SCREENING OF ALTERNATIVES REPORT

Mid-States Corridor
Tier 2 Environmental Study
Section 2
I-64 at Dale to SR 56 at Haysville

Prepared for
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Prepared by
Mid-States Project Consultant

Table of Contents

1. Summary 6
2. Preferred Facility Type 8
   2.1 Use of Representative Alternatives 8
   2.2 Comparative Performance 11
   2.3 Comparative Impacts 13
   2.4 Comparative Costs 15
   2.5 Preferred Facility Type 16
3. Preliminary Alternatives 17
   3.1 Draft Preliminary Alternatives 17
   3.2 Identification of Preliminary Alternatives 22
      3.2.1 Preliminary Alternative 1 24
      3.2.2 Preliminary Alternative 2 25
      3.2.3 Preliminary Alternative 3 26
4. Preliminary Alternatives Screening 27
   4.1 Alternative Benefits, Costs and Impacts 27
      4.1.1 Alternative Benefits 27
      4.1.2 Alternative Costs 31
      4.1.3 Alternative Impacts 33
   4.2 Comparison of Preliminary Alternatives 39
   4.3 Review of Corridor Segments 39
      4.3.1 Segment 1 – I-64 to CR 1000 S 39
      4.3.2 Segment 2 – CR 1000S to CR 200 W 42
      4.3.3 Segment 3 – CR 200 W to North of SR 64 (Sixth St.) 45
      4.3.4 Segment 4 – North of SR 64 to North of SR 162/Schnellville Road 47
      4.3.5 Segment 5 – North of SR 162/Schnellville Road to North of Kellerville Road 50
      4.3.6 Segment 6 – North of Kellerville Road to North of US 231 54
      4.3.7 Segment 7 – North of US 231 to White River 56
   4.4 NEPA Document Alternatives 58
      4.4.1 Variation 1 - Elimination of Access at CR 1100 S 59
      4.4.2 Variation 2 – County Road 400S and Hunley Creek Crossing 60
      4.4.3 Variation 3 – SR 162/Schnellville Road Access 61

4.4.4 Variation 4 – SR 162 to SR 164 Alignments 62
4.4.5 Variation 5 – Quadrant Roadway at US 231 63
4.4.6 Variation 6 – Haysville Access 64
4.5 Alternatives Carried Forward 65

Figures

Figure 1: Study Area with Approved Corridor 7
Figure 2 - Typical Section for Expressway Facility Type 9
Figure 3 - Typical Section for Super-2 Facility Type 9
Figure 4: Representative Alternative 2A 10
Figure 5: Dwellings and Access Locations Existing US 231 Expressway 40
Figure 6: Residences Near Roadway 41
Figure 7: Huntingburg Airport Runway Protection Zone (RPZ) 42
Figure 8: Short Creek Floodway 43
Figure 9: Fire Station Access Issues 44
Figure 10: Norfolk Southern Switch Yard and Nearby Wetlands 45
Figure 11: Bruner Creek Floodway and Access Considerations 46
Figure 12: Hunley Creek Crossing 47
Figure 13: Relocation Reduction 48
Figure 14: Historic Bridge on SR 162 49
Figure 15: Historic Resource Log Barn, Relocation Minimization 50
Figure 16: Relocation Minimization Trainer Lane to CR 190 51
Figure 17: Buffalo Flats Wetland, Patoka River and Railroad Crossing 52
Figure 18: Access Considerations 53
Figure 19: Relocation Minimization 54
Figure 20: Access Options 55
Figure 21: Alignment at Existing White River Bridge 56
Figure 22: Residences Along Existing US 231 57
Figure 23: Access Considerations/Options 58
Figure 24: Potential Elimination of Access at CR 1100 S 59
Figure 25: CR 400 S and Hunley Creek Crossing 60
Figure 26: SR 162/Schnellville Road Access 61
Figure 27: SR 162 to SR 164 Alignments 62
Figure 28: Quadrant Roadway at US 231 63

Figure 29: Haysville Access 64

Tables

Table 1: Mid-States Corridor Facility Type Performance Comparison 12
Table 2: Mid-States Corridor Facility Type Impact Comparison 14
Table 3: Access Locations and Types for Alternative 1 24
Table 4: Access Locations and Types for Alternative 2 25
Table 5: Access Locations and Types for Alternative 3 26
Table 6: Access to Major Business Markets 28
Table 7: Labor Market Access 29
Table 8: Annual Forecast Year (2050) Truck Hour Savings 29
Table 9: Average Access Time to Alternatives from Major Freight Destinations 30
Table 10: Improved Access to Major Intermodal Locations 30
Table 11: Overall Performance Measure Index Comparison 31
Table 12: Alternative Costs 31
Table 13: Resource Impacts by Alternative 33

Appendices

Preliminary Alternatives Appendix (Separate Document)

Purpose and Need Appendix

Impact Calculation Appendix

Cost Estimating Appendix

Design Summary Appendix

1. SUMMARY

The Tier 1 Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Mid-States Corridor (MSC) Project made a build decision for the project and selected a corridor between I-64 and I-69 in Dubois, Martin, Daviess and Greene counties. The FEIS/ROD also designated Sections for Tier 2 studies (Sections 1-5). The current Tier 2 project in Dubois County is Section 2 of the MSC. It is approximately 24 miles long. **Figure 1** shows the project Study Area. It depicts the selected corridor as well as all Sections for the MSC. The ROD provided that the Tier 2 studies would determine the facility type in that Section. It also provided that the facility type would be either an expressway or Super-2 highway. In addition, Tier 2 studies would determine the access plan for the facility.

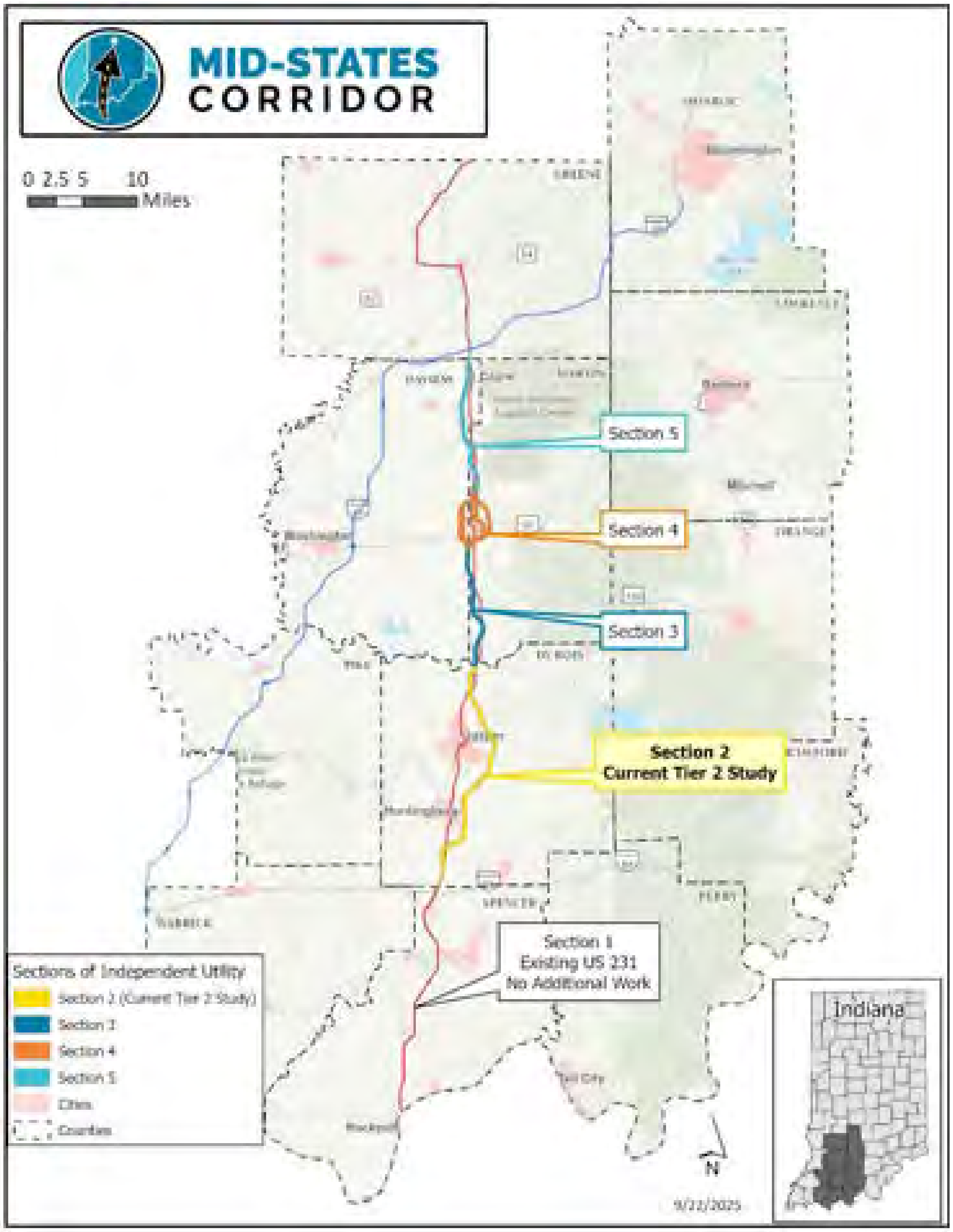
This is the Screening of Alternatives Report for the Mid-States Corridor project in Section 2. This report describes the process of identifying detailed alternatives for analysis in this project's NEPA document. The key components of this report include:

- **Determining a Preferred Facility Type for the Project in Section 2.** The Tier 1 FEIS/ROD for the MSC project deferred selection of a preferred facility type to Tier 2 studies. Tier 2 studies consider either a four-lane divided expressway or two-lane Super-2 facility. Either would be new terrain rural principal arterial facilities. See Section 2 - Preferred Facility Type.
- **Identifying Preliminary Alternatives.** Based on Tier 1 studies, preliminary engineering assessments and public input, three end-to-end preliminary alignment alternatives were identified. Each alignment alternative featured two potential access plans. See Section 3 – Preliminary Alternatives.
- **Reviewing and Comparing Preliminary Alternatives.** Costs, impacts and performance of the Preliminary Alternatives were reviewed. See Section 4.1 – Alternative Benefits, Costs and Impacts and Section 4.2 - Comparison of Preliminary Alternatives.
- **Identification of Alternatives Carried Forward for Detailed Study.** The comparison of Preliminary Alternatives resulted in the identification of an alignment to carry forward in the Draft NEPA document. This alignment will have alternatives consisting of potential alignment variations and access options. See Section 4.3 - Review of Corridor Segments and Section 4.4 - Alternatives Carried Forward.

Throughout this document, reference will be made to the **Alternatives Appendix**. The maps in this Appendix show the alternatives within the approved corridor, key resources and other parts of the transportation network.

Figure 1 shows the Study Area for the Mid-States Corridor (MSC) project, as well as all five Sections of Independent Utility (SIUs).

Figure 1: Study Area with Approved Corridor



2. PREFERRED FACILITY TYPE

The Tier 1 ROD defined a Super-2 as a highway with one travel lane in each direction, a passing/auxiliary lane the length of the alternative and access primarily provided via at-grade intersections. The Tier 1 ROD defined an expressway as a highway with multiple travel lanes (at least two) in each direction of travel, a median separating roadways in opposite directions and access provided by a combination of interchanges and at-grade intersections[1] with state and local roads. See **Figure 2** for the typical cross sections of the expressway facility type and **Figure 3** for the typical cross section of the Super-2 facility type as defined for this study. See **Section 3.2 - Identification of Preliminary Alternatives** for descriptions of potential access types.

This Screening of Alternatives for the project in Section 2 will identify a preferred facility type. The NEPA document will analyze alternative access plans for this preferred facility type.

2.1 Use of Representative Alternatives

INDOT used preliminary **Alternative 2A**[2] (see **Section 3 - Preliminary Alternatives**) to identify two facility-types alternatives: a Super-2 design and an expressway design. Both facility-type alternatives include the same centerline and access locations, as shown in **Figure 4**. A detailed map set portraying these representative alternatives is in the **Alternatives Appendix**. The remainder of **Section 2** is a summary of the performance, impacts and costs for these two representative alternatives.

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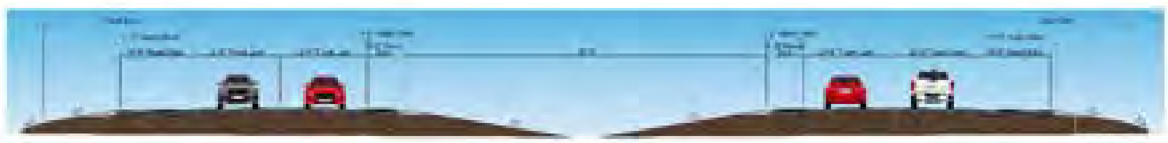
[1] At-grade intersections can include Reduced Conflict Intersections (RCI). This is a type of intersection design that improves safety by modifying how side-street traffic crosses or turns onto a major highway. Side-street traffic is not allowed to make direct left turns or cross the major road. Instead, vehicles turn right onto the major road, merge into traffic and travel a short distance, make a U-turn at a designated median opening, and then continue in the desired direction. Roundabouts are another type of at-grade intersection which are considered for the Super-2 facility type. See the **Design Appendix** for an illustration of a Reduced Conflict Intersection.

[2] **Alternative 1** was the Tier 1 working alignment. **Alternative 2A** was the initial refinement of **Alternative 1**. These refinements were intended to reduce impacts and costs. It was identified as a representative alternative which was appropriate to compare the relative costs, impacts and benefits of the Super-2 and expressway facility types. This analysis was conducted earlier in the screening process, before **Alternative 3** was finalized.

Figure 2 - Typical Section for Expressway Facility Type

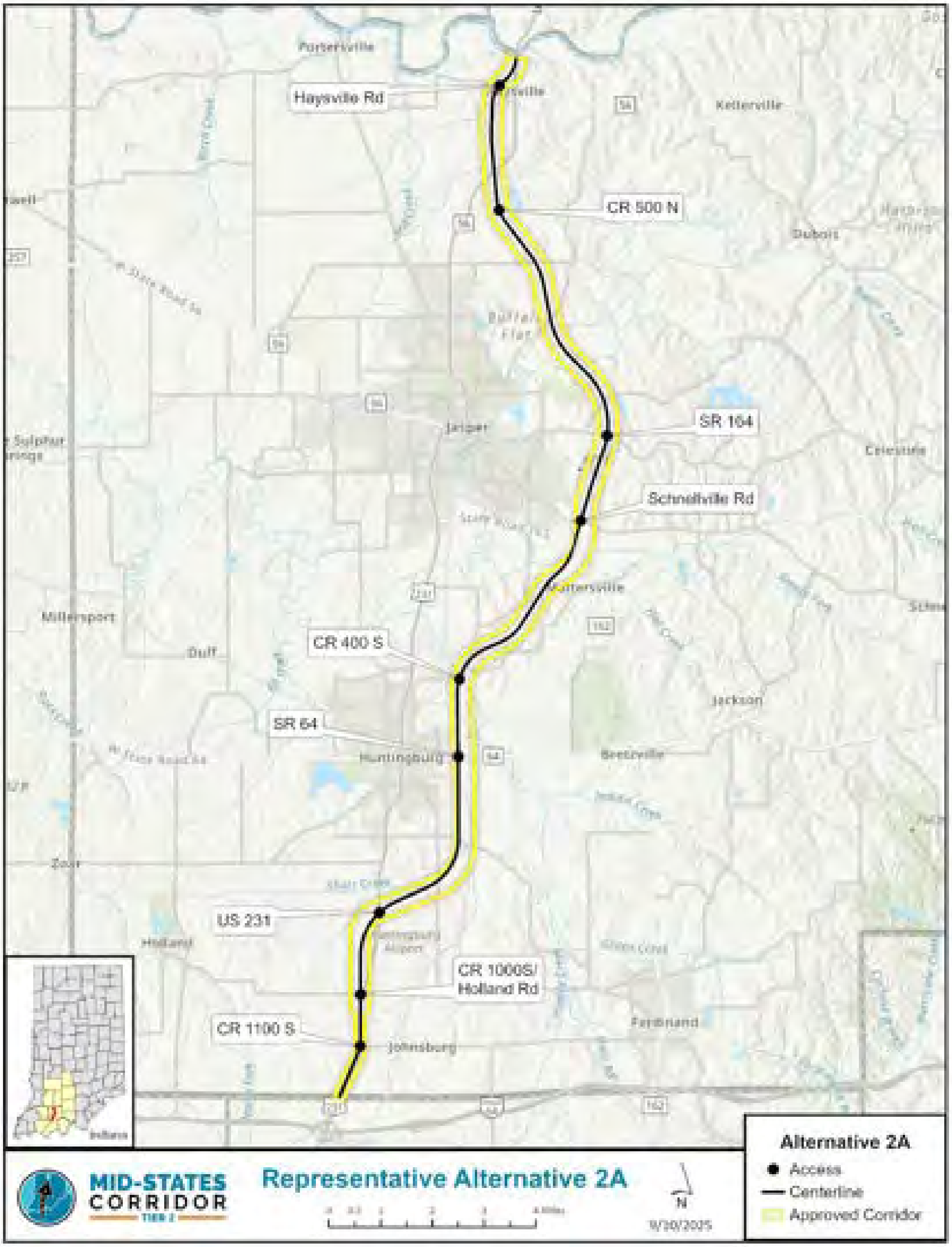


Expressway

Figure 3 - Typical Section for Super-2 Facility Type

Super-2

Figure 4: Representative Alternative 2A



2.2 Comparative Performance

Calculations of the comparative benefits of Super-2 and expressway facility types are detailed and presented in the **Purpose and Need Appendix** to this Report. The **Purpose and Need Appendix** defines each performance measure. Each facility type has two design configurations[3] (designated as **Version 1** and **Version 2**) which are evaluated for the range of performance which they provide.

Table 1 summarizes the relative performance of the representative Super-2 and expressway traffic assignments on the project core goals. It compares performance using an index approach. This is based upon the Purpose and Need for this project. It determined that in order to satisfy the Purpose and Need, an alternative needed to provide at least one-half the performance of the best-performing alternative. See the **Section 2 Purpose and Need** on the project web site. [4]

This one-half requirement is measured using an index approach, which compares the performance of the Super-2 facility type to that of the expressway facility type. The index calculated the relative performance of the two facility types for each group of performance measures. In order to satisfy the one-half criterion for the Purpose and Need, the overall index for the Super-2 facility type would need to be at least 0.50.

[3] The Super-2 alternative was modeled with two variations which assumed traditional at-grade access and reduced conflict access. The Expressway alternative was modeled with two variations which assumed either a Super-2 or Expressway facility in Sections 3 through 5. These assumptions provide different levels of performance.
[4] This threshold was established in the Tier 1 EIS. It is carried over to this Tier 2 NEPA study. See **Purpose and Need Appendix** for further discussion.

Table 1: Mid-States Corridor Facility Type Performance Comparison

Measure	Detail[5]	Total Minutes Saved for One-Way Trips						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy[6]. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Business Center Access	Downtown, NE Jasper Combined[7]	10	4	7	36	20	28	0.25	1.00
Intermodal Access	Downtown, NE Jasper Combined	3	3	3	23	11	17	0.18	1.00
Measure	Detail	Increase in Labor Force Access (Persons)						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Workforce Increase within 40 Minutes	40 minutes Downtown Jasper and Huntingburg Combined	2,440	380	1,410	6,210	4,350	5,280	0.27	1.00
Measure	Detail	Annual Truck Hours Saved						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Annual Truck Hours Saved	Truck Hours Saved in 12-County Study Area	67,410	34,480	50,945	106,110	87,900	97,005	0.53	1.00
AVERAGE – All Indices								**0.30**	**1.00**

Table 1 shows that the performance of the Super-2 facility type falls well below this one-half threshold. For the Super-2 facility type to adequately satisfy the Purpose and Need, it would have to perform at least half as well as the expressway facility type. This would correspond to a summary index of 0.50 in **Table 1**. The overall performance index for the Super-2 facility type is only 0.30. In addition, only one of the four categories of core goal performance (annual truck hours saved) has an index over 0.50.

The Super-2 facility type performance is well below the one-half threshold needed to satisfy the project's Purpose and Need. The ratio of the performance indices by facility type shows that the benefits of the expressway facility type are over 230 percent[8] greater than the benefits of the Super-2 facility type.[9]

The Purpose and Need also documents the need to consider the operational safety. Safety of traffic operations is an important component of supporting freight movement, as well as business and personal

[5] "Business Center Access" and "Intermodal Access" provide travel time savings from multiple business and intermodal centers. These are cited in **Purpose and Need Appendix**.
[6] Expy refers to the expressway facility type.
[7] Time savings for trips starting in downtown and northeast Jasper and ending in business and intermodal centers.
[8] The expressway facility type shows an overall performance increase of (1.00 – 0.30) / (0.30, for an increase in benefits of 233 percent.
[9] The expressway has a higher posted speed (60 mph vs. 55 mph for the Super-2) which accounts for much of its travel time and access advantage. For Super-2, version 1 uses stop-controlled intersections and version 2 uses roundabout intersections. The roundabout intersections, while safer, also result in through traffic slowing to go through roundabouts. Both types of access are included in order to present a range of potential time savings.

accessibility. A forecast of safety performance for these two facility types was performed using Highway Safety Manual (HSM) techniques. This analysis showed the expressway facility type with 28 percent fewer crashes per 100 million vehicle miles of travel on mainline segments compared to the Super-2 facility type. It also showed the expressway facility type with 29 to 30 percent fewer crashes per million vehicles compared to the Super-2 facility type at access points.[10] See the Facility Type Safety Comparison Addendum in the **Purpose and Need Appendix**.

2.3 Comparative Impacts

The preliminary design supporting the comparative performance and comparative costs of the two representative alternatives was used to estimate each alternative's impact to key resources. The definitions and methodology for calculating the impacts to key resources is in the **Impact Calculation Appendix**. The key resources used for comparison of the two facility types are shown in **Table 2**.

These resources were evaluated for their potential to differentiate alternatives. In addition, impacts to some of these resources may require additional agency review and/or approval. **Table 2** compares the impacts of each facility type to key resources.

[10] Forecasted crashes on mainline segments were 49 per 100 million vehicle miles on the expressway facility type, versus 68 for the Super-2 facility type. For standard access treatments, forecasted crashes at access points were 0.29 per million vehicles for expressways versus 0.41 for the Super-2 facility type. For enhanced access treatments (reduced conflict intersections for the expressway facility type and roundabouts for the Super-2 facility type), the expressway is forecasted to have 0.19 crashes per million vehicles versus 0.27 for the Super-2.

Table 2: Mid-States Corridor Facility Type Impact Comparison

Impact Type	Alternative 2A Expressway	Alternative 2A Super-2
Total Right-of-Way (acres)	1480	1280
Non-Wetland Forest (acres)	326.5	283.0
Wetlands (acres)	73.3	61.9
Open Waters (ponds, lakes, reservoirs)	5.6	4.8
Streams (feet)	65,934.3	56,081.0
Floodplains* (acres)	321.9	287.4
Agricultural Lands (acres)	883.2	761.0
Herbaceous / Successional Lands (acres)	34.1	30.1
Managed Lands* (acres)	17.3	15.8
Residential Lands (acres)	69.7	59.6
Commercial / Industrial Lands (acres)	1.6	2.4
Public Use Facilities (acres)**	3.2	4.2
Existing Transportation Land Use (acres)	86.2	74.3
Historic Properties Lands* (acres)	0.6	0.2
Utility Lands (acres)	0.3	0.1
Planned Trails (feet)	2,322	2,197
Archeological Resource Lands* (acres)	35.3	34.8
Relocations		
Residential Relocations (number)	76	69
Commercial / Industrial Relocations (number)	2	2
Agricultural Operation Relocations (number)	19	16
Public Use Facility Relocations (number)	1	2

*Floodplain, Managed Lands, Historic Property and Archeological Resource impacts overlap with other impact types. Total acres of all land use types do not add up to the total right-of-way acres.
** These public use facilities include two churches, the Dubois County Highway Garage and Jasper Outdoor Association.

The Super-2 facility type impacts to wetlands and open waters combined are 85 percent of those for the expressway facility type. Stream impacts are 85 percent of those for the expressway facility type. Total right-of-way impacts of the Super-2 facility type are 86 percent of those for the expressway facility type. Total relocation impacts of the Super-2 facility type are 91 percent of those for the expressway facility type.[11] These similarities in impacts are due in part to the designs of Reduced Conflict Intersections (RCIs) and roundabout intersections, as well as differences in profile grades between facility types. For example, roundabout intersections for a Super-2 would require more right-of-way at the intersections than RCIs for the expressway. The **Design Appendix** provides a drawing of a representative RCI.

[11] The impact width and/or construction limits comparison between the Super-2 Facility and expressway typical can be proportional to the width of their typical section if the terrain is generally flat. The preliminary vertical profile design of the Super-2 Facility and the expressway are different to accommodate the different intersection types as well as the differences in terrain. The Super-2 Facility generally assumes the use of roundabouts which requires a flatter intersection grade than an intersection on an expressway. In cut sections in hilly terrain, the outside slope of the roadside ditch will intersect existing topography further away from the center line for a Super-2 facility than for an expressway.

2.4 Comparative Costs

Construction costs of the Super-2 and expressway facility types were estimated and compared, as detailed in the **Cost Estimating Appendix** and the **Design Summary Appendix**. Year 2024 construction costs for each facility type are presented below. They include a 20 percent contingency factor.

- Expressway - $1,077 million
- Super-2 - $833 million

The primary factors driving construction costs for each alternative are as follows:

- Typical Section Width – The primary difference between the Super-2 and expressway facility types is that the expressway has a median and four travel lanes. The Super-2 has two travel lanes in addition to a continual center turn lane extending the length of the alternative.[12] The widths of the two facilities, from edge of shoulder to edge of shoulder, are 130 feet for the expressway, as compared to 58 feet for the Super-2. This impacts major quantities including, but not limited to, excavation, borrow, Hot Mix Asphalt (HMA), aggregate and drainage.[13] Additional items impacting quantities include foreslopes,[14] ditches and backslopes.[15] These items determine the location of the construction limits, which, in turn, dictate right-of-way needs. The location of the construction limits is highly sensitive to existing topography and the vertical profile. For this reason, there are varying right-of-way widths along the length of each alternative.
- Access Types – These alternatives use roundabouts[16] at access points on the Super-2 facility type and Reduced Conflict Intersections (RCIs) for access points on the expressway facility type. Because an RCI includes right and left turn auxiliary lanes, it requires more earthwork, pavement and aggregate quantities compared to those for the Super-2. Additionally, several S-lines[17] required intersection alignment improvements for the expressway facility type. The

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[12] For Super-2s the continual center turning lane is assumed to exist for two to three miles at a time in one direction. There is a buffer of approximately 1,500 to 2,000 feet in the center turning lane where it changes direction. No traffic is permitted in either direction in this buffer area.
[13] Construction activities, such as excavation and borrow activities, follow INDOT standard specifications. These govern removal and excavating activities, including minimizing the air quality impacts of these activities.
[14] A foreslope is the inclined surface that extends from the edge of the shoulder or roadway down to the adjoining ditch. It provides a transition from the roadway to the natural ground or drainage ditch and is designed to be stable and safe for errant vehicles.
[15] A backslope is the inclined surface that rises from the bottom of the ditch up to the natural ground level in a cut section. It stabilizes the cut area and prevents soil erosion or collapse onto the roadway.
[16] INDOT and local units of government have implemented roundabouts throughout the Indiana. FHWA's Crash Modification Clearinghouse (https://cmfclearinghouse.fhwa.dot.gov/) cites a 34 percent reduction in crashes on a high speed road in Wisconsin. This is reflective of crash reductions resulting from the implementation of roundabouts.
[17] "S-lines" refers to roadway construction at access points which extends outside of the mainline right-of-way.

roundabouts on the Super-2 can better accommodate these same skews without added construction costs.

- Bridge Widths – All mainline Mid-States Corridor expressway grade separations were assumed to have two bridges, each 46.33-feet wide. Grade separations for mainline Super-2 were assumed to have one bridge which has an estimate width of 64.33 feet.

2.5 Preferred Facility Type

This Screening of Alternatives identifies the expressway as the preferred facility type based on these key factors:

- The Super-2 facility type does not satisfy the project's Purpose and Need. Its overall performance index on core goals is only 0.30 that of the expressway alternative. This is significantly below the 0.50 threshold established by the Purpose and Need.
- The benefits of the expressway facility type are over 230 percent greater than those for the Super-2 facility type. See discussion in **Section 2.2**.
- These indices correspond to the following comparative performance on core goals. See **Table 1**.
  - Business Center Access – Expressway saves 28 minutes vs. seven minutes for Super-2.
  - Intermodal Center Access – Expressway saves 17 minutes vs. three minutes for Super-2.
  - Workforce Increase – Expressway increases access for 5,280 workers vs. 1,410 workers for Super-2.
  - Annual Truck Hours – Expressway saves 97,005 truck hours vs. 50,945 truck hours for Super-2.
- Although it is not a core goal, the expressway facility type has 28 percent fewer roadway crashes per vehicle mile and 29 to 30 percent fewer crashes per million vehicles at access points, compared to the Super-2 facility type.
- While the expressway facility type has greater impacts on almost all resources than the Super-2 facility type, the impacts do not significantly differ in terms of type or extent. See **Table 2**. For the Super-2 facility type:
  - Impacts to wetlands and open waters combined are 85 percent of those for the expressway facility type.
  - Stream impacts are 85 percent of those for the expressway facility type.
  - Total right-of-way impacts 86 percent of those for the expressway facility type.
- The increase in benefits of more than 230 percent for the expressway facility type when compared to the Super-2 facility type outweighs the 29 percent increase in cost.

3. PRELIMINARY ALTERNATIVES

3.1 Draft Preliminary Alternatives

In April 2025, Draft Preliminary Alternatives were provided for public and agency input. This section describes how the Preliminary Alternatives were identified. Alternative 1 is the Tier 1 working alignment in the center of the selected Tier 1 corridor. Alternative 2 and Alternative 3 were identified as refinements of Alternative 1 to avoid impacts and/or reduce costs. Based upon the selection of the expressway as the preferred facility type in **Section 2**, all alternatives going forward are of the expressway facility type.

The Draft Preliminary Alternatives were developed based on preliminary design criteria assuming the maximum values for roadway design criteria in the Indiana Design Manual for the roadway classifications and construction types defined. The intention was to provide a conservative design that provided reasonable alternatives. The design could be refined utilizing engineering judgment as the alternatives are better defined in the Tier 2 process. The design criteria for the Preliminary Alternatives have continued to develop as coordination with INDOT Design and stakeholders has taken place. See the **Design Summary Appendix** for the design criteria used for this project.

The mainline alignments were developed based on various factors including mapped floodway locations, waterway locations, railroad crossings, utilities, preliminary bridge locations and skews[18] and preliminarily identified environmental resource locations. Significant streams within the corridor include Short Creek, Hall Creek, Flat Creek, Bruner Creek, Hunley Creek, Straight River and the Patoka River.

The mainline horizontal and vertical alignments were designed assuming a design speed limit of 60 mph.[19] The S-lines were designed for the posted speed limit or, where no posted speed limits are found, the speed limit was assumed to be 55 mph.[20]

The access locations within each alignment were initially identified by reviewing existing roadway classifications, existing traffic volumes, local accessibility, existing flooding considerations, preliminary traffic modeling, existing topography, proposed intersection angles/geometry and potential proposed intersection treatment types. Limiting access points that create traffic conflicts is a general safety and operational consideration for the MSC development also considered in this process.

Each county road and state highway crossing was reviewed as a potential access location. Meetings and coordination with local officials occurred between October 2024 and April 2025. A meeting with local

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[18] In highway and bridge design, it is generally desirable for bridges to cross streams, rivers or other roadways at or near right angles (i.e., with minimal skew) for several important reasons. Right-angle crossings allow for simpler and more efficient structural designs. Bridges with little or no skew are easier and faster to construct. For stream crossings, a perpendicular alignment minimizes obstructions to flow and improves hydraulic performance. Skewed bridges can create increased crash risk, especially at high speeds or in low-visibility conditions.

[19] The posted speeds on these facility types were specified as 60 mph for expressways and 55 mph for Super-2s. The design and posted speed limits are in accordance with Chapter 40 of the Indiana Design Manual (IDM).

[20] Taken from Indiana Design Manual - IDM 40-3.02(02) Regulatory Speed vs. Design Speed.

officials from the City of Huntingburg, City of Jasper and Dubois County was held on October 16, 2024 to discuss alternatives and access locations. Each potential roadway crossing was discussed from south to north within the corridor. Items discussed included emergency service access, flooding, high east/west volume roadways, future roadway improvements in the area and areas that are logical to overpass rather than intersect. The Dubois County Engineer discussed roadways with known flooding issues.

The following is a summary of the analyses conducted for each intersecting roadway for potential connections to the Mid-States Corridor (MSC). These are portrayed in several map sets in the **Alternatives Appendix**.

CR 1200 S / County Line Road

CR 1200 S crosses the portion of US 231 that was previously upgraded to an expressway. This intersection is in the southern limit of Section 2 improvements with the existing improvements including the interchange between I-64 and US 231 in place immediately south of this intersection. Access to mainline MSC will be maintained at this location. No alignment modifications are anticipated; however, safety improvements may be considered based upon the potential for increased traffic. No known flooding issues exist here.

CR 1150 S

CR 1150 S primarily serves properties immediately west of the MSC. These residences can be accessed from CR 1200 S. This removes the need for access to the MSC from CR 1150 S. The existing frontage road (Old US 231) will need to be extended from the south to provide access to properties on the east side of the MSC. No known flooding issues exist here.

CR 1100 S

CR 1100 S serves properties immediately west of the MSC. If CR 1100 S does not have access to the MSC, these properties would require an alternative/new connection for access. East of the MSC, CR 1100 S serves as the primary east-west road between US 231, St. Henry and Ferdinand. For these reasons, access to the MSC from CR 1100 S will be considered. No known flooding issues exist here.

The east and west approaches of CR 1100 S are offset by approximately 200 feet. To achieve desirable intersection geometrics a realignment of CR 1100 S is anticipated.

CR 1000 S / US 231

CR 1000 S serves as the primary road between Holland and Ferdinand and is a significant east-west roadway for Dubois County. Access to the MSC from CR 1000 S is being proposed. The current connection to existing US 231 will be eliminated, since at this point the MSC diverges from existing US 231.

Desirable intersection geometrics could be achieved with minimal realignment of CR 1000 S. Existing US 231 would terminate at CR 1000 S. Access to the Huntingburg Regional Airport could be provided via CR 1000 S. No pavement upgrades would need to be made to existing US 231 to accommodate airport traffic. No known flooding issues exist here.

CR 900 S

CR 900 S currently serves as the primary access point to Huntingburg Regional Airport from existing US 231. If access to the Airport is maintained at this location, pavement upgrades will be necessary between the MSC and existing US 231 to accommodate airport traffic. Depending on the final alignment of the MSC, significant realignment of CR 900 S may be necessary to achieve desirable intersection geometrics. The City of Huntingburg provides fire service to the Huntingburg Regional Airport. Should access to the southern portion of existing US 231 be eliminated at the crossing location just north of the Huntingburg Regional Airport, access at CR 900 S or CR 200 W to the MSC will likely be necessary to avoid adversely impacting emergency response times. No flooding issues exist here.

Existing US 231 (south of Huntingburg)

Multiple access points into Huntingburg are necessary due to the presence of the Norfolk Southern Railroad, which impedes north-south traffic in the city. Existing US 231 ensures that all portions of the city south of the railroad can be accessed without disruption from the railroad. Depending on the final alignment of the MSC, realignment of the north approach of existing US 231 will be necessary to achieve desirable intersection geometrics. The south approach to existing US 231 (which currently provides access to the Huntingburg Regional Airport) is anticipated to be removed in order to allow for future expansion of the airport to the west. See CR 900 S and 200 W narratives for additional information regarding emergency service access considerations for the Huntingburg Regional Airport. No known flooding issues exist here.

CR 200 W

Multiple residences and farms exist along CR 200 W south of the MSC. Several of the farms south of the MSC appear to have fields north of the MSC. Continued access across the MSC needs to be considered by an at-grade intersection or grade separation.

Access could be maintained to the south via CR 200 W and fields accessed to the north via farm field type entrances off CR 200 W. Depending on the final alignment of the MSC, significant realignment of CR 200 W may be required to achieve desirable intersection geometrics should access be provided at CR 200 W.

CR 200 W does have known flooding issues associated with Short Creek. It is not anticipated that the project will raise CR 200 W to eliminate these issues.

Ferdinand Road NW

Ferdinand Road NW serves as an urban collector for Huntingburg, providing access to the city. This road crosses Bruner Creek, Short Creek and the Norfolk-Southern railroad. For this reason, continued access across the MSC needs to be retained by an at-grade intersection or grade separation. No known flooding issues exist here. Ferdinand Road does have known flooding issues associated with Short Creek and Bruner Creek which will be further evaluated in the Draft NEPA document.

CR 600 S / East 1st Street

CR 600 S/East 1st Street serves as an urban local street. However, it is not essential to provide access from CR 600 S/East 1st Street to the MSC. Agricultural properties can be accessed from Ferdinand Road, SR 64 and CR S 75 W. This roadway does have known flooding issues associated with Bruner Creek.

SR 64

State Road 64 is a two-lane urban arterial. Traffic volumes exceed 3,000 vehicles per day. All intersection types will be considered to provide access to MSC. Options will evaluate impacts to surrounding wetlands and streams and encroachments into the Norfolk-Southern Railroad's switch yard. No known flooding issues of SR 64 exist here.

Phoenix Drive/CR 400 S/CR 130 W/CR 375 W

Phoenix Drive is a Rural Major Collector[21] that serves properties west of the MSC along the north side of Huntingburg. CR 400 S is a Rural Minor Collector[22] that serves properties west and east of the MSC. CR 400 W becomes CR 130 W within the Tier 1 approved 2,000-foot corridor. CR 130 W and CR 375 W are local roadways within the Tier 1 approved corridor. CR 375 Ts into CR 130W near the MSC.

It is proposed to provide access to the MSC via CR 400 or an improved facility that would connect to Phoenix Drive. Connecting via CR 400 would entail the realignment of CR 400 S to intersect with MSC near the south end of a horizontal curve. An at-grade crossing is anticipated at the Dubois County Railroad. CR 130W generally runs north/south. CR 375W is proposed to be grade separated over the MSC to maintain local access. The Phoenix Drive alternative would extend Phoenix Drive east from US 231 creating a new intersection with CR 400 S, crossing the Railroad and intersecting with MSC near the south end of a horizontal curve. Phoenix Drive has flooding issues that may need to be addressed. However, the issue is well west of the MSC and would not be anticipated to be needed as part of MSC improvements. An at-grade crossing is anticipated to be required at the Dubois County Railroad. CR 130W generally runs north/south and access is anticipated to remain. No access to the MSC is proposed at CR 375. Local traffic east of the corridor will use Patoka Road south to SR 64 for access to Huntingburg and north to 162 for access to Jasper.

SR 162/Schnellville Road

SR 162 and Schnellville Road are classified as Collectors that provide east/west access along the southeast side of Jasper. Schnellville Road is an important and heavily traveled local connecting route from Birdseye and Schnellville to Jasper. SR 162 is an important and heavily-traveled route connecting Ferdinand and Jasper. The MSC working alignment and SR 162 both generally run north/south which creates geometric issues for a SR 162/MSC intersection. Schnellville Road crosses the MSC generally east/west and provides opportunities for multiple intersection alternatives. The MSC working alignment

[21] Rural Major Collectors serve larger towns not directly served by higher-level roads (like arterials) and provide inter-county and intra-county travel.
[22] Rural Minor Collectors serve smaller communities and rural areas, collecting traffic from local roads and funneling it to major collectors or arterials.

traverses through the low-lying floodplains and crosses near an existing historic select bridge[23] carrying SR 162 over Straight River. SR 162 has a history of flooding in this area.

Grade Separation is proposed at SR 162 due to geometric issues with MSC. Traffic on SR 162 will access the MSC via Schnellville Road. All intersection types will be considered to provide access to MSC at Schnellville Road.

CR N 100 E/E Trainer Lane

CR N 100E is a low-volume local road that does not provide connectivity to other roadways. It serves primarily residential properties. No access is anticipated to MSC from CR N 100 E. Alternative access will be reviewed for properties east of the MSC.

SR 164/Jasper Dubois Road/ CR E 190 N/Kellerville Road

SR 164, Jasper Dubois Road and Kellerville Road are classified as Major Collectors. They provide east/west access along the east side of Jasper. Kellerville Road has a history of flooding within the MSC area and is within the Buffalo Pond Nature Preserve. Jasper Dubois Road and Kellerville Road are heavily traveled truck routes from West Baden to Jasper. CR E 190 N is a low-volume local roadway. It provides access for residential traffic between Jasper Dubois Road and 15th Street.

Were Kellerville Road to have access to MSC, upgrades to the roadway would be required from MSC to Cathy Lane. This is due to flooding issues on Kellerville Road. Due to the Dubois County Railroad and Buffalo Pond Nature Preserve, upgrades to the roadway are anticipated to include realignment of Kellerville Road north of the current location and construction of a retaining wall to minimize impacts. Significant permitting efforts would be required due to impacts to aquatic resources. Due to these issues, no alternatives currently have access to Kellerville Road.

All alternatives currently provide access at SR 164. To improve safety and mobility for commercial and industrial traffic, improvements may be recommended to 15th Street, Meridian Road and SR 164 west of MSC. Truck traffic on Jasper Dubois Road is generally east and west and therefore grade separation without access is recommended. No access at Road E 190 N is recommended due to low traffic volumes. Road E 190 N will be realigned to allow for continued free flow movement west of the MSC.

CR 400 N/CR 500 N

CR 400 N is classified as a Collector and is a major east/west route within Dubois County and City of Jasper. Dubois County and the City of Jasper have discussed future improvements to CR 400 N from Ireland to Kellerville Road and have interest in it having access to MSC. Currently it floods west of the MSC. It is recommended to improve CR 400 to provide cross connectivity. Due to CR 400 N's proximity to CR 500 N additional traffic analysis and coordination is required to determine which road should have access onto MSC.

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[23] In the State of Indiana, a "historic select bridge" refers to a historic bridge that has been identified as "most suitable for preservation and an excellent example of a given type of historic bridge." This designation comes from the Indiana Historic Bridge Programmatic Agreement (PA), which was developed by the Indiana Department of Transportation (INDOT), the Federal Highway Administration (FHWA) and the Indiana State Historic Preservation Office (SHPO).

CR 500 N is a low volume local road that provides access between US 231 and North Kellerville Road. Though low volume, it is a serviceable county road with no history of flooding. No other roadways intersect with CR 500 N near the MSC.

Underground gas transmission lines as well as overhead electric transmission lines are located between CR 400 N and CR 500 N. For this reason, MSC profile grades will be reviewed. This may impact intersection alternatives at CR 500 N.

US 231/CR 600 N/Haysville Road

US 231 serves as the primary north-south route between Jasper, Haysville and Loogootee. Existing US 231 also serves as SR 56 from Jasper to Haysville, where US 231 continues north to Loogootee and SR 56 continues east to French Lick. Access to Haysville and the connection between SR 56 and the MSC will be provided by all access alternatives. Access alternatives being considered include the following:

- No access at US 231 with access provided at Haysville Road. Under this option, CR 600 N would be connected to Old State 45 in order to maintain local access. Access at Haysville Road would be provided. The local roadway network in Haysville would be improved in order to connect SR 56 to the MSC.
- MSC access at US 231 (or CR 600 N) with no access at Haysville Road. A preliminary review of the existing topography and potential vertical alignments indicates that grade-separating Haysville Road and US 231 is feasible. In this scenario, access to the MSC would be provided via an interchange at US 231 or CR 600 N. Regardless of the intersection type placed at CR 600 N or US 231, realignment of local roadways is anticipated in order to maintain access. Emergency vehicle access to the MSC in Haysville would be required in order to prevent adverse travel to areas serviced in Martin County by the Haysville Volunteer Fire Department.

3.2 Identification of Preliminary Alternatives

The following sections identify the Preliminary Alternatives based on public and agency input. Alternative numbers correspond to mainline alignments. The capital letter sub-designations refer to alternative access plans for each mainline alignment. The **Alternatives Appendix** provides maps of each Preliminary Alternative.

Alternative 1 is the Tier 1 working alignment in the center of the selected Tier 1 corridor. **Alternative 2** and **Alternative 3** were identified as refinements of **Alternative 1** to avoid impacts and/or reduce costs.

In addition, multiple meetings with INDOT were held to discuss preliminary design criteria and assumptions for alignment locations, roadway configurations as well as intersection types and locations. Based on preliminary traffic forecasts, analyses indicated that generally at-grade intersections should be provided rather than using interchanges. INDOT recommended the use of reduced conflict intersections rather than two-way stop controlled intersections for expressway alternatives. Reduced Conflict Intersections are recognized by FHWA as a proven safety countermeasure.[24] One alternative with

[24] https://highways.dot.gov/safety/proven-safety-countermeasures

limited access and interchanges, **Alternative 3A**, was provided as a comparison of cost and associated impacts in the screening.

The access alternatives were designated with **1A** and **1B** for **Alternative 1** alignment, **2A** and **2B** for **Alternative 2** alignment, and **3A** and **3B** for **Alternative 3** alignment. The mainline alignment is the same for each alternative pair. These potential access locations are provided in the following sections.

All alternatives are expressways. The Super-2 facility type has been excluded from further analysis, as documented in **Section 2 - Preferred Facility Type**.

3.2.1 Preliminary Alternative 1

Alternatives 1A and **1B** represent two access plans for **Alternative 1**. **Table 3** lists the location and type of access for **Alternative 1**.

Table 3: Access Locations and Types for Alternative 1

S-Line / Roadway	Alternative 1A Intersection Type	Alternative 1B Intersection Type
E County Rd 2200N/W1200S	MUT – RCI	MUT - RCI
W1150S	NAS	NAS
W1100S	MUT - RCI	MUT - RCI
US 231	NAS	NAS
W1000S	MUT - RCI	MUT - RCI
W900S	NAS	MUT - RCI
US 231	MUT - RCI	MUT - Partial RCI
S200W	GSN	GSN
S. Ferdinand Rd NW	GSN	GSN
W600S/E1st St	NAS	NAS
E6th St/SR 64	MUT - RCI	QRI
Phoenix Drive	NAS	MUT - RCI
W400S/S130W	MUT - RCI	NAS
SR 162	GSN	GSN
SR 162/Schnellville Rd.	MUT - RCI	QRI
N100E	NAS	NAS
SR 164	MUT - RCI	MUT - RCI
Jasper Dubois Rd.	GSN	GSN
E190N	NAS	NAS
Kellerville Rd.	GSN	GSN
400N	GSN	GSN
500N	MUT - RCI	NAS
US 231/SR 56/600N	GSN	GSN
N OLD SR 45	NAS	NAS
US 231 / 600N	GSN	MUT – RCI
Haysville Road	MUT - RCI	GSN

ACCESS TYPE KEY

MUT – RCI	Median U-Turn – Reduced Conflict Intersection
QRI	Quadrant Roadway Intersection
ICE	Interchange
GSN	Grade Separation
NAS	No Access

3.2.2 Preliminary Alternative 2

Alternatives 2A and **2B** represent two access plans for **Alternative 2**. **Table 4** lists the location and type of access for **Alternative 2**.

Table 4: Access Locations and Types for Alternative 2

S-Line / Roadway	Alternative 2A	Alternative 2B
E County Rd 2200N/W1200S	MUT - RCI	MUT - RCI
W1150S	NAS	NAS
W1100S	MUT - RCI	MUT - RCI
US 231	NAS	NAS
W1000S	MUT - RCI	MUT - RCI
W900S	NAS	MUT - RCI
US 231	MUT - Partial RCI	MUT - Partial RCI
S200W	GSN	GSN
S. Ferdinand Rd NW	GSN	GSN
W600S / E. 1st St	NAS	NAS
E6th St/SR 64	MUT - RCI	QRI
Phoenix Drive	NAS	MUT - RCI
W400S/S130W	MUT - RCI	NAS
SR 162	GSN	GSN
SR 162/Schnellville Rd	MUT - RCI	QRI
N100E	NAS	NAS
SR 164	MUT - RCI	MUT - RCI
Jasper Dubois Rd	GSN	GSN
E190N	NAS	NAS
Kellerville Rd	GSN	GSN
400N	GSN	GSN
500N	MUT - RCI	NAS
US 231/SR 56/600N	GSN	MUT - RCI
N Old SR 45	NAS	NAS
US 231/600N	NAS	NAS
Haysville Road	MUT - RCI	GSN

ACCESS TYPE KEY

MUT – RCI	Median U-Turn – Reduced Conflict Intersection
QRI	Quadrant Roadway Intersection
ICE	Interchange
GSN	Grade Separation
NAS	No Access

3.2.3 Preliminary Alternative 3

Alternatives 3A and **3B** represent two access plans for **Alternative 3**. **Alternative 3A's** access plan includes interchanges and grade separations. It provides no at-grade access. **Alternative 3B** includes access via Median U Turns and Quadrant Roadways. **Table 5** lists the location and type of access for **Alternative 3**.

Table 5: Access Locations and Types for Alternative 3

S-Line / Roadway	Alternative 3A	Alternative 3B
E. County Rd 2200N / W1200S	MUT - RCI	MUT - RCI
W1150S	NAS	NAS
W1100S	NAS	MUT - RCI
US 231	NAS	NAS
W1000S	ICE	MUT - RCI
W 900S	NAS	MUT - RCI
US 231	ICE	MUT - Partial RCI
S200W	GSN	GSN
S. Ferdinand Rd NW	GSN	GSN
W. 600S /E. 1st St	NAS	NAS
E6th St/SR 64	QRI	QRI
Phoenix Drive	NAS	MUT - RCI
W400S/S130W	GSN	NAS
SR 162	GSN	GSN
SR 162/Schnellville Rd.	ICE	QRI
N100E	NAS	NAS
SR 164	ICE	MUT - RCI
Jasper Dubois Rd.	GSN	GSN
E190N	NAS	NAS
Kellerville Rd.	GSN	GSN
400N	GSN	MUT-RCI
500N	ICE	NAS
US 231/SR 56/600N	GSN	MUT - RCI
Old SR 45	NAS	NAS
US 231 / 600N	NAS	NAS
Haysville Road	ICE	GSN

ACCESS TYPE KEY

MUT – RCI	Median U-Turn – Reduced Conflict Intersection	ICE	Interchange
QRI	Quadrant Roadway Intersection	GSN	Grade Separation
NAS	No Access		

4. PRELIMINARY ALTERNATIVES SCREENING

The benefits, impacts and costs of each Preliminary Alternative are presented here. Details of these calculations are presented in the **Purpose and Need Appendix**, **Impact Calculation Appendix** and **Cost Estimating Appendix** to this document. End-to-end maps of each alternative are included in the **Alternatives Appendix**. Refer also to maps in **Section 4.3 - Review of Corridor Segments** which show resources at certain specific locations.

4.1 Alternative Benefits, Costs and Impacts

4.1.1 Alternative Benefits

This section presents the performance of each Preliminary Alternative on the core goals of the MSC's Purpose and Need. The performance measures are defined and described in the **Purpose and Need Appendix.** The performance measures are reported in the following subsections, organized by the core goals which they address.

For each measure, an index is assigned to each alternative's performance. The index is the ratio of that alternative's performance to the best performing alternative on that performance measure. For example, if an alternative is calculated to save four minutes on a given performance measure, and the best-performing alternative on that measure saves 10 minutes, the index for that alternative on that measure is 0.40 (4/10).

4.1.1.1 Major Business Market Access

Two performance measures assess the ability of alternatives to increase access to major business markets. **Table 6** compares alternatives' improved access to major business markets. **Table 7** compares the degree to which alternatives provide employers with increased access to potential employees (labor market). It provides the increased number of workforce participants with 40-minute access to downtown Jasper and downtown Huntingburg.

Table 6: Access to Major Business Markets

Destination	Alternatives					
	1A	1B	2A	2B	3A	3B
	Reduction in travel time from Downtown Jasper (minutes)					
NSA Crane	2	3	2	3	2	3
Bloomington	3	3	3	3	2	3
Rockport	1	1	1	1	1	1
Bedford	0	1	0	1	0	1
Washington	2	3	2	3	2	3
Indianapolis	3	3	3	3	2	3
Chicago	3	3	3	3	2	3
Louisville	1	1	1	1	1	1
Destination	**Alternatives**					
	1A	**1B**	**2A**	**2B**	**3A**	**3B**
	Reduction in travel time from Northeast Jasper (minutes)					
NSA Crane	2	3	2	3	2	3
Bloomington	3	3	3	3	2	3
Rockport	4	4	4	4	4	4
Bedford	0	0	0	0	0	0
Washington	2	3	2	3	2	3
Indianapolis	3	3	3	3	2	3
Chicago	3	3	3	3	2	3
Louisville	4	4	4	4	4	4
Total - All Destinations	**36**	**41**	**36**	**41**	**30**	**41**
Index	**0.88**	**1.00**	**0.88**	**1.00**	**0.73**	**1.00**

Table 7: Labor Market Access[25]

Origin	Added number of Persons in Workforce with 40-minute Access, by Alternative					
	1A	1B	2A	2B	3A	3B
Downtown Jasper	2,410	2,610	2,750	3,030	2,200	3,050
Downtown Huntingburg	3,340	3,300	3,370	3,420	3,000	3,400
Total – Both Locations	**5,750**	**5,910**	**6,120**	**6,450**	**5,200**	**6,450**
INDEX	**0.89**	**0.92**	**0.95**	**1.00**	**0.81**	**1.00**

4.1.1.2 Efficient Truck/Freight Travel

Two performance measures assess the Preliminary Alternatives' ability to provide more efficient truck/freight travel. **Table 8** shows forecasted annual freight hour savings by alternative. These annual savings translate to 280 to 300 daily truck hours saved in the Study Area. **Table 9** shows the average freight access time to and from each alternative based upon a survey of major area businesses in 2024.

All businesses with annual sales over $100 million in Dubois County were contacted to request an interview and to administer a survey.[26] The survey requested the enumeration of all truck trips to and from their freight terminals for one week. The survey results provided data on freight flows at a greater level of detail than that available from the project's travel forecasting model. The project's travel model was used to calculate the average travel time from each location to the nearest alternative access point for both northbound and southbound trips. It was assumed that half of trips at each location were traveling in each direction. The number of trips at each location was multiplied by this average travel time. These calculations were summed and divided by the total number of trips. This provides an estimate of the average access time for each alternative to and from these major freight locations.

Table 8: Annual Forecast Year (2050) Truck Hour Savings

Origin	Alternative					
	1A	1B	2A	2B	3A	3B
Annual Freight Hours Saved	103,410	104,410	106,030	107,700	104,530	108,560
INDEX	**0.95**	**0.96**	**0.98**	**0.99**	**0.96**	**1.00**

[25] Workforce is based upon the LEHD Origin-Destination Employment Statistics (LODES) of the US Census Bureau.
[26] These surveys are described in the Tier 2 Purpose and Need Report, Section 4.2.2, *Regional Business & Economic Input.* Five businesses (Jasper Engines, Meyer Distributing, Masterbrand Cabinets, Farbest/Wabash Valley Food and OFS/Skyline) provided information on 419 trips to and from 13 business locations in Jasper and Huntingburg for a typical week. They were conducted in the summer and fall of 2024, at the outset of this Tier 2 study.

Table 9: Average Access Time to Alternatives from Major Freight Destinations

Origin	Alternative					
	1A	1B	2A	2B	3A	3B
Average Freight Access Time (minutes)	7.87	8.00	7.84	8.00	7.90	7.45
INDEX	**0.94**	**0.93**	**0.95**	**0.93**	**0.94**	**1.00**

This average access time measure quantifies the relative access time from key freight origins to each MSC alternative. This measure cannot be calculated for the No-Build.

4.1.1.3 Intermodal Access

This performance measure assesses the ability of alternatives to increase access to major intermodal locations. **Table 10** compares alternatives' improved access to major intermodal locations.

Table 10: Improved Access to Major Intermodal Locations

Destination	Alternatives					
	1A	1B	2A	2B	3A	3B
	Reduction in travel time from Downtown Jasper (minutes)					
CSX Avon Yard	3	3	3	3	2	3
Senate Ave. Yard (Indianapolis)	3	3	3	3	2	3
Louisville Airport	1	1	1	1	1	1
Indianapolis Airport	3	3	3	3	2	3
Destination	**Alternatives**					
	1A	**1B**	**2A**	**2B**	**3A**	**3B**
	Reduction in travel time from Northeast Jasper (minutes)					
CSX Avon Yard	3	3	3	3	2	3
Senate Ave. Yard (Indianapolis)	3	3	3	3	2	3
Louisville Airport	4	4	4	4	4	4
Indianapolis Airport	3	3	3	3	2	3
Total - All Destinations	**23**	**23**	**23**	**23**	**17**	**23**
Index	**1.00**	**1.00**	**1.00**	**1.00**	**0.74**	**1.00**

4.1.1.4 Overall Performance Comparison

Table 11 shows the index for each alternative on each performance measure, as well as the average overall index for each alternative. These indices provide a ***comparative performance*** of alternatives on all core goals.

Table 11: Overall Performance Measure Index Comparison

Measure	Index by Alternative					
	1A	1B	2A	2B	3A	3B
Business Market Access	0.88	1.00	0.88	1.00	0.73	1.00
Labor Market Access	0.89	0.92	0.95	1.00	0.81	1.00
Truck Hour Savings	0.95	0.96	0.98	0.99	0.96	1.00
Access Time to Alternative	0.94	0.93	0.95	0.93	0.94	1.00
Intermodal Access	1.00	1.00	1.00	1.00	0.74	1.00
AVERAGE INDEX	**0.93**	**0.96**	**0.95**	**0.98**	**0.84**	**1.00**

Alternative 3B is the best-performing alternative on each Purpose and Need core goal, with an index rating of 1.00. Most other alternatives have index ratings close to 1.00, ranging from 0.93 to 0.98. **Alternative 1B** slightly outperforms **Alternative 1A** and **Alternative 2B** slightly outperforms **Alternative 2A**. **Alternative 3A** underperforms all other alternatives by a larger margin. Its overall performance is 10 to 16 percent less than any other alternative.

4.1.2 Alternative Costs

To compare construction costs between the various horizontal alignments (1 thru 3) and access options (A & B), quantities were developed for each horizontal alignment and access option combination as described in the **Cost Estimating Appendix** and **Design Summary Appendix**. Each horizontal alignment and access option combination forms an end-to-end alternative. **Table 12** provides Year 2024 costs for each alternative.

Table 12: Alternative Costs

Expressway Alternative	Construction Costs with Contingencies (millions)*	Cost/Mile (millions)
Alternative 1A	$ 1,183	$ 51.0
Alternative 1B	$ 1,135	$ 48.9
Alternative 2A	$ 1,077	$ 47.0
Alternative 2B	$ 1,047	$ 45.7
Alternative 3A	$ 1,233	$ 52.7
Alternative 3B	$ 1,099	$ 47.0

**Construction costs include an added 20 percent for contingencies*

When comparing each alternative on a construction cost / mile basis, the cost of **Alternatives 2A**, **2B** and **3B** were between $45.7 and $47.0 million/mile. **Alternatives 1A** and **3A** cost more than $52.1 million/mile, while **Alternative 1B** cost more than $48.9 million/mile. The higher costs for **Alternatives 1A** and **1B** can be primarily attributed to higher bridge costs. The total area of bridge deck for these alternatives exceeded 131,000 square feet. The total area of bridge deck for **Alternative 3A** is 126,190 square feet, while all other alternatives are less than 115,000 square feet. **Alternatives 1A and 2B** include longer crossings at Short Creek (SE of Huntingburg), Unnamed Tributary to Bruner Creek (E of Huntingburg), Straight River (SE of Jasper) and Patoka River (NE of Jasper). **Alternative 3A** is the only alternative that includes interchanges, resulting in a higher cost.

Alternative 3B has a higher total cost, but a similar per mile cost to **Alternatives 2A** and **2B**. This is due to **Alternative 3** being approximately 0.5 miles longer than **Alternative 2**. This additional length is primarily due to optimizing the alignment around the Huntingburg Airport (stakeholder coordination), along Short Creek (floodway impacts) and across the Patoka River (floodway impacts).

Earthwork costs are primarily driven by floodplain crossings where adequate pavement elevation above forecasted flood levels must be maintained. Other factors influencing earthwork include grade separations (specifically railroad crossings) and amount of S-line realignment required to provide access to mainline MSC.

Significant grade separations include the combined grade separation between Norfolk Southern's Switchyard and SR 64 associated with access option 3BB. In order to cross over the Switchyard and SR 64, a significant embankment is required which then minimizes the cut that can be generated north of SR 64. Access option 3AA includes an at-grade intersection; however, this impacts the flow of traffic along SR 64. The situation is similar to where MSC passes over SR 162. The proposed embankment must both traverse the Straight River floodplain and pass over SR 162 which traverses that same floodway. This particular scenario is common across all alternatives and requires a significant amount of fill.

Final earthwork balances are highly influenced by location of the alignments, grade controlling features in the vicinity (i.e., access points, floodplains, grade separations, etc.) and surrounding topography. For this reason, geographic diversity between horizontal alignments was included whenever possible. This allows for discrete analysis of earthwork for individual segments. In addition, this provides the opportunity for further refinement of engineering design during subsequent phases of the NEPA study.

4.1.3 Alternative Impacts

The preliminary design supporting the costs in **Section 4.1.2 - Alternative Costs** provided right-of-way files which were used to estimate each alternative's impact to key resources (**Table 13**). The definitions of each key resource and methodology for calculating the impacts to key resources are explained in the **Impact Calculation Appendix**. Many of these resources are depicted in the **Preliminary Alternatives Appendix** with the alternatives superimposed.

Table 13: Resource Impacts by Alternative

Impact Type	Alt 1A	Alt 1B	Alt 2A	Alt 2B	Alt 3A	Alt 3B
Total Right-of-Way (acres)	1,560	1,596	1,500	1,462	1,490	1,483
Non-Wetland Forests (acres)	349.7	361.6	326.5	333.2	327.3	333.9
Wetlands (acres)	84.5	89.8	67.7	61.0	55.4	61.1
Open Waters (ponds, lakes, reservoirs)	4.2	5.8	5.6	5.5	4.2	4.0
Streams (feet)	64,517	68,806	65,934	64,155	61,053	59,368
Floodplains* (acres)	347.2	336.5	321.9	275.6	261.4	256.8
Agricultural Lands (acres)	919.6	935.1	883.2	869.1	932.4	874.5
Herbaceous / Successional Lands (acres)	36.3	35.7	34.1	32.4	34.0	33.1
Managed Lands* (acres)	28.2	25.7	17.3	16.5	25.7	21.9
Residential Lands (acres)	71.4	68.4	69.7	64.8	50.5	51.3
Commercial / Industrial Lands (acres)	0.5	1.6	1.6	2.4	0.1	0.7
Public Use Facilities (acres)	3.5	5.2	3.2	2.3	4.0	1.4
Existing Transportation Lands (acres)	96.0	95.0	86.2	89.6	77..7	74.1
Historic Property Lands* (acres)	0.6	0.6	0.6	0.8	1.2	1.2
Utility Lands (acres)	0.3	0.1	0.3	0.1	0.0	0.0
Planned Trails (feet)	1,926	3,216	2,322	3,526	3,283	2,252
Archaeological Resource Lands* (acres)	43.2	52.5	35.3	31.3	40.7	38.9
Relocations	**Alt 1A**	**Alt 1B**	**Alt 2A**	**Alt 2B**	**Alt 3A**	**Alt 3B**
Residential Relocations (number)	60	49	58	46	37	27
Commercial / Industrial Relocations (number)	2	3	2	1	1	0
Agricultural Operation Relocations (number)	19	19	18	15	17	14
Public Use Facility Relocations (number)	1	2	1	0	0	0

* Floodplain, Managed Lands, Historic Property and Archeological Resource impacts overlap with other impact types. Total acres of all land use types do not add up to the total right-of-way acres.
Alt – Alternative
Exp - Expressway

Total Right-of-Way

The Total Right-of-Way was determined based on engineering principles, roadway typical cross sections and alignment adjustments to try and avoid key resources. Also, input from both the public and local officials was sought. The right-of-way for each alignment was reviewed and optimized to reduce overall right-of-way impacts wherever feasible.

- **Alternatives 1A** and **1B** require the highest amount of Total Right-of-Way, 1,560 and 1,596 acres, respectively.
- **Alternatives 2B** and **3B** require the least amount of Total Right-of-Way, 1,462 and 1,483 acres, respectively.

Non-Wetland Forests

The impacts to non-wetland forests include all areas that meet the U.S. Department of Agriculture (USDA) definition of a forest and are not located within an area that meets the U.S. Army Corps of Engineers (USACE) definition of a wetland. Impacts to forest areas that are within a wetland are included as wetland impacts. Impacts also include forest fragments, which are forested areas ranging from 0.1 to one acre. Reducing the amount of forest impacts is important because many of Indiana's threatened and endangered bat species rely on forested areas for summer roosting. All the alternatives are on new terrain and complete avoidance of forest impacts is not feasible. All alternatives have similar impacts to non-wetland forest with the alternative with the highest impact (**Alternative 1B**) only seven percent higher than the alternative with the lowest impact (**Alternative 2A**).

- **Alternatives 1A** and **1B** have the highest non-wetland forest impacts, 349.7 and 361.6 acres, respectively.
- **Alternatives 2A** and **3A** have the lowest non-wetland forest impacts, 326.5 and 327.3, respectively.

Wetlands and Open Waters

For this summary description, both wetlands and open waters[27] were combined for summarizing impacts to regulated waters. For the Screening Report, both wetlands and open waters include jurisdictional and isolated resources. A formal jurisdictional determination by the USACE will be requested to determine which wetlands and open waters will be considered jurisdictional (regulated by Section 401 and 404 of the Clean Water Act) and which wetlands and open waters will be considered isolated (regulated by Indiana's Isolated Wetlands Law (IC 13-18-22)). Wetlands and open waters are a valuable resource for providing food and cover for many different species of mammals, reptiles and amphibians. In addition, both wetlands and waters are regulated by the Clean Water Act under Section 404 and Section 401 along with the Indiana Isolated Wetland Program. Any impacts to wetlands or open waters will require permits from the USACE and/or the Indiana Department of Environmental Management (IDEM). All the alternatives were evaluated, and alignments were adjusted during the development process to avoid and minimize impacts to wetlands and open waters wherever practicable and feasible.

- **Alternatives 1A** and **1B** have the highest impacts on wetlands and open waters, 88.7 and 95.7 acres, respectively.
- **Alternatives 3A** and **3B** have the lowest impacts on wetlands and open waters, 59.6 and 65.1 acres, respectively. Alternative 3B has a higher impact to wetlands and open waters due to the access variations. Further evaluations of access variations will be completed in the Draft NEPA Document to minimize the impacts to wetlands and open waters.

Streams

Streams provide many different functions that are essential to our environment. Streams provide habitat and water for mammals, reptiles, amphibians and aquatic species. In addition, streams are essential for conveying rainfall runoff and moving it over the land in a confined area to reduce flooding.

[27] Open waters include ponds, lakes and reservoirs.

Streams that qualify as "navigable waters" under the Clean Water Act are subject to regulation under that Act. Impacts to streams will require permits from the U.S. Army Corps of Engineers (USACE) and the Indiana Department of Environmental Management (IDEM). All the alternatives were evaluated, and alignments were adjusted during the development process to avoid and minimize impacts on streams wherever practicable and feasible.

- **Alternatives 1B** and **2A** have the highest impacts on streams, 68,806 and 65,934 feet, respectively.
- **Alternatives 3A** and **3B** have the lowest impacts on streams, 61,053 and 59,368 feet, respectively.

Floodplains

Floodplains are a vital component of a stream which controls flooding on neighboring properties. Floodplains include both backwater storage areas for storing excess floodwater during heavy rain events and floodways. These are the areas of the floodplain that convey floodwater downstream and eventually drain the backwater areas. Floodways are normally narrower areas within the larger floodplain areas. In Indiana, floodways associated with streams with a drainage area over one square mile are regulated by the Indiana Department of Natural Resources Division of Water under the Flood Control Act. Impacts to floodways require Construction in a Floodway approval by the Indiana Department of Natural Resources Division of Water prior to construction. There is a rural bridge exemption that applies to rural areas in Indiana that allows streams with less than 50 square miles of drainage to be exempt from the Construction in a Floodway approval; however, all conditions of the rural bridge exemption must be met to use the exemption. All the alternatives cross floodplain areas and have been hydraulically evaluated to determine bridge and drainage structure design requirements to avoid and/or minimize project impacts on floodwaters.

- **Alternatives 1A** and **1B** have the highest impacts on floodplains, 347.2 and 336.5 acres, respectively.
- **Alternatives 3A** and **3B** have the lowest impacts on floodplains, 261.4 and 256.8 acres, respectively.

Agricultural Lands

Agricultural Lands are one of the highest acreage land use categories in Dubois County. Agricultural lands provide food for both humans and livestock. All alternatives will impact agricultural lands. The development of alternatives has been evaluated to reduce the impact on agricultural lands.

- **Alternatives 1B** and **3A** have the highest impacts on agricultural lands, 935.1 and 932.4 acres, respectively.
- **Alternatives 2B** and **3B** have the lowest impacts on agricultural lands, 869.1 and 874.5 acres, respectively.

Herbaceous / Successional Lands

Herbaceous / Successional lands are areas that are not included as maintained lawns, not identified as pasture/hay fields and do not meet the definition of a forest or wetland. These are roadside and fallow areas that are most likely abandoned or sparsely maintained. Eventually, the herbaceous / successional lands may become forested. Herbaceous / successional lands provide a unique habitat for some species such as ground nesting birds. All alternatives will have impacts on herbaceous / successional lands.

- **Alternatives 1A** and **1B** have the highest impacts on herbaceous /successional lands, 36.3 and 35.7 acres, respectively.
- **Alternatives 2B** and **3B** have the lowest impacts on herbaceous / successional lands, 32.4 and 33.1 acres, respectively.

Managed Lands

Managed Lands are areas that are enrolled in a government program and/or are managed by some unit of federal, state or local government. Some managed lands may be considered a resource subject to protection under Section 4(f) of the of the U.S Department of Transportation Act or Section 6(f) of the Land and Water Conservation Act and require approvals by governmental agencies prior to impacts. The Managed Lands within the alternatives include Classified Forests, Wetland Reserve Program lands, Jasper Recreation Area and Planned Trails. Preliminary review of the Managed Lands identified that none of these are anticipated to be 4(f) resources. All alternatives will impact managed lands to some extent.

- **Alternatives 1A**, **1B** and **3A** have the highest impacts on managed lands, 28.2, 25.7 and 25.7 acres, respectively.
- **Alternatives 2A** and **2B** have the lowest impacts on managed lands, 17.3 and 16.5 acres, respectively.

Residential Lands

Residential Lands include all maintained areas associated with residential property, including houses, outbuildings, lawns and driveways. Avoiding and minimizing impacts to residential properties is a primary goal for a project of this magnitude. Completely avoiding impacts to residential properties is not feasible. The alternatives have been evaluated to reduce the impact on residential lands.

- **Alternatives 1A** and **2A** have the highest impacts on residential lands, 71.4 and 69.7 acres, respectively.
- **Alternatives 3A** and **3B** have the lowest amount of impact on Residential Lands, 50.5 and 51.3 acres, respectively.

Commercial / Industrial Lands

Commercial / Industrial lands include all maintained areas associated with a commercial and/or industrial facility, including buildings, parking lots, driveways and maintained lawns. The alternatives were developed to avoid and/or minimize impacts to commercial / industrial lands.

- **Alternatives 1B**, **2A** and **2B** have the highest impacts on commercial / industrial lands, 1.6, 1.6 and 2.4 acres, respectively.
- **Alternatives 1A** and **3A** have the lowest impacts on commercial / industrial lands, 0.5 and 0.1 acre, respectively.

Public Use Facilities

Public Use Facilities are lands that are generally used by organizations or the public. All alternatives will impact public use facilities. The Public Use Facilities include two churches, the Dubois County Highway Garage and Jasper Outdoor Association. Preliminary review of these public use facilities identified than none of these are anticipated to be 4(f) resources.

- **Alternatives 1B** and **3A** have the highest impacts on public use facilities, 5.2 and 4.0 acres, respectively.
- **Alternatives 2B** and **3B** have the lowest impacts on public use facilities, 2.3 and 1.4 acres, respectively.

Existing Transportation Lands

Existing Transportation Lands include areas that are maintained either as active roadways or maintained rights-of-way. All alternatives will impact existing transportation lands.

- **Alternative 1A** and **1B** have the highest impacts on existing transportation lands, 96.0 and 95.0 acres, respectively.
- **Alternatives 3A** and **3B** have the lowest impacts on existing transportation lands, 77.7 and 74.1 acres, respectively.

Historic Property Lands

Historic Property Lands include all land associated with a property that is either listed on the National Register of Historic Places (NRHP) or was recommended eligible for listing on the NRHP by a qualified professional historian. A proposed "use" within the meaning of Section 4(f) of a historic property may require review and approval as provided under Section 4(f). All alternatives will impact historic property lands based on current planning.

- **Alternatives 3A** and **3B** have the highest impacts on historic property lands at 1.2 acres each.
- **Alternatives 1A**, **1B** and **2A** have the lowest impacts on historic property lands at 0.6 acres each.

Utility Lands

Utility Lands include land associated with a utility structure such as a utility tower or facility. This does not include any easement areas associated with a linear utility, such as a powerline or gas line. The land areas for the utility easements are included within other land use types. Only some of the alternatives will impact utility lands.

- **Alternatives 1A** and **2A** have the highest impacts on utility lands at 0.3 acres each.
- **Alternatives 3A** and **3B** do not have any impacts on utility lands.

Trails

Trails include the length of planned trails located within the right-of-way of a Preliminary Alternative (Dubois Co. Plan 2021). All alternatives impact planned trails. These trails, when built, would be managed by Dubois County. Dubois County will be consulted during preparation of the Draft NEPA document to initiate any appropriate joint development activities. No alternatives impact existing publicly owned and/or maintained trails.

- **Alternatives 2B** and **3A** have the highest impacts on planned trails, 3,526 and 3,283 feet, respectively.
- **Alternatives 1A** and **3B** have the lowest impacts on planned trails, 1,926 and 2,252 feet, respectively.

Archaeological Resource Lands

Archaeological Resource Lands include areas associated with a previously recorded or known archaeological site. All archaeological resource lands identified by the Indiana State Historic Architectural and Archaeological Research Database (SHAARD) were included in this evaluation. A proposed "use" within the meaning of Section 4(f) of an archaeological resource may require review and approval as provided under Section 4(f). All alternatives will have impacts on known archaeological resource lands.

- **Alternatives 1A** and **1B** have the highest impacts on archaeological resource lands, 43.2 and 52.5 acres, respectively.
- **Alternatives 2A** and **2B** have the lowest impacts on archaeological resource lands, 35.3 and 31.3, respectively.

Residential Relocations

Residential Relocations include residential homes that are located within the right-of-way limits for each of the alternatives. Aerial photographs and field verifications were used to identify residential relocations. All residential homes impacted by a Preliminary Alternative were identified and field-verified as single-family homes. There were no multi-family residential properties (i.e., apartment buildings, duplexes, etc.) impacted. All alternatives will require residential relocations.

- **Alternatives 1A** and **2A** have the highest residential relocations, 60 and 58, respectively.
- **Alternatives 3B** and **3A** have the lowest residential relocations, 27 and 37, respectively.

Commercial / Industrial Relocations

Commercial /Industrial Relocations include any business or industrial facility located within the right-of-way for each alternative. Most alternatives have commercial / industrial relocations.

- **Alternatives 1B** and **1A/2A** have the highest commercial / industrial relocations, 3 and 2, respectively.
- **Alternatives 3B** and **2B/3A** have the lowest commercial / industrial relocations, 0 and 1, respectively.

Agricultural Operation Relocations

Agricultural Operation Relocations include barns, feed lots, grain storage facilities and other facilities associated with a single agricultural operation. All the alternatives have agricultural operation relocations.

- **Alternatives 1A** and **1B** have the highest agricultural operation relocations at 19 each.
- **Alternatives 3B** and **2B** have the lowest agricultural operation relocations, 14 and 15, respectively.

Public Use Facility Relocations

Public Use Facility Relocations include properties that are used by the public or organizations. Only three of the six alternatives have public use facility relocations.

- **Alternatives 1A**, **1B** and **2A** all have the highest public use facility relocations, 1, 2 and 1, respectively.
- **Alternatives 2B**, **3A** and **3B** have no public use facility relocations.

Summary of Overall Key Resource Impacts

The information provided in **Table 13** and the descriptions provided above summarize the potential impacts to key resources by each alternative. In addition, the **Impact Calculation Appendix** provides the definitions of each key resource and the methodology used for calculating their impacts.

- Alternatives 1A and 1B have the overall highest impact on key resources.
- Alternatives 3A and 3B have the overall lowest impact on key resources.

4.2 Comparison of Preliminary Alternatives

This screening analysis has determined that **Alternative 2B** has the lowest total right-of-way, lowest impacts to agricultural lands, second-lowest impacts to wetlands, lowest impacts to managed lands, second-lowest impacts to agricultural operations and lowest impacts to identified archaeological resources. It also has the lowest cost and second-best overall performance on purpose and need core goals. The Screening Analysis determined that **Alternative 3B** requires the second-lowest total right-of-way, and has the lowest impacts to streams and floodplains. It also has the fewest relocations in all categories (residential, commercial/industrial, agricultural operation and public use facilities). It has the second-lowest impacts to agricultural lands. **Alternative 3B** has the third-lowest cost. On each purpose and need core goal, **Alternative 3B** has the highest performance of all alternatives.

Based upon this comparison of the impacts, costs and benefits of the Preliminary Alternatives, both **Alternative 2B** and **Alternative 3B** have been identified to be carried forward for detailed study in the Draft NEPA document.

Carrying forward both alternatives provides a full opportunity for robust public and agency input. Both alternatives will be refined to reduce impacts, especially relocations and aquatic impacts. They also will seek to reduce costs. It is anticipated that some of the refinements to the preferred alternative will be components of the non-preferred alternative.

4.3 Review of Corridor Segments

4.3.1 Segment 1 – I-64 to CR 1000 S

The alignment of MSC between I-64 and CR 1000 S is primarily driven by the following elements:

- **Existing US 231 Horizontal Alignment from CR 1175 S to CR 1100 S (Figure 5).** The horizontal alignment of existing US 231 (two-lane section) from CR 1175 S to CR 1100 S has roadway geometrics that would need to be upgraded in order to meet the design criteria for the expressway facility type. This segment of existing US 231 can become a frontage road to provide access to properties on the east side of the roadway without further upgrades. Access to those (east side) properties can be re-established by connecting CR 400 E to existing US 231. If desired, existing US 231 can be extended north to CR 1100 S in order to provide full north-south local access between County Line Road and CR 1100 S. [28] The horizontal orientation of US 231 south of CR 1175 S (four-lane section) would be extended north. This would provide a new facility west of and parallel to existing US 231. All alternatives follow the same alignment through this section.

Figure 5: Dwellings and Access Locations Existing US 231 Expressway

- **Dwelling Impacts from CR 1100 S to CR 1000 S (Figure 6).** Between CR 1100 S and CR 1000 S, there are nine dwellings on the west side of existing US 231 and only two on the east side. Of the two on the east side, one is likely to be impacted due to the need to provide access to the MSC at CR 1000 S (see below). If MSC crosses from the west side to the east of US 231 at CR 1100 S and parallels existing US 231 to the east, as shown in **Alternative 3**, it is estimated that a direct impact to approximately five dwellings can be avoided, provided that existing US 231 remains as a frontage road. Depending on the final alignment of the MSC, new connections between existing US 231 and CR 1100 S and 1000 S will likely be required. If existing US 231 would be upgraded to an expressway, as shown in **Alternatives 1** & **2**, new frontage roads would need to be established to provide access to properties on both sides of the MSC; resulting in direct impacts to all dwellings.

[28] Any extension of CR 1100 S would be a separate local action, and not part of the MSC project.

Figure 6: Residences Near Roadway

- **Maintenance of Traffic.** Existing US 231 will need to remain open throughout construction of the MSC. **Alternative 3** maintains existing US 231 in its current state to the maximum extent possible in order to minimize disruption to the traveling public. Regardless of alignment, phased construction and temporary connections will likely be required at intersections with CRs 1100 S and 1000 S.
- **Access Considerations.** As discussed in **Section 3.1 - Draft Preliminary Alternatives**, maintaining east-west connectivity for southern Dubois County will be a critical consideration in this area due to the importance of these facilities in the transportation network. Local access is also key to maintaining access to residences. Properties which are accessed from CR 1100 S west of existing US 231 do not have alternative access to the west. Properties within the immediate vicinity of access points to the MSC likely will be impacted regardless of whether existing US 231 is upgraded or the MSC is offset to one side of existing US 231. Any such impacts will be evaluated in the Draft NEPA document.

4.3.2 Segment 2 – CR 1000S to CR 200 W

The alignment of MSC between CR 1000 S to CR 200 W is primarily driven by the following elements:

- **Huntingburg Airport Runway Protection Zone[29] (RPZ) (Figure 7).** The Huntingburg Airport has a planned runway expansion to extend its runway 500 feet to the east. This would bring the total runway length 6000 feet. After a runway expansion, new RPZs will take effect on both sides of the runway. The proposed rights-of-way for **Alternatives 1** and **2** encroach into the future RPZ. **Alternative 3** avoids the future RPZ; however, a reverse curve[30] followed by a broken-back curve[31] are required in order to avoid the RPZ. These curve types are not considered desirable by the Indiana Design Manual; however, all applicable design criteria can be met. A similar horizontal alignment configuration could be applied to **Alternatives 1** and **2** in order to avoid the RPZ, but would result in additional non-desirable horizontal alignment geometrics in order to get back on alignment east of existing US 231.

Figure 7: Huntingburg Airport Runway Protection Zone (RPZ)

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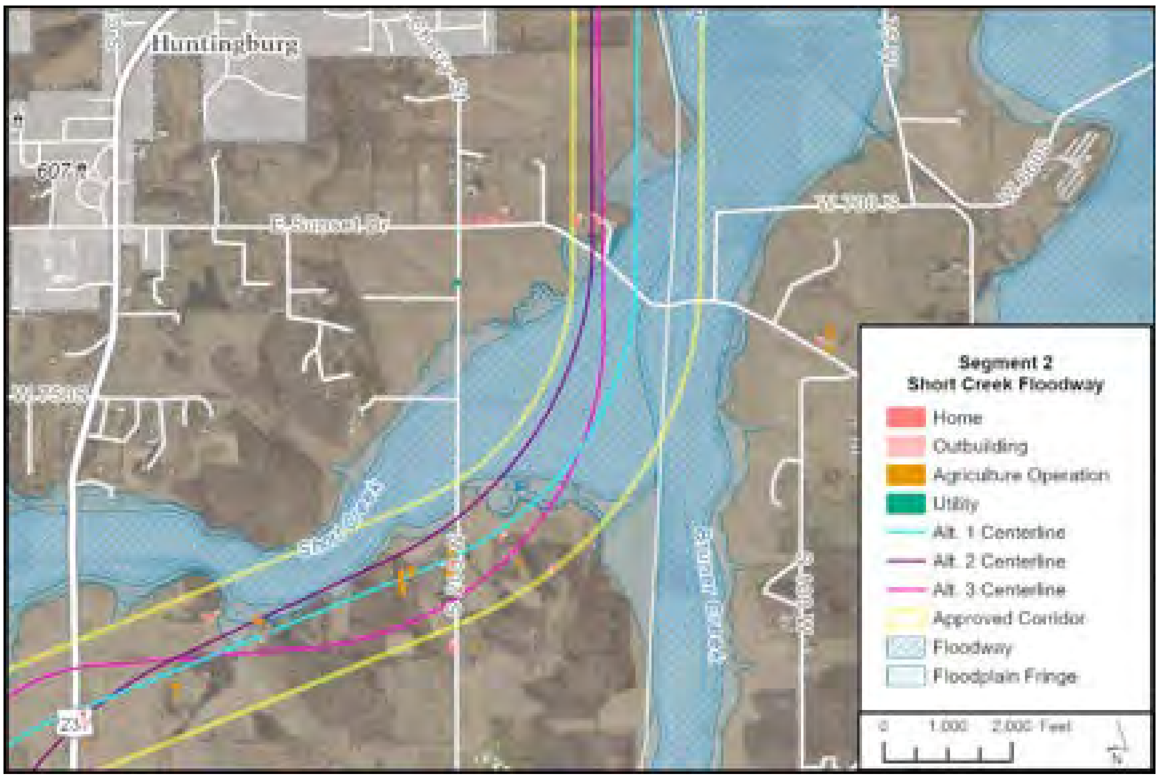
[29] A Runway Protection Zone (RPZ) is a trapezoidal area located off the end of a runway that is designed to enhance the safety and protection of people and property on the ground in the event of an aircraft undershooting or overrunning the runway. The Federal Aviation Administration (FAA) discourages the presence of buildings, public roads and places of public assembly within RPZs. Ideally, RPZs should be free of any development or activities that could increase risk to people on the ground.

[30] A reverse curve (also called an S-curve) consists of two curves in opposite directions with a common tangent between them. It looks like an "S" shape.

[31] A broken-back curve consists of two curves in the same direction separated by a short tangent.

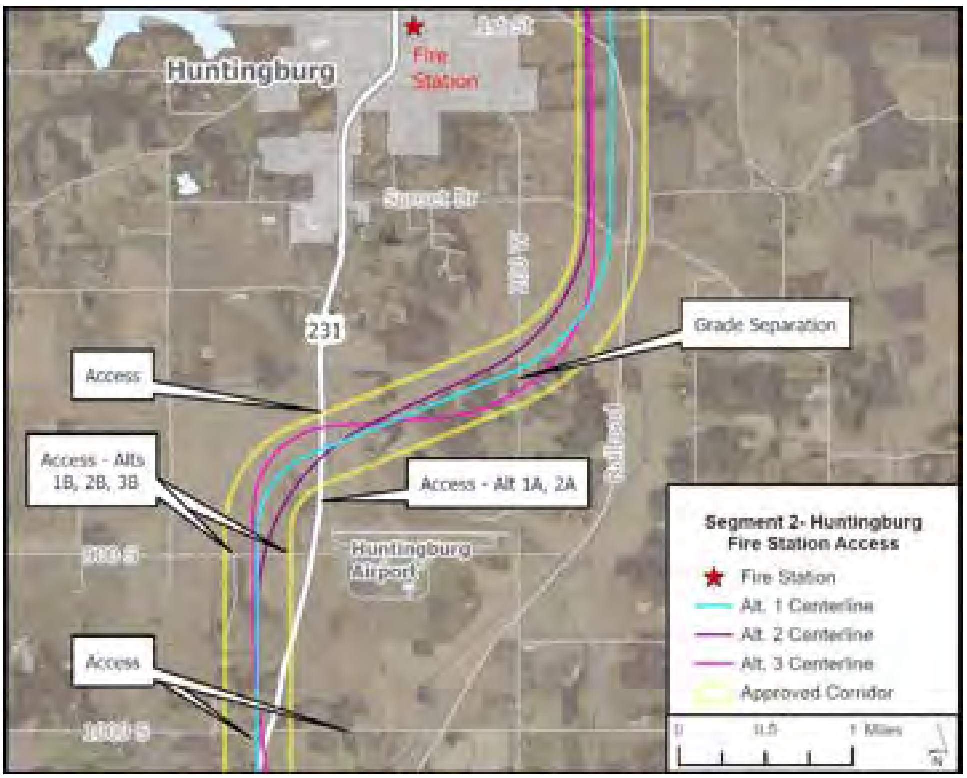
- **Short Creek Floodway between Existing US 231 and CR 200 W (Figure 8).** All alternatives seek to minimize encroachments into the Short Creek Floodway. **Alternatives 1** and **2** generally traverse this segment on a northeast bearing while **Alternative 3** traverses the area on an easterly bearing. **Alternatives 1** and **2** impact two dwellings. **Alternative 3** also impacts two dwellings, which are different that those impacted by **Alternatives 1** and **2**. This segment of MSC is highly influenced by horizontal alignment at the airport (see previous bullet).

Figure 8: Short Creek Floodway



- **Fire Station Access Considerations (Figure 9).** Fire service is provided to the Huntingburg Airport by the City of Huntingburg via the First Street Fire Station. Any decrease in response time to the airport is considered undesirable by the Huntingburg Airport as well as the City of Huntingburg. Primary access to the airport from Huntingburg is provided via CR 900 S or existing US 231 depending on the access configuration utilized, except for **Alternative 3A** for which access is provided via an interchange at US 231 and CR 1000S. **Alternative 3A** requires significant adverse travel (travel in opposite one's intended direction) for fire response vehicles. CR 200 W has not been designated as an access point due to the impacts of designing an access point to accommodate flooding along Short Creek.

Figure 9: Fire Station Access Issues



- **Other Access Considerations.** All access options propose grade separating MSC and CR 200 W. This allows it to serve a secondary access point most of the year when not flooded. Raising CR 200 W above the base flood elevation is not considered in any alternatives. CR 1000 S can serve as a primary access point to the Airport for traffic originating from the south. It is undesirable as a primary access point from Huntingburg due to the approximately one mile of adverse travel that would be required. All access options allow access onto existing US 231 north of MSC. Access option **B** eliminates access to existing US 231 south of MSC, and requires all traffic to divert to the MSC. **Alternatives 1** and **2** allow for more flexibility in maintaining access to private properties east of CR 200 W. **Alternative 3** is more restrictive in access to private properties.

4.3.3 Segment 3 – CR 200 W to North of SR 64 (Sixth St.)

The alignment of MSC between CR 200 W and SR 64 is primarily driven by the following elements:

- **Norfolk Southern Switchyard (Figure 10)**. All alternatives require a grade separation across the Norfolk Southern Switchyard. **Alternative 1** minimizes the length of the bridge span by crossing the switch yard toward its east end. This location results in significant wetland impacts. **Alternatives 2** and **3** cross the switchyard west of the wetland, but require a longer bridge span. **Alternatives 2** and **3** minimize the encroachment into railroad property. **Alternatives 2** and **3** are conducive to either a grade separated quadrant roadway intersection[32] or an RCI at SR 64 due to the crossing being near a high point in the grade of SR 64. **Alternative 1** crosses SR 64 further east and is more conducive to a quadrant roadway intersection. Coordination is ongoing with railroad officials to determine specific considerations regarding the potential crossing locations.
- **Norfolk Southern Rail Spur & Unnamed Tributary to Bruner Creek Crossings. Alternatives 2** and **3** cross Norfolk Southern's rail spur at a more desirable angle than **Alternative 1**. All alternatives result in similar bridge opening sizes for the crossing of the Unnamed Tributary to Bruner Creek.

Figure 10: Norfolk Southern Switch Yard and Nearby Wetlands

[32] A quadrant roadway intersection is an intersection design used to improve traffic flow and reduce congestion at traditional four-leg intersections. It does this by redirecting left-turn movements away from the main intersection to a connector road located in one of the quadrants formed by the intersecting roads.

- **Bruner Creek Floodway (Figure 11).** All alternatives are within the ineffective flow area[33] created by the existing railroad bridge over Bruner Creek. In the scenario where Ferdinand Road passes over the MSC (via grade separation) a portion of the realigned Ferdinand Road impacts the Bruner Creek Floodway upstream of the railroad bridge. This requires a lengthy span to avoid increasing the water surface elevation above the regulatory threshold of 0.14 ft. For this reason, realigning Ferdinand Road in any manner that impacts the Bruner Creek floodway downstream of the railroad bridge is undesirable.
- **Access Considerations.** Dubois County officials requested that traffic across the MSC be maintained on Ferdinand Road, whether via an access point to the MSC or a grade separation. All access options presently propose grade separating MSC and Ferdinand Road. This may be reevaluated for the potential cost reduction offered by an at-grade crossing. Access **Option A** proposes the MSC be bridged over Ferdinand Road. **Option B** proposes that Ferdinand Road be bridged over MSC. Where Ferdinand Road bridges the MSC, a longer bridge length is required to cross the railroad, as well as the Bruner Creek Floodway. No access options include access at First Street, while all access options provide access at SR 64 either via an RCI or a quadrant roadway intersection. A quadrant roadway intersection allows thru traffic on SR 64 to pass unimpeded through the intersection with the MSC.

Figure 11: Bruner Creek Floodway and Access Considerations

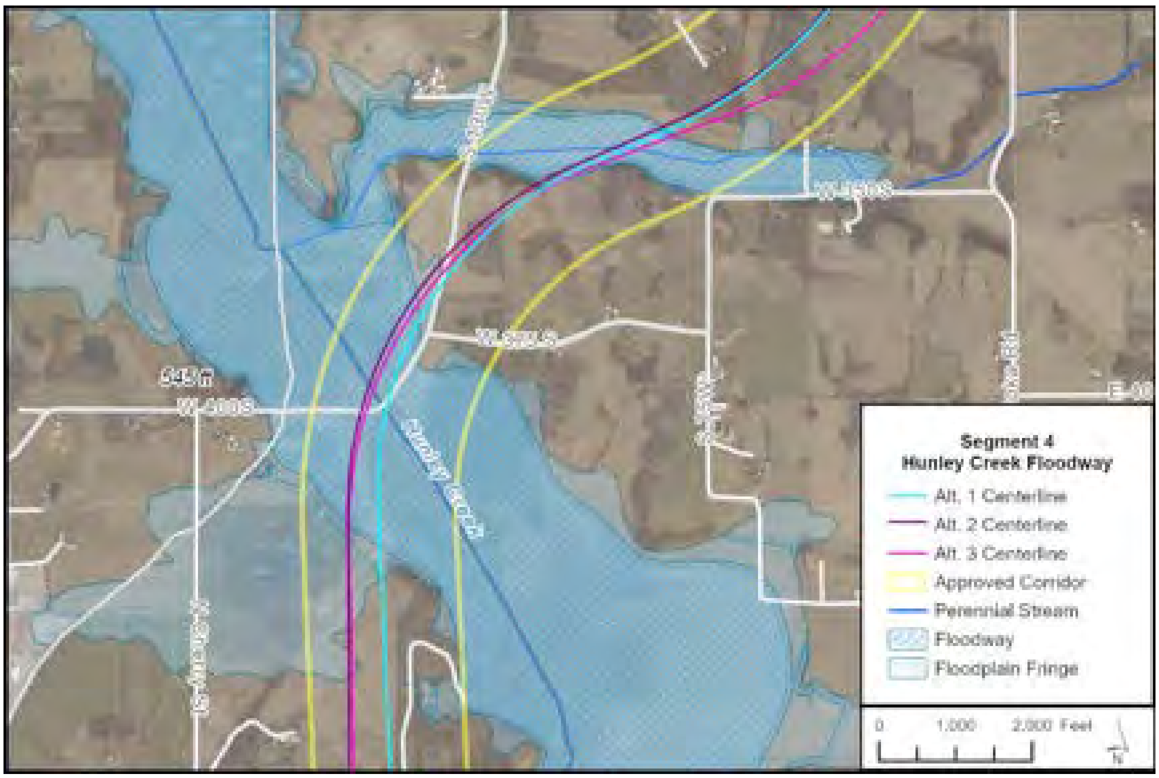
[33] The ineffective flow area refers to portions of the floodplain or channel cross section beneath or near the bridge that do not effectively convey water during a flood event. These areas are typically obstructed or hydraulically disconnected from the main flow path.

4.3.4 Segment 4 – North of SR 64 to North of SR 162/Schnellville Road

The alignment of MSC between SR 64 and SR 162/Schnellville Road is primarily driven by the following elements:

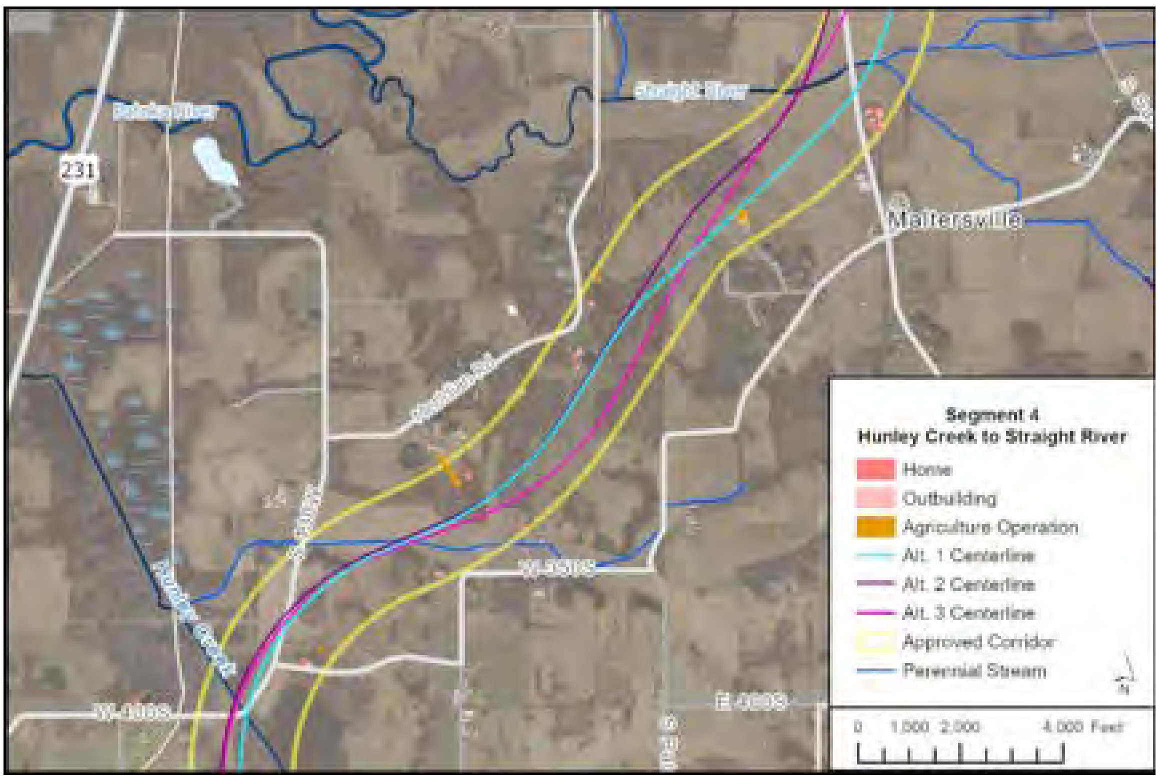
- **Hunley Creek Floodway (Figure 12).** All alternatives seek to minimize encroachments into the Hunley Creek Floodway by paralleling the floodway to the west to the maximum extent possible. **Alternatives 2** and **3** generally follow the same alignment and have a slightly longer (approximately 100 feet) floodway encroachment length than **Alternative 1**. The final access configuration of the MSC and CR 400 S / 130 W is a significant factor in the length of bridge needed to span the floodway. The access configuration impacts on bridge length are similar for all alternatives.

Figure 12: Hunley Creek Crossing



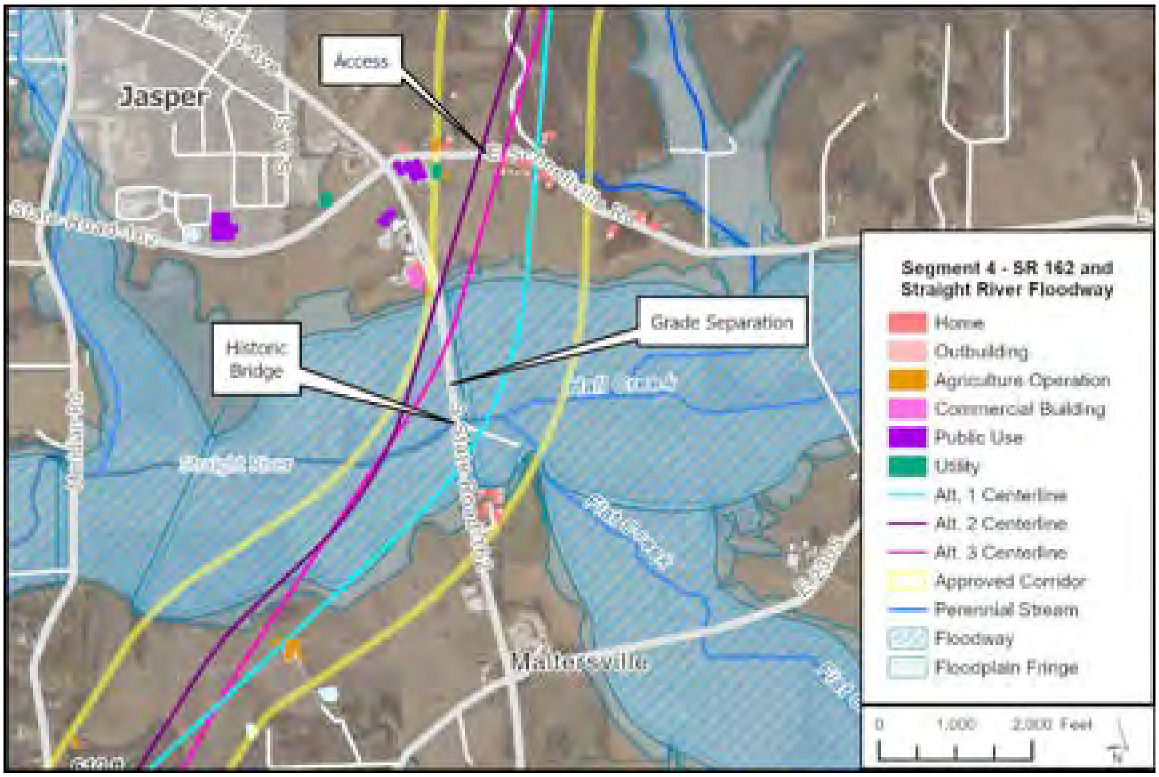
- **Relocation Reduction & Unnamed Tributary to Hunley Creek Floodway (Figure 13).** All alternatives generally cross the Unnamed Tributary to Hunley Creek at the same location and with a similar orientation. The alignments between the Unnamed Tributary to Hunley Creek and the Straight River attempt to reduce impacts to dwellings and agricultural operations. **Alternative 1** impacts a residence and an agricultural operation while **Alternative 2** only impacts the residence. **Alternative 3** impacts only the agricultural operation. This segment of MSC is highly influenced by the horizontal alignment utilized to traverse the Straight River Floodway. See next bullet.

Figure 13: Relocation Reduction



- **Straight River Floodway and SR 162 Historic Bridge Avoidance (Figure 14).** As discussed earlier in [Section 3.1 - Draft Preliminary Alternatives](), the SR 162 Bridge across the Straight River is designated as a select historic bridge. All alternatives avoid the bridge, with **Alternatives 2** and **3** crossing the Straight River downstream of the bridge and **Alternative 1** crossing the Straight River upstream of the bridge. Crossing the Straight River downstream of the bridge is more desirable to minimize floodway impacts. All alternatives are grade separated from SR 162.

Figure 14: Historic Bridge on SR 162



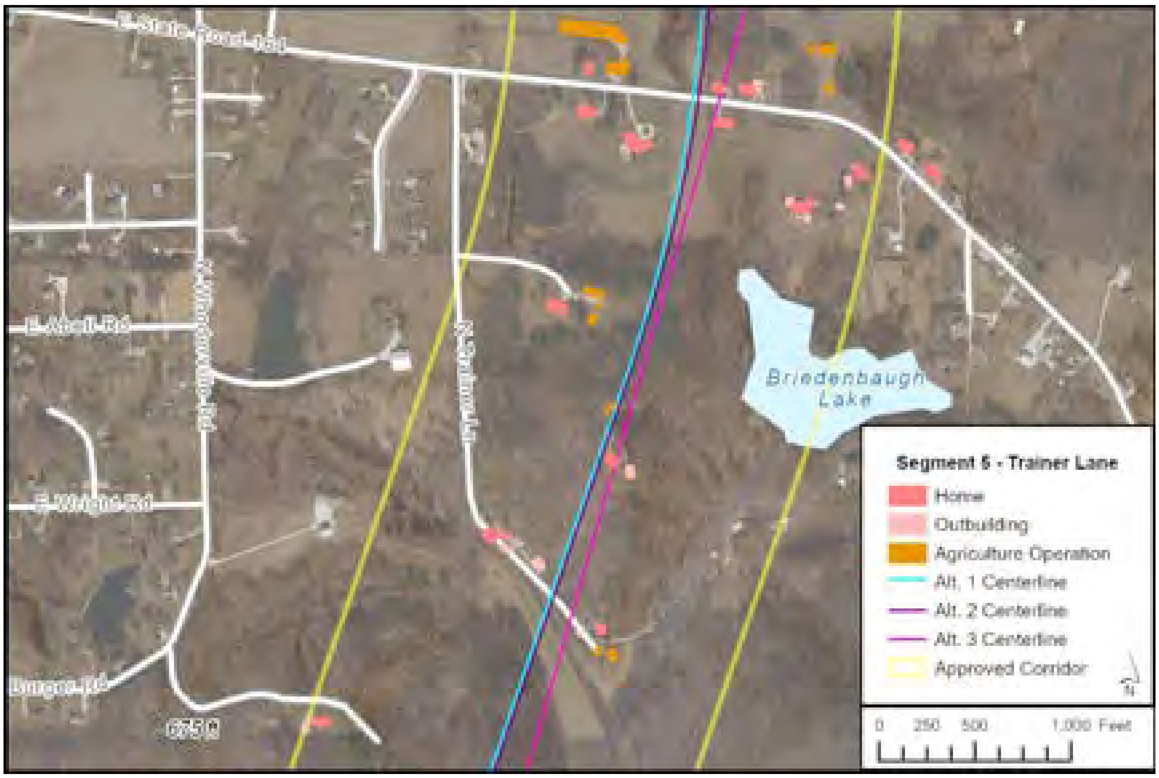
- **Access Considerations.** As previously stated above, the final access configuration of the MSC and CR 400 S / CR 130 W will impact the bridge length needed to span the Hunley Creek Floodway. If access is pushed south of the floodway, the construction of new connecting roadways will be required. Access from the MSC to SR 162 is proposed via Schnellville Road. **Alternative 1** is likely to impact five residential dwellings along Schnellville Road. **Alternatives 2** and **3** provide the opportunity to minimize impacts to those dwellings and will be further discussed in the Draft NEPA document.

4.3.5 Segment 5 – North of SR 162/Schnellville Road to North of Kellerville Road

The alignment of MSC between SR 162/Schnellville Road and Kellerville Road is primarily driven by the following elements:

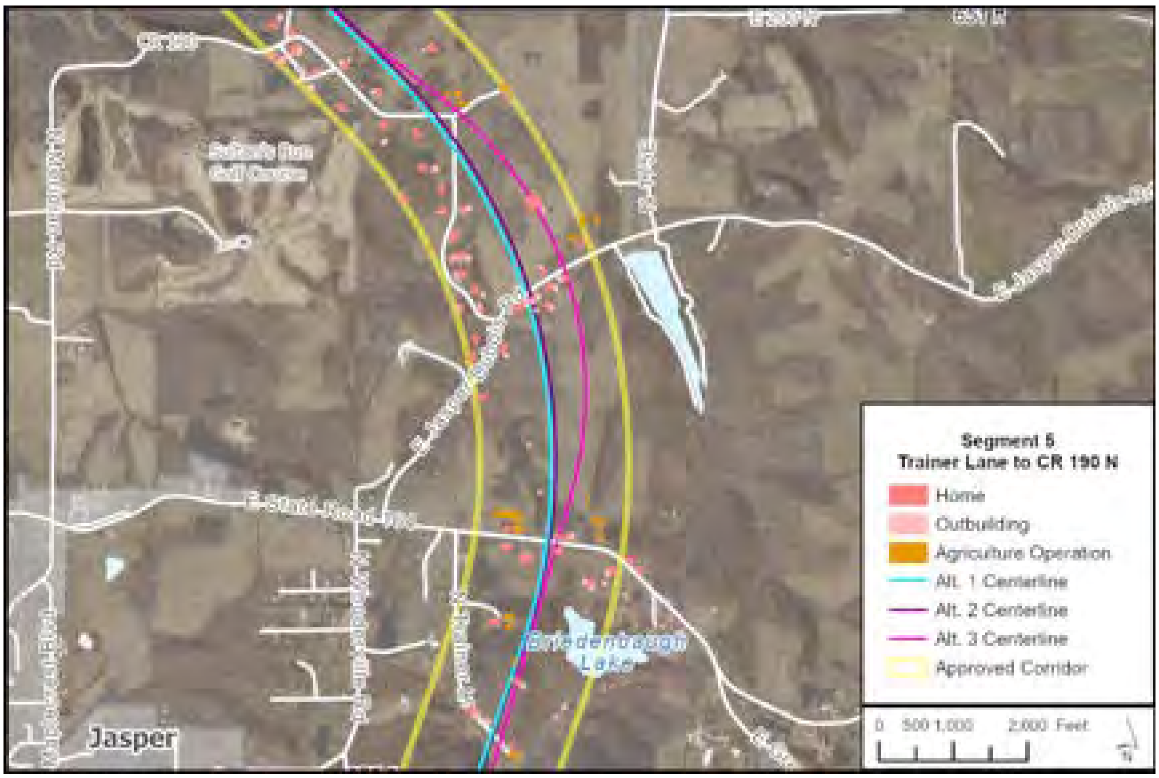
- **Historic Resources (Figure 15).** A structure that is potentially eligible for listing in the National Register of Historic Places is located within the study corridor, near the southernmost segment of the private drive known as Trainer Lane. The centerlines of **Alternatives 1** and **2** are 400 feet from the structure, while the centerline of **Alternative 3** is 270 feet from the structure. Variations to typical sections and alignments to potentially avoid adverse effects to this resource will be identified in the Draft NEPA document.

Figure 15: Historic Resource Log Barn, Relocation Minimization



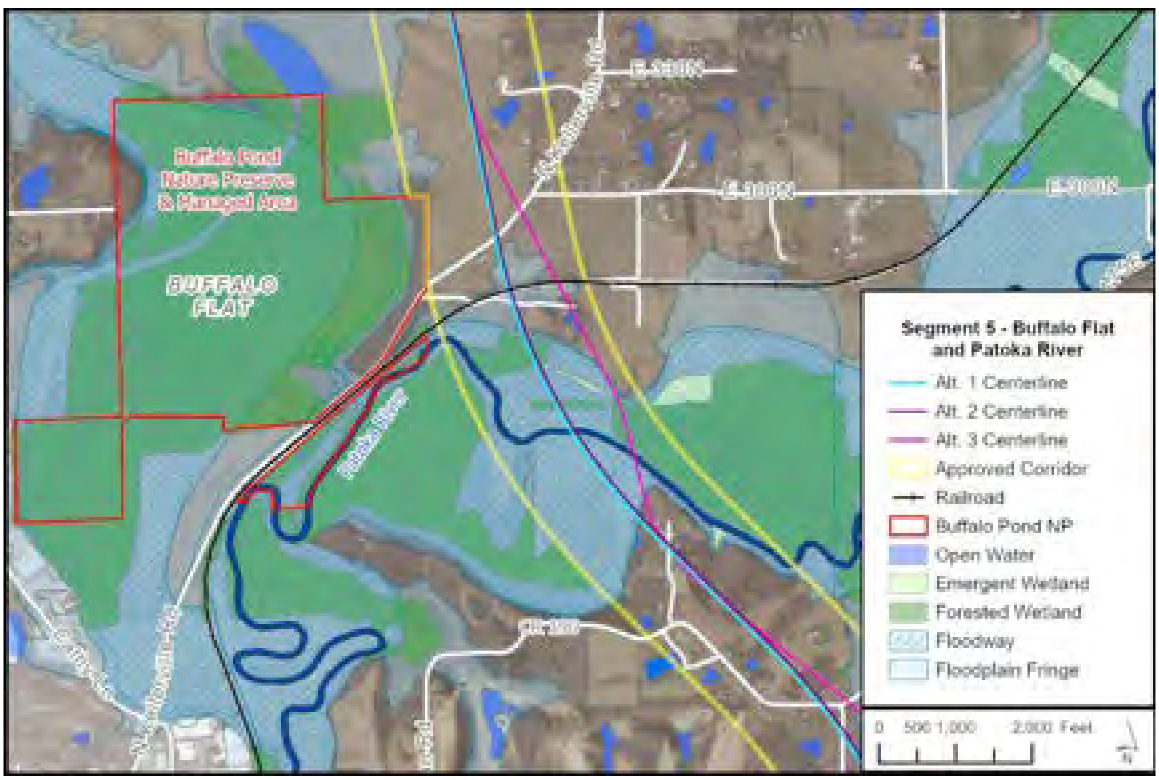
- **Relocation Minimization from Trainer Lane to CR 190 (Figure 16).** There are multiple residential dwellings and agricultural operations between Trainer Lane and CR 190 N. **Alternatives 1** and **2** are generally on the same alignment through this segment of the MSC and have fewer relocations than **Alternative 3**. **Alternative 3** provides for a more desirable crossing of the Patoka River with significant reduction in bridge lengths. **Alternative 2**’s alignment also will be carried forward and further refined.

Figure 16: Relocation Minimization Trainer Lane to CR 190



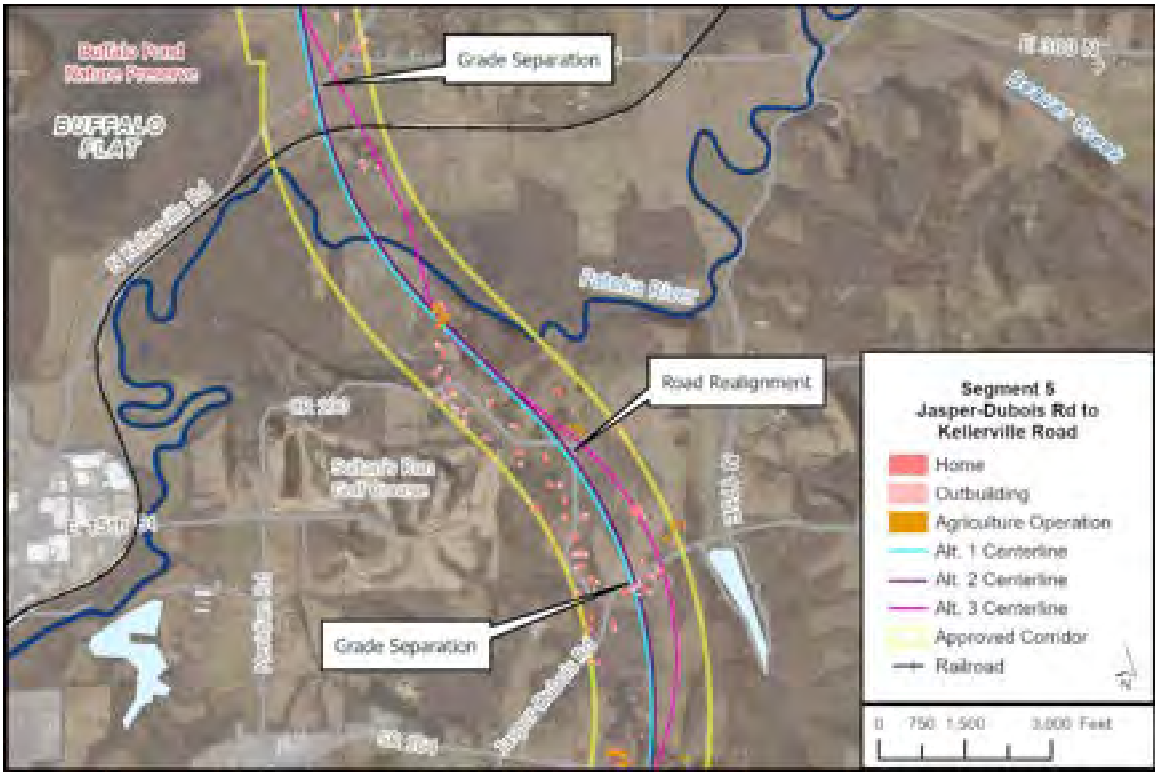
- **Buffalo Pond Nature Preserve.** The Buffalo Pond wetland exists along the western edge of the approved MSC study corridor. It is a dedicated nature preserve managed by the Indiana Department of Natural Resources as Buffalo Pond Nature Preserve, which is primarily closed to the public. All alternatives avoid the Nature Preserve. The presence of this Nature Preserve guided the location of the corridor in the Tier 1 EIS. There are multiple constraints which dictated the approved corridor in this area. These include the Patoka River crossing, the Dubois County Railroad and Kellerville Road. See **Figure 17**.
- **Patoka River and Railroad Crossing. Alternatives 1** and **2** generally cross the Patoka River in the same location, which provides for a more desirable skew between the river channel and the MSC. **Alternative 3** crosses the river at a less desirable location when considering river channel skew, but a more desirable location when considering floodway encroachment length. The Patoka River floodway encroachment lengths for **Alternatives 1** and **2** are approximately 2,800 feet; whereas **Alternative 3's** encroachment length is approximately 1,500 feet. This results in shorted bridge lengths for **Alternative 3**. **Alternatives 1** and **2** also have a more desirable skew angle at the Dubois County Railroad grade separation. See **Figure 17**. Both **Alternative 2** and **Alternative 3** will be carried forward into the draft NEPA document. Bridge placements and lengths for both alternatives will be refined.

Figure 17: Buffalo Flats Wetland, Patoka River and Railroad Crossing



- **Access Considerations.** Local officials have requested that traffic across the MSC be maintained at Jasper-Dubois Road and Kellerville Road with either an access point or a grade separation. All alternatives currently include grade separations between these roadways and the MSC. All alternatives require CR 190 N to be realigned in order to maintain connectivity. All alternatives also require consideration of potential for land-locking properties. See **Figure 18**.

Figure 18: Access Considerations

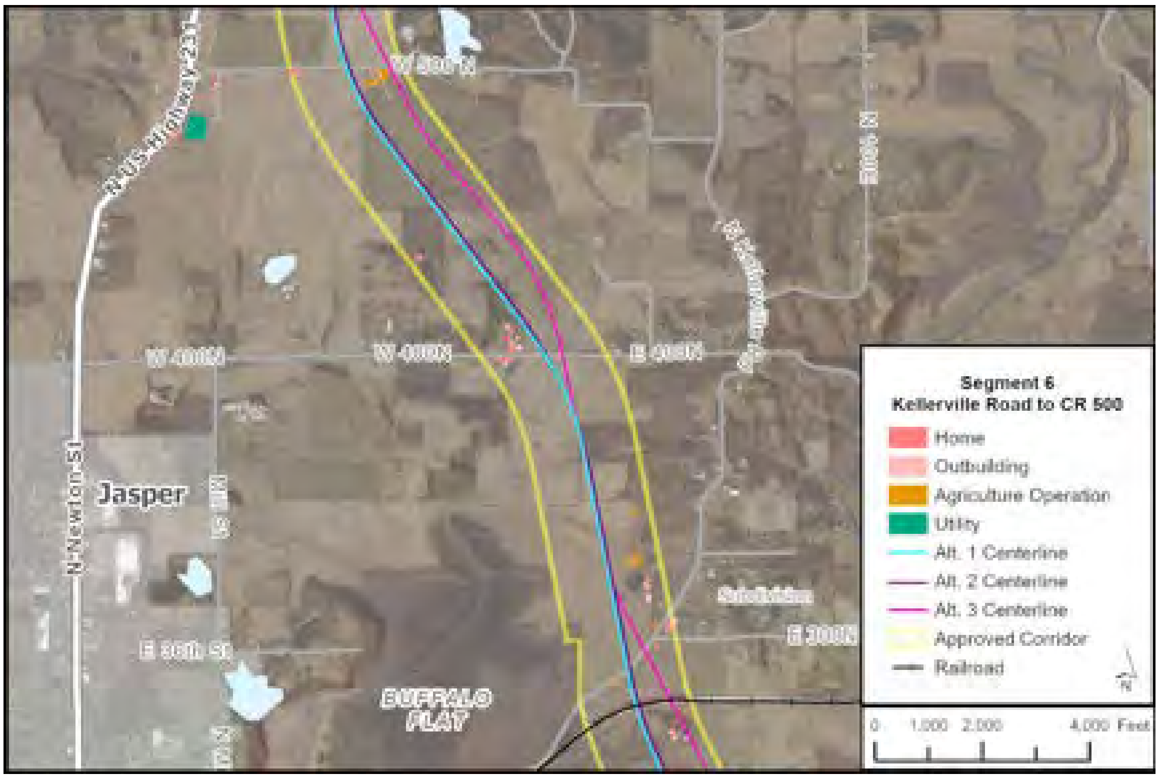


4.3.6 Segment 6 – North of Kellerville Road to North of US 231

The alignment of MSC from just north of Kellerville Road to US 231 is primarily driven by the following elements:

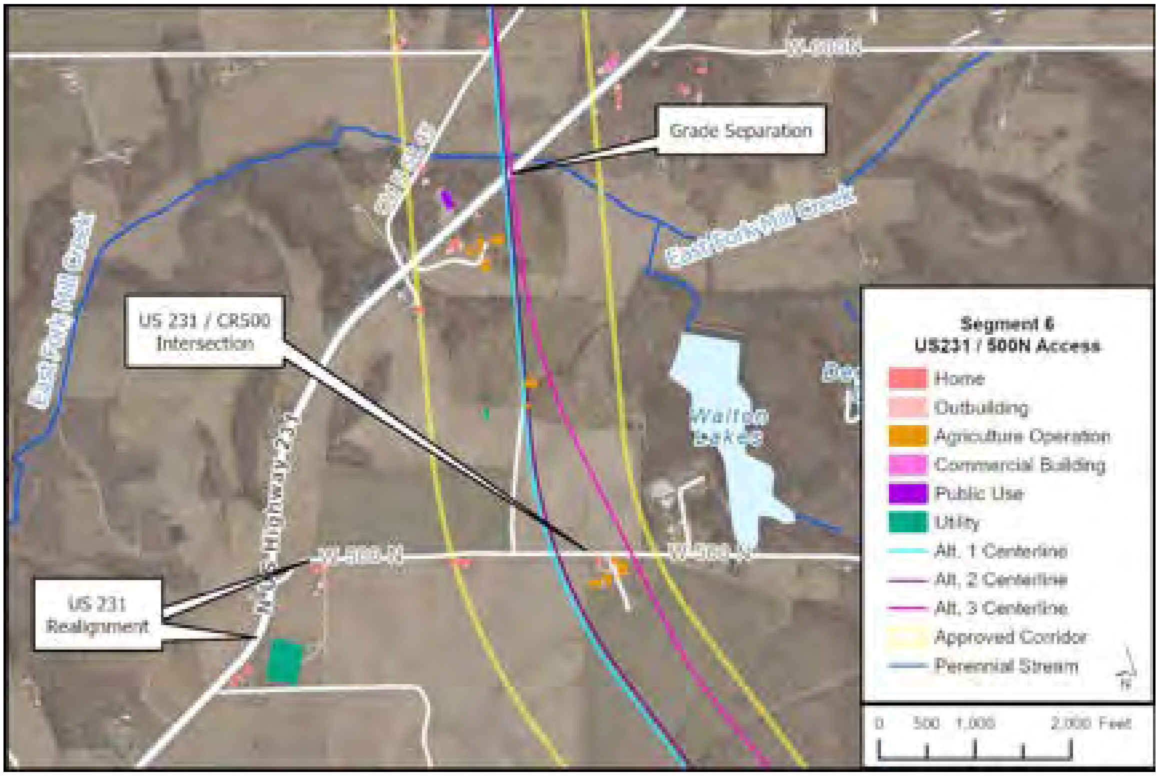
- **Relocation Minimization.** Clusters of residential dwellings are immediately adjacent to Kellerville Road and CR 400 N. There is a residential subdivision located immediately adjacent to, but outside of, the approved study corridor east of Kellerville Road and north of CR 300 N. **Alternatives 1** and **2** generally follow the same alignment while **Alternative 3** avoids some residential dwellings along CR 400 N, reducing relocations by two. See **Figure 19**.

Figure 19: Relocation Minimization



- **Access Considerations.** Access on this segment of the MSC is being considered at CR 500 N or existing US 231 (See Segment 7 Description). Access at CR 500 N requires realigning existing US 231. Existing US 231 would be realigned to follow the CR 500 N alignment. A curved roadway would connect the existing US 231 alignment to the existing CR 500 N alignment. Northbound traffic on existing US 231 will be rerouted to the MSC. See **Figure 20.**

Figure 20: Access Options



4.3.7 Segment 7 – North of US 231 to White River

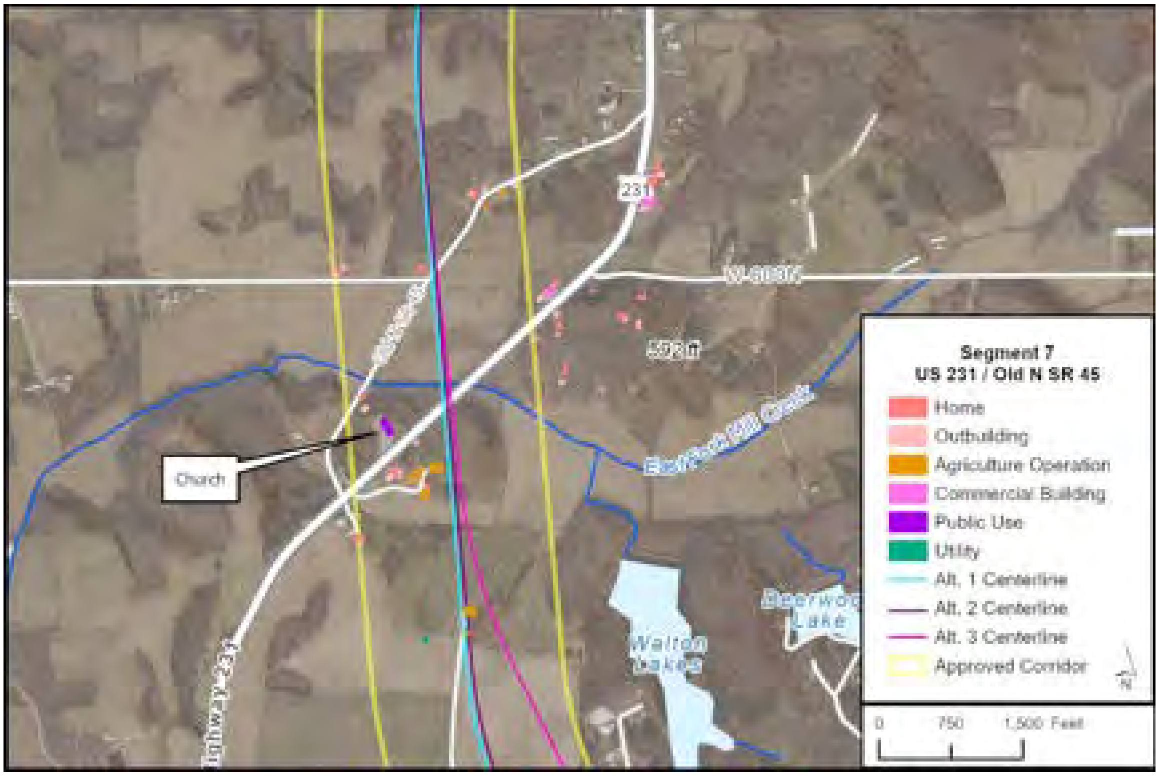
The alignment of MSC from US 231 to the White River is primarily driven by the following elements:

- **Existing White River Bridge.** All alternatives end at the south end of the existing US 231 bridge. The radius of the incoming horizontal curve to the bridge must allow a transition to the pavement of the existing bridge approach. This restricts alignment choices immediately to the west and north of Haysville. All alternatives generally follow the same alignment in this area. See **Figure 21.**

Figure 21: Alignment at Existing White River Bridge

- **Dwelling Impacts.** In addition to dwellings within and adjacent to Haysville, a cluster of dwellings exists along existing US 231 near Old SR 45. **Alternatives 1, 2** and **3** all impact the same dwellings. See **Figure 22**.

Figure 22: Residences Along Existing US 231



- **Access Considerations.** Due to the proximity of dwellings where the MSC crosses existing US 231 and the presence of the Mill Creek Floodway, all access options propose grade separating MSC and existing US 231. Access in the vicinity of the Haysville area is proposed at either Haysville Road or at CR 600 N. If access is provided at Haysville Road, SR 56 will need to be rerouted through Haysville in order to perpetuate connectivity of the state highway system. If access is provided at CR 600 N, existing US 231 and CR 600 N will need to be realigned in order to provide efficient access. The Haysville Fire Department provides fire service to the north to southern Martin County. Adverse travel to an access point at CR 600 N is undesirable for the fire department. Emergency access for emergency vehicles is recommended at the north end of Haysville to reduce response times to southern Martin County. Perpetuating traffic across the MSC at Haysville Road is desired by local officials. If access is not provided at Haysville Road then local officials request that it be grade separated. See **Figure 23**.

Figure 23: Access Considerations/Options

4.4 NEPA Document Alternatives

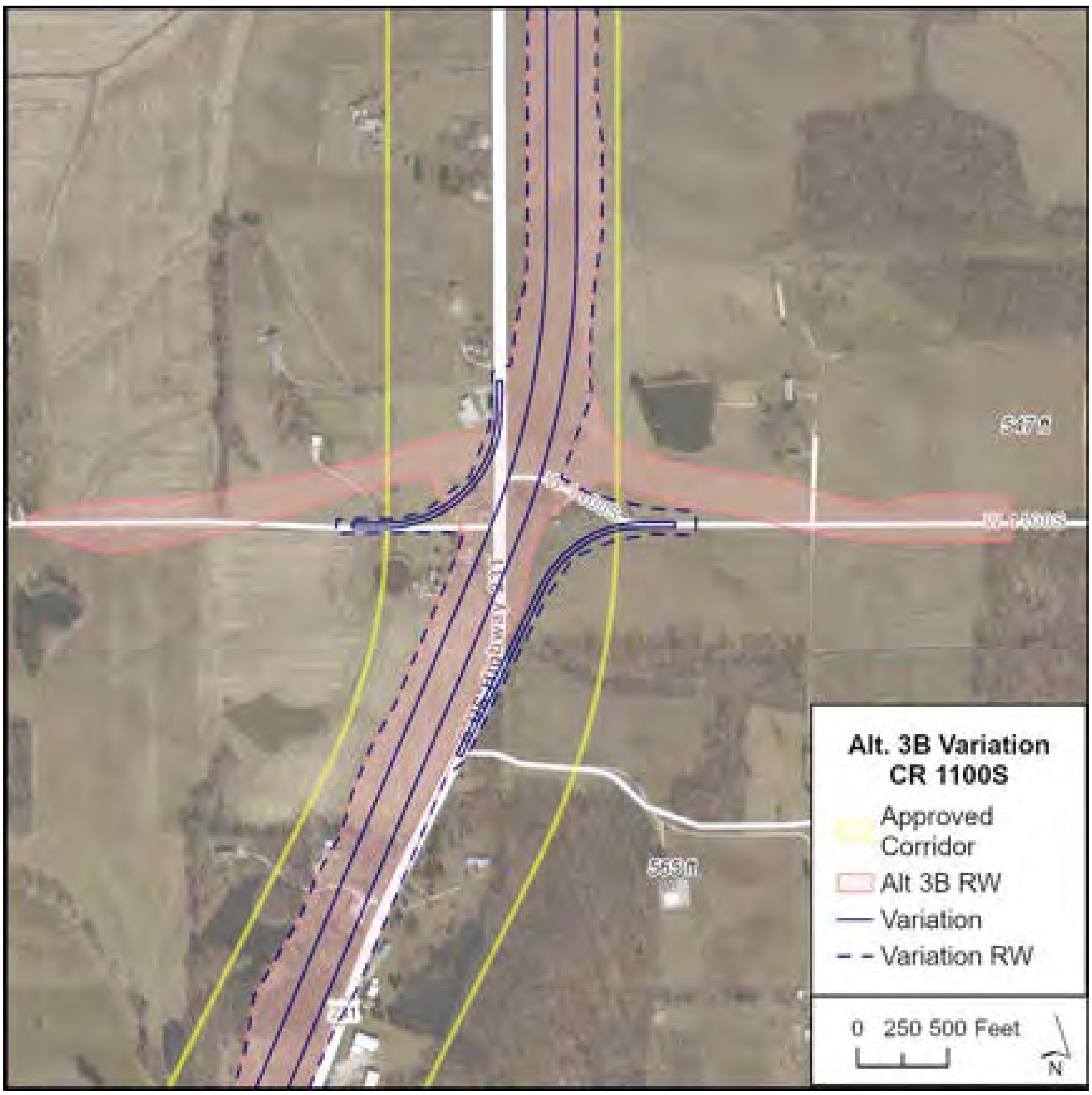
Section 4.2 identified **Alternative 2B** and **Alternative 3B** as alternatives to be carried forward into the Draft NEPA document. The following sections summarize the major variations of these alternatives which will be further evaluated in the Draft NEPA document. These variations may be modified or additional variations may be identified during further detailed studies. These modifications and additions will be documented in the Draft NEPA document.

The listing of access locations for **Alternative 2B** and **Alternative 3B** are found in **Table 4** and **Table 5**, respectively.

4.4.1 Variation 1 - Elimination of Access at CR 1100 S

By eliminating direct access to MSC at CR 1100 S the opportunity exists to reduce relocations. This variation will incorporate alternative access connectivity to provide connections for CR 1100 S both east and west of MSC connecting to existing US 231 to provide local access. Additionally, CR 1100 S no longer becomes a grade controlling feature for MSC; thus, providing additional flexibility for horizontal and vertical alignment refinements. This added flexibility may allow for earthwork to be better balanced. **Figure 24** shows this location.

Figure 24: Potential Elimination of Access at CR 1100 S



4.4.2 Variation 2 – County Road 400S and Hunley Creek Crossing

All alternatives cross Hunley Creek and the Unnamed Tributary to Hunley Creek in the same general location. A variation to the mainline alignment and access planning could allow for additional cost and impact evaluations at the floodway crossings. The Alternatives 2B and 3B access plans included a local connection between the three local roads crossed in this area (CR 400 S, CR 130 W and CR 375 S) with MSC connectivity being provided via new connection that would extend to Phoenix Drive at its intersection with existing US 231. Incorporation of access variations to eliminate some or all of these access connections as well as potential to modify connectivity to the MSC will be further evaluated in the alternatives carried forward. **Figure 25** portrays this location.

Figure 25: CR 400 S and Hunley Creek Crossing

4.4.3 Variation 3 – SR 162/Schnellville Road Access

Alternatives 2B and 3B provide a quadrant roadway intersection in the northeast quadrant of the intersection of MSC and Schnellville Road with a revised connection of Schnellville Road to SR 162 that will provide connectivity to traffic on SR 162 to access MSC. Additional variations for this access will provide a quadrant roadway intersection in the southeast quadrant of the intersection to reduce impacts to the existing homes along Schnellville Road and provide additional impact minimization.. **Figure 26** portrays this location.

Figure 26: SR 162/Schnellville Road Access

4.4.4 Variation 4 – SR 162 to SR 164 Alignments

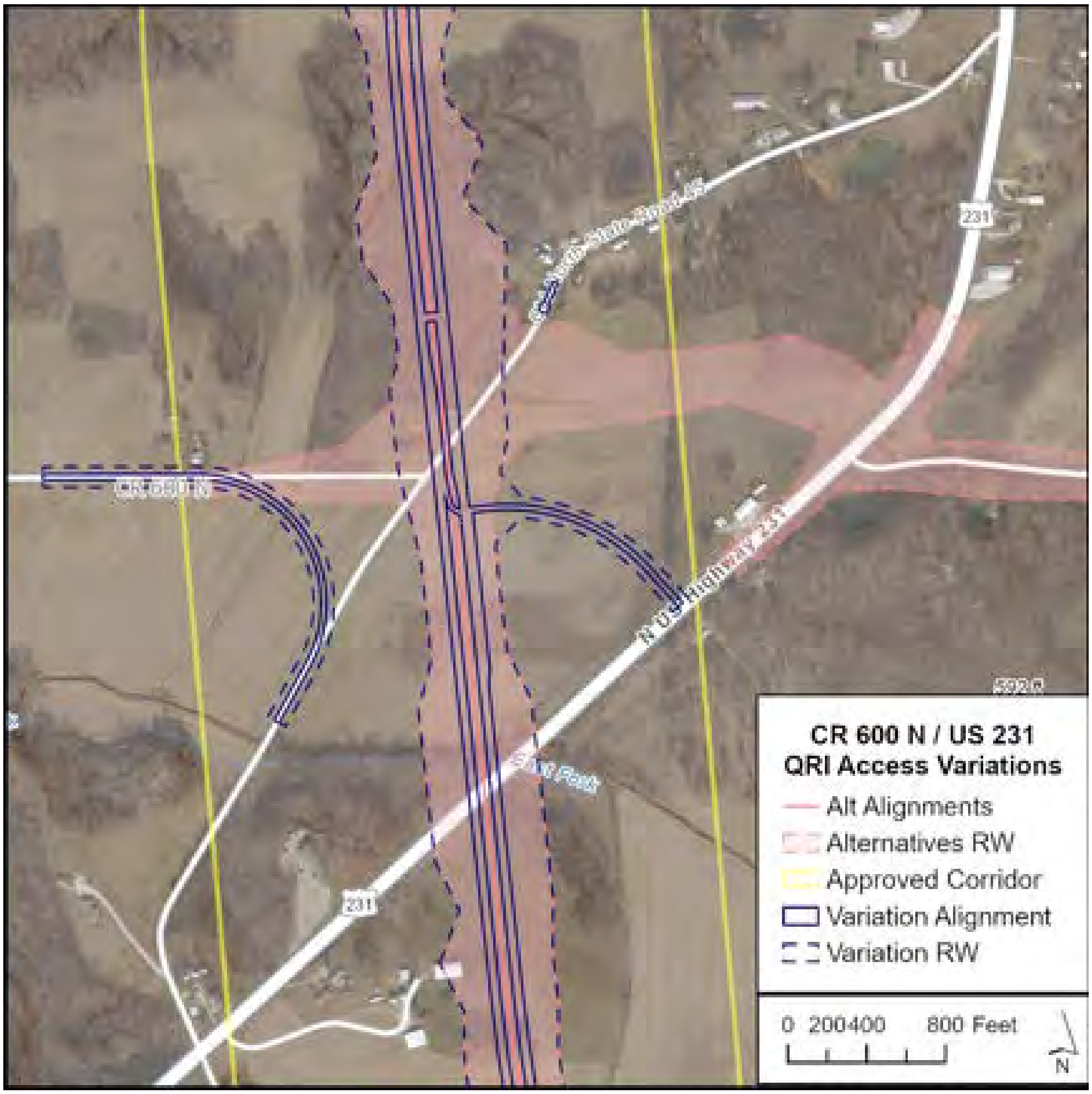
Alternatives 2B and 3B cross Schnellville Road near existing homes and impact a historic cabin which is likely to be identified as eligible for listing on the National Register of Historic Places with the current alignments. The historic cabin and associated structures are approximately 0.54 miles south of SR 164. Alignment variations to **Alternatives 2B and 3B** in this segment will be developed to provide avoidance alternatives both to the east and to the west that avoid impacts to the historic cabin. **Figure 27** portrays this location.

Figure 27: SR 162 to SR 164 Alignments

4.4.5 Variation 5 – Quadrant Roadway at US 231

All access options grade separate MSC at US 231 south of Haysville and provide access to MSC via an extension of CR 600 N. This variation provides access at US 231 through the use of a new quadrant roadway intersection connecting to existing US 231 closer to the MSC crossing and providing the connection for US 231 traffic. **Figure 28** portrays this location.

Figure 28: Quadrant Roadway at US 231

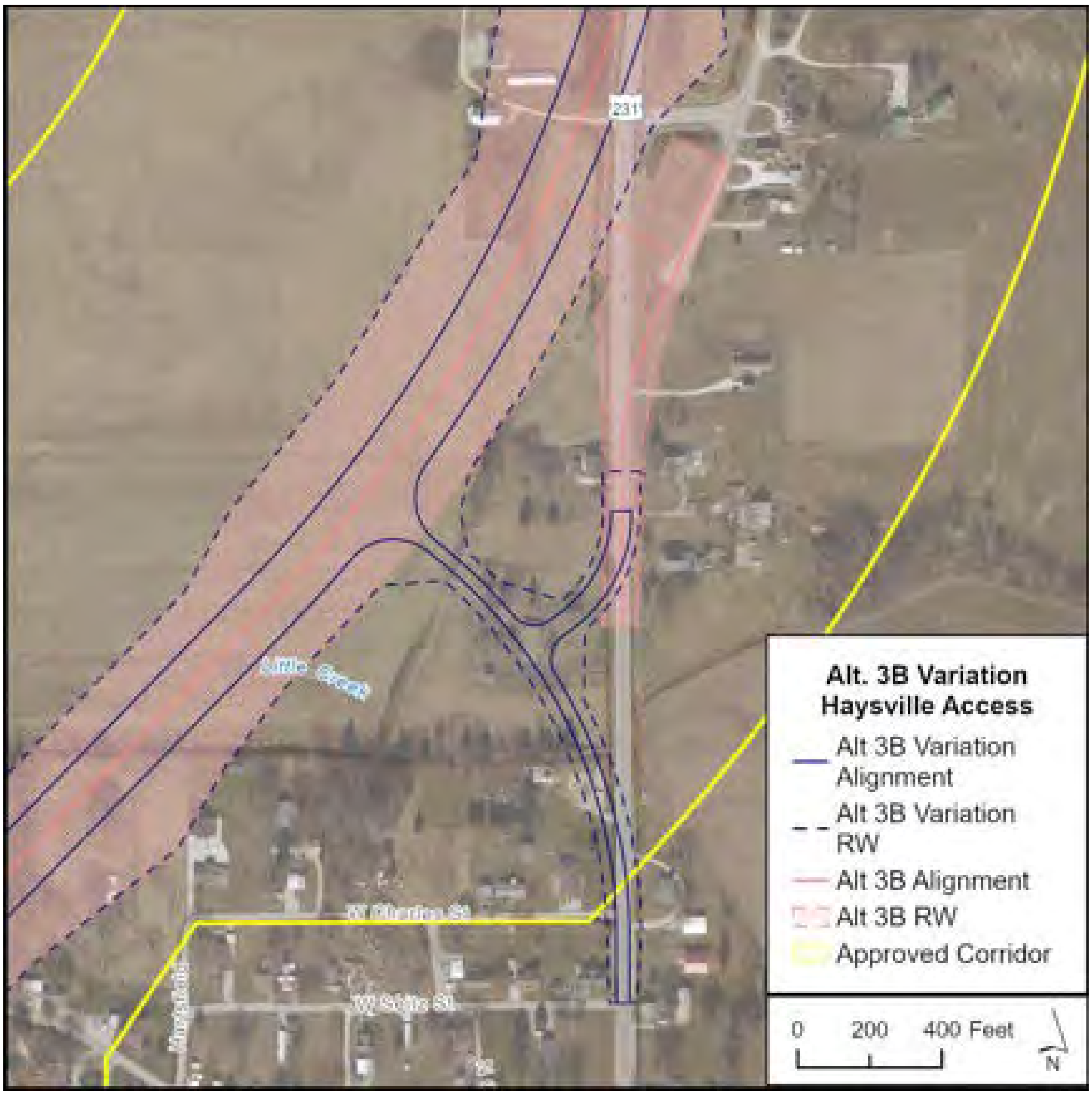


4.4.6 Variation 6 – Haysville Access

Alternatives 2B and 3B provide access south of Haysville in the vicinity of US 231 and CR 600 N and a grade separation at Haysville Road. This variation provides access off of US 231 just south of the existing White River Bridge on the north side and more proximate to Haysville. This will provide a more direct access for Haysville and improve emergency response.

Figure 29 portrays this location.

Figure 29: Haysville Access



4.5 Alternatives Carried Forward

This screening report has identified **Alternative 2B** and **Alternative 3B** as the alternatives to be carried forward for detailed study in the Draft NEPA document. The Draft NEPA document will consider variations to these alternatives, as described in the previous section (**Section 4.4**).

These alternatives will consider primarily potential changes in access, with additional alignment variations for avoidance of a historic log cabin. Access variations include alternative access locations or connections to different local roads, as well as how to configure access for the same connecting roadways.

This Draft Screening of Alternatives report is being provided for input from the public, elected officials, agencies and other stakeholders. It will be available for review and comment during a public input period. This review period will include a public information meeting where these recommendations are presented. This input process is a vital part of this NEPA study.

It is anticipated that public comment will inform the development of other alternative variations to **Alternative 2B** and **Alternative 3B** for consideration in the Draft NEPA document.

SCREENING OF ALTERNATIVES PURPOSE & NEED APPENDIX

Mid-States Corridor
Tier 2 Environmental Study
Section 2
I-64 at Dale to SR 56 at Haysville

Prepared for

Indiana Department of Transportation

OCTOBER 2025

Prepared by

Mid-States Project Consultant

TABLE OF CONTENTS

Introduction 4
Facility Type Assessment 4
Facility Type Comparison 5
Goal 1 - Business Market Accessibility – Travel Time Savings 7
Goal 1 - Business Market Accessibility – Labor Force Access 8
Goal 2 – Freight Travel Efficiencies 9
Goal 7 – Improved Intermodal Access 10
Summary 11

Facility Type Safety Comparison Addendum

Introduction

The Purpose and Need is a basic element of any analysis under the National Environmental Policy Act (NEPA). It identifies the problem(s) which need to be addressed (the "Need(s)") and identifies how alternatives are evaluated for their ability to satisfy the needs (the Purpose). The Tier 1 Final Environmental Impact Statement and Record of Decision (FEIS/ROD) determined the Purpose and Need for the entire project. See **Tier 1 Purpose and Need**. The Tier 2 Purpose and Need for this project is a refinement of the Tier 1 Purpose and Need.

For details see the Tier 2 Purpose and Need. The statement of Purpose and Need for this project is:

> ***The purpose of this project is to provide improved system linkages from Dubois County to major business destinations and freight intermodal centers, improve employee access to Dubois County businesses, increase the efficiency of freight operations and complete Section of Independent Utility 2 of the MSC, as determined in the Tier 1 Record of Decision.***

The Tier 1 FEIS identified significant needs to improve regional accessibility, especially for freight movements. These freight movements are centered in Dubois County, which is a major center of manufacturing and logistics employment.

The Tier 2 Purpose and Need identifies project goals. These goals are based upon specific elements of the Purpose and Need. Each goal has performance measures that identify how alternatives perform in addressing project needs.

Some goals are identified as core goals. To be selected, an alternative must provide adequate performance on all core goals. The Purpose and Need requires that an alternative have at least 50 percent of the performance of the best-performing alternative on a goal for its performance to be adequate. See **Table 6-1** in the Tier 2 Purpose and Need. This table is reproduced at the end of this document.

Any alternative will provide some level of performance on a Purpose and Need measure. This 50 percent threshold was identified as a reasonable criterion in the Tier 1 EIS. Any alternative which failed to meet it indicates that another alternative overall has more than twice the performance on core goals. In the Tier 1 EIS, this criterion was used to determine that two of the five alternatives considered provided inadequate performance on the Purpose and Need. This 50 percent criterion is carried over to this Tier 2 NEPA document.

The performance measures for the Purpose and Need core goals are calculated using traffic assignments from the Mid-States Corridor travel demand model. This model forecasts traffic within the project's 12-county Study Area for the 2050 forecast year. **Figure 1-1** in the Purpose and Need depicts this Study Area. Traffic assignments from each alternative are analyzed to compute the performance measures associated with each goal.

Facility Type Assessment

The decision about a facility type for the Mid-States Corridor (MSC) project was not made in the Tier 1 Final Environmental Impact Statement (FEIS) and Record of Decision (ROD). The ROD approved consideration of both an expressway facility type and Super-2 facility type for alternatives in Tier 2 NEPA studies. The Tier 1 ROD defined a Super-2 as a highway with one travel lane in each direction, a passing/auxiliary lane the length of the alternative and access primarily provided via at-grade intersections. The Tier 1 ROD defined an expressway as a highway with multiple travel lanes (at least two) in each direction of travel, a median separating roadways in opposite directions and access provided by a combination of interchanges and at-grade intersections with state and local roads.

This Purpose and Need Appendix compares the performance of these two facility types to support determination of a preferred facility type for this Tier 2 NEPA study in Section of Independent Utility (SIU) 2.

Facility Type Comparison

To compare the performance of these two facility types, traffic assignments[1] were run for representative expressway and Super-2 alternatives. For this comparison, the alignment and access points for **Alternative 2A** were used.[2] They had identical access locations, which are depicted in **Figure 1**. For each facility type, traffic assignments were conducted for two versions, which represented a range of potential configurations for each facility type. ***This range of potential configurations allows the potential range of performance for each facility type to be estimated.***

For the expressway facility type, **Version 1** (**Expy - v. 1**) assumed the project also was built as an expressway in SIUs 3 through 5 in Martin, Daviess and Greene counties. **Version 2** (**Expy - v. 2**) assumed that the project was completed as a Super-2 in SIUs 3 through 5.

For the Super-2 facility type, both versions assumed that the facility also was completed as a Super-2 in SIUs 3 through 5. **Version 1** (**Super-2 - v. 1**) assumes that access in SIU 2 is provided by traditional at-grade intersections. **Version 2** (**Super-2 - v. 2**) assumes that all access points are roundabouts. Roundabout intersections for the Super-2 facility type have been encouraged by INDOT Traffic Engineering as a safety measure for this potential new two-lane facility.

In addition, a comparison of the relative safety performance of the two facility types is depicted in an addendum to this Appendix.

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[1] A “traffic assignment” is a forecast of traffic flows on the area highway network, using the project’s travel forecasting model. The travel forecasting model assigns traffic flows to the future year highway network. The highway network is coded to represent future year alternatives, such as a Super-2 or expressway highway with specific access locations.

[2] **Alternative 2A** was chosen for this comparison prior to identifying **Alternative 2B** and **Alternative 3B** to be carried forward for analysis in the draft NEPA document. The Super-2 and expressway facility types for **Alternative 2A** have identical access locations.

Figure 1 – Access Points for Representative Expressway and Super-2 Alternatives

The following sections compare the performance on core goals for the two variations of the expressway and Super-2 facility types. These core goals and their associated performance measures were described in the Draft Purpose and Need for this project. It is available on the project website.[3]

Goal 1 - Business Market Accessibility – Travel Time Savings

One set of **Goal 1** performance measures computes travel time savings between two locations in Jasper and key business destinations. The two origins are downtown Jasper and the northeastern Jasper industrial area. These key business destinations were identified in the Tier 1 study and are shown in **Table 1** and **Table 2**. In the Tier 1 study, this performance measure was computed only for an origin point in downtown Jasper. The level of detail in the Tier 1 traffic model did not offer a meaningful distinction between the northeast Jasper industrial area and downtown Jasper.

Table 1 – Reduction in Travel Time from Downtown Jasper (Minutes)

Destination	Super-2 – v. 1	Super-2 – v. 2	Expy. – v. 1	Expy – v. 2
NSA Crane	0	0	2	1
Bloomington	0	0	3	1
Rockport	1	0	1	1
Beford	0	0	0	0
Washington	1	0	2	1
Indianapolis	0	0	3	1
Chicago	0	0	3	1
Louisville	1	0	1	1
Total	**3**	**0**	**15**	**7**

Table 2 – Reduction in Travel Time from Northeast Jasper (Minutes)

Destination	Super-2 – v. 1	Super-2 – v. 2	Expy. – v. 1	Expy – v. 2
NSA Crane	0	0	2	1
Bloomington	0	0	3	1
Rockport	3	2	4	4
Beford	0	0	0	0
Washington	1	0	2	1
Indianapolis	0	0	3	1
Chicago	0	0	3	1
Louisville	3	2	4	4
Total	**7**	**4**	**21**	**13**

[3] The Draft Purpose and Need Report is available at https://midstatescorridor.com/wp-content/uploads/2025/04/Combined_Purpose_Need.pdf.

Table 3 shows the total travel time savings between both origins and all destinations.

Table 3 – Reduction in Travel Time – Both Origins (Minutes)						
All Destinations	Super-2 – v. 1	Super-2 – v. 2	Super-2 Avg.	Expy. – v. 1	Expy. – v. 2	Expy – Avg.
Total – All Trip Pairs[4]	**10**	**4**	**7**	**36**	**20**	**28**

Two of these destinations (Chicago and Louisville) are located outside of the Study Area. For these destinations, travel time savings were measured to the external stations in the travel model which these trips would use. Travel time beyond those external stations is assumed to be equal for facility types.

Both expressway assignments provide significantly greater travel time savings than the Super-2 assignment. The average total savings for the Super-2 assignment (7 minutes) is 25 percent of the average of the two expressway assignments (28 minutes).

Goal 1 - Business Market Accessibility – Labor Force Access

The other set of **Goal 1** performance measures calculates the increase in labor force access to both downtown Jasper and downtown Huntingburg. Labor force was estimated using the number of residents in the workforce[5] in each Traffic Analysis Zone.[6] In the Tier 1 study, a 30-minute threshold was used to measure labor force access. Based on research[7] identified since the Tier 1 FEIS, a 40-minute threshold will be used in this Tier 2 study.

Table 4 provides the increase in labor force access from downtown Jasper and downtown Huntingburg.

Table 4 – Increase in Workforce Within 40 Minutes						
Origin	Super-2 – v. 1	Super-2 – v. 2	Super-2 Avg.	Expy. – v. 1	Expy. – v. 2	Expy – Avg.
Downtown Jasper	880	0	440	2,710	1,610	2,160
Downtown Huntingburg	1,560	380	970	3,500	2,740	3,120
Total – Both Locations	**2,440**	**380**	**1,410**	**6,210**	**4,350**	**5,280**

Both expressway assignments provide significantly greater increases in labor force access than the Super-2 assignment. The average increase in labor force access (1,410 persons) for the Super-2 facility type is 27 percent of that for the expressway facility type (5,280 persons).

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[4] This represents total trip savings to eight destinations. Previous tables provide travel time savings to individual destinations.

[5] Workforce is based upon the LEHD Origin-Destination Employment Statistics (LODES) of the US Census Bureau.

[6] A Traffic Analysis Zone (TAZ) is a small geographic unit in the traffic forecasting model which is based on US Census geography. Trips assigned in the model are assigned to begin and end in a specific TAZ.

[7] Economic Development Research Group, et al. Interactions between Transportation Capacity, Economic Systems, and Land Use: Final Report. Strategic Highway Research Program, Project C03, National Academies Press, 2011. This report analyzed over 100 case studies.

Goal 2 – Freight Travel Efficiencies

The MSC travel demand model has two assignments, one for auto and the other for multi-unit trucks. Single-unit trucks are included in the auto assignment. The key performance measure[8] for **Goal 2** is annual truck-hour savings for multi-unit trucks (FHWA vehicle classifications 9 through 13). Movement of multi-unit trucks is a key component of business efficiencies for the large manufacturing and distribution businesses in Dubois County.

Table 5 compares the annual truck-hour savings for the Super-2 and expressway facility types. These savings are realized for all truck trips forecasted in the 12-county Mid-States Corridor Study Area.

Table 5 – Reduction in Truck Vehicle Hours of Travel						
	Super-2 – v. 1	Super-2 – v. 2	Super-2 Avg.	Expy. – v. 1	Expy. – v. 2	Expy – Avg.
Annual Truck Hours Saved	**67,410**	**34,480**	**50,945**	**106,110**	**87,900**	**97,005**

These savings have increased significantly from those calculated in the Tier 1 FEIS. These factors led to these upward trends in truck-hour savings.

- The Tier 2 traffic model network is more detailed than the Tier 1 traffic model network. This provides additional roads to which truck trips may be assigned.
- This more detailed network resulted in higher proportions of truck traffic being diverted to the MSC in the Build scenario. See **Table 6** and **Table 7** below and the discussion following.
- In the Tier 1 analysis, annual truck-hour savings were estimated by multiplying daily truck-hour savings by 300. For this Tier 2 analysis, staff identified FHWA guidance which provided that for trucks, annual traffic levels be calculated by multiplying daily traffic by 365.[9] This increased the annual truck VHT estimates for both the No Build and Build scenarios.
- This more detailed network resulted in higher overall truck speeds in the Tier 2 traffic assignments. In the Tier 1 expressway traffic assignment for RPA P (the Tier 1 selected alternative), the average truck speed was 55 mph. The Tier 2 traffic assignment for expressway version 1 was 63.6 miles per hour.

Table 6 – Forecast Year (2045) Truck Volumes – Tier 1 Scenarios										
	No Build		Expressway (RPA P)				Super-2 (RPA P)			
Segment	MSC	US 231	MSC	US 231	Total	Pct. MSC	MSC	US 231	Total	Pct. MSC
North of Loogootee	N/A	1,288	1,346	199	1,545	87%	1,383	195	1,578	88%
South of SR 162	N/A	2,184	1,223	985	2,208	55%	1,407	1,081	2,488	57%
South of Huntingburg	N/A	2,256	1,091	1,330	2,421	45%	1,190	1,395	2,585	46%

[8] There is a second performance measure for **Goal 2** which is not used in this comparison. That performance measure compares how well different combinations of access locations on the MSC serve known concentrations of freight trip origins and destinations in Jasper and Huntingburg. Both facility type assignments have identical MSC access points. For that reason, this performance measure is not used in this comparison.
[9] *FHWA Traffic Data Computation Method Pocket Guide*. 2018. Annual Average Daily Truck Traffic (AADTT) – p. 8.

Table 7 – Forecast Year (2050) Truck Volumes – Tier 2 Scenarios										
	No Build		Expressway – v. 1				Super-2 – v. 1			
Segment	MSC	US 231	MSC	US 231	Total	Pct. MSC	MSC	US 231	Total	Pct. MSC
North of Loogootee	N/A	1,315	1,284	44	1,328	97%	1,272	45	1,317	97%
South of SR 162	N/A	2,127	1,844	230	2,088	89%	1,668	242	1,930	87%
South of Huntingburg	N/A	1,667	1,632	54	1,902	97%	1,688	54	1,742	97%

Table 6 and **Table 7** show that in the Tier 2 traffic assignments, higher volumes of truck traffic are diverted from US 231 to MSC. In the Tier 1 analysis near Jasper and Huntingburg, about one-half of truck traffic in the Build scenario remains on US 231 for both the expressway and Super-2 assignments. In the Tier 2 analysis Build scenario, less than 15 percent of the truck traffic near Jasper and Huntingburg remains on US 231 for either facility type.

This increased diversion of traffic to the MSC in the Tier 2 traffic assignments is another factor explaining the increase in truck VHT savings.

Goal 7 – Improved Intermodal Access

Goal 7 performance measures computed travel time savings between two locations in Jasper and key intermodal destinations. The two origins were downtown Jasper and the northeastern Jasper industrial area. These destinations were identified in the Tier 1 study and are shown in **Table 8** and **Table 9**. In the Tier 1 study, this performance measure was computed only for an origin point in downtown Jasper. The level of detail in the Tier 1 model did not offer a meaningful distinction between the northeast Jasper industrial area and downtown Jasper.

Table 8 – Reduction in Travel Time from Downtown Jasper (Minutes)				
Destination	Super-2 – v. 1	Super-2 – v. 2	Expy. – v. 1	Expy – v. 2
CSX Avon Yard	0	0	3	1
Senate Ave. Yard (Indianapolis)	0	0	3	1
Louisville Airport	0	1	1	1
Indianapolis Airport	0	0	3	1
Total	**0**	**1**	**10**	**4**

Table 9 – Reduction in Travel Time from Northeast Jasper (Minutes)				
Destination	Super-2 – v. 1	Super-2 – v. 2	Expy. – v. 1	Expy – v. 2
CSX Avon Yard	0	0	3	1
Senate Ave. Yard (Indianapolis)	0	0	3	1
Louisville Airport	3	2	4	4
Indianapolis Airport	0	0	3	1
Total	**3**	**2**	**13**	**7**

Table 10 shows the total travel time savings between both origins and all destinations.

Table 10– Total Reduction in Travel Time – Both Origins (Minutes)						
All Destinations	Super-2 – v. 1	Super-2 – v. 2	Super-2 Avg.	Expy. – v. 1	Expy – v. 2	Expy Avg.
Total – All Trip Pairs	**3**	**3**	**3**	**23**	**11**	**17**

All destinations are located outside of the Study Area. Travel time savings were measured to the external stations in the travel model which these trips would use. Travel time beyond those external stations is assumed to be equal for all facility types.

Both expressway assignments provide significantly greater travel time savings than the Super-2 assignment. The average savings for the Super-2 assignment (2 minutes) is 12 percent of the average of the two expressway assignments (17 minutes).

Summary

Table 11 summarizes the relative performance of the representative Super-2 and expressway traffic assignments on the project core goals, using an index approach. The index for the Super-2 reflects the ratio of its performance to the average performance of the expressway variations on each group of performance measures. The overall index for the Super-2 facility type is 0.30 compared to the expressway facility type.

Table 11 – Overall Performance Comparison, Super-2 and Expressway Assignments									
Measure	Detail	Total Minutes Saved						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Business Center Access	Downtown, NE Jasper Combined	10	4	7	36	20	28	0.25	1.00
Intermodal Access	Downtown, NE Jasper Combined	3	3	3	23	11	17	0.18	1.00
Measure	Detail	Increase in Labor Force Access (Persons)						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Workforce Increase within 40 Minutes	40 minutes Downtown Jasper and Huntingburg Combined	2,440	380	1,410	6,210	4,350	5,280	0.27	1.00
Measure	Detail	Annual Truck Hours Saved						Index	
		Super-2 v. 1	Super-2 v. 2	Super-2 Avg.	Expy. v.1	Expy. v. 2	Expy. Avg.	Super-2 Avg.	Expy. Avg.
Annual Truck Hours Saved	Truck Hours Saved in 12-County Study Area	67,410	34,480	50,945	106,110	87,900	97,005	0.53	1.00
AVERAGE – All Indices								0.30	1.00

The Purpose and Need establishes performance thresholds alternatives must achieve to satisfy the project's Purpose and Need. **Table 6-1** from this document is reproduced below. It requires that an alternative provide at least one-half the benefit of the best-performing alternative across all core goals in order to satisfy the Purpose and Need.

The measures which identify "Minutes Saved" use multiple destinations. Based upon the Tier 1 Study, travel time savings are identified to eight business centers and four intermodal centers. Portions of some trips use common paths. For example, trips to Bloomington and Indianapolis share a common path between Jasper and Bloomington. Since these are different trips made for different purposes, counting their time savings separately is reasonable.

In the case described, some might regard using both travel time savings as "double-counting." If trips using common paths were combined so that he time savings on a given path is counted only once, the overall performance index would be 0.41 instead of 0.30. This remains well below the one-half threshold.

Table 11 shows that the performance of the Super-2 facility type falls well below this 0.50 threshold. See highlighted text. For the Super-2 facility type to adequately satisfy the Purpose and Need, it would have to perform at least half as well as the expressway facility type. This would correspond to a summary index of 0.50 in **Table 11**. The overall performance index for the Super-2 facility type is only 0.30. In addition, only one of the four categories of core goal performance (annual truck hours saved) has an index over 0.50.

By a significant margin, the Super-2 facility type fails to satisfy the project's Purpose and Need.

Table 6-1: Comparison of Core and Secondary Goals

Descriptor	Core Goals	Secondary Goals
Definition	Outcomes identified as required to be achieved by the project. These are ***fundamental reasons*** for the project.	Represent secondary outcomes.
How Identified	Federal and state transportation planning requirements. Previous planning studies. Technical analyses. Extensive business and stakeholder interviews. These identified ***core goals*** for the project.	Technical analyses. Economic development measures are secondary because transportation is one of several necessary components to support economic development.
Role in Alternative Evaluation	Alternatives must have adequate performance in addressing goals. Adequacy is defined using an index approach. To have adequate performance, an alternative provides at least half the benefit of the best-performing alternative across all core goals.	Performance on secondary goals also are considered in identifying a preferred alternative.

Facility Type Safety Comparison Addendum

The figures and tables on the following page compare the forecasted performance of expressway and Super-2 versions of **Alternative 2A** under two sets of assumptions for each facility type. For both facility types, forecasted annual crashes are computed for standard, at-grade intersections. In addition, forecasted annual crashes for the expressway facility type are computed a facility with Reduced Conflict Intersections (RCIs). Forecasted annual crashes for the Super-2 facility type are computed for a facility with roundabout access. For both comparisons, the crash rates for the Super-2 facility type are significantly higher than for the expressway facility type.

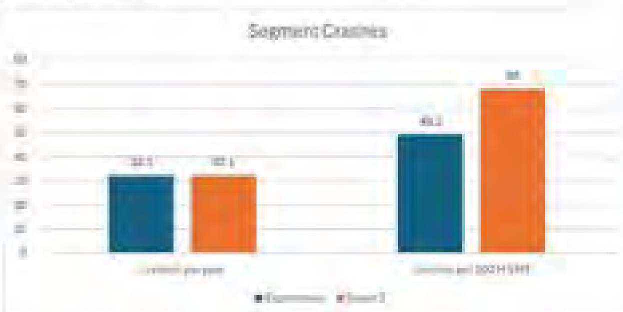
This analysis showed the expressway facility type with 28 percent fewer crashes per 100 million vehicle miles of travel on mainline segments compared to the Super-2 facility type. It also showed the expressway facility type with 29 to 30 percent fewer crashes per million vehicles compared to the Super-2 facility type at access points.[10]

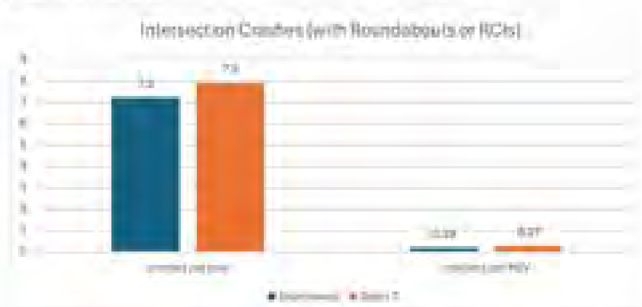
[10] Forecasted crashes on mainline segments were 49 per 100 million vehicle miles on the expressway facility type, versus 68 for the Super-2 facility type. For standard access treatments, forecasted crashes at access points were 0.29 per million vehicles for expressways versus 0.41 for the Super-2 facility type. For enhanced access treatments (reduced conflict intersections for the expressway facility type and roundabouts for the Super-2 facility type), the expressway is forecasted to have 0.19 crashes per million vehicles versus 0.27 for the Super-2.

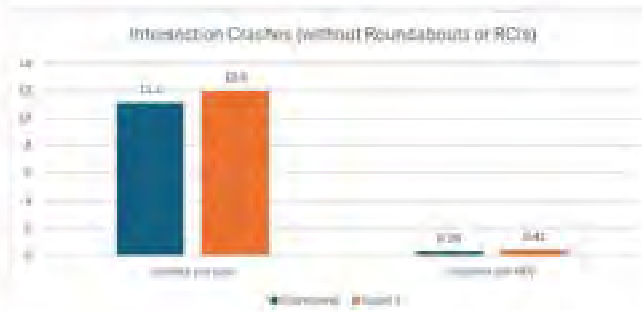
Mid-States Tier 2
HSM Analysis - Alternative 2A

Expressway	
Segments	32.1 crashes per year 49.2 crashes per 100 M VMT
Intersections	11.1 crashes per year 0.29 crashes per MEV
Intersections w/ RCIs	7.2 crashes per year 0.19 crashes per MEV
Total Crashes (Segments + Intersections)	43.2
Total Crashes with RCIs or Roundabouts (Segments + Intersections)	39.3

Super 2	
Segments	32.1 crashes per year 68 crashes per 100 M VMT
Intersections	12.0 crashes per year 0.41 crashes per MEV
Intersections w/ Roundabouts	7.9 crashes per year 0.27 crashes per MEV
Total Crashes (Segments + Intersections)	44.1
Total Crashes with RCIs or Roundabouts (Segments + Intersections)	40







SCREENING OF ALTERNATIVES IMPACT CALCULATION APPENDIX

Mid-States Corridor
Tier 2 Environmental Study
Section 2
I-64 at Dale to SR 56 at Haysville

Prepared for

Indiana Department of Transportation

OCTOBER 2025

Prepared by

Mid-States Project Consultant

TABLE OF CONTENTS

Introduction 4
Key Resource Definitions 4
Key Resource Impact Calculation Methodology 6

Introduction

This appendix provides support information for the analysis of impacts in the Screening of Alternatives Report. It has two main sections. The first section, **Key Resource Definitions**, gives detailed definitions of the resources which are impacted by alternatives. The second section, **Key Resource Impact Calculation Methodology**, documents the impact calculation methodologies and GIS-based analysis procedures used to calculate impacts to these resources.

Key Resource Definitions

Total Right-of-Way – Total Right-of-Way (Right-of-Way is defined as the legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another) includes total acres of right-of-way required for each alternative, including S-Lines proposed for each alternative required for local roadway improvements.

Non-Wetland Forest – Non-Wetland Forest includes all forested areas greater than one-tenth acre in size that do not meet the definition of a wetland. In addition, any streams flowing through the forested areas had their area removed as calculated by the length and the ordinary high water mark width.

Wetlands – Wetlands include all areas that meet all three of the U.S. Army Corps of Engineers (USACE)_wetland criteria (wetland hydrology, hydric soils and hydrophytic vegetation). The wetlands included in this calculation include aquatic bed, emergent, scrub/shrub and forested wetlands. The wetland impacts include both jurisdictional and isolated wetlands. A formal jurisdictional determination request will be submitted to the USACE to determine which wetlands will be jurisdictional (regulated under Section 404 and Section 401 of the Clean Water Act) and which wetlands will be isolated (regulated by the Indiana's Isolated Wetlands Law (IC 13-18-22)). The wetlands have been field verified by environmental professionals with wetland delineation experience, except for those in S-lines outside the corridor, which were collected by aerial photography interpretation and National Wetland Inventory (NWI) map review.

Waters – Waters include lakes, ponds and reservoirs. The water areas have been field verified by environmental professionals, except for those in S-lines outside the corridor, which were collected by aerial photography interpretation and NWI review.

Streams – Streams include all areas that meet the USACE definition of a stream, meaning they contain a bed, bank, and display and ordinary high water mark. The streams included in this calculation include ephemeral, intermittent and perennial streams. The streams have been field verified by environmental professionals, except for those in S-lines outside the corridor, which were collected by aerial photography interpretation due to access limitations. The S-line streams will be field verified during follow up field reviews in the fall of 2025, and impact numbers will be updated.

Floodplains – Floodplains were calculated using the Indiana Department of Natural Resources Best Available Floodplain Data dated April 29, 2025. The floodplain calculation includes both Flood Zone A and Zone AE. Both Flood Zone A and AE represent areas with a high risk of flooding, specifically those areas that are subject to inundation by the 1 percent annual chance flood event (also known as the 100-year flood). The difference between Flood Zone A and AE is that Flood Zone AE has a Federal Emergency

Management Agency (FEMA) defined base flood elevation. Flood Zone A does not have a defined base flood elevation. In addition, the floodplain areas include all regulated floodways. The floodway is defined as the channel of a river or stream and the adjacent land that must remain free of obstructions to allow floodwaters to pass through without increasing the water surface elevation beyond allowable limits.

Agricultural Lands – Agricultural Lands include all areas used for agricultural production, which includes areas required for agricultural operations (barns, grain storage areas, etc.), row crop production areas and pasture/hay production areas. These areas were identified using GIS analysis and time series aerial photography.

Herbaceous/Successional Lands – Herbaceous / Successional Lands include areas that are outside of the Existing Transportation Lands and include non-woody areas or have woody vegetation that do not meet the definition of a forest or wetland. These areas include field and forest edges, grass waterways, stream bank areas, roadsides, old fields and forest opening areas.

Managed Lands – Managed Lands includes all areas that are managed by a government entity or private organization for specific conservation or recreation goals. The following sources were used to identify managed lands, the USGS Gap Analysis Project (GAP) Protected Areas Database of the United States (PAD-US), Indiana Department of Natural Resources Heritage Data, Natural Resource Conservation Service and the Nature Conservancy. All managed lands were evaluated in Tier 1 and determined not to be 4(f) resources. These identifications will be reconfirmed in this Tier 2 study.

Residential Lands – Residential Lands include all areas surrounding a residential home. These areas include the houses, maintained yards, driveways, garages, sheds and other areas directly associated and maintained as part of the residential properties.

Commercial / Industrial Lands – Commercial / Industrial Lands include all areas surrounding a Commercial / Industrial facility. These areas include commercial / industrial buildings, storage buildings, maintained lawns, access drives, parking areas and other areas directly associated and maintained as part of the commercial / industrial properties.

Public Use Facilities – Public Use Facilities include areas that are not privately owned by individuals and used by organizations or the public. These areas include cemeteries, churches, recreational areas, trails and land owned by the local highway department. Based on preliminary reviews of the Public Use Facilities and the alternatives, these are not anticipated to be 4(f) resources.

Existing Transportation Lands – Existing Transportation Lands include all defined properties owned by a governmental agency. These include existing road rights-of-way and parcels owned by transportation departments, railroad rights-of-way and parcels owned by the railroads and areas owned by airports.

Historic Property Impacts – Historic Property Impacts include properties that are listed in the National Register of Historic Places (NRHP) or were recommended eligible for listing in the NRHP during field reviews by a qualified professional historian. Impacts to historic properties listed in the NRHP or eligible for listing in the NRHP could result in 4(f) resource impacts.

Utility Lands – Utility Lands include land that has been used for utility structure construction such as cellular towers, gas pumps, sanitation facilities or substations. This does not include areas used for utility easements for transmission lines or other linear utility easements.

Trails – Trails include all trails that are part of the state and/or local trail system and available for use by the public. Coordination with state and local officials was completed to identify the location of all existing and potential future trail locations. The length of impact to each trail was measured using GIS to determine the total impact of each alternative to trails.

Archaeological Resources Lands – Archaeological Resources Lands include all areas associated with a previously recorded known archaeological site as identified in the Indiana State Historic Architectural and Archaeological Research Database (SHAARD). In addition, all previously completed archaeological reports within the project area were reviewed. Any archaeological sites identified in the previous archaeological reports that were not included in the SHAARD were included in the calculations of Archaeological Resource Lands impacts. Only the previously reported known archaeological sites that were directly impacted by one or more of the alternatives were included in the calculations.

Residential Relocations – Residential Relocations include the number of single-family residences (homes) that would require relocation within each individual alternative. These calculations were based on the number of homes within each alternative and assumed each home is limited to a single family. There were no multi-family duplexes or residential housing buildings identified within any of the alternatives. The homes were identified using aerial photography and verified by field staff.

Commercial / Industrial Relocations – Commercial / Industrial Relocations include the number of Commercial / Industrial facilities that would require relocation within each individual alternative. The Commercial / Industrial Relocations were identified using aerial photography and verified by field staff.

Agricultural Operation Relocations – Agricultural Operation Relocations include barns, sheds, grain storage facilities, feed lots and other items necessary for operating an agricultural facility. Agricultural Operations may range in size from a single isolated barn to a compound with significant facilities and multiple structures. Each Agricultural Operation was reviewed using aerial photography. All barns, sheds, grain storage facilities, feed lots and other items that appeared to be used for a single agricultural operation were grouped together to form one single Agricultural Operation.

Public Use Facility Relocations – Public Use Facilities include areas that are not privately owned by individuals and used by organizations or the public. These areas include cemeteries, churches, recreational areas, trails and land owned by the local highway department. If the functional use of the Public Use Facility was being impacted by an alternative it was considered a Public Use Facility Relocation. However, if the function of the Public Use Facility was determined unimpacted and only minor impacts to the facility were determined, the Public Use Facility was not considered a relocation. For instance, if the project impacted one-tenth acre of open lawn of a five acre public park this would not be considered a Public Use Facility Relocation.

Key Resource Impact Calculation Methodology

Impacts were assessed using field data collection, existing resource layer collection and GIS methodology with ESRI ArcPro software. In order to calculate impacts for each alternative in the screening process, each alternative was analyzed for resources overlapping its right-of-way, and the measure of that overlap was quantified. Seven alternatives consisting of six expressway alternatives and the 2A Super-2 Alternative were combined into a single analysis file. The combined alternatives file was then input with each resource into an ESRI ArcPro geoprocess called "pairwise intersect" to generate the overlap of each resource with each alternative. The output overlap or "impact" file was then quantified with geodesic methods (accounting for Earth's curvature) in units of US survey acres, US survey feet, or US survey miles; as appropriate, using the project coordinate system (NAD 1983 (2011) InGCS Dubois-Martin (ftUS); WKID 7292). Resulting impact tables were copied into Microsoft Excel and pivot tables were used to summarize the data. Accuracy was evaluated by having separate teams perform the analysis independently and verify the QAQC. The resource files analyzed are described as follows:

- Land Cover – Land Cover base file was created beginning with an image classification deep learning model on 2022 NAIP orthophotography (2-foot resolution). This draft file was then updated with more recent imagery (Indiana current imagery 2025) and field verification. This file was used to quantify forests, developed classes, herbaceous/successional lands and agriculture.

1. Streams, Wetlands, and Structures – Collected using field data collection tools (Field Maps, Survey 123, Capture) by field crews in the spring/summer of 2024 and 2025. This base file is still in editing, as resources on properties that did not allow entry and S-line areas outside the corridor were added by 2025 orthophotography and Lidar elevation digitizing and have not yet been field verified.
2. Relocations – Relocations were identified using a buildings (structures) layer. This layer was created from on-screen aerial digitizing and verified and edited in the field in 2024 and 2025. The building information includes the type of structure, name if applicable and its developed land use category.
    a. Residential Relocations – Only residential homes that were directly impacted by one of the alternatives are included in the residential relocation calculations. Detached garages, sheds and other out buildings associated with a residential home were not included in the Residential Relocation calculations.
    b. Commercial/Industrial Relocations – A single impact may involve multiple buildings, if all those buildings are adjacent and related to the same commercial/industrial facility. For example, a storage unit operation with three adjacent buildings would count as one Commercial/Industrial Relocation.

- Agricultural Operation Relocations – An agricultural operation impact consists of any building or group of adjacent buildings with agricultural use. These properties range from a single small barn in a field to large multi-structure operations.
    c. Public Use Facility Relocations – If the functional use of a Public Use Facility was impacted by one or more of the alternatives, then this was calculated as a Public Use Facility Relocation. However, if the functional use of a Public Use Facility was not impacted (i.e., the alternative impacts one-tenth acre of lawn of a five-acre park and no facilities are impacted by the alternative) then this was not included in the Public Use Facility Relocation Impact calculations.

3. Managed Lands and Trails – These layers developed in the Tier 1 Study were checked for any updates of source data. No updates were identified; therefore the Tier 1 data was utilized for these resources. Sources checked for updates included – Indiana Heritage database, US GAP Protected Areas Database, The Nature Conservancy and the Indiana Department of Natural Resources (IDNR) Open Trails data.
4. Classified Forests – The data layer created in Tier 1 was utilized for this resource. No new additional areas are known at this time.
5. Floodplain – the IDNR Best Available floodplain layer was downloaded from Indiana Map.
6. National Historic Register – properties were evaluated for the potential for listing and mapped by qualified historians in the field.

- Archaeology – The methodology for calculating the Archaeological Resource Lands impact is defined below:
  a. Each alternative was visually checked against IDNR SHAARD Archaeology and Structures online map for any discrepancies.
  b. No discrepancies were identified. Reviewed available previous archaeological survey reports for the area and compared report mapping with SHAARD database points/areas for any discrepancies.
     - Two sites identified in reports that were not included in SHAARD database or map.
     - Several site polygon areas in report mapping differed from the SHAARD mapping.

MID-STATES CORRIDOR
TIER 2

SCREENING OF ALTERNATIVES COST ESTIMATING APPENDIX

Mid-States Corridor
Tier 2 Environmental Studies
Section 2
I-64 at Dale to SR 56 at Haysville

Prepared for

Indiana Department of Transportation

OCTOBER 3, 2025

Prepared by

VS Engineering, Inc.

TABLE OF CONTENTS

Summary 4
Construction costs 5
Typical Sections 5
Typical Section Application 5
Mainline Mid-States Corridor (Mainline) 5
Intersecting Roadways (S-lines) 5
Interchange Ramps (Ramps) 6
Interchange and Grade Separation Bridges 6
Waterway Crossings 6
Earthwork 7
Quantified Construction Costs 8
Lump Sum Construction Costs 8
Price Determination for Quantified Construction Costs 9
Previous Contract Data 9
INDOT Cost Estimating Software 11
Price Determination for Lump Sum Construction Costs 11
Contingencies and Total Roadway Cost 12
Additional Reference Materials 12
APPENDIX 1 13

SUMMARY

This Appendix describes the methodologies used to develop construction costs for each alternative within the Screening Report. Construction costs include items such as earthwork, drainage, paving materials, culverts, small structures, bridges, pavement markings, signage, maintenance of traffic, etc. Alternatives generally follow new terrain with improvements to the local roadway network consisting of those only needed to facilitate access to the new facility. Detailed cost estimates for each route and access combination are presented In **Appendix 1** of this document. A summary of construction costs for each alternative and facility type combination is presented below in **Table 1**.

Cost Summary

Table 1: Summary of Costs for each Alternative and Facility Type

Alternatives	Total Construction Cost Including Contingency*
1A - Expressway	$1,182,775,000
1B - Expressway	$1,135,008,000
2A - Expressway	$1,077,260,000
2B - Expressway	$1,046,914,000
3A - Expressway	$1,233,386,000
3B – Expressway	$1,099,452,000
2A – Super 2	$833,303,000

*Note: All costs rounded up to nearest $1,000.00

CONSTRUCTION COSTS

For each route analyzed as part of this Screening, typical sections, horizontal working alignments and vertical working alignments were created such that construction quantities could be developed. The working alignments were developed utilizing aerial photography, GIS resource layers and LiDAR survey data publicly available from the Indiana Spatial Data Portal. The aforementioned sources were supplemented with topographic and environmental survey data.

Typical Sections

A typical section was developed for mainline Mid-States Corridor and each intersecting roadways (S-Lines) based upon facility type and forecasted traffic. Design criteria and graphical representations for each typical section are presented in the **Design Summary Appendix.**

Application of typical sections for the purposes of developing quantities is further described below.

Typical Section Application

Typical sections are applied to mainline, interchange ramps and intersecting roadways to develop quantities for cost estimating purposes. Assumptions made in applying typical sections, to account for anticipated conditions, are as follows:

Mainline Mid-States Corridor (Mainline)

Typical sections for the Mid-States Corridor are associated with a horizontal and vertical working alignment. The horizontal and vertical alignment for a particular route is then paired with a specific access control configuration in order to form an end-to-end alternative. Once a route is established, the base typical sections for the Mainline Mid-States Corridor remain unchanged with the exception of auxiliary lanes, if recommended. Auxiliary lanes are added to the mainline typical section as further described below. Efforts to minimize right of way, environmental impacts, and costs beyond the said typical have not been included for screening. These may include elimination of grass median in favor of a concrete barrier or addition of guardrail w/ side slope steepening

Underdrains and median drains are included for mainline Mid-States Corridor. Typical sections and vertical alignments account for maintaining drainage, specifically freeboard, recommendations stated in Indiana Design Manual (IDM). When traversing an established floodway, it is assumed that underdrains and median drains will outlet approximately 2 ft above the base flood elevation.

Intersecting Roadways (S-lines)

Depending on the access control used, improvements to the local road system and/or turn lanes on mainline Mid-States Corridor were specified as follows.

For ***intersections at-grade***, the following assumptions are incorporated into the quantity computations:

- S-Line Travel Lanes – The length of each S-line is based upon a horizontal and vertical working alignment. Working alignments were developed in accordance with design criteria stated in the **Design Summary Appendix.**
- Mainline Auxiliary Lanes – Left & right turn lanes are included on mainline Mid-States Corridor for each intersection at-grade. Intersections at-grade are assumed to be reduced conflict

intersections (RCI). Preliminary horizontal geometric layouts for each RCI were developed utilizing available topographic and environmental data, INDOT design criteria and engineering judgment.

- S-Line Auxiliary Lanes – All intersections-at-grade are RCI's. No auxiliary lanes are included along S-Lines.

Grade separations are used at locations where access is not provided and cross connectivity is deemed desirable. A separate determination of whether mainline Mid-Sates passes over the S-Line, or vice versa, was made for each grade separation. This determination was made utilizing topographic and environmental data, INDOT design criteria and engineering judgment.

Interchange Ramps (Ramps)

Preliminary horizontal geometric layouts for each interchange were developed utilizing available topographic and environmental data, INDOT design criteria and engineering judgement. Ramp lengths were calculated based upon the preliminary geometric horizontal layout. Quantities for mainline Mid-States Corridor and S-Lines, within the limits of the interchange, were developed as described above.

Interchange and Grade Separation Bridges

The previously described typical sections do not account for bridges associated with interchanges, roadway grade separations or railroad grade separations. In order to develop quantities for these bridges, vertical working alignments were developed for mainline Mid-States Corridor. The vertical working alignments at grade separations are based on vertical clearances described in the **Design Summary Appendix.**

For the purposes of developing quantities, two bridge configurations were utilized. Those configurations are as follows:

- Vertical MSE Wall – A vertical MSE wall is utilized at each bridge end. MSE walls are located outside adjacent drainage ways and extend up to the vertical working alignment. The length of the bridge is the distance between the intersections of the MSE walls with the vertical working alignment.
- Concrete Slope Wall – A concrete slope wall at a 2 horizontal to 1 vertical slope is utilized at each bridge end. Concrete slope walls are located outside adjacent drainage ways and extend up to the vertical working alignment. The length of the bridge is the distance between the intersections of the slope walls with the vertical working alignment.

Bridge widths are based upon each typical section as described in the **Design Summary Appendix.** For all S-line overpasses, a single structure is assumed. For Expressway overpasses, twin structures are assumed.

Waterway Crossings

Waterway crossings have a variety of treatments, including bridges, 3-sided structures, 4-sided box structures and traditional round culverts. The choice of treatment depends on the magnitude of the waterway being crossed and whether or not the Indiana Department of Natural Resources (IDNR) has established a floodway for the water. The waterway treatment decision matrix is as follows:

- 4-Sided Box Culverts – All non-IDNR floodway waterway locations where mainline Mid-States Corridor crosses a GIS resource stream layer and the nearest upstream existing crossing is not listed in the county bridge inventory are assumed to be 4-sided box culverts.
- 3-Sided Box Culverts - All non-IDNR floodway waterway locations where mainline Mid-States Corridor crosses a GIS resource stream layer, the nearest upstream stream crossing is listed in the county bridge inventory and the span of that crossing is equal to or between 20 ft and 30 ft are assumed to be 3-sided box culverts.
- Bridges - Bridges are proposed at all locations where mainline Mid-States Corridor or s-lines cross an IDNR floodway. In order to determine bridge lengths, preliminary hydraulic modeling was performed. Current hydraulic models were downloaded from the IDNR's website[1] and corrected to current existing conditions utilizing the best available information. Proposed roadway embankments were incorporated into the model and bridge openings sized such that the increase in water surface elevation, proposed elevation less corrected elevation, did not exceed IDNR's regulatory threshold of 0.14 ft. Proposed discharges utilized in hydraulic models were obtained from IDNR. Additional data gathering and modeling efforts will be required in order to develop permit grade models.
- Pipe Culverts – All locations where existing LiDAR or aerial photography indicate a waterway, but the crossing is not a GIS stream layer are assumed to be a circular pipe culvert. Pipe culverts were also utilized to convey stormwater around intersections.

The lengths of culverts are based upon the construction limits further described below. All culverts also include quantities for riprap and geotextiles. The amount of riprap and geotextiles utilized is based upon INDOT Standard Drawings, the IDM and engineering judgement.

Earthwork

Horizontal and vertical working alignments, along with the applicable typical sections, are used to develop cross sections every 100' along the length of each mainline and S-Line route. Earthwork cut and fill quantities are calculated using a proposed surface to existing surface comparison calculation. Quantities developed utilizing the surface comparison method are cross checked using an average area end method calculation to ensure no anomalies exist. Once each route is cross checked a final earthwork balance is created using the earthwork cut and fill quantities computed by the surface comparison method. Additional assumptions are as follows:

- Shrinkage Factor – 15% per IDM Figure 17-2C
- Rock Swell Factor – 30% per IDM Figure 17-2C
- Rock Excavation – Assumed to be 20% of cut quantity
- Unsuitable Material – Assumed to be 10% of cut quantity
- Final excavation quantities are reported as "unclassified excavation" in accordance with INDOT Standard Specifications.

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[1] Indiana Hydrology and Hydraulics Model Library - DNR Water Division Model Library

Earthwork at all bridge locations was removed from the earthwork balance. Earthwork associated with all auxiliary lane widening was included in the earthwork balance.

For the purposes the screening report, earthwork for mainline Mid-States Corridor and S-Lines were assumed to separate balances. Earthwork quantities will continue to be refined throughout the duration of the Tier 2 study.

Quantified Construction Costs

Items that can be quantified through a length, area or volume calculation using working alignments, typical sections and engineering judgement are included in cost estimates as a quantified construction cost. Quantified construction costs include HMA, Waterway and Earthwork items as well as those that are commonly encountered on new terrain projects. Additional items that are included as quantified construction costs are as follows:

- Embankment Foundation Soils Treatment – Construction limits are generated from working alignments and typical sections. The quantity of embankment foundation soils treatment is assumed to be equal to the area of the construction limits.
- Settlement Plates and Lateral Stakes - It is assumed that settlement plates and lateral stakes will be installed every 500 ft on average.
- Median Drainage – It is assumed that a median inlet is required every 500 ft on average. A representative quantity for 15” pipe, structure backfill, end sections, revetment riprap and geotextiles is also computed for each median inlet.
- Permanent Surface Stabilization – Seeding, mulching and fertilizer are calculated using the previously described construction limits, less paved area, and the appropriate conversion factors per IDM 17-4.10.
- Pavement Markings – Pavement marking lengths are computed based on the applicable typical section and lengths of mainline, ramps and S-lines. Adjustments are made to account for auxiliary lanes when necessary.
- Underdrains - Underdrains are assumed for all typical sections. Associated quantities include pipe, aggregate for underdrains, geotextile fabric and outlet protectors. Quantity computations are based on a 6” pipe at a 2’ depth per IDM Figure 602-SL. Aggregate for underdrain is computed using conversion factors in IDM Figure 17-4a. Outlets are located every 400 ft per IDM Chapter 605-2.04(03).
- R/W Fence – R/W fence is included on both sides of each mainline route.
- Intersection lighting – Intersection lighting is assumed for all intersections and interchanges.

Lump Sum Construction Costs

Items that could not be reasonably quantified at the current level of analysis, but are commonly encountered on new terrain projects are included in the cost estimate as lump sum pay items. These items include:

- clearing right-of-way
- signing

- miscellaneous non-median drainage
- construction engineering
- mobilization and demobilization
- maintenance of traffic
- stormwater management budget

Price Determination for Quantified Construction Costs

Unit prices for quantified items are determined by analyzing previous bid tabulations from similar projects and utilizing INDOT's Cost Estimating Software, BidTabs Professional - PLUS. Engineering judgement is applied to all data in order to determine a final unit price for each line item.

Previous Contract Data

At the time of this analysis, the most relevant new alignment projects are those associated with I-69 Sections 1 thru 4 in Southwestern Indiana and SR 25 Hoosier Heartland Segments 2 & 3 in Northern Indiana. Because these projects were let circa 2012, they appear to have been removed from INDOT's Cost Estimating Software due to age. In order to effectively utilize previous contract data, bid tabulations for similar contracts were downloaded from INDOT's Bid Letting Portal. Unit price data is summarized into a table by contract number, quantity, low bid unit price and high bid unit price as shown in **Table 5**.

For intersection lighting, previous contract data was analyzed and lighting components aggregated into a unit cost per each intersection/interchange lighted.

Bridges

Bridge costs were estimated by completing preliminary quantities and cost estimates for three types of bridges. The three types quantified and estimated were as follows:

- Greater than 3-Span
- 3 Span
- Single Span with Retaining Walls (i.e. MSE Walls or T-Walls)

Utilizing the preliminary quantities, each type of bridge was estimated using current unit price data from BidTabs Professional – PLUS and similar projects. A weighted average of the bridge deck area for all bridges along the corridor, of each type, was utilized to develop a unit cost on a square yard basis.

Previous Contract Data Table - Example Analysis

Table 5: Previous Contract high and Low Unit prices

Contract	Compacted Aggregate No. 53, Base		
	Quantity (tons)	Low Bid Unit Price	High Bid Unit Price
IR-30845-A	11,697	12.00	15.34
IR-30846-A	17,123	10.00	17.35
IR-30849-A	16,251	13.00	14.6
IR-30850-A	23,823	12.00	16.06
IR-33040-A	34,363	19.62	25.00
IR-33042-A	20,727	20.00	24.37
IR-33045-A	78,331	14.96	22.00
IR-33291-A	23,253	12.00	15.5
IR-33633-A	6,935	16.00	25.00
IR-33737-A S0002	15,089	11.00	20.00
IR-33737-A S0003	2,781	15.75	20.00
IR-33737-A S0004	1,679	14.94	20.00
IR-33737-A S0005	320	16.00	24.00
IR-33741-A	4,705	9.78	25.00
IR-33742-A	11,930	9.50	22.00

This quantity and unit price data is plotted on an X-Y scatter plot and a best fit regression developed to assist in identifying the upper and lower bounds of applicable unit prices. Engineering judgement is utilized to select a unit price that best corresponds to a quantity that could be expected for an individual Mid-States Corridor contract.

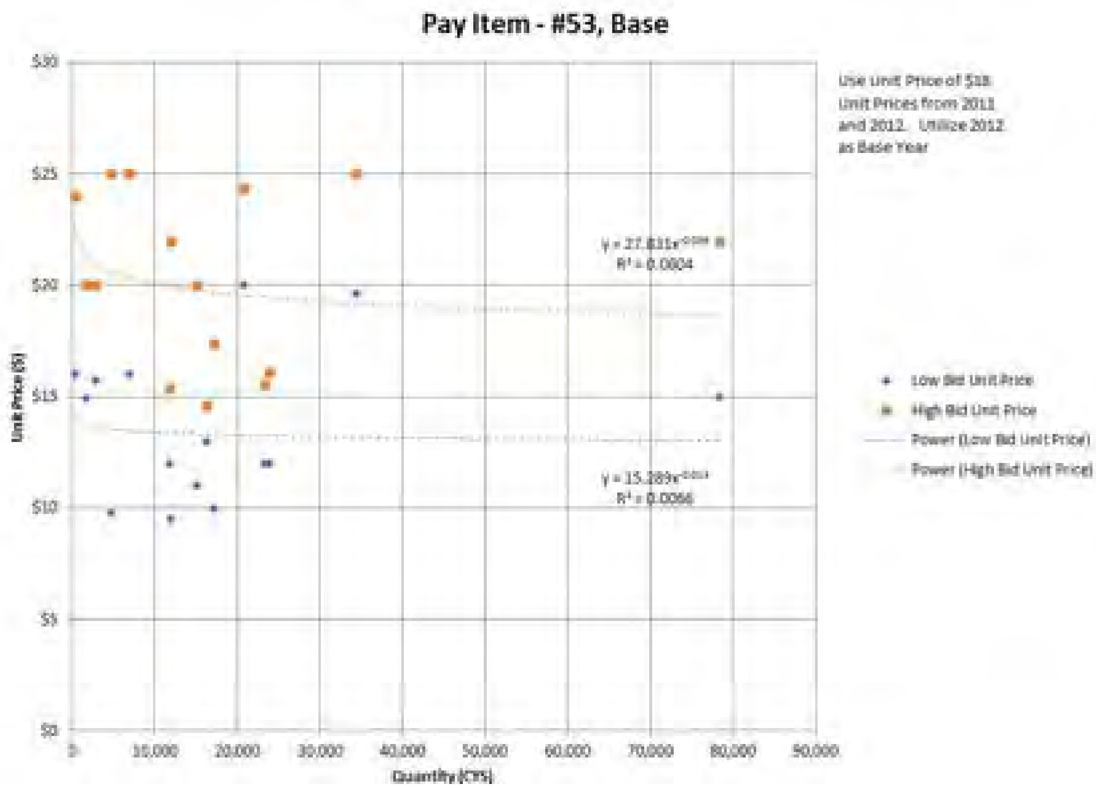


Figure 1: Previous Contract high and Low Unit prices

Previous Contract Data Cost Regression Analysis

With the previous contract data being from 2011 and 2012, a base year of 2012 is utilized for all unit prices. The unit prices are escalated to 2024 prices using the Federal Highway Administration's National Highway Construction Cost Index from 2012, Quarter 4 to 2024, Quarter 3.[2] The escalated unit costs are then rounded to a whole number depending on the pay item.

INDOT Cost Estimating Software

INDOT's cost estimating software, BidTabs Professional – PLUS, is used to identify potential anomalies with previous contract data, compare current data to previous contract data and to supplement previous contract data when no comparable pay items existed.

Price Determination for Lump Sum Construction Costs

The costs for lump sum items are reported as a percentage of the sum of the unit price extensions for quantified construction costs. The percentages used to calculate the costs are based upon previous contract data and engineering judgement. Lump sum costs will be further refined as part of future analysis.

[2] See https://www.fhwa.dot.gov/policy/otps/nhcci/pt1.cfm. The indices for Q4 2012 and Q3 2024 are 1.607 and 3.362, respectively.

Contingencies and Total Roadway Cost

A contingency of 20% is included in the total roadway construction. The contingency is a percentage of the sum of the quantified construction costs and the lump sum construction costs. The total roadway cost is equal to the sum of the quantified construction costs, lump sum construction costs and contingency.

ADDITIONAL REFERENCE MATERIALS

The following additional reference materials are enclosed:

- Appendix 1 - Detailed cost estimates for each alternative

APPENDIX 1

PROJECT: MID-STATES CORRIDOR
INDOT DES. NO.: N/A
CALCULATED BY: NW AB DATE: 7/17/25
CHECKED BY: NJ DATE: 7/28/25

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS
ALTERNATIVE 1, ACCESS OPTION A - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 343	N/A	343 to 451	451 to 488	488 to 640	640 to 800	800 to 985	985 to 1140	1140 to 1275				
1	COMMON EXCAVATION	416,443	2,153,748		112,782	155,269	1,008,304	1,184,751	1,220,713	890,748	767,952	7,910,711	CYS	$14.00	$110,749,951.00
2	ROCK EXCAVATION	104,111	538,437		28,196	38,817	252,076	296,188	305,178	222,687	191,988	1,977,678	CYS	$14.00	$27,687,487.75
3	BORROW	94,839	0		977,136	483,227	689,482	187,068	894,261	0	50,534	3,376,546	CYS	$12.00	$40,518,553.30
4	EMBANKMENT FOUNDATION SOILS TREATMENT	460,621	650,692		531,714	203,959	864,123	700,592	834,785	465,669	522,142	5,234,297	SYS	$1.75	$9,160,019.53
5	SETTLEMENT PLATE	35	41		36	14	49	46	55	31	33	342	EA	$1,500.00	$512,585.19
6	STAKE, LATERAL	35	41		36	14	49	46	55	31	33	342	EA	$650.00	$222,120.25
7	STAKE, SETTLEMENT	35	41		36	14	49	46	55	31	33	342	EA	$250.00	$85,430.87
8	SUBGRADE TREATMENT, TYPE IB	152,773	313,678		125,867	55,850	173,852	182,463	217,143	146,160	140,493	1,508,280	SYS	$10.00	$15,082,799.60
9	QC/QA, SURFACE	11,452	24,563		9,319	4,214	12,885	13,097	16,219	10,922	10,486	113,156	TON	$115.00	$13,012,978.00
10	QC/QA, INTERMEDIATE	25,959	55,480		20,019	8,694	27,830	28,732	34,936	25,484	23,749	250,883	TON	$105.00	$26,342,728.98
11	QC/QA, BASE	52,889	110,738		42,235	17,249	58,503	59,790	69,821	50,967	48,650	510,841	TON	$95.00	$48,529,926.09
12	QC/QA, INTERMEDIATE, OG	22,905	47,904		18,639	7,668	25,769	26,194	30,643	21,843	21,085	222,650	TON	$110.00	$24,491,455.08
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	17,303	20,713		18,140	7,096	24,572	23,118	27,729	15,500	16,690	170,862	LFT	$2.25	$384,438.89
14	JOINT ADHESIVE, INTERMEDIATE	95,675	216,399		72,640	35,941	119,875	118,475	139,807	94,120	87,733	980,665	LFT	$0.75	$735,499.04
15	ASPHALT FOR TACK COAT	0	0		0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	70,789	97,466		61,450	24,697	84,614	90,868	107,362	71,064	66,328	674,638	TON	$50.00	$33,731,907.22
17	INLET, TYPE P	28	30		22	7	30	32	37	31	27	245	EA	$5,400.00	$1,322,460.00
18	PIPE, TYPE 2, 15"	2,491	2,980		2,107	741	3,344	3,253	3,885	2,790	2,645	24,237	LFT	$90.00	$2,181,372.81
19	END SECTION, 15"	28	30		22	7	30	32	37	31	27	245	EA	$1,000.00	$244,900.00
20	REVETMENT RIPRAP	1,723	1,556		760	509	1,247	796	1,117	1,517	1,066	10,291	TON	$55.00	$566,014.17
21	GEOTEXTILES FOR RIPRAP	2,238	2,028		1,023	647	1,687	1,127	1,520	2,040	1,419	13,729	SYS	$5.00	$68,645.00
22	STRUCTURAL BACKFILL, TYPE 1	9,964	11,921		8,429	2,966	13,376	13,013	15,540	11,160	10,581	96,950	CYS	$55.00	$5,332,244.64
23	SEEDING, TYPE R	14,198	21,492		17,763	6,906	29,891	23,011	27,191	14,589	17,364	172,404	SYS	$3.00	$517,212.14
24	MULCHING	139	210		173	67	292	224	265	142	169	1,682	SYS	$750.00	$1,261,493.03
25	FERTILIZER	28	42		35	13	58	45	53	28	34	336	TON	$1,000.00	$336,398.14
26	UNDERDRAIN, 4"	62,806	71,733		58,080	21,485	79,543	78,236	92,458	62,000	60,281	586,623	LFT	$6.00	$3,519,739.92
27	AGGREGATE FOR UNDERDRAIN	5,653	6,456		5,227	1,934	7,159	7,041	8,321	5,580	5,425	52,796	CYS	$80.00	$4,223,687.90
28	GEOTEXTILES FOR UNDERDRAIN	29,030	33,157		26,846	9,931	36,767	36,163	42,736	28,658	27,863	271,150	SYS	$3.00	$813,451.00
29	OUTLET PROTECTOR	157	179		145	54	199	196	231	155	151	1,467	EA	$750.00	$1,099,918.73
30	PAVEMENT MARKINGS	70,657	80,700		65,341	24,171	108,230	102,252	122,474	69,750	67,816	711,390	LFT	$2.00	$1,422,779.22
31	FENCE, RIGHT-OF-WAY	28,200	30,307		21,800	7,293	30,400	32,000	37,000	31,000	26,900	244,900	LFT	$10.00	$2,449,000.00
32	CULVERT, CIRCULAR	1,814	1,174		688	407	2,999	1,957	1,745	4,082	1,208	16,074	LFT	$350.00	$5,625,991.00
33	CULVERT, 4-SIDED BOX	1,236	2,323		585	839	512	996	2,531	1,121	739	10,882	LFT	$1,400.00	$15,235,276.00
34	CULVERT, 3-SIDED BOX	0	0		0	0	0	0	0	0	0	0	LFT	$4,500.00	$0.00
35	BRIDGE	0	988		56,494	1,390	35,190	14,815	21,888	844	6,929	138,539	SYS	$2,745.00	$380,289,655.65
36	INTERSECTION LIGHTING	2	1		0	1	1	1	1	1	1	9	EA	$500,000.00	$4,500,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$32,134,104.79**	**$81,586,467.11**	**$0.00**	**$186,877,719.01**	**$21,123,036.89**	**$148,828,404.08**	**$90,513,122.29**	**$125,649,977.31**	**$41,395,599.67**	**$54,149,688.99**	**Cross Check**		**OK**	**$782,258,120.14**

PROJECT: MID-STATES CORRIDOR
INDOT DES. NO.: N/A
CALCULATED BY: NW AB DATE: 7/17/25
CHECKED BY: NJ DATE: 7/28/25

LUMP SUM ITEMS

ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$39,112,906
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$11,733,872
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$39,112,906
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$15,645,162
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$39,112,906
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$39,112,906
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$19,556,453
SUB-TOTAL OF LUMP SUM ITEMS		$8,354,867.25		$21,212,481.45		$0.00		$48,588,206.94		$5,491,989.59		$38,695,385.06		$23,533,411.79		$32,668,994.10		$10,762,855.91		$14,078,919.14		**Cross Check**		**OK**	**$203,387,111**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$40,488,972.04		$102,798,948.56		$0.00		$235,465,925.96		$26,615,026.48		$187,523,789.15		$114,046,534.08		$158,318,971.40		$52,158,455.58		$68,228,608.12		**Cross Check**		**OK**	**$985,645,231**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$48,586,766.45		$123,358,738.27		$0.00		$282,559,111.15		$31,938,031.78		$225,028,546.98		$136,855,840.90		$189,982,765.69		$62,590,146.70		$81,874,329.75		**Cross Check**		**OK**	**$1,182,774,278**
MAINLINE SEGMENT LENGTH (LFT)		14,100		15,154		0		10,900		3,646		15,200		16,000		18,500		15,500		13,450				**MILES**	**23.19**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$18,194,193.39		$42,982,025.31		#DIV/0!		$136,872,544.78		$46,247,016.27		$78,167,811.05		$45,162,427.50		$54,222,108.26		$21,321,030.62		$32,141,000.82					$51,000,801.85

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 1, ACCESS OPTION B - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER									TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 343	N/A	343 to 451	451 to 488	488 to 640	640 to 800	800 to 985	985 to 1140	1140 to 1270				
1	COMMON EXCAVATION	493,192	551,233		37,980	316,465	1,008,304	1,184,751	1,220,713	890,748	960,062	6,663,448	CYS	$14.00	$93,288,270.54
2	ROCK EXCAVATION	123,298	137,808		9,495	79,116	252,076	296,188	305,178	222,687	240,016	1,665,862	CYS	$14.00	$23,322,067.64
3	BORROW	101,422	1,244,443		909,024	951,752	689,482	187,068	894,261	0	210,213	5,187,664	CYS	$12.00	$62,251,965.27
4	EMBANKMENT FOUNDATION SOILS TREATMENT	534,607	603,023		389,740	240,154	864,123	700,592	834,785	465,669	632,655	5,265,348	SYS	$1.75	$9,214,358.78
5	SETTLEMENT PLATE	42	39		22	15	49	46	55	31	42	342	EA	$1,500.00	$512,560.77
6	STAKE, LATERAL	42	39		22	15	49	46	55	31	42	342	EA	$650.00	$222,109.67
7	STAKE, SETTLEMENT	42	39		22	15	49	46	55	31	42	342	EA	$250.00	$85,426.80
8	SUBGRADE TREATMENT, TYPE IB	165,712	163,556		101,733	57,339	173,852	182,463	217,143	146,160	167,645	1,375,603	SYS	$10.00	$13,756,031.40
9	QC/QA, SURFACE	12,378	12,224		7,594	4,325	12,885	13,097	16,219	10,922	12,568	102,211	TON	$115.00	$11,754,293.45
10	QC/QA, INTERMEDIATE	27,189	27,455		17,719	8,873	27,830	28,732	34,936	25,484	26,830	225,048	TON	$105.00	$23,630,077.57
11	QC/QA, BASE	56,532	55,537		35,437	17,331	58,503	59,790	69,821	50,967	52,939	456,857	TON	$95.00	$43,401,446.26
12	QC/QA, INTERMEDIATE, OG	24,755	24,098		15,187	7,710	25,769	26,194	30,643	21,843	23,272	199,472	TON	$110.00	$21,941,941.00
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	21,188	19,446		10,900	5,838	24,572	23,118	27,729	15,500	21,000	169,291	LFT	$2.25	$380,903.74
14	JOINT ADHESIVE, INTERMEDIATE	99,546	103,304		65,400	32,166	119,875	118,475	139,807	94,120	104,533	877,227	LFT	$0.75	$657,919.92
15	ASPHALT FOR TACK COAT	0	0		0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	76,982	78,660		49,857	25,680	84,614	90,868	107,362	71,064	80,806	665,894	TON	$50.00	$33,294,703.71
17	INLET, TYPE P	28	30		22	7	30	32	37	31	27	245	EA	$5,400.00	$1,322,325.65
18	PIPE, TYPE 2, 15"	2,489	2,932		2,144	826	3,344	3,253	3,885	2,790	2,643	24,306	LFT	$90.00	$2,187,549.96
19	END SECTION, 15"	28	30		22	7	30	32	37	31	27	245	EA	$1,000.00	$244,875.12
20	REVETMENT RIPRAP	1,990	1,467		582	790	1,247	796	1,117	1,517	1,318	10,824	TON	$55.00	$595,340.66
21	GEOTEXTILES FOR RIPRAP	2,584	1,912		792	992	1,687	1,127	1,520	2,040	1,767	14,422	SYS	$5.00	$72,110.42
22	STRUCTURAL BACKFILL, TYPE 1	9,956	11,728		8,575	3,306	13,376	13,013	15,540	11,160	10,571	97,224	CYS	$55.00	$5,347,344.35
23	SEEDING, TYPE R	16,941	19,293		12,824	8,352	29,891	23,011	27,191	14,589	20,900	172,992	SYS	$3.00	$518,976.30
24	MULCHING	165	188		125	81	292	224	265	142	204	1,688	SYS	$750.00	$1,265,795.85
25	FERTILIZER	33	38		25	16	58	45	53	28	41	338	TON	$1,000.00	$337,545.56
26	UNDERDRAIN, 4"	70,553	69,222		43,600	18,968	79,543	78,236	92,458	62,000	68,875	583,456	LFT	$6.00	$3,500,737.08
27	AGGREGATE FOR UNDERDRAIN	6,350	6,230		3,924	1,707	7,159	7,041	8,321	5,580	6,199	52,511	CYS	$80.00	$4,200,884.50
28	GEOTEXTILES FOR UNDERDRAIN	32,611	31,996		20,153	8,767	36,767	36,163	42,736	28,658	31,836	269,686	SYS	$3.00	$809,059.24
29	OUTLET PROTECTOR	176	173		109	47	199	196	231	155	172	1,459	EA	$750.00	$1,093,980.34
30	PAVEMENT MARKINGS	79,372	77,875		49,050	25,723	108,230	102,252	122,474	69,750	84,408	719,134	LFT	$2.00	$1,438,268.02
31	FENCE, RIGHT-OF-WAY	28,177	30,330		21,800	7,292	30,400	32,000	37,000	31,000	26,876	244,875	LFT	$10.00	$2,448,751.20
32	CULVERT, CIRCULAR	2,666	1,064		455	641	2,999	1,957	1,745	4,082	1,847	17,455	LFT	$350.00	$6,109,229.00
33	CULVERT, 4-SIDED BOX	1,252	2,100		631	1,543	512	996	2,531	1,121	392	11,078	LFT	$1,400.00	$15,509,466.00
34	CULVERT, 3-SIDED BOX	0	0		0	0	0	0	0	0	0	0	LFT	$4,500.00	$0.00
35	BRIDGE	0	772		48,163	1,936	35,190	14,815	21,888	844	7,521	131,129	SYS	$2,745.00	$359,950,047.45
36	INTERSECTION LIGHTING	2	2		0	1	1	1	1	1	3	12	EA	$500,000.00	$6,000,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$35,455,693.19**	**$53,094,182.20**	**$0.00**	**$158,941,911.05**	**$32,321,744.73**	**$148,828,404.08**	**$90,513,122.29**	**$125,649,977.31**	**$41,395,599.67**	**$64,465,728.68**	**Cross Check**		**OK**	**$750,666,363.19**

LUMP SUM ITEMS

ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$37,533,318
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$11,259,995
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$37,533,318
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$15,013,327
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$37,533,318
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$37,533,318
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$18,766,659
SUB-TOTAL OF LUMP SUM ITEMS		$9,218,480.23		$13,804,487.37		$0.00		$41,324,896.87		$8,403,653.63		$38,695,385.06		$23,533,411.79		$32,668,994.10		$10,762,855.91		$16,761,089.46		**Cross Check**		**OK**	**$195,173,254**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$44,674,173.42		$66,898,669.57		$0.00		$200,266,807.92		$40,725,398.36		$187,523,789.15		$114,046,534.08		$158,318,971.40		$52,158,455.58		$81,226,818.13		**Cross Check**		**OK**	**$945,839,618**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$53,609,008.10		$80,278,403.48		$0.00		$240,320,169.51		$48,870,478.03		$225,028,546.98		$136,855,840.90		$189,982,765.69		$62,590,146.70		$97,472,181.76		**Cross Check**		**OK**	**$1,135,007,541**
MAINLINE SEGMENT LENGTH (LFT)		14,089		15,165		0		10,900		3,646		15,200		16,000		18,500		15,500		13,438				**MILES**	**23.19**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$20,091,049.44		$27,950,542.06		#DIV/0!		$116,411,972.02		$70,772,387.28		$78,167,811.05		$45,162,427.50		$54,222,108.26		$21,321,030.62		$38,298,569.99					$48,946,089.89

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 2, ACCESS OPTION A - SUPER 2

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 282	282 to 335	335 to 439	439 to 490	490 to 640	640 to 800	800 to 985	985 to 1112	1112 to 1250				
1	COMMON EXCAVATION	237,509	362,610	48,849	128,774	530,070	514,541	985,838	1,177,957	758,188	1,012,853	5757190	CYS	$14.00	$80,600,653.28
2	ROCK EXCAVATION	59,377	90,652	12,212	32,194	132,518	128,635	246,460	294,489	189,547	253,213	1439297	CYS	$14.00	$20,150,163.32
3	BORROW	1,991	0	331,601	678,686	0	1,503,638	1,219,689	496,746	495,316	10,892	4738559	CYS	$12.00	$56,862,705.14
4	EMBANKMENT FOUNDATION SOILS TREATMENT	338,314	254,156	140,300	437,860	227,978	668,503	698,977	734,881	579,162	454,995	4535125	SYS	$1.75	$7,936,468.78
5	SETTLEMENT PLATE	35	23	11	32	18	44	40	46	27	38	314	EA	$1,500.00	$470,330.76
6	STAKE, LATERAL	35	23	11	32	18	44	40	46	27	38	314	EA	$650.00	$203,810.00
7	STAKE, SETTLEMENT	35	23	11	32	18	44	40	46	27	38	314	EA	$250.00	$78,388.46
8	SUBGRADE TREATMENT, TYPE IB	105,587	71,480	36,000	87,997	54,249	129,751	124,598	140,563	87,526	110,681	948430	SYS	$10.00	$9,484,300.18
9	QC/QA, SURFACE	8,066	5,482	2,772	6,669	4,137	9,350	9,249	10,756	6,729	8,441	71651	TON	$115.00	$8,239,879.92
10	QC/QA, INTERMEDIATE	17,987	12,049	6,468	14,173	8,293	20,167	20,545	23,919	15,507	18,751	157859	TON	$105.00	$16,575,214.69
11	QC/QA, BASE	37,035	24,007	12,936	30,113	16,421	42,435	42,408	48,314	31,055	39,926	324652	TON	$95.00	$30,841,916.39
12	QC/QA, INTERMEDIATE, OG	16,132	10,469	5,544	13,338	7,367	18,701	18,498	21,022	13,359	17,467	141898	TON	$110.00	$15,608,732.95
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	17,588	11,322	5,400	16,111	9,236	21,925	20,034	22,924	13,426	18,810	156777	LFT	$2.25	$352,748.07
14	JOINT ADHESIVE, INTERMEDIATE	45,764	29,466	16,200	36,687	19,468	51,925	60,103	59,924	40,278	24,528	384344	LFT	$0.75	$288,258.02
15	ASPHALT FOR TACK COAT	0	0	0	0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	44,085	29,650	14,750	37,425	22,892	68,774	53,632	59,553	36,072	44,420	411254	TON	$50.00	$20,562,687.55
17	INLET, TYPE P	0	0	0	0	0	0	0	0	0	0	0	EA	$5,400.00	$47.05
18	PIPE, TYPE 2, 15"	0	0	0	0	0	0	0	0	0	0	0	LFT	$90.00	$0.78
19	END SECTION, 15"	0	0	0	0	0	0	0	0	0	0	1	EA	$1,000.00	$590.23
20	REVETMENT RIPRAP	1,760	740	576	562	281	1,390	725	1,859	2,112	932	10936	TON	$55.00	$601,482.40
21	GEOTEXTILES FOR RIPRAP	2,187	921	688	690	345	1,726	923	1,830	2,523	1,150	12982	SYS	$5.00	$64,909.88
22	STRUCTURAL BACKFILL, TYPE 1	0	0	0	0	0	0	0	0	0	0	2	CYS	$55.00	$129.85
23	SEEDING, TYPE R	10,644	8,293	4,625	15,407	7,625	23,775	24,842	25,727	21,086	15,246	157270	SYS	$3.00	$471,811.15
24	MULCHING	104	81	45	150	74	232	242	251	206	149	1534	SYS	$750.00	$1,150,758.91
25	FERTILIZER	21	16	9	30	15	46	48	50	41	30	307	TON	$1,000.00	$306,869.04
26	UNDERDRAIN, 4"	35,176	22,644	10,800	32,222	18,472	43,850	40,069	45,848	26,852	37,620	313554	LFT	$6.00	$1,881,323.04
27	AGGREGATE FOR UNDERDRAIN	3,166	2,038	972	2,900	1,662	3,947	3,606	4,126	2,417	3,386	28220	CYS	$80.00	$2,257,587.65
28	GEOTEXTILES FOR UNDERDRAIN	16,259	10,467	4,992	14,894	8,538	20,269	18,521	21,192	12,411	17,389	144932	SYS	$3.00	$434,794.66
29	OUTLET PROTECTOR	88	57	27	81	46	110	100	115	67	94	784	EA	$750.00	$587,913.45
30	PAVEMENT MARKINGS	73,874	47,556	22,950	67,016	38,223	91,451	85,146	96,322	57,060	79,653	659251	LFT	$2.00	$1,318,502.64
31	FENCE, RIGHT-OF-WAY	28,176	18,144	10,800	20,576	10,232	30,000	32,000	37,000	25,400	29,582	241910	LFT	$10.00	$2,419,100.00
32	CULVERT, CIRCULAR	1,962	868	0	368	186	2,601	1,948	1,983	0	1,035	10951	LFT	$350.00	$3,832,906.00
33	CULVERT, 4-SIDED BOX	853	735	674	493	147	833	332	711	2,936	653	8366	LFT	$1,400.00	$11,712,820.00
34	CULVERT, 3-SIDED BOX	0	0	0	0	0	0	0	125	0	0	125	LFT	$4,500.00	$562,500.00
35	BRIDGE	0	0	1,035	34,219	2,286	23,785	9,099	15,189	565	6,270	92447	SYS	$2,745.00	$253,765,663.85
36	INTERSECTION LIGHTING	3	1	0	0	1	1	1	1	1	1	10	EA	$150,000.00	$1,500,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$19,877,502.57**	**$16,695,980.62**	**$13,271,450.57**	**$116,481,661.37**	**$22,447,557.20**	**$111,526,493.92**	**$74,282,929.81**	**$88,942,142.22**	**$36,859,182.98**	**$50,741,066.82**	**Cross Check**		**OK**	**$551,125,968.08**

PROJECT: MID-STATES CORRIDOR
INDOT DES. NO.: N/A
CALCULATED BY: NW AB DATE: 7/17/25
CHECKED BY: NJ DATE: 7/28/25

LUMP SUM ITEMS																									
ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$27,556,298
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$8,266,890
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$27,556,298
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$11,022,519
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$27,556,298
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$27,556,298
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$13,778,149
SUB-TOTAL OF LUMP SUM ITEMS		$5,168,150.67		$4,340,954.96		$3,450,577.15		$30,285,231.96		$5,836,364.87		$28,996,888.42		$19,313,561.75		$23,124,956.98		$9,583,387.58		$13,192,677.37		**Cross Check**		**OK**	**$143,292,752**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$25,045,653.24		$21,036,935.58		$16,722,027.72		$146,766,893.33		$28,283,922.07		$140,523,382.34		$93,596,491.56		$112,067,099.19		$46,442,570.56		$63,933,744.19		**Cross Check**		**OK**	**$694,418,720**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$30,054,783.89		$25,244,322.69		$20,066,433.26		$176,120,272.00		$33,940,706.48		$168,628,058.81		$112,315,789.87		$134,480,519.03		$55,731,084.67		$76,720,493.03		**Cross Check**		**OK**	**$833,302,464**
MAINLINE SEGMENT LENGTH (LFT)		14,088		9,072		5,400		10,288		5,116		15,000		16,000		18,500		12,700		14,791				**MILES**	**22.91**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$11,264,143.88		$14,692,462.94		$19,620,512.52		$90,388,320.00		$35,028,719.75		$59,357,076.70		$37,064,210.66		$38,381,467.05		$23,170,088.74		$27,387,208.65					$36,375,817.52

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 2, ACCESS OPTION A - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 282	282 to 335	335 to 439	439 to 490	490 to 640	640 to 800	800 to 985	985 to 1126	1126 to 1250				
1	COMMON EXCAVATION	323,041	349,813	65,717	158,959	291,159	612,412	1,084,498	1,202,697	721,289	881,702	5,691,287	CYS	$14.00	$79,678,017.10
2	ROCK EXCAVATION	80,760	87,453	16,429	39,740	72,790	153,103	271,125	300,674	180,322	220,425	1,422,822	CYS	$14.00	$19,919,504.28
3	BORROW	0	166,216	585,436	1,239,396	313,091	2,453,946	1,850,722	795,758	629,940	13,111	8,047,616	CYS	$12.00	$96,571,397.20
4	EMBANKMENT FOUNDATION SOILS TREATMENT	437,502	363,242	192,825	495,762	234,127	801,142	793,264	771,083	579,140	511,355	5,179,443	SYS	$1.75	$9,064,024.61
5	SETTLEMENT PLATE	36	28	11	32	15	44	42	46	37	32	322	EA	$1,500.00	$483,118.68
6	STAKE, LATERAL	36	28	11	32	15	44	42	46	37	32	322	EA	$650.00	$209,351.43
7	STAKE, SETTLEMENT	36	28	11	32	15	44	42	46	37	32	322	EA	$250.00	$80,519.78
8	SUBGRADE TREATMENT, TYPE IB	154,449	113,607	50,400	115,751	63,215	163,831	173,478	191,448	153,980	137,311	1,317,468	SYS	$10.00	$13,174,683.87
9	QC/QA, SURFACE	11,571	8,529	3,762	8,579	4,761	12,162	12,578	14,275	11,507	10,255	97,979	TON	$115.00	$11,267,606.36
10	QC/QA, INTERMEDIATE	26,100	18,299	8,778	18,630	10,400	26,728	28,040	32,127	25,462	23,373	217,936	TON	$105.00	$22,883,245.04
11	QC/QA, BASE	53,343	36,403	17,556	39,026	20,713	55,556	57,746	64,729	50,517	47,453	443,042	TON	$95.00	$42,088,967.83
12	QC/QA, INTERMEDIATE, OG	23,141	15,990	7,524	17,158	9,049	24,324	25,156	28,058	21,975	20,510	192,885	TON	$110.00	$21,217,389.41
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	17,858	13,929	5,400	16,146	7,268	21,925	21,096	22,936	18,526	15,955	161,040	LFT	$2.25	$362,339.01
14	JOINT ADHESIVE, INTERMEDIATE	96,093	72,895	32,400	67,756	40,860	111,335	112,409	125,429	98,998	87,092	845,267	LFT	$0.75	$633,950.53
15	ASPHALT FOR TACK COAT	0	0	0	0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	71,631	52,586	24,700	56,538	28,612	79,782	85,893	93,838	74,412	65,206	633,200	TON	$50.00	$31,659,980.56
17	INLET, TYPE P	28	18	11	21	10	30	32	37	28	27	242	EA	$5,400.00	$1,305,847.44
18	PIPE, TYPE 2, 15"	2,395	1,633	1,062	1,961	1,041	3,250	3,467	3,700	2,726	2,574	23,808	LFT	$90.00	$2,142,723.72
19	END SECTION, 15"	28	18	11	21	10	30	32	37	28	27	242	EA	$1,000.00	$241,823.60
20	REVETMENT RIPRAP	1,901	919	630	665	332	1,540	885	2,044	2,253	1,065	12,234	TON	$55.00	$672,870.38
21	GEOTEXTILES FOR RIPRAP	2,468	1,218	796	896	447	2,026	1,243	2,200	2,805	1,416	15,516	SYS	$5.00	$77,578.40
22	STRUCTURAL BACKFILL, TYPE 1	9,580	6,532	4,248	7,845	4,163	13,000	13,867	14,800	10,904	10,294	95,232	CYS	$55.00	$5,237,769.09
23	SEEDING, TYPE R	13,045	11,510	6,353	16,380	7,717	27,949	26,700	25,246	19,057	16,430	170,389	SYS	$3.00	$511,168.04
24	MULCHING	127	112	62	160	75	273	260	246	186	160	1,662	SYS	$750.00	$1,246,751.31
25	FERTILIZER	25	22	12	32	15	55	52	49	37	32	332	TON	$1,000.00	$332,467.02
26	UNDERDRAIN, 4"	63,892	46,002	21,600	52,936	24,772	73,850	74,193	82,872	65,252	58,533	563,903	LFT	$6.00	$3,383,416.32
27	AGGREGATE FOR UNDERDRAIN	5,750	4,140	1,944	4,764	2,229	6,647	6,677	7,459	5,873	5,268	50,751	CYS	$80.00	$4,060,099.58
28	GEOTEXTILES FOR UNDERDRAIN	29,532	21,263	9,984	24,468	11,450	34,135	34,294	38,305	30,161	27,055	260,648	SYS	$3.00	$781,945.11
29	OUTLET PROTECTOR	160	115	54	132	62	185	185	207	163	146	1,410	EA	$750.00	$1,057,317.60
30	PAVEMENT MARKINGS	78,476	60,252	24,300	69,744	31,631	96,932	93,660	102,104	82,261	70,826	710,185	LFT	$2.00	$1,420,370.23
31	FENCE, RIGHT-OF-WAY	28,176	18,144	10,800	20,644	10,236	30,000	32,000	37,000	28,200	26,624	241,824	LFT	$10.00	$2,418,236.00
32	CULVERT, CIRCULAR	2,385	1,193	0	517	232	2,601	1,948	1,983	0	1,208	12,067	LFT	$350.00	$4,223,439.50
33	CULVERT, 4-SIDED BOX	1,212	853	932	664	357	833	332	711	2,936	739	9,568	LFT	$1,400.00	$13,395,480.00
34	CULVERT, 3-SIDED BOX	0	0	0	0	0	0	0	125	0	0	125	LFT	$4,500.00	$562,500.00
35	BRIDGE	0	0	1,041	34,219	2,286	35,190	13,106	21,868	813	6,270	114,793	SYS	$2,745.00	$315,107,208.95
36	INTERSECTION LIGHTING	3	1	0	0	1	1	1	1	1	1	10	EA	$500,000.00	$5,000,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$30,148,365.64**	**$24,780,242.33**	**$19,353,719.87**	**$128,449,078.08**	**$24,441,683.41**	**$162,111,047.71**	**$102,495,595.69**	**$119,592,843.78**	**$47,634,742.78**	**$53,465,788.67**	**Cross Check**		**OK**	**$712,473,107.97**

PROJECT: MID-STATES CORRIDOR
INDOT DES. NO.: N/A
CALCULATED BY: NW AB DATE: 7/17/25
CHECKED BY: NJ DATE: 7/28/25

LUMP SUM ITEMS

ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$35,623,655
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$10,687,097
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$35,623,655
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$14,249,462
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$35,623,655
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$35,623,655
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$17,811,828
SUB-TOTAL OF LUMP SUM ITEMS		$7,838,575.07		$6,442,863.01		$5,031,967.17		$33,396,760.30		$6,354,837.69		$42,148,872.41		$26,648,854.88		$31,094,139.38		$12,385,033.12		$13,901,105.06		**Cross Check**		**OK**	**$185,243,008**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$37,986,940.70		$31,223,105.34		$24,385,687.04		$161,845,838.38		$30,796,521.10		$204,259,920.12		$129,144,450.57		$150,686,983.16		$60,019,775.91		$67,366,893.73		**Cross Check**		**OK**	**$897,716,116**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$45,584,328.85		$37,467,726.40		$29,262,824.45		$194,215,006.05		$36,955,825.32		$245,111,904.14		$154,973,340.68		$180,824,379.79		$72,023,731.09		$80,840,272.48		**Cross Check**		**OK**	**$1,077,259,339**
MAINLINE SEGMENT LENGTH (LFT)		14,088		9,072		5,400		10,322		5,118		15,000		16,000		18,500		14,100		13,312				**MILES**	**22.90**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$17,084,416.26		$21,806,613.25		$28,612,539.46		$99,346,563.84		$38,125,587.66		$86,279,390.26		$51,141,202.43		$51,608,255.42		$26,970,588.66		$32,064,532.12					$47,041,970.36

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 2, ACCESS OPTION B - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 282	282 to 336	336 to 439	439 to 490	490 to 640	640 to 800	800 to 985	985 to 1126	1126 to 1260				
1	COMMON EXCAVATION	296,965	245,816	115,186	115,167	194,734	725,944	989,468	1,494,546	1,302,013	955,687	6,435,527	CYS	$14.00	$90,097,371.50
2	ROCK EXCAVATION	74,241	61,454	28,797	28,792	48,683	181,486	247,367	373,637	325,503	238,922	1,608,882	CYS	$14.00	$22,524,342.88
3	BORROW	2,661	113,317	244,843	702,593	1,053,615	1,039,168	2,013,907	1,065,536	0	34,237	6,269,876	CYS	$12.00	$75,238,512.64
4	EMBANKMENT FOUNDATION SOILS TREATMENT	455,146	318,404	168,858	341,202	251,470	845,284	869,745	973,165	526,369	730,724	5,480,367	SYS	$1.75	$9,590,641.64
5	SETTLEMENT PLATE	39	25	11	21	17	49	46	55	28	37	328	EA	$1,500.00	$492,196.59
6	STAKE, LATERAL	39	25	11	21	17	49	46	55	28	37	328	EA	$650.00	$213,285.19
7	STAKE, SETTLEMENT	39	25	11	21	17	49	46	55	28	37	328	EA	$250.00	$82,032.77
8	SUBGRADE TREATMENT, TYPE IB	160,492	106,838	50,400	96,357	66,463	171,986	182,463	217,143	133,093	153,224	1,338,459	SYS	$10.00	$13,384,591.58
9	QC/QA, SURFACE	12,002	8,020	3,762	7,192	4,986	12,745	13,097	16,219	9,946	11,482	99,452	TON	$115.00	$11,436,946.53
10	QC/QA, INTERMEDIATE	26,670	17,721	8,778	16,782	10,470	27,505	28,732	34,936	23,208	25,148	219,951	TON	$105.00	$23,094,873.96
11	QC/QA, BASE	55,039	35,693	17,556	33,564	21,652	57,853	59,790	69,821	46,416	50,349	447,733	TON	$95.00	$42,534,600.81
12	QC/QA, INTERMEDIATE, OG	24,004	15,556	7,524	14,385	9,604	25,490	26,194	30,643	19,892	21,989	195,281	TON	$110.00	$21,480,954.87
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	19,688	12,591	5,400	10,324	8,455	24,372	23,118	27,729	14,100	18,289	164,065	LFT	$2.25	$369,147.29
14	JOINT ADHESIVE, INTERMEDIATE	97,881	68,052	32,400	61,944	42,505	118,675	118,475	139,807	85,720	96,463	861,922	LFT	$0.75	$646,441.59
15	ASPHALT FOR TACK COAT	0	0	0	0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	74,555	49,618	24,700	47,223	31,207	83,700	90,868	107,362	64,660	73,026	646,918	TON	$50.00	$32,345,918.49
17	INLET, TYPE P	28	18	11	21	10	30	32	37	28	27	242	EA	$5,400.00	$1,305,847.44
18	PIPE, TYPE 2, 15"	2,348	1,603	990	1,927	1,023	3,300	3,520	3,947	2,820	2,662	24,140	LFT	$90.00	$2,172,608.40
19	END SECTION, 15"	28	18	11	21	10	30	32	37	28	27	242	EA	$1,000.00	$241,823.60
20	REVETMENT RIPRAP	1,990	830	630	576	421	1,245	796	1,117	1,503	1,139	10,247	TON	$55.00	$563,603.71
21	GEOTEXTILES FOR RIPRAP	2,584	1,102	796	781	563	1,683	1,127	1,520	2,012	1,534	13,702	SYS	$5.00	$68,508.96
22	STRUCTURAL BACKFILL, TYPE 1	9,392	6,411	3,960	7,709	4,093	13,200	14,080	15,787	11,280	10,649	96,560	CYS	$55.00	$5,310,820.53
23	SEEDING, TYPE R	13,507	9,685	5,337	10,689	8,164	29,346	30,460	33,539	17,253	25,293	183,273	SYS	$3.00	$549,817.70
24	MULCHING	132	94	52	104	80	286	297	327	168	247	1,788	SYS	$750.00	$1,341,018.79
25	FERTILIZER	26	19	10	21	16	57	59	65	34	49	358	TON	$1,000.00	$357,605.01
26	UNDERDRAIN, 4"	67,552	43,325	21,600	41,296	27,142	78,743	78,236	92,458	56,400	63,201	569,954	LFT	$6.00	$3,419,726.88
27	AGGREGATE FOR UNDERDRAIN	6,080	3,899	1,944	3,717	2,443	7,087	7,041	8,321	5,076	5,688	51,296	CYS	$80.00	$4,103,672.26
28	GEOTEXTILES FOR UNDERDRAIN	31,224	20,026	9,984	19,088	12,546	36,397	36,163	42,736	26,069	29,213	263,446	SYS	$3.00	$790,336.88
29	OUTLET PROTECTOR	169	108	54	103	68	197	196	231	141	158	1,425	EA	$750.00	$1,068,664.65
30	PAVEMENT MARKINGS	75,996	48,741	24,300	46,458	37,213	107,330	102,252	122,474	63,450	71,102	699,315	LFT	$2.00	$1,398,629.82
31	FENCE, RIGHT-OF-WAY	28,176	18,144	10,800	20,648	10,232	30,000	32,000	37,000	28,200	26,624	241,824	LFT	$10.00	$2,418,236.00
32	CULVERT, CIRCULAR	2,450	985	0	412	335	2,999	1,957	1,745	4,082	1,564	16,529	LFT	$350.00	$5,785,150.00
33	CULVERT, 4-SIDED BOX	1,121	764	796	620	373	512	996	2,531	1,121	582	9,416	LFT	$1,400.00	$13,182,400.00
34	CULVERT, 3-SIDED BOX	0	0	0	0	0	0	0	0	0	0	0	LFT	$4,500.00	$0.00
35	BRIDGE	0	0	1,045	28,776	2,594	35,190	13,106	21,878	813	5,446	108,850	SYS	$2,745.00	$298,792,594.25
36	INTERSECTION LIGHTING	2	2	0	0	3	1	1	1	1	1	12	EA	$500,000.00	$6,000,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$29,788,977.02**	**$21,982,237.35**	**$15,875,745.57**	**$103,725,827.51**	**$33,987,458.30**	**$147,799,069.77**	**$104,796,444.57**	**$132,808,266.02**	**$47,039,427.90**	**$54,599,469.21**	**Cross Check**		**OK**	**$692,402,923.20**

MID-STATES CORRIDOR

LUMP SUM ITEMS

ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$34,620,146
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$10,386,044
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$34,620,146
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$13,848,058
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$34,620,146
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$34,620,146
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$17,310,073
SUB-TOTAL OF LUMP SUM ITEMS		$7,745,134.03		$5,715,381.71		$4,127,693.85		$26,968,715.15		$8,836,739.16		$38,427,758.14		$27,247,075.59		$34,530,149.16		$12,230,251.25		$14,195,861.99		**Cross Check**		**OK**	**$180,024,760**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$37,534,111.05		$27,697,619.06		$20,003,439.41		$130,694,542.66		$42,824,197.46		$186,226,827.91		$132,043,520.16		$167,338,415.18		$59,269,679.15		$68,795,331.20		**Cross Check**		**OK**	**$872,427,683**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$45,040,933.26		$33,237,142.87		$24,004,127.29		$156,833,451.19		$51,389,036.95		$223,472,193.49		$158,452,224.19		$200,806,098.22		$71,123,614.98		$82,554,397.44		**Cross Check**		**OK**	**$1,046,913,220**
MAINLINE SEGMENT LENGTH (LFT)		14,088		9,072		5,400		10,324		5,116		15,000		16,000		18,500		14,100		13,312				**MILES**	**22.90**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$16,880,758.63		$19,344,368.87		$23,470,702.24		$80,209,281.51		$53,036,379.02		$78,662,212.11		$52,289,233.98		$57,311,145.87		$26,633,523.91		$32,744,423.63					$45,716,810.11

MID-STATES CORRIDOR

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 3, ACCESS OPTION A - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 360	N/A	360 to 458	458 to 512	512 to 640	640 to 800	800 to 985	985 to 1140	1140 to 1284				
1	COMMON EXCAVATION	377,659	460,774		121,847	212,912	1,443,255	2,993,405	1,978,187	1,906,392	1,162,494	10,656,924	CYS	$14.00	$149,196,939.28
2	ROCK EXCAVATION	94,415	115,193		30,462	53,228	360,814	748,351	494,547	476,598	290,623	2,664,231	CYS	$14.00	$37,299,234.82
3	BORROW	0	1,024,701		1,106,679	1,271,509	217,903	443,682	196,766	0	0	4,261,240	CYS	$12.00	$51,134,881.84
4	EMBANKMENT FOUNDATION SOILS TREATMENT	536,313	569,890		455,517	313,955	645,721	770,349	847,242	730,360	525,689	5,395,035	SYS	$1.75	$9,441,311.30
5	SETTLEMENT PLATE	52	36		33	16	34	42	46	45	29	332	EA	$1,500.00	$498,438.99
6	STAKE, LATERAL	52	36		33	16	34	42	46	45	29	332	EA	$650.00	$215,990.23
7	STAKE, SETTLEMENT	52	36		33	16	34	42	46	45	29	332	EA	$250.00	$83,073.17
8	SUBGRADE TREATMENT, TYPE IB	207,949	195,903		113,967	84,097	133,547	203,472	220,888	218,274	168,456	1,546,553	SYS	$10.00	$15,465,525.52
9	QC/QA, SURFACE	15,330	14,544		8,436	6,107	9,932	14,728	16,385	16,205	12,494	114,161	TON	$115.00	$13,128,551.04
10	QC/QA, INTERMEDIATE	32,886	33,573		18,075	14,249	22,222	33,057	37,050	35,610	29,153	255,876	TON	$105.00	$26,866,948.01
11	QC/QA, BASE	68,548	67,103		38,198	28,499	45,657	67,778	74,575	70,374	58,307	519,040	TON	$95.00	$49,308,755.02
12	QC/QA, INTERMEDIATE, OG	30,232	28,846		16,872	12,214	19,865	29,456	32,278	30,665	24,989	225,417	TON	$110.00	$24,795,817.75
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	25,764	18,000		16,550	8,131	16,800	21,096	22,936	22,300	14,569	166,146	LFT	$2.25	$373,829.24
14	JOINT ADHESIVE, INTERMEDIATE	123,135	113,923		65,550	49,729	89,360	120,145	133,009	124,752	96,547	916,150	LFT	$0.75	$687,112.29
15	ASPHALT FOR TACK COAT	0	0		0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	88,286	82,871		55,634	29,371	65,036	88,788	96,680	90,247	69,796	666,709	TON	$50.00	$33,335,449.96
17	INLET, TYPE P	28	34		20	11	26	32	37	31	29	247	EA	$5,400.00	$1,334,540.23
18	PIPE, TYPE 2, 15"	2,538	3,155		1,797	1,242	2,859	3,413	4,008	3,203	2,865	25,080	LFT	$90.00	$2,257,213.16
19	END SECTION, 15"	28	34		20	11	26	32	37	31	29	247	EA	$1,000.00	$247,137.08
20	REVETMENT RIPRAP	1,723	1,485		660	986	1,134	51,495	2,161	1,606	1,077	62,326	TON	$55.00	$3,427,941.85
21	GEOTEXTILES FOR RIPRAP	2,238	1,947		886	1,258	1,524	52,339	2,312	2,155	1,442	66,100	SYS	$5.00	$330,501.47
22	STRUCTURAL BACKFILL, TYPE 1	10,152	12,619		7,187	4,968	11,435	13,653	16,033	12,813	11,461	100,321	CYS	$55.00	$5,517,632.16
23	SEEDING, TYPE R	16,086	17,808		15,086	11,455	22,138	25,947	28,561	24,265	17,140	178,485	SYS	$3.00	$535,455.95
24	MULCHING	157	174		147	112	216	253	279	237	167	1,741	SYS	$750.00	$1,305,990.13
25	FERTILIZER	31	35		29	22	43	51	56	47	33	348	TON	$1,000.00	$348,264.03
26	UNDERDRAIN, 4"	62,800	69,800		52,700	21,600	59,200	74,193	82,872	75,600	58,274	557,040	LFT	$6.00	$3,342,237.00
27	AGGREGATE FOR UNDERDRAIN	5,652	6,282		4,743	1,944	5,328	6,677	7,459	6,804	5,245	50,134	CYS	$80.00	$4,010,684.40
28	GEOTEXTILES FOR UNDERDRAIN	29,028	32,263		24,359	9,984	27,364	34,294	38,305	34,944	26,936	257,476	SYS	$3.00	$772,428.11
29	OUTLET PROTECTOR	157	175		132	54	148	185	207	189	146	1,393	EA	$750.00	$1,044,449.06
30	PAVEMENT MARKINGS	106,622	78,525		59,288	35,907	74,600	93,660	102,104	98,650	65,559	714,914	LFT	$2.00	$1,429,828.08
31	FENCE, RIGHT-OF-WAY	28,200	33,800		19,600	10,800	25,600	32,000	37,000	31,000	29,137	247,137	LFT	$10.00	$2,471,370.80
32	CULVERT, CIRCULAR	1,679	993		538	1,158	2,586	1,957	1,745	4,500	1,158	16,314	LFT	$350.00	$5,709,742.50
33	CULVERT, 4-SIDED BOX	1,226	2,107		629	746	512	996	2,531	1,121	746	10,615	LFT	$1,400.00	$14,860,594.00
34	CULVERT, 3-SIDED BOX	0	0		0	0	0	0	125	0	0	125	LFT	$4,500.00	$562,500.00
35	BRIDGE	613	1,802		45,268	6,141	33,524	15,176	15,040	1,687	6,939	126,190	SYS	$2,745.00	$346,390,479.45
36	INTERSECTION LIGHTING	1	1		0	1	1	1	1	1	1	8	EA	$1,000,000.00	$8,000,000.00
	SUB-TOTAL OF QUANTIFIED ITEMS	**$37,155,971.37**	**$54,808,581.80**	**$0.00**	**$156,069,975.84**	**$48,685,754.03**	**$141,187,952.30**	**$131,753,916.42**	**$113,076,127.34**	**$69,362,041.79**	**$63,630,527.01**	**Cross Check**		**OK**	**$815,730,847.90**

PROJECT: MID-STATES CORRIDOR
INDOT DES. NO.: N/A
CALCULATED BY: NW AB DATE: 7/17/25
CHECKED BY: NJ DATE: 7/28/25
SHEET NO. 2 OF 2

LUMP SUM ITEMS

ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$40,786,542
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$12,235,963
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$40,786,542
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$16,314,617
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$40,786,542
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$40,786,542
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$20,393,271
SUB-TOTAL OF LUMP SUM ITEMS		$9,660,552.56		$14,250,231.27		$0.00		$40,578,193.72		$12,658,296.05		$36,708,867.60		$34,256,018.27		$29,399,793.11		$18,034,130.86		$16,543,937.02		**Cross Check**		**OK**	**$212,090,020**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$46,816,523.92		$69,058,813.07		$0.00		$196,648,169.56		$61,344,050.08		$177,896,819.90		$166,009,934.68		$142,475,920.44		$87,396,172.65		$80,174,464.04		**Cross Check**		**OK**	**$1,027,820,868**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$56,179,828.71		$82,870,575.69		$0.00		$235,977,803.47		$73,612,860.10		$213,476,183.88		$199,211,921.62		$170,971,104.53		$104,875,407.18		$96,209,356.85		**Cross Check**		**OK**	**$1,233,385,042**
MAINLINE SEGMENT LENGTH (LFT)		14,100		16,900		0		9,800		5,400		12,800		16,000		18,500		15,500		14,569				**MILES**	**23.40**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$21,037,552.88		$25,890,925.42		#DIV/0!		$127,139,061.46		$71,977,018.76		$88,058,925.85		$65,739,934.13		$48,796,077.40		$35,725,300.00		$34,868,655.62					$52,701,707.26

MID-STATES CORRIDOR, TIER 2 SCREENING OF ALTERNATIVES - ESTIMATE OF QUANTITIES & CONSTRUCTION COSTS

ALTERNATIVE 3, ACCESS OPTION B - EXPRESSWAY

QUANTIFIED ITEMS															
ITEM #	DESCRIPTION	SEGMENT DESIGN NUMBER										TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		50 to 191	191 to 360	N/A	360 to 458	458 to 512	512 to 640	640 to 800	800 to 985	985 to 1140	1140 to 1284				
1	COMMON EXCAVATION	394,371	686,964		211,409	608,661	1,504,206	1,533,201	1,927,973	1,581,333	1,412,278	9,860,397	CYS	$14.00	$138,045,555.87
2	ROCK EXCAVATION	98,593	171,741		52,852	152,165	376,052	383,300	481,993	395,333	353,070	2,465,099	CYS	$14.00	$34,511,388.97
3	BORROW	0	122,971		620,510	1,270,688	114,710	489,774	78,665	0	0	2,697,319	CYS	$12.00	$32,367,824.32
4	EMBANKMENT FOUNDATION SOILS TREATMENT	463,126	559,271		352,713	317,121	724,521	825,589	988,057	651,361	627,386	5,509,144	SYS	$1.75	$9,641,002.87
5	SETTLEMENT PLATE	40	38		20	19	44	49	55	34	40	340	EA	$1,500.00	$509,755.92
6	STAKE, LATERAL	40	38		20	19	44	49	55	34	40	340	EA	$650.00	$220,894.23
7	STAKE, SETTLEMENT	40	38		20	19	44	49	55	34	40	340	EA	$250.00	$84,959.32
8	SUBGRADE TREATMENT, TYPE IB	161,376	171,781		91,467	73,296	151,452	189,130	217,143	153,004	165,749	1,374,398	SYS	$10.00	$13,743,980.00
9	QC/QA, SURFACE	12,061	12,854		6,827	5,496	11,213	13,482	16,219	11,435	12,407	101,995	TON	$115.00	$11,729,383.09
10	QC/QA, INTERMEDIATE	26,690	29,448		15,930	11,483	23,929	29,246	34,936	26,228	27,295	225,185	TON	$105.00	$23,644,469.92
11	QC/QA, BASE	55,069	59,410		31,861	22,084	50,701	61,307	69,821	52,282	54,164	456,697	TON	$95.00	$43,386,236.42
12	QC/QA, INTERMEDIATE, OG	24,046	25,622		13,655	9,754	22,425	26,964	30,643	22,510	23,603	199,222	TON	$110.00	$21,914,460.81
13	VOID REDUCING ASPHALT MEMBRANE FOR HMA	20,061	19,031		9,800	9,621	22,172	24,618	27,729	16,900	19,987	169,919	LFT	$2.25	$382,316.83
14	JOINT ADHESIVE, INTERMEDIATE	97,587	108,268		58,800	46,758	105,475	122,975	139,807	98,320	100,005	877,994	LFT	$0.75	$658,495.28
15	ASPHALT FOR TACK COAT	0	0		0	0	0	0	0	0	0	0	TON	$1,250.00	$0.00
16	COMPACTED AGGREGATE, NO. 53	75,275	82,345		44,826	34,964	73,637	94,559	107,362	74,240	80,038	667,246	TON	$50.00	$33,362,320.61
17	INLET, TYPE P	28	34		20	11	26	32	37	31	29	247	EA	$5,400.00	$1,334,540.23
18	PIPE, TYPE 2, 15"	2,397	3,098		1,927	1,224	2,731	3,413	3,947	3,255	2,865	24,857	LFT	$90.00	$2,237,173.16
19	END SECTION, 15"	28	34		20	11	26	32	37	31	29	247	EA	$1,000.00	$247,137.08
20	REVETMENT RIPRAP	1,723	2,440		571	1,749	1,134	796	1,117	1,606	1,241	12,377	TON	$55.00	$680,736.03
21	GEOTEXTILES FOR RIPRAP	2,238	2,623		770	1,705	1,524	1,127	1,520	2,155	1,674	15,336	SYS	$5.00	$76,682.41
22	STRUCTURAL BACKFILL, TYPE 1	9,588	12,393		7,709	4,896	10,923	13,653	15,787	13,020	11,461	99,430	CYS	$55.00	$5,468,645.50
23	SEEDING, TYPE R	14,045	17,505		11,530	10,954	25,072	27,862	33,452	21,879	20,596	182,895	SYS	$3.00	$548,683.78
24	MULCHING	137	171		112	107	245	272	326	213	201	1,784	SYS	$750.00	$1,338,253.12
25	FERTILIZER	27	34		22	21	49	54	65	43	40	357	TON	$1,000.00	$356,867.50
26	UNDERDRAIN, 4"	68,322	71,862		39,200	30,042	69,943	81,236	92,458	64,800	69,110	586,974	LFT	$6.00	$3,521,845.56
27	AGGREGATE FOR UNDERDRAIN	6,149	6,468		3,528	2,704	6,295	7,311	8,321	5,832	6,220	52,828	CYS	$80.00	$4,226,214.67
28	GEOTEXTILES FOR UNDERDRAIN	31,580	33,216		18,119	13,886	32,329	37,549	42,736	29,952	31,944	271,313	SYS	$3.00	$813,937.64
29	OUTLET PROTECTOR	171	180		98	75	175	203	231	162	173	1,467	EA	$750.00	$1,100,576.74
30	PAVEMENT MARKINGS	76,862	80,845		44,100	33,797	97,430	108,627	122,474	75,700	77,749	717,584	LFT	$2.00	$1,435,168.29
31	FENCE, RIGHT-OF-WAY	28,200	33,800		19,600	10,800	25,600	32,000	37,000	31,000	29,137	247,137	LFT	$10.00	$2,471,370.80
32	CULVERT, CIRCULAR	1,691	839		473	417	2,586	1,957	1,745	4,500	1,812	16,020	LFT	$350.00	$5,607,000.00
33	CULVERT, 4-SIDED BOX	1,161	1,836		598	499	512	996	2,531	1,121	574	9,828	LFT	$1,400.00	$13,759,200.00
34	CULVERT, 3-SIDED BOX	0	125		0	125	0	0	0	0	0	250	LFT	$4,500.00	$1,125,000.00
35	BRIDGE	0	928		40,827	2,605	35,190	15,176	14,156	0	4,633	113,515	SYS	$2,745.00	$311,598,629.25
36	INTERSECTION LIGHTING	2	2		0	1	1	1	1	1	1	10	EA	$500,000.00	$5,000,000.00
SUB-TOTAL OF QUANTIFIED ITEMS		**$31,349,569.66**	**$43,754,657.87**	**$0.00**	**$136,920,874.62**	**$44,462,549.20**	**$147,194,314.77**	**$102,214,748.07**	**$107,379,803.08**	**$52,507,432.80**	**$61,366,756.11**	**Cross Check**		**OK**	**$727,150,706.20**

LUMP SUM ITEMS																									
ITEM #	DESCRIPTION	SEGMENT NUMBER																				TOTAL QTY.	UNITS	UNIT COST	TOTAL COST
		Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%	Qty.	%				
35	CLEARING RIGHT-OF-WAY	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$36,357,535
36	SIGNING	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	1	1.5%	N/A	LS	N/A	$10,907,261
37	LIGHTING	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
38	KARST MITIGATION	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	N/A	LS	N/A	$0
39	MISCELLANEOUS NON-MEDIAN DRAINAGE	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$36,357,535
40	CONSTRUCTION ENGINEERING	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	1	2.0%	N/A	LS	N/A	$14,543,014
41	MOBILIZATION AND DEMOBILIZATION	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$36,357,535
42	MAINTENANCE OF TRAFFIC	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	1	5.0%	N/A	LS	N/A	$36,357,535
43	STORMWATER MANAGEMENT BUDGET	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	1	2.5%	N/A	DOL	N/A	$18,178,768
SUB-TOTAL OF LUMP SUM ITEMS		$8,150,888.11		$11,376,211.05		$0.00		$35,599,427.40		$11,560,262.79		$38,270,521.84		$26,575,834.50		$27,918,748.80		$13,651,932.53		$15,955,356.59		**Cross Check**		**OK**	**$189,059,184**
TOTAL CONSTRUCTION COST WITHOUT CONTINGENCY		$39,500,457.77		$55,130,868.92		$0.00		$172,520,302.02		$56,022,811.99		$185,464,836.61		$128,790,582.57		$135,298,551.88		$66,159,365.33		$77,322,112.70		**Cross Check**		**OK**	**$916,209,890**
CONTINGENCY		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%		20.0%					**20%**
TOTAL ROADWAY COST		$47,400,549.33		$66,157,042.70		$0.00		$207,024,362.43		$67,227,374.39		$222,557,803.94		$154,548,699.09		$162,358,262.26		$79,391,238.40		$92,786,535.24		**Cross Check**		**OK**	**$1,099,451,868**
MAINLINE SEGMENT LENGTH (LFT)		14,100		16,900		0		9,800		5,400		12,800		16,000		18,500		15,500		14,569				**MILES**	**23.40**
TOTAL ROADWAY COST PER MILE OF MAINLINE		$17,749,992.94		$20,669,182.57		#DIV/0!		$111,539,656.49		$65,733,432.74		$91,805,094.12		$51,001,070.70		$46,337,925.66		$27,044,241.21		$33,628,140.23					$46,978,833.46

MID-STATES CORRIDOR
TIER 2

SCREENING OF ALTERNATIVES DESIGN SUMMARY APPENDIX

Mid-States Corridor
Tier 2 Environmental Study
Section 2
I-64 at Dale to SR 56 at Haysville

Prepared for

Indiana Department of Transportation

OCTOBER 3, 2025

Prepared by

VS Engineering, Inc.

TABLE OF CONTENTS

Summary 4
Typical Sections 4
Cross Sectional Elements 4
Pavement Section 16
Horizontal & Vertical Alignment 17
Mainline Mid-States Corridor (Mainline) Design Criteria 17
Intersecting Roadways (S-lines) Design Criteria 17
Bridges 18
Additional Reference Materials 19
Attachment 1 21
Attachment 2 22

SUMMARY

This document outlines the design criteria used to develop each preliminary alternative for the preliminary alternative screening phase of the Tier 2 NEPA process. Each preliminary alternative consists of a combination of cross-section elements (which form a typical section), horizontal alignment and vertical alignment. The alternatives and design criteria are preliminary and will continue to develop and be refined following the screening of alternatives for the development of alternatives carried forward for detailed study.

Typical Sections

A typical section was developed for each facility type and roadway functional classification studied. Each typical section generally consists of the following components:

- Cross Sectional Elements
- Pavement Section

A schematic representation of each typical section is presented in **Attachment 1**. Items comprising each typical section component are further described below.

Cross Sectional Elements

Design criteria for each cross-sectional element are based on the Indiana Design Manual (IDM) and projected Annual Average Daily Traffic (AADT) counts for the design year. Projected traffic volumes are a result of preliminary traffic analysis and provided for reference only. S-Line projected traffic volumes are provided in AADT ranges due to variability within alternative access locations. A summary of cross-sectional elements and utilized design criteria for each typical section is presented in the following tables.

Table 1: Projected Design Year AADT's for Mainline Mid-States Corridor

Mainline Segment Description	Passenger Vehicle			Truck			All Vehicles		
	NB	SB	Total	NB	SB	Total	NB	SB	Total
Super 2	4,200	4,300	8,500	1,000	1,100	2,100	5,200	5,400	10,600
Expressway	4,700	4,800	9,500	1,100	1,200	2,300	5,800	6,000	11,800

Mainline Mid-States Corridor (Mainline)

Table 2: Design Criteria for Mainline Mid-States Corridor Typical Sections

Element	Utilized Design Criteria for Mid-States Corridor Typical (Mainline) Sections	
	Super 2 Facility Type Rural Arterial 2-Lane Highway / w Passing Lane AADT > 5,000 VPD	Expressway Facility Type Rural Arterial 4-Lane Divided Highway AADT > 5,000 VPD
IDM Design Reference	Figure 53-2	Figure 53-2
Travel Lane Width	12 ft	12 ft
Opposing Travel Lane Buffer	4 ft	N/A
Right Shoulder	9 ft Usable / 8 ft Paved	11 ft Usable / 10 ft Paved
Left Shoulder	N/A	5 ft Usable / 4 ft Paved
Median Width	N/A	50 ft (Usable Shoulder to Usable Shoulder)
Outside Foreslope to Clear CZ	6 Horizontal : 1 Vertical	6 Horizontal : 1 Vertical
Outside Foreslope Outside CZ	4 Horizontal : 1 Vertical	4 Horizontal : 1 Vertical
Outside Backslope	4 Horizontal : 1 Vertical	4 Horizontal : 1 Vertical
Median Shoulder Foreslope	N/A	6 Horizontal : 1 Vertical
Median Ditch Width	N/A	4 ft
Outside Ditch Width	4 ft	4 ft
Underdrains Present	Yes	Yes – Median and Outside

Interchange Ramps (Ramps)

Table 3: Design Criteria for Interchange Ramp Typical Sections

Element	Utilized Design Criteria for Interchange Ramp Typical Sections
	Expressway Facility Type Rural Arterial 4-Lane Divided Highway
IDM Design Reference	Chapter 48
Travel Lane Width	16 ft
Right Shoulder	9 ft Usable / 8 ft Paved
Left Shoulder	5 ft Usable / 4 ft Paved
Underdrains Present	Yes

S-Line Intersecting Roadways (S-lines)

S-lines are generally defined as roadways intersecting with the mainline; however, in some instances, S-lines also serve as frontage roads to maintain local access. When access is provided via a quadrant roadway, the design criteria for the corresponding S-line was utilized for the quadrant roadway connecting the mainline to the S-line. A generalized schematic of a reduced conflict intersection (RCI) is in Attachment 2.

Table 4: Design Criteria for S-Line Typical Sections – E County Road 2200 N / W 1200 S

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 5: Design Criteria for S-Line Typical Sections – County Road W 1150 S

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 6: Design Criteria for S-Line Typical Sections – County Road W 1100 S West of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local-Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	2 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 7: Design Criteria for S-Line Typical Sections – County Road W 1100 S East of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local-Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 8: Design Criteria for S-Line Typical Sections – CR W 1000 S West of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 9: Design Criteria for S-Line Typical Sections – CR W 1000 S East of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	2 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 10: Design Criteria for S-Line Typical Sections – County Road W 900 S West of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 11: Design Criteria for S-Line Typical Sections – County Road W 900 S East of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	4 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 12: Design Criteria for S-Line Typical Sections – US 231 at Huntingburg West of Mainline

Element	Cross-Section Elements for Intersecting Roadway
Functional Classification	Rural Arterial
IDM Design Reference	Figure 53-7
Proposed AADT (VPD)	AADT ≥ 2000
Travel Lane Width	12 ft
Paved Shoulder	8 ft
Usable Shoulder	8 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 13: Design Criteria for S-Line Typical Sections – US 231 at Huntingburg East of Mainline

Element	Cross-Section Elements for Intersecting Roadway
Functional Classification	Rural Arterial
IDM Design Reference	Figure 53-7
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	12 ft
Paved Shoulder	6 ft
Usable Shoulder	4 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 14: Design Criteria for S-Line Typical Sections – CR S 200 W

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	2 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 15: Design Criteria for S-Line Typical Sections – S Ferdinand Rd. NW

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 16: Design Criteria for S-Line Typical Sections – E 6th St. / SR 64

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Urban Arterial, Two Lanes, Intermediate
IDM Design Reference	Figure 53-7
Proposed AADT (VPD)	AADT > 2000
Travel Lane Width	12 ft
Paved Shoulder	8 ft
Usable Shoulder	8 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 17: Design Criteria for S-Line Typical Sections – Phoenix Drive

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	AADT < 400
Travel Lane Width	12 ft*
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Des.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

*12 ft travel lanes provided due to potential for trucks depending on final access point determinations

Table 18: Design Criteria for S-Line Typical Sections – W 400 S / 130 W

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 19: Design Criteria for S-Line Typical Sections – SR 162

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, State Route
IDM Design Reference	Figure 53-3
Proposed AADT (VPD)	AADT > 2000
Travel Lane Width	12 ft
Paved Shoulder	8 ft
Usable Shoulder	10 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 20: Design Criteria for S-Line Typical Sections – Schnellville Road West of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-3
Proposed AADT (VPD)	AADT ≥ 2000
Travel Lane Width	12 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	8 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 21: Design Criteria for S-Line Typical Sections – Schnellville Road East of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-3
Proposed AADT (VPD)	AADT ≥ 2000
Travel Lane Width	12 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	8 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 22: Design Criteria for S-Line Typical Sections – SR 164

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, State Route
IDM Design Reference	Figure 53-3
Proposed AADT (VPD)	AADT > 2000
Travel Lane Width	12 ft
Paved Shoulder	8 ft
Usable Shoulder	10 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 23: Design Criteria for S-Line Typical Sections – E 190 N

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 24: Design Criteria for S-Line Typical Sections – Kellerville Road

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 25: Design Criteria for S-Line Typical Sections – 400 N

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT < 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft (Min.)
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 26: Design Criteria for S-Line Typical Sections – 500 N

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	4250
Travel Lane Width	12 ft
Paved Shoulder	N/A
Usable Shoulder	8 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 27: Design Criteria for S-Line Typical Sections – 500 N West of Mainline, Access Option A

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Arterial
IDM Design Reference	Figure 53-2
Proposed AADT (VPD)	AADT ≥ 2000
Travel Lane Width	12 ft
Paved Shoulder	8 ft
Usable Shoulder	8 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 28: Design Criteria for S-Line Typical Sections – 500 N East of Mainline, Access Option B

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT < 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 29: Design Criteria for S-Line Typical Sections – US 231 / SR 56 North of Jasper

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Arterial
IDM Design Reference	Figure 53-2
Proposed AADT (VPD)	AADT ≥ 2000
Travel Lane Width	12 ft
Paved Shoulder	10 ft
Usable Shoulder	11 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 30: Design Criteria for S-Line Typical Sections – 600 N

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT ≤ 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 31: Design Criteria for S-Line Typical Sections – Old SR 45

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Local Road
IDM Design Reference	Figure 53-5
Proposed AADT (VPD)	250 ≤ AADT ≤ 400
Travel Lane Width	11 ft
Paved Shoulder	N/A
Usable Shoulder	2 ft
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	No

Table 32: Design Criteria for S-Line Typical Sections – Haysville Road East of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	400 ≤ AADT< 1500
Travel Lane Width	11 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	4 ft Min.
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Table 33: Design Criteria for S-Line Typical Sections – Haysville Road West of Mainline

Element	Cross Section Elements for Intersecting Roadway
Functional Classification	Rural Collector, Local Agency Route
IDM Design Reference	Figure 53-4
Proposed AADT (VPD)	AADT< 400
Travel Lane Width	10 ft
Paved Shoulder	0 ft (2' Provided for Underdrain)
Usable Shoulder	2 ft Min.
Outside Foreslope to Clear Zone	Varies - See Typical Sections
Outside Backslope	4H:1V
Ditch Width	4 ft
Underdrains Present	Yes

Pavement Section

The following assumed hot mix asphalt (HMA) pavement section is utilized for mainline Mid-States Corridor travel lanes and should as well as interchange ramps:

165 lb/syd HMA Surface
385 lb/syd HMA Intermediate
770 lb/syd HMA Base
330 lb/syd HMA Drainage Layer
4” Compacted Aggregate, No. 53 Separation Layout
Chemical Subgrade Stabilization

The following assumed hot mix asphalt (HMA) pavement section is utilized for S-line travel lanes:

165 lb/syd HMA Surface
385 lb/syd HMA Intermediate
650 lb/syd HMA Base
330 lb/syd HMA Drainage Layer
4” Compacted Aggregate, No. 53 Separation Layout
Chemical Subgrade Stabilization

The following HMA shoulder pavement section is used for interchange ramps and S-line paved shoulders for all facility types:

165 lb/syd HMA Surface
275 lb/syd HMA Intermediate
12.41” Compacted Aggregate, No. 53 Base on
Chemical Subgrade Stabilization

The aggregate portions of shoulders (commonly known as usable shoulder) match the depth of the adjacent HMA pavement section and daylight along the foreslope. Chemical subgrade stabilization extends two feet beyond the paved shoulder in accordance with standard IDM pavement sections detailed in Chapter 602. Paved shoulder HMA pavement is replaced with mainline HMA pavement as required to accommodate underdrains and narrow paved shoulders for S-Lines per IDM requirements. In order to facilitate future maintenance of traffic needs, mainline Mid-States Corridor paved shoulders are assumed to have the same pavement thickness as the adjacent travel lanes. Project design year traffic counts will be utilized to further refine pavement thicknesses during subsequent phases of this study.

Horizontal & Vertical Alignment

Horizontal and vertical alignments are designed to avoid impacts while still complying with requirements of the Indiana Design Manual. Applicable design criteria and the methodology for which they were applied are further described below.

Mainline Mid-States Corridor (Mainline) Design Criteria

Two roadway facility types were proposed for the mainline: a Super-2 (two lanes with an alternating passing lane), and an Expressway (4-lane, divided highway). Design criteria utilized to develop preliminary horizontal and vertical alignments for both mainline facility types are as follows:

- Design Speed – 60 MPH (Expressway and Super-2)
- Posted Speed – 60 MPH (Expressway), 55 MPH (Super-2)
- Emax & Superelevation Rate – An Emax of 6% (IDM Fig. 305-4C) is used in accordance with IDM Figure 305-4A. Preliminary horizontal alignments were developed assuming that the superelevation rate will not exceed 4%.
- Minimum Horizontal Curve Length – Desirable and minimum horizontal curve lengths are in accordance with IDM 305-3.03 and presented below.
    - Desirable: 30V = 30 x 60 mph = 1,800 ft
    - Minimum: 15V= 15 x 60 mph = 900 ft
- Superelevation Transition Length – Superelevation transition length (sum of runoff length and runout length) is in accordance with IDM 305-4.04, IDM Figures 305-4F thru 305-4N as applicable. Superelevation application is in accordance with IDM 305-4.04(02)
- Vertical and Horizontal Stopping Sight Distance – As a new facility all desirable vertical and horizontal stopping sight distance requirements will be met or exceeded.

Intersecting Roadways (S-lines) Design Criteria

The local roadway network consists of a variety of functional classifications and design speeds. Design criteria utilized to develop preliminary horizontal and vertical alignments for s-line facilities are as follows:

- Design Speed – When the posted speed was available, it was also utilized as the design speed. When the posted speed was not available, a design speed of 55 mph was utilized in accordance with IDM 40-3.02(02)02. In the event that a 55 mph design speed results in impacts (or costs) that could be avoided through the use of a lower design speed, the theoretical design speed of the existing corridor is computed. If the computed theoretical design speed is lower than 55 mph, the computed theoretical design speed is utilized as the design speed.

- Emax & Superelevation Rate – An Emax of 6% (IDM Fig. 305-4C) is used in accordance with IDM Figure 305-4A. Preliminary horizontal alignments were developed assuming that the superelevation rate will not exceed 4% .
- Minimum Horizontal Curve Length – Desirable and minimum horizontal curve lengths are in accordance with IDM 305-3.03 and presented below.
    - Desirable: 30V = Varies Depending on Design Speed
    - Minimum: 15V= Varies Depending on Design Speed
- Intersection Alignments – Skew angles for intersections at-grade are in accordance with IDM 46-1.02 and IDM Figure 46-1A. Preliminary alternatives were designed such that skew angles did not exceed the desirable skew angle.
    - Desirable ≤ 20d
    - Maximum ≤ 30d

  When practical, S-lines were designed to intersect with Mainline Mid-States Corridor within tangent sections. When this is not practical, S-Lines were designed to intersect Mainline Corridor perpendicular to the tangent at a point on the horizontal curve.
- Superelevation Transition Length – Superelevation transition length (sum of runoff length and runout length) is in accordance with IDM 305-4.04, IDM Figures 305-4F thru 305-4N as applicable. Superelevation application is in accordance with IDM 305-4.04(02)
- Vertical and Horizontal Stopping Sight Distance – As a new facility all desirable vertical and horizontal stopping sight distance requirements will be met or exceeded.

Bridges

The previously described typical sections do not account for bridges associated with interchanges, roadway grade separations or railroad grade separations. The vertical alignments at grade separations are based on the following vertical clearances:

- Mainline Mid-States Corridor over S-Line Intersecting Roadway – 16’-6” plus the Bridge Structural Depth Based on the Required Span Length
- Mainline Mid-States Corridor over Railroad – 23’-0” plus the Bridge Structural Depth Based on the Required Span Length
- S-Line Intersecting Roadway over Mid-States Corridor – 16’-6” plus the Bridge Structural Depth Based on the Required Span Length

Bridge widths are based upon cross sectional elements for each mainline Mid-States Corridor typical section and the appropriate guardrail offset and bridge rail offset per the Indiana Design Manual. Assumed out-to-out bridge widths are as follows:

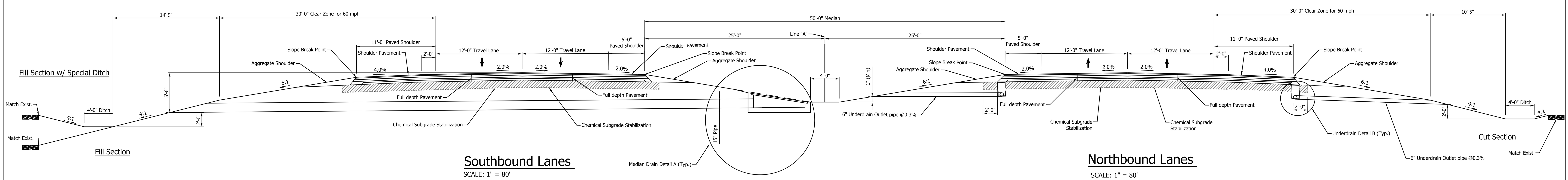
- Super-2 Facility Type – Single Structure at 64.33 ft
- Expressway Facility Type – Twin Bridges at 46.33 ft Each
- S-Line Facility Type – Single Structure at 36.33 ft or 46.33 ft

ADDITIONAL REFERENCE MATERIALS

The following additional reference materials are enclosed:

- Attachment 1 – Typical Sections
- Attachment 2 – Reduced Conflict Intersection

ATTACHMENT 1



Southbound Lanes

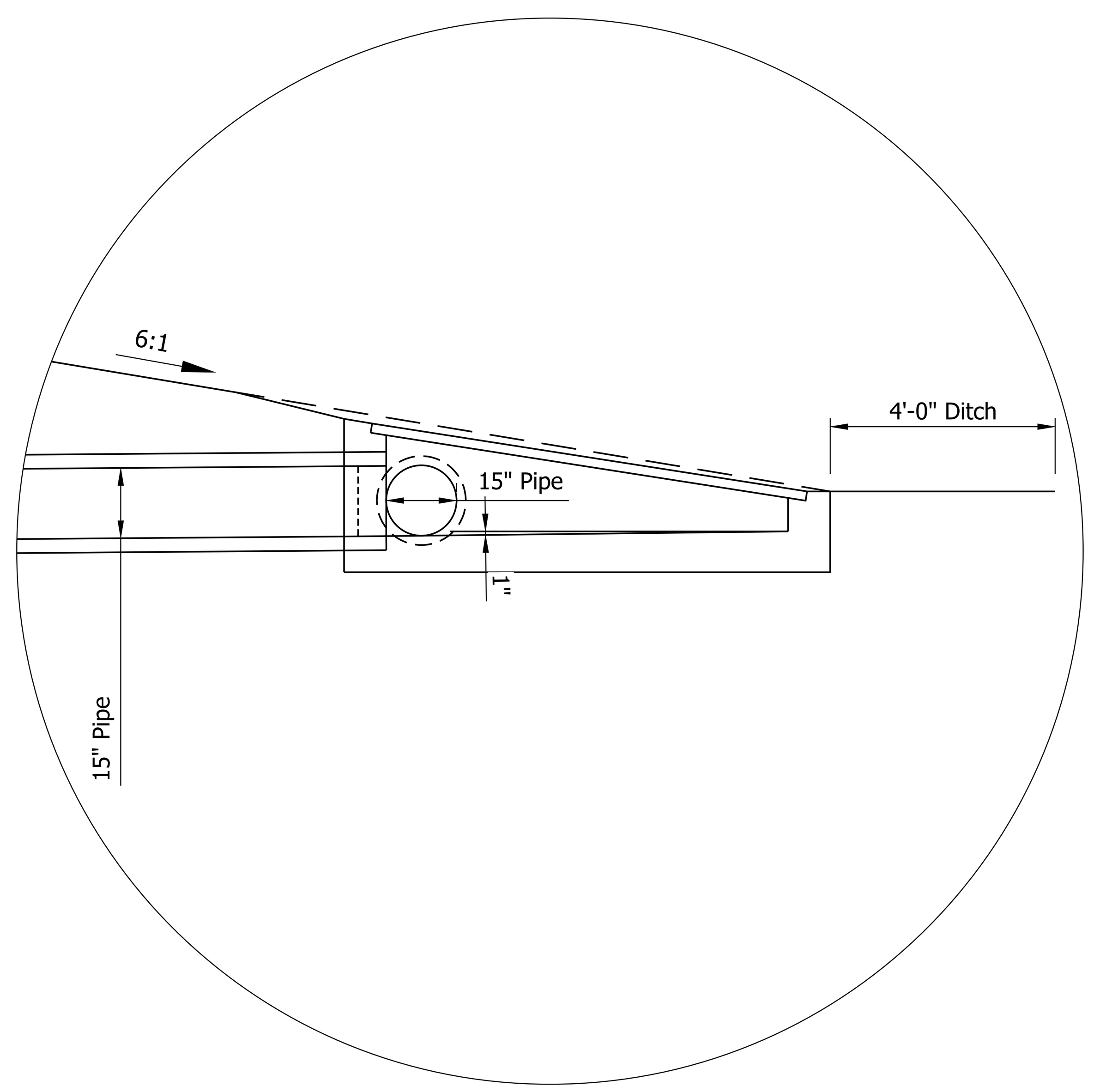
SCALE: 1" = 80'

Note: Underdrain omitted from southbound lanes for clarity purposes.

Northbound Lanes

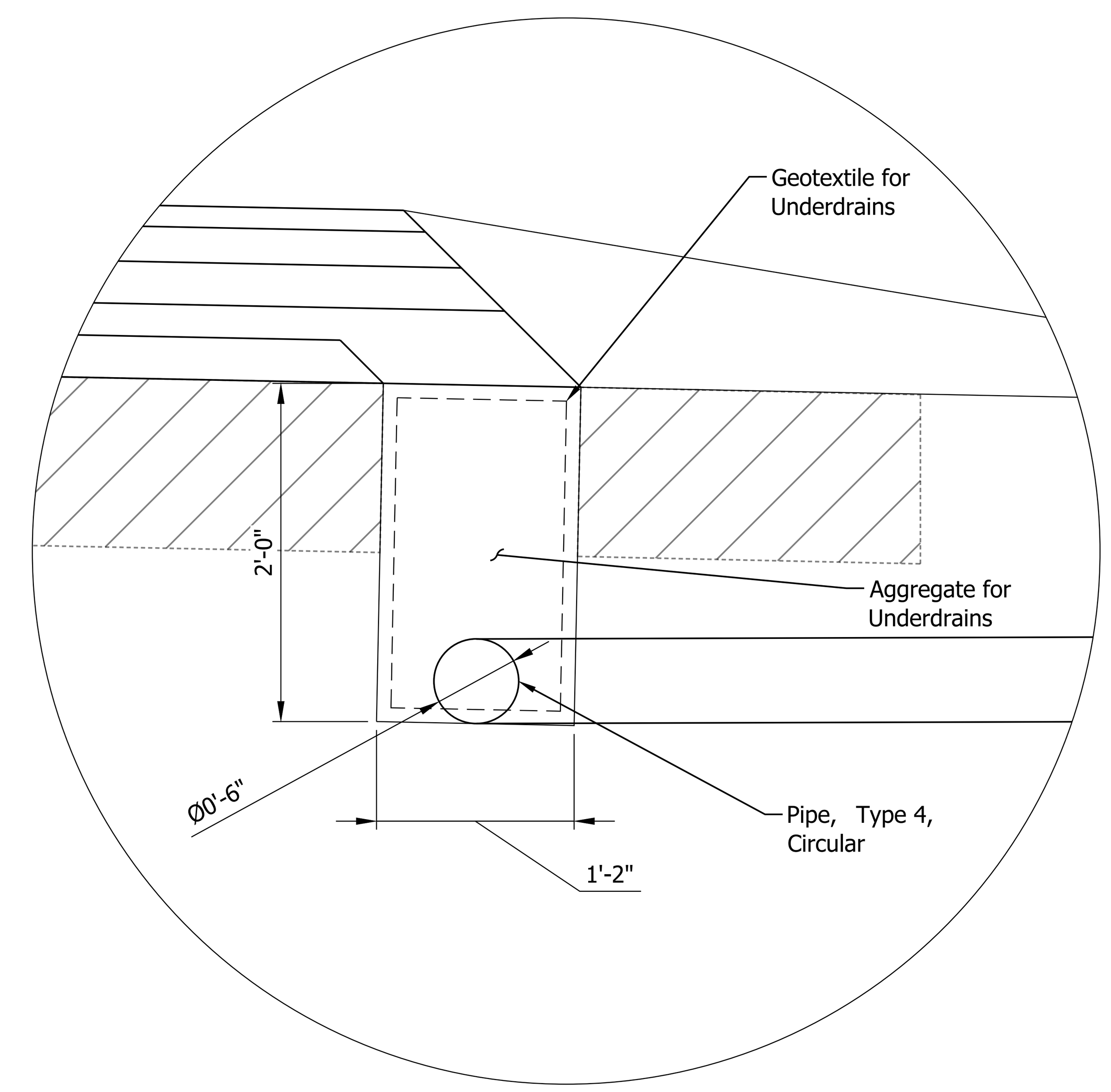
SCALE: 1" = 80'

Expressway Facility Type, Rural Arterial, 4 - Lane Divided Highway



Median Drain Detail A

SCALE 1"= 30'

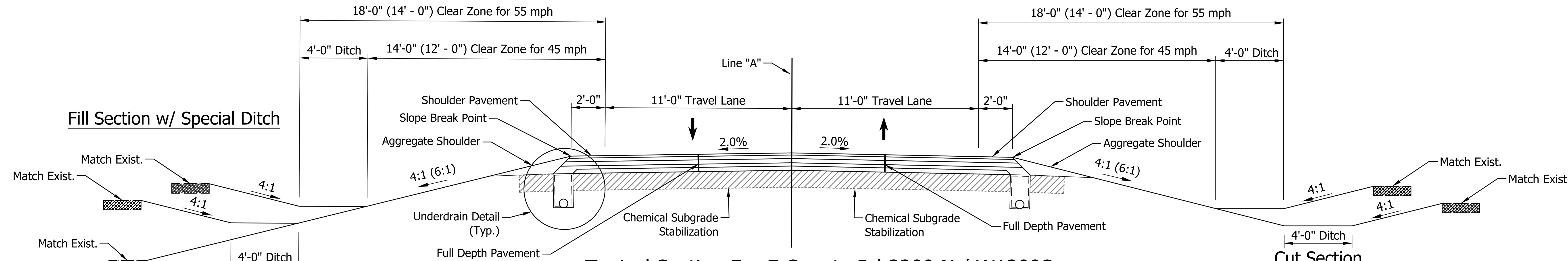


Underdrain Detail B

SCALE 1"= 10'

Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-Prelim\04282025_Typical Sections_COPY.dwg - (Expressway)

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: 1"=80'	BRIDGE FILE: #
		VERTICAL SCALE	DESIGNATION: #
DESIGNED: MLA / DRAWN: MLA	Typical Section Mainline Mid-States Corridor Expressway	SURVEY BOOK	SHEET 1 of 17
CHECKED: BSD / CHECKED: BSD		CONTRACT: #	PROJECT: #



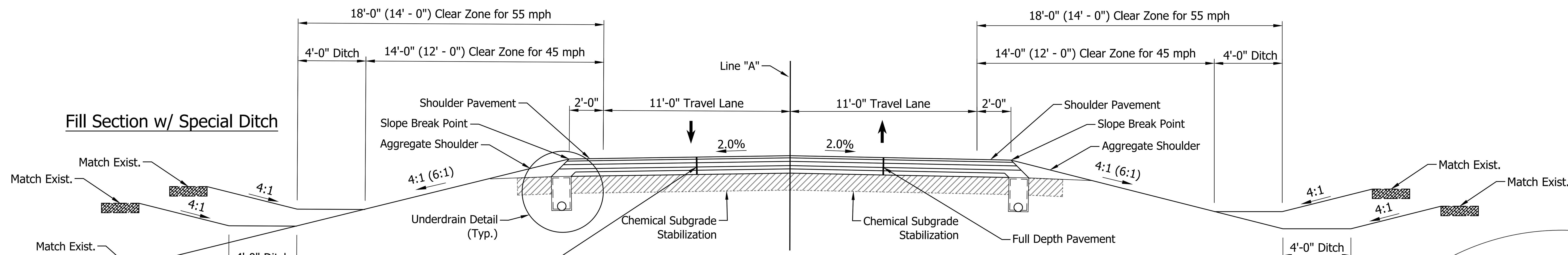
Typical Section For E County Rd 2200 N / W1200S

Functional Class: Local

Geometric Design Criteria: Rural Local Road

Speed - 45 mph

250 ≤ AADT < 400



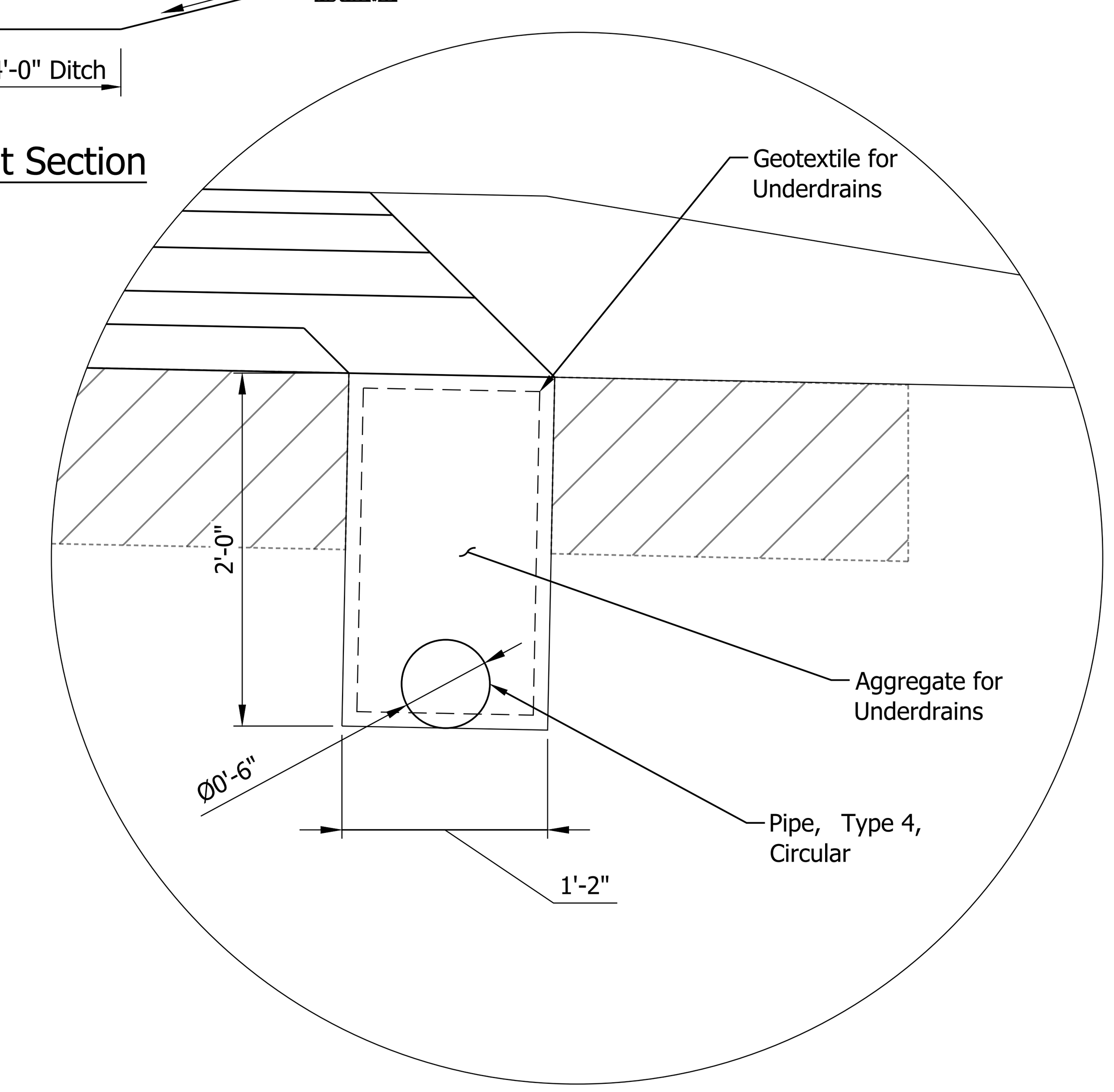
Typical Section For W1150S

Functional Class: Local

Geometric Design Criteria: Rural Local Road

Speed - 55 mph

250 ≤ AADT < 400

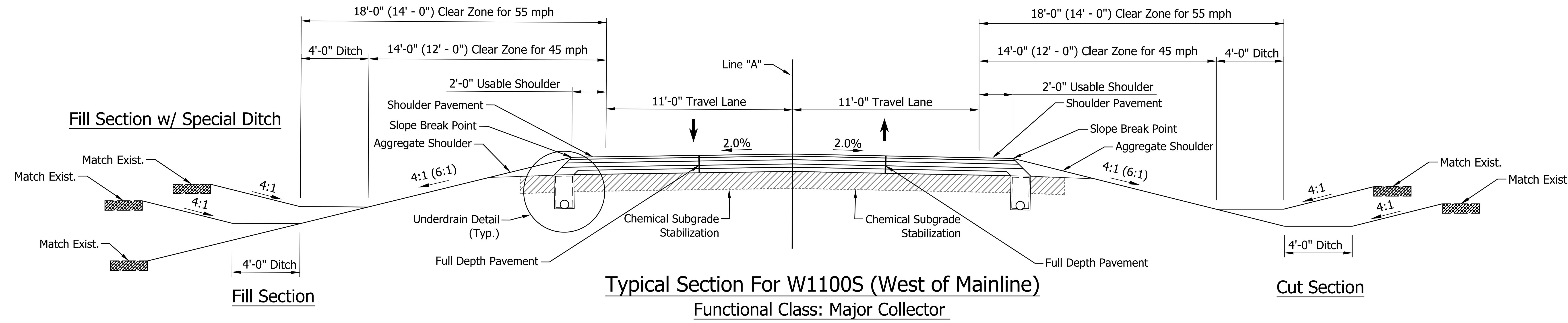


Underdrain Detail

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL ___ DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1'	BRIDGE FILE #
		VERTICAL SCALE	DESIGNATION #
DESIGNED: MLA / DRAWN: MLA	Typical Section E County Rd 2200 N / W1200S - W1150S	SURVEY BOOK	SHEET 2 of 17
CHECKED: BSD / CHECKED: BSD		CONTRACT #	PROJECT #

Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (ECR 2200S - W1150S)



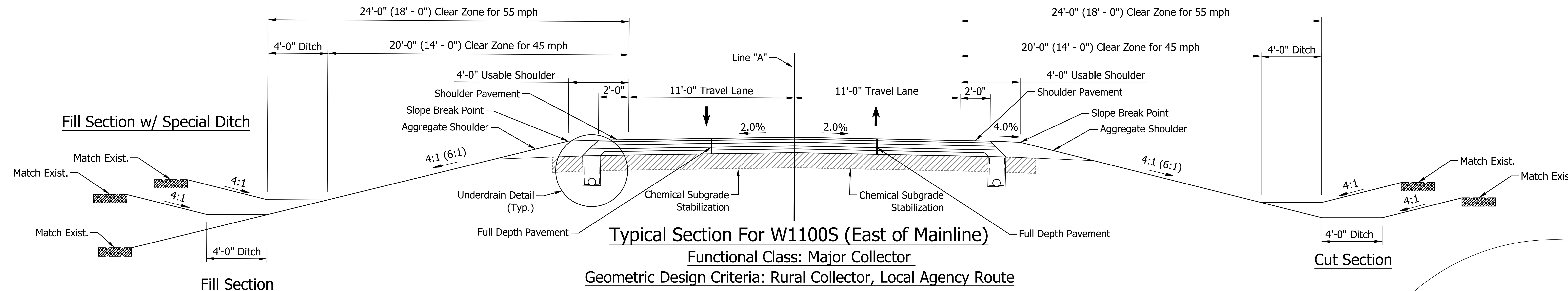
Typical Section For W1100S (West of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT < 400



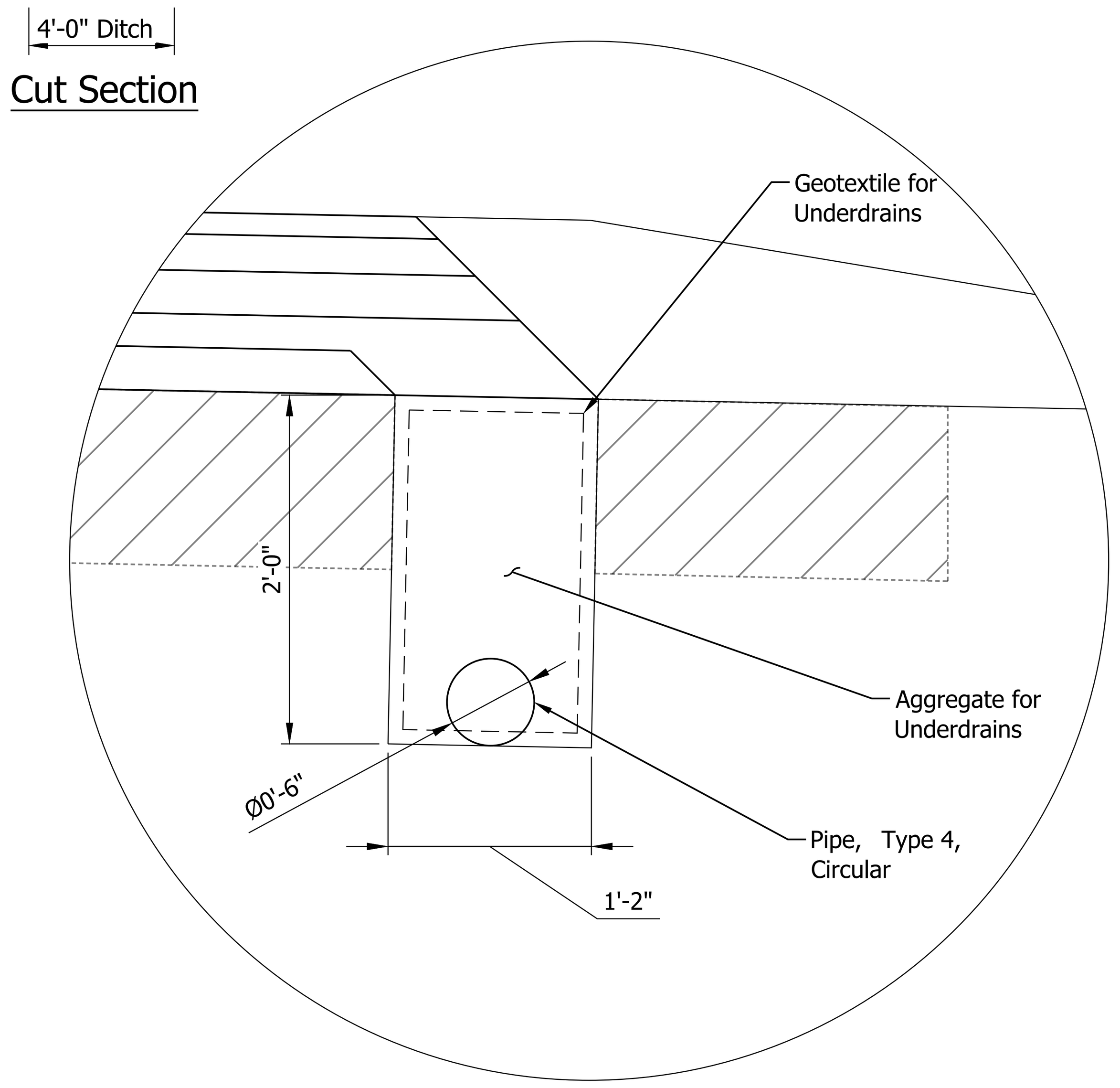
Typical Section For W1100S (East of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

400 ≤ AADT < 1500



Underdrain Detail

SCALE 1"= 10'

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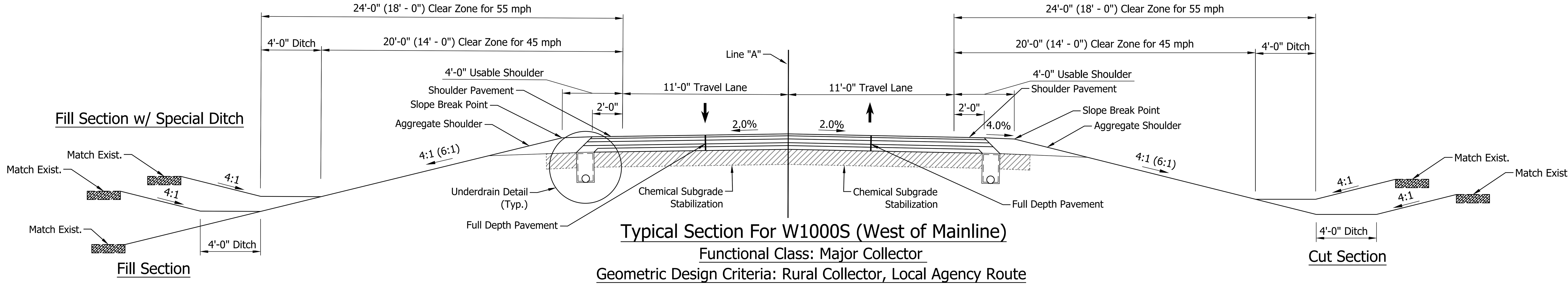
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-Prelim\04282025_Typical Sections_COPY.dwg - (W1100S West - W1100S East)

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	#	DATE
DESIGNED: MLA	DRAWN: MLA		
CHECKED: BSD	CHECKED: BSD		

INDIANA
DEPARTMENT OF TRANSPORTATION

Typical Section
W1100S West - W1100S East

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	3 of 17
CONTRACT	PROJECT
#	#



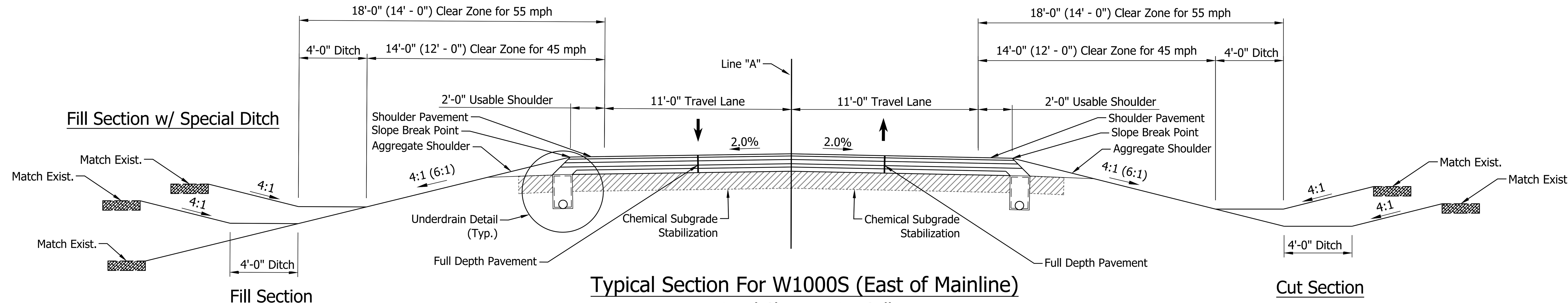
Typical Section For W1000S (West of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

400 ≤ AADT < 1500



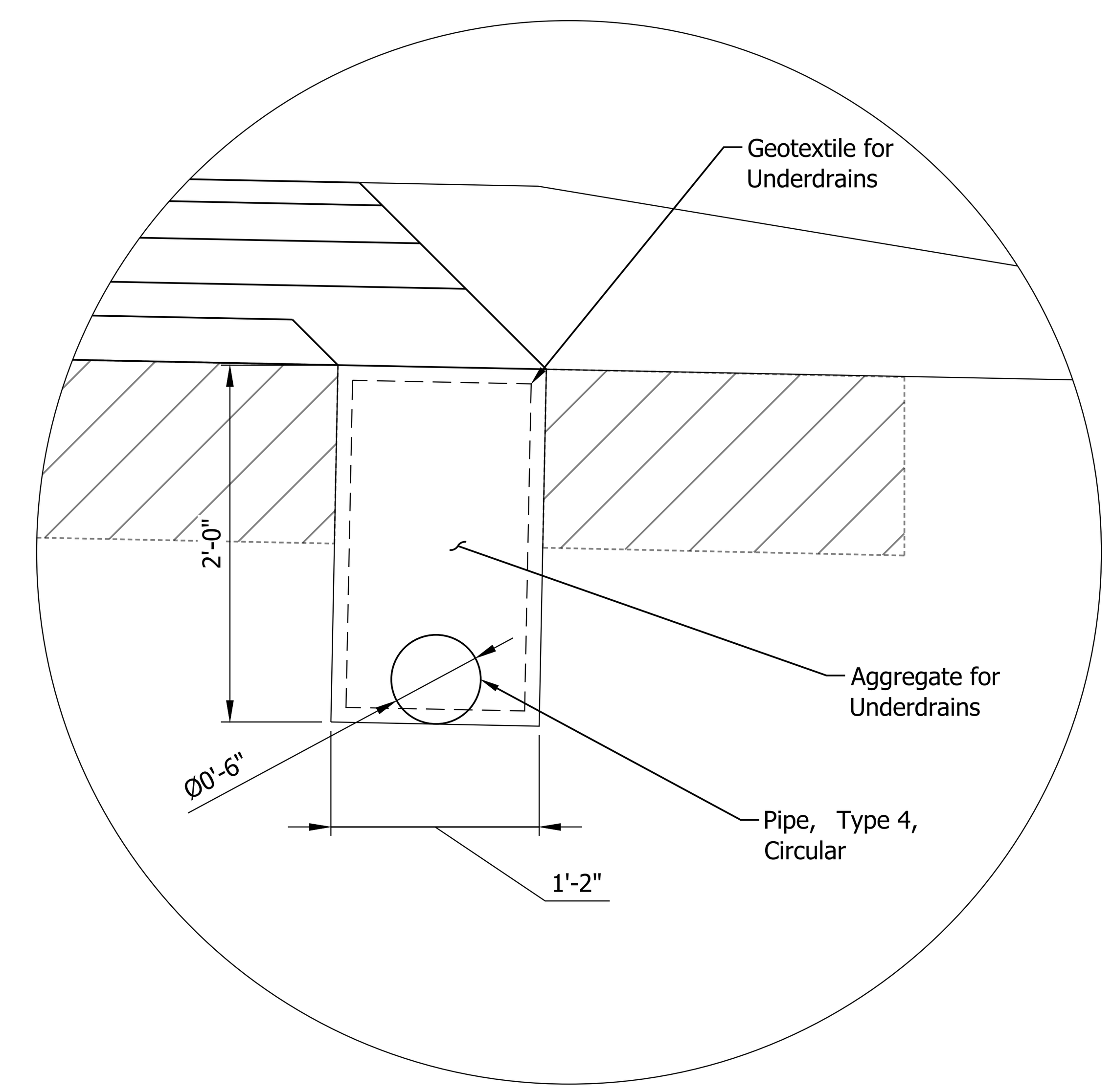
Typical Section For W1000S (East of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT < 400



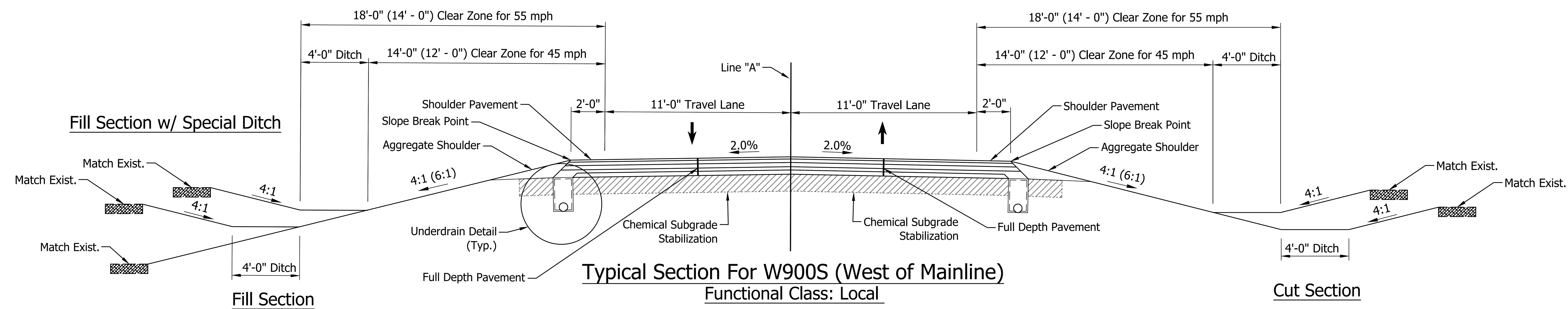
Underdrain Detail

SCALE 1"= 10'

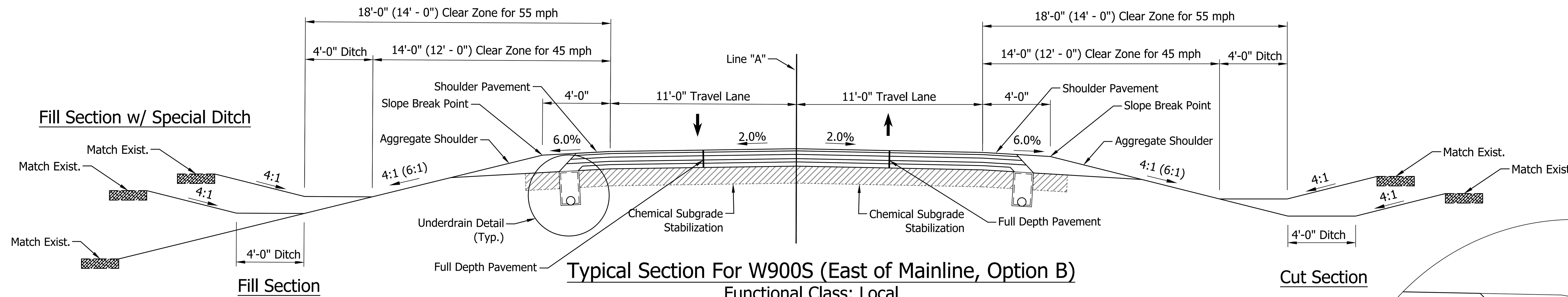
RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER # DATE		INDIANA DEPARTMENT OF TRANSPORTATION
DESIGNED: MLA	DRAWN: MLA	Typical Section W1100S - W1000S
CHECKED: BSD	CHECKED: BSD	

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	4 of 17
CONTRACT	PROJECT
#	#

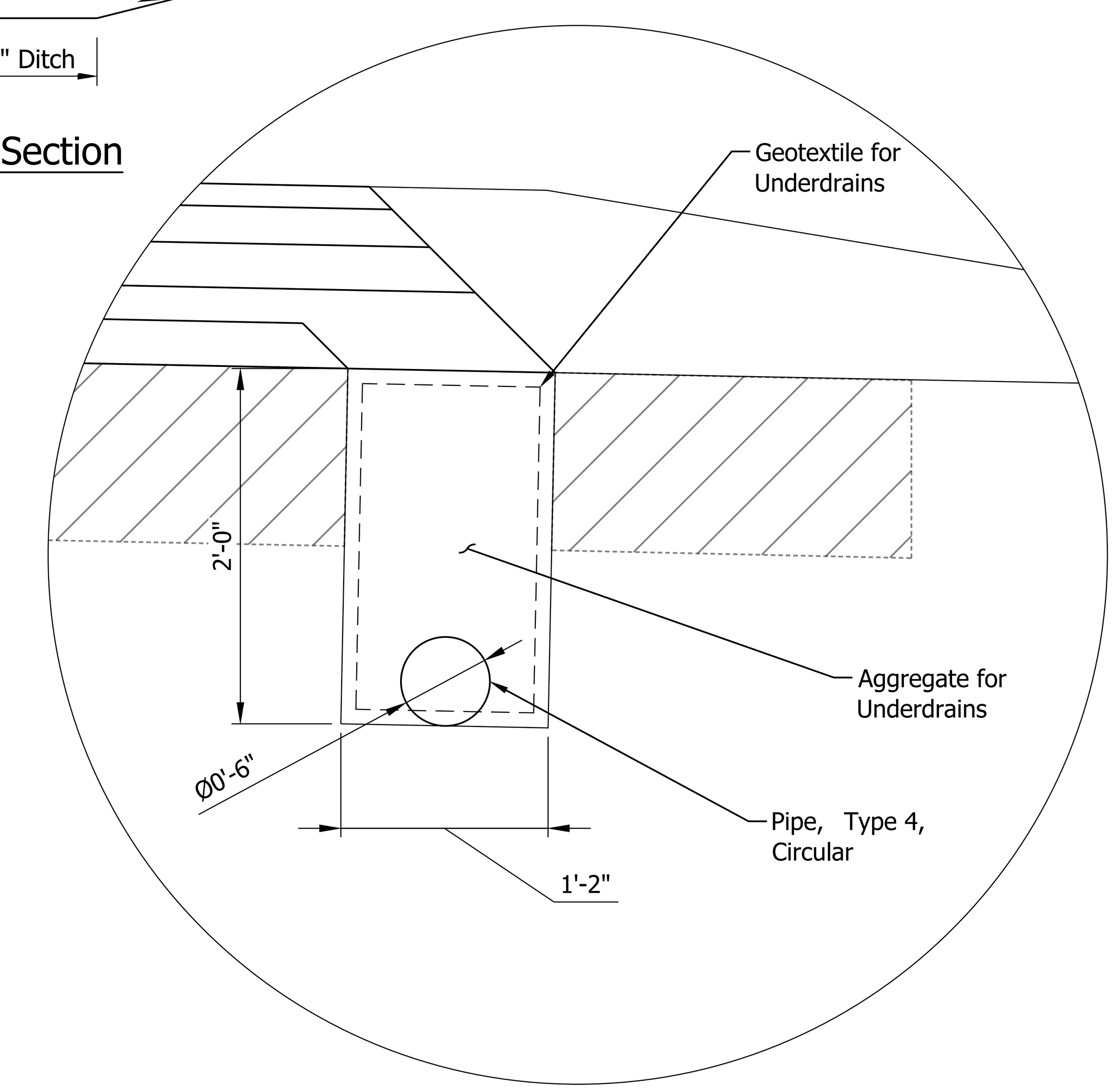
Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (W1000S West - W1000S East)



Typical Section For W900S (West of Mainline)
Functional Class: Local
Geometric Design Criteria: Rural Local Road
Speed - 45 mph
250 < AADT < 400



Typical Section For W900S (East of Mainline, Option B)
Functional Class: Local
Geometric Design Criteria: Rural Local Road
Speed - 45 mph
400 ≤ AADT < 1500

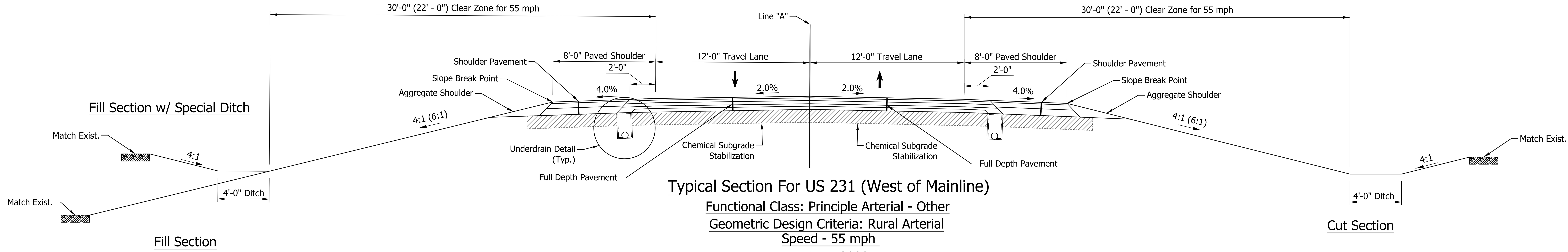


Underdrain Detail

SCALE 1"= 10'

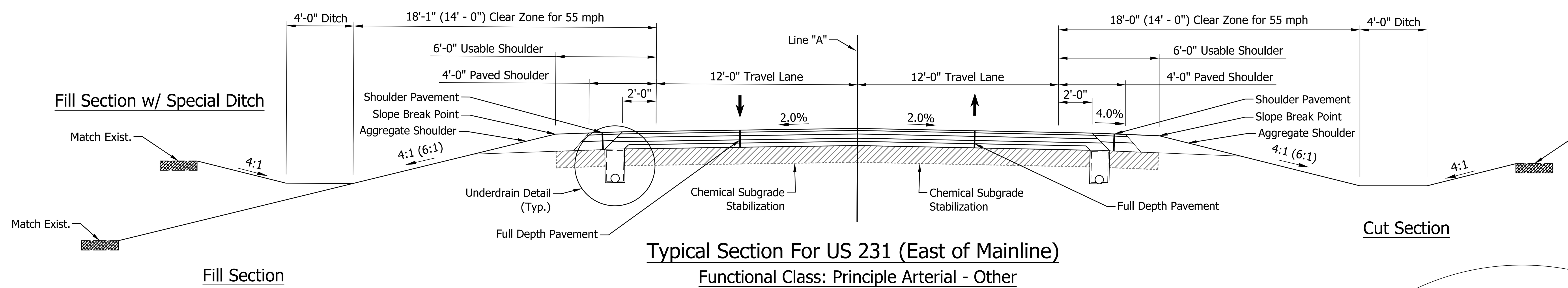
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1' / BRIDGE FILE # / VERTICAL SCALE / DESIGNATION #
DESIGNED: MLA / CHECKED: BSD	DRAWN: MLA / CHECKED: BSD	Typical Section W900S	SURVEY BOOK / SHEET 5 of 17 / CONTRACT # / PROJECT #

Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (W900S)



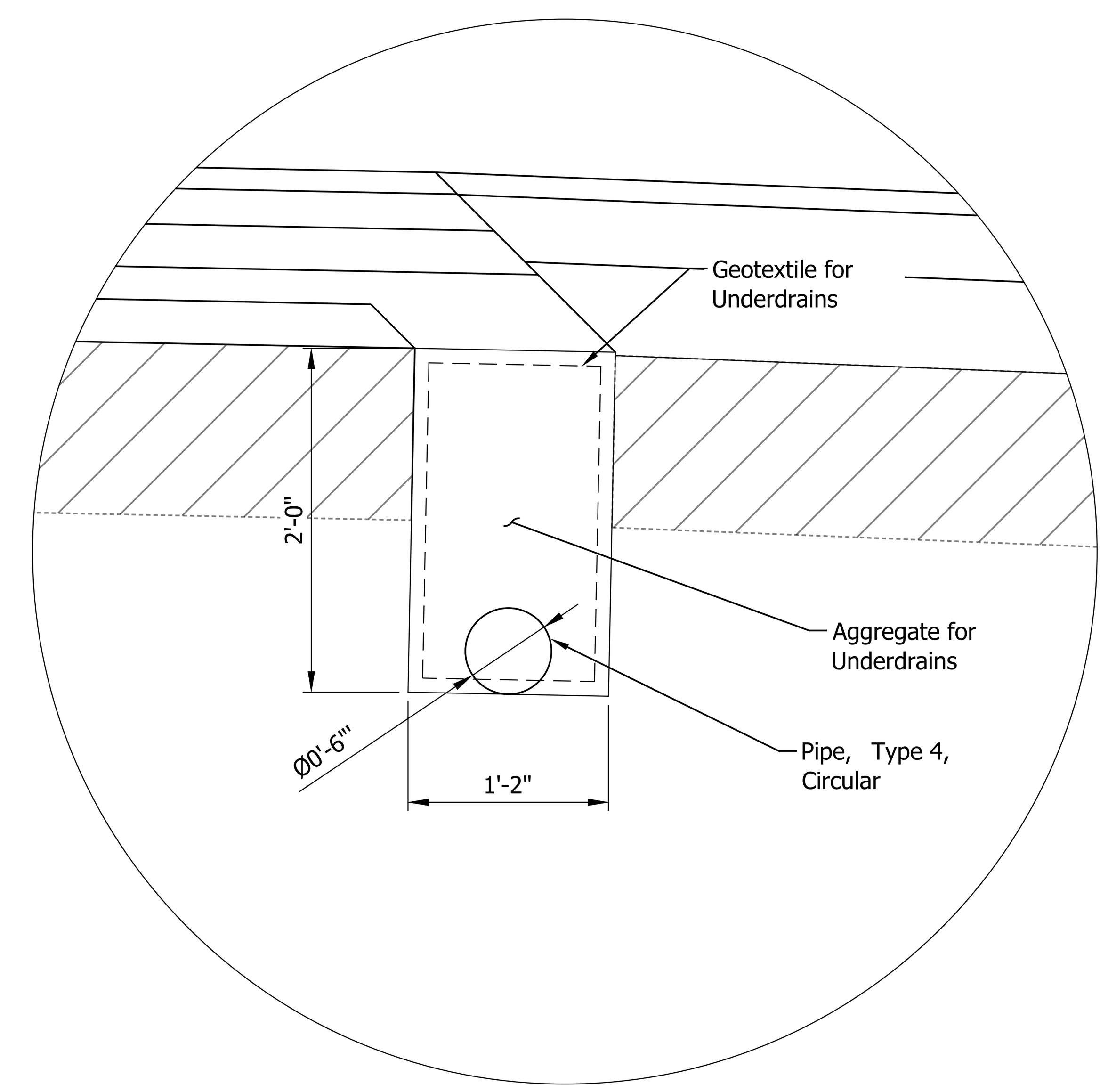
Typical Section For US 231 (West of Mainline)

Functional Class: Principle Arterial - Other
Geometric Design Criteria: Rural Arterial
Speed - 55 mph
AADT ≥ 2000



Typical Section For US 231 (East of Mainline)

Functional Class: Principle Arterial - Other
Geometric Design Criteria: Rural Arterial
Speed - 55 mph
250 ≤ AADT < 400



Underdrain Detail

SCALE 1"= 10'

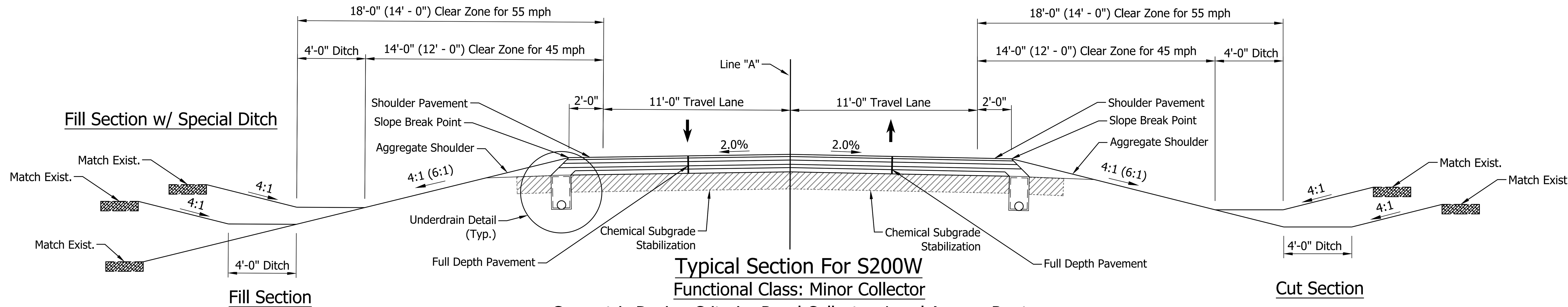
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	#	DATE
DESIGNED: MLA	DRAWN: MLA		
CHECKED: BSD	CHECKED: BSD		

INDIANA
DEPARTMENT OF TRANSPORTATION

Typical Section
US 231 NB

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	6 of 17
CONTRACT	PROJECT
#	#

Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (US 231 NB)



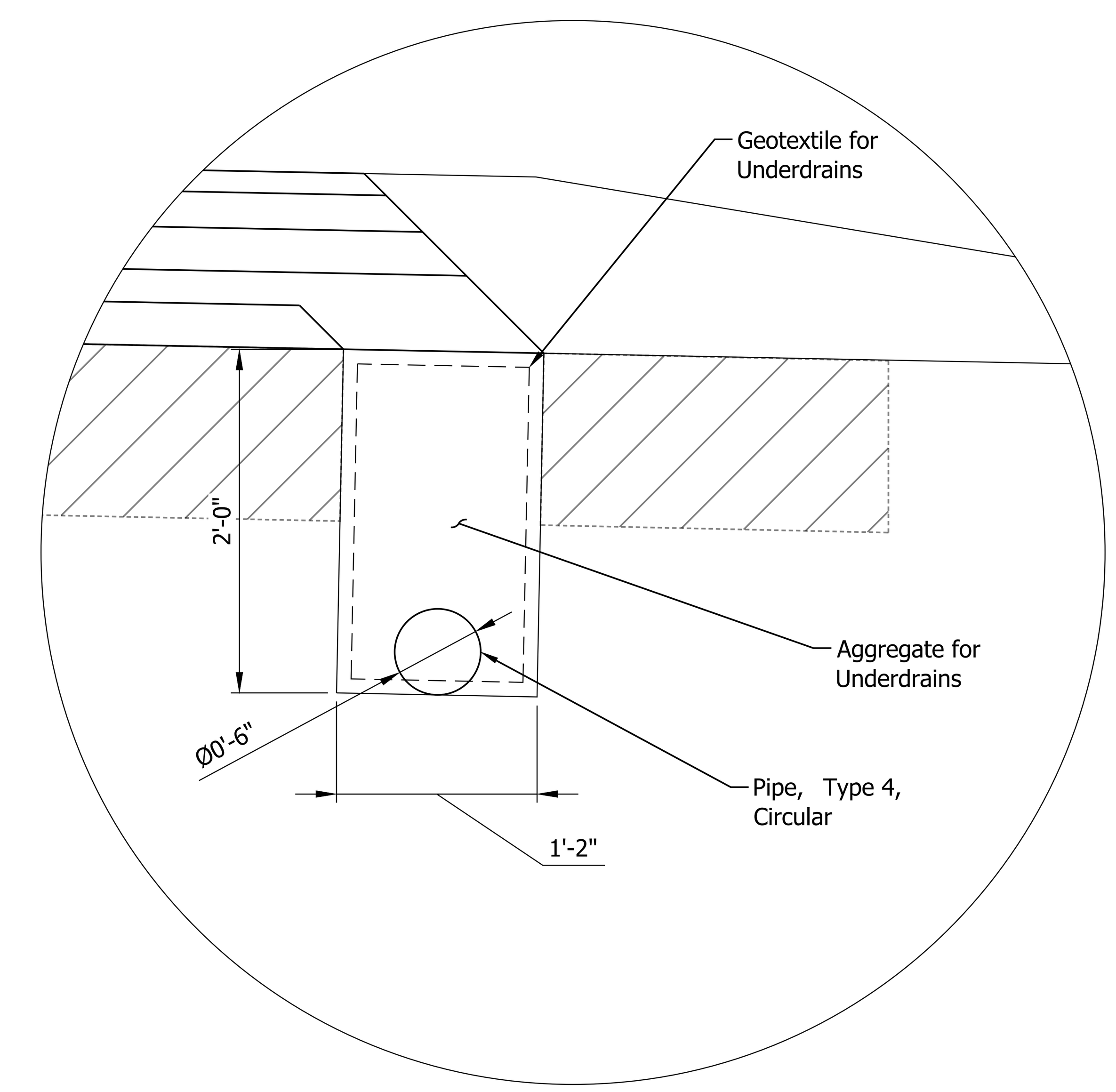
Typical Section For S200W

Functional Class: Minor Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT < 400



Underdrain Detail

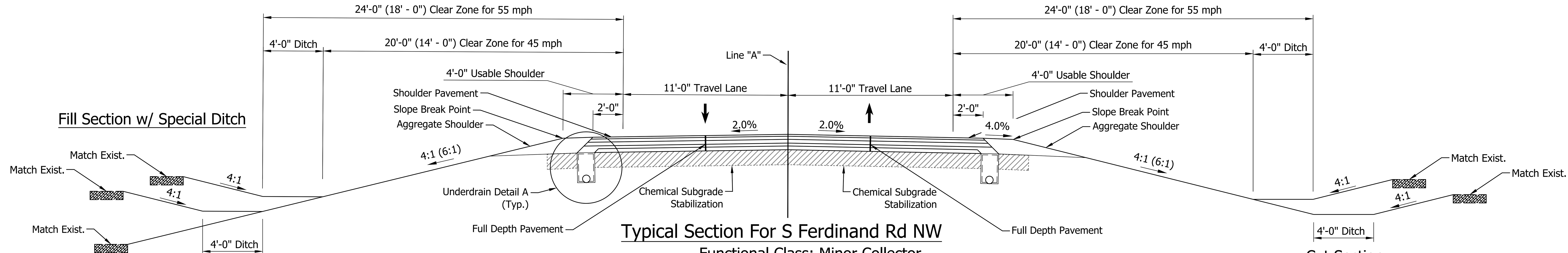
SCALE 1"= 10'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE		
DESIGNED: MLA	DRAWN: MLA		
CHECKED: BSD	CHECKED: BSD		

INDIANA
DEPARTMENT OF TRANSPORTATION

Typical Section
S200W

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	7 of 17
CONTRACT	PROJECT
#	#



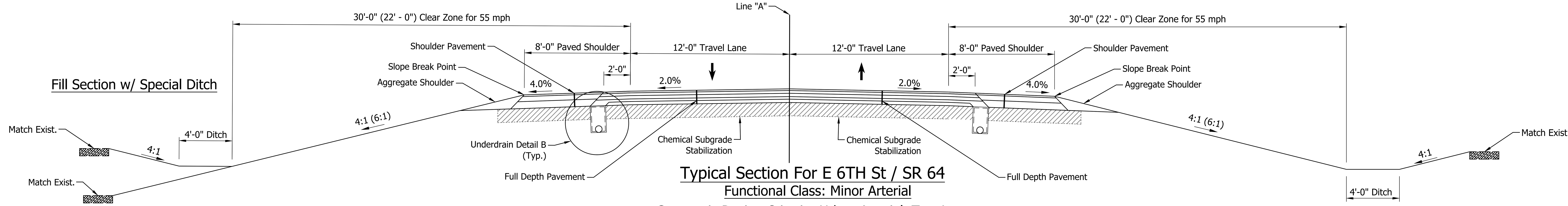
Typical Section For S Ferdinand Rd NW

Functional Class: Minor Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

400 ≤ AADT < 1500



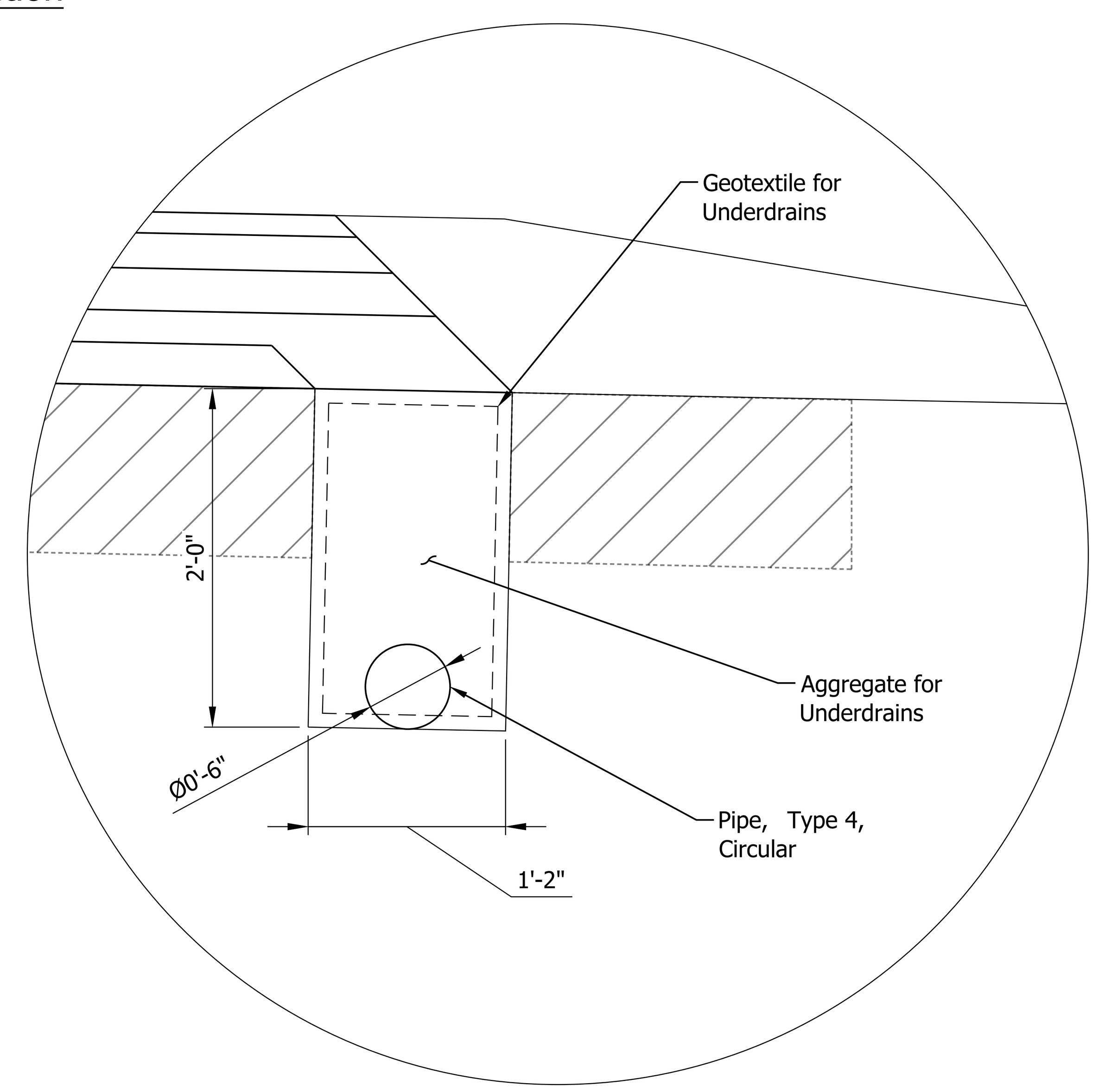
Typical Section For E 6TH St / SR 64

Functional Class: Minor Arterial

Geometric Design Criteria: Urban Arterial, Two Lanes

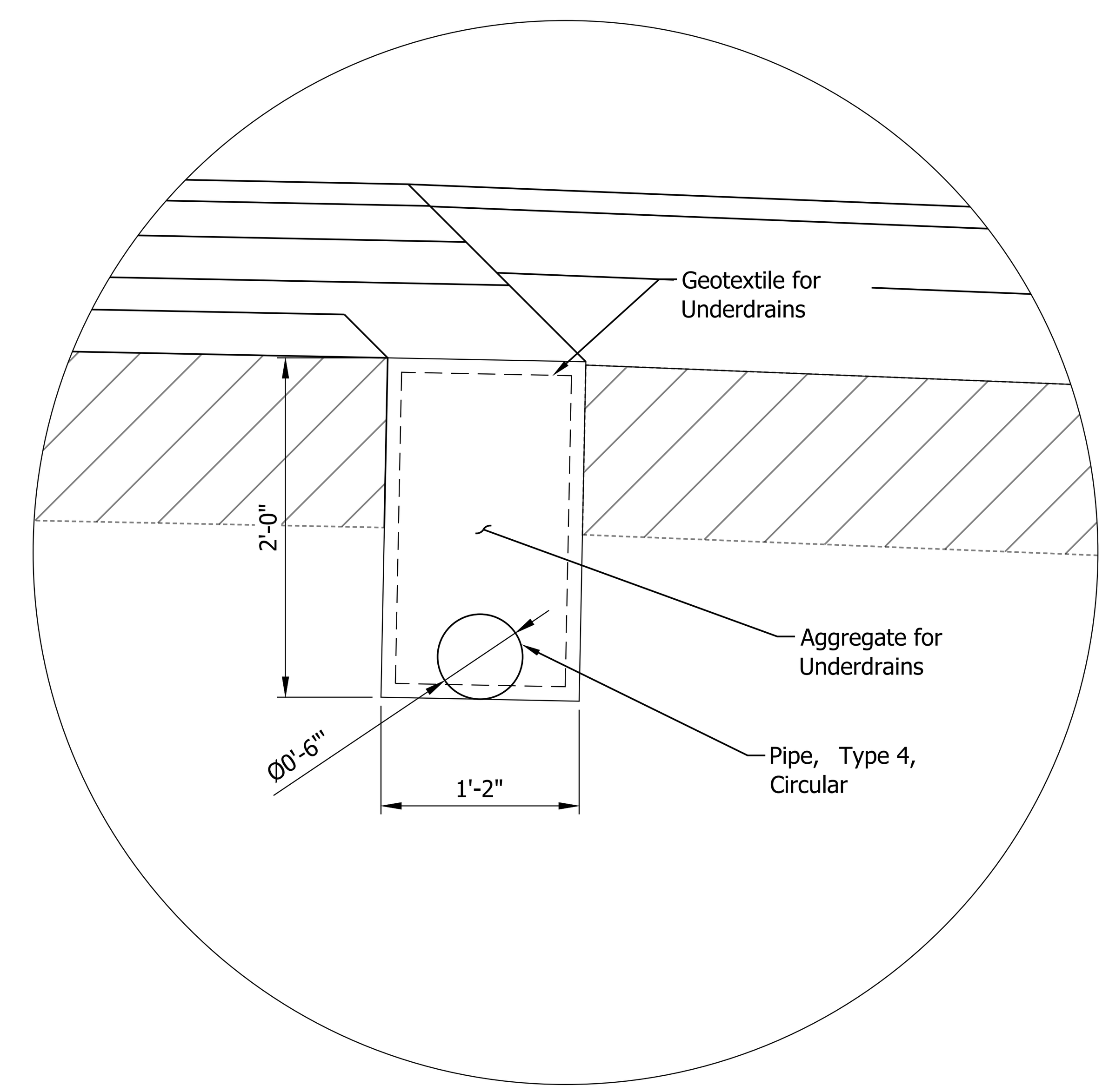
Speed - 55 mph

1500 ≤ AADT < 6000 - Intermediate



Underdrain Detail A

SCALE 1"= 10'

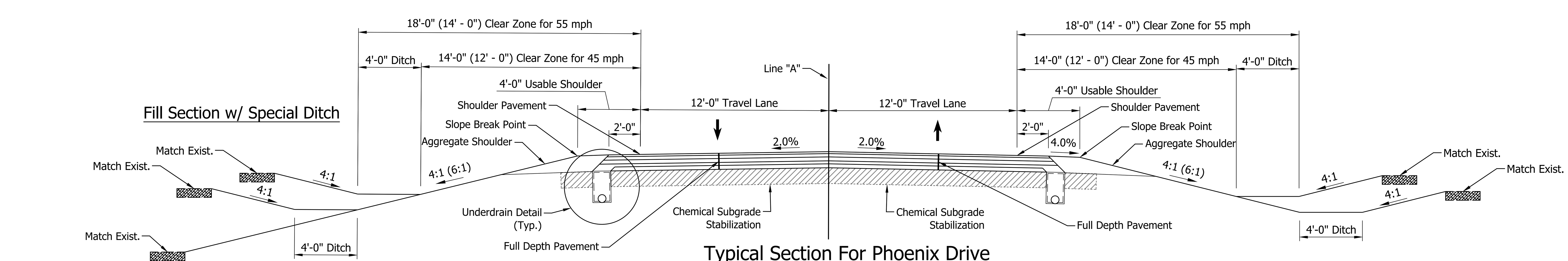


Underdrain Detail B

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1' / BRIDGE FILE # / VERTICAL SCALE / DESIGNATION #
DESIGNED: MLA / CHECKED: BSD	DRAWN: MLA / CHECKED: BSD	Typical Section S FERD RD - SR 64	SURVEY BOOK / SHEET 8 of 17 / CONTRACT # / PROJECT #

Date: Jul 29, 2025, 2:02pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (S FERD RD - SR 64)



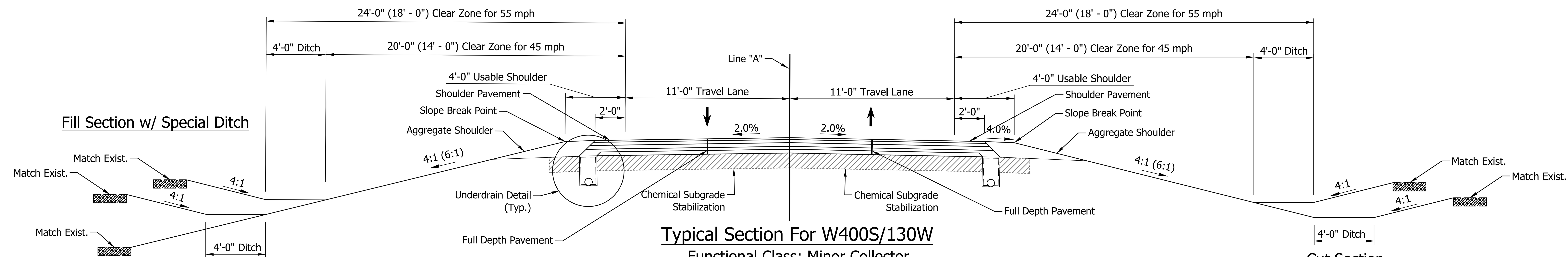
Typical Section For Phoenix Drive

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - Unknown

AADT < 400



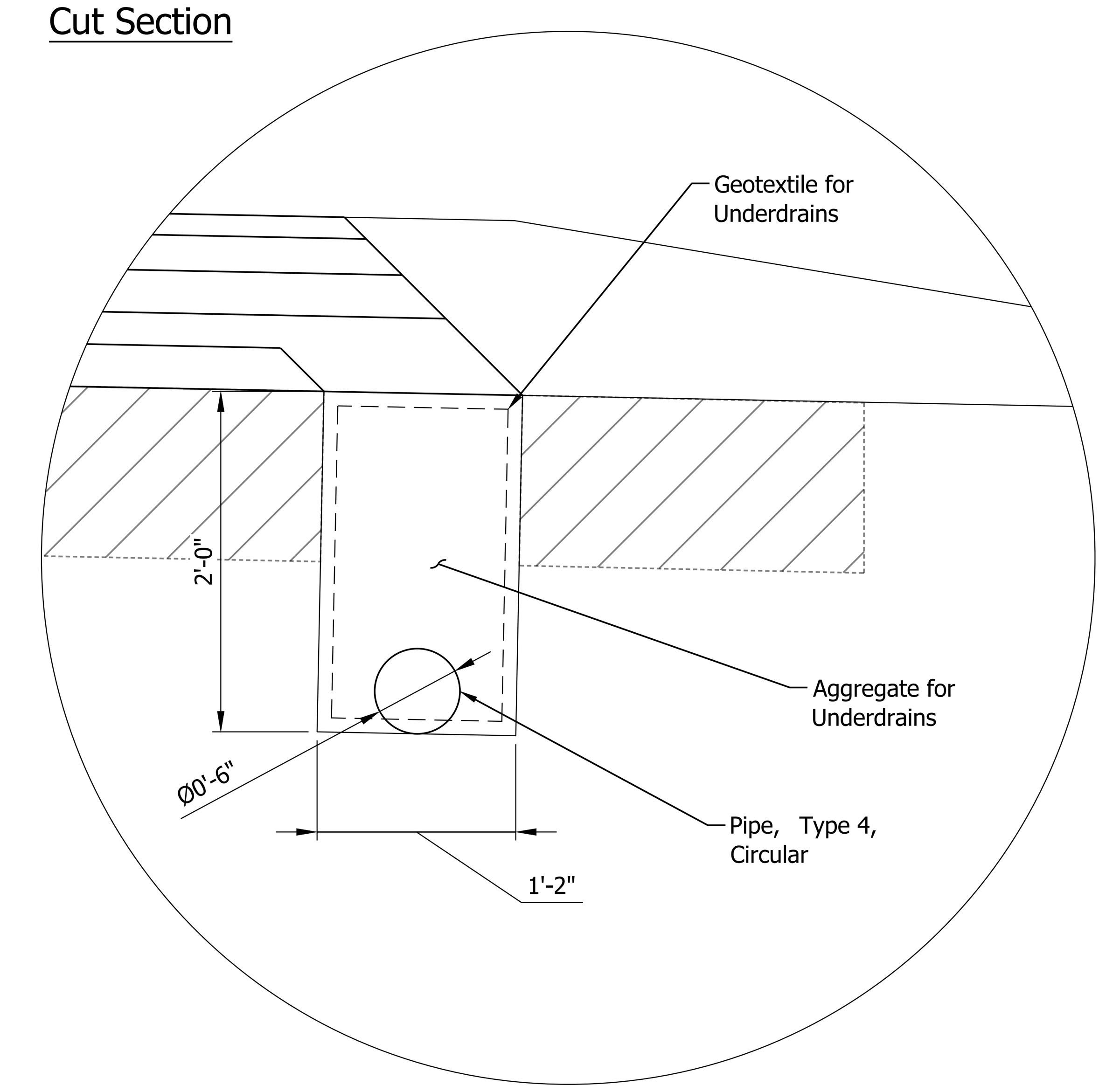
Typical Section For W400S/130W

Functional Class: Minor Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

400 ≤ AADT < 1500

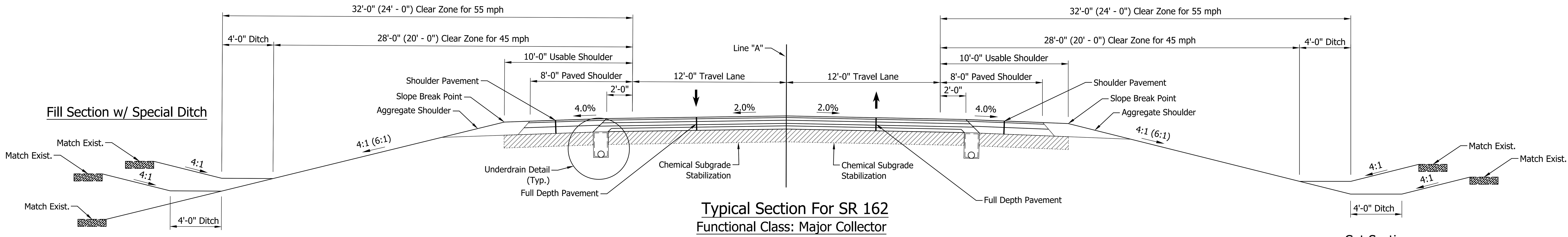


Underdrain Detail

SCALE 1"= 10'

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-Prelit\04282025_Typical Sections_COPY.dwg - (Phoenix drive- W400S_S130W)

RECOMMENDED FOR APPROVAL ___ DESIGN ENGINEER # DATE		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1'	BRIDGE FILE #
			VERTICAL SCALE	DESIGNATION #
DESIGNED: MLA	DRAWN: MLA	Typical Section Pheonix Drive - W400S / S130W	SURVEY BOOK	SHEET 9 of 17
CHECKED: BSD	CHECKED: BSD		CONTRACT #	PROJECT #



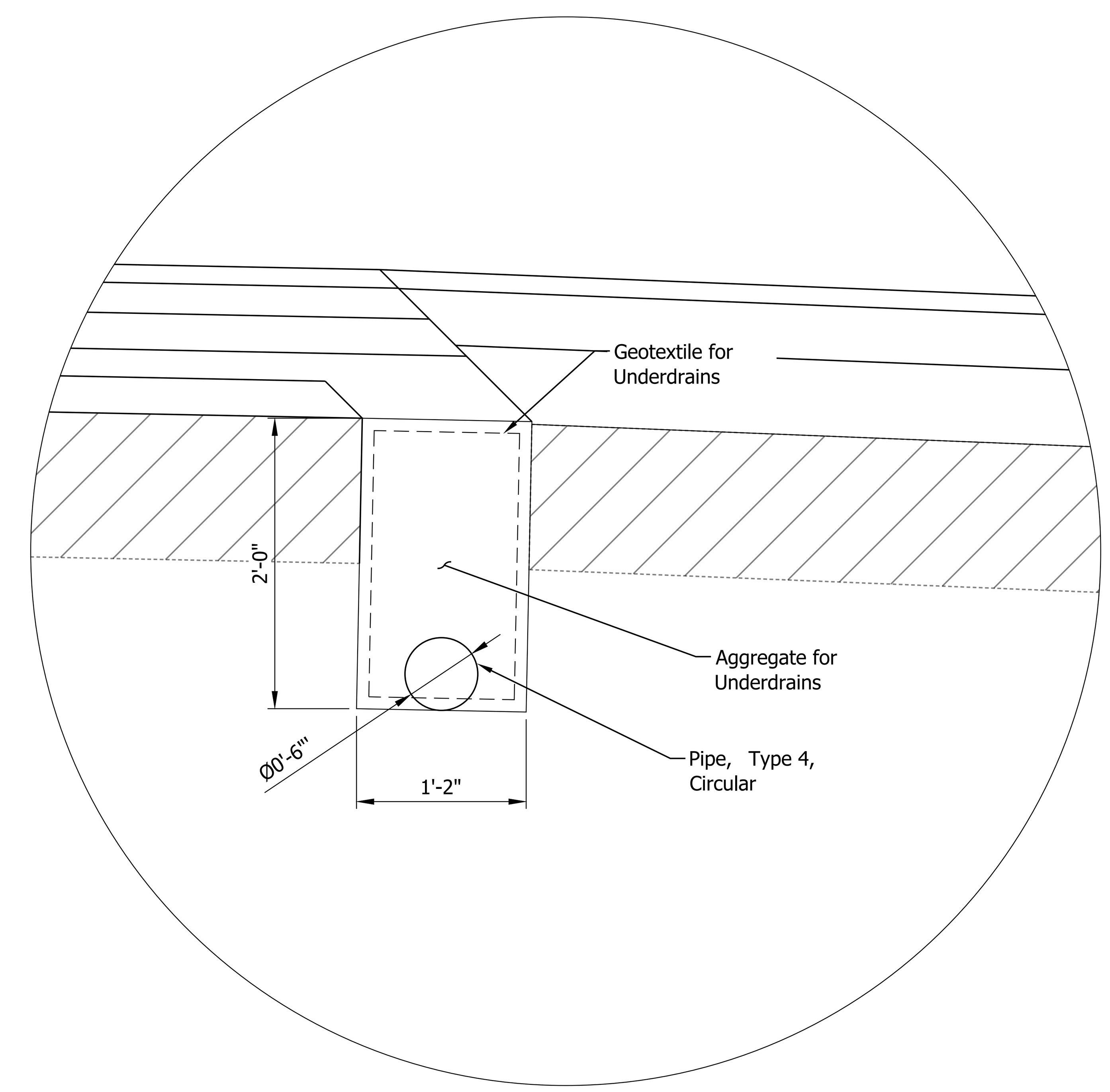
Typical Section For SR 162

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, State Route

Speed - 55 mph

AADT > 2000



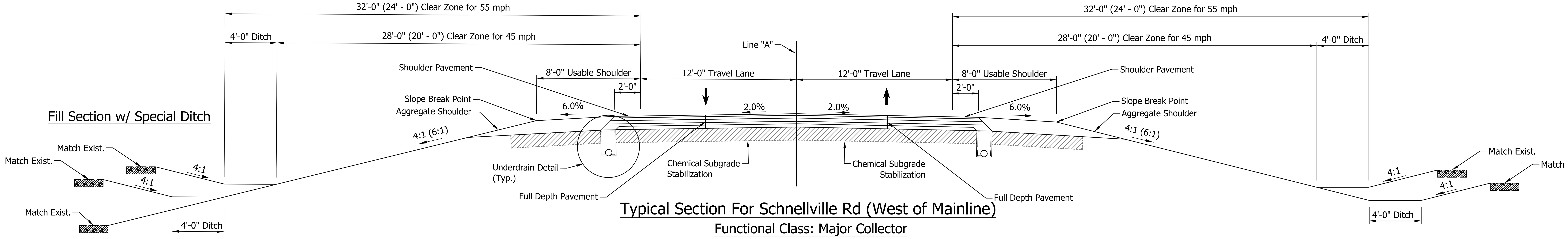
Underdrain Detail

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	# DATE	INDIANA DEPARTMENT OF TRANSPORTATION
DESIGNED: PS	DRAWN: PS		Typical Section SR 162
CHECKED: BSD	CHECKED: BSD		

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	10 of 17
CONTRACT	PROJECT
#	#

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (SR 162)



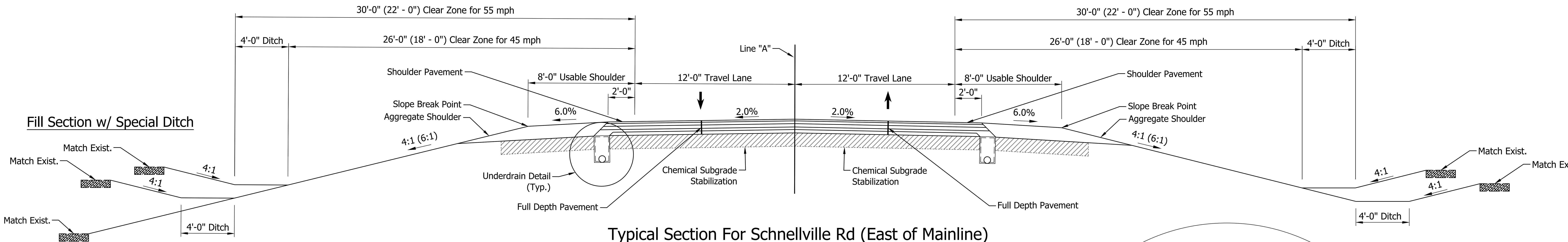
Typical Section For Schnellville Rd (West of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT ≥ 2000



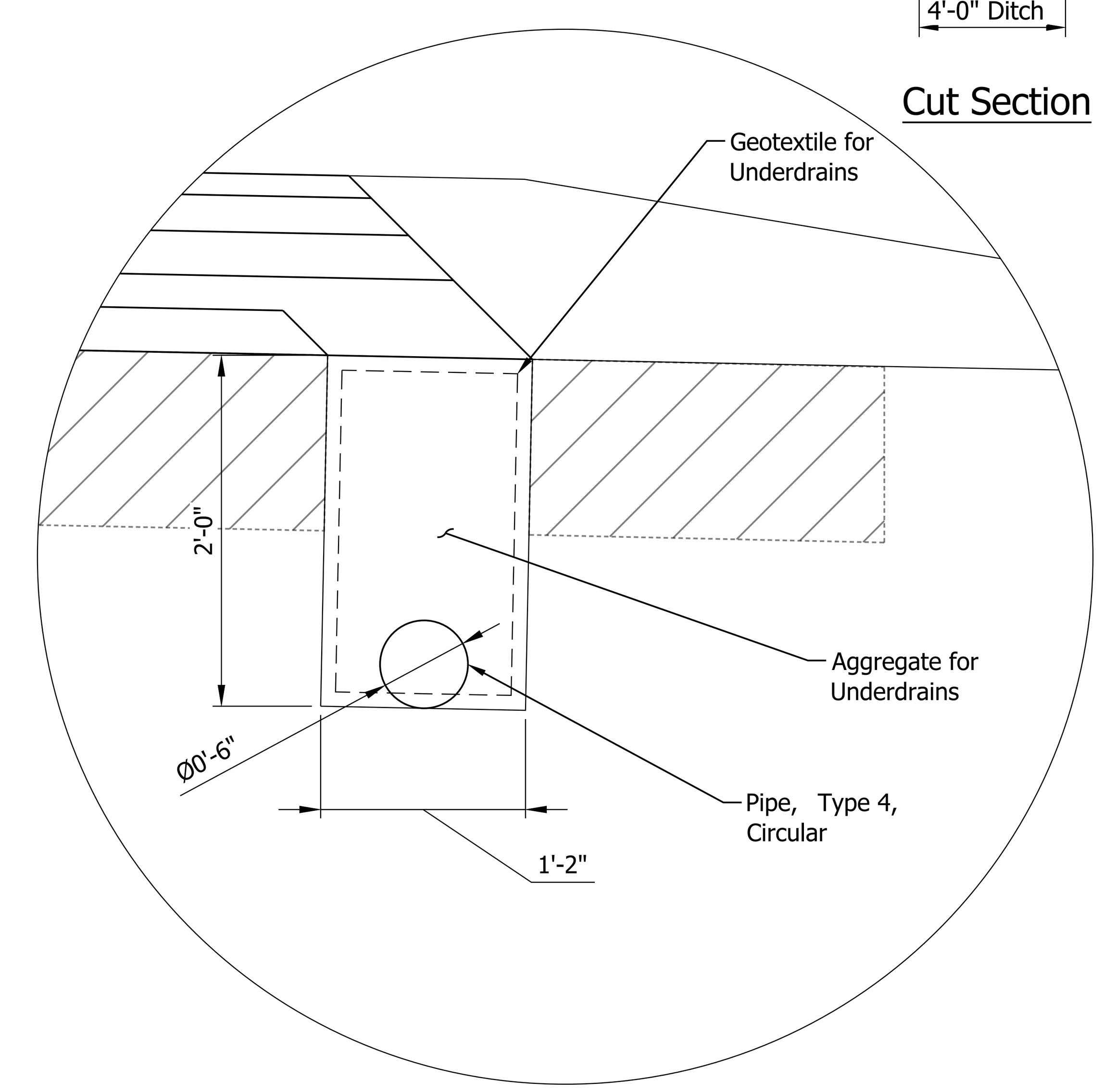
Typical Section For Schnellville Rd (East of Mainline)

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT ≥ 2000



Underdrain Detail

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE

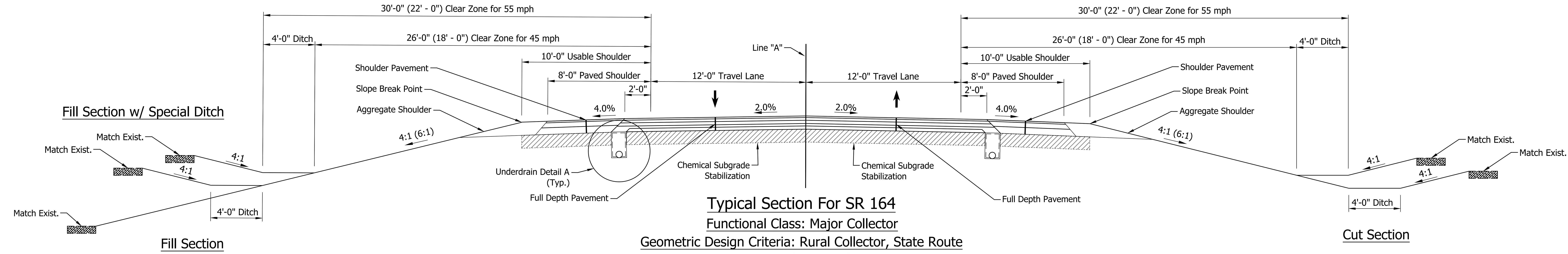
DESIGNED: PS | DRAWN: PS

CHECKED: BSD | CHECKED: BSD

INDIANA
DEPARTMENT OF TRANSPORTATION

Typical Section
Schnellville Rd West / Schnellville Rd East

HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	11 of 17
CONTRACT	PROJECT
#	#



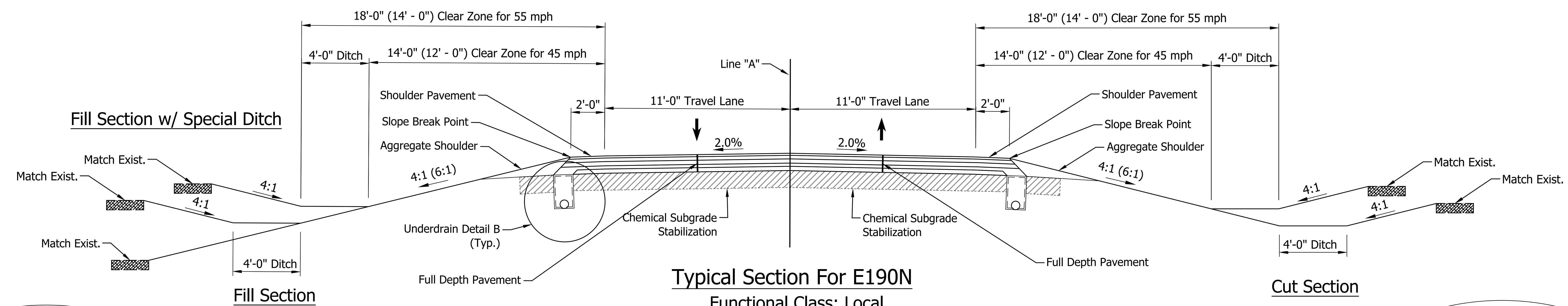
Typical Section For SR 164

Functional Class: Major Collector

Geometric Design Criteria: Rural Collector, State Route

Speed - 45 mph

AADT > 2000



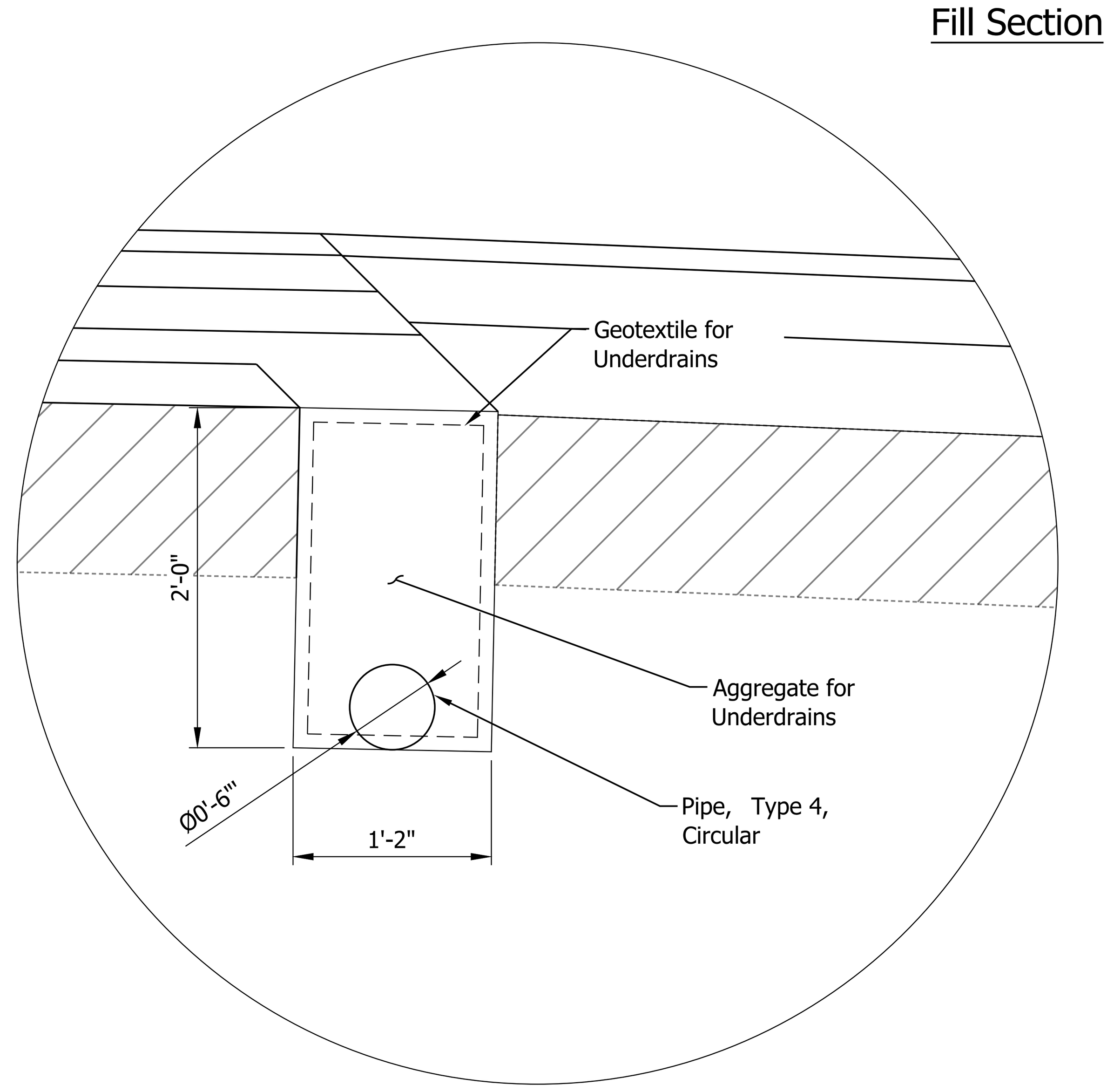
Typical Section For E190N

Functional Class: Local

Geometric Design Criteria: Rural Local Road

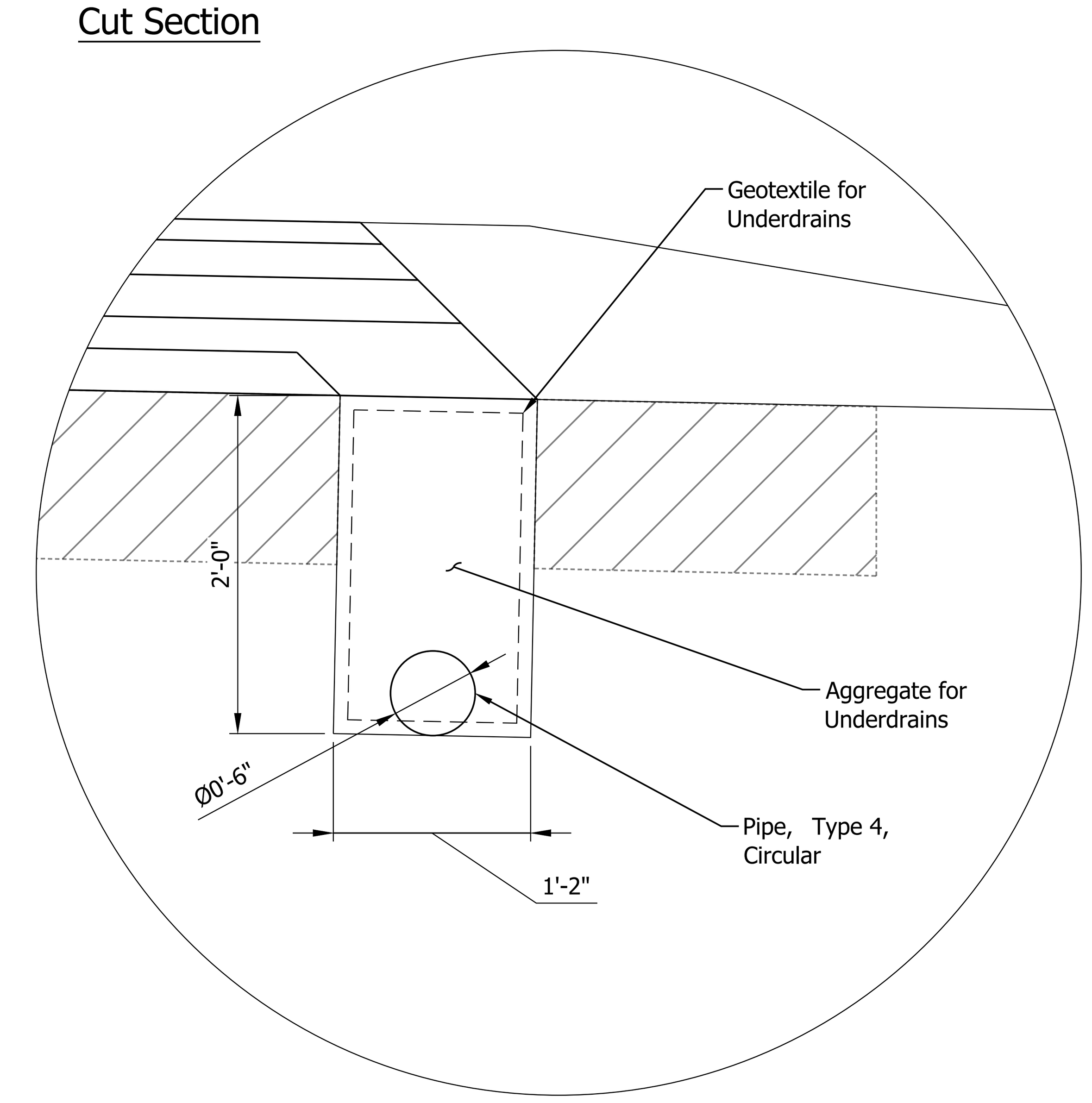
Speed - 55 mph

250 ≤ AADT < 400



Underdrain Detail A

SCALE 1"= 10'

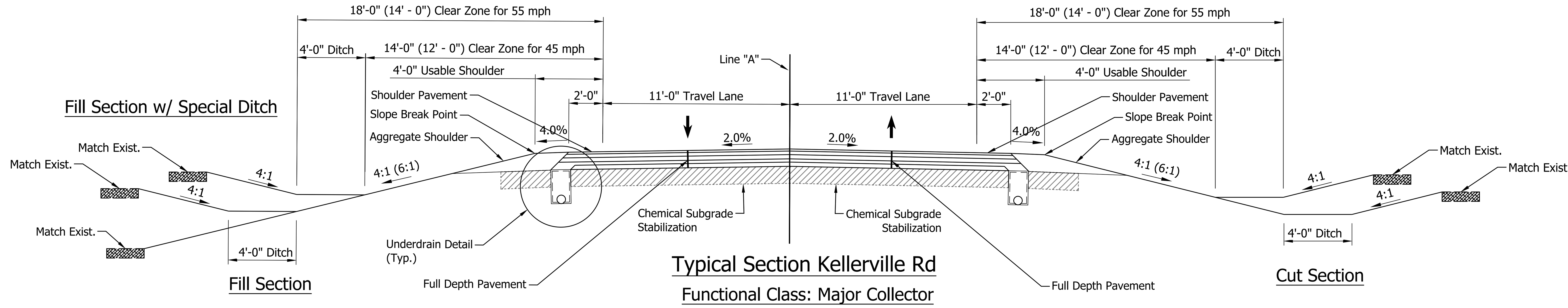


Underdrain Detail B

SCALE 1"= 10'

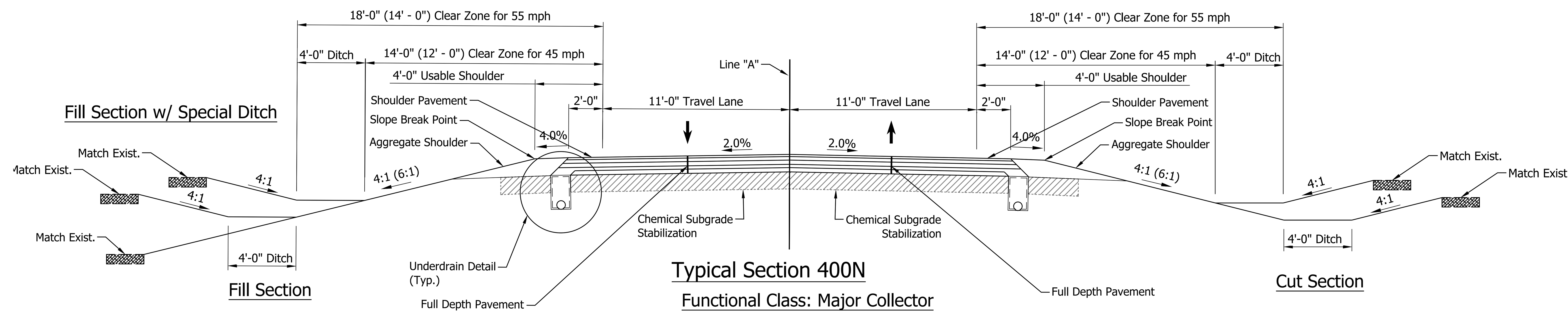
RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER # DATE		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1'	BRIDGE FILE #
			VERTICAL SCALE	DESIGNATION #
DESIGNED: PS	DRAWN: PS	Typical Section SR 164 - E190N	SURVEY BOOK	SHEET 12 of 17
CHECKED: BSD	CHECKED: BSD		CONTRACT #	PROJECT #

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (SR 164 - E190N)



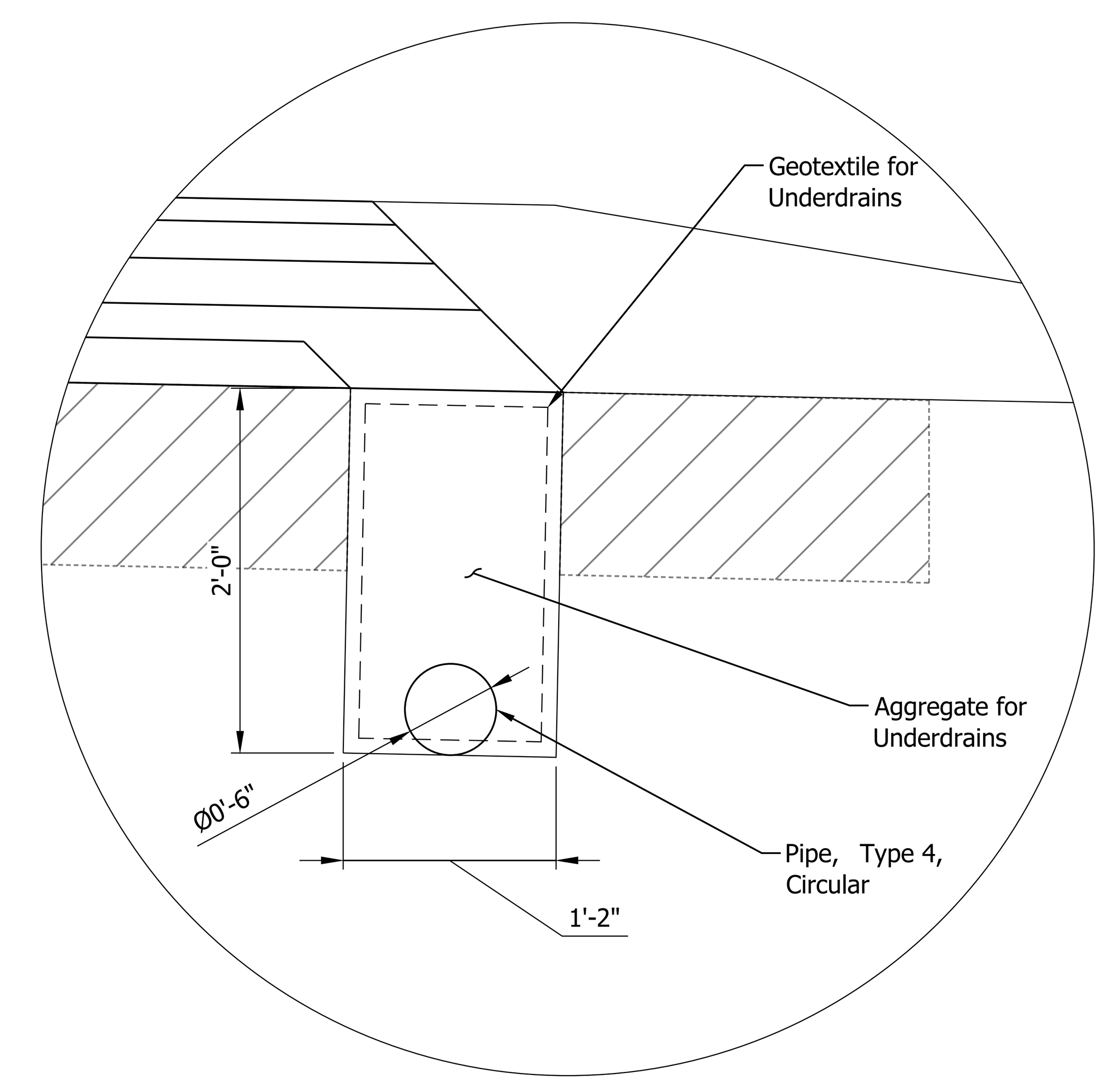
Typical Section Kellerville Rd

Functional Class: Major Collector
Geometric Design Criteria: Rural Collector, Local Agency Route
Speed - 45 mph
400 ≤ AADT < 1500



Typical Section 400N

Functional Class: Major Collector
Geometric Design Criteria: Rural Collector, Local Agency Route
Speed - 45 mph
400 ≤ AADT < 1500

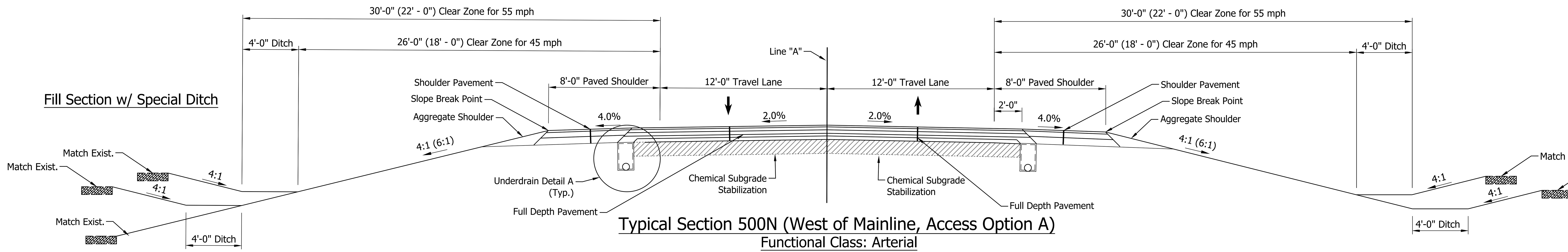


Underrain Detail

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1'	BRIDGE FILE #
			VERTICAL SCALE	DESIGNATION #
DESIGNED: PS	DRAWN: PS	Typical Section Kellerville Rd - 400N	SURVEY BOOK	SHEET 13 of 17
CHECKED: BSD	CHECKED: BSD		CONTRACT #	PROJECT #

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (Kellerville Rd - 400N)



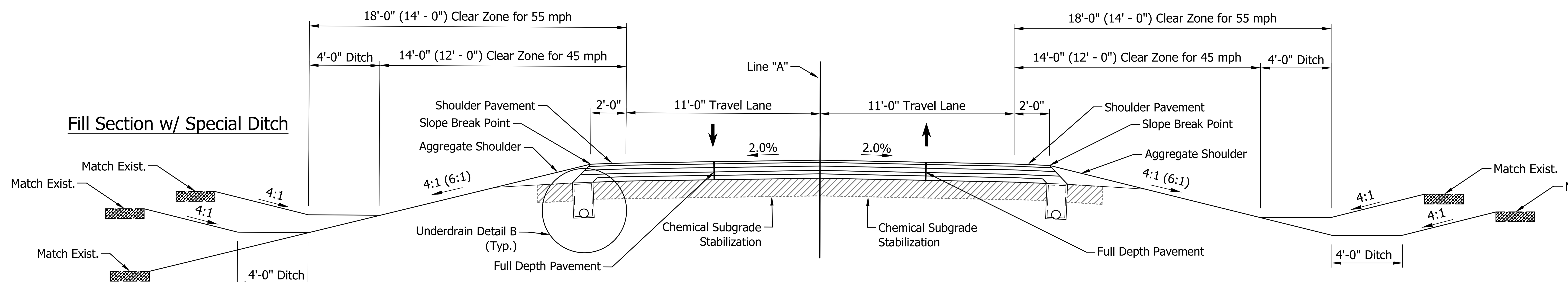
Typical Section 500N (West of Mainline, Access Option A)

Functional Class: Arterial

Geometric Design Criteria: Rural Arterial

Speed - 55 mph

AADT ≥ 2000



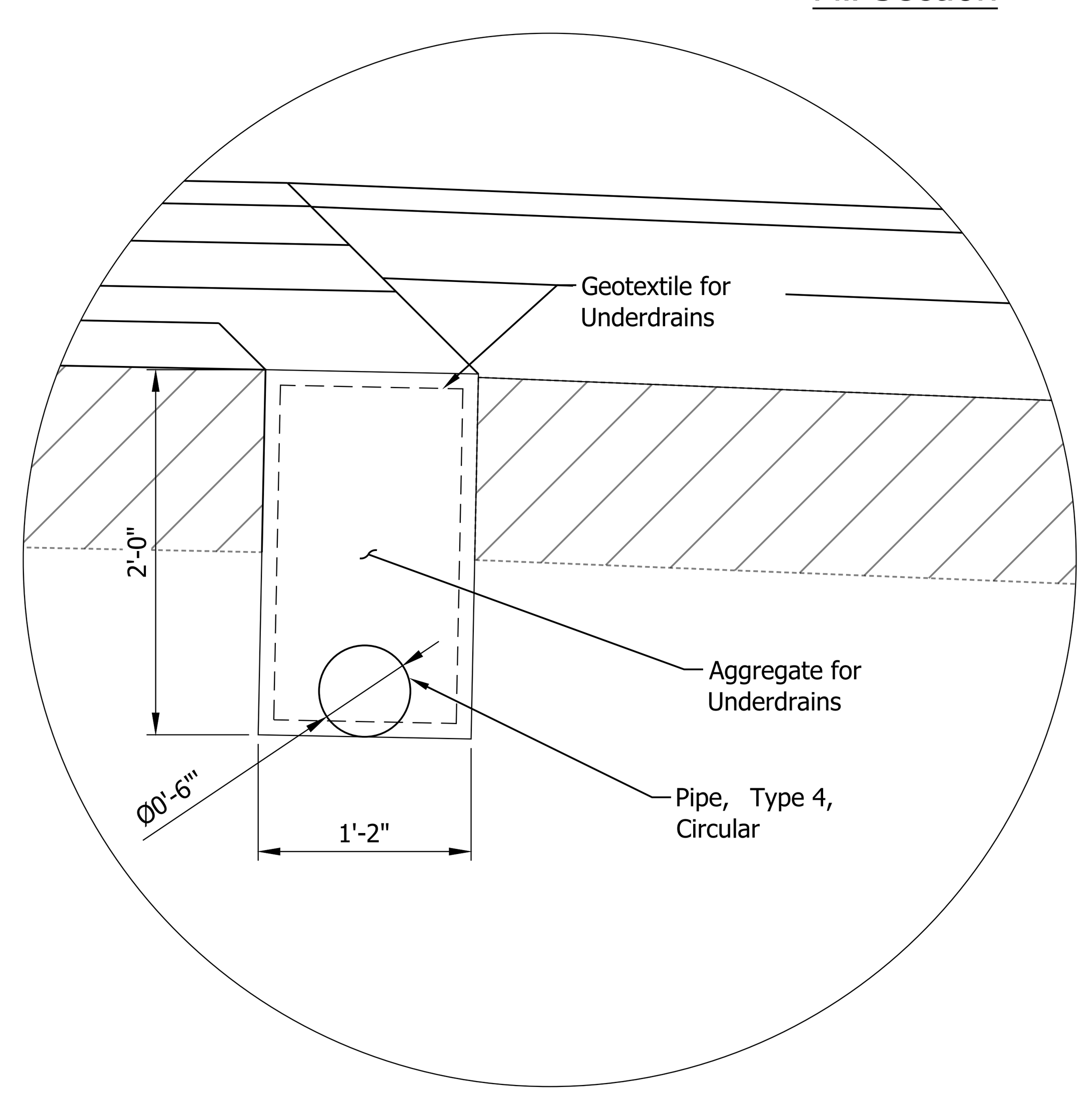
Typical Section 500N (East of Mainline, Access Option B)

Functional Class: Local

Geometric Design Criteria: Rural Local Road

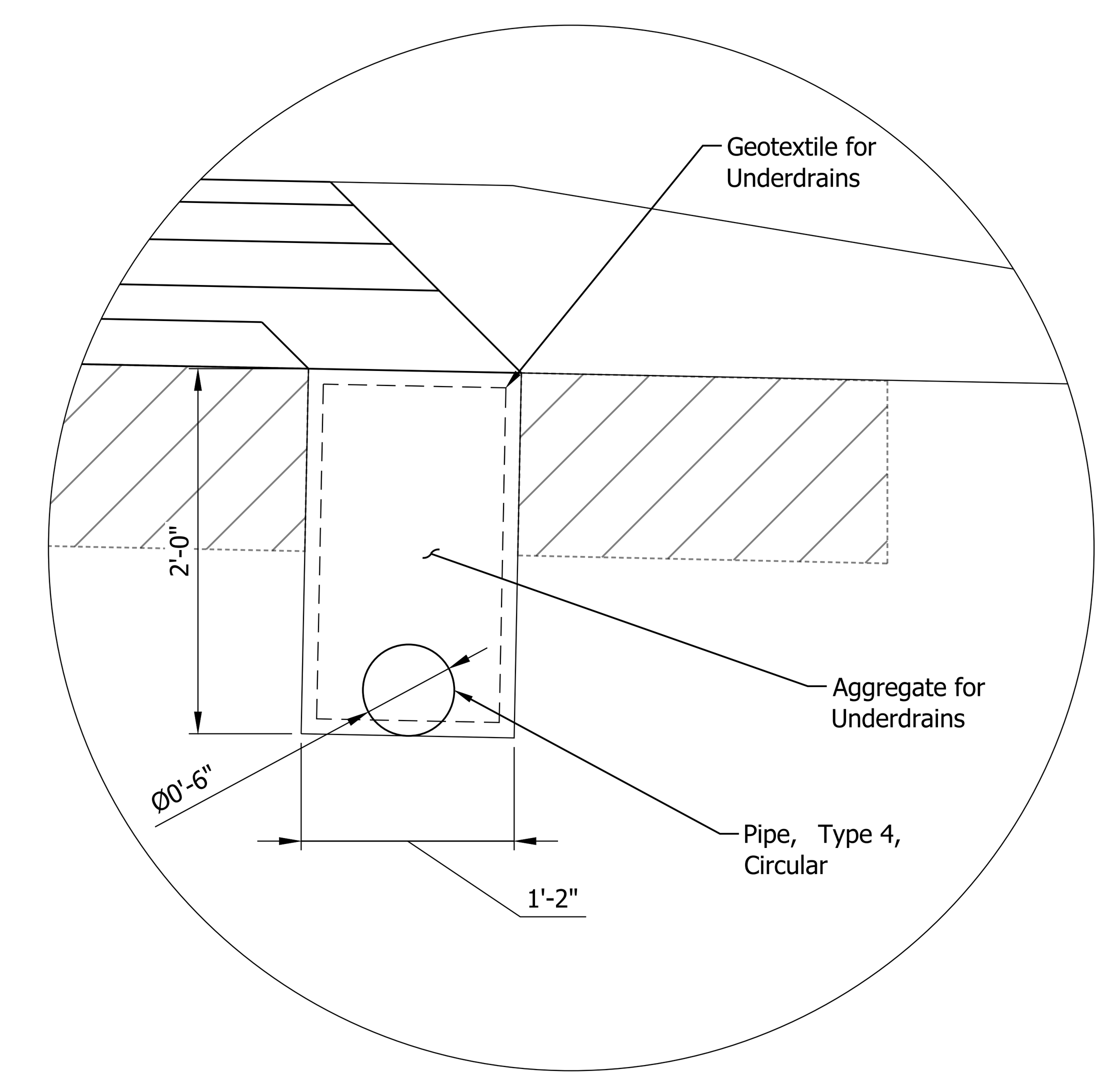
Speed - 55 mph

250 ≤ AADT < 400



Underdrain Detail A

SCALE 1"= 10'



Underdrain Detail B

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER # DATE

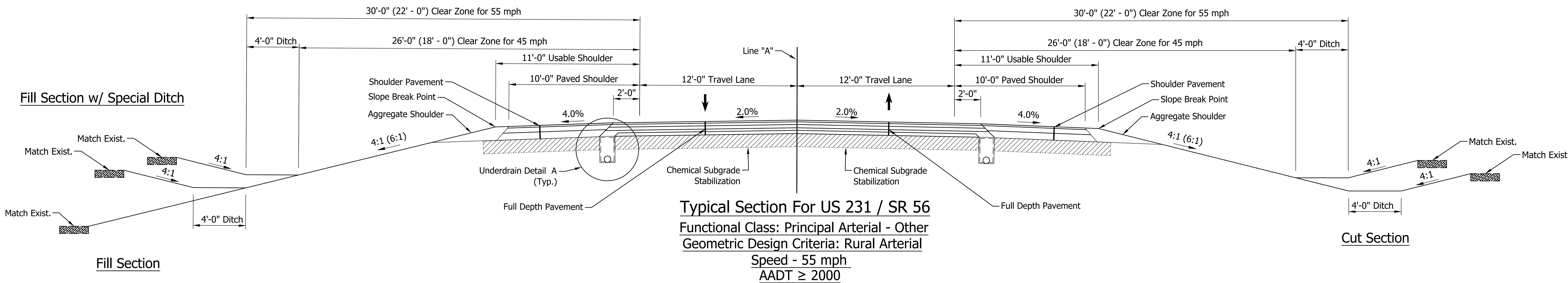
DESIGNED: PS	DRAWN: PS
CHECKED: BSD	CHECKED: BSD

INDIANA
DEPARTMENT OF TRANSPORTATION

Typical Section
500N OPT 1 - 500N OPT 2

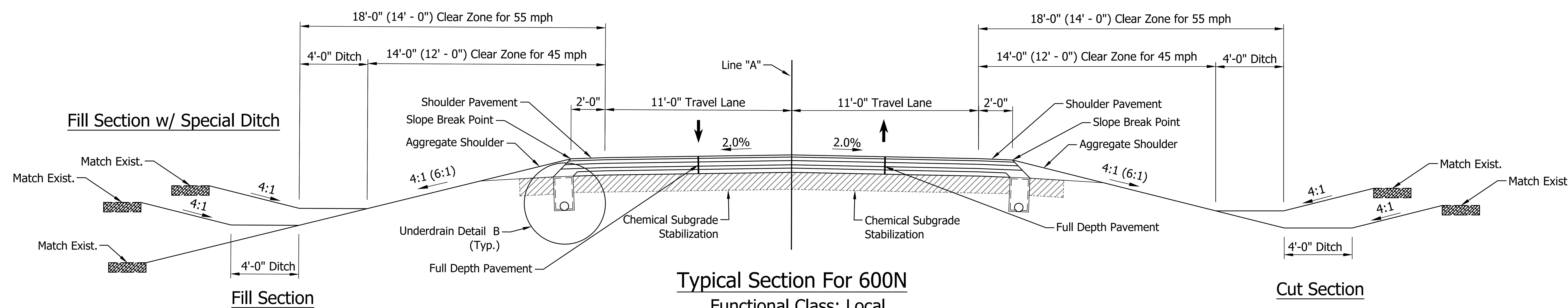
HORIZONTAL SCALE	BRIDGE FILE
1/4"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	14 of 17
CONTRACT	PROJECT
#	#

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (500N Opt 1 - 500N Opt 2)



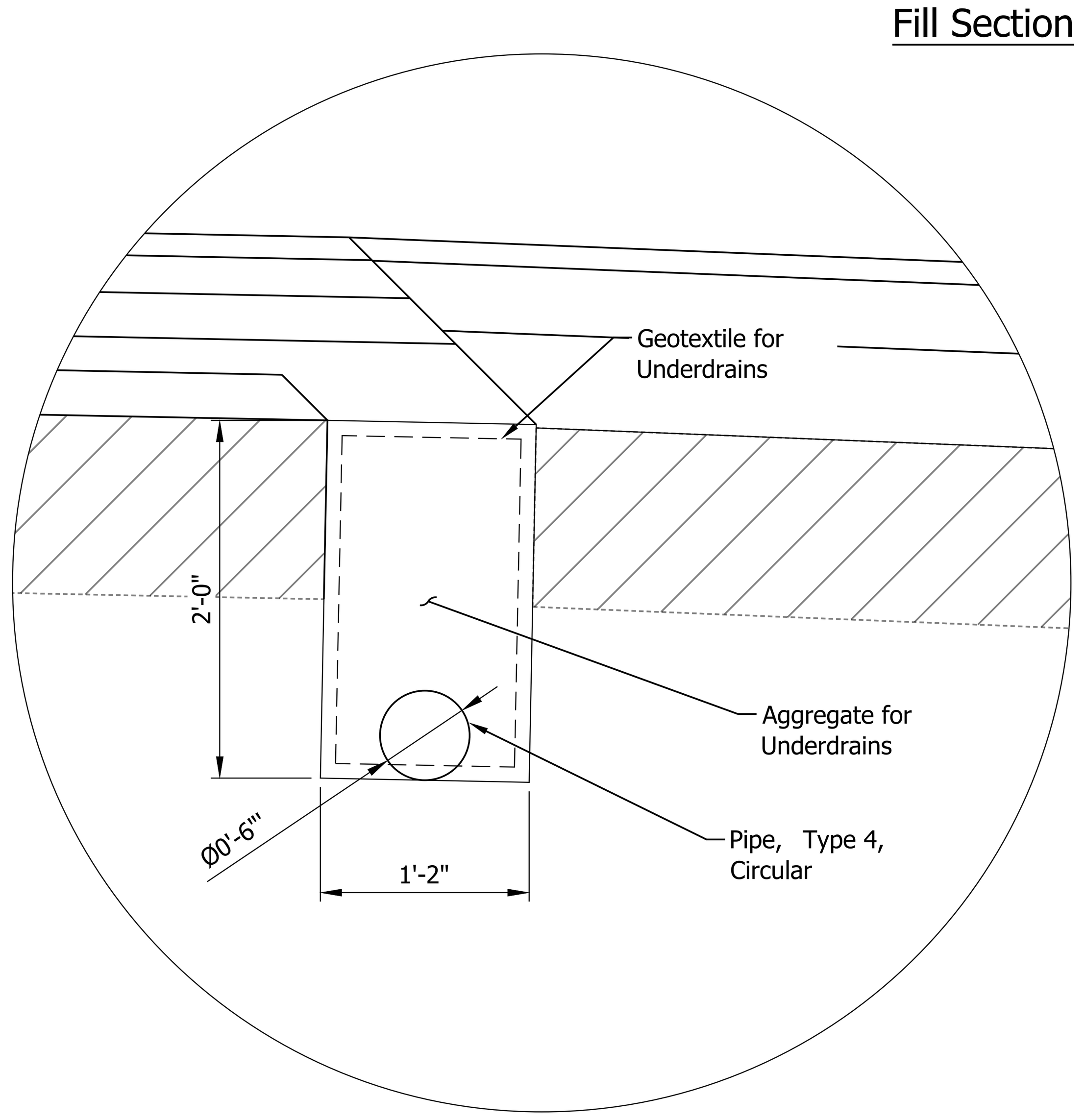
Typical Section For US 231 / SR 56

Functional Class: Principal Arterial - Other
Geometric Design Criteria: Rural Arterial
Speed - 55 mph
AADT ≥ 2000



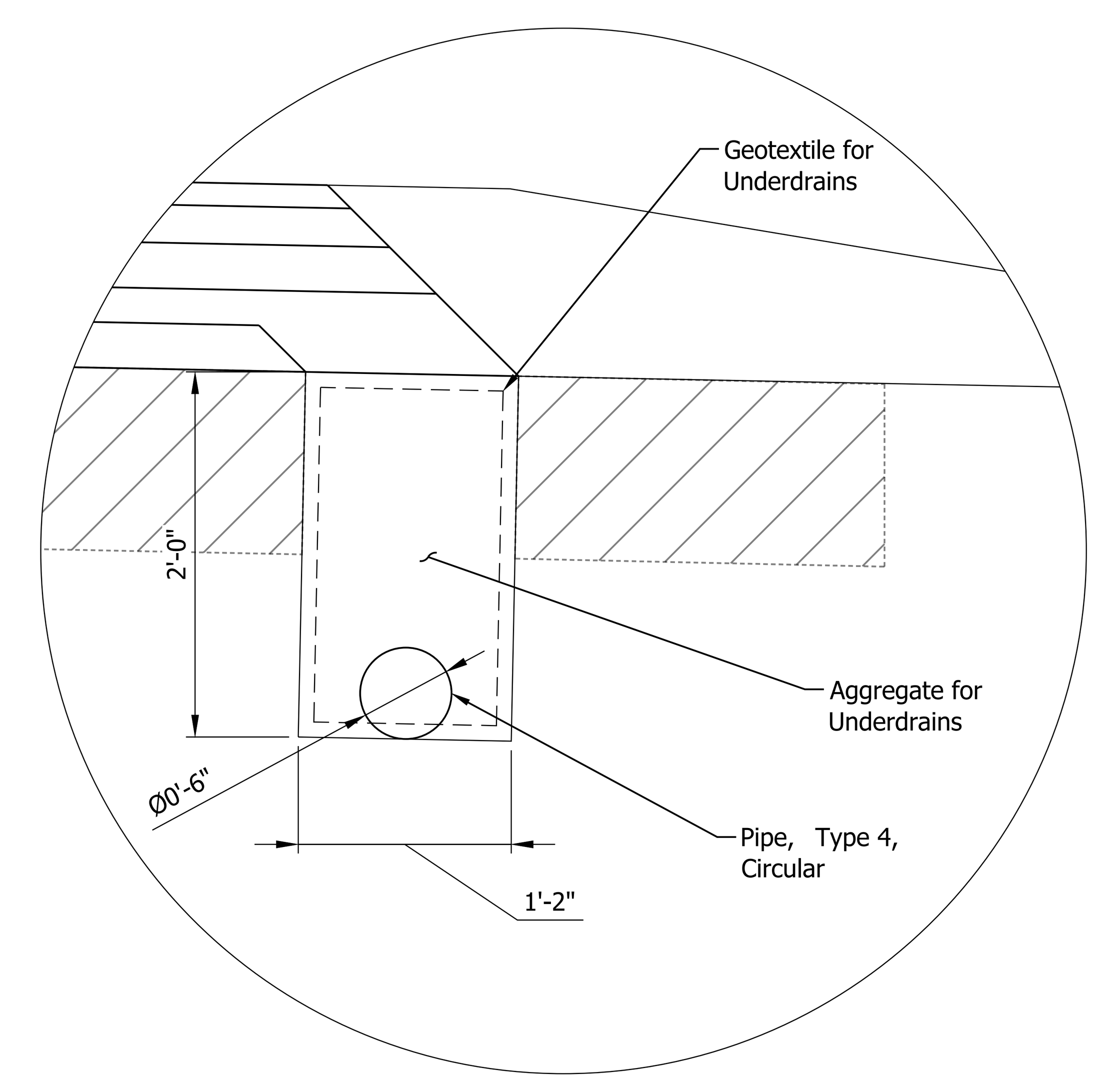
Typical Section For 600N

Functional Class: Local
Geometric Design Criteria: Rural Local Road
Speed - 55 mph
250 ≤ AADT < 400



Underdrain Detail A

SCALE 1"= 10'

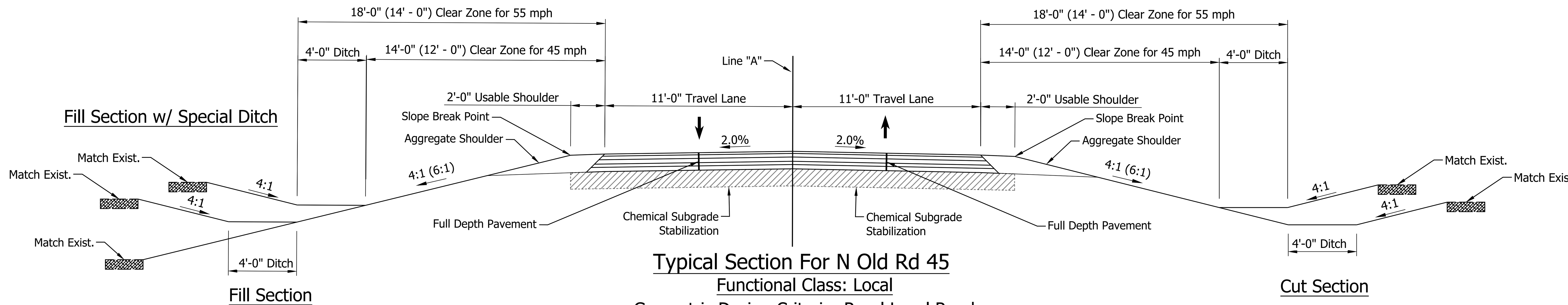


Underdrain Detail B

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: 1/4"=1'; BRIDGE FILE: #; VERTICAL SCALE; DESIGNATION: #
DESIGNED: PS / CHECKED: BSD	DRAWN: PS / CHECKED: BSD	Typical Section US 231 / SR 56 - 600 N	SURVEY BOOK; SHEET 15 of 17; CONTRACT: #; PROJECT: #

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (US 231_SR 56 - 600N)



Typical Section For N Old Rd 45

Functional Class: Local

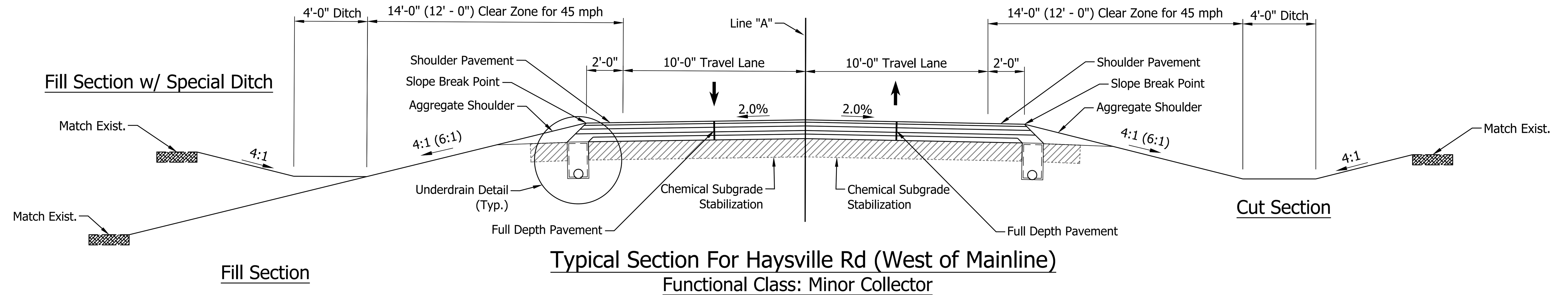
Geometric Design Criteria: Rural Local Road

Speed - 55 mph

250 ≤ AADT < 400

RECOMMENDED FOR APPROVAL ____ # DESIGN ENGINEER DATE		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: 1/4"=1'	BRIDGE FILE: #
			VERTICAL SCALE:	DESIGNATION: #
DESIGNED: PS	DRAWN: PS	Typical Section N Old SR 45	SURVEY BOOK:	SHEET: 16 of 17
CHECKED: BSD	CHECKED: BSD		CONTRACT: #	PROJECT: #

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (N Old SR 45)



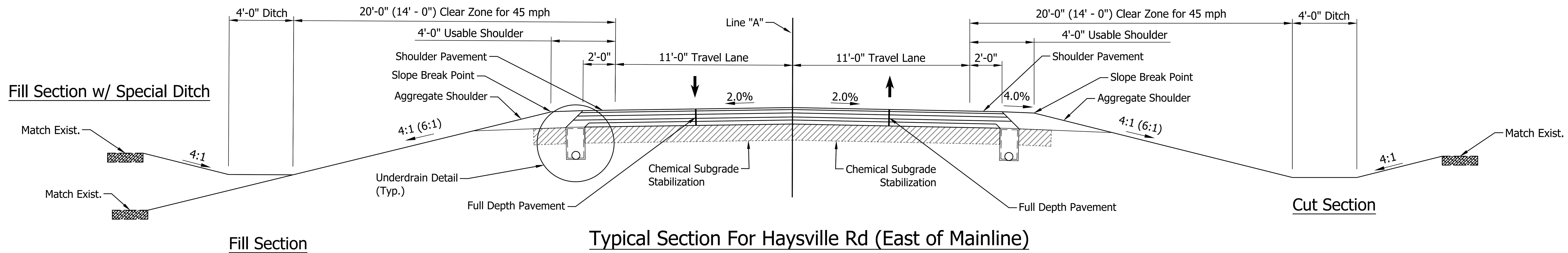
Typical Section For Haysville Rd (West of Mainline)

Functional Class: Minor Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

AADT< 400



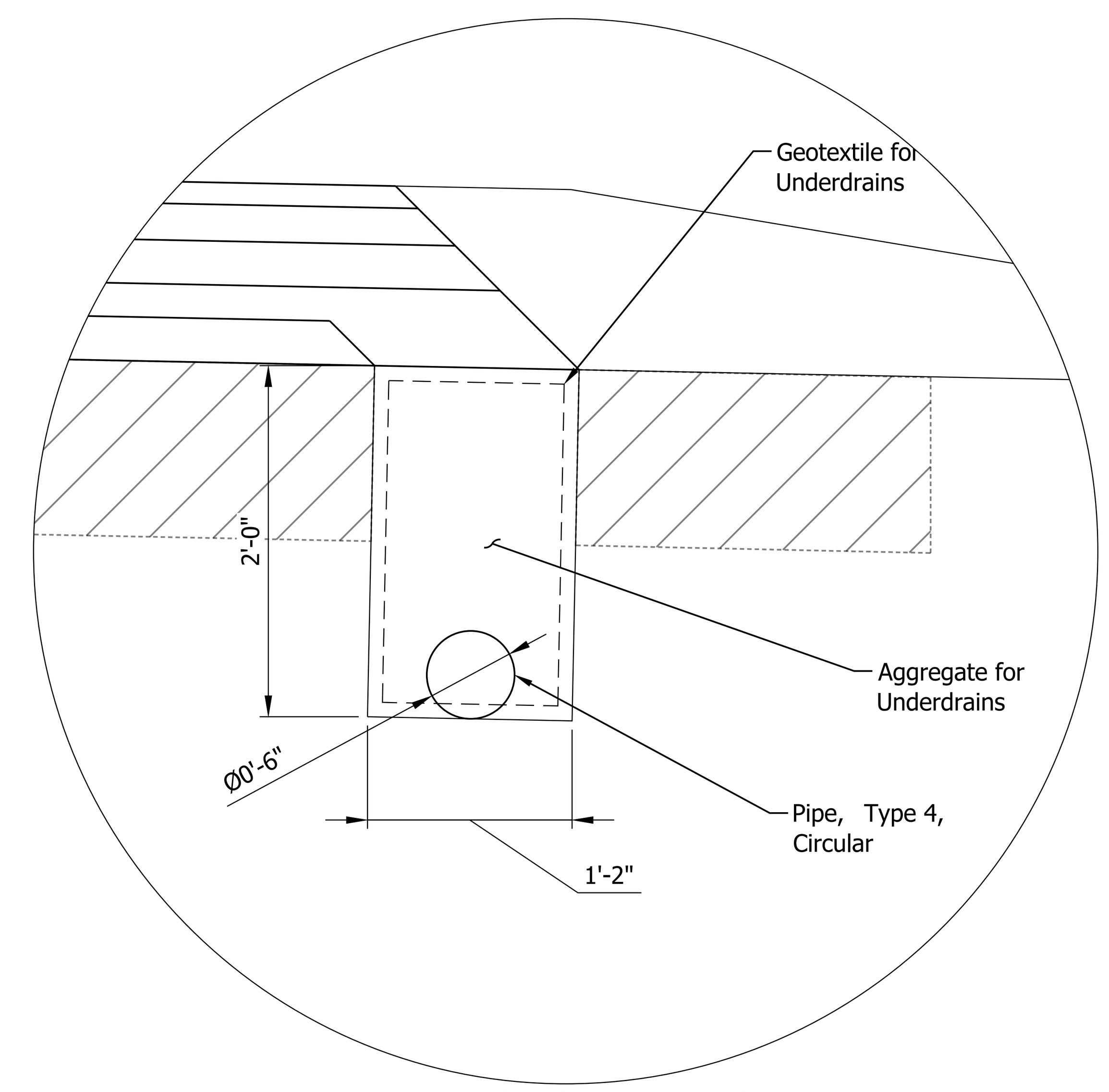
Typical Section For Haysville Rd (East of Mainline)

Functional Class: Minor Collector

Geometric Design Criteria: Rural Collector, Local Agency Route

Speed - 45 mph

400 ≤ AADT< 1500

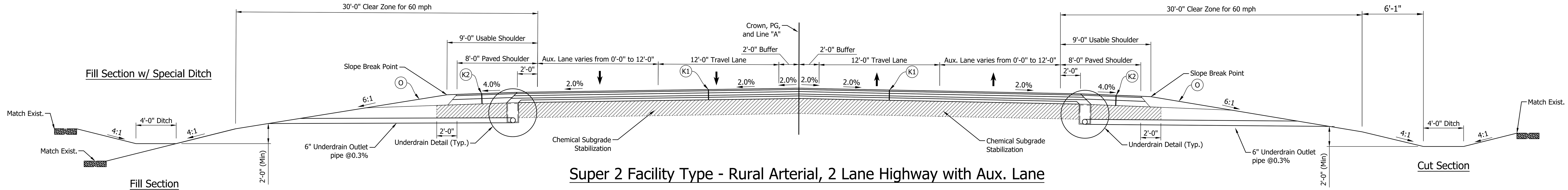


Underdrain Detail

SCALE 1"= 10'

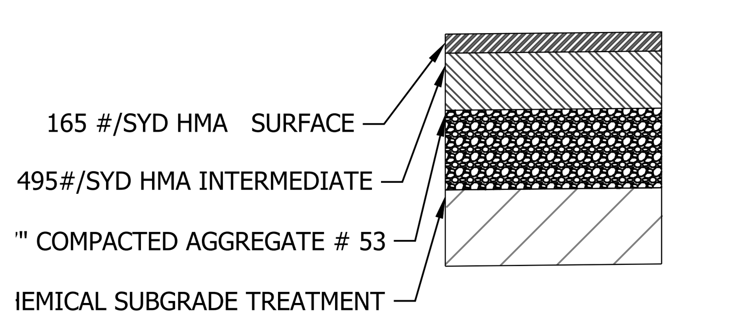
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1/4"=1' · VERTICAL SCALE · SURVEY BOOK · CONTRACT #
DESIGNED: PS	DRAWN: PS	Typical Section	BRIDGE FILE # · DESIGNATION # · SHEET 17 of 17 · PROJECT #
CHECKED: BSD	CHECKED: BSD	Haysville Rd West - Haysville Rd East	

Date: Jul 29, 2025, 2:03pm User Name: MariaLopez
File: C:\Users\MariaLopez\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\CAD\Support\Misc\Typicals\1-PreAlt\04282025_Typical Sections_COPY.dwg - (Haysville Rd West - Haysville Rd East)



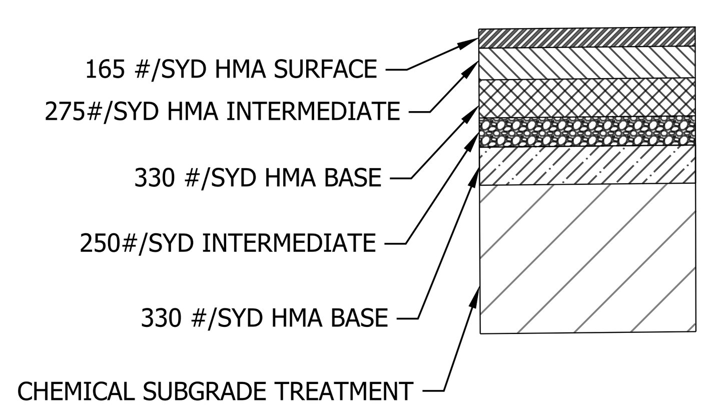
Super 2 Facility Type - Rural Arterial, 2 Lane Highway with Aux. Lane

Asymmetrical 2+1 Configuration



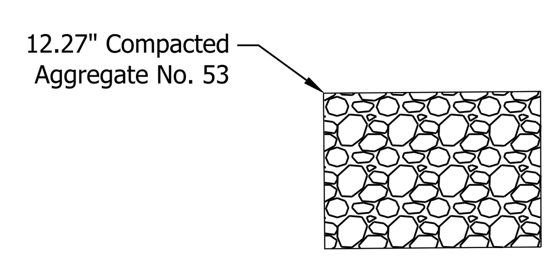
K2 HMA FOR SHOULDER

SCALE: 1" = 1'



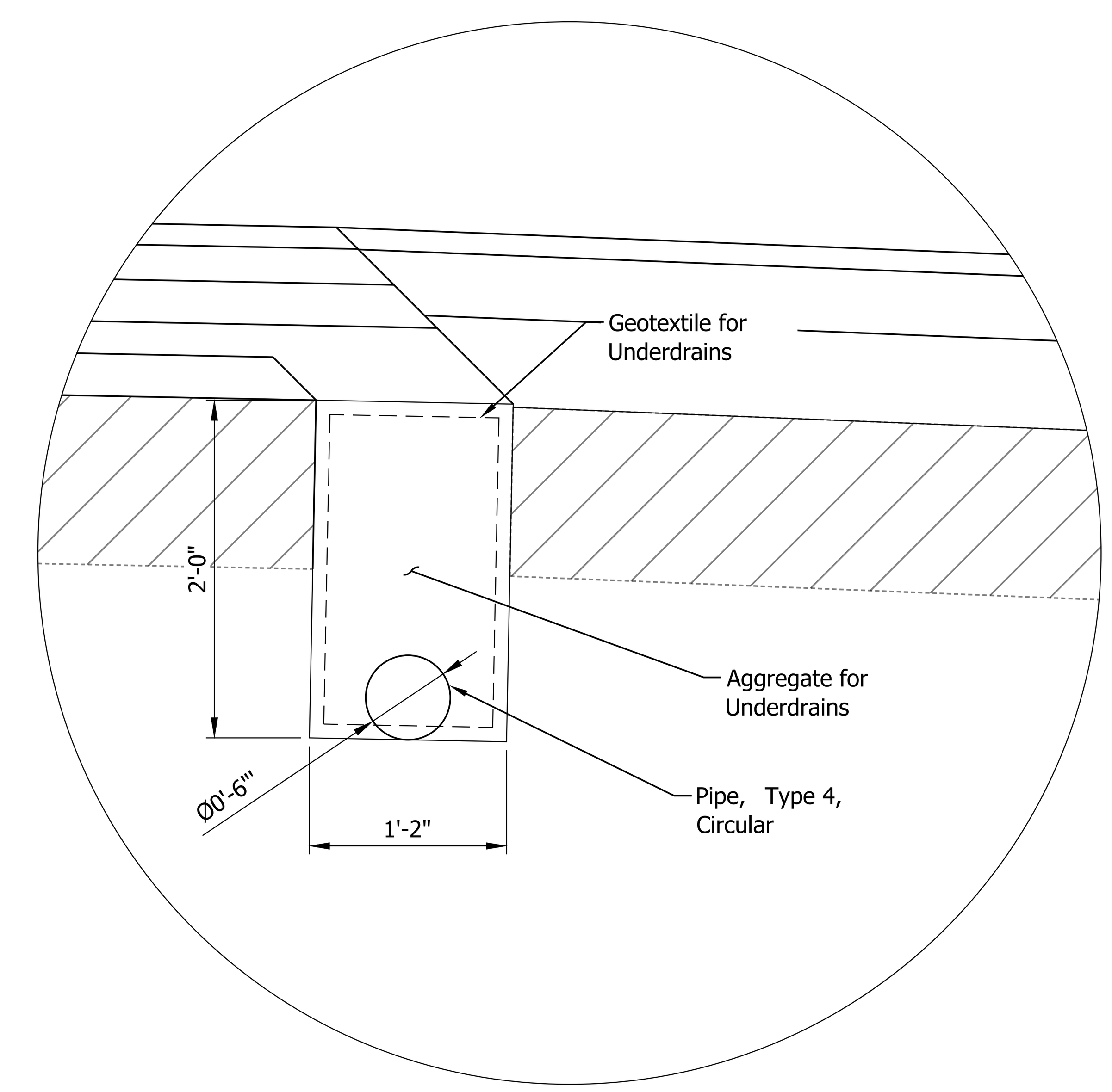
K1 HMA FOR MAINLINES

SCALE: 1" = 1'



O Aggregate Shoulder

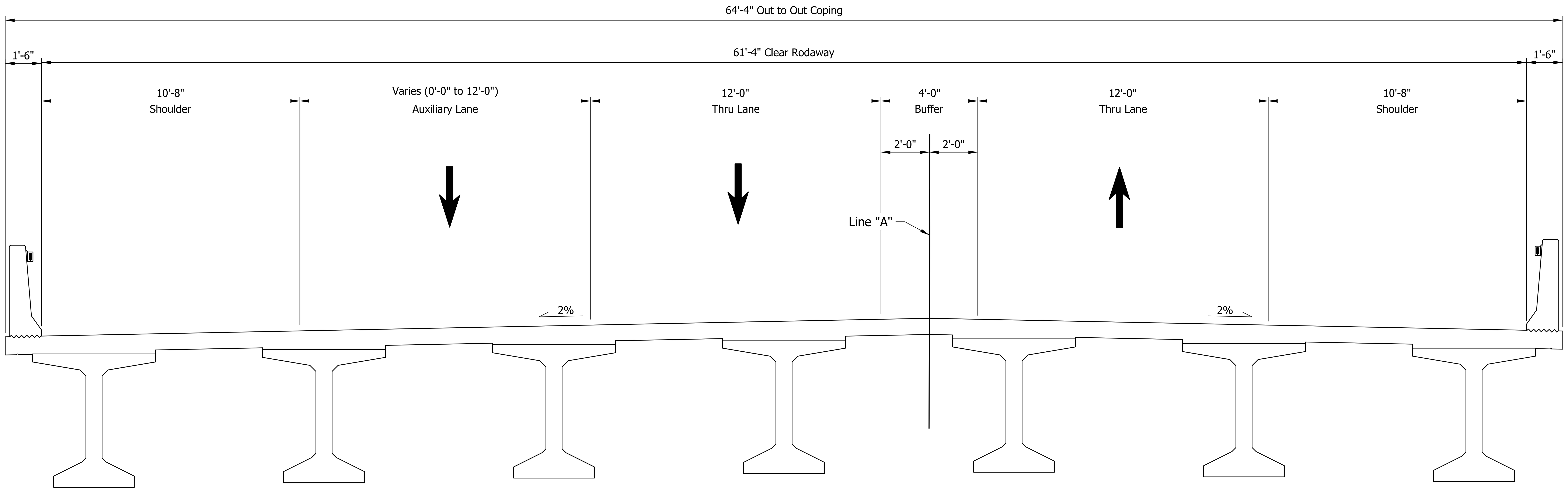
SCALE: 1" = 1'



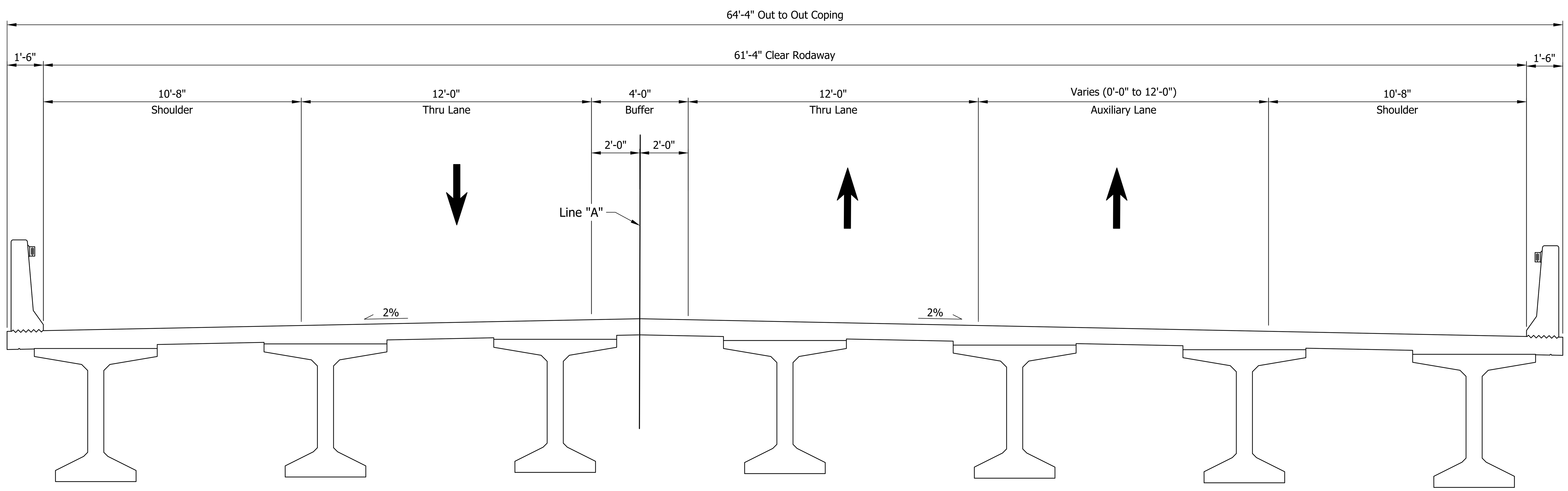
Underdrain Detail

SCALE 1"= 10'

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: 1/4"=1'	BRIDGE FILE: #
		VERTICAL SCALE	DESIGNATION: #
DESIGNED: MLA / DRAWN: MLA	Typical Section Mainline Midstates Corridor - Super 2	SURVEY BOOK	SHEET: 2 of 18
CHECKED: BSD / CHECKED: BSD		CONTRACT: #	PROJECT: #



Super 2 Facility Type - Rural Arterial, 2 Lane Highway with Southbound Aux. Lane



Super 2 Facility Type - Rural Arterial, 2 Lane Highway with Northbound Aux. Lane

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE

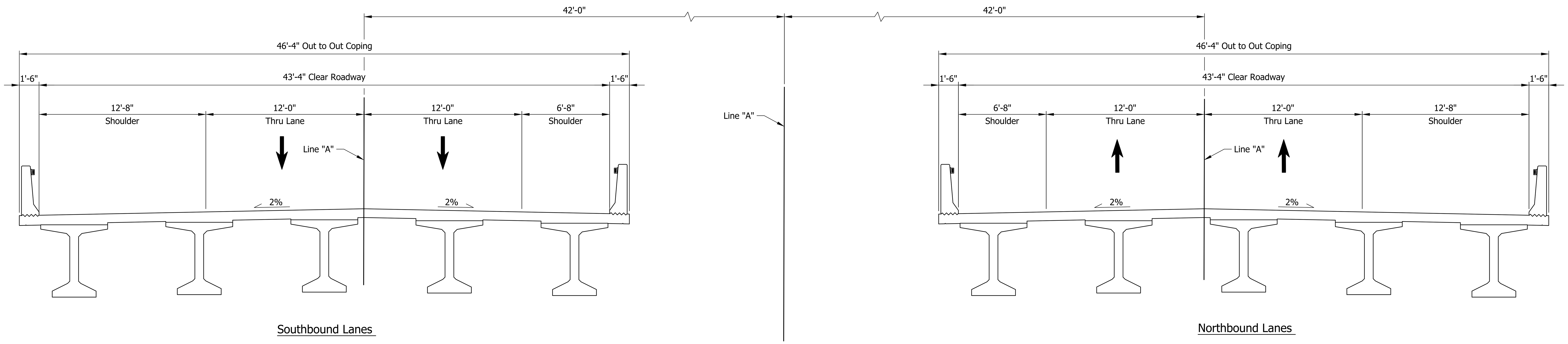
DESIGNED: SMH DRAWN: TAM
CHECKED: ACS CHECKED: MAR

INDIANA
DEPARTMENT OF TRANSPORTATION

Bridge Typical Section
Mainline Mid-States Corridor - Super 2

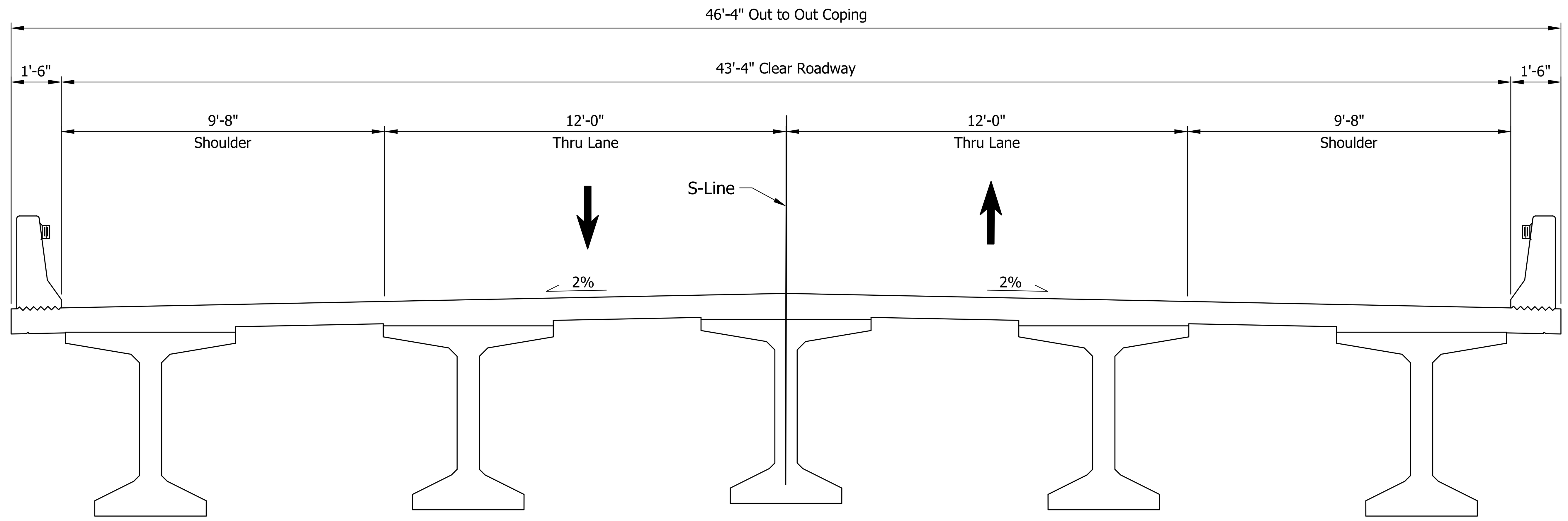
HORIZONTAL SCALE	BRIDGE FILE
3/8"=1'	#
VERTICAL SCALE	DESIGNATION
	#
SURVEY BOOK	SHEET
	1 of 3
CONTRACT	PROJECT
#	#

Date: Aug 28, 2025, 1:47pm User Name: Tracy
File: C:\Users\Tracy\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\Bridge\CAD\Typicals\Typical Sections.dwg - (Super 2)



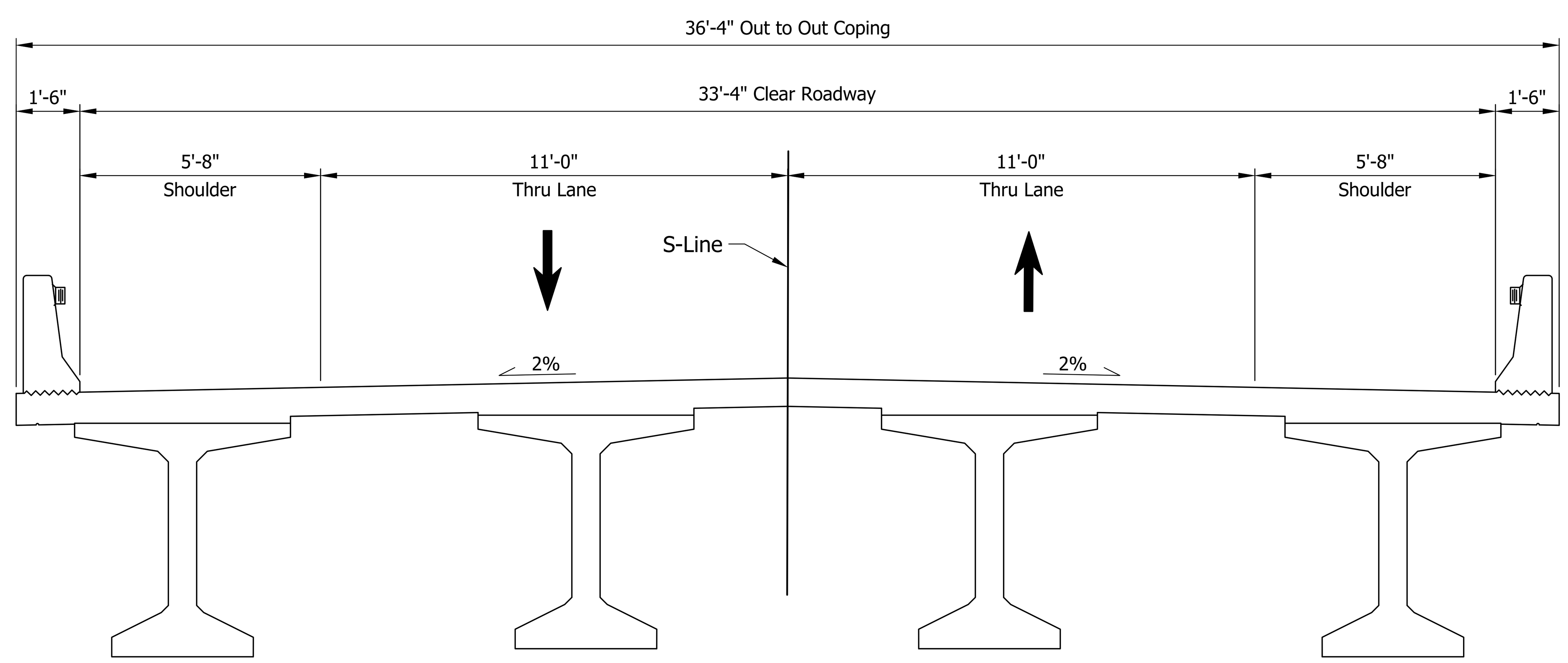
Expressway Facility Type, Rural Arterial, 4 - Lane Divided Highway

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE: 1/4"=1'	BRIDGE FILE: #
		VERTICAL SCALE	DESIGNATION: #
DESIGNED: SMH / DRAWN: TAM	Bridge Typical Section	SURVEY BOOK	SHEET: 2 of 3
CHECKED: ACS / CHECKED: MAR	Mainline Mid-States Corridor - Expressway	CONTRACT: #	PROJECT: #



Typical Section For Rural Collector, Local Agency Route

AADT ≥ 2000



Typical Section For Rural Collector, Local Agency Route

400 ≤ AADT < 2000

Date: Aug 28, 2025, 12:34pm User Name: Tracy
File: C:\Users\Tracy\DC\ACCDocs\Lochgroup\Mid-States Tier 2\Project Files\Services\Bridge\CAD\Typicals\Typical Sections.dwg - (S-Line)

RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER # DATE		INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 3/8"=1'	BRIDGE FILE #
			VERTICAL SCALE	DESIGNATION #
DESIGNED: SMH	DRAWN: TAM	Bridge Typical Section S-Lines	SURVEY BOOK	SHEET 3 of 3
CHECKED: ACS	CHECKED: MAR		CONTRACT #	PROJECT #

ATTACHMENT 2

Attachment 2 – Reduced Conflict Intersection Generalized Schematic