

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

<b>Road No./County:</b>	State Route (SR) 445, Greene County
<b>Designation Number(s):</b>	2100161
<b>Project Description/Termini:</b>	Guardrail Improvement Project, from 0.39 Mile East of SR 54 to 0.62 Mile East of SR 54

<b>X</b>	<b>Categorical Exclusion, Level 2</b> – Required Signatories: INDOT DE and/or INDOT ESD
	<b>Categorical Exclusion, Level 3</b> – Required Signatories: INDOT ESD
	<b>Categorical Exclusion, Level 4</b> – Required Signatories: INDOT ESD and FHWA
	<b>Environmental Assessment (EA)</b> – Required Signatories: INDOT ESD and FHWA
	<b>Additional Investigation (AI)</b> – The proposed action included a design change from the original approved environmental document. Required Signatories must include the appropriate environmental approval authority

**Approval** \_\_\_\_\_  
INDOT DE Signature and Date
INDOT ESD Signature and Date

\_\_\_\_\_  
 FHWA Signature and Date

**Release for Public Involvement** \_\_\_\_\_  
INDOT DE Initials and Date
INDOT ESD Initials and Date

RF  
 3/2/2023

**Certification of Public Involvement** \_\_\_\_\_  
 INDOT Consultant Services Signature and Date

**INDOT DE/ESD Reviewer Signature and Date:** \_\_\_\_\_

**Name and Organization of CE/EA Preparer:** \_\_\_\_\_  
 Payton Fischer, Tamra Reece – Hanson Professional Services Inc.

# Indiana Department of Transportation

County Greene County

Route SR 445

Des. No. 2100161

Note: Refer to the most current INDOT CE Manual, guidance language, and other ESD resources for further guidance regarding any section of this form.

## 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.

Notice of Survey letters were mailed to potentially affected property owners near the project area on January 12, 2022, notifying them about the project and that individuals responsible for land surveying and field activities may be seen in the area. A sample copy of the Notice of Survey letter is included in Appendix G, page 2.

The project will meet the minimum requirements described in the current *Indiana Department of Transportation (INDOT) Public Involvement Manual*, which requires the project sponsor to offer the public an opportunity to submit comments and/or request a public hearing. Therefore, a legal notice will appear in a local publication contingent upon the release of this document for public involvement. This document will be revised after the public involvement requirements are fulfilled.

## **Public Controversy on Environmental Grounds**

Discuss public controversy concerning community and/or natural resource impacts, including what is being done during the project to minimize impacts.

At this time, there is no substantial public controversy concerning impacts to the community or to natural resources.

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

Sponsor of the Project: Indiana Department of Transportation INDOT District: Vincennes

Local Name of the Facility: SR 445

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

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

### **PURPOSE AND NEED:**

The need should describe the specific transportation problem or deficiency that the project will address. The purpose should describe the goal or objective of the project. The solution to the traffic problem should NOT be discussed in this section.

This project is located on SR 445, from 0.39 mile east of SR 54 to 0.62 mile east of SR 54 in Greene County, Indiana (Appendix B, pages 2 and 3).

**Need:** The need for this project is due to the crash history of SR 445 along this section of roadway in rural Greene County. The roadway in this area is a two-lane facility with narrow shoulders and steep slopes. According to available crash data, nine crashes occurred within the project limits between 2019 and 2021, with one-third of the crashes being roadway departure accidents (Appendix I, pages 5 to 6).

This is page 2 of 22 Project name: SR 445 Guardrail Improvement Project Date: February 16, 2023

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**Purpose:** The purpose of this project is to lessen the severity of roadway departure crashes by deflecting vehicles back onto the roadway and providing for safe recovery.

**PROJECT DESCRIPTION (PREFERRED ALTERNATIVE):**

County: Greene

Municipality: N/A

Limits of Proposed Work: 0.39 mile east of SR 54 to 0.62 mile east of SR 54

Total Work Length: 0.23 Mile(s)

Total Work Area: 2.45 Acre(s)

Is an Interstate Access Document (IAD)<sup>1</sup> required?  
 If yes, when did the FHWA provide a Determination of Engineering and Operational Acceptability?

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

<sup>1</sup>If an IAD is required; a copy of the approved CE/EA document must be submitted to the FHWA with a request for final approval of the IAD.

*Describe location of project including township, range, city, county, roads, etc. Existing conditions should include current conditions, current deficiencies, roadway description, surrounding features, etc. Preferred alternative should include the scope of work, anticipated impacts, and how the project will meet the Purpose and Need. Logical termini and independent utility also need discussed.*

The Indiana Department of Transportation (INDOT) and the Federal Highway Administration (FHWA) intend to proceed with this guardrail improvement project.

This project is located on SR 445, from 0.39 mile east of SR 54 to 0.62 mile east of SR 54. The project is located in Sections 15 and 22, Township 7 North, Range 3 West, Center Township, Greene County, Indiana (Appendix B, pages 2 and 3).

This section of SR 445 is classified as a Rural Major Collector, consisting of two 12-foot (ft.) travel lanes with a posted speed limit of 50 miles per hour (mph). The roadway runs east/west with one travel lane in each direction. The existing roadway has a shoulder that ranges from 2 inches (in.) to 3.5 ft. with no guardrail present. The existing roadside embankments range from a 2:1 slope to a 3:1 slope. The minimal shoulder, lack of guardrail, and steep roadside embankments have resulted in a safety hazard evidenced by crash data (Appendix I, pages 5 to 6). The surrounding land use is rural residential and heavily forested areas. Four existing structures are within the project limits.

The preferred alternative for this project includes installation of w-beam guardrail for a length of approximately 0.09 mile along the north side of SR 445 and approximately 0.21 mile along the south side of SR 445. Work will include widening the roadway shoulders and reinforcing the roadside embankments to accommodate the new guardrail installation. The roadside embankment will range from a 2:1 slope to a 4:1 slope with Class I riprap placed for slope stabilization along SR 445. The four structures within the project limits will have work done to incorporate them into the new roadside embankment. Str. 1 (CLV-67648), a 15-in. corrugated metal pipe (CMP), will have riprap placed at the outlet. An uncatalogued structure identified as Str. 2 within the plans (no INDOT culvert number), a 15-in. CMP, will be removed and replaced in kind. Str. 3 (CLV-67652), an 18-in. reinforced concrete pipe (RCP), will be abandoned in place, with ends capped, and the pipe filled with flowable fill. At Str. 4 (CV 445-028-00.53), 5-ft. sections of the existing structure will be removed at both the inlet and outlet along with existing wingwalls. A 24-ft. section of 5-ft. by 5-ft. RCB will be added at the inlet and a 10-ft. section of 5-ft. by 5-ft. RCB will be added at the outlet. A riprap basin and energy dissipater will be installed at the outlet. Wingwalls will be installed at the inlet and outlet. Preliminary project plans are included in Appendix B (pages 10 to 43).

Anticipated impacts from the proposed project include impacts to streams, wetlands, right-of-way (ROW) acquisition, and removal of 0.43 acre of trees along the SR 445 project limits for shoulder widening, guardrail installation, and grading. Impacts to three unnamed tributaries (UNTs) to Beech Creek and one forested wetland are from culvert extensions, riprap placement, and grading. Acquisition of permanent ROW from three adjacent parcels is for shoulder widening, guardrail installation, and grading. Impacts to resources have been minimized by limiting the project footprint to what is necessary to make improvements to the existing roadway.

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The proposed maintenance of traffic (MOT) will include a full closure of SR 445, utilizing a state detour route (Appendix B, page 14). The MOT for the project is discussed in further detail in the *MOT During Construction* section of this document.

Installing guardrail, widening the shoulders of the roadway, installing riprap, and re-grading the roadside embankment will improve overall travel in the area and meet the purpose and need.

The logical termini for the project limits are 0.39 mile east of SR 45, east of the local business, Milestone Contractors, entrance to 0.62 mile east of SR 45, east of the SR 445 and Lawrence Hollow intersection. These logical termini include the roadway that contains steep slopes and lacks guardrail, which poses a safety concern to the motoring public. This project demonstrates independent utility because it will improve the roadway safety conditions as an independent project and does not rely on any other planned projects.

### OTHER ALTERNATIVES CONSIDERED:

Provide a header for each alternative. Describe all discarded alternatives, including the No Build Alternative. Explain why each discarded alternative was not selected. Make sure to state how each alternative meets or does not meet the Purpose and Need and why.

**No Build:** The No Build Alternative would not improve the existing roadway deficiencies or potentially improve the crash data of roadway departure accidents in this area. This would not meet the purpose and need or address the purpose of this project. Therefore, this alternative was discarded.

**The No Build 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;

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):

<b>X</b>

### ROADWAY CHARACTER:

If the proposed action includes multiple roadways, complete and duplicate for each roadway.

Name of Roadway	<u>SR 445</u>			
Functional Classification:	<u>Rural Major Collector</u>			
Current ADT:	<u>3,751</u>	<u>VPD (2022)</u>	Design Year ADT:	<u>3,751</u> <u>VPD (2043)</u>
Design Hour Volume (DHV):	<u>9.78%</u>	Truck Percentage (%)	<u>2.18%</u>	
Designed Speed (mph):	<u>50 mph</u>	Legal Speed (mph):	<u>50 mph</u>	

	Existing		Proposed	
Number of Lanes:	2		2	
Type of Lanes:	Thru lanes		Thru lanes	
Pavement Width:	24	ft.	24	ft.
Shoulder Width:	0.17 to 3.5	ft.	4 ft.	ft.
Median Width:	N/A	ft.	N/A	ft.
Sidewalk Width:	N/A	ft.	N/A	ft.

Setting:  Urban  
Topography:  Level

Suburban  
 Rolling

Rural  
 Hilly

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**BRIDGES AND/OR SMALL STRUCTURE(S):**

*If the proposed action includes multiple structures, complete and duplicate for each bridge and/or small structure. Include both existing and proposed bridge(s) and/or small structure(s) in this section.*

Structure/NBI Number(s): CLV-67648 (Str. 1) Sufficiency Rating: 4, INDOT Bridge and Drainage Asset Viewer  
(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	15-in. corrugated metal pipe (CMP)		No structure work, Class I riprap placement at outlet	
Number of Spans:	N/A		N/A	
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.	N/A	ft.
Shoulder Width:	N/A	ft.	N/A	ft.

Structure/NBI Number(s): Str. 2 Sufficiency Rating: N/A, undocumented structure  
(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	15-in. CMP		Replace in kind	
Number of Spans:	N/A		N/A	
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.	N/A	ft.
Shoulder Width:	N/A	ft.	N/A	ft.

Structure/NBI Number(s): CLV-67652 (Str. 3) Sufficiency Rating: 4, INDOT Bridge and Drainage Asset Viewer  
(Rating, Source of Information)

	Existing		Proposed	
Bridge/Structure Type:	18-in. RCP		Abandon in place	
Number of Spans:	N/A		N/A	
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.	N/A	ft.
Shoulder Width:	N/A	ft.	N/A	ft.

Structure/NBI Number(s): CV 445-028-00.53, NBI 93008356 (Str. 4) Sufficiency Rating: 6, Inspection Report 3/24/2022  
(Rating, Source of Information)

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	Existing	Proposed
Bridge/Structure Type:	5-ft. by 5-ft. RCB	Extend structure 24 ft. at inlet and 10 ft. at outlet, replace 5 ft. of existing structure at both inlet and outlet
Number of Spans:	N/A	N/A
Weight Restrictions:	N/A	N/A
Height Restrictions:	N/A	N/A
Curb to Curb Width:	N/A	N/A
Outside to Outside Width:	N/A	N/A
Shoulder Width:	N/A	N/A

Describe impacts and work involving bridge(s), culvert(s), pipe(s), and small structure(s). Provide details for small structure(s): structure number, type, size (length and dia.), location and impacts to water. Use a table if the number of small structures becomes large. If the table exceeds a complete page, put it in the appendix and summarize the information below with a citation to the table.

Four small structures are located within the project limits. Str. 1 (CLV-67648) is a 58-ft. long, 15-in. CMP. Work at this structure is limited to Class I riprap on geotextiles placed at the outlet of the structure. No work on Str. 1 will take place that would alter the existing conditions of the small structure. Str. 2, an undocumented structure with no INDOT culvert number assigned is a 50-ft. long, 15-in. CMP, located under a field entrance. Work includes removal and replacement of the existing 50-ft., 15-in. CMP with a 50-ft., 15-in. CMP. Str. 3 (CLV-67652) is a 50-ft. long, 18-in. RCP that will be abandoned in place, with ends capped, and the pipe filled with flowable fill. Str. 4 (CV 445-028-00.53) is a 100-ft. long, 5-ft. by 5-ft. RCB that will have the inlet, outlet, and wingwalls extended to accommodate shoulder widening, guardrail installation, and slope stabilization. Five feet of the existing structure will be replaced at both the inlet and outlet. The inlet will be extended 24 ft. and the outlet will be extended 10 ft. for a new total structure length of 134 ft. Class I riprap on geotextiles will be placed at the inlet and outlet (Appendix B, pages 18 to 22).

**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 below)	<input checked="" type="checkbox"/>	<input 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"/>
Will the project require a sidewalk, curb ramp, and/or bicycle lane closure? (describe below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Provisions will be made for access by pedestrians and/or bicyclist and so posted (describe below).	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discuss closures, detours, and/or facilities (if any) that will be provided for maintenance of traffic. Any known impacts from these temporary measures should be quantified to the extent possible, particularly with respect to properties such as Section 4(f) resources and wetlands. Discuss any pedestrian/bicycle closures. Any local concerns about access and traffic flow should be detailed as well.

The MOT for the project will require a full closure of SR 445 with an official state detour route. The detour is approximately 4.3 miles in length utilizing SR 45 and SR 54. The detour is anticipated to add an additional 4.2 miles to a one-way trip with approximately six minutes of additional travel time (Appendix B, page 14). The closure and detour will remain in place for approximately 16 weeks. Access to local businesses and residences shall be maintained at all times.

The closures/lane restrictions will pose a temporary inconvenience to traveling motorists (including school buses and emergency services); however, no significant delays are anticipated, and all inconveniences and delays will cease upon project completion.

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### ESTIMATED PROJECT COST AND SCHEDULE:

Engineering: \$ 179,000 (2022) Right-of-Way: \$ 30,000 (2023) Construction: \$ 705,332 (2024)

Anticipated Start Date of Construction: March 2024

### RIGHT OF WAY:

Land Use Impacts	Amount (acres)	
	Permanent	Temporary
Residential	0.25	0
Commercial	0	0
Agricultural	0	0
Forest	1.08	0
Wetlands	0.0064	0
Other:	1.992	0
Other:	0	0
<b>TOTAL</b>	<b>3.328</b>	<b>0</b>

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, reacquisition or easements, either known or suspected, and their impacts on the environmental analysis should be discussed.

The existing ROW is the edge of pavement of SR 445. The project requires approximately 1.516 acres (ac.) of reacquired ROW that consists of roadside grasses and forest. The project requires approximately 3.328 ac. of permanent ROW that consists of roadside grasses, forest, and streams. The project will not require any temporary ROW. Proposed ROW is located north and south of SR 445 along the length of the project area, with widths ranging from approximately 35 ft. to 75 ft. from the SR 445 centerline. ROW locations are denoted in the project plans in Appendix B (page 16).

If the scope of work or permanent or temporary ROW amounts change, the INDOT Environmental Services Division (ESD) and the INDOT District Environmental Section will be contacted immediately.

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

### SECTION A - EARLY COORDINATION:

List the date(s) coordination was sent and all resource 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.

Early coordination letters were sent on August 8, 2022 (Appendix C, pages 2 to 4).

Agency	Date Sent	Response Date	Appendix
Eastern Greene Schools - Superintendent	August 8, 2022	No response received	N/A
Federal Highway Administration (FHWA)	August 8, 2022	No response received	N/A
Greene County Commissioner	August 8, 2022	No response received	N/A
Greene County Emergency Management	August 8, 2022	No response received	N/A
Greene County Health Department	August 8, 2022	No response received	N/A
Greene County Highway Department	August 8, 2022	No response received	N/A
Greene County Historical Society	August 8, 2022	No response received	N/A
Greene County Surveyor	August 8, 2022	No response received	N/A
Indiana Department of Natural Resources – Division of Fish and Wildlife (IDNR – DFW)	August 8, 2022	September 7, 2022	Appendix C, pages 5 to 6

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Indiana Geological and Water Survey (IGWS)	August 8, 2022 Electronic Submittal	Response generated August 8, 2022	Appendix C, pages 8 to 10
INDOT – Project Manager	August 8, 2022	August 8, 2022	Appendix C, page 11
INDOT Vincennes District – Environmental Section Manager	August 8, 2022	August 8, 2022	Appendix C, page 12
Natural Resources Conservation Service (NRCS)	August 8, 2022	August 10, 2022	Appendix C, page 7
U.S. Army Corps of Engineers (USACE) – Louisville District	August 8, 2022	No response received	N/A
U.S. Department of Housing and Urban Development (HUD)	August 8, 2022	No response received	N/A
U.S. Fish and Wildlife Service (USFWS)	August 8, 2022	August 22, 2022	Appendix C, pages 14 to 15

Applicable recommendations are included in the *Environmental Commitments* section of this Categorical Exclusion (CE) document.

### SECTION B – ECOLOGICAL RESOURCES:

Streams, Rivers, Watercourses & Other Jurisdictional Features	<u>Presence</u>	<u>Impacts</u>	
		Yes	No
Federal Wild and Scenic Rivers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
State Natural, Scenic or Recreational Rivers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nationwide Rivers Inventory (NRI) listed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outstanding Rivers List for Indiana	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Navigable Waterways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Total stream(s) in project area: 797 Linear feet      Total impacted stream(s): 229.61 Linear feet

Stream Name	Classification	Total Size in Project Area (linear feet)	Impacted (linear feet)	Comments (i.e. location, flow direction, likely Water of the US, appendix reference)
UNT 1 to Beech Creek	Intermittent	406 linear ft.	83.6	Located at eastern end of project limits, flow direction to the southeast, likely Water of the U.S. (WOTUS) (Appendix F, pages 4 to 6)
UNT 2 to Beech Creek	Intermittent	156 linear ft.	79.4	Located at the mid-section of project limits, flow direction to the north, likely WOTUS (Appendix F, pages 4 to 6)
UNT 3 to Beech Creek	Ephemeral	202 linear ft.	9.05	Located at western end of project limits, flow direction to the north and northeast, likely WOTUS (Appendix F, pages 4 to 6)
UNT 4 to Beech Creek	Intermittent	33 linear ft.	0	Located flowing from Wetland A in forested area northwest of SR 445 and Lawrence Hollow intersection, flow direction to the northeast, likely WOTUS (Appendix F, pages 4 to 6)

*Describe all streams, rivers, watercourses and other jurisdictional features adjacent or within the project area. Include whether or not impacts (both permanent and temporary) will occur to the features identified. Include if the streams or rivers are listed on any federal or state lists for Indiana. Include if features are likely subject to federal or state jurisdiction. Discuss measures to avoid, minimize, and mitigate if impacts will occur.*

Based on the desktop review, the aerial map of the project area, and the Red Flag Investigation (RFI) report (Appendix E, page 3), there are three streams, rivers, watercourses, or other jurisdictional features within the 0.5-mile search radius. There are no streams, rivers, watercourses, or other jurisdictional features within or adjacent to the project area. That number was increased to four by the site visit conducted on May 13, 2022, by Hanson Professional Services Inc. (Hanson).

No Federal, Wild and Scenic Rivers; State Natural, Scenic, and Recreational Rivers; Outstanding Rivers for Indiana; navigable waterways or National Rivers Inventory waterway are present in or adjacent to the project area.



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A *Waters of the U.S. Determination/Wetland Delineation Report* was approved by INDOT Ecology and Waterway Permitting Office (EWPO) on September 21, 2022. Please refer to Appendix F, pages 2 to 42, for the *Waters of the U.S. Determination/Wetland Delineation Report*. It was determined that four likely jurisdictional streams are located within the investigated area. The USACE makes all final determinations regarding jurisdiction. Three of the streams will be impacted by the project.

UNT 1 to Beech Creek is an intermittent stream that flows southeast under SR 445, carried by Str. 4 (CV 445-028-00.53), which flows to Beech Creek, which flows to the White River, a traditionally navigable waterway (TNW). A defined ordinary high water mark (OHWM) was observed at approximately 5 ft. wide and 0.92 ft. deep. The stream quality was considered excellent due to substantial canopy cover and substrate consisting of sand, gravel, cobble, and small boulders. Approximately 406 linear ft. of the stream is located within the investigated area. Approximately 83.6 linear ft. (0.01 ac.) of UNT 1 to Beech Creek will be permanently impacted from structure work and riprap installation. Approximately 37.7 linear ft. (0.004 ac.) of UNT 1 to Beech Creek will be temporarily impacted from dewatering and cofferdam placement during construction.

UNT 2 to Beech Creek is an intermittent stream that flows north under SR 445, carried by Str. 3. (CLV-67652), which ultimately flows to the White River, a TNW. A defined OHWM was observed at approximately 1.42 ft. wide and 0.42 ft. deep. The stream quality was considered poor due to proximity to the roadway and moderate canopy cover. Substrate consists of silt and gravel. Approximately 156 linear ft. of the stream is located within the investigated area. Approximately 79.4 linear ft. (0.003 ac.) of UNT 2 to Beech Creek will be permanently impacted from structure abandonment and earth fill. There are no temporary impacts to UNT 2 to Beech Creek.

UNT 3 to Beech Creek is an ephemeral stream that flows north under SR 445, carried by Str. 1 (CLV-67648), which ultimately flows to the White River, a TNW. A defined OHWM was observed at approximately 1.33 ft. wide and 0.25 ft. deep. No flow was observed in the stream. The stream quality was considered poor due to the proximity to the roadway and moderate canopy cover. Substrate consists of silt and gravel. Approximately 202 linear ft. of the stream is located within the investigated area. Approximately 9.05 linear ft. (0.0003 ac.) of UNT 3 to Beech Creek will be permanently impacted from riprap installation. Approximately 42.3 linear ft. (0.001 ac.) will be temporarily impacted from slope stabilization and equipment access during construction.

UNT 4 to Beech Creek is an intermittent stream that flows northeast from Wetland A to UNT 1 to Beech Creek, which ultimately flows to the White River, a TNW. A defined OHWM was observed at approximately 1.42 ft. wide and 0.25 ft. deep. The stream quality was considered average due to substantial canopy cover and unaltered stream channel. Approximately 33 linear ft. of the stream is located within the investigated area. There are no permanent or temporary impacts to UNT 4 to Beech Creek. UNT 4 to Beech Creek will be marked as "Do Not Disturb" on plan sheets. This is included as a firm commitment in the *Environmental Commitments* section of this document.

A total of 172.05 linear ft. (0.013 ac.) of all jurisdictional streams will be permanently impacted from structure construction and riprap installation. A total of 80 linear ft. (0.005 ac.) of all jurisdictional streams will be temporarily impacted from dewatering, cofferdam placement, slope stabilization, and equipment access during construction. Avoidance was not practicable, as project limits have been constrained to the smallest possible area to complete the project. Erosion control measures will be implemented to minimize impacts to affected streams.

This project will need an Indiana Department of Environmental Management (IDEM) 401 Water Quality Certification (WQC) and USACE 404 Nationwide Permit (NWP) #14 due to stream impacts. Mitigation is not anticipated due to cumulative impacts being less than 300 linear ft. and 0.03 ac. of stream.

The IDNR-DFW responded on September 7, 2022, with recommendations to avoid, minimize, or compensate for impacts to fish, wildlife, and botanical resources (Appendix C, pages 5 to 6). All applicable recommendations are included in the *Environmental Commitments* section of this document.

Open Water Feature(s)	Presence	Impacts	
		Yes	No
Reservoirs			
Lakes	X		X
Farm Ponds			
Retention/Detention Basin			
Storm Water Management Facilities			
Other: _____			

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*Describe all open water feature(s) identified adjacent or within the project area. Include whether or not impacts (both permanent and temporary) will occur to the features identified. Include if features are likely subject to federal or state jurisdiction. Discuss measures to avoid, minimize, and mitigate if impacts will occur.*

Based on the desktop review, the aerial map of the project area, and the RFI report (Appendix E, pages 3 and 4), there are 11 open water features within the 0.5-mile search radius. There is one open water feature within or adjacent to the project area. That number was confirmed by the site visit on May 13, 2022, by Hanson.

A *Waters of the U.S. Determination/Wetland Delineation Report* was approved by INDOT EWPO on September 21, 2022. Please refer to Appendix F, pages 2 to 42, for the *Waters of the U.S. Determination/Wetland Delineation Report*. It was determined that the lake documented in the RFI report was outside the investigated area at a higher elevation than the roadway. No areas of open water were identified in the investigated area. Therefore, no impacts are expected.

**Wetlands**

**Presence**

**Impacts**

**Yes**

**No**

Total wetland area: 0.018 Acre(s)

Total wetland area impacted: 0.0064 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	Comments (i.e. location, likely Water of the US, appendix reference)
Wetland A	PFO1C, Forested	0.018 acre	0.0064	Between UNT 1 to Beech Creek and SR 445, likely jurisdictional WOTUS (Appendix F, pages 6 to 7)

**Wetlands (Mark all that apply)**

- Wetland Determination
- Wetland Delineation
- USACE Isolated Waters Determination

**Documentation**

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

**ESD Approval Dates**

<b>September 21, 2022</b>
<b>May 13, 2022</b>

**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.

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

*Describe all wetlands identified adjacent or within the project area. Include whether or not impacts (both permanent and temporary) will occur to the features identified. Include if features are likely subject to federal or state jurisdiction. Discuss measures to avoid, minimize, and mitigate if impacts will occur.*

Based on the desktop review, the aerial map of the project area, and the RFI report (Appendix E, pages 3 and 4), there are 11 wetlands within the 0.5-mile search radius. There is one wetland within or adjacent to the project area. That number was increased to two, one adjacent and one within the project area, by the site visit on May 13, 2022, by Hanson.

A *Waters of the U.S. Determination/Wetland Delineation Report* was approved by INDOT EWPO on September 21, 2022. Please refer to Appendix F, pages 2 to 42, for the *Waters of the U.S. Determination/Wetland Delineation Report*. It was determined that one likely jurisdictional forested wetland is located within the investigated area. The USACE makes all final determinations regarding jurisdiction.

Wetland A is an approximately 0.018 ac. palustrine forested wetland (PFO) of average quality that is located north of SR 445. Hydrology within Wetland A is due to groundwater infiltration and drainage from the roadway. Wetland A was considered average quality due to canopy cover and sparse vegetation. Wetland A would likely be considered a jurisdictional WOTUS due to adjacency

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to UNT 4 to Beech Creek, which ultimately drains to the White River, a TNW. Approximately 0.0064 acre of wetland will be permanently impacted due to excavation and earth fill. There are no temporary impacts to Wetland A.

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.

This project will need an IDEM 401 WQC and USACE NWP #14 due to wetland impacts. Mitigation is not anticipated due to cumulative impacts being less than 0.1 acre of wetland.

The IDNR-DFW responded on September 7, 2022, with recommendations to avoid, minimize, or compensate for impacts to fish, wildlife, and botanical resources (Appendix C, pages 5 to 6). All applicable recommendations are included in the *Environmental Commitments* section of this document.

	<u>Presence</u>	<u>Impacts</u>	
<b>Terrestrial Habitat</b>	<input checked="" type="checkbox"/>	Yes <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

Total terrestrial habitat in project area: 1.27 Acre(s)      Total tree clearing: 0.43 Acre(s)

*Describe types of terrestrial habitat (i.e. forested, grassland, farmland, lawn, etc) adjacent or within the project area. Include whether or not impacts will occur to habitat identified. Include total terrestrial habitat impacted and total tree clearing that will occur. Discuss measure to avoid, minimize, and mitigate if impacts will occur.*

Based on a desktop review, a site visit on May 13, 2022, by Hanson, and the aerial map of the project area (Appendix B, page 4), there are roadside grasses, turf lawn, and mature forest surrounding the project corridor. The dominant species within the areas of roadside grasses and turf lawn include Kentucky bluegrass (*Poa pratensis*), poison ivy (*Toxicodendron radicans*), and red fescue (*Festuca rubra*). Dominant species within the forested area include red trillium (*Trillium recurvatum*), red raspberry (*Rumus idaeus*), tulip poplar (*Liriodendron tulipifera*), golden ragwort (*Packera aurea*), and American Beech (*Fagus grandifolia*). Approximately 0.84 acres of non-forested terrestrial habitat will be disturbed due to the proposed guardrail improvement and slope stabilization. Disturbed areas will be reseeded according to INDOT Standard Specifications. Farmland described as forestland is noted within the project area but none will be taken.

An estimated 0.43 acre of trees are anticipated for removal. The area of tree removal extends 65 ft. north and 60 ft. south from the edge of pavement along the 0.23-mile corridor within the project limits of SR 445. Tree species being removed include tulip poplar (*Liriodendron tulipifera*), American sycamore (*Platanus occidentalis*), Bradford pear (*Pyrus calleryana*), Eastern redbud (*Cercis canadensis*), Eastern red cedar (*Juniperus virginiana*), red maple (*Acer rubra*), black walnut (*Juglans nigra*), Eastern cottonwood (*Populus deltoides*), and black cherry (*Prunus serotina*).

Total terrestrial habitat disturbance is approximately 1.27 acre. Avoidance would not be practicable due to tree removal being necessary to complete the project; therefore, avoidance alternatives would not meet the project's purpose and need. Minimization efforts were made by constraining the project limits to the smallest possible area to complete the project. No mitigation will be required.

The IDNR-DFW responded on September 7, 2022, with recommendations to mitigate non-wetland forest impacts and avoid, minimize, or compensate for impacts to wildlife and botanical resources (Appendix C, pages 5 to 6). All applicable recommendations are included in the *Environmental Commitments* section of this CE document.

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**Protected Species  
Federally Listed Bats**

Information for Planning and Consultation (IPaC) determination key completed  
 Section 7 informal consultation completed (IPaC cannot be completed)  
 Section 7 formal consultation Biological Assessment (BA) required

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

Determination Received for Listed Bats from USFWS:      NE       NLAA       LAA

**Other Species not included in IPaC**

Additional federal species found in project area (based on IPaC species list)  
 State species (not bird) found in project area (based upon consultation with IDNR)

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

**Migratory Birds**

Known usage or presence of birds (i.e. nests)  
 State bird species based upon coordination with IDNR

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

*Discuss IDNR coordination and species identified. Describe USFWS Section 7 consultation and determination received for Indiana bat and northern long-eared bat impacts. Discuss if other federally listed species were identified. If so, include consultation that has occurred and the determination that was received. Discuss if migratory birds have been observed and any impacts.*

Based on a desktop review and the RFI report (Appendix E, page 5) completed by Hanson on June 22, 2022, the IDNR Greene County Endangered, Threatened and Rare (ETR) Species List has been checked. According to the IDNR-DFW early coordination response letter dated September 7, 2022 (Appendix C, pages 5 to 6), the Natural Heritage Program's Database has been checked and no plant or animal species listed as state or federally threatened, endangered, or rare have been reported to occur within the projects vicinity.

An INDOT 0.5-mile bat review occurred on November 14, 2022. No endangered bat species were identified in or within 0.5 mile of the project area. This project is located within critical habitat and the 10-mile hibernacula buffer for the Indiana bat (*Myotis sodalis*). INDOT ESD, on behalf of FHWA, determined that this project "May Affect – Not Likely to Adversely Affect" (NLAA) the Indiana bat critical habitat. USFWS concurred with this determination on November 14, 2022 (Appendix C, pages 16 to 21). The USFWS early coordination response on August 22, 2022 (Appendix C, page 14), state that tree clearing should be done between November 15 and March 31 to allow for the conclusion of fall swarming around the hibernacula. This is included as a firm commitment in the *Environmental Commitments* section of this document.

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 22 to 37). The project is within range of the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (NLEB) (*Myotis septentrionalis*). There was one critical habitat for the Indiana bat identified wholly or partially within the project area. No additional species were generated in the IPaC species list other than the Indiana bat and NLEB.

The project qualifies 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 (FRA), Federal Transit Administration (FTA), and USFWS. A culvert inspection occurred on May 13, 2022 and no evidence of bats was seen or heard within the four structures. Str. 4, CV 445-028-00.53, had evidence of use by birds (Appendix C, pages 53 to 60). An effect determination key was completed on November 17, 2022, and based on the responses provided, the project was found to NLAA the Indiana bat and/or the NLEB (Appendix C, pages 38 to 52). INDOT reviewed and verified the effect finding on November 21, 2022 and requested USFWS's review of the finding. No response was received from USFWS within the 14-day review period; therefore, it was concluded they concur with the finding. General construction, lighting, hibernacula, and tree removal Avoidance and Minimization Measures (AMMs) are applicable to this project. AMMs and/or commitments are included as firm commitments in the *Environmental Commitments* section of this document.

A culvert inspection for structures Str. 1 through 4 occurred on May 13, 2022, and no bats or signs of bats were seen or heard within the structures (Appendix C, pages 53 to 60). USFWS Bridge/Structure Assessments are only valid for two years. If construction will begin after May 13, 2024, an inspection of the structure by a qualified individual must be performed. Inspection of the structure should check for presence of bats/bat indicators and/or presence of birds. The results of the inspection must indicate no signs of bats or birds. If signs of bats or birds are documented during this inspection, the INDOT District Environmental Manager must be contacted immediately. This firm commitment is included in the *Environmental Commitments* section of this document.

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Str. 4 (CV 445-028-00.53) has shown evidence of use (i.e. nests) by a bird species protected under the Migratory Bird Treaty Act (MBTA) during the May 13, 2022 inspection. Avoidance and minimization measures must be implemented prior to the start of and during the nesting season. Nests without eggs or young should be removed prior to construction during the non-nesting season (September 8 – April 30) and during the nesting season if no eggs or young are present. Nests with eggs or young cannot be removed or disturbed during the nesting season (May 1 – September 7). Nests with eggs or young should be screened or buffered from active construction. Details of the required procedures are outlined in the “Potential Migratory Bird on Structure” Unique Special Provision (USP). This firm commitment is included in the *Environmental Commitments* section of this document.

This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act, as amended. If new information on endangered species at the site becomes available, or if project plans are changed, USFWS will be contacted for consultation.

**Geological and Mineral Resources**

- Project located within the Indiana Karst Region
- Karst features identified within or adjacent to the project area
- Oil/gas or exploration/abandoned wells identified in the project area

Yes	No
<b>X</b>	
	<b>X</b>
	<b>X</b>

Date Karst Evaluation reviewed by INDOT EWPO (if applicable): \_\_\_\_\_

*Discuss if project is located in the Indiana Karst Region and if any karst features have been identified in the project area (from RFI). Discuss response received from IGWS coordination. Discuss if any mines, oil/gas, or exploration/abandoned wells were identified and if impacts will occur. Include discussion of karst study/report was completed and results. (Karst investigation must comply with the current Protection of Karst Features during Planning and Construction guidance and coordinated and reviewed by INDOT EWPO)*

Based on a desktop review and the Indiana Karst Region map, the project is located in the designated Indiana Karst Region as outlined in the most current *Protection of Karst Features during Project Development and Construction*. According to the topographic map of the project area (Appendix B, page 3), the RFI report (Appendix E, page 3), and the site visit on May 13, 2022, by Hanson, there are no karst features identified within or adjacent to the project area. In the early coordination response dated August 8, 2022, the IGWS did not indicate that karst features exist in the project area (Appendix C, pages 8 to 10). The IGWS did indicate there was potential for karst features, moderate potential for bedrock resources, and active or abandoned petroleum exploration wells. Response from IGWS has been communicated to the designer on August 8, 2022. No impacts are expected.

The USFWS responded on August 22, 2022, with recommendations to coordinate with the USFWS if any karst features are encountered or affected (Appendix C, pages 12 to 13). Coordination with INDOT EWPO on October 20, 2022, stated that there are no apparent impacts to karst features and directed to include the Karst Memorandum of Understanding (MOU) in the project’s letting and permitting documents (Appendix C, page 13). All applicable recommendations are included in the *Environmental Commitments* section of this CE document.

**SECTION C – OTHER RESOURCES**

**Drinking Water Resources**

- Wellhead Protection Area(s)
- Source Water Protection Area(s)
- Water Well(s)
- Urbanized Area Boundary
- Public Water System(s)

	<u>Presence</u>	<u>Impacts</u>	
		Yes	No
	<b>X</b>		<b>X</b>

- Is the project located in the St. Joseph Sole Source Aquifer (SSA):
- If Yes, is the FHWA/EPA SSA MOU Applicable?
- If Yes, is a Groundwater Assessment Required?

	Yes	No
		<b>X</b>

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*Check the appropriate boxes and discuss each topic below. Provide details about impacts and summarize resource-specific coordination responses and any mitigation commitments. Reference responses in the Appendix.*

The project is located in Greene County, which is not located within the area of the St. Joseph Sole Source Aquifer, the only legally designated sole source aquifer in the state of Indiana. Therefore, the FHWA/Environmental Protection Agency (EPA)/INDOT Sole Source Aquifer MOU is not applicable to this project, a detailed groundwater assessment is not needed, and no impacts are expected.

The IDEM Wellhead Proximity Determinator website (<http://www.in.gov/idem/cleanwater/pages/wellhead/>) was accessed on September 15, 2022, by Hanson. This project is not located within a Wellhead Protection Area or Source Water Area. No impacts are expected.

The IDNR Water Well Record Database website (<https://www.in.gov/dnr/water/3595.htm>) was accessed on September 13, 2022, by Hanson. No wells are located near this project. Therefore, no impacts are expected.

Based on a desktop review of the INDOT MS4 website (<https://entapps.indot.in.gov/MS4/>) by Hanson on September 13, 2022, this project is not located in an Urban Area Boundary. No impacts are expected.

Based on a desktop review, a site visit on May 13, 2022, by Hanson, and the aerial map of the project area (Appendix B, page 4), this project is located where there is a public water system. The public water system will not be affected because construction limits are constrained to avoid impacts to water lines or water mains. Early coordination letters were sent on August 8, 2022, to the Greene County Surveyor and the Green County Health Department (Appendix C, pages 2 to 4). No responses were received within the 30-day time frame. Therefore, no impacts are expected.

<b>Floodplains</b>	<b>Presence</b>	<b>Impacts</b>	
		<b>Yes</b>	<b>No</b>
Project located within a regulated floodplain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Longitudinal encroachment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transverse encroachment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Homes located in floodplain within 1000' up/downstream from project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If applicable, indicate the Floodplain Level?

Level 1     Level 2     Level 3     Level 4     Level 5

*Use the IDNR Floodway Information Portal to help determine potential impacts. Include floodplain map in appendix. Discuss impacts according to the classification system. If encroachment on a flood plain will occur, coordinate with the Local Flood Plain Administrator during design to insure consistency with the local flood plain planning.*

The IDNR Indiana Floodway Information Portal website (<https://indnr.maps.arcgis.com/apps/webappviewer/index.html?id=05026dabc2e8461983e196d56a213c1e>) was accessed on November 8, 2022, by Hanson. This project is not located in a regulatory floodplain as determined from approved IDNR floodplain maps (Appendix F, page 43). 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.

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

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

*Discuss existing farmland resources in the project area, impacts that will occur to farmland, and mitigation and minimization measures considered.*

Based on a desktop review, a site visit on May 13, 2022, by Hanson, and the aerial map of the project area (Appendix B, page 4), there is farmland as defined by the Farmland Protection Policy Act within and adjacent to the project area. This farmland adjacent to

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the project area is characterized as forestland. This farmland is not located in areas where ROW will be required. An early coordination letter was sent on August 8, 2022, to the NRCS. The NRCS responded on August 10, 2022, stating that there will be no conversion of prime farmland (Appendix C, page 7). No alternatives other than those previously discussed in this document will be investigated without reevaluating impacts to prime farmland.

### SECTION D – CULTURAL RESOURCES

<b>Minor Projects PA</b>	<b>Category(ies) and Type(s)</b> <input type="text" value="B-4 and B-9"/>	<b>INDOT Approval Date(s)</b> <input type="text" value="October 7, 2022"/>	<b>N/A</b> <input type="text"/>
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**Full 106 Effect Finding**

No Historic Properties Affected       No Adverse Effect       Adverse Effect

**Eligible and/or Listed Resources Present**

NRHP Building/Site/District(s)       Archaeology       NRHP Bridge(s)

**Documentation Prepared** (mark all that apply)

- APE, Eligibility and Effect Determination
- 800.11 Documentation
- Historic Properties Report or Short Report
- Archaeological Records Check and Assessment
- Archaeological Phase Ia Survey Report
- Archaeological Phase Ic Survey Report
- Other:

**ESD Approval Date(s)**

**SHPO Approval Date(s)**


**MOA Signature Dates** (List all signatories)

Memorandum of Agreement (MOA)

*If the project falls under the MPPA, describe the category(ies) that the project falls under and any approval dates. If the project requires full Section 106, use the headings provided. The completion of the Section 106 process requires that a Legal Notice be published in local newspapers. Please indicate the publication date, name of the paper(s) and the comment period deadline. Include any further Section 106 work which must be completed at a later date, such as mitigation from a MOA or avoidance commitments.*

On October 7, 2022, the INDOT Cultural Resource Office (CRO) determined that this project falls within the guidelines of Category B, Type 4 and Type 9, under the Minor Projects Programmatic Agreement, (Appendix D, pages 4 and 5). Category B, Type 4 refers to “installation of new safety appurtenances, including but not limited to, guardrails, barriers, glare screens, and crash attenuators”. Category B, Type 9 refers to “installation, replacement, repair, lining, or extension of culverts and other drainage structures”. The project is occurring in previously disturbed soils. No further consultation is required. This completes the Section 106 process and the responsibilities of the FHWA under Section 106 have been fulfilled.

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<b>SECTION E – SECTION 4(f) RESOURCES/ SECTION 6(f) RESOURCES</b>
---

	<u>Presence</u>	<u>Use</u>	
		Yes	No
<b>Parks and Other Recreational Land</b>			
Publicly owned park	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Publicly owned recreation area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (school, state/national forest, bikeway, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Wildlife and Waterfowl Refuges</b>			
National Wildlife Refuge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National Natural Landmark	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State Wildlife Area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State Nature Preserve	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Historic Properties</b>			
Site eligible and/or listed on the NRHP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
 <b><u>Evaluations</u></b>			
	<b><u>Prepared</u></b>		
Programmatic Section 4(f)	<input type="checkbox"/>		
"De minimis" Impact	<input type="checkbox"/>		
Individual Section 4(f)	<input type="checkbox"/>		
Any exception included in 23 CFR 774.13	<input type="checkbox"/>		

*Discuss Programmatic Section 4(f) and "de minimis" Section 4(f) impacts in the discussion below. Individual Section 4(f) documentation must be included in the appendix and summarized below. Discuss proposed alternatives that satisfy the requirements of Section 4(f). FHWA has identified various exceptions to the requirement for Section 4(f) approval. Refer to 23 CFR § 774.13 - Exceptions.*

Section 4(f) of the U.S. Department of Transportation Act of 1966 prohibits the use of certain public and historic lands for federally funded transportation facilities unless there is no feasible and prudent alternative. The law applies to significant publicly owned parks, recreation areas, wildlife/waterfowl refuges, and National Register of Historic Places (NRHP) eligible or listed historic properties regardless of ownership. Lands subject to this law are considered Section 4(f) resources.

Based on a desktop review, the aerial map of the project area (Appendix B, page 4), and the RFI report (Appendix E, page 3), there are no potential 4(f) resources located within the 0.5-mile search radius. Based on additional research and the site visit on May 13, 2022, by Hanson, there are no Section 4(f) resources within or adjacent to the project area. Therefore, no use is expected.

**Section 6(f) Involvement**

**Section 6(f) Property**

**Presence**

**Use**

Yes

No




*Discuss Section 6(f) resources present or not present. Discuss if any conversion would occur as a result of this project. If conversion will occur, discuss the conversion approval.*

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 6(f) properties on the INDOT ESD website revealed a total of five properties in Greene County (Appendix I, page 4). None of these properties are located within or adjacent to the project area. Therefore, there will be no impacts to 6(f) resources.



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### SECTION F – Air Quality

**STIP/TIP and Conformity Status of the Project**

Is the project in the most current STIP/TIP?  Yes  No  
 Is the project located in an MPO Area?  Yes  No  
 Is the project in an air quality non-attainment or maintenance area?  Yes  No  
 If Yes, then:  
     Is the project in the most current MPO TIP?  Yes  No  
     Is the project exempt from conformity?  Yes  No  
 If No, then:  
     Is the project in the Transportation Plan (TP)?  Yes  No  
     Is a hot spot analysis required (CO/PM)?  Yes  No

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

Location in STIP: FY 2022-2026, page 94

Name of MPO (if applicable): \_\_\_\_\_

Location in TIP (if applicable): \_\_\_\_\_

Level of MSAT Analysis required?

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

*Describe if the project is listed in the STIP and if it is in a TIP. Describe the attainment status of the county(ies) where the project is located. Indicate whether the project is exempt from a conformity determination. If the project is not exempt, include information about the TP and TIP. Describe if a hot spot analysis is required and the MSAT Level.*

This project is included in the Fiscal Year (FY) 2022 to 2026 Statewide Transportation Improvement Program (STIP) (Appendix H, page 2).

This project is located in Greene County, which is currently in attainment for all criteria pollutants according to IDEM. Therefore, the conformity procedures of 40 CFR Part 93 do not apply.

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.

### SECTION G - NOISE

**Noise**

**Yes      No**

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

Date Noise Analysis was approved/technically sufficient by INDOT ESD: \_\_\_\_\_

*Describe if the project is a Type I or Type III project. If it is a Type I project, describe the studies completed to date and if noise impacts were identified. If noise impacts were identified, describe if abatement is feasible and reasonable and include a statement of likelihood.*

This project is a Type III project. In accordance with 23 CFR 772 and the current *Indiana Department of Transportation Traffic Noise Analysis Procedure*, this action does not require a formal noise analysis.

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## SECTION H – 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 discussion below)

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

*Discuss how the project complies with the area's local/regional development patterns; whether the project will impact community cohesion; and impact community events. Discuss how the project conforms with the ADA Transition Plan.*

The Greene County Americans with Disabilities Act (ADA) Transition Plan was reviewed by Hanson on September 15, 2022 ([https://www.co.greene.in.us/egov/documents/1494335897\\_69977.pdf](https://www.co.greene.in.us/egov/documents/1494335897_69977.pdf)). The proposed project is a federal-aid project, meaning all improvements to the infrastructure must conform to the ADA. However, no sidewalks are present or proposed within the project limits. Therefore, the ADA transition plan is not applicable for the proposed project.

On September 15, 2022, Hanson reviewed [www.indianafestivals.org](http://www.indianafestivals.org) for any special events or festivals in Greene County throughout the year. There is one festival, Linton Freedom Festival, scheduled for July 3, 2023, to July 7, 2023. If these events are held during the proposed construction activities, the commute times to events may be impacted due to increased travel time from the detour. Early coordination letters were sent to the Greene County Commissioners on August 8, 2022, for planning and scheduling purposes.

SR 445 will close for approximately 16 weeks during construction. Delays shall occur during construction but will cease with project completion. Temporary community and economic impacts will occur due to increased travel time and expense; therefore, no long-term negative impacts to the community or its economy are expected.

### Public Facilities and Services

*Discuss what public facilities and services are present in the project area and impacts (such as MOT) that will occur to them. Include how the impacts have been minimized and what coordination has occurred. Some examples of public facilities and services include health facilities, educational facilities, public and private utilities, emergency services, religious institutions, airports, transportation or public pedestrian and bicycle facilities.*

Based on a desktop review, the aerial map of the project area (Appendix B, page 4), and the RFI report (Appendix E, page 3), there is one school located within the 0.5-mile search radius. There are no public facilities within or adjacent to the project area, which was confirmed by the site visit on May 13, 2022, by Hanson. Therefore, no impacts are expected. Access to all properties will be maintained during construction.

It is the responsibility of the project sponsor to notify school corporations and emergency services at least two weeks prior to any construction that would block or limit access.

### Environmental Justice (EJ) (Presidential EO 12898)

- During the development of the project were EJ issues identified?
- Does the project require an EJ analysis?  
If YES, then:
  - Are any EJ populations located within the project area?
  - Will the project result in adversely high and disproportionate impacts to EJ populations?

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

*Indicate if EJ issues were identified during project development. If an EJ analysis was not required, discuss why. If an EJ analysis was required, describe how the EJ population was identified. Include if the project has a disproportionately high or adverse effect on EJ populations and explain your reasoning. If yes, describe actions to avoid, minimize and mitigate these effects.*

Under FHWA Order 6640.23A, FHWA and the project sponsor, 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. Per the current INDOT Categorical Exclusion Manual, an Environmental Justice (EJ) Analysis is required for any project

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that has two or more relocations or 0.5 acre of additional permanent right-of-way. The project will require 3.328 acres of permanent ROW; 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. The reference population may be a county, city or town and is called the community of comparison (COC). In this project, the COC is Greene County, Indiana. The community that overlaps the project area is called the affected community (AC). In this project, the project location is along the border between two census tracts; therefore, two ACs were utilized in the EJ analysis. The area designated as AC1 is Census Tract 9547.01, Greene County, Indiana, and the area designated as AC2 is Census Tract 9547.02, Greene County Indiana. 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. Data from the American Community Survey (ACS) 2020 5-Year Estimate was obtained from the U.S. Census Bureau on June 21, 2022, by Hanson. The data collected for minority and low-income populations within the AC are summarized in the below table.

	<b>COC – Greene County, Indiana</b>	<b>AC1 – Census Tract 9547.01, Greene County, Indiana</b>	<b>AC2 – Census Tract 9547.02, Greene County, Indiana</b>
<b>Percent Minority</b>	3.9%	2.5%	0.39%
125% of COC	4.8%	AC < 125% COC	AC < 125% COC
EJ Population of Concern		<b>No</b>	<b>No</b>
<b>Percent Low-Income</b>	13%	12%	9%
125% of COC	17%	AC < 125% COC	AC < 125% COC
EJ Population of Concern		<b>No</b>	<b>No</b>

Minority and Low-Income Data (ACS, 2020)

The AC1, Census Tract 9547.01, has a percent minority of 2.5% which is below 50% and the 125% COC threshold. The AC2, Census Tract 9547.02, has a percent minority of 0.39% which is below 50% and the 125% COC threshold. The AC1, Census Tract 9547.01, has a percent low-income of 12% which is below 50% and the 125% COC threshold. The AC2, Census Tract 9547.02, has a percent low-income of 9% which is below 50% and the 125% COC threshold. Therefore, AC1 and AC2 do not contain minority or low-income populations of EJ concern.

The census data sheets, map, and calculations can be found in Appendix I (pages 2 to 3). The EJ analysis for the area impacted by the proposed project resulted in no adverse impacts to minority or low-income populations. No further EJ analysis is warranted.

**Relocation of People, Businesses or Farms**

Will the proposed action result in the relocation of people, businesses or farms?  
Is a BIS or CSRS required?

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

Number of relocations:      Residences: \_\_\_\_\_      Businesses: \_\_\_\_\_      Farms: \_\_\_\_\_      Other: \_\_\_\_\_

*Discuss any relocations that will occur due to the project. If a BIS or CSRS is required, discuss the results in the discussion below.*

No relocations of people, businesses, or farms will take place as a result of this project.

### SECTION I – HAZARDOUS MATERIALS & REGULATED SUBSTANCES

**Hazardous Materials & Regulated Substances** (Mark all that apply)

- Red Flag Investigation (RFI)
- Phase I Environmental Site Assessment (Phase I ESA)
- Phase II Environmental Site Assessment (Phase II ESA)
- Design/Specifications for Remediation required?

**Documentation**

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

Date RFI concurrence by INDOT SAM (if applicable): November 7, 2022

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*Include a summary of the potential hazardous material concerns found during review. Discuss in depth sites found within, directly adjacent to, or ones that could impact the project area. Refer to current INDOT SAM guidance. If additional documentation (special provisions, pay quantities, etc.) will be needed, include in discussion. Include applicable commitments.*

Based on a review of Geographic Information Systems (GIS) and available public records, the RFI was completed on June 22, 2022, by Hanson, and INDOT Site Assessment and Management (SAM) provided their concurrence on November 7, 2022 (Appendix E, pages 4 and 5). Three NPDES Facilities are located within 0.5 mile of the project area. None of the hazmat sites identified will impact the project. Further investigation for hazardous material concerns is not required at this time.

### Part IV – Permits and Commitments

#### PERMITS CHECKLIST

**Permits** (mark all that apply)

**Likely Required**

**Army Corps of Engineers (404/Section10 Permit)**

Nationwide Permit (NWP)	<input checked="" type="checkbox"/>
Regional General Permit (RGP)	<input type="checkbox"/>
Individual Permit (IP)	<input type="checkbox"/>
Other	<input type="checkbox"/>

**IN Department of Environmental Management (401/CSGP)**

Nationwide Permit (NWP)	<input checked="" type="checkbox"/>
Regional General Permit (RGP)	<input type="checkbox"/>
Individual Permit (IP)	<input type="checkbox"/>
Isolated Wetlands	<input type="checkbox"/>
Construction Stormwater General Permit (CSGP)	<input checked="" type="checkbox"/>
Other	<input type="checkbox"/>

**IN Department of Natural Resources**

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

**Mitigation Required**

**US Coast Guard Section 9 Bridge Permit**

**Others (Please discuss in the discussion below)**

*List the permits likely required for the project and summarize why the permits are needed, including permits designated as "Other."*

INDOT EWPO responded on October 20, 2022, with required permits based on the current project scope and impacts (Appendix F, page 44). This project will need an IDEM 401 WQC and USACE 404 NWP #14 due to stream and wetland impacts. Mitigation is not anticipated due to cumulative impacts being less than 0.1 ac. of wetland and 300 linear ft./0.03 ac. of stream. An IDEM CSGP will be required due to soil disturbance being greater than 1.0 ac.

Applicable recommendations provided by resource agencies are included in the *Environmental Commitments* section of this document. If permits are found to be necessary, the conditions of the permit will be requirements of the project and will supersede these recommendations.

It is the responsibility of the project sponsor to identify and obtain all required permits.

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### ENVIRONMENTAL COMMITMENTS

List all commitments and include the name of agency/organization requesting/requiring the commitment(s). Listed commitments should be numbered.

#### Firm:

- 1) If the scope of work or permanent or temporary right-of-way amounts change, the INDOT Environmental Services Division (ESD) and the INDOT District Environmental Section will be contacted immediately. (INDOT ESD and INDOT District)
- 2) It is the responsibility of the project sponsor to notify school corporations and emergency services at least two weeks prior to any construction that would block or limit access. (INDOT ESD)
- 3) Any work in a wetland area within ROW or in borrow/waste area is prohibited unless specifically allowed in the USACE permit. (INDOT ESD)
- 4) If construction will begin after May 13, 2024, an inspection of the structure by a qualified individual must be performed. Inspection of the structure should check for presence of bats/bat indicators and/or presence of birds. The results of the inspection must indicate no signs of bats or birds. If signs of bats or birds are documented during this inspection, the INDOT District Environmental Manager must be contacted immediately. (INDOT ESD)
- 5) Nests without eggs or young should be removed prior to construction during the non-nesting season (September 8 – April 30) and during the nesting season if no eggs or young are present. Nests with eggs or young cannot be removed or disturbed during the nesting season (May 1 – September 7). Nests with eggs or young should be screened or buffered from active construction. Details of the required procedures are outlined in the "Potential Migratory Bird on Structure" USP. (INDOT ESD)
- 6) If any karst features are encountered or affected, coordination with USFWS will occur. (USFWS)
- 7) Tree clearing should be done between November 15 and March 31 to allow for the conclusion of fall swarming around the hibernacula. (INDOT ESD and USFWS)
- 8) General AMM 1: Ensure all operators, employees, and contractors working in areas of know or presumed bat habitat are aware of all FHQA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs. (USFWS)
- 9) Lighting AMM 1: Direct temporary lighting away from suitable habitat during the active season. (USFWS)
- 10) Hibernacula AMM 1: For projects located within karst areas, on-site personnel will use best management practices, secondary containment measures, or other standard spill prevention and countermeasures to avoid impacts to possible hibernacula. Where practicable, a 300 ft. buffer will be employed to separate fueling areas and other major containment risk activities from caves, sinkholes, losing streams, and springs in karst topography. (USFWS)
- 11) Tree Removal AMM 1: Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to avoid tree removal. (USFWS)
- 12) Tree Removal AMM 2: Apply time of year restrictions for tree removal when bats are not likely to be present, or limit tree removal to 10 or fewer trees per project at any time of year within 100 ft. of existing road/rail surface and outside of documented roosting/foraging habitat or travel corridors; visual emergence survey must be conducted with no bats observed. (USFWS)
- 13) 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)
- 14) Tree Removal AMM 4: Do not remove documented Indiana bat or NLEB roosts that are still suitable for roosting, or trees within 0.25 miles of roosts, or documented foraging habitat any time of year. (USFWS)

#### For Further Consideration:

- 1) Impacts to non-wetland forest of one (1) acre or more should be mitigated at a minimum 2:1 ratio. If less than one acre of non-wetland forest is removed in a rural setting, replacement should be at a 1:1 ratio based on area. 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 inches dbh or greater (5:1 mitigation based on the number of large trees). (IDNR-DFW)
- 2) Do not cut any trees suitable for Indiana bat or NLEB roosting (greater than 5 in. dbh, living or dead, with loose hanging bark, or with cracks, crevices, or cavities) from April 1 through September 30. (IDNR-DFW)
- 3) Restrict below low-water work in streams to placement of culverts, piers, pilings, and/or footings, shaping of the spill slopes around bridge abutments, and placement of riprap. (USFWS)
- 4) Minimize the extent of hard armor (riprap) in bank stabilization by using bioengineering techniques whenever possible. If riprap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat. (USFWS)
- 5) Avoid all work within the inundated part of the stream channel during the fish spawning season (April 1 through June 30); except work within sealed structures such as caissons or cofferdams that were installed prior to the spawning season. No

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equipment shall be operated below OHWM during this time unless the machinery is within the caissons or on the cofferdams. (USFWS)

- 6) Evaluate wildlife crossings under bridge/culverts projects in appropriate situations. Suitable crossings include flat areas below bridge abutments with suitable ground cover, high water shelves in culverts, amphibian tunnels, and diversion fencing. (USFWS)

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## APPENDIX A

# INDOT Supporting Documentation



### Categorical Exclusion Level Thresholds

	PCE	Level 1	Level 2	Level 3	Level 4 <sup>1</sup>
<b>Section 106</b>	Falls within guidelines of Minor Projects PA	"No Historic Properties Affected"	"No Adverse Effect"	-	"Adverse Effect" Or Historic Bridge involvement <sup>2</sup>
<b>Stream Impacts<sup>3</sup></b>	No construction in waterways or water bodies	< 300 linear feet of stream impacts	≥ 300 linear feet of stream impacts	-	USACE Individual 404 Permit <sup>4</sup>
<b>Wetland Impacts<sup>3</sup></b>	No adverse impacts to wetlands	< 0.1 acre	-	< 1.0 acre	≥ 1.0 acre
<b>Right-of-way<sup>5</sup></b>	Property acquisition for preservation only or none	< 0.5 acre	≥ 0.5 acre	-	-
<b>Relocations<sup>6</sup></b>	None	-	-	< 5	≥ 5
<b>Threatened/Endangered Species (Species Specific Programmatic for Indiana bat &amp; northern long eared bat)*</b>	"No Effect", "Not likely to Adversely Affect" (With select AMMs <sup>7</sup> )	"Not likely to Adversely Affect" (With any AMMs or commitments)	-	"Likely to Adversely Affect"	Project does not fall under Species Specific Programmatic <sup>8</sup>
<b>Threatened/Endangered Species (Any other species)*</b>	Falls within guidelines of USFWS 2013 Interim Policy or "No Effect"	"Not likely to Adversely Affect"	-	-	"Likely to Adversely Affect"
<b>Environmental Justice</b>	No disproportionately high and adverse impacts	-	-	-	Potential <sup>9</sup>
<b>Sole Source Aquifer</b>	No Detailed Groundwater Assessment	-	-	-	Detailed Groundwater Assessment
<b>Floodplain</b>	No Substantial Impacts	-	-	-	Substantial Impacts
<b>Section 4(f) Impacts</b>	None	-	-	-	Any <sup>10</sup>
<b>Section 6(f) Impacts</b>	None	-	-	-	Any
<b>Permanent Traffic Alteration</b>	None	-	-	-	Any
<b>Noise Analysis Required</b>	No	-	-	-	Yes
<b>Air Quality Analysis Required</b>	No	-	-	-	Yes <sup>11</sup>
<b>Approval Level</b>	Concurrence by				
<ul style="list-style-type: none"> <li>• District Env. (DE)</li> <li>• Env. Serv. Div. (ESD)</li> <li>• FHWA</li> </ul>	DE or ESD	DE or ESD	DE or ESD	DE and/or ESD	DE and/or ESD; and FHWA

<sup>1</sup> Coordinate with INDOT Environmental Services Division. INDOT will then coordinate with the appropriate FHWA Environmental Specialist.

<sup>2</sup> Any involvement with a bridge processed under the Historic Bridge Programmatic Agreement.

<sup>3</sup> Total permanent impacts to streams (linear feet) and wetlands (acres).

<sup>4</sup> US Army Corps of Engineers Individual 404 Permit

<sup>5</sup> Total permanent and temporary right-of-way. This does not include reacquisition of existing apparent right-of-way.

<sup>6</sup> If any relocations are within an area with a known or suspected Environmental Justice (EJ) or disadvantaged population, or has greater than 5 relocations, a conversation with FHWA, through INDOT ESD, is needed to confirm NEPA classification and outreach plan for the project.

<sup>7</sup> Avoidance and Mitigation Measures (AMMs) determined by the IPAC determination key to be required that are not tree AMMs, bridge AMMs, or structure AMMs.

<sup>8</sup> Projects that do not fall under a Species Specific Programmatic and results in a "Likely to Adversely Affect". Other findings can be processed as a lower-level CE.

<sup>9</sup> Potential for causing a disproportionately high and adverse impact.

<sup>10</sup> Section 4(f) use resulting in an Individual, Programmatic, or *de minimis* evaluation. The only exception is a *de minimis* evaluation for historic properties (Effective January 2, 2020). If a historic property *de minimis* and no other use, mark the *None* column.

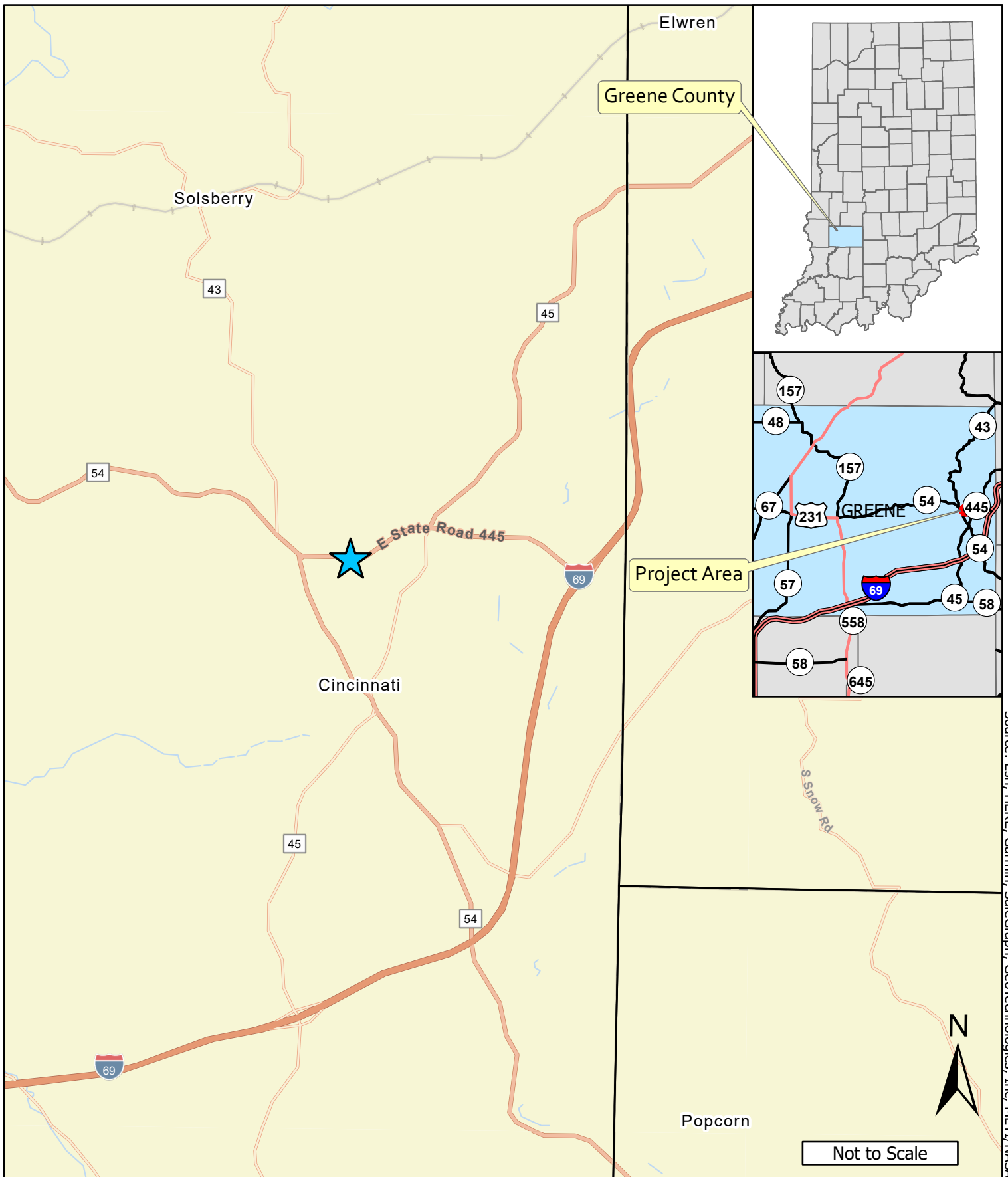
<sup>11</sup> Hot Spot Analysis and/or MSAT Quantitative Emission Analysis.

\* Includes the threatened/endangered species critical habitat

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

## APPENDIX B

# Graphics



Source: Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

**Figure 1 Project Location**

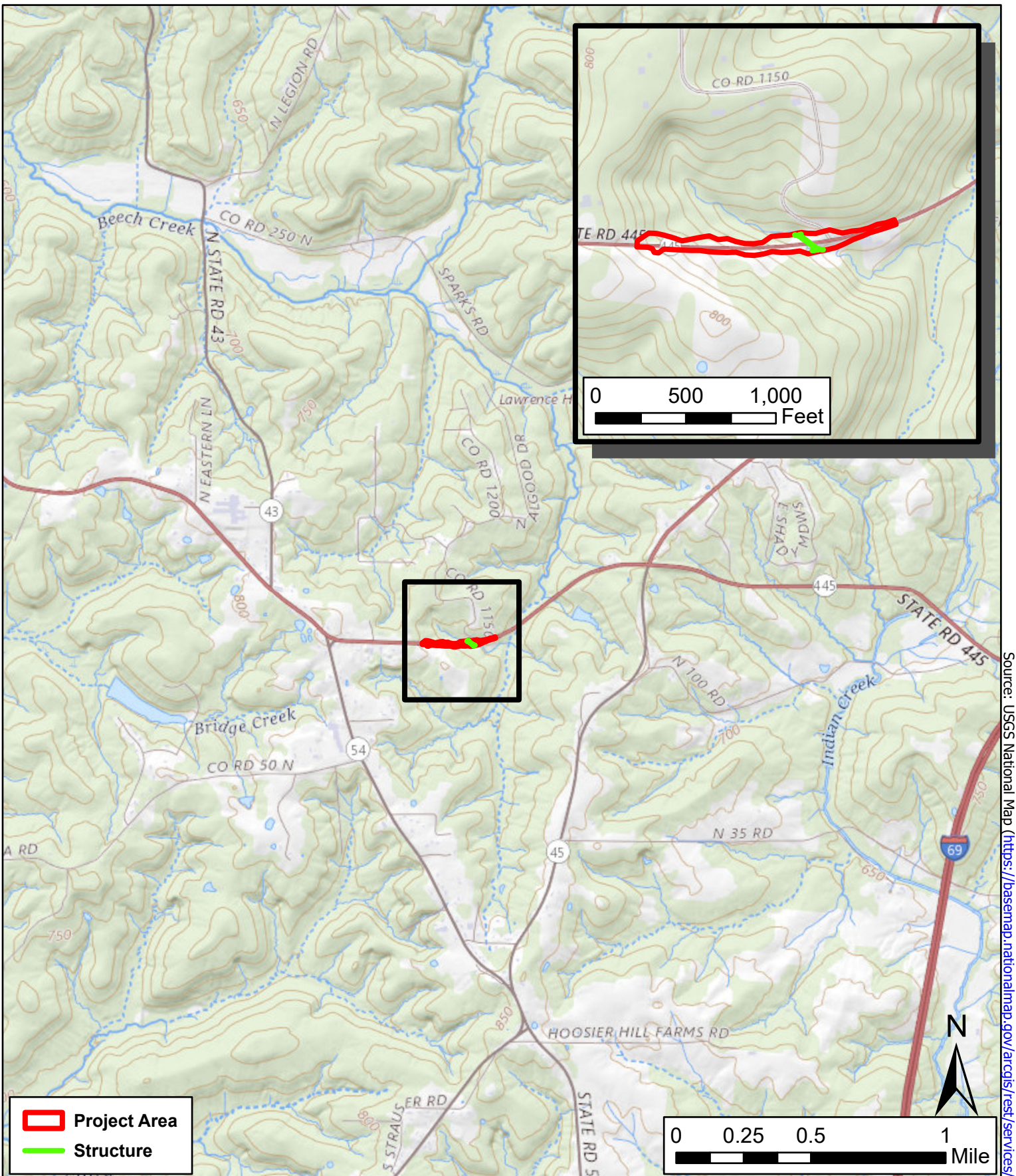
**Categorical Exclusion**  
 SR 445 Guardrail Improvement Project  
 Greene County, Indiana

Des. No. 2100161

Created: 7/8/2022

**Indiana Department of Transportation**  
 100 North Senate Avenue  
 Indianapolis, IN 46204





Source: USGS National Map (<https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer/0>)

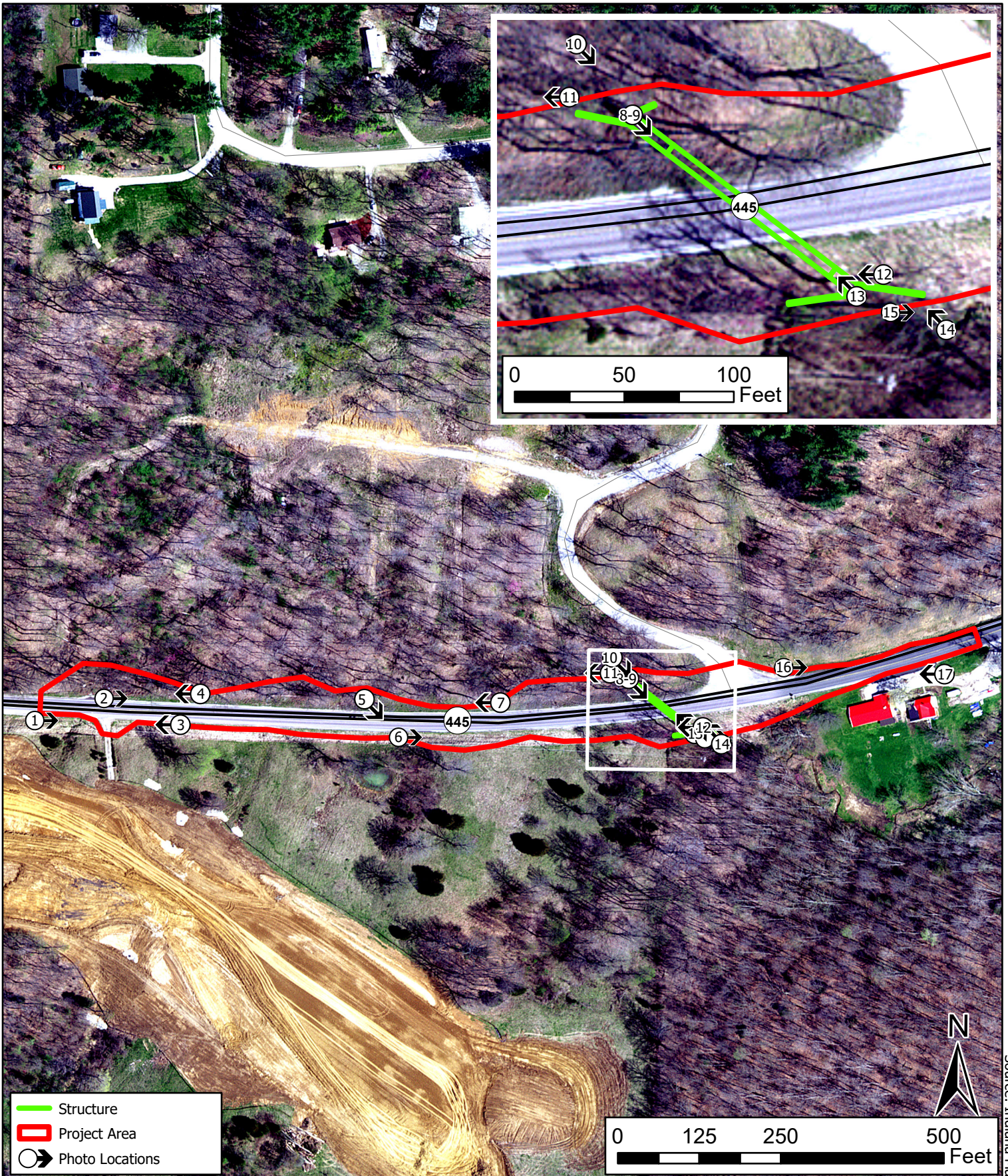
**Figure 2 USGS Topographic Map**

**Categorical Exclusion**  
 SR 445 Guardrail Improvement Project  
 Greene County, Indiana

Des. No. 2100161 Created: 6/27/2022

**Indiana Department of Transportation**  
 100 North Senate Avenue  
 Indianapolis, IN 46204





**Figure 3 Aerial Imagery and Photo Location**  
**Categorical Exclusion**  
 SR 445 Guardrail Improvement Project  
 Greene County, Indiana  
 Des. No. 2100161      Created: 7/8/2022

**HANSON**  
 Hanson Professional Services Inc.

**Indiana Department of Transportation**  
 100 North Senate Avenue  
 Indianapolis, IN 46204

Source: Indiana Map ([www.indianamap.org](http://www.indianamap.org))



Photo 1. Roadside ditch on south side of SR 445, viewing east,  
5/13/2022



Photo 2. Roadside slope on north side of SR 445, viewing east,  
5/13/2022



Photo 3. Roadside ditch on south side of SR 445, viewing west,  
5/13/2022



Photo 4. Roadside slope on north side of SR 445, viewing west,  
5/13/2022



Photo 5. Roadside slope on north side of SR 445, viewing southeast, 5/13/2022



Photo 6. Roadside ditch on south side of SR 445, viewing east, 5/13/2022



Photo 7. Roadside slope on north side of SR 445, viewing west, 5/13/2022



Photo 8. Inlet of culvert (CV 445-28-000.52) and UNT to Beech Creek north of SR 445 facing downstream, viewing southeast, 5/13/2022



Photo 9. Inside of culvert (CV 445-28-000.52) at inlet and UNT to Beech Creek facing downstream, viewing southeast, 5/13/2022



Photo 10. Inlet of culvert (CV 445-28-000.52) and UNT to Beech Creek with surrounding forest facing downstream, viewing southeast, 5/13/2022



Photo 11. UNT to Beech Creek north of SR 445 facing upstream, viewing west, 5/13/2022



Photo 12. Outlet of culvert (CV 445-28-000.52) and UNT to Beech Creek, viewing west, 5/13/2022





Photo 13. Inside of culvert (CV 445-28-000.52) at outlet facing upstream, viewing northwest, 5/13/2022



Photo 14. Surrounding area at outlet of culvert with UNT to Beech Creek facing upstream, viewing northwest, 5/13/2022



Photo 15. UNT to Beech Creek south of SR 445 facing downstream, viewing east, 5/13/2022

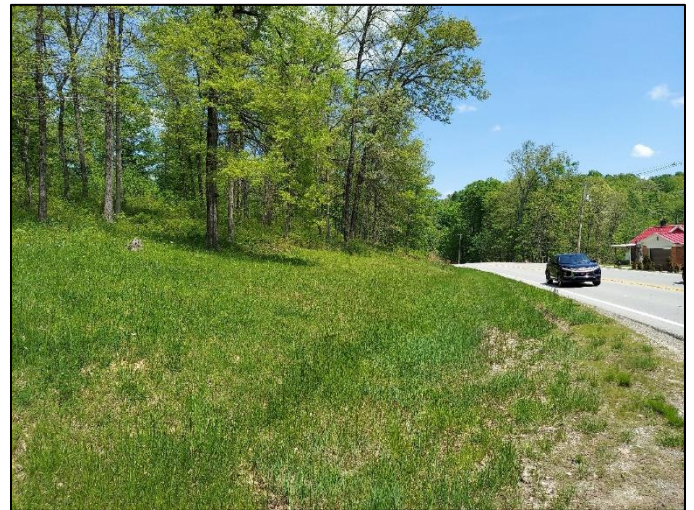


Photo 16. Roadside north of SR 445, viewing east, 5/13/2022



Photo 17. Roadside with residence south of SR 445, viewing west,  
5/13/2022

PROJECT	DESIGNATION
2100161	2100161
CONTRACT	
T-43663	
CULVERT ASSET ID	
CV 445-28-000.53	

# INDIANA DEPARTMENT OF TRANSPORTATION



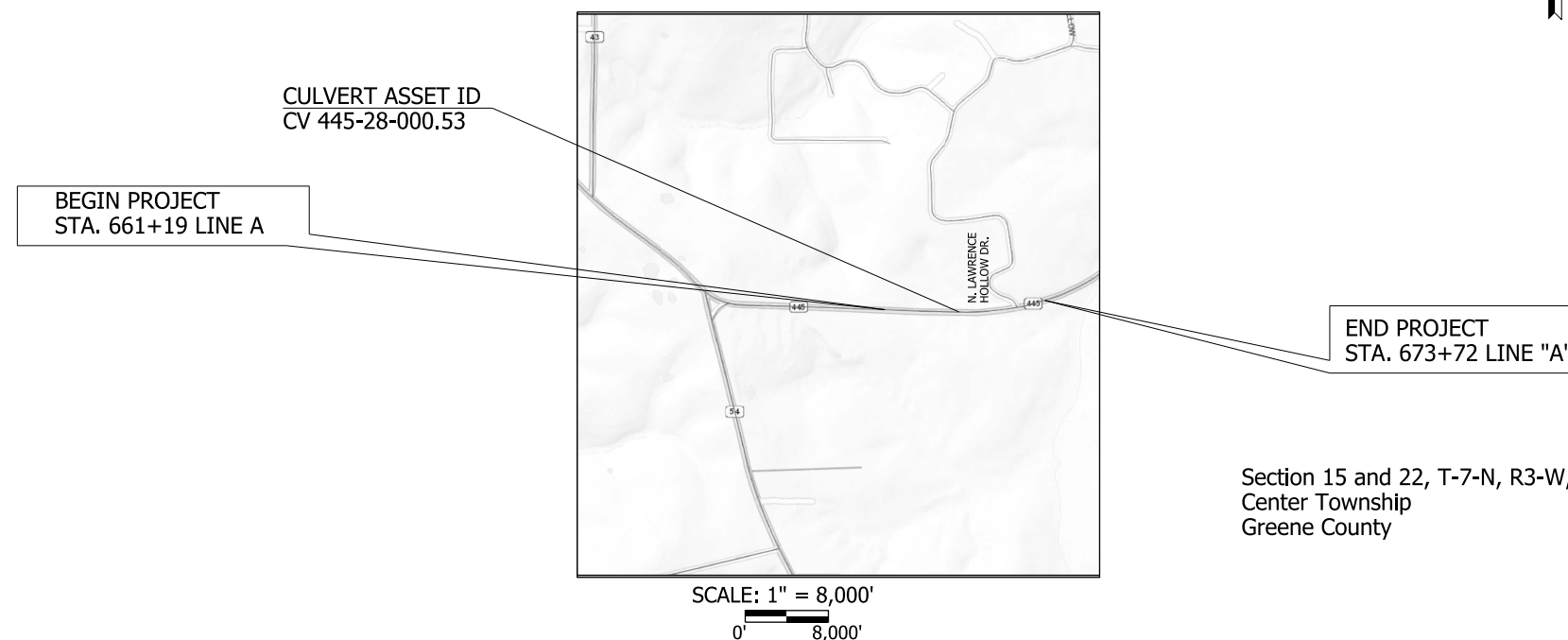
## ROAD PLANS

ROUTE: SR 445 AT: RP 0+39 TO 0+62

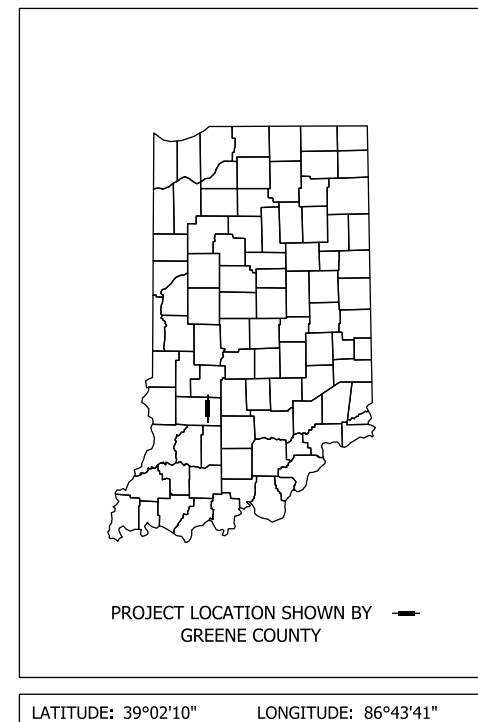
PROJECT NO. 2100161 P.E.  
2100161 R/W  
2100161 CONST.

Small structure extension on SR 445 over Unnamed Tributary, located approximately 0.39 miles East of State Road 54 in Section 15 and 22, T-7-N, R-3-W, Center Township Greene County, Indiana.

Gross Length: 0.237 MI.  
Net Length: 0.237 MI.  
Maximum Grade: 6.82 %



TRAFFIC DATA	
A.A.D.T. (2022)	3,751 V.P.D.
A.A.D.T. (2043)	3,751 V.P.D.
D.H.V. (2043)	9.78 %
DIRECTIONAL DISTRIBUTION	48.41 %
TRUCKS	2.83 % A.A.D.T. 2.18 % D.H.V.
DESIGN DATA	
DESIGN SPEED	50 M.P.H.
PROJECT DESIGN CRITERIA	3R (Non-Freeway)
FUNCTIONAL CLASSIFICATION	State Collector
RURAL/URBAN	Rural
TERRAIN	Rolling
ACCESS CONTROL	None



INDIANA DEPARTMENT OF TRANSPORTATION  
STANDARD SPECIFICATIONS DATED 2022  
TO BE USED WITH THESE PLANS



2857 Charlestown Road, Suite 400  
New Albany, IN 47150  
Phone (812) 944-9672

PLANS PREPARED BY: **HMB Professional Engineers** (812) 944-9672  
PHONE NUMBER

CERTIFIED BY: \_\_\_\_\_ DATE

APPROVED FOR LETTING: \_\_\_\_\_ DATE  
INDIANA DEPARTMENT OF TRANSPORTATION

CULVERT ASSET ID	CV 445-28-000.53
DESIGNATION	2100161

SHEETS	
1	of 17
CONTRACT	PROJECT
T-43663	2100161

\$FILES

**UTILITIES**

Comcast Cable Richard Miller 1600 West Fountain Dr. Bloomington, IN 47404 Phone: (317) 645-2670 Email: Richard_Miller3@cable.comcast.com	Smithville Telephone Company, INC. Joe Brynlarski 1600 W. Temperance ST., Ellettsville, IN 47429 Phone: (812)935-2262 Email: Joe.Bryniarski@smithville.com
Eastern Heights Utilities, Inc. Loys Rees 6219 S. East St., Indianapolis, IN 46227 Phone: (317)788-4551 Email: LoysR@weslerengineering.com Email: ehewater@wspaninternet.com	Utilities Dist. of Western Indiana R.E.M.C. David Patterson P.O. Box 427, Bloomfield, IN 47424 Phone: (812)384-4446 Email: dpatterson@udwiremc.com
Midwest Natural Gas Corporation Greg Friedrich P.O. BOX 66, Bloomfield, IN 47424 Phone: (630) 484-8675 Email: gjf1952@aol.com	Zayo Bandwidth Waylon Higgins 722 N. High School Rd, Indianapolis, IN 46214 Phone: (765)341-1199 Email: waylon.higgins@zayo.com

**GENERAL NOTES**

Access to drives should be maintained throughout construction.

All earth shoulders, median areas, and cut and fill slopes shall be plain or mulch seeded except where sodding or erosion control blanket is specified.

Clearing of right-of-way limits are to the existing right-of-way. Contractor shall clear and grub to these limits for utility relocation.

**INDEX**

SHEET NO.	DRAWINGS INDEX
1	TITLE SHEET
2	INDEX AND GENERAL NOTES
3-4	TYPICAL CROSS SECTIONS
5	TRAFFIC CONTROL PLAN
6	GEOMETRIC TIE-UP SHEET
7	PLAT NO. 1
8	PLAN & PROFILE SHEET
9-11	CONSTRUCTION DETAILS
12-13	STRUCTURE DETAIL SHEETS
14	GUARDRAIL AND PAVEMENT MARKING DETAILS
15-16	TEMPORARY EROSION AND SEDIMENT CONTROL
17	PUMP AROUND DETAIL
18	DRIVEWAY DETAILS
19	ROAD SUMMARY SHEET
XS1-XS15	CROSS SECTIONS

**REVISIONS**

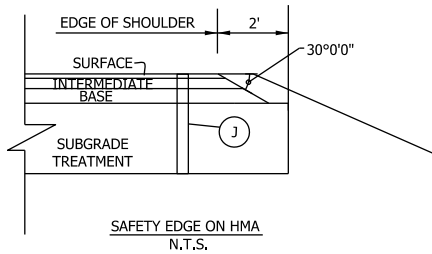
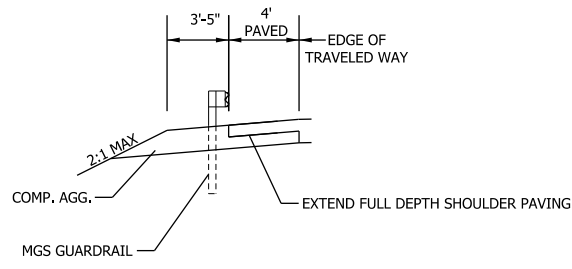
SHEET NO.	DATE	REVISED



RECOMMENDED FOR APPROVAL _____		DESIGN ENGINEER _____		DATE _____	
DESIGNED:	AKH	01-01-22	DRAWN:	AKH	01-01-22
CHECKED:	RMH	01-01-22	CHECKED:	RMH	01-01-22

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>INDEX &amp; GENERAL NOTES</b>	

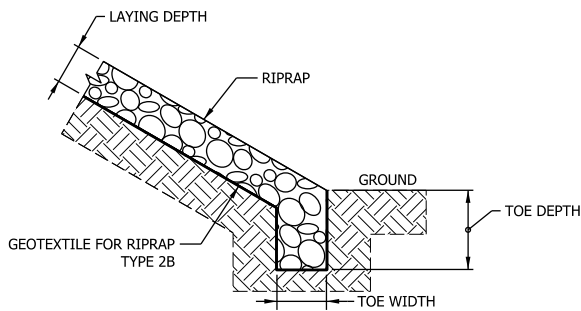
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	DESIGNATION 2100161
	SHEETS 2 of 19
CONTRACT T-43663	PROJECT 2100161



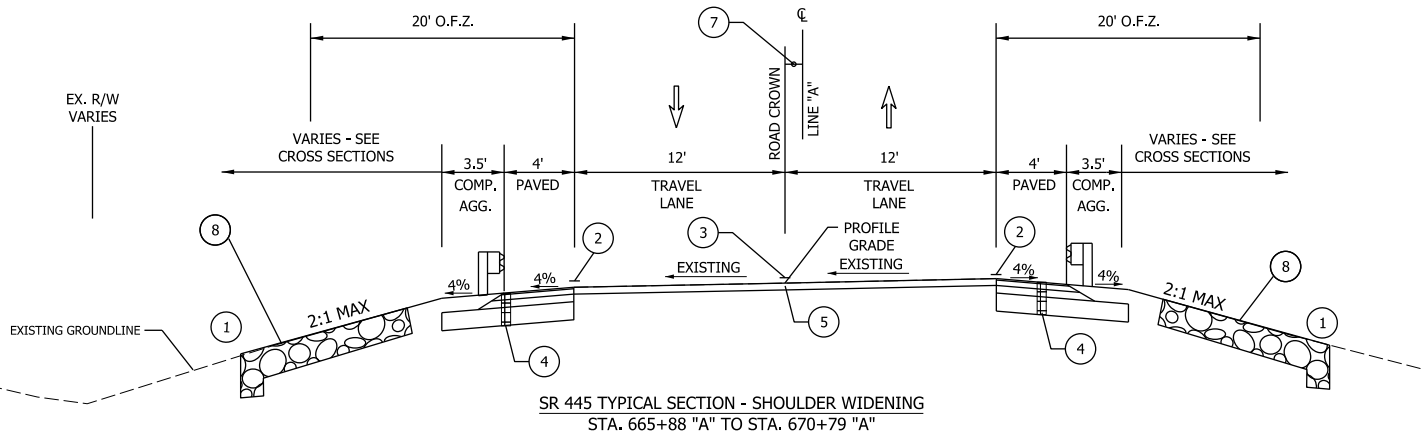
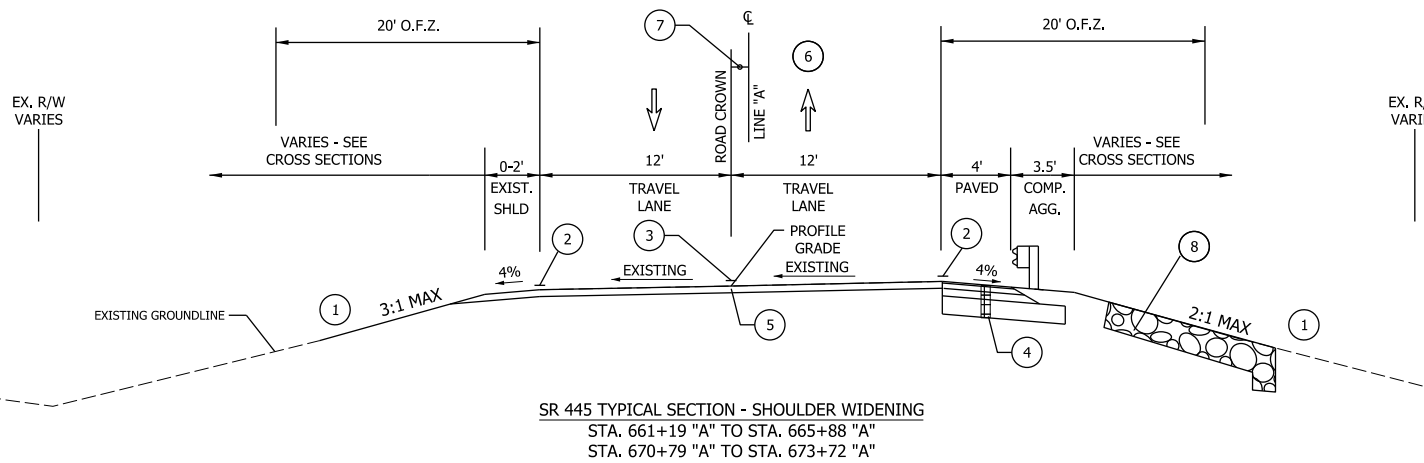
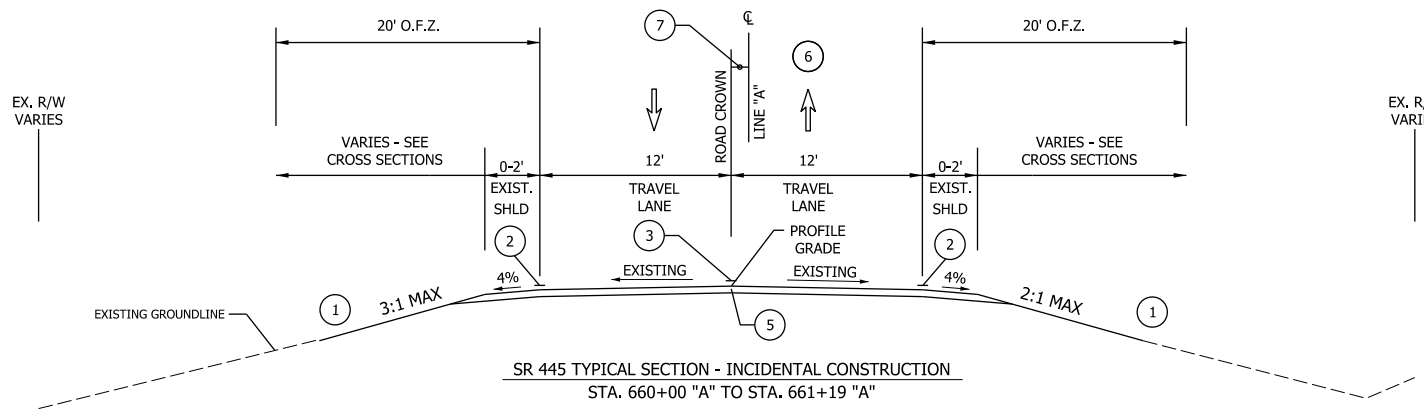
2:1 Slopes	2'-0"	4'-0"	2'-0"
3:1 Slopes	3'-0"	4'-0"	3'-0"
4:1 Slopes	4'-0"	4'-0"	4'-0"

18" - REVETMENT RIPRAP  
24" - CLASS 1 RIPRAP

**RIPRAP DITCH**  
N.T.S.



RIPRAP CLASS	TOE WIDTH	TOE DEPTH	LAYING DEPTH
REVETMENT	2 FT	2 FT	1.5 FT
CLASS 1	3 FT	3 FT	2 FT
CLASS 2	4 FT	4 FT	2.5 FT



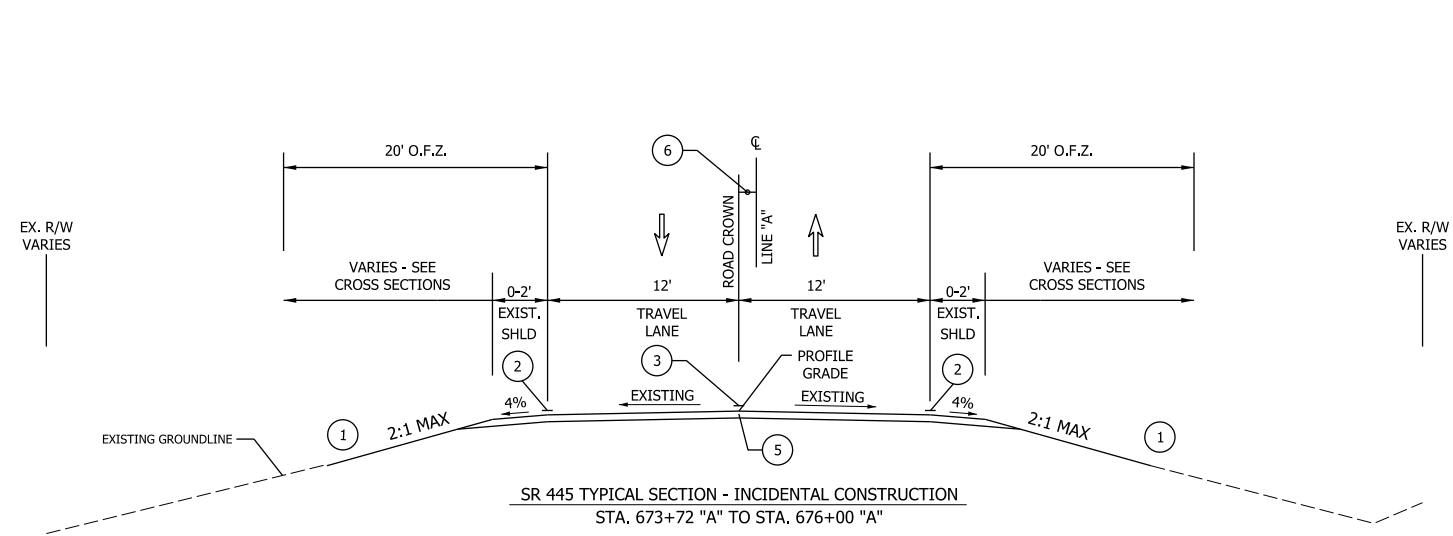
**LEGEND:**

- ① SEE CROSS SECTIONS FOR SLOPES.
- ② LINE, PAINT, SOLID, WHITE, 4".
- ③ DOUBLE LINE, PAINT, SOLID, YELLOW, 4".
- ④ 165 LBS/SYD QC/QA-HMA, 3, 64, SURFACE, 9.5 MM ON WIDENING WITH HMA, TYPE B CONSISTING OF: 275 LBS/SYD HMA INTERMEDIATE, TYPE B, ON COMPACTED AGGREGATE, NO. 53 (6 INCH MINIMUM, MATCH EXISTING MAINLINE) ON SUBGRADE TREATMENT TYPE II
- ⑤ TRANSITION MILL THE EXISTING ASPHALT PAVEMENT UP TO 1.5 INCHES FOR VERTICAL ALIGNMENT PURPOSES 165 LBS/SYD QC/QA-HMA, 3, 64, SURFACE, 9.5MM.
- ⑥ NORMAL CROWN FROM STA. 661+63 TO STA. 664+00
- ⑦ ALIGNMENT IS OFFSET FROM ROAD CROWN, VARIES FROM 0' TO 1.54', REFER TO CROSS SECTIONS.
- ⑧ RIPRAP, REVETMENT ON GEOTEXTILE, TYPE 2B

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH 04-11-22	DRAWN: AKH 04-11-22	
CHECKED: RMH 04-11-22	CHECKED: RMH 04-11-22	

INDIANA DEPARTMENT OF TRANSPORTATION  
**TYPICAL CROSS SECTIONS**

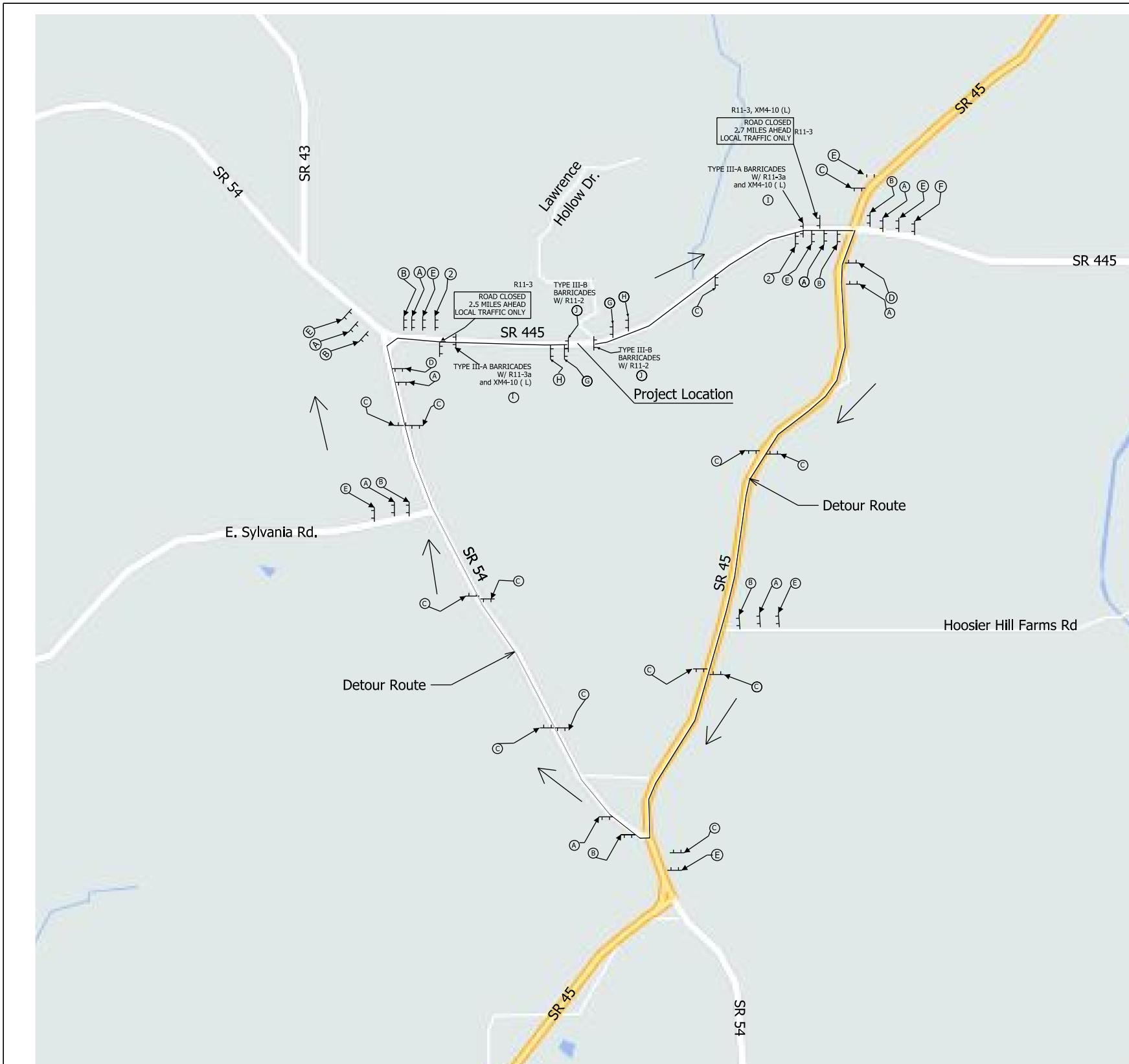
SCALE	CULVERT ASSET ID
1/4" = 1'-0"	CV 445-28-000.53
	DESIGNATION
	2100161
	SHEETS
	3 of 19
CONTRACT	PROJECT
T-43663	2100161



- LEGEND:**
- ① SEE CROSS SECTIONS FOR SLOPES.
  - ② LINE, THERMOPLASTIC, SOLID, WHITE, 4".
  - ③ DOUBLE LINE, THERMOPLASTIC, SOLID, YELLOW, 4".
  - ④ 165 LBS/SYD QC/QA-HMA, 3, 64, SURFACE, 9.5 MM ON WIDENING WITH HMA, TYPE B CONSISTING OF: 275 LBS/SYD HMA INTERMEDIATE, TYPE B, ON COMPACTED AGGREGATE, NO. 53 (6 INCH MINIMUM, MATCH EXISTING MAINLINE) ON SUBGRADE TREATMENT TYPE II
  - ⑤ TRANSITION MILL THE EXISTING ASPHALT PAVEMENT UP TO 1.5 INCHES FOR VERTICAL ALIGNMENT PURPOSES. 165 LBS/SYD QC/QA- HMA, 3, 64, SURFACE, 9.5MM.
  - ⑥ ALIGNMENT IS OFFSET FROM ROAD CROWN, VARIES FROM 0' TO 1.54', REFER TO CROSS SECTIONS.

	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	INDIANA DEPARTMENT OF TRANSPORTATION	SCALE 1/4" = 1'-0"	CULVERT ASSET ID CV 445-28-000.53
	DESIGNED: AKH 04-11-22 DRAWN: AKH 04-11-22			DESIGNATION 2100161
	CHECKED: RMH 04-11-22 CHECKED: RMH 04-11-22	TYPICAL CROSS SECTIONS		SHEETS 4 of 19
			CONTRACT T-43663	PROJECT 2100161

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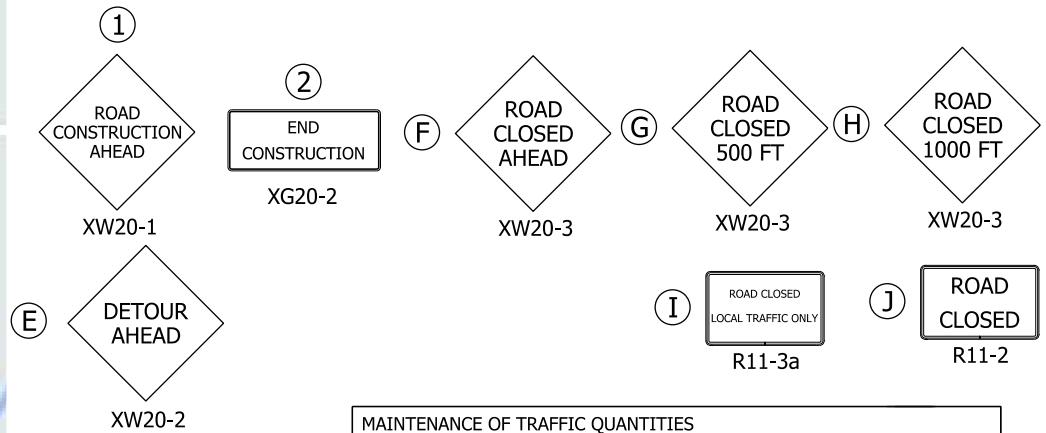


**TRAFFIC CONTROL PLAN**

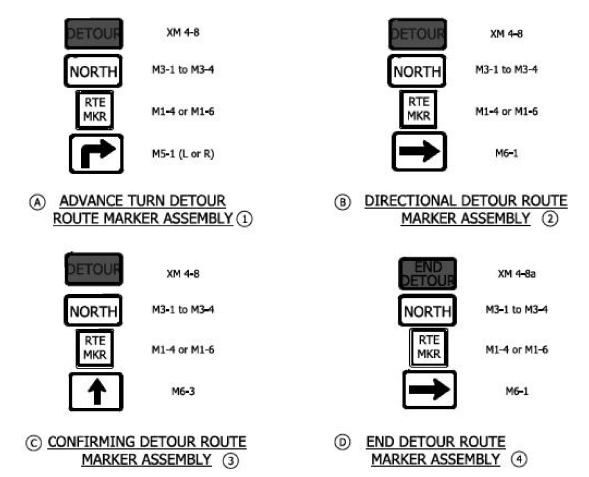
ROUTE DETOUR = 4.50 MILES

A ROAD CLOSURE WILL BE UTILIZED FOR THE PROJECT. THE OFFICIAL STATE DETOUR WILL UTILIZE SR45 AND SR54.

SEE STANDARD DRAWINGS:  
 E 801-TCDT-01 RURAL DETOUR  
 E 801-TCDT-03 DETOUR ROUTE MARKER ASSEMBLIES

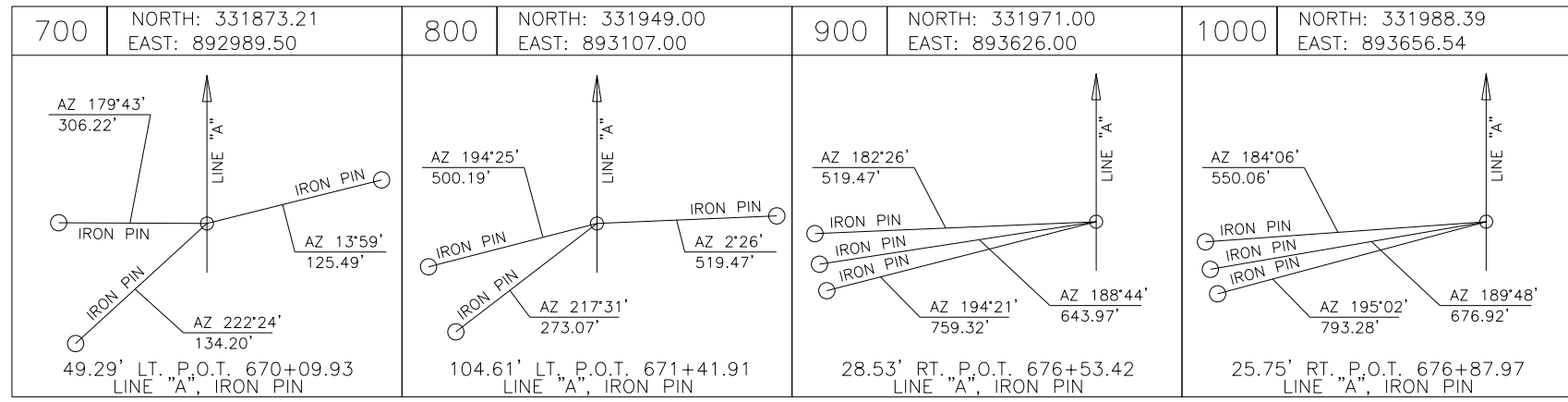
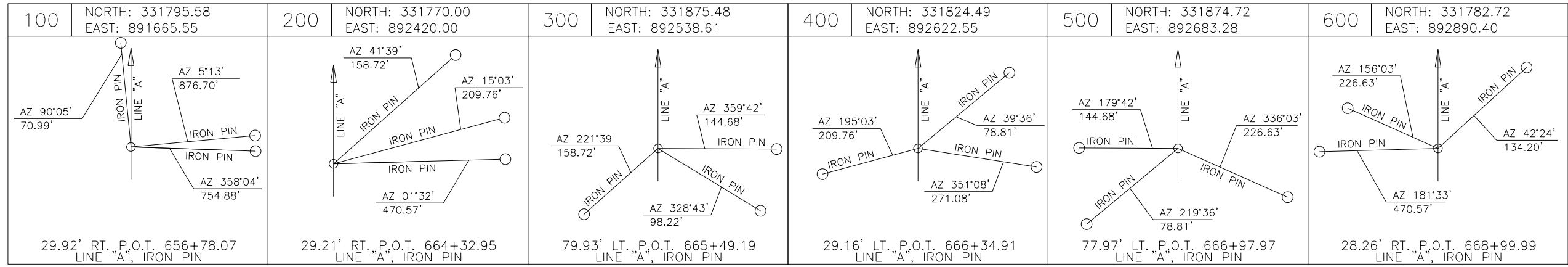


MAINTENANCE OF TRAFFIC QUANTITIES			
PAY ITEM	EACH	LFT	SFT
Construction Sign, A	21		
Construction Sign, B	2		
Detour Route Marker Assembly	36		
Temporary Traffic Barrier, Type IIIB		48	
Temporary Traffic Barrier, Type IIIA		48	
Road Closure Sign Assembly	4		



SCALE: 1" = 800'  
 0' 400' 800'

RECOMMENDED FOR APPROVAL _____		DESIGN ENGINEER _____ DATE _____		INDIANA DEPARTMENT OF TRANSPORTATION		SCALE	CULVERT ASSET ID
DESIGNED: AKH 04-11-22	DRAWN: AKH 04-11-22	TRAFFIC CONTROL PLAN SR 445 DETOUR ROUTE				NTS	CV 445-28-000.53
CHECKED: RMH 04-11-22	CHECKED: RMH 04-11-22					DESIGNATION	2100161
						SHEETS	5 of 19
						CONTRACT	PROJECT
						T-43663	2100161



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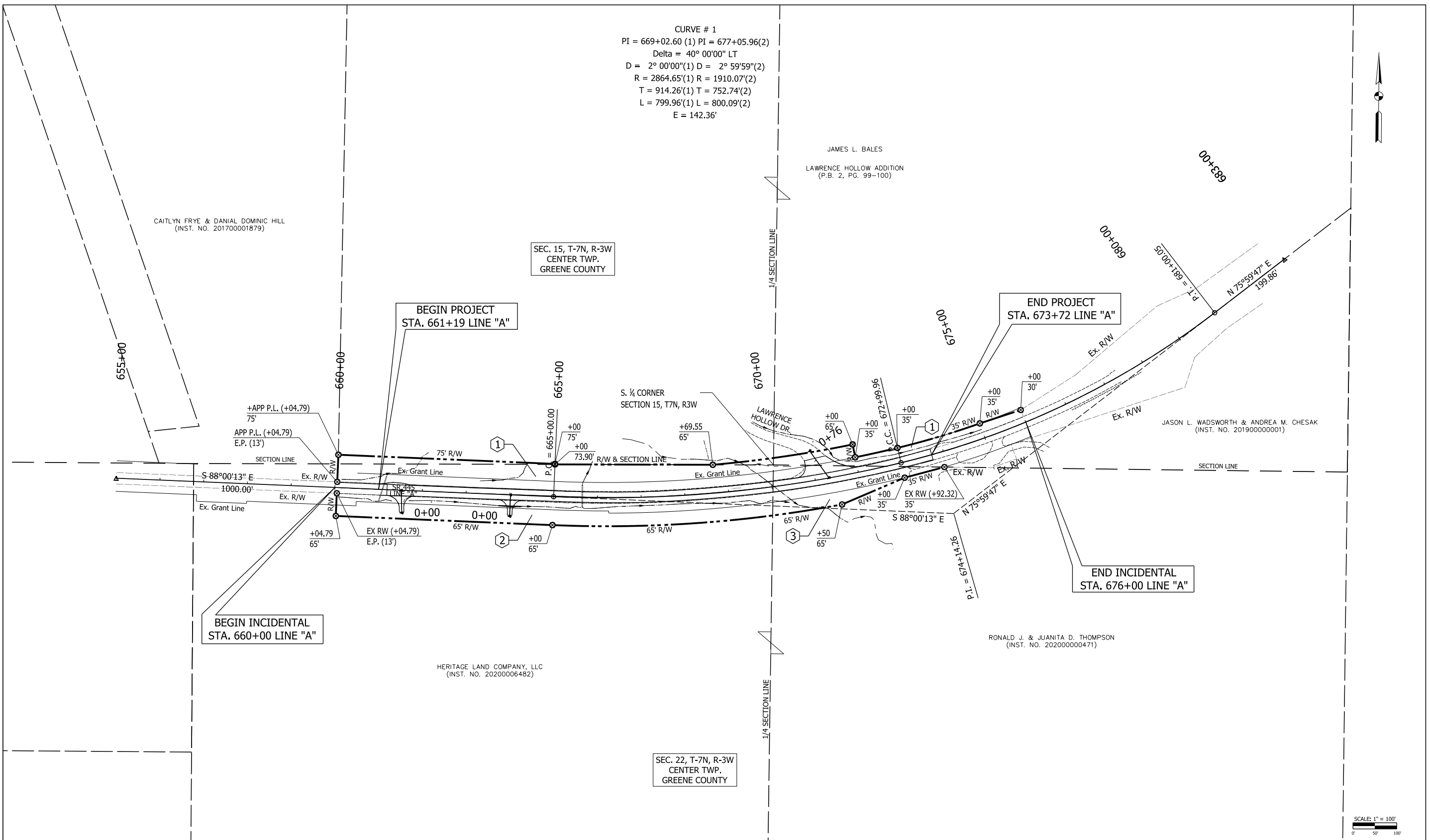
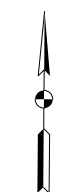
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DESIGNED: AKH 04-11-22	DRAWN: AKH 04-11-22	
CHECKED: RMH 04-11-22	CHECKED: RMH 04-11-22	

INDIANA DEPARTMENT OF TRANSPORTATION
<b>GEOMETRIC TIE-UP SHEET</b>

SCALE NTS	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 2100161
	SHEETS 6 of 19
CONTRACT T-43663	PROJECT 2100161



CURVE # 1  
 PI = 669+02.60 (1) PI = 677+05.96(2)  
 Delta = 40° 00'00" LT  
 D = 2° 00'00"(1) D = 2° 59'59"(2)  
 R = 2864.65'(1) R = 1910.07'(2)  
 T = 914.26'(1) T = 752.74'(2)  
 L = 799.96'(1) L = 800.09'(2)  
 E = 142.36'



NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

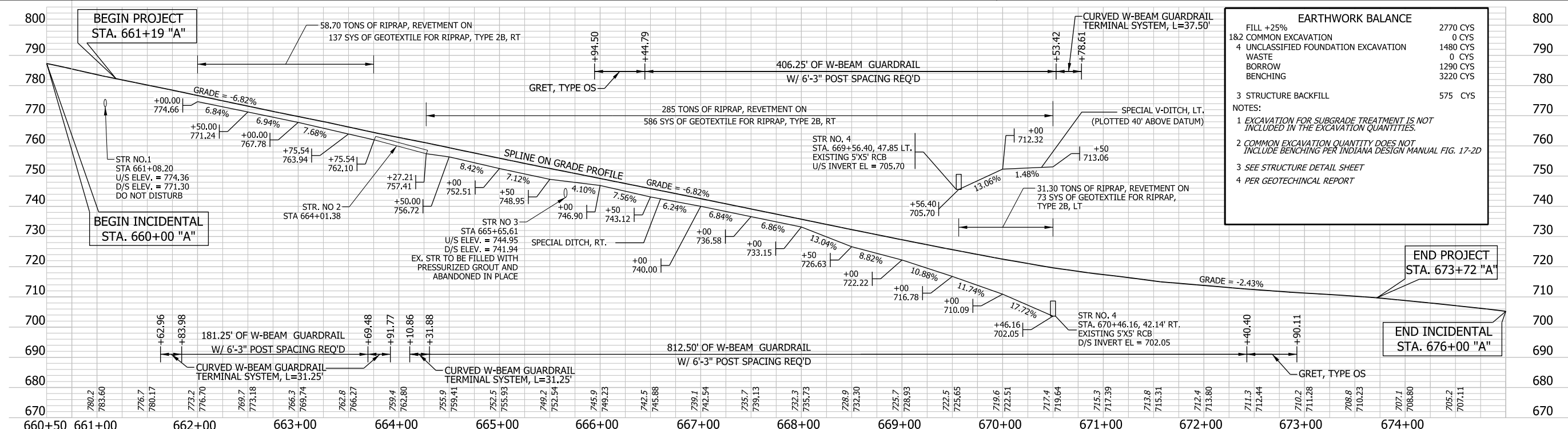
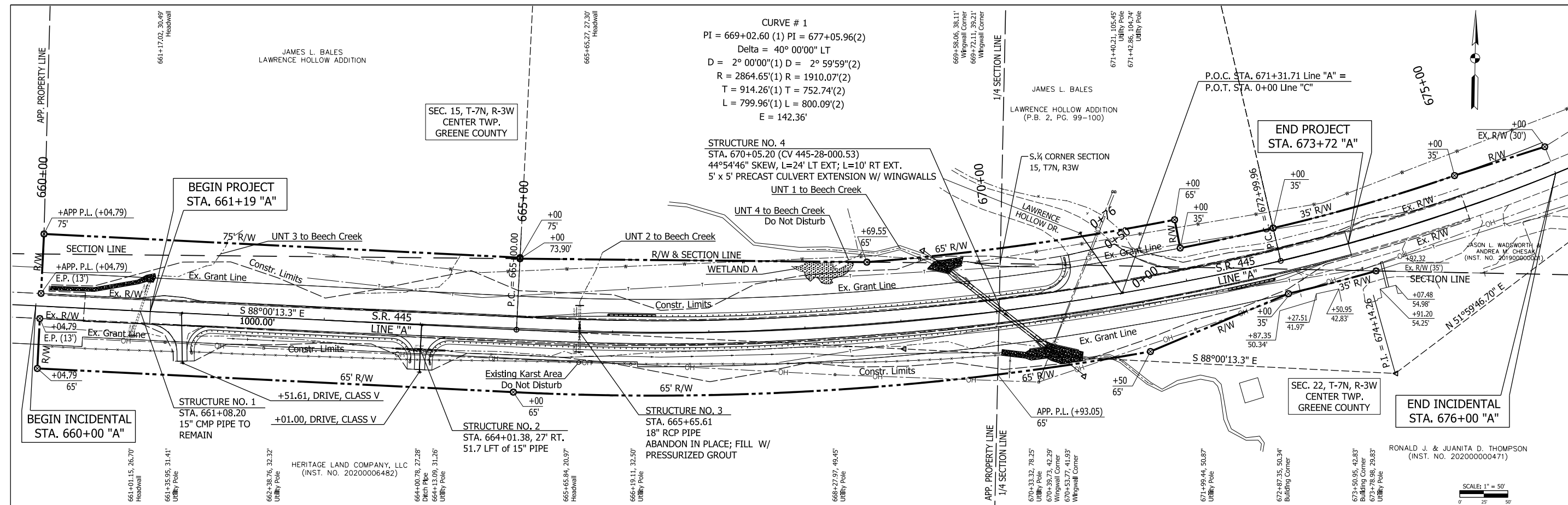
Concrete Right-of-Way Marker

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE	
DESIGNED: AKH	04-11-22	DRAWN: AKH	04-11-22		
CHECKED: RMH	04-11-22	CHECKED: RMH	04-11-22		

INDIANA  
DEPARTMENT OF TRANSPORTATION

PLAT NO. 1

SCALE	CULVERT ASSET ID
1"=50'	CV 445-28-000.53
	DESIGNATION
	2100161
SURVEY BOOK	SHEETS
	7 of 19
CONTRACT	PROJECT
T-43663	2100161



EARTHWORK BALANCE		
FILL +25%	2770 CYS	800
1&2 COMMON EXCAVATION	0 CYS	790
4 UNCLASSIFIED FOUNDATION EXCAVATION	1480 CYS	780
WASTE	0 CYS	770
BORROW	1290 CYS	760
BENCHING	3220 CYS	750
3 STRUCTURE BACKFILL	575 CYS	740
NOTES:		730
1 EXCAVATION FOR SUBGRADE TREATMENT IS NOT INCLUDED IN THE EXCAVATION QUANTITIES.		720
2 COMMON EXCAVATION QUANTITY DOES NOT INCLUDE BENCHING PER INDIANA DESIGN MANUAL FIG. 17-2D		710
3 SEE STRUCTURE DETAIL SHEET		700
4 PER GEOTECHNICAL REPORT		690

Note: For Reference Ties, See Geometric Tie-up Sheet.  
 All Topo and Right of Way described from Line A unless otherwise noted.  
 Concrete Right-of-Way Marker

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE	
DESIGNED: AKH	04-11-22	DRAWN: AKH	04-11-22		
CHECKED: RMH	04-11-22	CHECKED: RMH	04-11-22		

INDIANA  
 DEPARTMENT OF TRANSPORTATION  
 PLAN AND PROFILE SHEET

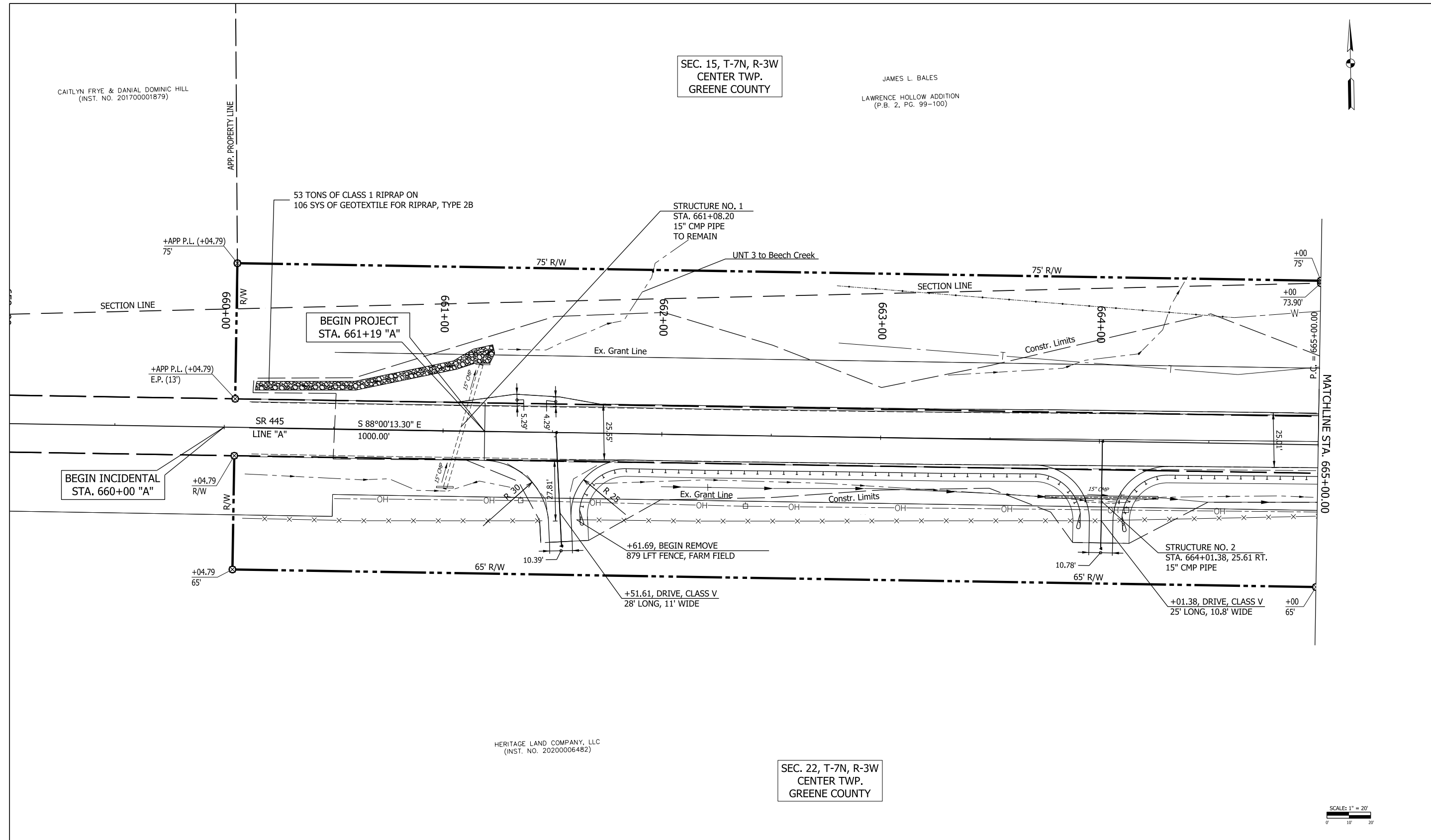
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1:3 VERTICAL		DESIGNATION	
		2100161	
		SHEETS	
		8 of 19	
CONTRACT		PROJECT	
T-43663		2100161	

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CAITLYN FRYE & DANIAL DOMINIC HILL  
(INST. NO. 201700001879)

SEC. 15, T-7N, R-3W  
CENTER TWP.  
GREENE COUNTY

JAMES L. BALES  
LAWRENCE HOLLOW ADDITION  
(P.B. 2, PG. 99-100)



HERITAGE LAND COMPANY, LLC  
(INST. NO. 20200006482)

SEC. 22, T-7N, R-3W  
CENTER TWP.  
GREENE COUNTY

NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

☒ Concrete Right-of-Way Marker

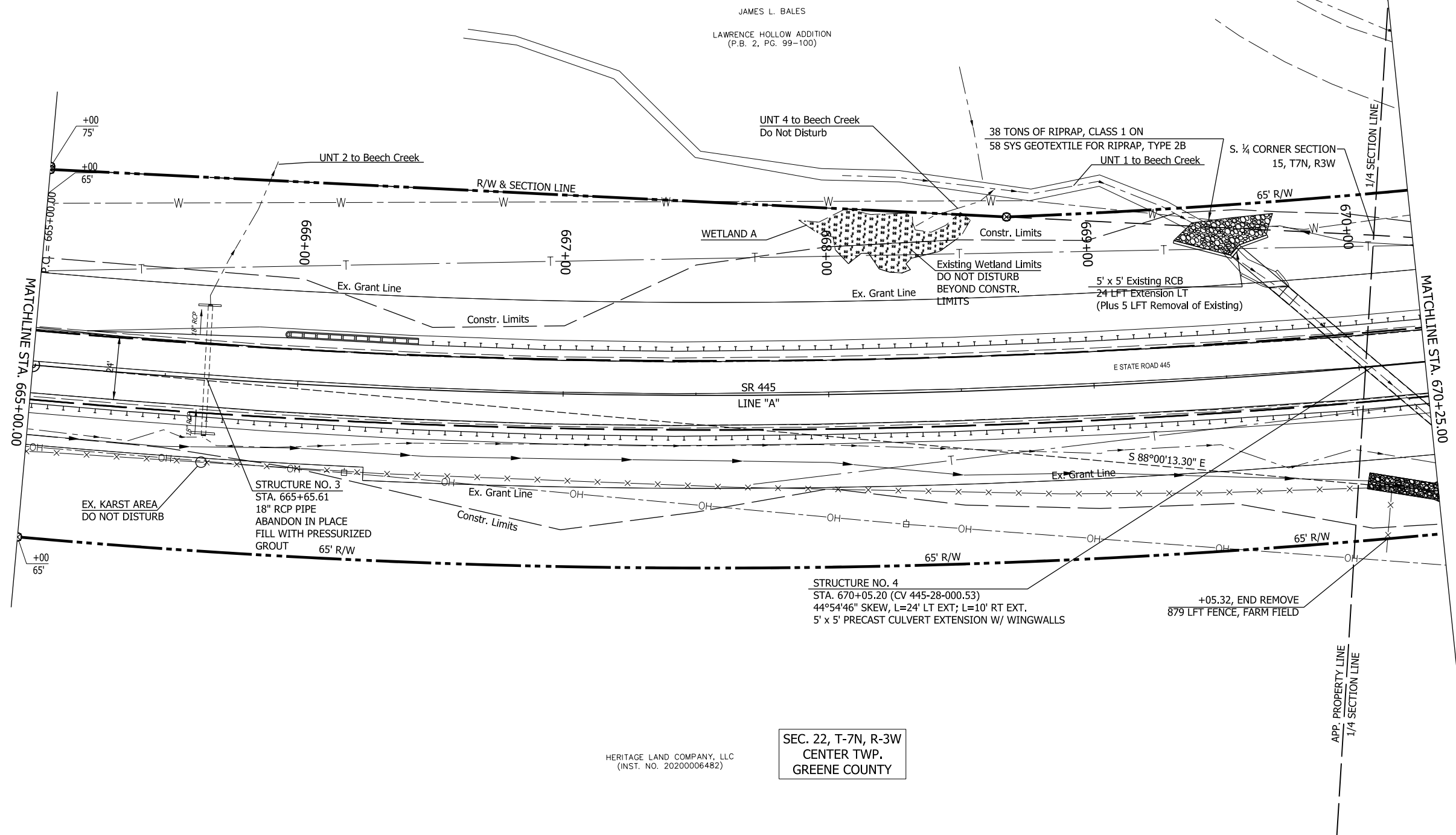
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DESIGNED: AKH 04/11/22	DRAWN: AKH 04/11/22	
CHECKED: RMH 04/11/22	CHECKED: RMH 04/11/22	

INDIANA  
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 1200161
SURVEY BOOK	SHEETS 9 of 19
CONTRACT T-43663	PROJECT 1200161

SEC. 15, T-7N, R-3W  
CENTER TWP.  
GREENE COUNTY



HERITAGE LAND COMPANY, LLC  
(INST. NO. 2020006482)

SEC. 22, T-7N, R-3W  
CENTER TWP.  
GREENE COUNTY

NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

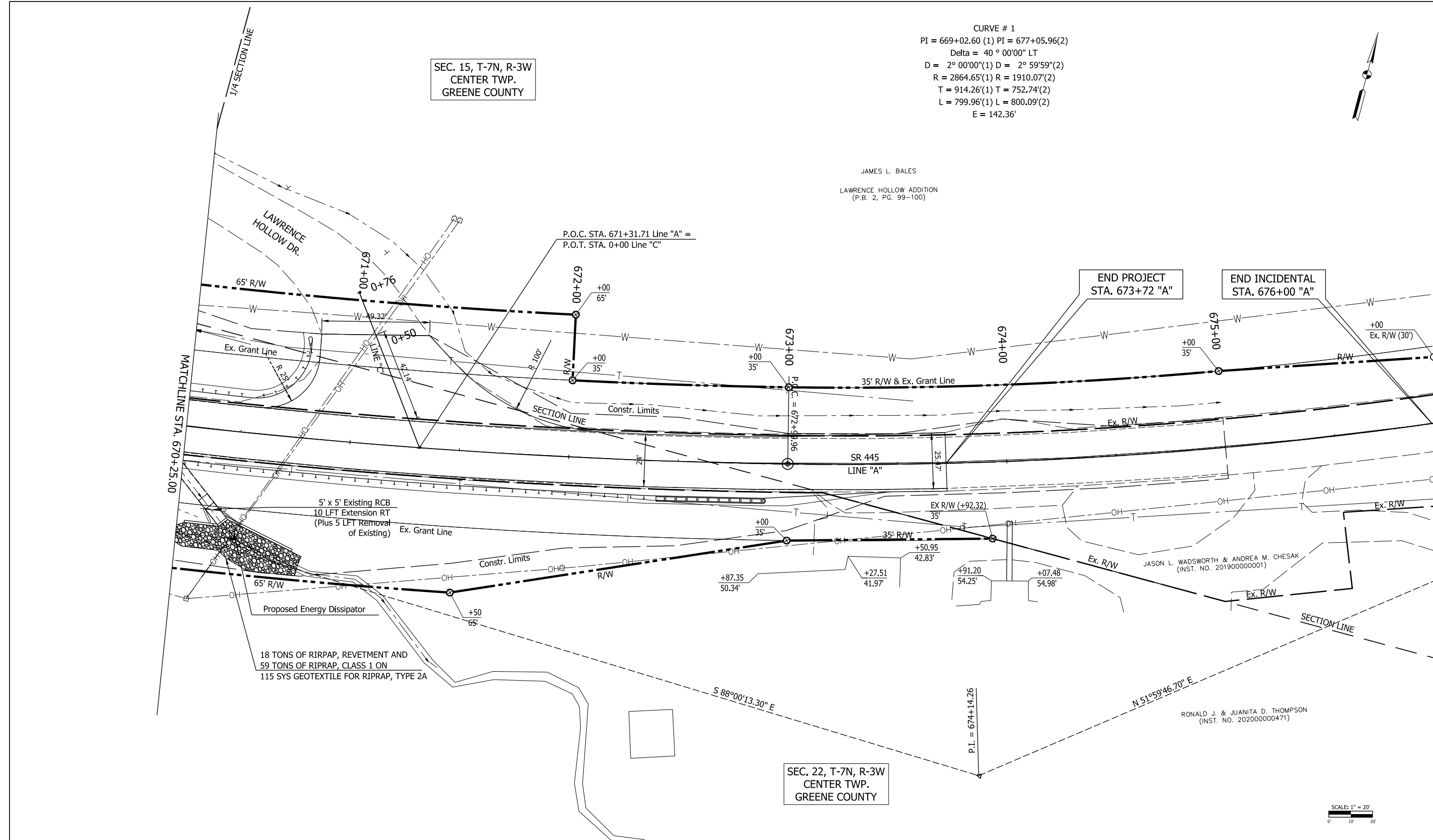
☒ Concrete Right-of-Way Marker

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	04/11/22	DRAWN: AKH 04/11/22
CHECKED: RMH	04/11/22	CHECKED: RMH 04/11/22

INDIANA  
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 2100161
SURVEY BOOK	SHEETS 10 of 19
CONTRACT T-43663	PROJECT 2100161



CURVE # 1  
 PI = 669+02.60 (1) PI = 677+05.96(2)  
 Delta = 40° 00' 00" LT  
 D = 2° 00' 00" (1) D = 2° 59' 59" (2)  
 R = 2864.65' (1) R = 1910.07' (2)  
 T = 914.26' (1) T = 752.74' (2)  
 L = 799.96' (1) L = 800.09' (2)  
 E = 142.36'

JAMES L. BALES  
 LAWRENCE HOLLOW ADDITION  
 (P.B. 2, PG. 99-100)

END PROJECT  
 STA. 673+72 "A"

END INCIDENTAL  
 STA. 676+00 "A"

MATCHLINE STA. 670+25.00

SEC. 22, T-7N, R-3W  
 CENTER TWP.  
 GREENE COUNTY

JASON L. WADSWORTH & ANDREA M. CHESAK  
 (INST. NO. 201900000001)

RONALD J. & JUANITA D. THOMPSON  
 (INST. NO. 202000000471)

SCALE: 1" = 20'

NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

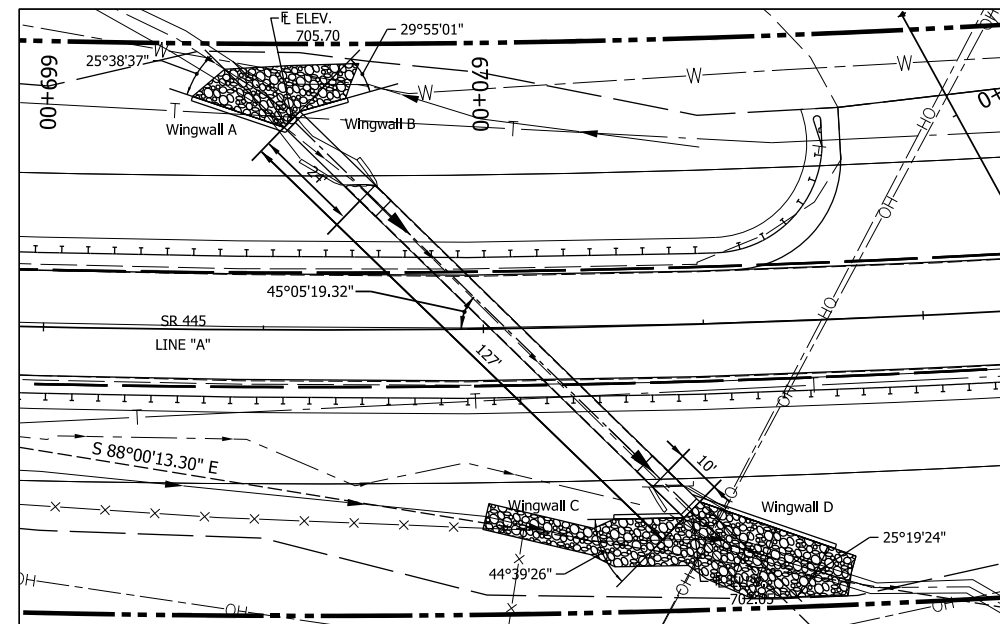
☒ Concrete Right-of-Way Marker

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
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CHECKED: RMH	04/11/22	CHECKED: RMH

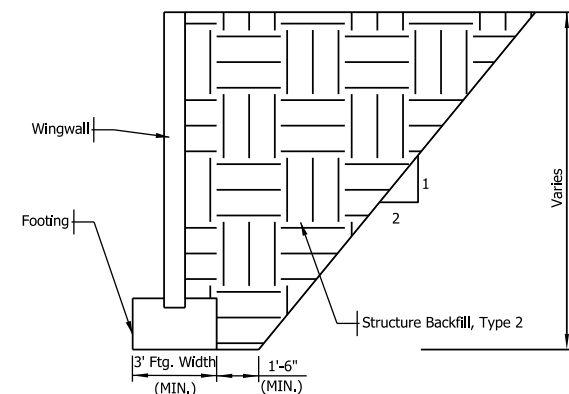
INDIANA  
 DEPARTMENT OF TRANSPORTATION

CONSTRUCTION DETAILS

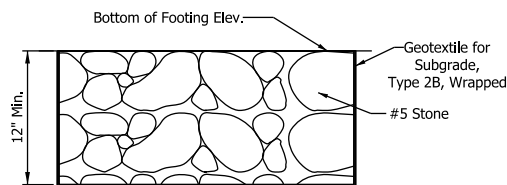
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1"=20'	CV 445-28-000.53
SURVEY BOOK	DESIGNATION
	2100161
	SHEETS
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CONTRACT	PROJECT
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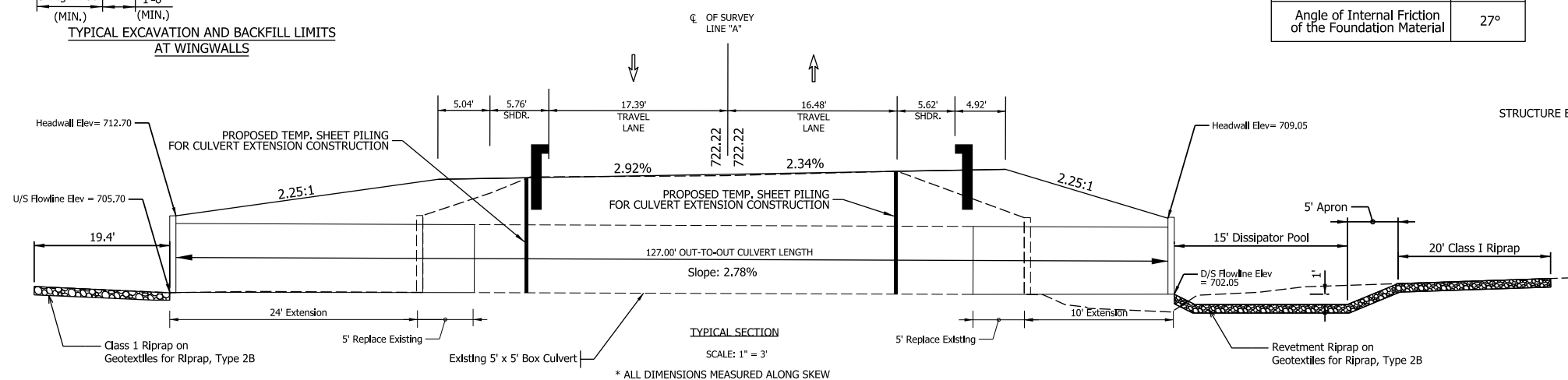
PLAN VIEW  
SCALE: 1"=20'



TYPICAL EXCAVATION AND BACKFILL LIMITS  
AT WINGWALLS

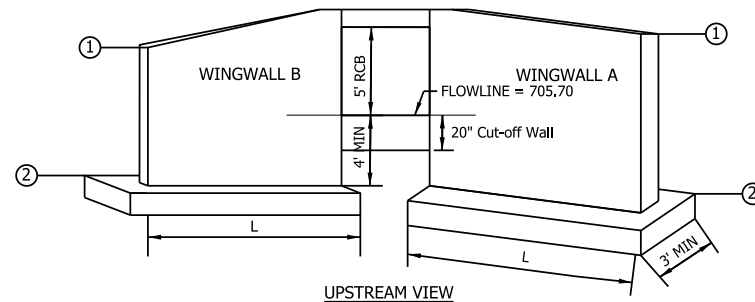


FOUNDATION IMPROVEMENT DETAIL  
N.T.S.

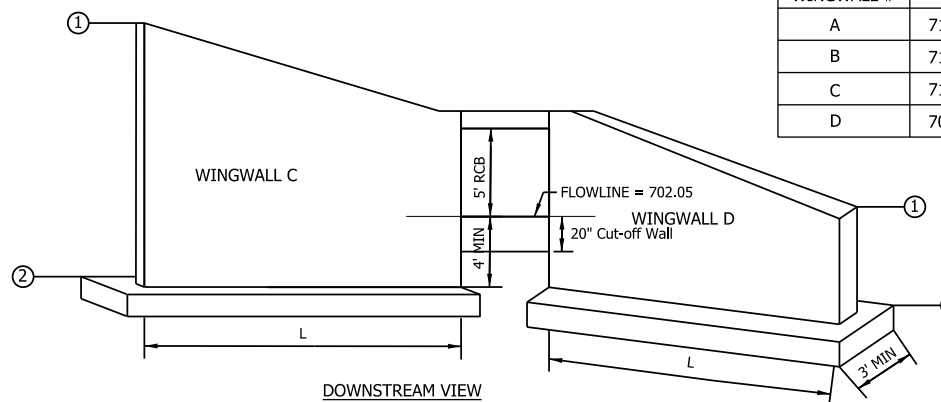


TYPICAL SECTION  
SCALE: 1"=3'

\* ALL DIMENSIONS MEASURED ALONG SKEW



UPSTREAM VIEW

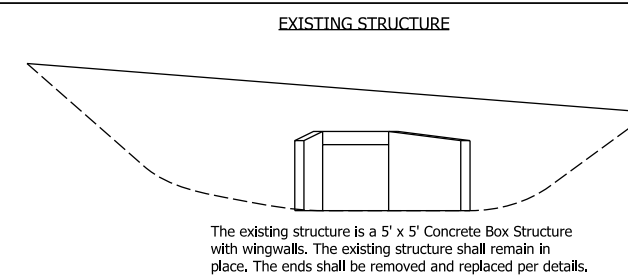


DOWNSTREAM VIEW

WINGWALL #	1	2	L
A	711.00	701.70	31.65'
B	712.00	701.70	31.68'
C	710.50	698.05	23.52'
D	703.50	698.05	31.70'

GEOTECHNICAL TABLE

Factored Bearing Resistance	2025 psf
Resistance Factor	0.45
Nominal Bearing Resistance	4500 psf
Friction Angle between wingwall & soil backfill (Type II Backfill)	20°
Friction Factor between footing & foundation soil	0.32
Cohesion of foundation soil	N/A
Adhesion of foundation soil	N/A
Angle of Internal Friction of the Foundation Material	27°



The existing structure is a 5' x 5' Concrete Box Structure with wingwalls. The existing structure shall remain in place. The ends shall be removed and replaced per details.

DESIGN DATA

ALLOWABLE DESIGN STRESSES:  
 REINFORCING STEEL (GRADE 60)  $f_y = 60,000$  psi  
 CLASS A CONCRETE OR HIGHER  $f_c = 5,000$  psi  
 STRUCTURES:  
 HEADWALLS, WINGWALLS, OR SPANDRELL WALLS:  $f_c = 4,000$  psi  
 CLASS B CONCRETE  
 FOOTINGS AND BASE SLABS  $f_c = 3,000$  psi  
 LIVE LOAD:  
 DESIGN FOR HL-93 LOADING IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE SPECIFICATIONS, 9th EDITION, 2020 AND ITS SUBSEQUENT INTERIMS.  
 DEAD LOAD:  
 DEAD LOAD INCREASED 35 psf FOR FUTURE WEARING SURFACE.

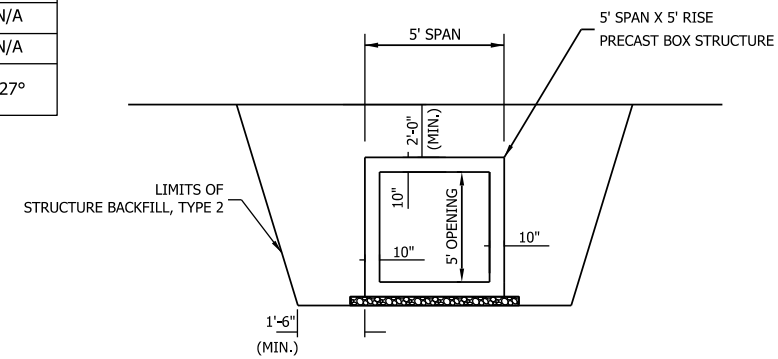
HYDRAULIC REQUIREMENTS

Drainage Area: 30.82 acres  
 Q100 (AEP 1%) Discharge = 86.60 cfs  
 Q50 (AEP 2%) Discharge for velocity = 79.40 cfs  
 Q100 (AEP 1%) Tailwater Depth = 1.38 feet  
 US Edge of Travel Lane Elevation = 717.48 ft  
 Design Roadway Serviceability Elevation = 716.48 ft

Q100 (AEP 1%) Headwater Elevation = 709.58  
 Q100 Backwater = 2.12 ft  
 Min. Low Structure Elevation (DS) = 706.55  
 Sump Depth = 0 inches

Outlet Velocity at Q50 = 15.61 ft/sec  
 Natural Channel Velocity at Q50 = 8.33 ft/sec

Notes:  
 The Contractor shall verify the existing flowline elevation to set the appropriate sump depth.



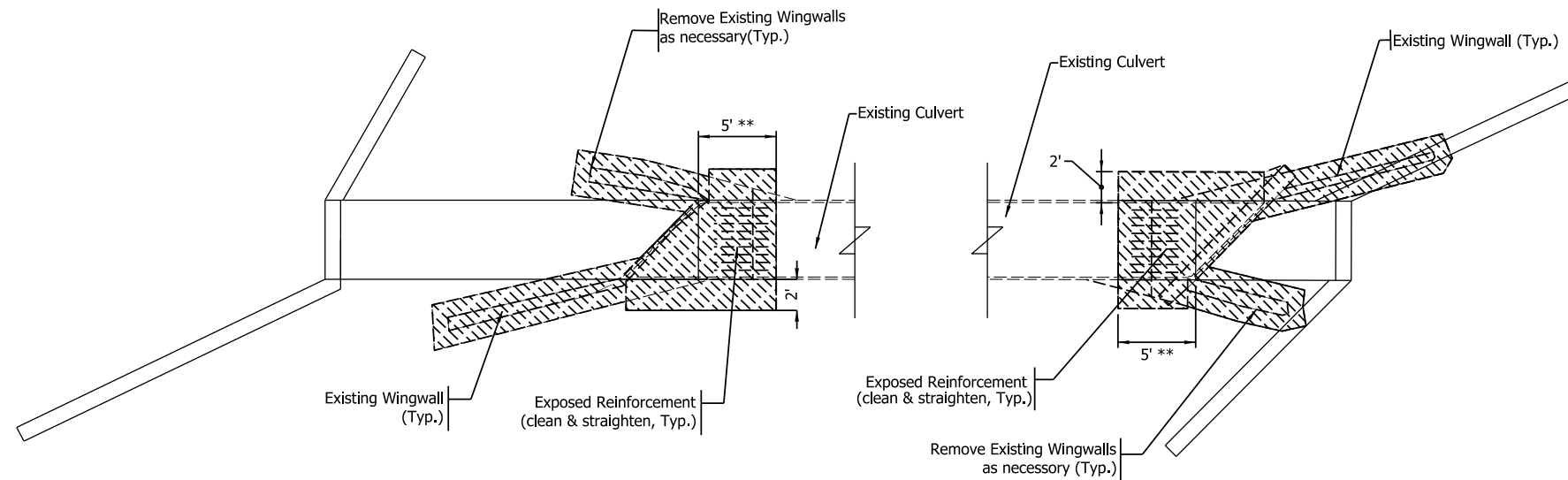
PROPOSED TYPICAL SECTION THRU BARREL  
SR 445  
STRUCTURE DATA

5' X 5' EXISTING PRECAST 4-SIDED STRUCTURE SKEW  
 Contractor shall verify existing structure size prior to ordering.

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	01/01/2022	DATE
DESIGNED: AKH	01/01/22	DRAWN: AKH	01/01/22
CHECKED: RMH	01/01/22	CHECKED: RMH	01/01/22

INDIANA  
DEPARTMENT OF TRANSPORTATION  
  
SR 445  
STRUCTURE DETAIL SHEET

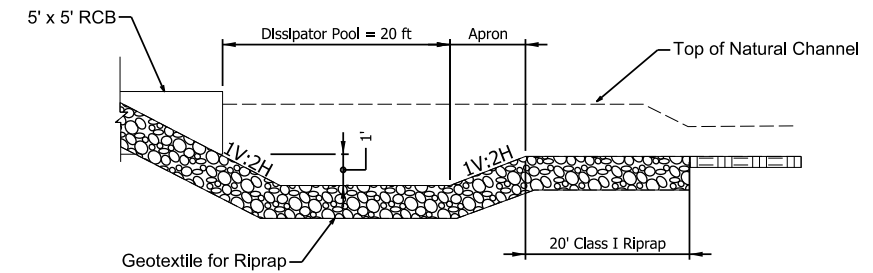
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NTS	CV 445-28-000.53
	DESIGNATION
	2100161
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T-43663	2100161



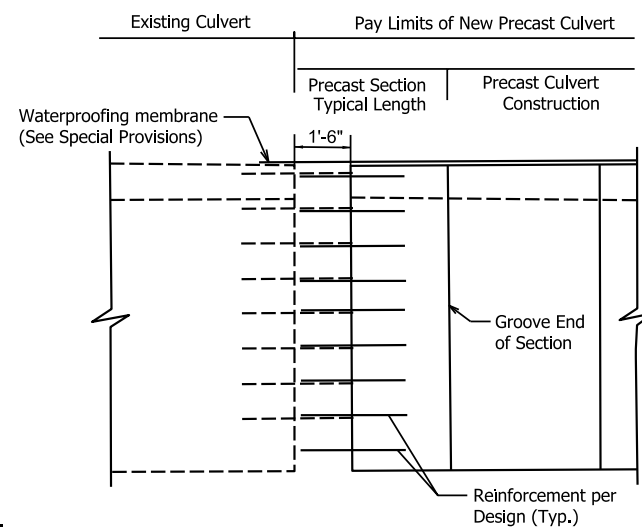
\*\* As required per Structure Detail Sheet

CULVERT WITH WINGWALLS PLAN  
EXTENSION PREPARATION  
SCALE 1"=4'

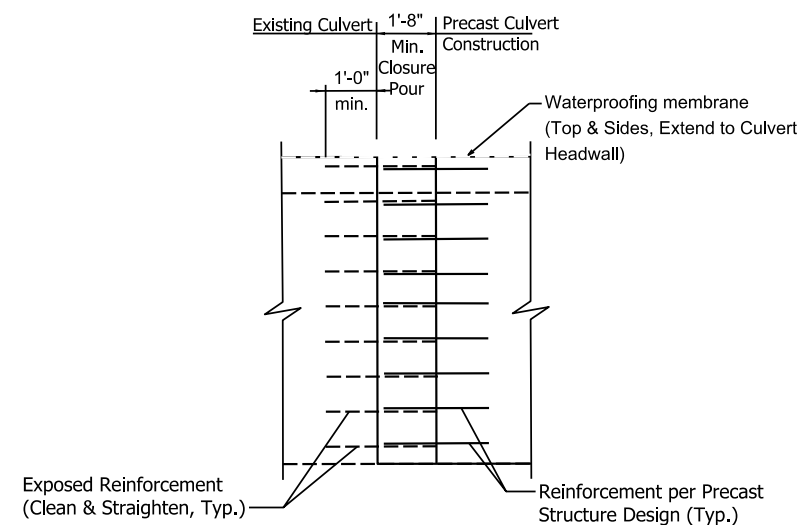
PARAMETERS	
Basin Length	20.0 ft
Basin Width	18.5 ft
Apron Length	5.0 ft
Pool Depth	1.0 ft
Riprap Size	Revetment



RIPRAP BASIN ENERGY DISSIPATOR DETAIL  
STA. 670+45.71 RT.



SECTION A-A  
CONNECTION ELEVATION



CULVERT CLOSURE POUR  
ELEVATION DETAILS

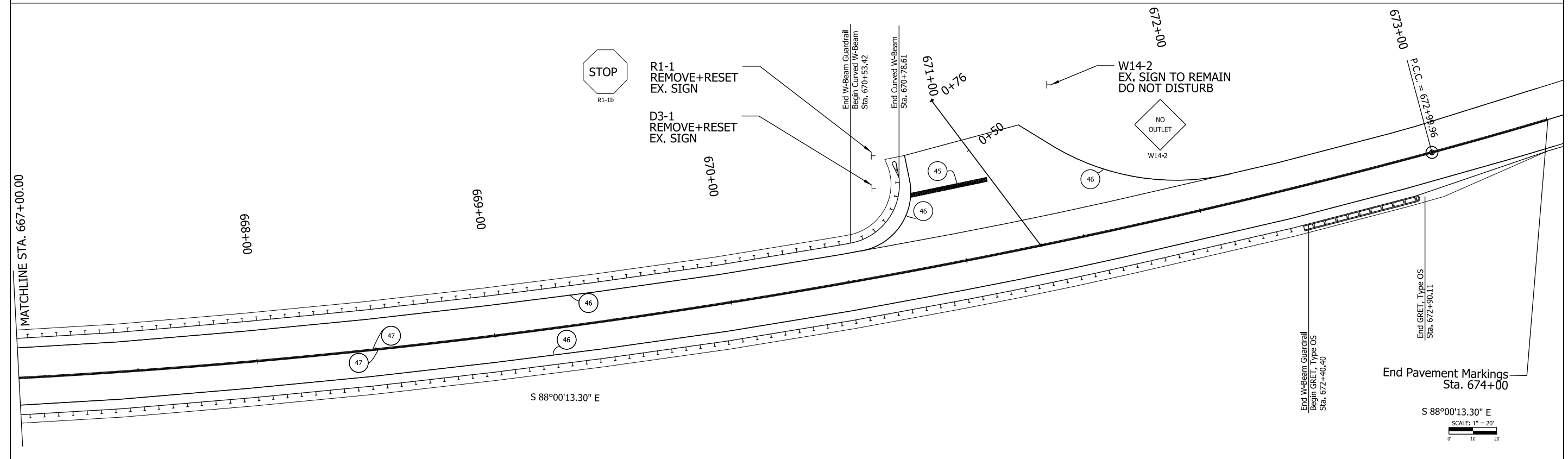
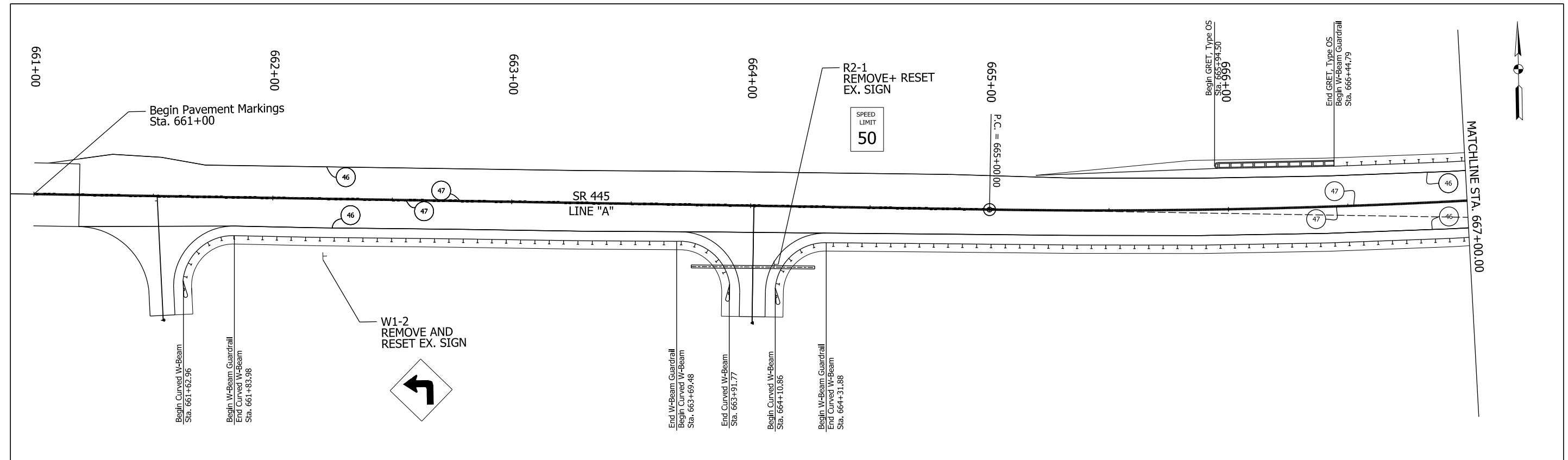
LEGEND:

- Existing Structure
- Structure Removal
- Proposed Structure

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	01/01/22	DRAWN: AKH 01/01/22
CHECKED: RMH	7/25/2022	CHECKED: RMH 01/01/22

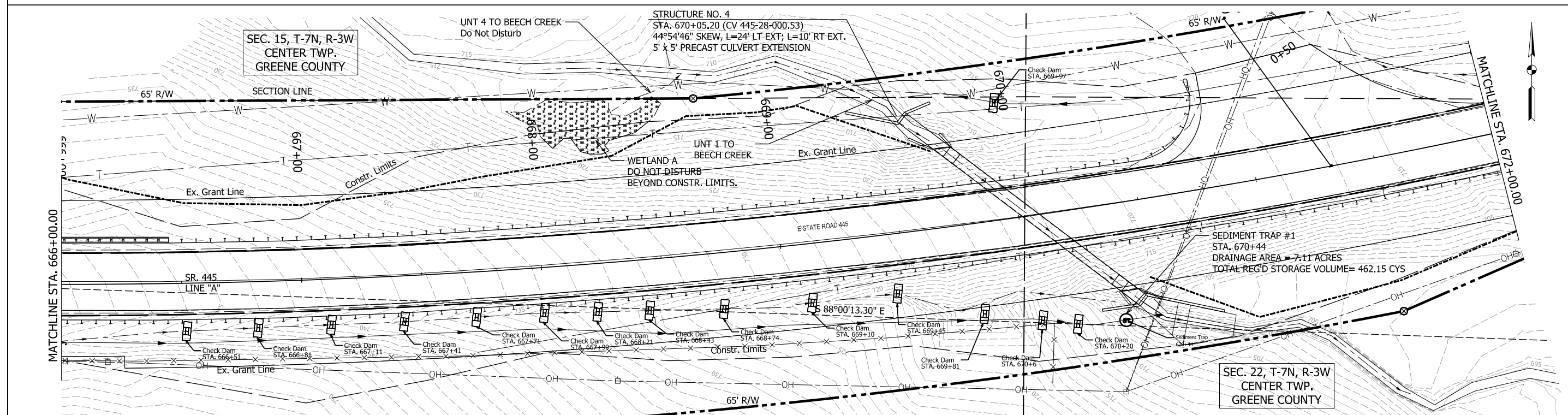
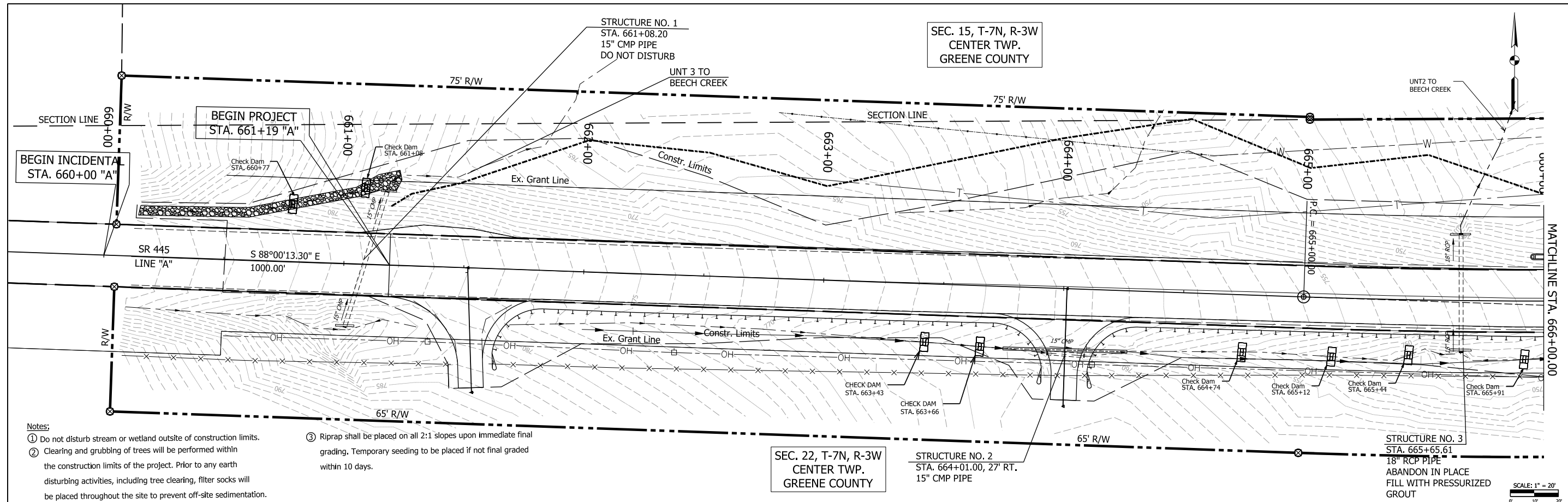
INDIANA  
DEPARTMENT OF TRANSPORTATION  
  
SR 445  
STRUCTURE DETAIL SHEET

SCALE	CULVERT ASSET ID
1" = 20'	CV 445-28-000.53
	DESIGNATION
	2100161
SURVEY BOOK	SHEETS
	13 of 19
CONTRACT	PROJECT
T-43663	2100161



<p>46 6IN SOLID WHITE THERMOPLASTIC LINE</p> <p>47 6IN SOLID YELLOW THERMOPLASTIC LINE</p> <p>45 24IN WHITE, STOP LINE, PREFORMED PLASTIC</p>	RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION  <b>GUARDRAIL AND PAVEMENT MARKING DETAILS</b>	SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNED: AKH 04/11/22	DRAWN: AKH 04/11/22	CHECKED: RMH 04/11/22		SURVEY BOOK	SHEETS 14 of 19
					CONTRACT T-43663	PROJECT 2100161





NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

- Legend**
- CHECK DAM
  - FILTER SOCK
  - SEDIMENT TRAP

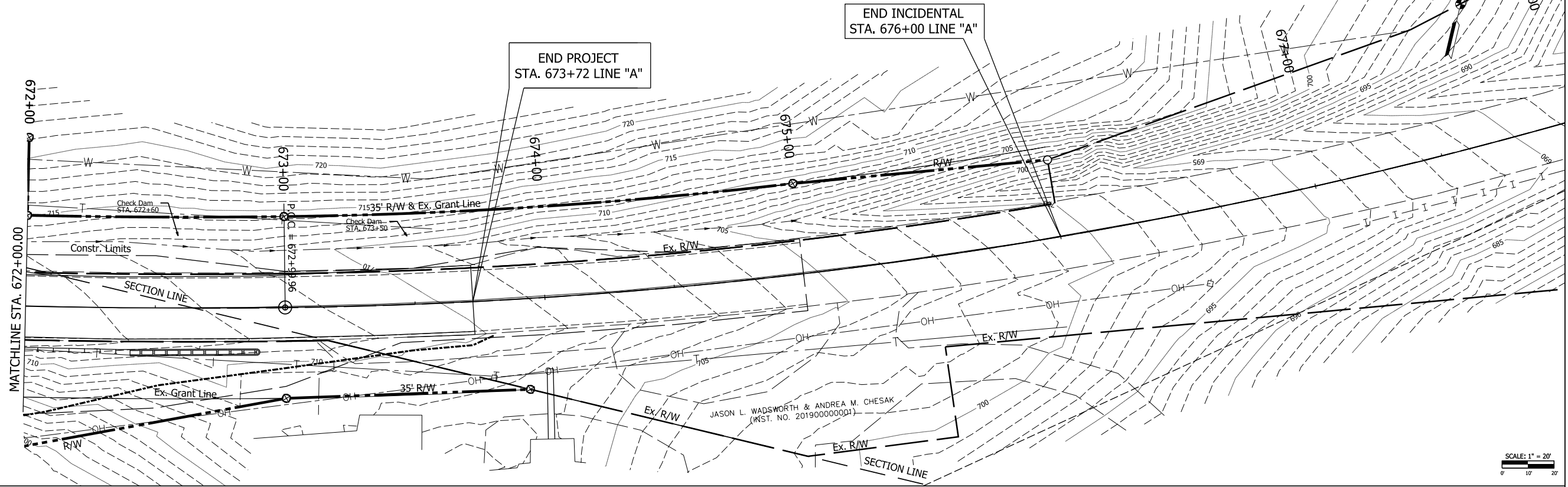
DESIGNED: RMH	7/19/2022	DRAWN: BR	7/21/2022
CHECKED: AKH	7/25/2022	CHECKED: RMH	7/22/2022

INDIANA  
DEPARTMENT OF TRANSPORTATION

**TEMPORARY EROSION &  
SEDIMENT CONTROL**

SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 2100161
SURVEY BOOK	SHEETS 15 of 19
CONTRACT T-43663	PROJECT 2100161

JAMES L. BALES  
LAWRENCE HOLLOW ADDITION  
(P.B. 2, PG. 99-100)



SCALE: 1" = 20'  
0' 10' 20'

TEMPORARY EROSION CONTROL TABLE

STATION	LOCATION		SEDIMENT TRAP	TEMPORARY SEDIMENT TRAP SEDIMENT TRAP REVETMENT RIPRAP	TEMPORARY DITCH CHECK DAM, REVETMENT RIPRAP	COMPACTED #5 STONE	TEMPORARY GEOTEXTILES	DITCH INLET PROTECTION	COMPACTED EARTH	PERIMETER PROTECTION	REMARKS
	LEFT	RIGHT									
661+19 - 669+67	X									869	FILTER SOCK
660+77	X				6.12	0.54	27				CHECK DAM
661+08	X				6.12	0.54	27				CHECK DAM
669+97	X				4.80	0.42	24				CHECK DAM
663+43		X			12.00	0.89	36				CHECK DAM
663+66		X			12.00	0.89	36				CHECK DAM
664+74		X			12.00	0.89	36				CHECK DAM
665+12		X			12.00	0.89	36				CHECK DAM
665+44		X			12.00	0.89	36				CHECK DAM
665+91		X			12.00	0.89	36				CHECK DAM
666+51		X			12.00	0.89	36				CHECK DAM
666+81		X			12.00	0.89	36				CHECK DAM
667+11		X			12.00	0.89	36				CHECK DAM
667+41		X			12.00	0.89	36				CHECK DAM
667+71		X			12.00	0.89	36				CHECK DAM
667+99		X			12.00	0.89	36				CHECK DAM
668+21		X			12.00	0.89	36				CHECK DAM
668+43		X			12.00	0.89	36				CHECK DAM
668+74		X			12.00	0.89	36				CHECK DAM
669+10		X			12.00	0.89	36				CHECK DAM
669+45		X			12.00	0.89	36				CHECK DAM
669+81		X			12.00	0.89	36				CHECK DAM
670+06		X			12.00	0.89	36				CHECK DAM
670+20		X			12.00	0.89	36				CHECK DAM
670+38		X			69.00	1.48	120				SEDIMENT TRAP
670+53.80 - 672+82.94		X								245	FILTER SOCK
TOTAL			0.00	0.00	326.04	23.78	918.02	0.00	0.00	1,114.12	

- Notes:
- Do not disturb stream or wetland outside of construction limits.
  - Clearing and grubbing of trees will be performed within the construction limits of the project. Prior to any earth disturbing activities, including tree clearing, filter socks will be placed throughout the site to prevent off-site sedimentation.
  - Riprap shall be placed on all 2:1 slopes upon immediate final grading. Temporary seeding to be placed if not final graded within 10 days.

NOTE: All Topography and R/W described from Line "A" unless otherwise noted.

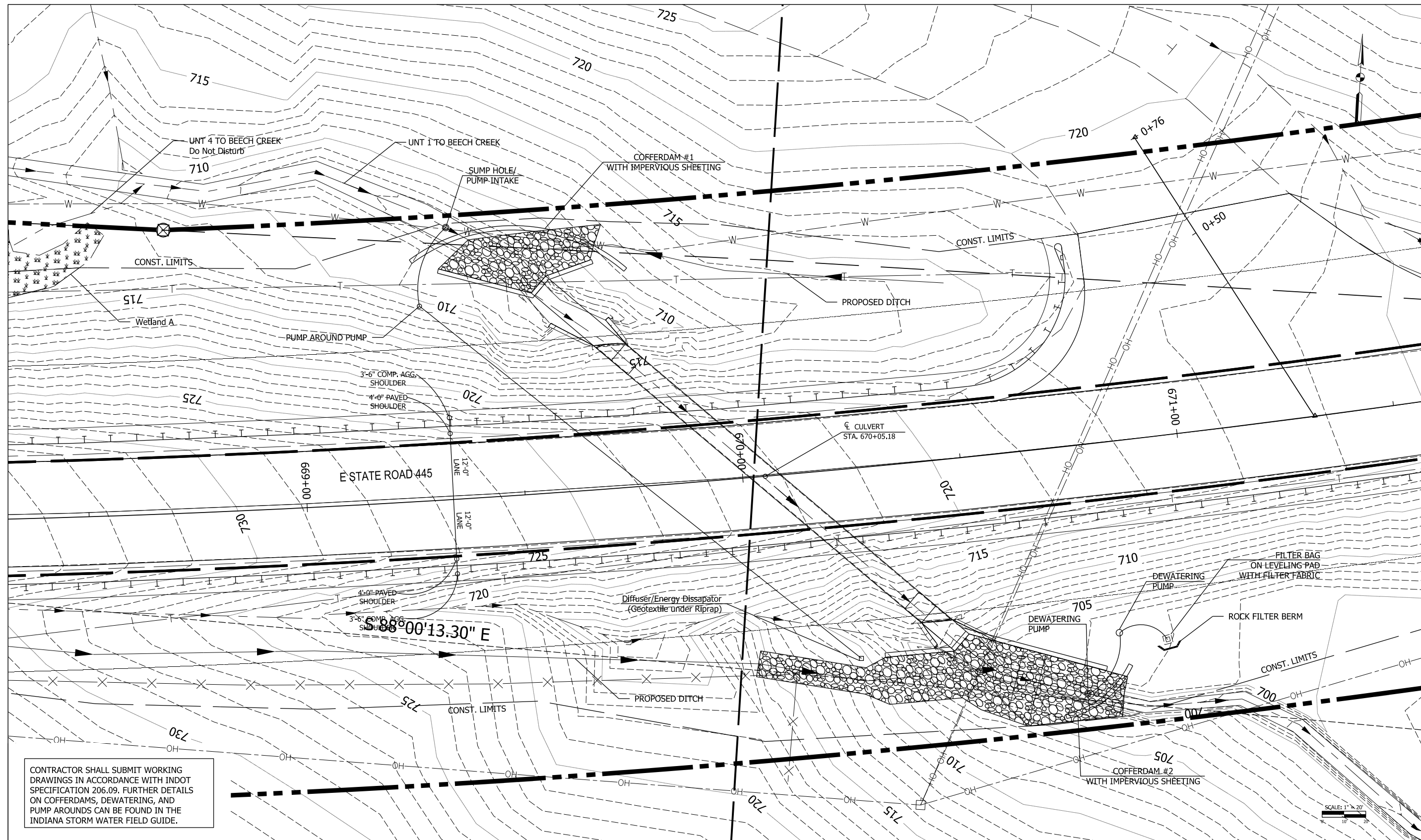
- Legend
- CHECK DAM
  - FILTER SOCK
  - SEDIMENT TRAP

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	01/01/22	DRAWN: AKH
CHECKED: RMH	01/01/22	CHECKED: RMH

INDIANA  
DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION &  
SEDIMENT CONTROL

SCALE	CULVERT ASSET ID
	CV 445-28-000.53
	DESIGNATION
	2100161
SURVEY BOOK	SHEETS
	16 of 19
CONTRACT	PROJECT
T-43663	2100161



CONTRACTOR SHALL SUBMIT WORKING DRAWINGS IN ACCORDANCE WITH INDOT SPECIFICATION 206.09. FURTHER DETAILS ON COFFERDAMS, DEWATERING, AND PUMP AROUNDS CAN BE FOUND IN THE INDIANA STORM WATER FIELD GUIDE.

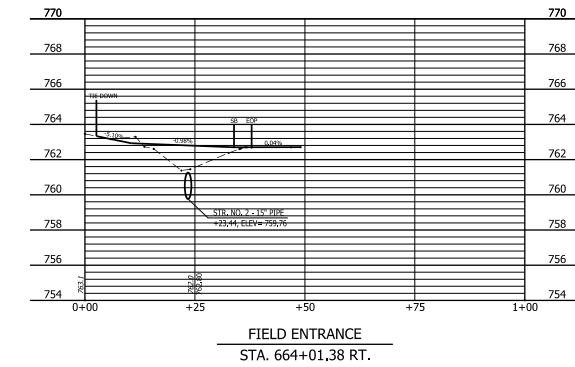
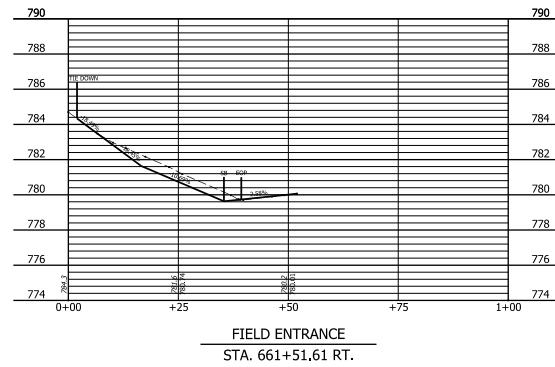
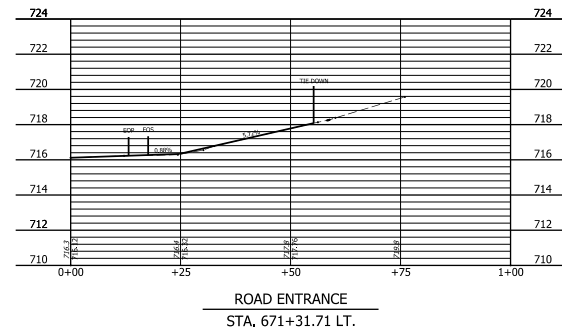
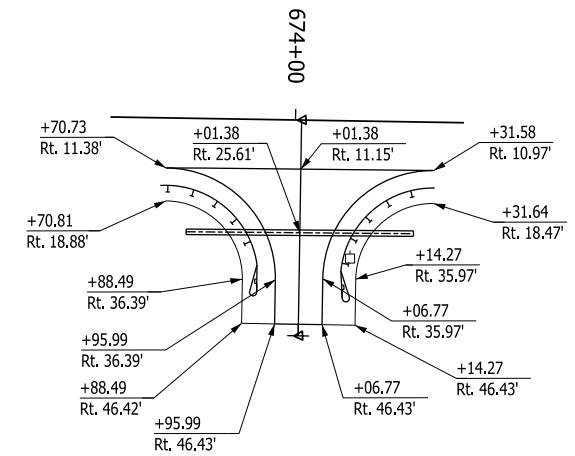
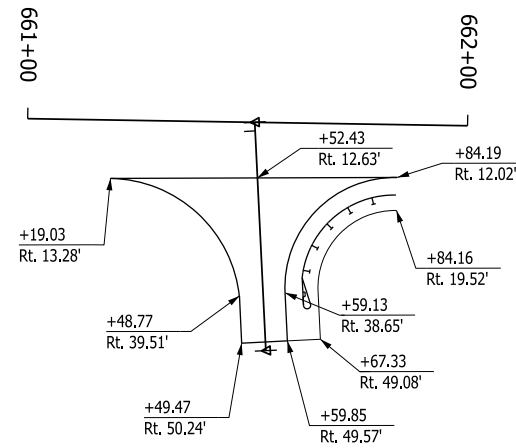
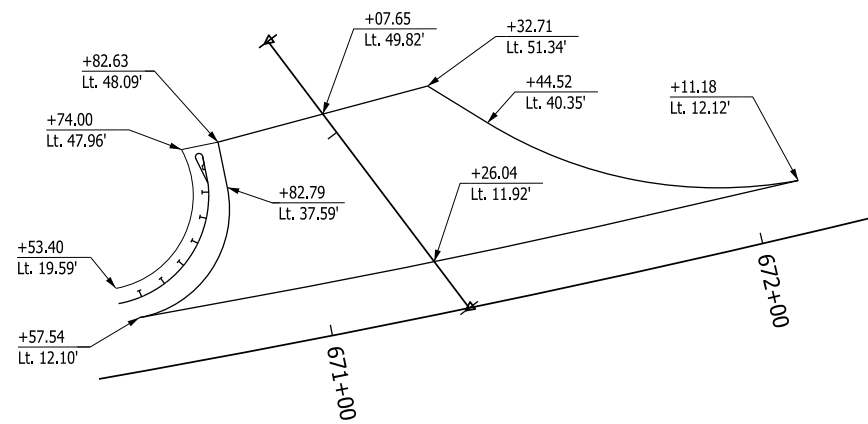
NOTE: COFFERDAM #1 DIMS: L= 54'x3'x3'  
COFFERDAM #2 DIMS: L= 20'x3'x3'

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	04/11/22	DRAWN: AKH 04/11/22
CHECKED: RMH	04/11/22	CHECKED: RMH 04/11/22

INDIANA  
DEPARTMENT OF TRANSPORTATION

**PUMP AROUND DETAIL**

SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 2100161
SURVEY BOOK	SHEETS 17 of 19
CONTRACT T-43663	PROJECT 2100161



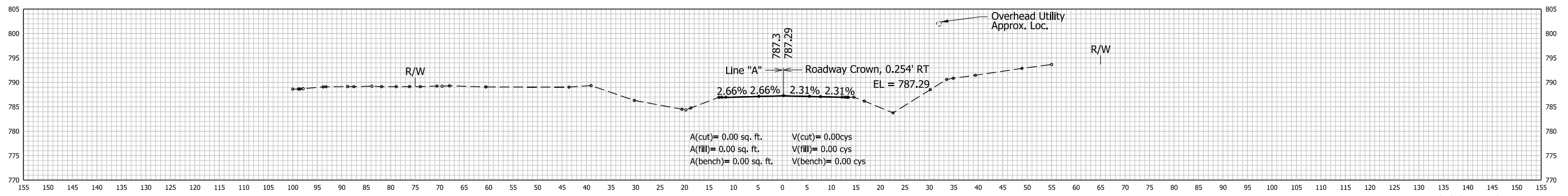
RECOMMENDED FOR APPROVAL _____			
DESIGNED: AKH 04/11/22		DRAWN: AKH 04/11/22	
CHECKED: RMH 04/11/22		CHECKED: RMH 04/11/22	

INDIANA  
DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS

SCALE 1"=20'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNATION 1200161
SURVEY BOOK	SHEETS 18 of 19
CONTRACT T-43663	PROJECT 1200161



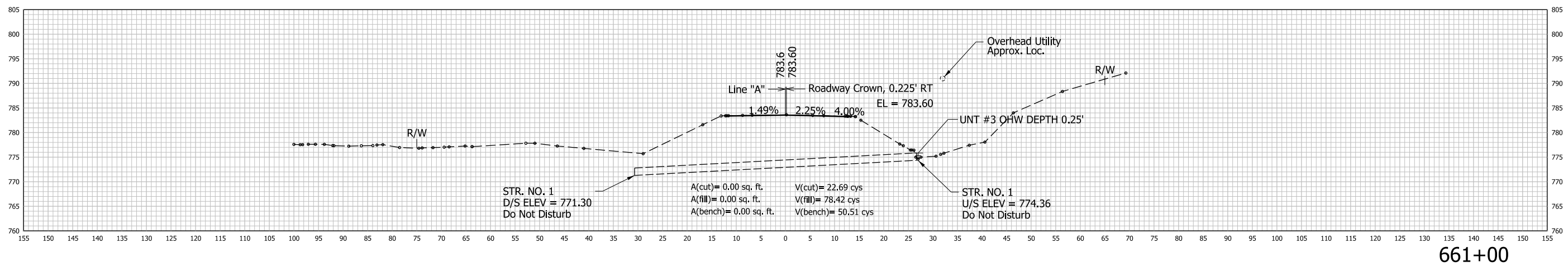
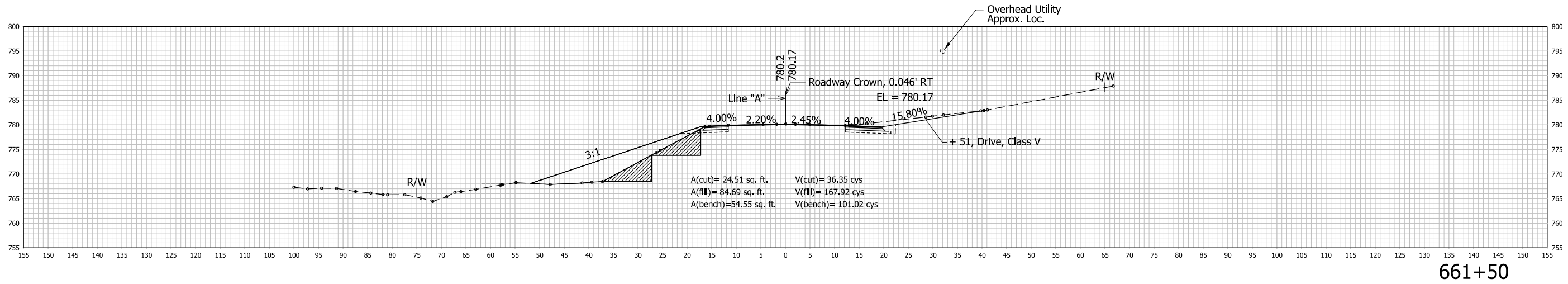
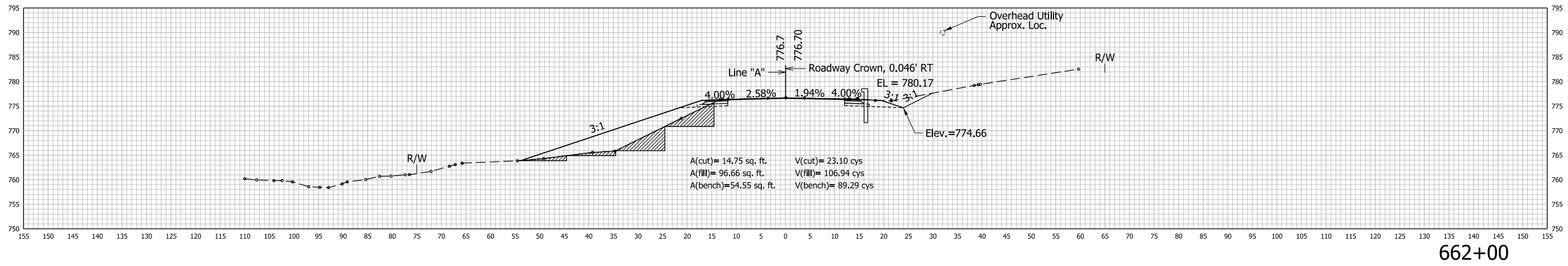


BEGIN CONSTRUCTION  
STA 660+50 LINE "A"

660+50

		RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER	DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	CULVERT ASSET ID	
						1"=10'	CV 445-28-000.53	
						1"=10'	2100161	
		DESIGNED: AKH 04/11/22	DRAWN: AKH	04/11/22	CROSS SECTIONS LINE "A"	SHEETS		
		CHECKED: RMH 04/11/22	CHECKED: RMH	04/11/22		XS1	of	XS15
						CONTRACT	PROJECT	
						T-43663	2100161	

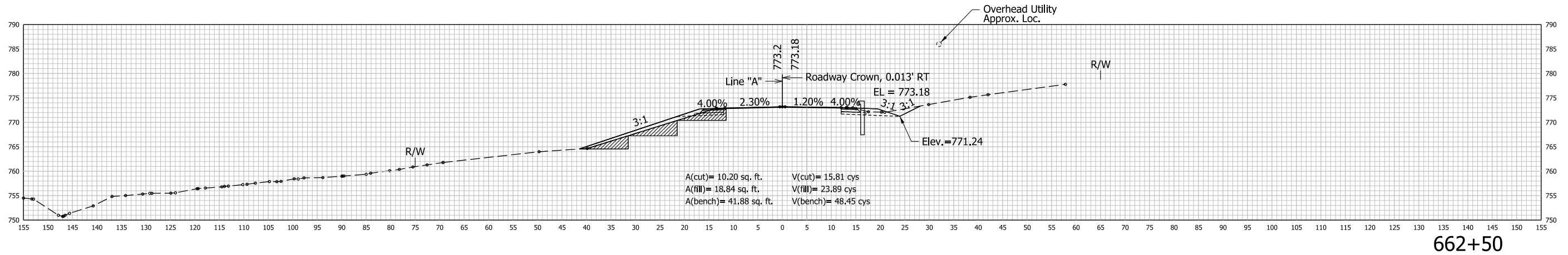
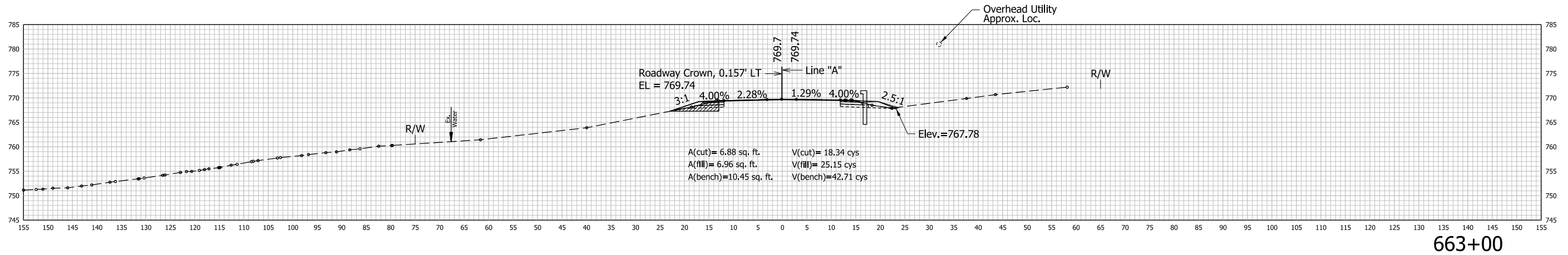
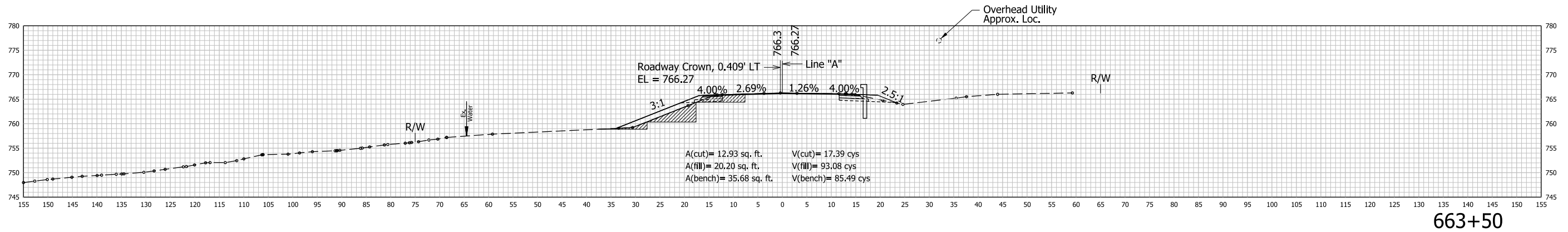
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RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE	CULVERT ASSET ID
			1"=10'	CV 445-28-000.53
	DESIGNED: AKH 04/11/22 DRAWN: AKH 04/11/22		VERTICAL SCALE	DESIGNATION
			1"=10'	2100161
CHECKED: RMH 04/11/22 CHECKED: RMH 04/11/22	CROSS SECTIONS LINE "A"		SHEETS	
			XS2 of XS15	
			CONTRACT	PROJECT
			T-43663	2100161

\$FILES

STA. 661+00 TO STA. 662+00

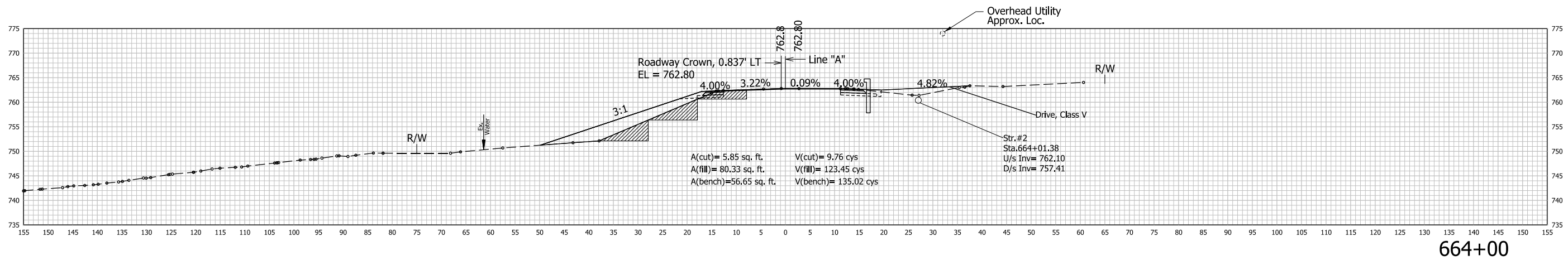
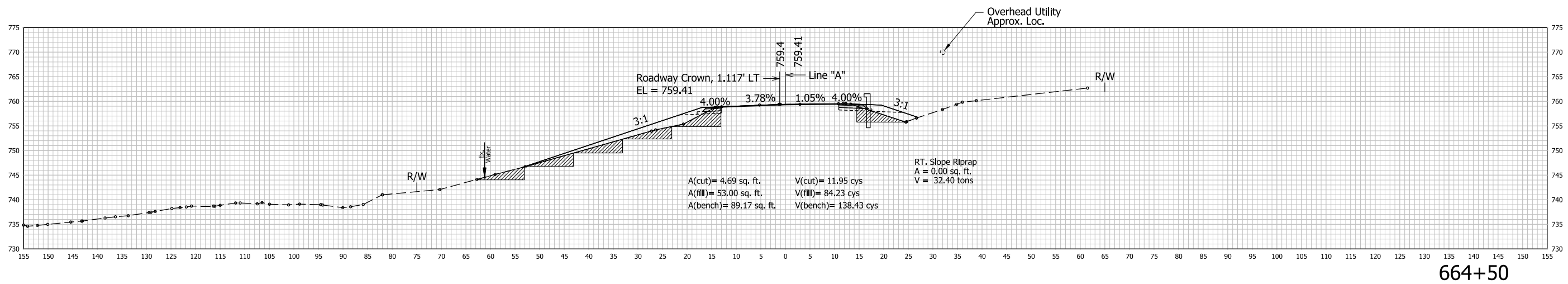
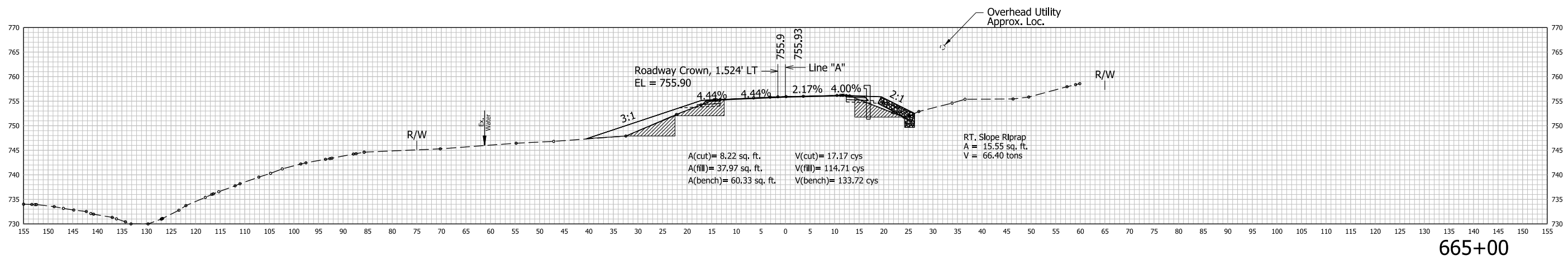


STA. 662+50 TO STA. 663+50

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION  <b>CROSS SECTIONS LINE "A"</b>	HORIZONTAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53
		VERTICAL SCALE 1"=10'	DESIGNATION 2100161
		SHEETS XS3 of XS15	
DESIGNED: AKH 04/11/22    DRAWN: AKH 04/11/22 CHECKED: RMH 04/11/22    CHECKED: RMH 04/11/22	CONTRACT T-43663	PROJECT 2100161	

\$FILES





RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	04/11/22	DRAWN: AKH
CHECKED: RMH	04/11/22	CHECKED: RMH

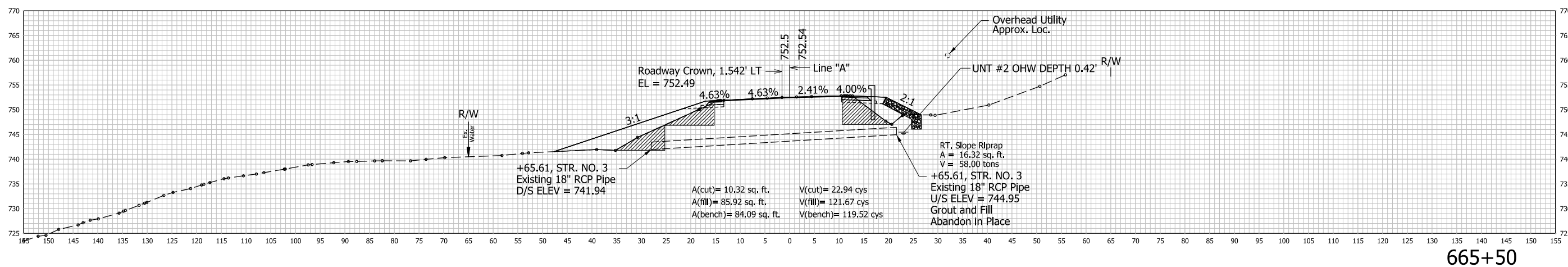
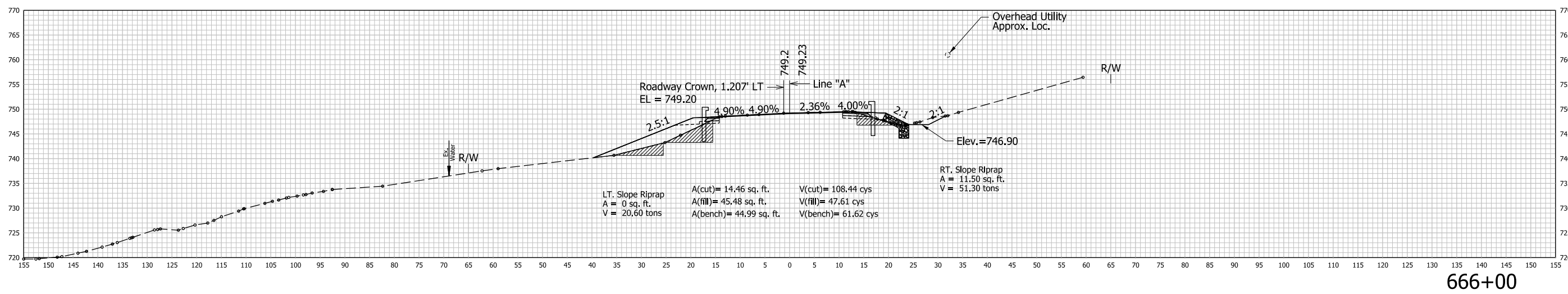
INDIANA  
DEPARTMENT OF TRANSPORTATION

CROSS SECTIONS  
LINE "A"

HORIZONTAL SCALE	CULVERT ASSET ID
1"=10'	CV 445-28-000.53
VERTICAL SCALE	DESIGNATION
1"=10'	2100161
SHEETS	
CONTRACT	PROJECT
T-43663	2100161

\$FILES\$

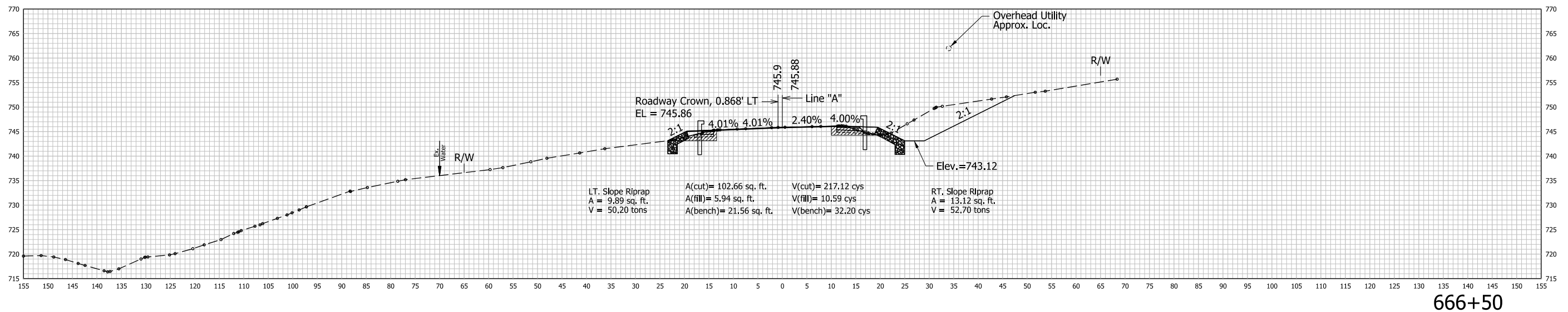
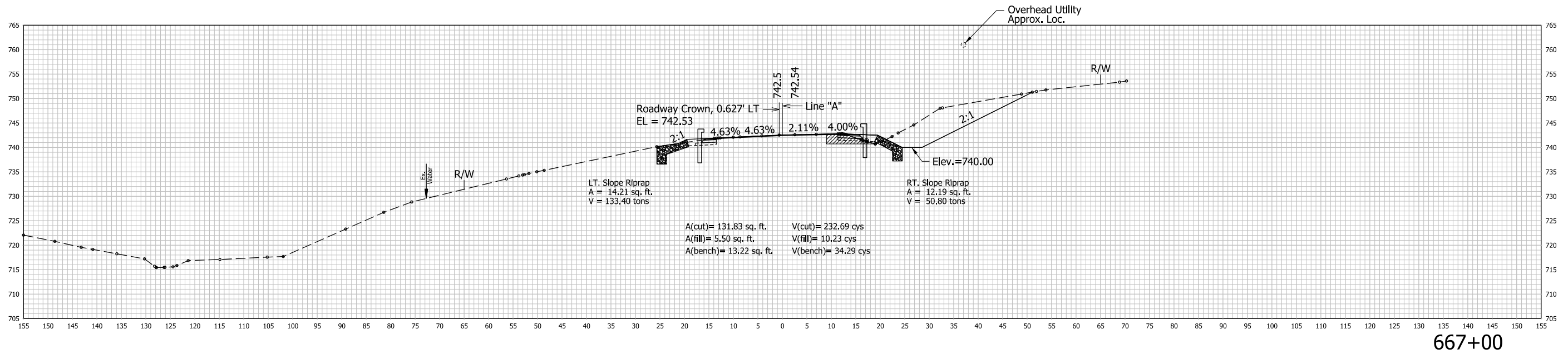
STA. 664+00 TO STA. 665+00



STA. 665+50 TO STA. 666+00

RECOMMENDED FOR APPROVAL _____ DESIGNED: AKH 04/11/22 CHECKED: RMH 04/11/22	DESIGN ENGINEER _____ DATE _____ DRAWN: AKH 04/11/22 CHECKED: RMH 04/11/22	INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53
		CROSS SECTIONS LINE "A"		VERTICAL SCALE 1"=10'	DESIGNATION 2100161
				SHEETS XSS of XS15	
		CONTRACT T-43663		PROJECT 2100161	

\$FILES\$



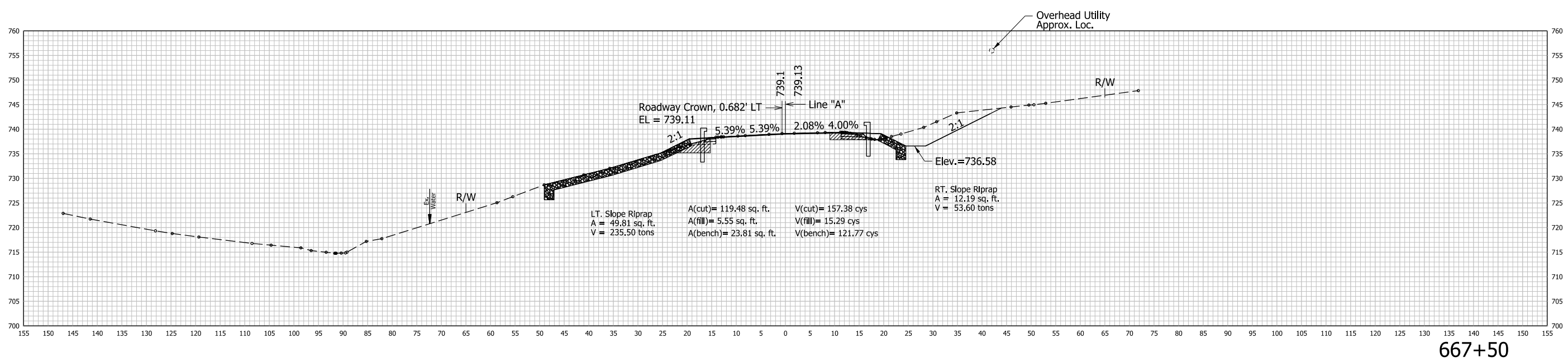
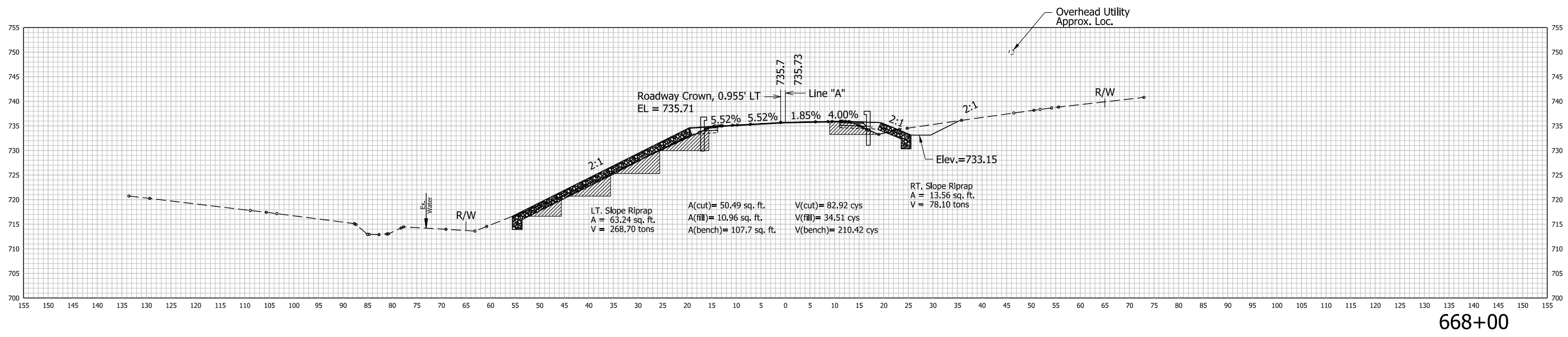
STA. 666+50 TO STA. 667+00

\$FILES

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	04/11/22	DRAWN: AKH
CHECKED: RMH	04/11/22	CHECKED: RMH

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS LINE "A"	

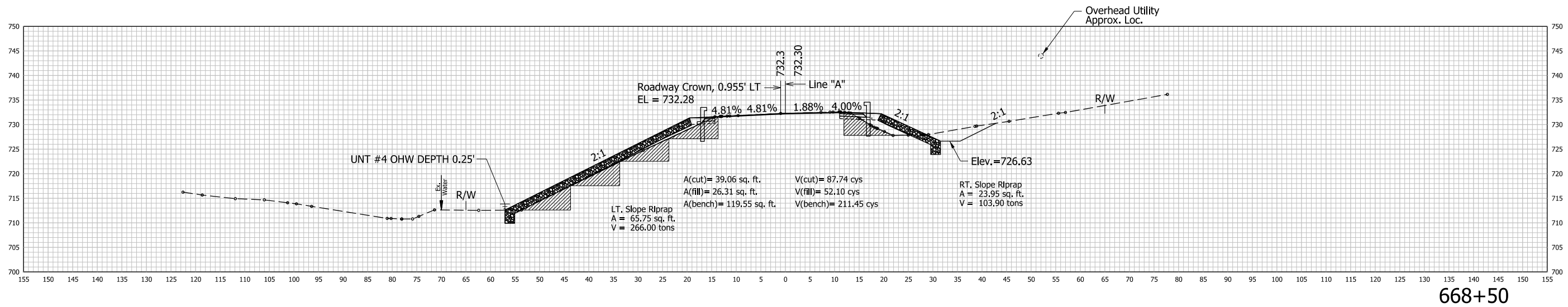
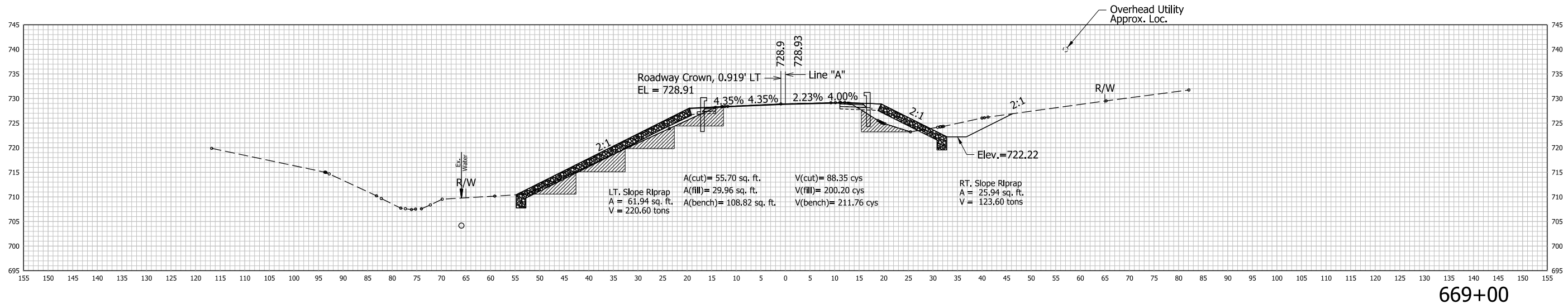
HORIZONTAL SCALE	CULVERT ASSET ID
1"=10'	CV 445-28-000.53
VERTICAL SCALE	DESIGNATION
1"=10'	2100161
SHEETS	
XS6 of XS15	
CONTRACT	PROJECT
T-43663	2100161



STA. 667+50 TO STA. 668+00

	RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53	
					CROSS SECTIONS LINE "A"	VERTICAL SCALE 1"=10'	DESIGNATION 2100161
						SHEETS XS7 of XS15	
						CONTRACT T-43663	PROJECT 2100161

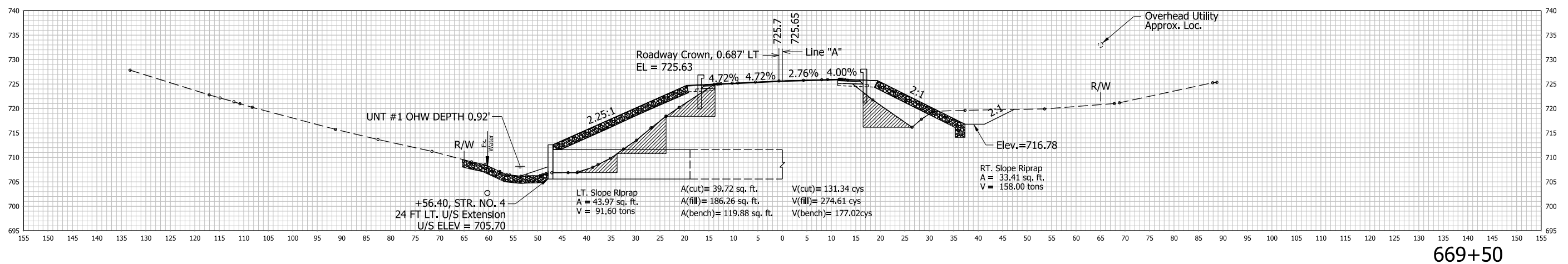
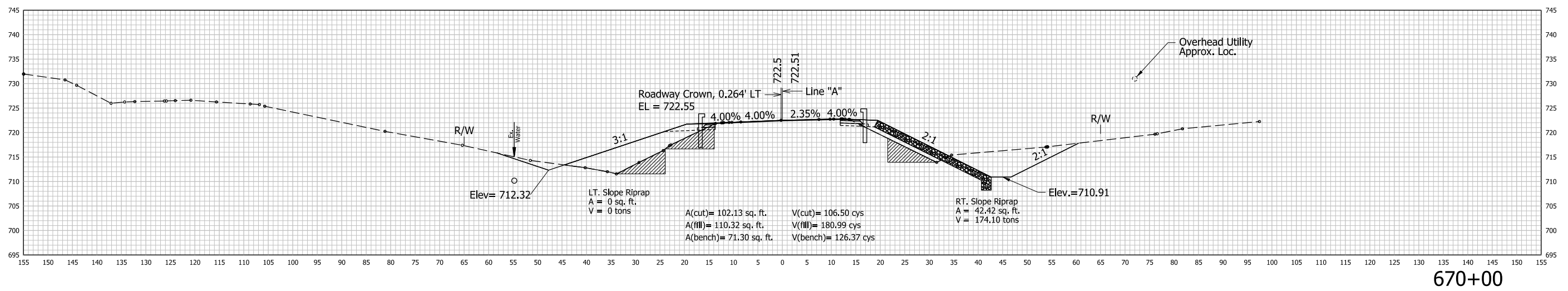
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RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE _____ DESIGNED: AKH 04/11/22 DRAWN: AKH 04/11/22 CHECKED: RMH 04/11/22 CHECKED: RMH 04/11/22	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=10' VERTICAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53 DESIGNATION 2100161	
	<b>CROSS SECTIONS          LINE "A"</b>	SHEETS XS8 of XS15		
			CONTRACT T-43663	PROJECT 2100161

\$FILES\$

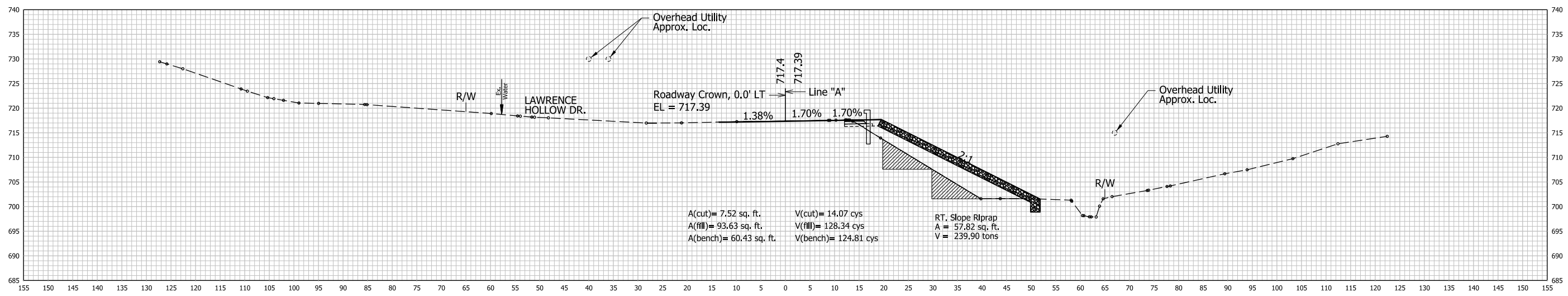
STA. 668+50 TO STA. 669+00



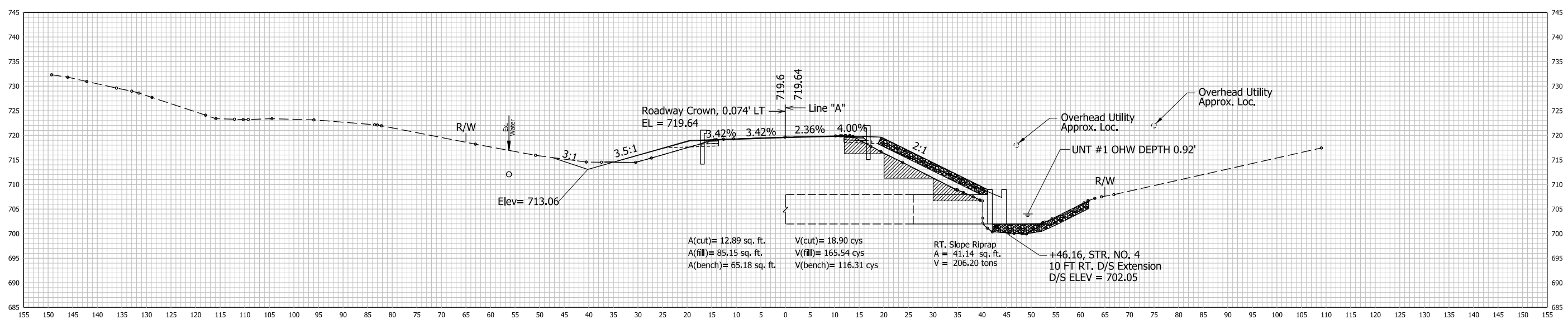
RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE _____ DESIGNED: AKH 04/11/22 DRAWN: AKH 04/11/22 CHECKED: RMH 04/11/22 CHECKED: RMH 04/11/22	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=10' VERTICAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53 DESIGNATION 2100161	
	<b>CROSS SECTIONS          LINE "A"</b>	SHEETS XS9 of XS15		
			CONTRACT T-43663	PROJECT 2100161

\$FILES\$

STA. 669+50 TO STA. 670+00



671+00

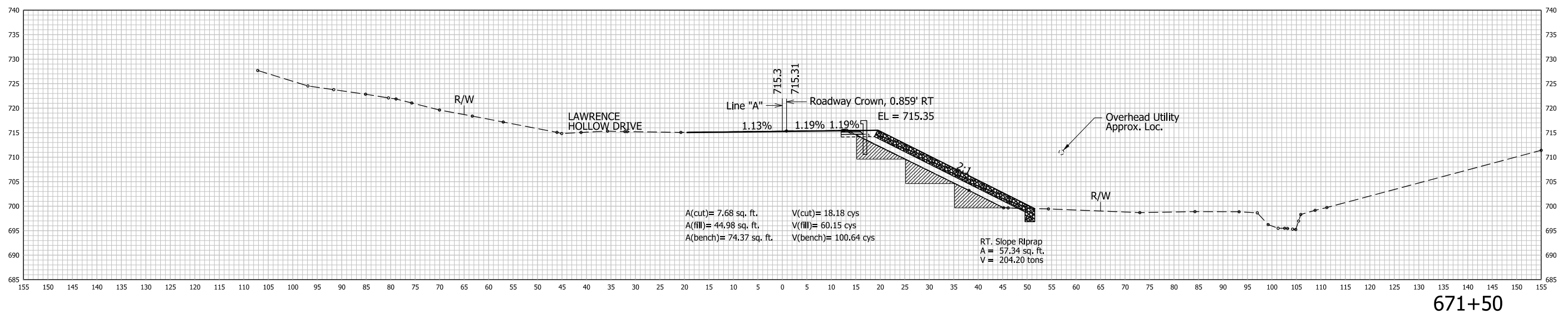
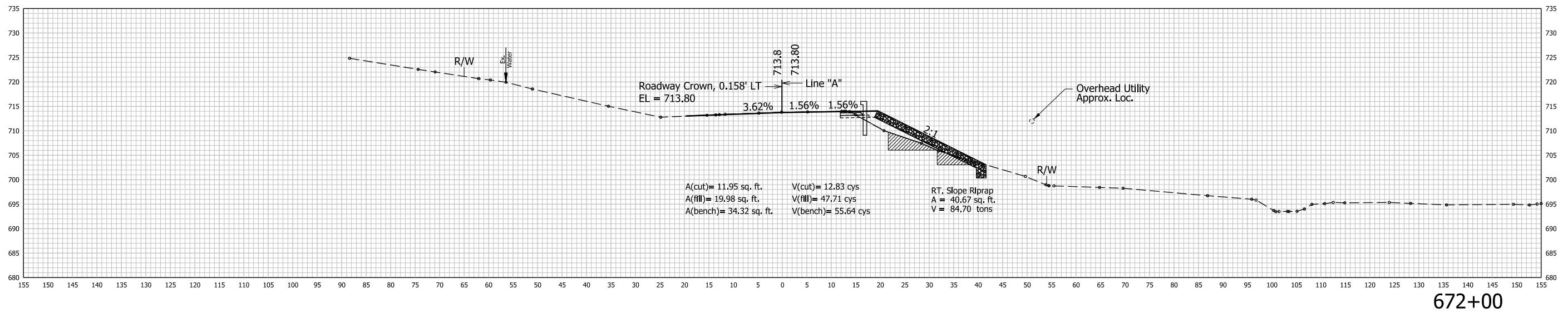


670+50

STA. 670+50 TO STA. 671+00

	RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	CULVERT ASSET ID	
					1"=10'	CV 445-28-000.53	
					1"=10'	DESIGNATION	2100161
						SHEETS	
	DESIGNED: AKH 04/11/22	DRAWN: AKH	04/11/22	CROSS SECTIONS LINE "A"		XS10 of XS15	
	CHECKED: RMH 04/11/22	CHECKED: RMH	04/11/22		CONTRACT	PROJECT	
					T-43663	2100161	

\$FILES

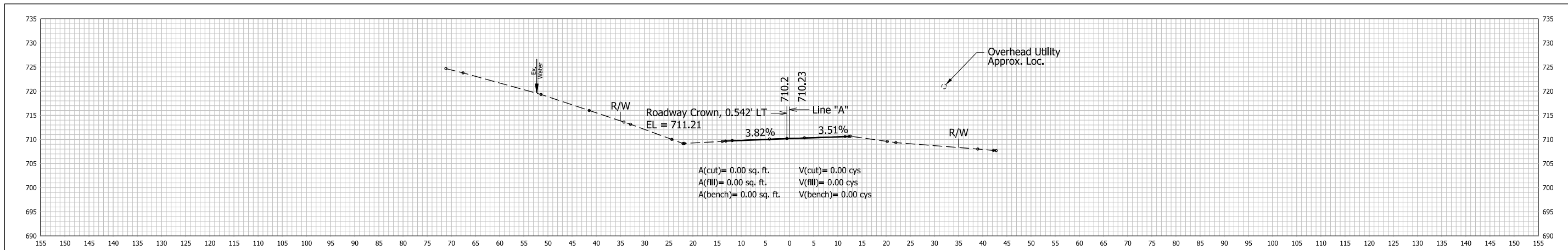


STA. 671+50 TO STA. 672+00

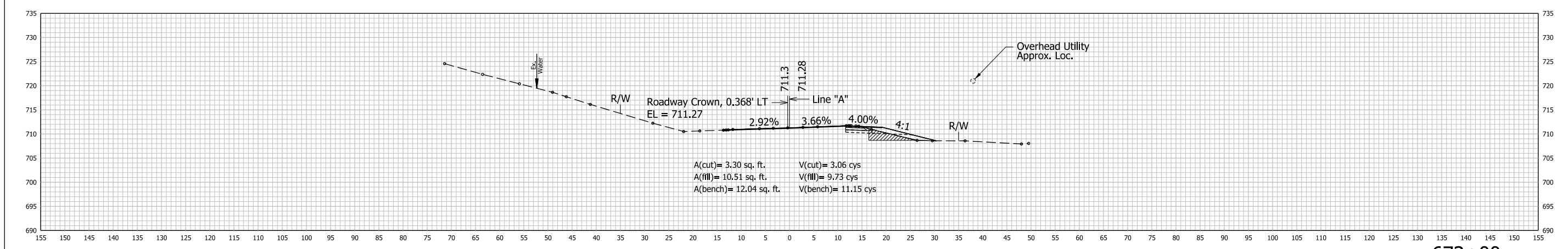
	RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE 1"=10'	CULVERT ASSET ID CV 445-28-000.53
	DESIGNED: AKH 04/11/22	DRAWN: AKH	04/11/22		VERTICAL SCALE 1"=10'	DESIGNATION 2100161
	CHECKED: RMH 04/11/22	CHECKED: RMH	04/11/22		SHEETS XS11 of XS15	
				CROSS SECTIONS LINE "A"	CONTRACT T-43663	PROJECT 2100161

\$FILES\$

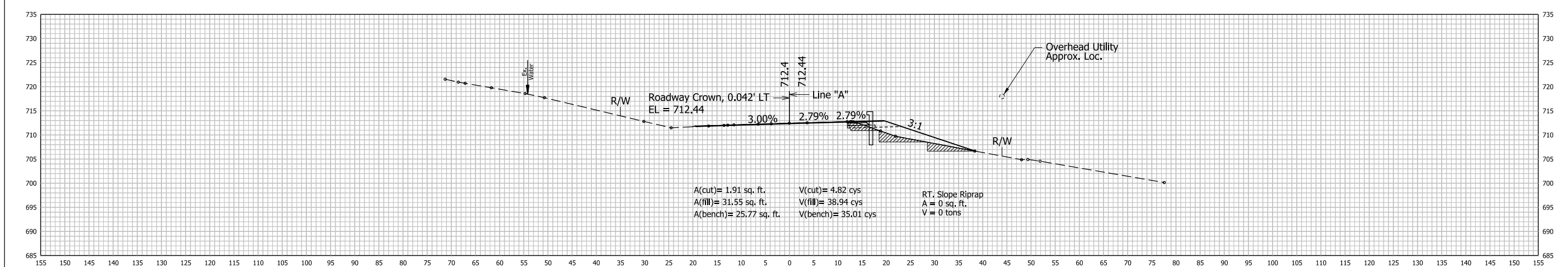




673+50



673+00

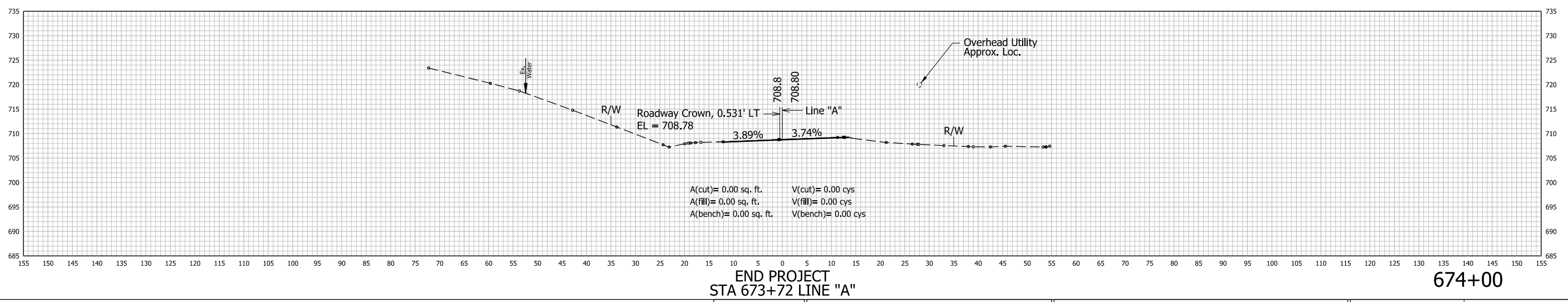
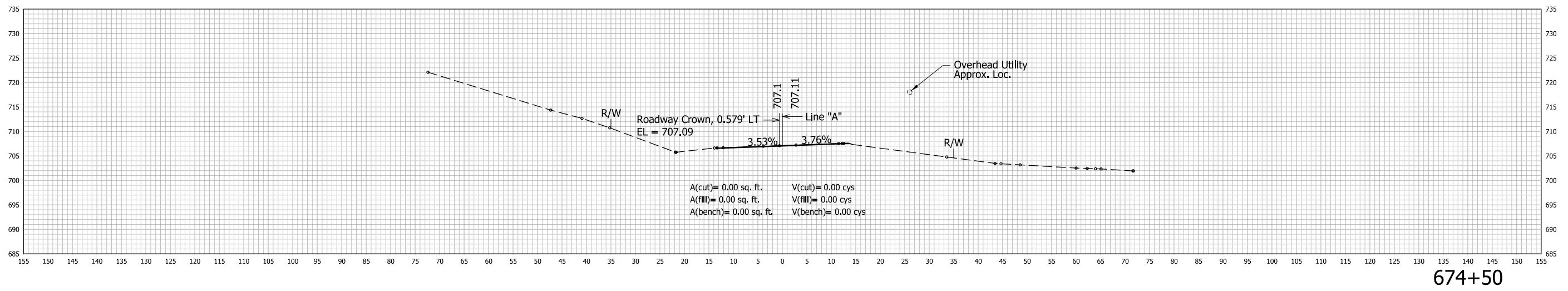


672+50

STA. 672+50 TO STA. 673+50

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	CULVERT ASSET ID
	DESIGNED: AKH 04/11/22	DRAWN: AKH 04/11/22		1"=10'	CV 445-28-000.53
CHECKED: RMH 04/11/22	CHECKED: RMH 04/11/22		CROSS SECTIONS LINE "A"	VERTICAL SCALE	DESIGNATION
				1"=10'	2100161
					SHEETS
					XS12 of XS15
				CONTRACT	PROJECT
				T-43663	2100161

\$FILES\$

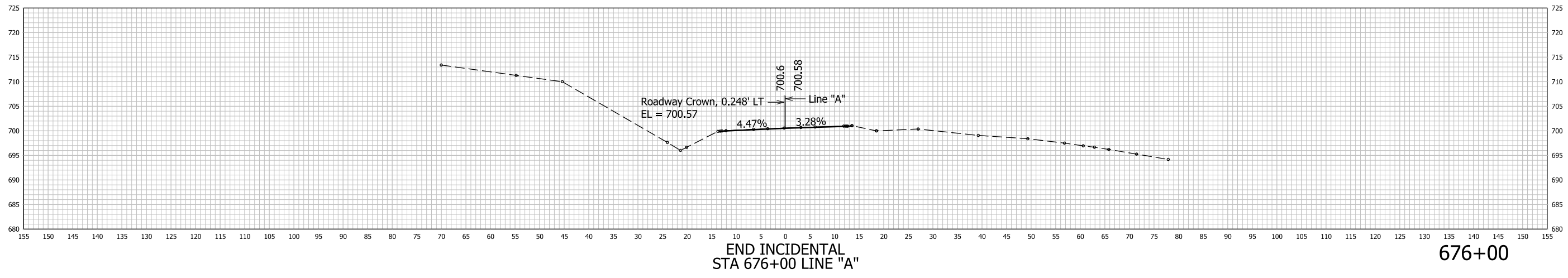


END PROJECT  
STA 673+72 LINE "A"

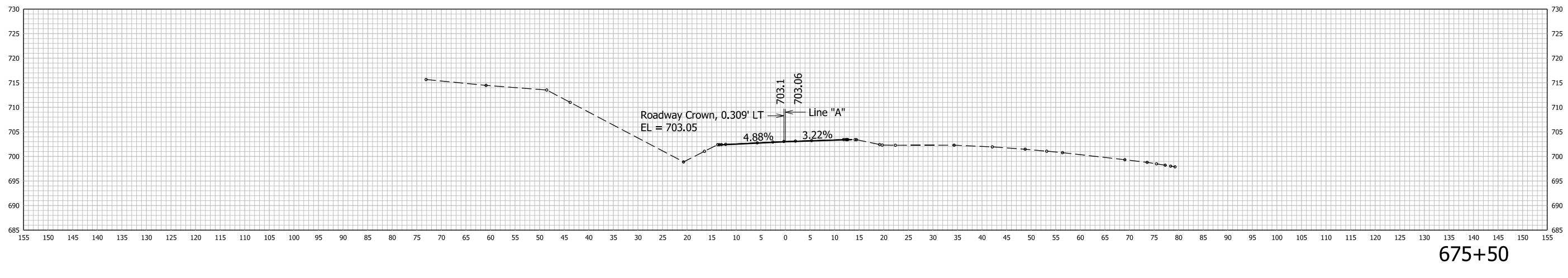
RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE	INDIANA DEPARTMENT OF TRANSPORTATION	HORIZONTAL SCALE	CULVERT ASSET ID
	DESIGNED: AKH 04/11/22	DRAWN: AKH 04/11/22		1"=10'	CV 445-28-000.53
	CHECKED: RMH 04/11/22	CHECKED: RMH 04/11/22		VERTICAL SCALE	DESIGNATION
			CROSS SECTIONS LINE "A"	1"=10'	2100161
				SHEETS	
				CONTRACT	PROJECT
			T-43663	2100161	

\$FILES\$

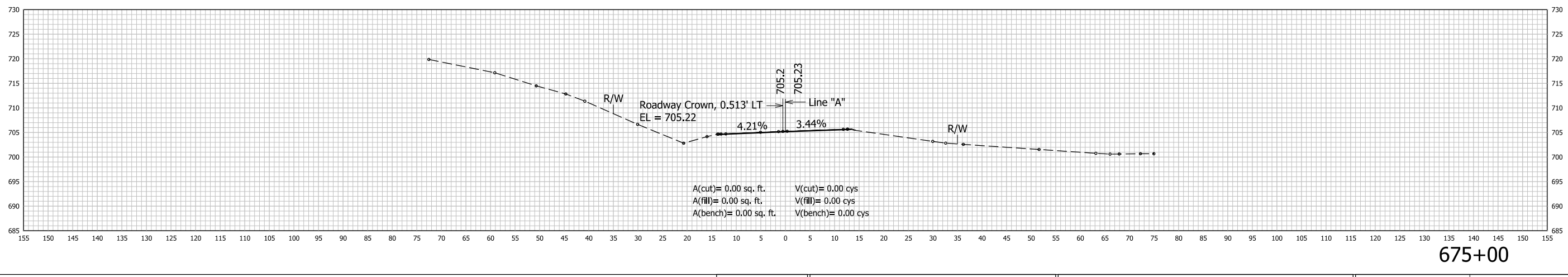
STA. 674+00 TO STA. 674+50



676+00



675+50



675+00

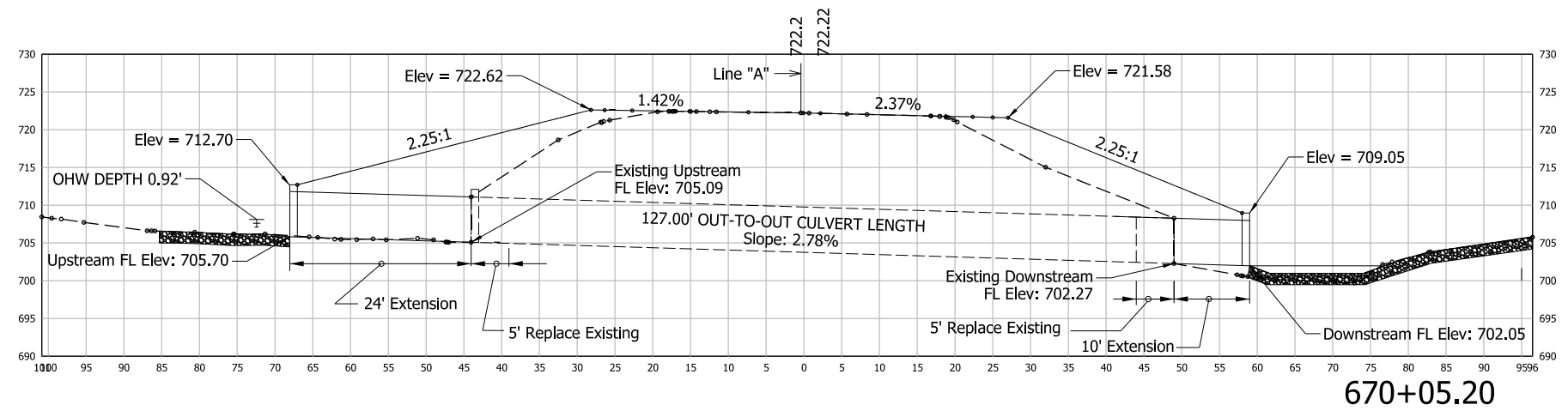
STA. 675+00 TO STA. 676+00

RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE
DESIGNED: AKH	04/11/22	DRAWN: AKH
CHECKED: RMH	04/11/22	CHECKED: RMH

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS LINE "A"	

HORIZONTAL SCALE	CULVERT ASSET ID
1"=10'	CV 445-28-000.53
VERTICAL SCALE	DESIGNATION
1"=10'	2100161
SHEETS	
XS14 of XS15	
CONTRACT	PROJECT
T-43663	2100161

\$FILES\$



	RECOMMENDED FOR APPROVAL _____	DESIGN ENGINEER _____	DATE _____	INDIANA DEPARTMENT OF TRANSPORTATION	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>HORIZONTAL SCALE</td><td>CULVERT ASSET ID</td></tr> <tr><td>1"=10'</td><td>CV 445-28-000.53</td></tr> <tr><td>VERTICAL SCALE</td><td>DESIGNATION</td></tr> <tr><td>1"=10'</td><td>2100161</td></tr> </table>	HORIZONTAL SCALE	CULVERT ASSET ID	1"=10'	CV 445-28-000.53	VERTICAL SCALE	DESIGNATION	1"=10'	2100161
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	1"=10'	CV 445-28-000.53											
	VERTICAL SCALE	DESIGNATION											
1"=10'	2100161												
DESIGNED: AKH 04/11/22	DRAWN: AKH 04/11/22	CROSS SECTIONS STR. NO 4-STA. 670+05.20 "A"		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">SHEETS</td></tr> <tr><td style="text-align: center;">XS15</td><td style="text-align: center;">of XS15</td></tr> <tr><td colspan="2" style="text-align: center;">PROJECT</td></tr> <tr><td colspan="2" style="text-align: center;">2100161</td></tr> </table>	SHEETS		XS15	of XS15	PROJECT		2100161		
SHEETS													
XS15	of XS15												
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2100161													
CHECKED: RMH 04/11/22	CHECKED: RMH 04/11/22			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td colspan="2" style="text-align: center;">CONTRACT</td></tr> <tr><td colspan="2" style="text-align: center;">T-43663</td></tr> </table>	CONTRACT		T-43663						
CONTRACT													
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