

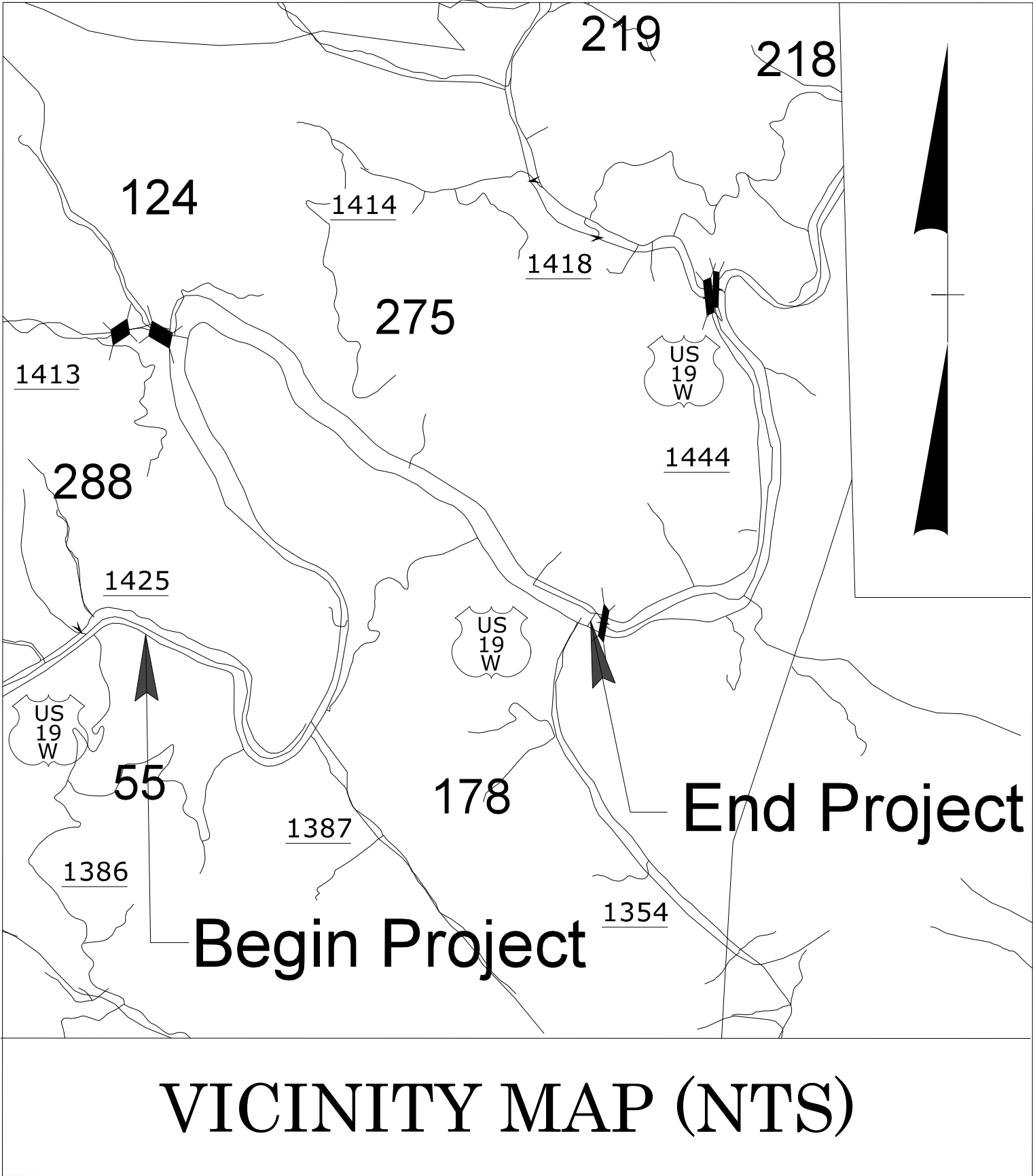
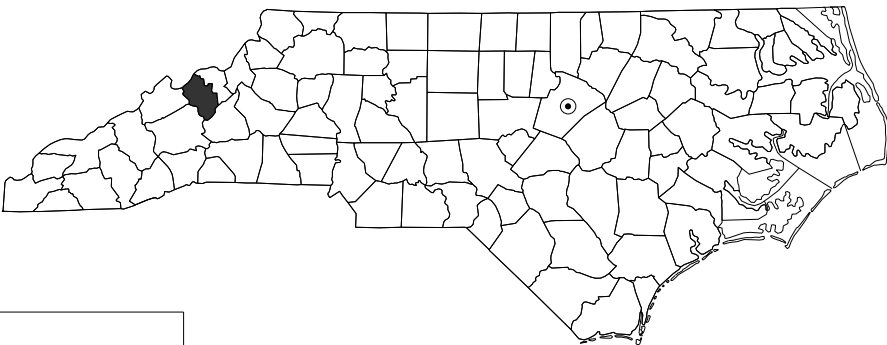
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

STREAM PLAN SUBMITTAL - SEGMENT 3
for NCDOT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.
N.C.	M-0572G	R-0.1
STATE PROJ. NO.		F. A. PROJ. NO.
DF1813.1100999.1.2		ER24384
DF1813.1100999.2.2		ER24384
DF1813.1100999.3.2		ER24384
		DESCRIPTION
		PE
		R/W, UTILITIES
		CONSTRUCTION

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY



VICINITY MAP (NTS)

STREAM PLANS
ISSUED JULY 6, 2026

Sheet Index

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Project Directory

Engineering:
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License No. C-3097
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Cockeysville, MD 21030
Jeremy Koser, Project Engineer
410-316-2360

Structural Engineering:
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108 Asheville Commerce Parkway
Candler, NC 28715
Ryan Shipman, Structures Section Head
828-221-0979

Roadway Engineering:
JMT - Johnson, Mirmiran, & Thompson, Inc
4700 Falls of Neuse Rd, Suite 100
Raleigh, NC 27609
Chad Rogers, Vice President
980-270-5851

General Notes

1. All erosion and sediment control practices shall comply with the North Carolina Erosion and Sediment Control Planning and Design Manual.
2. The contractor shall ensure safe working conditions are always maintained at the Site. Contractor shall monitor river flows and weather forecasts and move equipment from flood prone areas if rain is predicted. All materials shall be stored in an orderly manner, away from waterways, and in appropriate containers and/or enclosures.
3. Under no circumstances will Contractor exceed the limits of disturbance and/or go outside of temporary disaster construction easement (TDCE) areas shown in the plans.

VEGETATION GENERAL NOTES:

4. Vegetation onsite to be used as transplant material (river cane, small trees, and sod mats) shall not be disturbed until Contractor is prepared to install transplants. These will be identified by the Engineer during the pre-construction site walk.
5. Contractor is to make every effort to avoid damaging or removing existing trees. Any required tree clearing shall occur outside of bat moratoria (March 15 to November 15).
6. If necessary due to timing, trees will be removed pre-project with no or minimal ground disturbance. Trees will be cut at their base leaving root balls in place. All pre-project tree clearing shall occur outside of bat moratoria time of year restriction dates in accordance with permit requirements to protect potential bat habitat.
7. Non-native vegetation encountered during clearing, grubbing, and grading shall be hauled offsite.

Initial Site Preparation

1. Contact North Carolina "One Call" Center (800-632-4949) before any excavation. Contact the Division of Energy, Mineral, and Land Resources (DEMLR) Asheville Regional Office at 828-296-4500 to schedule a pre-construction meeting at least 48 hours prior to project activation.
2. Mobilize equipment and materials to the Site.
3. Identify and establish construction access points, staging and stockpile areas, and silt fence.
 - a. Construction access is located off US19W.
 - b. Preliminary locations for staging and stockpile areas have been provided in the plans, but these may be field adjusted by the contractor with engineer approval given the following conditions are met.
 - c. Stockpiles, laydown or waste areas, concrete washouts, portable toilets, and fuels must be located within the permitted limits of disturbance, the TDCE, and are at least 50 feet away from any open water conveyances, such as basins, ditches, storm drain inlets, etc.
 - d. Additional stockpile areas and staging areas not meeting these conditions will require approval of the Division of Energy, Mineral, and Land Resources, the client, and the engineer.
4. Establish haul roads.
 - a. On river right, adjacent to US19W, install the first lift of Vegetated Rock Toe to be used as a haul road using recovered river material, as detailed in the Vegetated Rock Toe detail. The height of the first lift can be field adjusted based on available material and contractor equipment requirements for height above water surface. The contractor shall work with the onsite stream engineer on changes to lift height, or if quarry material is needed.
 - b. All haul roads shall be monitored for sediment loss daily. In the event of sediment loss, a double row of silt fence or other acceptable sediment and erosion control practices shall be installed. Silt fence outlets shall be located at points of low elevation or a maximum spacing of 150 ft and offset between double rows of silt fence to maximize sediment capture.
5. Set up temporary facilities, locate equipment within the staging area, and stockpile materials needed for the initial stages of construction within the stockpile area(s).
6. NPDES Preparation and Monitoring
 - a. Install and maintain an onsite rain gauge and logbook to record the rainfall amounts and dates.
 - b. Maintain an approved copy of the E&SC plan with placard and approval letter and a copy of the NPDES permit. Twelve months of complete inspection forms shall be kept on-site and available for inspection at all times until project closure by NCDEQ.
 - c. The contractor shall conduct self-inspections of the erosion and sedimentation control measures and compete the following combined self-inspection form found on the DEMLR website: <https://deq.nc.gov/about/divisions/energy-mineral-land-resources/erosion-sediment-control/forms>.
 - d. Monitor site for sediment loss and inspect all erosion control features after each rain event and as dictated by the NPDES Permit. Maintain erosion control features according to the North Carolina Erosion and Sediment Control Planning and Design Manual.
7. Stream work consists of One main element: Vegetated Rock Toe (Cane River). Contractor will work in and adjacent to the live channel. Erosion will be managed with careful phasing of work.
 - a. Vegetated Rock Toe: Recovered river material, or imported quarry stone as approved by the onsite stream engineer, shall be installed as the first lift of Vegetated Rock Toe in the live channel. Soil application will occur above baseflow water elevation to minimize sedimentation. Follow sequencing notes in the Vegetated Rock Toe detail.
8. Routine crossing of the live river is not anticipated due to an existing bridge and road access on both sides of the channel. The designated haul road must be utilized per the approved plan to conduct stream enhancement work.

Stream Construction Sequence

3. Contractor shall develop a phasing plan and schedule for stream work to be approved by the engineer prior to beginning work. If it is anticipated that stream work may be completed to a point to support bridge construction, then be stabilized and finalized later after bridge construction is underway or complete. Contractor shall adhere to the approved phasing plan and schedule unless otherwise approved by the engineer. All aspects of construction should be considered within the proposed phasing plan and schedule.
2. After initial erosion control measures are installed as discussed in Initial Site Preparation and Erosion Control, cobble/gravel excavated during river and roadway side slope excavation shall be used for the construction of stream elements.
3. Begin construction of stream elements. Where feasible and if multiple dedicated crews are available, multiple sections of stream work may be constructed concurrently.
 - 3.1. If bedrock is encountered, work with onsite stream engineer to adjust the stream profile/cross section. Bedrock/large boulder blasting is not desirable and should be avoided if possible.
 - 3.3. To balance materials and earthwork:
 - 3.3.1. Excess excavation material may be used to increase the slope of the low in-stream benches and the top of the vegetated rock toe areas, as directed by the onsite stream engineer. See notes on cross sections. Work with onsite stream engineer to locate areas where stream bench slopes can be increased consistently across the project area.
4. Upon completion of stream elements, transplant vegetation as directed by the engineer.
5. Seed all disturbed areas with a mix of temporary (erosion control) and permanent riparian seed mix as completed and in compliance with the NPDES permit, as detailed below.
 - a. Ground stabilization will be applied within 14 calendar days from last land disturbing activity on flatter areas.
 - b. For steep slopes, that area must be stabilized within 7 calendar days.
 - c. Prepare floodplain for seeding by ripping and raking/smoothing between bankfull and the grading limits.
 - d. Any areas within the TDCe that have not been graded shall be treated according to the planting plan.
6. Install live stakes, bare roots, and containerized plantings along the stream banks in the dormant season (October 10 to April 25) according to the plans and specifications.

Construction Demobilization

1. Contractor shall ensure that the site is free of trash and leftover materials prior to demobilization of equipment from the site.
2. Complete the removal of any additional stockpiled material from the site.
3. Perform final walkthrough with engineer and complete punch list items before removing grading equipment and construction materials from the site.
4. Demobilize grading equipment from the site.
5. All rock and other stockpiled materials must be removed from within the limits of disturbance and TDCE. All areas within the TDCE that do not have a project design element shall be returned to pre-project conditions or better.
6. Seed, mulch, and stabilize staging areas, stockpile areas, haul roads, and construction entrances.
7. Remove all temporary erosion control measures once permanent stabilization has been achieved.

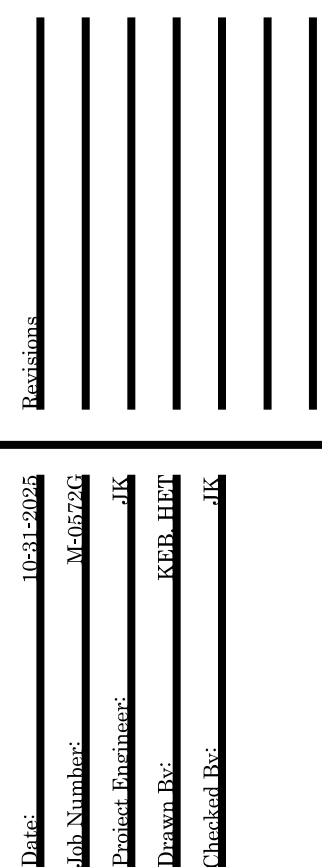
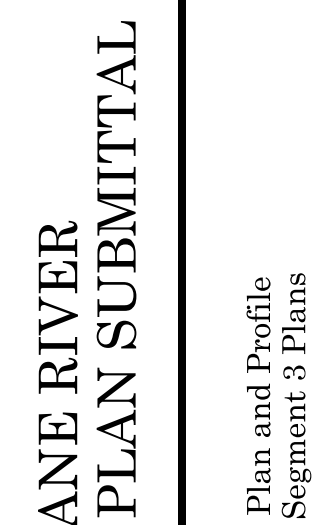
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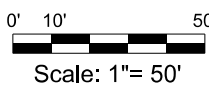
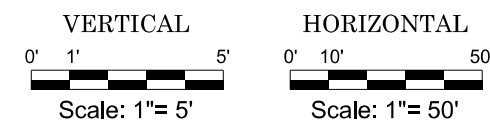
-  PRE-HELENE EDGE OF WATER
-  POST HELENE EDGE OF WATER
-  EXISTING MAJOR CONTOUR
-  EXISTING MINOR CONTOUR
-  EXISTING BEDROCK OUTCROP

Proposed Features

-  BENCH
-  PROPOSED EDGE OF WATER
-  PROPOSED BANKFULL
-  PROPOSED CENTERLINE
-  PROPOSED TEMPORARY DISASTER CONSTRUCTION EASEMENT
-  PROPOSED MAJOR CONTOUR
-  PROPOSED MINOR CONTOUR
-  PROPOSED TRANSVERSE BAR
-  PROPOSED BOULDER CLUSTER

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CANE RIVER STREAM PLAN SUBMITTAL	
General Notes and Symbols Segment 3 Plans	
Revisions	
Date:	10-31-2025
Job Number:	M-0572G
Project Engineer:	JRK
Drawn By:	KER, HET
Checked By:	JRK



CANE RIVER
STREAM PLAN SUBMITTAL

Plan and Profile Segment 3 Plans

Revisions

Date: 10-31-2025

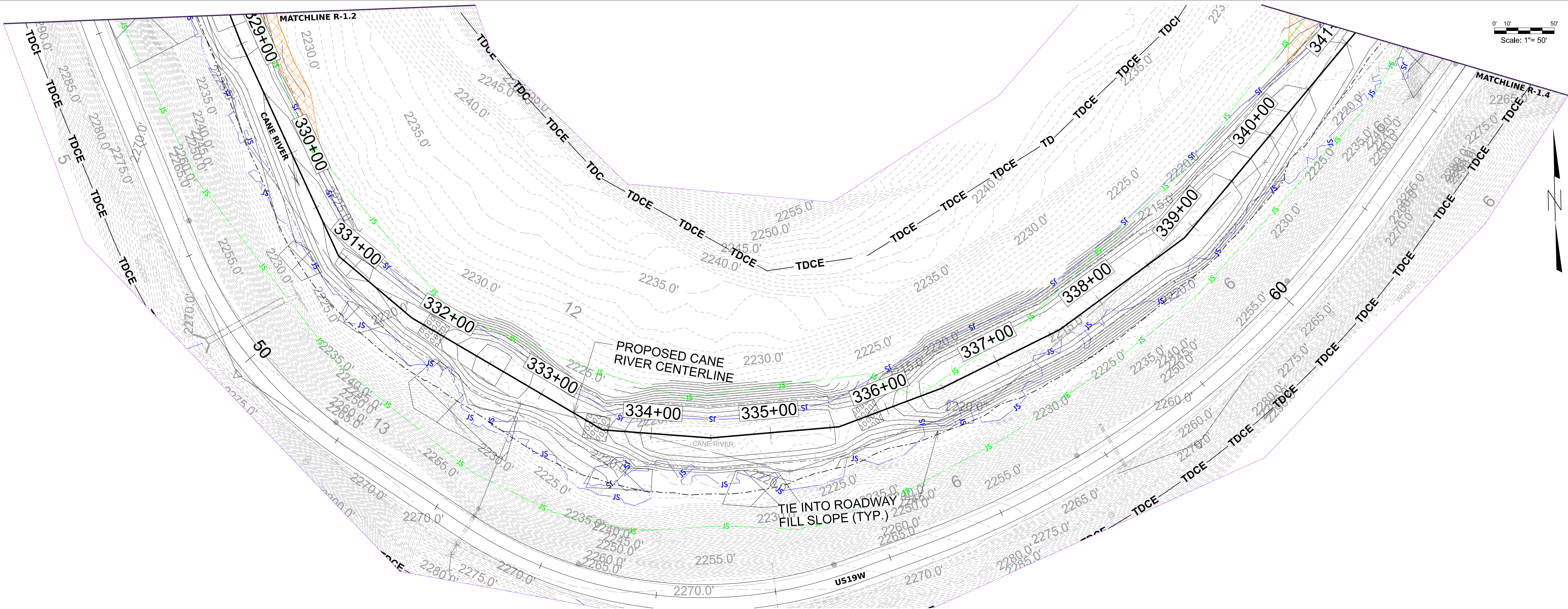
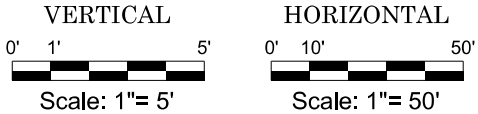
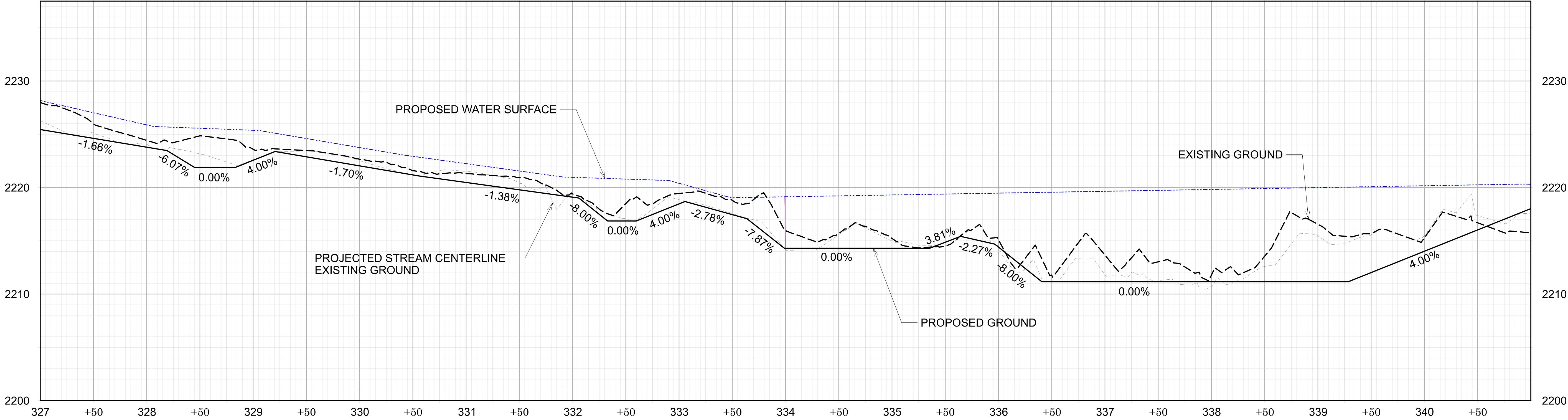
Job Number: M-0372G

Project Engineer: JK

Drawn By: KEB, HET

Checked By: JK

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M-05726

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DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

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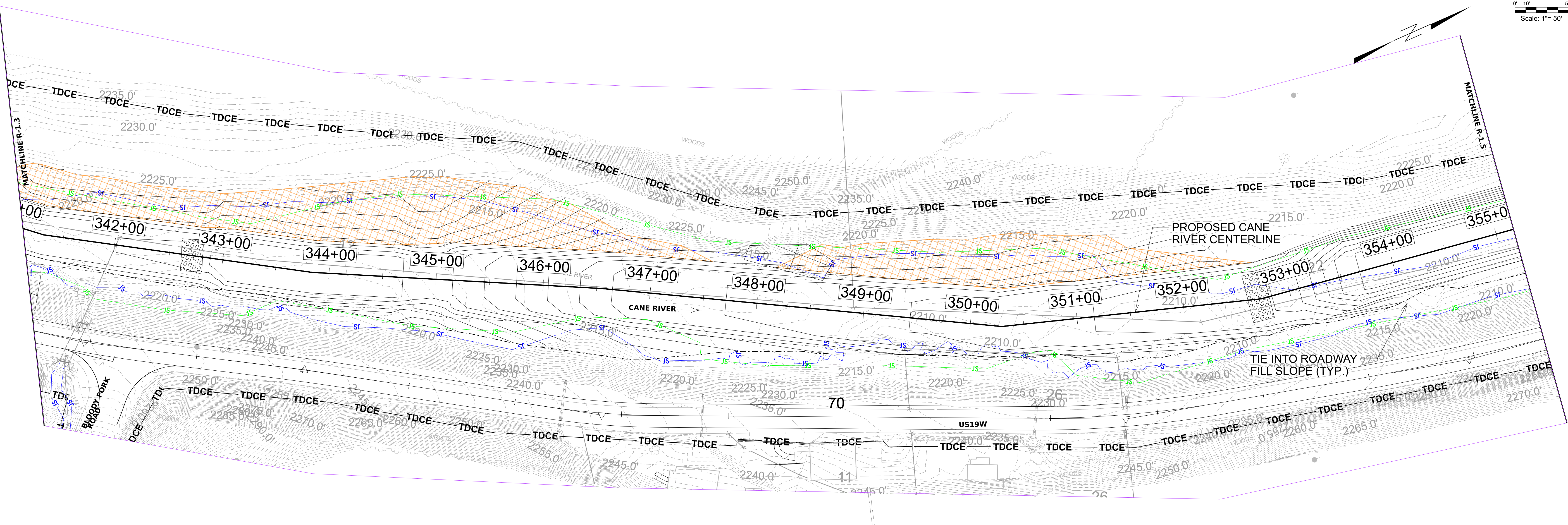
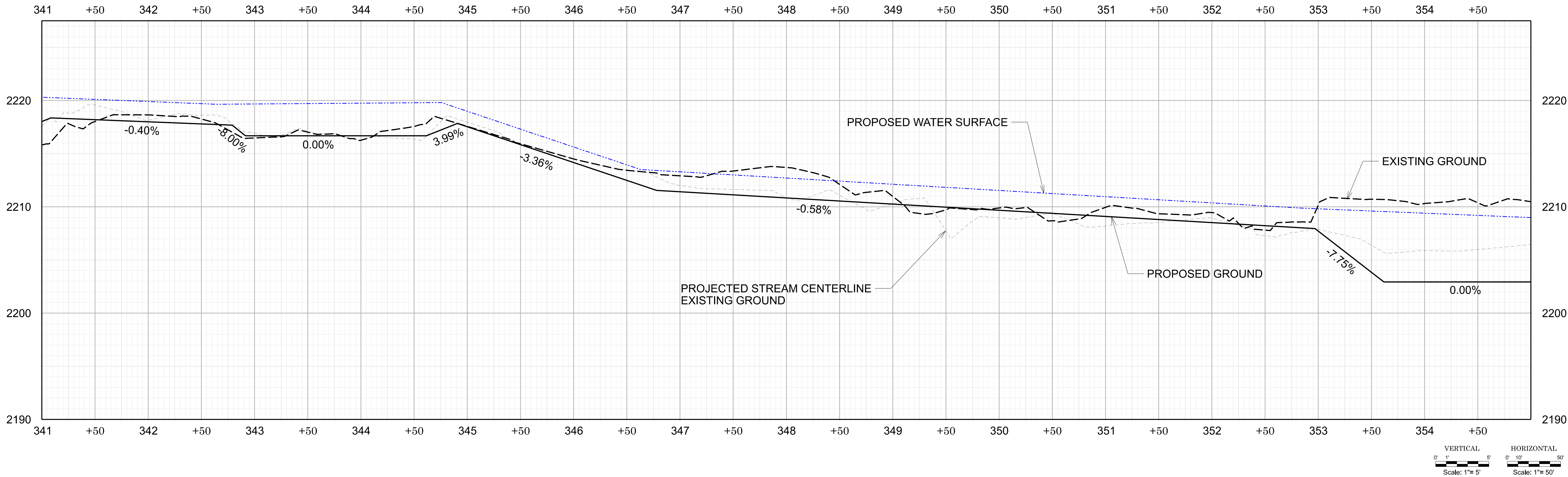
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CANE RIVER
STREAM PLAN SUBMITTAL

Plan and Profile
Segment 3 Plans

Revisions					
Date	11/14/2023	Auth Number	M-05726	Project	JLS
Drawn By	ASB	Checked By	JLS		



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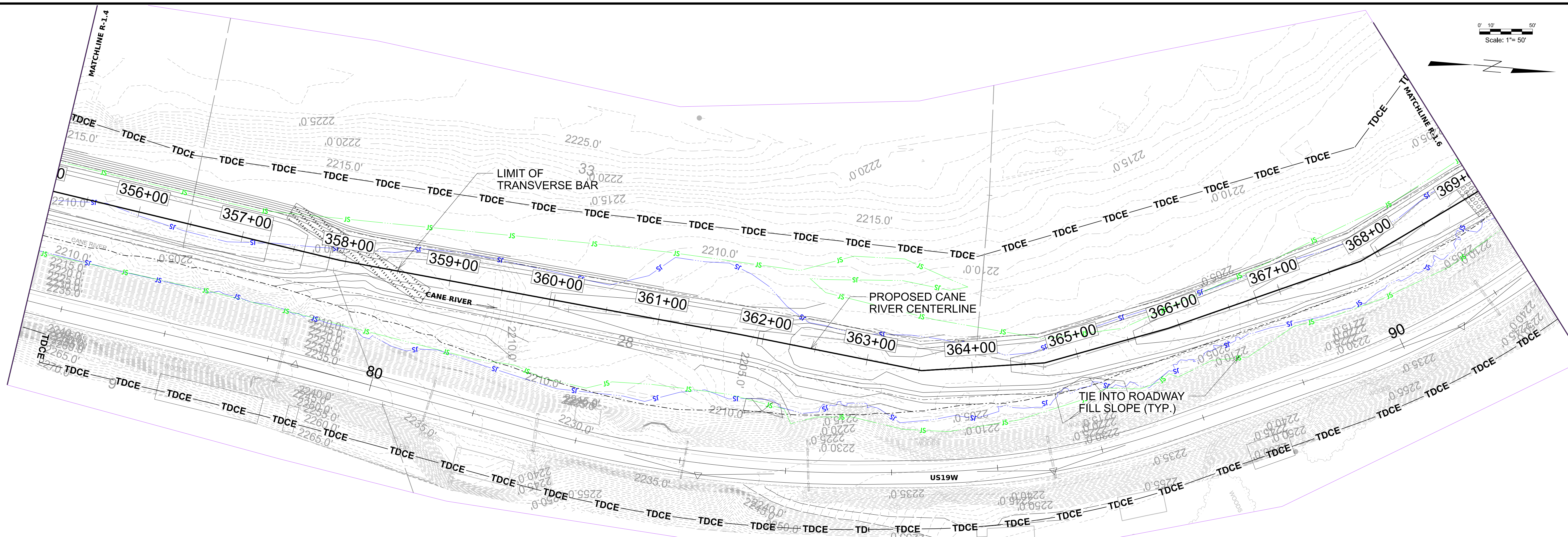
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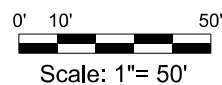
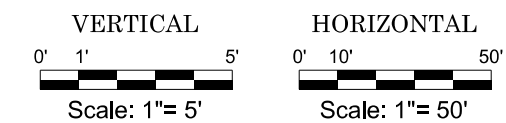
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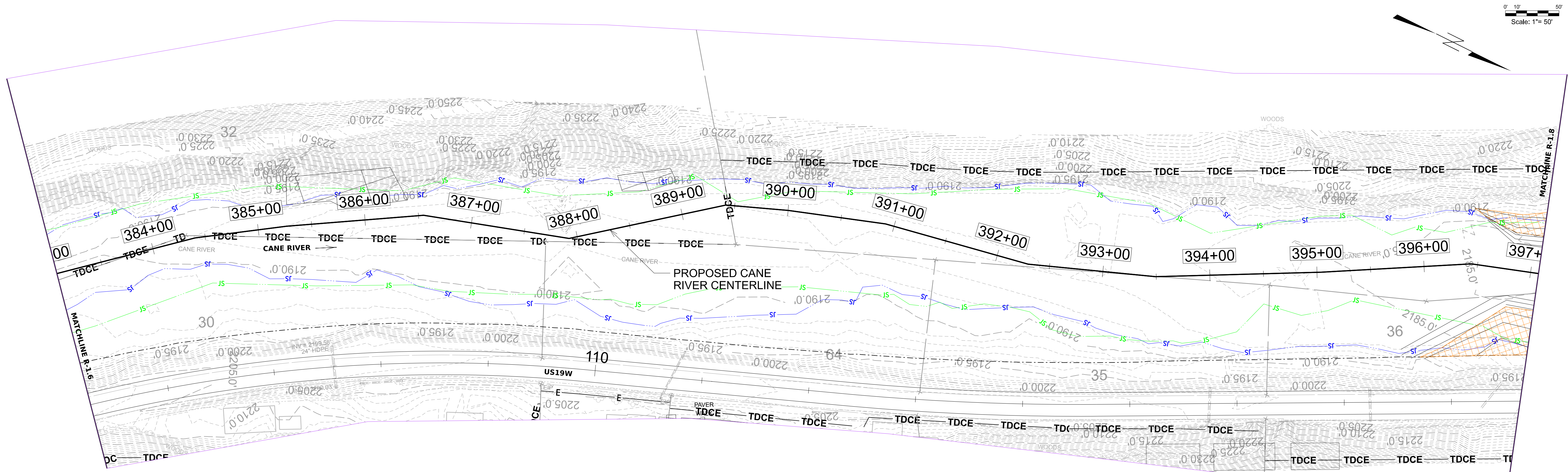


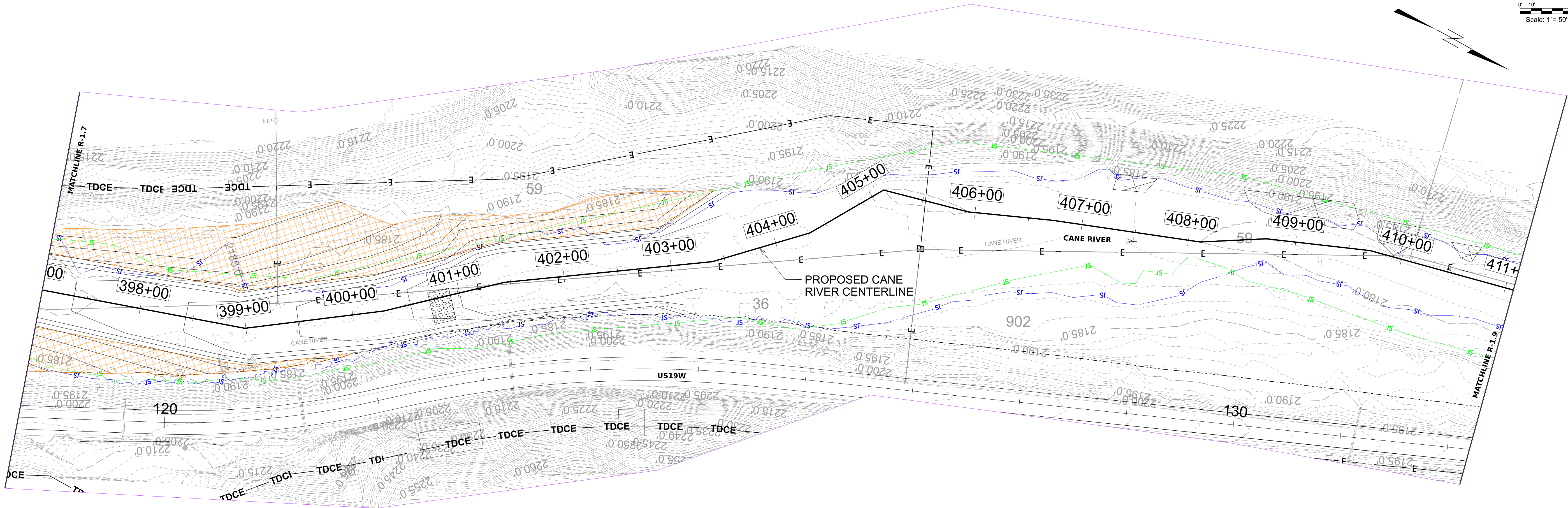
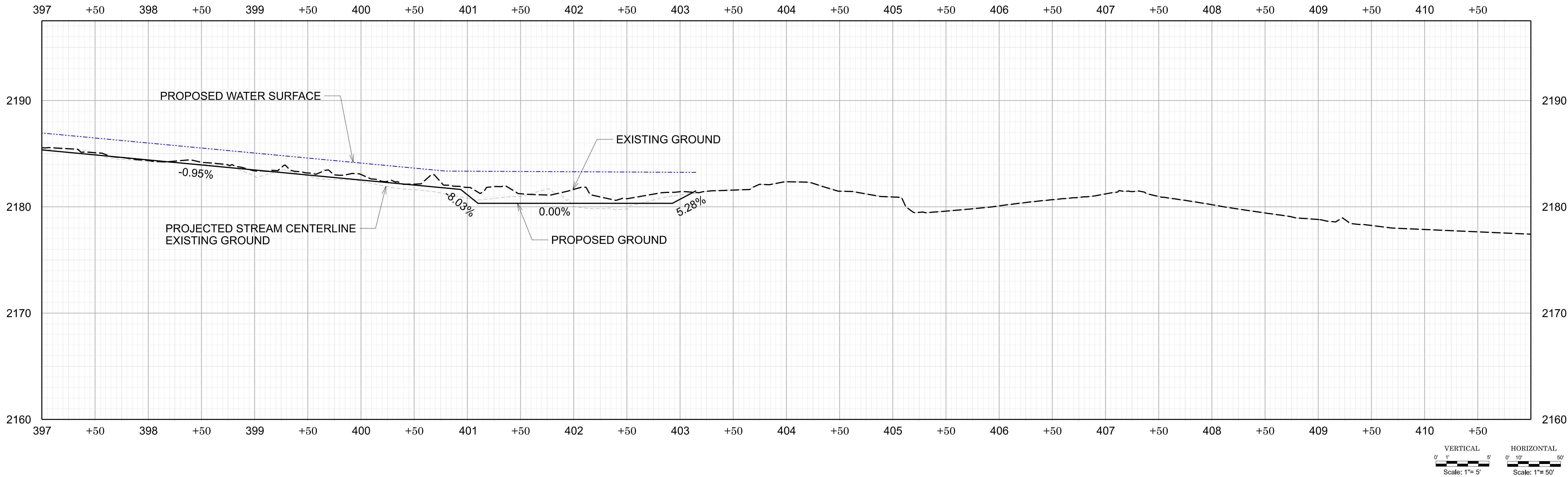
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Job Number: M-0372G
Project Engineer: JK
Drawn By: KGB, HET
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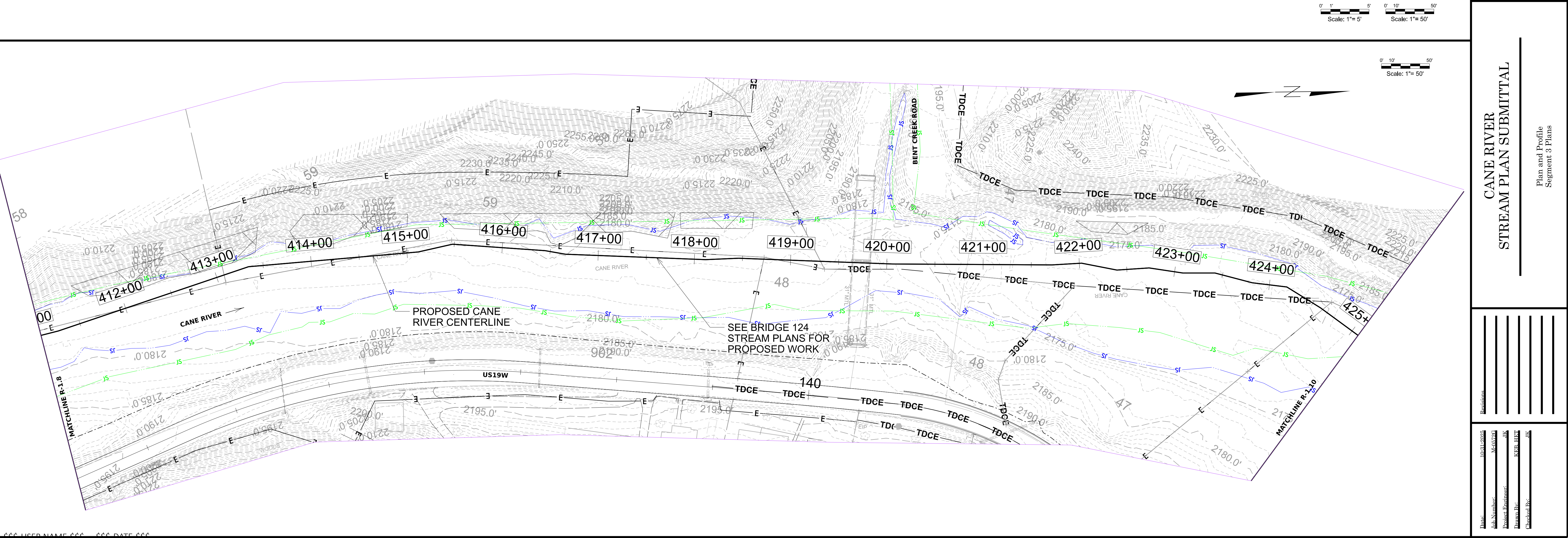
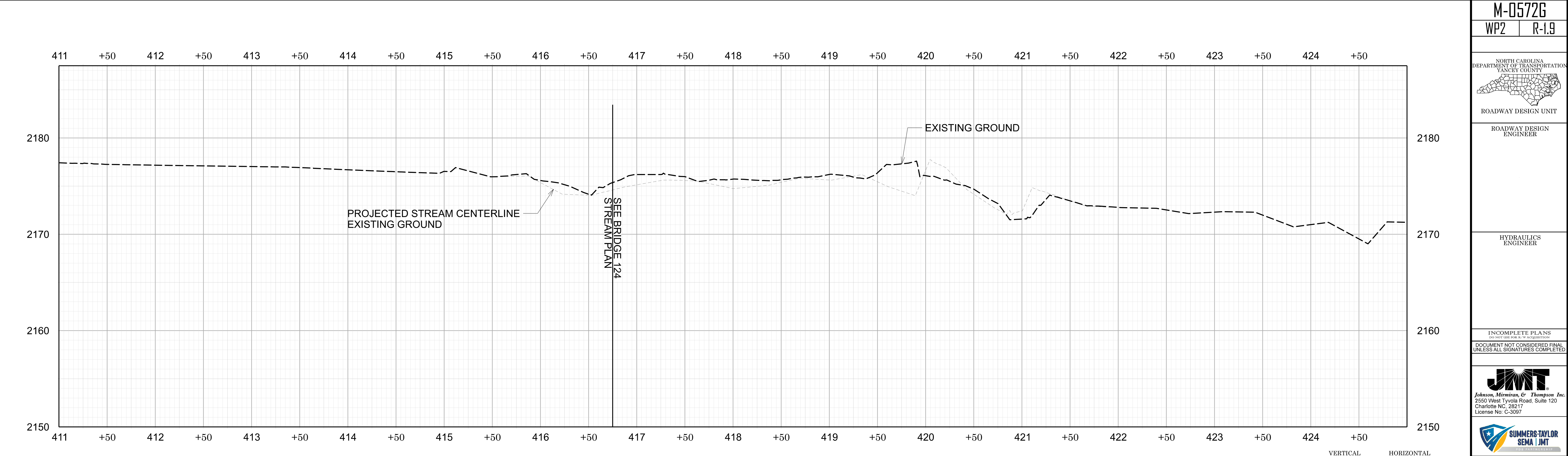
CANE RIVER
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Project Name:	JK
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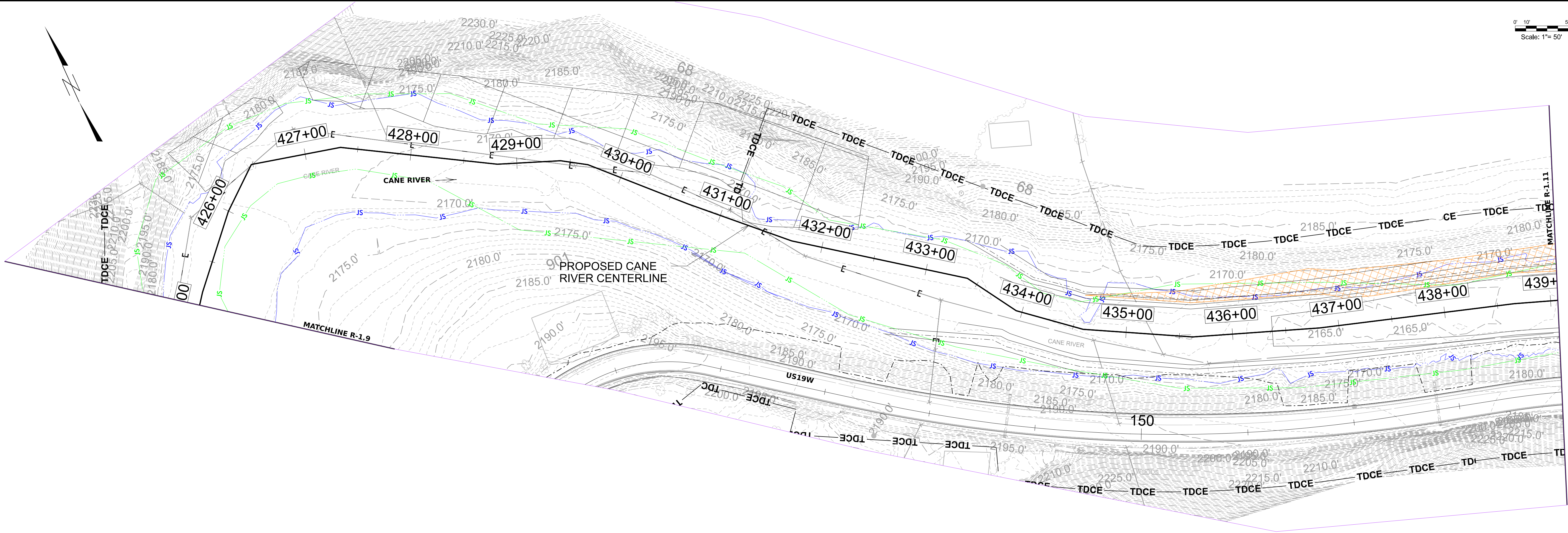
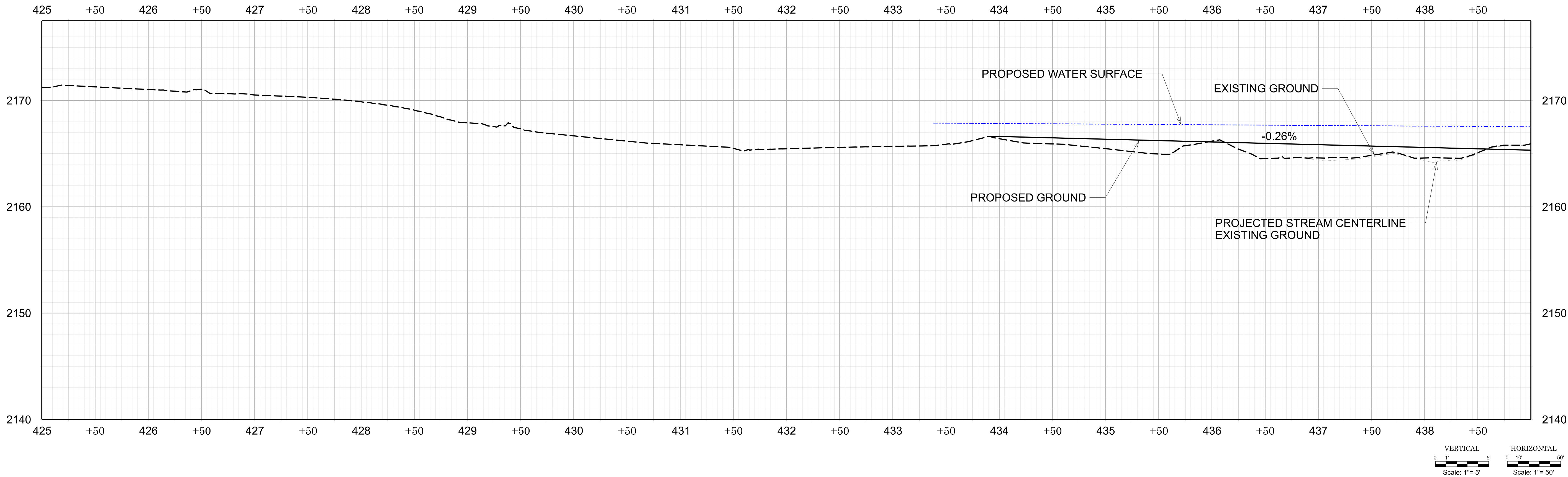
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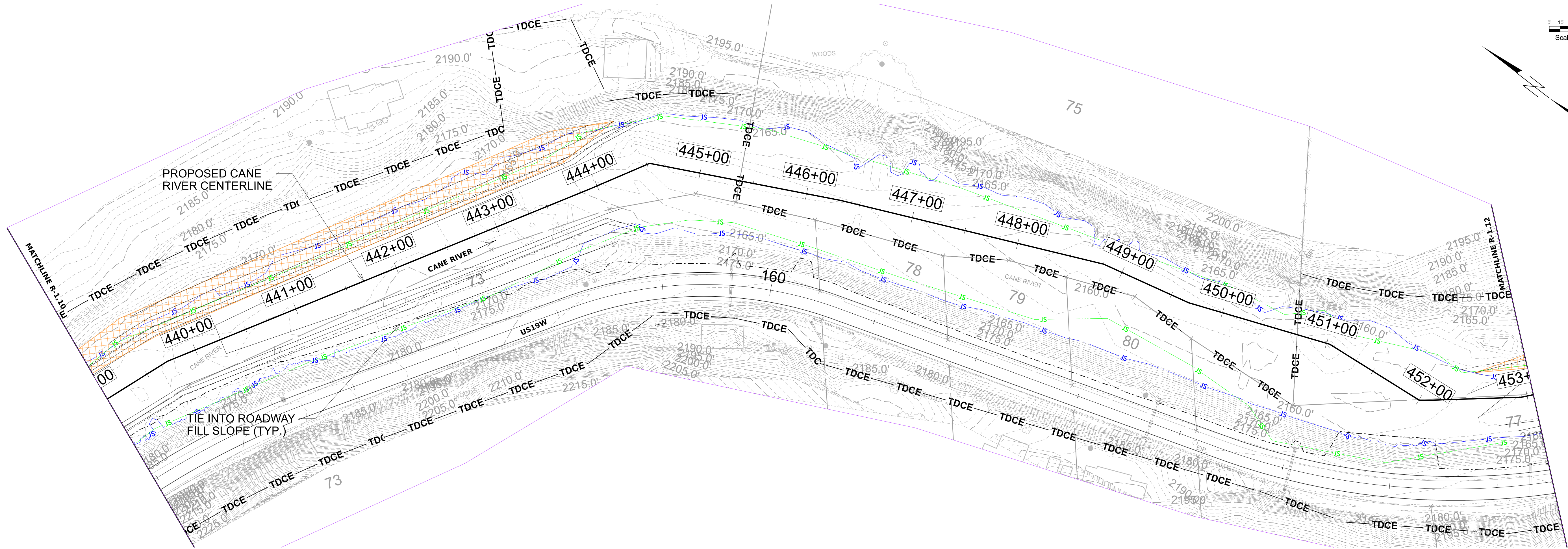
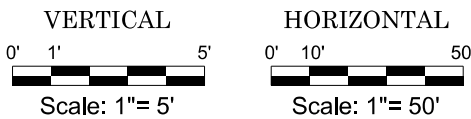
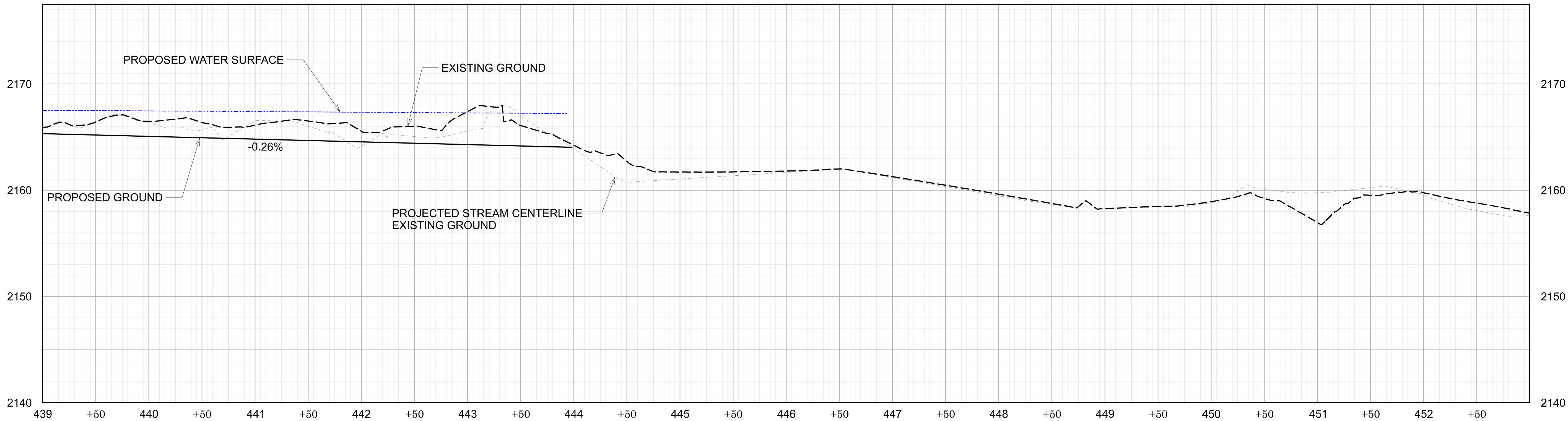
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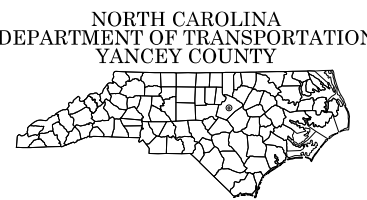
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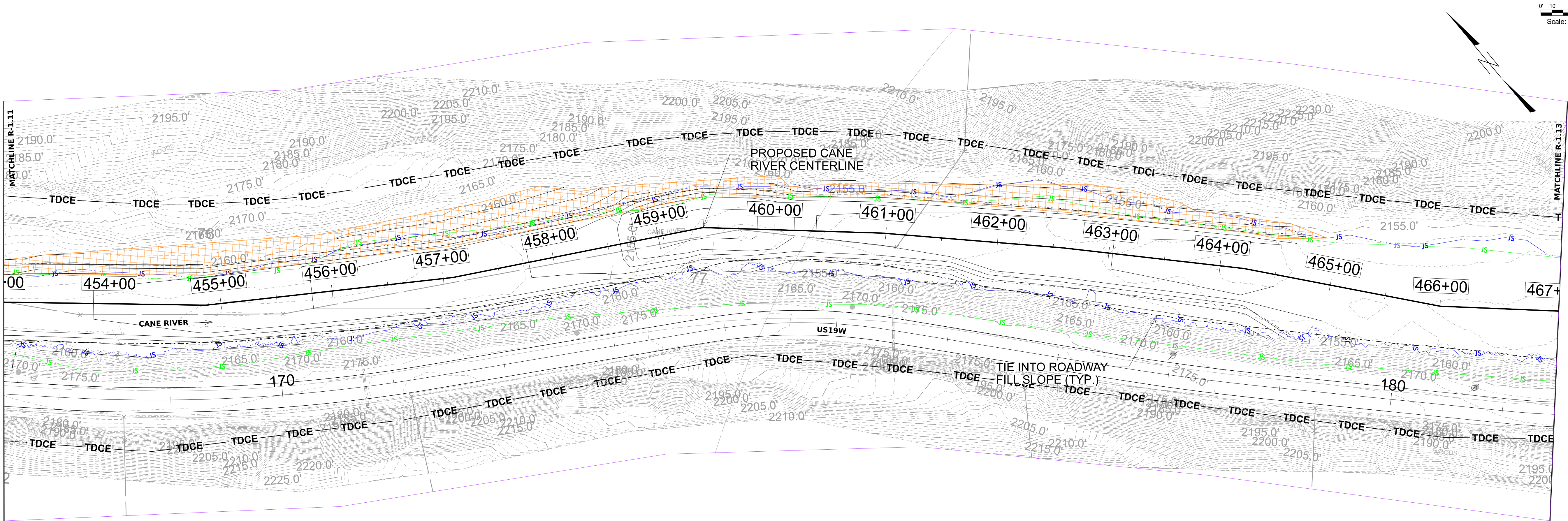
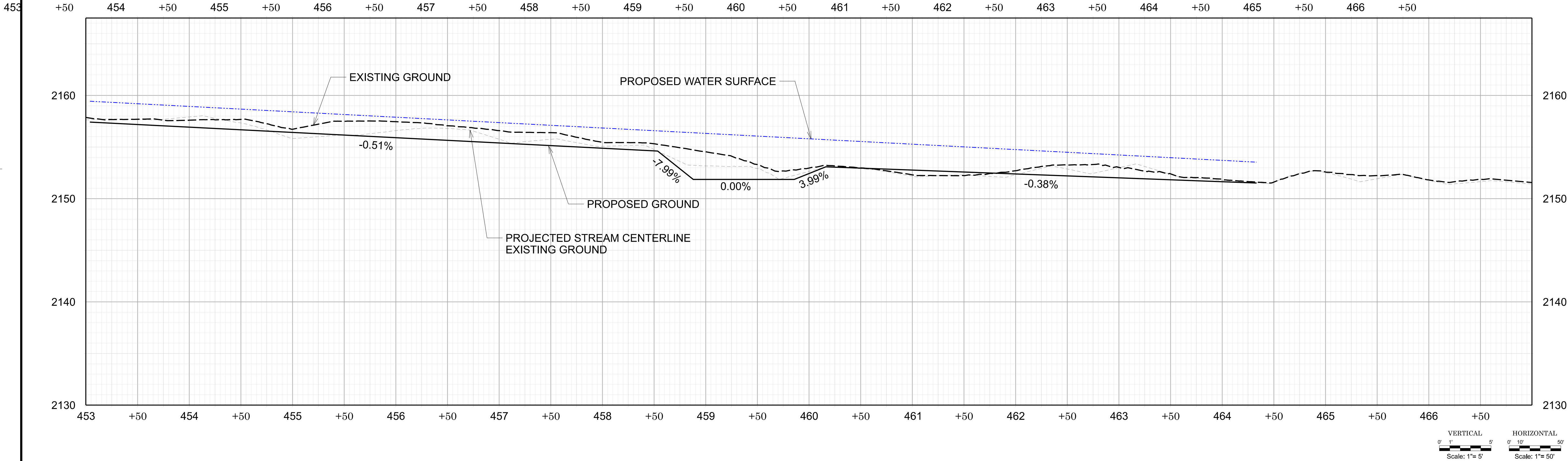


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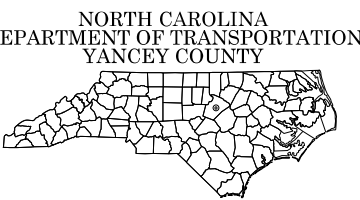
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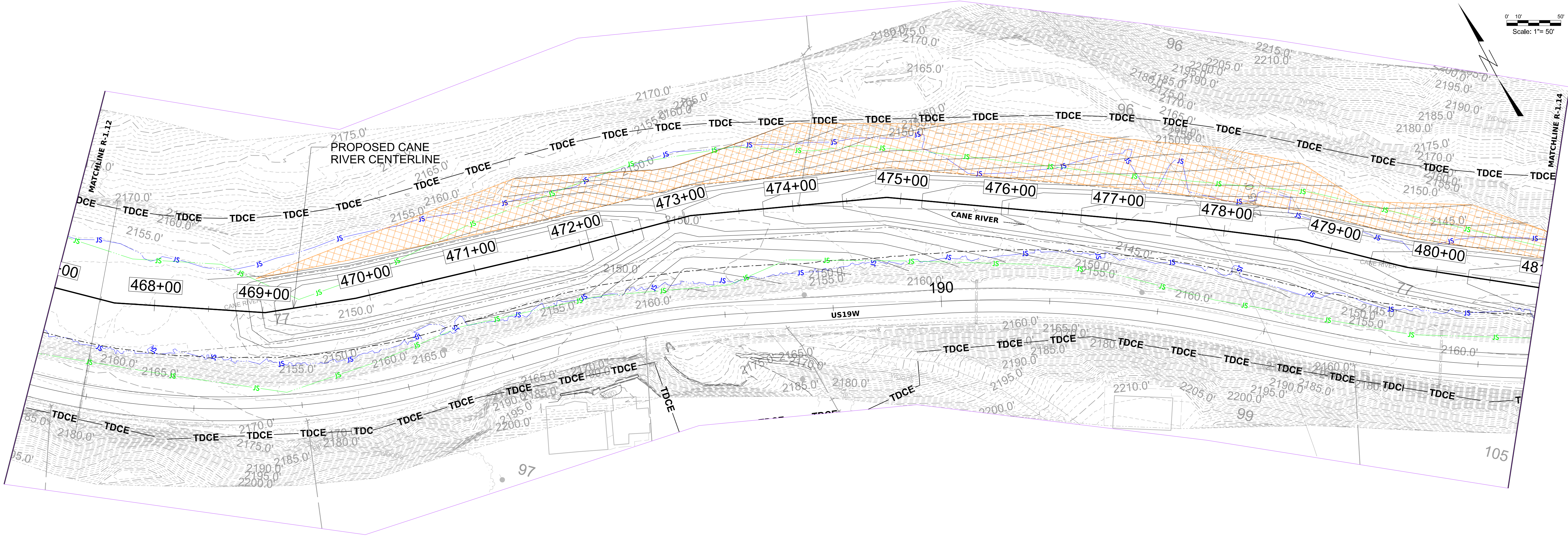
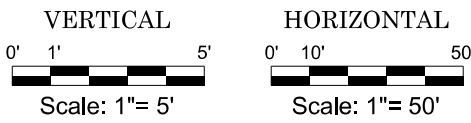
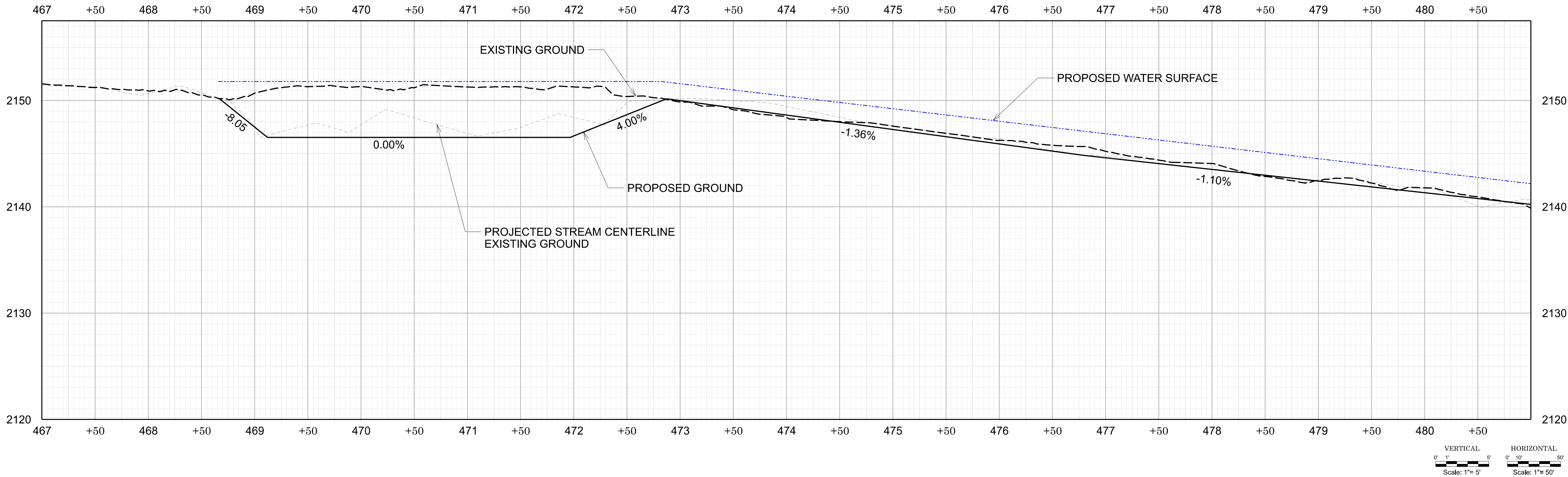


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Project Name:	JK
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Checked By:	JK



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YANCEY COUNTY

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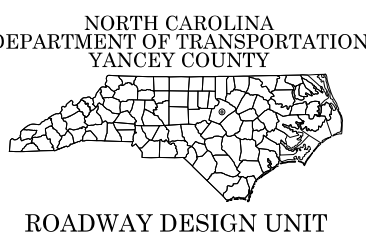
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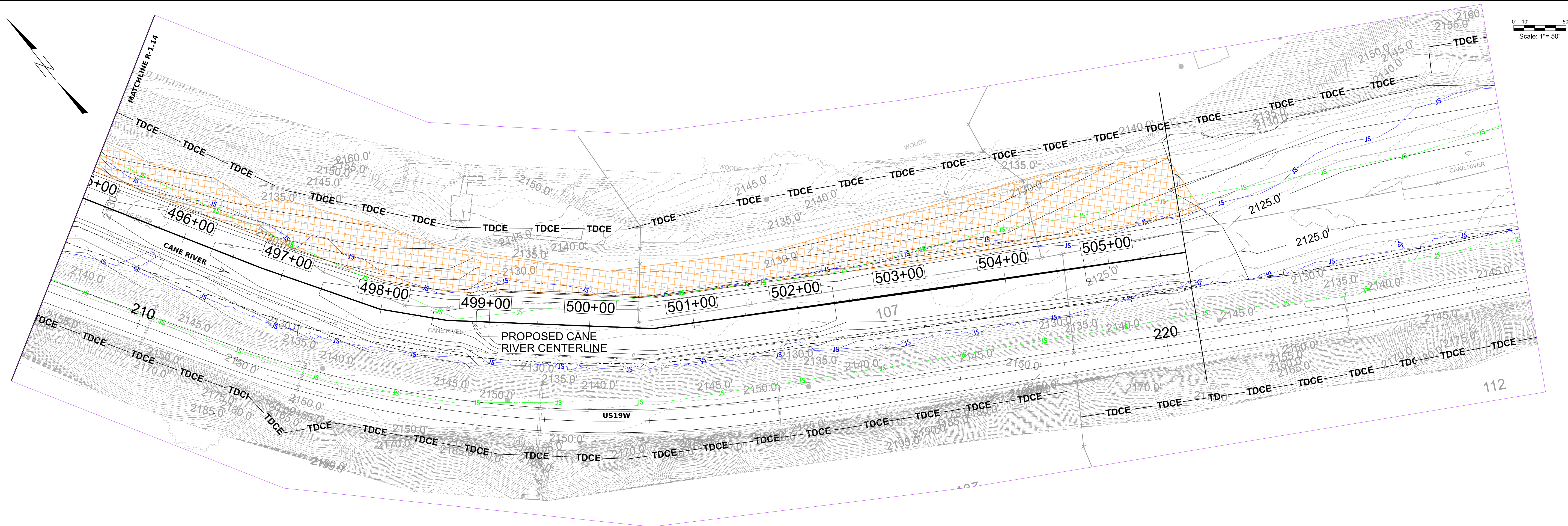
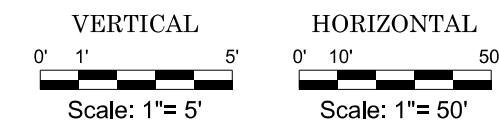
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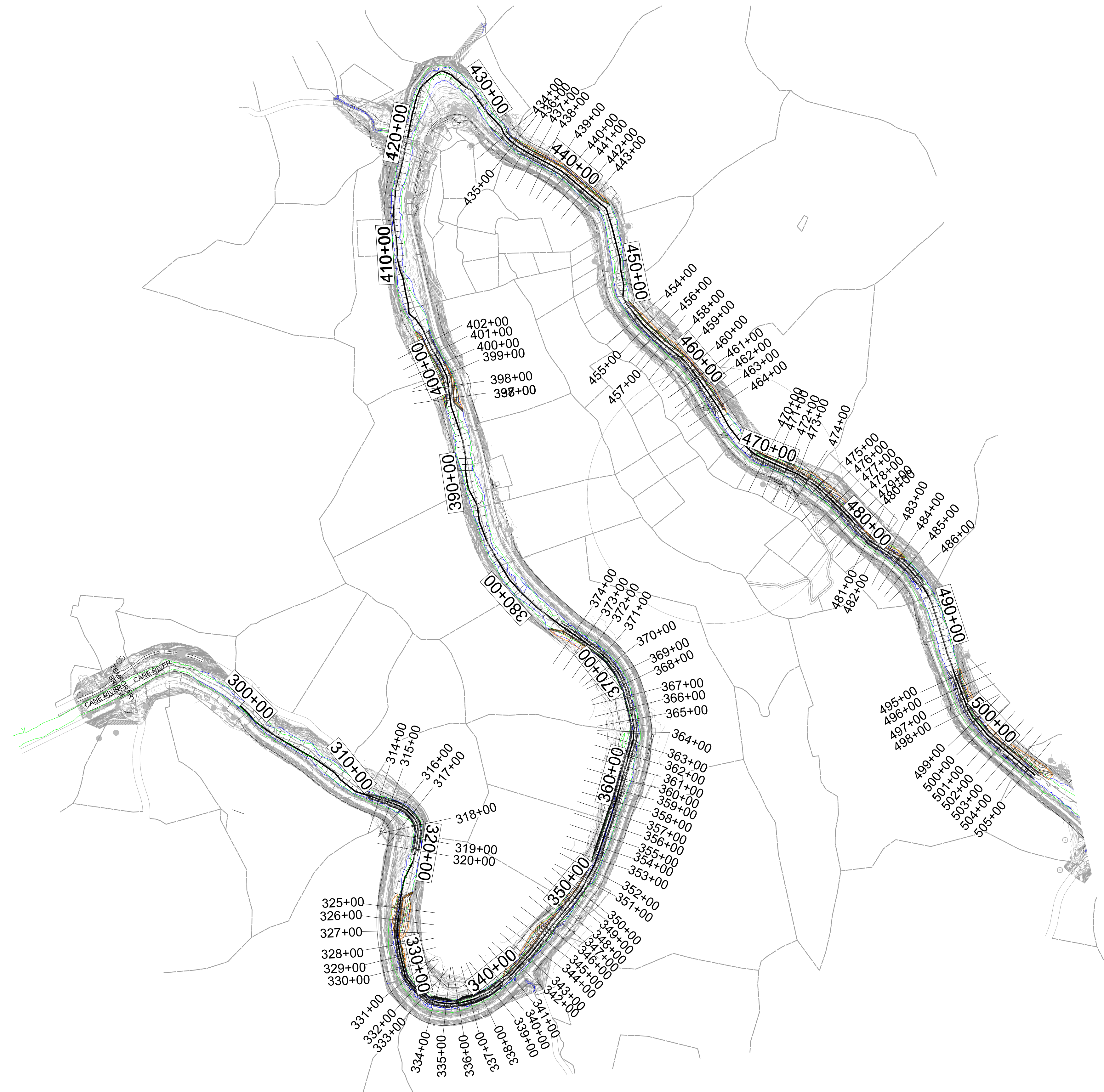
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Project Engineer: JJK
Drawn By: KEB, HET
Checked By: JJK



Revisions

Date:	10-31-2025
Job Number:	M-057240
Project Engineer:	JLK
Drawn By:	KER, HET
Checked By:	JLK



0' 100' 500'



Scale: 1" = 500'



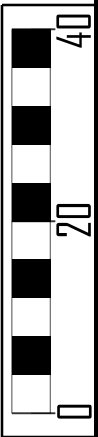
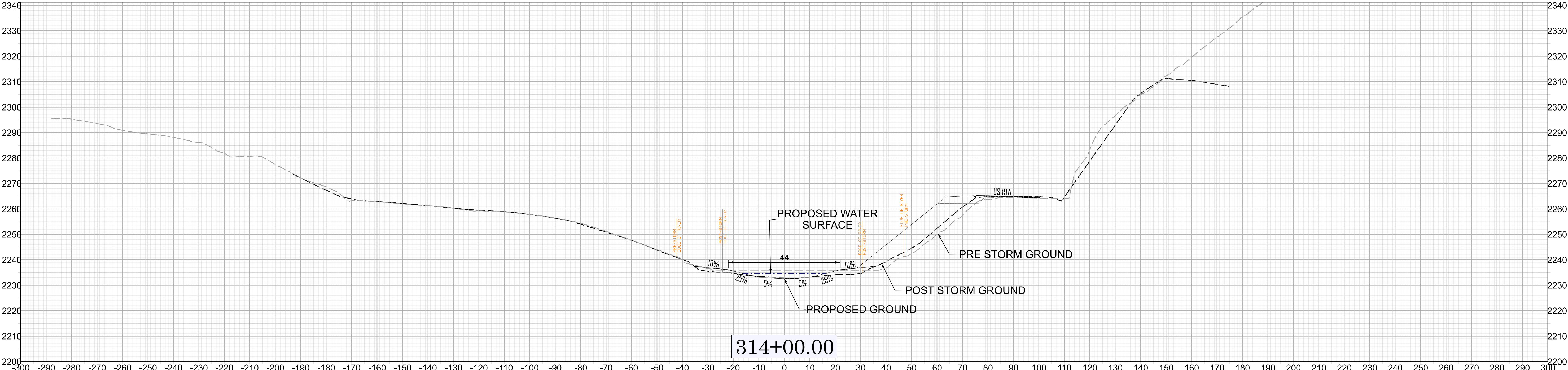
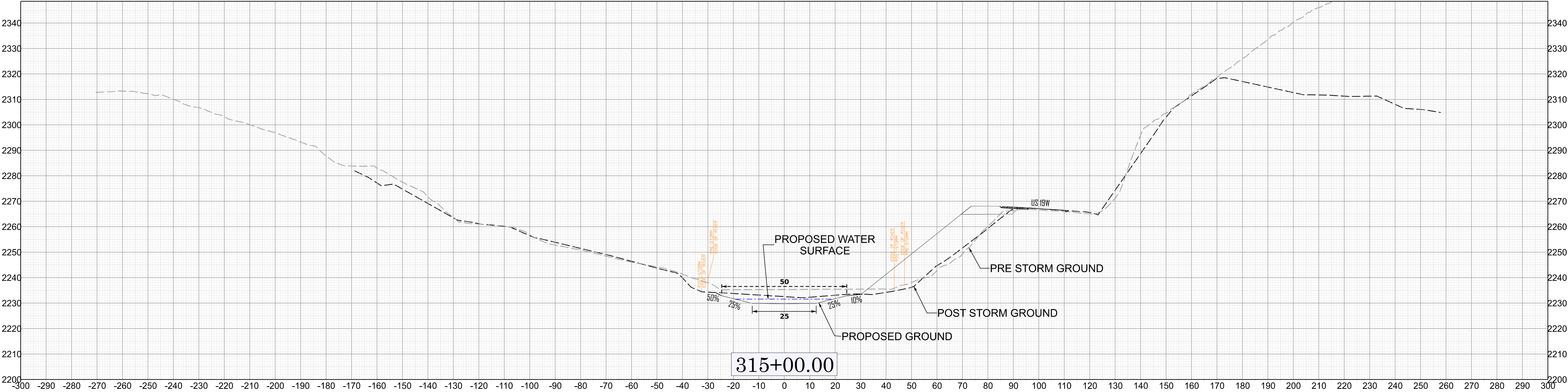
son, Mirmiran, & Thompson Inc.
50 West Tyvola Road, Suite 120
Charlotte NC, 28217
License No: C-3097

CANE RIVER
STREAM PLAN SUBMITTAL

Overall Layout

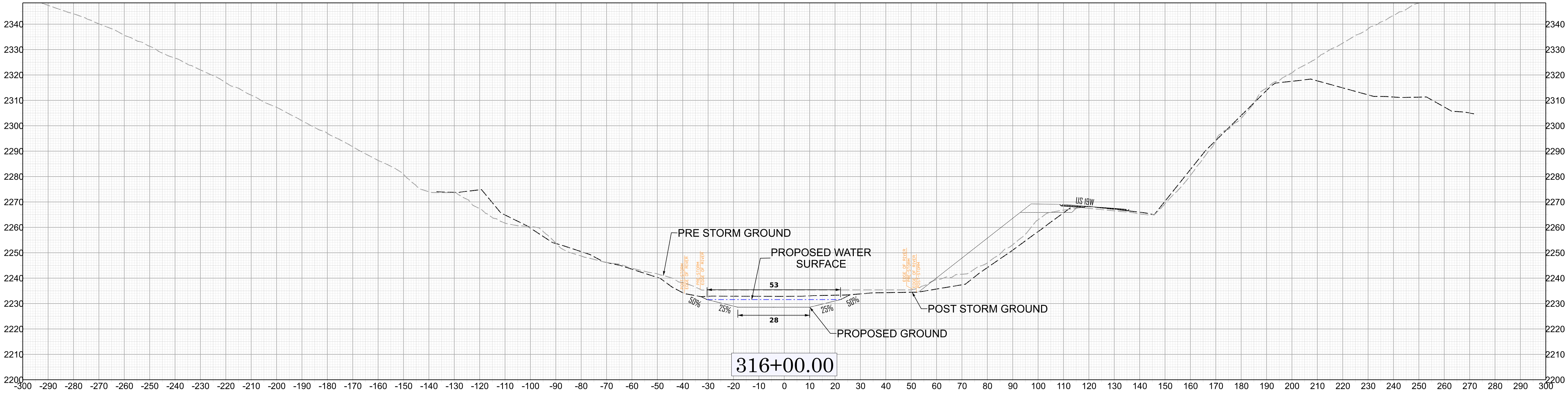
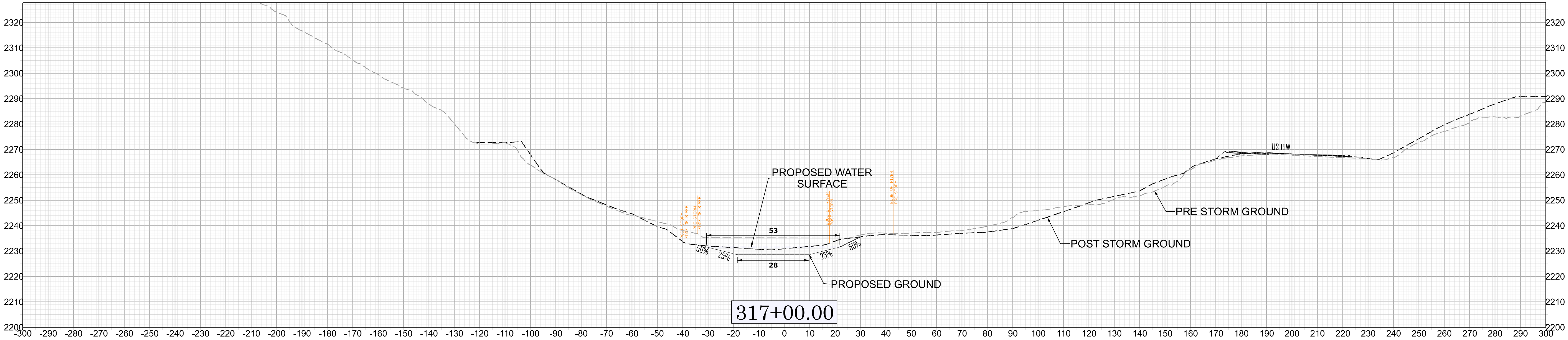
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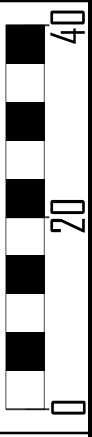
Job Number:	M-0572G
Project Engineer:	JK
Drawn By:	KEB, HET
Checked By:	JK



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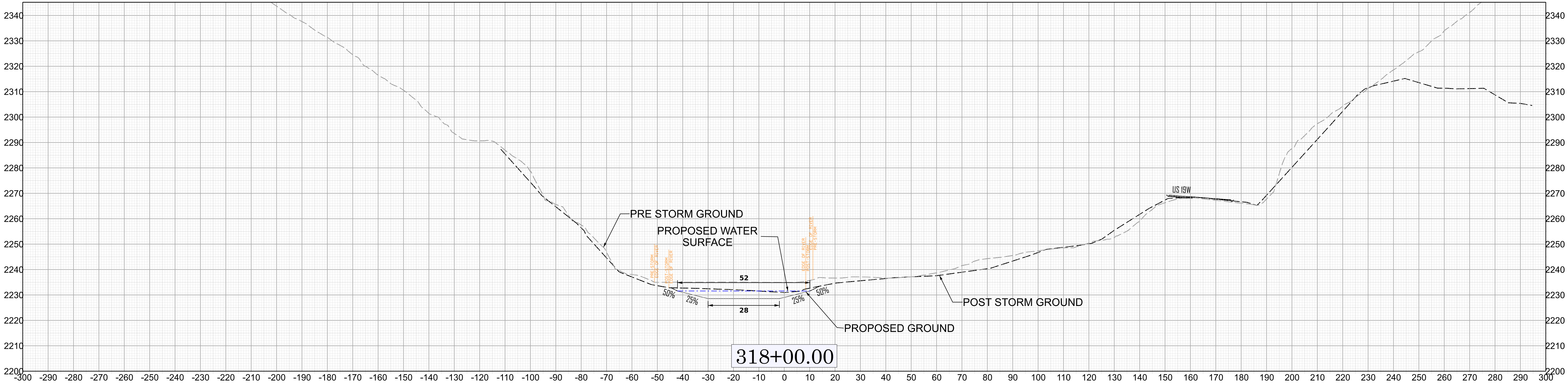
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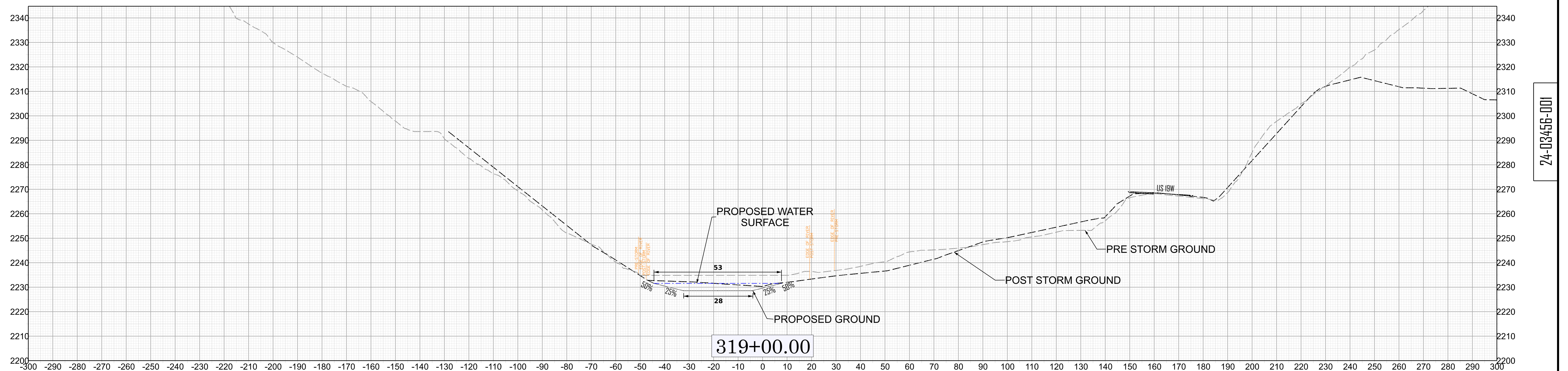
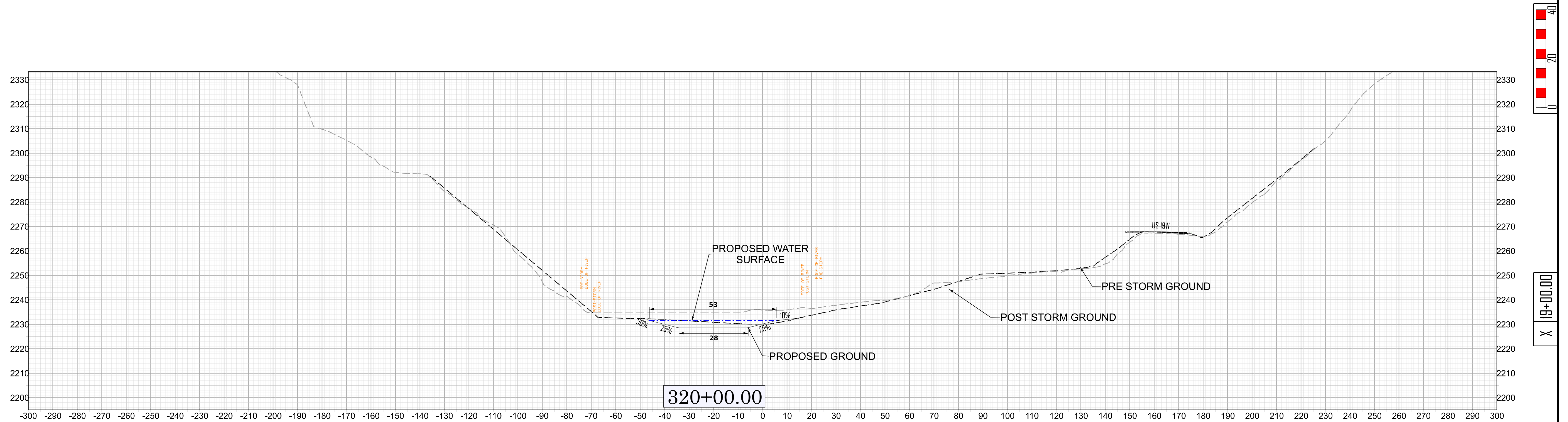


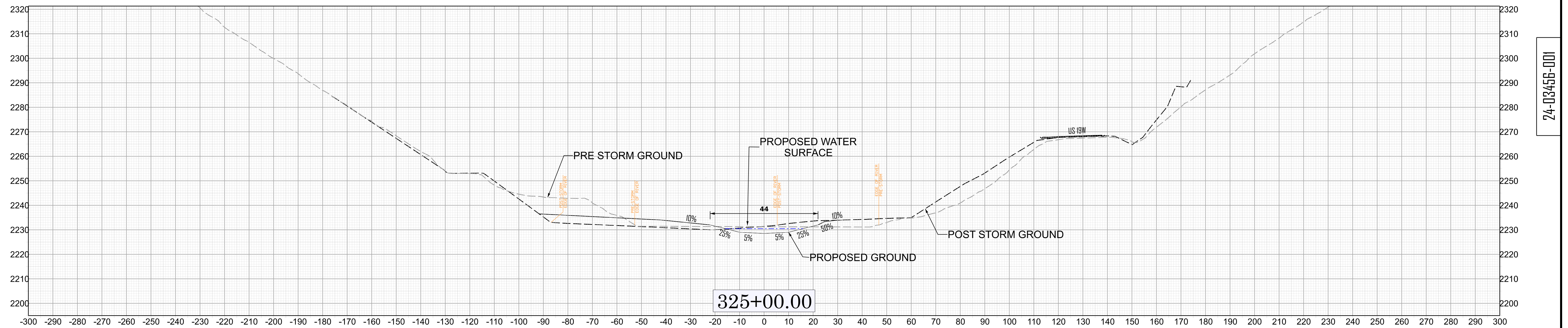
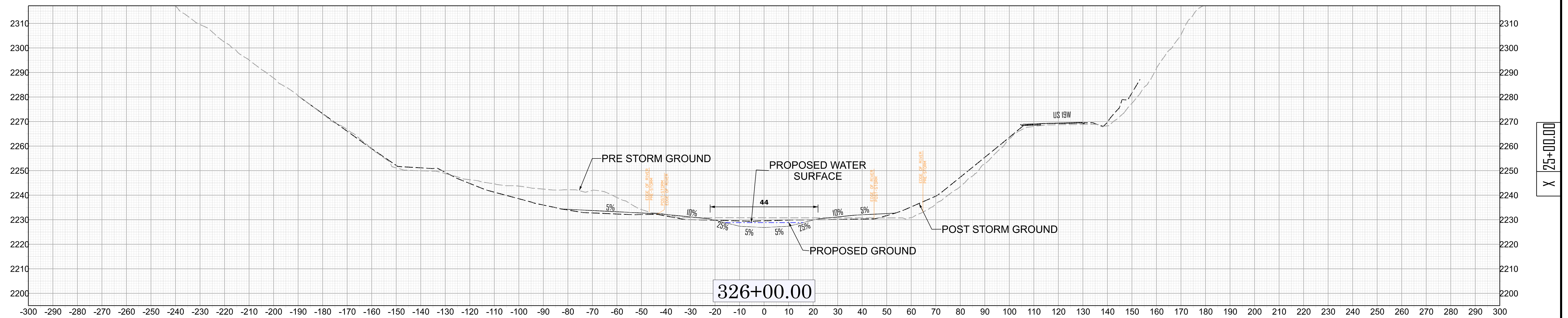
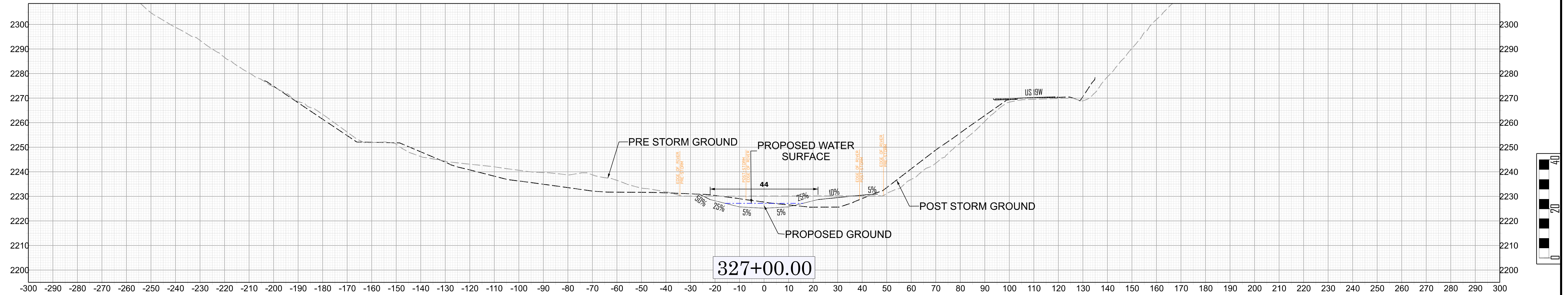


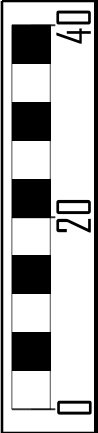
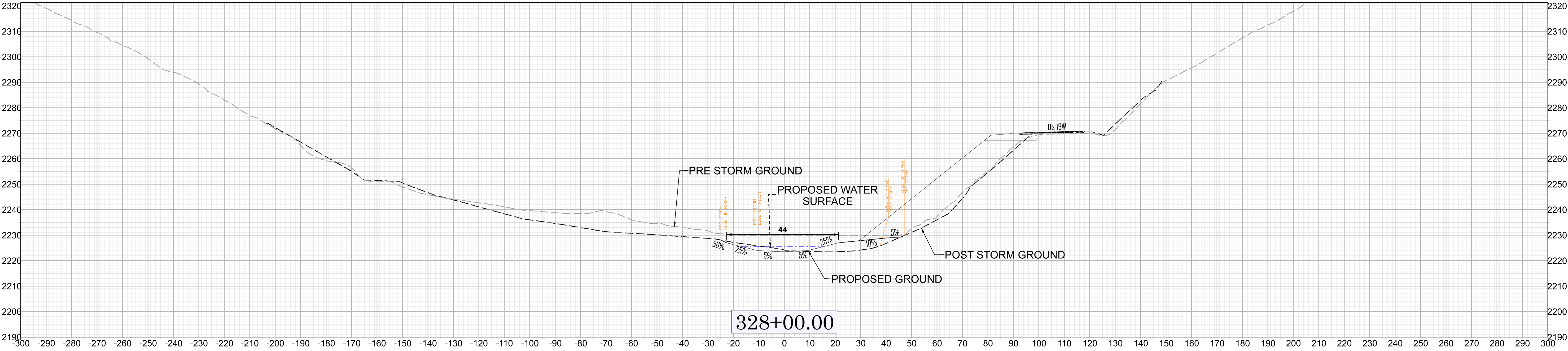
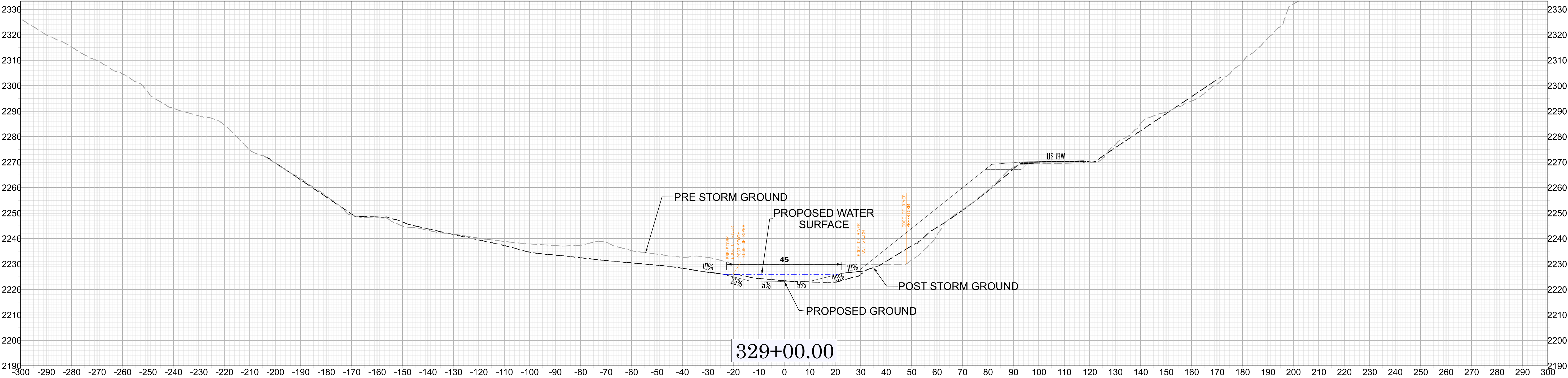
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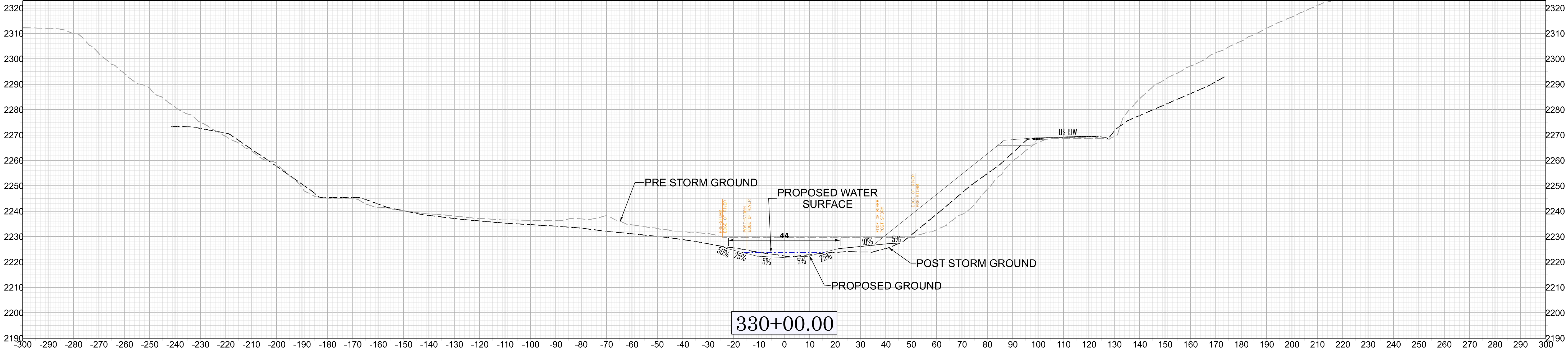
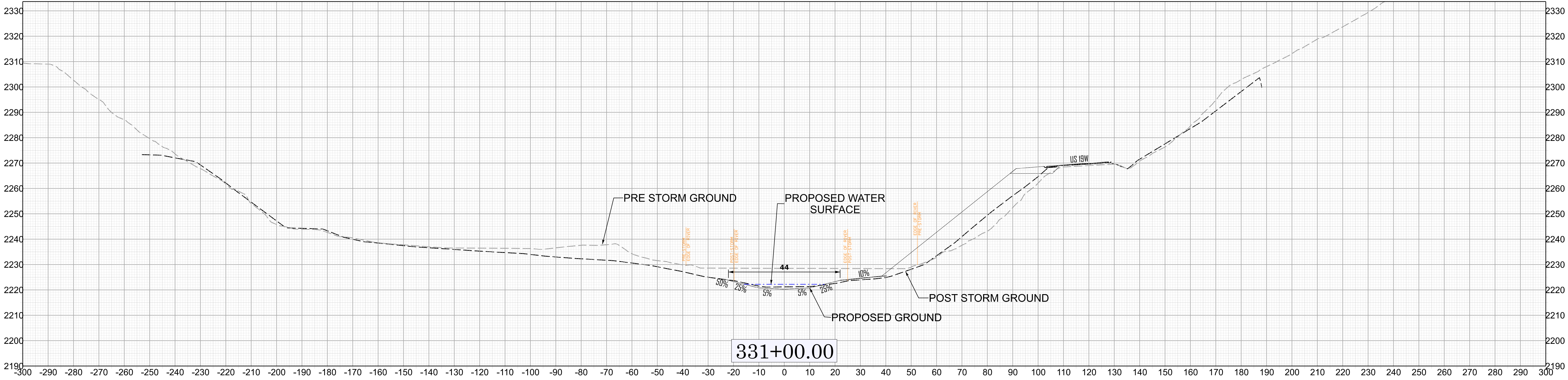


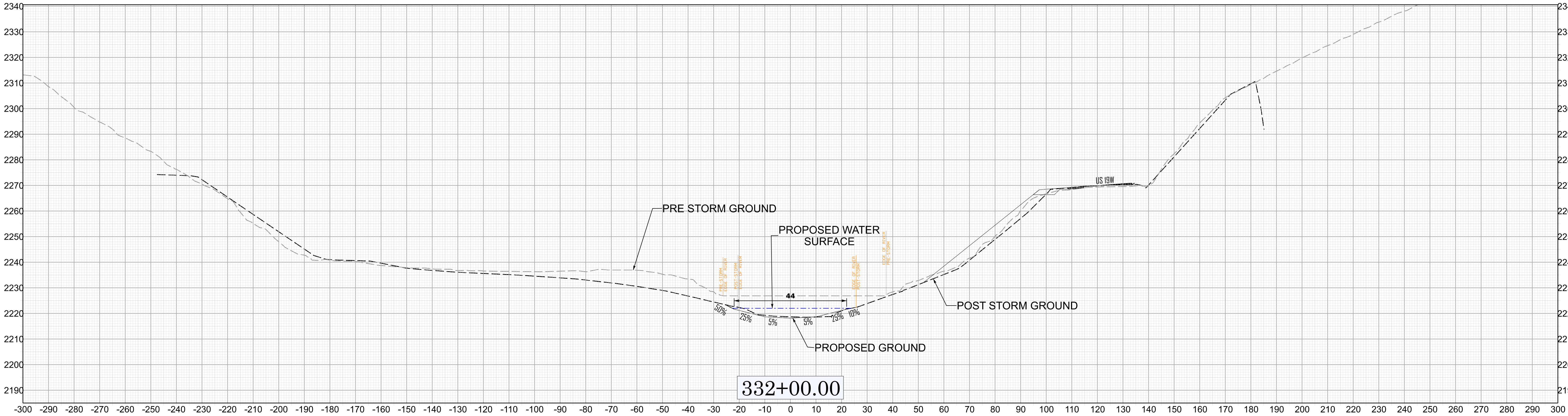
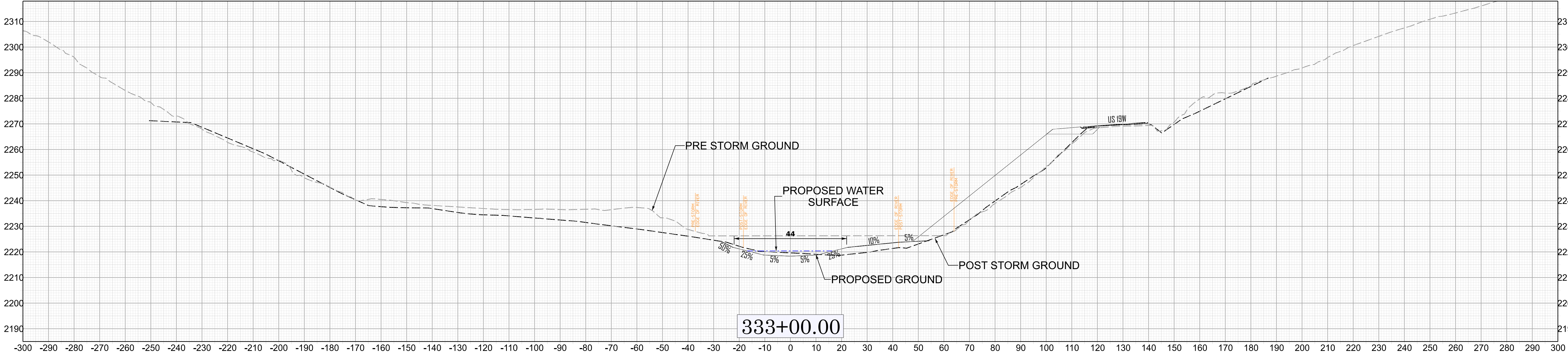


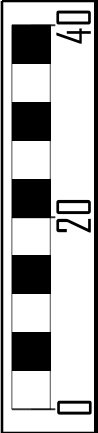
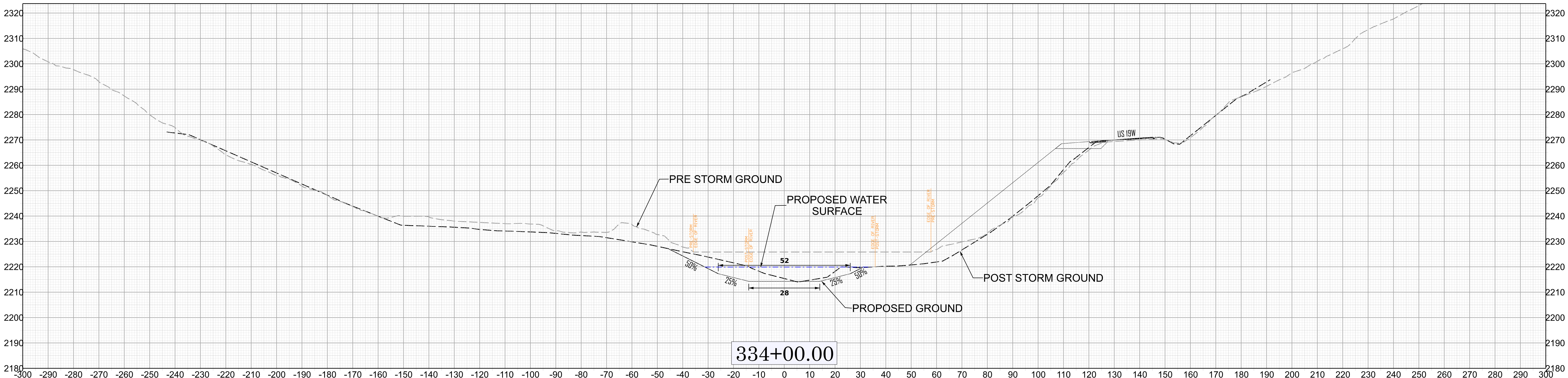
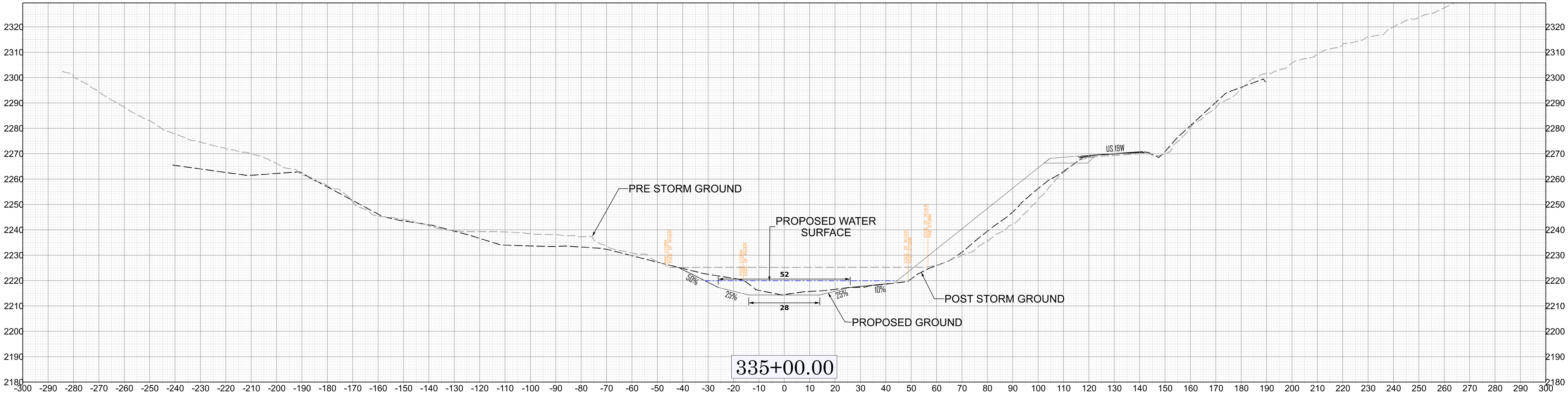


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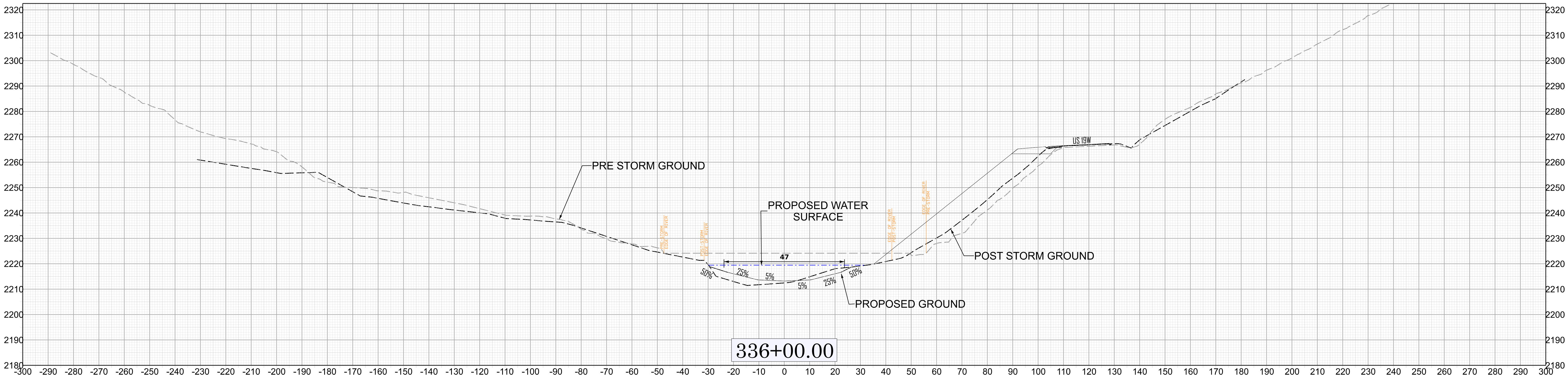
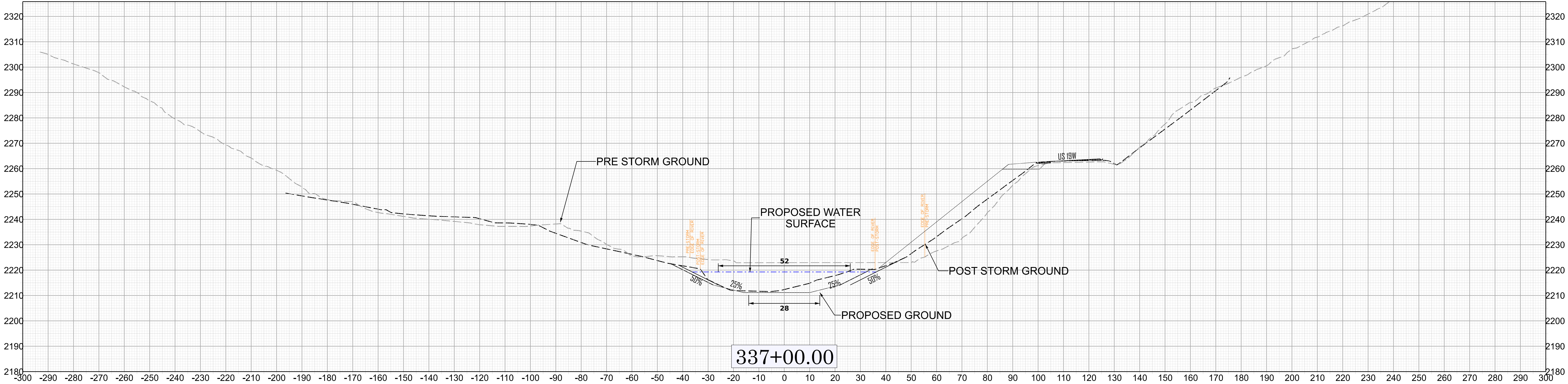


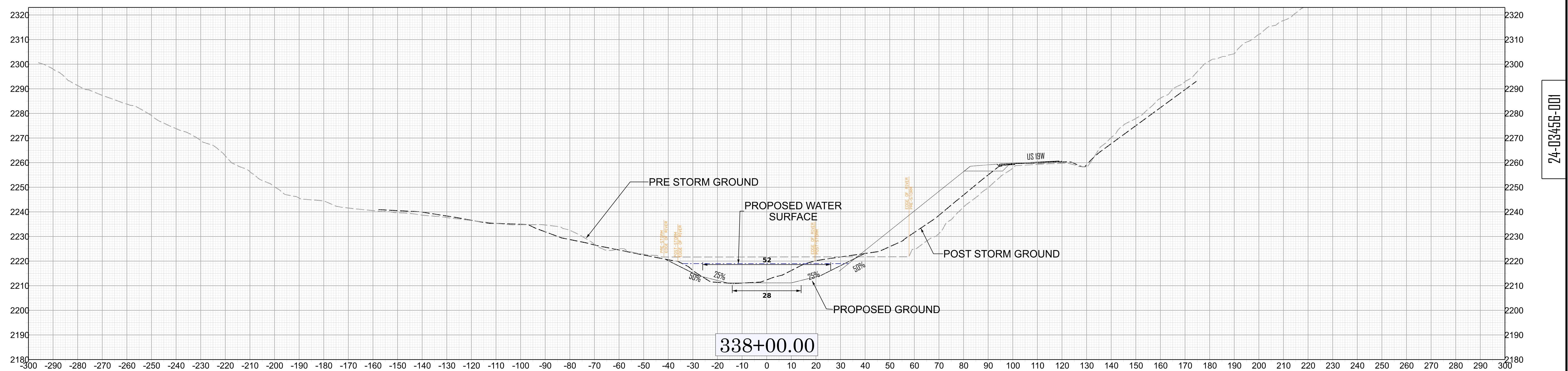
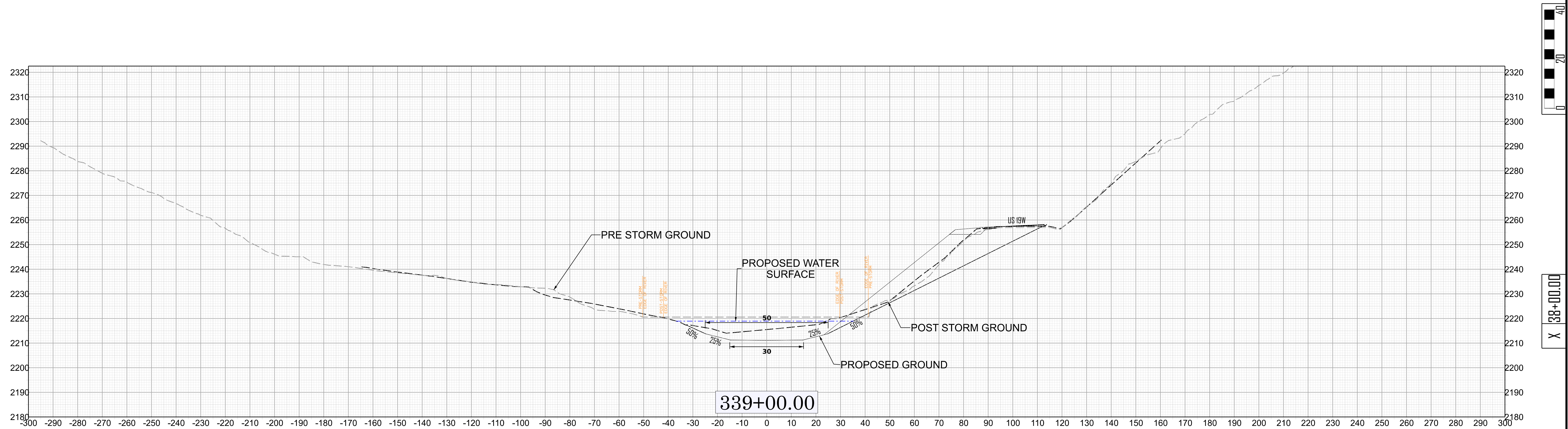


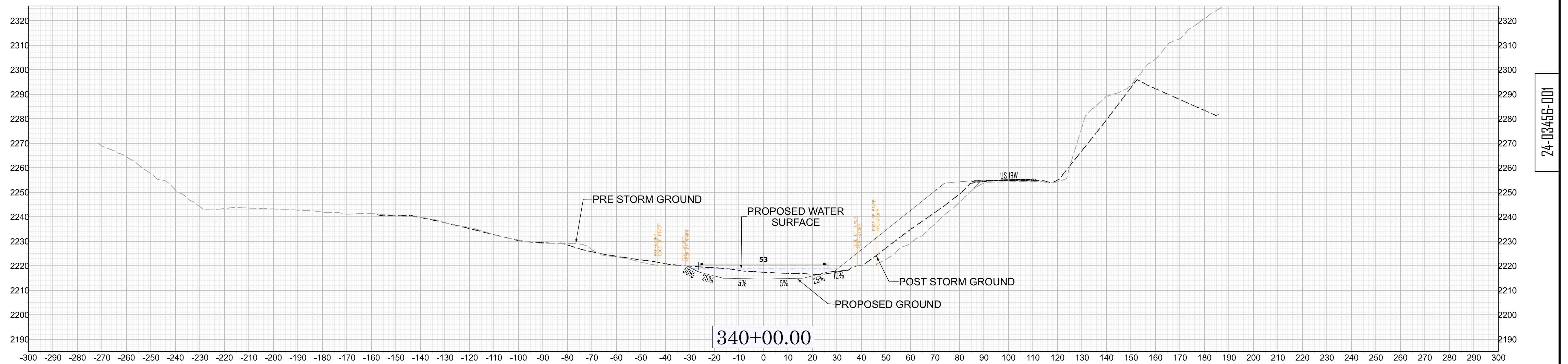
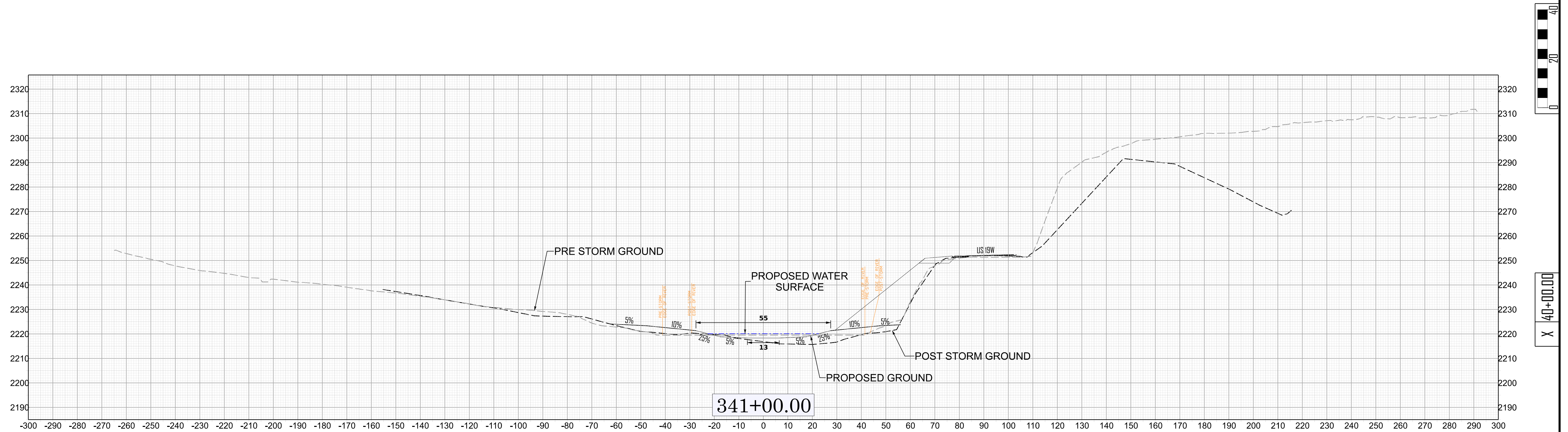


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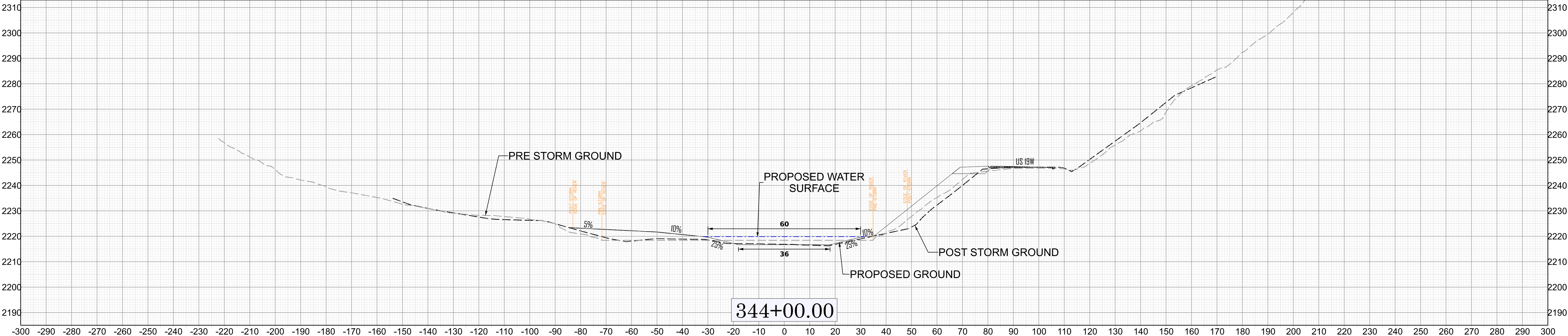
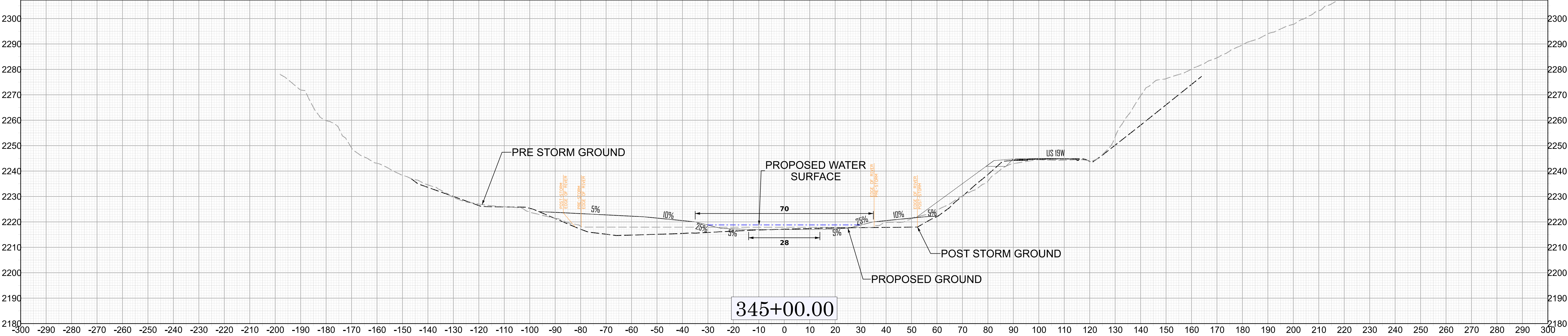
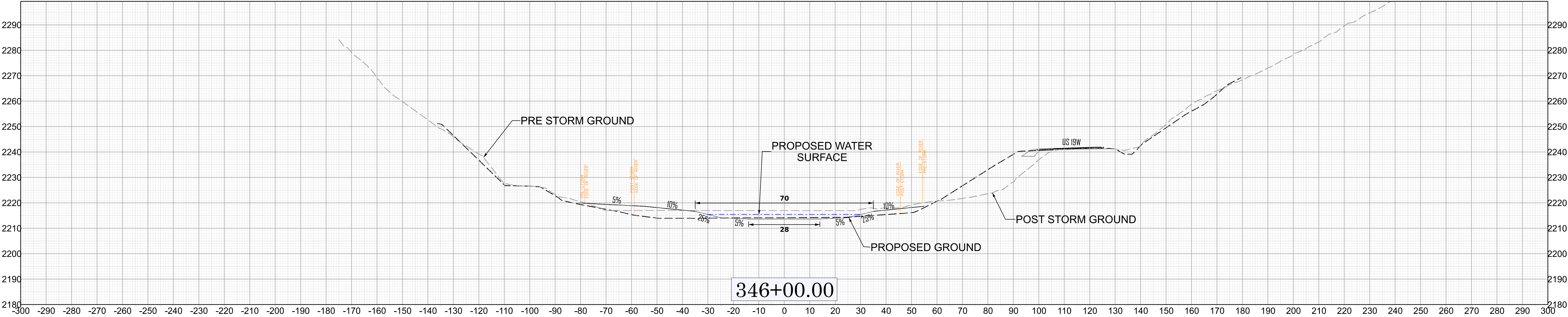
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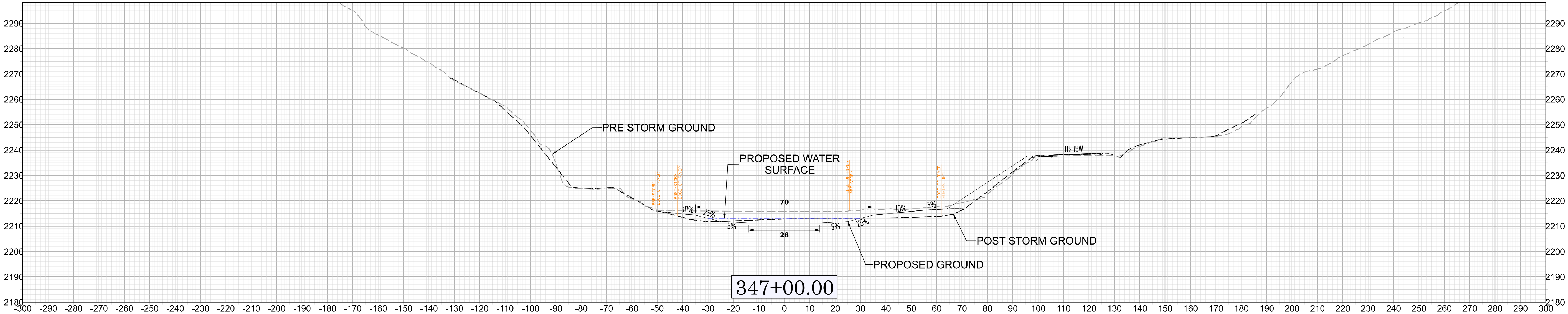
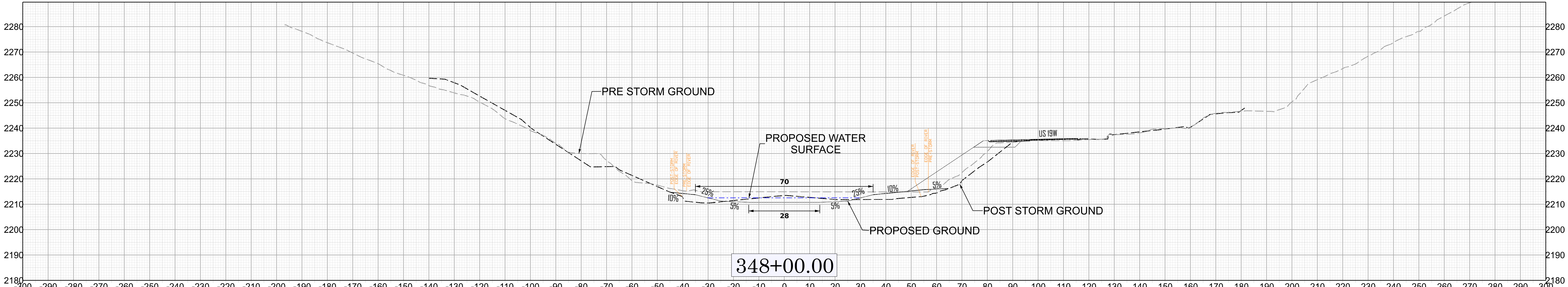
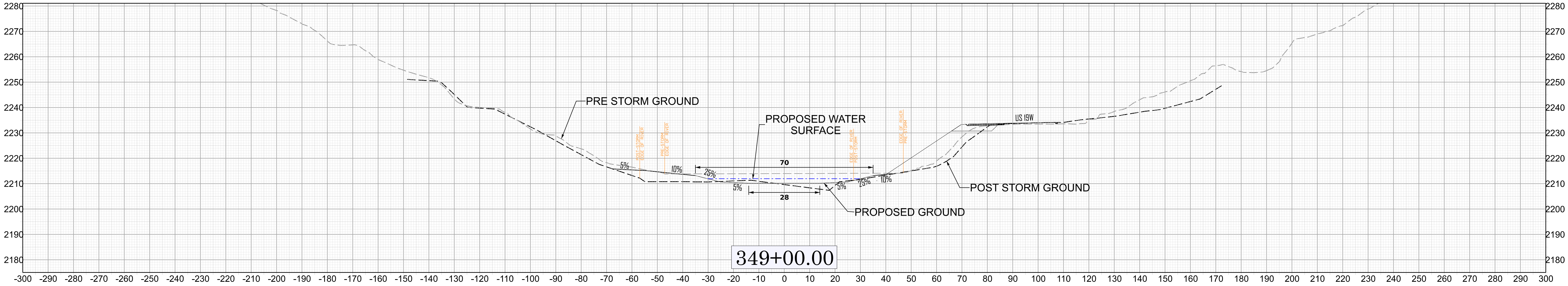


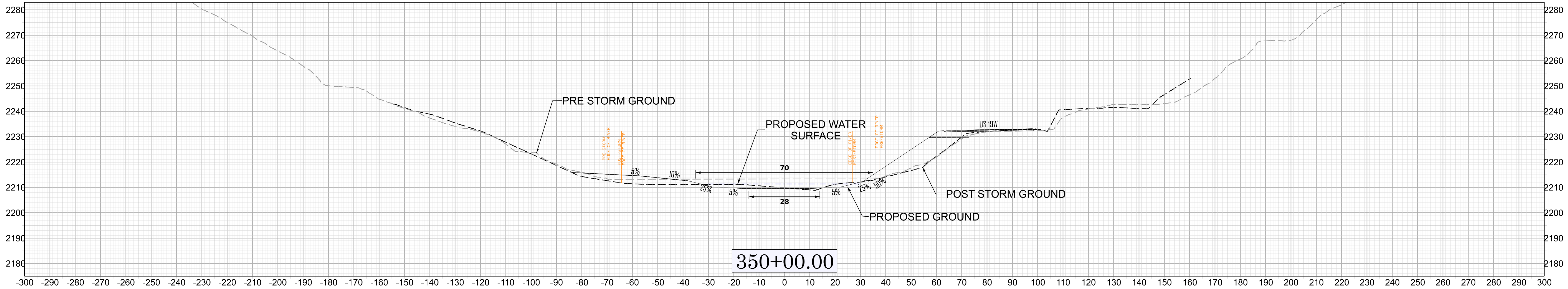
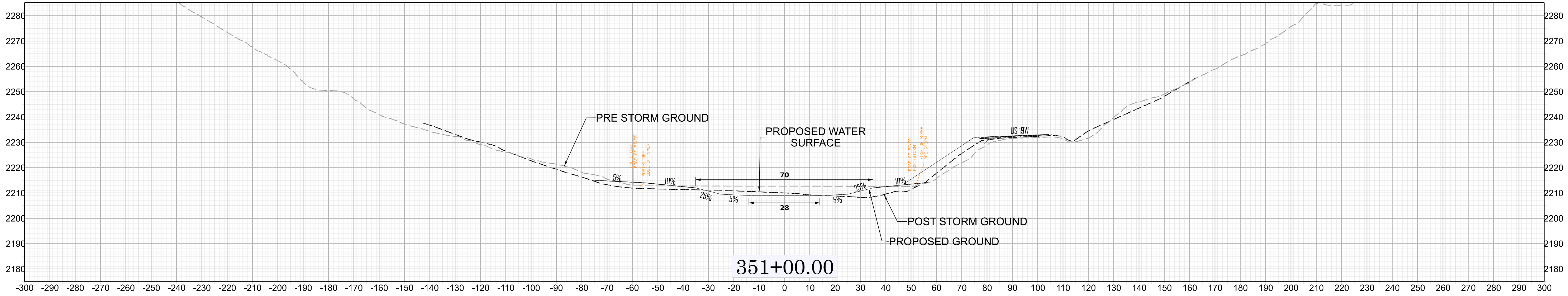
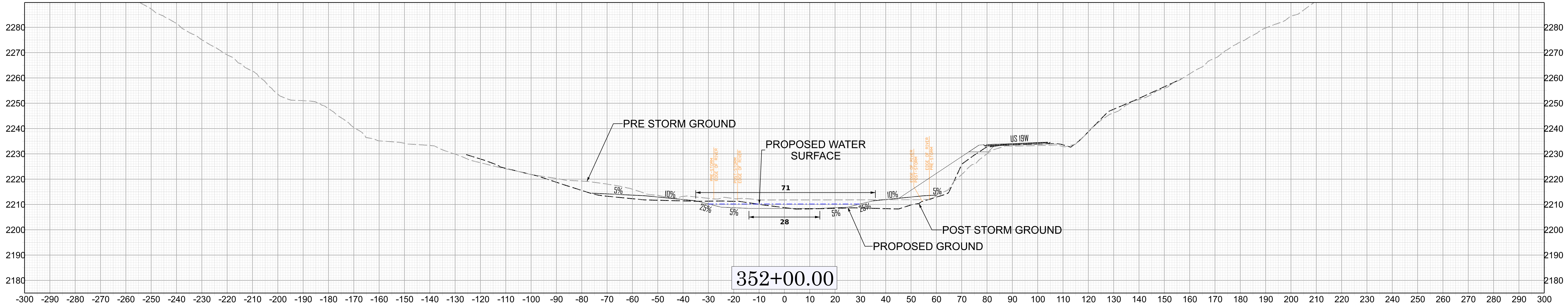


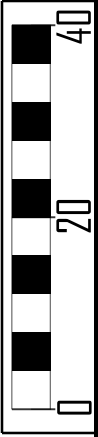
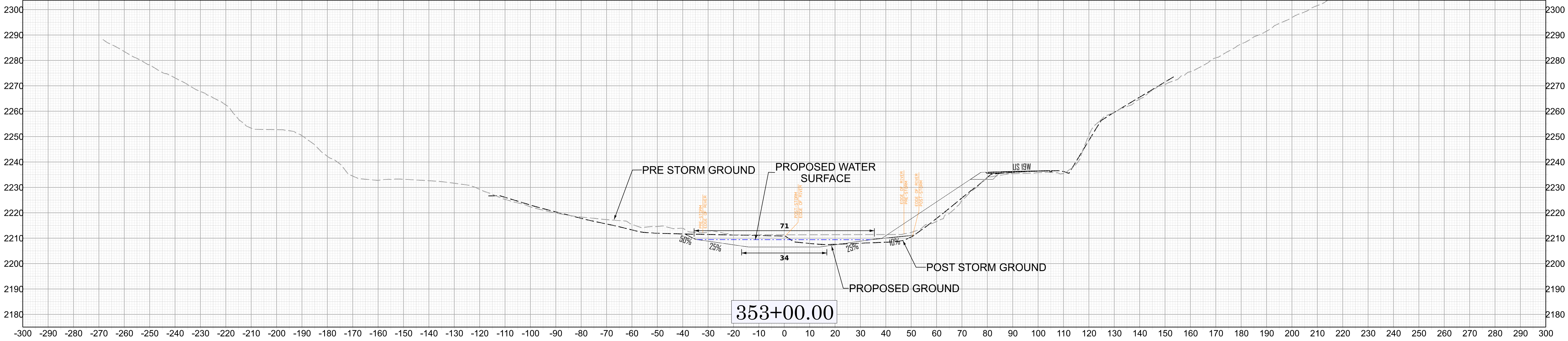
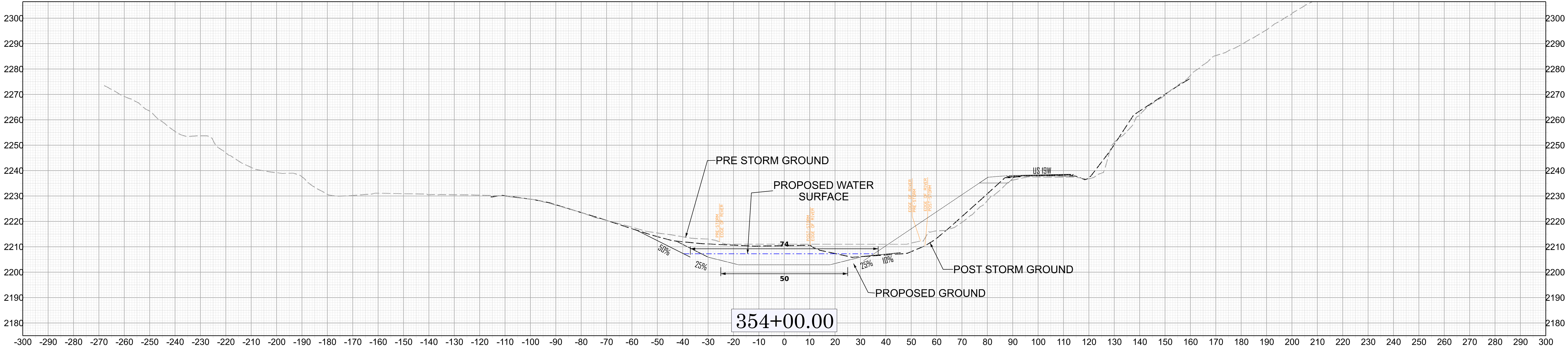






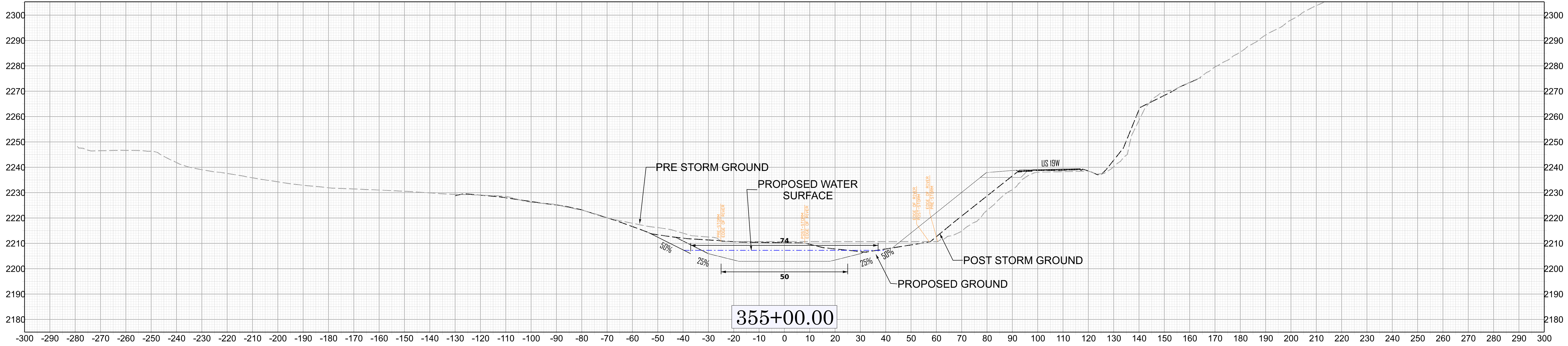
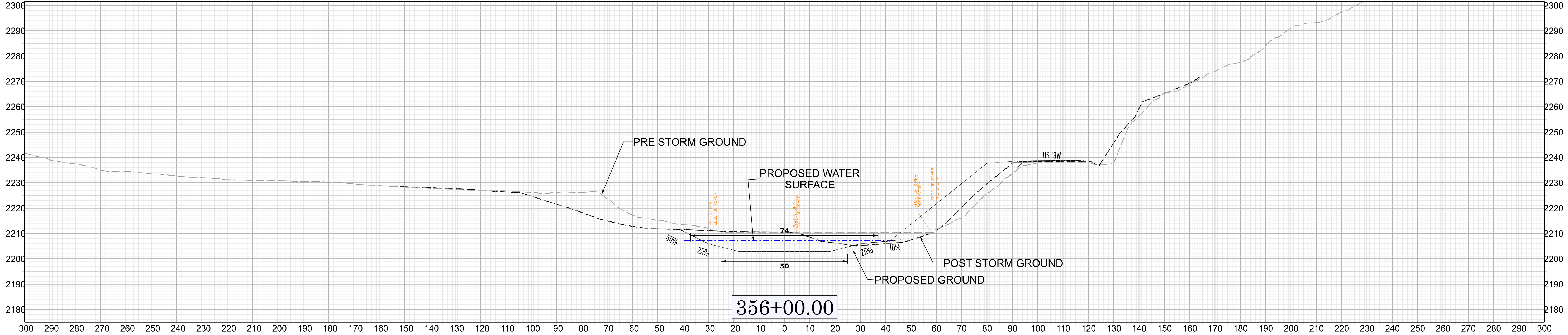






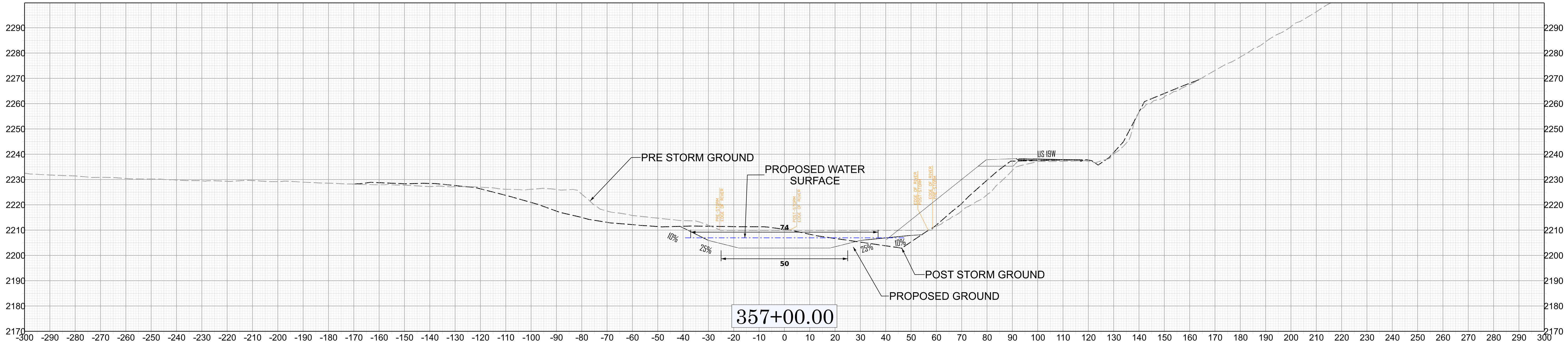
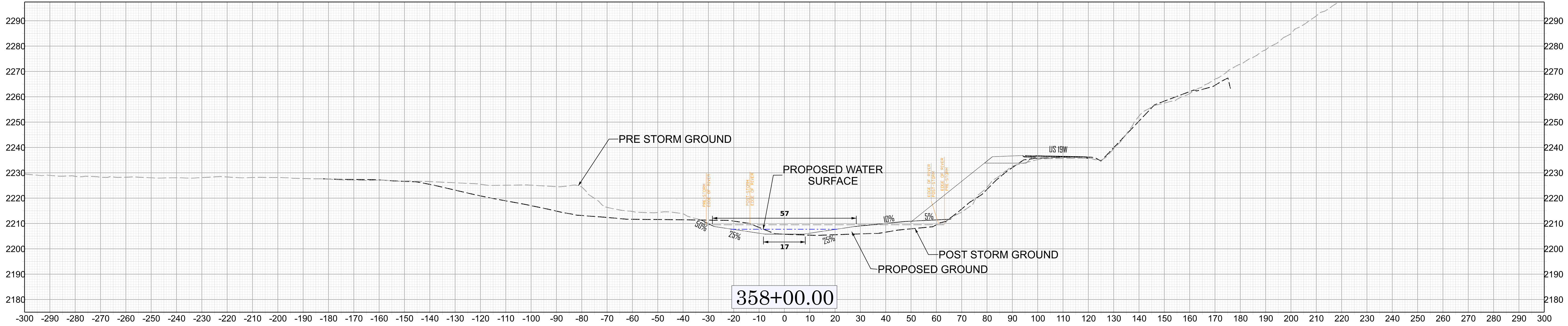
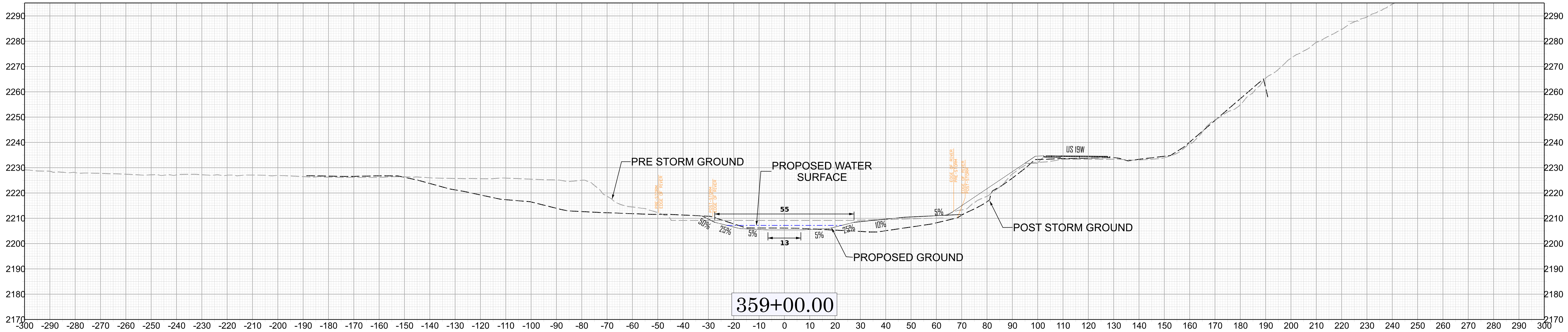
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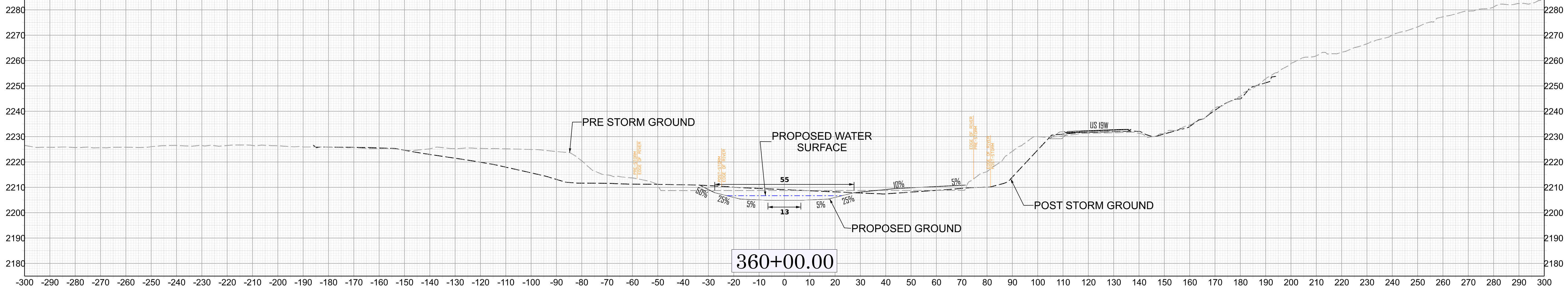
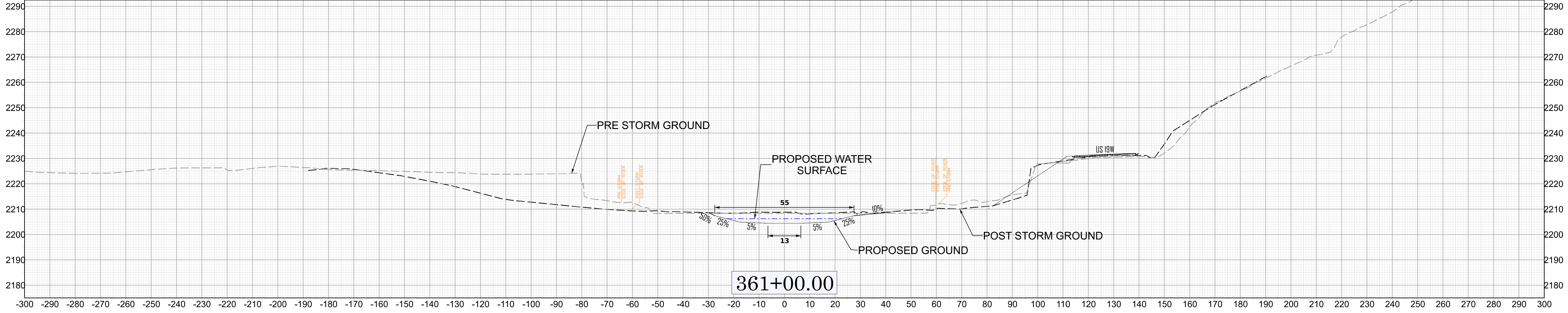
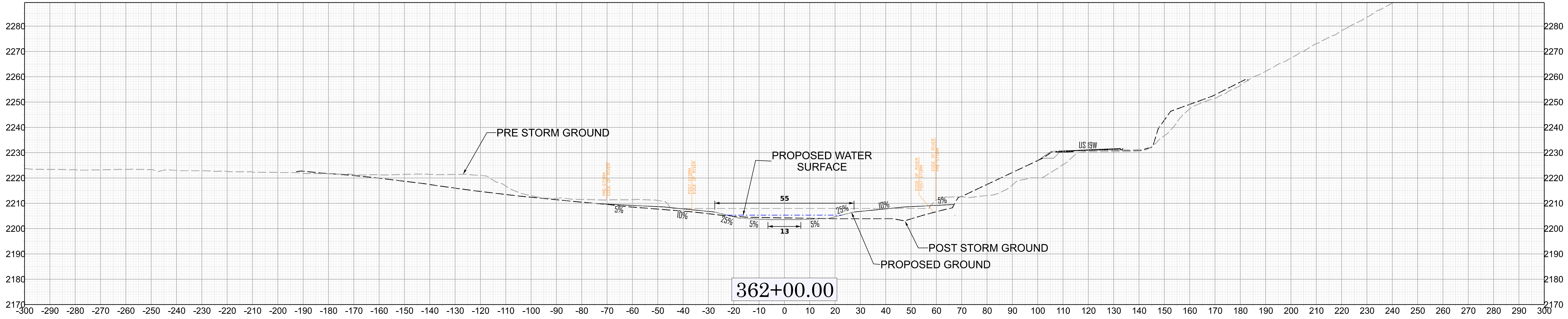
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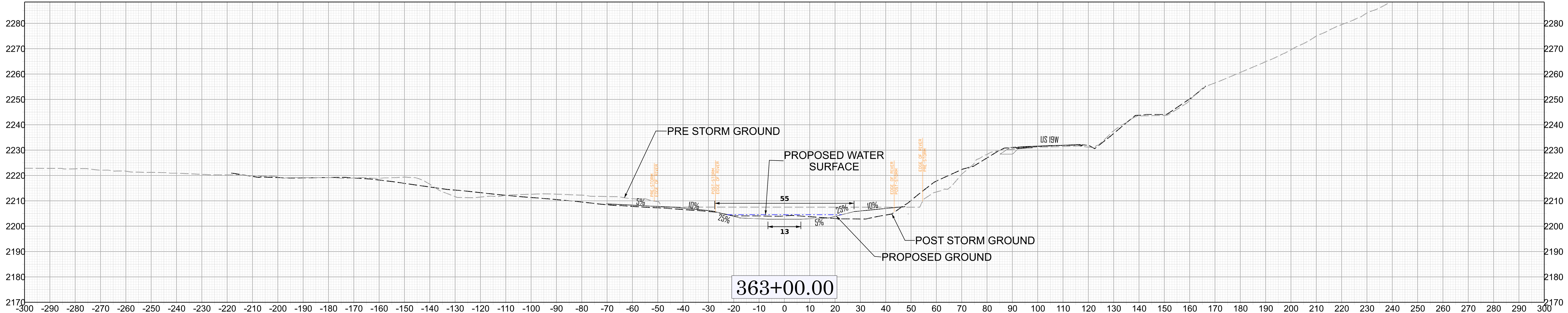
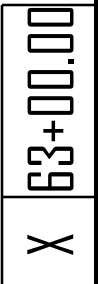
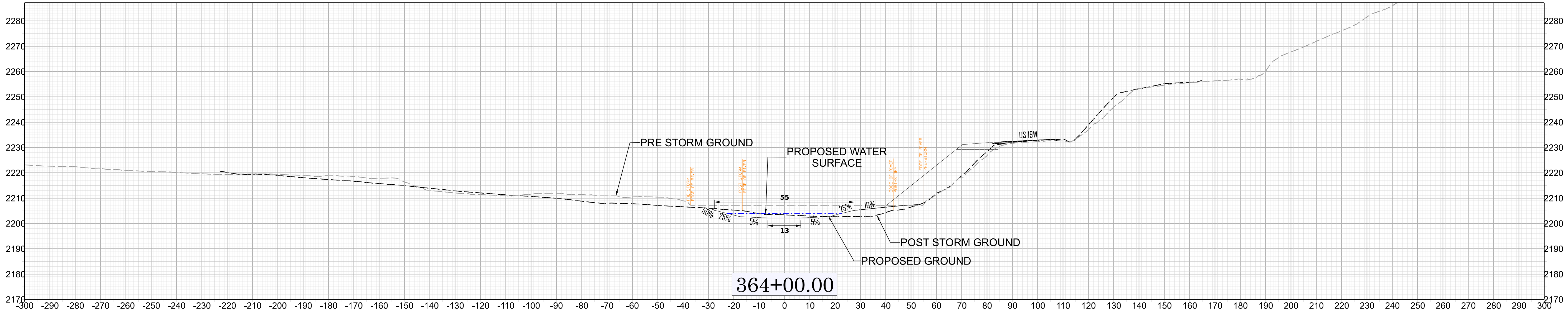
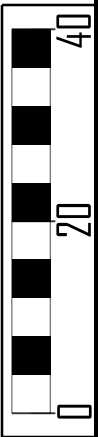
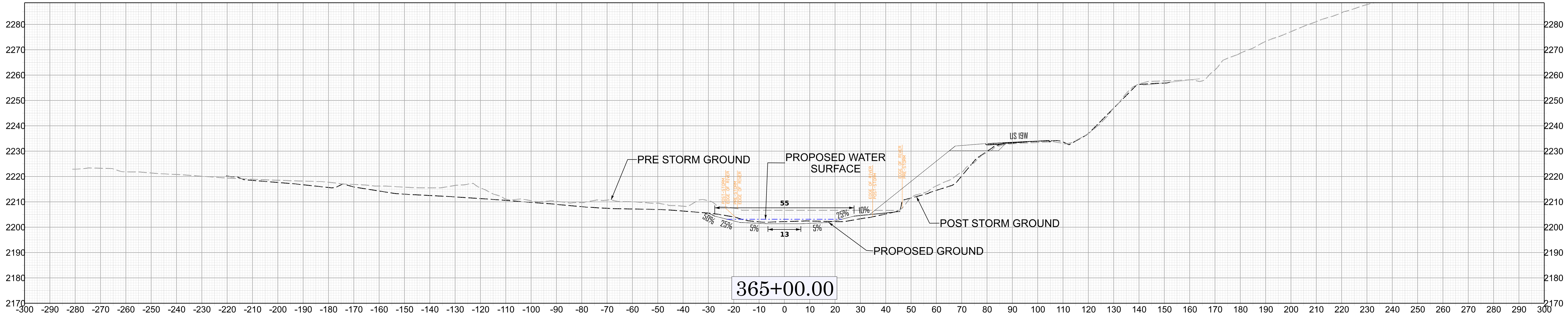


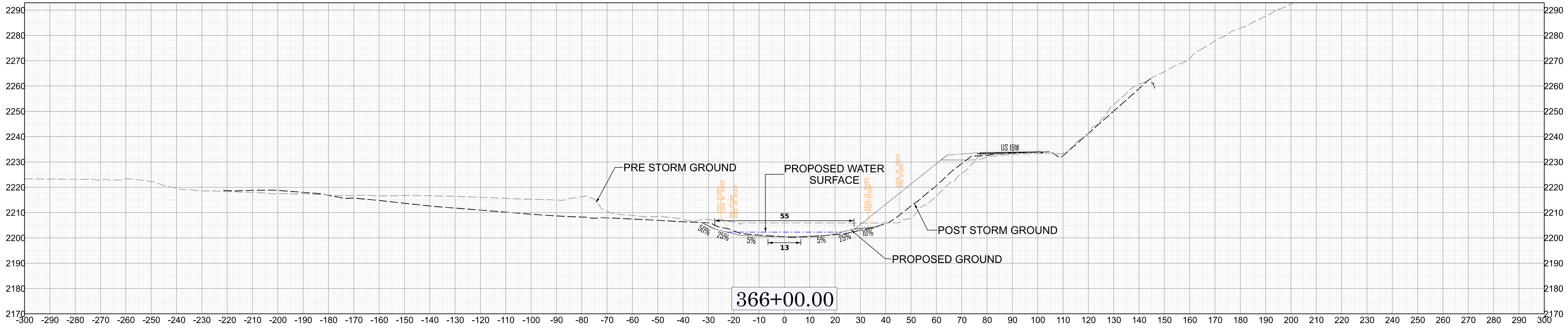
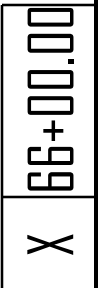
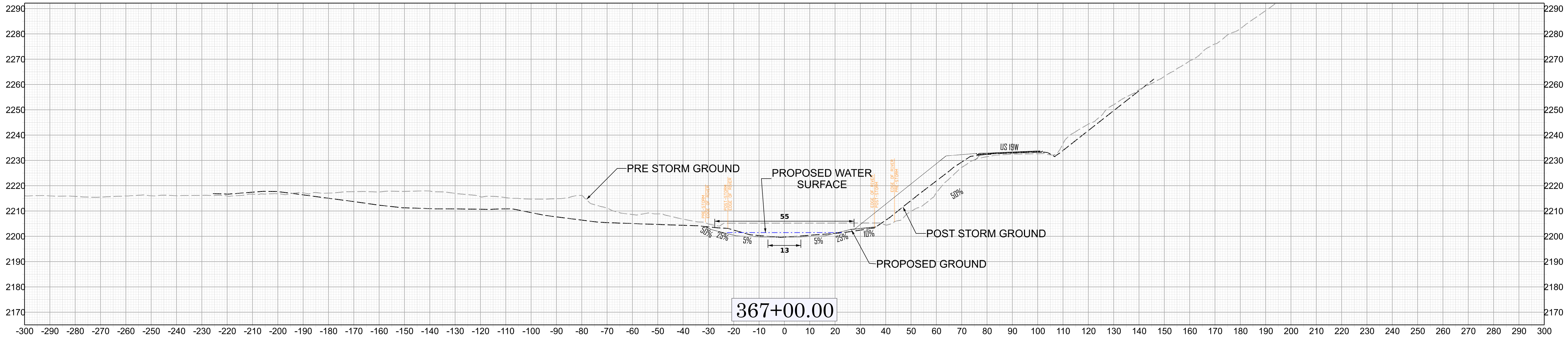
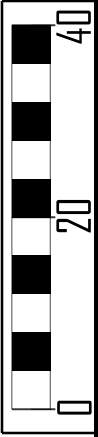
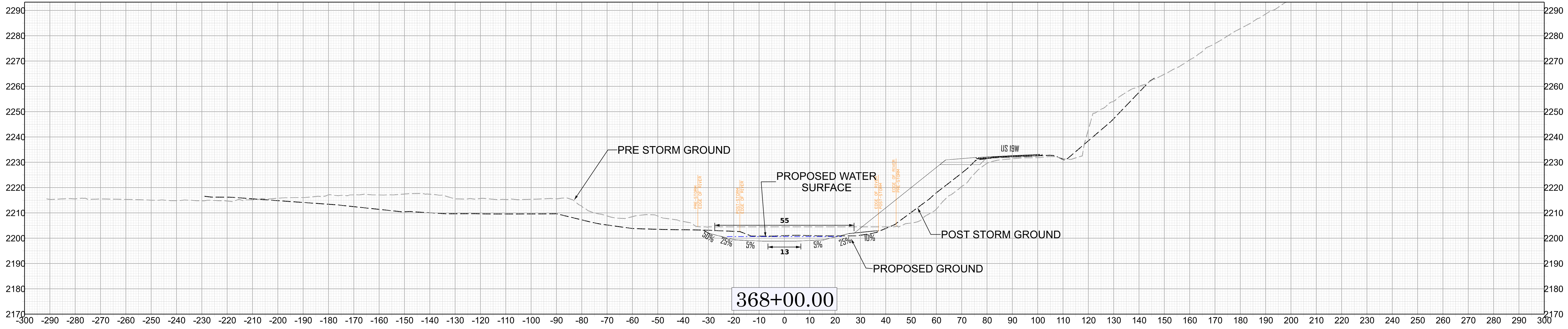
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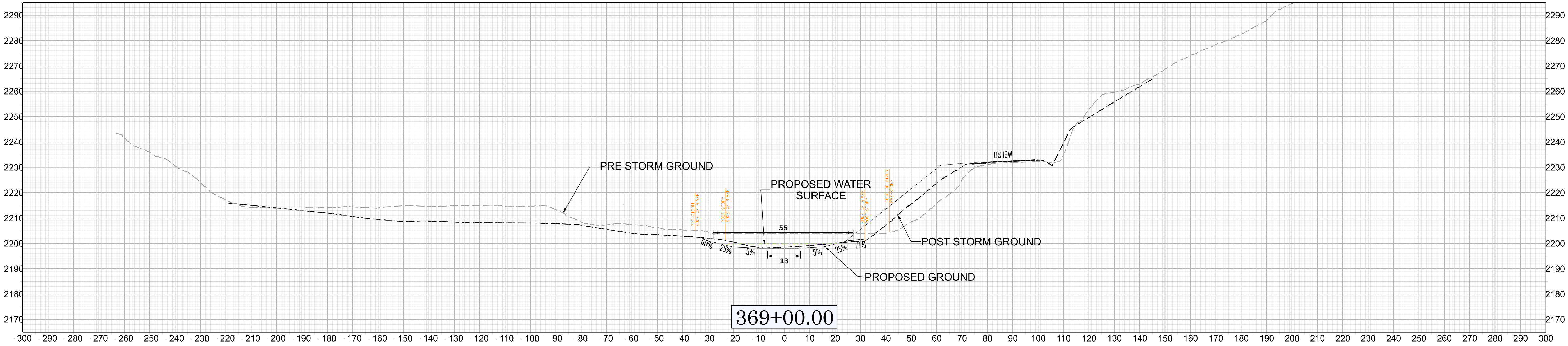
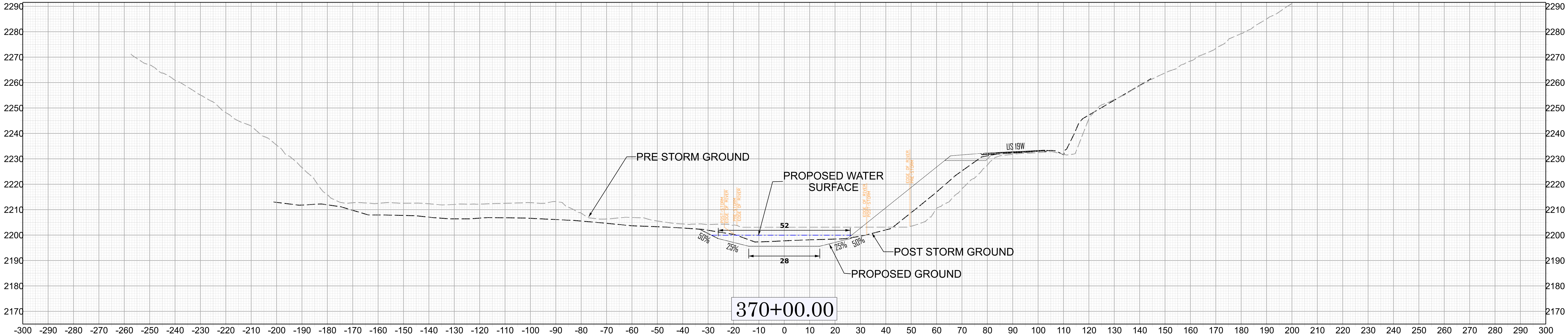
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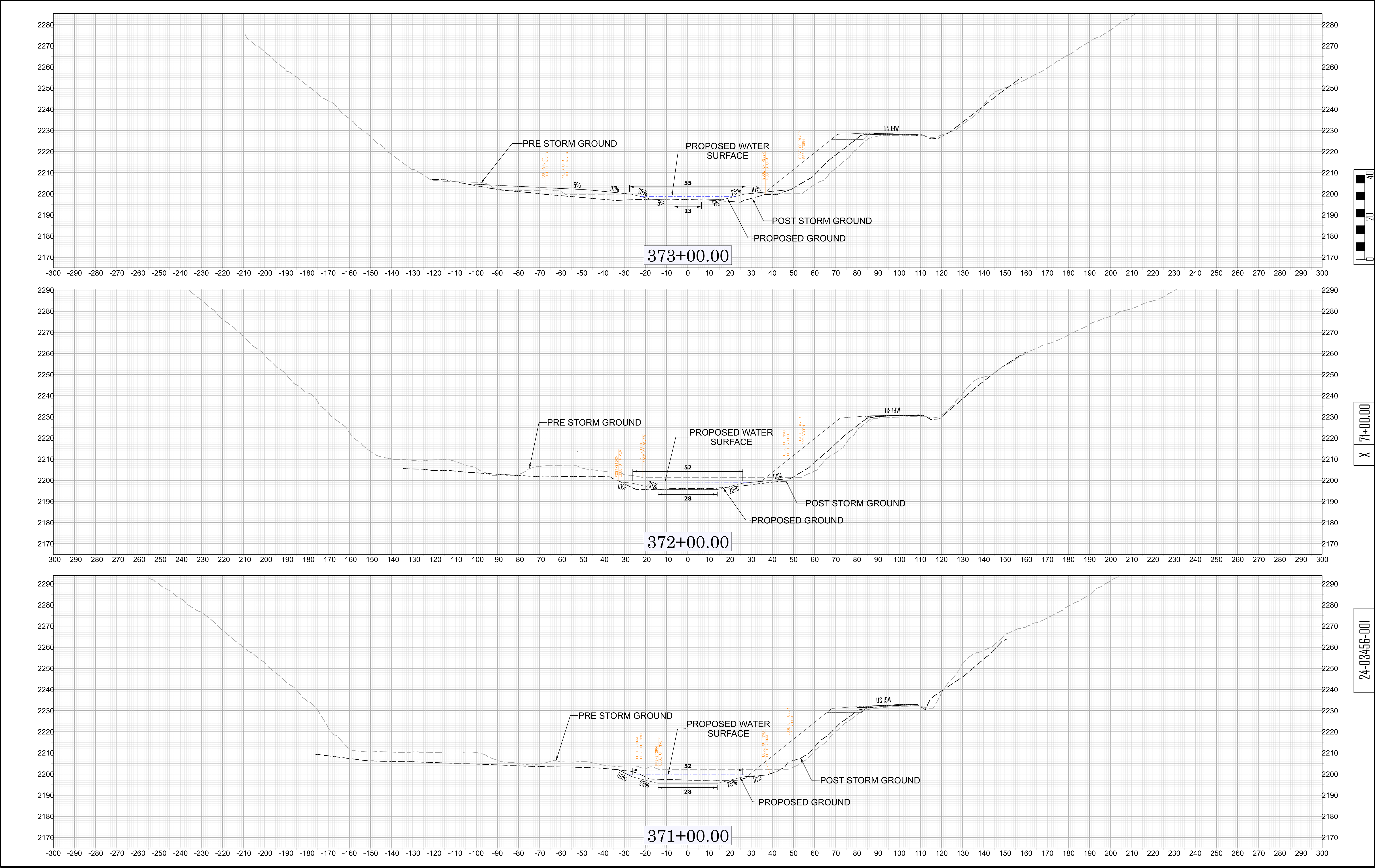


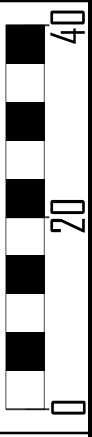






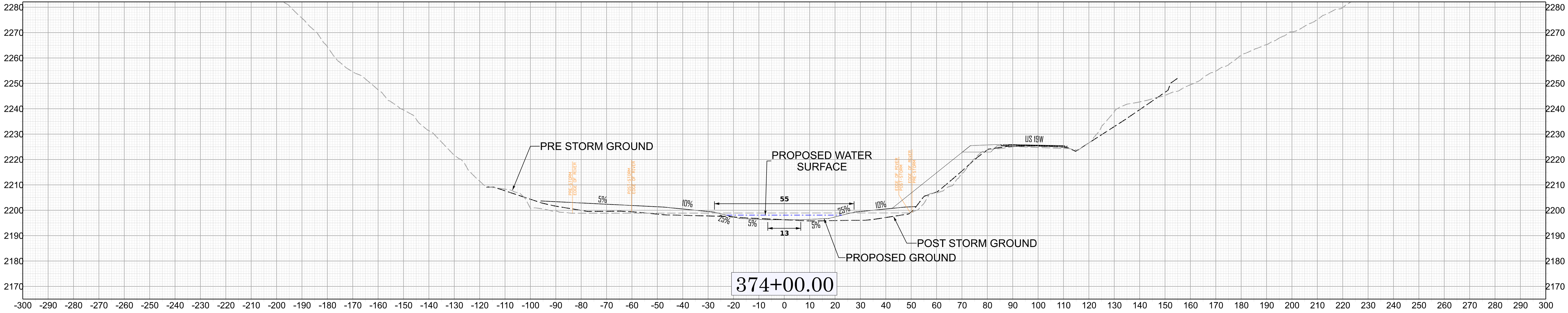


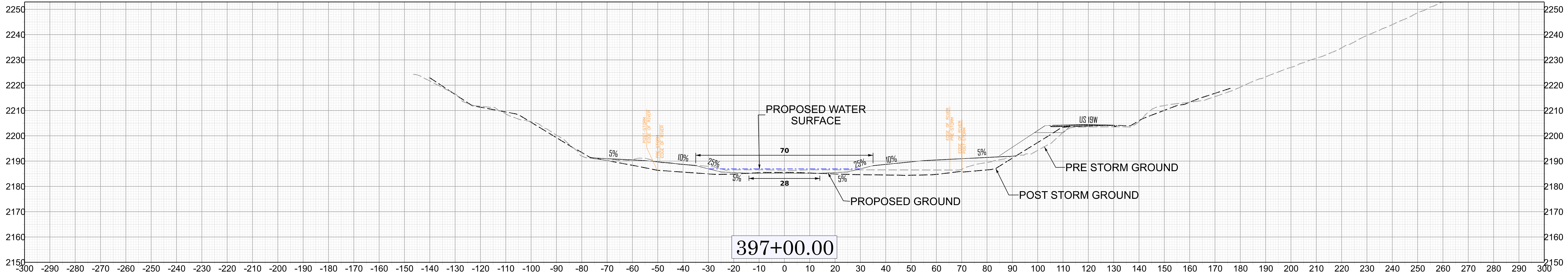
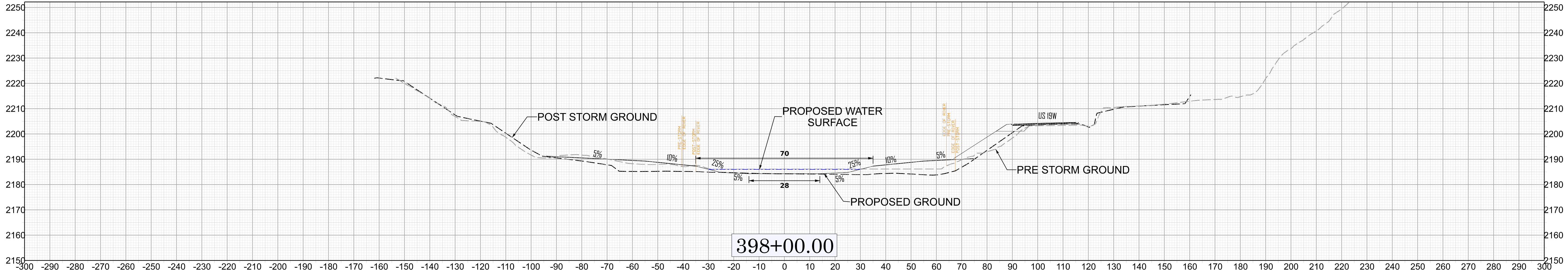
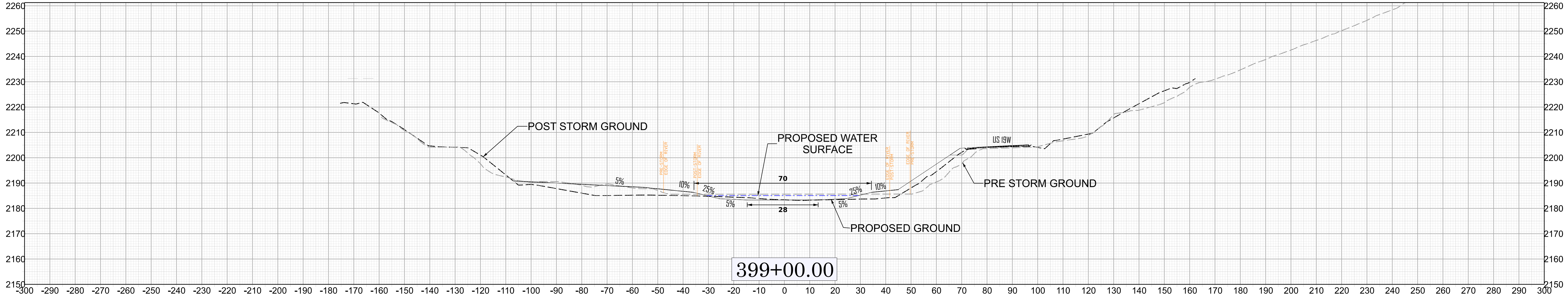


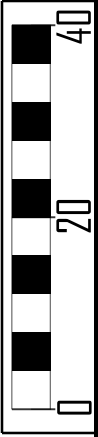
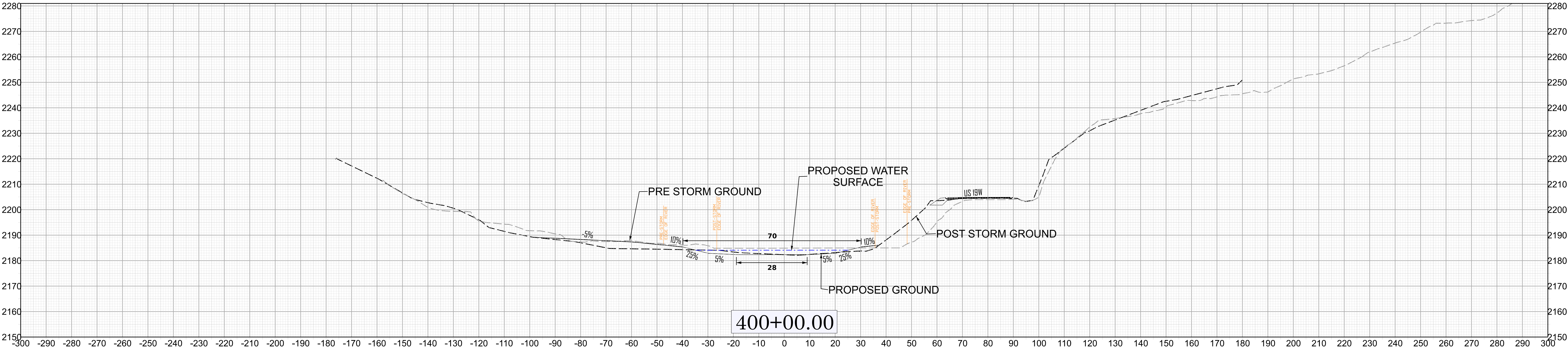
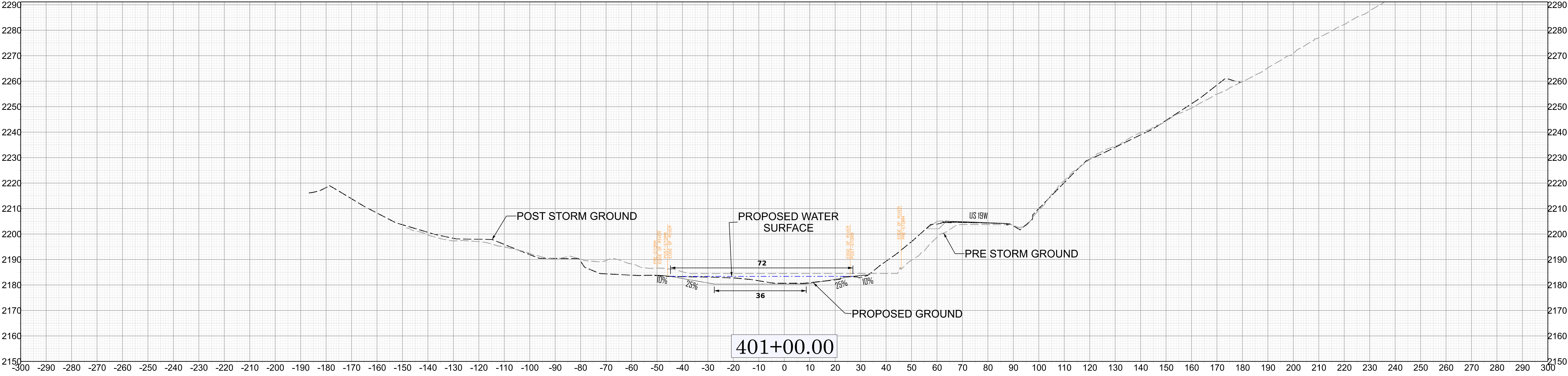


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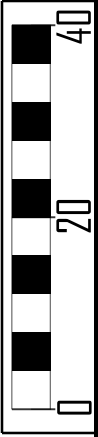
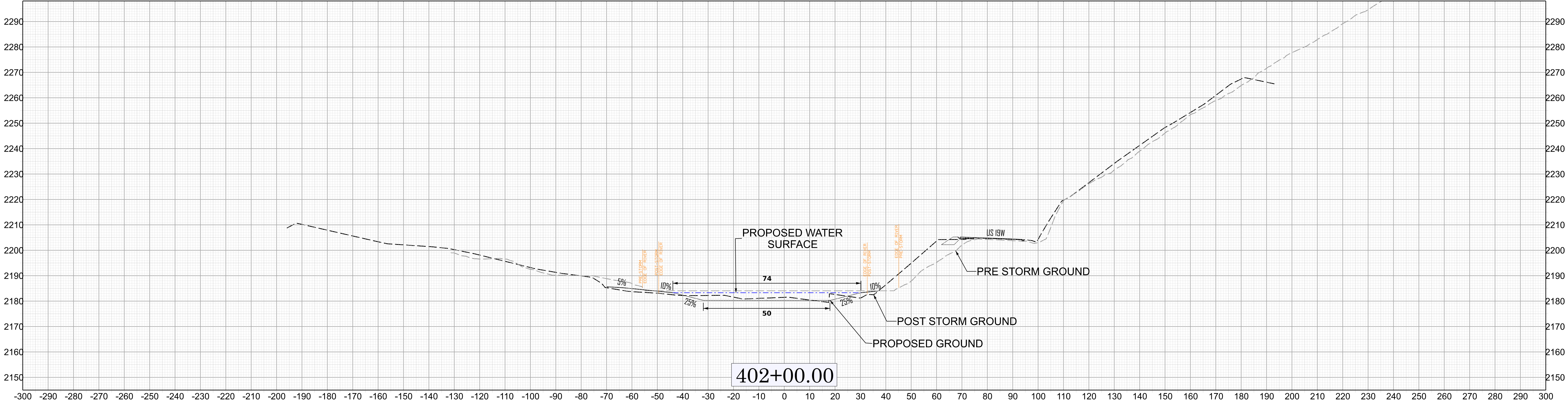
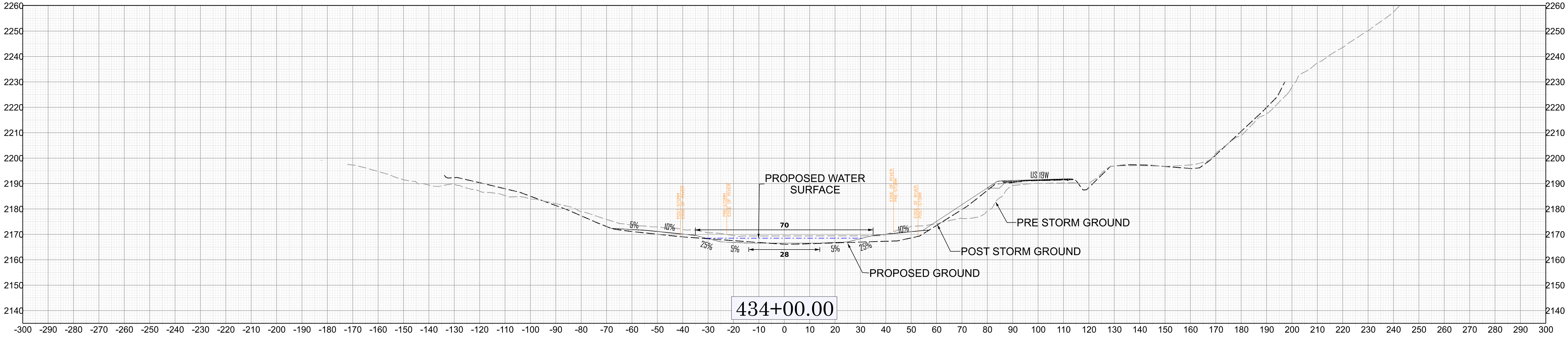






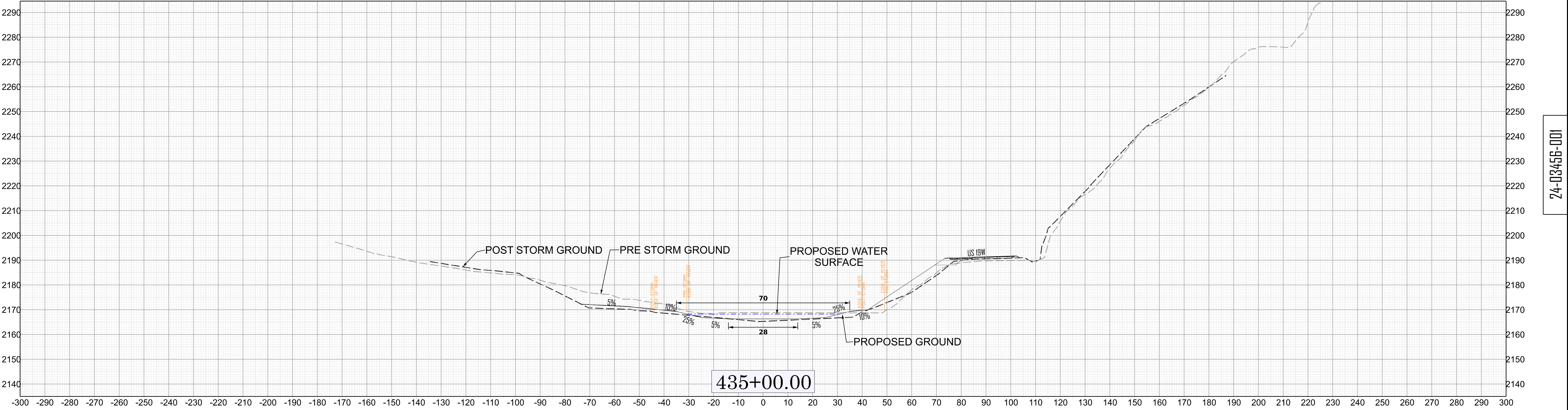
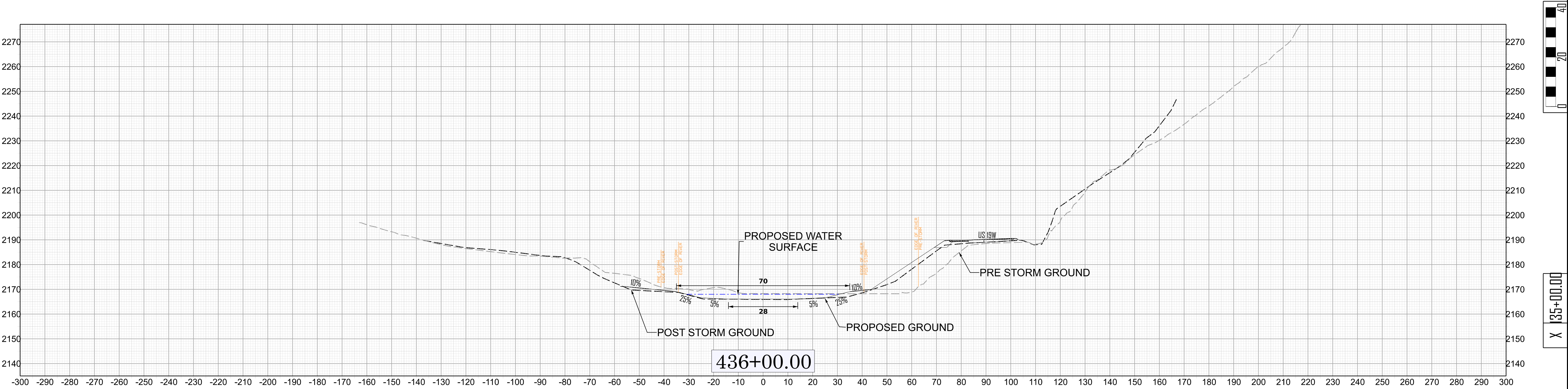
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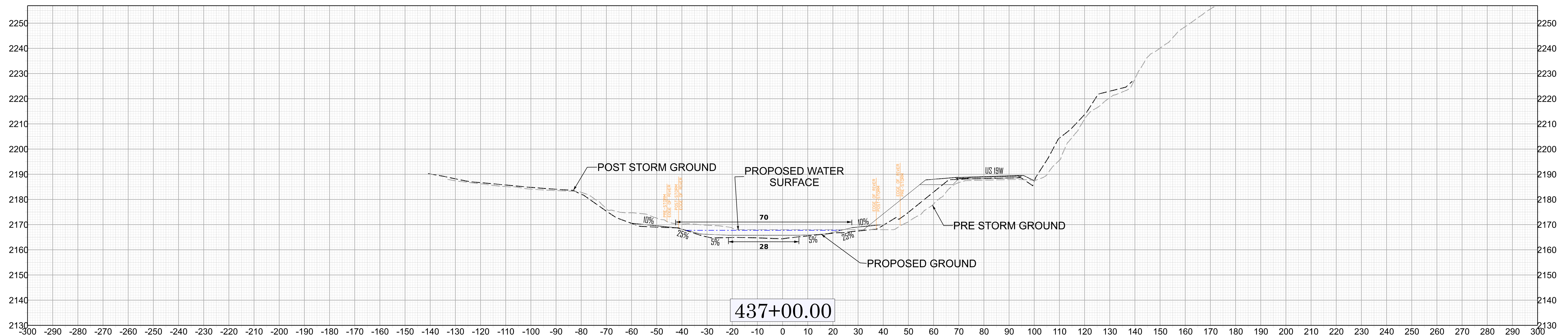
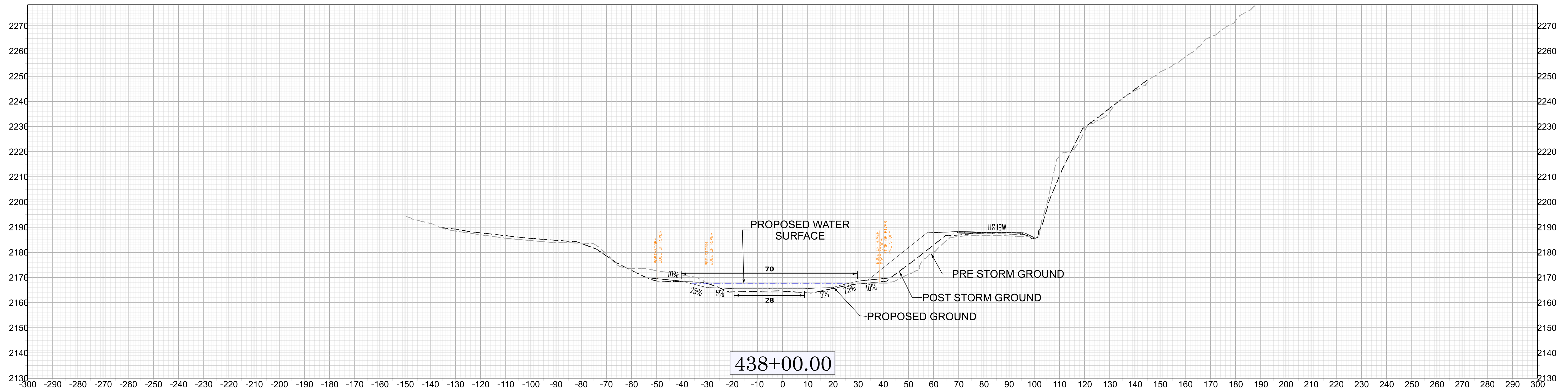
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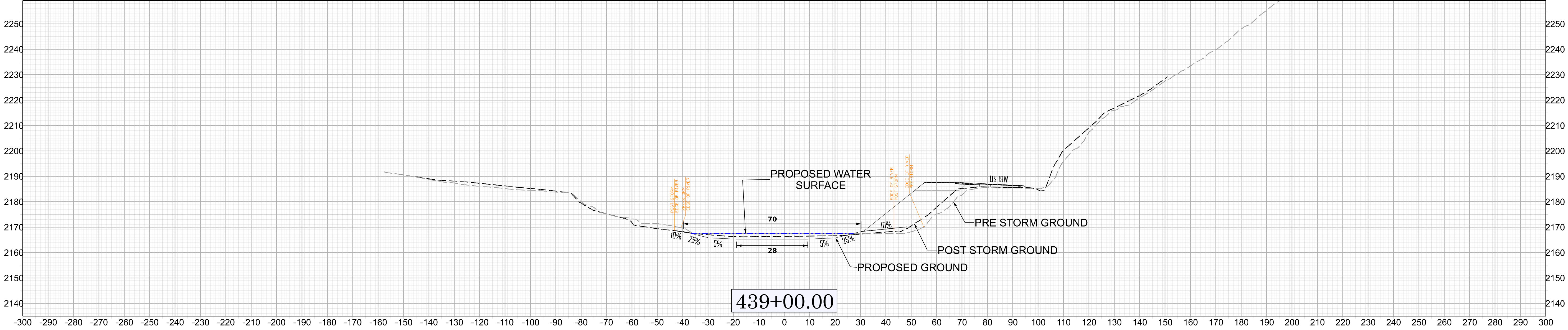
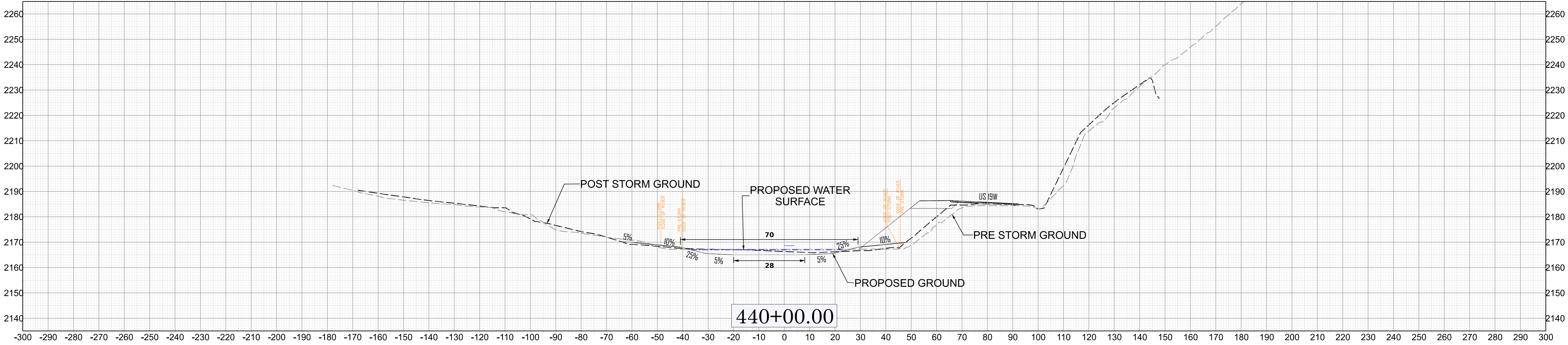
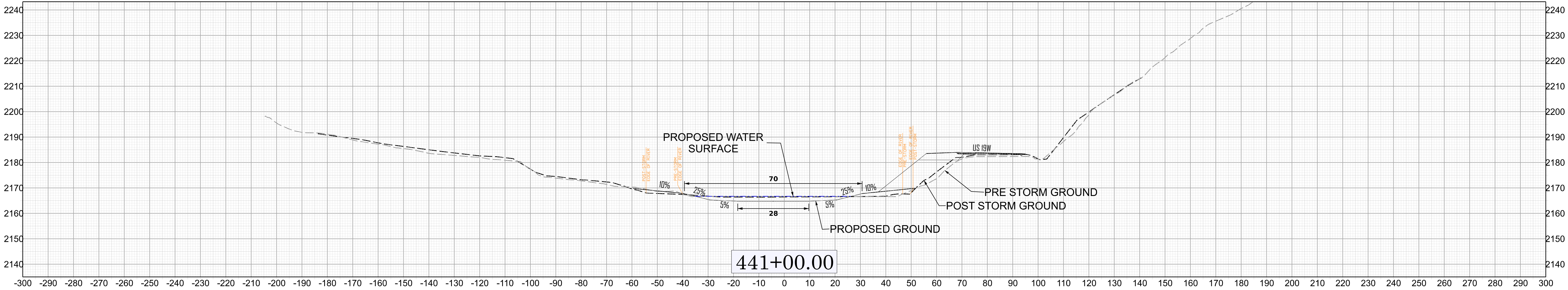


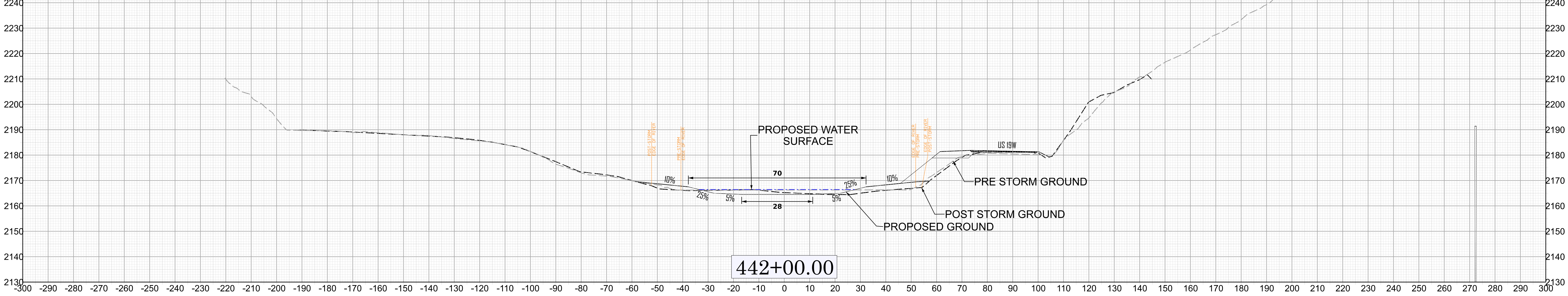
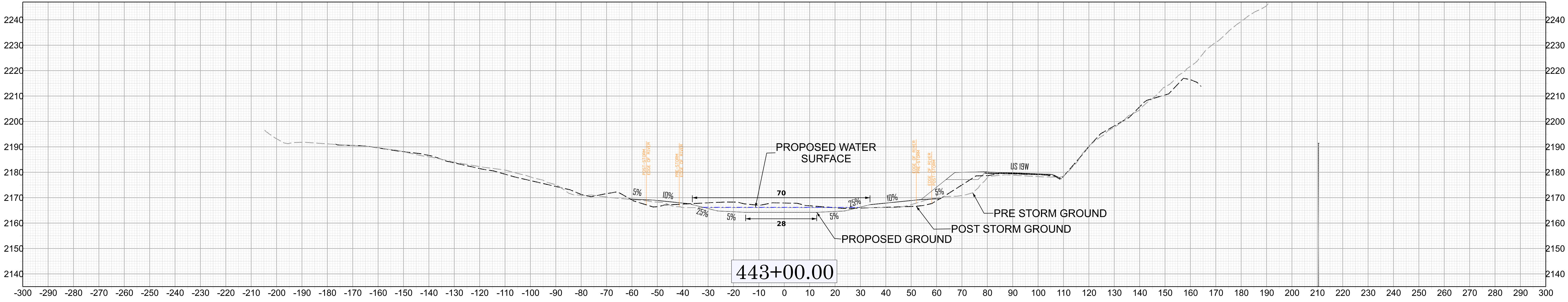
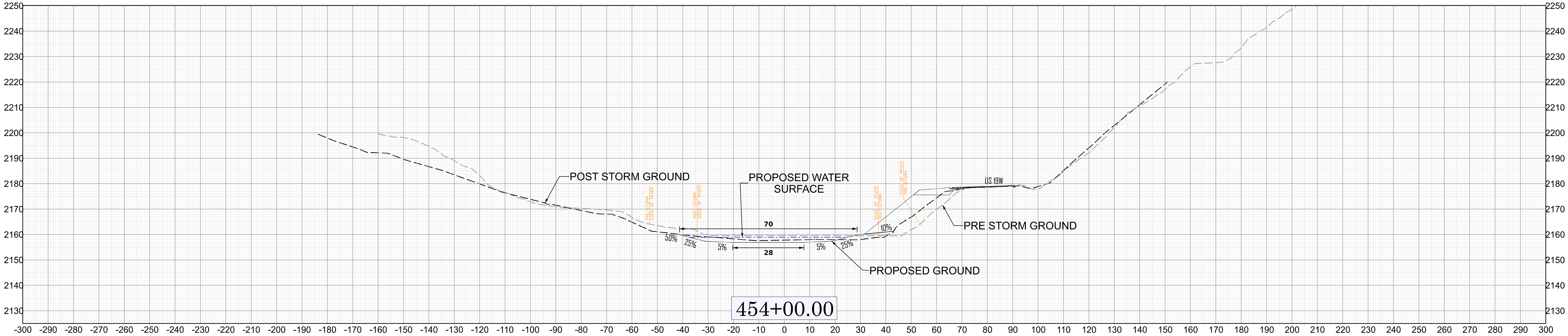
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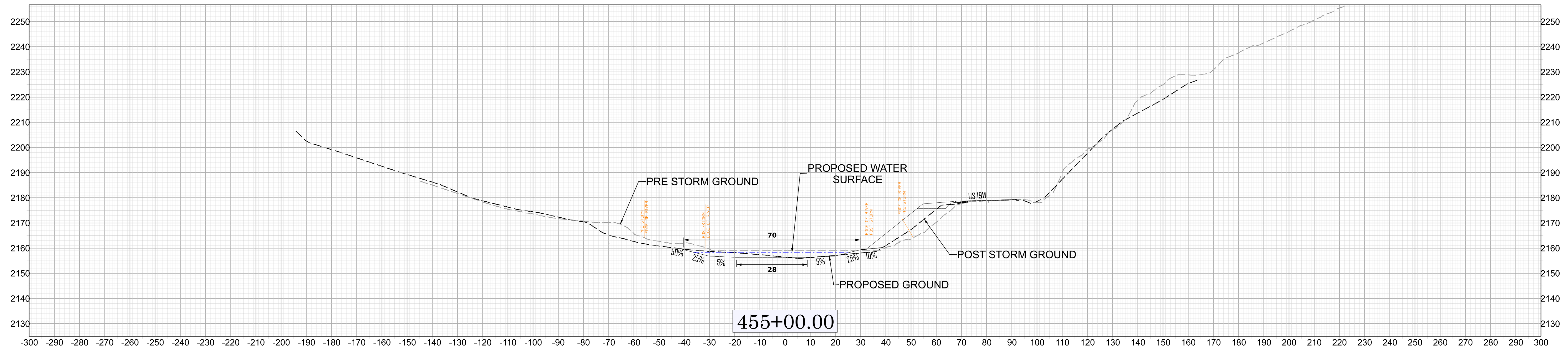
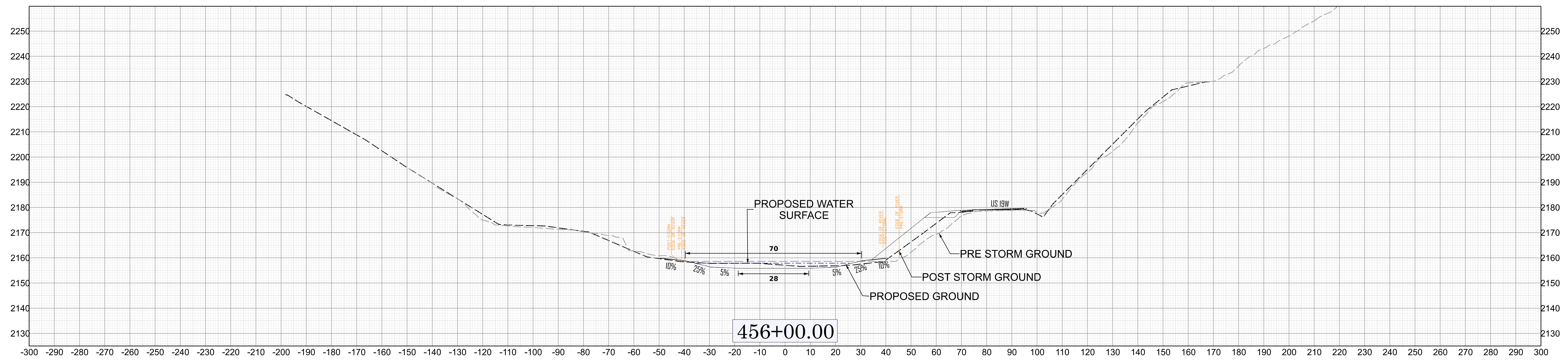
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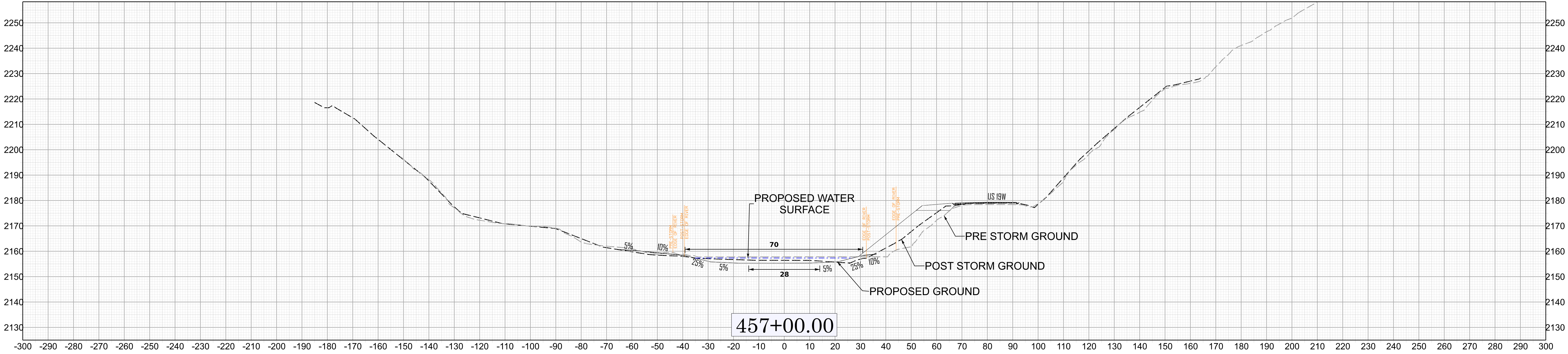
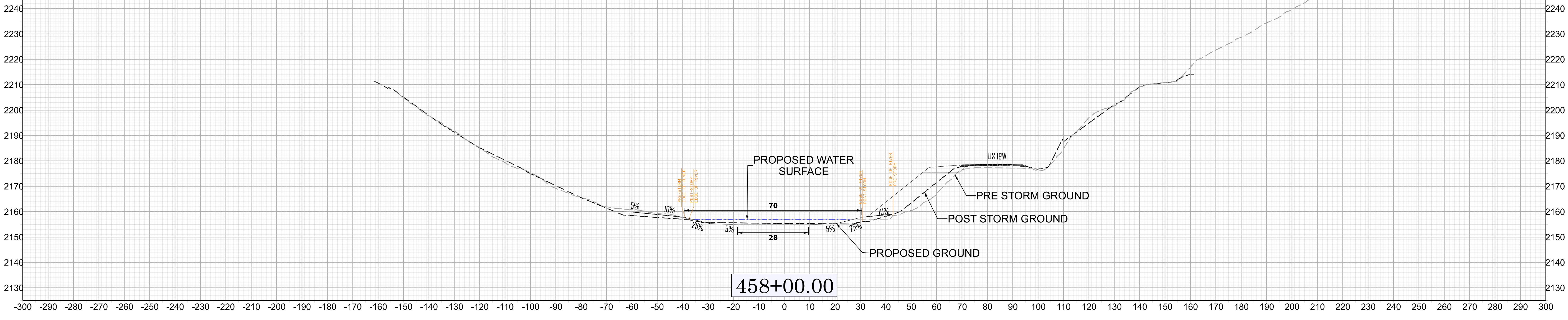
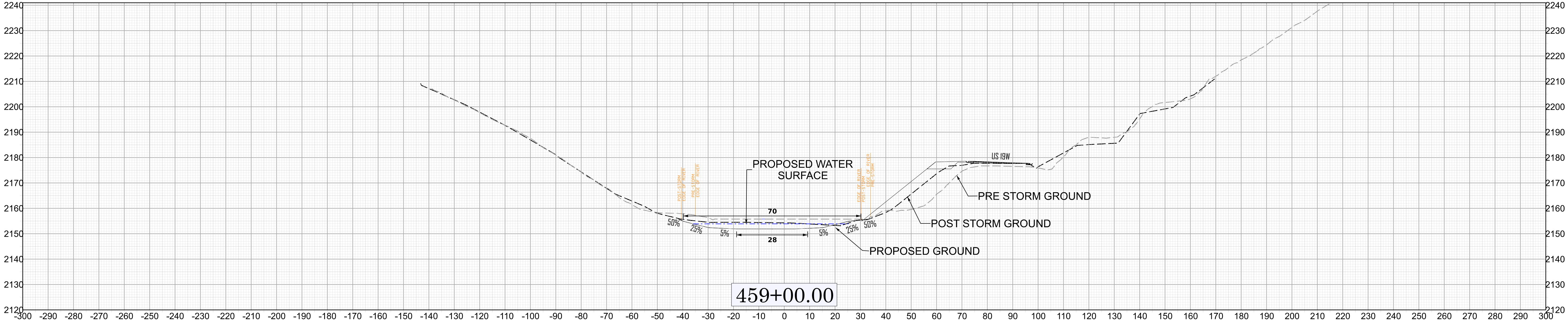


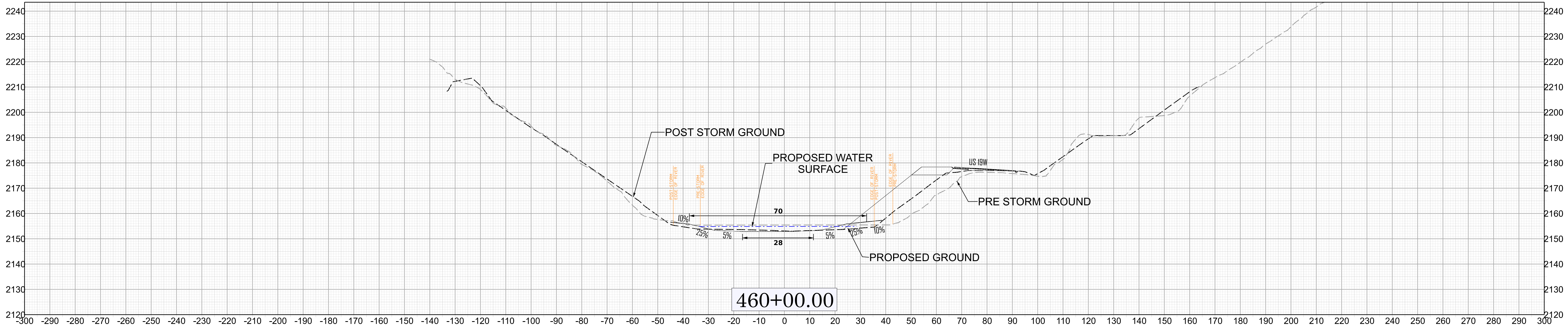
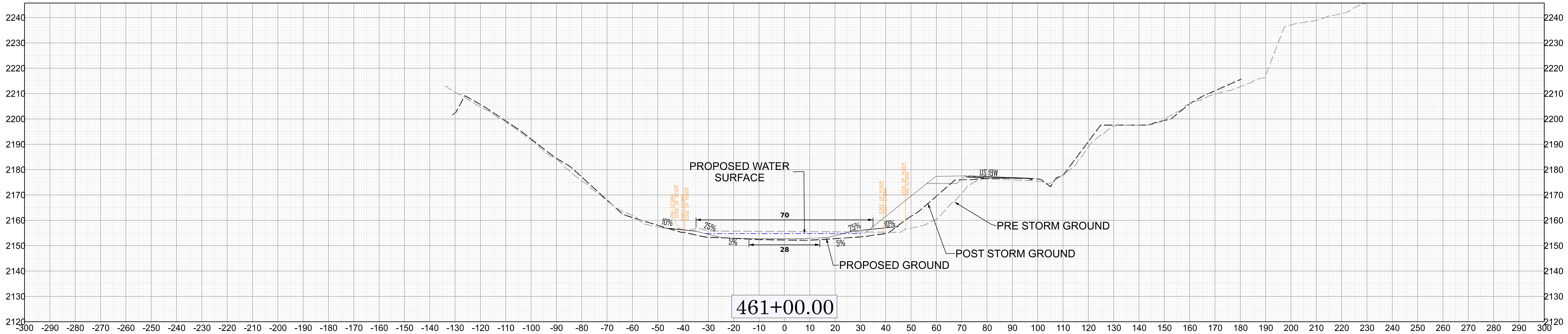


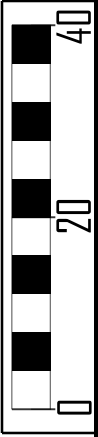
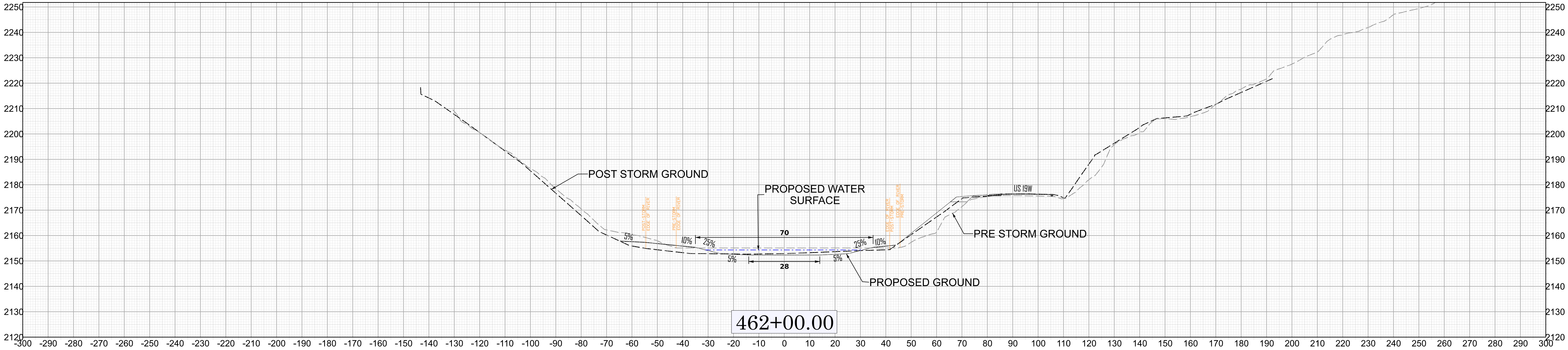
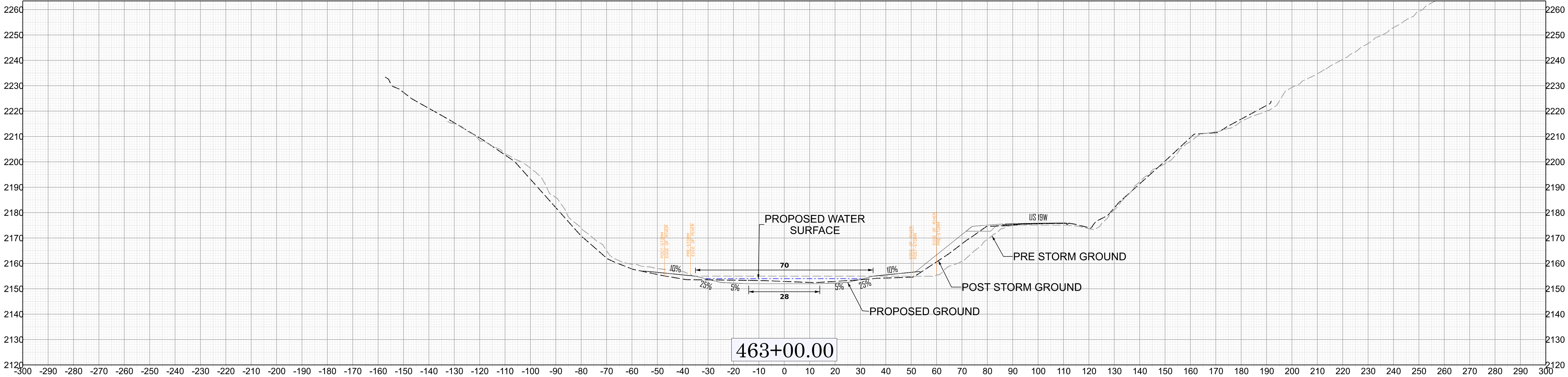






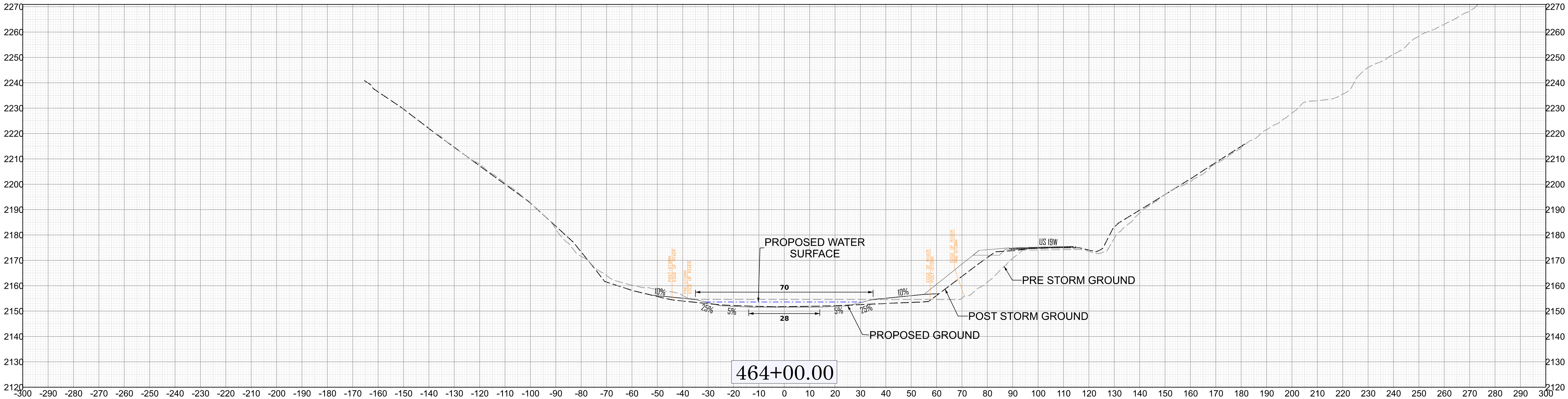
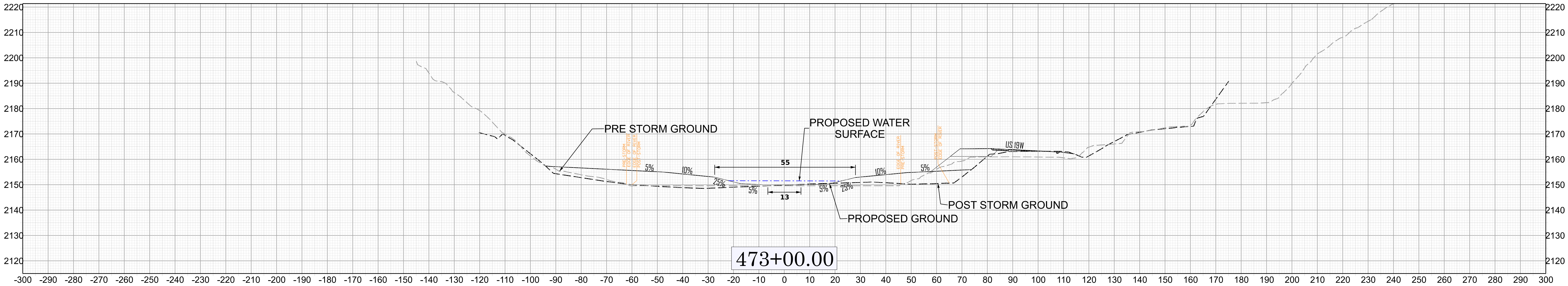
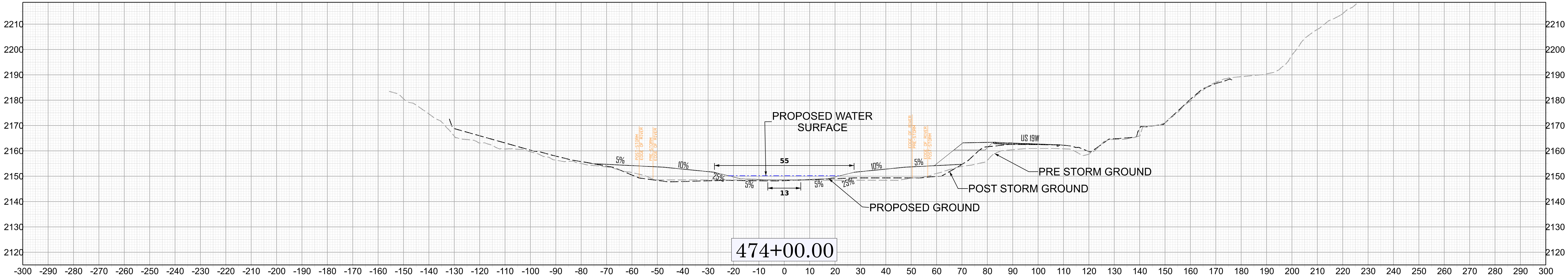


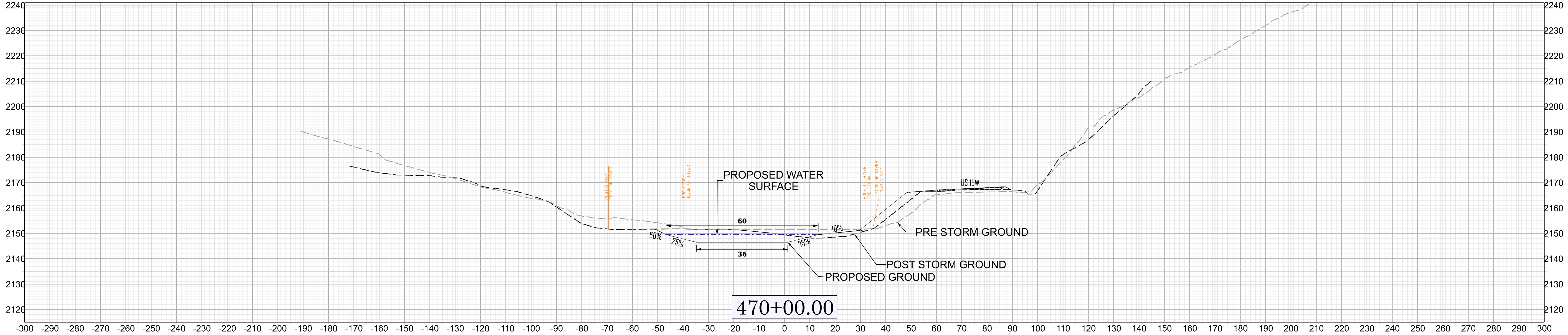
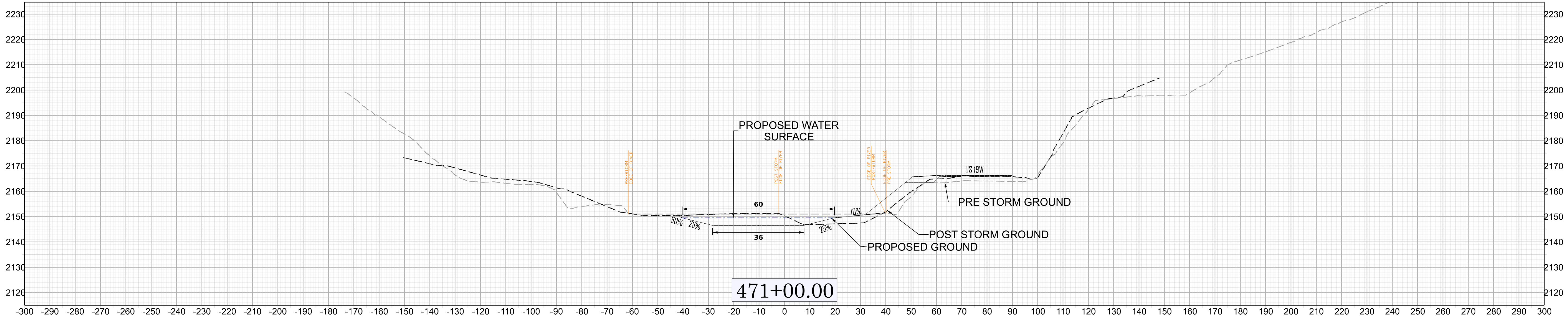
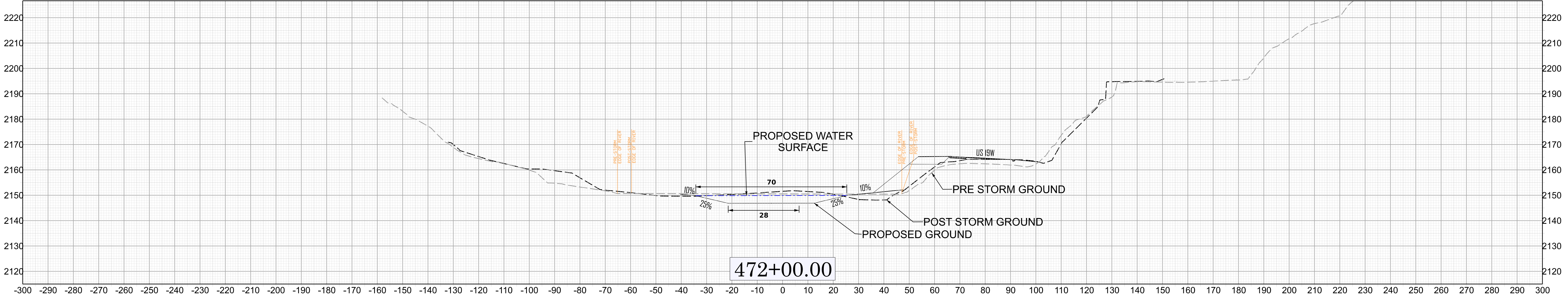


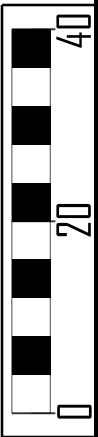
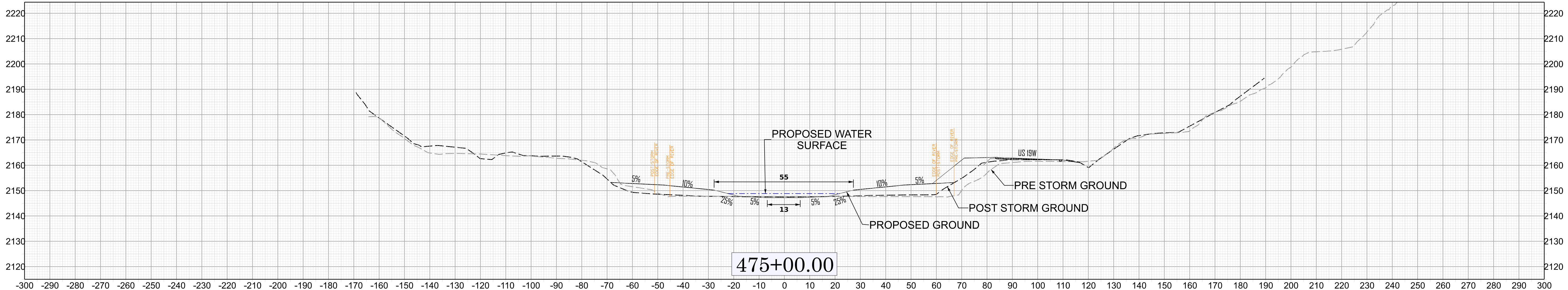
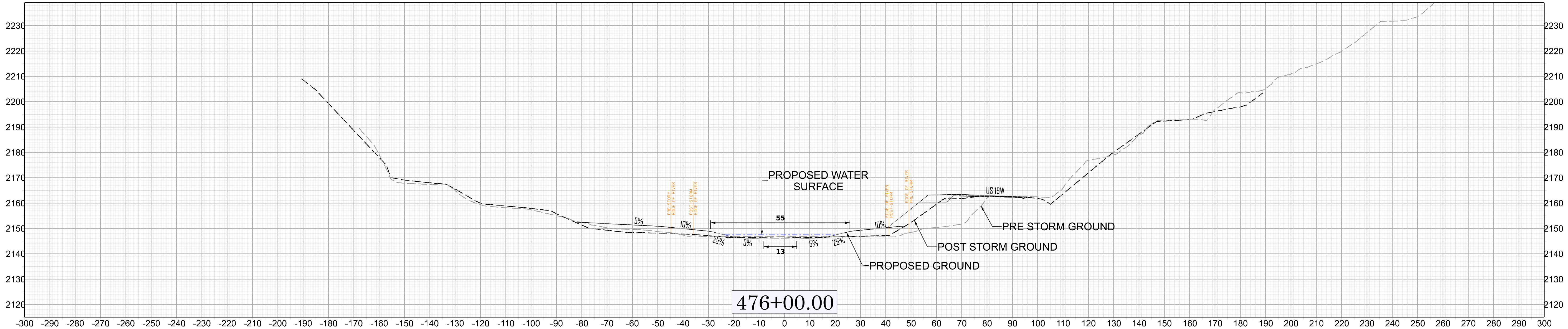
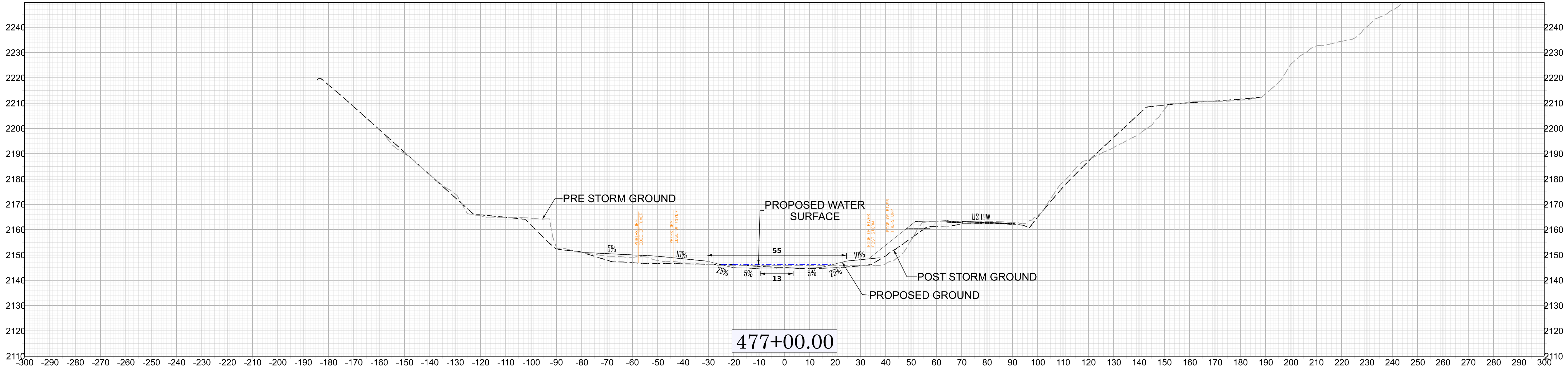


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24-03456-001

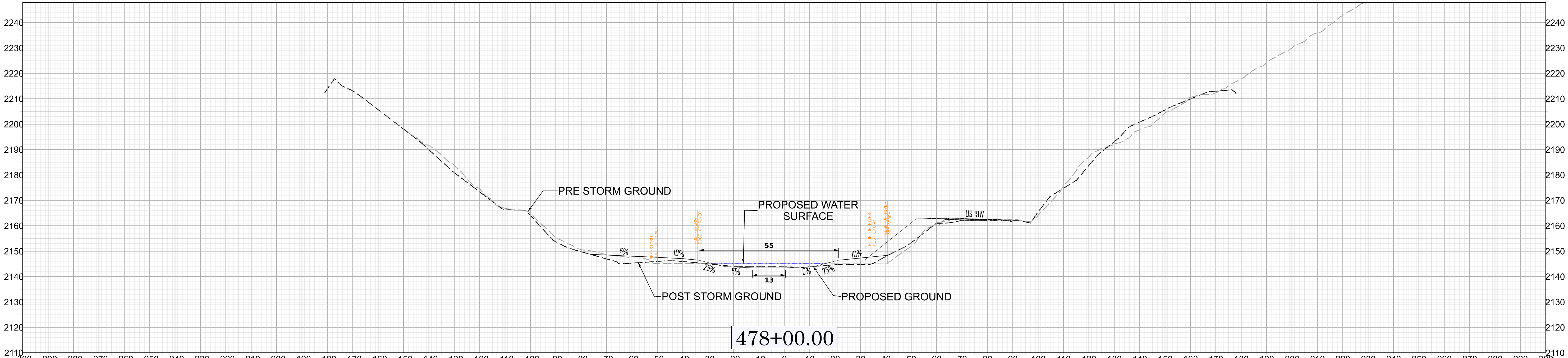
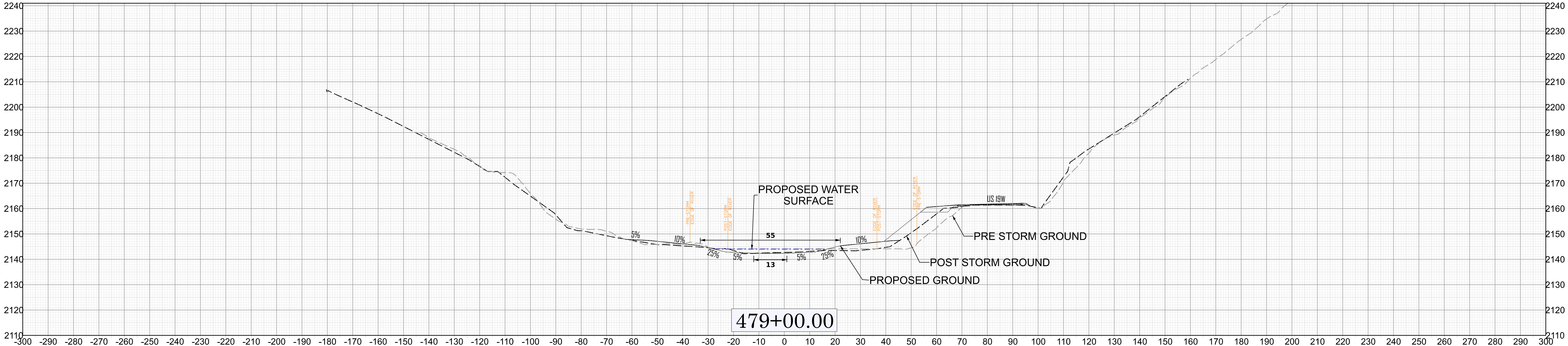


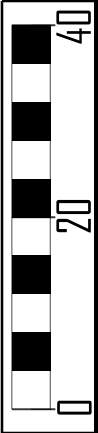
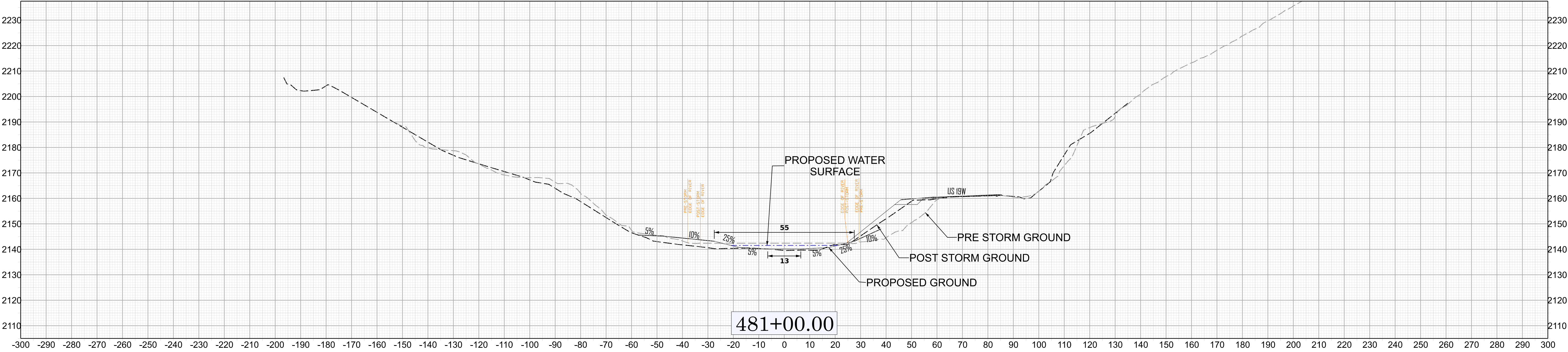




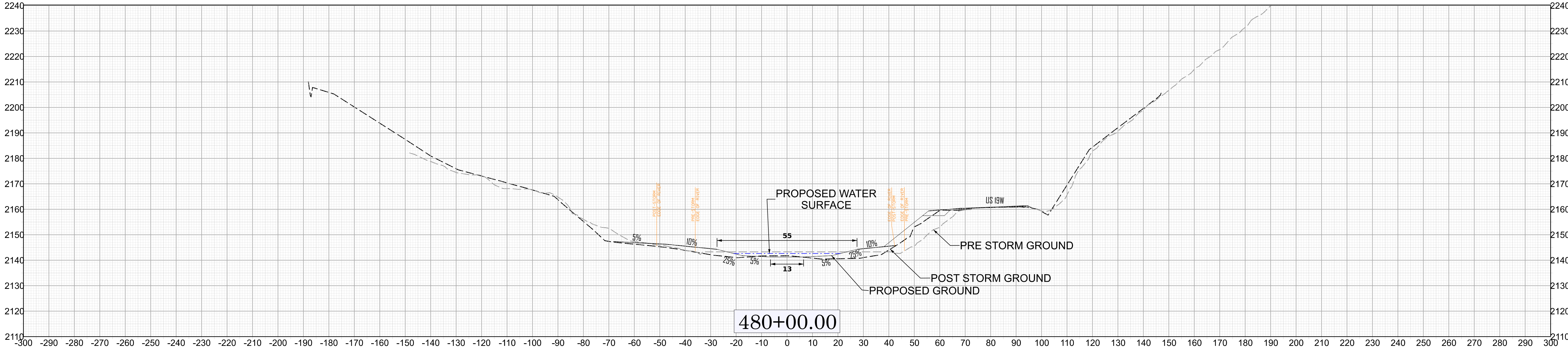
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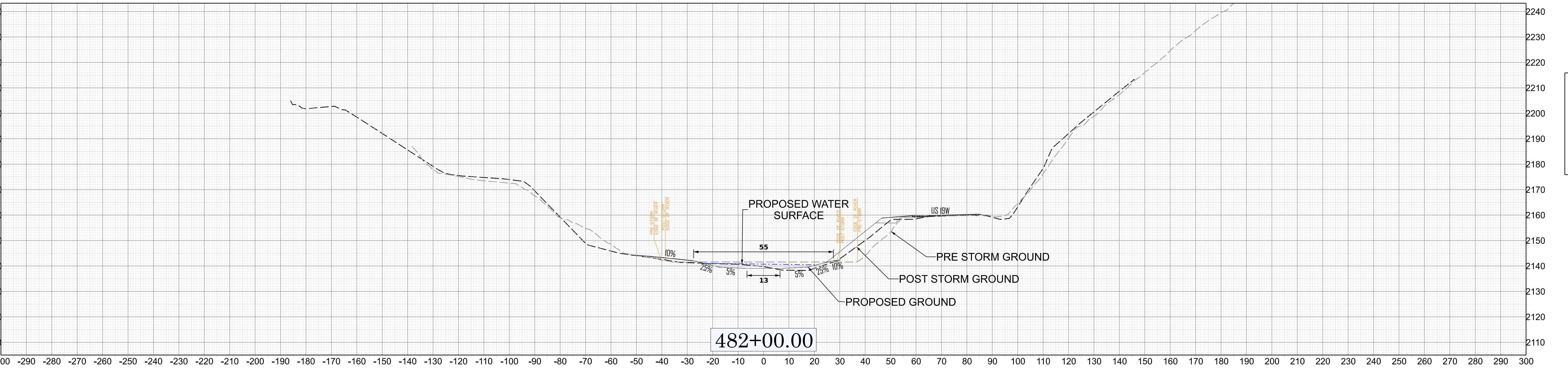
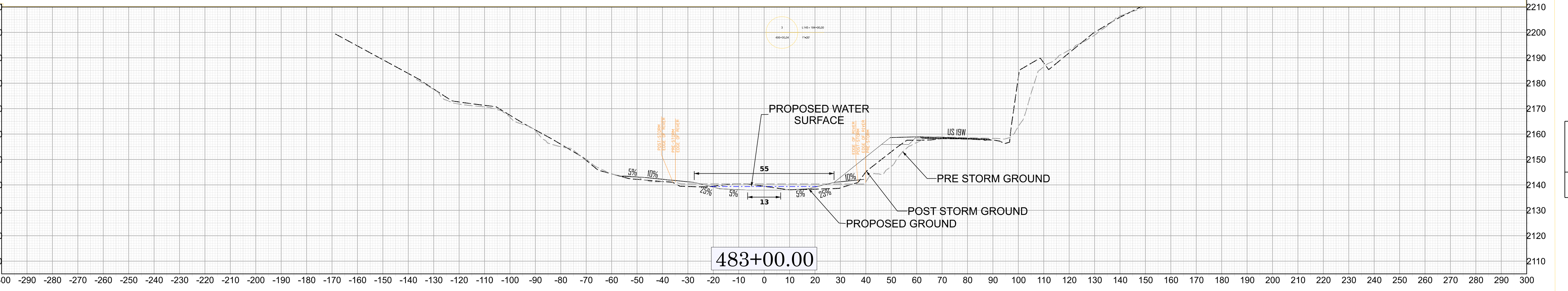
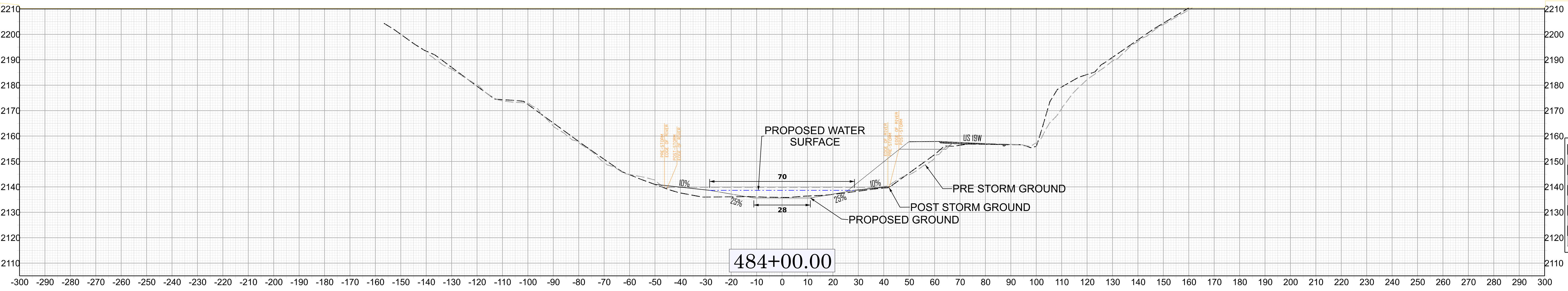


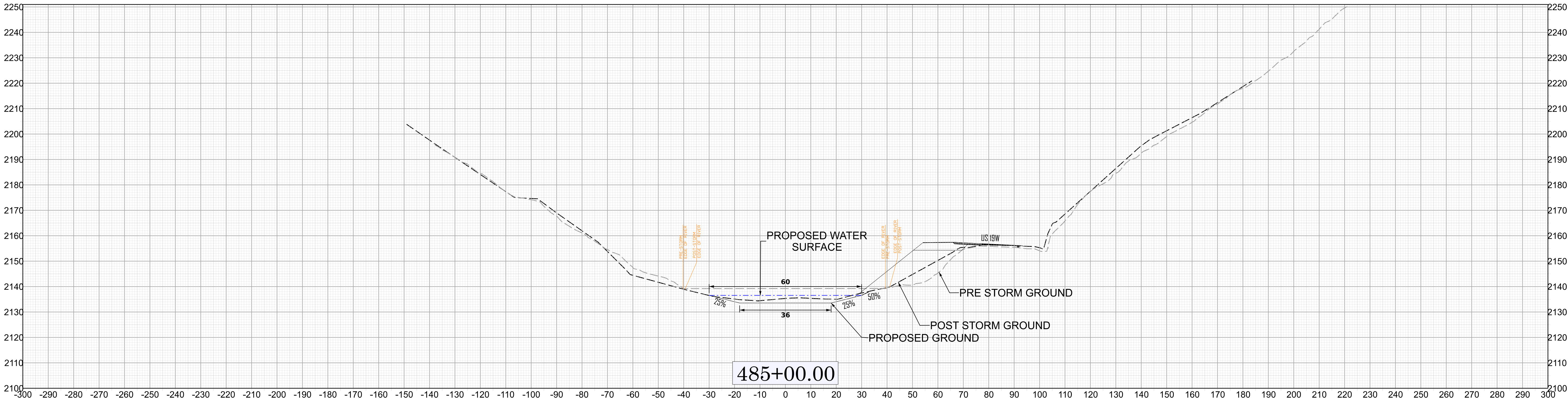
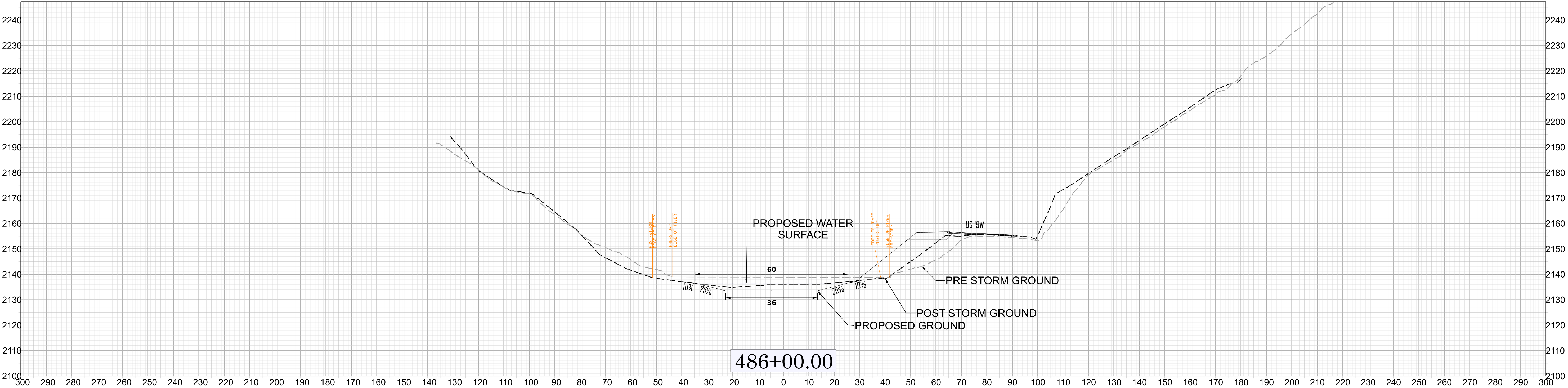


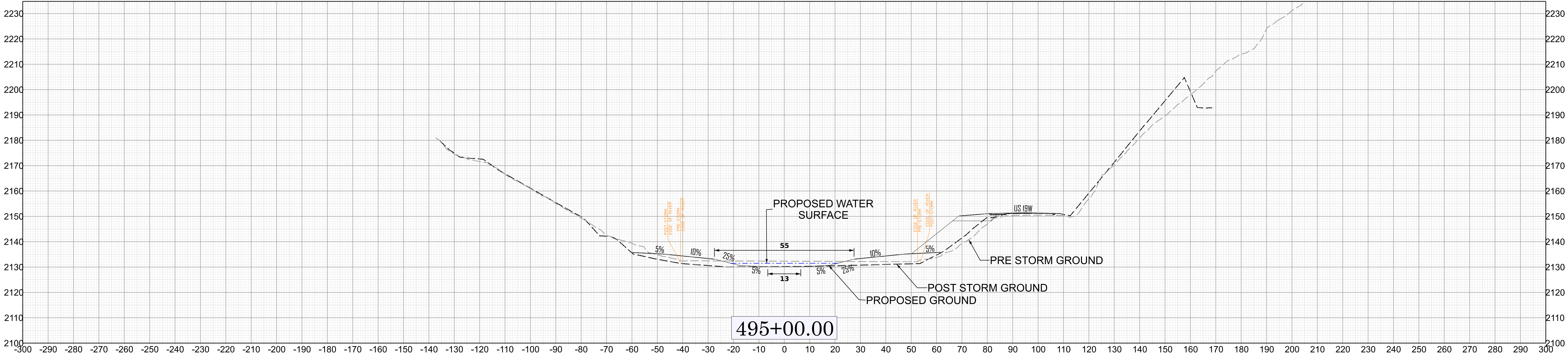
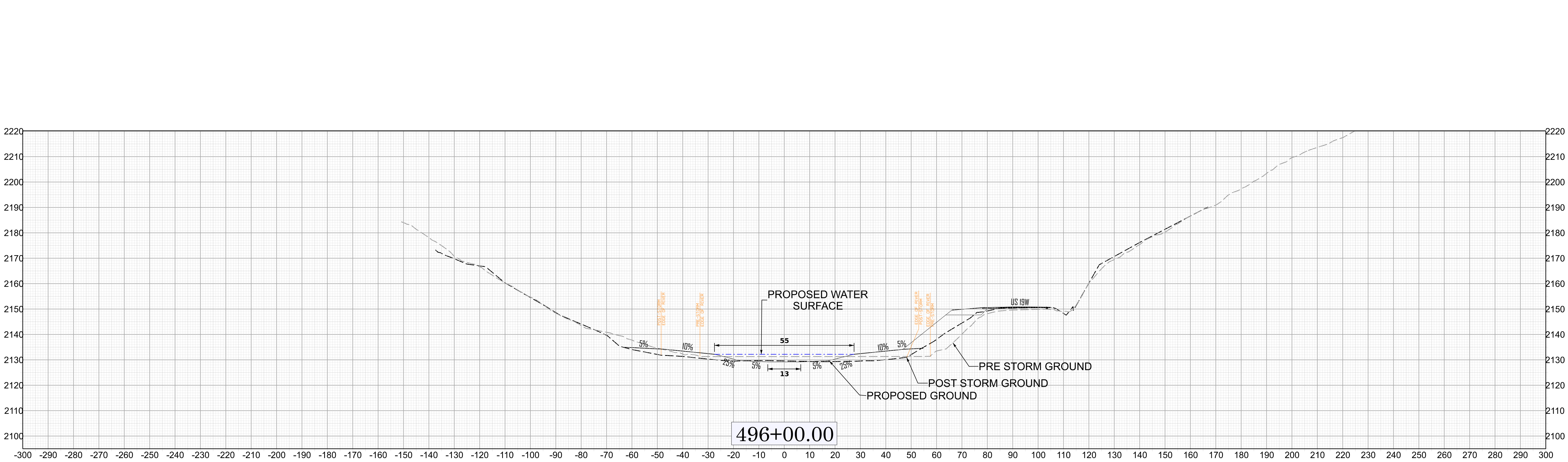
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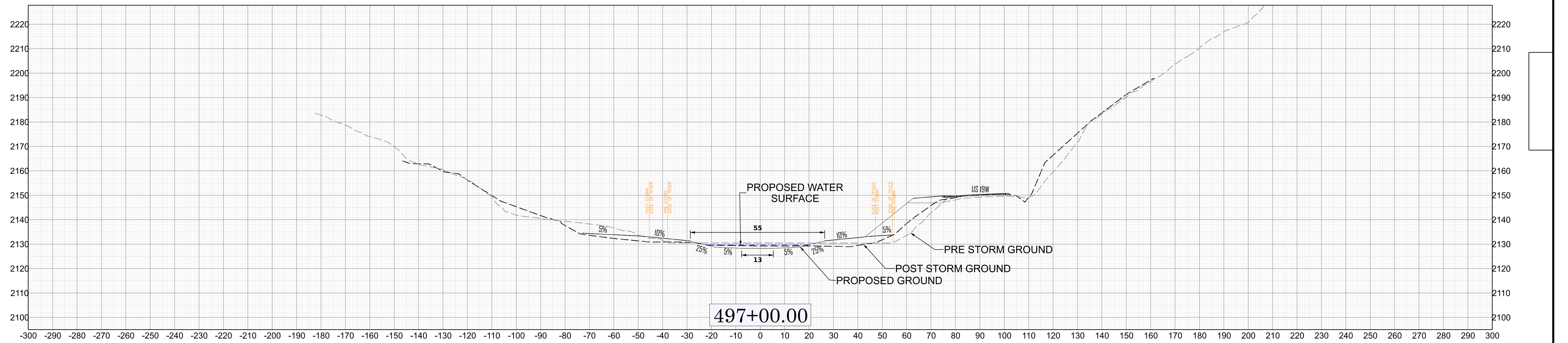
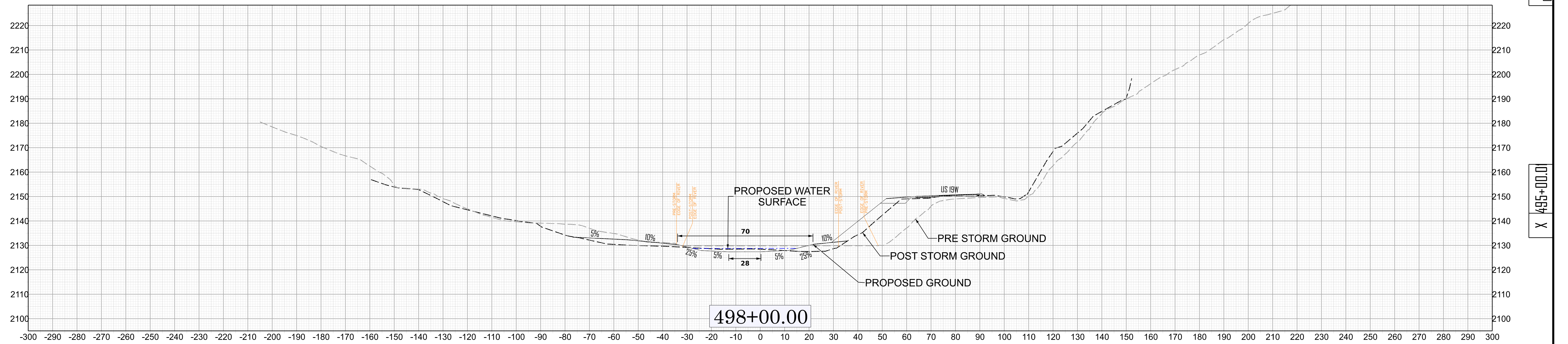


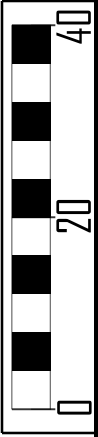
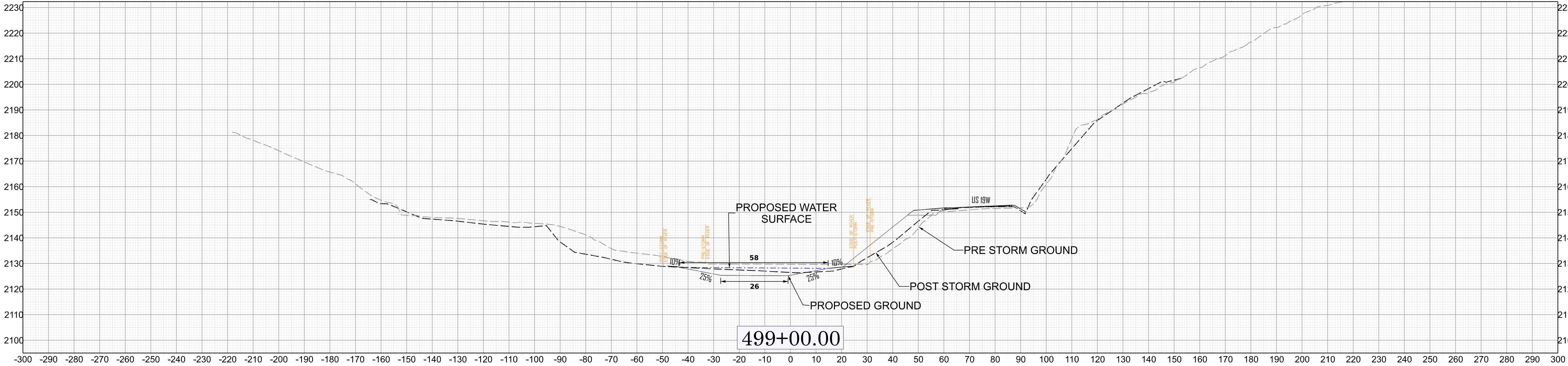
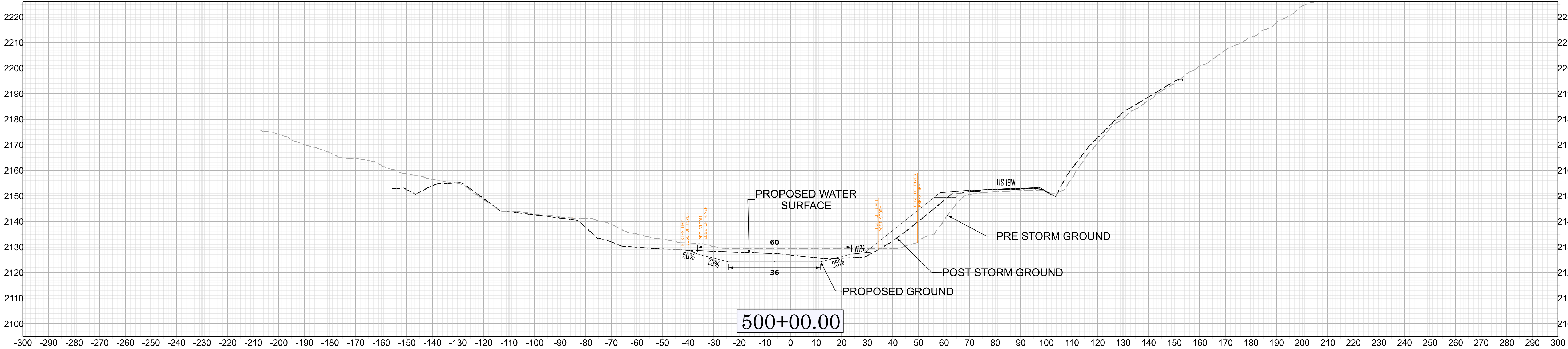
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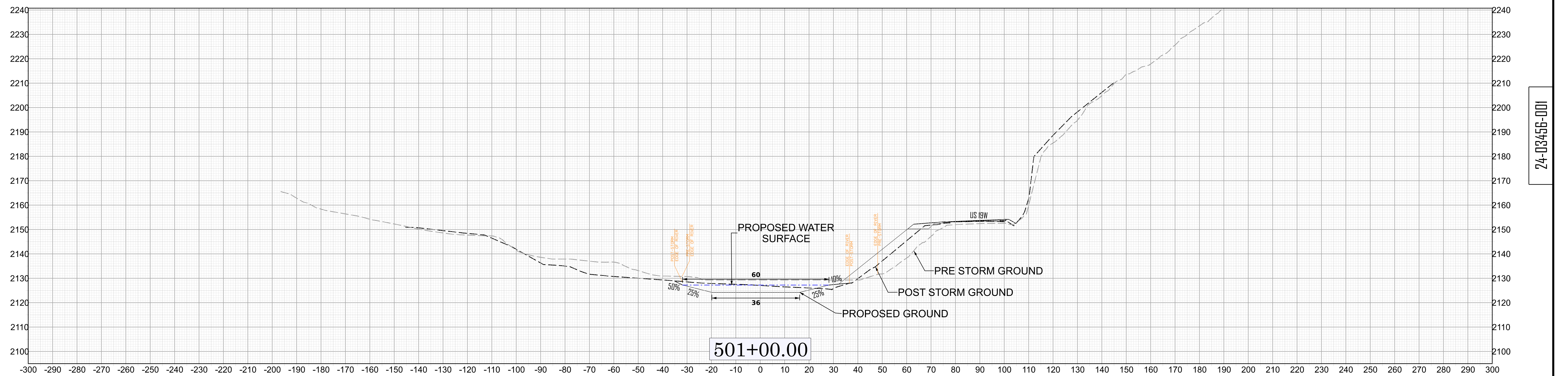
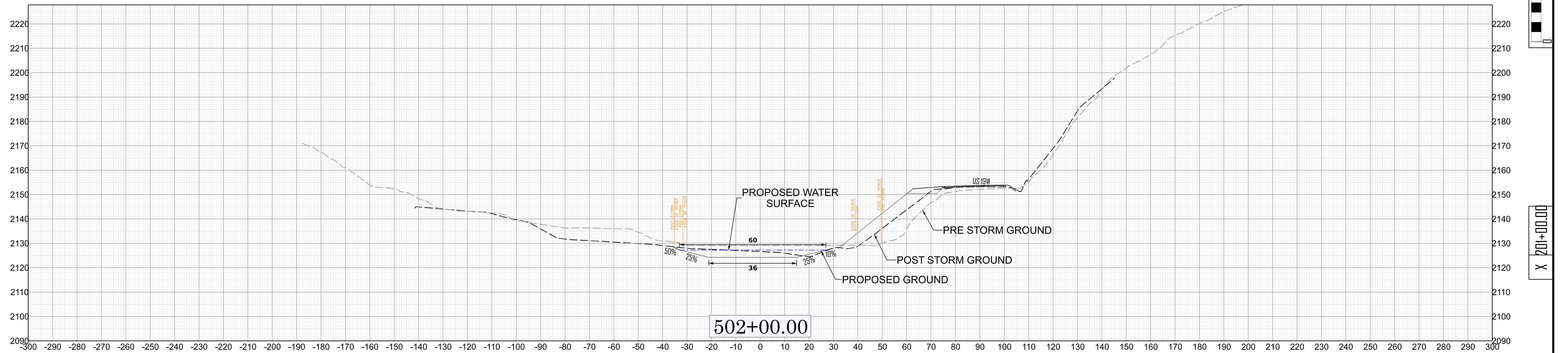


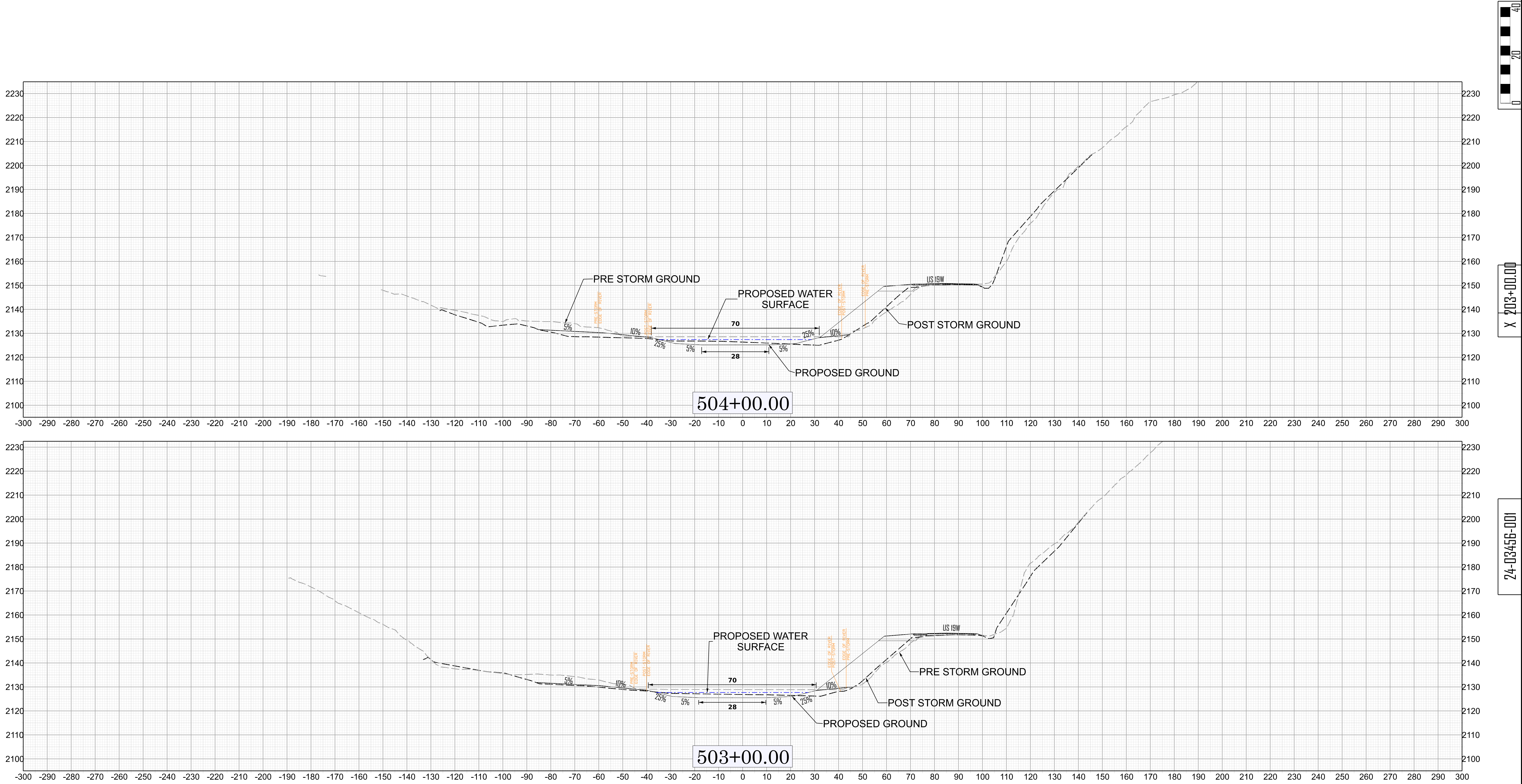


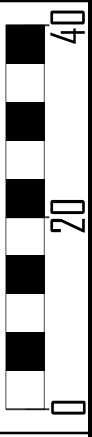


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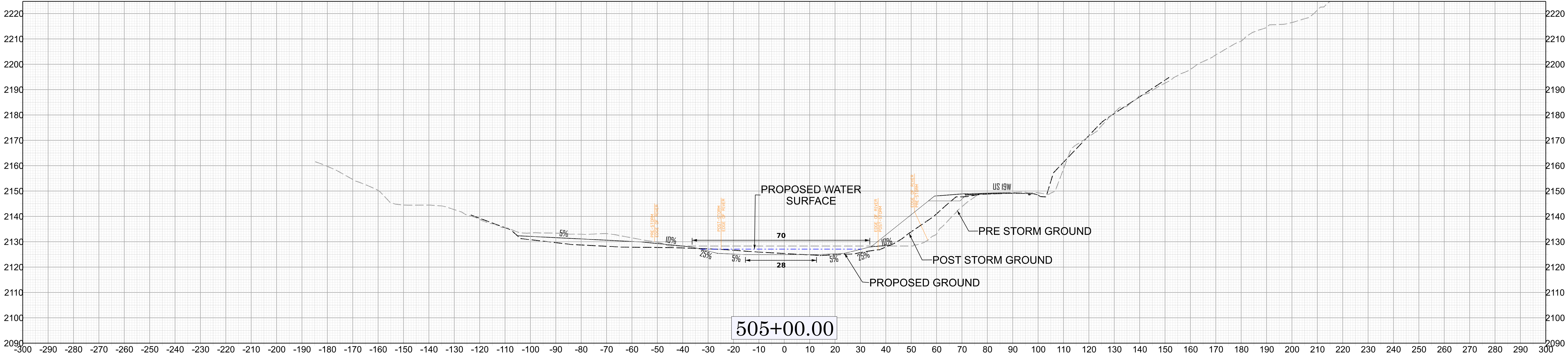


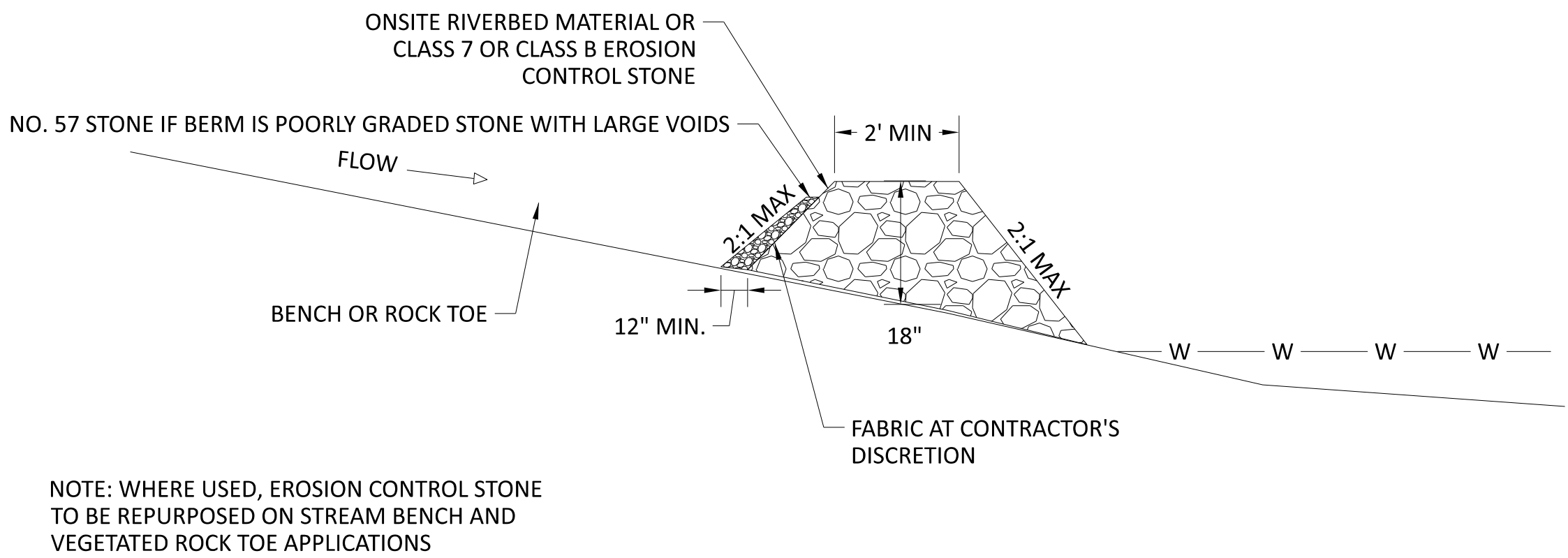




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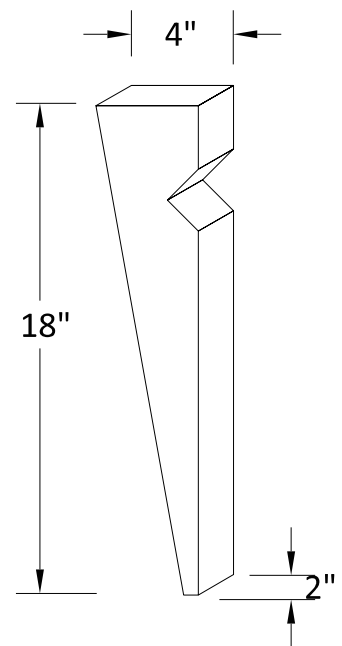
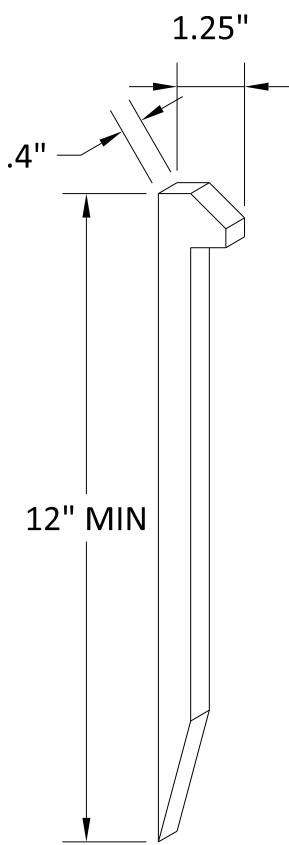
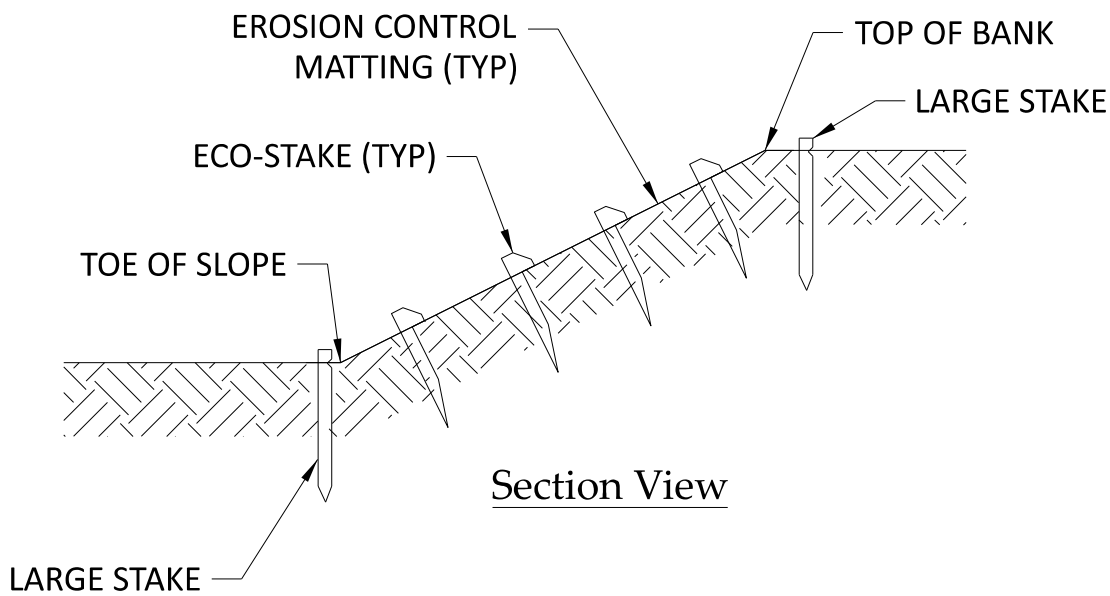
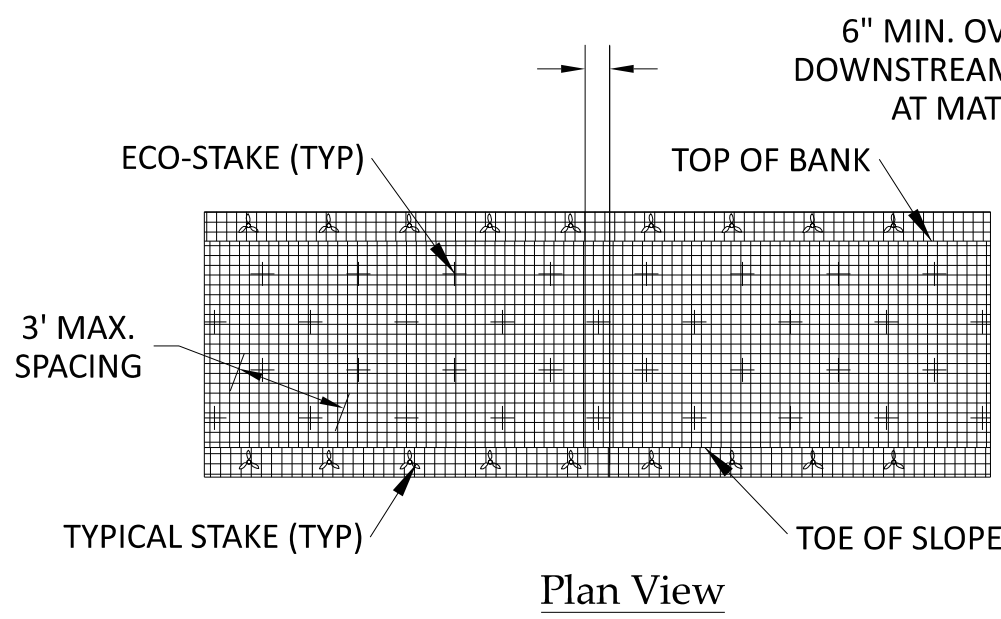




NOTE: WHERE USED, EROSION CONTROL STONE TO BE REPURPOSED ON STREAM BENCH AND VEGETATED ROCK TOE APPLICATIONS

Rock Berm

Not to Scale

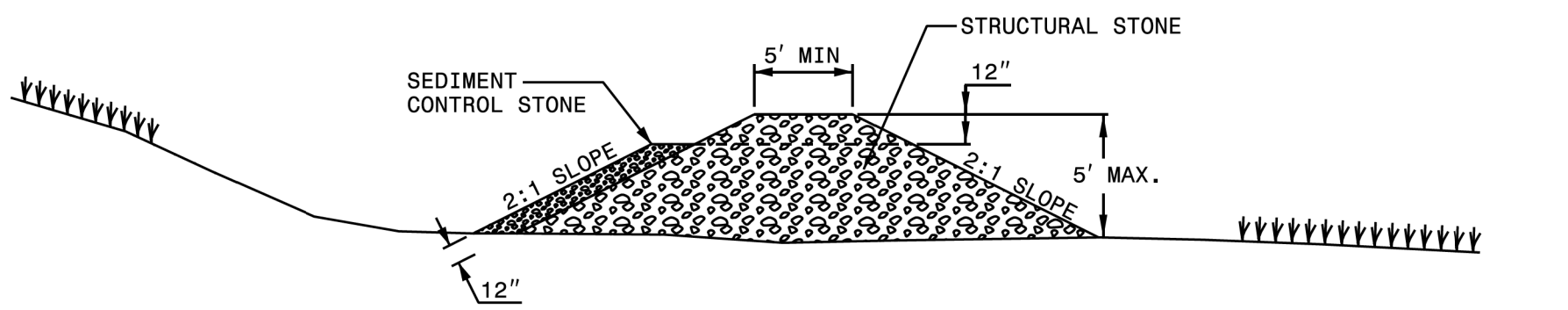


Large Stake

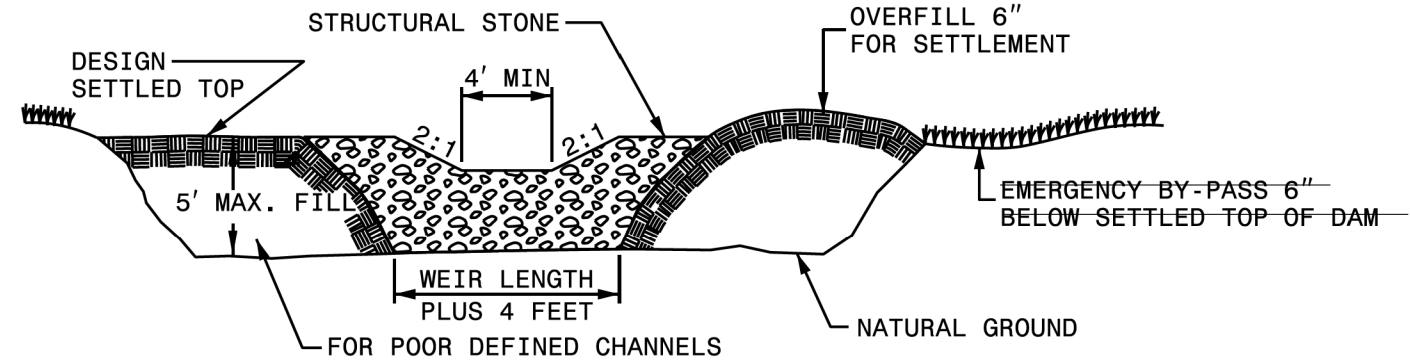
DIMENSIONS MAY VARY BY MANUFACTURER BUT SHALL BE SUBJECT TO DESIGNER APPROVAL. SHALL RESIST BREAKAGE PER SPEC.

Erosion Control (Coir Fiber) Matting

Not to Scale



PROFILE SECTION



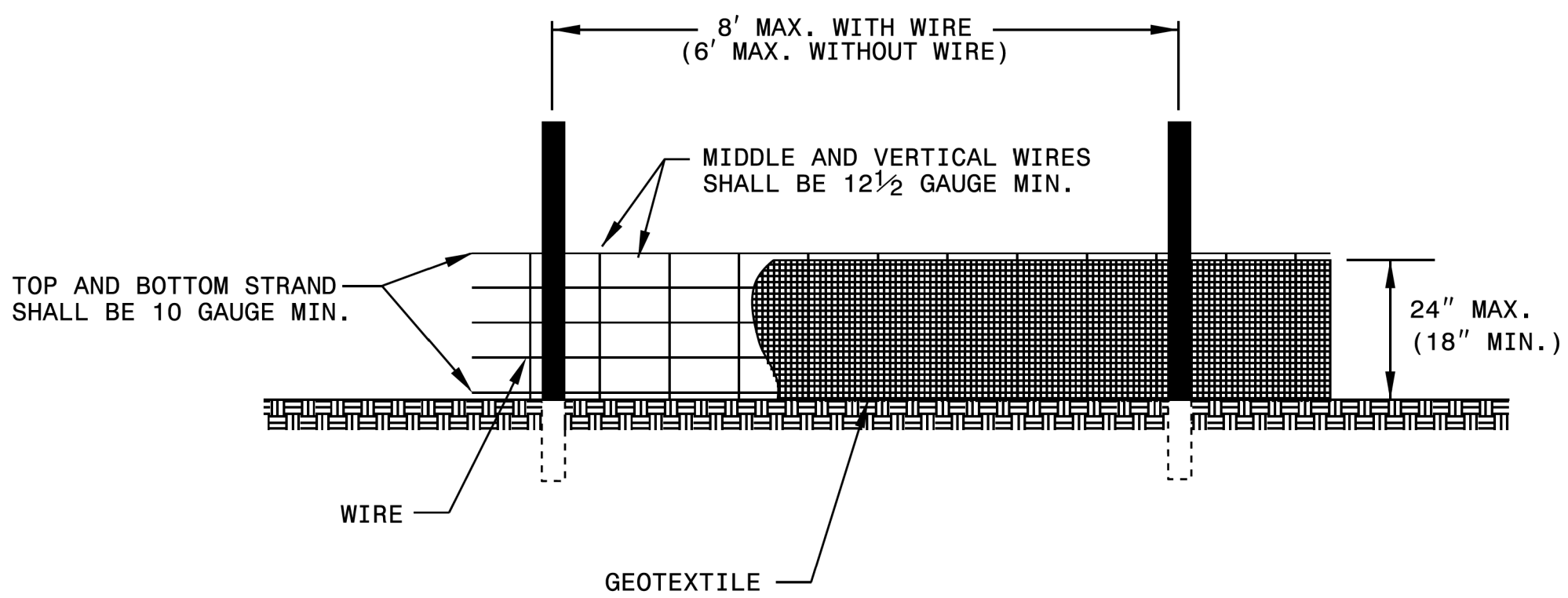
CROSS SECTION

NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
DIKE MAY EXTEND ALONG MORE THAN ONE SIDE OF THE TRAP AREA. PROVIDE A TOTAL SEDIMENT STORAGE VOLUME OF 3600± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY OTHER UP OR DOWNSTREAM CONTROLS.
AN UNDERLAY OF STRUCTURAL STONE WITH FILTRATION GEOTEXTILE MAY BE REQUIRED AS DIRECTED.
INSTALL COIR FIBER BAFFLES ON THE UPSTREAM SIDE OF THE DAM IN ACCORDANCE WITH STANDARD DRAWING NO. 1640.01.
SEED AND PLACE MATTING FOR EROSION CONTROL ON ALL INTERIOR AND EXTERIOR SLOPES OF SEDIMENT BASIN AS DIRECTED.

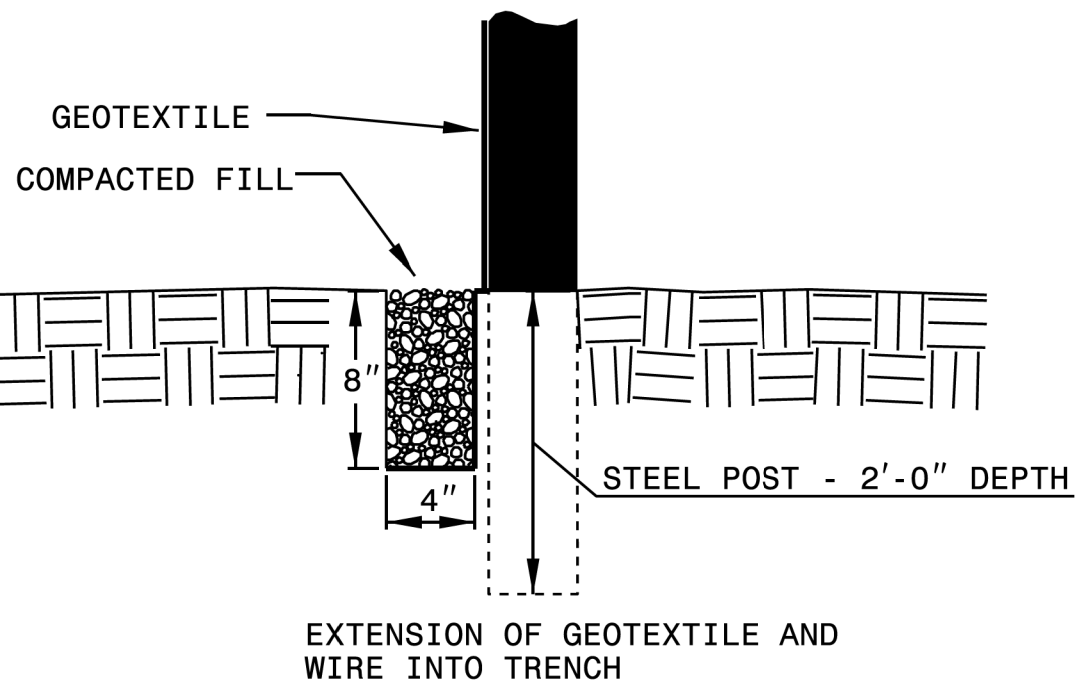
Rock Filter Dam

Not to Scale



NOTES

USE GEOTEXTILE A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE POSTS AND WIRE AS DIRECTED.
USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 5 LINE WIRES WITH 12" VERTICAL SPACING.
PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.
FOR MECHANICAL SLICING METHOD INSTALLATION, GEOTEXTILE SHALL BE A MAXIMUM OF 18" ABOVE GROUND SURFACE.



Temporary Silt Fence

Not to Scale

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE B

SHEET 1 OF 1
1634.02

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

M-0572G

WP2R-3.1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCY COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

INCOMPLETE PLANS
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ROADWAY DESIGN UNIT

CANE RIVER
STREAM PLAN SUBMITTAL

Erosion Control Details
Segment 3 Plans

Revisions

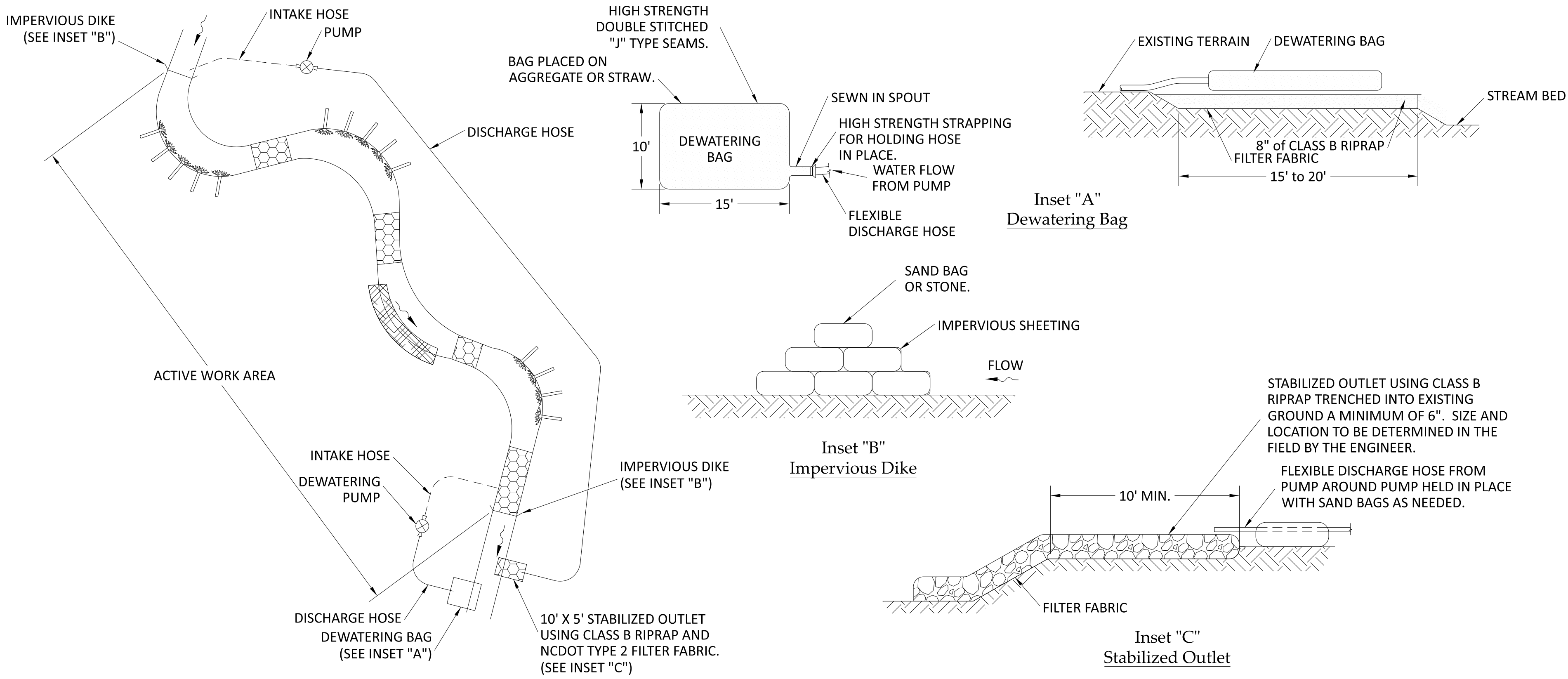
Date: 10/01/2025

Job Number: M-0572G

Project Engineer: JJK

Drawn By: KEB, JET

Checked By: JJK



Plan View

Pump Around System

Not to Scale

- NOTES:
1. PROVIDE STABILIZED OUTLET TO STREAMBED.
 2. PLACE BAG ON FLAT GROUND OR STAKE AROUND IT TO PREVENT IT ROLLING DOWNHILL.

NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

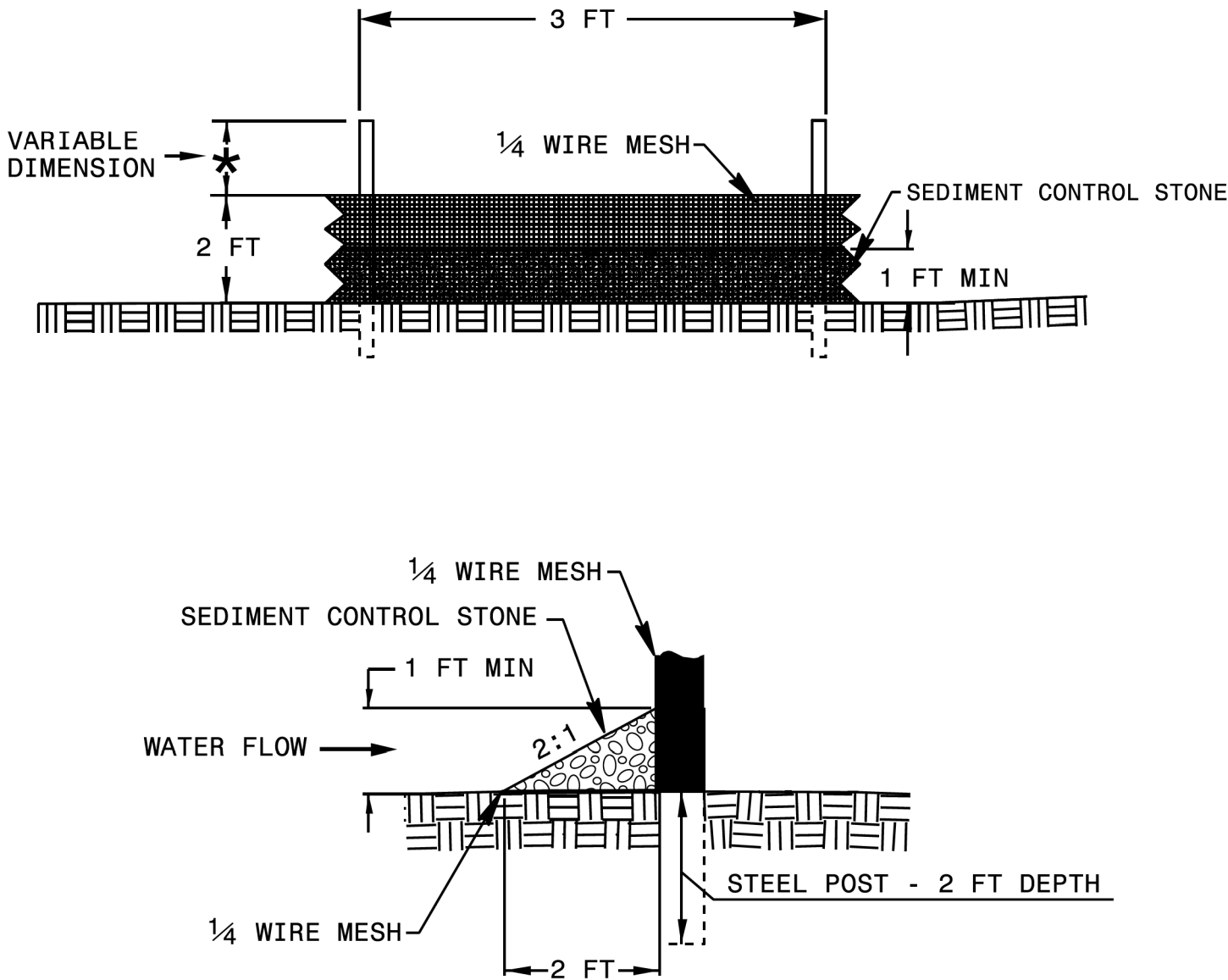
USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH 1/4 INCH MESH OPENINGS.

INSTALL 5 FT. SELF FASTENER ANGLE STEEL POST 2 FT. DEEP MINIMUM.

ATTACH HARDWARE CLOTH TO POSTS WITH WIRE STAPLE OR OTHER ACCEPTABLE METHODS.

SPACE POSTS A MAXIMUM OF 3 FT.

FOR INSTALLATION BETWEEN SECTIONS OF SILT FENCE, EXTEND SEDIMENT CONTROL STONE A MINIMUM OF 12" ON EACH SIDE OF SPECIAL SEDIMENT CONTROL FENCE SECTION.



Special Sediment Control Fence

Not to Scale

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE

SHEET 1 OF 1
1606.01

M-0572G
WP2 R-3.2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY
ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

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JMT
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Charlotte NC, 28217
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SUMMERS-TAYLOR
SEMA | JMT
CONSULTING GROUP

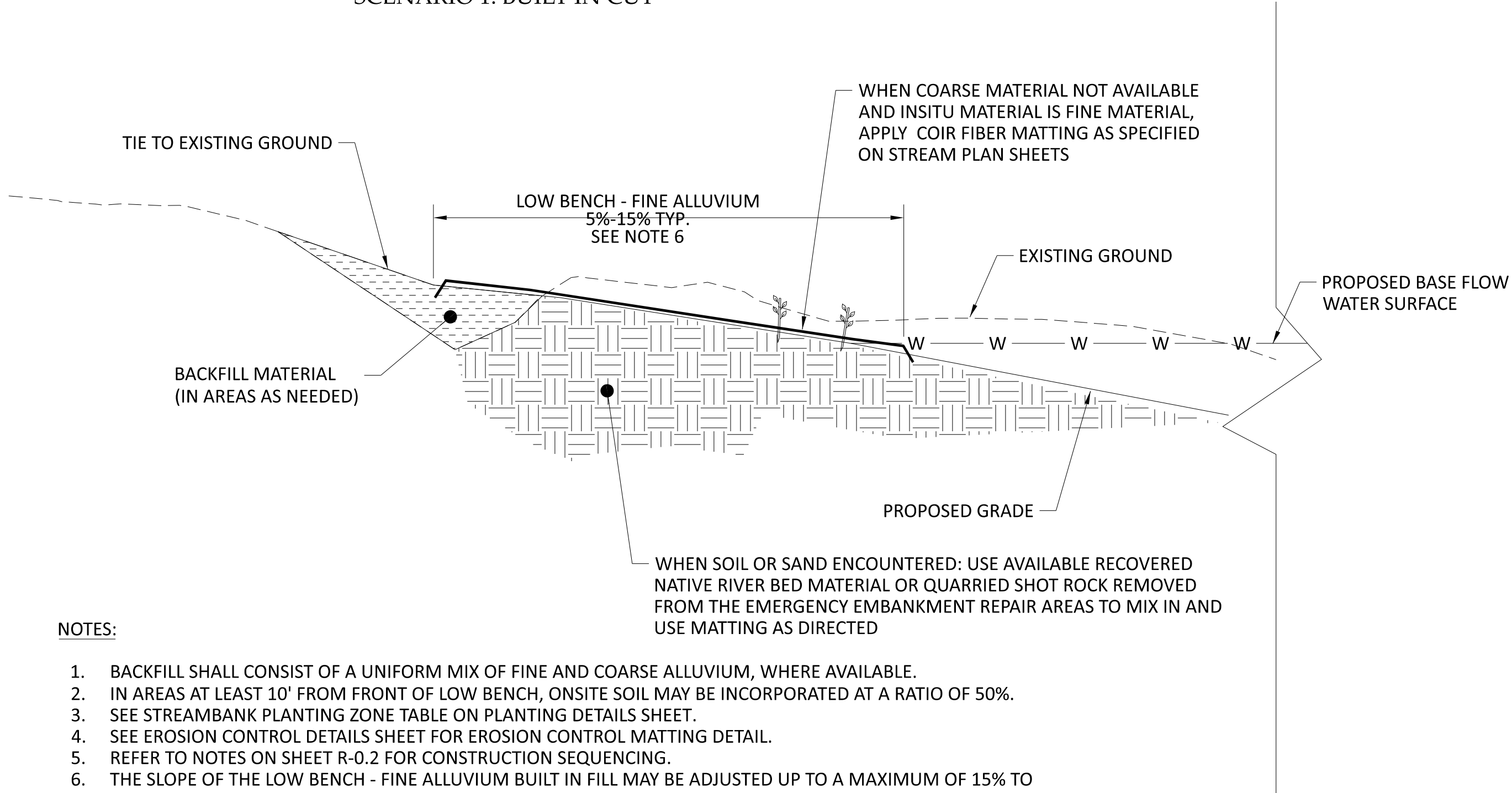
CANE RIVER
STREAM PLAN SUBMITTAL

Revisions

Date: 10/01/2025
Job Number: M-0572G
Project Engineer: JJK
Drawn By: KEB, HET
Checked By: JJK

Erosion Control Details
Segment 3 Plans

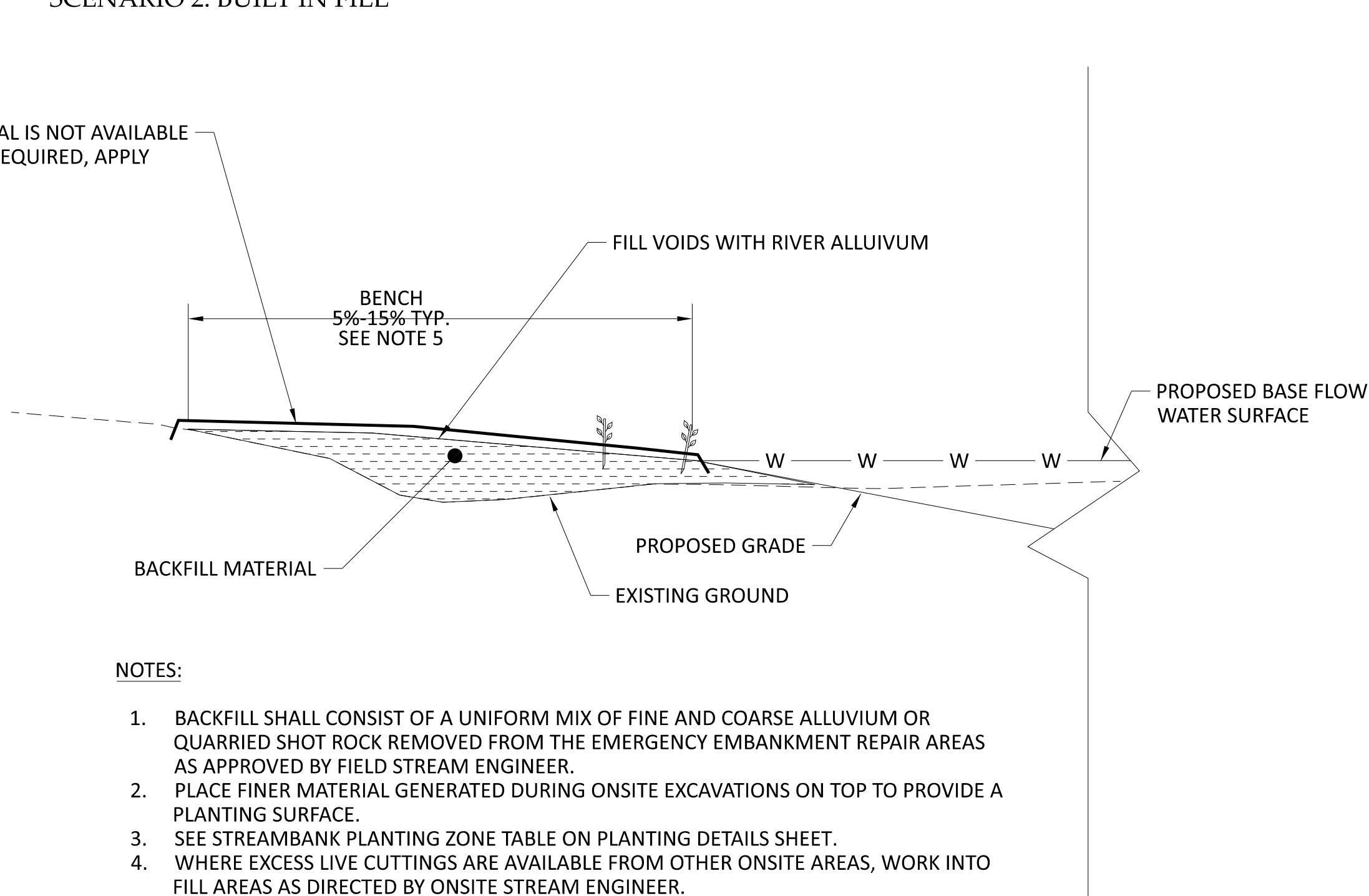
SCENARIO 1: BUILT IN CUT



NOTES:

1. BACKFILL SHALL CONSIST OF A UNIFORM MIX OF FINE AND COARSE ALLUVIUM, WHERE AVAILABLE.
2. IN AREAS AT LEAST 10' FROM FRONT OF LOW BENCH, ONSITE SOIL MAY BE INCORPORATED AT A RATIO OF 50%.
3. SEE STREAMBANK PLANTING ZONE TABLE ON PLANTING DETAILS SHEET.
4. SEE EROSION CONTROL DETAILS SHEET FOR EROSION CONTROL MATTING DETAIL.
5. REFER TO NOTES ON SHEET R-0.2 FOR CONSTRUCTION SEQUENCING.
6. THE SLOPE OF THE LOW BENCH - FINE ALLUVIUM BUILT IN FILL MAY BE ADJUSTED UP TO A MAXIMUM OF 15% TO HELP BALANCE EARTHWORK. WORK WITH STREAM ENGINEER TO DETERMINE WHERE SLOPES WILL BE INCREASED - MAINTAIN CONSISTENCY AND SMOOTH TRANSITIONS.

SCENARIO 2: BUILT IN FILL

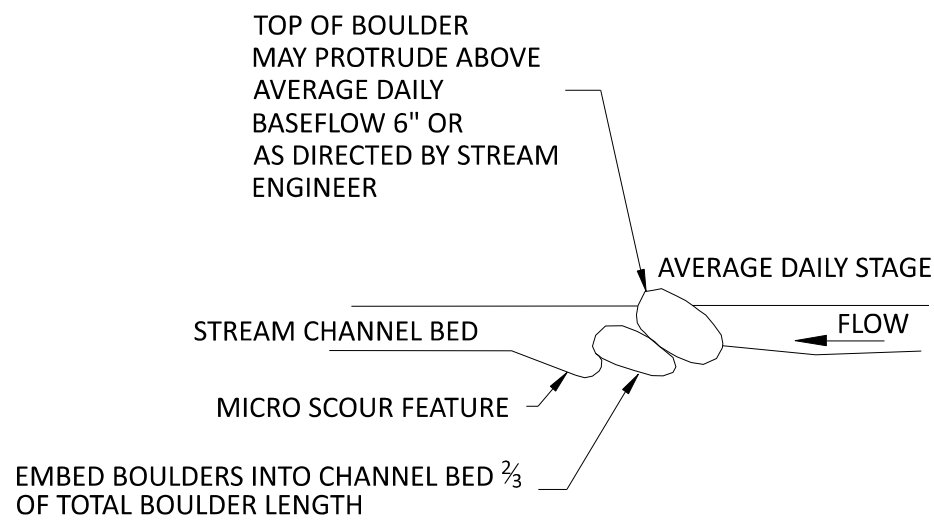


NOTES:

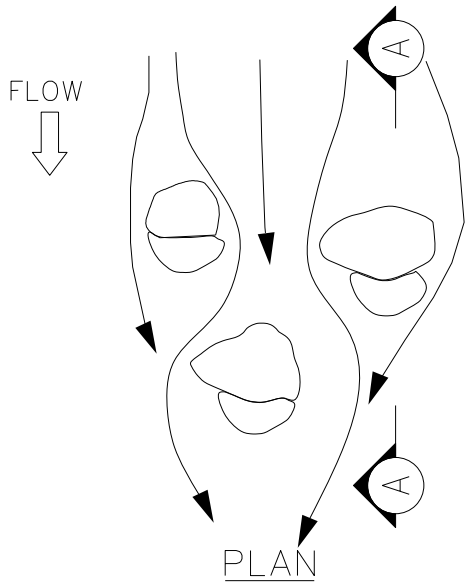
1. BACKFILL SHALL CONSIST OF A UNIFORM MIX OF FINE AND COARSE ALLUVIUM OR QUARRIED SHOT ROCK REMOVED FROM THE EMERGENCY EMBANKMENT REPAIR AREAS AS APPROVED BY FIELD STREAM ENGINEER.
2. PLACE FINER MATERIAL GENERATED DURING ONSITE EXCAVATIONS ON TOP TO PROVIDE A PLANTING SURFACE.
3. SEE STREAMBANK PLANTING ZONE TABLE ON PLANTING DETAILS SHEET.
4. WHERE EXCESS LIVE CUTTINGS ARE AVAILABLE FROM OTHER ONSITE AREAS, WORK INTO FILL AREAS AS DIRECTED BY ONSITE STREAM ENGINEER.
5. REFER TO NOTES ON SHEET R-0.2 FOR CONSTRUCTION SEQUENCING.
6. THE SLOPE OF THE BENCH BUILT IN FILL MAY BE ADJUSTED UP TO A MAXIMUM OF 15% TO HELP BALANCE EARTHWORK. WORK WITH STREAM ENGINEER TO DETERMINE WHERE SLOPES WILL BE INCREASED - MAINTAIN CONSISTENCY AND SMOOTH TRANSITIONS.

LOW BENCH - FINE ALLUVIUM

NOT TO SCALE



SECTION A-A

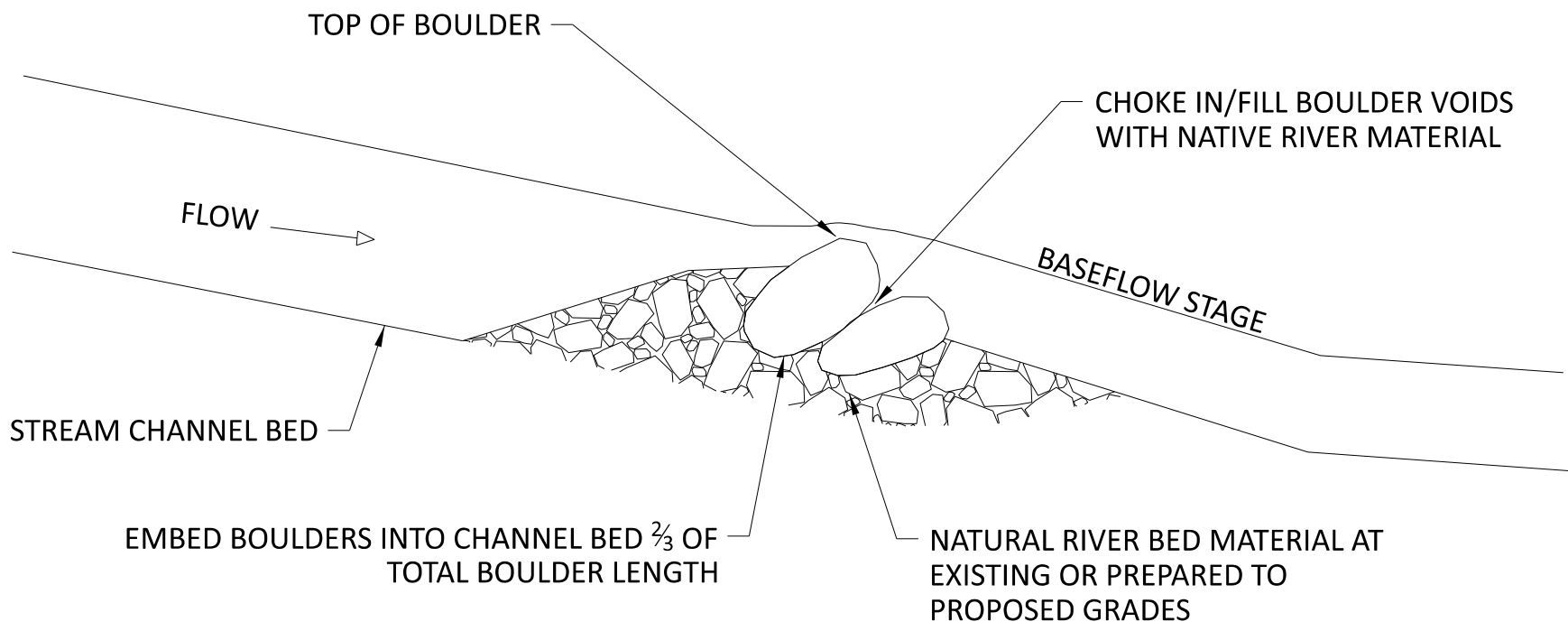


NOTES:

1. BOULDER SIZE MUST BE A MINIMUM OF 3' L X 2' W X 2' H
2. BOULDERS SHOULD BE SHINGLED TO CREATE CONTACT BETWEEN ROCKS
3. MUST BE FIELD FIT, CONFIGURATION AND NUMBER MAY VARY
4. BOULDERS ARE NOT TO BE PLACED IN A STRAIGHT LINE

BOULDER CLUSTER

NOT TO SCALE



TRANSVERSE BAR STRUCTURE TYPICAL SECTION

NOT TO SCALE

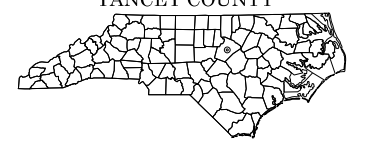
NOTES:

1. BOULDER SIZE MUST BE BE MINIMUM OF 3' L X 2' W X 2' H
2. BOULDERS SHOULD BE SHINGLED TO CREATE CONTACT BETWEEN ROCKS

M-0572G

WP2 R-4.1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

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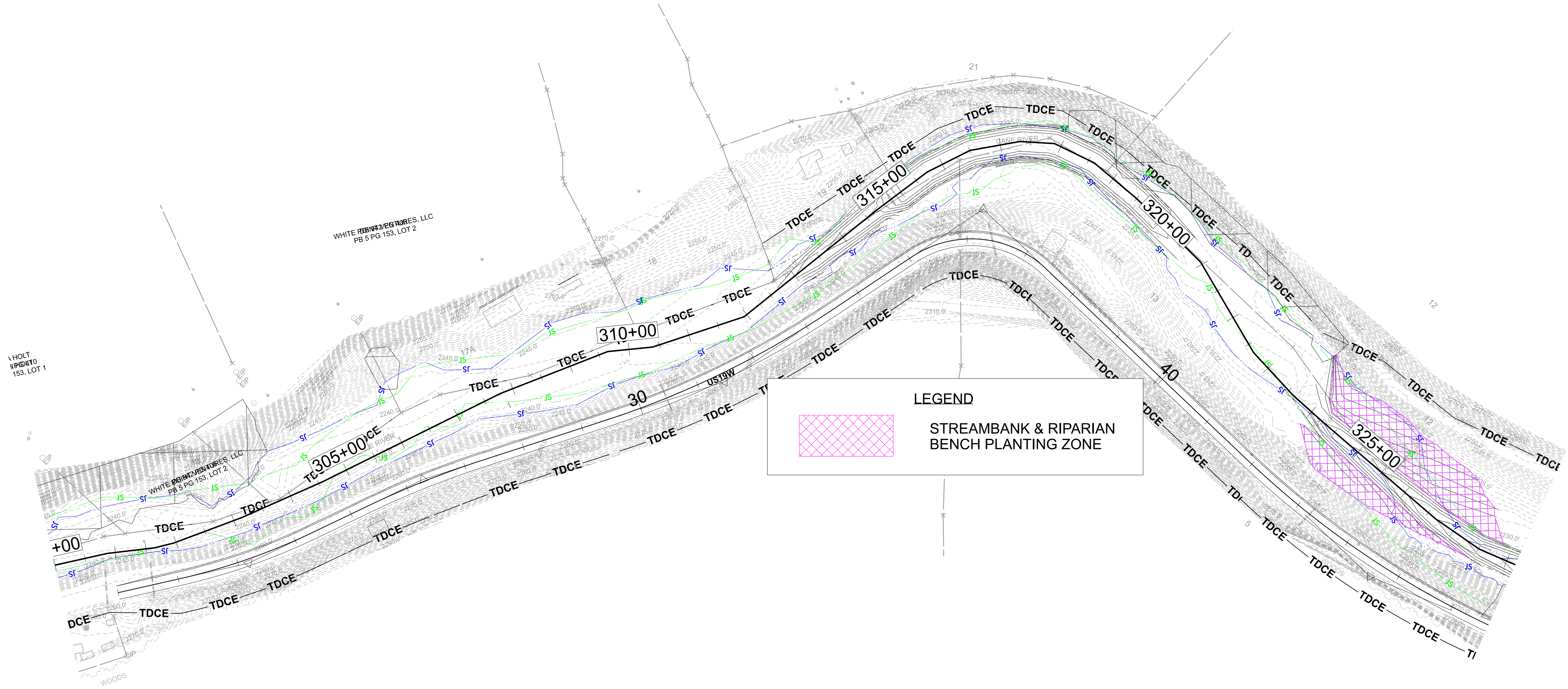


CANE RIVER
STREAM PLAN SUBMITTAL

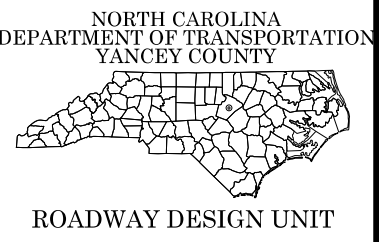
Restoration Practice Details
Segment 3 Plans

Revisions									
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Date:	10-01-2025
Job Number:	M-0572G
Project Engineer:	JRK
Drawn By:	KEB, JET
Checked By:	JRK



M-0572G	
WP2	R-5.1



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ENGINEER

HYDRAULICS
ENGINEER

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CANE RIVER
STREAM PLAN SUBMITTAL

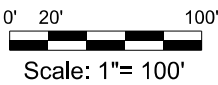
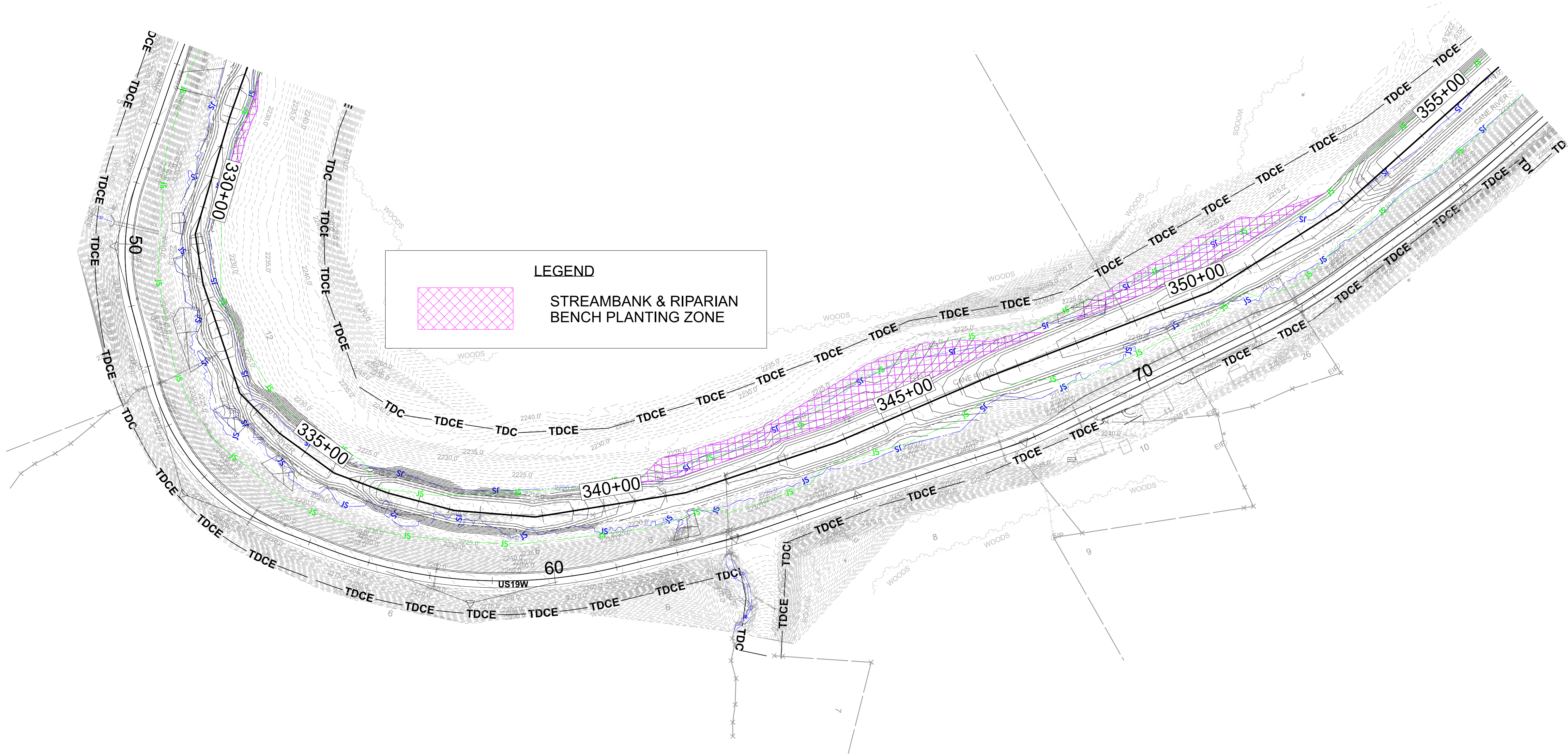
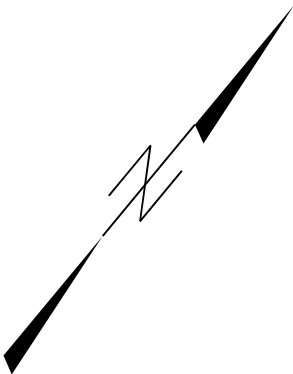
Planting Plan
Segment 3 Plans

Revisions									

Date:	11/14/2023
Job Number:	M-0572G
Project Location:	JK
Drawn By:	ASB/HFL
Checked By:	JK

Revisions									
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Date:	11/14/2023
Job Number:	M-0572G
Project Name:	JK
Drawn By:	ASB/HPL
Checked By:	JK

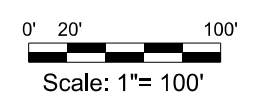
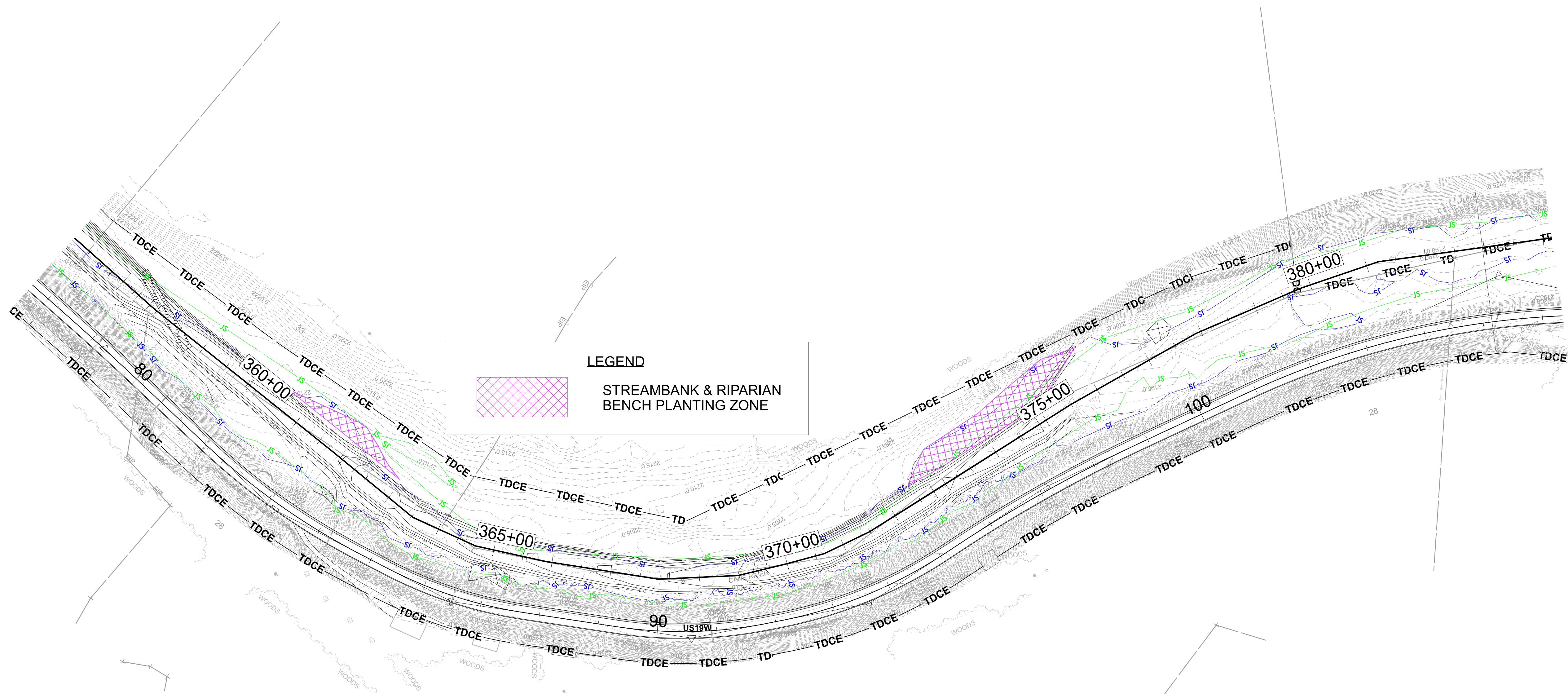


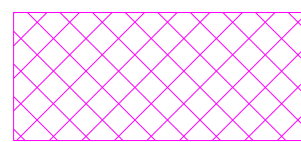
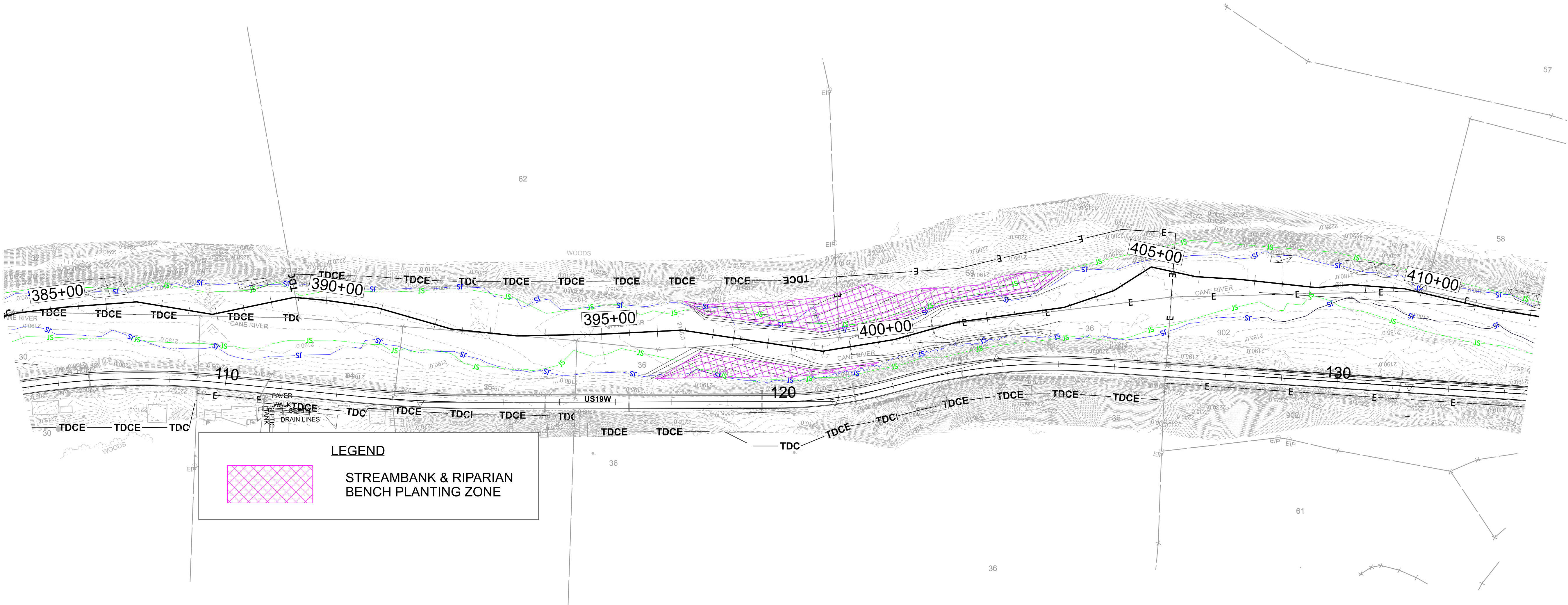
CANE RIVER
STREAM PLAN SUBMITTAL

Planting Plan Segment 3 Plans

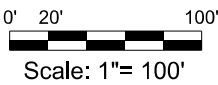
NAME: _____

Job Number:	M-0572G
Project Engineer:	JK
Drawn By:	KEB, HET
Checked By:	JK





LEGEND
STREAMBANK & RIPARIAN
BENCH PLANTING ZONE



M-0572G

WP2 | R-5.4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
YANCEY COUNTY

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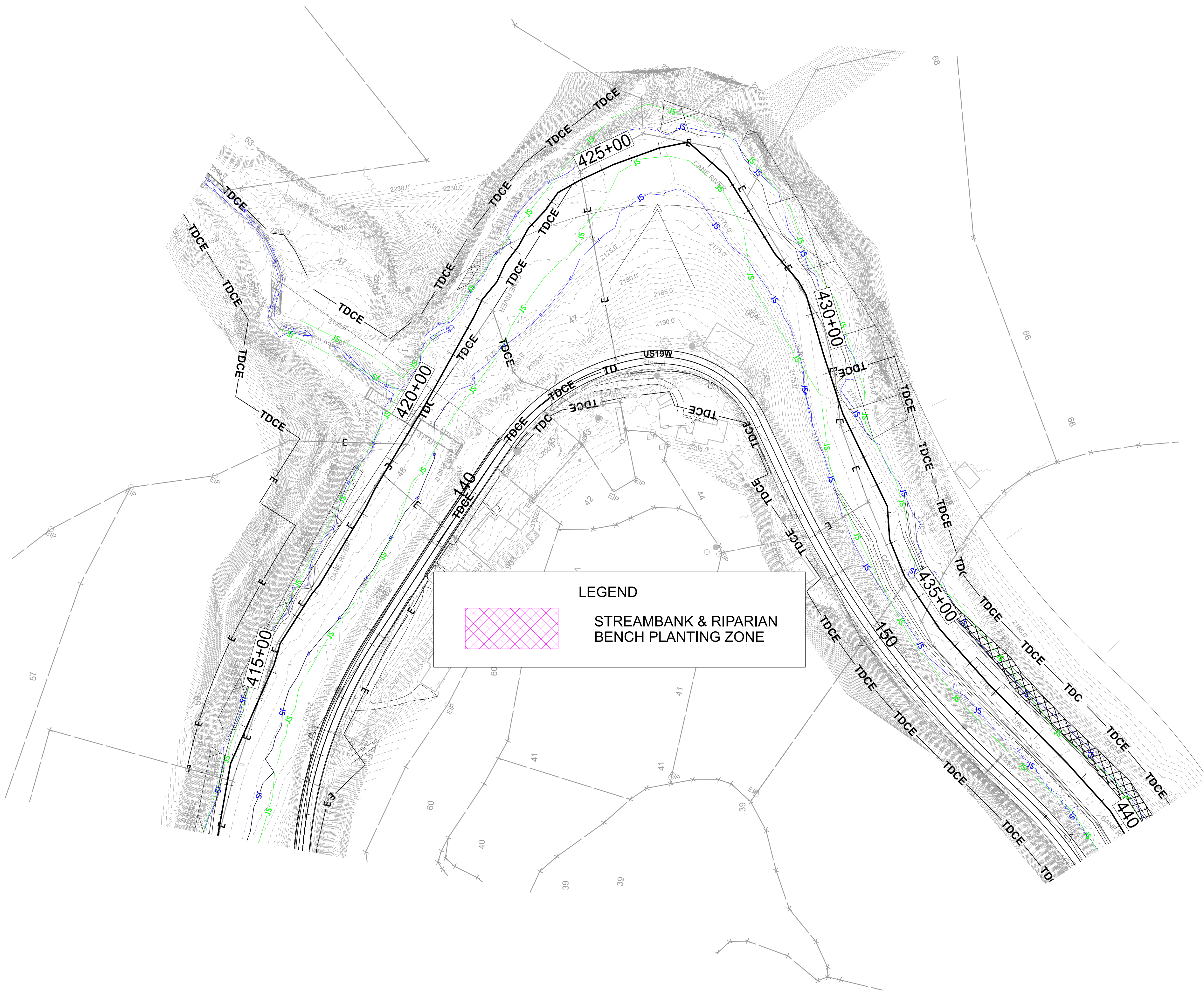


CANE RIVER
STREAM PLAN SUBMITTAL

Planting Plan
Segment 3 Plans

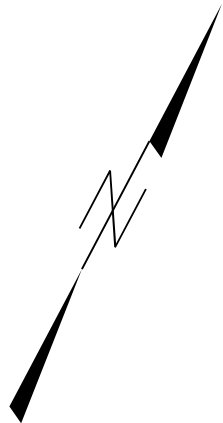
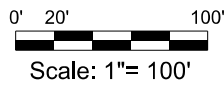
Revisions	

Date:	11/14/2023
Job Number:	M-0572G
Project Name:	JK
Drawn By:	ASB
Checked By:	JK



LEGEND

STREAMBANK & RIPARIAN
BENCH PLANTING ZONE



M-0572G

WP2R-5.5

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FAYAT COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN
ENGINEER

HYDRAULICS
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SEMA | JMT

CANE RIVER
STREAM PLAN SUBMITTAL

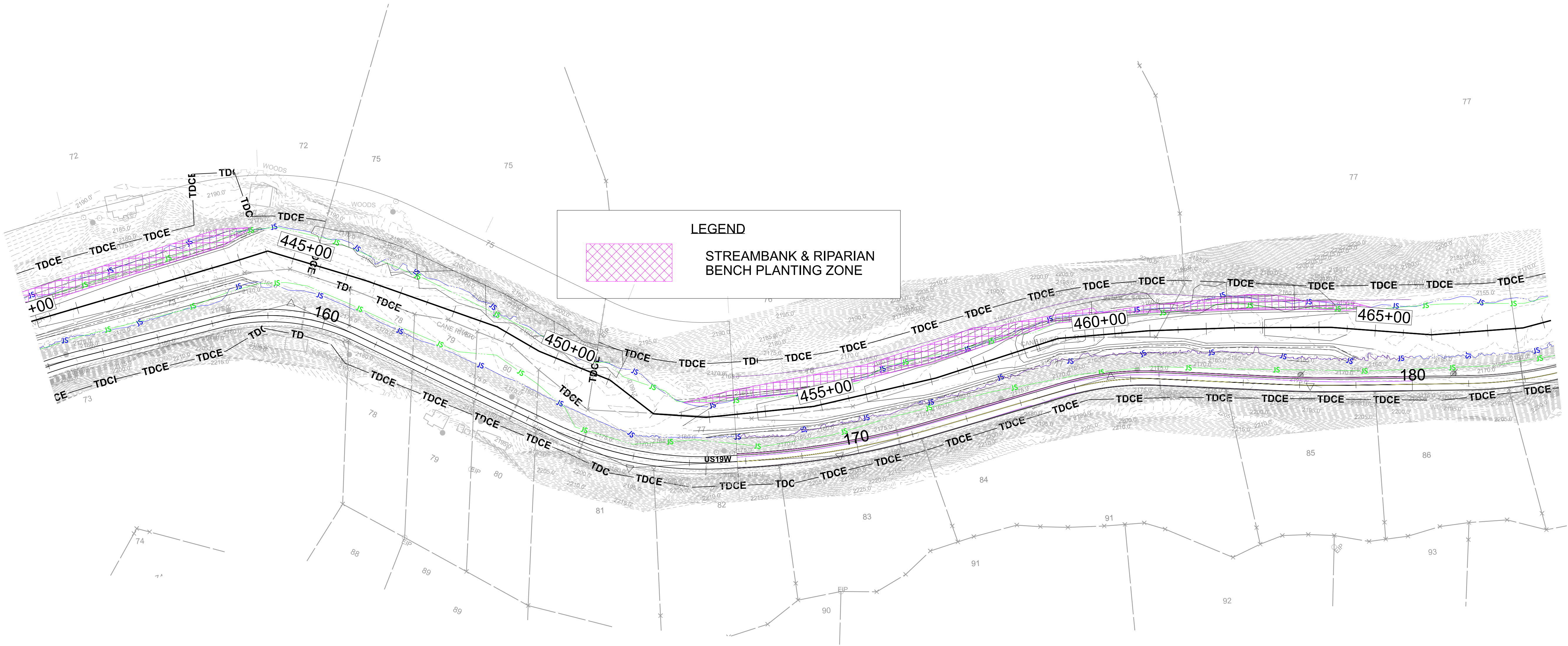
Planting Plan
Segment 3 Plans

Revisions	

Date:	11/14/2023
Job Number:	M-0572G
Project Name:	JK
Drawn By:	ASB
Checked By:	JK

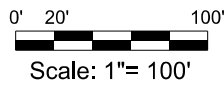
Revisions									

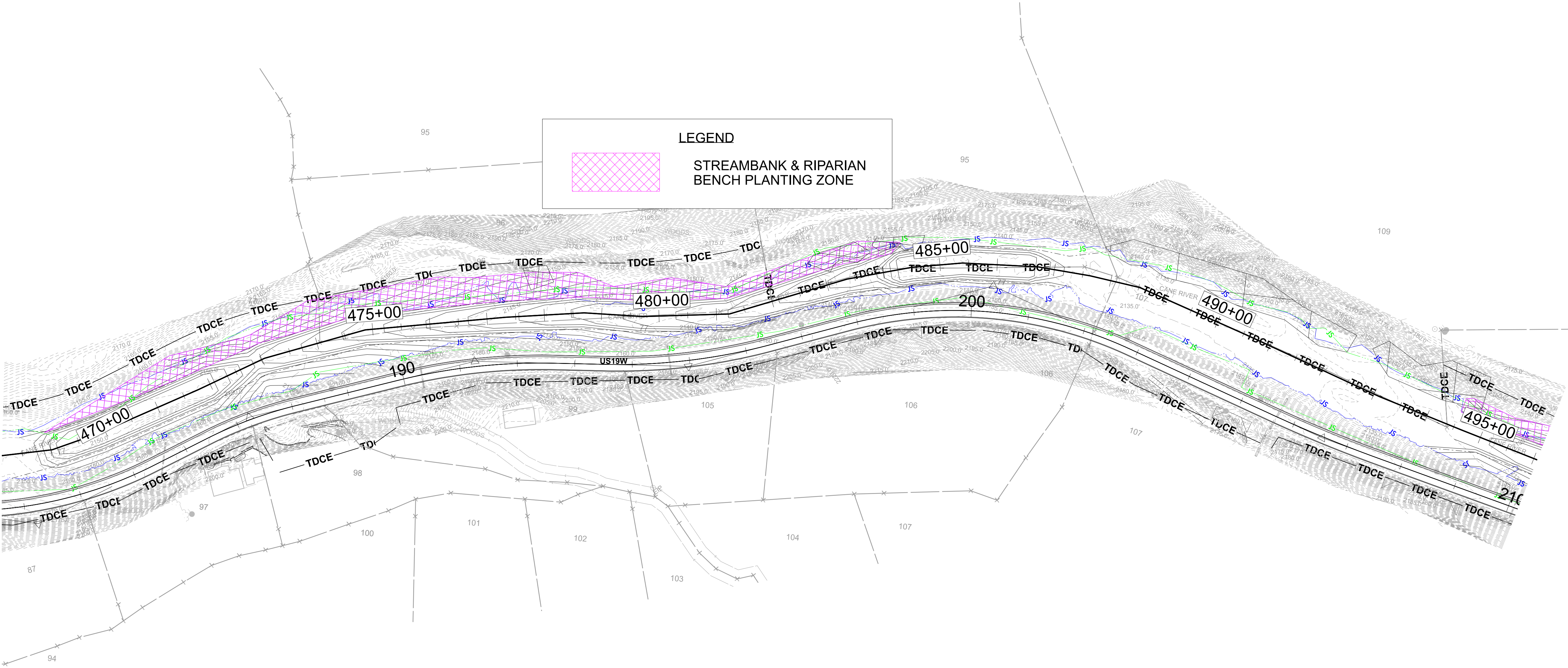
Date:	11/14/2023
Job Number:	M-0572G
Project Name:	JK
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Checked By:	JK



LEGEND

STREAMBANK & RIPARIAN
BENCH PLANTING ZONE





M-0572G

WP2 | R-5.7

NORTH CAROLINA
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YANCEY COUNTY

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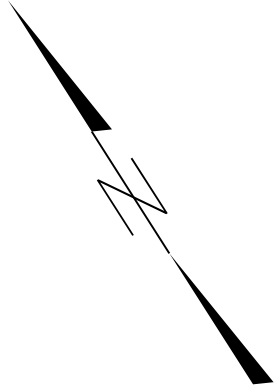
CANE RIVER
STREAM PLAN SUBMITTAL

Planting Plan
Segment 3 Plans

Revisions

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Date:	11/14/2023
Job Number:	M-0572G
Project Name:	JK
Drawn By:	ASB
Checked By:	JK



M-0572G

WP2 | R-5.8

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FANCY COUNTY

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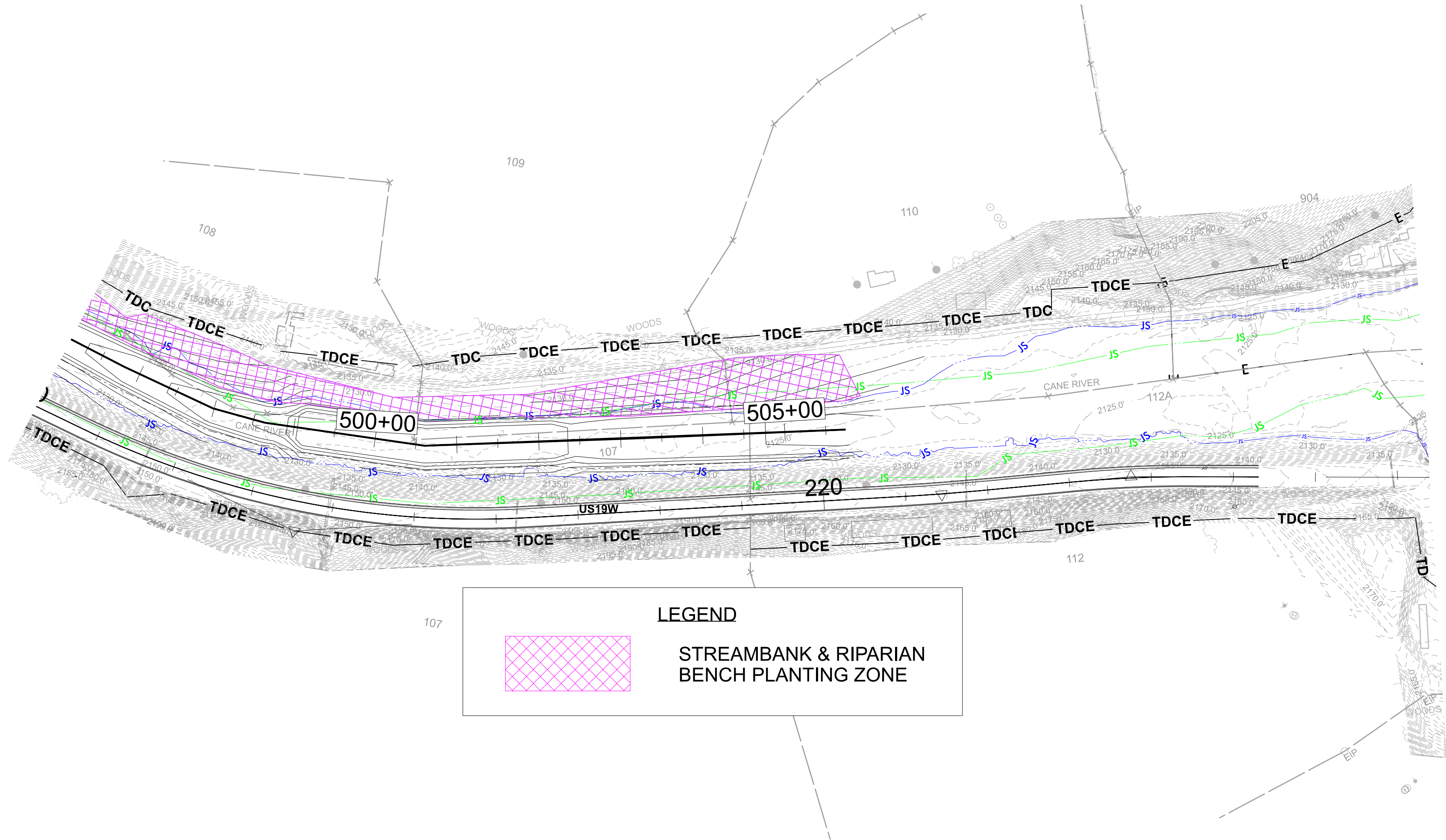
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CANE RIVER
STREAM PLAN SUBMITTAL

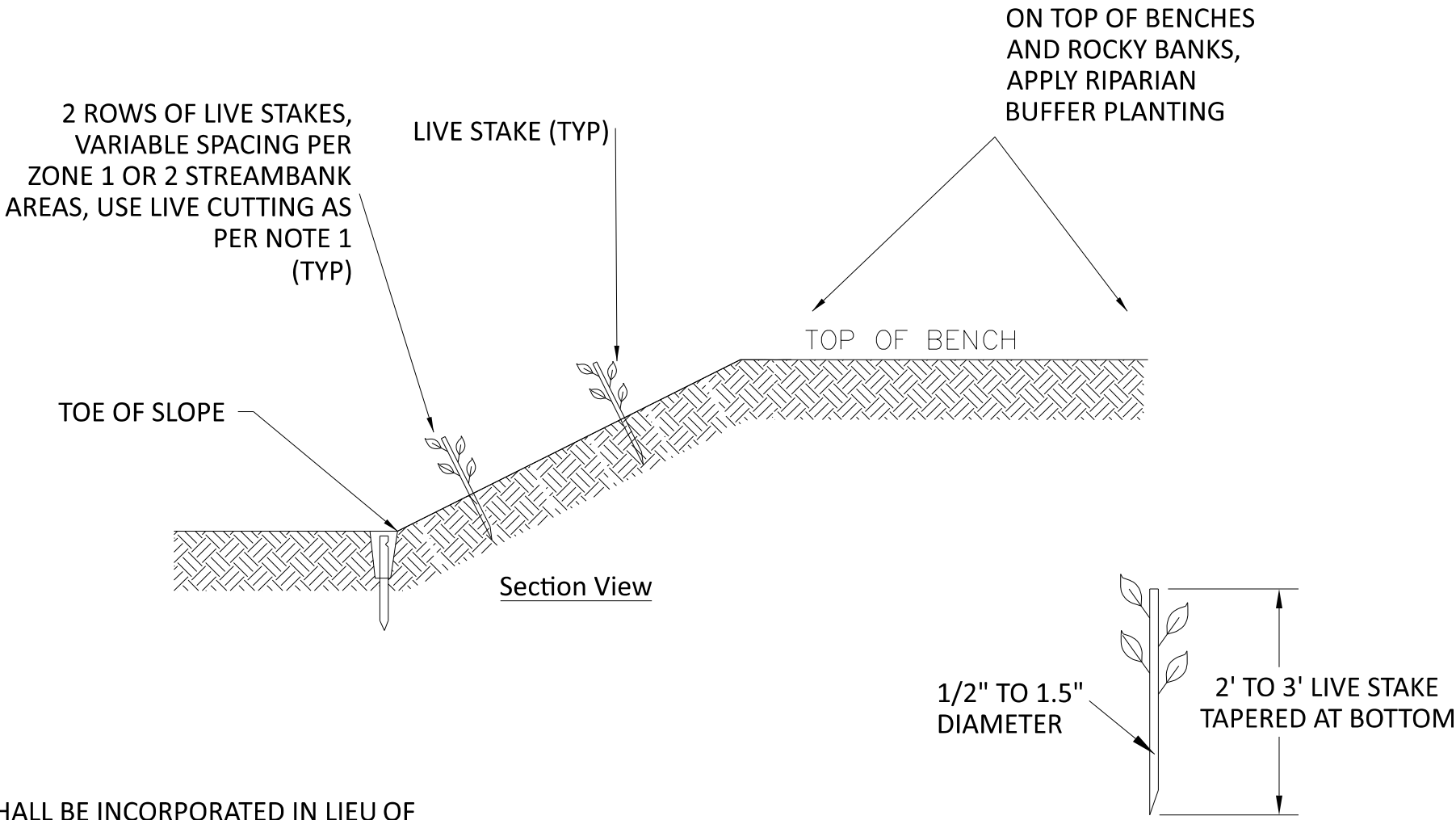
Planting Plan
Segment 3 Plans

Revisions	
Date:	11/14/2023
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Streambank & Riparian Bench Planting Zone- Cane River							
Live whips (if final preparation during dormant season) or Live Stakes (if final preparation during growing season)							
Species	Common Name	Live Whip Spacing	Live Stake Spacing	Size	Stratum	Wetland Indicator Status	% of Stems
Cornus amonmum	Silky Dogwood	1' x 2 rows	3' x 2 rows	0.5"-1.5" cal.	Subcanopy	FACW	10%
Salix sericea	Silky Willow	1' x 2 rows	3' x 2 rows	0.5"-1.5" cal.	Subcanopy	OBL	50%
Cephalanthus occidentalis	Buttonbrush	1' x 2 rows	3' x 2 rows	0.5"-1.5" cal.	Shrub	OBL	10%
Physocarpus opulifolius	Ninebark	1' x 2 rows	3' x 2 rows	0.5"-1.5" cal.	Shrub	FACW	10%
Salix nigra	Black Willow	1' x 2 rows	3' x 2 rows	0.5"-1.5" cal.	Canopy	OBL	20%
							100%

- NOTE:
- Bench Planting - Riparian Buffer Planting zone bare roots shall be applies to the flat benches in this zone. Whips and livestales in the table above are for sloping and top of bank locations adjacent to the base flow channel.
 - Fascine, where proposed perpendicular to stream on benches, shall be a mix of at least 3 livestake species from streambank planting zone species list.



- NOTE:
- LIVE CUTTINGS SHALL BE INCORPORATED IN LIEU OF LIVESTAKING WHEN CONSTRUCTING FINAL BENCH PREPARATION IN DORMANT SEASON.
 - LIVE CUTTINGS MAY BE USED IN AREAS THAT ARE CONSTRUCTED IN FILL AT THE CONTRACTORS CONVENIENCE IN LIEU OF LIVESTAKING BUT IS NOT REQUIRED.
 - LIVE STAKING SHOULD BE COMPLETED DURING THE DORMANT SEASON.

- JOINT PLANTING:
- WHEN LIVESTAKING IS NECESSARY, USE REBAR OR OTHER TECHNIQUE TO FORM PILOT HOLE. PILOT HOLE SHALL BE TO REQUIRED LIVE STAKING DEPTH AND SHOULD BE OF SIMILAR TO EQUAL DIAMETER AS LIVESTAKE TO PROMOTE GOOD SOIL CONTACT.

Live Stake Detail

Live Staking & Live Whips

Not to Scale

M-0572G

WPI | R-5.9

NORTH CAROLINA
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YANCEY COUNTY



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CANE RIVER AND BENT CREEK
STREAM PLAN SUBMITTAL

Planting Details
Segment 3 Plans

Revisions

Date: 10-01-2025

Job Number: M-0572G

Project Engineer: JJK

Drawn By: KEB, HET

Checked By: JJK