	9,028 / 895	181,751	3.7	497.9	497.9	498.8	0.9
S	75.60	10,973 / 7,803	218,551	3.1	498.9	498.9	499.9	1.0
T	76.42	12,196 / 1,185	221,616	3.0	499.5	499.5	500.5	1.0
U	77.76	11,748 / 1,215	186,634	3.6	500.3	500.3	501.3	1.0
V	79.13	10,201 / 730	172,346	3.9	501.7	501.7	502.6	0.9
W	80.42	10,323 / 730	169,978	4.0	502.9	502.9	503.9	1.0
X	81.73	9,798 / 740	164,354	4.1	504.6	504.6	505.5	0.9
Y	82.71	10,286 / 1,800	165,578	4.1	505.5	505.5	506.3	0.8
Z	83.89	9,994 / 8,259	194,792	3.5	506.7	506.7	507.5	0.8
AA	85.00	9,534 / 8,834	183,966	3.7	507.3	507.3	508.2	0.9
AB	86.11	9,805 / 9,043	181,011	3.7	508.2	508.2	509.1	0.9
AC	87.64	10,172 / 9,618	175,833	3.8	509.4	509.4	510.3	0.9
AD	88.92	9,931 / 9,115	179,355	3.8	510.9	510.9	511.8	0.9
AE	90.18	10,823 / 10,111	187,020	3.6	512.6	512.6	513.5	0.9
AF	90.94	11,965 / 10,575	204,099	3.3	513.5	513.5	514.4	0.9
AG	92.54	11,658 / 3,217	242,219	2.8	515.1	515.1	516.1	1.0
AH	93.85	10,517 / 700	196,289	3.4	515.6	515.6	516.5	0.9

[1]Feet above confluence with Mississippi River

[2]Distance based on the 1960 River Mile stationing, which may not match the measured distance along the profile baseline shown on the maps

[3]Total width / width within jurisdiction

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MISSOURI RIVER

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,210	32	123	3.7	461.3	461.4[2]	461.3	0.0
B	1,365	22	70	6.4	461.5	461.5	461.6	0.0
C	1,605	36	70	6.4	467.2	467.2	467.2	0.0
D	2,000	18	57	8.0	470.3	470.3	470.3	0.0
E	2,212	31	157	2.9	474.2	474.2	474.2	0.0
F	2,661	28	82	5.5	475.8	475.8	475.8	0.0
G	3,018	35	256	1.8	482.9	482.9	483.7	0.8
H	3,391	19	56	8.0	483.1	483.1	483.4	0.3
I	4,231	29	172	2.6	495.7	495.7	495.7	0.0
J	4,603	22	91	4.9	497.2	497.2	497.2	0.0
K	4,964	28	207	2.2	504.4	504.4	504.4	0.0
L	5,276	22	76	3.7	505.8	505.8	505.8	0.0
M	5,893	16	37	7.7	510.0	510.0	510.0	0.0
N	6,254	15	33	8.4	517.5	517.5	517.5	0.0
O	6,607	22	39	7.2	524.4	524.4	524.5	0.1
P	6,841	20	36	7.7	527.4	527.4	527.4	0.0

[1]Feet above confluence with Brush Creek
[2]Elevation computed without consideration of backwater effects from Brush Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: MONROE BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	4,228	48	230	7.4	467.7	467.7	467.7	0.0
B	5,146	74	349	4.9	475.5	475.5	475.5	0.0
C	5,553	43	173	7.3	478.7	478.7	478.8	0.1

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PHELAN BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	80	82	711	7.5	496.7	483.9[2]	484.7	0.8
B	600	74	664	8.0	496.7	486.8[2]	487.1	0.3
C	1,250	76	925	5.7	496.7	490.4[2]	490.7	0.3
D	1,780	133	1,210	4.4	496.7	492.0[2]	492.3	0.3
E	2,315	265	2,042	2.6	496.7	493.0[2]	493.5	0.5
F	3,505	260	1,539	3.4	496.7	495.5[2]	496.3	0.8
G	4,565	215	1,139	4.6	500.3	500.3	500.7	0.4
H	6,420	185	997	3.9	511.0	511.0	511.4	0.4

[1]Feet above confluence with Bourbeuse River
[2]Computed without consideration of backwater effects from Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PIN OAK CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	820	141	281	6.2	518.9	518.9	518.9	0.0

[1]Feet above confluence with Pin Oak Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PIN OAK TRIBUTARY

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,299	80	244	4.3	536.8	536.8	537.5	0.7
B	2,598	54	211	4.9	559.7	559.7	560.0	0.3

[1]Feet above confluence with Flat Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: POSSUM CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2,210	130	1,680	6.8	495.1	483.7[2]	484.3	0.6
B	3,685	159	1,519	7.6	495.1	484.6[2]	485.2	0.6
C	4,620	161	1,940	5.9	495.1	486.0[2]	486.9	0.9
D	6,020	132	1,532	7.5	495.1	487.7[2]	488.5	0.8
E	7,370	196	2,088	5.5	495.1	490.2[2]	490.5	0.3
F	10,755	183	2,146	5.4	495.1	493.3[2]	493.7	0.4
G	12,045	271	2,952	3.9	495.1	494.3[2]	494.8	0.5
H	13,910	373	4,667	2.5	495.4	495.4	495.8	0.4
I	17,165	419	3,900	2.9	496.1	496.1	496.7	0.6
J	19,435	373	3,604	3.2	497.0	497.0	497.7	0.7

[1]Feet above Mississippi Pacific Railroad
[2]Computed without consideration of backwater effects from Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SAINT JOHN'S CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0	43[2]	387	8.4	491.3	480.6[3]	481.3	0.7
B	400	42	233	14.0	491.3	484.4[3]	484.4	0.0
C	730	44	407	8.0	491.3	488.4[3]	488.5	0.1
D	940	44	430	7.6	491.3	489.1[3]	489.3	0.2
E	1,180	50	643	5.1	492.1	492.1	492.2	0.2
F	1,550	72	746	4.4	492.4	492.4	492.7	0.3
G	2,980	244	1,242	1.7	493.2	493.2	493.8	0.6
H	3,960	103	544	3.9	493.5	493.5	494.2	0.7
I	4,700	53	303	5.0	494.8	494.8	495.4	0.6
J	5,520	75	313	4.9	497.0	497.0	497.3	0.3

[1]Feet above confluence with Busch creek
[2]Width without considering Influence from Busch Creek Floodway
[3]Computed without consideration of backwater effects from Missouri River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTH BRANCH BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	100	50	559	7.7	492.6	485.3[2]	485.4[2]	0.1
B	500	50	576	7.5	492.6	486.1[2]	486.4[2]	0.3
C	1,163	192	1,839	2.3	492.6	491.5[2]	491.5[2]	0.0
D	1,750	231	1,752	2.5	492.6	491.7[2]	491.7[2]	0.0
E	2,400	90	783	5.5	492.6	491.9[2]	491.9[2]	0.0
F	3,300	140	1,053	4.2	493.1	493.1	493.3	0.1
G	4,752	71	713	6.2	494.5	494.5	495.2	0.7
H	4,883	111	1,174	3.8	500.0	500.0	500.0	0.0
I	6,170	130	849	5.2	500.8	500.8	500.8	0.1
J	7,230	94	770	5.7	502.0	502.0	502.5	0.5
K	7,494	103	761	5.8	502.5	502.5	503.0	0.4
L	8,151	220	1,225	3.6	506.9	506.9	506.9	0.0
M	8,319	162	1,895	2.4	509.0	509.0	509.0	0.0

[1]Feet above confluence with Busch Creek
[2]Computed without consideration of backwater effects from Busch Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SOUTHWEST BRANCH BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	856	30	152	6.3	477.4	477.0[2]	477.8	0.4
B	1,603	25	112	7.7	481.1	481.1	481.9	0.8
C	2,118	31	210	4.1	492.6	492.6	492.6	0.0
D	2,645	26	116	7.4	494.1	494.1	494.1	0.0
E	3,077	27	118	7.3	498.8	498.8	498.8	0.0
F	3,747	34	104	6.2	503.2	503.2	503.3	0.1
G	4,392	22	84	7.8	508.4	508.4	508.4	0.0
H	4,895	27	108	6.0	513.5	513.5	513.5	0.0

1Feet above confluence with Brush Creek
[2]Elevation computed without consideration of backwater effects from Brush Creek

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY FRANKLIN COUNTY, MISSOURI AND INCORPORATED AREAS	FLOODWAY DATA FLOODING SOURCE: THORNTON BRANCH

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	90	99[3]	424	3.3	536.9	534.5[2]	535.5	1.0
B	390	204[3]	2,720	0.5	551.5	551.5	551.5	0.0
C	700	197	2,901	0.5	551.5	551.5	551.5	0.0
D	1,260	139	1,514	0.9	551.5	551.5	551.5	0.0
E	1,810	117	1,195	1.2	551.5	551.5	551.5	0.0

[1]Feet above confluence with Busch Creek

[2]Computed without consideration of backwater effects from Missouri River

[3]Width does not match mapped width due to floodway width extending into Busch Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: UNNAMED TRIBUTARY TO BUSCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	8,661	185	526	4.2	471.8	471.8	471.8	0.0
B	11,781	80	310	5.6	487.8	487.8	487.9	0.1
C	13,135	68	251	6.9	496.2	496.2	496.2	0.0
D	13,740	42	176	9.8	500.0	500.0	500.0	0.0
E	15,285	41	182	7.8	511.9	511.9	512.2	0.3
F	16,440	43	150	9.4	520.4	520.4	520.5	0.1
G	18,719	55	223	4.3	535.9	535.9	536.1	0.2
H	21,175	39	82	8.2	553.3	553.3	553.3	0.0
I	21,731	34	79	8.5	558.4	558.4	558.4	0.0
J	22,616	34	97	6.2	569.2	569.2	569.2	0.0
K	22,982	34	92	6.5	572.3	572.3	572.3	0.0

[1]Feet above confluence with Meramec River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WINCH CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,335	248	1,557	3.5	820.0	820.0	820.9	0.9
B	2,635	345	1,837	3.0	826.2	826.2	827.2	1.0
C	3,455	134	893	6.2	829.2	829.2	830.2	1.0
D	4,445	257	1,838	3.0	833.3	833.3	834.3	1.0
E	5,605	123	981	5.6	838.3	838.3	839.2	0.9
F	7,205	134	1,205	4.6	842.8	842.8	843.8	1.0
G	8,365	391	2,326	2.4	844.9	844.9	845.9	1.0
H	8,995	151	1,084	5.1	845.7	845.7	846.7	1.0
I	10,257	342	2,163	2.6	849.3	849.3	849.9	0.6
J	11,402	263	1,502	3.2	850.5	850.5	851.4	0.9
K	12,372	193	934	5.2	853.3	853.3	854.2	0.9
L	14,847	150	1,053	4.6	858.6	858.6	859.5	0.9
M	16,062	174	1,256	3.8	861.0	861.0	862.0	1.0
N	17,782	238	1,204	4.0	865.2	865.2	865.7	0.5
O	19,852	266	1,012	4.4	872.4	872.4	873.0	0.6
P	21,112	104	820	5.5	877.2	877.2	877.5	0.3

[1]Feet above confluence with Bacon Ridge Road

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WINSEL CREEK

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Q	22,072	257 / 65[2]	2,078	1.9	884.6	884.6	884.8	0.2
R	24,167	236 / 220[2]	1,290	3.0	889.0	889.0	890.0	1.0
S	24,616	319	1,513	2.4	891.3	891.3	892.2	0.9
T	26,096	263	1,426	2.5	893.9	893.9	894.9	1.0
U	27,522	234	1,046	3.5	898.3	898.3	899.3	1.0
V	29,106	384	1,749	2.1	903.7	903.7	904.4	0.7
W	29,836	153 / 125[2]	804	4.5	905.0	905.0	905.8	0.8
X	31,470	90	683	4.7	912.7	912.7	913.6	0.9
Y	32,875	225	1,000	3.2	916.8	916.8	917.8	1.0
Z	34,160	210	1,049	3.1	921.0	921.0	921.9	0.9
AA	36,170	313	1,443	2.2	925.6	925.6	926.5	0.9
AB	37,295	345	1,264	2.4	929.7	929.7	930.7	1.0
AC	39,645	75	173	5.4	938.0	938.0	938.8	0.8

[1]Feet above confluence with Bacon Ridge Road
[2]Total width / width within jurisdiction

TABLE 24	FEDERAL EMERGENCY MANAGEMENT AGENCY **FRANKLIN COUNTY, MISSOURI** AND INCORPORATED AREAS	**FLOODWAY DATA** **FLOODING SOURCE: WINSEL CREEK**

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill

above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

No new LOMCs were incorporated as a part of this map revision.

Table 27: Incorporated Letters of Map Change

[Not applicable to this Flood Risk Project]

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Franklin County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

Community Name includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

Initial Identification Date (First NFIP Map Published) is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

Initial FHBM Effective Date is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.

FHBM Revision Date(s) is the date(s) that the FHBM was revised, if applicable.

Initial FIRM Effective Date is the date of the first effective FIRM for the community.

FIRM Revision Date(s) is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated

accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Franklin County FIRMs in countywide format was 10/18/2011.

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Berger, City of	08/30/1974	8/30/1974	01/16/1976	06/15/1982	10/18/2011
Franklin County, Unincorporated areas	01/17/1978	01/17/1978	N/A	10/16/1984	10/18/2011 09/14/2018 06/05/2020
Gerald, City of[1,2]	10/18/2011	N/A	N/A	10/18/2011	N/A
Leslie, Village of[1,2]	10/18/2011	N/A	N/A	10/18/2011	N/A
Miramiguoa Park, Village of[2]	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
New Haven, City of	03/05/1976	03/05/1976	N/A	02/18/1981	10/18/2011 09/14/2018
Oak Grove, Village of	06/03/1977	06/03/1977	N/A	08/19/1986	10/18/2011
Pacific, City of	10/26/1973	10/26/1973	N/A	03/15/1977	8/15/1983 2/19/1992 10/18/2011 06/05/2020
Parkway, Village of[1,2]	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
St. Clair, City of[2]	10/18/2011	N/A	N/A	10/18/2011	06/05/2020
Sullivan, City of	03/29/1974	03/29/1974	11/14/1975	06/15/1981	10/18/2011
Union, City of	03/08/1974	03/08/1974	07/23/1976	03/02/1983	10/18/2011
Washington, City of	01/09/1974	01/09/1974	10/15/1976	11/03/1982	10/18/2011

[1]No Special Flood Hazard Areas
[2]This Community does not have map history prior to first countywide mapping.

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Birch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; St. Clair, City of; Union, City of
Bourbeuse River	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Bourbeuse River Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Brown's Branch	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Brush Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas; Pacific, City of
Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Calvey Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Calvey Creek and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Calvey Creek Tributary 1	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Dubois Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Fenton Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Fiddle Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Flat Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Flat Creek North Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Guenzler Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Happy Sock Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; St. Clair, City of
Indian Creek and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Labadie Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Labadie Creek Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Little Calvey Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Fox Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Meramec River	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Meramec River and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Little Tavern Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Meramec River	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Meramec River and Tributaries	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Missouri River	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Monroe Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Phelan Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Pin Oak Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Pin Oak Creek Tributary	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Possum Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
South Branch Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Southwest Branch Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Saint John's Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas
Thornton Branch	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas; Pacific, City of
Unnamed Tributary to Busch Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; Pacific, City of

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Wild Horse Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas; Pacific, City of
Winch Creek	03/20/2020	Wood E&IS	EMW-2016-CA-APP-00002	June 2017	Franklin County, Unincorporated Areas
Winsel Creek	10/18/2011	URS Group, Inc.	EMW-200-CO-0247	July 2003	Franklin County, Unincorporated Areas

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Berger, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Franklin County, Unincorporated areas	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
Miramiguoa Park, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
New Haven, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Pacific, City of	06/05/2020	10/26/1973	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor
		12/15/1975	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Parkway, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
St. Clair, Village of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
Sullivan, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
Union, City of	06/05/2020	12/18/2015	Project Discovery	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		12/16/2016	Kickoff	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA
		09/14/2017	Flood Risk Review	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS
		12/06/2018	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, and Wood E&IS

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Washington, City of	10/18/2011	07/29/2005	Initial CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA, USGS
		01/12/2010	Final CCO	Representatives of Franklin County and incorporated communities, FEMA, Study Contractor, SEMA

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Franklin County, (FEMA 2011).

Table 31 is a list of the locations where FIRMs for Franklin County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Berger, City of	City Hall 405 Rosalie Avenue	Berger	MO	63014
Franklin County, Unincorporated areas	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
Gerald, City of[1]	City Hall 430 West Fitzgerald Avenue	Gerald	MO	63037
Leslie, Village of[1]	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
Miramiguoa Park, Village of	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
New Haven, City of	City Hall 101 Front Street	New Haven	MO	63068
Oak Grove, Village of	Village Hall 260 James Street	Sullivan	MO	63080
Pacific, City of	City Hall 301 Hoven Drive	Pacific	MO	63069
Parkway, Village of[1]	Franklin County Office 8 North Church Street, Suite B	Union	MO	63084
St. Clair, City of	City Hall #1 Paul Parks Drive	St. Clair	MO	63077
Sullivan, City of	City Hall 209 West Washington Street	Sullivan	MO	63080

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Union, City of	City Hall 500 East Locust Street	Union	MO	63084
Washington, City of	City Hall 405 Jefferson Street	Washington	MO	63090

[1] No Special Flood Hazard Areas Identified

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region 7	Federal Regional Center 11224 Holmes Road, Kansas City, MO 64131-3626 (816) 283-7061
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil

Table 32: Additional Information

State Agencies and Organizations	
State NFIP Coordinator	Karen McHugh, CFM Missouri State Emergency Management Agency 2302 Militia Drive Jefferson City, MO 65101 573-526-9129 Karen.McHugh@sema.dps.mo.gov
State GIS Coordinator	Alexis Gieseker, GISP GIS Specialist State of Missouri Office of Administration Information Technology Services Division Office of Geospatial Information 2302 Militia Drive Jefferson City, MO 65101 Telephone: (573) 418-7687 Email: alexis.gieseker@oa.mo.gov

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA, 2011	FEMA	*Flood Insurance Study, Franklin County, Missouri*	FEMA	Washington, D.C.	2011	N/A
Hydrology Summary, 2017	FEMA	*Hydrology Summary Report*	Wood E&IS	Washington, D.C.	2017	N/A
Hydraulics Summary, 2017	FEMA	*Hydraulics Summary Report*	Wood E&IS	Washington, D.C.	2017	N/A
MSDIS, 2015	Missouri Spatial Data Information Service	*Light Detection and Ranging (LiDAR) data*	Missouri NRCS State Office	Columbia, Missouri	2014	http://msdis.missouri.edu
USDA NAIP, 2014	United States Department of Agriculture	*Orthography*	USDA	Washington, D.C.	2014	https://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 2 OF 2

FRANKLIN COUNTY, MISSOURI

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BERGER, CITY OF	290132
FRANKLIN COUNTY, UNINCORPORATED AREAS	290493
GERALD, CITY OF*	290734
LESLIE, VILLAGE OF*	290304
MIRAMIGUOA PARK, VILLAGE OF	290992
NEW HAVEN, CITY OF	290133
OAK GROVE, VILLAGE OF	290554
PACIFIC, CITY OF	290134
PARKWAY, VILLAGE OF*	290532
ST. CLAIR, CITY OF	290135
SULLIVAN, CITY OF	290136
UNION, CITY OF	290137
WASHINGTON, CITY OF	290138

*No Special Flood Hazard Areas Identified

FEMA

REVISED:

JUNE 5, 2020

FLOOD INSURANCE STUDY NUMBER
29071CV001C
Version Number 2.4.3.5

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Volume 2
Exhibits

Flood Profiles

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Bourbeuse River	03P-09P
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Brown's Branch	11P-13P
Brush Creek	14P-17P
Busch Creek	18P-21P
Calvey Creek	22P-26P
Calvey Creek Tributary 1	27P
Dubois Creek	28P-31P
Fenton Creek	32P
Fiddle Creek	33P-36P
Flat Creek	37P-40P
Flat Creek North Tributary	41P
Guenzler Creek	42P
Happy Sock Creek	43P-44P
Labadie Creek	45P
Labadie Creek Tributary	46P
Little Calvey Creek	47P-49P
Little Fox Creek	50P-51P
Little Meramec River	52P-54P
Little Tavern Creek	55P-57P
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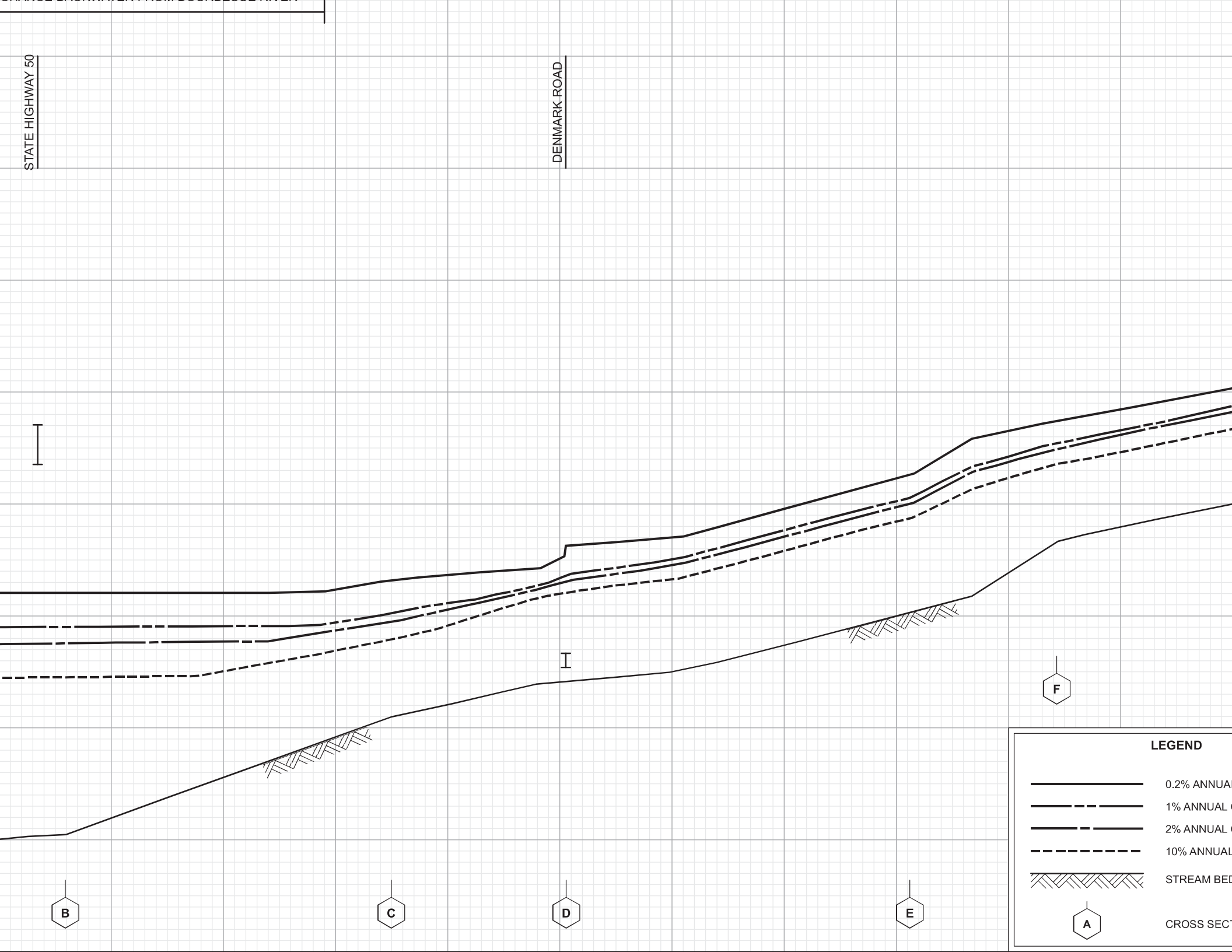
Monroe Branch	88P-90P
Phelan Branch	91P-92P
Pin Oak Creek	93P-94P
Pin Oak Creek Tributary	95P
Possum Creek	96P-97P
Saint John's Creek	98P
South Branch Busch Creek	99P
Southwest Branch Busch Creek	100P-103P
Thornton Branch	104P
Unnamed Tributary to Busch Creek	105P
Winch Creek	106P-109P
Winsel Creek	110P-116P

Published Separately

Flood Insurance Rate Map (FIRM)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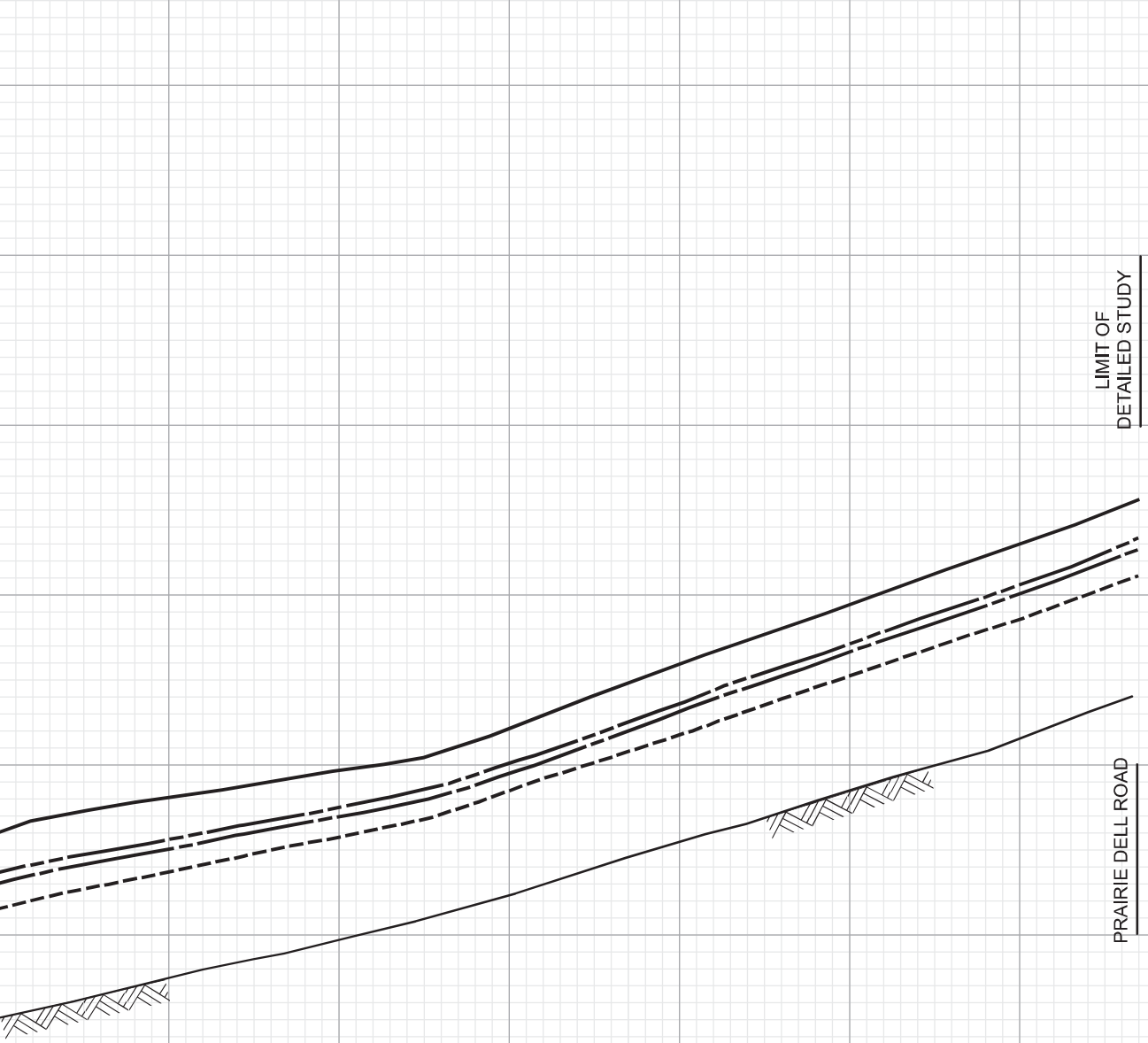

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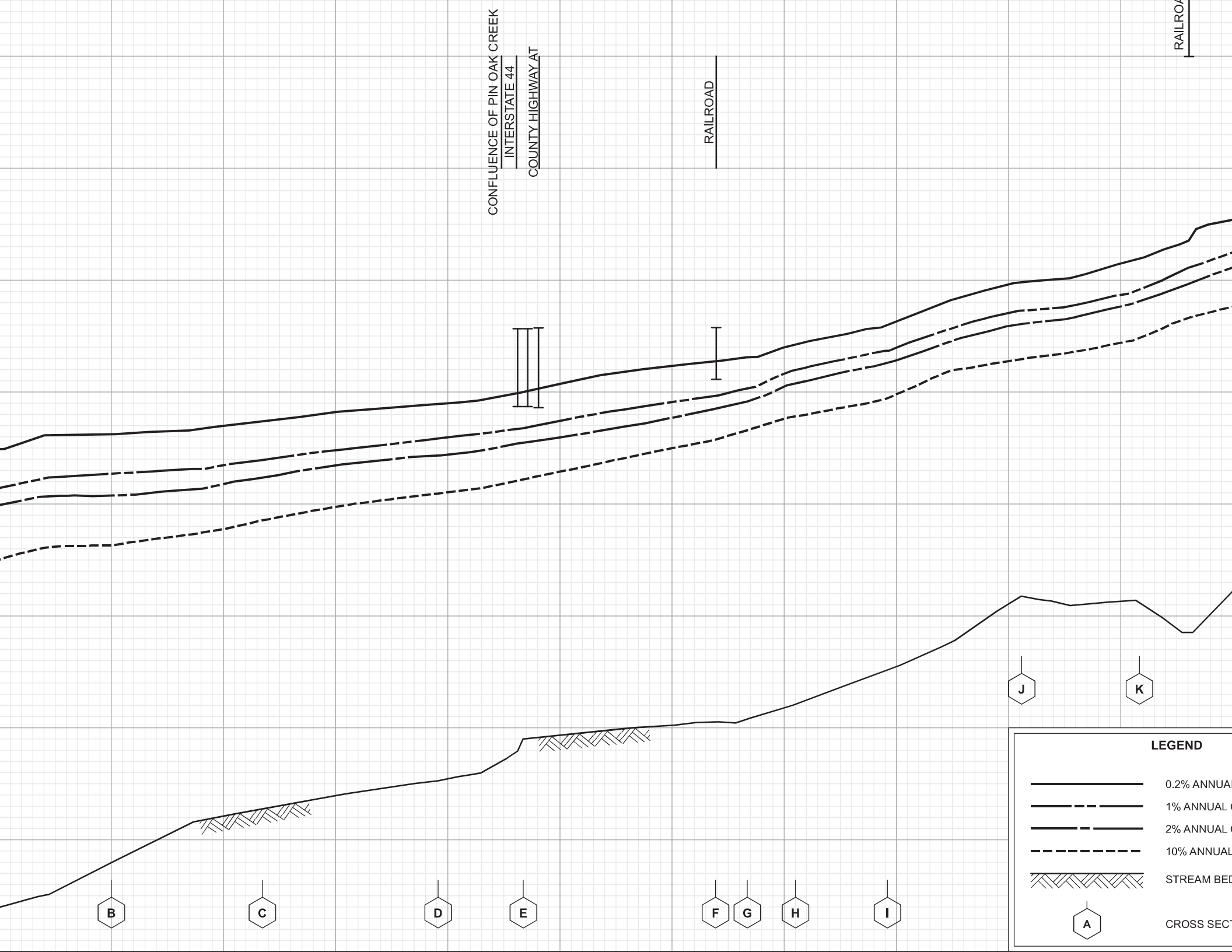
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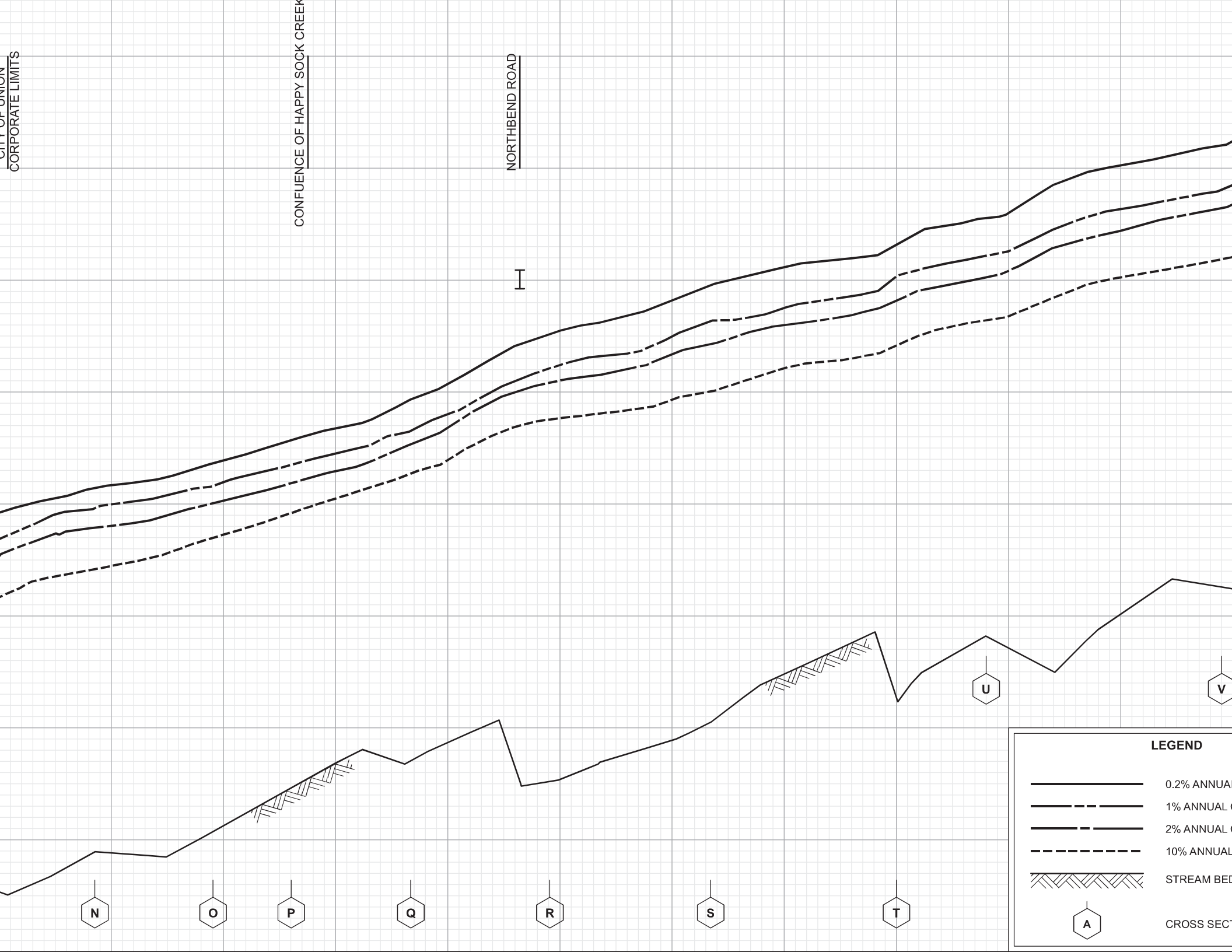
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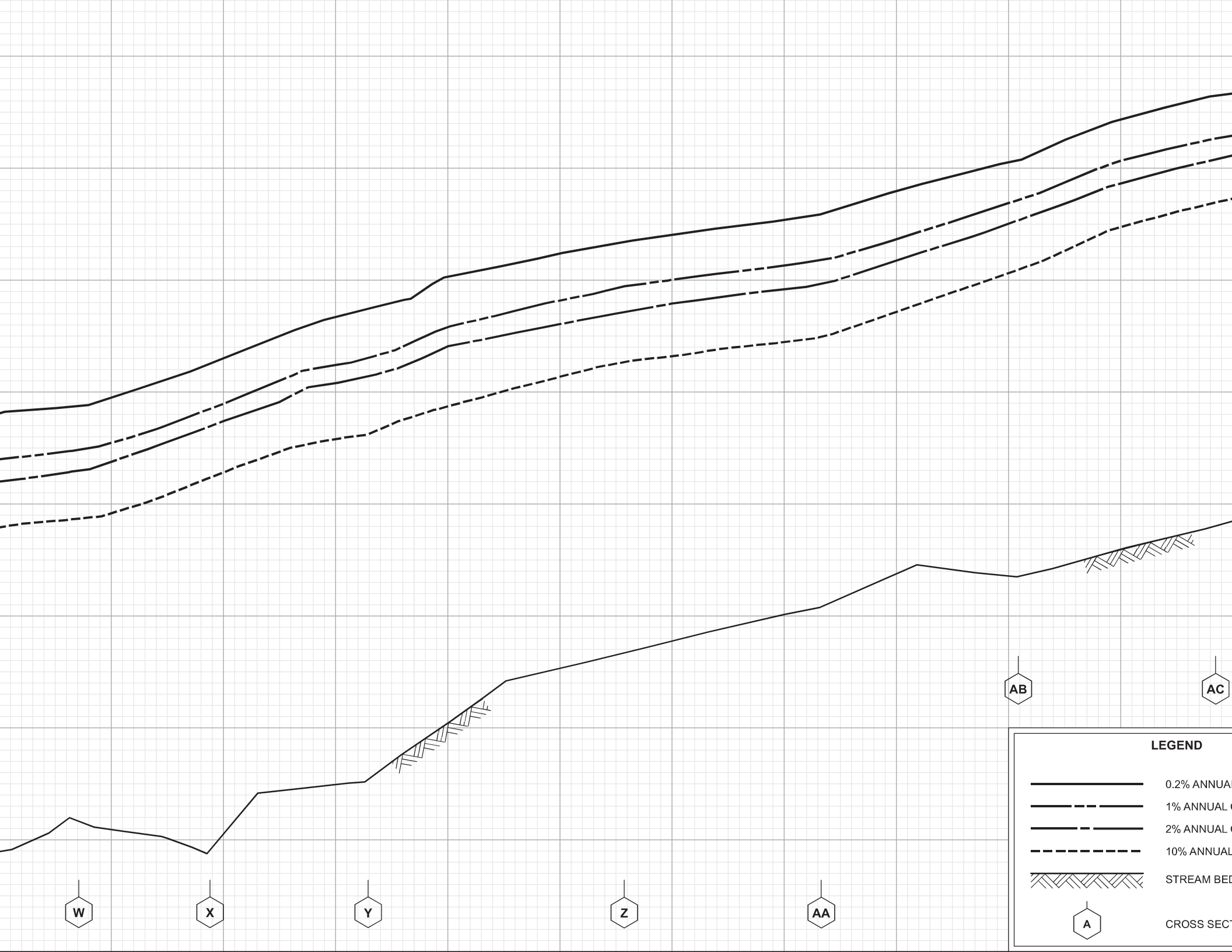
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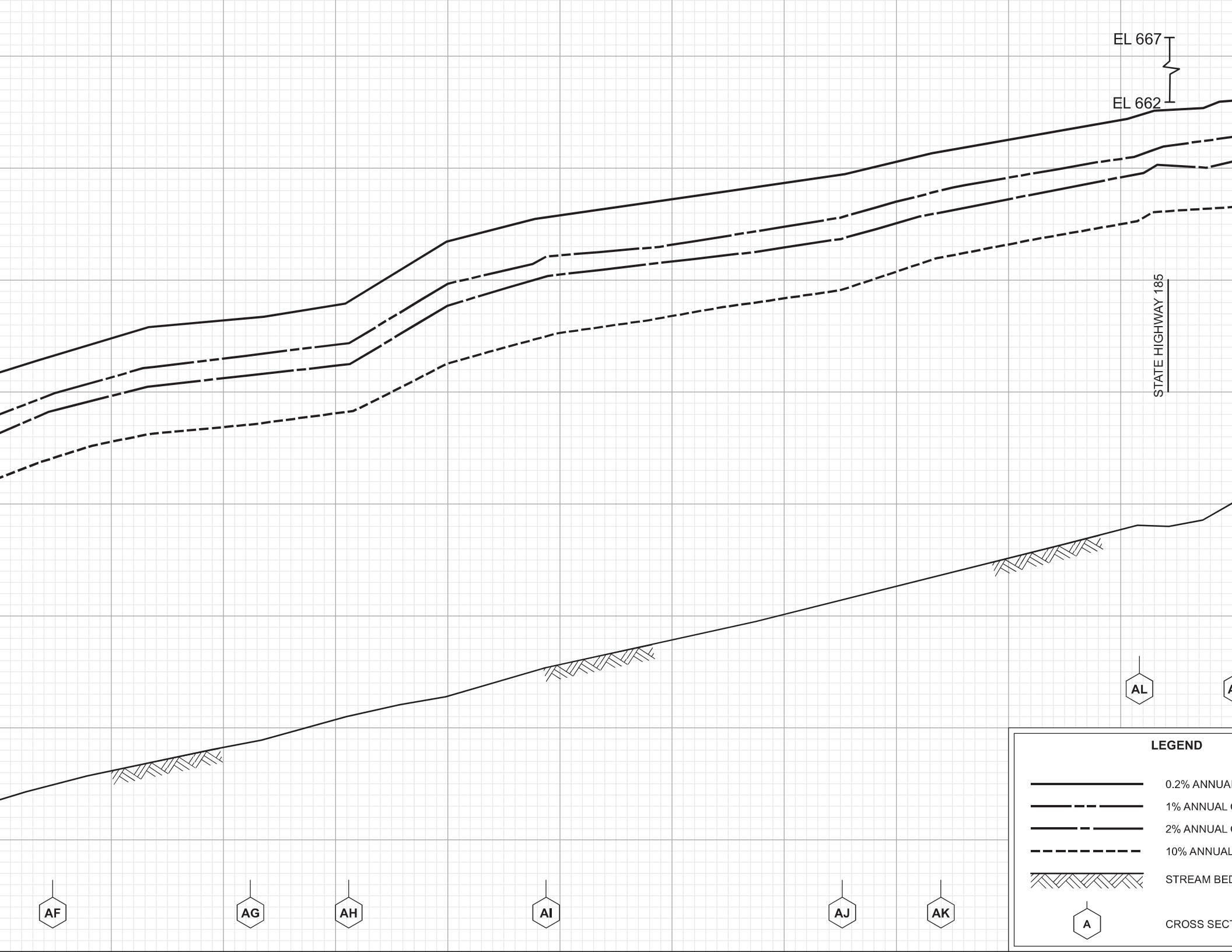
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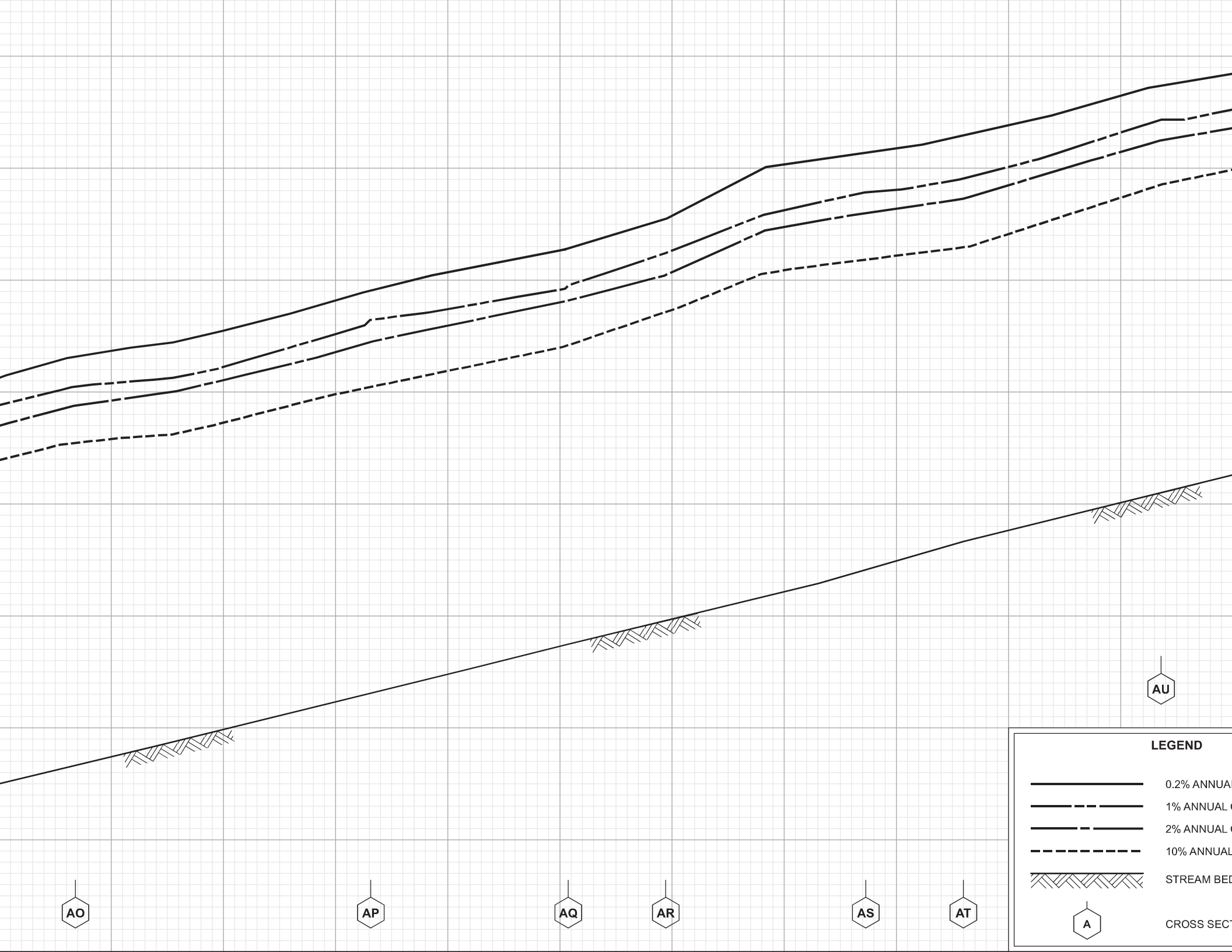
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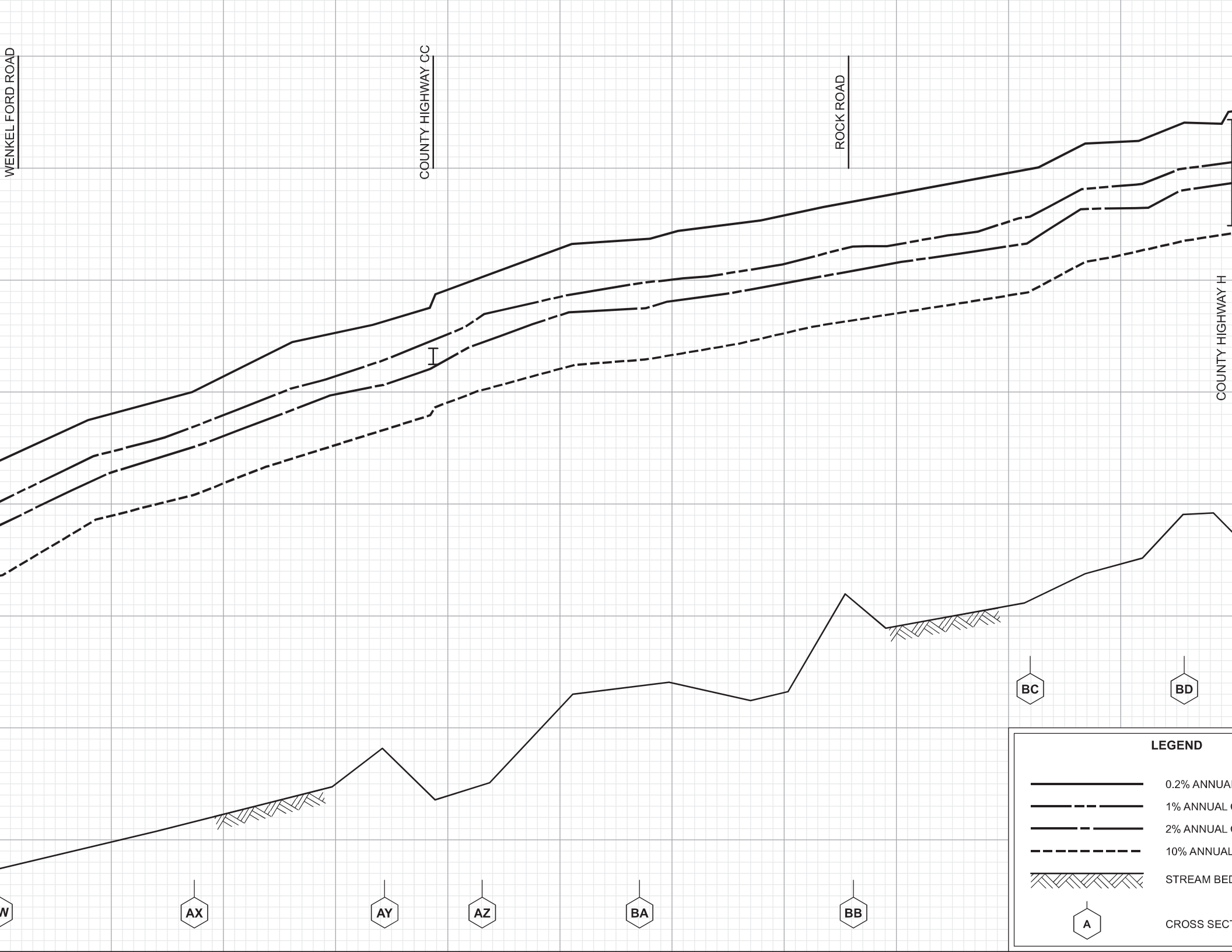
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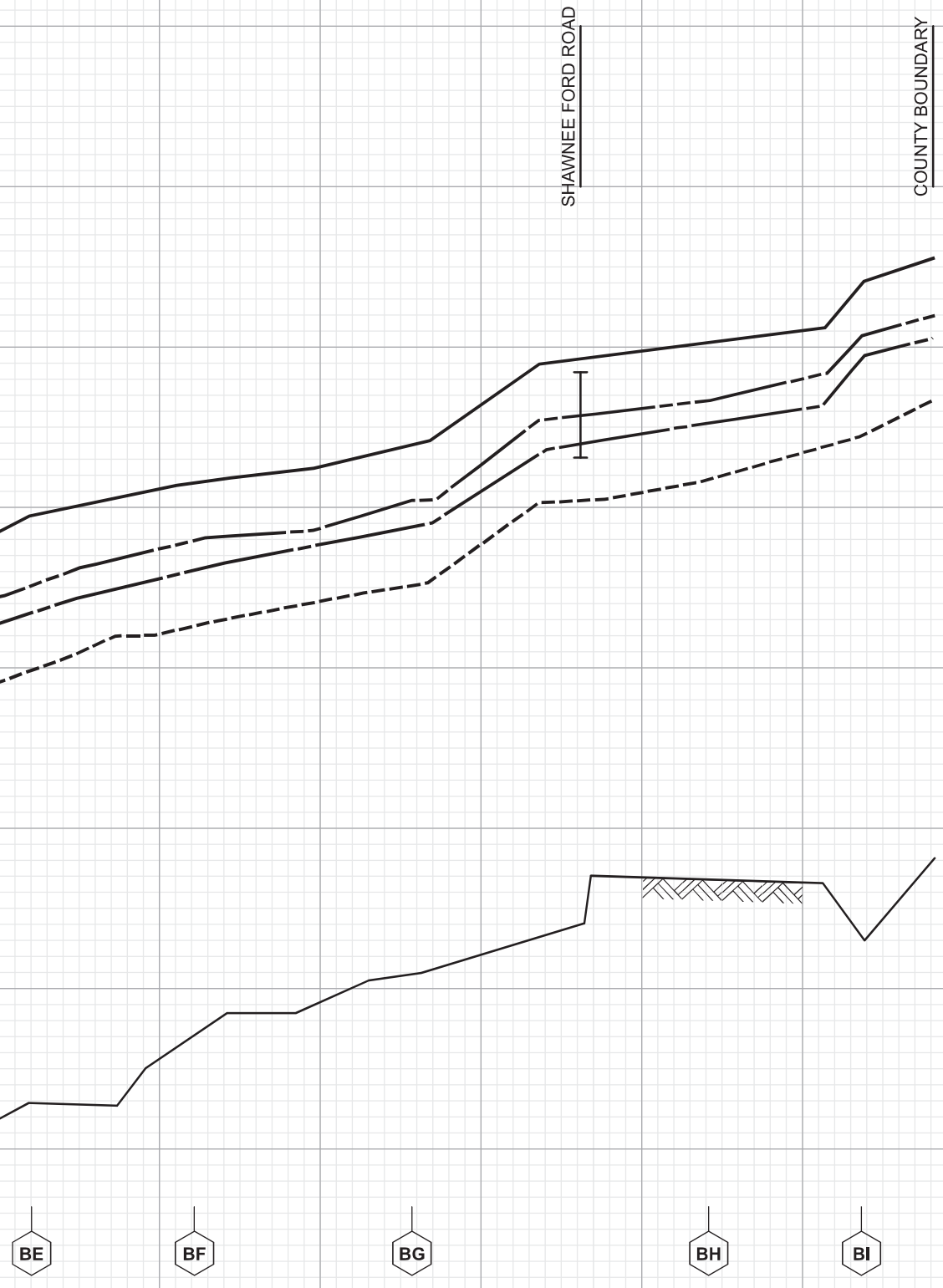

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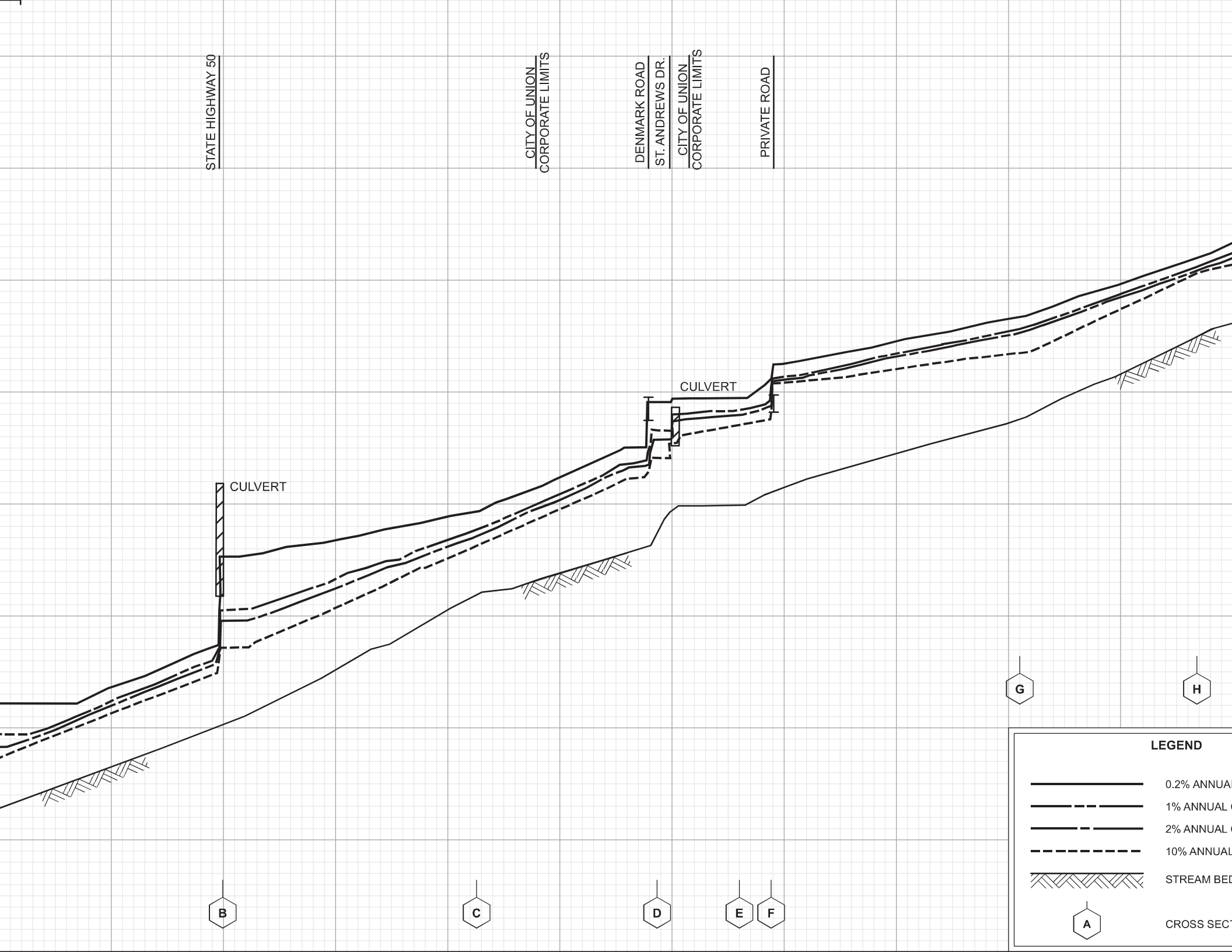
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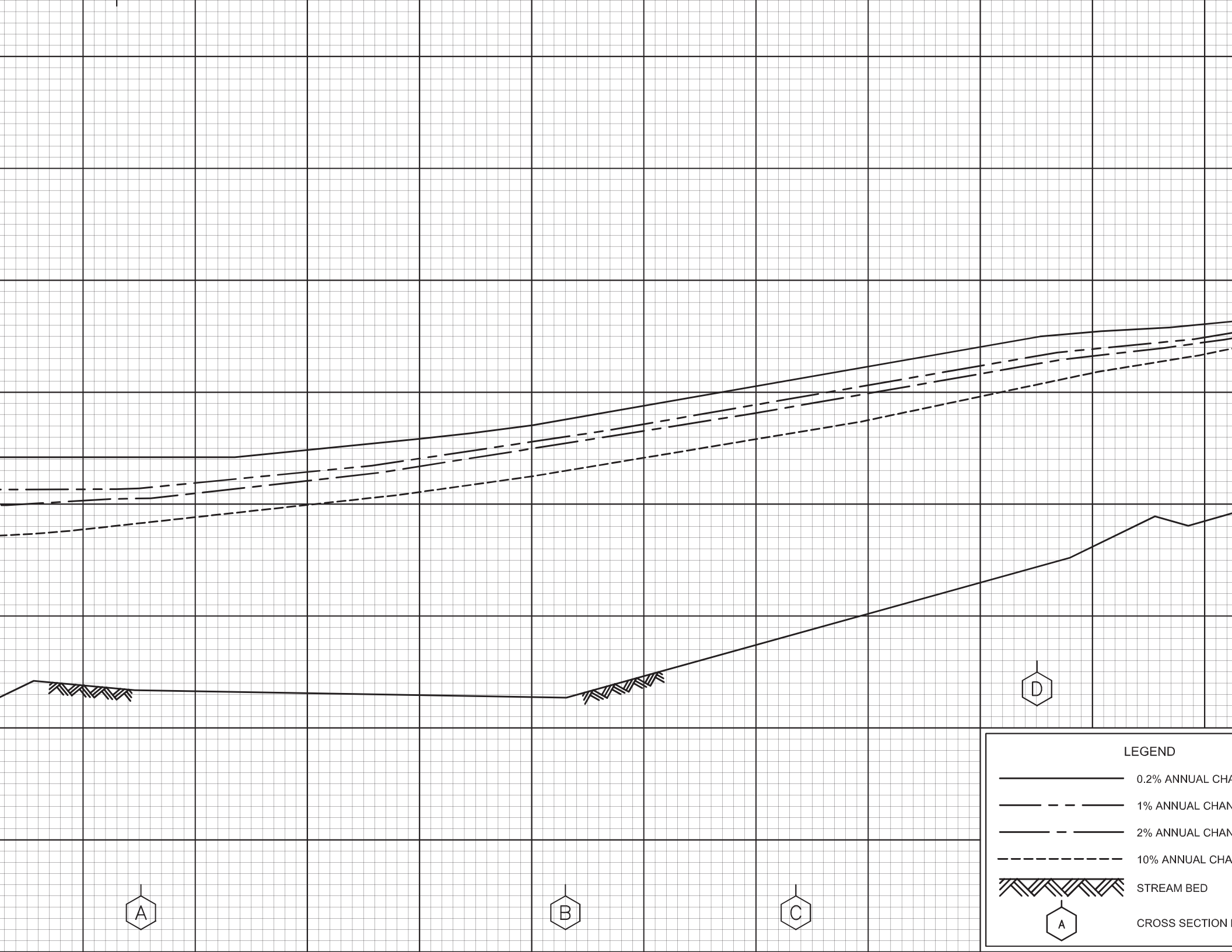
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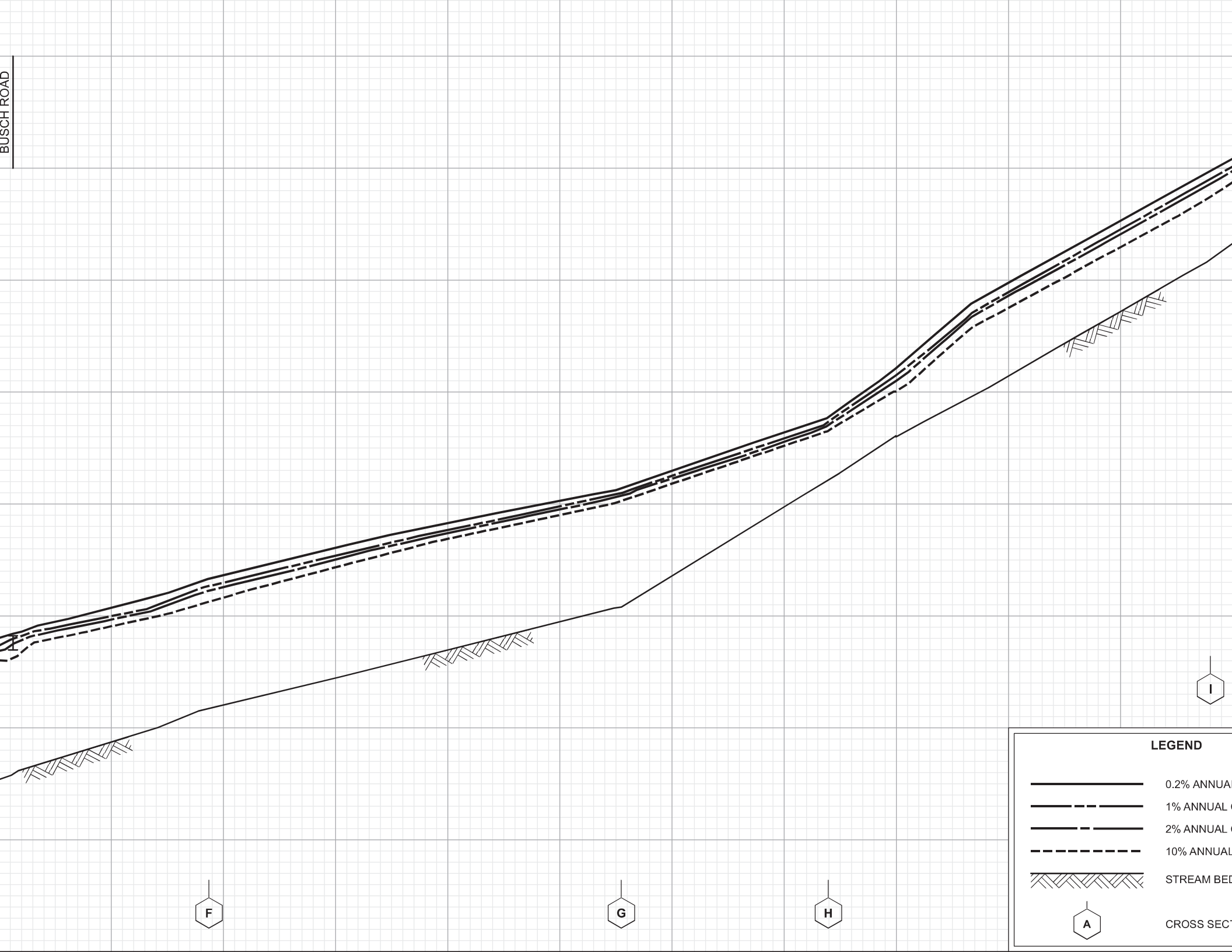
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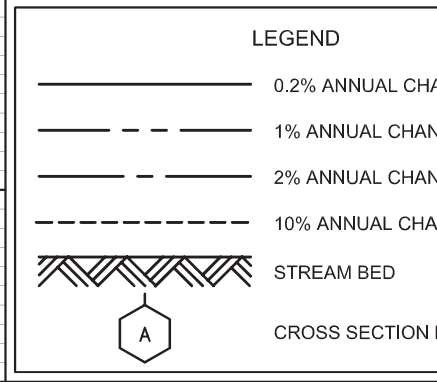
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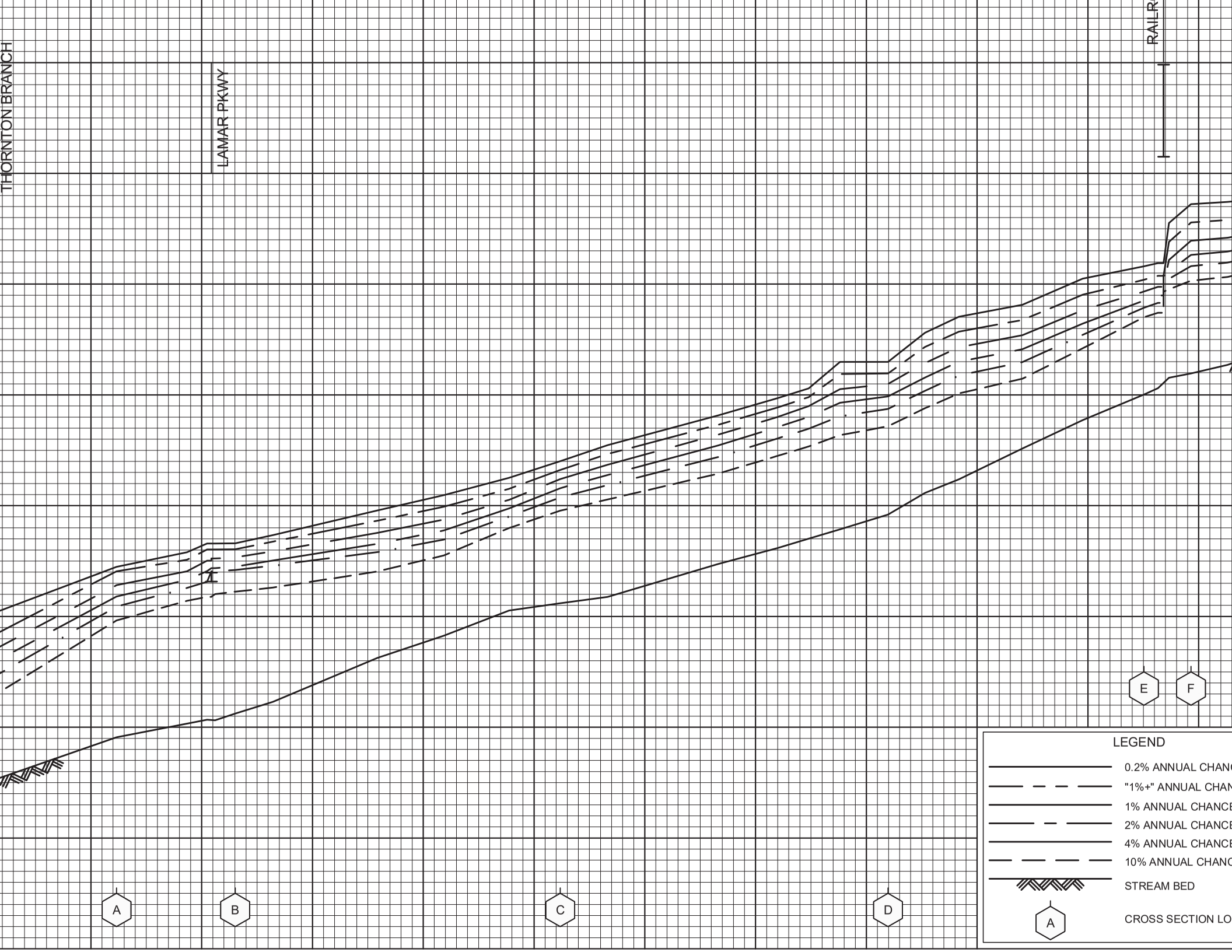
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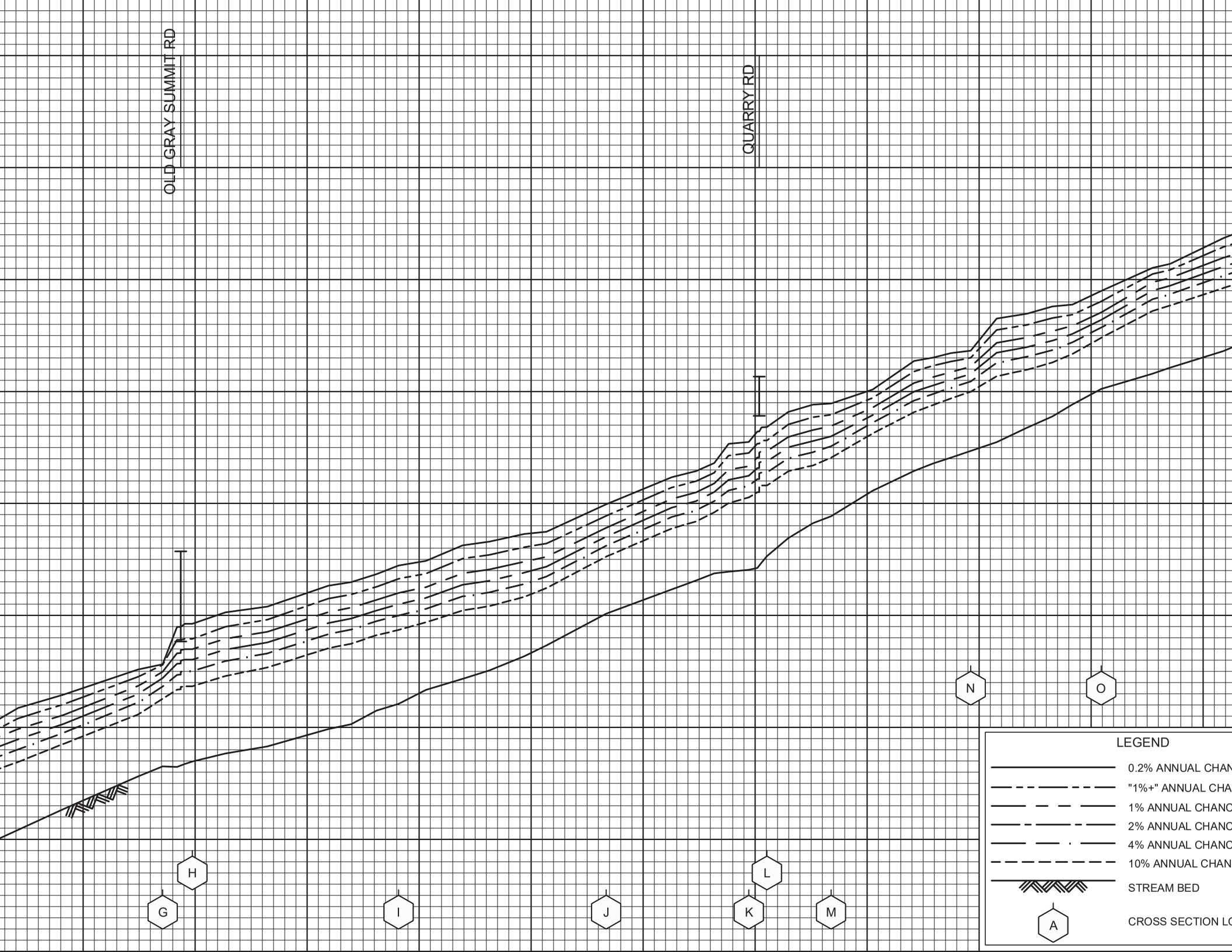
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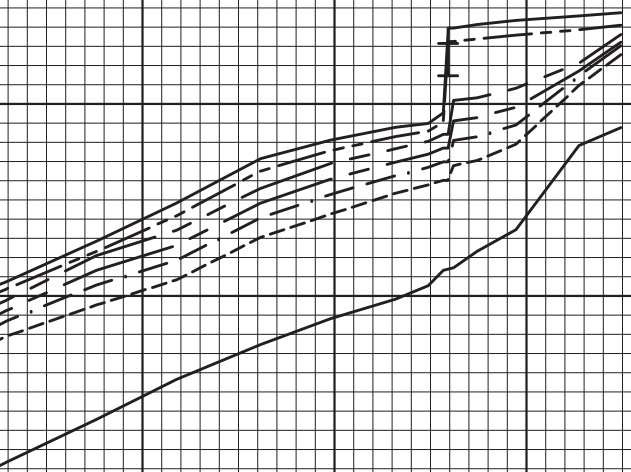

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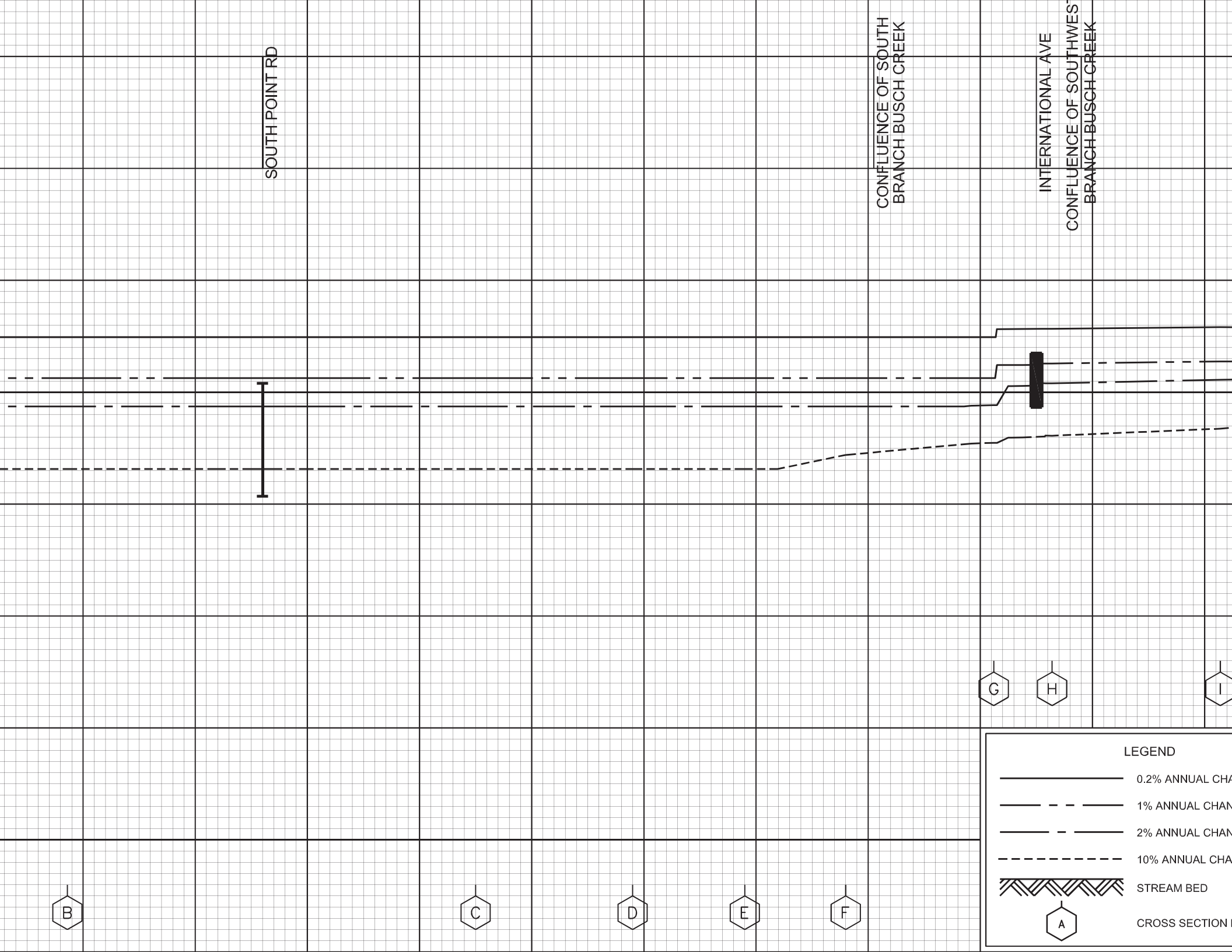
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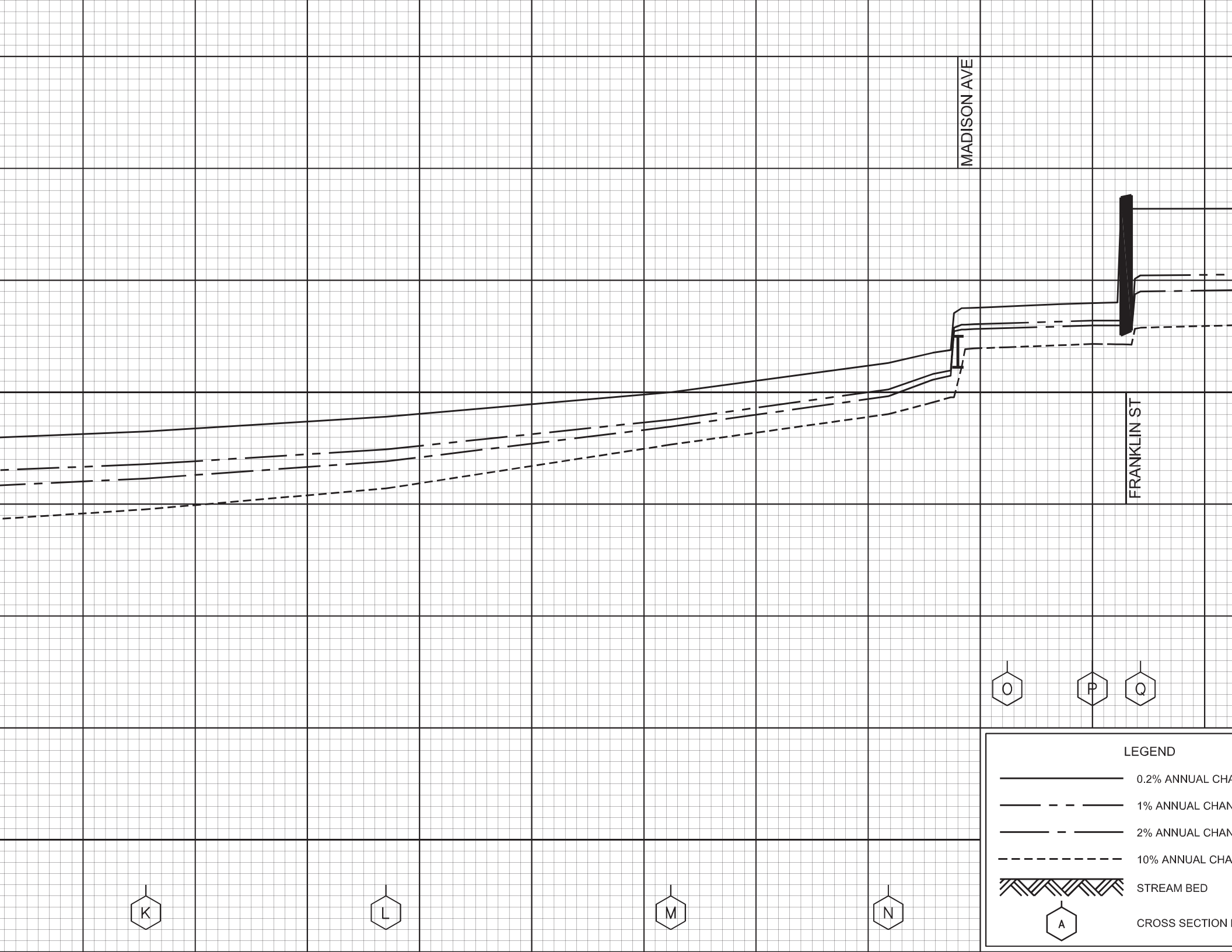
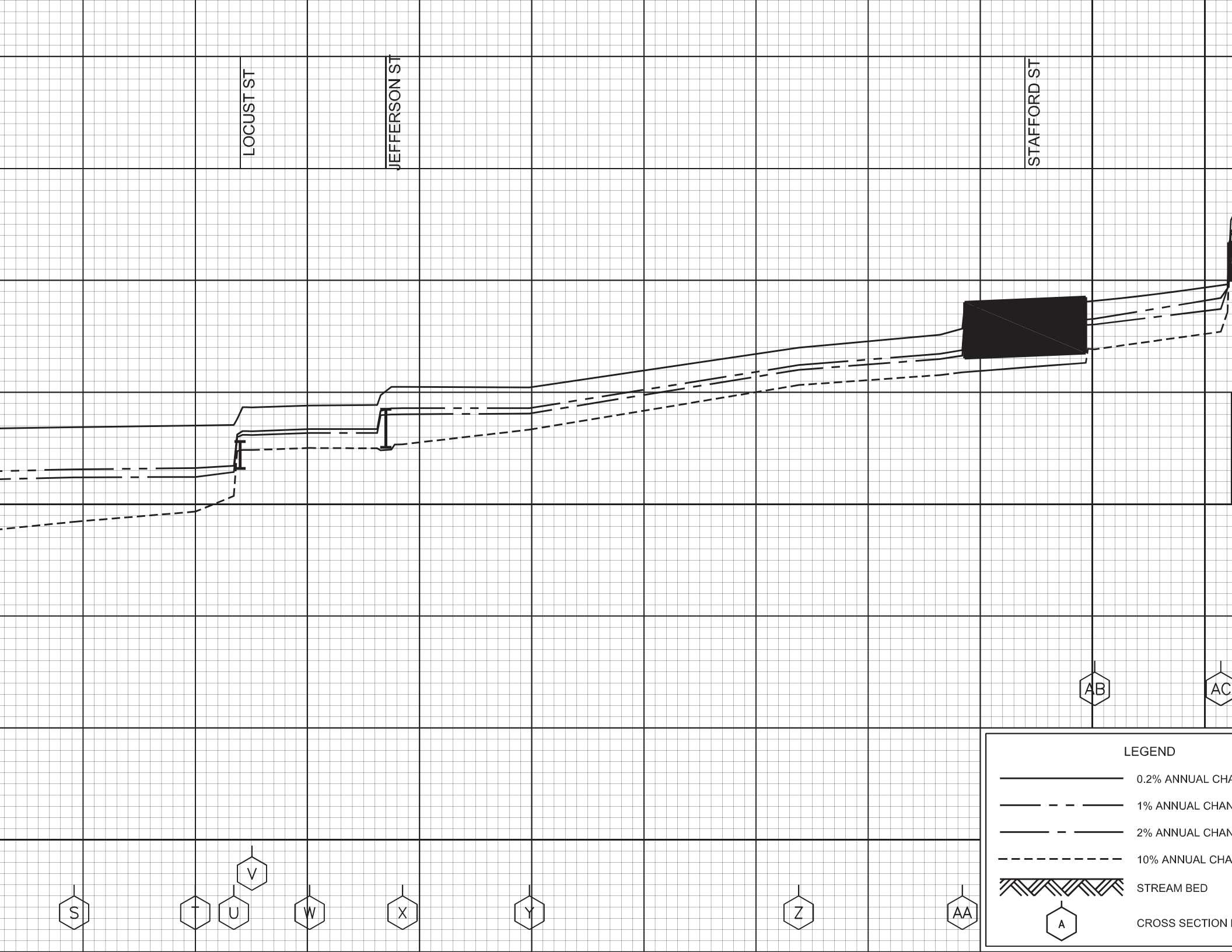
CONFLUENCE OF SOUTH BRANCH BUSCH CREEK
INTERNATIONAL AVE
CONFLUENCE OF SOUTHWEST BRANCH BUSCH CREEK
G
H
I
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION
B
C
D
E
F

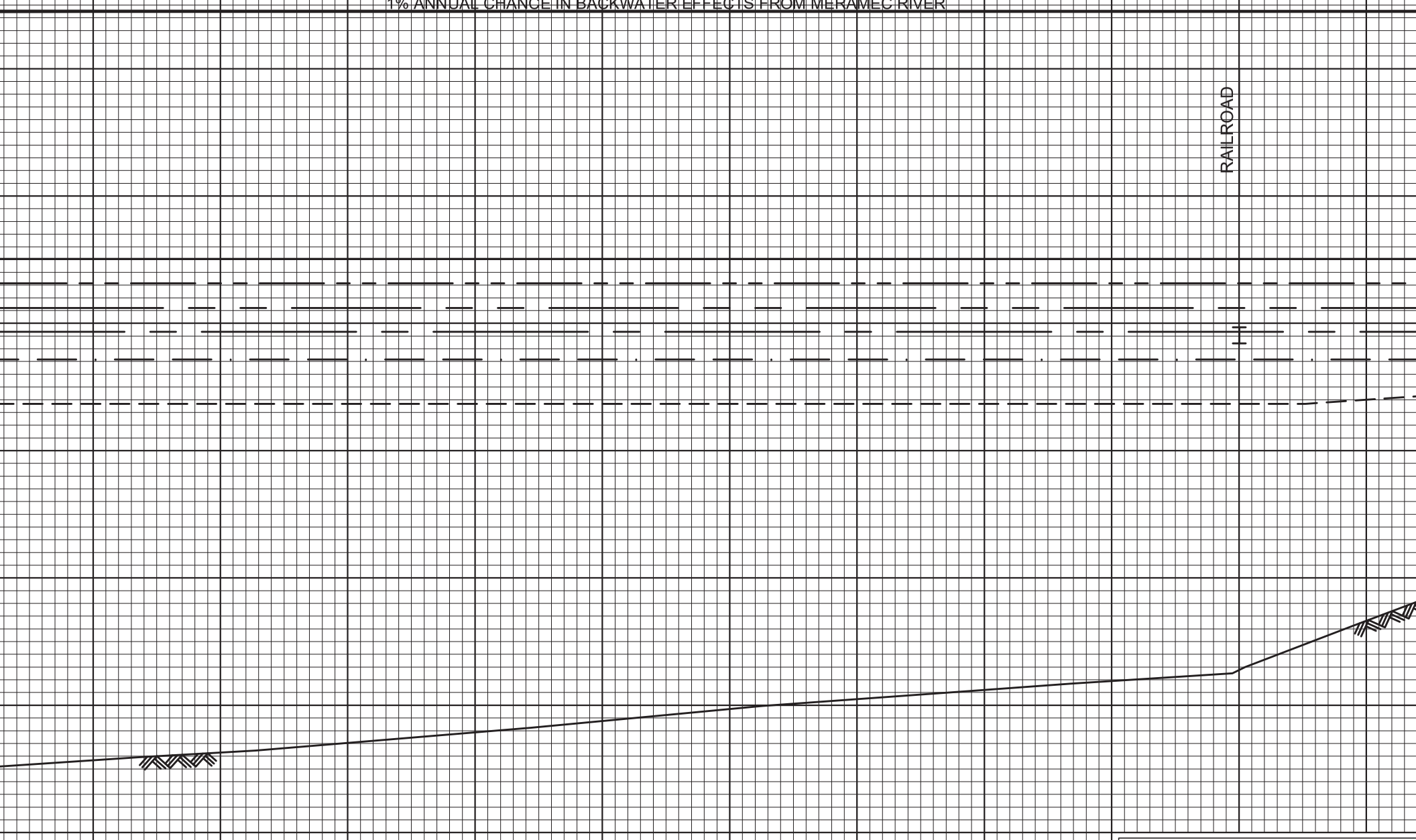

MADISON AVE
FRANKLIN ST
O
P
Q
K
L
M
N
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION


LOCUST ST
JEFFERSON ST
STAFFORD ST
AB
AC
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION
S
T
U
V
W
X
Y
Z
AA

LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
CROSS SECTION
A
SHROEDER LN
CORPORATE LIMITS
CITY OF WASHINGTON
CORPORATE LIMITS
CITY OF WASHINGTON
CORPORATE LIMITS
CITY OF WASHINGTON
CORPORATE LIMITS
CITY OF WASHINGTON
AI
AH
CORPORATE LIMITS
CITY OF WASHINGTON
MISSOURI STATE
HIGHWAY 100
AG
AF
CONFLUENCE OF UNNAMED
TRIBUTARY TO BUSCH CREEK

1% ANNUAL CHANCE IN BACKWATER EFFECTS FROM MERAMEC RIVER

RAILROAD



LEGEND

0.2% ANNUAL CHANCE

"1%+" ANNUAL CHANC

1% ANNUAL CHANCE F

2% ANNUAL CHANCE F

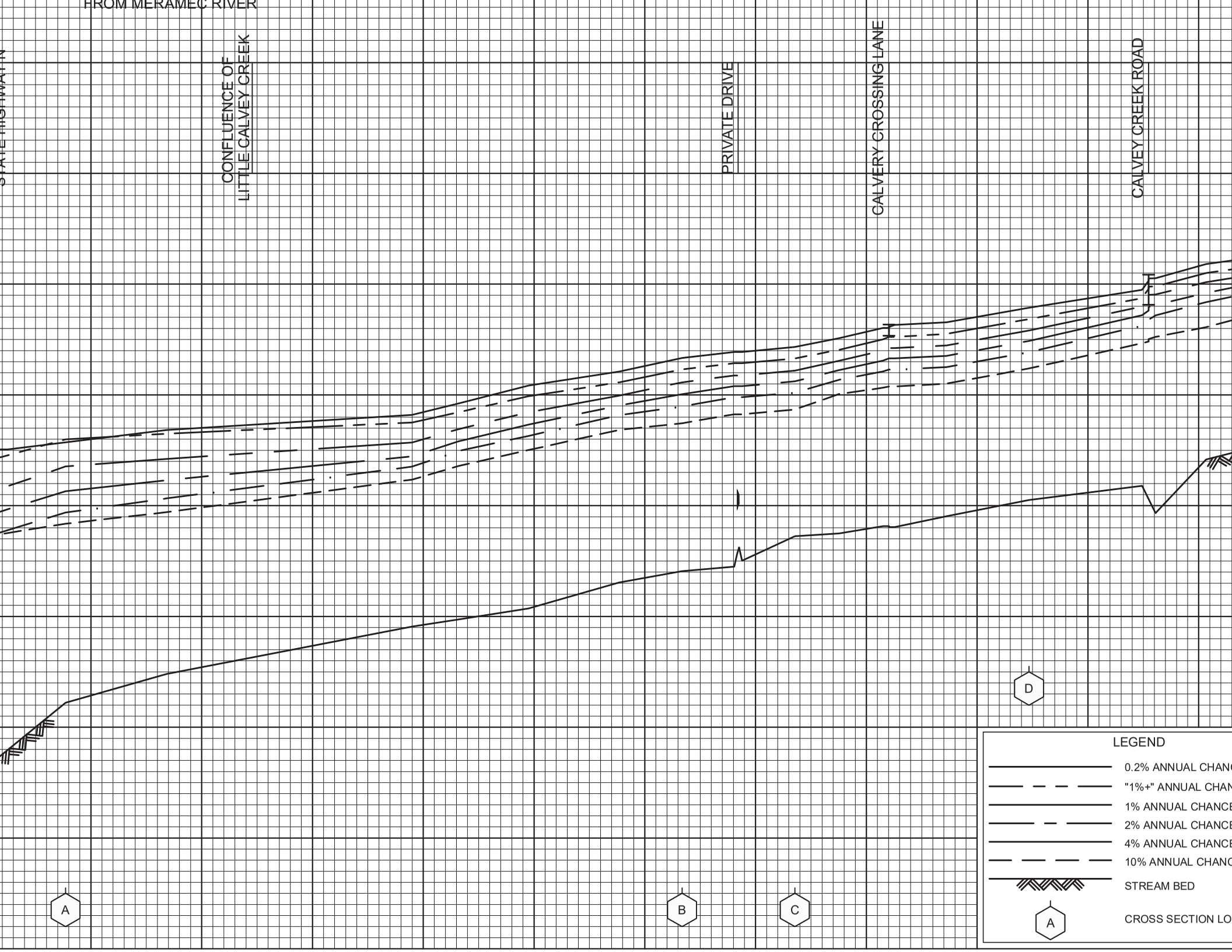
4% ANNUAL CHANCE F

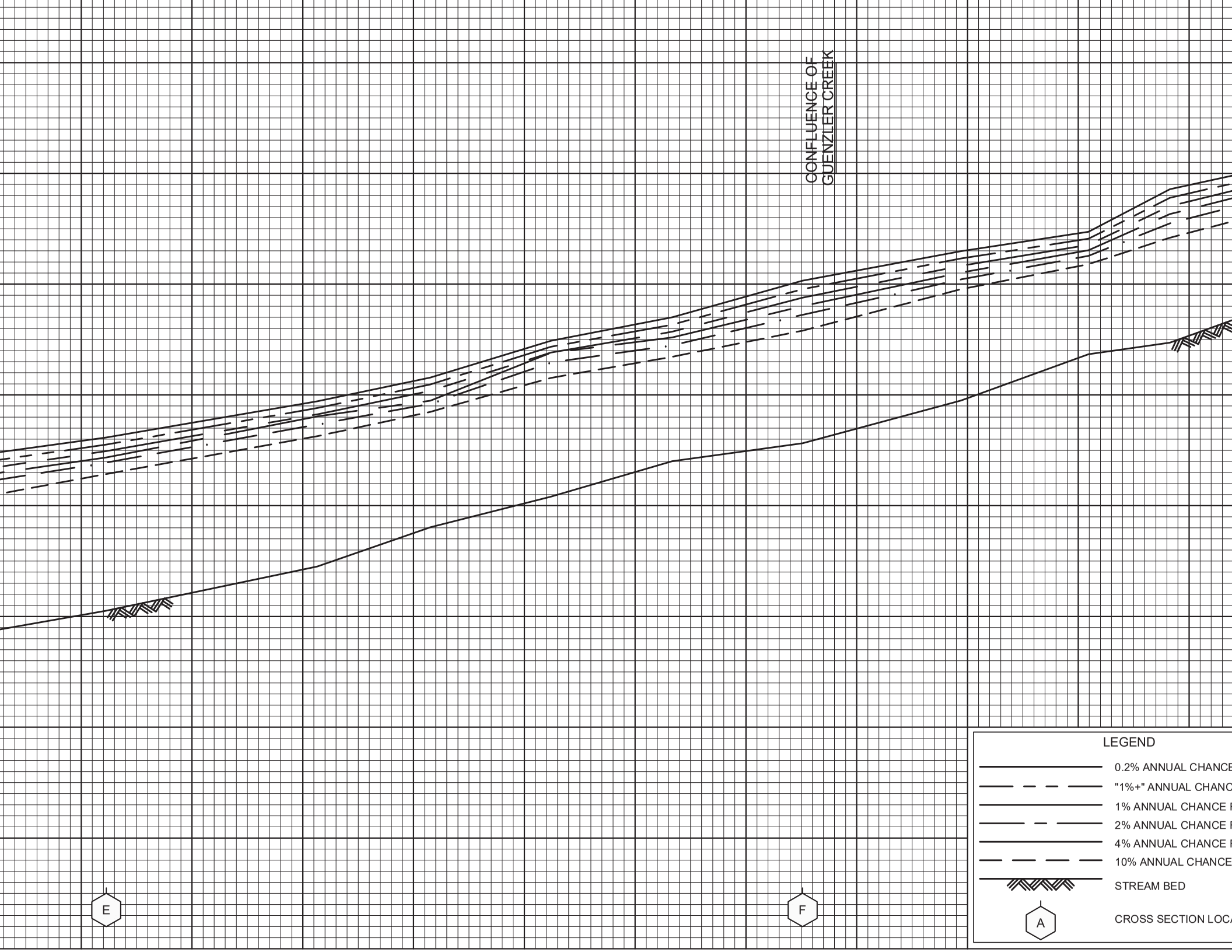
10% ANNUAL CHANCE

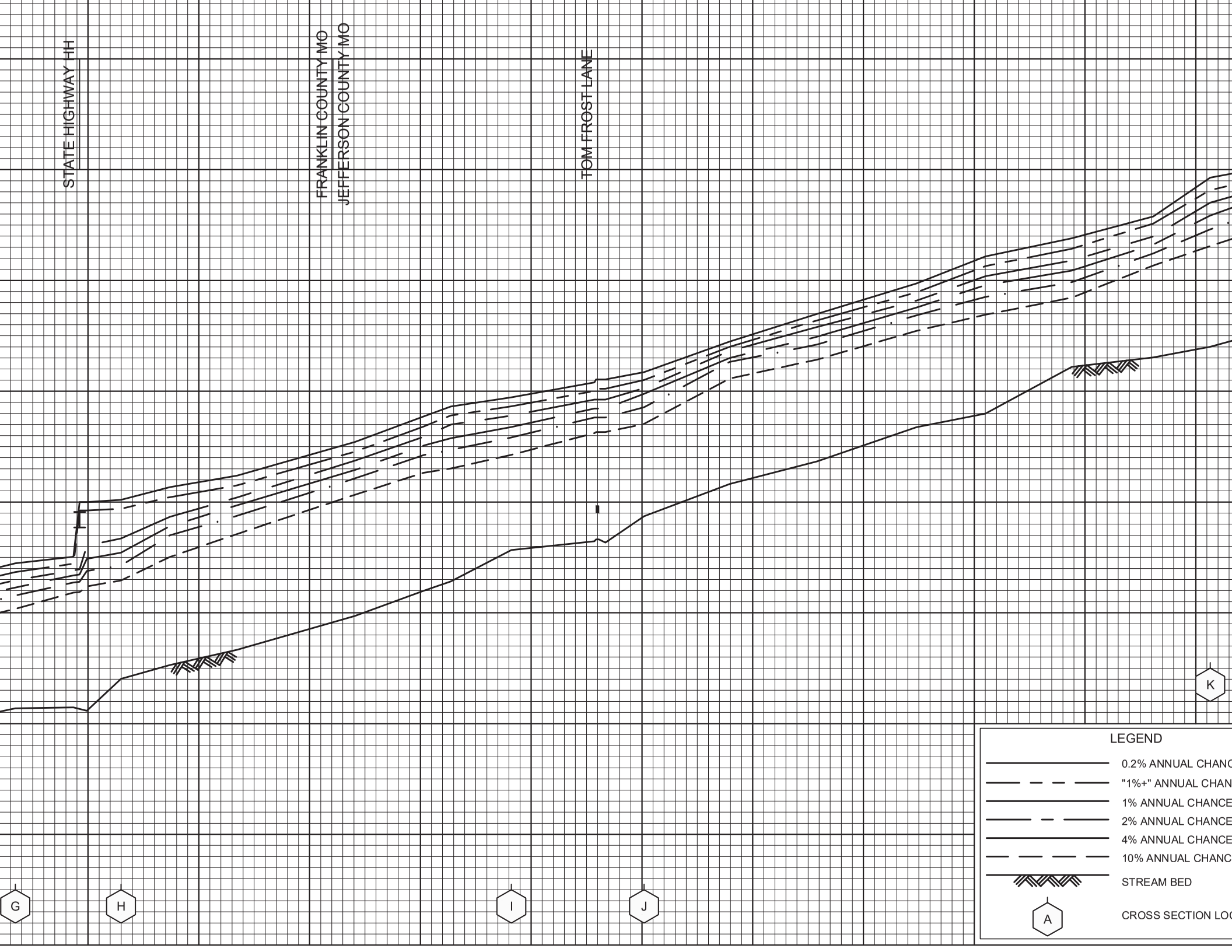
STREAM BED

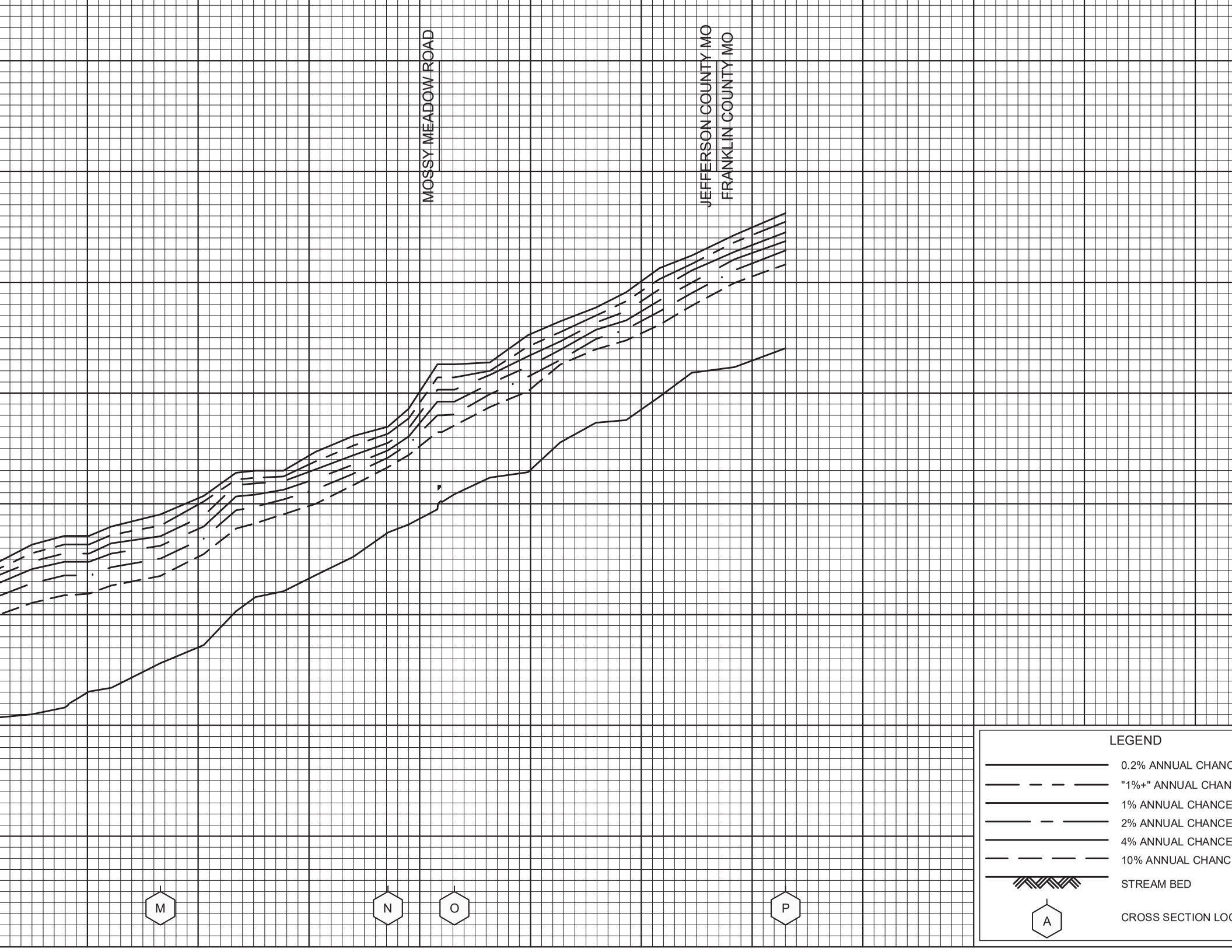
A

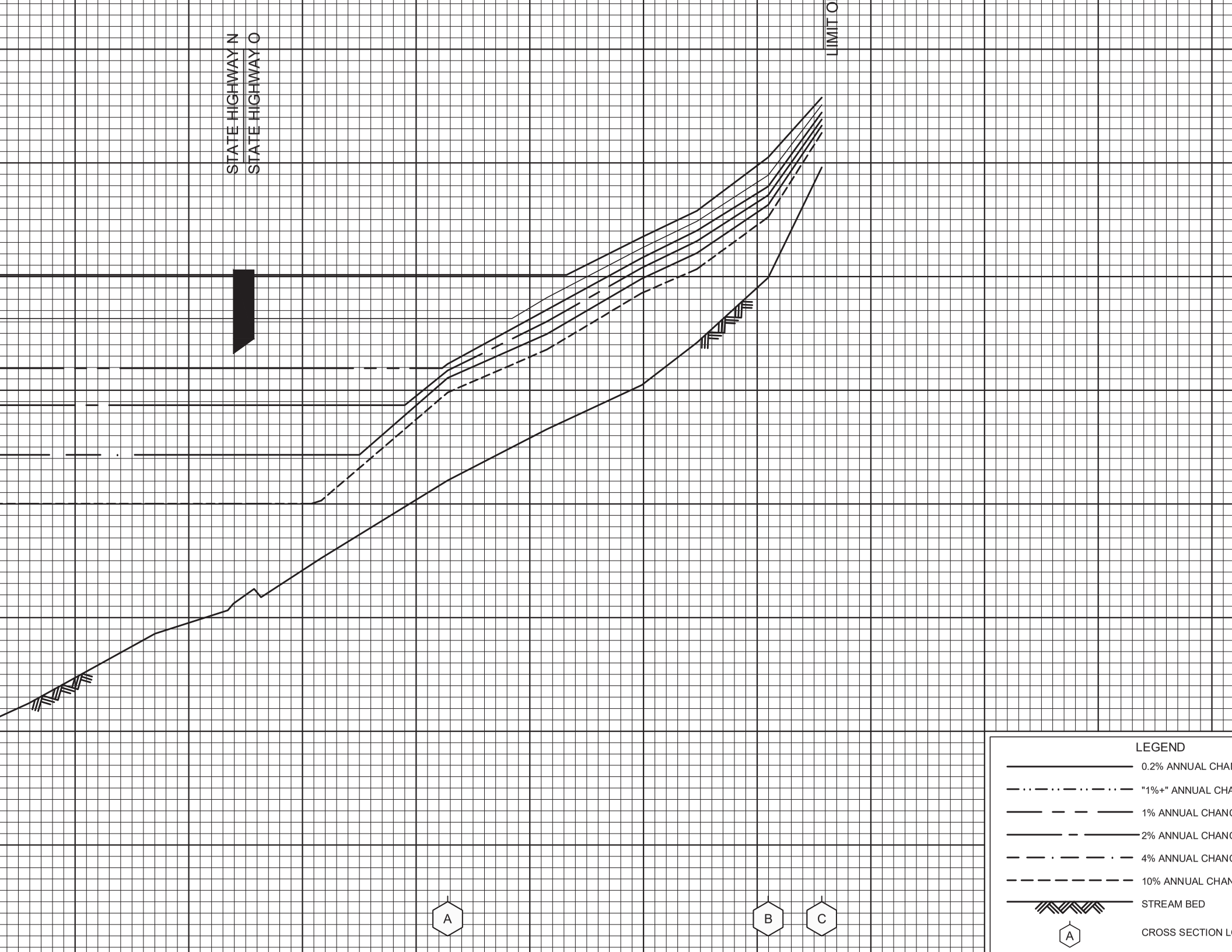
CROSS SECTION LOCA

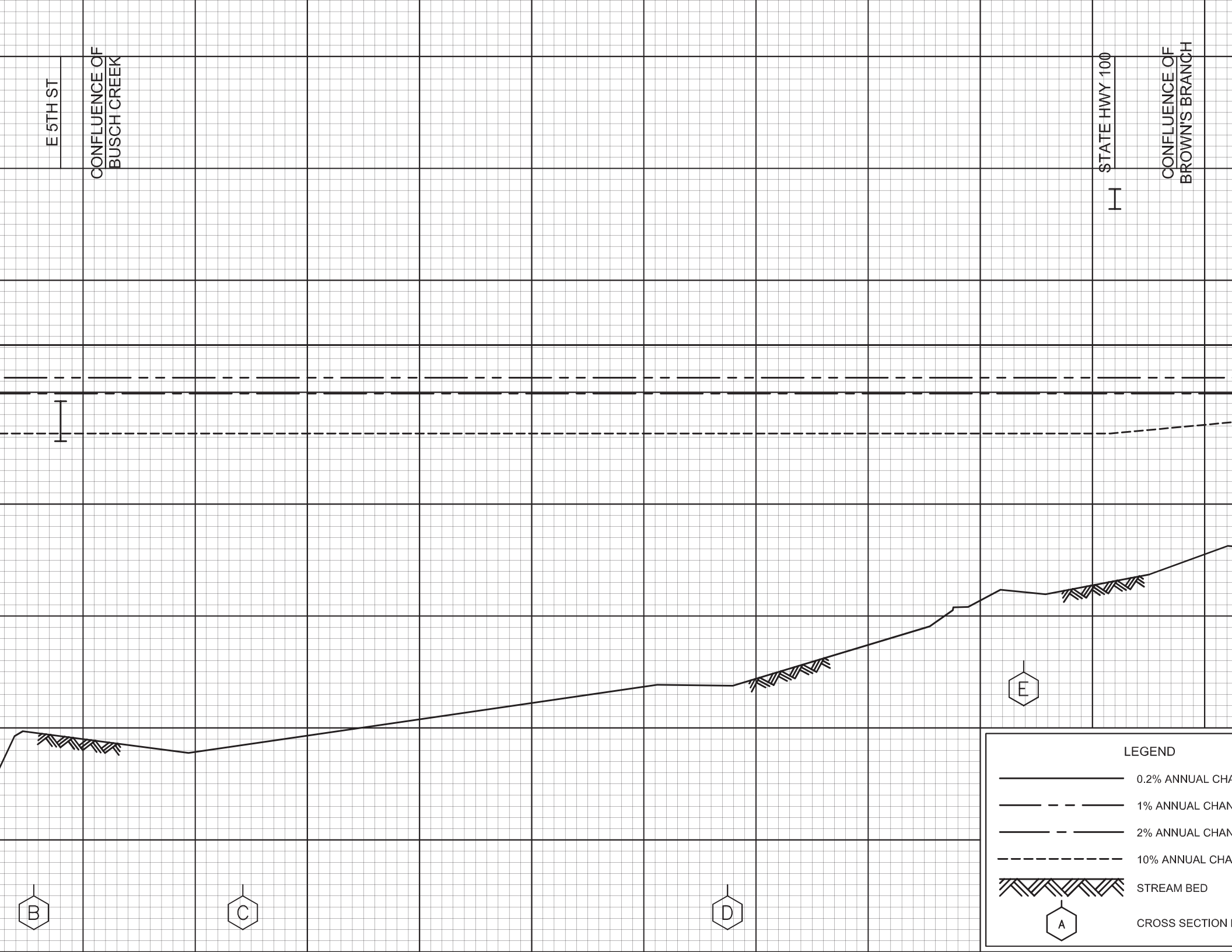

FROM MERAMEC RIVER
STATE HIGHWAY N
CONFLUENCE OF
LITTLE CALVEY CREEK
PRIVATE DRIVE
CALVERY CROSSING LANE
CALVEY CREEK ROAD
A
B
C
D
LEGEND
0.2% ANNUAL CHANC
"1%+" ANNUAL CHAN
1% ANNUAL CHANCE
2% ANNUAL CHANCE
4% ANNUAL CHANCE
10% ANNUAL CHANC
STREAM BED
A
CROSS SECTION LO


CONFLUENCE OF
GUENZLER CREEK
LEGEND
0.2% ANNUAL CHANCE
"1%+" ANNUAL CHANC
1% ANNUAL CHANCE
2% ANNUAL CHANCE
4% ANNUAL CHANCE
10% ANNUAL CHANCE
STREAM BED
CROSS SECTION LOCA
E
F
A

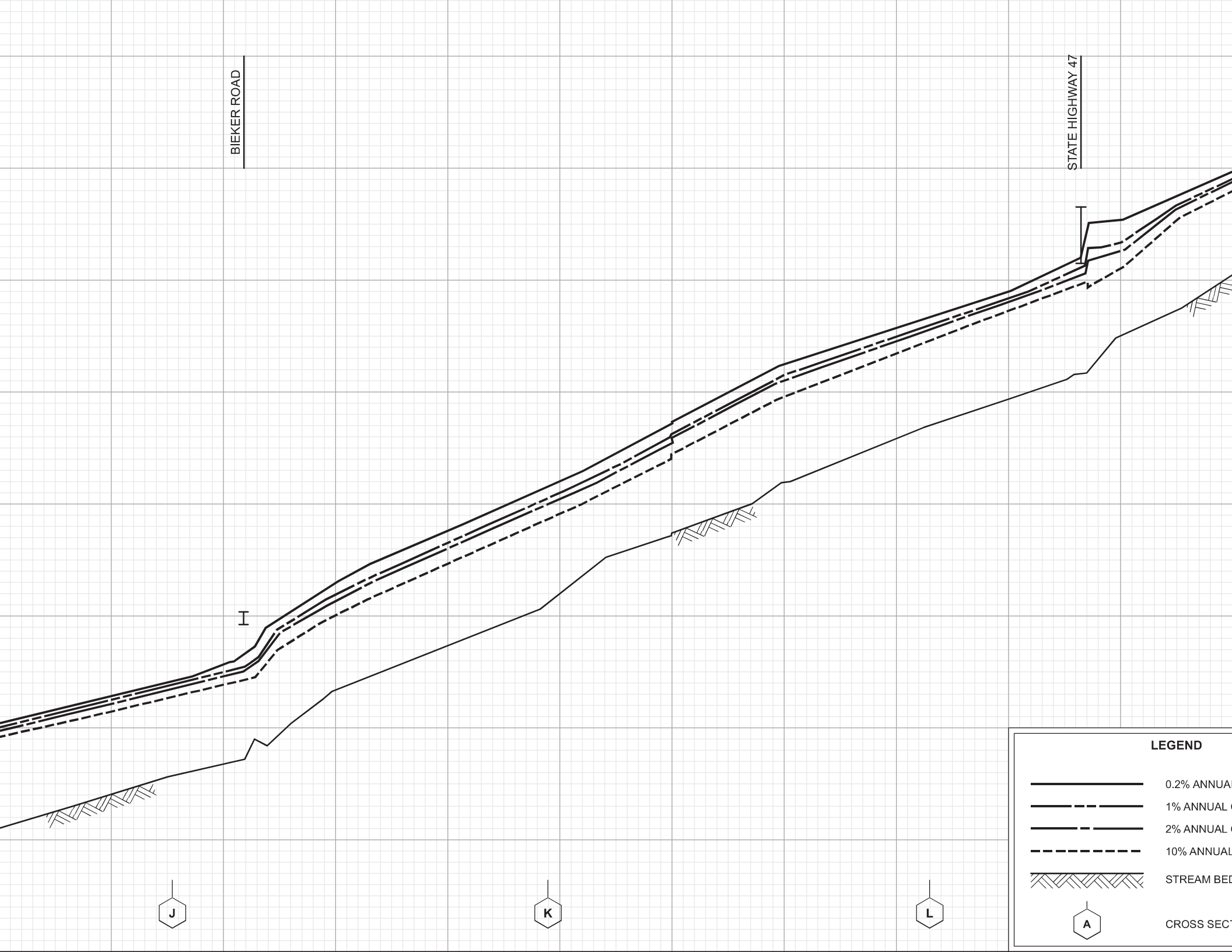

STATE HIGHWAY HH
FRANKLIN COUNTY MO
JEFFERSON COUNTY MO
TOM FROST LANE
K
G
H
I
J
LEGEND
0.2% ANNUAL CHANC
"1%+" ANNUAL CHAN
1% ANNUAL CHANCE
2% ANNUAL CHANCE
4% ANNUAL CHANCE
10% ANNUAL CHANC
STREAM BED
A
CROSS SECTION LOC


MOSSY MEADOW ROAD
JEFFERSON COUNTY MO
FRANKLIN COUNTY MO
M
N
O
P
LEGEND
0.2% ANNUAL CHANC
"1%+" ANNUAL CHAN
1% ANNUAL CHANCE
2% ANNUAL CHANCE
4% ANNUAL CHANCE
10% ANNUAL CHANC
STREAM BED
A
CROSS SECTION LOC

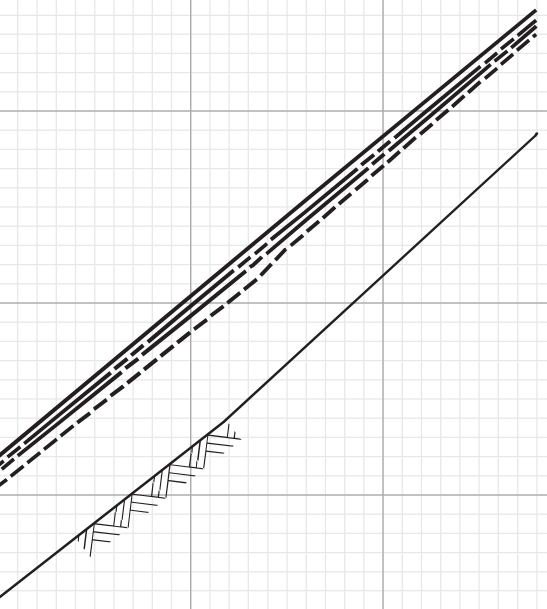

STATE HIGHWAY N
STATE HIGHWAY O
LIMIT O
LEGEND
0.2% ANNUAL CHA
"1%+" ANNUAL CHA
1% ANNUAL CHANC
2% ANNUAL CHANC
4% ANNUAL CHANC
10% ANNUAL CHAN
STREAM BED
CROSS SECTION L
A
B
C


E 5TH ST
CONFLUENCE OF BUSCH CREEK
STATE HWY 100
CONFLUENCE OF BROWN'S BRANCH
B
C
D
E
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION

NORTHGOODES MILL ROAD
I
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION
F
G
H


BIEKER ROAD
STATE HIGHWAY 47
J
K
L
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT

LIMIT OF DETAILED STUDY



N

LEGEND

0.2% ANNUA

1% ANNUAL

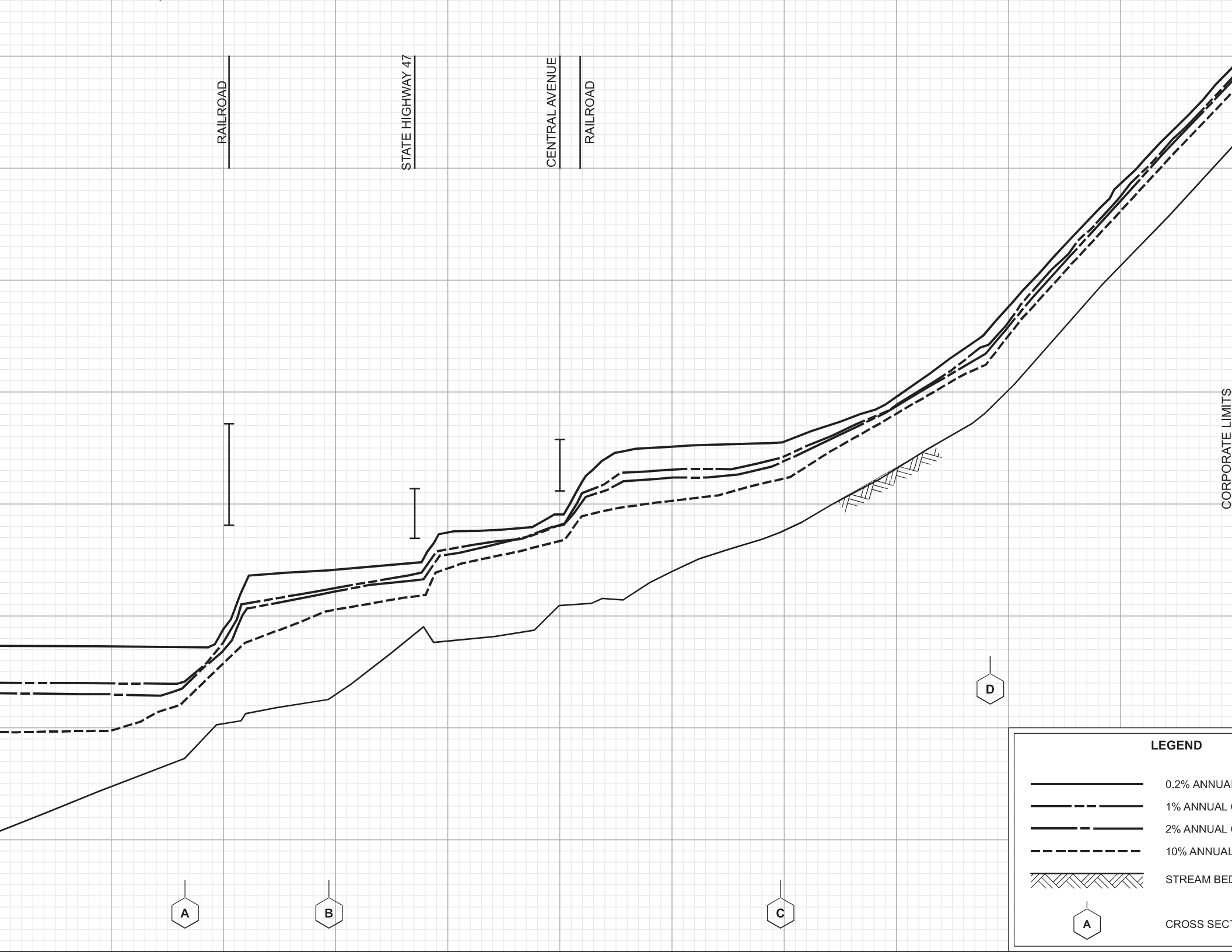
2% ANNUAL

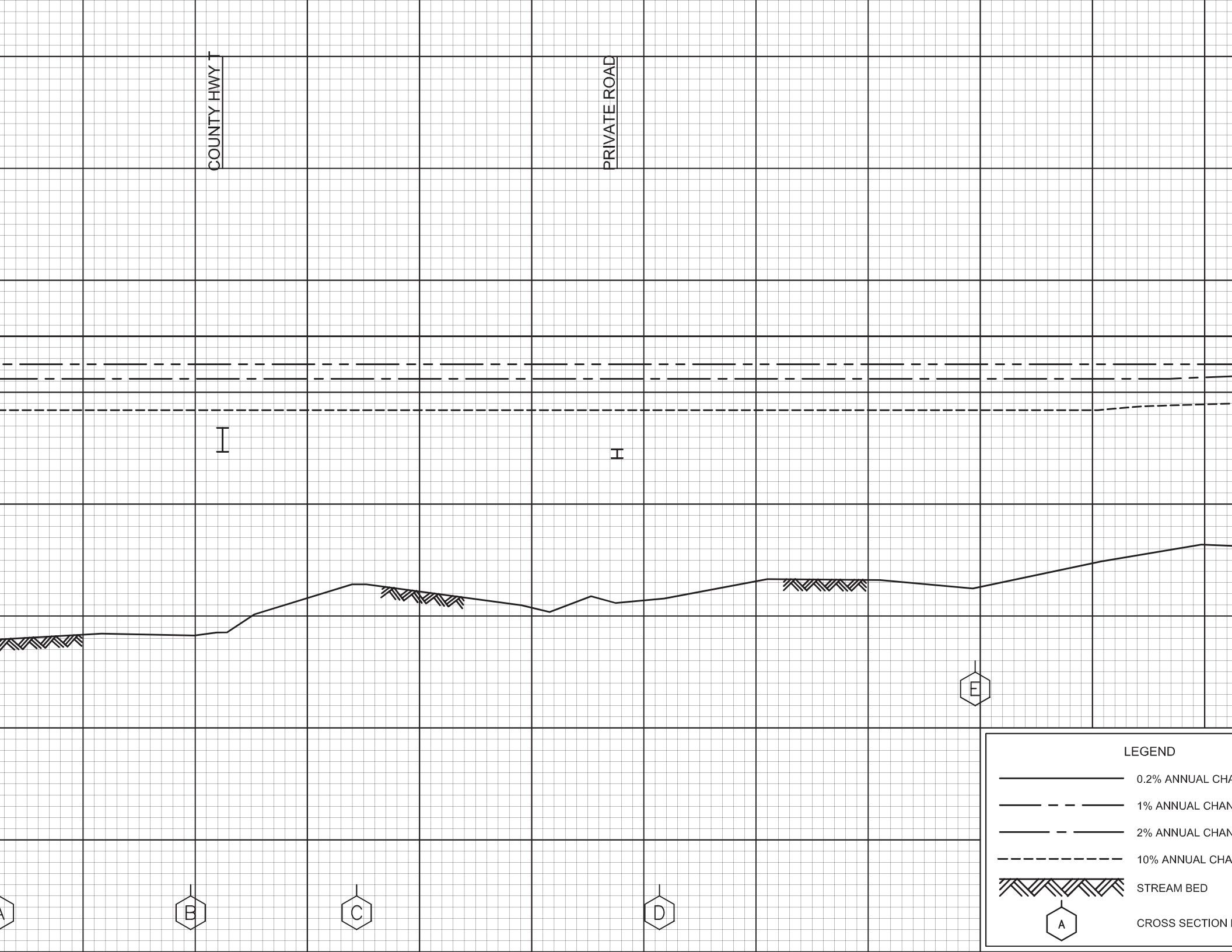
10% ANNUAL

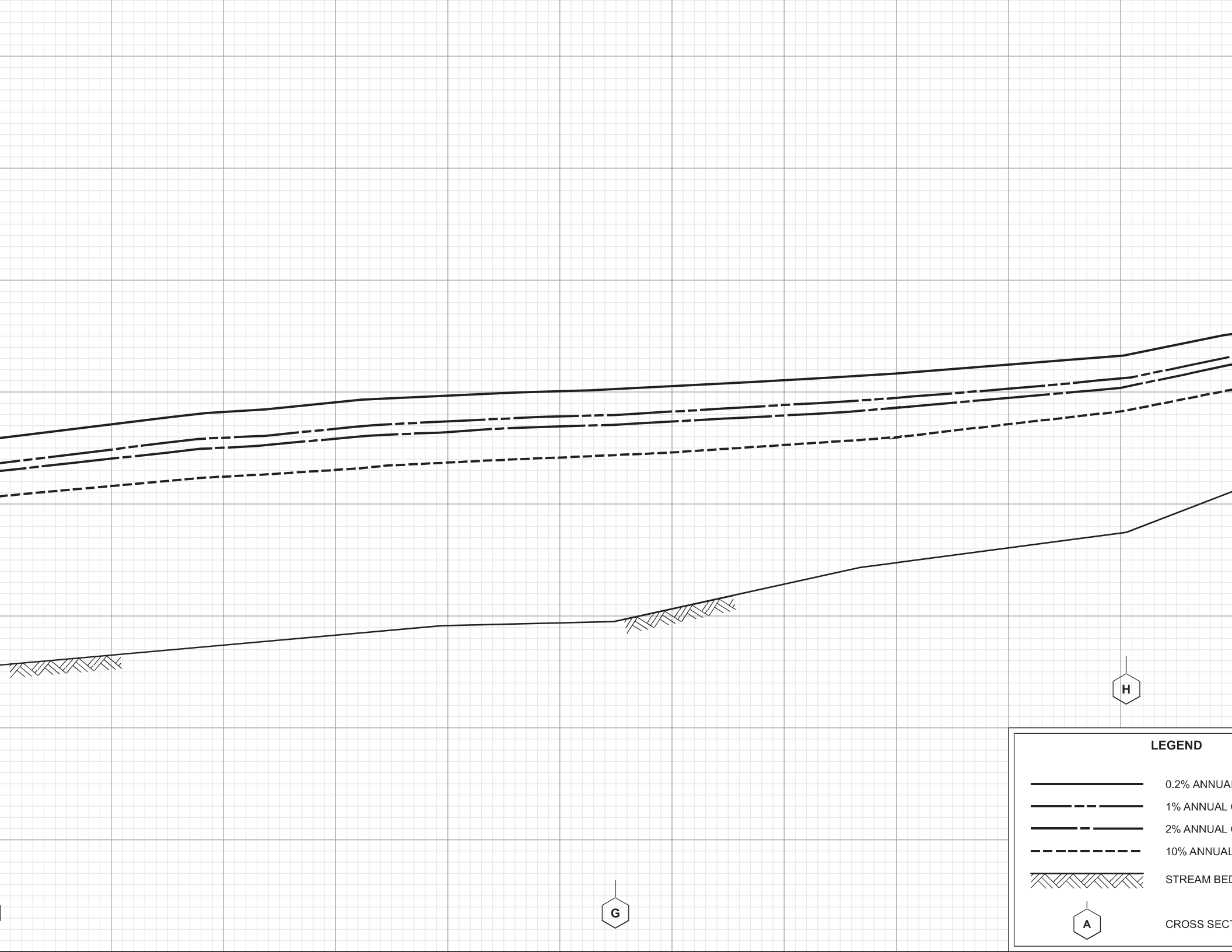
STREAM BED

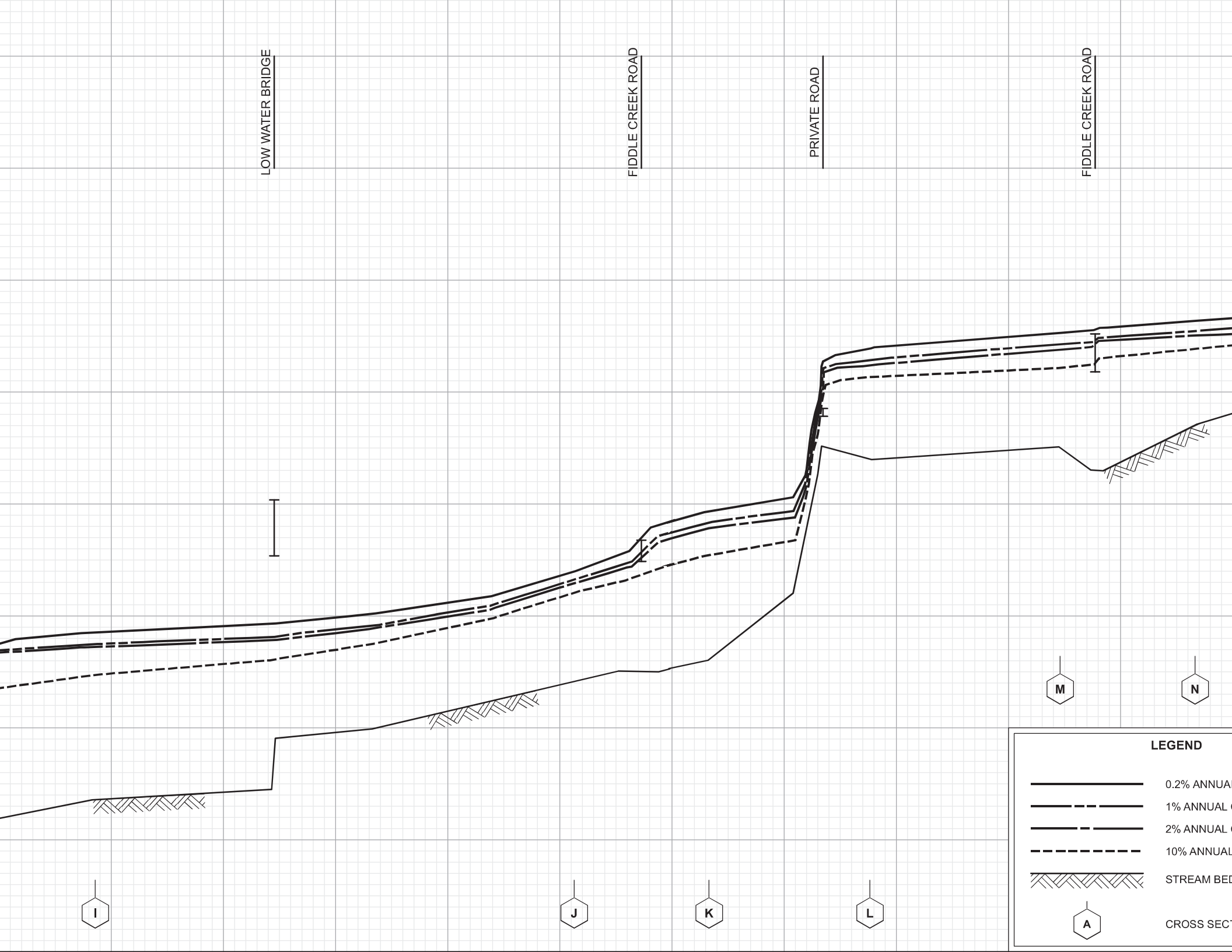
A

CROSS SECT


RAILROAD
STATE HIGHWAY 47
CENTRAL AVENUE
RAILROAD
CORPORATE LIMITS
A
B
C
D
LEGEND
0.2% ANNUAL
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT


COUNTY HWY T
PRIVATE ROAD
H
E
B
C
D
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION


H
G
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT

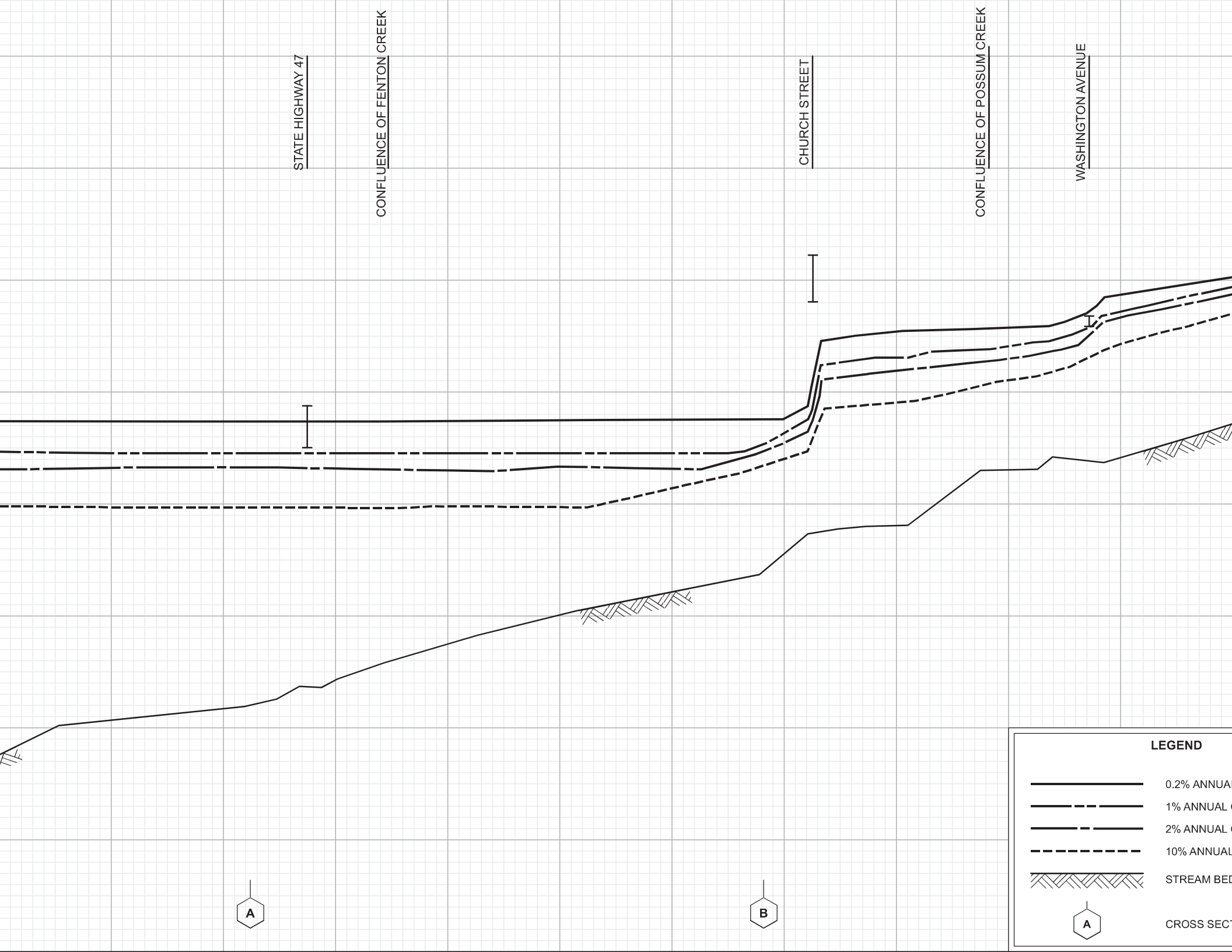

LOW WATER BRIDGE
FIDDLE CREEK ROAD
PRIVATE ROAD
FIDDLE CREEK ROAD
M
N
I
J
K
L
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT

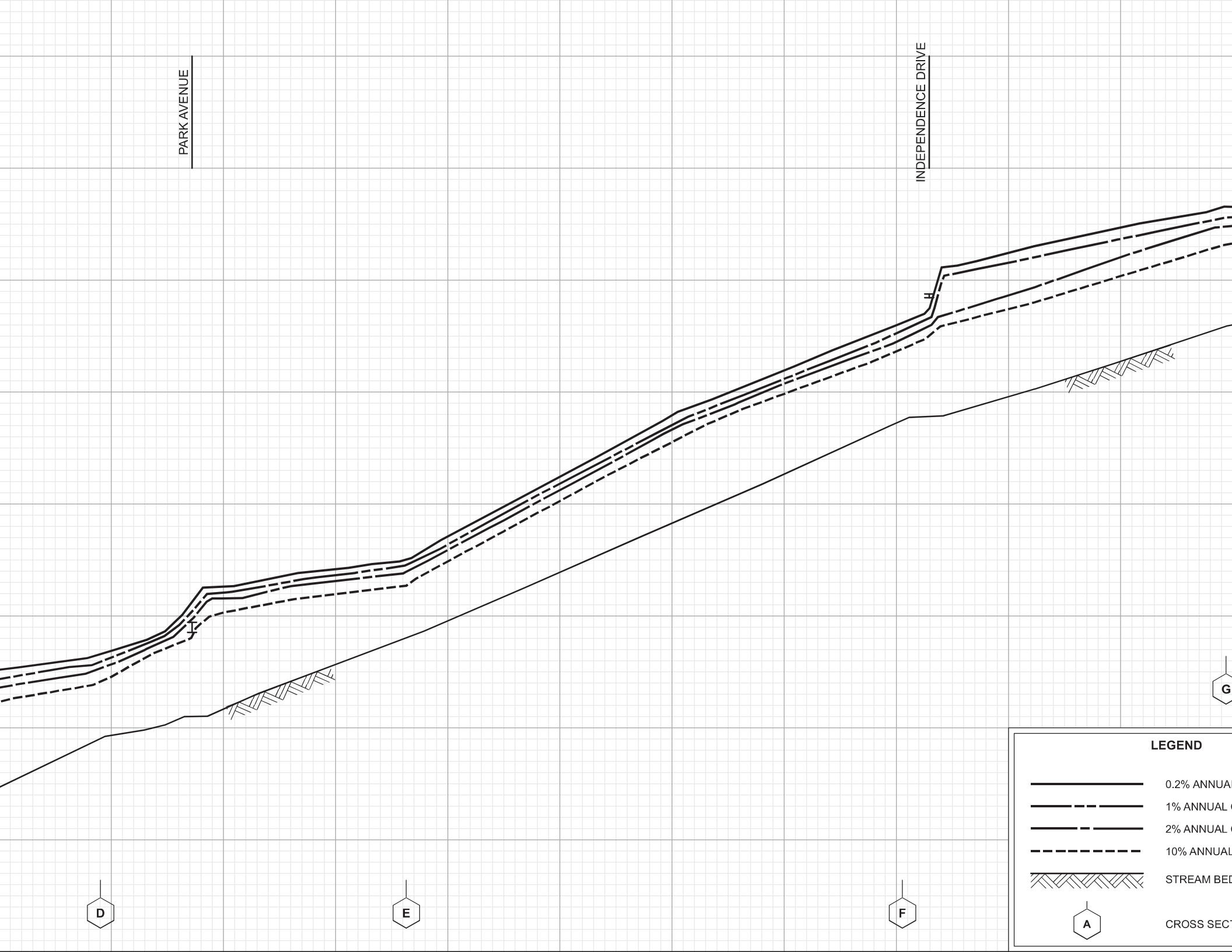
LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- A — CROSS SECTION

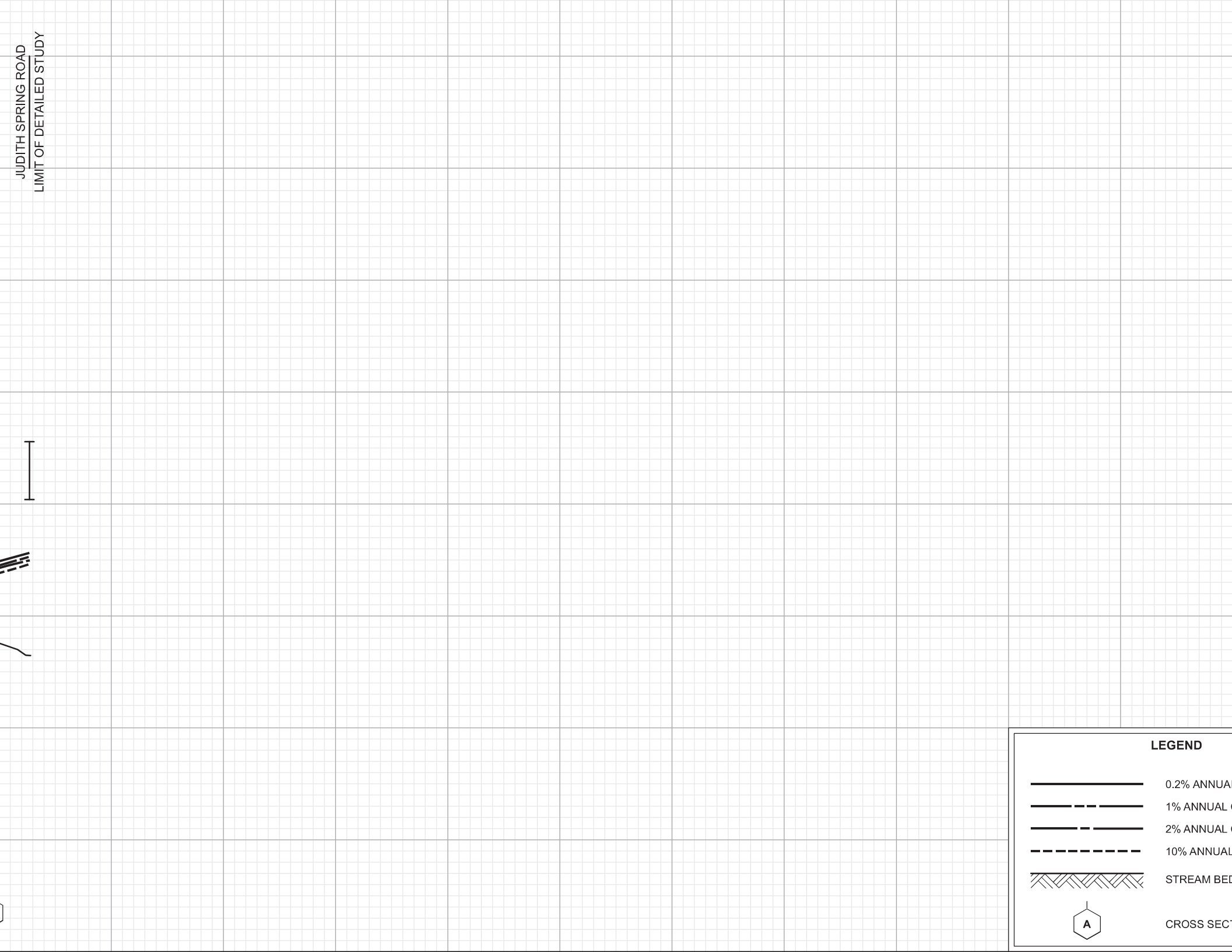
FIDDLE CREEK ROAD

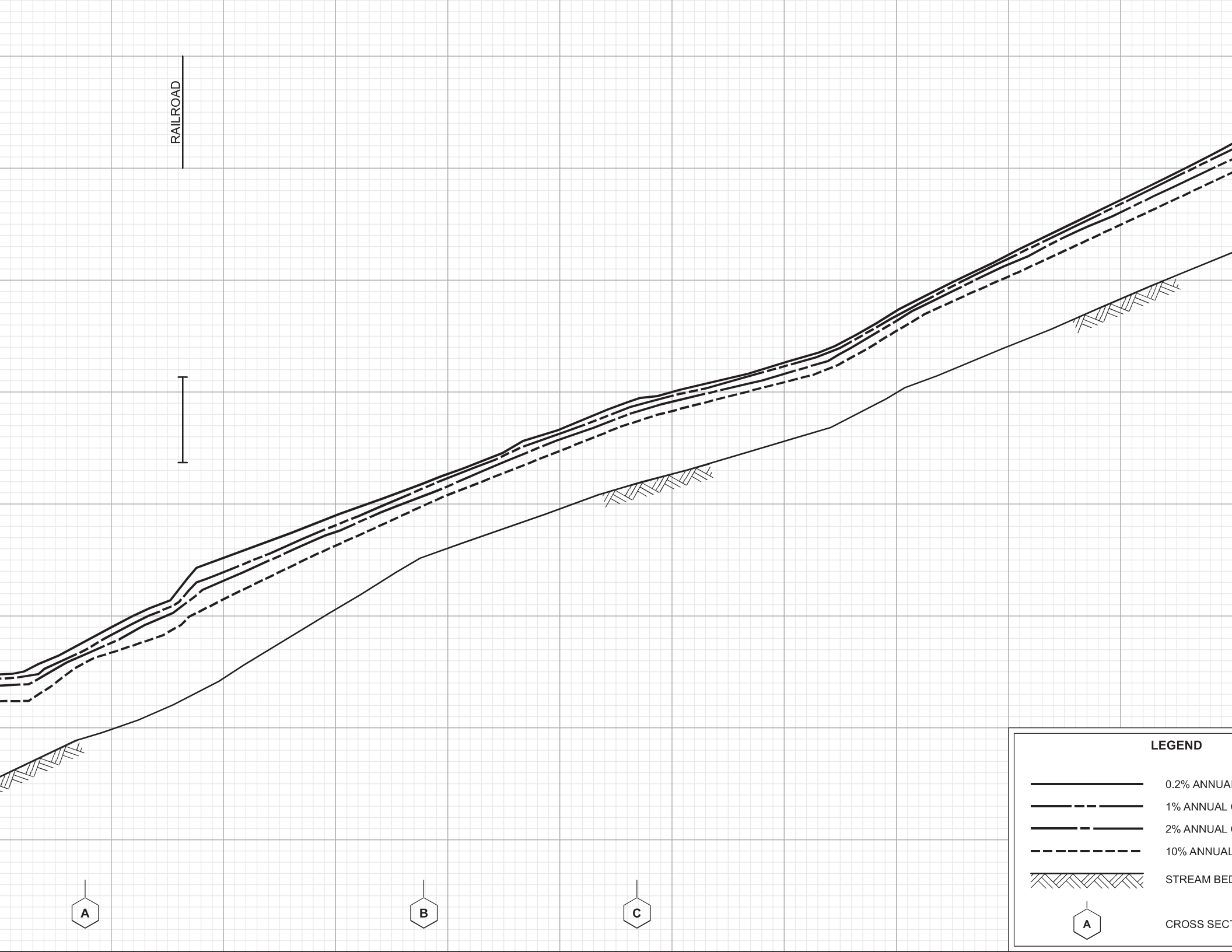
LIMIT OF DETAILED STUDY


STATE HIGHWAY 47
CONFLUENCE OF FENTON CREEK
CHURCH STREET
CONFLUENCE OF POSSUM CREEK
WASHINGTON AVENUE
A
B
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT


PARK AVENUE
INDEPENDENCE DRIVE
H
H
G
D
E
F
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SEC

J
H
I
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT


JUDITH SPRING ROAD
LIMIT OF DETAILED STUDY
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT


RAILROAD
A
B
C
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT

FRANKLIN COUNTY

JEFFERSON COUNTY

MO HWY H

LEGEND

0.2% ANNUAL CHANCE

1%+ ANNUAL CHANCE

1% ANNUAL CHANCE

2% ANNUAL CHANCE

4% ANNUAL CHANCE

10% ANNUAL CHANCE

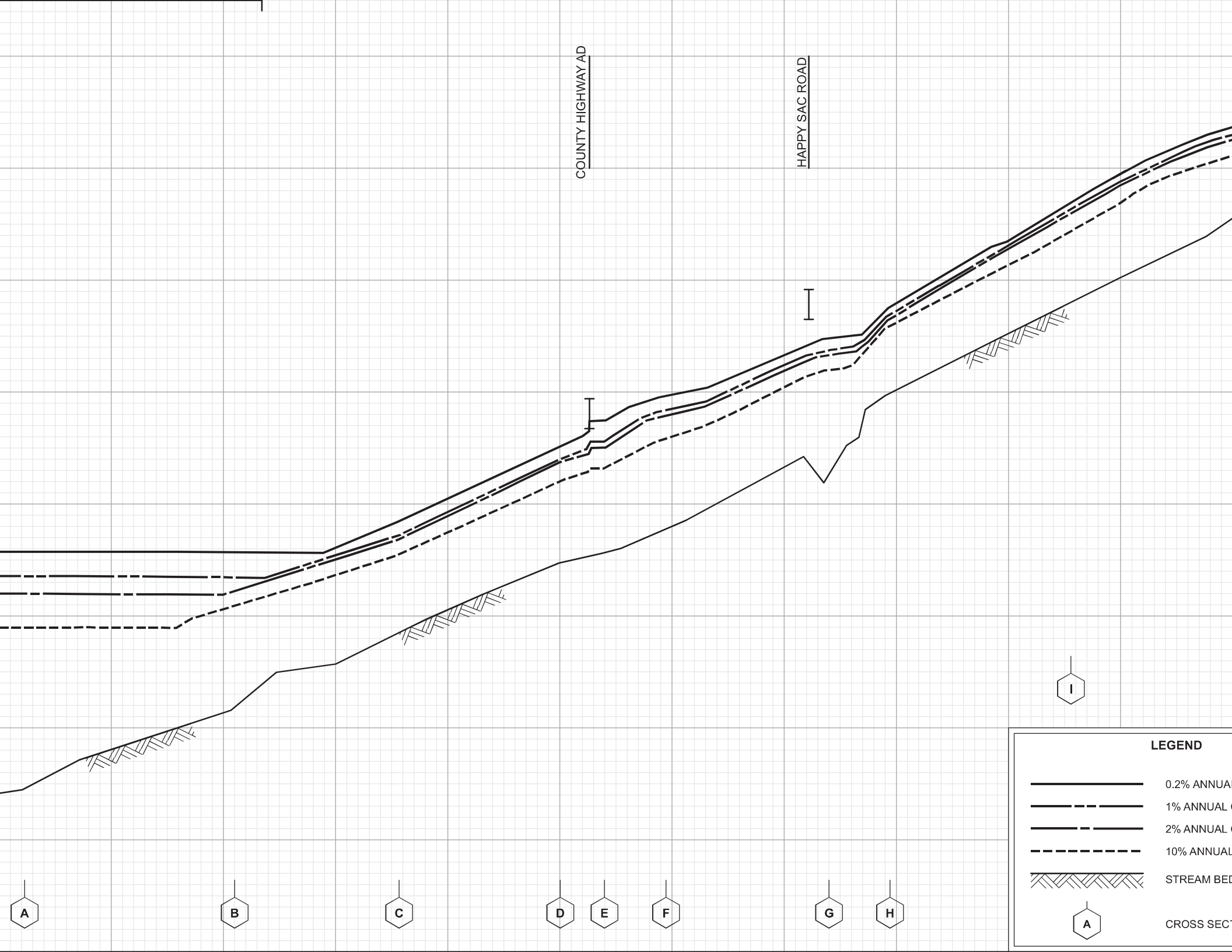
STREAM BED

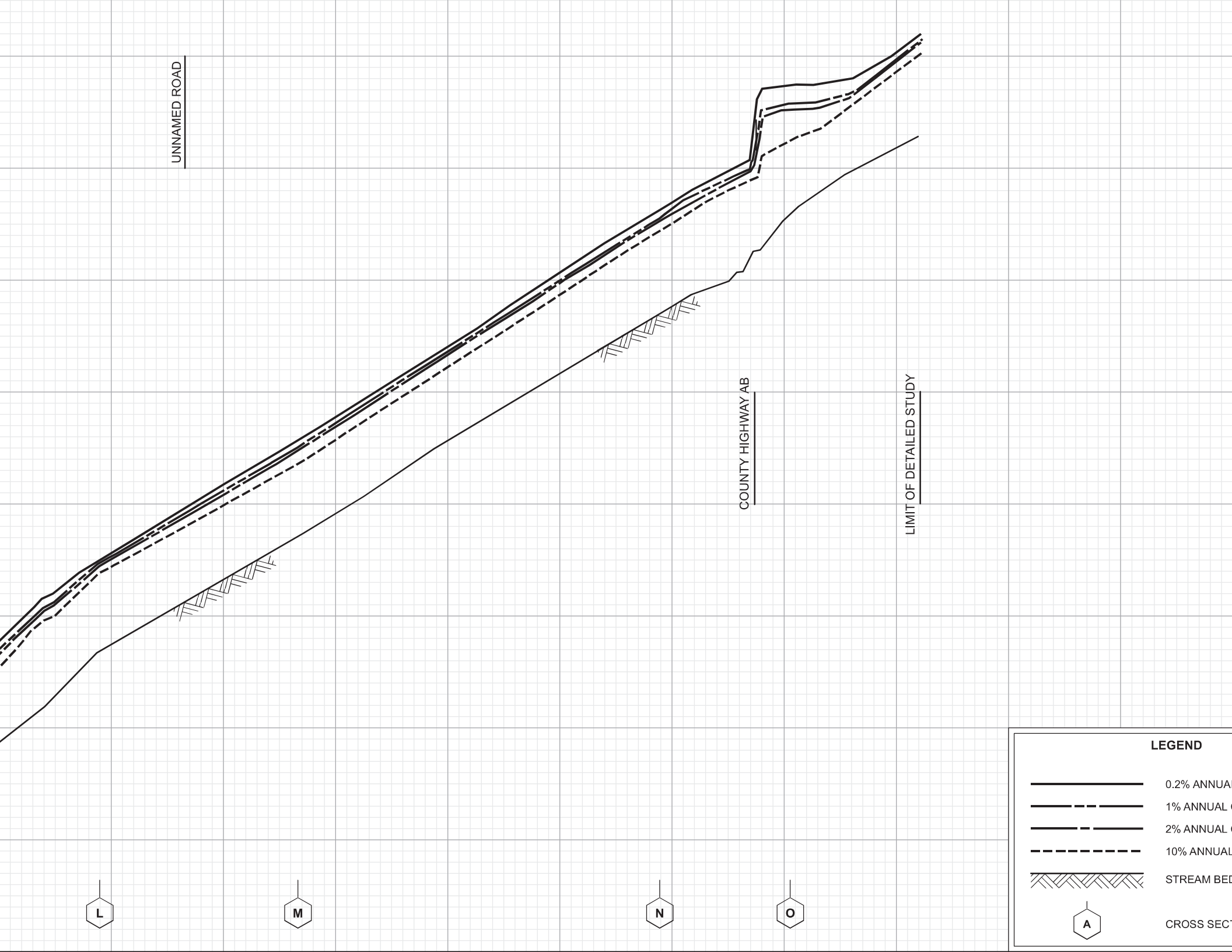
CROSS SECTION LOCATION

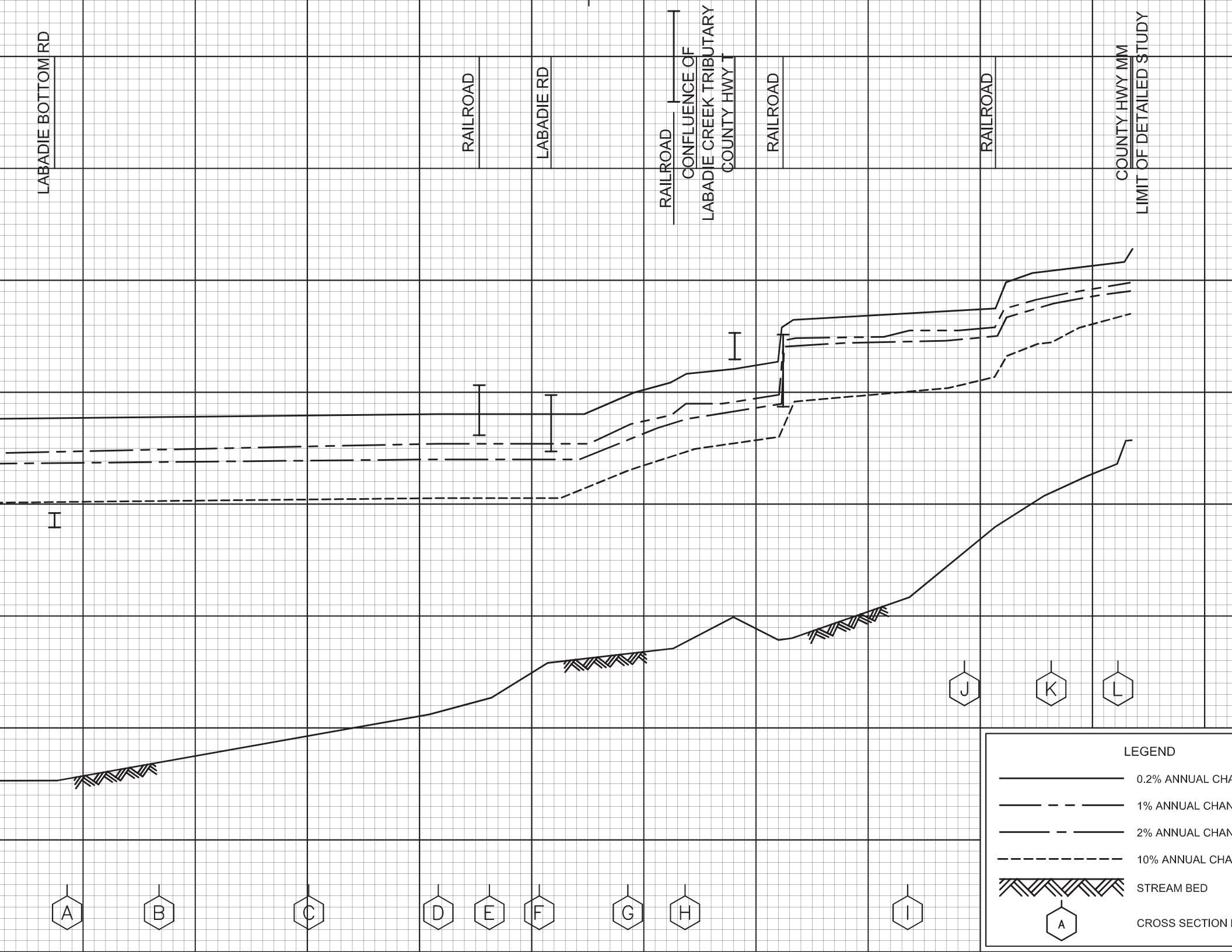
A

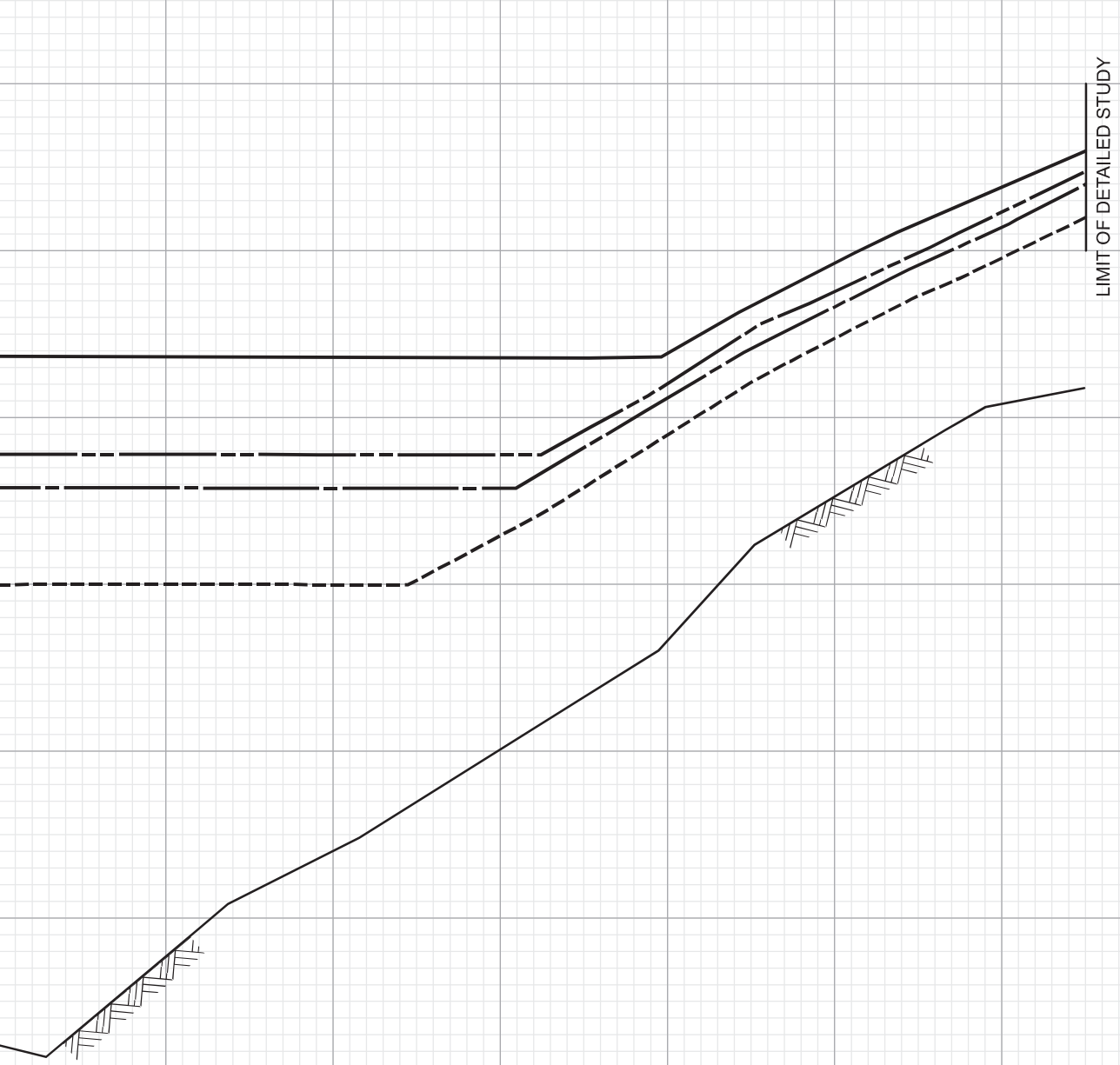
B

C

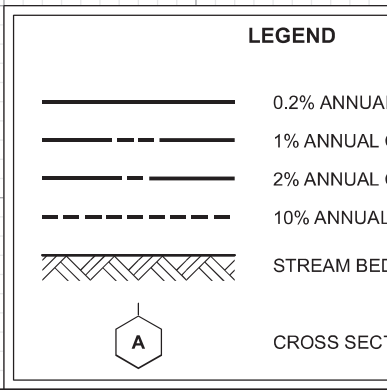

COUNTY HIGHWAY AD
HAPPY SAC ROAD
I
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT
A
B
C
D
E
F
G
H

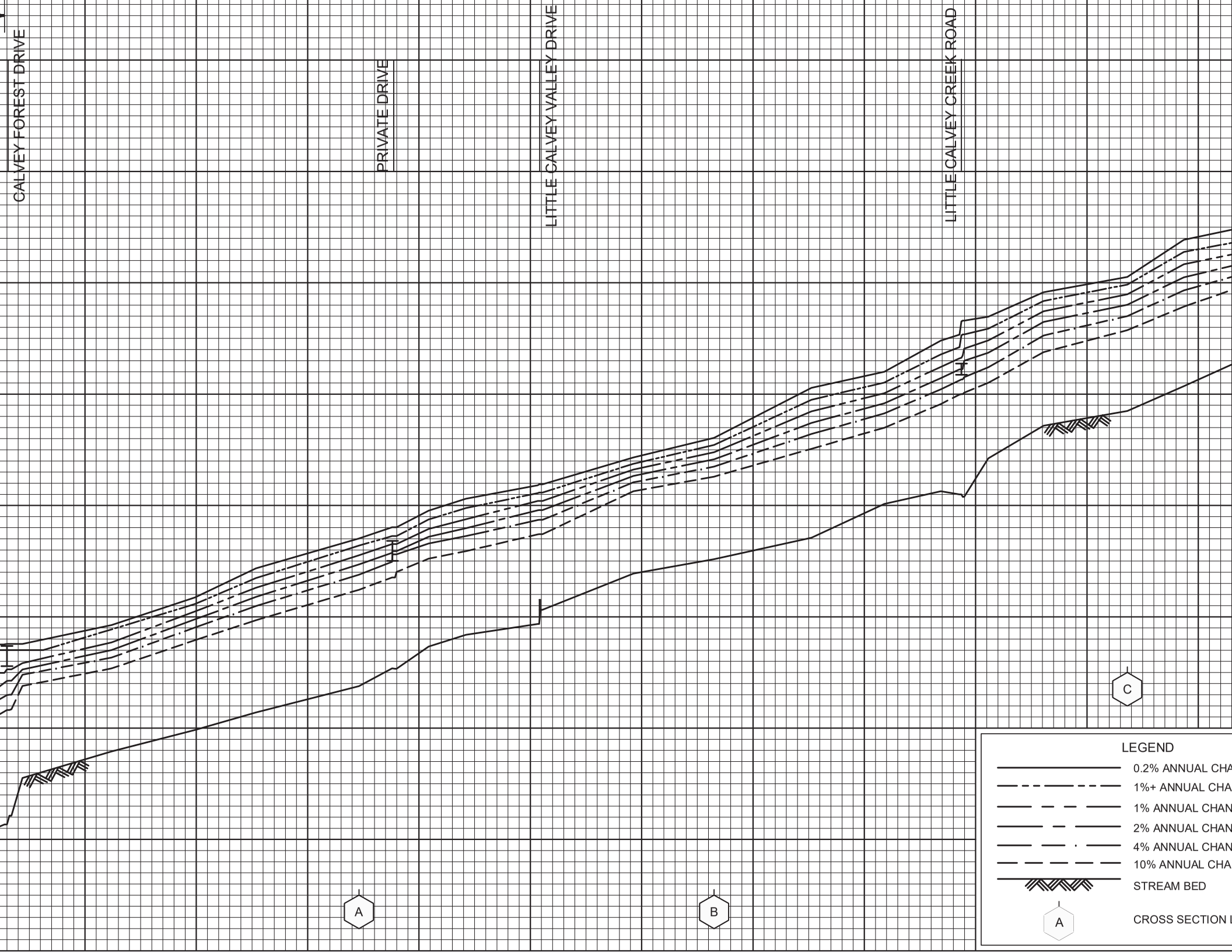

UNNAMED ROAD
COUNTY HIGHWAY AB
LIMIT OF DETAILED STUDY
L
M
N
O
LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SEC

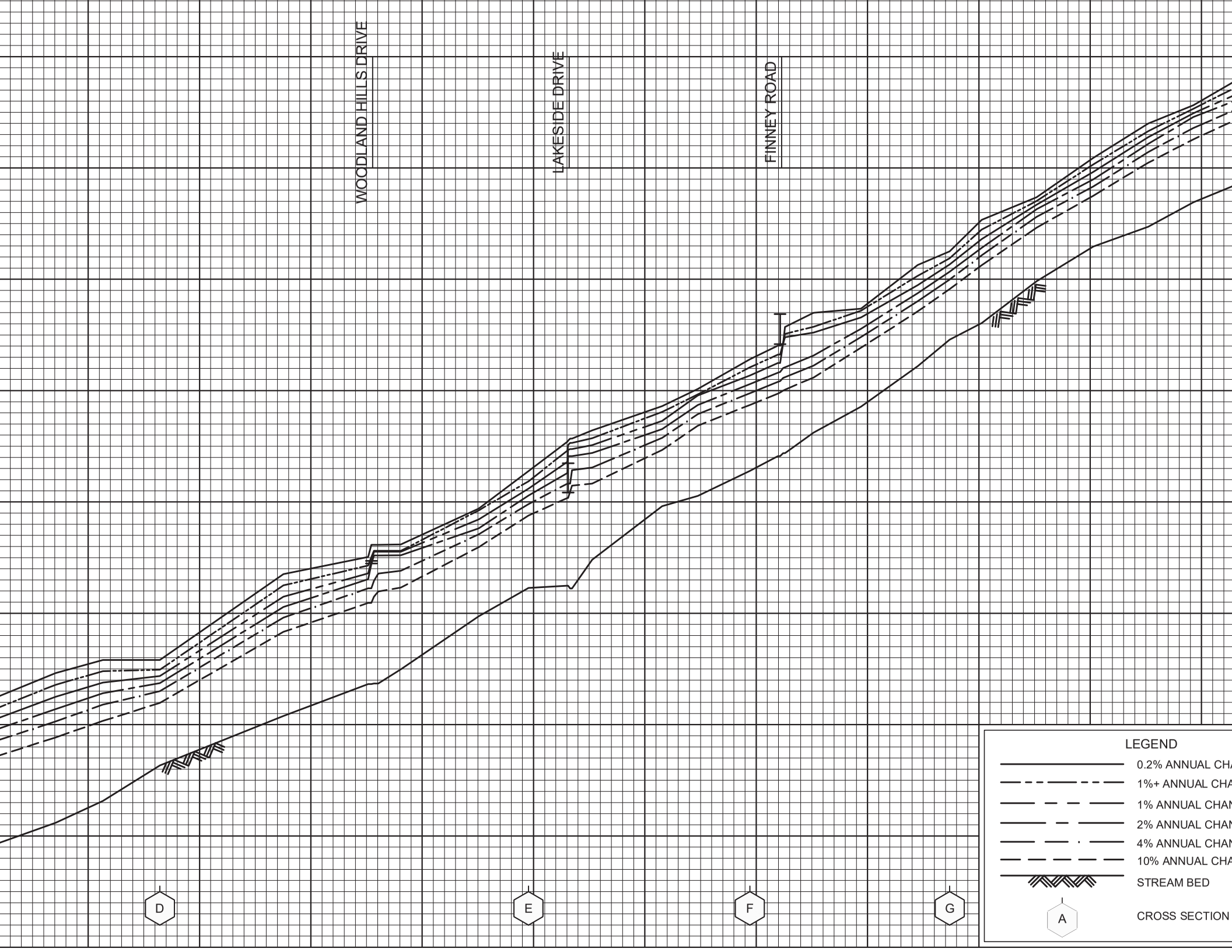

LABADIE BOTTOM RD
RAILROAD
LABADIE RD
RAILROAD
CONFLUENCE OF LABADIE CREEK TRIBUTARY
COUNTY HWY T
RAILROAD
RAILROAD
COUNTY HWY MM
LIMIT OF DETAILED STUDY
A
B
C
D
E
F
G
H
I
J
K
L
LEGEND
0.2% ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION

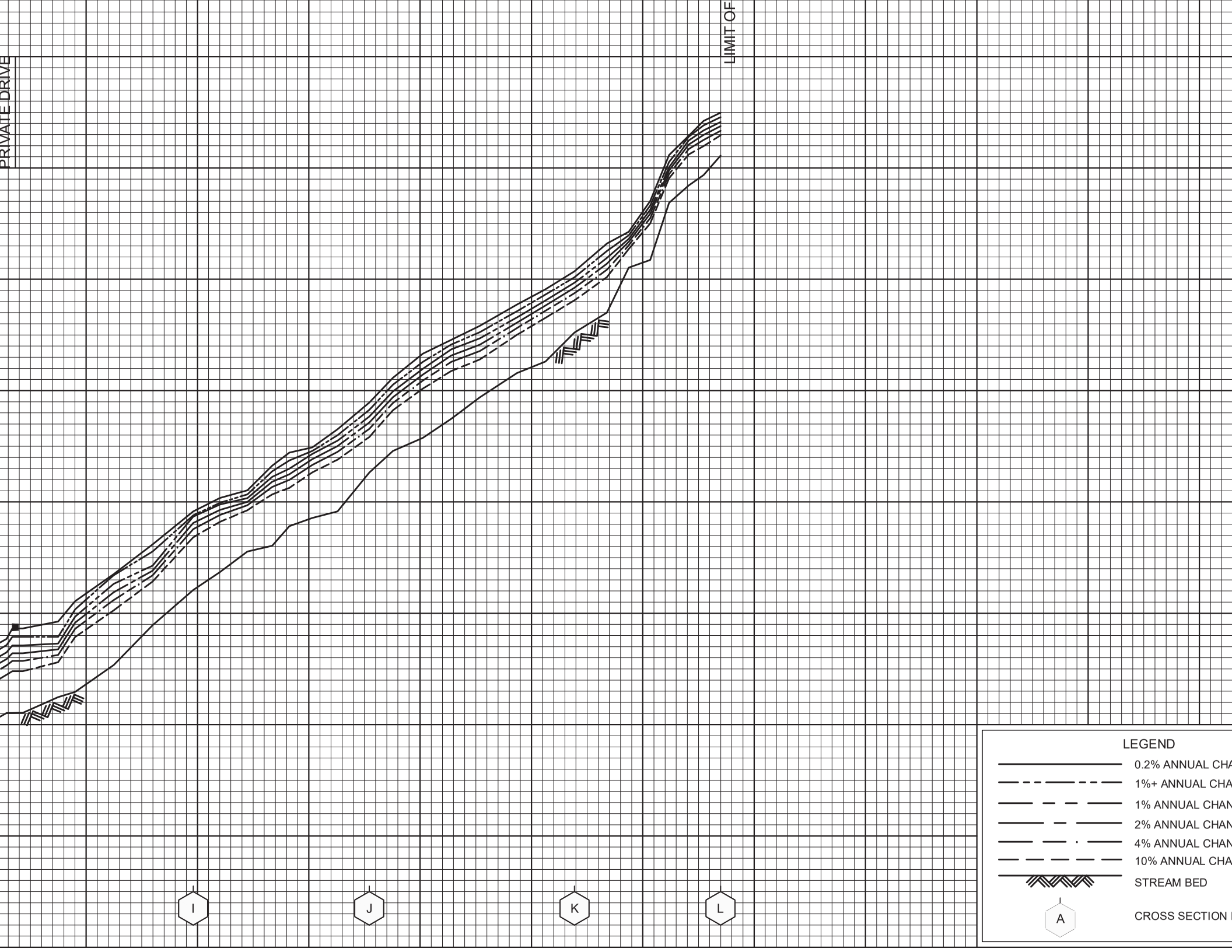

LIMIT OF DETAILED STUDY

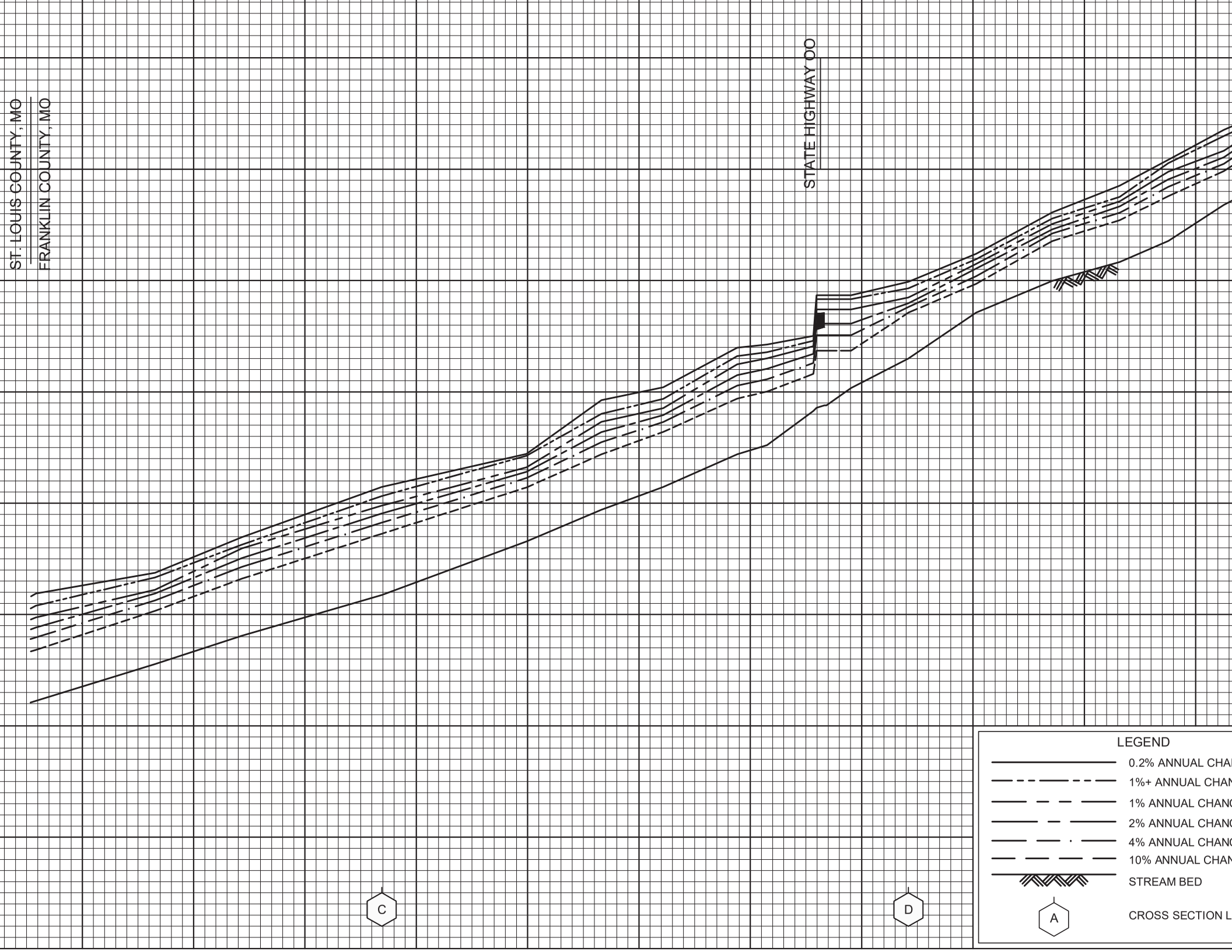
A
B
C

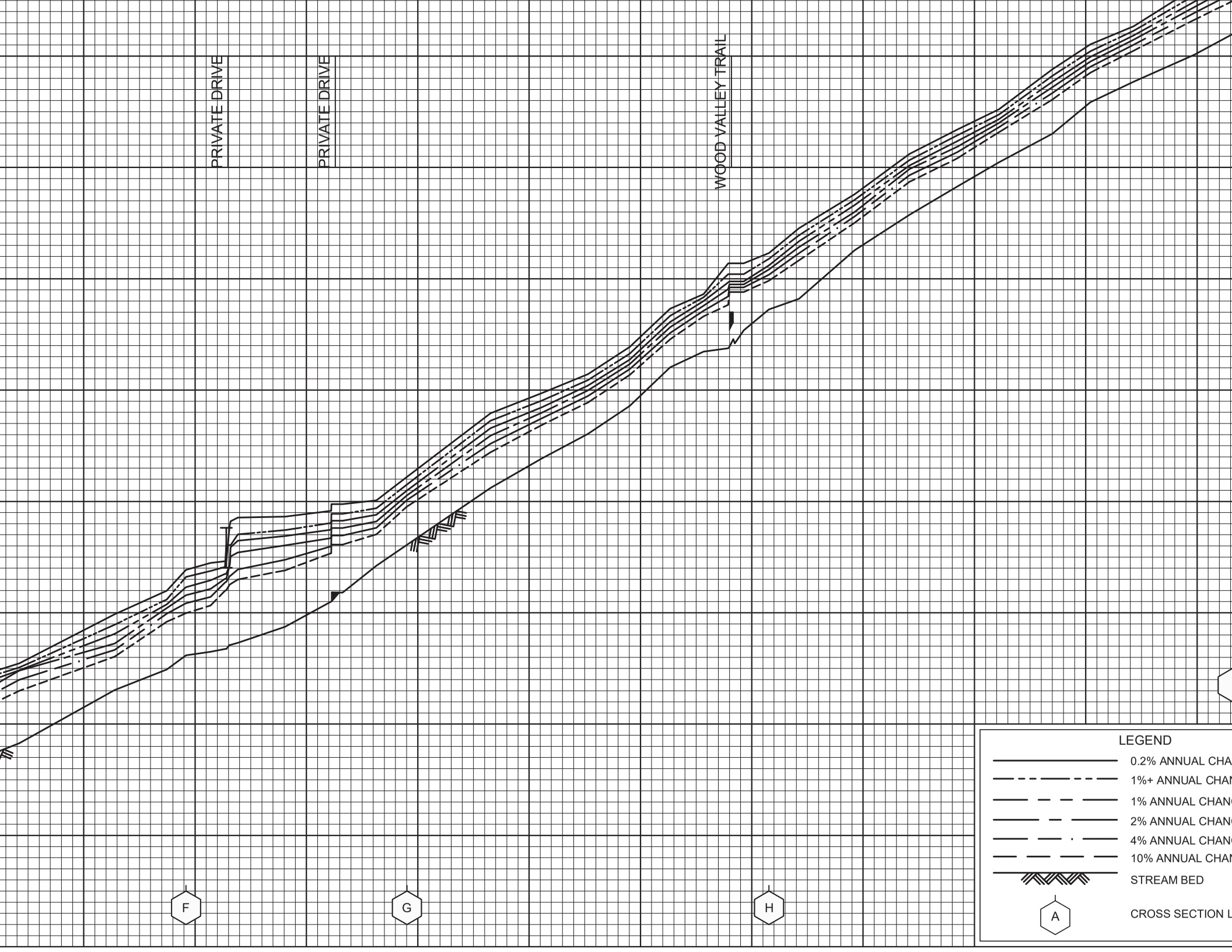

LEGEND
0.2% ANNUA
1% ANNUAL
2% ANNUAL
10% ANNUAL
STREAM BED
A
CROSS SECT


CALVEY FOREST DRIVE
PRIVATE DRIVE
LITTLE CALVEY VALLEY DRIVE
LITTLE CALVEY CREEK ROAD
A
B
C
LEGEND
0.2% ANNUAL CHA
1%+ ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
4% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION L


WOODLAND HILLS DRIVE
LAKESIDE DRIVE
FINNEY ROAD
D
E
F
G
LEGEND
0.2% ANNUAL CHA
1%+ ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
4% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION

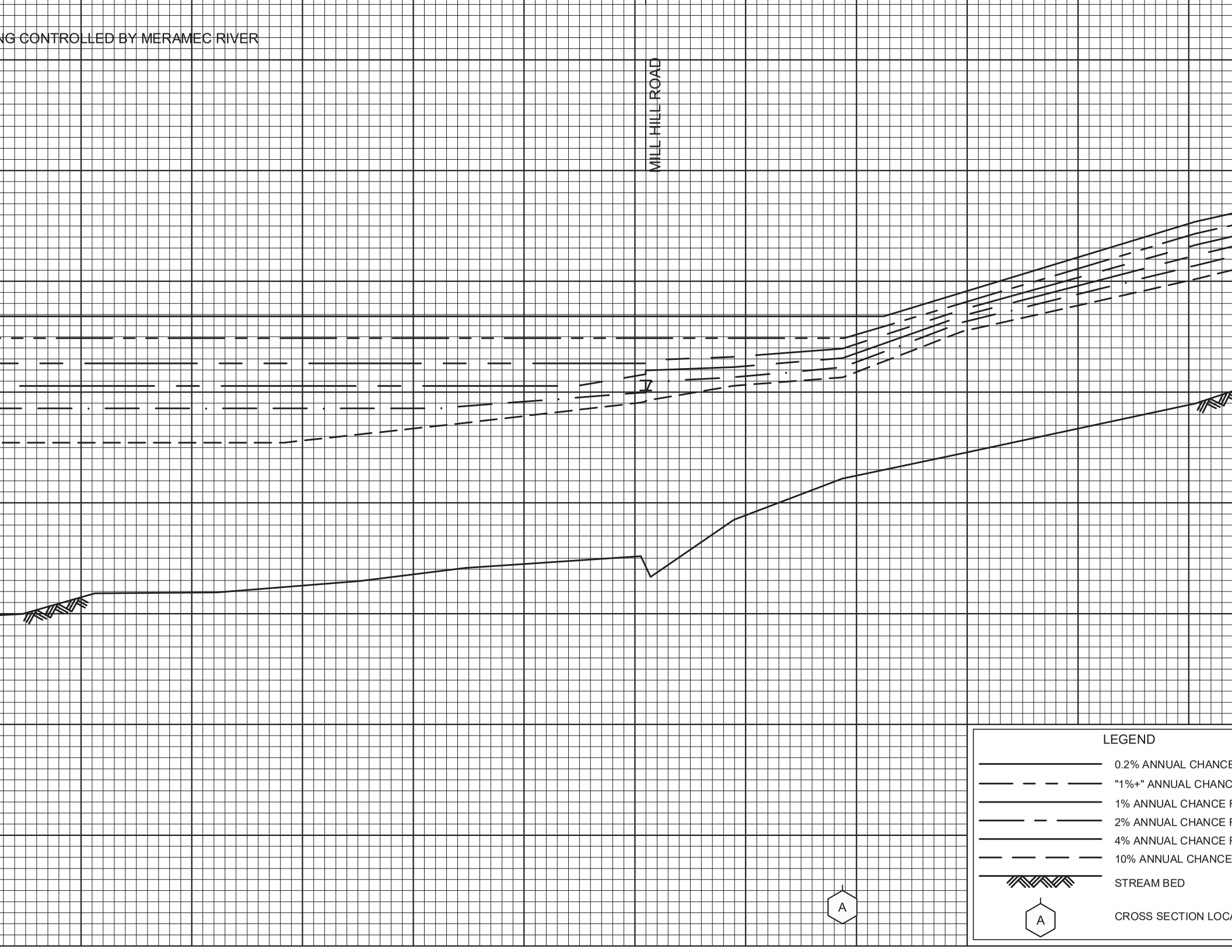

PRIVATE DRIVE
LIMIT OF
I
J
K
L
LEGEND
0.2% ANNUAL CHA
1%+ ANNUAL CHA
1% ANNUAL CHAN
2% ANNUAL CHAN
4% ANNUAL CHAN
10% ANNUAL CHA
STREAM BED
A
CROSS SECTION

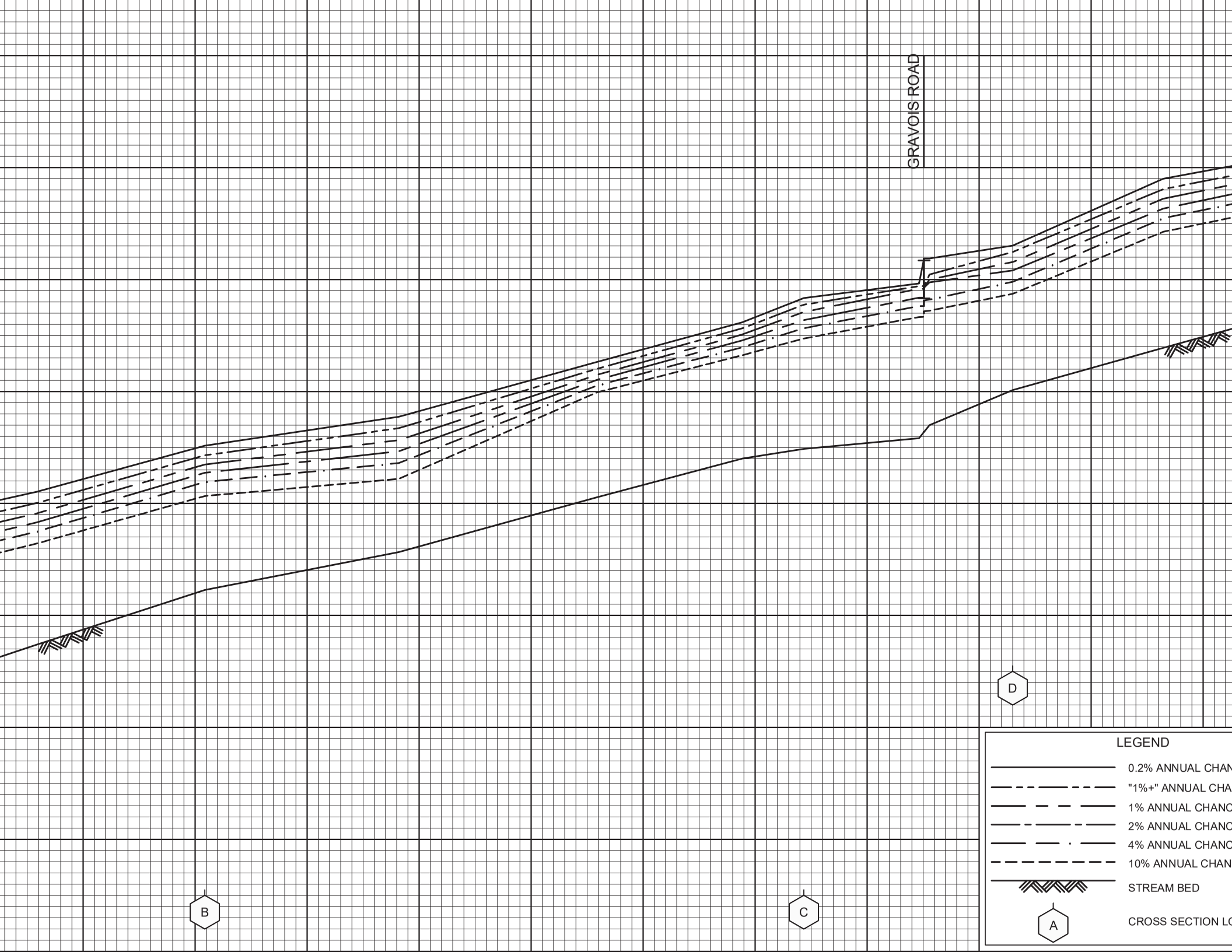

ST. LOUIS COUNTY, MO
FRANKLIN COUNTY, MO
STATE HIGHWAY DD
LEGEND
0.2% ANNUAL CHA
1%+ ANNUAL CHAN
1% ANNUAL CHANC
2% ANNUAL CHANC
4% ANNUAL CHANC
10% ANNUAL CHAN
STREAM BED
A
CROSS SECTION L
C
D

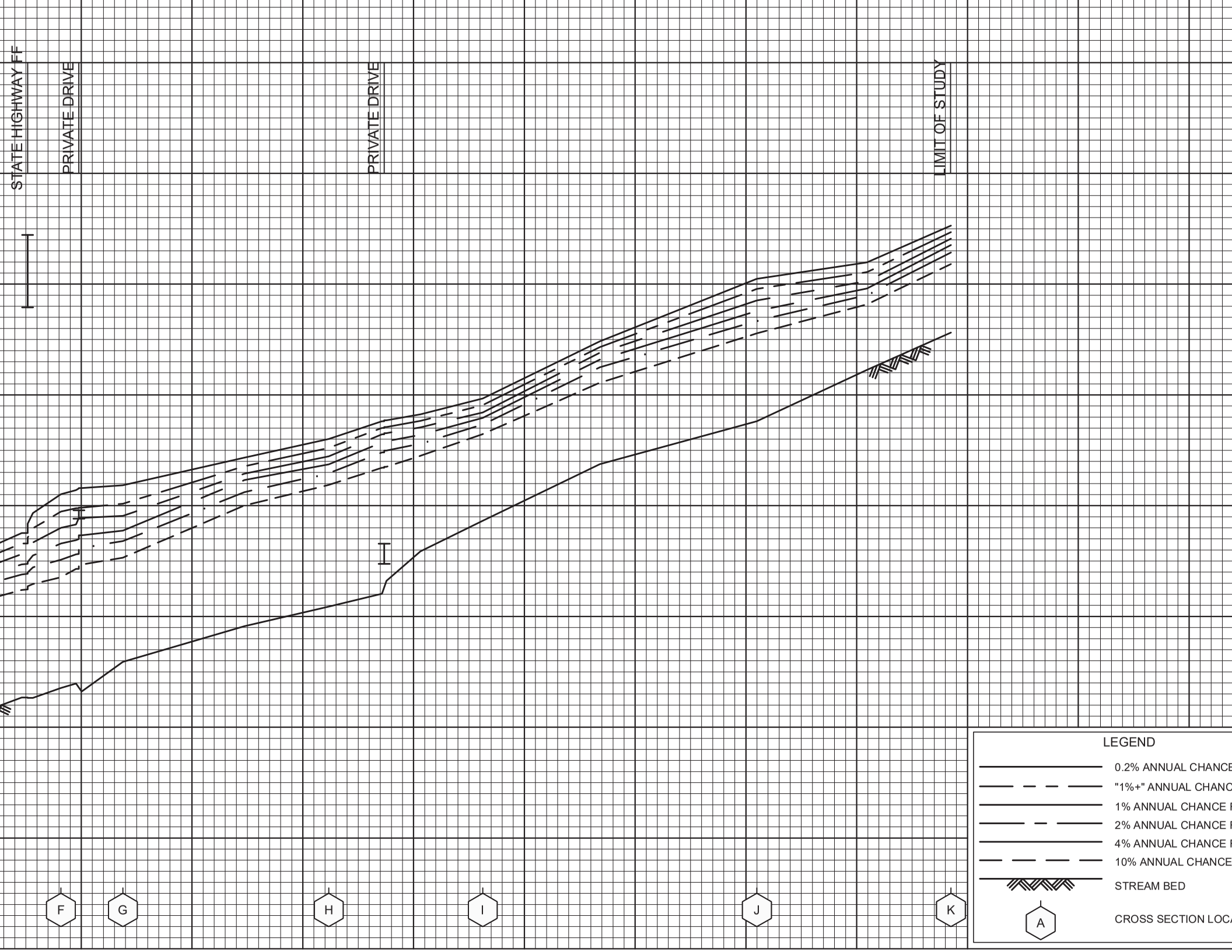

PRIVATE DRIVE
PRIVATE DRIVE
WOOD VALLEY TRAIL
F
G
H
LEGEND
0.2% ANNUAL CHA
1%+ ANNUAL CHAN
1% ANNUAL CHANC
2% ANNUAL CHANC
4% ANNUAL CHANC
10% ANNUAL CHAN
STREAM BED
A
CROSS SECTION L

NG CONTROLLED BY MERAMEC RIVER

MILL HILL ROAD




GRAVOIS ROAD
D
B
C
LEGEND
0.2% ANNUAL CHAN
"1%+" ANNUAL CHA
1% ANNUAL CHANC
2% ANNUAL CHANC
4% ANNUAL CHANC
10% ANNUAL CHAN
STREAM BED
A
CROSS SECTION LO


STATE HIGHWAY FF
PRIVATE DRIVE
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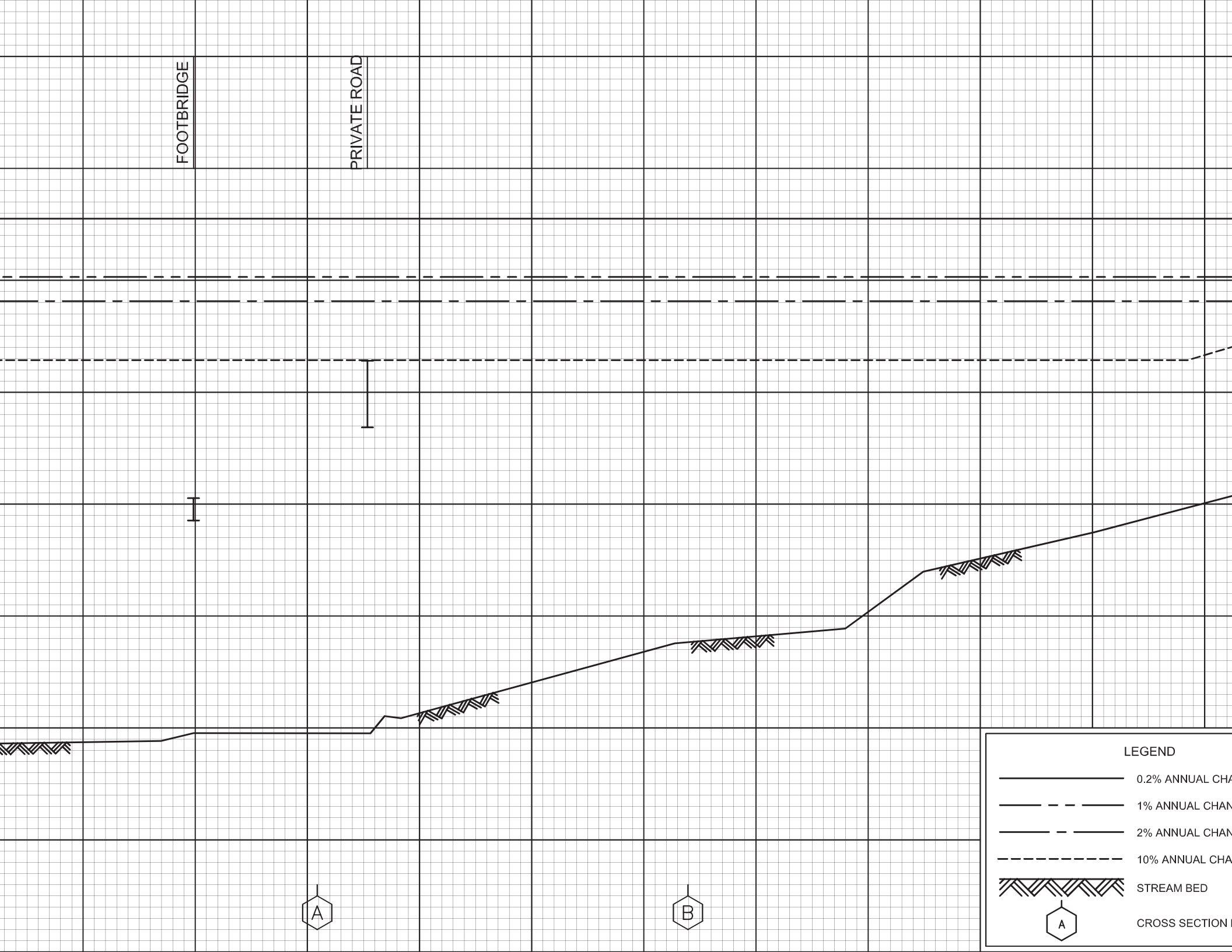
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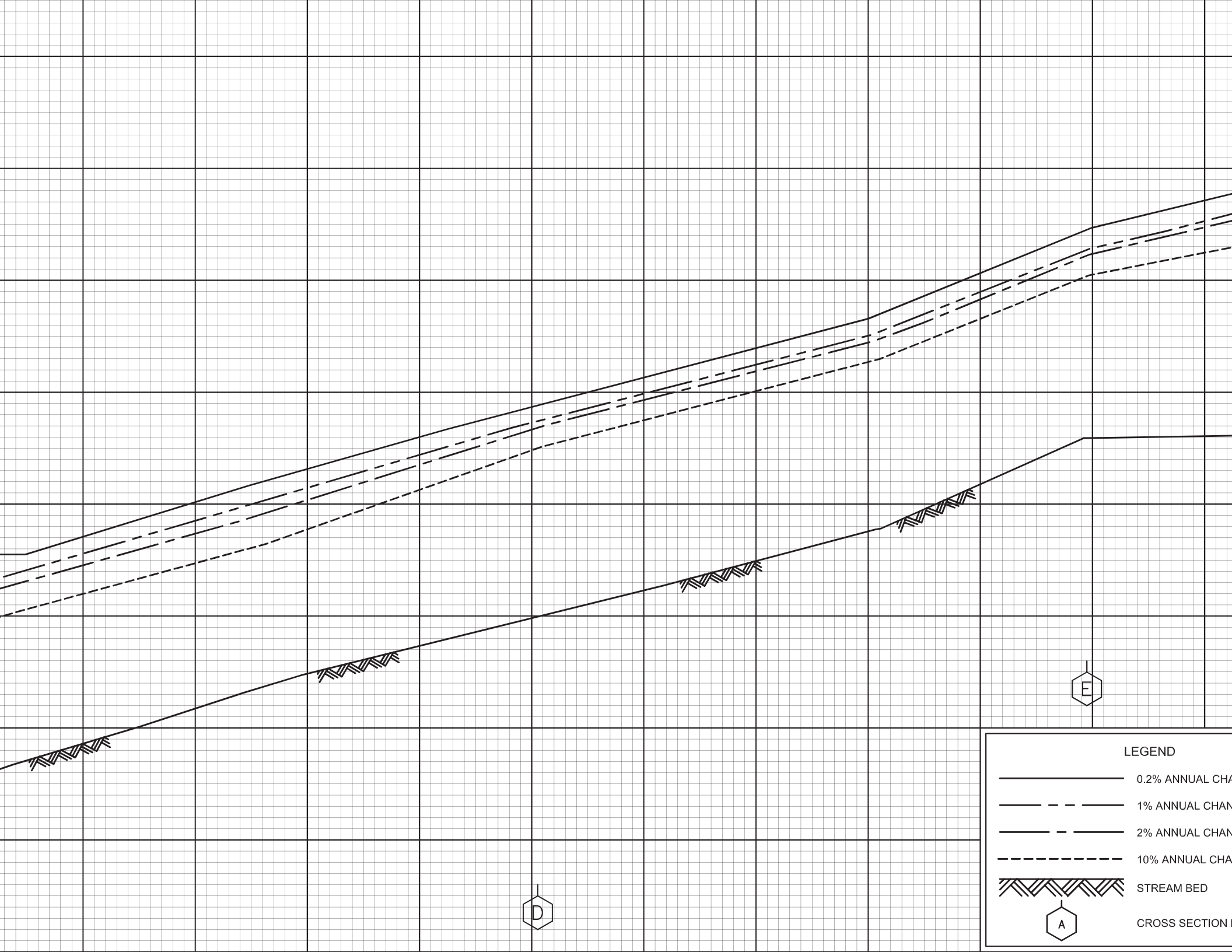
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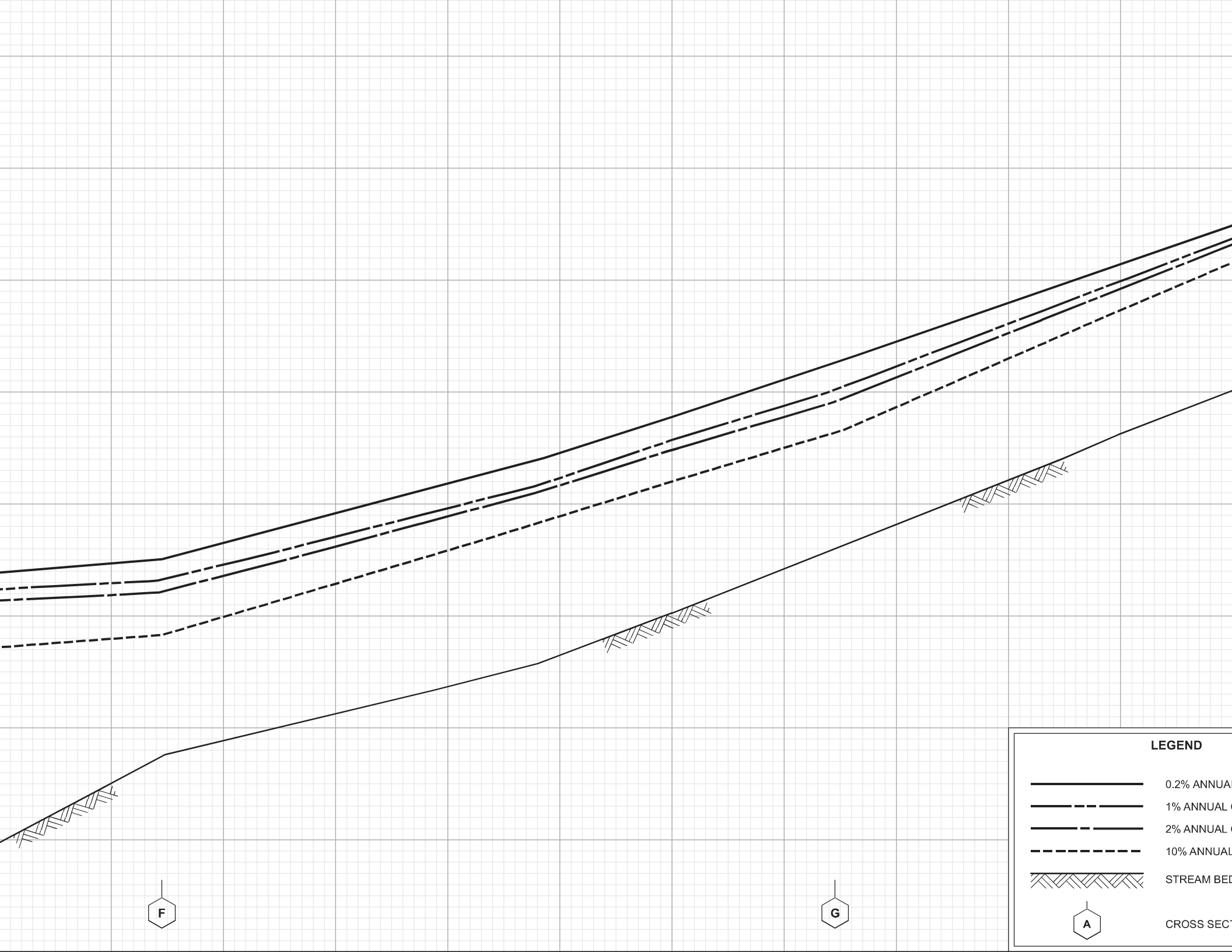
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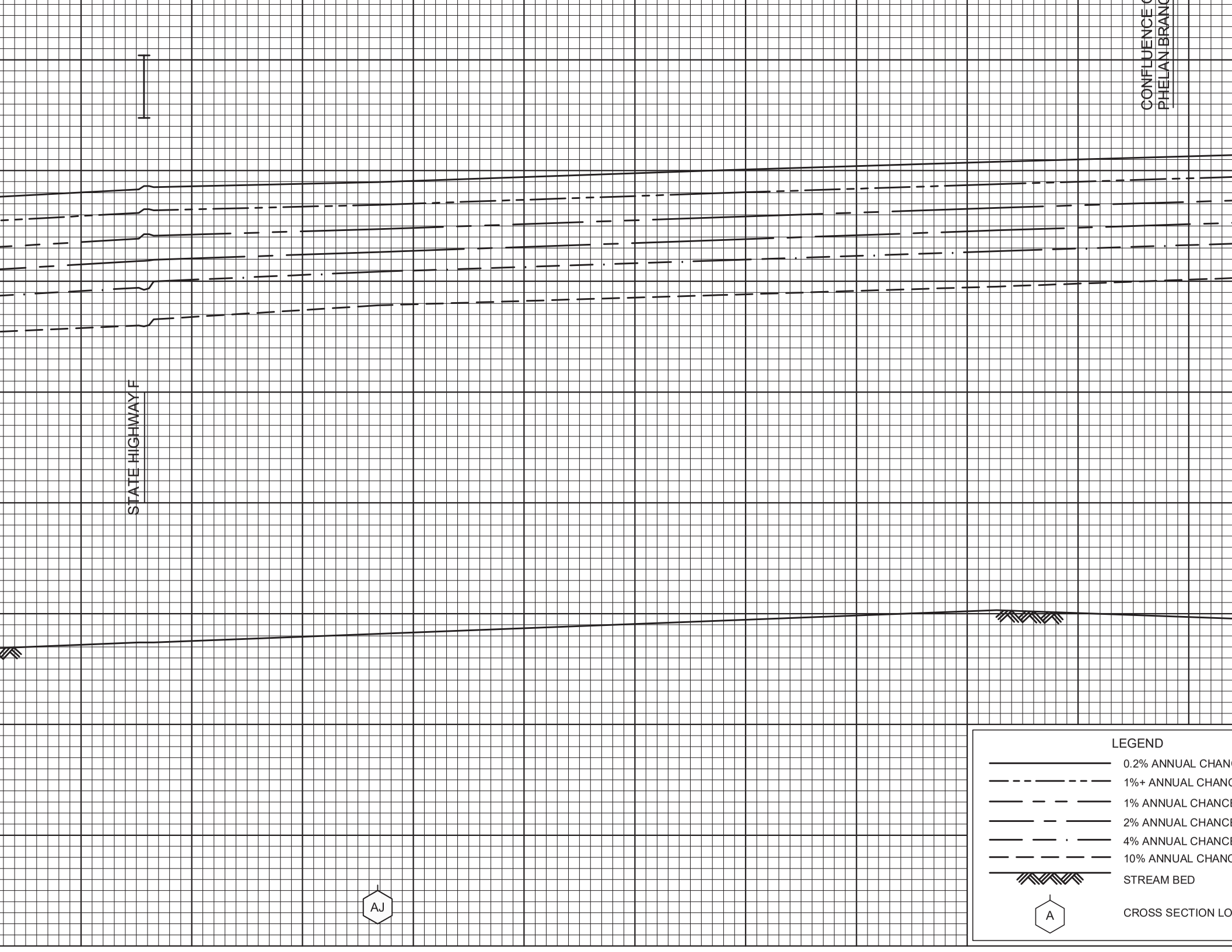
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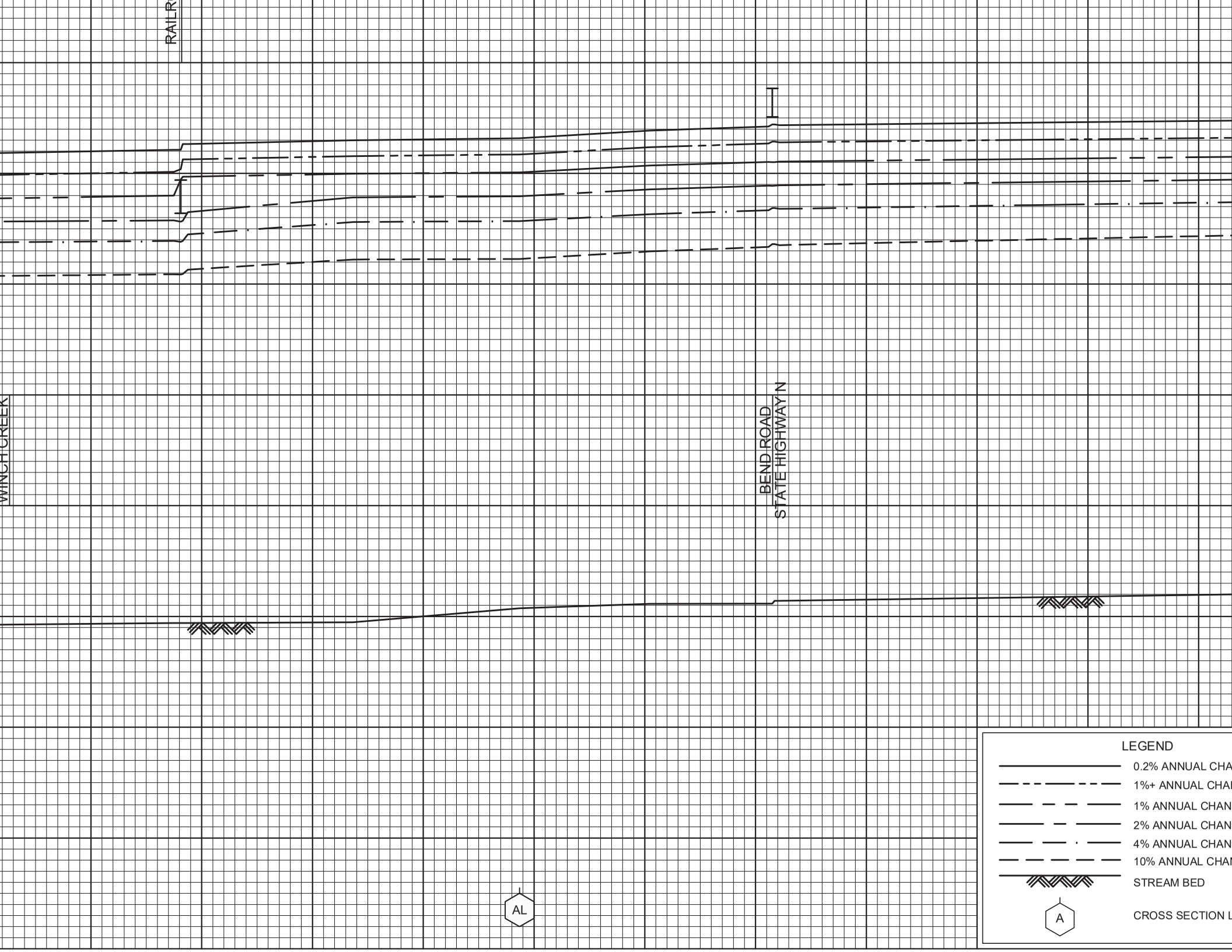
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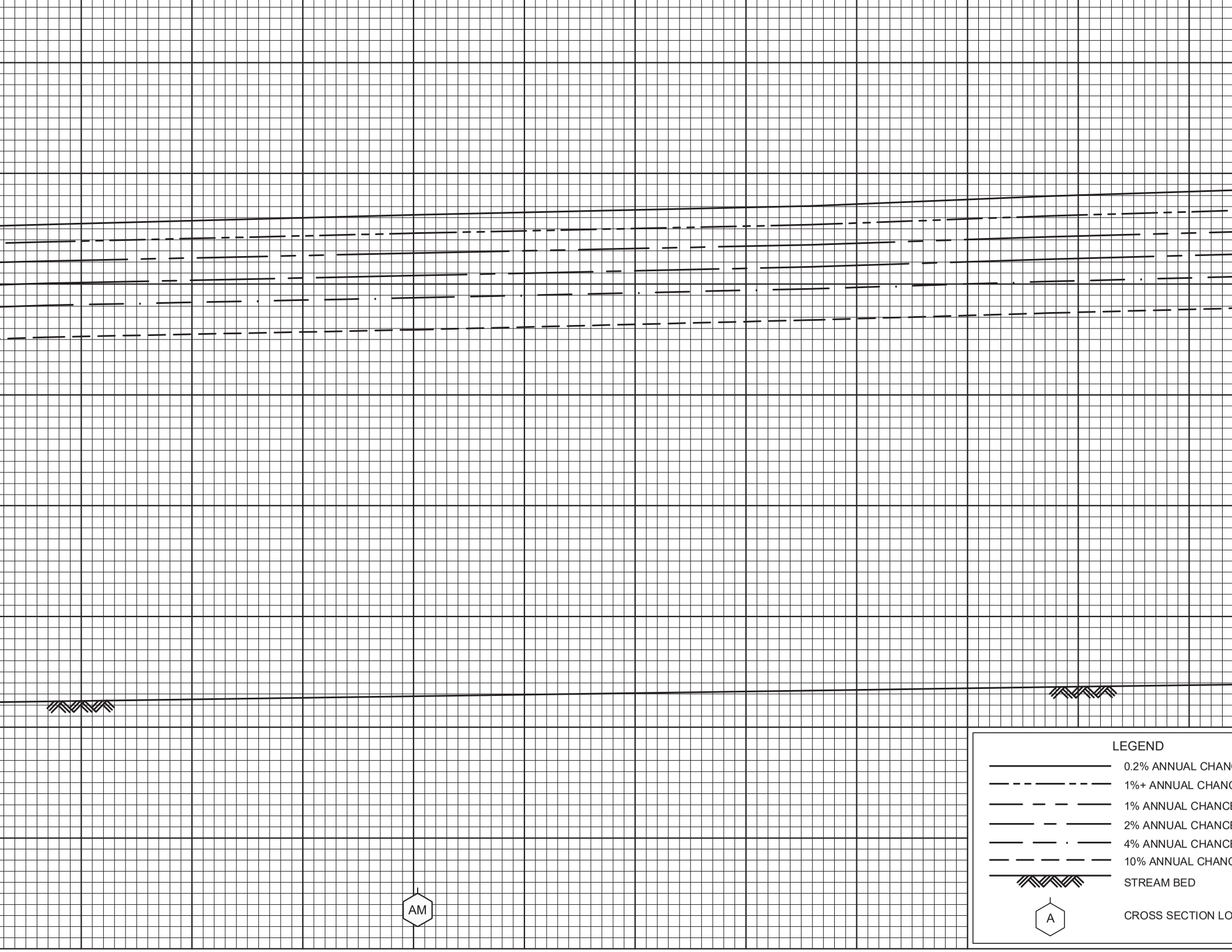
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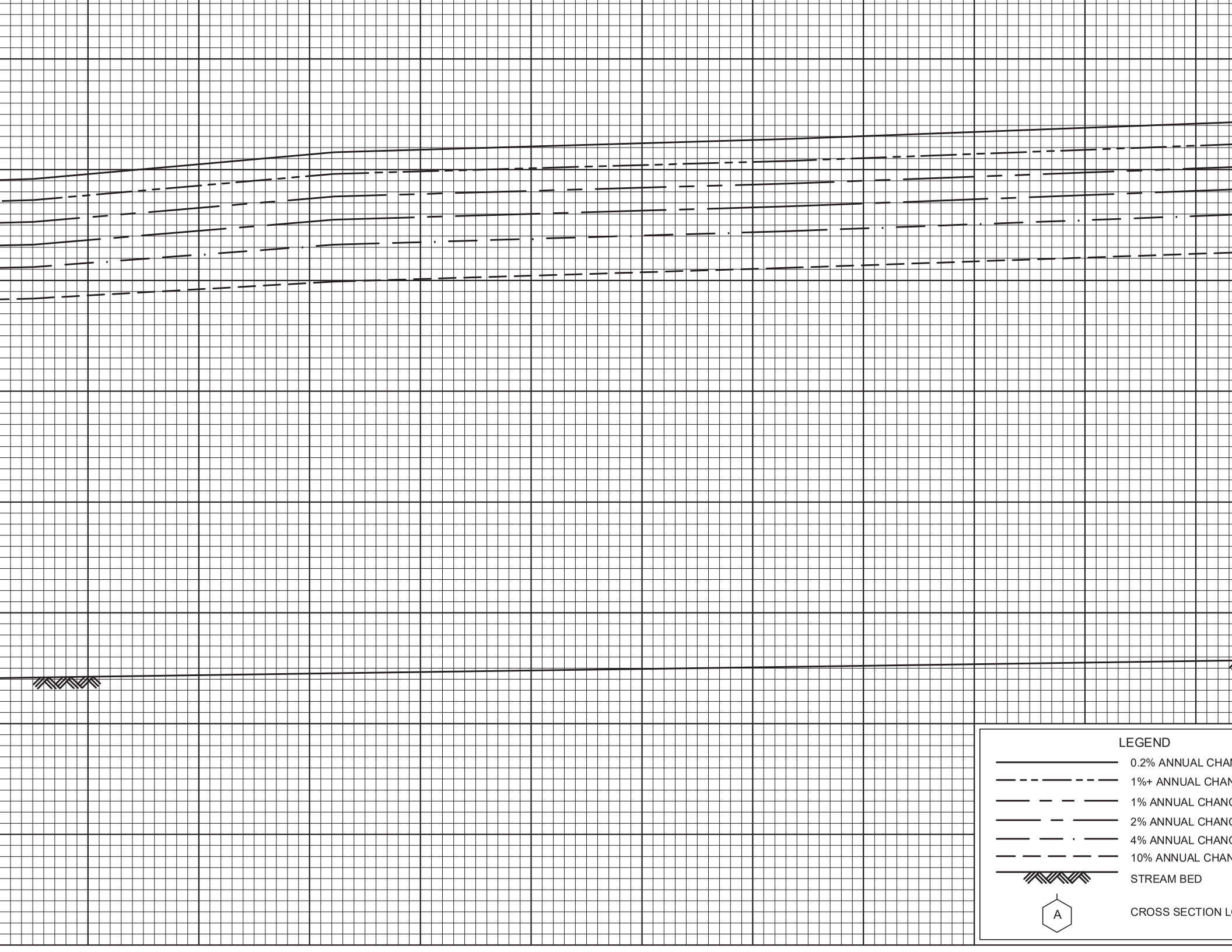
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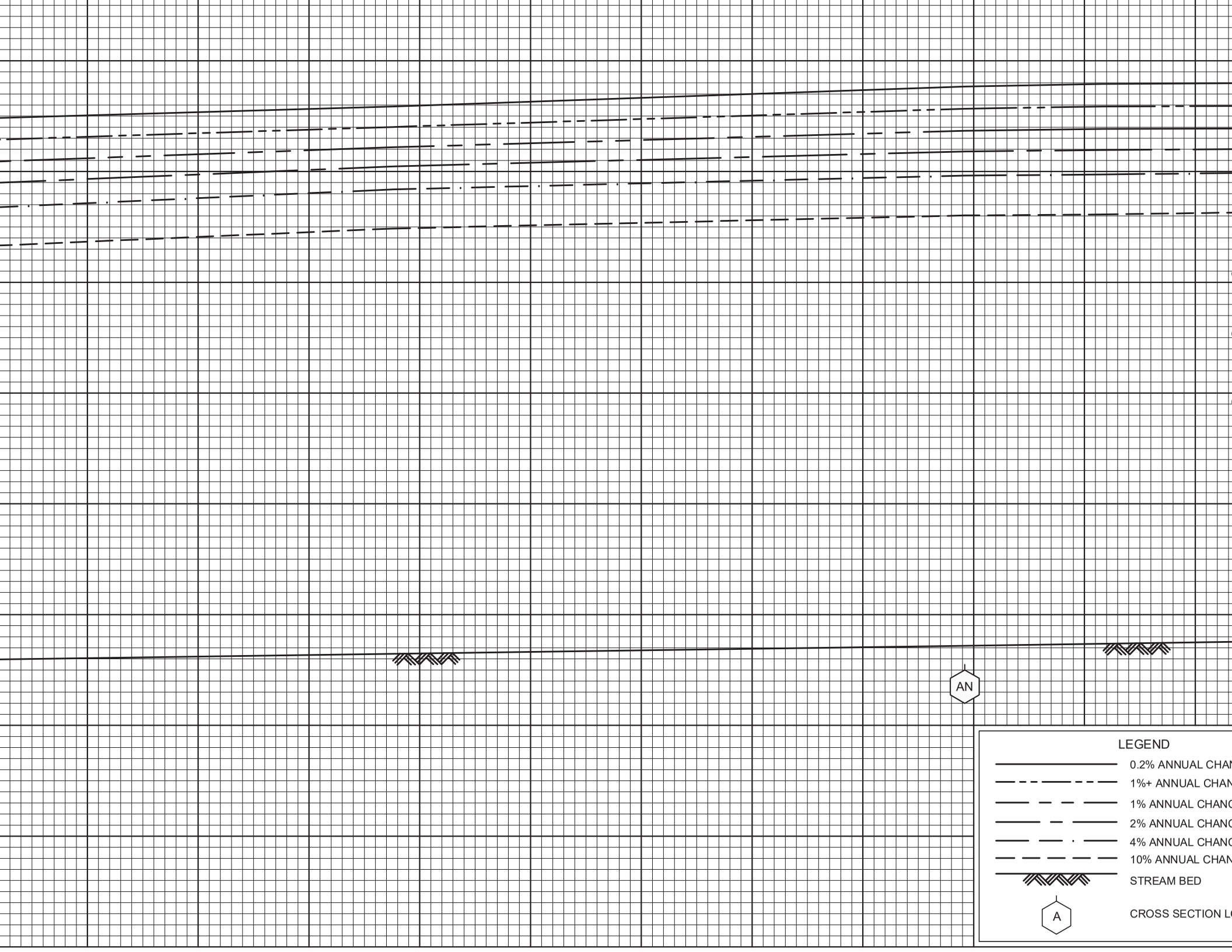
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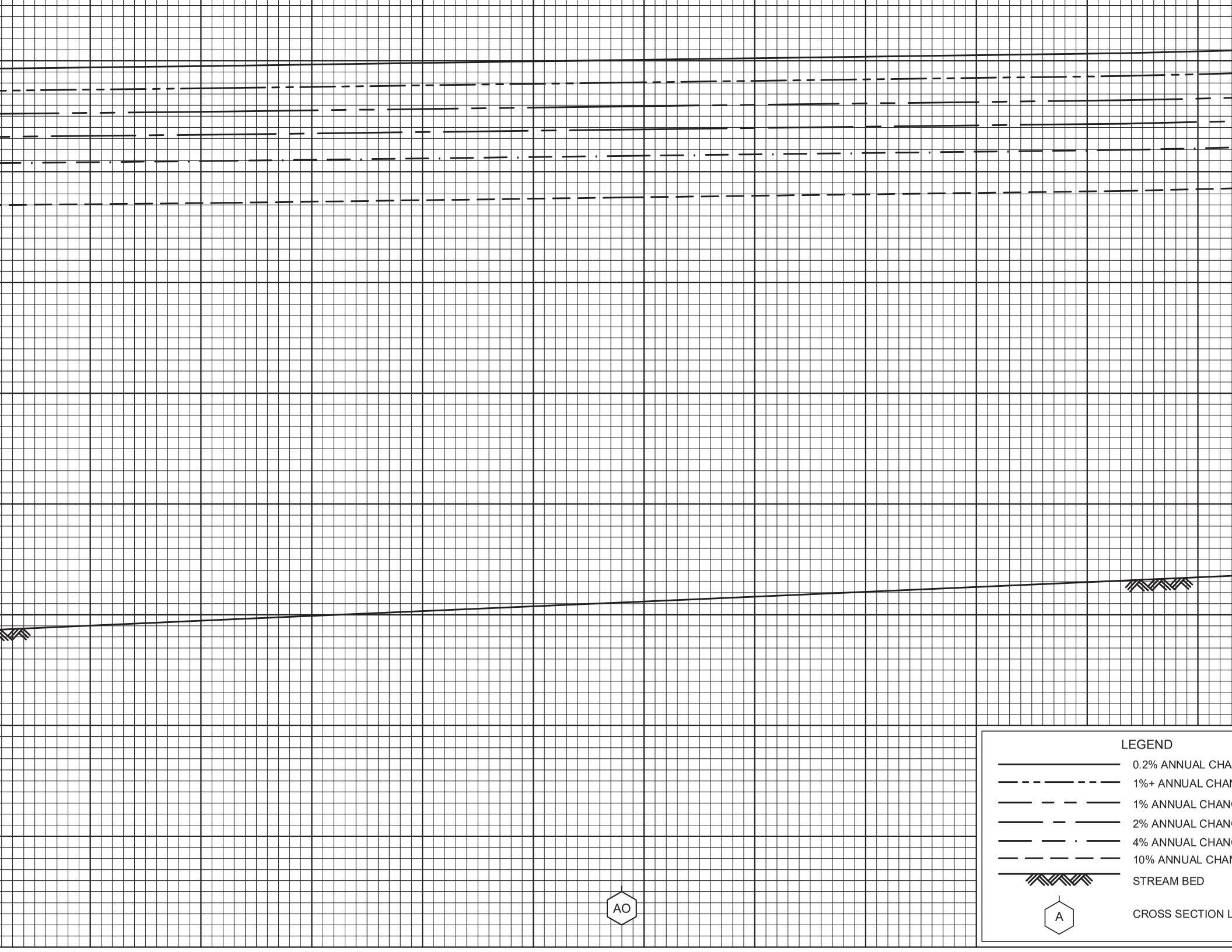
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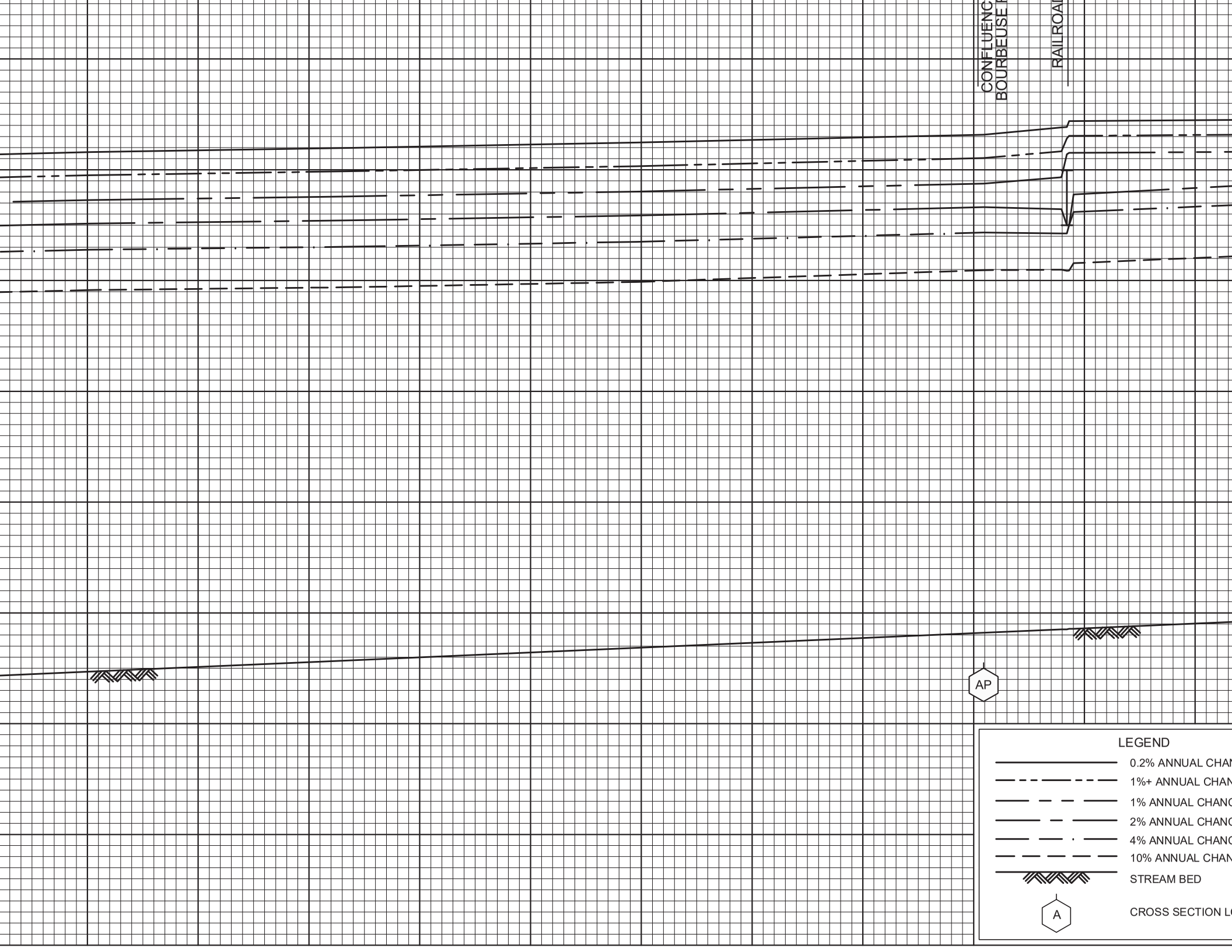
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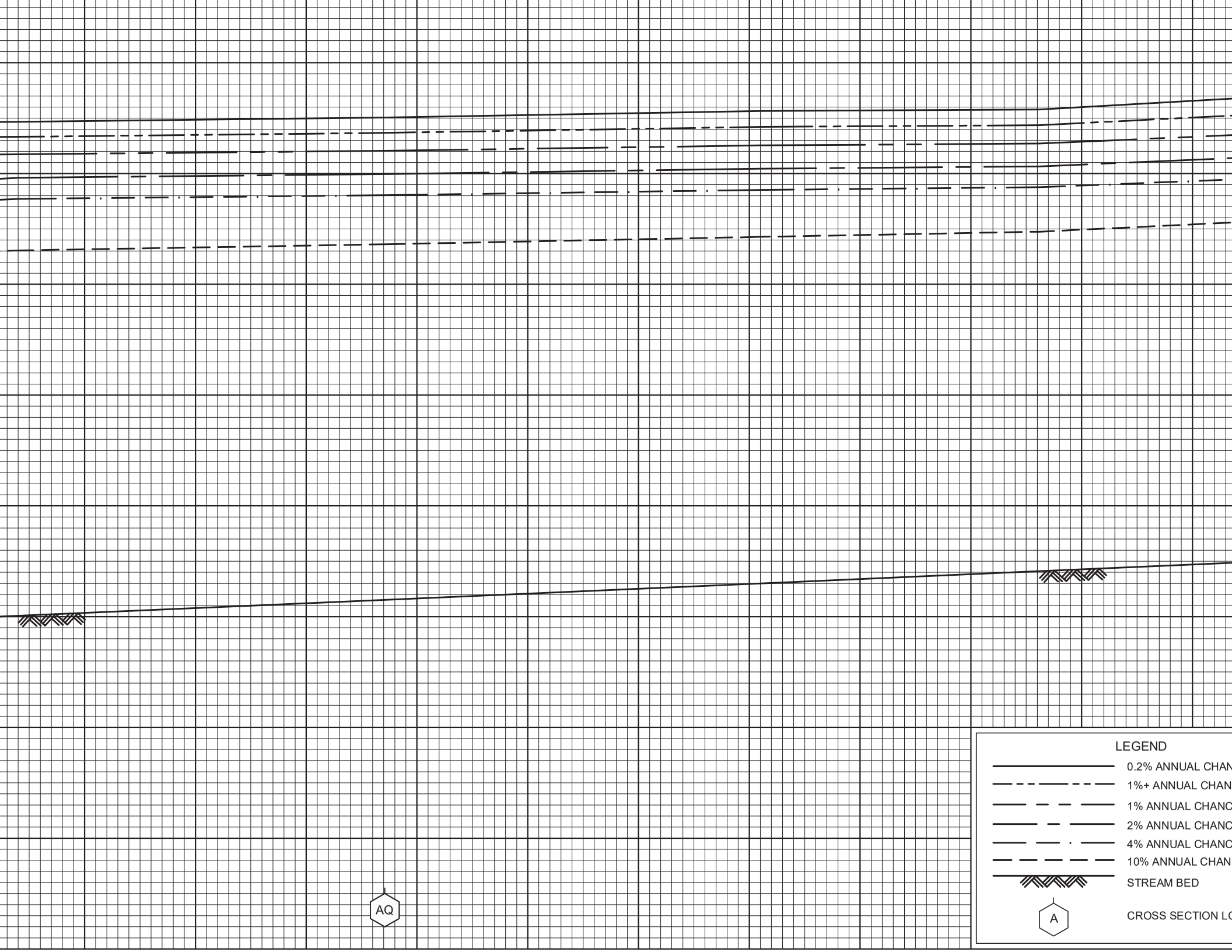
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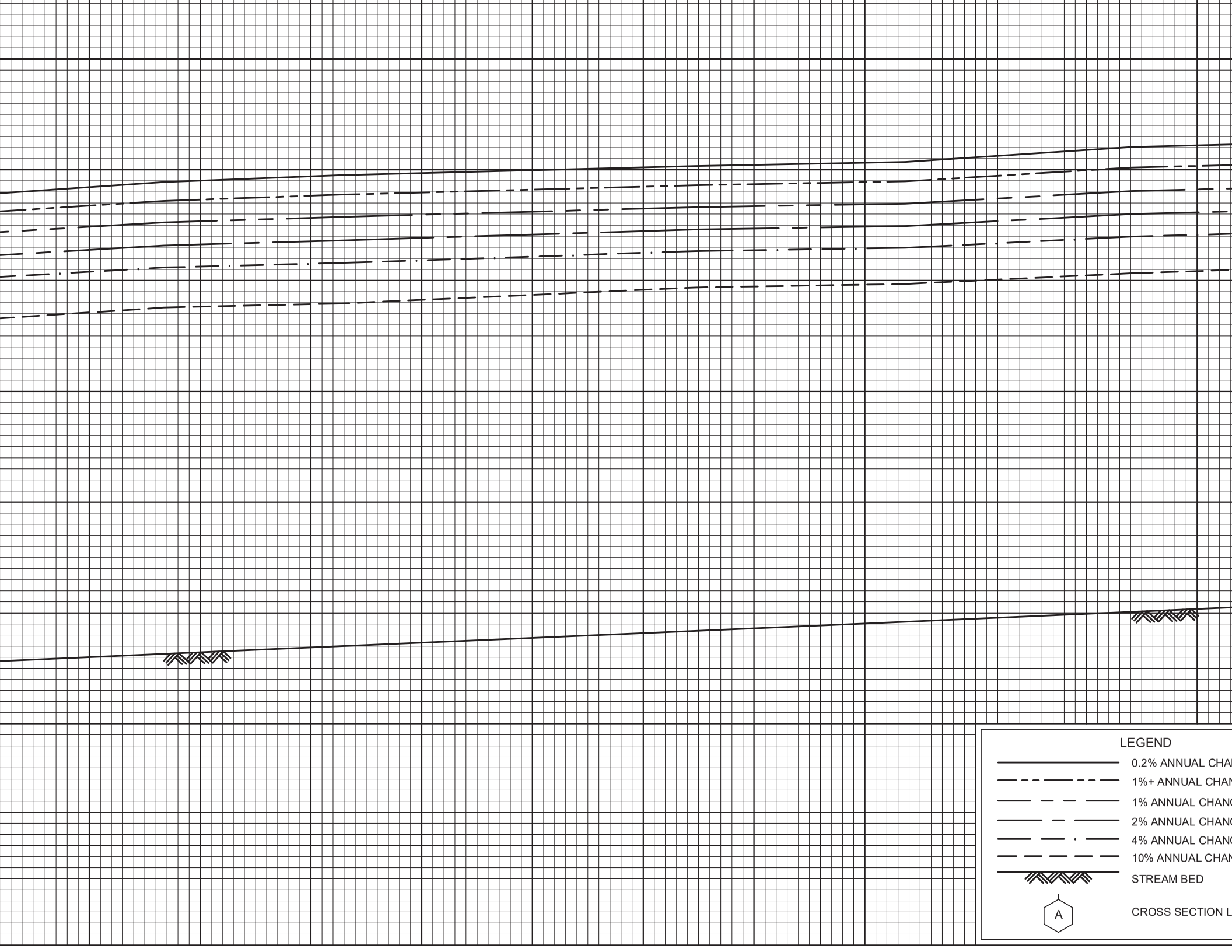
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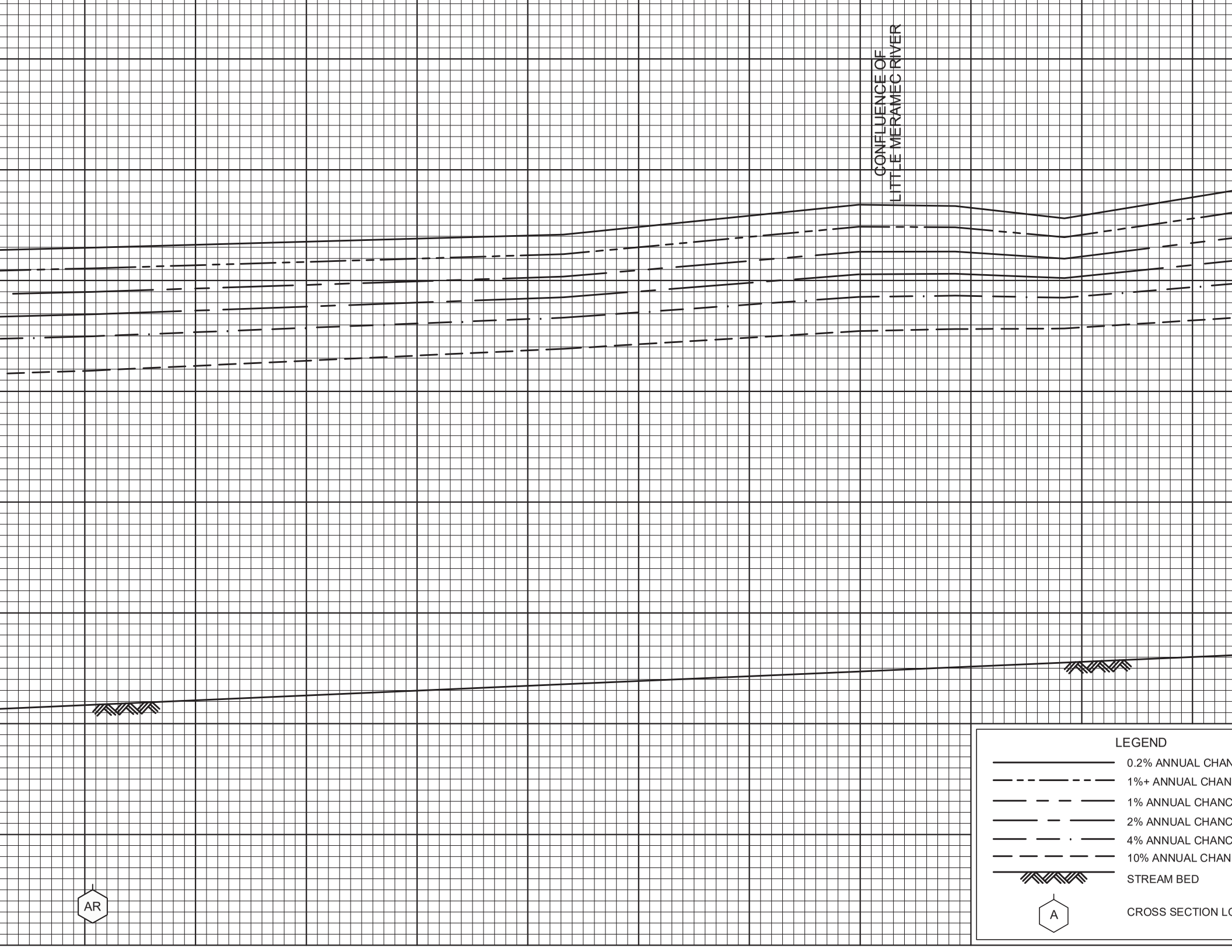
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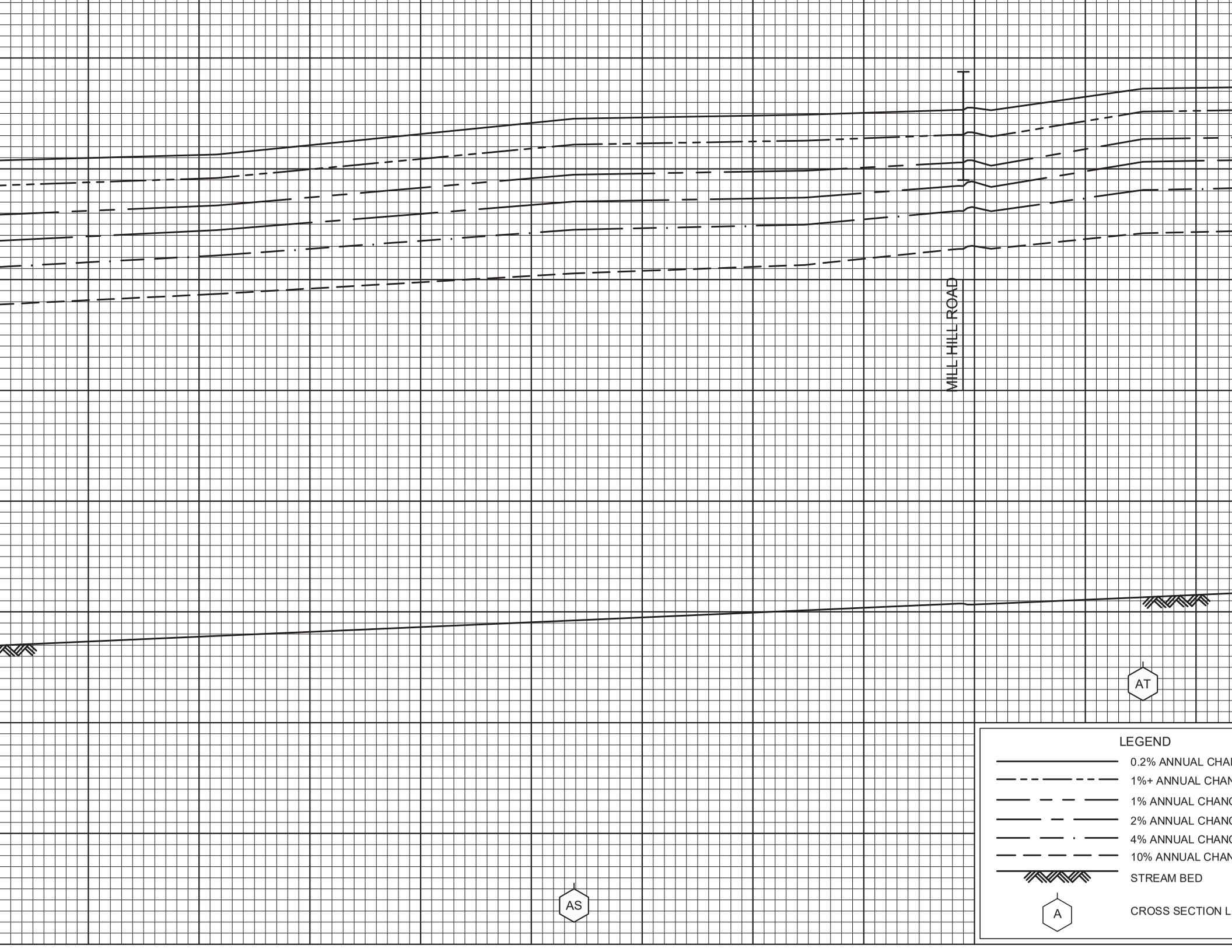
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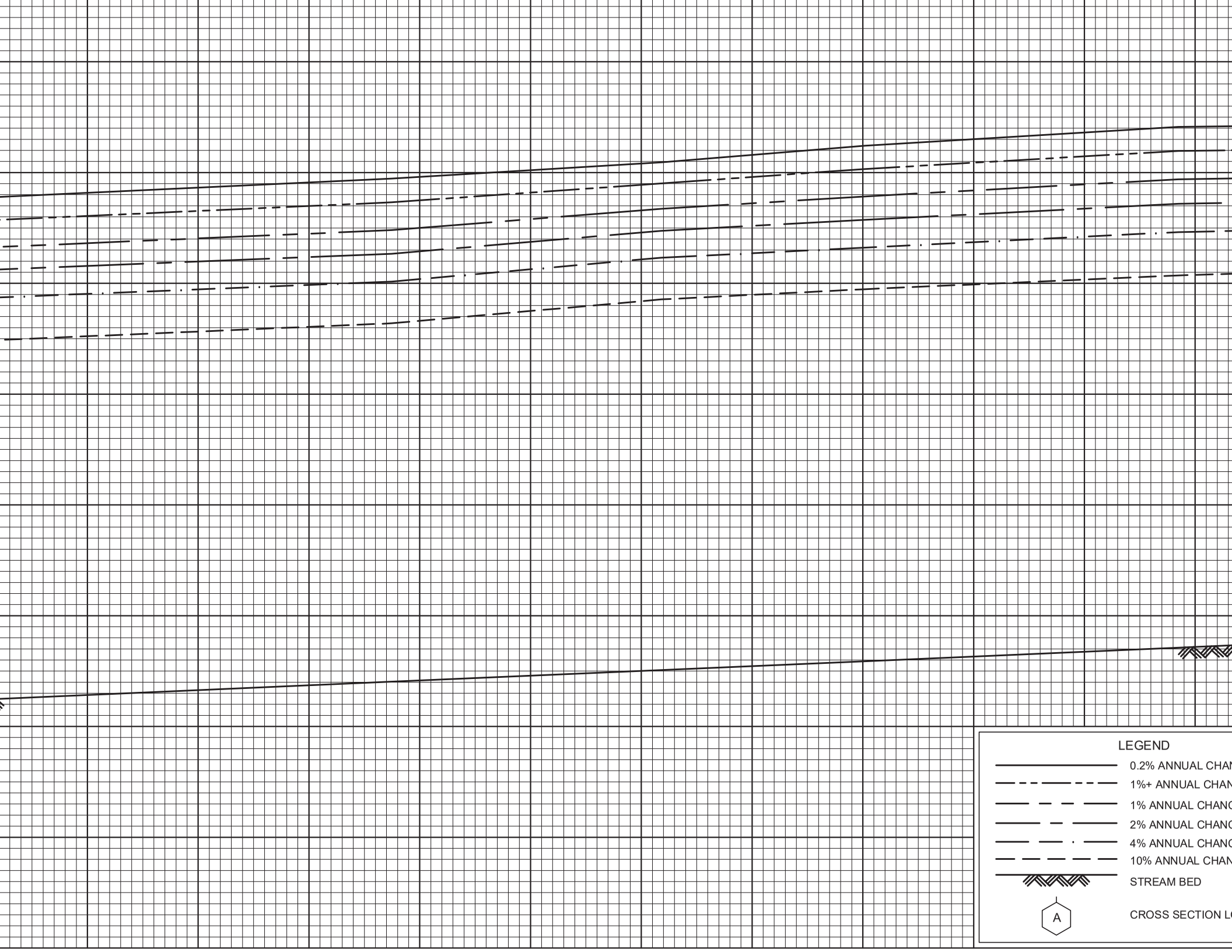
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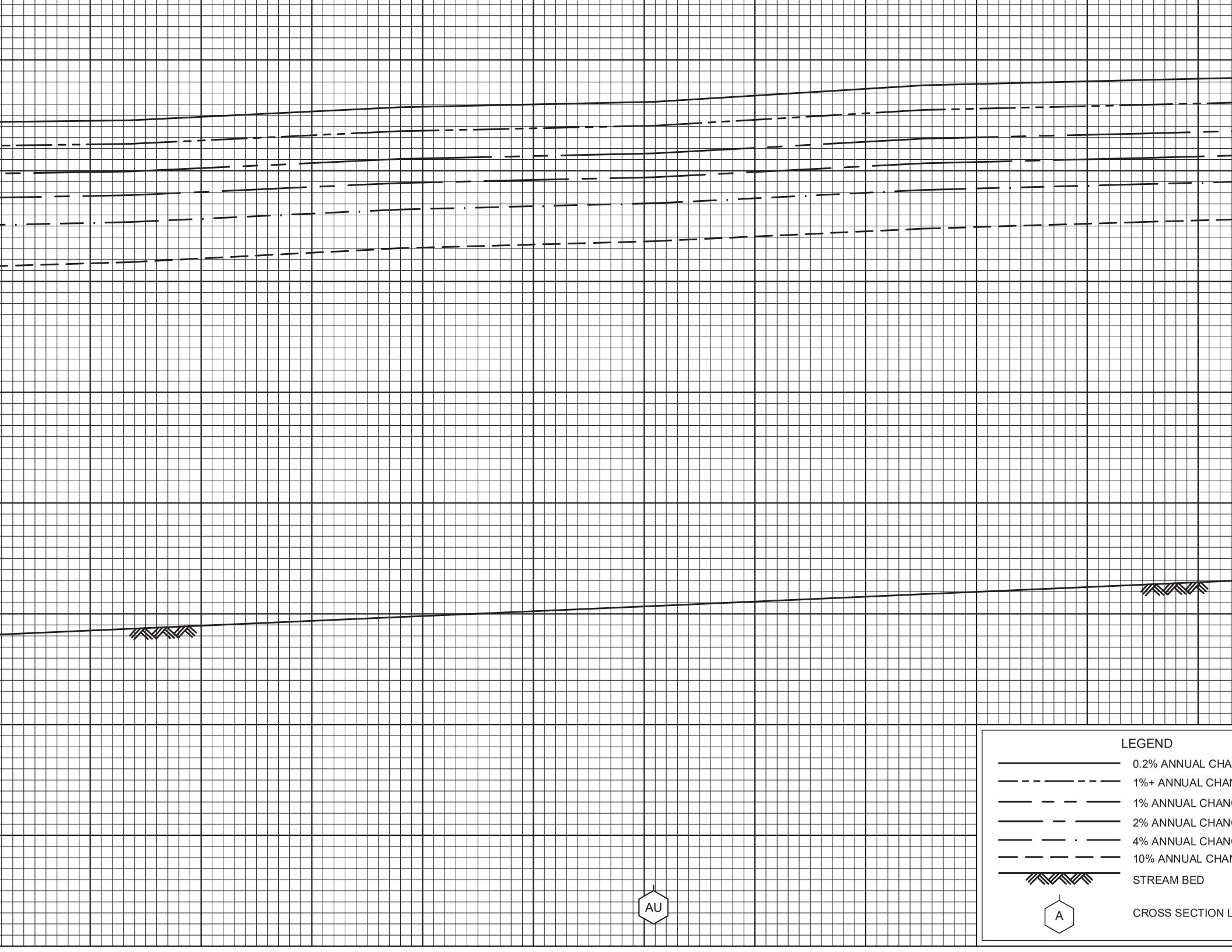
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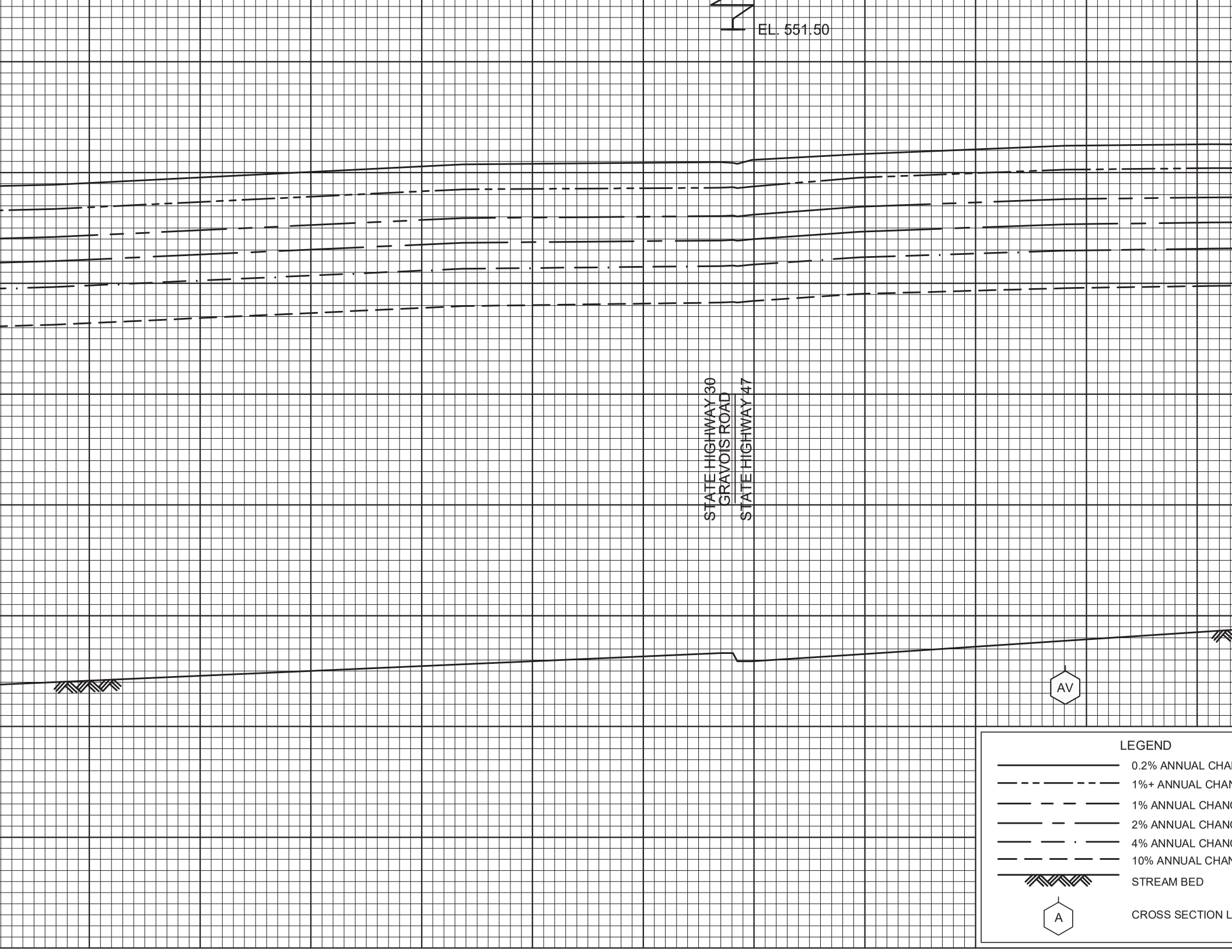
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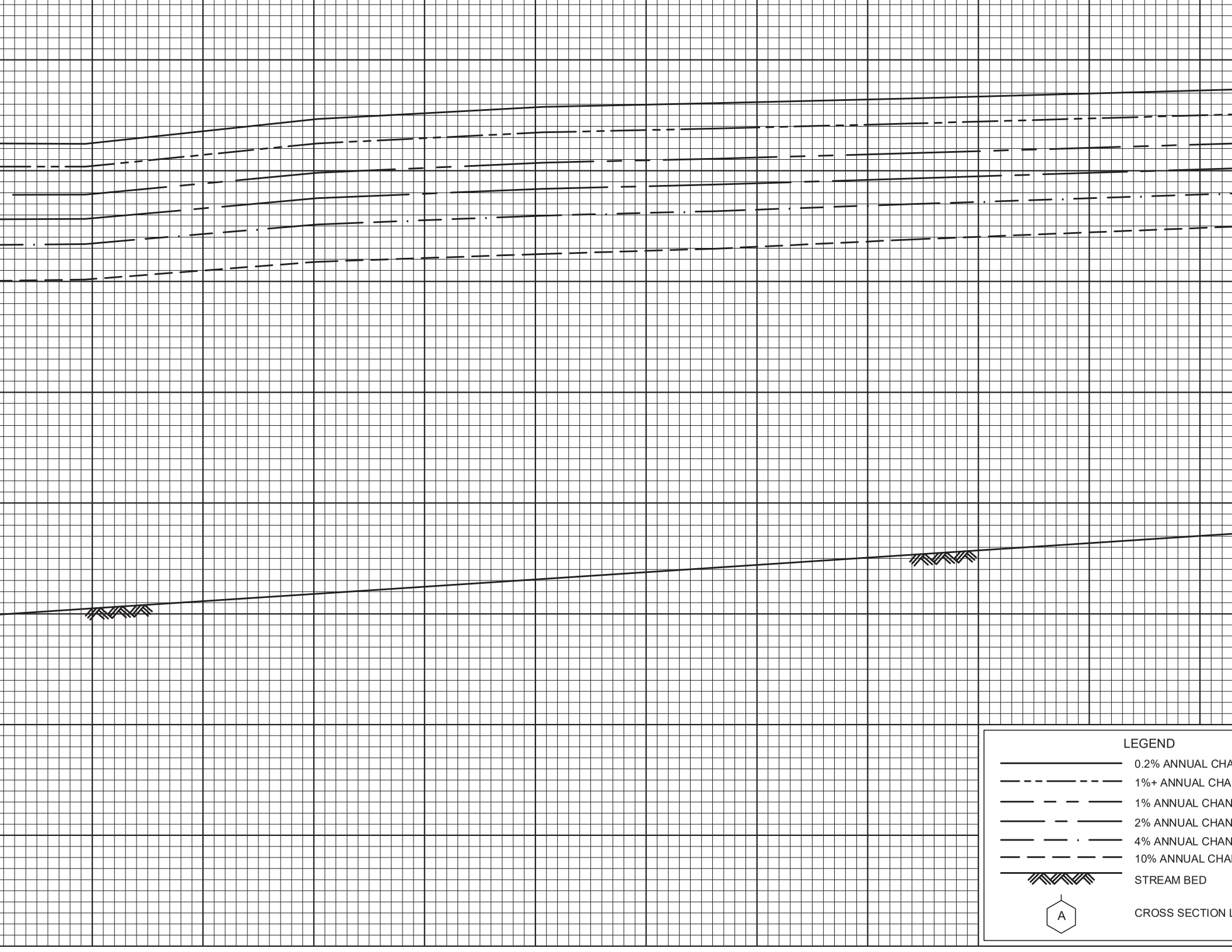
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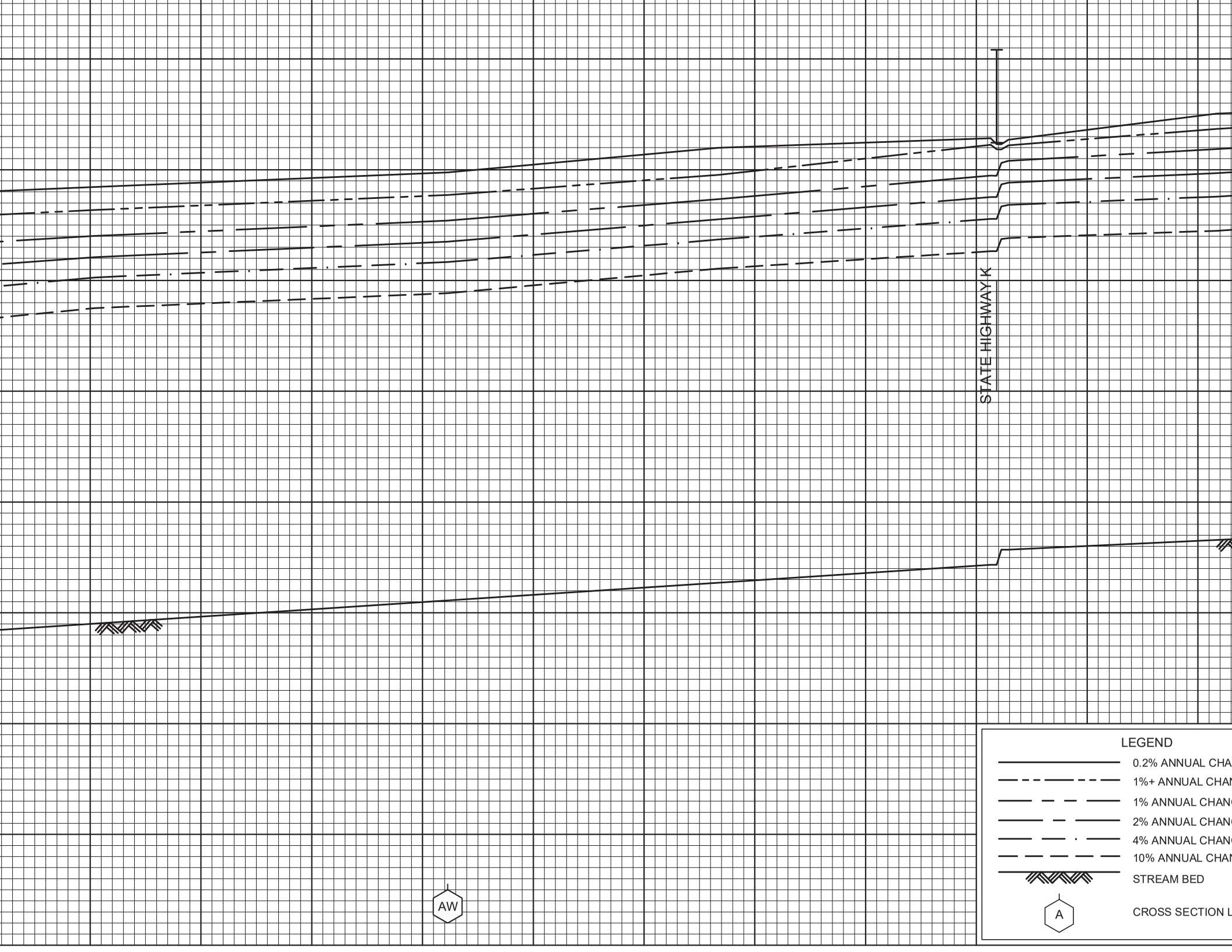
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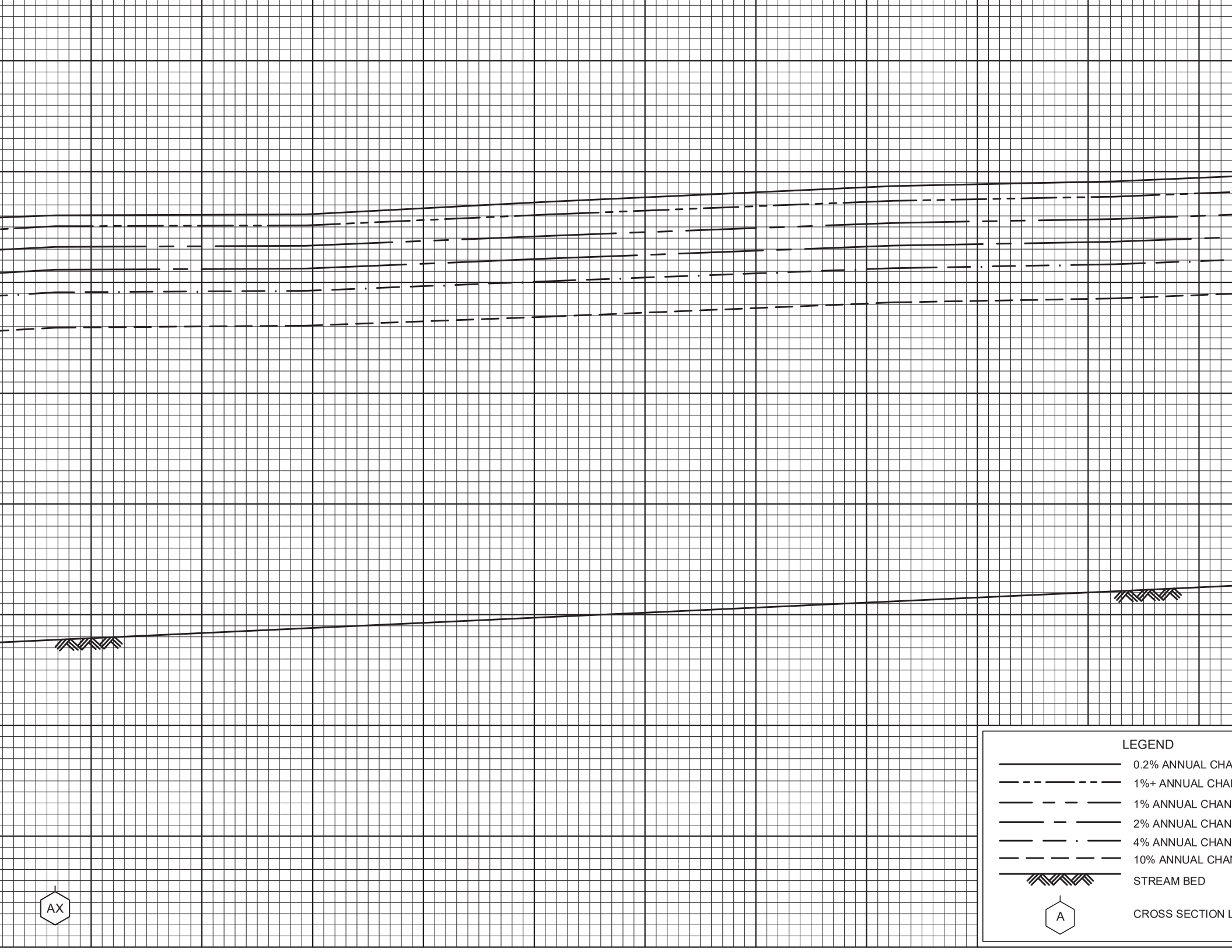
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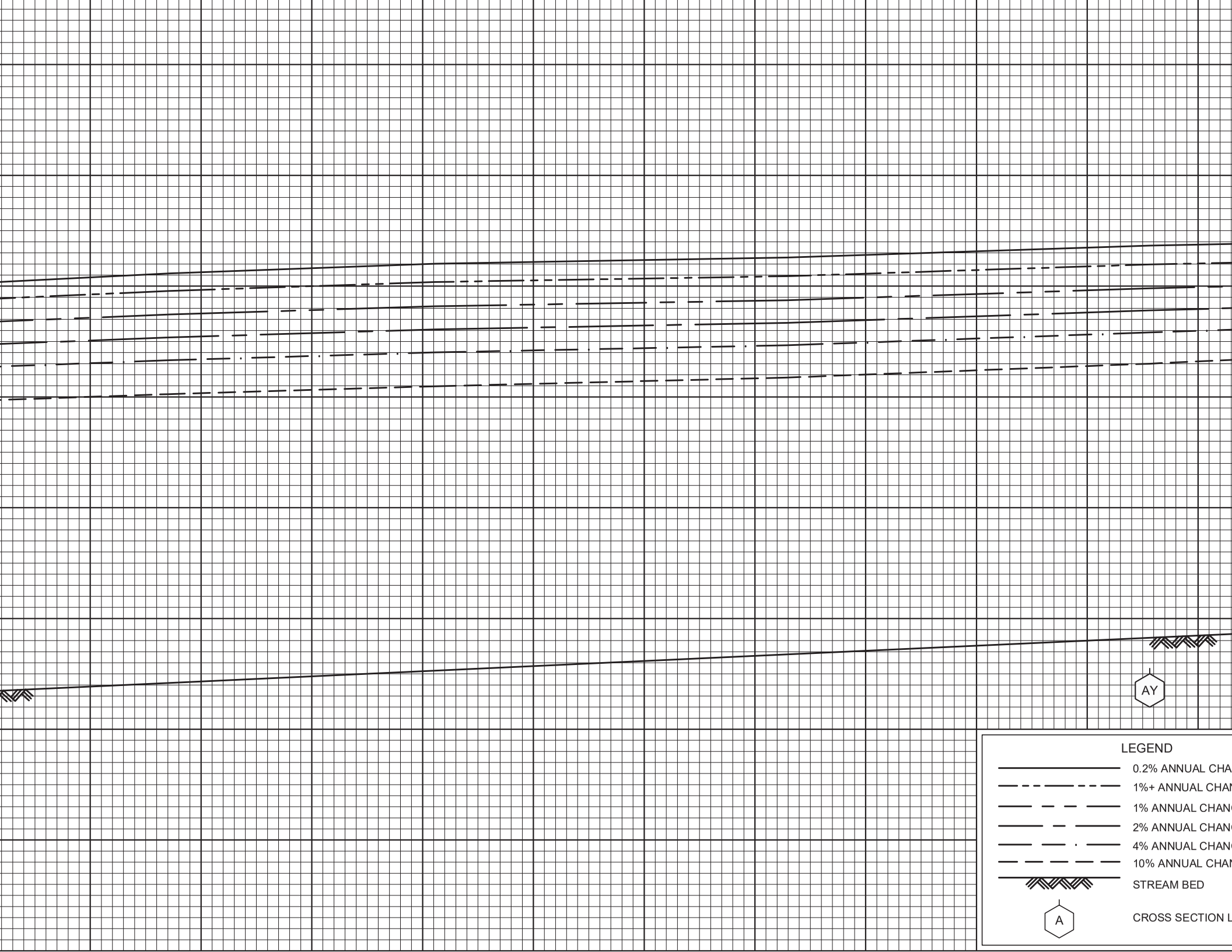
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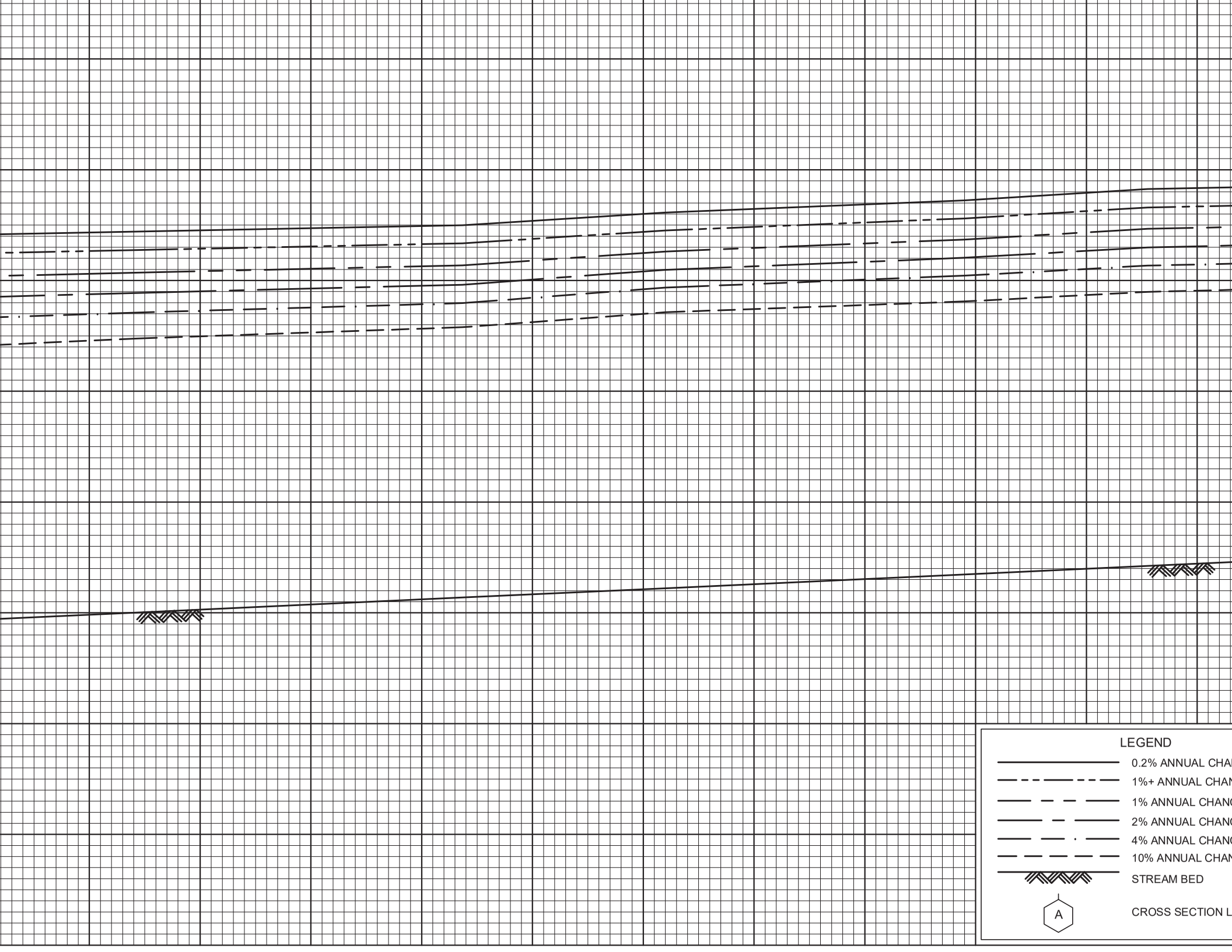
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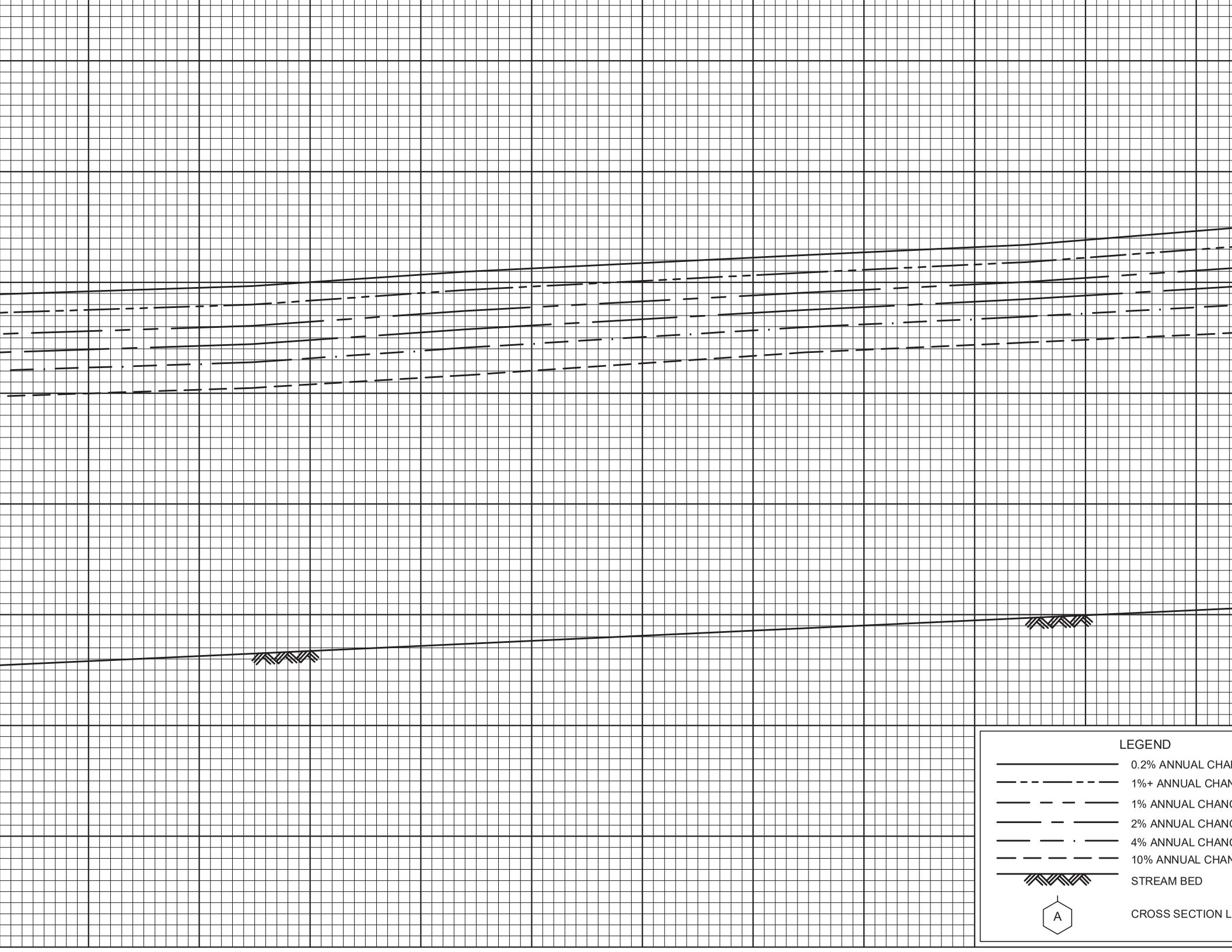
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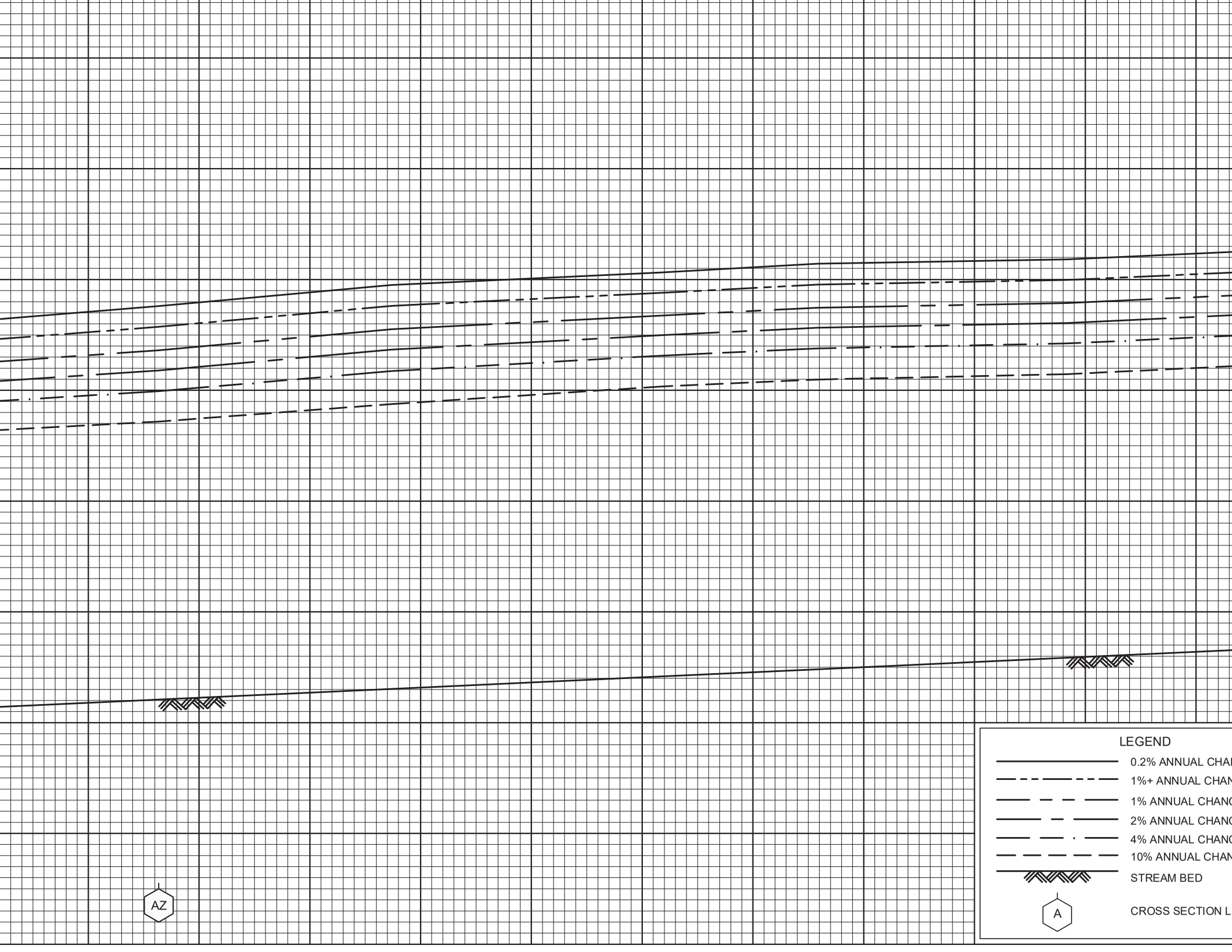
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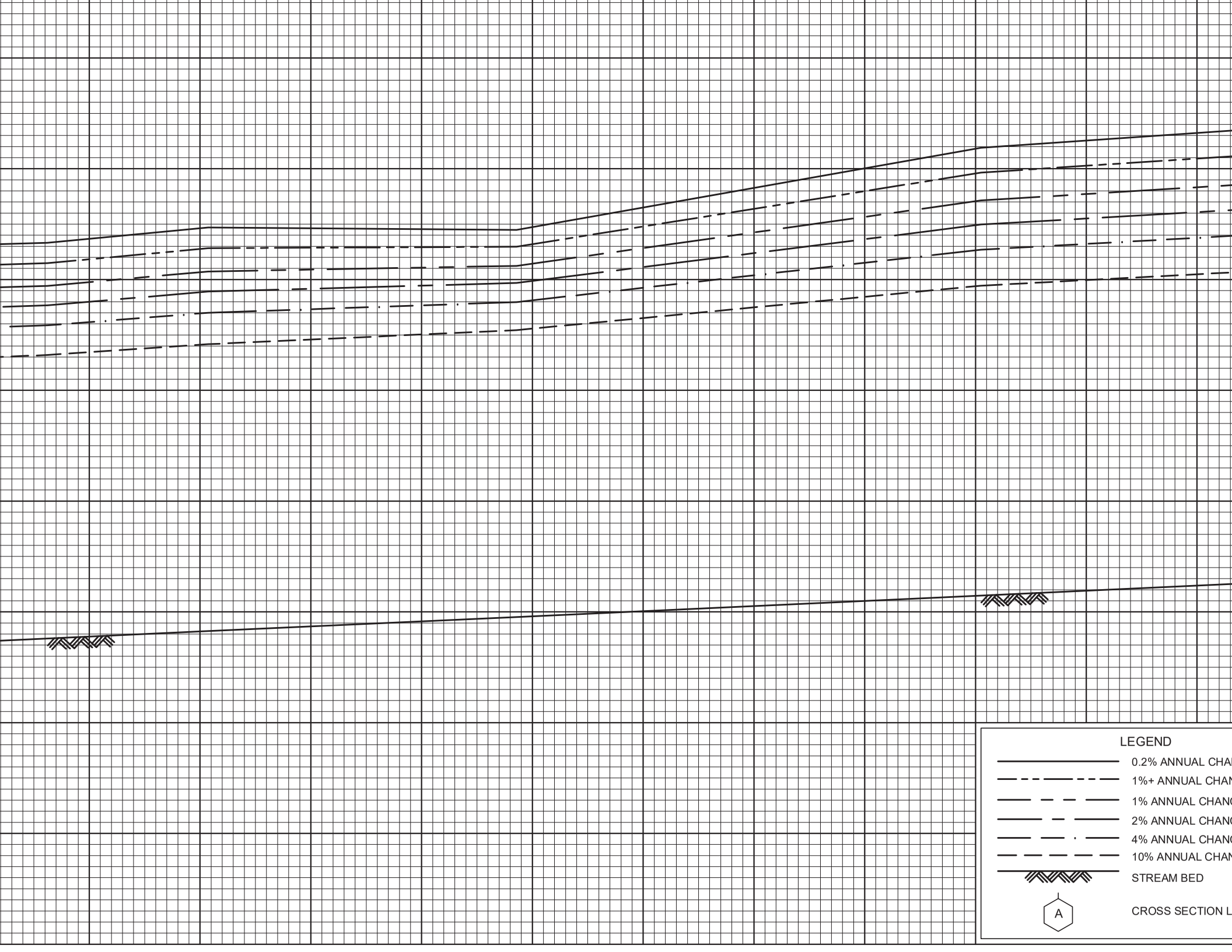
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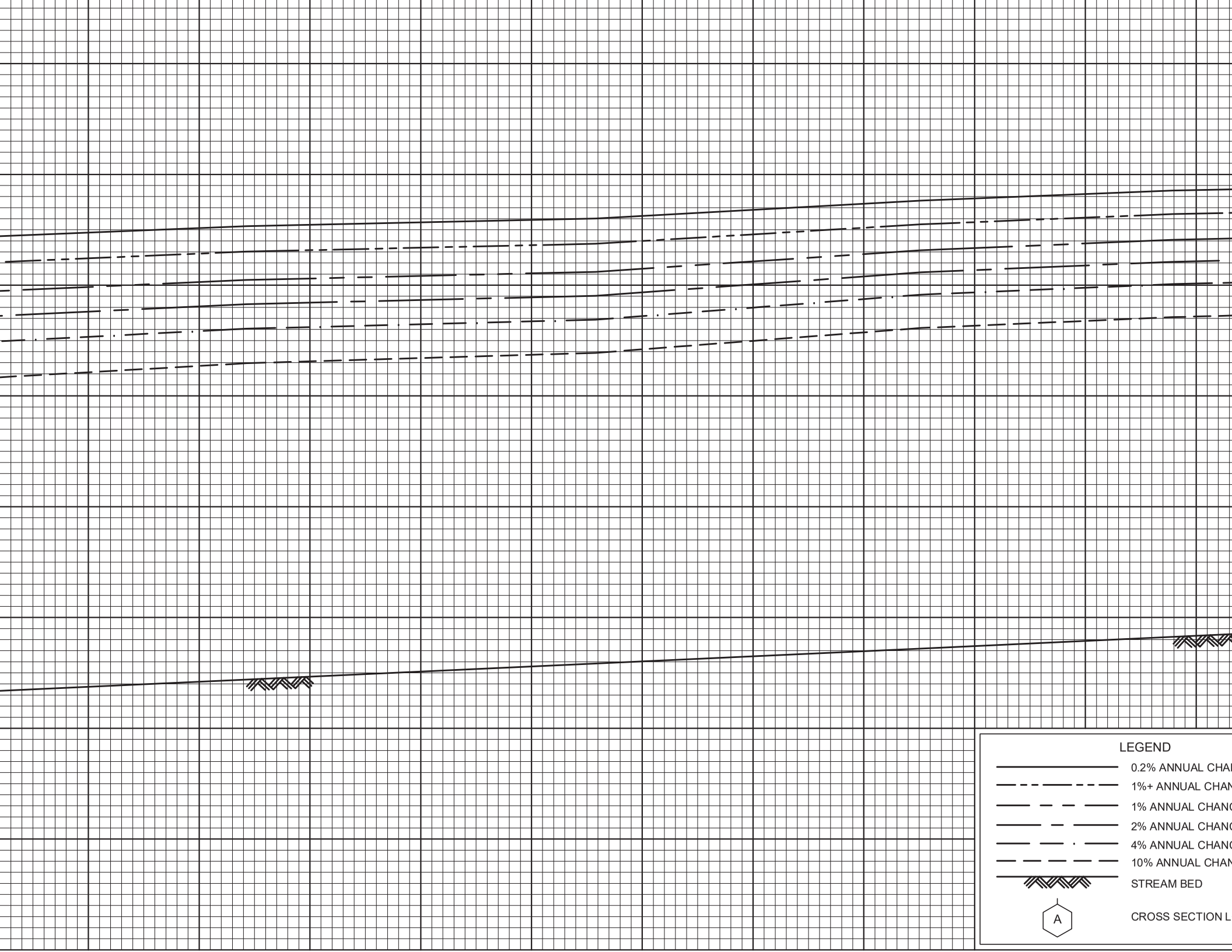
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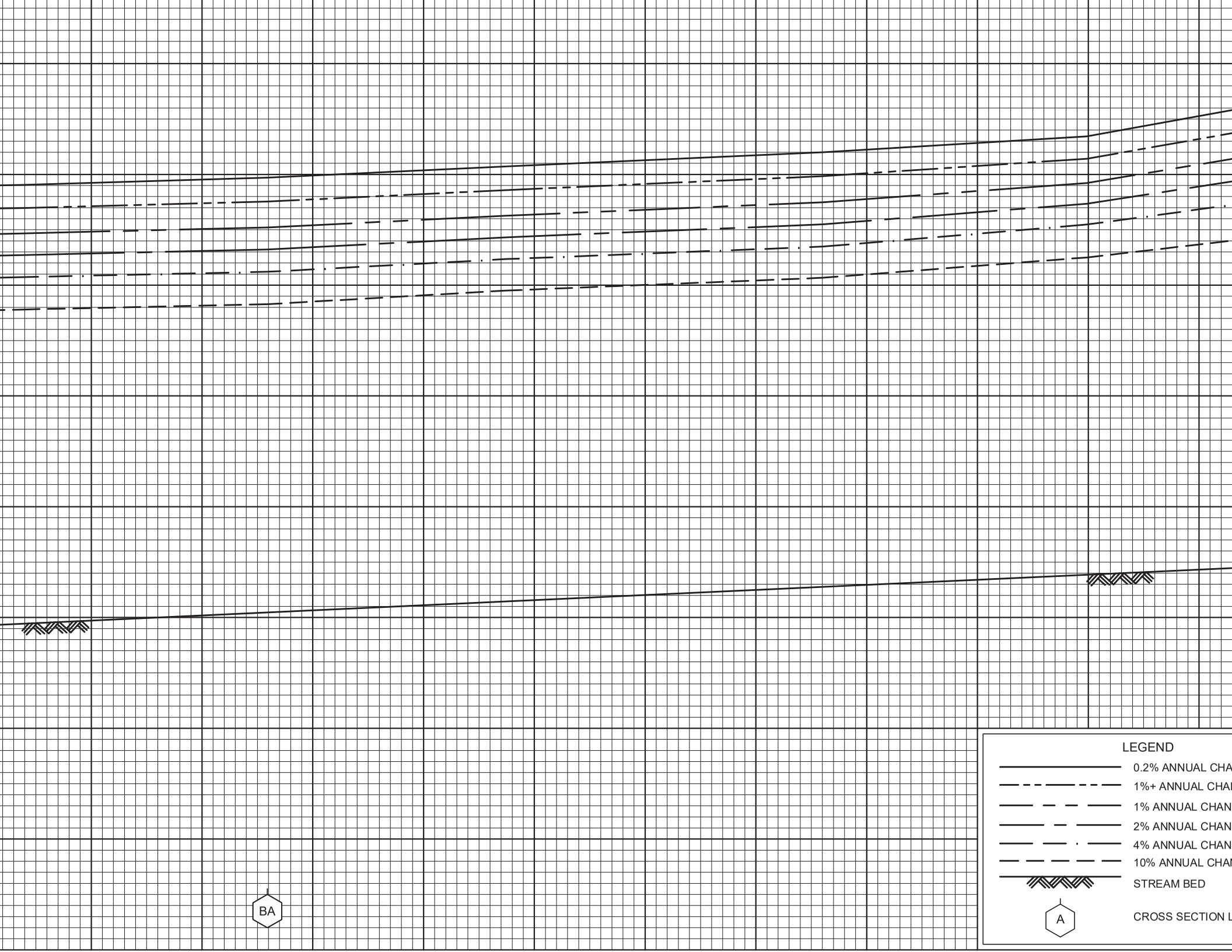
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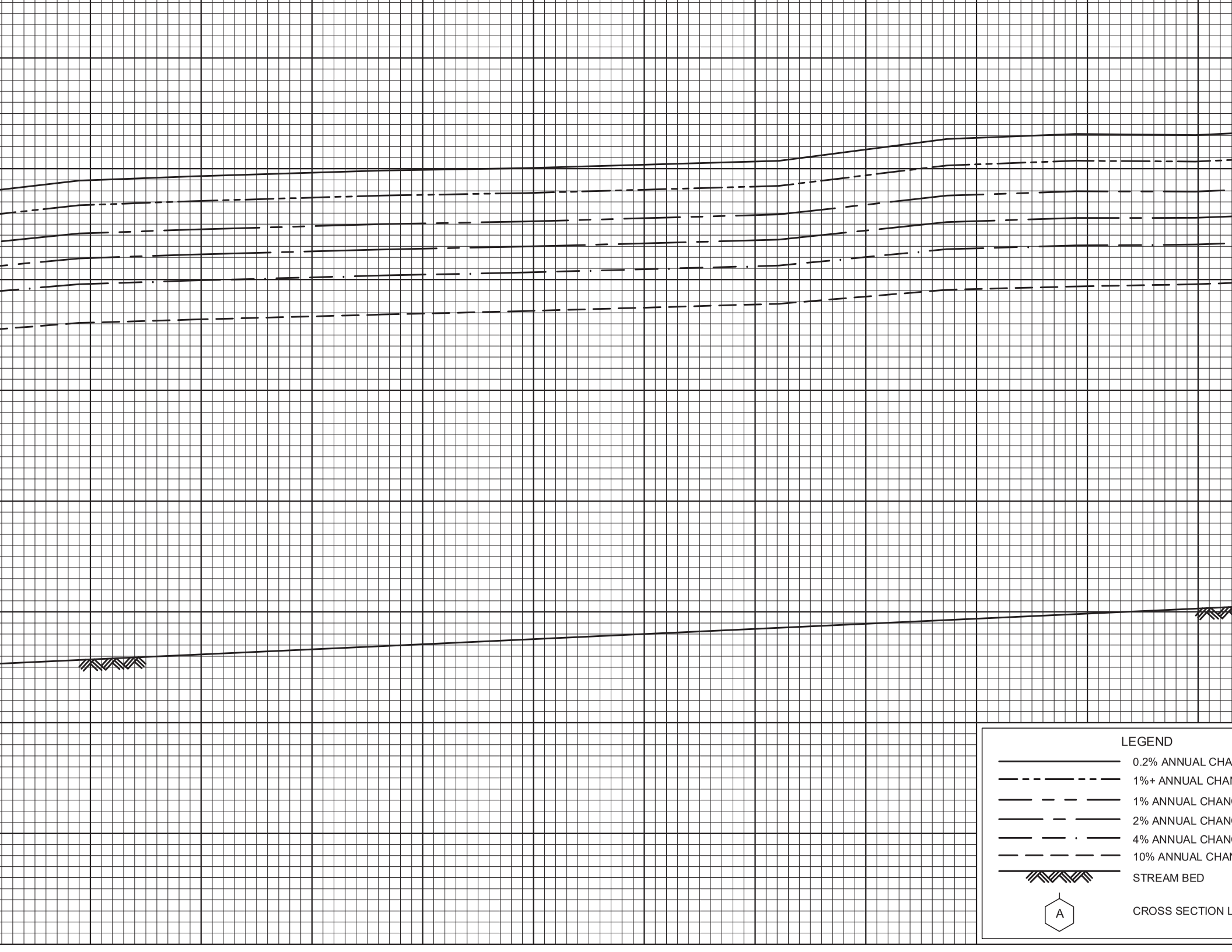
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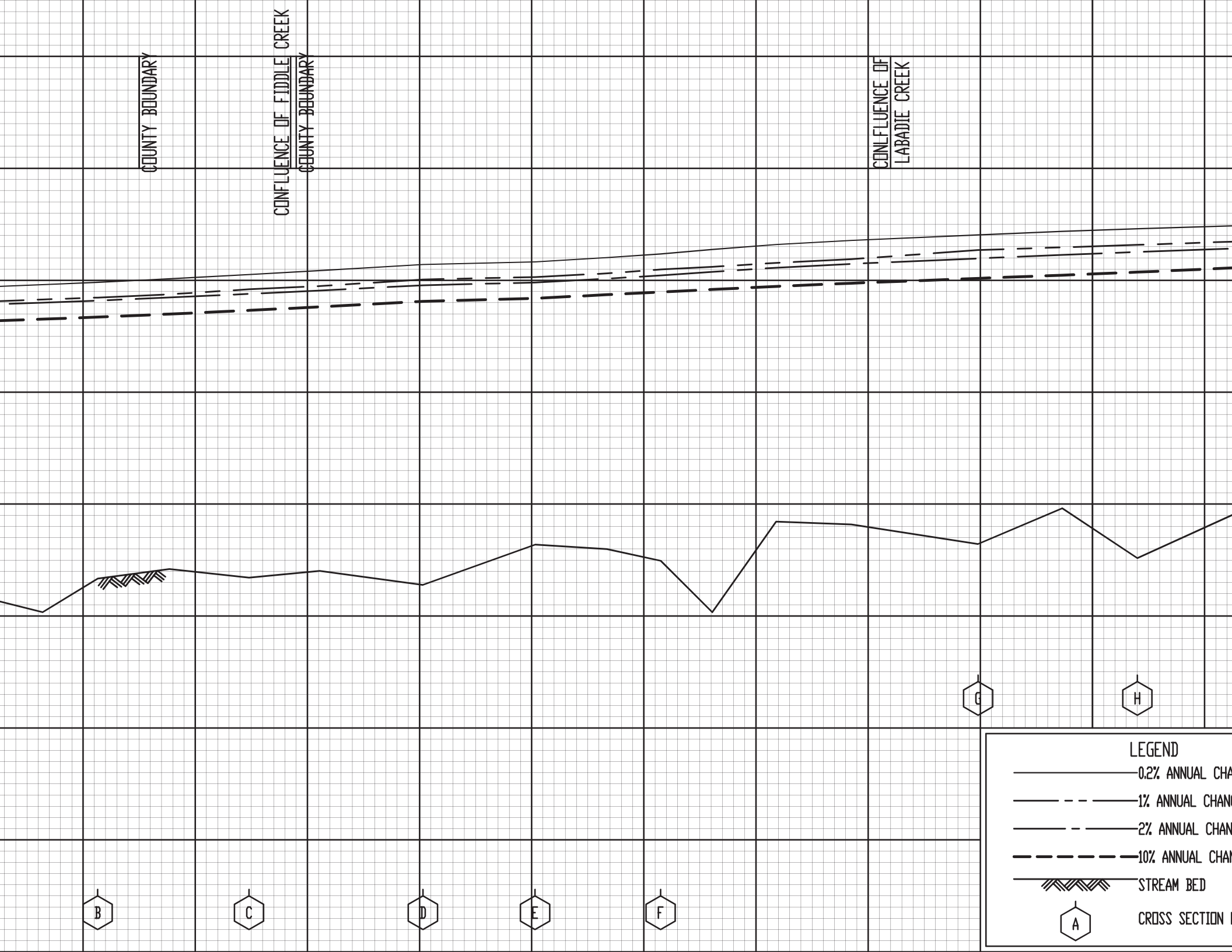
STATE HIGHWAY 185

FRANKLIN COUNTY, N

CRAWFORD COUNTY,


COUNTY BOUNDARY
CONFLUENCE OF FIDDLE CREEK
COUNTY BOUNDARY
CONFLUENCE OF
LABADIE CREEK
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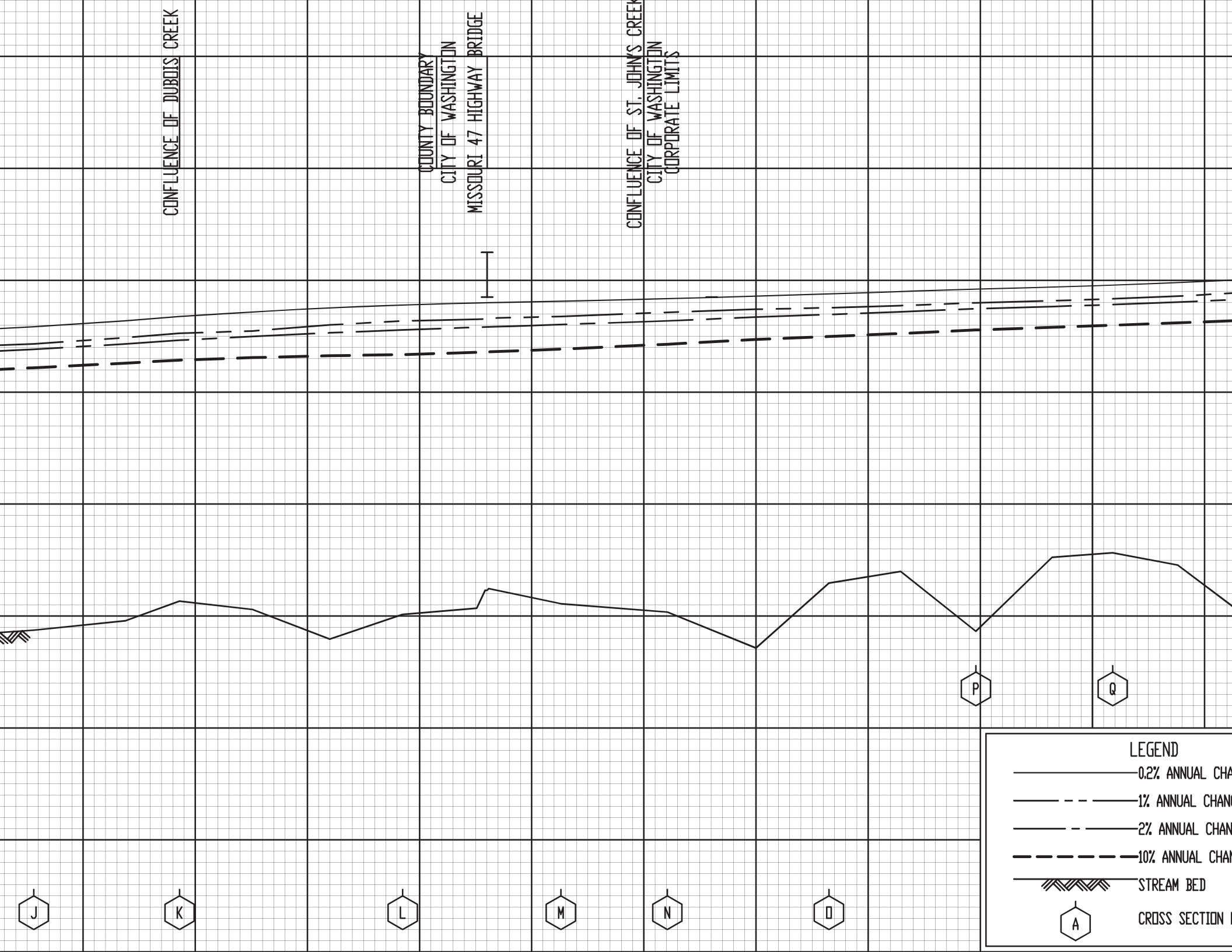
CONFLUENCE OF DUBOIS CREEK
COUNTY BOUNDARY
CITY OF WASHINGTON
MISSOURI 47 HIGHWAY BRIDGE
CONFLUENCE OF ST. JOHN'S CREEK
CITY OF WASHINGTON
CORPORATE LIMITS
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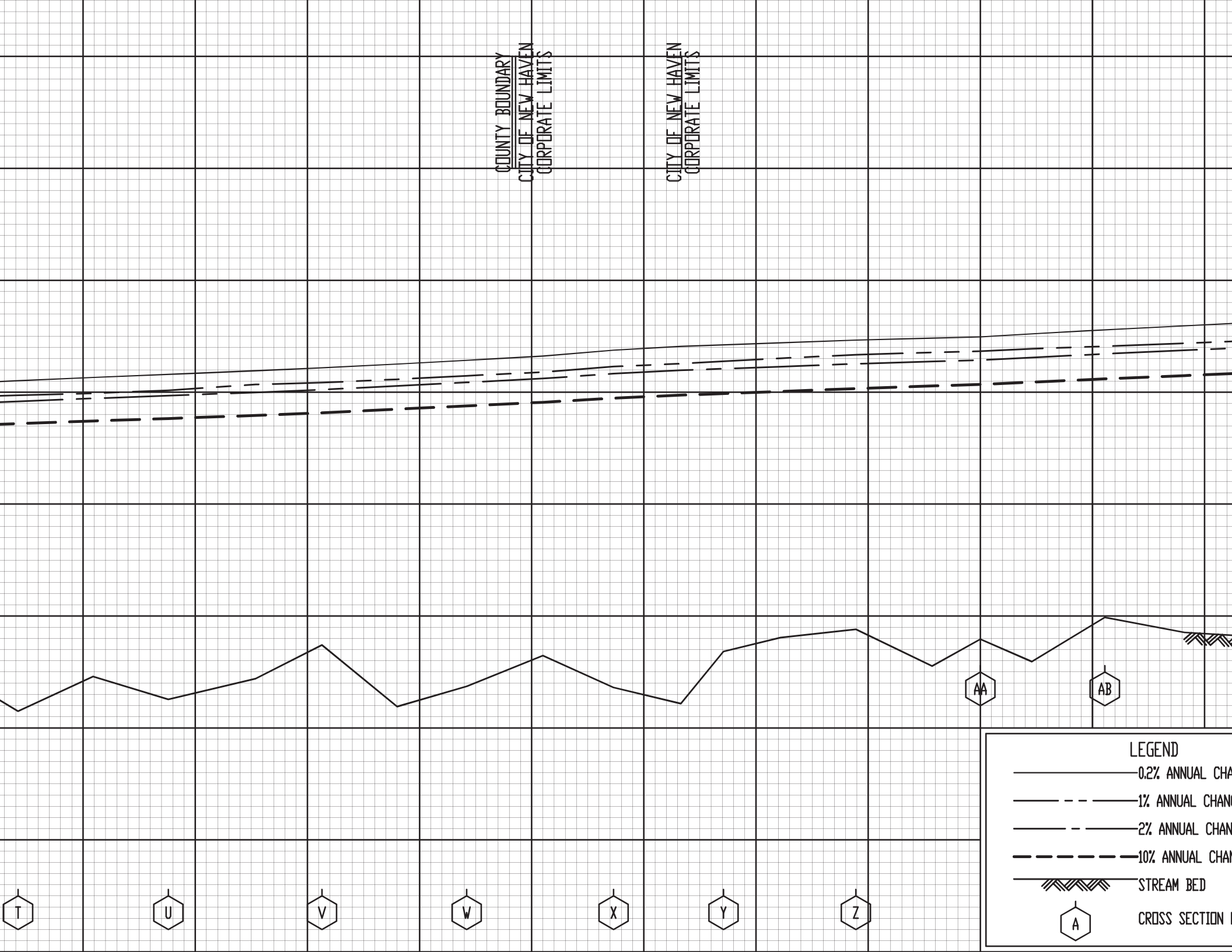
COUNTY BOUNDARY
CITY OF NEW HAVEN
CORPORATE LIMITS
CITY OF NEW HAVEN
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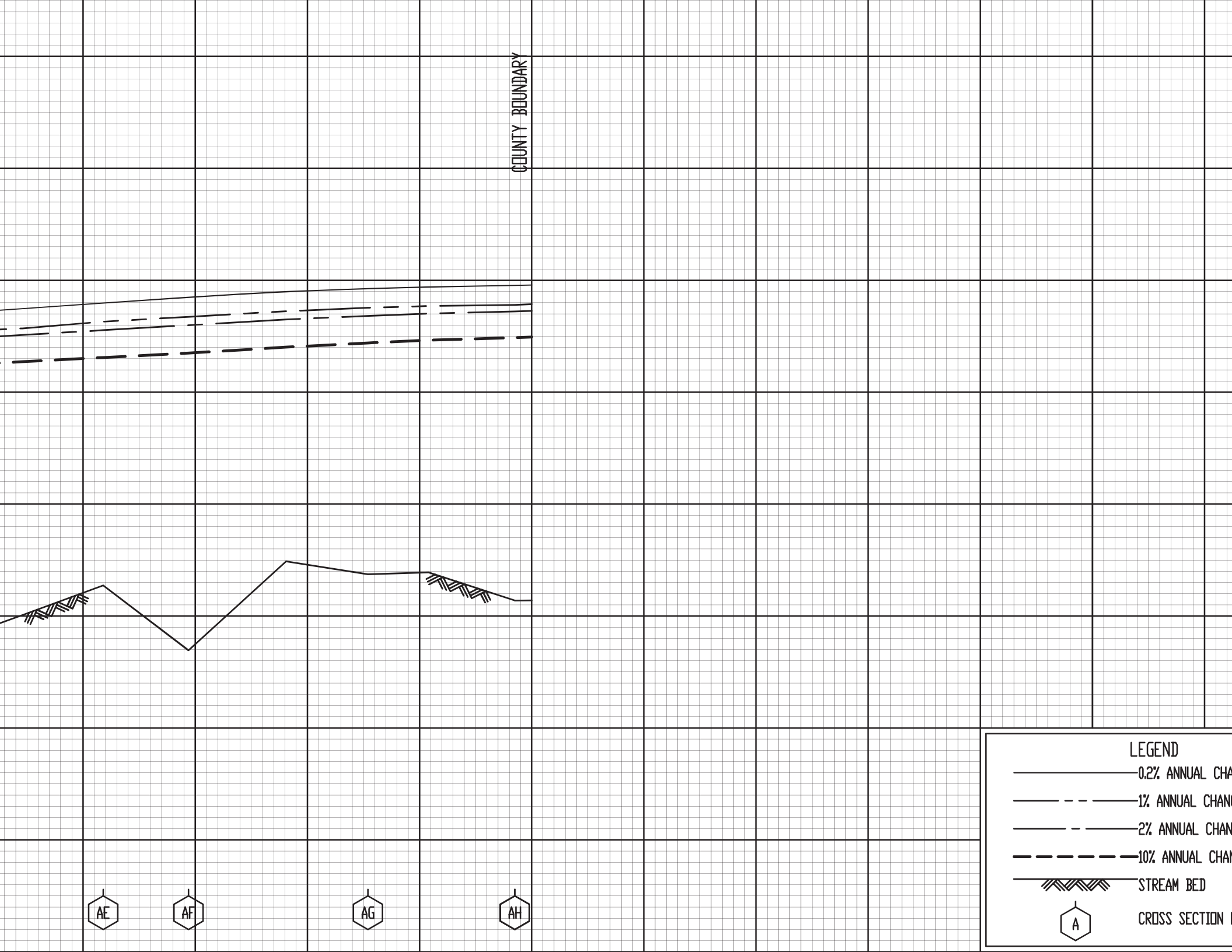
COUNTY BOUNDARY
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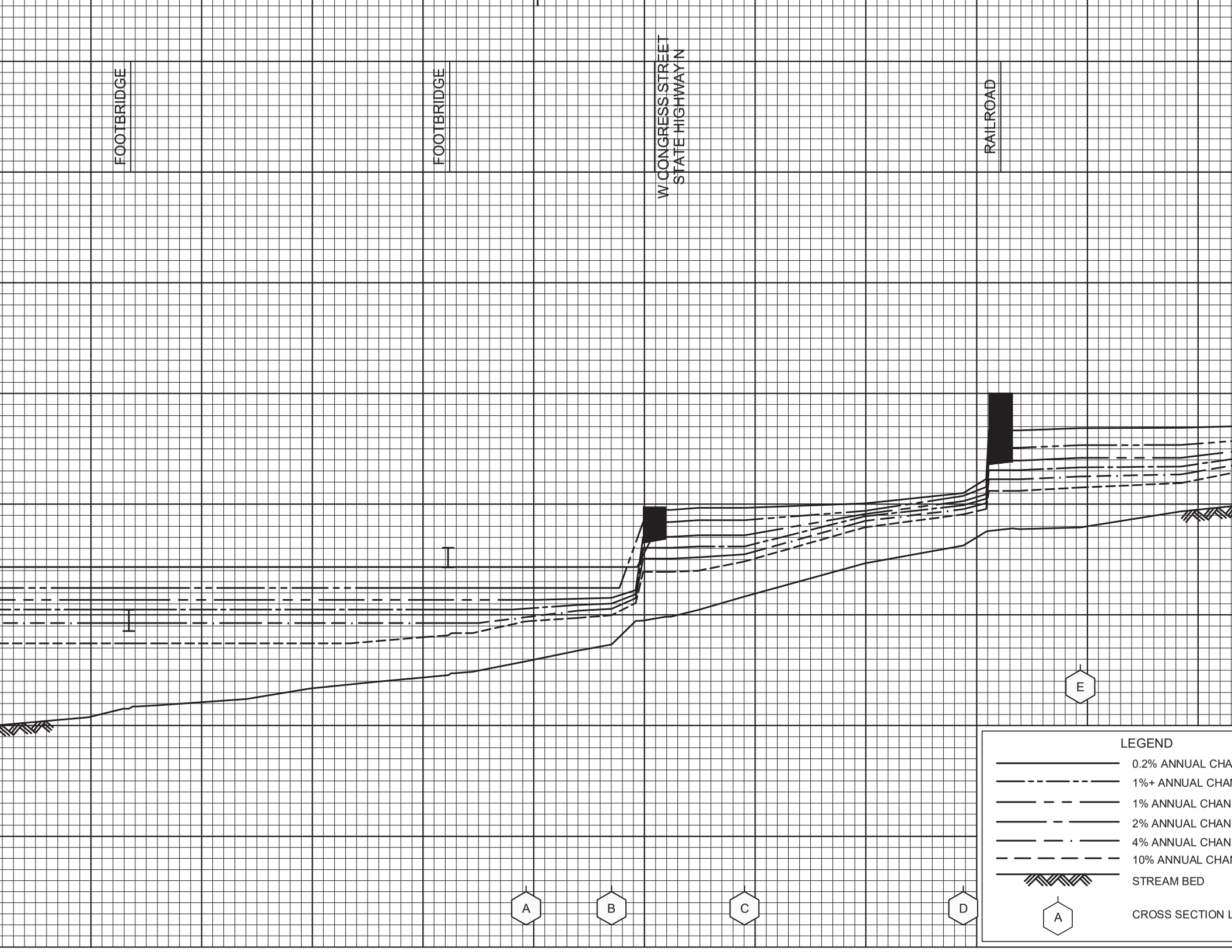
FOOTBRIDGE
FOOTBRIDGE
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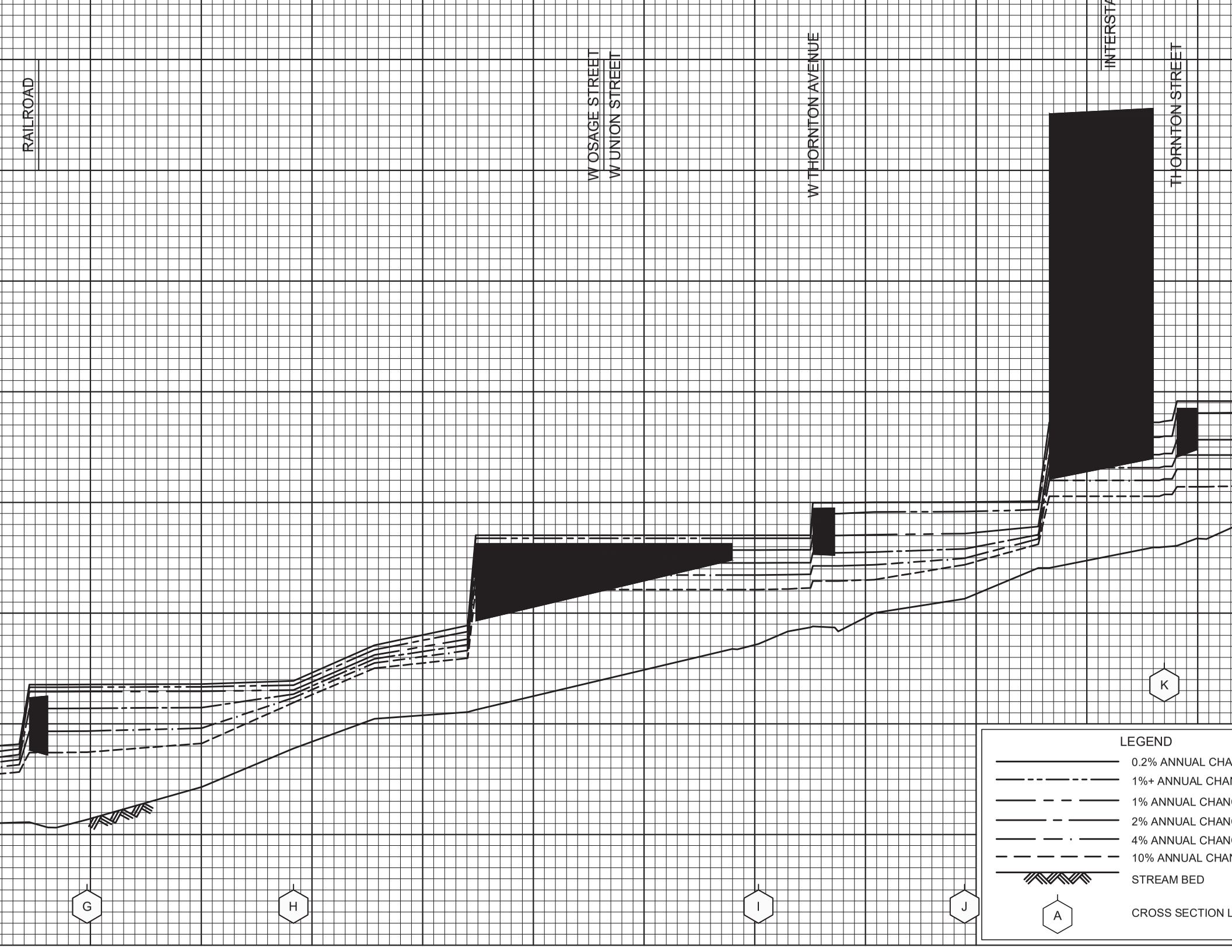
RAILROAD
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W UNION STREET
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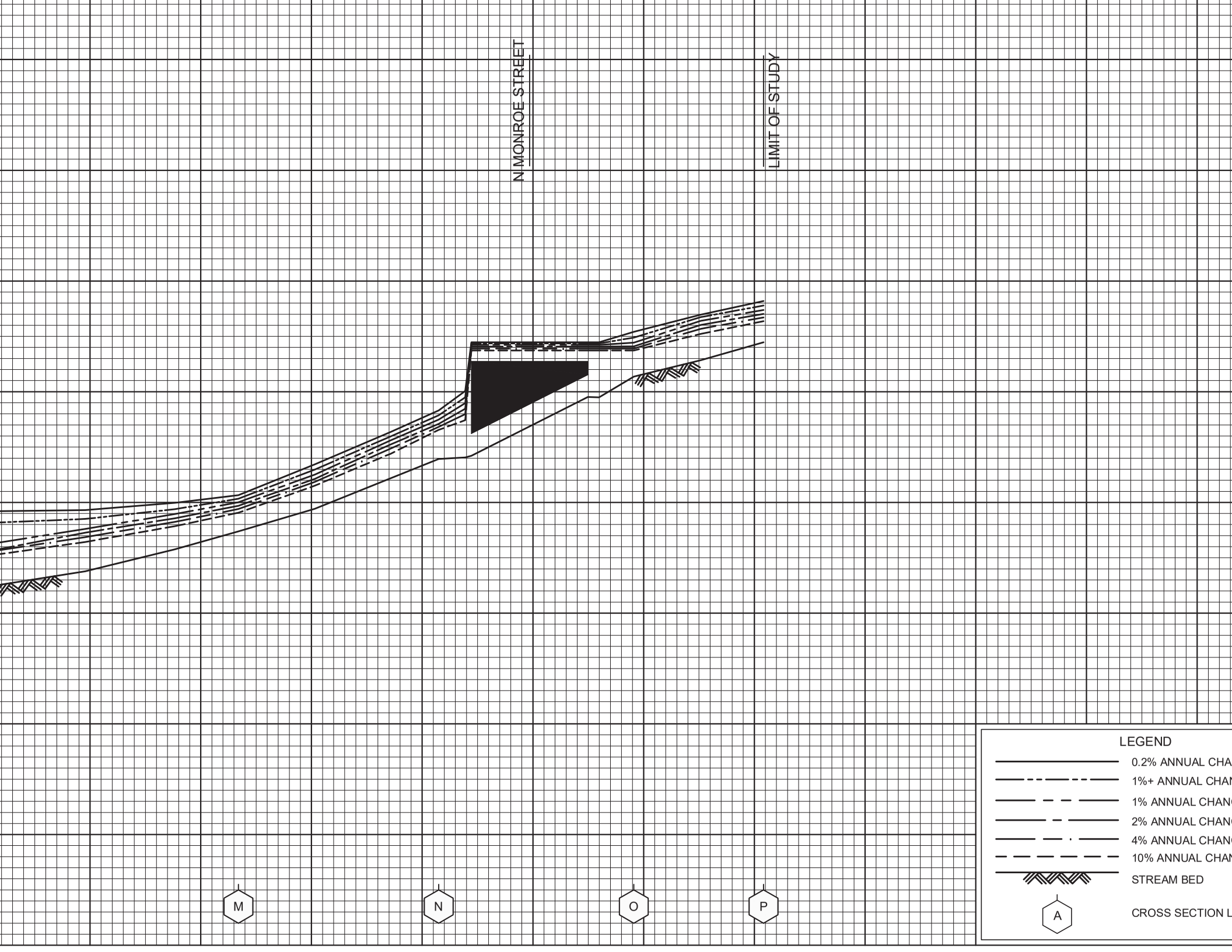
N MONROE STREET
LIMIT OF STUDY
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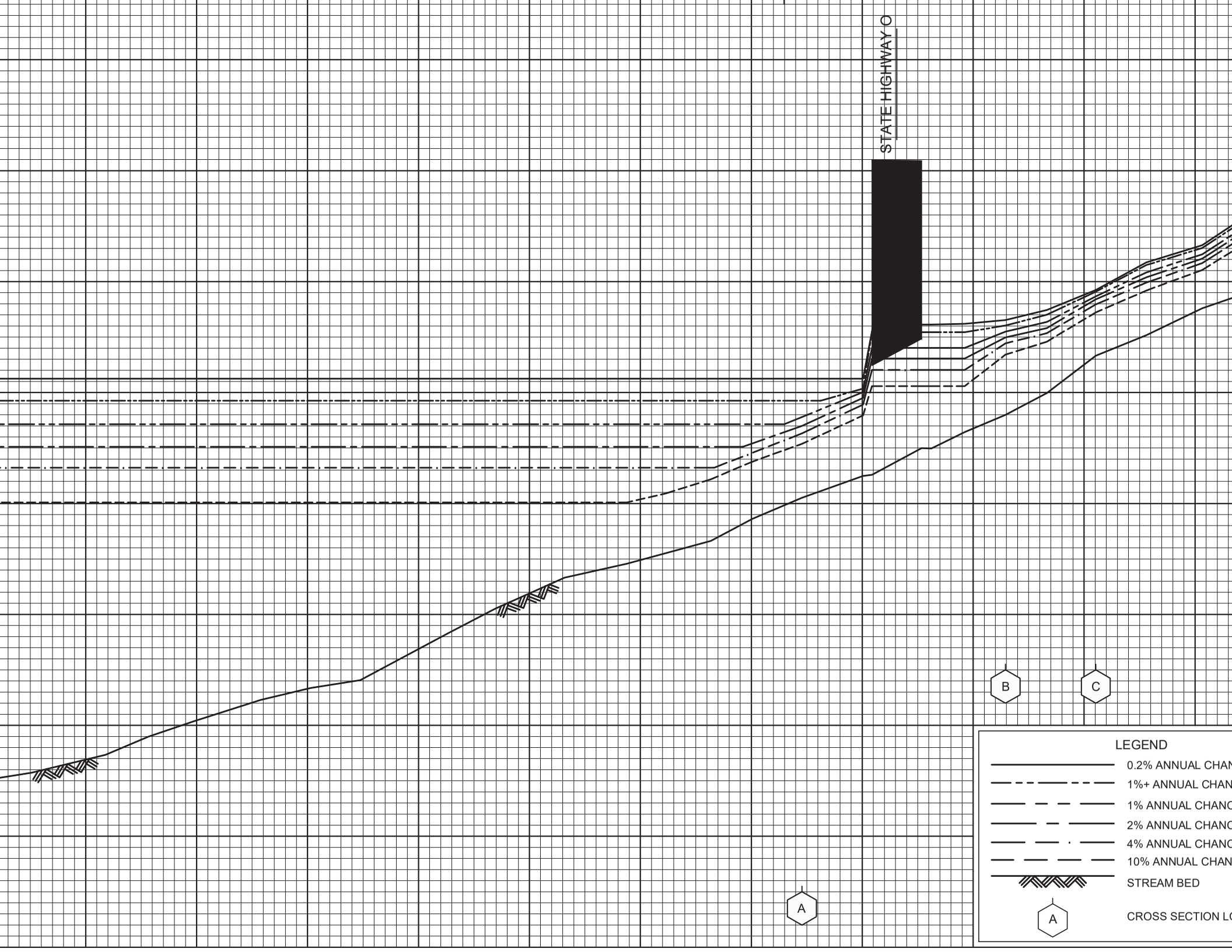
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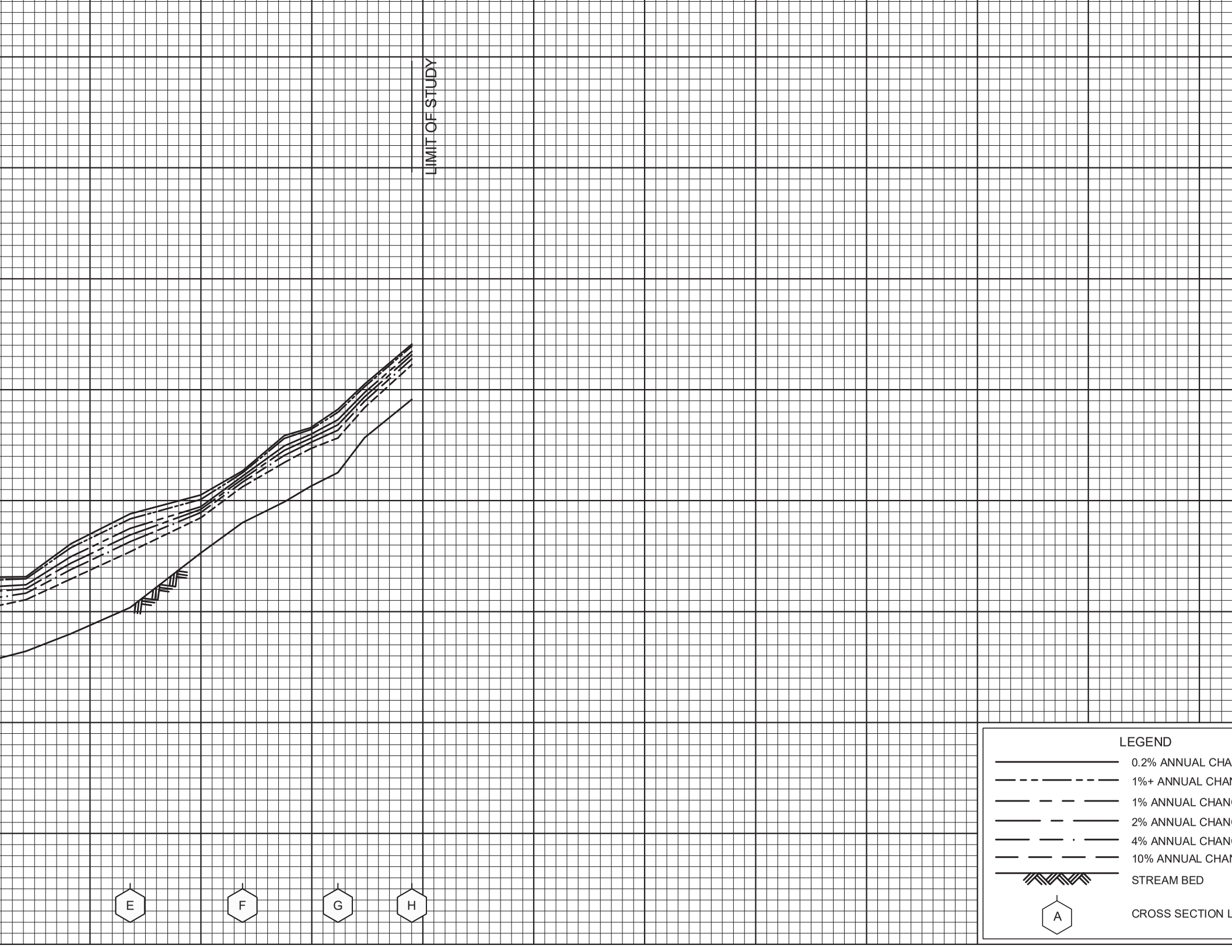
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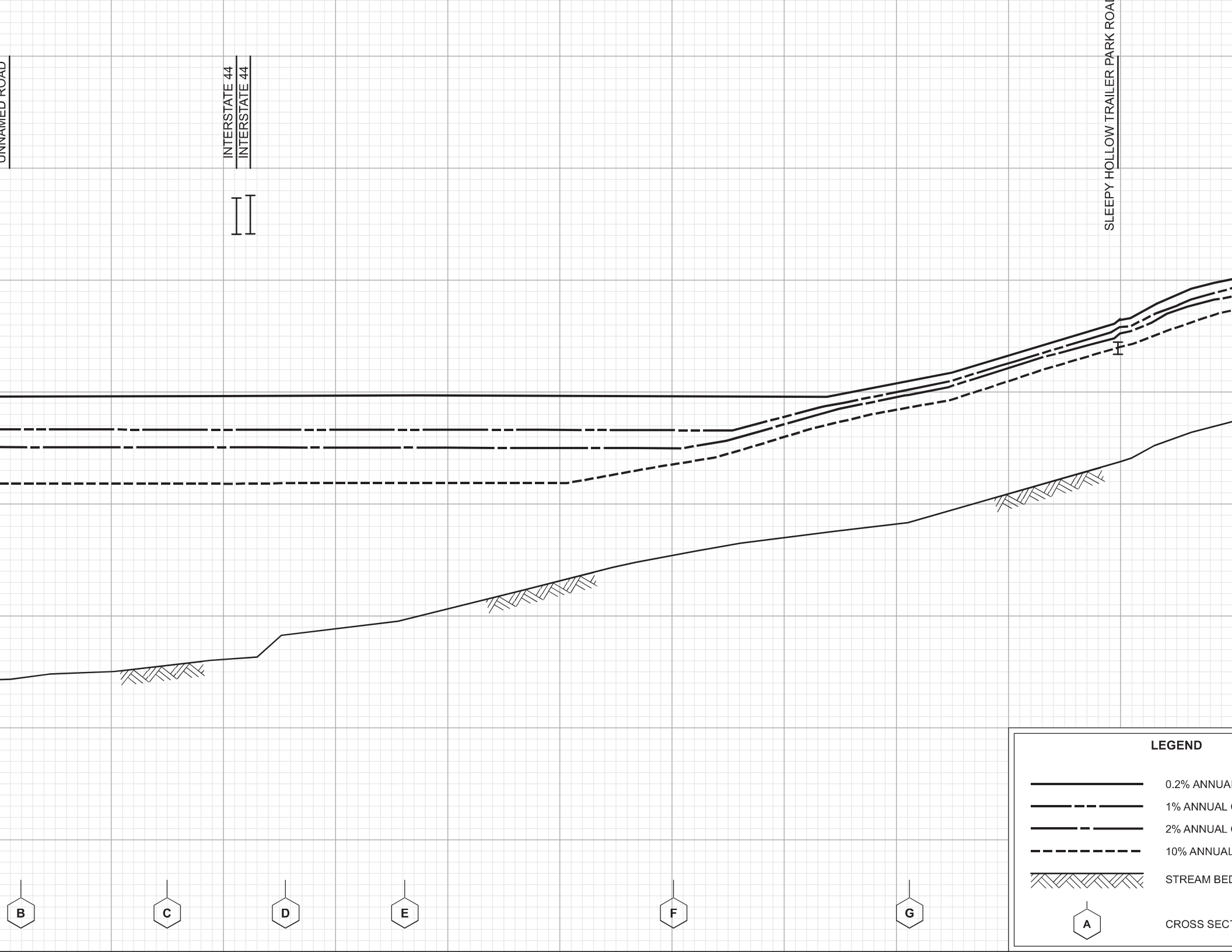
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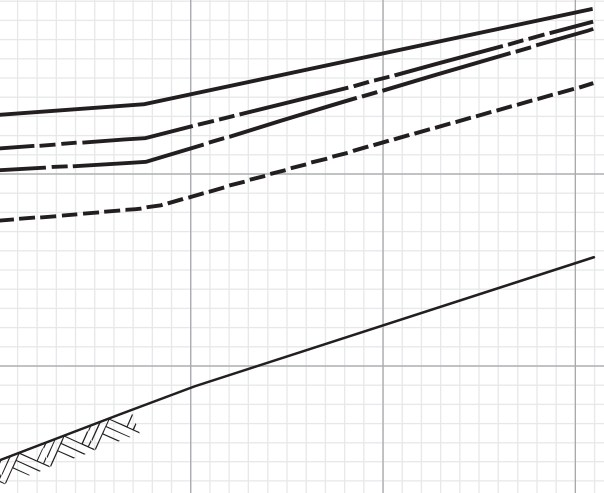

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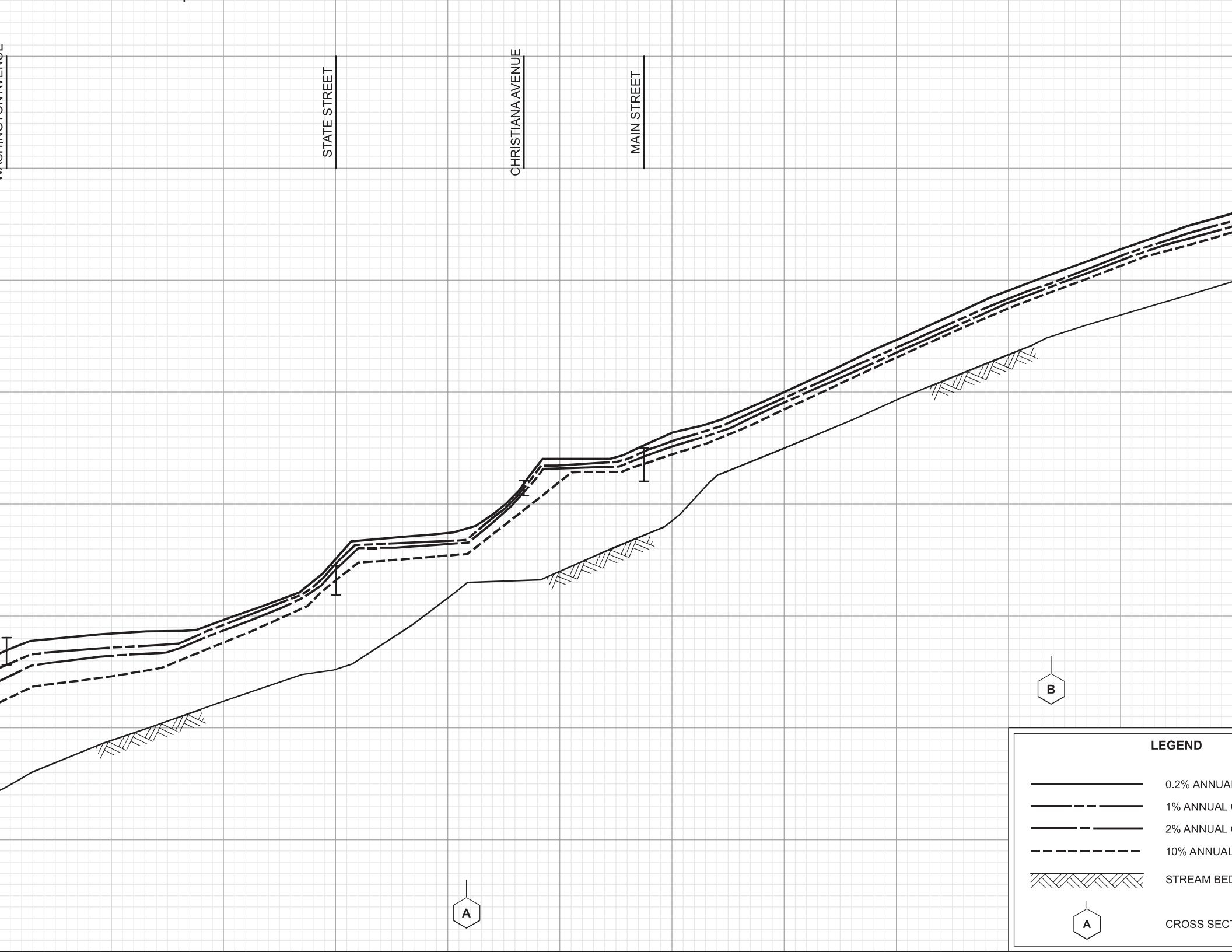
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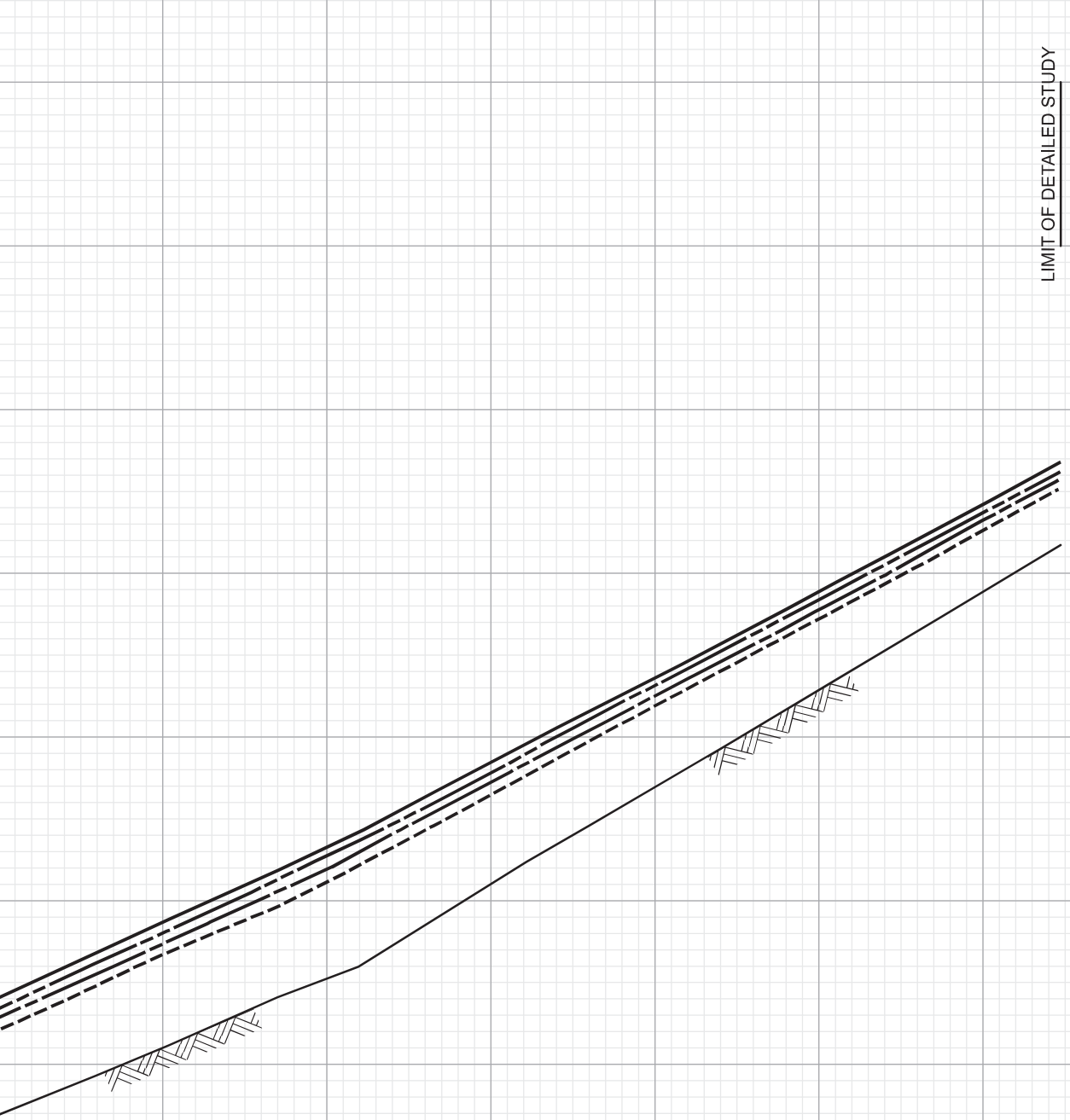

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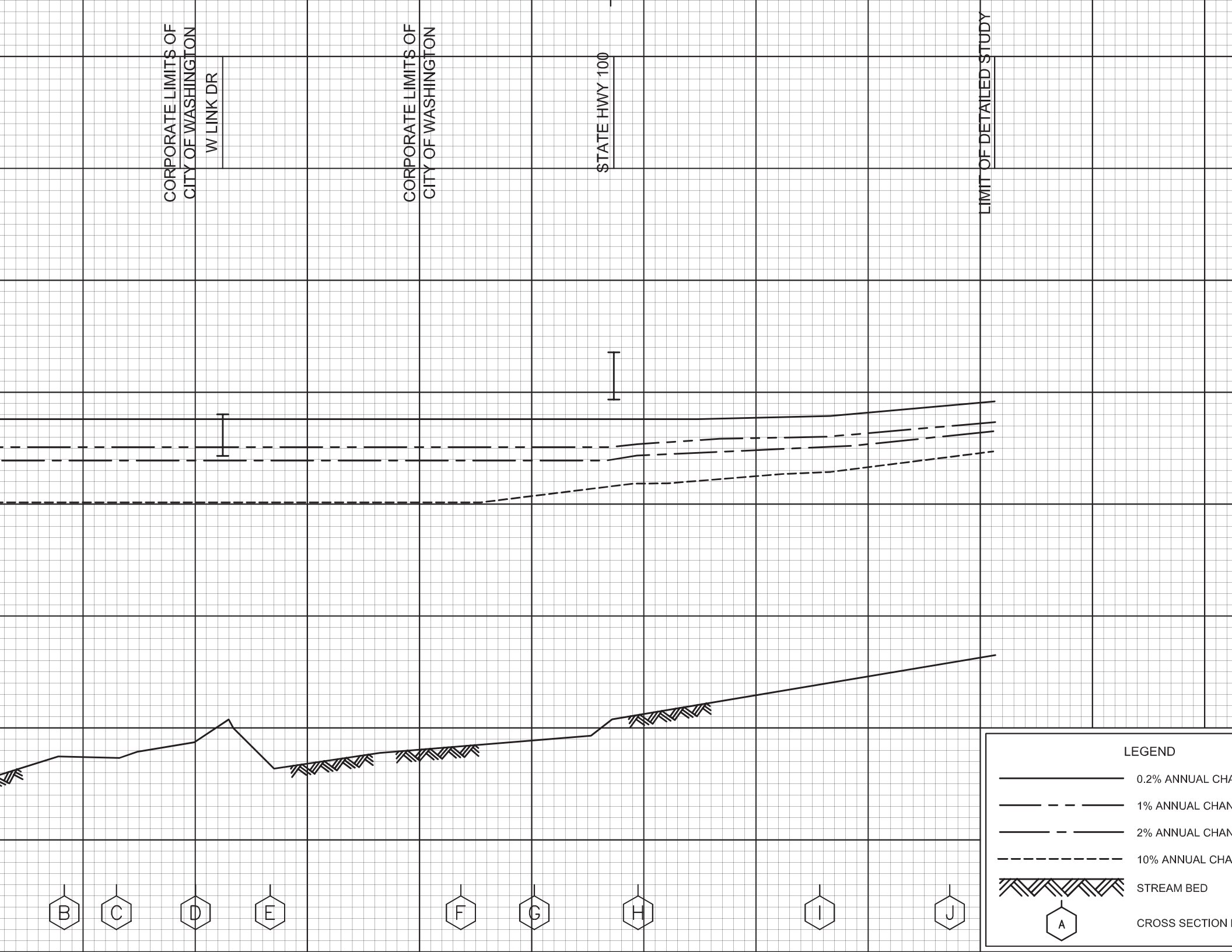
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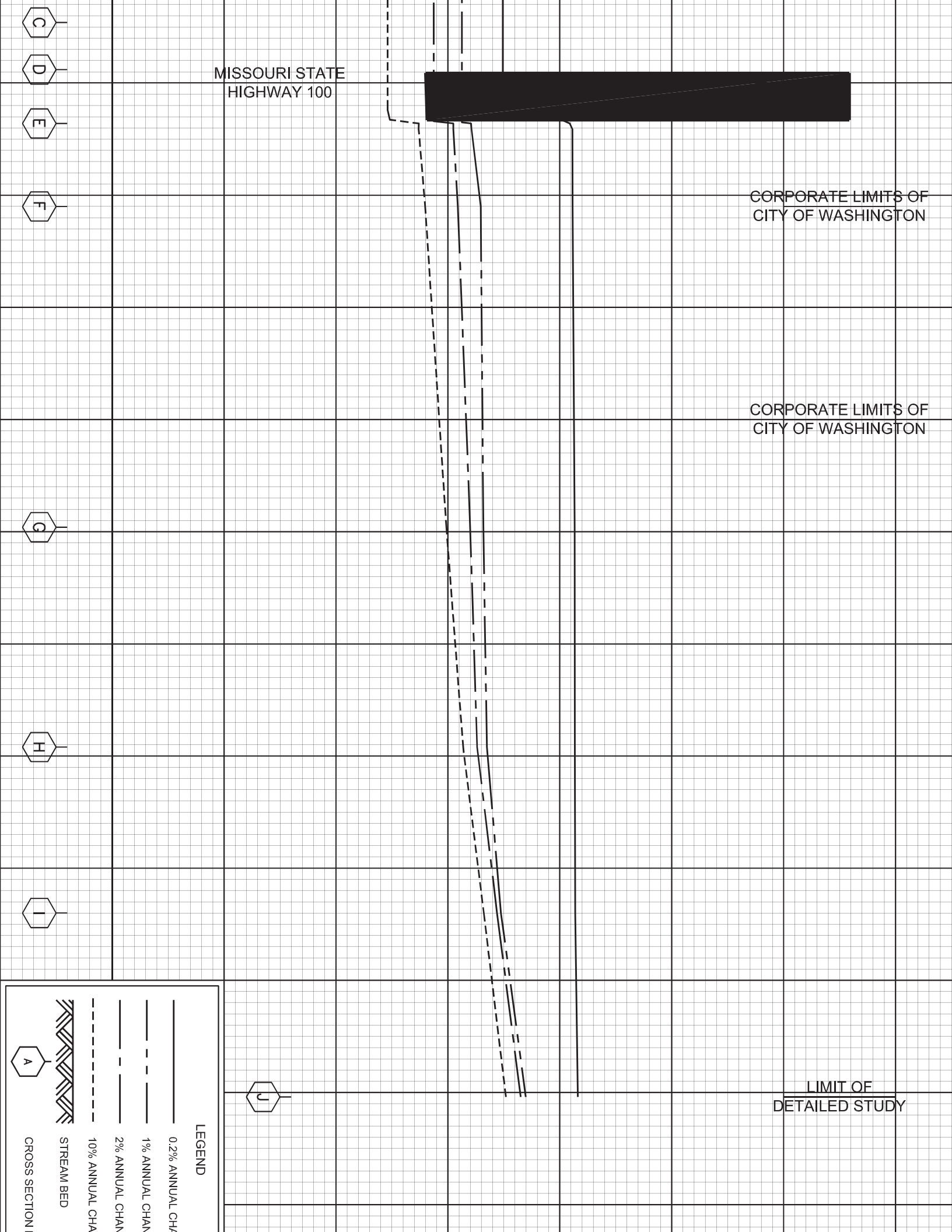
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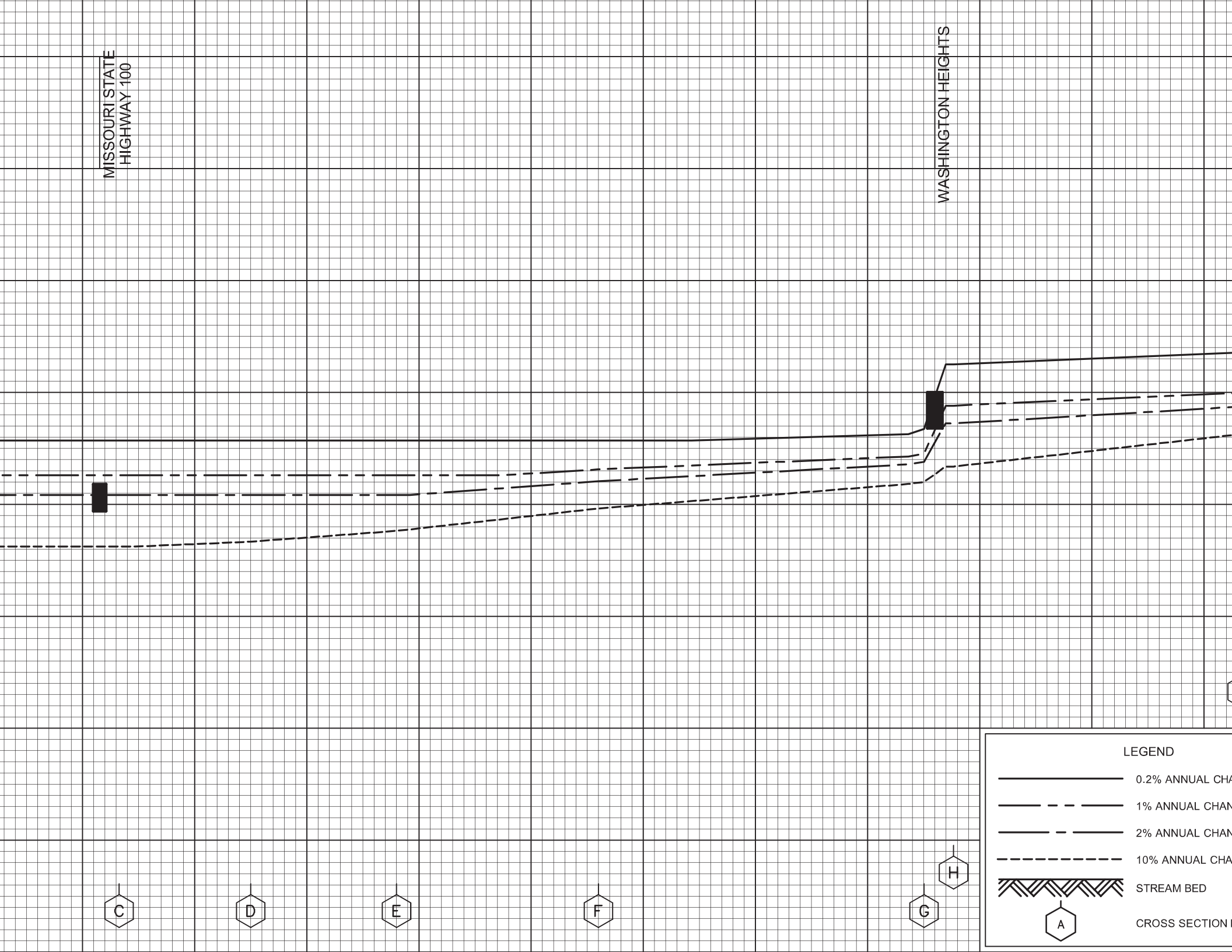
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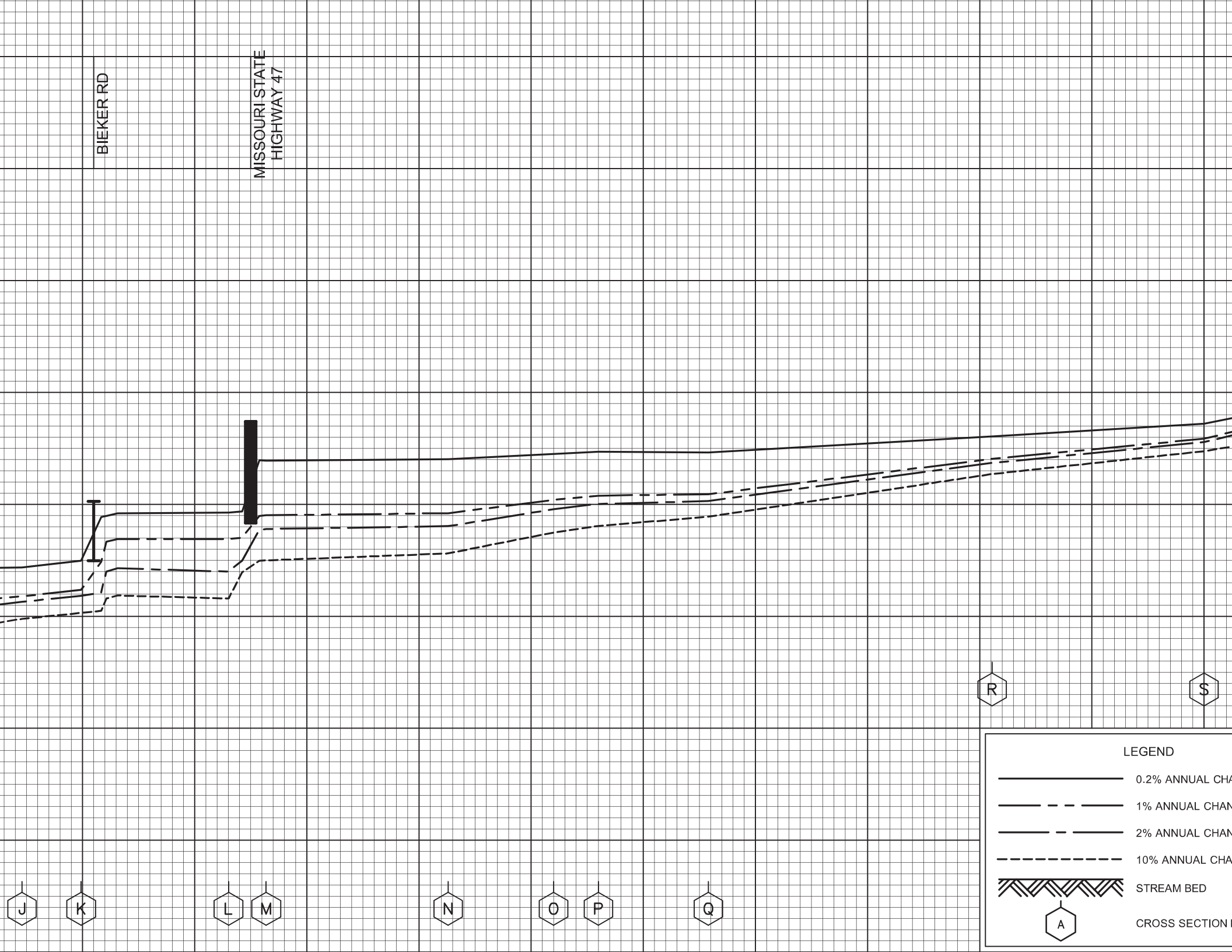
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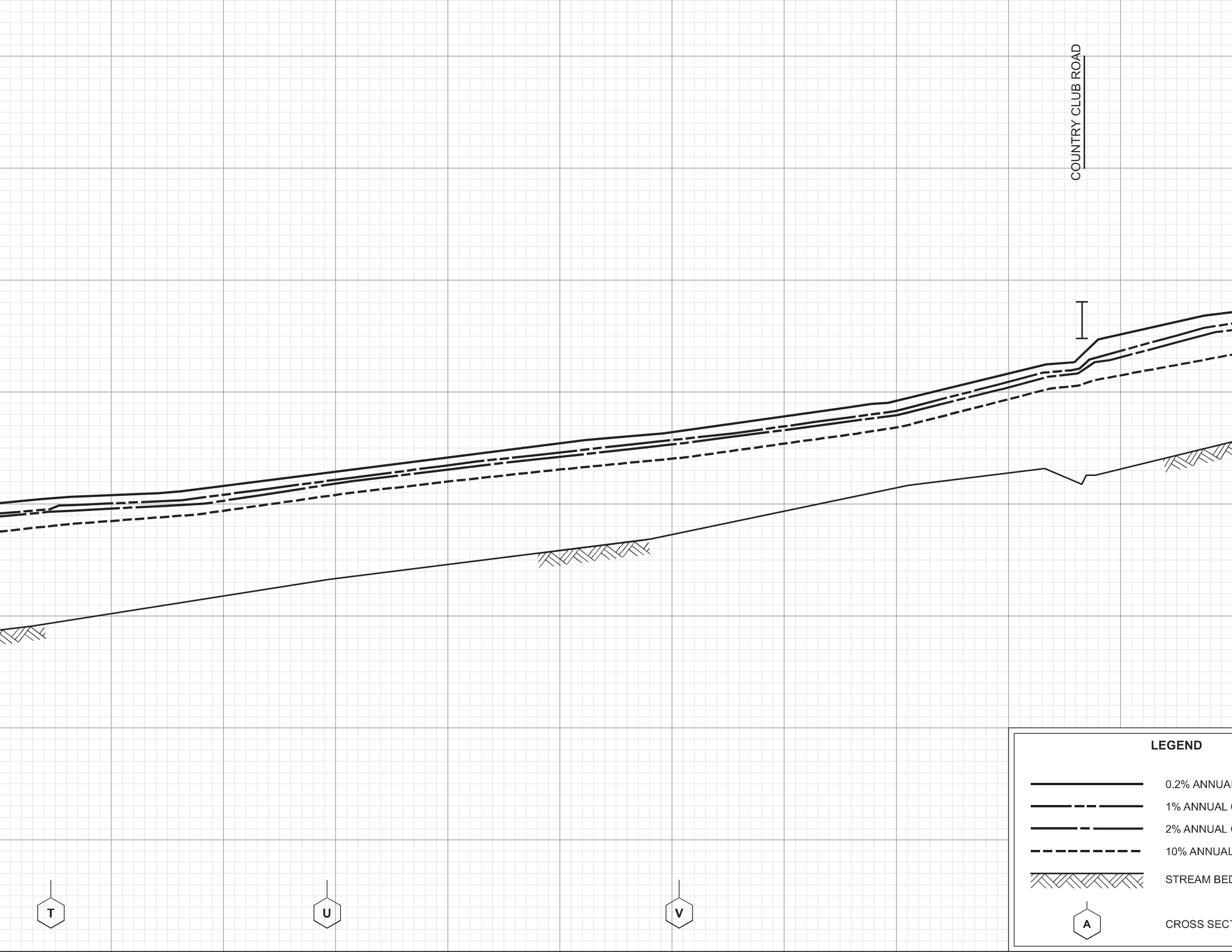
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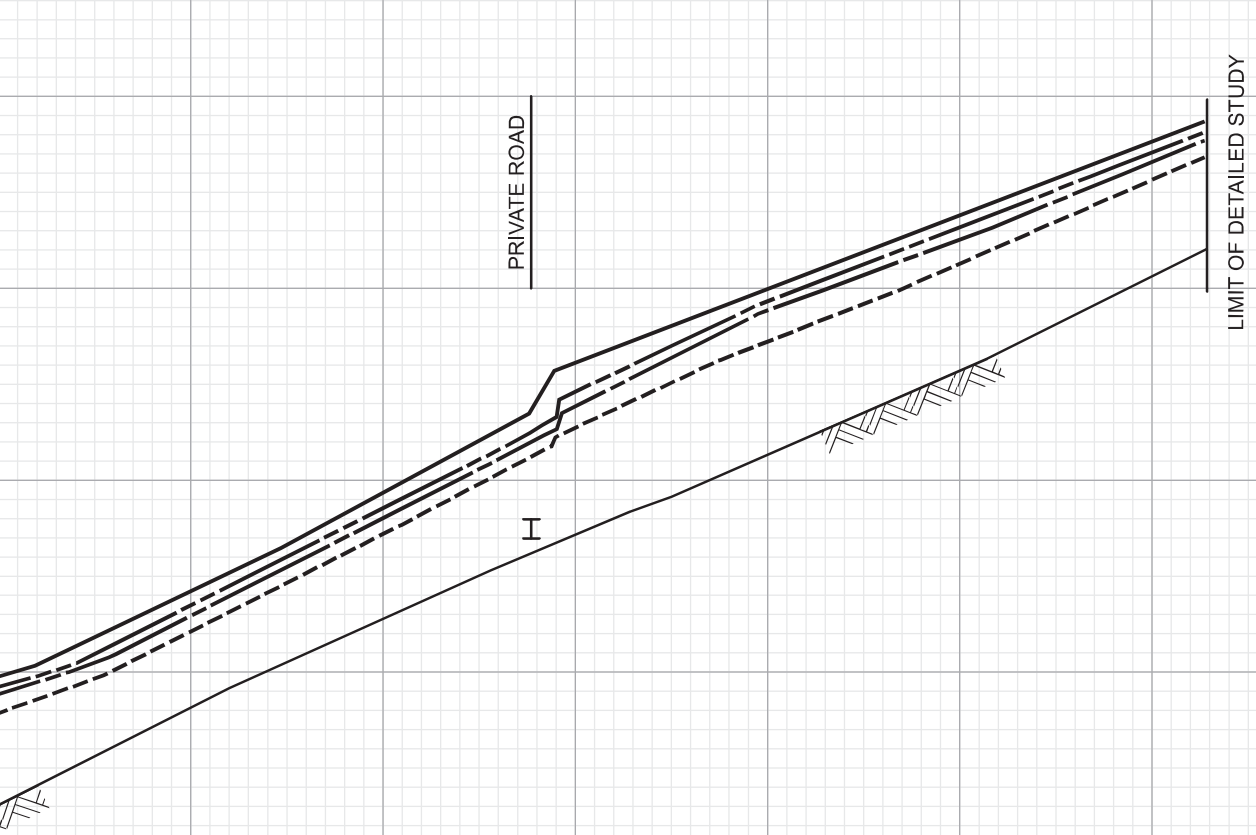

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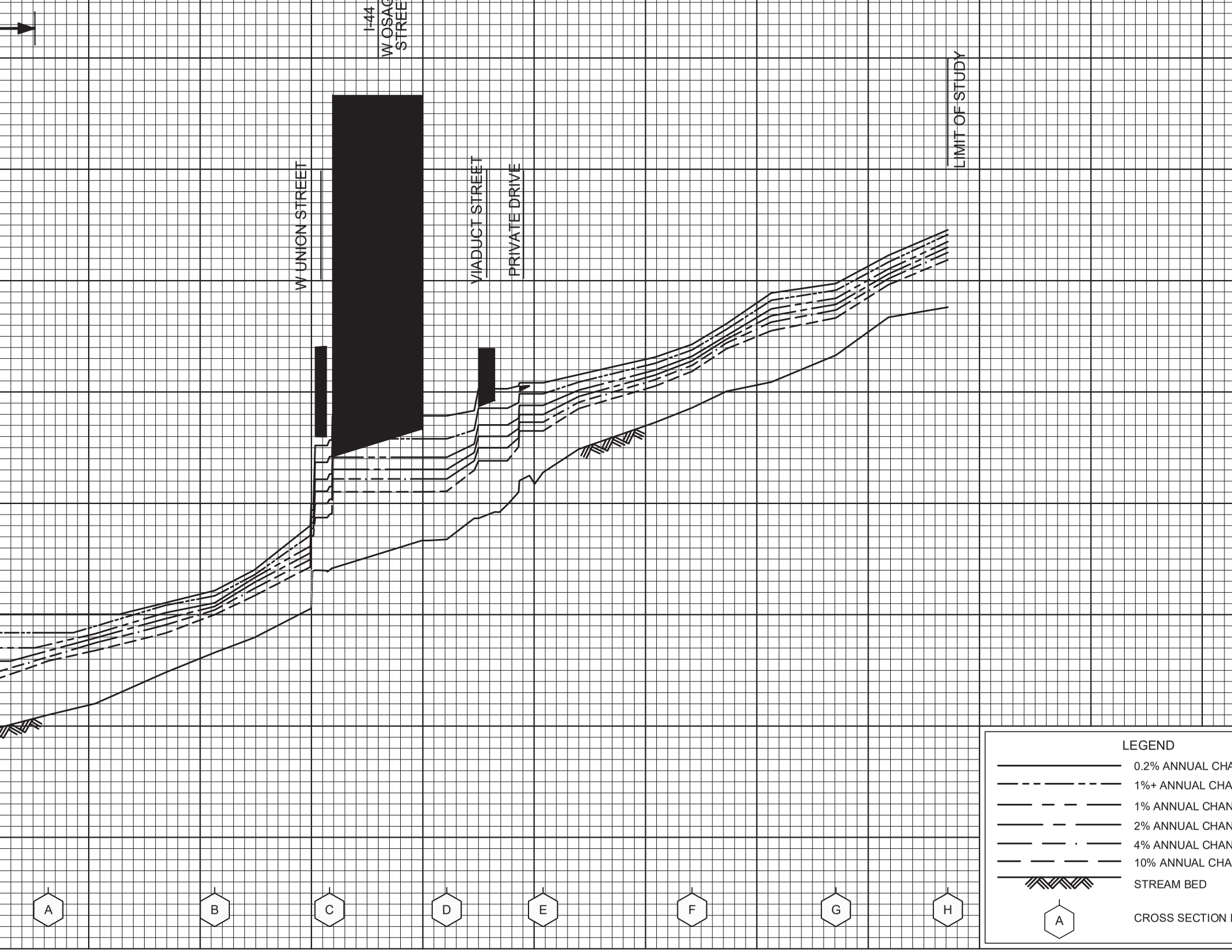
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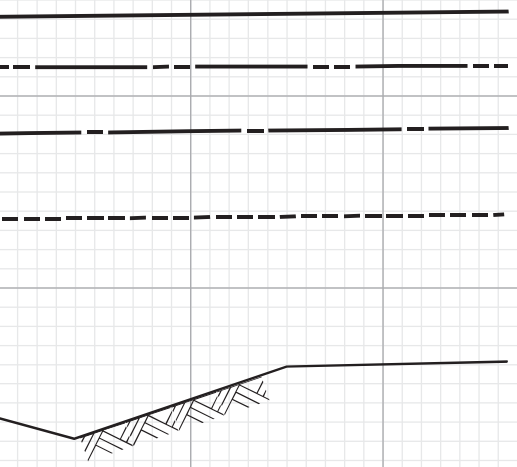

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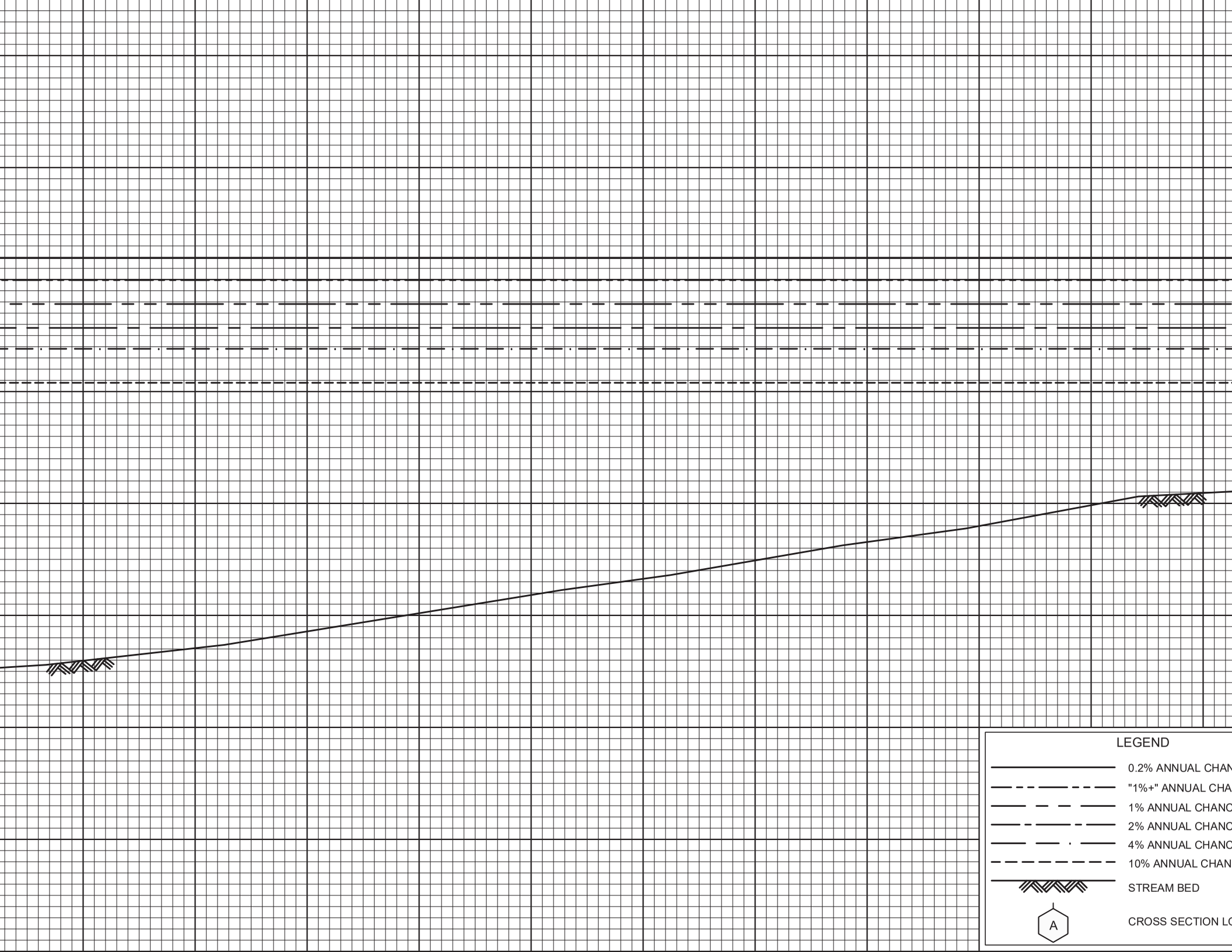
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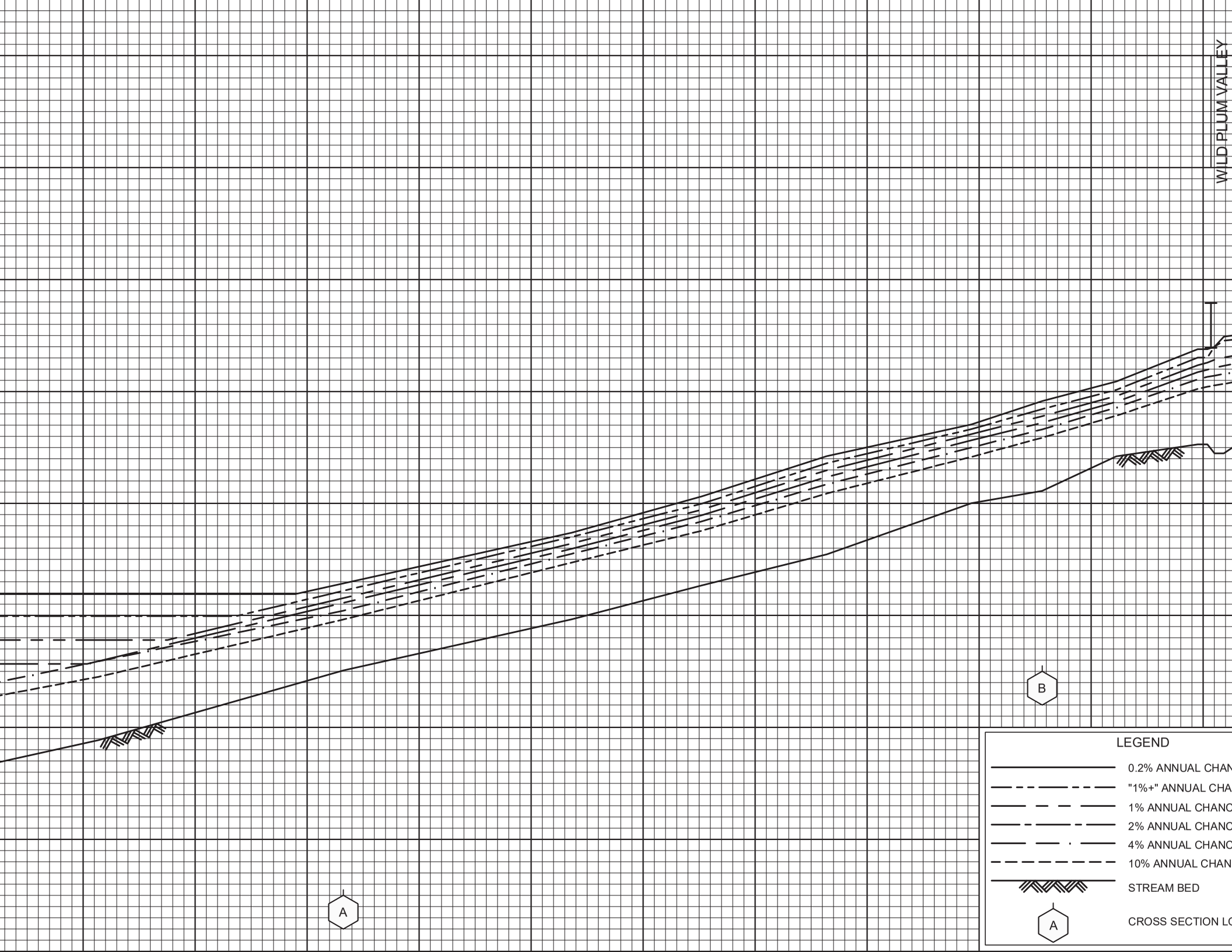
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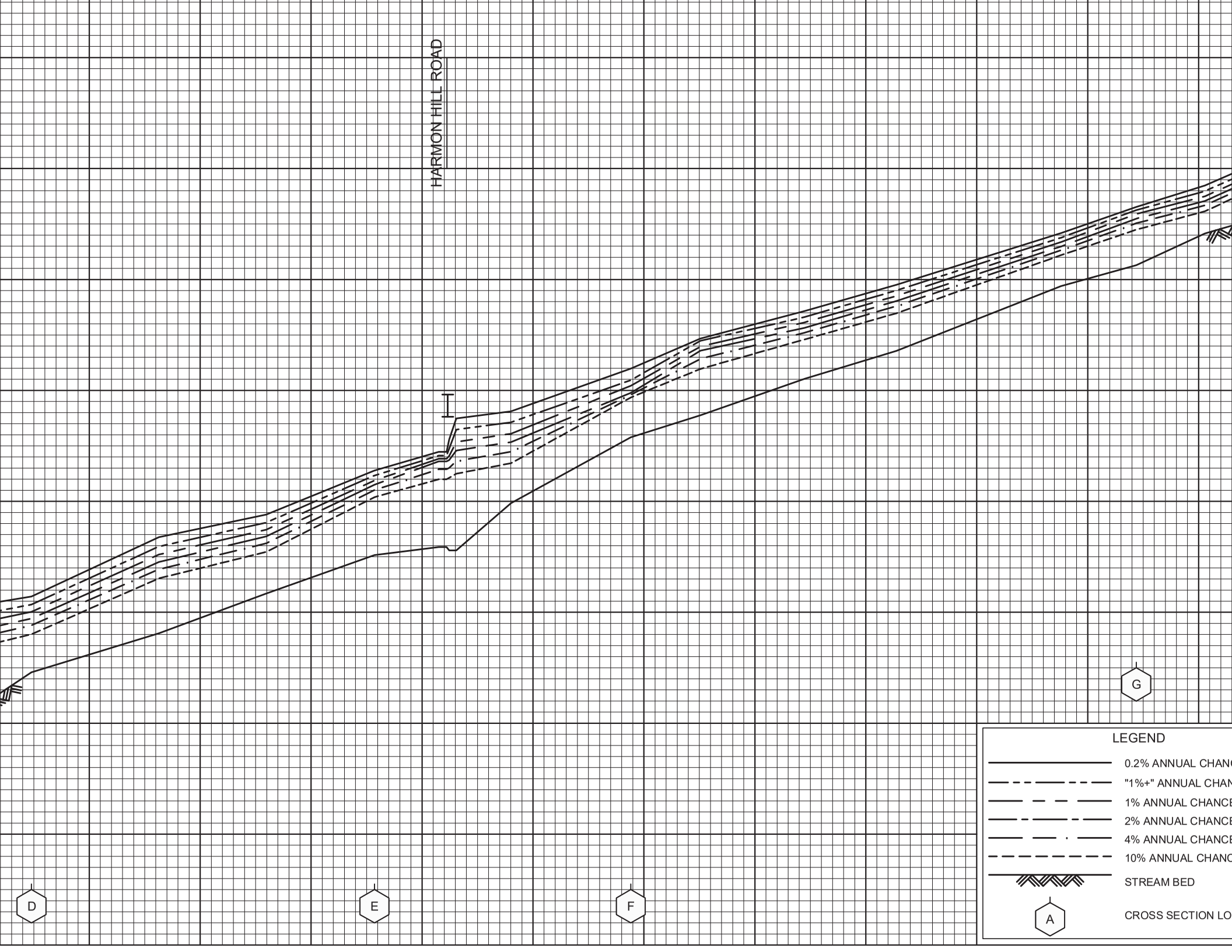
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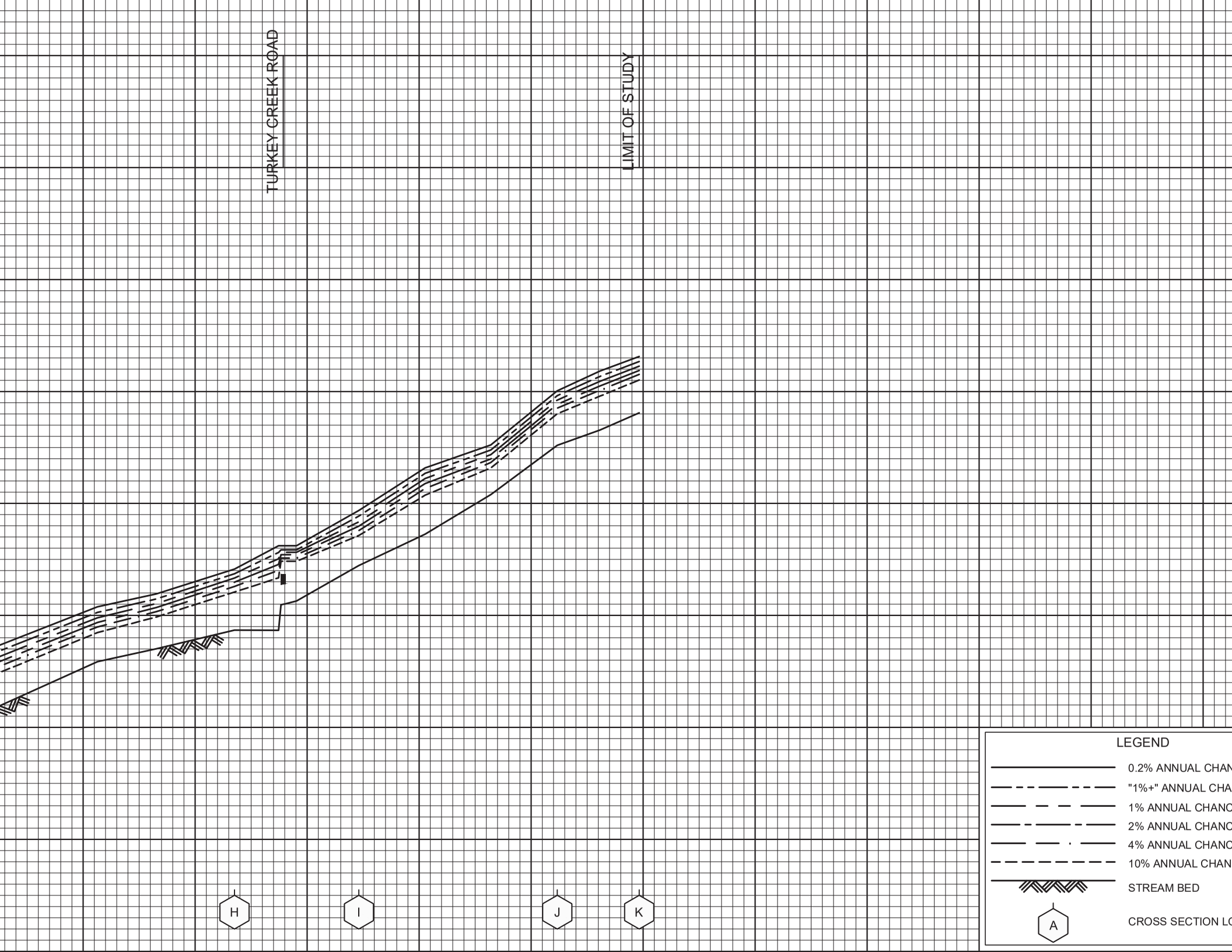
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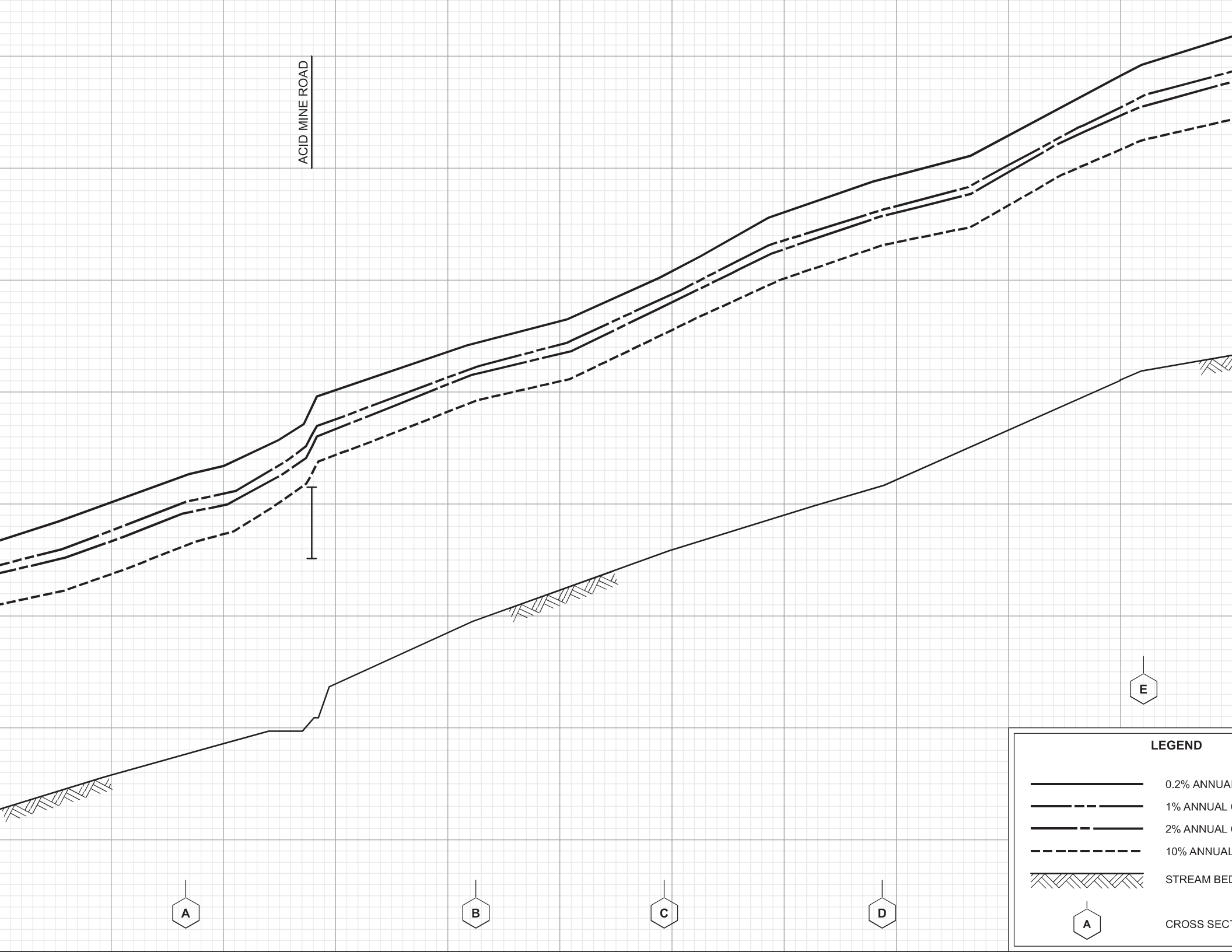
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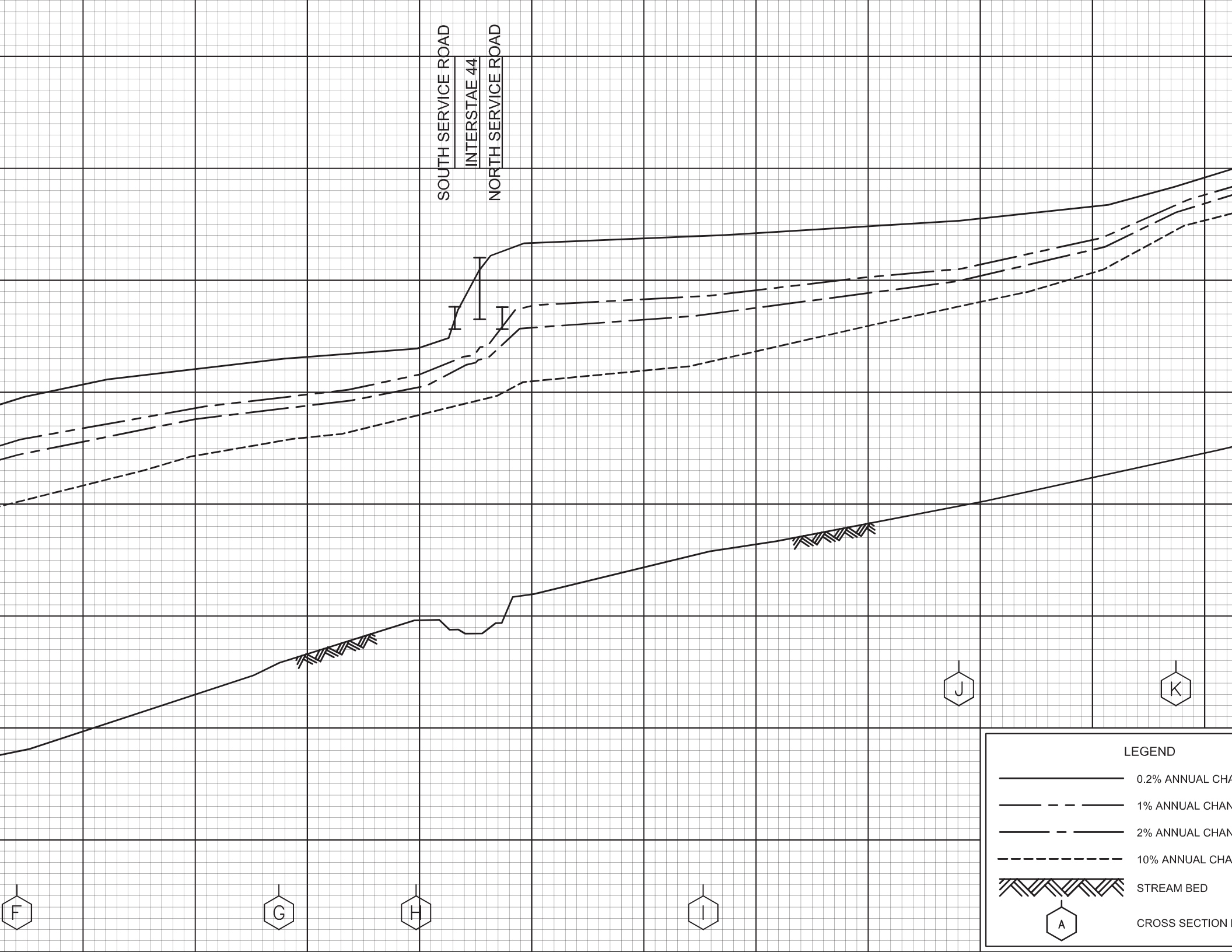
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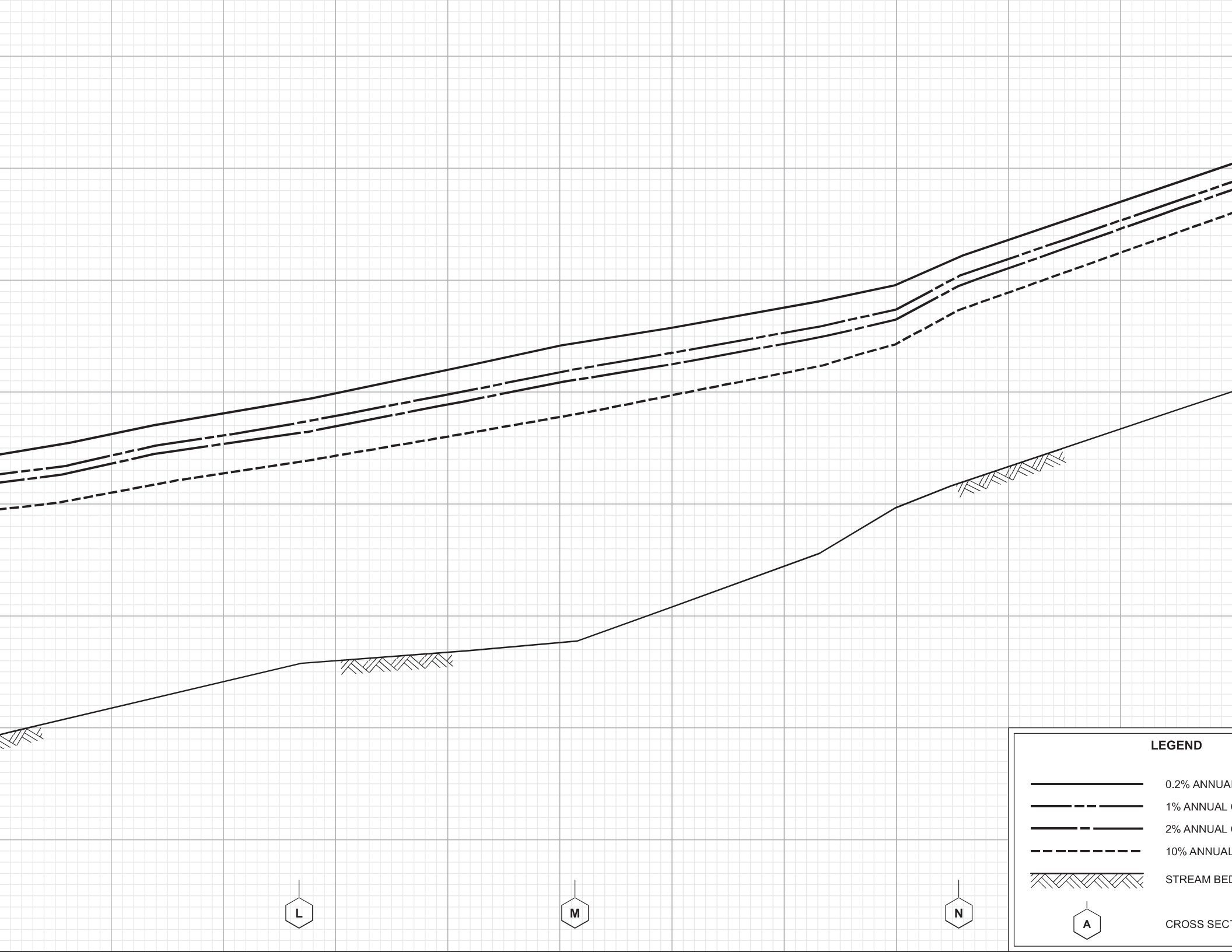
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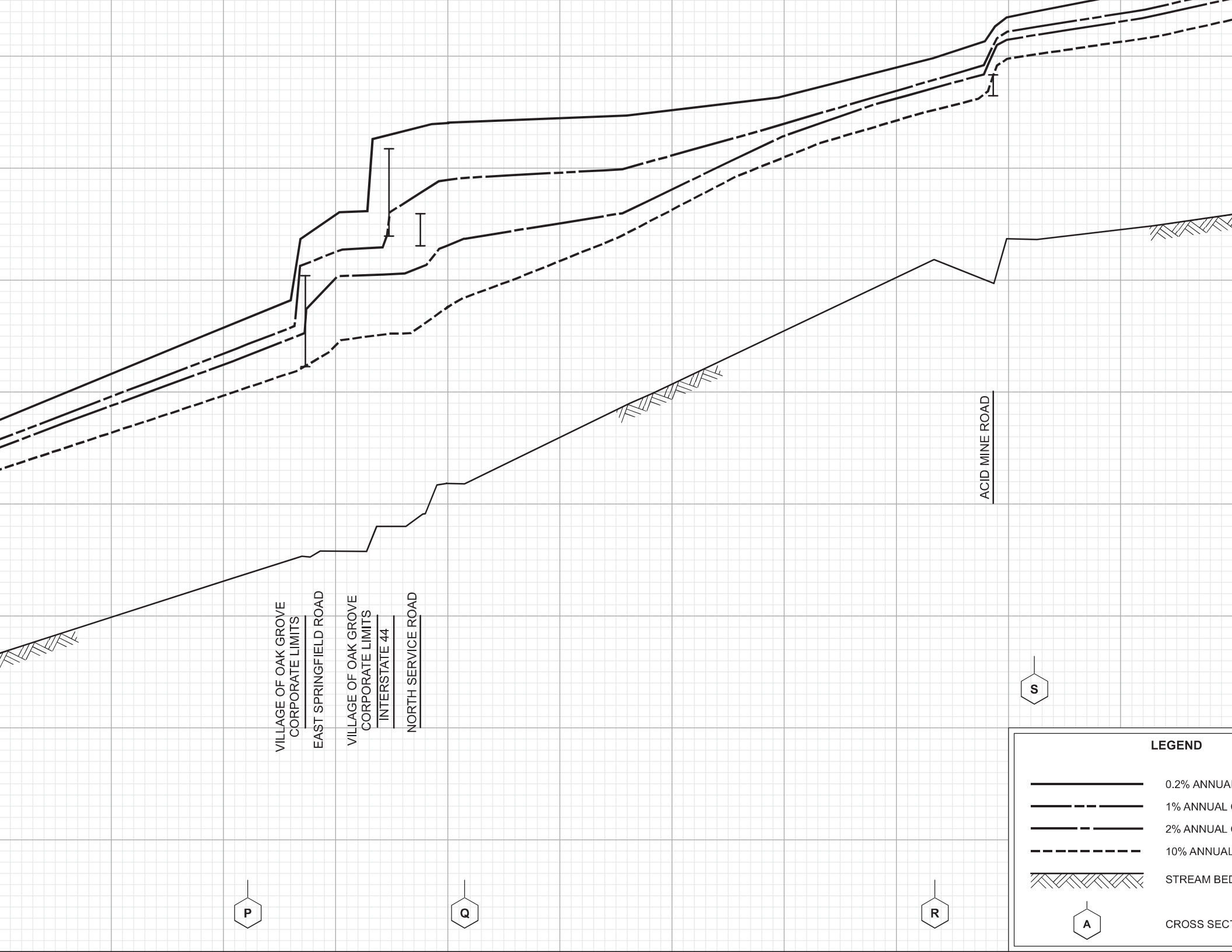
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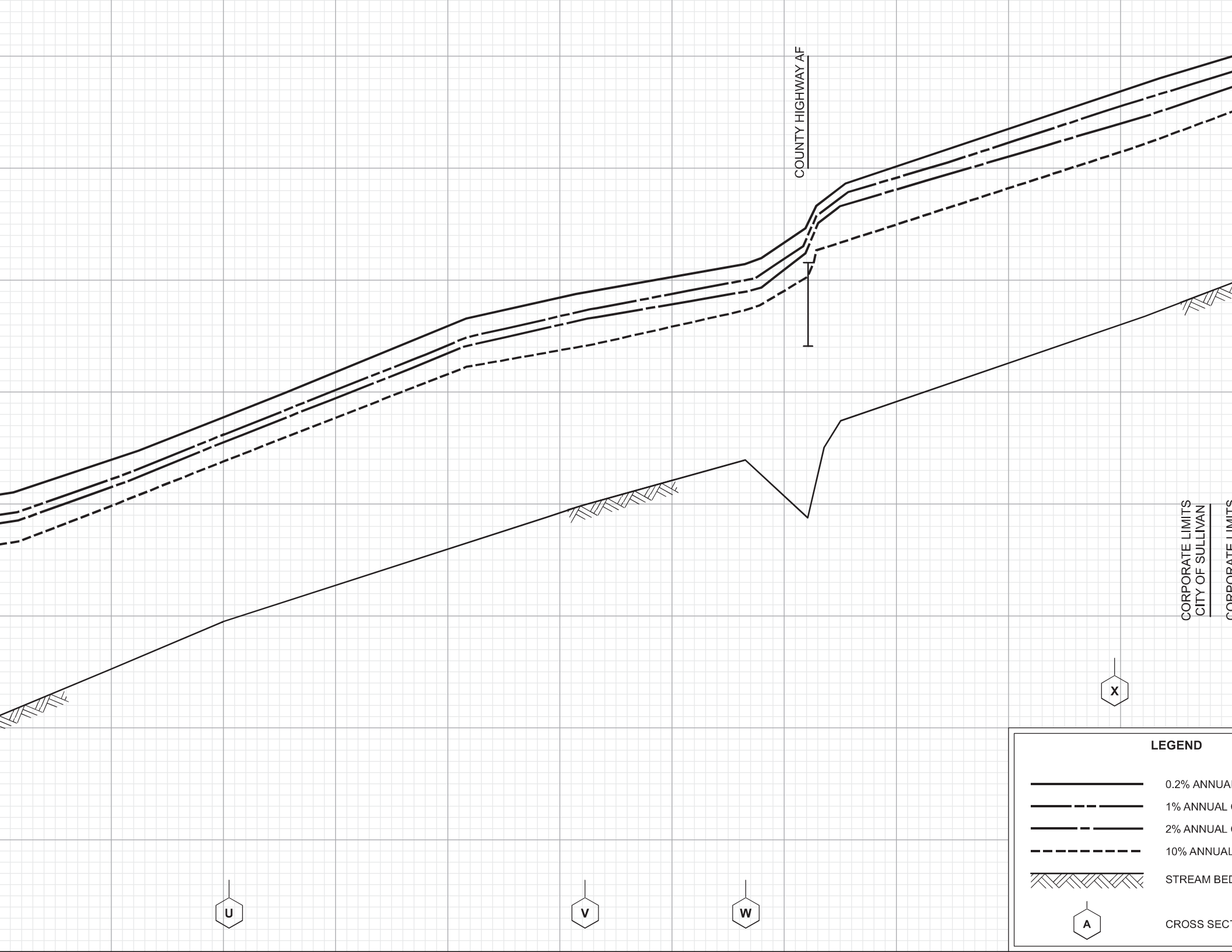
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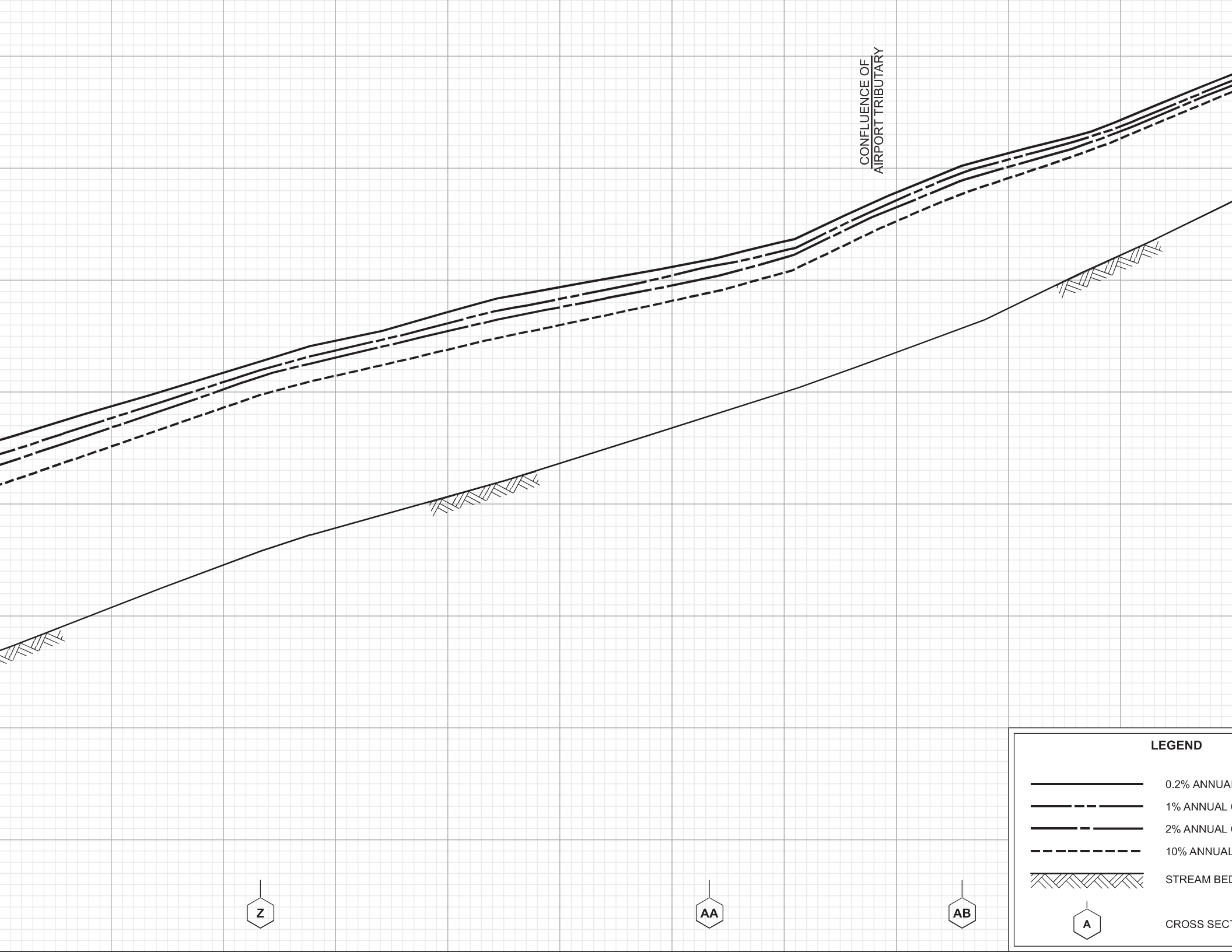
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APPENDIX D - EPA WATER QUALITY REPORT FOR THE BOURBEUSE RIVER

An official website of the United States government

MENU

Glossary Data About Educators Contact Us <https://www.epa.gov/waterdata/forms/contact-us-about-hows-my-waterway>

How's My Waterway?

Explore, Discover and Learn about your water.

Waterbody Report

Bourbeuse R.
Assessment Unit ID: MO_2034.00

Waterbody Condition: Impaired (Issues Identified)

Existing Plans for Restoration: No

303(d) Listed: Yes

Year Reported: 2022

303(d) List Status: EPA Final Action

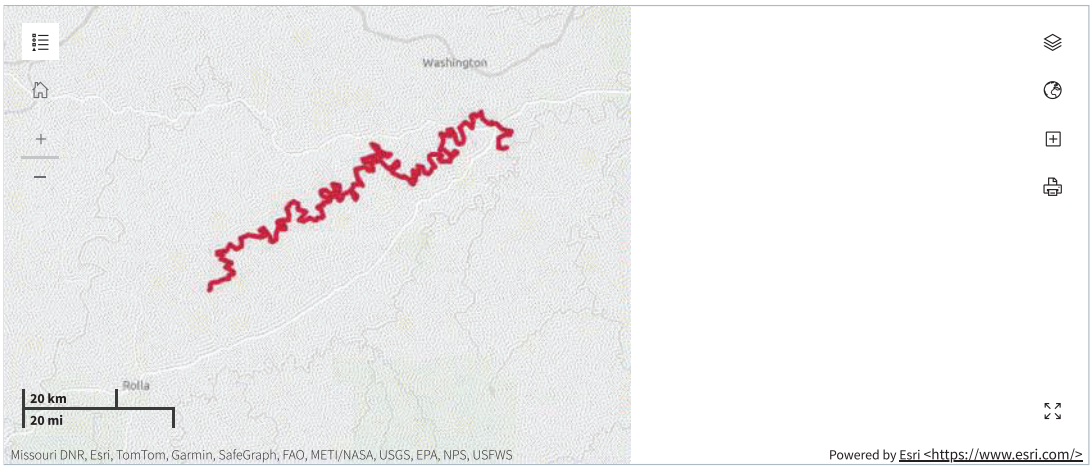
Other Years Reported:
2018 <https://epa.gov/waterbody-report/mdnr/mo_2034.00/2018>, 2020 <https://epa.gov/waterbody-report/mdnr/mo_2034.00/2020> (opens new browser tab)

Organization Name (ID): Missouri (MDNR)

What type of water is this?
River (136.7 Miles)

Where is this water located?
Legal US: 4,39N,6W; Legal DS: Mouth

Advanced Filtering (opens new browser tab) **Download Waterbody Data (2022)**



Assessment Information from 2022

State or Tribal Nation specific designated uses:

Information on Water Quality Standards <https://www.epa.gov/wqs-tech/state-specific-water-quality-standards-effective-under-clean-water-act-cwa> Expand All

Boating and Canoeing	Good
Cool Water Fishery	Good
Drinking Water Supply	Good
Human Health Protection (Fish Consumption and Secondary Contact Recreation)	Impaired
Irrigation	Good
Livestock and Wildlife Watering	Good
Protection of Warm Water Aquatic Life and Human Health--Fish Consumption	Good
Unclassified With Other Protection	Insufficient Info
Whole Body Contact Recreation	Impaired

Probable sources contributing to impairment from 2022:

Click a column heading to sort... **Clear Filters**

Source	Parameter	Confirmed
Filter...	Filter...	Filter...
Atmospheric Deposition - Toxics	Mercury in Fish Tissue	No
Non-Point Source	Escherichia Coli (E. coli)	No

Click a column heading to sort... **Clear Filters**

Assessment Documents

No documents are available

Plans to Restore Water Quality

What plans are in place to protect or restore water quality?

No plans specified for this waterbody.

Discover.

Accessibility Statement <https://www.epa.gov/accessibility/epa-accessibility-statement>

Budget & Performance <https://www.epa.gov/planandbudget>

Contracting <https://www.epa.gov/contracts>

EPA www Web Snapshot <https://www.epa.gov/home/wwwepagov-snapshots>

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No FEAR Act Data
<https://www.epa.gov/ocr/whistleblower-protections-epa-and-how-they-relate-non-disclosure-agreements-signed-epa>

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White House
<https://www.whitehouse.gov/>

Frequent Questions
<https://www.epa.gov/aboutepa/frequent-questions-specific-epa-programstopics>

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APPENDIX E - 1982 USGS FLOODING REPORT

FLOODS OF DECEMBER 1982 AND JANUARY 1983 IN CENTRAL AND SOUTHERN MISSISSIPPI RIVER BASIN

By Vernon B. Sauer and Janice M. Fulford

U.S. GEOLOGICAL SURVEY

Open-File Report 83-213

Atlanta, Georgia

1983

UNITED STATES DEPARTMENT OF THE INTERIOR

JAMES G. WATT, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
see page 5.

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Peak stages and discharges	3
Flood hydrographs	5
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PLATE

Plate 1.	Map of study area showing location of flood data sites for the floods of December 1982 and January 1983	In pocket

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DEFINITION OF TERMS

Terms related to streamflow characteristics described in this report are defined below:

Cubic feet per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second.

Discharge is the volume of water that passes a given point within a given period of time.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream upstream from the specified location.

Gage height is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage heights and/or discharges are determined.

Recurrence interval, or frequency, of a flood is the average number of years between exceedances of a particular flood event. It is emphasized that this is an average interval, and does not imply that there cannot be another flood of that magnitude within a shorter time. The reciprocal of recurrence interval is the probability of having a flood of that magnitude, or greater, in any year. Recurrence intervals were determined from individual station records according to procedures described by the Water Resources Council (1977).

FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM (SI) UNITS

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI):

Multiply inch-pound	By	To obtain SI units
	Length	
inches (in)	25.40	millimeters (mm)
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
	Area	
square miles (mi^2)	2.590	square kilometers (km^2)
	Flow	
cubic feet per second (ft^3/s)	0.02832	cubic meters per second (m^3/s)

FLOODS OF DECEMBER 1982 AND JANUARY 1983 IN CENTRAL AND SOUTHERN MISSISSIPPI RIVER BASIN

By Vernon B. Sauer and Janice M. Fulford

ABSTRACT

Widespread flooding occurred in December 1982 and early January 1983 through a large part of the central and southern Mississippi River basin. The States affected the most by these floods were Illinois, Missouri, Arkansas, Louisiana, Mississippi, and Tennessee. The flooding was the result of two major storms; one in early December and the other in late December. The early December storm resulted in outstanding floods mainly in Illinois, Missouri, and Arkansas. The late December storm produced major flooding mainly in southeastern Arkansas, Louisiana, and Mississippi. Western Tennessee was on the fringes of both storms. Throughout the affected area for both storms, many streams exceeded previously known flood heights and discharges, and in many cases the recurrence interval of peak discharges exceeded 100 years.

INTRODUCTION

Purpose and Scope

The floods of December 1982 and early January 1983 affected an area, approximately 250 miles wide and 1,000 miles long, through the central and southern part of the United States extending from the Great Lakes to the Gulf of Mexico. This area was roughly centered over the central and southern part of the Mississippi River basin. States that were hardest hit by the flooding included Illinois, Missouri, Arkansas, Louisiana, Mississippi, and Tennessee. Figure 1 shows the area affected by these floods.

The purpose of this report is to present peak stage and discharge data for gaging stations and miscellaneous sites in the affected area. Rainfall data for many rain gages are included. All data are provisional and subject to review and revision.

Acknowledgments

Precipitation data were provided by the Department of Commerce, National Weather Service. Streamflow data, peak stages, discharges, and recurrence intervals were compiled by U.S. Geological Survey district offices in Illinois, Missouri, Arkansas, Louisiana, Mississippi, and Tennessee.

Figure 1.--Area affected by the floods of December 1982 and January 1983.

STORM CHARACTERISTICS

The two main storms, December 2-7 and December 24-29, 1982, were both related to deep low pressure troughs aloft over Texas and the Southwest. The resulting flow pattern fed warm, wet air over the lower Mississippi River basin and created atmospheric disturbances over the Gulf of Mexico and southeast Texas that encouraged development of the storm systems. Subsequent slow movement of these systems toward the northeast produced tornadoes, severe thunderstorms, and intense rainfall for extended time periods. Additional moderate but spotty rains in December served to maintain a high soil moisture content, thereby contributing to high runoff and extreme floods.

Illinois, Missouri, and Arkansas were affected severely by the December 2-7 storm, whereas the December 24-29 storm had the greatest affect in Louisiana and Mississippi. Western Tennessee was not severely affected by either storm, but had moderate to heavy rainfall from both events which resulted in moderate flooding on some streams.

Provisional rainfall data for many National Weather Service rain gages are given in table 1. However, for some states, rainfall data were available for only a few sites at the time this report was prepared. The accumulated rainfall totals shown in table 1 are for the periods December 2-7 and December 24-29, except as noted.

FLOODS

Peak Stages and Discharges

Peak stages and discharges were determined at many gaging stations and miscellaneous sites throughout the six-state area affected by the flooding. Table 2 lists provisional data for 350 of these sites. Note that table 2 lists only 349 map numbers; however, site 74 is followed by 74a, thus the total of 350 sites. Included in table 2 is a map number corresponding to the numbers on plate 1 which shows the location of each site. General information shown in table 2 includes the downstream order station number, the station name and location, drainage area size, and the period of record for which peak stage and discharge data are available. Peak stage and discharge for the maximum flood previously known is given. The maximum stage and discharge for the early December and late December-early January floods are shown where both are significant. At many sites only one peak is significant and consequently it is the only one listed.

The frequency, or recurrence interval, of the floods, as shown in table 2, is the average number of years between floods equal to or greater than the December or January events. It is emphasized that this is an average number of years, and it does not imply that it will be that many years before another event of that magnitude occurs. In fact, similar or greater events can occur within the same year, as indicated by some stations where two outstanding peaks occurred in December. The

reciprocal of the frequency is the probability of the event occurring in any one year. For instance, a 100-year flood has a 0.01 probability or 1 percent chance, of occurring in any year. All frequencies, or recurrence intervals, were determined from station data, unless otherwise noted. Log Pearson III procedures, as described by the Water Resources Council (1977), were used to compute individual station frequency curves.

Many of the outstanding peaks during December were on the large streams because of the generally widespread and long duration of the rainfall. Previous peaks of record were exceeded and recurrence intervals were greater than 100 years at many sites. A few of the outstanding flood peaks are described in the following paragraphs; however, there are too many to cite all of them. The reader can refer to table 2 for a comparison of flood peaks in any particular area of interest.

Illinois was affected most severely by the early December storm, with several streams exceeding previously known maximum floods. The Illinois River at Marseilles, for instance, exceeded the previous maximum by 1.5 feet for the period dating back to 1919. The December 5 flood peak of 94,100 ft^3/s has a frequency estimated to be 90 years.

Missouri, like Illinois, was affected most by the early December storm and also had many new peaks of record established as a result of this storm. As an example, the Gasconade River exceeded previous maximum flood by 2.3 and 4.1 feet, respectively, at Jerome (since 1897) and Rich Fountain (since 1922). For both stations the frequency of the peak discharges was greater than 100 years.

Arkansas had severe flooding caused by the early December storm, and the southeastern part of the State received additional flooding from the late December storm. Peaks of record were exceeded at many locations in Arkansas. An outstanding example occurred near Poughkeepsie on the Strawberry River where the maximum peak since 1936 was exceeded by 6.6 feet and the December 3 peak discharge of 158,000 ft^3/s is more than three times the previous maximum. This flood was greater than a 100-year event.

Large flood peaks in Mississippi were mostly in the western part of the State. Only a few really outstanding peaks occurred because Mississippi was on the eastern fringe of the storms. The Yalobusha River at Calhoun City exceeded the previous maximum since 1950 by 0.5 foot. The December 26 peak discharge of 70,600 ft^3/s had a frequency greater than 100 years.

Louisiana was affected by both the early and late December storms, but the late December storm was the most severe. The Little River near Rochelle exceeded the previous maximum since 1958 by 5.6 feet. The December 29 peak discharge of 108,000 ft^3/s was nearly twice as large as the previous maximum and had a frequency in excess of 100 years.

The main stem of the Mississippi River, although not exceeding any previous maximum floods, had fairly high peaks from Illinois downstream to its mouth. The peak discharges in the lower reaches exceeded 1 million ft^3/s, with a peak on January 11 of almost 1.2 million ft^3/s at Tarbert Landing, Miss. The Atchafalaya River, a distributary of the Mississippi River, had a peak discharge on January 12 of 513,000 ft^3/s at Simmesport, La.

Flood Hydrographs

Daily discharge hydrographs for the month of December 1982 and part of January 1983 are shown in figure 2. These hydrographs are for selected gaging stations to show the relative magnitude of flooding for the early and late December floods in various parts of the study area. The hydrographs illustrate again that the northern part of the study area had the most severe flooding in early December and the southern part had the most severe flooding in late December.

Additional Information

Additional information on floods during December 1982 and January 1983 and streamflow data in general can be obtained by writing to the District Chief, U.S. Geological Survey, Water Resources Division, at the following addresses:

Arkansas

Federal Office Building
Room 2301
700 West Capitol Avenue
Little Rock, Arkansas 72201

Illinois

Champaign County Bank Plaza
102 East Main Street, 4th Floor
Urbana, Illinois 61801

Louisiana

P.O. Box 66492
Baton Rouge, Louisiana 70896

Mississippi

Federal Building, Suite 710
100 West Capitol Street
Jackson, Mississippi 39269

Missouri

1400 Independence Road
Main Stop 200
Rolla, Missouri 65401

Tennessee

A-413 Federal Building
U.S. Courthouse
Nashville, Tennessee 37203

SELECTED REFERENCES

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Colson, B. E., and Hudson, J. W., 1976, Flood frequency of Mississippi streams: Mississippi State Highway Department, 34 p.

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Hauth, L. D., 1974, A technique for estimating the magnitude and frequency of Missouri floods: U.S. Geological Survey Open-File Report.

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Patterson, J. L., 1971, Floods in Arkansas, magnitude and frequency characteristics through 1968: Arkansas Geological Commission, Water Resources Summary No. 11, 21 p.

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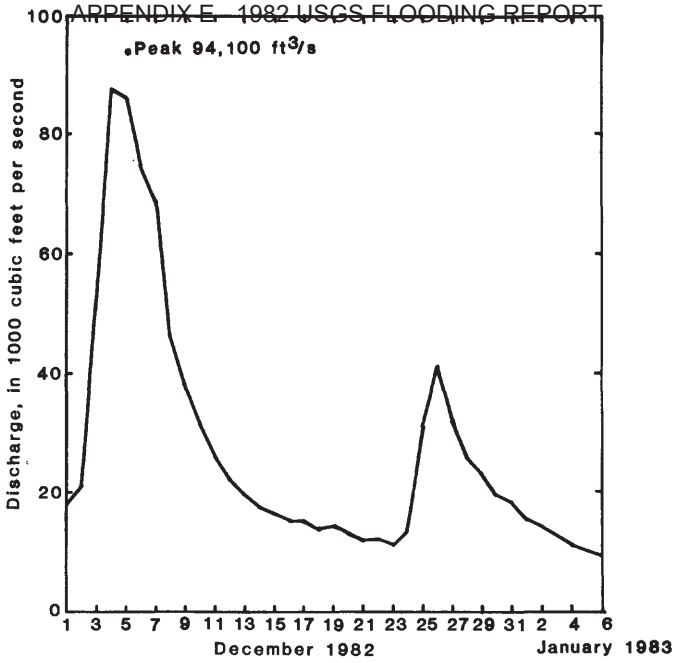
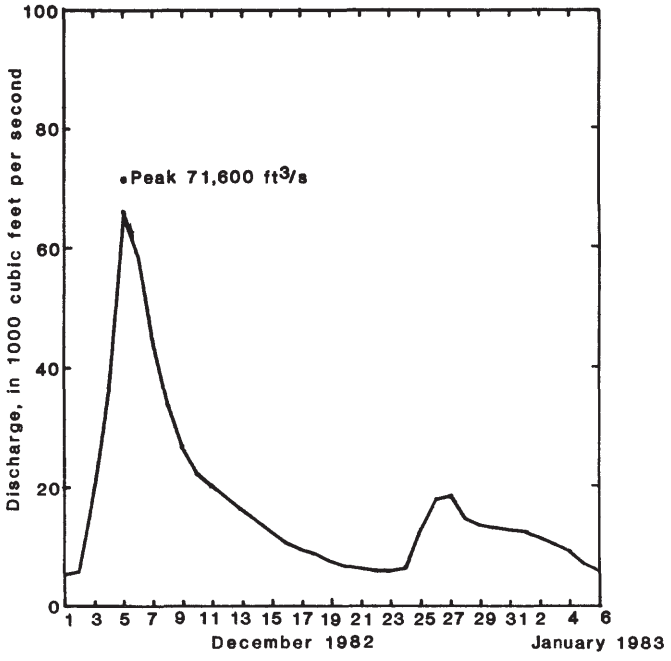
Spencer, D. W., and Alexander, T. W., 1978, Technique for estimating the magnitude and frequency of floods in St. Louis County, Missouri: U.S. Geological Survey Water-Resources Investigations 78-139 (PB-298 245/AS), 23 p.

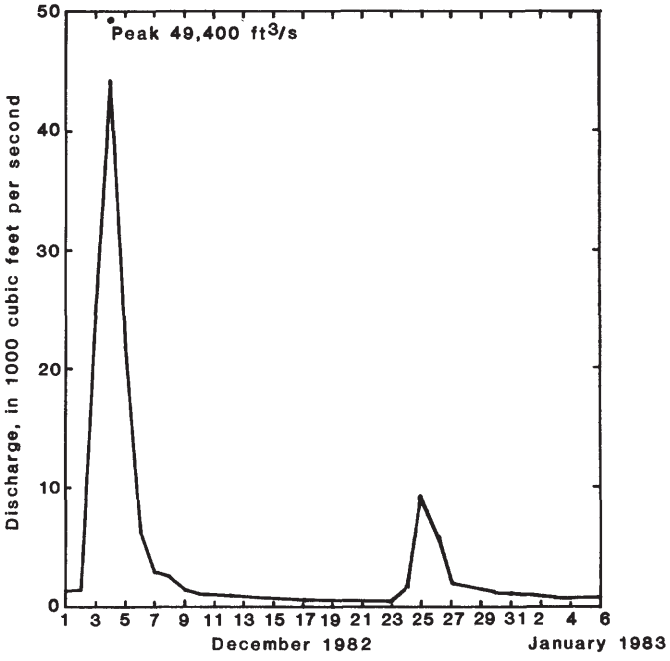
Water Resources Council, 1977, Guidelines for determining flood flow frequency: U.S. Water Resources Council Bulletin 17A, 26 p.



(a)



(b)



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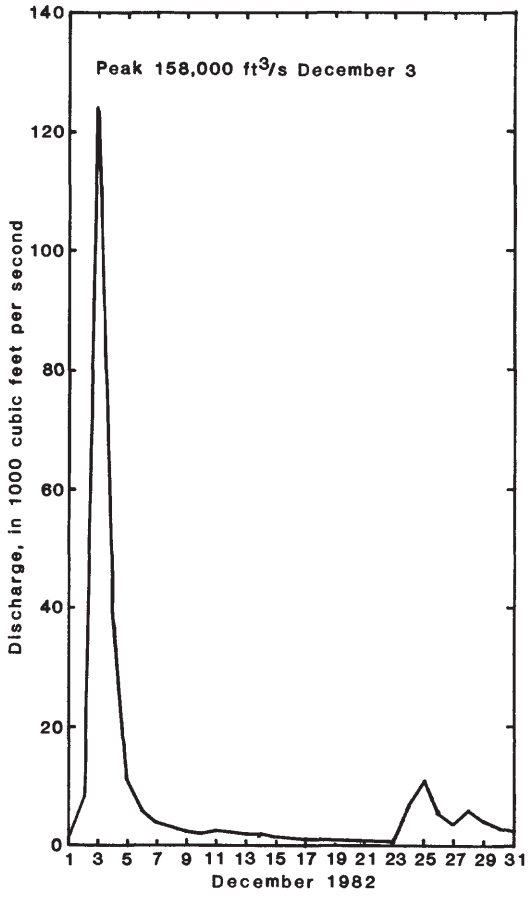
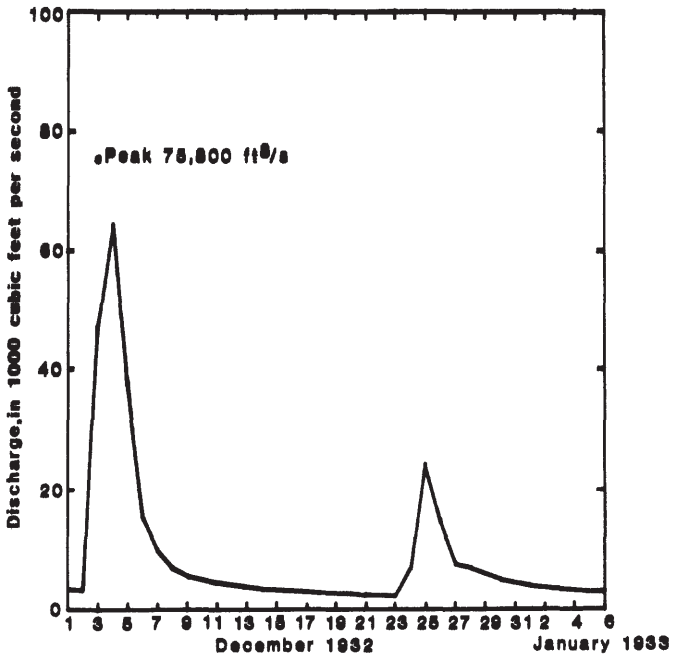
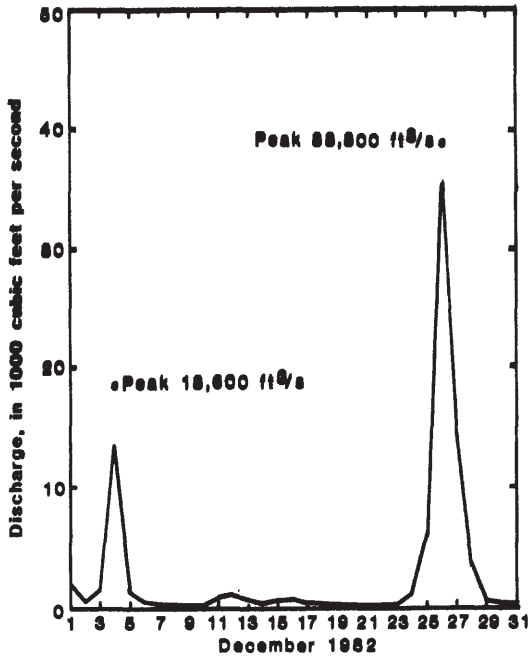


(d)

Figure 2.--Daily discharge hydrographs for (a) 05543500 Illinois River at Marseilles, Ill., (b) 05583000 Sangamon River near Oakford, Ill., (c) 07013000 Meramec River near Steelville, Mo., (d) 07056000 Buffalo River near St. Joe, Ark.



(e)



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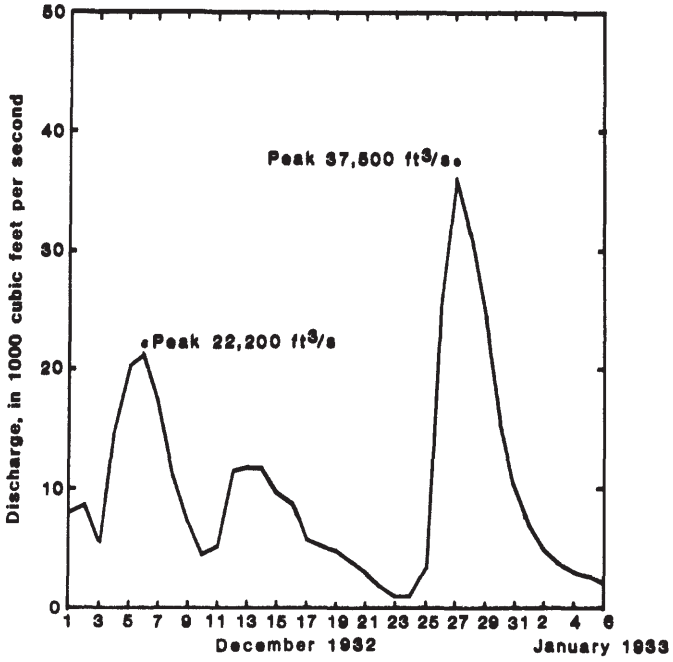

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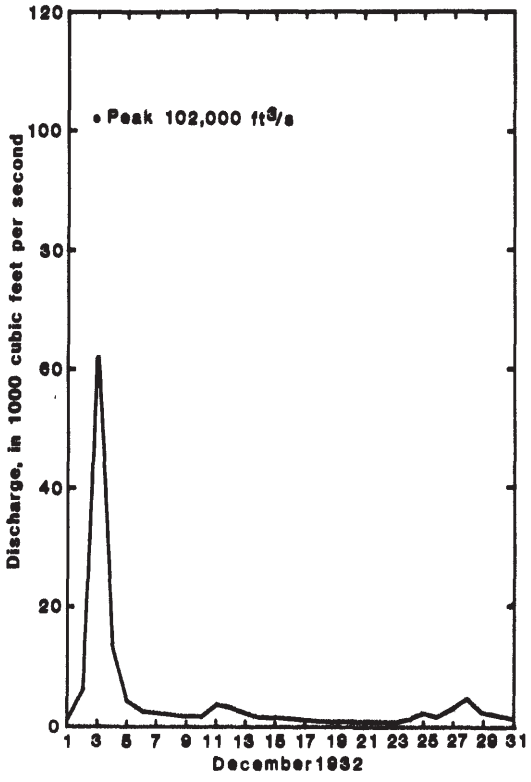
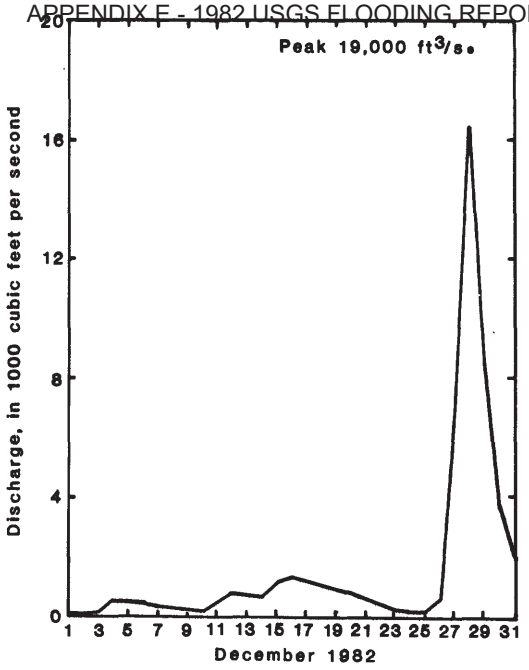
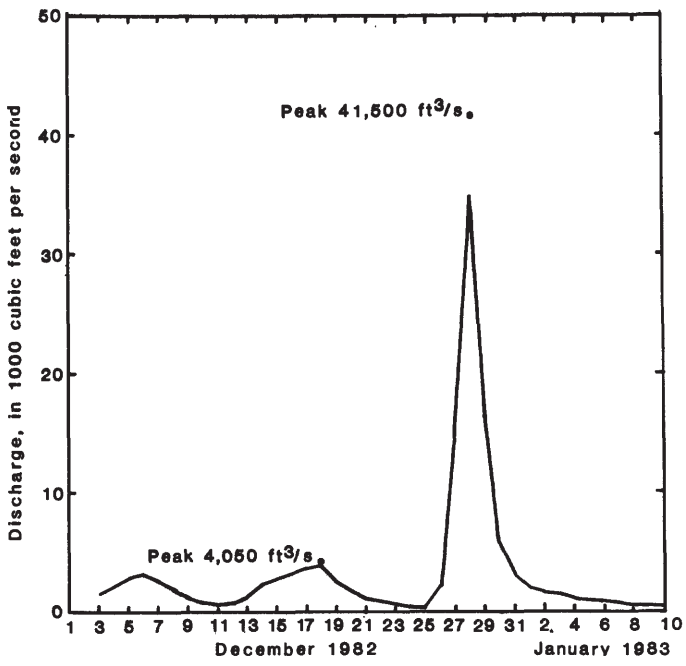


(h)

Figure 2 (continued).--Daily discharge hydrographs for (e) 07067000 Current River at Van Buren, Mo., (f) 07283000 Skuna River at Bruce, Miss., (g) 07289350, Big Black River at West, Miss., (h) 07356000 Ouachita River near Mount Ida, Ark.



(i)



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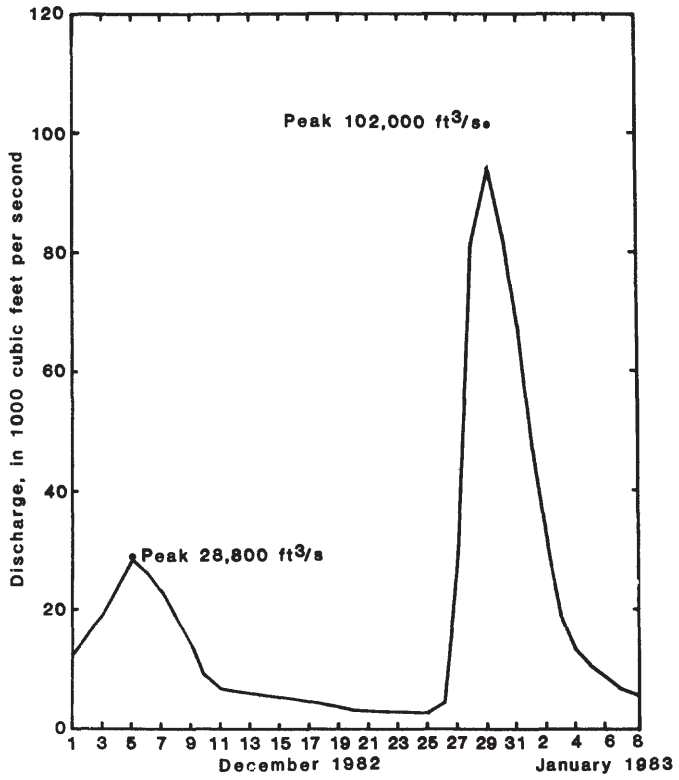


(k)

Figure 2 (continued).--Daily discharge hydrographs for (i) 07362500 Moro Creek near Fordyce, Ark., (j) 07371500 Dugdemona River near Jonesboro, La., (k) 08015500 Calcasieu River near Kinder, La.

Table 1.—Cumulative rainfall for December 2-7, 1982, and December 24-29, 1982, for selected stations in the study area

Station	Latitude	Longitude	Cumulative rainfall, inches	
			Dec 2-7	Dec 24-29
ARKANSAS				
Abbott	35° 04'	94° 12'	6.42	4.44
Alicia	35° 54'	91° 05'	3.70	4.77
Amity	34° 17'	93° 25'	9.19	3.66
Arkadelphia	34° 07'	91° 03'	4.03	4.00
Benton	34° 33'	92° 37'	4.86	4.73
Bentonville	36° 22'	94° 13'	4.60	2.52
Big Fork	34° 29'	93° 58'	14.31	2.73
Bismark	34° 18'	93° 09'	4.75	4.17
Bogg Springs			5.50	1.77
Bonnerdale	34° 23'	93° 23'	12.50	2.20
Botkinburg	35° 39'	92° 30'	14.20	3.05
Buffalo Town	35° 32'	93° 30'	8.91	2.82
Center Ridge	35° 22'	92° 34'	13.75	3.69
Centerville			3.48	1.81
Chimes	35° 43'	92° 45'	13.85	3.21
Clarksville 6NE			9.32	1.92
Clarksville (AG)	35° 28'	93° 28'	9.29	2.06
Clinton	35° 35'	92° 28'	15.66	2.10
Coal Hill	35° 27'	93° 40'	10.15	2.53
Combs	35° 48'	93° 48'	4.85	2.40
Conway	35° 05'	92° 28'	7.10	3.25
Corning	36° 24'	90° 35'	3.74	6.29
Cove	34° 26'	94° 25'	5.24	1.84
Crystal Valley	34° 42'	92° 26'	2.46	5.90
Damascus	35° 22'	92° 25'	10.97	6.02
Danville	35° 03'	93° 24'	12.10	2.63
Deer	35° 50'	93° 12'	11.03	4.52
Devils Den			3.77	1.66
Dumas	33° 53'	91° 30'	2.99	6.17
Endora	33° 07'	91° 16'	4.69	7.21
Greenbrier	35° 14'	92° 21'	7.81	2.80
Green Forest	36° 20'	93° 26'	5.11	1.43
Greenwood	35° 13'	94° 15'	4.82	2.47
Gurdon	33° 54'	93° 09'	3.77	5.20
Hardy	36° 19'	91° 29'	13.09	6.19
Hattieville	35° 15'	92° 50'	14.20	3.06
Hector	35° 28'	92° 58'	7.87	0.65
Hope	33° 43'	93° 33'	4.51	4.85
Hopper	34° 22'	93° 41'	3.47	3.41
Hot Spring	34° 31'	93° 03'	6.55	4.57
Jasper	36° 01'	93° 11'	8.74	2.29
Jessieville	34° 42'	93° 04'	11.40	5.44
Lead Hill	36° 24'	92° 54'	6.72	1.86
Leola	34° 10'	92° 35'	1.85	6.91
Long Pool			11.72	2.68
Mammoth Spring	36° 29'	91° 32'	14.08	6.65
Marshall	35° 54'	92° 38'	8.12	0.70
Melbourne	36° 04'	91° 54'	14.34	3.26
Mena	34° 35'	94° 15'	6.79	2.11
Midland	35° 06'	94° 19'	5.20	2.11

Table 1.--Cumulative rainfall for December 2-7, 1982, and December 24-29, 1982, for selected stations in the study area--Continued

Station	Latitude	Longitude	Cumulative rainfall, inches Dec 2-7	Dec 24-29
		ARKANSAS--Continued		
Mountainburg	35° 38'	94° 10'	5.00	1.73
Mount Ida	34° 33'	93° 38'	11.10	2.72
Mountain View	32° 52'	92° 07'	15.86	5.03
Mulberry	35° 34'	94° 01'	5.17	2.06
Natural Dam			3.15	1.55
Newport	35° 36'	91° 17'	4.81	3.94
Odell	35° 48'	94° 24'	3.95	2.65
Oden	34° 38'	93° 48'	10.55	3.58
Omaha	36° 25'	93° 12'	7.07	1.35
Ozone	35° 38'	93° 27'	3.70	3.00
Parks	34° 48'	93° 57'	8.39	1.31
Patterson	35° 15'	91° 14'	2.66	7.59
Perry	35° 03'	92° 48'	11.98	3.73
Pine Bluff	34° 12'	92° 00'	2.09	9.27
Pine Ridge	34° 35'	93° 54'	9.00	3.10
Piney Grove			4.20	3.98
Prairie Grove	35° 58'	94° 18'	5.72	0.68
Ratcliff	35° 18'	93° 53'	5.85	2.92
Rohwer	33° 48'	91° 16'	3.51	8.98
Salem	36° 23'	91° 50'	11.83	3.95
Searcy	35° 15'	91° 44'	2.28	5.75
Siloam Springs	36° 11'	94° 33'	3.22	1.27
Sparkman	33° 55'	92° 48'	1.94	6.04
Stuttgart	34° 29'	91° 32'	2.64	4.39
Subiaco	35° 18'	93° 39'	7.41	1.09
Vandervoort	34° 22'	94° 21'	6.09	2.19
Waldron	34° 54'	94° 06'	6.99	1.78
Warren	33° 36'	92° 04'	2.50	7.94
Washita	34° 38'	93° 32'	12.95	0.70
		ILLINOIS		
Moline			3.78	1.15
Peoria			3.12	1.91
Springfield			6.76	1.60
		LOUISIANA		
Alexandria			8.92	6.05
Baton Rouge			8.85	4.73
Bayou Sorrel	30° 08'	91° 19'	6.70	-----
Calhoun Exp. Sta.	32° 31'	92° 20'	-----	[a]13.01
Lafayette			7.79	6.17
Monroe			4.08	9.27
Plaquemine 2N	30° 19'	91° 14'	8.53	-----
Steplington	32° 43'	92° 05'	-----	[a]9.61
Vinton	30° 12'	93° 35'	-----	[a]18.21

[a]Cumulative rainfall for period December 23-28, 1982

Table 1.—Cumulative rainfall for December 2-7, 1982, and December 24-29, 1982, for selected stations in the study area—Continued

Station	Latitude	Longitude	Cumulative rainfall, inches	
			Dec 2-7	Dec 24-29
[b]MISSISSIPPI				
Anguilla 3E	32° 58'	90° 47'	8.06	8.10
Ashland	34° 49'	89° 12'	4.66	7.35
Batesville	34° 18'	89° 59'	6.83	7.28
Belzoni	33° 12'	90° 29'	7.24	7.25
Bovina	32° 21'	90° 42'	6.95	4.08
Brookhaven	31° 33'	90° 27'	8.88	5.41
Bruce 2W	34° 00'	89° 21'	4.99	10.47
Byhalia	34° 50'	89° 42'	5.54	6.35
Canton	32° 36'	90° 02'	7.50	6.38
Carrollton	33° 30'	89° 56'	5.70	11.40
Cleveland	33° 44'	90° 44'	6.70	8.36
Coffeeville	33° 59'	89° 40'	6.07	10.33
Grenada	33° 47'	89° 49'	7.05	9.83
Houston 2NE	33° 55'	88° 58'	5.99	10.77
Leland	33° 28'	90° 51'	6.86	6.87
Minter City	33° 45'	90° 18'	7.88	10.78
Moorhead	33° 27'	90° 31'	7.68	11.21
Natchez	31° 33'	91° 24'	8.12	6.25
Nitta Yuma	33° 02'	90° 51'	6.27	9.45
Port Gibson	31° 58'	91° 00'	6.19	4.55
Sunflower	33° 33'	90° 32'	7.40	10.12
Swan Lake	33° 53'	90° 17'	7.52	9.00
University	34° 23'	89° 32'	5.07	11.41
Valden 155W	33° 19'	89° 45'	7.55	9.74
Vance	34° 04'	90° 22'	7.09	7.33
Vicksburg	32° 18'	90° 52'	6.24	3.67
Yazoo City	32° 51'	90° 26'	4.75	7.50
MISSOURI				
Bloomfield	36° 53'	89° 56'	——	[a]3.95
Cape Girardeau	37° 14'	89° 34'	——	[a]7.48
Farmington	37° 47'	90° 23'	——	[a]4.41
Jewett 7E	37° 22'	90° 21'	——	[a]3.90
Kirksville			2.78	0.99
St. Louis			5.20	2.60
Springfield			6.08	2.00
Summerville	37° 11'	91° 40'	——	[a]4.23
Van Buren	36° 58'	90° 59'	9.57	——
Vichy			5.93	0.53
West Plains	36° 44'	91° 51'	13.47	——
TENNESSEE				
Dyersburg			4.23	5.53
Memphis			4.82	5.92

[a]Cumulative rainfall for period December 23-28, 1982

[b]Cumulative rainfall for periods December 1-7, 1982, and December 24-29, 1982

Table 2.--Summary of peak stages and discharges

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					CACHE RIVER BASIN						
001	03612000	Cache River at Forman, Ill.	244	1922-	3-12-35	[a]17.99	9,360	Dec 6	24.99	6,490	6
								Dec 27	25.89	7,020	7
					ROCK RIVER BASIN						
002	05446500	Rock River near Joslin, Ill.	9,549	1939-	3-22-48	14.46	46,200	Dec 7	14.09	25,500	3
					3-22-79	17.81	------				
					EDWARDS RIVER BASIN						
003	05466500	Edwards River near New Boston, Ill.	445	1934-	4-22-73	22.33	18,000	Dec 5	21.36	4,230	2
					POPE CREEK BASIN						
004	05467000	Pope Creek at Keithsburg, Ill.	174	1934-	4-22-73	27.88	8,900	Dec 3	26.94	3,680	7
					7-07-82	28.36	------				
					HENDERSON CREEK BASIN						
005	05469000	Henderson Creek near Oquawka, Ill.	432	1934-	7-08-82	31.05	34,600	Dec 3	25.57	4,520	<2
					BEAR CREEK BASIN						
006	05495500	Bear Creek near Marcelline, Ill.	349	1944-	7-22-51	26.07	21,200	Dec 3	23.0	16,700	8
					BAY CREEK BASIN						
007	05513000	Bay Creek at	161	1939-	8-16-46	19.31	23,500	Dec 3	[n]14.6	10,700	3
					CUIVRE RIVER BASIN						
008	05514500	Cuivre River near Troy, Mo.	903	1922-72 1979-	10-05-41	33.4	120,000	Dec 3	30.10	71,400	40
					ILLINOIS RIVER BASIN						
009	05520500	Kankakee River at Momence, Ill.	2,294	1905, 06, 14-	3-06-79	[m]10.51	16,000	Dec 3	5.79	9,450	20
010	05525000	Iroquois River at Iroquois, Ill.	686	1944-	6-13-58	26.31	10,400	Dec 6	17.86	3,500	2
011	05526000	Iroquois River at Chebanse, Ill.	2,091	1923-	5-13-33	16.10	27,000	Dec 6	15.00	15,500	4
					3-07-79	[m]21.68	27,000				
012	05527500	Kankakee River near Wilmington, Ill.	5,150	1933-	7-13-57	11.40	75,900	Dec 3	8.53	56,800	70
					1-30-68	[m]13.88	-------				

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	G.Ht. (ft)	Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					ILLINOIS RIVER BASIN--Continued						
013	05528000	Des Plaines River near Gurnee, Ill.	232	1945-58 1960-	4-03-60	10.64	3,070	Dec 8	8.60	1,780	4
014	05528500	Buffalo Creek near Wheeling, Ill.	19.6	1952-	7-22-82	7.94	887	Dec 2	6.94	614	5
015	05529000	Des Plaines River near Des Plaines, Ill.	360	1940-	4-02-60	8.56	4,670	Dec 3	7.54	3,550	9
016	05529500	McDonald Creek near Mount Prospect, Ill.	7.93	1952-	6-20-72	7.58	644	Dec 3	7.46	553	10
					7-13-75	8.04	------				
017	05530000	Weller Creek at Des Plaines, Ill.	13.2	1950-	6-10-67	15.09	1,590	Dec 3	8.66	911	3
018	05530990	Salt Creek at Rolling Meadows, Ill.	30.5	1973-	4-18-75	10.82	910	Dec 3	12.56	1,060	15
019	05531500	Salt Creek at Western Springs, Ill.	114	1945-	3-04-79	8.48	1,930	Dec 3	8.59	1,970	40
					8-28-72	8.55	------				
020	05532000	Addison Creek at Bellwood, Ill.	17.9	1950-	8-07-82	10.68	839	Dec 3	8.94	639	10
021	05532500	Des Plaines River at Riverside, Ill.	630	1943-	3-20-48	8.28	6,510	Dec 5	8.01	6,130	15
					1-26-69	[n]9.82	------				
022	05534500	North Branch Chicago River at Deerfield, Ill.	19.7	1952-	7-22-82	10.93	756	Dec 3	10.78	702	>100
023	05535000	Skokie River at Lake Forest, Ill.	13.0	1951-	7-22-82	8.35	435	Dec 3	7.94	394	25
024	05535070	Skokie River near Highland Park, Ill.	21.1	1967-	7-22-82	8.44	716	Dec 2	8.46	724	>100

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood of December 1982 and January 1983 G.Ht. (ft)	Flood of December 1982 and January 1983 Discharge (ft^3/s)	Frequency (years)
					ILLINOIS RIVER BASIN--Continued						
025	05535500	West Fork of North Branch Chicago River at Northbrook, Ill.	11.5	1952-	7-22-82	9.65	1,060	Dec 2	8.29	740	20
026	05536000	North Branch Chicago River at Niles, Ill.	100	1950-	6-11-67	9.83	2,210	Dec 3	8.99	1,480	6
027	05536215	Thorn Creek at Glenwood, Ill.	24.7	1949-	8-17-68	11.26	2,600	Dec 3	10.98	2,210	40
028	05536255	Butterfield Creek at Flossmoor, Ill.	23.5	1948-	5-22-82	11.97	2,160	Dec 3	11.40	1,700	50
029	05536265	Lansing ditch near Lansing, Ill.	8.84	1948-	5-10-48	9.24	461	Dec 3	9.11	200	4
					10-11-54	10.18	------				
030	05536275	Thorn Creek at Thornton, Ill.	104	1948-	7-13-57	16.00	4,700	Dec 3	15.95	3,340	20
					6-14-81	17.06	------				
031	05536290	Little Calumet at South Holland, Ill.[1]	208	1947-	4-06-47	19.24	4,760	Dec 4	19.84	3,940	15
					6-14-81	20.20	------				
032	05539000	Hickory Creek at Joliet, Ill.	107	1944-	6-13-81	14.90	20,500	Dec 3	9.63	7,830	25
033	05539900	West Branch DuPage River near West Chicago, Ill.	28.5	1961-	6-10-67	10.36	805	Dec 3	10.44	984	100
034	05540095	West Branch DuPage River near Warrenville, Ill.	90.4	1968-	8-26-72	4.70	1,980	Dec 3	4.88	2,160	40
035	05540500	DuPage River at Shorewood, Ill.	324	1940-	10-11-54	11.06	12,000	Dec 3	7.61	6,010	6
036	05542000	Mazon River near Coal City, Ill.	455	1939-	7-15-58	19.70	17,600	Dec 4	19.57	22,800	35

Table 2.—Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood G.Ht. (ft)	Flood Discharge (ft^3/s)	Frequency (years)
					ILLINOIS RIVER BASIN--Continued						
037	05543500	Illinois River at Marseilles, Ill.	8,259	1919-	7-14-57	15.20	93,900	Dec 5	16.78	94,100	90
038	05548280	Nippersink Creek near Spring Grove, Ill.	192	1966-	2-20-71	13.03	3,980	Dec 4	11.01	1,640	2
039	05549000	Boone Creek near McHenry, Ill.	15.5	1948-	6-02-70	4.87	276	Dec 3	4.02	190	5
040	05550500	Poplar Creek at Elgin, Ill.	35.2	1951-	4-22-73	5.45	896	Dec 3	5.37	696	15
041	05551200	Ferson Creek near St. Charles, Ill.	51.7	1960-	2-20-71 2-08-65	7.64 [m]9.66	1,970 ------	Dec 3	7.00	1,530	8
042	05551700	Blackberry Creek near Yorkville, Ill.	70.2	1960-	5-17-74	8.58	1,320	Dec 4	7.60	922	5
043	05552500	Fox River at Dayton, Ill.	2,642	1914-	10-11-54 1-25-60	24.63 [m]36.47	47,100	Dec 3	17.17	26,000	20
044	05554000	North Fork Vermilion River near Charlotte, Ill.	186	1943-	2-22-82	-----	[j]5,300	Dec 4	15.31	4,550	20
045	05554500	Vermilion River at Pontiac, Ill.	579	1942-	6-03-80	18.12	14,500	Dec 4	19.16	14,300	100
046	05555300	Vermilion River near Leonore, Ill.	1,251	1931-	7-15-58	15.30	33,500	Dec 4	27.07	31,500	40
047	05555890	Illinois River at Henry, Ill.	13,543	1982-	--------	-----	------	Dec 8	20.70	104,000	---
048	05567500	Mackinaw River near Congerville, Ill.	767	1944-	7-09-51 6-03-80	19.41 19.52	36,000 ------	Dec 5	20.18	43,100	>100

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood of December 1982 and January 1983 G.Ht. (ft)	Flood of December 1982 and January 1983 Discharge (ft^3/s)	Frequency (years)
					ILLINOIS RIVER BASIN--Continued						
049	05568000	Mackinaw River near Green Valley, Ill.	1,089	1922-	6-03-80 5-19-27	15.98 16.80	46,700 ------	Dec 6	16.13	48,300	>100
050	05568500	Illinois River at Kingston Mines, Ill.	15,819	1939-	5-23-43	26.02	83,100	Dec 8 Dec 9	23.86 24.37	89,000 ------	90
051	05569500	Spoon River at London Mills, Ill.	1,062	1942-	6-23-74	28.03	41,000	Dec 3	23.39	10,500	2
052	05570000	Spoon River at Seville, Ill.	1,636	1914-	8-22-24 6-24-74	30.77 31.82	37,300 ------	Dec 5	26.90	19,320	6
053	05570370	Big Creek near Bryant, Ill.	41.2	1971-	6-23-74 6-03-80	12.90 13.05	1,220 -----	Dec 3	12.93	1,070	7
054	05570500	Illinois River at Havana, Ill.	18,299	-----	--------	-----	-----	Dec 9	-----	80,200	--
055	05572000	Sangamon River at Monticello, Ill.	550	1908-12, 14-	10-04-26 5-16-68	18.50 18.55	19,000 ------	Dec 6	13.89	3,880	<2
056	05573540	Sangamon River at Decatur, Ill.	938	1981-	--------	-----	------	Dec 3	16.40	4,500	--
057	05576000	South Fork Sangamon River near Rochester, Ill.	867	1949-	7-01-57 4-14-79	28.36 31.92	18,100 ------	Dec 3	27.50	5,600	2
058	05576500	Sangamon River at Riverton, Ill.	2,618	1908-12, 15-	5-19-43	31.52	68,700	Dec 4	23.82	29,600	9
059	05577500	Spring Creek at Springfield, Ill.	107	1948-	3-30-60	12.70	6,750	Dec 3	14.55	7,730	60
060	05578500	Salt Creek near Rowell, Ill.	335	1942-	5-16-68	29.21	24,500	Dec 3	20.71	4,310	2
061	05579500	Lake Fork near Cornland, Ill.	214	1948-	4-12-79	23.11	8,930	Dec 4	22.45	5,900	10

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					ILLINOIS RIVER BASIN--Continued						
062	05580950	Sugar Creek near Bloomington, Ill.	34.6	1974-	3-03-79	11.04	3,680	Dec 3	14.02	6,600	--
063	05582000	Salt Creek near Greenview, Ill.	1,804	1941-	5-19-43	20.50	41,200	Dec 4	20.04	36,000	40
064	05583000	Sangamon River near Oakford, Ill.	5,093	1909-11 1911-12 1914-19 1921-22 1928-33 1939-	5-20-43	25.63	123,000	Dec 5	23.65	71,600	50
065	05585000	LaMoine River at Ripley, Ill.	1,293	1921-	9-27-70	28.42	24,100	Dec 6	26.95	19,700	25
066	05585500	Illinois River at Meredosia, Ill.	26,028	1938-	5-26-43	28.61	123,000	Dec 10	25.92	107,000	20
								Dec 11	26.40	-------	
067	05587000	Macoupin Creek near Kane, Ill.	868	1921-33 1940-	5-18-43	28.5	40,000	Dec 4	[n]26.5	27,800	20
					CAHOKIA CREEK BASIN						
068	05587900	Cahokia Creek at Edwardsville, Ill.	212	1969-	4-12-79	24.74	8,200	Dec 4	19.52	5,210	3
								Dec 25	19.79	5,350	3
					MOREAU RIVER BASIN						
069	06910500	Moreau River near Jefferson City, Mo.	531	1904, 1948-75	1904 10-14-69	39.00 28.60	------ 24,400	Dec 3	29.83	30,000	100
					OSAGE RIVER BASIN						
070	06927000	Marles River at Westphalia, Mo.	257	1937, 1948-70	6-08-37 10-12-69	22.80 20.83	------ 26,100	Dec 3	21.36	34,200	>100
					GASCONADE RIVER BASIN						
071	06927600	Wheeler Branch near Mountain Grove, Mo.	1.34	1955-	6-16-58	6.32	940	Dec 2	5.11	680	5

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood G.Ht. (ft)	Flood Discharge (ft^3/s)	Frequency (years)
					GASCONDE RIVER BASIN--Continued						
072	06927800	Osage Fork at Drynob, Mo.	404	1903, 1962-81	1903 4-12-79	31.00 17.96	------ 21,300	Dec 3	19.40	38,800	>100
073	06928000	Gasconade River at Hazelgreen, Mo.	1,250	1916, 1929-71	1- -16	30.60	90,000	Dec 3	34.46	94,000	40
074	--------	Roubidoux Creek near Waynesville, Mo.	278	-------	-------	-----	------	Dec 3	-----	27,700	[f]50
074a	06930000	Big Piney River near Big Piney, Mo.	560	1922-81	12-27-42	20.7	32,700	Dec 3	24.54	[h]81,200	>100
075	06931000	Beaver Creek near Rolla, Mo.	14	1949-79	7-28-79	9.50	12,000	Dec 3	6.84	5,900	20
076	06931500	Little Beaver Creek near Rolla, Mo.	6.41	1948-79	7-17-58	8.57	7,420	Dec 3	7.64	5,130	25
077	06932000	Little Piney Creek at Newburg, Mo.	200	1915, 1929-	8-20-15 8-14-46	16.70 16.20	30,000 32,500	Dec 3	16.11	28,100	40
078	06933500	Gasconade River at Jerome, Mo.	2,840	1897, 1923-	1-6-1897	29.00	120,000	Dec 5	31.34	140,000	>100
079	06934000	Gasconade River near Rich Fountain, Mo.	3,180	1922-65	4-16-45	29.13	96,400	Dec 6	33.27	134,000	>100
					MISSOURI RIVER MAIN STEM						
080	06934500	Missouri River at Hermann, Mo.	528,200	1844, 1929-	6- -1844	35.50	892,000	Dec 4	30.78	373,300	5
					MERAMEC RIVER BASIN						
081	07010350	Meramac River at Cook Station, Mo.	199	1965-81	2-10-66	17.74	34,900	Dec 3	15.30	16,000	5
082	07011200	Love Creek near Salem, Mo.	0.89	1955-	4-11-79	7.13	365	Dec 3	5.19	150	4
083	07011600	Love Branch at Rolla, Mo.	1.72	1978-	4-11-79	4.37	1,700	Dec 2	3.05	686	[f]5

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					MERAMEC RIVER BASIN--Continued						
084	07012050	Dry Fork near St. James, Mo.	370	1944-50	8-15-46	21.70	28,000	Dec 3	20.4	21,000	f_5
085	07013000	Meramec River near Steelville, Mo.	781	1915, 1923-	8-20-15	26.50	60,000	Dec 4	25.55	49,400	50
086	07014200	Courtois Creek at Berryman, Mo.	165	1944-46	6-08-45	12.90	24,300	-----	12.45	25,000	60
087	07014500	Meramac River near Sullivan, Mo.	1,475	1915, 1922-32 1944-	8- -15	33.50	90,000	Dec 4	32.30	68,500	90
088	07015000	Bourbeuse River near St. James, Mo.	21.3	1945, 1948-81	6-08-45	14.00	------				
					4-11-79	11.17	8,390	-----	10.85	7,200	15
089	07015720	Bourbeuse River near High Gate, Mo.	135	1957-	6- -57	23.00	------				
					4-11-79	21.15	33,500	Dec 4	23.65	50,000	>100
090	07016000	Bourbeuse River near Spring Bluff, Mo.	608	1915, 1944-	8- -15	35.70	------				
					6-30-57	34.71	50,700	Dec 5	41.26	85,000	>100
091	07016500	Bourbeuse River at Union, Mo.	808	1915, 1921-	8-22-15	28.50	50,000	Dec 5	33.80	77,000	>100
092	07017000	Meramac River at Robertsville, Mo.	2,673	1915, 1940-51	8- -15	36.10	125,000	Dec 5	37.53	133,000	100
093	07017200	Big River at Irondale, Mo.	175	1965-	11-01-72	27.92	43,200	Dec 3	17.01	17,300	3
094	07017500	Dry Branch near Bonne Terre, Mo.	3.35	1956-	6-30-57	5.55	1,520	Dec 3	3.82	750	3
095	07017700	Fountain Farm Branch near Potosi, Mo.	2.16	1957-	6-30-57	18.36	1,890	Dec 3	13.78	660	4
096	07018000	Big River near Desoto, Mo.	718	1915, 1949-	8- -15	29.40	70,500	Dec 4	22.37	32,800	10
097	07018500	Big River at Byrnesville, Mo.	917	1915, 1922	8-21-15	30.20	80,000	Dec 5	25.22	36,800	25

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	G.Ht. (ft)	Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					MERAMEC RIVER BASIN--Continued						
098	07019000	Meramac River near Eureka, Mo.	3,788	1903-06, 1915, 1922	8-22-15	42.20	175,000	Dec 6	42.88	145,000	>100
					HEADWATER DIVERSION CHANNEL BASIN						
099	07021000	Castor River at Zalma, Mo.	423	1920-	3-11-35	28.20	-------	Dec 4	29.78	95,400	>100
					3-28-77	27.05	40,800				
100	--------	Crooked Creek at Lutesville, Mo.	75.2	-------	-------	-----	-------	-----	-----	40,900	f>100
101	--------	Whitewater River near Bufordville, Mo.	238	-------	-------	-----	-------	-----	-----	60,300	f>100
					OBION RIVER BASIN						
102	07024500	South Fork Obion River near Greenfield, Tenn.	383	1929-	1-22-37	17.82	25,600	Dec 3	13.21	2,680	<2
								Dec 28	16.54	16,000	8
103	07026000	Obion River at Obion, Tenn.	1,852	1929-58, 1966-	1-24-37	40.4	99,500	Dec 6	31.98	19,400	<2
								Dec 30	34.83	41,000	5
					HATCHIE RIVER BASIN						
104	07029500	Hatchie River at Bolivar, Tenn.	1,480	1929-	3-18-73	21.66	61,600	Dec 5	16.56	13,300	<2
								Dec 30	20.61	45,800	20
					LOOSAHATCHIE RIVER BASIN						
105	07030240	Loosahatchie River near Arlington, Tenn.	262	1969-	3-13-75	24.96	23,700	Dec 4	21.62	8,980	f<2
								Dec 27	21.98	9,650	f2
					WOLF RIVER BASIN						
106	07031650	Wolf River at Germantown, Tenn.	699	1969-	3-14-75	27.98	33,400	Dec 4	18.6	13,100	f2
								Dec 28	22.82	20,100	f3
					NONCONNAH CREEK BASIN						
107	07032200	Nonconnah Creek near Germantown, Tenn.	68.2	1969-	3-12-75	27.11	9,680	Dec 3	22.7	6,940	f3
								Dec 26	18.1	4,650	f<2

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood of December 1982 and January 1983 G.Ht. (ft)	Flood of December 1982 and January 1983 Discharge (ft^3/s)	Frequency (years)
					ST. FRANCIS RIVER BASIN						
108	07033000	Wolf Creek near Farmington, Mo.	40.3	1955-79	12-21-67	18.46	13,600	Dec 3	17.97	10,000	50
109	07035500	Barnes Creek near Fredericktown, Mo.	4.03	1956-	5-21-57	9.62	5,550	Dec 3	8.80	2,100	5
110	07037500	St. Francis River near Patterson, Mo.	956	1915, 1920-	8- -15	33.80	100,000	Dec 3	35.77	155,000	>100
111	07038000	Clark Creek at Patterson, Mo.	38.0	1955-79	3-20-55	12.53	11,200	Dec 3	13.74	15,500	100
112	07043500	Little River Ditch 1 near Morehouse, Mo.	450	1945-	6- -45 5-10-61	19.85 19.35	5,830 8,250	Dec 4	12.84	6,340	4
113	07047942	L'Anguille River near Colt, Ark.	535	1971-	12-09-78	15.81	12,000	Dec 28	14.90	7,020	3
					WHITE RIVER BASIN						
114	07050500	Kings River near Berryville, Ark.	527	1927, 1939-	4-14-27	38.0	62,000	Dec 3	30.20	39,400	10
115	07054400	Charley Creek near Omaha, Ark.	3.41	1962-	3-10-73	13.18	2,850	Dec 3	16.54	4,850	>100
116	07055650	Smith Creek near Boxley, Ark.	8.35	1963-	11-24-73	15.8	6,830	Dec 3	13.74	7,200	35
117	07055800	Dry Branch near Vendor, Ark.	6.15	1962-	11-24-73	14.24	3,880	Dec 3	15.30	5,000	50
118	07056000	Buffalo River near St. Joe, Ark.	829	1915, 1927-33, 1936-	8- -15	50.5	139,000	Dec 3	53.75	158,000	>100
119	07057500	North Fork River near Tecumseh, Mo.	561	1945-	4-22-74	22.15	37,900	Dec 3	17.70	26,700	10
120	07058000	Bryant Creek near Tecumseh, Mo.	570	1945-	4-11-73	21.93	33,200	Dec 3	26.67	71,100	>100
121	07060500	White River at Calico Rock, Ark.	9,978	1905-	1-31-16	51.9	350,000	Dec 4	41.14	201,000	b

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood G.Ht. (ft)	Flood Discharge (ft^3/s)	Frequency (years)
					WHITE RIVER BASIN--Continued						
122	07060710	North Sylamore Creek near Fifty Six, Ark.	58.1	1966-	4-22-73	17.61	17,800	Dec 3	20.60	25,200	30
123	07060830	Wolf Bayou near Drasco, Ark.	0.27	1963-	3-10-73	8.05	190	Dec 3	9.49	283	90
124	07061000	White River at Batesville, Ark.	11,070	1904-58, 1979-	4-16-45	29.43	324,000	Dec 3	29.27	310,000	b
125	07061300	East Fork Black River at Lesterville, Mo.	94.5	1935, 1960-	3- -35 11-02-72	13.80 11.13	------ 13,700	Dec 3	10.04	9,760	15
126	07061500	Black River near Annapolis, Mo.	484	1939-	11-02-72	21.55	49,700	Dec 4	17.64	33,900	5
127	--------	McKenzie Creek at mouth near Piedmont, Mo.	31.0	----	--------	-----	-------	Dec 4	-----	40,000	[f]>100
128	07062500	Black River at Leeper, Mo.	957	1904, 1921-	3- -04	22.30	125,000	Dec 4	15.15	41,000	5
129	07063000	Black River at Poplar Bluff, Mo.	1,245	1904, 1923-	3-12-35 3- -04	21.10 -----	------- 100,000	Dec 5	21.68	65,600	25
130	07064300	Fudge Hollow near Licking, Mo.	1.72	1957-79	9-04-65	6.46	580	Dec 3	5.5	350	10
131	07064500	Big Creek near Yukon, Mo.	8.36	1949-79	10-27-70	5.54	5,520	Dec 3	8.17	7,800	70
132	07066000	Jacks Fork at Eminence, Mo.	398	1904, 1922-	3- -04 6-13-28	25.0 17.2	------- 40,000	Dec 3	13.81	24,600	10
133	07066500	Current River near Emmence, Mo.	1,272	1904, 1922-75	3- -04 2-10-66	37.50 29.69	------- 88,500	Dec 3	27.8	79,000	20
134	07067000	Current River at Van Buren, Mo.	1,667	1904, 1922-	3-26-04 8-21-15	29.00 25.90	------- 125,000	Dec 3	23.89	75,300	15
135	07067500	Big Spring near Van Buren, Mo.	--------	1922-	6- -28	-----	1,300	Dec 4	-----	1,500	---

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood of December 1982 and January 1983 G.Ht. (ft)	Flood of December 1982 and January 1983 Discharge (ft^3/s)	Frequency (years)
					WHITE RIVER BASIN--Continued						
136	07068000	Current River at Doniphan, Mo.	2,038	1904, 1922-	3- -04	25.90	130,000	Dec 3	25.41	117,000	>100
137	07068250	Middle Fork Little Black River at Grandin, Mo.	6.85	1981-	5-14-81	3.36	84	Dec 3	10.7	6,430	[f]>100
138	07068300	North Prong Little Black River near Grandin, Mo.	39.4	1980-	5-14-81	3.59	368	Dec 3	16.83	31,800	[f]>100
139	07068380	Little Black River near Grandin, Mo.	79.5	1980-	5-14-81	4.28	554	Dec 3	13.54	41,800	[f]>100
140	07068500	Little Black River near Fairdealing, Mo.	187	1936-42 1955-79	3-02-77	23.63	52,800	Dec 3	23.60	52,000	50
141	07068540	Logan Creek near Oxly, Mo.	37.5	1980-	6-06-81	4.88	260	Dec 3	14.94	15,000	[f]>100
142	07068863	Fourche River near Poynor, Mo.	87.2	1976-	3-27-77	15.91	25,400	Dec 3	14.54	17,200	[f]50
143	07064000	Black River near Corning, Ark.	1,749	1915-	6-13-45	16.92	48,600	Dec 7	14.82	23,400	b
144	07069000	Black River at Pocahontas, Ark.	4,845	1927-	4-17-27	25.9	80,000	Dec 7	25.22	66,300	b
145	07069500	Spring River at Imboden, Ark.	1,183	1915, 1937-	8- -15	32.1	125,000	Dec 3	[c]38.12	244,000	>100
146	07070500	Eleven Point River near Thomasville, Mo.	361	1951-76	2-10-66	21.65	31,000	Dec 3	17.51	15,000	10
147	07071000	Greer Spring at Greer, Mo.	-----	1904 1921-	11-17-58	2.63	1,510	Dec 4	2.97	1,800	---
148	07071500	Eleven Point River near Bardley, Mo.	793	1915, 1922	8- -15	19.70	44,000	Dec 3	21.5	49,000	80

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					WHITE RIVER BASIN--Continued						
149	07072000	Eleven Point River near Ravenden Springs, Ark.	1,134	1930-33, 1936-	11-17-58	20.83	37,600	Dec 3	[c]29.06	162,000	>100
150	07072500	Black River at Black Rock, Ark.	7,369	1905-	8-21-15	31.9	160,000	Dec 4	[c]31.51	190,000	[b]
151	07073500	Piney Fork at Evening Shade, Ark.	99.2	1939-	1-24-49	23.42	17,500	Dec 3	[c]30.32	52,600	>100
152	07074000	Strawberry River near Poughkeepsie, Ark.	473	1936-	1-24-49	29.30	52,000	Dec 3	[c]35.9	158,000	>100
153	07074200	Dry Branch tributary near Sidney, Ark.	1.22	1961-	9-08-67	11.57	1,100	Dec 3	12.40	1,230	10
154	07074500	White River at Newport, Ark.	19,860	1886-	4-17-45	[k]35.9	343,000	Dec 5	34.00	340,000	[b]
155	07074900	Trace Creek tributary near Marshall, Ark.	0.26	1961-	11-24-73	10.50	208	Dec 3	11.89	288	45
156	07075000	Middle Fork Little Red River at Shirley, Ark.	302	1939-	1-24-49	28.3	101,000	Dec 3	[c]30.9	-------	---
157	07075300	South Fork Little Red River at Clinton, Ark.	148	1962-	3-28-77	26.43	32,700	Dec 3	[c]34.27	67,900	>100
158	07075600	Choctaw Creek tributary near Choctaw, Ark.	1.36	1964-	6-08-74	13.60	579	Dec 3	19.07	1,760	>100
159	07077380	Cache River at Egypt, Ark.	701	1938-40, 1945-	1-06-66	21.88	8,940	Dec 30	19.43	5,270	3
160	07077950	Big Creek at Poplar Grove, Ark.	448	1971-	4-23-73	31.74	5,910	Dec 28	30.47	4,290	4

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
		ARKANSAS RIVER BASIN									
161	07250550	Arkansas River at Dam No. 13, near Van Buren, Ark.	150,547	1927-	5-12-43	[a]38.0	850,000	Dec 3	[d]382.96	69,600	b
162	07251500	Frog Bayou at Rudy, Ark.	216	1945, 1950-	4-15-45	18.5	39,500	Dec 3	12.58	13,100	b
163	07252000	Mulberry River near Mulberry, Ark.	373	1927, 1939-	12- -27	22.0	59,000	Dec 3	23.66	70,200	100
164	07256500	Spadra Creek at Clarksville, Ark.	61.1	1953-	4-03-57	15.58	15,300	Dec 2	14.75	13,400	8
165	07257000	Big Piney Creek near Dover, Ark.	274	1949, 1951-	12-10-71	28.7	74,600	Dec 3	33.87	111,000	>100
166	07257200	Little Piney Creek near Lamar, Ark.	154	1978-	5-17-80	13.37	9,800	Dec 3	15.35	13,300	[f]4
167	07257500	Illinois Bayou near Scottsville, Ark.	241	1943, 1948-	5-10-43 1-24-49	24.60 24.60	77,000 77,000	Dec 3	27.08	120,000	>100
168	07258000	Arkansas River at Dardanelle, Ark.	153,670	1938-	5-13-43 5-25-43	 43.6	683,000	Dec 3	40.02	325,000	b
169	07258500	Petit Jean River near Booneville, Ark.	241	1939-	4-16-39	23.42	43,200	Dec 3	22.03	20,100	5
170	07259500	Petit Jean River near Waveland, Ark.	516	1939-	4-16-39	34.0	62,600	Dec 3	28.51	9,100	b
171	07260000	Dutch Creek at Waltreak, Ark.	81.4	1946-	7-26-69	22.38	24,500	Dec 3	20.80	18,600	25
172	07260500	Petit Jean River at Danville, Ark.	764	1917-	4-17-39	31.82	70,800	Dec 3	29.36	47,000	b
173	07260630	Jake Creek near Chickalah, Ark.	1.85	1961-	10-12-73	10.20	1,070	Dec 3	14.58	2,200	>100

Table 2.—Summary of peak stages and discharges—Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					ARKANSAS RIVER BASIN--Continued						
174	07260673	West Fork Remove Creek near Hattieville, Ark.	222	1978-	4-01-79	21.00	11,500	Dec 3	26.62	64,800	>100
175	07260679	East Fork Point Remove Creek tributary near St. Vincent, Ark.	0.09	1967-	3-20-68	7.69	82	Dec 3	8.24	101	>100
176	07261000	Cadron Creek near Guy, Ark.	169	1955-	8-14-57	24.95	18,600	Dec 4	29.29	24,000	80
177	07261050	Pine Mountain Creek tributary near Damascus, Ark.	0.29	1961-	5-05-61	10.22	270	Dec 3	13.50	573	>100
178	07261500	Fourche LaFave River near Gravelly, Ark.	410	1939-	5-20-60 7-26-69	30.30 30.30	69,400 69,400	Dec 3	32.45	-------	---
179	07261800	Brogan Creek near Rover, Ark.	1.40	1963-	4-23-66	9.59	1,010	Dec 3	10.65	1,260	80
180	07262500	Fourche LaFave River near Nimrod, Ark.	684	1935, 1937-	2-19-38	27.6	36,100	Dec 3	10.03	6,200	b
181	07263000	South Fourche LaFave River near Hollis, Ark.	210	1942-	3-30-45	19.47	54,400	Dec 3	24.55	94,000	>100
182	07263100	Fourche LaFave River tributary near Perryville, Ark.	1.47	1962-	3-28-75	9.72	700	Dec 3	11.45	1,150	>100
183	07263450	Arkansas River at Murray Dam, at Little Rock, Ark.	158,030	1883, 1927-	6- -1883 5-27-43	[a]34.6 [a]30.05	536,000	Dec 4	[d]253.12	290,000	b
184	07264000	Bayou Meto near Lonoke, Ark.	207	1948-	5-18-68	26.55	4,700	Dec 3	24.46	3,020	5

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					YAZOO RIVER BASIN						
185	07267000	Hell Creek near New Albany, Miss.	27.3	1939-42 1952-	4-26-70	16.66	4,800	Dec 4	10.49	2,550	3
186	07268000	Little Tallahatchie River at Etta, Miss.	526	1938-	3-22-55	29.32	79,000	Dec 4	22.75	8,900	<2
								Dec 26	28.55	70,000	50
187	07268500	Cypress Creek near Etta, Miss.	28.5	1939-42 1952-	5-11-70	18.78	9,970	Dec 26	14.66	5,700	4
188	07274000	Yocona River near Oxford, Miss.	262	1951-	3-21-55	28.72	44,100	Dec 4	24.76	7,000	<2
								Dec 26	28.38	31,000	15
189	07274250	Otoucalofa Creek at Water Valley, Miss.	84.1	1952-	3-15-73	26.84	10,400	Dec 4	23.47	4,050	<2
								Dec 26	27.43	13,500	60
190	07275500	Long Creek near Courtland, Miss.	66.2	1940-43 1952-	4-11-62	22.11	19,500	Dec 4	8.04	8,000	<2
								Dec 26	10.47	10,300	2
191	07280270	Tillatoba Creek below Oakland, Miss.	37.1	1974-	6-24-80	14.93	7,600	Dec 4	11.92	2,500	[f]<2
								Dec 26	14.58	7,000	[f]15
192	07280340	South Fork Tillatoba Creek near Charleston, Miss.	53.9	1975-	6-24-80	23.47	11,000	Dec 4	17.24	5,500	f4
								Dec 26	23.96	11,600	[f]35
193	07282000	Yalobusha River at Calhoun City, Miss.	305	1950-	3-16-73	25.22	52,100	Dec 4	21.80	18,100	3
								Dec 26	25.75	70,600	>100
194	07283000	Skuna River at Bruce, Miss.	254	1947-	3-21-55	34.11	61,400	Dec 4	22.45	18,600	5
								Dec 26	29.66	38,800	30
195	07287350	Fannegusha Creek near Tchula, Miss.	100	1953-65 1968-	1970	160.28	23,000	Dec 26	20.82	9,500	2

Table 2.—Summary of peak stages and discharges—Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	G.Ht. (ft)	Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					BIG BLACK RIVER BASIN						
196	07289350	Big Black River at West, Miss.	985	1961 1971-	12-18-61 1-05-72	24.03 23.08	46,700 33,800	Dec 6 Dec 27	21.63 23.34	22,200 37,500	2 9
197	07289395	Sharkey Creek tributary near West, Miss.	0.30	1967-	4-26-70	7.67	218	Dec 3 Dec 26	6.76 7.61	145 213	3 8
198	07289470	Tacketts Creek tributary near Pickens, Miss.	0.15	1965-	1-04-72	6.84	206	Dec 3 Dec 26	5.29 5.65	114 134	4 7
199	07289600	Tilda Bogue near Canton, Miss.	24.4	1948-	4-29-53	19.0	8,800	Dec 4 Dec 26	17.85 19.12	3,000 8,200	2 90
200	07289641	Panther Creek tributary near Flora, Miss.	0.07	1965-	3-10-73	7.42	140	Dec 26	4.40	59	<2
201	07290000	Big Black River near Bovina, Miss.	2810	1936-	12-20-61	40.53	63,500	Dec 8 Jan 1	39.20 38.71	27,000 25,000	2 2
202	07290005	Clear Creek at Bovina, Miss.	36	1952-	4-13-69	30.03	21,000	Dec 4	25.21	6,400	3
					BAYOU PIERRE BASIN						
203	07290525	White Oak Creek tributary near Utica, Miss.	1.36	1964-	11-28-64	11.26	1,230	Dec 4 Dec 6	4.55 6.78	106 320	<2 <2
204	07290650	Bayou Pierre near Willows, Miss.	653	1959-	4-13-74	27.33	51,000	Dec 4 Dec 27	26.10 23.93	37,200 27,500	[f]15 [f]6
205	07290690	Clarks Creek near Pattison, Miss.	77.4	1961-	4-12-74	26.18	21,000	Dec 4	18.34	9,000	5
206	07290830	Little Creek near Fayette, Miss.	1.71	1967-	4-12-74	15.45	1,770	Dec 4 Dec 26	7.72 9.85	435 790	<2 3
207	07290870	Coles Creek near Fayette, Miss.	257	1961-	5-11-79	[e]31.50	71,000	Dec 4 Dec 26	24.13 23.80	32,000 30,500	2 <2

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					HOMOCHITTO RIVER BASIN						
208	07291000	Homochitto River at Eddiceton, Miss.	180	1938-	3-29-39	-----	30,900	Dec 4	13.07	22,000	3
					4-13-74	19.53	56,000	Dec 26	9.14	11,700	<2
209	07291250	McCall Creek near Lucien, Miss.	60	1955-	4-13-74	92.7	24,000	Dec 4	86.46	10,800	4
								Dec 26	83.99	7,600	2
210	07292500	Homochitto River at Rosetta, Miss.	750	1951-	5-04-53	36.03	-------	Dec 4	22.13	94,000	5
					4-13-74	28.60	150,000	Dec 26	17.67	35,000	<2
					BUFFALO RIVER BASIN						
211	07295000	Buffalo River near Woodville, Miss.	182	1942-	10-04-64	20.19	44,800	Dec 3	18.19	34,500	4
								Dec 26	16.30	24,300	<2
212	07373550	Moores Branch near Woodville, Miss.	0.21	1955-	3-24-73	9.90	455	Dec 4	5.26	166	<2
								Dec 26	9.19	435	>100
					RED RIVER BASIN						
213	07337000	Red River at Index, Ark.	48,030	1936-	2-23-38	34.25	297,000	Dec 4	16.33	54,000	b
214	07340000	Little River near Horatio, Ark.	2,662	1915, 1930-	8- -15	38.0	124,000	Dec 3	30.20	37,200	b
215	07340200	West Flat Creek near Foreman, Ark.	10.7	1962-	1-30-69	12.40	3,400	Dec 3	12.97	3,800	20
216	07340300	Cossatot River near Vandervoort, Ark.	89.6	1961-	5-06-61	23.0	48,000	Dec 3	19.50	32,000	6
217	07340500	Cossatot River near DeQueen, Ark.	360	1938-	5-13-68	22.60	122,000	Dec 3	17.21	21,800	b
218	07341000	Saline River near Dierks, Ark.	121	1939-	5-13-68	22.95	59,200	Dec 2	13.95	6,730	b
219	07341200	Saline River near Lockesburg, Ark.	256	1964-	5-07-61	25.6	-------	Dec 3	20.52	59,600	b
					5-14-69	20.86	64,700				
220	07348700	Bayou Dorcheat near Springhill, La.	605	1958-	4-28-58	22.79	36,400	Dec 8	14.38	4,320	<2
								Dec 29	16.68	10,900	4
221	07349500	Bodcau Bayou near Sarepta, La.	546	1939-	5-02-58	25.14	18,600	Dec 13	17.64	4,270	<2
								Dec 29	18.86	5,760	3

Table 2.—Summary of peak stages and discharges—Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	G.Ht. (ft)	Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
222	07351600	Bayou Pierre near Grand Bayou, La.	661	1933, 1978-	8- -33	26.93	7,260	Dec 17	25.64	6,620	
					1-22-79	35.4	------	Dec 29	26.78	7,190	
223	07351980	Saline Bayou near Bienville, La.	54.9	1966-	1-21-79	44.74	2,210	Dec 16	44.02	1,210	<2
								Dec 27	45.24	3,500	>100
224	07352000	Saline Bayou near Lucky, La.	154	1940-	1-01-45	12.90	13,500	Dec 17	7.99	2,170	<2
								Dec 28	10.58	7,230	10
225	07352295	Black Lake Creek at Gibsland, La.	44.8	1968-	3-07-76	50.63	------	Dec 28	46.93	3,350	7
226	07352400	Kepler Creek at Sparta, La.	21.1	1954-68 1974-	4-06-56	44.45	2,430	Dec 16	42.96	820	3
								Dec 28	43.69	1,450	6
227	07352500	Black Lake Bayou near Castor, La.	423	1941-	4-03-45	13.20	14,100	Dec 28	11.98	8,520	8
228	07352730	Antoine Creek near Ashland, La.	17.7	1965-	2-10-66	46.10	------	Dec 16	43.68	------	---
								Dec 28	44.53	------	---
229	07352800	Grand Bayou near Coushatta, La.	93.9	1957-77 1979-	9-21-58	11.47	7,920	Dec 16	8.61	1,320	<2
								Dec 28	9.84	3,280	4
230	07352895	Black Lake Bayou near Clarence, La.	908	1970-	1-30-74	18.88	-------	Jan 1	20.25	-------	---
231	07353520	Nantachie Lake near Aloha, La.	80.4	1969-	4-13-74	9.12	9,470	Dec 28	9.38	-------	---
232	07353990	Kisatchie Bayou at Kisatchie, La.	37.3	1966-	4-08-68	25.44	14,200	Dec 3	22.13	3,260	2
								Dec 27	26.13	17,800	>100
233	07354100	Kisatchie Bayou at Lotus, La.	140	1939, 1980-	3-30-39	19.43	-------	Dec 4	15.96	6,400	---
					3-28-80	16.15	6,800	Dec 27	18.17	11,500	---
234	07355500	Red River at Alexandria, La.	67,500	1879-	4-17-45	45.23	233,000	Jan 3	30.0	119,000	f3
235	07355650	Larto Lake at Dam near Acme, La.	291	1969-	5-(14-18)-73	59.26	-------	Jan 4	52.19	-------	---
236	07355900	Big Fork Tributary at Big Fork, Ark.	0.17	1964-	4-22-74	9.36	103	Dec 3	14.25	225	>100

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
237	07356000	Ouachita River near Mount Ida, Ark.	414	1942-	12-10-71	38.62	95,900	Dec 3	40.02	102,000	>100
238	07356700	Barnes Branch near Mount Ida, Ark.	1.85	1961-	12-10-71	14.50	1,140	Dec 3	16.79	3,070	>100
239	07359500	Ouachita River near Malvern, Ark.	1,585	1903-05, 1923-	5-15-23	30.3	140,000	Dec 3	27.06	125,000	b
240	07361500	Antoine River at Antoine, Ark.	178	1905, 1951-	1905	29.7	40,000	Dec 3	28.43	26,900	20
241	07362000	Ouachita River at Camden, Ark.	5,357	1886-	4-03-45	44.82	243,000	Dec 7	38.06	93,900	b
242	07362100	Smackover Creek near Smackover, Ark.	385	1938-	6-08-74	24.97	52,700	Dec 28	19.08	13,500	6
243	07362500	Moro Creek near Fordyce, Ark.	240	1952-	5-02-58	16.47	26,800	Dec 28	16.05	19,000	40
244	07363000	Saline River at Benton, Ark.	550	1927, 1938-	4- -27	30.5	110,000	Dec 4	26.37	64,700	10
245	07363200	Saline River near Sheridan, Ark.	1,123	1938-	2-01-69	22.42	71,000	Dec 6	19.43	38,900	4
246	07363300	Hurricane Creek near Sheridan, Ark.	204	1938-40, 1947-	6-27-60	18.55	52,300	Dec 28	15.64	11,700	4
247	07363450	Varnell Creek near Rison, Ark.	0.28	1964-	8-31-74	8.14	173	Dec 27	8.71	214	20
248	07363500	Saline River near Rye, Ark.	2,102	1938-	5-18-68	31.40	74,500	Dec 30	27.49	37,700	4
249	07364070	Bear Creek near Strong, Ark.	5.62	1963-	6-08-74	15.27	890	Dec 26	15.35	950	>100
250	07364110	Nevins Creek tributary near Pine Bluff, Ark.	0.75	1961-	5-04-79	8.67	408	Dec 27	8.78	418	50

Table 2.—Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
251	07364150	Bayou Bartholomew near McGehee, Ark.	576	1939-	5-11-58	25.49	6,870	Jan 2	22.4	4,470	5
252	07364200	Bayou Bartholomew near Jones, La.	1,187	1958-	3-13-61 5-21-58	----- 28.24	6,680 -----	Jan 5	28.45	6,800	10
253	07364740	Bayou DeLoutre near Farmerville, La.	241	1966-	6-10-74	51.34	17,300	Dec 28	48.27	10,300	30
254	07364800	Bayou D'Arbonne at Homer, La.	e30	1954-68 1974-	4-29-58	47.75	8,180	Dec 28	46.02	1,510	2
255	07364840	Lake Claiborne near Aycock, La.	133	1968-	5-05-79	12.03	------	Dec 28	11.38	———	——
256	07364870	Sugar Creek near Arcadia, La.	e47	1966-	1-21-79	46.16	5,110	Dec 5 Dec 27	43.72 45.30	1,450 3,510	<2 6
257	07364890	Bayou D'Arbonne near Hico, La.	254	1980-	4-14-80	13.87	3,500	Dec 10 Dec 28	9.38 15.74	870 10,000	—— ——
258	07365300	Middle Fork Bayou D'Arbonne near Colquitt, La.	43.9	1954-68 1974-	4-26-58	49.68	17,900	Dec 28	46.25	3,300	3
259	07365800	Cornie Bayou near Three Creeks, Ark.	180	1956-	6-08-74	17.50	65,000	Dec 28	11.63	4,960	2
260	07366000	Corney Bayou near Lillie, La.	462	1941-	4-27-58	25.20	48,200	Dec 28	16.07	8,690	3
261	07366200	Little Corney Bayou near Lillie, La.	208	1956-	6-09-74	17.54	24,000	Dec 17 Dec 28	8.91 10.72	2,810 6,290	<2 4
262	07366300	Bayou D'Arbonne Lake at Farmerville, La.	1,607	1965-	6-11-74	45.43	------	Dec 28	45.04	———	——
263	07366350	Stowe Creek near Farmerville, La.	e29	1954-68 1974-	2-10-66	47.61	16,600	Dec 27	c49.90	12,800	50
264	07366403	Bayou Choudrant tributary near Tremont, La.	0.54	1966-	5-07-75	10.62	735	Dec 5 Dec 27	9.52 9.90	494 570	25 30

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
265	07366420	Bayou Choudrant near Calhoun, La.	113	1966-	2-10-66	44.72	9,190	Dec 5	41.91	1,820	<2
								Dec 27	48.06	24,200	>100
266	07367250	Guyton Creek near Eros, La.	8.76	1968-	6-10-75	13.53	2,330	Dec 5	9.67	260	<2
								Dec 27	14.38	2,250	40
267	07367300	North Chenlere Creek at Chenlere, La.	e38	1954-68 1974-	3-21-55	45.89	6,270	Dec 5	43.16	1,240	<2
								Dec 27	46.29	7,620	>100
268	07367600	Cypress Creek near Vixen, La.	e16	1954-68 1974-	4-12-74	48.83	8,820	Dec 5	46.59	1,150	<2
								Dec 27	48.50	6,650	20
269	07367630	Ouachita River at Columbia Lock & Dam near Riverton, La.	15,630	1976-	5-13-79	43.08	71,000	Jan 6	44.62	78,700	---
270	07368000	Boeuf River near Girard, La.	P1,226	1927, 1939-	5-07-27	31.7	------	Dec 5	15.11	1,670	<2
					5-02-58	-----	3,070	Dec 29	18.30	2,030	2
					5-06-58	21.51	------				
271	07369000	Bayou Lafourche near Crew Lake, La.	P361	1939-	5-02-58	-----	26,800	Dec 7	27.68	18,300	4
					2-14-66	27.55	------	Dec 30	29.24	22,800	6
272	07369500	Tensas River at Tendal, La.	P309	1927, 1936-	5-15-27	34.02	------	Dec 6	26.33	3,590	7
					11-19-48	-----	4,610	Dec 29	24.75	3,120	
		Tendal, La.			6-12-75	24.91	------				4
273	07369700	Bayou Macon near Kilbourne, La.	P504	1958-	5-05-58	-----	4,740	Dec 5	24.55	3,880	4
					3-17-73	26.73	------	Dec 28	25.22	4,080	5
274	07370000	Bayou Macon near Delhi, La.	P782	1882, 1936-	3- -1882	37.5		Dec 5	25.12	8,400	15
					5-06-58	26.0	------	Dec 29	25.34	9,200	20
					1-21-79	-----	9,480				
275	07370530	Black Bayou at Kelly, La.	51.9	1966-	3-04-77	41.87	6,500	Dec 3	37.73	670	<2
								Dec 28	44.42	15,200	>100
276	07370575	Caney Creek near Chatham, La.	48.8	1966-	2-10-66	48.76	------	Dec 27	45.80	17,000	>100
					5-08-78	45.72	7,610				

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
277	07370600	Beaucoup Creek near Cotton Plant, La.	127	1951-68 1974-	5-17-53	13.18	13,400	Dec 4 Dec 28	10.31 13.93	2,870 17,200	<2 >100
278	07370650	Flat Creek near Sikes, La.	41.5	1951-68 1974-	5-17-53	12.56	------	Dec 5 Dec 28	9.44 13.28	1,120 11,000	<2 20
279	07370660	Flat Creek near Olla, La.	103	1966-	4-12-74	50.98	17,500	Dec 5 Dec 28	46.22 50.83	1,900 16,800	<2 25
280	07370700	Beech Creek near Olla, La.	e58	1954-68 1974-	4-12-74	46.78	23,900	Dec 5 Dec 28	41.45 44.89	1,120 10,800	<2 10
281	07370750	Chickasaw Creek near Olla, La.	47.6	1954-	2-10-66	43.22	10,400	Dec 5 Dec 28	40.29 42.87	1,830 8,440	<2 60
282	07370820	Dugdemona River near Quitman, La.	117	1965-	2-10-66	44.49	6,250	Dec 5 Dec 27	40.85 47.29	1,100 12,000	<2 >100
283	07370840	Choctaw Creek near Hodge, La.	16.5	1966-	1-22-79	44.77	2,950	Dec 5 Dec 27	44.68 45.92	2,800 5,400	15 >100
284	07370930	Cypress Bayou at Quitman, La.	91.8	1966-	2-11-66	45.80	13,500	Dec 5 Dec 27	40.99 47.73	2,010 21,600	<2 >100
285	07370980	Little Dugdemona River near Hodge, La.	p20	1965-	5-07-78	46.87	3,140	Dec 5 Dec 27	42.23 48.25	286 7,600	<2 >100
286	07371500	Dugdemona River near Jonesboro, La.	355	1939-	1-01-45	19.87	30,600	Dec 18 Dec 28	13.80 c21.20	4,050 41,500	<2 >100
287	07372110	Brushy Creek near Joyce, La.	e24	1965-	4-12-74	47.63	14,800	Dec 4 Dec 28	42.79 46.09	894 7,320	<2 10
288	07372200	Little River near Rochelle, La.	1,899	1958-	4-14-74	40.20	54,800	Dec 6 Dec 29	34.87 c45.88	17,900 108,000	2 >100
289	07372300	Bear Creek near Packton, La.	e11	1954-68 1974	4-08-68 5-05-75	48.78 51.03	12,500 ------	Dec 3 Dec 27	42.79 48.60	405 11,000	<2 50
290	07372900	Dyson Creek near Pollock, La.	e12	1964-	7-23-69	47.87	4,800	Dec 1 Dec 27	40.52 43.75	230 1,040	<2 3

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					RED RIVER BASIN--Continued						
291	07373000	Big Creek at Pollock, La.	e51	1942-	4-29-53	16.90	23,500	Dec 1	10.90	2,070	<2
								Dec 26	14.18	6,740	5
292	07373250	Hemphill Creek at Nebo, La.	35.3	1979-	4-14-79	11.00	6,020	Dec 3	8.39	2,410	---
								Dec 27	14.19	13,600	---
293	07373259	Catahoula Lake Control Structure, La.	-------	1972-	5-16-73	59.41	-------	Jan 3	53.80	-------	---
					MISSISSIPPI RIVER DELTA						
294	07375235	Tangipahoa River tributary near McComb, Miss.	2.71	1966-	3-24-73	10.23	1,460	Dec 4	8.32	830	6
								Dec 26	6.28	355	<2
295	07376760	CRS Draw near Liberty, Miss.	0.8	1966-	3-24-73	10.17	764	Dec 4	7.78	440	5
								Dec 26	9.69	710	40
296	07381490	Atchafalaya River at Simmesport, La.	-------	1903-	5-16-27	59.13	-------	Jan 12	38.75	513,000	--
					5-12-73	54.43	781,000				
297	07381590	Wax Lake Outlet at Calumet, La.	-------	1977-	5-04-79	7.32	-------	Jan 12	6.58	-------	--
298	07381600	Lower Atchafalaya River at Morgan City, La.	-------	1977-	5-04-79	6.71	-------	Dec 27	6.23	-------	--
299	07381800	Spring Creek near Glenmora, La.	68.4	1953, 1954-	5- -53	20.50	-------	Dec 4	12.64	979	<2
					9-20-79	17.55	6,920	Dec 26	17.57	7,580	50
300	07382000	Bayou Cocodrie near Clearwater, La.	240	1922-24 1938-	5-18-53	26.72	28,200	Dec 5	17.47	1,320	<2
								Dec 28	23.28	7,270	90
301	07382500	Bayou Courtableau at Washington, La.	P715	1946-	5-21-53	-----	9,490	Dec 6	d27.08	4,010	<2
					5-22-53	d35.29	-------	Jan 10	d30.07	4,870	3
302	07383500	Bayou Des Glaises at Moreauville, La.	P270	1943-	5-18-53	22.68	6,340	Dec 4	17.39	-------	--
								Dec 27	19.32	-------	--
								Dec 28	-----	2,400	<2
303	07385500	Bayou Teche at Arnaudville, La.	P1,531	1949-	5-24-53	-----	4,630	Dec 4	d18.95	2,360	b
					5-23-53	d24.27	-------	Dec 27	d21.86	2,400	

Table 2.—Summary of peak stages and discharges—Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	G.Ht. (ft)	Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					MISSISSIPPI RIVER DELTA—Continued						
304	07385700	Bayou Teche near St. Martinville, La.	-------	1927, 1960-	5-27-27 9-05-73	24.30 -----	------- 3,970	Dec 4 Dec 26	11.96 12.74	2,390 3,790	b
					MERMENTAU RIVER BASIN						
305	08010000	Bayou Des Cannes near Eunice, La.	131	1939-	5-20-53	22.36	11,900	Dec 5 Dec 28	16.68 20.16	------- 7,460	-- 7
306	08011800	Castor Creek near Oberlin, La.	43.9	1964-	9-20-79	49.93	8,560	Dec 27	46.78	3,240	4
307	08012000	Bayou Nezpique near Basile, La.	527	1939-	5-20-53	34.39	35,800	Dec 5 Dec 30	20.42 26.22	3,740 13,600	<2 8
					CALCASIEU RIVER BASIN						
308	08012650	Floctaw Creek near Lacamp, La.	18.7	1951-68 1974-	5-18-53	19.00	28,800	Dec 2 Dec 27	14.33 14.70	1,970 2,640	<2 3
309	08013000	Calcasieu River near Glenmora, La.	499	1944-	5-19-53	21.55	59,900	Dec 4 Dec 28	15.64 20.40	12,700 45,000	2 30
310	08013500	Calcasieu River near Oberlin, La.	753	1923-24 1939-	5-19-53	26.53	72,800	Dec 4 Dec 30	18.63 24.33	15,300 51,100	2 50
311	08013700	Drakes Creek near Pitkin, La.	22.1	1954-68 1974-	8-04-55	17.41	7,800	Dec 3 Dec 27	15.01 17.36	1,130 7,540	<2 35
312	08013800	Little Sixmile Creek near Pitkin, La.	10.4	1954-	10-11-77	16.70	4,200	Dec 3 Dec 27	13.71 14.40	1,040 1,590	<2 3
313	08013950	Big Brushy Creek near Pitkin, La.	34.4	1965-	11-12-66	20.70	13,000	Dec 3 Dec 27	15.46 17.54	1,380 3,880	<2 5
314	08014000	Sixmile Creek near Sugartown, La.	171	1957-	11-12-66	17.66	21,600	Dec 27	17.52	20,700	90
315	08014200	Tenmile Creek near Elizabeth, La.	94.2	1950-	5-18-53	21.33	31,900	Dec 27	17.62	11,800	15
316	08014500	Whisky Chitto Creek near Oberlin, La.	510	1886, 1939-	6- -1886 5-18-53	[c]25.7 [c]32.8	 144,000	Dec 2 Dec 27	18.80 25.66	9,490 45,800	<2 25
317	08014600	Flat Creek near De Ridder, La.	26.3	1964-	3-25-73	13.42	7,240	Dec 27	13.79	8,450	80

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					CALCASIEU RIVER BASIN--Continued						
318	08014800	Bundick Creek near De Ridder, La.	120	1957-79	11-12-66	20.79	7,090	Dec 27	[c]21.88	18,100	90
319	08014880	Bundick Lake near Dry Creek, La.	-------	----	--------	-----	-------	Dec 28	[c,d]104.3	-------	--
320	08015200	Dry Creek at Dry Creek, La.	42.7	1954-68 1975-	9-20-79	24.60	7,200	Dec 28	24.66	7,250	15
321	08015500	Calcasieu River near Kinder, La.	1,700	1923-24 1939-57 1962-	5-19-53	32.00	182,000	Dec 5 Dec 29	19.26 26.35	28,800 102,000	2 50
322	08016400	Beckwith Creek near De Quincy, La.	148	1946-	5-21-55	24.45	13,800	Dec 5 Dec 27	16.93 23.71	1,970 11,700	<2 25
323	08016500	Hickory Branch near Longville, La.	34.9	1953-68 1977-	5-20-55	21.38	10,200	Dec 28	19.72	6,280	9
324	08016600	Hickory Branch at Kernan, La.	82.2	1946-	5-20-55	27.83	11,400	Dec 28	28.60	12,500	35
325	08016800	Bear Head Creek near Starks, La.	177	1954-	5-18-80	17.70	11,500	Dec 5 Dec 28	13.47 18.24	1,380 18,000	<2 >100
326	08017050	Calcasieu River & Pass at Lake Charles, La.	-------	1937-73 1975-	5-22-53	9.8	------	Dec 31	6.3	------	---
					SABINE RIVER BASIN						
327	08023080	Bayou Grand Cane near Stanley, La.	27.5	1980-	4-12-80	14.18	6,200	Dec 15 Dec 28	12.98 11.75	4,130 2,290	--- ---
328	08023270	Bull Bayou near Hunter, La.	8.54	1964-	4-12-80	14.57	672	Dec 28	12.18	430	5
329	08023400	Bayou San Patricio near Benson, La.	80.2	1954-68 1978-	9-20-58	20.36	21,300	Dec 16 Dec 28	16.60 17.22	3,400 5,780	3 7
330	08024030	Bayou Scie at Zwolle, La.	45.9	1950-68 1974-	4-09-68	16.33	15,800	Dec 3 Dec 28	8.52 12.11	538 2,920	<2 3
331	08024060	Blackwell Creek at Many, La.	3.16	1960-	5-08-69	13.09	946	Dec 3 Dec 28	9.89 11.21	454 638	2 4

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	Flood G.Ht. (ft)	Flood Discharge (ft^3/s)	Frequency (years)
					SABINE RIVER BASIN--Continued						
332	08025350	Toledo Bend Reservoir, La.	7,178	1967-	3-21-69	[d]173.42	-------	Dec 28	[d]172.37	-------	---
333	08025500	Bayou Toro near Toro, La.	148	1956-	4-09-68	25.73	31,200	Dec 1	10.50	1,390	<2
								Dec 28	23.01	14,300	10
334	08025850	Pearl Creek at Burr Ferry, La.	9.66	1967-	4-12-80	9.74	1,650	Dec 3	5.77	440	<2
								Dec 28	10.79	2,150	>100
335	08026000	Sabine River near Burkeville, Tex.	7,482	1884, 1956-	5- -1884	35.9	----------	Dec 27	28.20	36,600	b
					1-29-74	34.20	80,600	Dec 29	28.43	37,100	b
336	08026200	Red Bank Creek at Evans, La.	17.2	1966-	4-12-80	20.60	4,200	Dec 28	21.95	6,000	40
337	08026700	West Anacoco Creek near Hornbeck, La.	22.2	1950-68, 1974-	4-09-68	18.48	7,930	Dec 3	11.87	950	<2
								Dec 28	17.82	6,910	10
338	08027550	Prairie Creek near Leesville, La.	40.0	1949-68 1974-	4-29-53	47.68	28,000	Dec 3	43.71	3,300	3
								Dec 28	48.11	33,600	>100
339	08028000	Bayou Anacoco near Rosepine, La.	365	1952-	5-19-53	28.38	64,300	Dec 4	21.02	8,260	2
								Dec 28	[c]27.76	59,000	40
340	08028500	Sabine River near Bon Wier, Tex.	8,229	1913, 1924-	4-23-13	33.5	----------	Dec 29	26.86	83,800	b
					5-19-53	28.70	115,000				
341	08028700	Hoosier Creek near Merryville, La.	13.1	1956-81	3-24-73	12.86	3,550	Dec 28	[c]13.12	3,860	>100
342	08029700	Brushy Creek at Bancroft, La.	25.9	1954-68 1974-	9-21-58	16.97	----------	Dec 28	17.88	9,190	>100
					5-17-80	16.92	4,530				
343	08030500	Sabine River near Ruliff, Tex.	9,329	1884, 1925-	5- -1884	22.2	----------	Dec 31	18.00	90,000	b
					5-22-53	19.98	121,000				
					MISSISSIPPI RIVER MAIN STEM						
344	05587500	Mississippi River at Alton, Ill.	171,500	1927-	4-28-73	432.15	----------	Dec 8	427.73	401,000	15
					4-29-73	-------	535,000				
345	07010000	Mississippi River at St. Louis, Mo.	701,000	1844, 1861-	6-27-1844	41.32	1,300,000	Dec 7	37.98	694,000	5
					4-28-73	43.23	852,000				
346	07020500	Mississippi River at Chester, Ill.	708,600	1844, 1928-	6-30-1844	39.80	1,350,000	Dec 9	39.50	753,000	5
					4-30-73	43.32	886,000				

Table 2.--Summary of peak stages and discharges--Continued

Map no.	Station number	Station name and location	Drainage area (mi^2)	Period of record	Discharge data: Previous flood Date	Previous flood G.Ht. (ft)	Previous flood Discharge (ft^3/s)	Flood of December 1982 and January 1983 Date	G.Ht. (ft)	Discharge (ft^3/s)	Frequency (years)
					MISSISSIPPI RIVER MAIN STEM--Continued						
347	07022000	Mississippi River at Thebes, Ill.	713,200	1844, 1933-	6-04-1844	345.14	1,375,000	Dec 9	42.36	832,000	5
348	07295100	Mississippi River at Tarbert Landing, Miss.	1,124,900	1932-	2-19-37	58.09	1,977,000	Jan 11	53.4	1,195,000	<2
349	07374000	Mississippi River Baton Rouge, La.	1,125,810	1871-	4-16-45 5-15-27	------ 47.8	1,473,000 ---------	Jan 13	37.3	91,070,000	2

FOOTNOTES:

[a]At former site and datum

[b]Not determined because of regulation

[c]From floodmark

[d]Elevation (NGVD)

[e]Approximately

[f]From regional relationship

[g]Discharge measurement

[h]Indirect measurement made at site 14 miles downstream from gaging station. Drainage area at this site is 603 mi^2.

[i]Prior to 3/31/81 gage located at site 1.4 miles upstream at same datum

[j]Estimated discharge

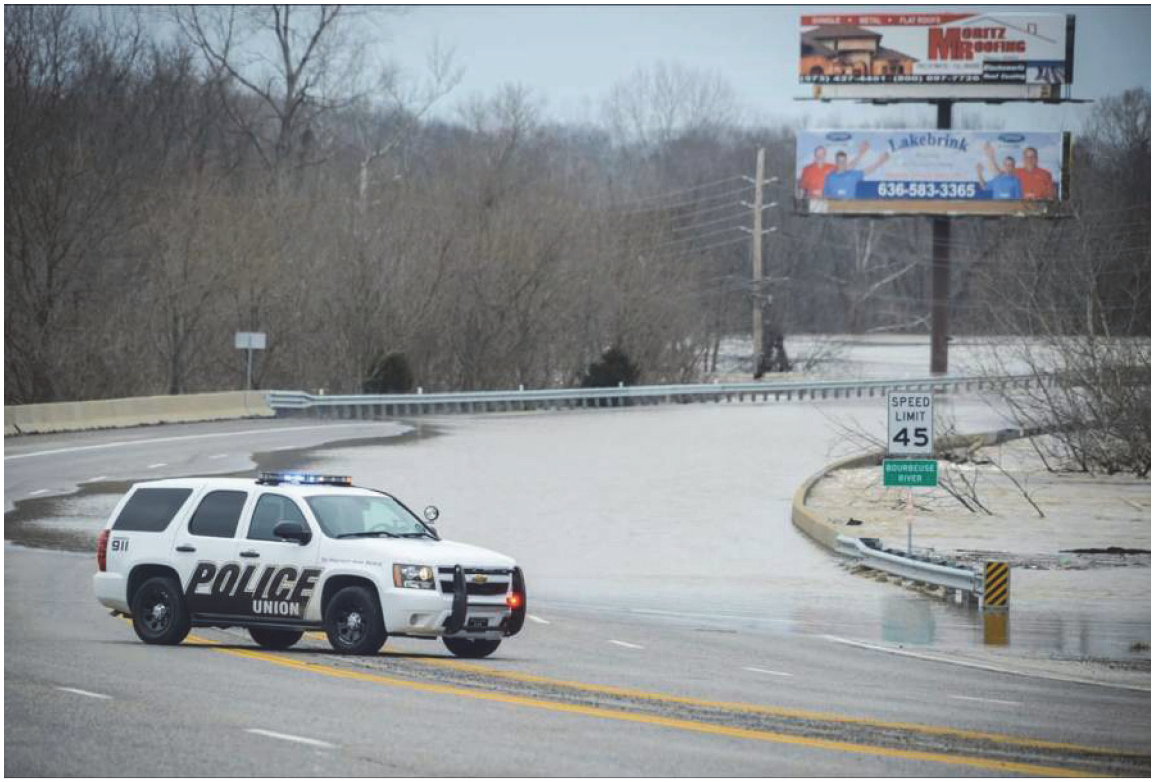
[k]Occurred on following day

[m]Gage height affected by ice

[n]Estimated from observer gage-height readings

[p]Interchange of flow between basins

APPENDIX F - DECEMBER 2015 FLOODING PHOTOS


MORITZ ROOFING
Lakebrink
636-583-3365
SPEED LIMIT 45
BOURBEUSE RIVER
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UNION

45
BOURBEUSE RIVER

SPEED
LIMIT
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BOURBEUSE
RIVER
Lakebring
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Super 8

MOVIE PALACE
verizonwireless
MOVIE PALACE

POLICE

POLICE

McDonald's
PHILLIPS 66
166 189
MOVIE PALACE
MOVIE PALACE

McDonald's
Restaurant
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66
1.66 1.89
McDonald's

QT

JIMMY JOHN'S

GROVE

GROVE
Link-Belt
KOZENY
WAGNER

Link-Belt
KOZENY
WAGNER

GROVE

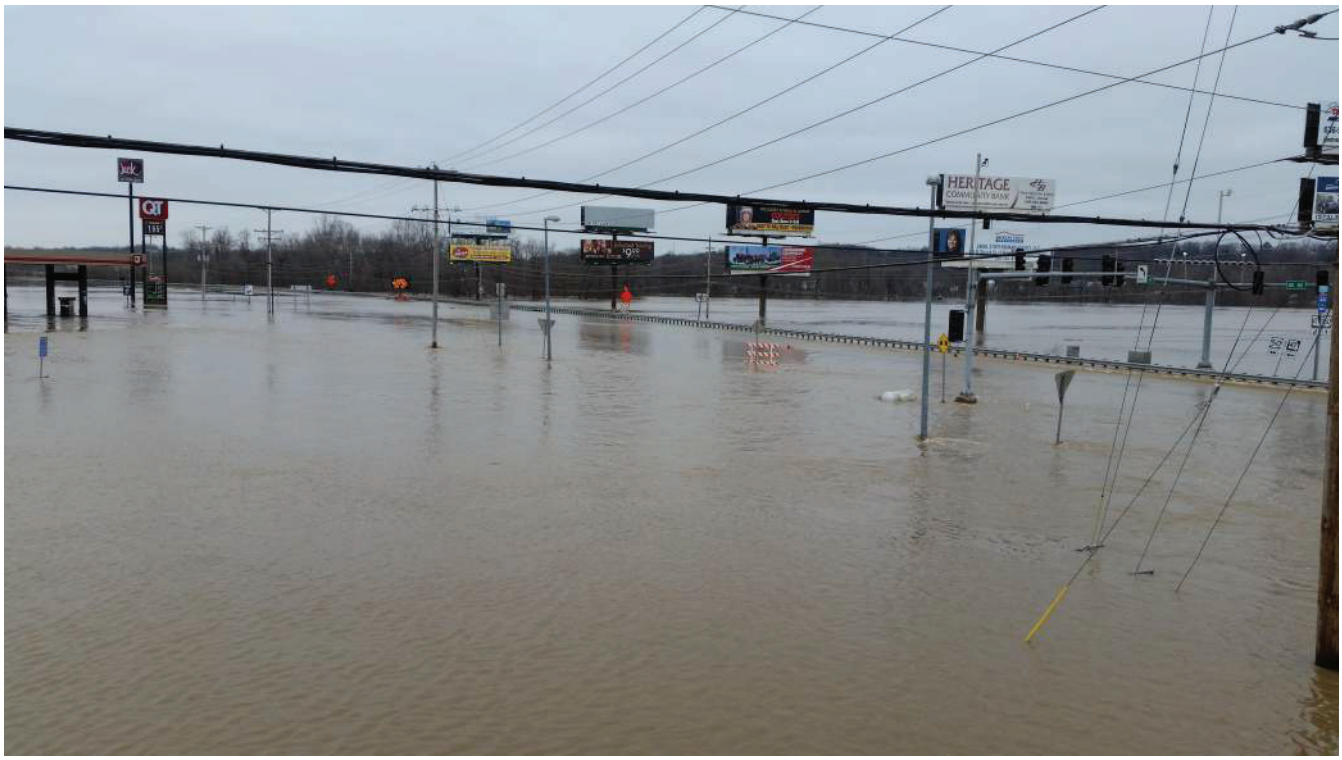
DICKEY BUB

DICKEY BUB

QT
DICKEY BUB
HERITAGE

DICKEY BUB

DICKEY RUB


HERITAGE
COMMUNITY BANK

HERITAGE

HERITAGE

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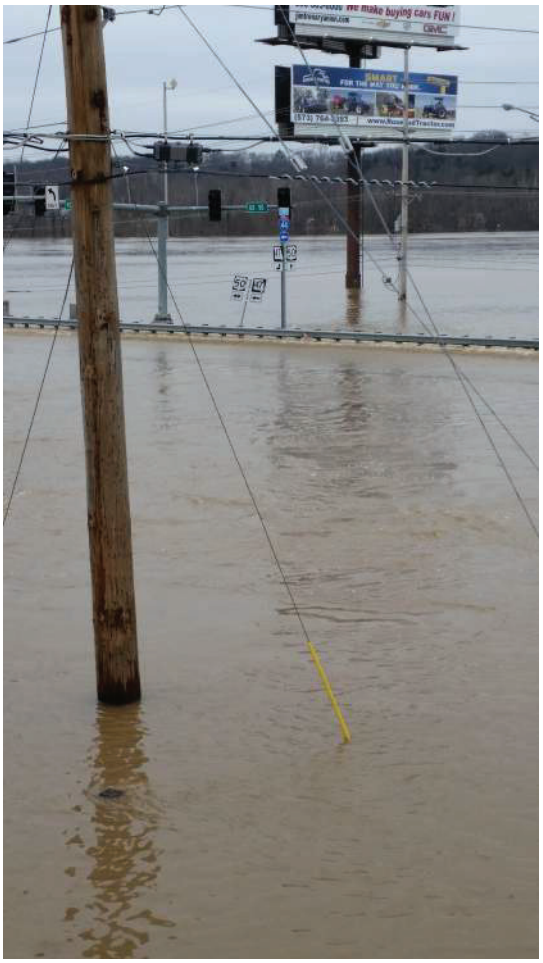

DICKEY RUB

DOLLAR GENERAL

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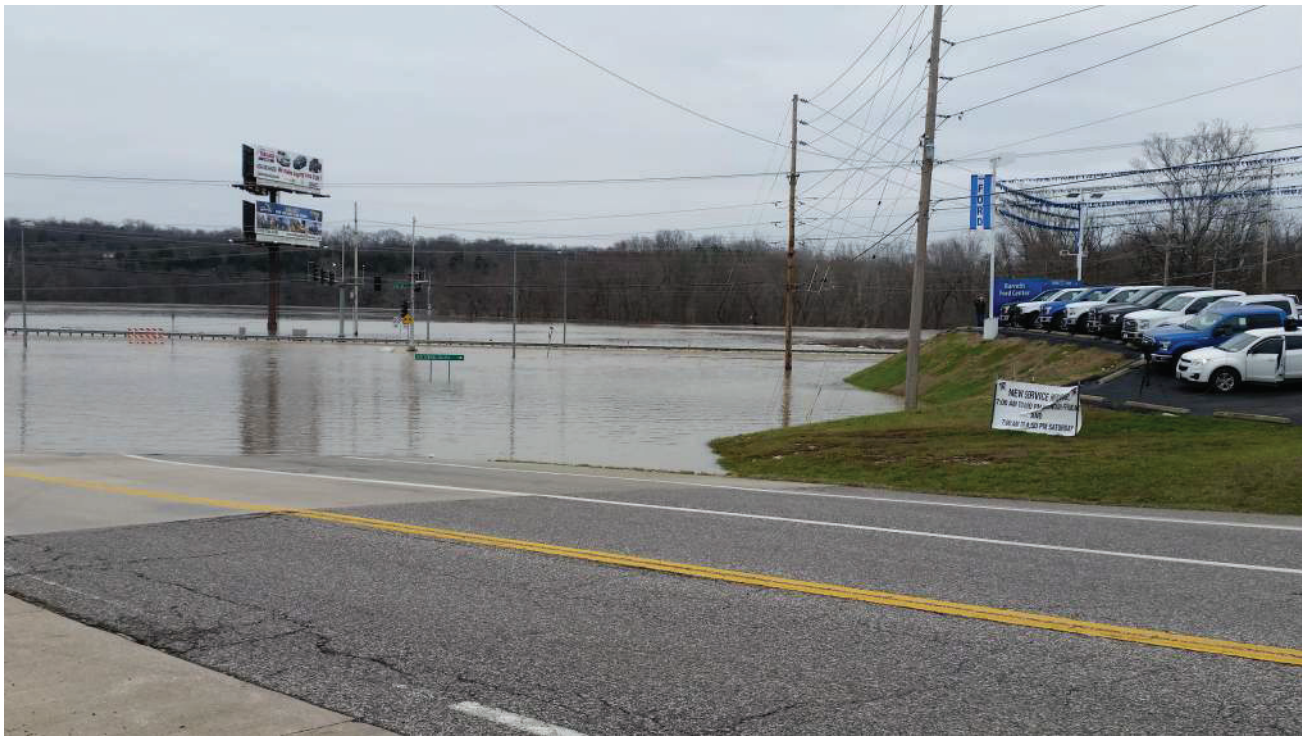
DICKEY BU
FARM & HOME

HERITAGE



SPORTS CENTER
WAL MART
1982
DICKEY DUB
2015

Appendix K: Route 47 Existing Utilities

DRAFT

UTILITIES

Below is a list of all known existing utilities in the project limits per 5 Segments and details of potential utility conflicts.

Segment 1

- Ameren – Electric (OH)
  - Ameren has 12kv/34kv aerial facilities along Segment 1. Some facilities are located within a utility easement but most of their facilities are located within r/w.
- Ameren – Fiber
  - Ameren has aerial fiber facilities within part of this segment (aerial and buried). Most of the existing fiber facilities are located within r/w at the intersection of Route 100 and Route 47 within an utility easement.
- AT&T-d
  - AT&T-d has buried fiber & copper facilities throughout the entire Segment. AT&T-d fiber facilities are located in a small duct bank within a rod wide utility easement. AT&T-d also has aerial copper facilities located on Ameren poles.
- Charter
  - Charter has aerial facilities located within the entire Segment section on Ameren's poles. They also have minor buried crossings at various locations.
- MoDOT
  - MoDOT maintains the traffic signals & lighting at various locations along this segment.
- Gateway Fiber
  - Gateway fiber maintains a buried fiber at Route 47 and Route 100 intersection within r/w.
- Lumen
  - Lumen maintains an aerial fiber along this segment on Ameren's poles and the fiber is located within r/w.
- Sho-Me Fiber
  - Sho-Me Fiber maintains an aerial fiber along this segment on Ameren's poles and the fiber is located within r/w.
- Spire
  - Spire maintains several intermediate pressure gas mains along this segment, and they are located within r/w.
- City of Washington
  - The City of Washington has water and sewer facilities located between Route 100 and Norwood Trailer Court. These facilities are located within r/w.
- Washington School Fiber
  - Washington School has an aerial fiber on Ameren poles between Route 100 and Bieker Road.

It should be noted that no reimbursable utilities are anticipated to be impacted in this segment except for potentially two Ameren poles located just south of 4255 State Hwy 47.

Segment 2

- Ameren – Electric (OH)
    - Ameren has 12kv/34kv aerial facilities located along Segment 2. Some facilities are located within a utility easement but most of their facilities are located within r/w.
- Ameren-Electric (UG)
    - Ameren has heavy underground equipment (two Switchgears) and buried facilities crossing Route 47 at Lost Pines. The existing switchgears are located within a utility easement.
- Ameren Transmission
    - Ameren has existing transmission H Towers (138kv and 345Kv) crossing Route 47 at Lost Pines.
- AT&T-d
    - AT&T-d has buried fiber & copper facilities throughout the entire Segment. AT&T-d fiber facilities are located in a small duct bank within a rod wide utility easement. AT&T-d also has aerial copper facilities located on Ameren poles.
- Charter
    - Charter has aerial facilities located within the entire Segment section on Ameren's poles. They also have minor buried crossings at various locations.
- MoDOT
    - MoDOT maintains the traffic signals & lighting at various locations along this segment.
- Phillips 66 Pipeline (non-HVL product-Natural Gas Liquid/processed crude Oil)
    - Phillips 66 Pipeline has a pipeline crossing Route 47, just north of County Club Lane. Phillips Pipeline predates Route 47 and is considered "reimbursable" to the Commission. Minor widening is anticipated with the concept plan with no increase in grade over the pipeline. The pipeline is not currently encased (no vent pipes).
- Marathon Pipeline (Crude Oil)
    - Marathon's Pipeline has a pipeline crossing Route 47, approximately 1000 feet north of Forest Hills Drive Intersection (just north of Fairway Auto Sales. Marathon's pipeline predates Route 47 and is considered "reimbursable" to the Commission. Minor widening is anticipated with the concept plan with no increase in vertical grade over the pipeline. The pipeline is currently encased (no vent pipes).
- Explorer Pipeline (Liquefied Petroleum)
    - Explorer Pipeline has a pipeline crossing Route 47, between Bourbeuse Bridge and flood relief bridge. Explorer's pipeline predates Route 47 and is considered "reimbursable" to the Commission. Minor Widening is anticipated with the concept plan with no increase in vertical grade over the pipeline. The pipeline is currently encased (no vent pipes).

- Sho-Me Fiber
    - Sho-Me Fiber maintains an aerial fiber along this segment on Ameren's poles and the fiber is located within r/w.
- Spire
    - Spire maintains several intermediate pressure gas mains along this segment, and they are located within r/w.
- Franklin County PWSD #1
    - PWSD #1 has existing facilities at a couple proposed intersection improvements including Route 47 & Lost Pines (west & east side of Route 47). Water facilities on the east side are located within r/w but it appears their water facilities located on the west side of Route 47 may be in conflict for approximately 100 feet. These facilities are located within a utility easement.
- City of Union
    - The City of Union has water and sewer facilities located along Route 47, north and south of Independence Drive. These facilities are located within public r/w.

It should be noted that some existing reimbursable utility facilities may be impacted within Segment 2 work limits. It is likely that as many as 2-3 existing Ameren 12kv/34 poles within existing utility easement could be impacted by the Segment 2 improvement work. We don't anticipate conflicts with any of the existing three pipelines in Segment 2. It is possible that Franklin County PWSD #1 reimbursable facilities on the west side of Route 47 (Lost Pines) may be impacted for less than 100 feet (of water main). Ameren's two switchgears at Lost Pipes & Route 47 are currently located in close proximity of potential proposed work. Ameren's Electric Transmission H-Towers appear to be out of conflict with proposed work. It should be also noted that AT&T's duct bank is located within a Rod-wide utility easement outside existing right of way in much of Segment 2. Therefore, significant proposed cut grades outside of right of way could become reimbursable with AT&T-distribution. The existing duct bank mainly includes fibers that could be lowered in place when slack is pulled from adjacent manholes.

Segment 3

- Ameren – Electric (OH)
    - Ameren has 12kv/34kv aerial facilities within Segment 3 (along Route 47 and along Route 50). Some facilities are located within a utility easement (Route 50) but most of their facilities are located within r/w along Route 47.
- Ameren – Fiber
    - Ameren has fiber facilities in a small part of this segment (aerial and buried). Most of the existing fiber is located within r/w at the intersection of Route 50 and Route 47 and along East Main Street.
- AT&T-d

    - AT&T-d has buried fiber & copper facilities along the entire Segment. AT&T-d fiber facilities are located in a small duct bank within a rod wide utility easement. AT&T-d also has aerial copper facilities located on Ameren poles.
- Charter
    - Charter has aerial facilities located within the entire Segment section on Ameren's poles. They also have minor buried crossings at various locations.
- Windstream
    - Windstream maintains a buried fiber at Route 47 and Route 50 intersection within r/w.
- MoDOT
    - MoDOT maintains the traffic signals & lighting at various locations along this segment.
- Gateway Fiber
    - Gateway fiber maintains an aerial fiber at Route 47 and Route 50 intersection within r/w.
- Lumen
    - Lumen maintains an aerial fiber along this segment on Ameren's poles and the fiber is located within r/w.
- MoGas Pipeline (Natural Gas)
    - MoGas has an existing 10" high pressure pipeline that crosses Route 50 in Segment 3 limits. The MoGas pipeline is located within a utility easement where Route 47 may get re-aligned. If Route 47 gets re-aligned, then a significant fill (15' plus) will need to be placed over the pipeline; such types of road improvements will facilitate at least a $300k utility relocation.
- MCI/Verizon
    - MCI's maintains an aerial/buried fiber at the Route 47 and Route 50 intersection within r/w.
- Sho-Me Fiber
    - Sho-Me Fiber maintains an aerial fiber along this segment on Ameren's poles and the fiber is located within r/w.
- Spire
    - Spire maintains several intermediate pressure gas mains along this segment and they are located within r/w.
- City of Union
    - The City of Union has water and sewer facilities located with the entire project limits of Segment 3. These facilities are located within public r/w.

It should be noted that some existing reimbursable utility facilities may be impacted within Segment 3 work limits. It is likely that as many as 2-3 existing Ameren 12kv/34kv poles located within existing utility easement could be impacted by the Segment 3 improvement work. If Route 47 gets re-aligned, then we can anticipate a costly ($300k) pipeline relocation.

Segment 4

- Ameren – Electric
    - Ameren has 12kv/34kv aerial facilities within Segment 4. Some facilities are located within a utility easement but most of their facilities are located within r/w.
- AT&T-d
    - AT&T-d has buried fiber & copper facilities along the entire Segment. AT&T-d fiber facilities are located small duct bank within a rod wide utility easement. AT&T-d also has aerial copper facilities located on Ameren poles.
- Charter
    - Charter has aerial facilities located within the entire Segment 4 section on Ameren's poles. They also have minor buried crossings at various locations.
- MoGas Pipeline (10" HP Natural Gas)
    - MoGas has an existing 10" high pressure (HP) pipeline crosses Route 47 in Segment 4 limits. The HP gas pipeline crosses Route 47 approximately 150' north of Sawmill Road. There could be a minor grade cut for the new ditch for the widening improvement work. Potholes will be necessary in the design phase to determine if the gas main has the minimum cover. Construction of an inverted cradle - concrete reinforced could be a simple fix to avoid relocating the HP gas pipeline. This work could be included in the road contract and cost less than $60K.
- Sho-Me fiber
    - Sho-Me Fiber maintains an aerial fiber within this segment on Ameren's poles and the fiber is located within r/w.
- Spire
    - Spire maintains several intermediate pressure gas mains within this segment and they are located within r/w.
- City of Union – Water and Sewer
    - The City of Union has water and sewer facilities located within the entire project limits of Segment 4 except between Ruck Drive and College Drive. These facilities are located within public r/w.

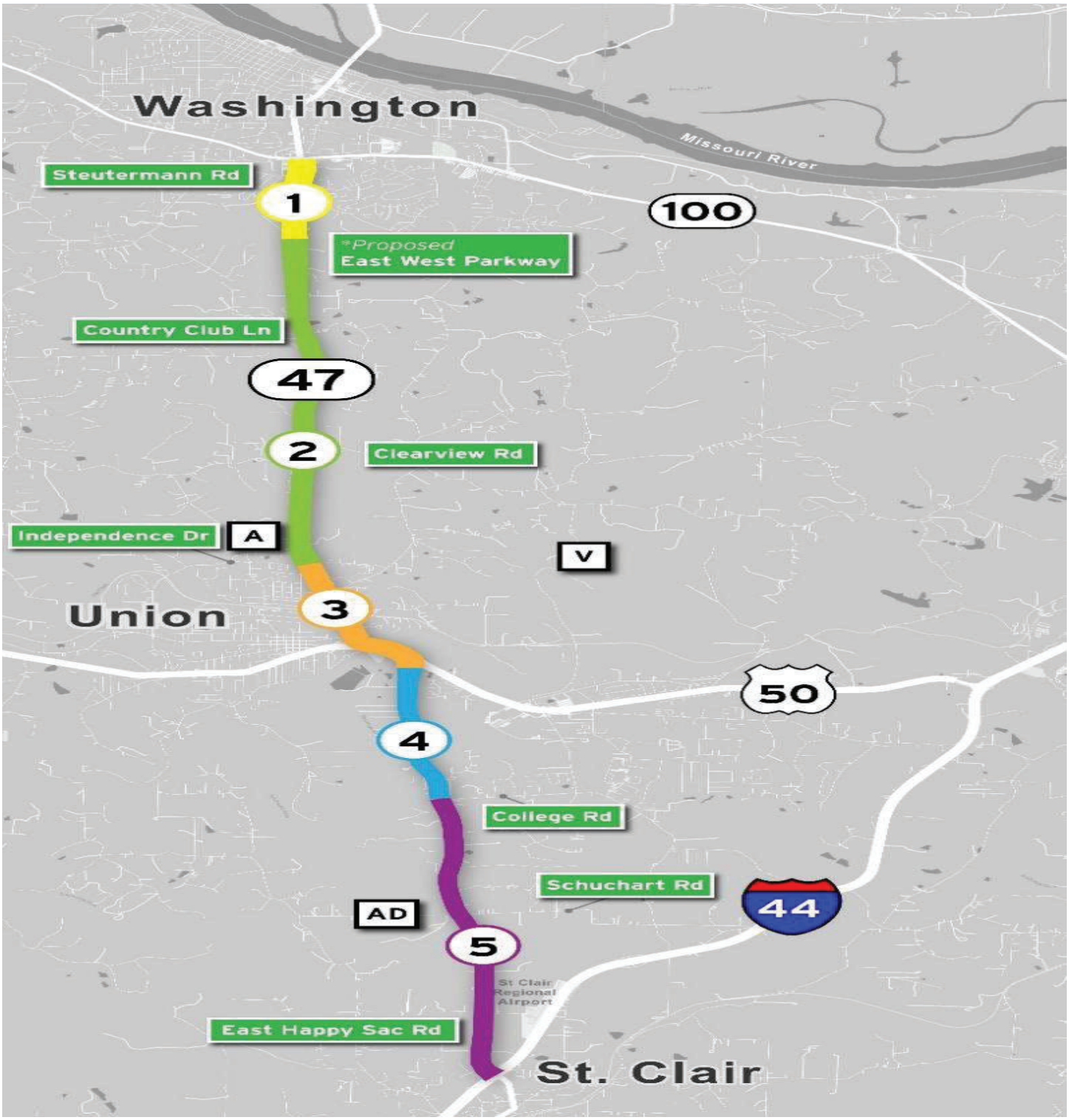
It should be noted that some existing reimbursable utility facilities may be impacted within Segment 4 work limits. It is likely that as many as 2-3 existing Ameren 12kv/34 poles located within existing utility easement could be impacted by the Segment 4 improvement work. A pothole investigation of the MoGAS pipeline crossing Route 47, north of Sawmill Road will clarify a potential conflict with the proposed improvement work.

Segment 5

- Ameren- Electric
    - Ameren has 12kv/34kv aerial facilities along Segment 5. Some facilities are located within a utility easement but most of their facilities are located within r/w.

- AT&T-d
    - AT&T-d has buried fiber & copper facilities throughout the entire Segment. AT&T-d fiber facilities are located in a small duct bank within a rod wide utility easement. AT&T-d also has aerial copper facilities located on Ameren poles. AT&T-d has a Remote Terminal Cabinet and two copper distribution cabinets located on the south side of College Road. This AT&T equipment is located outside r/w within a utility easement. The cost of relocating this equipment will exceed $250k. It would be prudent not to widen on the south side of College Road.
- Charter
    - Charter has aerial facilities located within the entire Segment 5 section on Ameren's poles. They also have minor buried crossings at various locations.
- MoDOT
    - MoDOT maintains the traffic signals & lighting at various locations along this segment.
- MoGas Pipeline
    - MoGas has an existing 10" high pressure (HP) pipeline crosses Route 47 in Segment 5 limits between Reeds Plaza Drive and Happy Sac. Widening work & lowering the profile of the road may be necessary over MoGas's Pipeline. A pothole investigation will be necessary in the design phase to determine if the gas main has the acceptable cover. Construction of an inverted cradle – (concrete reinforced) may be a simple fix to avoid relocating the HP gas pipeline if we only have a vertical cover issue. This work could possibly be included in the road contract.
- Spire
    - Spire maintains several intermediate pressure gas mains within this segment, and they are located within r/w. Spire has a regulator station on the south side of College Road. It is important to avoid impacts this reimbursable utility. Conflicts would require a replacement easement and $250k relocation cost.
- City of St. Clair - Water and Sewer
    - The City of St. Clair has water and sewer facilities located adjacent to Route 47 from Reeds Plaza Drive to I-44 within Segment 5. These facilities are located within public r/w.

It should be noted that some existing reimbursable utility facilities may be impacted within Segment 5 work limits. It is likely that as many as 6-8 existing Ameren 12kv/34 poles located within existing utility easement could be impacted by the Segment 5 improvement work. It should also be noted that AT&T's duct bank is located within a rod wide utility easement located outside existing right of way in much of Segment 5. Therefore, significant proposed cut grades outside of right of way could become reimbursable with AT&T-distribution. The existing duct bank mainly includes fibers that could be lowered in place when slack is pulled from adjacent manholes. It will be important to pot hole over the MoGAS existing pipeline in this segment. Also, special attention to not disturb AT&T-d's above ground equipment and Spire's regulator station should be made on the south side of College Road.


Washington
Missouri River
Steutermann Rd
1
100
*Proposed
East West Parkway
Country Club Ln
47
2
Clearview Rd
Independence Dr
A
V
Union
3
50
4
College Rd
Schuchart Rd
44
AD
5
St Clair
Regional
Airport
East Happy Sac Rd
St. Clair

Appendix L: Safety Assessment for Every Roadway (SAFER) Checklist

DRAFT

Project Name:	STL OE RTE 47
MoDOT Project Number:	J6P3661
Location (Route & Limits):	RT 47, MO 100 to I-44
Project Purpose:	Conceptual Study Report for Route 47 corridor improvements
Current Roadway Classification:	
Proposed Roadway Classification:	No change
Posted Speed Limit:	
Proposed Speed Limit:	No change
Area Team:	
Status:	FINAL
Review Date:	

SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

INSTRUCTIONS

The goal is to incorporate safety measures in all projects. The intent of this tool is to facilitate a discussion of safety in all MoDOT projects. Project Managers along with the area core team should use this document to consider baseline safety improvements for projects. Crash history and customer areas of concern should be a part of the discussion, as well as considerations for potential future crashes. This is not an all-inclusive list, and further safety analysis may be required. If other safety improvements not specified on the form have been considered, these items can be added to the form. Comments can be added to note any core team discussions and decisions that occurs. This document shall not be shared with any external partners unless they are working on our behalf.

NOTES:

1. Sections along the corridor (A, B, C, & D) are shown in **Appendix A, Corridor Sections Map.**
2. Appendix B: MO Route 47 Existing Crash Analysis Memorandum can be found in **Appendix B.**

VULNERABLE ROADWAY USERS	NOTES
Are there gaps within the VRU infrastructure that can be made continuous?	Yes, consider adding pedestrian facilities in urban Sections C and D defined in the Appendix B: MO Route 47 Existing Crash Analysis Memorandum.
Are unique road users in the area? (e.g. horse/buggy, farming, schools, older roadway users, alcohol establishments,…)	Yes. Schools located in urban sections and farming in the rural. (Referenced from Google Maps)
What are the specific recommendations from the community/regional plans for bike, pedestrian, or transit within the project limits that can be incorporated or modified to be accommodates in the project?	No known recommendations. According to Area Traffic Engineer (ATE), there is potential for a developing Bike/Pedestrian initiative. Latest bikeable/walkable plan, was published by Trailnet in 2011 with project recommendations involving adding bike path along Rte 47 in Section D. See https://www.onestl.org/media/site/documents/reports/transportation/Franklin%20County%20Bike%20Walk%20Plan.pdf for more detail.
Does the local municipality have a complete streets ordinance or policy that should be considered?	No (From https://mobikefed.org/CompleteStreets)

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

What is the historic trend for vulnerable road user fatalities and serious injuries over the past 5 years?	One serious injury crash recorded in last five years that involved a bicycle during dark conditions near E. Happy Sac Road (Section D of the Appendix B: MO Route 47 Existing Crash Analysis Memorandum)
How does vulnerable road user safety performance compare to overall safety performance for the roadway?	VRU serious injury crashes make up 3% of all total serious/fatal injury crashes along corridor.
Are there high generators of bike/ped traffic that require additional improvements? - Note: Land use (shopping centers, schools, apartment complexes, tourist areas, low/no vehicle households), nearby bike/ped trails, transit stops, etc.	Yes, In urban Sections A and C. (shopping centers like Lowe's, Schnucks, Restaurants, and license bureau, fitness centers, and No sidewalk present for the residential area west of Independence Dr in Section- C and West of US 50 SB travel)
Are there trail crossing locations that could be improved?	No trail crossings were identified along the corridor. (from the google street view)
Are there traffic calming measures that could be implemented along the corridor? Complete Streets concepts? - Narrow lanes, road diets, roundabouts, curb extensions, etc.	Roundabouts under consideration for some intersections along corridor.
Should speed management countermeasures be considered?	Yes. Two subsegments along the corridor in rural Sections B and D were noted in the Top 50% for speeding related crashes in the HIN4-CF1 analysis (Appendix B: MO Route 47 Existing Crash Analysis Memorandum).
Should a road diet be considered?	No, the majority of the corridor is not multi-lane with the exception of isolated segments in the urban sections where additional lanes are present near US 50 and Rte 100.
Do any high-risk areas for vulnerable roadway users exist in the project area? - Note: High-risk areas, which involve greater level of analysis than identification of hot spots, can be identified using any of the following methods: High Injury Network (HIN) analysis from Vision Zero; Predictive safety analysis (https://safety.fhwa.dot.gov/rsdp/ddsa.aspx); or Systemic safety analysis (https://highways.dot.gov/safety/data-analysis-tools/systemic)	Yes, the section between Timberview Dr and N. Outer Rd in St. Clair, MO is considered in the top 10% of VRU crashes per year per mile, according to the East-West Gateway's High-Injury Network Analysis (See: https://www.ewgateway.org/gtsr/)

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

Is the speed of the roadway conducive to pedestrians/bikes along the roadway? - Note: A speed study may need to be done on the roadway Severity of Pedestrian Crash Chart	The corridor consists of speeds primarily ranging from 45mph to 55mph. Typically, roadways with higher speeds are not conductive to pedestrians/bikes without consideration of safety improvements.
Are there opportunities to enhance crossings based on the number of lanes crossed, AADT and speeds? - Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Locations Table 1. Application of Pedestrian Crash Countermeasures by Roadway Features	Pedestrian crossings existing at 3 signalized intersections (E. Main St, Steutermann Rd, and Washington Crossing) and potential pedestrian crosswalks at Rte 47 and Independence Dr intersection . Based on Table 1 of "Field Guide for Selecting Countermeasures at Uncontrolled Pedestrian Crossing Location", enhancement opportunities of high visibility markings, pedestrian refuge island and Pedestrian Hybrid Beacon should be considered.
Is the pedestrian crossing time complaint with the EPG? - Based on the demographic analysis, does the pedestrian crossing time need to be adjusted for vulnerable road users?	Undetermined. Future intersection modeling needs to include pedestrian modeling with compliant crossing times and coordination with MoDOT traffic staff.
Have leading pedestrian intervals been considered for implementation?	Not at this time.
What areas on the ADA transition plan remain for improvement? - Can the project go beyond just ADA to incorporate pedestrian safety?	Gaps in pedestrian facilities and side street pedestrian facility updates can be made in urban sections along corridor. No outstanding areas of improvement found remaining on the ADA transition plan.
Are the transit station/shelter in an optimal location? - Consider improvements and/or moving these locations to be near mid-block crossings. - Please review crashes along the corridor to see trends - Note: Work with METRO to identify relevant locations and optimal placement	There are no bus routes along the corridor.
What are the ITS solutions that could be incorporated at mid-block and signalized intersections? - Audible pedestrian signal, countdown timers, pedestrian detectors, RFB, push buttons, etc… - Note: ped counts & speed study should be conducted for any proposed or existing mid-	No mid-block pedestrian crossings were found along corridor. Pedestrian facilities limited to three signalized intersections at E. Main St, Steutermann Rd, and the Washington Crossing, with an additional consideration to installing a signalized pedestrian facility at Independence Dr intersection Field assessment of existing pedestrian crossing signal infrastructure recommended to determine ITS solutions for consideration.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

blocks to determine what type ITS may be warranted. Document the decision?	Pedestrian crossings are in consideration at Rte 47 and Main St, north of US 50.
Are there elements of the roadway that block a pedestrian or cyclist from view? (on-street parking, shrubbery, etc…)?	None identified.
Are there any sight distance issues for cyclists or pedestrians?	Yes, there are some sight distance issues as per the intersection analysis from page 32 to 37 in the Appendix B: MO Route 47 Existing Crash Analysis Memorandum..
What is the average spacing between marked pedestrian crossing locations? - Has adding more frequent pedestrian crossing locations been considered?	There are pedestrian crossings in urban areas of Sections A and C, and the average space between those is 0.15 miles. Additional pedestrian crossings considered at the intersection of Rte 47 and Independence Dr.
Should crosswalk visibility enhancements have been considered? - How many crosswalks locations have faded pavement markings?	Yes, E Main St, Union (Section C) crosswalk markings are worn (From google street view)
Should reducing lane widths be considered to calm traffic and shorten pedestrian crossing distance? - If so, then does the solution relocate the stripe or the curb line?	Pedestrian crossings exist at 3 intersections. Should pedestrian infrastructure be included with the project improvements, calming measures, such as lane reducing lane widths should be considered.
Should corner islands or other vertical protection elements be considered to protect bicyclists and pedestrians from right turning vehicles? - Note: https://nacto.org/publication/dont-give-up-at-the-intersection/protected-intersections/	Yes, in areas where existing and future bike lanes traverse through the intersections.
Can any free right slip lanes at intersections be redesigned to force motorists to look for pedestrians and make slower free right turns?	N/A. Existing crosswalks are located at signalized intersections. Channelized right turn at E. Main St only. Should be considered where necessary with intersection geometric modifications and any future implementation of crosswalks at unsignalized intersections.
Should curb extensions/medians/pedestrian refuge islands be considered as a traffic calming measure and/or to narrow pedestrian crossing distances? - Note: Major locations are next to Walmart, grocery stores, schools/colleges/universities, healthcare clinics/hospitals, sensitive community	Yes, consider at Steutermann Rd and Rte 47, due to speed limit of 45 mph and proximity of preschool on SE corner of the intersection.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

destinations, public housing, large multifamily housing complexes, transit stops, etc…	
Should pedestrian hybrid beacons or rectangular rapid flashing beacons be considered?	Yes, consider for future implementation of pedestrian crossings along the rural and urban segments.
How many crosswalks are not illuminated or have poor quality illumination?	All existing crossings have lighting.
How many linear feet are there without a sidewalk along the roadway per side of road?	Section A – left side 1459' and Right side 1359', Section B - 5.1 mile on each side, Section C – left side 8348' and right side 8448' and Section D – 5.7 mile on each side of road. A total of 14.51 miles without a sidewalk along the roadway per side of road throughout the corridor.
Is the pedestrian walkway setback from the street? - If not, then is space available to move the walkway away from the street at least four to six feet?	Yes, at crosswalk locations, Setback differs from location-to-location.
Should vertical protection elements be considered to protect bicyclists from vehicles for on-street bicycle paths?	Yes, particularly in areas where sufficient buffer space cannot be achieved.
How can on-street parking be added, broken up by curb extensions, or modified to support safer speeds?	N/A, Rte 47 is a principal arterial.
Has a demonstration project tested traffic calming measures? - What were the results? - Note: Speed reader signs can be used temporarily to alert motorists of their unsafe behavior. - Note: Missouri Chapter of American Planning has a lending library for traffic calming available for use when requested. https://missouri.planning.org/community-outreach/apa-missouri-traffic-calming-lending-libraries/	None were identified.
Where can shoulder widths be reduced to reduce vehicle speeds and support pedestrian safety?	No existing locations identified. But Urban Sections of A and C with higher speeds are candidate segments for reduced width shoulder.
How many side street locations could be modified to add speed tables, raised crosswalks, raised	No existing locations identified.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

intersections, rumble pavement for pedestrian crossing, or other vertical deflection measures?	
Is there a need for fences along the right of way to prevent/reduce pedestrian crossings along limited access sections of highway?	No.

ACCESS MANAGEMENT	NOTES (color coding for SAFER planning)
What is the primary focus of the corridor (through traffic, business district, residential, a combination?, etc…)?	A combination of through, business, and residential traffic.
What is the density of the curb cuts per mile within the study area? - How many properties have more than one curb cut and could potentially be removed or consolidated? (¾ access or right-in/right-out = reducing conflict points) - If there is an opportunity to consolidate curb cuts, then how many total curb cuts can be reduced along the roadway?	Density varies as sections are a mix of rural and urban. Access points are limited throughout corridor, curb cuts per mile < 10 ccpm in both urban and rural sections. No consolidation opportunities identified. Curb cuts defined as commercial or residential entrance ways such as driveways.
Do access points accommodate VRUs?	Three signalized intersections have marked pedestrian crossings. All other access points do not sufficiently accommodate for VRUs.
If an interchange is involved, will new/proposed access point be within the functional area of the interchange? - Note: If so, further design considerations will need to be addressed to preserve safety through the corridor. Consider the impact of closely spaced outer roads/access. (See EPG 940.3)	N/A.

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Project Name:	STL OE RTE 47
MoDOT Project Number:	J6P3661
Location (Route & Limits):	RT 47, MO 100 to I-44
Project Purpose:	Conceptual Study Report for Route 47 corridor improvements
Current Roadway Classification:	
Proposed Roadway Classification:	No change
Posted Speed Limit:	
Proposed Speed Limit:	No change
Area Team:	
Status:	FINAL
Review Date:	

SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

ROADWAY VISIBILITY	NOTES (color coding for SAFER planning)
Are there any unlit, raised, non-mountable islands/medians? - If so, how will this be addressed?	Raised, and non-mountable islands/medians without existing lighting found at NB Rte 47 near Old County Farm Rd, EB US 50/Rte 47 at QT entrance and North of the WB I-44 Off-Ramp intersections. Intersection lighting to be included with intersection improvements along corridor.
Are there unlit or improperly lit crosswalks? - If so, how will this be addressed	Nothing found (Limited crosswalks along the corridor) (From the Google Street View)
Are different light types/brightness levels being used along the corridor? - What is the quality of lighting along the corridor? - Note: Avoid rapidly changing lighting environments	No, the same type of lighting used throughout the corridor. But Partial Lighting Availability only in the whole corridor (At signalized intersections).
What is the observed sign visibility along the corridor? - How many signs along the roadway could be explored for further safety improvement such as relocation, retro-reflectivity, etc.? - Are there opportunities to improve driver compliance through enhanced sign visibility? - Please check with your Traffic Studies Specialist	2 Curve Warning signs need to be replaced, and many stop signs need to be placed along with the advisory signs for the road entrances (Google Street view). Consider review of existing sign inventory and inspection logs to determine existing signing insufficiencies.
Is there potential for adding warning signs for curves, intersections, signals and crossings? - If so, how many locations for each type can be explored?	Yes, consider advance intersection warning signs, particularly for those where sight distance is a concern.
Is there an opportunity to reduce exposure to maintenance staff by using a more durable stripe?	Yes. Durable stripes are more visible for a longer period of time and leads to less maintenance.
Have any roadway stripes or intersection pavement markings faded such that replacement is needed sooner?	Yes, E. Main St pedestrian crossing markings are worn. (As per the observations from Google Street view)
What is the observed condition of pavement markings during wet conditions?	Undetermined. Consider future observational analysis during wet conditions.
Is there a need for increased signal visibility (retro-reflective backplates)?	Upon google review, there are existing retro-reflective backplates at signalized intersections along corridor at

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

- High speeds approaching intersections, first signal at unsuspected signals	areas of higher approach speeds, i.e rural sections and along US 50.
Is there sufficient lighting to accommodate pedestrian facilities, if needed?	Yes, sufficient lighting is available for the pedestrians at the intersections.

ROADWAY ALIGNMENT	NOTES
How many curves do not meet MoDOT standards for radius/super-elevation, and transition? - Note: super-elevation/crown/transitions/ radius	18 Curves (2 in Section A, 1 in Section B, 1 in Section C and 14 in Section D as per the Appendix B: MO Route 47 Existing Crash Analysis Memorandum).
How many driveways and intersections have poor sight distance? - Note: vertical/horizontal alignments	13 driveways/ intersections (Appendix B: MO Route 47 Existing Crash Analysis Memorandum)
How many side roads have inadequate sight distance?	5 side road intersections identified in Appendix B: MO Route 47 Existing Crash Analysis Memorandum.
How many skewed driveways or intersections exist in the study area?	Google Maps observations identified at least 2 skewed intersections (Clearview Rd and Rte V) and 1 skewed driveway (Mid America Ln)

ROADWAY SURFACE	NOTES
Is there a wet crash problem at an intersection/corridor/ curve? - If so, then how can wet crashes be reduced? - Note: a potential treatment could be HFST	Yes, In Section A – 16%, Section B- 11%, Section C - 19%, and Section D- 14% of total crashes occurred during wet conditions. (Appendix B: MO Route 47 Existing Crash Analysis Memorandum).
Does the project warrant centerline and/or rumble strips? - Note: https://epg.modot.org/index.php/Category:626_Rumble_Strips	Yes (MoDOT EPG Category: 626 Rumble Strips).
Are there signs of off tracking at intersections or through curves?	No.
Are there rutting, water-pooling/hydroplaning and/or drainage issues?	Undetermined. Consider future observational analysis during wet conditions.
Is there a potentially safer use of the roadway cross-section (lane width vs. shoulders)?	Cross sections are currently being evaluated within this project.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

INTERSECTION/INTERCHANGE DESIGN	NOTES
What alternative interchange/intersection designs have been considered? - Note: consider the Intersection Control Evaluation (ICE) for alternative design (DDI, dog-bone, roundabouts, j-turns, etc.)	Multiple alternatives along the corridor are currently being considered, such as Diverging Diamond Interchanges (DDI), Continuous Flow Interchanges(CFI), and roundabouts.
What are the opportunities to reduce conflict points? - If redesigning: how many conflict points exit presently and how many are proposed for the future condition?	Alternative design options being considered in the project offer varying reduced conflict points. Primarily roundabout and DDI options.
Are turn lanes warranted? - If so, can offset turn lanes be incorporated?	Some turn lanes are warranted per HNTB analysis (NB Left to Lost Pines, NB Right to HiLine, and SB Left to HiLine). Additional study may be required for other locations.
Can the sight distance be improved? (e.g. reduce the angle of visibility of drivers, trim/clear vegetation, etc…)	Yes, In 3 locations intersection sight distance can be improved by clearing vegetation (Forest Hill Dr, Driveway 1800' north of Reeds Plaza Dr and E Happy Sac Dr).
Does the interchange/intersection design make drivers more prone to wrong way movements? - If so, how can it be improved? - Note: check wrong way crash history within the study area	Not identified as a prominent crash trend.
Are there opportunities to improve the skew?	Yes.
Do the through lanes align with the appropriate receiving lane?	Yes, through lanes align with appropriate receiving lanes at all signalized intersections from Google Street view

ROADSIDE	NOTES
Are there opportunities to upgrade crashworthy devices to MASH standards? - List and describe briefly. - Per maintenance, can consideration given to Type D/E for reusability and ease of repair	No areas identified via google maps. According to ATE, previous projects upgraded guard rail in Sections C and D to MASH standards.
Has the length of need for guardrail been verified?	Not at this stage.

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- If additional length is needed, please list the locations. - How much linear feet needs to be upgraded to MASH standards?	
Could any bridge approach transitions be improved?	Needs verification by PM.
Is there an elevated risk of vehicles crossing the median (AADT and median width)? - Note: Consider adding guard cable	No median present throughout majority of corridor.
Are there fixed objects within ROW/sight triangles? - What are the fixed objects within the ROW? - Note: potential to remove or shield fixed objects?	None recognized via Google Street View.
Are there edge drop-off issues? - Note: a potential treatment could be Safety edge	Various potential locations identified via Google Maps observations, in Sections B and D.
How can the side slopes be modified to be more recoverable?	Flattening slopes to be at or lower than a ratio of 4:1 is a considerable modification for recoverability.
What is the risk of run-off-road crashes (high-speeds, rural, narrow lanes)? - Note: potential treatments include adding shoulders, rumbles or HFST.	Project corridor contains rural sections, narrow shoulders and higher speeds. Shoulder width adjustment and rumbles are considerations in cross sections phase of project, according to ATE.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

TRANSPORTATION SYSTEMS MANAGEMENT AND OPERATIONS (TSMO)	
Is there a need for additional enforcement to address driver behavior?	Potential for red-light enforcement in Sections A and C, and speed enforcement in B and D, as those were main contributing circumstances to each section's analysis (See Appendix B: MO Route 47 Existing Crash Analysis Memorandum) respectively. Area Project Manager also identified where shoulder width improvements could address law enforcement concerns regarding traffic stops between Union and St. Clair (Section D), where narrow shoulders are presenting perceived unsafe stopping conditions.
Does this segment/corridor qualify for a Travel Safe Zone? - See EPG 907.3 for criteria and procedures.	Additional safety analysis and agency/public involvement required.
Is there a need to provide warning systems to alert drivers of various conditions? - Note: Queue, curve, intersection, speed, and wrong way	Yes, multiple sections of speed change from rural to urban sections and curves along corridor.
Is there an opportunity to improve traffic monitoring to assist with incident response? - Please work with your traffic/ITS staff to determine if any additional/upgraded CCTV cameras should be included.	ATE identified no immediate actions to improve traffic monitoring. ITS infrastructure implementation still on-going throughout corridor.
What are the opportunities to improve messaging to drivers? (e.g. add/replace dynamic message signs) - Please work your traffic/ITS staff to perform a needs assessment.	ITS infrastructure is under implementation throughout corridor according to ATE.
Can traffic signal operations be improved for the project? - Are the signal controllers and or cabinets in need of replacement? - Preemption for emergency vehicles? - Protected left-turn movements - Signal timing adjustments to reduce number of stops or enhance clearance times?	Yes, according to ATE, there are on-going signal timing adjustments throughout the corridor, especially in Sections B and C, to accommodate increase in traffic volumes
How can Automated Traffic Signal Performance Measures (ATSPM) be implemented?	ATE is currently assessing potential for ATSPM. In the mean-time ITS implementation is on-going and needed to connect the corridor throughout the project limits.

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SAFETY ASSESSMENT FOR EVERY ROADWAY (SAFER) CHECKLIST

- Note: Please work with your ATE for a needs assessment of the signals on the project.	
How can Smart Work Zone strategies be considered when constructing the project? - Note: Smart Work Zone Guidebook	No current Smart Work Zone strategies were identified by ATE. Traffic control will be implemented to State and Federal standards.
Is the shoulder wide enough for emergency response or first responders?	Not uniformly throughout corridor (Google Maps). Shoulder widening being considered as part of cross sections phase of project.
Is there a need for additional emergency response operators due to the project?	None identified by ATE. Proper traffic control will be maintained to state and federal standards throughout the duration of the project.
Has maintenance or emergency response operators identified areas of concern within/near the construction project? - If so, please state the areas of concern.	No instances were identified from ATE. More coordination between the agencies should be considered.

OTHER CONSIDERATIONS	NOTES
Conduct a quick crash analysis to develop a crash profile. What is the 5-year trendline for fatal and serious injuries?	The crash analysis found a total of 7 fatal and 29 severe injury crashes occurred throughout the corridor in the 5-year period. Year-end totals followed a consistent trendline, excluding 2021 which saw an increase in both with a year-end total of 3 fatalities and 11 serious injury crashes.
How does the total crash rate compare to the statewide average?	Observed total crash rates of the segments within the studied corridor range from 3 to 7 times higher than state average (see Appendix B: MO Route 47 Existing Crash Analysis Memorandum for more details).
What safety study type/analysis was conducted on this segment/corridor previously?	5-year crash analysis.
Does the project area include any locations on the Traffic Safety Lists? - If so, please list the locations/segments - Note: The Traffic Safety Lists show locations/segments that have higher frequency of injury crashes throughout each district. Please get your traffic staff for assistance.	ATE provided Traffic Safety list for High Severity crashes which included overlapping segments along Rte 47 SB, ranging from outermost limits of White Oak Trail to Thunderbird Court, encompassing Sections B to D.
Has maintenance identified areas of concern?	No areas of concern were identified to ATE.

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Have any customer safety concerns been received for the project area?	Yes, according to ATE, in the form of routinely received call reports by MoDOT. No details were provided.
Can speed management strategies be implemented, such as setting proper speed limits, traffic calming effort, or other speed management countermeasures?	Yes, especially along Section C, where there is recommended intersection redesign at Rte 47 and US 50.
Has an assessment of the corridor's safety performance been completed through an RSA, HSM Analysis, risk factor analysis, or predictive safety analysis? - If so, is there an opportunity to incorporate any of the recommendations? - If not, please explain.	Appendix B: MO Route 47 Existing Crash Analysis Memorandum completed. No other known assessments conducted.
Can any existing at-grade railroad crossings be modified to improve advance safety?	No at-grade crossings identified along corridor. However, according to Area Project Manager, the at-grade crossing on Rock Rd (East of Rte 47) will need modifications during the widening of the railroad overpass south of Rte V.
Can we make future maintenance activities safer by any of the following? - Tie-ons for bridge maintenance/inspections - Accessibility for overhead structures (DMS boards)	Yes, tie-ons could be used. Limited amount of bridges along corridor.
Is there a need to re-evaluate signal base/signal cabinet placement due to repeated hits?	None identified by ATE.
Are there Road weather information Systems (RWIS) sensors on the pavement? - If so, project should account for replacement, if impacted by resurfacing, etc.	None identified.
For signal projects, are there Uninterrupted Battery Backup (UPS)?	N/A.

Version	Date	Amendment	Author

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Corridor Segment Map

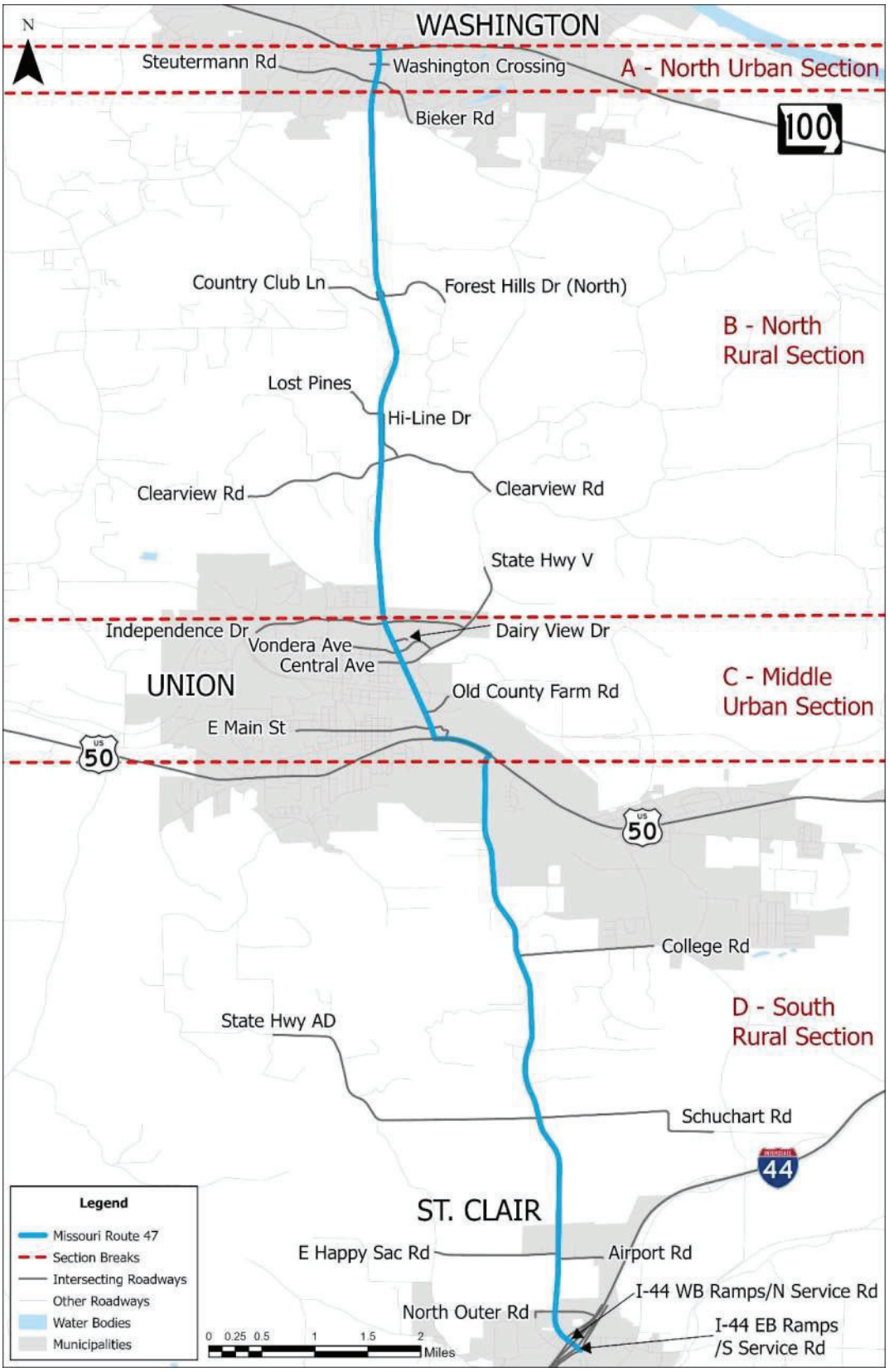

Figure 1: Study Corridor Sections

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J6P3661: MO Route 47
Existing Crash Analysis Memorandum

April 8, 2025

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Introduction

Missouri Route 47 (MO 47) is part of the Missouri State Highway System located in the eastern part of Missouri. This study encompasses the 12.7-mile corridor of MO 47 between Missouri Route 100 in the north (in Washington, MO) and Interstate 44 interchange to the south (in St. Clair, MO). MO 47 also passes through Union, MO where it shares a segment with US 50. The study corridor can be seen in **Figure 1.**

The purpose of this technical memorandum is to provide supporting documentation for the Conceptual Study Report (CSR) that describes the existing traffic safety conditions for the following intersections and their associated segments:

- Signalized
  - MO 47 / Highway 100
  - MO 47 / Washington Crossing
  - MO 47 / Steutermann Road/Bieker Road
  - MO 47 / Clearview Road
  - MO 47 / Independence Drive
  - MO 47 / Central Avenue & Highway V
  - MO 47 / E Main Street
  - MO 47 / US 50 (West)
  - MO 47 / US 50 (East)
  - MO 47 / N Outer Road
  - MO 47 / I-44 WB Ramps (Interchange)
  - MO 47 / I-44 EB Ramps (Interchange)
- Unsignalized
  - MO 47 / Country Club Lane & Forest Hills Drive (north)
  - MO 47 / Lost Pines & Hi-Line Drives
  - MO 47 / Dairy View Drive
  - MO 47 / Vondera Avenue
  - MO 47 / Old County Farm Road
  - MO 47 / College Road & Forestview Drive
  - MO 47 / Rte AD / Schuchart Road
  - MO 47 / E. Happy Sac Road
  - MO 47 / Airport Road

As shown in **Figure 2**, the study corridor was divided into four sections based on variations in roadway characteristics and surrounding land uses. A summary of the four sections can be found below in **Table 1**.

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Table 1: Summary of Study Corridor Sections

Section	Start Point	End Point	Length	# Lanes	AADT	Speed	Street Lighting
A – North Urban	Highway 100	Steutermann Rd	0.3 mi	5	22,440	45	Partial
B – North Rural	Steutermann Rd	Independence Dr	5.1 mi	2	17,399	45-55	Partial
C – Middle Urban	Independence Dr	US 50 (East)	1.6 mi	5	22,391	45	Partial
D – South Rural	US 50 (East)	I-44 EB Ramps	5.7 mi	2	14,836	40-55	Partial

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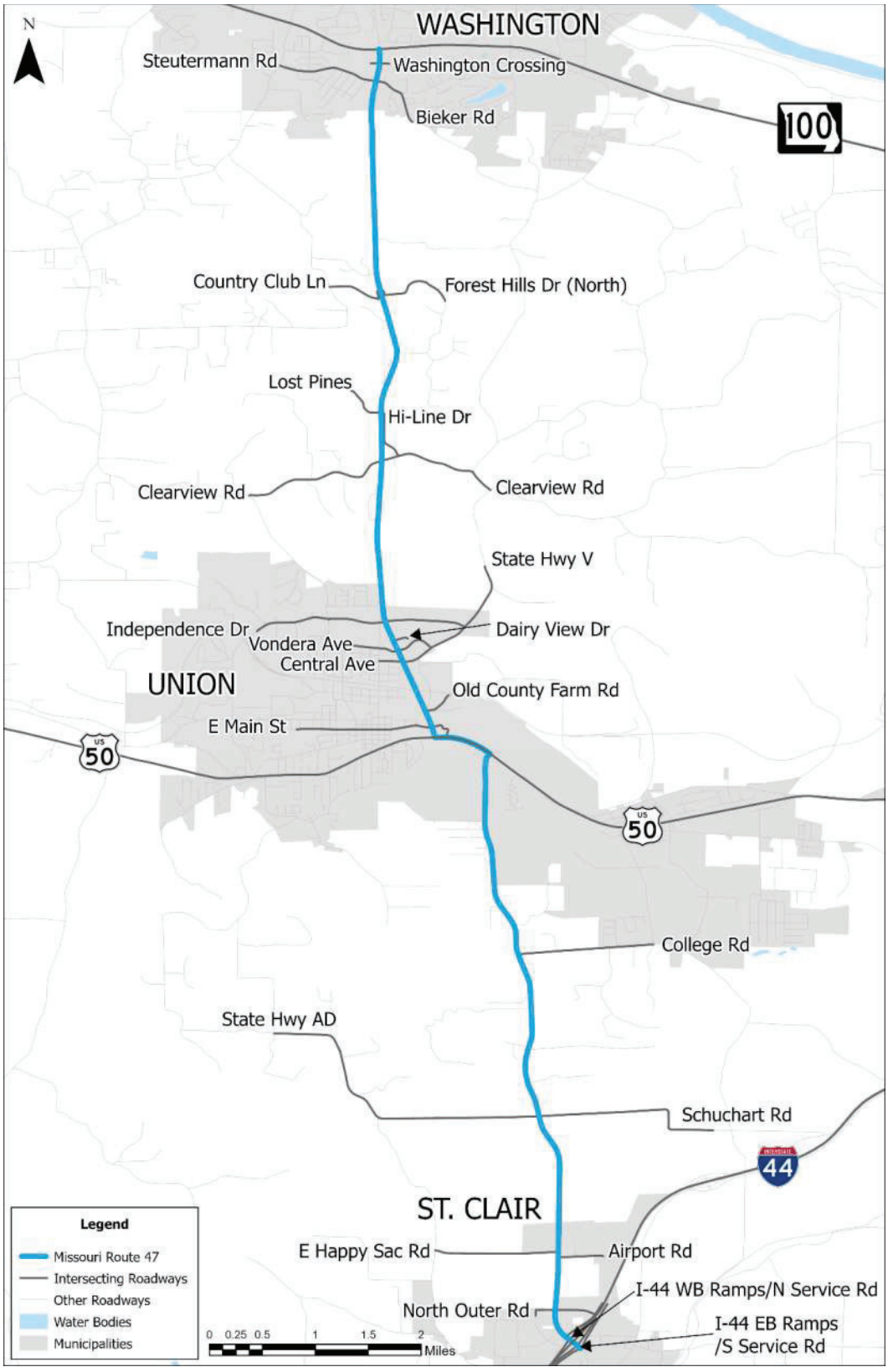

Figure 1: Study Corridor

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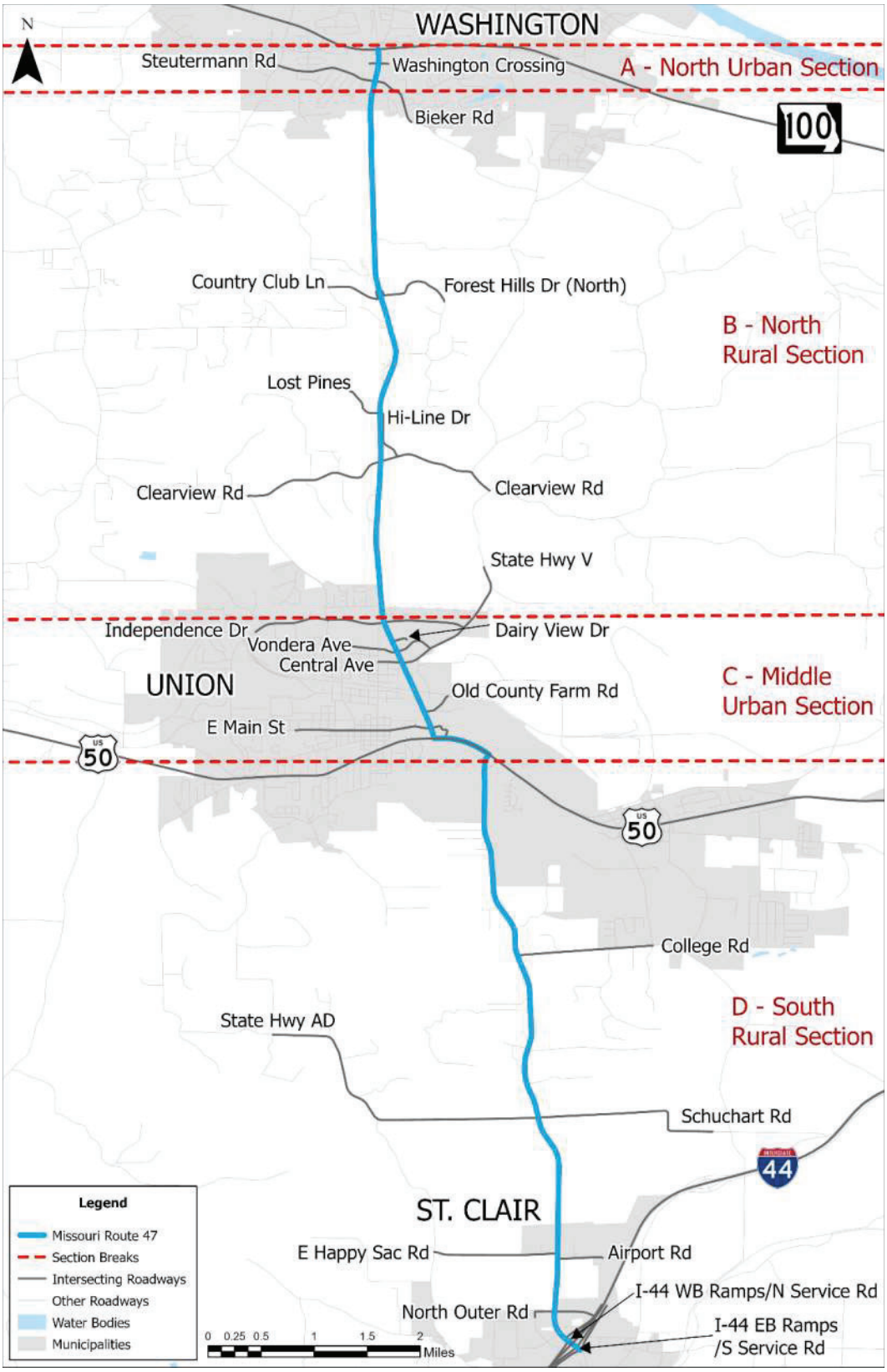

Figure 2: Study Corridor Sections

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Statewide Crash Comparison

Historical statewide crash rates were obtained from Missouri Department of Transportation (MoDOT) to accurately compare the crash rates along the MO 47 corridor for a 1- and 5-year analysis. These crash rates are determined by the total number of crashes per 100 million vehicle miles traveled. The current crash rate for each section of MO 47 through each study area section was calculated using **Equation (1)** as outlined in EPG 905.1.1.1. To determine the crash rate for the four sections along MO 47 the ratio of total number of crashes per 100 million vehicle miles traveled will be used.

$$Crash\ rates\ for\ ranges = \frac{No.\ of\ Crashes\ x\ 100{,}000{,}000}{No.\ of\ Years\ x\ AADT\ x\ Range\ Length\ x\ 365\ days/year} \quad \textbf{(1)}$$

The MO 47 crash rate for each study section was looked at separately to specifically compare that segment to the statewide average crash rates shown in **Table 2**.

Table 2: Statewide Crash Rates

Year	Roadway Type	Geo Area	1 Yr Rate	3 Yr Rate	5 Yr Rate	Centerline	Severity
2023	TWO-LANE	STATE	167.9	173.73	183.01	29,296.48	_
2023	5 LANE SECTION	STATE	299.37	298.93	306.29	238	_
2023	TWO-LANE	STATE	1.93	2.02	2.05	29,296.48	FATAL
2023	5 LANE SECTION	STATE	1.05	1.1	1.07	238	FATAL

Table 3 provides an overview of each section of MO 47 comparing the statewide crash rate for 1 year (2023) and for 5 years (2019-2023) total crash data.

Table 3: Crash Rate per Million Vehicle-Miles of Travel

Section	2023 (1 Year)					2019-2023 (5 Year)				
	Total			Fatal		Total			Fatal	
	Severity Factor	State	MO 47	State	MO 47	Severity Factor	State	MO 47	State	MO 47
A – North Urban*	7.20	299.37	2156.94	1.05	0	7.60	306.29	2327.87	1.07	0
B – North Rural	1.10	167.90	185.25	1.93	0	0.92	183.01	168.58	2.05	1.24
C – Middle Urban	3.01	299.37	902.39	1.05	0	2.99	306.29	914.63	1.07	1.53
D – South Rural	0.91	167.90	152.30	1.93	0	1.04	183.01	190.50	2.05	2.59

** = Crash rates for the North Urban section are disproportionately high due to the segment's short length (0.3 miles), which can exaggerate rate calculations per EPG guidelines. For comparative purposes, segments over one mile are preferred.*

In the North Urban and Middle Urban sections, five-lane segments were used for comparing statewide crash rates. As shown in **Table 3**, observed crash rates are 3 to over 7 times higher than the state averages; however, this discrepancy may be influenced by the shorter segment lengths used in the calculation. Per the EPG, segment lengths of more than one mile are preferred to avoid artificially high crash rates. The proximity of intersections, particularly in the North Urban Section (A), which features three intersections within just 0.3 miles, may also contribute to this variance. For the North Rural and South Rural sections,

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two-lane segments were used for comparison. **Table 3** indicates that observed crash rates over the 5-year period exceeded state averages in three out of four study areas: North Urban, Middle Urban, and South Rural. However, it is worth noting that the South Rural Section (D) had only a 4% higher crash rate compared to the state average. Given the potential impact of short segment lengths, caution should be used when interpreting these crash rates.

In addition to calculating crash rates per Million Vehicle-Miles of Travel (MVMT), a standard metric for evaluating crash exposure based on traffic volume and roadway length, this study also includes crash rates per 100,000 vehicles for each study section. This additional metric provides a different perspective by normalizing crash frequency relative to traffic volume alone, without factoring in segment length. It is particularly useful for understanding crash likelihood in areas with varying traffic densities.

To further contextualize crash occurrence along each study section, **Table 4** presents the average number of crashes occurring per day, week, and month. These values are broken down by total crashes, Property Damage Only (PDO) crashes, and Injury & Fatal crashes. Expressing crash data in this format provides a more intuitive understanding of safety conditions, making it easier to communicate risk levels to decision-makers and the public.

Table 4: Crash Rate Per Thousand Vehicles and Crash Frequency by Severity and Time Period

Section	Crash Rate	Total Crashes			PDO			Injury and Fatal		
		Per Day	Per Week	Per Month	Per Day	Per Week	Per Month	Per Day	Per Week	Per Month
A – North Urban	1274.51	0.2	1.1	4.8	0.1	0.9	4.0	0.0	0.2	0.8
B – North Rural	1568.97	0.1	1.1	4.6	0.1	0.8	3.3	0.0	0.3	1.3
C – Middle Urban	2670.84	0.3	2.3	10.0	0.3	1.8	7.9	0.1	0.5	2.0
D – South Rural	1981.80	0.2	1.1	4.9	0.1	0.9	3.8	0.0	0.2	1.1

Regional Safety Plan Comparison

To align with the East-West Gateway Council of Governments' (EWG) Regional Safety Plan, this study incorporates the High-Injury Network (HIN) analysis, which identifies roadways with the highest frequencies of fatal and serious injury crashes within the EWG region. The HIN methodology synthesizes five years of crash data (2018–2022) to score locations based on crash frequency, highlighting priority areas for safety improvements. The EWG plan developed HINs for multiple focus areas, including All Roads and Modes (HIN 1 - All Modes), Vulnerable Road Users (HIN 2 - VRU), Underserved Communities (HIN 3 - Underserved), Top Contributing Factors (HIN 4 - Contributing Factors), and Interstates & Ramps (HIN 5 - Interstates). Within HIN 4 (Top Contributing Factors), key crash factors analyzed include speeding, failure to yield right-of-way, improper lane usage, impaired driving (alcohol/drug use), and distraction. **Figure 3** illustrates HIN 1 (all-mode crashes) along the study corridor, as well as HIN 4 subcategories: CF1 (Speeding Crashes), CF2 (Failure to Yield ROW), CF3 (Improper Lane Usage), and CF5 (Distraction). This comparison provides critical insights into how the study corridor aligns with regional safety priorities and helps guide data-driven countermeasure recommendations.

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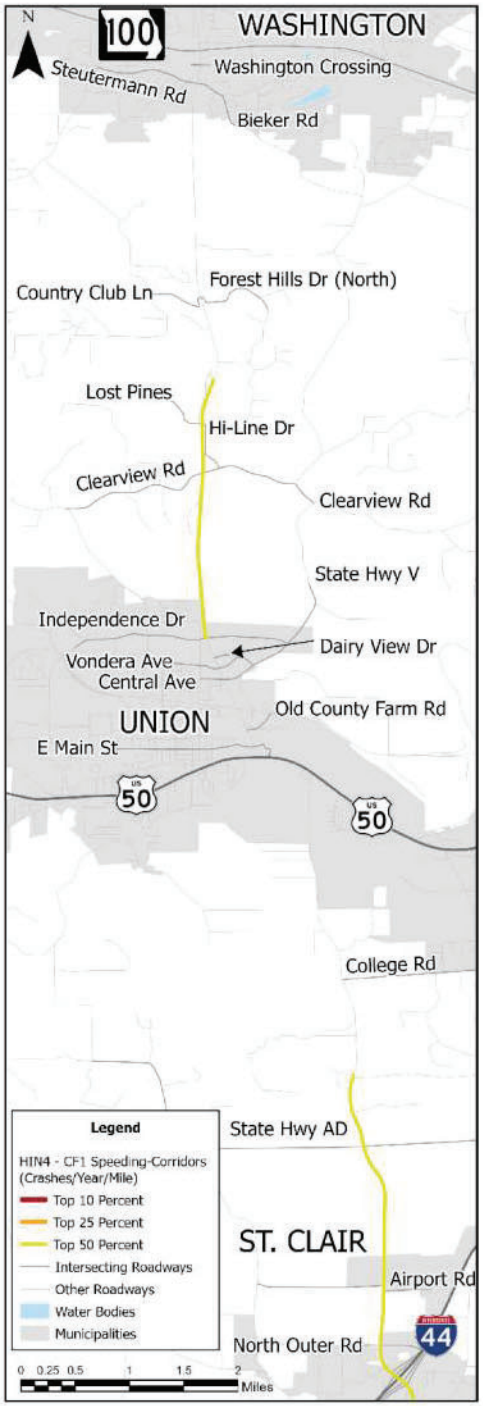
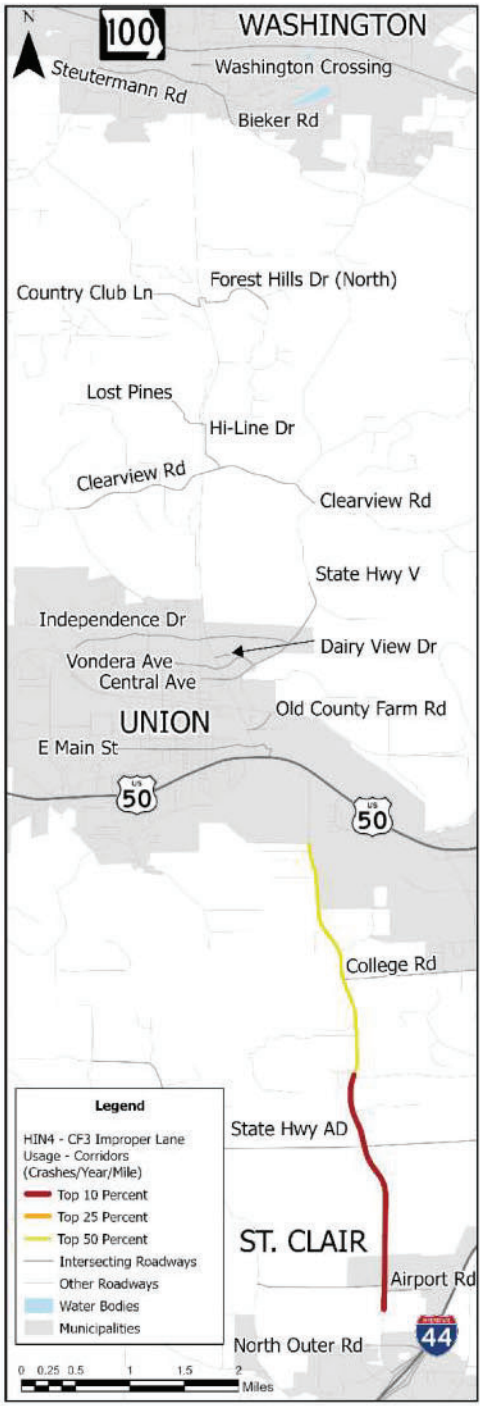
WASHINGTON
Washington Crossing
Bieker Rd
Forest Hills Dr (North)
Hi-Line Dr
Clearview Rd
State Hwy V
Dairy View Dr
Old County Farm Rd
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Miles


N
100
WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF1 Speeding-Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

N
100
WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF2 Failure to Yield ROW - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles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WASHINGTON
Steutermann Rd
Washington Crossing
Bieker Rd
Country Club Ln
Forest Hills Dr (North)
Lost Pines
Hi-Line Dr
Clearview Rd
State Hwy V
Independence Dr
Dairy View Dr
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
50
College Rd
State Hwy AD
ST. CLAIR
Airport Rd
North Outer Rd
44
Legend
HIN4 - CF3 Improper Lane Usage - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

N
100
Steutermann Rd
Country Club Ln
Forest Hills
Lost Pines
Hi-Line Dr
Clearview Rd
Independence Dr
Vondera Ave
Central Ave
UNION
E Main St
50
Legend
HIN4 - CF5 Distraction - Corridors (Crashes/Year/Mile)
Top 10 Percent
Top 25 Percent
Top 50 Percent
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
0 0.25 0.5 1 1.5 2
Miles

Methodology

Data Collection

Historical crash data were received from the MoDOT, which are compiled from local and state police crash records. Crashes that occurred between January 1, 2019, and December 31, 2023, were evaluated in the study. At the time of this study, the 2024 statewide crash records had not been finalized and were not considered for analysis. The crash data files contain the following information required to identify and analyze the crash records:

- Crash ID,
- Day and time of crash,
- Crash type,
- Latitude / Longitude,
- Light condition,
- Roadway condition (wet, dry),
- Crash severity (fatal, injury, PDO).

Collected intersection counts from May 9, 2024, were used to estimate the annual average daily traffic (AADT) for each intersection. For the intersection of MO 47 and E. Happy Sac Road, the MoDOT State Highway Patrol Mapping tool was utilized. Recorded AADT values from 2019 to 2023 were used for the study.

Ramp Terminal Analysis

Analysis Tool

The Enhanced Interchange Safety Analysis Tool (ISATe) from AASHTO, which is based on the 2010 Highway Safety Manual (HSM) 1st Edition (2016 Errata) methodology, was used to analyze the existing interchanges. Geometric and site characteristics needed for the analysis were derived from aerial images.

Study Limits

Ramp terminal study limits, as depicted in **Figure 4: Ramp Terminal Study Limits**, were set in accordance with EPG 905.3.6.1.3 for intersection analysis such that crashes that occurred within 150 feet of an intersection along all ramp terminal approaches were considered for analysis; 150 feet was measured from the edge of pavement of the cross-street for each approach.

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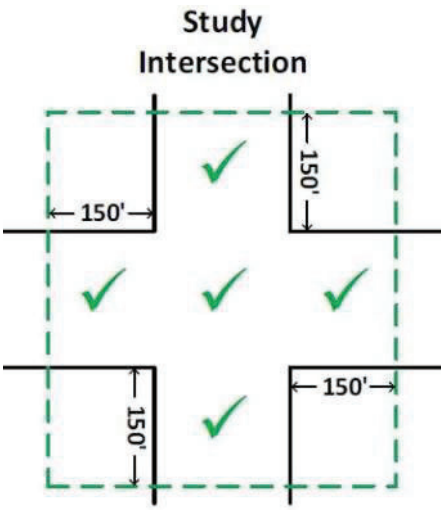

Figure 4: Ramp Terminal Study Limits

Surface Street & Intersection Analysis

Analysis Tool

The predictive method for urban and suburban arterials provided in Chapter 12 of the HSM was used to analyze the conditions and crash history of surface streets and intersections. Spreadsheets that were developed by the National Cooperative Highway Research Program (NCHRP) based on HSM methodologies and safety performance functions (SPFs) were utilized to predict crash frequencies. The Urban and Suburban Arterials NCHRP spreadsheet was used for the study. Geometric and site characteristics needed for the analysis were derived from aerial images. Missouri calibration factors for HSM worksheets that were provided in EPG 905.3.6.2.2 were used.[1]

Study Limits

The segment lengths for surface streets, as depicted in **Figure 5**, were set according to guidance provided in EPG 905.3.6.2.4 and HSM 12.5. Lengths of roadway segments began and ended at the center of intersections or where the homogenous road segment changed. However, to avoid double-counting intersection-related crashes, crashes that occurred within an intersection influence area (150 feet beyond an intersection) were not included in the safety analysis of surface street segments and were only included in the safety analysis of intersections. Crashes that occurred on a surface street segment outside an intersection influence area were considered only in the safety analysis of surface streets.

[1] https://epg.modot.org/files/c/c9/905.3.6.2.2_Summary_spreadsheet.xlsx

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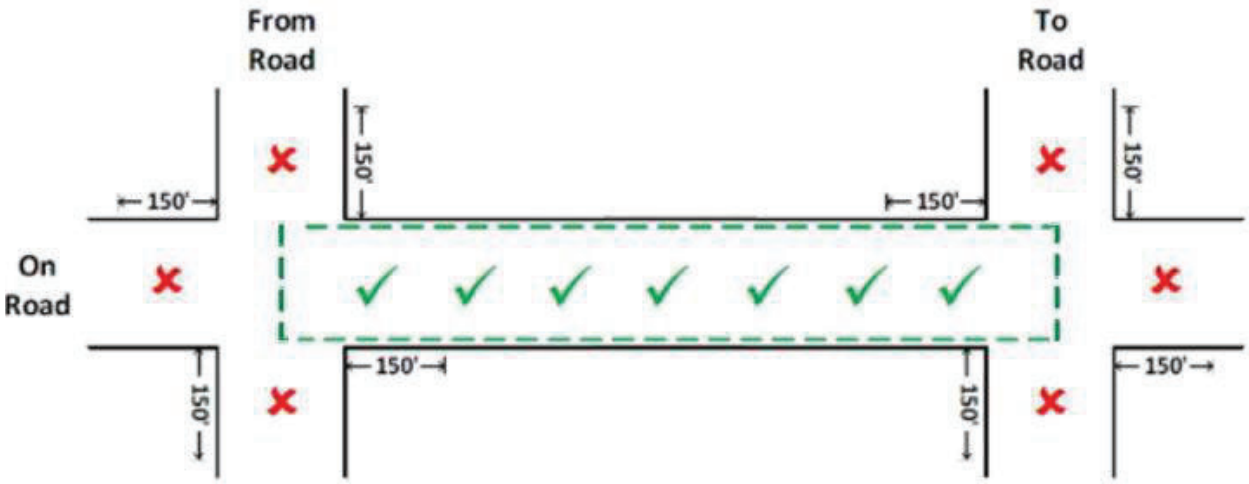

Figure 5: Surface Street Segment Lengths

Intersection study limits, as depicted in **Figure 6**, were set in accordance with EPG 905.3.6.1.3 unless otherwise noted for intersection analysis such that crashes that occurred within 150 feet of an intersection along all approaches were considered for analysis; 150 feet was measured from the edge of pavement of the cross-street for each approach.

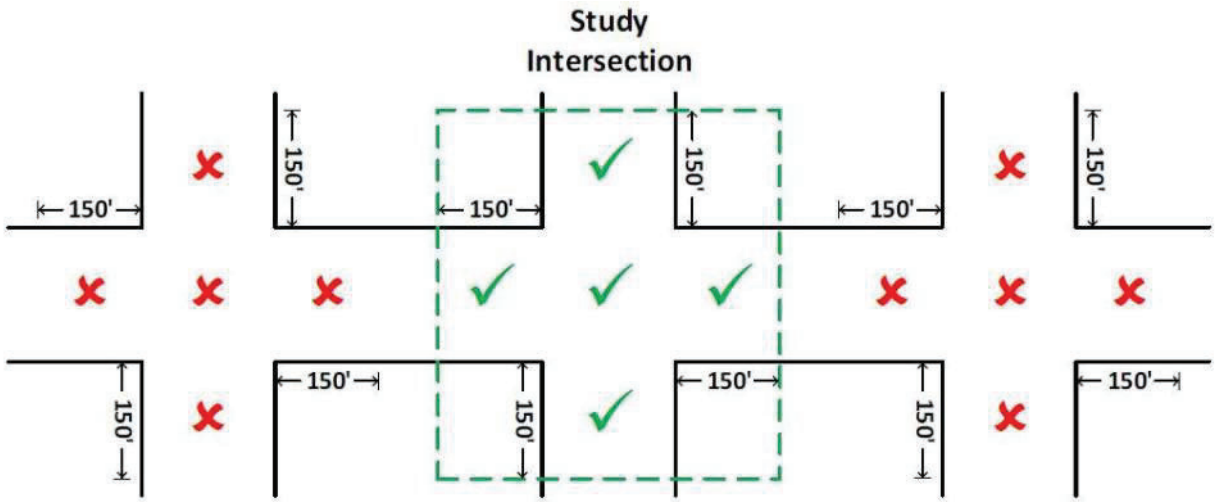

Figure 6: Intersection Study Limits

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Existing and No-Build Safety Analysis

MO Route 47 Corridor

Figure 7 shows the total number of crashes per year within the study corridor from 2019 to 2023. Over the 5-year span, a total of 1,451 crashes occurred. As shown, the total number of crashes along the study corridor range from a low of 252 (2020) to a high of 320 (2021).

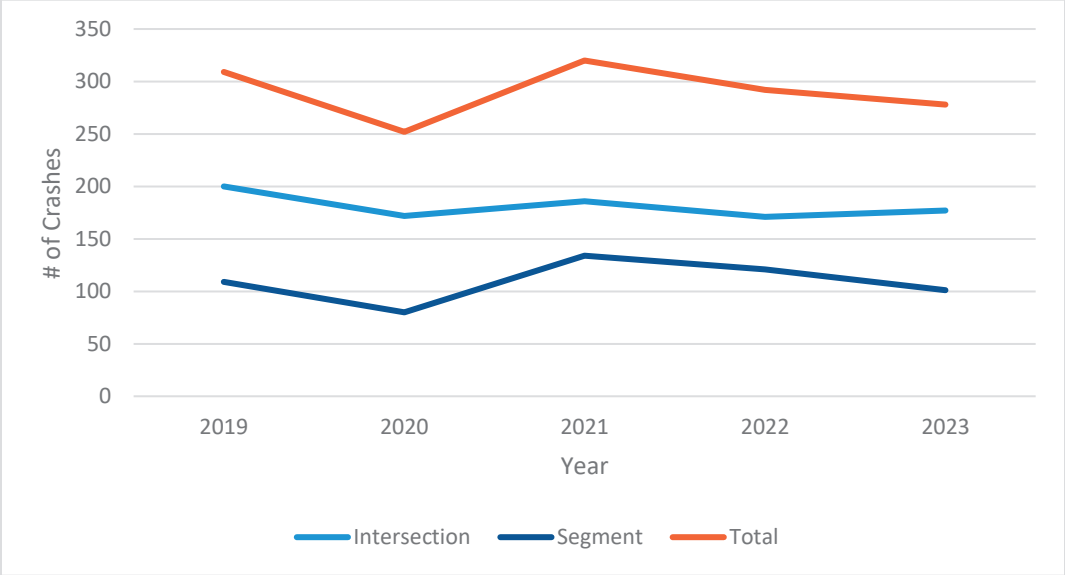

Figure 7: Crash Trends (2019 to 2023)

As can be seen in **Figure 7**, crash trends from 2019 to 2023, highlighting fluctuations in intersection and segment crashes. While total crashes saw a decline in 2020, they peaked in 2021 before gradually decreasing. Segment crashes followed a similar pattern, dropping in 2020, spiking in 2021, and then tapering off. In contrast, intersection crashes remained relatively stable, with minor fluctuations. The spike in 2021 suggests a potential external factor, that temporarily influenced crash rates.

Over the five-year period, there were 45 animal-related crashes across various sections. The North Urban Section (A) reported no incidents, while the North Rural Section (B) had 15 crashes involving deer, including 14 property damage only (PDO) and one minor injury. The Middle Urban Section (C) experienced eight crashes, including six deer involving and two involving dogs, all resulting in PDO. The South Rural Section (D) had 22 crashes, with 21 involving deer (including two minor injuries) and one unspecified animal, all resulting in PDO.

Figure 8 highlights the locations of total crashes at intersections and along roadway segments within the study corridor. Intersection crashes were the greatest at the following intersections with the highest ADT:

- MO 47 and Highway 100 (Section A)
- MO 47 and US 50 West (Section C)

Segment crashes were the highest among the following segments of the study corridor:

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- Between Steutermann Road/Bieker Road and Country Club Lane/Forest Hills Drive (Section A)
- Between Clearview Road and Independence Drive (Section B)
- Between US 50 East and College Road (Section D)

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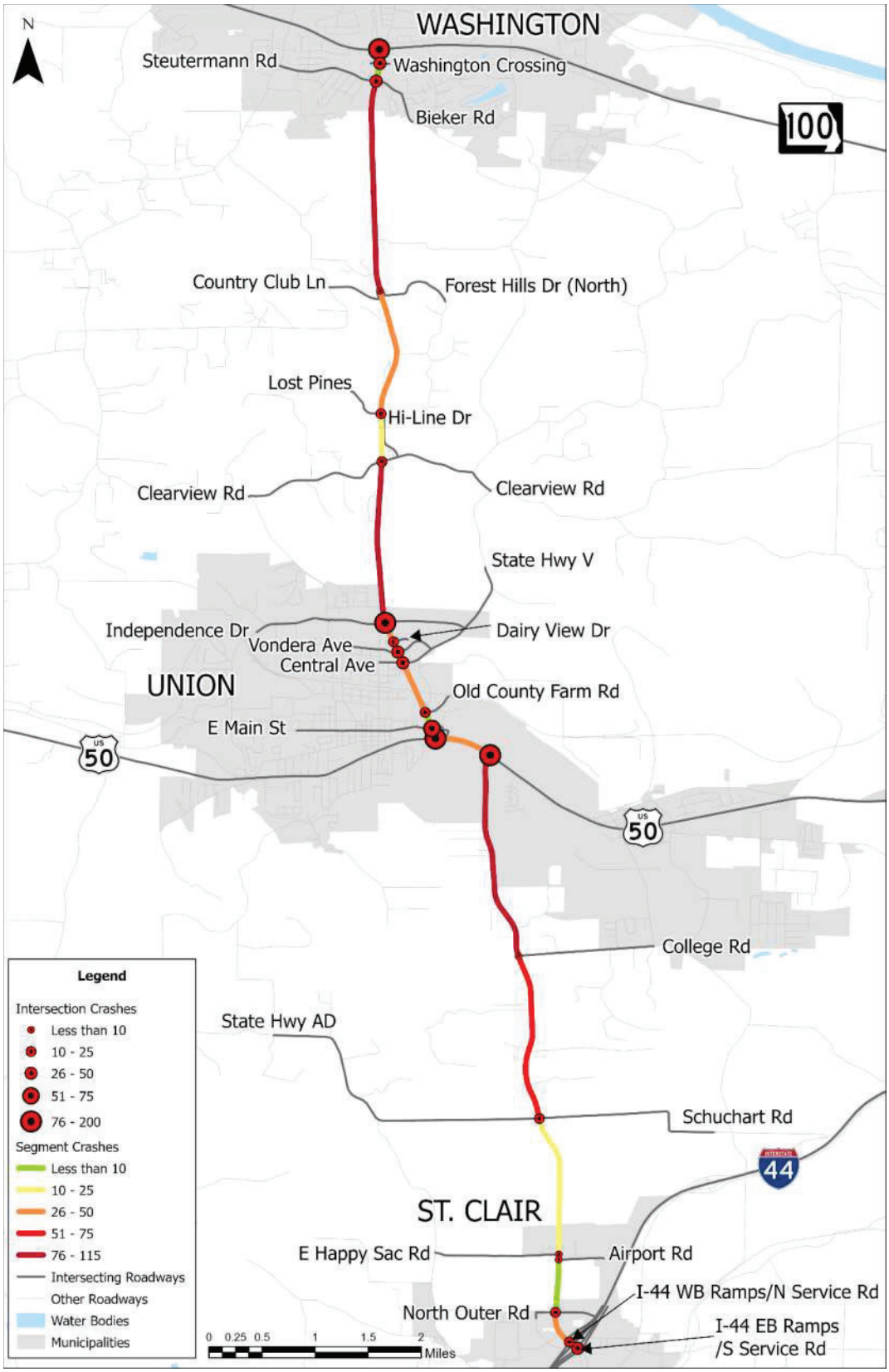

Figure 8: Intersection and Segment Crashes along the Study Corridor

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Crash Severity

According to the State of Missouri's Uniform Crash Report Preparation Manual Version 3.0, crash severity levels fall into the following categories:

- Fatal Injury
- Serious Injury
- Minor Injury
- Property Damage Only

Serious Injury is defined as non-fatal injury, which prevents the injured person from walking, driving, or continuing the activities the person was capable of performing prior to the traffic crash. **Table 5** shows the number of crashes that resulted in injuries along the study corridor.

Table 5: Crashes by Severity and Location

Location	Fatal Injury Crashes	Serious Injury Crashes	Minor Injury Crashes	Property Damage Only Crashes	Total Crashes
Intersection	1	17	166	722	**906**
Segment	6	12	110	417	**545**
Total	**7**	**29**	**276**	**1139**	**1451**

Between 2019 and 2023, the study corridor experienced seven fatal crashes resulting in 11 fatalities and 29 crashes resulting in serious injuries. A detailed analysis of crash severity is provided in the detailed four corridor sections of this report. **Figure 9** summarizes the locations of fatal and serious injury crashes along the study corridor.

During the study period, there were five pedestrian-involved crashes were recorded, all resulting in minor injuries. Two crashes occurred near Steutermann Rd (Section A), where pedestrian crossings are present at the intersection, but sidewalks are absent along MO 47. The remaining three crashes took place near Independence Dr, E Main St, and US 50 (Section C). Independence Dr lacks pedestrian crossings, while E Main St has a marked crosswalk at the intersection but no pedestrian infrastructure along MO 47. At US 50, pedestrian facilities are limited to roadway shoulders. Notably, four of these crashes occurred under dark conditions, highlighting potential visibility and lighting concerns for pedestrian safety.

Additionally, one bicycle-involved crash resulted in a serious injury. This incident also occurred in dark conditions near E. Happy Sac Road (Section D). No bicycle facilities are present on MO 47.

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Figure 9: Fatal and Serious Injury Crashes

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Crash Rates

Traffic crash rates for the intersections and segments along the study corridor were calculated. **Figure 10** shows the intersection and segment crash rates along the study corridor. Segment crash rates are calculated based on the location of intersections, and in some cases, segments have been combined to achieve lengths greater than one mile, in accordance with EPG recommendations. The following corridor segments experienced the highest crash rates along the study corridor:

- Between Clearview Road and Independence Drive (Section B)
- Between Independence Drive and US 50 East (Section C)

The mentioned segments above had crash rates of more than 1.5 crashes per million vehicle-miles of travel.

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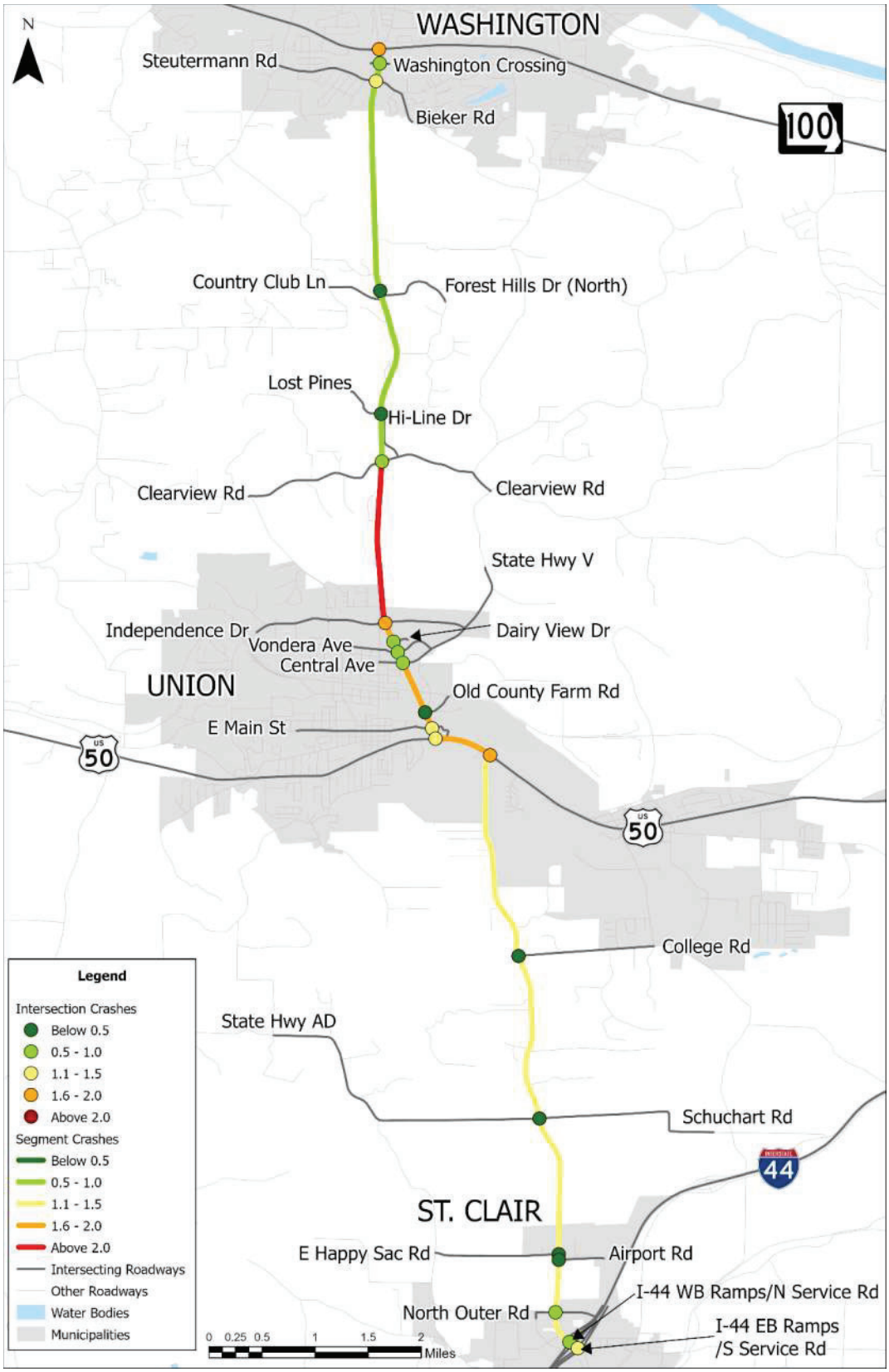

Figure 10: Crash Rates Along the Corridor

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Roadway Design Analysis

Geometrics – Horizontal Alignment

Horizontal alignments along the corridor were studied by comparing existing radii and superelevation to the minimum required radii and minimum required superelevations found in the AASHTO A Policy on Geometric Design of Highways and Streets (Green Book). From Section 3.3.3.2 in the Green Book and per MoDOT Std Plan 203.22, superelevation is not to exceed 8%, and a maximum superelevation of 4% is recommended for urban streets, and superelevation may be omitted on low-speed streets in an urban area. Since the study corridor contains urban and rural areas at varying speeds (with no sections containing low-speed urban areas), it can be determined that the maximum superelevation will vary with each study segment based upon whether it is an urban or rural section. Urban areas will be evaluated using the 4% maximum superelevation, and rural areas of the study area will be evaluated using an 8% maximum superelevation. Using this study criteria, each horizontal curve along the study corridor was analyzed using existing radii and superelevations and comparing them to minimum required radii found in Tables 3-8 and 3-10 in the Green Book. The results of this are shown in **Figures 11a-11h** with analysis in tables in each study segment of this report.

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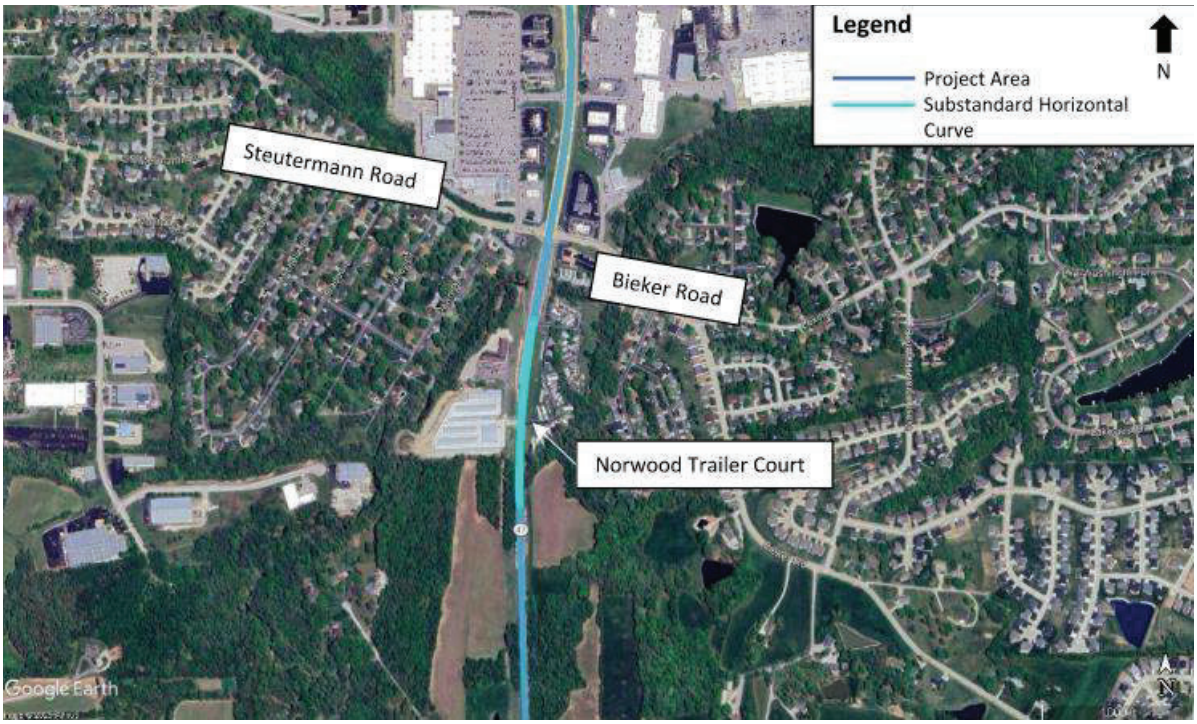

Figure 11a: MO 47 Horizontal Alignment Locations – North Urban Section (A)

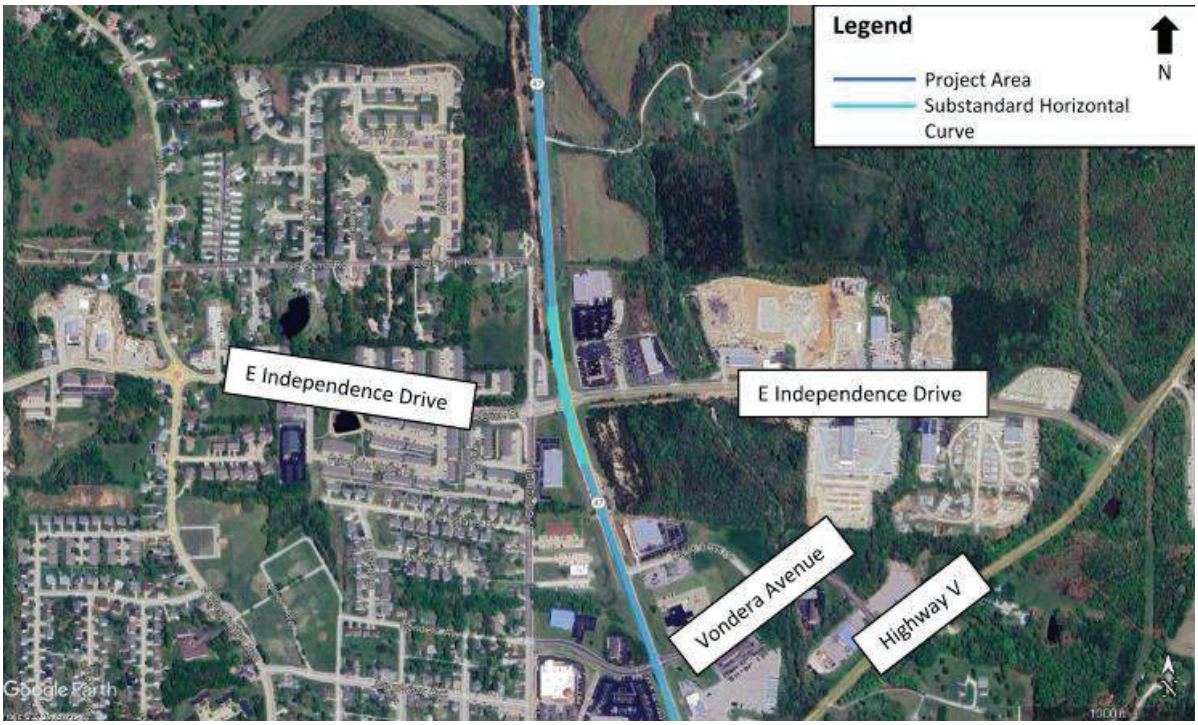

Figure 11b: MO 47 Horizontal Alignment Locations – Middle Urban Section (C)

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Figure 11c: MO 47 Horizontal Alignment Locations – South Rural Section (D)

Figure 11d: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Figure 11e: MO 47 Horizontal Alignment Locations – South Rural Section (D)

Figure 11f: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Figure 11g: MO 47 Horizontal Alignment Locations – South Rural Section (D)

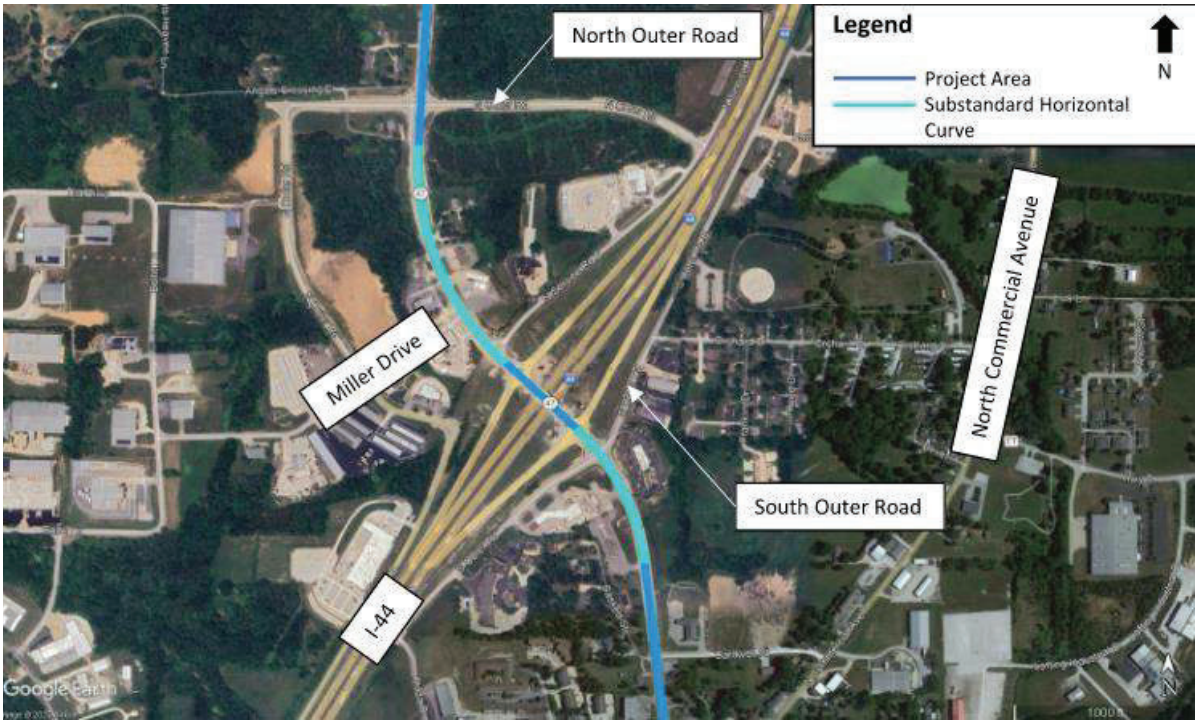

Figure 11h: MO 47 Horizontal Alignment Locations – South Rural Section (D)

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Geometrics – Vertical Alignment

Vertical alignments in the study area were analyzed using K-values and stopping sight distances of existing conditions and comparing them to the values from current AASHTO and MoDOT standards. A combination of both substandard crest and sag curves were identified and summarized in the tables, in each of the four sections of the project corridor. Several of the curves were found to be sag curves where one travel direction experienced a lower sight distance than the other travel direction. Most of the crest curves along MO 47 have K-values and stopping sight distances that were acceptable. Exhibits summarizing the locations of the substandard vertical curves can be found in **Figure 12a-12d** below.

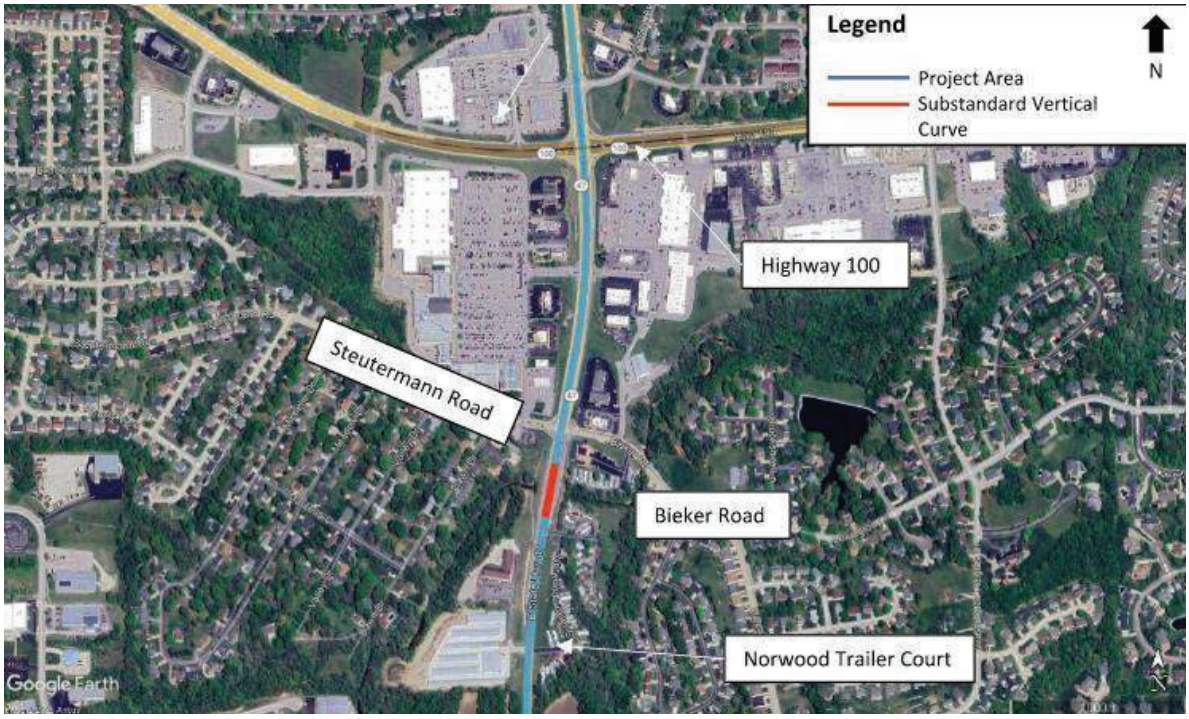

Figure 12a: MO 47 Vertical Alignment Locations – North Urban Section (A)

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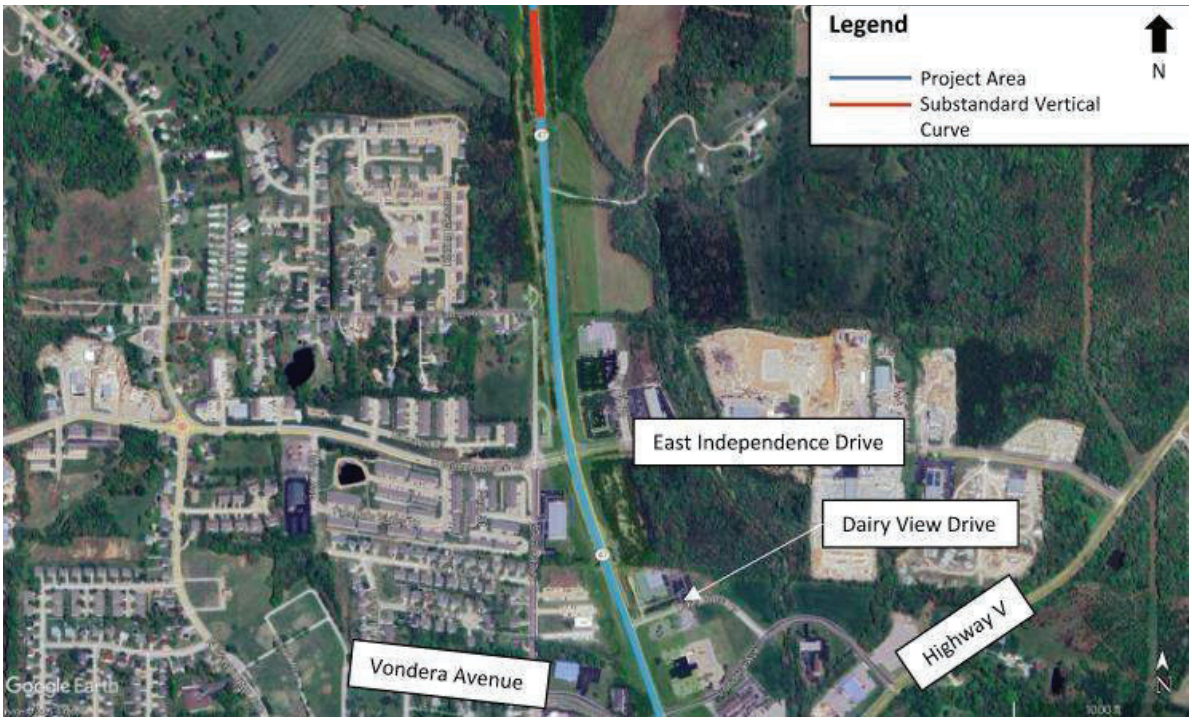

Figure 12b: MO 47 Vertical Alignment Locations – North Rural Section (B)

Figure 12c: MO 47 Vertical Alignment Locations – South Rural Section (D)

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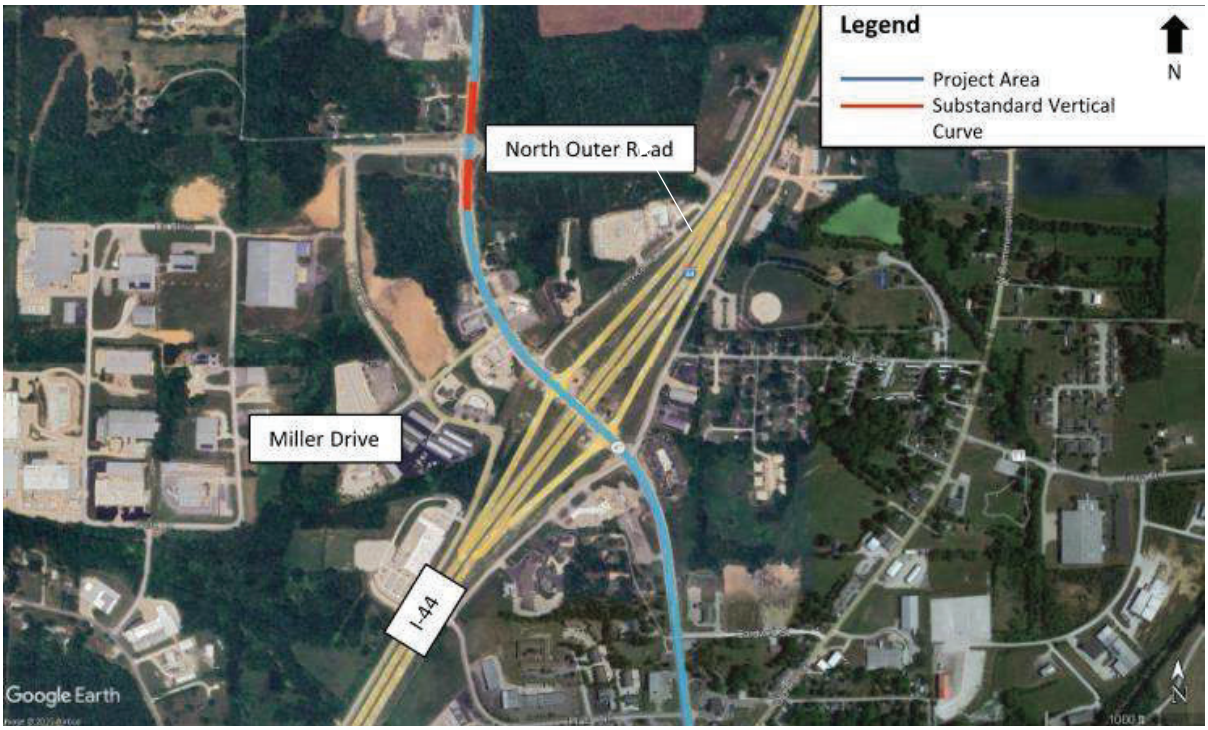

Figure 12d: MO 47 Vertical Alignment Locations – South Rural Section (D)

Deceleration Lanes, Turn Lanes, and Tapers

Throughout the study corridor, deceleration lanes, turn lanes, and tapers were analyzed for taper lengths and lane lengths and compared to minimum values from the AASHTO Green Book (Section 10.9.5.10) and MoDOT Engineering Policy Guide (EPG) (Sections 233 & 234). There are no acceleration lanes within the study limits. Some intersections include deceleration lanes only on the right (for right-turns) and some include deceleration lanes on both the left and right to receive both left- and right-turns. Similarly, deceleration lanes are provided approaching most intersections, enabling turning traffic to decelerate out of the through lanes before completing their turns. When compared to the areas with the most crashes, substandard deceleration lanes were present in the sections of MO 47 near Clearview Road, Independence Drive, and US 50 which fall into North Rural (B) and Middle Urban (C) sections. Like the previous analyses, substandard deceleration lanes, with their respective tapers, will be covered in their respective sections of this report. Locations of these lanes can be seen in **Figure 13a-13f.**

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Figure 13a: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Urban Section (A)

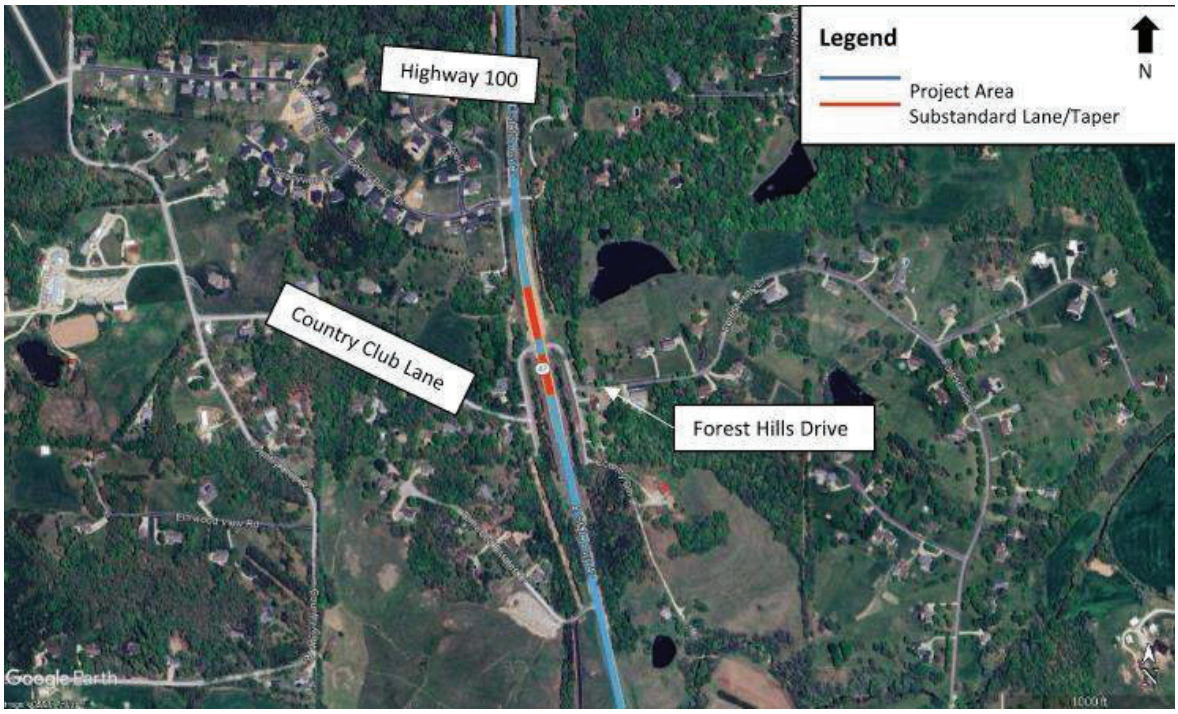

Figure 13b: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

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Figure 13c: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

Figure 13d: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

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Figure 13e: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

Figure 13f: MO 47 Substandard Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

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Intersection Sight Distance Analysis

In addition to the major roads listed in the introduction that intersect with MO 47, there are numerous minor roads and driveways that also intersect with MO 47. These intersections were analyzed as part of this study to determine whether there was sufficient Intersection Sight Distance (ISD) for turning movements from the minor road or driveway onto MO 47. For each intersection, a right and left turning movement was analyzed by creating intersection sight triangles using Green Book Section 9.5.2. The sight triangle analysis considered the approach grade from the minor road, the grade of the major road, type of turning movement, design speed of the major road, and the time gap at the design speed of the major road. In total, 13 minor roads/driveways were found to have insufficient ISD. It should be noted that these sight triangles were calculated based on the posted speed limit (45 mph or 55 mph) of the turn in question onto MO 47. If drivers are not adhering to the posted speed limits, the intersection sight distance analysis in this report will not reflect driver behaviors. The locations of turning movements with deficient ISD are shown in **Figures 14a-14j**. Additionally, the locations with deficient ISD are summarized in tables in each study section.

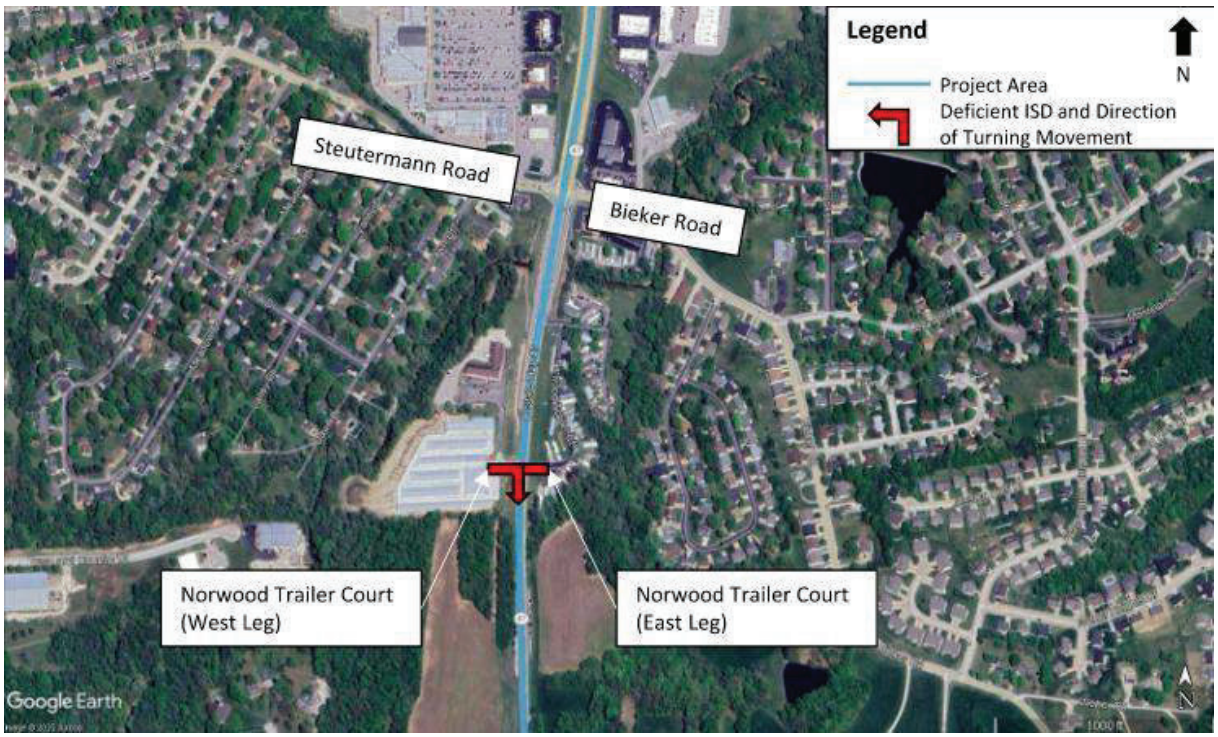

Figure 14a: MO 47 Deficient Intersection Sight Distances – North Urban Section (A)

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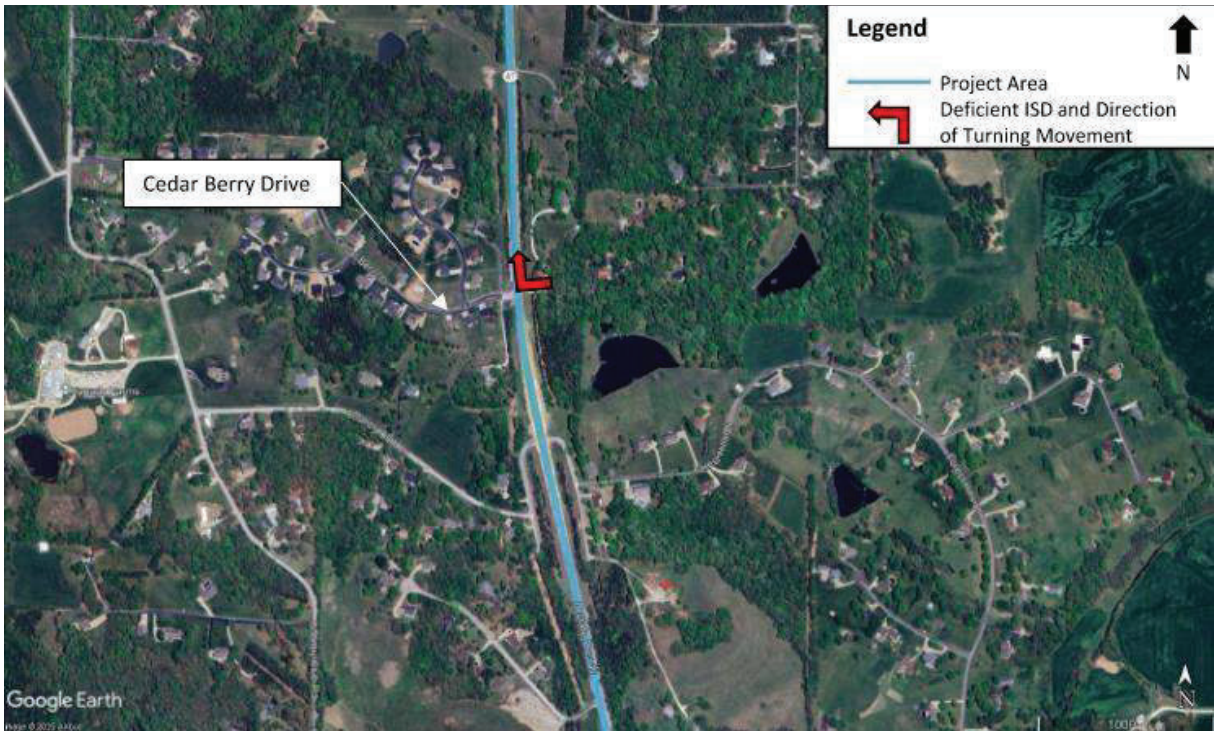

Figure 14b: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

Figure 14c: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

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Figure 14d: MO 47 Deficient Intersection Sight Distances – North Rural Section (B)

Figure 14e: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14f: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

Figure 14g: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14h: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

Figure 14i: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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Figure 14j: MO 47 Deficient Intersection Sight Distances – South Rural Section (D)

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North Urban Section (A)

This section of the study corridor extends approximately 0.3 miles from Highway 100 to Steutermann/Bieker Road. The typical cross-section includes a four-lane, two-way urban roadway with wide paved shoulders on both sides along the entire segment and a painted center median between intersections.

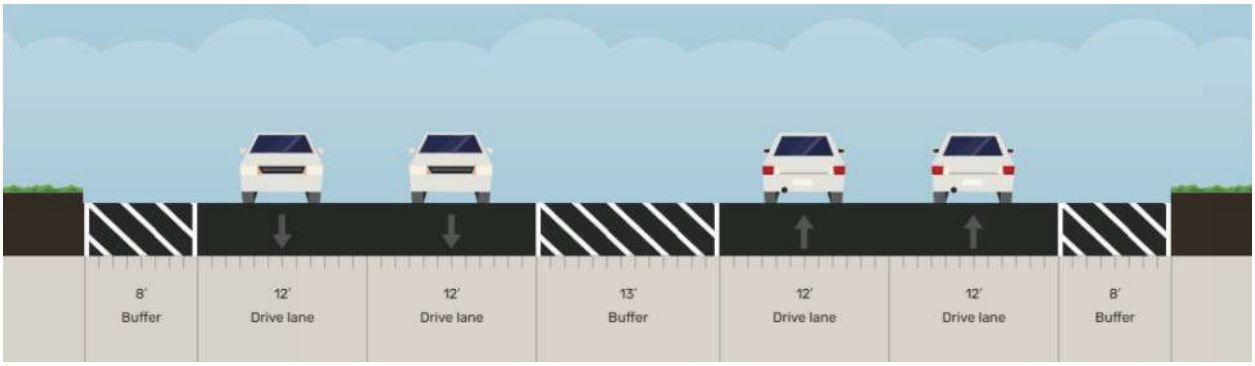

Figure 15 illustrates the dimensions of roadway lanes and paved shoulders. The alignment for this section is relatively straight.

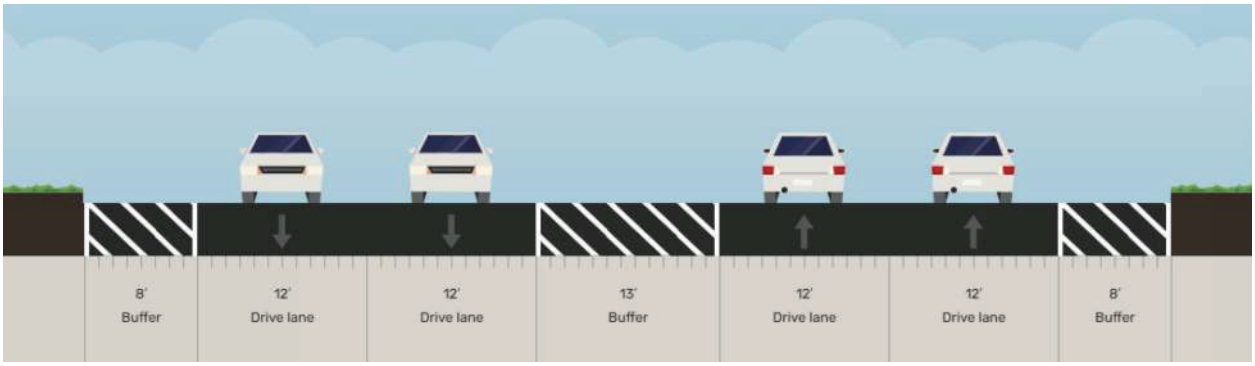

Figure 15: Typical Cross-Section (North Urban Section (A))

The study area for the North Urban Section (A) includes the following intersections:

- Signalized
  - MO 47 / Highway 100
  - MO 47 / Washington Crossing
  - MO 47 / Steutermann Road/Bieker Road

Crash Data Analysis

Figure 16 shows a detailed summary of traffic crash facts for the North Urban Section (A). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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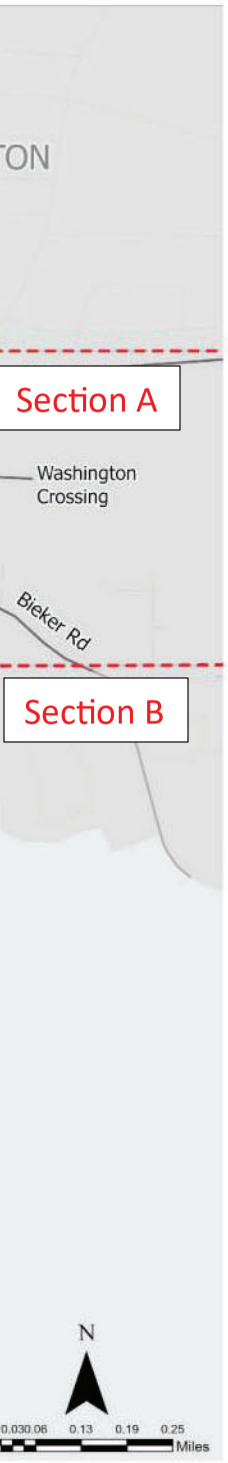
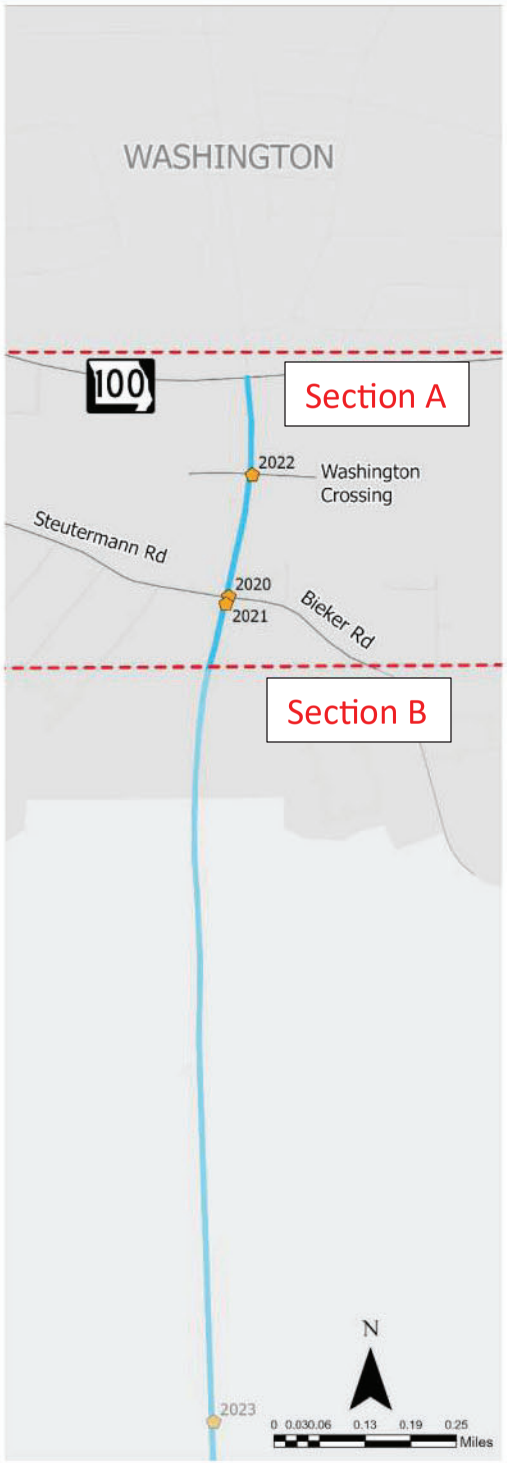
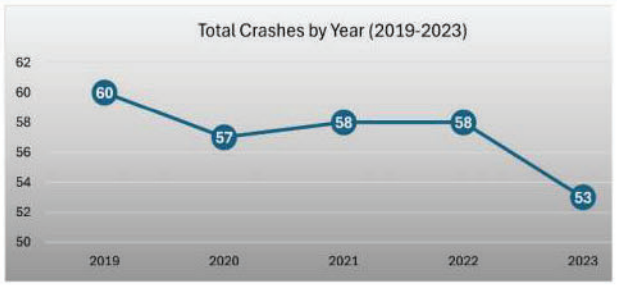
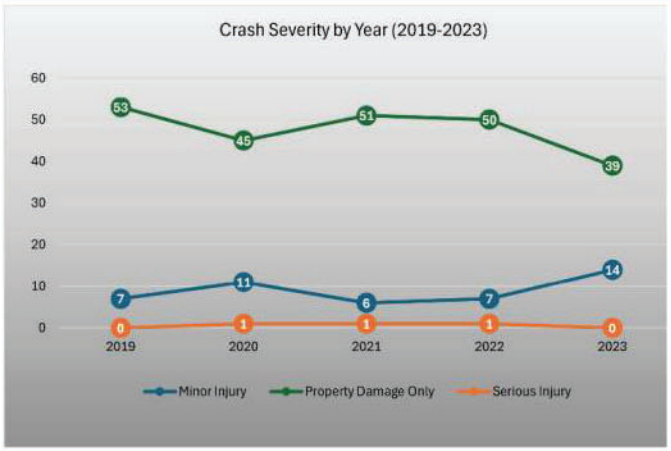

Section A
Washington Crossing
Bieker Rd
Section B
N
0 0.03 0.06 0.13 0.19 0.25
Miles

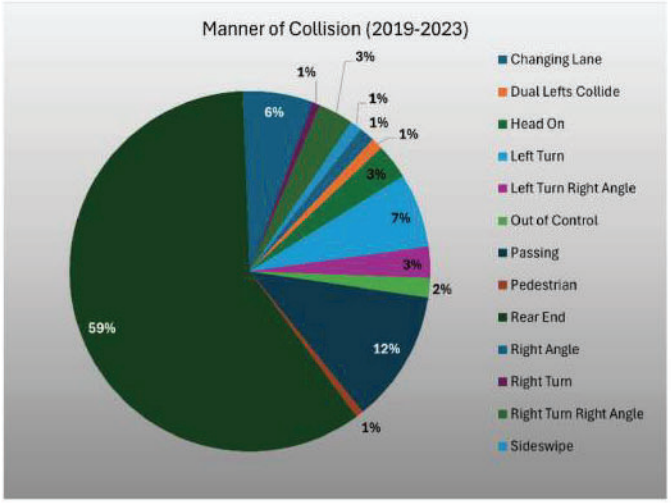

WASHINGTON
100
Section A
2022
Washington Crossing
Steutermann Rd
2020
2021
Bieker Rd
Section B
2023
N
0 0.03 0.06 0.13 0.19 0.25
Miles

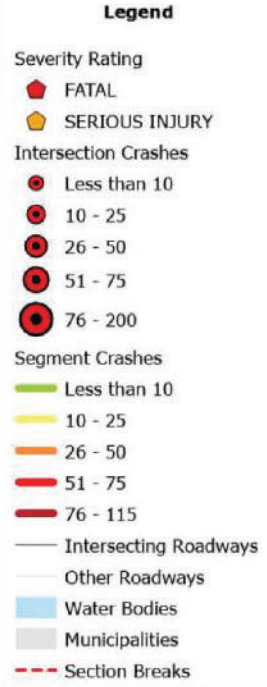

Total Crashes by Year (2019-2023)
62
60
58
56
54
52
50
60
57
58
58
53
2019
2020
2021
2022
2023

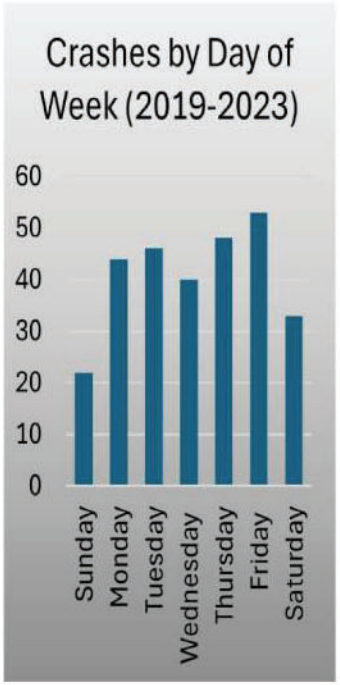
Lighting Condition (2019-2023)
1%
20%
79%
0%
Dark W/ Street Lights Off
Dark W/ Street Lights On
Daylight
Unknown

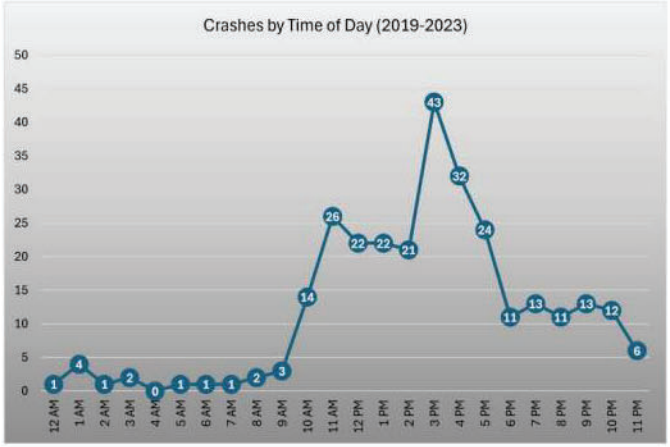
Road Surface Conditions (2019-2023)
0%
1%
83%
16%
Dry
Ice
Snow
Wet


Crash Severity by Year (2019-2023)
60
50
40
30
20
10
0
53
45
51
50
39
7
11
6
7
14
0
1
1
1
0
2019
2020
2021
2022
2023
Minor Injury
Property Damage Only
Serious Injury


Manner of Collision (2019-2023)
6%
1%
3%
1%
1%
1%
3%
7%
3%
2%
12%
1%
59%
Changing Lane
Dual Lefts Collide
Head On
Left Turn
Left Turn Right Angle
Out of Control
Passing
Pedestrian
Rear End
Right Angle
Right Turn
Right Turn Right Angle
Sideswipe


Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersection Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 200
Segment Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section Breaks


Crashes by Day of Week (2019-2023)
60
50
40
30
20
10
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Crashes by Time of Day (2019-2023)
50
45
40
35
30
25
20
15
10
5
0
1
4
1
2
0
1
1
1
2
3
14
26
22
22
21
43
32
24
11
13
11
13
12
6
12 AM
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM

Within the study section, a total of 286 crashes occurred between 2019 and 2023. During the time period analyzed, 277 (97%) of the crashes occurred at intersections. The intersection of MO 47 and Highway 100 had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2021 where 41 crashes occurred. **Table 6** provides additional information on the crash locations and severities within the study area.

Table 6: North Urban Section (A) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**7**	**52**	**11**	**44**	**7**	**50**	**7**	**47**	**13**	**39**	**277**
MO 47 & Highway 100 (S)	3	36	5	32	4	37	5	27	8	29	186
MO 47 & Washington Crossing (S)	2	6	3	6	1	5	1	13	3	2	42
MO 47 & Steutermann /Bieker Rd (S)	2	10	3	6	2	8	1	7	2	8	49
Segment	**-**	**1**	**1**	**1**	**-**	**1**	**1**	**3**	**1**	**-**	**9**
Highway 100 to Washington Crossing	-	1	-	1	-	1	-	1	-	-	4
Washington Crossing to Steutermann/Bieker Rd	-	-	1	-	-	-	1	2	1	-	5
Grand Total	**7**	**53**	**12**	**45**	**7**	**51**	**8**	**50**	**14**	**39**	**286**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, 48 (17%) resulted in injuries (both serious and minor injuries). There were no fatal crashes and three serious injury crashes in this section. The highest frequency of injury crashes occurred at MO 47 and Highway 100 where 8 injury crashes were reported in 2023.

All three serious injury crashes were angle collisions. One occurred when a driver ran a red light, while the other two resulted from drivers failing to yield at a flashing yellow arrow.

A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 16**.

Crash Type

Rear-end crashes were the most prominent type of crash (59%) followed by passing crashes (12%).

The following roadway characteristics and human factors can be attributed to the higher number of rear-end crashes in this section:

- High traffic volume/few gaps in traffic for minor street traffic to enter the major street,

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- Lack of right-turning bays/lanes,
- Higher travel speed,
- Sight distance issue at highway curves, and

Longer distance between traffic signals.**Figure *17*** shows the distribution of crash types within the study area.

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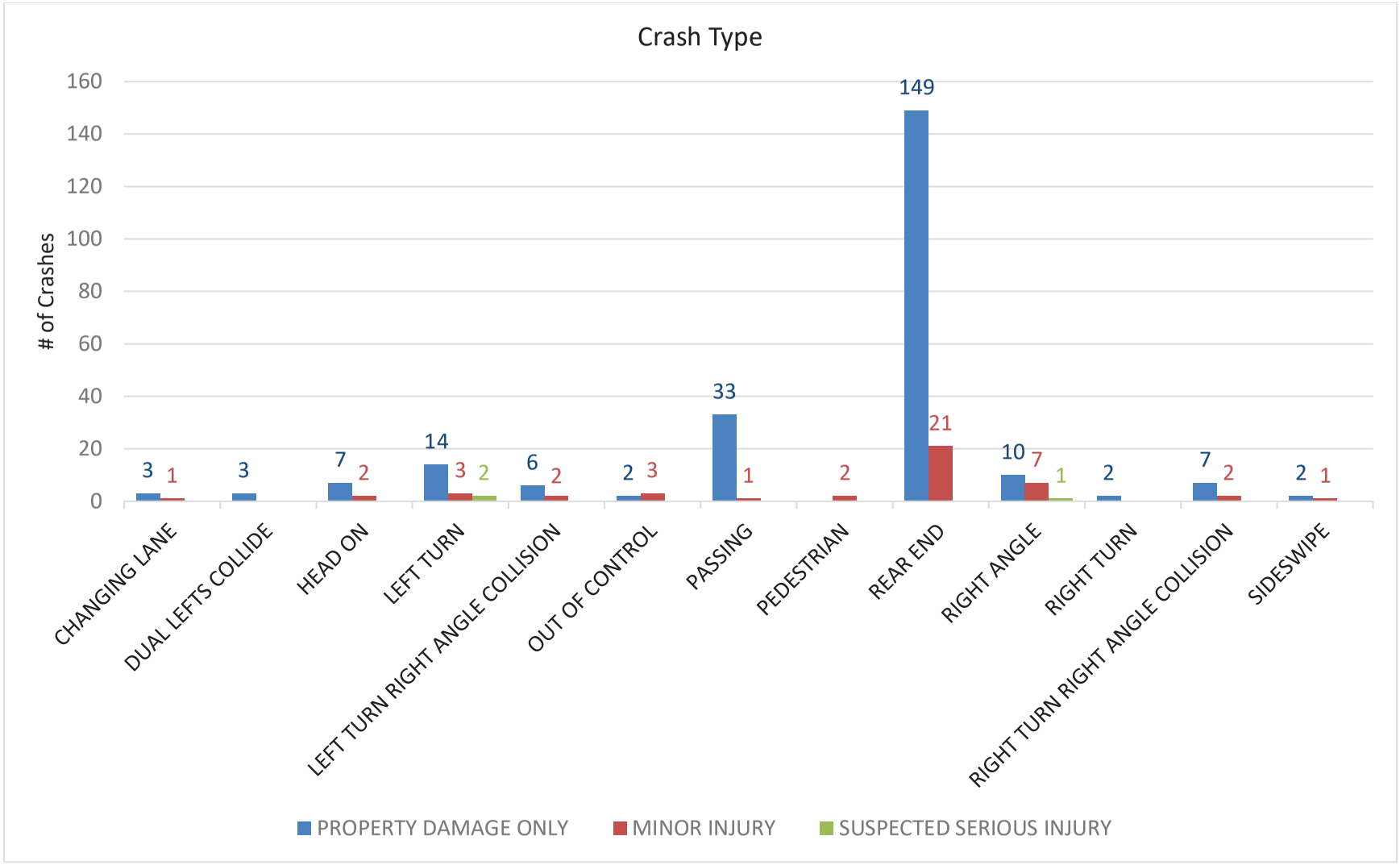

Figure 17: North Urban Section (A) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 26 vehicles occurring in 2020. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 18** displays the breakdown of crashes by time of day according to year.

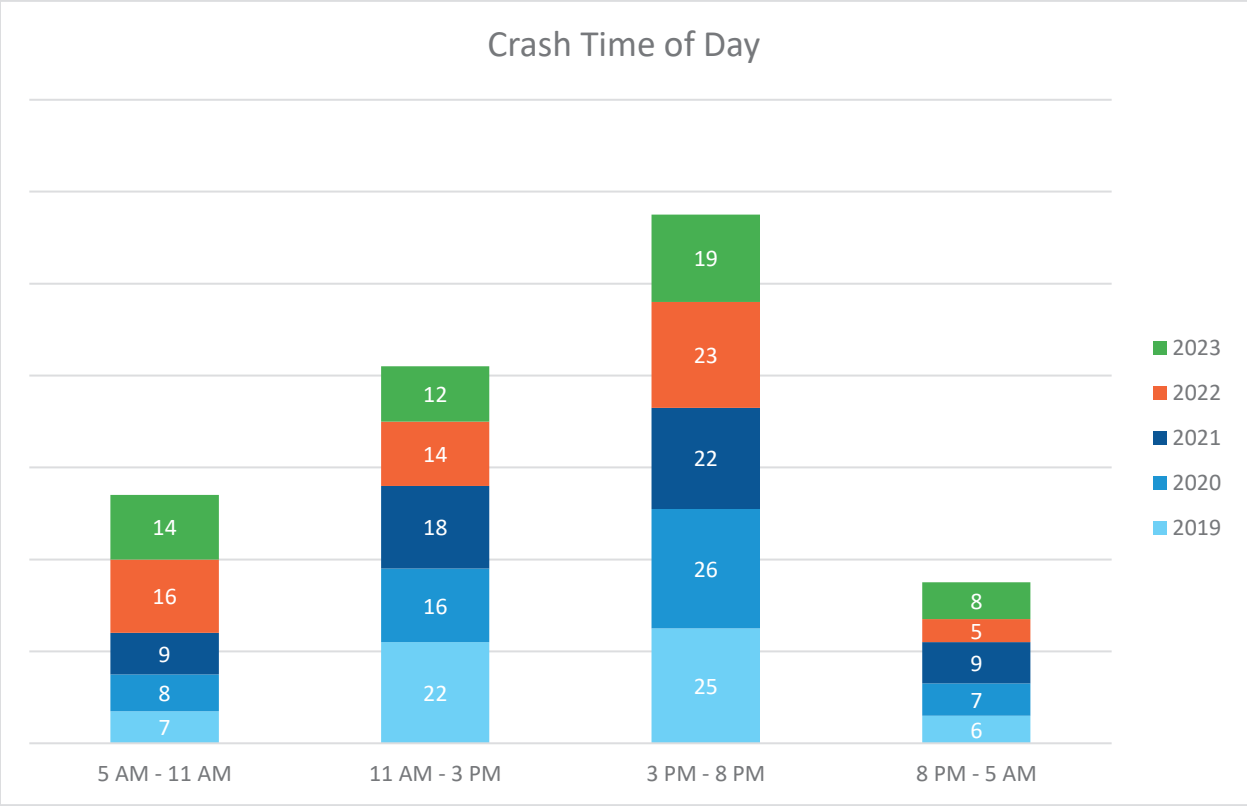

Figure 18: North Urban Section (A) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 226 (79%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 57 (20%) of crashes while 3 (1%) occurred in the dark where streetlights were off.

Approximately 83% of crashes occurred while roads were dry and 17% of crashes occurred while roads were wet or had snow present. **Figure 16** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

The North Urban Section (A) experiences moderate traffic flow, with congestion typically observed during peak travel hours due to its role as a key connector for local commuters and regional traffic. The area includes a mix of residential, commercial, and agricultural land use, resulting in varying traffic patterns throughout the day. The roadway is generally well-maintained, but occasional delays occur at intersections with lower capacity and limited passing opportunities, particularly during morning and evening rush hours.

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Additionally, the presence of school zones and local businesses contribute to stop-and-go traffic. Enhancements in intersection signalization, lane configuration, and signage could improve the overall flow and reduce bottlenecks in this segment.

Roadway Design Analysis

Horizontal Alignment – North Urban Section (A)

The North Urban Section (A) of the project corridor contained one substandard curve near Norwood Trailer Court. While the radius of the horizontal curve was more than sufficient, the superelevation was found to be substandard as it fell outside the range of maximum superelevation of 4%. The results of this section are summarized in **Table 7** below.

Table 7: Substandard Horizontal Curves – North Urban Section (A)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at Norwood Trailer Court	4.35% (4.00%)	6,000' (1190')

Vertical Alignment – North Urban Section (A)

As shown in **Table 8**, one substandard vertical curve was identified in this segment at MO 47 near Bieker Road. It should be noted that the existing conditions are close to the current criteria.

Table 8: Substandard Vertical Curve Clusters – North Urban Section (A)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Minimum)
SB	MO 47 South of Steutermann/ Bieker Road	1	Sag	76 (79)	360' (360')

Deceleration Lanes, Turn Lanes, and Tapers – North Urban Section (A)

One substandard lane was found in the North Urban Section (A) of the study area. While the taper length was found to be sufficient, the lane length was substandard. This intersection, however, was not one of the intersections that was found to have the highest number of crashes. The results of the analysis of this segment are summarized in **Table 9**.

Table 9: Substandard Tapers – North Urban Section (A)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of Steutermann/Bieker Road	106' (120')	119' (100')
NB	MO 47 South of Steutermann/ Bieker Road	184' (120')	97' (100')

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Intersection Sight Distance Analysis

As shown in **Table 10**, there was a total of two turning movements that were found to be deficient in North Urban Section (A) of the Study Area. Both turning movements were found at Norwood Trailer Court.

Table 10: Deficient Intersection Sight Distance – North Urban Section (A)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Norwood Trailer Court - East Leg	X		SB
Norwood Trailer Court - West Leg		X	SB

Existing No-Build Analysis

Table 11 shows the observed and estimated existing annual crash frequency for the MO 47 North Urban Section (A) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Washington Crossing and Steutermann Road.

Table 11: North Urban Section (A) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & HIGHWAY 100	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	5	32.2	37.2
No Build Expected Crashes - Existing Condition	15.1	27.1	42.2
MO 47 & WASHINGTON CROSSING	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.0	6.4	8.4
No Build Expected Crashes - Existing Condition	6.9	13.3	20.2
MO 47 & STEUTERMANN ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.0	7.8	9.8
No Build Expected Crashes - Existing Condition	6.4	12.6	19.1
Segment			
HIGHWAY 100 TO WASHINGTON CROSSING	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.8	0.8
No Build Expected Crashes - Existing Condition	0.1	0.3	0.4
WASHINGTON CROSSING TO STEUTERMANN ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	0.4	1.0
No Build Expected Crashes - Existing Condition	0.1	0.3	0.5

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North Rural Section (B)

This 5.1-mile-long section of the study corridor lies between Steutermann/Bieker Road in the City of Washington and Independence Drive in the City of Union. The typical cross-section includes a two-lane, two-way rural roadway with wide paved shoulders on both sides almost along the entire segment. There are turning lanes at some intersections and a striped median is present for some portions along this section. **Figure 18** illustrates the dimensions of roadway lanes and paved shoulders. The alignment for this section is relatively straight except for a large horizontal curve south of Elmwood Estates Drive near Forest Hills Drive (south).

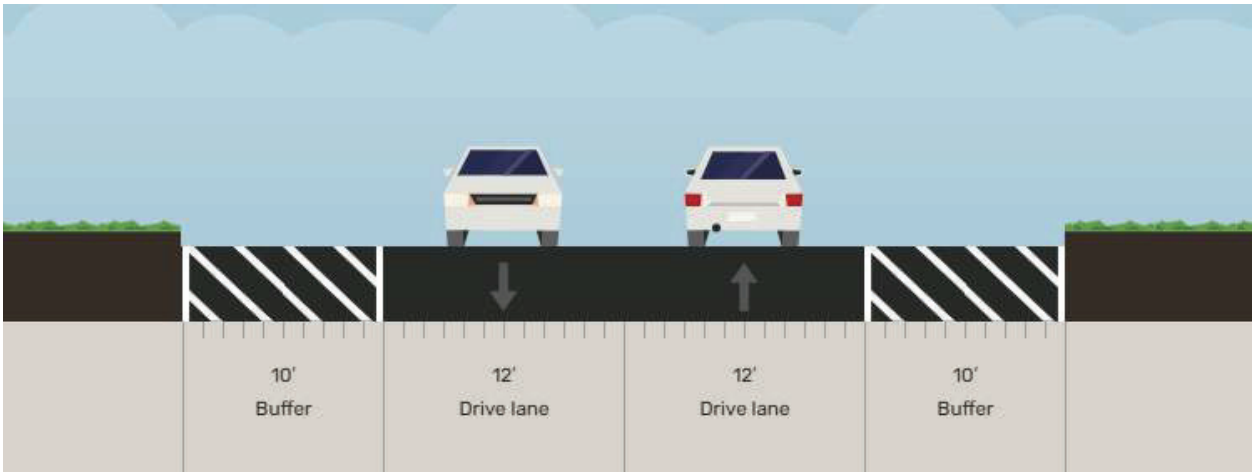

Figure 19: Typical Cross-Section (North Rural Section (B))

The study area for the North Rural Section (B) includes the following intersections:

- Signalized
  - MO 47 / Clearview Road
- Unsignalized
  - MO 47 / Country Club Lane & Forest Hills Drive (north)
  - MO 47 / Lost Pines & Hi-Line Drives

Crash Data Analysis

Figure 20 shows a detailed summary of traffic crash facts for the North Rural Section (B). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed an increasing trend since 2019 along this section.

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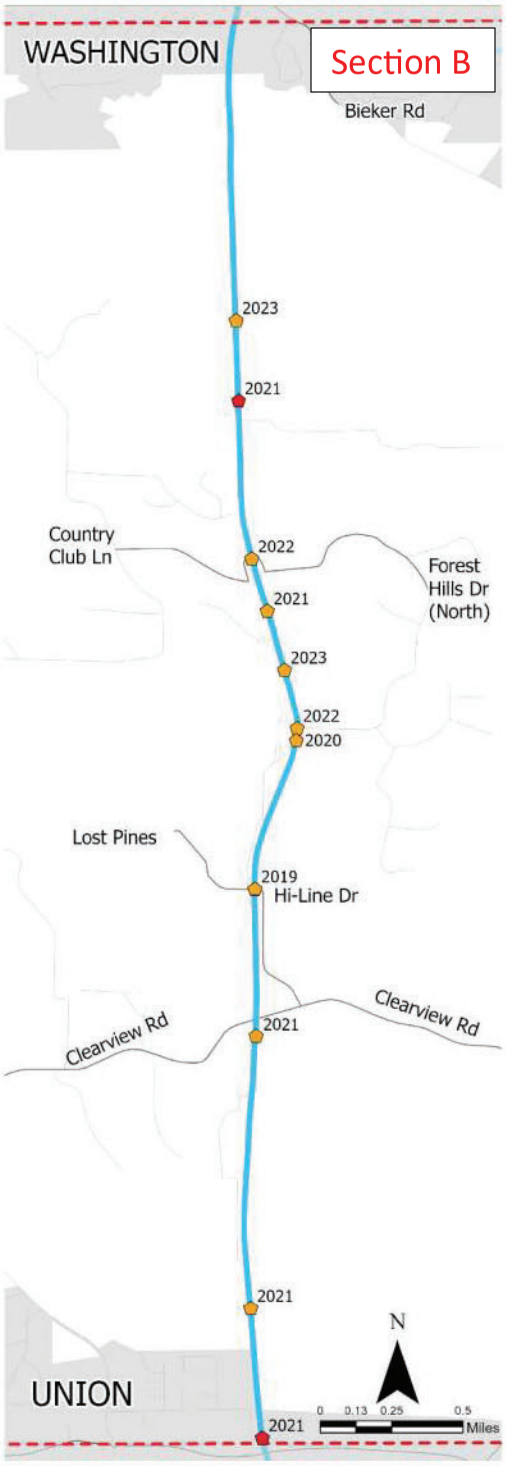
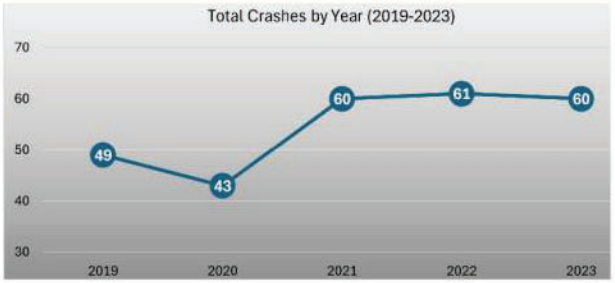
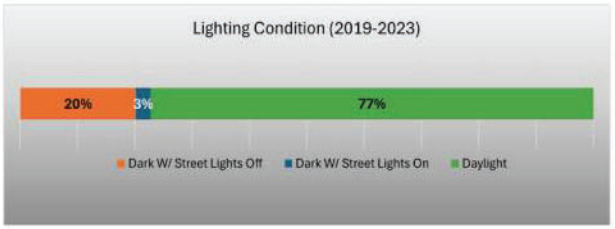
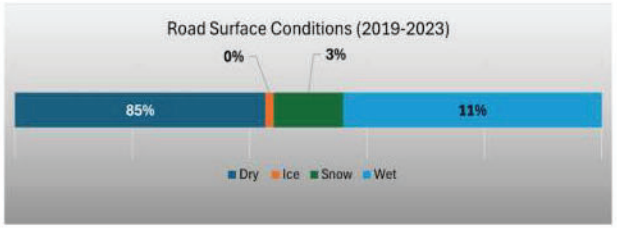






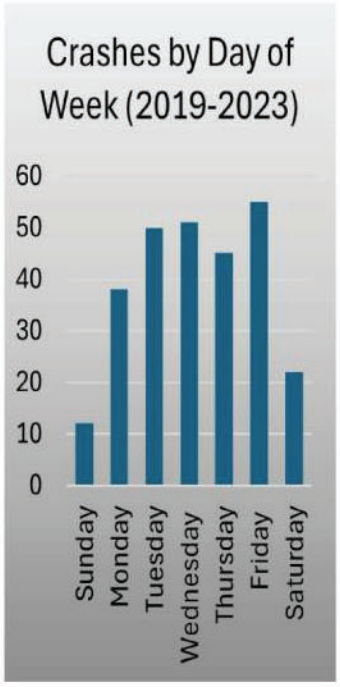


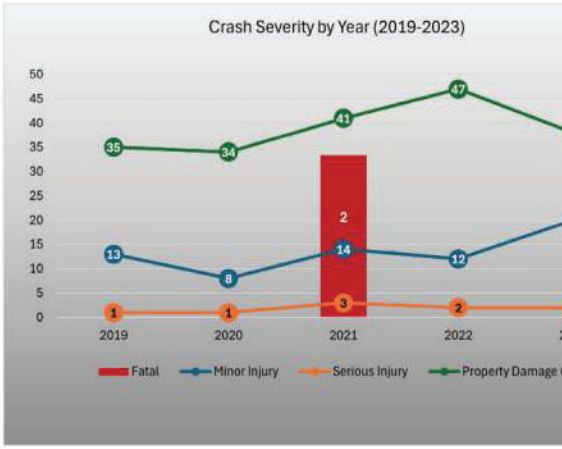
Legend

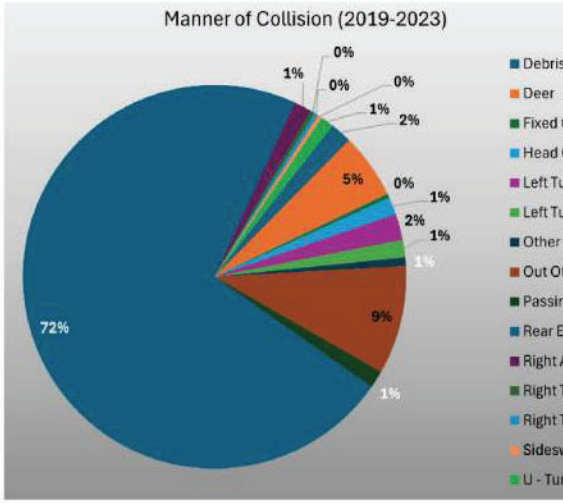
Severity Rating
- FATAL
- SERIOUS INJURY

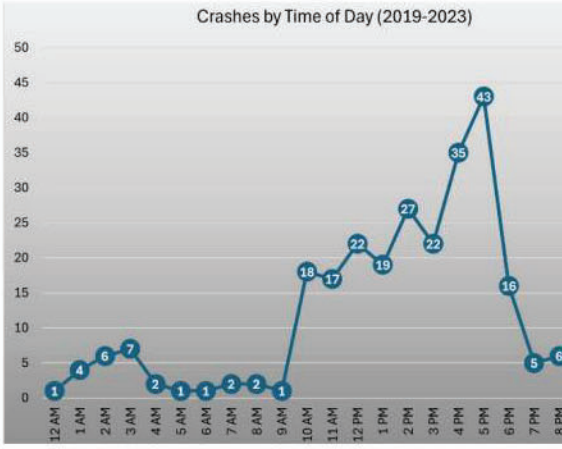
Intersection Crashes
- Less than 10
- 10 - 25
- 26 - 50
- 51 - 75
- 76 - 200

Segment Crashes
- Less than 10
- 10 - 25
- 26 - 50
- 51 - 75
- 76 - 115
- Intersecting Roadways
- Other Roadways
- Water Bodies
- Municipalities
- Section Breaks









Within the study area for the North Rural Section (B), a total of 273 crashes occurred between 2019 and 2023. During the period analyzed, only 38 (14%) crashes occurred at intersections. The intersection of MO 47 and Clearview Road had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2022 when six crashes occurred.

A total of 235 crashes occurred on the segments throughout North Rural Section (B). The segment between Clearview Road and Independence Drive had the highest frequency of crashes, with a total of 30 crashes occurring in 2021.

Table 12 provides additional information on the crash locations and severities within the study area.

Table 12: North Rural Section (B) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**4**	**3**	**1**	**5**	**3**	**3**	**2**	**7**	**2**	**7**	**37**
MO 47 & Country Club Lane (U)	-	-	-	1	1	1	1	-	-	1	5
MO 47 & Lost Pines (U)	2	-	-	-	1	2	-	2	2	4	13
MO 47 & Clearview Road (S)	2	3	1	4	1	-	1	5	-	2	19
Segment	**10**	**32**	**8**	**29**	**14 (2)**	**38**	**12**	**40**	**20**	**31**	**236**
Steutermann/Bieker Rd to Country Club Ln	3	6	5	9	2 (1)	10	5	20	6	9	76
Country Club Lane to Lost Pines	-	7	1	2	2	4	3	4	1	5	29
Lost Pines to Clearview Road	2	3	-	1	-	5	-	2	4	2	19
Clearview Road to Independence Drive	5	16	2	17	10 (1)	19	4	14	9	15	112
Grand Total	**14**	**35**	**9**	**34**	**17 (2)**	**41**	**14**	**47**	**22**	**38**	**273**

(S) = Signalized Intersection
(U) = Unsignalized Intersection(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there were two fatal crashes and nine serious injury crashes in this section. Overall, there were 76 crashes that resulted in injuries. The highest frequency of serious injury crashes occurred between the intersections of Country Club Lane and Lost Pines.

According to the police report, one fatal crash was caused by an unconscious driver traveling on the wrong side of the road, while the other resulted from a distracted driver who failed to reduce speed for slow/stopped traffic and struck vehicles ahead. Of the nine serious injury crashes, seven were attributed to distracted driving and excessive speed, while the remaining two involved failure to yield and loss of control.

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A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 20**.

Crash Type

As can be seen in **Figure 21**, rear-end crashes were the most prominent (72%) followed by out-of-control crashes (9%).

The following roadway and human factors can be attributed to a higher number of rear-end crashes in this section:

- High traffic volume/few gaps in traffic for minor street traffic to enter major streets,
- Lack of turning bays/lanes,
- Higher travel speed,
- Sight distance issue at highway curves, and
- Longer distance between traffic signals.

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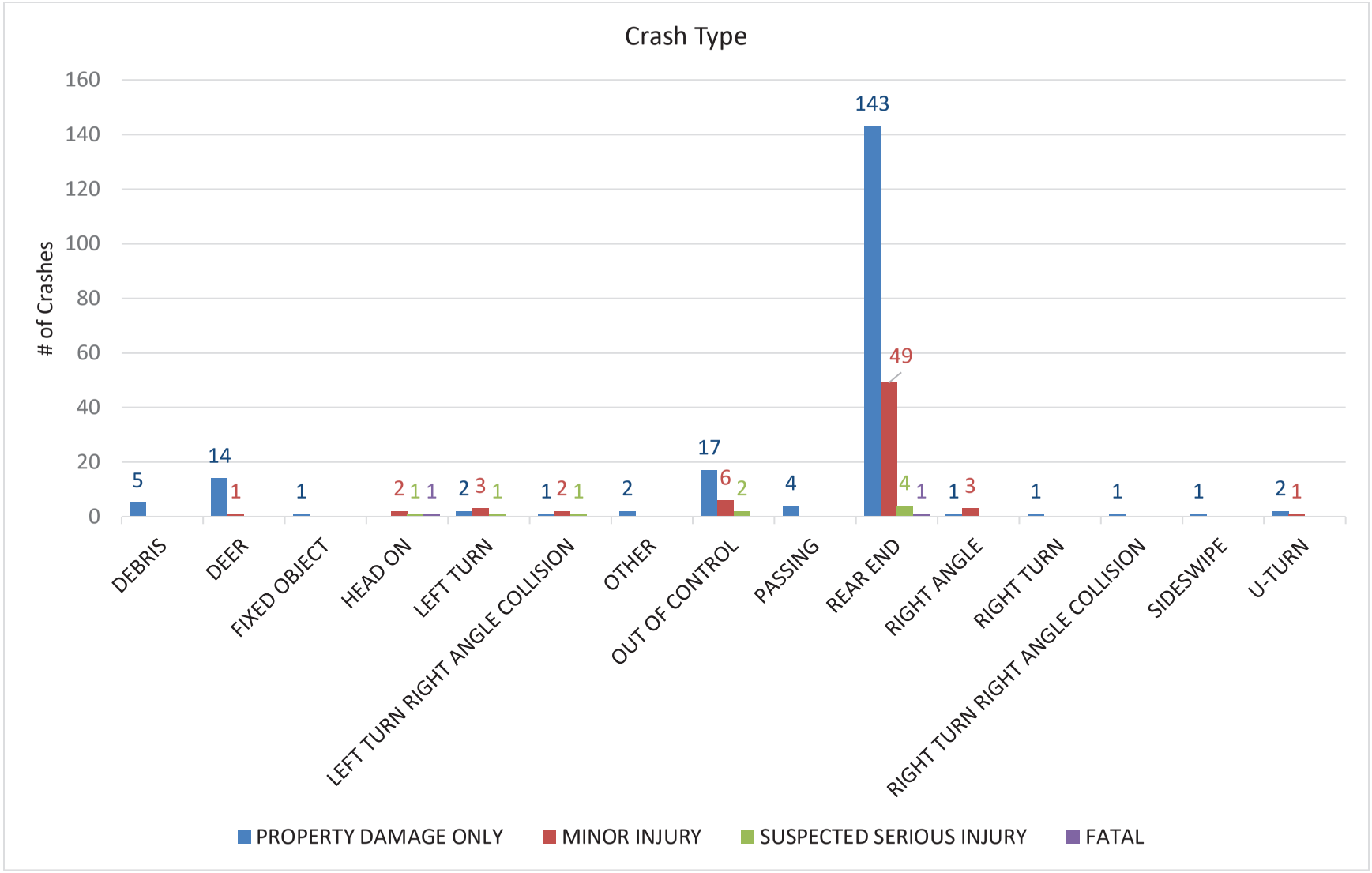

Figure 21: North Rural Section (B) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest number of 30 crashes in 2021. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 22** below displays the breakdown of crashes by time of day according to year.

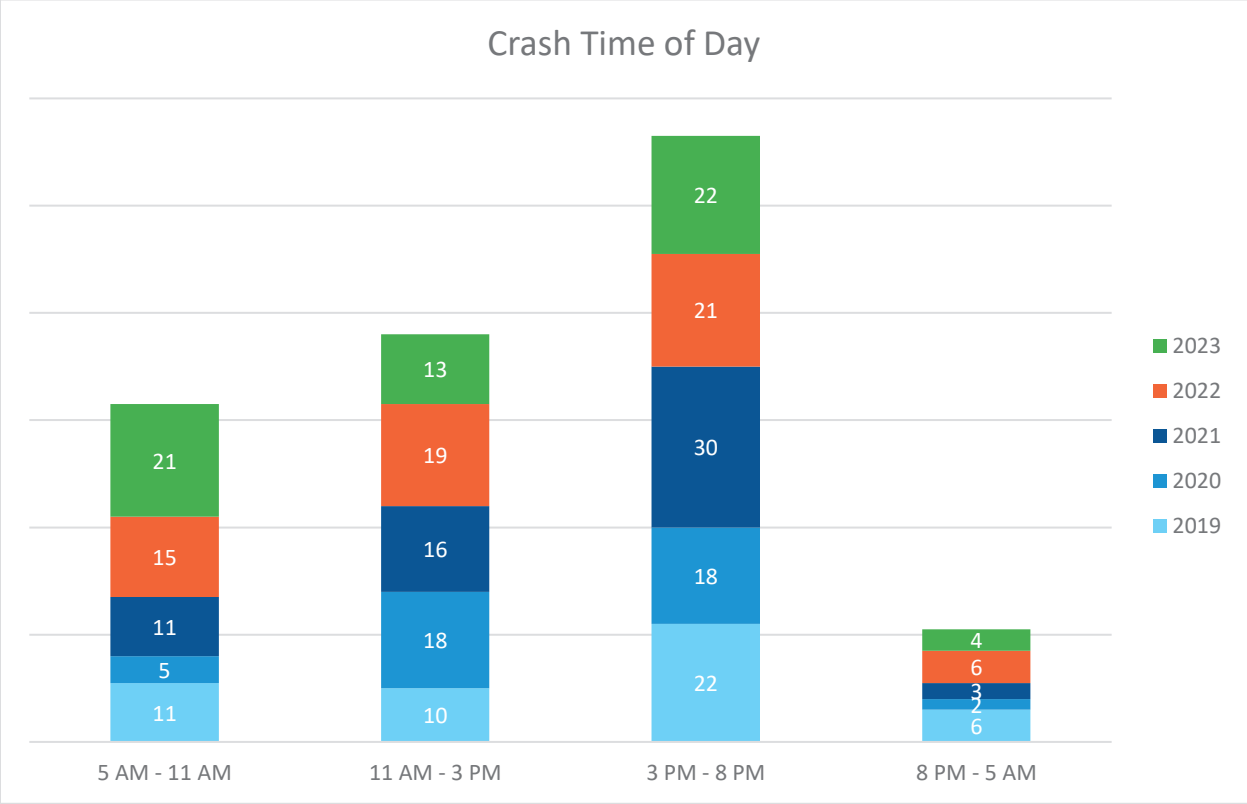

Figure 22: North Rural Section (B) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 210 (77%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 8 (3%) of crashes while 55 (20%) occurred in the dark where streetlights were off.

Approximately 85% of crashes occurred while roads were dry and 15% of crashes occurred while roads were wet or had snow present. **Figure 20** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

The North Rural Section (B) serves as a critical route for both local and regional traffic. While the traffic flow generally remains steady, it can experience congestion during peak hours due to several major intersections, particularly those near residential zones and commercial establishments. This segment of MO 47 encompasses a mix of agricultural and suburban land uses, leading to diverse traffic patterns

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throughout the day, especially from school-related travel and delivery vehicles servicing nearby businesses. The roadway typically supports two lanes of traffic in each direction; however, limited passing opportunities and the presence of larger farm machinery or slow-moving vehicles often result in delays. Additionally, this area includes multiple access points and intersections that could benefit from optimized traffic signal timing and enhanced road signage to mitigate delays and improve overall mobility.

Roadway Design Analysis

Horizontal Alignment – North Rural Section (B)

As this section is a rural area with less traffic than the urban areas, this segment was evaluated using a maximum superelevation of 8%. When comparing the values for minimum radius and maximum allowable superelevation from the Green Book, this segment was found to contain no substandard horizontal curves.

Vertical Alignment – North Rural Section (B)

In **Table 13**, one vertical curve was identified in the North Rural Section (B) to be substandard. The substandard curve, however, was not located in an area where the highest number of crashes were found.

Table 13: Substandard Vertical Curve Clusters – North Rural Section (B)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Minimum)
NB	MO 47 North of East Independence Drive	1	Sag	99 (115)	437' (495')

Deceleration Lanes, Turn Lanes, and Tapers – North Rural Section (B)

The North Rural Section (B) of the study area contained six substandard tapers. The substandard elements of each deceleration lane analyzed varied on whether the taper length or lane length was below the calculated design values. The results of this study area are summarized in **Table 14** below.

Table 14: Substandard Tapers – North Rural Section (B)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of Norwood Trailer Court	85' (100')	87' (120')
SB	MO 47 North of Country Club Lane	204' (350')	97' (250')
NB	MO 47 South of Country Club Lane	146' (350')	94' (250')
NB	MO 47 South of Clearview Road	440' (350')	103' (250')
SB	MO 47 North of Clearview Road	200' (350')	107' (250')

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Intersection Sight Distance Analysis

Two turning movements were found to be ISD Deficient in North Rural Section (B). They were located near Cedar Berry Drive and Melinda Drive as shown in **Table 15** below.

Table 15: Deficient Intersection Sight Distance – North Rural Section (B)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Driveway East of Cedar Berry Drive		X	NB
Forest Hills Drive	X		SB
Melinda Drive	X		NB

Existing No-Build Analysis

Table 16 shows the observed and estimated existing annual crash frequency for the MO 47 North Rural Section (B) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes would increase at the intersection of MO 47 and Clearview Road.

Table 16: North Rural Section (B) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & COUNTRY CLUB LANE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.6	1
No Build Expected Crashes - Existing Condition	0.3	0.4	0.7
MO 47 & LOST PINES	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	1.6	2.6
No Build Expected Crashes - Existing Condition	0.6	0.8	1.4
MO 47 & CLEARVIEW ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	2.8	3.8
No Build Expected Crashes - Existing Condition	2.4	4.6	7.0
Segment			
STEUTERMANN ROAD TO COUNTRY CLUB LANE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	4.4	10.8	15.2
No Build Expected Crashes - Existing Condition	2.6	5.6	8.2
COUNTRY CLUB LANE TO LOST PINES	**FATAL/INJURY**	**PDO**	**TOTAL**

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Observed (5 Year Average, 2019-2023)	1.4	4.4	5.8
No Build Expected Crashes - Existing Condition	1.5	3.3	4.8
LOST PINES TO CLEARVIEW ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	2.6	3.8
No Build Expected Crashes - Existing Condition	0.5	1.1	1.6
CLEARVIEW ROAD TO INDEPENDENCE DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	6.2	16.2	22.4
No Build Expected Crashes - Existing Condition	1.8	3.9	5.7

Based on historical crash data and patterns, the MoDOT-recommended calibration factor for a four-legged signalized intersection overpredicted crashes at the intersection of MO 47 and Clearview Road. The crash patterns more similarly reflected those of an urban four-legged stop-controlled intersection. Therefore, the MoDOT-recommended calibration factor for an urban four-legged stop-controlled intersection was used to calculate future crash predictions at the intersection of MO 47 and Clearview Road.

Furthermore, the segments from Steutermann/Bieker Road to Country Club Lane show a lower frequency of crashes for the no-build existing conditions. This could be due to the HSM Rural spreadsheet not allowing an AADT value greater than 17,800 vehicles per day, while the segments correct AADT value is 18,109 vehicles per day. Another factor to note is that the highest shoulder length width available in the HSM spreadsheet is 8’ while the correct measurement is closer to 10’. These factors in the spreadsheet could possibly be predicting incorrect results.

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Middle Urban Section (C)

This section of the study corridor extends approximately 1.6 miles from Independence Drive to US 50. Cross sections for this section vary considerably. The cross-section of the north portion of this section (between Independence Drive and Old County Farm Road) consists of two-lane, two-way roadway with wide paved shoulders on both sides. As shown in **Figure 23**, the segment between Old County Farm Road and the intersection of MO 47 and US 50 consists of 4-lane, bi-directional roadway with paved shoulders. **Figure 24** shows the dimensions of roadway lanes, median, and paved shoulders for the segment running concurrent with US 50.

The alignment of this section is relatively straight from Independence Drive to US 50. The portion that runs parallel to US 50 has a large horizontal curve.

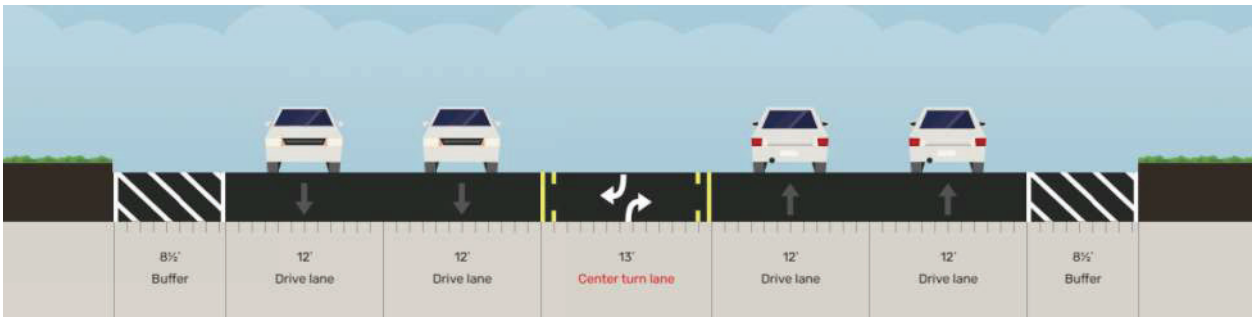

Figure 23: Typical Cross-Section for the Middle Urban Section (C)

Figure 24: Typical Cross-Section (Middle Urban Section (C)) (Concurrent with US 50)

The study area for the Middle Urban Section (C) includes the following intersections:

- Signalized
  - MO 47 / Independence Drive
  - MO 47 / Central Avenue & Highway V
  - MO 47 / E Main Street
  - MO 47 / US 50 (West)
  - MO 47 / US 50 (East)
- Unsignalized
  - MO 47 / Dairy View Drive
  - MO 47 / Vondera Avenue

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- MO 47 / Old County Farm Road

Crash Data Analysis

Figure 25 shows a detailed summary of traffic crash facts for the Middle Urban Section (C). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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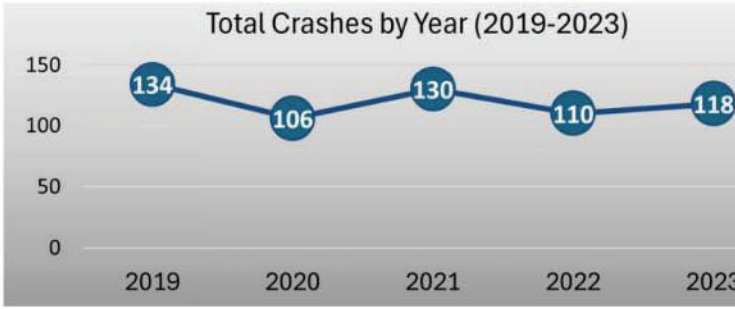
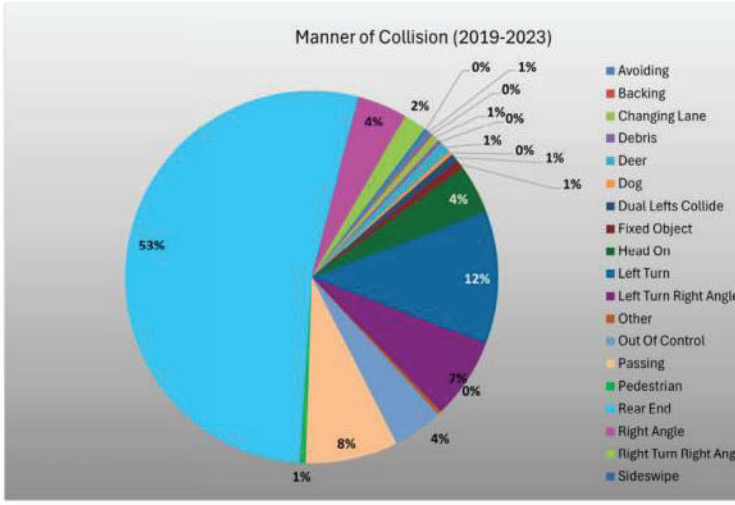
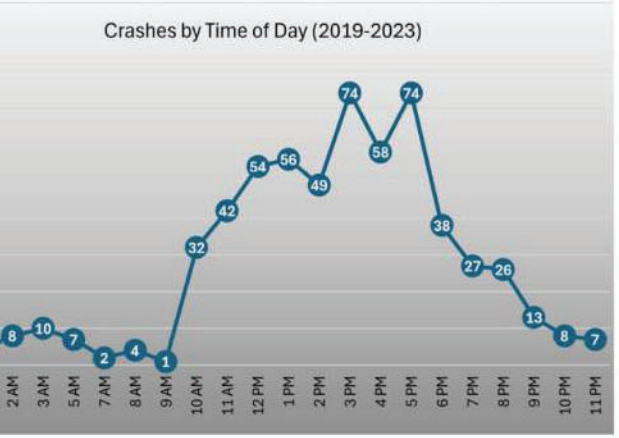
Section C
Independence Dr
Dairy View Dr
State Hwy V
ON
Old County Farm Rd
50
50
Legend
SegmentCrashCount
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section D
0 0.030.06 0.12 0.18 0.25
Miles

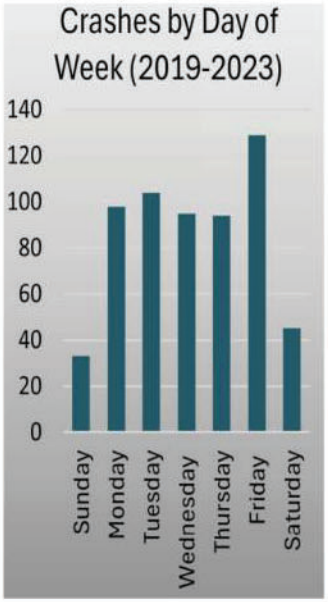
Section C
Independence Dr
Dairy View Dr
State Hwy V
Vondera Ave
Central Ave
UNION
Old County Farm Rd
E Main St
2020
2022
2019
2019
2022
50
50
50
2019
2023
2021
Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section D
0 0.030.06 0.12 0.18 0.25
Miles

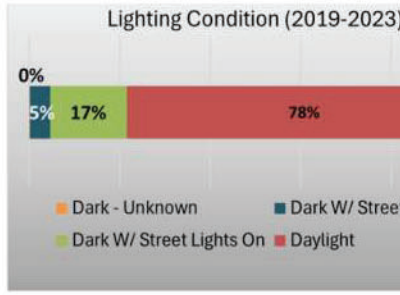

Total Crashes by Year (2019-2023)
150
100
50
0
134
106
130
110
118
2019
2020
2021
2022
2023

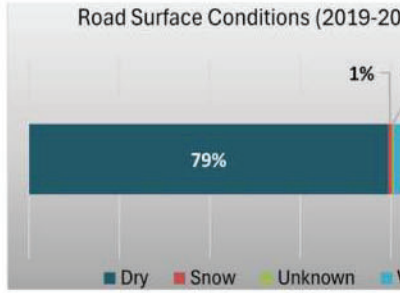

Manner of Collision (2019-2023)
53%
12%
8%
4%
4%
2%
1%
1%
1%
1%
1%
1%
0%
0%
0%
0%
0%
7%
Avoiding
Backing
Changing Lane
Debris
Deer
Dog
Dual Lefts Collide
Fixed Object
Head On
Left Turn
Left Turn Right Angle
Other
Out Of Control
Passing
Pedestrian
Rear End
Right Angle
Right Turn Right Ang
Sideswipe


Crashes by Time of Day (2019-2023)
8
10
7
2
4
1
32
42
54
56
49
74
58
74
38
27
26
13
8
7
2 AM
3 AM
5 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM
9 PM
10 PM
11 PM

Crash Severity by Year (2019-2023)
120
100
80
60
40
20
0
2
1
0
111
89
107
88
81
19
16
1
21
20
36
4
0
2
2
1
0
0
0
0
0
Fatal
Minor Injury
Property Damage Only
Serious Injury


Crashes by Day of Week (2019-2023)
140
120
100
80
60
40
20
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Lighting Condition (2019-2023)
0%
5%
17%
78%
Dark - Unknown
Dark W/ Stree
Dark W/ Street Lights On
Daylight


Road Surface Conditions (2019-20
1%
79%
Dry
Snow
Unknown

Within the study area, a total of 598 crashes occurred between 2019 and 2023. During the time analyzed, 484 (81%) crashes occurred at intersections. The intersection of MO 47 and US 50 East had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2020 when 24 crashes occurred.

Table 17 provides additional information on the crash locations and severities within the study area.

Table 17: Middle Urban Section (C) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**20**	**83**	**15**	**74**	**20**	**82**	**20**	**72**	**31**	**67**	**484**
MO 47 & Independence Drive (S)	3	21	1	11	3	14	2	4	3	12	76
MO 47 & Dairy View Drive (U)	-	2	-	5	1	6	1	5	1	1	22
MO 47 & Vondera Avenue (U)	4	8	-	2	2	4	4	4	1	2	31
MO 47 & Central Avenue (S)	2	7	-	9	2	6	1	7	1	4	39
MO 47 & Old County Farm Road (U)	2	1	-	3	-	1	3	1	1	5	17
MO 47 & E Main Street (S)	3	10	-	10	2	9	4	10	7	13	68
MO 47 & US 50 West (S)	3	20	4	20	2	19	2	21	3	16	110
MO 47 & US 50 East (S)	3	14	10	14	8	23	3	20	14	14	123
Segment	**3**	**28**	**1 (1)**	**15**	**3**	**25**	**2**	**16**	**6**	**14**	**114**
Independence Drive to Dairy View Drive	-	8	-	3	-	10	1	1	3	2	28
Dairy View Drive to Vondera Avenue	-	-	-	-	-	-	-	2	-	1	3
Vondera Avenue to Central Avenue	1	-	1	-	-	-	-	1	-	-	3
Central Avenue to Old County Farm Road	1	7	(1)	3	-	5	1	4	1	4	27
Old County Farm Road to E Main Street	-	1	-	1	-	-	-	-	1	1	4
E Main Street to US 50 West	-	2	-	-	-	2	-	-	-	-	4
US 50 West to US 50 East	1	10	-	8	3	8	-	8	1	6	45
Grand Total	**23**	**111**	**16 (1)**	**89**	**23**	**107**	**22**	**88**	**37**	**81**	**598**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there was one fatal crash and nine serious injury crashes in this section. The highest frequency of injury crashes was near intersections, especially MO 47 and US 50 East.

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According to the crash report, the fatal crash was caused by a driver traveling on the wrong side of the road. Of the serious injury crashes, two were caused by drivers running red lights, one due to distraction and the other due to sun glare, both resulting in collisions with vehicles making left turns. Another crash was caused by excessive speed when a driver failed to stop. The remaining crashes were due to failure to yield, with multiple incidents occurring at flashing yellow arrows or stop signs. One driver failed to slow down and rear-ended a trailer, another was unable to stop due to rain and struck a stopped vehicle, and one crash resulted from a driver intentionally running a red light, colliding with a trailer. A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 25.**

Crash Type

Rear-end crashes were the most prominent type of crash (56%) followed by passing (8%) and left-turn crashes (8%).

The following roadway and human factors can be attributed to the higher number of rear-end:

- Higher access density,
- Longer traffic queues at intersections prompting drivers to perform risky maneuvers at minor approaches, and
- Red light running at signalized intersections.

Figure 26 shows the distribution of crash types within the study area.

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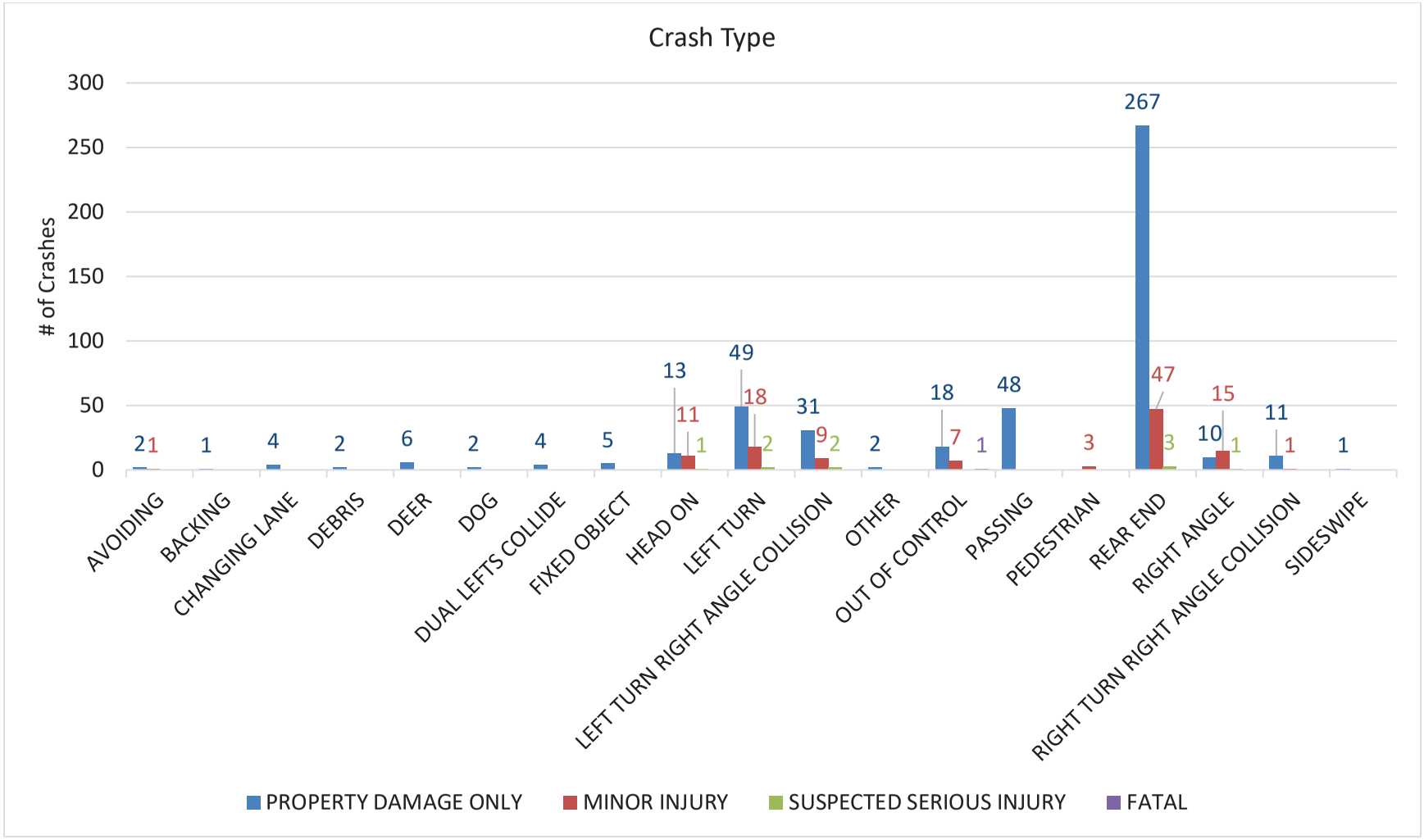

Figure 26: Middle Urban Section (C) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 52 crashes in 2019. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 27** below displays the breakdown of crashes by time of day according to year.

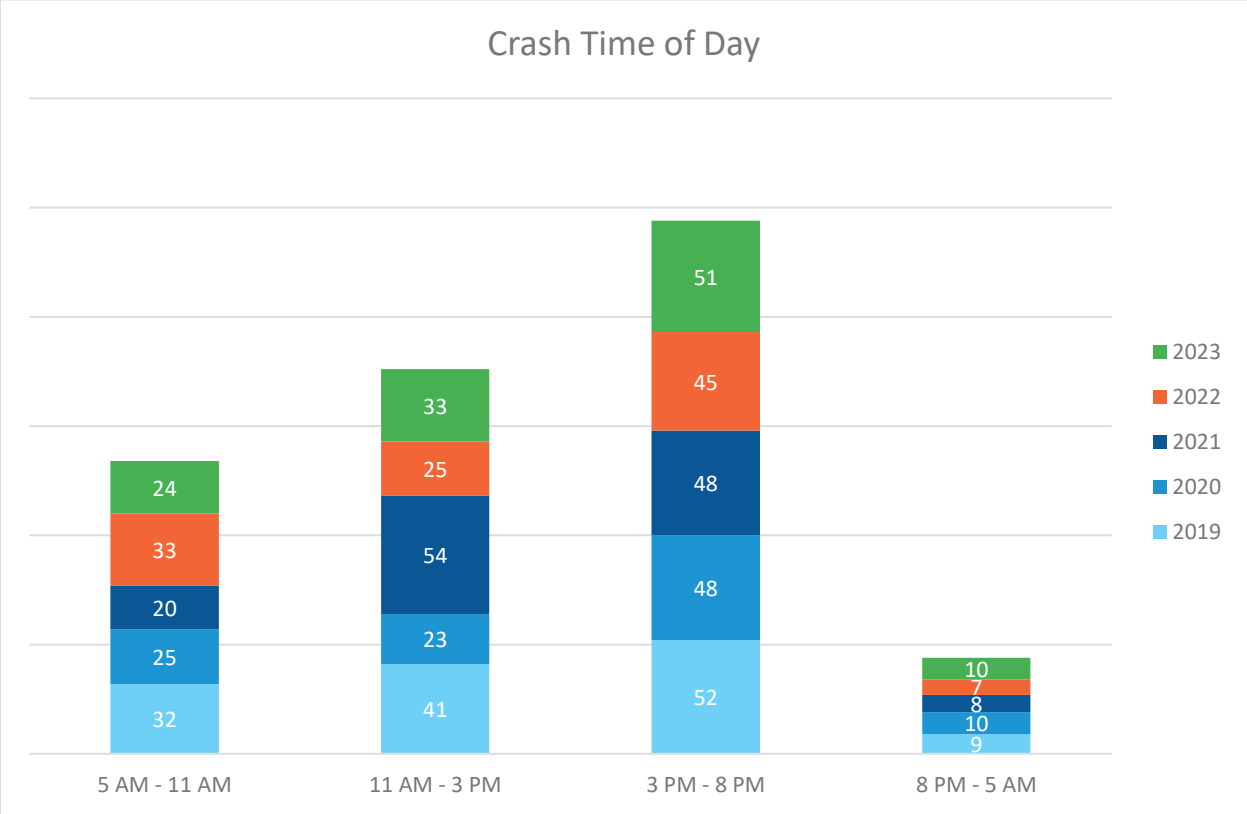

Figure 27: Middle Urban Section (C) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 466 (78%) occurred during daylight hours. Crashes under dark conditions with streetlights on accounts for 101 (17%) of crashes while 30 (5%) occurred in the dark where streetlights were off.

Approximately 79% of crashes occurred while roads were dry, 20% of crashes occurred while roads were wet or had snow present, and 1% was unknown. **Figure 25** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

This section of road has a higher volume of traffic compared to other segments of MO 47, due to its proximity to major regional routes and commercial areas. Traffic flow is typically consistent but can become congested during peak travel times as commuters use this route to access US 50 and nearby amenities. The road features a mix of residential, retail, and light industrial land use, generating varying

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traffic demands throughout the day. Key intersections, especially those near shopping centers and residential areas, can experience delays during rush hours. Additionally, this segment serves as an important connection to US 50, leading to periodic traffic bottlenecks with vehicles turning onto or off the highway. Enhancements in intersection management, signal coordination, and upgrades to turning lanes could improve traffic flow and reduce congestion in this area.

Roadway Design Analysis

Horizontal Alignment – Middle Urban Section (C)

The Middle Urban Section (C) of the project corridor contained no substandard horizontal curves. This segment was analyzed using a 4% maximum superelevation to determine the minimum required radii. This curve is shown in **Table 18** below.

Table 18: Substandard Horizontal Curves – Middle Urban Section (C)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at East Independence Drive	6.0% (4.0%)	3,250' (1,190')

Vertical Geometry – Middle Urban Section (C)

In the Middle Urban Section (C) all vertical geometry was found to be compliant with current standards.

Deceleration Lanes, Turn Lanes, and Tapers – Middle Urban Section (C)

The Middle Urban Section (C) of the study area contained the most substandard deceleration lanes and tapers. This study area also contains several of the areas containing the highest number of crashes. The areas with the highest number of crashes in the Middle Urban Section (C) occur at MO 47 near Independence Drive and US 50. The results of these substandard deceleration lanes and other substandard lanes are summarized in **Table 19**.

Table 19: Substandard Tapers – Middle Urban Section (C)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
SB	MO 47 North of East Independence Drive	459' (350')	80' (250')
NB	MO 47 South of East Independence Drive	556' (350')	97' (250')
SB	MO 47 North of Central Avenue and Highway V	154' (350')	51' (250')
NB	MO 47 South of Central Avenue and Highway V	130' (350')	94' (250')
SB	MO 47 North of Old County Farm Road	276' (350')	99' (250')
SB	MO 47 North of East Main Street	164' (350')	134' (250')

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NB	MO 47 South of East Main Street	103' (350')	101' (250')
NB	MO 47 South of East Main Street	126' (350')	90' (250')
SB	MO 47 North of US 50	132' (350')	110' (250')
SB	MO 47 North of US 50	207' (350')	1,010' (250')
EB	US 50 West of MO 47 South	279' (120')	86' (100')

Intersection Sight Distance Analysis

There were no turning movements found to have deficient Intersection Sight Distance in the Middle Urban Section (C) of the study area.

Existing No-Build Analysis

Table 20 shows the observed and estimated existing annual crash frequency for the MO 47 Middle Urban Section (C) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Independence Drive, Central Avenue, E Main Street, US 50 West, and US 50 East.

Table 20: Middle Urban Section (C) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & INDEPENDENCE DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.4	12.4	14.8
No Build Expected Crashes - Existing Condition	5.0	10.1	15.1
MO 47 & DAIRY VIEW DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	3.8	4.4
No Build Expected Crashes - Existing Condition	0.4	0.4	0.8
MO 47 & VONDERA AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.2	4.0	6.2
No Build Expected Crashes - Existing Condition	1.0	1.7	2.7
MO 47 & CENTRAL AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	6.6	7.8
No Build Expected Crashes - Existing Condition	5.5	10.8	16.3
MO 47 & OLD COUNTY FARM ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.2	2.2	3.4

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No Build Expected Crashes - Existing Condition	0.4	0.6	1.0
MO 47 & E MAIN STREET	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	3.2	10.4	13.6
No Build Expected Crashes - Existing Condition	5.9	11.3	17.2
MO 47 & US 50 WEST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.8	19.2	22
No Build Expected Crashes - Existing Condition	6.5	17.2	23.7
MO 47 & US 50 EAST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	7.6	17.0	24.6
No Build Expected Crashes - Existing Condition	6.1	16.1	22.2
Segment			
INDEPENDENCE DRIVE TO DAIRY VIEW DRIVE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.8	5.6
No Build Expected Crashes - Existing Condition	0.2	0.5	0.7
DAIRY VIEW DRIVE TO VONDERA AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.6	0.6
No Build Expected Crashes - Existing Condition	0.1	0.1	0.2
VONDERA AVENUE TO CENTRAL AVENUE	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.2	0.6
No Build Expected Crashes - Existing Condition	0.1	0.2	0.3
CENTRAL AVENUE TO OLD COUNTY FARM ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.6	5.4
No Build Expected Crashes - Existing Condition	0.9	2.5	3.4
OLD COUNTY FARM ROAD TO E MAIN STREET	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.2	0.6	0.8
No Build Expected Crashes - Existing Condition	0.1	0.3	0.5
E MAIN STREET TO US 50 WEST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	0.8	0.8
No Build Expected Crashes - Existing Condition	0.0	0.1	0.2
US 50 WEST TO US 50 EAST	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	8.0	9.0
No Build Expected Crashes - Existing Condition	1.6	3.9	5.5

The segments from US 50 West to US 50 East show lower frequency of PDO crashes for the no-build existing conditions. This could be due to the HSM Urban spreadsheet value for AADT. The spreadsheet allowed the correct AADT value of 40,600 vehicles per day to be inserted; however, this value is out of range and the maximum AADT value of 40,100 vehicles per day should be used. With that being said, the

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spreadsheet allowed for the correct AADT to be input; however, it may not be calculating the crashes correctly.

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South Rural Section (D)

This section of the study corridor extends between US 50 and I-44 ramp terminals. It is approximately 5.7 miles long. The typical cross-section includes a two-lane, two-way rural roadway with wide paved shoulders on both sides almost along the entire segment. There are turning lanes at some intersections, and striped medians are present for some portions along this section. **Figure 28** shows the dimensions of roadway lanes and paved shoulders for this section.

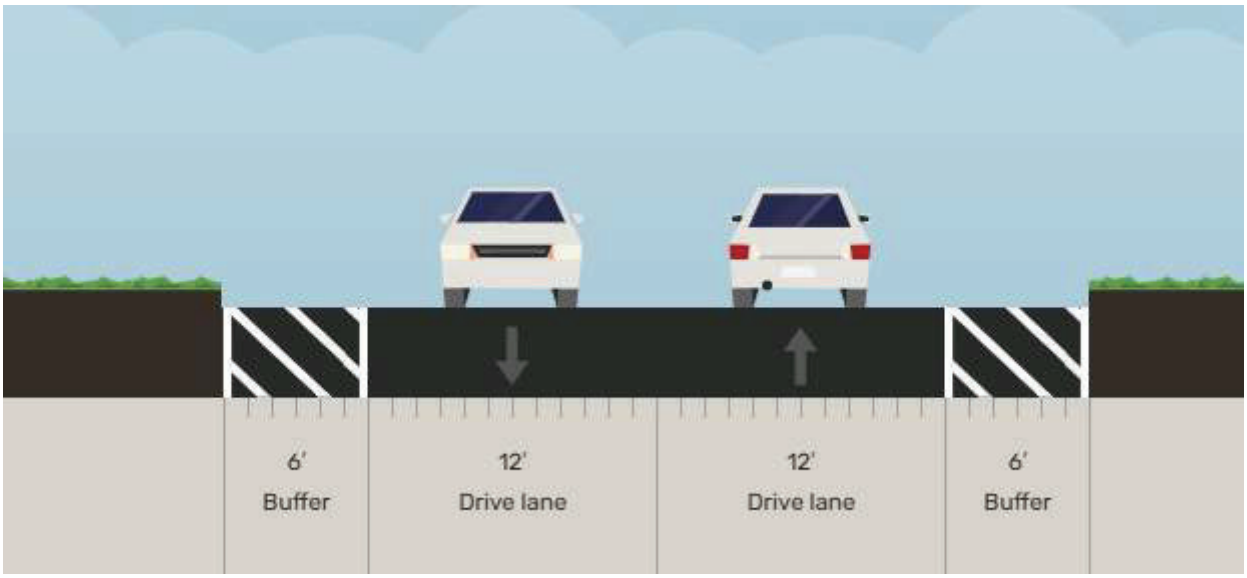

Figure 28: Typical Cross-Sections (South Rural Section (D))

The study area for the South Rural Section (D) includes the following intersections and interchanges:

- Signalized
  - MO 47 / N Outer Road
  - MO 47 / I-44 WB Ramps (Interchange)
  - MO 47 / I-44 EB Ramps (Interchange)
- Unsignalized
  - MO 47 / College Road & Forestview Drive
  - MO 47 / Rte AD / Schuchart Road
  - MO 47 / E. Happy Sac Road
  - MO 47 / Airport Road

Crash Data Analysis

Figure 29 shows the detailed summary of traffic crash facts for the South Rural Section (D). The dashboard includes a map showing the locations of crashes by type (color) and severity (size). As can be seen, traffic crash frequency showed a decreasing trend since 2019 along this section.

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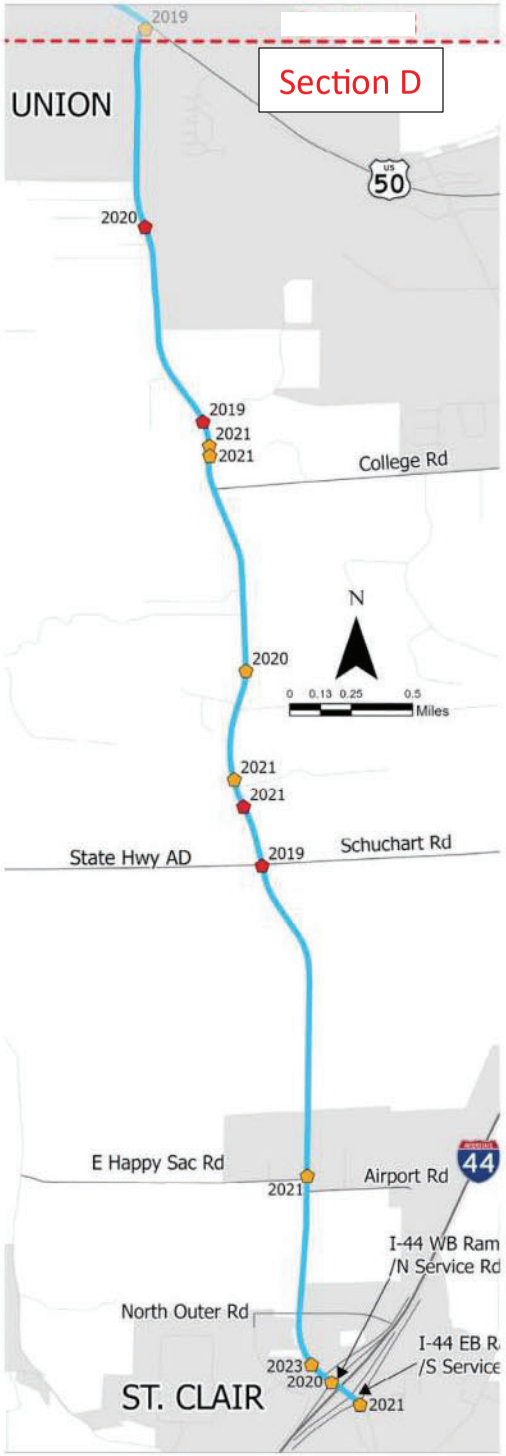
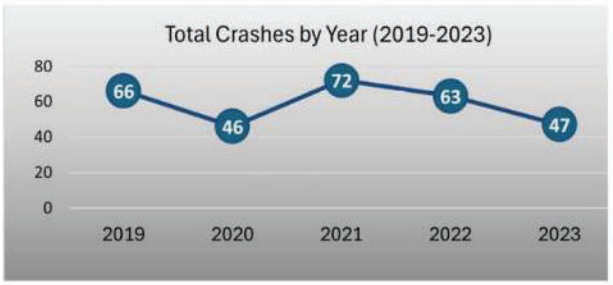
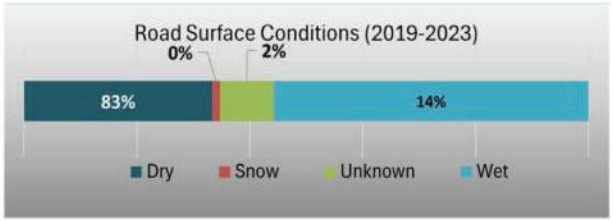
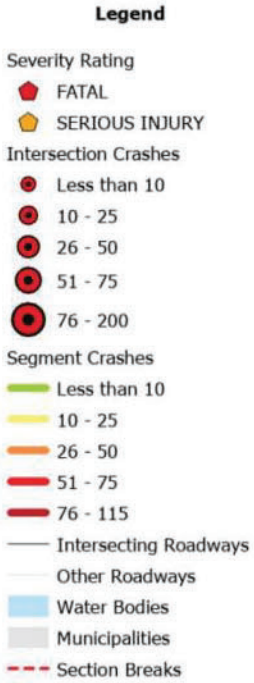
Section D
50
College Rd
N
0 0.13 0.25 0.5 Miles
e Hwy AD
Schuchart Rd
Happy Sac Rd
Airport Rd
44
I-44 WB Ram
/N Service Rd
North Outer Rd
I-44 EB R
/S Service
ST. CLAIR

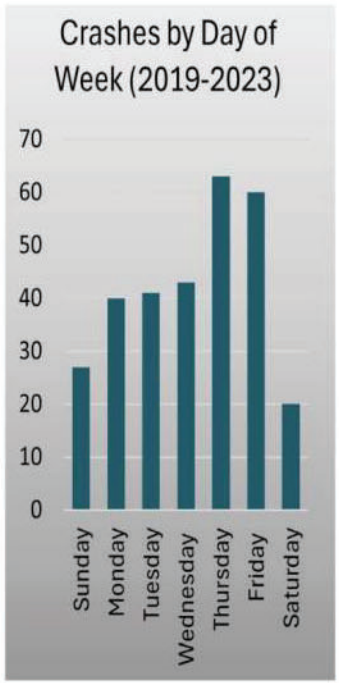

2019
Section D
UNION
50
2020
2019
2021
2021
College Rd
N
0 0.13 0.25 0.5 Miles
2020
2021
2021
State Hwy AD
2019
Schuchart Rd
E Happy Sac Rd
2021
Airport Rd
44
I-44 WB Ram
/N Service Rd
North Outer Rd
I-44 EB R
/S Service
2023
2020
2021
ST. CLAIR

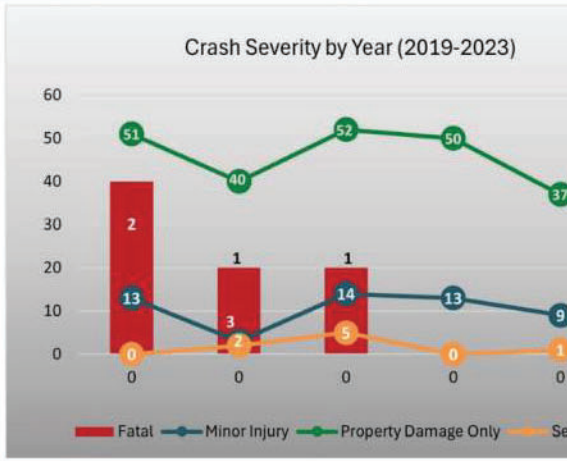

Total Crashes by Year (2019-2023)
80
60
40
20
0
66
46
72
63
47
2019
2020
2021
2022
2023

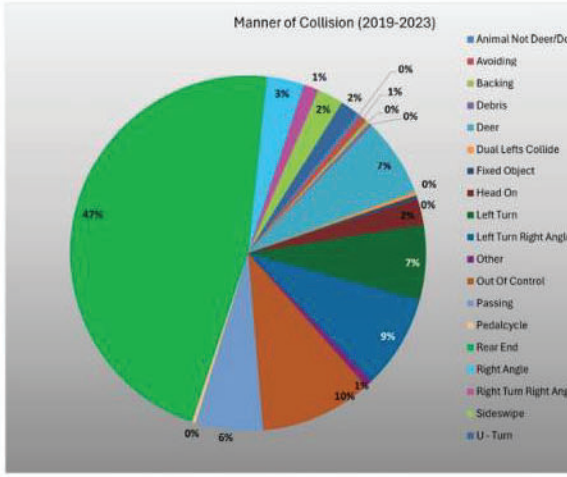
Lighting Condition (2019-2023)
20%
6%
74%
Dark W/ Street Lights Off
Dark W/ Street Lights On
Daylight

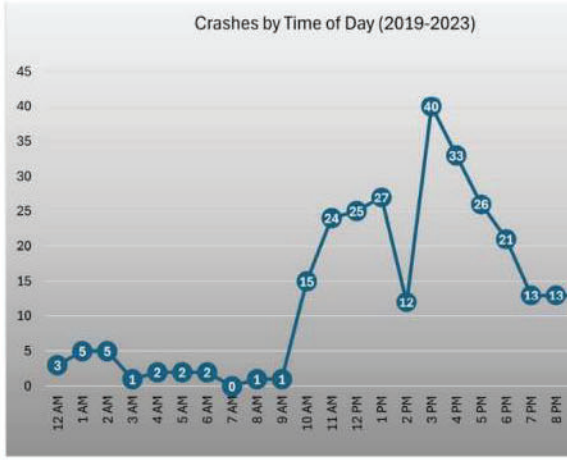

Road Surface Conditions (2019-2023)
0%
2%
83%
14%
Dry
Snow
Unknown
Wet


Legend
Severity Rating
FATAL
SERIOUS INJURY
Intersection Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 200
Segment Crashes
Less than 10
10 - 25
26 - 50
51 - 75
76 - 115
Intersecting Roadways
Other Roadways
Water Bodies
Municipalities
Section Breaks


Crashes by Day of Week (2019-2023)
70
60
50
40
30
20
10
0
Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday


Crash Severity by Year (2019-2023)
60
50
40
30
20
10
0
51
40
52
50
37
13
14
13
9
2
1
1
3
2
5
0
0
1
0
0
0
0
0
Fatal
Minor Injury
Property Damage Only


Manner of Collision (2019-2023)
Animal Not Deer/D
Avoiding
Backing
Debris
Deer
Dual Lefts Collide
Fixed Object
Head On
Left Turn
Left Turn Right Angl
Other
Out Of Control
Passing
Pedalcycle
Rear End
Right Angle
Right Turn Right An
Sideswipe
U - Turn


Crashes by Time of Day (2019-2023)
45
40
35
30
25
20
15
10
5
0
12 AM
1 AM
2 AM
3 AM
4 AM
5 AM
6 AM
7 AM
8 AM
9 AM
10 AM
11 AM
12 PM
1 PM
2 PM
3 PM
4 PM
5 PM
6 PM
7 PM
8 PM

Within the study area, a total of 294 crashes occurred between 2019 and 2023. During the time analyzed, 107 (36%) crashes occurred at intersections. The intersection of MO 47 and I-44 EB Ramp had the highest frequency of crashes; the highest number of reported crashes at this intersection was in 2020 where 10 crashes occurred.

A total of 187 (64%) crashes occurred at segments in this study area. Based on five years of crash data, this study section recorded the highest number of fatal crashes, with a total of four incidents. **Table 21** provides additional information on the crash locations and severities within the study area.

Table 21: South Rural Section (D) Observed Crash Frequencies, 2019-2023

Location	2019		2020		2021		2022		2023		Grand Total
	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	Injury	PDO	
Intersection	**5 (1)**	**25**	**2**	**19**	**7**	**14**	**2**	**14**	**4**	**14**	**107**
MO 47 & College Road (U)	3	1	-	-	2	-	-	-	-	-	6
MO 47 & Rte AD / Schuchart Road (U)	(1)	3	-	-	-	1	1	3	-	3	12
MO 47 & E. Happy Sac Road (U)	-	3	-	2	2	1	1	-	-	-	9
MO 47 & Airport Road (U)	1	2	-	1	-	-	-	-	1	-	5
MO 47 & N Outer Road (S)	-	5	1	1	2	3	-	2	-	1	15
MO 47 & I-44 WB Ramps (S)	-	5	1	5	-	5	-	2	3	4	25
MO 47 & I-44 EB Ramps (S)	1	6	-	10	1	4	-	7	-	6	35
Segment	**8 (1)**	**26**	**3 (1)**	**21**	**12 (1)**	**38**	**11**	**36**	**6**	**23**	**187**
US 50 East to College Road	7 (1)	8	(1)	12	6	13	7	10	2	9	76
College Road to Rte AD / Schuchart Road	1	3	2	5	4 (1)	12	2	13	3	7	53
Rte AD / Schuchart Road to E. Happy Sac Road	-	4	1	2	1	6	-	5	-	2	21
Airport Road to N. Outer Road	-	4	-	-	-	2	-	-	-	-	6
N Outer Road to I-44 WB Ramp	-	7	-	2	1	5	2	8	1	5	31
Grand Total	**13 (2)**	**51**	**5 (1)**	**40**	**19 (1)**	**52**	**13**	**50**	**10**	**37**	**294**

(S) = Signalized Intersection
(U) = Unsignalized Intersection
(#) = Fatal Injury Crashes

Crash Severity

Of the reported crashes, there were four fatal crashes and eight serious injury crashes in this section. The highest concentration of fatal crashes, with two incidents, is just north of the MO 47 and Rte AD/Schuchart Road intersection.

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Two fatal crashes involved motorcycles—one caused by a failure to yield, and the other by running a stop sign. The remaining fatalities were due to excessive speed and driving on the wrong side of the road.

Eight serious injury crashes were caused by driver errors and risky behaviors. One involved a driver running a red light at high speed, and another was a motorcycle with worn tires skidding off the road. In a third, a driver failed to yield, colliding with an oncoming vehicle. Distracted driving contributed to several incidents, including a rear-end collision and a driver crossing the centerline. Additional crashes involved a motorcyclist following too closely, another speeding while passing on the shoulder, and a distracted driver veering off the road and overcorrecting into oncoming traffic. One crash involved a bicycle, resulting in serious injuries. Each crash highlights the dangers of distraction, speeding, improper passing, and failure to yield.

A heatmap illustrating the concentration of fatal/injury crashes within the study area is provided in the dashboard in **Figure 29.**

Crash Type

Rear-end crashes were the most prominent type of crash (46%) followed by out-of-control crashes (10%).

The following roadway and human factors can be attributed to the higher number of rear-end at this section:

- Higher access density,
- Sight distance issues at highway curves,
- High speeds,
- High volume/few gaps lead to aggressive driving from minor streets,
- Lack of turning bays/lanes, and
- Lack of intersection lighting.

Figure 30 shows the distribution of crash types within the study area.

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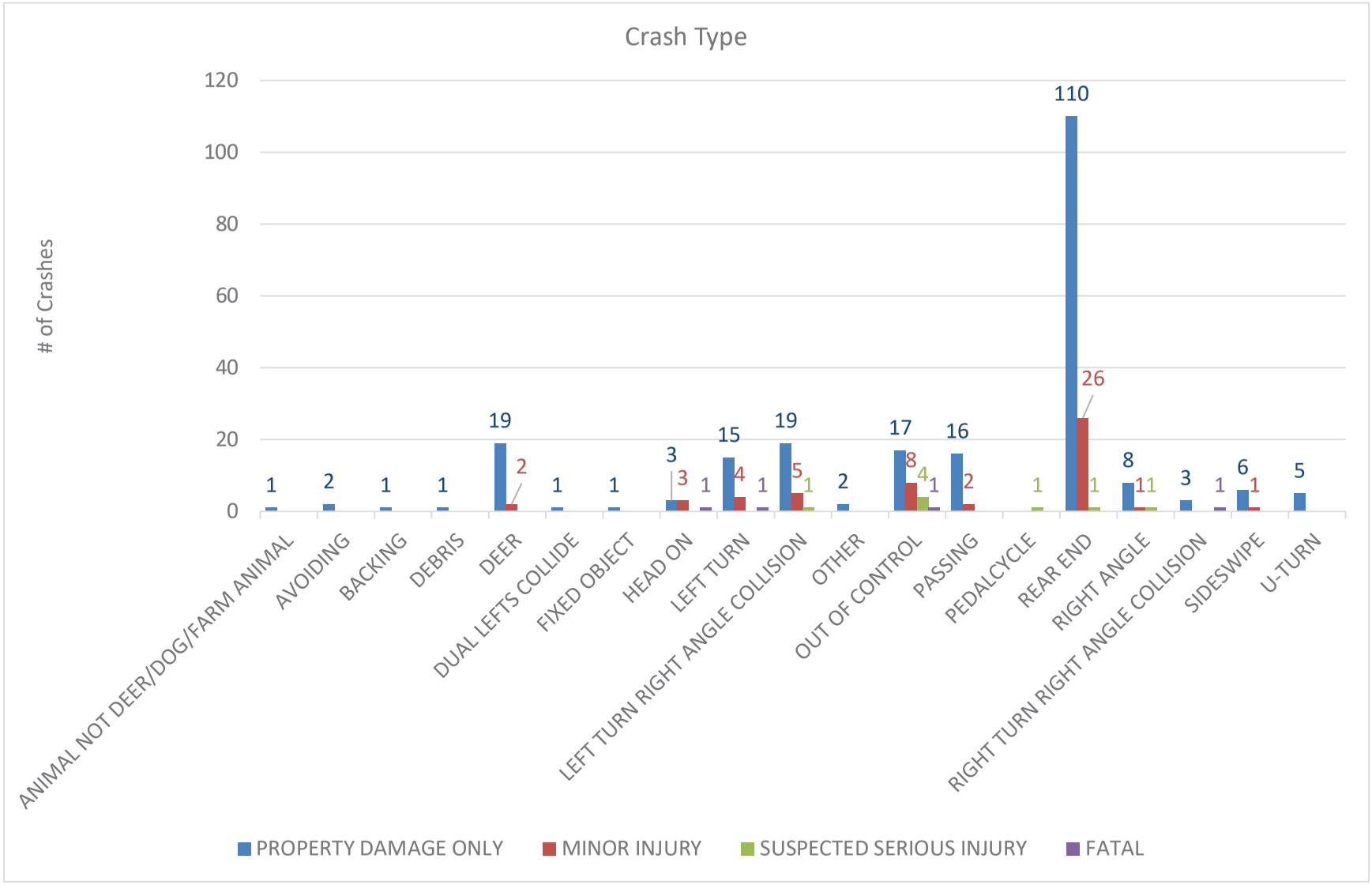

Figure 30: South Rural Section (D) Observed Crash Types, 2019-2023

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Crash Time of Day

Crashes were most frequent between the hours of 3 PM and 8 PM, with the highest count of 29 crashes in 2021. The late-night to early-morning period from 8 PM to 5 AM had the lowest number of crashes overall. This data suggests that crash frequency is higher during late afternoon and evening hours. **Figure 31** below displays the breakdown of crashes by time of day according to year.

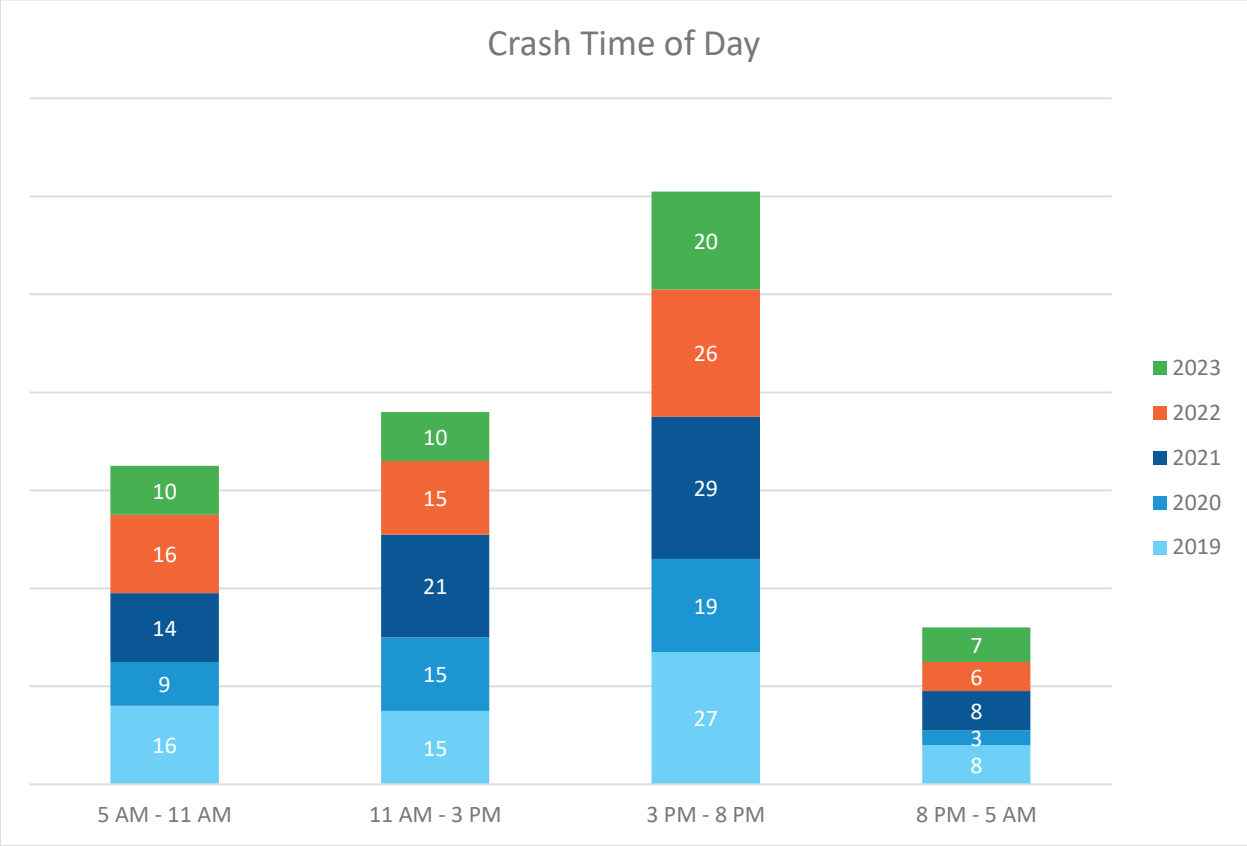

Figure 31: South Rural Section (D) Observed Crash Time of Day, 2019-2023

Light and Roadway Conditions

When analyzing the light conditions of crashes, 221 (75%) occurred during daylight hours. Crashes under dark conditions with streetlights on account for 15 (5%) of crashes while 59 (20%) occurred in the dark where streetlights were off.

Approximately 83% of crashes occurred while roads were dry and 16% of crashes occurred while roads were wet or had snow present. **Figure 29** above shows the proportion of crashes according to road surface conditions.

Traffic Mobility Analysis

This section of road is a high-traffic corridor that serves as a critical access point for travelers entering or exiting I-44, as well as for commuters and freight moving between US 50 and the interstate. Traffic flow is generally steady, but congestion can occur during peak periods, particularly at the US 50 and MO 47

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intersection, and MO 47 and the I-44 ramp terminals, where turning movements and merging traffic cause delays. The road is influenced by the surrounding commercial and industrial developments, which generate frequent short trips and varying traffic volumes throughout the day. Additionally, the proximity to I-44 results in a higher concentration of trucks and larger vehicles, affecting traffic flow. Limited turn lanes, short deceleration zones, and the need for improved traffic signal synchronization at key intersections contribute to occasional bottlenecks. Upgrading ramp design, intersection flow, and overall lane capacity could alleviate congestion and enhance traffic mobility in this segment.

Roadway Design Analysis

Horizontal Alignment – South Rural Section (D)

The South Rural Section (D) is where the most substandard horizontal curves are present. This segment was analyzed using a maximum superelevation of 8%. Due to the existing superelevations combined with the posted speeds of this segment (55 mph north of East Happy Sac Road, and 45 mph south of East Happy Sac Road), there were several curves that were found to be substandard based on the existing radii of the curve, the existing superelevation, and Table 3-10 from the AASHTO Green Book. The substandard curves are summarized in **Table 22** below.

Table 22: Substandard Horizontal Curves – South Rural Section (D)

Direction	Location	Superelevation Existing (Maximum)	Existing Radius (Minimum)
NB	MO 47 at Missouri Road	4.8% (8.0%)	2500’ (2,610’)
SB	MO 47 at Ruck Drive	5.8% (8.0%)	1,900' (2,010')
NB	MO 47 at Ruck Drive	4.6% (8.0%)	1,900' (2,750')
SB	MO 47 at Forestview Drive	5.0% (8.0%)	2,000’ (2,470’)
SB	MO 47 South of Walnut Ridge Drive	5.0% (8.0%)	2,000’ (2,470’)
SB	MO 47 South of Moreland Drive	5.4% (8.0%)	2,000’ (2,230’)
SB	MO 47 North of Highway AD / Schuchart Road	4.8% (4.0%)	2,000' (2,610')
NB	MO 47 South of Highway AD / Schuchart Road	5.0% (4.0%)	1,750' (2,470’)
SB	MO 47 North of Reeds Plaza Drive	5.0% (8.0%)	1,800' (2,470')
NB	MO 47 at Miller Drive	6.2% (8.0%)	1,500' (1,820')
NB	MO 47 at South Outer Road	5.8% (4.0%)	1,200' (2,010')
SB	MO 47 at South Outer Road	5.8% (4.0%)	1,200' (2,010')

Vertical Geometry – South Rural Section (D)

In **Table 23**, two vertical curves were found to be substandard in the South Rural Section (D). The curves found to be substandard were located between Airport Road and North Outer Road.

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Table 23: Substandard Vertical Curve Clusters – South Rural Section (D)

Direction	Location	# of Curves	Type	K Value (Minimum)	Sight Distance (Standard)
SB	MO 47 South of Airport Road	1	Sag	65 (79)	312’ (360’)
SB	MO 47 at North Outer Road	2	Sag	70 (79)	332' (360')
				24 (79)	164' (360')

Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

The South Rural Section (D) of the study area did not contain as many substandard deceleration lanes as the previous section but did contain substandard lanes in an area where the most crashes occurred, specifically near US 50. The results of the analysis of the deceleration lanes in this section are summarized in **Table 24** below.

Table 24: Substandard Deceleration Lanes, Turn Lanes, and Tapers – South Rural Section (D)

Direction	Location	Lane Length Existing (Minimum)	Taper Length (Minimum)
NB	MO 47 South of Highway 50	143' (120')	82' (100')
SB	MO 47 North of North Outer Road	208' (350')	116' (250')
NB	MO 47 South of North Outer Road	233' (350')	107' (250')

Intersection Sight Distance Analysis

The South Rural Section (D) contained the highest number of turning movements with deficient Intersection Sight Distance. A total of eight turning movements were found to have deficient ISDs in this segment of the corridor. These turning movements are summarized in **Table 25** below.

Table 25: Deficient Intersection Sight Distance – South Rural Section (D)

Road	Left Turn ISD Deficient	Right Turn ISD Deficient	Turning Movement Direction
Driveway at 495 State MO 47	X		NB
Eastview Drive	X		SB
Driveway 1700’ South of Highway AD	X		NB
Driveway 1800’ North of Reeds Plaza Drive		X	SB
Reeds Plaza Drive	X		NB
East Happy Sac Road		X	SB
Airport Road	X		SB
Driveway 1200’ North of North Outer Road	X		SB

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Existing No-Build Analysis

Table 26 shows the observed and estimated existing annual crash frequency for the MO 47 and I-44 interchange based on ISATe crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes would either have no change or would decrease on the I-44 ramp terminals.

Table 26: South Rural Section (D) Annual Crash Frequency, ISATe Analysis

MO 47 Annual Crash Frequency (Crashes/Year)			
MO 47 & I-44 WB RAMP TERMINAL	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	4.2	5.0
No Build Expected Crashes - Existing Condition	1.4	3.6	5.0
MO 47 & I-44 EB RAMP TERMINAL	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	6.6	7.0
No Build Expected Crashes - Existing Condition	1.1	4.7	5.8

Table 27 shows the observed and estimated existing annual crash frequency for the MO 47 South Rural Section (D) based on HSM crash prediction methods. Observed frequencies were found by dividing the number of observed crashes in the study area by the number of years in the study period. Existing traffic AADT volumes for predictive models were calculated using the PM peak hour intersection counts taken in 2024 divided by a k-value of 9.2%. As traffic volumes increase and if no roadway improvements are made, it is likely that the total number of crashes will increase at the intersections of Airport Road and North Outer Road and would increase at the segment of Route AD / Schuchart Road to E. Happy Sac Road.

Table 27: South Rural section (D) Annual Crash Frequency, HSM Analysis

Intersection			
MO 47 & COLLEGE ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	1.0	0.2	1.2
No Build Expected Crashes - Existing Condition	0.4	0.6	1.0
MO 47 & RTE AD / SCHUCHART ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	2.0	2.4
No Build Expected Crashes - Existing Condition	0.4	0.5	0.9
MO 47 & E. HAPPY SAC ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	1.2	1.8
No Build Expected Crashes - Existing Condition	0.7	0.9	1.6
MO 47 & AIRPORT ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	0.6	1.0

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No Build Expected Crashes - Existing Condition	0.7	0.9	1.6
MO 47 & N OUTER ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.6	2.4	3.0
No Build Expected Crashes - Existing Condition	1.0	2.1	3.1
Segment			
US 50 EAST TO COLLEGE ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	4.8	10.4	15.2
No Build Expected Crashes - Existing Condition	2.9	6.1	9.0
COLLEGE ROAD TO Rte AD / SCHUCHART ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	2.6	8.0	10.6
No Build Expected Crashes - Existing Condition	2.1	4.5	6.6
Rte AD / SCHUCHART ROAD TO E. HAPPY SAC ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.4	3.8	4.2
No Build Expected Crashes - Existing Condition	1.5	3.2	4.7
AIRPORT ROAD TO N OUTER ROAD	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.0	1.2	1.2
No Build Expected Crashes - Existing Condition	0.5	1.0	1.5
N OUTER ROAD TO I-44 WB RAMP	**FATAL/INJURY**	**PDO**	**TOTAL**
Observed (5 Year Average, 2019-2023)	0.8	5.4	6.2
No Build Expected Crashes - Existing Condition	0.4	0.8	1.2

Based on historical crash data and patterns, the MoDOT-recommended calibration factor for a four-legged signalized intersection overpredicted crashes at the intersection of MO 47 and N Outer Road. The crash patterns more similarly reflected those of an urban four-legged stop-controlled intersection. Therefore, the MoDOT-recommended calibration factor for an urban four-legged stop-controlled intersection was used to calculate future crash predictions at the intersection of MO 47 and N Outer Road.

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Safety Performance

The safety performance analysis along the MO 47 corridor reveals a range of crash rates and safety issues across different sections:

- **The North Urban Section (A)**: Despite its relatively short length of 0.3 miles, exhibits a significantly high crash rate compared to statewide averages, with total of 286 crashes. The majority of crashes (97%) occurred at intersections, with the MO 47 & Highway 100 intersection recording the highest frequency. Rear-end crashes were the most common, primarily due to high traffic volumes, limited gaps for minor street traffic, and insufficient right-turn bays. While no fatal crashes were reported, three serious injury crashes resulted from red-light violations and failure-to-yield incidents. Substandard superelevation and intersection sight distances were noted as potential contributing factors. Future projections indicate a continued high crash frequency unless intersection improvements and traffic flow management measures are implemented.
- **The North Rural Section (B)**: Spanning 5.1 miles, recorded a total of 273 crashes, with the highest frequency occurring along the segment between Clearview Road and Independence Drive. Rear-end crashes (72%) were the predominant type, often attributed to high-speed traffic, limited passing opportunities, and sight distance issues at curves. This section recorded two fatal crashes—one due to an unconscious driver and another caused by distracted driving. Nine serious injury crashes were linked to excessive speed and failure to yield. Substandard horizontal alignment and deceleration lanes were identified as safety concerns. The crash frequency at the Clearview Road intersection is projected to rise without intervention, necessitating signal timing improvements and enhanced road signage.
- **The Middle Urban Section (C)**: Extending 1.6 miles, had the highest total number of crashes 598, with 81% occurring at intersections. The MO 47 & US 50 East intersection recorded the most crashes, with a notable peak in 2020. Rear-end crashes (53%) were most common, attributed to high traffic volumes, red-light running, and long queue lengths at intersections. This section experienced one fatal crash and nine serious injury crashes, primarily caused by distracted driving, failure to yield, and red-light violations. Substandard superelevation, inadequate deceleration lanes, and high access density contributed to safety issues. Future crash projections indicate a continued rise in crashes at major intersections, necessitating intersection redesigns, improved signal coordination, and enhanced turning lanes.
- **The South Rural Section (D)**: The longest segment at 5.7 miles, recorded 294 crashes, including four fatal crashes and eight serious injury crashes. This section had the highest number of fatal incidents, largely attributed to excessive speed, failure to yield, and motorcycle-related crashes. Rear-end crashes (47%) were the most prevalent, often influenced by high speeds, sight distance limitations, and the lack of dedicated turning bays. The intersection at MO 47 & I-44 EB Ramp recorded the highest crash frequency. Substandard horizontal geometry, deficient intersection sight distances, and inadequate deceleration lanes were key safety concerns. Without improvements, crash rates in this section are expected to persist, emphasizing the need for targeted countermeasures such as intersection enhancements, improved lighting, and lane reconfigurations.

Crash trends across all sections indicate that without targeted safety improvements, crash frequencies will remain high, particularly at key intersections and high-speed segments. Addressing geometric deficiencies,

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improving intersection safety features, and implementing speed management strategies will be essential to enhancing overall roadway safety along the MO 47 corridor.

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Appendix M: Pavement Condition Survey Report

DRAFT

MoDOT

St. Louis District
GARRY L GOSS - Pavement Specialist

Missouri Department of Transportation

1590 Woodlake Drive
Chesterfield, Missouri 63017-5712
Office 314.453.1761
Cell 314.570.6220
1.888.ASK MODOT (275.6636)

TO: Brandon Voyles - C/M
Aaron Groff – SL/Design

FROM: Garry Goss - Pavement Specialist

DATE: March 31, 2025

SUBJECT: Condition Survey
Job No.: J6P3661 Franklin County Rte. 47 St. Clair to Washington

In response to a request made for cores to investigate pavement type and thickness. Twenty-one cores were taken at random locations along the limits of the route. Two of these locations were on Rte. 50 between Rte. 47 North and South segments.

According to the as built plans the last project in this area was J6S3161 in 2018 with a 1.5 overlay of SP048F with PG70-22 binder. The centerline rumble was milled out 2' wide by 2" deep and replaced with BP-1 at various locations and fog seal was applied at a rate of .15 gal/sqyd to the rumble strips once milled. There was also HFST placed in many areas as part of a safety project on this route (J6P3194 locations 9&11 on as-builts). The Rte. 50 section just had a recent project J6P3436 with removal of existing UBAWS, full depth concrete repairs, and putting back a UBAWS.

This route currently has a PASER rating of 4 with moderate to severe block cracking; the transverse and longitudinal cracks are open between ¼" and ½". The centerline pavement joint with rumbles are showing more distress than the rest of the pavement especially in the areas that have the HFST on them, small to medium sized potholes are also developing in several areas. The section on Rte. 50 is currently seeing many areas of the UBAWS are seeing premature failure and potholes developing.

Pavement Specialist observation/opinion: After coring these sections of roadway a couple observations were made that are worth noting. The section of 47 between Union and Washington is showing more surface distress than the section from St. Clair to Union. The current surface treatment of SP048 was in fair condition on most core but the SP125 under that was badly stripped in most of the cores, for this reason strong consideration should be given to a deeper mill and fill treatment (3+Inches) on the entirety of Rte. 47.

MISSOURI DEPARTMENT of TRANSPORTATION

DIVISION OF MATERIALS

Pavement Core Logs for Preliminary Geotechnical Report

County: Franklin Route: 47 Job No.: J6P3661

Logged By: Garry Goss Date Performed: March 27, 2025

LOCATION	LOG OF MATERIALS		CLASSIFIED BY
Core 1- common lane 725ft south of north outer rd. spur	0.00-1.00” 1.00-3.00” 3.00-4.00” 4.00-5.00” 5.00-7.25” 7.25-9.25” 9.25-13.00” 13.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair asphalt surface mix - fair asphalt surface mix – fair asphalt surface mix – fair various seal coats and blade mix oil covered aggregate	Kor-It trailer with 4” bit
Core 2 – north bound lane 150ft south of rte. AD	0.00-1.00” 1.00-3.00” 3.00-4.00” 4.00-6.25” 6.25-7.50” 7.50-10.50” 10.50-12.00” 12.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt surface mix – fair asphalt subsurface mix – poor asphalt surface mix - fair oil covered aggregate	Kor-It trailer with 4” bit
Core 2S – north bound right shoulder 150ft south of rte. AD	0.00-1.00” 1.00-3.00” 3.00-5.25” 5.25-7.50” 7.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair asphalt subsurface mix – fair base rock	Kor-It trailer with 4” bit
Core 3 – north bound lane 350ft south of Ruby Ridge Dr.	0.00-0.75” 0.75-2.00” 2.00-2.75” 2.75-3.75” 3.75-5.00” 5.00-7.75” 7.75-9.50” 9.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair/poor asphalt surface mix – fair/poor asphalt subsurface mix – fair various seal coats and blade type mixes oil covered aggregate	Kor-It trailer with 4” bit
Core 4 – north bound lane 900ft south of hwy. 50	0.00-1.25” 1.25-2.75” 2.75-4.50” 4.50-6.50” 6.50-8.50” 8.50-10.00” 10.00-12.00” 12.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt surface mix – fair/poor various seal coats and blade type mixes oil covered aggregate	Kor-It trailer with 4” bit

MISSOURI DEPARTMENT of TRANSPORTATION

DIVISION OF MATERIALS

Pavement Core Logs for Preliminary Geotechnical Report

County: Franklin Route: 47 Job No.: J6P3661

Logged By: Garry Goss Date Performed: March 27, 2025

LOCATION	LOG OF MATERIALS		CLASSIFIED BY
Core 5 – hwy. 50 west bound right lane 550ft west of 47 south intersection	0.00-0.75” 0.75-9.75” 9.75-	asphalt surface mix (LP) – fair concrete small void (<1/2”) and base rock	Kor-It trailer with 4” bit
Core 6 – north bound right lane at East Main St. intersection	0.00-2.00” 2.00-6.50” 6.50-10.50” 10.50-	asphalt surface mix (LP) – fair/poor asphalt subsurface mix – fair/poor asphalt subsurface mix fair base rock	Kor-It trailer with 4” bit
Core 7 – north bound lane ½ mile south of Clearview Rd.	0.00-1.00” 1.00-3.00” 3.00-5.00” 5.00-6.50” 6.50-9.50” 9.50-13.50” 13.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt subsurface mix – fair/poor asphalt subsurface mix – fair oil covered aggregate	Kor-It trailer with 4” bit
Core 7S – north bound right shoulder ½ mile south of Clearview Rd.	0.00-1.00” 1.00-2.00” 2.00-3.00” 3.00-6.00” 6.00-7.00” 7.00-9.25” 9.25-13.00” 13.00-	asphalt surface mix (LP) – fair asphalt surface mix – poor asphalt surface mix – poor asphalt surface mix – poor asphalt surface mix – fair asphalt subsurface mix – poor asphalt subsurface mix – fair/poor oil covered aggregate	Kor-It trailer with 4” bit
Core 8 – north bound lane 300ft north of Country Club Rd.	0.00-1.00” 1.00-3.25” 3.25-5.50” 5.50-7.75” 7.75-10.25” 10.25-	asphalt surface mix (LP) – poor asphalt surface mix (LP) – poor asphalt surface mix – fair asphalt surface mix – fair/poor asphalt subsurface mix – fair oil covered aggregate	Kor-It trailer with 4” bit
Core 9 – north bound lane 1250ft south of Becker Rd.	0.00-1.00” 1.00-2.25” 2.25-3.50” 3.50-5.50” 5.50-6.50” 6.50-10.00” 10.00-12.00” 12.00-16.00” 16.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair asphalt surface mix – fair/poor asphalt surface mix – poor asphalt subsurface mix – poor asphalt subsurface mix – poor asphalt subsurface mix – poor oil covered aggregate	Kor-It trailer with 4” bit

MISSOURI DEPARTMENT of TRANSPORTATION

DIVISION OF MATERIALS

Pavement Core Logs for Preliminary Geotechnical Report

County: Franklin Route: 47 Job No.: J6P3661

Logged By: Garry Goss Date Performed: March 27, 2025

LOCATION	LOG OF MATERIALS		CLASSIFIED BY
Core 10 – south bound lane 200ft north of Mid America Ln.	0.00-1.00” 1.00-3.00” 3.00-4.00” 4.00-5.75” 5.75-7.75” 7.75-10.00” 10.00-13.00” 13.00-15.00” 15.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt surface mix – fair asphalt subsurface mix – fair asphalt subsurface mix – fair asphalt subsurface mix – fair oil covered aggregate	Kor-It trailer with 4” bit
Core 10S – south bound right shoulder 200ft north of Mid America Ln.	0.00-1.00” 1.00-2.50” 2.50-4.50” 4.50-7.75” 7.75-10.00” 10.00-	asphalt surface mix (LP) – fair asphalt surface mix – poor asphalt surface mix – poor asphalt subsurface mix – poor asphalt subsurface mix – fair oil covered aggregate	Kor-It trailer with 4” bit
Core 11 – south bound lane 150ft south of Low Line Dr.	0.00-1.00” 1.00-2.00” 2.00-3.75” 3.75-6.00” 6.00-7.00” 7.00-9.50” 9.50-14.50” 14.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – fair asphalt surface mix - fair asphalt surface mix – fair asphalt surface mix – poor asphalt subsurface mix – fair oil covered aggregate	Kor-It trailer with 4” bit
Core 12 – south bound left turn lane at Independence Dr.	0.00-1.00” 1.00-3.00” 3.00-4.75” 4.75-6.00” 6.00-7.50” 7.50-9.00” 9.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt surface mix – poor asphalt surface mix – poor asphalt surface mix – poor asphalt surface mix – poor broken up asphalt material	Kor-It trailer with 4” bit
Core 13 – hwy 50 east bound right lane 450ft east of hwy 47 north intersection	0.00-0.75” 0.75-9.75” 9.75-	asphalt surface mix (LP) – fair concrete small void (< 1/2”) and base rock	Kor-It trailer with 4” bit
Core 14 – south bound lane at Russell Ln.	0.00-1.00” 1.00-2.50” 2.50-3.50” 3.50-5.00” 5.00-7.25” 7.25-9.00” 9.00-11.50” 11.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – fair asphalt surface mix – fair asphalt surface mix – fair asphalt surface mix – fair asphalt surface mix – fair/poor various seal coats and blade mixes base rock	Kor-It trailer with 4” bit

MISSOURI DEPARTMENT of TRANSPORTATION

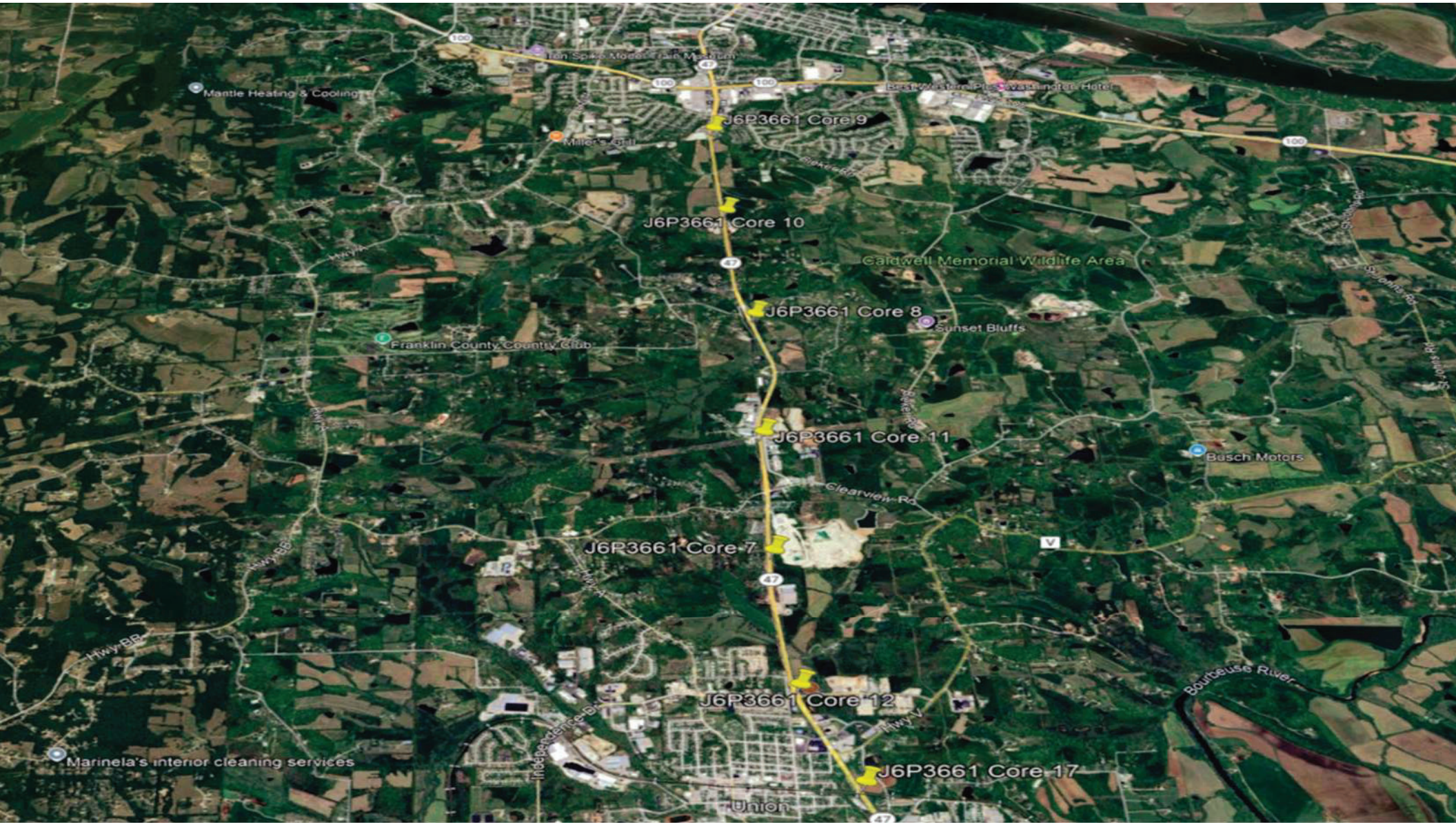
DIVISION OF MATERIALS

Pavement Core Logs for Preliminary Geotechnical Report

County: Franklin Route: 47 Job No.: J6P3661

Logged By: Garry Goss Date Performed: March 27, 2025

LOCATION	LOG OF MATERIALS		CLASSIFIED BY
Core 15 – south bound lane 500ft. south of Myrick Manor	0.00-1.00” 1.00-2.50” 2.50-4.25” 4.25-5.50” 5.50-7.50” 7.50-9.50” 9.50-13.00”	asphalt surface mix (LP) – fair/poor asphalt surface mix (LP) – poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt surface mix – fair asphalt surface mix – fair various seal coats and blade type mixes	Kor-It trailer with 4” bit
Core 15S – south bound right shoulder 500ft south of Myrick Manor	0.00-1.00” 1.00-2.50” 2.50-7.50” 7.50-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – poor asphalt subsurface mix - fair oil covered aggregate	Kor-It trailer with 4” trailer
Core 16 – south bound lane 725ft north of East Happy Sac Rd.	0.00-1.00” 1.00-2.75” 2.75-3.75” 3.75-4.25” 4.25-5.50” 5.50-7.25” 7.25-9.00” 9.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – fair/poor asphalt surface mix – fair/poor asphalt surface mix – fair asphalt surface mix – fair/poor asphalt surface mix – fair/poor various seal coats and blade type mixes oil covered aggregate	Kor-It trailer with 4” bit
Core 17 – north bound lane 150ft north of the railroad bridge	0.00-1.00” 1.00-3.50” 3.50-4.25” 4.25-5.75” 5.75-6.50” 6.50-7.75” 7.75-9.00” 9.00-	asphalt surface mix (LP) – fair asphalt surface mix (LP) – fair/poor asphalt surface mix – poor asphalt surface mix – fair asphalt surface mix – fair asphalt surface mix – fair/poor asphalt subsurface mix – poor oil covered aggregate	Kor-It trailer with 4” bit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J6P3661 Core 17
Caldwell Memorial Wildlife Area
Sunset Bluffs
Franklin County Country Club
Busch Motors
Mantle Heating & Cooling
Miller's Grill
Marinela's interior cleaning services
Union
Bourbeuse River
Clearview Rd
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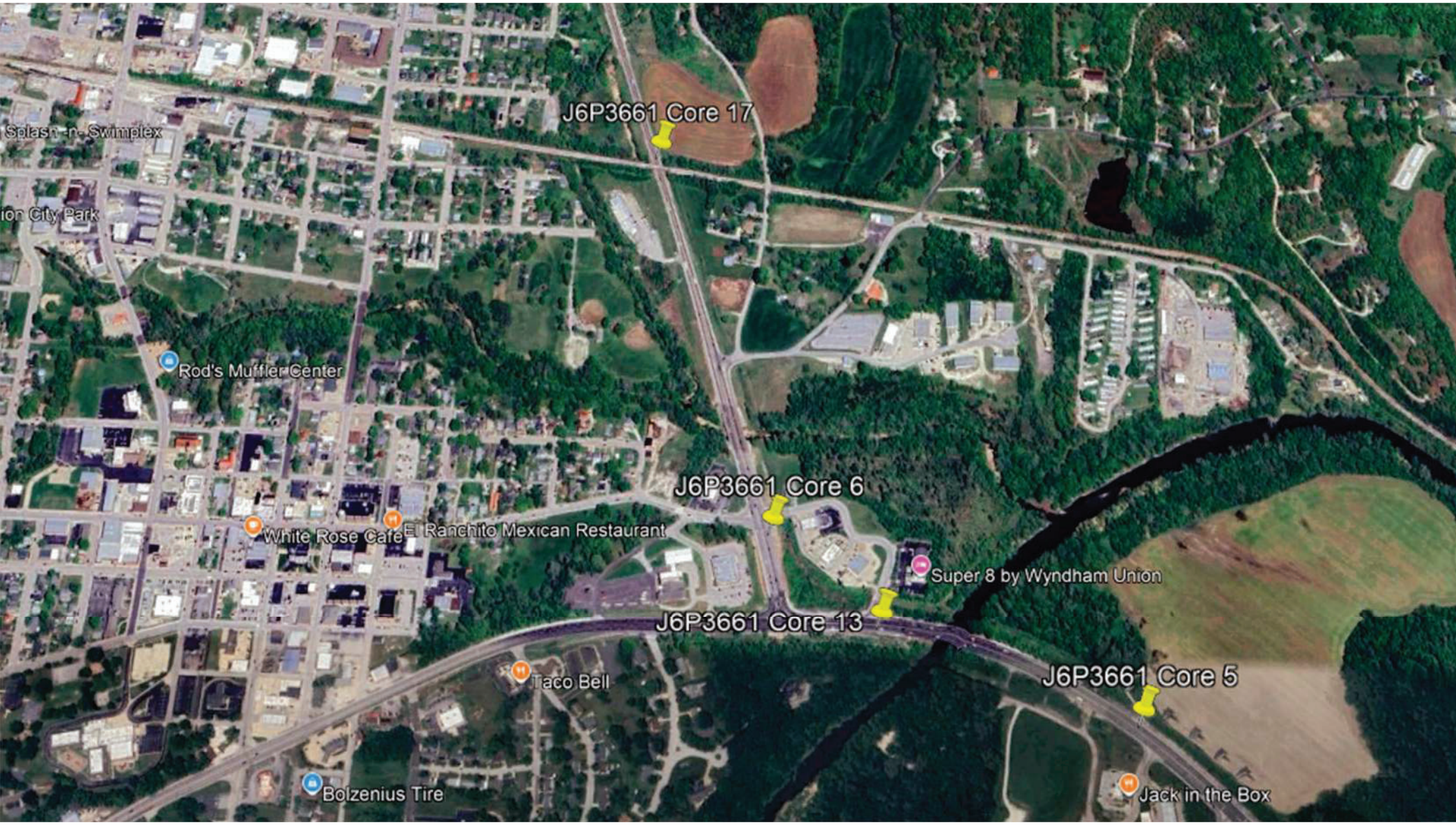
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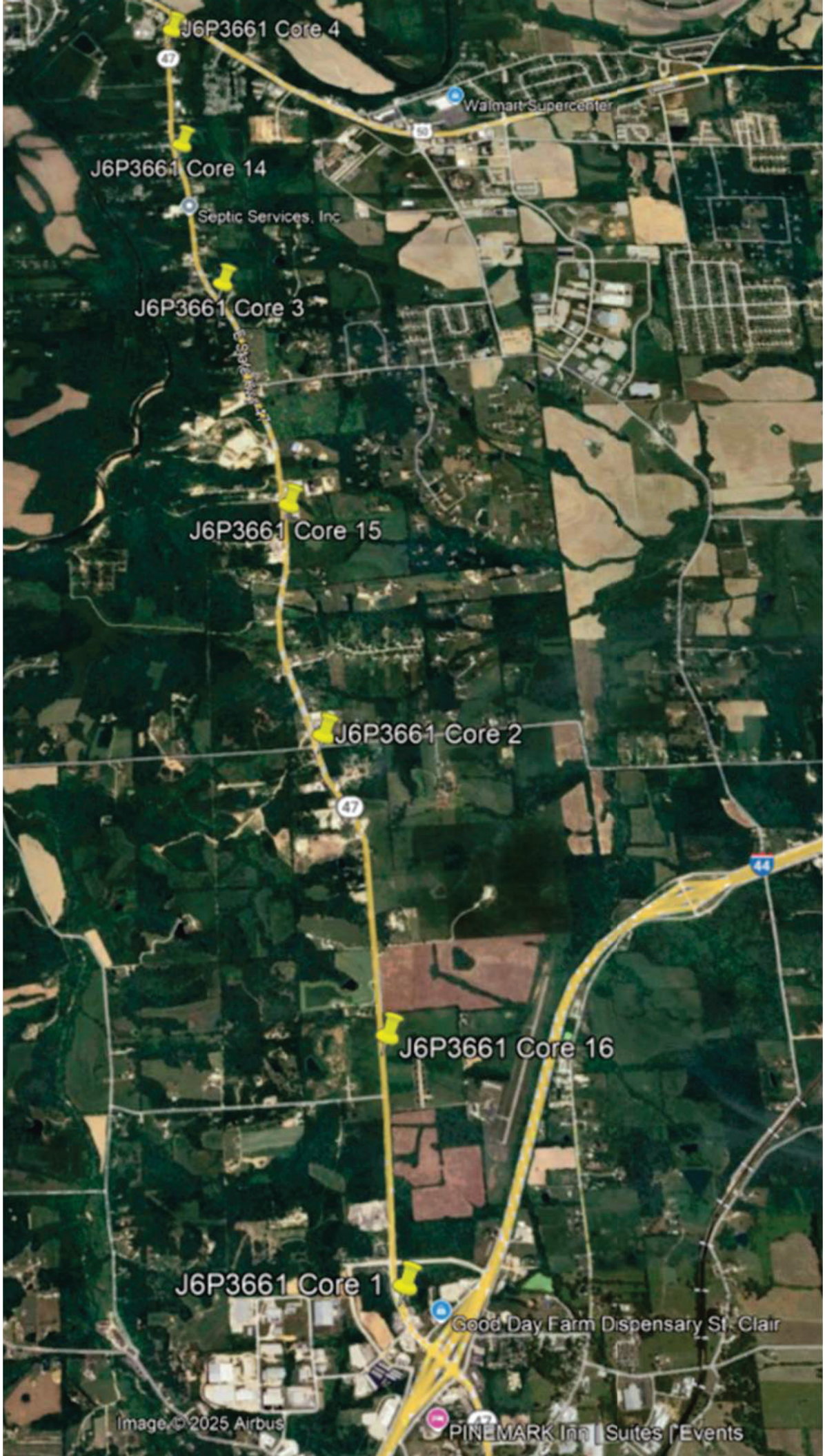
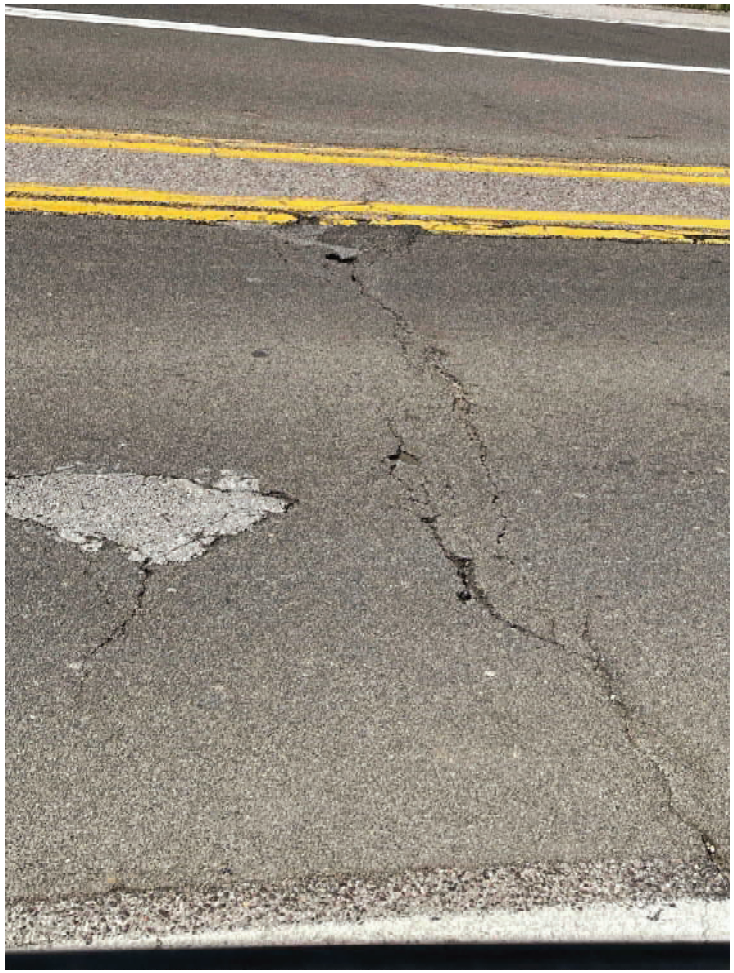
Splash 'n' Swimplex
ion City Park
Rod's Muffler Center
J6P3661 Core 6
White Rose Cafe
El Ranchito Mexican Restaurant
Super 8 by Wyndham Union
J6P3661 Core 13
J6P3661 Core 5
Taco Bell
Bolzenius Tire
Jack in the Box

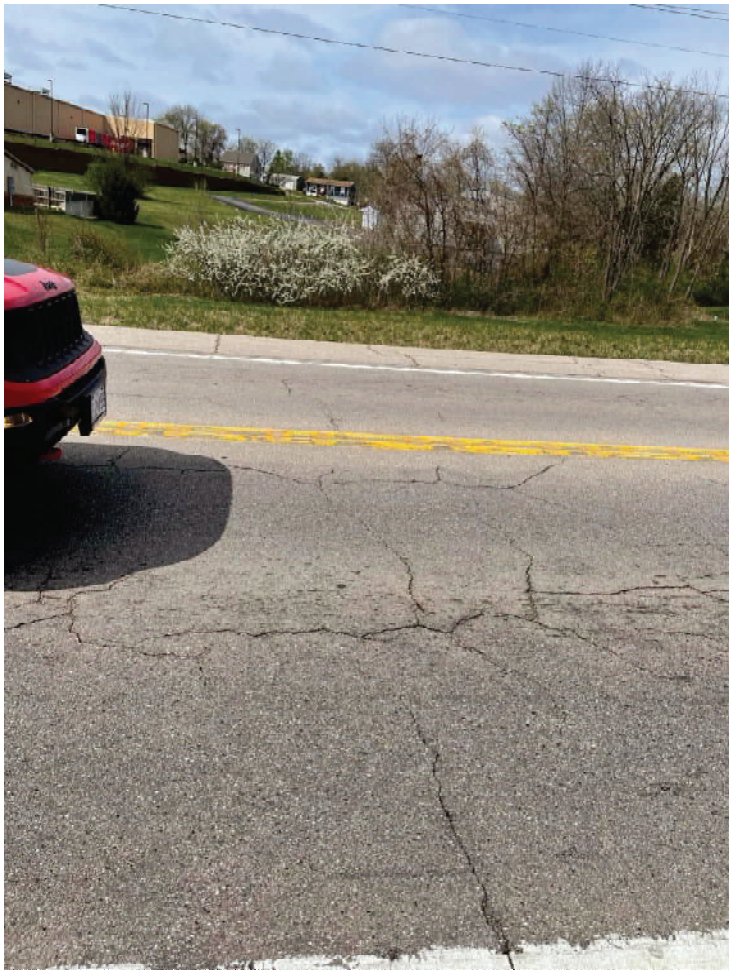

J6P3661 Core 4
Walmart Supercenter
J6P3661 Core 14
Septic Services, Inc
J6P3661 Core 3
J6P3661 Core 15
J6P3661 Core 2
J6P3661 Core 16
J6P3661 Core 1
Good Day Farm Dispensary St. Clair
PINEMARK Inn | Suites | Events
Image © 2025 Airbus

Typical distress on Hwy 47

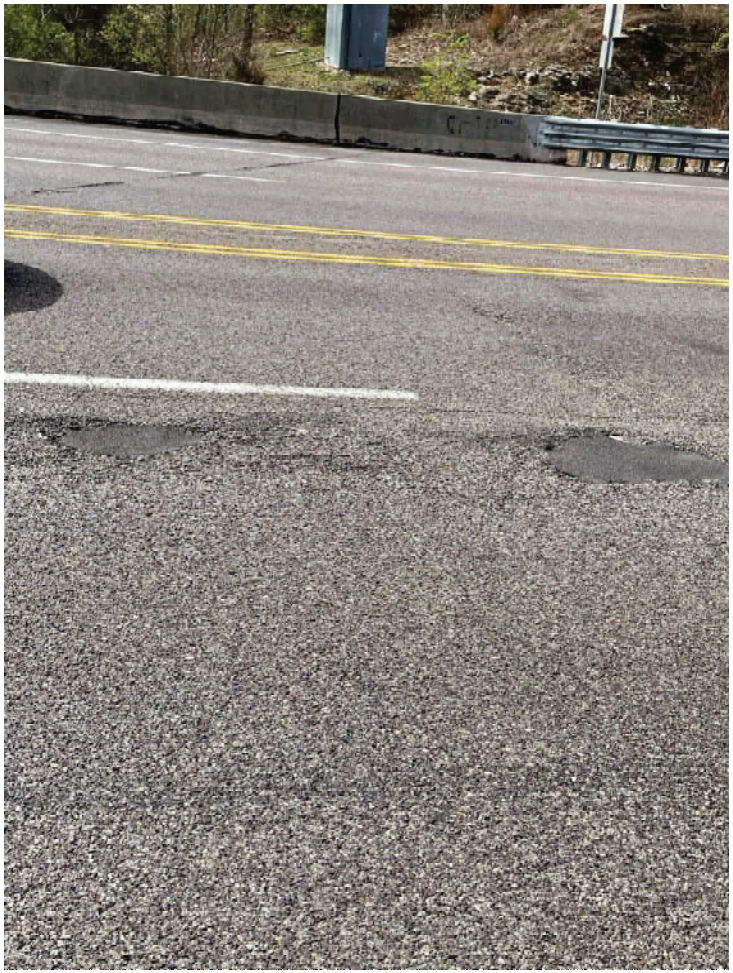
Typical Distress on Hwy 47

Typical Distress on Hwy 47





Typical Distress on Hwy 50



J6P3661 Hwy 47 St. Clair to Washington Cores 1-9

10
10
10
10
10S
10S
10S
11
11
11
12
12
13
14
14
14
15
15
15S
16
16
16
17
17
J.C. P3661 Rte 47 St. Clair to Washington Cores 10-17

Core 1

Core 2

Core 2S

JOB 3661
Core 2S
Hwy 47 North Bound
Right Shoulder 150 ft
South of Rt AD

Core 3

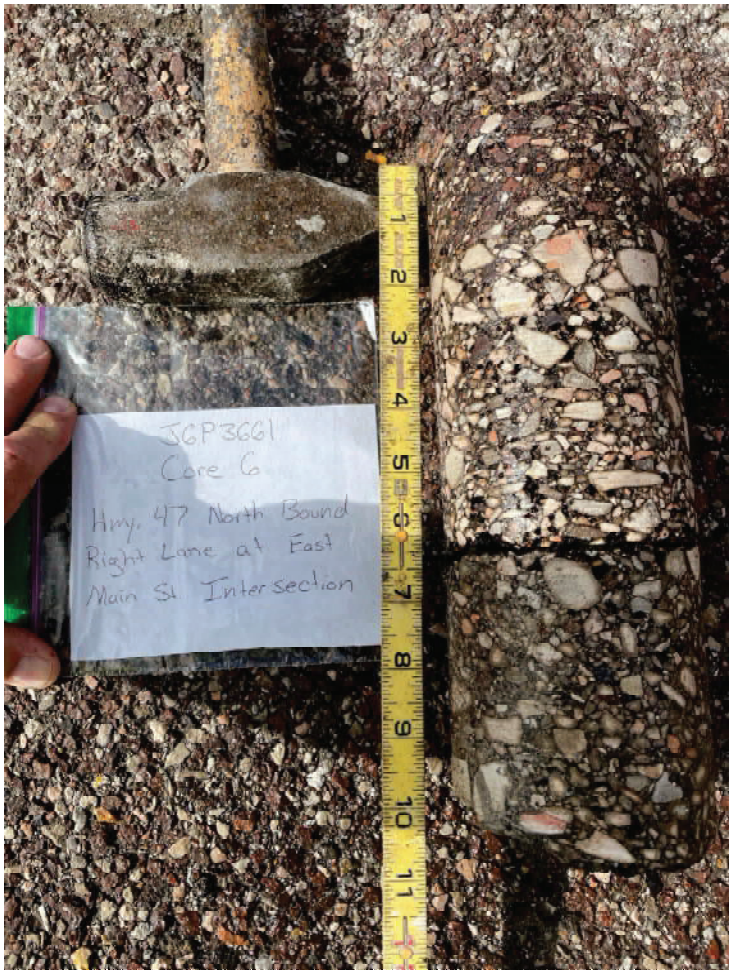
J6P3661
Core 3
Hwy 47 North Bound Lane
350ft South of Ruby Ridge Dr.

Core 4

Core 5

SCP3661
Core 5
Hwy. 50 West Bound
Right Lane 550 ft west
of Rt 47 South Intersection

Core 6


JGP3661
Core 6
Hwy. 47 North Bound
Right Lane at East
Main St Intersection

Core 7

J6P3661
Core 7
Hwy 47 North Bound Lane .5
Mile South Of Clearview Rd.

Core 7S

Core 8

J6P3661
Core 8
Hwy 47 North Bound Lane
800ft south of Country Club

Core 9

J6P3661
Core 9
Hwy 47 North Bound Lane
1250ft south of Becker Rd.

Core 10

J6P3661
Core 10
Hwy 47 South Bound Lane
200ft North of Mid America Ln.

Core 10S

JGP 3661
Core 10 S
Hwy. 47 South Bound
Right Shoulder 200 ft
North of Mid America Ln.

Core 11

J6P3661
Core 11
Hwy 47 South Bound Lane
150ft South of Low Line D

Core 12

Core 13

Core 14

Core 15

J6P3661
Core 15
Hwy 47 South Bound Lane
500ft South of Myrick Manor

Core 15S

SGP3661
Core 15S
Hwy. 47 South Bound
Right Shoulder
South of Myrick Marsh

Core 16

SP3661
Core 16
Hwy 47 South Bound Lane
725ft North of East Happy Sac

Core 17

J6P3661
Core 17
Hwy 47 North Bound Lane
150ft North of the RR Bridge

Appendix N: Pavement Type Selection Report

DRAFT

MoDOT

MEMORANDUM
Central Office – Construction & Materials
Brandi Baldwin – State Construction & Materials Engineer

Missouri Department of Transportation

1617 Mo. Blvd. P.O. Box 270
Jefferson City, Missouri 65102

TO: Aaron Groff - SLde **DATE:** 04/23/2025

FROM: Brandon Voyles - COcm

SUBJECT: Pavement Type Selection
J6P3661_Rte. 47_Franklin County

GENERAL DESCRIPTION: Rte. 47 pavement improvements.

PAVEMENT TYPE SELECTION: New Pavement Design

Equivalent Pavement Designs[1]				
Location	**Base Type**	**HMA Design[2]**	**PCCP Design[2]**	**Shoulders[3]**
Rte. 47	6" Type 5 Aggregate Base	**11.5" HMA** 2" SP125CLP w/ PG 70-22 Over 2" SP125C w/ PG 70-22 Over 7.5" SP190C w/ PG 64-22	**Not Widened Slab 10" PCCP** 15 ft. joint spacing, 1 ¼" dowels **Widened Slab 9" PCCP** 15 ft. joint spacing, 1 ¼" dowels	A2 OR Full Depth
Rte. 50	6" Type 5 Aggregate Base	**12.5" HMA** 2" SP125CLP w/ PG 76-22 Over 2" SP125C w/ PG 76-22 Over 8.5" SP190C w/ PG 64-22	**Not Widened Slab 11" PCCP** 15 ft. joint spacing, 1 ½" dowels **Widened Slab 10" PCCP** 15 ft. joint spacing, 1 ¼" dowels	A2 OR Full Depth

(1) Refer to the EPG "Other Aspects of Pavement Design – Alternate Categories" for guidance on setting up alternate or optional pavement bid items for the contract or contact Central Office Design for assistance.
(2) Designed pavement thicknesses based on full depth pavement width extended a minimum of 2-feet beyond the striped edge line location.
(3) Shoulders 4' or less in width may be constructed as full depth pavement as part of travel way.

PAVEMENT TYPE SELECTION: Rehab Design

Location	Mainline Treatment	Shoulder Treatment[(1)]
Rte. 47 Short Term	Overlay with 2" SP125CLP w/ PG 70-22	Overlay with 2" BP-1 w/ PG 64-22
Rte. 47 From the South end to College Rd. Medium Term	Mill/Fill Remove 4" HMA Replace with 2" SP125CLP w/ PG 70-22 Over 2" SP125C w/ PG 70-22	Mill/Fill Remove 4" HMA Replace with 2" BP-1 w/ PG 64-22 Over 2" BP-1 w/ PG 64-22
Rte. 47 From College Rd. to Rte. 50 From Rte. 50 to the North end Medium Term	Mill/Fill Remove 6" HMA Replace with 6" SP125CLP HiMod	Mill/Fill Remove 4" HMA Replace with 2" BP-1 w/ PG 64-22 Over 2" BP-1 w/ PG 64-22
Rte. 50 Option 1	Mill/Fill Remove ¾" UBAWS Replace with ¾" UBAWS	Same as mainline
Rte. 50 Option 2	Mill/Fill Remove ¾" UBAWS Replace with 1.5" SP095CLP w/ PG 76-22	Mill/Fill Remove ¾" UBAWS Replace with 1.5" BP-2 w/ PG 64-22

(1) The mainline treatment should be extended onto shoulders at least 18-inches for good longitudinal joint and rumble stripe performance. Any remaining shoulder width that is 3 feet or greater should utilize a lesser treatment with a separate shoulder paving operation and pay item. If the remaining shoulder width is less than 3 feet; then the mainline treatment should also be applied to the shoulder.

PAVEMENT REPAIR:
NA

JOB SPECIALS NEEDED:
HiMod JSP

Please contact me at (417) 252-0018 if you have any further questions.

bv

MATERIAL FIELD OFFICE NOTES

DESIGN ASSUMPTIONS and JUSTIFICATION:

EXISTING CONDITIONS OR GENERAL NOTES:

For new full depth concrete pavement design: If the pavement is at least 13’ wide it is considered a widen slab, use widen slab design. If pavement is narrower use not widened slab design.

For the 6” mill/fill on Rte. 47, use HiMod JSP.

If using option 2 on Rte. 50, transition sections will need to be milled ½” into the concrete to tie into existing UBAWS.

Appendix O: Traffic Noise Assessment Report

DRAFT

J6P3661

Missouri Route 47 Conceptual Study
Franklin County, MO

DRAFT Traffic Noise Assessment Memo

October 2025

HNTB

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Attachment 1 – Noise-Sensitive Receptors

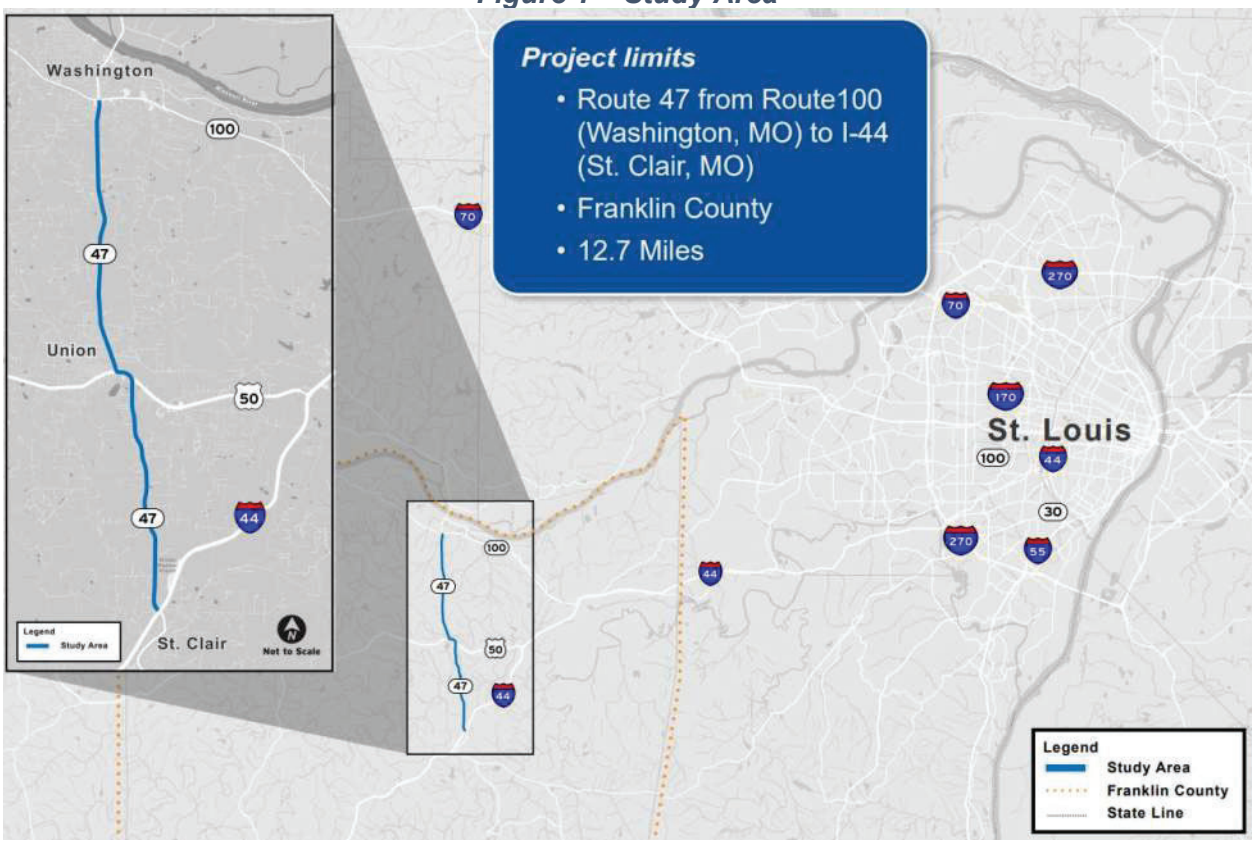
1 Introduction

As part of the Statewide Transportation Improvement Program (STIP), the Missouri Department of Transportation (MoDOT) has allocated approximately $78.1 million for safety and congestion improvements along the Missouri Route 47 (Route 47) corridor, which spans the communities of Washington, Union, and St. Clair in Franklin County, Missouri. This corridor, originally constructed over 70 years ago, faces congestion challenges that impact mobility and safety. The study area is illustrated in **Figure 1**.

To address these concerns, a conceptual study is currently underway to evaluate existing conditions and identify potential improvements. The study focuses on key areas including traffic safety, mobility, intersection performance, access management, infrastructure condition, and stakeholder input.

Depending on the conceptual study's outcome, a traffic noise analysis may be required in accordance with Federal Highway Administration (FHWA) and MoDOT traffic noise policies. As a component of this study, a desktop-level scan was conducted to identify noise-sensitive properties along the corridor and assess the potential for noise impacts and abatement measures. This memo summarizes the findings of the traffic noise desktop-level scan within the study area.

Figure 1 – Study Area



2 Traffic Noise Policies

For any project in Missouri that receives Federal-aid funds or is otherwise subject to approval from FHWA, traffic noise analysis must be completed in accordance with:

- FHWA's Noise Standard at 23 Code of Federal Regulations Part 772 (23 CFR 772)*
- MoDOT's traffic noise policy, EPG Section 127.13 (MoDOT Noise Policy)

FHWA has given MoDOT flexibility in executing 23 CFR 772. The MoDOT Noise Policy describes MoDOT's approach to implementing the noise standard.

23 CFR 772 and the MoDOT Noise Policy apply to all Type I projects. A Type I project is defined as:

1. The construction of a highway on new location; or
2. The physical alteration of an existing highway where there is either:
    a. Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
    b. Substantial Vertical Alteration. A project that removes shielding (vegetation does not constitute shielding as it typically does not provide substantial noise reduction), as it thereby exposes the line-of-sight between the receptor and the traffic noise source (maintenance and resurfacing projects are not Type I projects). This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
3. The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a High Occupancy Vehicle (HOV) lane, High Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
4. The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
5. The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

*On October 18, 2024, FHWA released a Notice of Proposed Rulemaking (NPRM) in the Federal Register to reorganize and update 23 CFR 772. This NPRM proposes many changes to the current rule and is the first proposed update of 23 CFR 772 in over 14 years. Among the many changes proposed, FHWA is considering redefining how projects are categorized, what areas of and around a project must be considered for noise analysis, and adding exemptions to Type I projects. This would allow recipients to focus analysis and mitigation efforts on projects and areas that have, or are likely to have, noise impacts. FHWA is also proposing to allow for the use of innovative mitigation measures and the consideration of non-acoustical benefits of mitigation. The exact details of these proposed changes, what may or may not be implemented, and the timing of these changes are not known at the time of this desktop review. As this information becomes available, any projects as part of the J6P3661 Route 47 project should be reviewed to better understand any implications of the changes.

6. Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
8. If any portion of a project evaluated under NEPA is determined to be Type I per 23 CFR 772.5, then the entire project area as defined in the environmental document is a Type I project.

Type II projects are any Federal or Federal-aid highway project on an existing highway. MoDOT does not participate in a Type II noise program. Type III projects are projects that do not meet the criteria for Type I or Type II. Type III projects do not require noise analysis.

Along the Route 47 corridor, the initial alternatives being reviewed indicate the potential for a Type I project designation for certain portions of the corridor due to the addition of new through traffic lanes. Specifically, at the time of this traffic noise assessment, the addition of through traffic lanes are being evaluated along approximately one mile at the northern portion of the corridor south of Washington and approximately one mile in the middle of the corridor north of Union. For the majority of the corridor between Washington and Union and between Union and St. Clair, improvements being evaluated generally include median separation and intersection improvements. Median separation and/or intersection improvements on their own would likely not trigger a Type I project and the need for a noise analysis. However, as indicated by #8 of the Type I project definition above, if any part of a project is Type I, then the entire project as defined in the environmental document is considered Type I. For this reason, the entire ~13-mile corridor was reviewed for potential noise impacts and noise abatement.

3 Traffic Noise Assessment

3.1 Noise-Sensitive Receptor Identification

FHWA has developed Noise Abatement Criteria (NAC) to identify what is considered noise-sensitive land use and the decibel levels that are considered a noise impact depending on the land use type, referred to as the Activity Criteria. **Table 1** defines the NAC and the Activity Criteria for different land uses. Developed lands that are identified and included in the noise study comprise Activity Categories A, B, C, and E land uses with exterior areas of frequent human use, as well as qualifying Activity Category D uses with interior areas.

Within the study area, all parcels within approximately 300’ of the Route 47 centerline were identified and categorized by NAC type using a desktop-level review. In all, 401 different properties were identified, including 227 considered noise-sensitive: 211 categorized as NAC B, five categorized as NAC C, seven categorized as NAC D, and four categorized as NAC E. The remaining 174 parcels were identified as NAC Category F or G and are not considered noise-sensitive.

All properties categorized by NAC are illustrated in **Attachment 1**.

Table 1 – Noise Abatement Criteria

Hourly Equivalent A-Weighted Sound Level (decibels (dBA))			
Activity Category	**Activity Criteria[1] $L_{eq(h)}$[2]**	**Evaluation Location**	**Activity Description**
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[3]	67	Exterior	Residential
C[3]	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E[3]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A- D or F
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

1. The $L_{eq(h)}$ Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.
2. The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of L_{eq}.
3. Includes undeveloped lands permitted for this activity category.

3.2 Noise Impacts

MoDOT defines a noise impact as any receiver with an hourly equivalent noise level ($L_{eq(h)}$) during the loudest hour that is within one decibel of the NAC Activity Criteria. Generally, this correlates to an $L_{eq(h)}$ of 66 A-weighted decibels (dBA) for NAC B and NAC C and 71 dBA for NAC E. (Interior noise impacts for NAC D are calculated using building reduction factors depending on the building type. On a corridor like Route 47, interior noise impacts are extremely rare.)

FHWA's Traffic Noise Model version 2.5 (TNM 2.5) was used to predict approximate distances noise impacts may occur. Future traffic volumes and truck percentages were obtained from the project's traffic study, and a basic, no elevation model was created in TNM 2.5 to generate noise contours. For individual locations, the distance at which traffic noise impacts will occur can vary greatly depending on several factors including, but not limited to, traffic volumes, nearby topography, shielding from nearby structures, etc. Noise levels near intersections vary due to vehicle deceleration when approaching and acceleration when departing, which increases noise emissions. Additionally, the precise placement of receptor points may fluctuate after a more detailed review of individual properties, with primary consideration given to exterior areas of frequent human use. However, this exercise gives a high-level sense of the potential for noise impacts as well as the effect of speed on noise levels. Speeds were tested at both 45 mph and 55 mph. The results are shown in **Table 2**.

Table 2 – Approximate Noise Impact Contours

Approximate Noise Level Contours (Measured from Route 47 Centerline)		
Hourly Equivalent A-Weighted Sound Level (dBA)	45 mph Speed	55 mph Speed
66	100'	150'
71	50'	75'

In **Attachment 1**, approximate buffer zones from the Route 47 centerline are illustrated to understand the potential for noise impacts. No noise-sensitive receptors were identified within the 75' buffer. **Within the 100' buffer, approximately 70 NAC Category B receptors and two NAC Category C receptors exist. Within the 150' buffer, approximately 100 NAC Category B receptors and two NAC Category C receptors exist.**

3.3 Noise Abatement

23 CFR Part 772 and the MoDOT Noise Policy require that noise abatement measures must be considered when traffic noise impacts are identified for Type I projects. Typically, noise walls are the most common and practical form of noise abatement on a corridor like Route 47.

Abatement measures must be both feasible and reasonable to be eligible for construction. Feasibility refers to the combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure. It generally deals with whether it is possible to build an abatement measure given site constraints and whether the abatement measure provides a minimum reduction in noise levels. Engineering feasibility can be limited by topography, access requirements, other noise sources, drainage, utilities, maintenance, and more. Reasonableness refers to the combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure. Three specific reasonableness criteria are required, including a maximum of 1,300 square feet of noise wall per receptor who would receive at least a 7 dBA reduction from the wall.

Throughout the majority of the Route 47 corridor, the presence of driveways and side road connections would make construction of a noise wall not feasible, as the breaks in the wall would make the wall less effective. A few locations exist where noise impacts may exist and noise walls may be feasible to construct. Because of the 1,300 square feet per benefited receptor requirement, noise walls are typically only reasonable in areas of dense development, with noise-sensitive properties located very close to one another. The review identified the following locations as potential for noise impacts to exist, noise walls to be feasible, and a sizable number of noise-sensitive receptors located close together:

1. Two mobile home parks on the east side of Route 47 south of Washington and south of Steutermann Road (See Attachment 1, Page 1 of 17)
2. A mobile home park on the east side of Route 47 north of Union and just north of the Riverstone Quarry (See Attachment 1, Page 6 of 17)
3. A collection of approximately 15 single family homes on the west side of Route 47 north of Union on Melinda Drive (See Attachment 1, Page 6 of 17)
4. A mobile home park on the west side of Route 47 in Union, just south of Highway V (See Attachment 1, Page 8 of 17)

However, based on the desktop level review, it is considered unlikely that any noise walls in the project area would meet all feasibility and reasonableness criteria. #1 and #2 would require breaks in the wall for driveways/side roads, and #3 and #4 likely do not have enough receptors to be considered cost-effective. If a project that includes these locations is categorized as Type I, a more comprehensive noise analysis with more detailed noise modeling would be required to confirm whether or not noise abatement is feasible and reasonable.

4 Conclusion

Approximately 13-miles of Route 47 in Franklin County, MO is being evaluated for safety and mobility improvements. Many of the improvements along the corridor, including median separation and intersection improvements, would not be considered a Type I project as defined by FHWA and the MoDOT Noise Policy. However, some portions of the corridor are being evaluated for the addition of through lanes. Current FHWA policies dictate that if any part of a project is a Type I project, the entire project as defined in the environmental document is a Type I project.

Over 200 noise-sensitive properties were identified within 300’ of the Route 47 centerline in the study area. A high-level TNM 2.5 model with future Route 47 traffic projections was developed to predict general distances noise impacts may occur. Generally, noise impacts may be expected within about 100’ with a 45-mph speed and within about 150’ with a 55-mph speed. Approximately 70 noise-sensitive receptors exist within the 100’ buffer, and approximately 100 noise-sensitive properties exist within the 150’ buffer. The exact number and locations of noise impacts can and will vary significantly depending on individual locations.

Four locations were identified where noise impacts may exist, noise walls may be feasible to construct, and a large number of receptors are grouped relatively close together. However, based on this desktop review, it is considered unlikely that any noise abatement will meet all the feasible and reasonableness criteria defined in the MoDOT Noise Policy. More detailed modeling will be required if a Type I project advances.

To reduce the potential for noise impacts and therefore the potential for noise walls, lower speeds and narrower roadway footprints would be effective. The evaluation of different alternatives will be based on a wide variety of factors, including safety, mobility, and stakeholder input, and noise emissions should also be a factor during these evaluations.

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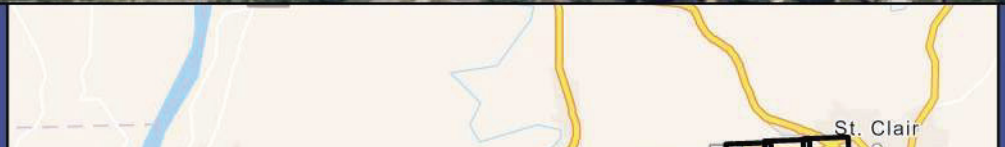

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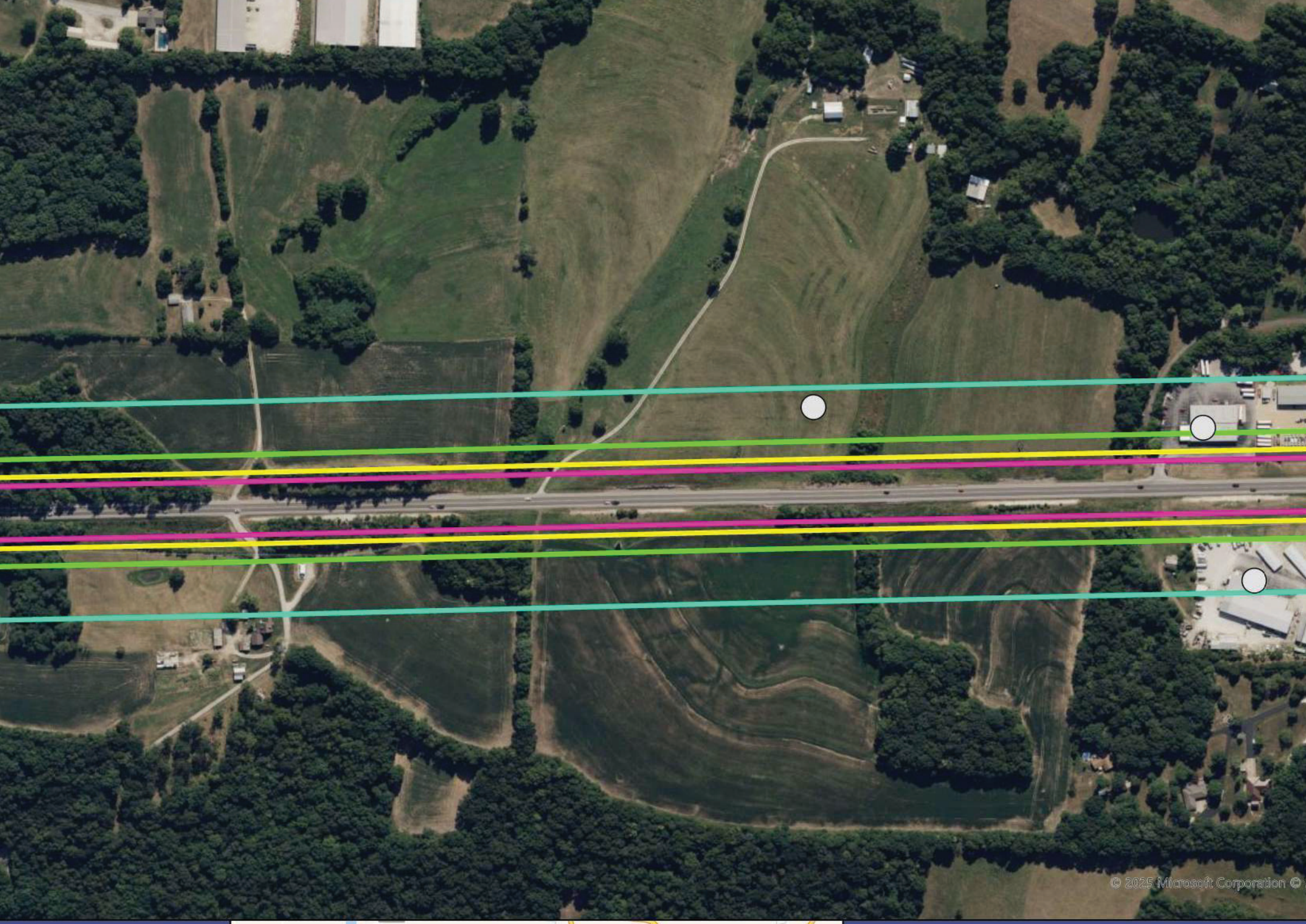

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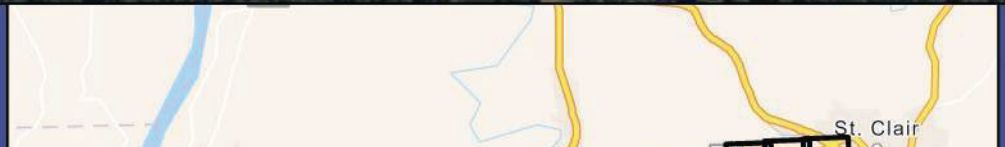

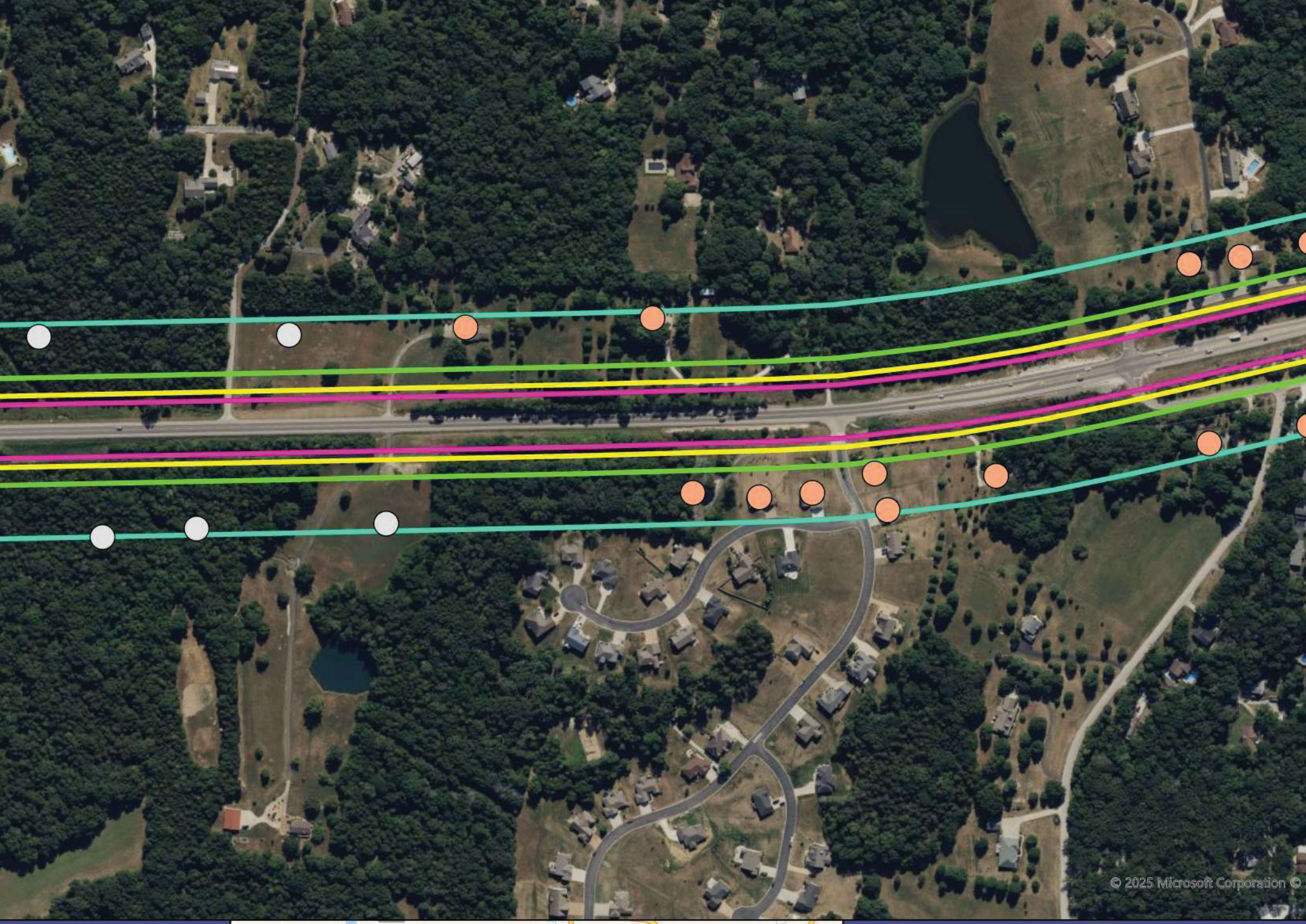

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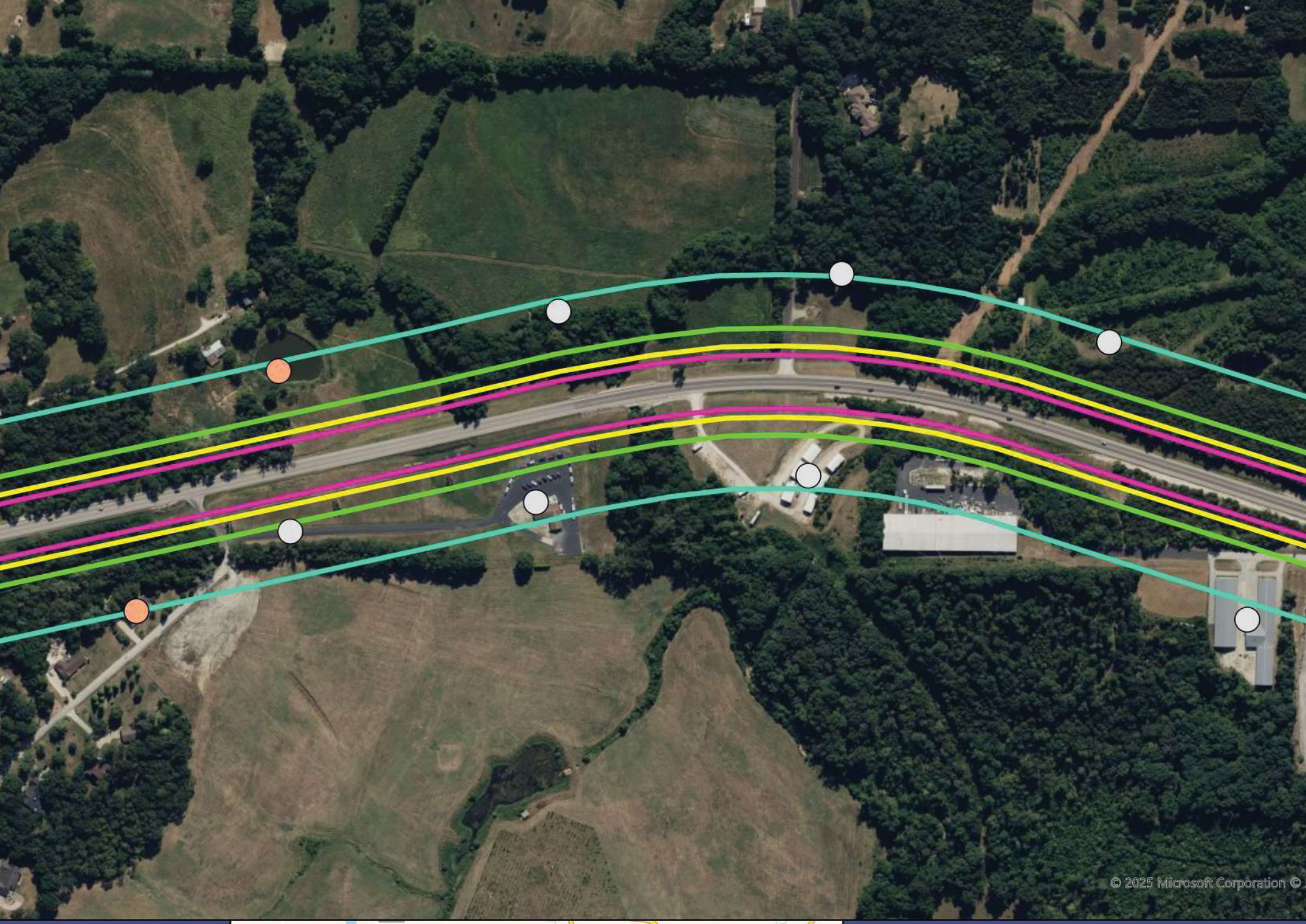

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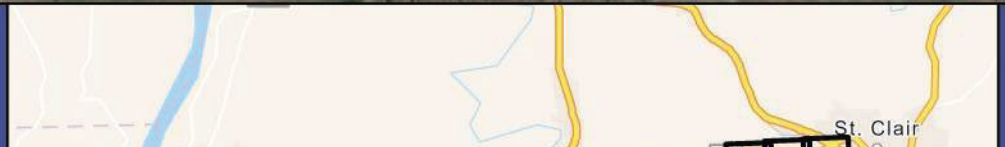

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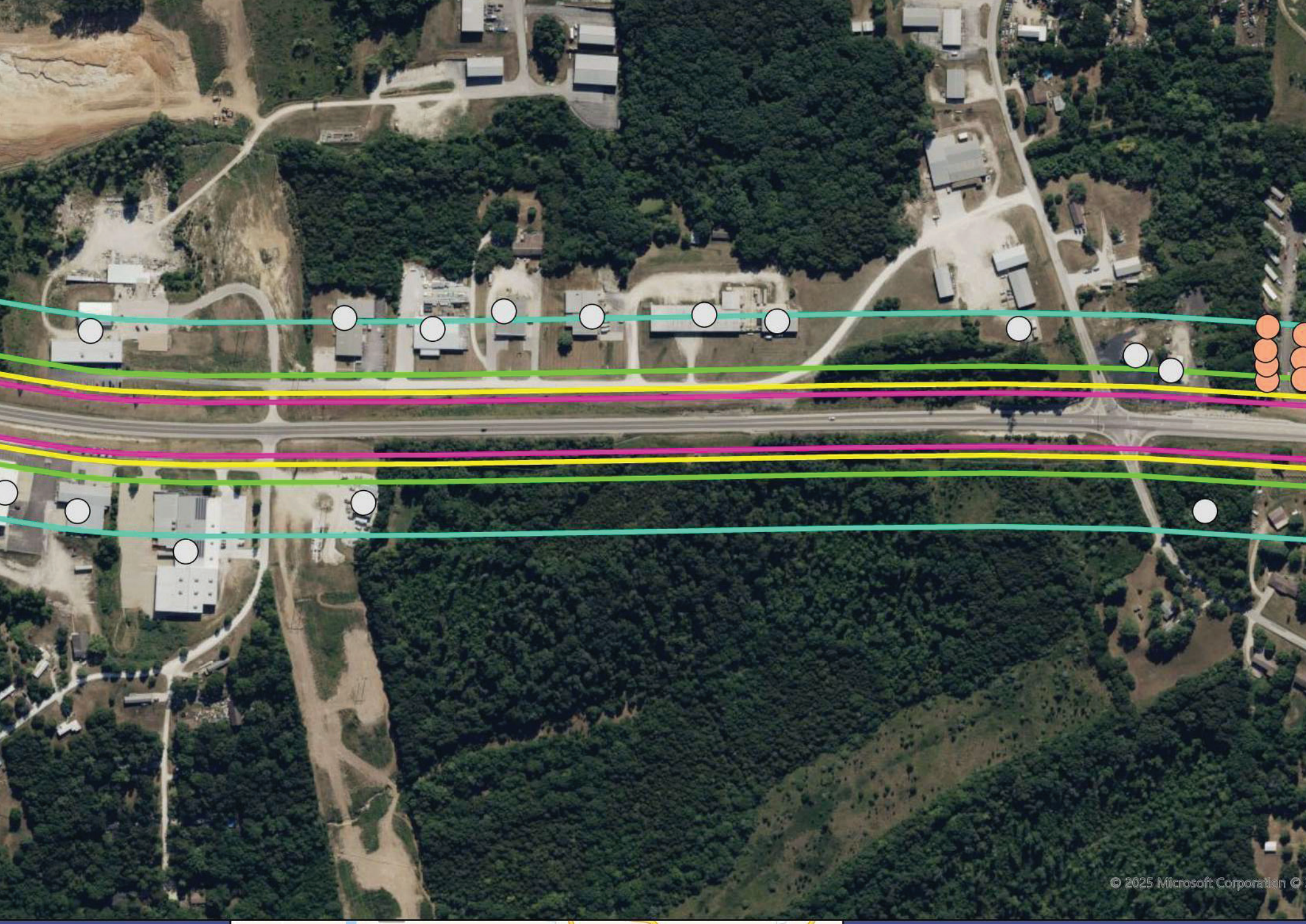

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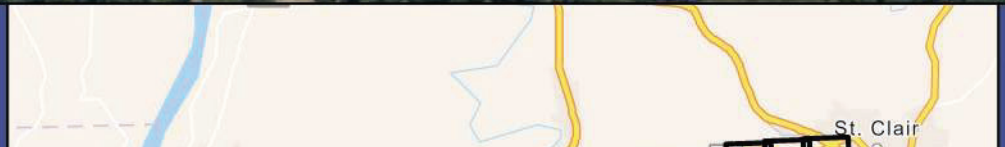

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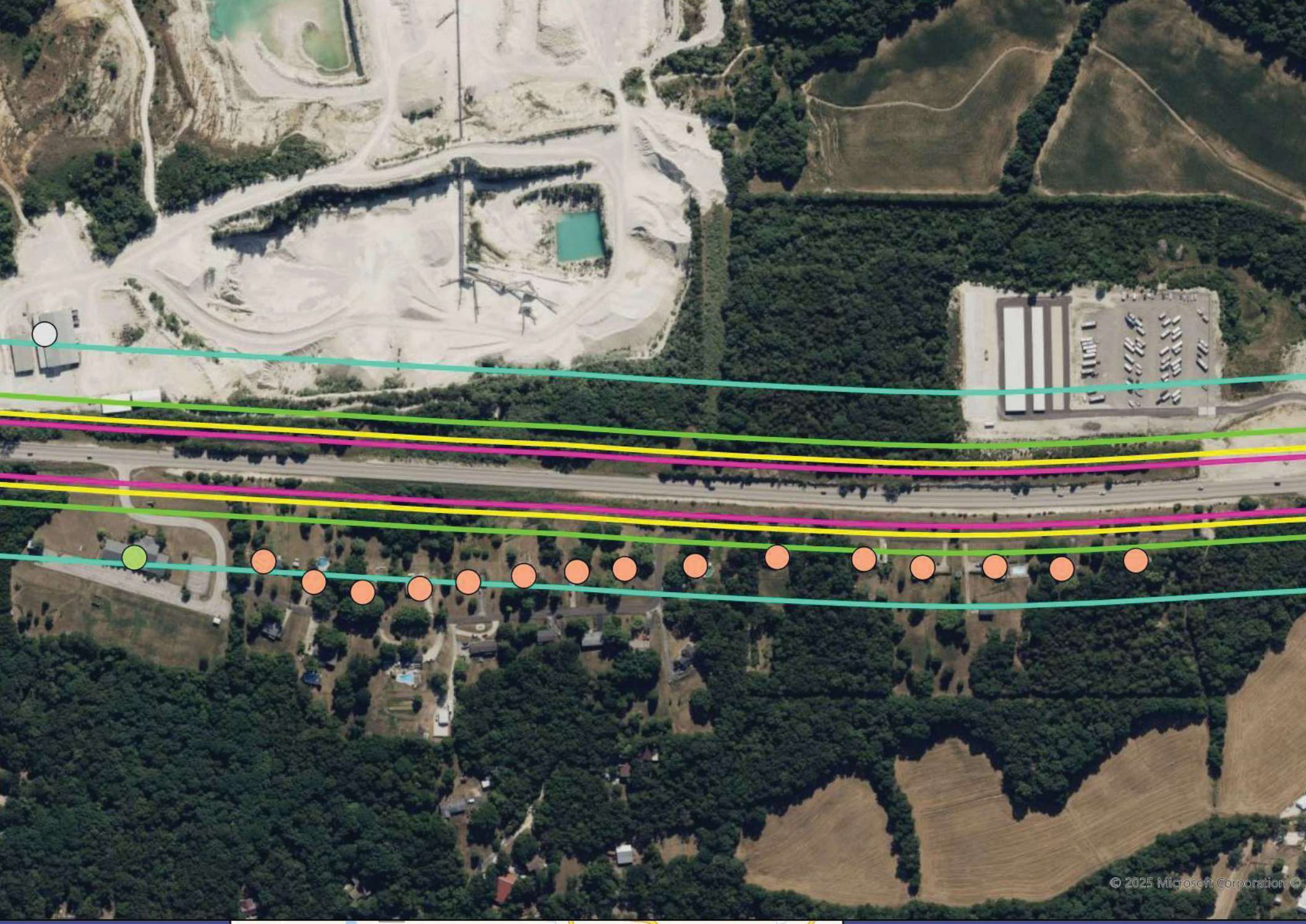

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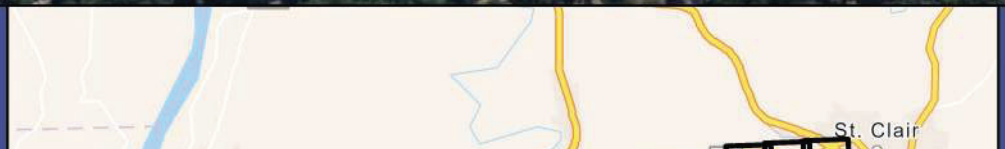

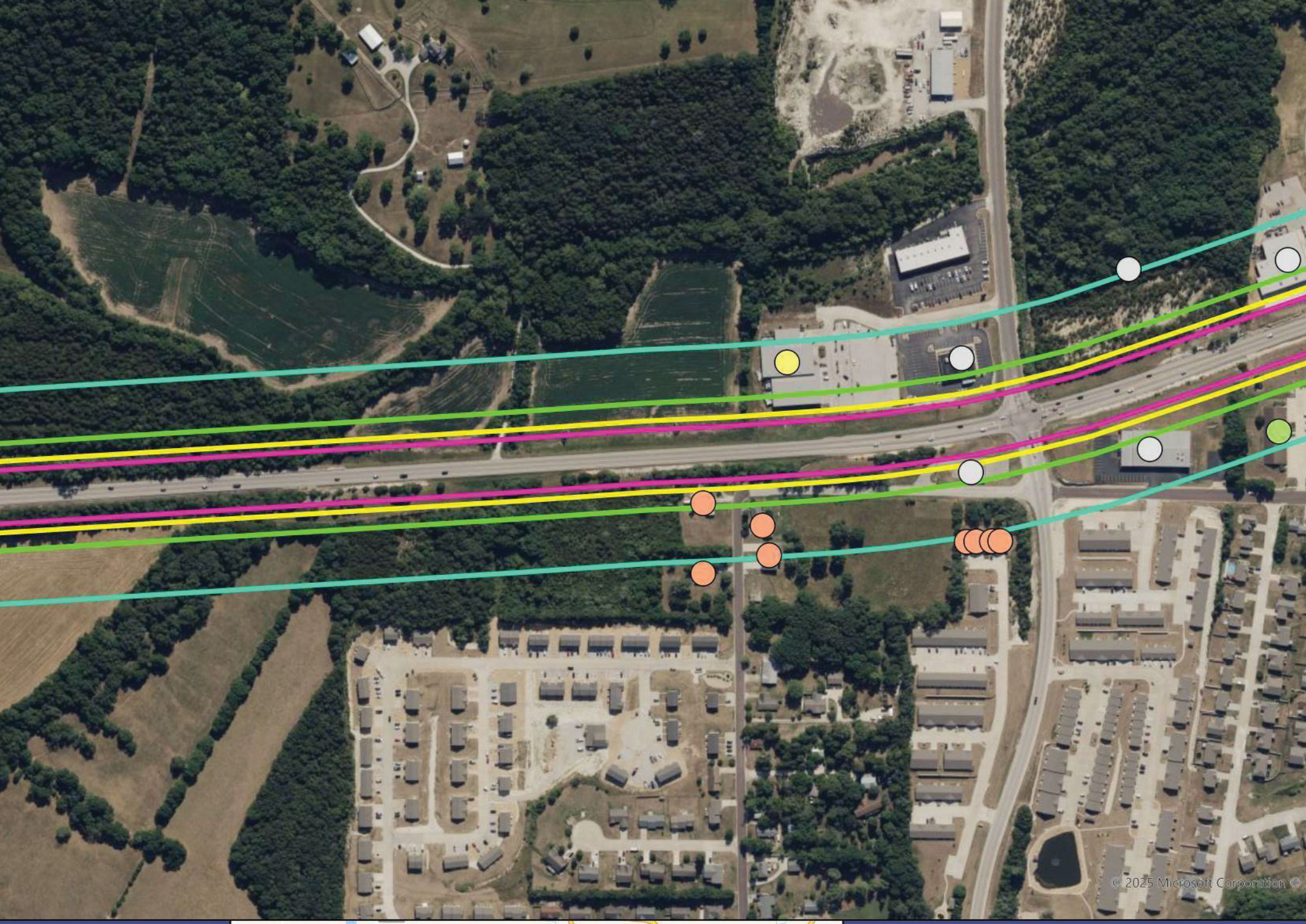

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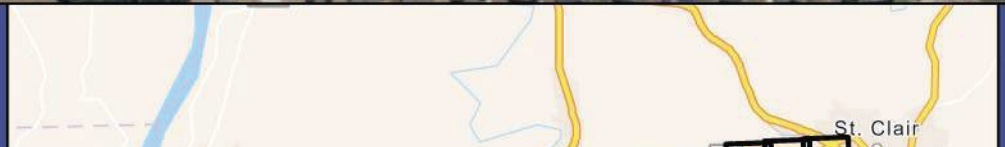

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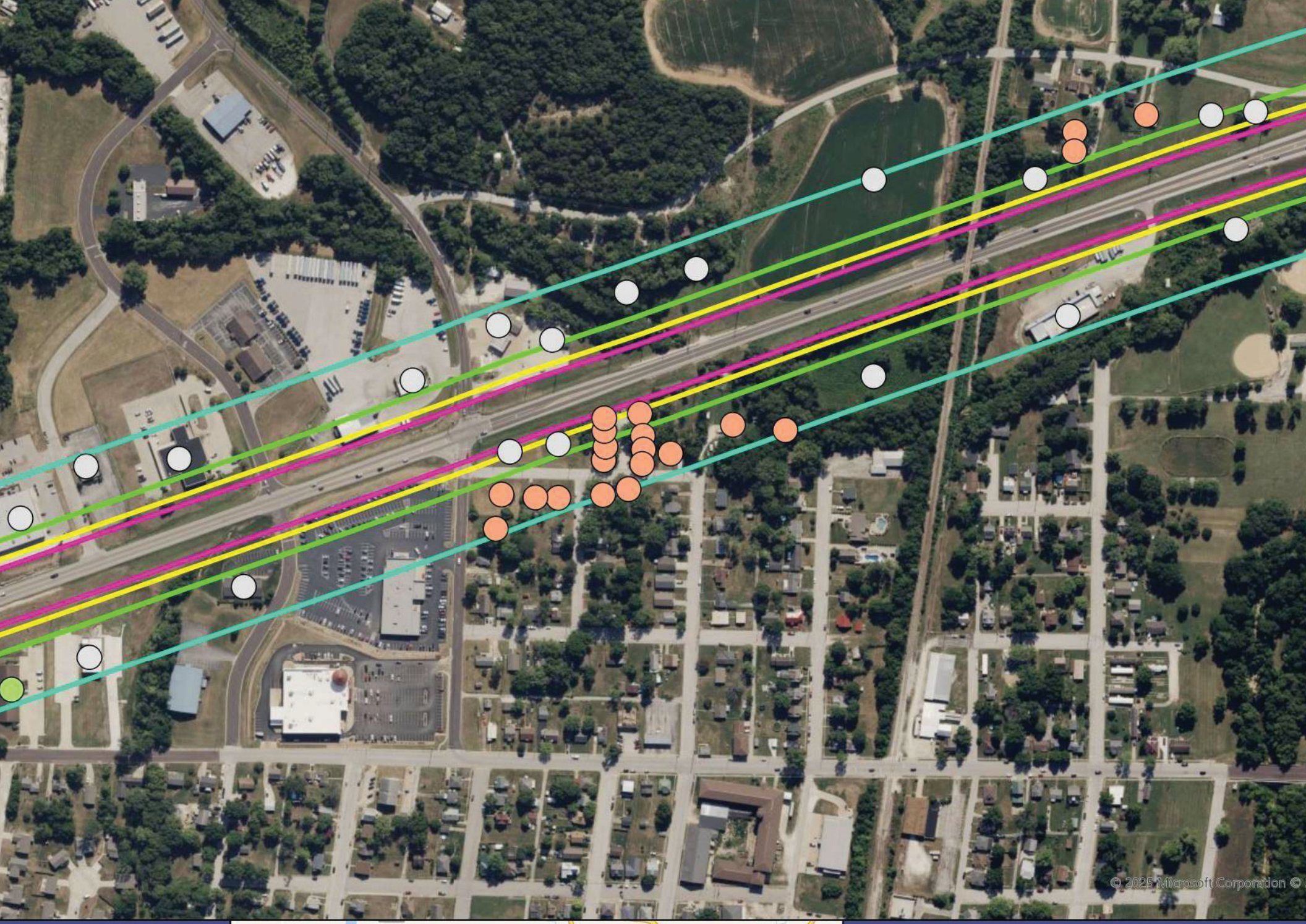

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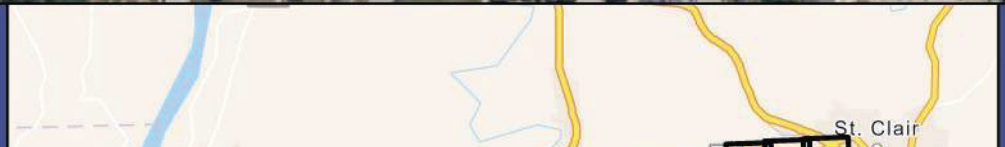

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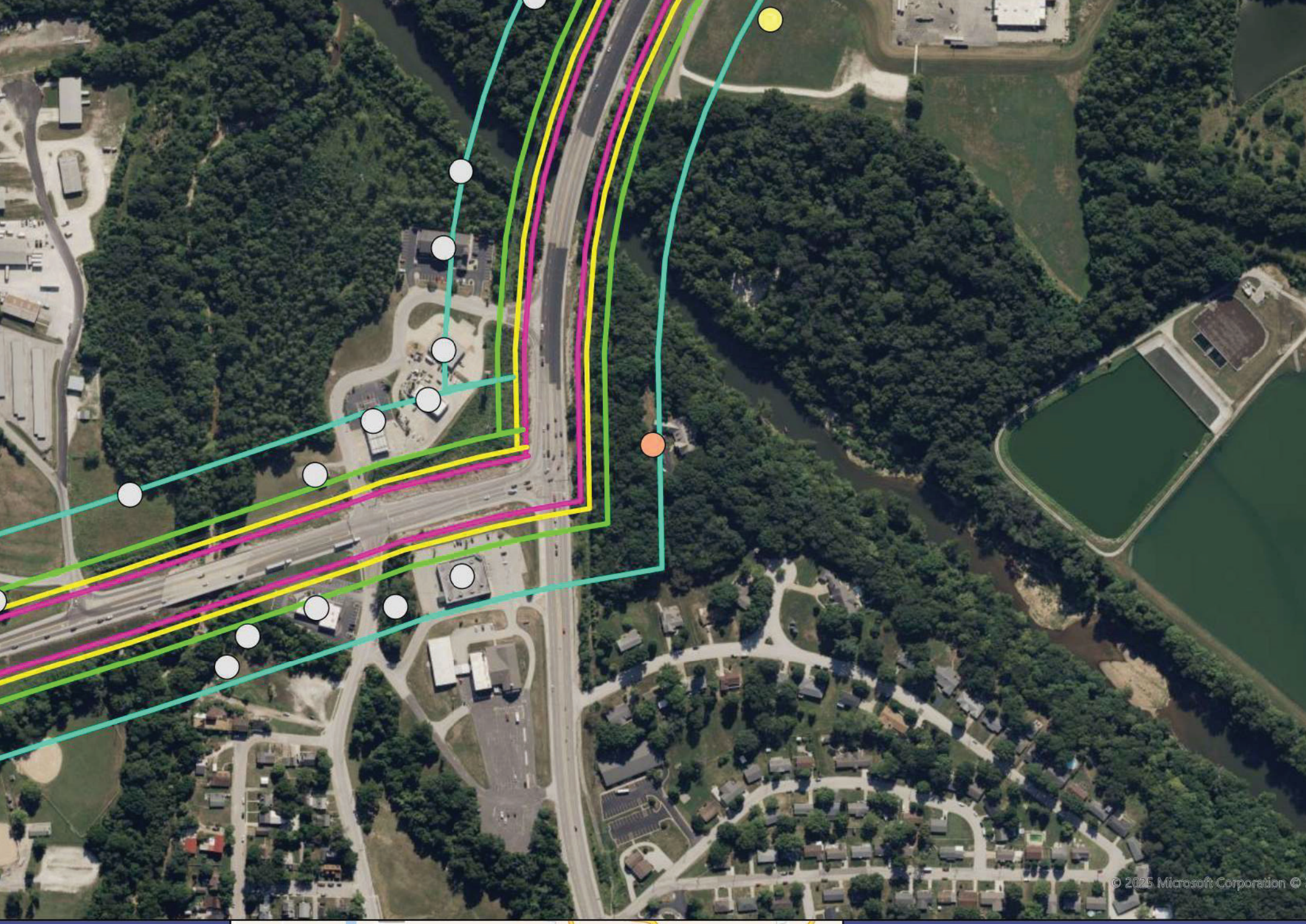

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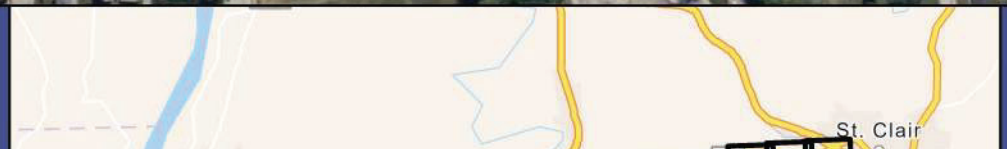

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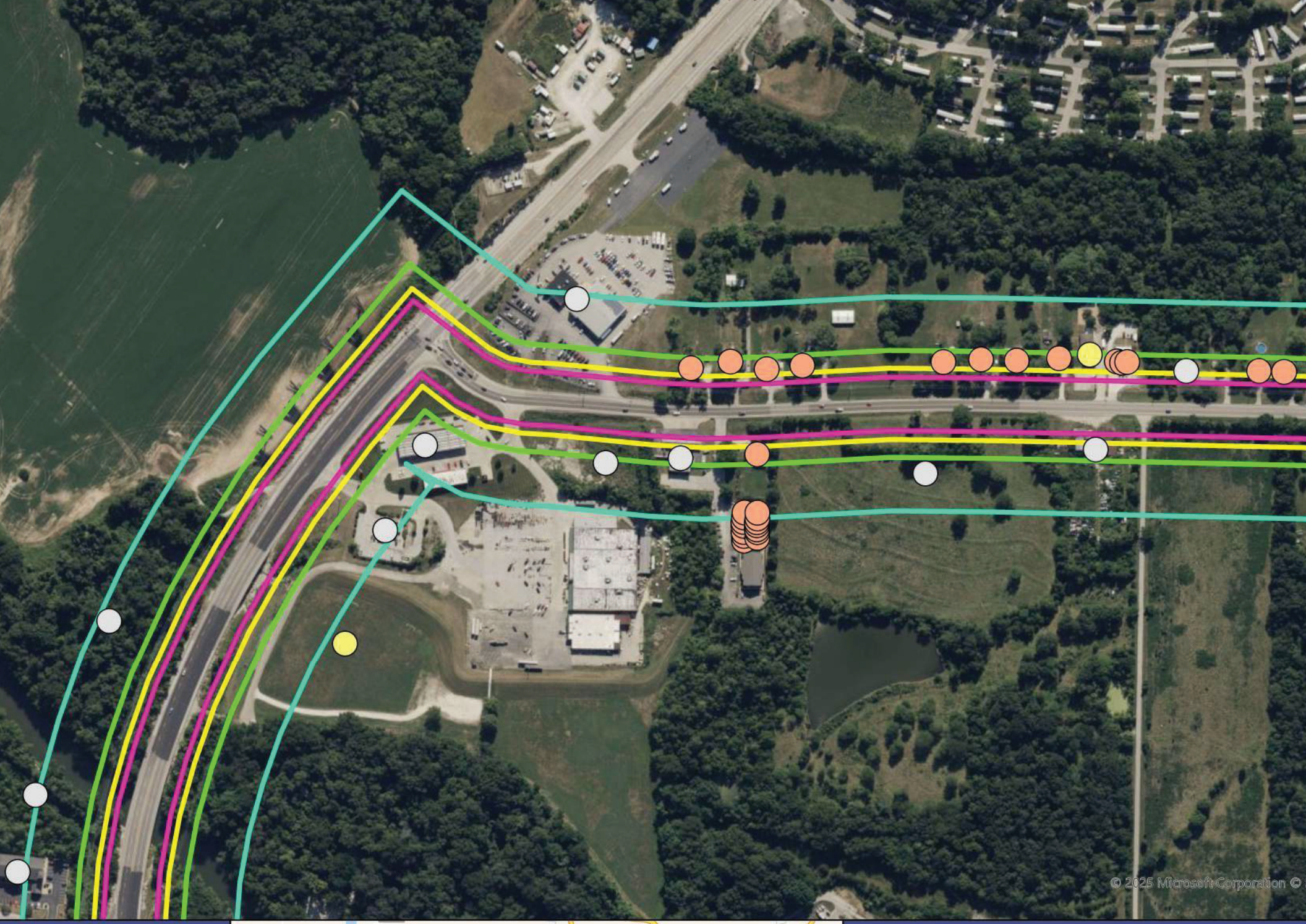

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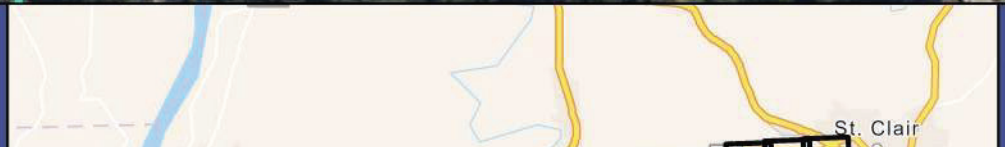

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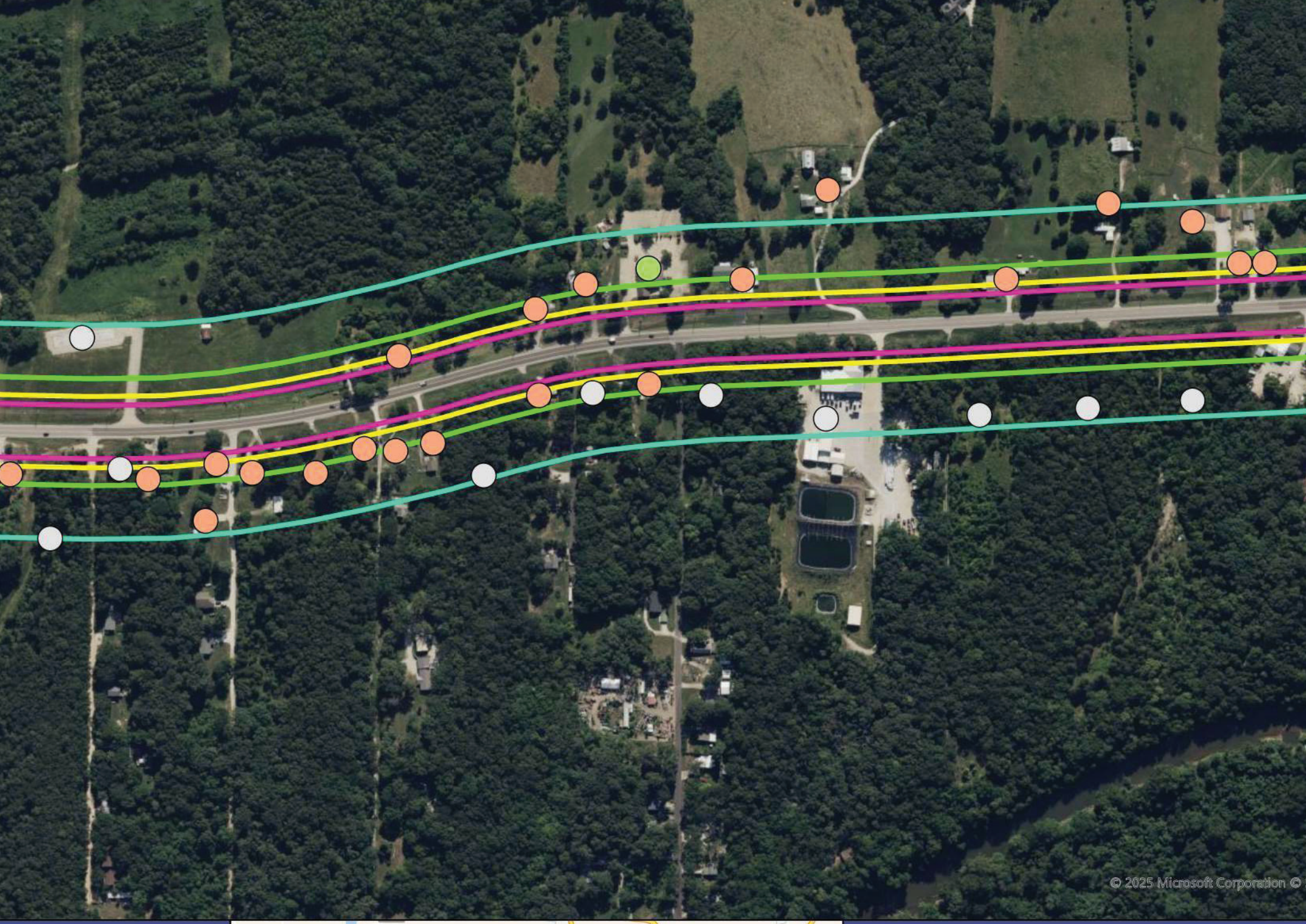

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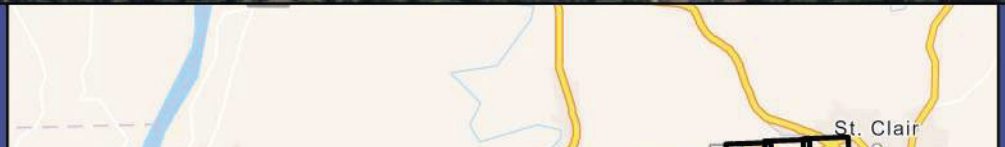

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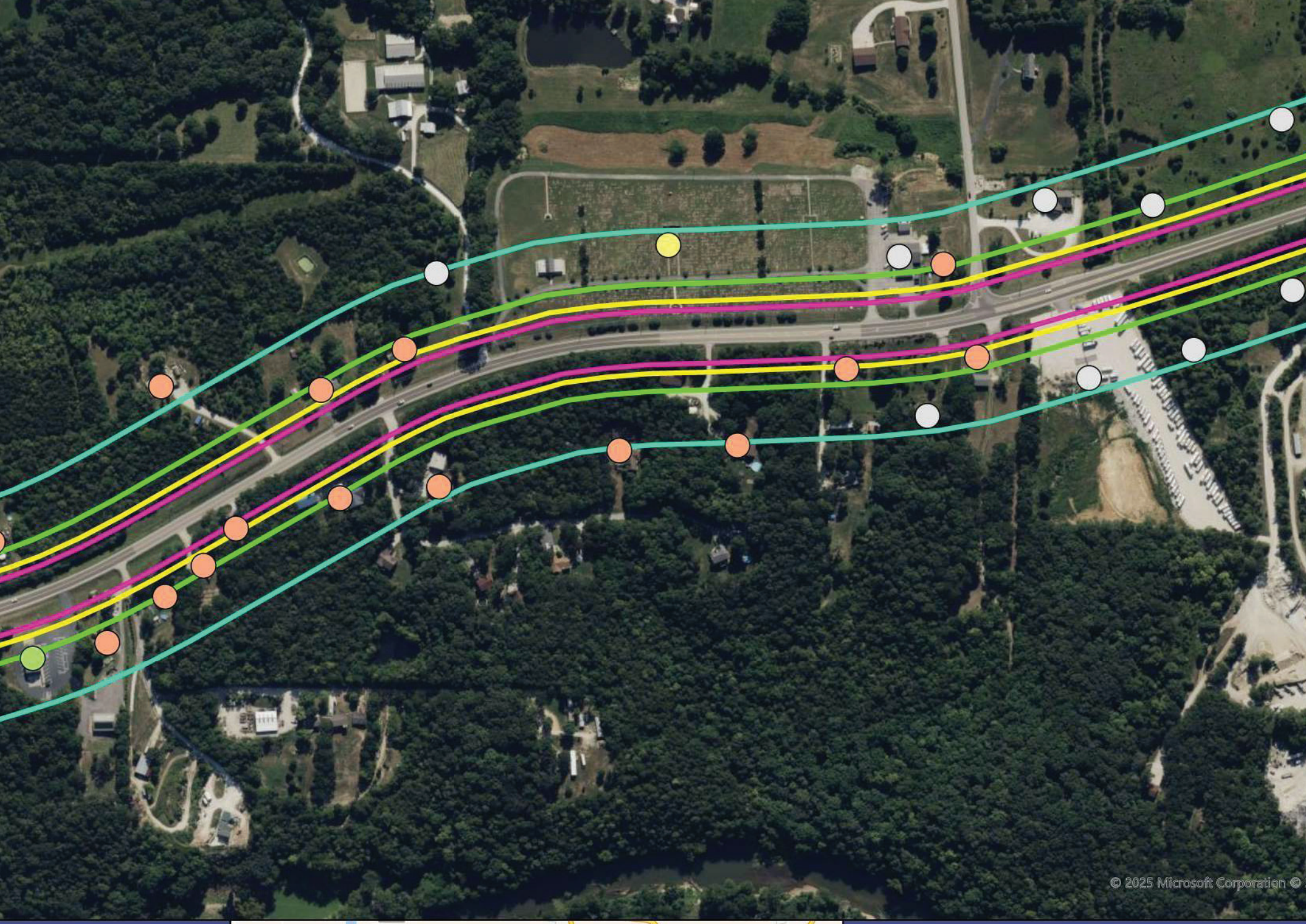

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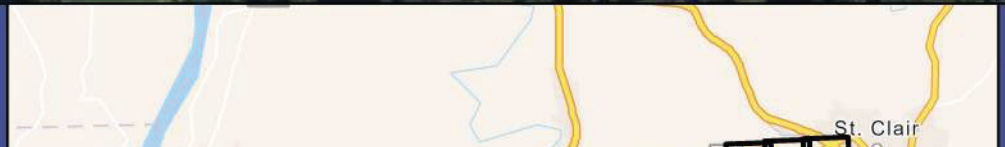

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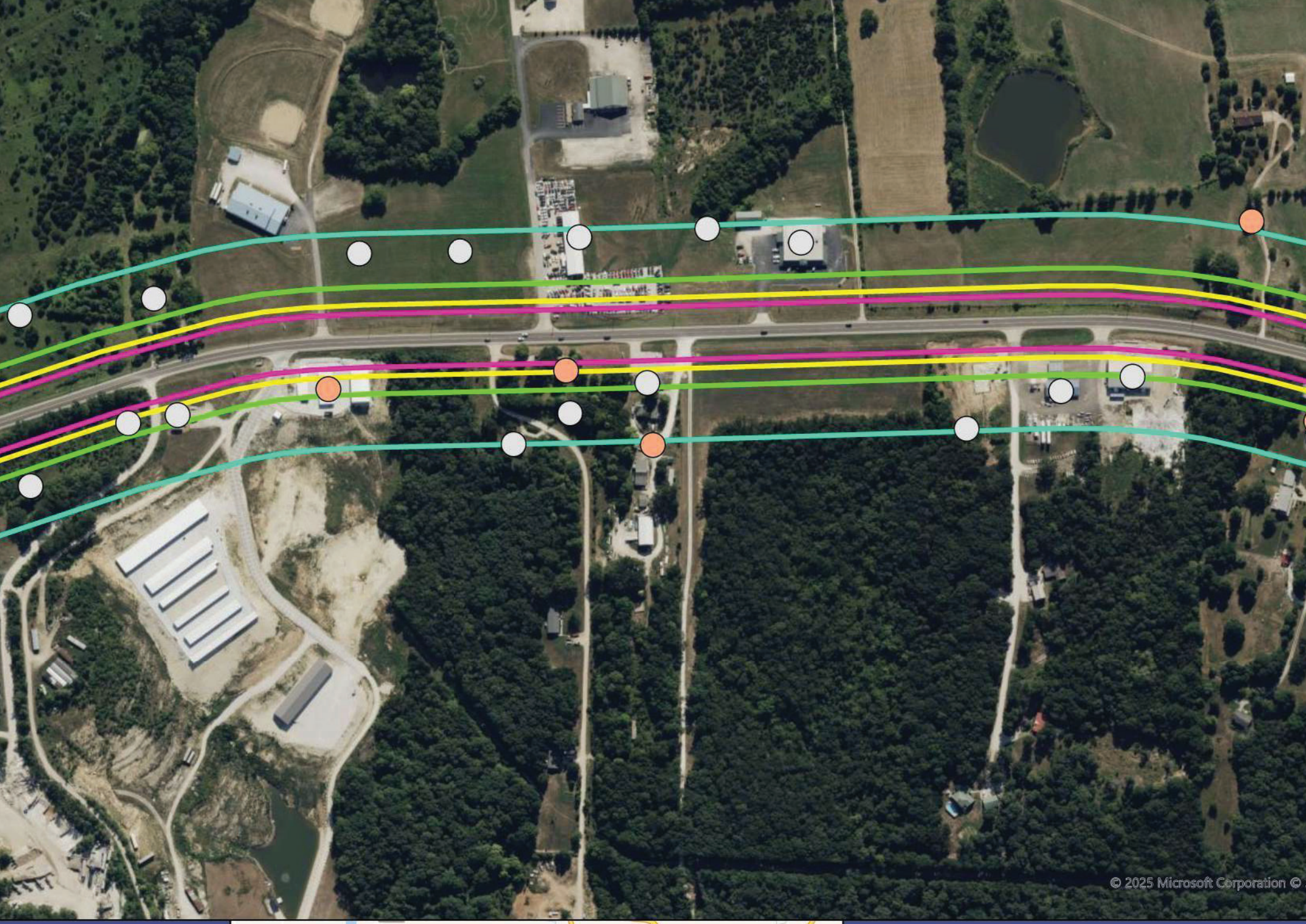

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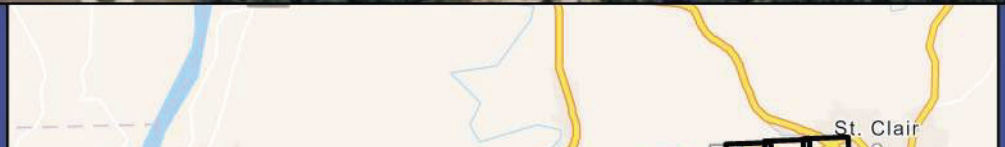

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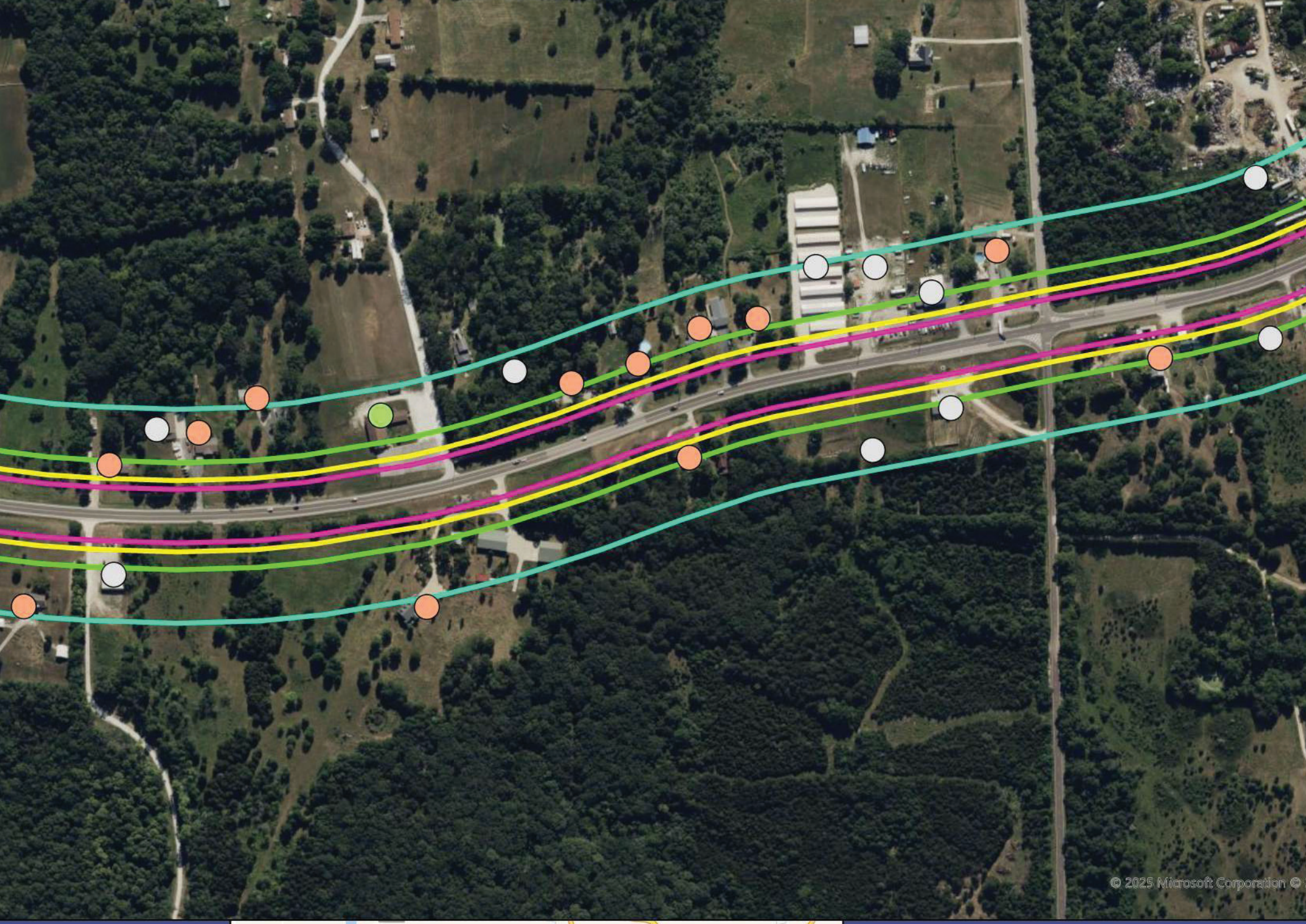

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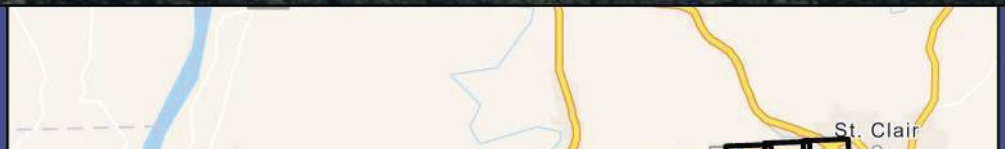

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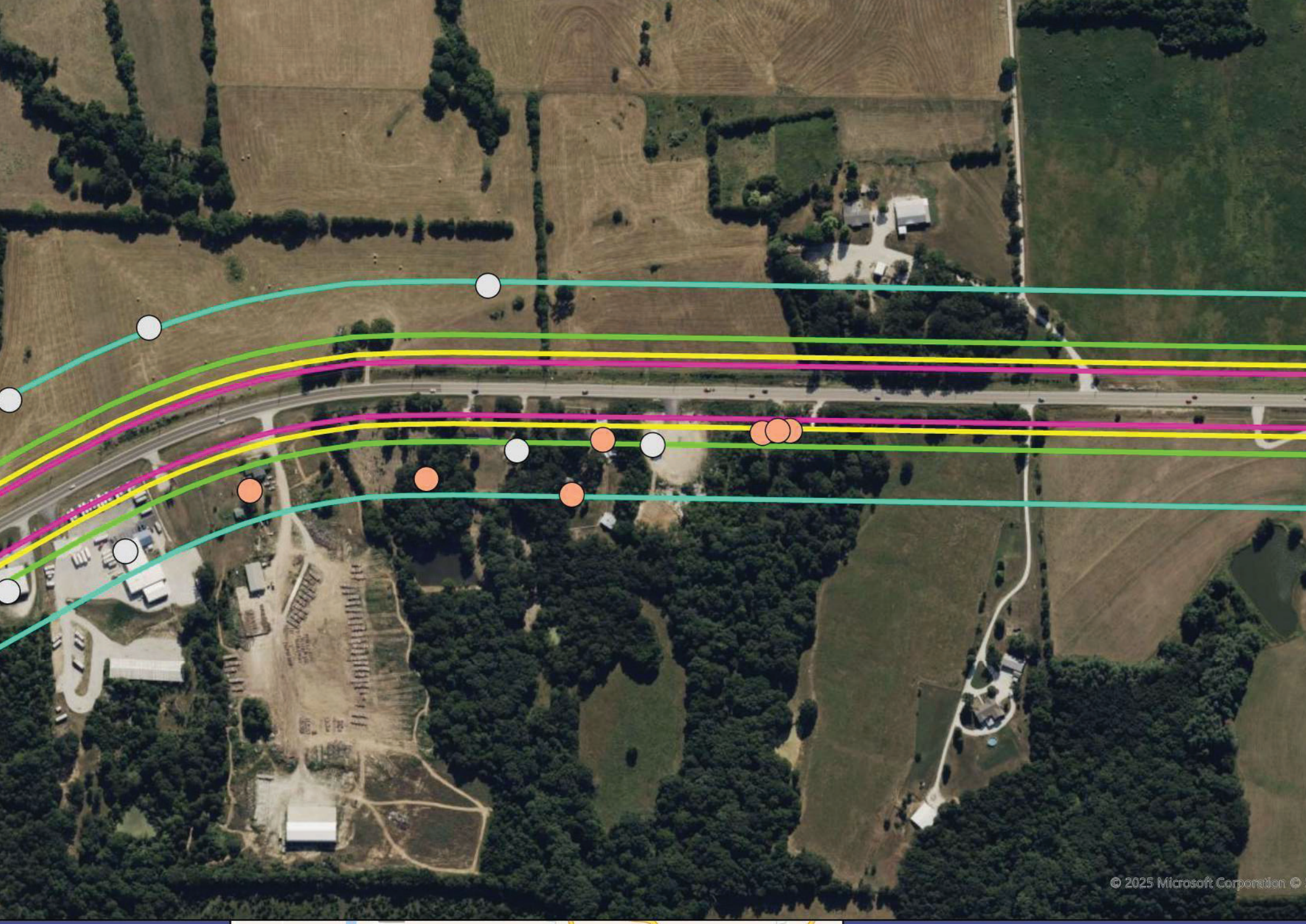

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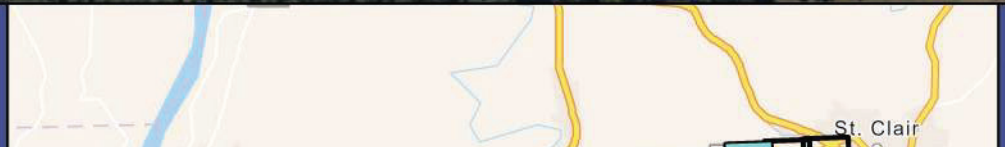

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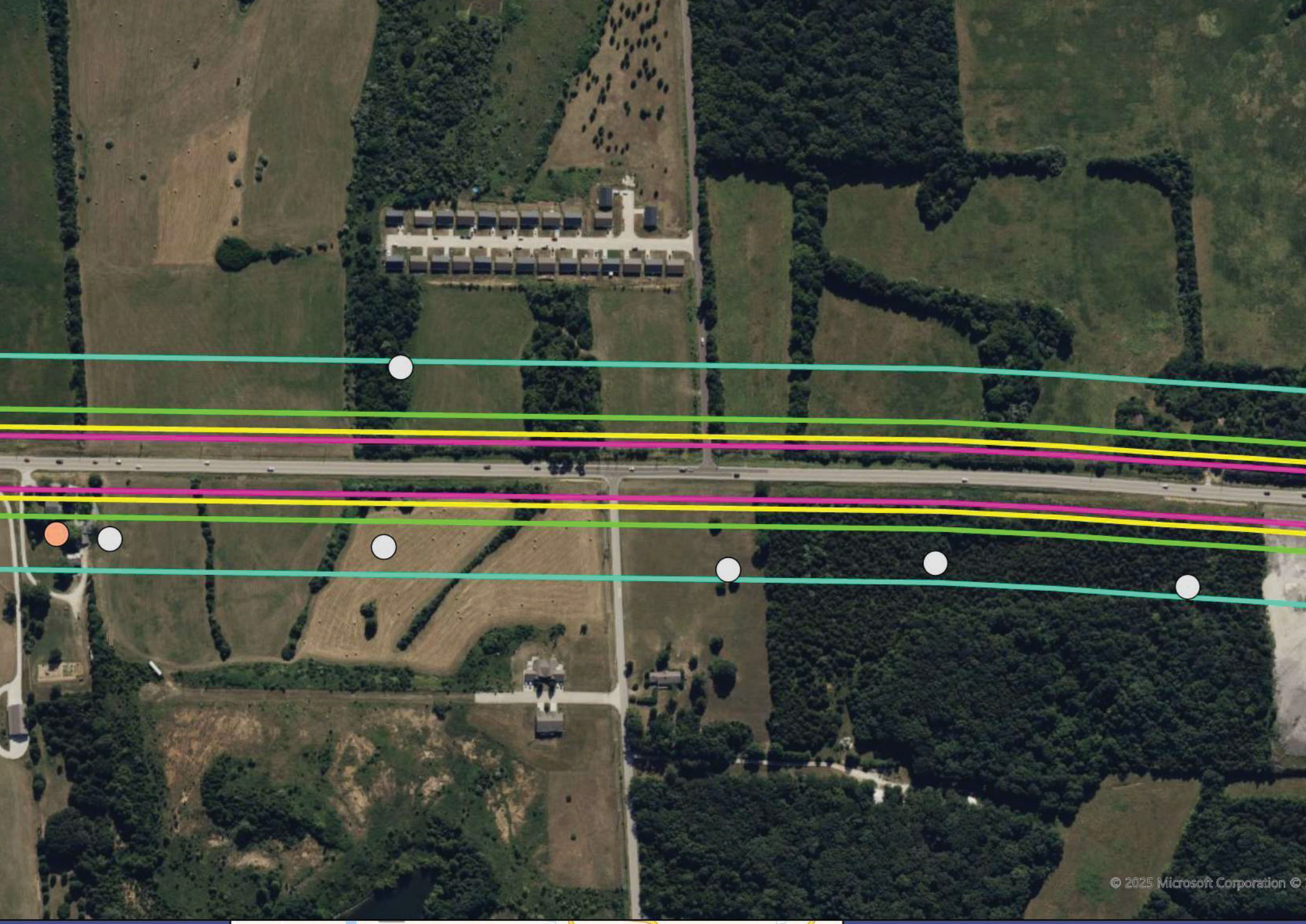

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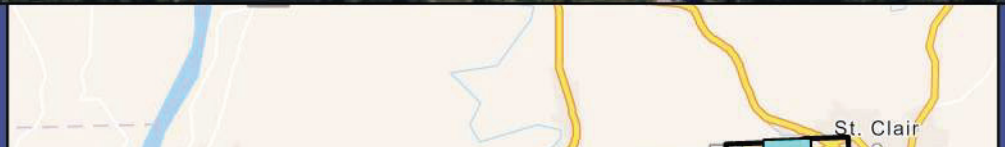

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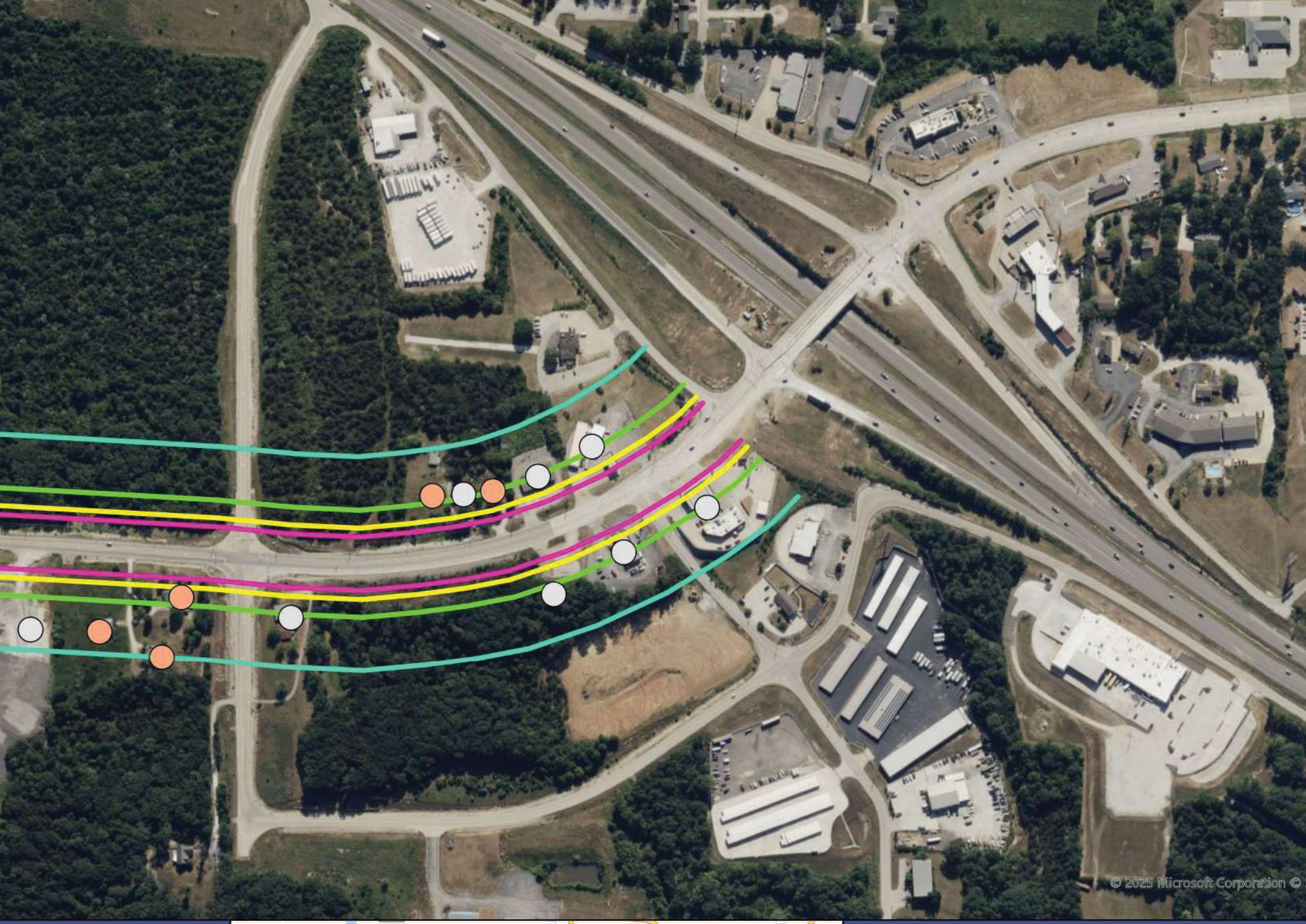

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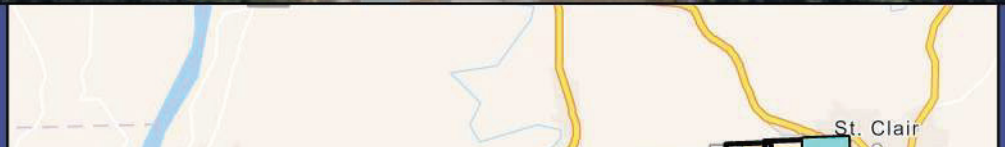

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Appendix P: Concept Plans [Not Included]

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Indicates Sections to be included in Final Conceptual Study Report

Appendix Q: Cost Estimate [Not Included]

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Indicates Sections to be included in Final Conceptual Study Report

Appendix R: Project Prioritization [Not Included]

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Indicates Sections to be included in Final Conceptual Study Report

Appendix S: Public Engagement Supplemental Documents

i. MoDOT Route 47 Newsletter
ii. Public Meeting #1 Summary
iii. Public Meeting #2 Summary
iv. Community Advisory Group (CAG) Meeting #1 Summary
v. Community Advisory Group (CAG) Meeting #2 Summary
vi. Community Advisory Group (CAG) Meeting #3 Summary
vii. Conceptual Study Listening Sessions Memorandum

DRAFT

i. MoDOT Route 47 Newsletter

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MISSOURI ROUTE 47 CONCEPTUAL STUDY IN FRANKLIN COUNTY

A Note from the Project Team

Thank you for your engagement with the Route 47 Conceptual Study. Your input has been invaluable through this process. In this newsletter we would like to share with you what we have accomplished to-date along with what steps are still to come. We look forward to completing the Study and taking the next steps to improve Route 47.

As you may recall, this study is part of the Statewide Transportation Improvement Program (STIP) and MoDOT has budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in FY2028.

MoDOT is conducting a study to identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, and Condition of Existing Infrastructure. Stakeholder input is an important component to this phase of the project. As of Fall 2025, the project team has conducted the following engagement Activities:

- 1 Public Survey
- 1 Public Meeting (9/24/2024)
- 3 Community Advisory Group (CAG) meetings
- 12 Stakeholder Listening Sessions

While each stakeholder has their own transportation challenges along Route 47, the consensus is the communities of Washington, Union and St. Clair are supportive of making improvements to the corridor.

As we move forward, we look forward to gathering additional input on the concept alternatives from the public at the 2nd Public Meeting on October 9, 2025. We hope to see you there!

Aaron Groff,
MoDOT Project Manager
Franklin and Jefferson Counties

Jordan Dalaviras,
MoDOT Area Liaison - Franklin and Jefferson Counties

Project Goals

Based on stakeholder input, the project team has established the project goals. In addition, the Community Advisory Group has helped prioritize the goals. This helps the project team, in addition to engineering factors, determine the best alternatives to help meet the needs of the community. The Prioritized goals include:

Increase safety	**Reduce congestion**
Balance needs for local access, mobility, and economic growth	**Increase reliability of north-south regional travel**

What We've Heard

Public Engagement

To kick off the study, MoDOT hosted Public Meeting #1 on September 24, 2024, along with a public survey. The purpose of the initial meeting was to provide an overview of the study, share initial safety and traffic information and allow the community to provide input. The public survey was available at the public meeting and available online until October 8, 2024, for public meeting attendees and the general public to help understand how the community uses and views the Route 47 corridor.

- Approximately 160 people attended the in-person public meeting
- 14 comment forms were submitted via a written comment form, the MoDOT website or email
- 190 public survey responses received

In general, the public is in support of improvements to Route 47 to increase safety and address congestion. There were many comments about the need for turn lanes. One frequently cited location is the Route 47/U.S. 50 intersection; attendees noted it is heavily congested and causes backups 2+ miles north of Rte 50.

It was also frequently noted that there is concern about the sight distance problem for those that are pulling onto Route 47. There are many curves and hills, and it is dangerous to pull out of existing driveways as drivers are unable to see traffic coming.

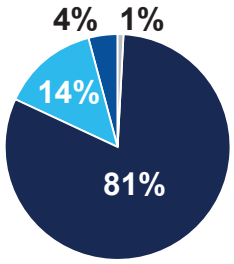
Stakeholder Listening Sessions

MoDOT hosted a series of Listening Sessions throughout the Study to share information about the Route 47 Conceptual Study and gather input from targeted stakeholders about how their organizations use Route 47 between Washington and St. Clair, their perceptions and understand their concerns about the corridor. Key stakeholders included but were not limited to:

- **MO State Parks/Rock Island Trail**
- **Trailnet**
- **Scenic Regional Library**
- **UPS**
- **MO Baptist Sullivan Hospital**
- **Septic Services/ Wunderlich Surveying**
- **Little Bears Daycare**
- **Riverstone Quarry**
- **First Student Busses**
- **QuikTrip (St. Clair)**
- **3R RV**

Public Survey Response

How much of a concern is SAFETY to you on Route 47 in Franklin County?



LEGEND

Very Concerning
Not Concerning
Somewhat Concerning
Not Sure

*The public survey was conducted in the fall of 2024 to gather input on the Route 47 corridor between Washington and St. Clair.

Community Advisory Group (CAG)

The Community Advisory Group (CAG) is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members are important as they represent their organizations and their constituents.

The CAG helps the project team understand and address community needs and concerns throughout the study. This has been crucial through the development of potential improvement alternatives for Route 47.

In addition to gathering input on the project goals, the CAG has provided input on concerns throughout the corridor and the alternative concepts.

Corridor Capacity

The CAG was presented potential capacity corridor options, such as a four-lane option, three-lane that includes one lane in each direction and a middle turn lane, and 2-lane options. The lane capacity may be different throughout the corridor, based on safety and congestion at that specific location. Additional lanes are not recommended through all sections of the MO-47 corridor.

MO 47 / US 50

The CAG and the public stated the U.S. 50/47 Intersection was a key location that needs improvement. The current intersection experiences backups and heavy congestion. It is also where there are safety concerns due to crashes. The CAG reviewed several design alternatives at the second and third meetings. During the third CAG meeting, three design alternatives were presented that included:

- *Southwest Realignment* - A realignment of MO-47 from north of Sawmill Rd. to the existing western intersection of MO-47 and U.S. 50.
- *Diverging Diamond Intersection (DDI)* - Utilizes cross over intersections similar to a Diverging Diamond Interchange (DDI).
- *Continuous Flow Intersection (CFI)* - Shifts the U.S. 50 eastbound to MO-47 northbound left turning traffic to the opposite (north) side of oncoming westbound traffic west of the MO-47/US-50 intersection, allowing simultaneous left turns and through movements to reduce delays.

Generally, the CAG noted they were not in favor of a Diverging Diamond Intersection (DDI). The Continuous Flow Intersection (CFI) concept alternative was overwhelmingly supported by the group. This concept improves safety, congestion, as well as limits the right-of-way and environmental impacts and is the most budget friendly. It was also noted that the CFI design may accommodate the Southwest Realignment alternative concept in the future, if needed. The Southwest Realignment of MO-47 was viewed less favorably due to the anticipated right of way impacts, higher construction cost and lesser benefit to traffic operations. The public can see the U.S. 50/47 Intersection Alternative exhibits at Public Meeting #2 on October 9, or the exhibits will be available online on October 10 at the project website (www.modot.org/Future47).

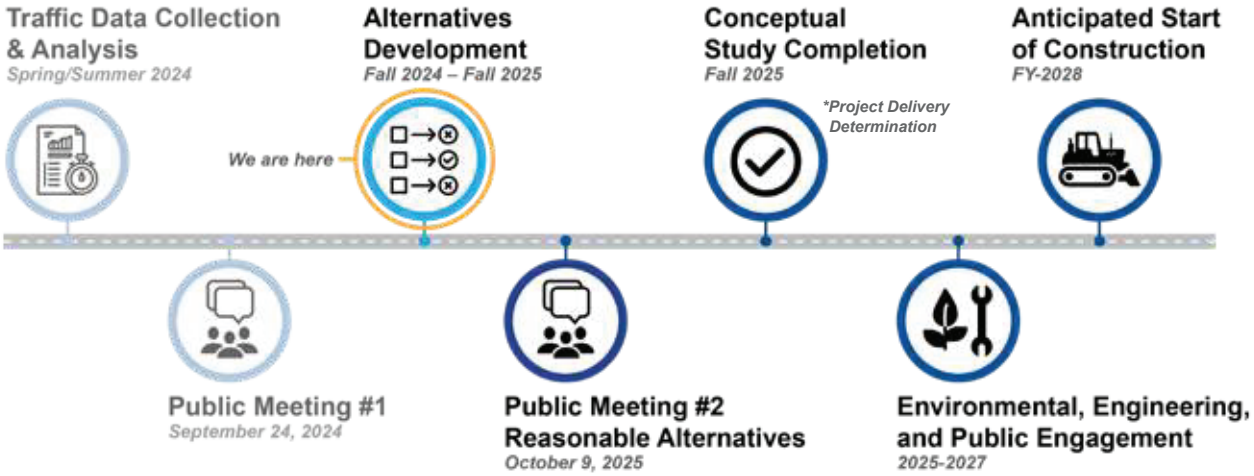
Intersections

Additional improvements may be considered at intersections throughout the corridor. Improvements can include signalized or roundabout intersections, turn improvements, additional lanes, access management, etc. There is support from the CAG to make improvements to enhance safety and congestion. The CAG noted to look at each intersection and do what is best for that specific area. The CAG expressed support for roundabouts in conjunction with additional design and strategy to lower the posted and travel speeds below the 55mph along many portions of MO-47 to help improve safety along the corridor.

Project Timeline

The project kicked off in the Spring/Summer 2024 and anticipates completion of the Conceptual Study in late 2025. Stakeholder engagement has been held throughout the course of the study.

A second Public Meeting, is planned for October 9, 2025 from 3:30 - 6:00 p.m. at the Union Community Center, 1329 Union Ave, Union, MO. The purpose of the meeting will be to present alternative concepts and intersection examples to the public and gather input.



Next Steps

Following Public Meeting #2 (October 9, 2025), the project team will document public feedback and further develop the concepts and cost estimates before moving into Preliminary Design next year. The next phases of the project will include preliminary, right of way and final plan engineering design, additional public engagement, along with environmental investigation. These tasks will occur before construction can begin in Fiscal Year 2028, when the $78.1 million dollars in funding for this project is available.

Project Contacts

You may submit questions and comments to:

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314-453-5021

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314-453-1876

Future47@modot.mo.gov

www.modot.org/Future47

1-888-ASK-MODOT (275-6636)

ii. Public Meeting #1 Summary

DRAFT

Missouri Route 47
Conceptual Study
Public Meeting #1 Summary DRAFT
September 24, 2024

Overview

Figure 1: Public Meeting Attendees

The Missouri Department of Transportation (MoDOT) hosted a public information meeting on Tuesday, September 24, 2024, from 4:00 to 7:00 p.m. at the Union Community Center in Union, Missouri to share information about the Route 47 Conceptual Study and gather input.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

The purpose of the initial meeting was to provide an overview of the study, provide initial safety and traffic information and allow the community to provide input. The in-person event was an open house style meeting with no formal presentation. Participants were invited to stop by anytime to speak with the project team and provide input. For those unable to attend the in-person event, the meeting materials were posted on the project webpage found at www.modot.mo.org for the public to view at their discretion. In addition to the public meeting materials, the public survey was available for two weeks following the meeting to collect public input.

Along with Public Meeting #1, MoDOT conducted a public survey that was available from September 24, 2024 to October 8, 2024, for public meeting attendees and the general public to help understand how the community uses and views the Route 47 corridor.

Key Takeaways

Franklin County has an engaged community that is interested in this project. The meeting opportunities had the following participation counts:

- 143 people signed in at the in-person public meeting.
- 160 people were manually counted attending the in-person meeting.
- 10 attendees left written comment forms and four submitted via the MoDOT website or email, which are included in **Appendix B: Received Comments**.
- A total of 190 responses of the survey were received, including 13 that completed a paper survey at the meeting; **Appendix G: Public Survey** includes the results.

In general, the public is in support of improvements to Route 47 to increase safety and address congestion. There were many comments about the need for turn lanes. One frequently cited location is the Route 47/U.S. 50 intersection; attendees noted it is heavily congested and causes backups far down the road.

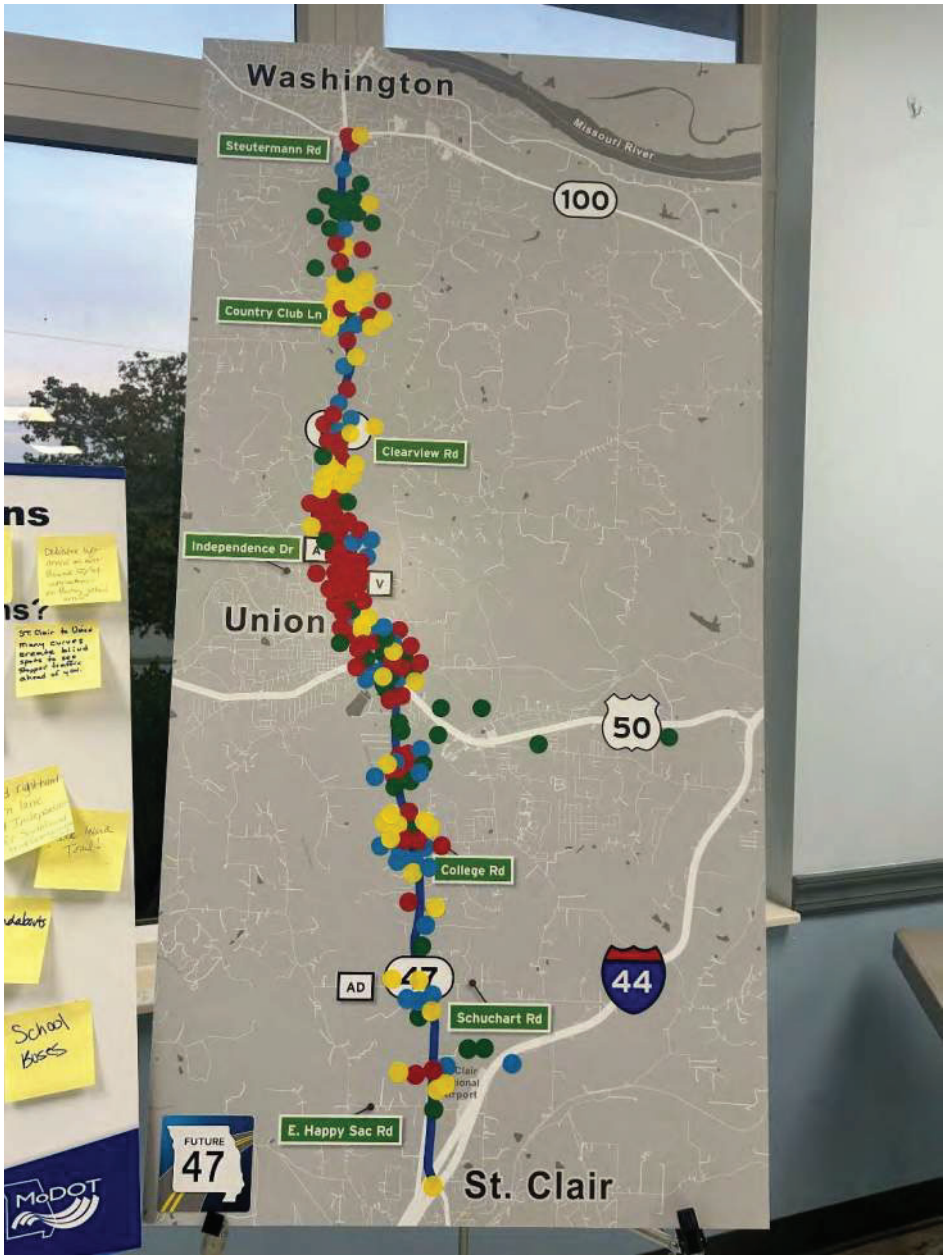
It was also frequently noted that there is concern about the sight distance problem for those that are pulling onto Route 47. There are many curves and hills, and it is dangerous to pull out of existing driveways as drivers are unable to see traffic coming. Another noted location is the intersection of Route 47 and Independence Drive, where a southbound turn lane was repeatedly requested.

Common Comment Themes

At Public Meeting #1, attendees had the opportunity to participate in an interactive input activity, as shown in **Appendix F: Public Meeting Fact Sheet and Exhibit Boards**. In this activity participants were asked to identify locations where they have the most traffic and safety concerns, where they see potential growth opportunities they see in the study area, and any other input they would like to provide. The image to the right is the results from the dot activity. Red dots identify safety concerns, yellow indicates traffic/congestion concerns, green shows where the community sees potential growth opportunities and blue is “other”.

As shown below, dots of all colors line the entire corridor but the heaviest concentration is seen in the red and yellow dots surrounding the Route 47/U.S. 50 intersection to the north. People verbally communicated that traffic backs up to the north due to the intersection. Additional pictures and details are included in **Appendix F: Public Meeting Fact Sheet and Exhibit Boards**.

Figure 2: Dot Exercise



Comments provided in the other board include, but are not limited to:

- Turn lanes are needed
- Railroad Bridge
- Uphill with semis
- Sight distance with the curves and hills
- School bus location

In addition to the dot exercise, the project team had roll plot exhibits, as shown in Appendix D: **Roll Plot Scans**, to understand how the community accesses properties and businesses and listen to community concerns. The roll plot comments where very similar to the activity above; themes include but are not limited to:

- Turn lanes are needed
- Railroad Bridge
- Uphill with semis
- Sight distance with the curves and hills

These themes aside; there were a few comments with regard to specific property or access concerns along the corridor.

Meeting Promotion

Prior to Public Meeting #1, residents, media outlets, and news stations were notified about the public meeting through press releases and/or emails sent from the MoDOT St. Louis District Office, which are shown in **Appendix C: Media**. Public Meeting #1 was also promoted via the project webpage at www.modot.org.

Figure 3: MoDOT Social Media Post

Media

The Emissourian, located in Washington, Missouri, provided news stories in relation to Public Meeting #1. An article ran prior to the Meeting #1, helping with the promotion, as well as one after, which provided the public survey link. Both articles are included in **Appendix C: Media**.

- 9/29/2024 - Emissourian – *Highway 47 meeting attracts large crown in Union*
- 9/13/2024 – Emissourian – *Open house meeting on Highway 47 improvements*

Next Steps

Following Public Meeting #1, the project team will review traffic data analysis and public input and begin to develop improvement alternatives. A second public meeting is tentatively planned for early 2025 and the Conceptual Study will be completed in the summer of 2025.

Comment Summary

A list of submitted comments, ver batim, and topics are listed below and are located in **Appendix B: Received Comments**. Comments were submitted by written comment form at the meeting and submitted via MoDOT email.

TOPIC	COMMENT
Traffic, Commercial traffic	Our house sits extremely close to Highway 47 as is and shakes when semi trucks come by. These vehicles drive exceedingly fast and over the speed limit every time they pass our house. There is absolutely no law enforcement to deter drivers from excessive speeding, which causes a lot of car crashes. It is truly the wild west of driving on this part of Highway 47. Our house sits within a 100 feet of Highway 47. The last thing we want, is an expansion of the highway that encroaches on our house in land even more than what it already does. With the way our house sits, our bedroom is at the very front of the house and we already fear that a vehicle or semi will crash in front of our house and kill us. I am against widening the Highway. I invited you to come visit us and watch the vehicles drive pass our house for a day just to see how wild they drive and encourage you to setup cameras to watch them at night.
Congestion	For 33 years starting in 1980 until 2013 I traveled highway 47 from Union to Washington to drive to work each day. When I first started the traffic was much less that it is today. Having been retired for 11 years now, I dread traveling highway 47 during "Rush Hour Times"--6-8 A.M. and 2:30-5:00 P.M. People are all in a hurry today and most are not courteous to let someone in off a side road not controlled by a traffic light. At one time heavy traffic was only during the major rush hour times but now anytime of day there is always traffic on highway 47. During the "Rush" it is bumper-to-bumper stop and go movement--Heaven forbid there be an accident. I am glad the Union double lane roundabout Highway 47-50 interchange was dropped. That was a wild idea without a lot of thought on the outcome of such a plan. The only way to solve the problem is to have highway 47 overpass Highway 50 with exits to highway 50. The biggest problem with that interchange is the combination of the railroad tracks and the Bourbeuse River to add two more parameters to the problem. I am thankful you allowed me to express my opinion on the MoDot Route 47 open house. It was nice talking to some receptive ears.
Traffic, Turn-lanes	We honestly need a turning lane for the daycare on 47 SB right up from Hwy 50. I live right next to this business and there are so many people getting rear ended. Also, Missler Oak Furniture is moving to the old skating rink and that will be another heavy turning area we will have. Cars are passing and traveling at high

	speed past our house all day long. I also leave for work at 4am and have to wait 2-5 minutes everyday just to turn right out of our driveway.
Traffic	I know there is a lot of local money pushing for some plan to keep the existing route 47 where it is. In my honest opinion, that simply will not work, the only sensible route is to straighten 47 at the 50 interchange and build another 4 lane bridge South of 50, across the Bourbeuse river. I know it will reduce the traffic flow past some existing businesses but in the long run it may actually increase their business, simply because it will be easier to get in and out of their entrances. highway 47 between Union and Washington is fairly straight with enough right of way in place to widen it to 4 lanes. Highway 47 between Union and Saint Clair, is a whole different story, it needs to be completely rerouted and straightened, away from all of the existing homes at least as far as College Road. Just my thoughts as a lifelong resident of Franklin County.
Turn-lanes	Hwy 47 at Union needs to be a straight thru highway running over top of Hwy 50 + Bourbeuse Road at the same time with on + off ramps to Hwy 50 from Hwy 47. Hwy 47 needs more turn lanes at each intersection.
Turn-lanes	I believe that the best solution to fixing the traffic issue on 47 is to create rt & left turn lanes all along Rt 47. This allows people who need to turn either direction to allow thru traffic to flow thru to either Washington or St Clair. The 47 to St Clair you could put a center lane for people to turn. Turn lanes from past the RR bridge to Washington would help eliminate congestion. Some streets like Melinda Dr need signs going from either direction to let people know it's coming up. For further discussion, call me.
Safety	Need a way around an accident. Road is usually closed. This creates a nightmare trying to find a way around. If there are four lanes, maybe can move accident over instead of closing road. Left turn lanes would help. Maybe faster light cycles. Seems sitting for light when traffic is clear. Big trucks have trouble with roundabouts. Nucleus of roundabout is too small.
Safety	I live off Melinda Drive between Washington and Union. Going North on 47 making a left turn into Melinda Dr. many cars get rearended. This is a safety concern. Ask MoDOT for sign with flashing lights but was told no.
Traffic, Safety	Coming out to 47 from Country Club Ln in the morning about 7:30 is very congested. Trying to make a left onto 47 is very dangerous sometimes sitting for 10 minutes to get a break in traffic. Maybe a traffic light would help at this time.
Safety	We are very much in favor of 4 lanes between Washington and St. Clair. Every year there is a death due to traffic accidents not to mention the safety of children who depart the school buses along the corridor. You may start to widen 47 tomorrow. Thank you. How about a brand new 47 alongside old 47? Oh well.

Safety, Access Management	The less separate "entry points" on the corridor the better. Can we filter some residences/businesses and direct that traffic to a single entry point that is safer. Crossing 2 lanes of traffic to get access to Hwy travel in opposite directions is recipe for accidents. Hwy T, Hwy V, and Hwy 100 is good example of this bad concept. Love roundabouts but the speed + volume of cars in this stretch (plus 18 wheel trucks) is NOT conducive IMO
Pedestrian Accommodations	Scenic Regional Library in Union was built East of Hwy 47. The High School, Middle School, a public elementary, and the parochial elementary are West of 47. The majority of senior housing is just West of Independence and 47 intersection. At a minimum we need sidewalks, a crosswalk, and a walk light. Ideally a pedestrian bridge. You need to accommodate wheel chairs, walkers, and bicycles.
Safety and Pedestrian Accommodations	I want you to find money in this project for public safety and education! I was concerned when Scenic Regional Library relocated to the side of Hwy. 47. In this widening project, please consider that the high school, middle school and an elementary school are in the west side of the highway and the library is on the east side. Directly across from this busy intersection is the industrial area with trucks constantly turning. The "Senior Center" and the majority of senior housing are also immediately west of the intersection. Is it possible to have some sort of pedestrian bridge or at least a well defined crossing for wheelchairs, walkers, and bicycles.
Funding and Safety	Why are they doing another study? If they can't see the problem now they must be blind. How much more tax payers money are they going to waste on study's. Ask anyone who drives it daily and they will tell you how bad it is. Hwy 47 sucks.

Appendices

- Appendix A: Sign-In Sheets
- Appendix B: Received Comments
- Appendix C: Media
- Appendix D: Roll Plot Scans
- Appendix E: Project Team Notes
- Appendix F: Public Meeting Fact Sheet and Exhibit Boards
- Appendix G: Survey

Missouri Route 47
Conceptual Study
Public Meeting Summary
Fall 2024

Appendix A: Sign-In Sheets

PLEASE SIGN IN

Name	Organization	Email	Phone
Gary Gerner	Land owner	nverhome2@yahoo.com	636-358-4959
Barbara Horter	citizen	bLhorter@gmail.com	636-649-8422
MARK WESSELS	City of Washington	rawess3@gmail.com	636-667-0025
Mary Jo Straatmann	Franklin County + Union Resident	maryjoaghti.net	636-584-3125
JOHN SIMMONS	State Rep Dist 109	johnsimmons954@gmail.com	—
Kevin Eckelkamp	Landowner	Lizeck44@msn.com	314-276 4547
Kathy Rust	Citizen	rustmom@gmail.com	636-742-3345
NORBERT WUNDERLICH	LAND OWNER	MLWNJW@GMAIL.COM	636-[redacted] 239-6085
Mike McClain	citizen	condomyla@yhti.net	636 583 7702
Jim Alff	CITIZEN	jtdra@sbcglobal.net	314-520-5272

PLEASE SIGN IN

Name	Organization	Email	Phone
Gordon Mehler	—		636-744-2753
Dan Holdmeyer	taxpayer	odotwo@gmail.com	440-708-8860
Rick Hankins	Taxpayer	r.hankins1@charter.net	636 3077249
Jeni Thiekeubaumer	taxpayer		636-583-5981
Doris Malone	resident	rndmalone@gmail.com	314-452-2258
Paul Kamper	Owner	— —	314.688-9220
Robert Miller	Modot		636-628-8841
Clay Zigler	resident	Ckeyzigler@gmail.com	636-357-5934
Darren Lamb	City of Washington	dlamb@washmo.gov	636-390-1000
Aaron Griesheimer	" "	agriesheimer@washmo.gov	636-390-1004

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Ross MALONE		RNDMalone@att.net	(636) 583-4768
Jeff Halterman		jthalt@yahoo.com	636 388-2259
Kelly Grebhard		Kanowak@live.com	636 795 5286
Richard Marchand		Rmarchand0311@yahoo.com	636 667-7198
Jacob Heitman	MoDOT	jacob.heitman@modot.mo.gov	314-223-1041
STEVE LINDEMANN		Steve.pharmland@me.com	636-584-3486
JONATHAN ZIMMERMAN	CITY OF UNION	CITYADMINISTRATOR@UNIONMISSOURI.GOV	636 583 3600
James Schneider	City of UNION	devdirector@unionmissouri.gov	636 388-5757
Chad Briggs	City of Washington	Cbriggs@washmo.gov	636-221-1818
Jeff Pathe	City of Washington	jeffpathe@gmail.com	636-369-1343

D

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
CHRIS DIECKHAUS		christineincc@smo.com	636.583.4579
JAMES DIECKHAUS		63084jmd@att.net	636.583.4579
WM F. DEWERT		wdewert@SBCGLOBAL.NET	636-234-5269
Carl Ridder		carljane64@gmail.com	314 277 2802
Brian Dukleth		bdukleth7@gmail.com	314 397 0707
DENNY FRITZ		troop3219@yahoo.com	636.222.0910
DARRYL HOLTMEYER		dholtmeyer3@gmail.com	636-390-1871
JON DERNER		jjderner@hornershifrin.com	314-808-2400
Dave Bean		dave.bean.75@gmail.com	314-609-1859
Dorothy Davis		doneyd@Yahoo.com	314-799-7074

(10)

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Doug Hagedorn	City of Washington	dhagedorn@washmo.gov	636-~~390~~-1000
Joe + Alice Smith		msmittyu@Aol.com	314-503-0743
Gary Kallsday		G44657@GMAIL.COM	636-584-8526
BILL STRAATMANN	WASHINGTON TRANSPORTATION CHAIRMAN	BILL.STRAATMANN@GMAIL.COM	636-239-4775
Dayna Williams		C and S Investment Properties ~~dayna.williams~~@gmail.	314-602-7706
Bethany Herron		bkherron13@gmail.com	636 259-6911
Vaughn Wampler			636-234-4953
Charles Klabunde		vcharlesk@gmail.com	719-229-8764
Linda Klabunde		CSLWPS4@Outlook.com	719-963-7197
Rhonda M Woolery	self	rhonda1423@hotmail.com	573-680 6624

PLEASE SIGN IN

Name	Organization	Email	Phone
Jerome Kleekamp			314 920 3368
Sandy & Wayne Groff			314-630-6998
Mike Kleekamp			636-221-3030
Dave Heck			314-532-4519
Len Benter			573-268-7020
Elaine Menke			636-667-7527
Patty Love			314 915 3520
Ed Gebhard			636-584-5700
Dave Hagg	Septic Services, elve	davef@SepticServ.com	(636)583-5564
RAY FRANKENBERG II	DFA	rfrankenberg@RFAEHL.com	636-239-4251

PLEASE SIGN IN

Name	Organization	Email	Phone
Lee Hinson		~~hinson~~ hinsondrm@gmail.com	
Mark W. Berger		markwberger@gmail.com	
Johanna Klipper		fleerj5@gmail.com	
Jeanne Lischer		jlischer90@gmail.com	
Jim SEE		JeepGuy00@ATT.NET	
Shannon Webb		shwebbs4@gmail.com	
Brian Pickard		bpickard25@att.net	
Randy Stroede		RStroede@Att.Net	
KENNETH BRAUTIGAM		kjabrautigam@att.net	
Duane Kiewitt		cliffdk@sbcglobal.net	

*

PLEASE SIGN IN

Name	Organization	Email	Phone
Jane Curtman	land owner	teacherjane65@yahoo.com	636 584 3526
Jimmie Reynolds	3RRV Service Center	Jreynolds@3RRV.com	636-583-2244
Lucas Reynolds	3RRV Service Center	LReynolds@3RRV.com	11
John Generally	Land Owner	john1generally@gmail.com	636-259-6210
Tim Porter	First Student	Tim.Porter@firststudentinc.com	314-600-1026
MacDonald Cognata		djcognata@gmail.com	636-239-4848
Mary Lynn Eckert	land owner	minnie5275@yahoo.com	636-583-5242
Sheila Kiewitt	landowner	skiewitt@sbcglobal.net	636-234-8435
Charles Stankovic	City of Washington	Cstankovic@washmo.gov	636-390-1014
Alan Behr	City of Washington	ABehr@washmo.gov	636.390.9946

PLEASE SIGN IN

Name	Organization	Email	Phone
Connie + Herman	Grimes	cg@grimestx.com	314-941-0646
Stacie Elias	N/A	sandb5135e@gmail	636-541-2418
Tiffany Thebeau	Hwy 47 Carts + Trailers	hwy47carts@yahoo.com	636-584-0911
David Bailey		dave5565@icloud.com	
Eugene R Glatt	Union Special Road District Commissioner		584-5772
John Doepke			314 737-8297
JEFFREY HEGGER		AP HEGGER @ HOTMAIL	636-584-2500
JOHN JOHNSON		JNJ COWBOY @ YAHOO.COM	314-223-5504
Armin Klamma		—	636 583 6477
Juanita Youngberg		rayjky39@gmail.com	480-235-5354

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Brad Banderman	MO House of Rep Dist 119	Bradbanderman@house.mo.gov	
Wayne Kleekamp		JeanKleekamp@gmail.com	636-582-0722
Linda Prince			
Kim Colter MD		coltmenk@hotmail.com	314-607-0971
Sharon Viola			
Silvio Viola Jr.			
Tim + Sharon Thebeau		thebeaubuilders@gmail.com	636-234-4708 636-284-4707
J.D. KELLEY	CITY OF UNION	engineer@unionmissouri.gov	636-583-3600
Herman B Grimes	City of Union		
Diane Disbro		bibliodiane@yahoo.com	

*

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Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Debbie Kamper		dlkamper55@gmail.com	3146302293
Steve Acely			636.584.2465
Jacob Geeley			636-259-0470
Terry + Roberta Marsch	Resident	trmarsch60@charter.net	636-584-3649
Ray Youngberg	Resident		6367441122
Sandy/Dennis Bailey	Resident		636-583-6665
Tom Gassner	Resident	gassner@yhti.net	314 956 0795
Allison Hatfield	resident	threesareluckyagmail.com	6364329623
MIKE COULTER	WASHINGTON CITY COUNCIL	MSCOULTER61@GMAIL.COM	636-359-1253
DAVE HALL		dhall48@charter.net	6363990531

(12)

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Dolores Jeffries	Citizen	dhjeffries79@gmail.com	314 602 9011
Jennifer Henderson	Citizen	jenandlou7@gmail.com	
Robert Septon	CITIZEN	NONE	636-583-4922
David E Lotz			5TC
Elena Hoard			
L. B Echelkamp	Citizen		
Bonnie Echelkamp	Citizen		
Geoff Folsom	Missouri	folsomg@emissouri.com	
Charles and Gloria Juedemann	citizens	radios@charter.net	
Brandon Adams	citizen	draggirl1966@yahoo.com	636-584-9043

PLEASE SIGN IN

Name	Organization	Email	Phone
Stuart Lindemann		StuartLindemann@gmail.com.	636-584-8765
PATRICK WILSON	PARALLEL TOOL & DIE, INC.		636 583 8786
Wendy Griffi	Home owner	WD61988@yahoo.com	314/630-5714
GREG Hohaeock	Home owner	500 BRAEBURN WASH	317-808-1221
JOE Holtmeier	Washington City Council	jholtmeier@washmo.gov	636-239-6473
Kim Peffermann		scarlettohara1974@hotmail.com	816-550-0369
JacqueLine Ward	jacquemward@gmail.com	~~Visitor~~ Resident	636-303-2617

*

(7)

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
John Williams	Mistletoe Oak Furniture	millersoakfurniture@gmail.com	636-583-7303
Nathan Matchell		bignate1027@gmail.com	636-388-3330
Rick Berchek		rberk@outlook.com	314-724-0694
Michael Kuenzel			636-236-7849
Stephanie Groff			314-799-6004

*

PLEASE SIGN IN

Name	Organization	Email	Phone
Marc Hndonoff	HDR	Marc.Hndonoff@HDRINC.com	314-265-1931
[illegible]	—		
Anne Ward		ward anne0605@gmail.com	636-234-7848

(3)

Public Meeting #1
September 24, 2024

PLEASE SIGN IN

Name	Organization	Email	Phone
Chris Fischer		fischerspilotcarservices@gmail	636-584-3391

*

(1)

Missouri Route 47
Conceptual Study
Public Meeting Summary
Fall 2024

Appendix B: Received Comments

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

Scenic Regional Library in Union was built East of Hwy 47. The High School, Middle School, a pubic elementary and the parochial elementary are West of 47. The majority of Senior housing is just West of the Independence and 47 intersection. At a minimum we need side walks, a cross walk and a Walk light. ideally a pedestrian bridge.
You need to accomodate wheel chairs, walkers, and bicycles

Your Name: Deuetta M Davis
Address: 351 Vienna Woods
City, State, Zip: Beaufort, MO 63013
Phone/Email: 314-799-7074 Doueyd@Yahoo.com

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

The less separate "entry points" on the corridor the better. Can we filter some residences/businesses and direct that traffic to a single entry point that is safer.

Crossing 2 lanes of traffic to get access to Hwy travel in opposite direction is recipe for accidents. Hwy T, Hwy V and Hwy 100 is good example of this bad concept.

Love roundabouts but the speed & volume of cars in this stretch (plus 18 wheel trucks) is not conducive IMO

Your Name: Rep elect Justin Simmons
Address: 954 Cobblestone Dr
City, State, Zip: Washington Mo 63090
Phone/Email: 314-401-9042

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

We honestly need a turning lane for the daycare on 47 SB right up from Hwy 50. I live right next to this business and there are so many people getting rearended. Also, Missler Oak Furniture is moving to the old skating rink and that will be another heavy turning area we will have.

Cars are passing and traveling at high speed past our house all day long.

I also leave for work at 4am and have to wait 2-5 minutes everyday just to turn right out of our driveway.

Your Name: Patricia & Brandon Adams
Address: 700 S. Hwy 47
City, State, Zip: Union, Mo. 63084
Phone/Email: 636-584-9043 / draggir1966@yahoo.com

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

We are very much in favor of 4 lanes between Washington and St Clair. Every year there is a death due to traffic accidents not to mention the safety of children who depart the school buses along the corridor. You may start to widen 47 tomorrow.

Thank You
Charles Jaeckeman

How about a brand new 47 alongside old 47? Oh well.

Your Name: Charles & Gloria Jaeckeman
Address: 207 Indian Prairie Ln
City, State, Zip: Union 63084
Phone/Email: 633 328 2318 radios@charter.net

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

See Attached

Your Name: Jim Reynolds
Address: 7819 Hwy 47 S.
City, State, Zip: Union, Mo, 63084
Phone/Email: JReynolds@3RRV.com (636) ~~[illegible]~~ - 224-8449

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

Hwy 47 At Union needs to be a straight thru highway running over top of Hwy 50 + Bourbeuse River. at the same time with on + off ramps to Hwy 50 from Hwy 47. Hwy 47 needs more turn lanes at each intersection

Your Name: Terri Hilkerbaumer
Address: 24616 Prairie Dell RD.
City, State, Zip: Union Missouri 63084
Phone/Email: 314-630-6372

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

Coming out to 47 from Country Club ln in the morning about 7:30 is very Congested. Trying to make a left onto 47 is very dangerous. Sometimes sitting for 10 minutes to get a break in traffic. Maybe a traffic light would help at this time.

Your Name: Rick Marchand
Address: 780 Lost Creek ln.
City, State, Zip: Washington Mo 63090
Phone/Email: 636 667-7190

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

I LIVE OFF MELINDA DRIVE BETWEEN WASHINGTON AND UNION. GOING NORTH ON 47 MAKING A LEFT TURN INTO MELINDA DR. MANY CARS GET REAENDED [redacted] THIS IS A SAFTY CONCERN. ASK MODOT FOR SIGN WITH FLASHING LIGHTS BUT WAS TOLD NO.

Your Name: TERRY MARSCH

Address: 779 MELINDA DR.

City, State, Zip: UNION, MO 63084

Phone/Email: 636-584-3649

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

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For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

I believe that the best solution to fixing the traffic issue on 47 is to create Rt & Left turn lane all along Rt 47. This allows people who need to turn either direction to allow through traffic to flow through to either Washington or St Clair. the 47 to St Clair you could put a center lane for people to turn. Turn lanes from past the RR bridge to Washington would help eliminate congestion. Some streets like Melinda Dr need signs going from either direction to let people know it is coming up. For further discussion, call me.

Your Name: Rick Hankins
Address: 770 Melinda Dr
City, State, Zip: Union, MO 63084
Phone/Email: 636 303 7247 / r.hankins1@charter.net

Comment Form

MoDOT Route 47
Public Meeting #1
September 24, 2024

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

* NEED A WAY AROUND AN ACCIDENT. ROAD IS USUALLY CLOSED, THIS CREATES A NIGHTMARE trying to FIND A WAY AROUND. IF THERE ARE FOUR LANES, MAYBE CAN MOVE ACCIDENT OVER INSTEAD of CLOSING ROAD.

LEFT TURN LANES WOULD HELP

MAYBE FASTER LIGHT CYCLES SEEMS SITTING FOR LIGHT WHEN TRAFFIC IS CLEAR.

Big · TRUCKS HAVE TROUBLE WITH ROUNDABOUTS NUCLEUS of ROUNDABOUT IS TOO SMALL.

Your Name: JAMES DIECKHAUS
Address: 405 CRESTVIEW DR.
City, State, Zip: UNION, MO 63084
Phone/Email: 63084 jmd@usmo.com

For 33 years starting in 1980 until 2013 I traveled highway 47 from Union to Washington to drive to work each day. When I first started the traffic was much less that it is today. Having been retired for 11 years now, I dread traveling highway 47 during "Rush Hour Times"--6-8 A.M. and 2:30-5:00 P.M. People are all in a hurry today and most are not courteous to let someone in off a side road not controlled by a traffic light. At one time heavy traffic was only during the major rush hour times but now anytime of day there is always traffic on highway 47. During the "Rush" it is bumper-to-bumper stop and go movement--Heaven forbid there be an accident.

I am glad the Union double lane roundabout Highway 47-50 interchange was dropped. That was a wild idea without a lot of thought on the outcome of such a plan. The only way to solve the problem is to have highway 47 overpass Highway 50 with exits to highway 50. The biggest problem with that interchange is the combination of the railroad tracks and the Bourbeuse River to add two more parameters to the problem.

I am thankful you allowed me to express my opinion on the MoDot Route 47 open house. It was nice talking to some receptive ears.

God's Blessings,

Leonard Benter
254 Tanglewood Rd
Union, MO 63084-4445
email: Lbenter@gmail.com

Kelsey,

Sending this comments over as they come in. Thanks!

From: Missouri Department of Transportation <noreply@modot.info>
Sent: Wednesday, September 25, 2024 10:12 AM
To: Rachel V. Sudduth <Rachel.Sudduth@modot.mo.gov>
Subject: Missouri Route 47 Conceptual Study Comments

Submitted on Wed, 09/25/2024 - 10:12

Submitted by: Visitor

Submitted values are:

Full Name:
Kate Vohsen

Email:
katevohsen@gmail.com

Comments:
Our house sits extremely close to Highway 47 as is and shakes when semi trucks come by. These vehicles drive exceedingly fast and over the speed limit every time they pass our house. There is absolutely no law enforcement to deter drivers from excessive speeding, which causes a lot of car crashes. It is truly the wild west of driving on this part of Highway 47.

Our house sits within a 100 feet of Highway 47. The last thing we want, is an expansion of the highway that encroaches on our house in land even more than what it already does. With the way our house sits, our bedroom is at the very front of the house and we already fear that a vehicle or semi will crash in front of our house and kill us.

I am against widing the Highway.

I invited you to come visit us and watch the vehicles drive pass our house for a day just to see how wild they drive and encourage you to setup cameras to watch them at night.

Aaron and Jordan,

I believe this is something we can respond to.

Do we want to say Conceptual Studies are a part of our NEPA process to understand the Purpose and Need along a corridor and that it is a federal requirement?

From: Missouri Department of Transportation <noreply@modot.info>
Sent: Tuesday, September 24, 2024 8:01 PM
To: Rachel V. Sudduth <Rachel.Sudduth@modot.mo.gov>
Subject: Missouri Route 47 Conceptual Study Comments

Submitted on Tue, 09/24/2024 - 20:00

Submitted by: Visitor

Submitted values are:

Full Name:
Wayne Sahm

Email:
pharmacbdwayne@yahoo.com

Comments:
Why are they doing another study? If they can't see the problem now they must be blind. How much more tax prayers money are they going to waste on study's. Ask anyone who drives it daily and they will tell you how bad it is. HWY 47 sucks.

From: Douetta Davis
To: Aaron J Groff
Subject: MISSOURI ROUTE 47 CONCEPTUAL STUDY
Date: Monday, September 23, 2024 2:28:45 PM

Hi Aaron,

Twice in one week!

I want you to find money in this project for public safety and education! I was concerned when Scenic Regional Library relocated to the side of Hwy. 47. In this widening project, please consider that the high school, middle school and an elementary school are in the west side of the highway and the library is on the east side. Directly across from this busy intersection is the industrial area with trucks constantly turning. The "Senior Center" and the majority of senior housing are also immediately west of the intersection. Is it possible to have some sort of pedestrian bridge or at least a well defined crossing for wheelchairs, walkers, and bicycles.

Thanks for addressing my concerns,

Douey Davis
314-799-7074
Sent from my iPhone

Missouri Route 47
Conceptual Study
Public Meeting Summary
Fall 2024

Appendix C: Media

St Louis District

Rachel V. Sudduth

September 24, 2024

MoDOT Hosts Public Meeting TODAY for Route 47 Conceptual Study in Union

WHO: The Missouri Department of Transportation (MoDOT)

WHAT: An open-house style public meeting for the Route 47 Conceptual Study

WHEN: TODAY, Tuesday, September 24, 2024

WHERE: Union Community Center, ***1329 Union Ave, Union, MO 63084***

Today's public meeting will focus on plans for improvement of Route 47 corridor in Washington, Union, and St. Clair. Congestion is a major concern along the corridor. The study will involve analyzing areas of the corridor such as Route 50/Route 47.

Attendees can stop by at any time during the meeting to view project plans and speak with Route 47 team members. A formal presentation is not scheduled. Attendees will also have an opportunity to provide feedback on the project by completing a comment form while at the meeting or online at https://www.surveymonkey.com/r/FUTURE47.

For further information on the Route 47 conceptual study, visit https://www.modot.org/future47.

###

News Release

Missouri Department of Transportation | St Louis District
1590 Woodlake Drive | Chesterfield MO 63017-5712
314.275.1500 Fax: 573.522.6475

For more information, contact MoDOT Customer Service at (314) 275-1500
Sent by Communications Specialist Rachel Sudduth at (314) 453-5080

Follow us on Facebook at MoDOT-St Louis
Follow us on Twitter: @MoDOT_StLouis

FOR IMMEDIATE RELEASE – September 24, 2024

MoDOT Hosts Public Meeting TODAY for Route 47 Conceptual Study in Union

https://www.modot.org/node/56252

WHO: The Missouri Department of Transportation (MoDOT)

WHAT: An open-house style public meeting for the Route 47 Conceptual Study

WHEN: TODAY, Tuesday, September 24, 2024

WHERE: Union Community Center, ***1329 Union Ave, Union, MO 63084***

Today's public meeting will focus on plans for improvement of the Route 47 corridor in Washington, Union, and St. Clair. Congestion is a major concern along the corridor. The study will involve analyzing areas of the corridor such as Route 50/Route 47.

Attendees can stop by at any time during the meeting to view project plans and speak with Route 47 team members. A formal presentation is not scheduled. Attendees will also have an opportunity to provide feedback on the project by completing a comment form while at the meeting or online at https://www.surveymonkey.com/r/FUTURE47.

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September 10, 2024

MoDOT seeks public input on future of Route 47 in Franklin County

https://www.modot.org/node/55339

FRANKLIN COUNTY – The Missouri Department of Transportation will host an open house-style public meeting on Missouri Route 47 on Tuesday, September 24 from 4 p.m. until 7 p.m. at the Union Community Center. The center is located at 1329 Union Ave, Union, MO 63084.

There will be no formal presentation. Participants may attend the meeting at any time between 4 p.m. and 7 p.m.

The purpose of the public meeting is to provide the public and stakeholders with the opportunity to provide comment and learn about the conceptual study that spans from Missouri Route 47 from Route 100 in Washington through Union to Interstate 44 in St. Clair.

This study is a critical step to preparing for future projects on Missouri Route 47 in Franklin County and gathering input to ensure the Purpose & Need reflects the identified needs of roadway users.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair. Congestion is a major concern along the corridor. The study will involve analyzing areas of the corridor such as Route 50/Route 47.

Guests will have the opportunity to learn more about the study and submit questions and/or concerns during the meeting. An online copy of the survey will be available up to two weeks after the meeting to submit comments.

To learn more information about the project and sign up for project updates, visit Missouri Route 47 Conceptual Study in Franklin County | Missouri Department of Transportation (modot.org).

###

St Louis District

Rachel V. Sudduth

September 10, 2024

MoDOT seeks public input on future of Route 47 in Franklin County

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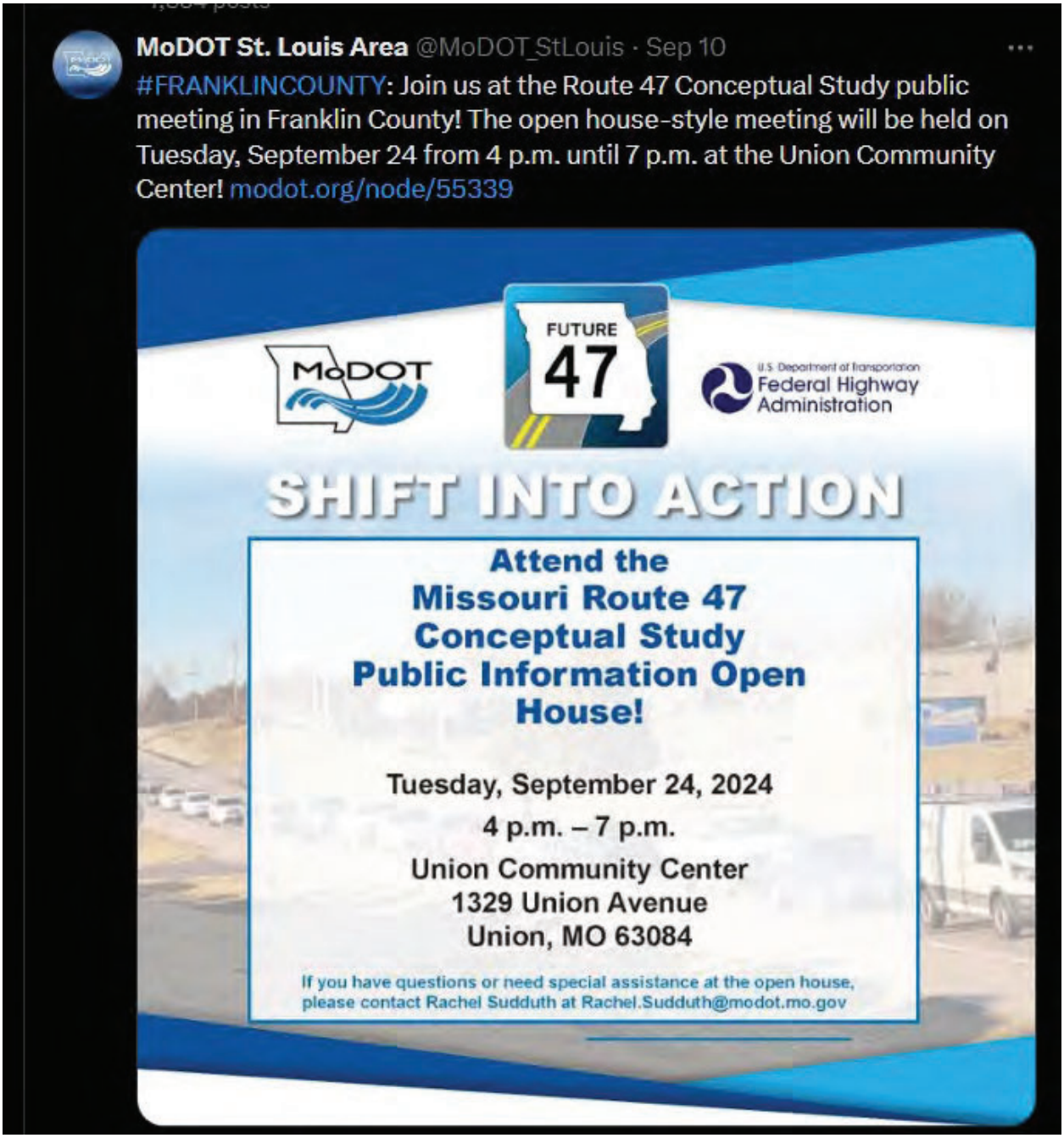
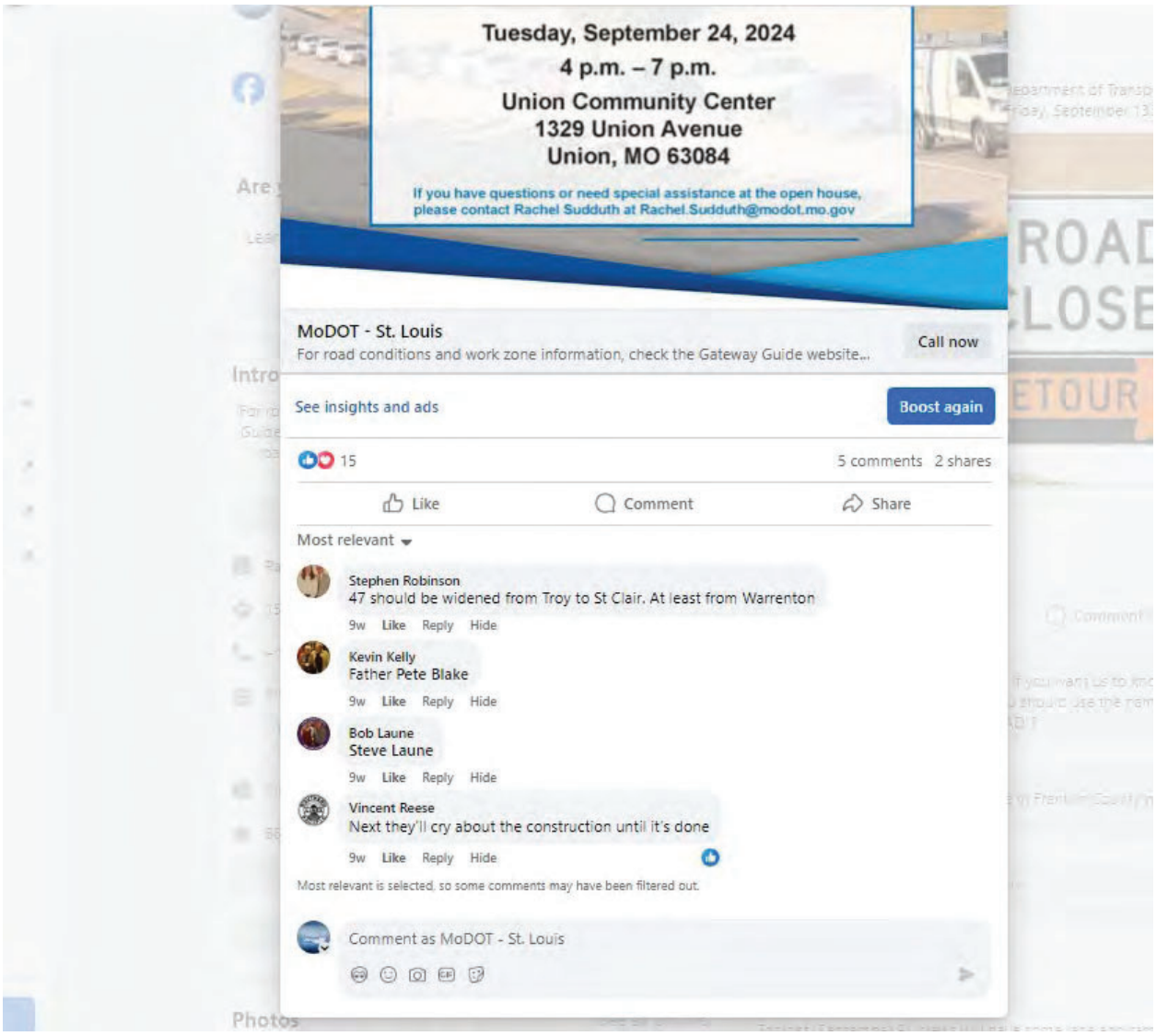
To learn more information about the project and sign up for project updates, visit Missouri Route 47 Conceptual Study in Franklin County | Missouri Department of Transportation (modot.org).

###

Attached are posts from Route 47.




Tuesday, September 24, 2024
4 p.m. – 7 p.m.
Union Community Center
1329 Union Avenue
Union, MO 63084
If you have questions or need special assistance at the open house, please contact Rachel Sudduth at Rachel.Sudduth@modot.mo.gov
MoDOT - St. Louis
For road conditions and work zone information, check the Gateway Guide website...
Call now
See insights and ads
Boost again
15
5 comments 2 shares
Like
Comment
Share
Most relevant
Stephen Robinson
47 should be widened from Troy to St Clair. At least from Warrenton
9w Like Reply Hide
Kevin Kelly
Father Pete Blake
9w Like Reply Hide
Bob Laune
Steve Laune
9w Like Reply Hide
Vincent Reese
Next they'll cry about the construction until it's done
9w Like Reply Hide
Most relevant is selected, so some comments may have been filtered out.
Comment as MoDOT - St. Louis

From: Aaron J Groff <Aaron.Groff@modot.mo.gov>
Sent: Thursday, November 14, 2024 9:11 AM
To: Jordan S. Dalaviras <Jordan.Dalaviras@modot.mo.gov>; Rachel V. Sudduth <Rachel.Sudduth@modot.mo.gov>
Cc: Aaron J Groff <Aaron.Groff@modot.mo.gov>
Subject: Rte 47 Public Outreach - Backup Data
Importance: High

Jordon & Rachel,

As I am reviewing the Rte 47 Public Meeting Summary, I am finding that there are some files I will need to acquire from you so that we can include them in our backup data.

Jordan, can you get me copies of all the Emails we sent to stakeholders (I'm guessing inviting them to the Public Meeting)

Rachel, I have emails from the 4 News Releases you sent out on 9-10-24 (2 each) & 9-24-24 (2 each), but would you by chance have any screenshots & such of any Facebook posts & Comments from those

posts? In the past Drew would send us copies of those to include in these Public Meeting Summaries as well. Then they would be a specific Appendix in the Public Meeting Summary Doc.

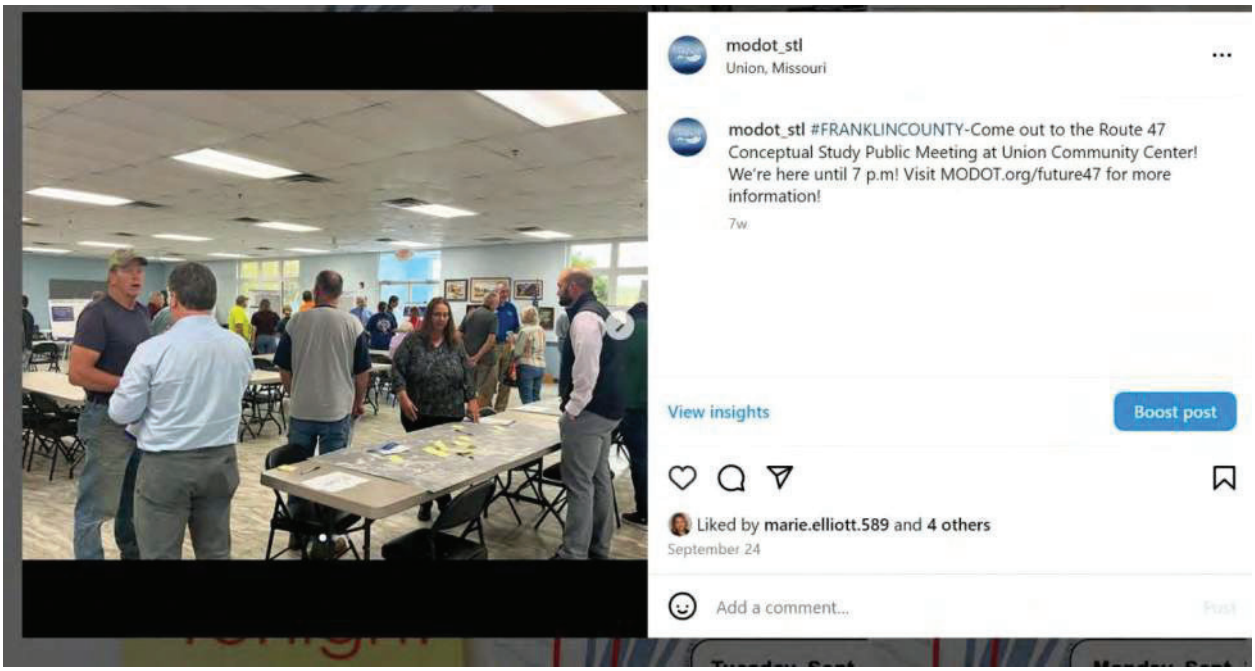
Then we can get these to HNTB to include in their report.
Please try to get these gathered sooner than later, so they can finish up addressing our comments.

Thanks
Aaron

Aaron J. Groff, P.E.
Transportation Project Manager
"Franklin & Jefferson County Area"
Missouri Department of Transportation
1590 Woodlake Drive
Chesterfield, MO 63017
314-453-1876
Aaron.Groff@modot.mo.gov

Normal Office Hours = Monday–Friday 6:30am – 3:00pm

Forgot to add these additional two post. We posted to Facebook, Twitter and Instagram.



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https://www.emissourian.com/local_news/open-house-meeting-on-highway-47-improvements-set/article_e59d0e38-7318-11ef-bc9e-1f33cfc65189.html

FEATURED

Open house meeting on Highway 47 improvements set

By Geoff Folsom, folsomg@emissourian.com
Sep 15, 2024

Cars wait in traffic in May due to the ongoing work on the intersection of Highways 47 and 50. Cars were backed up as far as Clearview Rd.

Eileen Wisniowicz

The Missouri Department of Transportation will hold its long-awaited public meeting on safety and capacity improvements for Highway 47 on Tuesday, Sept. 24 in Union.

BUR

The open house-style meeting will take place from 4-7 p.m. at the Union Community and Senior Center, 1329 Union Ave. No formal presentation will take place at the meeting and people can attend at their convenience.

“We’re thinking that will be a good, large room, good lighting, low ceiling, so it’s not echoing too bad,” said Aaron Groff, MoDOT transportation project manager for the Franklin and Jefferson counties area.

The meeting will provide the public and community stakeholders information on the conceptual study that has been taking place on the 12.7-mile Highway 47 corridor from the intersection with Highway 100 in Washington, through Union to the Interstate 44 interchange in St. Clair.

“This study is a critical step to preparing for future projects on Missouri Route 47 in Franklin County and gathering input to ensure the Purpose & Need reflects the identified needs of roadway users,” a MoDOT news release read.

MoDOT is working on the study with consultant HNTB. The safety and capacity upgrades project, which was first approved in 2022, has an estimated cost of $85.7 million, with $75.7 million of that slated for construction.

The study is analyzing areas like the intersections of Highways 47 and 50 in Union. The City of Union and Franklin County backed out of their own plan to address congestion at those intersections, called the Union Expressway, earlier this year.

“We’re going to look to share with the public a lot of the existing conditions that we know about,” Groff told The Missourian. “A lot of it is going to be some of the traffic data and the crash statistics that we have.”

A crucial part of the meeting will be getting feedback from the public, Groff added. People can submit information at the meeting or through a survey that will go online for around two weeks starting Sept. 24.

“We would really advise the public to go out there, take that survey, give us any feedback they know,” he said. “Sometimes when we do a lot of these jobs, we know what we know on the engineering side, as far as the data that we collect. But you kind of miss that personal touch. The people who drive the corridor, they are the ones that actually know firsthand issues here and there.”

The meeting will have strip maps of the Highway 47 corridor where members of the public can leave notes to indicate where they would like to see improvements, Groff said. Other stations will have the survey, other display boards and fact sheets.

Along with Groff, Jordan Dalaviras, new MoDOT area liaison for Franklin and Jefferson counties, and Tom Evers, assistant engineer for MoDOT’s St. Louis District, are expected to represent MoDOT at the meeting. They will be joined by communications and local staff and representatives from HNTB and the Lochmueller Group, which originally studied the corridor, finding justification in 2018 to widen the highway to four lanes.

The open house will be a week before the Oct. 2 meeting of the Missouri Highways and Transportation Commission at Washington City Hall, where the Highway 47 project is also expected to be addressed.

“I’m excited,” Groff said. “It’s a busy time getting this together, and then we’ve got the commission meeting.”

A second public meeting on Highway 47 is expected in winter or spring 2025, according to MoDOT. That is where information will be presented on what the revamped corridor could actually look like.

MoDOT recently released traffic counts for the Highway 47 corridor, indicating that between 18,000 and 35,000 people drive through the intersections of Highways 47 and 50 daily in Union.

In addition, between 14,000 and 18,000 vehicles use Highway 47 between Washington and Union daily, another 15,000 travel between Union and St. Clair, while 20,000 drivers take Highway 47 in the Washington area each day, according to MoDOT.

MoDOT plans to process that data with crash and safety information and public feedback, Groff said.

“We’re then going to go back to the drawing board and start investigating, see where the problem spots might be, from the data that we have,” he said. “And then we’re going to work up some draft alternatives that may show some ideas. And that’s what we want to bring to the public at the second public meeting.”

MoDOT would then take that feedback and return to the drawing board, “before we actually work up the more narrowed-down version of what the project could turn into” with the funding MoDOT has, Groff said.

“We’re going to really see what the studies say we need and how much we can afford,” he said. “What is the best use of that money for the top priorities along the corridor?”

Construction on Highway 47 is planned to start in 2027 or 2028.

“It’s exciting stuff, it was slated for 2042, we got it bumped up to 2027-28,” Franklin County Presiding Commissioner Tim Brinker said at Thursday’s commission meeting. “That’s an impressive timeline improvement by any standard.”

Brinker said in August that MoDOT St. Louis District Engineer Tom Blair told him in a recent meeting that the intersection of Highways 47 and 50 would be addressed in the project.

On Thursday, Brinker encouraged the public to attend the MoDOT open house.

“This 47 study is imperative to citizens making sure that MoDOT does what we want to have done in terms of expanding/improving 47 between Washington and St. Clair,” he said. “So, if anybody has time to do so, please go comment and express what you’d like to see done on 47.”

Attendees can learn about the study and submit questions. Visit modot.org/future47 for more information.

“They’ve allocated upward of $80 million for this project already, but we want to make sure it’s implemented properly and appropriately for now and for our future,” Brinker said.

https://www.emissourian.com/local_news/highway-47-meeting-attracts-large-crowd-in-union/article_254e7566-7d0b-11ef-9630-9b22cc4a56d0.html

FEATURED | TOP STORY

Highway 47 meeting attracts large crowd in Union

By Geoff Folsom, folsomg@emissourian.com
Sep 29, 2024

1 of 4

Steve Gerling places a sticker on a spot he would like to see addressed on the Highway 47 corridor.

Missourian Photo/Geoff Folsom

An open house meeting on planned upgrades to Highway 47 drew 160 people in Union Tuesday.

“That was a great turnout,” said Aaron Graff, transportation project manager for Franklin and Jefferson

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GRAINGER

That compares to 30 people who attended the recent open house on the Forward 44 project in St. Clair.

MoDOT is planning $85.7 million in safety and capacity improvements to Highway 47, with $75.7 million of that for construction, which is expected to start in late 2027 or early 2028.

There was no formal presentation at the open house, but members of the public got to walk around and view informational signs on the 12.7-mile corridor between Washington, through Union, to St. Clair. One of the signs indicated there were 1,496 crashes along the corridor between 2018 and 2022, the last full year statistics were available.

That includes 31 crashes with serious injuries and 10 fatalities, totaling 15 deaths.

Of the crashes, 859 were rear-end collisions, 106 involved a left turn, 103 each involved passing and out of control vehicles, while 326 were listed as “other.”

“So 57 percent of those crashes in that five-year period were due to rearends,” Groff said. “People could believe that’s due to congestion, access management, but also poor driver behavior.”

The information was broken into road segments, with the most fatal crashes occurring around the intersection of Highways 47 and 50 in Union. Five fatal and 13 serious injury crashes happened over the five-year period. This is also the busiest part of the highway, with 39,000 vehicles passing through daily.

Another four fatal crashes and six serious injury wrecks occurred on Highway 47 between the intersection of Eastview Drive, south of Union, and the Interstate 44 interchange in St. Clair. This portion of Highway 47 is older, built in 1948.

While it had 12 serious injury crashes, the northern segment from the Highway 47 intersection with Highway 100 in Washington south to the intersection with Independence Drive in Union had the fewest fatal crashes, with one over five years. That part of Highway 47 was built in 1962. Groff said the older

route between Union and St. Clair has more driveways, while the newer section was built with more side roads to connect to homes and businesses.

“You get to the St. Clair side, there’s so many driveways, specific houses just connect right on to the road,” Groff said. “Because it was older, back in the day, they allowed all those connection access points.”

Elena Hearst‘s husband has lived in the area for 40 years and told her Highway 47 traffic was bad back then. She said it has not improved since and would like to see the road widened.

“There are more businesses around 47, more houses around 47, people are traveling more,” she said. “It’s just not right, two lanes, on 47, and there are a lot of accidents and deaths. It’s actually tragic and sad.”

State Rep. Brad Banderman, R-St. Clair, as well as city administrators, public works directors and economic development directors from Washington and Union were among those in attendance at the Union Community and Senior Center.

“We had a mixture of city and county officials, we had property owners that are right along the corridor, others that just commute,” Groff said.

Banderman told The Missourian he has seen an ongoing process with Highway 47 for almost 20 years, noting that it connects with Interstate 70 in Warrenton.

“Highway 47 is the artery from 44 to 70 in our area, and it’s been in desperate need of work, and some of that work has been done in the past,” he said. “They’ve added some turn lanes when they’ve widened the road here and there, but I’m pretty excited about the potential to have, not just the study and the information provided, but the potential for us to make some improvements that might help traffic flow in that area and reduce accidents, for sure.”

Many people shared stories about specific spots on the corridor they saw issues with, Groff said.

“Some of them had concerns about how close their property was to the road,” he said. “The congestion coming into 47 at 50, I did hear that quite a bit, from a lot of folks, that that was the bottleneck. Of course, a lot of people would like to see four lanes between everything, but we need to go through the study and see what the needs are.”

MoDOT and consultant HNTB have been working on a study on the corridor.

The meeting also served as a kickoff for a survey on Highway 47 that is open through Oct. 8. The survey can be accessed at surveymonkey.com/r/FUTURE47.

The survey asks questions including how often users take Highway 47, how concerned they are about safety on the road and if they take alternate routes to avoid Highway 47.

By Thursday morning, 134 people had taken the survey, Groff said.

Those in attendance also took part in interactive activities to show what issues they have with traveling Highway 47. They could place color-coded stickers on the parts of Highway 47 where they have concerns with safety, congestion, growth and other issues. Early in the meeting, the area between Highway 50 and Independence Drive appeared to be the most concerning for congestion issues, while the intersection with Highway 100 and Clearview Road raised safety concerns.

“They targeted the areas along that road that we all know about,” Banderman said. “If you’ve lived in this area for any length of time, you know where those bad spots are, with traffic backups and stuff along the road.”

Banderman would even like MoDOT to do some work in advance of the major improvements several years from now, including adding right-turn lanes at the intersection with Clearview Road in Union and I-44 in St. Clair.

Others placed notes on a board with messages like “railroad bridge,” “uphill w/ semis” and “roundabouts.” The segment does not currently have roundabouts, though one was to be part of the now canceled Union Expressway bypass project at the intersections of Highways 47 and 50.

Steve Gerling, of Union, looks forward to the Highway 47 improvements, but doesn’t want MoDOT to forget about improving Highway 50 between Union and the I-44 interchange.

“This is a great deal, if they four-lane this thing from St. Clair to Union to Washington, great idea,” he said. “But if you extend the four lanes of 50 out to 44, that completes the project.”

MoDOT and HNTB will take traffic and crash data, as well as comments from the public, before developing solutions for the Highway 47 corridor and holding another public meeting in early 2025.

To see display boards and other information displayed at the meeting, people can go to modot.org/route-47-public-meeting.

Groff hopes the public meeting reinforces the project is going to happen.

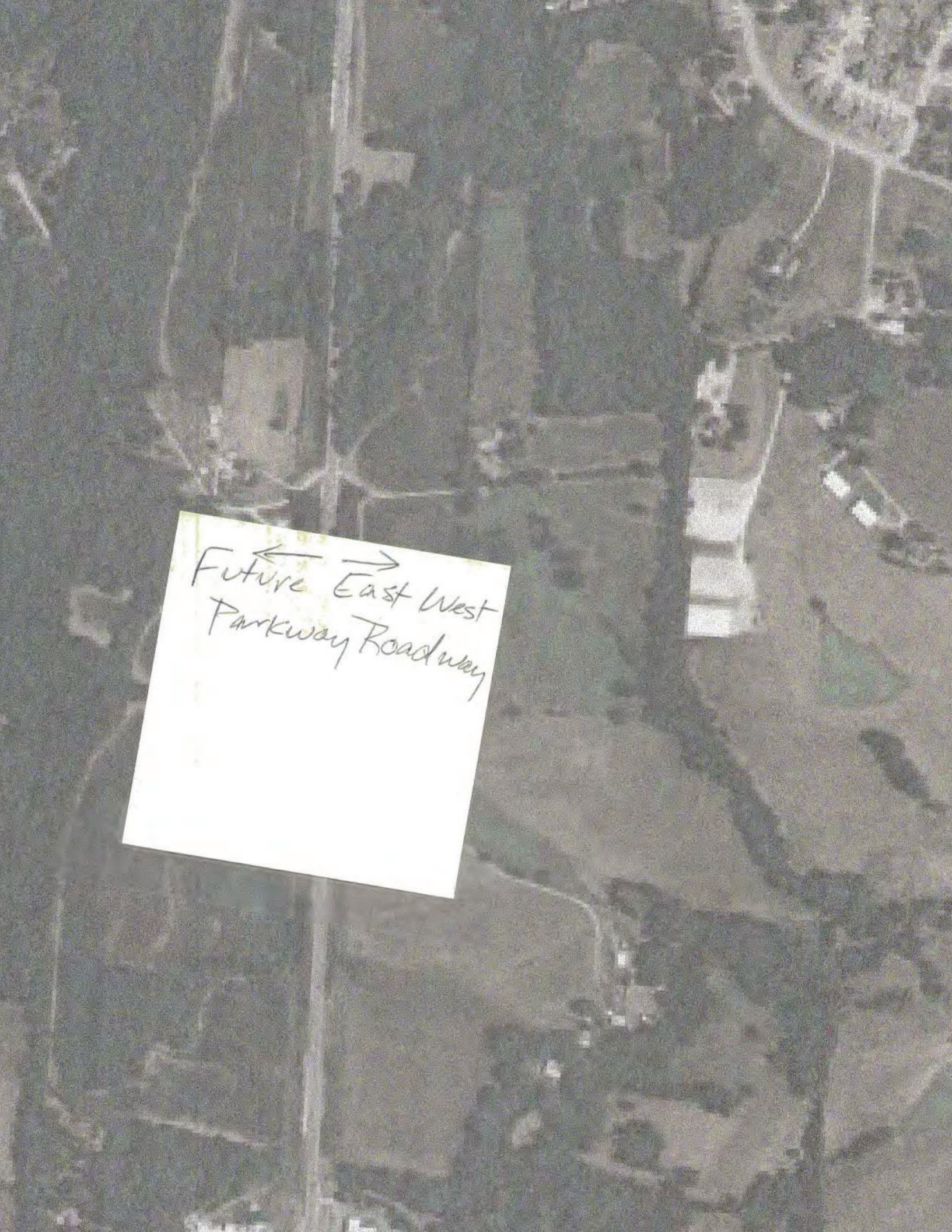
“A lot of folks were wondering, ‘Why are we doing another study, we’ve done studies?’” he said. “Now that MoDOT does have funding, we need to go through 100 percent of the whole process, which is conceptual all the way through the final plans. We need to do the steps ourselves, we can’t just take the information that the city and the county have worked on.”

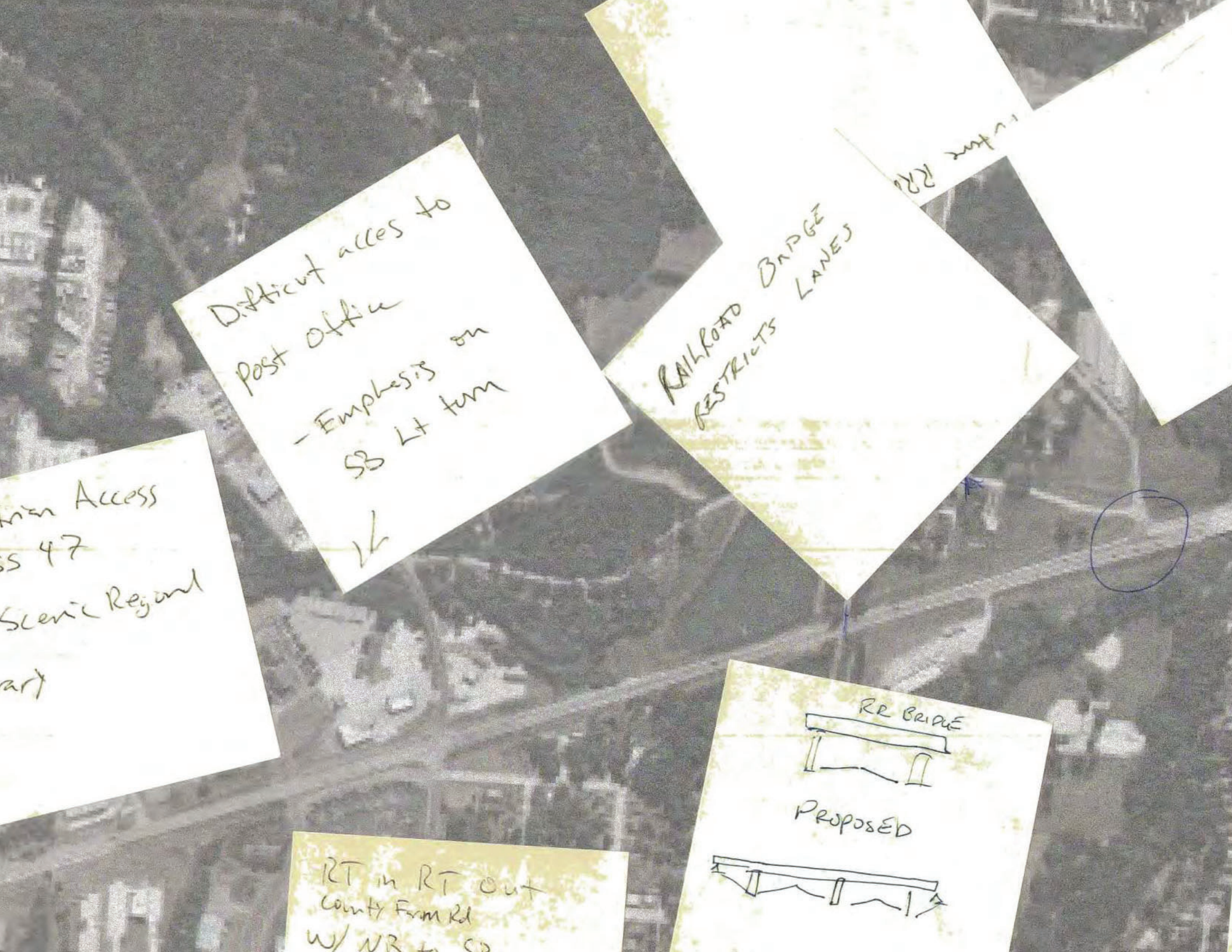
This is the first time MoDOT has had funding to address the corridor, Groff noted.

“I think they’re finally starting to understand that this is committed, there is money out there,” he said. “Is it enough money to do 100 percent of everything that’s needed? That’s yet to be determined, because that’s what we’re going to be working on from now until the spring, just getting a better understanding of what the needs are and what different alternatives could be developed.”

Missouri Route 47
Conceptual Study
Public Meeting Summary
Fall 2024

Appendix D: Roll Plot Scan


Future East West
Parkway Roadway


Difficult acces to post office
- Emphesis on SB Lt turn
RAILROAD BRIDGE RESTRICTS LANES
RR BRIDGE
PROPOSED
RT in RT out
County Farm Rd

Semi TRUCK
MOTOR Homes
and Trailers
Turn in and out
Log TRUCKS

No Sight
clearance

Sight
Preferably
Hill
Curve
Curve Issues
Rear end
Crashes

Missouri Route 47
Conceptual Study
Public Meeting Summary
Fall 2024

Appendix E: Project Team Notes

Missouri Route 47
Conceptual Study
Public Meeting Summary DRAFT
Fall 2024

Recorded Documentation of verbal comments – Project team notes

TOPIC	COMMENT
Turn-lanes, Safety	Turn lanes and acceleration/deceleration lanes are needed for the bus shelter on the east side of Route 47 across from Lost Pines. A wider driveway would be helpful also so that buses can easily pass another vehicle when turning in. Another idea would be warning lights for buses entering the highway. (Currently bus movements are restricted to right-in/right-out.) The bus company moved to this site in August 2023.
Traffic	There is a residential development being constructed on Country Club Ln. west of Route 47 (near A) – 201 units. I am concerned about the future traffic turning at Route 47 and Country Club.
Congestion	We need a flyover of Route 50 at Route 47 like at 141.
Traffic, Congestion	Right-turns at Independence are needed. The trip from Clearview to Independence takes 3-4 cycles because there's no right-turn lanes.
Safety, Turn-lanes, Commercial Traffic	There are 3 businesses near Franklin, south of US 50. Tractor-trailers and box trucks travel in/out of these businesses all day (one business is septic services), sometimes there's 2-3 trucks at a time. Turn lanes and acceleration/deceleration lanes would be helpful. There are 3 commercial entrances with 2 in use now.
Safety	Additional lanes would help the crash situation. There are a lot of crashes at the Pasta House. There are a lot of issues trying to turn left.
Congestion	Turn the trestle bridge upside down. The railroad trestle (south of Hwy. V) is the low-water issue when flooding, it sends traffic through town.
Traffic	The mess at McDonalds made everything worse.

Congestion, Safety	Route V at Route 100 is really bad – it needs signals.
Congestion	Lower the hill on Route 47 at Independence, trucks are decelerating northbound on Route 47 and slowing traffic.
Safety	Country Club Lane is a mess at Route 47 – bridge Country Club over 47 and add ramps. Country Club Ln. is a cut-thru route. YY should have been extended to 47. A YY connection would move a ton of traffic.
Traffic	The signal at 50 and Prairie Dell needs a protected left-turn; westbound 50 never has a green arrow.
Safety	At Clearview during ice and snow people slide. Perhaps a roundabout at Clearview to slow down traffic (traffic blows through this intersection, especially in the early morning).
Traffic	Semi trucks can't go to Foristell on T/TT – which is signed NO Trucks. All truck traffic must go to Warrenton.
Turn-lanes	On 47 just sought of 50, the turn lanes need to be longer. The northbound left to Old Smelter made congestion worse for Route 47 (it helped people coming out). There will be a lot more traffic at Old Smelter in the future.
Congestion	Routes V and A are alternates for southbound traffic in the PM. Northbound traffic in AM is not as bad as southbound traffic in the PM. After 3 PM, Route 47 southbound is Interstate 270.
Congestion	Traffic is heavy for the north leg of MO 47 in southbound direction from 3pm – 5pm and he uses alternative paths, Route A and V to avoid MO 47. He said this traffic movement was worst on Fridays likely due to recreational traffic headed to Lake of the Ozarks. ○ Consider collecting traffic counts for Rte. A & V and calculating a percentage of peak traffic that would shift to MO 47 in the future when level of service improves from roadway improvements. ○ Consider collecting traffic observation from Miovision for southbound MO 47 from Clearview to MO 50
Congestion, Business	First Student – school bus company – is contracted by area school districts and operates approximately 100 school buses on MO 47 during AM and PM peak each and 50 during mid-day period. This is approximately 500 unlinked trips operating on MO 47 as the central spine. First Student is contracted by the following school

	districts: Washington, Union, Autumn Hills (MSSD). Contact Tim Porter for additional information. Tim.Porter@firststudentinc.com 314-600-1026.
Congestion, Business	The land lord for First Student is also a developer of land along MO 47 between Washington and Union. Specifically around Clearview to Highline Drive intersections with MO 47. He anticipates building more light industrial in the area and requests additional operational improvements to facilitate turning movements on / off of MO 47. He emphasized that his ability to develop land is limited by traffic operations at MO 47 & MO 50 intersections.
Turn-lanes	Request for right-turn lane at Independence > SB MO 47 to WB Independence
Design	Request for new alignment for through traffic to bypass local traffic.
Safety	Concern about high speed rear end crashes on south leg of MO 47. Echoed by five people.
Access Management	Concern by residents exiting driveways on southbound leg of MO 47 and turning right to go northbound on MO 47. One resident said the AM peak begins as early as 4am due to heavy traffic from St. Clair going northbound. Comment echoed by at least three people.
Design	Concern for roundabouts unless they allow higher speed and sized for trucks at those faster speeds.
Design	WB MO 50 @ Prairie Dell left turn has a flashing yellow but needs a dedicated green arrow, especially because McBride & Sons has been building more housing in the area.
Economic Development	Railroad is adding track spurs for new industrial businesses east of Union / east of north leg MO 47. Expect new industrial development and more truck traffic in future.
Turn lanes	Request for turn lane for First Student bus garage.
Pedestrian/Bikes	Pedestrians are walking along MO 47 at night. Observed a pedestrian walking southbound along western side of MO 47 at 7:40pm near railroad bridge in Union. ○ A reminder that there are bike and pedestrian users along MO 47 and that we must consider these users during development of conceptual alternatives.

Pedestrian/Bikes	One resident identified herself as a cyclist who has used MO 47 and would like a trail along MO 47 to connect the future Rock Island Railroad trail to the Katy Trail. ○ Again a reminder that bike and pedestrian users are using MO 47 and would use it more if a safe and comfortable facility could be built in the right-of-way.
Congestion	No fewer than 10 people said to me that the intersections of MO 47 & MO 50 is a bottleneck that needs to be addressed first before any other improvement to MO 47.

Bus Shed near Clearview (N. of) warning lights for buses entering hwy.

R.N. rights-in & rights-out → RAB @ Bus Shed? Access Lost Pines

Problem B/T 50 & 100 is lack of turn lanes → 3 businesses near Franklin 50 @ 47, Tractor-trailers & box trucks all day Lane = turn lanes, acceleration / decel lanes (Septic Services) 2-3 HV @ a time even 3 commercial entrances, & in use m

Residential Dev. being constructed on Country Club W. of 47 (near A) - 201 units = traffic concern (turning @ C.C.)

Flyover @ 50/47 Okay 140

Utilities missed 4 fiber lines

Additional lanes would help crash situation

LOTS of crashes @ Pasta House

Trying to turn left issues

2-lanes all the way St. Clair to Warrenton

Rt. turn lanes SB @ V & I-44

Turn the trestle bridge upside down", the trestle is the low-water issue when flooding it sends ppl. this route

Bypass on the SW corner

US 50 ... in / out

→ Rt. turn lanes @ Wareh

Clearview → Independence to 3-4 axles B/C there No Rt. turn lanes

— V @ 100 is BAD needs signal

— lower the hill on 47 @ Independence — trucks decelerating NB on 47

— Country Club Ln is a mess @ 47

"YY should haven been extended to 47"

Bridge CC over 47 & add ramps

C.C. Ln is a Cut-thru route

YY connection would move TON of traffic

Signal @ 50 needs Prote left (no FYA, 4

down traffic = high speeds
traffic blows thru intersection
(early mornings)

3- lane RR Spur across Old Co. Farm Rd., will increase truck traffic to/from the spur; City has plans

~~Redacted~~
Truck Traffic on 50
to/from Jeff City

Semis can't go to Eoristell
(TIF signed NO trucks)
All traffic must go to Warrenton

- Big company moved in Aug
- A connects to CC & also Steutermann
- 47 @ 50 47 just south of 50, turn bays need to be longer
- Talk to Union & St. Clair
- ~~redacted~~
- Friday traffic that makes se
- NB LT to Old Smelter ma it worse for 47 (helpe people coming out)

↳ A LOT more traffic (a Old Smelter

Both 47/50 intersections
Lane utilization & 50 seg.

is a alternate for SB

" " " "

NB traffic in AM not as bad as SB traffic in PM
"after 3pm on 47 SB is 270"

Turning Lanes ★

Extend 4 lanes S. of 100
+ turning lanes

Jaw Ameren Substation N.
of Clearview

Missouri Route 47
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Appendix F: Public Meeting Fact Sheet and Exhibit Boards

N N N N N

Project Overview

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in FY2028. This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

Project Area

The project limits are on Route 47 that extend from MO-100 in Washington, MO to I-44 in St. Clair, MO. It also includes the intersection at Route 47 and U.S. 50 in Union, MO.

Corridor Information

Corridor Traffic

- Detailed Analysis is ongoing
- 2024 ADT is 39,000 at Route 47 / 50
- Approximately 0.0% to 1.8% average annual increase since 2018

Crash History (2018 – 2022)

- **1496** Crashes in 5 Years

Rea - **859**	*/* - **103**
ass - **103**	*e* - **106**
e - **326**	

- **31** Serious Injury Crashes
- **10** Fatal Crashes
  - (**15** Fatalities)

al a a s e a a la le

We want your input!

MoDOT is hosting a public survey to gather information on how the public uses the Route 47 corridor between Washington and St. Clair. Results will help the team evaluate improvement alternatives.

Please scan the QR code or use the link below to access the survey: https://www.surveymonkey.com/r/FUTURE47

The survey will be available to complete until October 8, 2024.

Timeline and Next Steps

The project kicked off in the Spring/Summer 2024 and anticipates completion of the Conceptual Study in 2025.

Traffic Data Collection & Analysis
Spring/Summer 2024

We Are Here

Public Meeting #1
September 24, 2024

Alternatives Development
Starting Fall 2024

Public Meeting #2 Recommended Alternatives
Early 2025

Conceptual Study Completion
Summer 2025

Environmental, Engineering, and Public Engagement
2025-2027

Anticipated Start of Construction
FY-2028

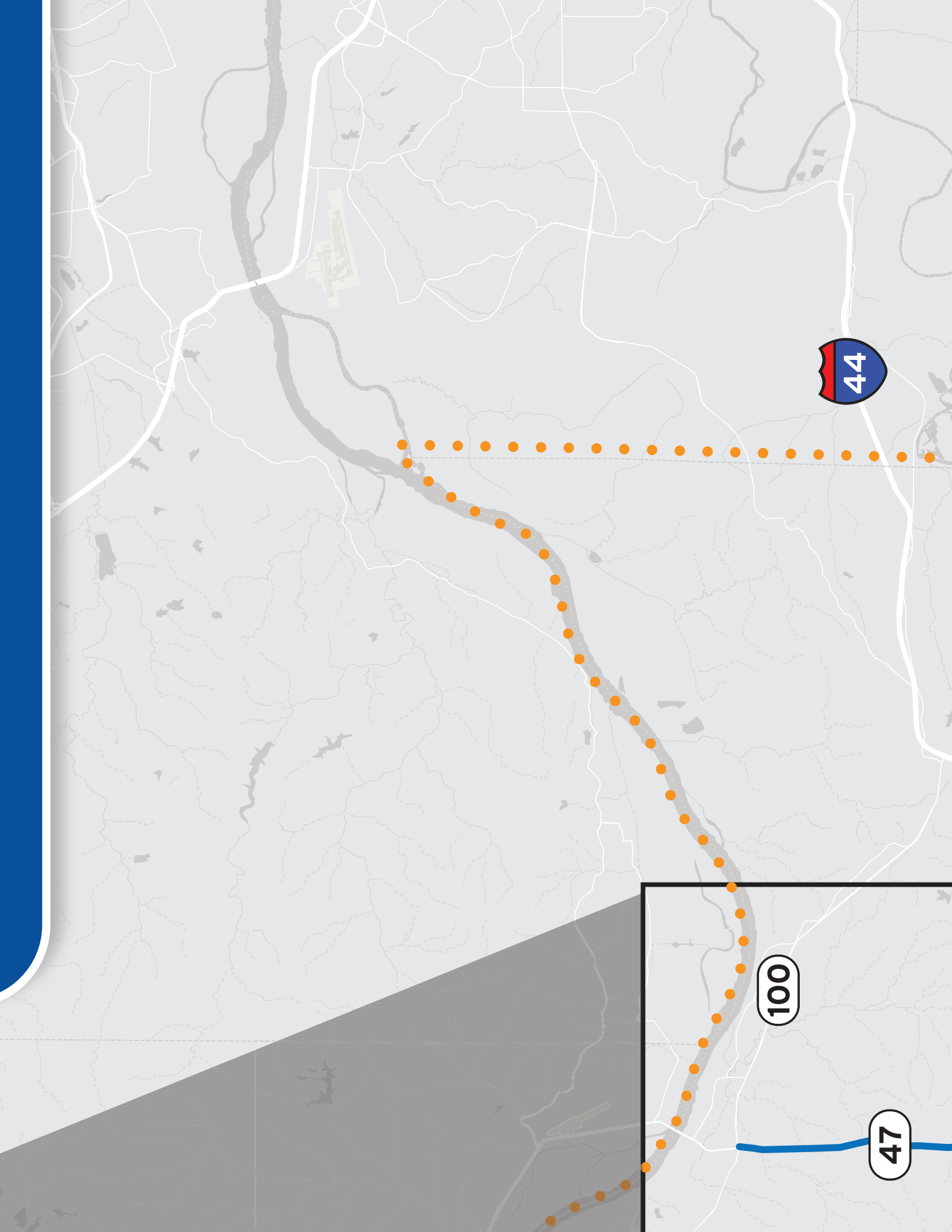
Project Contacts

For more information about the project, please visit the project webpage at **https://www.modot.org/future47**

You may also submit questions and comments to:

Aaron J. Groff
MoDOT Transportation Project Manager
Aaron.Groff@modot.mo.gov
314-453-1876

Jordan S. Dalaviras
MoDOT Franklin / Jefferson County Area Liaison
Jordan.Dalaviras@modot.mo.gov
314-453-5021


44
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IDENTIFY IS

Safety and

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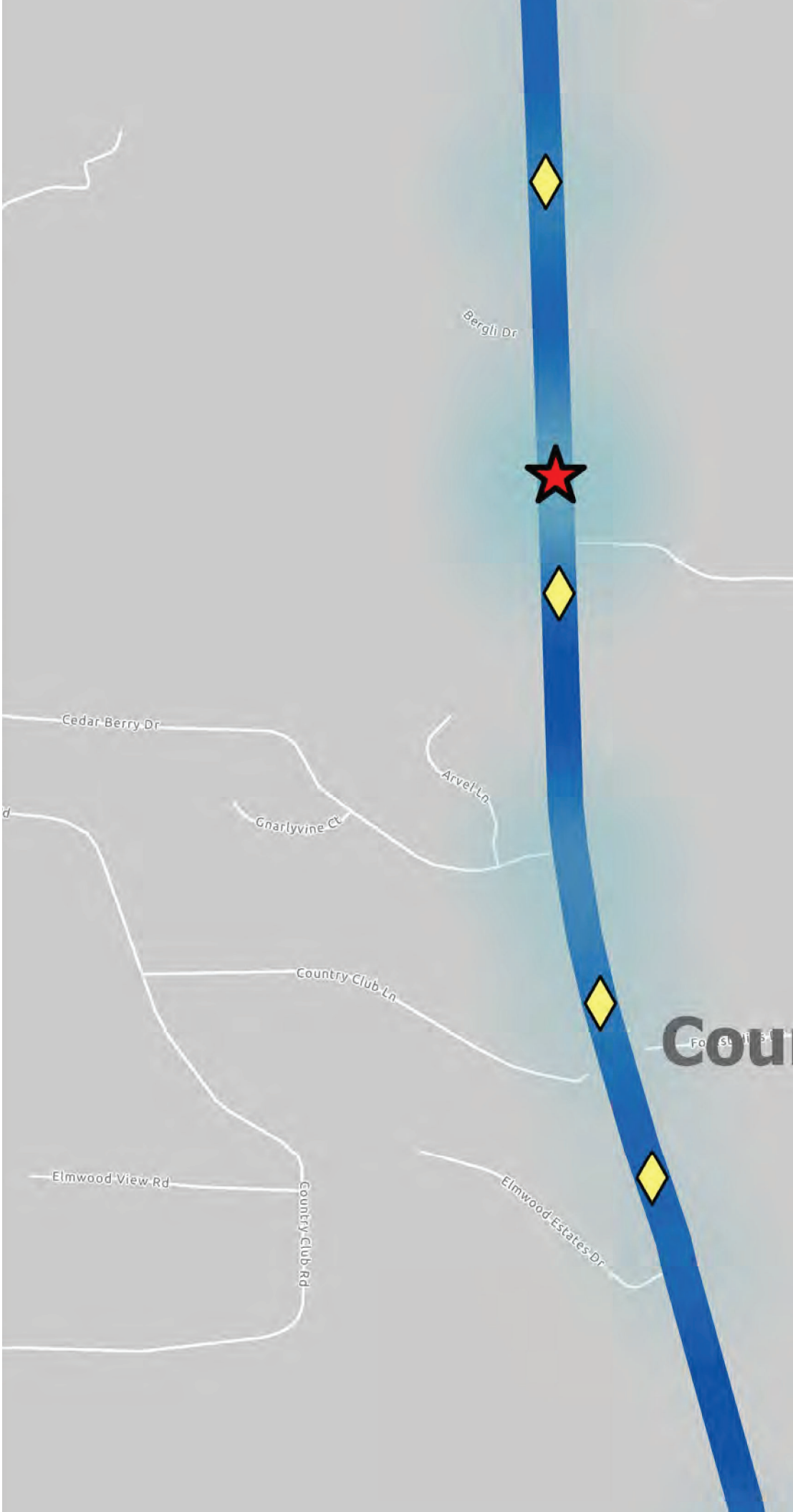
ear-End


Bergli Dr
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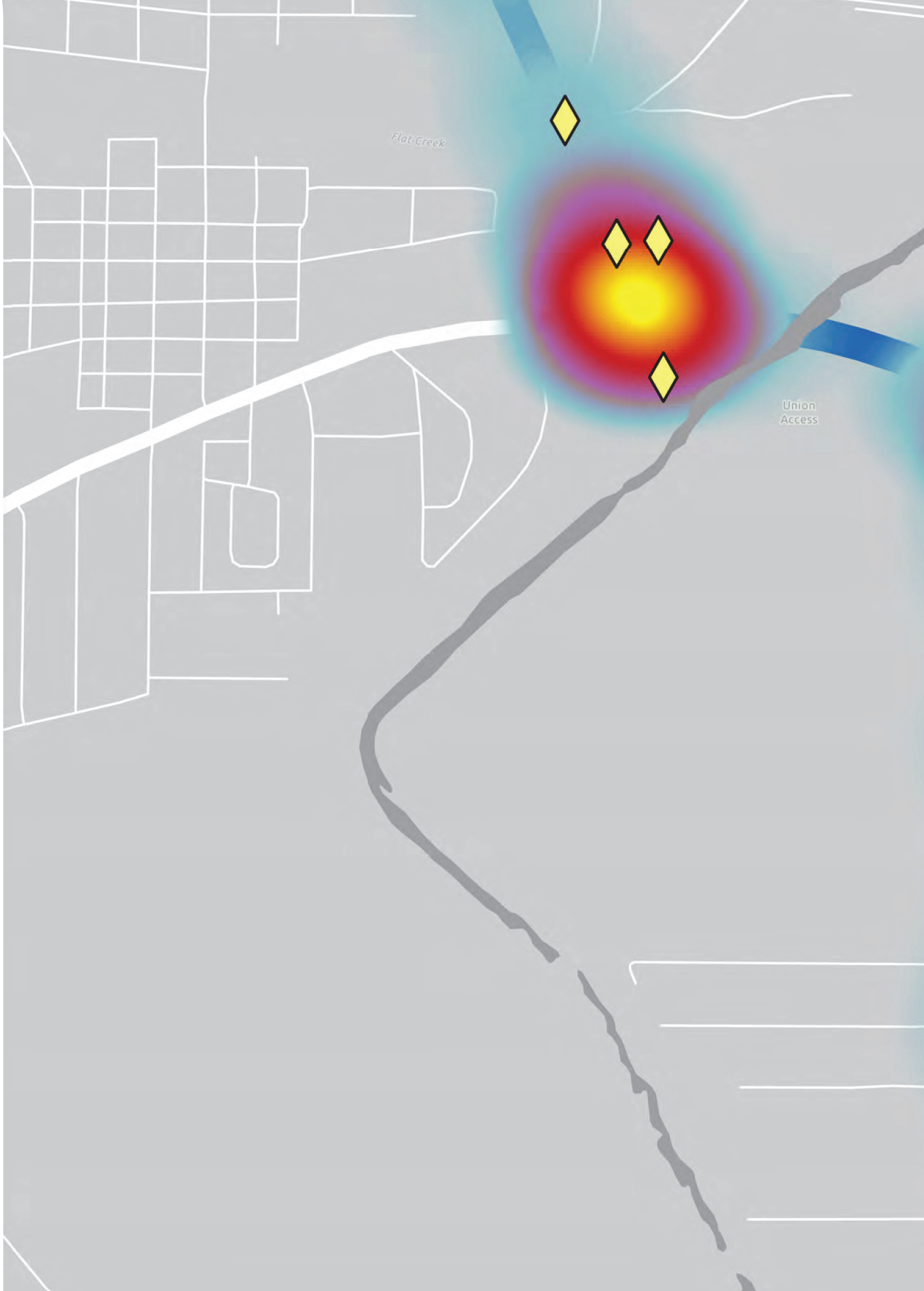
Arvel Ln
Gnarlyvine Ct
Country Club Ln
Elmwood View Rd
Country Club Rd
Elmwood Estates Dr


Flat Creek
Union
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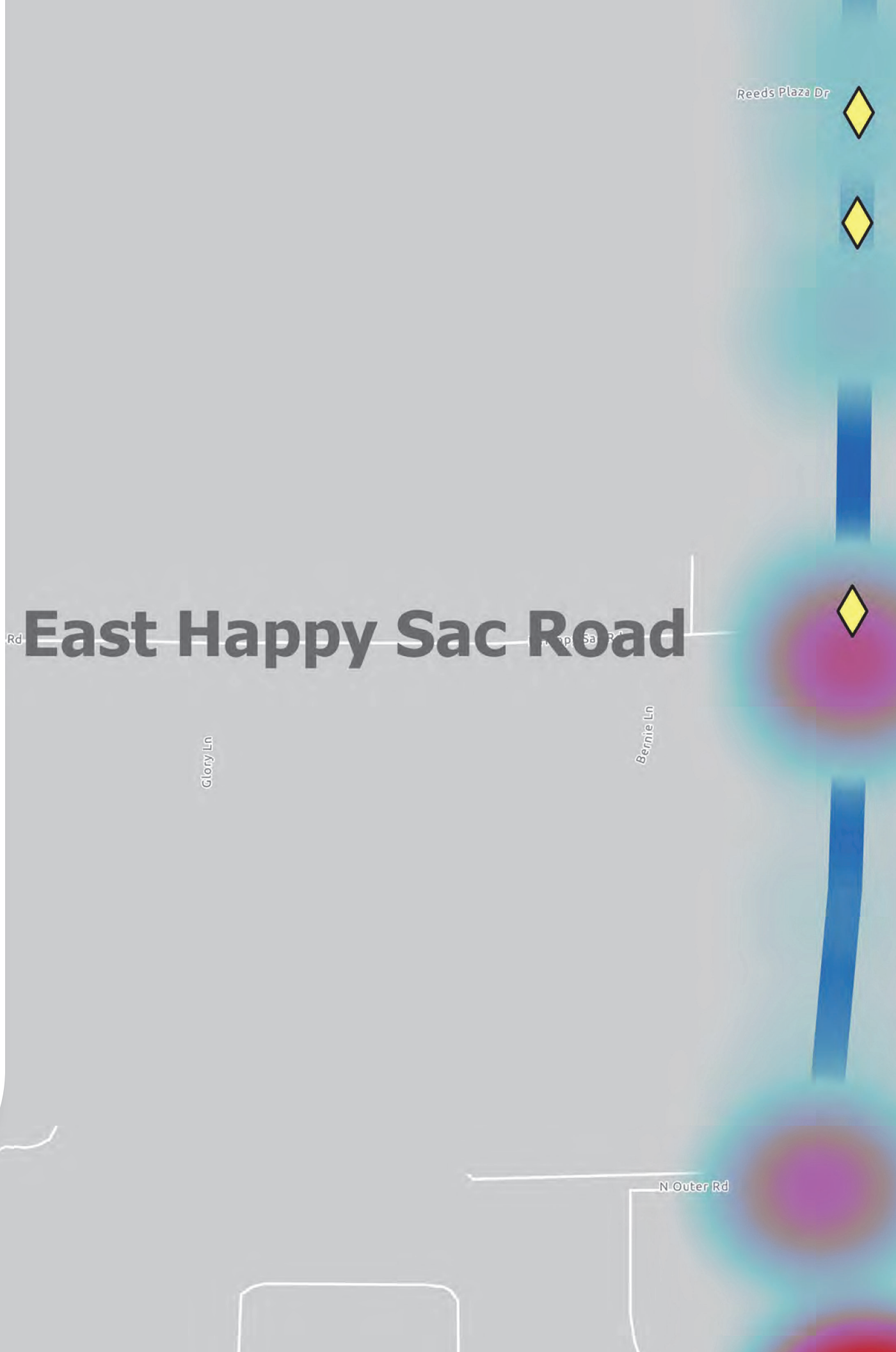
Reeds Plaza Dr
East Happy Sac Road
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N Outer Rd

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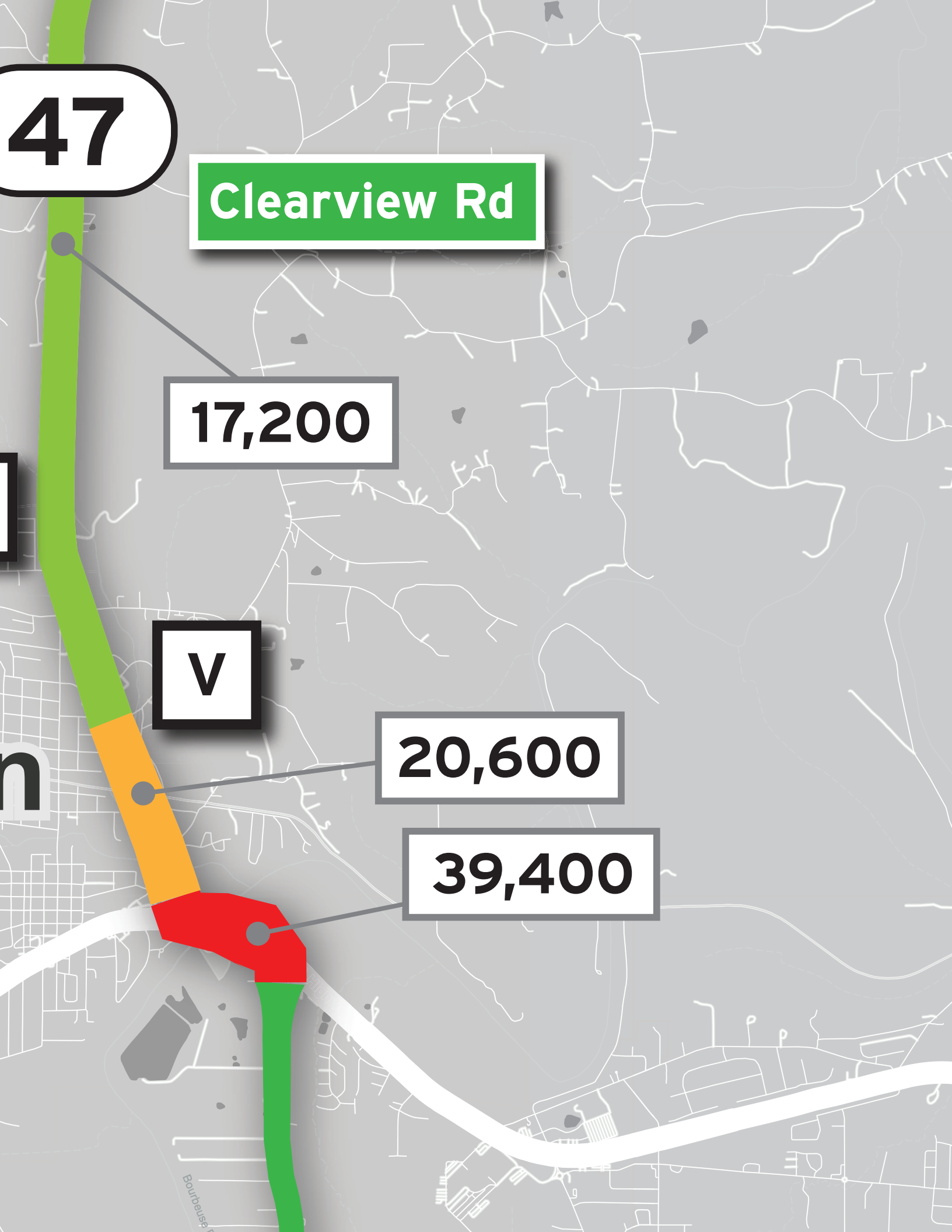
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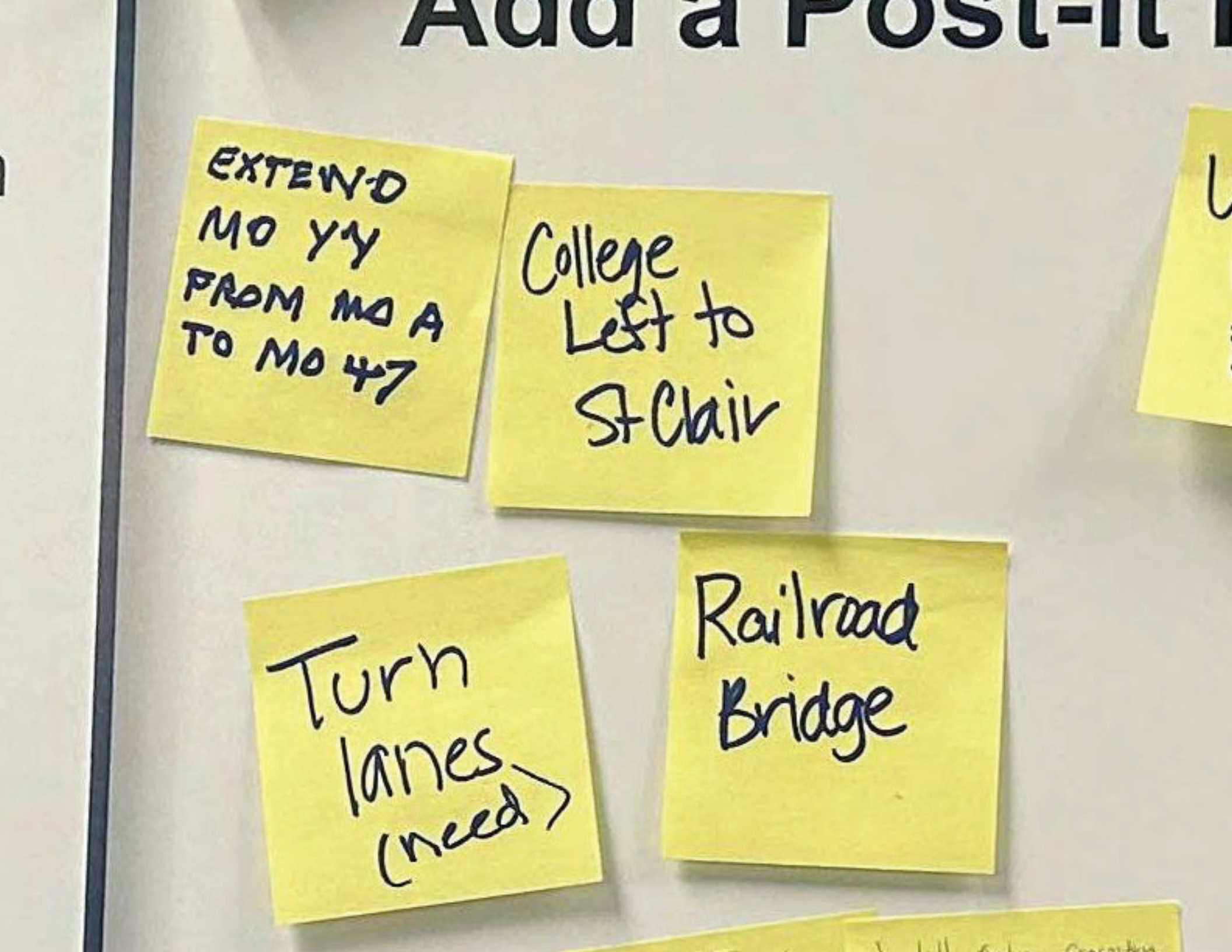
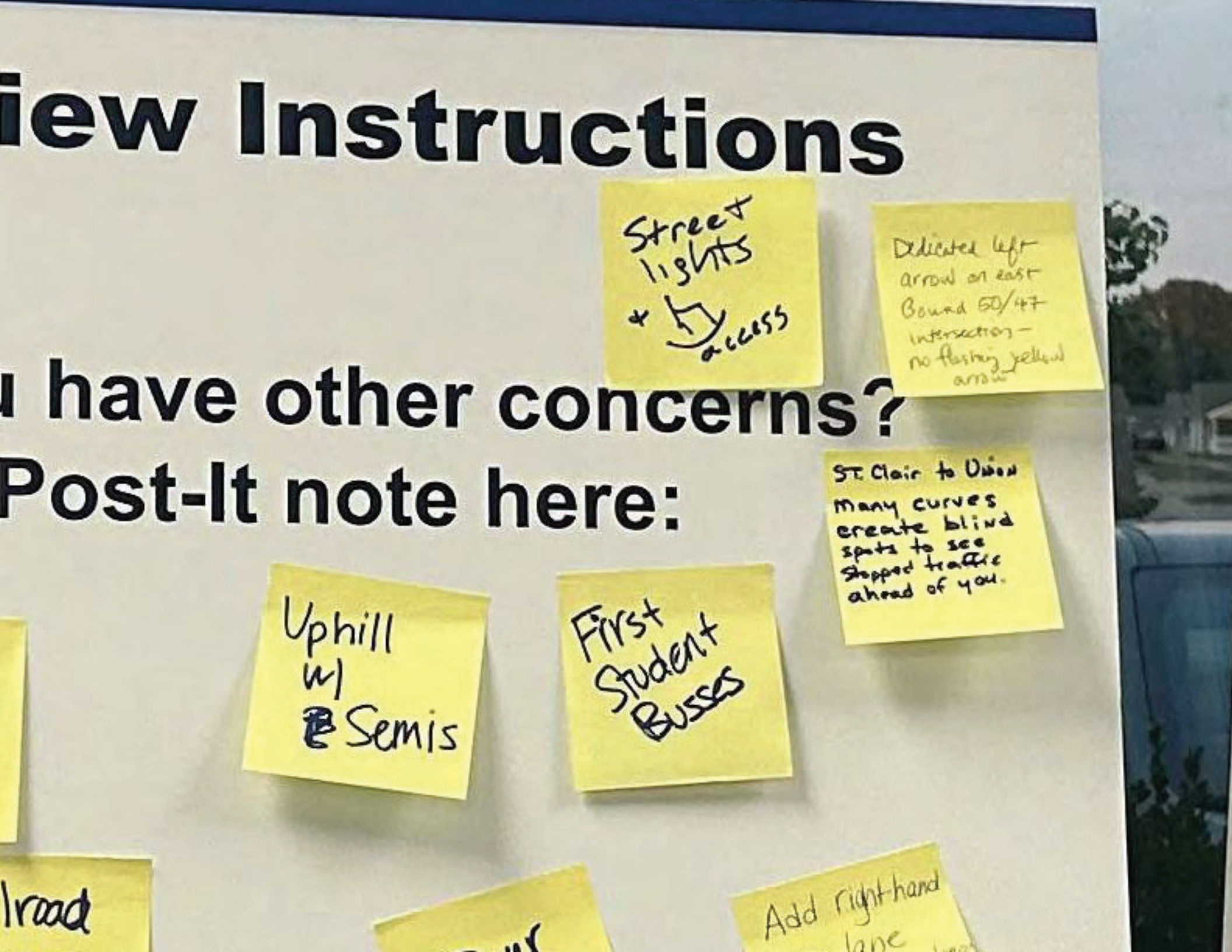
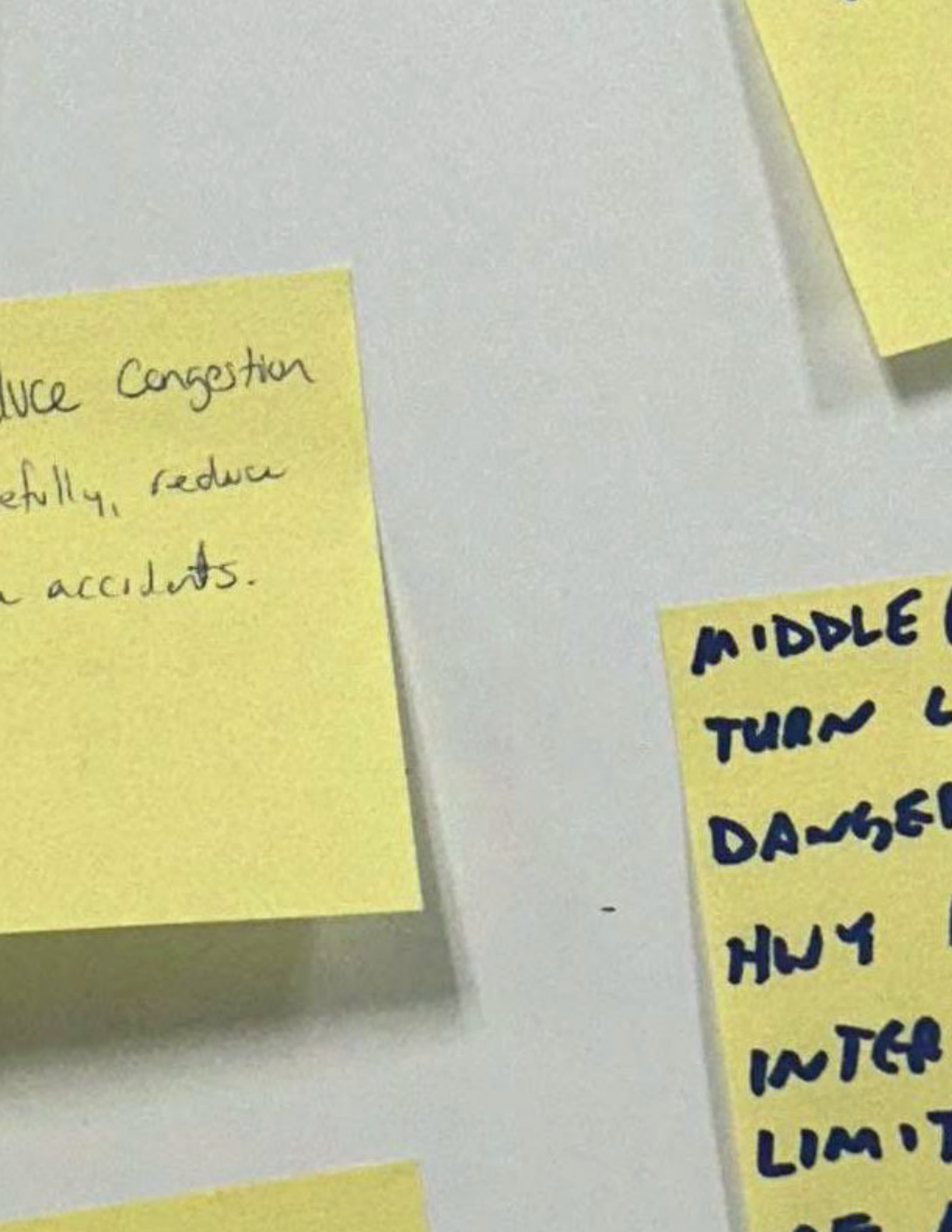

Add a Post-it
EXTEND MO YY FROM MO A TO MO 47
College Left to St Clair
Turn lanes (need)
Railroad Bridge


iew Instructions
u have other concerns?
Post-It note here:
Street lights + by access
Dedicated left arrow on east Bound 50/47 intersection — no flashing yellow arrow
St Clair to Union
many curves create blind spots to see stopped traffic ahead of you.
Uphill w/ Semis
First Student Busses
lroad
Add right-hand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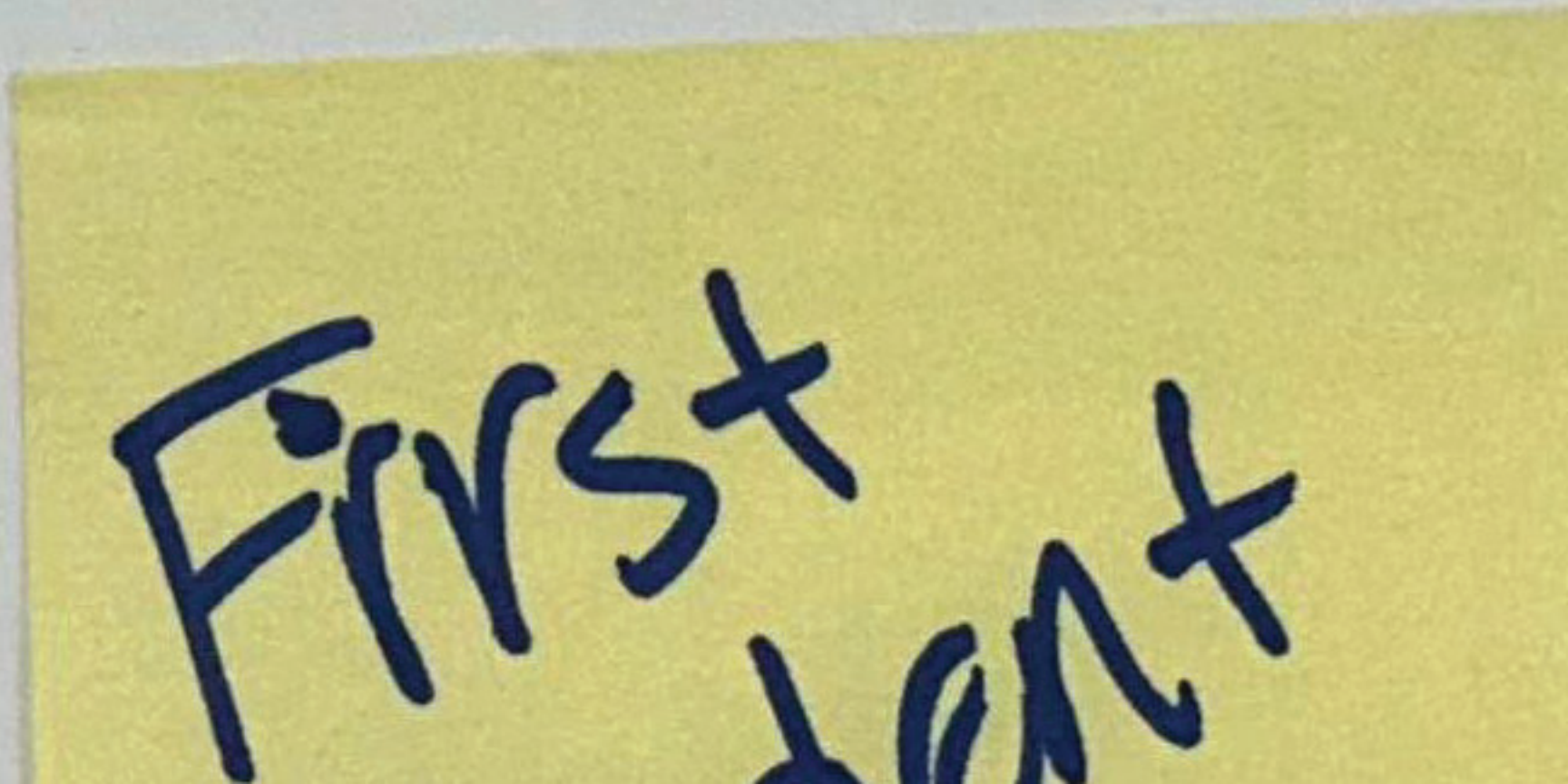

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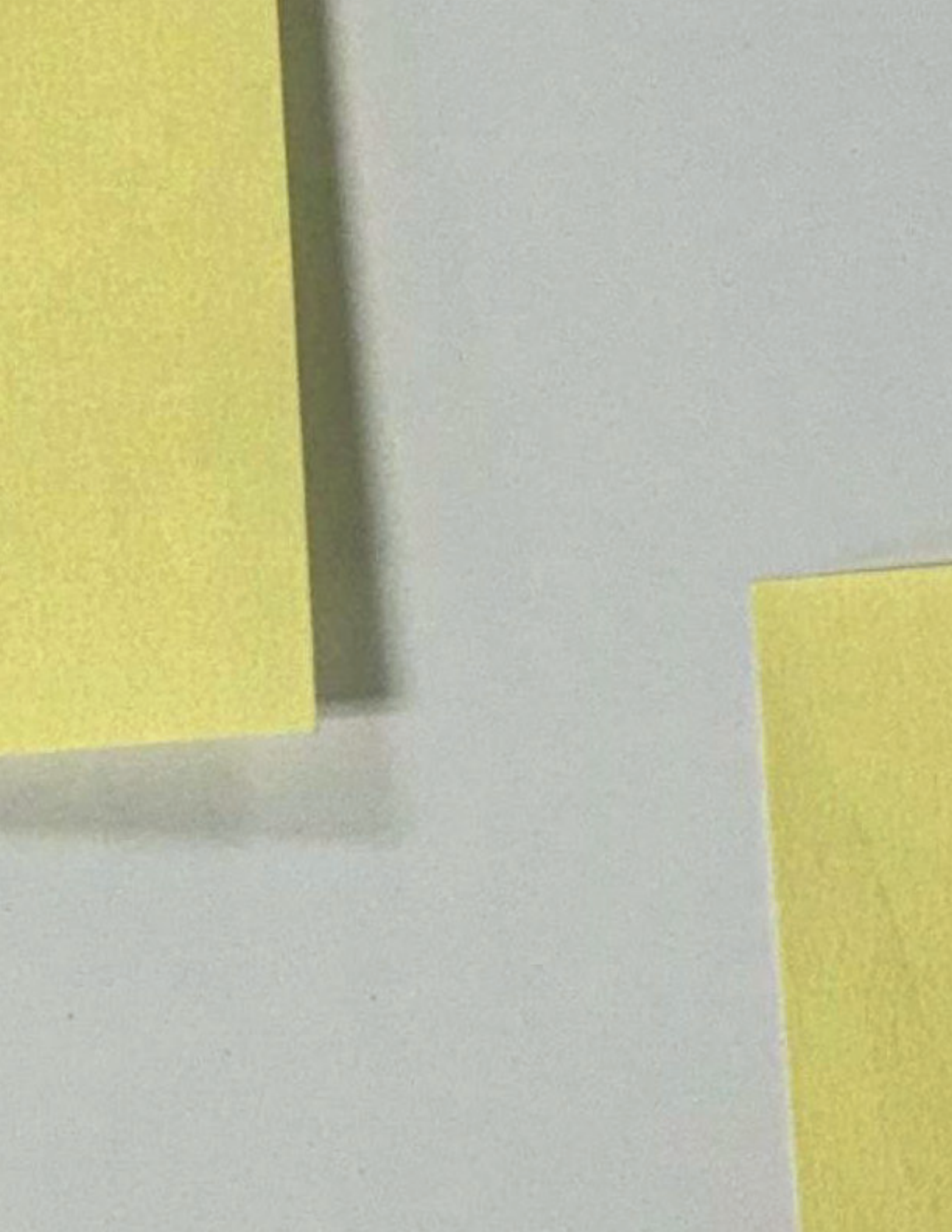

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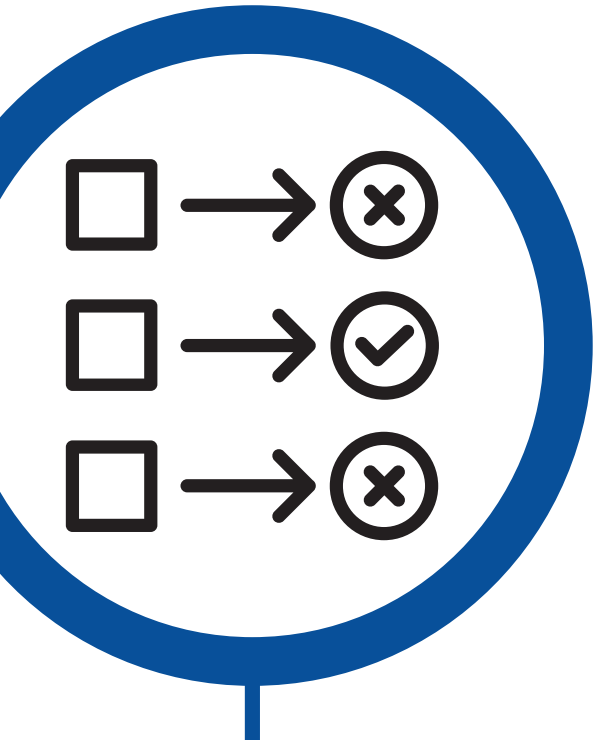

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Missouri Route 47
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Appendix G: Public Survey

Missouri Route 47

Conceptual Study

Route 47 Corridor Study Survey Results

Fall 2024 DRAFT

The Missouri Department of Transportation (MoDOT) has initiated a study to establish an overall vision for improvements to the Route 47 corridor in the cities of Washington, Union, and St. Clair.

One of the first steps in the planning process is for the Study Team to gather information about how the public uses Route 47 and the improvements they would like to see. Results will help the team evaluate important alternatives for the Route 47 corridor.

MoDOT conducted a public online survey from September 24 until October 8, 2024. Over the two-week period, 190 people participated. The survey was promoted in alignment with the public open house that was held on September 24, 2024, at the Union Community Center. MoDOT promoted the survey at the meeting, as well as via social media and the Emissourian promoted in the news articles.

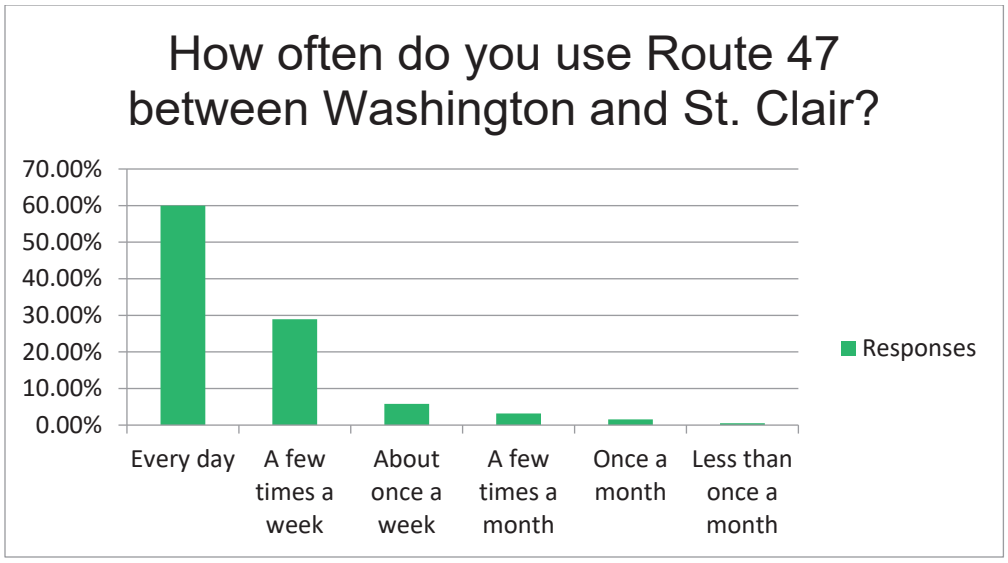
Although the survey asks several questions, comment responses were generally very similar. The public wants to see improvements on this corridor. It is clear from the responses that improving traffic flow and safety along the corridor are top priorities for Franklin County residents. Common areas of concern and opportunities for improvement, which fit within the goals of the study, include:

- Traffic flow
- Safety
- Route 47/Hwy 50 access
- Pedestrian accommodations

Questions and Results

Question 1:

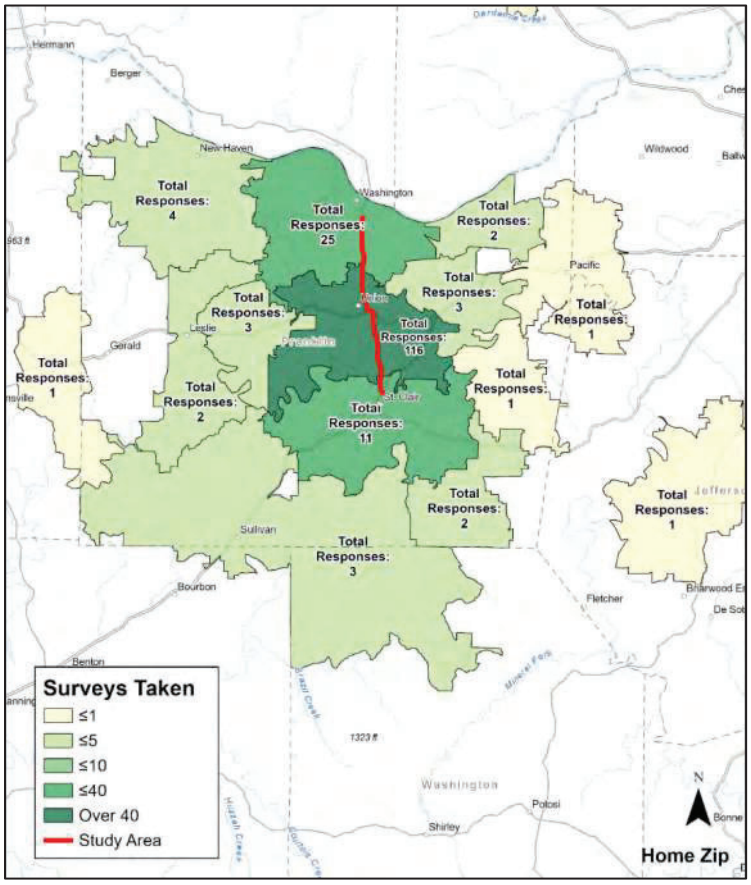
The first question asked respondents how often they use Route 47 between Washington and St. Clair. 60% of respondents use this route every day, and an additional 29% use this route multiple times a week.



Question 2:

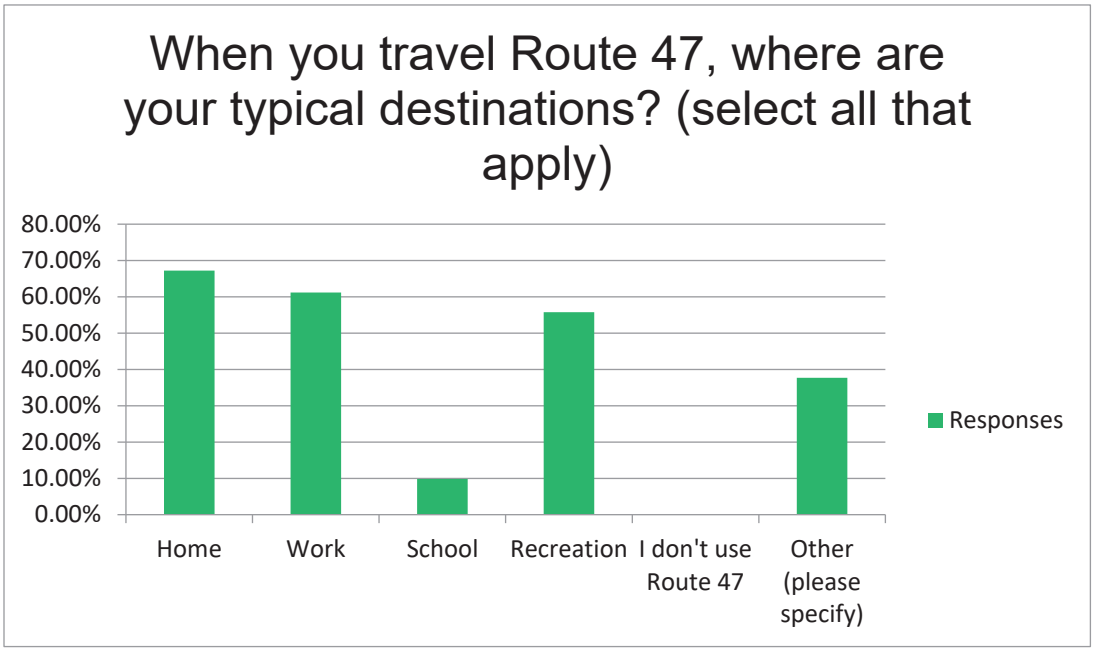
Question 2 asks respondents what the zip code is for their home. A total of 13 zip codes were represented in the responses. 64% of responses represented zip code 63084 (Union), 13% represented 63090 (Washington), and 6% represented 63077 (St. Clair). The map below shows how many people in each zip code took the survey.

Home Zip Code Heat Map:



Question 3:

Question 3 asked respondents what their typical destinations are when traveling on Route 47. The main destinations shown from the results are Home/Work/Recreation. A large percentage of people also selected 'Other', which the leading specification was shopping and visiting family or friends.



Question 4:

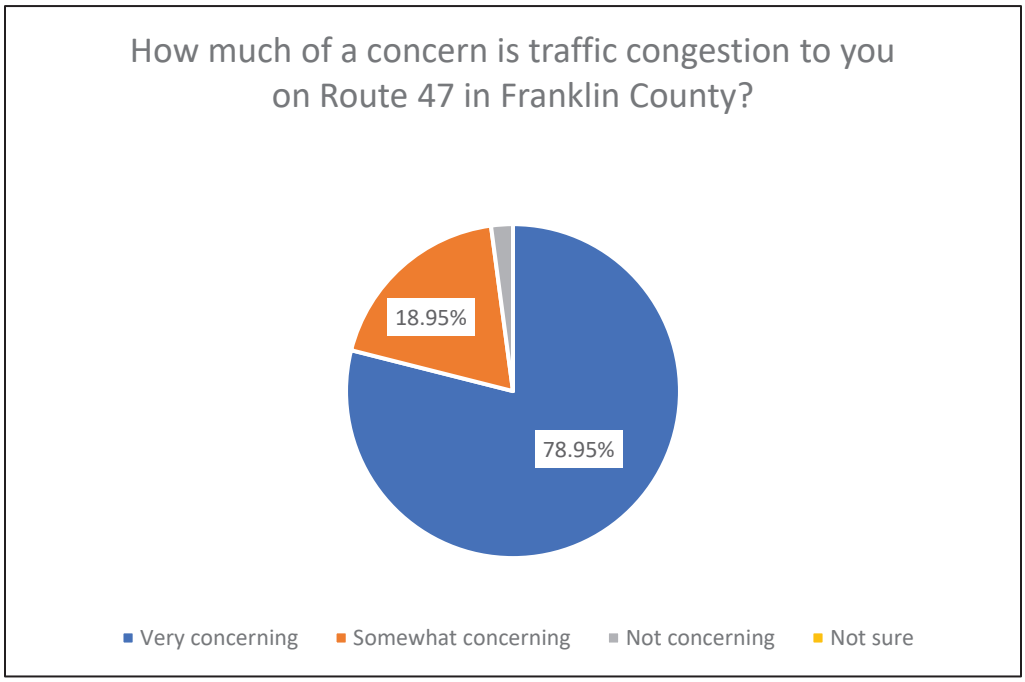
Question 4 asked respondents how many miles it typically takes to reach any point within the Route 47 corridor between Washington and St. Clair. The highest received response was 6-10 miles with 41%. 38% said 0-5 miles, and 24% said 11-15 miles. The purpose of this question is to identify respondent proximity to Route 47 from their residence as there are concerns for safety and access to those who live nearby in addition to those who are driving.

Question 5:

Question 5 asked respondents how much of a concern traffic congestion is to them on Route 47. Nearly 80% said it was very concerning, 19% said it was somewhat concerning, and only 2% said it was not concerning.

Respondents had the opportunity to leave additional comments on this question. Common themes from the comments include:

- Traffic is significantly worse because of a lack of turn lanes
- Traffic is especially bad in the mornings and evenings
- People dread/avoid driving on Route 47
- Traffic is bumper to bumper, many fear being in rear-end collisions
- Travel times are longer when driving on Route 47
- Traffic has been an issue on Route 47 for years



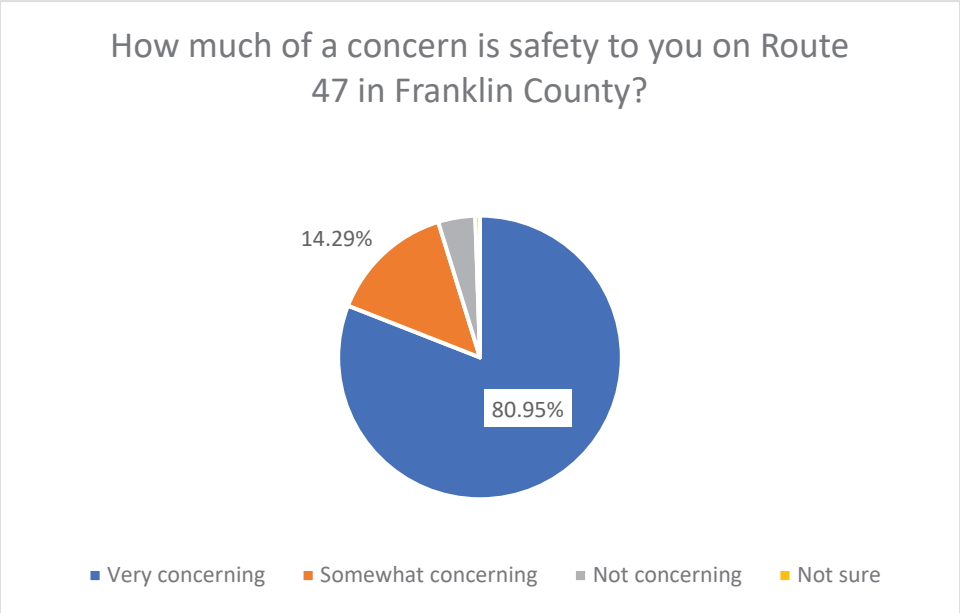
Question 6:

Question 6 asked respondents how much of a concern safety is to them on Route 47. Over 80% said it was very concerning, 13% said it was somewhat concerning, and 3% said it was not concerning.

Respondents had the opportunity to leave additional comments on this question. Common themes from the comments include:

- Frequent rear-end collisions and accidents
- Very difficult to drive on when there is any kind of precipitation/weather (rain, snow, etc.)

- People making risky moves to get to their destinations faster
- Drivers exceeding speed limits
- Turning onto Route 47 is dangerous and often takes several minutes



Question 7:

Question 7 asked respondents if they take any alternative routes to avoid using Route 47. 75% answered yes, 25% answered no. Respondents who answered yes were asked to specify with what alternative routes they were using. The most common routes from the comments include:

- Hwy A
- Hwy V
- College Road
- Backroads
- I-44
- Hwy 100

Question 8:

Question 8 asked respondents if they had any comments or specific concerns that they would like to share about Route 47. This question received 131 responses. Common themes from the comments are listed below. A full list of comments are attached.

- Need turn lanes to improve the traffic flow
- Improvements have been needed for several years, people very much desire changes on Route 47
- Alignment of Hwy 47 and Hwy 50 is concerning

- Lines need to be repainted
- More lanes are needed
- Trips are taking too long, specifically from 3-6 p.m.
- Safety concerns

Question 9:

Question 9 gave respondents the option to put in their contact information. Respondents had the opportunity to share their name, address, company (if applicable), email address, and phone number. Sharing any of these gives allows the Study Team to send information about the project, as well as respond to comments if necessary. 119 respondents shared at least one category of contact information.

Question 10:

Question 10 asked which of the following best describes you from these options: resident, employee in the area, commuter, business owner/manager, elected official, or other (please specify). 154 respondents answered this question.

85% identified as a resident, 6% as an employee in the area, 4.5% as other, 2% as a business owner/manager, 1% as an elected official, and less than 1% as a commuter.

Conclusion

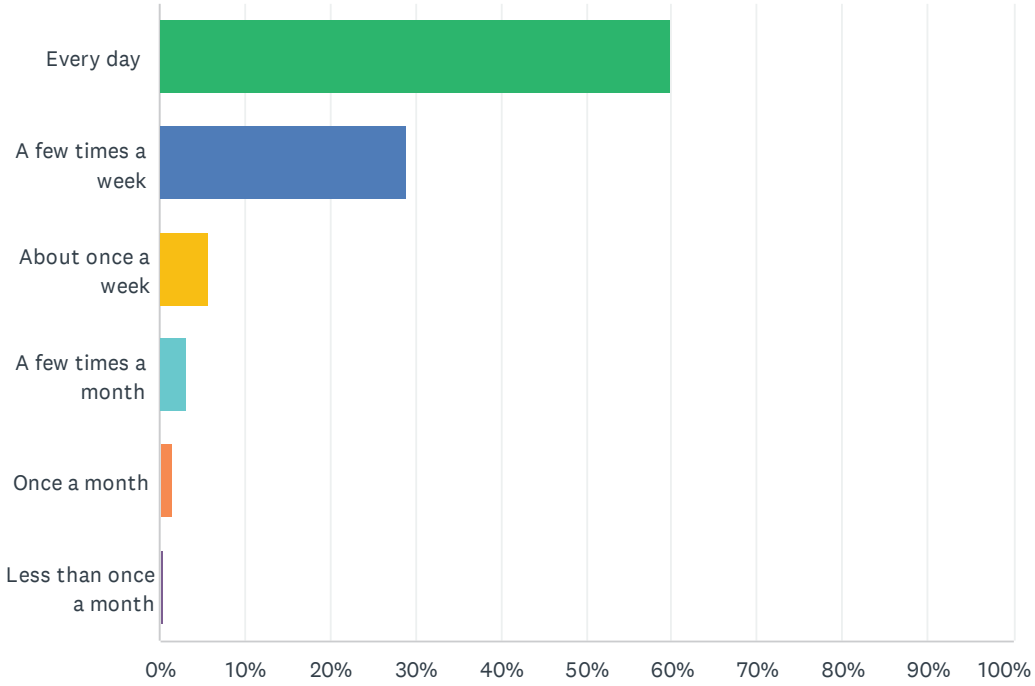
A large majority of responses from this survey support improving Route 47 in Franklin County. The top concerns are addressing traffic flow and improving trip times along the corridor. The secondary concern is improving safety.

Appendices

- Survey results

Q1 How often do you use Route 47 between Washington and St. Clair?

Answered: 190 Skipped: 0



ANSWER CHOICES	RESPONSES	
Every day	60.00%	114
A few times a week	28.95%	55
About once a week	5.79%	11
A few times a month	3.16%	6
Once a month	1.58%	3
Less than once a month	0.53%	1
TOTAL		190

Q2 What is your home zip code?

Answered: 187 Skipped: 3

#	RESPONSES	DATE
1	63077	10/8/2024 8:23 PM
2	63077	10/8/2024 8:02 PM
3	63084	10/8/2024 7:51 PM
4	63367	10/8/2024 11:48 AM
5	63084	10/8/2024 7:54 AM
6	65535	10/7/2024 5:19 PM
7	63084	10/7/2024 1:08 PM
8	63090	10/7/2024 11:52 AM
9	63084	10/7/2024 11:50 AM
10	63084	10/7/2024 11:46 AM
11	63084	10/7/2024 11:43 AM
12	63091	10/7/2024 11:40 AM
13	63084	10/7/2024 11:38 AM
14	63090, 63084 own property in both	10/7/2024 11:34 AM
15	63084	10/7/2024 11:30 AM
16	63084	10/7/2024 11:28 AM
17	63084	10/7/2024 11:26 AM
18	63084	10/7/2024 11:24 AM
19	63090	10/7/2024 11:17 AM
20	63077	10/7/2024 11:16 AM
21	63084	10/7/2024 11:14 AM
22	63084	10/6/2024 5:03 PM
23	63084	10/6/2024 9:46 AM
24	63084	10/6/2024 7:56 AM
25	63077	10/5/2024 11:59 PM
26	63084	10/5/2024 3:55 PM
27	63084	10/5/2024 12:43 PM
28	63084	10/4/2024 9:59 PM
29	63084	10/4/2024 4:47 PM
30	63084	10/2/2024 3:18 PM
31	63090	10/2/2024 1:02 PM
32	63084	10/2/2024 11:53 AM
33	63084	10/2/2024 11:26 AM

34	63090	10/1/2024 11:57 AM
35	63077	10/1/2024 11:43 AM
36	63090	10/1/2024 9:52 AM
37	63077	9/30/2024 11:38 PM
38	62084	9/30/2024 9:57 PM
39	63077	9/30/2024 5:50 PM
40	63084	9/30/2024 10:35 AM
41	63090	9/30/2024 8:53 AM
42	63084	9/30/2024 6:51 AM
43	63060	9/30/2024 6:23 AM
44	63090	9/30/2024 4:45 AM
45	63080	9/29/2024 9:36 PM
46	63090	9/29/2024 8:14 PM
47	63080	9/29/2024 7:31 PM
48	63056	9/29/2024 3:03 PM
49	63084	9/29/2024 10:32 AM
50	63090	9/29/2024 10:03 AM
51	63084	9/28/2024 7:22 PM
52	63090	9/28/2024 6:39 PM
53	63090	9/28/2024 6:35 PM
54	63084	9/28/2024 1:52 PM
55	63077	9/28/2024 10:52 AM
56	63090	9/28/2024 9:51 AM
57	63084	9/28/2024 7:53 AM
58	63084	9/28/2024 12:02 AM
59	63084	9/27/2024 10:27 PM
60	63084	9/27/2024 7:14 PM
61	63084	9/27/2024 3:20 PM
62	63090	9/27/2024 1:03 PM
63	63084	9/27/2024 12:16 PM
64	63084	9/26/2024 7:37 PM
65	63084	9/26/2024 6:58 PM
66	63084	9/26/2024 2:50 PM
67	63056	9/26/2024 12:57 PM
68	63090	9/26/2024 11:12 AM
69	63069	9/26/2024 10:03 AM
70	63060	9/26/2024 8:03 AM
71	63084	9/26/2024 1:57 AM

72	63084	9/26/2024 12:27 AM
73	63084	9/25/2024 11:17 PM
74	63084	9/25/2024 10:01 PM
75	63084	9/25/2024 9:55 PM
76	63084	9/25/2024 9:22 PM
77	63089	9/25/2024 8:09 PM
78	63084	9/25/2024 8:00 PM
79	63084	9/25/2024 7:57 PM
80	63084	9/25/2024 7:48 PM
81	63077	9/25/2024 7:42 PM
82	63084	9/25/2024 7:36 PM
83	63084	9/25/2024 7:12 PM
84	63084	9/25/2024 6:28 PM
85	63084	9/25/2024 6:21 PM
86	63084	9/25/2024 6:16 PM
87	63084	9/25/2024 6:02 PM
88	63084	9/25/2024 6:01 PM
89	63084	9/25/2024 6:01 PM
90	63084	9/25/2024 5:47 PM
91	64084	9/25/2024 5:36 PM
92	63084	9/25/2024 5:08 PM
93	63084	9/25/2024 5:05 PM
94	63084	9/25/2024 4:43 PM
95	63084	9/25/2024 4:38 PM
96	63084	9/25/2024 4:35 PM
97	63072	9/25/2024 4:35 PM
98	63013	9/25/2024 4:30 PM
99	63084	9/25/2024 4:00 PM
100	63084	9/25/2024 3:57 PM
101	63084	9/25/2024 3:47 PM
102	63090	9/25/2024 2:50 PM
103	63084	9/25/2024 2:47 PM
104	63084	9/25/2024 2:40 PM
105	63084	9/25/2024 1:52 PM
106	63084	9/25/2024 1:49 PM
107	63084	9/25/2024 1:47 PM
108	63084	9/25/2024 1:43 PM
109	63084	9/25/2024 1:25 PM

110	63084	9/25/2024 1:18 PM
111	63084	9/25/2024 12:52 PM
112	63077	9/25/2024 12:50 PM
113	63084	9/25/2024 12:49 PM
114	63084	9/25/2024 12:36 PM
115	63084	9/25/2024 12:33 PM
116	63013	9/25/2024 12:17 PM
117	63084	9/25/2024 12:17 PM
118	63084	9/25/2024 12:02 PM
119	63099	9/25/2024 12:01 PM
120	63084	9/25/2024 11:52 AM
121	63084	9/25/2024 11:44 AM
122	63084	9/25/2024 11:43 AM
123	63084	9/25/2024 11:39 AM
124	63055	9/25/2024 11:25 AM
125	63084	9/25/2024 11:25 AM
126	63090	9/25/2024 11:00 AM
127	63084	9/25/2024 10:56 AM
128	63084	9/25/2024 10:43 AM
129	63084	9/25/2024 10:37 AM
130	63090	9/25/2024 10:36 AM
131	63084	9/25/2024 10:30 AM
132	63089	9/25/2024 10:28 AM
133	63084	9/25/2024 10:23 AM
134	63084	9/25/2024 10:20 AM
135	63068	9/25/2024 10:19 AM
136	63084	9/25/2024 10:18 AM
137	63084	9/25/2024 10:12 AM
138	63090	9/25/2024 10:11 AM
139	63090	9/25/2024 10:10 AM
140	63090	9/25/2024 10:03 AM
141	63084	9/25/2024 10:02 AM
142	63084	9/25/2024 9:59 AM
143	63084	9/25/2024 9:56 AM
144	63084	9/25/2024 9:54 AM
145	63084	9/25/2024 9:54 AM
146	63084	9/25/2024 9:53 AM
147	63084	9/25/2024 9:38 AM

148	63084	9/25/2024 9:30 AM
149	63084	9/25/2024 9:29 AM
150	63084	9/25/2024 9:19 AM
151	63084	9/25/2024 9:19 AM
152	63084	9/25/2024 9:13 AM
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166	63084	9/24/2024 6:14 PM
167	63084	9/24/2024 6:09 PM
168	63084	9/24/2024 6:08 PM
169	63077	9/24/2024 5:58 PM
170	63084	9/24/2024 5:50 PM
171	63084	9/24/2024 5:18 PM
172	63050	9/24/2024 5:17 PM
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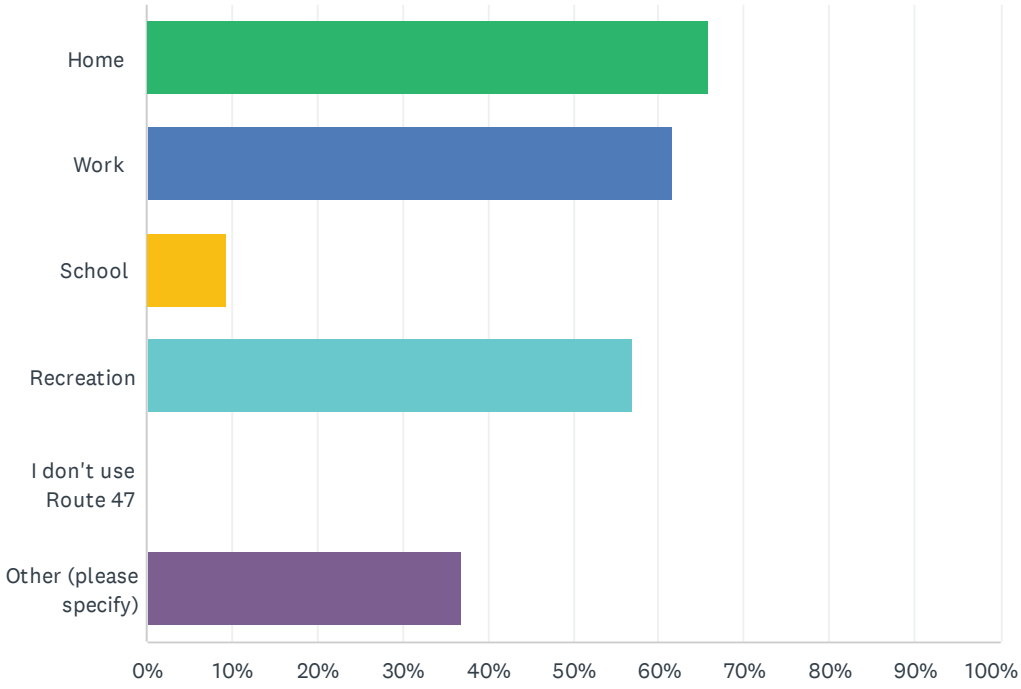
174	63013	9/24/2024 4:18 PM
175	63084	9/24/2024 4:17 PM
176	63084	9/24/2024 4:15 PM
177	63084	9/24/2024 3:52 PM
178	63084	9/24/2024 3:51 PM
179	63367	9/24/2024 3:11 PM
180	63084	9/24/2024 3:09 PM
181	63077	9/24/2024 3:05 PM
182	63084	9/24/2024 2:49 PM
183	63084	9/24/2024 2:46 PM
184	63090	9/24/2024 12:58 PM
185	63055	9/24/2024 11:20 AM

186	63090	9/24/2024 11:08 AM
187	63090	9/24/2024 10:48 AM

Q3 When you travel Route 47, where are your typical destinations? (select all that apply)

Answered: 190 Skipped: 0



ANSWER CHOICES	RESPONSES	
Home	65.79%	125
Work	61.58%	117
School	9.47%	18
Recreation	56.84%	108
I don't use Route 47	0.00%	0
Other (please specify)	36.84%	70
Total Respondents: 190		

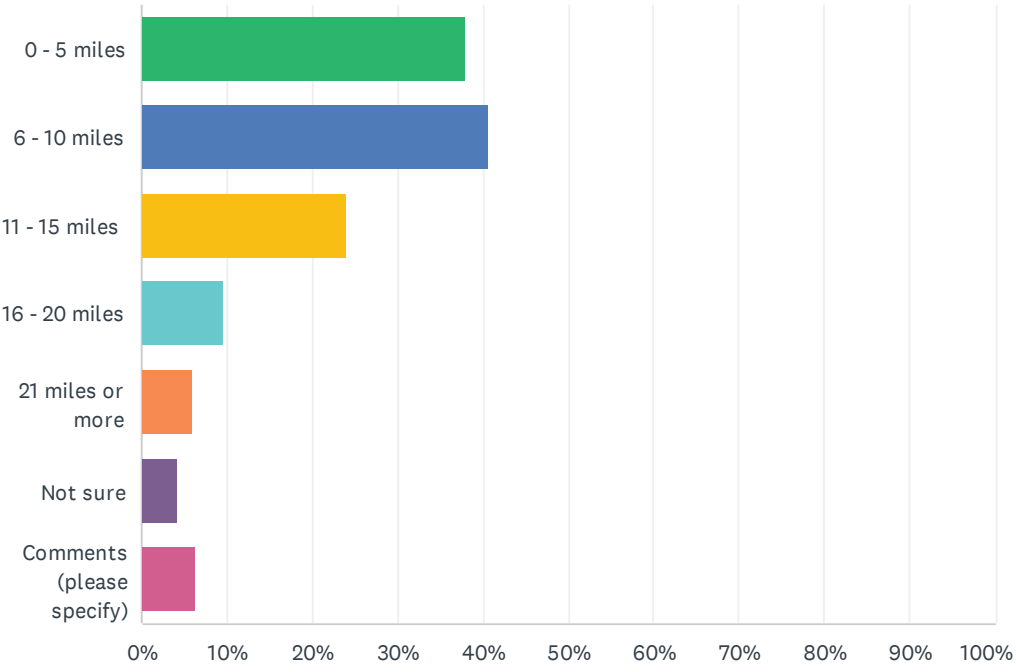
#	OTHER (PLEASE SPECIFY)	DATE
1	Literally everything, I live off 47.	10/8/2024 7:51 PM
2	Sports events	10/7/2024 11:52 AM
3	Appointments, work, commerce-related activities	10/7/2024 11:40 AM
4	Farm equipt-	10/7/2024 11:30 AM
5	Church, merchants, etc.	10/7/2024 11:28 AM
6	Church	10/7/2024 11:26 AM
7	Help my mother who lives in Union	10/7/2024 11:24 AM

8	Washington stores and restaurants	10/7/2024 11:20 AM
9	Visit family	10/7/2024 11:17 AM
10	Kids activities	10/7/2024 11:14 AM
11	Church	10/5/2024 3:55 PM
12	driving to the Y in Washington	10/5/2024 12:43 PM
13	Doctors and stores	10/4/2024 4:47 PM
14	Shopping	10/2/2024 1:02 PM
15	Shopping	10/2/2024 11:26 AM
16	shopping	10/1/2024 11:43 AM
17	Visit family	10/1/2024 9:52 AM
18	Everything, indo everything in Union and Washington	9/30/2024 11:38 PM
19	Shopping	9/30/2024 10:35 AM
20	relatives	9/30/2024 8:53 AM
21	nursing home	9/29/2024 10:32 AM
22	Businesses on Hi-line Dr, Rock quarry	9/29/2024 10:03 AM
23	Shopping	9/28/2024 6:39 PM
24	Dining/shopping	9/28/2024 1:52 PM
25	. Shopping. Dining	9/28/2024 10:52 AM
26	Union Care Center, Hwy 50, Union MO	9/28/2024 9:51 AM
27	Shopping/retail	9/27/2024 10:27 PM
28	Shopping	9/27/2024 3:20 PM
29	child care	9/27/2024 1:03 PM
30	Shopping	9/26/2024 12:57 PM
31	Businesses	9/26/2024 8:03 AM
32	Errands	9/25/2024 11:17 PM
33	retail goods and services in Washington, church services between Washington and Union	9/25/2024 10:01 PM
34	Shopping, Doctor appointment	9/25/2024 7:57 PM
35	Shopping	9/25/2024 7:36 PM
36	Shop	9/25/2024 6:21 PM
37	Shopping	9/25/2024 6:02 PM
38	Store	9/25/2024 5:08 PM
39	Shopping	9/25/2024 4:35 PM
40	Shopping	9/25/2024 1:49 PM
41	In winter time to avoid 44 accidents	9/25/2024 1:25 PM
42	Shopping	9/25/2024 12:17 PM
43	Son lives in St.Clair	9/25/2024 11:52 AM
44	shopping	9/25/2024 11:43 AM
45	shopping	9/25/2024 11:39 AM

46	Shopping	9/25/2024 11:00 AM
47	Shopping	9/25/2024 10:43 AM
48	Shopping	9/25/2024 10:30 AM
49	Camping	9/25/2024 10:23 AM
50	Que Pasa	9/25/2024 10:19 AM
51	Misc	9/25/2024 10:18 AM
52	Baby sitter	9/25/2024 9:59 AM
53	Doctor	9/25/2024 9:38 AM
54	Going to the Gym, The Competitive edge	9/25/2024 9:29 AM
55	Church	9/25/2024 9:19 AM
56	shopping	9/25/2024 9:19 AM
57	Shopping & travel	9/25/2024 9:13 AM
58	Shopping	9/25/2024 8:56 AM
59	Volunteer activities, meetings, etc.	9/24/2024 10:11 PM
60	errands, such as banking or post office	9/24/2024 9:22 PM
61	Shopping	9/24/2024 9:07 PM
62	Houses I deliver food to in Union	9/24/2024 8:23 PM
63	Shopping - Gym	9/24/2024 7:55 PM
64	Shopping	9/24/2024 6:14 PM
65	Shopping	9/24/2024 6:09 PM
66	Goods & Services	9/24/2024 6:08 PM
67	Visiting Family	9/24/2024 4:23 PM
68	Shopping	9/24/2024 4:17 PM
69	Shopping	9/24/2024 4:15 PM
70	Doctor visits, visit relatives and shop.	9/24/2024 3:05 PM

Q4 How many miles does it typically take for you to reach any point within the Route 47 corridor between Washington and St. Clair? (select all that apply)

Answered: 187 Skipped: 3



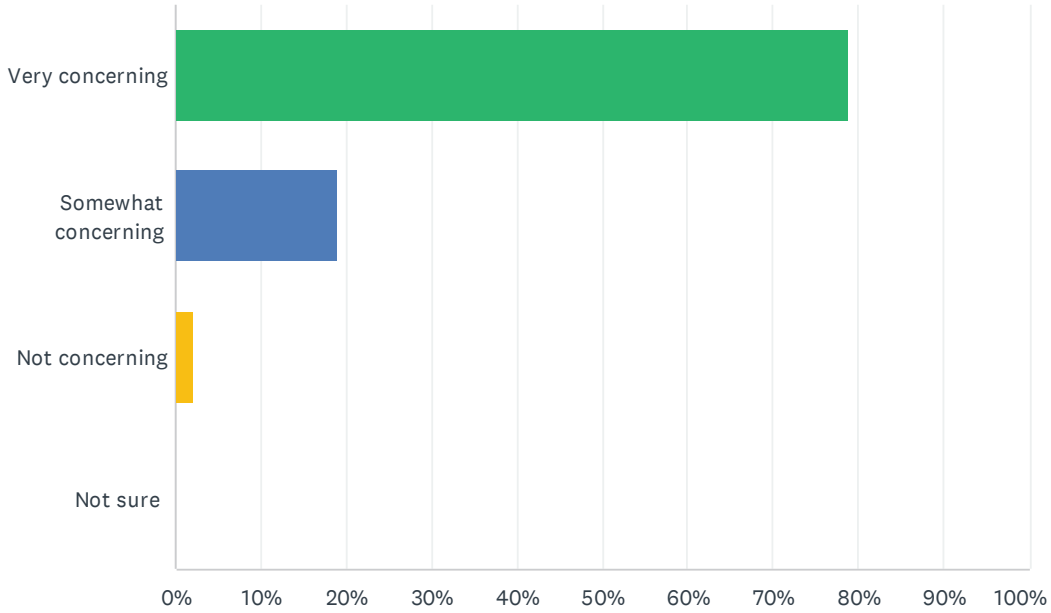
ANSWER CHOICES	RESPONSES	
0 - 5 miles	37.97%	71
6 - 10 miles	40.64%	76
11 - 15 miles	24.06%	45
16 - 20 miles	9.63%	18
21 miles or more	5.88%	11
Not sure	4.28%	8
Comments (please specify)	6.42%	12
Total Respondents: 187		

#	COMMENTS (PLEASE SPECIFY)	DATE
1	We live on 47 South between St. Clair and Union	10/7/2024 11:50 AM
2	We live on 47 between St. Clair and Union	10/7/2024 11:46 AM
3	Driveway is directly on Hwy 47	10/7/2024 11:14 AM
4	I drive from dutzow to union twice per day, to work and back	10/6/2024 5:03 PM
5	I live off of 47 in Forest Hills Subdivision and work in Washington	9/28/2024 6:35 PM

6	About 4 miles to attend church services between Washington and Union, 6-10 miles for goods and services in Washington.	9/25/2024 10:01 PM
7	I'm a driver for Compass. My route is St. Clair to Washington. I live behind Dicky Bub's.	9/25/2024 6:02 PM
8	Rarely drive from Union to St Clair	9/25/2024 3:47 PM
9	I'd drive further to avoid the aggressive and impatient drivers.	9/25/2024 1:25 PM
10	You have to use 47 to get just about anywhere.. unless you take backroads. Those are unreliable in winter season, though	9/25/2024 9:13 AM
11	I travel both directions pretty evenly during the week.	9/25/2024 8:56 AM
12	We live right between Washington and Union so it largely depends on which way traffic is heavier - I go opposite.	9/24/2024 10:48 AM

Q5 How much of a concern is traffic congestion to you on Route 47 in Franklin County?

Answered: 190 Skipped: 0



ANSWER CHOICES	RESPONSES	
Very concerning	78.95%	150
Somewhat concerning	18.95%	36
Not concerning	2.11%	4
Not sure	0.00%	0
TOTAL		190

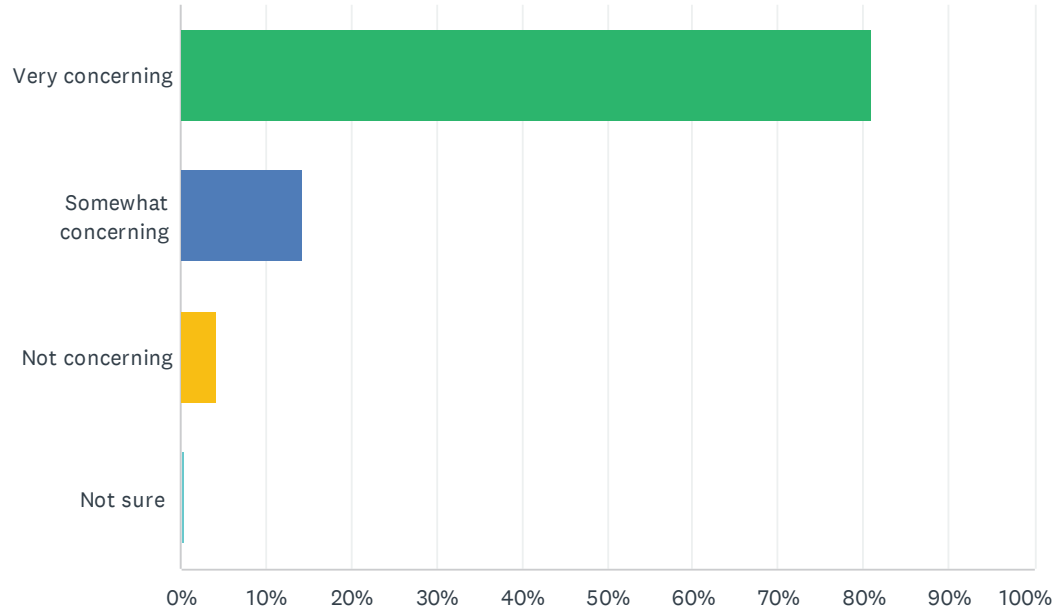
#	COMMENTS	DATE
1	Sure it is busy at peak times and you might have to wait a minute or two to make a left, and it does often congest a little at 47 & 50 but it is only a very minor inconvenience.	10/8/2024 7:51 PM
2	The amount of traffic from Walgreens in Union all the way to the Quarry during rush hour is crazy sometimes having to wait 25 mins for a 5 min trip	10/8/2024 7:54 AM
3	A very dangerous road. Too many rear end collisions	10/7/2024 11:52 AM
4	There is heavy traffic for us to turn in or out of our driveway. Always congested at College Rd and Hwy 47	10/7/2024 11:50 AM
5	I am lucky enough to not need to travel during rush-hour times	10/7/2024 11:40 AM
6	Just need to add a few turn lanes to help with flow. Also UPS dedicated lanes area is a mess.	10/7/2024 11:34 AM
7	This has been a problem for the last 25 years	10/7/2024 11:26 AM
8	Between 7:30-8:00 driving north on 47 from Clearview Rd to Washington very congested. Between 3:00-5:30 driving south from Clearview Rd to Union extremely congested.	10/7/2024 11:24 AM

9	Too many tractor trailers/cars going too fast with as many other drivers on this highway.	10/7/2024 11:14 AM
10	It is the most devastating part of my life sitting in bumper to bumper traffic moving 10-30 mph below speed limit twice a day, everyday.	10/6/2024 5:03 PM
11	I take longer routes, to get to Washington, to avoid 47. It's just too dangerous!	10/6/2024 7:56 AM
12	Two lanes on highway 47 has been terrible for years!	10/4/2024 4:47 PM
13	Without a center turning lane, traffic backs-up quite a bit, especially in the mornings and evenings. I understand that 4 or 5 lanes is out of the question with this round of funding, but a center turning lane would make a lot of sense from St. Clair to Washington.	9/30/2024 5:50 PM
14	I work between Washington and Union by the new bus garage off of Dubois Valley Drive.	9/30/2024 8:53 AM
15	Appears to be getting heavier every year	9/28/2024 6:35 PM
16	Heavy traffic certain times of day	9/28/2024 10:52 AM
17	Congestion has definitely increased over recent years with long lines well north of Independence Drive to Hwy 47/50 intersection. I've waited over 30-45 minutes to just get thru the intersection; especially during the morning and after-school/work hours.	9/28/2024 9:51 AM
18	Depending what time of the day it can take twice as long to get where you're going.	9/27/2024 3:20 PM
19	Independence stop light is way to backed up every single day, I try to avoid it but when I have to take that route it typically takes me 20 minutes to get from clear view to independence	9/26/2024 7:37 PM
20	You have to be sure to have plenty of time to travel between Union and Washington most of the time BUT PARTICULARLY between around 3:00pm-6:00 pm! It is terribly congested! People also get in too big a hurry to get to where they are going and I have seen them pull out of the traffic area and do a u turn and head say to Clearview Rd or somewhere to hopefully make it to their destination faster!	9/26/2024 12:57 PM
21	Traffic in the 47/50 intersection is a serious issue. In my opinion this is the most serious problem in the area. The traffic at Prairie Dell and 50 is also a huge concern. When the college and Union School lets out it is a dangerous section of road. In my opinion I would like to see the College install a back entrance to hwy 47 S and utilize this intersection with a light to begin the "flyover" to connect to existing 47 N and 50 intersection. With this 4 lane section it will increase the flow thus reducing the congestion points 1) Hwy 47 S in the afternoon 2) Hwy 47 N in the mornings 3) Prairie Dell and Hwy 50 - most college students live North toward Washington	9/26/2024 11:12 AM
22	The worst area is north of Independence, but I'm not sure if you intentionally make it bad there so it won't be as bad at the 50 intersection.	9/26/2024 10:03 AM
23	Drivers tend to block intersections when traffic get back up badly in Union and Washington.	9/26/2024 8:03 AM
24	See more road rage than ever along with wrecks.	9/26/2024 12:27 AM
25	You cannot count on traffic moving smoothly between Washington and Union with slow traffic and the ever-increasing frequency of hitting stop lights on red due to increased traffic entering from both the east and west. Often it can be nightmarish returning to Union from Washington, especially as you enter Union at 47/Independence and try to get through 47/V, 47/Main, and 47/50. The backups are frequent and often unavoidable unless you've taken an alternate route.	9/25/2024 10:01 PM
26	I will actually take the interstate to union or Washington to avoid using 47, which usually adds time to my trips.	9/25/2024 7:42 PM
27	The morning and evening traffic sucks! It is always bumper to bumper.	9/25/2024 7:36 PM
28	Friend was involved in a rear end accident almost took their life. Traffic was stopped and backed up at a stand still.	9/25/2024 6:21 PM
29	If it's after 3pm, I typically take Highway 100 to 44 and avoid the traffic backed up the hill before the intersection by the library.	9/25/2024 6:01 PM
30	There are other options available so not a terrible issue.	9/25/2024 5:36 PM
31	47 South from Washington to Union is just a parking lot in the afternoons, especially Fridays	9/25/2024 3:47 PM
32	It's always backed up during in the mornings and evenings.	9/25/2024 2:47 PM

33	My home is located on Highway 47 between Union and St Clair. I also work and shop in Washington and Marthasville.	9/25/2024 2:40 PM
34	Only at certain times of the day, accidents and construction traffic.	9/25/2024 1:25 PM
35	It's completely ridiculous, especially in the late afternoon.	9/25/2024 12:33 PM
36	I end up traveling Hwy A to avoid getting backed up in hwy 47 traffic	9/25/2024 12:17 PM
37	The traffic is so bad , I dread driving 47	9/25/2024 12:01 PM
38	I think the changes made in the last 10 years to the 47/50 intersection were designed poorly and were not thought out properly.	9/25/2024 11:43 AM
39	Too much waiting, too many accidents. Too many inattentive drivers.	9/25/2024 11:00 AM
40	I used to work in Washington. I would travel from union to Washington everyday. But the drive home I dreaded. It wasn't so much in Washington but the 47 to 50 that I hated. Too much stop and go. It would back all the way up to the pasta house intersection.	9/25/2024 10:56 AM
41	How long are we going to talk about doing something. It's been discuss 30 years or more.	9/25/2024 10:20 AM
42	it should have been 4 lanes 20 years ago	9/25/2024 9:53 AM
43	I brace myself for being rear-ended at almost every intersection. Impossible to pull out onto 47 from almost any business if not at a light. Backups happen often & cause me to be late for things. And it almost never fails that I get stuck behind a slow driver driving under the speed limit & have no opportunity to pass	9/25/2024 9:13 AM
44	From Union I take North Bend to Ad and or Ab to get to St. Clair more often. I take V to get over to southpoint using the backroads to avoid traffic at times.	9/25/2024 8:56 AM
45	The traffic has been awful for so many years. It would help to have left turn lanes, so we aren't stopped in traffic so much, and possibly hit while waiting for traffic. It's dangerous sitting waiting for someone to turn left, and people sometimes go around everyone illegally.	9/24/2024 9:22 PM
46	It needs to be four lanes.	9/24/2024 8:23 PM
47	Traffic on 47 became heavy at least 15-20 years ago but now it's terrible	9/24/2024 6:27 PM
48	Everyone works at the same time so you can only reduced congestion so much	9/24/2024 5:17 PM
49	Traffic is almost always constant. During peak periods, in the morning and afternoon, when businesses workforce goes into work or leaves for the day, capacity is reached, and lines are long.	9/24/2024 4:23 PM
50	You need right turn lanes installed, you need cross walks, you need center lanes.	9/24/2024 4:17 PM
51	The improvements they've made haven't seemed to work. The traffic is more than the road can take. The lights are timed in a way that exacerbates the problem, it causes unnecessary stops, jams, and frustration--this goes for Union, Washington, and Saint Clair intersections. Anyone who travels 47 knows the light frustration, and if not timed right can add 10-15 minutes to a short commute.	9/24/2024 3:09 PM
52	The traffic at 5pm both directions (northbound and southbound) is ridiculous.	9/24/2024 11:08 AM
53	Sometimes it takes 5 minutes to get out onto 47 with the traffic	9/24/2024 10:48 AM

Q6 How much of a concern is safety to you on Route 47 in Franklin County?

Answered: 189 Skipped: 1



ANSWER CHOICES	RESPONSES	
Very concerning	80.95%	153
Somewhat concerning	14.29%	27
Not concerning	4.23%	8
Not sure	0.53%	1
TOTAL		189

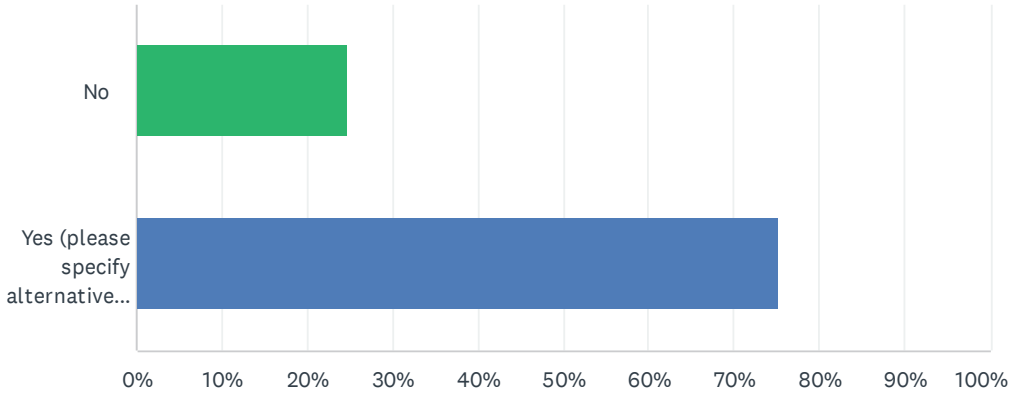
#	COMMENTS	DATE
1	I have never had any safety concerns (in the ten months I've been living here), maybe aside from the occasional bike rider on a shoulder. I used to commute up and down 70 thru St. Louis City and believe me I had safety concerns there. After that I have basically no safety concerns driving 47.	10/8/2024 7:51 PM
2	A very dangerous road. Too many rear end collisions	10/7/2024 11:52 AM
3	People traveling on Hwy 47 do not watch for people slowing down - rear end accident concerns. Curves are dangerous.	10/7/2024 11:50 AM
4	Friends and family comment on our dangerous stretch of 47	10/7/2024 11:46 AM
5	Distracted and hurried driving is worse than the road conditions	10/7/2024 11:40 AM
6	I don't use tech when driving; I pay attention to others around me.	10/7/2024 11:34 AM
7	There is some sort of accident every day.	10/7/2024 11:26 AM
8	Seems like we risk our lives every time we pull out of our driveway	10/7/2024 11:14 AM

9	With the huge influx of new drivers being introduced to the hwy 47 congestion, the tribal knowledge of how current drivers that have been dealing with the increasing traffic avoid the untrained is no longer working. It is causing accidents from trying to get around those slow drivers and commercial transport vehicles that may be on the 47 corridor for the first time. Multiple lanes have been needed for years. Since bad st louis county policy have pushed so many people out to franklin county due to the counties handling of covid.	10/6/2024 5:03 PM
10	There are wrecks on 47 all the time. It's very concerning!	10/6/2024 7:56 AM
11	Turning north at Walgreen's is difficult. When the yellow arrow flashes, I really have to concentrate figuring out that the oncoming cars are really in the turning lane before I can turn left. Last week I did not see a truck tire in my lane just after turning left because I was focusing on the next traffic light.. I just thought that I was running over a sizable rock. But the tire had flipped up and damaged the back door on the passenger side. The repair cost will be $4 200.-	10/5/2024 12:43 PM
12	I have seen people pass uphill in a no passing zone	10/4/2024 9:59 PM
13	I hate my kids being on that road, it’s so scary. Every time I remind them how dangerous that highway is & to pay attention to everything.	10/1/2024 9:52 AM
14	We need a center turning lane and a few lights from St. Clair to Washington. Turning left during morning and evening commutes is dangerous.	9/30/2024 5:50 PM
15	It’s just a very busy road	9/28/2024 6:35 PM
16	Backed up traffic and people trying to get somewhere fast. Many residents along road between Union and St Clair. Many stops. People very impatient	9/28/2024 10:52 AM
17	Safety is a big concern. Many drivers are not paying attention, on their phones, traveling too fast, keeping safe distance between vehicles.	9/28/2024 9:51 AM
18	People are on there phones and not paying attention to everyone around them.	9/27/2024 3:20 PM
19	The curved lanes at 47 & 50 are dangerous. You can't see the painted curve lanes when it rains or snows. Approach at your own risk! Intersection of hwy 47 and college road with not lights and a turn lane painted in the middle of the highway! Lots of close calls here.	9/26/2024 2:50 PM
20	People travel way too fast and only have their agenda on their minds! It would help if it were patrolled more in my opinion!	9/26/2024 12:57 PM
21	There are a great deal of accidents on the section from 50/47S to College Road - This section in my opinion is a huge safety concern.	9/26/2024 11:12 AM
22	I was the victim of one of the rear-end collisions at Clearview. It was my first month living in Missouri and did not give me a good impression.	9/26/2024 10:03 AM
23	A lots of dangerous drivers drives on 47, most would go excessive speed of 70s if they get the chance. Also a lots of drivers don't understand the clear rules of Yield when they have flashing yellow arrow thinking it's a right of way for them to go through in front of oncoming traffic that have the right of way.	9/26/2024 8:03 AM
24	Wrecks almost every other day now. The roads have not been improved in order to handle the increased traffic. Getting worse all the time.	9/26/2024 12:27 AM
25	The number of crashes that happen are excessive...but so is the 2-lane traffic.	9/25/2024 10:01 PM
26	I have personally been rear ended on 47. It's too congested for 55mph and 2 lanes. Either lower the speed limit or expand the highway.	9/25/2024 7:42 PM
27	Friend was involved in a rear end accident almost took their life. Traffic was stopped and backed up at a stand still.	9/25/2024 6:21 PM
28	Too many drivers exceeding speed limits, drivers passing in no pass zone.	9/25/2024 3:47 PM
29	People take risky moves because they're agitated with the wait and stress of traffic. The hwy 47 exit from Dickey Bub / QT is very dangerous while making a left turn	9/25/2024 2:47 PM
30	We witness these accidents everyday.	9/25/2024 2:40 PM
31	Too many people pulling out in front of others, running lights, going to Union from Washington	9/25/2024 10:19 AM

	traffic backs up on the hills and people speeding can’t always see it is stopped.	
32	I was in a car accident a few years ago on 47. Someone was turning left and I stopped behind them waiting on them to run and I was rear ended by another car going 60 miles per hour. No turn lanes is dangerous, it’s needs more lanes to accommodate the amount of traffic.	9/25/2024 9:59 AM
33	way too many accidents	9/25/2024 9:53 AM
34	There are a lot of accidents on this stretch specifically between Union and Washington. I have had a few close calls	9/25/2024 9:29 AM
35	The accidents seem to keep occuring more often. I also ride a motorcycle and this highway feels dangerous from rearending and pulling out in front of traffic.	9/25/2024 8:56 AM
36	There are too many people passing on curves and blind spots because they don't want to wait for someone slower. The highway has so much traffic on it and should have been expanded years ago.	9/24/2024 9:22 PM
37	All 47 from St. Clair to Union is residential area with a lot of businesses, so people need safe spaces to turn to their homes, schools bus/mail trucks/trash trucks should have space to provide service and be safe at same time	9/24/2024 6:27 PM
38	Heavy congestion and long backups lead to very unsafe and unhappy drivers that display road rage and drive through red lights.	9/24/2024 6:08 PM
39	Not many shoulders to veer onto	9/24/2024 5:17 PM
40	The level of traffic causes several left turn locations to be a higher level of risk for crossing in front of oncoming traffic and holding up traffic behind the person turning.	9/24/2024 4:23 PM
41	The number of accidents that occur on 47 north and south is absurd. The number of deaths that have occurred on 47 as well should speak for themselves. I grew up in Union and recently moved to Lake St. Louis. I feel much safer traveling on these roads than I ever did on 47.	9/24/2024 3:11 PM
42	We live directly off 47 and the thought of my kids driving the road is scary. We have seen so many accidents.	9/24/2024 11:08 AM
43	I turn directly off of 47 into my subdivision and it always scares me that traffic is not paying attention and I will get rear ended	9/24/2024 10:48 AM

Q7 Do you take any alternative routes to avoid using Route 47 in Franklin County?

Answered: 190 Skipped: 0



ANSWER CHOICES	RESPONSES	
No	24.74%	47
Yes (please specify alternative routes)	75.26%	143
TOTAL		190

#	YES (PLEASE SPECIFY ALTERNATIVE ROUTES)	DATE
1	109/100	10/8/2024 11:48 AM
2	I take Clearview to highway A or I go Clearview to highway V	10/8/2024 7:54 AM
3	Highway A	10/7/2024 1:08 PM
4	Hwy A	10/7/2024 11:52 AM
5	College Rd to Prairie Dell Rd	10/7/2024 11:46 AM
6	Clearview Rd E&W, Independence E&W	10/7/2024 11:43 AM
7	BB to A from 50 to get to Washington	10/7/2024 11:40 AM
8	Hwy A, College Rd, Hwy V	10/7/2024 11:38 AM
9	I take A (Union to Washington). Sometimes I take M from 100 to Hwy 50.	10/7/2024 11:34 AM
10	Hwy A, Hwy V, Clearview Rd, Bethlam Church, Rock Rd.	10/7/2024 11:30 AM
11	Hwy A	10/7/2024 11:28 AM
12	Hwy A, Hwy Y, Hwy C, Hwy V	10/7/2024 11:26 AM
13	Sometimes Highway A	10/7/2024 11:24 AM
14	Missouri V	10/7/2024 11:20 AM
15	I-44 Washington exit	10/7/2024 11:16 AM
16	i sometimes take hwy m and at.	10/6/2024 5:03 PM
17	Hwy A	10/6/2024 9:46 AM

18	I either take highway A; or Highway V to Clearview to Bethlehem Church Road to Bieker Road.	10/6/2024 7:56 AM
19	Highway A	10/5/2024 3:55 PM
20	1. Hwy A 2. Bieker/Bethel Church/Clearview/Hwy V	10/4/2024 9:59 PM
21	Highway A	10/4/2024 4:47 PM
22	Highway A	10/2/2024 1:02 PM
23	Rt A. Happy Sac Rd, RT AD.	10/2/2024 11:53 AM
24	Highway A and V	10/2/2024 11:26 AM
25	I-44 East to 100 West	10/1/2024 11:43 AM
26	Yes, if feasible, I will drive Hwy A instead of 47.	10/1/2024 9:52 AM
27	Sometimes 44 to 100 to get to washington when I don't want to fight with traffic	9/30/2024 11:38 PM
28	Clearview Rd, Hwy V, Hwy A	9/30/2024 9:57 PM
29	I-44 to 50 west to Union or 100 west to Washington.	9/30/2024 5:50 PM
30	Hwy V is frequently used to bypass 47 to get to Union/Washington. Denmark and Prairie Dell Rd are often used to bypass 47 to get to Hwy 44/St. Clair.	9/30/2024 8:53 AM
31	Sometimes I take Highway A to avoid.	9/30/2024 6:51 AM
32	I take HWY A from HWY 100 to Independence to avoid that section of HWY 47	9/30/2024 6:23 AM
33	Hwy A	9/30/2024 4:45 AM
34	Sometimes I will take 185 up to Hwy 50. Then over to BB and go northeast to Hwy A that takes me north to Hwy 100 in Washington.	9/29/2024 9:36 PM
35	Hwy A	9/29/2024 3:03 PM
36	If going to Union from 3 pm to 5 pm I take Hwy A. Unless I am going to The Competive Edge or businesses on Hi-Line Dr.	9/29/2024 10:03 AM
37	At times I take Hwy A to Country club road on my way home.	9/28/2024 6:35 PM
38	Hwy 50 - Hwy BB - Hwy A.	9/28/2024 1:52 PM
39	Almost no alternative	9/28/2024 10:52 AM
40	At times, use Hwy A between Washington and Union to get to Hwy 50. And that route is heavily travelled most times too.	9/28/2024 9:51 AM
41	We have taken 50 to 44 to Hwy 100 to get to Washington when traffic is backed up.	9/28/2024 7:53 AM
42	Route 50 to highway AT. Then Highway M to Highway 100	9/28/2024 12:02 AM
43	Independence Dr. to cut over to Highway 50 or another side street to cut over.	9/27/2024 10:27 PM
44	Hwy A to independent then Bend rd to Hwy AD	9/27/2024 3:20 PM
45	Hwy A	9/27/2024 1:03 PM
46	I take clear view and highway V	9/26/2024 7:37 PM
47	hwy a	9/26/2024 2:50 PM
48	Hwy A….. but that is almost as bad as others are also taking that route and many live along that area too!	9/26/2024 12:57 PM
49	I will take BB to 50 to 185 S to Sullivan to avoid going through Union in the afternoon.	9/26/2024 11:12 AM
50	Highway A, but even it has problems with school buses at times.	9/26/2024 10:03 AM
51	Taking highway 100 to St. Mary rd to avoid afternoon traffic nightmare and avoiding very dangerous drivers that might rear end or cut you off at intersections failing to yield dues to their impatient.	9/26/2024 8:03 AM

52	Take Hwy A between Union and Washington	9/26/2024 12:27 AM
53	Clearview, Bieker, Southpoint Rd	9/25/2024 11:17 PM
54	Occasionally I will take Hwy A, but with the slow speed limit and number of homes it is not preferred. Bieker Road to Bethlehem Church Rd to Clearview to Hwy V to 47 can provide an alternative, but it is especially slow.	9/25/2024 10:01 PM
55	Hwy A and Bieker Rd	9/25/2024 9:55 PM
56	Hwy M and 100	9/25/2024 8:09 PM
57	College rd	9/25/2024 8:00 PM
58	Hwy A	9/25/2024 7:57 PM
59	North service road to college road for walmart, aldi, my daughters dance classes.	9/25/2024 7:42 PM
60	North Bend into Union Hwy.A into Washington Happy Sac into St. Clair	9/25/2024 6:28 PM
61	Sometimes south point road to Bethlehem church road	9/25/2024 6:21 PM
62	I-44 to get to St. Clair, around accidents. Denmark back roads to avoid entering 47 near I-44.	9/25/2024 6:02 PM
63	Highway a Highway v	9/25/2024 6:01 PM
64	100 to 44 to 50	9/25/2024 6:01 PM
65	A, V	9/25/2024 5:36 PM
66	Highway A	9/25/2024 5:05 PM
67	Hwy A	9/25/2024 4:43 PM
68	there's really no other alternatives other than Hwy A.	9/25/2024 4:38 PM
69	Highway A	9/25/2024 4:35 PM
70	Hwy BB & A. HWY 185& Hwy KK	9/25/2024 4:30 PM
71	A	9/25/2024 3:57 PM
72	Hwy A to/from Union/Washington.	9/25/2024 3:47 PM
73	Hwy A	9/25/2024 2:47 PM
74	Highway A takes as long to drive as 47 and 47 is safer. Detouring through town has multiple stop signs. Basically there isn't a faster or safer alternative. Just sit in the traffic and relax.	9/25/2024 2:40 PM
75	Cut thru town	9/25/2024 1:52 PM
76	Hwy A	9/25/2024 1:49 PM
77	I will take 50 east to HWY AT, to HWY M, left on HWY 100 into Washington	9/25/2024 1:47 PM
78	HWY A	9/25/2024 1:43 PM
79	Hwy A	9/25/2024 1:25 PM
80	backroads (hwy a)	9/25/2024 1:18 PM
81	Hwy A	9/25/2024 12:52 PM
82	44 to outer road to 100 or to Hwy M	9/25/2024 12:50 PM
83	Hwy V	9/25/2024 12:36 PM
84	Highway A and streets through Union.	9/25/2024 12:33 PM
85	HWY A	9/25/2024 12:17 PM
86	Highway A, highway V	9/25/2024 12:17 PM
87	Hyw BB Hwy A	9/25/2024 12:02 PM
88	Hwy V	9/25/2024 12:01 PM

89	Denmark	9/25/2024 11:52 AM
90	Hwy A	9/25/2024 11:44 AM
91	there really are not very many. Occasionally I take 50-44-100 to get from Union to Washington.	9/25/2024 11:43 AM
92	Hey A	9/25/2024 11:39 AM
93	Hwy v and hwy bb	9/25/2024 11:25 AM
94	Hwy A, Hwy AJ to Hwy 50	9/25/2024 11:00 AM
95	Highway 100 is a main alternative I take when I don't feel like dealing with the traffic.	9/25/2024 10:56 AM
96	I will drive through Union on the side-streets to avoid 47 or take Hwy A.	9/25/2024 10:43 AM
97	Highway A	9/25/2024 10:36 AM
98	Hwy A	9/25/2024 10:30 AM
99	Hey A	9/25/2024 10:23 AM
100	Hwy A, Hwy 100	9/25/2024 10:20 AM
101	Highway A and V	9/25/2024 10:19 AM
102	50 to I44 or college rd to I44	9/25/2024 10:12 AM
103	Hwy A between Washington and Union.	9/25/2024 10:11 AM
104	Hwy. A	9/25/2024 10:10 AM
105	Highway A	9/25/2024 10:03 AM
106	Occasionally I will take Highway A to avoid 47 during certain times of the day when I know traffic is bad	9/25/2024 10:02 AM
107	Highway A but it takes a lot longer	9/25/2024 9:59 AM
108	Hwy A	9/25/2024 9:56 AM
109	Sometimes I use clearview road to hwy a to bypass the backup	9/25/2024 9:54 AM
110	i will take A to washington or drive thru town.	9/25/2024 9:53 AM
111	Hey A	9/25/2024 9:38 AM
112	I have taken an alternative route to avoid congestion, due to an accident on Rt. 47, but the alternative route took longer than what sitting in the accident line would have taken.	9/25/2024 9:30 AM
113	When I go to the gym I will take V and go the back way to avoid congestion	9/25/2024 9:29 AM
114	Backroads multiple routes	9/25/2024 9:13 AM
115	I mentioned earlier. Mainly the less traveled back roads north and south.	9/25/2024 8:56 AM
116	I will take Highway A leaving Washington going to Union.	9/25/2024 8:52 AM
117	Hwy A occasionally	9/25/2024 8:40 AM
118	AT	9/25/2024 6:57 AM
119	Hwy A	9/24/2024 10:11 PM
120	Sometimes I go the back way to St. Clair on the Highway 44 outer road.	9/24/2024 9:22 PM
121	Sometimes I take college road to 66 then get on 44	9/24/2024 9:18 PM
122	Hwy 100	9/24/2024 9:07 PM
123	If there is ANY option other than HWY 47 I will normally take it to avoid the delays and bs	9/24/2024 7:55 PM
124	Hwy A	9/24/2024 6:14 PM
125	Hwy A between Union and Washington	9/24/2024 6:09 PM

126	I take Progress Prkwy to Prairie Dell to Old Rte 66/N Service Rd to get to St. Clair. I take Hwy 50 to Hwy AT to Hwy M to Hwy 100 to go to Washington any time I'm going to the east side of Washington and during rush hour periods.	9/24/2024 6:08 PM
127	Hwy a occasionally, & AD	9/24/2024 5:58 PM
128	Service roads along 44	9/24/2024 5:50 PM
129	Hwy A from Washington to Washington Ave in Union, go through town to get across 50 to get home	9/24/2024 5:18 PM
130	Depends on direction, but Hwy A from Washington to Union. Interstate 44 if destination is St. Clair, or Hwy 185 if traveling West on Interstate 44.	9/24/2024 4:23 PM
131	Depending on other stops needed, I may take 185. I work in Sullivan.	9/24/2024 4:18 PM
132	Taking Clearview to avoid sitting in traffic waiting 4-5 light cycles.	9/24/2024 4:17 PM
133	Highway A and AD	9/24/2024 4:15 PM
134	HWY A, HWY V	9/24/2024 3:52 PM
135	44 to highway 50 or 47N to highway 50 to college road (to avoid 47S).	9/24/2024 3:11 PM
136	AD, Happy Sac, HWY A, Hwy V.	9/24/2024 3:09 PM
137	Rt 66 to Hwy 50 or to Hwy 100	9/24/2024 3:05 PM
138	AT and M as well as V	9/24/2024 2:49 PM
139	Hwy V, Prairie Dell, College Rd, Bethlehem Church Rd, Bieker Rd, Clearview Rd, Hwy A, North bend loop, Hwy 44	9/24/2024 2:46 PM
140	Highway A and other side roads whenever possible.	9/24/2024 12:58 PM
141	Hwy V to Independence to hwy 50	9/24/2024 11:20 AM
142	Hwy 100 to Hwy V to Clearview Road minimizes the amount of time spent on 47. On my commute home from work, which begins at St Clair, there is no alternate route.	9/24/2024 11:08 AM
143	I try to stay off it whenever possible, unfortunately I must be on it for a few miles whichever way I head (through Union or Washington)	9/24/2024 10:48 AM

Q8 In general, do you have any comments or specific concerns that you would like to share about Route 47 in Franklin County?

Answered: 131 Skipped: 59

#	RESPONSES	DATE
1	It would be nice if Highway 47 was four lanes from Washington to Saint Clair or at least Washington to Union	10/8/2024 8:23 PM
2	It would be awesome if 47 was a 4 lane highway from St. Clair to Washington.	10/8/2024 8:02 PM
3	Since I live here I would be selfishly glad to see it widened, and the two parts of 47 reconnected where 50 cuts through. But I have to be honest, in the grand scheme or things 47 doesn't seem like a big issue to me. I lived in St. Louis City for a few years and the traffic here in Union is a breeze compared to say 30 or 70 or something. Even though I don't commute thru St. Louis anymore, if I could vote where my tax dollars go I would vote to enlarge 70 or 170 or 270 or 141 or any of those crazy roads over 47. I know those 70's interstates might not be a good comparison to a state highway, I am just trying to demonstrate that 47 might seem busy for Unionites, in the grand scheme of things it is on the low end of the scale.	10/8/2024 7:51 PM
4	Excessive traffic increases annually. Traffic backup from Clearview to Hwy 50/47 interchange is unbearable. Very poor access from County Farm to Hwy 47. Recommend more direct route from Hwy 47 in Union to Hwy 47 south to St Clair.	10/7/2024 1:08 PM
5	Lots of congested areas, dangerous curves. High traffic flow making it hard for residential driveways off Hwy 47 - this project is much needed.	10/7/2024 11:50 AM
6	Excessive speeds - no regard to turning traffic	10/7/2024 11:46 AM
7	Adequate turn lanes to help relieve congestion on all the turn points. Bus garage by competitive edge to north Hwy 47. Busses cannot turn to road if another vehicle is trying to come out. Cause road rage.	10/7/2024 11:43 AM
8	Make a "business loop". If the ability to not add an entire lane each direction, please do!	10/7/2024 11:40 AM
9	No roundabouts, trucks cannot navigate and impossible to do with any speed. Quit talking and let's do something this has been a discussion for years.	10/7/2024 11:38 AM
10	Willing to sell property we own by Union Bridge - Aaron Groff knows. Thank you for this open house. Please consider the turn lane options - much cheaper and will solve most of issues.	10/7/2024 11:34 AM
11	Highway 47 needs to be a straight thru road at Union that crosses Hwy 50 and the river at the same time with on and off ramps for Hwy 50.	10/7/2024 11:26 AM
12	The highway 47 has just not kept up with the growth in Franklin County.	10/7/2024 11:24 AM
13	Needs to be at least 4 lanes all the way. Quick fix for Independence add right turn lane.	10/7/2024 11:20 AM
14	Need four lanes at least from Washington to Union and improve the 47/50 intersection	10/7/2024 11:17 AM
15	Width of new road if built, will it be 4 lanes, 3 lanes with a turn lane, as my property will be taken away.	10/7/2024 11:16 AM
16	I feel 4 lanes would help/hurt because it will help with congestion but it will also have more drivers traveling at faster speeds which is disturbing.	10/7/2024 11:14 AM
17	The county commissioners are not expressing the concern of most people on that road. I get that they are telling you its bad. Its not just bad or concerning, it is crippling. I would never stop and patronize a business off of 47. I would not want to stop and lose my place in traffic. If this work to widen to four lanes is going to start in 2027, our families plan would be to move out of Franklin county before then. I already have to sit in unchecked traffic, i could not add construction traffic to that. This should have started two years ago. Modot and our county commissioners have let down franklin county drivers.	10/6/2024 5:03 PM

18	It's a challenge to get satisfaction amongst all the established businesses and residents along the route. I am sending you positive vibes in making all happy!	10/6/2024 9:46 AM
19	Please make highway 47 a 4 lane highway. The safety, and growth, of Franklin County depend on it.	10/6/2024 7:56 AM
20	I wonder if it would make sense to widen the existing bridge on both sides because Modot would not have to acquire as much land as for the planned and scrapped roundabout.	10/5/2024 12:43 PM
21	We need additional lanes. People either drive too slow, or are driving too fast (and pass in no passing zones).	10/4/2024 9:59 PM
22	4 lanes has been badly needed for years !	10/4/2024 4:47 PM
23	The misalignment of 47 at hey 50 is a major problem.	10/2/2024 11:26 AM
24	Focus on more rural sections from Washington to Union and Union to St. Clair to reduce more serious crashes. Traffic in Union from Clearview to east junction of 47/50 does back up in peak periods, but otherwise is manageable.	10/1/2024 11:57 AM
25	The traffic congestion and blind turnouts are very dangerous not to mention pedestrians walking along the side of the road with little to no shoulder.	10/1/2024 11:43 AM
26	Both Forest Hills Entrances and then during mornings & evenings the congestion btwn the quarry and Highway 50. The whole Hwy btwn Union & STC.	10/1/2024 9:52 AM
27	We need 4 lanes, not a few turn lanes. People that need to enter onto the highway in either direction wait for significant amount of time. There are many driveways along the route and putting a turn lane at each does not make sense. People get impatient and take unnecessary risks to enter the highway	9/30/2024 9:57 PM
28	We desperately need lights and a center turning lane. 47 is becoming a major thoroughfare through the county, and as years go by, more development takes place. So, let's do something now, and make it safer for the future. I understand that 4 or 5 lanes this time out of the question, but let's put in a few lights, and at the very least, a center turning lane.	9/30/2024 5:50 PM
29	No more roundabouts, we need more lanes	9/30/2024 10:35 AM
30	Please put in turn lanes or something. I almost get rearended daily.	9/30/2024 8:53 AM
31	The light at independence is awful. Also where people turn into competitive edge is very dangerous.	9/30/2024 6:51 AM
32	Controlling traffic through Union should be the most important part of the project. Traffic in Union adds about 20 mins to my drive time daily.	9/30/2024 6:23 AM
33	Need 4 lanes washington to st clair. Thank you for the survey.	9/30/2024 4:45 AM
34	Hwy 47 has too much on and off traffic with so many intersections, turn offs, and backroads that I feel possibly consolidating them would help. The speed also does not fit well with the highway at this time for safety reasons. I believe immediately that the highway needs to be decreased to 45mph until the work improvement is done. Hwy 47 needs to be widened to four lanes, with a median turning lane. Some of the roads that connect to 47 need to be routed to another closer road to eliminate the number of intersections. Some intersections need longer turning lanes such as the Independence Rd and 47 intersection in Union. There is an immediate concern for the double lighted intersection at 47 and Main St and 47 and Hwy 100 intersection in Union. They are too close together and with traffic backing put it makes it dangerous to go through the light on Main St to get on and off to Hwy 47, or to just cross over 47. Hwy 47 from Union to St. Clair has a need for a median turning lane as well and widening to four lanes. There is on and off traffic increasing at the intersection of Hwy 47 and College just north of the city of Union. Could there be traffic lights placed there? Within Washington, Hwy 47 appears to be fine with the four lanes until he get up to the hospital. With the traffic increasing through there, it does appear that making this four lanes all the way through is needed, as well as possibly taking out the lights at 3rd and 47 next the hospital. Maybe having traffic from the west of 47 turn right only and the other side of 47 turn right only. This would help decrease traffic backups there and could be done immediately. As far as the bridge goes it does seem to hold up well and I have not seen any major backups except for going south into Washington because of the two really close intersections. Another concern is of course the increase in traffic on Hwy 50 from Union to I-44. Hopefully MODOT can start soon on a	9/29/2024 9:36 PM

	project that can widen the highway the rest of the way along with a median turning lane and either a longer merging right turning lane from Hwy AT onto Hwy 47 north so that it is safer and the vehicles can get up to speed easier. This might be a good starting point for that extra lane to start all the way into Union. Traffic turning left on 47 would have a median lane to drive onto and wait out traffic to merge into the traffic lane. Another option is adding traffic lights to that intersection. Either way it would improve safety there as I have seen it becoming harder to enter onto 47 from AT.	
35	I think it is BS that you have to do so many studies, you know what needs to be done.so just do it .Ithink everyone that uses highway 47 would agree. I also think you should get started sooner than what the plan is .	9/29/2024 8:14 PM
36	I am concerned for the business on Hi-Line Dr since I frequent them. How would someone get to those businesses so they do not suffer during this project.	9/29/2024 10:03 AM
37	I often tell relatives that are coming to Union from Kansas City and Columbia, make sure you arrive on 47 before 3:00 pm. Traveling 47 is worse than St. Louis County.	9/28/2024 7:22 PM
38	I'd like to see a left hand turn lane in more locations.	9/28/2024 6:35 PM
39	Congestion needs to be lessened, as well as the Hwy 47 & Hwy 50 intersection. Both north & south.	9/28/2024 1:52 PM
40	Need turn lanes between Union and St Clair. Many residents and stop and go traffic	9/28/2024 10:52 AM
41	A turn-lane into/out of Cedar Berry subdivision should also be considered. Thank you to all who are devoting their time and attention to this desperately needed project for our safety.	9/28/2024 9:51 AM
42	We want 'No Thru Truck' signs posted on Hwy.47 at College road to support our ordinance.	9/28/2024 7:53 AM
43	Congestion at highway 50 and highway 47 is a huge concern.	9/28/2024 12:02 AM
44	I think it needs to be more than two lanes. The area is growing up and sometimes traffic gets pretty bogged down	9/27/2024 10:27 PM
45	Turn lanes would be great in a few key areas. A right turn lanes at 47 and Independence. As well as a few other spots would make me feel safer taking turns off the highway	9/27/2024 7:14 PM
46	Needs to be wider	9/27/2024 3:20 PM
47	Right turn lanes to keep traffic moving	9/27/2024 12:16 PM
48	I feel it would be very beneficial to add a second lane or at least turning lanes throughout 47 Washington to st Clair. I feel that's where a lot of the accidents happen is when people are making left hand turns and the people behind them are not paying attention	9/26/2024 7:37 PM
49	Repainting lanes is not a solution. fix roads correctly.	9/26/2024 2:50 PM
50	I realize that there is a lot more traffic/people traveling Route 47 than when it was originally built! I seriously believe that quite a few issues could be resolved if people were considerate of each other! My concern is that if there is another lane added both ways (AND KEEP IN MIND….the way people drive) that the accidents will increase and so will the seriousness of them! The only way to reduce that would be more monitoring by the police!	9/26/2024 12:57 PM
51	I want to share my interest in this project and as a landowner both North and South of where ECC owns a 60 Ft strip for a back entrance, I am offering my support. I understand that MODOT will not construct this roadway but with the correct planning and communication I am certain this can be accomplished with planned development and support of the College .ECC is one of the greatest assets the County has and many people support it. My number is 636-584-8765 and I would like to offer my cooperation.	9/26/2024 11:12 AM
52	If you are not going to make it four lanes right away, at least put in passing lanes. I am not sure why MoDOT hates passing lanes so much (they should obviously be between Union and Jeff City on 50, as well).	9/26/2024 10:03 AM
53	Would like to see highway 47 get realign instead having to deal with multiple dangerous drivers trying to fight to get front of you along highway 50 after turning from 47 intersection by QT. Similar experience going toward St. Clair from intersection by Walgreen and Mc donald. I had multiple close calls dues to drivers forcing their way in front of me at the turning lane causing me to brake extremely hard to avoid rear ending them.	9/26/2024 8:03 AM

54	Too many left hand turns with no turning lanes causing more rear end accidents.	9/26/2024 12:27 AM
55	I'm convinced that if the people making thses decisions actually lived here and tried to do business here on a daily business that work would have already been done rather than studied ad naseum. Why this is beng studied (again and again) makes me shake my head.	9/25/2024 10:01 PM
56	no	9/25/2024 9:55 PM
57	I live on s 47 and sometimes it takes me 15.to get out of my driveway in am!	9/25/2024 9:22 PM
58	Why not do 2 lane 1 lane and vice versa where it allows	9/25/2024 8:09 PM
59	The traffic on 47 at Independence down to 47 & 50 in the afternoon is atrocious and inexcusable. I have personally sat stuck in slow going traffic for 45 minutes.	9/25/2024 8:00 PM
60	Increased congestion leading to people running lights and passing when it isn't safe. There have been multiple fatalities because of passing in unsafe areas.	9/25/2024 7:57 PM
61	It should be expanded to a four lane highway and more right/left turn lanes need to be added. The amount of residential living on 47 makes it imperative we make this road wider.	9/25/2024 7:42 PM
62	Please fix it. With all the home construction, the traffic is just getting worse.	9/25/2024 7:36 PM
63	Could a solution for most of the left turn crashes be just adding a dedicated turning lane? especially from 47 in Washington through south 47 in St. clair?	9/25/2024 7:12 PM
64	This Route is long overdue for upgrades. 4 lanes	9/25/2024 6:28 PM
65	At the intersection of 47/50 at Walgreens, south bound 50 has a flashing yellow to turn N on 47. I have had 2 instances where I was almost hit turning N onto 47 there from 50.	9/25/2024 6:02 PM
66	Please no roundabouts	9/25/2024 6:01 PM
67	I live on Hwy 47 south. Sometimes I sit for long periods of time to pull out of my driveway because the traffic is so bad	9/25/2024 5:47 PM
68	No	9/25/2024 4:43 PM
69	something needs to be done there's multiple safety issues (if traffic is backed up ambulances can't get to Mercy), there's no/minimal turn lanes, additional lanes with a turn lane need to be added somehow	9/25/2024 4:38 PM
70	Highway 47 needs to be 5 lanes to help the people who live off of this road with turning into their driveway or road. Having a turn lane would not hold up traffic when someone is turning and it will give someone a lane to get into to work out into traffic.	9/25/2024 4:35 PM
71	Hwy 50 & 47 intersection in Union is a disaster, especially since the traffic signal in Union have been redone.	9/25/2024 4:30 PM
72	Definitely needs to be expanded to 4 lanes.	9/25/2024 3:47 PM
73	It needs a major over haul from Wahington to St. Clair.	9/25/2024 2:47 PM
74	Basically there isn't a faster or safer alternative to using Highway 47. Best to just sit in traffic, relax, and wait your turn.	9/25/2024 2:40 PM
75	Build new over pass or under pass for the railroad and then build 47 as a 4 lane from St Clair to Warrenton! Enough expensive studies that take forever. GET IT DONE!	9/25/2024 1:43 PM
76	I think it should all be double lined even on straight stretches. Too many close calls almost always a head on collision do to impatient drivers.	9/25/2024 1:25 PM
77	Too much congestion and slamming of brakes almost causing accidents at pasta house stoplight.	9/25/2024 1:18 PM
78	I would love to see 47 extended to 4 lanes	9/25/2024 12:52 PM
79	Many people walk this corridor and the amount of traffic makes it unsafe.	9/25/2024 12:50 PM
80	Route 47 has been a problem between Washington and Union for decades. If this is just going to be another "study" or "research" project it would be just more waste of taxpayers money. Nothing ever gets done. Route 47 needs to be 4 lanes with a turn lane, 5 lanes in total.	9/25/2024 12:49 PM

81	It needs to be 4 lanes. It's been needed for quite some time now. This area has a lot more population now.	9/25/2024 12:33 PM
82	This project is long overdue. The traffic nightmare has been going on for years. I've sat in traffic from clearview road to the intersection of 47 & 50 for 30-45 minutes at times, just to make a right hand turn. I also feel like middle turn lanes would be beneficial at the major cross roads where the majority of crashes are happening. The last thing I feel needs to be addressed is the timing of the traffic lights. The major intersection lights are so short and traffic is so backed up, it causes people to run red lights. My opinion is, if they lengthen the length of the lights, traffic would flow better, and red light running may diminish. Please get this started before 2028. There is no need to procrastinate and drag your feet! How many more people have to die to get this done??	9/25/2024 12:17 PM
83	Yes I would love to see it 4 lanes with center turn lanes!	9/25/2024 12:01 PM
84	It shouldn't take 30 to 40 mins to get from Washington to Union in the evening. Do better	9/25/2024 11:44 AM
85	The intersection that was created 7-8 years ago at 47 and Old County Farm road is very puzzling. It is beyond unique for seemingly no reason. It actually seems as if one of the businesses or residents that live down that road had monetary influence or power to influence the type of intersection that was there. There is NO need for old County Farm rd drivers to make a left turn on 47 as they have a direct route to HWY V and the light at V and 47. The best thing MODOT could do for 47 safety seems to be the availability of a full length center turn lane or a specific turn lane for every road and driveway along the route. The next best thing would be to eliminate the Old County intersection and make the road 4 lane for 400-500 more feet to help with congestion at the 50/47 intersection. Although financially and logistically difficult (building another bridge and moving a car dealership, fast food, hotel, gas stations, etc.,), eliminating the 1000yds of hwy 50 travel necessary to travel hwy 47 would be ideal. Making the 47/50 intersection a more typical crossing with either one intersection with multiple lanes/turn lanes on the same level or elevating one of the highways and creating exit ramps. The next is to get rid of the "s" shaped lane shift between Main and 50 on hwy 47 - this is so dangerous for those unfamiliar and even dangerous for those who know the area - it is really awkward. There is really no easy solution, but I think Franklin county is ready for 4-5 years of construction to make the area more navigable.	9/25/2024 11:43 AM
86	The intersection of 47 and 50 in union is always a cluster and my family and I typically don't feel safe driving through these 2 intersections. Mainly due to the constant speeding and lane changing last minute to make the turns.	9/25/2024 11:25 AM
87	Needs to be done asap!! Save lives!	9/25/2024 11:00 AM
88	At the right times it's a good drive. But rush hour sucks	9/25/2024 10:56 AM
89	Please consider making it atleast a 4 lane road to improve safety and reduce congestion.	9/25/2024 10:37 AM
90	4 lanes has been talked about for quite a while now. It's definitely time for it to happen.	9/25/2024 10:36 AM
91	Too many cars	9/25/2024 10:30 AM
92	Need to build a new train bridge make a 4 lane hwy and get it over with quit dragging your feet!	9/25/2024 10:23 AM
93	This should have been done a long time ago.	9/25/2024 10:20 AM
94	No round abouts. People don't use the one that's there properly already.	9/25/2024 10:19 AM
95	The lights need to be longer during high traffic hours	9/25/2024 10:12 AM
96	Route 47 should be at least 4 lanes between Washington and St. Clair with dedicated center turning lanes for left turns at any turns.	9/25/2024 10:11 AM
97	Nope	9/25/2024 10:10 AM
98	The highway has become very congested. And there alof of turn off that many accidents happen because people aren't paying attention	9/25/2024 10:03 AM
99	People are constantly being rear-ended on 47. It makes my commute very scary some days. The traffic heading into union is also terribly backed up a lot of the time. Widening the road would most likely alleviate a lot of these issues. Even putting in turn lanes would be helpful at least with the number of accidents that occur.	9/25/2024 10:02 AM

100	I believe it’s a dangerous road. The towns around are expanding and traffic is always backed up because of it .	9/25/2024 9:59 AM
101	This project is long overdue! The numbers say it all.	9/25/2024 9:54 AM
102	It is very dangerous	9/25/2024 9:19 AM
103	I avoid this road at great cost & often will put off going to Washington because I don’t want to travel on 47	9/25/2024 9:13 AM
104	This area has been neglected from state funding for years. I can remember hearing talk of making highway 50 four lanes to Jefferson City. Never hsppened. Down south highway 60 is improved with probably lesser amount of traffic as there is here and this area is growing fast.	9/25/2024 8:56 AM
105	Left turns into side roads or driveways can quickly get traffic backed up. There is traffic most times of day so "drive times" are especially bad.	9/24/2024 10:11 PM
106	It should be expanded to two lanes each way with left turn lanes. Guard rails or medians could be put in where people try to pass on curves and dangerous areas. It would be good to have more alternative roads to use, too, so Highway 47 could be avoided, especially around 3 p.m. and through rush hour. It should be well lit at night and reflective paint for rainy nights. There's too much traffic for only one lane each way, and dangerous without the left turn lanes.	9/24/2024 9:22 PM
107	At the junction of 47 and college rd needs to be a stop light	9/24/2024 9:18 PM
108	Anyone who travels this hwy knows how badly something need to be done.our area is growing	9/24/2024 9:07 PM
109	It needs to be four lanes. It needed to be four lanes 20 years ago.	9/24/2024 8:23 PM
110	Time and safety are huge concerns	9/24/2024 7:55 PM
111	Turn lanes along 47 would be helpful to keep traffic moving. I'm always concerned about someone behind me not seeing in time that traffic is completely stopped up ahead. It would also be good if travelers going from Washington to St. Clair had a way to stay on 47 heading south and not clog up Union traffic. They should have a way to bypass 50, while those traveling within Union could get off at 50 and proceed either direction.	9/24/2024 6:30 PM
112	I am mail carrier and delivery mail every day along 47, so I’m Very concern for my safety because shoulders are not wide enough for traffic pass me and many cars going on upcoming lane with upcoming traffic on	9/24/2024 6:27 PM
113	I feel we need a good public transportation system to help those who lack transportation and to reduce the amount of cars on the Highway.	9/24/2024 6:09 PM
114	Widening 47 within the city of Union, like has been done in Washington and St. Clair, would go a long way to ease congestion and improve the safety of the Hwy 50 & Hwy 47 intersections and Hwy 47 in general.	9/24/2024 6:08 PM
115	It's been over congested for years, somethings gotta give, more turn lanes, more lanes. Anything has to improve it.	9/24/2024 5:58 PM
116	Turn lanes at busy cross roads. Especially at Mid America Coaches, the subdivision road just south of there, and by The Competitive Edge. Good luck on the congestion from the Quarry on 47 through Union. Maybe two lanes from Independence to Old County Farm Rd	9/24/2024 5:18 PM
117	I feel the bypass or widening of the road like MODOT is trying to do would be a huge improvement even if it is only part of the route.	9/24/2024 5:17 PM
118	Left turn access for current and future easements should be considered, especially for an alternate access off 47 to Prairie Dell Rd to ECC, and to relieve traffic at Union R-X1 Prairie Dell Elementary School during peak periods.	9/24/2024 4:23 PM
119	At least having turning lanes would help for turning on 47	9/24/2024 4:22 PM
120	Fix this today. Look at how many traffic issues that have happened on 47. Waiting until 2027 is too long.	9/24/2024 4:17 PM
121	This project is long overdue. We need 4 lanes between Washington and St. Clair	9/24/2024 4:15 PM
122	Needs more lanes or passing lanes put in.	9/24/2024 3:52 PM
123	Build cities that are safe for people and vehicles. Our growing city should not be at the mercy	9/24/2024 3:51 PM

	of a couple highways. [Example: Access to Union's Public Library on foot/bicycle is impossible (especially with kids), thus you must have a vehicle to safely access it. Not everyone has a vehicle.] Slow traffic down within city limits. Narrow the roads, use chicanes, and traffic circles to slow traffic down making it safer for people (pedestrians, cyclists and drivers). Build a fast highway, and people will drive fast.	
124	At the very least, get a turn lane put in the middle of the highway so that it doesn't stop traffic when people are turning onto side roads. They're in place in some spots, but certainly not all.	9/24/2024 3:11 PM
125	47 needs turning options that don't stop traffic. The lights need to be calibrated to assist traffic flow, not impeded it for no reason or cause unnecessary stops. If there are no cars coming, turning, etc. why are the lights still active in some locations? Some lights turn so quick that people are stuck hanging in the intersection--or hurried to go through yellow.	9/24/2024 3:09 PM
126	Hwy 50 is so heavily traveled and so many deadly accidents have occurred on it, it needs to be changed to four lanes. And several major intersections along the route either need turn lanes or stoplights.	9/24/2024 3:05 PM
127	Remove the curb that is in the middle of the highway in Union remove all access from that road and direct the traffic to the intersections with existing stop lights	9/24/2024 2:49 PM
128	There needs to be another access to all of the commercial development by east central from Highway 47 to relieve the congestion at the entrance to east central from highway 50.	9/24/2024 12:58 PM
129	It needs more lanes.	9/24/2024 11:20 AM
130	We absolutely must do something to improve the safety and traffic flow along this route. Fatal accidents could be prevented with the use of double lanes, or at the very least, a dedicated turn lane at frequent accident spots along the route.	9/24/2024 11:08 AM
131	We moved to our current address 3 years ago and have seen several nasty accidents at the entrance to our subdivision. I will have young drivers in a few years and really worry about their safety. It's one of the worst corridors I've ever seen with the extremely large volume of traffic.	9/24/2024 10:48 AM

Q9 Contact Information (Sharing your email will add you to a project information distribution list. You may opt out at any time.)

Answered: 119 Skipped: 71

ANSWER CHOICES	RESPONSES	
Name	98.32%	117
Company	19.33%	23
Address	93.28%	111
Address 2	5.04%	6
City/Town	95.80%	114
State/Province	95.80%	114
ZIP/Postal Code	95.80%	114
Country	80.67%	96
Email Address	92.44%	110
Phone Number	69.75%	83

#	NAME	DATE
1	Kira Long	10/8/2024 8:03 PM
2	Joseph Kronlage	10/8/2024 7:51 PM
3	Henry Swallow	10/8/2024 7:55 AM
4	Jeffrey Heeger	10/7/2024 1:09 PM
5	Sharon Thebeau	10/7/2024 11:51 AM
6	Tim Thebeau	10/7/2024 11:47 AM
7	Wendy Griffin	10/7/2024 11:44 AM
8	Jane Curtman-Schroeder	10/7/2024 11:35 AM
9	William F. Dewert	10/7/2024 11:31 AM
10	Ross Malone	10/7/2024 11:28 AM
11	Terri Hilkerbaumer	10/7/2024 11:27 AM
12	Charles Klabunde	10/7/2024 11:21 AM
13	Diane Disbro	10/7/2024 11:18 AM
14	Tim buchanan	10/6/2024 5:04 PM
15	Barbara E. Laberer	10/6/2024 7:57 AM
16	Eva Adams	10/5/2024 12:44 PM
17	Jean Schaible	10/4/2024 10:00 PM
18	C Hamer	10/2/2024 3:19 PM
19	Donald R Hays	10/2/2024 11:27 AM

20	Dawn Paul	10/1/2024 9:53 AM
21	Sheila Kiewitt	9/30/2024 9:59 PM
22	Thomas Gasaway	9/30/2024 5:51 PM
23	Jason Terschluse	9/30/2024 6:26 AM
24	Jonathan and Rebecca Hanna	9/30/2024 4:46 AM
25	Ricky Thomas	9/29/2024 9:37 PM
26	Wayne Groff	9/29/2024 3:07 PM
27	Raymond Weaver	9/29/2024 10:05 AM
28	Vicki Hooper	9/28/2024 7:23 PM
29	Denise Spaunhorst	9/28/2024 6:40 PM
30	Matthew Spaunhorst	9/28/2024 6:36 PM
31	Brian Alcaraz	9/28/2024 1:53 PM
32	Don Hearst	9/28/2024 10:54 AM
33	Theresa Eckelkamp	9/28/2024 7:53 AM
34	Corey Krone	9/28/2024 12:03 AM
35	Alaine Dimmett	9/27/2024 10:27 PM
36	Nicholas Knoblauch	9/27/2024 7:15 PM
37	Sherrie L Kleekamp	9/27/2024 1:03 PM
38	melissa huntington	9/26/2024 2:51 PM
39	Sandra Groff	9/26/2024 1:06 PM
40	Stuart Lindemann	9/26/2024 11:13 AM
41	Geoff Folsom	9/26/2024 10:05 AM
42	Steven Zenthoefer	9/26/2024 8:05 AM
43	Valerie Adkins	9/26/2024 12:28 AM
44	Kevin Dixon	9/25/2024 10:01 PM
45	Will Mentz	9/25/2024 9:55 PM
46	Deborah smith	9/25/2024 9:24 PM
47	Michele Benko	9/25/2024 8:02 PM
48	Dorothy McGee	9/25/2024 7:58 PM
49	Leighton D	9/25/2024 7:43 PM
50	Craig Small	9/25/2024 6:30 PM
51	Kevin Curtis	9/25/2024 6:17 PM
52	Suzanne	9/25/2024 6:04 PM
53	Beth Bray	9/25/2024 6:02 PM
54	Schuttenberg	9/25/2024 5:48 PM
55	Jon	9/25/2024 5:37 PM
56	Scott boning	9/25/2024 5:07 PM
57	Katherine Mallett	9/25/2024 4:39 PM

58	Kjersti Merseal	9/25/2024 4:36 PM
59	Ronald L Pulsifer	9/25/2024 4:02 PM
60	Gary sieve	9/25/2024 3:58 PM
61	Adam Anderson	9/25/2024 2:48 PM
62	Carolyn Luttrell	9/25/2024 2:43 PM
63	Robert Schmuke	9/25/2024 1:52 PM
64	Marianne Lipari	9/25/2024 1:48 PM
65	Robert Hrrvey	9/25/2024 1:44 PM
66	Robert Unnerstall	9/25/2024 12:50 PM
67	Catherine Blackwell	9/25/2024 12:35 PM
68	Amy Francis	9/25/2024 12:18 PM
69	Karen kennedy	9/25/2024 12:03 PM
70	Linda Runnels	9/25/2024 11:53 AM
71	DOUG RICE	9/25/2024 11:43 AM
72	Matthew	9/25/2024 11:26 AM
73	Sheryl Duffer	9/25/2024 11:02 AM
74	Grace	9/25/2024 10:57 AM
75	Adam Tefft	9/25/2024 10:44 AM
76	Nicole Birkmann	9/25/2024 10:39 AM
77	Laura	9/25/2024 10:39 AM
78	Mike parmentier	9/25/2024 10:37 AM
79	Kristin Straatmann	9/25/2024 10:29 AM
80	Ben Esslinger	9/25/2024 10:21 AM
81	Nope	9/25/2024 10:20 AM
82	Austin	9/25/2024 10:12 AM
83	William Pruessner	9/25/2024 10:11 AM
84	Shirley	9/25/2024 10:04 AM
85	Katlyn Peterson	9/25/2024 10:02 AM
86	Kristina Aide	9/25/2024 10:00 AM
87	Karen	9/25/2024 9:58 AM
88	Kathryn Gaither	9/25/2024 9:55 AM
89	Belinda Tappe	9/25/2024 9:40 AM
90	Marisa Wagner	9/25/2024 9:32 AM
91	Ben Ross	9/25/2024 9:29 AM
92	Glenn Gibson	9/25/2024 8:59 AM
93	Jaki Welker	9/25/2024 8:52 AM
94	Tonya Reynolds	9/25/2024 8:42 AM
95	Krista Junge	9/25/2024 6:59 AM

96	Mary Wesche	9/24/2024 10:13 PM
97	Jamie Davis	9/24/2024 9:20 PM
98	Jennifer Kunz	9/24/2024 8:24 PM
99	Wayne Sahm	9/24/2024 7:57 PM
100	Jennifer Donovan	9/24/2024 6:31 PM
101	Elena Hearst	9/24/2024 6:29 PM
102	Jessica Horn	9/24/2024 6:10 PM
103	Nathan Strubberg	9/24/2024 6:09 PM
104	Gretchen Wincheater	9/24/2024 5:50 PM
105	Allison Hatfield	9/24/2024 5:20 PM
106	Melanie Blaser	9/24/2024 5:19 PM
107	Gary Gerner	9/24/2024 4:25 PM
108	Richard Kramer	9/24/2024 4:22 PM
109	Melissa Arand	9/24/2024 4:19 PM
110	Clay Zigler	9/24/2024 4:18 PM
111	James M Schmieder	9/24/2024 4:17 PM
112	Rochelle Bailey	9/24/2024 3:52 PM
113	Brenda Jordan	9/24/2024 3:07 PM
114	Chad	9/24/2024 12:59 PM
115	Terry Matt	9/24/2024 11:20 AM
116	Valarie Johnson	9/24/2024 11:08 AM
117	Jeff Johnson	9/24/2024 10:48 AM

#	COMPANY	DATE
1	Thebeau Builders	10/7/2024 11:47 AM
2	home owner	10/7/2024 11:44 AM
3	land owner - several properties	10/7/2024 11:35 AM
4	retired teacher	10/5/2024 12:44 PM
5	Charter Communications	10/1/2024 9:53 AM
6	Mr. and Ms.	9/30/2024 4:46 AM
7	Wayne’s Pest Control Co .	9/29/2024 3:07 PM
8	Clear Blue Ice	9/26/2024 11:13 AM
9	Missourian Publishing	9/26/2024 10:05 AM
10	Craig’s Tree Service	9/25/2024 6:30 PM
11	Griffiths	9/25/2024 6:04 PM
12	Scenic Regional Library	9/25/2024 4:36 PM
13	Mayor City of Union	9/25/2024 1:52 PM
14	Active Family Chiropractic	9/25/2024 1:44 PM
15	Franklin county country club	9/25/2024 10:37 AM

16	None	9/25/2024 10:20 AM
17	Deliveries Unlimited	9/25/2024 10:11 AM
18	First State Insurance Agency	9/25/2024 10:02 AM
19	Climate Express	9/25/2024 9:58 AM
20	Union Chamber	9/25/2024 9:55 AM
21	3R RV Service Center	9/24/2024 4:22 PM
22	Langenberg, Strubberg, Arand & King, LLC	9/24/2024 4:19 PM
23	City of Union	9/24/2024 4:17 PM
#	**ADDRESS**	**DATE**
1	289 Crescent Lake Road	10/8/2024 8:03 PM
2	2275 Myrick Manor	10/8/2024 7:51 PM
3	1020 Independence Dr	10/8/2024 7:55 AM
4	310 Garrick Pl	10/7/2024 1:09 PM
5	7247 Highway 47	10/7/2024 11:51 AM
6	7247 Hwy 47 Union	10/7/2024 11:47 AM
7	114 Linda Lane	10/7/2024 11:44 AM
8	860 Belleview Pl	10/7/2024 11:35 AM
9	698 Post Bluff	10/7/2024 11:31 AM
10	1487 Clearview Rd	10/7/2024 11:28 AM
11	2466 Prairie Dell Rd.	10/7/2024 11:27 AM
12	903 Sarah Ln	10/7/2024 11:21 AM
13	1099 James St	10/7/2024 11:18 AM
14	452 grandview oaks dr	10/6/2024 5:04 PM
15	500 W. Springfield Ave.	10/6/2024 7:57 AM
16	52 Hoffert St.	10/5/2024 12:44 PM
17	1018 Pinehurst Ln	10/4/2024 10:00 PM
18	PO Box 170	10/2/2024 3:19 PM
19	182 Oak Tree Ln	10/2/2024 11:27 AM
20	2106 Monty View	10/1/2024 9:53 AM
21	3914 Highway A	9/30/2024 9:59 PM
22	347 Roller Road	9/30/2024 5:51 PM
23	2889 HWY 47	9/30/2024 6:26 AM
24	5807 Steutermann Road	9/30/2024 4:46 AM
25	1033 Sunset Dr	9/29/2024 9:37 PM
26	587 Flint Hill Road, Leslie, MO	9/29/2024 3:07 PM
27	19 Edward Pl	9/29/2024 10:05 AM
28	1032 Hawk Ridge Drive	9/28/2024 7:23 PM
29	3 Autumn Meadow Ct	9/28/2024 6:40 PM

30	3 Autumn Meadow Ct	9/28/2024 6:36 PM
31	323 Union Hills Ln	9/28/2024 1:53 PM
32	1790 Franklin Drive	9/28/2024 10:54 AM
33	853 College Rd	9/28/2024 7:53 AM
34	842 Diamond Head Dr	9/28/2024 12:03 AM
35	918 Sarah Lane	9/27/2024 10:27 PM
36	618 w main St	9/27/2024 7:15 PM
37	1521 E 6th St	9/27/2024 1:03 PM
38	136 indian prairie ln	9/26/2024 2:51 PM
39	587 Flint Hill Rd	9/26/2024 1:06 PM
40	766 Hwy 47 S	9/26/2024 11:13 AM
41	6321 Bluff Road	9/26/2024 10:05 AM
42	435 Nancy Dr	9/26/2024 8:05 AM
43	539 Eagle Ridge Dr	9/26/2024 12:28 AM
44	22 Circle Drive	9/25/2024 10:01 PM
45	600 s	9/25/2024 9:24 PM
46	112 Burr Oak Dr	9/25/2024 8:02 PM
47	119 Indian Prairie Lane	9/25/2024 7:58 PM
48	420 N Lay Ave	9/25/2024 7:43 PM
49	2563 North Bend Loop	9/25/2024 6:30 PM
50	383 Water Tower Dr	9/25/2024 6:17 PM
51	501 S Hwy 47	9/25/2024 6:04 PM
52	276 Tanglewood Road	9/25/2024 6:02 PM
53	7068 Hwy 47 S	9/25/2024 5:48 PM
54	895 Sarah lane	9/25/2024 5:37 PM
55	845 porterford	9/25/2024 5:07 PM
56	608 Arrowhead Lane	9/25/2024 4:39 PM
57	835 South Highway 47	9/25/2024 4:02 PM
58	57 Edwards Circle	9/25/2024 3:58 PM
59	415 W. State St.	9/25/2024 2:48 PM
60	7142 Highway 47	9/25/2024 2:43 PM
61	1327 N Washington Ave	9/25/2024 1:52 PM
62	109 Vista Vallarta Drive	9/25/2024 1:48 PM
63	1089 W State	9/25/2024 1:44 PM
64	346 River Ridge DR	9/25/2024 12:50 PM
65	1267 Prairie Dell Rd	9/25/2024 12:35 PM
66	7260 Koko Beach Road	9/25/2024 12:18 PM
67	2211 E 5th street	9/25/2024 12:03 PM

68	809 South Ct	9/25/2024 11:43 AM
69	7750 Hwy YY	9/25/2024 11:02 AM
70	1030 pinehurst lane	9/25/2024 10:57 AM
71	654 Eagle Ridge Drive	9/25/2024 10:44 AM
72	615 E Park Ave	9/25/2024 10:39 AM
73	70 hickory circle	9/25/2024 10:39 AM
74	305 e 6th street	9/25/2024 10:37 AM
75	4550 St Louis Rock Road	9/25/2024 10:29 AM
76	857 Pebble Beach	9/25/2024 10:21 AM
77	123 any st	9/25/2024 10:20 AM
78	400 Sophia Dr	9/25/2024 10:12 AM
79	24 Southwinds Cir	9/25/2024 10:11 AM
80	305 east 6th street	9/25/2024 10:04 AM
81	1002 N Oak St	9/25/2024 10:02 AM
82	605 S Jefferson Ave	9/25/2024 10:00 AM
83	12 Progress Parkway	9/25/2024 9:58 AM
84	49 Lanier Ave.	9/25/2024 9:55 AM
85	418 Koelling Ave	9/25/2024 9:40 AM
86	2 Timber Drive	9/25/2024 9:32 AM
87	236 South Ridge ct	9/25/2024 9:29 AM
88	520 Porterford Road	9/25/2024 8:59 AM
89	3373 Highway A	9/25/2024 8:42 AM
90	129 Linda Oane	9/25/2024 6:59 AM
91	1578 Lyon Road	9/24/2024 10:13 PM
92	99 Wildwood Terr	9/24/2024 9:20 PM
93	9516 Highway 100	9/24/2024 8:24 PM
94	4699 St Louis Rock Rd	9/24/2024 7:57 PM
95	1790	9/24/2024 6:29 PM
96	351 Augusta Pl	9/24/2024 6:09 PM
97	Brookerashell@gmail.com	9/24/2024 5:58 PM
98	153 Vista Vallarta	9/24/2024 5:50 PM
99	Mailing address	9/24/2024 5:20 PM
100	619 S Jefferson Ave	9/24/2024 5:19 PM
101	308 East 11th St	9/24/2024 4:25 PM
102	7819 HIGHWAY 47	9/24/2024 4:22 PM
103	361 WOODLINE DRIVE	9/24/2024 4:19 PM
104	109 Grandview Ave	9/24/2024 4:18 PM
105	5 Harmonie Drive	9/24/2024 4:17 PM

106	416 Crestview Dr	9/24/2024 3:52 PM
107	155 Crescent Lake Rd.	9/24/2024 3:07 PM
108	5737 Steutermann Rd	9/24/2024 12:59 PM
109	507 Sweet Gum Ct.	9/24/2024 11:20 AM
110	3 Forest Hills Dr	9/24/2024 11:08 AM
111	3 Forest Hills Drive	9/24/2024 10:48 AM
#	**ADDRESS 2**	**DATE**
1	B16	10/8/2024 7:55 AM
2	Hwy 47	9/25/2024 9:24 PM
3	Apartment 4	9/25/2024 6:04 PM
4	Apt 5	9/25/2024 10:11 AM
5	Franklin Drive	9/24/2024 6:29 PM
6	POBox 2904	9/24/2024 5:20 PM
#	**CITY/TOWN**	**DATE**
1	St. Clair	10/8/2024 8:03 PM
2	Union	10/8/2024 7:51 PM
3	Union	10/8/2024 7:55 AM
4	Union	10/7/2024 1:09 PM
5	Union	10/7/2024 11:51 AM
6	Union	10/7/2024 11:47 AM
7	Union	10/7/2024 11:44 AM
8	Washington	10/7/2024 11:35 AM
9	Union	10/7/2024 11:31 AM
10	Union	10/7/2024 11:28 AM
11	Union	10/7/2024 11:27 AM
12	Union	10/7/2024 11:21 AM
13	Washington	10/7/2024 11:18 AM
14	union	10/6/2024 5:04 PM
15	Union	10/6/2024 7:57 AM
16	Union	10/5/2024 12:44 PM
17	Union	10/4/2024 10:00 PM
18	Union	10/2/2024 3:19 PM
19	UNION	10/2/2024 11:27 AM
20	Washington	10/1/2024 9:53 AM
21	Union	9/30/2024 9:59 PM
22	Saint Clair	9/30/2024 5:51 PM
23	Lonedell	9/30/2024 6:26 AM
24	Washington	9/30/2024 4:46 AM

25	Sullivan	9/29/2024 9:37 PM
26	Washington	9/29/2024 10:05 AM
27	Union	9/28/2024 7:23 PM
28	Washington	9/28/2024 6:40 PM
29	Washington	9/28/2024 6:36 PM
30	Union	9/28/2024 1:53 PM
31	St. Clair	9/28/2024 10:54 AM
32	Union	9/28/2024 7:53 AM
33	Union	9/28/2024 12:03 AM
34	Union	9/27/2024 10:27 PM
35	Union	9/27/2024 7:15 PM
36	Washington	9/27/2024 1:03 PM
37	union	9/26/2024 2:51 PM
38	Leslie	9/26/2024 1:06 PM
39	Union	9/26/2024 11:13 AM
40	Washington	9/26/2024 10:05 AM
41	Lonedell	9/26/2024 8:05 AM
42	Union	9/26/2024 12:28 AM
43	Union	9/25/2024 10:01 PM
44	Union	9/25/2024 9:24 PM
45	Union	9/25/2024 8:02 PM
46	Union	9/25/2024 7:58 PM
47	Saint Clair	9/25/2024 7:43 PM
48	Union	9/25/2024 6:30 PM
49	Union	9/25/2024 6:17 PM
50	Union	9/25/2024 6:04 PM
51	Union	9/25/2024 6:02 PM
52	Union	9/25/2024 5:48 PM
53	Union	9/25/2024 5:37 PM
54	Union	9/25/2024 5:07 PM
55	Union	9/25/2024 4:39 PM
56	Union	9/25/2024 4:02 PM
57	Union	9/25/2024 3:58 PM
58	Union	9/25/2024 2:48 PM
59	Union	9/25/2024 2:43 PM
60	Union	9/25/2024 1:52 PM
61	Union	9/25/2024 1:48 PM
62	Union	9/25/2024 1:44 PM

63	Union	9/25/2024 12:50 PM
64	Union	9/25/2024 12:35 PM
65	Union	9/25/2024 12:18 PM
66	Washington	9/25/2024 12:03 PM
67	Union	9/25/2024 11:53 AM
68	Union	9/25/2024 11:43 AM
69	Union	9/25/2024 11:26 AM
70	Washington	9/25/2024 11:02 AM
71	Union	9/25/2024 10:57 AM
72	Union	9/25/2024 10:44 AM
73	Union	9/25/2024 10:39 AM
74	Union	9/25/2024 10:39 AM
75	Washington	9/25/2024 10:37 AM
76	Villa Ridge	9/25/2024 10:29 AM
77	Union	9/25/2024 10:21 AM
78	New Haven	9/25/2024 10:20 AM
79	Washington	9/25/2024 10:12 AM
80	Washington	9/25/2024 10:11 AM
81	Washington	9/25/2024 10:04 AM
82	Union	9/25/2024 10:02 AM
83	Union	9/25/2024 10:00 AM
84	Union	9/25/2024 9:58 AM
85	Union	9/25/2024 9:55 AM
86	Union	9/25/2024 9:40 AM
87	Union	9/25/2024 9:32 AM
88	Union	9/25/2024 9:29 AM
89	Union	9/25/2024 8:59 AM
90	New Haven	9/25/2024 8:52 AM
91	Washington	9/25/2024 8:42 AM
92	Union	9/25/2024 6:59 AM
93	New Haven	9/24/2024 10:13 PM
94	Salem	9/24/2024 9:20 PM
95	New Haven	9/24/2024 8:24 PM
96	Villa Ridge	9/24/2024 7:57 PM
97	Union	9/24/2024 6:31 PM
98	Saint Clair	9/24/2024 6:29 PM
99	Union	9/24/2024 6:10 PM
100	Union	9/24/2024 6:09 PM

101	Union	9/24/2024 5:50 PM
102	Leslie	9/24/2024 5:20 PM
103	Union	9/24/2024 5:19 PM
104	WASHINGTON	9/24/2024 4:25 PM
105	UNION	9/24/2024 4:22 PM
106	Beaufort	9/24/2024 4:19 PM
107	Union	9/24/2024 4:18 PM
108	Union	9/24/2024 4:17 PM
109	Union	9/24/2024 3:52 PM
110	St. Clair	9/24/2024 3:07 PM
111	Washington	9/24/2024 12:59 PM
112	Labadie	9/24/2024 11:20 AM
113	Washington	9/24/2024 11:08 AM
114	Washington	9/24/2024 10:48 AM
#	**STATE/PROVINCE**	**DATE**
1	MO	10/8/2024 8:03 PM
2	MO	10/8/2024 7:51 PM
3	MO	10/8/2024 7:55 AM
4	Mo	10/7/2024 1:09 PM
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6	MO	10/7/2024 11:47 AM
7	MO	10/7/2024 11:44 AM
8	MO	10/7/2024 11:35 AM
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11	MO	10/7/2024 11:27 AM
12	MO	10/7/2024 11:21 AM
13	mo	10/7/2024 11:18 AM
14	missouri	10/6/2024 5:04 PM
15	MO	10/6/2024 7:57 AM
16	MO	10/5/2024 12:44 PM
17	Mo	10/4/2024 10:00 PM
18	MO	10/2/2024 3:19 PM
19	MO	10/2/2024 11:27 AM
20	MO	10/1/2024 9:53 AM
21	Mo	9/30/2024 9:59 PM
22	MO	9/30/2024 5:51 PM
23	MO	9/30/2024 6:26 AM

24	MO	9/30/2024 4:46 AM
25	MO	9/29/2024 9:37 PM
26	Mo	9/29/2024 10:05 AM
27	MO	9/28/2024 7:23 PM
28	MO	9/28/2024 6:40 PM
29	MO	9/28/2024 6:36 PM
30	Mo	9/28/2024 1:53 PM
31	MO	9/28/2024 10:54 AM
32	Missouri	9/28/2024 7:53 AM
33	MO	9/28/2024 12:03 AM
34	MO	9/27/2024 10:27 PM
35	MO	9/27/2024 7:15 PM
36	Missouri	9/27/2024 1:03 PM
37	mo	9/26/2024 2:51 PM
38	MO	9/26/2024 1:06 PM
39	MO	9/26/2024 11:13 AM
40	MO	9/26/2024 10:05 AM
41	Mo	9/26/2024 8:05 AM
42	MO	9/26/2024 12:28 AM
43	MO	9/25/2024 10:01 PM
44	Mo	9/25/2024 9:24 PM
45	MO	9/25/2024 8:02 PM
46	MO	9/25/2024 7:58 PM
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49	Mo	9/25/2024 6:17 PM
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52	Mo	9/25/2024 5:48 PM
53	Mo	9/25/2024 5:37 PM
54	Mo	9/25/2024 5:07 PM
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56	Mo	9/25/2024 4:02 PM
57	Mo	9/25/2024 3:58 PM
58	MO	9/25/2024 2:48 PM
59	MO	9/25/2024 2:43 PM
60	Mo	9/25/2024 1:52 PM
61	MO	9/25/2024 1:48 PM

62	MO	9/25/2024 1:44 PM
63	MO	9/25/2024 12:50 PM
64	MO	9/25/2024 12:35 PM
65	Mo	9/25/2024 12:18 PM
66	Mo	9/25/2024 12:03 PM
67	Mo	9/25/2024 11:53 AM
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70	MO	9/25/2024 11:02 AM
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93	MO	9/24/2024 10:13 PM
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96	MO	9/24/2024 7:57 PM
97	MO	9/24/2024 6:31 PM
98	MO	9/24/2024 6:29 PM
99	MO	9/24/2024 6:10 PM

100	MO	9/24/2024 6:09 PM
101	MO	9/24/2024 5:50 PM
102	Mo	9/24/2024 5:20 PM
103	MO	9/24/2024 5:19 PM
104	MISSOURI	9/24/2024 4:25 PM
105	MO	9/24/2024 4:22 PM
106	MO	9/24/2024 4:19 PM
107	MO	9/24/2024 4:18 PM
108	MO	9/24/2024 4:17 PM
109	MO	9/24/2024 3:52 PM
110	MO	9/24/2024 3:07 PM
111	MO	9/24/2024 12:59 PM
112	MO	9/24/2024 11:20 AM
113	MO	9/24/2024 11:08 AM
114	MO	9/24/2024 10:48 AM

#	ZIP/POSTAL CODE	DATE
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16	63084	10/5/2024 12:44 PM
17	63084	10/4/2024 10:00 PM
18	63084	10/2/2024 3:19 PM
19	63084	10/2/2024 11:27 AM
20	63090	10/1/2024 9:53 AM
21	63084	9/30/2024 9:59 PM
22	63077	9/30/2024 5:51 PM

23	63060	9/30/2024 6:26 AM
24	63090	9/30/2024 4:46 AM
25	63080	9/29/2024 9:37 PM
26	63090	9/29/2024 10:05 AM
27	63084	9/28/2024 7:23 PM
28	63090	9/28/2024 6:40 PM
29	63090	9/28/2024 6:36 PM
30	63084	9/28/2024 1:53 PM
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37	63084	9/26/2024 2:51 PM
38	63056	9/26/2024 1:06 PM
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55	63084	9/25/2024 4:39 PM
56	63084	9/25/2024 4:02 PM
57	63084	9/25/2024 3:58 PM
58	63084	9/25/2024 2:48 PM
59	63084	9/25/2024 2:43 PM
60	63084	9/25/2024 1:52 PM

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91	63090	9/25/2024 8:42 AM
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93	63068	9/24/2024 10:13 PM
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95	63068	9/24/2024 8:24 PM
96	63089-1114	9/24/2024 7:57 PM
97	63084	9/24/2024 6:31 PM
98	63077	9/24/2024 6:29 PM

99	65084	9/24/2024 6:10 PM
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101	63084	9/24/2024 5:50 PM
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103	63084	9/24/2024 5:19 PM
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113	63090-5602	9/24/2024 11:08 AM
114	63090	9/24/2024 10:48 AM
#	**COUNTRY**	**DATE**
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2	United States	10/8/2024 7:51 PM
3	United States	10/8/2024 7:55 AM
4	USA	10/7/2024 1:09 PM
5	USA	10/7/2024 11:18 AM
6	usa	10/6/2024 5:04 PM
7	United States	10/6/2024 7:57 AM
8	United States	10/5/2024 12:44 PM
9	Usa	10/4/2024 10:00 PM
10	US	10/2/2024 3:19 PM
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12	United States	10/1/2024 9:53 AM
13	USA	9/30/2024 9:59 PM
14	US	9/30/2024 5:51 PM
15	Franklin	9/30/2024 6:26 AM
16	United States	9/30/2024 4:46 AM
17	USA	9/29/2024 9:37 PM
18	USA	9/29/2024 3:07 PM
19	Franklin	9/29/2024 10:05 AM
20	United States	9/28/2024 7:23 PM
21	United States	9/28/2024 6:40 PM

22	United States	9/28/2024 6:36 PM
23	United States	9/28/2024 1:53 PM
24	USA	9/28/2024 10:54 AM
25	United States	9/28/2024 7:53 AM
26	USA	9/28/2024 12:03 AM
27	United States	9/27/2024 10:27 PM
28	USA	9/27/2024 7:15 PM
29	United States	9/27/2024 1:03 PM
30	franklin	9/26/2024 2:51 PM
31	United States	9/26/2024 1:06 PM
32	USA	9/26/2024 10:05 AM
33	Usa	9/26/2024 8:05 AM
34	USA	9/26/2024 12:28 AM
35	United States	9/25/2024 10:01 PM
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41	USA	9/25/2024 6:04 PM
42	Franklin	9/25/2024 6:02 PM
43	Franklin	9/25/2024 5:48 PM
44	Usa	9/25/2024 5:37 PM
45	United States	9/25/2024 4:39 PM
46	FRANKLIN	9/25/2024 4:02 PM
47	Usa	9/25/2024 3:58 PM
48	USA	9/25/2024 2:48 PM
49	USA	9/25/2024 2:43 PM
50	Franklin	9/25/2024 1:52 PM
51	USA	9/25/2024 1:48 PM
52	Franklin	9/25/2024 1:44 PM
53	USA	9/25/2024 12:50 PM
54	USA	9/25/2024 12:35 PM
55	Usa	9/25/2024 12:18 PM
56	USA	9/25/2024 12:03 PM
57	Usa	9/25/2024 11:53 AM
58	US	9/25/2024 11:43 AM
59	USA 🇺🇸	9/25/2024 11:02 AM

60	USA	9/25/2024 10:57 AM
61	United States	9/25/2024 10:44 AM
62	USA	9/25/2024 10:39 AM
63	Usa	9/25/2024 10:39 AM
64	USA	9/25/2024 10:37 AM
65	USA	9/25/2024 10:29 AM
66	United States	9/25/2024 10:21 AM
67	Usa	9/25/2024 10:20 AM
68	USA	9/25/2024 10:12 AM
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71	USA	9/25/2024 10:02 AM
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76	Usa	9/25/2024 8:59 AM
77	USA	9/25/2024 8:42 AM
78	US	9/25/2024 6:59 AM
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81	United States	9/24/2024 8:24 PM
82	USA	9/24/2024 7:57 PM
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86	USA	9/24/2024 5:19 PM
87	United States	9/24/2024 4:25 PM
88	United States	9/24/2024 4:22 PM
89	United States	9/24/2024 4:19 PM
90	United States	9/24/2024 4:18 PM
91	United States	9/24/2024 4:17 PM
92	Franklin	9/24/2024 3:07 PM
93	USA	9/24/2024 12:59 PM
94	United States	9/24/2024 11:20 AM
95	United States	9/24/2024 11:08 AM
96	USA	9/24/2024 10:48 AM
#	**EMAIL ADDRESS**	**DATE**

1	kilong@sbcglobal.net	10/8/2024 8:03 PM
2	jos.kronlage@gmail.com	10/8/2024 7:51 PM
3	gatorboy51602@gmail.com	10/8/2024 7:55 AM
4	thebeaubuilders@gmail.com	10/7/2024 11:47 AM
5	WDG01988@yahoo.com	10/7/2024 11:44 AM
6	teacherjane65@yahoo.com	10/7/2024 11:35 AM
7	wdewert@sbcglobal.net	10/7/2024 11:31 AM
8	rndmalone@att.net	10/7/2024 11:28 AM
9	vcharlesk@gmail.com	10/7/2024 11:21 AM
10	bibliodiane@yahoo.com	10/7/2024 11:18 AM
11	TIMBBUCHANAN@GMAIL.COM	10/6/2024 5:04 PM
12	Laberer@sbcglobal.net	10/6/2024 7:57 AM
13	eva.adams@gmail.com	10/5/2024 12:44 PM
14	mail2jean@yahoo.com	10/4/2024 10:00 PM
15	haysdr1947@gmail.com	10/2/2024 11:27 AM
16	dawnbush@charter.net	10/1/2024 9:53 AM
17	skiewitt@sbcglobal.net	9/30/2024 9:59 PM
18	thomasbg.kc@gmail.com	9/30/2024 5:51 PM
19	jason.tershluse@gmail.com	9/30/2024 6:26 AM
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30	cjkrone10@gmail.com	9/28/2024 12:03 AM
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34	huntington22@gmail.com	9/26/2024 2:51 PM
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37	folsomg@emissourian.com	9/26/2024 10:05 AM
38	zenthoefer2@gmail.com	9/26/2024 8:05 AM

39	vkadkins@att.net	9/26/2024 12:28 AM
40	kdixon009050@gmail.com	9/25/2024 10:01 PM
41	dasmith020204@yahoo.com	9/25/2024 9:24 PM
42	mbenko.reo4mo@usa.net	9/25/2024 8:02 PM
43	dlmcge@att.net	9/25/2024 7:58 PM
44	mike.vemmer@millstoneweber.com	9/25/2024 7:49 PM
45	craigstreeservicellc@gmail.com	9/25/2024 6:30 PM
46	kevinwcurtis@gmail.com	9/25/2024 6:17 PM
47	jm29atct@hotmail.com	9/25/2024 6:04 PM
48	Willsmama@duck.com	9/25/2024 6:02 PM
49	pattypohlmann@hotmail.com	9/25/2024 5:48 PM
50	pd1808@gmail.com	9/25/2024 5:37 PM
51	scotts10seclx@hotmail.com	9/25/2024 5:07 PM
52	wildcat000421@gmail.com	9/25/2024 4:39 PM
53	kjersti4@yahoo.com	9/25/2024 4:36 PM
54	Ronsr1948@sbcglobal.net	9/25/2024 4:02 PM
55	garysieve@yahoo.com	9/25/2024 3:58 PM
56	aba60620@yahoo.com	9/25/2024 2:48 PM
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60	herveyrobert@yahoo.com	9/25/2024 1:44 PM
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63	ajmomma3@gmail.com	9/25/2024 12:18 PM
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65	dgndug@gmail.com	9/25/2024 11:43 AM
66	columbiaeagle11@yahoo.com	9/25/2024 11:26 AM
67	sheryl_duffer@yahoo.com	9/25/2024 11:02 AM
68	gkmoore066@gmail.com	9/25/2024 10:57 AM
69	actefft@gmail.com	9/25/2024 10:44 AM
70	nicbirk@sbcglobal.net	9/25/2024 10:39 AM
71	laurabaeres@yahoo.com	9/25/2024 10:39 AM
72	mikep@fcccgolf.net	9/25/2024 10:37 AM
73	kstraatmann@hotmail.com	9/25/2024 10:29 AM
74	beness@charter.net	9/25/2024 10:21 AM
75	nope@gmail.com	9/25/2024 10:20 AM
76	mrsoccer007@gmail.com	9/25/2024 10:12 AM

77	pruessnerwilliam@gmail.com	9/25/2024 10:11 AM
78	Shirl3030@gmail.com	9/25/2024 10:04 AM
79	petersonkatie93@gmail.com	9/25/2024 10:02 AM
80	kstahlman21@gmail.com	9/25/2024 10:00 AM
81	kyoung@climateexpress.com	9/25/2024 9:58 AM
82	katbelieve@gmail.com	9/25/2024 9:55 AM
83	bstappe@charter.net	9/25/2024 9:40 AM
84	marwag65@icloud.com	9/25/2024 9:32 AM
85	1991bwr@gmail.com	9/25/2024 9:29 AM
86	glenngib57@hotmail.com	9/25/2024 8:59 AM
87	jakiwelker@hotmail.com	9/25/2024 8:52 AM
88	tnreynolds67@att.net	9/25/2024 8:42 AM
89	krista.junge2@gmail.com	9/25/2024 6:59 AM
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91	jamie.davis83@hotmail.com	9/24/2024 9:20 PM
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101	nverhome2@yahoo.com	9/24/2024 4:25 PM
102	rkramer@3rrv.com	9/24/2024 4:22 PM
103	melissa.arand@gmail.com	9/24/2024 4:19 PM
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106	ro.brazas@gmail.com	9/24/2024 3:52 PM
107	bjj481@gmail.co.com	9/24/2024 3:07 PM
108	cnbriggs10@spectrum.net	9/24/2024 12:59 PM
109	tm2924@yahoo.com	9/24/2024 11:20 AM
110	commtrader40@outlook.com	9/24/2024 10:48 AM

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6	636-583-8216	10/7/2024 11:31 AM
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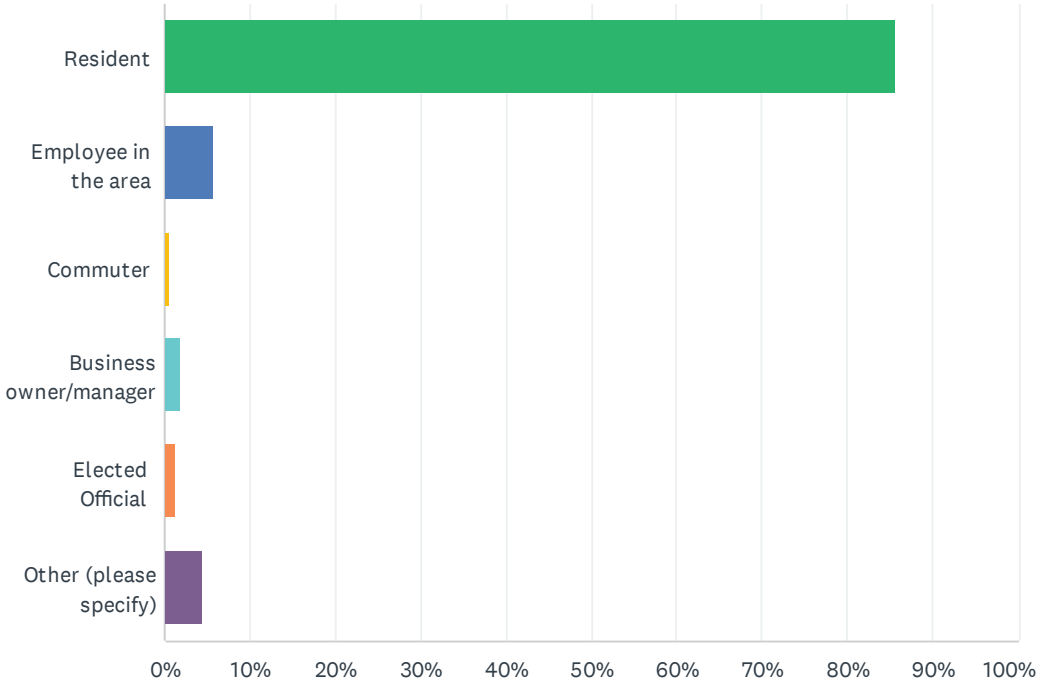
Q10 Which of the following best describes you?

Answered: 154 Skipped: 36



ANSWER CHOICES	RESPONSES	
Resident	85.71%	132
Employee in the area	5.84%	9
Commuter	0.65%	1
Business owner/manager	1.95%	3
Elected Official	1.30%	2
Other (please specify)	4.55%	7
TOTAL		154

#	OTHER (PLEASE SPECIFY)	DATE
1	Frequent shopper and gym rat	9/29/2024 10:05 AM
2	Taxpayer	9/25/2024 10:20 AM
3	Resident, parent of a young driver, and business owner with employees who drive the route daily.	9/25/2024 9:20 AM
4	Frequent visitor	9/24/2024 10:13 PM
5	Resident and work in the area	9/24/2024 6:15 PM
6	Prev resident and currently commute daily from Hillsboro	9/24/2024 5:20 PM
7	Resident, Employee, and commuter	9/24/2024 3:10 PM

iii. Public Meeting #2 Summary

DRAFT

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025

Job #J6P3661

Overview

The Missouri Department of Transportation (MoDOT) hosted a public information meeting on Thursday, October 9, 2025, from 3:30 to 6:00 p.m. at the Union Community Center in Union, Missouri to present the reasonable concept alternatives and gather input.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962.

The purpose of the study is to identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and gather Stakeholder Input.

The purpose of the second public meeting was to provide the public and stakeholders with the opportunity learn about the conceptual study, present the reasonable concept alternatives, and allow the community to provide input. The in-person event was an open house style meeting with no formal presentation. Participants were invited to stop by anytime to speak with the project team and provide input. For those unable to attend the in-person event, the meeting materials were posted on the project webpage for the public to view at their discretion.

Along the with the public meeting, MoDOT conducted a public survey that was available for public meeting attendees and the general public to help understand how the community views the Route 47 corridor and gather input on the reasonable alternative concepts.

Key Takeaways

Franklin County has an engaged community that is interested in this project. The meeting opportunities had the following participation counts:

- 158 people signed in at the in-person public meeting
    - 138 attendees
    - 20 MoDOT staff and Consultants

- Six attendees left written comment forms and two submitted via the MoDOT website or email
- Eight attendees completed paper surveys

In general, the public is in support of improvements to Route 47 to increase safety and address congestion. One key location, frequently cited is the Route 47/U.S. 50 intersection.

Attendees made comments about the urgency to make the improvements as soon as possible, as well about the development and growth in the area and want to see that the proposed improvements will accommodate traffic well into the future.

Meeting Promotion

Prior to the public meeting, residents, media outlets, and news stations were notified about the public meeting through a press release from the MoDOT St. Louis District Office. MoDOT also mailed a newsletter to those that have previously been engaged with the project through either the first public meeting, Community Advisory Group, or listening sessions. The newsletter provided the input that has been received to date.

The public meeting was also promoted via MoDOT social media and the project webpage. Following the in-person event, stakeholders were directed to the project webpage at www.modot.org/publicmeeting2, set up specifically for the second public meeting and comment period.

Media

The Emissourian, located in Washington, Missouri, provided multiple news stories after the public meeting, two of which provided the public survey link.

- 10/14/2025 - Emissourian – Public Weighs in on proposed Highway 47 Upgrades
- 10/16/2025 – Emissourian – Franklin County sticks with Hwy 47 cost share – for now
- 10/20/2025 – Emissourian – Folsom: Taking the Highway 47 survey

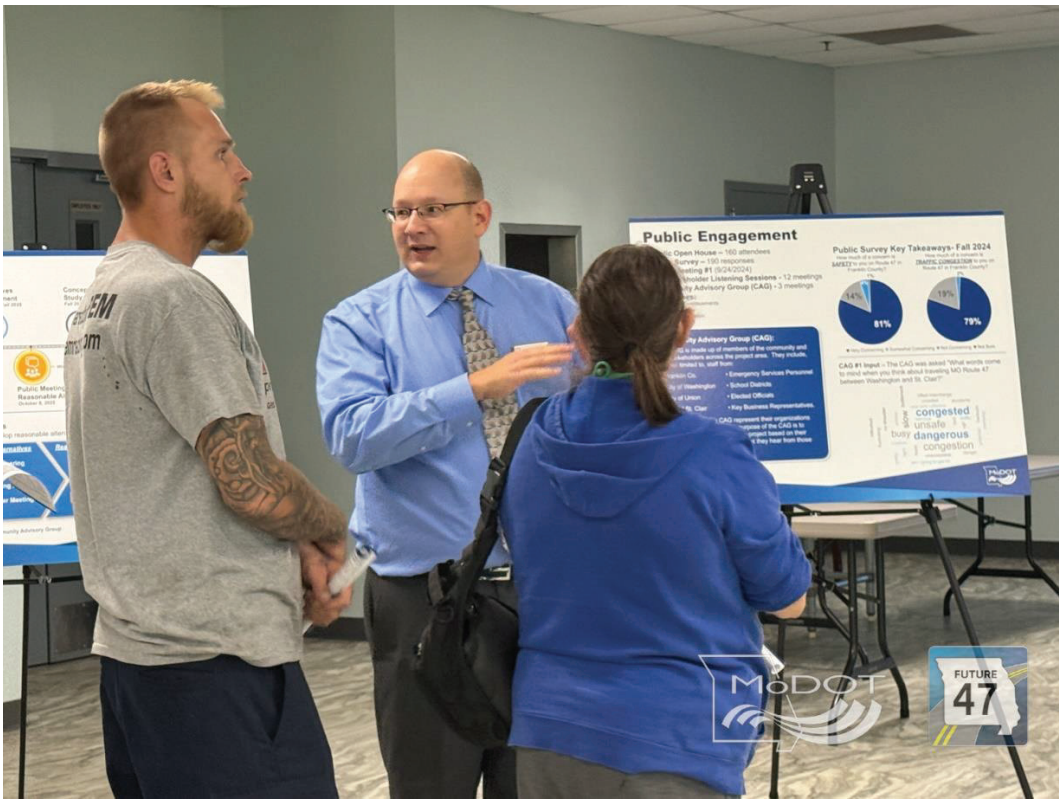
Common Themes

Below are a list of the most prevalent topics and themes from the 287 survey responses and the eight comments received as well as verbal conversations held during the in-person meeting:

- Congestion and safety are both key priorities
- Continuous Flow Interchange is the most favorable alternative for the 47/50 intersection
- 47/50 interchange experiences severe congestion
- Roundabouts have mixed support, however, more comments leaning in favor of roundabouts,
    - Overall, roundabouts were favored 2-to-1 in the total comments regarding roundabouts
    - Roundabouts are supported as long as they are large enough to accommodate oversized loads and trailers
- Widened lanes and shoulders on Route 47 are desired
- Lane capacity configurations throughout the corridor received varying comments as some desire the entire corridor to be four lanes while others would support more turning lanes
    - Turning lanes were heavily supported in comments

- Concerns that the presented alternatives may not address future needs due to the rate of growth in the area
- Urgency of moving forward with this project was projected through comments, in-person feedback, and news coverage
- Independence and Route 47 intersection has a high need to be improved
- Traffic laws need greater enforcement on this corridor, otherwise a speed reduction is likely not to be effective
- Route 47 was compared to other similar growing corridors that have been improved and modernized; Route 47 is no longer a typical rural highway

Meeting Photos



EXIT
MoDOT
FUTURE
47

MoDOT
FUTURE
47

Public Survey Summary

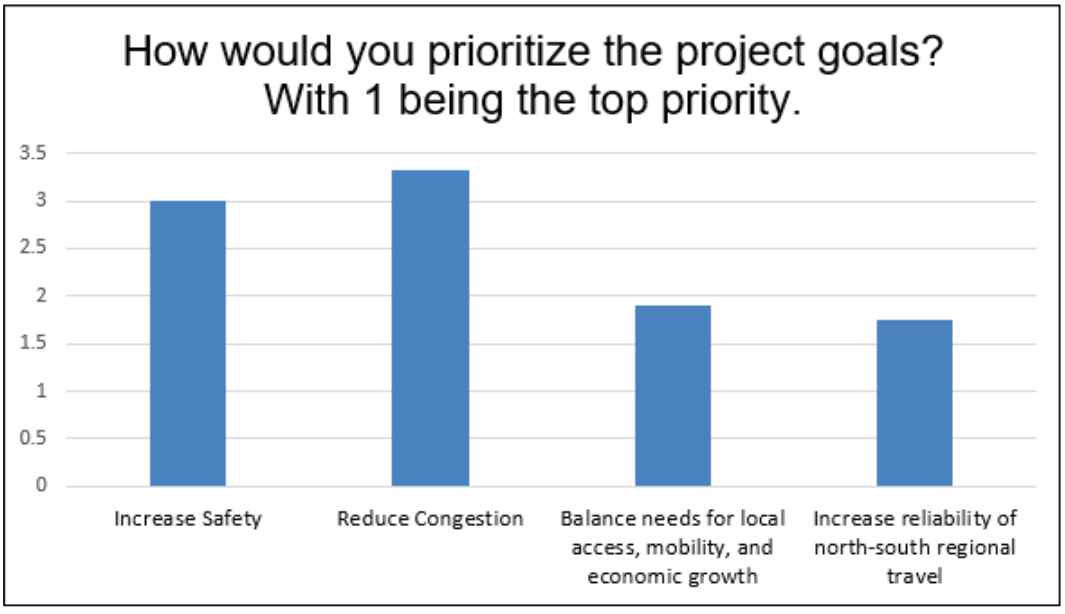
A public survey was available for the public meeting attendees and the general public. The survey was available on the project website from October 9 to October 23, 2025. The purpose of the survey was to gain greater insight to the daily use and concerns of Route 47, as well as to gain feedback from the presented alternatives. The survey received 287 responses. A detailed summary of the survey can be viewed in **Appendix B: Survey Results**.

Participants

The participants that took the survey covered 27 zip codes and 82% identified themselves as a resident or employee in the project area of Washington, Union, and St. Clair. Over 80% drive the corridor at least a few times a week, with 50% responding that they use Route 47 between Washington and St. Clair on a daily basis.

Project Goals

Respondents were asked to prioritize the four project goals. Forty-eight percent selected "Congestion" as the top priority and 40% selected "Safety". When asked if there were any goals that were missed, reoccurring theme were "long term sustainability" and "bike/pedestrian access". Participants want to see that the improvements will accommodate the growth and future traffic.



Participants were asked how much of a concern both safety and congestion are in the corridor. Nearly 60% noted **safety** is "Very Concerning" and 34% selected "Somewhat Concerning"; for **traffic congestion** concerns, 80% selected "Very Concerning" and 16% selected "Somewhat Concerning".

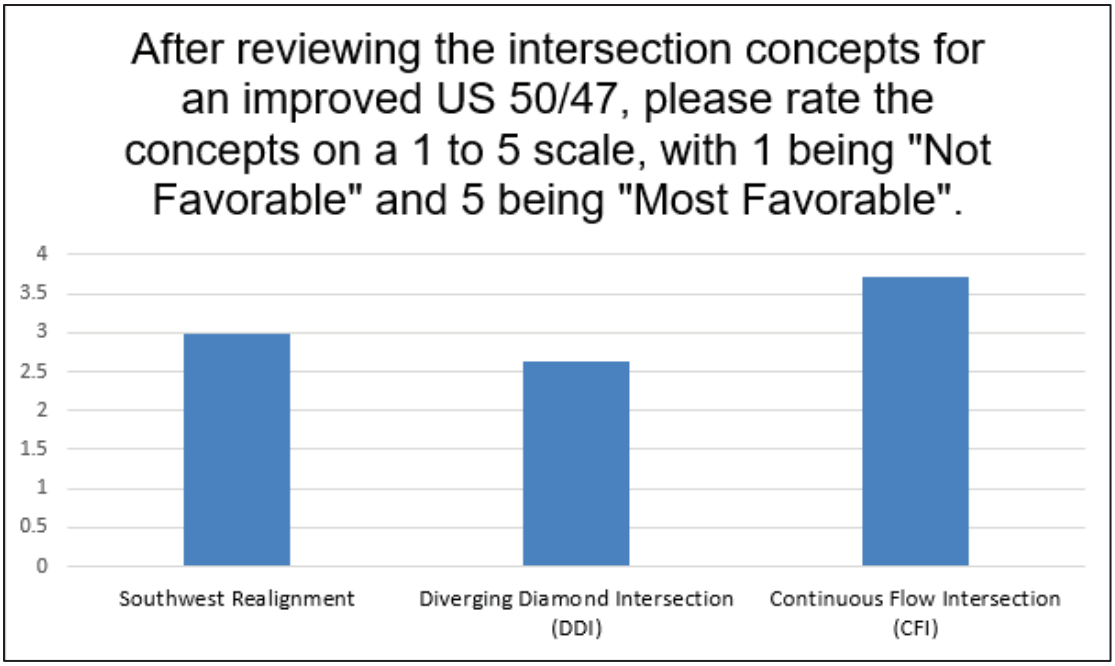
Reasonable Alternative Concepts

The survey provided links to the exhibits displayed at the public meeting with the reasonable alternative concepts. The project team sought to understand the community feedback on the concepts and understand the needs and desires of the traveling public on the Route 47 corridor.

The participants were asked to rate each of the Route 47/U.S. 50 intersection concepts on a 1 to 5 scale, with 1 being "Not Favorable" and 5 being "Most Favorable". The Continuous Flow Intersection (CFI) rated the highest with 45.89% of participants ranking the alternative as "Most Favorable (5)" and 14.98% as a (4) on the scale. This was followed by the Southwest Realignment alternative that 27.94% rated as a (5) and 8.33% as a (4). However, the Southwest Realignment ratings were spread across the scale as it received 28.92% of "Not Favorable (1)" ratings.

The Diverging Diamond Intersection only had a combined 26.24%of the participants rate this alternative at a (4) or (5) and it had the largest percent at 34.65% rate as "Not Favorable (1)".

	Not Favorable (1)	(2)	Neutral (3)	(4)	Most Favorable (5)
Southwest Realignment	28.92%	8.82%	25.98%	8.33%	27.94%
Diverging Diamond Intersection (DDI)	34.65%	5.94%	33.17%	13.86%	12.38%
Continuous Flow Intersection (CFI)	15.94%	3.86%	19.32%	14.98%	45.89%



The following set of questions asked participants to weigh safety and congestion, by segment, out of 100%. They were asked to allocate a percent to each factor of safety and congestion and the total response needed to add up to 100. In the North Segment and City of Union, Congestion was more of a priority than Safety. However, in the South Segment, Safety outweighed Congestion.

The following responses were collected:

Segment	Safety (Average Score)	Congestion (Average Score)
North Segment (Washington to Independence Dr.)	47.0%	53.0%
City of Union (Independence Dr. to U.S. 50)	40.6%	69.6%
South Segment (U.S. 50 to St. Clair)	53.0%	47.0%

**Note that scores vary from the SurveyMonkey export results due to respondents leaving answers empty vs. adding a "0" score. Scores above are manually calculated to account for all participant responses.*

The project team also wanted the public to provide feedback on the potential of speed reductions, by segment, if done in conjunction with other safety improvements to reduce speed (ex. Narrowed lanes, raised median islands, roundabouts, etc.) The respondents were asked to rate on a 1 to 5 scaled, with 1 being "Not Acceptable" and 5 being "Very Acceptable". The City of Union was found to be most acceptable if posted speed limits were lowered, and the South Segment was rated the lowest in terms of acceptability.

As shown in the table below, the North Segment had 37.21% percent of respondents select they found the reduction to be "Acceptable" or "Very Acceptable" and 25% were "Neutral", or unopposed, totaling 62.21%. In the City of Union Segment, 43.61% selected "Acceptable" or "Very Acceptable", and 28.49

selected “Neutral”, totaling 72.1 % of those unopposed. The South Segment had 36.26% select “Acceptable” or “Very Acceptable” and 26.32% were “Neutral”, totaling 62.58% of the respondents are unopposed to the speed reduction.

As noted in the comments, people understand the importance of reducing speeds to increase safety, others want to significantly reduce travel times between Washington and St. Clair.

Please rate how acceptable a SPEED LIMIT REDUCTION is in each segment if done in conjunction with other SAFTEY improvement to reduce speeds.(Ex. narrowed lanes, raised median islands, roundabouts, etc.) (1 being "Not acceptable", 5 being "Very acceptable")

Segment	Not Acceptable (1)	(2)	Neutral (3)	(4)	Very Acceptable (5)
North Segment (Washington to Independence Dr.)- Existing 55 mph	28.49%	9.30%	25.00%	8.72%	28.49%
City of Union (Independence Dr. to U.S. 50)- Existing 45 mph	20.93%	6.98%	28.49%	11.63%	31.98%
South Segment (U.S. 50 to St. Clair)- Existing 55 mph	26.90%	10.53%	26.32%	13.45%	22.81%

In addition, many comments were submitted regarding roundabouts and traffic flow. The feedback on roundabouts is divided, however, for every one concern about roundabouts, there are two positive comments. Many are very supportive of roundabouts, as long as they are not too close together and are wide and large enough to allow trucks to travel through them easily. People noted they like the idea of slowing down traffic, as well as they eliminate traffic signals and allow traffic to keep moving. However, there are several comments that are not supportive of roundabouts and think that the motorists do not know how to use them.

Turning lanes were an additional common theme throughout the survey. Participants noted that they would like to see additional turn lanes at many of the intersections throughout the corridor. They acknowledged it would help ease the congestion and improve safety as it will allow the turning vehicles to get out of the lanes of traffic. In addition to helping people turn left, it would allow those turning into traffic a lane to turn into instead of cutting off drivers by turning in front of them.

The survey asked if there are specific intersections where improvements need to be made. While several intersections throughout the corridor are mentioned, the two most common intersections noted are the Route 47/U.S. 50 intersection as well as the Route 47/Independence intersection.

The final question to gather project related information, asked the participants to provide any additional comments or concerns they would like to share about Route 47 in Franklin County. Many comments are reinforcement of feedback that was provided in previous questions. The key themes are that there is significant support for improvements along the corridor and the public would like to see these done as soon as possible. Many note that the area continues to grow, congestion is only getting worse, so they would like to make sure that improvements will support the development of the corridor well into the future.

Next Steps

Following Public Meeting #2, the project team will document public feedback and further develop the concepts and cost estimates before moving into Preliminary Design next year. The next phases of the project will include preliminary, right of way and final plan engineering design, additional public engagement, along with environmental investigation. These tasks will occur before construction can begin in Fiscal Year 2028, when the $78.1 million dollars in funding for this project is available.

Written/Emailed Comment Summary

A full list of submitted comments, ver batim, and topics are listed below. Comments were submitted by written comment form at the meeting and submitted via email to MoDOT.

TOPIC	COMMENT
Design, Access, Funding	Propose 1 for 50 and 47 in Union. 5 lanes as far as possible. 78.1 million is not enough to get project started do it right.
Design, Access	I have tried to have mailbox moved because of health reasons. Move to side where we live!
Traffic, Access, Landowner Compensation	The first diagram for 47 & 50 w/bridge behind Dicky bubs; I believe is best. The second choice is also my second choice. The third w/video should be thrown out. It is not user friendly for farm equpiment & oversize. 53 ft trailer & items oversize 14-16 ft. There are too many roundabouts & lights that will increase the time getting from Washington to St. Clair by double. How are landowners along route being compensated for road being widened & or bridge being built? If this project is looking to store equipment or dump near Franklin Ave contact Mickedvillen 6363886521 Detours during construction capable for oversize loads w/out penalties?
Access, Landowner Compensation, Turn-lanes	That whatever turn lanes or roundabouts are big enough for a 53-foot trailer so that truckers won't be hung up on them or tearing up equipment for oversized loads. That people will be compensated for all property that is taken for road improvements. If this project is looking for place to store equipment or dump materials have location near Franklin Ave. Call if you interested. Big enough detours and ability to take detours in a tractor truck without being fined.
Roundabouts	No roundabout
Funding, Community needs	Your presentation is nice, but it is already out of date. It does not take into account all of the new subdivisions being built. With new subdivisions where is the money for all of the new infrastructure (water, sewage, trash)? What about schools?

Safety, Access, Traffic	Good morning I see no other alternative proposed for the intersection of HWY47 and Vondera. Is nothing else being considered? I just don't see where tractor/trailers are going to exit to return to St. Louis unless the intersection of Vondera and HWY V is going to be widened also, to allow a tractor/trailer to make a safe right hand turn because I don't think Seidhoff is going to allow the USPS to cut through their parking lot. Is it going to be widened also? We have minimum 5 tractor/trailers coming and going each day. Not to mention the larger box trucks coming and going each day, heading South when they depart. Additionally, most of our customers are Union residents, when they are leaving the USPS the proposal is that their only option is to go towards Washington and then turn around somewhere or drive completely around to HWY V or cut through on Dairy View or cut through Seidhoff, which all are not inviting and are going to cause further backups at those locations. A roundabout would at least allow the traffic to still move and not cause a longer back-up somewhere else, and it would accommodate the tractor/trailers without having to widen HWY V and Vondera.
Traffic	I think the highway intersection of 50 and 47 should be the continuous flow design that looks the best to move traffic. Thanks for all you guys do!!

Public Survey Comment Examples

The following quotes are taken from the public survey to provide context for general sentiment of the public regarding key themes. Quotes listed are verbatim. The full survey results and comments are found in Appendix B: Survey Results.

Roundabouts

> *"I have driven on many roundabouts in the past 25 years, and I believe from what I have experienced that the traffic moves very smoothly through them! I think many people do not care for them because they don't feel like they can travel as fast as they want! In reality roundabouts keep traffic moving for all travelers if everyone is courteous!"*

> *"The 10 Roundabouts proposed would convert Hwy 47 into a residential street and severely limit traffic in this north/south corridor. Roundabouts work when traffic entering them is relatively balanced which is not the case in the majority of locations recommended by MoDOT. I believe traffic congestion would be worse rather than improved."*

> *"Large roundabouts will work well to allow traffic to enter and exit 47 safely allowing traffic to keep up the speed and flow. After initial confusion the roundabouts will be safer. Can roundabouts be an oval shape?"*

> *"Save the money and take away some of the roundabouts and put in traffic lights."*

Additional Lanes/Turn-Lanes

> *"It is not the speed that is the problem with safety, it is the congestion. You are trying to sidestep the cost of doing a good job. 47 should be 4 lanes now. All you are doing with the fixes is to make more congestion and increase travel time, using the excuse of safety. Your fixes are not for the people."*

> *"a left turn lane would be the most budget friendly option and greatly improve congestion and safety allowing vehicles waiting to turn to be removed from the lanes of traffic."*

> *" Lanes need to be widened both directions on 47. St Clair to Marthasville should be 2 lanes both ways. it gives passing without out on coming traffic."*

Speed Limits

> *"Need consistent reliable safe travel (to medical facilities in Washington) but need to minimize speeding!"*

> *"Reducing the speed limit will cause greater congestion. I drive this daily and don't reach the speed limit due to the high level of congestion."*

> *"Speed is not the issue; the amount of backup traffic is. Lanes need to be added to reduce backflow of traffic. The backflow of traffic in a contestant stops and go is another problem. Stop lights need to be recalibrated to appropriate lengths."*

Respondents had the option of leaving open-ended comments regarding specific intersections where they would like to see improvements made. The most common intersections from the responses were:

Route 47/Highway 50

> "Between Clearview Road and highway 4750 intersection at Walgreens. The traffic needs to be diverted around that Walgreens intersection so that people can go to St Clair and east union. The people that live in actual union that need to turn right into town or down 50 can barely get through all that traffic that's trying to go east and south."
>
> *"47 and 50 is a mess"*
>
> *"Hwy 47 and 50 is the largest area of concern. It needs to be totally revamped. College Road needs help also. Can you take out the hills and valleys before the first light into St. Clair?"*
>
> *"The stop light coming from Independence in Union, to turn left onto HWY 50- that stop light is too short and is difficult to get a green light if you're the person in front of the line. The intersection from South 47 and HWY 50 gets so congested around 4:30 PM M-F it is hard to get anywhere. As well as the stop light on 50 and North 47. It is all crowded and unsafe."*

Independence Drive

> *"Traffic seems to be backed up the most at Independence and 47. Big trucks heading East on Independence needing to turn right on 47 South cannot turn. No turn lane available. This is the Truck route intersection. Extra wide lanes in all directions seems to be needed."*
>
> *"I like the CFI option along with the five-lane section north of Independence Dr, this should really help get the southbound traffic flow better."*

Respondents had the option of leaving open-ended comments regarding any other specific concerns they wanted to share about Route 47 in Franklin County. Common topics/themes include:

Speed Limit Reductions

> *"Do not lower the speed limit or add any roundabouts. It's a highway. Don't try to make it a leisurely slow road. It should not take LONGER to get between Union/Washington. The congestion is the main problem. Your graphic about how "most people are speeding" must be in the middle of the night because it's been impossible to reach the 55-mph speed limit on 47 lately due to the slow line of cars."*
>
> *"St Clair to Union on 47 needs the shoulders widened and a center turn lane put in.*
> *Lower speed to 45"*
>
> *"While it is potentially understandable to lower the speed limit in Union, the whole point of this exercise should be to raise the speed limit in rural areas, not lower it."*

Roundabouts

"People make fun of roundabouts, but they work! I think the ones on independence dr left a bad taste in people's mouth bc of the size. The one bu the college is great, but the traffic light sometimes backs it up."

"I'm not a fan of roundabouts. In theory they are great, but I think they are confusing and frustrating to most drivers. Spend reductions would require a lot of enforcement to be effective. As someone who drives 47 every day, I fear being hit by an oncoming car crossing into my lane."

"I prefer the models showing turn lanes south of Washington to Union. I also prefer the roundabouts. Need to see how this could coexist."

"Roundabout don't work, because people don't use them correctly."

Congestion

"Road rage because of traffic congestion is real. No need for traffic issues with sufficient lanes to meet volume."

"It is getting more and more congested. Happy that something is finally going to be done about it. Whatever is easiest for people to understand the rules of the road, I believe is best. People are just not paying attention. Sad to say, an increase in patrol might help as well."

"My concerns are more about congestion during mid to late afternoon time periods. It should not take 45 minutes to get from Washington to Union after 2:30 pm"

Appendices

- Appendix A: Sign in sheets
- Appendix B: Survey Results
- Appendix C: Written comment forms and emails
- Appendix D: Exhibit Boards
- Appendix E: Fact Sheet
- Appendix F: Promotional Materials and Newsletter
- Appendix G: Media Coverage

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

Appendix A: Sign-In Sheets

Public Meeting #2
October 9, 2025

MoDOT

PLEASE SIGN IN

10 attendees

Name	Organization	Email	Phone
Christine Redhage	MoDOT	Christine.Redhage@modot.mo.gov	314-220-6670
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Christopher Hilson	MoDOT	Christopher.Hilson@modot.mo.gov	314-886-3602
Bryson Sanders	MoDOT		
Jordan Dalaviras	MoDOT		
Rachel Syddall	MoDOT		
Aaron Groff	MoDOT		
SHAUN TOOLEY	MoDOT		
Tom Blair			
David Herzog			

Public Meeting #2
October 9, 2025

Consultants

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10 attendees

Name	Organization	Email	Phone
Travis Pfeiffer	HNTB		
Chip Touzinsky	Lochmueller		
Bill Thorpe	HNTB		
Joe Blasi	HNTB		
Chris Beard	Lochmueller		
Christopher Givens	HNTB		
Pouya Yousefzadeh	Lochmueller		
Carrie Falkenrath	TSquared		
April Fleming	HNTB		
Kelsey Heavin	HNTB		

11

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11 attendees

Name	Organization	Email	Phone
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Virginia Elliott			636 583-3706
Joe Elliott		LITTLETIM3@MSN.com	636 432 3685
Jacob Heilman			314-223-1041
PHIL HINTZ	LET'S GO TAXI	PHIL HINTZ@GMAIL.COM	573-881-4724
Jim & Kim Peffermann		scarlettohara1974@hotmail.com	816-550-0369
James Schneider	City of Union		636-583-5157
Bill Faltermeier	~~WESTROCT~~	BFALTERMEIER@YAHOO.COM	636-667-0075
Wendy Griffin	Union	WDG1988@yahoo.com	3146305714
Patrick Wilson	Parallel Tool & Die	PatWilson@ParallelToolAndDie.com	

4

PLEASE SIGN IN

4 attendees

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Katherine Hewitt			314-955-3175
Trish Adams			636-584-9048
Mike McFatrich			573-450-7536

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11 attendees

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Michelle Goeckel	St. Clair		636-262-8116
Mary Matyiko	UNION		314 435 6146
Lisa Lochner	Sullivan	Lisa.Lochner@bjc.org	314-540-7615
Joe Holtmeier	Washington	JHoltmeier@washmo.org	
Jim Southwick	Union	KONA KOVE CONSULTING@yahoo.com	760-954-7452
Scott Hoskins	Union	hoss1hoss@yahoo.com	636-744-9835
Ellen Aubuchon	Union	ellenaubuchon@yahoo.com	314-795-6362
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Chase Wissbaum	Washington	chase.wissbaum@student.eastcentral.edu	636-392-8963

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10

PLEASE SIGN IN

10 attendees

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Tim Thebeau		11	11
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Vaughn Wampler	Union		636-234-4953
Al Kasper			3146089020
Karen Werdine	Washington		
Keith Adams	Union		314-960-2795

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11 attendees

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Tracy Licklider		Tracy Licklider@gmail	636-730-0094
Cheiree Courtney	Villa Ridge		
Patty Taylor	citizen Washington	markpatty1991@gmail.com	360-908-2523
Robby Bond	NB West Contracting	rbond@nbwest.com	636-288-7079

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11 attendees

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JONATHAN P. FINCK		jfinck@ykti.net	636 759-0773

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(10)

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10 attendees

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Sean Pennington		Sean.Pennington24@gmail.com	314-709-8431
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Glen Timke	Tax Payers Citizen	—	636-584-433
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7

PLEASE SIGN IN

7 attendees

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Cameron Lueken	WSE	cam@wseteam.com	
Lori Green		green.collie@gmail.com	
Sharon + Alan TenEyck			

10

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10 attendees

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DAVE HECK			
Linda Schneider		sjacklinda@gmail.com	
William Dysinger			314-541-6849
Jim Grulsch	FCHD	j.inthepaper@hotmail.com	
Ly Heggen	Private	hegge157@gmail.com	
GEORGE GUMPENBERGER		dangump@charter.net	636-448-9087

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October 9, 2025

10

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10 attendees

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Aaron Hall	City of Union Trans. Committee		
Robert Sestro	city of union	NONE	636 583-4972
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10 10

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10 attendees

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Kenneth Brautigam	7137 Hwy 47	kjabrautigam@att.net	636-584-1153
Mark Diehl		Diehl.Karen2@Gmail.com	314-817-4293
Mike Ulrich	United Bank + UDC	—	636 582 0057
Aldwin Fleer		Afleer11@gmail.com	636-388-1118
DARRYL HOLTMEYER	SELF	dholtmeyer3@gmail.com	636-390-1871

10

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10 attendees

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Jim Bush	PRIVATE	—	573-259-3953
Steven Fees	"		314 6503 463
Stephanie Groff			314-799-6004
Richard Bercher	ME	—	—
Ron Pulsifer Sr.	PRIVATE		636 583-4068
Randy Straeck			314 368-0394
Armon Remme	Kewaus		583-6477
Paul Gresham	—		636-584-9084
Brady Gro**			314.706.0105
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11

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11 attendees

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Jon Meyer			314-435-1182
Theresa Eckelkamp			314-799-4473

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2 attendees

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Missouri Route 47
Conceptual Study
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Job #J6P3661

Appendix B: Public Survey Results

Q1 What is your home zip code?

Answered: 283 Skipped: 4

#	RESPONSES	DATE
1	63084	10/23/2025 10:10 PM
2	63090	10/23/2025 9:26 PM
3	63090	10/23/2025 8:59 PM
4	63084	10/23/2025 8:44 PM
5	63090	10/23/2025 8:31 PM
6	63084	10/23/2025 7:40 PM
7	63084	10/23/2025 5:51 PM
8	63084	10/23/2025 2:22 PM
9	63090	10/23/2025 1:06 PM
10	63084	10/23/2025 12:05 PM
11	63080	10/23/2025 11:13 AM
12	63084	10/23/2025 10:05 AM
13	65066	10/23/2025 9:25 AM
14	63090	10/23/2025 9:00 AM
15	65066	10/23/2025 7:39 AM
16	63084	10/23/2025 7:14 AM
17	65109	10/23/2025 6:47 AM
18	63084	10/23/2025 12:41 AM
19	63090	10/22/2025 9:40 PM
20	63084	10/22/2025 8:17 PM
21	63090	10/22/2025 6:16 PM
22	63056	10/22/2025 5:52 PM
23	63084	10/22/2025 5:48 PM
24	63084	10/22/2025 5:08 PM
25	63084	10/22/2025 4:02 PM
26	63084	10/22/2025 3:02 PM
27	63084	10/22/2025 1:08 PM
28	63080	10/22/2025 11:32 AM
29	63084	10/22/2025 11:15 AM
30	63090	10/22/2025 11:14 AM
31	63090	10/22/2025 11:04 AM
32	63090	10/22/2025 10:56 AM
33	63090	10/22/2025 10:43 AM

34	63090	10/22/2025 10:31 AM
35	63090	10/22/2025 6:51 AM
36	63084	10/21/2025 7:44 PM
37	63084	10/21/2025 3:37 PM
38	63084	10/21/2025 2:34 PM
39	63077	10/21/2025 2:33 PM
40	63084	10/21/2025 12:50 PM
41	63084	10/21/2025 12:33 PM
42	63090	10/21/2025 10:51 AM
43	63090	10/21/2025 9:55 AM
44	63055	10/21/2025 9:52 AM
45	63090	10/21/2025 9:46 AM
46	63090	10/21/2025 9:16 AM
47	63014	10/21/2025 8:34 AM
48	63090	10/21/2025 8:23 AM
49	63084	10/21/2025 8:03 AM
50	63013	10/21/2025 7:34 AM
51	63084	10/21/2025 7:08 AM
52	63090	10/21/2025 7:03 AM
53	63084	10/21/2025 7:03 AM
54	63084	10/20/2025 8:56 PM
55	63084	10/20/2025 8:17 PM
56	63011	10/20/2025 3:20 PM
57	63037	10/20/2025 3:05 PM
58	63084	10/20/2025 1:07 PM
59	63090	10/20/2025 12:40 PM
60	63084	10/20/2025 10:24 AM
61	63090	10/20/2025 10:16 AM
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63	63084	10/20/2025 8:23 AM
64	63084	10/20/2025 8:06 AM
65	63357	10/20/2025 8:03 AM
66	63084	10/20/2025 6:21 AM
67	63084	10/20/2025 5:29 AM
68	63084	10/19/2025 11:48 PM
69	63084	10/19/2025 10:06 PM
70	63084	10/19/2025 9:26 PM
71	63084	10/19/2025 8:30 PM

72	63084	10/19/2025 7:39 PM
73	63084	10/19/2025 7:03 PM
74	63089	10/19/2025 6:25 PM
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76	63084	10/19/2025 6:10 PM
77	63084	10/19/2025 5:56 PM
78	63084	10/19/2025 5:53 PM
79	63090	10/19/2025 5:46 PM
80	63005	10/19/2025 5:45 PM
81	63084	10/19/2025 5:45 PM
82	63084	10/19/2025 5:34 PM
83	63084	10/19/2025 5:26 PM
84	63084	10/19/2025 5:18 PM
85	63084	10/19/2025 5:08 PM
86	63084	10/19/2025 5:03 PM
87	65559	10/19/2025 4:37 PM
88	63084	10/19/2025 4:36 PM
89	63084	10/19/2025 4:31 PM
90	63090	10/19/2025 4:25 PM
91	63077	10/19/2025 4:21 PM
92	63084	10/19/2025 3:57 PM
93	63077	10/19/2025 3:03 PM
94	63090	10/19/2025 2:59 PM
95	63084	10/19/2025 2:49 PM
96	63077	10/19/2025 2:49 PM
97	63013	10/19/2025 10:02 AM
98	63077	10/18/2025 11:44 PM
99	63077	10/18/2025 3:07 PM
100	63084	10/18/2025 10:12 AM
101	63069	10/18/2025 10:08 AM
102	63084	10/18/2025 9:22 AM
103	63084	10/17/2025 11:28 PM
104	63084	10/17/2025 10:58 PM
105	63056	10/17/2025 10:50 PM
106	63084	10/17/2025 10:49 PM
107	63056	10/17/2025 10:39 PM
108	63084	10/17/2025 10:04 PM
109	63084	10/17/2025 8:21 PM

110	63084	10/17/2025 5:20 PM
111	63090	10/17/2025 4:06 PM
112	63056	10/17/2025 3:01 PM
113	63084	10/17/2025 2:30 PM
114	63013	10/17/2025 2:25 PM
115	63090	10/17/2025 1:49 PM
116	63090	10/17/2025 1:45 PM
117	63357	10/17/2025 1:29 PM
118	63077	10/17/2025 1:00 PM
119	63090	10/17/2025 9:36 AM
120	63090	10/17/2025 7:54 AM
121	63090	10/17/2025 7:26 AM
122	63060	10/17/2025 7:22 AM
123	63077	10/17/2025 12:13 AM
124	63077	10/16/2025 7:39 PM
125	63077	10/16/2025 5:18 PM
126	63055	10/16/2025 4:54 PM
127	63077	10/16/2025 1:34 PM
128	63084	10/16/2025 1:20 PM
129	63084	10/16/2025 1:07 PM
130	63077	10/16/2025 7:57 AM
131	63376	10/15/2025 9:12 PM
132	63077	10/15/2025 8:22 PM
133	63080	10/15/2025 2:28 PM
134	63077	10/15/2025 7:59 AM
135	63084	10/14/2025 4:44 PM
136	63090	10/14/2025 4:42 PM
137	63090	10/14/2025 2:30 PM
138	63084	10/14/2025 2:24 PM
139	63090	10/14/2025 2:22 PM
140	63084	10/14/2025 2:19 PM
141	63084	10/14/2025 2:15 PM
142	63084	10/14/2025 2:11 PM
143	63084	10/14/2025 2:07 PM
144	63084	10/14/2025 2:00 PM
145	63090	10/14/2025 1:54 PM
146	63084	10/14/2025 1:52 PM
147	63090	10/14/2025 1:42 PM

148	63090	10/14/2025 9:39 AM
149	63084	10/13/2025 10:27 PM
150	63089	10/13/2025 7:29 PM
151	63099	10/13/2025 6:26 PM
152	63090	10/13/2025 5:07 PM
153	63084	10/13/2025 4:30 PM
154	63090	10/13/2025 3:37 PM
155	63090	10/13/2025 3:28 PM
156	63084	10/13/2025 3:23 PM
157	63090	10/13/2025 3:03 PM
158	63090	10/13/2025 2:35 PM
159	63084	10/13/2025 2:17 PM
160	63090	10/13/2025 12:48 PM
161	63084	10/12/2025 8:16 PM
162	63090	10/12/2025 4:30 PM
163	63090	10/12/2025 10:23 AM
164	63077	10/12/2025 8:24 AM
165	63077	10/12/2025 8:22 AM
166	63077	10/12/2025 4:45 AM
167	63077	10/11/2025 9:27 PM
168	63349	10/11/2025 7:34 PM
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170	63084	10/11/2025 4:17 PM
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172	63084	10/11/2025 2:19 PM
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174	63090	10/11/2025 12:21 PM
175	63090	10/11/2025 10:44 AM
176	63084	10/11/2025 9:16 AM
177	63077	10/11/2025 8:56 AM
178	63137	10/11/2025 8:54 AM
179	63090	10/11/2025 8:54 AM
180	63084	10/11/2025 8:46 AM
181	63084	10/11/2025 8:26 AM
182	63077	10/11/2025 7:57 AM
183	63084	10/11/2025 7:36 AM
184	64084	10/11/2025 7:33 AM
185	64074	10/11/2025 7:32 AM

186	63084	10/11/2025 6:51 AM
187	63090	10/11/2025 5:27 AM
188	63084	10/11/2025 2:12 AM
189	63084	10/11/2025 12:00 AM
190	63084	10/10/2025 11:45 PM
191	63084	10/10/2025 11:29 PM
192	63084	10/10/2025 11:21 PM
193	63090	10/10/2025 11:13 PM
194	63077	10/10/2025 11:09 PM
195	63084	10/10/2025 10:55 PM
196	63084	10/10/2025 10:48 PM
197	63090	10/10/2025 10:27 PM
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211	63084	10/10/2025 8:22 PM
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222	63077	10/10/2025 7:21 PM
223	63077	10/10/2025 7:18 PM

224	63077	10/10/2025 7:14 PM
225	63060	10/10/2025 6:17 PM
226	63060	10/10/2025 6:14 PM
227	63090	10/10/2025 5:58 PM
228	63084	10/10/2025 5:18 PM
229	63090	10/10/2025 5:13 PM
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232	63084	10/10/2025 4:36 PM
233	63060	10/10/2025 4:10 PM
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235	63077	10/10/2025 3:29 PM
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239	63077	10/10/2025 2:24 PM
240	63077	10/10/2025 2:19 PM
241	63084	10/10/2025 2:19 PM
242	63077	10/10/2025 2:05 PM
243	63077	10/10/2025 1:33 PM
244	63084	10/10/2025 1:21 PM
245	63077	10/10/2025 1:14 PM
246	63077	10/10/2025 1:02 PM
247	63077	10/10/2025 12:57 PM
248	63077	10/10/2025 12:55 PM
249	63077	10/10/2025 12:37 PM
250	63084	10/10/2025 11:36 AM
251	63080	10/10/2025 11:17 AM
252	63080	10/10/2025 11:15 AM
253	63025	10/10/2025 10:07 AM
254	63090	10/10/2025 9:43 AM
255	63090	10/10/2025 9:27 AM
256	63089	10/10/2025 9:03 AM
257	63084	10/10/2025 8:58 AM
258	63084	10/10/2025 8:51 AM
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261	63084	10/9/2025 10:46 PM

262	63077	10/9/2025 8:24 PM
263	63090	10/9/2025 7:51 PM
264	63077	10/9/2025 7:25 PM
265	63090	10/9/2025 6:29 PM
266	63084	10/9/2025 6:05 PM
267	63084	10/9/2025 5:53 PM
268	63080	10/9/2025 5:53 PM
269	63090	10/9/2025 5:38 PM
270	63080	10/9/2025 5:14 PM
271	63090	10/9/2025 5:12 PM
272	63077	10/9/2025 5:08 PM
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274	63077	10/9/2025 5:02 PM
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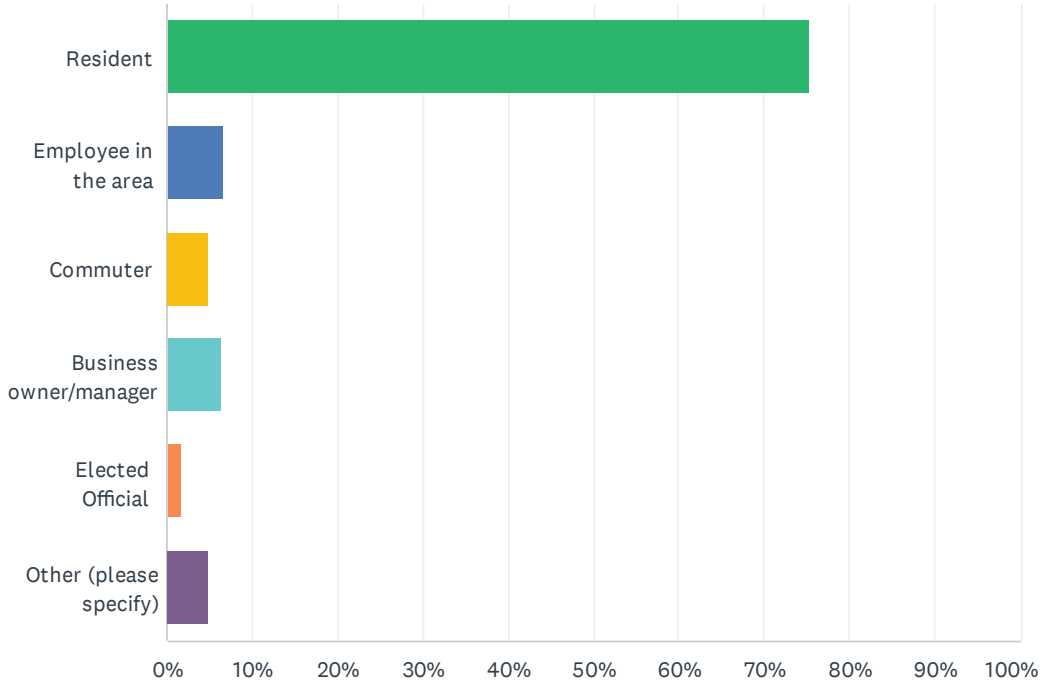
276	63084	10/9/2025 4:57 PM
277	63077	10/9/2025 4:44 PM
278	63090	10/9/2025 4:41 PM
279	63090	10/9/2025 4:24 PM
280	63084	10/9/2025 4:17 PM
281	63077	10/9/2025 4:11 PM
282	63077	10/9/2025 3:58 PM
283	63089	10/9/2025 2:47 PM

TOWN	Qty (ea)
Union	121
Washington	66
St. Clair	50
Sullivan	7
Leslie	4
Lonedell	4
Villa Ridge	4
Beaufort	3
Marthasville	3
Labadie	2
Owensville	2
St. Charles / St. Peters	2
Ballwin	1
Berger	1
Chesterfield	1
Eureka	1
Fenton	1
Gerald	1
Hawk Point	1
Jeff City	1
Napoleon	1
Pacific	1
Rayville	1
St. Charles	1
St. James	1
St. Louis North County	1
St. Peters / Cottleville / O'Fallon	1

Q2 Which of the following best describes you?

Answered: 283 Skipped: 4



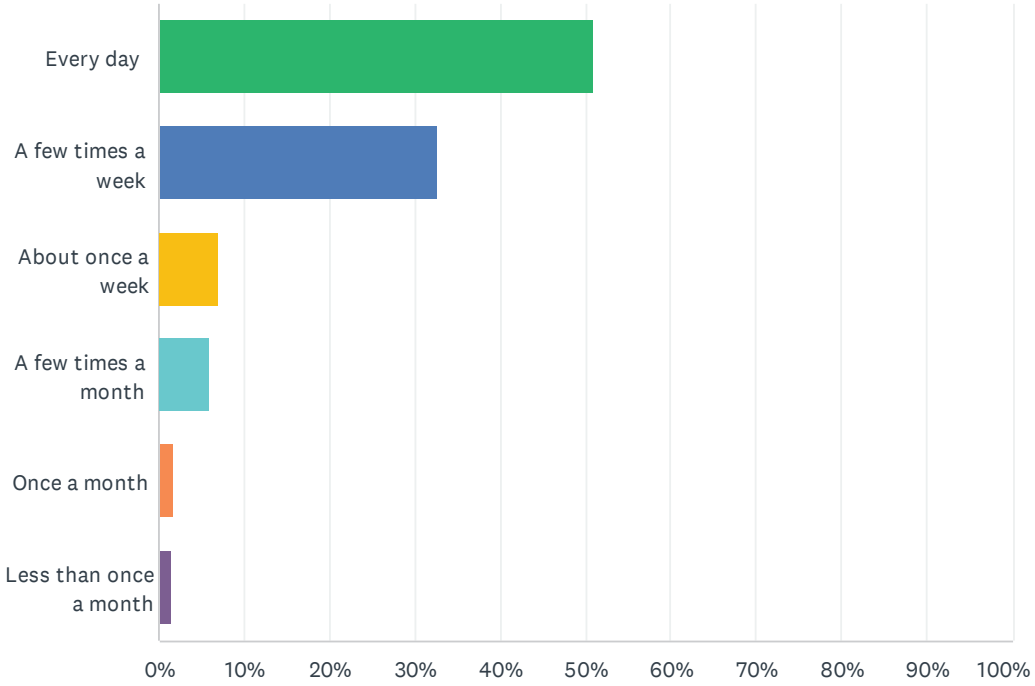
ANSWER CHOICES	RESPONSES	
Resident	75.27%	213
Employee in the area	6.71%	19
Commuter	4.95%	14
Business owner/manager	6.36%	18
Elected Official	1.77%	5
Other (please specify)	4.95%	14
TOTAL		283

#	OTHER (PLEASE SPECIFY)	DATE
1	First responder	10/23/2025 8:59 PM
2	Resident/Business owner/manager	10/23/2025 12:05 PM
3	Frequent shopper and visitor to family	10/23/2025 9:25 AM
4	Have interest in development of the Rock Island Trail	10/23/2025 6:47 AM
5	Frequently through Washington Union for friends,family, business.	10/19/2025 4:37 PM
6	Business Owner and Resident	10/18/2025 9:22 AM
7	Recently retired but commuter for 29 years	10/17/2025 10:04 PM
8	Resident and business owner	10/16/2025 7:57 AM

9	Relative of someone in the area and I lived in St. Clair for years.	10/15/2025 9:12 PM
10	Land owner	10/12/2025 10:23 AM
11	Employee and resident	10/10/2025 11:36 AM
12	Resident and bank president	10/10/2025 8:51 AM
13	Route 47 Resident as well as business owner.	10/9/2025 6:05 PM
14	Live near and shop in union, business owner that services Washington, union, st Clair,	10/9/2025 2:47 PM

Q3 How often do you use Route 47 between Washington and St. Clair?

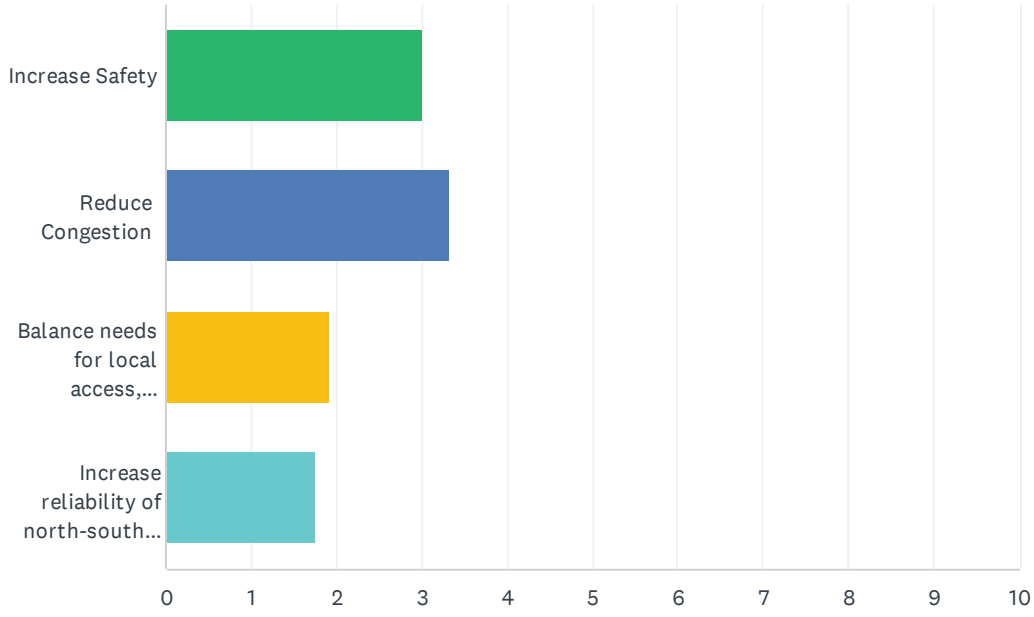
Answered: 282 Skipped: 5



ANSWER CHOICES	RESPONSES	
Every day	51.06%	144
A few times a week	32.62%	92
About once a week	7.09%	20
A few times a month	6.03%	17
Once a month	1.77%	5
Less than once a month	1.42%	4
TOTAL		282

Q4 How would you prioritize the project goals? With 1 being the top priority.

Answered: 266 Skipped: 21



	1	2	3	4	TOTAL	SCORE
Increase Safety	40.23% 107	33.83% 90	12.78% 34	13.16% 35	266	3.01
Reduce Congestion	48.50% 129	39.10% 104	9.77% 26	2.63% 7	266	3.33
Balance needs for local access, mobility, and economic growth	4.89% 13	15.79% 42	44.36% 118	34.96% 93	266	1.91
Increase reliability of north-south regional travel	6.39% 17	11.28% 30	33.08% 88	49.25% 131	266	1.75

Q5 Did we miss any goals? Please specify.

Answered: 53 Skipped: 234

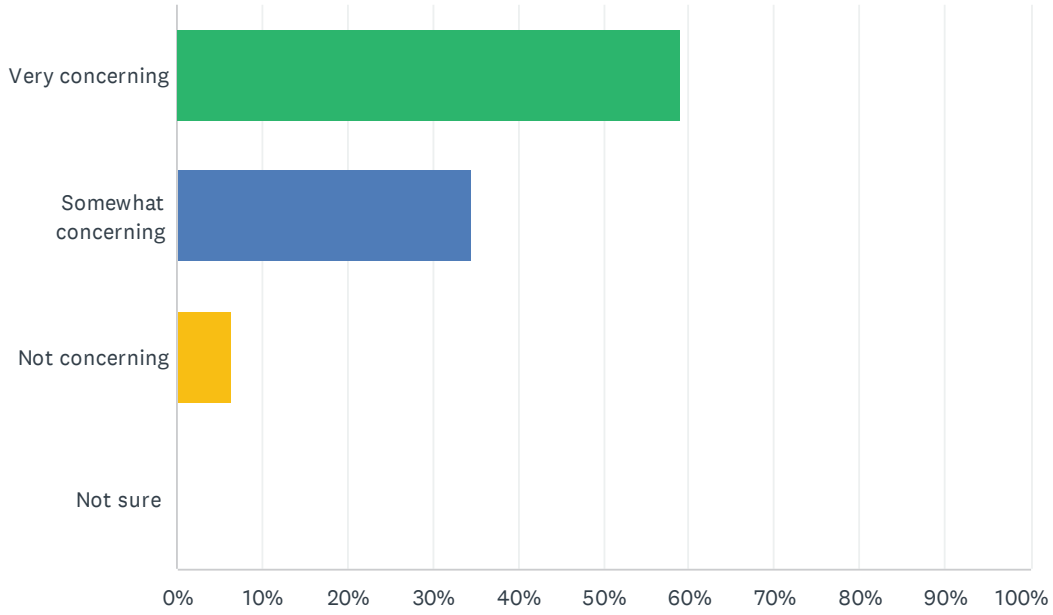
#	RESPONSES	DATE
1	Long-term affordability.	10/23/2025 8:44 PM
2	Common sense should be utilized.	10/23/2025 2:22 PM
3	provide for greater access from I44 to I 70.	10/23/2025 10:05 AM
4	Bike/Ped access	10/23/2025 9:25 AM
5	If local access, mobility and economic growth means hiking and biking then I believe you have my concern identified. Likely to have international travelers when RITSP is completed.	10/23/2025 6:47 AM
6	Yes. Protect the land of the current home-owners impacted by these proposals.	10/23/2025 12:41 AM
7	Pederstian sidewalk, bike riders, shoulder? Hard to properly rank project goals when not knowing if these are being considered.	10/22/2025 5:48 PM
8	Making the city of Union accessible to people from Union. It shouldn't take an extra 10 minutes everyday to get from one side of town to the other.	10/21/2025 3:37 PM
9	You guys need to figure out how to get traffic moving through there. It’s awful now, congestion causes everything to be worse.	10/21/2025 12:33 PM
10	I would travel 47 from St Clair to Washington several times a week IF the ridiculous traffic issues were eased. I ONLY use 44 to get to Washington because of Union traffic. I purposely spend money anywhere but Union because of the traffic issues.	10/20/2025 8:51 AM
11	No	10/19/2025 5:26 PM
12	N/a	10/19/2025 5:08 PM
13	Smoother traffic flow and bypass lights/stops	10/19/2025 4:37 PM
14	No roundabout. People do not know how to use them.	10/19/2025 4:36 PM
15	I think it has been covered very well	10/18/2025 10:12 AM
16	Make Highway 47 like Highway 100 between Washington and I-44. If you can't do that, make it three lanes, with two in each direction, alternating passing lanes between north and south. Chicken lanes are dangerous.	10/18/2025 10:08 AM
17	Some areas don't allow for line of sight and to see stopped/turning cars over the hill or around bends. Trash Trucks and USPS with no shoulders to be on. Clear some brush and trees would help for around bends. Put center turn lane in If not putting in round abouts at least put longer turn lanes at happy sack and college road	10/18/2025 9:22 AM
18	No	10/17/2025 2:30 PM
19	Long term sustainability. This project should not be barely adequate for current issues which leads to future problems and fixes.	10/17/2025 1:49 PM
20	Current suggested improvements only seem to address immediate concerns, and are not looking very far into future needs. This seems to be only 'kicking the can down the road'.	10/16/2025 4:54 PM
21	YES - widening the bridge near Old County Farm Rd won't do nearly enough to help the back up at the light at 47/50. The backup at the light at 47/50 causes a line of cars from the quarry all the way to QT. You've got to have more lanes all the way from Riverstone Quarry to Hwy 50 east, and also more lanes on hwy 50 at least through the QT/47 south intersection.	10/16/2025 1:20 PM
22	Provide for future connection between the Rock Island and Katy Trails	10/14/2025 4:44 PM
23	Long term growth - Phase II budget to solve future traffic concerns	10/14/2025 2:30 PM

24	Fixing how steep Franklin Ave is and being sure enough room for large trucks	10/14/2025 2:07 PM
25	Less congestion = less accidents	10/14/2025 2:00 PM
26	Safety may be an issue with the diverging left turn lane from hwy 50 east to hwy 47 north. I can see head on collisions galore.	10/13/2025 7:29 PM
27	Being able to access 47 from the Cedar Berry Subdivision	10/13/2025 5:07 PM
28	Make easier to turn left off Hwy 47 and on to Hwy 47	10/13/2025 3:28 PM
29	No	10/11/2025 1:22 PM
30	Future needs	10/11/2025 6:51 AM
31	Reduce number of stop lights. Do not use roundabouts use right turn only with center turn around lanes	10/11/2025 5:27 AM
32	The affect on established businesses in the corridor	10/10/2025 11:45 PM
33	Franklin county is growing more and more. Due to the congestion on 47 I tend to go 50 to AT to 100 to Washington.	10/10/2025 9:51 PM
34	Aesthetics and innovation that can be replicated and expanded on elsewhere in Missouri. Minimize costs and Maxine speed of completion. Work faster and do more!	10/10/2025 9:09 PM
35	Aesthetics and innovation. Creat best practices to replicate and expand on elsewhere.	10/10/2025 9:02 PM
36	Yes, you missed the point that we need 4 lanes St. Clair to Washington. Quit kicking the can down the road!	10/10/2025 6:14 PM
37	Not looks good	10/10/2025 5:58 PM
38	Would love to see a better connection between Franklin County and St Charles County, especially to Wentzville since it is closer to us. That route is 2 lanes of crazy turns and congestion and it isn't a straight through route.	10/10/2025 5:18 PM
39	Please no roundabouts. Traffic lights are preferred. Also, please try and not use too much eminent domain.	10/10/2025 4:41 PM
40	No but this has been an ongoing problem since the 80’s and much time and money has been wasted without any true results. The only people benefiting so far is the engineers and architects. Please let us see some of the money going to actual improvements instead of just talk	10/10/2025 2:28 PM
41	No	10/10/2025 2:19 PM
42	No median we need a turn lane and the road needs to be straightened and trees need cut back at quarry in between union and st.clair death trap when trucks come out or loose braks	10/10/2025 11:36 AM
43	No	10/10/2025 9:43 AM
44	Accommodate additional growth that will occur.	10/9/2025 6:29 PM
45	No	10/9/2025 5:53 PM
46	Possible different options to decrease congestion	10/9/2025 5:53 PM
47	I’m not sure. Will the traffic be backed up for two miles on Hwy 47 South during morning and evening rush hours	10/9/2025 5:14 PM
48	No	10/9/2025 5:05 PM
49	Limit roundabouts, please.	10/9/2025 5:02 PM
50	Lower stress of daily drivers be reducing unexpected stopping and preventing longer commute times.	10/9/2025 4:57 PM
51	Have driver’s stop using cedar berry estates dr to bypass congested HWY 47	10/9/2025 4:41 PM
52	It is very dangerous to cross the hwy to retrieve mail, and would love to have our mail box on the west side. Please address this concern.	10/9/2025 3:58 PM

53	Residential accessibility entering onto highway during high volume times.. subdivision, home owners, businesses	10/9/2025 2:47 PM

Q6 How much of a concern is safety to you on Route 47 in Franklin County?

Answered: 281 Skipped: 6



ANSWER CHOICES	RESPONSES	
Very concerning	59.07%	166
Somewhat concerning	34.52%	97
Not concerning	6.41%	18
Not sure	0.00%	0
TOTAL		281

#	COMMENTS	DATE
1	We have lived on Hwy. 47 between UNION AND St. Clair for 31 years and we have had so many near misses just trying to turn into our driveway. We live close to College Rd. We went to the meetings and we would like to see the round abouts or the center turn lanes from Union to St. Clair.	10/23/2025 10:10 PM
2	Flashing yellow turn signals should be removed from all traffic lights in this area. Reducing the 47 mess down to one major intersection would reduce crashes, not increase them as your skewed numbers suggest. It would be good for the people who created the comparison chart to get out on the roads and drive them like we do.	10/23/2025 2:22 PM
3	safety is a concern at intersections	10/23/2025 12:05 PM
4	The amount of traffic on the stretch of 47 from washington to union warrrants a 4 lane divided highway. T	10/23/2025 10:05 AM
5	It is difficult to make a left hand turn from Cedar Berry road where we have relatives.	10/23/2025 9:25 AM
6	Safety includes signage for international visitors as well as separation from traffic between bikers with families.	10/23/2025 6:47 AM

7	Drivers need to feel as though they can travel and access on and off of Hwy 47 safely.	10/23/2025 12:41 AM
8	slow traffic causes congestion and therefore causes safety concerns.	10/22/2025 9:40 PM
9	Seems to me that if congestion is improved, safety would improve as well.	10/22/2025 5:48 PM
10	I don't know why cops don't give out tickets for tailgating. It is the dumbest thing a driver can do. It would help the most senseless accident.	10/22/2025 3:02 PM
11	No matter what improvements are made it's all about the attentive drivers i.e. distractions	10/22/2025 11:15 AM
12	I think right turn lanes and center turn lanes would help. Plus, increased police patrol would help to encourage people to slow down and pay attention.	10/22/2025 10:43 AM
13	I have personally been rear ended turning into the daycare I operate, have seen several accidents out front in our 4 years of being in operation. The speed limit definitely needs reduced and a turning lane for us. If someone behind you doesn't want to wait they just speed around you on the shoulder, it is bad, there are families turning in here with cars full of children.	10/22/2025 10:31 AM
14	I think drivers in this area struggle to drive safely. This struggle to drive safely is exacerbated when traffic is bad, people drive worse.	10/21/2025 12:33 PM
15	Not having left or right turn lanes especially on the portion between union and St. Clair causes concern due to vehicles having to come to a complete stop especially for a left turn. Drivers unable to see the queue due to the curvy and hilly nature of 47 have trouble stopping. A dedicated center turn lane would help keep traffic moving and keep vehicles waiting to turn out of the lane of traffic	10/21/2025 9:52 AM
16	Congestion leads to a lot of the safety issues.	10/20/2025 3:05 PM
17	sidewalks or shoulders are needed, not everything has them. and moving the library to across 47 with no crosswalk or cross light was dangerous.	10/20/2025 10:24 AM
18	Speed???? I can't even get to 10 below the speed limit!!! Too much traffic at most times.	10/20/2025 8:51 AM
19	The route between Washington and Union are horrible, even during non-peak times. The increased semi-traffic, with 47 as a major route to I-44 and I-70, increases this congestion	10/20/2025 6:21 AM
20	I don’t think there are many accidents near me in Union. Reducing traffic should help with the accidents we do have though.	10/19/2025 11:48 PM
21	Congestion is bad enough, when accidents happen it makes it so much worse. Accidents seem to happen frequently.	10/19/2025 9:26 PM
22	I don’t think it is a dangerous road at this time	10/19/2025 6:10 PM
23	By the time you build something. Safety could be more of a concern.	10/19/2025 5:03 PM
24	The 47/50 intersection gets realigned it would fix many safety concerns.	10/19/2025 2:59 PM
25	Many accidents occur on this route due to turns with no turn lane and it stopping all traffic flow	10/19/2025 2:49 PM
26	To many close calls, to many deaths, to many accidents, long wait times depending on the day to safely make left turns into or out of businesses.	10/18/2025 10:12 AM
27	It should be safe, but safe to go at a relatively high speed.	10/18/2025 10:08 AM
28	I like to do 55 on 47 but if you're putting in round abouts the speed needs to drop. Also, a lot of older adults use 47 to get to Washington for doctors and they are already driving 35-45. Most people don't adjust their speed until they are right on your but.	10/18/2025 9:22 AM
29	If you implement the suggested changes then it won't be concerning.	10/17/2025 10:04 PM
30	Reducing cross traffic would reduce accidents people who drive on the right shoulder to get around stopped traffic trying to make a left across traffic.	10/17/2025 8:21 PM
31	Constant stop and go traffic in the morning makes me feel nervous that I will be rear ended.	10/17/2025 4:06 PM
32	On South 47, my husband has gotten rear ended near the doggy grooming business while delivering pizza for Pizza Hut back in 2019.	10/17/2025 2:30 PM
33	dedicated turn lanes and less stopping (this includes stoplights)	10/17/2025 1:49 PM

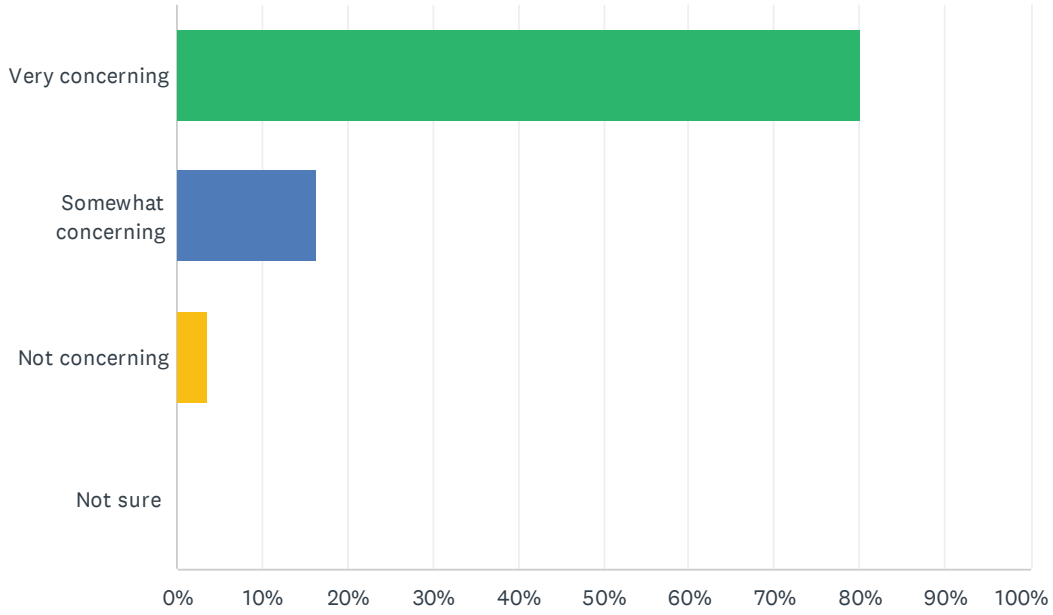
34	Drivers are very impatient and the congestion between Washington and Union on a weekday basis is concerning. While the stop and go traffic between Union and St. Clair isn't as bad, the close proximity of vehicles driving fast on the 2-lane highway has caused fatal accidents and long backups/delays.	10/17/2025 1:29 PM
35	I drove this to route to east central everyday. We have an issue of speeding and then breaking excessively. Since the road is kind of clogged, considering a lot of people typically leave at once there are people making right hand and left hand turns, but they don't slow slowly slow down since they're going such high speed they slam on their brakes and with no turn lanes it can end bad. I've had semis and school busses pull out infront me while I'm going 55-60MPH at commercial drive I'd imagine if someone was on my ass driving (tends to happen) it can end fatally. Also, the intersection of Clearview and 47 typically backs up around 4:00-6 PM all the way to the light of independence. I'd imagine people going 55 mph and always speeding so add more speed to that and they go flying over that hill about to enter union and don't realize there's a line of traffic. I feel like one day it'll end fatal.	10/17/2025 7:54 AM
36	As a first responder, we have concern about divided highways. Dividers limit the ability to keep traffic flowing. When northbound Highway 47 is shut down, Highway A is overloaded and access to Mercy Hospital is eliminated.	10/17/2025 7:26 AM
37	The Backups are increasingly getting worse, causing anger and frustration for a lot of drivers	10/16/2025 4:54 PM
38	If you add a left turn lane on 47, I wouldn't be concerned about safety anymore. The most dangerous part about 47 is the people stopping to turn left and someone not paying attention slamming into everyone else.	10/16/2025 1:20 PM
39	47 crossing at the north and south service roads at highway 44 are not safe Corner of college ave and 47 not safe	10/16/2025 7:57 AM
40	The number of crashed compared to total volume is not out of line.	10/14/2025 2:30 PM
41	To much congestion with speeders trying to pass	10/14/2025 2:15 PM
42	Safety concerns for me are DRIVERS, not roadways. Some people are dumb drivers. Need more policing.	10/14/2025 1:52 PM
43	We live on White Oak Trl. just south of Washington on Hwy. 47. It is very difficult to safely turn in and out of our road. To make a left turn to go north, we have to monitor great volumes of traffic just coming over the crest of the hill from the south as well as the southbound traffic. To turn into our road from the south, we fear being rear ended. Most of the time we just go to Washington and turn around. Several years ago there was a fatal accident where our road enters 47. To turn into our road, there is no shoulder and drivers tailgate us when we slow down.	10/14/2025 9:39 AM
44	I live on Hwy 47 near College road. I have add serveral accidents in front of my house. Several years a go a car come off of College hit my house and almost when all the way through it. Thus the reason I put up the guard rail.	10/13/2025 3:23 PM
45	I work in Union and live in Washington, so I commute 47 five days a week. The close-calls (especially in the afternoons) are a nightmare. Cars are constantly tailgating one another, and the lack of turn lanes in either direction means cars stopping in the travel lane to make left turns and slowing to 10 mph to make right turns. This leads to several close calls with rear-end collisions, or people feeling pressured to make a quick left and turning in front of oncoming traffic.	10/13/2025 3:03 PM
46	There are wrecks everyday. Franklin county population has multiplied 10 times since this hwy was installed. Creating toms of extra revenue.	10/12/2025 8:16 PM
47	Getting out of our subdivision, turning left to go to Washington, can be dangerous at certain times of the day.	10/12/2025 4:30 PM
48	needs longer time for left turns at stop lights for	10/11/2025 8:46 AM
49	I live on Hwy ad and if I am on 47 waiting to turn I feel like I'm going to die every time because people are impatient and go around when they should not, then if the car behind did not see me stopped to turn -I'm going to be smashed!	10/11/2025 7:36 AM
50	47 between Union and Saint Clair needs to be rerouted on the Northern end,from hwy 50 to College road, It is very winding with way to many entrances for a major highway. I realize it	10/11/2025 6:51 AM

	maybe can't all be done at once but a straight through interchange at 50 and 47 with a new bridge would be a great start and would answer future problems. Any other project is putting a band-aid on a bullet wound and 10-15 years down the road you will end up doing this anyway. This area is growing rapidly and i believe that this will continue in the future, fix it right the first time !	
51	I was in a rear end collision on Hwy 47 just north of Independence Rd earlier this year which involved 5 people/vehicles with most being taken to or treated at the hospital after the incident.	10/10/2025 11:29 PM
52	I am a post office worker and driving on 47 not only to work but for work also and delivery mail to residents on hwy 47 and I'm literally praying for my safety while doing it, and honestly I have no idea how residents pick up their mail if house on opposite side of hwy47, it seems like suicidal trip to pick up mail every day	10/10/2025 9:57 PM
53	Always a concern, but fatal accidents on I-70, I-170 and I-55 need to be red alert priorities. The multiple fatal accidents and lack of semi truck management and control are abysmal. MODOT needs to solve these issues fast. Unacceptable!	10/10/2025 9:09 PM
54	It is always a concern, but MODOT should be most concerned about the safety issues and fatal accidents on I-70, I-170 and I-55. Those highways are red alert danger zones, and MODOT needs to provide solutions…particularly for the semi trucks causing accidents.	10/10/2025 9:02 PM
55	MANY accidents in areas where someone has to stop traffic flow to turn off the highway. Congestion very bad. Peak times the single lane is almost bumper to bumper as far as you can see traveling together.	10/10/2025 8:22 PM
56	Almost daily avoiding accidents. Primarily sudden stops to make cross road turns. Needs at least a center lane for turns to avoid frequent hard stops.	10/10/2025 8:00 PM
57	Increasing safety should be the number one priority. Simply adding four lane roads will only make things worse and create a speedway between St. Clair and Washington.	10/10/2025 7:51 PM
58	The majority of wrecks I have seen are in the basic 2 lane section between Independence and Washington. Turn lanes would help immensely.	10/10/2025 7:35 PM
59	Congestion and safety go hand in hand.	10/10/2025 7:30 PM
60	Some people drives slow which make some drivers drives very aggressive and dangerous	10/10/2025 6:14 PM
61	Putting inv4-lanes from St. Clair to Washington should do just that.	10/10/2025 2:19 PM
62	Congestion and safety go together.	10/10/2025 1:21 PM
63	I'm a hospital employee. Constant MVCs on 47 in the same spots. By quick trip and by pasta house.	10/10/2025 1:14 PM
64	Line of sights and pathing	10/10/2025 11:36 AM
65	Roundabouts are much safer!	10/10/2025 9:43 AM
66	It is about time of day. 7-830 am And 330-5 every week day. The congestion is massive. Industry releasing workers and school out. We are trying to coordinate those times with the industry work hours like that have in Scandinavia countries	10/10/2025 8:51 AM
67	Maybe I have just missed them, but I've honestly not seen any bad wrecks on 47. I will say when somebody turns left and I have to break I am watching in my rear view mirror though.	10/9/2025 8:24 PM
68	Safety is always paramount!	10/9/2025 6:29 PM
69	Have to put myself in physical danger to get off my road to 47. There are no alternative ways out.	10/9/2025 6:05 PM
70	Safety is always top priority	10/9/2025 5:53 PM
71	Hard to merge onto 47 from side roads	10/9/2025 5:05 PM
72	I have spent my whole life seeing the danger presented on 47.	10/9/2025 4:57 PM
73	I drive off peak when traffic is minimal. I rarely encounter speeders, but often meet drivers going 20+ mph BELOW speed limits. A second lane in each direction would help, but so would a Minimun speed limit to avoid cresting a hill only to have to slam on the brakes.	10/9/2025 4:17 PM

74	Each event has to be reviewed to comment on this.	10/9/2025 2:47 PM

Q7 How much of a concern is traffic congestion to you on Route 47 in Franklin County?

Answered: 282 Skipped: 5



ANSWER CHOICES	RESPONSES	
Very concerning	80.14%	226
Somewhat concerning	16.31%	46
Not concerning	3.55%	10
Not sure	0.00%	0
TOTAL		282

#	COMMENTS	DATE
1	It takes about the same amount of time to travel hwy A as 47 to get to and from washington. 47 has better shoulders and it much straighter. Making hwy 47 a 4 lanes from union to washington should be a high priority along with realighning 47 to go straight instead of turning left onto hwy 50.	10/23/2025 10:05 AM
2	We simply take back roads during peak traffic times.	10/23/2025 9:25 AM
3	When I drive Hwy 47, I sometimes encounter slight congestion, but nothing that is bothersome.	10/23/2025 12:41 AM
4	Overall, Since it has been since the 60's since the planned improvements, I feel future concerns become very important. Looking forward 65 years...the only answer is 4 lanes throughout with emphasis on standardization so drivers are not confused. Being in wrong lanes, too much signage, poor lighting, are unknowns which would seem to be huge factors for safety.	10/22/2025 5:48 PM
5	I try to avoid it from about 2pm to 6pm	10/22/2025 3:02 PM
6	Just do something. You need to add a LONG right turn on south 47 onto Independence Drive.	10/22/2025 1:08 PM

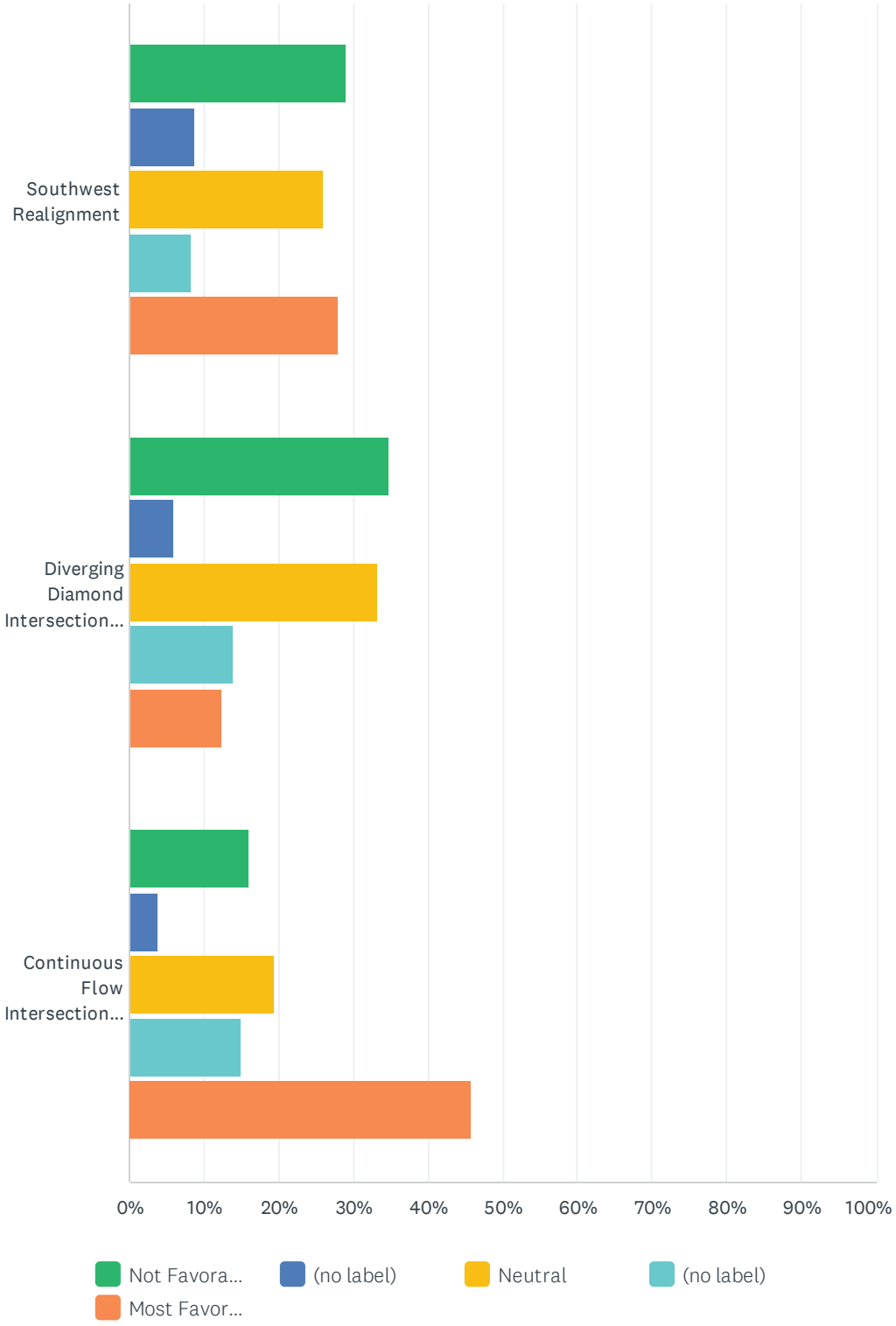
	You need to add right turn lane on Central Ave. to 47 south. Add a right turn lane on 47 south to Central east.	
7	Keeping traffic moving safely	10/22/2025 11:15 AM
8	Traffic is always backed up! This is why I think added turn lanes would help.	10/22/2025 10:43 AM
9	People not respecting rules of the road--- the video I just watched makes my heart rate pop--- it looks like an opportunity to really thin the population and invite the police and EMTs to a great deal more work splitting traffic directions and have a turn lane in the midst of two on coming lanes. Did Pete Hegdrunk come up with this using his social media platform? Those that flow down by the hotel, seem to ignore how often that area floods...	10/21/2025 12:50 PM
10	This is the worst part of driving in the area	10/21/2025 12:33 PM
11	Not having left or right turn lanes especially on the portion between union and St. Clair causes concern due to vehicles having to come to a complete stop especially for a left turn. Drivers unable to see the queue due to the curvy and hilly nature of 47 have trouble stopping. A dedicated center turn lane would help keep traffic moving and keep vehicles waiting to turn out of the lane of traffic	10/21/2025 9:52 AM
12	Most concerning during peak hours. (7:00-9:00 and 2:30-5:00 week days)	10/21/2025 8:34 AM
13	I'm sure the study has shown that congestion issues are significant. The congestion issue is a problem primarily twice daily south of Washington to St.Clair.	10/21/2025 7:08 AM
14	Hy 47 should be four lanes between St Claire and Washington. Now.	10/21/2025 7:03 AM
15	The area has tripled its population just in Washington alone since the 1980's. Several residential developments have entrances on this section of roadway. This road was not designed to handle the population we have.	10/20/2025 3:05 PM
16	Reducing congestion seems like it will improve safety	10/20/2025 12:40 PM
17	every where that is one lane needs to be 2. there are too many ppl with pass thru traffic and trucks for locals. it is worse than 270 at times	10/20/2025 10:24 AM
18	I know of no worse traffic zone in all of St Louis and purposely avoid it at all costs.	10/20/2025 8:51 AM
19	For the evening rush hour, it gets extremely backed up wen you get to Union-all the way through 47	10/20/2025 5:29 AM
20	Congestion is bad, I will travel on main st, hwy A or independence to skirt around it frequently.	10/19/2025 9:26 PM
21	The congestion is causing the safety hazards	10/19/2025 6:25 PM
22	Always busy.	10/19/2025 4:36 PM
23	To many close calls, to many deaths, to many accidents, long wait times depending on the day to safely make left turns into or out of businesses.	10/18/2025 10:12 AM
24	Need to do something about the Independence Drive intersection.	10/18/2025 10:08 AM
25	divided median is going to be difficult to get in and out of places. having to go to happy sack to turn around to go north or vice versa on the east side of 47. Theres a lot of folks on their phones and not paying attention and a lot of swerving with hitting the center median could cause more incidents.	10/18/2025 9:22 AM
26	Traffic circles would help this!	10/17/2025 8:21 PM
27	The line of traffic up the hill after 4 o clock every week day is very concerning. People should not have to sit in that line after they get off work just to make it back home.	10/17/2025 4:06 PM
28	No	10/17/2025 2:30 PM
29	4 lane roads do not reduce congestion, it has been shown that cars just end up in bunches or packs. what actually reduces congestion is CONSTANT movement.	10/17/2025 1:49 PM
30	Drivetime and increased risk of accidents is a concern with the congestion between Washington and Union on a weekday basis.	10/17/2025 1:29 PM
31	I think one lane in each direction is still fine but we really need basic turn lanes. I would love to	10/17/2025 7:54 AM

	see center turn lanes and some right hand turn lanes… we need a left hand turn lane at the quarry lots of dump trucks and other cars turn into their… I would love to see a roundabout or at least turn lanes at commercial Drive/lost pines. That intersection has a lot of chaos considering people will have to fully stop to make a left-hand turn and then gun it, and then slower cars coming out, have to floor it, but it is harder for them to accelerate rapidly with the excessive speeding around them. I think emerge lane would be a nice addition to that intersection too so the buses that leave can merge smoothly because I understand where they're coming from because it is harder for them to accelerate to match speed. I think if we put a roundabout at the Clearview intersection, it will help slow down traffic, especially considering right over that hill union changes the speed limit to 45 If you can't see over the hill until you're there.	
32	The issue we see as emergency responders are more rear end crashes. The congestion is more of an issue at the approach to Highway 50. The Highway 50 and 47 intersection is the bottle neck. A south bound dedicated right turn lane at Independence would be helpful	10/17/2025 7:26 AM
33	Congestion is the main problem.	10/16/2025 1:20 PM
34	50 and 47 in union is the worst	10/16/2025 7:57 AM
35	Daily backups on southbound 47 from Crestview to Rt 50 is out of control	10/14/2025 2:30 PM
36	Live along 47 and cannot get out of the driveway	10/14/2025 2:22 PM
37	Cannot get out from side roads	10/14/2025 2:15 PM
38	Of course, the congestion creates safety issues for us.	10/14/2025 9:39 AM
39	It is so draining to spend increasing amount of time on 47 on a daily basis. The hwy has needed to be 4 lanes since covid. Without the ability to pass slower traffic it will continue.	10/13/2025 4:30 PM
40	Hwy 47 need to be able to handle higher volumes of traffic to support growth in this area.	10/13/2025 3:28 PM
41	Congestion is terrible during rush hour. In the mornings, nobody can keep up with the speed limit and a line of 20-30 cars gets stuck behind someone going 35 mph in a 55 mph zone. In the afternoons, everyone is in such a rush to get home, and the congestion is terrible. Traffic on SB 47 entering the city of Union always has such a long line backing up from the light at Independence. Cars turning left at Cedar Berry, Hi-Line, etc., cause everyone to slam on the brakes and come to a complete stop heading towards Washington. The entire route needs a center left turn lane, and right turn lanes whenever possible.	10/13/2025 3:03 PM
42	If traffic flows and there is no constant stoping then this reduces wrecks. You guys are our state road department we shouldn't be telling you this. MODOT has spent years and years and who knows how many millions studying and surviving this. It shouldn't be this drawn out. You are supposed to be the professionals. Then again you put 4 lanes on hwy 100 in Washington and made cross traffic entrances instead of J Turns and people keep dieing there.	10/12/2025 8:16 PM
43	No matter what time of day you travel 47, there is always traffic backed up	10/12/2025 4:45 AM
44	With only one lane in each direction and no left turn lanes between Washington and Union, traffic backs up often when someone makes a left turn off the highway.	10/11/2025 10:44 AM
45	This route is totally unreliable. I use Hwy A frequently, or 100 to I44 w/b to get home to St. Clair on late afternoons.	10/11/2025 7:57 AM
46	Very hard to get out on 47 when on the side roads.	10/11/2025 7:36 AM
47	All of the traffic issues start at 47 and 50 A three or four lane road between Washington and Union will NOT solve anything until that interchange is fixed. A straight through interchange just like Washington has is the only option that uses common sense. Lets see if anyone still has that.	10/11/2025 6:51 AM
48	Every Friday evening, and many nights during the week, the traffic is backed up southbound from Independence back almost to Clearview. Change must take place or more will be injured or killed along this section of public roadway.	10/10/2025 11:29 PM
49	there's lots of backups during peak travel hours	10/10/2025 11:09 PM
50	Honestly for me more concerning drivers behavior when they cut you off to get from one lane to another because only one lane goes from 50 to 47 in intersection	10/10/2025 9:57 PM

51	See above comment	10/10/2025 9:51 PM
52	Getting worse with population and traffic count growth. Semi trucks are a huge concern.	10/10/2025 9:09 PM
53	I use back roads some days to avoid the congestion.	10/10/2025 9:08 PM
54	Getting worse	10/10/2025 9:02 PM
55	Route 47 should eventually be 4 lanes all the way between Washington and Union lots of back up traffic from 3 p.m. to 6p.m.	10/10/2025 8:06 PM
56	I avoid most rush hour traffic, but I see it backed up daily coming from Washington into union	10/10/2025 8:00 PM
57	Yes, congestion sucks. Though our goal should be for motorists to get where they are going safely. I am confident congestion can be lessened while still being safe for all.	10/10/2025 7:51 PM
58	47 would benefit from 2 lanes (like 50) in the area from Clearview south through Prairie Dell.	10/10/2025 7:35 PM
59	E Independence dr. Intersection south bound traffic get congestion dues to light being short while north bound light have longer. Fix that	10/10/2025 6:14 PM
60	If you don’t travel at the right time, a trip to Washington from Union (or vice versa) can take WAY longer than it should.	10/10/2025 5:18 PM
61	The 47/50 intersection in Union is the area most in need if some upgrade. Second would be left turn lanes for the section between Highway 100 and Union. And bring back the merge lane south of Steutermann Road	10/10/2025 5:13 PM
62	Takes over an hour almost to get from saint clair to Washington during rush hour traffic. Both in the morning and in the afternoon.	10/10/2025 1:14 PM
63	Build the road correct and congestion and safety will take care of its self	10/10/2025 11:36 AM
64	Key business events are handicapped severely and drivers try to cut “corners”	10/10/2025 8:51 AM
65	The intersection of 30 and 47 in Union is terrible. And I also don't like the two lane stretches as inevitably you will catch up with somebody going 45 miles an hour almost every time.	10/9/2025 8:24 PM
66	Traffic congestion is contrary to safety and should be on the same level as traffic safety.	10/9/2025 6:29 PM
67	Sometimes have to wait up to 17 minutes to be able to find a safe space between vehicles to enter 47 safely.	10/9/2025 6:05 PM
68	Very important	10/9/2025 5:53 PM
69	Traveling 47 has often been a very mentally taxing affair because of how much attention it requires to safely travel with all the stop and go traffic.	10/9/2025 4:57 PM
70	I avoid this corridor during peak times especially southbound south of Clearview.	10/9/2025 4:17 PM
71	This topic needs address because of the new volume of people in the area.	10/9/2025 2:47 PM

Q8 After reviewing the intersection concepts for an improved US 50/47, please rate the concepts on a 1 to 5 scale, with 1 being "Not Favorable" and 5 being "Most Favorable". Please click here to review the public meeting information (www.modot.org/media/53827)

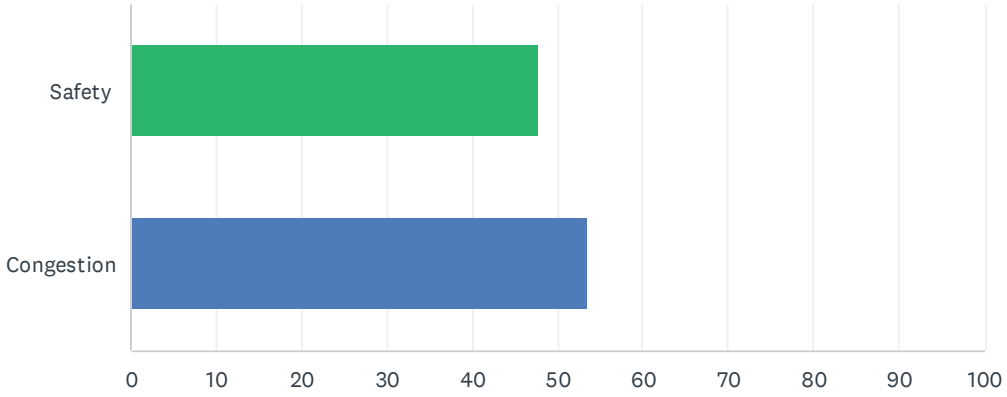
Answered: 210 Skipped: 77


Southwest Realignment
Diverging Diamond Intersection...
Continuous Flow Intersection...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Not Favora...
(no label)
Neutral
(no label)
Most Favor...

	NOT FAVORABLE	(NO LABEL)	NEUTRAL	(NO LABEL)	MOST FAVORABLE	TOTAL	WEIGHTED AVERAGE
Southwest Realignment	28.92% 59	8.82% 18	25.98% 53	8.33% 17	27.94% 57	204	2.98
Diverging Diamond Intersection (DDI)	34.65% 70	5.94% 12	33.17% 67	13.86% 28	12.38% 25	202	2.63
Continuous Flow Intersection (CFI)	15.94% 33	3.86% 8	19.32% 40	14.98% 31	45.89% 95	207	3.71

Q9 Out of 100%, how would you weigh SAFETY and CONGESTION? Please assign a % to each factor for the North Segment (Washington to Independence Dr.).The choices need to add up to 100.

Answered: 205 Skipped: 82



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Safety	48	9,632	202
Congestion	54	10,868	203
Total Respondents: 205			

#	SAFETY	DATE
1	15	10/23/2025 10:10 PM
2	10	10/23/2025 9:26 PM
3	70	10/23/2025 8:59 PM
4	90	10/23/2025 8:44 PM
5	70	10/23/2025 8:31 PM
6	65	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
9	70	10/23/2025 1:06 PM
10	25	10/23/2025 12:05 PM
11	15	10/23/2025 11:13 AM
12	35	10/23/2025 10:05 AM
13	50	10/23/2025 9:25 AM
14	40	10/23/2025 9:00 AM
15	80	10/23/2025 7:39 AM
16	20	10/23/2025 7:14 AM

17	85	10/23/2025 12:41 AM
18	50	10/22/2025 8:17 PM
19	100	10/22/2025 6:16 PM
20	50	10/22/2025 5:52 PM
21	5	10/22/2025 5:48 PM
22	60	10/22/2025 5:08 PM
23	50	10/22/2025 4:02 PM
24	40	10/22/2025 3:02 PM
25	60	10/22/2025 11:15 AM
26	20	10/22/2025 11:14 AM
27	90	10/22/2025 11:04 AM
28	90	10/22/2025 10:56 AM
29	20	10/22/2025 10:43 AM
30	15	10/22/2025 10:31 AM
31	70	10/22/2025 6:51 AM
32	40	10/21/2025 7:44 PM
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34	70	10/21/2025 2:34 PM
35	70	10/21/2025 2:33 PM
36	5	10/21/2025 12:33 PM
37	90	10/21/2025 10:51 AM
38	10	10/21/2025 9:55 AM
39	50	10/21/2025 9:52 AM
40	80	10/21/2025 9:46 AM
41	30	10/21/2025 9:16 AM
42	40	10/21/2025 8:34 AM
43	25	10/21/2025 8:23 AM
44	50	10/21/2025 8:03 AM
45	50	10/21/2025 7:34 AM
46	50	10/21/2025 7:08 AM
47	90	10/21/2025 7:03 AM
48	25	10/21/2025 7:03 AM
49	40	10/20/2025 8:56 PM
50	20	10/20/2025 8:17 PM
51	65	10/20/2025 3:20 PM
52	20	10/20/2025 3:05 PM
53	40	10/20/2025 1:07 PM
54	30	10/20/2025 12:40 PM

55	55	10/20/2025 10:24 AM
56	75	10/20/2025 10:16 AM
57	25	10/20/2025 8:51 AM
58	90	10/20/2025 8:23 AM
59	60	10/20/2025 8:06 AM
60	25	10/20/2025 8:03 AM
61	50	10/20/2025 6:21 AM
62	32	10/20/2025 5:29 AM
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64	40	10/19/2025 10:06 PM
65	85	10/19/2025 9:26 PM
66	50	10/19/2025 8:30 PM
67	20	10/19/2025 7:39 PM
68	60	10/19/2025 7:03 PM
69	45	10/19/2025 6:25 PM
70	50	10/19/2025 6:15 PM
71	50	10/19/2025 6:10 PM
72	40	10/19/2025 5:56 PM
73	50	10/19/2025 5:53 PM
74	100	10/19/2025 5:46 PM
75	90	10/19/2025 5:45 PM
76	40	10/19/2025 5:45 PM
77	30	10/19/2025 5:34 PM
78	60	10/19/2025 5:26 PM
79	50	10/19/2025 5:18 PM
80	40	10/19/2025 5:08 PM
81	30	10/19/2025 5:03 PM
82	40	10/19/2025 4:37 PM
83	50	10/19/2025 4:31 PM
84	75	10/19/2025 4:21 PM
85	50	10/19/2025 3:57 PM
86	40	10/19/2025 3:03 PM
87	10	10/19/2025 2:59 PM
88	80	10/19/2025 2:49 PM
89	35	10/19/2025 2:49 PM
90	50	10/19/2025 10:02 AM
91	50	10/18/2025 11:44 PM
92	40	10/18/2025 3:07 PM

93	70	10/18/2025 10:12 AM
94	20	10/18/2025 10:08 AM
95	50	10/18/2025 9:22 AM
96	70	10/17/2025 11:28 PM
97	25	10/17/2025 10:58 PM
98	65	10/17/2025 10:50 PM
99	55	10/17/2025 10:49 PM
100	25	10/17/2025 10:39 PM
101	60	10/17/2025 10:04 PM
102	50	10/17/2025 8:21 PM
103	40	10/17/2025 5:20 PM
104	60	10/17/2025 3:01 PM
105	50	10/17/2025 2:30 PM
106	40	10/17/2025 2:25 PM
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108	35	10/17/2025 1:29 PM
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114	10	10/16/2025 7:39 PM
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130	50	10/14/2025 2:16 PM

131	50	10/14/2025 2:13 PM
132	40	10/14/2025 2:07 PM
133	40	10/14/2025 2:04 PM
134	50	10/14/2025 1:56 PM
135	80	10/14/2025 10:07 AM
136	50	10/13/2025 10:29 PM
137	50	10/13/2025 5:13 PM
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165	30	10/10/2025 6:23 PM
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171	50	10/10/2025 2:35 PM
172	50	10/10/2025 2:33 PM
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175	40	10/10/2025 1:04 PM
176	50	10/10/2025 11:29 AM
177	75	10/10/2025 11:18 AM
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194	60	10/9/2025 5:11 PM
195	80	10/9/2025 5:07 PM
196	80	10/9/2025 5:05 PM
197	75	10/9/2025 4:54 PM
198	50	10/9/2025 4:46 PM
199	80	10/9/2025 4:26 PM
200	25	10/9/2025 4:22 PM
201	50	10/9/2025 4:15 PM
202	25	10/9/2025 4:13 PM
#	**CONGESTION**	**DATE**
1	85	10/23/2025 10:10 PM
2	90	10/23/2025 9:26 PM
3	30	10/23/2025 8:59 PM

4	10	10/23/2025 8:44 PM
5	30	10/23/2025 8:31 PM
6	35	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
9	30	10/23/2025 1:06 PM
10	75	10/23/2025 12:05 PM
11	85	10/23/2025 11:13 AM
12	65	10/23/2025 10:05 AM
13	50	10/23/2025 9:25 AM
14	60	10/23/2025 9:00 AM
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16	80	10/23/2025 7:14 AM
17	15	10/23/2025 12:41 AM
18	100	10/22/2025 9:40 PM
19	50	10/22/2025 8:17 PM
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23	50	10/22/2025 4:02 PM
24	60	10/22/2025 3:02 PM
25	40	10/22/2025 11:15 AM
26	80	10/22/2025 11:14 AM
27	10	10/22/2025 11:04 AM
28	10	10/22/2025 10:56 AM
29	80	10/22/2025 10:43 AM
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36	95	10/21/2025 12:33 PM
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39	50	10/21/2025 9:52 AM
40	20	10/21/2025 9:46 AM
41	70	10/21/2025 9:16 AM

42	60	10/21/2025 8:34 AM
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67	80	10/19/2025 7:39 PM
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76	70	10/19/2025 5:34 PM
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85	50	10/19/2025 3:57 PM
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112	55	10/17/2025 7:22 AM
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116	25	10/16/2025 4:54 PM
117	50	10/16/2025 1:34 PM

118	80	10/16/2025 1:20 PM
119	85	10/16/2025 1:07 PM
120	80	10/16/2025 7:57 AM
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151	75	10/11/2025 8:05 AM
152	30	10/11/2025 7:09 AM
153	25	10/11/2025 5:36 AM
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156	100	10/10/2025 10:14 PM
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160	25	10/10/2025 9:13 PM
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195	40	10/9/2025 5:11 PM
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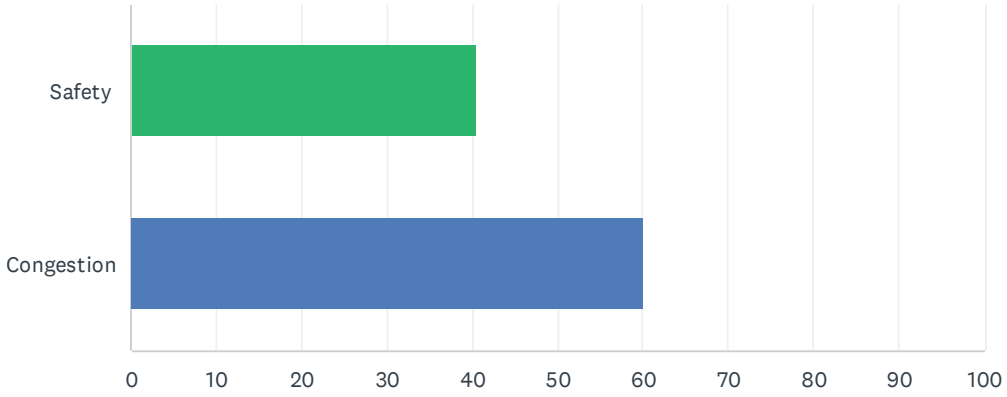
198	25	10/9/2025 4:54 PM
199	50	10/9/2025 4:46 PM
200	20	10/9/2025 4:26 PM
201	75	10/9/2025 4:22 PM
202	50	10/9/2025 4:15 PM
203	75	10/9/2025 4:13 PM

Q10 Out of 100%, how would you weigh SAFETY and CONGESTION? Please assign a % to each factor for the City of Union (Independence Dr. to US 50).The choices need to add up to 100.

Answered: 206 Skipped: 81



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Safety	41	8,320	205
Congestion	60	12,280	204
Total Respondents: 206			

#	SAFETY	DATE
1	45	10/23/2025 10:10 PM
2	10	10/23/2025 9:26 PM
3	50	10/23/2025 8:59 PM
4	50	10/23/2025 8:44 PM
5	20	10/23/2025 8:31 PM
6	20	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
9	80	10/23/2025 1:06 PM
10	25	10/23/2025 12:05 PM
11	15	10/23/2025 11:13 AM
12	2	10/23/2025 10:05 AM
13	45	10/23/2025 9:25 AM
14	40	10/23/2025 9:00 AM
15	60	10/23/2025 7:39 AM
16	20	10/23/2025 7:14 AM

17	85	10/23/2025 12:41 AM
18	50	10/22/2025 8:17 PM
19	100	10/22/2025 6:16 PM
20	50	10/22/2025 5:52 PM
21	25	10/22/2025 5:48 PM
22	40	10/22/2025 5:08 PM
23	60	10/22/2025 4:02 PM
24	30	10/22/2025 3:02 PM
25	20	10/22/2025 11:32 AM
26	50	10/22/2025 11:15 AM
27	20	10/22/2025 11:14 AM
28	90	10/22/2025 10:56 AM
29	20	10/22/2025 10:43 AM
30	20	10/22/2025 10:31 AM
31	50	10/22/2025 6:51 AM
32	30	10/21/2025 7:44 PM
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34	50	10/21/2025 2:34 PM
35	30	10/21/2025 2:33 PM
36	5	10/21/2025 12:33 PM
37	90	10/21/2025 10:51 AM
38	10	10/21/2025 9:55 AM
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40	80	10/21/2025 9:46 AM
41	30	10/21/2025 9:16 AM
42	30	10/21/2025 8:34 AM
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45	50	10/21/2025 7:34 AM
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47	90	10/21/2025 7:03 AM
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63	65	10/19/2025 11:48 PM
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88	10	10/19/2025 2:59 PM
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90	25	10/19/2025 2:49 PM
91	25	10/19/2025 10:02 AM
92	50	10/18/2025 11:44 PM

93	50	10/18/2025 3:07 PM
94	50	10/18/2025 10:12 AM
95	20	10/18/2025 10:08 AM
96	70	10/18/2025 9:22 AM
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98	25	10/17/2025 10:58 PM
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126	10	10/14/2025 4:44 PM
127	40	10/14/2025 2:39 PM
128	50	10/14/2025 2:23 PM
129	75	10/14/2025 2:20 PM
130	50	10/14/2025 2:19 PM

131	50	10/14/2025 2:16 PM
132	50	10/14/2025 2:13 PM
133	40	10/14/2025 2:07 PM
134	45	10/14/2025 2:04 PM
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166	0	10/10/2025 7:19 PM
167	40	10/10/2025 6:23 PM
168	25	10/10/2025 5:29 PM

169	50	10/10/2025 4:31 PM
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173	25	10/10/2025 2:35 PM
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205	25	10/9/2025 4:13 PM
#	**CONGESTION**	**DATE**

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2	90	10/23/2025 9:26 PM
3	50	10/23/2025 8:59 PM
4	50	10/23/2025 8:44 PM
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6	80	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
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12	98	10/23/2025 10:05 AM
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17	15	10/23/2025 12:41 AM
18	100	10/22/2025 9:40 PM
19	50	10/22/2025 8:17 PM
20	50	10/22/2025 5:52 PM
21	75	10/22/2025 5:48 PM
22	60	10/22/2025 5:08 PM
23	40	10/22/2025 4:02 PM
24	70	10/22/2025 3:02 PM
25	80	10/22/2025 11:32 AM
26	50	10/22/2025 11:15 AM
27	80	10/22/2025 11:14 AM
28	10	10/22/2025 10:56 AM
29	80	10/22/2025 10:43 AM
30	80	10/22/2025 10:31 AM
31	50	10/22/2025 6:51 AM
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33	100	10/21/2025 3:37 PM
34	50	10/21/2025 2:34 PM
35	70	10/21/2025 2:33 PM
36	95	10/21/2025 12:33 PM
37	10	10/21/2025 10:51 AM
38	90	10/21/2025 9:55 AM

39	100	10/21/2025 9:52 AM
40	20	10/21/2025 9:46 AM
41	70	10/21/2025 9:16 AM
42	70	10/21/2025 8:34 AM
43	75	10/21/2025 8:23 AM
44	50	10/21/2025 8:03 AM
45	50	10/21/2025 7:34 AM
46	80	10/21/2025 7:08 AM
47	10	10/21/2025 7:03 AM
48	75	10/21/2025 7:03 AM
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51	35	10/20/2025 3:20 PM
52	80	10/20/2025 3:05 PM
53	70	10/20/2025 1:07 PM
54	70	10/20/2025 12:40 PM
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56	25	10/20/2025 10:16 AM
57	99	10/20/2025 8:51 AM
58	10	10/20/2025 8:23 AM
59	30	10/20/2025 8:06 AM
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62	78	10/20/2025 5:29 AM
63	35	10/19/2025 11:48 PM
64	40	10/19/2025 10:06 PM
65	95	10/19/2025 9:26 PM
66	90	10/19/2025 8:30 PM
67	80	10/19/2025 7:39 PM
68	50	10/19/2025 7:03 PM
69	70	10/19/2025 6:25 PM
70	75	10/19/2025 6:15 PM
71	50	10/19/2025 6:10 PM
72	60	10/19/2025 5:56 PM
73	50	10/19/2025 5:53 PM
74	10	10/19/2025 5:45 PM
75	80	10/19/2025 5:45 PM
76	60	10/19/2025 5:34 PM

77	70	10/19/2025 5:26 PM
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80	50	10/19/2025 5:03 PM
81	70	10/19/2025 4:37 PM
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83	50	10/19/2025 4:25 PM
84	75	10/19/2025 4:21 PM
85	50	10/19/2025 3:57 PM
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87	90	10/19/2025 2:59 PM
88	50	10/19/2025 2:49 PM
89	75	10/19/2025 2:49 PM
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92	50	10/18/2025 3:07 PM
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104	50	10/17/2025 3:01 PM
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107	100	10/17/2025 1:49 PM
108	50	10/17/2025 1:29 PM
109	20	10/17/2025 9:36 AM
110	50	10/17/2025 7:54 AM
111	50	10/17/2025 7:26 AM
112	50	10/17/2025 7:22 AM
113	50	10/17/2025 12:13 AM
114	80	10/16/2025 7:39 PM

115	50	10/16/2025 5:18 PM
116	40	10/16/2025 4:54 PM
117	50	10/16/2025 1:34 PM
118	95	10/16/2025 1:20 PM
119	65	10/16/2025 1:07 PM
120	95	10/16/2025 7:57 AM
121	80	10/15/2025 9:12 PM
122	40	10/15/2025 8:22 PM
123	40	10/15/2025 2:28 PM
124	75	10/15/2025 7:59 AM
125	90	10/14/2025 4:44 PM
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137	60	10/13/2025 4:39 PM
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139	80	10/13/2025 3:37 PM
140	60	10/13/2025 3:29 PM
141	65	10/13/2025 2:51 PM
142	50	10/13/2025 12:55 PM
143	50	10/12/2025 4:36 PM
144	70	10/11/2025 9:38 PM
145	40	10/11/2025 4:35 PM
146	50	10/11/2025 1:24 PM
147	60	10/11/2025 12:41 PM
148	60	10/11/2025 10:57 AM
149	60	10/11/2025 9:24 AM
150	50	10/11/2025 9:16 AM
151	75	10/11/2025 8:05 AM
152	80	10/11/2025 7:09 AM

153	50	10/11/2025 5:36 AM
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155	80	10/10/2025 11:38 PM
156	50	10/10/2025 10:14 PM
157	50	10/10/2025 10:00 PM
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159	95	10/10/2025 9:13 PM
160	50	10/10/2025 9:13 PM
161	45	10/10/2025 8:55 PM
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163	25	10/10/2025 8:04 PM
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165	100	10/10/2025 7:19 PM
166	60	10/10/2025 6:23 PM
167	75	10/10/2025 5:29 PM
168	50	10/10/2025 4:31 PM
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181	60	10/10/2025 9:05 AM
182	60	10/10/2025 8:58 AM
183	60	10/9/2025 11:00 PM
184	90	10/9/2025 8:28 PM
185	70	10/9/2025 8:05 PM
186	90	10/9/2025 7:31 PM
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188	80	10/9/2025 6:18 PM
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190	30	10/9/2025 5:57 PM

191	50	10/9/2025 5:40 PM
192	75	10/9/2025 5:30 PM
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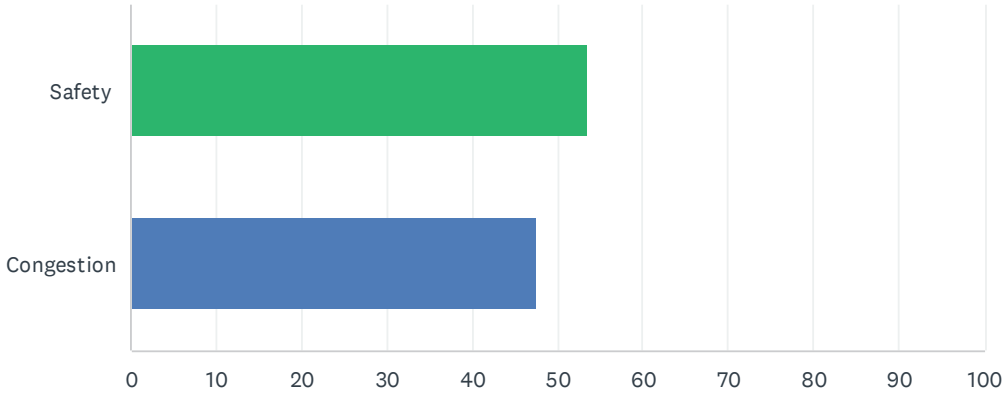
196	60	10/9/2025 5:11 PM
197	20	10/9/2025 5:07 PM
198	40	10/9/2025 5:05 PM
199	50	10/9/2025 4:54 PM
200	70	10/9/2025 4:46 PM
201	80	10/9/2025 4:26 PM
202	90	10/9/2025 4:22 PM
203	50	10/9/2025 4:15 PM
204	75	10/9/2025 4:13 PM

Q11 Out of 100%, how would you weigh SAFETY and CONGESTION? Please assign a % to each factor for the South Segment (U.S. 50 to St. Clair).The choices need to add up to 100.

Answered: 207 Skipped: 80



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
Safety	54	10,972	205
Congestion	47	9,728	205
Total Respondents: 207			

#	SAFETY	DATE
1	95	10/23/2025 10:10 PM
2	10	10/23/2025 9:26 PM
3	50	10/23/2025 8:59 PM
4	90	10/23/2025 8:44 PM
5	75	10/23/2025 8:31 PM
6	70	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
9	70	10/23/2025 1:06 PM
10	75	10/23/2025 12:05 PM
11	10	10/23/2025 11:13 AM
12	50	10/23/2025 10:05 AM
13	50	10/23/2025 9:25 AM
14	40	10/23/2025 9:00 AM
15	50	10/23/2025 7:39 AM
16	20	10/23/2025 7:14 AM

17	90	10/23/2025 12:41 AM
18	50	10/22/2025 8:17 PM
19	100	10/22/2025 6:16 PM
20	50	10/22/2025 5:52 PM
21	40	10/22/2025 5:48 PM
22	60	10/22/2025 5:08 PM
23	80	10/22/2025 4:02 PM
24	50	10/22/2025 3:02 PM
25	20	10/22/2025 11:32 AM
26	50	10/22/2025 11:15 AM
27	80	10/22/2025 11:14 AM
28	90	10/22/2025 10:56 AM
29	30	10/22/2025 10:43 AM
30	95	10/22/2025 10:31 AM
31	80	10/22/2025 6:51 AM
32	70	10/21/2025 7:44 PM
33	0	10/21/2025 3:37 PM
34	80	10/21/2025 2:34 PM
35	80	10/21/2025 2:33 PM
36	5	10/21/2025 12:33 PM
37	90	10/21/2025 10:51 AM
38	30	10/21/2025 9:55 AM
39	40	10/21/2025 9:52 AM
40	80	10/21/2025 9:46 AM
41	30	10/21/2025 9:16 AM
42	60	10/21/2025 8:34 AM
43	10	10/21/2025 8:23 AM
44	50	10/21/2025 8:03 AM
45	50	10/21/2025 7:34 AM
46	75	10/21/2025 7:08 AM
47	80	10/21/2025 7:03 AM
48	25	10/21/2025 7:03 AM
49	60	10/20/2025 8:56 PM
50	20	10/20/2025 8:17 PM
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52	20	10/20/2025 3:05 PM
53	50	10/20/2025 1:07 PM
54	30	10/20/2025 12:40 PM

55	40	10/20/2025 10:24 AM
56	75	10/20/2025 10:16 AM
57	25	10/20/2025 8:51 AM
58	90	10/20/2025 8:23 AM
59	50	10/20/2025 8:06 AM
60	40	10/20/2025 8:03 AM
61	60	10/20/2025 6:21 AM
62	36	10/20/2025 5:29 AM
63	65	10/19/2025 11:48 PM
64	50	10/19/2025 10:06 PM
65	51	10/19/2025 9:26 PM
66	50	10/19/2025 8:30 PM
67	50	10/19/2025 7:39 PM
68	75	10/19/2025 7:03 PM
69	50	10/19/2025 6:25 PM
70	10	10/19/2025 6:15 PM
71	50	10/19/2025 6:10 PM
72	50	10/19/2025 5:56 PM
73	50	10/19/2025 5:53 PM
74	100	10/19/2025 5:46 PM
75	90	10/19/2025 5:45 PM
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78	80	10/19/2025 5:26 PM
79	50	10/19/2025 5:18 PM
80	50	10/19/2025 5:08 PM
81	30	10/19/2025 5:03 PM
82	50	10/19/2025 4:37 PM
83	60	10/19/2025 4:31 PM
84	75	10/19/2025 4:21 PM
85	50	10/19/2025 3:57 PM
86	40	10/19/2025 3:03 PM
87	10	10/19/2025 2:59 PM
88	50	10/19/2025 2:49 PM
89	45	10/19/2025 2:49 PM
90	50	10/19/2025 10:02 AM
91	50	10/18/2025 11:44 PM
92	20	10/18/2025 3:07 PM

93	80	10/18/2025 10:12 AM
94	20	10/18/2025 10:08 AM
95	90	10/18/2025 9:22 AM
96	75	10/17/2025 11:28 PM
97	25	10/17/2025 10:58 PM
98	70	10/17/2025 10:50 PM
99	75	10/17/2025 10:49 PM
100	50	10/17/2025 10:39 PM
101	60	10/17/2025 10:04 PM
102	75	10/17/2025 8:21 PM
103	75	10/17/2025 5:20 PM
104	80	10/17/2025 3:01 PM
105	50	10/17/2025 2:30 PM
106	40	10/17/2025 2:25 PM
107	0	10/17/2025 1:49 PM
108	60	10/17/2025 1:29 PM
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111	70	10/17/2025 7:26 AM
112	40	10/17/2025 7:22 AM
113	50	10/17/2025 12:13 AM
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116	50	10/16/2025 4:54 PM
117	60	10/16/2025 1:34 PM
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119	85	10/16/2025 1:07 PM
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124	30	10/15/2025 7:59 AM
125	40	10/14/2025 4:44 PM
126	50	10/14/2025 2:39 PM
127	50	10/14/2025 2:23 PM
128	75	10/14/2025 2:20 PM
129	50	10/14/2025 2:19 PM
130	50	10/14/2025 2:16 PM

131	50	10/14/2025 2:13 PM
132	70	10/14/2025 2:07 PM
133	55	10/14/2025 2:04 PM
134	70	10/14/2025 10:07 AM
135	50	10/13/2025 10:29 PM
136	50	10/13/2025 5:13 PM
137	5	10/13/2025 4:39 PM
138	45	10/13/2025 3:39 PM
139	20	10/13/2025 3:37 PM
140	60	10/13/2025 3:29 PM
141	55	10/13/2025 2:51 PM
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163	90	10/10/2025 8:04 PM
164	50	10/10/2025 7:25 PM
165	0	10/10/2025 7:19 PM
166	30	10/10/2025 6:23 PM
167	50	10/10/2025 5:29 PM
168	85	10/10/2025 4:38 PM

169	30	10/10/2025 4:31 PM
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172	0	10/10/2025 2:38 PM
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199	80	10/9/2025 5:05 PM
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201	40	10/9/2025 4:46 PM
202	50	10/9/2025 4:26 PM
203	40	10/9/2025 4:22 PM
204	50	10/9/2025 4:15 PM
205	25	10/9/2025 4:13 PM
#	**CONGESTION**	**DATE**

1	5	10/23/2025 10:10 PM
2	90	10/23/2025 9:26 PM
3	50	10/23/2025 8:59 PM
4	10	10/23/2025 8:44 PM
5	25	10/23/2025 8:31 PM
6	30	10/23/2025 7:40 PM
7	50	10/23/2025 5:51 PM
8	50	10/23/2025 1:38 PM
9	30	10/23/2025 1:06 PM
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13	50	10/23/2025 9:25 AM
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26	50	10/22/2025 11:15 AM
27	20	10/22/2025 11:14 AM
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29	70	10/22/2025 10:43 AM
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36	95	10/21/2025 12:33 PM
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41	70	10/21/2025 9:16 AM
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44	50	10/21/2025 8:03 AM
45	50	10/21/2025 7:34 AM
46	25	10/21/2025 7:08 AM
47	20	10/21/2025 7:03 AM
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69	50	10/19/2025 6:25 PM
70	90	10/19/2025 6:15 PM
71	50	10/19/2025 6:10 PM
72	50	10/19/2025 5:56 PM
73	50	10/19/2025 5:53 PM
74	10	10/19/2025 5:45 PM
75	65	10/19/2025 5:45 PM
76	25	10/19/2025 5:34 PM

77	20	10/19/2025 5:26 PM
78	50	10/19/2025 5:18 PM
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80	70	10/19/2025 5:03 PM
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85	50	10/19/2025 3:57 PM
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89	55	10/19/2025 2:49 PM
90	50	10/19/2025 10:02 AM
91	50	10/18/2025 11:44 PM
92	80	10/18/2025 3:07 PM
93	20	10/18/2025 10:12 AM
94	80	10/18/2025 10:08 AM
95	10	10/18/2025 9:22 AM
96	25	10/17/2025 11:28 PM
97	75	10/17/2025 10:58 PM
98	30	10/17/2025 10:50 PM
99	25	10/17/2025 10:49 PM
100	50	10/17/2025 10:39 PM
101	40	10/17/2025 10:04 PM
102	25	10/17/2025 8:21 PM
103	25	10/17/2025 5:20 PM
104	20	10/17/2025 3:01 PM
105	50	10/17/2025 2:30 PM
106	60	10/17/2025 2:25 PM
107	100	10/17/2025 1:49 PM
108	40	10/17/2025 1:29 PM
109	50	10/17/2025 1:00 PM
110	20	10/17/2025 9:36 AM
111	30	10/17/2025 7:26 AM
112	60	10/17/2025 7:22 AM
113	50	10/17/2025 12:13 AM
114	50	10/16/2025 7:39 PM

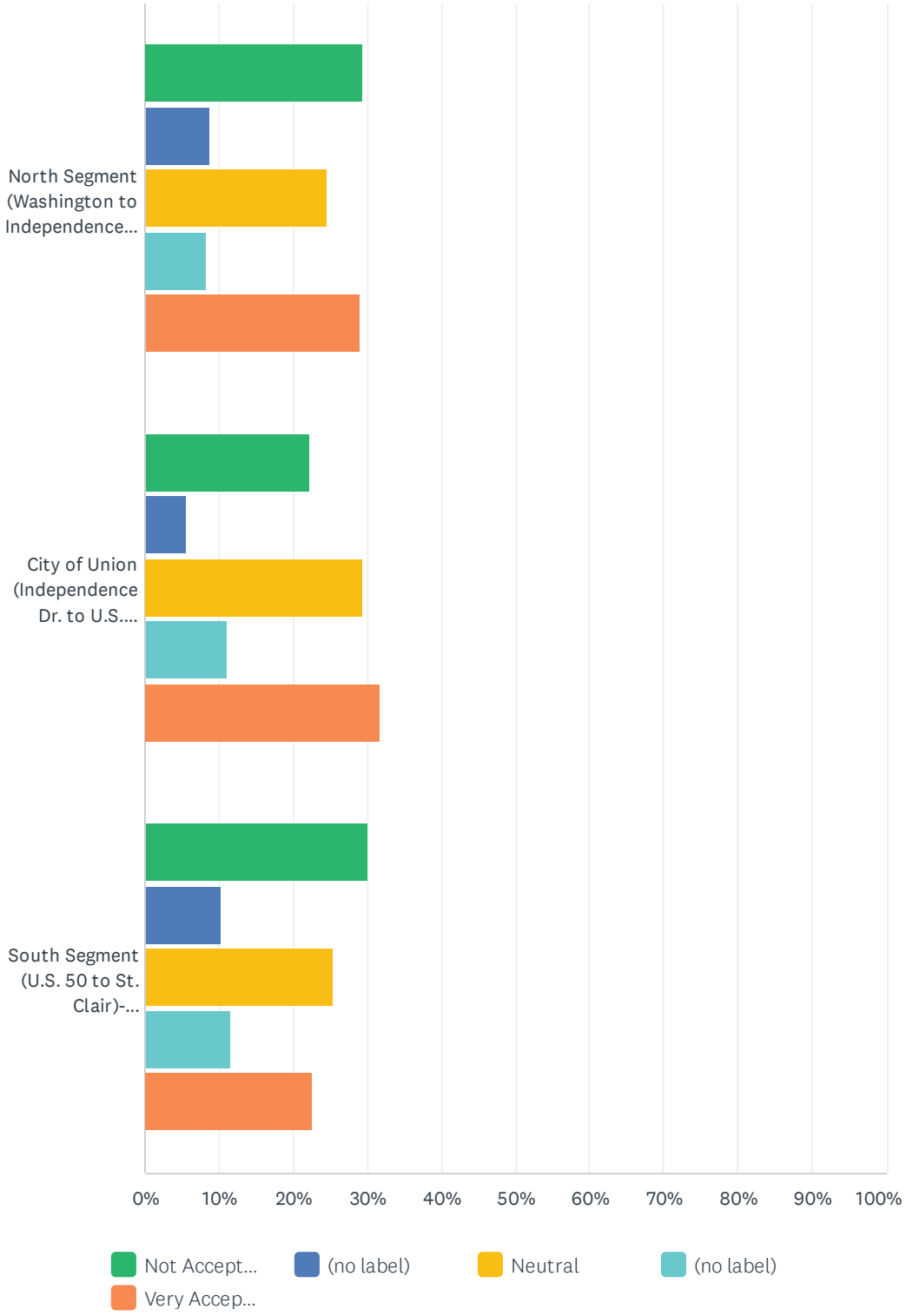
115	50	10/16/2025 5:18 PM
116	50	10/16/2025 4:54 PM
117	40	10/16/2025 1:34 PM
118	50	10/16/2025 1:20 PM
119	15	10/16/2025 1:07 PM
120	50	10/16/2025 7:57 AM
121	50	10/15/2025 9:12 PM
122	40	10/15/2025 8:22 PM
123	40	10/15/2025 2:28 PM
124	70	10/15/2025 7:59 AM
125	60	10/14/2025 4:44 PM
126	50	10/14/2025 2:39 PM
127	50	10/14/2025 2:23 PM
128	25	10/14/2025 2:20 PM
129	50	10/14/2025 2:19 PM
130	50	10/14/2025 2:16 PM
131	50	10/14/2025 2:13 PM
132	30	10/14/2025 2:07 PM
133	45	10/14/2025 2:04 PM
134	30	10/14/2025 10:07 AM
135	50	10/13/2025 10:29 PM
136	50	10/13/2025 5:13 PM
137	95	10/13/2025 4:39 PM
138	55	10/13/2025 3:39 PM
139	80	10/13/2025 3:37 PM
140	40	10/13/2025 3:29 PM
141	45	10/13/2025 2:51 PM
142	50	10/13/2025 12:55 PM
143	50	10/12/2025 4:36 PM
144	70	10/11/2025 9:38 PM
145	20	10/11/2025 4:35 PM
146	50	10/11/2025 1:24 PM
147	60	10/11/2025 12:41 PM
148	50	10/11/2025 10:57 AM
149	60	10/11/2025 9:24 AM
150	50	10/11/2025 9:16 AM
151	75	10/11/2025 8:05 AM
152	20	10/11/2025 7:09 AM

153	25	10/11/2025 5:36 AM
154	50	10/11/2025 2:30 AM
155	50	10/10/2025 11:38 PM
156	50	10/10/2025 10:14 PM
157	50	10/10/2025 10:00 PM
158	50	10/10/2025 9:28 PM
159	85	10/10/2025 9:13 PM
160	25	10/10/2025 9:13 PM
161	25	10/10/2025 8:55 PM
162	35	10/10/2025 8:12 PM
163	10	10/10/2025 8:04 PM
164	50	10/10/2025 7:25 PM
165	100	10/10/2025 7:19 PM
166	70	10/10/2025 6:23 PM
167	50	10/10/2025 5:29 PM
168	15	10/10/2025 4:38 PM
169	70	10/10/2025 4:31 PM
170	10	10/10/2025 4:15 PM
171	35	10/10/2025 3:33 PM
172	100	10/10/2025 2:38 PM
173	50	10/10/2025 2:35 PM
174	75	10/10/2025 2:33 PM
175	70	10/10/2025 2:31 PM
176	75	10/10/2025 1:19 PM
177	50	10/10/2025 1:04 PM
178	50	10/10/2025 11:29 AM
179	25	10/10/2025 11:18 AM
180	10	10/10/2025 9:50 AM
181	40	10/10/2025 9:43 AM
182	50	10/10/2025 9:05 AM
183	60	10/10/2025 8:58 AM
184	20	10/9/2025 11:00 PM
185	70	10/9/2025 8:28 PM
186	30	10/9/2025 8:05 PM
187	90	10/9/2025 7:31 PM
188	50	10/9/2025 6:29 PM
189	20	10/9/2025 6:18 PM
190	10	10/9/2025 6:08 PM

191	30	10/9/2025 5:57 PM
192	70	10/9/2025 5:40 PM
193	60	10/9/2025 5:30 PM
194	30	10/9/2025 5:24 PM
195	40	10/9/2025 5:16 PM
196	50	10/9/2025 5:11 PM
197	25	10/9/2025 5:11 PM
198	20	10/9/2025 5:07 PM
199	20	10/9/2025 5:05 PM
200	0	10/9/2025 4:54 PM
201	60	10/9/2025 4:46 PM
202	50	10/9/2025 4:26 PM
203	60	10/9/2025 4:22 PM
204	50	10/9/2025 4:15 PM
205	75	10/9/2025 4:13 PM

Q12 Please rate how acceptable a SPEED LIMIT REDUCTION is in each segment if done in conjunction with other SAFTEY improvement to reduce speeds.(Ex. narrowed lanes, raised median islands, roundabouts, etc.) (1 being "Not acceptable", 5 being "Very acceptable")

Answered: 217 Skipped: 70


North Segment (Washington to Independence...
City of Union (Independence Dr. to U.S....
South Segment (U.S. 50 to St. Clair)-...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Not Accept...
(no label)
Neutral
(no label)
Very Accep...

	NOT ACCEPTABLE	(NO LABEL)	NEUTRAL	(NO LABEL)	VERY ACCEPTABLE	TOTAL	WEIGHTED AVERAGE
North Segment (Washington to Independence Dr.)- Existing 55 mph	29.49% 64	8.76% 19	24.42% 53	8.29% 18	29.03% 63	217	2.99
City of Union (Independence Dr. to U.S. 50)- Existing 45 mph	22.12% 48	5.53% 12	29.49% 64	11.06% 24	31.80% 69	217	3.25
South Segment (U.S. 50 to St. Clair)- Existing 55 mph	30.09% 65	10.19% 22	25.46% 55	11.57% 25	22.69% 49	216	2.87

Q13 Do you have any comments or concerns regarding the example intersection improvements? Please click here to review the public meeting information (www.modot.org/media/53827)

Answered: 106 Skipped: 181

#	RESPONSES	DATE
1	When going from Washington to union please include a right turn lane onto independence drive.	10/23/2025 9:26 PM
2	Roundabouts are horrible	10/23/2025 8:59 PM
3	Any additional turn lanes seem great.	10/23/2025 8:44 PM
4	Most people drive too fast! I think if the speed limit was lowered and roundabouts were added it would help with the flow of traffic and safety!	10/23/2025 8:31 PM
5	The MoDOT team did a nice job at presenting all the material at the public meeting. A lot of work when into the prep work. Seeing how it looks like 5 lanes is suggested between Independence Drive and Highway 50 will really help keep the traffic flowing through the signals better to elevate the single file stack of cars SB lining up the hill north of Independence. The 2-3 lane section between Washington and Union is understandable with the lane configuration capacity board that was shown, as long as left turn lanes are added at the many intersections in that section. Personally I think roundabouts work really well to keep traffic flowing while slowing the speed enough to help cars enter 47 from the side roads. Currently it's very difficult at times. I would be ok with the roundabout intersections to help make it safer & slow cars down. Even if it took a little longer in my commute, the amount of time savings in traffic flow between Independence and 50 will make up for the little extra time it'll take to travel through the section between Washington and Union. I'd rather keep moving than sit at a signal, especially when no one is on the side street.	10/23/2025 7:40 PM
6	I believe that turn lanes (left AND/OR right) need to be added at any location where traffic can be entering or exiting the highway.	10/23/2025 5:51 PM
7	Concerns are that the information has been skewed to effectively convince people to pick the cheaper option for the Union Hwy. 47 corridor when it is obvious that the Southwest Realignment is the only one that truly makes sense. The Key highlights are very questionable, citizens are able to see that quite clearly. Citizens are not stupid, so please be honest with your comparisions. You can't tell anyone that the Southwest option will increase accidents that is so dishonest to put that kind of prediction on there. The other two options are a bad bandaid to keep a few business owners happy, what about the rest of us. The current highway path at 47/50 coming from St. Clair is an accident that is not only waiting to happen, accidents happen all of the time, we all know this. That section of the highway would benefit from realigning hwy 47 greatly. How can removing extra traffic from a dangerous intersection possibly cause the number of crashes to go up??	10/23/2025 2:22 PM
8	DDI has converging single lane to Washington at Phillips 66 which will add to congestion will DDI still be in flood plane , the area has flooded multiple times through the Years	10/23/2025 12:05 PM
9	I think we need to look at possibly mirroring this project with what was done in wildwood with hwy 109 near the hwy 100 intersection. IT might also be important to consider putting in over pass at the hwy 5o and 47 intersection. When a wreck occurs between the 2 hwy 47 junctions on hwy 50. Traffic in Union becomes a bottleneck with no other way to get around. On the Union to St Clair side the most dangerous intersections are college rd and hwy AD because of sight distance issue with Hwy AD being on a hill.	10/23/2025 10:05 AM
10	Too many roundabouts will increase the travel time. What is the traffic count at these intersections and this will create more congestion when 90-95% of the traffic is north-south on 47.	10/23/2025 9:00 AM
11	Saftey regarding future biking and hiking as a result of a proposed 450 mile loop that will attract visitors from out of the area.	10/23/2025 6:47 AM

12	The area in Union, when traveling north from St. Clair on 47, after turning right from Hwy 50, immediately before Old County Farm Road seems very dangerous now, as you lose a lane. If you are unfamiliar with that roadway, unfamiliar drivers are surprised, when needing to jog to your left to continue north on 47 towards Washington. That same area is dangerous traveling south, as you approach the stoplight from 47 heading towards 50, if you need to turn left to go to St. Clair. Again, you need to make an uncomfortable jog to ensure you are in a correct lane to turn left to go to St. Clair. I do not believe roundabouts are positive additions, as they can be confusing to people entering and leaving these circular intersections in high traffic areas. You also need to have good visibility on all sides of a round-about, or they can be dangerous.	10/23/2025 12:41 AM
13	Continious flow seems to be most standardized option. Future Autonomous car issues with adding white light with non standard intersections seems to be a problem.	10/22/2025 5:48 PM
14	NO ROUNDABOUTS	10/22/2025 4:02 PM
15	Independence Dr needs a third lane for cars making a right turn. It is very frustrating to have to wait for a green light to make a right turn when somebody going straight doesn't leave enough room.	10/22/2025 3:02 PM
16	Add round about	10/22/2025 11:32 AM
17	Not a big fan of crossover lanes. They add another traffic light and potential for accidents.	10/22/2025 11:15 AM
18	Could you build a highway 47 bridge over the river on the north side of highway 50 and have 47 join at the current intersection by the ford dealer and the QT station?	10/22/2025 10:43 AM
19	At rout AD i noticed a couple fatally, and I believe a roundabout would improve safety and flow of traffic. Traffic needs to slow down	10/21/2025 2:34 PM
20	Roundabouts are very easy to learn how to adapt and maneuver through effectively and they will reduce confusion once used routinely and therefore will increase safety.	10/21/2025 2:33 PM
21	The issue is people not abiding by the posting, so hold them accountable as we should taco34	10/21/2025 12:50 PM
22	Don’t reduce the speed limits, you’ll see crazier driver behavior.	10/21/2025 12:33 PM
23	Roundabouts are more than acceptable	10/21/2025 10:51 AM
24	a left turn lane would be the most budget friendly option and greatly improve congestion and safety allowing vehicles waiting to turn to be removed from the lanes of traffic	10/21/2025 9:52 AM
25	The roudabout at Country Club on highway 47 makes sense. Nearly blind left turns required at both directions. Both intersections slope downhill towards highway 47 off of private roads. This is very concerning during icy conditions.	10/21/2025 9:46 AM
26	Minimize traffic signals to keep traffic moving and reduce stacking, suggest roundabouts as solution where practical	10/21/2025 8:34 AM
27	No roundabouts...	10/21/2025 8:23 AM
28	No consideration given for an alternative proposal for HWY47 and Vondera intersection. We have minimum 5 tractor/trailers leaving our facility a day needing to head South. How are they going to accomplish this with the proposed change? Additionally, we have large box trucks departing our facility needing to head South. Not to mention most all customers leaving the USPS head South on their departure to return into Union, not go to Washington. By making everyone go around to HWY V is HWY V going to made wider and the light longer. Why is a round-about or something else not being considered?	10/21/2025 8:03 AM
29	South of Union intersections don’t seem to be a good fit for Roundabouts.	10/21/2025 7:08 AM
30	Round abouts could work in the North Segment, to keep traffic flowing. Round abouts still work when lights are flashing. Flashing lights creates congestion.	10/21/2025 7:03 AM
31	It is not the speed that is the problem with safety, it is the congestion. You are trying to sidestep the cost of doing a good job. 47 should be 4 lanes now. All you are doing with the fixes is to make more congestion and increase travel time, using the excuse of safety. Your fixes are not for the people.	10/21/2025 7:03 AM
32	Adding more roundabouts, in a community that can't figure out how to use the ones that exist, is insanity. Reconfigure 47& 50 intersections to add more lanes and turning options will increase accidents and won't deter speeding. While in theory they look nice, they do not fit this	10/20/2025 3:05 PM

	community. A bypass would be the simplest option. Regardless of how many parcels you to buy out.	
33	lanes need to be widen both directions on 47. st clair to marthasville should be 2 lanes both ways. it gives passing without out on coming traffic.	10/20/2025 10:24 AM
34	No	10/20/2025 8:51 AM
35	Doing millions of dollars of work to gain (wait for it) 2 minutes travel time? When more homes continue to be built? Not sure any of the options address future needs.	10/20/2025 8:06 AM
36	The 47/50 intersection should have a 2 lane left turn from 50 onto 47, simply making that lane longer is not sufficient solution when so many cars line up there. Make it like the intersection at 47/100 is now.	10/19/2025 9:26 PM
37	I would rather see roundabouts instead of stoplights.	10/19/2025 6:25 PM
38	No	10/19/2025 6:15 PM
39	No roundabouts or continuous flows.	10/19/2025 5:45 PM
40	I think the roundabouts will help slow traffic down and help flow	10/19/2025 5:34 PM
41	No roundabouts. Too much traffic	10/19/2025 5:18 PM
42	I feel most of the time the traffic is not going 55 mph especially during the rush hours. I try to go Highway A or V to Bieker and southpoint roads to get to Washmo. I sometimes take North Bend Loop to AD and Happy Sack to get to St. Clair or to take the service road to Sullivan to stay off of 44	10/19/2025 5:03 PM
43	People will run lights so close together.	10/19/2025 4:37 PM
44	No Roundabouts.	10/19/2025 4:36 PM
45	Need consistent reliable safe travel (to medical facilities in Washngton), but need to minimize speeding!	10/19/2025 4:21 PM
46	If the 47/50 intersection is not realigned no sense in spending any money. That intersection should be the #1 priority. It would fix many of the other problems. Traffic gets backed up for miles.	10/19/2025 2:59 PM
47	Many drivers don't know rules on making left turns on flashing yellow, so I'm concerned about roundabouts being confusing and slowing down the flow of traffic on a state hwy when many drivers don't know how to yield to traffic at normal intersection. Roundabout should only be used for lower flowing traffic in my opinion	10/18/2025 11:44 PM
48	I would like to see other options for the hwy 50 hwy 47 exchange .	10/18/2025 10:12 AM
49	Roundabouts are OK in the towns, but should not be done in the rural areas, unless it is with another state highway (Highway AD).	10/18/2025 10:08 AM
50	No center median, roundabouts seem to scare the heck out of older adults and young drivers. Not understanding how to judge prior to reaching the roundabout. If you are aware of what is coming from all directions, they work great.	10/18/2025 9:22 AM
51	I have driven on many roundabouts in the past 25 years and I believe from what I have experienced that the traffic moves very smoothly through them! I think many people do not care for them because they don't feel like they can travel as fast as they want! In reality roundabouts keep traffic moving for all travelers if everyone is courteous!	10/17/2025 11:28 PM
52	I prefer to have the roundabouts at all intersections except where hwy 50 & 47 are located.	10/17/2025 10:58 PM
53	Roundabouts would really hopefully make people reduce their speed and prevent wrecks!	10/17/2025 10:50 PM
54	The CFI option at 50/47 looks to be the best option to help increase safety but more importantly helps the traffic flow better than the other concepts. It also is the easiest to understand. I also am in favor of Roundabouts in various locations since they should help reduce major crashes & help people drive slower along the entire highway.	10/17/2025 10:49 PM
55	I think roundabouts are very important to help control traffic.	10/17/2025 10:39 PM
56	Here are my thoughts (recommendations) on Widening and Locations: 1. City of Washington -	10/17/2025 10:04 PM

	5 Lane 2. Rural Washington - 3 Lane Center Turn Lane 3. Independence - 5 Lane 4. St Clair - 3 Lane A center turn lane on all these sections is a must. It improves safety because it allows for vehicles to: A. Be separated by a lane in the middle B. Turn lane for any of the intersections that do not get a roundabout or light. There have been many times we have been stopped in traffic because someone is wanting to make a left turn.	
57	Traffic circles, I am calling the roundabouts that, all the way north to south would provide a non-stop, safe way to allow the side traffic to enter and exit seamlessly. Reduce accidents. The minor slowing of traffic does not matter.	10/17/2025 8:21 PM
58	I like roundabouts because they slow traffic down. People run red lights.	10/17/2025 5:20 PM
59	No concerns	10/17/2025 4:06 PM
60	No	10/17/2025 2:30 PM
61	aligning 47/50 will do a great deal to reduce accidents. 47 through Union will need to be synced in order to que stopped traffic. If you did this correctly unlike the unsynced mess you have in Washington you could reduce people running red lights. (fix this issue in Washington) The best solution could be the Southwest alignment done as a DD. You could still send EB 50 traffic on the old roadbed to reduce congestion. (47 @ main may just have to be vacated)	10/17/2025 1:49 PM
62	no roundabouts should be acceptable on this busy highway. it would add confusion.	10/17/2025 9:36 AM
63	I was at the meeting and I heard a lot of people very against the roundabout at Clearview. I would love to see it. I drive the one at East Central and it genuinely helps traffic so much and I feel a lot safer. I have an issue when I at Clearview intersection and the light turns yellow, and I don't know whether I can continue going or have to slam on my brakes. I would rather just be forced to slow down every time and take that intersection with caution. And I love that has continuous flow and it's safer. People hated on the one by Central first, but then once I got used to it, they didn't mind it as much… I also feel like we desperately need a roundabout at country club lane I can't imagine having to leave during rush-hour or whatever it's hard because you're on top of the hill too.	10/17/2025 7:54 AM
64	I was opposed to roundabouts. After traveling in Green County on four lane, newer roundabouts, these are the answer. The traffic slows, flows and moves effectively. If constructed the correct size, they are effective.	10/17/2025 7:26 AM
65	Would like to see a right turn lane for Independence from Washington stating at Clearview	10/16/2025 7:39 PM
66	We need more lanes heading south from Old County Farm Rd to east on 50 to south on 47 toward St. Clair. It would be better if you could separate the ones going toward St. Clair from the ones going east on 50 toward ECC. Widening the area over the creek by Old County Farm Rd is NOT going to do nearly enough. There need to be more lanes from Hwy 47 from Riverstone Quarry all the way to eastbound Hwy 50 by QT	10/16/2025 1:20 PM
67	roundabout will keep traffic flowing	10/15/2025 2:28 PM
68	Need to have Rt 47 fly over Rt 50 on southwest realignment. Make only a right turn exit onto westbound 50. Once across connecting back to Rt 47. The exit to go to EB 50.	10/14/2025 2:39 PM
69	-First diagram w/bridge for 47 and 50 -Land taken for construction -Contract information on work (locally) Detours during work of rd. change.	10/14/2025 2:09 PM
70	Please be sure the roundabouts are wide enough for 18 wheels and RVs.	10/14/2025 2:04 PM
71	I prefer the roundabouts where proposed.	10/14/2025 10:07 AM
72	Look at Hwy 100 for an example of a 4 lane highway.	10/13/2025 4:39 PM
73	The 10 Roundabouts proposed would convert Hwy 47 into a residential street and severely limit traffic in this north/south corridor. Roundabouts work when traffic entering them is relatively balanced which is not the case in the majority of locations recommended by MoDOT. I believe traffic congestion would be worse rather than improved.	10/13/2025 3:37 PM
74	no	10/13/2025 2:51 PM
75	I can't understand how the continuous flow can improve congestion by the numbers stated.	10/11/2025 12:41 PM
76	no	10/11/2025 9:24 AM

77	round about[s don't work, because people don't use them correctly. I have sat at a round about for 2 minutes because of traffic flow	10/11/2025 9:16 AM
78	It looks to me like, the powers that be in the city of Union, have already spoken. If these other plans are so great [According to your study] then why didn't you put one of these goofy intersections in Washington. Explain to me how a straight through intersection is more dangerous or slows traffic down compared to these other plans and i might agree,until then i think this whole process of public meetings and comments is an insult to our intelligence.	10/11/2025 7:09 AM
79	Roundabouts are very hard for semis and large vehicles to maneuver through.	10/11/2025 5:36 AM
80	Driving south from Washington to Union specifically during rush hours is very concerning	10/10/2025 10:00 PM
81	The only intersection improvement I can see working without confusing the local driver is the continous flow intersection. It take what is currently in place to a larger scale. The DDI will only cause more cars to end up going off the road and the southwest realignment will cause back up in two locations instead of one.	10/10/2025 9:28 PM
82	Not a fan of roundabouts, narrow lanes and diverging diamond intersections.	10/10/2025 9:13 PM
83	Would like to know how the 3 US-50/47 intersection options continue to perform based on increased future ADT's. I like the use of roundabouts where they are appropriate over signals. Could roundabouts be appropriate at Independence Drive, Highway V, Old County Farm & E. Main in conjunction with either the DDI or CFI intersection concepts at US-50/47 for more continuous flow through the City of Union section?	10/10/2025 9:13 PM
84	Need to align 47 highway to reduce congestion at the intersections of 47/50. Traffic volume data you have show it, so stop trying to be cheap. People drives like a maniac through there.	10/10/2025 6:23 PM
85	Just make it 4 lane all the way from st.clair to Washington and call it a day	10/10/2025 4:31 PM
86	Reducing the speed limit will cause greater congestion. I drive this daily and don't reach the speed limit due to the high level of congestion.	10/10/2025 2:38 PM
87	No	10/10/2025 2:33 PM
88	NO ROUNDABOUTS !!! Those are just for people who can’t read the word stop or who need to retake the drivers test to learn how to work a 4-way stop	10/10/2025 2:31 PM
89	Speed is not the issue, the amount of backup traffic is. Lanes need to be added to reduce backflow of traffic. The backflow of traffic in a contestant stop and go is another problem. Stop lights need to be recalibrated to appropriate lengths	10/10/2025 1:19 PM
90	Of course, the 50/47 and the railroad overpass will be the most expensive, and therefore most critical to address. Fix these two issues most economically keeping safety in mind, so other areas can bee addressed	10/10/2025 9:50 AM
91	I like the CFI at 47/50 however there is not near enough capacity in turn lane from 50 west to 47 north at McDonald’s right in right out. I believe you need to do fill and move a lane closer to McDonald to accommodate more vehicles OR make them turn right on Main at the hotel to take them around. May upset businesses there tho.	10/10/2025 9:05 AM
92	50 west at 47 north. Why not create a dedicated turn lane in right of way ditch on right side across from McDonald’s ?	10/10/2025 8:58 AM
93	I think that in order to help improve safety it would be nice to use roundabouts in specific locations to help slow the traffic down and help improve vehicles on the side road access highway 47 easier and safer. This applies to both the Union to Washington section as well as the Union to St. Clair section.	10/9/2025 11:00 PM
94	I feel the two solutions that are not the intersection alignment, will just be confusing and are a short-term solution	10/9/2025 8:28 PM
95	Not in favor of any of the roundabouts. Don’t think they will improve access.	10/9/2025 7:31 PM
96	Given the alternatives, I believe roundabouts are the best way to go. Some of those suggested though will require what appears to be massive grade changes which I see as difficult. prime example is Country Club lane. Have you looked at the cost of a bridge instead of the grade changes?	10/9/2025 6:29 PM
97	Large roundabouts will work well to allow traffic to enter and exit 47 safely allowing traffic to	10/9/2025 6:18 PM

	keep up the speed and flow. After initial confusion the roundabouts will be safer. Can roundabouts be an oval shape?	
98	Save the money and take away some of the roundabouts and put in traffic lights	10/9/2025 6:08 PM
99	I have comments, but require I conversation on alternate design that can solve the congestion issue	10/9/2025 5:57 PM
100	No	10/9/2025 5:40 PM
101	Please do not put a round about every where. For instance Hwy AD does not need a round about. Not enough traffic to warrant it. Isn't there any other way to let people get on the highway without a round about- not everyone uses the same rules in the roundabout. If you put as many roundabouts as you suggest, you better have a TV ad campaign to inform drivers how to appropriately use them.	10/9/2025 5:30 PM
102	Add lanes at independence,Vondera,college Rd, Hwy V, HwyAd/Schuchart, add turn lanes at E Happy Sac and Airport Rd. Green T at Old County Farm Rd. Stop light St Country Club Ln. Extra lanes at Clearview Rd.	10/9/2025 5:24 PM
103	I worry about overcomplicating some of the intersections. A lot of people out here still struggle with round-a-bouts on our smaller roads. Having them on a high traffic road I fear may introduce uncertainty and frustration for drivers. Some of the intersection proposals for 47/50 I feel may create too much complexity and lead to driver frustration. I think that the 47 Realignment makes it a more traditional intersection that reduces driver frustration by not introducing complexity.	10/9/2025 5:16 PM
104	Very well presented and explained. Thank you for hosting the event.	10/9/2025 5:07 PM
105	I believe round abouts are the way to go to keep traffic moving albeit at a slower speed . Its gives people a way to turn around as well.	10/9/2025 4:54 PM
106	Prefer alternate to round-about.	10/9/2025 4:22 PM

Q14 Do you have any specific intersections where you would like to see improvements made?

Answered: 113 Skipped: 174

#	RESPONSES	DATE
1	Independence drive and 47	10/23/2025 9:26 PM
2	A right turn lane onto Independence from hwy 47 heading south towards Union.	10/23/2025 8:44 PM
3	I really believe that Country Club Rd/47 is a dangerous intersection! There is enough traffic going through that area that a roundabout would make it more safe for all drivers!	10/23/2025 8:31 PM
4	Please do something at the Happy Sac intersection to help us see better when trying to turn out of or into this road. The hill to the north should be cut down or the low point on the north side could be raised to help us see oncoming cars better before we pull out. If it was the roundabout option that was shown, please also cut down or raise 47 north of Happy Sac to help people see there is a roundabout they are about to approach. What was shown in the examples puts the roundabout on the lower side of the hill which could make it worse to see, unless the existing lanes were also adjusted by raising or lowering them with a roundabout.	10/23/2025 7:40 PM
5	All of them.	10/23/2025 5:51 PM
6	All intersections in this corridor need to have flashing yellow turn signal lights removed immediately!	10/23/2025 2:22 PM
7	4 lanes from Washington to St. Clair. Anything else is just putting off the inevitable.	10/23/2025 11:13 AM
8	Independance Dr, Country club rd, clearview rd, college rd-takes forever to get on the hwy which could be accomplished with a round about.	10/23/2025 10:05 AM
9	E happy sac rd and 47, We can hardly get out on to 47 with out causing an issue and the same when turning on to E happy sac rd. We need a light or round about for this area with airport road heavily traveled now as well.	10/23/2025 7:14 AM
10	If a change must be made to the Hwy 47/East Happy Sac/Airport Road area, I would NOT support a roundabout, as Example 1 and 2 (on page 22) would greatly cut into the front yard of my personal property. The maps that are used on page 22 of the Intersection Improvement Examples show the two round-about examples taking a large section of my land, but the proposed photos do not paint the entire picture of this impact to my home/property. The map on page 22 does not show a 3-D image, highlighting the valley that is just north of this section of Hwy 47. Unfamiliar travelers driving south on Hwy 47 and coming up from the valley just before a round-about could have a dangerous situation. The valley would need to be leveled for better visibility before entering a round-about from either direction. I would be more receptive to Example 4 illustrated on the far right side of page 22. Adding a designated turn lane from Hwy 47 onto East Happy Sac, seems to be safer and less intrusive of currently developed, private property. I recognize the 2024-25 capacity of traffic may not currently warrant this, but I feel simply adding the proposed turn lanes on Hwy 47 NOW, along with a FUTURE stoplight and appropriate stoplight signage, at Hwy 47 and East Happy Sac and Airport Road would improve safety and reduce congestion.	10/23/2025 12:41 AM
11	Traffic seems to be backed up the most at Independence and 47. Big trucks heading East on Independence needing to turn right on 47 South cannot turn. No turn lane available. This is the Truck route intersection. Extra wide lanes in all directions seems to be needed.	10/22/2025 5:48 PM
12	I think a light is fine on College but if there are to be more homes coming down there then the proactive move might be a roundabout. I like the oval approach. A light at Clearview I think is fine	10/22/2025 3:02 PM
13	I like the idea of continous flow right turn lanes at all major intersections.	10/22/2025 11:15 AM
14	47/50 intersections are always congested.	10/22/2025 10:43 AM

15	Lost Pines/Low Line Drive	10/22/2025 6:51 AM
16	Between Clearview road and highway 4750 intersection at Walgreens. The traffic needs to be diverted around that Walgreens intersection so that people can go to St Clair and east union. The people that live in actual union that need to turn right into town or down 50 can barely get through all that traffic that's trying to go east and south	10/21/2025 3:37 PM
17	I do not believe a diverging diamond is the best option for this area	10/21/2025 2:34 PM
18	I like the CFI option along with the five lane section north of Independence Dr, this should really help get the southbound traffic flow better.	10/21/2025 2:33 PM
19	Don’t reduce the speed limits, you’ll see crazier driver behavior.	10/21/2025 12:33 PM
20	Country Club Road	10/21/2025 10:51 AM
21	County Club Lane.	10/21/2025 9:55 AM
22	country club road, lost pines, happy sac rd	10/21/2025 9:52 AM
23	Country Club needs to be the new hub for the east-west parkway. The parkway needs to be moved south to allow for better economic growth along highway 47.	10/21/2025 9:46 AM
24	Clearview, Independence, Hwy V, and Schuchart.	10/21/2025 8:34 AM
25	Vondera and HWY 47 - you need a different proposal	10/21/2025 8:03 AM
26	College Road seems to need a traffic light. East Happy sac and Airport rd do need improved.	10/21/2025 7:08 AM
27	n/a	10/21/2025 7:03 AM
28	47 should be a main through fare for St Clair to Washington with a bypass around McDonalds at the Bourbeuse river. I suspect your business friends are sneaking money to you to keep people near their business, instead of doing what is right for the commuters and locals. Look at 94 in St Peters, They did not side step the real issue, they fixed it.	10/21/2025 7:03 AM
29	47 & 50	10/20/2025 3:05 PM
30	you will need a light at old country farm road before allowing more housing in back there	10/20/2025 10:24 AM
31	47/50	10/20/2025 8:51 AM
32	47/Indepence	10/20/2025 8:23 AM
33	Main/E Main at 47 by philips 66. Accidents there all the time.	10/20/2025 8:06 AM
34	College Road/47. The inclines make visibility difficult	10/20/2025 6:21 AM
35	In Union, all of them	10/20/2025 5:29 AM
36	A few places along the corridor have enough traffic to warrant a roundabout. But a 3 lane highway with a dedicated left turn lane all the way would greatly improve flow. People could also use it as a merge lane instead of cutting off oncoming traffic.	10/19/2025 9:26 PM
37	All intersections with traffic lights need left hand turn green arrows and not just flashing yellow. People drive too fast on 47 to safely make a turn.	10/19/2025 7:03 PM
38	Country Club and Cedar Berry.	10/19/2025 6:25 PM
39	No	10/19/2025 6:15 PM
40	Hwy 50 -47 North	10/19/2025 5:56 PM
41	Country club road is hard to get out of. And there are back ups going north of 47 to Washington because of no center turn lane	10/19/2025 5:34 PM
42	Independence and 47. Right turns only on church street.	10/19/2025 5:18 PM
43	Overpass	10/19/2025 4:37 PM
44	No roundabouts	10/19/2025 4:36 PM
45	50 and 47 in Union	10/19/2025 4:25 PM

46	Blind intersection @ St. Clair going down hill by Burger King. Turning left From 47N you can't tell what you're turning into because of the hill.	10/19/2025 4:21 PM
47	47 and 50	10/19/2025 2:59 PM
48	Airport rd could have a flashing light when someone is at Airport Road. Stop Sign or happy sack road. Stop sign. Alerting traffic coming from union.	10/18/2025 11:44 PM
49	College Rd. would like to see the roundabout AD/Schuchart Rd. (Turn Lane Improvements) E. Happy Sac / Airport Rd. (Turn Lane)	10/18/2025 10:12 AM
50	College Road south of Union should have a roundabout. Most of these driveways/smaller roads should be right-in and right-out only.	10/18/2025 10:08 AM
51	50-47 what if you took CFI and combined it with the portion of DDI where you go behind McDonalds? Vondera Ave needs lines one for turning south and one for turning north from USPS. Its wide enough but folks think there is only one lane. 50-47 coming from St. Clair, don't see any plans for this area unless you reroute. rather than reoute why not widen it so the turn left lane goes up the hill more. QT is one of the bottle neck areas. Putting a turn lane all the way down and widening the shoulders 50-47 south to St. Clair might fix a lot of the incidents.	10/18/2025 9:22 AM
52	The CFI intersection at 47 & 50 to me seems to be the best solution for the issues! It also is the cheapest and so then there may be extra money left for some other improvements along 47!	10/17/2025 11:28 PM
53	No	10/17/2025 10:58 PM
54	Hwy 47 from North of Independence to Hwy 50! I feel that something major needs to be done specifically in this area because of congestion!	10/17/2025 10:50 PM
55	I think there needs to be a SB 47 right turn lane to Independence Drive to allow people to get off of 47 faster to help maintain the SB flow of traffic through the intersection.	10/17/2025 10:49 PM
56	All intersections	10/17/2025 10:39 PM
57	Based on slide 17, here are the intersections, other than 47/50, that I have a preference for: 1. Washington Crossing - An additional lane for the road coming from the shopping center that Franklins restaurant is. Currently the road does not line up with the one coming from Lowes/Schnucks side because one side has a left, a straight and a right turn lane, while the other only has a right turn lane and a combination left/straight lane. This would make it safer for both sides. 2. Bieker/Steutermann - Like the previous intersection, an addition dedicated turn lane is needed. A lot of traffic uses this intersection to get to Highway A as well as Dairy Queen and subdivisions. 3. Woodland - Turn lane or if the 3-lane proposal is chosen, this would resolve this issue. 4. Cedar Berry - A left turn lane or if the 3-lane proposal is chosen, this would resolve this issue. 5. Country Club - If the 3-lane proposal is chosen, this would resolve this issue. 6. Lost Pines - If the 3-lane proposal is chosen, this would resolve this issue. 7. Clearview Road - A lot of traffic uses this intersection, including school buses. I believe a roundabout would be the safest and most convenient. There have been many times wanting to make a left turn from Clearview onto 47 that I have had to pass in front of another car coming the other direction making a left turn. Sometimes they do not turn on their blinker, and you are not sure if they are turning or not. I believe this would also be cheaper because you would not have the costs of maintaining a stop light. Finally, aligning Clearview at a 90-degree angle with 47 would also make it safer. 8. Melinda - If the 3-lane proposal is chosen, this would resolve this issue. 9. Independence - All 4 roads need to have a dedicated left turn, straight and right turn lane. This road is used a lot by both residents and industrial park traffic. This would be especially helpful for a dedicated right turn onto 47 south. In addition to having traffic not back up, it would also allow semi-trucks to make an easier turn onto 47 south. I have seen many times a semi has to pull almost into the 47 north turn lane to make a right onto 47 south. I'm also surprised that a roundabout was not suggested here. It would be a great location for one. No stoplight maintenance. 10. Vondera - The proposed additional dedicated turn lanes look good. 11. Highway V - The proposed additional dedicated turn lanes look good. 12. Old County Farm - Not sure. Both have advantages. 13. Main St - No opinion 14. 47/50 - See the next section for opinions. 15. Sawmill/Boone Path/Russell/Missouri/Franklin - If the 3-lane proposal is chosen, this would resolve this issue. 16. College Road - I believe a roundabout would be best. No stoplight maintenance costs and would not have to wait on a light to change when there is no one else at intersection. 17. Remaining intersections - I don't drive it during its busiest times so my opinion is more limited but if the 3-lane proposal is chosen, I believe this would resolve the safety and backup issues.	10/17/2025 10:04 PM

58	Lost Pines, by the post office and Country Club Rd. Also south of 50, an occasional traffic circle there would allow the many small roads to enter and exit safely. (They might have to go the wrong way for a minute before turning around at the next traffic circle, if their small road doesn't have its own circle. Much safer than trying to cross after waiting for a gap in traffic, which there often isn't any gap in the afternoon!	10/17/2025 8:21 PM
59	East Happy Sac is so unsafe to make a left out of or a right into that I won't turn there, and take Route AD.	10/17/2025 5:20 PM
60	The intersection by Pasta House is the most concerning.	10/17/2025 4:06 PM
61	The stop light coming from Independence in Union, to turn left onto HWY 50- that stop light is too short and is difficult to get a green light if you're the person in front of the line. The intersection from South 47 and HWY 50 gets so congested around 4:30 PM M-F it is hard to get anywhere. As well as the stop light on 50 and North 47. It is all crowded and unsafe.	10/17/2025 2:30 PM
62	it would be great if clearview road could be a flyover with exit lanes, but this is probably not in your plans. It appears to be the only intersection that has the topography to be able to do so. College road is another crash hotspot, the sight-lines are good it just appears to be an impatience (congestion) issue.	10/17/2025 1:49 PM
63	Country Club Road Mid-America Lane	10/17/2025 1:29 PM
64	Commercial Drive needs a roundabout or some merge lanes or something… You have to come to a full stop in the middle of the intersection to make a left-hand turn then the road is so clogged buses and semi. I just have to pull out in front of you, forcing on all the people to slam on their brakes. The issue is most of the cars coming out of commercial drive can’t accelerate fast and since the road is so congested, they just caused everybody to slam on their brakes. I’ve had countless times of semi ice pulling out in front of me and I thought I was gonna get in an accident when I was going to speed limit.	10/17/2025 7:54 AM
65	Woodland, Country Club and Mid American Coach Drive. A deeper look in crashes would show more serious crashes at Mid American Coaches Drive.	10/17/2025 7:26 AM
66	College Road East Happy Sac/Airport road 4 lanes in both directions on 47 East Happy Sac/Airport Road to 44 in St Clair	10/16/2025 7:39 PM
67	both 47 @ 50 intersections	10/16/2025 1:34 PM
68	Hwy 47 south (at Walgreens) to Hwy 50 east and Hwy 47 south toward St. Clair (at QT)	10/16/2025 1:20 PM
69	47 and 50 is a mess	10/16/2025 1:07 PM
70	44 and 47 College ave and 47	10/16/2025 7:57 AM
71	Stop light/signal added and tried w/ clear view at Hiline Dr.	10/14/2025 2:39 PM
72	Highway 47 and private road White Oak Trail.	10/14/2025 2:20 PM
73	Melinda Drive left turn lane	10/14/2025 2:19 PM
74	Franklin Ave is too steep	10/14/2025 2:09 PM
75	Hwy 47 & College Rd	10/14/2025 2:07 PM
76	Old Country Farm Rd needs to be totally redone - or route LT to V-	10/14/2025 2:04 PM
77	White Oak Trl…turn lane please. Also widening the entrance to White Oak Trl. Currently part of the road at the entrance has worn away and we can only safely fit one vehicle at a time, causing the vehicle leaving our road to have to back up when another comes to turn into the road. Wait times are very long to exit onto 47 safely.	10/14/2025 10:07 AM
78	4 lanes	10/13/2025 4:39 PM
79	all of them	10/13/2025 2:51 PM
80	Need a left-turn lane on SB-47 at Forest Hills Dr.	10/11/2025 10:57 AM
81	no	10/11/2025 9:24 AM
82	Highway 47 and Hi-line drive not enough room to make turns in when there is another vehicle	10/11/2025 9:16 AM

	waiting to exit.	
83	50 AND 47	10/11/2025 7:09 AM
84	No	10/11/2025 5:36 AM
85	the 47/50 mcdonald section to V is absolutely trash.	10/10/2025 11:38 PM
86	All turns from off the highway are concerning. Fear of being rear ended	10/10/2025 10:00 PM
87	General upgrades would be great, but specifically correctly timing the traffic lights so that all south flowing traffic on 47 between Main St and 50 can move as one and not block the intersection. Additionally, the turn lane from 50 east to 47 north should not be given a flashing yellow, but give the drivers in that lane two opportunities to make the turn. Once when all traffic flows east and again right before the lights change.	10/10/2025 9:28 PM
88	All highways in Missouri need massive safety improvements.	10/10/2025 9:13 PM
89	US-50/47, E. Main, Old County Farm, Highway V & Independence Drive	10/10/2025 9:13 PM
90	All of it.	10/10/2025 6:23 PM
91	Forest Hill Drive and Highway 47 left turn lane southbound	10/10/2025 5:29 PM
92	Not necessarily.	10/10/2025 4:31 PM
93	47 & college road	10/10/2025 2:35 PM
94	No	10/10/2025 2:33 PM
95	Independence and 47	10/10/2025 1:19 PM
96	50/47, first and foremost! Then Country Club, Clearview and International	10/10/2025 9:50 AM
97	44/50 is a death trap	10/10/2025 8:58 AM
98	East Happy Sac has poor sight issues and it would be nice if the hill in the road was reconstructed to be lower to make the sight line better for vehicles turning out of East Happy Sac. Country Club Rd also has sight issues when on the east side trying to get onto highway 47. Can this be looked into?	10/9/2025 11:00 PM
99	50/47 (CFI) Country Club Ln (Signal) Clear view rd (signal) Old county farm rd (Green T) College Rd (Signal) Hey AD/schucthart (turn lane improvements) E Happy Sac/Airport Rd (turn lane)	10/9/2025 8:05 PM
100	50@47 west 47@college	10/9/2025 7:31 PM
101	Continuing, I'm wondering if a bridge from Country Club lane to Forrest Hills might be an equal cost or possibly lower cost than a roundabout. Another possibility would be the extension of MO Hwy YY from Route A to Hwy 47,	10/9/2025 6:29 PM
102	Lost Pines (High-line and commercial). Roundabout. Country club Rd. Roundabout	10/9/2025 6:18 PM
103	They all look well thoughtout	10/9/2025 6:08 PM
104	Not particularly. Just need people to drive correctly and pay attention	10/9/2025 5:57 PM
105	50 47 needs to go over each other no other in state highway with this meet with this volume	10/9/2025 5:40 PM
106	Hwy 47 and 50 is the largest area of concern. It needs to be totally revamped. College Road needs help also. Can you take out the hills and valleys before the first light into St. Clair?p	10/9/2025 5:30 PM
107	All of them listed above and stop light with right turn lanes at Country Club Ln.	10/9/2025 5:24 PM
108	East happy sac and airport road	10/9/2025 5:11 PM
109	47 by post office	10/9/2025 5:11 PM
110	Independence Road	10/9/2025 5:07 PM
111	Hwy 100 through Hwy 50 traffic.	10/9/2025 4:54 PM
112	All intersections appear to be covered.	10/9/2025 4:22 PM

113	S. Hwy 47, between AD and E. Happy Sac Also at Hwy 50 and S. Hwy 47 intersection	10/9/2025 4:15 PM

Q15 In general, do you have any comments or specific concerns that you would like to share about Route 47 in Franklin County?

Answered: 112 Skipped: 175

#	RESPONSES	DATE
1	We are not in agreement to widen shoulders. It would make matters worse where we live. Round abouts would help slow traffic. Putting a center turn lane would improve safety. We have trouble with no one wanting to slow down to let us in our driveway. We have almost been rear ended many time or had pile up right behind us.	10/23/2025 10:10 PM
2	If congestion is reduced, safety will follow after. If you slow down traffic, that will result in congestion and an increased likelihood of fender benders.	10/23/2025 9:26 PM
3	4 Lanes all the way	10/23/2025 8:59 PM
4	I think adding turn lanes is great. Buy adding too many additional lanes increases not just the one time costs but the ongoing maintenance. I don't want 47 to turn into Manchester Rd in the STL	10/23/2025 8:44 PM
5	I am all for whatever slows traffic down and makes the roadway safer for everyone! I thank MoDot & all the workers on this project for all of the hours, thoughts and preparations that has been put into trying to make this corridor safer for all commuters!	10/23/2025 8:31 PM
6	Thanks to MoDOT and your team for all the work you have done to help make this road better. Looking forward to the improvements.	10/23/2025 7:40 PM
7	This update is WAY overdue. I believe that, as much as improving for the present, it needs to be preparing for the future. This area is only going to grow, increasing the use of Highway 47 tremendously. Cost of upgrades are only going to get higher, so we should be looking hard at preparing for that growth now. I’m convinced that four lane with a center turn should be considered now versus later.	10/23/2025 5:51 PM
8	Please give the Union Corridor as much consideration as the other parts of hwy. 47. Please invest in the future of the highway for all of us not just a business or two. The current mess needs to be fixed completely not patched up again. Citizens should not have to risk their lives going through dangerous intersections that could be fixed with the Southwest Alignment option, it may cost more but in the end will save lives and reduce accidents.	10/23/2025 2:22 PM
9	47 from Union to St Clair would be best served as 3 lane with turn lanes	10/23/2025 12:05 PM
10	I think a 4 lane road for hwy 47 is long overdue. We must plan for the future as franklin co is not currently losing population. perhaps it will have to be funded in sections with Union getting the highest priority through its city limits. SStop light intersections need to be eliminated when possible as this seems to be where a lot of wrecks occur most frequently. If a new bridge (Southern Alignment) is not chosen, then 2 new lanes need to be added to hwy 50 betwen the the 47 intersections. The 47 lights near walgreens and mc DOnalds seems to be more dangerous then the one at Quick trip. Perhaps the state could take over east main street, make it a 2 lane one way road and have have all 50 traffic merge there to go north on 47. I have seen with over passes where the eastbound and westbound traffic switch sides to make left turns easier. Washington getting a 4 lane road to a intersection that is just a idea with no real start date is just stalling what really needs to happen on the rest of the 12 mile stretch	10/23/2025 10:05 AM
11	We were sold on this to be a 4-5 lane road to increase traffic flow with all of the development that is going on in these cities. At the least it should be 5 lanes in the cities and 3 lanes in the rural areas. All 3 cities have big apartment complexes going up at the moment. Washington and Union have a lot of new housing being built. What is the traffic count going to be in 5-10 years after completion and will we be back in the same boat with congestion with 2 lanes in the rural area with roundabouts? The next answer will be to decrease the speed to 45 and increase travel time 10 minutes for safety because it was not built correctly the first time as we are limited on budget.	10/23/2025 9:00 AM

12	I would like the traffic congestion to ease up at 50/47 and a new traffic pattern at 47/e happy sac rd (and airport). But also don't put so many round abouts or lights in that it takes 45 min. To get to Washington	10/23/2025 7:14 AM
13	Although I was unable to attend the Public Meeting #1 or #2, I was very grateful to speak at length with Aaron Groff, Transportation Project Manager, about this proposed project. He seemed knowledgeable of the Hwy 47 corridor and empathetic with my concerns for my family home/property. I would like to see the 'rest of the pictures' for the four proposals addressing the East Happy Sac/Airport Rd. intersections. The photos on page 22 only show a small segment of impacted land. I do believe that possibly widening the current Hwy 47 pavement, shoulders, and adding the turn lanes could be beneficial to the safety of that area, but I don't understand why a concrete median or island is proposed for Hwy 47 in Example 4 (Turn Lane) on page 22. I don't see how that would improve safety. In general, I do not believe roundabouts are safety enhancements, and my concern is that adding one on Hwy 47 between East Happy Sac/Airport Rd. would decrease the safety on Hwy 47 as well as my personal property. Please do not construct a roundabout on my property. Sincerely, Holly Hoffman Ph: 407.340.3300 email addresses: Hollyann0809@icloud.com, Persicat2012@gmail.com, Holly@it-is-personal.com.	10/23/2025 12:41 AM
14	Why can't 47 resemble Highway 50 and Highway 100. Standardization among Missouri roadways I feel would be the safest. Hwy 100 is four lanes, hwy 50 is 4 lanes through Union and elsewhere in the state (Jefferson City). A portion of 47 is 4 lanes in Washington already, why not standardize. If standardizing route 47 to a four lane road similar to hwy 100 and hwy 50 a complete loop from I-44 (Washington Exit) through to 47 at Washington through Union to St. Clair would be complete and standardized.	10/22/2025 5:48 PM
15	SW Realignment is the only option that avoids that 1/2 mile of 47 and 50 joining. It still means that everybody is going to have to make left turns to get onto 47/50 then a right turn to get off 50 and make a right turn to get on 47. That's not really solving the problem. That intersection by Walgreens and the one at QT are ridiculous.	10/22/2025 3:02 PM
16	I feel traffic laws in general need to be strengthened with stiffer fines and testing and loss of license for repeat offenders.	10/22/2025 11:15 AM
17	Thank you for giving us all opportunities for comments and suggestions.	10/22/2025 10:43 AM
18	I am not in favor of the proposed round-abouts. Morning and afternoon rush hour drivers may become less patient with waiting their turn to go through them and traffic will stack up in the queue to go through.	10/22/2025 6:51 AM
19	It needed to be 4 lanes, 10 years ago, now it probably needs to be 6 lanes. We're way behind.	10/21/2025 12:33 PM
20	Putting in a nice highway shoulder is good. But the only way to alleviate traffic is more driving lanes. Please plan for the future.	10/21/2025 9:55 AM
21	it should be updated like Highway 100 between Highway 47 in Washington and the intersection of Interstate I-44. Save up our (taxpayers) money until you can do it right!	10/21/2025 8:23 AM
22	Vondera and HWY 47 - you need a different proposal	10/21/2025 8:03 AM
23	Wider shoulders and straighter lanes will help tremendously.	10/21/2025 7:08 AM
24	Thank you for taking the time to listen to what all taxpayers are wanting.	10/21/2025 7:03 AM
25	four lanes to two lanes is always a problem and a bottleneck. Make 47 4 lanes now.	10/21/2025 7:03 AM
26	I'm not a fan of roundabouts. In theory they are great but I think they are confusing and frustrating to most drivers. Spend reductions would require a lot of enforcement to be effective. As someone who drives 47 every day I fear being hit by an oncoming car crossing in to my lane.	10/20/2025 8:56 PM
27	People won't slow down, because you put in a roundabout and a lower speed. Making the intersections more complex to navigate is ridiculous no matter how much cheaper it is.	10/20/2025 3:05 PM
28	it needs to be 2 lanes both directions to help reduce traffic and improve safety. right now you can't pass trucks or slow people without getting into oncoming traffic and it isn't safe. alot of the time you have cars going 40 even though the speed limit is 55.	10/20/2025 10:24 AM
29	I feel that you need two lanes north and south the entire length from Washington to St. Clair.	10/20/2025 10:16 AM

30	Road rage because of traffic congestion is real. No need for traffic issues with sufficient lanes to meet volume.	10/20/2025 8:51 AM
31	This should have been taken care of many years ago	10/20/2025 8:23 AM
32	We know people speed regularly on 47, but I've never seen anyone stopped by police or highway patrol.	10/20/2025 8:06 AM
33	It is getting more and more congested. Happy that something is finally going to be done about it. Whatever is easiest for people to understand the rules of the road, I believe is best. People are just not paying attention. Sad to say, an increase in patrol might help as well	10/20/2025 5:29 AM
34	People make fun of roundabouts, but they work! I think the ones on independence dr left a bad taste in people's mouth bc of the size. The one bu the college is great, but the traffic light sometimes backs it up.	10/19/2025 9:26 PM
35	People drive too fast. The school bus is picking up kids on 50 and people are driving 60+. There are also a number of people that walk along the road.	10/19/2025 7:03 PM
36	No	10/19/2025 6:15 PM
37	Why have we been ignored when Hwy 50 in Central Missouri is 4 lanes?	10/19/2025 5:56 PM
38	Whatever course, consult with the property and business owners this would be directly impacting.	10/19/2025 5:45 PM
39	Its a n ightmare	10/19/2025 5:45 PM
40	No	10/19/2025 5:34 PM
41	Long overdue. Need to incorporate it with a hwy 50 expansion to 44. Even if you merge 50 47 and 100 with the existing 44 /100 interchange	10/19/2025 5:18 PM
42	I think it needs 4-5 lanes now at a reduced speed in the beginning.	10/19/2025 5:03 PM
43	Overpass	10/19/2025 4:37 PM
44	No roundabouts.	10/19/2025 4:36 PM
45	Need to add lanes from Washington to St. Clair	10/19/2025 4:25 PM
46	Need to keep corridor open and flowing while working on it!	10/19/2025 4:21 PM
47	Turn lane between happy sac and airport rd would be very short and would have people almost coming head on to each other.	10/18/2025 11:44 PM
48	St Clair to Union on 47 needs the shoulders widened and a center turn lane put in. Lower speed to 45	10/18/2025 10:12 AM
49	While it is potentially understandable to lower the speed limit in Union, the whole point of this exercise should be to raise the speed limit in rural areas, not lower it.	10/18/2025 10:08 AM
50	from Schucart/AD to Happy Sac has big line of sight issues. The only suggestion I have is to put center turn lane in so those turning are out of traffic which would also stop congestion. For the safety of the residents need to get the post office to put mailboxes on both sides of the highway.	10/18/2025 9:22 AM
51	No	10/17/2025 10:58 PM
52	Route 47 from Union to Washington has been in existence since the year 1962 and since that time the traffic and fast drivers have changed immensely! I believe that roundabouts may benefit some of these issues!	10/17/2025 10:50 PM
53	Highway 47/50: I realize that funds are limited but we also have to look long term. I believe the Southwest Realignment is the best choice. A. The other 2 will be confusing for people from out of town, even some people in town (many still complain about roundabouts, which I think are great in the right situation). B. The other 2 still rely on the backup of 47/50 at QT C. Southwest Realignment is a configuration people are used to with stoplights and turns. D. You still have the same safety issues of vehicles coming from St. Clair making a turn onto highway 50 with the other 2. E. In the event of something happening to the existing bridge on highway 50 over the Bourbeuse River, there would be an alternative route. Some examples: -- Multi vehicle, multi lane accident -- Flooding in 2017 (I think) closed the bridge for a short time -- Bridge	10/17/2025 10:04 PM

	damaged by debris from flooding -- Bridge damaged by tanker truck fire. The I-44 bridge over highway 50 about 30 years ago had to be repaired due to this exact scenario. According to Google maps, it is .5 miles (2 minutes) from Walgreens to QT in Union. If that bridge is unavailable, the next 2 routes are: 1. Going west on highway 50 to Clearview Dr, North Bend Rd, Highway AD, Highway 47 south. This is 10.4 miles (16 minutes). 2. Going north on highway 47 to highway V, St. Louis Rock Rd, Hilltop Rd, highway AT, highway 50 east. This is 14.4 miles (24 minutes). Both roads are curvy and narrow, with no shoulder. This means any traffic traveling highway 50 (average number 39,400), including semi-trucks, would need to be diverted. Just reducing the speed is NOT the solution. There are many times during the day where traffic is not congested on various parts and reducing the speed just means it takes longer to get where you are going. It is hard to put all my thoughts on this survey, and I would be more than happy to go into more detail of my thoughts. You can call me at 636-583-1907. My name is Jeff Johnson. Thank you for your time.	
54	What are you going to do during construction? Many roads only have 1 way out, e.g. Lost Pines. Please address the construction details at the next public meeting!	10/17/2025 8:21 PM
55	The whole area by McDonald's is a nightmare, between Hwy 50 and the railroad.	10/17/2025 5:20 PM
56	I honestly hope these improvements will save lives and make a difference. HWY 47 has been a problem for years. As I previously stated, my husband has gotten rear ended on South 47 and we drop our children off at the babysitter on South 47 daily and every day my anxiety is horrible about getting rear ended with my children being in the back of my car. It is also always so difficult to get out back onto the HWY headed back to the stoplight by QT.	10/17/2025 2:30 PM
57	Reducing congestion improves safety. Some accidents are not preventable. The large majority of accidents between Wash-Union are REAR END accidents due to stopped traffic, these can be significantly reduced with turn lanes and better programming at clearview road. This light could be eliminated if done correctly. Union - St clair also needs turn lanes but has a bigger safety issue due to path of the roadway = Straighten the roadway or put in a buffer to prevent the head on accidents. For the overall project the City of Union is basically refusing to participate so removing intersections (main st) and circumventing their town should not be a concern. If they want a say then pay up, otherwise no need to be at the table. They are not willing to be partners then they should have no say.	10/17/2025 1:49 PM
58	Just a need to widen to allow better traffic flow without congestion.	10/17/2025 1:29 PM
59	no roundabouts	10/17/2025 9:36 AM
60	My biggest issue is safety and congestion like most people, everybody says we need two lanes back-and-forth in reality. I don't think we need that. I think a simple turn lane in the center for intersections that need it would be awesome. I would also like to see right hand turn waves because since everybody is flying above the 55 mph speed limit (Even if they were going it) The car slams on the brakes to make a turn, causing a domino effect. I'm surprised there's not as many accidents. The speeding data is there. I think we should also put some medians in some spaces to slow us down. I'm not asking for two lanes in each direction, but I feel like in some intersections you should have emerged lane or passing lane because one of the biggest issues on 47 regardless is that people are going to try to pass and they can't make it….. I think having two lanes in each direction at least on the hill at Fairway dealership would significantly help reduce accidents because people try passing each other there all the time because it's one of the spots that they can see but they don't time it right at all and they caused a lot of accidents. I'm not asking for two lanes in each direction at all places, but I think that would be a good spot to add one just so people can pass But for the remainder of it, I would just like to see turn lanes and stuff	10/17/2025 7:54 AM
61	MO DOT has done a great job providing data to make decisions. Just throwing in 4 lanes in not necessarily the answer. The management of intersections, left turns keeping traffic flowing. The issue in Union appears to be volume through the intersection. We would prefer no separation in lanes so traffic can be diverted or one lane traffic control provided. Kuddos to MODOT for this work, study and options. Well done.	10/17/2025 7:26 AM
62	Expansion is coming out hwy 44 from the St Louis area by way of land development for subdivisions and business development. I spoke with a surveyor along hwy 44 that was shooting grade for a large project that is being designed. That project will be along hwy 44 from St Clair to the Arch. With your proposed road work project along hwy 47 it is a time to be proactive in adding N/S lanes in anticipation for expansion out 44 west that will accomodate travel from the St Clair area that will allow for safe and smooth travel north to Washington.	10/16/2025 5:18 PM

	Reducing congestion and safety go hand in hand. Dividers only create a traffic flow problem. Road widening, such as what has been done down hwy 100 from Grey Summit to Wildwood does nothing for traffic or safety, and ends up being little more than a very expensive asphalt cap. Additional lanes will allow people to safely merge onto 47 to/from new subdivions and businesses that will be under development in the years to come. Thank you, good luck, and have a wonderful day.	
63	Any improvements need to be looking at least 10 -20 years into the future to avoid more wasteful spending	10/16/2025 4:54 PM
64	please dont make the intersections confusing for us old timers	10/16/2025 1:34 PM
65	Do not lower the speed limit or add any roundabouts. It's a highway. Don't try to make it a leisurely slow road. It should not take LONGER to get between Union/Washington. The congestion is the main problem. Your graphic about how "most people are speeding" must be in the middle of the night because it's been impossible to reach the 55 mph speed limit on 47 lately due to the slow line of cars.	10/16/2025 1:20 PM
66	My concerns are more about congestion during mid to late afternoon time periods. It should not take 45 minutes to get from Washington to Union after 2:30 pm	10/16/2025 1:07 PM
67	Please don't forget about st. Clair! Many residents think that the funding will go to the north sections and the south section will be whatever is left over. They feel discouraged to even fill out a survey because they think their voices don't matter, including the former mayor Cozy Bailey who said that publicly on Facebook recently	10/16/2025 7:57 AM
68	Washington east west Outer rd needs to be set 300-400 north (or at Beller Site distance) than the current spot at property lines	10/14/2025 2:39 PM
69	Making 47 anything less than 4 lanes between Washington and Union is a waste of money - will not help	10/14/2025 2:23 PM
70	White Oak Trail is a private road roughly a mile south of the Washington city limits. It serves a farm and several residences. There is a large amount of traffic, moving at a fairly high rate of speed, both North and South bound on 47 in that area. The main problem is turning left out of White Oak Trail to go to Washington, or turning left into it when coming from Union. When turning out to go to Washington the wait for traffic to clear in both directions can be 5 minutes or more. To complicate things, there is a hill just to the South on 47. This makes North bound traffic impossible to see until they crest the hill. When coming from Union, trying to make a left turn into White Oak Trail is sometimes almost impossible. We often go on into Washington and turn around and come back South to make sure we do not get hit in the rear end or have someone behind us get hit because another following car does not see the stopped cars. A center turn lane on Hwy 47 would help very much to fix these problems. The entrance into White Oak Trail is also very narrow. If a car is trying to leave and is not as far to the south side of the entrance as possible they often have to back up if another car is trying to get in off of 47. Making the road entrance wider would help a lot. Also adding a shoulder on the right side of South bound 47 would help with turning into the road when coming south from Washington. Many cars tend to tailgate as you are making the turn off of 47.	10/14/2025 2:20 PM
71	The presentations do not take into account all of the new subdivisions being built. All of your info is from the past.	10/14/2025 2:16 PM
72	Spend the money for the North segment cross the Bourbeuse River - the growth is demanding forward thinking. Good luck with the RR.	10/14/2025 2:04 PM
73	I prefer the models showing turn lanes south of Washington to Union. I also prefer the roundabouts. Need to see how this could coexist.	10/14/2025 10:07 AM
74	Anything less than 4 lanes from washington to Union will be too little. Make it 4 lanes, the traffic is unbearable.	10/13/2025 4:39 PM
75	Hwy 47 needs to support larger volumes of traffic as it is the principal north/south route.	10/13/2025 3:37 PM
76	no	10/13/2025 2:51 PM
77	Definitely need a shoulder wide enough to drive on as at times broken down vehicles have stopped at the entrance to our road since it is a wider area.	10/12/2025 4:36 PM
78	I drive from Saint Clair to Washington for my job at between 5 am to 7:30 is crazy busy. If I	10/11/2025 9:38 PM

	leave at 4 pm it is miserable drive home if I Work to 5 pm It's the same.	
79	We just need to focus on making from 50 to St Clair 5 lanes. If a roundabout would be put in at my road (Schuchart Road) it would increase more accidents or traffic congestion. Because people don't drive speed limit so they would hit the roundabout doing 55 and cause people to be to scared to go into the roundabout.	10/11/2025 4:35 PM
80	Need to find the funds to get this done.	10/11/2025 12:41 PM
81	Why not have a reversible lane as an option?	10/11/2025 9:24 AM
82	Yea it needs to be at least 4 lanes from Washington to Union. Because by the time the improvement is done it will be out of date and we will have to wait another 72 years for anything to happen.	10/11/2025 9:16 AM
83	I made my career in St. Charles county. The hwy 47 project is just as important to Franklin county as Hwy 364 was to St. Charles county. Billions were spent on that project. Why does it seem that Hwy 47 is coming off as some cut rate bad aid project?	10/11/2025 8:05 AM
84	47 between Union and College Road will eventually have to be rerouted, period ! Unless MoDot wants to buy out 40 or 50 homes.	10/11/2025 7:09 AM
85	No	10/11/2025 5:36 AM
86	I don't want road from Union to St. Clair would be forgotten in this project because very many residential houses on this part of highway, actually The Only on this part of 47 and residents literally driving from highway to their driveway. Also I as post office worker who delivery mail to residents on this part of 47, literally praying for my safety every day while delivering mail and afraid for customers who need to cross highway to pick up their mail.	10/10/2025 10:14 PM
87	See above	10/10/2025 10:00 PM
88	It is a dangerous road and this upgrade should have been made at least a decade ago. I have been driving in this area for 20 years and have said for that 20 years, 47 should be two lanes with a constant turn lane to help with the congestion and safety issues we see day in and day out.	10/10/2025 9:28 PM
89	Do more with less and work harder and faster! Raise the bar! MODOT needs to step it up!	10/10/2025 9:13 PM
90	I am concerned about the Railroad Bridge Replacement. This is a major choke point on Highway 47. Is there any input from the correct railroad owner regarding this replacement?	10/10/2025 9:13 PM
91	4 lanes with middle Washington to St. Clair is what we needs not that cheap possible way. If we are the size of Manchester, you would be doing 4 lanes, no question asked.	10/10/2025 6:23 PM
92	I would like to see a improvement on traffic flow like adding extra lanes so we dont have to sit behind someone doing 10mph under the speed limit.	10/10/2025 4:31 PM
93	Too much time and money wasted without true results	10/10/2025 2:33 PM
94	It needs to be 4 lanes from St.Clair to Washington and should have been put years ago before hwy 100 4 lane to hwy 44	10/10/2025 2:31 PM
95	How many people have to be injured or killed in order to make a change? This county is growing, and rapidly at that, we have to accommodate for this growth otherwise more incidents are going to occur.	10/10/2025 1:19 PM
96	I like the process MODOT is using to gain public support. Thank You!	10/10/2025 9:50 AM
97	I love roundabouts. The more we can incorporate the better imo	10/10/2025 9:05 AM
98	Your idea of center turn lane makes the most sense. However at 50/47 intersections the holding lanes to turn north are not enough to contain eastbound on 50 trying to turn northbound	10/10/2025 8:58 AM
99	Rural Washington to independence 3-lane w/center 2 way lt turn lane Independence to 50/47 5 lane with 2 way lt turn lane 50 to St Clair 3 lane with 2 way center lt turn lane	10/9/2025 8:05 PM
100	The corridor seems to get busier every year. I think 5 laning the whole stretch would be the best investment for the future.	10/9/2025 7:31 PM
101	I believe that serious considerations should be given to the elimination of access points to Hwy 47. Ceder Berry being one. This should permit highly higher speeds (50 MPH) in many	10/9/2025 6:29 PM

	sections of the road. Maximum speeds in the roundabouts should be limited to 40 MPH.	
102	Traffic at bus barn. Safety concerns at Lost Pines. People, including semi trucks will pass you on the right shoulder while you are waiting for a break in the traffic.	10/9/2025 6:18 PM
103	Yes. Different congestion solving design. Feel free to call me. 5732593953. Jim Bush	10/9/2025 5:57 PM
104	No	10/9/2025 5:40 PM
105	Please do not put an abundance of round abouts and never incorporate the diverging diamonds into our traffic patterns. I do like aligning the Happy Sac and air port roads and aligning the golf course road with Forest Hills. Are you sure all the tractor trailer traffic want round abouts? If you put in stop lights and sync them, it should keep the traffic moving. Many people already use alternative routes(Hwy A) to avoid the traffic on Hwy 47. Have you added the traffic from alternative routes in with the current traffic to come up with your traffic numbers? Thank you for taking input.	10/9/2025 5:30 PM
106	How do we get easement for road along 47 between union and Washingtom? I would like option to develop	10/9/2025 5:24 PM
107	I think that with it being such a high traffic spot for daily commuters, keeping things as simple and straight forward as possible will help avoid frustration and road rage.	10/9/2025 5:16 PM
108	It needs to be done quickly but with forthought for the next 25 years.	10/9/2025 5:11 PM
109	Please limit the use of roundabouts.	10/9/2025 5:07 PM
110	Something has to be done ingress and egress form HWY 47 less dangerous as it is a main thoroughfare for a lot of drivers and has many businesses and residences that are accessed from HWY 48	10/9/2025 4:54 PM
111	This is still a rural county. The DDI and CFI options are more likely to increase accidents, in my opinion.	10/9/2025 4:22 PM
112	Good luck and God bless! Please don’t raise our taxes!	10/9/2025 4:15 PM

Q16 Contact Information (Sharing your email will add you to a project information distribution list. You may opt out at any time.)

Answered: 149 Skipped: 138

ANSWER CHOICES	RESPONSES	
Name	95.30%	142
Company	18.79%	28
Address	85.91%	128
Address 2	2.01%	3
City/Town	93.29%	139
State/Province	93.29%	139
ZIP/Postal Code	94.63%	141
Country	75.17%	112
Email Address	87.92%	131
Phone Number	74.50%	111

#	NAME	DATE
1	Sharon Thebeau	10/23/2025 10:11 PM
2	Jordan Hurt	10/23/2025 9:27 PM
3	Mark Skornia	10/23/2025 9:00 PM
4	Nicholas Knoblauch	10/23/2025 8:45 PM
5	Dan Haley	10/23/2025 6:25 PM
6	David Flagg	10/23/2025 12:07 PM
7	Randy Richter	10/23/2025 11:13 AM
8	Andrew Rosenkoetter	10/23/2025 10:06 AM
9	Chrysa Niewald	10/23/2025 9:25 AM
10	Jackie Barndollar	10/23/2025 7:41 AM
11	Isaiah Garn	10/23/2025 7:14 AM
12	Rick Mihalevich	10/23/2025 6:48 AM
13	Holly Hoffman	10/23/2025 12:46 AM
14	Brian Norwood	10/22/2025 9:41 PM
15	Joe	10/22/2025 5:53 PM
16	James Dieckhaus	10/22/2025 5:49 PM
17	Tracy L Licklider	10/22/2025 5:08 PM
18	Jennifer Henderson	10/22/2025 4:02 PM
19	Brian L Dukleth	10/22/2025 3:02 PM

20	Clay Zigler	10/22/2025 1:09 PM
21	John Williams	10/22/2025 11:17 AM
22	Kim Colter	10/22/2025 11:04 AM
23	James	10/22/2025 10:57 AM
24	Jane Curtman-Schroeder	10/22/2025 10:43 AM
25	Emily Miller	10/22/2025 10:32 AM
26	Tom Gierer	10/22/2025 6:53 AM
27	BARBARA L HORTER	10/21/2025 7:44 PM
28	Ryan Braun	10/21/2025 3:37 PM
29	Jacqueline M Ward	10/21/2025 12:51 PM
30	Doug Hagedorn	10/21/2025 10:52 AM
31	Calvin Obermark	10/21/2025 9:54 AM
32	Stephen Trentmann	10/21/2025 9:18 AM
33	Jim	10/21/2025 8:34 AM
34	Tanya Sickafoose	10/21/2025 8:04 AM
35	Ellen	10/21/2025 7:36 AM
36	Lee Hinson	10/21/2025 7:09 AM
37	charles juedemann	10/21/2025 7:06 AM
38	Ellen Burton	10/20/2025 8:57 PM
39	Jason	10/20/2025 8:18 PM
40	CHRISTOPHER LOONEY	10/20/2025 3:21 PM
41	Katie Aubuchon	10/20/2025 1:08 PM
42	Sarah Hurt	10/20/2025 12:41 PM
43	Stephanie Wheeling	10/20/2025 10:24 AM
44	Chad Carter	10/20/2025 10:16 AM
45	Michael Yaworski	10/20/2025 8:52 AM
46	Jeanne Lischer	10/20/2025 8:07 AM
47	Karen Stafford	10/20/2025 6:23 AM
48	Sydni Filla	10/20/2025 5:31 AM
49	Michael Schueler	10/19/2025 11:49 PM
50	Jeff	10/19/2025 10:06 PM
51	Amber	10/19/2025 9:28 PM
52	Miles Miller	10/19/2025 7:40 PM
53	Deanna St Cin	10/19/2025 7:04 PM
54	Jessica Monzyk	10/19/2025 6:11 PM
55	Carl Ridder	10/19/2025 5:58 PM
56	Steven sippel	10/19/2025 5:19 PM
57	Tracy Simmons	10/19/2025 5:09 PM

58	Linda Landers	10/19/2025 4:28 PM
59	Kay	10/19/2025 4:22 PM
60	Kathleen Hallows	10/19/2025 3:04 PM
61	Chad Briggs	10/19/2025 2:59 PM
62	Donna hovis	10/19/2025 10:02 AM
63	Mark goforth	10/18/2025 3:08 PM
64	Jimmie Reynolds	10/18/2025 10:12 AM
65	Geoff Folsom	10/18/2025 10:11 AM
66	Christian	10/18/2025 9:23 AM
67	Sandra	10/17/2025 10:51 PM
68	Wayne Groff	10/17/2025 10:40 PM
69	Jeff Johnson	10/17/2025 10:05 PM
70	Annette Marie Hintz	10/17/2025 8:23 PM
71	Alyssa Vogelgesang	10/17/2025 4:07 PM
72	Emma	10/17/2025 2:31 PM
73	Kayla Cobb	10/17/2025 1:46 PM
74	Chase Wissbaum	10/17/2025 7:55 AM
75	Tim Frankenberg	10/17/2025 7:26 AM
76	Dan Heck	10/16/2025 7:42 PM
77	David Pauly	10/16/2025 5:20 PM
78	Gary Quaethem	10/16/2025 4:55 PM
79	Valorie Steinbeck	10/16/2025 1:09 PM
80	robert miller	10/15/2025 2:28 PM
81	Jaxon Travis	10/15/2025 8:00 AM
82	Jake	10/14/2025 2:40 PM
83	Terry Marsch	10/14/2025 2:20 PM
84	Jay Mittler	10/14/2025 2:20 PM
85	Larry Hassler	10/14/2025 2:18 PM
86	Ronald L. Pulsifer Sr	10/14/2025 2:14 PM
87	Mickele Villmer	10/14/2025 2:11 PM
88	Sue Lindemann	10/14/2025 2:09 PM
89	Michele Benko	10/14/2025 2:05 PM
90	Bill Straatmann	10/14/2025 1:57 PM
91	Barbara Mittler	10/14/2025 10:08 AM
92	L. J. Unnerstall	10/13/2025 10:30 PM
93	Mitch Ruether	10/13/2025 5:14 PM
94	tim buchanan	10/13/2025 4:40 PM
95	Jason Hays	10/13/2025 3:40 PM

96	Don Jackson	10/13/2025 3:38 PM
97	James Dickman	10/13/2025 12:55 PM
98	Melissa Buhr	10/12/2025 4:37 PM
99	Diane DeBuhr	10/11/2025 9:40 PM
100	Tabitha Caldwell	10/11/2025 4:37 PM
101	Julie Bayless	10/11/2025 1:25 PM
102	Gary Gerner	10/11/2025 12:47 PM
103	David Kleikamp	10/11/2025 10:58 AM
104	Larry Hagedorn	10/11/2025 8:07 AM
105	john helling	10/11/2025 7:09 AM
106	Tim Ueltzen	10/11/2025 5:37 AM
107	Jalayne Faust	10/11/2025 2:32 AM
108	Chris Conaway	10/10/2025 11:39 PM
109	Elena Hearst	10/10/2025 10:16 PM
110	Abby Painter	10/10/2025 10:01 PM
111	S Traeger	10/10/2025 9:29 PM
112	Matthew Burton	10/10/2025 9:13 PM
113	Jennifer Fischer	10/10/2025 8:56 PM
114	Rick Tobben	10/10/2025 8:14 PM
115	Josh	10/10/2025 8:05 PM
116	James Jansen	10/10/2025 5:30 PM
117	Braden tate	10/10/2025 4:32 PM
118	Marcia Sterling	10/10/2025 3:35 PM
119	Patsy Green	10/10/2025 2:43 PM
120	Don Hearst	10/10/2025 2:34 PM
121	Ashley	10/10/2025 1:20 PM
122	Doug Hagedorn	10/10/2025 9:51 AM
123	Mark Taylor	10/10/2025 9:45 AM
124	Aaron Hall	10/10/2025 9:06 AM
125	Mike elliott	10/10/2025 8:59 AM
126	Randy Stroede	10/9/2025 8:30 PM
127	Chris Fischer	10/9/2025 8:06 PM
128	Jim Brocksmith	10/9/2025 7:33 PM
129	Annette Marie Hintz	10/9/2025 6:27 PM
130	Wendy griffin	10/9/2025 6:09 PM
131	Joe kopp	10/9/2025 5:42 PM
132	Karen	10/9/2025 5:31 PM
133	Chris Fischer	10/9/2025 5:25 PM

134	Sean Pennington	10/9/2025 5:17 PM
135	Dave heck	10/9/2025 5:13 PM
136	Leonard Benter	10/9/2025 5:12 PM
137	Stacie Elias	10/9/2025 5:09 PM
138	Caitlyn	10/9/2025 5:06 PM
139	Patty Taylor	10/9/2025 4:55 PM
140	Doug Pado	10/9/2025 4:24 PM
141	Michelle Goewert	10/9/2025 4:17 PM
142	Brad Banderman	10/9/2025 4:14 PM
#	**COMPANY**	**DATE**
1	Franklin Co. Sheriff’s Office - Retired	10/23/2025 6:25 PM
2	Septic Services Inc	10/23/2025 12:07 PM
3	University of Missouri - St. Louis	10/22/2025 5:08 PM
4	Mistler's Oak Furniture	10/22/2025 11:17 AM
5	City of Washington	10/22/2025 10:57 AM
6	Little Bears Learning Center	10/22/2025 10:32 AM
7	City of Washington	10/21/2025 10:52 AM
8	USPS	10/21/2025 8:04 AM
9	STYLEMASTER APPAREL INC	10/20/2025 3:21 PM
10	21 Design Group	10/20/2025 10:16 AM
11	Ameren	10/19/2025 2:59 PM
12	3R RV Service Center	10/18/2025 10:12 AM
13	Missourian	10/18/2025 10:11 AM
14	Reynolds	10/18/2025 9:23 AM
15	Let's Go to Your Destination Taxi	10/17/2025 8:23 PM
16	None	10/17/2025 7:55 AM
17	Washington Fire Department	10/17/2025 7:26 AM
18	Divine spine chiropractic	10/16/2025 7:58 AM
19	MoDOT	10/15/2025 2:28 PM
20	Straatman Toyota Hwy 100	10/14/2025 1:57 PM
21	Helling Farms	10/11/2025 7:09 AM
22	Mercy	10/10/2025 1:20 PM
23	City Of Washington	10/10/2025 9:51 AM
24	United Bank of Union	10/10/2025 9:06 AM
25	United bank of Union	10/10/2025 8:59 AM
26	Let’s go to your destination taxi	10/9/2025 6:27 PM
27	Kju	10/9/2025 5:42 PM
28	A.V.P.	10/9/2025 4:17 PM

#	ADDRESS	DATE
1	7247 Highway 47	10/23/2025 10:11 PM
2	1020 W 5TH ST	10/23/2025 9:27 PM
3	618 W MAIN St	10/23/2025 8:45 PM
4	410 West Locust St.	10/23/2025 6:25 PM
5	7059 hwy 47	10/23/2025 12:07 PM
6	101 Mulligan Dr. #12	10/23/2025 11:13 AM
7	651 Arrowhead lane	10/23/2025 10:06 AM
8	3581 Pin Oaks Estates	10/23/2025 9:25 AM
9	3687 Fourth Street	10/23/2025 7:41 AM
10	834 E Happy Sac Rd	10/23/2025 7:14 AM
11	794 E. Happy Sac Rd.	10/23/2025 12:46 AM
12	2 Creekside Pl	10/22/2025 9:41 PM
13	846 shaw forest ln	10/22/2025 5:53 PM
14	405 Crestview Dr.	10/22/2025 5:49 PM
15	13 Missouri Ave,	10/22/2025 5:08 PM
16	7993 Highway 47	10/22/2025 4:02 PM
17	600 Pinnacle Dr	10/22/2025 3:02 PM
18	109 Grandview Ave	10/22/2025 1:09 PM
19	710 S Hwy 47	10/22/2025 11:17 AM
20	5125 Mid-American Lane	10/22/2025 11:04 AM
21	719 West Main st	10/22/2025 10:57 AM
22	860 BELLERIVE PL	10/22/2025 10:43 AM
23	668 S Hwy 47	10/22/2025 10:32 AM
24	5468 Country Club Rd	10/22/2025 6:53 AM
25	306 Christopher Pl	10/21/2025 7:44 PM
26	7176 Koko Beach Rd	10/21/2025 3:37 PM
27	3584 South Service RD East	10/21/2025 12:51 PM
28	405 Jefferson st	10/21/2025 10:52 AM
29	3663 Dunne Spring Rd	10/21/2025 9:54 AM
30	4959 South Pt Rd	10/21/2025 9:18 AM
31	1276 N HWY 47	10/21/2025 8:04 AM
32	835 East Happy Sac Rd	10/21/2025 7:09 AM
33	207 indian prairie ln	10/21/2025 7:06 AM
34	3791 Iron Hill Rd	10/20/2025 8:57 PM
35	1021 Westen	10/20/2025 8:18 PM
36	1230 OLD SMELTER RD	10/20/2025 3:21 PM
37	9 Allison Dr	10/20/2025 1:08 PM

38	1020 W 5th	10/20/2025 12:41 PM
39	829 N Christina Ave	10/20/2025 10:24 AM
40	1351 Jefferson Street Suite 301	10/20/2025 10:16 AM
41	2039 Highway 47	10/20/2025 8:52 AM
42	1900 Old Highway 50 West	10/20/2025 8:07 AM
43	7744 Meadowview Circle	10/20/2025 6:23 AM
44	1024 Westmoreland Blvd	10/19/2025 11:49 PM
45	23 Michelle Dr	10/19/2025 10:06 PM
46	482 Grandview Oaks Dr	10/19/2025 7:40 PM
47	725 Valley Lake Ct	10/19/2025 7:04 PM
48	444 Eve Estates Drive	10/19/2025 6:11 PM
49	1299 Prairie Dell Road	10/19/2025 5:58 PM
50	524 Eagle Ridge dr	10/19/2025 5:19 PM
51	604 Old County Farm Rd	10/19/2025 5:09 PM
52	484 Willow Twist Dr	10/19/2025 4:28 PM
53	834 Highway ww	10/19/2025 3:04 PM
54	5737 Steutermann Rd	10/19/2025 2:59 PM
55	1935 krenning rd	10/19/2025 10:02 AM
56	1770 reed drive	10/18/2025 3:08 PM
57	7819 Highway 47	10/18/2025 10:12 AM
58	422 E. Franklin St.	10/18/2025 10:11 AM
59	7819 HwY 47 S.	10/18/2025 9:23 AM
60	587 Flint Hill Rd	10/17/2025 10:51 PM
61	587 Flint Hill Road	10/17/2025 10:40 PM
62	213 Quail Ridge Ct	10/17/2025 10:05 PM
63	327 Lost Pines	10/17/2025 8:23 PM
64	1418 E 3rd St	10/17/2025 4:07 PM
65	9 Stephen Avenue	10/17/2025 2:31 PM
66	257 Little Hickory Lane	10/17/2025 7:55 AM
67	200 E. 14th Street	10/17/2025 7:26 AM
68	908 Q Ave	10/16/2025 7:42 PM
69	820 Ivy dr	10/16/2025 5:20 PM
70	106 Red Oak Drive	10/16/2025 4:55 PM
71	621 W State St	10/16/2025 1:09 PM
72	70 N Main st.	10/16/2025 7:58 AM
73	1545 springbluff road	10/15/2025 2:28 PM
74	129 T-box Drive	10/15/2025 8:00 AM
75	779 Melinda Dr.	10/14/2025 2:20 PM

76	5616 White Oak Trl	10/14/2025 2:20 PM
77	412 Bourbeuse Rd	10/14/2025 2:18 PM
78	835 S Hwy 47	10/14/2025 2:14 PM
79	1067 Franklin Ave	10/14/2025 2:11 PM
80	174 Lindemann Ln	10/14/2025 2:09 PM
81	112 Burr Oak Dr.	10/14/2025 2:05 PM
82	Woodland Rd	10/14/2025 1:57 PM
83	5616 White Oak Trl	10/14/2025 10:08 AM
84	346 River Ridge DR	10/13/2025 10:30 PM
85	209 Cedar Berry Drive	10/13/2025 5:14 PM
86	452 Grandview Oaks Drive	10/13/2025 4:40 PM
87	103 Rand St.	10/13/2025 3:40 PM
88	205 Cedar Berry DR	10/13/2025 3:38 PM
89	17 Forest Hills Dr.	10/13/2025 12:55 PM
90	5609 White Oak Trails	10/12/2025 4:37 PM
91	2605 Sullivan Bottom Road	10/11/2025 9:40 PM
92	1555 Schuchart Rd	10/11/2025 4:37 PM
93	1202	10/11/2025 1:25 PM
94	308 E. 11th St.	10/11/2025 12:47 PM
95	1 Sherwood Dr	10/11/2025 10:58 AM
96	306 Hwy AB	10/11/2025 8:07 AM
97	1501 Prairie Dell Rd	10/11/2025 7:09 AM
98	213 Boardwalk Court	10/11/2025 2:32 AM
99	210 e oak	10/10/2025 11:39 PM
100	700 Anaconda Rd.	10/10/2025 10:16 PM
101	1054 Arrowhead Lane	10/10/2025 10:01 PM
102	423 Crestview Drive	10/10/2025 9:13 PM
103	673 stagecoach run	10/10/2025 8:56 PM
104	3304 Koch Cattle Dr	10/10/2025 8:05 PM
105	70 Sherwood Drive	10/10/2025 5:30 PM
106	8 andrew street	10/10/2025 4:32 PM
107	1352 Hwy K	10/10/2025 3:35 PM
108	700 Anaconda Rd	10/10/2025 2:34 PM
109	40 Hibbard St	10/10/2025 1:20 PM
110	405 Jefferson	10/10/2025 9:51 AM
111	163 Cedar Berry Drive	10/10/2025 9:45 AM
112	540	10/10/2025 9:06 AM
113	15 east main	10/10/2025 8:59 AM

114	531 Walls Ford Rd	10/9/2025 8:30 PM
115	5541 Country Club Ln	10/9/2025 8:06 PM
116	673 Redstone Drivr	10/9/2025 7:33 PM
117	327 Lost Pines	10/9/2025 6:27 PM
118	114 linda lane	10/9/2025 6:09 PM
119	328 state st	10/9/2025 5:42 PM
120	5541 Country Club Ln	10/9/2025 5:25 PM
121	1309 N Church St	10/9/2025 5:17 PM
122	254 Tanglewood Rd	10/9/2025 5:12 PM
123	20 Horizon Drive	10/9/2025 5:09 PM
124	2000 Golfway St	10/9/2025 5:06 PM
125	163 Cedar Berry dr	10/9/2025 4:55 PM
126	3817 Highway UU	10/9/2025 4:24 PM
127	7805 S. Hwy 47	10/9/2025 4:17 PM
128	1205 Arizona Ave	10/9/2025 4:14 PM

#	ADDRESS 2	DATE
1	405 Jefferson st	10/21/2025 10:52 AM
2	Fawn Drive	10/11/2025 1:25 PM
3	Fairway	10/10/2025 9:06 AM

#	CITY/TOWN	DATE
1	Union	10/23/2025 10:11 PM
2	Washington	10/23/2025 9:27 PM
3	Washington	10/23/2025 9:00 PM
4	Union	10/23/2025 8:45 PM
5	Union	10/23/2025 6:25 PM
6	Union	10/23/2025 12:07 PM
7	Sullivan	10/23/2025 11:13 AM
8	union	10/23/2025 10:06 AM
9	Owensville	10/23/2025 9:25 AM
10	Owensville	10/23/2025 7:41 AM
11	Union	10/23/2025 7:14 AM
12	Owensville	10/23/2025 6:48 AM
13	Union	10/23/2025 12:46 AM
14	Washington	10/22/2025 9:41 PM
15	Leslie	10/22/2025 5:53 PM
16	Union	10/22/2025 5:49 PM
17	Union	10/22/2025 5:08 PM
18	Union	10/22/2025 4:02 PM

19	Union	10/22/2025 3:02 PM
20	Union	10/22/2025 1:09 PM
21	Union	10/22/2025 11:17 AM
22	Washington	10/22/2025 11:04 AM
23	Washington	10/22/2025 10:57 AM
24	Washington	10/22/2025 10:43 AM
25	Union	10/22/2025 10:32 AM
26	Washington	10/22/2025 6:53 AM
27	Union	10/21/2025 7:44 PM
28	Union	10/21/2025 3:37 PM
29	UNION	10/21/2025 12:51 PM
30	Labadie	10/21/2025 9:54 AM
31	Washington	10/21/2025 9:18 AM
32	Union	10/21/2025 8:04 AM
33	Union	10/21/2025 7:09 AM
34	union	10/21/2025 7:06 AM
35	Union	10/20/2025 8:57 PM
36	Union	10/20/2025 8:18 PM
37	UNION	10/20/2025 3:21 PM
38	Union	10/20/2025 1:08 PM
39	Washington	10/20/2025 12:41 PM
40	Union	10/20/2025 10:24 AM
41	Washington	10/20/2025 10:16 AM
42	St. Clair	10/20/2025 8:52 AM
43	Union	10/20/2025 8:07 AM
44	Union	10/20/2025 6:23 AM
45	Union	10/20/2025 5:31 AM
46	Union	10/19/2025 11:49 PM
47	Union	10/19/2025 10:06 PM
48	Union	10/19/2025 9:28 PM
49	Union	10/19/2025 7:40 PM
50	Union	10/19/2025 7:04 PM
51	Union	10/19/2025 6:11 PM
52	Union	10/19/2025 5:58 PM
53	Union	10/19/2025 5:19 PM
54	Union	10/19/2025 5:09 PM
55	New Haven	10/19/2025 4:28 PM
56	Saint Clair	10/19/2025 3:04 PM

57	Washington	10/19/2025 2:59 PM
58	Beaufort	10/19/2025 10:02 AM
59	St. Clair	10/18/2025 3:08 PM
60	Union	10/18/2025 10:12 AM
61	Pacific	10/18/2025 10:11 AM
62	Union	10/18/2025 9:23 AM
63	Leslie	10/17/2025 10:51 PM
64	Union	10/17/2025 10:49 PM
65	Leslie	10/17/2025 10:40 PM
66	Union	10/17/2025 10:05 PM
67	Union	10/17/2025 8:23 PM
68	Washington	10/17/2025 4:07 PM
69	Union	10/17/2025 2:31 PM
70	Washington	10/17/2025 1:46 PM
71	Washington	10/17/2025 7:55 AM
72	Washington	10/17/2025 7:26 AM
73	St Clair	10/16/2025 7:42 PM
74	St Clair	10/16/2025 5:20 PM
75	Labadie	10/16/2025 4:55 PM
76	Union	10/16/2025 1:09 PM
77	St. Clair	10/16/2025 7:58 AM
78	sullivan	10/15/2025 2:28 PM
79	St.Clair	10/15/2025 8:00 AM
80	Union	10/14/2025 2:20 PM
81	Washington	10/14/2025 2:20 PM
82	Union	10/14/2025 2:18 PM
83	Union	10/14/2025 2:14 PM
84	Union	10/14/2025 2:11 PM
85	Union	10/14/2025 2:09 PM
86	Union	10/14/2025 2:05 PM
87	Washington	10/14/2025 1:57 PM
88	Washington	10/14/2025 10:08 AM
89	Union	10/13/2025 10:30 PM
90	Washington	10/13/2025 5:14 PM
91	UNION	10/13/2025 4:40 PM
92	Washington	10/13/2025 3:40 PM
93	Washington	10/13/2025 3:38 PM
94	Washington	10/13/2025 12:55 PM

95	Washington	10/12/2025 4:37 PM
96	Saint Clair	10/11/2025 9:40 PM
97	Union	10/11/2025 4:37 PM
98	Washington	10/11/2025 1:25 PM
99	Washington	10/11/2025 12:47 PM
100	Washington	10/11/2025 10:58 AM
101	St. Clair	10/11/2025 8:07 AM
102	Union	10/11/2025 7:09 AM
103	Washington	10/11/2025 5:37 AM
104	Union	10/11/2025 2:32 AM
105	st clair	10/10/2025 11:39 PM
106	St. Clair	10/10/2025 10:16 PM
107	Union	10/10/2025 10:01 PM
108	Union	10/10/2025 9:13 PM
109	Union	10/10/2025 8:56 PM
110	Washington	10/10/2025 8:14 PM
111	Washington	10/10/2025 8:05 PM
112	Washington	10/10/2025 5:30 PM
113	St.clair	10/10/2025 4:32 PM
114	St. Clair	10/10/2025 3:35 PM
115	St. Clair	10/10/2025 2:43 PM
116	St. Clair	10/10/2025 2:34 PM
117	Saint Clair	10/10/2025 1:20 PM
118	Washington	10/10/2025 9:51 AM
119	Washington	10/10/2025 9:45 AM
120	Union	10/10/2025 9:06 AM
121	Union	10/10/2025 8:59 AM
122	Union	10/9/2025 11:00 PM
123	St Clair	10/9/2025 8:30 PM
124	Washington	10/9/2025 8:06 PM
125	St Clair	10/9/2025 7:33 PM
126	Union	10/9/2025 6:27 PM
127	Union	10/9/2025 6:09 PM
128	Washington	10/9/2025 5:42 PM
129	Washington	10/9/2025 5:31 PM
130	Washington	10/9/2025 5:25 PM
131	Union	10/9/2025 5:17 PM
132	St clair	10/9/2025 5:13 PM

133	Union	10/9/2025 5:12 PM
134	Saint Peters	10/9/2025 5:09 PM
135	St. Charles	10/9/2025 5:06 PM
136	Washington	10/9/2025 4:55 PM
137	Union	10/9/2025 4:24 PM
138	Union	10/9/2025 4:17 PM
139	St Clair	10/9/2025 4:14 PM
#	**STATE/PROVINCE**	**DATE**
1	MO	10/23/2025 10:11 PM
2	MO	10/23/2025 9:27 PM
3	Mo	10/23/2025 9:00 PM
4	Missouri	10/23/2025 8:45 PM
5	MO	10/23/2025 6:25 PM
6	Mo	10/23/2025 12:07 PM
7	MO	10/23/2025 11:13 AM
8	mo	10/23/2025 10:06 AM
9	MO	10/23/2025 9:25 AM
10	MO	10/23/2025 7:41 AM
11	MO	10/23/2025 7:14 AM
12	MO	10/23/2025 6:48 AM
13	MO	10/23/2025 12:46 AM
14	MO	10/22/2025 9:41 PM
15	Mo	10/22/2025 5:53 PM
16	Missouri	10/22/2025 5:49 PM
17	MO	10/22/2025 5:08 PM
18	MO	10/22/2025 4:02 PM
19	MO	10/22/2025 3:02 PM
20	MO	10/22/2025 1:09 PM
21	MO	10/22/2025 11:17 AM
22	MO	10/22/2025 11:04 AM
23	MO	10/22/2025 10:57 AM
24	MO	10/22/2025 10:43 AM
25	Missouri	10/22/2025 10:32 AM
26	MO	10/22/2025 6:53 AM
27	MO	10/21/2025 7:44 PM
28	MO	10/21/2025 3:37 PM
29	MO	10/21/2025 12:51 PM
30	MO	10/21/2025 9:54 AM

31	Mo	10/21/2025 9:18 AM
32	MO	10/21/2025 8:04 AM
33	MO	10/21/2025 7:09 AM
34	mo	10/21/2025 7:06 AM
35	MO	10/20/2025 8:57 PM
36	Mo	10/20/2025 8:18 PM
37	MO	10/20/2025 3:21 PM
38	MO	10/20/2025 1:08 PM
39	MO	10/20/2025 12:41 PM
40	MO	10/20/2025 10:24 AM
41	MO	10/20/2025 10:16 AM
42	MO	10/20/2025 8:52 AM
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44	Mo	10/20/2025 6:23 AM
45	MO	10/20/2025 5:31 AM
46	MO	10/19/2025 11:49 PM
47	Mo	10/19/2025 10:06 PM
48	Mo	10/19/2025 9:28 PM
49	MO	10/19/2025 7:40 PM
50	MO	10/19/2025 7:04 PM
51	MO	10/19/2025 6:11 PM
52	MO	10/19/2025 5:58 PM
53	Mo	10/19/2025 5:19 PM
54	Mo	10/19/2025 5:09 PM
55	Mo	10/19/2025 4:28 PM
56	Mo	10/19/2025 3:04 PM
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61	MO	10/18/2025 10:11 AM
62	MO	10/18/2025 9:23 AM
63	MO	10/17/2025 10:51 PM
64	MO	10/17/2025 10:49 PM
65	MO	10/17/2025 10:40 PM
66	MO	10/17/2025 10:05 PM
67	MO	10/17/2025 8:23 PM
68	MO	10/17/2025 2:31 PM

69	MO	10/17/2025 1:46 PM
70	MO	10/17/2025 7:55 AM
71	Missouri	10/17/2025 7:26 AM
72	MO	10/16/2025 7:42 PM
73	MO	10/16/2025 5:20 PM
74	MO	10/16/2025 4:55 PM
75	MO	10/16/2025 1:09 PM
76	MO	10/16/2025 7:58 AM
77	Missouri	10/15/2025 2:28 PM
78	MO	10/15/2025 8:00 AM
79	MO	10/14/2025 2:40 PM
80	MO	10/14/2025 2:20 PM
81	MO	10/14/2025 2:20 PM
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97	MO	10/11/2025 4:37 PM
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101	Mo	10/11/2025 8:07 AM
102	MO	10/11/2025 7:09 AM
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104	Mo	10/11/2025 2:32 AM
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106	Mo	10/10/2025 10:16 PM

107	MO	10/10/2025 10:01 PM
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110	Mo	10/10/2025 8:14 PM
111	MO	10/10/2025 8:05 PM
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120	MO	10/10/2025 9:06 AM
121	Mo	10/10/2025 8:59 AM
122	MO	10/9/2025 11:00 PM
123	MO	10/9/2025 8:30 PM
124	Mo	10/9/2025 8:06 PM
125	Mo	10/9/2025 7:33 PM
126	MO	10/9/2025 6:27 PM
127	Mo	10/9/2025 6:09 PM
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129	Mo	10/9/2025 5:31 PM
130	Mo	10/9/2025 5:25 PM
131	MO	10/9/2025 5:17 PM
132	Mo	10/9/2025 5:13 PM
133	Mo	10/9/2025 5:12 PM
134	MO	10/9/2025 5:09 PM
135	MO	10/9/2025 5:06 PM
136	MO	10/9/2025 4:55 PM
137	Mo	10/9/2025 4:24 PM
138	Mo	10/9/2025 4:17 PM
139	Mo	10/9/2025 4:14 PM

#	ZIP/POSTAL CODE	DATE
1	63084	10/23/2025 10:11 PM
2	63090	10/23/2025 9:27 PM
3	63090	10/23/2025 9:00 PM
4	63084	10/23/2025 8:45 PM

5	63084	10/23/2025 6:25 PM
6	63084	10/23/2025 12:07 PM
7	63080	10/23/2025 11:13 AM
8	63084	10/23/2025 10:06 AM
9	65066	10/23/2025 9:25 AM
10	65066	10/23/2025 7:41 AM
11	63084	10/23/2025 7:14 AM
12	63084	10/23/2025 12:46 AM
13	63090	10/22/2025 9:41 PM
14	63056	10/22/2025 5:53 PM
15	63084-2216	10/22/2025 5:49 PM
16	63084	10/22/2025 5:08 PM
17	63084	10/22/2025 4:02 PM
18	63084	10/22/2025 3:02 PM
19	63084	10/22/2025 1:09 PM
20	63084	10/22/2025 11:17 AM
21	63090	10/22/2025 11:04 AM
22	63090	10/22/2025 10:57 AM
23	63090	10/22/2025 10:43 AM
24	63084	10/22/2025 10:32 AM
25	63090	10/22/2025 6:53 AM
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29	63055	10/21/2025 9:54 AM
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32	63084	10/21/2025 7:09 AM
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38	63090	10/20/2025 12:41 PM
39	63084	10/20/2025 10:24 AM
40	63090	10/20/2025 10:16 AM
41	63077	10/20/2025 8:52 AM
42	63084	10/20/2025 8:07 AM

43	63084	10/20/2025 6:23 AM
44	63084	10/20/2025 5:31 AM
45	63084	10/19/2025 11:49 PM
46	63084	10/19/2025 10:06 PM
47	63084	10/19/2025 9:28 PM
48	63084	10/19/2025 7:40 PM
49	63084	10/19/2025 7:04 PM
50	63084	10/19/2025 6:11 PM
51	63084	10/19/2025 5:58 PM
52	63084	10/19/2025 5:19 PM
53	63084	10/19/2025 5:09 PM
54	63068	10/19/2025 4:28 PM
55	63077	10/19/2025 4:22 PM
56	63077	10/19/2025 3:04 PM
57	63090	10/19/2025 2:59 PM
58	63013	10/19/2025 10:02 AM
59	63077	10/18/2025 3:08 PM
60	63084	10/18/2025 10:12 AM
61	63069	10/18/2025 10:11 AM
62	63084	10/18/2025 9:23 AM
63	63084	10/17/2025 11:28 PM
64	63056	10/17/2025 10:51 PM
65	63084	10/17/2025 10:49 PM
66	63056	10/17/2025 10:40 PM
67	63084	10/17/2025 10:05 PM
68	63084	10/17/2025 8:23 PM
69	63090	10/17/2025 4:07 PM
70	63084	10/17/2025 2:31 PM
71	63090	10/17/2025 1:46 PM
72	63090	10/17/2025 7:55 AM
73	63090-4516	10/17/2025 7:26 AM
74	63077	10/16/2025 7:42 PM
75	63077	10/16/2025 5:20 PM
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77	63084	10/16/2025 1:09 PM
78	63077	10/16/2025 7:58 AM
79	63080	10/15/2025 2:28 PM
80	63077	10/15/2025 8:00 AM

81	63090	10/14/2025 2:40 PM
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83	63090	10/14/2025 2:20 PM
84	63084	10/14/2025 2:18 PM
85	63084	10/14/2025 2:14 PM
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87	63084	10/14/2025 2:09 PM
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108	63077	10/10/2025 10:16 PM
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119	63077	10/10/2025 1:20 PM
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2	United States	10/23/2025 9:27 PM
3	USA	10/23/2025 8:45 PM
4	United States	10/23/2025 6:25 PM
5	USA	10/23/2025 12:07 PM
6	US	10/23/2025 11:13 AM
7	united states	10/23/2025 10:06 AM
8	USA	10/23/2025 9:25 AM
9	usa	10/23/2025 7:41 AM
10	United States	10/23/2025 7:14 AM
11	USA	10/23/2025 12:46 AM
12	UsA	10/22/2025 5:53 PM
13	USA	10/22/2025 5:49 PM
14	United States	10/22/2025 5:08 PM

15	United States	10/22/2025 4:02 PM
16	US	10/22/2025 3:02 PM
17	United States	10/22/2025 1:09 PM
18	USA	10/22/2025 11:17 AM
19	United States	10/22/2025 11:04 AM
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33	USA	10/20/2025 3:21 PM
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69	USA	10/14/2025 2:14 PM
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87	Franklin	10/10/2025 10:16 PM
88	Franklin	10/10/2025 10:01 PM
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111	USA	10/9/2025 4:24 PM
112	USA	10/9/2025 4:17 PM
#	**EMAIL ADDRESS**	**DATE**
1	thebeaubuilders@gmail.com	10/23/2025 10:11 PM
2	lgoldtop@gmail.com	10/23/2025 9:27 PM
3	mskornia@charter.net	10/23/2025 9:00 PM
4	knoblauchnicholas@gmail.com	10/23/2025 8:45 PM
5	d_k_haley@att.net	10/23/2025 6:25 PM
6	davef@septicserv.com	10/23/2025 12:07 PM
7	bluebeetle585@yahoo.com	10/23/2025 11:13 AM
8	andrewrosenkoetter@gmail.com	10/23/2025 10:06 AM
9	cmniewald@gmail.com	10/23/2025 9:25 AM
10	jbarndollar@gmail.com	10/23/2025 7:41 AM
11	igfarrierservice@yahoo.com	10/23/2025 7:14 AM
12	president@rockislandtrail.org	10/23/2025 6:48 AM
13	Holly@it-is-personal.com	10/23/2025 12:46 AM
14	brian.norwood.usmc@gmail.com	10/22/2025 9:41 PM
15	63084jmd@att.net	10/22/2025 5:49 PM

16	tracylicklider@gmail.com	10/22/2025 5:08 PM
17	jenandlou7@gmail.com	10/22/2025 4:02 PM
18	bdukleth7@gmail.com	10/22/2025 3:02 PM
19	clayzigler@gmail.com	10/22/2025 1:09 PM
20	mistlersoakfurniture@gmail.com	10/22/2025 11:17 AM
21	coltmenk@hotmail.com	10/22/2025 11:04 AM
22	hagedjpk11charter.net	10/22/2025 10:57 AM
23	jcurtmanschroeder@gmail.com	10/22/2025 10:43 AM
24	emily@littlebearschildcare.org	10/22/2025 10:32 AM
25	trgierer@gmail.com	10/22/2025 6:53 AM
26	blhorter@gmail.com	10/21/2025 7:44 PM
27	ryanbraun593@gmail.com	10/21/2025 3:37 PM
28	jacquemward@gmail.com	10/21/2025 12:51 PM
29	dhagedorn@washmo.gov	10/21/2025 10:52 AM
30	calvinobermark99@gmail.com	10/21/2025 9:54 AM
31	s.trentmann@sbcglobal.net	10/21/2025 9:18 AM
32	tanya.l.sickafoose@usps.gov	10/21/2025 8:04 AM
33	ellen021960@yahoo.com	10/21/2025 7:36 AM
34	hinsondvm@gmail.com	10/21/2025 7:09 AM
35	radios@charter.net	10/21/2025 7:06 AM
36	sommerburton@yahoo.com	10/20/2025 8:57 PM
37	jgarrett@gpccorp.net	10/20/2025 8:18 PM
38	CHRIS@PROMOTEWITHSTYLE.COM	10/20/2025 3:21 PM
39	kccaubuchon@gmail.com	10/20/2025 1:08 PM
40	sehurt2021@gmail.com	10/20/2025 12:41 PM
41	motherof4_2012@yahoo.com	10/20/2025 10:24 AM
42	chad@21designgroup.net	10/20/2025 10:16 AM
43	mby3rd@yahoo.com	10/20/2025 8:52 AM
44	jlischer90@gmail.com	10/20/2025 8:07 AM
45	kstafford1985@gmail.com	10/20/2025 6:23 AM
46	sogaddy25@hotmail.com	10/20/2025 5:31 AM
47	Floorguy26@yahoo.com	10/19/2025 11:49 PM
48	ajz_kinsey@yahoo.com	10/19/2025 9:28 PM
49	mildog44@gmail.com	10/19/2025 7:40 PM
50	drstcin@gmail.com	10/19/2025 7:04 PM
51	jmonzyk18@gmail.com	10/19/2025 6:11 PM
52	carljane64@gmail.com	10/19/2025 5:58 PM
53	sssippel@gmail.com	10/19/2025 5:19 PM

54	ktas_1@yahoo.com	10/19/2025 5:09 PM
55	glenngib57@hotmail.com	10/19/2025 5:04 PM
56	lindavlanders@gmail.com	10/19/2025 4:28 PM
57	pettenders@gmail.com	10/19/2025 4:22 PM
58	kathyhallows@att.net	10/19/2025 3:04 PM
59	cnbriggs10@spectrum.net	10/19/2025 2:59 PM
60	kstahlman21@gmail.com	10/19/2025 2:49 PM
61	dmhstl69@gmail.com	10/19/2025 10:02 AM
62	goforthmark@yahoo.com	10/18/2025 3:08 PM
63	jreynolds@3rrv.com	10/18/2025 10:12 AM
64	gmfolsom@yahoo.com	10/18/2025 10:11 AM
65	creynolds@3rrv.com	10/18/2025 9:23 AM
66	sgroff@yhti.net	10/17/2025 10:51 PM
67	weggroff@gmail.com	10/17/2025 10:40 PM
68	JEFFCHEL2@YAHOO.COM	10/17/2025 10:05 PM
69	hintzhamlet@gmail.com	10/17/2025 8:23 PM
70	eelizabethrich@gmail.com	10/17/2025 2:31 PM
71	khoward@franklinmo.gov	10/17/2025 1:46 PM
72	chase.wissbaum@student.eastcentral.edu	10/17/2025 7:55 AM
73	tpfrankenberg@washmo.gov	10/17/2025 7:26 AM
74	drheck1@spectrum.net	10/16/2025 7:42 PM
75	djlpjobs@yahoo.com	10/16/2025 5:20 PM
76	quaethemg@gmail.com	10/16/2025 4:55 PM
77	val.steinbeck@gmail.com	10/16/2025 1:09 PM
78	behla001@gmail.com	10/16/2025 7:58 AM
79	Trimmer1545@gmail.comm	10/15/2025 2:28 PM
80	jtravis2026@gmail.com	10/15/2025 8:00 AM
81	trmarsch60@charter.net	10/14/2025 2:20 PM
82	fjmitt@swbell.net	10/14/2025 2:20 PM
83	larryhassler@att.net	10/14/2025 2:18 PM
84	ronsr1948@sbcglobal.net	10/14/2025 2:14 PM
85	sue.pharmland@gmail.com	10/14/2025 2:09 PM
86	michele1benko@gmail.com	10/14/2025 2:05 PM
87	barbgildehau@yahoo.com	10/14/2025 10:08 AM
88	TIMBBUCHANAN@GMAIL.COM	10/13/2025 4:40 PM
89	DonJackson56@me.com	10/13/2025 3:38 PM
90	jcdickman80@gmail.com	10/13/2025 12:55 PM
91	ddebuhrs5@gmail.com	10/11/2025 9:40 PM

92	tabijc@yahoo.com	10/11/2025 4:37 PM
93	Juliebayless763@gmail.com	10/11/2025 1:25 PM
94	nverhome@yahoo.com	10/11/2025 12:47 PM
95	dkleikamp@gmail.com	10/11/2025 10:58 AM
96	lhage@att.net	10/11/2025 8:07 AM
97	hellingfarms@yahoo.com	10/11/2025 7:09 AM
98	timpam@icloud.com	10/11/2025 5:37 AM
99	faustjalayne@gmail.com	10/11/2025 2:32 AM
100	quiet9531@sbcglobal.net	10/10/2025 11:39 PM
101	lenahearst@yahoo.com	10/10/2025 10:16 PM
102	abbypainter@att.net	10/10/2025 10:01 PM
103	shb08phs@hotmail.com	10/10/2025 9:29 PM
104	mattburton27@hotmail.com	10/10/2025 9:13 PM
105	neeus78@yahoo.com	10/10/2025 8:56 PM
106	rtobb@att.net	10/10/2025 8:14 PM
107	jbailey0624@gmail.com	10/10/2025 8:05 PM
108	jdjansen713@gmail.com	10/10/2025 5:30 PM
109	brtseahawks@gmail.com	10/10/2025 4:32 PM
110	mauciefay@yahoo.com	10/10/2025 3:35 PM
111	plgreen@charter.net	10/10/2025 2:43 PM
112	donniehearst@yahoo.com	10/10/2025 2:34 PM
113	ashleydothage2000@gmail.com	10/10/2025 1:20 PM
114	dhagedorn@washmo.gov	10/10/2025 9:51 AM
115	markpatty1991@icloud.com	10/10/2025 9:45 AM
116	aaronh@ubu.bank	10/10/2025 9:06 AM
117	mikee@ubu.bank	10/10/2025 8:59 AM
118	rstroede@att.net	10/9/2025 8:30 PM
119	fischerspilotcarservices@gmail.com	10/9/2025 8:06 PM
120	sawmillacres@gmail.com	10/9/2025 7:33 PM
121	hintzhamlet@gmail.com	10/9/2025 6:27 PM
122	wdg1988@yahoo.com	10/9/2025 6:09 PM
123	joek@kjuinc.com	10/9/2025 5:42 PM
124	fischerspilotcarservices@gmail.com	10/9/2025 5:25 PM
125	sean.pennington24@gmail.com	10/9/2025 5:17 PM
126	lbenter@gmail.com	10/9/2025 5:12 PM
127	sandb513se@gmail.com	10/9/2025 5:09 PM
128	markpatty1991@gmail.com	10/9/2025 4:55 PM
129	doug@pado.name	10/9/2025 4:24 PM

130	Equinoxavp@aol.com	10/9/2025 4:17 PM
131	brad.banderman@hose.mo.gov	10/9/2025 4:14 PM

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2	3146814348	10/23/2025 9:27 PM
3	(314) 799-3876	10/23/2025 6:25 PM
4	636-583-5564	10/23/2025 12:07 PM
5	5734363218	10/23/2025 11:13 AM
6	636-485-9852	10/23/2025 10:06 AM
7	5734374275	10/23/2025 9:25 AM
8	314 630 0720	10/23/2025 7:41 AM
9	3144956968	10/23/2025 7:14 AM
10	(573) 690-3545	10/23/2025 6:48 AM
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15	6367300094	10/22/2025 5:08 PM
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93	9705670501	10/10/2025 2:34 PM
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96	360 731-4036	10/10/2025 9:45 AM
97	3148080744	10/10/2025 9:06 AM
98	6365820057	10/10/2025 8:59 AM
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101	5734186996	10/9/2025 7:33 PM
102	573-836-4723	10/9/2025 6:27 PM
103	3146305714	10/9/2025 6:09 PM
104	6363903860	10/9/2025 5:42 PM
105	6365843391	10/9/2025 5:25 PM
106	3147098431	10/9/2025 5:17 PM
107	3145324519	10/9/2025 5:13 PM
108	636-541-2418	10/9/2025 5:09 PM
109	3609082523	10/9/2025 4:55 PM
110	636-744-5255	10/9/2025 4:24 PM
111	636-583-3561	10/9/2025 4:17 PM

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

Appendix C: Written Comment Forms and Emails

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

Propose 1 for 50 and 47 in Union

5 Lanes as Far as possible

78.1 million is Not Even enough to get project Started do it right

Your Name: Jon Meyer
Address: 11306 St Hwy 47
City, State, Zip: Marthasville Mo 63357
Phone/Email: 314-435-1182

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

I have Tryed to have mail Box moved Because of healT reasons move To side were We Live!

Your Name: Gordon Mehler
Address: 8011 Hwy 47
City, State, Zip: Union Mo 63084
Phone/Email: 6367442752

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

- The First Diagram For 47+50 w/Bridge behind Dicky Dubs; I belive is best. The second choice is also my second choice. The third w/vidio should be thrown out. It is not user Friendly For Farm equpit & over size.* 53 Ft trailer & items over size 14-16 Ft.*
- There are to many round abouts & lights that will increase the time getting From Washington to stclair by double.
- How are land owners along rought being Compensated for road being widened & or Bridge being bilt?
- IF this project is looking to store equpmet or dump Near Franklin Ave Contact MichaelVillmer 636-388-6521
- ~~Detores~~ during Construction capable for oversize loads w/out Puntalys?

Your Name: Cheiree Courtney
Address: 5926 Hilltop Rd
City, State, Zip: Villa Ridge mo 63089
Phone/Email: 636-432-8160

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

- That whatever Turn lanes or Round Abouts are Big enough for A 53 foot trailer so that Trucks won't be hung up on them. Or Tearing up ~~equipment~~ equipment. For ~~the~~ Oversized Loads

- That people will be compensated for All Property that is taken for Road improvements

- If ~~the~~ this Project if Looking for Place to store equipment or Dump materials have location Near Franklin Ave. Call if you interested

- Big enough Detours ~~and~~ and Ability to take Detours in a tractor Truck without Being fined

Your Name: Michael Williams
Address: 1067 Franklin Ave
City, State, Zip: Union MO.
Phone/Email: 636-388-6521

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

No Roundabout

Your Name: Jim Alsop

Address:

City, State, Zip: St Clair

Phone/Email:

Comment Form

MoDOT Route 47
Public Meeting #2
October 9, 2025

Your input is important! Please provide your comments in the space below. You may leave this form with us tonight or send your comments to **Future47@modot.mo.gov**
For questions call **1-888-ASK-MODOT (275-6636)**.

Please print clearly, and feel free to use additional paper if necessary.

YOUR PRESENTATION IS NICE BUT IT IS ALREADY OUT OF DATE. IT DOES NOT TAKE INTO ACCOUNT ALL OF THE NEW SUBDIVISIONS BEING BUILT.
WITH NEW SUBDIVISIONS WHERE IS THE MONEY FOR ALL OF THE NEW INFRASTRUCTURE (WATER-SEWAGE-TRASH)?
WHAT ABOUT SCHOOLS?

Your Name: LARRY HASSLER
Address: 412 BOURBEUSE RD
City, State, Zip: UNION MO 63084
Phone/Email: LARRYHASSLER@ATT.NET

From: Missouri Department of Transportation <noreply@modot.info>
Sent: Friday, October 10, 2025 5:55 PM
To: Rachel V. Sudduth <Rachel.Sudduth@modot.mo.gov>
Subject: Missouri Route 47 Conceptual Study Comments

Submitted on Fri, 10/10/2025 - 17:54

Submitted by: Visitor

Submitted values are:

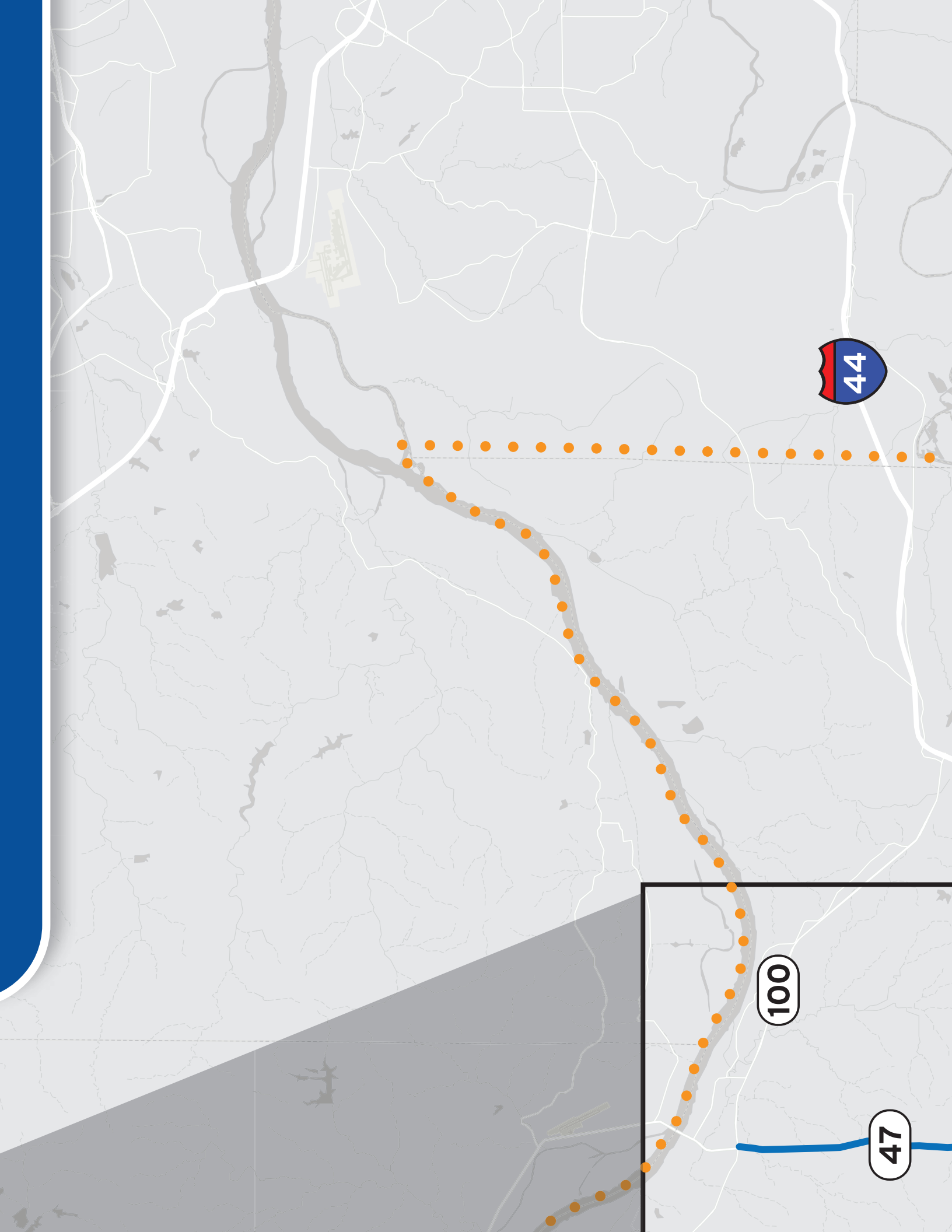
Full Name:
Joe Holtmeier

Email:
jholtmeier@washmo.gov

Comments:
I think the highway intersection of 50 and 47 should be the continuous flow design that looks the best to move traffic.
Thanks for all you guys do!!

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

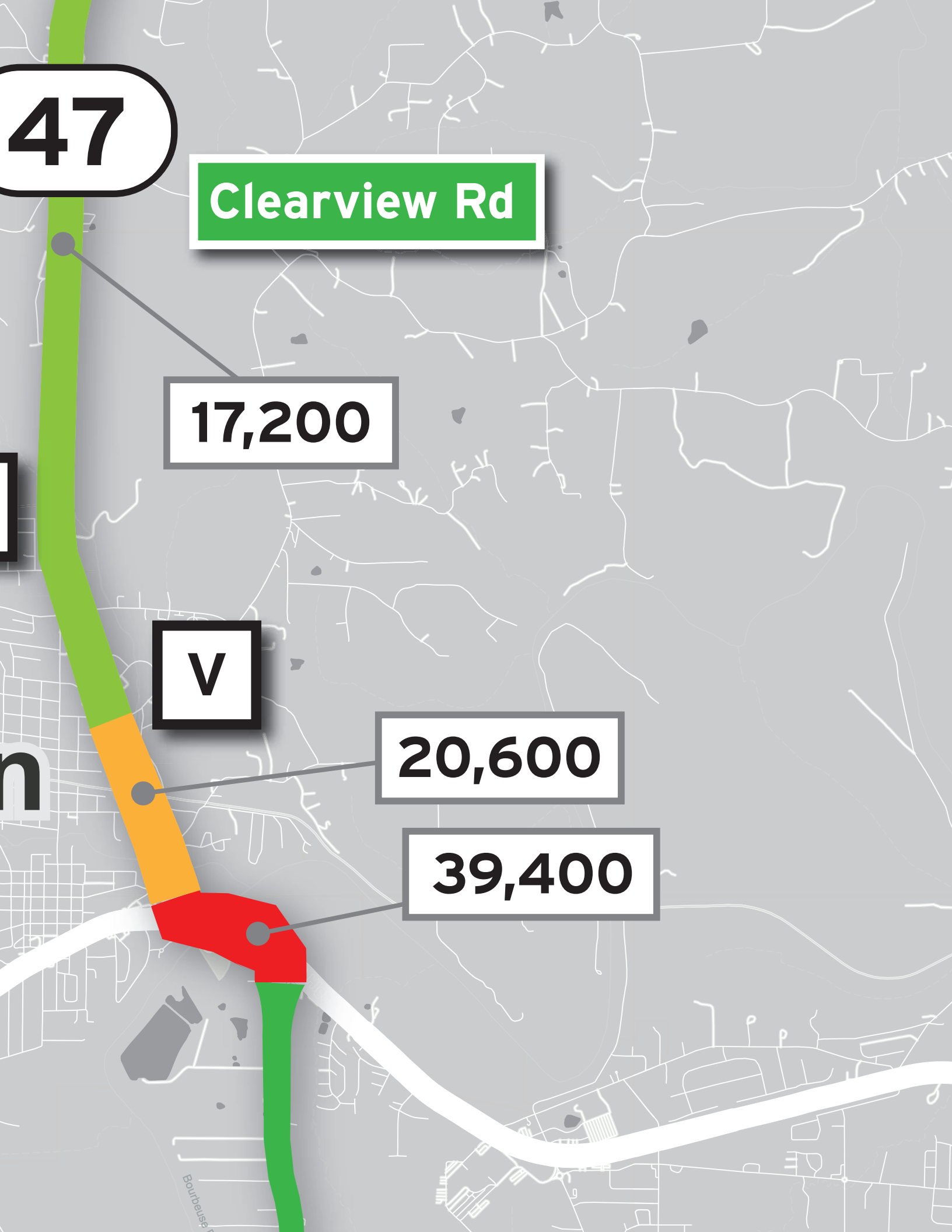
Appendix D: Exhibit Boards


44
100
47

IDENTIFY IS

Safety and

Intersection


47
Clearview Rd
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V
20,600
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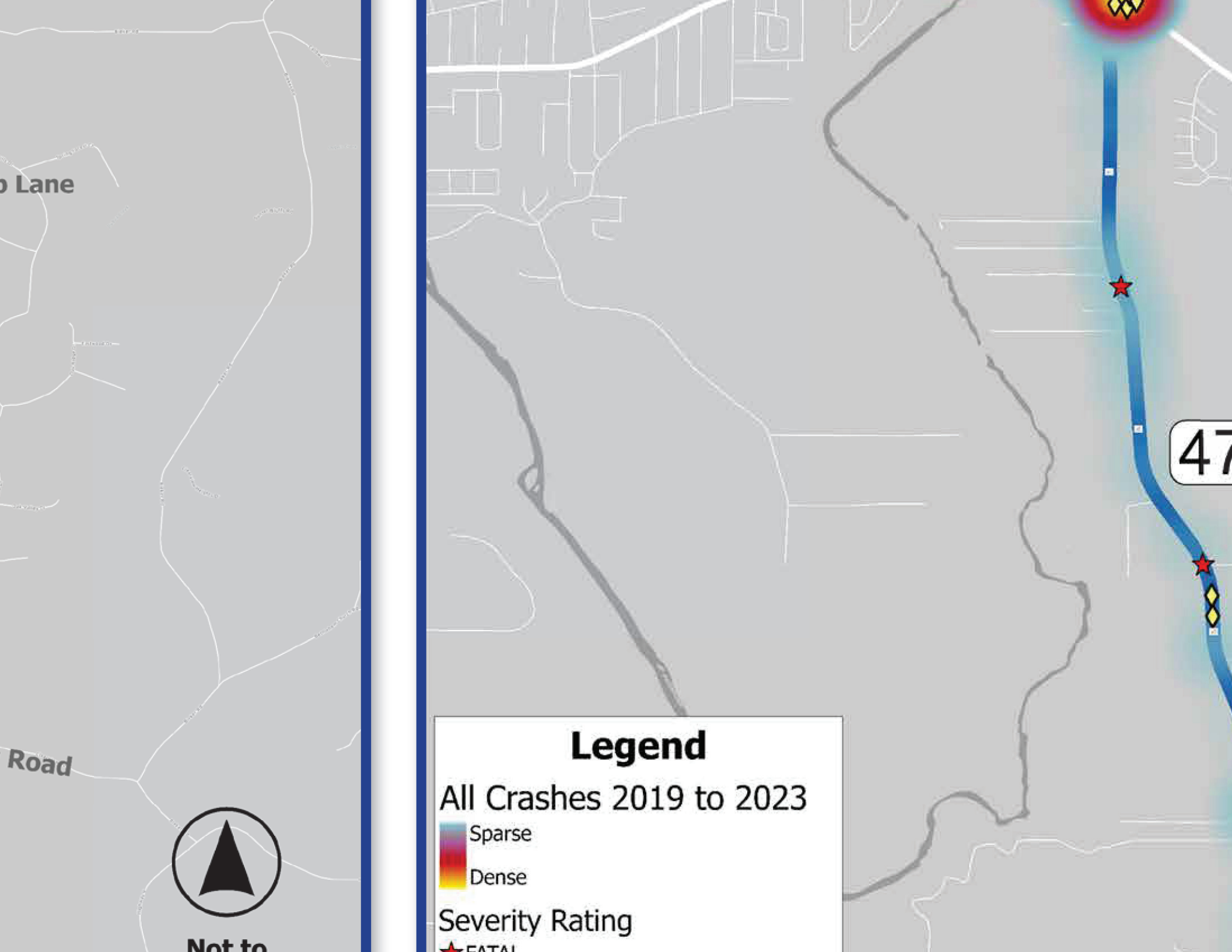
o Lane
Road
47
Legend
All Crashes 2019 to 2023
Sparse
Dense
Severity Rating
FATAL
Not to

ngton

South of Forest Hills Drive

South of Self Storage

Union

Missouri Eastern RR

US-50 (on bridge)

North of Franklin Avenue

We are here

Public Meeting #2
Reasonable Alternatives

October 9, 2025

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Preliminary Drawings

Detail Drawings

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■ Very Concernin

CAG #1 Input
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growth

1st

2nd

3rd

4th

,000

Decreases Safety

(15% More Crashes)

22 min
Existing

Time

,000

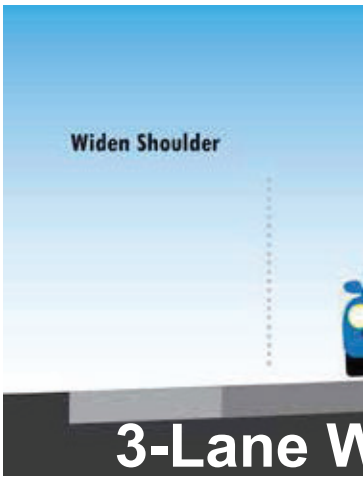
Increases Safety

(36% Less Crashes)

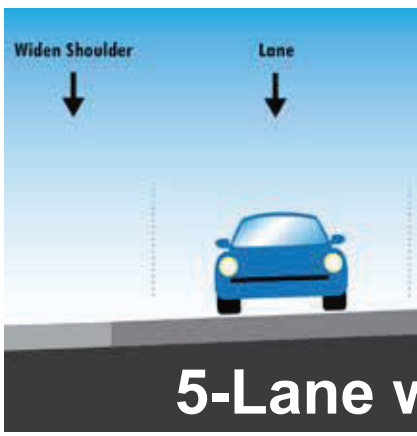
22 min
Existing

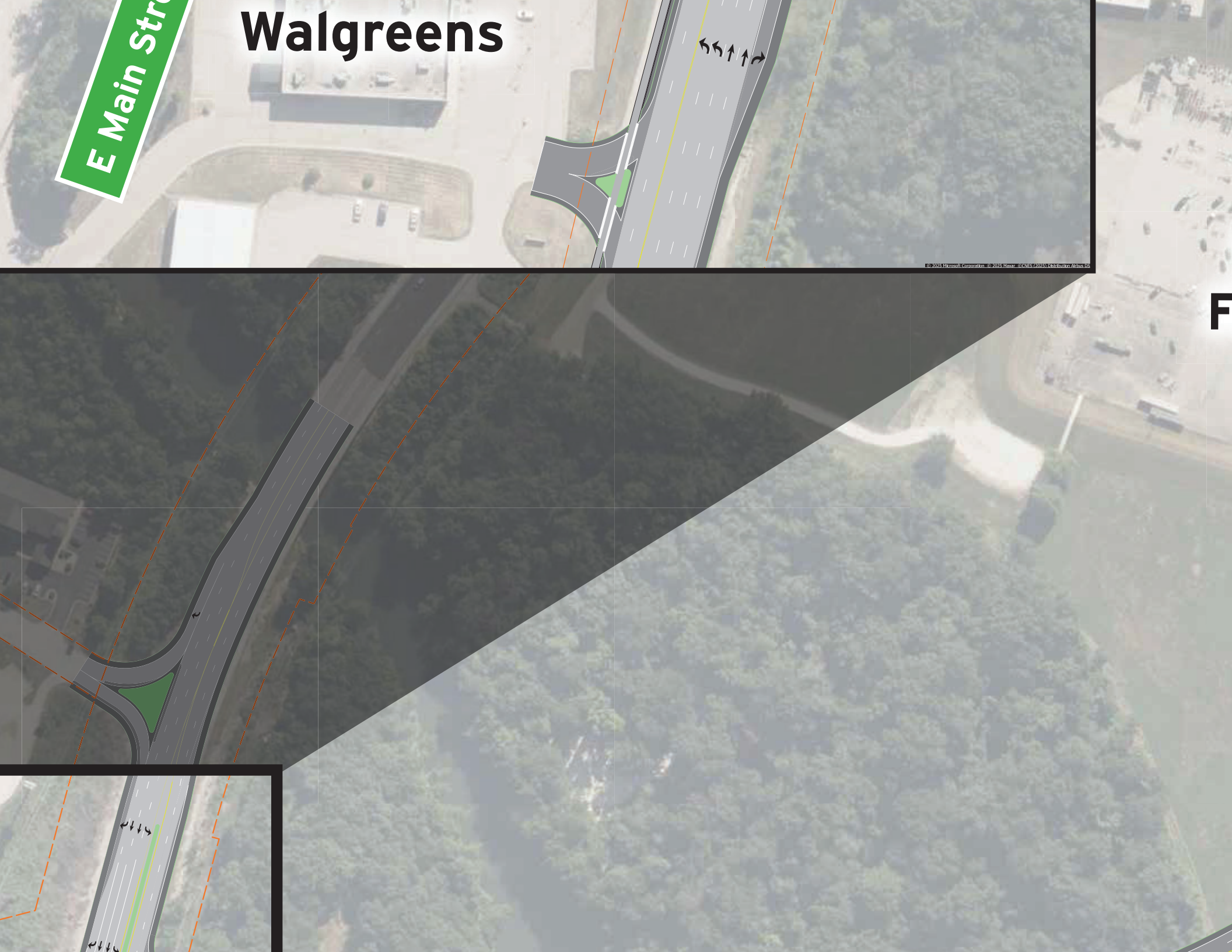
21 Minute Proposed Travel Time

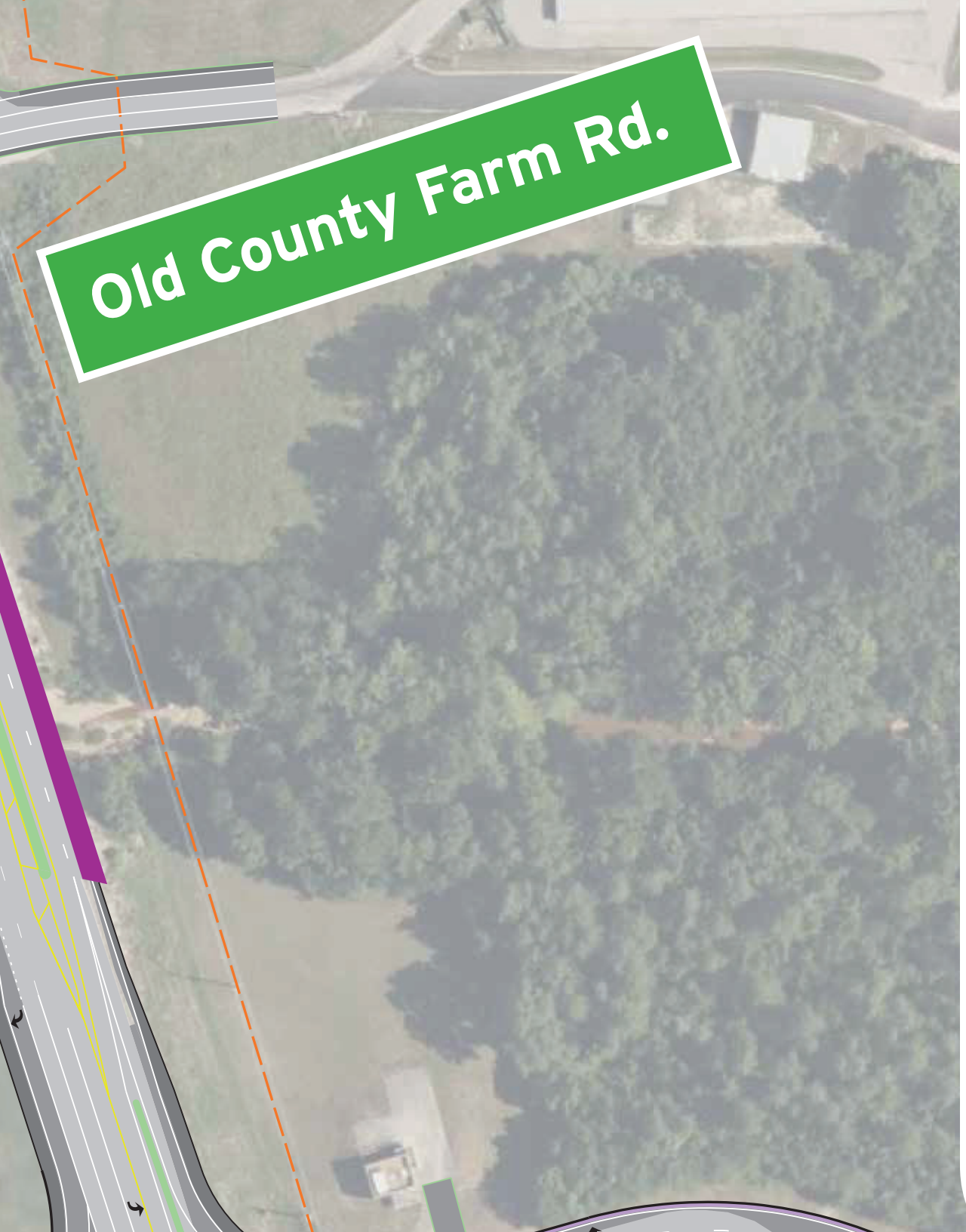
25 Minute Proposed Travel



Independence Dr. to US




E Main Street
Walgreens



Key Highlights:

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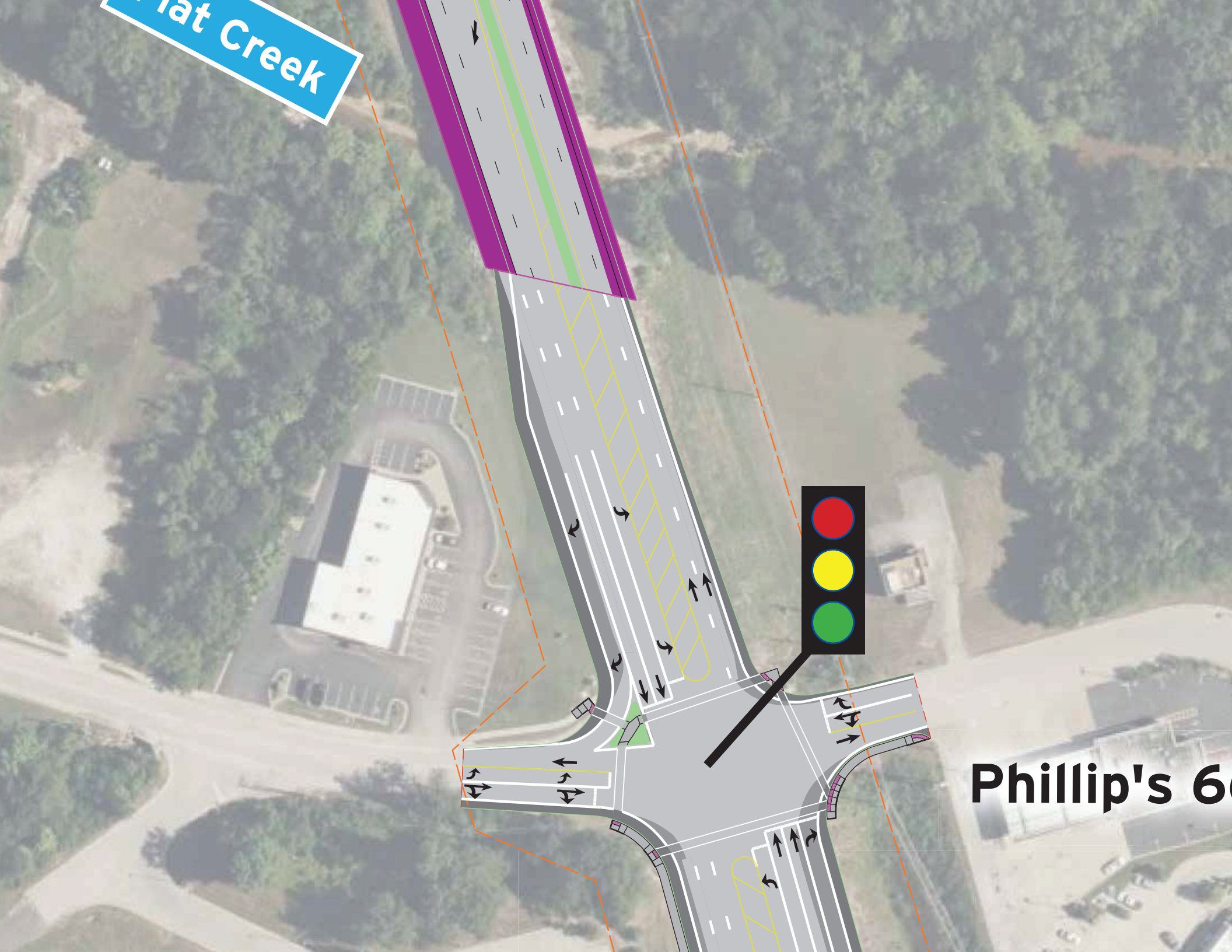
- Reduces con
  (43% decreas
- Reduces SB
  time by 132 s
- Unique desig
- Business acc
- Potential RO
- Potential env
- New bridge a
  widening


Phillip's 6

% decrease
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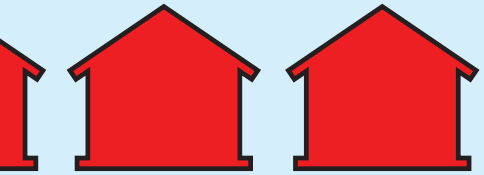
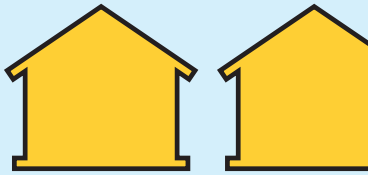
econds faster



icant Impacts
rcel/21 acres

$$$

43% decre
51 seconds f
132 seconds



Potential Im
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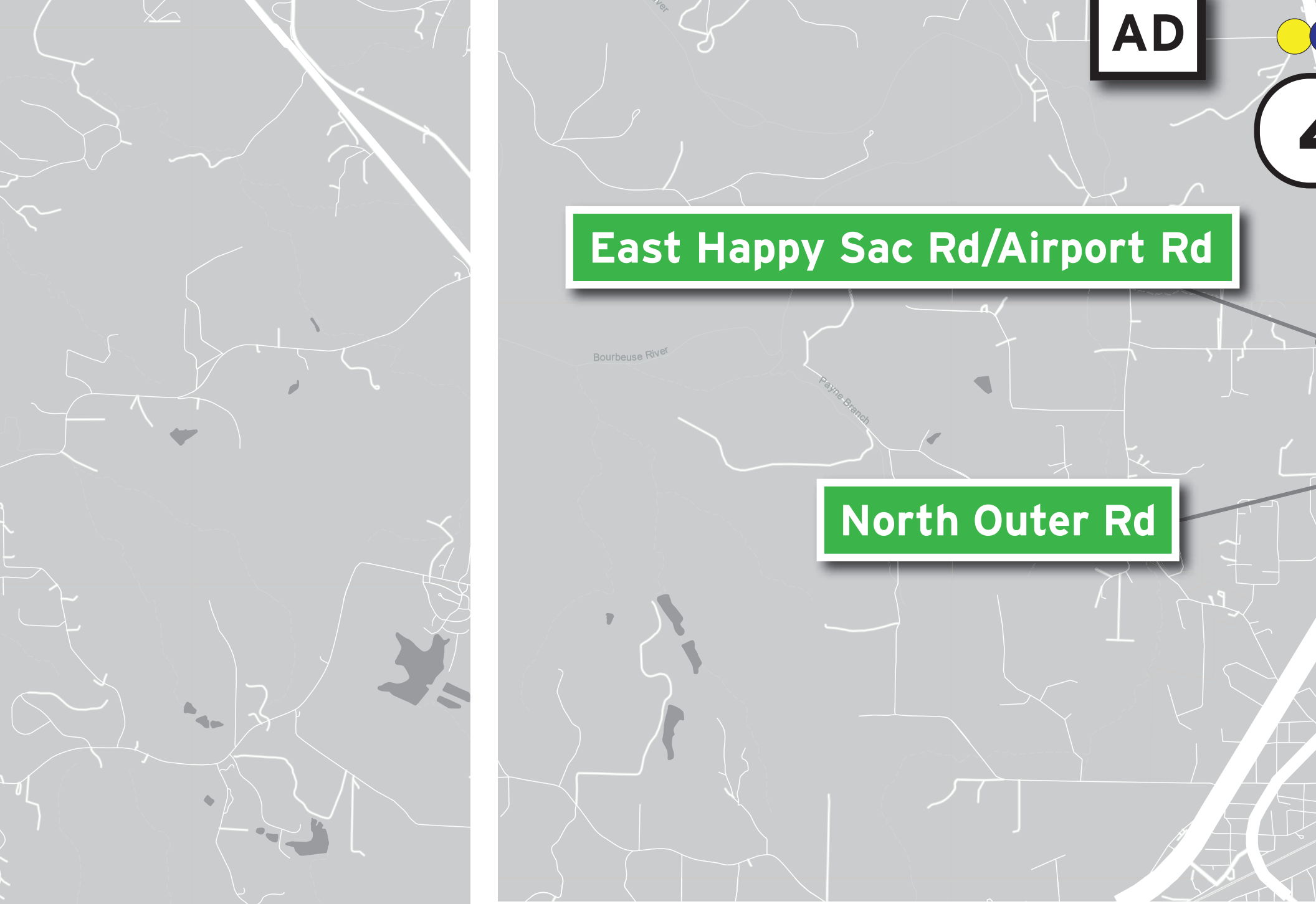
AD
East Happy Sac Rd/Airport Rd
Bourbeuse River
Payne Branch
North Outer Rd

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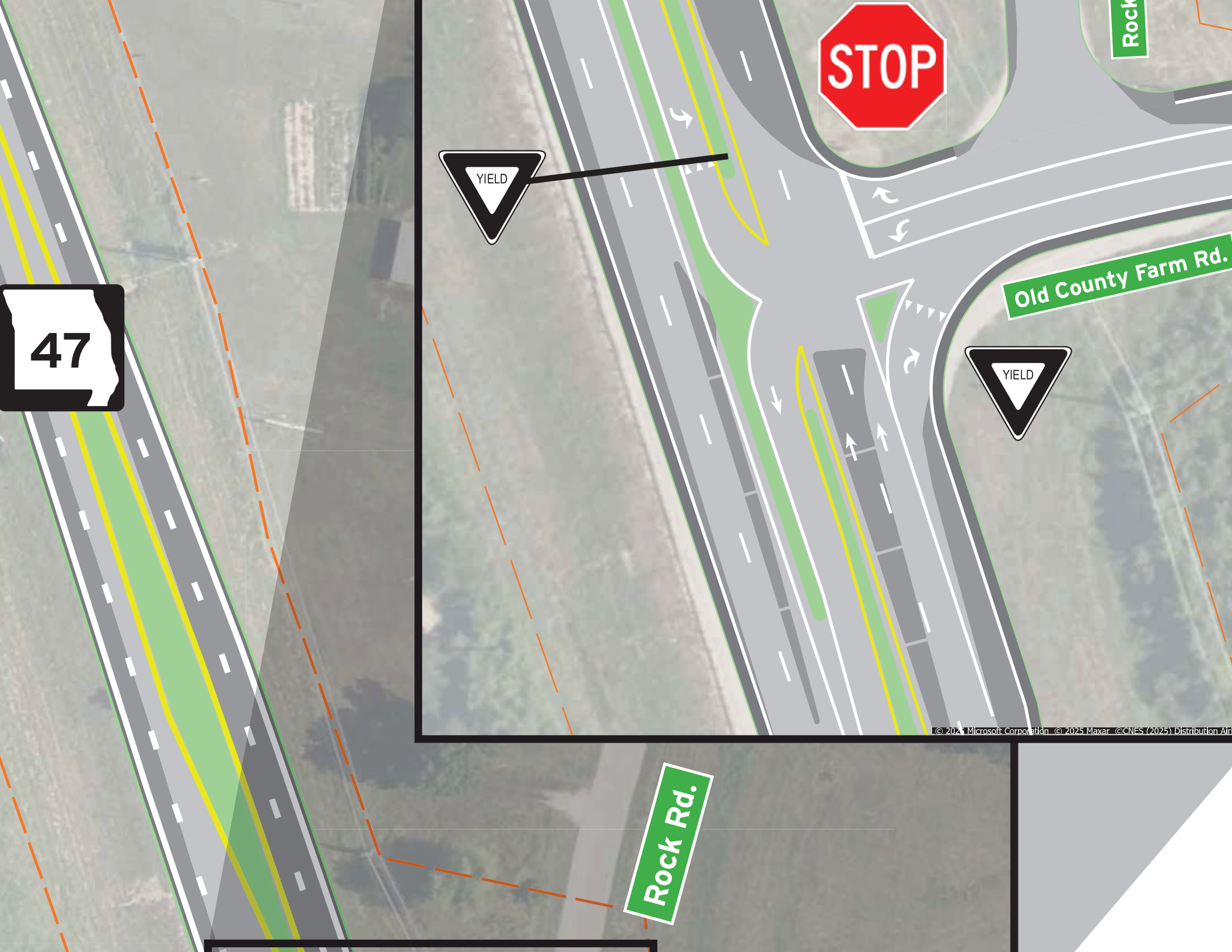
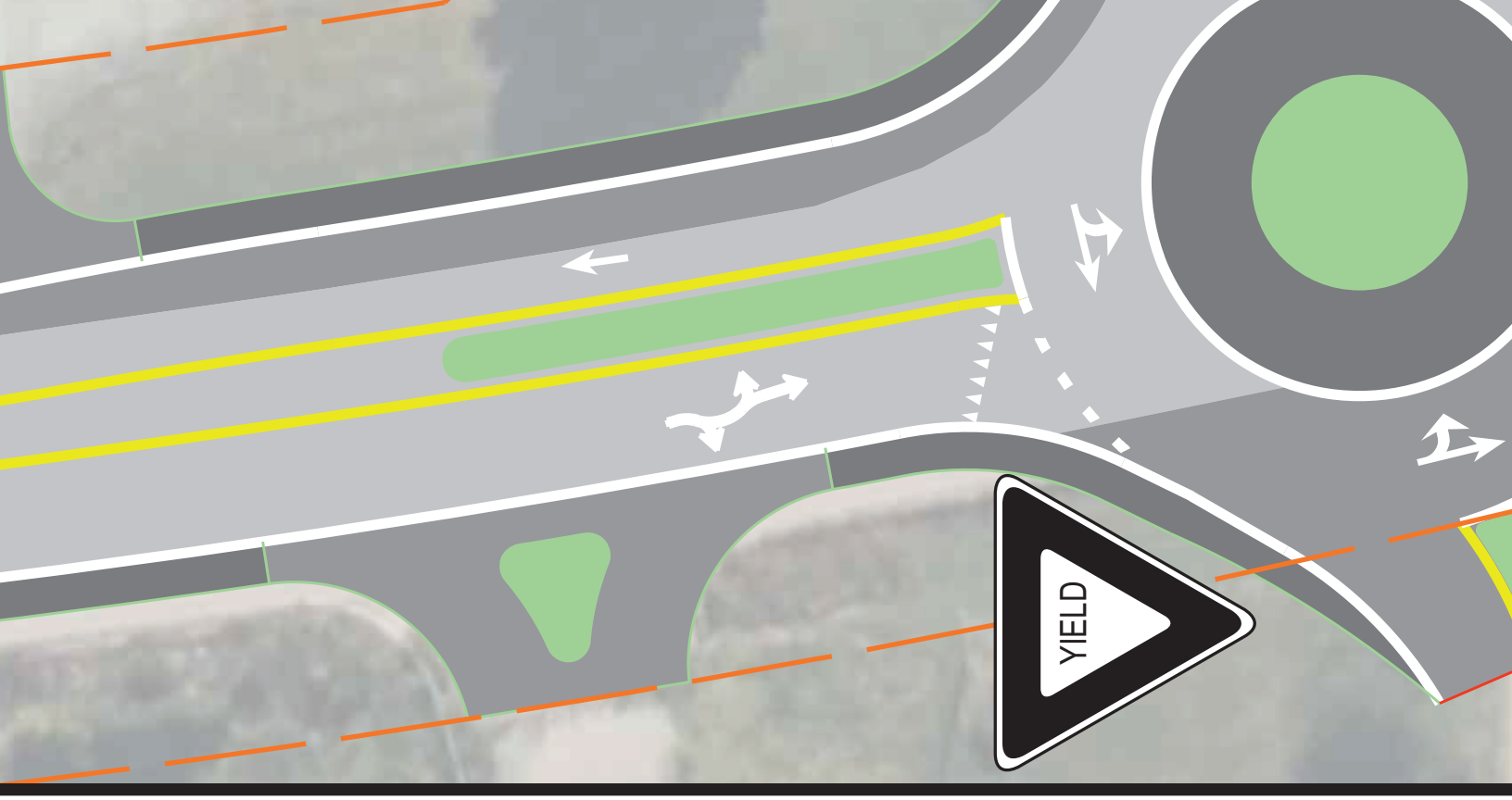
For Less

learview Rd.

Pasta
House


47
STOP
YIELD
YIELD
Old County Farm Rd.
Rock Rd.
Rock
© 2025 Microsoft Corporation © 2025 Maxar ©CNES (2025) Distribution Air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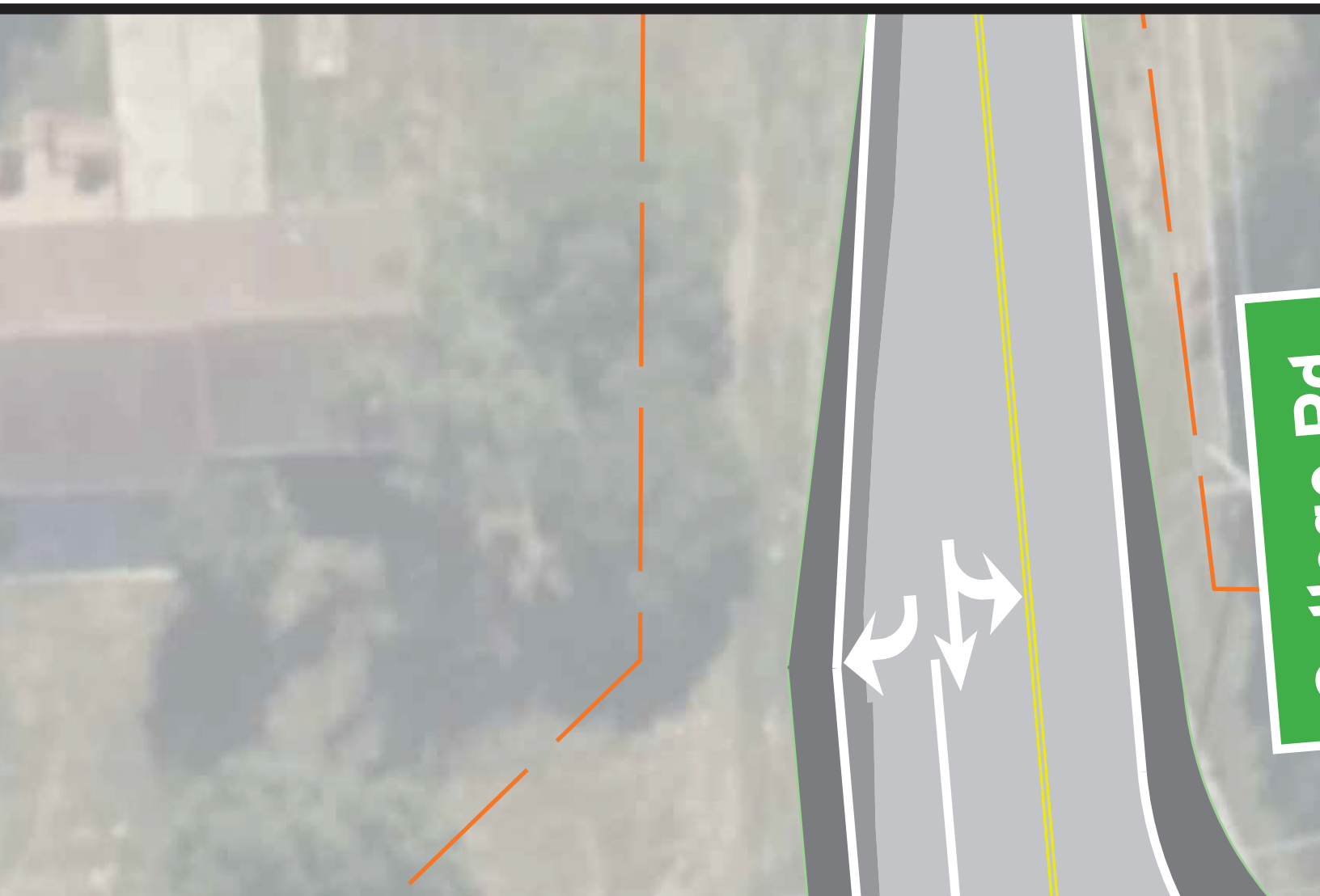
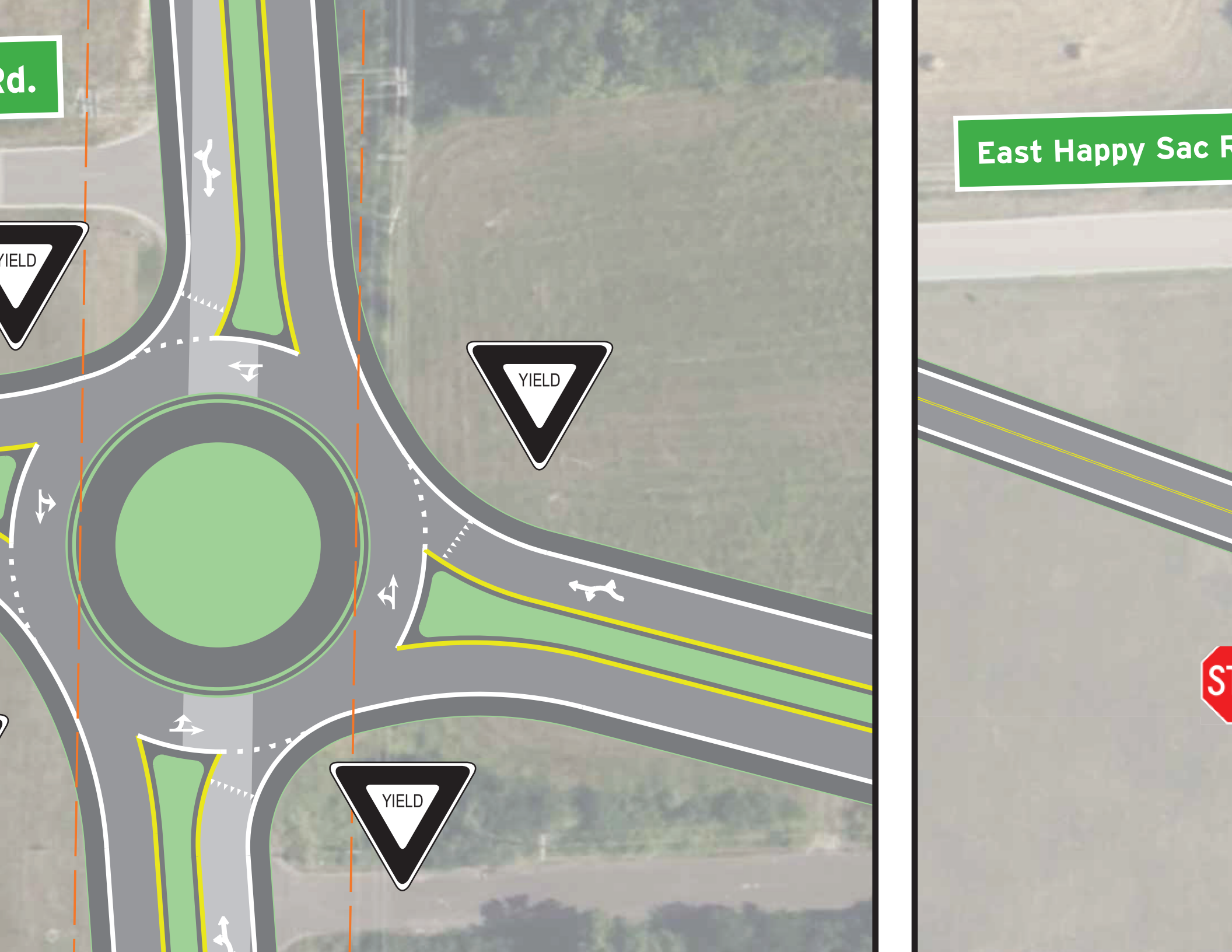


Schuchart Rd.


Rd.
YIELD
YIELD
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East Happy Sac R

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9%

INJURY
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76%

FATAL &
INCAPACITATING
CRASHES BY
89%

PEDESTRIA
CRASHES B
50%

Navigating a Roundabout

ns

nd

https://www.surveymon

The survey will be avai
October 23, 2025.

Project Cont

Futur

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

Appendix E: Fact Sheet

MISSOURI ROUTE 47 CONCEPTUAL STUDY IN FRANKLIN COUNTY

Project Overview

As part of the Statewide Transportation Improvement Program (STIP), MoDOT has budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in FY2028.

MoDOT is conducting a study to identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, and Condition of Existing Infrastructure.

Project Goals

Based on stakeholder input, the project team has established the project goals. This helps the project team, in addition to engineering factors, determine the best alternatives to help meet the needs of the community. The project goals include:

- **Increase safety**
- **Reduce congestion**
- **Balance needs for local access, mobility, and economic growth**
- **Increase reliability of north-south regional travel**

This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962.

Stakeholder and Public Engagement

Stakeholder input is an important component to this phase of the project. As of Fall 2025, the project team has conducted the following engagement Activities:

- 1 Public Survey
- 1 Public Meeting (9/24/2024)
- 3 Community Advisory Group (CAG) meetings
- 12 Stakeholder Listening Sessions

While each stakeholder has their own transportation challenges along Route 47, the consensus is the communities of Washington, Union and St. Clair are supportive of making improvements to the corridor.

We Want Your Input!

MoDOT is hosting a public survey to gather input on the potential alternative concepts.

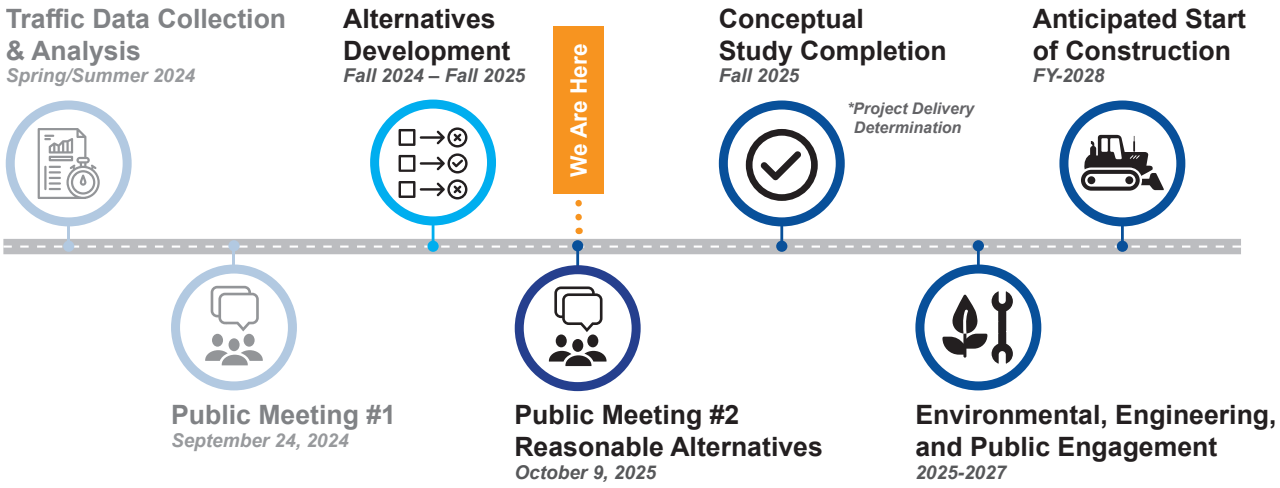
Please scan the QR code or use the link to access the survey: https://www.surveymonkey.com/r/Mo47PM2

The survey will be available to complete until October 23, 2025

Project Timeline

The project kicked off in the Spring/Summer 2024 and anticipates completion of the Conceptual Study in late 2025. Stakeholder engagement has been held throughout the course of the study.

Through the Alternatives Development process, the project team has taken many steps to develop reasonable alternative concepts that will best meet the needs of the communities.



Reasonable Alternative Concepts

The project team has developed many reasonable alternative concepts to address the project goals. With the key priorities to increase safety and reduce congestion, there are many improvement considerations including:

- Increase capacity, or add lanes
- Improve U.S. 50/47 intersection
- Intersection improvements throughout the corridor
  (corridor signalized or roundabout intersections, turn improvements, additional lanes, access management, etc.)

www.modot.org/media/53827

Scan the QR code to see Alternative Concept exhibits

Next Steps

Following Public Meeting #2 (October 9, 2025), the project team will document public feedback and further develop the concepts and cost estimates before moving into Preliminary Design next year. The next phases of the project will include preliminary, right of way and final plan engineering design, additional public engagement, along with environmental investigation. These tasks will occur before construction can begin in Fiscal Year 2028, when the $78.1 million dollars in funding for this project is available.

Project Contacts

You may submit questions and comments to:

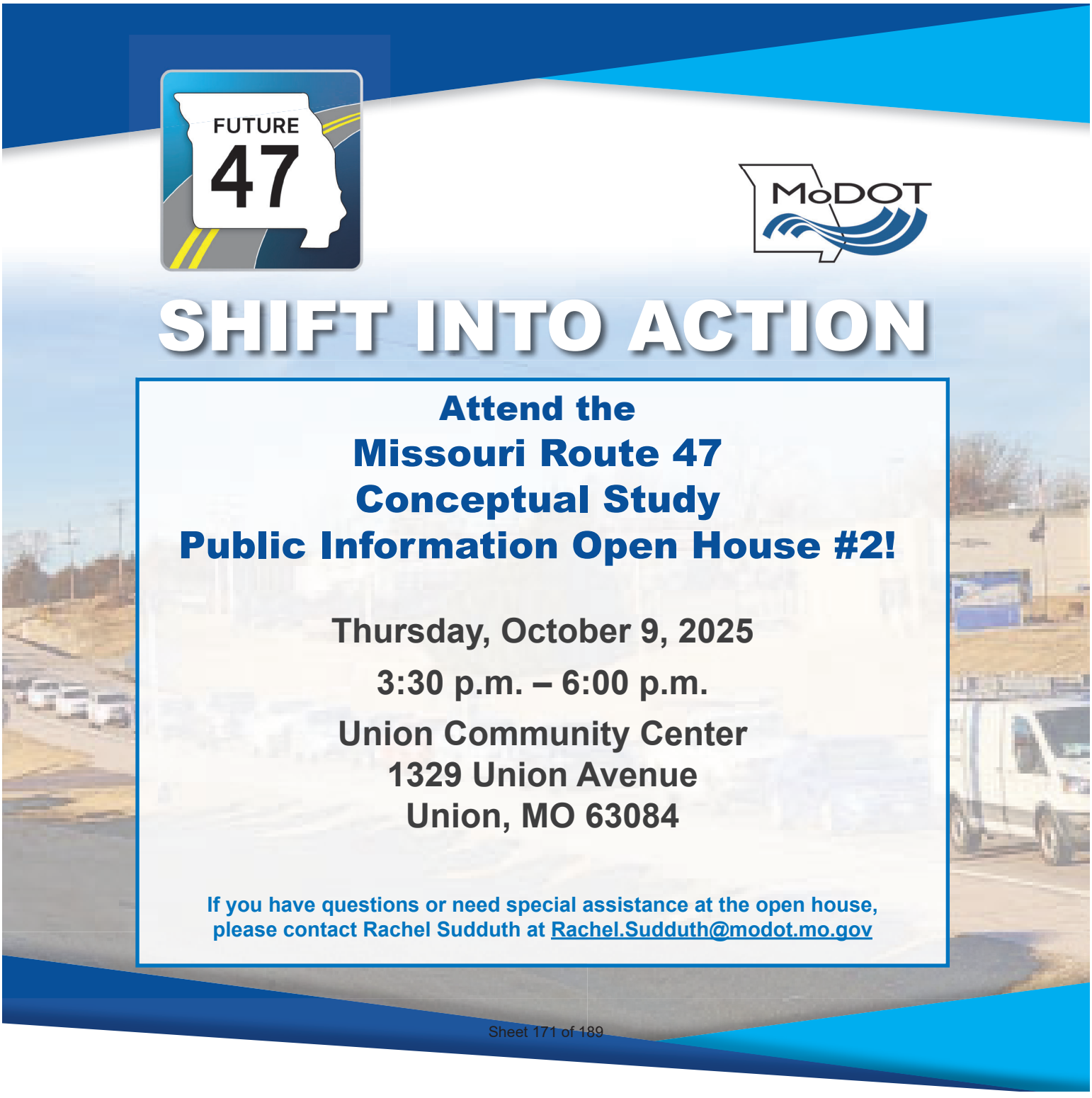
Jordan S. Dalaviras
MoDOT Franklin / Jefferson County Area Liaison
Jordan.Dalaviras@modot.mo.gov
314-453-5021

Aaron J. Groff
MoDOT Transportation Project Manager
Franklin and Jefferson Counties
Aaron.Groff@modot.mo.gov
314-453-1876

Future47@modot.mo.gov | **www.modot.org/Future47** | **1-888-ASK-MODOT (275-6636)**

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

Appendix F: Promotional Materials and Newsletter


FUTURE
47
MoDOT
SHIFT INTO ACTION
Attend the
Missouri Route 47
Conceptual Study
Public Information Open House #2!
Thursday, October 9, 2025
3:30 p.m. – 6:00 p.m.
Union Community Center
1329 Union Avenue
Union, MO 63084
If you have questions or need special assistance at the open house,
please contact Rachel Sudduth at Rachel.Sudduth@modot.mo.gov

MoDOT to host public meeting to present conceptual study materials for Route 47 in Franklin County

Project

Missouri Route 47 Conceptual Study in Franklin County

FRANKLIN COUNTY – The Missouri Department of Transportation will host the second open house-style public meeting on Missouri Route 47 on Thursday, October 9 from 3:30 p.m. until 6 p.m. at the Union Community Center.

The center is located at 1329 Union Ave, Union, MO 63084. There will be no formal presentation.

The purpose of the public meeting is to present reasonable concept alternatives and provide the public and stakeholders with the opportunity learn about the conceptual study that spans along Missouri Route 47 from Route 100 in Washington through Union to Interstate 44 in St. Clair. This study is a critical step to confirming project goals and to solicit feedback on a range of alternatives on Missouri Route 47 in Franklin County and gathering input to ensure the improvements best meet the needs of communities and roadway users.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair. Safety and Congestion are primary concerns along the corridor.

Guests will have the opportunity to learn more about the study and a survey will be available to submit input on the reasonable concept alternatives. For those who are unable to attend the meeting in person, the information shared during the meeting as well as a survey form will be available on the website. The survey will be available until Thursday, October 23.

Access for people with disabilities is available. Those who require special services at the public meeting should notify Senior Communications Specialist Rachel V. Sudduth by Thursday, October 2, at 314-343-7731 so arrangements can be made.

To learn more information about the project and sign up for project updates, visit Missouri Route 47 Conceptual Study in Franklin County | Missouri Department of Transportation.

###

Districts Involved

Published On

Wed, 10/01/2025 - 07:03

MISSOURI ROUTE 47 CONCEPTUAL STUDY IN FRANKLIN COUNTY

A Note from the Project Team

Thank you for your engagement with the Route 47 Conceptual Study. Your input has been invaluable through this process. In this newsletter we would like to share with you what we have accomplished to-date along with what steps are still to come. We look forward to completing the Study and taking the next steps to improve Route 47.

As you may recall, this study is part of the Statewide Transportation Improvement Program (STIP) and MoDOT has budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in FY2028.

MoDOT is conducting a study to identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, and Condition of Existing Infrastructure. Stakeholder input is an important component to this phase of the project. As of Fall 2025, the project team has conducted the following engagement Activities:

- 1 Public Survey
- 1 Public Meeting (9/24/2024)
- 3 Community Advisory Group (CAG) meetings
- 12 Stakeholder Listening Sessions

While each stakeholder has their own transportation challenges along Route 47, the consensus is the communities of Washington, Union and St. Clair are supportive of making improvements to the corridor.

As we move forward, we look forward to gathering additional input on the concept alternatives from the public at the 2nd Public Meeting on October 9, 2025. We hope to see you there!

Aaron Groff,
MoDOT Project Manager
Franklin and Jefferson Counties

Jordan Dalaviras,
MoDOT Area Liaison - Franklin and Jefferson Counties

Project Goals

Based on stakeholder input, the project team has established the project goals. In addition, the Community Advisory Group has helped prioritize the goals. This helps the project team, in addition to engineering factors, determine the best alternatives to help meet the needs of the community. The Prioritized goals include:

Increase safety	**Reduce congestion**
Balance needs for local access, mobility, and economic growth	**Increase reliability of north-south regional travel**

What We've Heard

Public Engagement

To kick off the study, MoDOT hosted Public Meeting #1 on September 24, 2024, along with a public survey. The purpose of the initial meeting was to provide an overview of the study, share initial safety and traffic information and allow the community to provide input. The public survey was available at the public meeting and available online until October 8, 2024, for public meeting attendees and the general public to help understand how the community uses and views the Route 47 corridor.

- Approximately 160 people attended the in-person public meeting
- 14 comment forms were submitted via a written comment form, the MoDOT website or email
- 190 public survey responses received

In general, the public is in support of improvements to Route 47 to increase safety and address congestion. There were many comments about the need for turn lanes. One frequently cited location is the Route 47/U.S. 50 intersection; attendees noted it is heavily congested and causes backups 2+ miles north of Rte 50.

It was also frequently noted that there is concern about the sight distance problem for those that are pulling onto Route 47. There are many curves and hills, and it is dangerous to pull out of existing driveways as drivers are unable to see traffic coming.

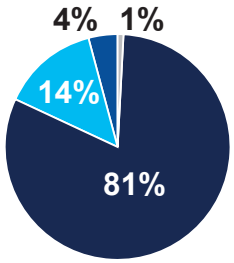
Stakeholder Listening Sessions

MoDOT hosted a series of Listening Sessions throughout the Study to share information about the Route 47 Conceptual Study and gather input from targeted stakeholders about how their organizations use Route 47 between Washington and St. Clair, their perceptions and understand their concerns about the corridor. Key stakeholders included but were not limited to:

- **MO State Parks/Rock Island Trail**
- **Trailnet**
- **Scenic Regional Library**
- **UPS**
- **MO Baptist Sullivan Hospital**
- **Septic Services/ Wunderlich Surveying**
- **Little Bears Daycare**
- **Riverstone Quarry**
- **First Student Busses**
- **QuikTrip (St. Clair)**
- **3R RV**

Public Survey Response

How much of a concern is SAFETY to you on Route 47 in Franklin County?



LEGEND

Very Concerning
Not Concerning
Somewhat Concerning
Not Sure

*The public survey was conducted in the fall of 2024 to gather input on the Route 47 corridor between Washington and St. Clair.

Community Advisory Group (CAG)

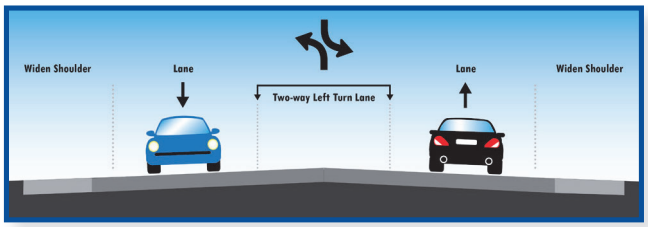
The Community Advisory Group (CAG) is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members are important as they represent their organizations and their constituents.

The CAG helps the project team understand and address community needs and concerns throughout the study. This has been crucial through the development of potential improvement alternatives for Route 47.

In addition to gathering input on the project goals, the CAG has provided input on concerns throughout the corridor and the alternative concepts.

Corridor Capacity

The CAG was presented potential capacity corridor options, such as a four-lane option, three-lane that includes one lane in each direction and a middle turn lane, and 2-lane options. The lane capacity may be different throughout the corridor, based on safety and congestion at that specific location. Additional lanes are not recommended through all sections of the MO-47 corridor.



MO 47 / US 50

The CAG and the public stated the U.S. 50/47 Intersection was a key location that needs improvement. The current intersection experiences backups and heavy congestion. It is also where there are safety concerns due to crashes. The CAG reviewed several design alternatives at the second and third meetings. During the third CAG meeting, three design alternatives were presented that included:

- *Southwest Realignment* - A realignment of MO-47 from north of Sawmill Rd. to the existing western intersection of MO-47 and U.S. 50.
- *Diverging Diamond Intersection (DDI)* - Utilizes cross over intersections similar to a Diverging Diamond Interchange (DDI).
- *Continuous Flow Intersection (CFI)* - Shifts the U.S. 50 eastbound to MO-47 northbound left turning traffic to the opposite (north) side of oncoming westbound traffic west of the MO-47/US-50 intersection, allowing simultaneous left turns and through movements to reduce delays.

Generally, the CAG noted they were not in favor of a Diverging Diamond Intersection (DDI). The Continuous Flow Intersection (CFI) concept alternative was overwhelmingly supported by the group. This concept improves safety, congestion, as well as limits the right-of-way and environmental impacts and is the most budget friendly. It was also noted that the CFI design may accommodate the Southwest Realignment alternative concept in the future, if needed. The Southwest Realignment of MO-47 was viewed less favorably due to the anticipated right of way impacts, higher construction cost and lesser benefit to traffic operations. The public can see the U.S. 50/47 Intersection Alternative exhibits at Public Meeting #2 on October 9, or the exhibits will be available online on October 10 at the project website (www.modot.org/Future47).

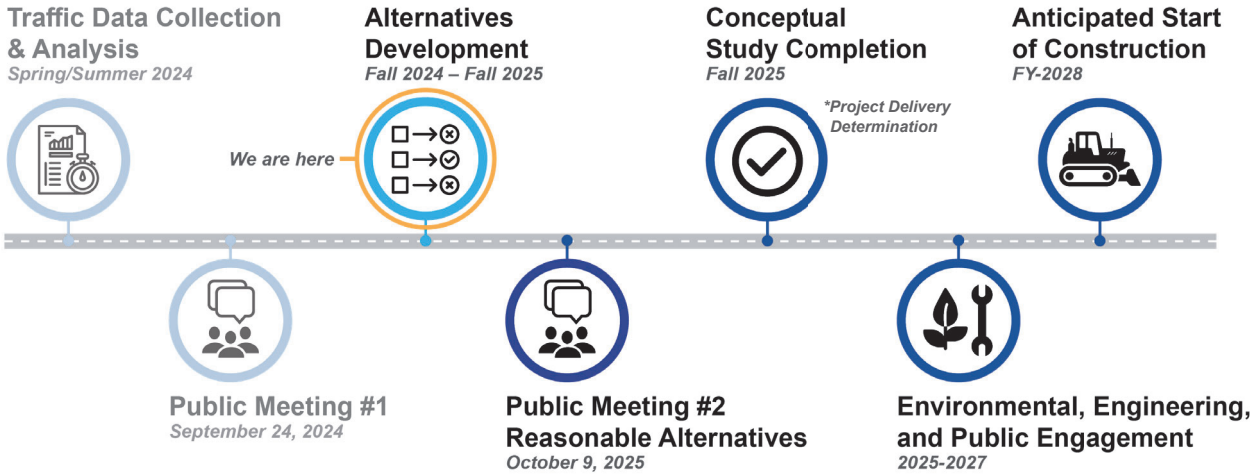
Intersections

Additional improvements may be considered at intersections throughout the corridor. Improvements can include signalized or roundabout intersections, turn improvements, additional lanes, access management, etc. There is support from the CAG to make improvements to enhance safety and congestion. The CAG noted to look at each intersection and do what is best for that specific area. The CAG expressed support for roundabouts in conjunction with additional design and strategy to lower the posted and travel speeds below the 55mph along many portions of MO-47 to help improve safety along the corridor.

Project Timeline

The project kicked off in the Spring/Summer 2024 and anticipates completion of the Conceptual Study in late 2025. Stakeholder engagement has been held throughout the course of the study.

A second Public Meeting, is planned for October 9, 2025 from 3:30 - 6:00 p.m. at the Union Community Center, 1329 Union Ave, Union, MO. The purpose of the meeting will be to present alternative concepts and intersection examples to the public and gather input.



Next Steps

Following Public Meeting #2 (October 9, 2025), the project team will document public feedback and further develop the concepts and cost estimates before moving into Preliminary Design next year. The next phases of the project will include preliminary, right of way and final plan engineering design, additional public engagement, along with environmental investigation. These tasks will occur before construction can begin in Fiscal Year 2028, when the $78.1 million dollars in funding for this project is available.

Project Contacts

You may submit questions and comments to:

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1-888-ASK-MODOT (275-6636)

Missouri Route 47
Conceptual Study
Public Meeting #2 Summary
Fall 2025
Job #J6P3661

Appendix G: Media Coverage

https://www.missourian.com/local_news/public-weighs-in-on-proposed-highway-47-upgrades/article_e4ca423a-a583-45bd-a243-9e1be0b9aece.html

FEATURED EXCLUSIVE

Public weighs in on proposed Highway 47 upgrades

By Geoff Folsom, folsomg@emissourian.com
Oct 14, 2025

1 of 2

Joe Blasi, right, transportation planning engineer with MoDOT consultant HNTB, directs Phil Hintz to a video showing how Highways 47 and 50 would work during an Oct. 9 open house meeting on Highway 47 improvements in Union. It was one o

Geoff Folsom/Missourian

More than 140 people provided feedback on proposed designs for the Missouri Department of Transportation's planned safety and capacity improvements on Highway 47 at an Oct. 9 meeting in Union.

MoDOT has earmarked $87 million for the project, with $76 million of that total designated for actual building costs. Construction is expected to start in late 2027 or early 2028.

The 12.7-mile stretch of highway between Washington and St. Clair was the site of 1,451 crashes between 2019 and 2023, with seven of them fatal and 29 involving serious injuries, MoDOT said in statistics presented at the open house at the Union Community & Senior Center.

How many lanes?

Different proposals were offered for both the number of lanes on Highway 47 and potential new designs for the intersection of Highways 47 and 50 in Union, which carries an average of 39,400 vehicles per day.

The fastest proposed lane alignment would be to have two lanes both north and south with a center turn lane, according to MoDOT. That would lower travel time to 19 minutes from the current 22 minutes and reduce crashes by 42 percent. But that is only being considered for Highway 47 between Independence Drive and Highway 50 in Union, as well as in the area on the south end of Washington that the city is looking to cost share with MoDOT to expand to four lanes.

MoDOT projects a four-lane undivided highway would, in turn, result in 15 percent more crashes and decrease travel time through the corridor to 20 minutes.

According to MoDOT, a two-lane highway with a center turn lane would reduce crashes by 36 percent and result in 21-minute travel times. That is being considered for the unincorporated areas between Washington and Union, as well as between Union and St. Clair.

Three options were offered for a redesigned Highway 47-50 intersection in Union. To accommodate a wider highway, each of the proposals included removing and replacing the Missouri Eastern Railroad bridge, which has been an impediment to efforts to widen Highway 47 north of the intersection with Main Street in the past.

“Essentially, to make any of that kind of work, the railroad bridge would have to be replaced,” Jordan Dalaviras, MoDOT area liaison for Franklin and Jefferson counties, told The Missourian. “All of those (options) are taking a look at the section of 47 being more than two lanes. To get more than two lanes on 47, the railroad is hindering that, so that’s where we would have to replace that railroad bridge.”

The Missouri Eastern Railroad has been represented in the community advisory group meetings with area government and business officials, Dalaviras said.

“They’re well aware of everything we have been discussing, and, of course, we will keep them involved in the whole process,” he said.

Funding for the railroad bridge replacement would come from MoDOT’s budget for the project, Dalaviras said.

“If we are making the changes, we would have to build the new bridge,” he said.

The City of Union would be willing to work with MoDOT and the railroad on removing the bridge, Assistant City Administrator James Schmieder said.

“I think everything’s on the table right now,” he said.

Intersection options

Only one of the three proposals for the junction Highways 47 and 50, the "continuous flow” intersection, had a screen showing a video rendering of the potential new intersection. According to statistics compiled by MoDOT and consultant HNTB, this alignment would be the safest, with a 12-percent reduction in crashes, while reducing congestion by 50 percent. The intersection would move drivers turning north on Highway 47 from eastbound Highway 50 to the north of westbound HIghway 50 traffic before making the turn. It is also the least expensive alignment.

The most expensive proposal was a bypass running from Highway 47’s western intersection with Highway 50 to south of Highway 47’s current eastern intersection with Highway 50. That would require a new bridge over the Bourbeuse River. According to MoDOT, the bypass would result in 25 percent more crashes because of additional conflicting movements between vehicles and only reduce congestion by 15 percent.

Phil Hintz, who said he drives Highway 47 between 35 and 40 times each week, likes the bypass idea.

“It’s the only way, there’s no way to go around it,” he said. “I’m not sure if it’s the safest option of the three, but I think it definitely would cure the congestion.”

Brian Riegel, who co-owns South Point Hemp just off Highway 47, questioned the statistics showing an additional 25 percent more crashes on the proposed bypass.

“That doesn’t pencil out in my head, but I’m not the engineer,” he said.

The diverging diamond intersection also moves traffic to the opposite side of the road on Highway 50 at the Highway 47 intersection but also has a loop that circles some traffic around McDonald’s and the Phillips 66 station. It could also require a new or expanded bridge at the existing Bourbeuse River crossing. MoDOT projects that design to reduce congestion by 43 percent, while reducing crashes by 6 percent from the current number.

“This one was pretty convoluted," Aaron Groff, MoDOT project manager for Franklin and Jefferson counties, said of why no video was made of the diverging diamond intersection. “It, technically, would have cost quite a bit to do.”

Additional intersection improvements are being considered on Highway 47 between Washington and Union. Those could include a roundabout or traffic signal at the new East-West Parkway, as well as roundabouts at Woodland Road, Lost Pines, Old County Farm Road and the combined intersection of Country Club Lane and Forest Hills Drive, according to MoDOT.

Between Union and St. Clair, roundabouts could be installed on College Road, Eastview Drive, Schuchart Road and a realigned intersection with East Happy Sac and Airport Roads. According to MoDOT, additional turn lanes are being considered along the corridor.

“That’s what we’re here for today, is we want the community and the public to tell us what kind of project they’re looking and hoping for,” Dalaviras said.

Riegel spoke with Washington Mayor Doug Hagedorn and Dalaviras at the meeting.

“They need to do something, I don’t know the solution though,” Riegel said. “Hopefully, they look at this with enough foresight for the next 15 years, the next expansion, and they don’t pigeonhole themselves in something stupid.”

Hintz wants MoDOT to remove the traffic signal at Main Street in Union, just north of the intersection with Highway 50.

“There’s not that much flow there,” he said.

In addition, Hintz would like a 150-yard right turn lane at the intersection with Independence Drive in north Union to allow people to exit Highway 47 southbound without slowing down traffic. “To get rid of some of the congestion going up the hill,” he said.

Schmieder was impressed with the turnout for the open house.

“We do these open houses, you hope for people to turn out,” he said. “We definitely want to hear from the public.”

Dalaviras noted that none of the proposals are promised.

“Everything here is subject to change,” he said. “It’s all a concept that is shown to improve and enhance 47, but that doesn’t necessarily mean that it will happen.”

MoDOT officials encouraged the public to take the survey on Highway 47 improvements through Oct. 23 at **surveymonkey.com/r/Mo47PM2**. Materials shown on large posters at the meeting are also available for **viewing online**.

EXCLUSIVE

Folsom: Taking the Highway 47 survey

By Geoff Folsom, folsomg@emissourian.com
Oct 20, 2025

From left, Jordan Dalaviras, MoDOT area liaison for Franklin and Jefferson counties, speaks with Washington Mayor Doug Hagedorn and Brian Riegel with South Point Hemp during the Oct. 9 open house on Highway 47 improvements.

Geoff Folsom/Missourian

One of my favorite column topics is to take an online survey and walk readers through it. And the survey the **Missouri Department of Transportation has on Highway 47 improvements** seemed like a great opportunity.

The first few couple questions are fairly simple. They include queries on where I live and “which of the following best describes you?” There are five options for that, plus “other,” with a space to put what “other” means. The choices are: “resident,” “employee in the area,” “commuter,” “business owner/manager” and “elected official.”

I think we’re already off to a bad start, with “elected official” being an option. I think our local elected officials are very nice people, but they’ve had plenty of opportunities to be heard on this topic. MoDOT has repeatedly held meetings on Highway 47 and other topics primarily for elected officials, where the general public is excluded, to the point where county Commissioner Ken Cox recently called out these closed session meetings. Rightly or wrongly, having elected officials, of which there are a relatively small number, as an option, gives the impression that their feelings mean more to MoDOT than the public.

Then it asks how often I use Highway 47 between Washington and St. Clair, which is more complicated to answer than it looks. Right now, I mainly use it in the mid-morning, when traffic is not as congested. In the afternoon, I generally take Highway A. But I probably would take Highway 47 nearly every day if the traffic was better, so that question is hard to answer.

We are then asked to rank how we would prioritize goals for the Highway 47 project. I put in order “reduce congestion,” “increase reliability of north-south travel,” “increase safety,” and “balance needs for local access, mobility and economic growth.”

While safety is obviously important, ideas that have been proposed like reducing the speed limit are a bridge too far. People want to get between St. Clair, Union and Washington quickly.

An open-ended question then asks if MoDOT missed any goals. I put “Make Highway 47 like Highway 100 between Washington and I-44.” I think that is what most people want, is to be able to travel relatively fast on Highway 47 (at least 60 mph), but with safety features like wide shoulders and an island in the middle of the road. That would be more costly than the $87 million now allotted for the project, but I think it would be worth it to connect the county.

I then added, “If you can't do that, make it three lanes, with two in each direction, alternating passing lanes between north and south. Chicken lanes are dangerous.” The “chicken lane” I am referring to is the center-turn lane, which is one of the proposals. People tend to dart out to the center lane and I can’t tell if they are going to keep going until they hit me. In addition, it makes me nervous to turn left at a “chicken lane,” because people might get into it from the opposite lane at the same time. I’ve also heard these lanes called “suicide lanes,” but was called insensitive when I put it in the paper.

For some reason, MoDOT has long been reluctant to build passing lanes. The only one I know of in our area is on Old Route 66 on the east side of Pacific. But I recently saw one under construction on Highway 50 in Linn, where they are much needed, so hopefully their position is changing.

The survey then asks how much of a concern safety and traffic congestion are on Highway 47, with room to explain. While I put both are “very concerning,” I wrote for safety that “It should be safe, but safe to go at a relatively high speed.”

I think that is what a lot of people are trying to say. There have been proposals to drop the speed limit to 45 mph on Highway 47. I can go 45 on Highway A. I feel Washington and Union should have a faster route between them.

On the congestion question, I elaborated to say something needs to be done about the intersection at Independence Drive. That intersection can really get backed up. It was even worse than usual last Wednesday evening when the traffic signals were flashing “red.” I went through again the next morning and it was still flashing.

The survey then addresses the proposed intersections for Highways 47 and 50. While MoDOT rated it low for safety, I think the “southwest realignment” with a new bridge south of the existing Bourbeuse River bridge would be the fastest route. But, in reality, that would take away money for other improvements, so I rated the “continuous flow” intersection just behind it.

I rated the “diverging diamond intersection,” which sends traffic all over the place, including around McDonald’s, as “not favorable.”

The survey then asks participants to give percentage factors to how we would favor safety versus congestion in three locations, the north segment between Washington and Independence Drive, in Union between Independence and Highway 50, and from Highway 50 south to St. Clair. This question has the extra challenge of requiring us to add the numbers up to 100, but I said it should be 80 percent in favor of congestion on each and 20 percent for safety (that was simple enough to add to 100).

It then asks how acceptable speed limit reduction would be on the north and south segments, where it is now 55 mph, as well as within Union, where it is 45 mph. While it is potentially understandable in Union, the whole point of this exercise should be to raise the speed limit in rural areas, not lower it, so I gave those suggestions “not acceptable” ratings.

In fact, that’s what I put for the last open-ended question.

There were a couple open-ended questions about intersections before that, though none of the questions ask about the sometimes sore subject of roundabouts. I wrote that roundabouts are acceptable in towns, but they should not be slowing down traffic in rural areas, except at intersections with state highways (like Highway AD between Union and St. Clair).

Now, that leaves some questions about what is considered "in town." I would like to see a roundabout at the Highway 47-College Road intersection on the south end of Union, so I guess that is considered in the city.

Most other rural intersections should be right-turn in and right-turn out only. I don't like cars darting across traffic on Highway 47. They can go to the roundabouts to turn around or take another road.

As for the proposed and becoming controversial intersection of Highway 47 with the East-West Parkway on the south end of Washington, I will wait to see how busy that is before passing judgement.

I have to say this survey was tougher than I thought it would be and it did make me feel for the engineers tasked with designing the upgrades to Highway 47. And MoDOT has stated that this could be done as a "design build" project, which could allow the contractor to come up with totally different designs.

But, in general, whoever officially designs the Highway 47 project should focus on getting traffic moving faster, rather than slower.

Take the survey yourself at **surveymonkey.com/r/Mo47PM2**. It is due Thursday, Oct. 23.

iv. Community Advisory Group (CAG) Meeting #1 Summary

DRAFT

Missouri Route 47
Conceptual Study
Community Advisory Group (CAG) Meeting #1
February 6, 2025

Overview

The Missouri Department of Transportation (MoDOT) hosted a Community Advisory Group (CAG) meeting on Thursday, February 6, 2025, from 9:30 to 11:30 a.m. at the East Central College Training Center in Union, Missouri to share information and gather input regarding the Missouri Route 47 Conceptual Study.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. A majority of this corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948, while the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

The purpose of the first CAG meeting was to provide an overview of the study, review initial safety and traffic information, and gather input from community leaders about the corridor.

Community Advisory Group (CAG)

The CAG is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members represent their organizations and their constituents.

Thirty individuals signed in to the meeting and provided input based on their professional experiences and what they hear from users of the corridor. The list of invited participants, sign-in sheets, and invitation letter are included in Appendix A.

General Sentiment of MO Route 47

The in-person event consisted of a presentation by the project team and included a facilitated conversation. The interactive polling tool, Mentimeter (Menti), was used to gather input from the group to help document responses. The power point, including Menti results, are included in Appendix B.

The project team documented key discussion highlights on flip charts. Images of the flip charts are documented in Appendix C.

The project team gave a brief overview of the project area and utilized Menti to gather initial input on the overall sentiment and feeling towards driving MO Route 47 between Washington and St. Clair.

The first question asked was, “How much of a concern to your organization/constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair?” Participants ranked each category on a 1-to-5 scale with 1 being Not Concerned and 5 being Very Concerned.

Traffic Congestion, on average, scored a 4.2 with 15 respondents selecting “5” (Very Concerned). Safety, on average, scored 4.5 with 19 respondents selecting “5” (Very Concerned).

Figure 7: How much of a concern to your constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair? Ratings by Individuals

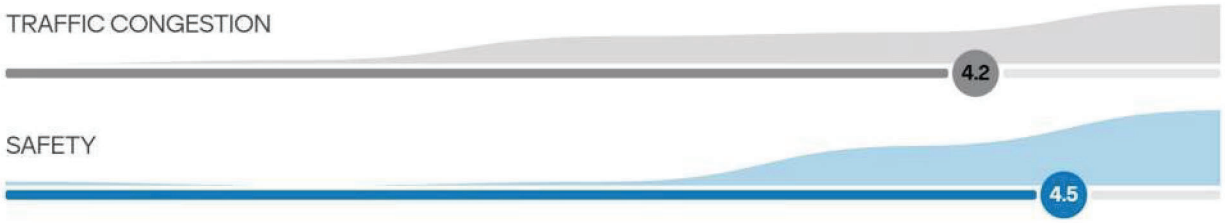
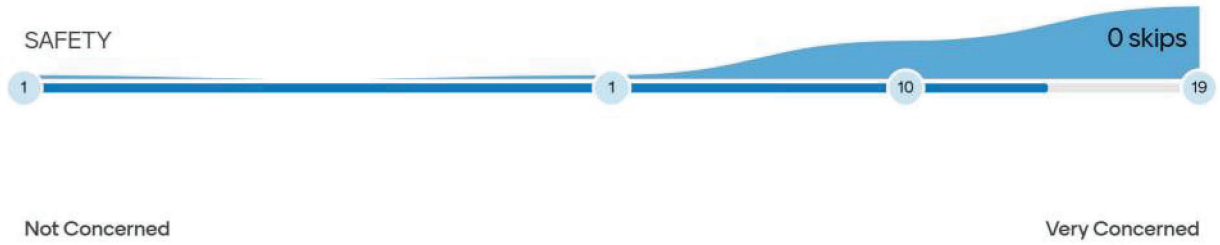


Figure 8: How much of a concern to your constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair? Ratings by Individuals



The second question asked the group, “What words come to mind when you think about traveling MO Route 47 between Washington and St. Clair?” The responses were provided in a word cloud, so words used multiple times are shown in larger font than others. The three most used words were “congested”, “unsafe”, and “dangerous”.

Figure 9: What words come to mind when you think about traveling MO Route 47 between Washington and St. Clair? Word Cloud Responses

The team followed the questions by providing additional information including project goals, funding information, tasks completed to date and full corridor traffic and safety information.

Corridor Segment Analysis and Discussion

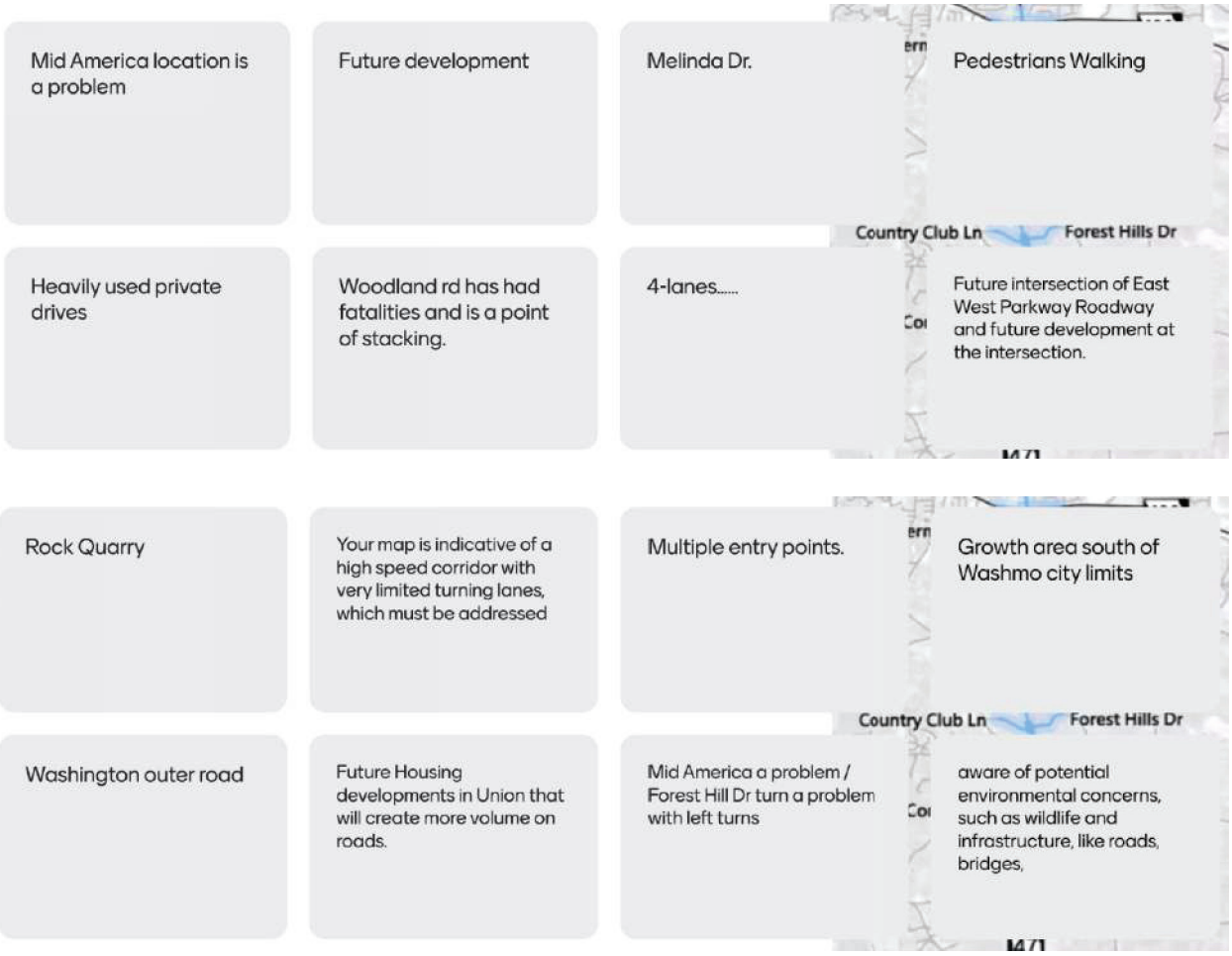
Following the overview, the presentation was broken into segments to understand specific concerns in the north, middle, and south portions of the corridor. The project team provided

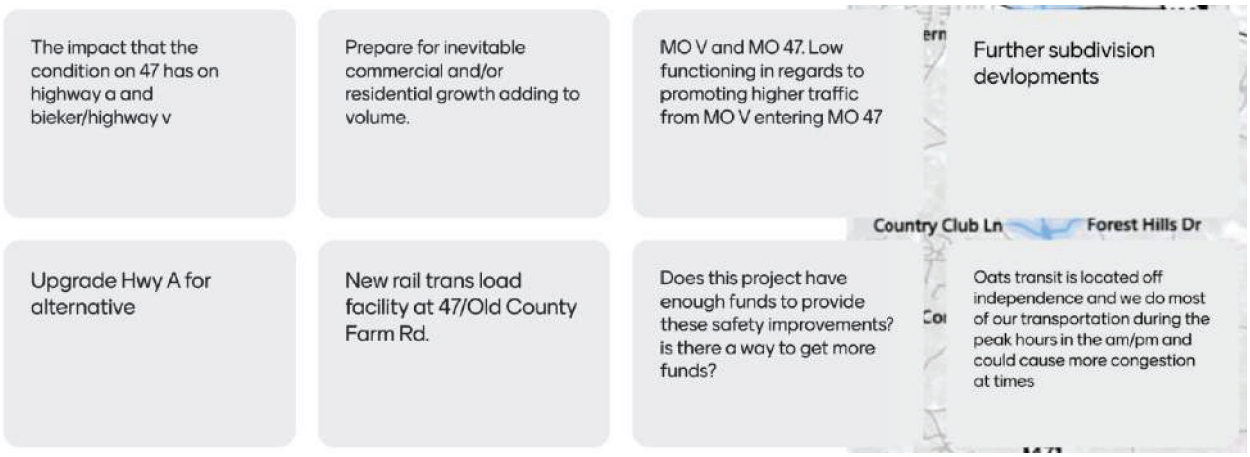
crash and safety statistics, as well as how traffic flows at specific intersections. The intersection information showed specific locations throughout the corridor that are areas of concern due to heavy congestion and back up during peak travel times. Each segment was followed by a group discussion to answer questions and to allow participants to notify the project team of additional elements and specific concerns the team should be aware of.

North Segment

Below are the comments entered into Menti by the CAG. Nineteen individuals provided a response. Key themes include future growth and development in Washington, pedestrian/ safety concerns, shoulder width, and sight line issues.

Figure 10: What else should we be aware of in the north segment of the corridor? Text Box Responses





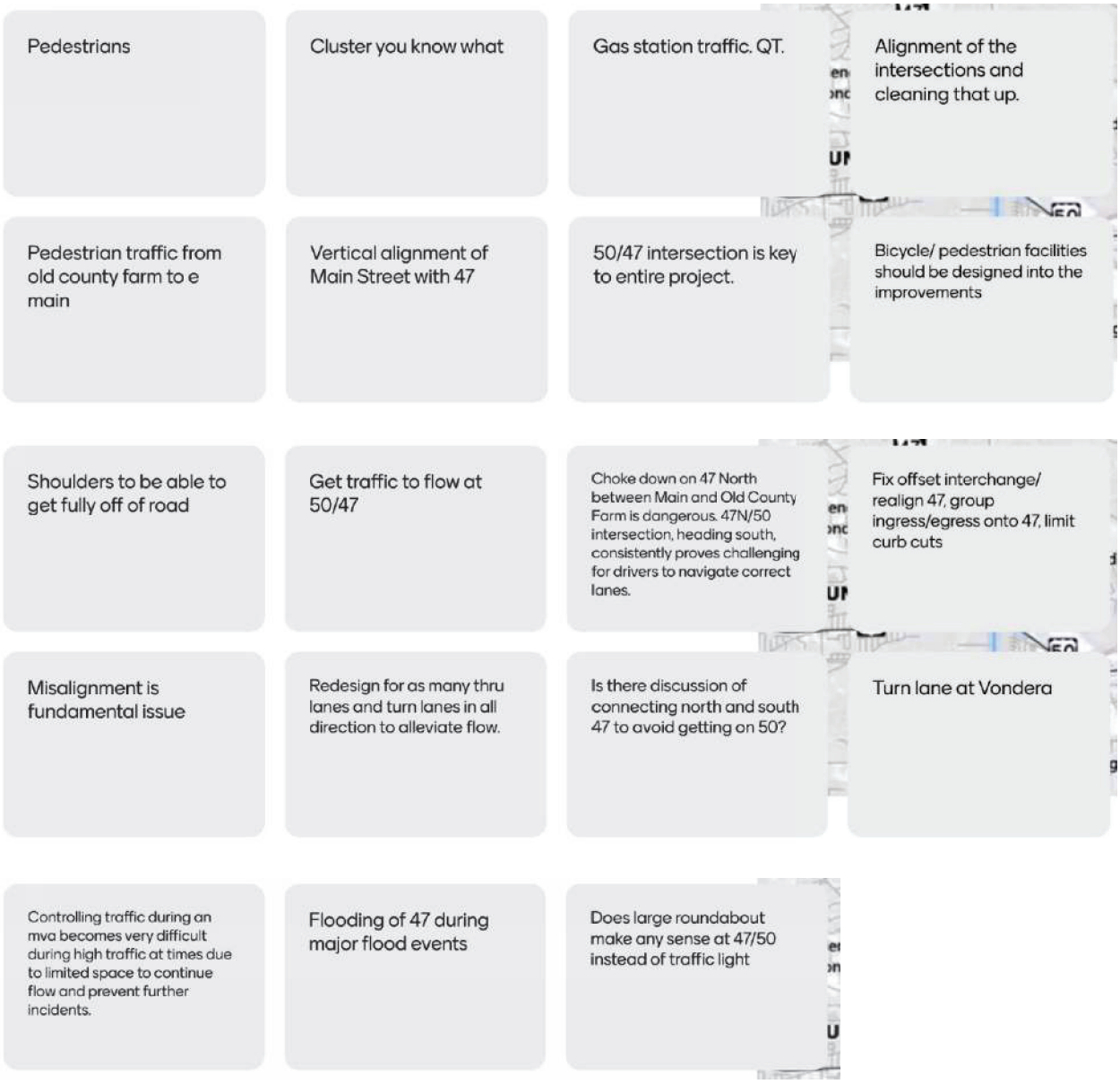
Additional verbal comments and discussion included:

- Public safety officers (both from the Franklin County Sheriff's Office and Missouri Highway Patrol) noting concerns about attempting to get traffic to yield or pull over and a lack of ability to assist with collisions/clear-out due to a lack of shoulder width.
- Tanya Sickafoose (from USPS) also noted that additional shoulder width and/or turning lanes are necessary to consider, adding that delivery vehicles have been clipped/rear-ended while attempting right turns.
- Dr. Mike Mabe (Union School District Superintendent) informed the group that the Washington and Union School Districts share a new bus location/depot right behind Competitive Edge gym. At 7 a.m. on weekdays, approximately 60 buses now pull out of this bus depot at the same time, and drivers are experiencing sight-line issues.
- Sight-Line issues were also noted at Country Club Road and south of Forest Hills.

Middle Segment

Below are the comments entered into Menti by the CAG. Sixteen individuals provided a response. Key themes include the traffic at the intersection of Highways Route 47 and 50, traffic, and pedestrian safety.

Figure 11: What else should we be aware of in the middle segment of the corridor? Text Box Responses



Additional verbal comments and discussion included input about the flashing lights at Highways Route 47 and 50:

- Lonnie Keathley (from Missouri Highway Patrol) noted that drivers traveling EB-50 making a left turn onto NB Route 47 is problematic, officers do not like flashing yellow, and officers often can't tell if people are traveling north or straight.
- Aaron Groff (from MODOT) added that he believes the flashing yellow is only operating during off-peak times, and that this is a recent change. This was confirmed by a traffic engineer.

- JD Kelley (City of Union Engineer) mentioned there was an officer-involved crash at that intersection just last week, making three crashes recently at this intersection involving officers. James Harden (from the Franklin County Sheriff's Office) adds that issue is ongoing despite change to flashing yellow operating only at off-peak times.

The group continued discussing the MO Route 47/MO-50 intersection. Comments included:

- Chris Diekhaus, (representing the Union Chamber of Commerce) who also lives in a home facing this intersection, provided a description of how the EB 50 Left turn lane at Rte 47 North backs into the driving lane during peak times, that people don't pay attention and are frequently speeding. She added that congestion is bad enough that when you try to turn onto Route 47 NB, westbound Rte. 50 drivers attempt to get in front of turning drivers. "It's a race" to get on to Route 47, also notes that yellow light creates more assertive/aggressive driving behaviors. Other attendees agreed that this is a regular occurrence.
- The group agreed that forces adding to traffic at Route 47/MO-50 include a school, a large subdivision, fast food restaurant, and the Main Street intersection. The intersection is known as a bottleneck.
- Aaron Groff and Christine Redhage (from MODOT) noted that tradeoffs that are often made between safety and congestion, and that this will likely continue to be a tradeoff that must be weighed during this project.

Additional comments include:

- Missouri Highway Patrol and the Franklin County Sheriff's Office confirmed that pedestrians move up and down the corridor, both during the day and at night. Walker and wheelchair users as well as cyclists are also present.
- Tim Brinker (Franklin County Presiding Commissioner) added that there is a large volume of UPS trucks from Old Country Road, and when combined with Highway Patrol vehicles there is a particularly high volume.
- Michelle Mayer and Kayla Herman (from the Union Ambulance District) added that at the Independence intersection it is hard for EMS to see drivers (and vice versa) when they are on the Indenpence sides of the Rte 47 Intersection, particularly when operating "lights and sirens."
- Several in the group agreed that Highway V and Vondera Ave. are being used as an alternate route to the Independence intersection, and the parking lot in this location is being used to bypass intersection.
- The number of driveways along the corridor are a major factor to consider.
- A discussion about the current train bridge design, which features a low trestle. Travis Pfeiffer from HNTB mentioned to the group that the trestle may become part of project and that discussion is ongoing.
- V intersection: concerns that access from new subdivisions will go on to V has future potential for increased traffic.

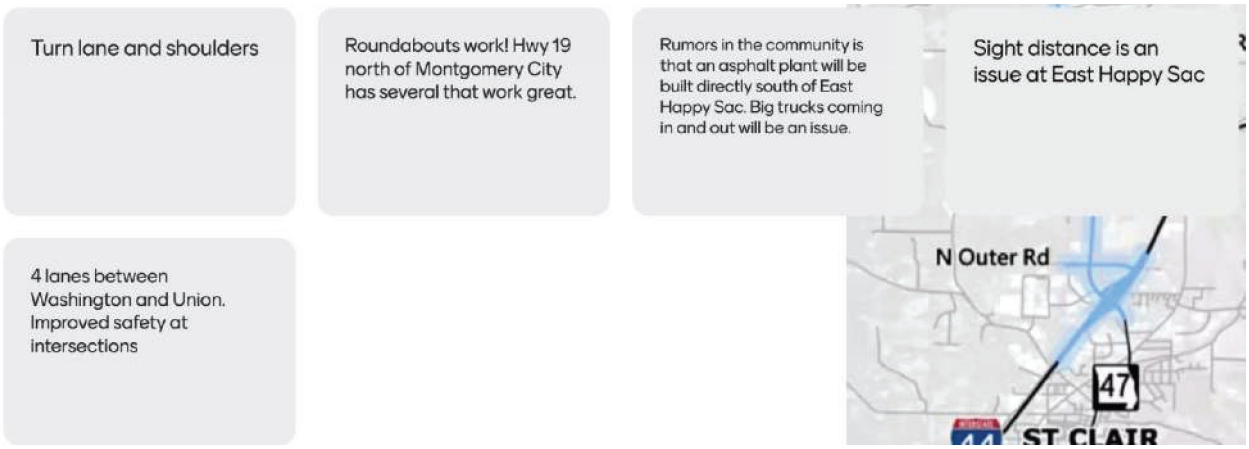
- Lonnie Keathley (from Missouri Highway Patrol) notes left turn out of College Road is difficult for many drivers.
- Aaron Groff (from MODOT) notes how southern section differs greatly from northern section due to when it was built, the quantity of access points and differing design standards.
- There was a discussion about the severity of crashes at higher speeds: more lanes means that traffic moves at higher speeds, resulting in higher counts of severe crashes. Public safety officers confirmed this assertion.
- Aaron Groff (from MODOT) described often seeing traffic piling up behind school buses and would like to initiate conversation about whether buses can pull off on rural roads/city/county roads and then turn around instead of stopping as frequent on the highway, to allow gaps in traffic to flush through.

Wrapping up the discussion about the middle segment was a conversation about roundabouts. Approximately 1/3 of attendees raised their hands to indicate that they are comfortable using roundabouts. No hands were raised among the group when asked if they felt that their neighbors/friends would be comfortable using roundabouts. However, there was no outward opposition to roundabouts being a part of this design, and the group agreed that they can have calming effects.

South Segment

Below are the comments entered into Menti by the CAG. Many topics and considerations had been discussed prior to the final segment so five individuals provided a response. The comments included the suggestions for improvements including turn lanes, shoulders and roundabouts. An additional note was in regard to East Happy Sac Road and a potential asphalt plant that would generate additional truck traffic. It was also noted that there are sight distance issues along East Happy Sac Road.

Figure 12: What else should we be aware of in the south segment of the corridor? Text Box Responses



The group discussion was brief relative to the North and Middle Segments as Route 47 terminates in a non-central location in St. Clair. Discussion points included:

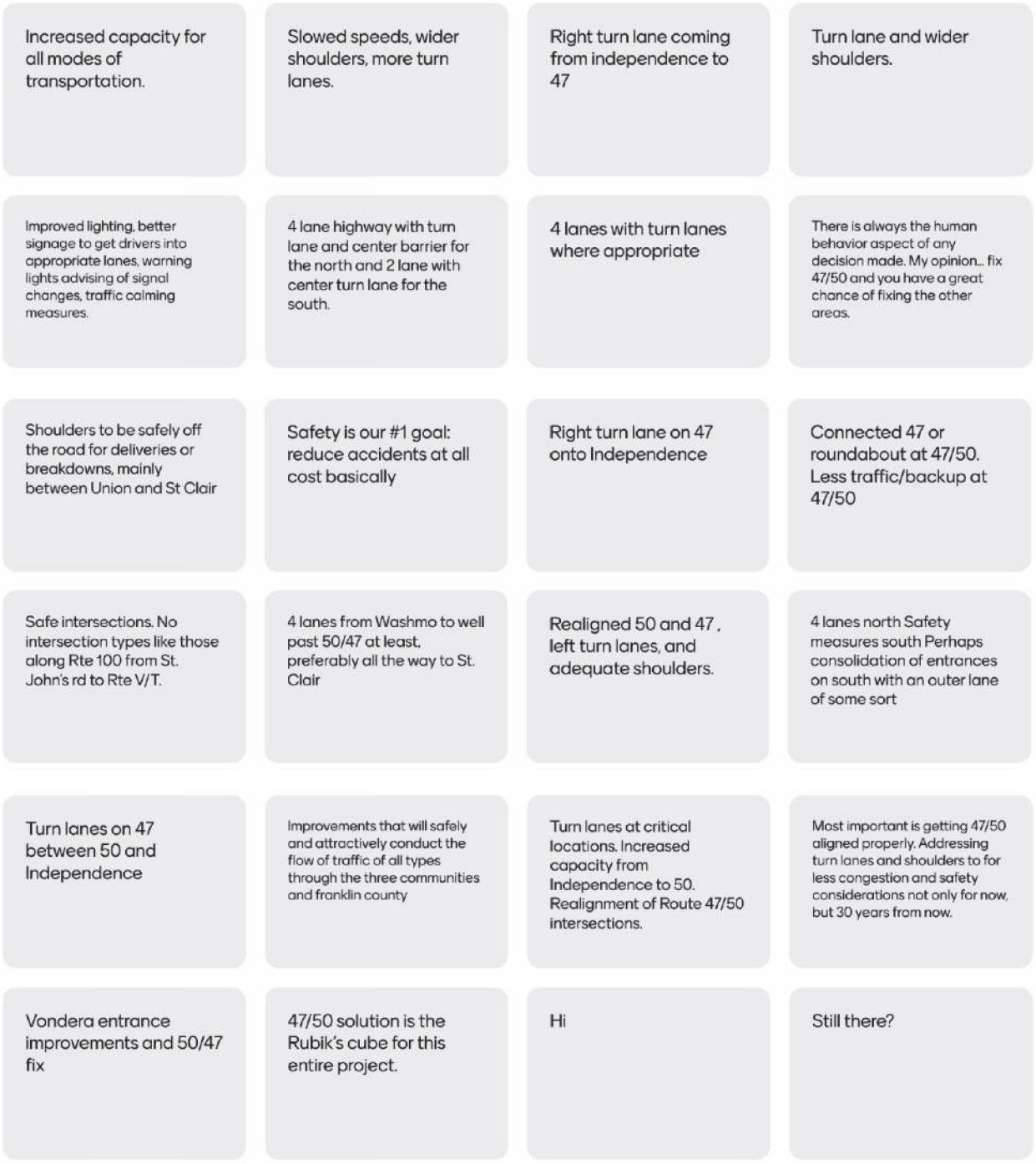
- Recurring concerns about safety while traveling along the corridor. Potential solutions included additional lighting and traffic calming design elements.
- The group generally agreed that due to considerably lower traffic volumes in this section, additional lanes are not warranted. The group agreed that they would like to see fewer curb cuts.
- MODOT notes that Airport Road data is currently being examined, early looks at data primarily examined East Happy Sac Road (west side).
- Melissa Husereau (St. Clair Superintendent of Schools) provided information about potential future residential developments on Airport Road that may increase traffic and congestion. The land is graded and ready for development at this time. She added that an attempt to host a track meet in this area was a "disaster" due to traffic issues, but that the city also owns property in this area and has high hopes.
- East Happy Sac has poor sight lines in both directions, 72 lots are currently for sale at NW corner, area is ready to build.
- There is discussion of a potential development at Route 47 and I-44 including gas stations and a residential development.

The conversation concluded with a discussion initiated by MoDOT asking whether the group would be comfortable with improvements that encourage slower speeds/traffic calming being built into the design. Examples provided of traffic calming/safety devices included: a center barrier, narrower lanes, wider islands or curbs (in more urban areas), pedestrian facilities, lighting, more prominent traffic striping, and roundabouts. The group expressed generally neutral to positive sentiment regarding these measures. No outward negative sentiment was noted.

Next Steps

The next steps include the Concepting and Evaluation of Potential Design Solutions and meeting with the CAG in Spring 2025 to discuss the potential alternatives and gather input. With the available funding, the project team wants to understand the priorities to the communities to help develop alternatives that best address those concerns. The project team asked the questions, "What does your organization envision for an improved MO Route 47? What does an improved MO Route 47 entail?" These questions help the project team and CAG members envision what is most important moving forward. The responses are listed on the following page.

Figure 13: What does your organization envision for an improved MO Route 47? What does an improved MO Route 47 entail? Text Box Responses



Missouri Route 47 Conceptual Study
Appendices

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Sign-In Sheets..... 7

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Missouri Route 47 Conceptual Study

Appendix A

Invitation Letter..... 2
Invited Attendees..... 5
Sign-In Sheets..... 7

December 23, 2025

Dear Stakeholder,

The Missouri Department of Transportation (MoDOT) would like to extend you an invitation to participate in the Community Advisory Group (CAG) for the Missouri Route 47 Corridor Study. This is an important project for the Federal Highway Administration (FHWA), MoDOT, Franklin County and the greater regional area.

The conceptual study spans Missouri Route 47 from Route 100 in Washington through Union to Interstate 44 in St. Clair. This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962. Congestion and safety are concerns along the corridor.

The study will involve analyzing areas of the corridor such as the Route 50/Route 47 Intersections. Initial tasks will include data collection, traffic and safety analyses, identifying issues through the corridor, meeting with stakeholders, environmental assessments and developing engineering solutions to improve the corridor.

Your involvement will help the project team understand and address community needs and concerns throughout the study. This will be important as the project team looks at potential improvements for Route 47.

MoDOT will engage CAG members at meetings to gather feedback prior to presenting information to the public. The project team anticipates a minimum of three meetings for this phase of the project, generally two hours or less, to discuss project details. The meetings are planned to occur between February 6, 2025 and Early Summer 2025 and the topics include, but are not limited to, the following:

a. **Meeting #1 (Thursday, February 6, 2025)**: Study introduction and preliminary findings.
b. **Meeting #2 (Spring 2025):** Review potential alternatives.
c. **Meeting #3 (Early Summer 2025):** Provide input on suggested improvement solutions.

The first in-person CAG meeting is scheduled for:

February 6, 2025
9:30 am to 11:30 am
East Central College Training Center (see map below included)
350 Audrey Lane
Union, MO 63084

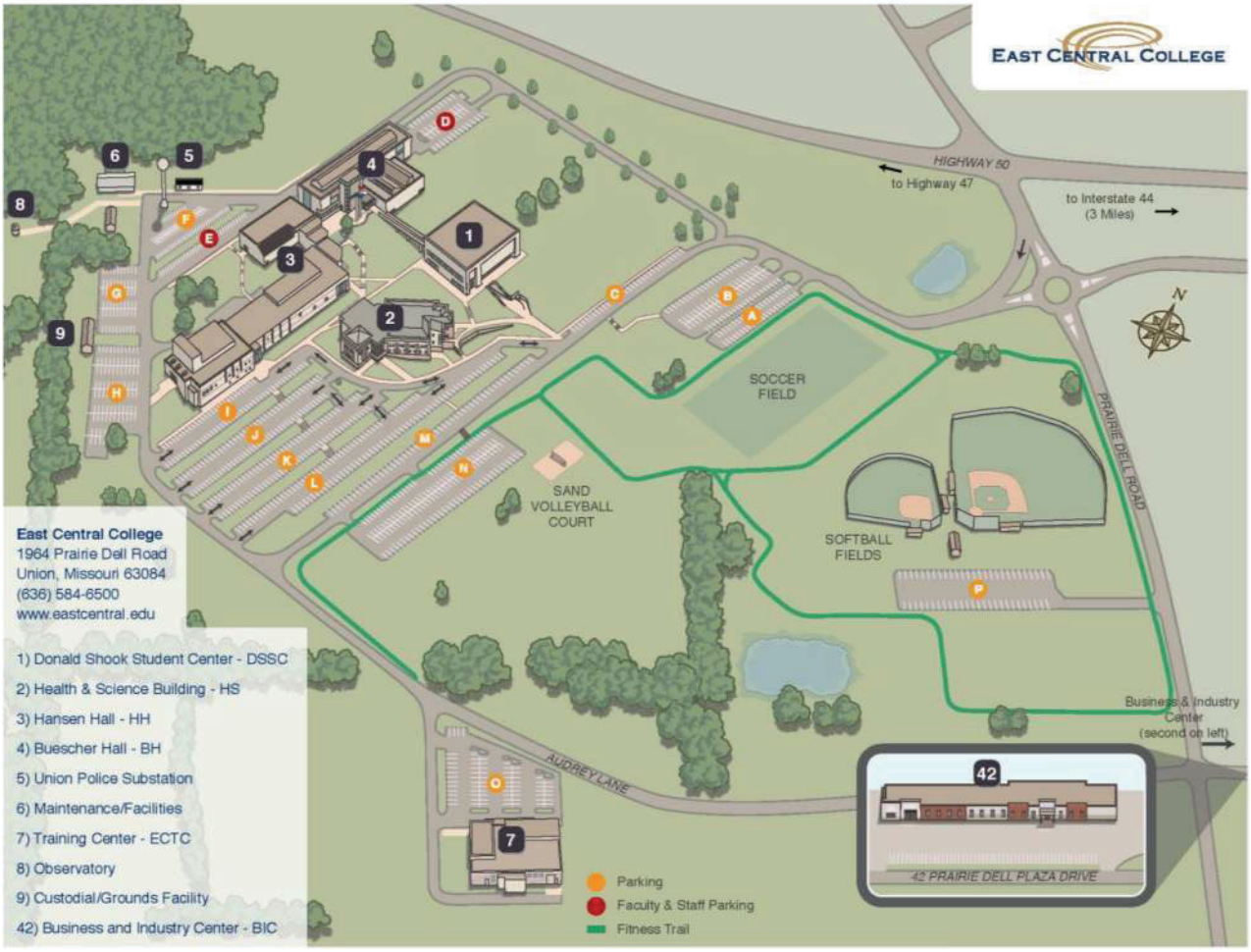
The perspectives that you and your organization bring to the table are greatly appreciated and vital to the project's success. Please email Jordan Dalaviras, Franklin/Jefferson Counties Area Liaison, to confirm your participation or provide a delegate name at Jordan.Dalaviras@modot.mo.gov. RSVP by Wednesday, January 8, 2025. A calendar invitation will be sent upon confirmation. If you cannot attend a meeting, please feel free to send someone from within your organization to attend the meeting in your place.

The project team members and I look forward to working with you on improving the Missouri Route 47 corridor.

Sincerely,

Aaron J. Groff, P.E.
MoDOT Transportation Project Manager
St. Louis District
Franklin & Jefferson County Area
(314) 453-1876
Aaron.Groff@modot.mo.gov

East Central College Training Center
Building #7, Parking Lot O



Missouri Route 47 Conceptual Study
Cag Meeting #1 Invited Participants

Last Name	First Name	Organization	Invited	Attended
Ivy	Jason	City of St. Clair - Public Works Director	X	-
Welty	Mike	City of St. Clair- City Administrator	X	-
Kelly	JD	City of Union - Engineer / Public Works Director	X	X
Zimmermann	Johnathon	City of Union- City Administrator	X	X
Lamb	Darren	City of Washington - City Administrator	X	X
Stankovic	Charles	City of Washington - Engineer	X	X
Hagedorn	Doug	City of Washington - Mayor	-	X
Bauer	Jon	East Central College (ECC)	X	X
Porter	Tim	First Student	X	-
Grutsch	Jim	Franklin County Highway Administrator	X	X
Brinker	Tim	Franklin County Presiding Commissioner	X	X
Harden	James	Franklin County Sheriff	X	X
Weggemann	Jason	Franklin County Sheriff	X	X
Pelton	Steven	Franklin County Sheriff	X	-
	Rick	Friends of Rock Island Trail State Park	X	-
Keathley	Lonnie	Highway Patrol - Troop C	X	X
Hedlund	Mark	Highway Patrol - Troop C	-	X
Pratt	Heather	Mercy Hospital - Washington	X	-
McBride	Charles	Missouri Eastern RR – Jag Transport	X	-
Jones	John	Missouri Eastern RR - Jag Transport	X	X
Banderman	Brad	MO House of Representatives Dist. 119	X	-
Amburn	Megan	OATS Transit	-	X
Burbank	Michael	OATS Transit	X	X
Flagg	Dave	Septic Services, Inc.	X	-
Siedhoff	Virgil	Siedhoff Distributing - Prairie Farms Milk	X	X
Husereau	Melissa	St. Clair R-XIII School District	X	X
Simmons	John	State Representative District 109	X	X
Folsom	Geoff	The Missourian	-	X
Herman	Kayla	Union Ambulance District	X	X
Mayer	Michelle	Union Ambulance District	X	X
Diekhaus	Chris	Union Chamber of Commerce	X	X
Lasswell	Jeremy	Union Fire Assistant Chief	X	X

Last Name	First Name	Organization	Invited	Attended
Graf	Gary	Union Fire Chief	X	X
Sickafoose	Tanya	Union Post Office	X	X
Kania	Dan	Union R-XI School District	X	-
Mabe	Dr. Mike	Union R-XI School District	X	X
Hall	Aaron	Union Transportation Committee	X	X
McColloch	John	Washington School District	X	X
Straatmann	Bill	Washington Transportation Chairman	X	X
Lueken	Cameron			X
Falkenrath	Carrie	Tsquared	X	X
Fleming	April	HNTB	X	X
Heavin	Kelsey	HNTB	X	X
Pfeiffer	Travis	HNTB	X	X
Beard	Chris	Lochmueller Group	X	
Touzinsky	Chip	Lochmueller Group	X	
Yousefzadeh	Pouya	Lochmueller Group	X	
Blair	Thomas	MoDOT	X	X
Dalaviras	Jordan	MoDOT	X	X
Evers	Thomas	MoDOT	X	X
Groff	Aaron	MoDOT	X	X
Herzog	David	MoDOT	X	X
Kuntz	Lisa	MoDOT	X	X
Pfeiffer	Travis	MoDOT	X	X
Redhage	Christine	MoDOT	X	X
Sanders	Bryson	MoDOT	X	
Simmons	Cindy	MoDOT	X	X
Simmons	David	MoDOT	X	
Sudduth	Rachel	MoDOT	X	

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Banderman	Brad	MO House of Representatives Dist. 119	☐
Bauer	Jon	East Central College (ECC)	☐
Brinker	Tim	Franklin County Presiding Commissioner	☒
Burbank	Michael	OATS Transit	☒
Diekhaus	Chris	Union Chamber of Commerce	☒
Flagg Lueken	Dave Cameron	Septic Services, Inc.	☒
Graf	Gary	Union Fire Chief	☒
Grutsch	Jim	Franklin County Highway Administrator	☒
Hall	Aaron	Union Transportation Committee	☒
Harden	James	Franklin County Sheriff	☒
Herman	Kayla	Union Ambulance District	☒
Husereau	Melissa	St. Clair R-XIII School District Superintendent	☒

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Ivy	Jason	City of St. Clair - Public Works Director	☐
~~Kania~~	~~Dan~~	Union R-XI School District Asst. Sup of Operations	☐
Keathley	Lonnie	Highway Patrol - Troop C	☒
Kelly	JD	City of Union - Engineer / Public Works Director	☒
Kephart	Dr. Jennifer	School District of Washington Superintendent	☐
Lamb	Darren	City of Washington - City Administrator	☒
Lasswell	Jeremy	Union Fire Assistant Chief	☒
Mabe	Dr. Mike	Union R-XI School District Superintendent	☒
Mayer	Michelle	Union Ambulance District	☒
McBride	Charles	Missouri Eastern RR --- Jag Transport	☐
McColloch	John	School District of Washington	☒
Pelton	Steven	Franklin County Sheriff	☐
Porter	Tim	First Student	☐

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Pratt	Heather	Mercy Hospital - Washington	☐
Sickafoose	Tanya	Union Post Office	☒
Siedhoff	Virgil	Siedhoff Distributing - Prairie Farms Milk	☒
Simmons	John	State Representative District 109	☒
Stankovic	Charles	City of Washington - Engineer	☒
Straatmann	Bill	Washington Transportation Chairman	X☐
Weggemann	Jason	Franklin County Sheriff	☒
Welty	Mike	City of St. Clair- City Administrator	☐
Zimmermann	Johnathon	City of Union- City Administrator	☒

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Blair	Thomas	MoDOT	☒
Dalaviras	Jordan	MoDOT	☒
Evers	Thomas	MoDOT	☒
Groff	Aaron	MoDOT	☒
Herzog	David	MoDOT	☒
Kuntz	Lisa	MoDOT	☐
Pfeiffer	Travis	MoDOT	☐
Redhage	Christine	MoDOT	☒
Sanders	Bryson	MoDOT	☐
Simmons	Cindy	MoDOT	☐
Simmons	David	MoDOT	☐
Sudduth	Rachel	MoDOT	☐

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Beard	Chris	Lochmueller Group	☐
Falkenrath	Carrie	Tsquared	☒
Flemming	April	HNTB	☒
Heavin	Kelsey	HNTB	☒
Pfeiffer	Travis	HNTB	☒
Touzinsky	Chip	Lochmueller Group	☐
Yousefzadeh	Pouya	Lochmueller Group	☐

PLEASE SIGN IN

Name	Organization	Email	Phone	Check if present
John Jones	MO Eastern Railroad	jjones@jag-transport.com		☒
Jeff Folsom	The Missourian	folsomg@emissourian.com		☑
Doug Hagedorn	Mayor of Washington			☐
Megan Ambuehl	OATS	mellert@oatstransit.org		☐
Landon Krieta	Wash HS - FOUR EVOS CAPT	landonkrieta@gmail.com		☐
Carson Hornberger	"	carsonhornberger@gmail.com		☐
Mark Hedlund - Hwy Patrol				X
				☐
				☐

Missouri Route 47 Conceptual Study

Appendix B

PowerPoint Presentation with
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Missouri Route 47 Conceptual Study

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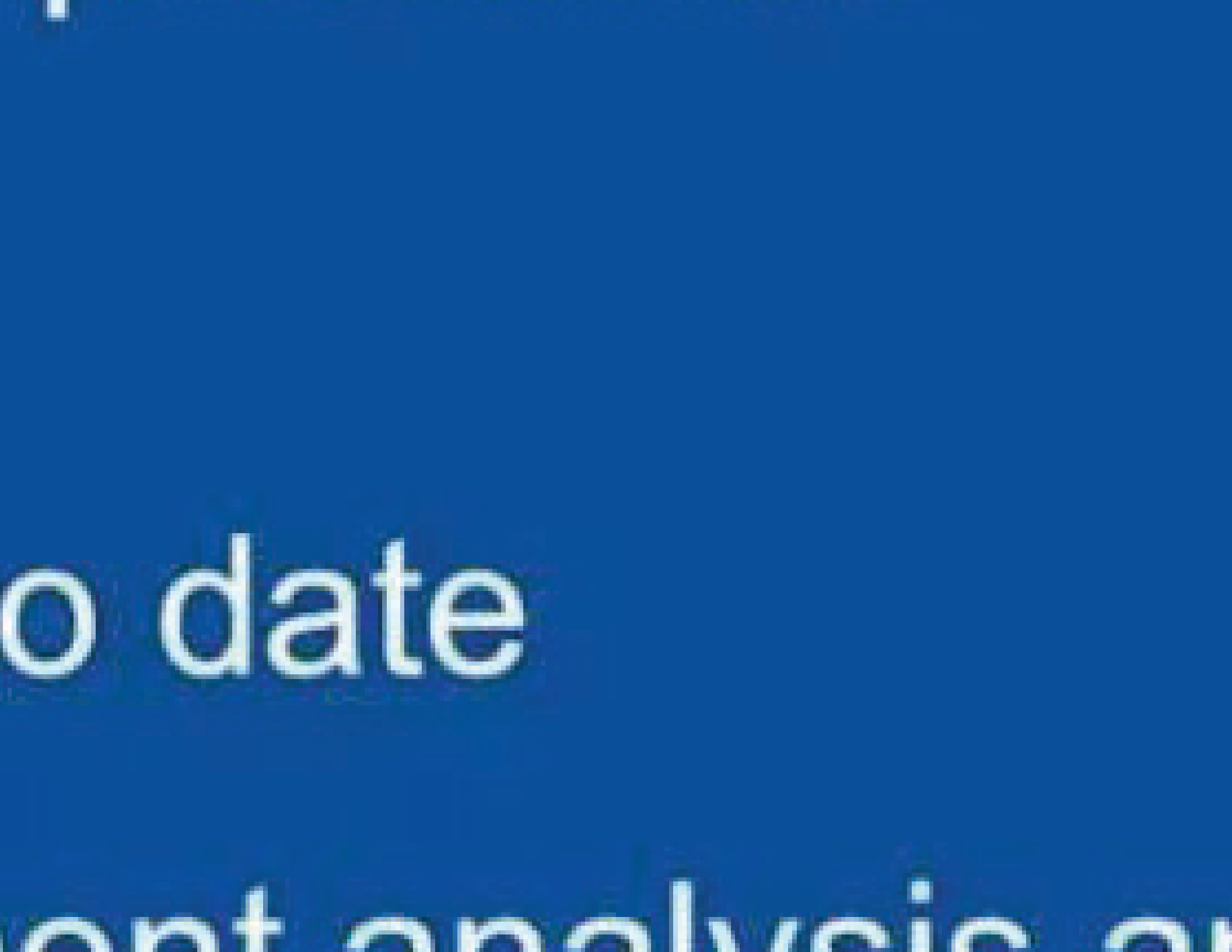
Flip Chart Notes..... 56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af — Union Fire Dept

Mayer — Union Amb

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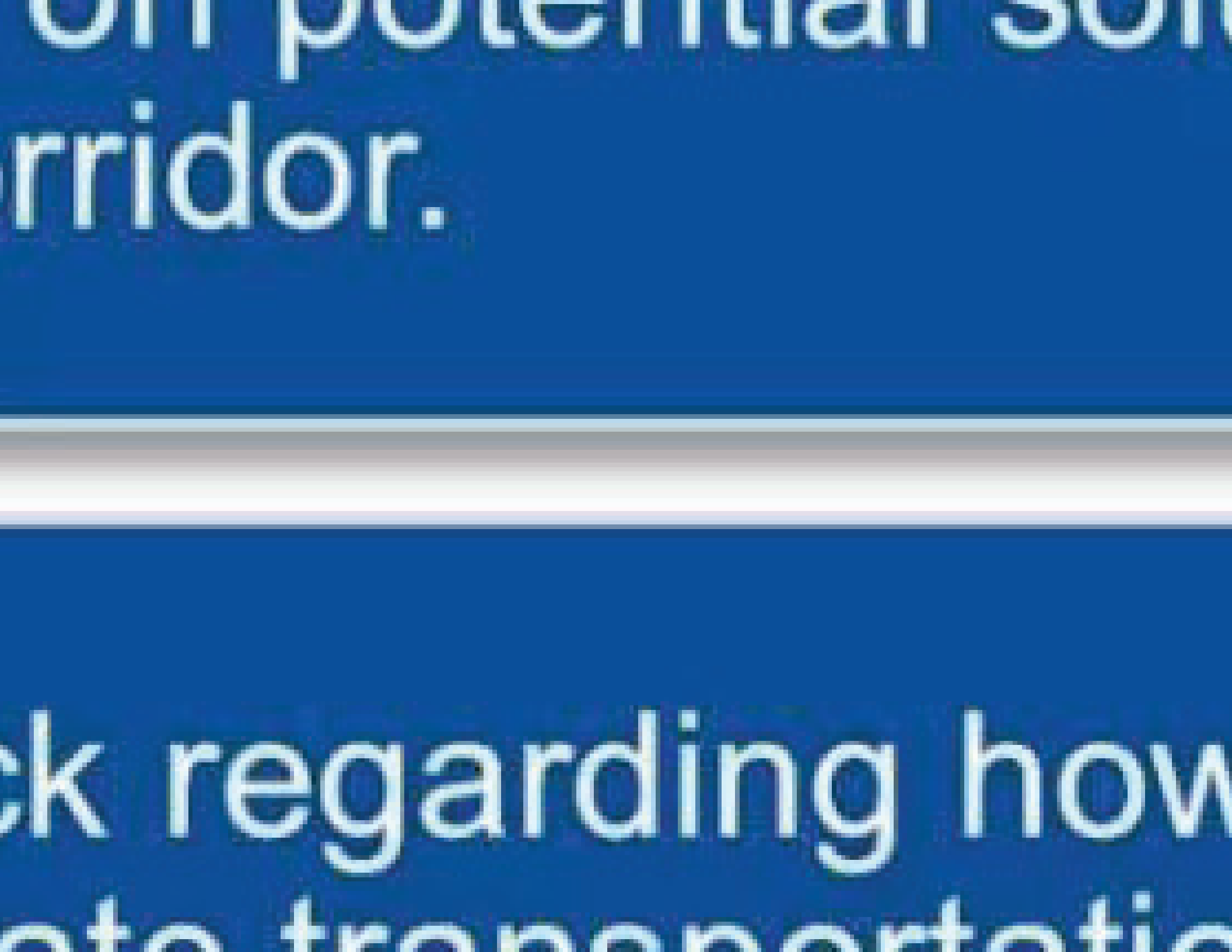
Pratt — Mercy Hosp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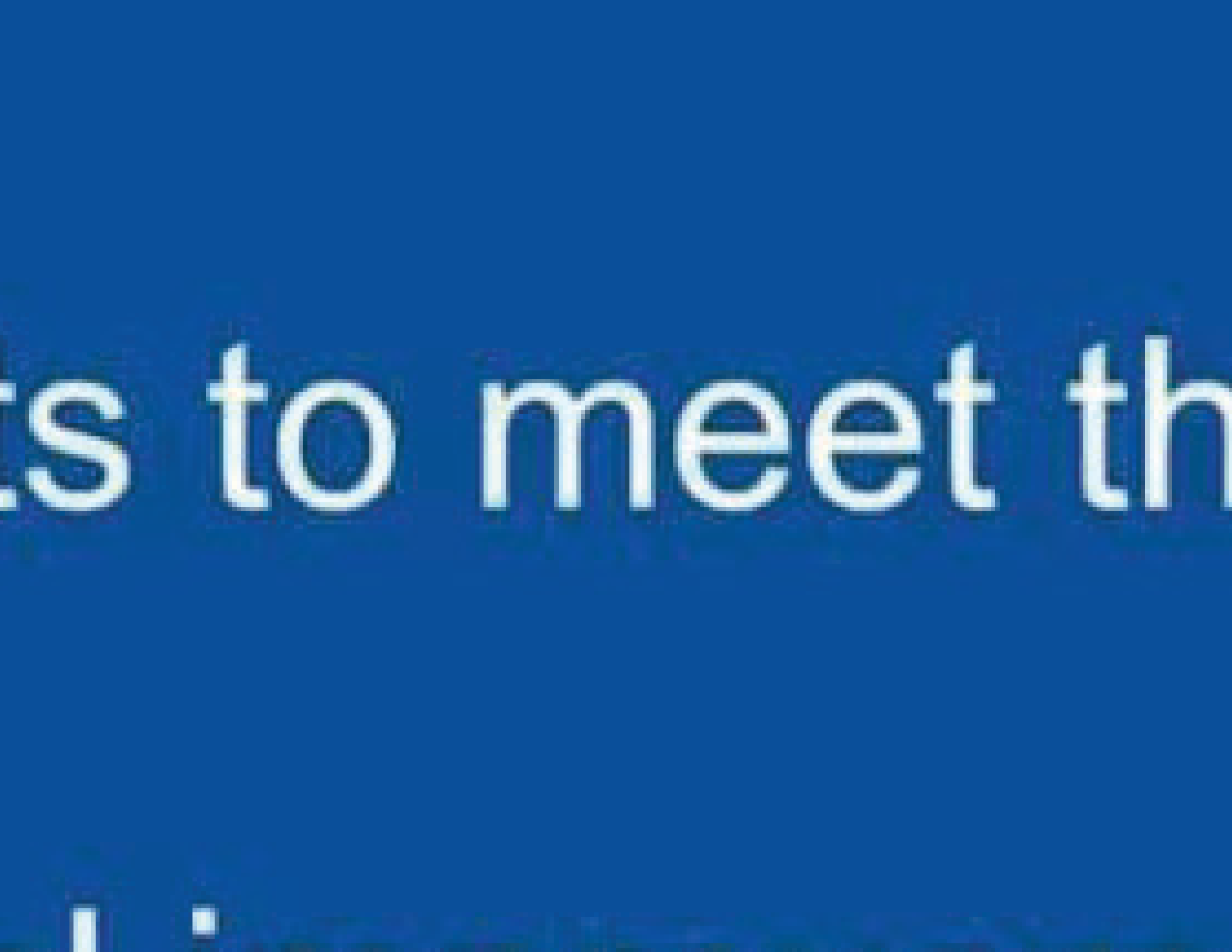
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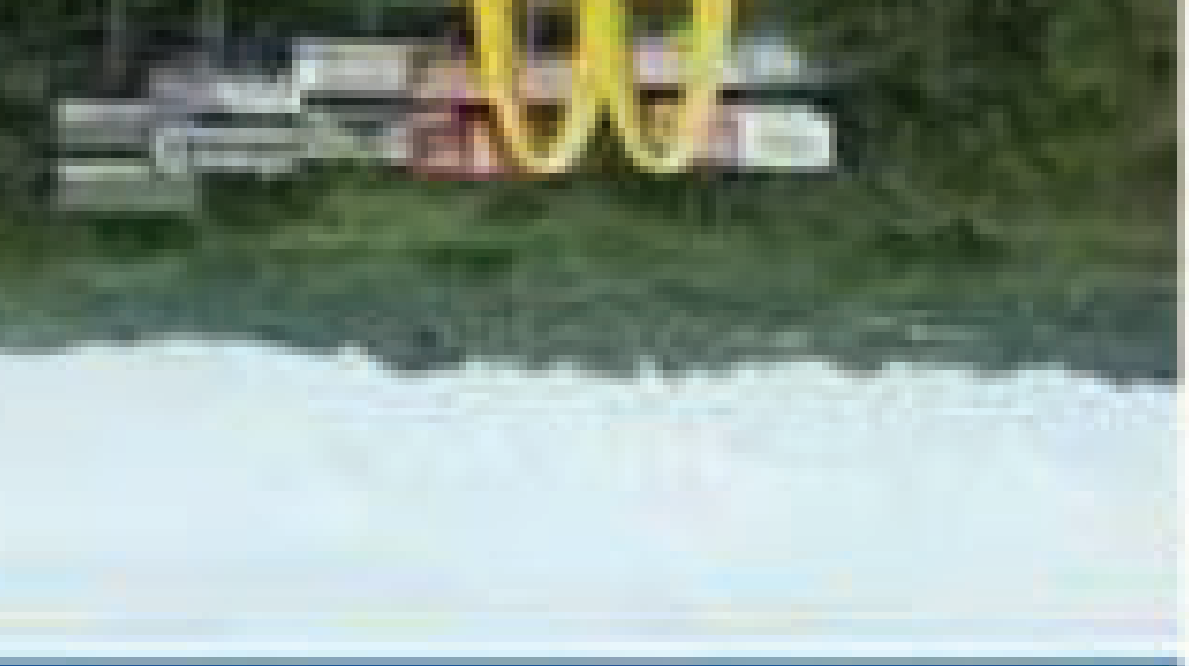

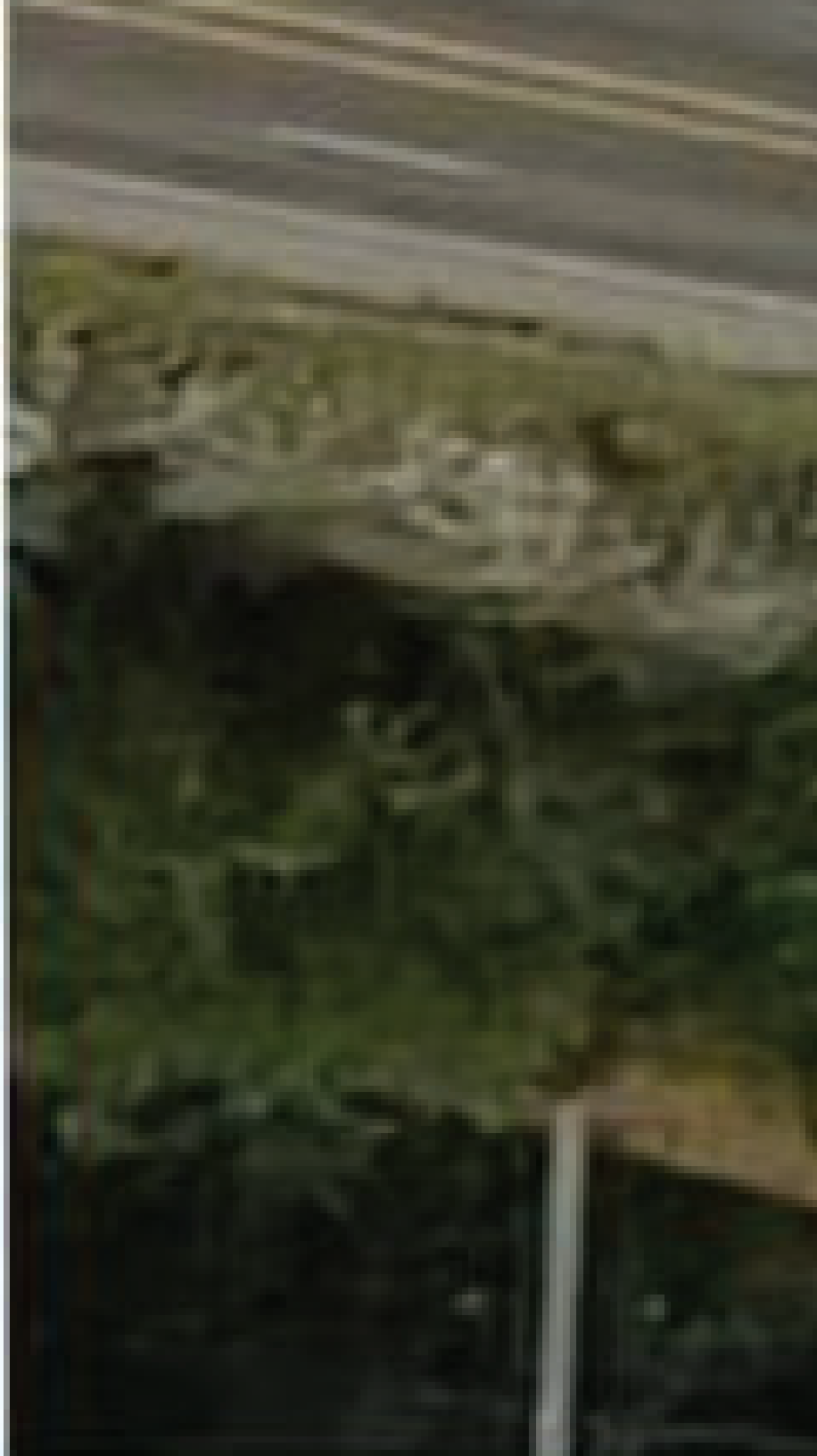

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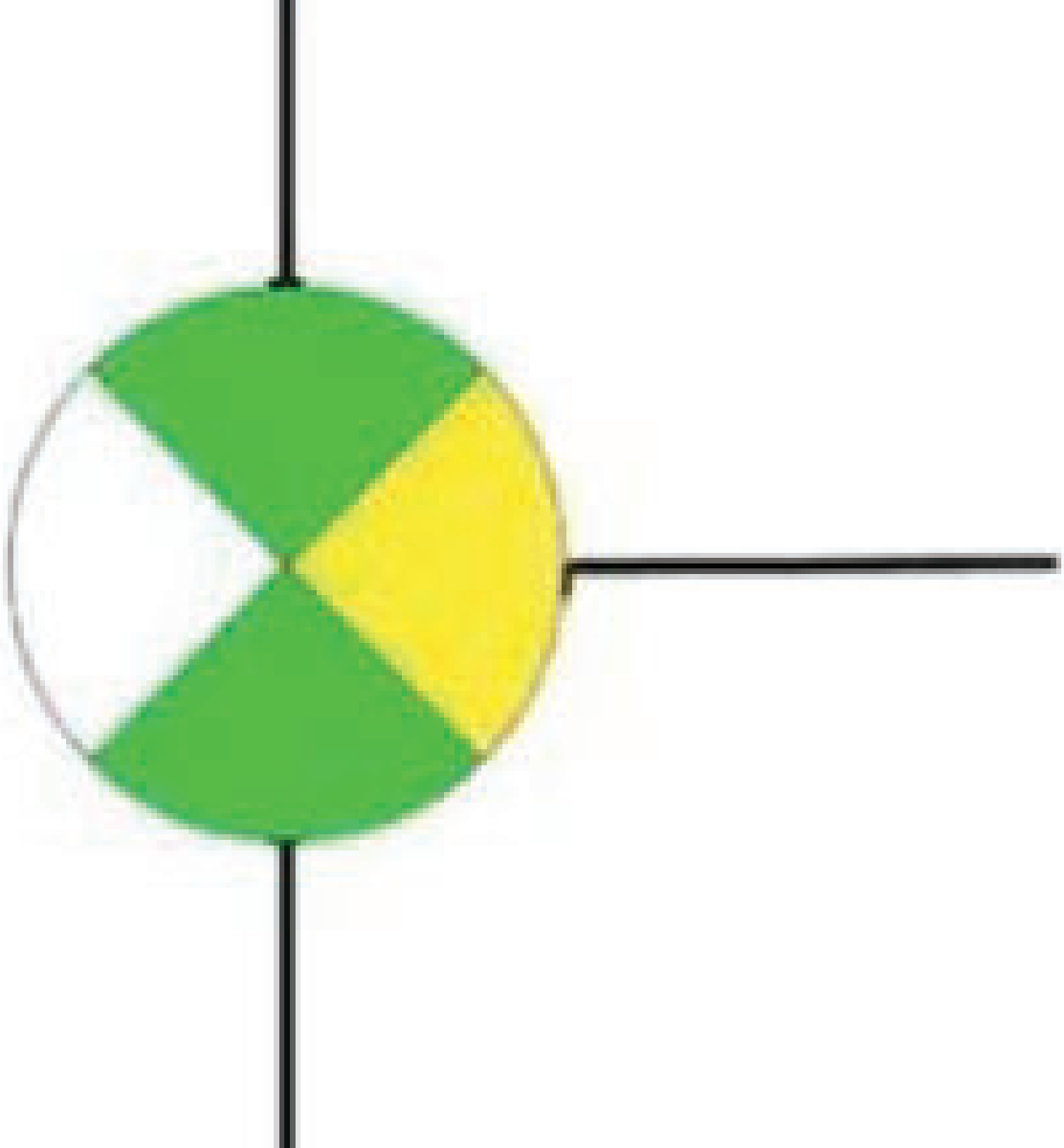
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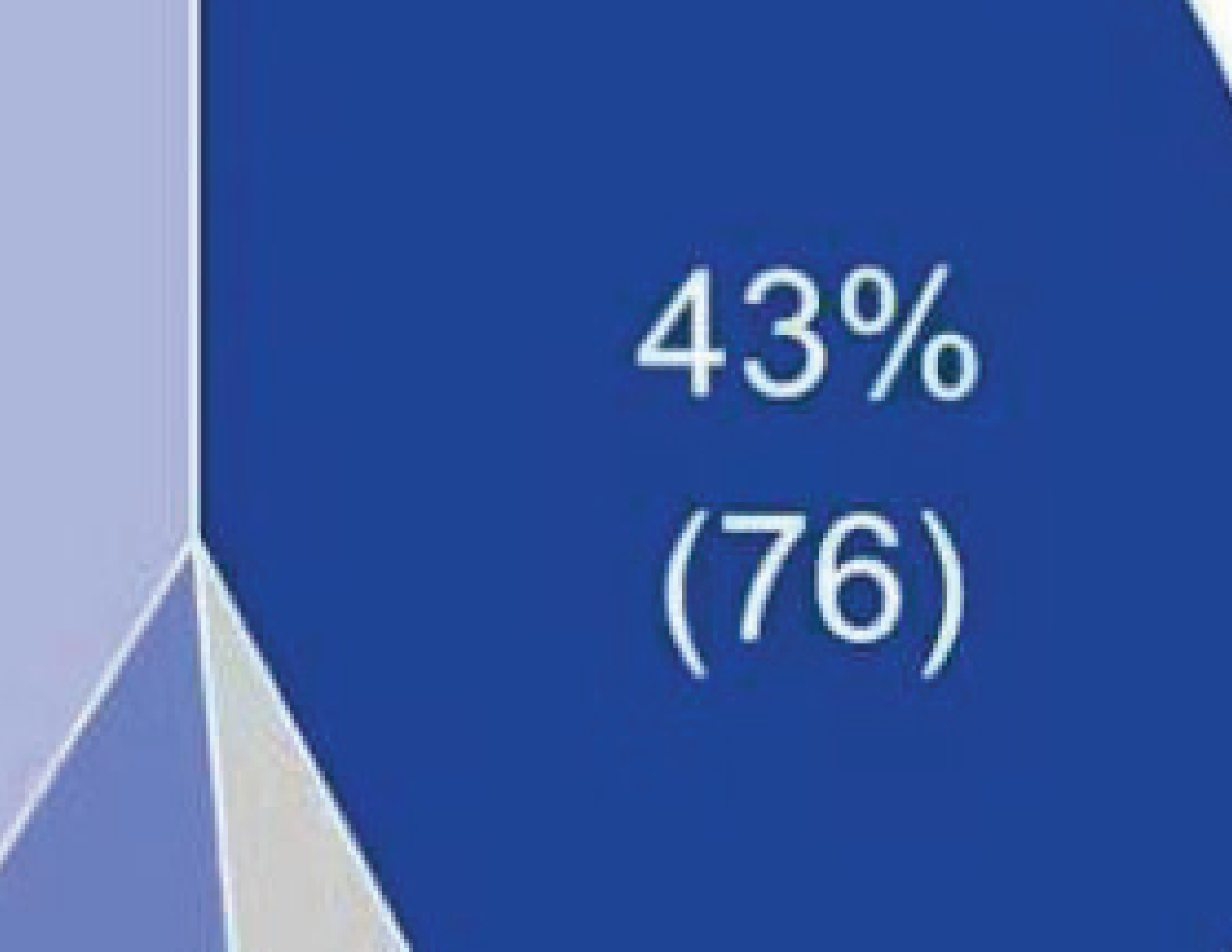
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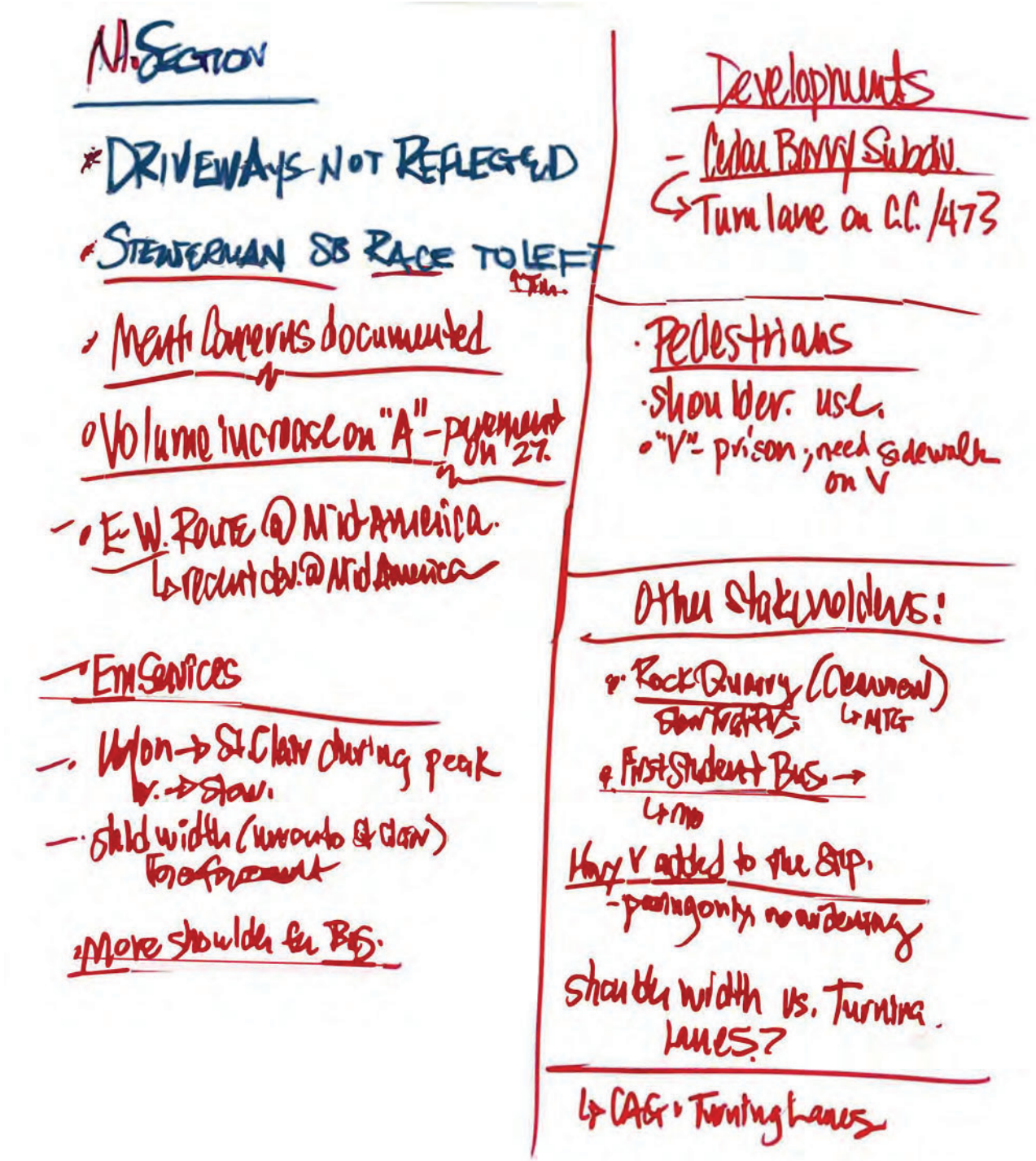
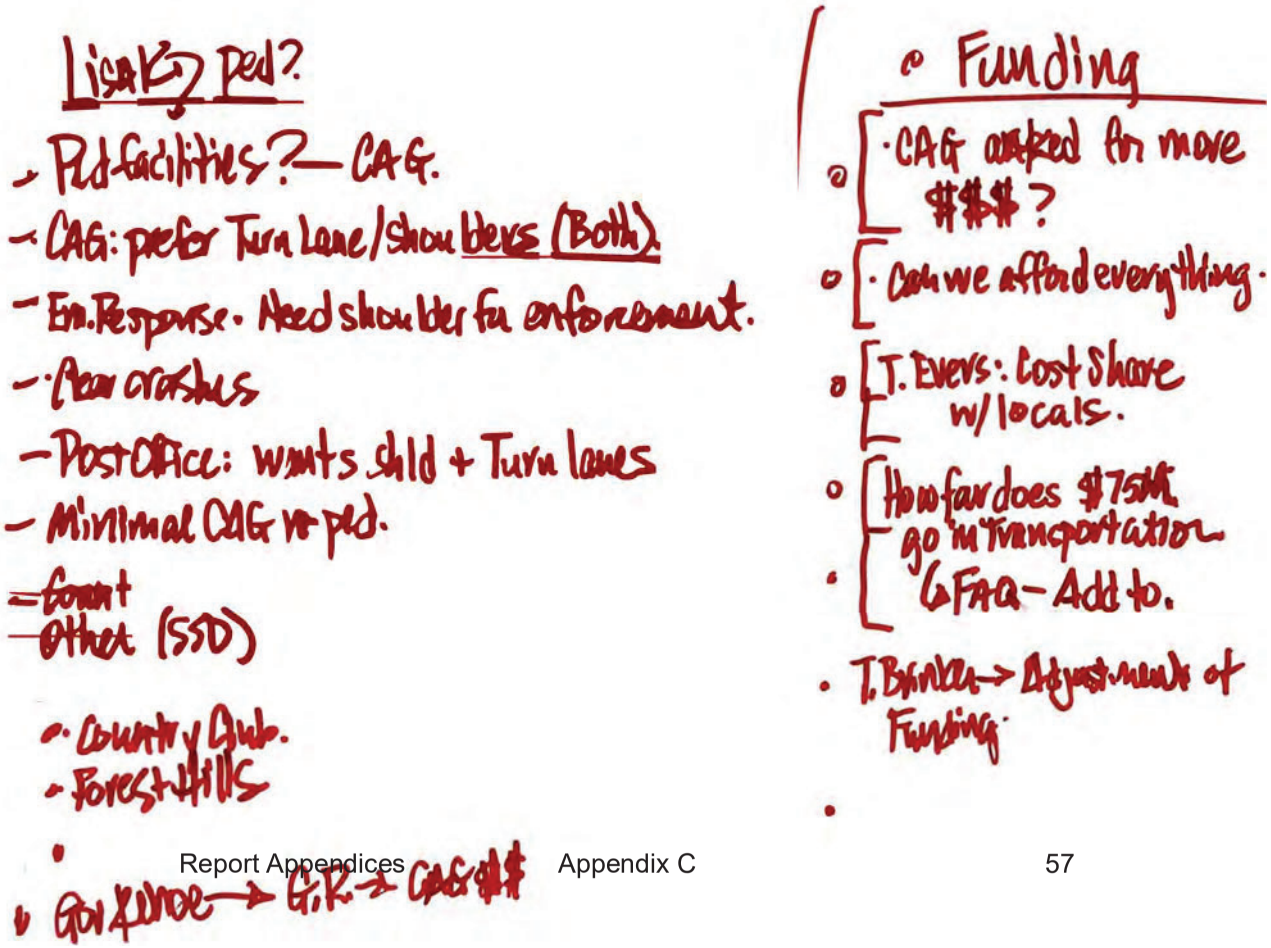
Summer 2025 Suggested Reading

#2 Fiction – Historical Fiction

#3 Fiction – Romance

#4 Fiction – Mystery/Thriller


N. Section
* Driveways not reflected
* Stenerman SB race to left
* Many Comments documented
o Volume increase on "A" - pavement in 27.
- E-W Route @ Mid-America
↳ recent dev. @ Mid America
- Emergencies
- Union → St Clair during peak
↳ → slow.
- Shld width (turnouts & clear) for enforcement
- More shoulder for BG.
Developments
- Cedar Berry Subdiv.
↳ Turn lane on C.C. 473
· Pedestrians
· Shoulder use.
o "V" - prison; need sidewalk on V
Other Stakeholders:
· Rock Quarry (Cement)
↳ MTG
· First Student Bus →
↳ no
Many V added to the Stp.
- pentagon/s no widening
Shoulder width vs. Turning lanes?
↳ CAG - Turning Lanes


Lisa's Ped?
- Ped facilities? — CAG.
- CAG: prefer Turn Lane/Shoulders (Both)
- Em. Response. Need shoulder for enforcement.
- Clear crashes
- Post Office: wants shld + Turn lanes
- Minimal CAG ped.
- Comment
- Other (SSD)
- Country Club.
- Forest Hills
- Gov't Mtge → G.R. → CAG $$$
Funding
CAG asked for more $$$?
Can we afford everything.
T. Evers: Cost Share w/ locals.
How far does $75M go in Transportation. & FAQ - Add to.
T. Brinkley → Adjustments of Funding.

MIDDLE SECTION

#of driveways
↳ access points

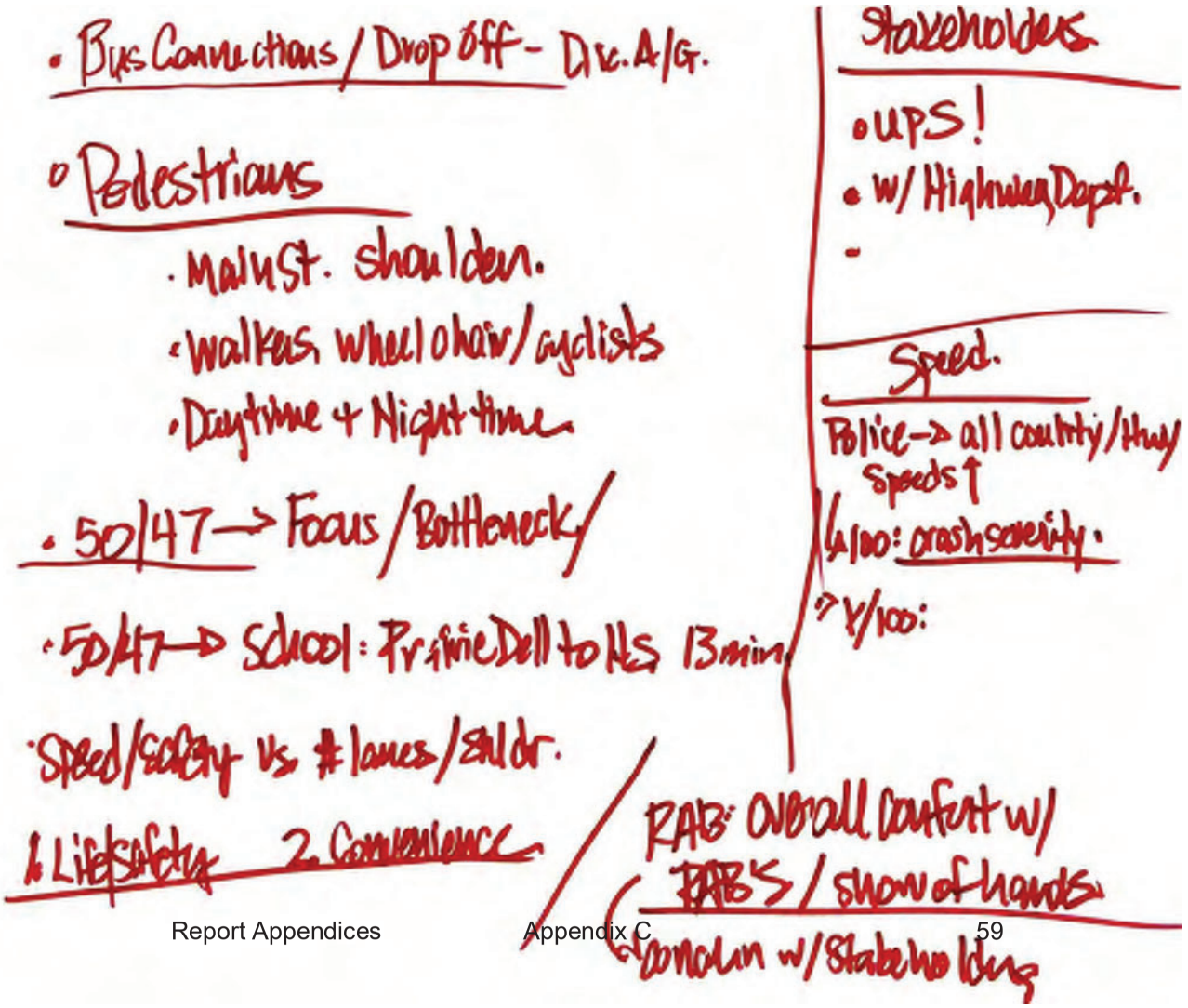
- EB 50 to NB 47 (Flashing yellow Arrow)
  ↳ now only during off Peak Hrs. (Recent Change)
- Crashes (3) w/ officers. → Union PD vs. Troops.
  ↳ off peak hrs.
- Independance NB/SB (Emergency cannot see)
- "V" → orange because of Vandera being red.
- 50/47 → Queing into Turn lane
  ↳ speeds!! — Old County Farm Lane
  ↳ racing for congestion.
- Congestion - Ag Nation → Hurry - Safety
  ↳ Flashing Yellow removed.
- Left Turn out of college to SB 47

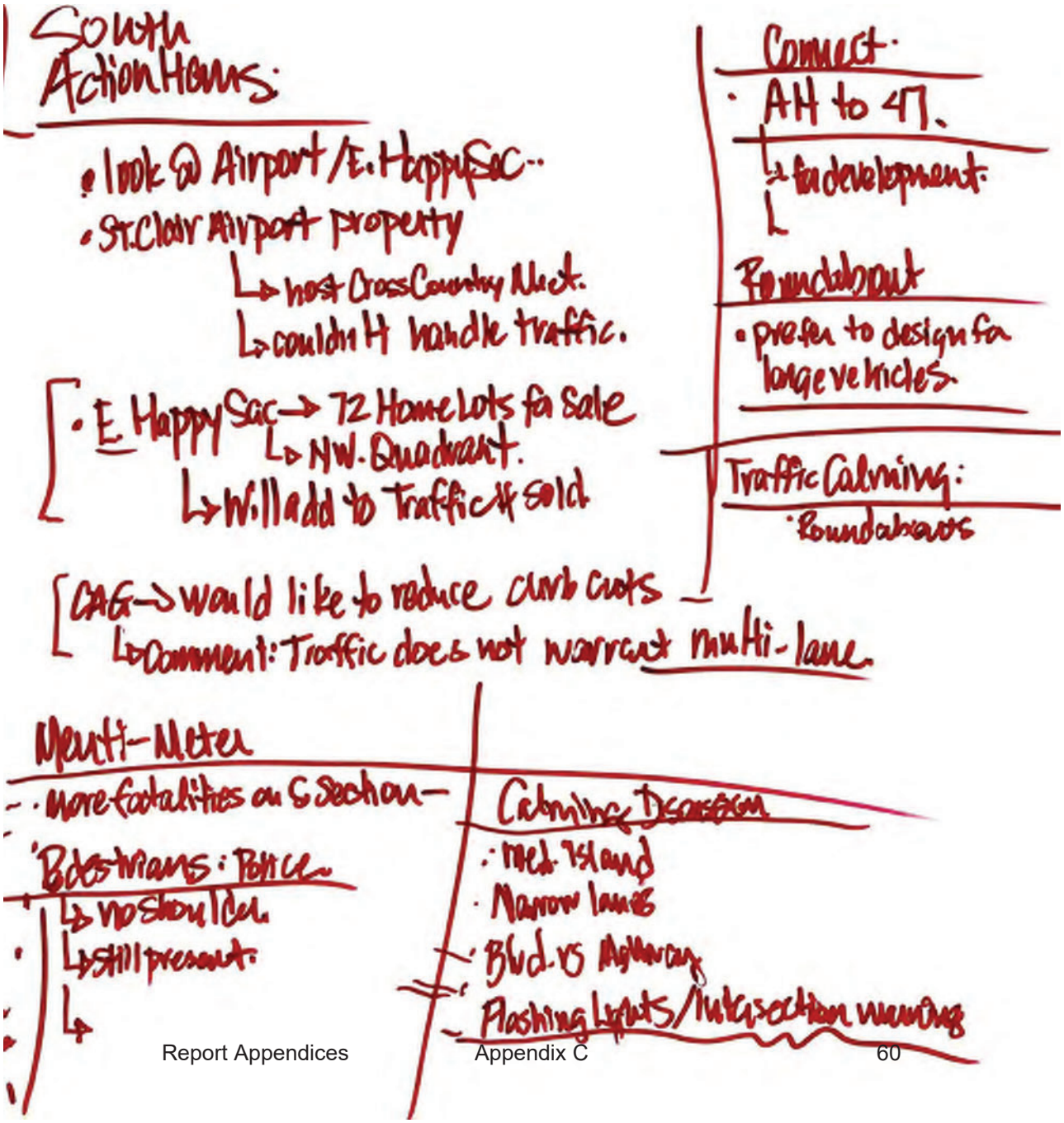
RAIL → JAGUAR
Moving
10-15 TRUCKS

- V / 4
- used to Avoid 50/47
- Chuvan/

50/47
& more safety

- McBride Subdivision
  ↳ will use "U"


• Bus Connections / Drop off - Div. A/G.
• Pedestrians
. Main St. shoulders.
• walkers, wheelchair/cyclists
• Daytime + Nighttime.
• 50/47 → Focus / Bottleneck /
• 50/47 → School: Prairie Dell to HS 13 min
• Speed/safety vs. # lanes/Shldr.
1. Life Safety 2. Convenience
Stakeholders
• UPS!
• w/ Highway Dept.
-
Speed.
Police → all county/Hwy
Speeds ↑
4/100: crash severity.
?/100:
RAB: Overall comfort w/
RAB's / show of hands
Consultation w/ Stakeholders


South Action Items:
• look @ Airport / E. Happy Sac..
• St. Clair Airport property
↳ host Cross Country Meet.
↳ couldn't handle traffic.
• E. Happy Sac → 72 Home Lots for Sale
↳ NW. Quadrant.
↳ Will add to Traffic if sold
CAG → would like to reduce curb cuts
↳ Comment: Traffic does not warrant multi-lane.
Connect:
• AH to 47.
↳ for development
Roundabout
• prefer to design for large vehicles.
Traffic Calming:
• Roundabouts
Multi-Meter
• more fatalities on S Section
Pedestrians: Police.
↳ no shoulder.
↳ still present.
Calming Measures
• Med. Island
• Narrow lanes
• Bld. vs Agriculture
• Flashing Lights / Intersection warning

Menti Discussion cont.

[o 44

- Asphalt Plant Discussion → Portable Plant?

Mayor →

- 4 lanes w/ safety
- How much costs
  - T. Blair → R/W costs !!!
  - R/W costs

Menti/47 project entail Discussion

Clearview (35 green lights) – 8 yrs ago.

- Driveway/Access Management? (Brooke)

Focus on 50/47

Jordan → Wrap Up

- CAG #2: React to Atts

US Fish & Wildlife = New BAT habitat/Mussels

[E-Missourian News] Lyle Rosbach comment?

- RAB feedback = Industrial Users + City of Union

v. Community Advisory Group (CAG) Meeting #2 Summary

DRAFT

Missouri Route 47 Conceptual Study
Community Advisory Committee (CAG) Meeting #2
April 28, 2025

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Meeting Structure....2
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MO-47 Intersections Analysis and Discussion....9
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Overview

The Missouri Department of Transportation (MoDOT) hosted a Community Advisory Group (CAG) meeting on Monday, April 28, from 1:00 to 3:00 p.m. at the East Central College Training Center in Union, Missouri to share information and gather input regarding the Missouri Route 47 Conceptual Study.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. A majority of this corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948, while the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

The purpose of the second CAG meeting was to provide a recap of feedback from the first CAG meeting, and to review, discuss, and collect CAG input on the draft project goals, MO-47 corridor options, safety concerns, and the initial concepts for addressing the intersection of MO-47 and U.S. 50.

Community Advisory Group (CAG)

The CAG is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members represent their organizations and their constituents.

Thirty-six members of the CAG and 12 MODOT staff and project consultants signed in to the meeting and provided input based on their professional experiences and what they hear from users of the corridor. The list of invited participants, sign-in sheets, and invitation letter are included in Appendix A.

Meeting Structure

The in-person event consisted of a presentation by the project team and included a facilitated conversation. The interactive polling tool, Mentimeter (Menti), was used to gather input from the group to help document responses. The PowerPoint presentation, including the Menti results, are included in Appendix B.

The project team had two project consultants capturing discussion highlights by taking notes. An audio recording of the meeting was captured as well to validate notes and to ensure questions and comments from the CAG were captured in full.

Meeting Summary

The project team gave a brief overview of the project area along with a review of the first CAG meeting, which was on February 6, 2025. The team utilized Menti polling software to gather input on the current draft project goals, corridor options, and intersection options for the corridor.

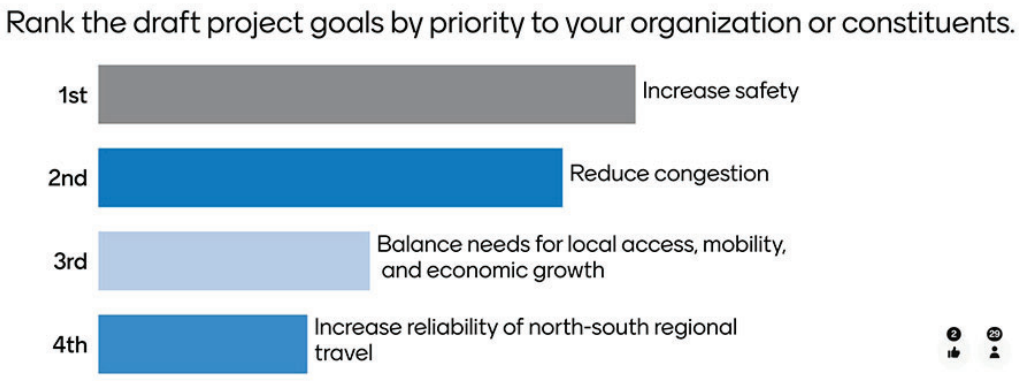
The meeting began with a review of the current draft project goals, which include:

- Increase safety;
- Reduce congestion;
- Increase reliability of north-south regional travel; and
- Balance of needs for local access, mobility, and economic growth.

Following the review, the first question asked was "Are we missing any project goals?" Fifteen attendees answered "No" (or similar), but other responses included three mentions of "Bike/ped access", two mentions of "Economic development/Spurring economic development", and one mention of "Future maintenance costs."

Following this, attendees were asked to rank the draft project goals by priority to your organization or constituents. The results are displayed in Figure 1 (below), with "Increase safety" coming in as the top priority, followed by "Reduce congestion."

Figure 1: Ranking project draft goals



Following the exercise, the project team engaged the CAG with a short discussion about priorities. Jordan Dalaviras asked Tim Porter (First Student bus services) about safety and access. Porter responded:

> "Key to me is safe access to 47. This is a huge concern to me. We had an accident on Friday where a car went down the embankment. With the grade of that embankment, are we looking at guardrails, things like that?"

Dalaviras responded that yes, all considerations are being examined. Bill Straatman, Washington City Transportation Chairman added that the bridge is likely to close during a major flood, asking if flooding concerns are being taken into consideration as a part of this study [Straatman was specifically referring to

the Missouri River Bridge North of Route 100, which is outside these project limits. Jordan Dalaviras at noted that this lies outside the project limits and will need to be addressed in a different project.) The project team responded in the affirmative that FEMA requires this information to be included in MODOT's assessment. Finally, St. Clair City Administrator Mike Welty added that St. Clair is likely to experience economic development and growth in the near future, but that safety remains a top concern from the perspective of the city.

Corridor Options Analysis and Discussion

Following the overview, the presentation was broken into segments to discuss potential design options for the corridor, including the following:

- 4 lane undivided;
- 3 lane with center two-way left turn lane;
- 2-lane divided; and
- Existing 2 lane with wider shoulders.

General questions and responses prior to discussions about any specific designs included:

> ***Question from CAG: How do the options affect speed?***
> Travis Pfeiffer (HNTB): "As a general rule, the more pavement we add, the more people want to speed."
>
> ***Question from CAG: "Does this account for peak travel times?"***
> Carrie Falkenrath (Tsquared): "When we perform analysis, we use peak travel times."
>
> ***Question from Bill Straatman, Washington Transp. Chairman: "What about traffic going over the bridge [in Washington]?"***
> Jordan Dalaviras responded that the bridge is not accounted for because it is not in the project area, but he added that he will pull data to share with Mr. Straatman.

Following a discussion about a 4-lane undivided design, the CAG asked a few more questions of the project team.

> ***Question from CAG: "Is this based on existing speed limit?"***
> Travis Pfeiffer (HNTB): "Yes, this does not take into account significantly reducing speed limit. With a 4-lane section, the team would experience challenges reducing limits."
>
> ***Question from CAG: "Where would bike/pedestrian paths be?"***
> Travis Pfeiffer (HNTB): "This overview doesn't include that, but later designs would include it. Would the CAG like to see bike/ped included in design?"
> Comment from Tim Porter (First Student): "Several times a day we encounter scooters/bikes running at 20 mph in a traffic lane. They are permitted to do so but there are safety concerns."

Question from John Simmons (Missouri House Representative, Dist. 109): "Are we at a point where we have dedicated turn lanes?"
Travis Pfeiffer (HNTB): "No, this overview does not include design detail such as turn lanes at this point."

Question from CAG: "Is there a recommended speed limit for this area currently? Is 55mph a recommended limit for a road like this?"
Carrie Falkenrath (Tsquared): "It would be difficult to encourage these speeds with a 4-lane. Adding more pavement will not reduce speeds or increase safety."

Jason Weggeman (Franklin County Sheriff): "We would likely be looking at an additional 4-5 fatalities per year with a 4-lane configuration."

After a discussion about the 3 lane with center two-way left turn and the 2 lane divided with small median designs, the CAG raised several questions for discussion.

Question from CAG: "How do you access Route 47 from the side roads with the 2-lane design?"
Travis Pfeiffer (HNTB): "Design elements including roundabouts could assist in reducing the amount of time to access, for example from bus facility and rock quarry."
Chip Touzinsky (Lochmueller Group): "This option may see small increase in time, but traffic will always be moving."
Carrie Falkenrath (Tsquared): "When comparing two and three lanes, what doesn't get captured – we see unscrupulous traffic using turning lane to pass. This is something to keep in mind when comparing 2-lane divided with 3-lane."

Question/Comment from Kayla Herman, Union Ambulance: "Don't we already see this on the shoulder?" **(i.e., the shoulder being used to pass).**
Carrie Falkenrath (Tsquared): "Yes."

Question from CAG: "Is it all the same throughout the entire corridor?" (i.e., Will the design include only one design configuration?)
Travis Pfeiffer (HNTB): "Today we are not recommending the same configuration throughout the corridor. We recognize that the topography, driveway density etc. is different north vs south of Union."

Question from Kayla Herman, Union Ambulance: "With the 2-lane divided design, how will EMS get priority and reduce response times if we have to backtrack?"
Travis Pfeiffer (HNTB)/Carrie Falkenrath (Tsquared): "CAG feedback can impact design decisions, and we don't want to negatively impact EMS response times."

Bill Straatman (City of Washington Transportation Chairman): "Around Woodland, there is a buildup somewhere that reveals 40-50 vehicles. At peak times, left turn on Woodland feels like a really dangerous move. It happens every day."
Travis Pfeiffer (HNTB): "Would the left turn lane [3 lane design] help with this?"

Straatman: “I’m not sure that it would. If you open up a center lane, this seems to open it up to more dangerous driving.”
Travis Pfeiffer (HNTB): “Would using a roundabout to turn around and then make a right turn into your driveway help?”
Straatman: “Perhaps. There’s just too much congestion.”

Question from Pam Knox (OATS Transit): “Is the three-lane the safest option then?”
Travis Pfeiffer (HNTB): “Roundabouts and J-turn intersections add safety benefits that are not accounted for in the safety benefit comparisons. Chip T from Lochmueller adds that these safety improvement predictions come from generalized studies. There is limited data with the 2-lane divided with small median.”

Question from Tim Porter (First Student): “Is there a way to predict the safety improvements that do include the roundabout/J-turn data?”
Travis Pfeiffer (HNTB): “We’re hesitant to provide more specific data without more detailed designs.”

Carrie Falkenrath (Tsquared): “Roundabouts generally provide safety improvements of about 30%.”

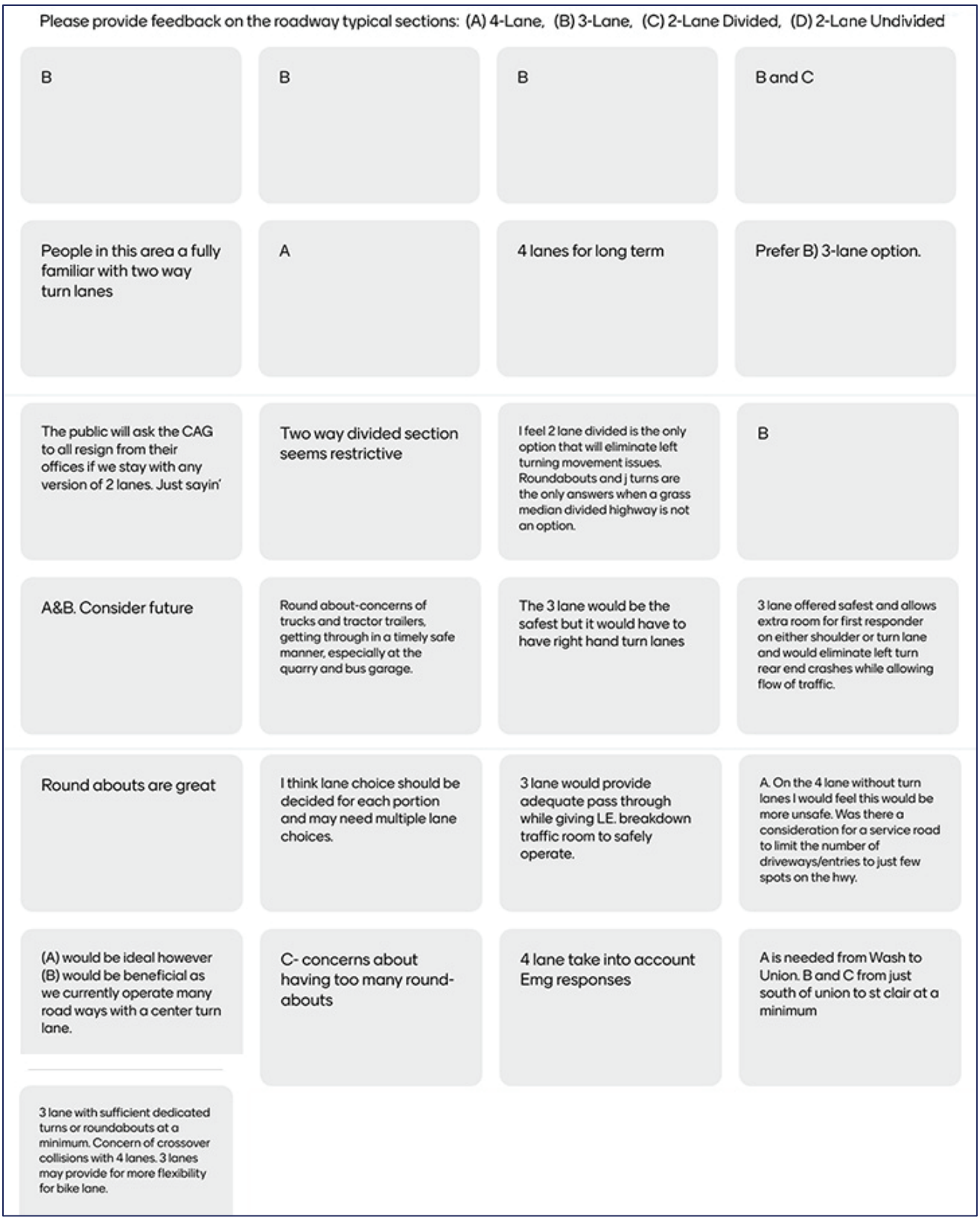
Question from Megan Amburn (OATS): “Would these designs include two-lane roundabouts?”
Travis Pfeiffer (HNTB)/team: “We are not there yet. Most would probably feature single-lane roundabouts.”

Question: “Is there a standard for roundabouts across the state?”
Carrie Falkenrath (Tsquared): “Yes and no. Overall there are general standards, but generally speaking, roundabouts are designed for their surroundings.” She then provided an example of new roundabouts near Route 19 that feature large configurations designed to accommodate large semi trucks.”

General comment: “There is fear that this would end up like 109. So much signage and drivers are intimidated.”

Following this discussion, the team used Menti to gather feedback on the design options presented. Responses are included in Figure 2 on the following page.

Figure 2: Feedback on roadway typical sections



Please provide feedback on the roadway typical sections: (A) 4-Lane, (B) 3-Lane, (C) 2-Lane Divided, (D) 2-Lane Undivided

B	B	B	B and C
People in this area a fully familiar with two way turn lanes	A	4 lanes for long term	Prefer B) 3-lane option.
The public will ask the CAG to all resign from their offices if we stay with any version of 2 lanes. Just sayin'	Two way divided section seems restrictive	I feel 2 lane divided is the only option that will eliminate left turning movement issues. Roundabouts and j turns are the only answers when a grass median divided highway is not an option.	B
A&B. Consider future	Round about-concerns of trucks and tractor trailers, getting through in a timely safe manner, especially at the quarry and bus garage.	The 3 lane would be the safest but it would have to have right hand turn lanes	3 lane offered safest and allows extra room for first responder on either shoulder or turn lane and would eliminate left turn rear end crashes while allowing flow of traffic.
Round abouts are great	I think lane choice should be decided for each portion and may need multiple lane choices.	3 lane would provide adequate pass through while giving LE. breakdown traffic room to safely operate.	A. On the 4 lane without turn lanes I would feel this would be more unsafe. Was there a consideration for a service road to limit the number of driveways/entries to just few spots on the hwy.
(A) would be ideal however (B) would be beneficial as we currently operate many road ways with a center turn lane.	C- concerns about having too many round-abouts	4 lane take into account Emg responses	A is needed from Wash to Union. B and C from just south of union to st clair at a minimum
3 lane with sufficient dedicated turns or roundabouts at a minimum. Concern of crossover collisions with 4 lanes. 3 lanes may provide for more flexibility for bike lane.			

The group was then asked to rate the roadway options both north and south of the city of Union. The results of each rating question are found in Figures 3 and 4 below.

Figure 3: Ratings for roadway options north of Union

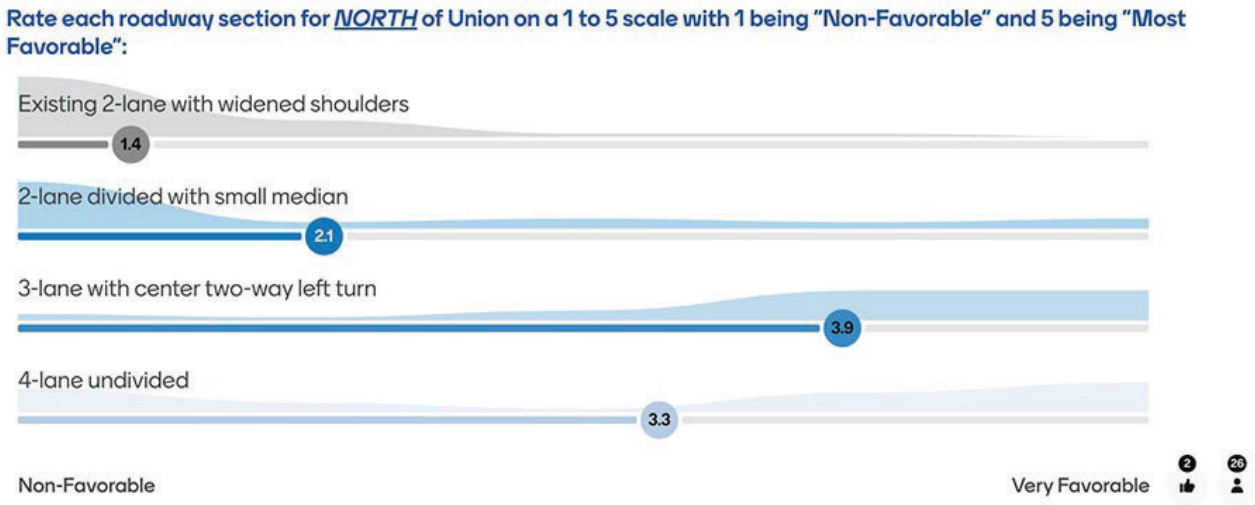
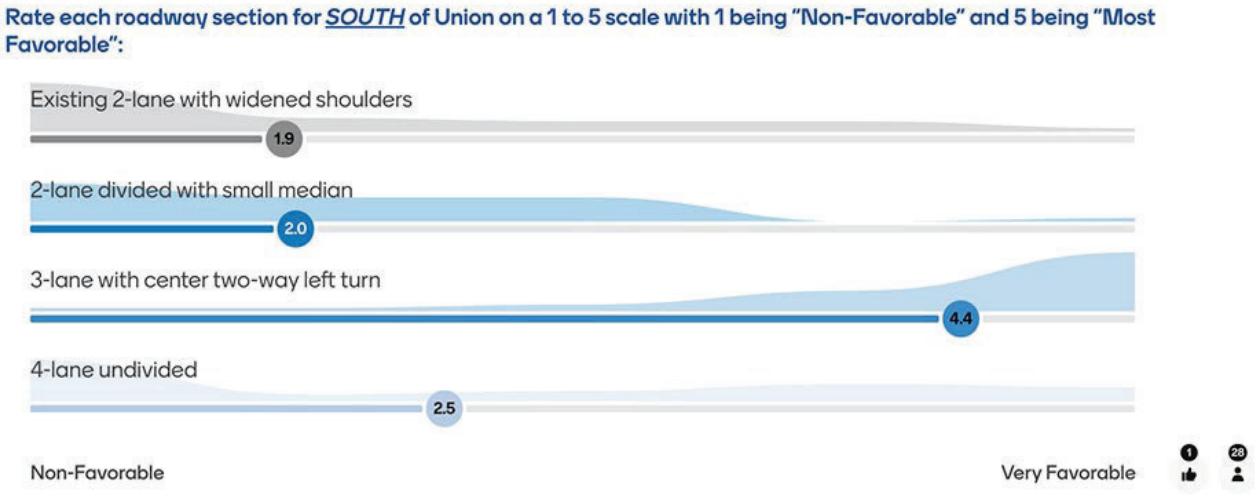


Figure 4: Ratings for roadway options south of Union



The group was asked to articulate why their votes differed slightly in favorability for the 3-lane option between the north and south segments of the corridor, but none articulated a specific reason. Overall, the ratings were relatively consistent between the two segments, with the 3-lane option being the most favored configuration overall. Several members of the group noted that the general public will expect at least a third lane to be added and two-lane improvements feel like a ”band-aid”. Additional information in included the following section.

MO-47 Intersections Analysis and Discussion

The discussion then moved to analyze and discuss intersections along MO-47, with the majority of the focus centering on the intersection of MO-47 and U.S. 50. Following a summary on the benefits and drawbacks of unsignalized, signalized, and roundabout intersections, the CAG was asked to provide general feedback on the options, which are shown in Figure 5 below.

Figure 5: Feedback on intersection options

The feedback provided indicated a favorable opinion of roundabout intersections for their benefits of improved traffic flow, safety, and lower maintenance costs. Favorable opinions were also expressed about signalized intersections at higher-traffic locations.

The project team asked several questions of the CAG following the exercise.

Question from Travis Pfeiffer (HNTB): Did the team here perhaps miss an opportunity at currently signalized intersections for roundabouts?
The CAG provided several "Yes" answers, including from law enforcement and other attendees. No verbal dissention was indicated.

Question from Jordan Dalaviras (MODOT): what do your residents think about roundabouts?
Mayor of Washington Doug Hagedorn: "It will take education but I'm for it. Let's do it."

Robert Schmuke (Mayor of Union): "They are traffic calming, keeps traffic moving. I'd rather keep moving than stop for a stop sign and have to slow down and speed up again."

Tim Porter (First Student): "Appropriately designed roundabouts can be driven over. If we miss a bus stop and I've got a roundabout, it's much easier to use the roundabouts to turn around and get back to that stop and then get back on the route. Avoids having buses having to make multi-point turns."

Bill Straatman (City of Washington Transp. Chairman): "It's a safety issue. I'd rather have roundabouts than problems with those intersections. I think we can convince the public, too."

Robert Schmuke (Mayor of Union): "If a roundabout will keep us from getting elected, that's sad."

John Simmons (Missouri House Representative, Dist. 109): "For $74M, any two-lane will feel like a waste to constituents. It's a non-starter."

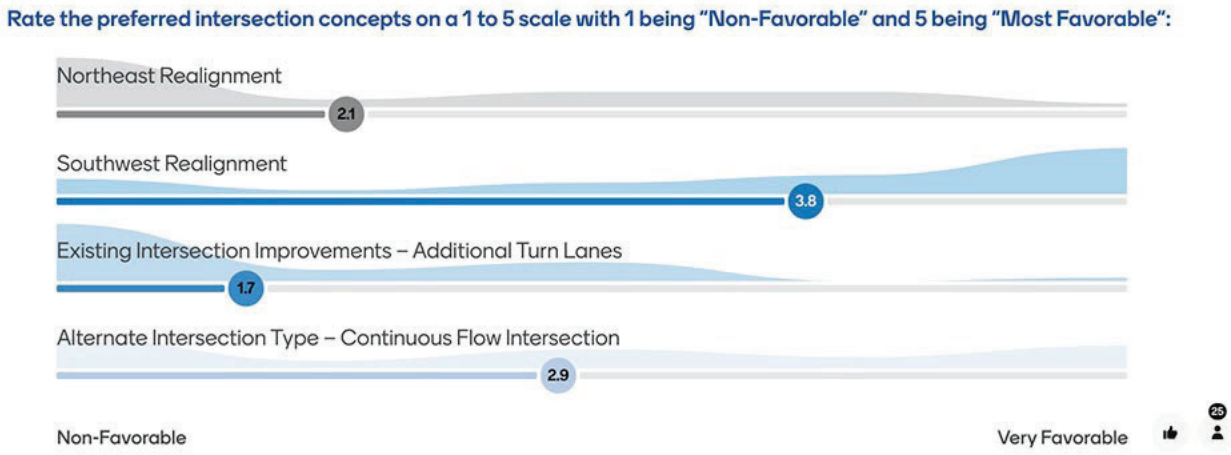
Tim Porter (First Student): "And if it's a two-lane road with a bike lane, that bike lane is all that residents will see."

Kayla Herman (Union Ambulance): "Some of the worst crashes I've been on in my career have been on MO-47 and they were crossover crashes. I'm not sure that the 3-lane solves for that. But the two-lane with divider doesn't address congestion."

Charles Stankovic (City of Washington Engineer): "The two-lane will feel like a Band-Aid."

After this discussion, the project team provided general concepts for alternatives for the intersection of MO-47 and U.S. 50, including two new alignments (northeast and southwest), a Continuous Flow Intersection (CFI), and the addition of additional turn lanes (triple left turn lanes).

Figure 6: Ratings of intersection options



The group then discussed the intersection options and their benefits and drawbacks.

Kayla Herman, Union Ambulance: "What does the triple left and continuous flow do in terms of safety?"
Carrie Falkenrath (Tsquared): The triple left decreases safety, continuous flow increases safety. Triple left increases opportunity for T-Bone accidents, increases opportunity for 'conflict.'"

Kayla Herman, Union Ambulance: "With major flooding having divided Union in the past, do any of these alignments address that?"
Travis Pfeiffer (HNTB): "FEMA would require analysis of this. Any new facility has to stay outside of flood boundaries."

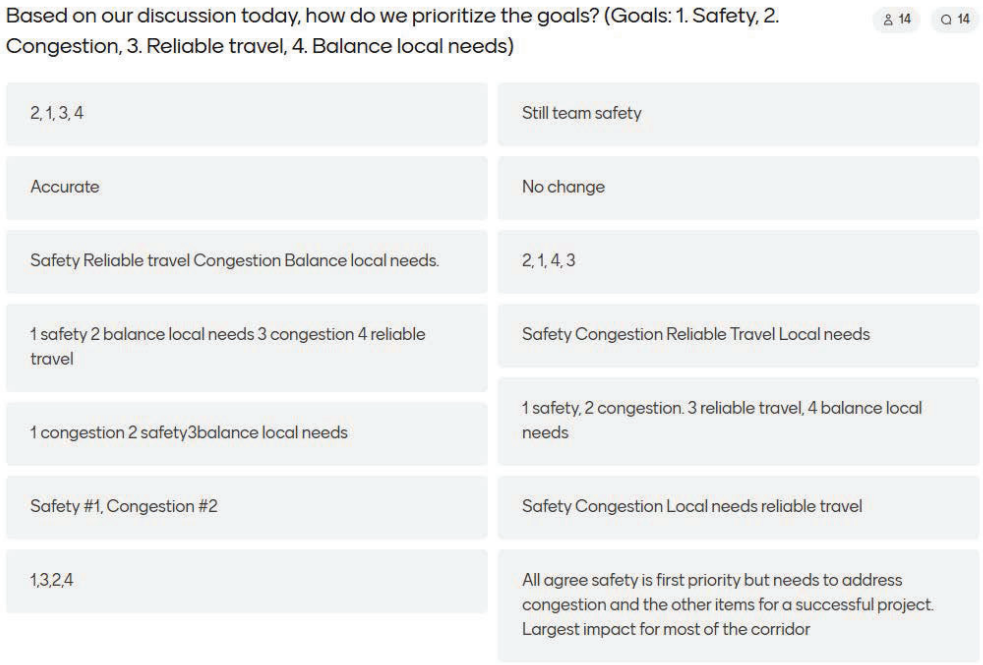
Michelle Mayer: "How much do new alignments affect the budget available for the rest of the route?"
Travis Pfeiffer (HNTB): "It's fair to say a realignment would occupy many of the dollars for the project overall."

Carrie Falkenrath (Tsquared): "The conditions are worse at the west intersection at MO-47 and 50."

Question: "What about the railroad bridge?"
Travis Pfeiffer (HNTB): "There are two lanes that go under the viaduct today, and alternative designs would definitely impact the bridge."

The final Menti poll asked the group to again prioritize the project goals. Responses are included in Figure 7 (next page).

Figure 7: Project priorities (conclusion of meeting)



As the meeting was beginning to close, fewer attendees participated in the final poll but based on responses and in short verbal agreement from the CAG it was clear that improved safety and reduced congestion remained the top priorities of the CAG.

The meeting concluded with a brief discussion of cost sharing opportunities and next steps, which include additional stakeholder listening sessions, the next CAG meeting (#3) to take place in Summer/Fall of 2025, and a public meeting to occur following CAG meeting #3.

Conclusions

The CAG is committed to maintaining improved safety and reduced congestion as its top priorities for the study corridor. Improved safety to the group includes fewer accidents and fatalities, reduced speeds, and room on the shoulder or a middle lane for traffic stops/breakdowns. There is consensus among the group, particularly among first responders and law enforcement, that higher speeds correlate with more fatalities and the group indicated it did not want to see increased speeds along the corridor. Rather, the group indicates through conversation and questions that reduced speeds through traffic calming design would improve safety and be preferable.

There is also consensus among the group that a three-lane configuration with center two-way turn lane is preferable to either two-lane configuration presented, or to a four-lane design. This does not account for the potential of a combination of roadway options, and several among the group indicated that a combination of roadway options may present the best option. Roundabouts are perceived positively by the group for their benefits of improved traffic flow, safety, and lower maintenance costs, and this positive perception was expressed more vocally and via the Menti polling than during the first CAG meeting.

Regarding intersection options, there was some enthusiasm expressed for the Southwest realignment, which was reflected in the Menti polling. However, following discussion of how the Continuous Flow

Intersection (CFI) would operate and how it would both increase safety without the high cost of a new realignment and bridge (both necessary for the northeast and southwest realignment options), increased enthusiasm for the CFI was more apparent. The group acknowledged that additional left turn lanes at the MO-47 and U.S. 50 intersection would not meet project goals of increasing safety, and that this option would be more likely to decrease safety and increase the rate of accidents at this intersection.

Appendix A: Sign-in Sheets

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Amburn	Megan	OATS Transit	☒
Dalwarth ~~Bailey~~	Brad ~~Cozy~~	City of St. Clair – Mayor	☒
Banderman	Brad	MO House of Representatives Dist. 119	☐
Bauer	Jon	East Central College (ECC)	☒
Brinker	Tim	Franklin County - Presiding Commissioner	☐
Pam ~~Burbank~~	~~Knox~~ Michael	~~OATS Transit~~ Sign in captured sep. sheet	~~☒~~
Chamberlain	Jeremy	UPS	☐
Cox	Ken	Franklin County - Commissioner	☐
Cox	Tony	Missouri Eastern RR – Jag Transport	☐
Diekhaus	James Chris	Union Chamber of Commerce	☒
Farris	Darl	Missouri Eastern RR – Jag Transport	☒

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Flagg	Dave	Septic Services, Inc.	☐
Folsom	Geoff	The Missourian	☑
Graf	Gary	Union Fire Chief	☐
Grutsch	Jim	Franklin County Highway Administrator	☒
~~Hagedorn~~	Doug	City of Washington – Mayor	☒
Hall	Aaron	Union Transportation Committee	☒
Harden	James	Franklin County Sheriff	☑
Hedlund	Mark	Highway Patrol – Troop C	☐
Herman	Kayla	Union Ambulance District	☒
Husereau	Melissa	St. Clair R-XIII School District Superintendent	☑
Ivie	Jason	City of St. Clair - Public Works Director	☑
Jones	John	Missouri Eastern RR – Jag Transport	☐
Kania	Dan	Union R-XI School District Asst. Sup of Operations	☐

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Keathley	Lonnie	Highway Patrol - Troop C	☒
Kelly	JD	City of Union - Engineer / Public Works Director	☒
Kephart	Dr. Jennifer	School District of Washington Superintendent	☒
Lamb	Darren	City of Washington - City Administrator	☒
Lasswell	Jeremy	Union Fire Assistant Chief	☒
Lueken	Cameron	Wunderlich Surveying	☒
Mabe	Dr. Mike	Union R-XI School District Superintendent	☐
Mayer	Michelle	Union Ambulance District	☒
McBride	Charles	Missouri Eastern RR --- Jag Transport	☐
McColloch	John	School District of Washington	☐
Overschmidt	Paul	Franklin County – Commissioner	☐
Pelton	Steven	Franklin County Sheriff	☐
Porter	Tim	First Student	☒

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Pratt	Heather	Mercy Hospital - Washington	☒
Russell	Rost	Union Transportation Committee	☐
Schatz	Dave	Franklin County – Presiding Commissioner	☐
Schmieder	James	City of Union – Assistant City Administrator	☑
Schmuke	Robert	City of Union - Mayor	☑
Sickafoose	Tanya	Union Post Office	☒
Siedhoff	Virgil	Siedhoff Distributing - Prairie Farms Milk	☑
Simmons	John	State Representative District 109	☒
Stankovic	Charles	City of Washington - Engineer	☑
Straatmann	Bill	Washington Transportation Chairman	☒
Weggemann	Jason	Franklin County Sheriff	☑
Welty	Mike	City of St. Clair- City Administrator	☑

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Williams	Shawn	UPS	☐
Zimmermann	Johnathon	City of Union- City Administrator	☒
Miller	Greg	City of Union Fire Dept	X

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Name	Organization	Email	Phone	Check if present
Pam Knox	OATS Transit	pamk@oatstransit.org	573-559-5911	☑
Michelle Patke	Fr. Co. Hwy. Dept.	mpatke@franklinmo.gov	636-584-6264	☑
[redacted]				
CHRIS CLIFTON	Washington AREA Ambulance District	CHRIS.CLIFTON@WAADEMS.ORG	636-239-4354	☑
				☐
				☐
				☐
				☐
				☐
				☐

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Blair	Thomas	MoDOT	X
Dalaviras	Jordan	MoDOT	X
Evers	Thomas	MoDOT	
Groff	Aaron	MoDOT	X
Herzog	David	MoDOT	
Kuntz	Lisa	MoDOT	
Maldonado	Alex	MoDOT	
Redhage	Christine	MoDOT	X
Sanders	Bryson	MoDOT	X
Simmons	Cindy	MoDOT	
Simmons	David	MoDOT	
Sudduth	Rachel	MoDOT	X
Tooley	Shaun	MoDOT	X
Watkins	Eddie	MoDOT	

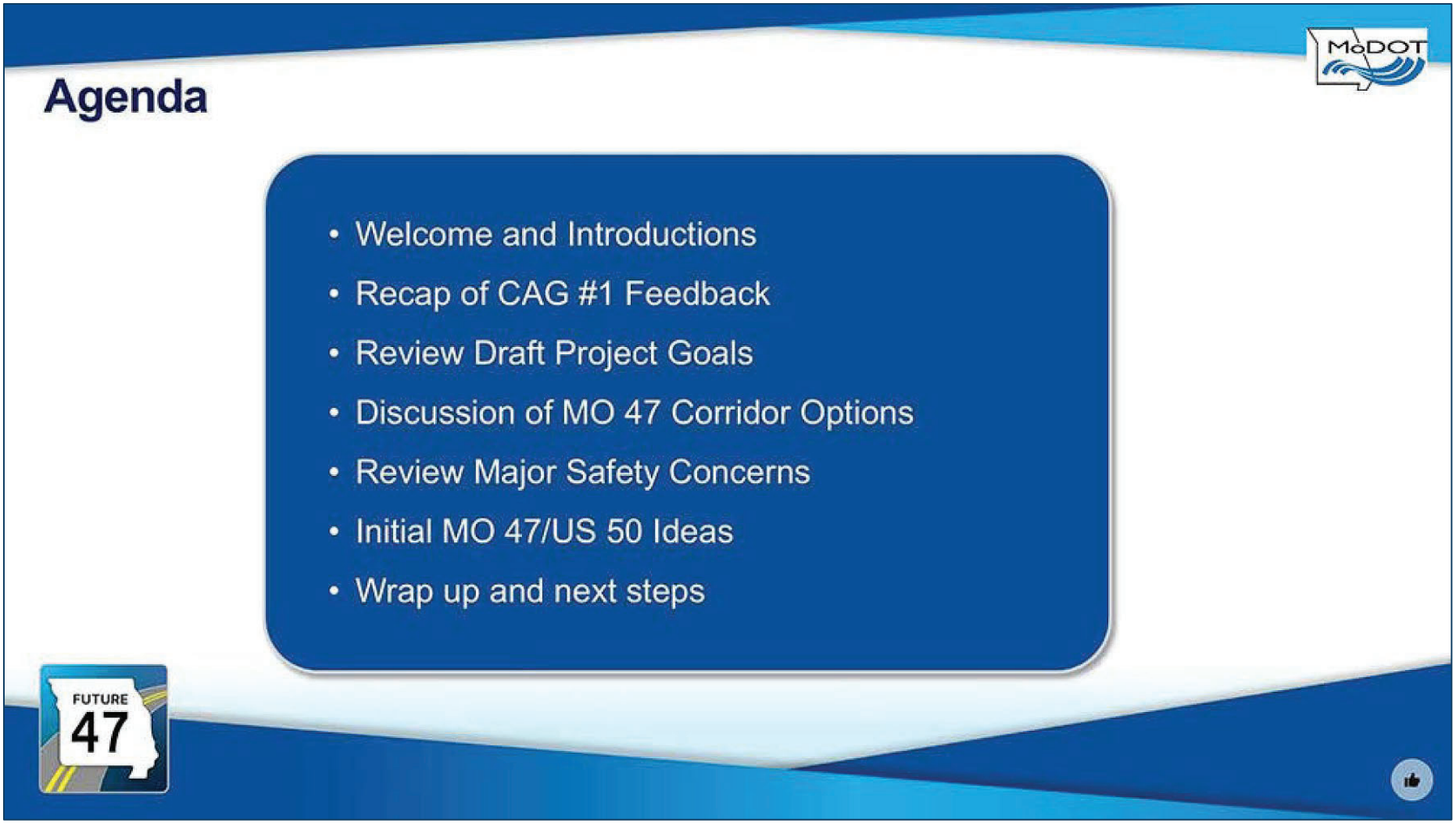
Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Beard	Chris	Lochmueller Group	☐
Falkenrath	Carrie	Tsquared	☒
Fleming	April	HNTB	☒
Heavin	Kelsey	HNTB	☒
Pfeiffer	Travis	HNTB	☒
Sagir	Fasil	HNTB	☐
Touzinsky	Chip	Lochmueller Group	☒
Yousefzadeh	Pouya	Lochmueller Group	☐

MoDOT Route 47 Study
Community Advisory Group (CAG)

April 28, 2025


Agenda
• Welcome and Introductions
• Recap of CAG #1 Feedback
• Review Draft Project Goals
• Discussion of MO 47 Corridor Options
• Review Major Safety Concerns
• Initial MO 47/US 50 Ideas
• Wrap up and next steps

Welcome and Introductions

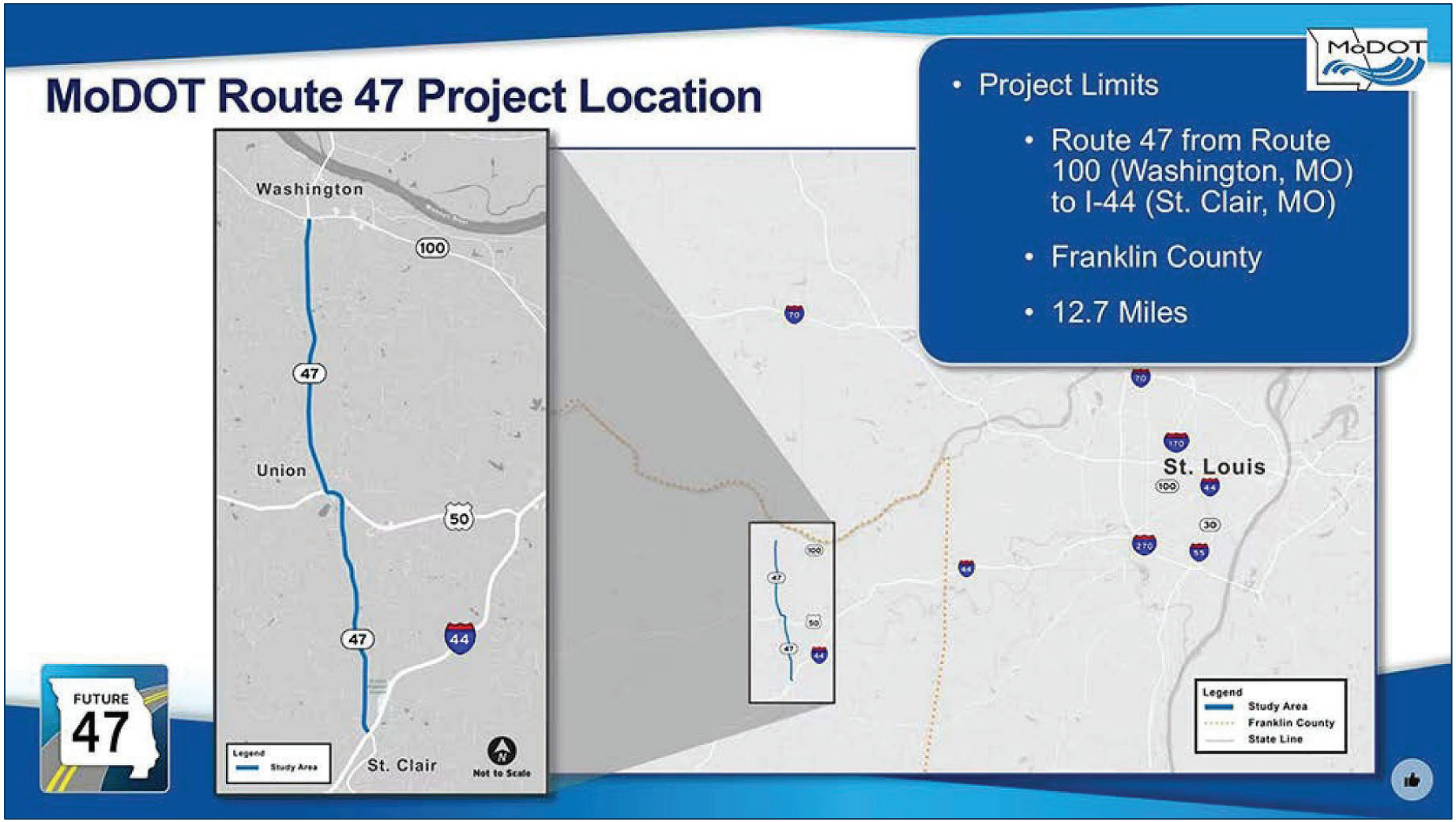
Project Team

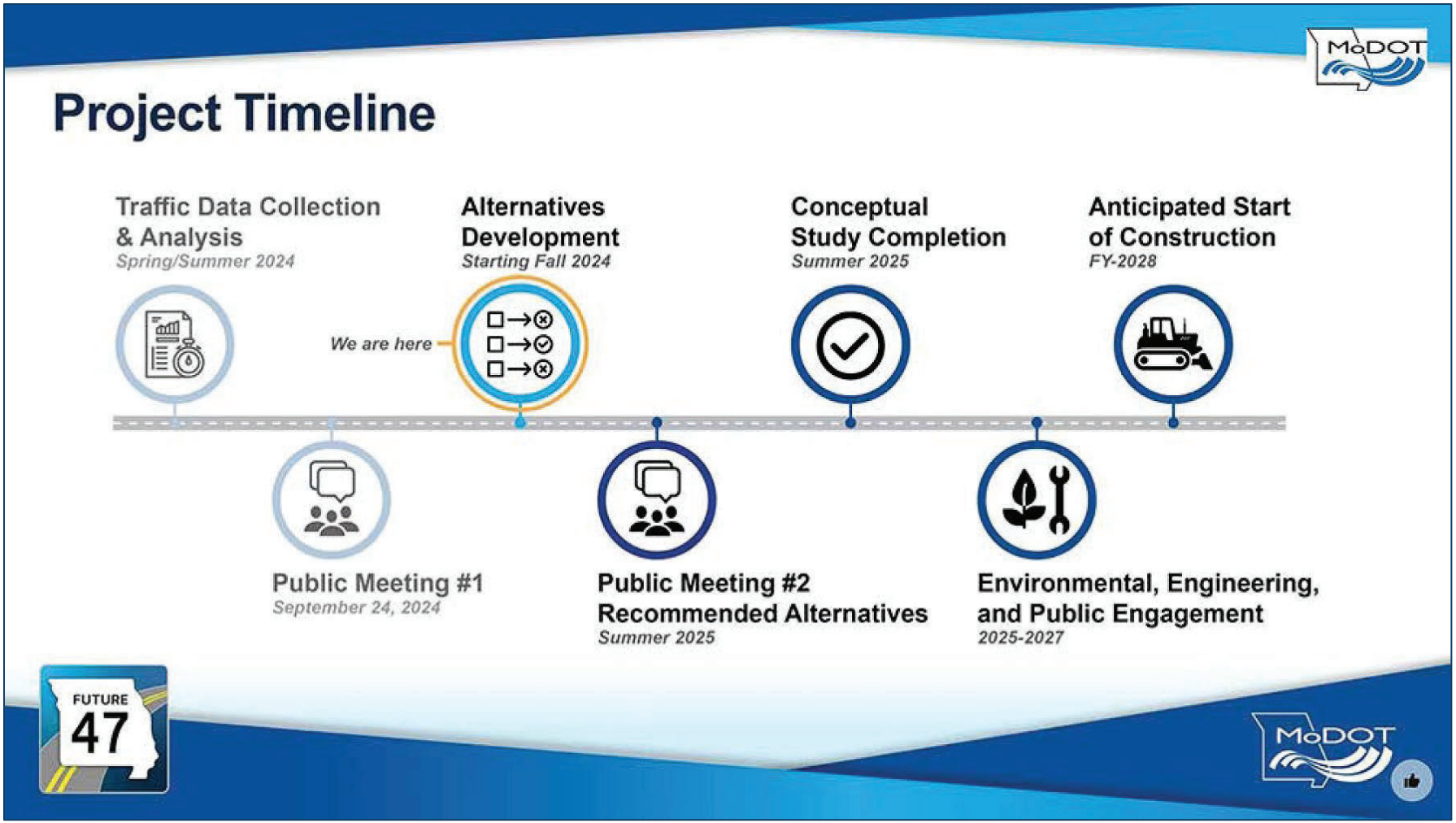
- Aaron Groff – MoDOT Project Manager
- Jordan Dalaviras – MoDOT
- Thomas Blair – MoDOT
- Thomas Evers - MoDOT
- Lisa Kuntz – MoDOT
- Bryson Sanders – MoDOT
- Rachel Sudduth – MoDOT
- Christine Redhage – MoDOT
- David Simmons – MoDOT
- David Herzog – MoDOT
- Cindy Simmons - MoDOT

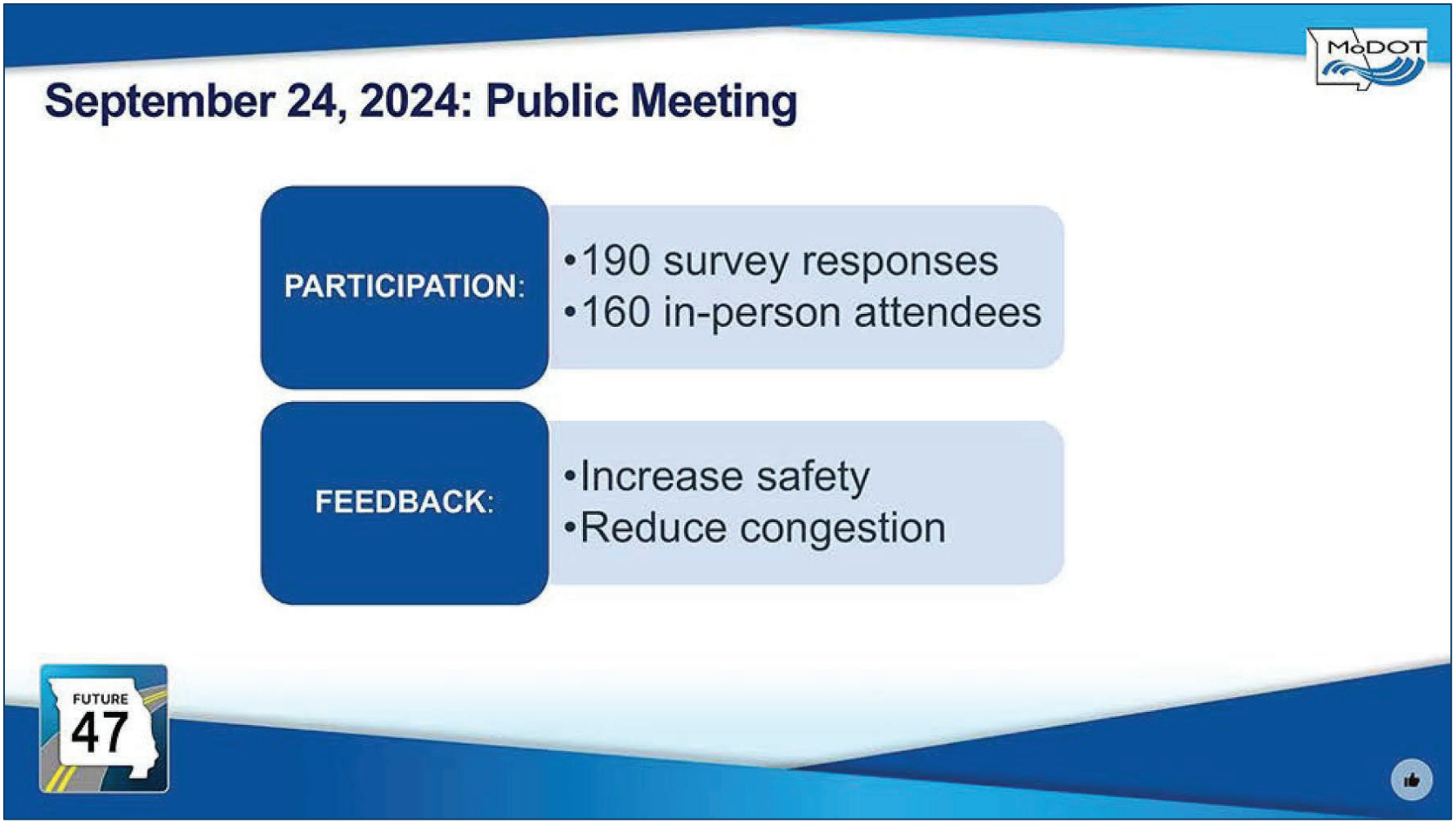
Consultant Team

- Travis Pfeiffer – HNTB
- Chip Touzinsky – Lochmueller Group
- Carrie Falkenrath – Tsquared
- Chris Beard – Lochmueller Group
- Pouya Yousefzadeh – Lochmueller Group
- Kelsey Heavin - HNTB

Advisory Group
City/County/Government
Brad Banderman – Representative
John Simmons - Representative
Jonathan Zimmermann – Union
James Schmieder - Union
J.D. Kelley – Union
Aaron Hall – Union
Doug Hagedorn - Washington
Charles Stankovic – Washington
Darren Lamb – Washington
Bill Straatmann – Washington
Mike Welty – St. Clair
Jason Ivie – St. Clair
Dave Schatz – Franklin County
Jim Grutsch – Franklin County
Ken Cox – Franklin County
Paul Overschmidt – Franklin County
Emergency Services
Steven Pelton – County Sheriff
Jason Weggemann – County Sheriff
James Harden – County Sheriff
Lonnie Keathley – Highway Patrol
Mark Hedlund – Highway Patrol
Jeremy Lasswell – Union Fire Dept.
Gary Graf – Union Fire Dept.
Michelle Mayer – Union Ambulance District
Kyle Herman – Union Ambulance District
Heather Pratt – Mercy Hospital
Education
Dr. Mike Mabe – Union School District
Dan Kania – Union School District
John McColloch – Washington School District
Melissa Husereau – St. Clair School District
Jon Bauer – East Central College
Gordon Brown – First Student
Tim Porter – First Student
Business Community
Chris Diekhaus – Union Chamber
Vergil Siedhoff – Siedhoff Distributing
Michael Burbank – OATS Transit
Megan Amburn – OATS Transit
Tanya Sickafoose – Union Post Office
John Jones – MO Eastern RR
Darl Farris – MO Eastern RR
Cameron Lueken – Wunderlich Surveying
Shawn Williams – UPS
Jeremy Chamberlain - UPS


MoDOT Route 47 Project Location
MoDOT
• Project Limits
• Route 47 from Route 100 (Washington, MO) to I-44 (St. Clair, MO)
• Franklin County
• 12.7 Miles
Washington
Union
St. Clair
St. Louis
100
47
50
44
70
170
270
55
30
Legend
Study Area
Franklin County
State Line
Not to Scale
FUTURE 47

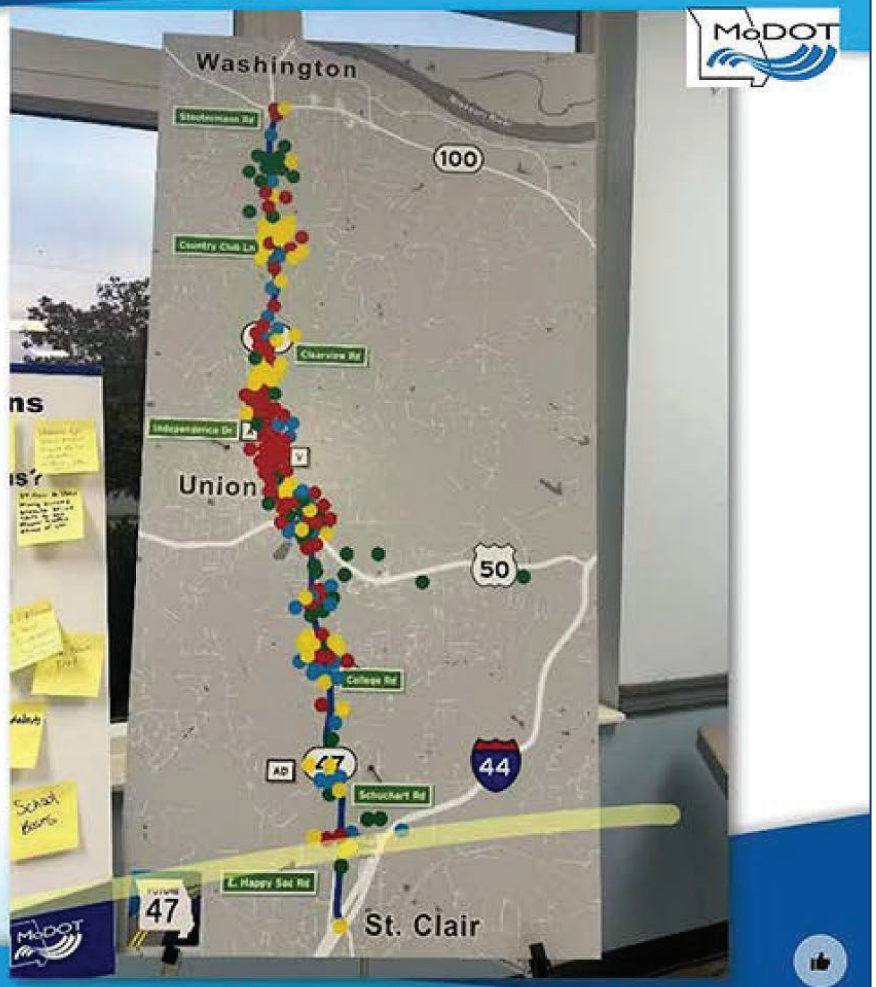

Project Timeline
Traffic Data Collection & Analysis
Spring/Summer 2024
We are here
Alternatives Development
Starting Fall 2024
Conceptual Study Completion
Summer 2025
Anticipated Start of Construction
FY-2028
Public Meeting #1
September 24, 2024
Public Meeting #2
Recommended Alternatives
Summer 2025
Environmental, Engineering, and Public Engagement
2025-2027


September 24, 2024: Public Meeting
PARTICIPATION:
•190 survey responses
•160 in-person attendees
FEEDBACK:
•Increase safety
•Reduce congestion

Public Meeting Engagement – Dot Exercise

RED DOT	• Safety Concern
YELLOW DOT	• Traffic/Congestion Concern
GREEN DOT	• Potential Growth
BLUE DOT	• Other Concern*

*Some examples: turn lanes, railroad bridge, uphill issues with semis, sight distance, school buses



February 6, 2025: CAG # 1

Figure 1: "How much of a concern to your organization/constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair?" - Average Rating

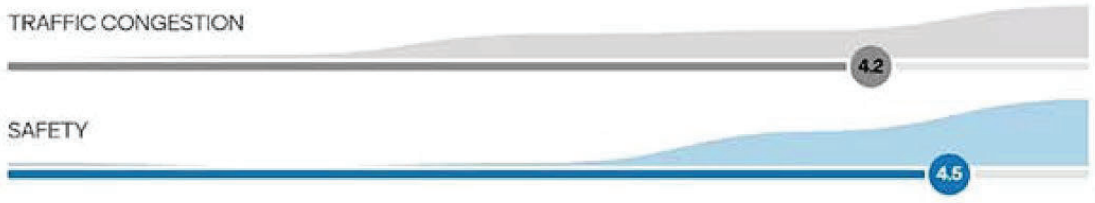
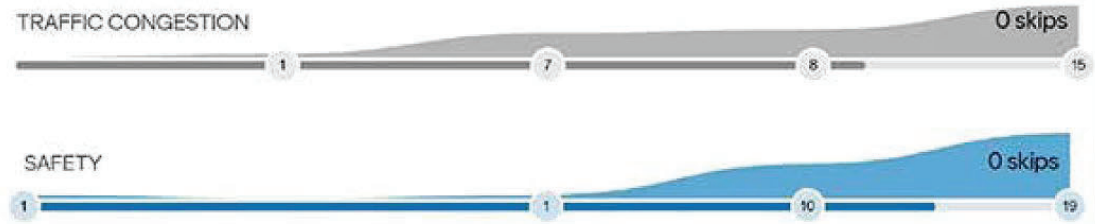


Figure 2: "How much of a concern to your organization/constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair?" - Ratings by Individuals



DRAFT Project Goals

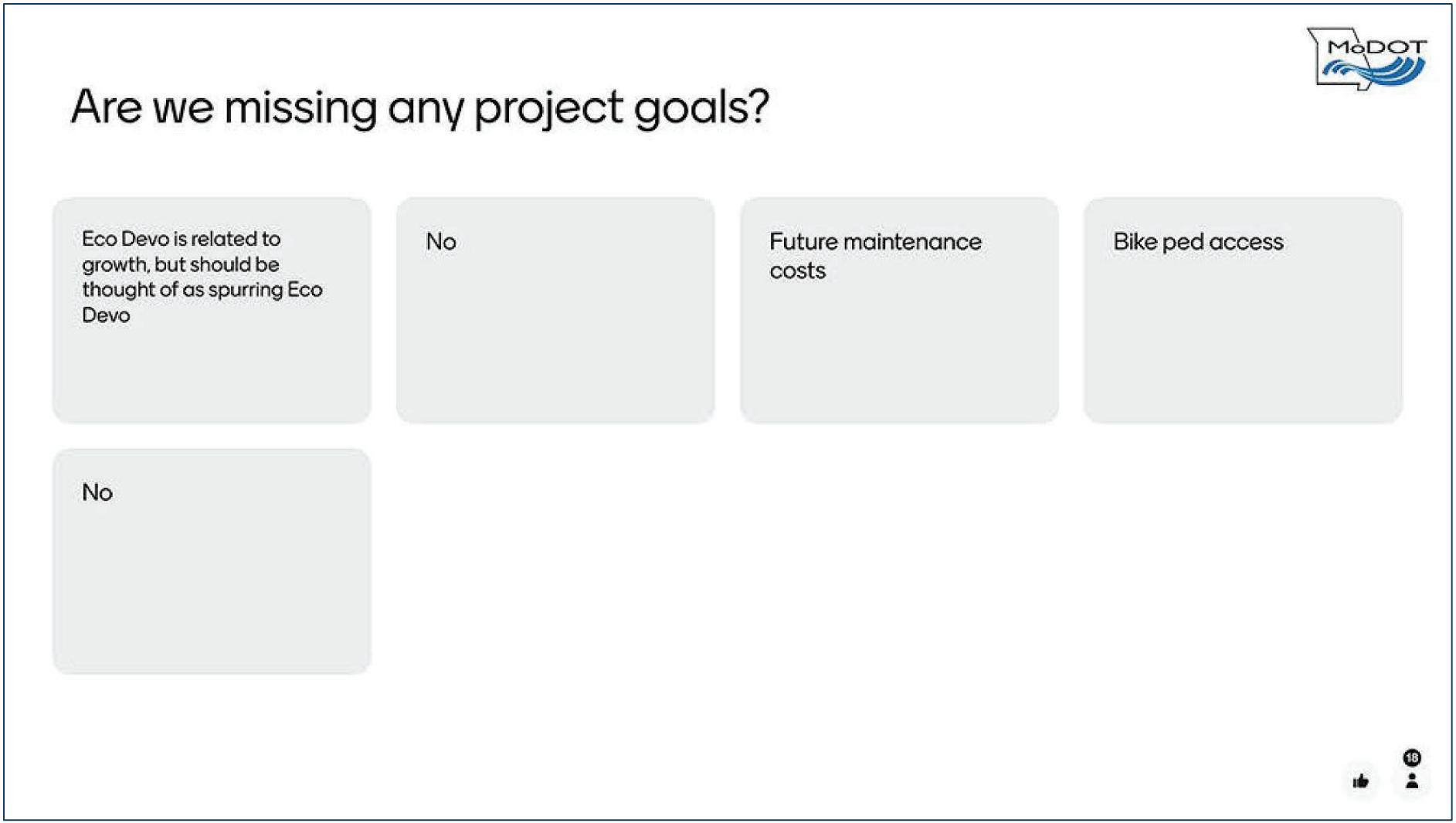
- Increase safety
- Reduce congestion
- Increase reliability of north-south regional travel
- Balance needs for local access, mobility, and economic growth

Are we missing any project goals?

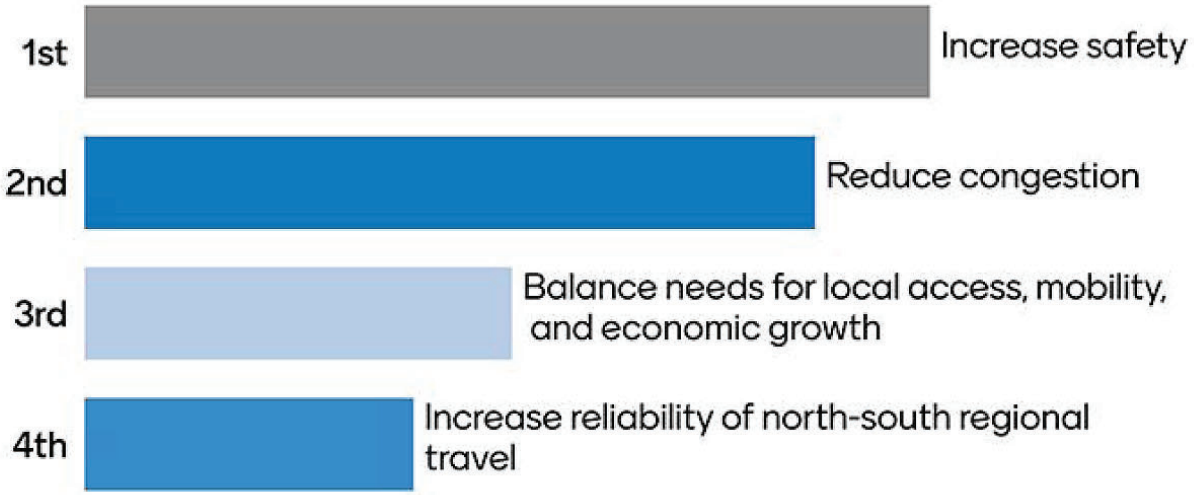
No	None	None that I can think of at this time	No
Mo	Bike/pedestrian access	No	Economic development

Are we missing any project goals?

No	No	No	No
No	No	Bike access	No

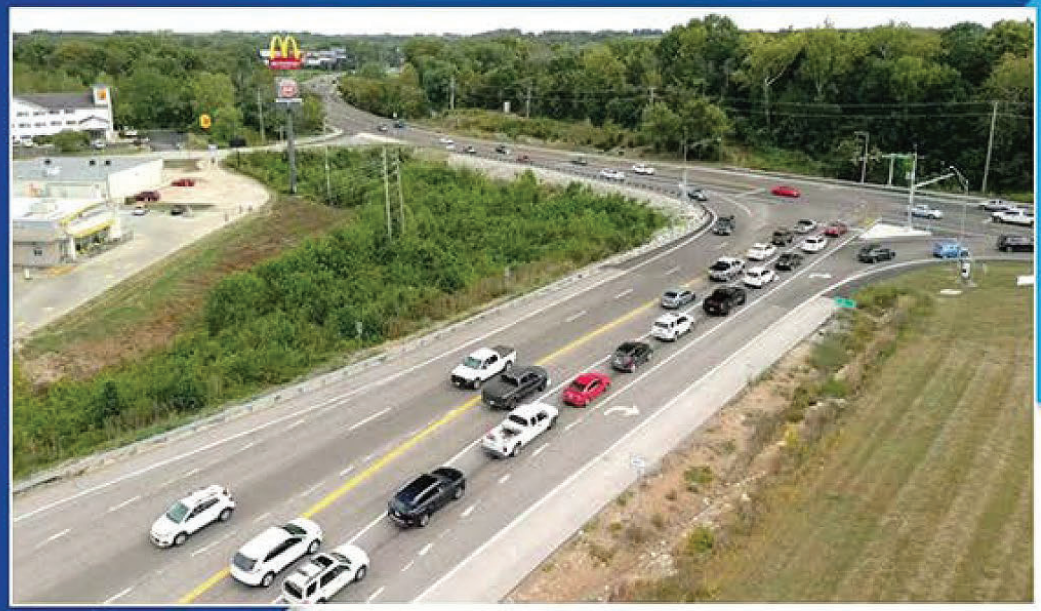

Are we missing any project goals?
Eco Devo is related to growth, but should be thought of as spurring Eco Devo
No
Future maintenance costs
Bike ped access
No

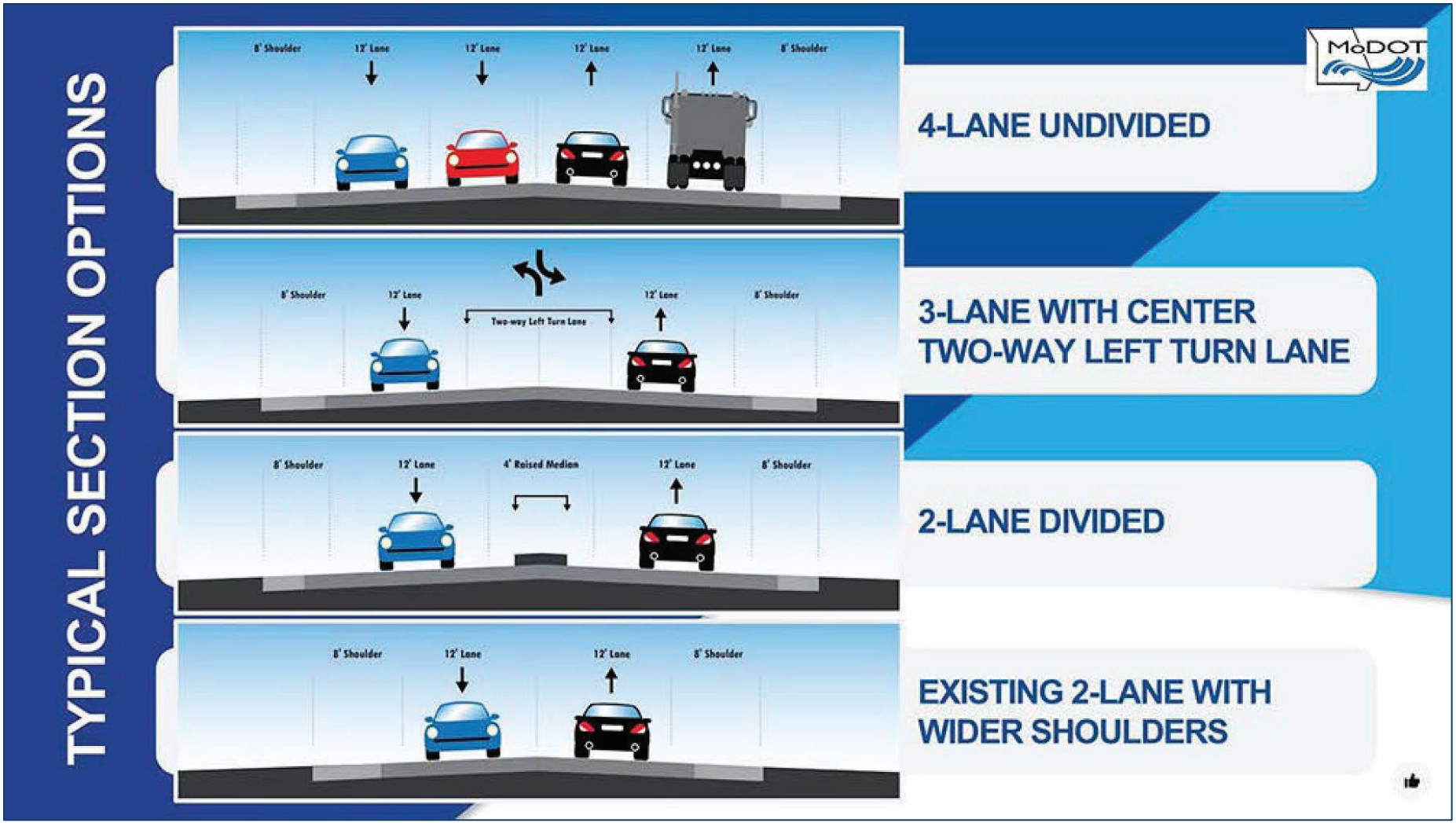
Rank the draft project goals by priority to your organization or constituents.



2 29

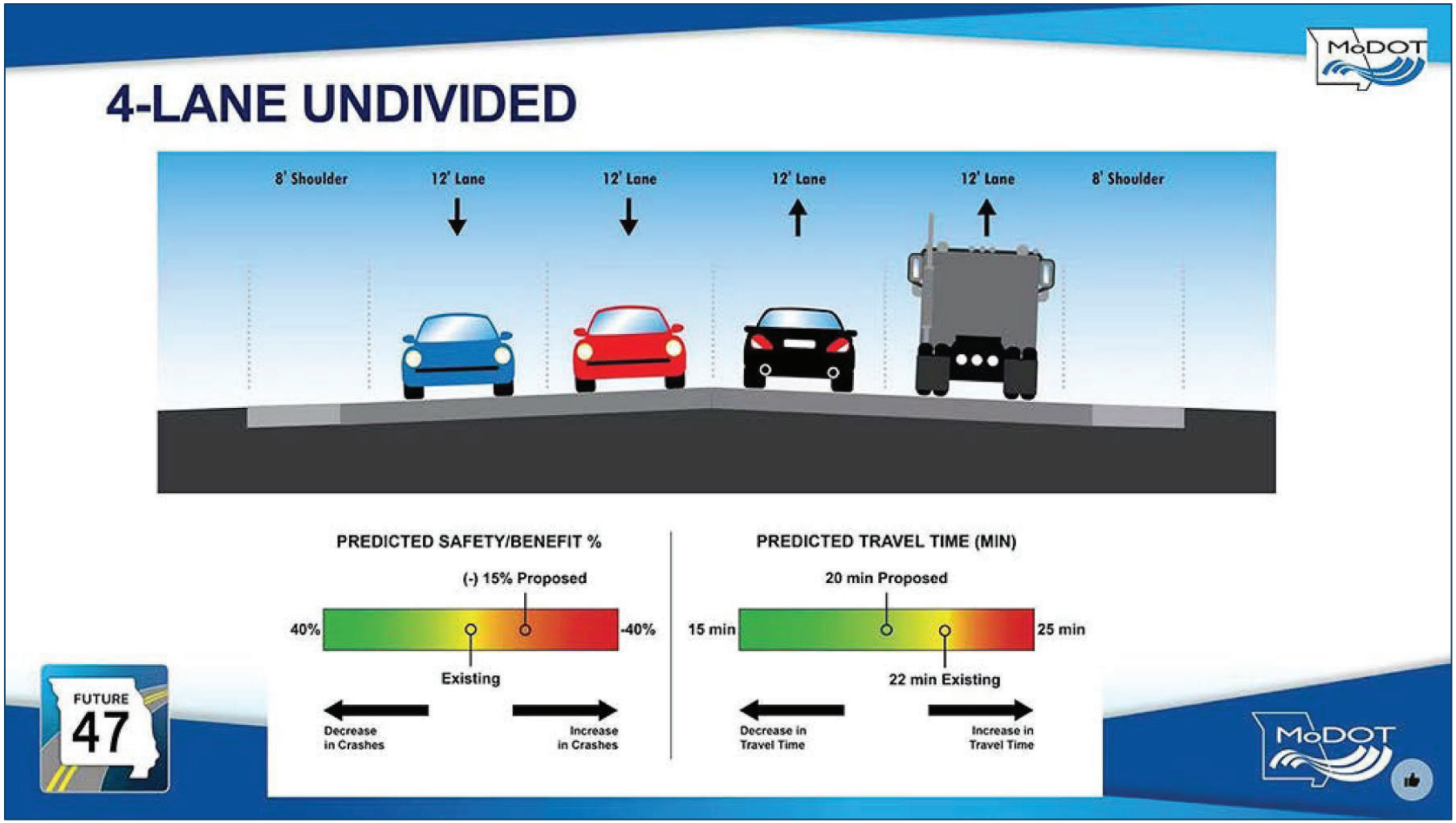
MO 47 CORRIDOR OPTIONS



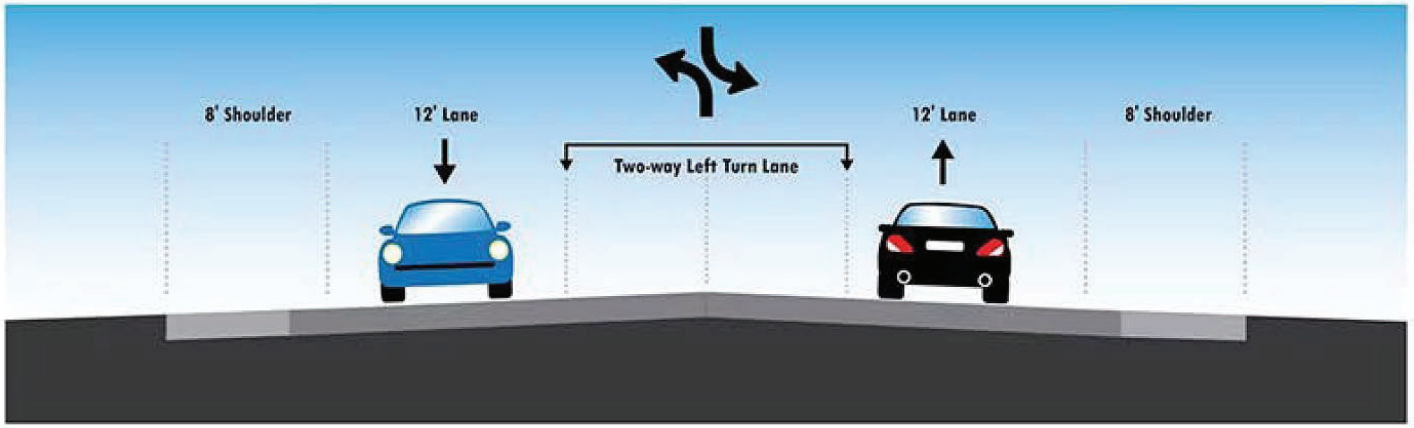

TYPICAL SECTION OPTIONS
8' Shoulder
12' Lane
12' Lane
12' Lane
12' Lane
8' Shoulder
4-LANE UNDIVIDED
8' Shoulder
12' Lane
Two-way Left Turn Lane
12' Lane
8' Shoulder
3-LANE WITH CENTER
TWO-WAY LEFT TURN LANE
8' Shoulder
12' Lane
4' Raised Median
12' Lane
8' Shoulder
2-LANE DIVIDED
8' Shoulder
12' Lane
12' Lane
8' Shoulder
EXISTING 2-LANE WITH
WIDER SHOULDERS

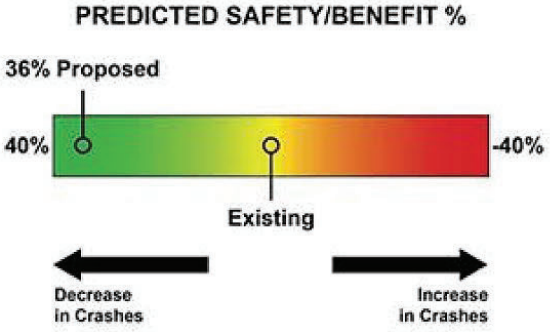
Future Average Daily Traffic (ADT) vs. Capacity by Typical Section

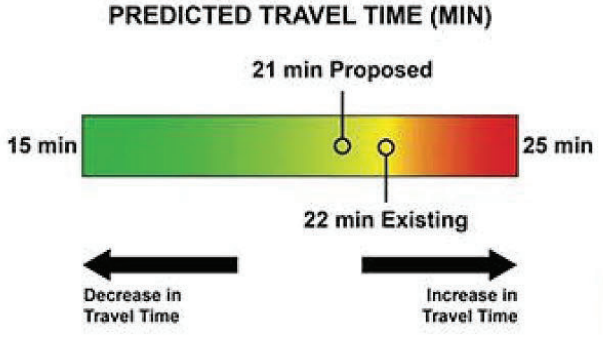
	2024 ADT	2050 ADT	ADT Capacity per Typical Section			
			4-Lane Section	3-Lane Section	2-Lane Divided	2-Lane Undivided (Existing)
MO-47 North of US-50	17,200	21,400	60,000	36,000	32,000	28,000
Rt-47 at US-50	39,400	47,800	60,000	36,000	32,000	28,000
MO-47 South of US-50	14,600	16,600	60,000	36,000	32,000	28,000


4-LANE UNDIVIDED
8' Shoulder
12' Lane
12' Lane
12' Lane
12' Lane
8' Shoulder
PREDICTED SAFETY/BENEFIT %
(-) 15% Proposed
40%
-40%
Existing
Decrease in Crashes
Increase in Crashes
PREDICTED TRAVEL TIME (MIN)
20 min Proposed
15 min
25 min
22 min Existing
Decrease in Travel Time
Increase in Travel Time

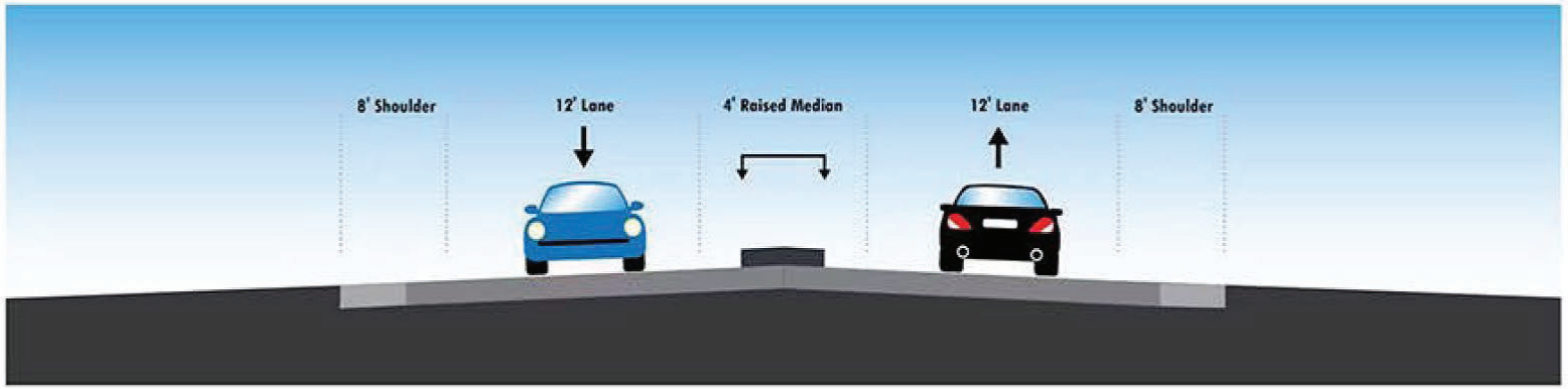
3-LANE WITH CENTER TWO-WAY LEFT TURN LANE







2-LANE DIVIDED WITH SMALL MEDIAN



PREDICTED SAFETY/BENEFIT %

15% Proposed

40% -40%

Existing

Decrease in Crashes

Increase in Crashes

PREDICTED TRAVEL TIME (MIN)

25 min Proposed

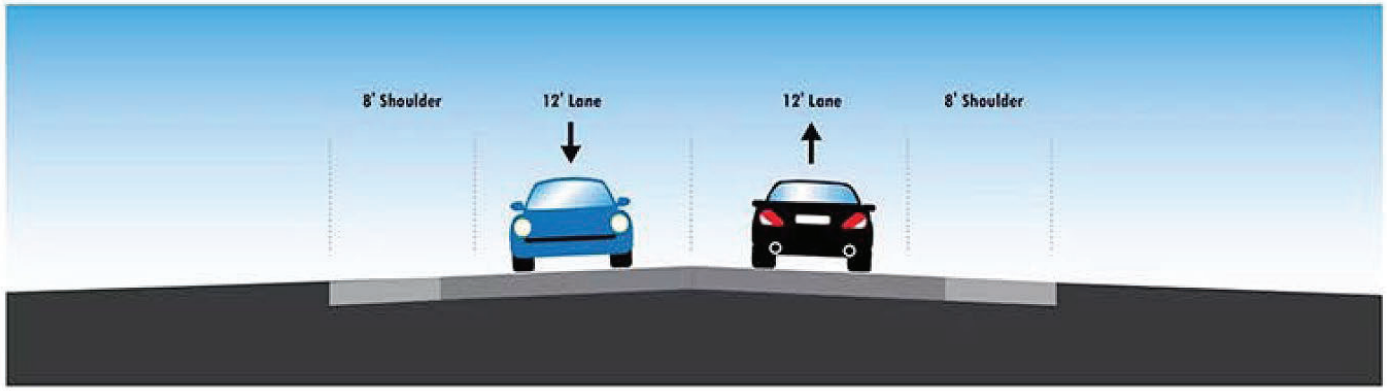
15 min 25 min

22 min Existing

Decrease in Travel Time

Increase in Travel Time

EXISTING 2-LANE WITH WIDENED SHOULDERS



PREDICTED SAFETY/BENEFIT %

10% Proposed

40% -40%

Existing

Decrease in Crashes

Increase in Crashes

PREDICTED TRAVEL TIME (MIN)

22 min Proposed

15 min 25 min

22 min Existing

Decrease in Travel Time

Increase in Travel Time

Speed Study Summary

	Location	Posted Limit (mph)	Majority of Drivers (mph) *non-peak hour
Washington	North of Woodland Road	SPEED LIMIT 55	62
	South of Forest Hills Drive		65
	South of Self Storage		70
Union	North of Central Midland RR	SPEED LIMIT 45	55
	US 50 (on bridge)		51
St. Clair	North of Franklin Avenue	SPEED LIMIT 55	60
	North of Myrick Manor		63
	North of Reeds Plaza		63

Existing Pavement Discussion

- Anticipate 4 to 6 inches of Mill and Overlay Asphalt Rehabilitation

Other Considerations

- Right-of-Way
- Driveway / Entrance impacts
- Utilities
- Costs
- Environmental
- Drainage
- Corridor Speeds
- Topography/Terrain

Please provide feedback on the roadway typical sections: (A) 4-Lane, (B) 3-Lane, (C) 2-Lane Divided, (D) 2-Lane Undivided

B	B	B	B and C
People in this area a fully familiar with two way turn lanes	A	4 lanes for long term	Prefer B) 3-lane option.

1 21

Please provide feedback on the roadway typical sections: (A) 4-Lane, (B) 3-Lane, (C) 2-Lane Divided, (D) 2-Lane Undivided

The public will ask the CAG to all resign from their offices if we stay with any version of 2 lanes. Just sayin'	Two way divided section seems restrictive	I feel 2 lane divided is the only option that will eliminate left turning movement issues. Roundabouts and j turns are the only answers when a grass median divided highway is not an option.	B
A&B. Consider future	Round about-concerns of trucks and tractor trailers, getting through in a timely safe manner, especially at the quarry and bus garage.	The 3 lane would be the safest but it would have to have right hand turn lanes	3 lane offered safest and allows extra room for first responder on either shoulder or turn lane and would eliminate left turn rear end crashes while allowing flow of traffic.

1 21

Please provide feedback on the roadway typical sections: (A) 4-Lane, (B) 3-Lane, (C) 2-Lane Divided, (D) 2-Lane Undivided

Round abouts are great	I think lane choice should be decided for each portion and may need multiple lane choices.	3 lane would provide adequate pass through while giving LE. breakdown traffic room to safely operate.	A. On the 4 lane without turn lanes I would feel this would be more unsafe. Was there a consideration for a service road to limit the number of driveways/entries to just few spots on the hwy.
(A) would be ideal however (B) would be beneficial as we currently operate many road ways with a center turn lane.	C- concerns about having too many round-abouts	4 lane take into account Emg responses	A is needed from Wash to Union. B and C from just south of union to st clair at a minimum

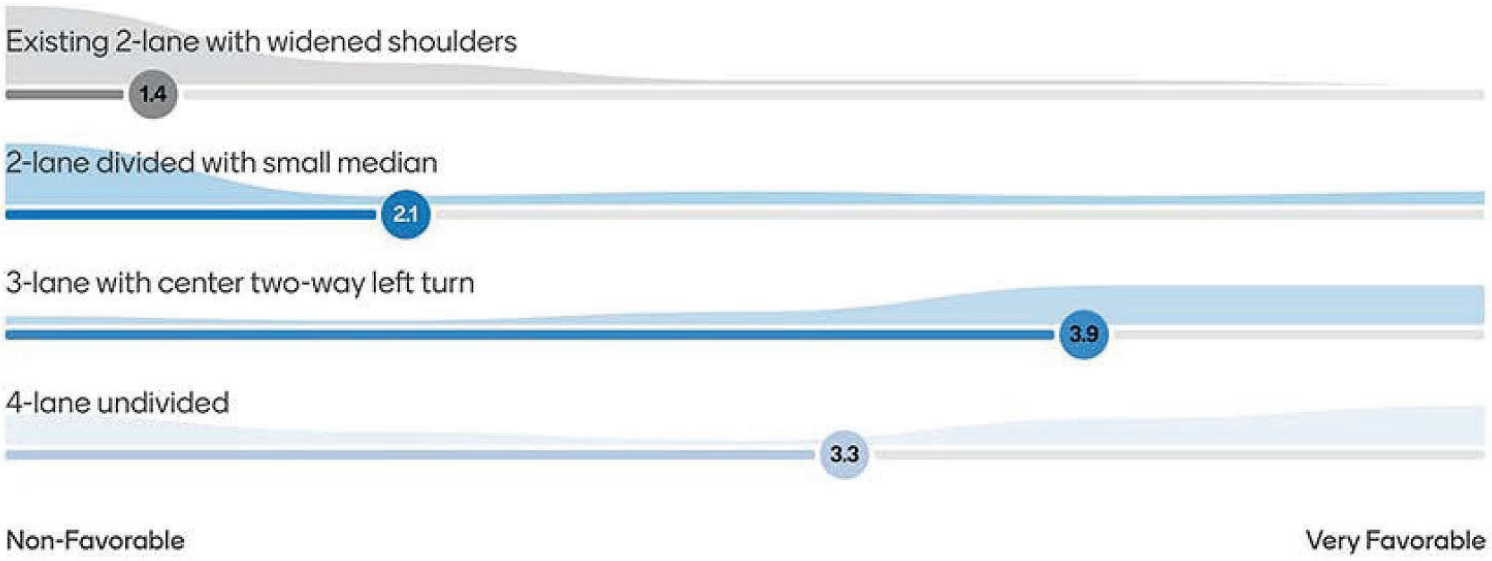
1 21

Please provide feedback on the roadway typical sections: (A) 4-Lane, (B) 3-Lane, (C) 2-Lane Divided, (D) 2-Lane Undivided

3 lane with sufficient dedicated turns or roundabouts at a minimum. Concern of crossover collisions with 4 lanes. 3 lanes may provide for more flexibility for bike lane.

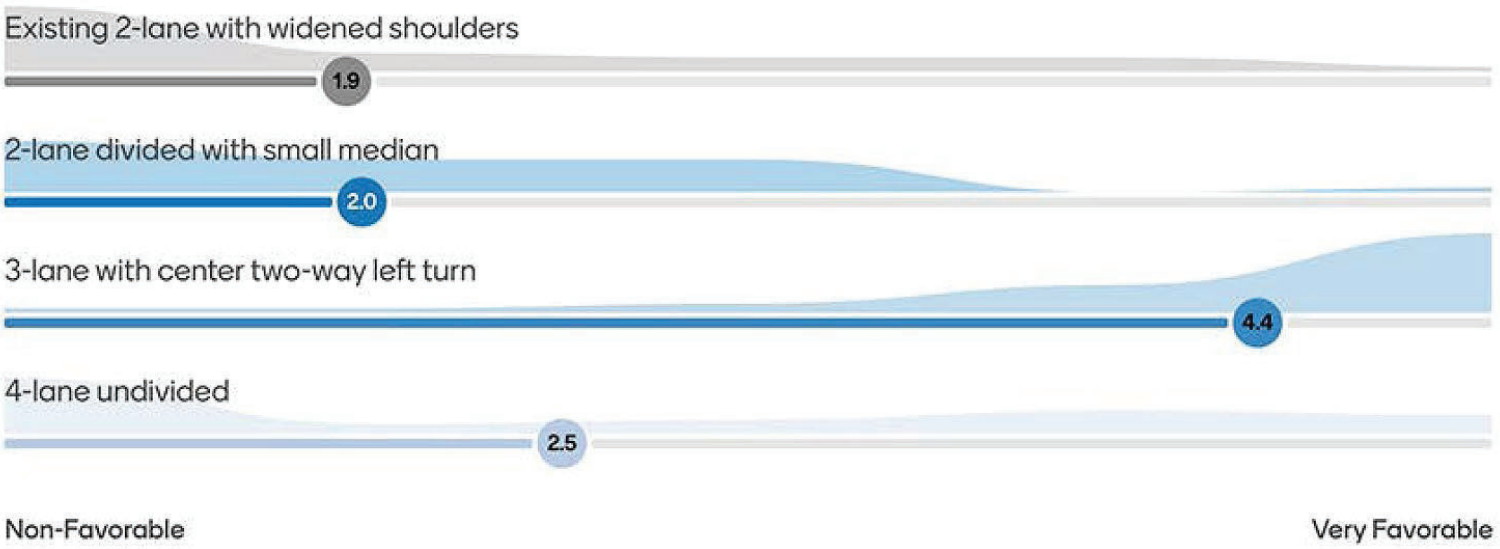
1 21

Rate each roadway section for *NORTH* of Union on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable":



2 26

Rate each roadway section for *SOUTH* of Union on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable":

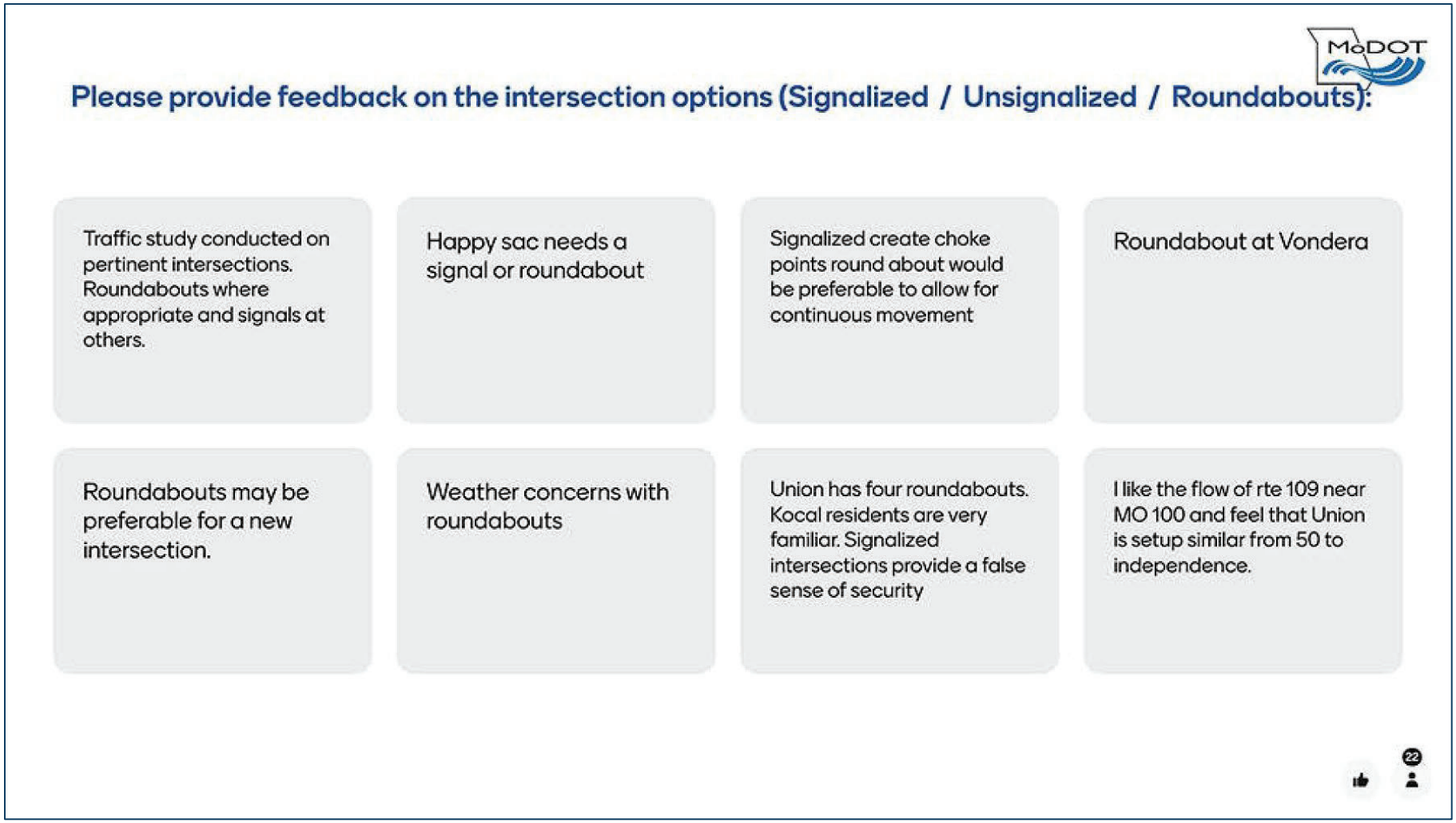


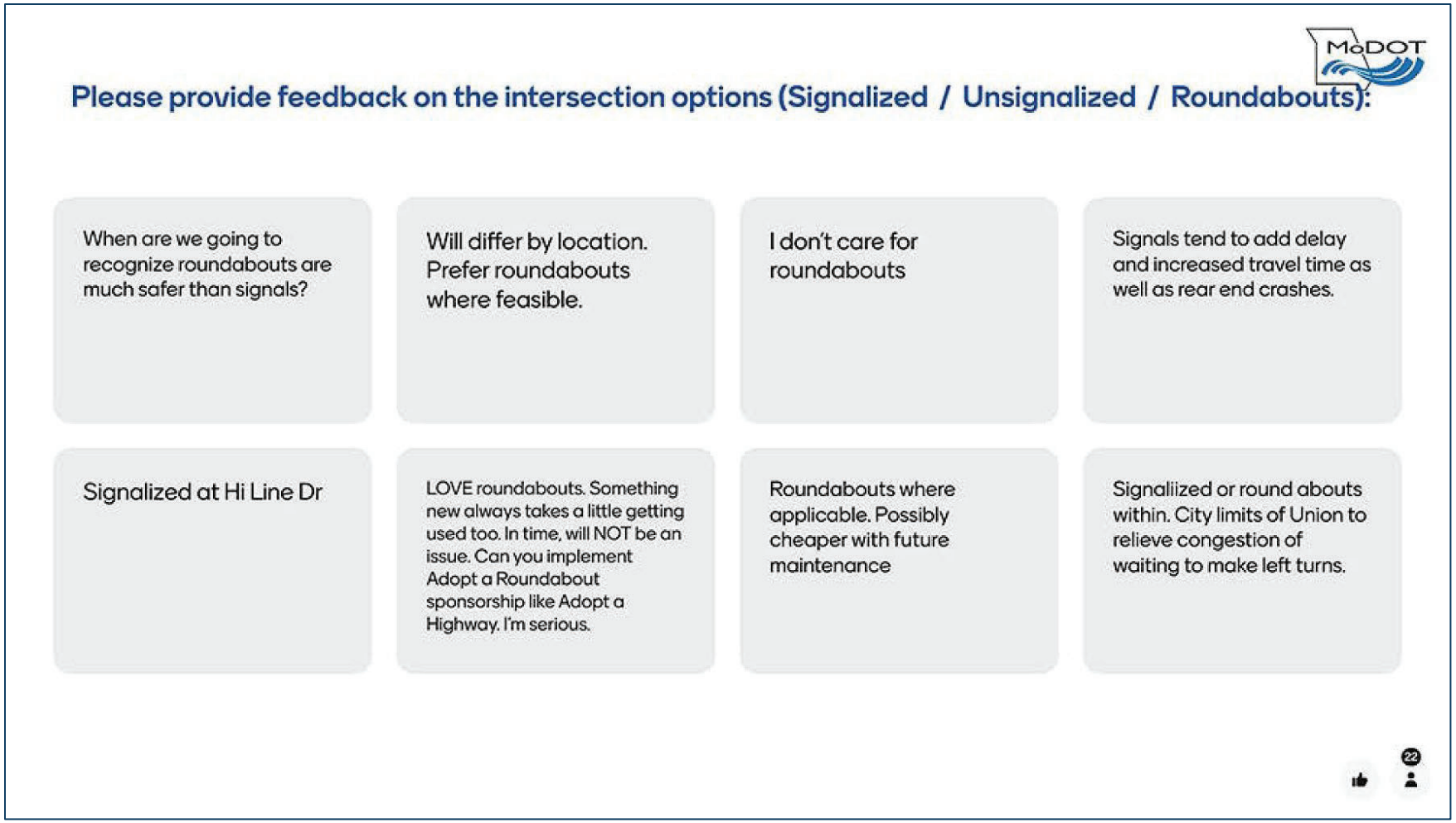
1 28

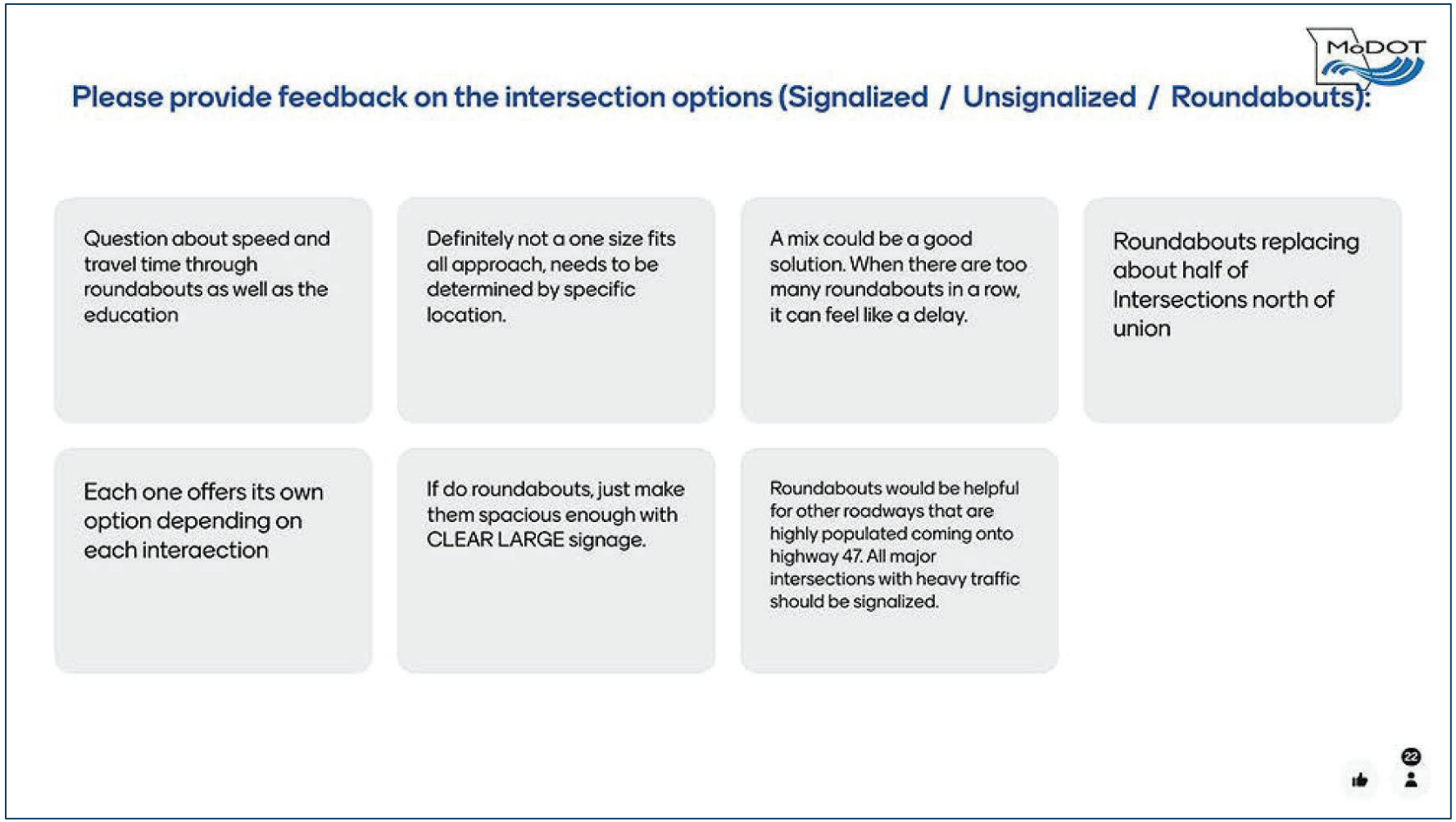
MO 47 INTERSECTIONS

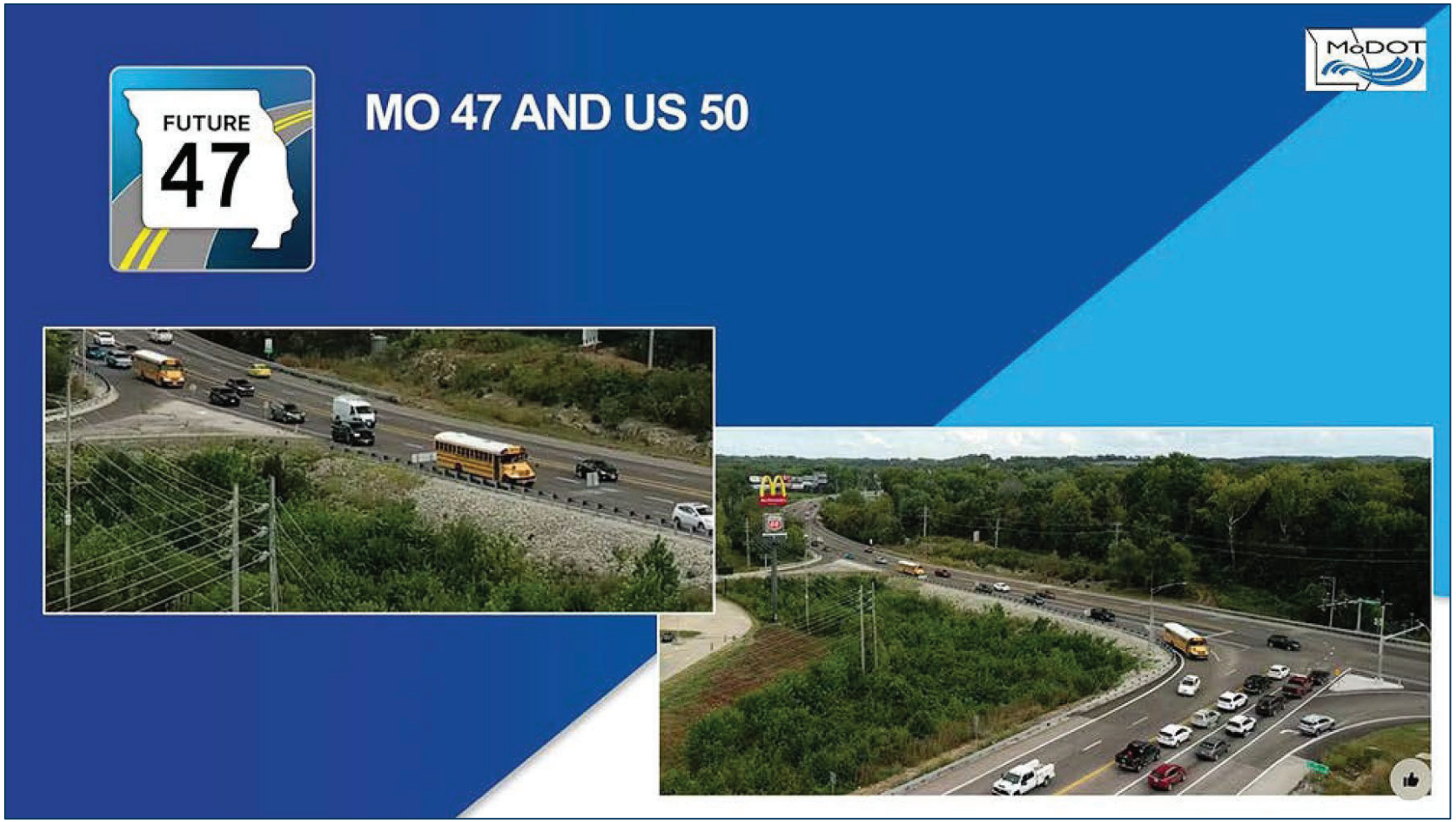
Intersection Types

	Unsignalized	Signalized	Roundabout
Low Cost	🟢	🔴	🟡
Easy to implement	🟢	🔴	🟡
Low maintenance cost	🟢	🔴	🟡
Requires Driver Education	🟢	🟡	🔴
Provides gaps for turning traffic on mainline	🔴	🟢	🟡
Provides gaps for turning traffic on crossroad	🔴	🟢	🟡
Lowers travel speeds on mainline	🔴	🟡	🟢
Improves safety for mainline	🔴	🟡	🟢
Improve safety for crossroad	🔴	🟡	🟢
Contributes to mainline congestion	🟢	🔴	🟡
Contributes to crossroad congestion	🔴	🟢	🟡
Accommodates a range of traffic volumes	🔴	🟢	🟡


Please provide feedback on the intersection options (Signalized / Unsignalized / Roundabouts):
Traffic study conducted on pertinent intersections. Roundabouts where appropriate and signals at others.
Happy sac needs a signal or roundabout
Signalized create choke points round about would be preferable to allow for continuous movement
Roundabout at Vondera
Roundabouts may be preferable for a new intersection.
Weather concerns with roundabouts
Union has four roundabouts. Kocal residents are very familiar. Signalized intersections provide a false sense of security
I like the flow of rte 109 near MO 100 and feel that Union is setup similar from 50 to independence.
22

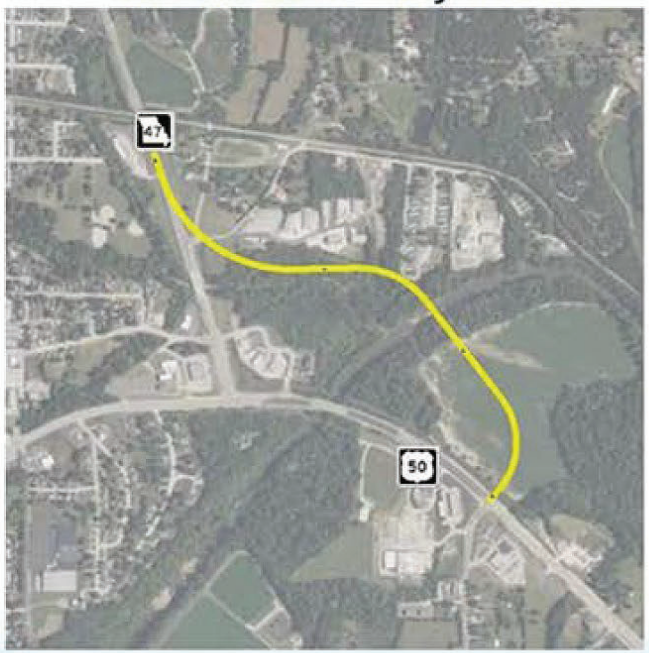

Please provide feedback on the intersection options (Signalized / Unsignalized / Roundabouts):
When are we going to recognize roundabouts are much safer than signals?
Will differ by location. Prefer roundabouts where feasible.
I don't care for roundabouts
Signals tend to add delay and increased travel time as well as rear end crashes.
Signalized at Hi Line Dr
LOVE roundabouts. Something new always takes a little getting used too. In time, will NOT be an issue. Can you implement Adopt a Roundabout sponsorship like Adopt a Highway. I'm serious.
Roundabouts where applicable. Possibly cheaper with future maintenance
Signaliized or round abouts within. City limits of Union to relieve congestion of waiting to make left turns.
22


Please provide feedback on the intersection options (Signalized / Unsignalized / Roundabouts):
Question about speed and travel time through roundabouts as well as the education
Definitely not a one size fits all approach, needs to be determined by specific location.
A mix could be a good solution. When there are too many roundabouts in a row, it can feel like a delay.
Roundabouts replacing about half of Intersections north of union
Each one offers its own option depending on each interaection
If do roundabouts, just make them spacious enough with CLEAR LARGE signage.
Roundabouts would be helpful for other roadways that are highly populated coming onto highway 47. All major intersections with heavy traffic should be signalized.
22


FUTURE
47
MO 47 AND US 50
MoDOT

MO- 47/50 Intersection Concepts

Northeast Realignment



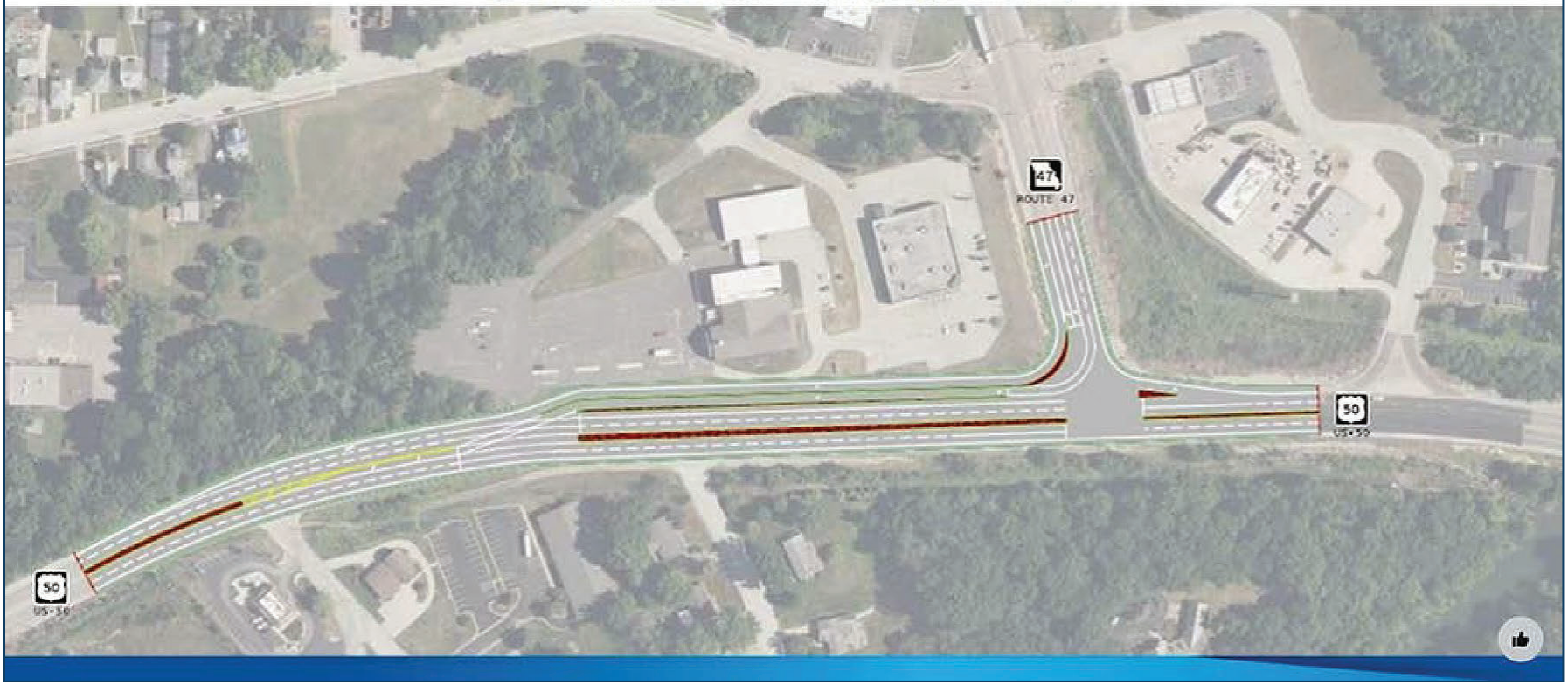
Southwest Realignment

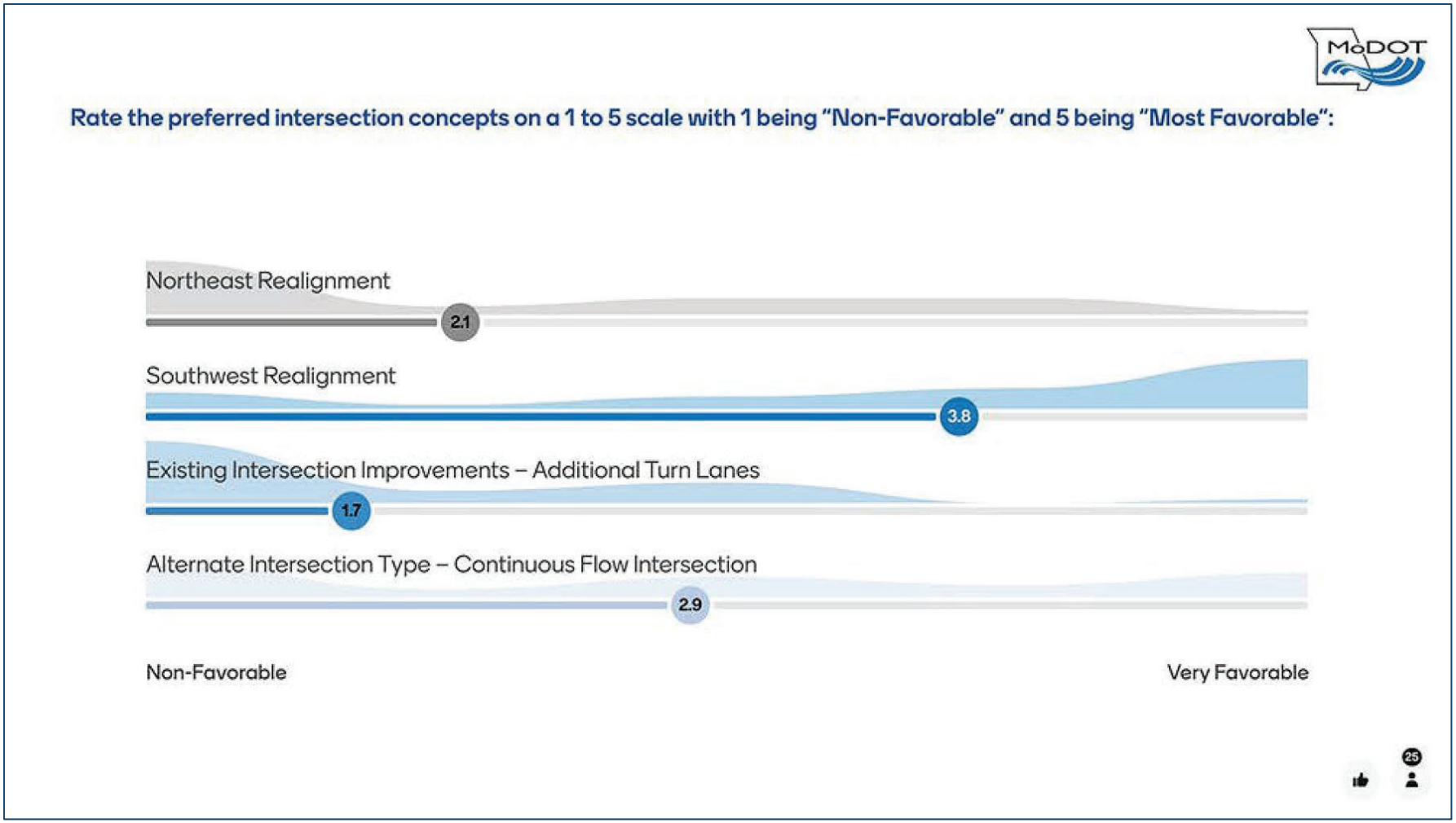
MO- 47/50 Intersection Concept

Additional Turn Lane (Triple Lefts)

MO- 47/50 Intersection Concept

Continuous Flow Intersection (CFI)



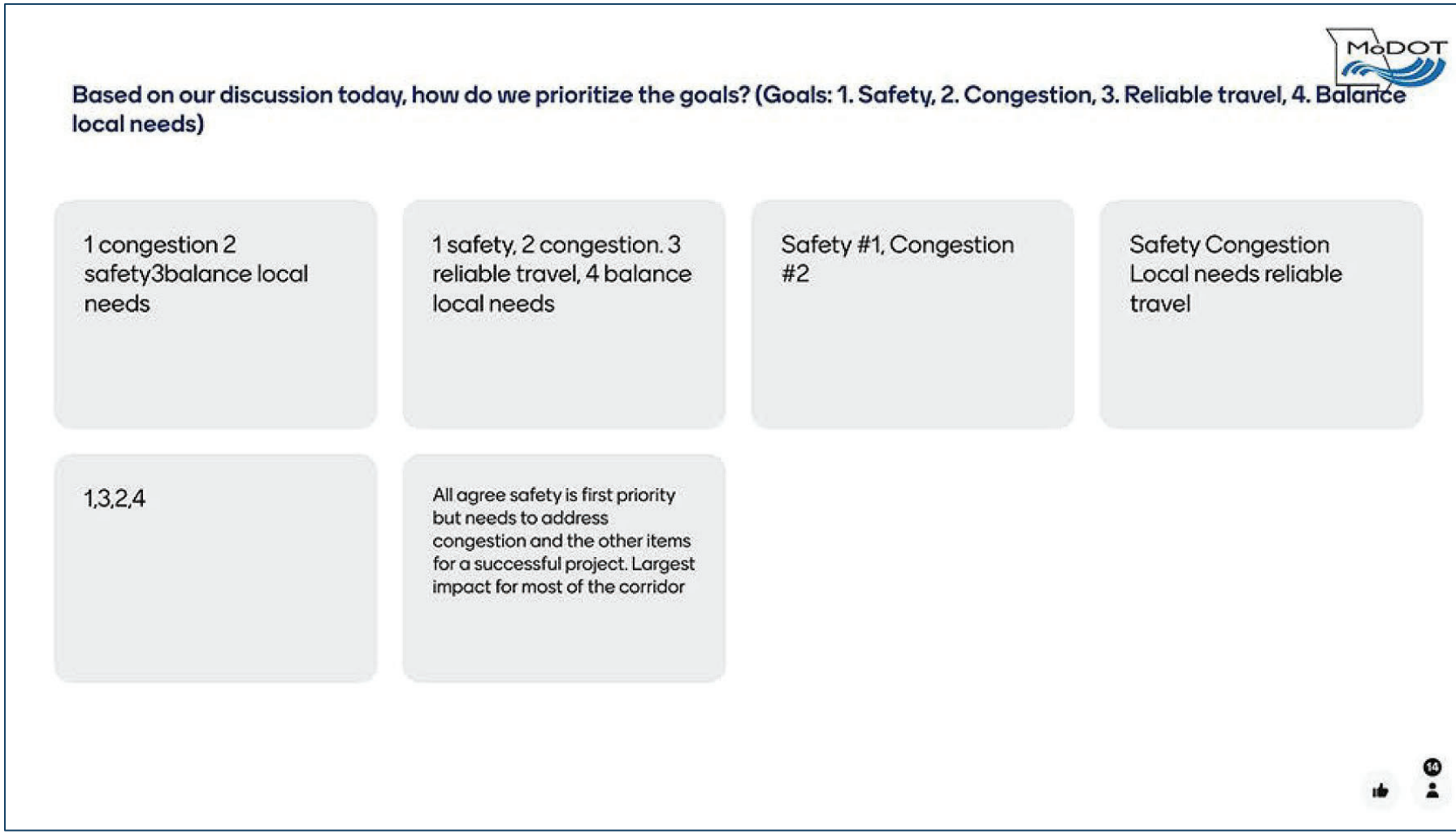

Rate the preferred intersection concepts on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable":
Northeast Realignment
2.1
Southwest Realignment
3.8
Existing Intersection Improvements – Additional Turn Lanes
1.7
Alternate Intersection Type – Continuous Flow Intersection
2.9
Non-Favorable
Very Favorable
25

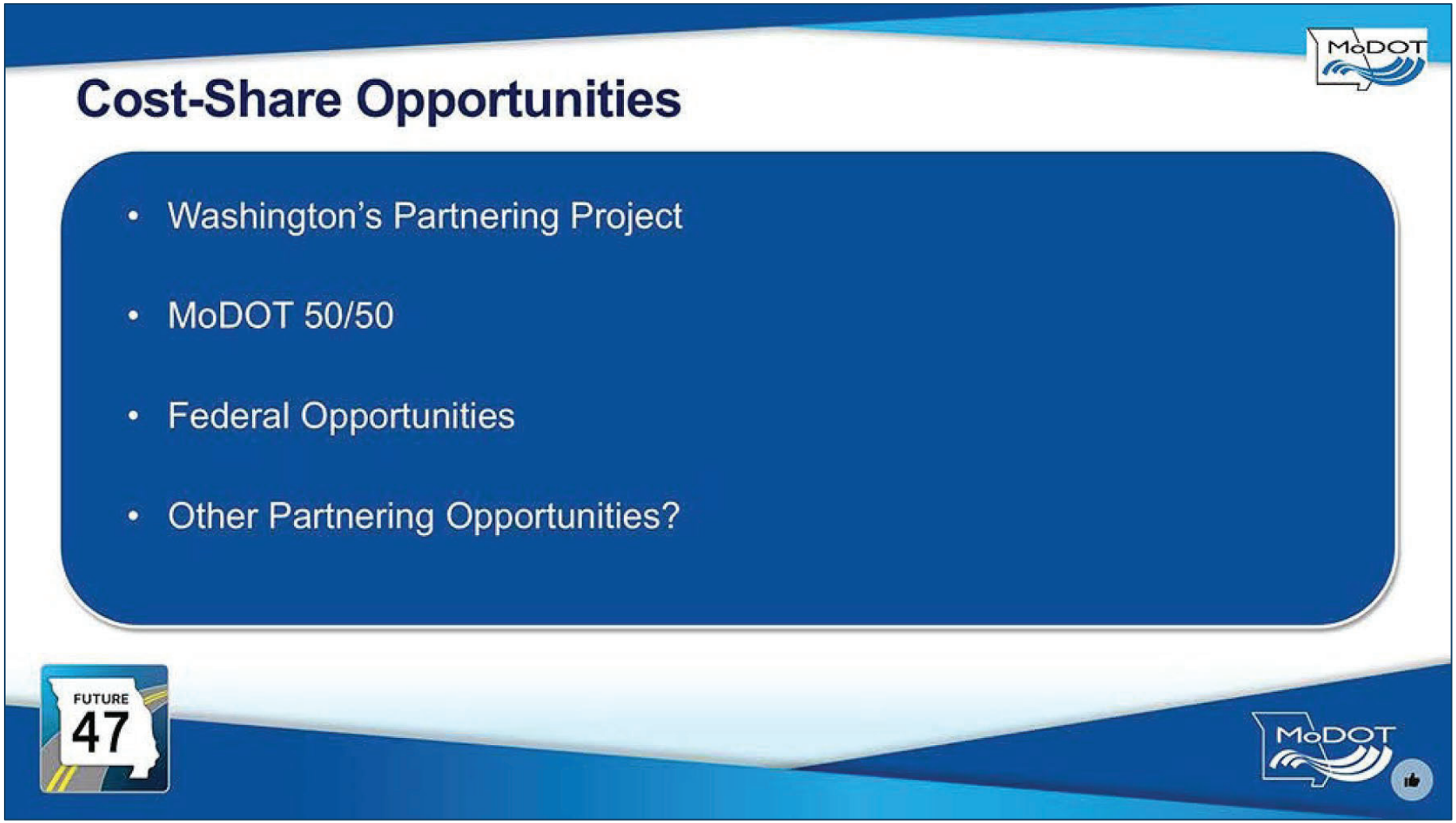
WRAP UP AND NEXT STEPS

Based on our discussion today, how do we prioritize the goals? (Goals: 1. Safety, 2. Congestion, 3. Reliable travel, 4. Balance local needs)

2, 1, 3, 4	Still team safety	Accurate	No change
Safety Reliable travel Congestion Balance local needs.	2, 1, 4, 3	1 safety 2 balance local needs 3 congestion 4 reliable travel	Safety Congestion Reliable Travel Local needs

14


Based on our discussion today, how do we prioritize the goals? (Goals: 1. Safety, 2. Congestion, 3. Reliable travel, 4. Balance local needs)
1 congestion 2 safety3balance local needs
1 safety, 2 congestion. 3 reliable travel, 4 balance local needs
Safety #1, Congestion #2
Safety Congestion Local needs reliable travel
1,3,2,4
All agree safety is first priority but needs to address congestion and the other items for a successful project. Largest impact for most of the corridor
14


Cost-Share Opportunities
• Washington's Partnering Project
• MoDOT 50/50
• Federal Opportunities
• Other Partnering Opportunities?

Next Steps

- Additional Public Engagement
  - Stakeholder Listening Sessions
  - CAG Meeting #3 – Summer/Fall 2025
    - *Topic: Provide input on suggested improvement solutions*
  - Open House Public Meeting #2 – Summer/Fall 2025 (following CAG #3)
- Design Plans – 2026 - 2027
- Construction – FY2028

Thank you!

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(275-6636)

vi. Community Advisory Group (CAG) Meeting #3 Summary

DRAFT

Missouri Route 47 Conceptual Study
Community Advisory Committee (CAG) Meeting #3
August 28, 2025

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Overview

The Missouri Department of Transportation (MoDOT) hosted a Community Advisory Group (CAG) meeting on Thursday, August 28, from 12:30-3:30 p.m. at the East Central College Training Center in Union, Missouri to share information and gather input regarding the Missouri Route 47 Conceptual Study.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $78.1 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. A majority of this corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948, while the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

The purpose of the second CAG meeting was to provide a recap of feedback from the first two CAG meetings, and to review, discuss, and collect CAG input on the initial concepts for addressing the intersection of MO-47 and U.S. 50, as well as discuss improvements across all segments in the study area.

Community Advisory Group (CAG)

The CAG is made up of members of the community and key stakeholders across the project area. They include, but are not limited to, staff from Franklin County, Cities of Washington, Union and St. Clair, emergency services personnel, school districts, elected officials, and key business representatives. The CAG members represent their organizations and their constituents.

Twenry-nine (29) members of the CAG and nineteen (19) MODOT staff and project consultants signed in to the meeting and provided input based on their professional experiences and what they hear from users of the corridor. The list of invited participants, sign-in sheets, and invitation letter are included in Appendix A.

Meeting Structure

The in-person event consisted of a presentation by the project team and included a facilitated conversation. The interactive polling tool, Mentimeter (Menti), was used to gather input from the group to help document responses. The PowerPoint presentation, including the Menti results, are included in Appendix B.

The project team had two project consultants capturing discussion highlights by taking notes. An audio recording of the meeting was captured as well to validate notes and to ensure questions and comments from the CAG were captured in full.

Intersection Concepts Analysis

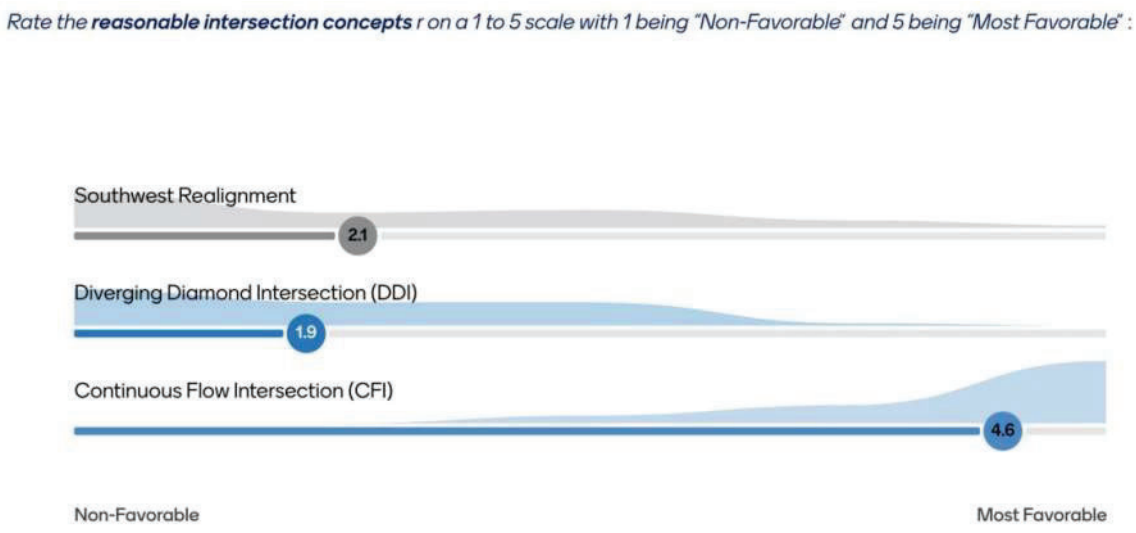
The project team gave a brief overview of the project area along with a review of the first two CAG meetings (held February 6 and April 28, 2025), and a review of the public meeting held on September 24, 2024. The team utilized Menti polling software to gather input on the current draft project goals, corridor options, and intersection options for the corridor.

The meeting began with a review of the three U.S. 50/47 intersection concepts. A table was shown in the presentation that compared the safety, cost, travel time, and environmental considerations of all three concepts. Following this, attendees were promoted to participate in a breakout activity. Three breakout stations were set up to discuss each intersection concept. Participants were asked to discuss:

- What features of each alternative do you like/not like?
- What pros/cons do you see?
- What considerations have we not thought about?

Following this, attendees were asked to rank the reasonable intersection concepts from least to most favorable. The results are displayed in Figure 1 (below), with "Continuous Flow Intersection (CFI)" coming in as the most favorable.

Figure 1: Ranking reasonable intersection concepts



Following the exercise, the project team engaged the CAG with a short discussion about each concept. Below are the general themes and sentiment from each concept from both verbal discussion and the report back sheets from the breakout stations.

SW Realignment

Verbal discussions:

- Jordan – "To the public, this is something closest to what they are used to seeing."
- City of Union EMS: "Crashes shift more to rear-end collisions and still require EMS."
- Jordan notes that there is less need for improvements at the eastern intersection under review – free flowing movement prevents
    - Response from City of Union EMS: We have more delays at E intersection than at West, accidents back us up past the NB 47 intersection
    - City of Union PD Chief notes that "any accident" causes a backup – principally because there is no alternate route
- Concerns due to cost that utilizing this option would remove ability to spend money in other parts of the corridor

Written feedback:

Likes:

- Intuitive design
- Best option for future growth
- Eliminates turns for controlled movement
- Provides more space for emergency access

Dislikes:

- Most expensive option, limiting funds for other corridor needs
- Requires significant property acquisition – this option has the most impacts on nearby residents and businesses
- Accessibility concerns to nearby businesses, notably QT

Overall Themes:

- Traditional design – most conventional and intuitive option aligning with public's expectations
- High cost and concerns with budget
- Best option pertaining to growth potential
- Mixed feelings on overall safety with this alternative
- Concerns over significant business and property impacts

Diverging Diamond Interchange (DDI)

Verbal discussions:

- CAG member: "Locals would probably understand it, visitors might not."
- Concerns included:
    - maintenance (snow removal, signal equipment including power outages, etc.)
    - costs of widening bridge
    - A lot of confusion for new users
    - traffic moving on WB 50

- Potential for flooding on new road
- ROW impacts and acquiring the private road
- No signal preemption
- Challenging pedestrian access

Written feedback:

Likes:

- Safety improvements, expected reduced crash rates
- Anticipated improvements to traffic flow especially for eastbound traffic
- Adaptability for locals
- Cost-effectiveness compared to other alternatives

Dislikes:

- Potential for confusion for non-locals and emergency responders
- Business access issues – notably the McDonald's and nearby hotels
- Additional infrastructure needs (bridges)

Overall themes:

- Local vs. visitor experience
- Business and property impacts
- Safety concerns
- Design and infrastructure

Continuous Flow Interchange (CFI)

Verbal Discussion:

- Anyone wanting to go left on U.S. 50 would encounter potential sight issue
- Quicker construction completion with fewer ROW and environmental impacts
- Wb U.S. 50 and NB 47, group felt like 2 turning lanes instead of just one would be warranted
  - Jordan noted that this would affect the signal timing
- "What about a Green T inside the CFI?"
- Most financially palatable option – allows for most funds to be applied elsewhere, addresses issue of moving traffic just as well as the other options, and this one allows for another project to come along in the future the room is still available for different use
- Solves safety and congestion while utilizing/making available more funds for other areas in need of improvement
- This design does not prevent a future southbound connector from being built in the future in the way the DDI is built
- Overhead signage would be helpful/important with this design to clearly mark how lanes should be used
- Additional signage or Right on Right after stop when moving from WB 50 on to 47
  - Jordan notes that striping can also help with this concern

Jordan notes that the data in the Comparison of Three Concepts chart is using projected 2045 data.

Written Feedback:

Likes:

- Improves traffic flow for left turns and U.S. 50 east-west movement
- Adaptable – can be modified to SW realignment in the future
- Minimal property impacts to residents and business owners
- Cost effective and financially palatable – can free up money for other corridor improvements

Dislikes:

- Not sure if this option is enough to alleviate traffic going westbound and northbound
- Potential signal coordination issues
- Initial confusion for first-time users (local and visitors)
- Access concerns with right-in/right-out on Crestview, Hawthorne, and Old County Farm Rd.

Overall themes:

- Seen as the most cost-effective option
- Generally considered more intuitive than the DDI
- Public perception concerns as design and low cost may make it seem like this is not a 'big enough' improvement
- Traffic flow seems especially improved for east-west movements

Corridor Segment Analysis

Following the intersection concepts and breakout activity, the presentation was broken into segments to discuss potential design options for the corridor, including the following:

- Middle Segment – U.S. 50/47 to Independence Dr. (City of Union)
- North Segment – City of Washington to Independence Dr.
- South Segment – U.S. 50 to City of St. Clair

Middle Segment – U.S. 50/47 to Independence Dr. (City of Union)

The presentation reviewed safety data in this segment, along with lane configurations and proposed intersection improvements. 5-lane with center two-way left turn lane and 4-lane undivided lane configurations are being considered for this segment. The presentation continued to show example intersection improvements including:

- Signalized intersections
- Roundabouts
- Turn improvements
- Additional lanes
- Access management

Figures 2-4 show the results to Menti questions asked pertaining to the Middle Segment.

Figure 2: Weighing Safety and Congestion in the City of Union

Figure 3: How Acceptable Speed Limit Reduction is for the City of Union

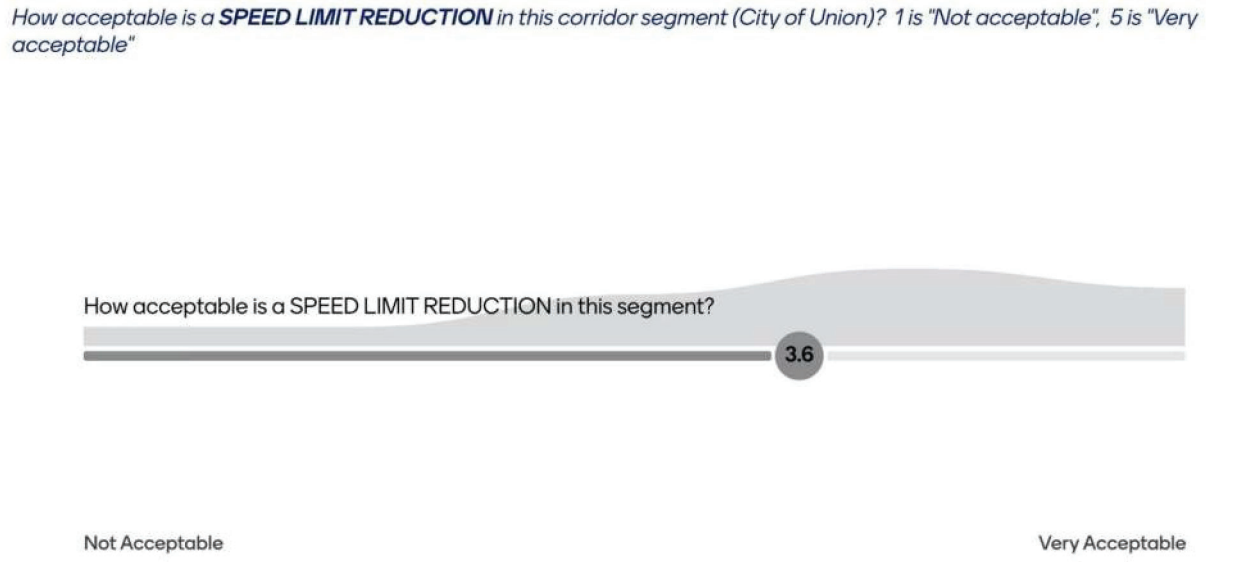
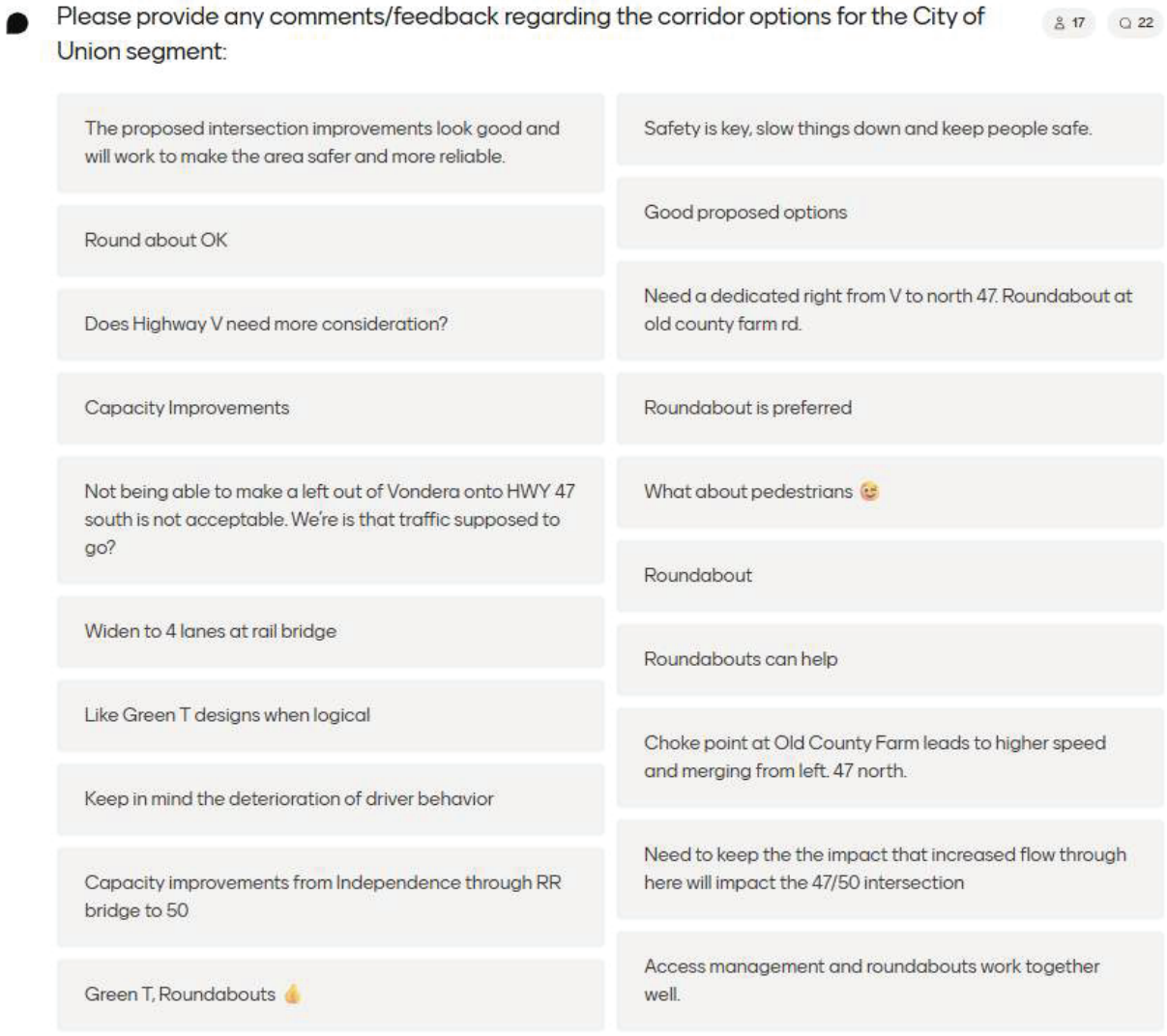


Figure 4: Comments Provided Regarding Corridor Options for the City of Union



North Segment – City of Washington to Independence Dr.

The presentation reviewed safety data in this segment, along with lane configurations, proposed intersection improvements, and feedback from the previous CAG meeting. 5-lane with center two-way left turn lane, 4-lane undivided, 3-lane with center two-way left turn lane, 2-lane divided, and existing 2-lane with wider shoulders lane configurations are being considered for this segment. The presentation continued to show example intersection improvements including:

- Signalized intersections
- Roundabouts
- Turn improvements
- Additional lanes
- Access management

Figures 5-7 show the results to Menti questions asked pertaining to the North Segment.

Figure 5: Weighing Safety and Congestion in the North Segment

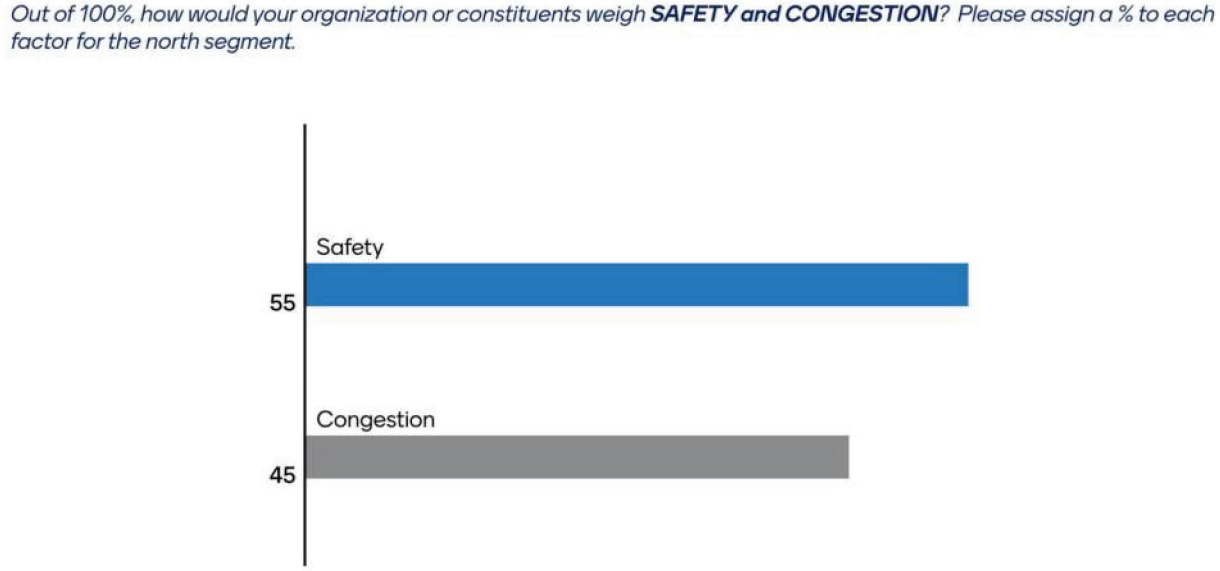


Figure 6: How Acceptable Speed Limit Reduction is for the North Segment

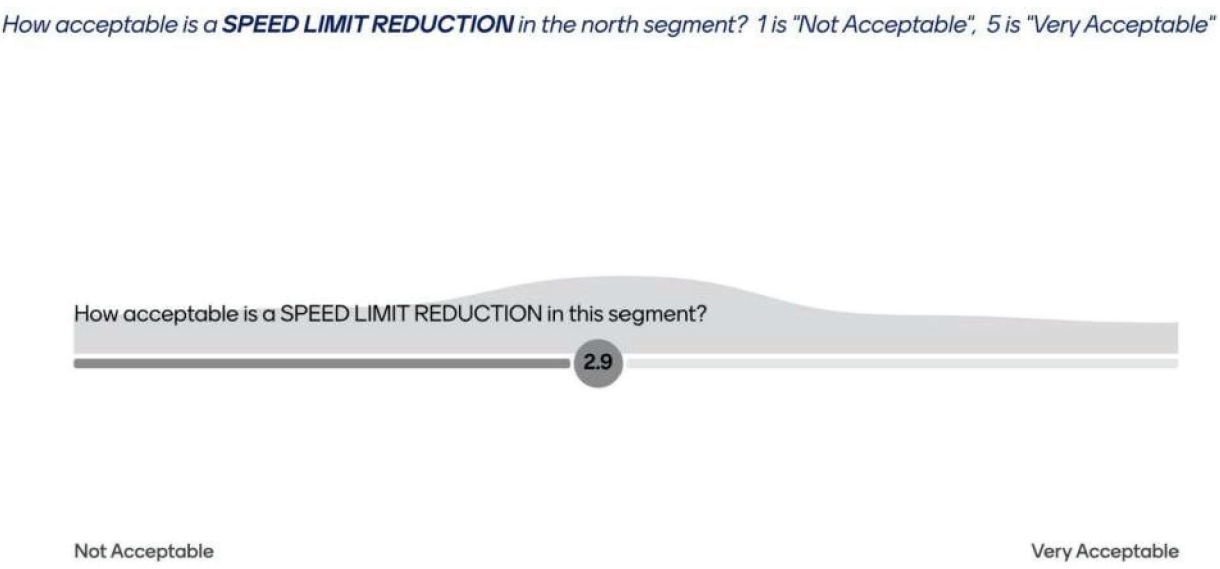
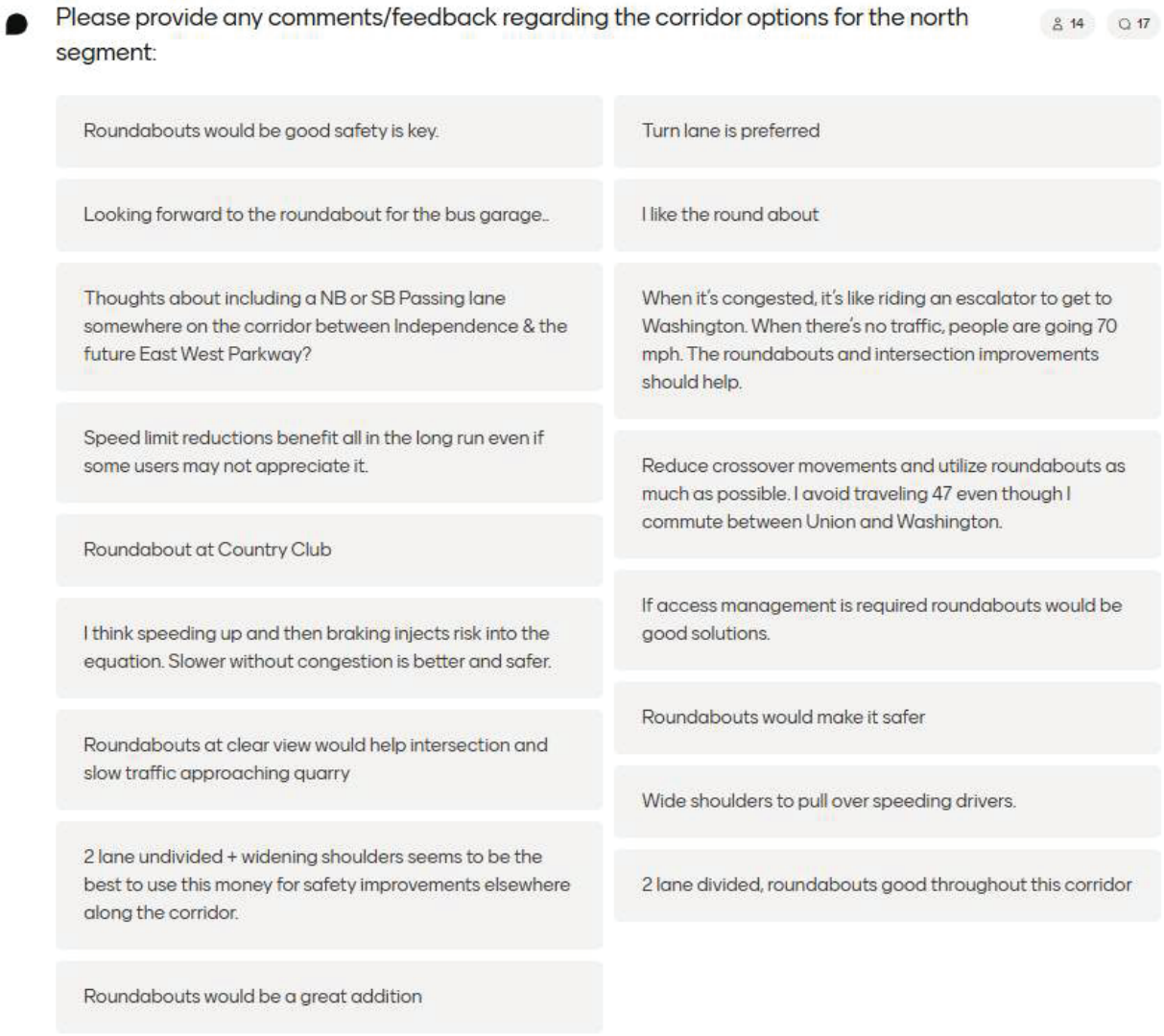


Figure 7: Comments Provided Regarding Corridor Options for the North Segment



South Segment – U.S. 50 to City of St. Clair

The presentation reviewed safety data in this segment, along with lane configurations, proposed intersection improvements, and feedback from the previous CAG meeting. 3-lane with center two-way left turn lane, 2-lane divided, and existing 2-lane with wider shoulders lane configurations are being considered for this segment. The presentation continued to show example intersection improvements including:

- Signalized intersections
- Roundabouts
- Turn improvements
- Additional lanes
- Access management

Figures 8-10 show the results to Menti questions asked pertaining to the North Segment.

Figure 8: Weighing Safety and Congestion in the South Segment

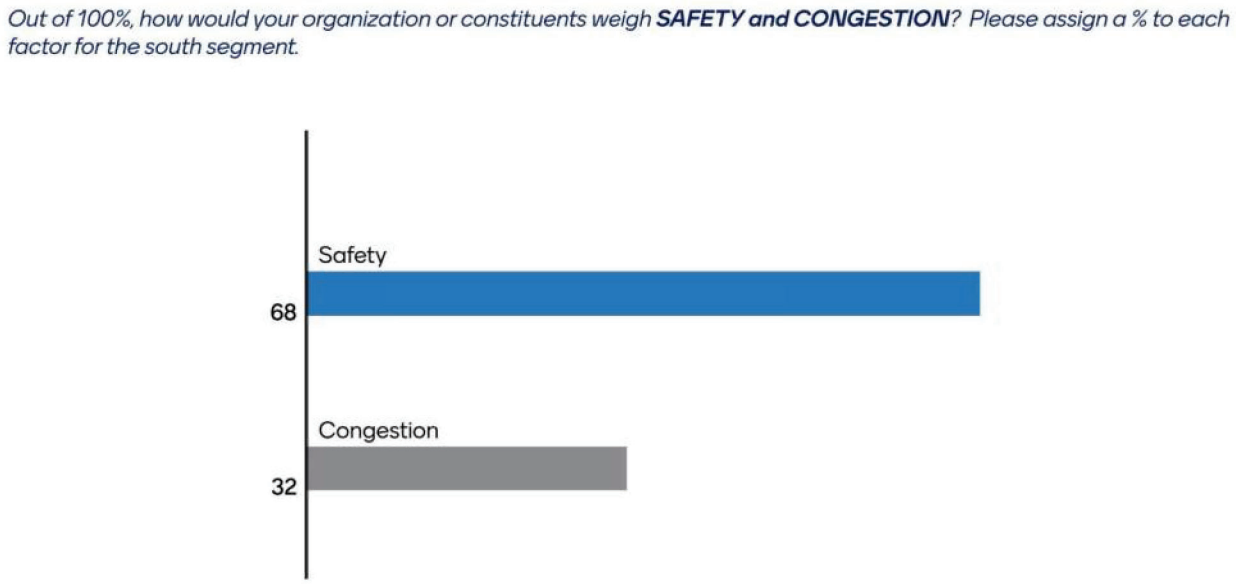


Figure 9: How Acceptable Speed Limit Reduction is for the South Segment

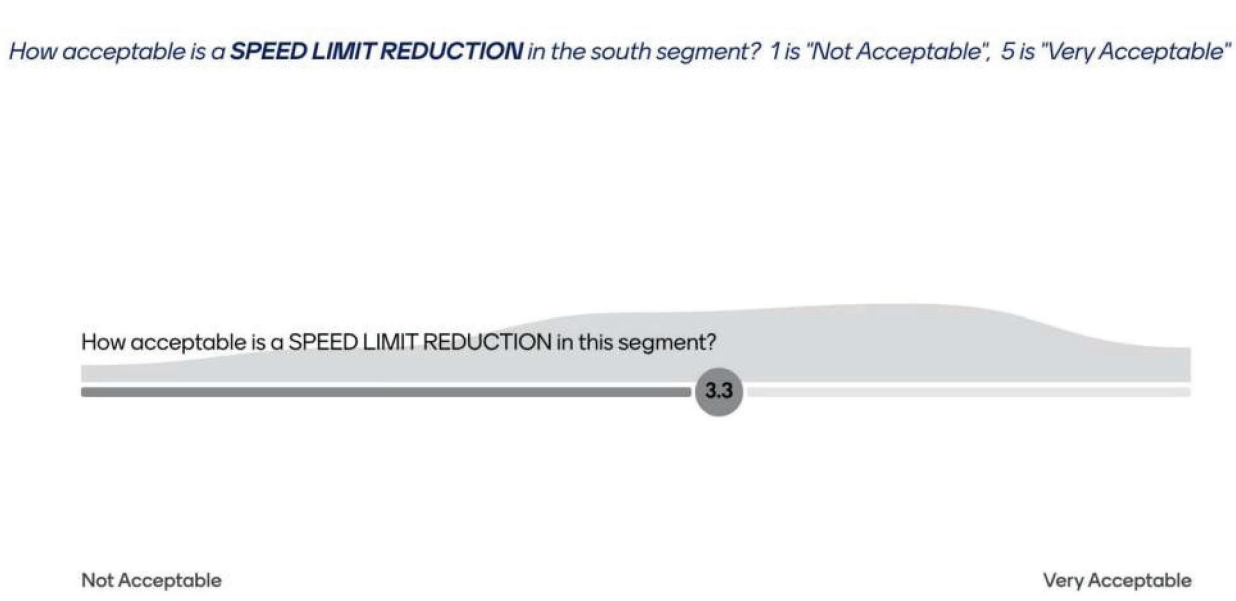
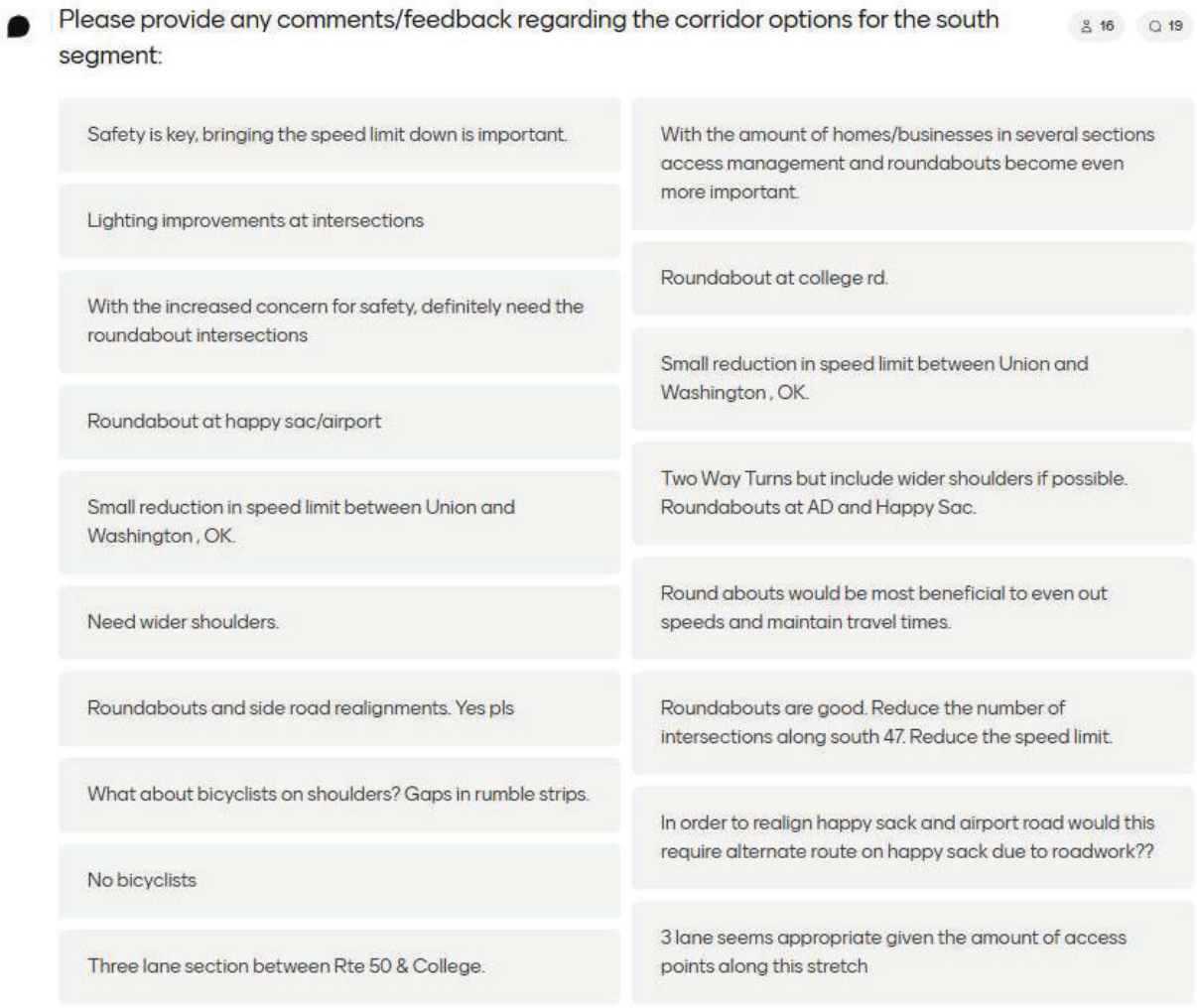


Figure 10: Comments Provided Regarding Corridor Options for the South Segment



Conclusions

The CAG overwhelmingly supported the CFI intersection concept due to its cost effectiveness, adaptability for future design, and minimal impacts to nearby business and property owners. While the SW Realignment had strengths, many were turned off by how expensive and disrupting it would be. The DDI concept was least favorable due to its complicated design requiring additional infrastructure support and maintenance.

When discussing the middle, north, and south segments, the speed reductions were somewhat acceptable by the CAG, but not overwhelmingly supported for any segment. Roundabouts are supported as a solution in each segment. For the middle segment, safety is especially prioritized and some members raised concerns about needing more consideration for Highway V. In the north segment, wider shoulders and 2-lane divided lane configuration were popular solutions. When weighing safety vs. congestion, the biggest gap is seen in the south segment with safety weighing considerably more than congestion

compared to the other two segments where the weights were fairly even. Many expressed support for two-way turn lanes for this segment.

Meeting Photos

Advisory Group Meeting
April 28, 2025

MoDOT TEAM

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Blair	Thomas	MoDOT	☒
Dalaviras	Jordan	MoDOT	☒
Demski	Max	MoDOT	☒
Dickman	Sebastian	MoDOT	☒
Evers	Thomas	MoDOT	☐
Groff	Aaron	MoDOT	☒
Herzog	David	MoDOT	☒
Hillyard	Mitchell	MoDOT	☒
Kuntz	Lisa	MoDOT	X
Maldonado	Alex	MoDOT	☐
Miller	Steve	MoDOT	☑
Redhage	Christine	MoDOT	☒
Ryan	Semar	MoDOT	☐
Sanders	Bryson	MoDOT	☒

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Simmons	Cindy	MoDOT	☒
Simmons	David	MoDOT	☐
Sudduth	Rachel	MoDOT	☑
Tooley	Shaun	MoDOT	☑
Watkins	Eddie	MoDOT	☐

Advisory Group Meeting
April 28, 2025

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Beard	Chris	Lochmueller Group	☐
Falkenrath	Carrie	Tsquared	☒
Fleming	April	HNTB	☑
Heavin	Kelsey	HNTB	☒
Pfeiffer	Travis	HNTB	☒
Sagir	Fasil	HNTB	☐
Touzinsky	Chip	Lochmueller Group	☑
Yousefzadeh	Pouya	Lochmueller Group	☑

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Amburn	Megan	OATS Transit	☒
Banderman	Brad	MO House of Representatives Dist. 119	☐
Bauer	Jon	East Central College (ECC)	☑
Beckman	Aaron	City of Washington	☒
Brinker	Tim	Franklin County - Presiding Commissioner	☐
Brown	Gordon	First Student	☐
Burbank	Michael	OATS Transit	☐
Chamberlain	Jeremy	UPS	☐
Clifton	Chris	Washington Ambulance District	☒
Cox	Ken	Franklin County - Commissioner	X
Cox	Tony	Missouri Eastern RR – Jag Transport	☐
Diekhaus	Chris	Union Chamber of Commerce	☒

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Kania	Dan	Union R-XI School District Asst. Sup of Operations	☒
Keathley	Lonnie	Highway Patrol - Troop C	☒
Kelly	JD	City of Union - Engineer / Public Works Director	☒
Kephart	Dr. Jennifer	School District of Washington Superintendent	☐
Kessler	Eric	Highway Patrol- Troop C	☐
Knox	Pam	OATS Transit	☒
Lamb	Darren	City of Washington - City Administrator	☒
Lasswell	Jeremy	Union Fire Assistant Chief	☒
Lueken	Cameron	Wunderlich Surveying	☑
Mabe	Dr. Mike	Union R-XI School District Superintendent	☐
Mayer	Michelle	Union Ambulance District	☒
McBride	Charles	Missouri Eastern RR --- Jag Transport	☐
McColloch	John	School District of Washington	☐
Miller	Greg	Union Fire Department	☒

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
~~Dutworth~~	~~Brad~~	~~City of St. Clair - Mayor~~	☐
Farris	Darl	Missouri Eastern RR – Jag Transport	☒
Folsom	Geoff	The Missourian	☐
Graf	Gary	Union Fire Chief	☒
Grutsch	Jim	Franklin County Highway Administrator	☒
Hagedorn	Doug	City of Washington – Mayor	☐
Hall	Aaron	Union Transportation Committee	☒
Harden	James	Franklin County Sheriff	☐
Hedlund	Mark	Highway Patrol – Troop C	☐
Herman	Kayla	Union Ambulance District	☐
Husereau	Melissa	St. Clair R-XIII School District Superintendent	☒
Ivie	Jason	City of St. Clair - Public Works Director	☒
Jones	John	Missouri Eastern RR – Jag Transport	☐

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Overschmidt	Paul	Franklin County – Commissioner	X
Patke	Michelle	Franklin County – Highway Administration	
Pelton	Steven	Franklin County Sheriff	
Porter	Tim	First Student	✓
Pratt	Heather	Mercy Hospital - Washington	
Russell	Rost	Union Transportation Committee	
Schatz	Dave	Franklin County – Presiding Commissioner	
Schmieder	James	City of Union – Assistant City Administrator	✓
Schmuke	Robert	City of Union - Mayor	✓
Sickafoose	Tanya	Union Post Office	✓
Siedhoff	Virgil	Siedhoff Distributing - Prairie Farms Milk	✓
Simmons	John	State Representative District 109	
Stankovic	Charles	City of Washington - Engineer	✓

PLEASE SIGN IN

Last Name	First Name	Organization	Check if present
Straatmann	Bill	Washington Transportation Chairman	☒
Weggemann	Jason	Franklin County Sheriff	☐
Welty	Mike	City of St. Clair- City Administrator	☒
Williams	Shawn	UPS	☐
Zimmermann	Johnathon	City of Union- City Administrator	☒
Parker	Andrew	City of Union PD	X

Appendix B: PowerPoint Slides with Menti Results

MoDOT Route 47 Study
Community Advisory Group (CAG)

August 28, 2025

Agenda

- Welcome and Introductions
- Recap of what we've heard to date
- Corridor Reasonable Alternatives
  - City of Union – (US 50/47 Intersection to Independence Dr.)
  - North Segment - *(Washington to Independence Dr.)*
  - South Segment - *(US 50 to St. Clair)*
- Wrap up and next steps

Welcome and Introductions

Project Team

- Aaron Groff – MoDOT Project Manager
- Jordan Dalaviras – MoDOT
- Thomas Blair – MoDOT
- Thomas Evers - MoDOT
- Lisa Kuntz – MoDOT
- Bryson Sanders – MoDOT
- Rachel Sudduth – MoDOT
- Christine Redhage – MoDOT
- David Simmons – MoDOT
- David Herzog – MoDOT
- Cindy Simmons - MoDOT

Consultant Team

- Travis Pfeiffer – HNTB
- Chip Touzinsky – Lochmueller Group
- Carrie Falkenrath – Tsquared
- Chris Beard – Lochmueller Group
- Pouya Yousefzadeh – Lochmueller Group
- Kelsey Heavin - HNTB

Advisory Group

City/County/Government

- Brad Banderman – Representative
- John Simmons - Representative
- Robert Schmuke - Union
- Jonathan Zimmermann – Union
- James Schmieder - Union
- J.D. Kelley – Union
- Aaron Hall – Union
- Doug Hagedorn - Washington
- Charles Stankovic – Washington
- Darren Lamb – Washington
- Bill Straatmann – Washington
- Brad Dulworth – St. Clair
- Mike Welty – St. Clair
- Jason Ivie – St. Clair
- Dave Schatz – Franklin County
- Jim Grutsch – Franklin County
- Ken Cox – Franklin County
- Paul Overschmidt – Franklin County
- Michelle Patke – Franklin County

Emergency Services

- Steven Pelton – County Sheriff
- Jason Weggemann – County Sheriff
- James Harden – County Sheriff
- Lonnie Keathley – Highway Patrol
- Mark Hedlund – Highway Patrol
- Jeremy Lasswell – Union Fire Dept.
- Gary Graf – Union Fire Dept.
- Greg Miller – Union Fire Dept.
- Michelle Mayer – Union Ambulance District
- Kayla Herman – Union Ambulance District
- Chris Clifton – Washington Ambulance District
- Heather Pratt – Mercy Hospital

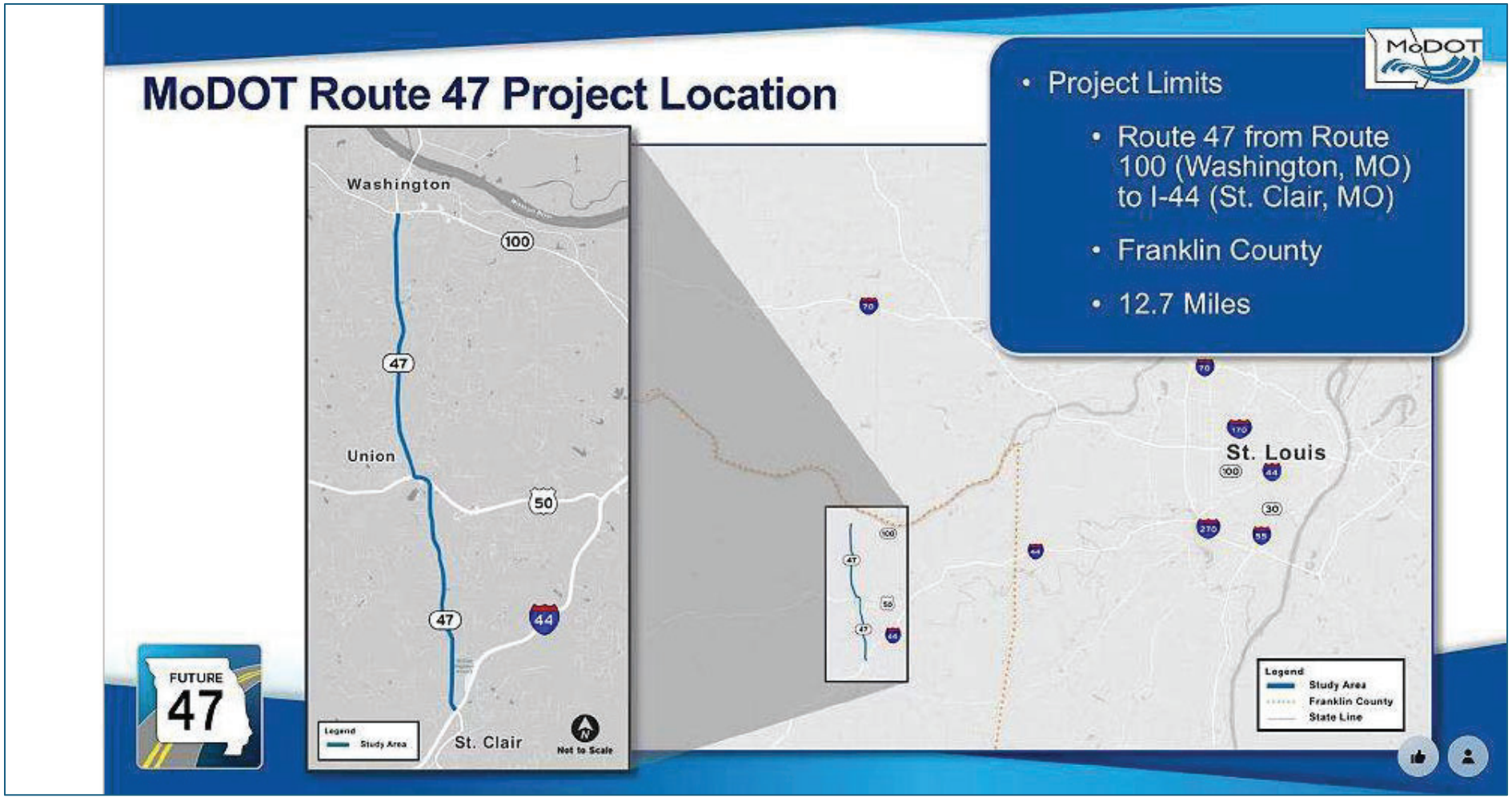
Education

- Dr. Mike Mabe – Union School District
- Dan Kania – Union School District
- Dr. Jennifer Kephart – Washington School District
- John McColloch – Washington School District
- Melissa Husereau – St. Clair School District
- Jon Bauer – East Central College
- Gordon Brown – First Student
- Tim Porter – First Student

Business Community

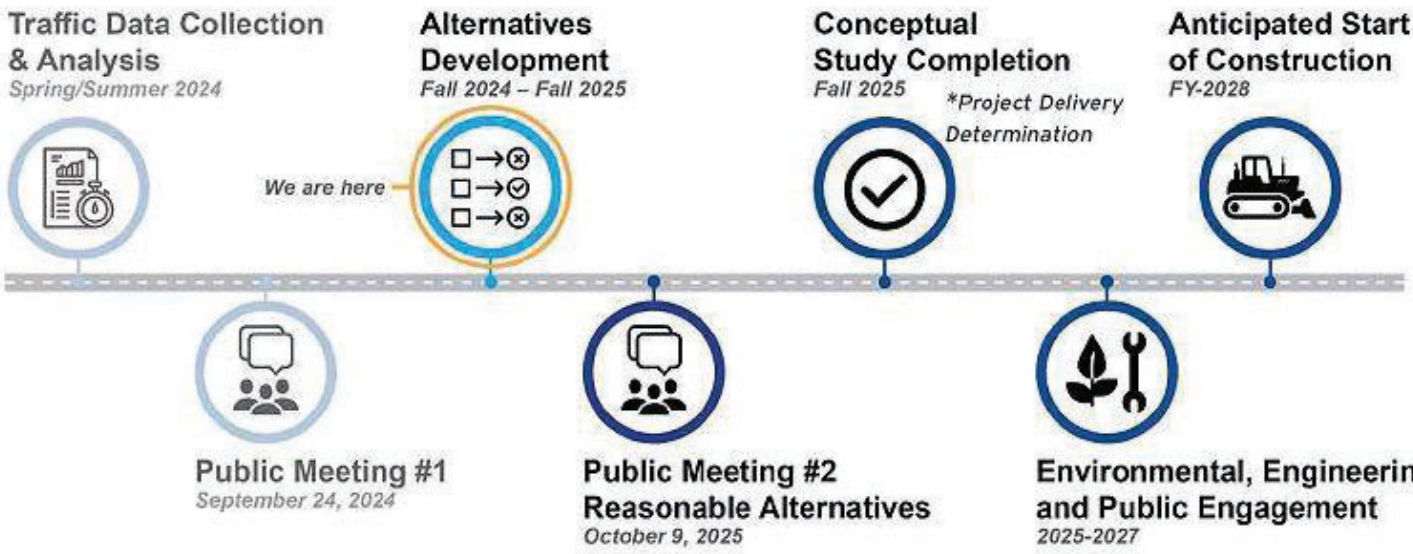
- Chris Diekhaus – Union Chamber
- Virgil Siedhoff – Siedhoff Distributing
- Pam Knox– OATS Transit
- Megan Amburn – OATS Transit
- Tanya Sickafoose – Union Post Office
- John Jones – MO Eastern RR
- Darl Farris – MO Eastern RR
- Cameron Lueken – Wunderlich Surveying
- Shawn Williams – UPS
- Jeremy Chamberlain – UPS
- John Jones – MO Eastern RR – Jag Transport
- Darl Farris – MO Eastern RR – Jag Transport
- Tony Cox – MO Eastern RR – Jag Transport
- Geoff Folsom – The Missourian

MoDOT Route 47 Project Location



- Project Limits
  - Route 47 from Route 100 (Washington, MO) to I-44 (St. Clair, MO)
  - Franklin County
  - 12.7 Miles

Project Timeline



WHAT WE'VE HEARD TO DATE

Public Engagement

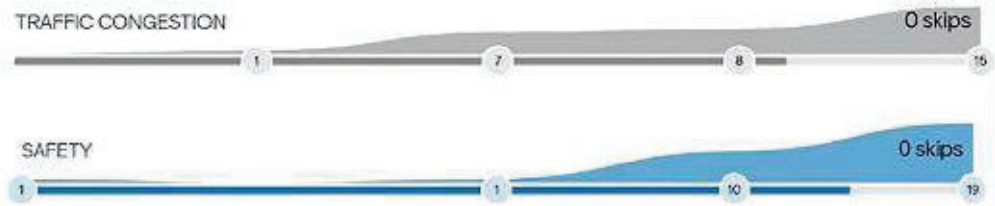
- **Public Open House** – 160 attendees
- **Public Survey** – 190 responses
- **Key Stakeholder Listening Sessions**
- **Key concerns:**
  - Increase safety
  - Reduce congestion
  - MO 47 / US 50

February 6, 2025: CAG # 1

How would you describe Route 47?

Figure 1: "How much of a concern to your organization/constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair?" - Average Rating

Figure 2: "How much of a concern to your organization/constituents are traffic congestion and safety on MO Route 47 between Washington and St. Clair?" - Ratings by Individuals

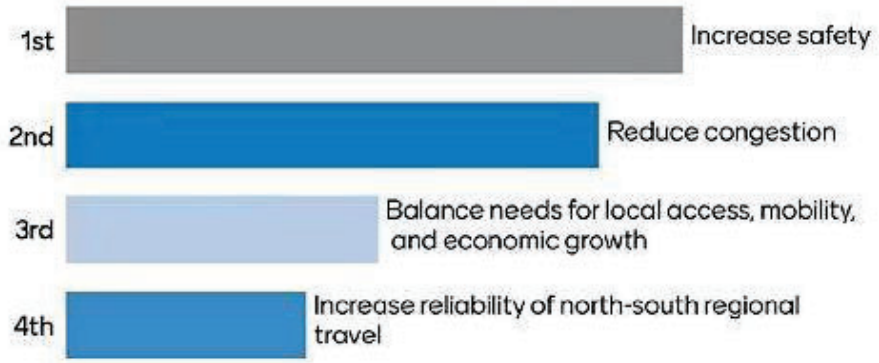


Goal Prioritization

What we heard

April 28, 2025: CAG # 2

How would prioritize the project goals?



"All agree safety is first priority but needs to address congestion and the other items for a successful project. Largest impact for most of the corridor."

-Menti response

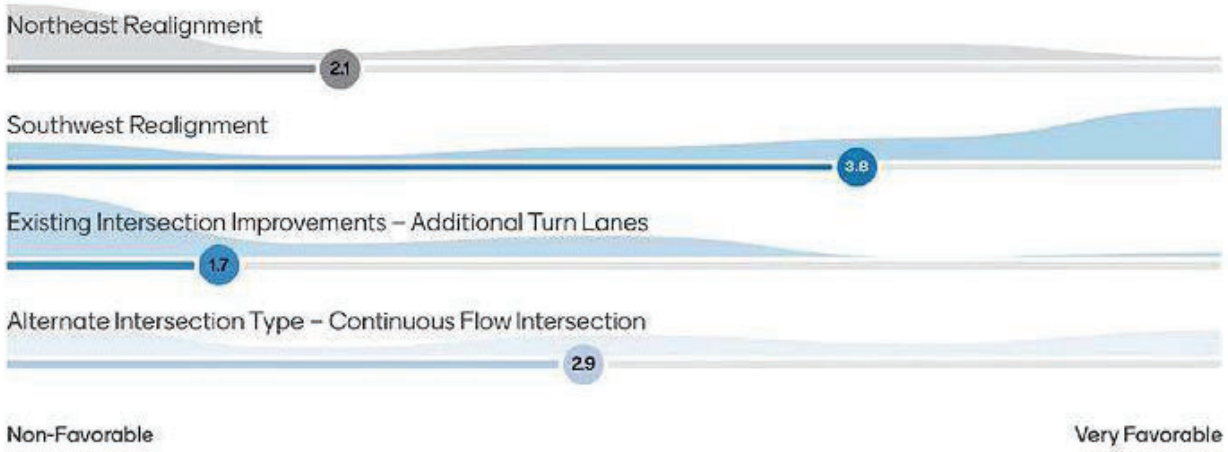
Project Goals

- Increase safety
- Reduce congestion
- Increase reliability of north-south regional travel
- Balance needs for local access, mobility, and economic growth

CITY OF UNION
US 50/47 to Independence Dr.

U.S. 50/47 – What we heard

Rate the intersection concepts on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable" :

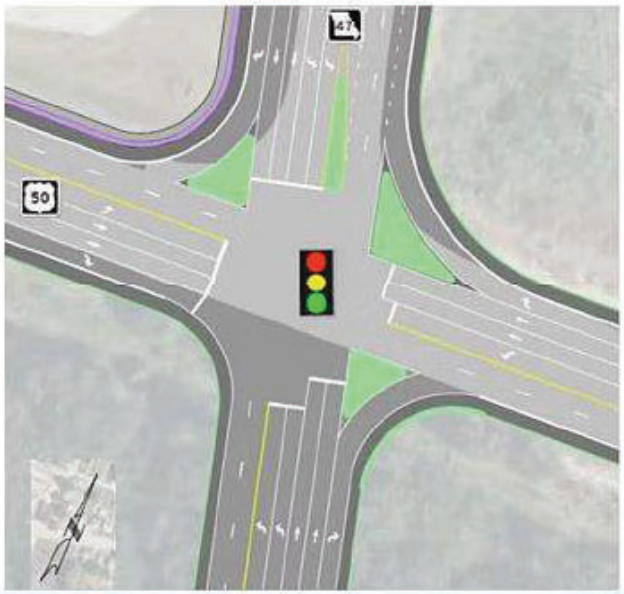


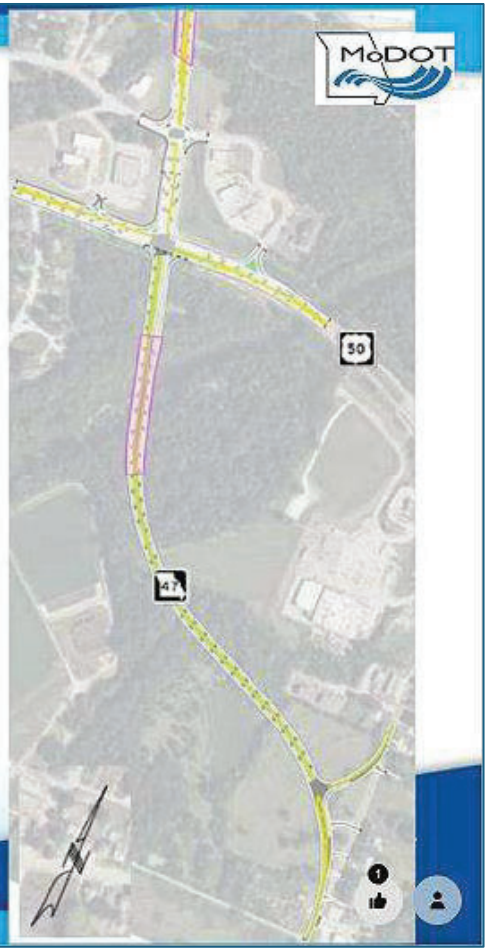
US 50/47 Intersection Concepts

Southwest Realignment

Pros/Cons

- Does not improve safety (+25% crashes)
- Reduces congestion at US 50/47 (15% decrease)
- Reduces SB 47 Corridor travel time by 129 seconds
- Requires large but typical intersection
- New bridge over river needed
- Environmental issues
- ROW impacts
- Significant cost and time to implement



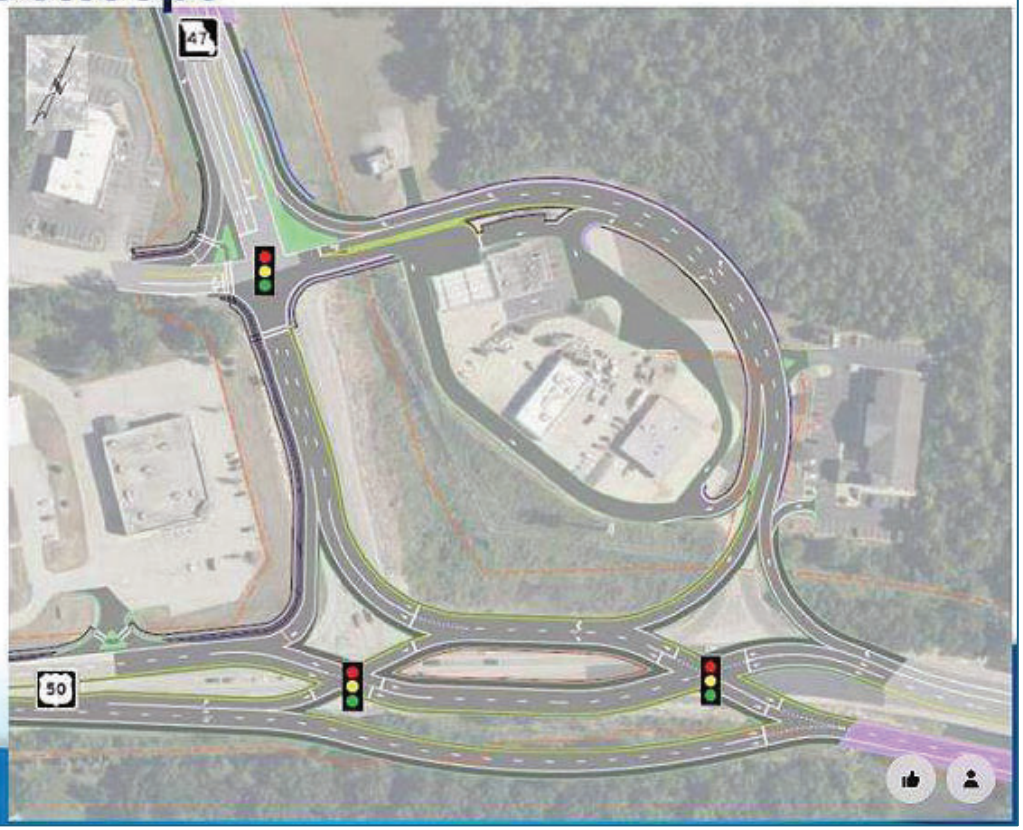


US 50/47 Intersection Concept

Diverging Diamond Interchange (DDI)

Pros/Cons

- Improves safety (-6% crashes)
- Reduces congestion at US 50/47 (43% decrease)
- Reduces SB 47 Corridor travel time by 132 seconds
- Unique design
- Business access challenges
- ROW impacts
- Potential environmental issues
- Potential bridge widening

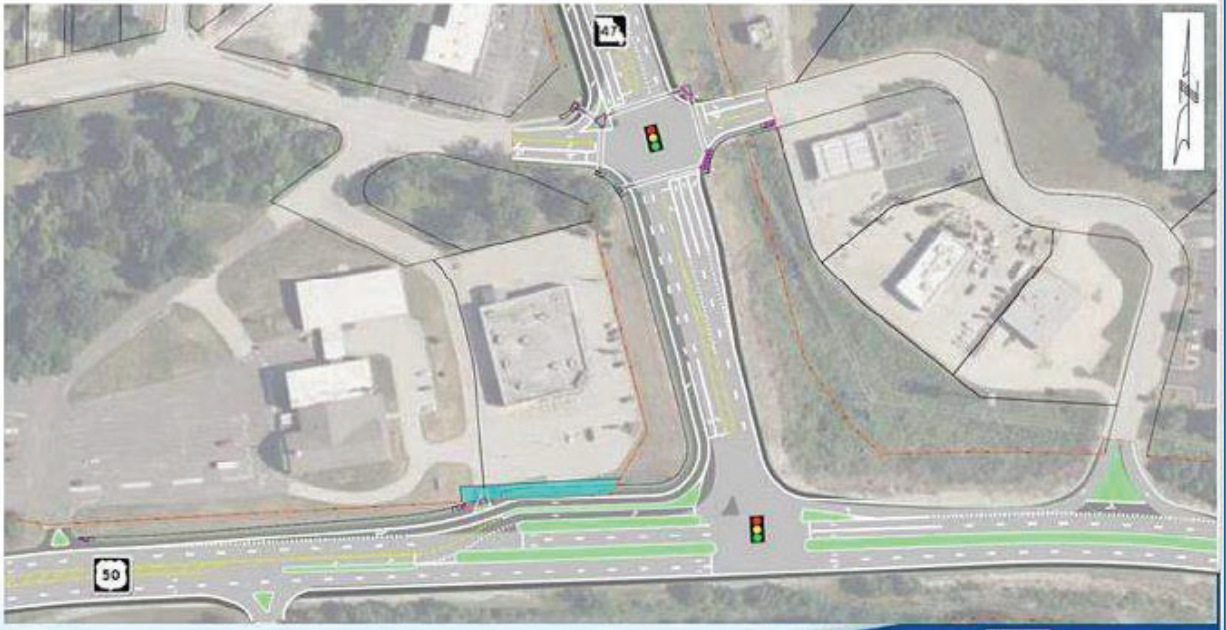


US 50/47 Intersection Concept

Continuous Flow Intersection (CFI)

Pros/Cons

- Improves safety (-12% crashes)
- Reduces congestion at US 50/47 (50% decrease)
- Reduce SB 47 Corridor travel time by 138 seconds
- Modified EB left-turn
- Minimal ROW impacts
- No environmental concerns
- Minor business/residential access impacts



CFI Animation Example

Comparison of Three Concepts

	Southwest Realignment	Diverging Diamond	Continuous Flow
Safety	(25% more crashes)	(6% less crashes)	(12% less crashes)
Travel Time US 50/47 (Overall Delay): SB 47 (US-50) SB 47(Indep. Dr. to 50):	15% decrease 25 seconds faster 129 seconds faster	43% decrease 51 seconds faster 132 seconds faster	50% decrease 60 seconds faster 138 seconds faster
Right-of-way	Significant Impacts 13 parcel/21 acres	Potential Impacts 10 parcels	Minimal Impacts 1 parcel
Cost	$$$	$$	$
Environmental	Concerns	Potential	Minimal
Other	• New bridge needed • Implementation (Time, $) • Moves traffic congestion west	• Unique design • Potential bridge widening • Access impacts to/from businesses	• Minor business/residential access impacts

Breakout Activity

Breakout Stations

- Review each of the US 50/47 Alternatives
- What features or components of each alternative do you like/not like? Examples include but not limited to: Prioritize safety, access, lane configurations, growth opportunities, improve travel times, etc.
- What pros/cons do you see?
- What considerations have we not thought about?

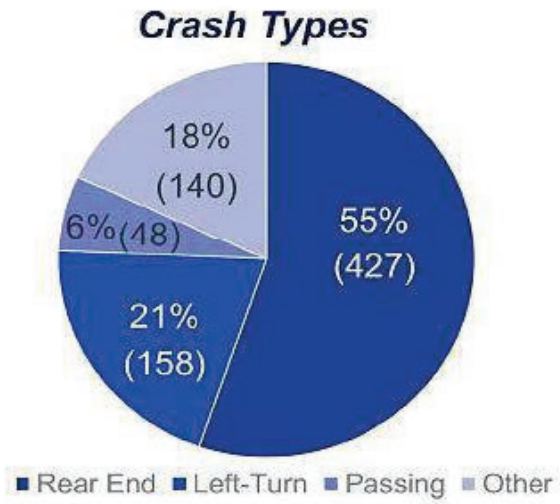
Report back

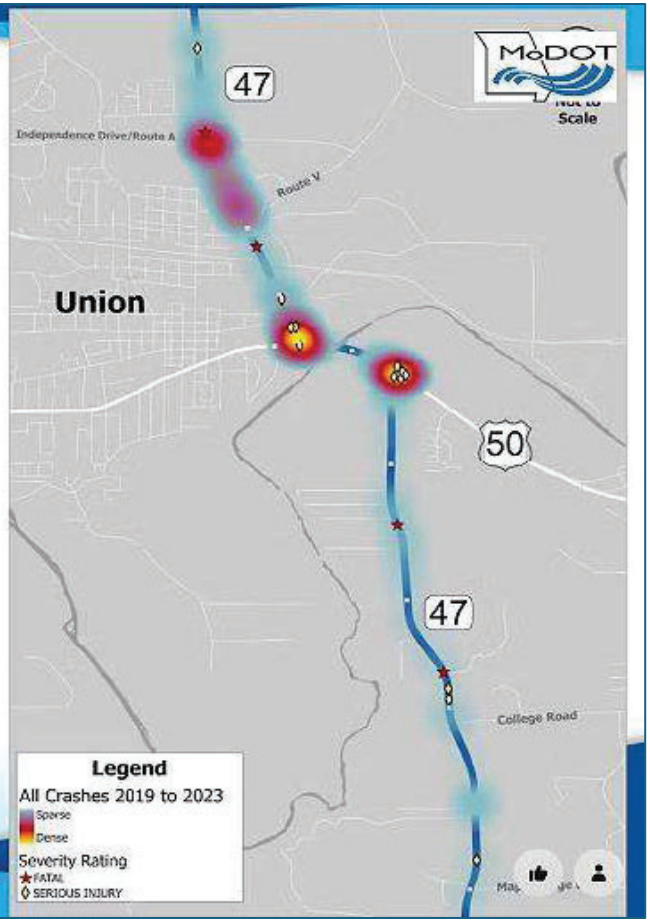
- What did facilitators hear/common themes?
- What did the group like/not like about each alternative?

*Rate the **reasonable intersection concepts** r on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable" :*

Middle Segment - City of Union Crash and Safety Data

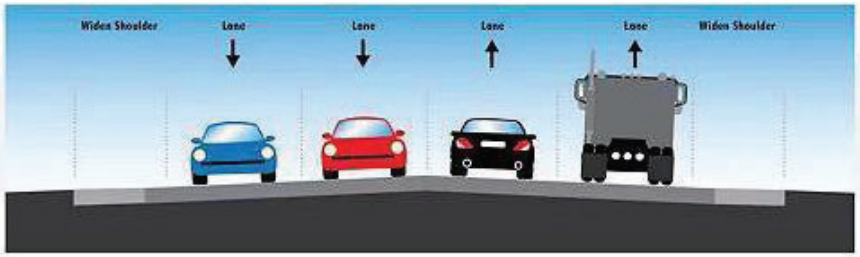
Crash Severity	Count
Fatal	4
Serious Injury	13
All Other Crashes	756
Total	773





City of Union – US 50/47 to Independence Dr.

5-LANE WITH CENTER
TWO-WAY LEFT TURN LANE



4-LANE UNDIVIDED

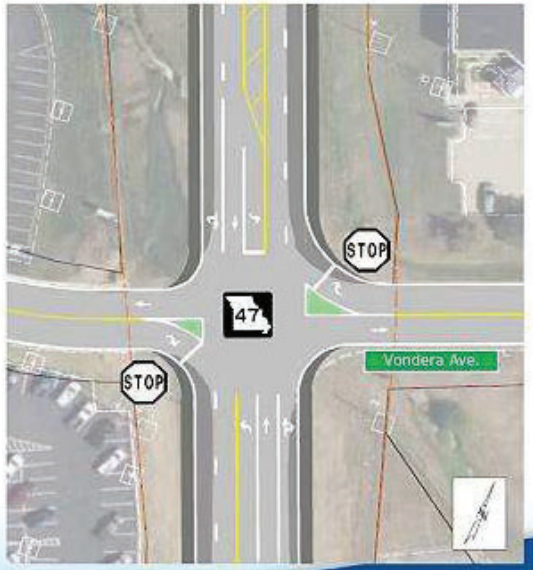
City of Union – Intersection Improvement Options US 50/47 to Independence Dr.

- Signalized intersections
- Roundabouts
- Turn improvements
- Additional lanes
- Access Management

Example Intersection Improvements – City of Union

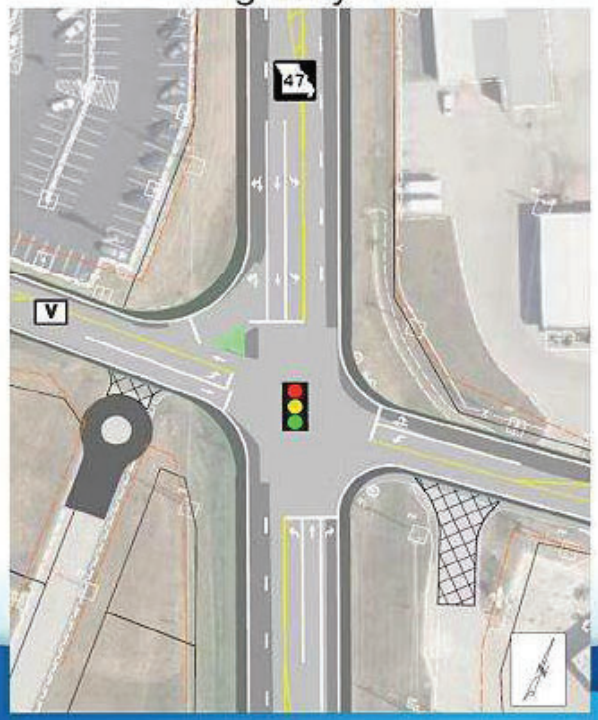
Independence Dr.

Vondera Ave.



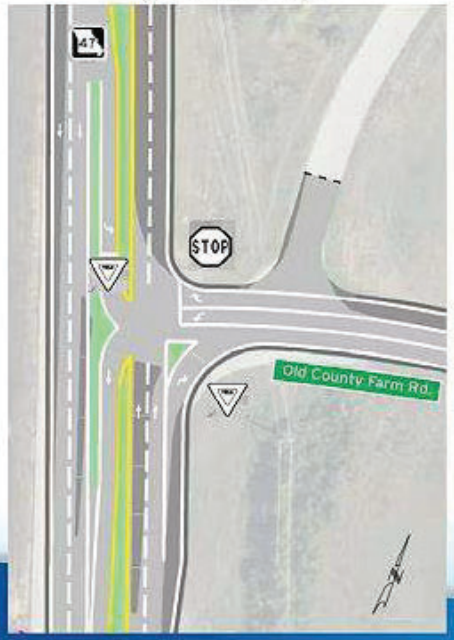
Example Intersection Improvements – City of Union

Highway V



Example Intersection Improvements – City of Union

Old County Farm Road
(Green-T)

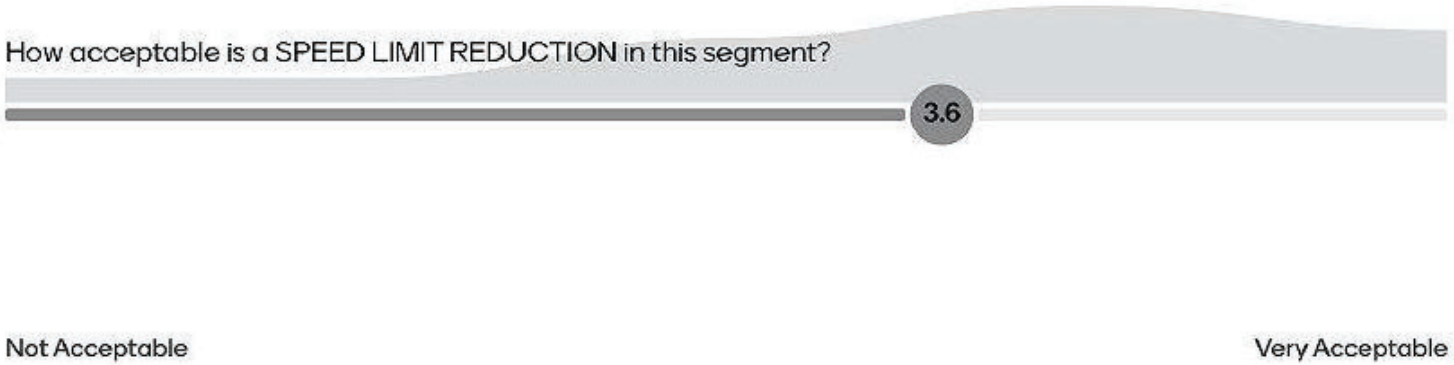


Old County Farm Road
(Roundabout)

*Out of 100%, how would your organization or constituents weigh **SAFETY and CONGESTION**? Please assign a % to each factor for the City of Union.*

6 33

*How acceptable is a **SPEED LIMIT REDUCTION** in this corridor segment (City of Union)? 1 is "Not acceptable", 5 is "Very acceptable"*



Please provide any comments/feedback regarding the corridor options for the City of Union segment.

The proposed intersection improvements look good and will work to make the area safer and more reliable.	Safety is key, slow things down and keep people safe.	Round about OK	Good proposed options
Does Highway V need more consideration?	Need a dedicated right from V to north 47. Roundabout at old county farm rd.	Capacity Improvements	Roundabout is preferred

1 17

Please provide any comments/feedback regarding the corridor options for the City of Union segment.

Not being able to make a left out of Vondera onto HWY 47 south is not acceptable. We're is that traffic supposed to go?	What about pedestrians 😉	Widen to 4 lanes at rail bridge	Roundabout
Like Green T designs when logical	Roundabouts can help	Keep in mind the deterioration of driver behavior	Choke point at Old County Farm leads to higher speed and merging from left. 47 north.

1 17

Please provide any comments/feedback regarding the corridor options for the City of Union segment.

Capacity improvements from Independence through RR bridge to 50

Need to keep the the impact that increased flow through here will impact the 47/50 intersection

Green T, Roundabouts 👍

Access management and roundabouts work together well.

Doesn't changing congestion directly impact Safety also?

If supporting Roundabouts, please be an advocate to the community.

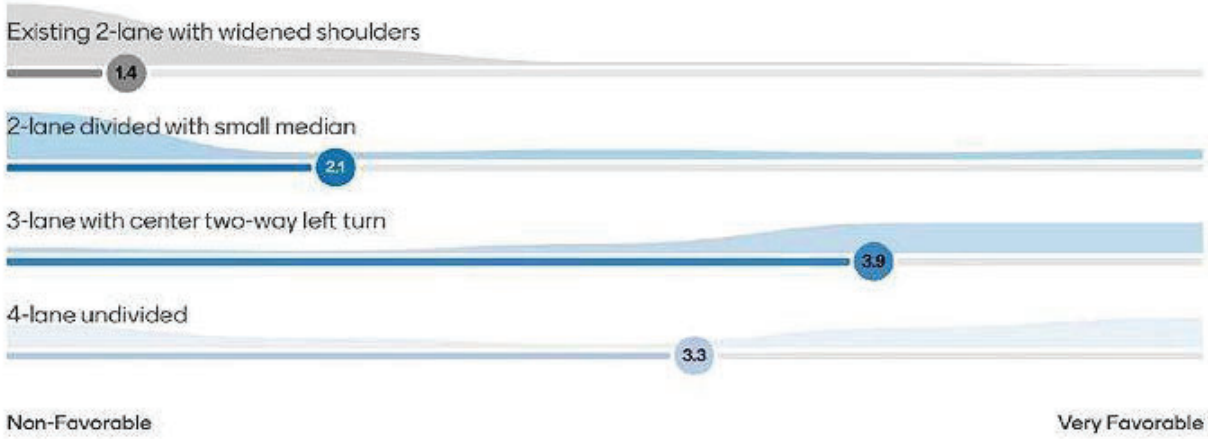
1 17

MO 47 CORRIDOR – North Segment

City of Washington to Independence Dr.

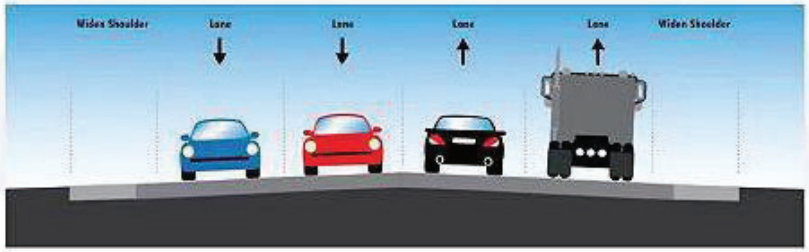
What we heard

Rate each roadway section for *NORTH* of Union on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable":



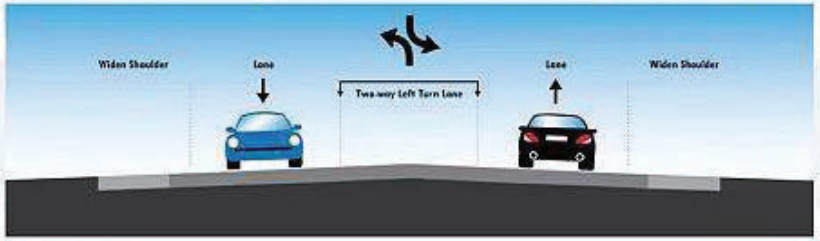
City of Washington (Partnership)

5-LANE WITH CENTER TWO-WAY LEFT TURN LANE

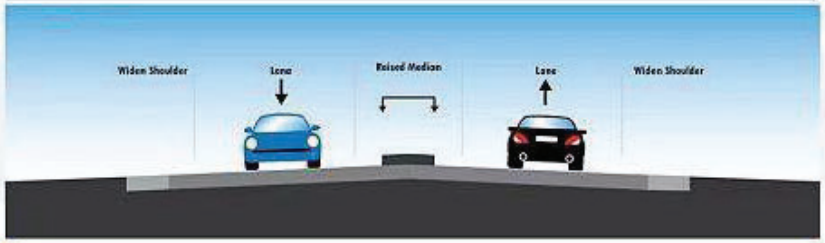


4-LANE UNDIVIDED

Rural Washington to Independence Dr (Union)



3-LANE WITH CENTER TWO-WAY LEFT TURN LANE



2-LANE DIVIDED

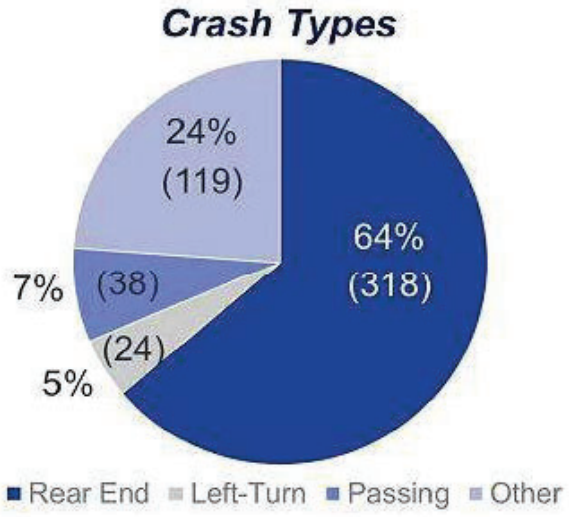
EXISTING 2-LANE WITH WIDER SHOULDERS

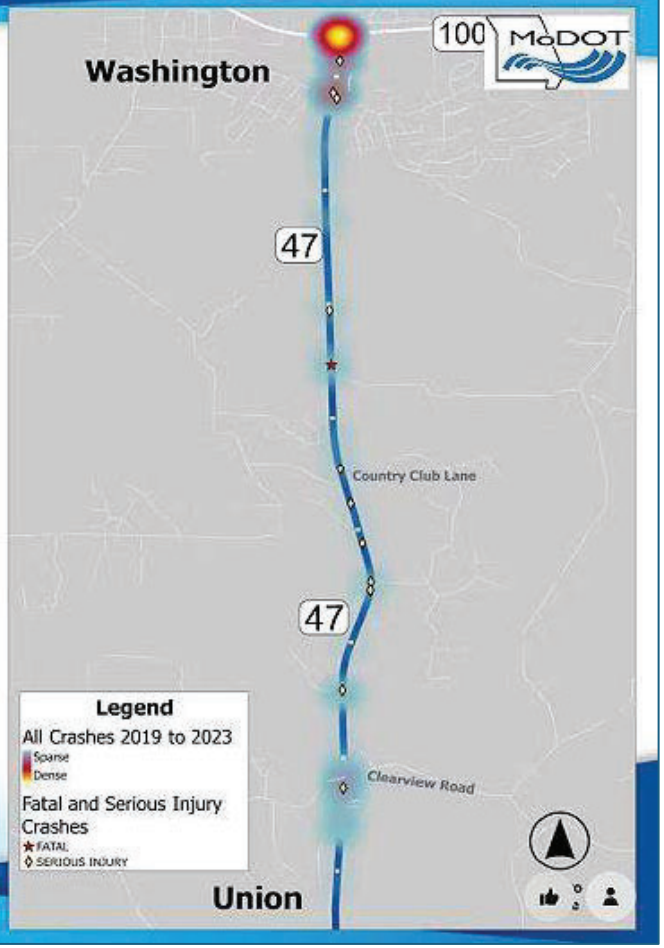
Intersection Improvements
What we heard at CAG #2

- CAG interested in improvements at many locations throughout the corridor
- Mix of solutions (signals, roundabouts, turn lanes, etc.) may be good
- Need to be determined by each location
- Roundabout
  - General support
  - Use where appropriate
  - Do not make them too close together

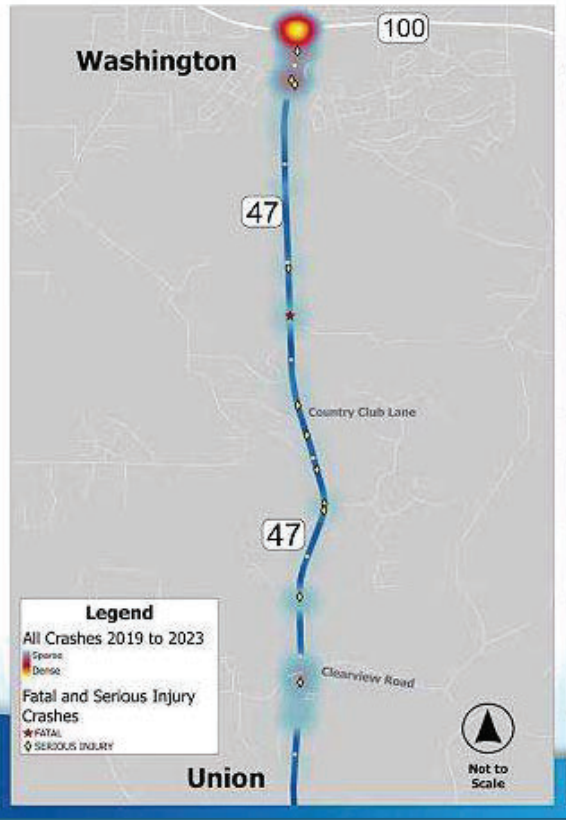
North Segment
Crash and Safety Data

Crash Severity	Count
Fatal	1
Serious Injury	11
All Other Crashes	487
Total	499



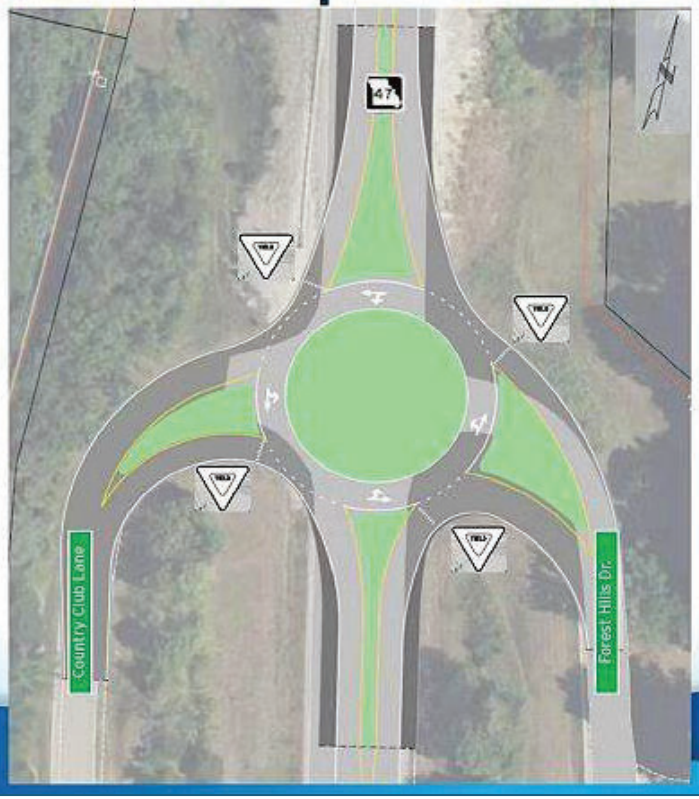


Potential Intersection Improvements North of US 50/47



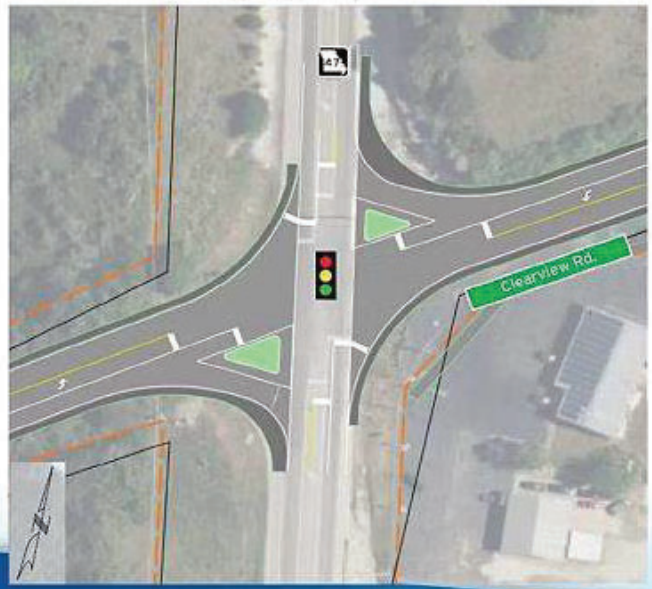
Examples of Intersection Improvements North of Union

Country Club Lane/
Forest Hills

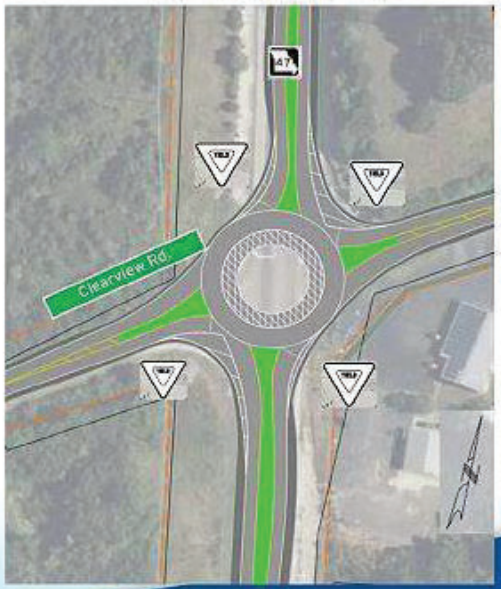


Examples of Intersection Improvements North of Union

Clearview Rd.
(Signal)

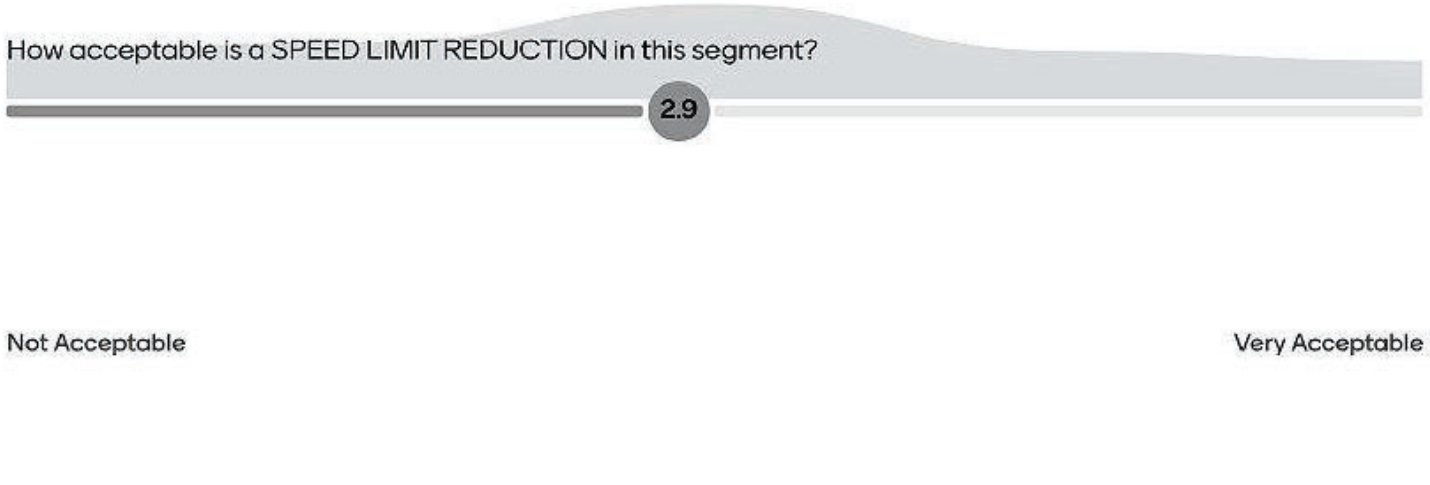


Clearview Rd.
(Roundabout)



*Out of 100%, how would your organization or constituents weigh **SAFETY and CONGESTION**? Please assign a % to each factor for the north segment.*

*How acceptable is a **SPEED LIMIT REDUCTION** in the north segment? 1 is "Not Acceptable", 5 is "Very Acceptable"*



Please provide any comments/feedback regarding the corridor options for the north segment.

Roundabouts would be good safety is key.	Turn lane is preferred	Looking forward to the roundabout for the bus garage..	I like the round about
Thoughts about including a NB or SB Passing lane somewhere on the corridor between Independence & the future East West Parkway?	When it's congested, it's like riding an escalator to get to Washington. When there's no traffic, people are going 70 mph. The roundabouts and intersection improvements should help.	Speed limit reductions benefit all in the long run even if some users may not appreciate it.	Reduce crossover movements and utilize roundabouts as much as possible. I avoid traveling 47 even though I commute between Union and Washington.

14

Please provide any comments/feedback regarding the corridor options for the north segment:

Roundabout at Country Club	If access management is required roundabouts would be good solutions.	I think speeding up and then braking injects risk into the equation. Slower without congestion is better and safer.	Roundabouts would make it safer
Roundabouts at clear view would help intersection and slow traffic approaching quarry	Wide shoulders to pull over speeding drivers.	2 lane undivided + widening shoulders seems to be the best to use this money for safety improvements elsewhere along the corridor.	2 lane divided, roundabouts good throughout this corridor

14

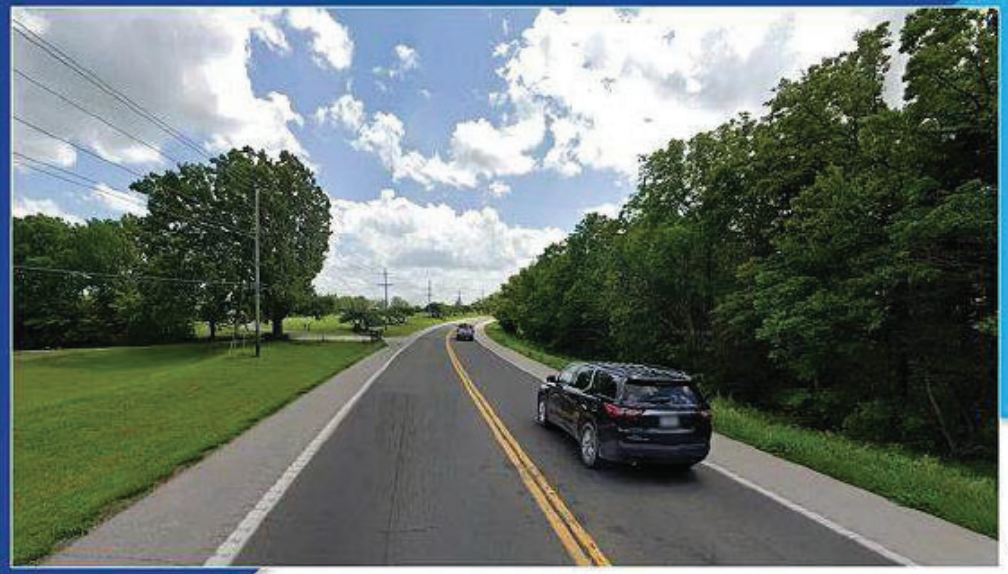
Please provide any comments/feedback regarding the corridor options for the north segment:

Roundabouts would be a great addition

14

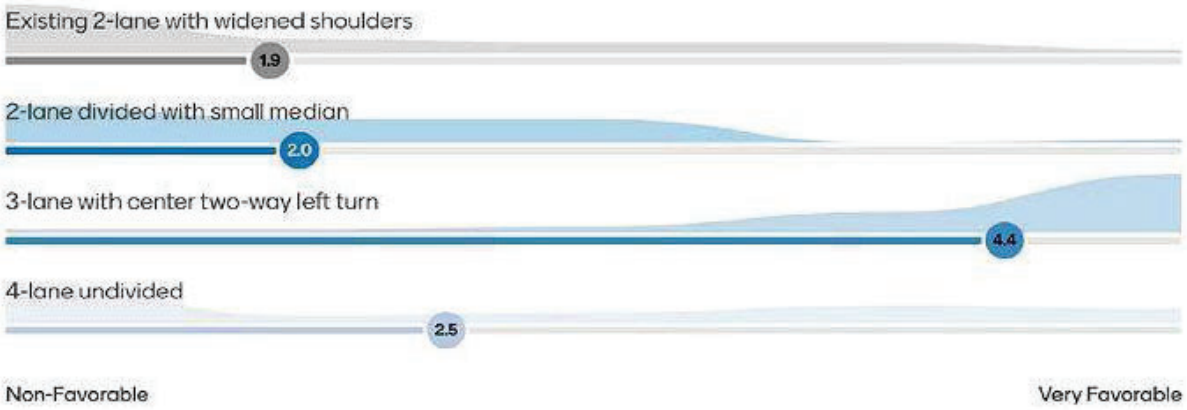
MO 47 CORRIDOR – South Segment

US 50 to City of St. Clair



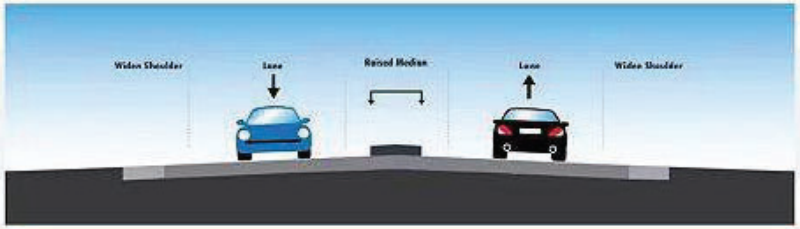
What we heard

Rate each roadway section for *SOUTH* of Union on a 1 to 5 scale with 1 being "Non-Favorable" and 5 being "Most Favorable":

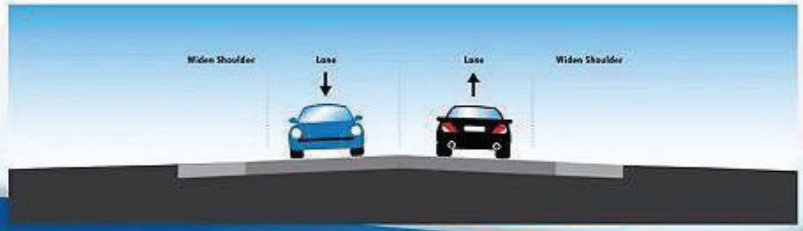


South Segment – US 50 to St. Clair

3-LANE WITH CENTER TWO-WAY LEFT TURN LANE



2-LANE DIVIDED



EXISTING 2-LANE WITH WIDER SHOULDERS

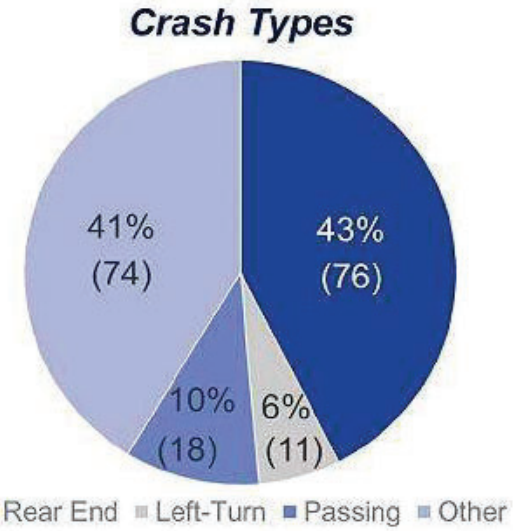
Intersection Improvements
What we heard at CAG #2

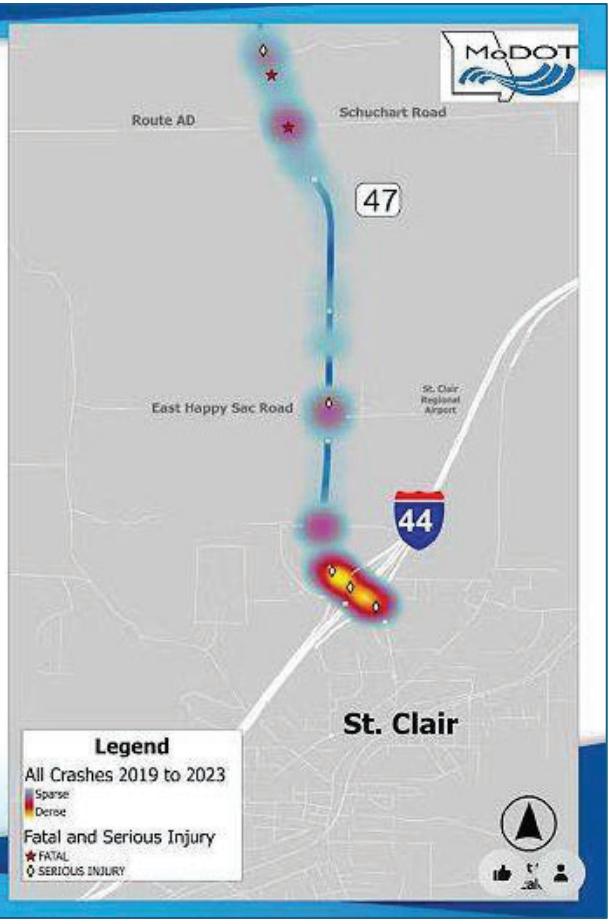
- Roundabout
  - General support
  - Use where appropriate
  - Do not make them too close together
- Mix of solutions may be good, need to be determined by each location

Potential Intersection Improvements South of US 50/47

South Segment
Crash and Safety Data

Crash Severity	Count
Fatal	2
Serious Injury	5
All Other Crashes	172
Total	179





Examples of Intersection Improvements South of US 50

College Rd.
(Signal)

College Rd.
(Roundabout)

Examples of Intersection Improvements South of US 50

Hwy AD/ Schuchart Rd.
(Turn Lane Improvements)

Hwy AD/ Schuchart Rd.
(Roundabout)

Examples of Intersection Improvements South of US 50

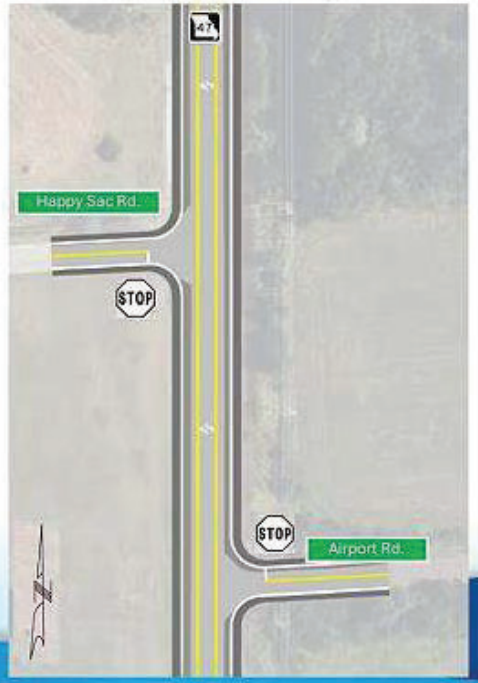
E. Happy Sac / Airport Rd.
(Roundabout – Example 1)

E. Happy Sac / Airport Rd.
(Roundabout – Example 2)

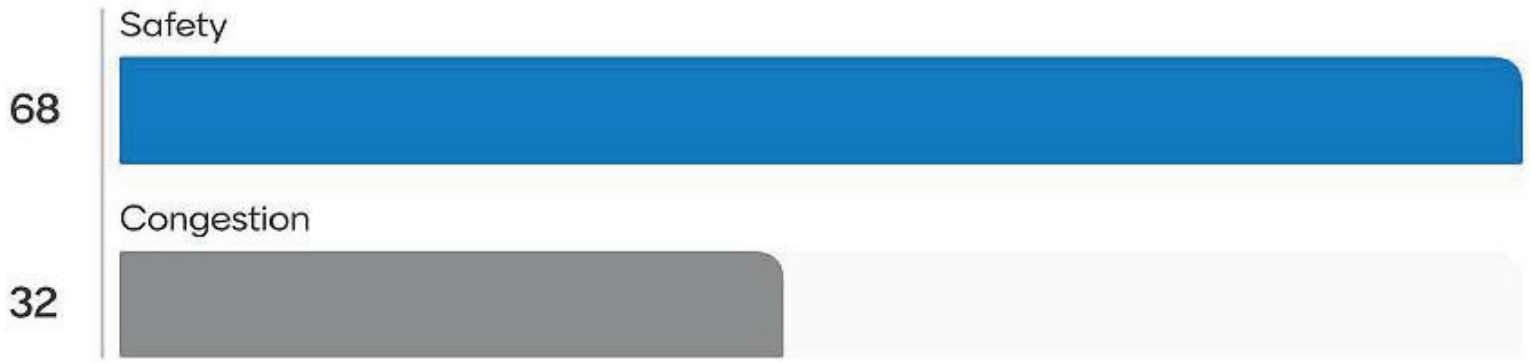
Examples of Intersection Improvements South of MO 47/US 50

E. Happy Sac / Airport Rd.
(Realign / Turn Lane)

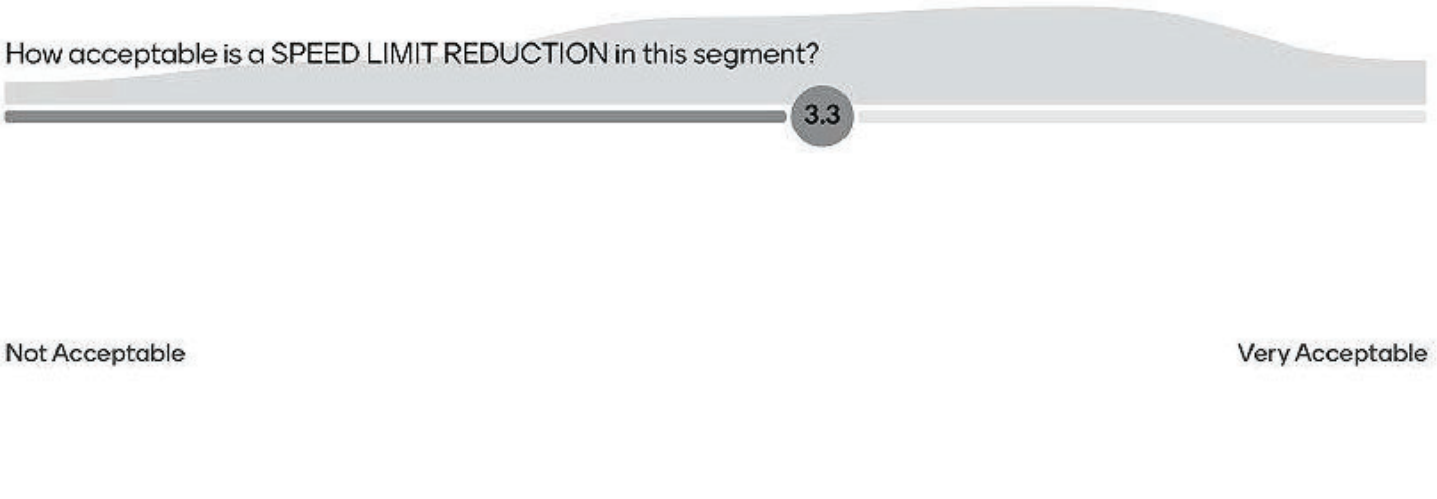
E. Happy Sac / Airport Rd.
(Turn Lane)

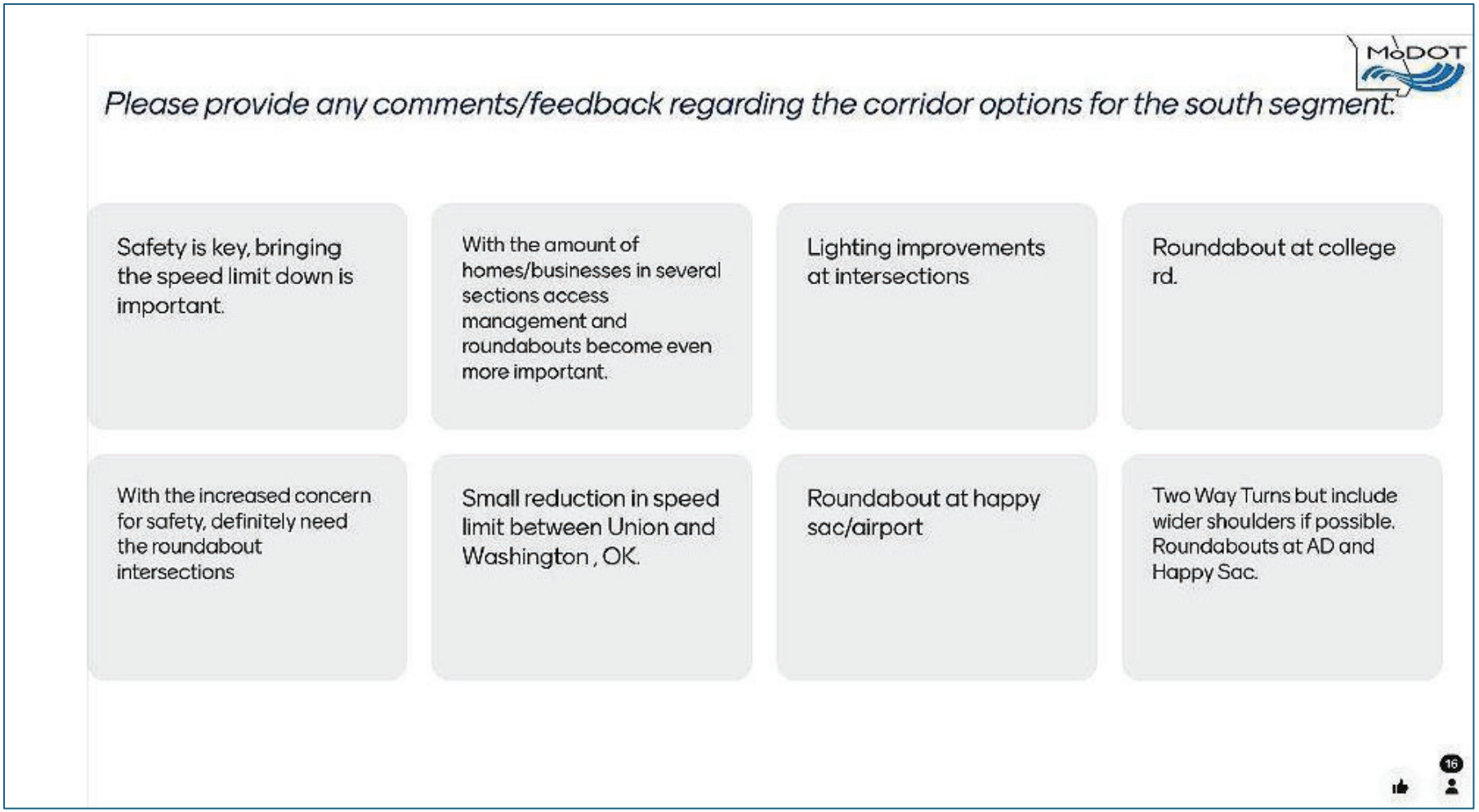


*Out of 100%, how would your organization or constituents weigh **SAFETY and CONGESTION**? Please assign a % to each factor for the south segment.*



*How acceptable is a **SPEED LIMIT REDUCTION** in the south segment? 1 is "Not Acceptable", 5 is "Very Acceptable"*




Please provide any comments/feedback regarding the corridor options for the south segment:
Safety is key, bringing the speed limit down is important.
With the amount of homes/businesses in several sections access management and roundabouts become even more important.
Lighting improvements at intersections
Roundabout at college rd.
With the increased concern for safety, definitely need the roundabout intersections
Small reduction in speed limit between Union and Washington , OK.
Roundabout at happy sac/airport
Two Way Turns but include wider shoulders if possible. Roundabouts at AD and Happy Sac.
16

Please provide any comments/feedback regarding the corridor options for the south segment.

Small reduction in speed limit between Union and Washington , OK.

Round abouts would be most beneficial to even out speeds and maintain travel times.

Need wider shoulders.

Roundabouts are good. Reduce the number of intersections along south 47. Reduce the speed limit.

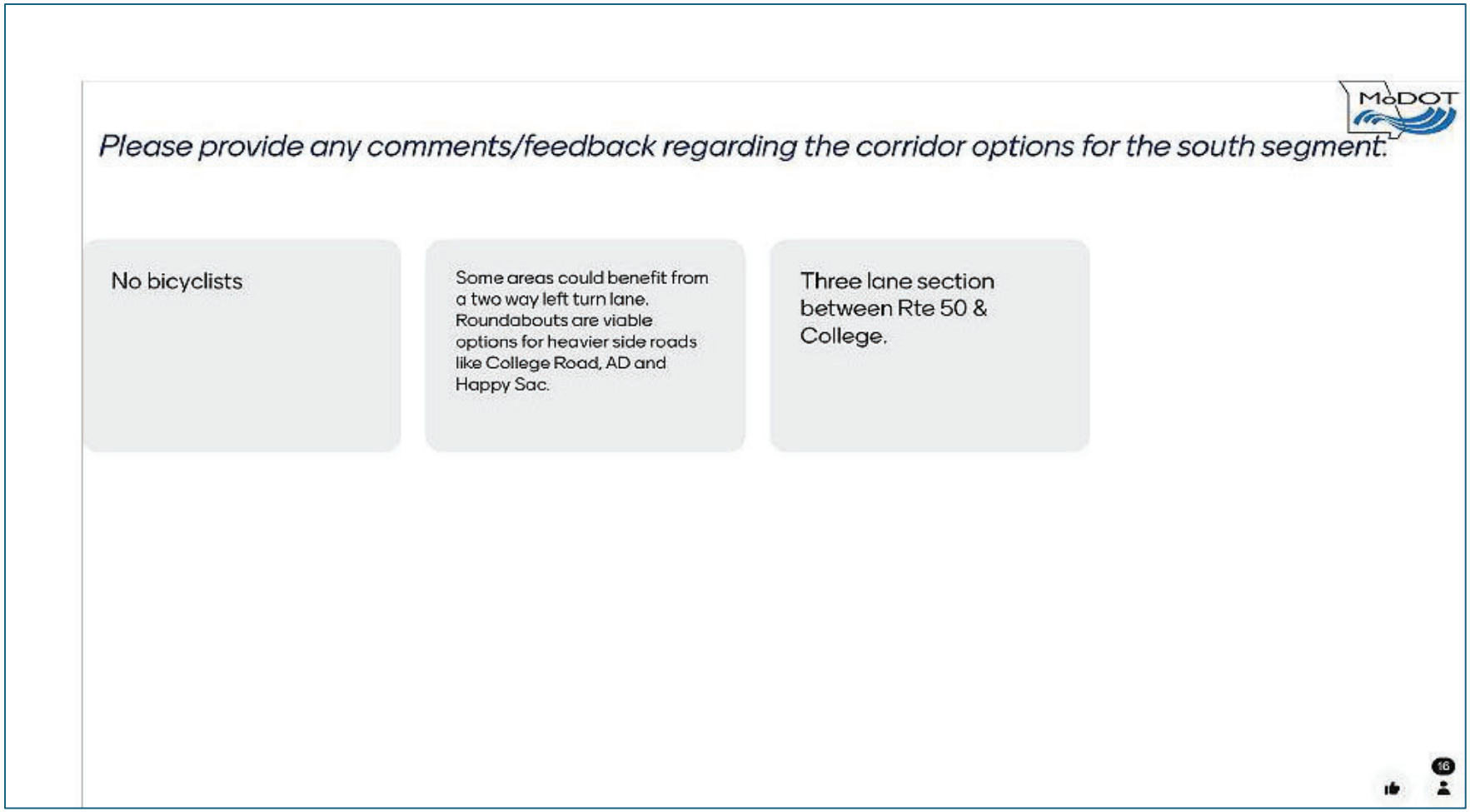
Roundabouts and side road realignments. Yes pls

In order to realign happy sack and airport road would this require alternate route on happy sack due to roadwork??

What about bicyclists on shoulders? Gaps in rumble strips.

3 lane seems appropriate given the amount of access points along this stretch

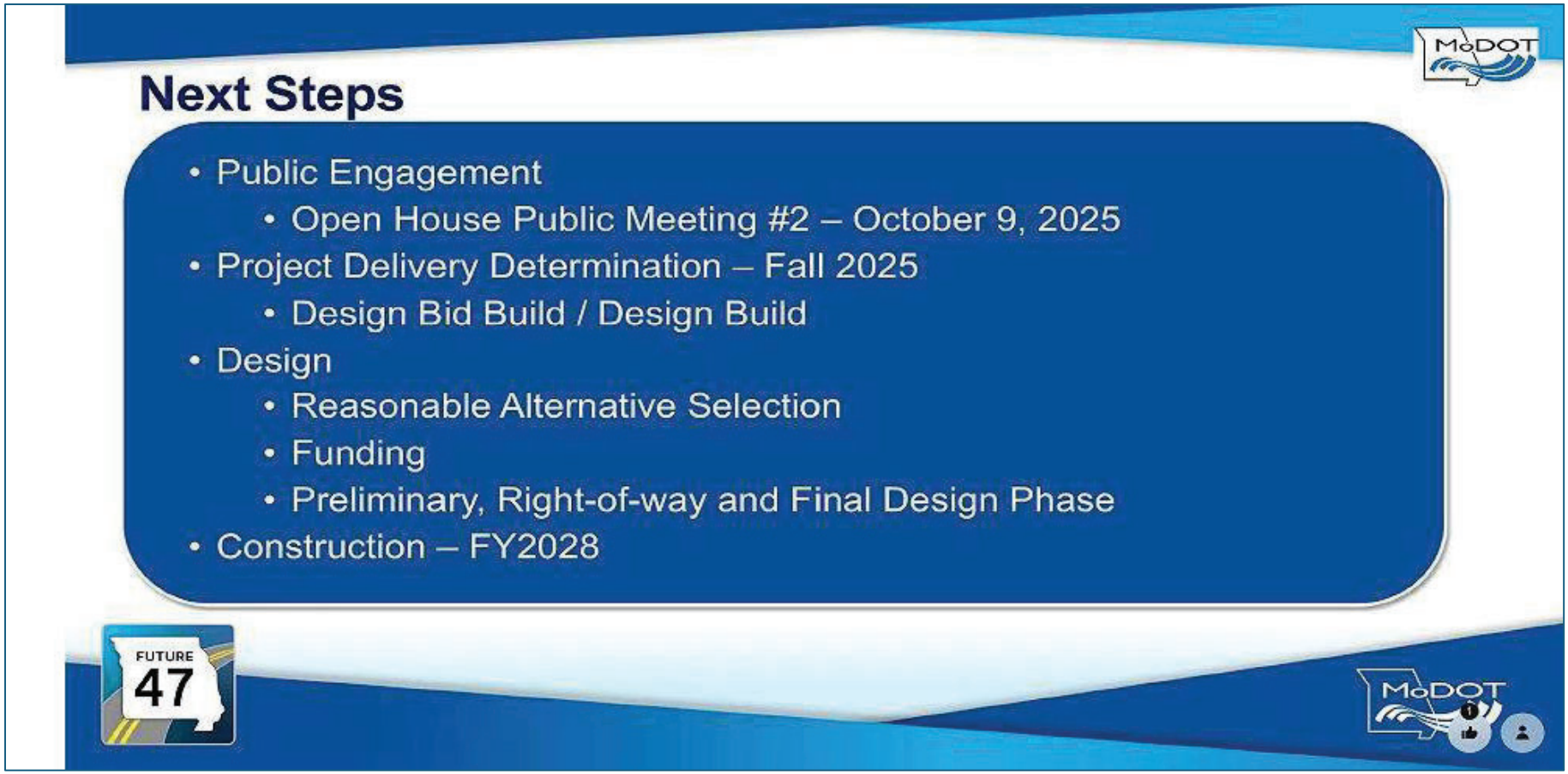
16


Please provide any comments/feedback regarding the corridor options for the south segment.
No bicyclists
Some areas could benefit from a two way left turn lane. Roundabouts are viable options for heavier side roads like College Road, AD and Happy Sac.
Three lane section between Rte 50 & College.
16

WRAP UP AND NEXT STEPS

*Are there any alternatives, potential design concepts that **CONCERN** you? Do you see any **CHALLENGES**? (word cloud)*

*Are there any alternatives, potential design concepts that you are most **EXCITED** about? What do you **LIKE**? (word cloud)*


Next Steps
• Public Engagement
• Open House Public Meeting #2 – October 9, 2025
• Project Delivery Determination – Fall 2025
• Design Bid Build / Design Build
• Design
• Reasonable Alternative Selection
• Funding
• Preliminary, Right-of-way and Final Design Phase
• Construction – FY2028

Thank you!

Project Contact Information:

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Aaron.Groff@modot.mo.gov
314-453-1676

Jordan S. Dalaviras
MoDOT Franklin / Jefferson County Area Liaison
Jordan.Dalaviras@modot.mo.gov
314-453-5021

Future47@modot.mo.gov

www.modot.org/future47

1-888-ASK-MODOT
(275-6636)

Cost-Share Opportunities and Updates

- City of Washington Cost Share update
- MoDOT 50/50
- Federal Opportunities
- Other partnering opportunities

Cost-Share Opportunities and Updates

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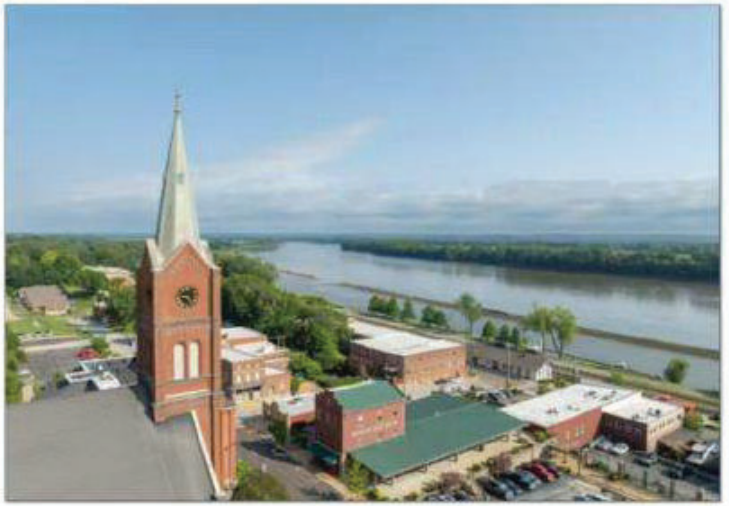

vii. Conceptual Study Listening Sessions Memorandum

DRAFT

Missouri Route 47
Conceptual Study
Listening Sessions Memo

Overview

The Missouri Department of Transportation (MoDOT) hosted a series of Listening Session meetings during the input phase of the Missouri Route 47 Study to share information about the Route 47 Conceptual Study and gather input. Initial meetings were held in Winter 2025 for targeted key stakeholders. As the Study progressed, MoDOT met with additional stakeholders as concerns were brought to the attention of the team.

As part of the Statewide Transportation Improvement Program (STIP), MoDOT budgeted an estimated $75.7 million for the construction of the safety and congestion improvements along the Route 47 corridor in Washington, Union, and St. Clair in Fiscal Year (FY) 2028. This corridor is over 70 years old as Route 47 from Union to St. Clair was built in 1948 and the portion between Washington to Union was built in 1962.

The study will identify issues and potential improvements related to Safety and Mobility, Intersections and Access Management, Condition of Existing Infrastructure and Stakeholder input.

The purpose of the listening sessions were to provide an overview of the study, review initial safety and traffic information and gather input from targeted stakeholders about how their organizations use the Route 47 between Washington and St. Clair, their perceptions and understand their concerns about the corridor.

Listening Sessions

Key stakeholder listening sessions included the following but were not limited to:

Ron Bentch, Missouri State Parks/Rock Island Trail Development Director and Rick Milhalevich, Rock Island Trail President
January 29, 2025, 1 p.m.

Cindy Mense, Trailnet
January 31, 2025, 1:00 p.m.

Steve Campbell, Scenic Regional Library Director
February 10, 2025, 1:30 p.m.

Shawn Williams, Jeremy Chamberlain, Zach (unknown last name) UPS
February 21, 2025, 9:30 a.m.

Lisa Lochner, Missouri Baptist Sullivan Hospital
February 24, 2025 10:00 a.m.

Dave Flagg, Septic Services/MORO and Cameron Lueken, Wunderlich Surveying
February 25, 2025, 10:00 a.m.

Kayla Frioli, Owner and Emily Miller, Director, Little Bears Daycare
March 5, 2025, 11:00 a.m.

Larry Whittaker, Riverstone Quarry
Thursday, March 6, 8:00 a.m.

First Student – Tim Porter, Location Manager and Gordon Brown, Dispatcher
March 6, 2025, 10:00 a.m.

3R RV – Christina Reynolds, Owner
August 13, 2025, 2:00 p.m.

Key Takeaways

While each stakeholder has their individual concerns and challenges along the corridor, all stakeholders support improvements to Route 47 to increase safety and reduce congestion. The biggest concerns include turning onto Route 47 from their businesses, particularly during peak travel hours.

Stakeholders are supportive of different types of improvements including wider shoulders, turning lanes and roundabouts.

In addition, the bike/ped community would like to see improved pedestrian accommodations such as sidewalks and cross walk along the corridor, but focus on the northern portion of the corridor between Washington and Union, connecting the Rock Island and Katy Trails.