

Indiana Department of Transportation

County Elkhart Route US 20 Des. No. 1600517

**FHWA-Indiana Environmental Document
CATEGORICAL EXCLUSION / ENVIRONMENTAL ASSESSMENT FORM
GENERAL PROJECT INFORMATION**

Road No./County:	US Highway 20 (US 20)/Elkhart County
Designation Number:	1600517 lead des, 1802043 building demolition, 1802045 tree clearing
Project Description/Termini:	US 20 Improvement Project – State Road 15 (SR 15) to County Road 35 (CR 35)

After completing this form, I conclude that this project qualifies for the following type of Categorical Exclusion (FHWA must review/approve if Level 4 CE):

	Categorical Exclusion, Level 2 – The proposed action meets the criteria for Categorical Exclusion Manual Level 2 - table 1, CE Level Thresholds. Required Signatories: ESM (Environmental Scoping Manager)
	Categorical Exclusion, Level 3 – The proposed action meets the criteria for Categorical Exclusion Manual Level 3 - table 1, CE Level Thresholds. Required Signatories: ESM, ES (Environmental Services Division)
X	Categorical Exclusion, Level 4 – The proposed action meets the criteria for Categorical Exclusion Manual Level 4 - table 1, CE Level Thresholds. Required Signatories: ESM, ES, FHWA
	Environmental Assessment (EA) – EAs require a separate FONSI. Additional research and documentation is necessary to determine the effects on the environment. Required Signatories: ES, FHWA

Note: For documents prepared by or for Environmental Services Division, it is not necessary for the ESM of the district in which the project is located to release for public involvement or sign for approval.

Approval
 ESM Signature _____ Date _____ ES Signature Date _____

FHWA Signature Date _____

Release for Public Involvement

N/A _____ REB 5/31/19
 ESM Initials Date ES Initials Date

Certification of Public Involvement _____
 Office of Public Involvement Date

Note: Do not approve until after Section 106 public involvement and all other environmental requirements have been satisfied.

INDOT ES/District Env.
 Reviewer Signature: _____ Date: _____

Name and Organization of CE/EA Preparer: Richard Connolly, HNTB

This is page 1 of 53 Project name: US 20 Improvement Project Date: May 31, 2019

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Part I - PUBLIC INVOLVEMENT

Every Federal action requires some level of public involvement, providing for early and continuous opportunities throughout the project development process. **The level of public involvement should be commensurate with the proposed action.**

Does the project have a historic bridge processed under the Historic Bridges PA*?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If No, then: Opportunity for a Public Hearing Required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**A public hearing is required for all historic bridges processed under the Historic Bridges Programmatic Agreement between INDOT, FHWA, SHPO, and the ACHP.*

Discuss what public involvement activities (legal notices, letters to affected property owners and residents (i.e. notice of entry), meetings, special purpose meetings, newspaper articles, etc.) have occurred for this project.

Remarks:

Notice of Entry for Survey or Investigation Letters
 Notice of Entry for Survey or Investigation letters were mailed to potentially affected property owners on February 23, 2017 (Appendix G, pages 9 to 13).

Stakeholder Working Group (SWG) Meeting
 A SWG meeting was held to gather feedback and concerns from local officials. Invitation letters were mailed out to SWG invitees on February 13, 2018 (Appendix G, page 14). The SWG invitee list included local, state and federal officials, emergency response facilities, and local education facilities. The SWG meeting was held on March 15, 2018 at 1 p.m. at Middlebury Town Hall. The project scope was discussed and an update on the current status of the project was provided. Questions and concerns included the consideration of through traffic through Middlebury and the impacts of additional water flow into legal drains. Meeting participants were then provided the opportunity to review Stage 1 design plans. Additional discussion between attendees and the project team continued after completion of the meeting (Appendix G, pages 15 and 16).

Public Information Meeting
 A public information meeting was held for the general public. Invitation postcards were sent to adjacent property owners and SWG meeting invitees. This invitation was also posted on several media outlets, the local newspaper, *The Elkhart Truth*, and the local Amish newspaper, *Die Blatt*. This meeting consisted of an open house session where members of the project team could answer questions, and a formal presentation was offered, and concluded with another open house session. This meeting was held on June 21, 2018 at Northridge High School from 5:30 to 7 p.m. Questions and concerns from attendees generally pertained to right-of-way acquisition, the US 20/County Road (CR) 35 intersection, existing safety concerns, schedule, and emergency services (Appendix G, pages 20 to 62).

Section 106 Public Notice
 To meet the public involvement requirements of Section 106, the Federal Highway Administration's (FHWA's) finding of "Adverse Effect" was advertised in *The Goshen News*, a widely circulated newspaper throughout the Town of Middlebury and northern Elkhart County, on November 1, 2018 (Appendix D, page 64). The comment period ended on December 3, 2018 and no comments were received.

Public Hearing
 The project will meet the minimum requirements described in the current INDOT Public Involvement Manual which requires the project sponsor to offer the public an opportunity to submit comment and/or request a public hearing. INDOT determined to forgo offering the public an opportunity to request a hearing, and decided to hold a public hearing to provide information to the public and gather public input. Upon release of the CE for public involvement, a legal

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advertisement will be placed in local publications notifying the public of the CE's availability for review and comment for a period of 30 days.

The legal notice will appear in local publications of general circulation, contingent upon the release of this document for public involvement, announcing the availability of the environmental documentation, and the date and venue of the public hearing at least 15 days and again at least seven days in advance of the event. The hearing will allow the public to formally provide comments on the preferred alternative and potential effects to the social and natural environment. Comments will be accepted for a period of 15 days following the hearing.

All comments received during this period will be listed and individually addressed in the disposition of comments attachment included in the Final CE.

This document will be revised after the public involvement requirements are fulfilled.

Public Controversy on Environmental Grounds

Will the project involve substantial controversy concerning community and/or natural resource impacts? Yes No

Remarks:

At this time, there is no known public controversy over community and/or natural resource impacts regarding the project.

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Part II - General Project Identification, Description, and Design Information

Sponsor of the Project: Indiana Department of Transportation INDOT District: Fort Wayne
 Local Name of the Facility: US 20

Funding Source (mark all that apply): Federal State Local Other*

*If other is selected, please identify the funding source: _____

PURPOSE AND NEED:

Describe the transportation problem that the project will address. The solution to the traffic problem should NOT be discussed in this section. (Refer to the CE Manual, Section IV.B.2. Purpose and Need)

Need: Improve Safety

INDOT generated accident data for this corridor which has been used in this evaluation. It examined a three-year period from October 4, 2013 to September 25, 2016. During this period, there were 200 accidents within the project area with a majority being rear end crashes. The severity level of each accident is defined as property damage only, personal injury, or fatality. Within the project area, 11% of the accidents resulted in personal injury with one accident resulting in a fatality. RoadHAT analysis shows the index of accident frequency is well above the expectations of the facility type and within the top 0.2% of highways in the state in terms of accident frequency.

US 20 Accident Quantity and Severity

	Property Damage Only	Personal Injuries	Fatalities	Total in the Project Area
US 20	143	18	1	162

Need: Reduce Congestion

The primary measure of congestion is level of service (LOS), which the Highway Capacity Manual (2000) defines as a quality measure describing operational conditions within a traffic stream. LOS range from A (best) to F (worst). LOS of E and F are deemed unacceptable and in need of improvement.

Base year (2016), opening year (2021), and horizon year (2041) traffic projections were developed by INDOT and are summarized in the Average Annual Daily Traffic (AADT) and Design Hourly Volume (DHV) Table below. A 1.9 % per year growth rate was used in the development of this forecast.

The existing LOS for US 20 within the project area was analyzed and determined to be at LOS E which results in congestion and traffic delays. The horizon year 2041 would experience a LOS F. The desirable LOS for this improvement is B.

AADT DHV Table

Year	Growth Rate percent	AADT	DHV	LOS
2016	1.9	17,390	4,695	E
2021	1.9	19,040	5,141	E
2041	1.9	25,650	6,926	F

Need: Geometric Deficiencies

Three existing level one geometric deficiencies, where the roadway does not meet critical safety design requirements, have been identified within the project area.

- A vertical alignment deficiency exists 1,900 feet east of the US 20/CR 15 intersection. Sight distance at this existing crest curve does not meet safe design requirements and could lead to rear end accidents.
- A vertical curve in US 20 that does not provide adequate visibility is located between CR 27 South of US 20 and CR 27 north of US 20. In this area, the leg of CR 27 south of US 20 is separated from the

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leg on CR 27 north of US 20 by approximately 0.5 mile (Appendix B, pages 7 and 8).

- A curve in US 20 without banking is located just west of CR 31. However, with a design speed of 55 miles per hour (MPH) a banking rate of 2.6 percent is required to meet safe design requirements.

Need: Local Community Needs and Interests

Horse drawn buggies are the primary mode of transportation for the local Amish community. This section of US 20 is regularly utilized by horse drawn buggies. Currently, US 20 through the project area has approximately 6-foot shoulders, which do not provide adequate separation between motorized vehicles and horse drawn buggies increasing the potential of accidents between motorists and buggies.

Project Purpose

Alternative must:

- Improve the traffic conditions to a LOS of B in the horizon year 2041.
- Correct the undesirable vertical geometry and provide adequate sight distance throughout the corridor.
- Provide adequate separation between buggies and vehicles.

PROJECT DESCRIPTION (PREFERRED ALTERNATIVE):

County: Elkhart Municipality: Town of Middlebury

Limits of Proposed Work: Beginning approximately 803 feet east of the intersection of SR 15 and US 20 and proceeding east on US 20 to approximately 1,051 feet east of the intersection of US 20 and CR 35.

Total Work Length: 4.4 Mile(s) Total Work Area: 130 Acre(s)

Is an Interchange Modification Study / Interchange Justification Study (IMS/IJS) required?

Yes ¹	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>
Date: <input type="text"/>	

If yes, when did the FHWA grant a conditional approval for this project?

¹If an IMS or IJS is required; a copy of the approved CE/EA document must be submitted to the FHWA with a request for final approval of the IMS/IJS.

In the remarks box below, describe existing conditions, provide in detail the scope of work for the project, including the preferred alternative. Include a discussion of logical termini. Discuss any major issues for the project and how the project will improve safety or roadway deficiencies if these are issues.

INDOT and FHWA propose to proceed with the US 20 Improvement Project (Des. Nos. 1600517) located west of the town of Middlebury in Elkhart County, Indiana from approximately 1,000 feet east of SR 15 to approximately 800 feet east of CR 35. More specifically the project is located within Jefferson and Middlebury Townships; Bristol and Middlebury US Geological Survey (USGS) Quadrangles, Sections 10, 11, 12, 13, 14, 15 of Township 37 North, Range 6 East and Sections 7, 8, 17, 18 of Township 37 North, Range 7 East (Appendix B, page 1 and 38).

Existing Conditions

US 20 is classified as a 2-lane rural minor arterial throughout the project area. This segment has a posted speed of 40 MPH starting at the US 20 and SR 15 intersection transitioning up to 55 MPH through the rural section of the project then transitioning down to 45 MPH before the intersection of US 20 and CR 35. A majority of the existing typical section of US 20 consists of two 12-foot travel lanes with 6-foot paved and 4-foot unpaved shoulders with a ditch of variable width. The apparent average right-of-way width through the corridor is 48 feet.

There are two signalized intersections along this segment of US 20, one at the west end of the project at US

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20 and SR 15 and one at the east end of the project at US 20 and CR 35. The US 20 and SR 15 intersection consists of two through lanes in all directions with a single left turn lane for all approaches. One through lane ends approximately 0.5 mile east of the intersection. The US 20 and CR 35 intersection consists of a through lane in each direction, and a single left turn lane for the east and west approaches. All other intersections along the corridor are stop controlled on the minor approach. The horizontal alignment along US 20 runs from west to east and contains curves without adequate banking.

US 20 frequently experiences elevated levels of congestion causing frequent delays resulting in unsafe driving conditions. Traffic through the corridor is projected to increase over the next 20 years resulting in worsened congestion levels. Within the project area, 11% of the accidents resulted in personal injury with one accident resulting in a fatality. This roadway is currently ranks in the top 0.2% of highways in the state for most accidents. These congestion and safety issues are exacerbated by the frequent use of the roadway, and roadway shoulders, by non-motorized vehicles including Amish buggies.

The project area includes several convenience store/gas stations, two religious facilities, a concrete plant, and several commercial properties at the east and west ends of the project area. Northridge High School is also located at the east end of the project. Land use within the remainder of the project area includes small to large family farms and agricultural land, residential properties and wetlands or natural areas. Local utilities including electric transmission lines, telephone, cable, and gas transmission lines are located on the north side of the roadway within the apparent existing right-of-way. One snow mobile trail also crosses US 20 approximately at mid-point of the project and extends along the north side of US 20 for approximately 0.75 mile.

Preferred Alternative (Alternative 3B-TWLTL)

The preferred alternative includes reconstruction of existing 2-lane US 20 to a 5-lane section including a 14-foot two way left turn lane, two 12-foot travel lanes in each direction, and two 10-foot paved shoulders. These 10-foot paved shoulders are wide enough to safely accommodate horse drawn buggy traffic and will be specifically designed to support long term buggy traffic without forming ruts. The widening will occur primarily to the south of the existing alignment. The preferred alternative will eliminate the vertical alignment deficiencies that exist 1,900 feet east of the US 20/CR 15 and between CR 27 south of US 20 and CR 27 north of US 20 by flattening the road grade through these areas. The preferred alternative also corrects the curve without banking on US 20 just west of CR 31 by increasing the horizontal curve radius to eliminate the need for super elevation.

The preferred alternative includes both in-ditch detention and retention basins. Efforts have been made to minimize impacts to wetlands where possible. Where necessary, ditch detention areas have been made wider to minimize impacts to other more sensitive areas. The preferred alternative includes only open channel drainage, no storm sewer lines are proposed. There are ten culverts to be modified across US 20 and the adjacent county roads (Appendix B, pages 51 through 60).

County road intersections with US 20 will be improved from the existing condition as necessary. The preferred alternative includes design exceptions for vertical sight distance requirements on CR 29 and CR 35. These design exemptions will avoid at least two residential relocations and minimize the overall project footprint. The preferred alternative also includes dedicated left turn lanes from CR 35 to US 20 in both directions and improved traffic signal timing.

Description of improvements to county roads at each intersection are described below:

US 20 and CR 27 - Roadway lanes will be widened from 10.5 feet to 12 feet in both directions along CR 27. Additionally, useable shoulder width will be widened from 1 foot (0 feet paved) to 8 feet (2 feet paved) in both directions. Approximately 290 linear feet and 630 linear feet of roadway and shoulder widening will occur along CR 27 north and south of US 20, respectively.

US 20 and CR 29 - Roadway lanes will be widened from 9 feet to 12 feet in both directions along CR 29. Additionally, useable shoulder width will be widened from 4 feet (0 feet paved) to 10 feet (2 feet paved) in both directions. Approximately 240 linear feet of roadway and shoulder widening will occur along CR 29 north and south of US 20.

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US 20 and CR 31 - Roadway lanes will be widened from 10 feet to 12 feet in both directions along CR 31. Additionally, useable shoulder width will be widened from 0 feet to 10 feet (2 feet paved) in both directions. Approximately 190 linear feet and 230 linear feet of roadway and shoulder widening will occur along CR 31 north and south of US 20, respectively.

US 20 and CR 33 - Roadway lanes will be widened from 10.5 feet to 12 feet in both directions along CR 33. Additionally, useable shoulder width will be widened from 2.5 feet (0 feet paved) to 8 feet (2 feet paved) in both directions. Approximately 240 linear feet and 220 linear feet of roadway and shoulder widening will occur along CR 33 north and south of US 20, respectively.

US 20 and CR 35 - Roadway lanes will not be widened along CR 35. However, useable shoulder width will be widened from 10 feet (6 feet paved) to 11 feet (10 feet paved) in both directions. Approximately 320 linear feet and 285 linear feet of shoulder widening will occur along CR 35 north and south of US 20, respectively.

The proposed project will require approximately 90.8 acres of permanent right-of-way and 4.0 acre of temporary right-of way. A total of 19 residential relocations, and two business relocations will be required. The proposed project will result in acquisition of 5.1 acres of wetland, 30.0 acres of agricultural land, 5.5 acres of forest, and 7.7 acres of commercial property. A total of 1,665 linear feet of UNT North Fork Pine Creek and Indian Creek will be impacted by structure lengthening, riprap placement, and channel clearing. Cofferdams and temporary pumparounds are anticipated to be necessary to complete the project resulting in temporary stream impacts. The Elkhart County Snowmobile Trail is present within the project area; however, the project is not anticipated to result in a Section 4(f) use of this trail.

Logical Termini and Fulfillment of Purpose and Need

The project has independent utility and will provide a fully functional road segment without any additional transportation improvements beyond the project limits. The project's logical termini along US 20 extend from SR 15 on to CR 35. Logical termini for improvements to the local road system are approximately 200 feet north and south of US 20 (Appendix B, page 1). These termini were established to encompass an area of elevated accidents, geometric deficiencies, and congestion.

The proposed project fulfills the purpose and need of the project by improving the LOS from E under the no-build alternative to LOS B in the horizon year, reducing congestion, improving functional safety, providing a safer facility for horse drawn buggies and eliminating the geometric deficiencies within the corridor.

Maintenance of Traffic (MOT)

MOT for the preferred alternative will be accomplished by constructing the entire southern portion of US 20 in Phase 1, while maintaining current traffic patterns on US 20. After completion of the southern portion of the project, traffic will be switched over to the newly constructed half, while the northern half of the project can be constructed. Note this method provides access to buggy traffic while not closing more than one consecutive county road. Additionally, this method increases worker safety by separating construction activities from travel lanes (Appendix B, pages 29-66).

Cost Estimate

The total estimated construction and engineering costs for the US 20 Improvement Project are \$26,664,588 and \$2,195,100 respectively. Construction is anticipated to start in 2022. The Michiana Area Council of Governments (MACOG), which functions as the Metropolitan Planning Organization (MPO) for Elkhart County has acknowledged the need for improved safety, reduced congestion, and elimination of geometric deficiencies in the Fiscal Year (FY) 2018-2021 Transportation Improvement Program (TIP). This project is also included in the INDOT FY 2018-2021 Statewide Transportation Improvement Program (STIP) (Appendix H, pages 1 and 2).

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OTHER ALTERNATIVES CONSIDERED:

Describe all discarded alternatives, including the Do-Nothing Alternative and an explanation of why each discarded alternative was not selected.

Alternative 1 – 2-lane with Two Way Left Turn Lane (TWLTL)

Alternative 1 was considered to minimize impacts to the human and natural environments. This alternative would widen US 20 to allow for the addition of a center TWLTL. This alternative would improve the safety of the roadway by removing left turning vehicles from the travel lane and address the horizontal and vertical geometric issues. However, this alternative would only improve operation of the facility to a LOS E in the design year thus not sufficiently reducing congestion. Alternative 1 would not meet the purpose and need and was eliminated from consideration.

Alternative 2 – 2-lane with TWLTL and Grading for Future 5 Lane Section:

Alternative 2 was considered to reduce the overall cost of the project. This alternative would construct a 3-lane facility and grade the corridor outside of the constructed road to accommodate a future 5-lane facility. This alternative would improve the safety of the roadway by removing left turning vehicles from the travel lane and address the horizontal and vertical geometric issues. However, this alternative would only improve operation of the facility to a LOS E in the design year thus not sufficiently reduce congestion. Alternative 2 would not meet the purpose and need and was eliminated from consideration.

Alternative 3A – 4-lane with TWLTL (Center):

Similar to the preferred alternative, this alternative would reconstruct US 20 to a 5-lane section carrying two lanes of traffic in each direction with a TWLTL in the center. Alternative 3A was developed to widen the road while splitting the additional environmental impacts evenly between the north and south sides of US 20. As both Alternative 3A and Alternative 3B (preferred alternative) meet the purpose and need of the project, an evaluation of impacts was conducted to quantify the impacts to assist in determining which alternative had the lowest overall environmental impacts. The results of this analysis are summarized in the Alternatives Comparison Table (Appendix I, page 1).

While Alternative 3A has fewer impacts to some resources, Alternative 3B had fewer overall impacts, thus Alternative 3A was eliminated from consideration.

Alternative 4 – 4-lane section with no TWLTL:

Upgrading the facility to a 4-lane section, two lanes in each direction without a TWLTL was considered and eliminated early in the alternative selection process. This alternative was dismissed since TWLTLs are the most effective way to remove left turning movements from through traffic. The 4-lane section with no TWLTL alternative does not address the congestion and safety concerns discussed in the Purpose and Need section above. If this alternative were selected, congestion would continue to increase throughout the corridor. This alternative does not meet the purpose and need of the project and was therefore dismissed from further consideration.

Alternative 5 – No Build Alternative:

This alternative would not involve roadway work along US 20. The No Build Alternative does not address the congestion and safety concerns discussed in the Purpose and Need section above. If this alternative were selected, congestion would continue to increase throughout the corridor. This alternative does not meet the purpose and need of the project and was therefore dismissed from further consideration.

The Do Nothing Alternative is not feasible, prudent or practicable because (Mark all that apply):

- It would not correct existing capacity deficiencies;
It would not correct existing safety hazards;
It would not correct the existing roadway geometric deficiencies;

X
X
X

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It would not correct existing deteriorated conditions and maintenance problems; or
 It would result in serious impacts to the motoring public and general welfare of the economy.
 Other (Describe)

X

ROADWAY CHARACTER:

Functional Classification: US 20-Rural Minor Arterial
 Current ADT: 19,040 VPD (2021) Design Year ADT: 25,650 VPD (2041)
 Design Hour Volume (DHV): 8.15 Truck Percentage (%) 26.91
 Designed Speed (mph): 40/55 Legal Speed (mph): 55

	Existing	Proposed
Number of Lanes:	2	5
Type of Lanes:	12 ft. through lanes	12 ft. through lanes with a 14 ft. two-way left turn lane
Pavement Width:	36 ft.	82 ft.
Shoulder Width:	10 (6 ft. paved) ft.	11 (10 ft. paved) ft.
Median Width:	N/A ft.	N/A ft.
Sidewalk Width:	N/A ft.	N/A ft.

Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

Functional Classification: CR 27 - Local
 Current ADT: N/A VPD (2021) Design Year ADT: N/A VPD (2041)
 Design Hour Volume (DHV): N/A Truck Percentage (%) N/A
 Designed Speed (mph): 30 Legal Speed (mph): 30

	Existing	Proposed
Number of Lanes:	2	2
Type of Lanes:	10.5 ft. through lanes	12 ft. through lanes
Pavement Width:	21 ft.	28 ft.
Shoulder Width:	1 (0 ft. paved) ft.	8 (2 ft. paved) ft.
Median Width:	N/A ft.	N/A ft.
Sidewalk Width:	N/A ft.	N/A ft.

Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

Functional Classification: CR 29- Local
 Current ADT: N/A VPD (2021) Design Year ADT: N/A VPD (2041)
 Design Hour Volume (DHV): N/A Truck Percentage (%) N/A
 Designed Speed (mph): 30 Legal Speed (mph): 30

	Existing	Proposed
Number of Lanes:	2	2
Type of Lanes:	9 ft. through lanes	12 ft. through lanes
Pavement Width:	18 ft.	28 ft.
Shoulder Width:	4 (0 ft. paved) ft.	10 (2 ft. paved) ft.
Median Width:	N/A ft.	N/A ft.
Sidewalk Width:	N/A ft.	N/A ft.

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Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

Functional Classification: CR 31 - Local
 Current ADT: N/A VPD (2021) Design Year ADT: N/A VPD (2041)
 Design Hour Volume (DHV): N/A Truck Percentage (%) N/A
 Designed Speed (mph): 30 Legal Speed (mph): 30

Existing		Proposed	
Number of Lanes:	2	2	
Type of Lanes:	10 ft. through lanes		
Pavement Width:	20	28	ft.
Shoulder Width:	0	12 (2 ft. paved)	ft.
Median Width:	N/A	N/A	ft.
Sidewalk Width:	N/A	N/A	ft.

Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

Functional Classification: CR 33 - Local
 Current ADT: N/A VPD (2021) Design Year ADT: N/A VPD (2041)
 Design Hour Volume (DHV): N/A Truck Percentage (%) N/A
 Designed Speed (mph): 30 Legal Speed (mph): 30

Existing		Proposed	
Number of Lanes:	2	2	
Type of Lanes:	10.5 ft. through lanes		
Pavement Width:	21	28	ft.
Shoulder Width:	2.5 (0 ft. paved)	8 (2 ft. paved)	ft.
Median Width:	N/A	N/A	ft.
Sidewalk Width:	N/A	N/A	ft.

Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

Functional Classification: CR 35 - Rural Local Arterial
 Current ADT: 5,190 VPD (2021) Design Year ADT: 6,933 VPD (2041)
 Design Hour Volume (DHV): 403 Truck Percentage (%) 7.65
 Designed Speed (mph): 45 Legal Speed (mph): 45

Existing		Proposed	
Number of Lanes:	2	2	
Type of Lanes:	12 ft. through lanes		
Pavement Width:	36	44	ft.
Shoulder Width:	10 (6 ft. paved)	11 (10 ft. paved)	ft.
Median Width:	N/A	N/A	ft.
Sidewalk Width:	N/A	N/A	ft.

Setting: Urban Suburban Rural
 Topography: Level Rolling Hilly

If the proposed action has multiple roadways, this section should be filled out for each roadway.

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DESIGN CRITERIA FOR BRIDGES:

Structure/NBI Number(s): CV 020-020-099.20 Sufficiency Rating: 6, Large Culvert Inspection Report, 7/31/2018
(Rating, Source of Information)

	Existing		Proposed	
Bridge Type:	12 ft. x 8 ft. Metal Arch		12 ft. x 8 ft. Metal Arch	
Number of Spans:	1		1	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	N/A	ft.	N/A	ft.
Curb to Curb Width:	N/A	ft.	N/A	ft.
Outside to Outside Width:	131	ft.	131	ft.
Shoulder Width:	16	ft.	16	ft.
Length of Channel Work:			1,530	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: Large culvert CV 020-020-099.20, carrying eastbound and westbound lanes of US 20 over Indian Creek is located approximately 960 feet east of the US 20 and SR 15 intersection. Per the May 21, 2013 INDOT Large Culvert Inspection Report, the existing structure was constructed in 1991 and was replaced in 2009 which included a 20-foot extension on the south end. No replacement or rehabilitation activities to this structure are anticipated as part of this project; however, approximately 1,530 linear feet of Indian Creek occurs within the proposed permanent right-of-way. Therefore, approximately 1,530 feet of impacts to Indian Creek are anticipated (Appendix B, page 27).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 17 Sufficiency Rating: N/A
(Rating, Source of Information)

	Existing		Proposed	
Bridge Type:	1.5 ft. Reinforced Concrete Pipe		3 ft. Reinforced Concrete Pipe	
Number of Spans:	1		1	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	N/A	ft.	N/A	ft.
Curb to Curb Width:	N/A	ft.	N/A	ft.
Outside to Outside Width:	138	ft.	138	ft.
Shoulder Width:	10	ft.	11	ft.
Length of Channel Work:			0	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: The existing small structure identified as Structure Number 17 on the plan sheet conveys roadside drainage beneath eastbound and westbound lanes of US 20 from the south to the north where it outlets into Indian Creek approximately 49 feet north of the existing US 20 edge of pavement. The existing small structure is located approximately 1,340 feet west of the US 20 and CR 27 South intersection. Due to a pipe diameter of less than 48 inches, the existing structure does not have an assigned INDOT Structure Number or Structure Inspection Report. The existing 1.25-foot reinforced concrete pipe (RCP) will be replaced with a 3-foot RCP as part of this project. This small structure carries roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 51).

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Will the structure be rehabilitated or replaced as part of the project? Yes No N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 19 Sufficiency Rating: N/A
(Rating, Source of Information)

	Existing		Proposed	
Bridge Type:	2 ft. Reinforced Concrete Pipe		3 ft. Reinforced Concrete Pipe	
Number of Spans:	1		1	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	N/A	ft.	N/A	ft.
Curb to Curb Width:	N/A	ft.	N/A	ft.
Outside to Outside Width:	82	ft.	130	ft.
Shoulder Width:	16	ft.	21	ft.
Length of Channel Work:			0	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: The existing small structure identified as Structure Number 19 on the plan sheet conveys roadside drainage beneath eastbound and westbound lanes of US 20 from the south to the north where it outlets into Indian Creek approximately 46 feet north of the existing US 20 edge of pavement. The existing small structure is located approximately 958 feet west of the US 20 and CR 27 South intersection. Due to a pipe diameter of less than 48 inches, the existing structure does not have an assigned INDOT Structure Number or Structure Inspection Report. The existing 2-foot RCP will be replaced with a 3-foot RCP as part of this project. This small structure carries roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 52).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 47 Sufficiency Rating: N/A
(Rating, Source of Information)

	Existing		Proposed	
Bridge Type:	1.5 ft. Reinforced Concrete Pipe		3 ft. Reinforced Concrete Pipe	
Number of Spans:	1		1	
Weight Restrictions:	N/A	ton	N/A	ton
Height Restrictions:	N/A	ft.	N/A	ft.
Curb to Curb Width:	N/A	ft.	N/A	ft.
Outside to Outside Width:	89	ft.	135	ft.
Shoulder Width:	10	ft.	11	ft.
Length of Channel Work:			0	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: The existing small structure identified as Structure Number 47 on the plan sheet conveys roadside drainage beneath eastbound and westbound lanes of US 20 from the south to the north where it outlets into Wetland 1 approximately 28 feet north of the existing US 20 edge of pavement. The existing small structure is located approximately 384 feet east of the US 20 and CR 29 intersection. Due to a pipe diameter of less than 48 inches, the existing structure does not have an assigned INDOT Structure Number or Structure Inspection Report. The existing 1.5-foot RCP will be replaced with a 3-foot RCP as part of this project. This small structure carries roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 53).

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Will the structure be rehabilitated or replaced as part of the project? Yes No NA

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 55 Sufficiency Rating: N/A
(Rating, Source of Information)

	Existing		Proposed
Bridge Type:	2 ft. Reinforced Concrete Pipe		11 ft. x 4 ft. Reinforced Concrete Box
Number of Spans:	1		1
Weight Restrictions:	N/A ton		N/A ton
Height Restrictions:	N/A ft.		N/A ft.
Curb to Curb Width:	N/A ft.		N/A ft.
Outside to Outside Width:	82 ft.		144 ft.
Shoulder Width:	10 ft.		11 ft.
Length of Channel Work:			135 ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: The existing small structure identified as Structure Number 55 on the plan sheet conveys unnamed tributary (UNT) 1 beneath eastbound and westbound lanes of US 20 from the north to the south where it outlets into a UNT approximately 760 feet south of the existing US 20 edge of pavement. The existing small structure is located approximately 1,797 feet east of the US 20 and CR 29 intersection. Due to a pipe diameter of less than 48 inches, the existing structure does not have an assigned INDOT Structure Number or Structure Inspection Report. The existing 2-foot RCP will be replaced with an 11-foot by 4-foot reinforced concrete box (RCB) as part of this project. This small structure carries roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 54).

Will the structure be rehabilitated or replaced as part of the project? Yes No NA

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 22 Sufficiency Rating: N/A
(Rating, Source of Information)

	Existing		Proposed
Bridge Type:	N/A		3 ft. Reinforced Concrete Pipe
Number of Spans:	N/A		1
Weight Restrictions:	N/A ton		N/A ton
Height Restrictions:	N/A ft.		N/A ft.
Curb to Curb Width:	N/A ft.		N/A ft.
Outside to Outside Width:	N/A ft.		100 ft.
Shoulder Width:	1 ft.		8 ft.
Length of Channel Work:			0 ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks: The proposed small structure identified as Structure Number 22 on the plan sheet conveys roadside drainage beneath northbound and southbound lanes of CR 27 South. Structure Number 22 carries roadside drainage west from a proposed detention pond east of CR 29 South to a proposed detention pond west of CR 29 South. An existing structure is not currently present at this location. The proposed small structure will be located approximately 49 feet south of the US 20 and CR 27 South intersection. The proposed structure will be a 3-foot RCP. This small structure will carry roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 56).

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Will the structure be rehabilitated or replaced as part of the project? Yes No N/A
If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 41 Sufficiency Rating: N/A
 (Rating, Source of Information)

	Existing		Proposed
Bridge Type:	N/A		3 ft. Reinforced Concrete Pipe
Number of Spans:	1		1
Weight Restrictions:	N/A	ton	N/A
Height Restrictions:	N/A	ft.	N/A
Curb to Curb Width:	N/A	ft.	N/A
Outside to Outside Width:	N/A	ft.	113
Shoulder Width:	4	ft.	10
Length of Channel Work:			0

Describe bridges and structures; provide specific location information for small structures.

Remarks: The proposed small structure identified as Structure Number 41 on the plan sheet conveys roadside drainage beneath northbound and southbound lanes of CR 29 north of US 20. Structure Number 41 carries roadside drainage east from Wetland 2 to a proposed detention pond east of CR 29. An existing structure is not currently present at this location. The proposed small structure will be located approximately 32 feet north of the US 20 and CR 29 intersection. The proposed structure will a 3-foot RCP. This small structure will carry roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 57).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A
If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 59 Sufficiency Rating: N/A
 (Rating, Source of Information)

	Existing		Proposed
Bridge Type:	N/A		3 ft. Reinforced Concrete Pipe
Number of Spans:	1		1
Weight Restrictions:	N/A	ton	N/A
Height Restrictions:	N/A	ft.	N/A
Curb to Curb Width:	N/A	ft.	N/A
Outside to Outside Width:	N/A	ft.	118
Shoulder Width:	0	ft.	12
Length of Channel Work:			0

Describe bridges and structures; provide specific location information for small structures.

Remarks: The proposed small structure identified as Structure Number 59 on the plan sheet conveys roadside drainage beneath northbound and southbound lanes of CR 31 south of US 20. Structure Number 58 carries roadside drainage west from a proposed detention pond east of CR 31 to Wetland 15. An existing structure is not currently present at this location. The proposed small structure will be located approximately 31 feet south of the US 20 and CR 31 intersection. The proposed structure will a 3-foot RCP. This small structure will carry roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 58).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A
If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

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Structure/NBI Number(s): Small Structure 60 Sufficiency Rating: N/A
 (Rating, Source of Information)

Existing		Proposed	
Bridge Type:	N/A	3 ft. Reinforced Concrete Pipe	
Number of Spans:	1	1	
Weight Restrictions:	N/A ton	N/A	ton
Height Restrictions:	N/A ft.	N/A	ft.
Curb to Curb Width:	N/A ft.	N/A	ft.
Outside to Outside Width:	N/A ft.	118	ft.
Shoulder Width:	0 ft.	12	ft.
Length of Channel Work:		0	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The proposed small structure identified as Structure Number 60 on the plan sheet conveys roadside drainage beneath northbound and southbound lanes of CR 31 north of US 20. Structure Number 60 carries roadside drainage west from a proposed detention pond east of CR 31 to a proposed detention pond west of CR 31. An existing structure is not currently present at this location. The proposed small structure will be located approximately 25 feet north of the US 20 and CR 31 intersection. The proposed structure will be a 3-foot RCP. This small structure will carry roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 59).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A
 If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): Small Structure 76 Sufficiency Rating: N/A
 (Rating, Source of Information)

Existing		Proposed	
Bridge Type:	N/A	3 ft. Reinforced Concrete Pipe	
Number of Spans:	1	1	
Weight Restrictions:	N/A ton	N/A	ton
Height Restrictions:	N/A ft.	N/A	ft.
Curb to Curb Width:	N/A ft.	N/A	ft.
Outside to Outside Width:	N/A ft.	94	ft.
Shoulder Width:	0 ft.	8	ft.
Length of Channel Work:		0	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

The proposed small structure identified as Structure Number 76 on the plan sheet conveys roadside drainage beneath northbound and southbound lanes of CR 33 North. Structure Number 76 carries roadside drainage west from a proposed detention pond east of CR 33 North to a proposed detention pond west of CR 33 North. An existing structure is not currently present at this location. The proposed small structure will be located approximately 25 feet north of the US 20 and CR 33 North intersection. The proposed structure will be a 3-foot RCP. This small structure will carry roadside drainage, thus, no impacts to a jurisdictional waterway will occur due to the structure replacement (Appendix B, page 60).

Will the structure be rehabilitated or replaced as part of the project? Yes No N/A
 If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

Structure/NBI Number(s): CV 020-020-103.34 (Str. No. 105) Sufficiency Rating: 8, Large Culvert Inspection Report, 8/3/2018

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(Rating, Source of Information)

	Existing	Proposed	
Bridge Type:	Twin 5 ft. Corrugated Metal Pipes	9 ft. x 5 ft. Reinforced Concrete Box	
Number of Spans:	1	1	
Weight Restrictions:	N/A	N/A	ton
Height Restrictions:	N/A	N/A	ft.
Curb to Curb Width:	N/A	N/A	ft.
Outside to Outside Width:	90	128	ft.
Shoulder Width:	10	11	ft.
Length of Channel Work:		38	ft.

Describe bridges and structures; provide specific location information for small structures.

Remarks:

Large culvert CV 020-020-103.34, Structure Number 105, serves as an equalization culvert for Pond 2 and Pond 3 beneath eastbound and westbound lanes of US 20 and is located approximately 270 feet east of the US 20 and CR 35 intersection. Pond 2 is located in the southeast quadrant of the US 20 and CR 35 intersection, approximately 145 feet east of CR 35 (Appendix B, page 41). Pond 3 is located in the northeast quadrant of the US 20 and CR 35 intersection, approximately 145 feet east of CR 35 (Appendix B, page 41). Per the May 21, 2013 INDOT Large Culvert Inspection Report, the existing structure was constructed in 1999. No records of rehabilitation activities to this structure were listed in the INDOT Large Culvert Inspection Report. The existing twin 5-foot corrugated metal pipe will be replaced with a 9-foot by 5-foot reinforced concrete box (RCB) as part of this project. Approximately 0.16 acre of Pond 2 and 0.04 acre of Pond 3 are within the proposed permanent right-of-way. Therefore, impacts to Pond 2 and Pond 3 are anticipated (Appendix B, page 55).

Will the structure be rehabilitated or replaced as part of the project?

Yes	No	NA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.

MAINTENANCE OF TRAFFIC (MOT) DURING CONSTRUCTION:

	Yes	No
Is a temporary bridge proposed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a temporary roadway proposed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Will the project involve the use of a detour or require a ramp closure? (describe in remarks)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Provisions will be made for access by local traffic and so posted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Provisions will be made for through-traffic dependent businesses.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Provisions will be made to accommodate any local special events or festivals.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Will the proposed MOT substantially change the environmental consequences of the action?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there substantial controversy associated with the proposed method for MOT?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Remarks:

Two lanes of traffic, one in each direction, will be maintained during construction. MOT will be accomplished by constructing the entire southern portion of US 20 in Phase 1, while maintaining current traffic patterns on US 20. After completion of the southern portion of the project, traffic will be switched over to the newly constructed half, while the northern half of the project can be constructed. Note this method provides access for buggy traffic while not closing more than one consecutive county road. A separate travel lane will be maintained for buggies and other non-motorized traffic. Although intersecting county roads may be closed for a brief period, detours will be clearly marked and should not substantially impair travel routes. During construction, a suitable path for use by the Elkhart County Snowmobile Trail will be provided. Additionally, this method increases worker safety by separating construction activities from travel lanes.

Early coordination letters were sent to the Elkhart County Surveyor, Elkhart County Sheriff, the Middlebury Town Manager, the Elkhart County Commissioners, Elkhart County Highway Department, Elkhart County Emergency Management, Northridge High School, Middlebury Town Council Members, and Middlebury Community Schools on February 1, 2018 and March 6, 2018 (Appendix C, pages 1 to 9). No responses pertaining to MOT were received from local officials.

The MOT will pose a temporary inconvenience to traveling motorists (including school buses and emergency services); however, no significant delays are anticipated and all inconveniences will cease upon project completion. Construction is anticipated to span two construction seasons. Potential temporary community and economic impacts during construction of the proposed project include increased travel time, increased emergency response time, and increased fuel consumption by commercial and individual motorists due to any temporary lane closures that may be required. The project sponsor will be responsible for contacting school districts, churches and emergency services at least two weeks prior to construction activity that would block or limit access. Delays may occur during construction but would cease with project completion.

ESTIMATED PROJECT COST AND SCHEDULE:

Engineering: \$ 2,195,100 (2018) Right-of-Way: \$ 2,100,000 (2020-21) Construction: \$ 26,664,588 (2020-21)*

Anticipated Start Date of Construction: Spring 2021

Date project incorporated into STIP July 3, 2017 (FY 18-21) (Appendix H, page 2)

Is the project in an MPO Area? **Yes** **No**

If yes,

Name of MPO Michiana Area Council of Governments (MACOG)

Location of Project in TIP MACOG TIP FY 18-21 per Resolution 28-17, Page 4 (Appendix H, page 1)

Date of incorporation by reference into the STIP July 3, 2017 (FY 18-21)

*Cost estimate based on the stage 2 plans. The STIP/TIP will be amended by the INDOT PM to reflect the current cost and project description.

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RIGHT OF WAY:

Land Use Impacts	Amount (acres)	
	Permanent	Temporary
Residential	39.4	3.5
Commercial	7.5	0.2
Agricultural	29.9	0.1
Forest	5.5	N/A
Wetlands	5.1	<0.1
Other: Religious Facility	1.8	0.2
Other:	N/A	N/A
Other: Utility	1.6	N/A
TOTAL	90.8	4.0

Describe both Permanent and Temporary right-of-way and describe their current use. Typical and Maximum right-of-way widths (existing and proposed) should also be discussed. Any advance acquisition or reacquisition, either known or suspected, and there impacts on the environmental analysis should be discussed.

Remarks:

INDOT does not have right-of-way outside of the edge of the existing pavement. Any work outside of the traveled way will necessitate re-acquiring the existing right-of-way. The width of the reacquired right-of-way will be approximately 22 feet north and south of the current US 20 centerline. New, permanent right-of-way widths range from 190 feet to 295 feet from the center line along US 20 and 90 feet to 142 feet from the center line along CR 27, CR 29, CR 31, CR 33, and CR 35.

The proposed project will require the reacquisition of 18.8 acre of right-of-way and acquisition of 90.8 acre of new, permanent right-of-way will be necessary. An additional 4.0 acres of temporary right-of-way will be necessary for construction access, staging activities, and temporary grading.

The current use of all reacquired right-of-way is existing pavement for US 20. The current use of the new, permanent right-of-way includes approximately 39.4 acre of residential property, 7.5 acre of commercial property, 29.9 acre of agricultural property, 5.1 acre of wetlands, 5.5 acres of forested property, 1.8 acre of religious facility property, and 1.6 acre of utility property. The current use of the temporary right-of-way includes approximately 3.5 acre of residential property, 0.2 acre of commercial property, 0.1 acre of agricultural property, <0.1 acre of wetlands, and 0.2 acre of religious facility property.

Farmland acquisition acreage provided by the US Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) was calculated based on a preliminary right-of-way footprint reflective of the worst-case scenario. As the project development process has progressed, the right-of-way acquisition footprint has been refined and reduced where possible. The refined right-of-way was used to calculate land use impacts in this section of the document. As such, acreage of agricultural areas noted in the table above are less than the acreage noted in the Farmland Farmland Protection Policy Act (FPPA) coordination included in Appendix C.

As a result of design changes, including a need for increased water detention areas onsite and a need for over excavation to remove unsuitable peat soils, the estimated right-of-way increased from the 48 acres stated in the March 6, 2018 agency-re-coordination letter to the 90.8 acres documented in this CE. During the Public Information Meeting, held on June 21, 2018 and the Resource Agency Meeting, on July 12, 2018, an estimated right-of-way acreage of 91 acres was presented to the public and resource agencies. No concerns regarding the overall right-of-way acreage have been received from the public or resource agencies.

The use of reacquired right-of-way will continue to be existing pavement. The use of new, permanent right-of-way will be converted from agricultural, residential, wetland, forest, religious

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facility, and utility property into new pavement, maintained roadside, and storm water detention for the project. The use of temporary right-of-way will continue to be residential, commercial, agricultural, wetland, and religious facility property (Appendix B, pages 6 to 14).

INDOT has approved an early acquisition CE in accordance with the Moving Ahead for Progress in the 21st Century Act (MAP-21) on December 5, 2018 (Appendix I pages 62-77). The document covered parcels except for those that would be considered Section 4(f) properties. This document was prepared to afford affected property owners additional time to work through the relocation procedures and to begin the time-consuming process of right-of-way acquisition activities as soon as possible.

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Part III – Identification and Evaluation of Impacts of the Proposed Action

SECTION A – ECOLOGICAL RESOURCES

Streams, Rivers, Watercourses & Jurisdictional Ditches

Federal Wild and Scenic Rivers

State Natural, Scenic or Recreational Rivers

Nationwide Rivers Inventory (NRI) listed

Outstanding Rivers List for Indiana

Navigable Waterways

Presence

Impacts

X

Yes	No
X	

Remarks:

HNTB staff conducted a desktop review of the project area in October 2016 and October 2017, using current and historical aerial imagery, the 7.5 Minute USGS Topographic Quadrangle Map, and publicly available Geographic Information System (GIS) water resource layers. As part of the Red Flag Investigation (RFI), 26 river and stream segments were located within a 0.5-mile radius of the project area, three of which were within the project area (Appendix E, pages 3 and 10).

HNTB staff performed surveys of the investigated area on October 20 and 21, 2016 and October 17, 2017. A *Wetland and Waterways Delineation* report, dated October 18, 2018 was prepared for the project by HNTB Corporation to detail the water resources observed and potentially impacted within the project area. This report was approved by INDOT Environmental Services Division (ESD) on September 25, 2018 (Appendix F, page 45).

An initial version of the waters report, approved by INDOT ESD on March 27, 2017, was sent to the US Army Corps of Engineers (USACE) for a jurisdictional determination. After a field review by the USACE, coordination between USACE and HNTB, and the second field survey by HNTB Corporation on October 17, 2017 an amendment to the Waters Report was prepared. The findings of the amendment to the report have been incorporated into the project Waters report (Appendix F, pages 1 to 44). Two streams, Indian Creek and UNT North Fork Pine Creek were field verified within or adjacent to the project area. On April 3, 2018, the USACE signed the Preliminary Jurisdiction Determination (PJD) form (Appendix F, page 43). The streams and waterways reported below are considered jurisdictional waters of the US. These streams showed Ordinary High Water Mark (OHWM) characteristics and hydrologic connection to the Elkhart River.

The Indiana list of Outstanding Rivers and Streams, and State Natural, Scenic or Recreational lists was reviewed by HNTB staff. No streams within the project area are listed on the Indiana Register's list of Outstanding Rivers and Streams. None of the streams within the project area are listed as a Federal Wild and Scenic River; State Natural, Scenic or Recreational River.

The identified streams and estimated amount of resource within the proposed right-of-way are described in the table below:

Stream Name	Flow Regime	USGS Blue Line	Impact Description	Limits of Stream within Right of Way (ft.)	Limits of Stream within Right-of-way (ac.)
UNT North Fork Pine Creek (UNT 1)	Intermittent	N	Structure Lengthening, Riprap Placement Channel Clearing	135	<0.01
Indian Creek	Perennial	Y	Structure Lengthening, Riprap Placement Channel Clearing	1,530	0.35

The proposed project will result in approximately 1,665 linear feet (0.35 acre) of impacts to the two

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streams observed within the project area. Stream mitigation is anticipated since new impacts meet or exceed 300 linear feet and/or 0.1 acre below the OHWM.

Cofferdams and temporary pump-arounds are anticipated to be necessary to complete the project resulting in temporary stream impacts. Proper sediment and erosion control measures will be implemented for construction access areas and in-stream work. All disturbed areas will be restored per the current INDOT Standard Specifications.

Agency Coordination

Early coordination letters were sent to the US Fish and Wildlife Service (USFWS), the Indiana Department of Natural Resources Division of Fish and Wildlife (IDNR DFW), and the USACE on June 9, 2017 (Appendix C, pages 1 to 3).

In their early coordination response dated July 12, 2017 IDNR DFW provided comments to reduce potential effects to streams in the project area. (Appendix C, pages 12 to 13).

An automated response was obtained from the Indiana Department of Environmental Management (IDEM) on July 23, 2018 (Appendix C, pages 44 to 51). North Fork of Pine Creek and Indian Creek are IDEM 303D listed streams for *E. coli*. Workers who are working in or near water with *E. coli* should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure. This has been added as a firm commitment.

In their early coordination response dated July 26, 2017, USACE recommended that INDOT and their consultants delineate wetlands (including streams) and that the resulting report be forwarded to them for their review (Appendix C, pages 22 to 25).

In their early coordination response dated July 7, 2017, USFWS noted the presence of several wetlands adjacent to US 20 in the western portion of the study area. The noted that mitigation for loss of wetlands will be required (Appendix C, pages 34 to 35).

Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process (Appendix C, pages 7 to 9). This coordination letter documented the recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center.

The IDNR DFW responded on April 4, 2018 indicating all the recommendations in their previous letter dated July 12, 2017 still apply (Appendix C, page 14). USFWS responded in an email dated March 20, 2018 stating that the original letter of July 7, 2017 continues to suffice and did not provide any additional comments regarding streams (Appendix C, page 36 to 37). No additional response was received from the USACE.

Representatives from the FHWA, USACE, IDEM, and IDNR DFW attended a resource agency meeting on July 12, 2018. The purpose of the meeting was to present the recommended preferred alternative to the resource agencies and identify any concerns they may have moving forward. Potential impacts to streams along with mitigation opportunities were discussed at the meeting (Appendix C, pages 52 to 72).

Recommendations provided by the agencies are included in Section J - Environmental Commitments section of this document.

Other Surface Waters

Reservoirs
 Lakes
 Farm Ponds
 Detention Basins
 Storm Water Management Facilities
 Other: _____

	<u>Presence</u>	<u>Impacts</u>	
		<u>Yes</u>	<u>No</u>
Reservoirs			
Lakes	X	X	
Farm Ponds	X	X	
Detention Basins			
Storm Water Management Facilities			
Other:			

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Remarks:

HNTB staff conducted a desktop review of the project area in October 2016, using current and historical aerial imagery, the 7.5 Minute USGS Topographic Quadrangle Map, and publicly available GIS water resource layers. As part of the RFI, 63 lakes were located within a 0.5-acre radius of the project area, 10 of which were mapped within the project area (Appendix E, page 1-14). The field investigations on October 20 and 21, 2016 and October 17, 2017, identified three open waters including one farm pond, and two other ponds present within the investigated area (Appendix B, pages 8, and 13-14). Descriptions of each of these ponds, including anticipated impacts are included below.

Pond 1 is located approximately 50 feet south of US 20 just west of CR 27. Pond 1 is an excavated farm pond approximately 0.84 acre in size, 0.28 acre of which is within the investigated area (Appendix B, page 8). Approximately 0.28 acre of Pond 1 occurs within the proposed permanent right-of-way. Therefore, impacts to Pond 1 are anticipated.

Pond 2 is located approximately 37 feet south of US 20 in the southeast quadrant of the intersection of US 20 and CR 35 (Appendix B, page 14). This pond is associated with Wetland 18. Pond 2 is a natural feature approximately 2.02 acre in size, 0.31 acre of which is within the investigated area. Approximately 0.16 acre of Pond 2 occurs within the proposed permanent right-of-way. Therefore, impacts to Pond 2 are anticipated.

Pond 3 is located approximately 43 feet north of US 20 in the northeast quadrant of the intersection of US 20 and CR 35 (Appendix B, page 14). This pond is associated with Wetland 19. Pond 3 is a natural feature approximately 1.06 acre in size, 0.33 acre of which is within the investigated area. Approximately 0.04 acre of Pond 3 occurs within the proposed permanent right-of-way. Therefore, impacts to Pond 3 are anticipated.

The proposed project will result in 0.48 acre of impacts to the three ponds observed within the project area. Mitigation for open water impacts is anticipated.

Agency Coordination

In their early coordination responses dated July 12, 2017, and April 4, 2018, IDNR DFW did not provide comments regarding potential effects to ponds in the project area. (Appendix C, pages 12 to 13).

An automated response was obtained from IDEM on July 23, 2018 (Appendix C, pages 44 to 51).

In their early coordination response dated July 21, 2017 and July 26, 2017, USACE recommended that INDOT and their consultants delineate wetlands (including open waters) and that the resulting report be forwarded to them for their review (Appendix C, pages 22).

In their early coordination responses dated July 7, 2017, and March 20, 2018, USFWS did not provide comments relating to other surface waters (Appendix C, pages 34 to 35). Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process (Appendix C, pages 7 to 9). This coordination letter documented the recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center.

IDNR DFW responded on April 4, 2018 indicating all of the recommendations in their previous letter dated July 12, 2017 still apply (Appendix C, page 14). USFWS responded in an email dated March 20, 2018 stating that the original letter of July 7, 2017 continues to suffice and did not provide any additional comments regarding ponds or other surface waters (Appendix C, page 36 to 37). No additional response was received from the USACE.

Representatives from the FHWA, USACE, IDEM, and IDNR DFW attended a resource agency meeting on July 12, 2018. The purpose of the meeting was to present the recommended preferred alternative to the resource agencies and identify any concerns they may have moving forward. During the meeting USACE mentioned that impacts to ponds two and three should be avoided or minimized as much as possible. Potential impacts to ponds along with mitigation opportunities

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were also discussed at the meeting (Appendix C, pages 52 to 72).
 Coordination with USACE and IDEM will continue during the permitting process.
 Recommendations provided by the agencies are included in Section J - Environmental Commitments of this document.

Presence **Impacts**

Total wetland area: 10.822 acre(s) Total wetland area impacted: 5.065 acre(s)

(If a determination has not been made for non-isolated/isolated wetlands, fill in the total wetland area impacted above.)

Wetland No.	Classification	Total Size (Acres)	Impacted Acres (ROW)	Comments
Wetland01	Palustrine Emergent (PEM1C)	0.342	0.026	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 1 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 9).
Wetland02A	Palustrine Emergent (PEM1C)	0.619	0.582	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 2A is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 and improve the intersection of US 20 and CR 27 (Appendix B, page 8).
Wetland-02B	Palustrine Forested (PFO1B)	0.187	0.052	Delineated wetland located within a larger wetland complex. A portion of Wetland 2B is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland-02C	Palustrine Scrub Shrub (PSS1B)	1.754	0.088	Delineated wetland located within a larger wetland complex. A portion of Wetland 2C is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland-02D	Palustrine Scrub Shrub (PSS1B)	0.95	0.062	Delineated wetland located within a larger wetland complex. A portion of Wetland 2D is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland-02E	Palustrine Forested (PFO1B)	0.175	0.004	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 2E is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland-03A	Palustrine Forested (PFO1B)	0.074	0.070	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 3A is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 and improve the intersection of US 20 and CR 27 (Appendix B, page 8).
Wetland-03B	Palustrine Emergent (PEM1C)	0.019	0.019	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 3B is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 and improve the intersection of US 20 and CR 27 (Appendix B, page 8).
Wetland - 04	Palustrine Emergent (PEM1B)	0.799	0.275	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 4 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 7).
Wetland - 05	Palustrine Emergent (PEM1C)	1.317	0.474	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 5 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 7).

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Wetland - 06	Palustrine Emergent (PEM1C)	0.21	0.023	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 6 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 6).
Wetland - 07	Palustrine Emergent (PEM1B)	1.207	0.260	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 7 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20. A portion of Wetland 7 is a current mitigation site. The current mitigation site will not be impacted by the project (Appendix B, page 6).
Wetland - 08	Palustrine Emergent (PEM1A)	0.05	0.050	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 8 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20. (Appendix B, page 6).
Wetland - 9	Palustrine Emergent (PEM1A)	0.033	0.022	Delineated wetland located immediately adjacent to the existing fill slope and Indian Creek. Wetland 9 will be partially impacted by roadway fill required to widen US 20 and the extension of the culvert carrying US 20 over Indian Creek (Appendix B, page 6).
Wetland - 10	Palustrine Emergent (PEM1C)	0.411	0.411	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 10 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 7).
Wetland - 11	Palustrine Emergent (PEM1B)	2.127	2.128	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 11 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 7).
Wetland - 12A	Palustrine Emergent (PEM1H)	0.063	0.063	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 12A is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland - 12B	Palustrine Scrub Shrub (PSS1B)	0.093	0.093	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 12B is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland - 12C	Palustrine Emergent (PEM1H)	0.133	0.133	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 12C is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland - 13	Palustrine Emergent (PEM1H)	0.009	0.009	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 13 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 8).
Wetland - 14	Palustrine Emergent (PEM1C)	0.124	0.124	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 14 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 9).
Wetland - 15	Palustrine Emergent (PEM1A)	0.067	0.059	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 15 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 9).
Wetland - 18	Palustrine Emergent (PEM1C)	0.034	0.034	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 18 is within the proposed right-of-way and will be entirely impacted by roadway fill required to widen US 20 (Appendix B, page 9).
Wetland - 19	Palustrine Emergent (PEM1C)	0.025	0.005	Delineated wetland located immediately adjacent to the existing fill slope. Wetland 19 is within the proposed right-of-way and will be partially impacted by roadway fill required to widen US 20 (Appendix B, page 9).

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Documentation

ES Approval Dates

Wetlands (Mark all that apply)

Wetland Determination
 Wetland Delineation
 USACE Isolated Waters Determination
 Mitigation Plan

X
X
X

March 27, 2017
March 27, 2017
April 3, 2018
To be submitted with permit applications.

Improvements that will not result in any wetland impacts are not practicable because such avoidance would result in (Mark all that apply and explain):

- Substantial adverse impacts to adjacent homes, business or other improved properties;
- Substantially increased project costs;
- Unique engineering, traffic, maintenance, or safety problems;
- Substantial adverse social, economic, or environmental impacts, or
- The project not meeting the identified needs.

X
X

Measures to avoid, minimize, and mitigate wetland impacts need to be discussed in the remarks box.

Remarks:

HNTB conducted a desktop review of the investigated area on October 2, 2016, using current and historical aerial imagery, the Bristol and Middlebury 7.5 Minute USGS Topographic Quadrangle Map, and the National Wetlands Inventory (NWI). 153 NWI mapped areas identified in the RFI included in Appendix E are classified as freshwater emergent wetlands (PEM1/UBF, PEM1B, PEM1C); freshwater forested/Shrub wetland (PFO1/SS1C, PFO1C, PSS1C); and freshwater pond (PBF and PUBGh). These areas are located north and south of US 20 along the length of the investigated area, as well as the extreme east end of the investigated area, just east of the intersection of US 20 and CR 35.

HNTB conducted a Waters of the United States determination on October 20 and 21, 2016 and October 17, 2017. Per the *Wetland and Waterways Delineation Report*, approved by INDOT ESD Ecology and Waterway Permitting (EWPO) on March 27, 2017, a total of seventeen wetlands totaling 10.822 acres were identified within the investigated area (Appendix F, pages 1 to 56). In order for an area to be considered a wetland the observed vegetation, soil properties and hydrologic regime must meet criteria set forth by the USACE. Of the wetlands delineated, fourteen were emergent (Wetlands 1, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 18, and 19), one was an emergent - scrub/shrub - forested complex (Wetland 02), one was an emergent-forested complex (Wetland 3), and one was an emergent - scrub/shrub complex (Wetland 12). Wetlands 2, 3 and 12 contained distinct areas that would receive different classifications under the Cowardin classification system. Therefore, letters were added to differentiate the separate wetland types found within each wetland. All seventeen of these wetlands are jurisdictional. All wetlands were delineated near the project limits in accordance with the USACE Wetland Delineation Manual (Midwest Regional Supplement, 2010). Two areas initially identified as wetlands, Wetlands 16 and 17 did not meet the vegetation, soils or hydrology criteria on a subsequent site visit and were determined to not be wetlands. On April 3, 2018, the USACE signed the Preliminary Jurisdiction Determination (PJD) form (Appendix F, page 45).

Impacts to wetlands are anticipated. Wetland impacts will be limited to the existing and proposed right-of-way limits of the project. Approximately 5.07 acre of wetland may be impacted by the US 20 Improvement Project.

Wetlands impacted by the project are located in low lying areas immediately adjacent to the base of the existing roadway embankment. Shifting US 20 to avoid wetlands was considered and found infeasible as any modification to the alignment would result in greater wetland impact and utility impacts. For this reason, an alternative that avoids wetland impacts was eliminated from consideration. The No-Build alternative would avoid wetland impacts but is not practicable as the No-Build alternative would not meet the purpose and need of the project. Of the two alternatives that met the purpose and need of the project, the preferred alternative had the lowest wetland

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impacts (Appendix I, page 1). Efforts to minimize wetland impacts will continue in the design phase of the project.

There is no practicable alternative to the proposed new construction in wetlands and the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. FHWA approval of this document will constitute approval of the adverse impacts to wetlands.

Indirect impacts to portions of wetland that are not impacted by the construction limits of the project will be prevented by posting do not disturb signs and utilizing proper erosion control measures. This is a firm commitment and is included in the *Environmental Commitments* section below in this document.

Wetland mitigation is anticipated and will be determined during permitting.

Agency Coordination

In their early coordination response dated July 12, 2017, IDNR DFW provided recommendations to coordinate with IDEM and USACE and that impacts to wetlands should be mitigated according to the 1991 INDOT/IDNR/USFWS Memorandum of Understanding. (Appendix C, pages 12 to 13).

In their early coordination response dated July 26, 2017, USACE recommend that INDOT and their consultants delineate wetlands and that the resulting report be forwarded to them for their review (Appendix C, pages 22 to 23).

An automated response was obtained from the Indiana Department of Environmental Management (IDEM) on August 8, 2018 (Appendix C, pages 44 to 51).

In their early coordination response dated July 7, 2017, USFWS noted the presence of several wetlands adjacent to US 20 in the western portion of the study area. The letter also noted that mitigation for loss of wetlands will be required (Appendix C, pages 34 to 35).

Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process (Appendix C, pages 7 to 9). This coordination letter documented the recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center.

The IDNR DFW responded on April 4, 2018 indicating all the recommendations in their previous letter dated July 12, 2017 still apply (Appendix C, page 14). USFWS responded in an email dated March 20, 2018 stating that the original letter of July 7, 2017 continues to suffice and did not provide any additional comments regarding wetlands (Appendix C, page 36 to 37). No additional response was received from the USACE.

Representatives from the FHWA, USACE, IDEM, and IDNR DFW attended a resource agency meeting on July 12, 2018. The purpose of the meeting was to present the recommended preferred alternative to the resource agencies and identify any concerns they may have moving forward. A Google Earth tour of the project corridor was also completed. Potential impacts to wetlands along with mitigation opportunities were discussed at the meeting (Appendix C, pages 52 to 72).

Recommendations provided by the agencies are included in Section J - Environmental Commitments of this document.

Terrestrial Habitat
Unique or High Quality Habitat

Presence	Impacts	
	Yes	No
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Use the remarks box to identify each type of habitat and the acres impacted (i.e. forested, grassland, farmland, lawn, etc).

Remarks: A review of the USGS topographic map, aerial photograph, and site visits conducted by HNTB on October 20 and 21, 2016 and October 17, 2017, revealed that terrestrial habitat within the project

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area consists primarily of agricultural, residential, and commercial land use. Dominant vegetation observed within the project area consists of tall fescue (*Schedonorus arundinaceus*), Queen Anne's lace (*Daucus carota*), reed canary grass (*Phalaris arundinacea*), spicebush (*Lindera benzoin*), multiflora rose (*Rosa multiflora*), ash-leaf maple (*Acer negundo*), silver maple (*Acer saccharinum*), American elm (*Ulmus americana*), and green ash (*Fraxinus pennsylvanica*). One wetland (Wetland 2) containing high-quality habitats were observed during the field investigation. Signs of wildlife such as deer rubs, deer beds, beaver cut trees and evidence of numerous other small mammals were observed during the field investigation. It can be assumed that small animals such as squirrels, raccoons, birds, etc. likely inhabit the surrounding area.

Proposed right-of-way impacts for the terrestrial habitat include approximately 5.5 acres of tree clearing, 30.0 acres of agricultural land, 5.1 acres of wetland, and 42.9 acres of residential property. Vegetation removal from on commercial, religious, and utility corridor land uses total 11.3 acres. Tree clearing will be limited to areas within 300 feet of the edge of pavement of US 20 and connecting county roads. The remainder of the project area is largely existing pavement or maintained grasses associated with commercial properties and existing transportation facilities (Appendix B, pages 6 to 14 and 25 to 51). No core forest will be impacted by the project. Animal movement should not be permanently restricted or impacted due to the proposed project. All areas will be restored per the current INDOT Standard Specifications.

Tree clearing for the project will be accomplished under a separate tree clearing contract. This work is anticipated to be performed one year prior to the main construction contract. The designation number for this work will be 1802045.

Agency Coordination

In their early coordination response letter on July 7, 2017, USFWS stated that mitigation for the loss of wetlands will be required. USFWS also stated their concern over the loss of deciduous and evergreen trees which provide habitat for migratory birds and other wildlife and indicated that these trees will need to be replaced as close to the project area as possible (Appendix C, pages 34 to 35).

In their early coordination response letter dated July 12, 2017, IDNR DFW made recommendations to minimize any potential effects to terrestrial habitat (Appendix C, pages 12 to 13).

Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process. This coordination letter documented that recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center.

The IDNR DFW responded on April 4, 2018 indicating all the recommendations in their previous letter dated July 12, 2017 still apply and did not make any additional recommendations concerning terrestrial habitat species (Appendix C, page 14).

The USFWS responded in an e-mail received March 20, 2018 USFWS indicating that they would like to see mitigation for the loss of trees for migratory birds and other wildlife, since a large number of trees will be taken (Appendix C, page 36).

Representatives from the FHWA, USACE, IDEM, and IDNR DFW attended a resource agency meeting on July 12, 2018. No concerns regarding impacts to terrestrial habitat were discussed at the meeting (Appendix C, pages 52 to 72).

Recommendations provided by the agencies are included in Section J - Environmental Commitments of this document.

If there are high incidences of animal movements observed in the project area, or if bridges and other areas appear to be the sole corridor for animal movement, consideration of utilizing wildlife crossings should be taken.

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Karst

Is the proposed project located within or adjacent to the potential Karst Area of Indiana?
 Are karst features located within or adjacent to the footprint of the proposed project?

Yes	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

If yes, will the project impact any of these karst features?

Use the remarks box to identify any karst features within the project area. (Karst investigation must comply with the Karst MOU, dated October 13, 1993)

Remarks:

The project is located in Elkhart County, which is outside the designated karst area of the state, as identified in the October 13, 1993 Memorandum of Understanding (MOU) between INDOT, IDNR, IDEM and USFWS. No karst features are known to exist within or adjacent to the proposed project area. The 1993 Karst MOU is not applicable to this project, and a karst assessment is not required. No karst features were noted in the RFI (Appendix E, pages 3 and 10). Impacts to karst features are not expected.

The Indiana Geological Survey (IGS) did not provide responses regarding karst features in their initial coordination response, dated July 6, 2017 or their auto response generated on March 14, 2018 (Appendix C, pages 26 and 27). In their early coordination response, IGS included this project is located in a moderate liquification area. It is also included in a moderate potential for bedrock resources and a low potential for sand and gravel resources. There are also active industrial mineral sites.

Threatened or Endangered Species

Within the known range of any federal species
 Any critical habitat identified within project area
 Federal species found in project area (based upon informal consultation)
 State species found in project area (based upon consultation with IDNR)

Presence	Impacts	
	Yes	No
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Is Section 7 formal consultation required for this action?

Yes	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks:

Based on a desktop review and the RFI (Appendix E, page 15), completed by HNTB on July 31, 2018, the IDNR Elkhart County Endangered, Threatened and Rare (ETR) Species List has been checked and is included in (Appendix E, page 12). The highlighted species on the list reflect the federal and state identified ETR species located within the county. In their early coordination response letter on July 12, 2017, a IDNR DFW review of the Natural Heritage Database identified one state endangered species Blanding's turtle (*Emydoidea blandingii*) documented within a half mile southeast of the project area (Appendix C, page 12). IDNR DFW recommended that to minimize impacts to this species during the nesting period construction should not taking place from April 1 through July 1. This has been added as a "For Consideration" commitment.

Early coordination was undertaken with the USFWS on June 9, 2017 (Appendix C, page 1-3). USFWS responded in a letter dated July 7, 2017 requesting information on the current and proposed right-of-way widths, stating that mitigation will be required for any wetland impacts, and any trees lost during the project will need to be replaced as close to the project area as possible (Appendix C, page 34). USFWS also provided comments regarding endangered species. They stated that impacts to the Indiana bat and northern long-eared bat (NLEB) will be evaluated utilizing the Range-wide Programmatic Consultation Process and that there is no known habitat for the eastern massasauga within the proposed project area. They concluded that the project is not likely to adversely affect the eastern massasauga and that this letter precludes the need for further consultation on the eastern massasauga as required under Section 7 of the Endangered Species Act (Appendix C, page 35).

A response was provided to USFWS on March 6, 2018 via email by HNTB providing information on the current and proposed right-of-way. This e-mail also solicited comments on the identification

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of the proposed five lane section as the recommended alternative. This e-mail also stated that approximately 5.5 acres of tree clearing may be needed, a portion of which may be 100-300 feet from the edge of the existing pavement (Appendix C, page 36).

USFWS responded to this additional coordination in an e-mail dated March 20, 2018. In this e-mail USFWS had questions regarding the proposed road alignment, potential residential relocations, and the existing and proposed right-of-way widths. This e-mail went on to say that the USFWS would still like to see mitigation for the loss of trees for migratory birds and other wildlife and that the overall habitat is suitable for bats. This e-mail asked for a copy of the wetlands delineation report and the USACE jurisdictional determination. HNTB provided responses to the USFWS questions along with a copy of the wetland delineation report in an e-mail on May 30, 2018. USFWS confirmed receipt of this information on June 11, 2018 and did not include any additional comments (Appendix C, page 37).

Elkhart County is within range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*). Project information was submitted through the USFWS's Information for Planning and Consultation (IPaC) portal and an official species list was generated (Appendix C, pages 78 to 84). The official species list generated from IPaC indicated one other species present within the project area, the federally threatened eastern massasauga (*Sistrurus catenatus*). This project does not qualify for the USFWS Interim Policy. Qualified staff identified suitable summer habitat for the Indiana bat and NLEB within the investigated area during the field survey.

The project does not qualify for the *Range-wide Programmatic Informal Consultation for the Indiana bat and northern long-eared bat (NLEB)*, dated May 2016 (revised February 2018), between FHWA, Federal Railroad Administration, Federal Transit Administration and USFWS. The *Limited Formal Programmatic Consultation* for the Indiana bat and northern long-eared bat (NLEB) was completed for this project.

Project information was submitted through the USFWS's Information for Planning and Consultation (IPaC) portal on August 6, 2018. The USFWS IPaC Official Species List and USFWS IPaC Concurrence Verification Letter have been completed (Appendix C, page 101). Based on the results of the IPaC consultation process, this project determination is likely to adversely affect the Indiana bat and/or NLEB (Appendix C, page 101). As part of this finding, four Avoidance and Minimization Measures (AMMs) are required. The following AMMs are firm project commitments:

General AMM 1: Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

Tree Removal AMM 1: Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to the extent practicable to avoid tree removal in excess of what is required to implement the project safely.

Tree Removal AMM 3: Ensure tree removal is limited to that specified in project plans. Install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits. Ensure that contractors understand clearing limits and how they are marked in the field.

Lighting AMM 1: Direct temporary lighting away from suitable habitat during the active season.

Lighting AMM 2: Use downward-facing, full cut-off lens lights, and direct lighting away from suitable habitat when installing new or replacing existing permanent lights.

INDOT shall satisfy the compensatory mitigation requirements of the formal consultation with USFWS through one of the conservation options outlined on page 41 of the May 20, 2016 *Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana bat and NLEB*. The amount to be paid to the Range-wide In-lieu Fee Program, to be administered by The Conservation Fund, shall be \$12,996.03. This amount was determined by the Habitat Block Method. The area of suitable habitat to be cleared, multiplied by the mitigation ratio for inactive

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season tree clearing for Elkhart, and the compensatory price per acre; 1.225 acre X 1.75 X \$10,609.

INDOT verified the effect finding and submitted to USFWS on August 6, 2018, (Appendix C, page 102). On August 16, 2018, USFWS concurred with the "Likely to Adversely Effect" finding (Appendix C, page 101). USFWS stated that this concurrence concludes the ESA Section 7 responsibilities relative to these species for this project. Additionally, a "Re-initiation Notice" is required if: more than 1.225 acre of suitable habitat is to be cleared; additional information about listed species is encountered; the project is modified in a manner that causes an effect to the listed species; or a new species or critical habitat is listed that the project may affect. These requirements, and the Avoidance and Minimizations Measures (AMMs) from the Project Submittal Form, are included as firm commitments for this project. Agency Coordination

Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process (Appendix C, page 7 to 9). This coordination letter documented that recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center.

The IDNR DFW responded on April 4, 2018 indicating all the recommendations in their previous letter dated July 12, 2017 still apply and did not make any additional recommendations concerning threatened or endangered species (Appendix C, page 14).

Recommendations provided by the agencies and AMMs are included in Section J - Environmental Commitments section of this document.

This precludes the need for further consultation on this project under Section 7 of the Endangered Species Act of 1973, as amended. Should additional information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

SECTION B – OTHER RESOURCES

Drinking Water Resources

- Wellhead Protection Area
- Public Water System(s)
- Residential Well(s)
- Source Water Protection Area(s)
- Sole Source Aquifer (SSA)

	<u>Presence</u>	<u>Impacts</u>	
		<u>Yes</u>	<u>No</u>
Wellhead Protection Area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public Water System(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Residential Well(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source Water Protection Area(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sole Source Aquifer (SSA)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If a SSA is present, answer the following:

- Is the Project in the St. Joseph Aquifer System?
- Is the FHWA/EPA SSA MOU Applicable?
- Initial Groundwater Assessment Required?
- Detailed Groundwater Assessment Required?

	<u>Yes</u>	<u>No</u>
Is the Project in the St. Joseph Aquifer System?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the FHWA/EPA SSA MOU Applicable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Initial Groundwater Assessment Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Detailed Groundwater Assessment Required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks:

The proposed project is located in Elkhart County, and a portion of the project area is within approximately 125 feet of the delineated boundary of the St. Joseph Sole Source Aquifer, the only legally designated sole source aquifer in the state of Indiana (Appendix B, page 6).

Agency Coordination

An early coordination letter was sent to the US Environmental Protection Agency (EPA) Groundwater and Drinking Water Branch on February 1, 2018 (Appendix C, page 4). EPA responded electronically on February 1, 2018, stating that the project is not within a designated

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Sole Source Aquifer review area, so an EPA Sole Source Aquifer project review of this project is not required (Appendix C, pages 29 to 31). After review of the project EPA suggested that during construction appropriate safeguards are in place to ensure that ground water is not endangered. Such safeguards would include securing adequate precautions for fueling/servicing large equipment, using "green infrastructure" practices where possible, and developing contingency plans to handle the release of any hazardous materials. This has been added as a "For Consideration" commitment.

Re-coordination letters were sent to the resource agencies on March 6, 2018, in order to document that the project team has determined that a five-lane section through the project area is warranted and solicit comments on the project. The EPA responded electronically on March 14, 2018, confirming that an EPA Sole Source Aquifer project review of this project is not required (Appendix C, page 31).

The IDEM Stormwater Permit Coordinator responded on April 4, 2018 indicating all the recommendations in their previous letter dated July 12, 2017 still apply and did not make any additional recommendations concerning threatened or endangered species (Appendix C, page 15).

Therefore, the FHWA/EPA Sole Source Aquifer Memorandum of Agreement (MOA) is not applicable to this project, and a detailed groundwater assessment is not required.

IDEM's Wellhead Proximity Determinator website (<https://www.in.gov/idem/cleanwater/pages/wellhead/>) was accessed on July 11, 2018, by HNTB. The required project location data was provided and it was determined that it is not located within a Wellhead Protection Area (WHPA).

A query of the IDNR Water Well Web Viewer (<https://www.in.gov/dnr/water/3595.htm>) conducted on July 11, 2018, by HNTB identified numerous private wells along the project corridor. There are three residential wells mapped within the right-of-way of the project and will likely be impacted. An additional eight residential wells are located adjacent to the right-of-way of the project. However, public water systems are not available to residences within the project area, and each residence and business located within the project area likely has its own water supply well. Therefore, there will likely be additional impacted private wells identified as the project advances to the right-of-way acquisition stage.

This project lies adjacent to the Elkhart, Goshen Urban Area Boundary (UAB). Post construction Storm Water Quality Best Management Practices (BMPs) will be considered during the final design of the project and incorporated into the project's Stormwater Pollution Prevention Plan (SWPPP).

The IDNR Division of Oil and Gas responded to early coordination on June 14, 2017 (Appendix C, pages 10 and 11). In their response, they indicated that some ground water withdrawal wells, owned by Elkhart County Gravel, Inc., are located at the east end of US 20. The identified ground water withdrawal well is 0.54 mile north of the right-of-way and will not be impacted by construction activities.

	<u>Presence</u>	<u>Impacts</u>	
		Yes	No
Flood Plains			
Longitudinal Encroachment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transverse Encroachment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project located within a regulated floodplain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Homes located in floodplain within 1000' up/down stream from project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discuss impacts according to classification system described in the "Procedural Manual for Preparing Environmental Studies".

Remarks: The project does not encroach upon a regulatory floodplain as determined from available Federal Emergency Management Agency (FEMA) floodplain maps (Appendix B, pages 2 and 3). Therefore, it does not fall within the guidelines for the implementation of 23 CFR 650, 23, CFR 771, and 44 CFR. No impacts are expected.

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In their early coordination response letters dated July 12, 2017 and March 6, 2018, IDNR DFW stated that the project will require a formal approval for construction in the Indian Creek floodway (Appendix C, page 12) unless the project qualifies for a bridge exemption or qualifies under the INDOT Maintenance Activity Exemption. It was determined by INDOT EWPO that a Construction in a Floodway (CIF) permit would not be needed for this project.

The Elkhart County Floodplain Administrator responded to coordination on March 19, 2019 (Appendix C, page 108). In their response, they requested to be provided the Waters Report. This was provided electronically on March 19, 2019. They had no other concerns with the project.

Farmland	<u>Presence</u>	<u>Impacts</u>	
		Yes	No
Agricultural Lands	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Prime Farmland (per NRCS)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Total Points (from Section VII of CPA-106/AD-1006* 157
 *If 160 or greater, see CE Manual for guidance.

See CE Manual for guidance to determine which NRCS form is appropriate for your project.

Remarks:

As required by the Farmland Protection Policy Act (FPPA), coordination with the USDA-NRCS has been completed.

An early coordination letter was sent to the USDA-NRCS on July 2, 2018.

In their response dated July 26, 2018, the USDA-NRCS stated that the acquisition of right-of-way will cause the conversion of prime farmland per the FPPA (Appendix C, page 32). A copy of the Farmland Conversion Impact Rating for Corridor Type Projects (NRCS-CPA-106) form was included in the response. The NRCS-CPA-106 form included prime farmland impact ratings for Alternative 3A (Corridor 1) and Alternative 3B (Corridor 2). Only alternatives that were determined to meet the purpose and need were evaluated for prime farmland impacts.

Alternative 3A and Alternative 3B will both require the acquisition of approximately 91 acres of new, permanent right-of-way. Farmland acreage provided by the NRCS were calculated based on a preliminary right-of-way footprint, a more refined right-of-way footprint was used in the right-of-way section of this document. Alternative 3A and Alternative 3B received NRCS-CPA-106 Form scores of 155 and 157, respectively (Appendix C, page 33).

NRCS's threshold score for significant impacts to farmland that result in the consideration of alternatives is 160. Since this project score is less than the threshold, no significant loss of prime, unique, statewide, or local important farmland will result from this project. No alternatives other than those previously discussed in this document will be investigated without reevaluating impacts to prime farmland.

SECTION C – CULTURAL RESOURCES

Minor Projects PA Clearance	<u>Category</u>	<u>Type</u>	<u>INDOT Approval Dates</u>	<u>N/A</u>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Results of Research	<u>Eligible and/or Listed Resource Present</u>
Archaeology	<input checked="" type="checkbox"/>
NRHP Buildings/Site(s)	<input type="checkbox"/>
NRHP District(s)	<input type="checkbox"/>
NRHP Bridge(s)	<input type="checkbox"/>

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Project Effect

No Historic Properties Affected No Adverse Effect Adverse Effect

Documentation

Prepared

Documentation (mark all that apply)

	ES/FHWA Approval Date(s)	SHPO Approval Date(s)
Historic Properties Short Report		
Historic Property Report	X	September 15, 2017
Archaeological Records Check/ Review		
Archaeological Phase Ia Survey Report	X	June 29, 2018
Archaeological Phase Ic Survey Report		August 8, 2018
Archaeological Phase II Investigation Report		
Archaeological Phase III Data Recovery		
APE, Eligibility and Effect Determination	X	October 22, 2018
800.11 Documentation	X	November 27, 2018

MOA Signature Dates (List all signatories)

Memorandum of Agreement (MOA)	X	1/23/2019 FHWA 1/17/2019 IDNR DHPA-SHPO 12/13/2018 INDOT ES
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Describe all efforts to document cultural resources, including a detailed summary of the Section 106 process, using the categories outlined in the remarks box. The completion of the Section 106 process requires that a Legal Notice be published in local newspapers. Please indicate the publication date, name of paper(s) and the comment period deadline. Likewise include any further Section 106 work which must be completed at a later date, such as mitigation or deep trenching.

Remarks:

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their undertakings on historic properties. In accordance with 36 CFR 800.2(c), consulting parties were invited to participate in efforts to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize or mitigate any adverse effects on historic properties.

Area of Potential Effect (APE):

The Area of Potential Effects (APE) is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking”. [36 CFR § 800.16(d)]

The APE for this undertaking was drawn to extend 1,320 feet from the project termini and to encompass all properties lying adjacent to the undertaking (Appendix D, page 22). On October 24, 2017, the IDNR Division of Historic Preservation and Archaeology State Historic Preservation Officer (DHPA-SHPO) indicated the APE as proposed in the Historic Property Report (HPR) (Weintraut and Associates, May 2017) appears to be of appropriate size to encompass the geographic area of direct and indirect effects (Appendix D, page 34).

Coordination with Consulting Parties:

The following entities were invited to be consulting parties on September 21, 2017. INDOT, FHWA, and the DHPA-SHPO are automatically considered to be consulting parties. The potential consulting parties were asked to respond within 30 days. If no response was received, it was assumed the recipient did not wish to act as a consulting party. Those in bold type accepted the invitation to be a consulting party.

- Eastern Shawnee Tribe of Oklahoma
- Forest County Potawatomi Community

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- Miami Tribe of Oklahoma
- Peoria tribe of Indians of Oklahoma
- Pokagon Band of Indians of Oklahoma
- Elkhart County Historian
- Elkhart County Genealogy Society
- Elkhart County Historical Museum
- Middlebury Community Historical Museum
- Goshen Historical Society and Museum
- Michiana Area Council of Governments
- Elkhart County Planning and Zoning
- Elkhart County Board of Commissioners
- Indiana Landmarks - Northern Regional Office
- State Historic Preservation Office.

Historic Properties:

An HPR was prepared by qualified professionals at Weintraut and Associates for the proposed action in May of 2017 (Appendix D, pages 9 to 10). Historians identified nine properties considered or rated Contributing, per the rating standards established for Indiana Historic Sites and Structures Inventory (IHSSI). Five properties within the project APE have been previously recorded in the IHSSI; only four remain extant. As part of the identification and evaluation efforts for the Section 106 study of this undertaking, historians are recommending no properties as eligible for listing in the NRHP. On October 24, 2017, DHPA-SHPO agreed none of the above-ground properties identified in the HPR appears to be eligible for inclusion in the NRHP (Appendix D, page 34).

Archaeology:

An archaeological records check and Phase Ia Field Reconnaissance Survey Report was prepared by qualified professionals at Weintraut and Associates for the proposed action in June of 2018 (Appendix D, pages 11-13). The report of these findings was approved by the INDOT Cultural Resources Office (CRO) on June 29, 2018. The archaeological records check was sent to the DHPA-SHPO on July 6, 2018 and provided to the Native American tribes for review via INDOT's IN SCOPE website on July 9, 2018 (Appendix D, page 40).

The DHPA-SHPO concurred with the findings of the report on August 8, 2018 (Appendix D, pages 41 to 42). In their letter, the DHPA-SHPO concurred that archaeological site 12-E-0487 appears potentially eligible for inclusion on the NRHP and must either be avoided or subjected to further archaeological investigations. The site must be clearly marked so that it is avoided by all project-related ground disturbing activities. If avoidance is not feasible, a plan for subsurface investigations must be submitted to the Division of Historic Preservation and Archaeology (DHPA) for review and comment and such investigations must conform to the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation.

Additionally, DHPA-SHPO concurred with the opinion of the archaeologist, as expressed in the archaeological report, that the portions of sites 12-E-0482, 12-E-0483, 12-E-0484, 12-E-0486, 12-E-0489, 12-E-0490, and 12-E-0491 that lie within the proposed project area are unlikely to contain intact archaeological deposits; and that no further archaeological investigations of these portions of sites 12-E-0482, 12-E-0483, 12-E-0484, 12-E-0486, 12-E-0489, 12-E-0490, and 12-E-0491 appear necessary. The portions of sites 12-E-0482, 12-E-0483, 12-E-0484, 12-E-0486, 12-E-0489, 12-E-0490, and 12-E-0491 that lie outside the proposed project area should be clearly marked, and must be avoided by all ground-disturbing project activities. If avoidance is not feasible, then a plan for subsurface archaeological investigations must be submitted to the DHPA for review and comment. Any further archaeological investigations must be done in accordance with the "Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation" (48 F.R. 44716)". This is included in Section J- Environmental Commitments at the end of this

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document.

Documentation, Findings:

The Section 106 APE determination and “Adverse Effect” finding were approved by FHWA on October 22, 2018 (Appendix D, page 1). The Section 106 finding was submitted to the DHPA-SHPO and consulting parties for review on October 25, 2018. The DHPA-SHPO concurred with the finding on November 27, 2018 (Appendix D, page 43). No other comments were received.

Public Involvement:

In accordance with 36 CFR 800.4(a)(1), 800.4(c)(2), and 800.6(a)(4), a 30-day public notice and opportunity for the public to comment on the “Adverse Effect” finding was published on November 1, 2018 in the *Goshen News* (Appendix D, page 64). The 30-day comment period concluded on December 3, 2018. No comments were received.

Memorandum of Agreement (MOA):

Due to the potential for adverse effects to archaeological site 12-E-0487 that would occur under the Preferred Alternative, FHWA has determined that a finding of Adverse Effect under Section 106 is appropriate for this undertaking.

Commitments to mitigate adverse impacts to archaeological resources that are determined eligible for the NRHP as a result of the US 20 Improvement project have been developed through a MOA between INDOT, FHWA, DHPA-SHPO, and consulting parties.

The draft MOA includes stipulations in which the agency agrees to fund and conduct a Phase II investigation of the site to determine its data potential and eligibility for listing in the NRHP. The Effect Finding and draft MOA were submitted to DHPA-SHPO and other consulting parties on October 25, 2018 for their review and concurrence on the proposed measures to resolve or mitigate adverse effects. Comments were received from DHPA-SHPO on November 27, 2018. INDOT, the project applicant, signed the MOA as an invited signatory on December 13, 2018. The DHPA-SHPO signed the MOA on January 17, 2019. FHWA signed the MOA on January 23, 2019 (Appendix D, pages 58 to 60). All mitigation measures from the MOA have been incorporated into this document as firm commitments.

The Section 106 process has been completed and the responsibilities of the FHWA under Section 106 have been fulfilled.

SECTION D – SECTION 4(f) RESOURCES/ SECTION 6(f) RESOURCES

Section 4(f) Involvement (mark all that apply)

Parks & Other Recreational Land

- Publicly owned park
- Publicly owned recreation area
- Other (school, state/national forest, bikeway, etc.)

Presence

X

Use

Yes	No
	X

Evaluations Prepared

- Programmatic Section 4(f)*
- “De minimis” Impact*
- Individual Section 4(f)

FHWA Approval date

--

Wildlife & Waterfowl Refuges

- National Wildlife Refuge

Presence

--

Use

Yes	No

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National Natural Landmark
State Wildlife Area
State Nature Preserve

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Evaluations Prepared

Programmatic Section 4(f)*
"De minimis" Impact*
Individual Section 4(f)

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

FHWA Approval date

Historic Properties

Sites eligible and/or listed on the NRHP

Presence

Use

Evaluations Prepared

Programmatic Section 4(f)*
"De minimis" Impact*
Individual Section 4(f)

<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

FHWA Approval date

*FHWA approval of the environmental document also serves as approval of any Section 4f Programmatic and/or De minimis evaluation(s) discussed below.

Discuss Programmatic Section 4(f) and "de minimis" Section 4(f) impacts in the remarks box below. Individual Section 4(f) documentation must be separate Draft and Final documents. For further discussions on Programmatic, "de minimis" and Individual Section 4(f) evaluations please refer to the "Procedural Manual for the Preparation of Environmental Studies". Discuss proposed alternatives that satisfy the requirements of Section 4(f).

Remarks:

Section 4 (f) of the Department of Transportation Act of 1966, 49 USC 303(c) was established to protect publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historic sites against direct or constructive use impacts from transportation projects.

The RFI, prepared by HNTB on January 23, 2017, identified one trail, the Miami Snowmobile Trail, within the project area (Appendix E, pages 2 and 9). The Miami Snowmobile Trail crosses US 20 between CR 31 and CR 35 (Appendix B, page 11).

This trail is considered a Section 4(f) resource, as it is located within an existing public easement on private land that permits public access for recreational purposes. The easement is owned by IDNR Division of Outdoor Recreation and managed by the Elkhart County Snowmobile Club. The Elkhart County Snowmobile Club is the Official with Jurisdiction (OWJ) over the resource. The trail is maintained during the snowmobile season from December 1 to March 31, and the location of the trail is marked by placement of flags in the ground to designate the path. Although it is a formally-designated trail, it is used only in the winter months and does not have a permanent, surfaced path that is visible during non-winter months. During the rest of the year, the land is used for agricultural crops.

In their early coordination response letter dated February 13, 2018, IDNR Division of Outdoor Recreation stated that initial analysis of the roadway expansion will not be a problem for the trail (Appendix C, page 15). In an additional early coordination response letter dated March 14, 2018, IDNR Division of Outdoor Recreation stated that coordination with the Elkhart County Snowmobile Club indicated the club does not anticipate the project affecting the trail outside of the December 1 to March 31 snowmobile season. IDNR Division of Outdoor Recreation requested that INDOT replace the existing snowmobile crossing signs at the crossing locations once construction is complete (Appendix C, page 16). This is a firm commitment included in Section J- Environmental Commitments at the end of this document.

The Elkhart County Snowmobile Club did not respond to the initial early coordination

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correspondence; however, phone conversations with the club president and lease coordinator occurred on February 1, 2018, and July 23, 2018 regarding details of the trail and concerns with the project (Appendix I, page 2). The club representatives noted that the trail is leased by IDNR from a local property owner, and the trail is installed and maintained each year by the Elkhart County Snowmobile Club. The lease held by the IDNR is for the use of the entire field. The location of the trail crossing is shown on the projects construction plans. It was also noted that the current US 20 crossing was chosen due to the lack of line-of-sight issues that are associated with elevated topography to the west. The club's concerns with the project include any proposed fencing, the additional safety concern with crossing a 5-lane facility, and a change in location of the trail's crossing of US 20 that may worsen line-of-sight issues for trail users. Access to the trail will be maintained during construction when there is snow on the ground and the trail is available for use. The line-of-sight for snowmobiles will be improved as a result of this project. This has been added as a firm commitment.

The widening of the right-of-way associated with this project will require the trail to be moved further north on the property from what is shown on the IDNR trail map, but within the existing public easement. This will not require a revision to the lease held by the IDNR Division of Outdoor Recreation, as the lease agreement is for the entire property and not a specific path on the property. The trail will continue to be open and available for public use in a different location within the public easement during construction. The existing location where the trail crosses US 20 will continue to be signed and will be maintained during construction.

According to the FHWA Section 4(f) Policy Paper, dated July 20, 2012, a temporary occupancy will not constitute a Section 4(f) use when all the conditions listed in 23 CFR 774.13(d) are satisfied:

- Duration will be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land;
- Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
- There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis;
- The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project; and
- There must be documented agreement of the OWJ over the Section 4(f) resource regarding the above conditions.

The Elkhart County Snowmobile Club, the OWJ for the Miami Snowmobile Trail, was notified of INDOT's intent to apply the Section 4(f) temporary occupancy criteria to this project on July 24, 2018, and concurrence that the project meets the above conditions was received on July 25, 2018 (Appendix I, pages 3 and 4). Therefore, the impacts to this trail constitute a temporary occupancy and are therefore not considered a Section 4(f) use.

The RFI also identified Northridge High School within the project area. 1.4 acres of strip right-of-way from the school will be necessary for the project. Portions of public schools that are used for recreation purposes and are open for public use may be considered a Section 4(f) resource if the OWJ for the property considers the recreational activities to be significant. The right-of-way that will be acquired from Northridge High School does not include any recreational facilities (Appendix I, page 5). Therefore, there will be no Section 4(f) use of this property.

FHWA Section 4(f) regulations exempt archeological sites from Section 4(f) protection if the archaeological resource "is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place" per 23 CFR §774.13(b)(1). This exception from Section 4(f) is only effective if the "officials(s) with jurisdiction over the Section 4(f) resource have been consulted and have not objected" per 23 CFR §774.13(b)(2). Most archaeological resources qualify for this exception.

Archaeological site 12-E-0487 appears potentially eligible for inclusion on the NRHP and must

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either be avoided or subjected to further archaeological investigations. If avoidance is not feasible, a plan for subsurface investigations must be implemented for data recovery. As site 12-E-0487 does not require preservation in place this is not a Section 4(f) Resource.

In the event that an archeological site which warrants preservation in place is discovered during construction, the Section 4(f) process may be expedited and any required evaluation of feasible and prudent avoidance alternatives will take into account the level of investment already made. The review process, including the consultation with other agencies, will be shortened as appropriate.

No other potential Section 4(f) resources were identified within or adjacent to the project. No further Section 4(f) evaluation is required.

Section 6(f) Involvement Presence Use

Section 6(f) Property

Discuss proposed alternatives that satisfy the requirements of Section 6(f). Discuss any Section 6(f) involvement.

Remarks: The U.S. Land and Water Conservation Fund Act of 1965 established the Land and Water Conservation Fund (LWCF), which was created to preserve, develop, and assure accessibility to outdoor recreation resources. Section 6(f) of this Act prohibits conversion of lands purchased with LWCF monies to a non-recreation use.

A review of the project's RFI, aerial mapping, the LWCF National Park Service website (<https://www.nps.gov/subjects/lwcf/lwcf-in-your-neighborhood.htm/>), and site visit determined that 16 Section 6(f) resources are within Elkhart County. None of the identified Section 6(f) resources are located within or near the project area (Appendix I, page 61). The proposed project will not impact Section 6(f) resources.

SECTION E – Air Quality

Air Quality

Conformity Status of the Project

Is the project in an air quality non-attainment or maintenance area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If YES, then:			
Is the project in the most current MPO TIP?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the project exempt from conformity?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the project is NOT exempt from conformity, then:			
Is the project in the Transportation Plan (TP)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a hot spot analysis required (CO/PM)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Level of MSAT Analysis required?

Level 1a Level 1b Level 2 Level 3 Level 4 Level 5

Remarks: Per the IDEM Office of Air Quality, Elkhart County is in attainment for all National Ambient Air Quality Standards criteria pollutants. Therefore, a carbon monoxide (CO) or particulate matter (PM) 2.5 hot spot analysis is not required.

This project is of a type qualifying as a categorical exclusion (Group 1) under 23 CFR 771.117(c), or exempt under the Clean Air Act conformity rule under 40 CFR 93.126, and as such, a Mobile Source Air Toxics analysis is not required.

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Elkhart County is within the boundaries of the MACOG MPO. This project was programmed into the MACOG TIP for Elkhart County per resolution 28-17 on July 1, 2017. This project was initially programmed into the INDOT STIP for Fiscal Year (FY) 2018-2021 on July 3, 2017 (Appendix H, page 2). No amendments to the STIP for Fiscal Year 2018-2021 have been issued for Des. No. 1600517.

The purpose of this project is to decrease congestion and increase safety by constructing an additional travel lane in each direction as well as a two-way left turn lane along US 20. This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxics (MSAT) concerns. This project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that will cause an increase in MSAT impacts from that of the No Build Alternative.

Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent. This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

SECTION F - NOISE

Noise
Is a noise analysis required in accordance with FHWA regulations and INDOT's traffic noise policy? Yes No

	No	Yes/Date
ES Review of Noise Analysis		November 30, 2018

Remarks:

The addition of an added travel lane classifies the proposed project as a Type I project. Per the FHWA noise regulations (23 CFR 772) and the 2017 INDOT *Traffic Noise Procedure*, a Traffic Noise Analysis Report has been completed and approved by INDOT on November 30, 2018 (Appendix I, page 60).

The latest version of the FHWA's Traffic Noise Model, TNM[®]2.5, was used to model existing (2016) and design year (2041) worst hourly traffic noise levels within the US 20 Improvement Project study area. Eighty-two (82) noise receivers representing the 100 receptors were modeled in the Existing and No Build conditions. Receivers were placed within and immediately adjacent to a 500-foot buffer surrounding US 20 in areas consisting of residences, religious facilities, and commercial facilities. Due to anticipated relocations of Receivers 20, 39, 46, 47, 48, 49, 53, and 60, 74 receivers (91 receptors) were modeled in the Build condition.

Existing peak hour (2016) noise levels range from 54.8 to 70.4 dBA L_{eq}(1h). Residential noise levels ranged from 58.4 to 68.4 dBA L_{eq}(1h).

Predicted future design year (2041) noise levels adjacent to the proposed project would approach or exceed the noise abatement criteria (NAC) at 24 noise sensitive receptors. The noise levels would range from 57.6 to 69.9 dBA L_{eq}(1h) within the project area.

Predicted future noise levels change over existing noise levels range from -1.0 to 4.5 dBA. Therefore, none of the predicted future noise levels would substantially exceed existing noise levels.

One noise barrier (Noise Barrier 1) was modeled in the study area. While Noise Barrier 1 would be considered a feasible abatement measure, even at the maximum allowable height of 30 feet, Noise Barrier 1 would not achieve INDOT's design goal of 7.0 dB(A) reduction for any

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of the benefitted first row receivers nor meet the cost effective criterion of \$25,000 per benefitted receptor per the INDOT Traffic Noise Policy in accordance with 23 CFR 772. Noise Barrier 1 would be constrained by a pond to the west and Westlake Drive to the east, inhibiting its effectiveness. Noise Barrier 1 would be approximately 410 feet in length and would be 30 feet in height. The estimated cost of Noise Barrier 1 would be approximately \$368,615, or approximately \$184,308 per benefitted receptor.

Based on the studies thus far accomplished, the State of Indiana has not identified any locations where noise abatement is likely. Noise abatement at these locations is based upon preliminary design costs and design criteria. Noise abatement has been found to be feasible, but not reasonable as the barrier exceeded the cost effective criterion of \$25,000 per benefitted receptor. This barrier did not meet the INDOT design goal as a 7 dB(a) reduction could not be reached at any of the benefitted receptors. A reevaluation of the noise analysis will occur during final design. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, the abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

SECTION G – COMMUNITY IMPACTS

Regional, Community & Neighborhood Factors

- Will the proposed action comply with the local/regional development patterns for the area?
- Will the proposed action result in substantial impacts to community cohesion?
- Will the proposed action result in substantial impacts to local tax base or property values?
- Will construction activities impact community events (festivals, fairs, etc.)?
- Does the community have an approved transition plan?
- If No, are steps being made to advance the community's transition plan?
- Does the project comply with the transition plan? (explain in the remarks box)

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Remarks:

The proposed project will improve traffic flow and safety along the project corridor. The project is not anticipated to result in substantial impacts to community cohesion, as it will not divide existing neighborhoods, or change community access. The project is not expected to have adverse impact to the local tax base or property values. The safety improvements provided by the project are anticipated to be a benefit to the community.

Potential temporary community and economic impacts during construction of the proposed project include increased travel time, increased emergency response time, and increased fuel consumption by commercial and individual motorists due to any temporary lane closures that may be required. Local access surrounding the construction limits will be maintained during construction.

In their coordination response dated February 16, 2018, the Town of Middlebury recommended that INDOT construct this roadway to resemble the section of US 20 between SR 15 and CR 17 except with a wider shoulder to accommodate all modes of transportation, including horse and buggy and bicycle traffic. Middlebury Town Council also recommended that the intersection of US 20 and CR 35 be improved to allow for protected left turns along with having a through lane and a dedicated right turn lane on the north and south approaches to the intersection (Appendix C, pages 39 to 40). These recommendations have been added as for consideration commitments.

According to the Fairs and Festivals website (www.fairsandfestivals.net) and (<https://www.indianafestivals.org/>) accessed on July 26, 2018, by HNTB, there are three annual fairs and festivals located within 10 miles of the project: Middlebury Summer Festival (August), Middlebury Fall Festival (September) and Hometown Holidays Annual Festival (November). The proposed project will maintain at least one lane of traffic in each direction during construction. Although intersecting roads may be closed for a brief period, detours will be clearly marked and

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should not substantially impair travel routes to these fairs and festivals.

According to the MACOG website, Elkhart County has a completed Americans with Disabilities Act (ADA) Transition Plan, dated 2012 (http://www.macog.com/docs/transportation_active/ada/ElkhartCo.pdf). The project will comply with the ADA Transition Plan. There are no sidewalks within or adjacent to the construction limits. Therefore, there are no facilities in the construction limits that require ADA compliance.

Indirect and Cumulative Impacts

Will the proposed action result in substantial indirect or cumulative impacts?

Yes	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks:

Indirect impacts are caused by an action (project) and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative impacts are impacts on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

This project is not of a type that is likely to cause substantial indirect or cumulative effects. This project is not expected to affect growth, changes in land use, or population density. The project will not add capacity to the existing roadway network or provide additional access to any currently undeveloped area. Therefore, the project is not expected to increase development in the area or result in substantial indirect or cumulative impacts.

Public Facilities & Services

Will the proposed action result in substantial impacts on health and educational facilities, public and private utilities, emergency services, religious institutions, airports, public transportation or pedestrian and bicycle facilities? *Discuss how the maintenance of traffic will affect public facilities and services.*

Yes	No
<input type="checkbox"/>	<input checked="" type="checkbox"/>

Remarks:

Educational facilities, religious institutions, a private airport, a snowmobile trail, and public utilities are located within or near the project area. The proposed project will not result in substantial impacts to these facilities. In addition, due to the presence of the Amish community in the area, this roadway is known to be heavily travelled by bicycles and horse-drawn buggies.

Educational Facilities - Northridge High School is located adjacent to the project in the northeast quadrant of the US 20 and CR 35 intersection (Appendix B, page 14). Approximately 1.4 acres of right-of-way will be acquired from the school. This right-of-way will be acquired from the portion of the property immediately adjacent to US 20. This portion of the property is currently a mowed lawn. Early coordination letters were sent to Northridge High School and Middlebury Community Schools. No response was received. Additional coordination will occur prior to construction to notify them of the MOT plan and the potential impacts on bus routes in the area. Access to the schools will be maintained during construction.

Religious Facilities – The RFI identified Waypoint Community Church and Wat Lao Dharmajaro Buddhist Temple religious facilities adjacent to the project (Appendix E, pages 2 and 9). Although right-of-way will be acquired from both properties, the required right-of-way will be a narrow strip near the roadway and will not have a permanent negative impact on the use of the facilities. Early coordination letters were sent to both religious facilities. Waypoint Community Church responded to early coordination on February 14, 2018 (Appendix C, page 38). Although the church anticipates temporary congestion during construction, they support the project and stated that it will have long-term positive effects on safety in the area. They also noted concerns from people who use their facility regarding lack of safety of current conditions, the wetlands located on the church property, and the increase in Amish “carts” in the last year. Additional coordination with these facilities will occur prior to construction to notify them of the MOT plan and the potential impacts to access of these facilities.

Snowmobile Trail – As discussed in the Section 4(f) section of this document, there is one

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snowmobile trail located within the project area. The project is not anticipated to negatively impact the trail, as the trail can be easily moved within the existing easement. Access to the trail will be maintained during construction when there is snow on the ground and the trail is available for use.

Airport - The Hatfield Airport, a private airport, is located approximately 0.49 mile west of the project area. An early coordination letter was sent to the airport, but no response was received. No impact to this airport is anticipated. Early coordination was sent to INDOT Office of Aviation. Their response dated June 21, 2017, indicated that no public use airports are located within five nautical miles of the project (Appendix C, page 18).

Early coordination was sent to the INDOT Office of Aviation on June 9, 2017 (Appendix C, pages 1-3). An updated early coordination letter was sent to the INDOT Office of Aviation on March 6, 2018 (Appendix C, pages 7 to 9). In their early coordination response letter dated June 21, 2017, the INDOT Office of Aviation stated that a tall structure permit would not be required unless the project involves the construction of a temporary or permanent structure that exceeds a height of 200 feet above ground level (Appendix C, page 18). No tall structure permit is anticipated for this project.

Utilities - Water, sanitary sewer, gas, electric, cable, fiber optic, and telephone utility lines are present throughout the project area. Utility coordination has been initiated for the project and several utilities attended a preliminary field check meeting on March 27, 2018 (Appendix C, page 105 to 107).

Bicycles and horse-drawn buggies – Due to the prevalence of Amish residences and businesses within the project area and in the region, there are a large number of bicycles and horse-drawn buggies utilizing this highway for transportation. Accommodating the non-motorized traffic was taken into consideration when choosing an alternative and designing the proposed roadway. The preferred alternative includes 10-foot paved shoulders to accommodate the non-motorized traffic. Access for bicycles and horse-drawn buggies during construction was also considered when selecting the preferred alternative. The MOT plan for the preferred alternative will be accomplished by constructing the entire southern portion of US 20 in Phase 1, while maintaining current traffic patterns on US 20. After completion of the southern portion of the project, traffic will be switched over to the newly constructed half, while the northern half of the project can be constructed. This method allows the project to provide access to buggy traffic while not closing more than one consecutive county road. Additionally, this method increases worker safety by separating construction activities from travel lanes.

Property Maintenance- A comment was received from a member of the public concerning the current unsafe conditions experienced during mowing the roadside ditches in front of his property. The maximum grade of the proposed side ditches is 3:1. A 3:1 side slope can safely be mowed.

The MOT plan for the project may pose delays and temporary inconveniences to traveling motorists (including school buses and emergency services); however, all inconveniences will cease upon project completion. School districts, emergency services and churches will be notified at least two weeks prior to construction activity that would block or limit access. The MOT is not expected to substantially impact public facilities or services.

Environmental Justice (EJ) (Presidential EO 12898)

During the development of the project were EJ issues identified?

Yes	No
<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Does the project require an EJ analysis?

If YES, then:

Are any EJ populations located within the project area?

<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>

Will the project result in adversely high or disproportionate impacts to EJ populations?

Remarks:

Under FHWA Order 6640.23A, FHWA and INDOT, as a recipient of funding from FHWA, are responsible to ensure that their programs, policies, and activities do not have a disproportionately high and adverse effect on minority or low-income populations.

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Per the Categorical Exclusion Manual, an Environmental Justice (EJ) Analysis is required for any project that has two or more relocations or 0.5 acre of additional permanent right-of-way. This project will require 90.8 acres of right-of-way. Approximately 19 residential relocations and two business relocations are anticipated. Therefore, an EJ Analysis is required.

Potential EJ impacts are detected by locating minority and low-income populations relative to a reference population to determine if populations of EJ concern exists and whether there could be disproportionately high and adverse impacts to them. Data from the 2010 Census (2012-2016 American Community Survey (ACS) 5-year Estimates) was obtained from the US Census Bureau Website on July 27, 2018, by HNTB. The data collected for minority and low-income populations within the Affected Communities (ACs) was then utilized to determine their percentages relative to the Community of Comparison (COC). For this project, the COC is Elkhart County.

An AC has a population of concern for EJ if the population is more than 50% minority or low-income or if the low-income or minority population is 125% of the COC. The AC contains two census tracts for low-income populations. AC1, Census Tract 6 has a percent low-income of 7.5%, which is below 50% and is below the 125% COC threshold of 18.6%. AC2, Census Tract 8.02 has a percent low-income of 7.2%, which is below 50% and is below the 125% COC threshold of 18.6%. Therefore, the AC does not contain low-income populations of EJ concern.

The AC contains two census tracts for minority population. AC1, Census Tract 6 has a percent minority of 6.2%, which is below 50% and is below the 125% COC threshold of 30.2%. AC2, Census Tract 8.02 has a percent minority of 8.3%, which is below 50% and is below the 125% COC threshold of 30.2%. Therefore, the AC does not contain minority populations of EJ concern.

Census Data

US 20 - SR 15 to CR 35 (Des. No. 1600517)	COC Elkhart County, Indiana	AC-1 Census Tract 6, Elkhart County	AC-2 Census Tract 8.02, Elkhart County
LOW-INCOME			
Total Population	197,671	9,946	9,161
Total Population Below Poverty Level	29,381	744	663
Percent Low-Income	14.9%	7.5%	7.2%
125 percent of COC	18.6%	AC < 125% COC	AC < 125% COC
EJ Population of Concern		No	No
MINORITY			
Total Population	201,640	9,946	9,175
Not Hispanic or Latino; White Alone	152,871	9,329	8,413
Percent Non-White (Minority)	24.2%	6.2%	8.3%
125 percent of COC	30.2%	AC < 125% COC	AC < 125% COC
EJ Population of Concern		No	No

Although the EJ analysis that was performed using US Census data did not identify any low income or minority EJ populations within the project area, there is a known local Amish community that is considered to be an EJ population of concern. Amish populations were identified in the 2014 MACOG Environmental Justice report (http://www.macog.com/environmental_justice.html) that

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utilized a method for identifying EJ communities based on "Indicators of Potential Disadvantage" (IPD). In addition to minority and low-income populations, the report considered carless households and limited English proficiency as two of several IPDs for EJ analysis. The Amish population generally falls into those two IPDs and thus was identified as a population of EJ concern.

The Amish community was taken into consideration during project development and public involvement activities. For public involvement activities, project information was distributed to residences via US mail to ensure that families that do not access the internet would be aware of the project and would be aware of the public information meeting that was held. Additionally, a public notice of the public information meeting was included in the *Die Blatt*, an Amish news letter for northern Indiana. The public information meeting was held on June 21, 2018, at Northridge High School (Appendix G, page 20 to 62). It was well attended by the Amish community.

Additional correspondence with the Amish community has consisted of regular phone conversions between the project team and representatives of the Amish Safety Steering Committee (Safety Committee). The Safety Committee serves to provide best practice guidance to the Amish community on the safe navigation of roadways and any upcoming road closures and detour routes. The Safety Committee also provides suggestions to INDOT and local road departments on how roadways can best accommodate horse drawn buggy traffic. For this project, the Safety Committee recommended the use of sinuous rumble strips that are easier for buggies to cross and providing shoulders that can withstand horse drawn buggy use without forming ruts. The project will be designed with wider shoulders and sinuous rumble strips to accommodate buggy traffic, and the project alternative was also selected based on how the MOT would impact the EJ community (see Public Facilities and Services section above). These conversations, along with a face to face meeting at the public information meeting helped to ensure that sufficient outreach was conducted with the Amish community.

Conclusion

The census data comparisons detailed in the table above indicate that the AC does not contain a higher concentration of low-income or minority populations when compared to the COC. However, because the Amish community has been identified as an EJ community of concern, additional analysis was performed to determine if there will be a disproportionately high and adverse effect on the Amish community. Although the project requires a relatively large amount of right-of-way and relocations, the right-of-way acquisition and relocations of Amish properties are not disproportionately high and adverse, when compared to non-Amish properties. The potential burden to the Amish community of having to cross US 20 after being widened as part of this project was discussed with the Safety Committee. The Safety Committee already encourages buggy traffic to avoid crossing US 20 or to cross at a traffic signal because of safety concerns. The proposed widened conditions on US 20 will not significantly change the recommendations that are already in place regarding US 20.

The project will not disrupt community cohesion or create a physical barrier within the community. In addition, the project will equally benefit both the Amish and non-Amish communities by providing a safer roadway with wider shoulders to accommodate non-motorized traffic. The project is not expected to have a disproportionately high and adverse environmental or health impact to low-income or minority populations of EJ concern when compared to non-EJ populations.

No further EJ analysis is required for this project. Should the scope of work change or the amount of right-of-way or relocations change, INDOT-ESD will be contacted to determine if the EJ analysis should be reinitiated.

Relocation of People, Businesses or Farms

Will the proposed action result in the relocation of people, businesses or farms?
 Is a Business Information Survey (BIS) required?
 Is a Conceptual Stage Relocation Study (CSRS) required?

Yes	No
X	
	X
	X

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Has utility relocation coordination been initiated for this project?

Number of relocations: Residences: 19 Businesses: 2 Farms: 4 Other: _____

If a BIS or CSRS is required, discuss the results in the remarks box.

Remarks:

According to the INDOT CE Manual, a Conceptual Stage Relocation Study (CSRS) may be required if there are more than 10 relocations required for a project. There are 19 anticipated residential relocations associated with this project, four farm relocations and two business relocations. Therefore, INDOT was consulted on February 23, 2018, to determine if a CSRS would be required. INDOT Real Estate Division determined that a CSRS would not be required for this project (Appendix C, page 20).

According to the INDOT CE Manual, a Business Information Survey (BIS) may be required if there are 10 or more business relocations associated with a project. Alternatively, if a community has fewer than 40 businesses, then a BIS may be required if 25% or more of the businesses will be relocated. Middlebury supports greater than 40 business. This project will require two business relocations, and therefore a BIS is not required. Anticipated relocations are shown in Appendix B, pages 6 to 14.

The two business relocations include the Middlebury Tool Repair and the Hilltop Restaurant. Several written public comments were received during the Public Information Meeting concerning the relocation of the Hilltop Restaurant.

Of the two alternatives that were considered to meet purpose and need, the preferred alternative had fewer relocations (see the alternatives analysis table in the "Other Alternatives Considered" section of this document).

The acquisition and relocation program will be conducted in accordance with 49 CFR 24 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended. Relocation resources are available to all residential and business relocatees without discrimination. No person displaced by the project will be required to move from a displaced dwelling unless comparable replacement housing is available to that person.

The Town of Middlebury is considering the possibilities of extending sanitary sewer and water to the west to allow for future growth of the town. Town officials will be included in utility relocation discussion as design progresses.

Water, sanitary sewer, gas, electric, cable, fiber optic, and telephone utility lines are present throughout the project area. Utility coordination has been initiated for the project and several utilities attended a preliminary field check meeting on March 27, 2018 (Appendix C, pages 105 to 107).

SECTION H – HAZARDOUS MATERIALS & REGULATED SUBSTANCES

Documentation

Hazardous Materials & Regulated Substances (Mark all that apply)

Red Flag Investigation

Phase I Environmental Site Assessment (Phase I ESA)

Phase II Environmental Site Assessment (Phase II ESA)

Design/Specifications for Remediation required?

	No	Yes/Date
ES Review of Investigations		Yes/May 31, 2017

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Include a summary of findings for each investigation.

Remarks:

The RFI, prepared by HNTB on January 23, 2017, identified five hazardous material items of concern within or adjacent to the project area (Appendix E, pages 1 to 11). A representative of the INDOT ESD Site Assessment and Management (SAM) Section concurred with the results of the RFI on May 31, 2017.

An addendum to the RFI was prepared on July 31, 2018 because the initial RFI was approved more than one year from incorporation into the CE document. The addendum was approved by a representative of INDOT ESD SAM on August 1, 2018 (Appendix E, pages 15 to 16).

The RFI and RFI addendum identified the following sites within or adjacent to the project area:

Leaking Underground Storage Tank (LUST): One LUST site, with records of 15 underground storage tanks (USTs), is located in the northwest quadrant of US 20 and CR 15 at the site of Speedway #6662 (18541 US 20 Middlebury, IN 46540; FID No. 16008) (Appendix B, page 6). Records show this has been an active gas/service station since 1940 with 15 underground storage tanks at this site. Of the 15 USTs at this site, seven have been removed, seven are active, and the status of one is unknown. This site has four spill incidents of which three have been issued No Further Action (NFA) Closure determinations and one of which has been discontinued. According to the NFA Determination Pursuant to Risk Integrated System of Closure (RISC) issued by IDEM on June 6, 2016, contamination remains in the area surrounding the site and exists in the right-of-way. The nearest proposed excavation for this project will be approximately 920 feet east of the boundary of this site. Due to the distance between the boundary of the site and proposed excavation for this project, impact is expected.

Institutional Control Site: One Institutional Control site is within the project area. This site Speedway No. 6662, was issued a NFA Approval Determination Pursuant to IDEM Risk Integrated System of Closure (RISC) Guidance for Incident No. 200404502 on July 3, 2008 by IDEM (Appendix B, page 6). This is the same site as the LUST site described above. An additional NFA Approval Determination Pursuant to IDEM RISC Guidance for Incidents No. 199008603 and No. 200908504 were issued on June 6, 2016. Low levels of soil and ground water contamination remain on the site. An Environmental Restrictive Covenant (ERC) was placed on the property and recorded by the Elkhart County Office of the Recorder on February 5, 2016 pertaining to Incident No. 200404502. A Recorded Modification of ERC was added to the property on May 18, 2016 to include Incident No. 199008603 and Incident No. 200908504. The ERC imposes specific usage requirements on the site designed to limit or eliminate exposure to contamination remaining in soil and groundwater. In total, approximately 5,670.87 tons of soil; 24,734 gallons of groundwater, and seven USTs have been removed from this site. The nearest proposed excavation for this project will be approximately 920 feet east of the boundary of this site. No impact is expected.

Underground Storage Tank: One UST site is within the project area; however, this site is not mapped within the INDOT RFI Database. IDEM conducted an Underground Storage Tank Inspection of this site, American Petroleum Inc. (18423 US 20 Goshen, IN 46528; FID No. 25362), on September 19, 2017, and the facility was found to be out of compliance with equipment, operating or maintenance requirements set forth in Indiana's UST Rule 329 IAC 9; however, documentation reviewed does not indicate that a release occurred. No impact is expected.

NPDES Facilities: Two (2) mapped NPDES facilities, Kuert Concrete Incorporated and Lippert Components Plant 67 Access Road, are mapped adjacent to the project area; however, further analysis of the most recent aerial imagery identifies both sites within the project area (Appendix B, pages 15 to 16). As recommended in the RFI, coordination with the IDEM Municipal Permitting Section was sent on July 18, 2018 (Appendix C, pages 4 to 6). No response was received. Additionally, coordination with the IDEM Storm Water Permitting Section was sent on July 18, 2018 (Appendix C, page 42). In their response, the IDEM Storm Water Permitting Coordinator responded stating that their only concern would be the construction limit overlap with the entrance to the NPDES Facilities affecting access (Appendix C, page 42). Per the INDOT Standard Specification 107.08, local access surrounding the construction limits will be maintained during

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construction. No impacts to NPDES Facility structures or outfalls were identified in the response.

Early coordination was sent to IDNR Division of Oil and Gas on June 9, 2017 (Appendix C, pages 1 to 3). An updated early coordination letter was sent to the IDNR Division of Oil and Gas on March 6, 2018 (Appendix C, pages 10 to 11). IDNR Division of Oil and Gas stated that their records indicate no oil or gas wells were drilled in the area of the project (Appendix C, page 11).

If a spill occurs or contaminated soils or water are encountered during construction, appropriate personal protective equipment (PPE) should be utilized. Contaminated materials will need to be properly handled by trained personnel and disposed in accordance with current regulations. IDEM should be notified through the spill line at (888) 233-7745 within 24 hours of discovery of a release from a UST system and within two hours of discovery of a spill. This is also listed in the Environmental Commitments section at the end of this document.

North Fork of Pine Creek and Indian Creek lie within the project area and are impaired for *E. coli*. Workers who are working in or near water with *E. coli* should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure (Appendix E, page 3).

SECTION I – PERMITS CHECKLIST

Permits (mark all that apply)

Likely Required

Army Corps of Engineers (404/Section 10 Permit)

Individual Permit (IP)	<input checked="" type="checkbox"/>
Nationwide Permit (NWP)	<input type="checkbox"/>
Regional General Permit (RGP)	<input type="checkbox"/>
Pre-Construction Notification (PCN)	<input type="checkbox"/>
Other	<input type="checkbox"/>
Wetland Mitigation required	<input checked="" type="checkbox"/>
Stream Mitigation required	<input checked="" type="checkbox"/>

IDEM

Section 401 WQC	<input checked="" type="checkbox"/>
Isolated Wetlands determination	<input type="checkbox"/>
Rule 5	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>
Wetland Mitigation required	<input checked="" type="checkbox"/>
Stream Mitigation required	<input checked="" type="checkbox"/>

IDNR

Construction in a Floodway	<input type="checkbox"/>
Navigable Waterway Permit	<input type="checkbox"/>
Lake Preservation Permit	<input type="checkbox"/>
Other	<input type="checkbox"/>
Mitigation Required	<input type="checkbox"/>

US Coast Guard Section 9 Bridge Permit

Others (Please discuss in the remarks box below)

Remarks:

Based on the preliminary permit determination from INDOT EWPO, received on March 5, 2018, a USACE 404/IDEM 401 Individual Permit (IP), Elkhart County Legal Drain Permit, and Rule 5 Permit will be necessary for the project (Appendix F, page 46).

Early coordination was sent to the INDOT Office of Aviation on June 9, 2017 (Appendix C, pages 1-3). An updated early coordination letter was sent to the INDOT Office of Aviation on March 6, 2018 (Appendix C, pages 7 to 9). In their early coordination response letter dated June 21, 2017, the INDOT Office of Aviation stated that a tall structure permit would not be required unless the project involves the construction of a temporary or permanent structure that exceeds a

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height of 200 feet above ground level (Appendix C, page 18). No tall structure permit is anticipated for this project.

In their early coordination response letters dated July 12, 2017 and March 6, 2018, IDNR DFW stated that the project will require a formal approval for construction in the Indian Creek floodway (Appendix C, page 12) unless the project qualifies for a bridge exemption or qualifies under the INDOT Maintenance Activity Exemption. It was determined by INDOT EWPO that a CIF permit would not be needed for this project.

It will be the responsibility of the designer to submit plans to ES to process permits.

SECTION J- ENVIRONMENTAL COMMITMENTS

The following information should be provided below. List all commitments, name of agency/organization requesting the commitment(s), and indicating which are firm and which are for further consideration. The commitments should be numbered.

Remarks:

- Firm:**
1. If the scope of work or permanent or temporary right-of-way amounts change, INDOT Environmental services will be contacted immediately (INDOT).
 2. If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, federal law and regulations (16 USC 470, et seq.: 36 CFR 800.11 et. a1.) and State Law (IC 14-21) require that work must stop immediately and that the discovery must be reported to the Division of Historic Preservation and Archeology in the Indiana Department of Natural Resources within 2 business days. (IDNR, SHPO)
 3. If a spill occurs or contaminated soils or water are encountered during construction, appropriate personal protective equipment (PPE) should be used. Contaminated materials will need to be properly handled by trained personnel and disposed in accordance with current regulations. IDEM should be notified through the spill line at (888) 233-7745 within 24 hours of discovery of a release from a UST system and within 2 (two) hours of discovery of a spill. (IDEM)
 4. It is the responsibility of the project sponsor to notify school corporations, emergency services, and religious institutions at least two weeks prior to any construction that would block or limit access. (INDOT)
 5. As local- or State- designated floodplains may be present in the project site, we recommend that you coordinate with local officials and with the Indiana Department of Natural Resources regarding the applicability of a floodplain permit prior to construction. (USACE)
 6. Wastes and unused building materials shall be managed and disposed of in accordance with all applicable statutes and regulations. (IDEM)
 7. Do not install right-of-way fencing at the US 20 and Miami Snowmobile Trail crossing.
 8. Replace snowmobile crossing signage at the US 20 and Miami Snowmobile Trail crossing once construction is complete. (IDNR Division of Outdoor Recreation)
 9. Access to the trail will be maintained during construction when there is snow on the ground and the trail is available for use (Elkhart County Snowmobile Club)
 10. North Fork of Pine Creek and Indian Creek lie within the project area and are impaired for *E. coli*. Workers who are working in or near water with *E. coli* should take care to wear appropriate PPE, observe proper hygiene procedures, including regular hand washing, and limit personal exposure. (INDOT)
 11. Indirect impacts to portions of wetland that are outside of the projects construction limits will be prevented by labeling the wetlands as "Do Not Disturb" on the plans, field delineating the wetland with "Do Not Disturb" signs and utilizing proper erosion control measures. (INDOT)
 12. The proposed shoulder in the US 20 project between SR 15 and CR 35 needs to be constructed extra wide to allow for all modes of transportation, including the horse and buggy traffic and bicycle traffic. (Middlebury Town Council)
 13. The intersection of US 20 and CR 35 needs to be improved to allow for protected left turns

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- along with having a through lane and a dedicated right turn lane on the north and south approaches to the intersection. (Middlebury Town Council)
14. The Town of Middlebury is considering the possibilities of extending sanitary sewer and water to the west to allow for future growth of the town. Town officials will be included in utility relocation discussion as design progresses. (Middlebury Town Council)
 15. General AMM 1: Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs. (USFWS)
 16. Lighting AMM 1: Direct temporary lighting away from suitable habitat during the active season. (USFWS)
 17. Lighting AMM 2: When installing new or replacing existing permanent lights, use downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those transportation agencies using the BUG system developed by the Illuminating Engineering Society, be as close to 0 for all three ratings with a priority of "uplight" of and "backlight" as low as practicable. (USFWS)
 18. Tree Removal AMM 1: Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to the extent practicable to avoid tree removal in excess of what is required to implement the project safely. (USFWS)
 19. Tree Removal AMM 3: Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits). (USFWS)
 20. Contractors must take care when handling dead or injured bats (regardless of species), and any other federally listed species that are found at the Project site in order to preserve biological material and protect the handler from exposure to diseases, such as rabies. Project personnel are responsible for ensuring that any evidence about determining the cause of death or injury is not unnecessarily removed. Reporting the discovery of dead or injured listed species is required in all cases. Parties finding a dead, injured, or sick specimen of any bat (regardless of species), or other endangered or threatened species, must promptly notify the USFWS Bloomington Field Office, call (812) 334-4261. (USFWS)
 21. A "Reinitiation Notice" is required if: more than (amount) acre of trees are to be cleared; the amount or extent of incidental take of Indiana bat is exceeded; new information about listed species is encountered; new species is listed or critical habitat designated that the project may affect; the project is modified in a manner that causes an effect to the listed species; or, new information reveals that the project may affect listed species or critical habitat in a manner not considered in the BO or the project information. (USFWS)
 22. The INDOT Project Manager will assure that (amount) of Preliminary Engineering funds will be allocated to the Range-wide In-Lieu Fee Program, administered by The Conservation Fund, to resolve formal consultation under the Rangewide Programmatic ((amount) acre X (mitigation ratio) x \$10,609 = (amount)). Payment shall be made at Ready for Contracts (RFC) date. (INDOT-ESD, USFWS)
 23. USFWS would still like to see mitigation for the loss of trees for migratory birds and other wildlife, since a large number of trees will be taken. (USFWS)
 24. The Phase Ia archaeological reconnaissance identified one site, 12E0487, recommended potentially eligible for inclusion in the NRHP. Before commencing construction activities within a segment of this undertaking that could affect site 12E0487, FHWA or its representatives shall submit a work plan authorization request for Phase II archaeological investigations for review and approval by the DHPA approval under IC-14-21-1-25 prior to the commencement of Phase II investigations. (DHPA)
 25. After the approval of the Phase II work plan authorization request, FHWA or its representatives shall conduct Phase II testing to determine the eligibility of site 12E0487 for listing in the NRHP. (DHPA)
 26. A report of Phase II archaeological investigations shall be provided to the DHPA prior to any proposal of Phase III investigations. (DHPA)
 27. If site 12E0487 is determined eligible for inclusion in the NRHP, FHWA or its representatives

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shall submit a work plan authorization request for Phase III archaeological investigations for review and approval by the DHPA approval under IC- 14-21-1-25 prior to the commencement of Phase III investigations. (DHPA)

- 28. After the approval of the Phase III work plan authorization request, FHWA or its representatives shall conduct Phase III data recovery of site 12E0487 to mitigate for impacts to the site from this undertaking. (DHPA)
- 29. A report of all archaeological investigations shall be provided to the DHPA within one (1) year of the conclusion of fieldwork. (DHPA)
- 30. No less than 10 percent of the site within the project limits shall be tested during a Phase II investigation; Phase III data recovery, if required, shall excavate an additional 25 percent of the site area within the project limits as mitigation. (DHPA)
- 31. FHWA or its representatives shall clearly mark and avoid all ground disturbing project activities within the portions of the archaeological sites 12E0482, 12E0483, 12E0484, 12E0486, 12E0489, 12E0490, and 12E0491 that lie outside the project area depicted in "Attachment A" and "Attachment B (1 and 2)"; or, if avoidance is not feasible, FHWA will submit a plan for subsurface archaeological investigations to determine eligibility for listing in the NRHP to the Indiana Division of Historic Preservation and Archaeology ("DHPA") for review and comment. (DHPA)

For Further Consideration:

- 32. We suggest that during construction appropriate safeguards are in place to ensure that ground water is not endangered. Such safeguards would include securing adequate precautions for fueling/servicing large equipment, using "green infrastructure" practices where possible, and developing contingency plans to handle the release of any hazardous materials. (USEPA)
- 33. Do not work in the waterway from April 1 through June 30 without the prior written approval of the Division of Fish and Wildlife. (IDNR DFW)
- 34. Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized. (IDNR DFW)
- 35. Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion. (IDNR DFW)
- 36. Do not cut any trees suitable for Indiana bat or Northern Long-eared bat roosting (greater than 3 inches dbh, living or dead, with loose hanging bark, or with cracks, crevices, or cavities) from April 1 through September 30. (IDNR DFW)
- 37. Seed and protect disturbed stream banks that are 3:1 or steeper with heavy-duty net-free biodegradable erosion control blankets to minimize the entrapment and snaring of small wildlife such as snakes and turtles (follow manufacturer's recommendation for installation); seed and apply mulch on all other disturbed areas. (IDNR DFW)
- 38. To minimize impacts to the Blanding's turtle during the nesting period, we recommend that construction not take place from April 1 through July 1. (IDNR DFW)
- 39. Due to the expansion of the road, it is likely the new roadside ditches will need to be relocated to allow for drainage along the sides of the roads. The newly constructed ditches should be constructed at a stable slope of at least 2:1, preferably 3:1. The sideslopes should be seeded with a native seed mixture that includes wildflowers to provide important pollinator habitat along the sides of the roads. (IDNR DFW)
- 40. The Environmental Unit recommends bridges rather than culverts and bottomless culverts rather than box or pipe culverts. Wide culverts are better than narrow culverts, and culverts with shorter through lengths are better than culverts with longer through lengths. If box or pipe culverts are used, the bottoms should be buried a minimum of 6" (or 20% of the culvert height/pipe diameter, whichever is greater up to a maximum of 2') below the stream bed elevation to allow a natural streambed to form within or under the crossing structure. Crossings should: span the entire channel width (a minimum of 1.2 times the bankful width); maintain the natural stream substrate within the structure; have a minimum openness ratio (height x width/ length) of 0.25; and have stream depth and water velocities during /low-flow

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- conditions that are approximate to those in the natural stream channel. The new, replacement, or rehabbed structure, and any bank stabilization under the structure, should not create conditions that are less favorable for wildlife passage under the structure compared to the current conditions. (IDNR DFW)
41. Due to the presence or potential presence of wetlands on site, we recommend contacting and coordinating with the Indiana Department of Environmental Management (IDEM) 401 program and also the US Army Corps of Engineers (USACE) 404 program. Impacts to wetland habitat should be mitigated at the appropriate ratio according to the 1991 INDOT/IDNR/USFWS Memorandum of Understanding. (IDNR DFW)
 42. We recommend a mitigation plan be developed (and submitted with the permit application, if required) if riparian habitat impacts will occur. (IDNR DFW)
 43. Impacts to non-wetland forest under one (1) acre in an urban setting should be mitigated by planting five trees, at least 2 inches in diameter-at-breast height (dbh), for each tree which is removed that is 10" dbh or greater (5:1 mitigation based on the number of large trees). (IDNR DFW)
 44. IDEM recommends that appropriate structures and techniques be utilized both during the construction phase, and after completion of the project, to minimize the impacts associated with storm water runoff. (IDEM)
 45. Reasonable precautions must be taken to minimize fugitive dust emissions from construction and demolition activities. Dirt tracked onto paved roads from unpaved areas should be minimized. (IDEM)
 46. Stabilize all disturbed areas upon completion of land disturbing activities. (IDEM)
 47. Sediment-laden water which otherwise would flow from the project site shall be treated by erosion and sediment control measures appropriate to minimize sedimentation. (IDEM)
 48. A stable construction site access shall be provided at all points of construction traffic ingress and egress to the project site. (IDEM)
 49. Public or private roadways shall be kept cleared of accumulated sediment that is a result of run-off or tracking. (IDEM)
 50. Install silt fence or other erosion control measures around the perimeter of any wetlands and/or other waterbodies to remain undisturbed at the project site. (IDEM)
 51. The use of cutback asphalt, or asphalt emulsion containing more than seven percent oil distillate, is prohibited during the months of April through October. (IDEM)
 52. In all cases where a demolition activity will occur (even if no asbestos is found), the owner or operator must still notify IDEM 10 working days prior to demolition. (IDEM)

SECTION K- EARLY COORDINATION

Please list the date coordination was sent and all agencies that were contacted as a part of the development of this Environmental Study. Also, include the date of their response or indicate that no response was received. INDOT and FHWA are automatically considered early coordination participants and should only be listed if a response is received.

Remarks:

Early coordination was initiated on June 9, 2017 with federal, state, and local agencies (Appendix C, pages 1-3). Subsequent letters were also sent to additional agencies, members of the stakeholder working group and local agencies on January 26 and February 1, 2018.

Re-coordination letters were sent to the resource agencies on March 6, 2018 as an update to the project and a continuation of the coordination process (Appendix C, page 7). This coordination letter documented that recommended preferred alternative would be a 5-lane facility with two travel lanes in each direction and a TWLTL in the center. The resource agencies and dates of their responses are listed below.

Agency	Response Received	Appendix Location
IDNR- Division of Oil and Gas	June 14, 2017 and February 13, 2018	Appendix C, pages 10 to 11
IDNR - Division of Fish and	July 12, 2017 and April 4, 2018	Appendix C, pages 12 to 14

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Wildlife		
IDNR – Division of Outdoor Recreation	February 13, 2018 and March 14, 2018	Appendix C, pages 15 to 16
Elkhart County Snow mobile Club via the IDNR – Division of Outdoor Recreation	February 13, 2018 and March 14, 2018	Appendix C, page 16
INDOT, Public Involvement Office	June 15, 2017	Appendix C, page 17
INDOT, Aviation Section	June 21, 2017	Appendix C, page 18
INDOT – Ft. Wayne District	February 6, 2018	Appendix C, page 19
USACE, Environmental Analysis Branch	July 21, 2017	Appendix C, pages 22 to 23
USACE, Engineering and Technical Services Branch	July 26, 2017	Appendix C, pages 24 to 25
Indiana Geological Survey (IGS)	July 6, 2017 and March 14, 2018	Appendix C, pages 26 to 28
USEPA, Ground Water and Drinking Water Branch	February 1, 2018 and March 14, 2018	Appendix C, pages 29 to 31
USDA-NRCS	July 26 2018	Appendix C, page 32 to 33
USFWS, Bloomington Field Office	July 7, 2017 and March 20, 2018	Appendix C, pages 34 to 37
Waypoint Community Church	February 14, 2018	Appendix C, page 38
Middlebury Town Council,	February 16, 2018	Appendix C, page 39 to 40
Middlebury Town Manager via the Middle Town Council Response	February 16, 2018	Appendix C, page 39 to 40
IDEM - Groundwater Section	March 12, 2018	Appendix C, page 41
IDEM Office of Water Quality Storm Water Permitting Coordinator	July 19, and July 24, 2018	Appendix C, pages 42
IDEM Auto Response	August 8, 2018	Appendix C, pages 44 to 49
Elkhart County Surveyor	No response received	N/A
Elkhart County Sheriff	No response received	N/A
Elkhart County Highway Department	No response received	N/A
Elkhart County Board of Commissioners	No response received	N/A
Middlebury Community Schools	No response received	N/A
Elkhart County Emergency Management	No response received	N/A
National Parks Service	No response received	N/A
US Coast Guard	No response received	N/A
Elkhart County Soil and Water Conservation District	No response received	N/A
Greater Elkhart County Storm Water Partnership	No response received	N/A
Michiana Area Council of Governments (MACOG)	No response received	N/A
Northridge High School	No response received	N/A
Wat Lao Dharmajaro Buddhist Temple	No response received	N/A
Hatfield Airport	No response received	N/A

Representatives from the FHWA, USACE, IDEM, and IDNR DFW attended a resource agency meeting on July 12, 2018. The purpose of the meeting was to present the recommended preferred alternative to the resource agencies and identify any concerns they may have moving forward. Resource agency comments pertained to environmental impacts and mitigation requirements. (Appendix C, pages 52 to 72).

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United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS).....

United States Fish and Wildlife Service (USFWS)

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Waypoint Community Church.....

Middlebury Town Council.....

Indiana Department of Environmental Management (IDEM)

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Appendix A: INDOT Supporting Documentation

Categorical Exclusion Level Thresholds

	PCE	Level 1	Level 2	Level 3	Level 4 ¹
Section 106	Falls within guidelines of Minor Projects PA	"No Historic Properties Affected"	"No Adverse Effect"	-	"Adverse Effect" Or Historic Bridge involvement ²
Stream Impacts	No construction in waterways or water bodies	< 300 linear feet of stream impacts	≥ 300 linear feet of stream impacts	-	Individual 404 Permit
Wetland Impacts	No adverse impacts to wetlands	< 0.1 acre	-	< 1 acre	≥ 1 acre
Right-of-way³	Property acquisition for preservation only or none	< 0.5 acre	≥ 0.5 acre	-	-
Relocations	None	-	-	< 5	≥ 5
Threatened/Endangered Species (Species Specific Programmatic for Indiana bat & northern long eared bat)	"No Effect", "Not likely to Adversely Affect" (Without AMMs ⁴ or with AMMs required for all projects ⁵)	"Not likely to Adversely Affect" (With any other AMMs)	-	"Likely to Adversely Affect"	Project does not fall under Species Specific Programmatic
Threatened/Endangered Species (Any other species)	Falls within guidelines of USFWS 2013 Interim Policy	"No Effect", "Not likely to Adversely Affect"	-	-	"Likely to Adversely Affect"
Environmental Justice	No disproportionately high and adverse impacts	-	-	-	Potential ⁶
Sole Source Aquifer	Detailed Assessment Not Required	-	-	-	Detailed Assessment
Floodplain	No Substantial Impacts	-	-	-	Substantial Impacts
Coastal Zone Consistency	Consistent	-	-	-	Not Consistent
National Wild and Scenic River	Not Present	-	-	-	Present
New Alignment	None	-	-	-	Any
Section 4(f) Impacts	None	-	-	-	Any
Section 6(f) Impacts	None	-	-	-	Any
Added Through Lane	None	-	-	-	Any
Permanent Traffic Alteration	None	-	-	-	Any
Coast Guard Permit	None	-	-	-	Any
Noise Analysis Required	No	-	-	-	Yes
Air Quality Analysis Required	No	-	-	-	Yes ⁷
Approval Level <ul style="list-style-type: none"> • District Env. Supervisor • Env. Services Division • FHWA 	Concurrence by INDOT District Environmental or Environmental Services	Yes	Yes	Yes Yes	Yes Yes Yes

¹Coordinate with INDOT Environmental Services. INDOT will then coordinate with the appropriate FHWA Environmental Specialist.

²Any involvement with a bridge processed under the Historic Bridge Programmatic Agreement.

³Permanent and/or temporary right-of-way.

⁴AMMs = Avoidance and Mitigation Measures.

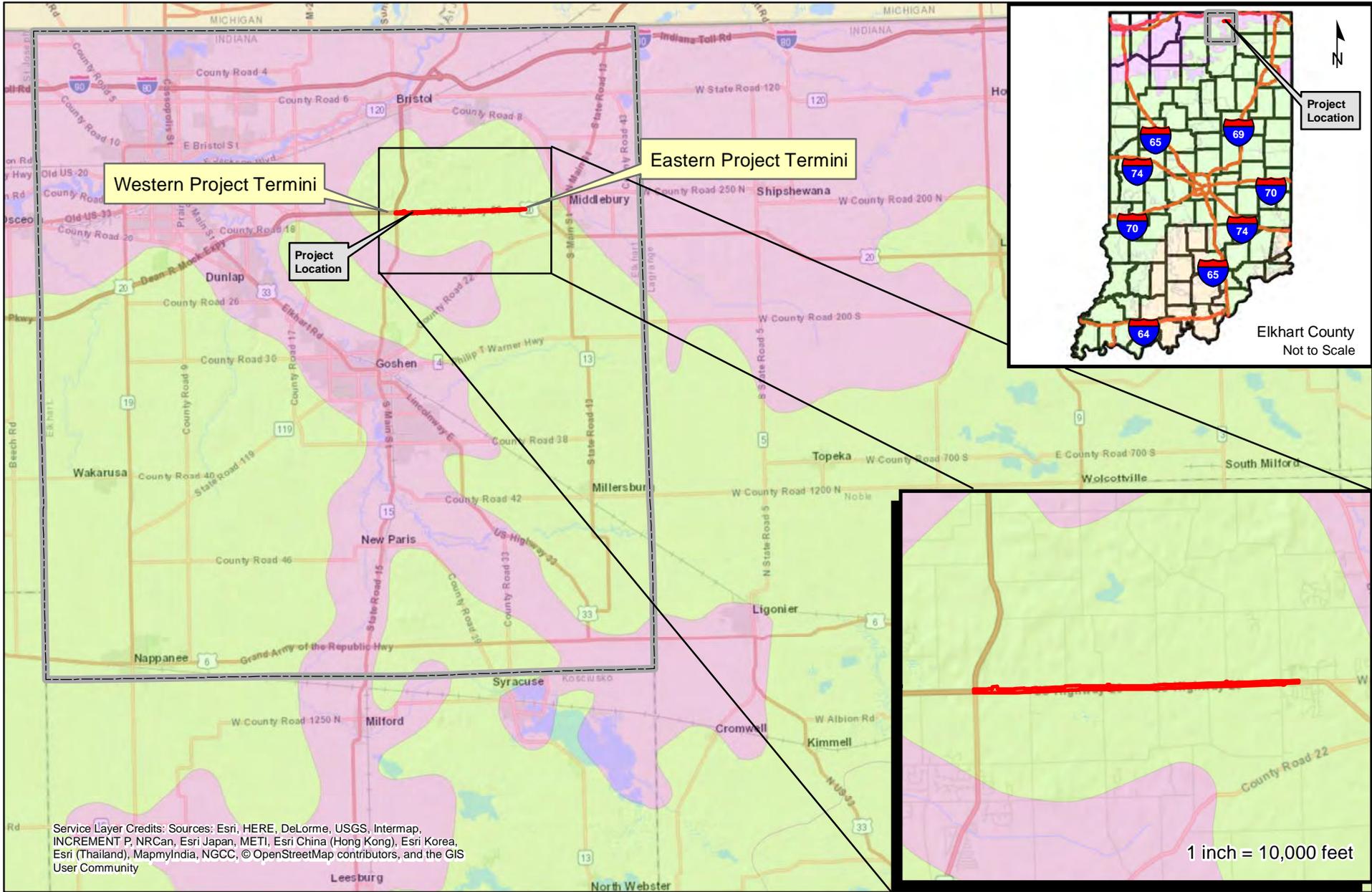
⁵AMMs determined by the IPAC decision key to be needed that are listed in the USFWS *User's Guide for the Range-wide Programmatic Consultation for Indiana bat and Northern long-eared bat* as "required for all projects".

⁶Potential for causing a disproportionately high and adverse impact.

⁷Hot Spot Analysis and/or MSAT Quantitative Emission Analysis.

*Substantial public or agency controversy may require a higher-level NEPA document.

Appendix B: Graphics



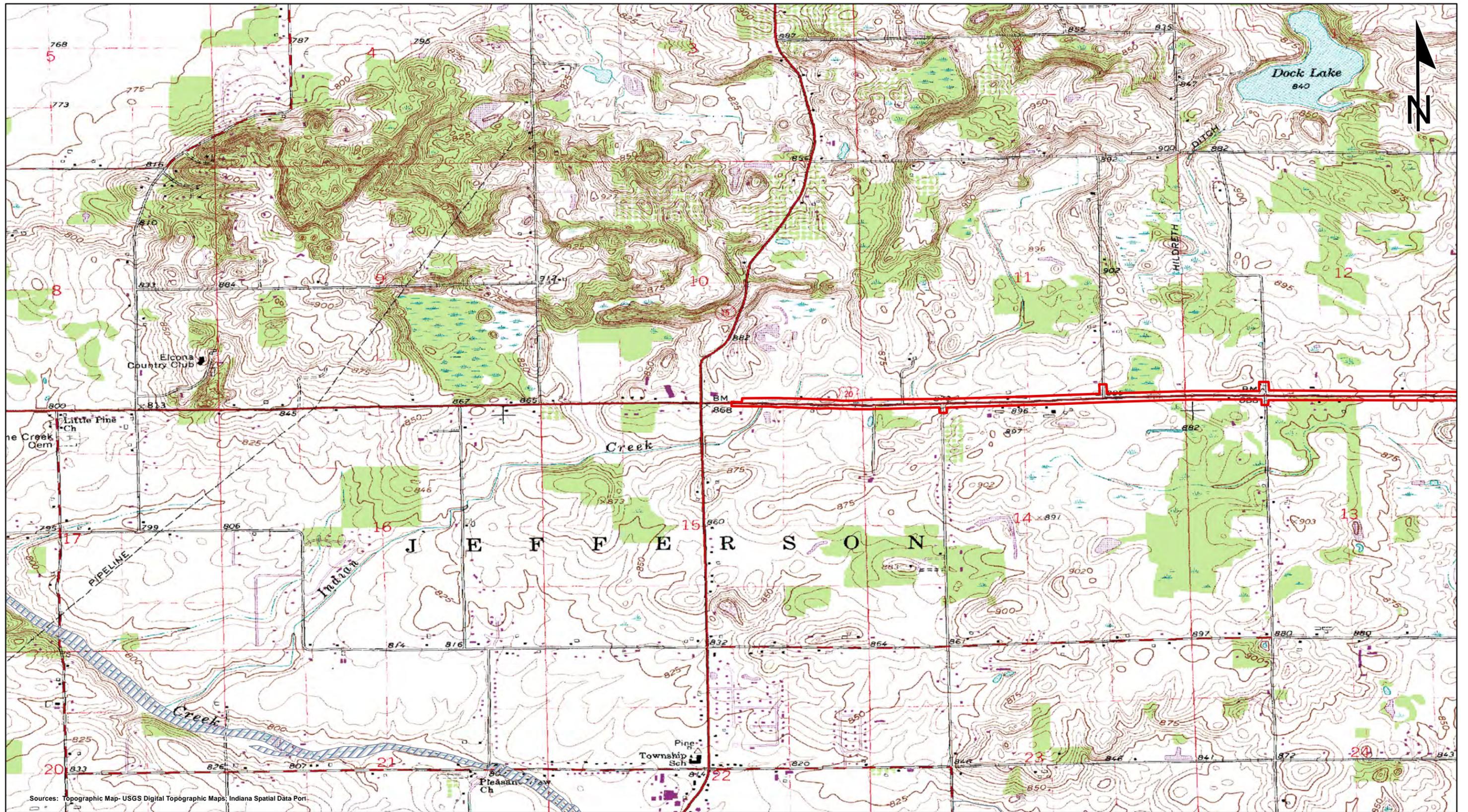
Legend

NRCS Land Resource Regions	Investigated Area
Northeast and Northcentral	Elkhart County
Midwest	
Eastern Mountains and Piedmont	

0 3.5 7 Miles

Figure 1: Project Location Map
 U.S. 20 - SR 15 to CR 35
 Roadway Improvement Project Elkhart County, Indiana

Des. No. 1600517	 Graphics created by HNTB Corporation (2018)
1 inch = 5 miles	



Sources: Topographic Map- USGS Digital Topographic Maps, Indiana Spatial Data Portal

Legend

- Alternative 3B Proposed Right-of-Way
- 100 Year Floodplains

0 1,000 2,000
 Feet

Des. No. 1600517
 1 inch = 2,000 feet

Figure 2: Topographic and Floodplain Map
 U.S. 20 - SR 15 to CR 35
 Added Turn Lane Elkhart County, Indiana

Sheet 1

HNTB
 Graphics created by HNTB Corporation (2016)



Sources: Topographic Map- USGS Digital Topographic Maps; Indiana Spatial Data Port

Legend

- Alternative 3B Proposed Right-of-Way
- 100 Year Floodplains

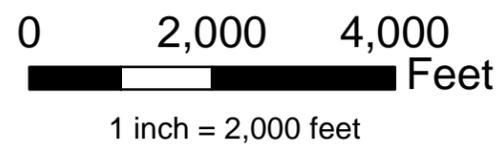
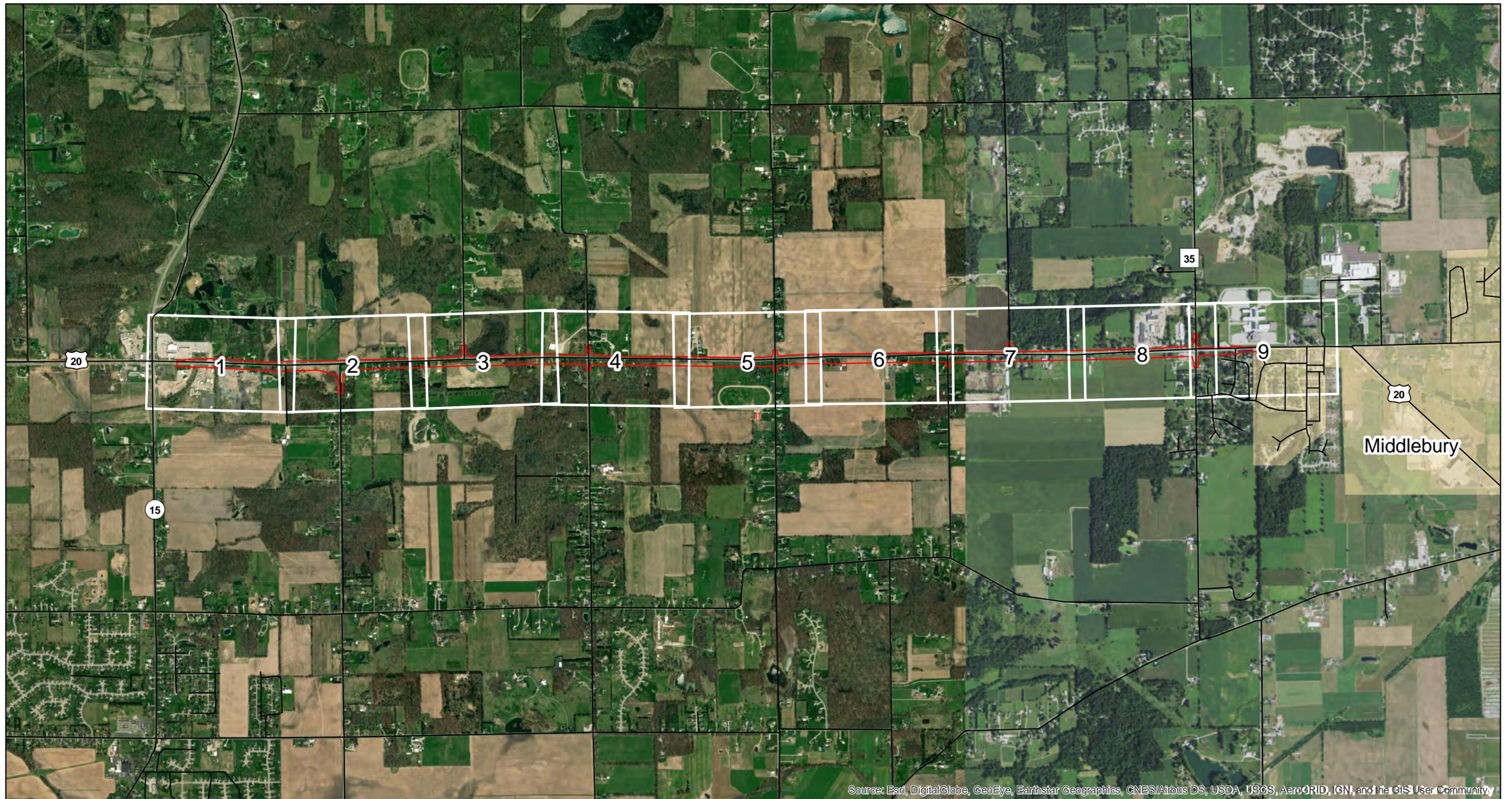
0 1,000 2,000
 Feet

Des. No. 1600517
 1 inch = 2,000 feet

Figure 2: Topographic and Floodplain Map
 U.S. 20 - SR 15 to CR 35
 Added Turn Lane Elkhart County, Indiana

Sheet 2

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Figure 3: Environmental Features Index Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana

Environmental Features Map Legend

Design Elements

Construction Limits	Inner-Lane Pavement Markings	Apparent Existing Right-of-Way
Guardrail	Alternative 3B Preliminary Permanent Right-of-Way	Potential Residential Relocation - Alternative 3B
Paved Shoulders	Alternative 3B Preliminary Temporary Right-of-Way	Potential Commercial Relocation - Alternative 3B
Outer-Lane Pavement Markings		

Features

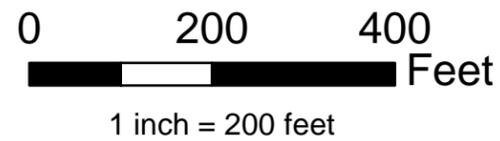
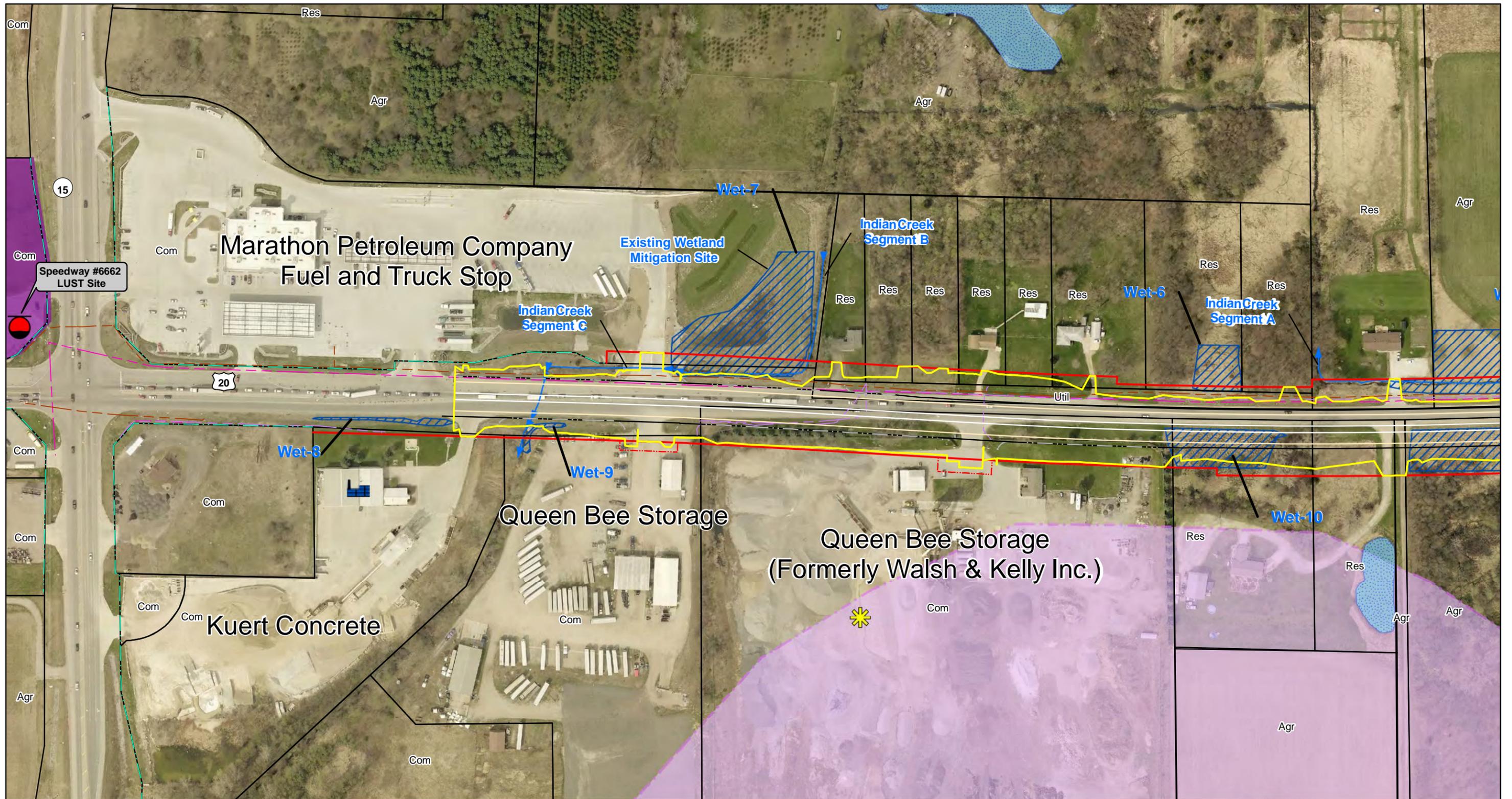
Utilities	Leaking Underground Storage Tanks	Open Waters
Utility - Electric	Underground Storage Tanks	Quarry Abandoned
Utility - Fiber	Institutional Control	Sole Source Aquifer
Utility - Telephone	Miscellaneous Features	Noise Measurements
Utility - Gas	Religious Facilities	Parcel Boundary
Hazardous Materials	Recreational Facilities	Land Use Codes
NPDES Facilities	Schools	Agr Agricultural
NPDES Pipe Location	Transmission Towers	Com Commercial
	Miami Snowmobile Trail	Rel Religious Facilities
		Res Residential
		Util Utility

Delineated Water Resources

Delineated Ponds	Delineated Wetlands
Delineated Streams	Palustrine Emergent Wetland
Stream - Intermittent	Palustrine Forested Wetland
Stream - Perennial	Palustrine Scrub Shrub Wetland

Sources:
Non Orthophotography
Data - Indiana Map Framework Data (<http://indianamap.org/>)
Orthophotography - Elkhart County Surveyor's Office
Map Projection: NAD 1983/2011 State Plane Indiana East **Map Datum:** NAD83/11

Note: At the request of the State of Indiana, archaeological sites, wellhead protection areas, and public wells are not indicated on the map.



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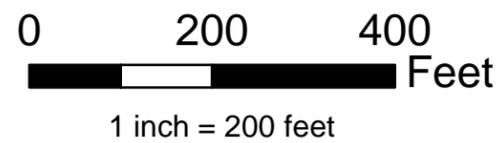
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Figure 3: Environmental Features Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana



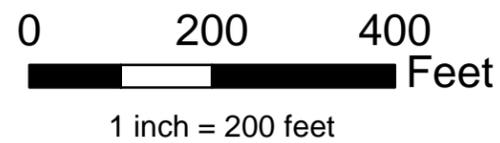
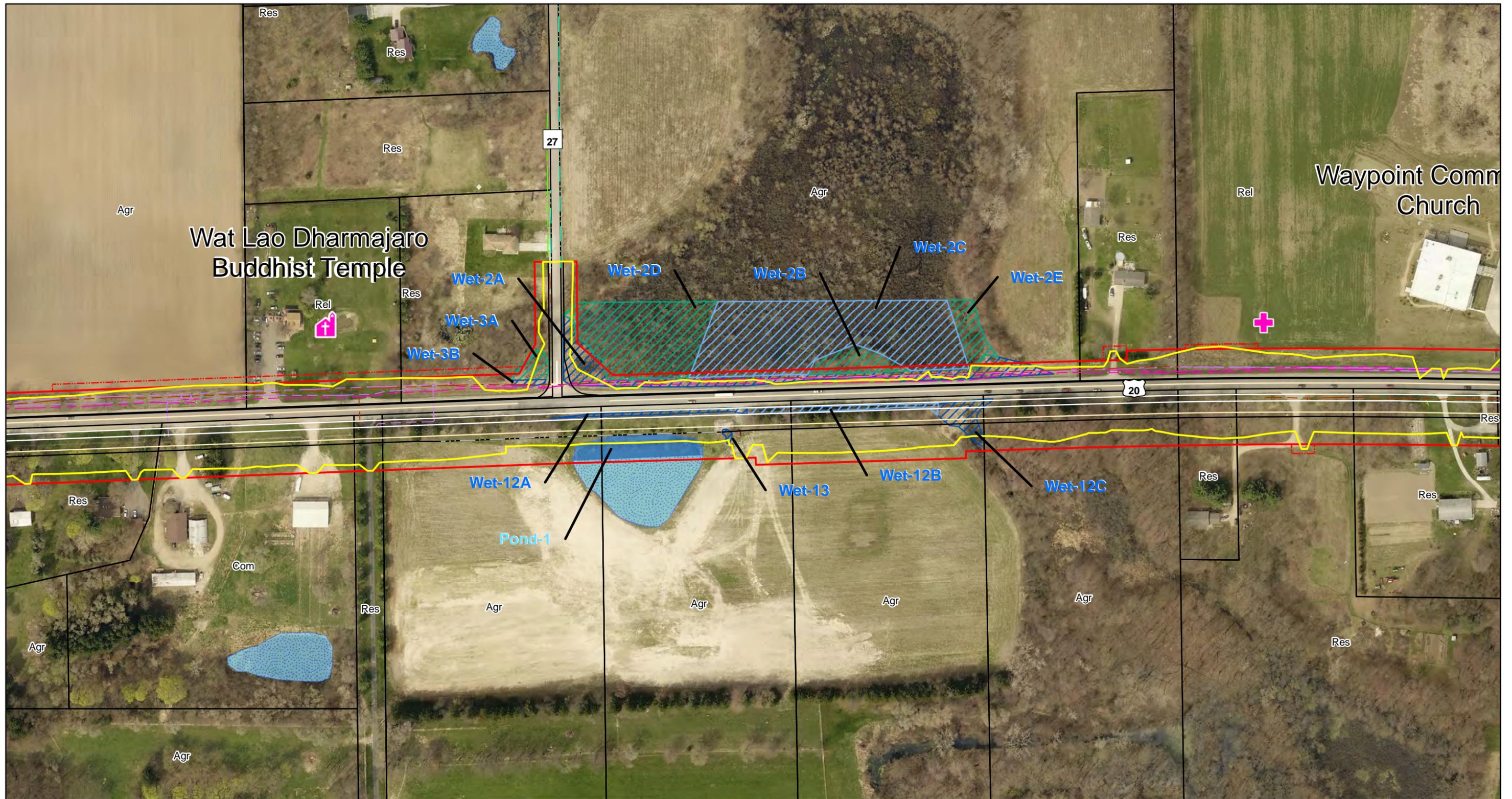
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Figure 3: Environmental Features Map
 U.S. 20 - SR 15 to CR 35
 Improvement Project Elkhart County, Indiana



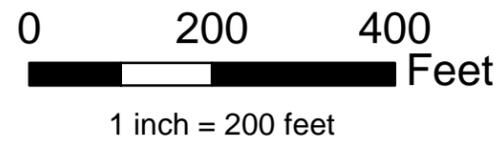
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Figure 3: Environmental Features Map
 U.S. 20 - SR 15 to CR 35
 Improvement Project Elkhart County, Indiana



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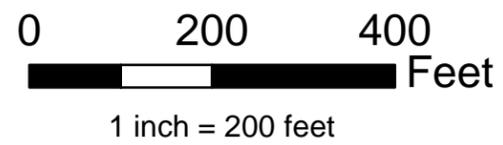
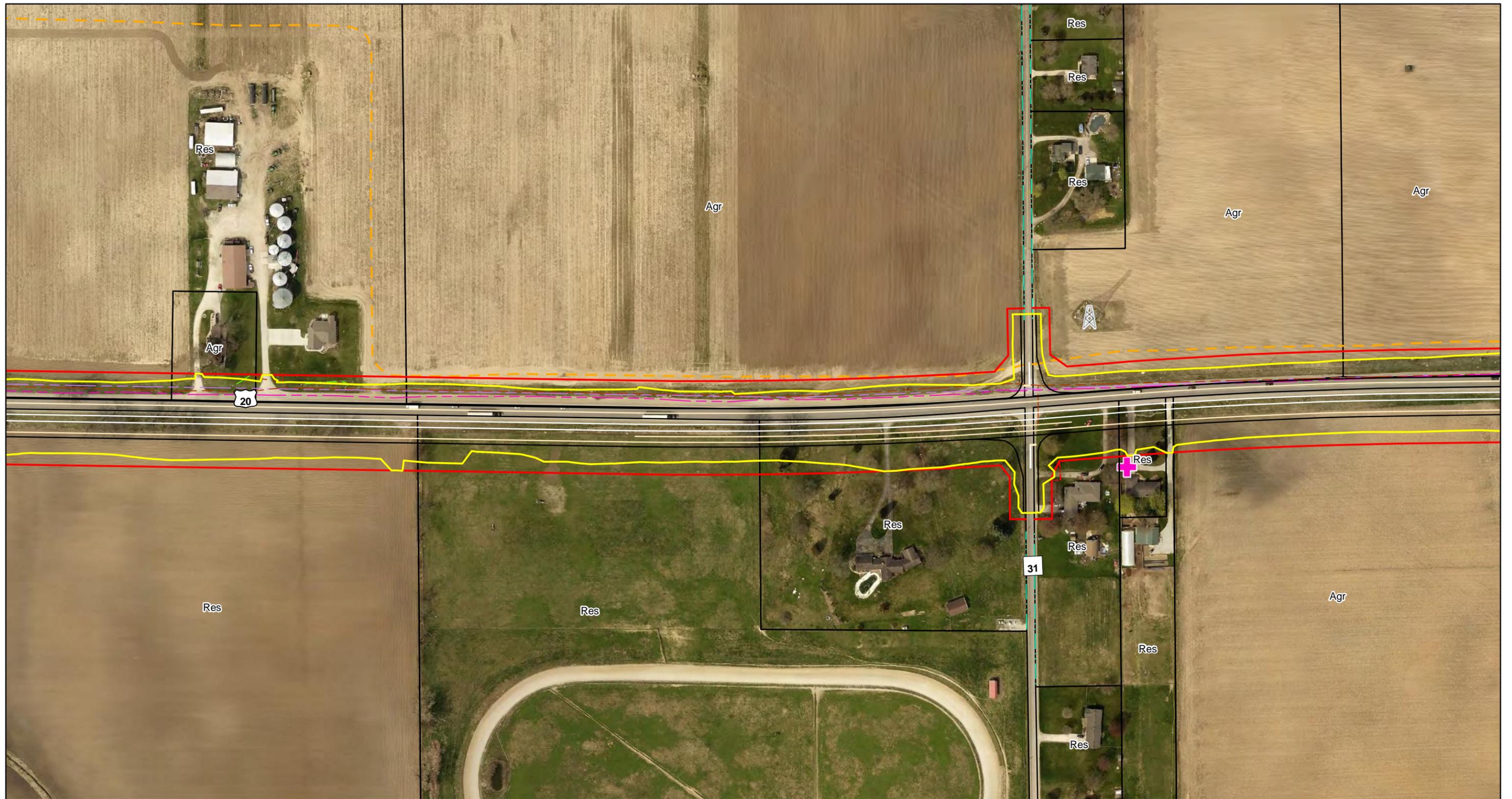
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Figure 3: Environmental Features Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana



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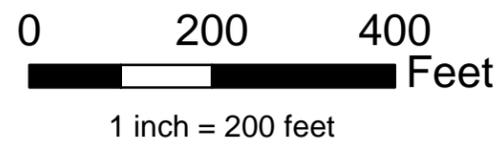
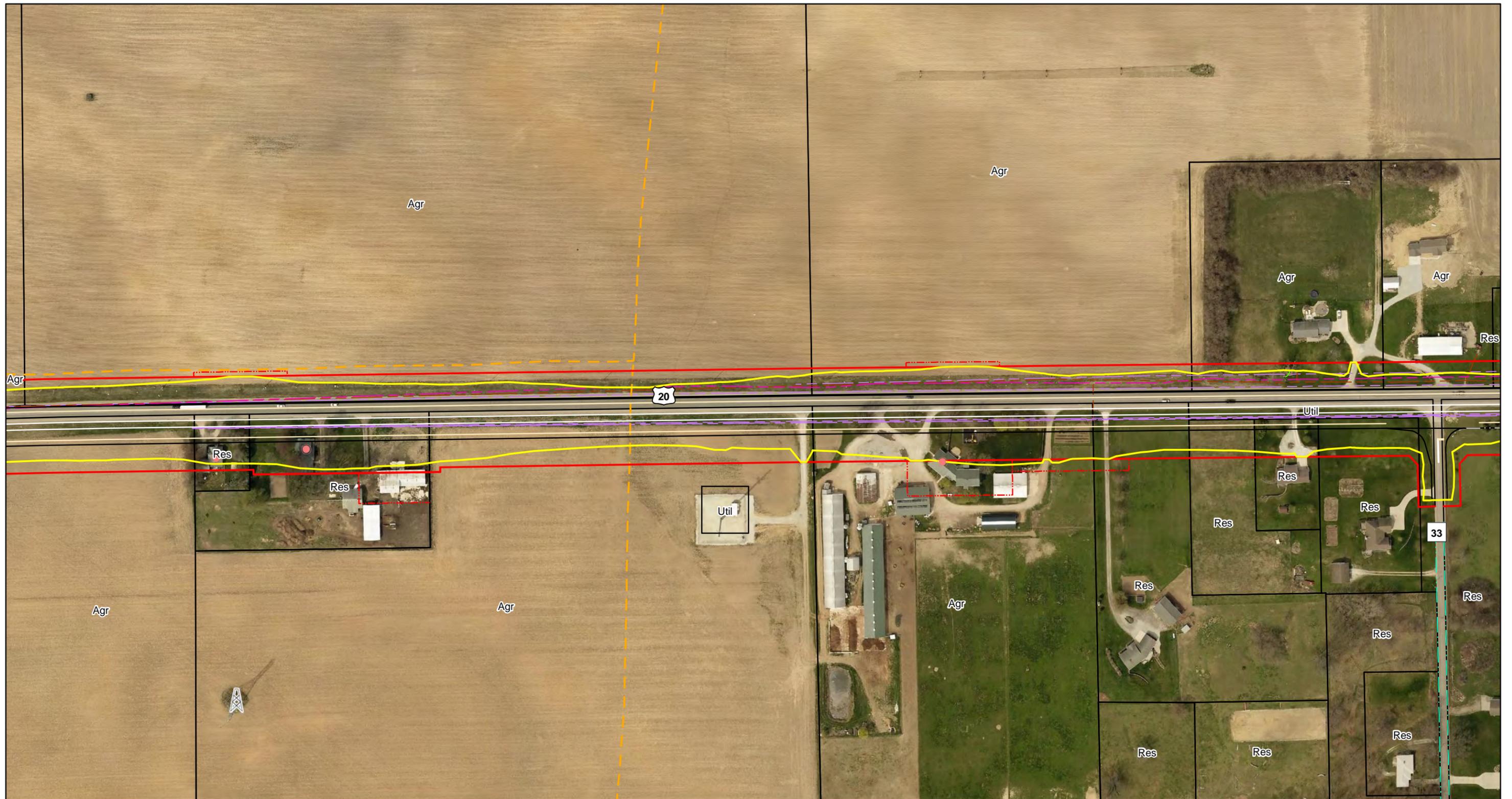
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Figure 3: Environmental Features Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana



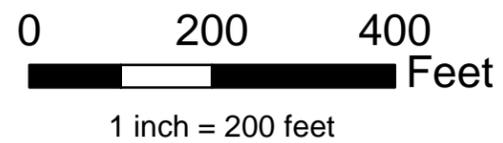
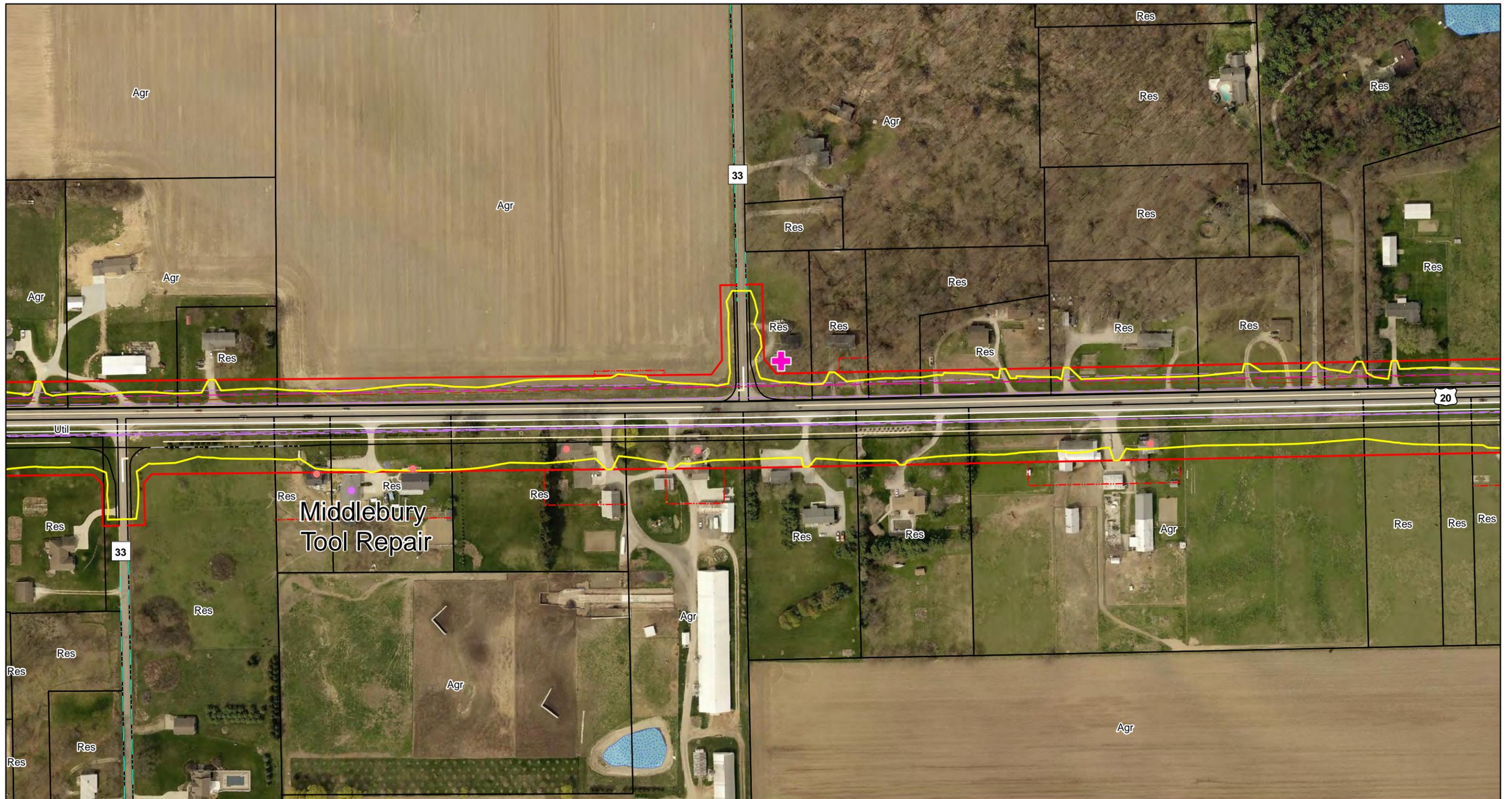
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Figure 3: Environmental Features Map
 U.S. 20 - SR 15 to CR 35
 Improvement Project Elkhart County, Indiana



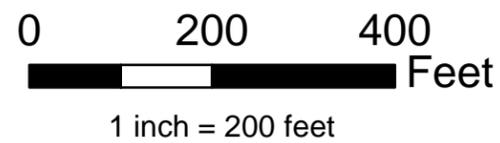
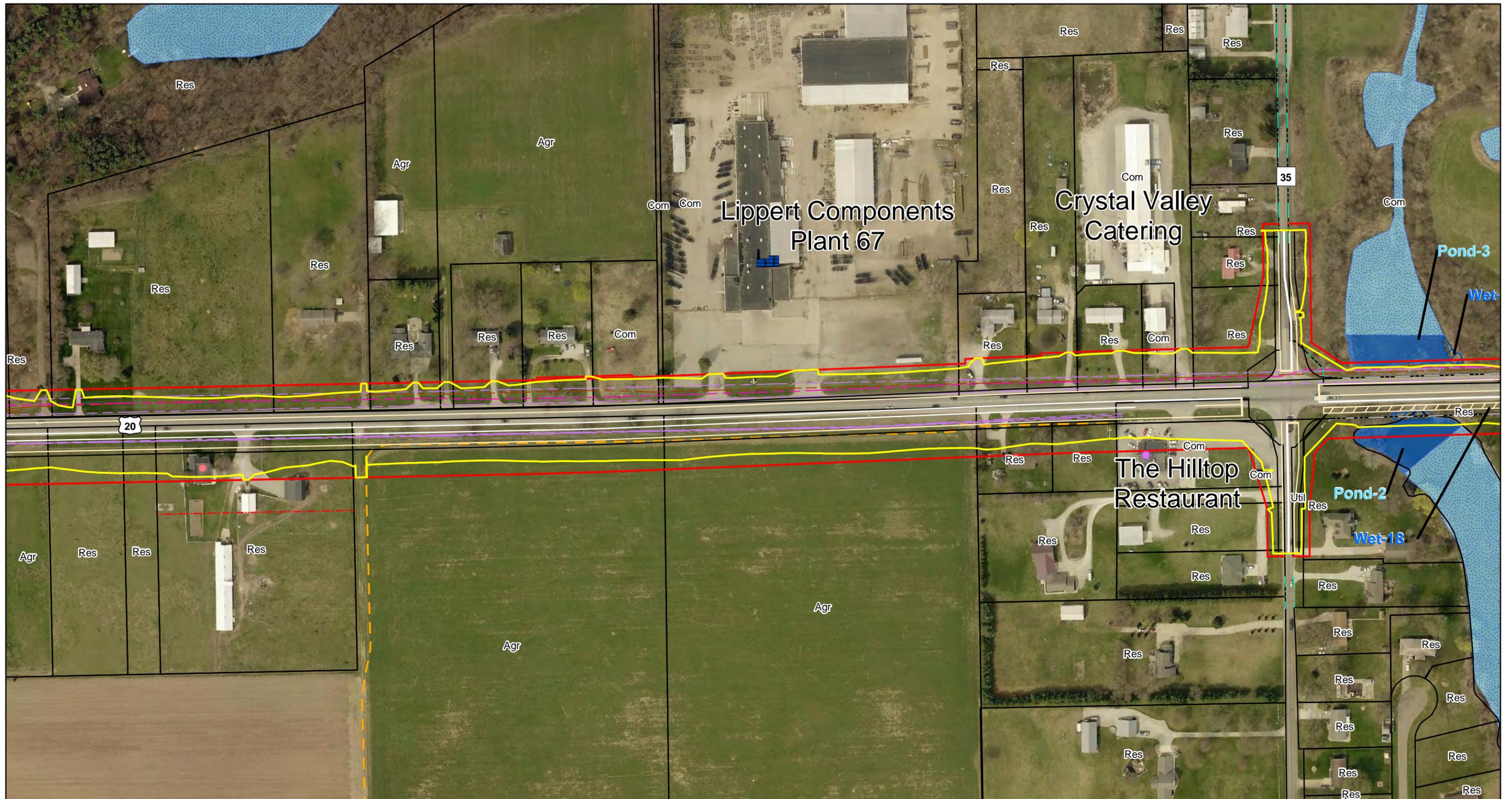
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Figure 3: Environmental Features Map
 U.S. 20 - SR 15 to CR 35
 Improvement Project Elkhart County, Indiana



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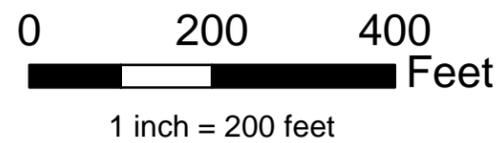
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Figure 3: Environmental Features Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana



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Figure 3: Environmental Features Map

U.S. 20 - SR 15 to CR 35
Improvement Project Elkhart County, Indiana



Photo 1: Facing south — view of CR 35 north of U.S. 20.

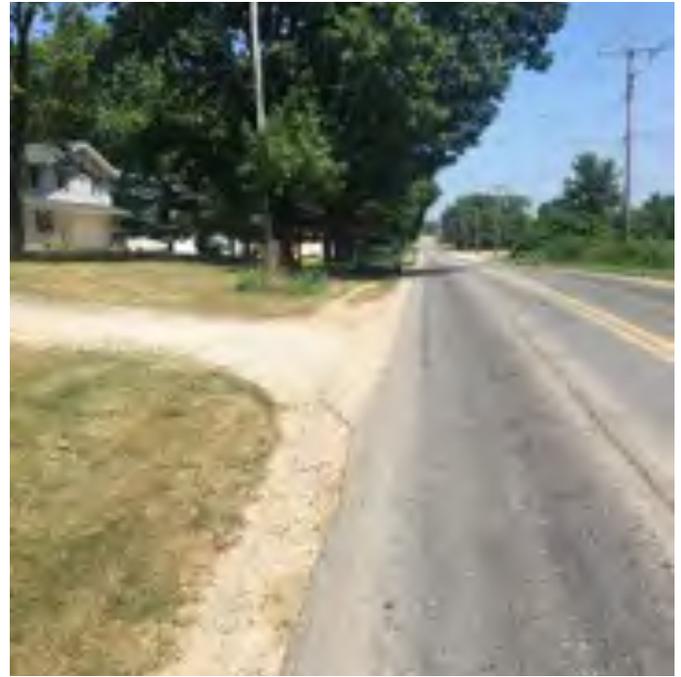


Photo 2: Facing north — view of CR 35 north of U.S. 20



Photo 3: Facing south — view of CR 35 south of U.S. 20.

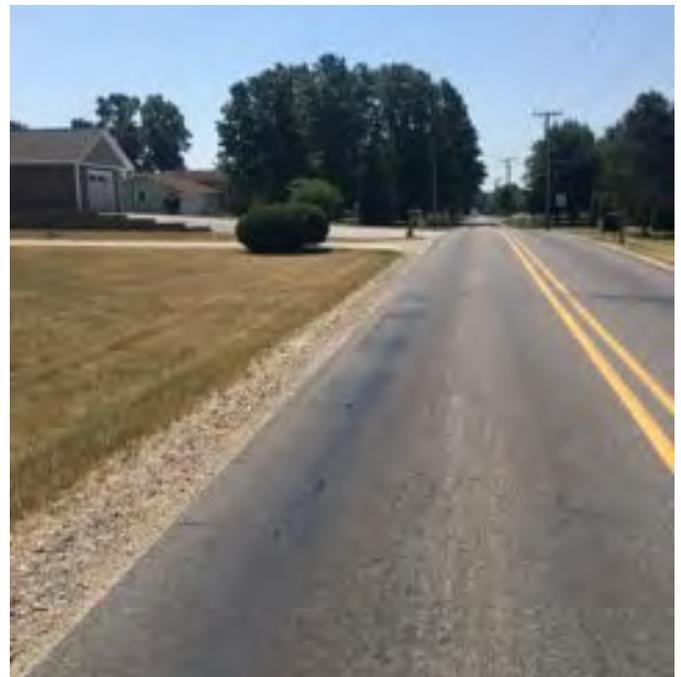


Photo 4: Facing north — view of CR 35 south of U.S. 20.



Photo 5: Facing east — view of U.S. 20 and CR 35 intersection.



Photo 6: Facing west — view of U.S. 20.



Photo 7: Facing west — view of U.S. 20.



Photo 8: Facing east — view of U.S. 20 and CR 33 intersection.



Photo 9: Facing south — view of CR 33 north of U.S. 20.



Photo 10: Facing north — view of CR 33 north of U.S. 20.



Photo 11: Facing south — view of CR 33 south of U.S. 20.

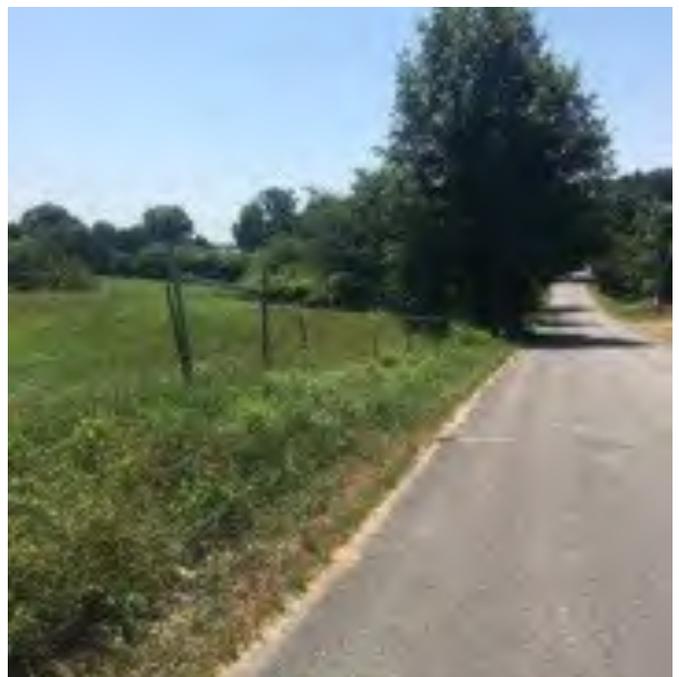


Photo 12: Facing north — view of CR 33 south of U.S. 20.



Photo 13: Facing east — view of U.S. 20.



Photo 14: Facing west — view of U.S. 20.



Photo 15: Facing north — view of CR 31 north of U.S. 20.



Photo 16: Facing south — view of CR 31 and U.S. 20 intersection.



Photo 17: Facing north — view of CR 31 south of U.S. 20.



Photo 18: Facing south — view of CR 31 and U.S. 20 intersection.



Photo 19: Facing east — view of U.S. 20.



Photo 20: Facing west — view of U.S. 20.



Photo 21: Facing north — view of CR 29 north of U.S. 20.



Photo 22: Facing south — view of CR 29 and U.S. 20 intersection.



Photo 23: Facing south — view of CR 29 south of U.S. 20.

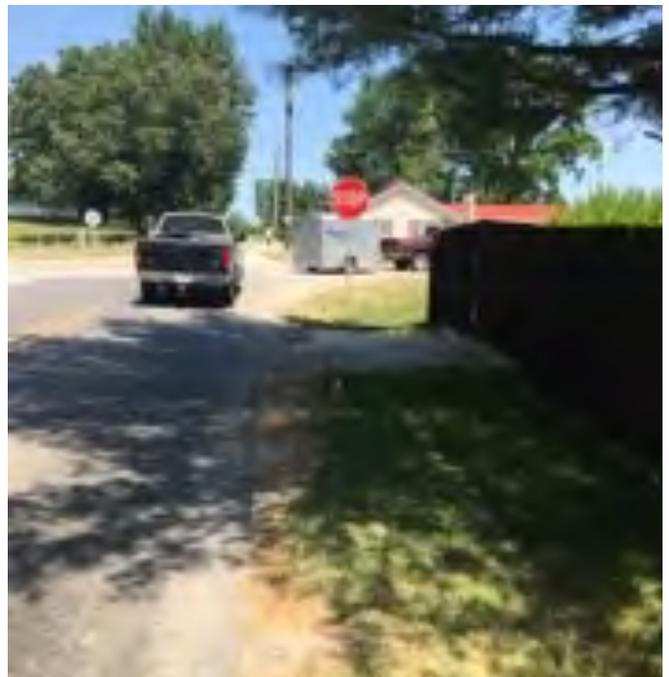


Photo 24: Facing north — view of CR 29 and U.S. 20 intersection.



Photo 25: Facing west — view of U.S. 20.



Photo 26: Facing east — view of U.S. 20.



Photo 27: Facing east — view of U.S. 20.



Photo 28: Facing west — view of U.S. 20.



Photo 29: Facing north — view of CR 27 north of U.S. 20.



Photo 30: Facing south — view of CR 27 south of U.S. 20.



Photo 31: Facing north — view of CR 27 and U.S. 20 intersection.

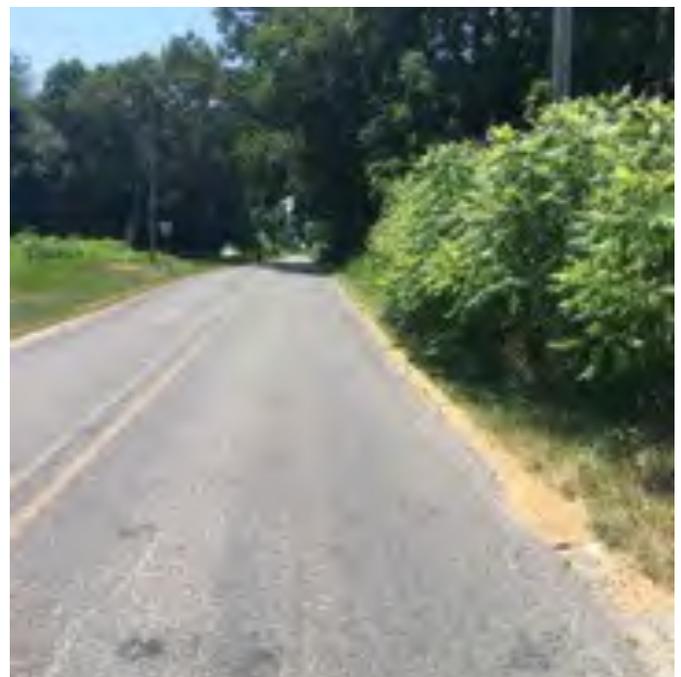


Photo 32: Facing south — view of CR 27 south of U.S. 20.



Photo 33: Facing east — view of U.S. 20.



Photo 34: Facing west — view of U.S. 20.



Photo 35: Facing east — view of U.S. 20.



Photo 36: Facing west — view of U.S. 20.



Photo 37: Facing east — view of U.S. 20.



Photo 38: Facing east — view of U.S. 20.

PROJECT	DESIGNATION
1600517	1600517
CONTRACT	
R-39851	

INDIANA DEPARTMENT OF TRANSPORTATION



ROAD PLANS U.S. 20

ROUTE: U.S. 20 FROM: RP 99+1 TO: RP 103+1
PROJECT NO. 1600517 P.E.
1600517 R/W
1600517 CONST.

TRAFFIC DATA U.S. 20		
A.A.D.T. (2021)		19,040 VPD
A.A.D.T. (2041)		25,650 VPD
D.H.V (2041)		8.15%
DIRECTIONAL DISTRIBUTION		50.55%
TRUCKS		26.91% A.A.D.T.

DESIGN DATA U.S. 20	
DESIGN SPEED	40/55 M.P.H.
PROJECT DESIGN CRITERIA	4R (RECONSTRUCTION)
FUNCTIONAL CLASSIFICATION	MINOR ARTERIAL
RURAL/URBAN	RURAL
TERRAIN	LEVEL
ACCESS CONTROL	NONE

DESIGN DATA C.R. 27, 29, 31, 33, AND 35	
DESIGN SPEED	(CR 27,29,31,33) 30 M.P.H. (CR 35) 45 M.P.H.
PROJECT DESIGN CRITERIA	4R (RECONSTRUCTION)
FUNCTIONAL CLASSIFICATION	(CR 27,29,31,33) LOCAL ROAD (CR 35) RURAL ARTERIAL
RURAL/URBAN	RURAL
TERRAIN	LEVEL
ACCESS CONTROL	NONE



LATITUDE: 41°40'03" LONGITUDE: 85°46'53"

GROSS LENGTH:	4.27 MILES
NET LENGTH:	4.27 MILES
MAX. GRADE:	3.22 %

HYDROLOGIC UNIT CODE: 04050001150030

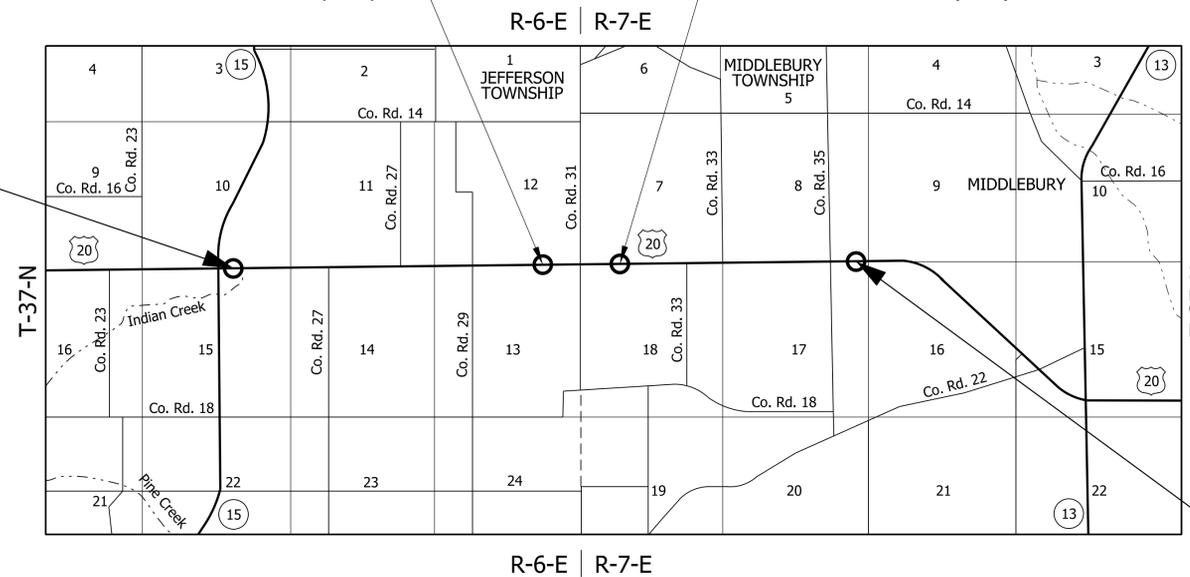
INDIANA DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS DATED 2018
TO BE USED WITH THESE PLANS

STAGE 2 SUBMITTAL PLANS
June 28, 2018

BEGIN PROJECT
PROJECT NO. 1600517
STA. 348+32.00
LINE "PR-A"

Equation:
Sta. 464+94.29 "PR-B" (Ahead)
Sta. 464+94.29 "PR-A" (Back)

Equation:
Sta. 481+84.05 "PR-A" (Ahead)
Sta. 481+83.80 "PR-B" (Back)



LOCATION MAP
JEFFERSON AND MIDDLEBURY TOWNSHIPS
ELKHART COUNTY

NOTE TO REVIEWER
PLEASE SEE CORRESPONDENCE FILE FOR
DOCUMENTATION OF DESIGN DECISIONS
AND OTHER NOTES



HNTB INDIANA, INC
THE HNTB COMPANIES
ENGINEERS ARCHITECTS PLANNERS
111 MONUMENT CIRCLE
SUITE 1200
INDIANAPOLIS, IN 46204

PLANS
PREPARED BY: HNTB INDIANA, INC.: (317) 636-4682
PHONE NUMBER
CERTIFIED BY: _____ DATE _____
APPROVED FOR LETTING: _____ DATE _____
INDIANA DEPARTMENT OF TRANSPORTATION

DESIGNATION	1600517
SURVEY BOOK	N/A
SHEETS	1 of 364
CONTRACT	PROJECT
R-39851	1600517

330+00

335+00

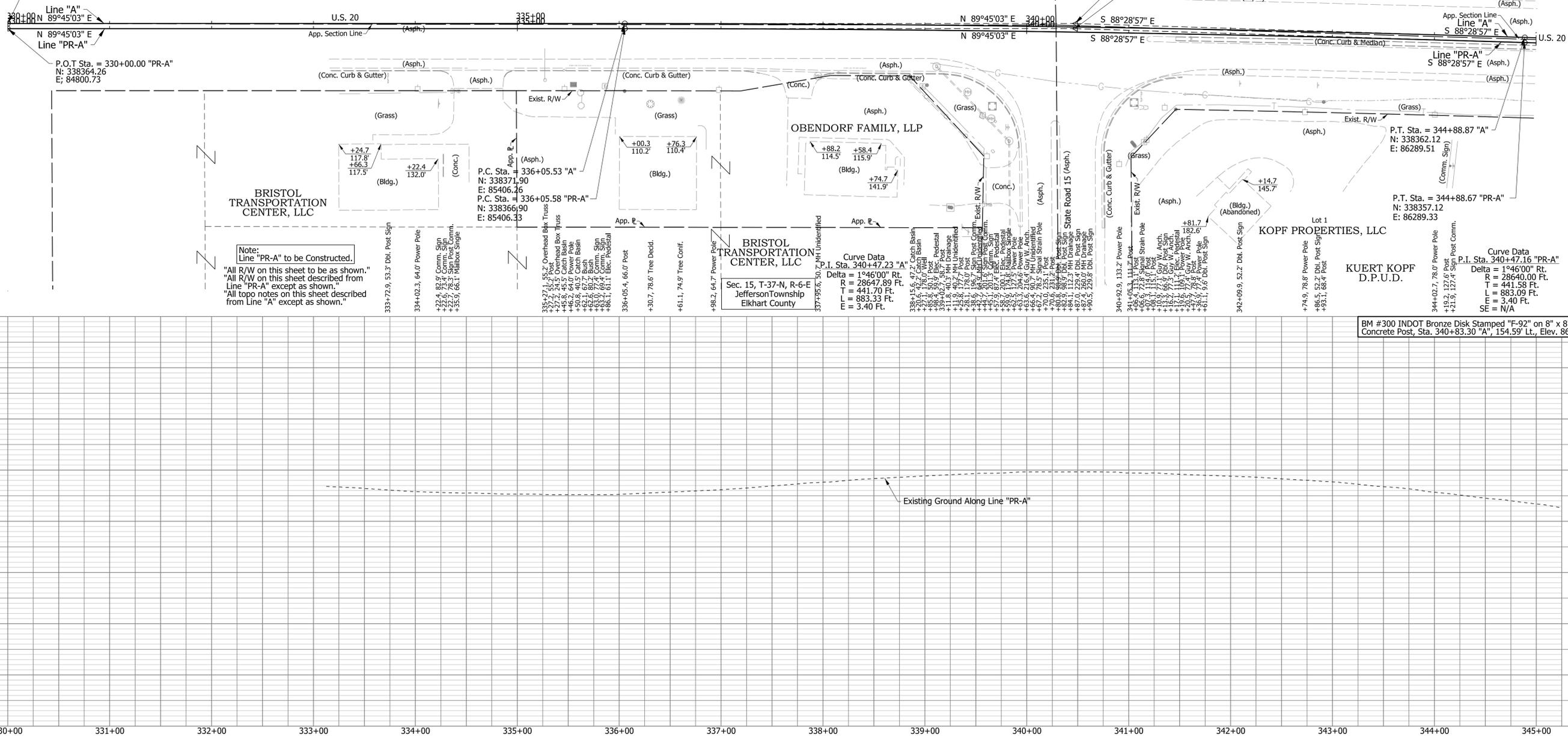
340+00

345+00

P.O.T Sta. = 330+00.00 "A"
N: 338369.26
E: 84800.73

Line "A"
N 89°45'03" E

P.O.T Sta. = 330+00.00 "PR-A"
N: 338364.26
E: 84800.73



Note:
Line "PR-A" to be Constructed.
"All R/W on this sheet to be as shown."
"All R/W on this sheet described from Line "PR-A" except as shown."
"All top notes on this sheet described from Line "A" except as shown."

Curve Data
P.I. Sta. 340+47.23 "A"
Delta = 1°46'00" Rt.
R = 28647.89 Ft.
T = 441.70 Ft.
L = 883.33 Ft.

Curve Data
P.I. Sta. 340+47.16 "PR-A"
Delta = 1°46'00" Rt.
R = 28640.00 Ft.
T = 441.58 Ft.
L = 883.09 Ft.
SE = N/A

BM #300 INDOT Bronze Disk Stamped "F-92" on 8" x 8" Concrete Post, Sta. 340+83.30 "A", 154.59' Lt., Elev. 869.73

Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

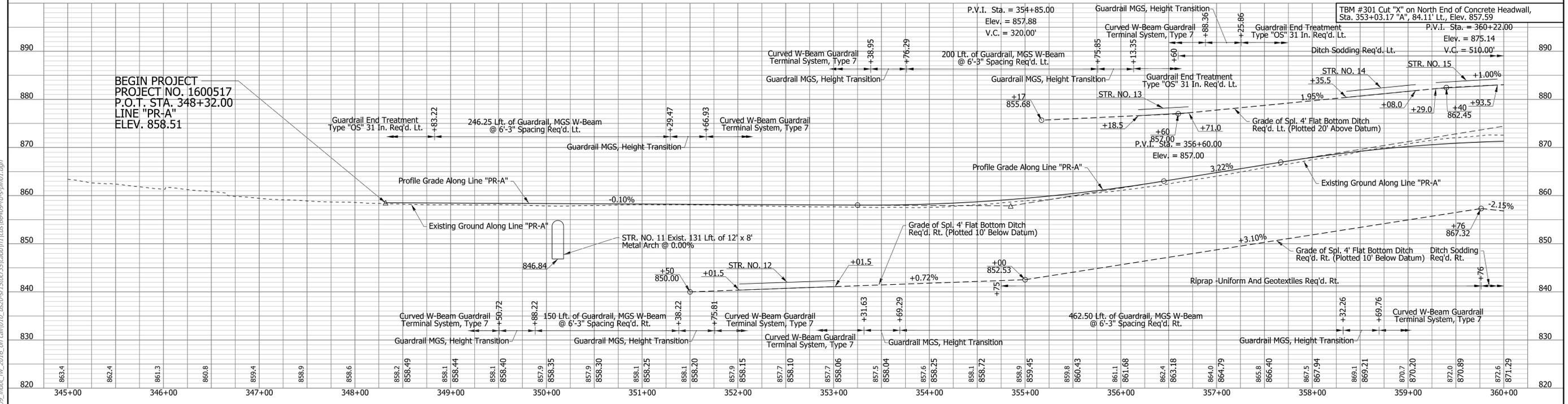
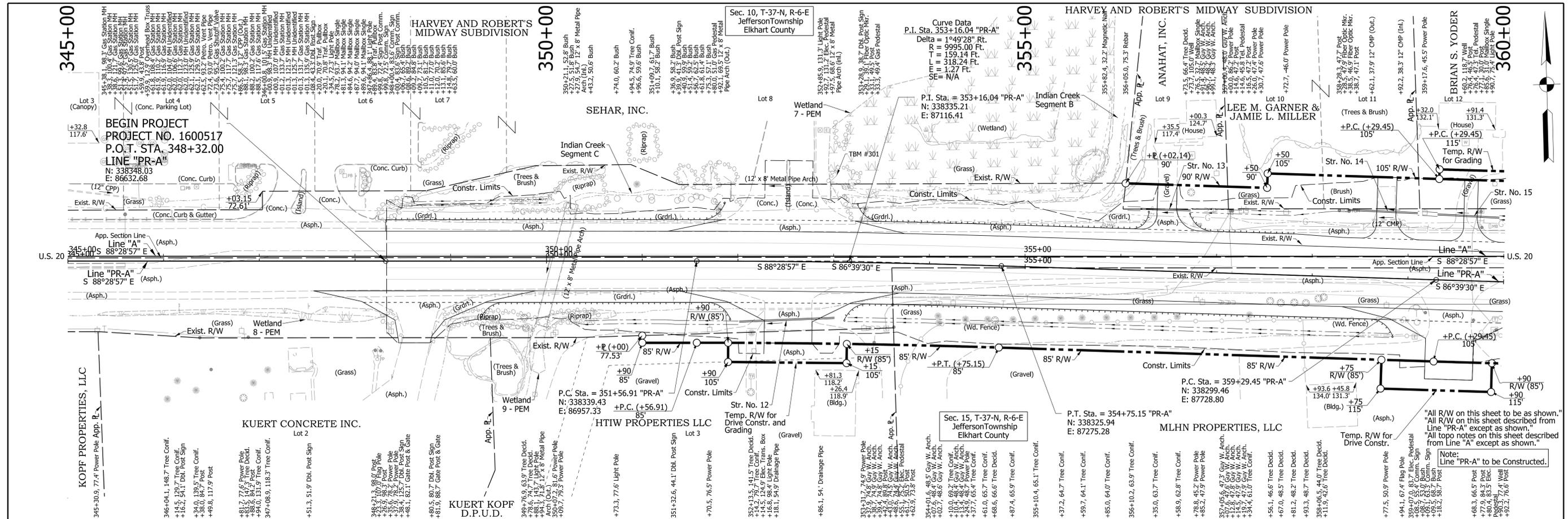
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	56 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

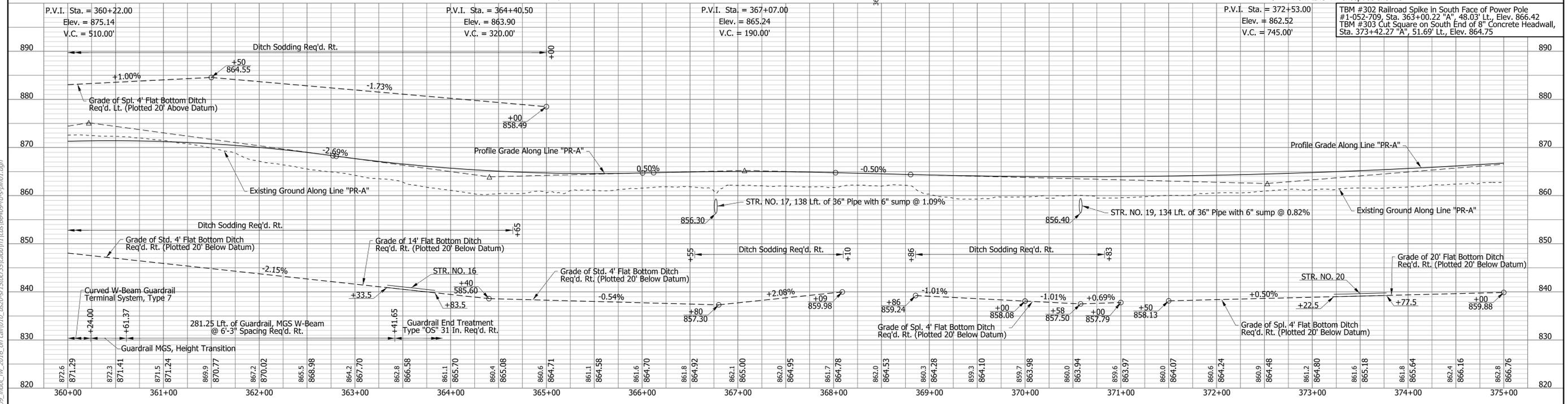
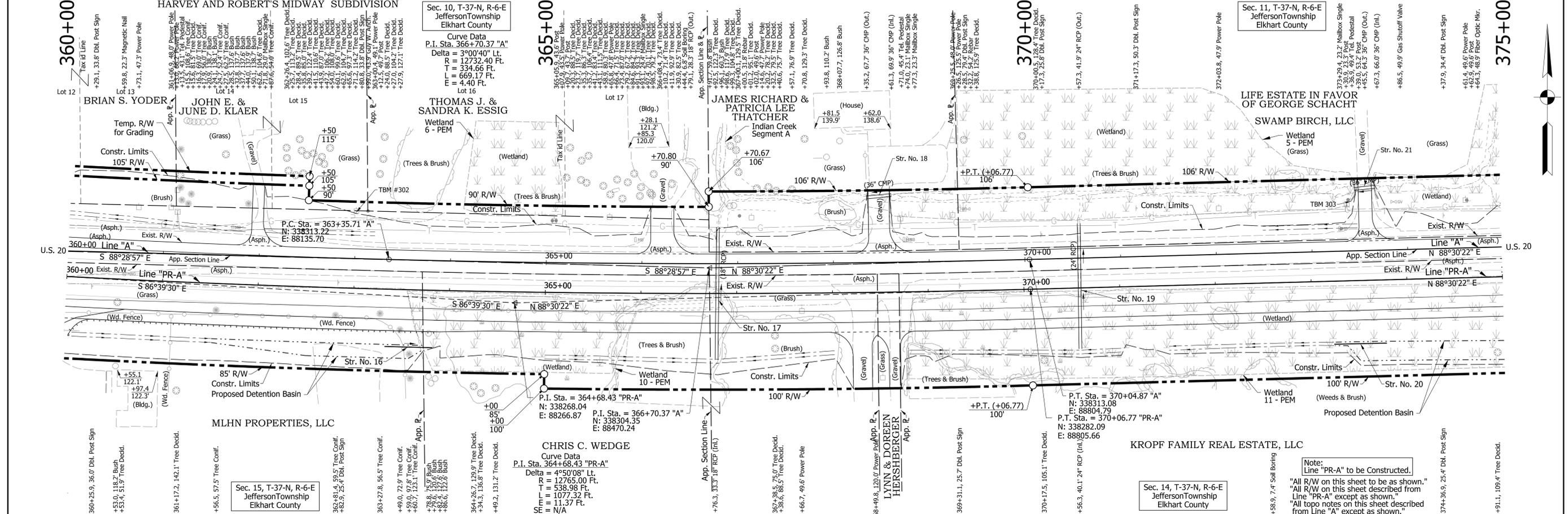
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CHECKED: JRG	CHECKED: DLG	

INDIANA DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	57 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

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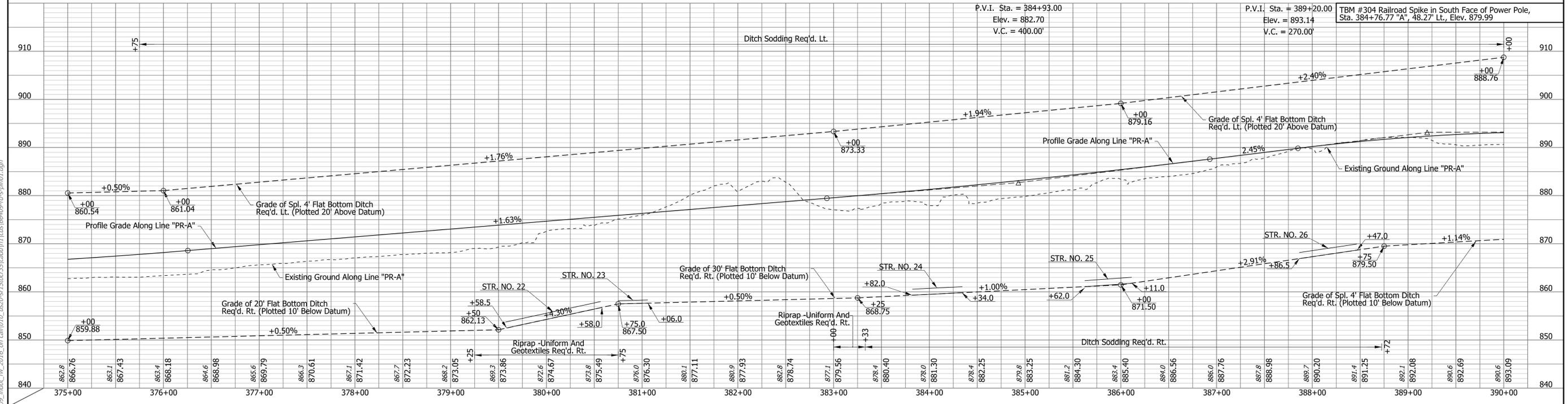
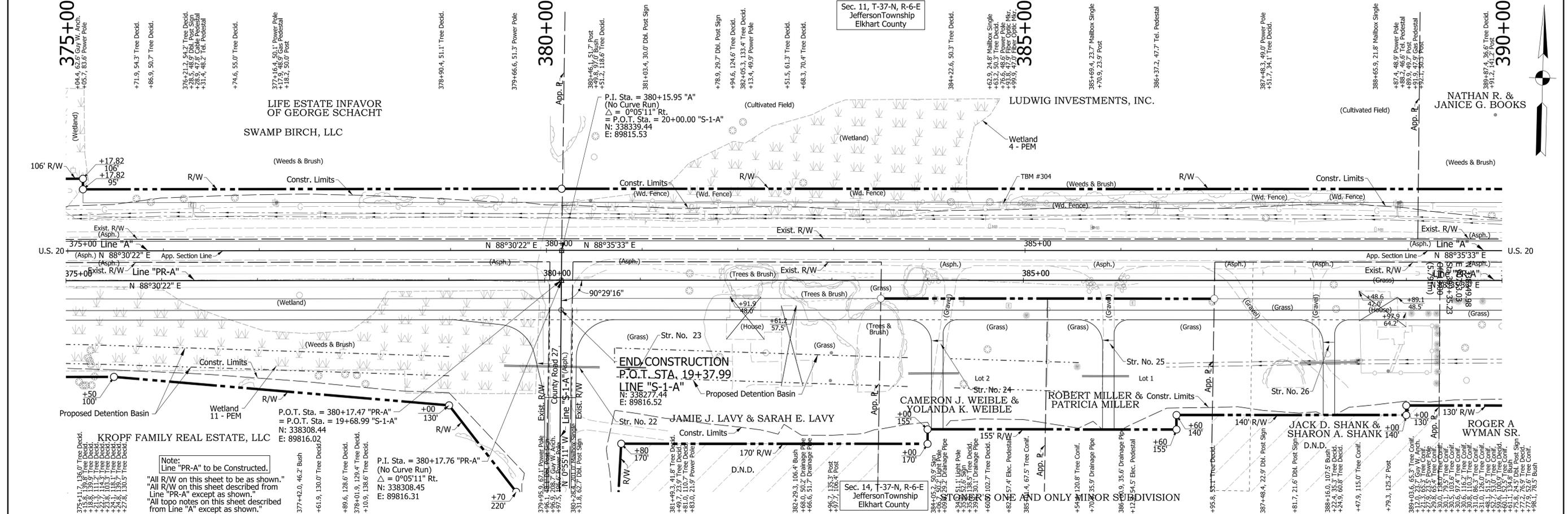
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DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	58 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

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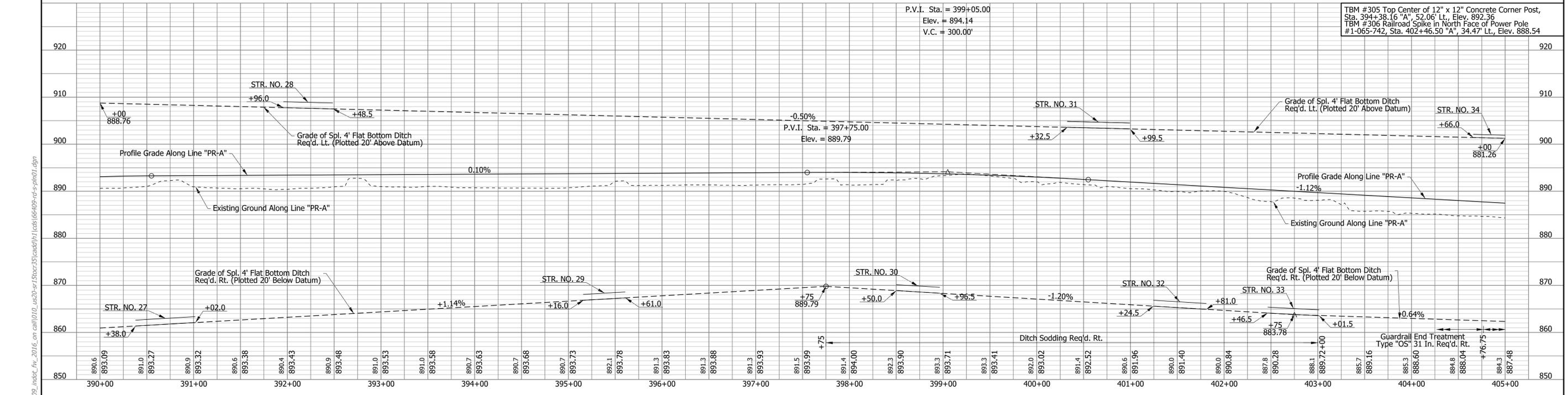
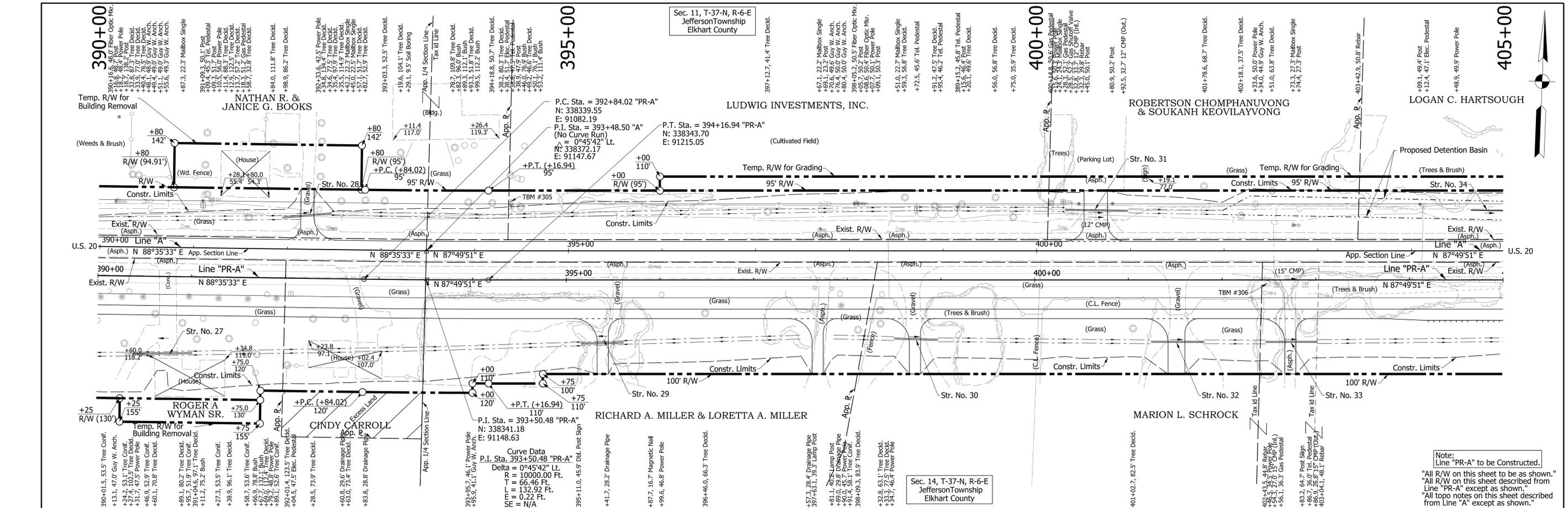
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DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

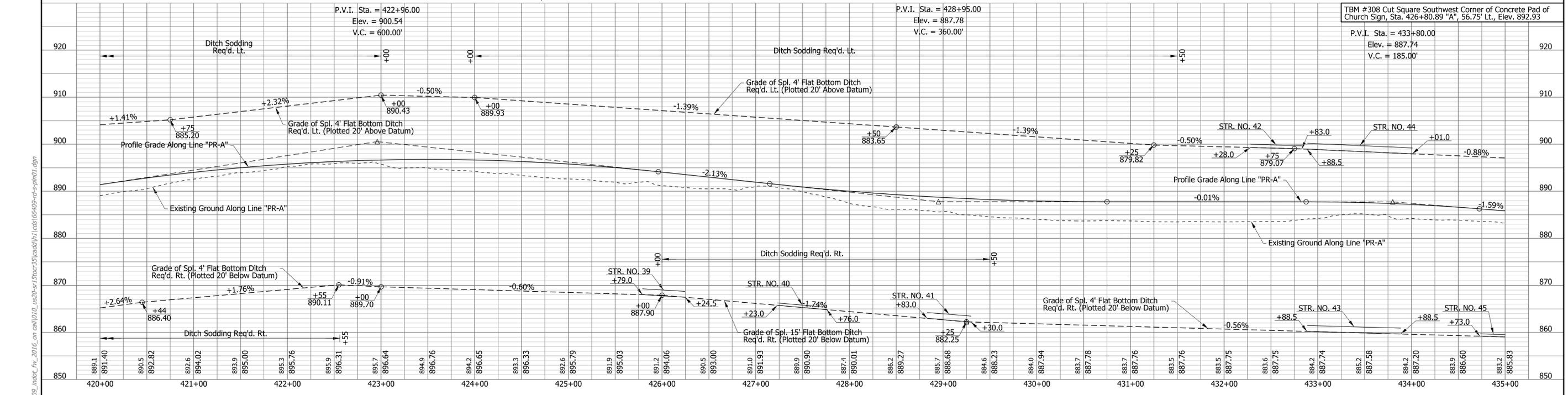
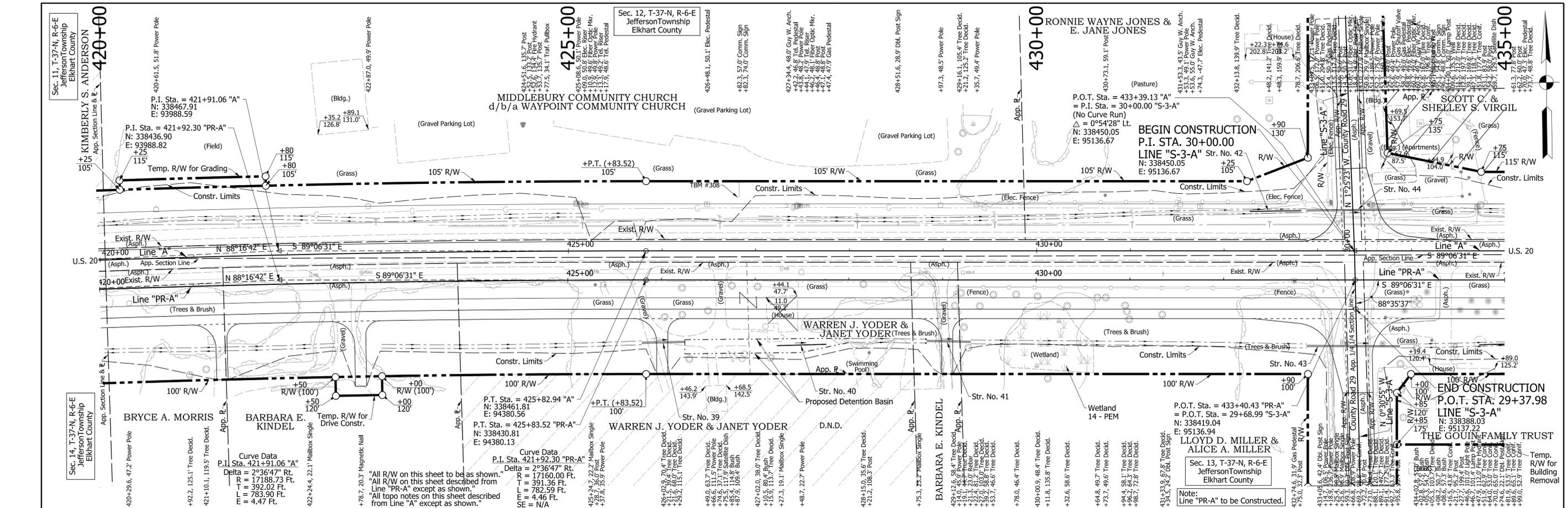
ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	59 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes: For Drainage Structure Notes and Locations, See Construction Detail Sheets.		DRAFT NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE _____		INDIANA DEPARTMENT OF TRANSPORTATION ROADWAY PLAN AND PROFILE LINE "PR-A"	HORIZONTAL SCALE 1"=50' BRIDGE FILE N/A	
DESIGNED: DLG DRAWN: CPH CHECKED: JRG CHECKED: DLG			SURVEY BOOK N/A CONTRACT R-39851			DESIGNATION 1600517 SHEETS of 362 PROJECT 1600517	
P.V.I. Sta. = 399+05.00 Elev. = 894.14 V.C. = 300.00'			TBM #305 Top Center of 12" x 12" Concrete Corner Post, Sta. 394+38.16 "A", 52.06' Lt., Elev. 892.36 TBM #306 Railroad Spike in North Face of Power Pole #1-065-742, Sta. 402+46.50 "A", 34.47' Lt., Elev. 888.54				



Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

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NOT FOR CONSTRUCTION

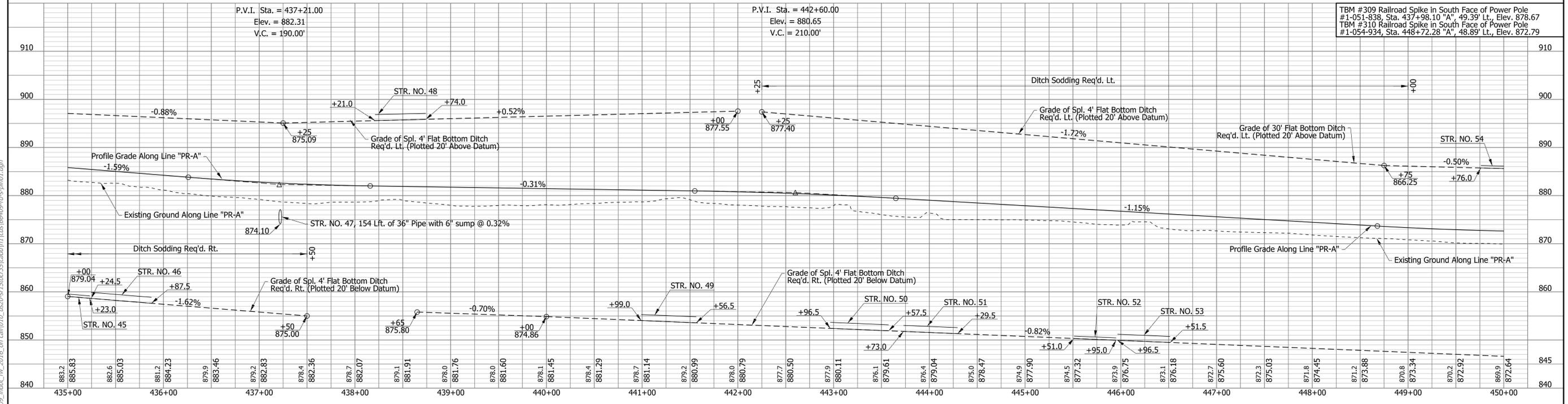
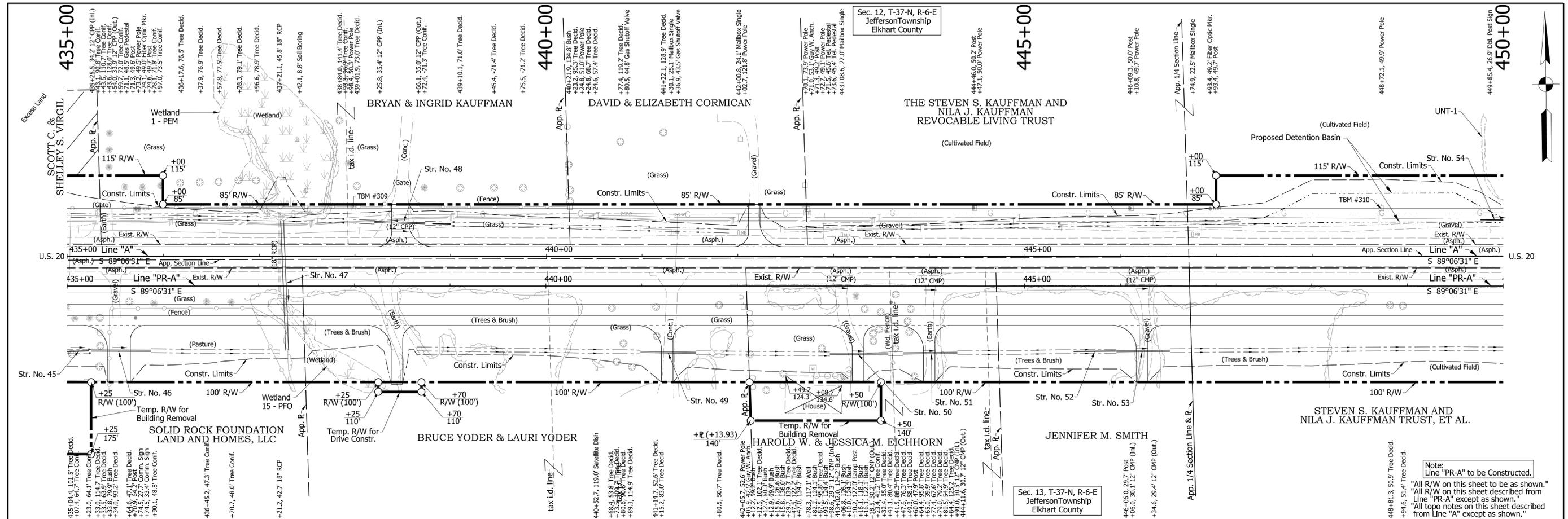
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	62 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	63 of 362
CONTRACT	PROJECT
R-39851	1600517

TBM #309 Railroad Spike in South Face of Power Pole #1-051-838, Sta. 437+98.10 "A", 49.39' Lt., Elev. 878.67
TBM #310 Railroad Spike in South Face of Power Pole #1-054-934, Sta. 448+72.28 "A", 48.89' Lt., Elev. 872.79

Note:
Line "PR-A" to be Constructed.
"All R/W on this sheet to be as shown."
"All R/W on this sheet described from Line "PR-A" except as shown."
"All topo notes on this sheet described from Line "A" except as shown."

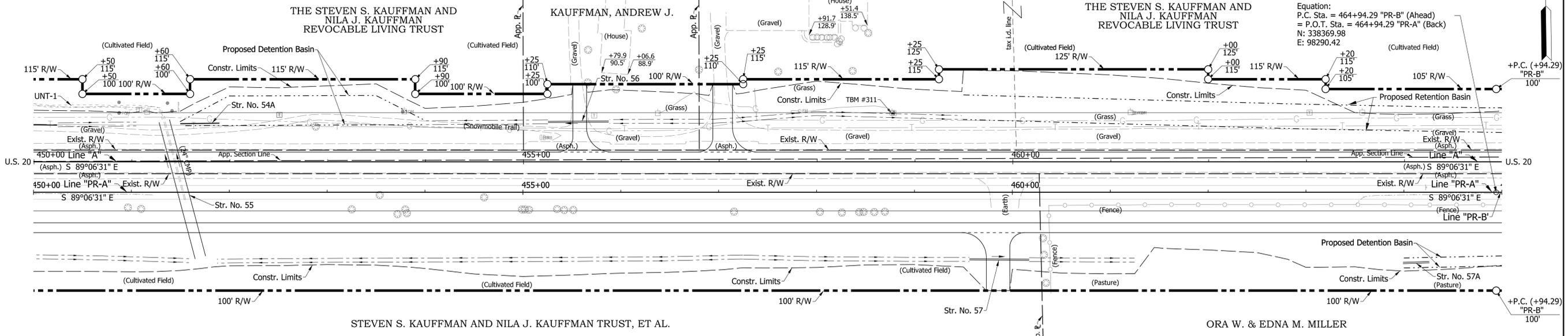
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450+00

455+00

460+00

465+00



Station	Elevation	Notes
450+00	869.9	P.V.I. Sta. = 450+53.00 Elev. = 871.55 V.C. = 370.00'
451+00	872.64	
452+00	869.4	
453+00	872.50	
454+00	869.3	
455+00	872.49	
456+00	869.3	
457+00	872.63	
458+00	869.8	
459+00	872.90	
460+00	870.0	
461+00	873.30	
462+00	869.8	
463+00	873.75	
464+00	870.4	
465+00	874.19	
466+00	871.0	
467+00	874.64	
468+00	871.7	
469+00	875.08	
470+00	872.6	
471+00	875.53	
472+00	873.3	
473+00	875.97	
474+00	873.8	
475+00	876.42	
476+00	874.0	
477+00	876.81	
478+00	874.1	
479+00	876.99	
480+00	873.9	
481+00	876.97	
482+00	873.5	
483+00	876.72	
484+00	872.8	
485+00	876.29	
486+00	872.3	
487+00	875.83	
488+00	871.9	
489+00	875.37	
490+00	872.3	
491+00	874.91	
492+00	871.9	
493+00	874.45	
494+00	871.1	
495+00	873.99	
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499+00	873.08	
500+00	869.0	
501+00	872.62	
502+00	868.6	
503+00	872.16	
504+00	868.1	
505+00	871.71	
506+00	867.3	
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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

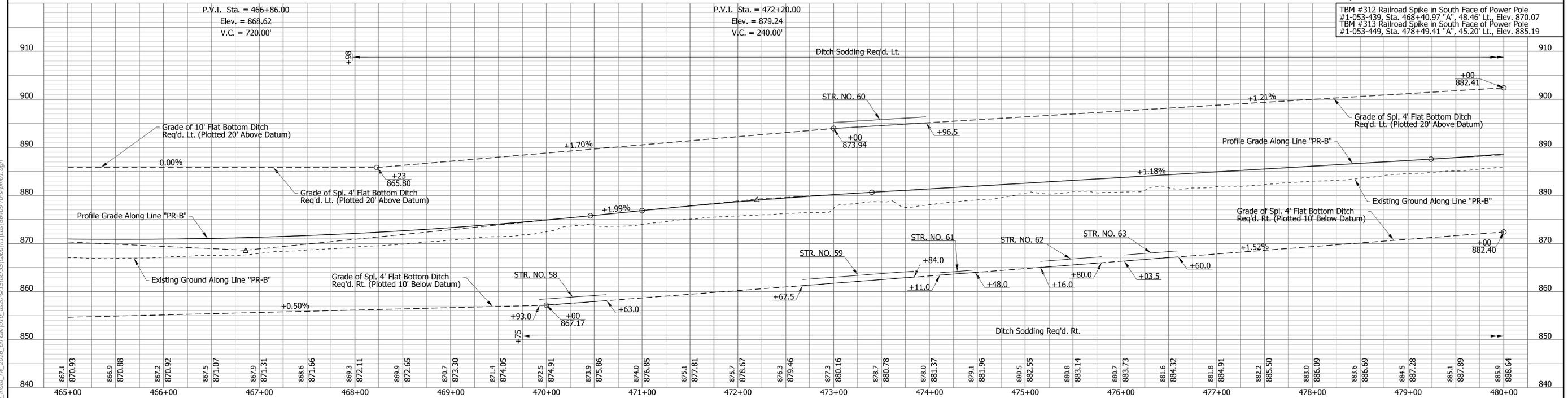
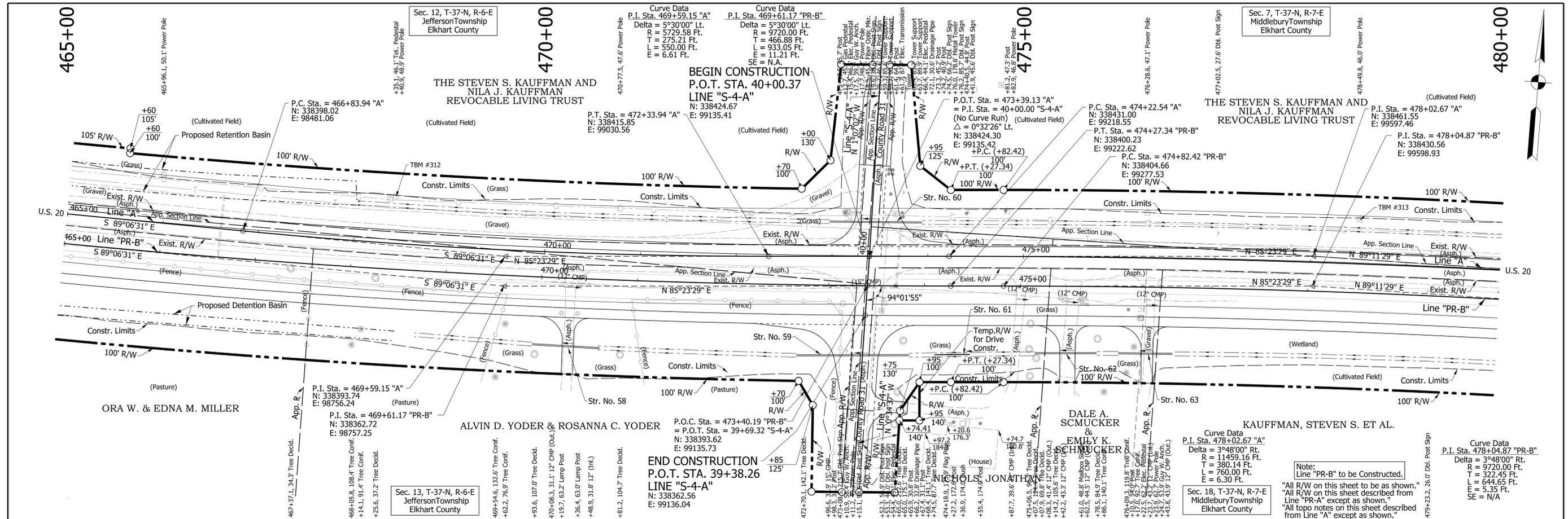
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RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION
ROADWAY PLAN AND PROFILE
LINE "PR-A" & LINE "PR-B"

HORIZONTAL SCALE 1"=50'	BRIDGE FILE N/A
VERTICAL SCALE 1"=10'	DESIGNATION 1600517
SURVEY BOOK N/A	SHEETS 64 of 362
CONTRACT R-39851	PROJECT 1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

<p>DRAFT NOT FOR CONSTRUCTION</p>	RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
	DESIGNED: DLG	DRAWN: CPH	
	CHECKED: JRG	CHECKED: DLG	

INDIANA DEPARTMENT OF TRANSPORTATION	
ROADWAY PLAN AND PROFILE LINE "PR-B"	

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	65 of 362
CONTRACT	PROJECT
R-39851	1600517

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480+00

485+00

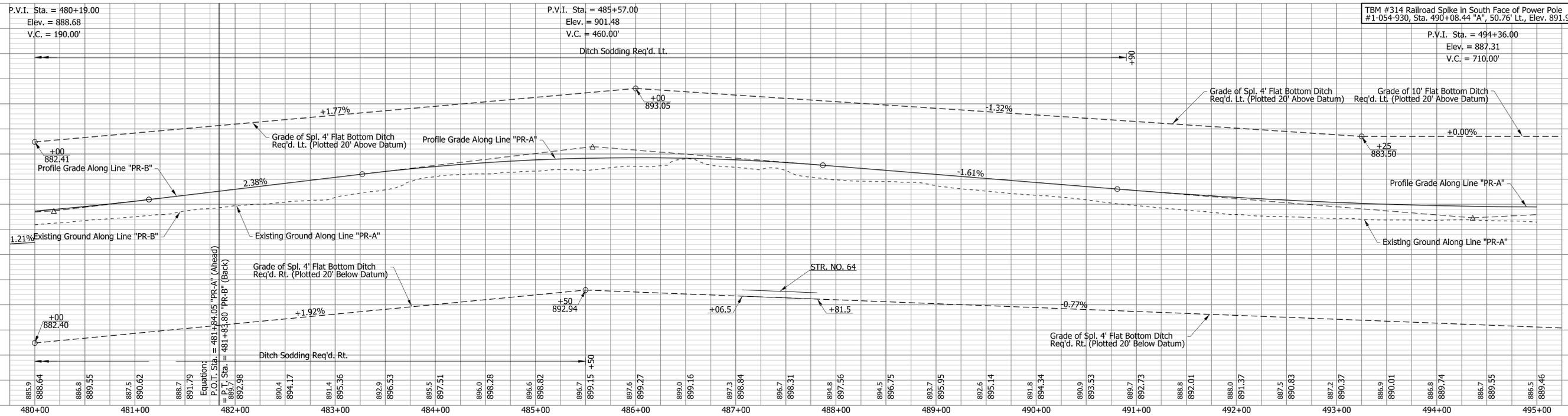
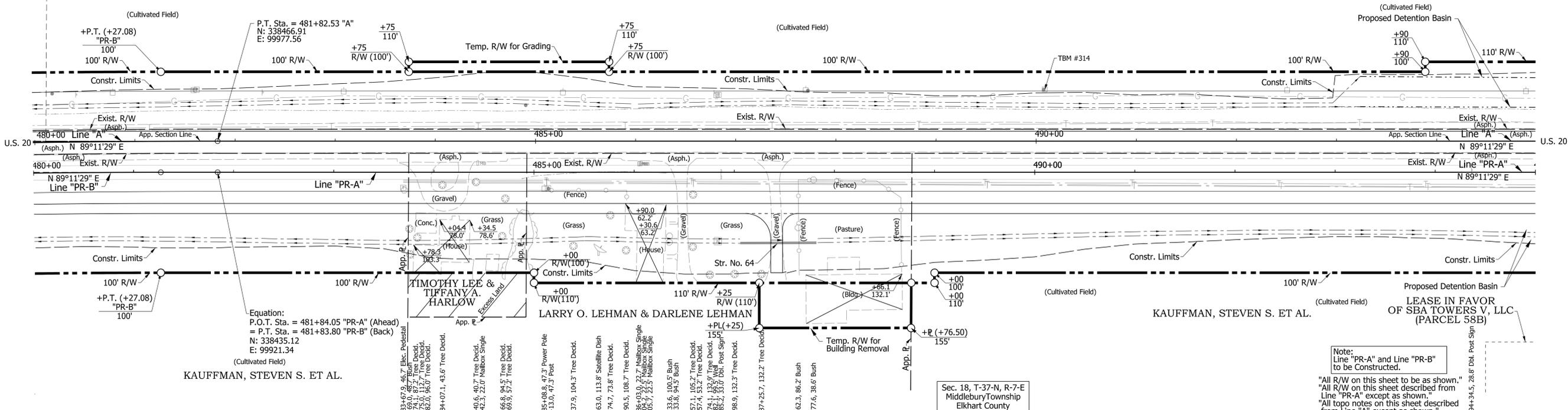
490+00

495+00

Sec. 7, T-37-N, R-7-E
Middlebury Township
Elkhart County

THE STEVEN S. KAUFFMAN AND
NILA J. KAUFFMAN
REVOCABLE LIVING TRUST

Sec. 18, T-37-N, R-7-E
Middlebury Township
Elkhart County



Note:
Line "PR-A" and Line "PR-B"
to be Constructed.

"All R/W on this sheet to be as shown."
"All R/W on this sheet described from
Line "PR-A" except as shown."
"All topo notes on this sheet described from
Line "A" except as shown."

TBM #314 Railroad Spike in South Face of Power Pole
#1-054-930, Sta. 490+08.44 "A", 50.76' Lt., Elev. 891.92

Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

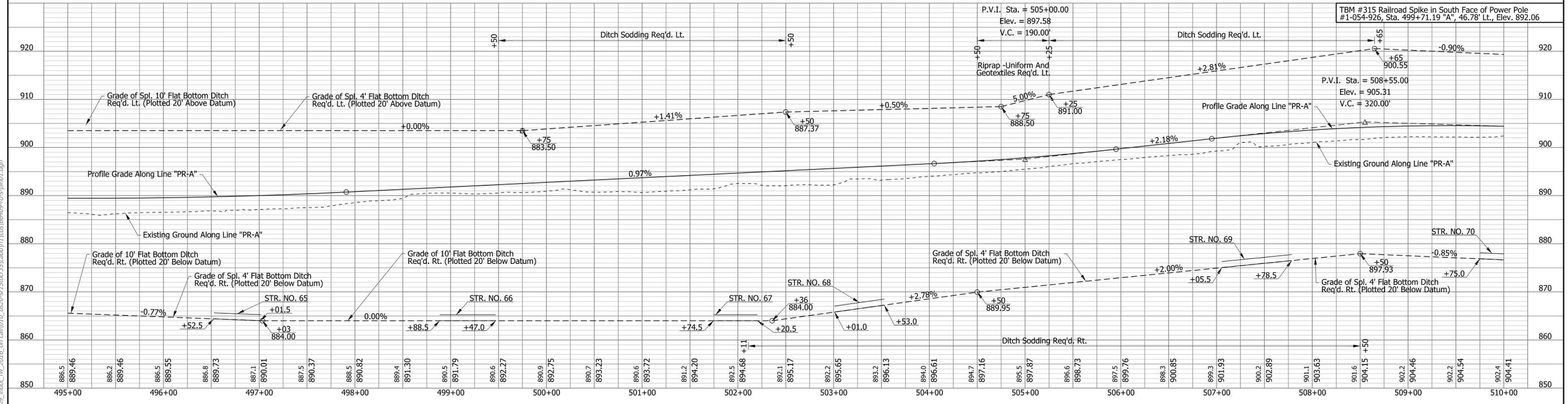
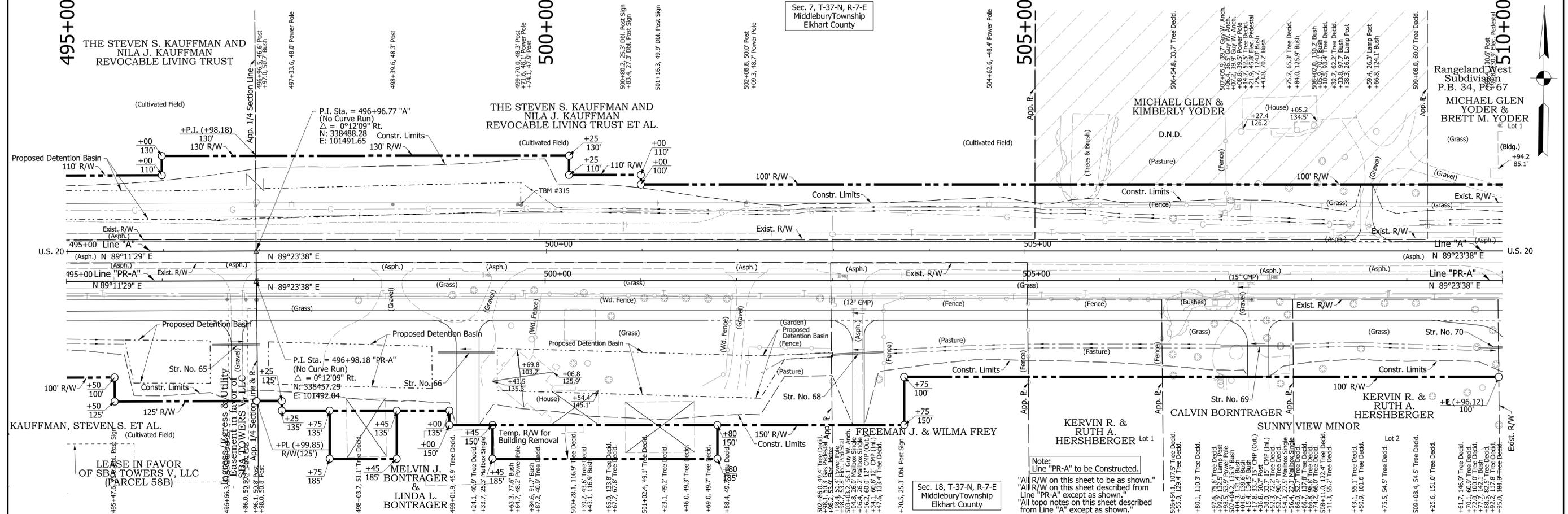
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DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-B" & LINE "PR-A"

HORIZONTAL SCALE 1"=50'	BRIDGE FILE N/A
VERTICAL SCALE 1"=10'	DESIGNATION 1600517
SURVEY BOOK N/A	SHEETS 66 of 362
CONTRACT R-39851	PROJECT 1600517

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Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

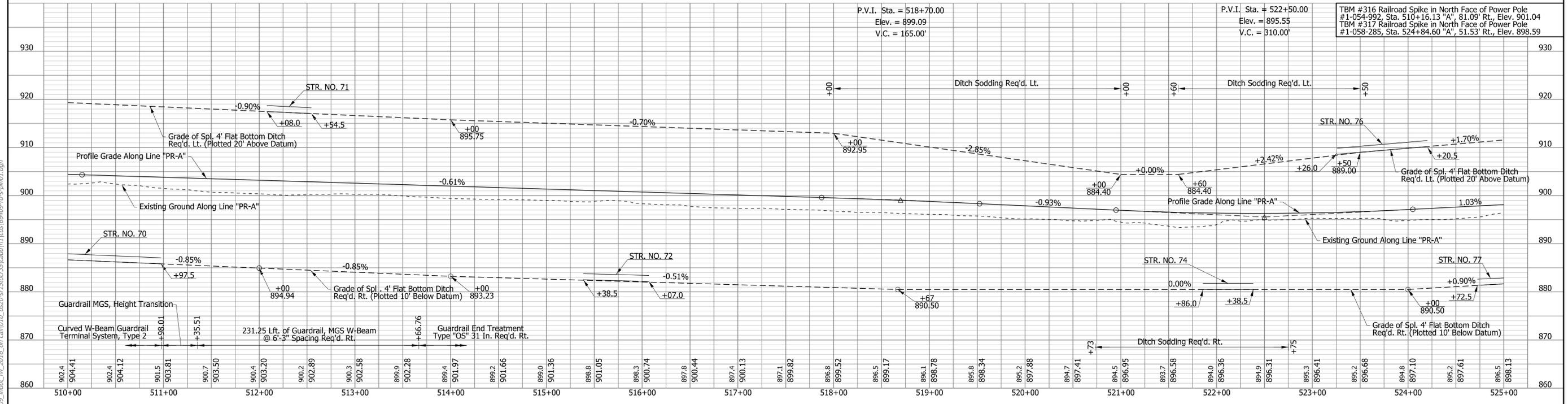
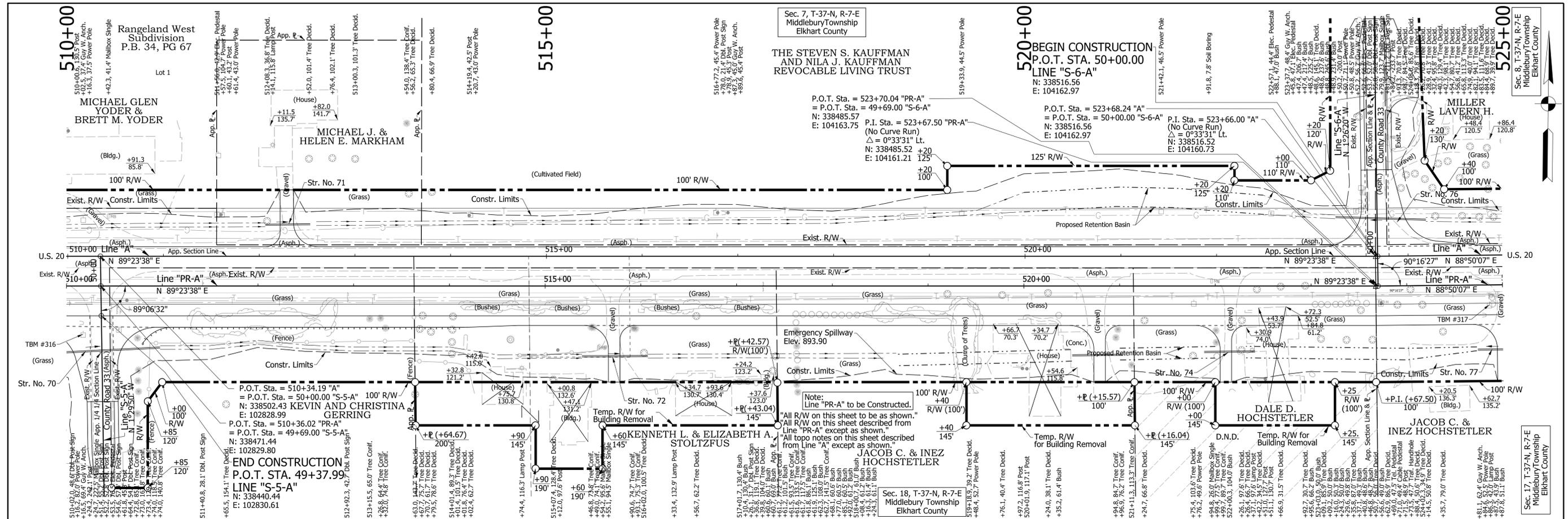
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DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION
ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	67 of 362
CONTRACT	PROJECT
R-39851	1600517

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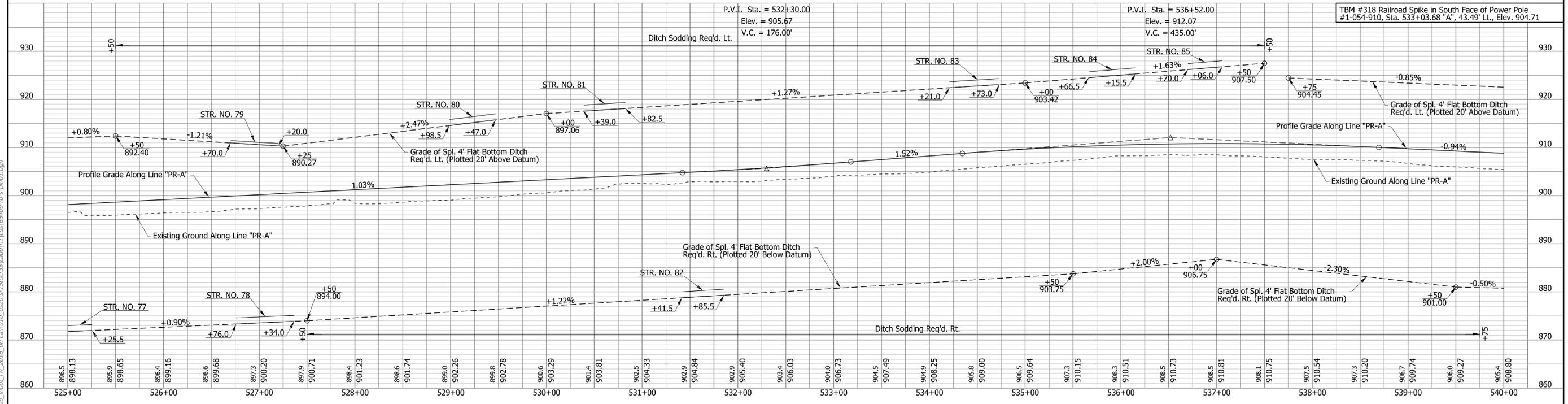
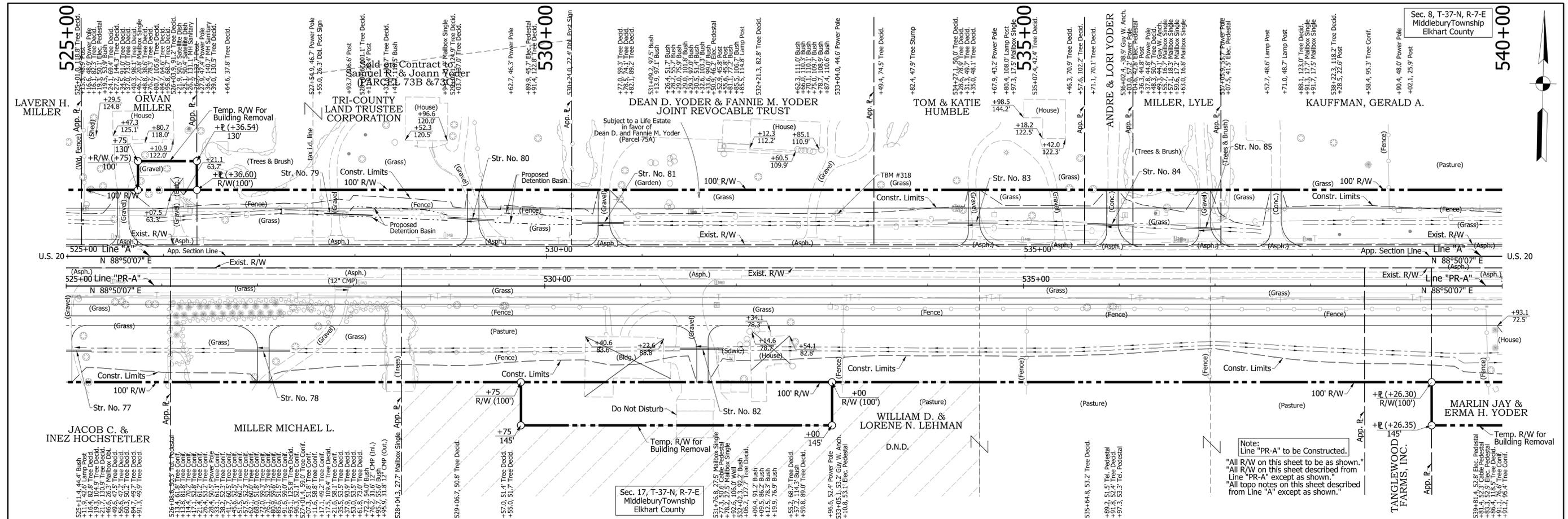
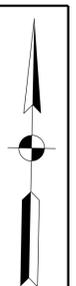
Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION
ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	68 of 362
CONTRACT	PROJECT
R-39851	1600517



Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

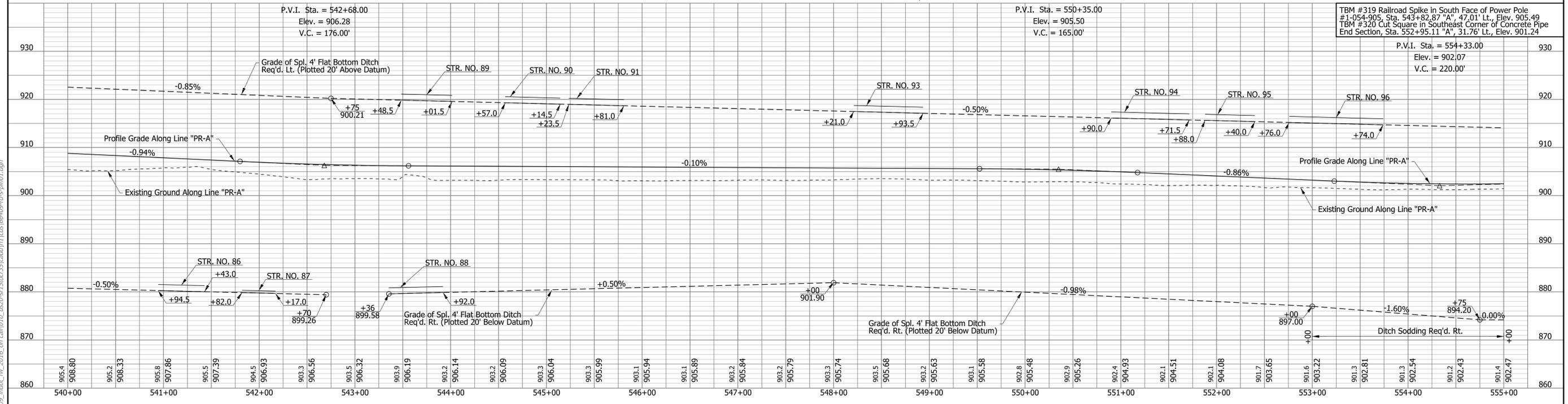
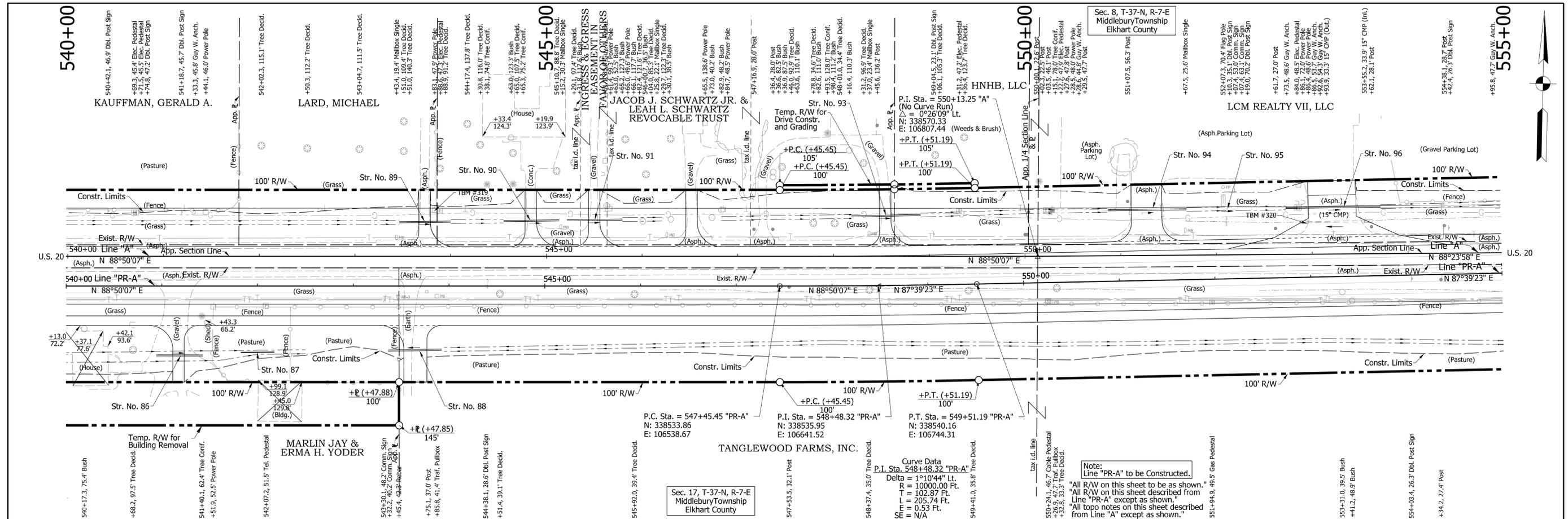
INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	69 of 362
CONTRACT	PROJECT
R-39851	1600517

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Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

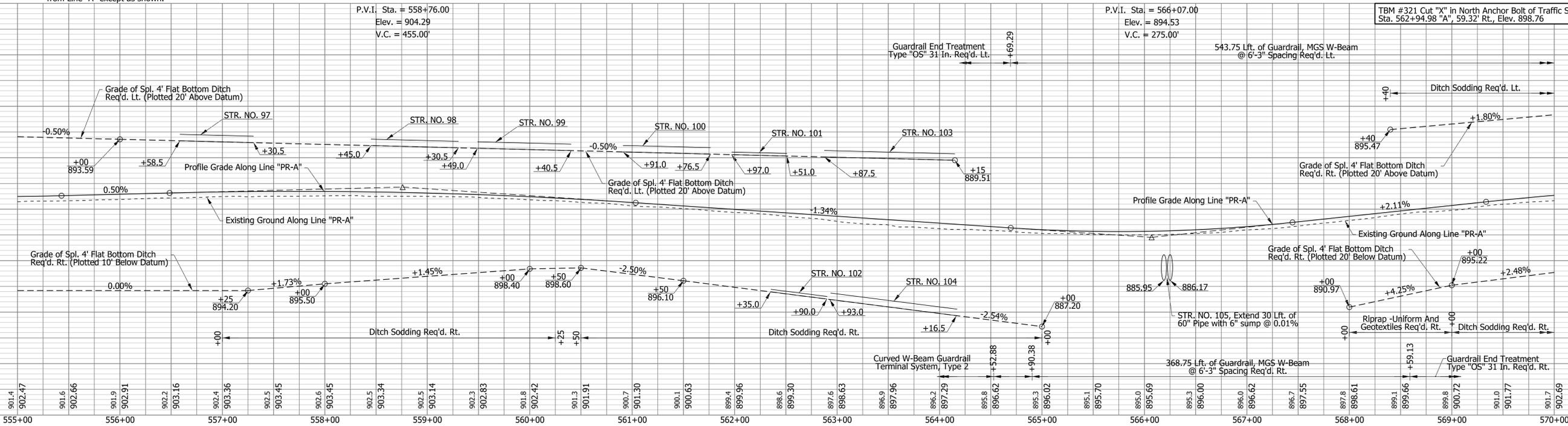
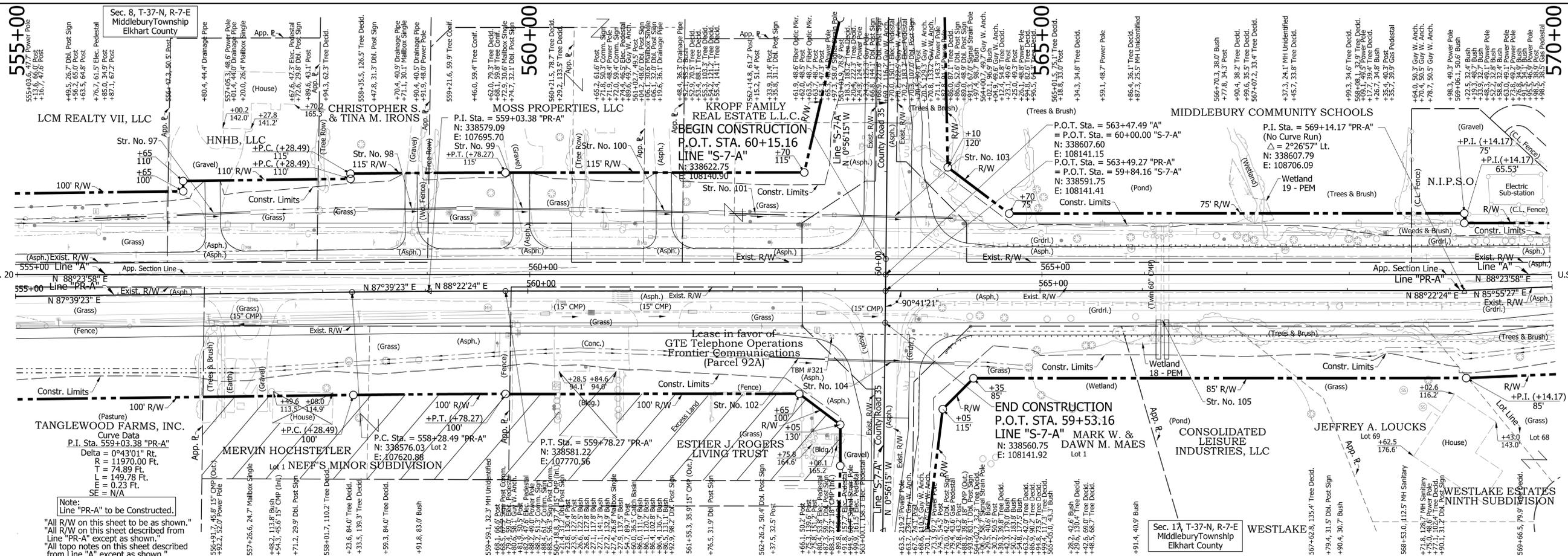
DRAFT
 NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA DEPARTMENT OF TRANSPORTATION
ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	70 of 362
CONTRACT	PROJECT
R-39851	1600517





Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

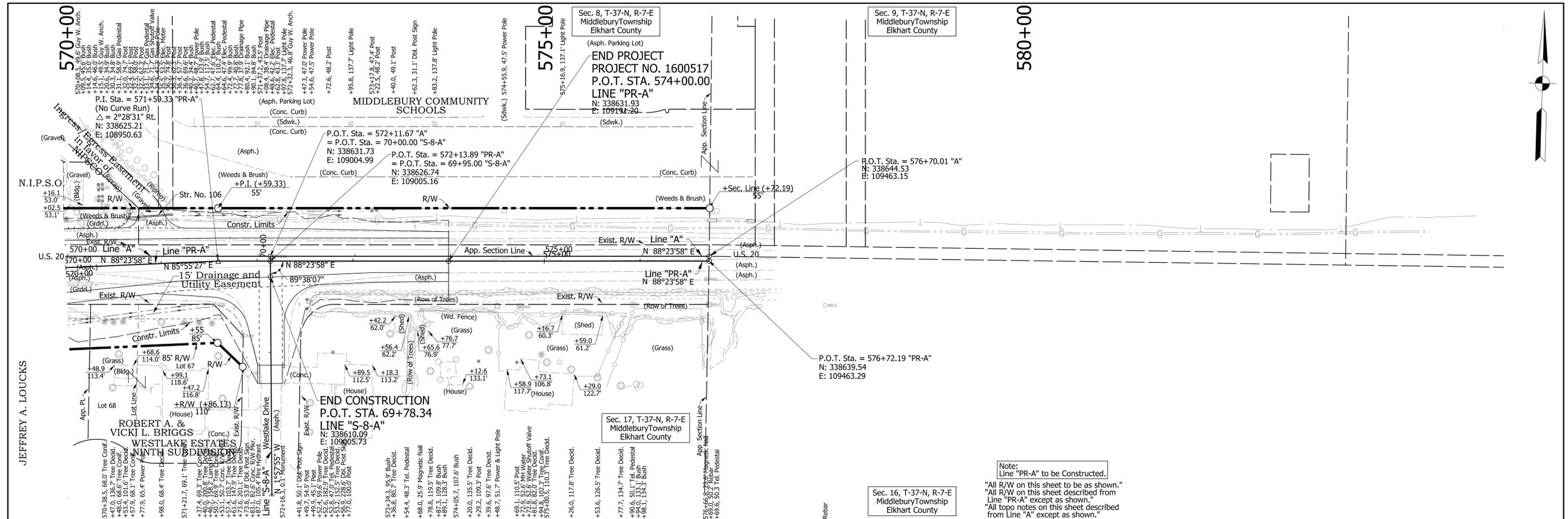
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

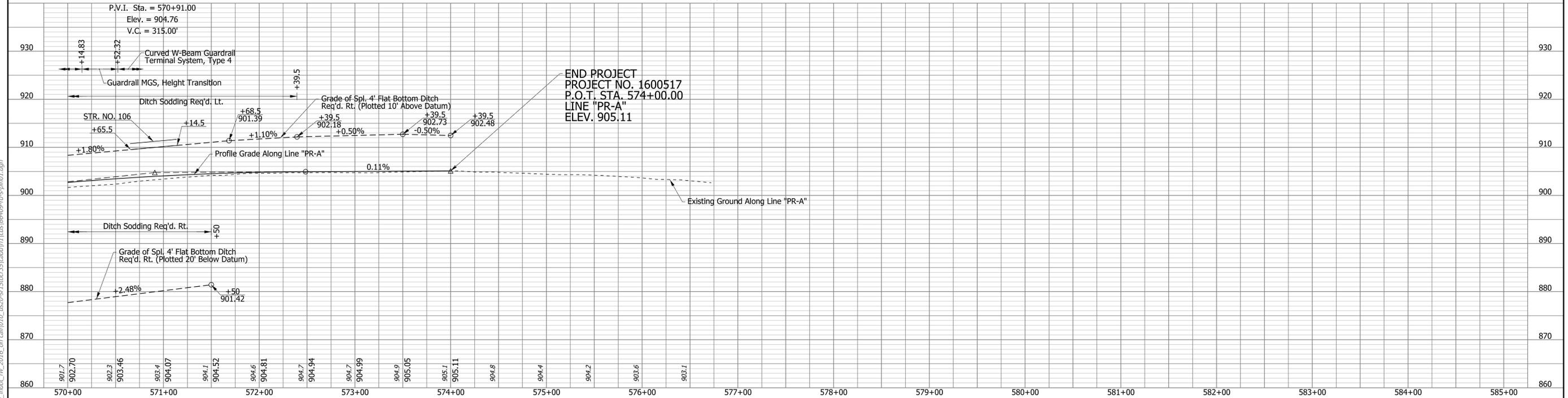
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1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	71 of 362
CONTRACT	PROJECT
R-39851	1600517

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Note:
Line "PR-A" to be Constructed.

"All R/W on this sheet to be as shown."
"All R/W on this sheet described from Line "PR-A" except as shown."
"All topo notes on this sheet described from Line "A" except as shown."



Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

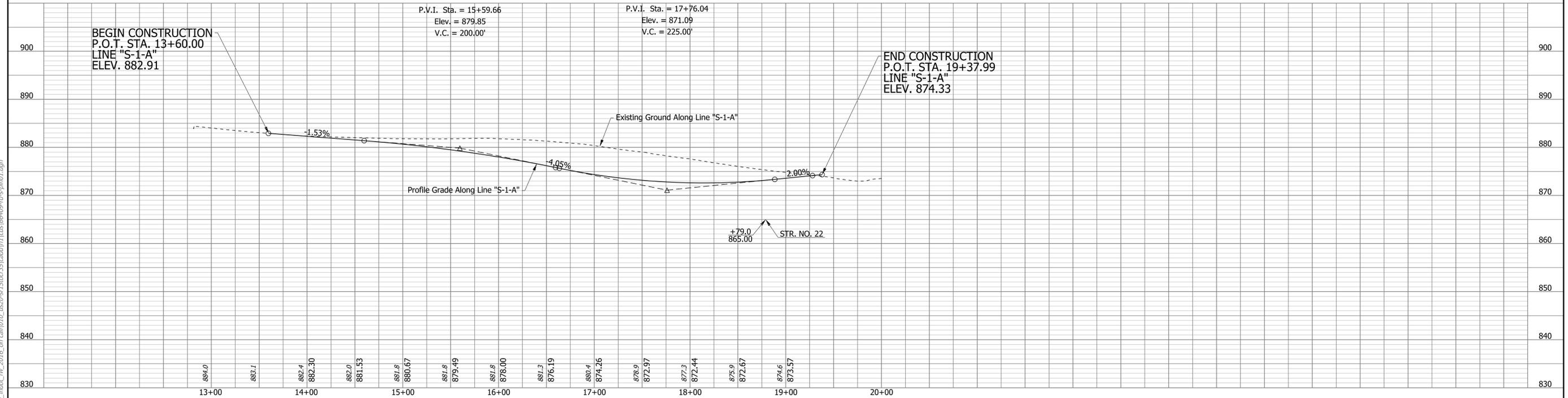
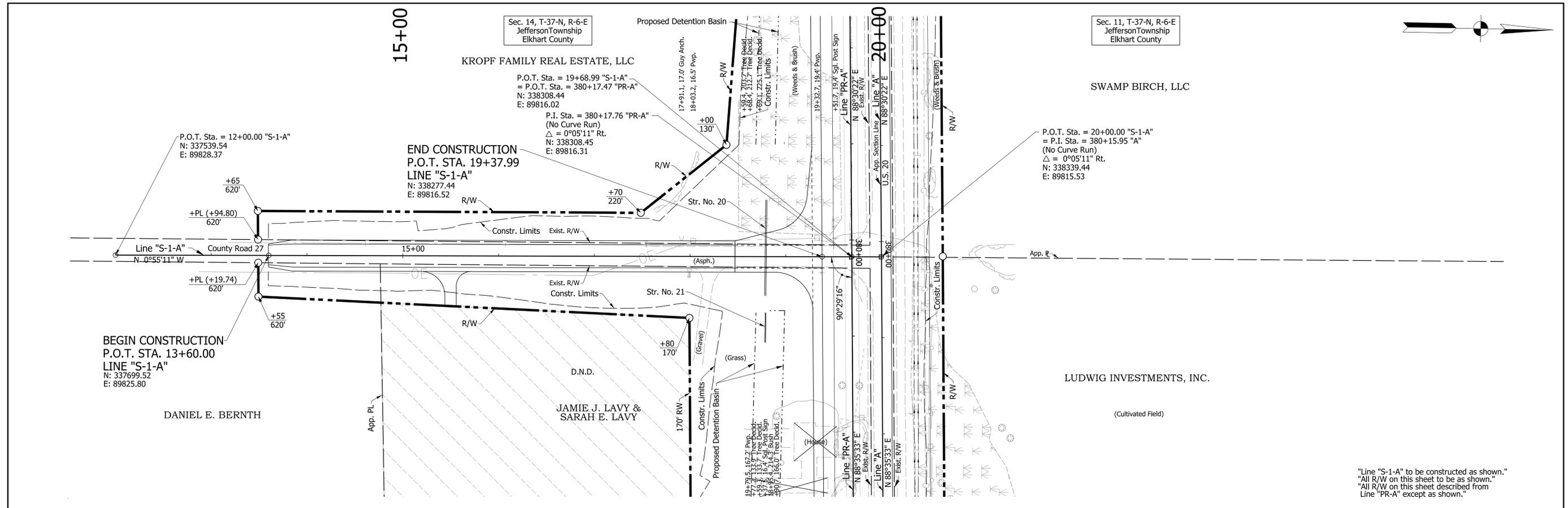
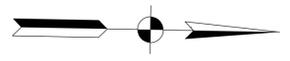
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	72 of 362
CONTRACT	PROJECT
R-39851	1600517

MShaffer
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 file: \\india\001\289\projects\66-09_inoc_fw_2016_on_call\010_us20-sr15ccr35\cadd\p1\cadd\66-09-d-s-ph01.dgn



"Line 'S-1-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All 'PR-A' on this sheet described from Line 'PR-A' except as shown."

Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

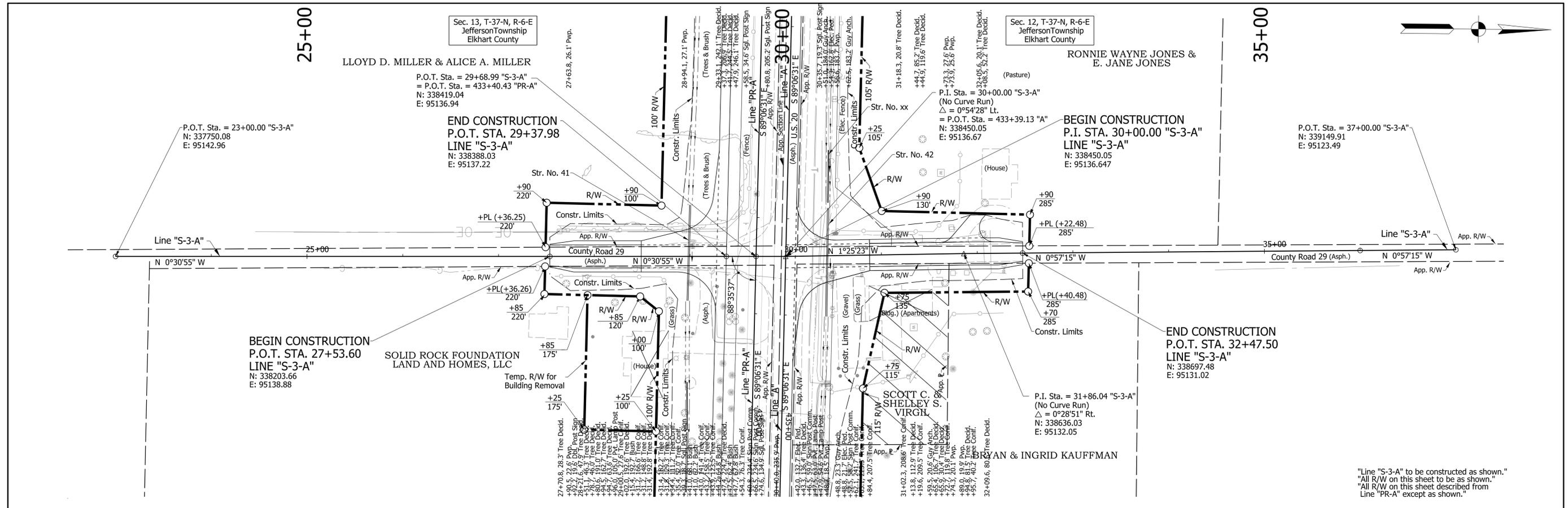
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
 DEPARTMENT OF TRANSPORTATION

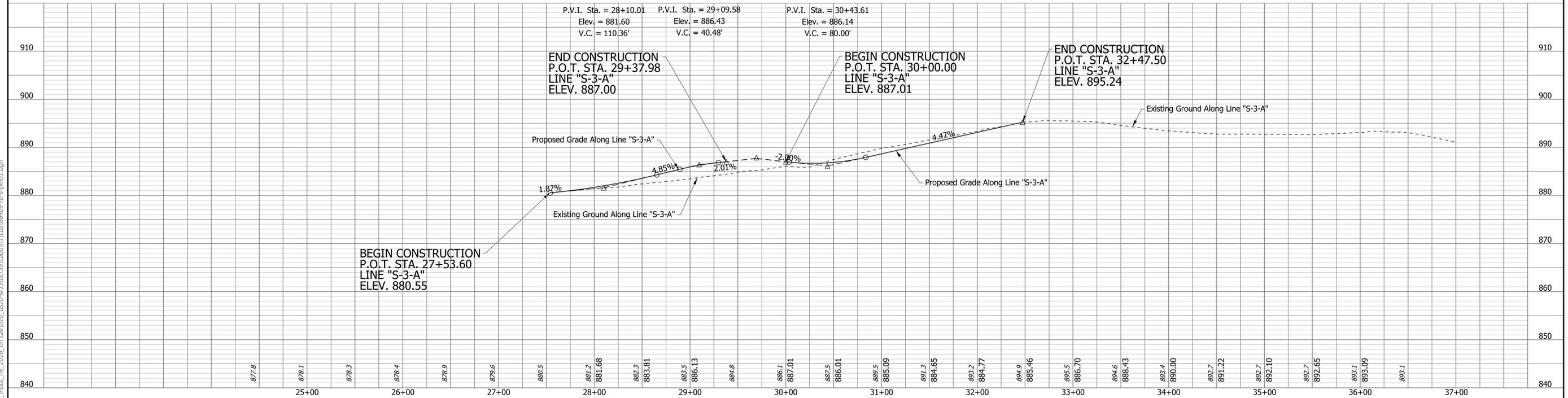
ROADWAY PLAN AND PROFILE
 LINE "S-1-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=50'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	PP-18
N/A	73	of 362
CONTRACT	PROJECT	
R-39851	1600517	

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"Line 'S-3-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All R/W on this sheet described from Line 'PR-A' except as shown."



Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

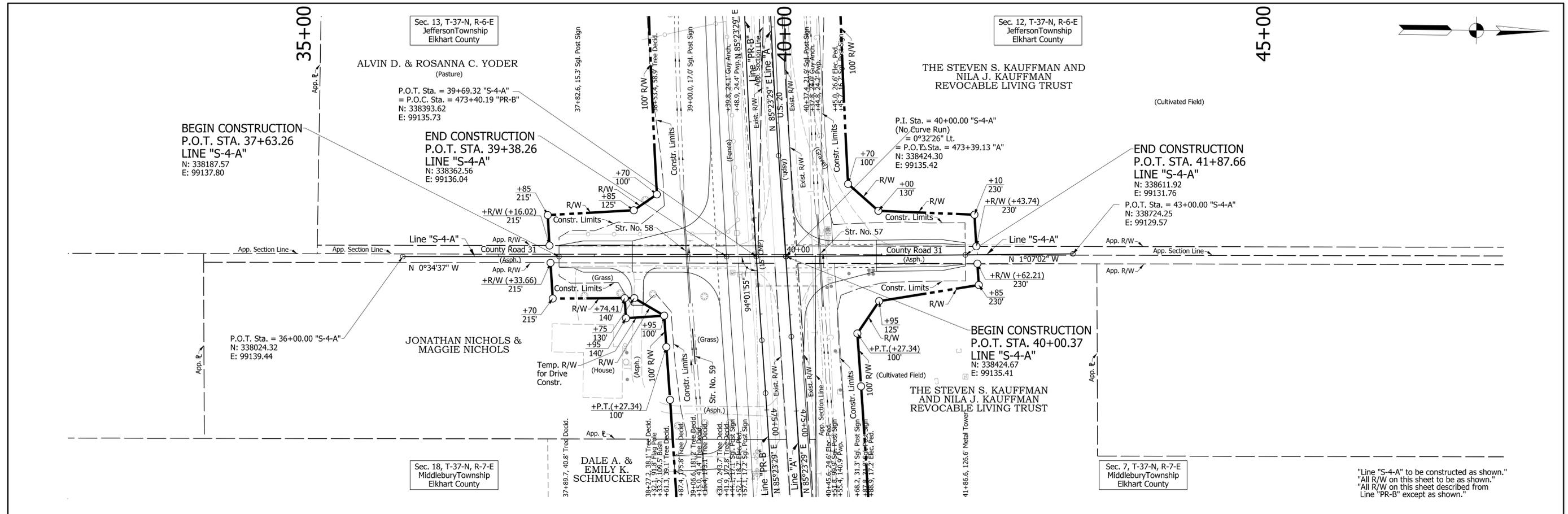
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
 DEPARTMENT OF TRANSPORTATION

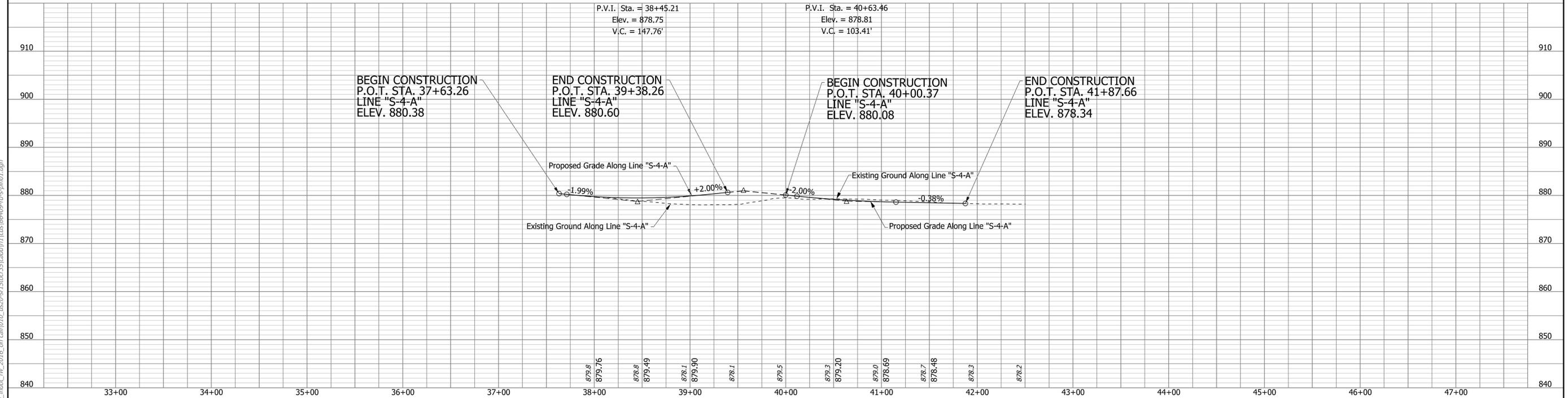
ROADWAY PLAN AND PROFILE
 LINE "S-3-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	75 of 362
CONTRACT	PROJECT
R-39851	1600517

dgarvin
 3/14/2019 4:06:02 pm
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"Line 'S-4-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All R/W on this sheet described from Line 'PR-B' except as shown."



Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

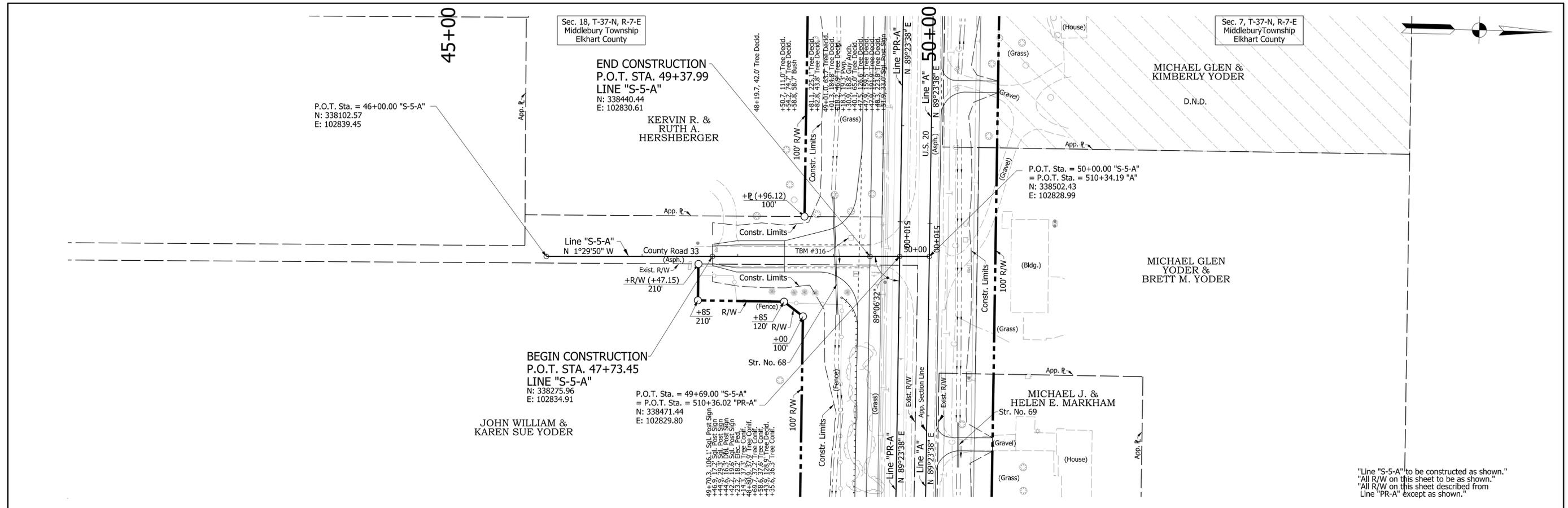
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DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
 DEPARTMENT OF TRANSPORTATION

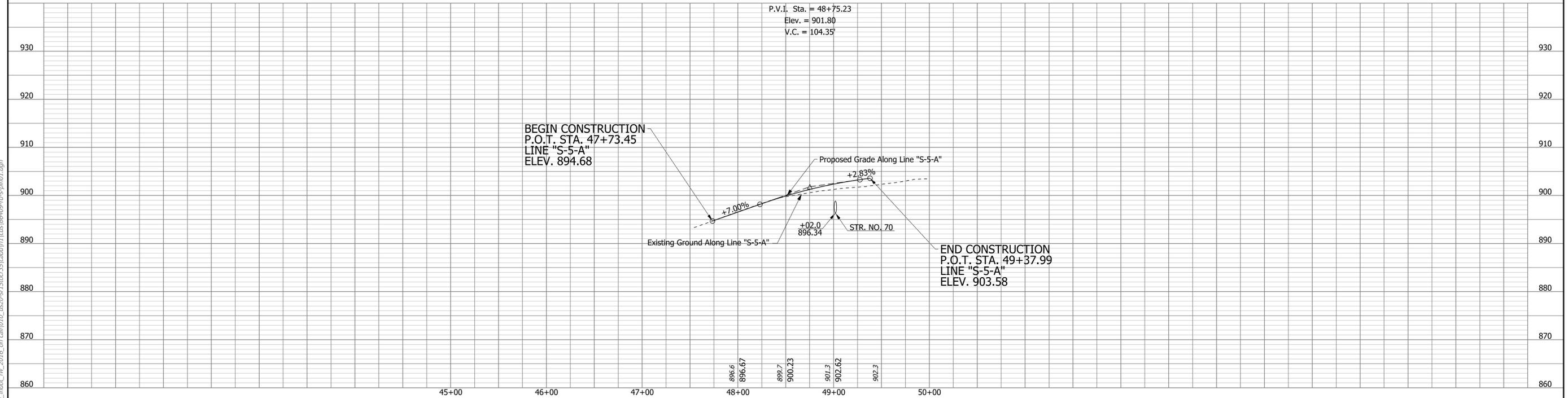
ROADWAY PLAN AND PROFILE
 LINE "S-4-A"

HORIZONTAL SCALE 1"=50'	BRIDGE FILE N/A
VERTICAL SCALE 1"=10'	DESIGNATION 1600517
SURVEY BOOK N/A	SHEETS 76 of 362
CONTRACT R-39851	PROJECT 1600517

MShaffer
 3/8/2019 4:42:15 pm
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"Line 'S-5-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All R/W on this sheet described from Line 'PR-A' except as shown."



Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

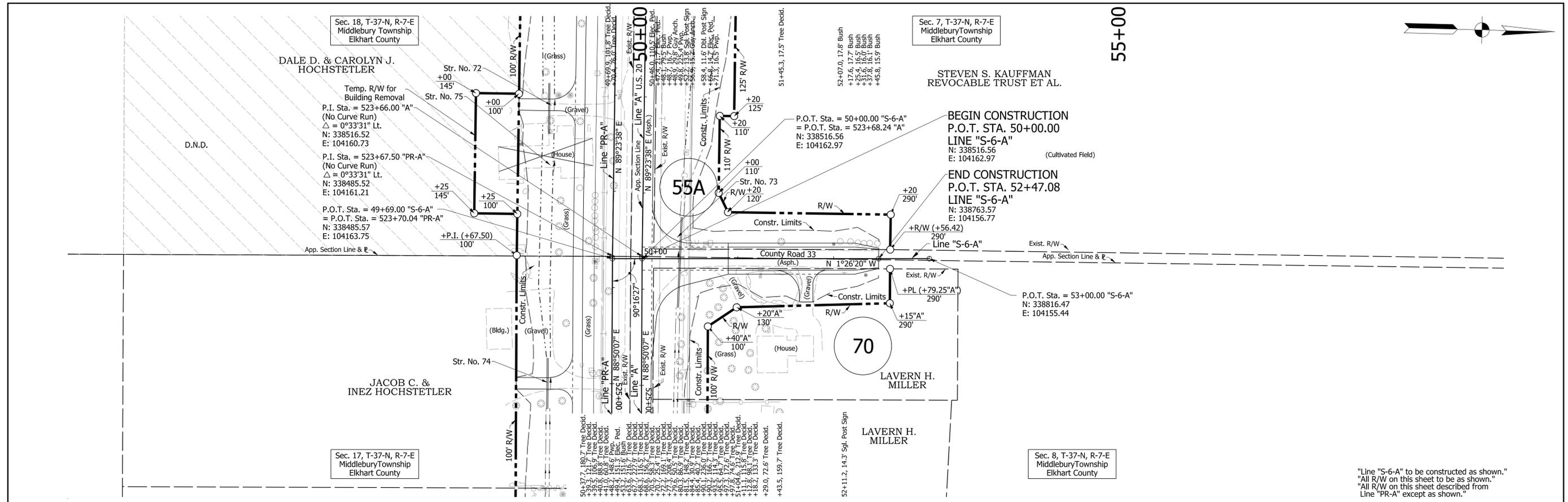
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
 DEPARTMENT OF TRANSPORTATION

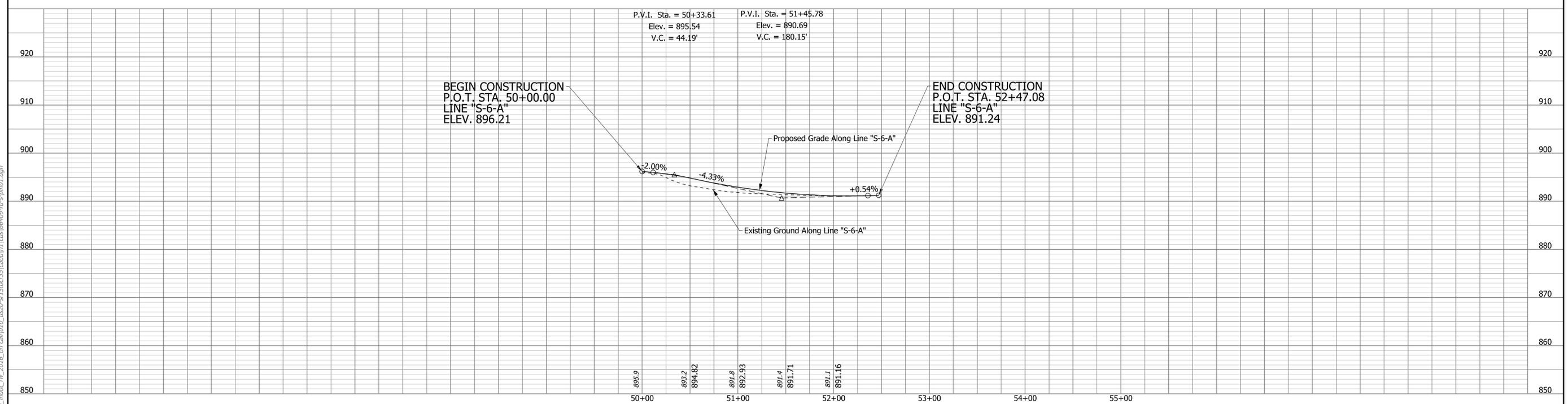
ROADWAY PLAN AND PROFILE
 LINE "S-5-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=50'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	PP-22
N/A	77	of 362
CONTRACT	PROJECT	
R-39851	1600517	

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"Line 'S-6-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All R/W on this sheet described from Line 'PR-A' except as shown."



Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

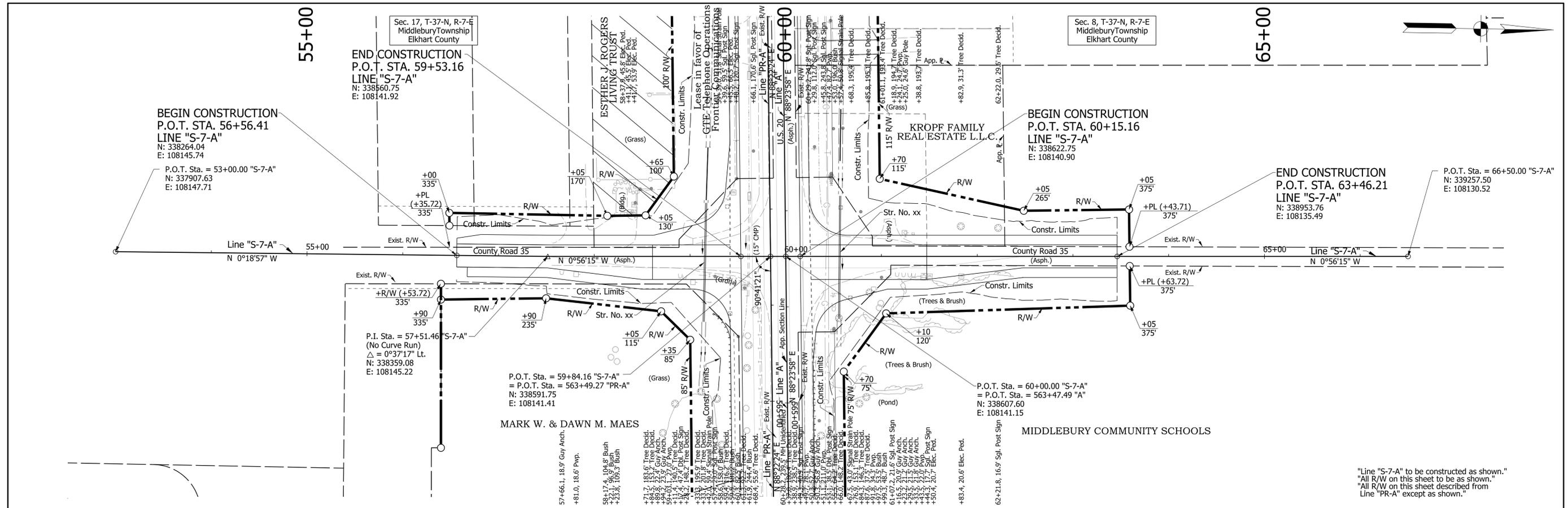
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DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
 DEPARTMENT OF TRANSPORTATION

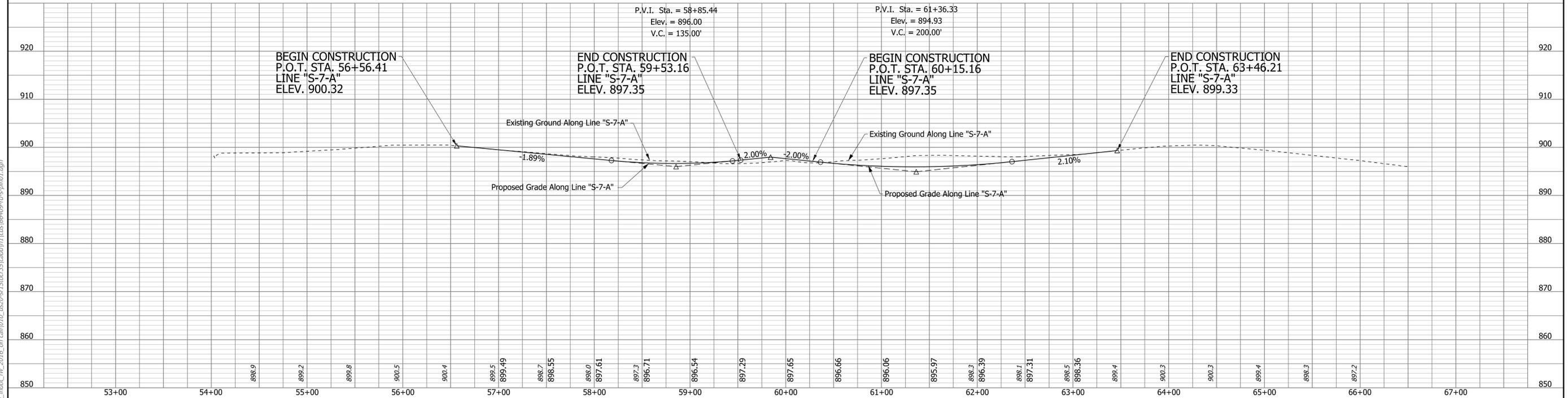
ROADWAY PLAN AND PROFILE
 LINE "S-6-A"

HORIZONTAL SCALE 1"=50'	BRIDGE FILE N/A
VERTICAL SCALE 1"=10'	DESIGNATION 1600517
SURVEY BOOK N/A	SHEETS 78 of 362
CONTRACT R-39851	PROJECT 1600517

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"Line 'S-7-A' to be constructed as shown."
 "All R/W on this sheet to be as shown."
 "All R/W on this sheet described from Line 'PR-A' except as shown."



Notes:
 For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
 NOT FOR CONSTRUCTION

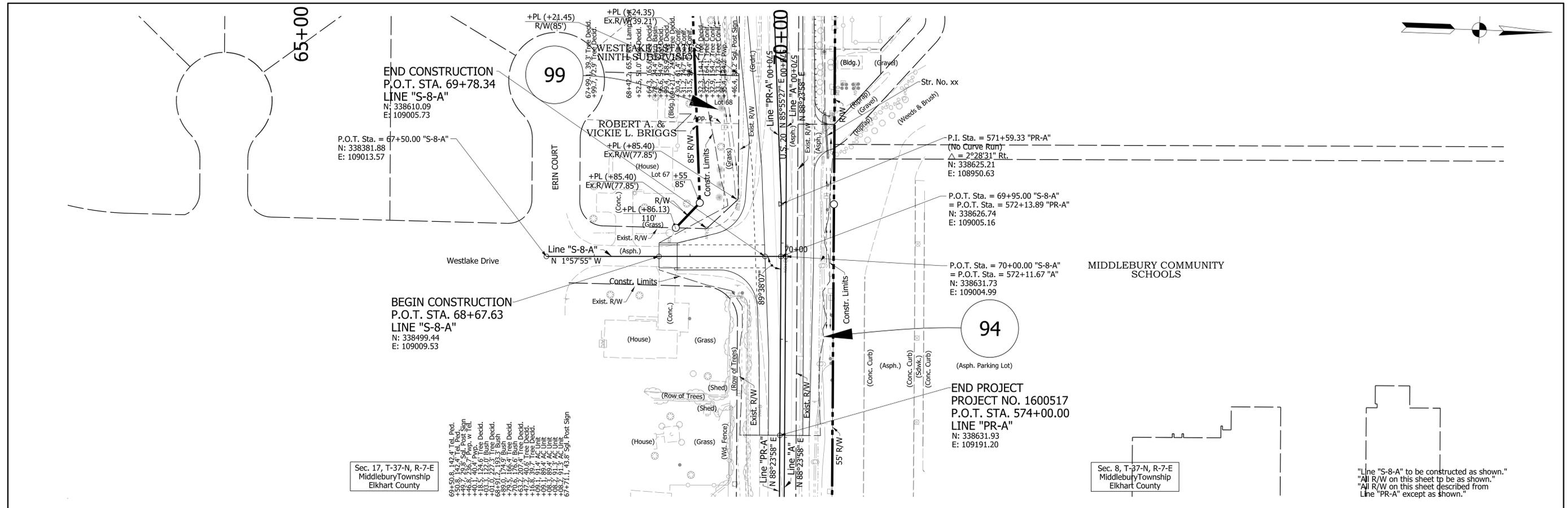
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
 DEPARTMENT OF TRANSPORTATION

ROADWAY PLAN AND PROFILE
 LINE "S-7-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=50'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
N/A	79 of 362
CONTRACT	PROJECT
R-39851	1600517

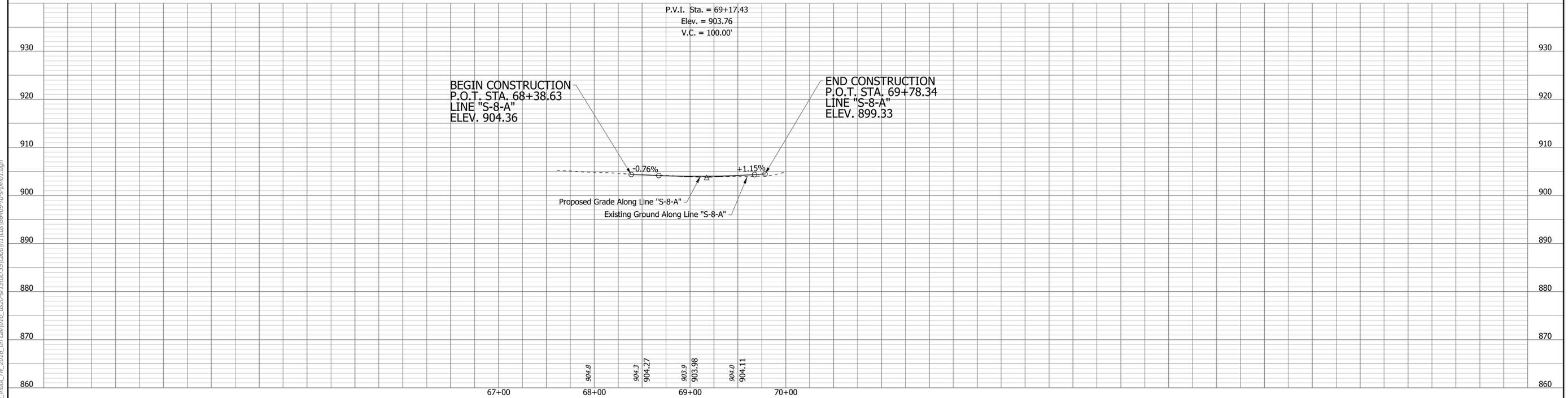
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Sec. 17, T-37-N, R-7-E
Middlebury Township
Elkhart County

Sec. 8, T-37-N, R-7-E
Middlebury Township
Elkhart County

"Line 'S-8-A' to be constructed as shown."
"All R/W on this sheet to be as shown."
"All 'PR-A' on this sheet described from
Line 'PR-A' except as shown."



Notes:
For Drainage Structure Notes and Locations, See Construction Detail Sheets.

DRAFT
NOT FOR CONSTRUCTION

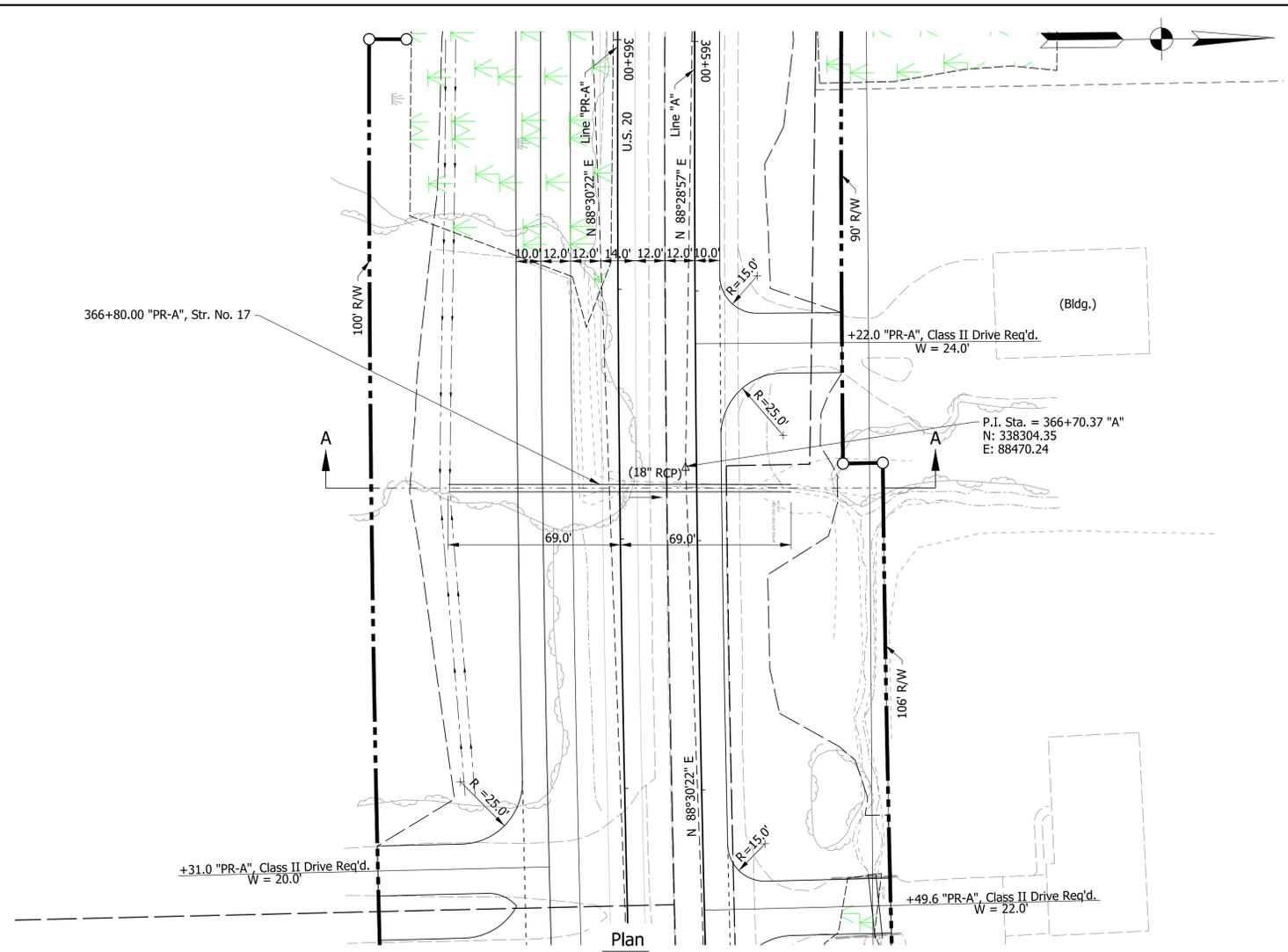
RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____
DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

**INDIANA
DEPARTMENT OF TRANSPORTATION**

**ROADWAY PLAN AND PROFILE
LINE "S-8-A"**

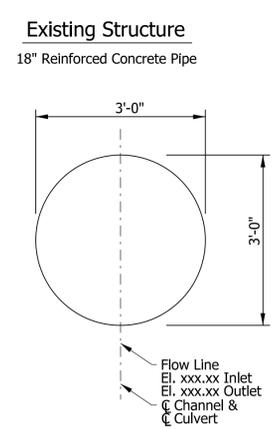
HORIZONTAL SCALE 1"=50'	BRIDGE FILE N/A
VERTICAL SCALE 1"=10'	DESIGNATION 1600517
SURVEY BOOK N/A	SHEETS 80 of 362
CONTRACT R-39851	PROJECT 1600517

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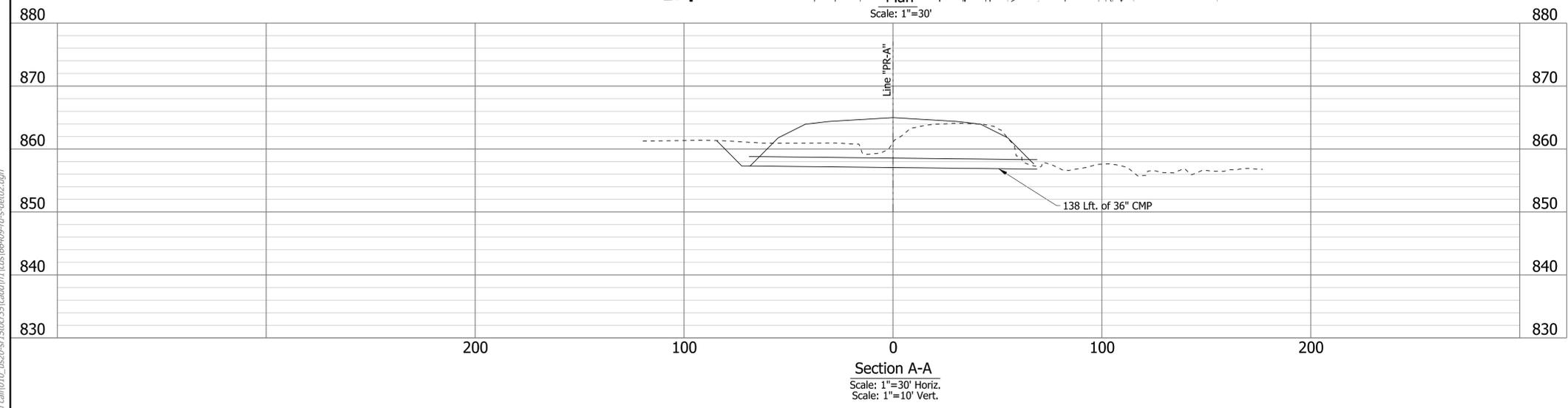


Hydraulic Data

Drainage Area	= 0.05225 sq. mi.
Discharge (Q100)	= 19.1 cfs
Q100 Elev. (Natural)	= 857.80 ft.
Q100 Headwater Elev. (Existing Channel)	= 863.49 ft.
Q100 Headwater Elev. (Proposed Channel)	= 857.47 ft.
Waterway Opening Required (Below Q100)	= 1.8581 sft.
Back Water @ Q100	= 1.16 ft.
Velocity @ Q50	= 5.70 ft./sec. D.S.



End Elevation
Not to Scale



dgarwin
 5/29/2019 7:14:03 pm
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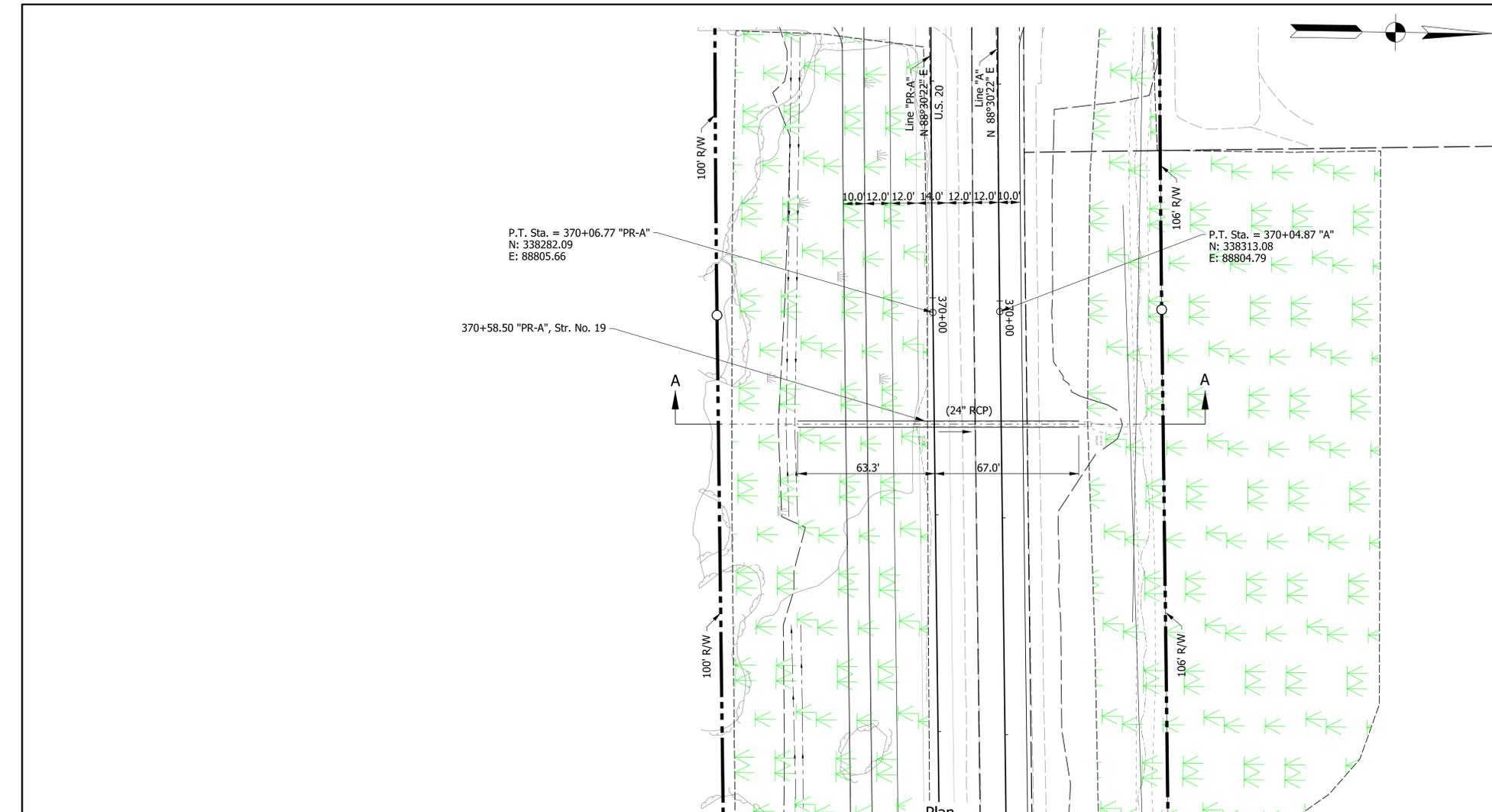
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____
DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
DEPARTMENT OF TRANSPORTATION

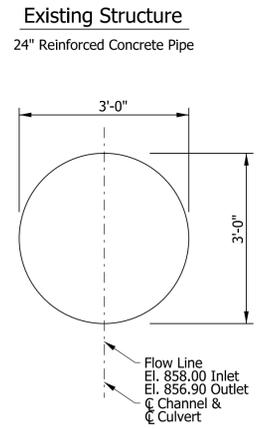
REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 17
STA. 366+80 LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-01
ELECTRONIC	81	of 416
CONTRACT	PROJECT	
R-39851	1600517	

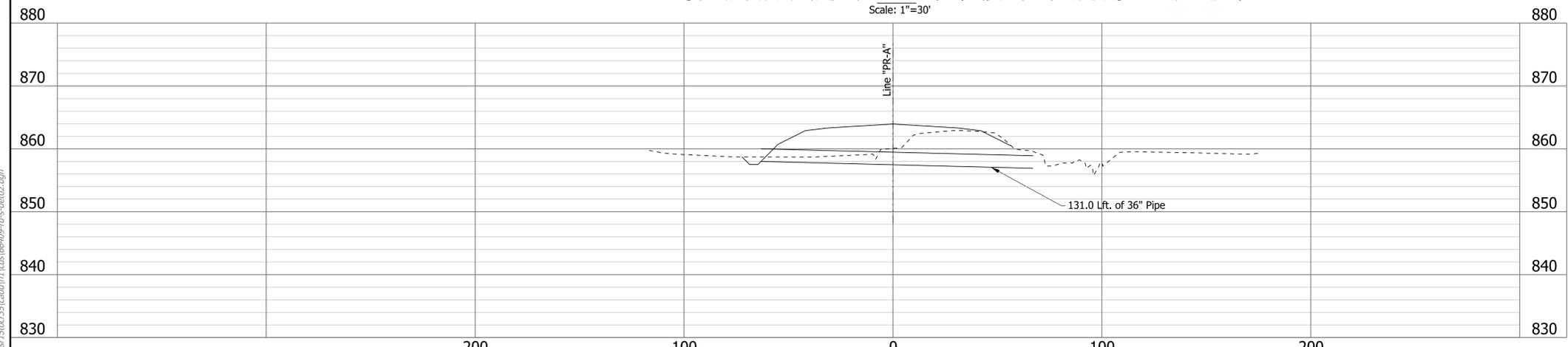


Hydraulic Data

Drainage Area	= 0.08907 sq. mi.
Discharge (Q100)	= 19.1 cfs
Q100 Elev. (Natural)	= 857.74 ft.
Q100 Headwater Elev. (Existing Channel)	= 860.05 ft.
Q100 Headwater Elev. (Proposed Channel)	= 860.10 ft.
Waterway Opening Required (Below Q100)	= 1.4481 sft.
Back Water @ Q100	= 1.26 ft.
Velocity @ Q50	= 5.70 ft./sec. D.S.



End Elevation
Not to Scale



Section A-A
Scale: 1"=30' Horiz.
Scale: 1"=10' Vert.

DRAFT
NOT FOR CONSTRUCTION

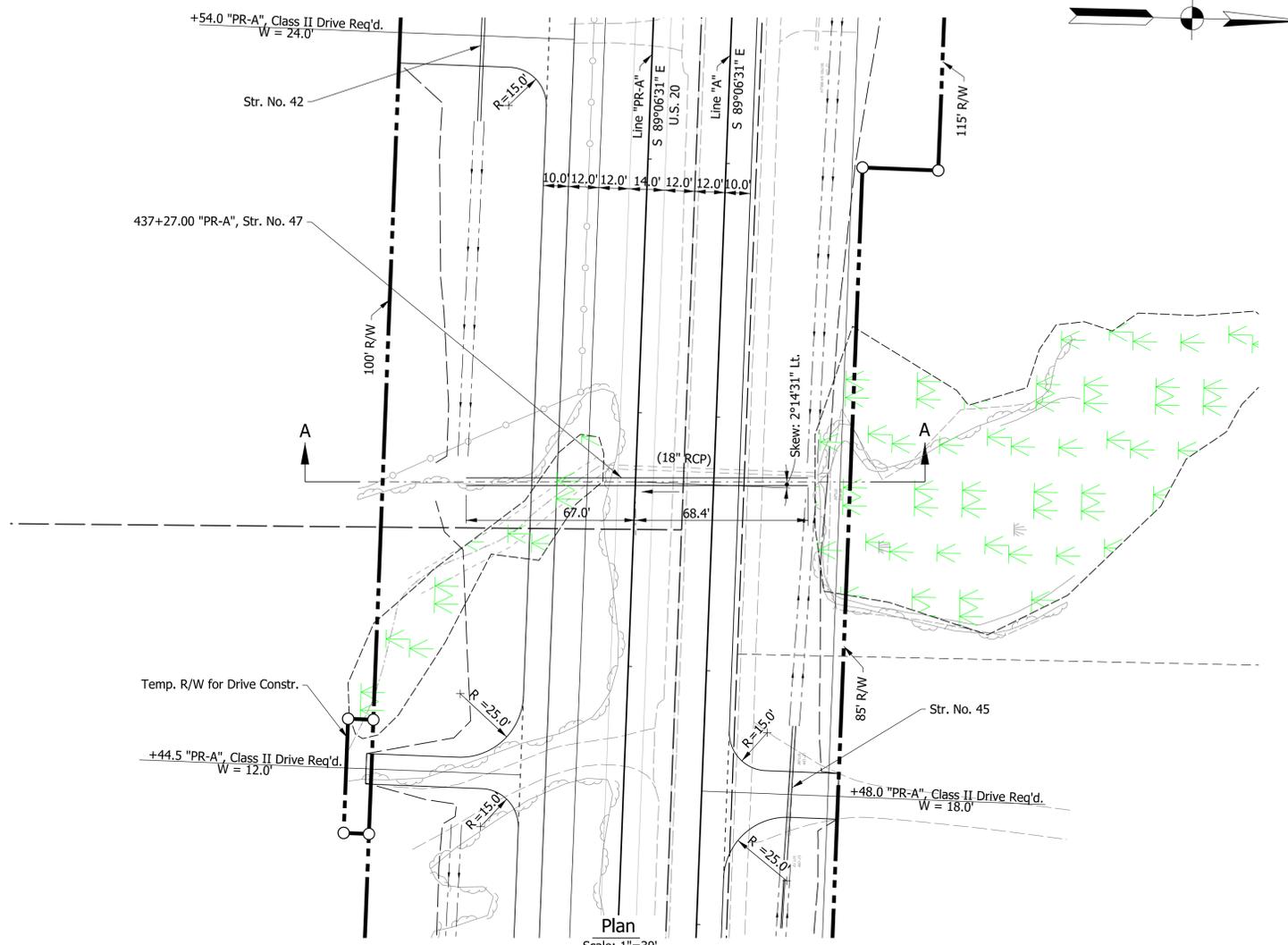
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 19
STA. 370+58.50 LINE "PR-A"

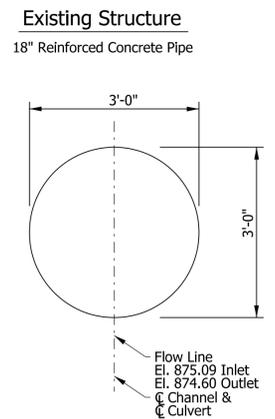
HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-02
ELECTRONIC	82 of	416
CONTRACT	PROJECT	
R-39851	1600517	

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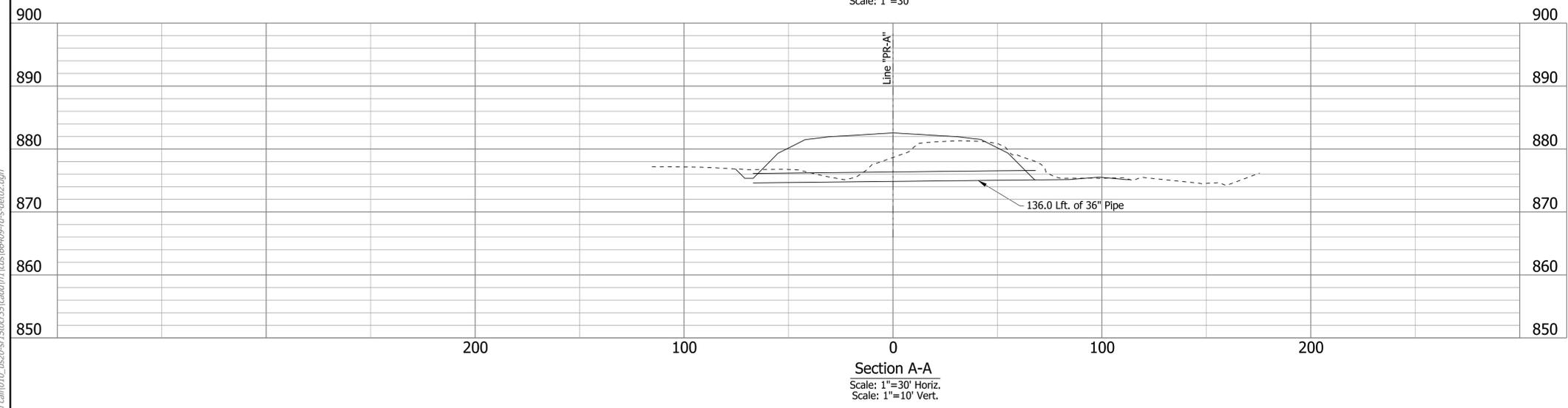


Hydraulic Data

Drainage Area	= 0.0280 sq. mi.
Discharge (Q100)	= 22.4 cfs
Q100 Elev. (Natural)	= 875.24 ft.
Q100 Headwater Elev. (Existing Channel)	= 881.02 ft.
Q100 Headwater Elev. (Proposed Channel)	= 877.55 ft.
Waterway Opening Required (Below Q100)	= 1.0583 sft.
Back Water @ Q100	= 1.79 ft.
Velocity @ Q50	= 6.02 ft./sec. D.S.



End Elevation
Not to Scale



dgarwin
 5/29/2019 7:14:04 pm
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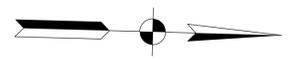
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____
DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 47
STA. 437+27 LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-03
ELECTRONIC	83	of 416
CONTRACT	PROJECT	
R-39851	1600517	

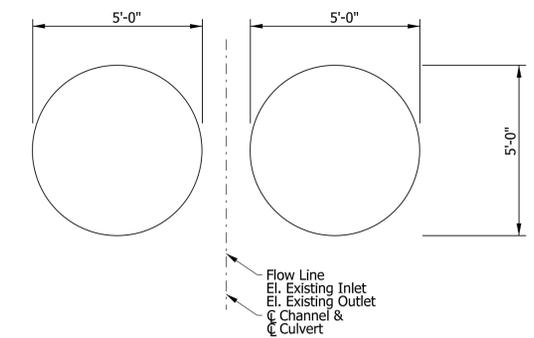


Hydraulic Data

Drainage Area	= 0.4866 sq. mi.
Discharge (Q100)	= 162.0 cfs
Q100 Elev. (Natural)	= 886.75 ft.
Q100 Headwater Elev. (Existing Channel)	= 890.46 ft.
Q100 Headwater Elev. (Proposed Channel)	= 890.76 ft.
Waterway Opening Required (Below Q100)	= 4.427 sft.
Back Water @ Q100	= 3.52 ft.
Velocity @ Q50	= 7.77 ft./sec. D.S.

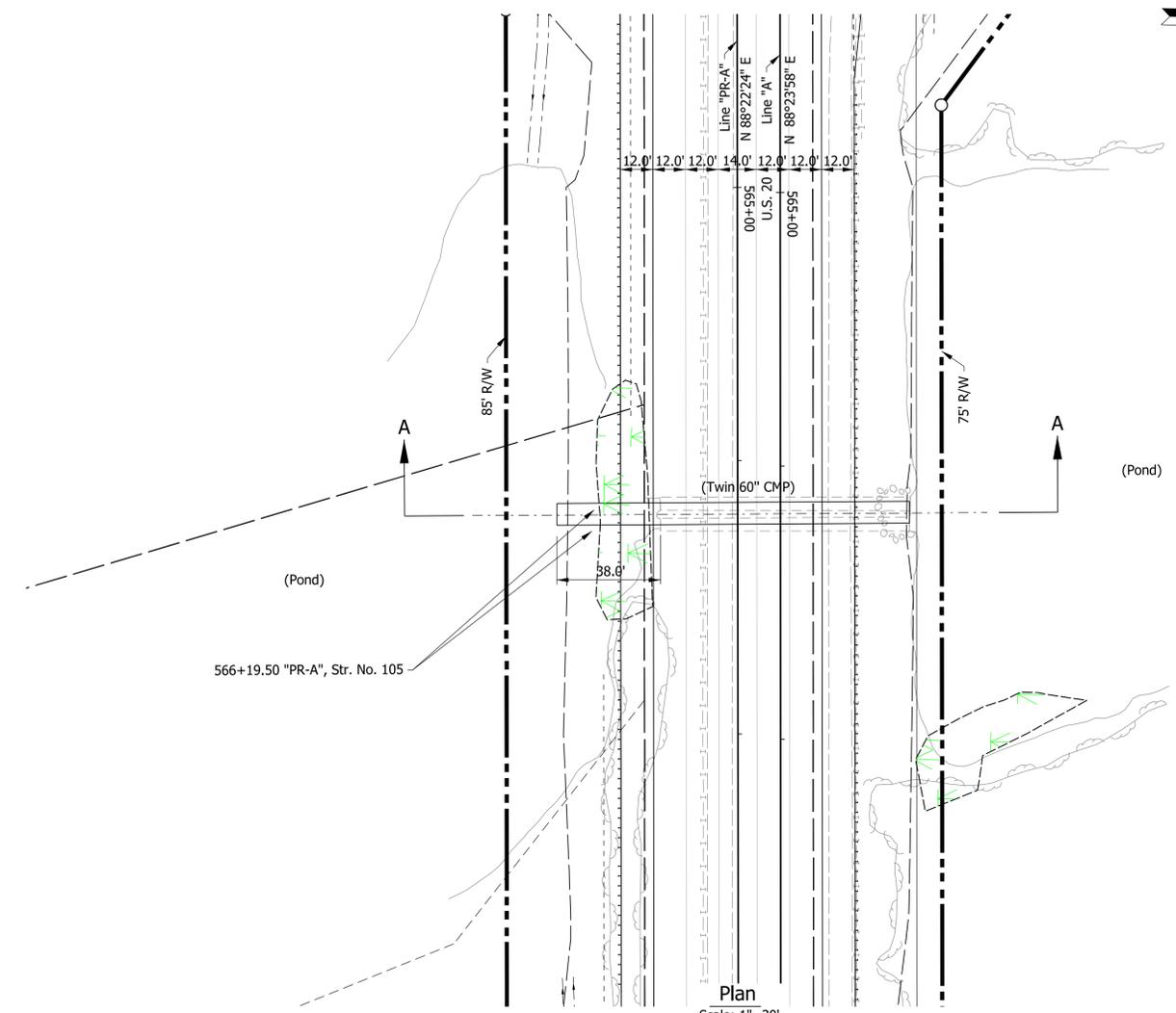
Existing Structure

Twin 60" Corrugated Metal Pipe

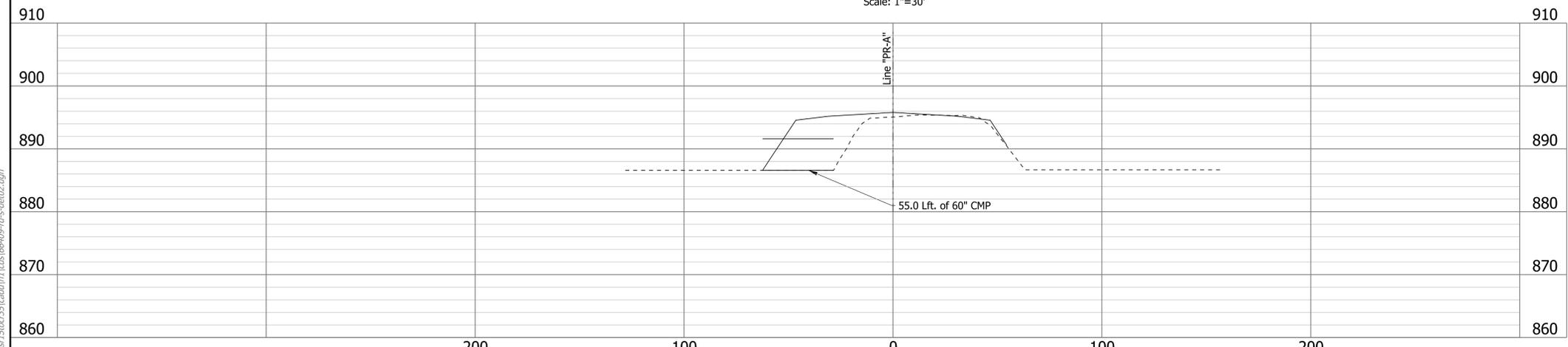


End Elevation

Not to Scale



Plan
Scale: 1"=30'



Section A-A
Scale: 1"=30' Horiz.
Scale: 1"=10' Vert.

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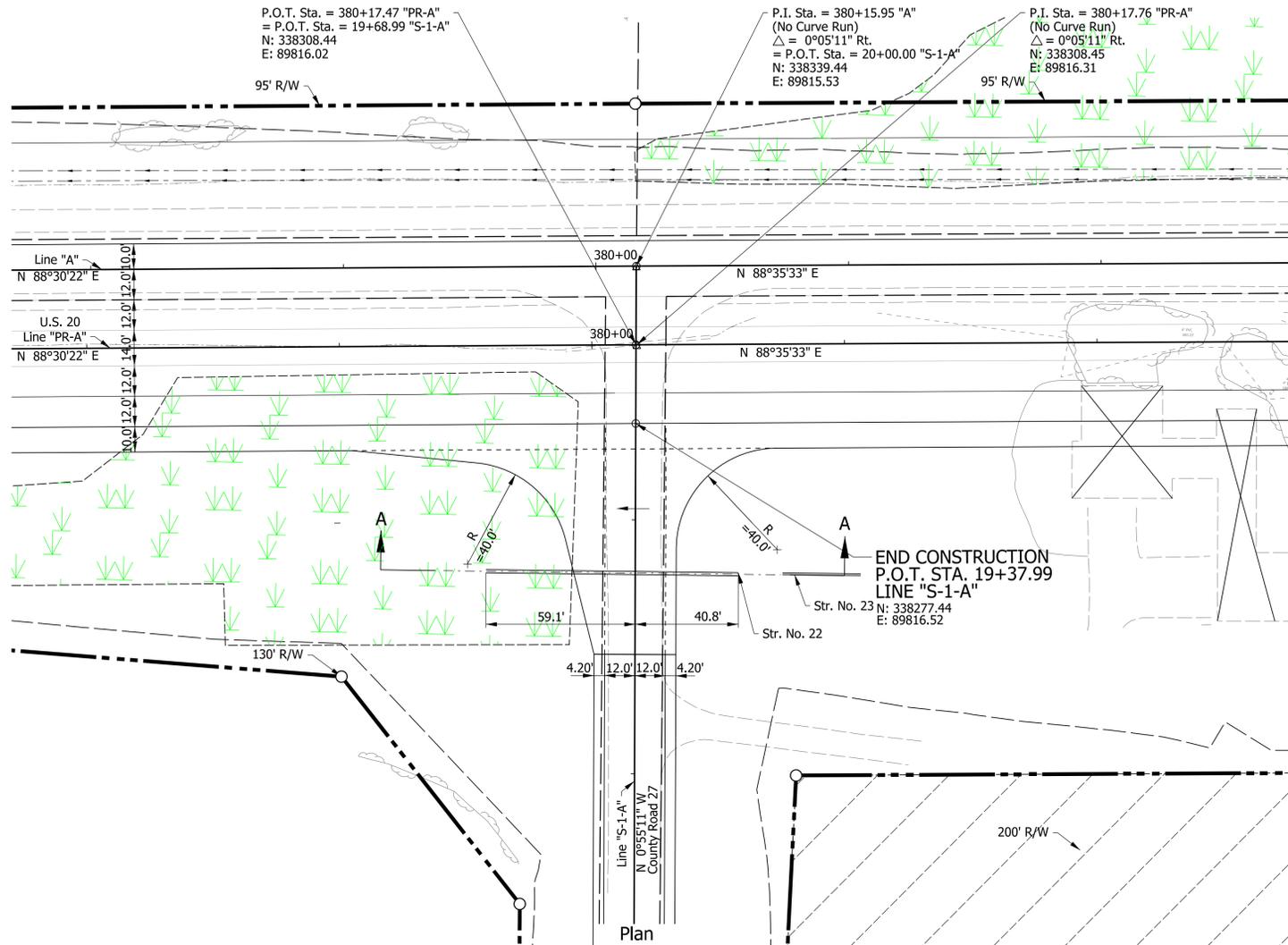
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____
DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
DEPARTMENT OF TRANSPORTATION

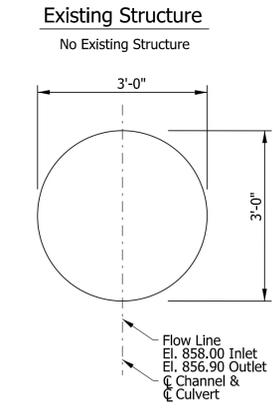
REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 105
STA. 566+19.50 LINE "PR-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-05
ELECTRONIC	85	of 416
CONTRACT	PROJECT	
R-39851	1600517	

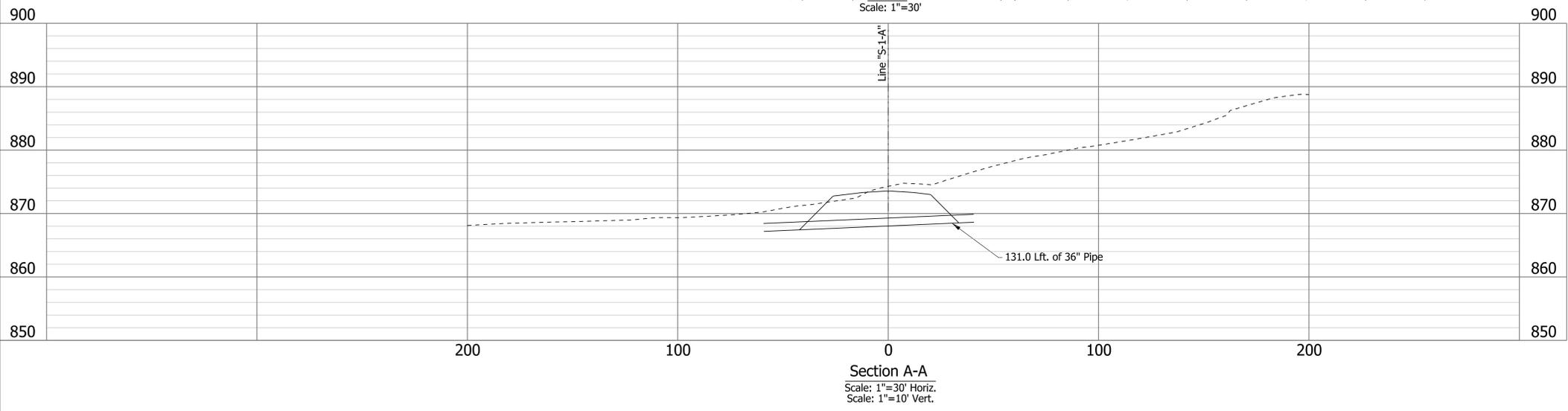


Hydraulic Data

Drainage Area	= 0.0553 sq. mi.
Discharge (Q100)	= 10.8 cfs
Q100 Elev. (Natural)	= 870.41 ft.
Q100 Headwater Elev. (Proposed Channel)	= 871.97 ft.
Waterway Opening Required (Below Q100)	= 1.0362 sft.
Back Water @ Q100	= 0.81 ft.
Velocity @ Q50	= 4.72 ft./sec. D.S.



End Elevation
Not to Scale



dgarwin
 5/29/2019 7:14:06 pm
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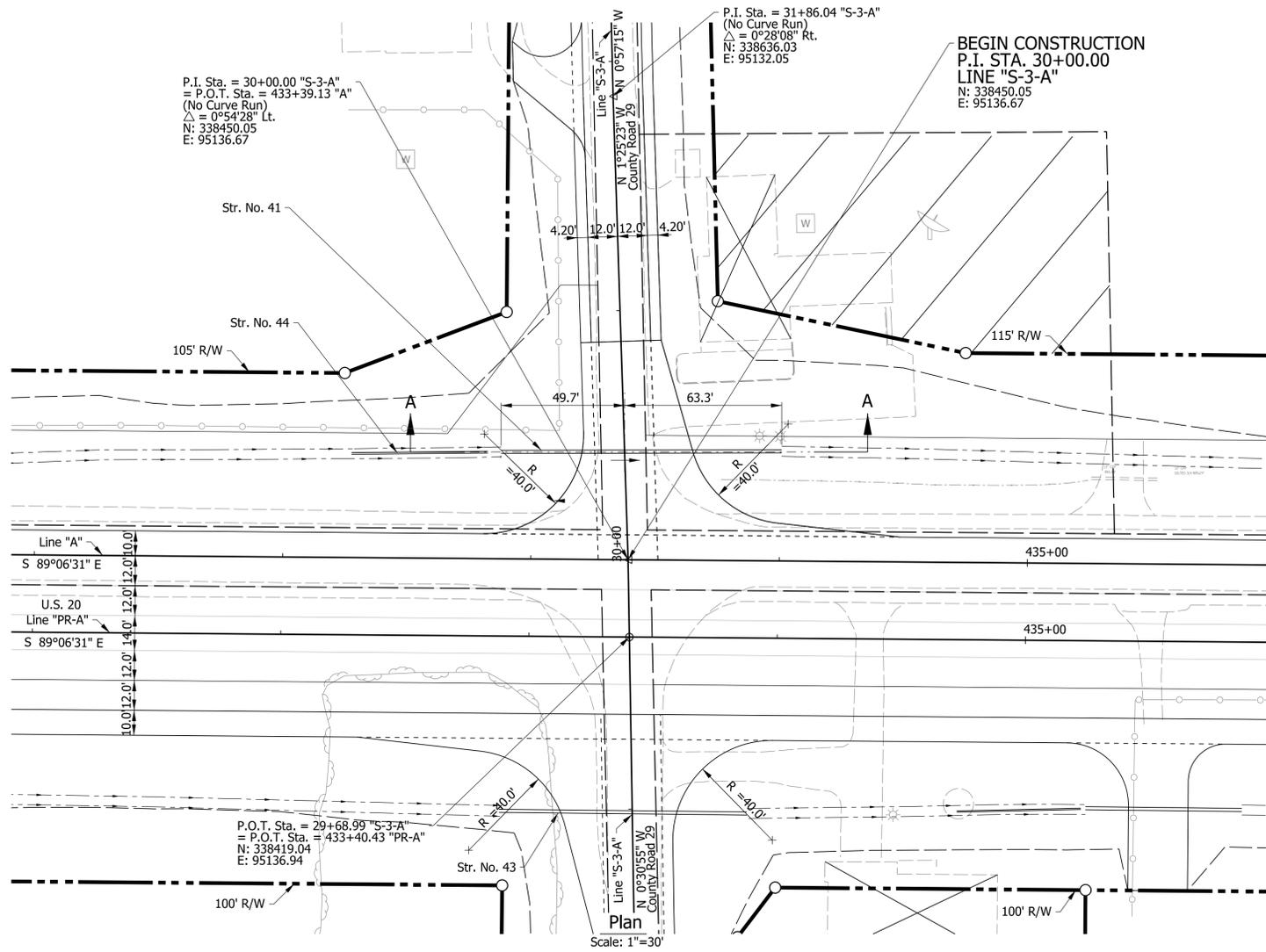
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

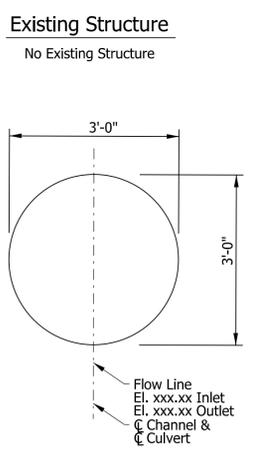
REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 22
STA. 18+79 LINE "S-1-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-06
ELECTRONIC	86	of 416
CONTRACT	PROJECT	
R-39851	1600517	

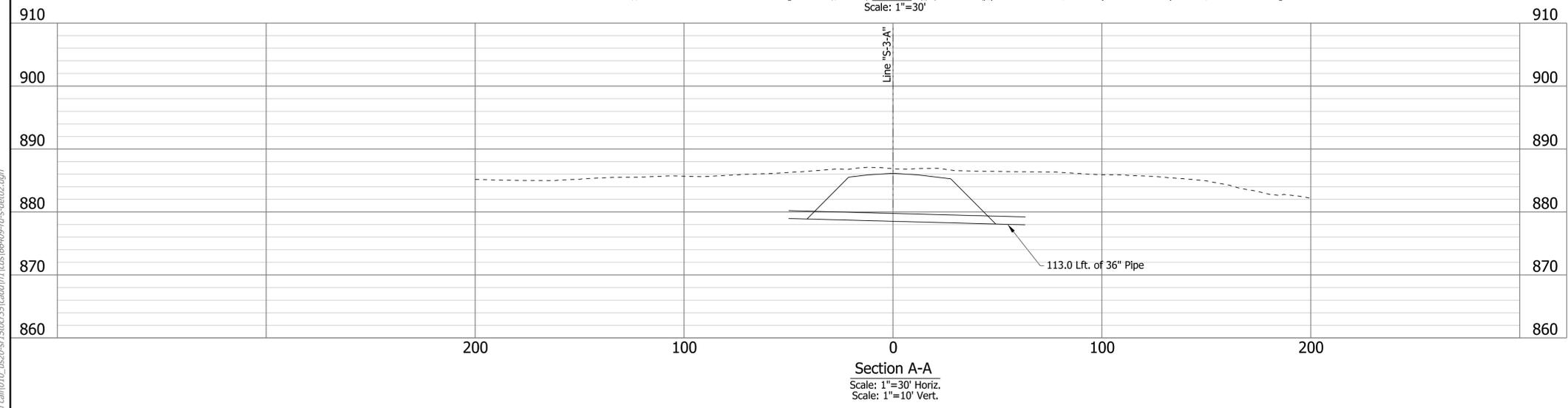


Hydraulic Data

Drainage Area	= 0.0118 sq. mi.
Discharge (Q100)	= 8.10 cfs
Q100 Elev. (Natural)	= 883.39 ft.
Q100 Headwater Elev. (Proposed Channel)	= 884.02 ft.
Waterway Opening Required (Below Q100)	= 1.3542 sft.
Back Water @ Q100	= 0.42 ft.
Velocity @ Q50	= 3.62 ft./sec. D.S.



End Elevation
 Not to Scale



dgarwin
 5/29/2019 7:14:06 pm
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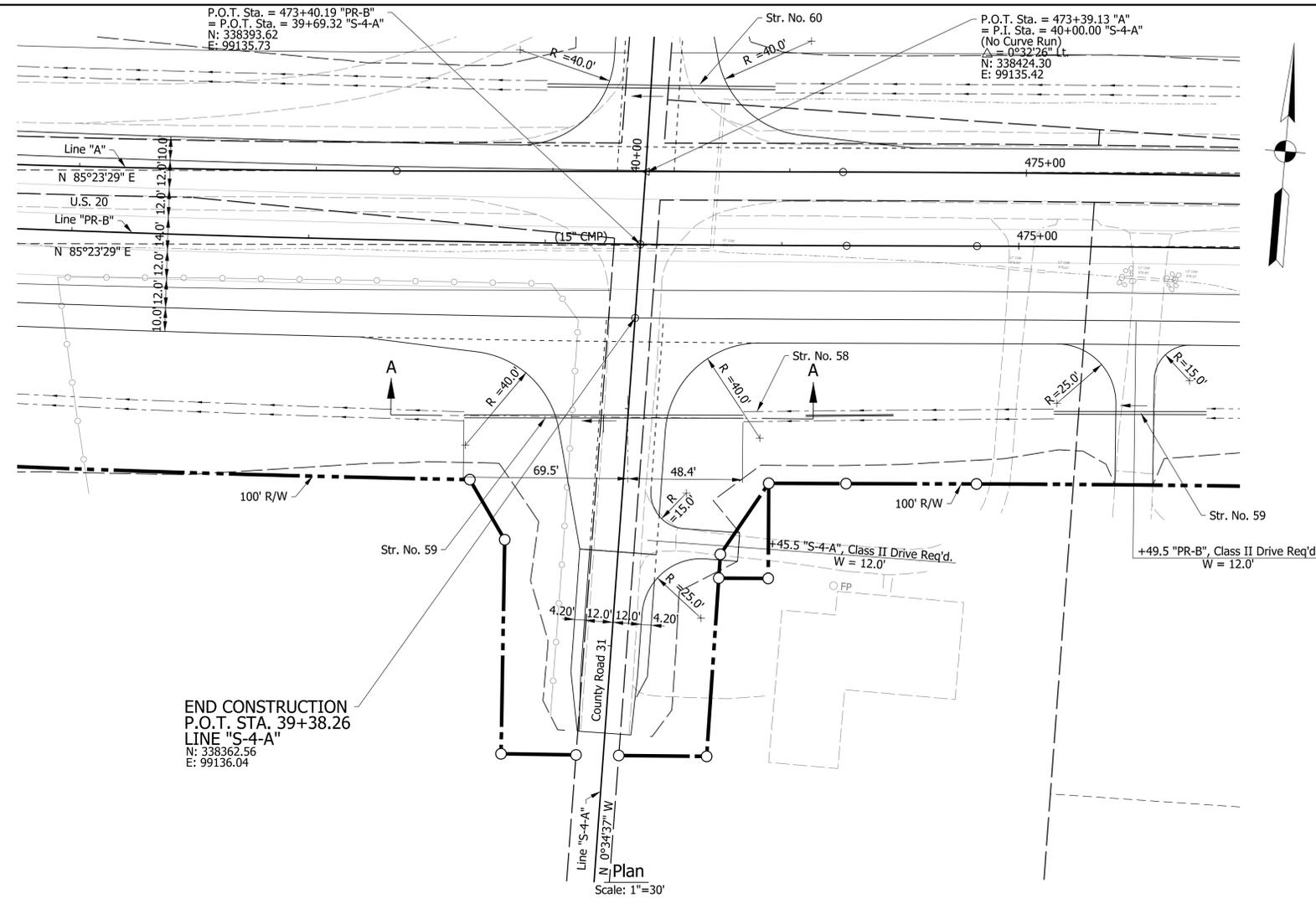
DRAFT
 NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
 DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
 STRUCTURE NO. 41
 STA. 30+43 LINE "S-3-A"

HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-07
ELECTRONIC	87	of 416
CONTRACT	PROJECT	
R-39851	1600517	



END CONSTRUCTION
P.O.T. STA. 39+38.26
LINE "S-4-A"
N: 338362.56
E: 99136.04

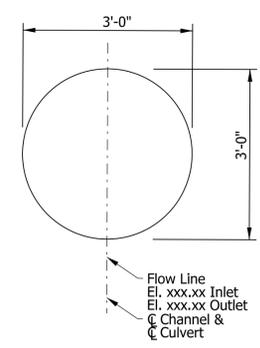


Hydraulic Data

Drainage Area	= 0.0161 sq. mi.
Discharge (Q100)	= 7.20 cfs
Q100 Elev. (Natural)	= 875.86 ft.
Q100 Headwater Elev. (Proposed Channel)	= 877.06 ft.
Waterway Opening Required (Below Q100)	= 0.9273 sft.
Back Water @ Q100	= 0.55 ft.
Velocity @ Q50	= 4.18 ft./sec. D.S.

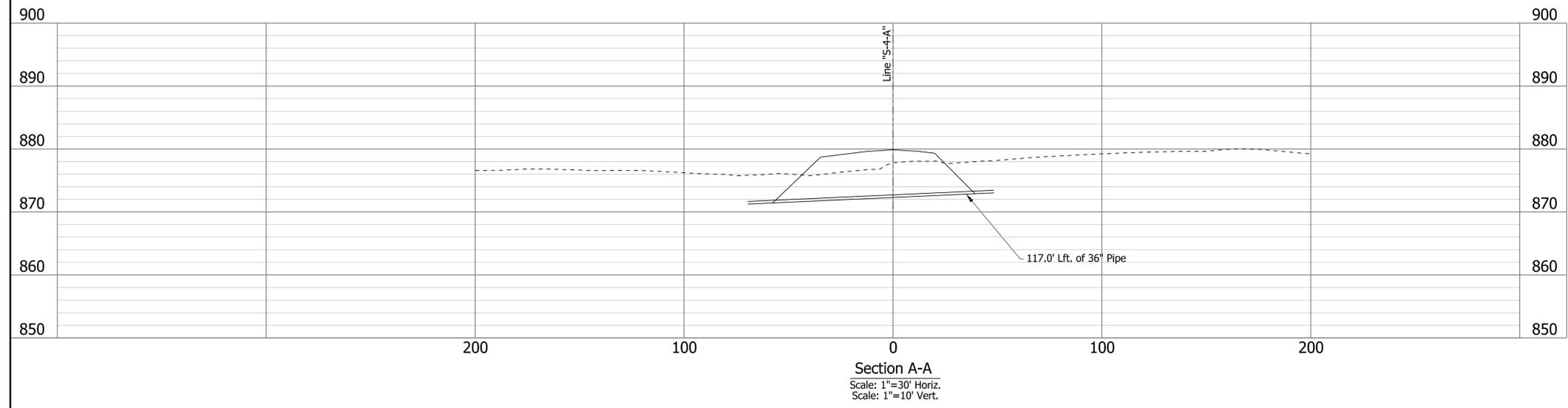
Existing Structure

No Existing Structure



End Elevation

Not to Scale



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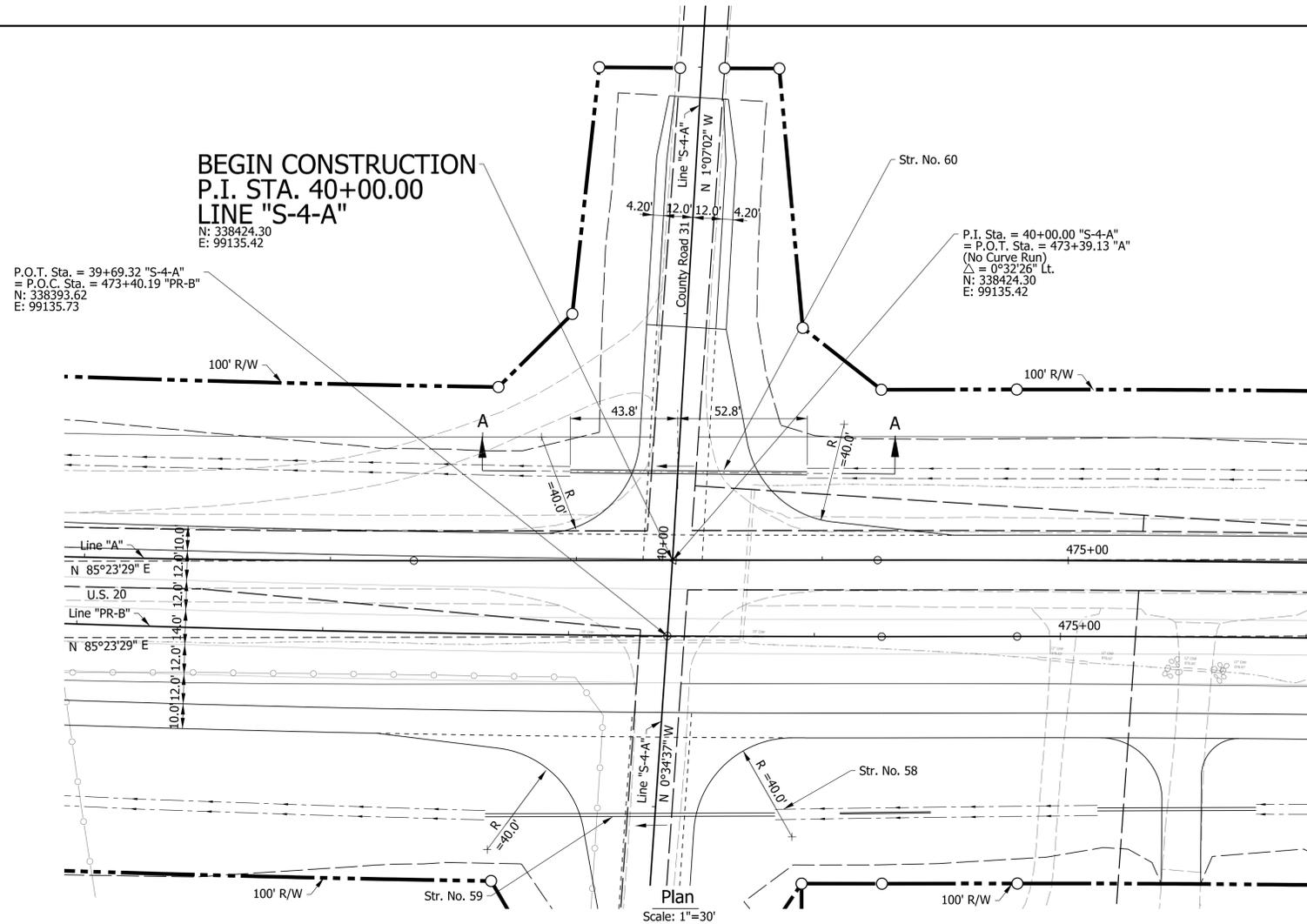
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 59
STA. 38+96 LINE "S-4-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=30'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS RCC-08
ELECTRONIC	88 of 416
CONTRACT	PROJECT
R-39851	1600517

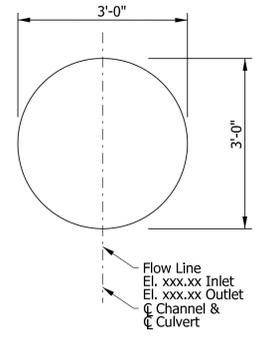


Hydraulic Data

Drainage Area	= 0.01924 sq. mi.
Discharge (Q100)	= 3.70 cfs
Q100 Elev. (Natural)	= 875.86 ft.
Q100 Headwater Elev. (Proposed Channel)	= 877.79 ft.
Waterway Opening Required (Below Q100)	= 0.4352 sft.
Back Water @ Q100	= 0.28 ft.
Velocity @ Q50	= 3.59 ft./sec. D.S.

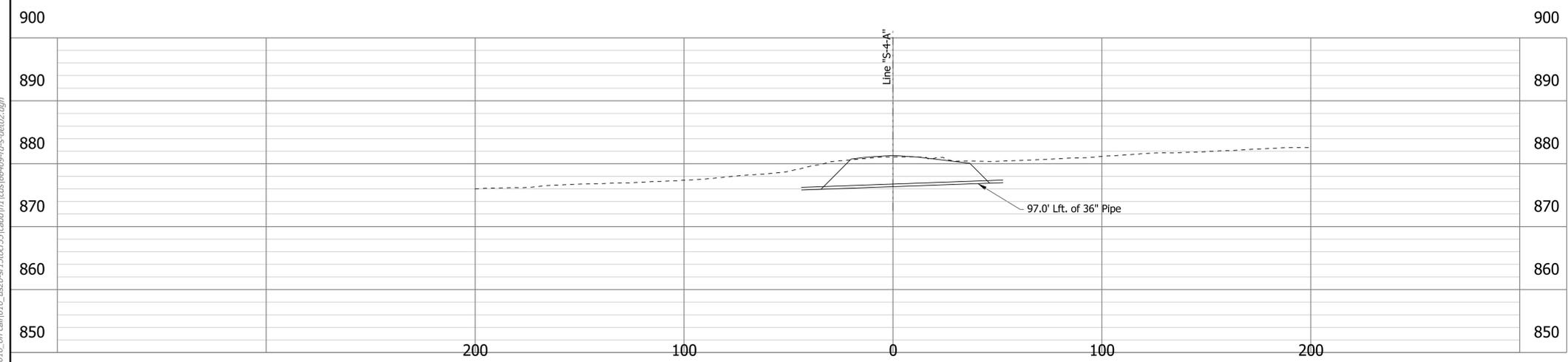
Existing Structure

No Existing Structure



End Elevation

Not to Scale



Section A-A
Scale: 1"=30' Horiz.
Scale: 1"=10' Vert.

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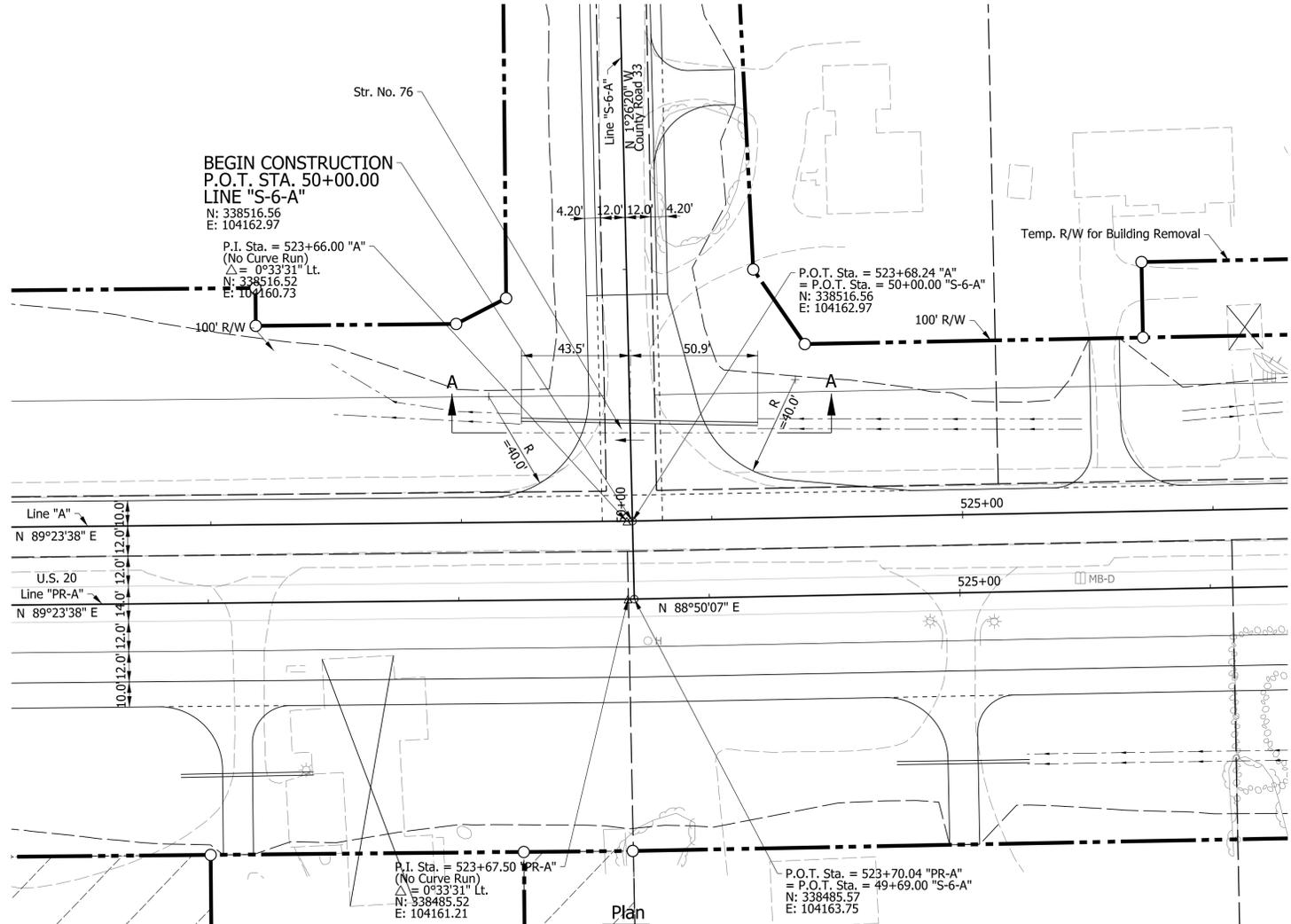
DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: DLG	DRAWN: CPH	
CHECKED: JRG	CHECKED: DLG	

INDIANA
DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 60
STA. 40+36 LINE "S-4-A"

HORIZONTAL SCALE	BRIDGE FILE
1"=30'	N/A
VERTICAL SCALE	DESIGNATION
1"=10'	1600517
SURVEY BOOK	SHEETS
ELECTRONIC	89 of 416
CONTRACT	PROJECT
R-39851	1600517

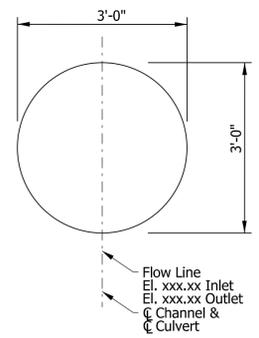


Hydraulic Data

Drainage Area	= 0.01365 sq. mi.
Discharge (Q100)	= 5.60 cfs
Q100 Elev. (Natural)	= 891.29 ft.
Q100 Headwater Elev. (Proposed Channel)	= 892.17 ft.
Waterway Opening Required (Below Q100)	= 0.6989 sft.
Back Water @ Q100	= 0.47 ft.
Velocity @ Q50	= 3.87 ft./sec. D.S.

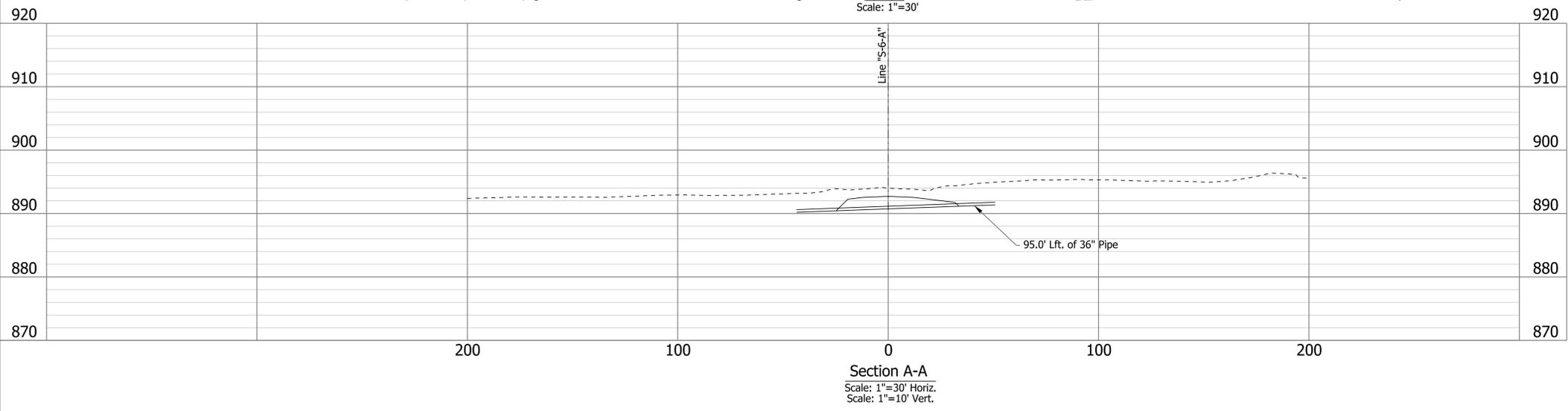
Existing Structure

No Existing Structure



End Elevation

Not to Scale



DRAFT
NOT FOR CONSTRUCTION

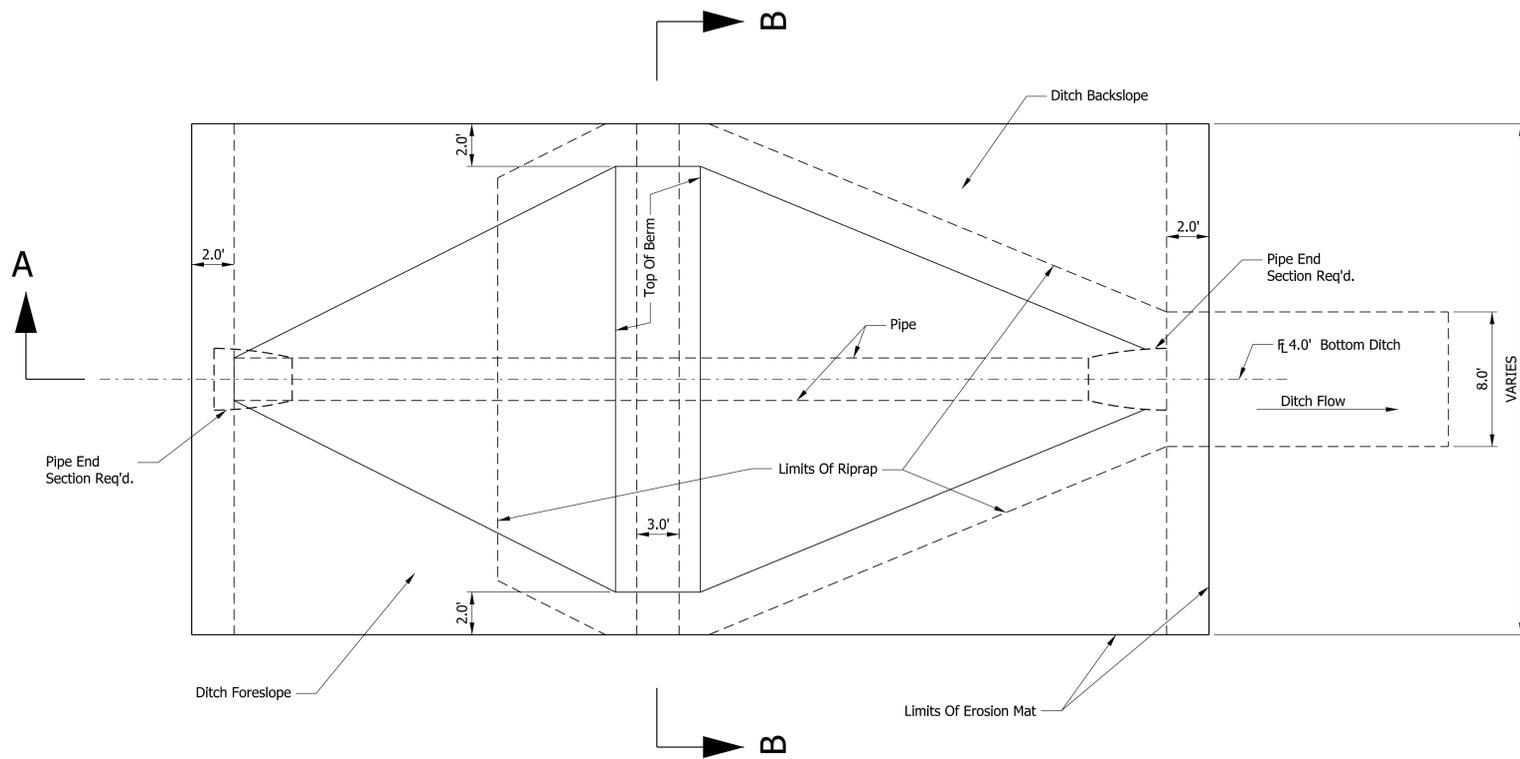
RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____
DESIGNED: _____ DLG _____	DRAWN: _____ CPH _____	
CHECKED: _____ JRG _____	CHECKED: _____ DLG _____	

INDIANA
DEPARTMENT OF TRANSPORTATION

REINF. CONC. CULVERT DETAILS
STRUCTURE NO. 76
STA. 50+35 LINE "S-6-A"

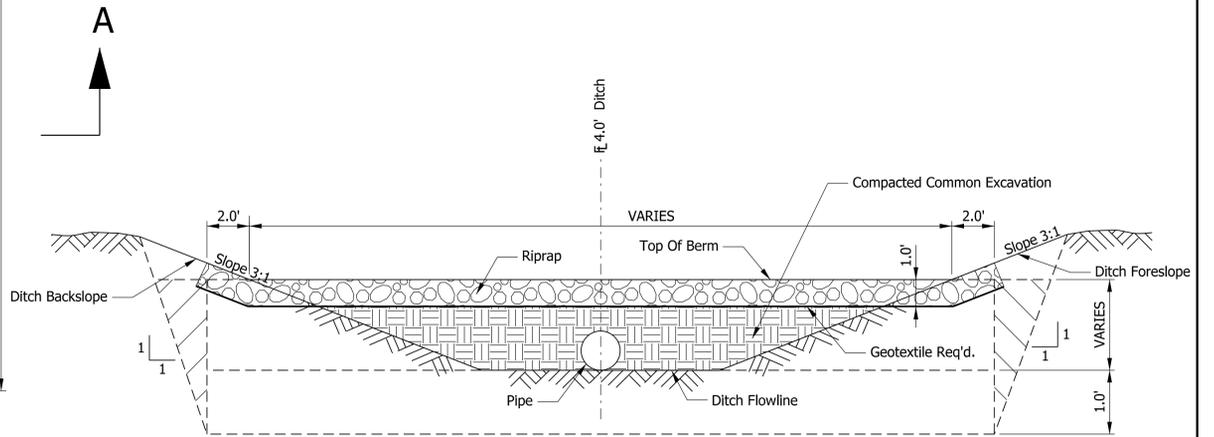
HORIZONTAL SCALE	BRIDGE FILE	
1"=30'	N/A	
VERTICAL SCALE	DESIGNATION	
1"=10'	1600517	
SURVEY BOOK	SHEETS	RCC-10
ELECTRONIC	90	of 416
CONTRACT	PROJECT	
R-39851	1600517	

dgarwin
 5/29/2019 7:14:08 pm
 model:Sheet10
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Swale Block Plan View

Not To Scale

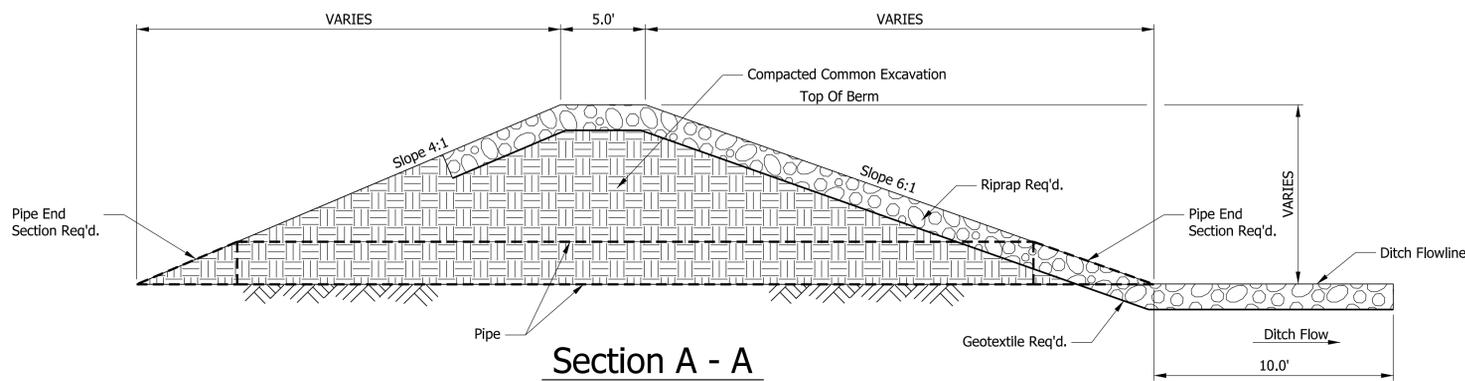


Section B - B

Not To Scale

Swale Block Schedule

Swale Block No.	Station	Lt. / Rt.	Upstream Ditch Invert Elev (ft)	Downstream Ditch Invert Elev (ft)	Berm Elev. (ft)	Pipe Size (in)	Pipe Slope (%)	Berm Height (ft)
1B	363+58.50	Rt.	860.50	860.40	865.00	6	1.0%	4.50
1C1	373+50.00	Rt.	867.80	867.50	871.99	12	0.5%	4.99
1C2	380+90.50	Rt.	859.10	859.00	861.70	8	1.0%	2.60
2A	404+83.00	Lt.	881.30	881.20	884.30	8	1.0%	3.00
3A	411+15.00	Rt.	880.00	879.90	883.00	18	1.0%	3.00
4A	427+49.50	Rt.	883.21	883.11	888.00	6	1.0%	4.79
5AW	432+55.50	Lt.	879.00	878.90	883.99	8	1.0%	4.99
5AE	441+05.00	Lt.	876.00	875.90	879.00	8	1.0%	3.00
5B	434+98.00	Rt.	878.50	878.40	883.00	6	1.0%	4.50
6AW	445+73.00	Lt.	865.71	865.61	870.00	6	1.0%	4.29
6AE	452+00.00	Lt.	865.50	865.40	868.50	8	1.0%	3.00
6B	450+00.00	Rt.	870.10	870.00	874.00	6	1.0%	3.90
7A	481+79.50	Rt.	864.71	864.60	869.00	15	1.0%	4.29
9B	527+95.00	Lt.	892.00	891.90	895.00	6	1.0%	3.00
10A	541+99.50	Rt.	900.00	899.90	903.00	6	1.0%	3.00
11B	552+14.00	Rt.	893.00	892.90	897.99	6	1.0%	4.99
12A	562+24.00	Lt.	895.53	895.43	899.00	6	1.0%	3.47
13A	562+62.50	Lt.	890.10	890.00	895.00	6	1.0%	4.90



Section A - A

Not To Scale

- Note:
- Excavate 1.0' X 3.0' to key in swale at centerline of top of berm.

dgarvin 3/19/2019 10:04:58 am
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DRAFT
NOT FOR CONSTRUCTION

RECOMMENDED FOR APPROVAL _____ DATE _____
 DESIGN ENGINEER _____
 DESIGNED: _____ DLG _____ DRAWN: _____ DLG _____
 CHECKED: _____ JRG _____ CHECKED: _____ DLG _____

INDIANA
DEPARTMENT OF TRANSPORTATION

SWALE BLOCK DETAIL

HORIZONTAL SCALE	BRIDGE FILE
N.T.S.	N/A
VERTICAL SCALE	DESIGNATION
N/A	1600517
SURVEY BOOK	SHEETS
Electronic	91 of 362
CONTRACT	PROJECT
R-39851	1600517