

Project Submittal Interim Form

Updated December 4, 2023



*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Project Type: *

- ☐ For the Record Only (Courtesy Copy)
- ☐ New Project
- ☒ Modification/New Project with Existing ID
- ☐ More Information Response
- ☐ Other Agency Comments
- ☐ Pre-Application Submittal
- ☐ Re-Issuance/Renewal Request
- ☐ Stream or Buffer Appeal

Project Contact Information

Name: Jason Dilday
Who is submitting the information?

Email Address: * jldilday1@ncdot.gov

Project Information

Existing ID #: *

20230935
20170001 (no dashes)

Existing Version: *

1
1

Project Name: * Replacement of Bridge 7 over Alligator River on US 64

Is this a public transportation project? *

- ☒ Yes
- ☐ No

Is this a DOT project? *

- ☒ Yes
- ☐ No

Is the project located within a NC DCM Area of Environmental Concern (AEC)? *

- ☒ Yes ☐ No ☐ Unknown

Does this project involve maintenance dredging funded by the Shallow Draft Navigation Channel Dredging and Aquatic Weed Fund, electric generation projects located at an existing or former electric generating facility, or involve the distribution or transmission of energy or fuel, including natural gas, diesel, petroleum, or electricity? *

- ☐ Yes ☒ No

Is this project connected with ARPA funding? *

- ☐ Yes ☒ No

TIP#:

HB-0001

WBS#:

49475.1.1

(Applies to DOT projects only)

County (ies) *

Tyrrell

Dare

Please upload all files that need to be submitted.[Click the upload button or drag and drop files here to attach document](#)

HB-0001 Individual Dare_Tyrrell_Permit

16.31MB

Mod_December 2024.pdf

[Only pdf or kmz files are accepted.](#)**Describe the attachments or add comments:**

This is a request for modification of the existing USACE Section 404 Standard Individual Permit and the North Carolina Division of Water Resources (NCDWR) Water Quality Certification to provide updated impact amounts as they relate to the temporary work trestle, staging areas, bent installation, and a temporary access road. An update to how compensatory mitigation will be covered for the project is also included. Additionally, a CAMA Major Development Permit modification is being pursued from the North Carolina Division of Coastal Management (DCM) via their online permit application portal (which will include this cover letter). Attached are the cover letter, revised permit drawings showing trestle, staging area, and access road locations and impacts, and the final on-site mitigation plans.

* ☒ By checking the box and signing box below, I certify that:

- I, the project proponent, hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.
- I, the project proponent, hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- I agree that submission of this online form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the online form.

Signature: ***Submittal Date:**

12/19/2024



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. R. "JOEY" HOPKINS
SECRETARY

December 19, 2024

U.S. Army Corps of Engineers
Washington Regulatory Office
2407 West Fifth Street
Washington, NC 27889

N.C. Division of Water Resources
Transportation Permitting Branch
1617 Mail Service Center
Raleigh NC 27699-1617

N.C. Div. of Coastal Mgmt
943 Washington Square Mall
Washington, NC 7889

ATTN: Mr. Kyle Barnes
NCDOT Coordinator

Mr. Garcy Ward
NCDOT Coordinator

Mr. Lee Cannady
NCDOT Coordinator

SUBJECT: **Application for Permit Modification of Section 404/Section 10 Standard Individual Permit, Section 401 Individual Water Quality Certification, and CAMA Major Development Permit** for the Proposed Replacement of the Lindsay C. Warren Bridge (Tyrrell County Bridge No. 7) on U.S. 64 over the Alligator River/Atlantic Intracoastal Waterway in Tyrrell and Dare Counties, North Carolina. STIP Project No. HB-0001; Federal Aid Project No. NHPB-0001; USACE Action ID No. SAW-2021-01091.

REFERENCE: USACE Section 404 Authorization SAW-2021-01091, issued February 9, 2024. NCDWR Water Quality Certification Number 20230935, issued October 20, 2023. CAMA Major Development Permit, Permit No. 136-23, issued November 30, 2023, modified January 19, 2024. USCG Bridge Permit 3-24-5, issued October 30, 2024.

Dear Sirs:

The North Carolina Department of Transportation (NCDOT) proposes to replace the Lindsay C. Warren Bridge (Tyrrell County Bridge No. 7) on U.S. 64 over the Alligator River portion of the Atlantic Intracoastal Waterway in Tyrrell and Dare Counties, North Carolina (at Atlantic Intracoastal Waterway Mile 84.2). The project will replace the existing 2.83-mile-long swing-span drawbridge with a modern 3.32-mile, two-lane, fixed-span, high-rise bridge north of the existing alignment. The new structure will be comprised of either driven piles or drilled piers, Florida I-beam concrete girders, concrete deck panels, and a drivable wearing surface will provide a vertical navigable channel clearance of 65 feet and a navigational channel horizontal clearance of 140 feet.

An application was submitted for the project on June 27, 2023, and a United States Army Corps of

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH, NC 27699-1598

Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Engineers (USACE) Section 404 Standard Individual Permit was issued on February 9, 2024, a Section 401 Individual Water Quality Certification was issued on October 20, 2023, and a Coastal Area Management Act (CAMA) Major Development Permit was issued on November 30, 2023. Since then, a CAMA permit modification has been submitted (on January 5, 2024) and approved (on January 27, 2024), which included the addition of multiple test piles, as well as installation of mooring piles for the test pile study and bridge construction.

The purpose of this letter is to request modification of the existing USACE Section 404 Standard Individual Permit and the North Carolina Division of Water Resources (NCDWR) Water Quality Certification to provide updated impact amounts as they relate to the temporary work trestle, staging areas, bent installation, and a temporary access road. An update to how compensatory mitigation will be covered for the project is also included. Additionally, a CAMA Major Development Permit modification is being pursued from the North Carolina Division of Coastal Management (DCM) via their online permit application portal (which will include this cover letter). In addition to this letter, revised permit drawings showing trestle, staging area, and access road locations and impacts, and the final on-site mitigation plans, are included in this submittal.

The current design prepared by NCDOT will result in jurisdictional impacts to the following:

Table 1: Permanent and Temporary Jurisdictional Impacts, Permit Drawings

Resources		Area (acres)	Notes
CAMA Resources (acres)			
Estuarine Public Trust Waters		0.0	
Coastal Wetlands		0.054	Includes Permanent Fill and Mechanized Clearing
Resources	Impact Type	Area (acres)	Notes
Non-CAMA Resources (acres)			
Wetlands(excludes Coastal Wetlands)	Permanent Impact	9.049	Includes Fill and Excavation
	Mechanized Clearing	1.748	
	Temporary Fill	1.04	
	Hand Clearing	4.12	
Surface Waters	Permanent Impact	0.306	Included Ponds, Tributaries, open water impacts to Alligator River, and other open waters
	Temporary Impact	0.064	

Impacts to Jurisdictional Resources

Final proposed impacts to jurisdictional wetlands and surface waters associated with road and bridge construction for HB-0001 are summarized in Tables 2 and 3, respectively. None of the surface water impacts within Table 1 are within CAMA features. All revisions to impacts are colored red on the attached impact summary sheet. Description of revisions at each applicable site are provided beneath the tables.

Table 2. Surface Water Impacts

Permit Drawing Site Number	NRTR Label	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Mitigation Required³
1	TF	Tributary	---	0.018	No
3	PA	Pond	0.009	0.010	No
12	TC	Tributary	0.139	0.012	No
16	TB	Tributary	0.008	0.017	No
17	TD	Tributary	0.010	0.006	No
18	Alligator River	Perennial	0.136	---	No
19	Alligator River	Perennial	0.004	---	No
20	TC	Tributary	---	0.001	No
Total			0.306	0.064	

Table 3. Wetland Impacts¹

Permit Drawing Site Number	NRTR Label	NCWAM Type	Riparian or Non-riparian	Section 404 or Section 404/CAMA	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Excavation (ac.)	Mechanized Clearing (ac.)	Hand Clearing (ac.)	Mitigation Required (ac.)
1	WD	Riverine Swamp Forest/Tidal Freshwater Marsh	Riparian	Section 404	0.010	---	---	0.020	---	0.03
1	WC	Tidal Freshwater Marsh	Riparian	Section 404/CAMA	0.026	---	---	0.028	---	0.054
2	WB	Riverine Swamp Forest	Riparian	Section 404	0.061	---	---	0.057	0.282	0.118
3	WB	Riverine Swamp Forest	Riparian	Section 404	0.142	---	---	---	0.052	0.142
4	WA	Riverine Swamp Forest	Riparian	Section 404	0.512	---	---	0.095	0.145	0.607
5	WA	Riverine Swamp Forest	Riparian	Section 404	2.77	---	---	0.533	0.840	3.303
6	WA	Riverine Swamp Forest	Riparian	Section 404	0.257	---	---	0.076	---	0.333
7	WD	Riverine Swamp Forest/Tidal Freshwater Marsh	Riparian	Section 404	0.002	---	---	0.021	---	0.023
8	WA	Riverine Swamp Forest	Riparian	Section 404	1.498	---	---	0.291	0.225	1.789
9	WA	Riverine Swamp Forest	Riparian	Section 404	---	0.714	---	---	0.390	---
10	WH	Riverine Swamp Forest	Riparian	Section 404	---	0.287	---	---	1.663	---
11	WH	Riverine Swamp Forest	Riparian	Section 404	1.361	---	---	0.283	0.201	1.644
12	WH	Riverine Swamp Forest	Riparian	Section 404	2.082	---	---	0.293	0.235	2.375
13	WH	Riverine Swamp Forest	Riparian	Section 404	0.324	---	---	0.073	0.086	0.397
15	WH	Riverine Swamp Forest	Riparian	Section 404	---	---	0.023	---	---	0.023
16	WH	Riverine Swamp Forest	Riparian	Section 404	---	---	0.002	---	---	0.002
17	WJ	Tidal Freshwater Marsh	Riparian	Section 404	0.004	---	---	0.004	---	0.008
18	WH	Riverine Swamp Forest	Riparian	Section 404	0.006	---	---	---	---	0.006
20	WH	Riverine Swamp Forest	Riparian	Section 404		0.037				
Total					9.055	1.04	0.02	1.776	4.12	10.856

¹ Rounded totals are the sum of the actual impacts.

In addition to the impacts listed in the table above, 0.01 acre of temporary fill will also occur in the hand clearing areas at Sites 3 and 12, for Erosion Control measures. This impact was not included in the original application.

Summary of Changes to Jurisdictional Impact Sites

Site 3:

- Added 0.01 acre of Temporary Fill

0.01 acre of temporary fill will occur with the hand clearing area to account for erosion control measures.

Site 8:

- Added 0.015 acre of Hand Clearing in Wetland

Site 8 will add 0.015 acre of hand clearing in wetlands, for a total of 0.225 acre. This is to accommodate construction of roadway on the western side of the project.

Site 9:

- Added 0.714 acre of Temporary Fill in Wetland
- Added 0.045 acre of Hand Clearing in Wetland

Site 9 will add 0.714 acre of temporary fill in wetland, for a total of 0.714 acre. There will also be an increase of 0.045 acre of hand clearing in wetland, for a total of 0.390 acre. This is to shift the proposed staging area on the western side of the project to be in line with the proposed work trestle, which will now be positioned south of the proposed bridge rather than north.

Site 10:

- Added 0.287 acre of Temporary Fill in Wetland
- Added 1.042 acre of Hand Clearing in Wetland

Site 10 will add 0.287 acre of temporary fill in wetland, for a total of 0.287 acre. There will also be an increase of 1.042 acre of hand clearing in wetland, for a total of 1.663 acre. This is to shift the proposed staging area on the eastern side of the project to be in line with the proposed work trestle, which will now be positioned south of the proposed bridge rather than north.

Site 11:

- Decreased Hand Clearing in Wetland by 0.251 acre

The amount of hand clearing at Site 11 has decreased by 0.251 acre, for a total of 0.201 acre.

Site 12

- Added 0.01 acre of Temporary Fill

0.01 acre of temporary fill will occur with the hand clearing area to account for erosion control measures.

Site 18:

- Decreased Permanent Fill in Wetland by 0.002 acre
- Decreased Permanent Surface Water Impacts by 0.062 acre

Impacts at Site 18 have decreased due to revision in impacts at the site. There will be 0.002 acre less of permanent fill in wetlands, for a total of 0.006 acre. There will also be 0.062 acre less of permanent surface water impacts, for a total of 0.136 acre.

Site 20:

- Added 0.037 acre of Temporary Fill Wetland
- Added 0.001 acre of Temporary Surface Water Impacts

Site 20 is a new site, which accounts for impacts associated with a temporary access road. This site adds 0.037 acre of temporary fill in wetland and 0.001 acre of temporary surface water impacts.

The overall effect of these changes is a decrease in permanent wetland fill (-0.002 acre), an increase of temporary wetland fill (+1.04 acre), an increase in hand clearing in wetlands (+0.85 acre), a decrease in permanent surface water impacts (-0.062 acre), and an increase in temporary surface water impacts (+0.001 acre).

Mitigation Options

Compensation: The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable. The proposed construction of HB-0001 will result in unavoidable impacts to 10.856 acres of wetlands (with 0.054 acres of that being within Section 404/CAMA wetlands) that will require mitigation. The wetland impacts are in the 8-digit HUC 03010205 of the Pasquotank River Basin.

Compensatory mitigation for unavoidable impacts to Section 404 and Section 404/CAMA wetlands will be provided through a combination of on-site mitigation designed by NCDOT and mitigation credits provided by the North Carolina Department of Environmental Quality (NCDEQ) – Division of Mitigation Services (DMS). Since the original application, the on-site wetland mitigation plan has been developed, which proposes to cover approximately 8.25 acres of permanent wetland impacts with coastal marsh/riparian wetland restoration. The on-site mitigation plan is attached to this application. The remainder of the compensatory mitigation required will be provided by DMS.

Regulatory Approvals

Section 404/Section 10: NCDOT request modification to the USACE Individual Section 404/Section 10 Permit as required for the above-described activities.

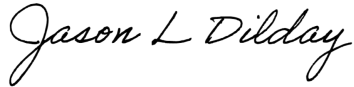
Section 401: We are requesting a modification to the Section 401 Individual Water Quality Certification from NCDWR. We are providing this application to NCDEQ, for their approval. Authorization to debit the \$767.00 Permit Application Fee from WBS Element 49475.1.1 is hereby given.

CAMA: NCDOT requests a modification to the CAMA Major Development Permit, Permit No. 136-23, to include the above-described activities. Authorization to debit the \$475.00 Permit Application Fee from WBS Element 49475.1.1 is hereby given.

A copy of this permit request and its distribution list will be posted on the NCDOT website at:
<https://connect.ncdot.gov/resources/Environmental>

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jason Dilday at jldilday1@ncdot.gov or (919) 707-6111.

Sincerely,

A handwritten signature in black ink that reads "Jason L Dilday". The signature is written in a cursive, flowing style.

Jason L. Dilday
NCDOT ECAP Eastern Region Lead

Cc: Paul Williams, NCDOT Division 1 Environmental Officer

Permit Application Report

Application ID	Application Type	Submitted	App Complete	Deadline	Decision	Expiration
PA-1653	DCM Major Permit					

Primary Applicant Information							
Applicant Type	Title	Business Name	Name	Email	Business Phone	Mobile Phone	
Business/Company		NCDOT	NCDOT	jldilday1@ncdot.gov	919-707-6111	919-707-6111	
Physical Address				Mailing Address			
Street 1	City	State	Zip	Street 1	City	State	Zip
1000 Birch Ridge Drive	Raleigh	NC	27610	1000 Birch Ridge Drive	Raleigh	NC	27610

Registered Agent Information							
Agent Type	Title	Business Name	Name	Email	Business Phone	Mobile Phone	
Business/Company		Three Oaks Engineering	Three Oaks Engineering	nancy.oberle@threeoaksengineering.com	919-732-1300		
Physical Address				Mailing Address			
Street 1	City	State	Zip	Street 1	City	State	Zip
324 Blackwell Street, Suite 1200	Durham	NC	27701	324 Blackwell Street, Suite 1200	Durham	NC	27701

Project Information						
Project Name		Project Type		Disturbed Land Area (Sq Ft/Acres)		
HB-0001 Alligator River Bridge Replacement		Public/Government		2894562 Sq. Ft. / Acres		
Is proposed project located in national registered historic district or national register listed/eligible: False						
List of previous state or federal permits for work on project tract: USACE Section 404 IP: SAW-2021-01091, Feb 9, 2024 USACE Section 404 NWP 6 & 33: SAW-2021-01901, January 26, 2024 USCG Permit 3-24-5: Oct 30, 2024 NCDWR Individual WQC: 20230935, Oct 20, 2023 CAMA Major: 136-23, Nov 30, 2023 & Jan 19, 2024						
Project Location Information						
Address	County	River Basin	Subdivision	County Parcel ID	Latitude	Longitude
N/A East Lake, NC 27953	Tyrrell				35.90013	-76.00573
Project Discharges to State Waters						
Discharge Type	Surface Runoff	Sanitary Wastewater	Industry/Commercial Effluent	Vessel Wash Down	Residential	Other
Wastewater/Stormwater Discharged Into Wetland?		Discharge Same Salinity as Receiving Waters			Is There Any Mitigation Proposed	
True		False			True	

Detailed Description of the Existing Development Located on the Property

Existing Man-Made Features:

The existing features are a roadway and associated roadway ditches and a draw bridge and associated support structures, plus driveways, residential and commercial buildings.

Existing Land Uses:

Forested, impervious surface, commercial and residential.

Existing Wastewater Treatment/Disposal:

N/A

Solid Waste/Fish Offal/Trash Disposal:

N/A

Use and Daily Operations of the Project When Complete

Proposed Development Purpose:

The purpose of the project is to replace the existing 2.83-mile-long Lindsay C. Warren Bridge (Tyrrell County Bridge Number

7), carrying US 64 across the Alligator River/Atlantic Intracoastal Waterway, with a two-lane, high-level, fixed-span bridge. The current bridge is experiencing substantial deterioration due to its age and structural deficiencies resulting in ongoing maintenance problems, jeopardizing its ability to provide a reliable connection between Columbia and Manns Harbor, Manteo, and the Outer Banks. A potential bridge malfunction or maintenance that requires the bridge to stay in the closed position for more than a short-term closure also affects reliable passage along the Atlantic Intracoastal Waterway. The existing bridge was constructed in 1960 and is classified as structurally deficient with a 31.71 rating of a possible 100.

Buildings/Facilities/Units/Structures:

Existing Lindsay Warren Bridge, US 64, Alligator River Marina, secondary roads.

Use & Daily Operations:

The roadway and the bridge carry existing US 64 traffic. The proposed bridge will continue this use on new location to the north of the existing bridge.

Construction Methodology & Equipment:

During construction, vehicular traffic will be maintained on the existing bridge; marine traffic will continue to use the existing navigation channel, and the swing span bridge will continue to function. Temporary work platforms, one on either shore in nearshore shallow waters, are proposed to access the new bridge alignment except for the central spans and navigation span, where barge access will be used. An in-water construction moratorium from July 15 – September 30 for the entire river, and February 15 – June 30 for the deepwater channel is required per the NC Division of Marine Fisheries. The existing bridge will be demolished via top-down techniques, along with the use of temporary work platforms in nearshore shallow waters and barges. Existing Tyrrell Bridge No. 7 will be removed completely, including piles, to the extent practicable. If a pile snaps off at a depth below scour and navigational clearance, and would require significant disturbance of substrate to remove, it will be cut at the mudline.

Development Activities Narrative Specifics:

Replacement of existing bridge.

Application Narrative:

The North Carolina Department of Transportation (NCDOT) proposes the replacement of US 64 Tyrrell County Bridge Number 7 over the Alligator River/Atlantic Intracoastal Waterway in Dare and Tyrrell Counties (STIP No. HB-0001). The proposed two-lane, 3.32-mile long, high-level, fixed-span bridge would replace the existing 2.83-mile long, 2-lane bridge, 343-span (with a movable steel swing span) bridge. Based on the design, the project will result in potential impacts to the Alligator River and Section 404 and Section 404/CAMA wetlands. All features are located in the Pasquotank River Basin (U.S. Geological Survey [USGS] Hydrologic Unit Code [HUC] 03010205). This permit application is a modification to the existing CAMA Major permit for the project. This modification only covers new impacts that have not been previously permitted.

Boat Ramp Development Activity Included: False

Boat Ramp Dimensions				
Length	Width	Avg Existing Depth	Final Project Depth	Distance Waterward of NHW/NWL

Will Fill Material Be Placed In Any Of The Following Areas		
Area	Sq. Ft. Affected	Purpose of Fill in This Area
Coastal Wetland/Marsh (CW)		
Submerged Aquatic Vegetation (SAV)		
Shell Bottom (SB)		
Other Non-Coastal Wetlands (WL)		

Boat Ramp Structures			
Structure Type	Length	Width	Quantity

Shoreline Stabilization Development Activity Included: False

Living Shoreline Development Activity Included: False

Piers & Docking Facilities Development Activity Included: False

Excavation Development Activity Included: False

Bridges & Culverts Development Activity Included: False

Oceanfront Erosion Control Development Activity Included: False

Temporary Structures Development Activity Included: True

Temporary Structures Details		
Floating Dock or Other Docking Structure	Other Temporary Structure	Other Temporary Structure (Describe)
False	True	This does not include previously permitted impacts; this is only outlining new impacts. Adding a temporary access road and switching the location of the temporary work trestle from the north side of the proposed bridge to the south side of the proposed bridge.

Temporary Structures - Docking Facilities Details			
Facility Use	# of Tie Pilings	Existing Slips	New Slips

Freestanding Moorings & Buoys Associated With This Temporary Structure		
Structures Consistent With Water Use Plan	Existing Freestanding Moorings & Buoys Slips	New Freestanding Moorings & Buoys Slips
False	0	0
Buoy Details:		

Temporary Structures - Moorings & Buoys Details			
Mooring or Buoy	Distance From Shoreline	Arc of Swing	Water Depth

Utility Crossings Development Activity Included: False

Freestanding Moorings, Buoys & Bird Nesting Poles Development Activity Included: False

Log Removal/Marine Debris Development Activity Included: Yes/No

Navigational Aids Development Activity Included: False

Other Fill Below Water Level Development Activity Included: True

Other Fill Below Water Level For Utility Crossing				
Will Fill Material be Placed in Any Of The Following Areas				
Area		Sq. Ft. Affected	Purpose of Fill in This Area	
Coastal Wetland/Marsh (CW)				
Submerged Aquatic Vegetation (SAV)				
Shell Bottom (SB)				
Other Non-Coastal Wetlands (WL)		46086	Temp fill for bridge construction/staging areas, temp access road, EC. Reduced permanent fill.	
Open Water (OW)				
How Will Fill Material be Kept on Site and Erosion Controlled		Wetlands Crossed Transporting Equipment to Project Site		Steps Taken to Avoid/Minimize Environmental Impact
An erosion control plan has been developed that covers how fill will be erosion controlled.		True		Equipment will use temporary work platforms and or/matting when crossing wetland areas to avoid or minimize compaction and permanent wetland impacts to the site related to equipment use. None of these areas are in CAMA wetlands.
Other Fill Dimensions				
Length	Width	Type of Fill	"Other" Fill Type Describe	Purpose of Fill

Stormwater Structures Development Activity Included: False

"Upland Development" Development Activity Included: False

Energy Facilities Development Activity Included: False

Aquaculture Development Activity Included: False

Submerged Lands Mining Development Activity Included: False

General Development Activity Details Required

General Development Activity Questions				
These questions are applicable if 1 of the following development activities are included in the project (Boat Ramps, Freestanding Moorings, Buoys & Bird Nesting Poles, Piers & Docking Facilities, Temporary Structures, Living Shorelines, Shoreline Stabilization Submerged Lands Mining)				
Boat Type(s)		Typical Boat Length		Other Boat Type (Describe)
Open runabout; Sail boat; Personal water craft; Non-motorized; Other		0		
Adj Riparian Property Line #1 (Proximity of Structure Nearest to Property Line)		Adj Riparian Property Line #2 (Proximity of Structure Nearest to Property Line)		Adj Riparian Property Line #3 (Proximity of Structure Nearest to Property Line)
Width of Water Body	Water Depth @ Waterward End of Structure (NLW or NWL)		Water Depth @ Most Landward Boat Slip (NLW or NWL)	Water Depth @ Most Waterward Boat Slip (NLW or NWL)
0	0		0	0
Navigational Aids Required	Number of Buoys	Number of Day Markers	Min Distance of Each Aid Placed Beyond Shoreline	Max Distance of Each Aid Placed Beyond Shoreline
False				

Marina Development Activity Details Required

Acknowledgements

☐ I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit

☐ I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project

☐ I further certify that the information provided in this application is truthful to the best of my knowledge

☐ I certify that by clicking the submit button on this NC Division of Coastal Management application I acknowledge that I am signing and dating the application submitted therein

09/08/19

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See Sheet 1C-1 For Survey Control Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TYRRELL & DARE COUNTY

LOCATION: REPLACE BRIDGE #7 ON US 64 IN TYRRELL AND
DARE COUNTIES OVER THE ALLIGATOR RIVER

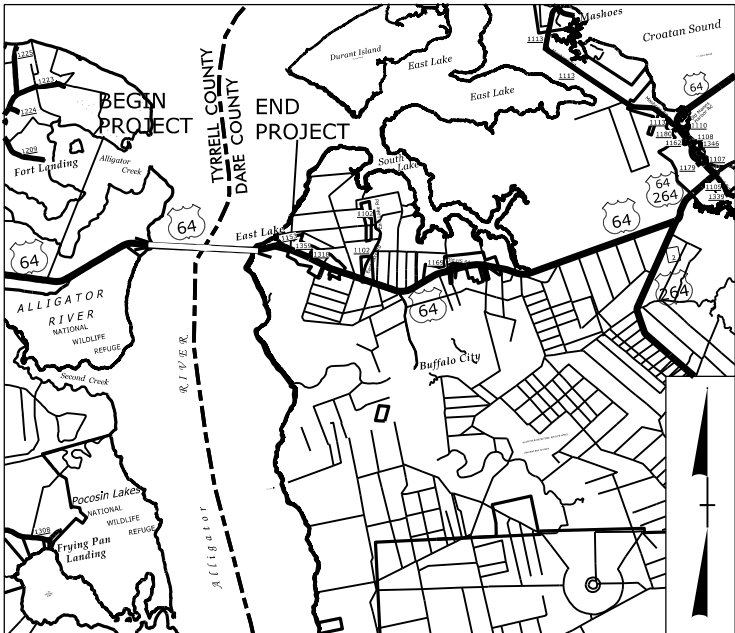
TYPE OF WORK: STRUCTURE, GRADING, PAVING, DRAINAGE

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 1 OF 79

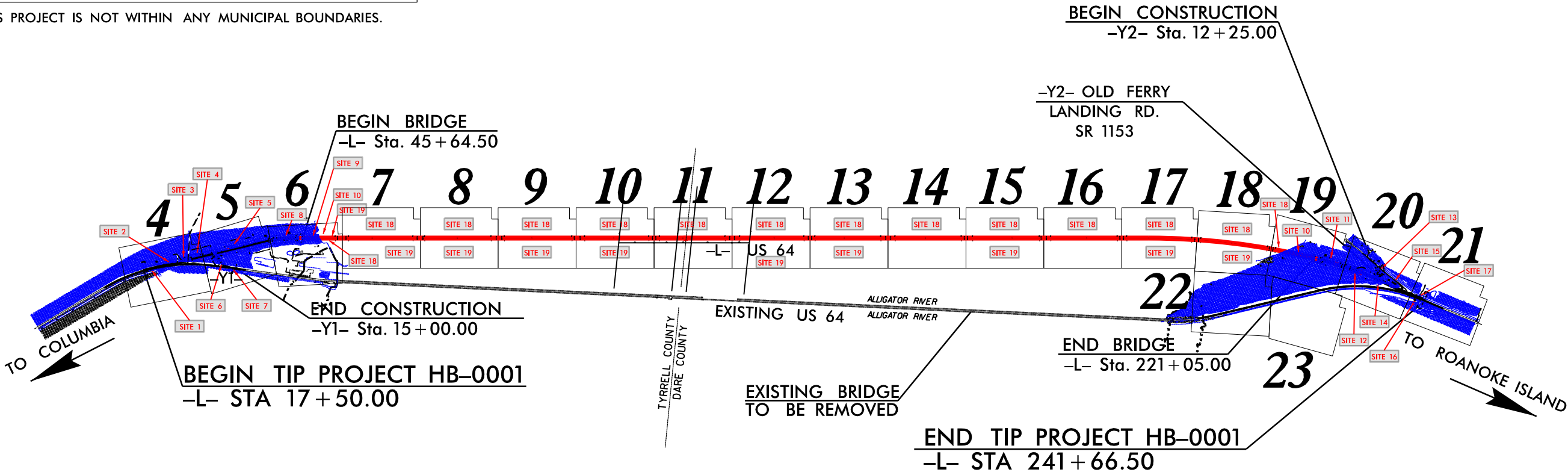
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HB-0001	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
49475.1.1	NHPB-0001(156)	PE	
49475.2.1	NHPB-0001(156)	ROW	

ROW PLAN SET



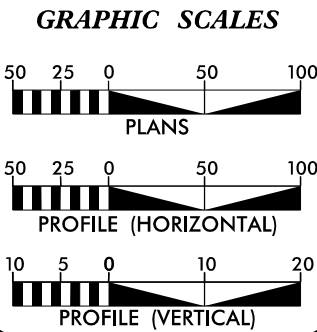
VICINITY MAP

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

CONTRACT:

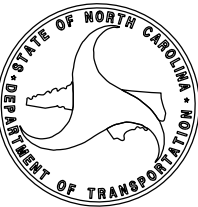


DESIGN DATA
ADT 2023 = 5734/9645**
ADT 2043 = 10400/13200**
K = 10 %
D = 60 %
T = 7 % *
V = 60 MPH
* TTST = 4% DUAL 3%
FUNC CLASS =
PRINCIPAL ARTERIAL
REGIONAL TIER
**WEEKDAY/WEEKEND

PROJECT LENGTH
TIP PROJECT HB-0001 ROADWAY LENGTH = 0.924 MILES
TIP PROJECT HB-0001 STRUCTURES LENGTH = 3.322 MILES
TIP PROJECT HB-0001 TOTAL PROJECT LENGTH = 4.246 MILES
NCDOT CONTACT: JOHN CONFORTI, REM
PROJECT MANAGER

Prepared In the Office of:
SUMMIT
ENGINEERING AND CONSTRUCTION SERVICES
FIRM NO. P-8339
2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE: DECEMBER 16, 2022
LETTING DATE: OCTOBER 2024
NEIL J. DEAN, PE
PROJECT ENGINEER
FAITH E. JAHNKE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.



28-DEC-2023 12:55
HB-0001-hyd-prm-tsh.dgn
patrik.hartnett

BEGIN TIP PROJECT HB-0001
-1- STA 17+50.00

EXISTING FIBER OPTIC CABLES
TO REMAIN IN PLACE

THE CONSERVATION FUND
DB 214 PG 699



SITE 2

SITE 2

MCKEE INVESTMENTS, LLC

-L- PT Sta. 18+78.88

MUTUAL GIN COMPANY
DB 164 PG 110

STATE OF NORTH CAROLINA
DB 192 PG 595

DETAIL 4-1

(Not to Scale)

1.0' min.

1'

Place Geotextile Under Riprap in Locations Directed by Engineer

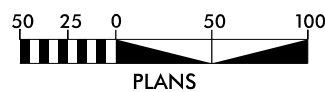
Press Riprap Channel Until Ref.

Type of Liner - 206 TONS, CL B Rip-Rap, Keyed-In

FROM STA. TO STA.

	FILL IN WETLAND
	MECHANIZED CLEARING (GRUBBING)
	HAND CLEARING (NON-GRUBBING)
	SURFACE WATER IMPACTS
	TEMPORARY SURFACE WATER IMPACTS
	PAVEMENT REMOVAL

SEE SHEET 24 FOR -L- PROFILE



PROJECT REFERENCE NO.
HB-0001

SHEET NO.
4

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

Prepared in the Office of:
SUMMIT
SUMMIT ENGINEERING & CONSULTING, INC.
320 Executive Ct.
Hillsborough, NC 27278
(919) 752-3883
(919) 752-6676 (FAX)

NC FIRM LICENSE No. P-0339

320 Executive Ct.
Hillsborough, NC 27278
(919) 752-3883
(919) 752-6676 (FAX)

PERMIT DRAWING
SHEET 3 OF 79

MATCHLINE -L- STATION 28+00.00 (SEE SHEET 5)

-L-
PI Sta 14+43.80
Δ = 17°10'13.3" (RT)
D = 1°57'30.0"
L = 876.78'
T = 441.70'
SE = 2925.74'
DS = EXIST.

BEGIN TIP PROJECT HB-0001
-L- STA 17+50.00

EXISTING FIBER OPTIC CABLES
TO REMAIN IN PLACE

THE CONSERVATION FUND
DB 214 PG 699

SITE 2

SITE 3

SITE 4

MCKEE INVESTMENTS, LLC
DB 244 PG 644

-L- PT. Sta. 18+78.88

MUTUAL GN COMPANY
DB 164 PG 100

DETAIL 4-1
BANK STABILIZATION
(Profile Scale)

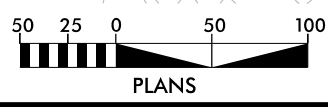
Place Geotextile Under
Riprap in Locations
Directed by Engineer

Type of Liner - 205 TONS, CL B Rip-Rap, Keyed-In

FROM STA. TO STA.

- FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- PAVEMENT REMOVAL

SEE SHEET 24 FOR -L- PROFILE

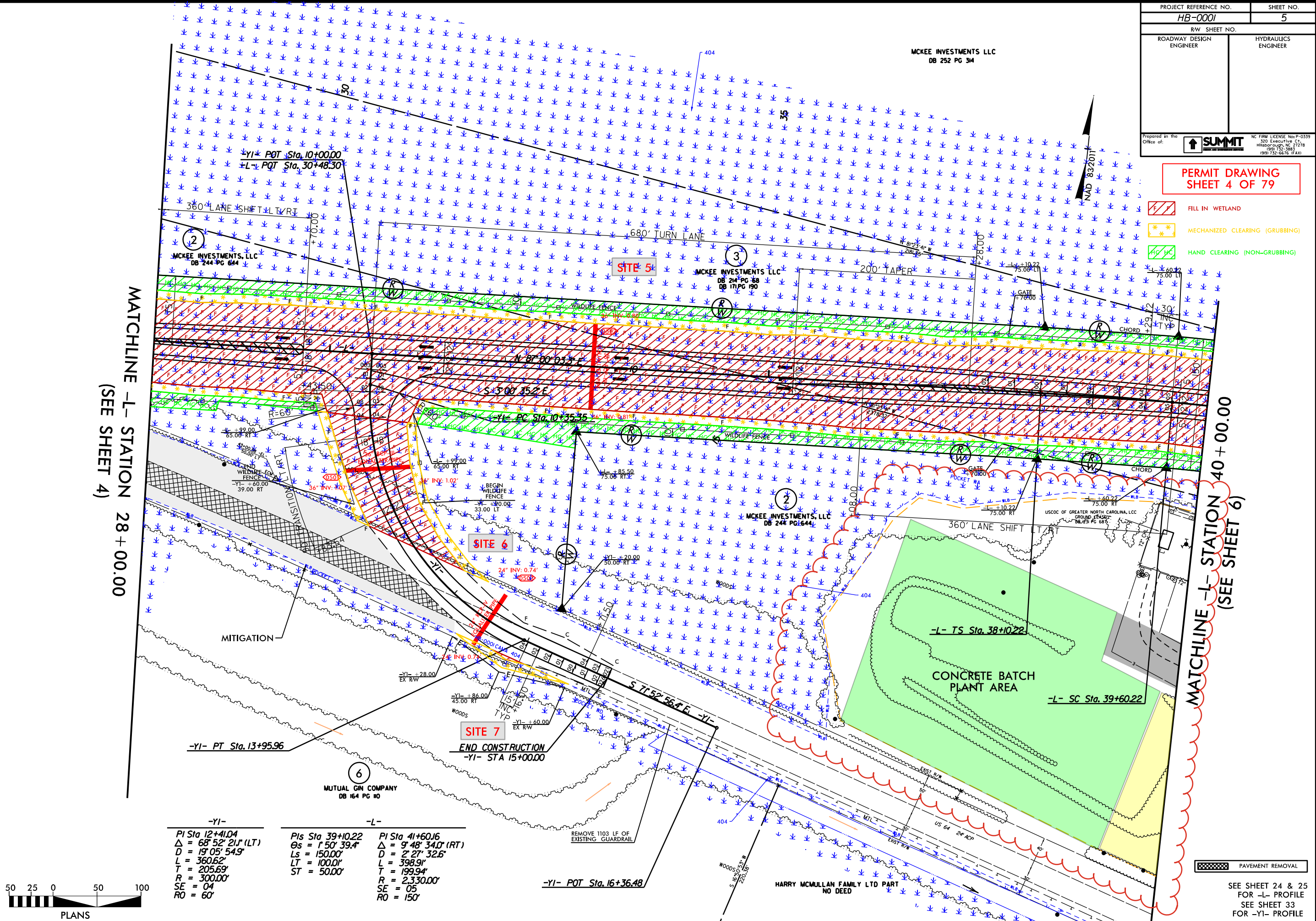


PLANS

8/17/99
28-DEC-2023 12:55
28-0001-Path-3.dgn
28-0001-Path-3.dgn

PERMIT DRAWING
SHEET 4 OF 79

- FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)

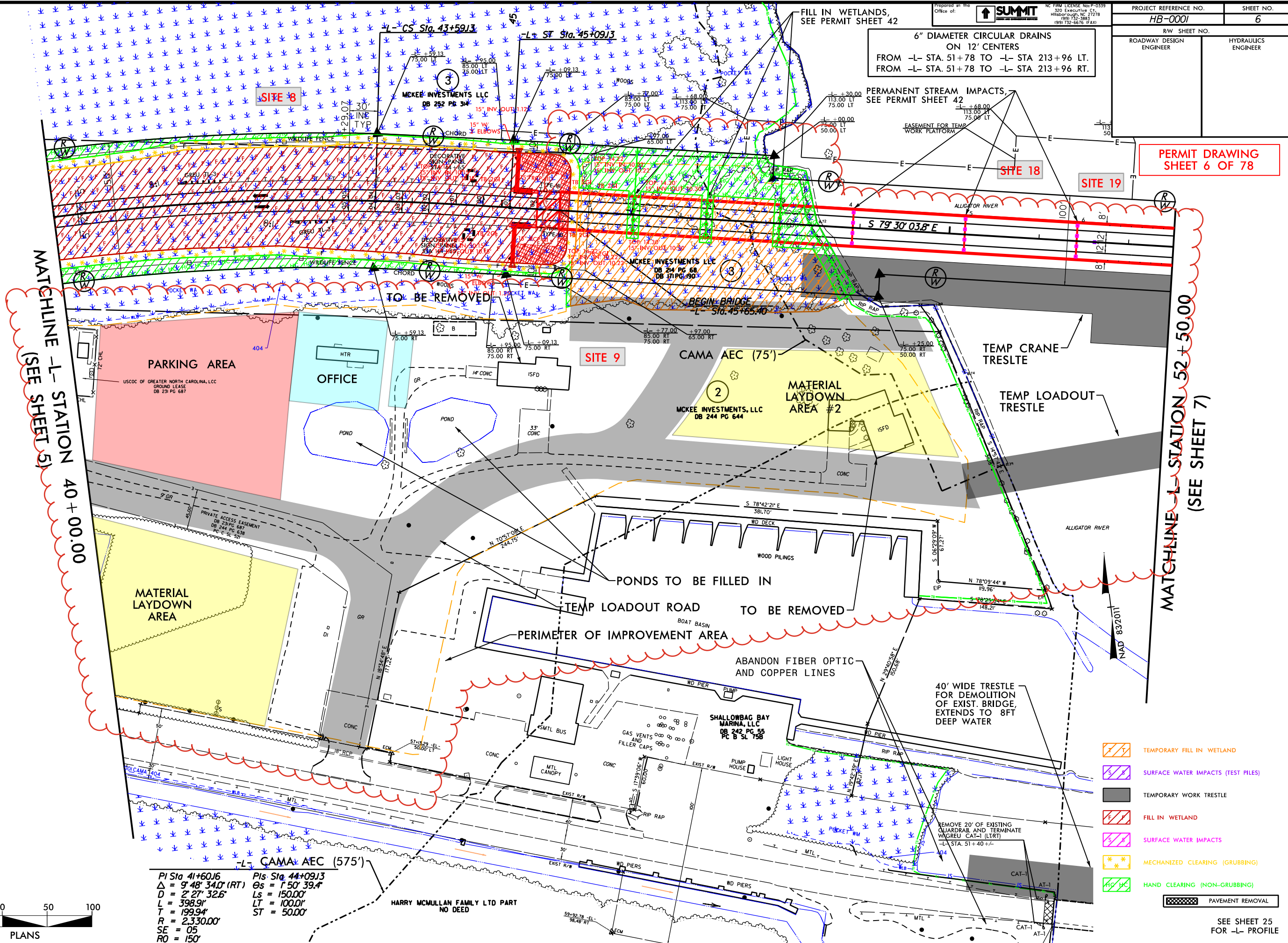


-YI-	-L-	-YI-
PI Sta 12+41.04	PIs Sta 39+10.22	PI Sta 41+60.16
$\Delta = 68^{\circ}52'21''$ (LT)	$\Theta_s = 1^{\circ}50'39.4''$	$\Delta = 9^{\circ}48'34.0''$ (RT)
$D = 19^{\circ}05'54.9''$	$L_s = 150.00'$	$D = 2^{\circ}27'32.6''$
$L = 360.62'$	$L = 398.91'$	$L = 199.94'$
$T = 205.69'$	$LT = 100.01'$	$R = 2,330.00'$
$R = 300.00'$	$ST = 50.00'$	$SE = 05'$
$SE = 04'$		$RO = 150'$
$RO = 60'$		

SEE SHEET 24 & 25
FOR -L- PROFILE
SEE SHEET 33
FOR -YI- PROFILE

18-NOV-2024 10:42
HB-0001_Hyd-prm-psh_6_MOD.dgn
Josh.Iernacki

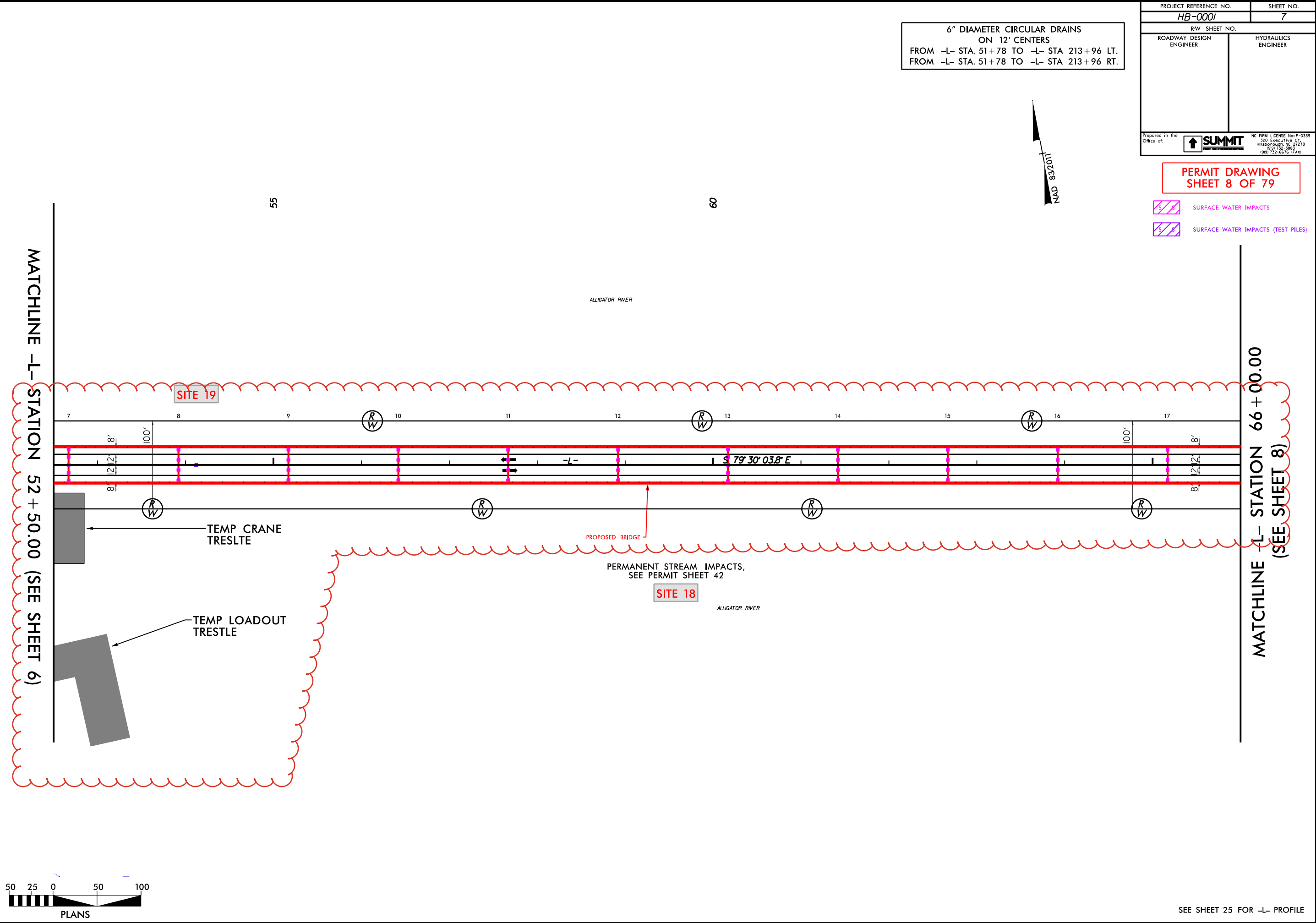
REVISIONS



8/17/99

18-NOV-2024 10:42
HB-0001.dgn
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HB-0001.dgn
18-NOV-2024 10:42
HB-0001.dgn

REVISIONS



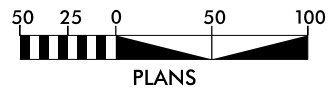
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO. HB-0001		SHEET NO. 7
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
Prepared in the Office of: 		NC FIRM LICENSE Nos P-0339 320 Executive Ct Hillsborough, NC 27278 (919) 732-3883 (919) 732-6876 (FAX)

PERMIT DRAWING
SHEET 8 OF 79

-  SURFACE WATER IMPACTS
-  SURFACE WATER IMPACTS (TEST PILES)

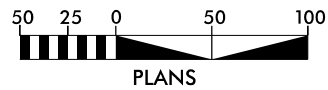


SEE SHEET 25 FOR -L- PROFILE

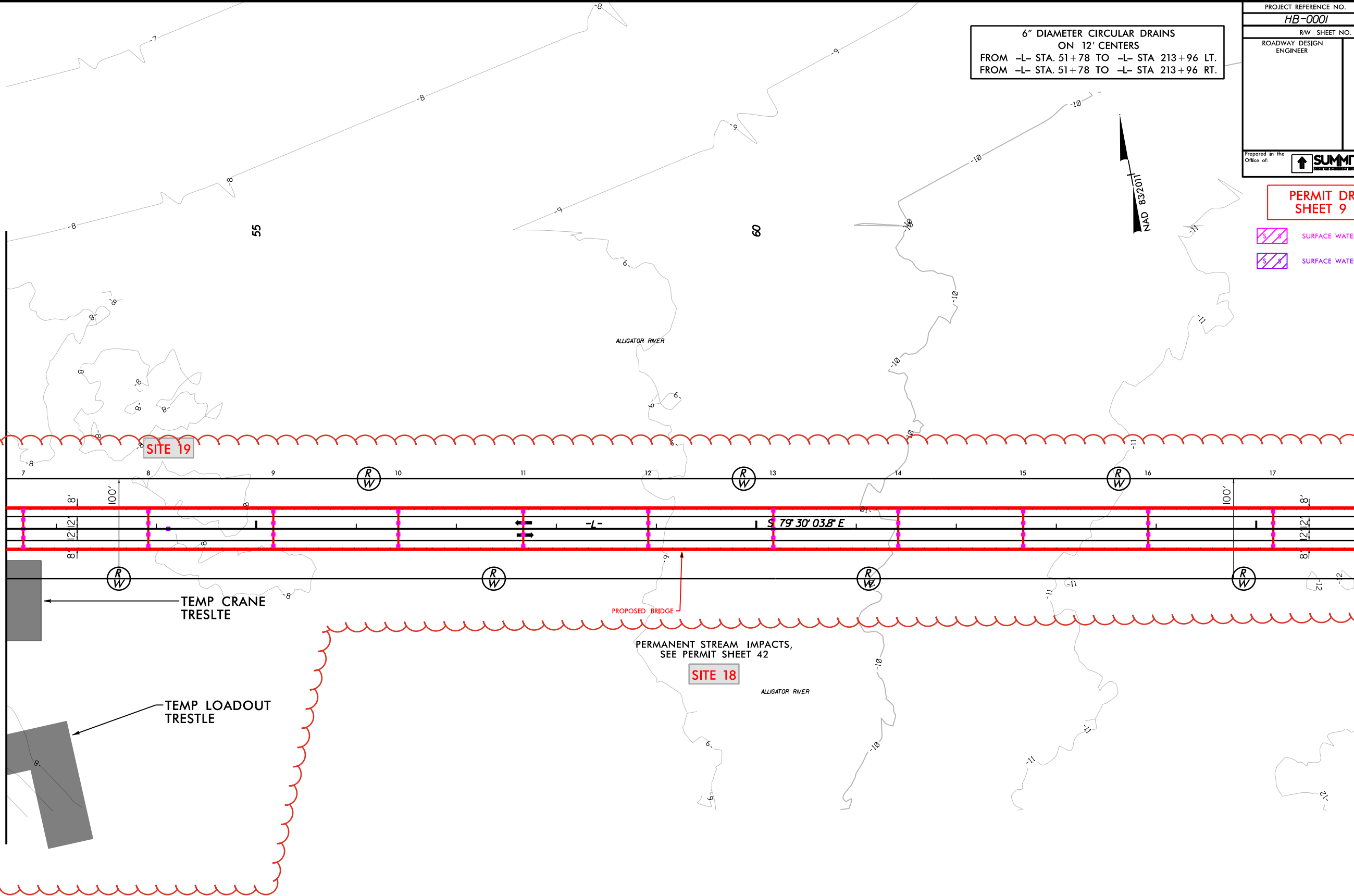
8/17/99

18-NOV-2024 10:42
HB-0001.dgn
18-NOV-2024 10:42
HB-0001.dgn
18-NOV-2024 10:42
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 52+50.00 (SEE SHEET 6)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

NAD 83/2011

PROJECT REFERENCE NO. HB-0001		SHEET NO. 7
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT ENGINEERING & CONSTRUCTION, INC. NC FIRM LICENSE Nos P-0339 320 Executive Ct Hillsborough, NC 27278 (919) 732-3883 (919) 732-6876 (FAX)		

PERMIT DRAWING
SHEET 9 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 66+00.00
(SEE SHEET 8)

SEE SHEET 25 FOR -L- PROFILE

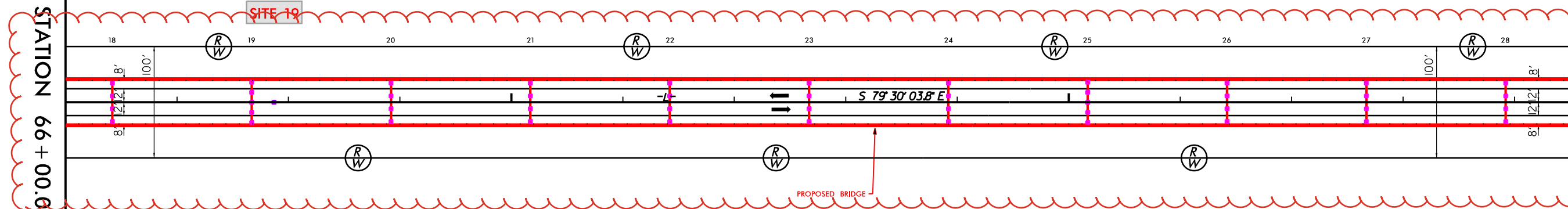
8/17/99

18-NOV-2024 09:44
HB-0001-11-10-0001-10-MOD.dgn
10-10-0001-10-MOD.dgn

REVISIONS



MATCHLINE -L- STATION 66+00.00 (SEE SHEET 7)



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 18

ALLIGATOR RIVER

PROPOSED BRIDGE

SITE 19

ALLIGATOR RIVER

70

75

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.	
HB-0001		8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 322-2869 (919) 732-6616 (FAX)	

PERMIT DRAWING
SHEET 10 OF 79

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (TEST PILES)

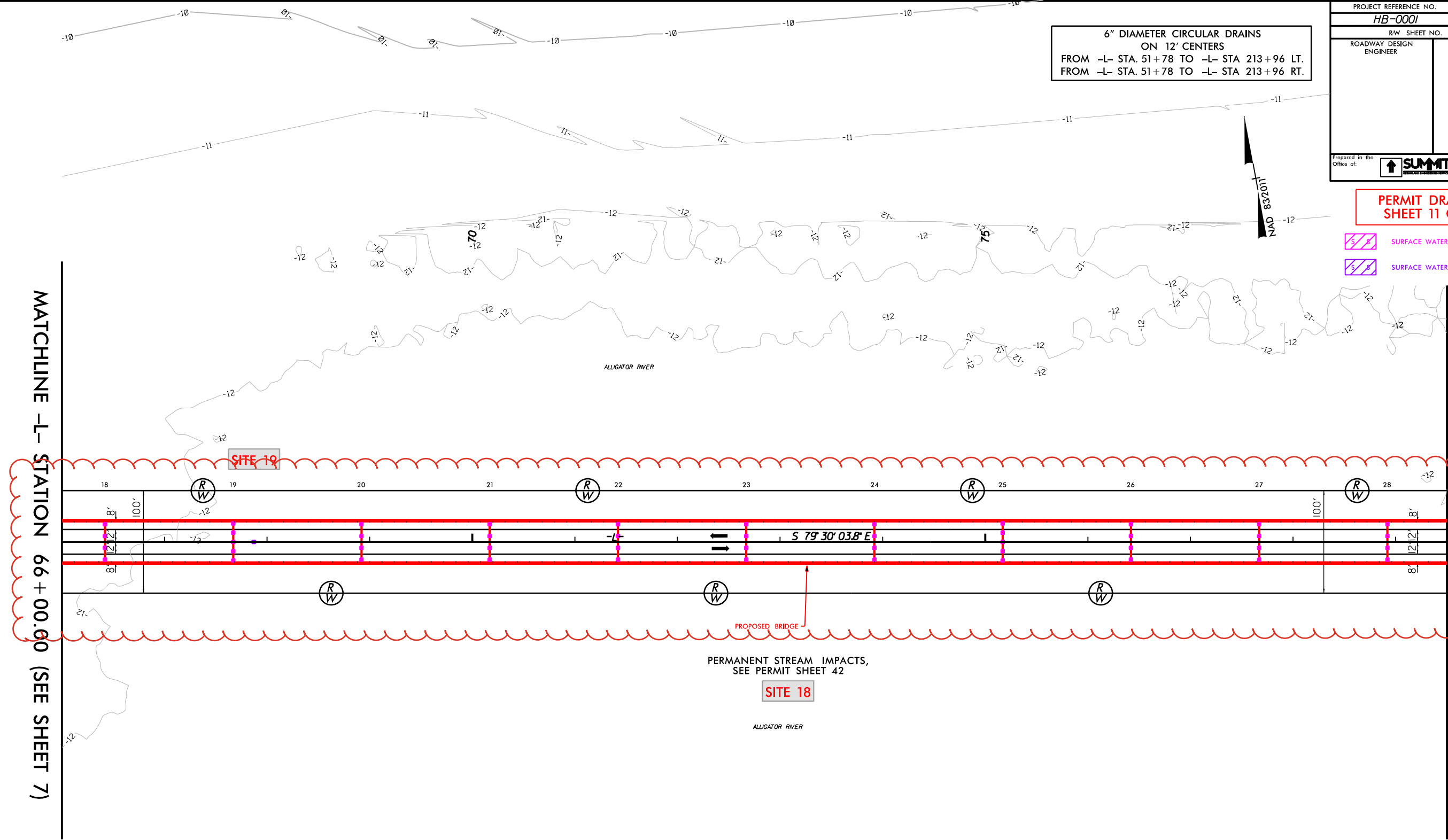
MATCHLINE -L- STATION 79+50.00
(SEE SHEET 9)

SEE SHEET 26 FOR -L- PROFILE

8/17/99

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HB-0001-11.dgn
18-NOV-2024 09:44
HB-0001-11.dgn
18-NOV-2024 09:44
HB-0001-11.dgn

REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
HB-0001		8
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-2869 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 11 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

SEE SHEET 26 FOR -L- PROFILE

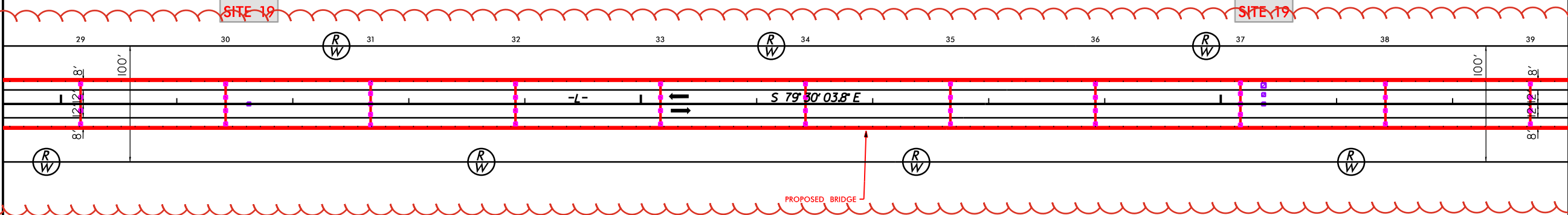
8/17/99

18-NOV-2024 09:44
HB-0001-11-12-0001-psd-12_M00.dgn
10/25/2024

REVISIONS



MATCHLINE -L- STATION 79+50.00 (SEE SHEET 8)



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 18

ALLIGATOR RIVER

PROPOSED BRIDGE

SITE 19

SITE 19

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.
HB-0001		9
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-2869 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 12 OF 79

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 93+00.00
(SEE SHEET 10)

SEE SHEET 26 FOR -L- PROFILE

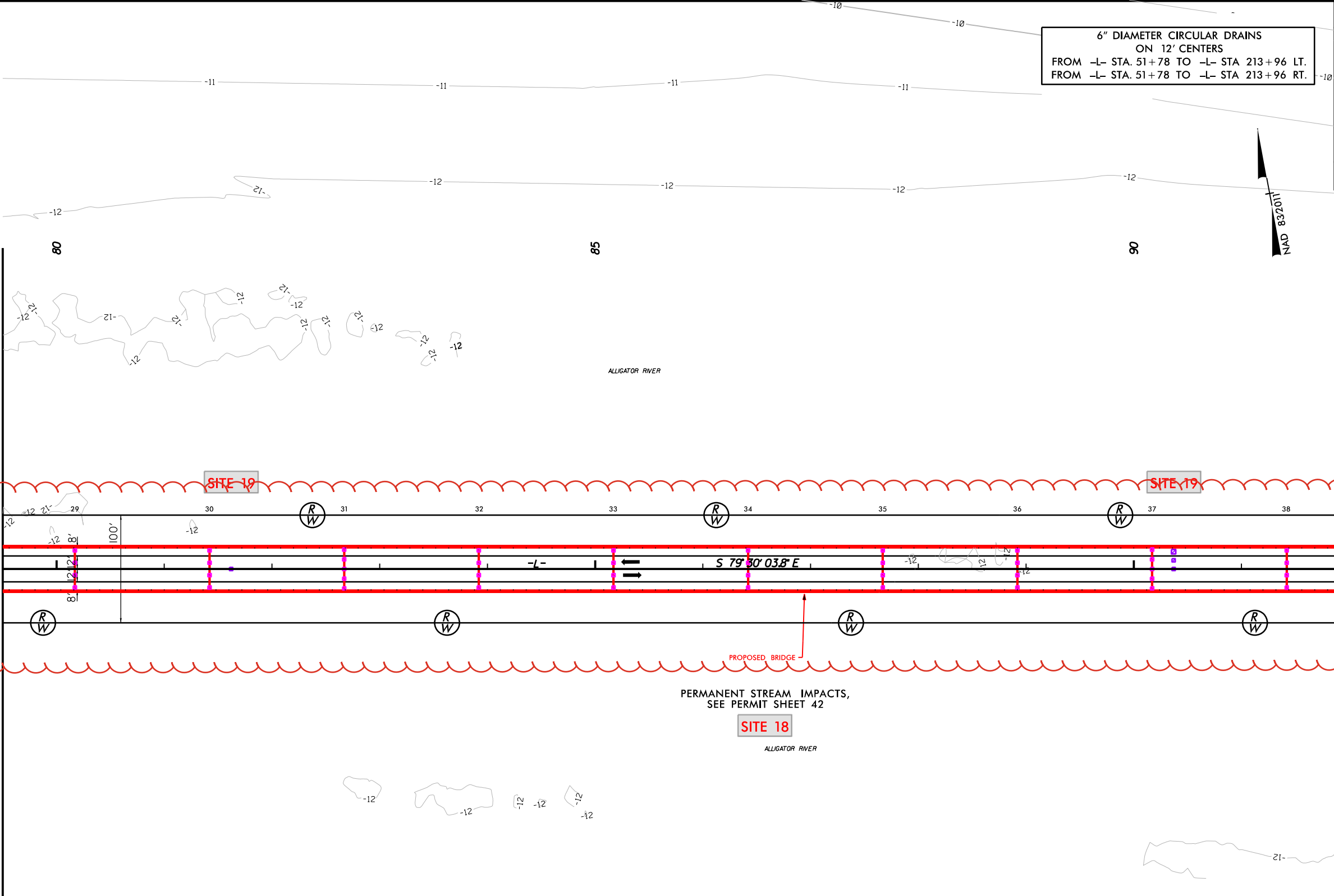
8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 79+50.00 (SEE SHEET 8)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

NAD 83/2011

PROJECT REFERENCE NO.		SHEET NO.	
HB-0001		9	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-6600 (919) 732-6610 (FAX)	

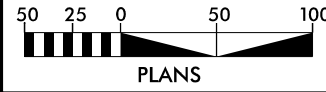
PERMIT DRAWING
SHEET 13 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 93+00.00
(SEE SHEET 10)

SEE SHEET 26 FOR -L- PROFILE

NAD 83/2011



REVISIONS

I8-NOV-2024 09:44
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iosb.terrac

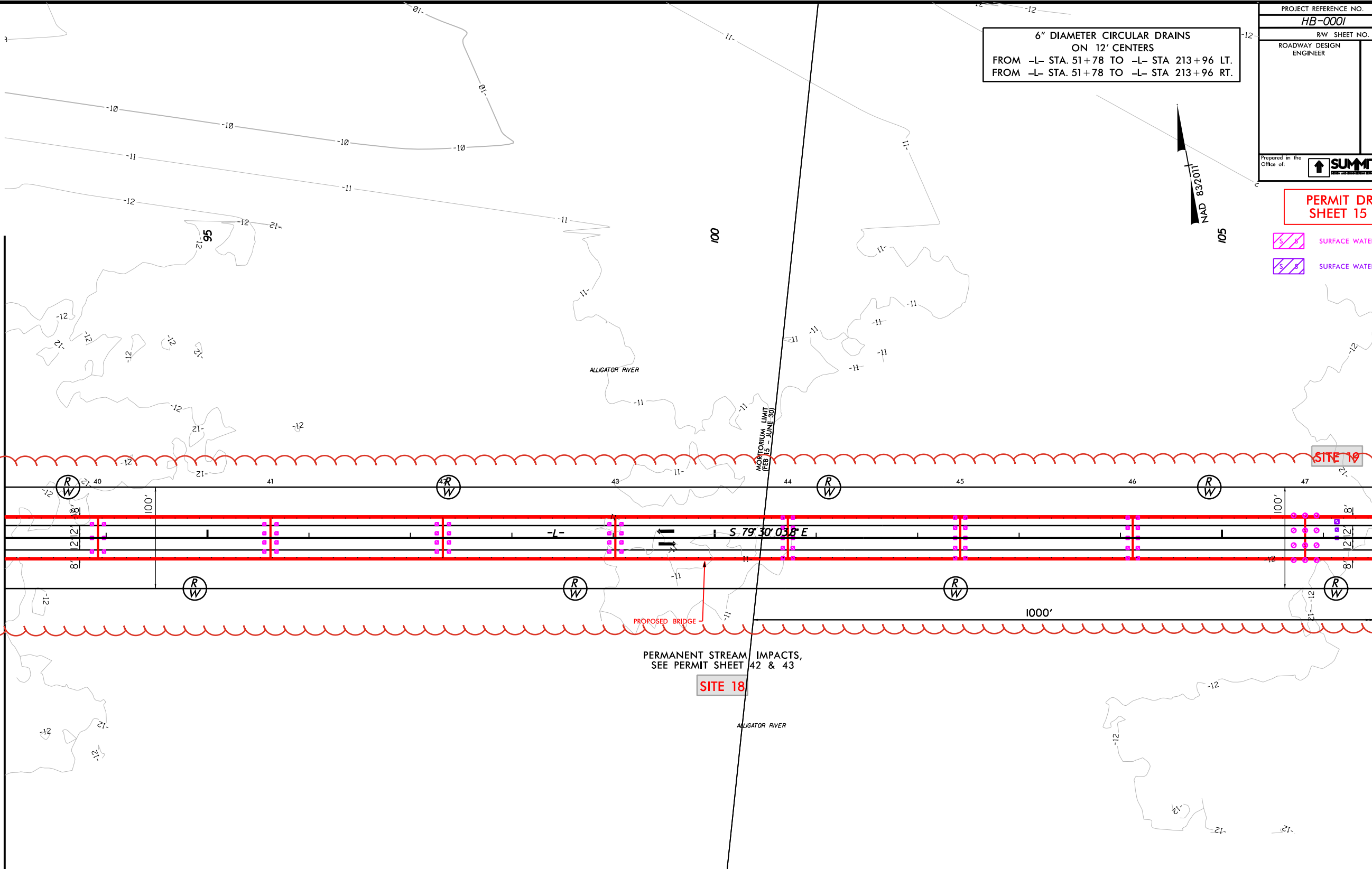
8/17/99

18-NOV-2024 09:44
HB-0001-11.dwg
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REVISIONS



MATCHLINE -L- STATION 93+00.00 (SEE SHEET 9)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

NAD 83/2011

PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>10</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of: 		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-2868 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 15 OF 79

-  SURFACE WATER IMPACTS
-  SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 106+50.00
(SEE SHEET 11)

SEE SHEET 26 & 27 FOR -L- PROFILE

8/17/99

18-NOV-2024 09:44
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18-NOV-2024 09:44
HB-0001-11.dwg
18-NOV-2024 09:44
HB-0001-11.dwg

REVISIONS



MATCHLINE -L- STATION 106 + 50.00 (SEE SHEET 10)

PROPOSED 140' HORIZONTAL
CLEARANCE AT NAVIGATION
OPENING

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42 & 43

SITE 18

ALLIGATOR RIVER

PROPOSED BRIDGE

ALLIGATOR RIVER

CENTERLINE OF
NAVIGATION OPENING
-L- 11+77.00
TYRRELL COUNTY
DARE COUNTY

APPROXIMATE DEEP
WATER CHANNEL

APPROXIMATE DEEP
WATER CHANNEL

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.
HB-0001		11
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 322-2869 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 16 OF 79

SURFACE WATER IMPACTS

MATCHLINE -L- STATION 120 + 00.00
(SEE SHEET 12)

SEE SHEET 27 & 28 FOR -L- PROFILE

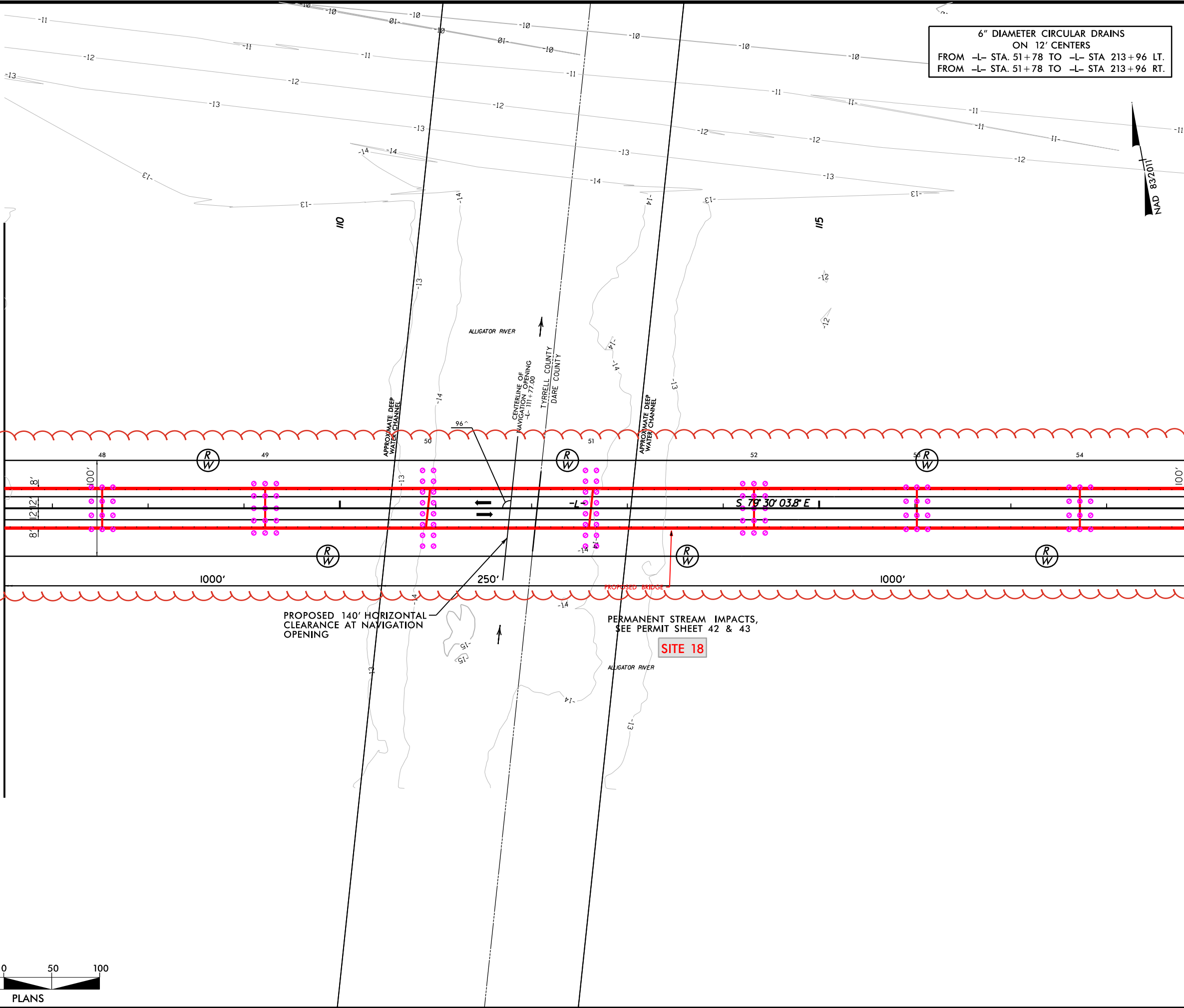
8/17/99

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HB-0001-11.dwg
18-NOV-2024 09:44
HB-0001-11.dwg
18-NOV-2024 09:44
HB-0001-11.dwg

REVISIONS



MATCHLINE -L- STATION 106+50.00 (SEE SHEET 10)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

NAD 83/2011

PROJECT REFERENCE NO. HB-0001		SHEET NO. 11	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of: SUMMIT		NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-6600 (919) 732-6600 (FAX)	

PERMIT DRAWING
SHEET 17 OF 79

SURFACE WATER IMPACTS

MATCHLINE -L- STATION 120+00.00
(SEE SHEET 12)

SEE SHEET 27 & 28 FOR -L- PROFILE

1000

SITE 18

1

•

NAD 83/2011

MATCHLINE -L- STATION 133 + 50.00
(SEE SHEET 13)

SITE 18

PROPOSED BRIDGE -

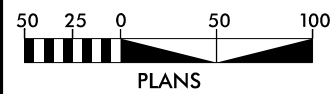
ALLIGATOR RIVER

ALLIGATOR RIVER

MORTUORUM LIMIT
(FEB 15 - JUNE 30)

REVISIONS

18-NOV-2024 09:44
HB-0001_Hyd.prm-psb_19_MOD.dgn
iosb.jericoe



SEE SHEET 28 & 29 FOR -L- PROFILE

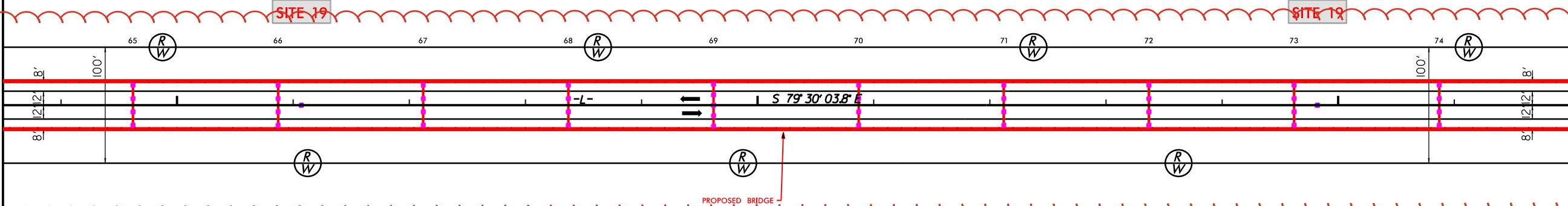
8/17/99

18-NOV-2024 09:44
HB-0001-11-1d-corr-m-psh_20_M00.dgn
lostb_per0000

REVISIONS



MATCHLINE -L- STATION 133 + 50.00 (SEE SHEET 12)



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 18
ALLIGATOR RIVER

PROPOSED BRIDGE

SITE 19

SITE 19

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.	
HB-0001		13	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-3863 (919) 732-6616 (FAX)	

PERMIT DRAWING
SHEET 20 OF 79

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 147 + 00.00
(SEE SHEET 14)

SEE SHEET 29 FOR -L- PROFILE

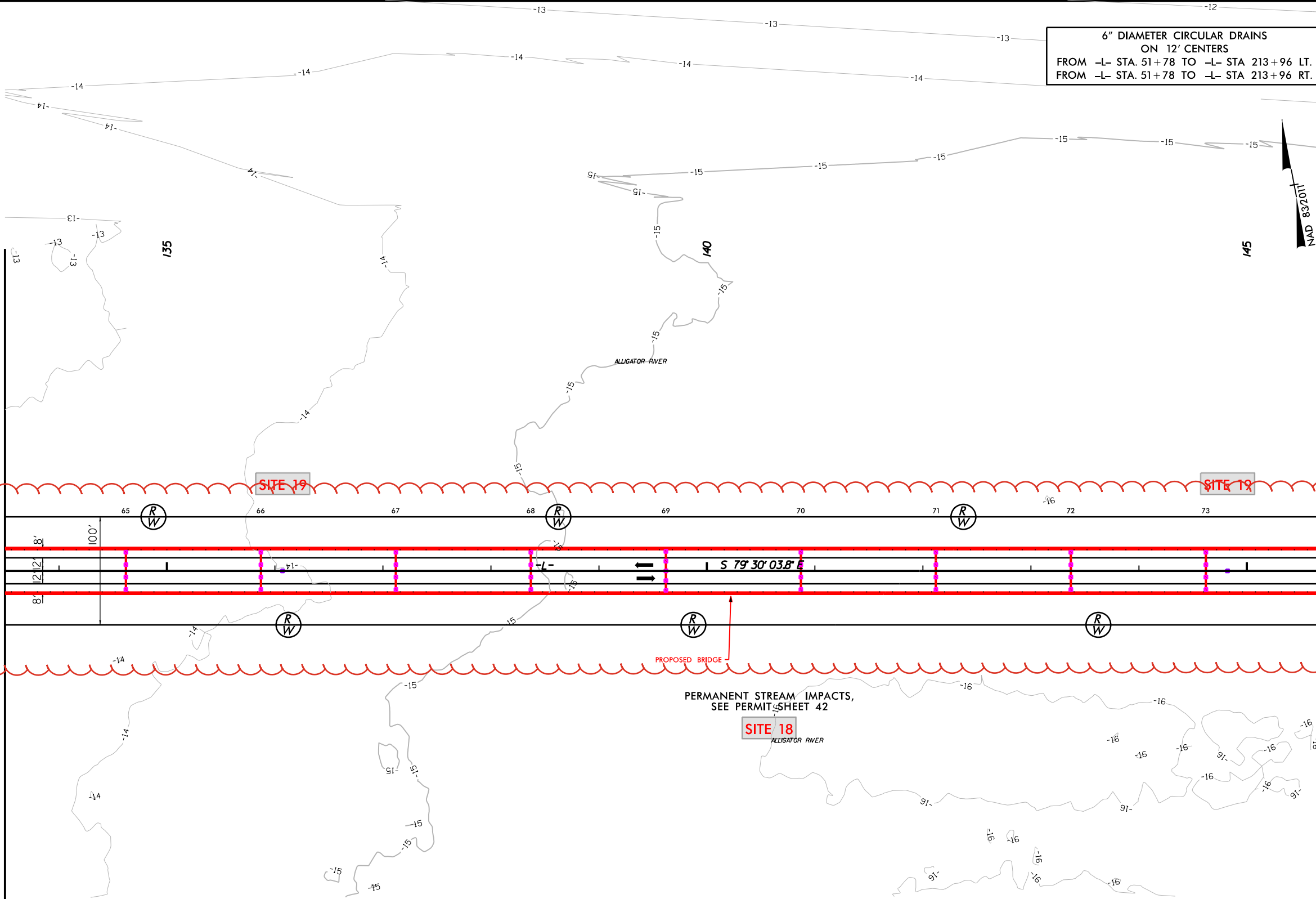
8/17/99

18-NOV-2024 09:44
HB-0001-11.dwg
18-NOV-2024 09:44
HB-0001-11.dwg
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HB-0001-11.dwg

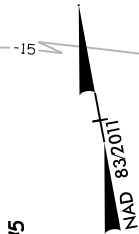
REVISIONS



MATCHLINE -L- STATION 133+50.00 (SEE SHEET 12)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>13</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-6666 (919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 21 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 147+00.00
(SEE SHEET 14)

SEE SHEET 29 FOR -L- PROFILE

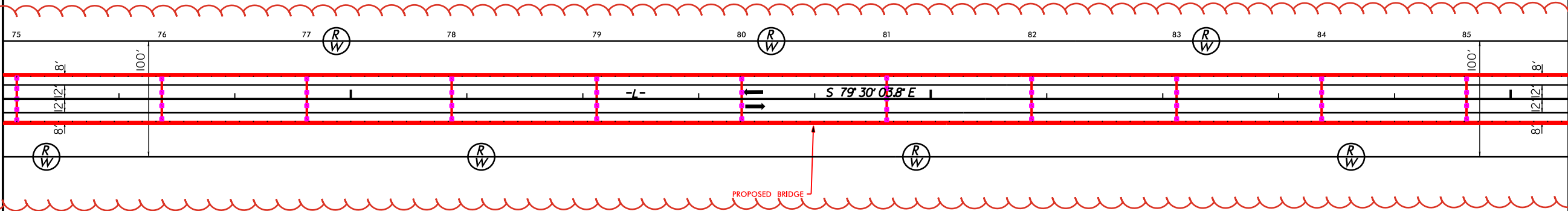
8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 147+00.00 (SEE SHEET 13)



MATCHLINE -L- STATION 160+50.00
(SEE SHEET 15)

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>14</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-2869 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 22 OF 79

 SURFACE WATER IMPACTS

SEE SHEET 29 & 30 FOR -L- PROFILE

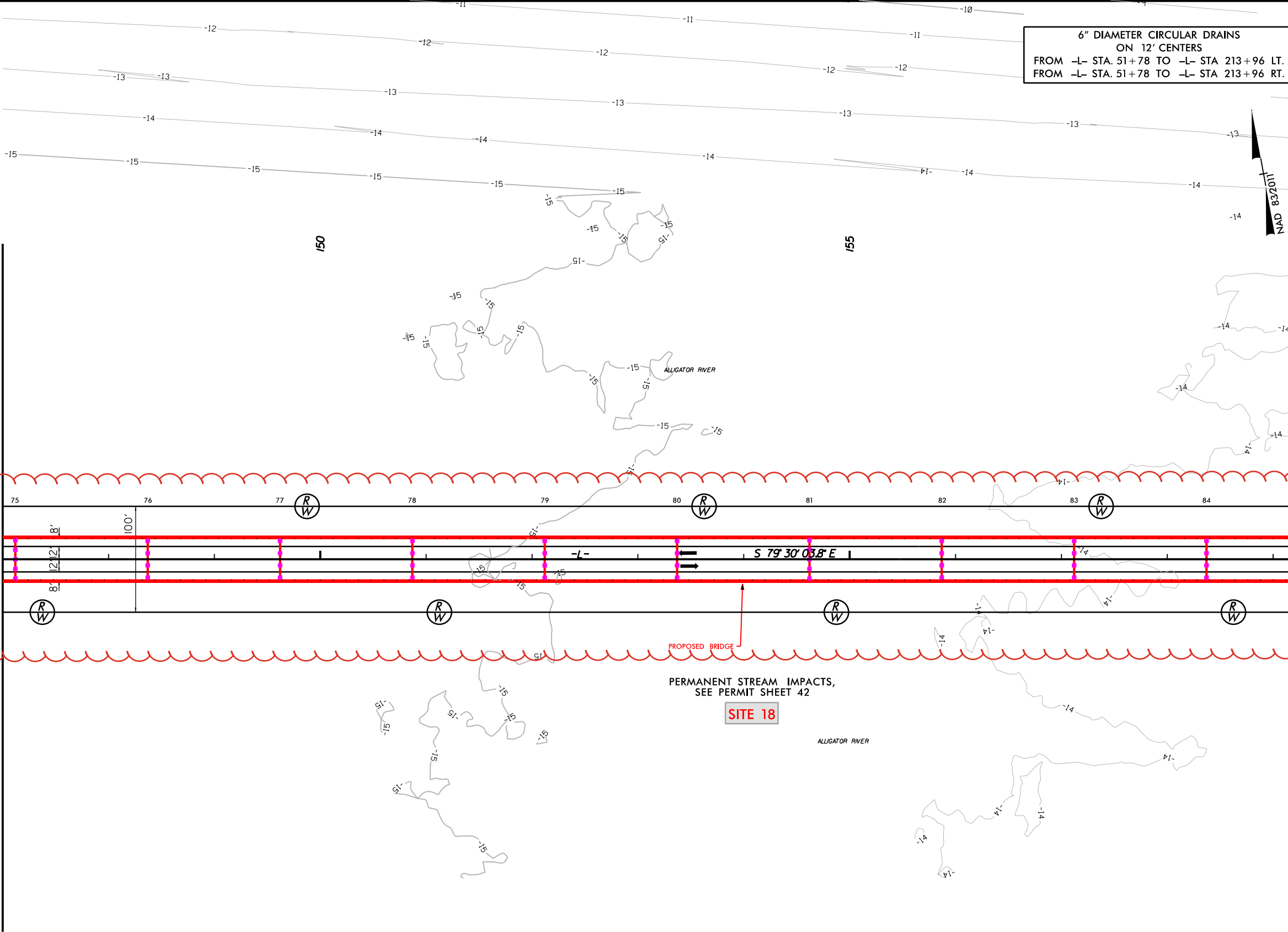
8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 147+00.00 (SEE SHEET 13)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>14</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-6600 (919) 732-6676 (FAX)	

PERMIT DRAWING
SHEET 23 OF 79

SURFACE WATER IMPACTS

PROPOSED BRIDGE

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 18

ALLIGATOR RIVER

MATCHLINE -L- STATION 160+50.00
(SEE SHEET 15)

SEE SHEET 29 & 30 FOR -L- PROFILE

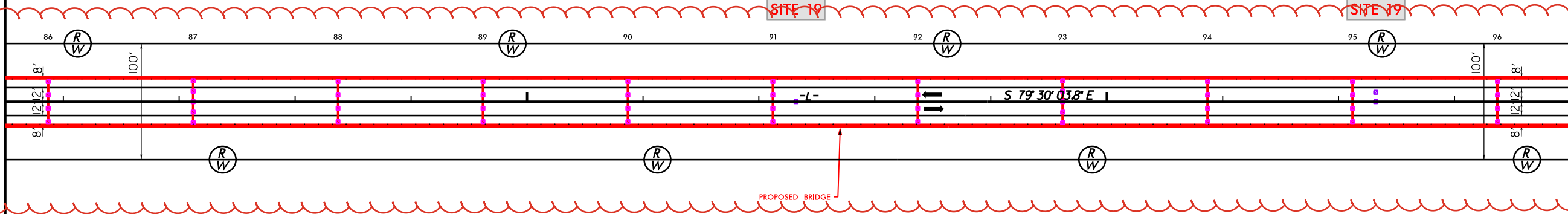
8/17/99

18-NOV-2024 09:44
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lostb-1600000

REVISIONS



MATCHLINE -L- STATION 160 + 50.00 (SEE SHEET 14)



MATCHLINE -L- STATION 174 + 00.00
(SEE SHEET 16)

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.
HB-0001		15
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC P&M LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-5863 (919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 24 OF 79

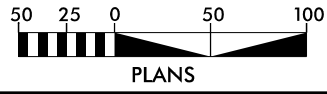
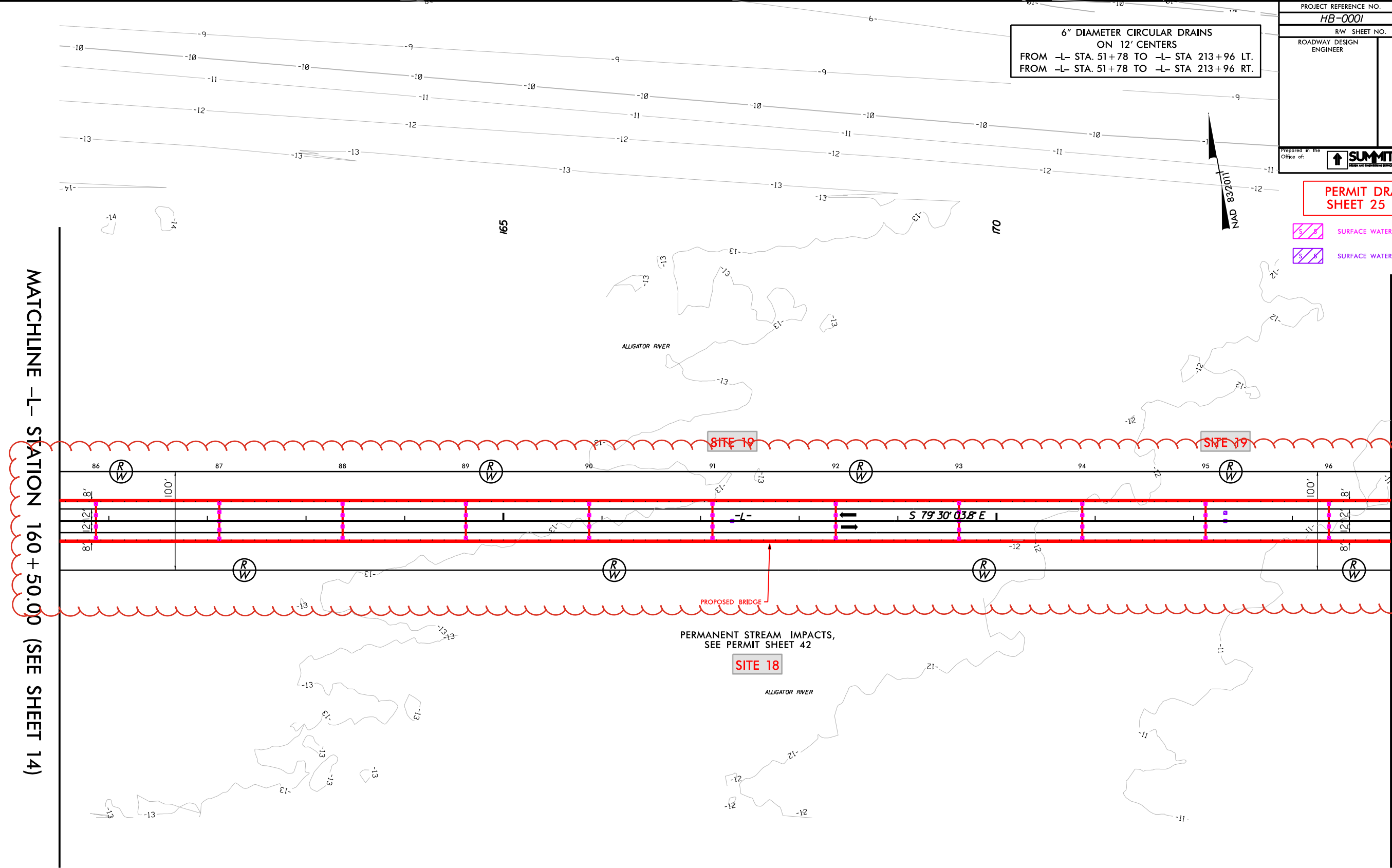
- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

SEE SHEET 30 FOR -L- PROFILE

8/17/99

18-NOV-2024 09:44
HB-0001.dgn
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REVISIONS



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

PROJECT REFERENCE NO. HB-0001		SHEET NO. 15	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of: SUMMIT ENGINEERING & CONSTRUCTION, INC. 320 Executive Ct. Hillsborough, NC 27278 (919) 332-5868 (919) 732-6676 (FAX)		NC P&M LICENSE No. P-0333 320 Executive Ct. Hillsborough, NC 27278 (919) 332-5868 (919) 732-6676 (FAX)	

PERMIT DRAWING
SHEET 25 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

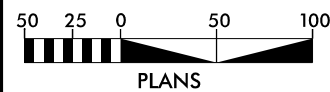
MATCHLINE -L- STATION 174 + 00.00
(SEE SHEET 16)

MATCHLINE -L- STATION 160 + 50.00 (SEE SHEET 14)

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SEE SHEET 30 FOR -L- PROFILE

NAD 83/2011



REVISIONS

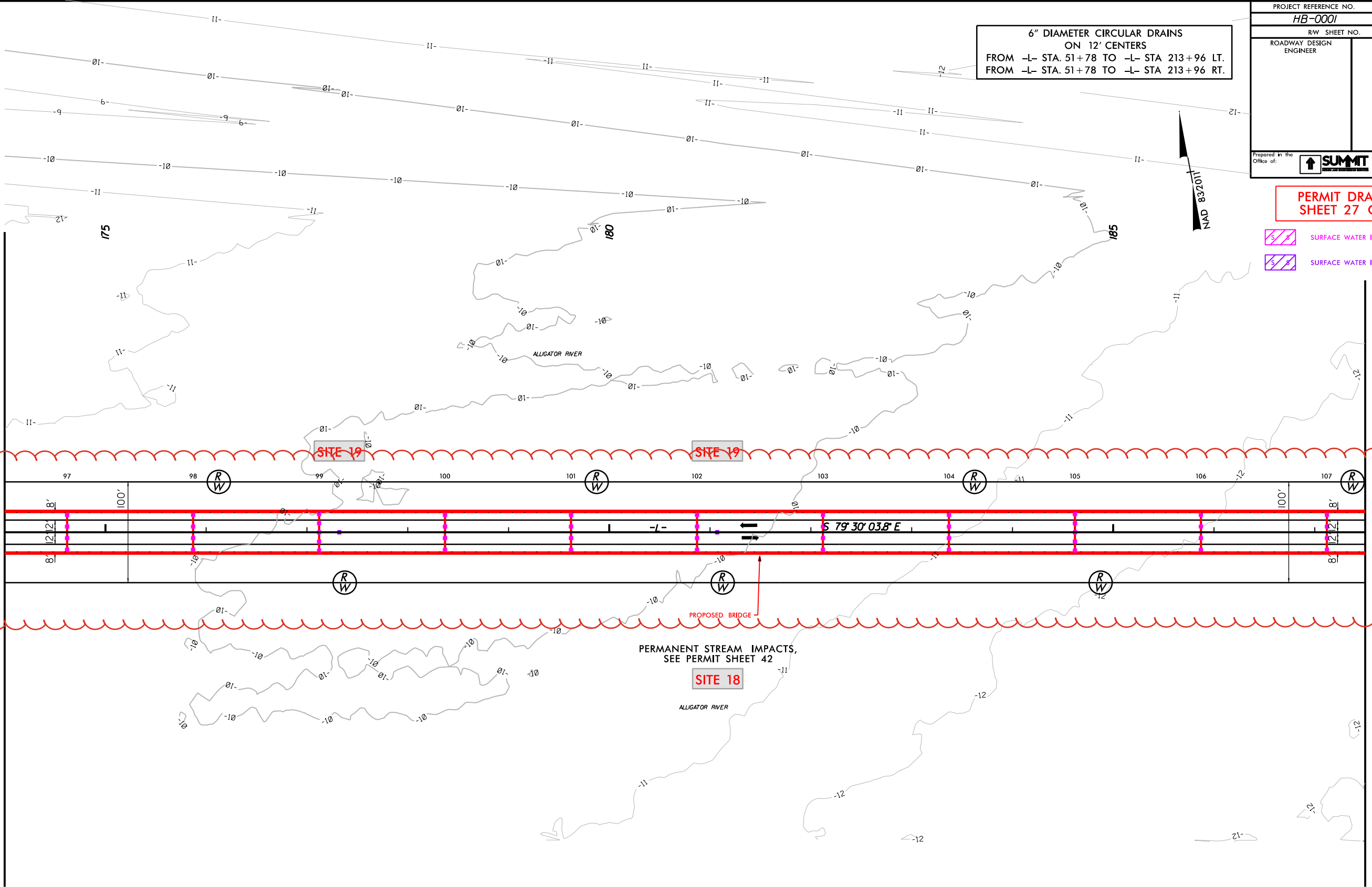
8/17/99

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HB-0001-11.dwg
c:\p\m\sh.27_M00.dgn
josh.levinson

REVISIONS



MATCHLINE -L- STATION 174 + 00.00 (SEE SHEET 15)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

NAD 83/2011

PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>16</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-2869 (919) 732-6616 (FAX)	

PERMIT DRAWING
SHEET 27 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 187 + 50.00
(SEE SHEET 17)

SEE SHEET 30 & 31 FOR -L- PROFILE

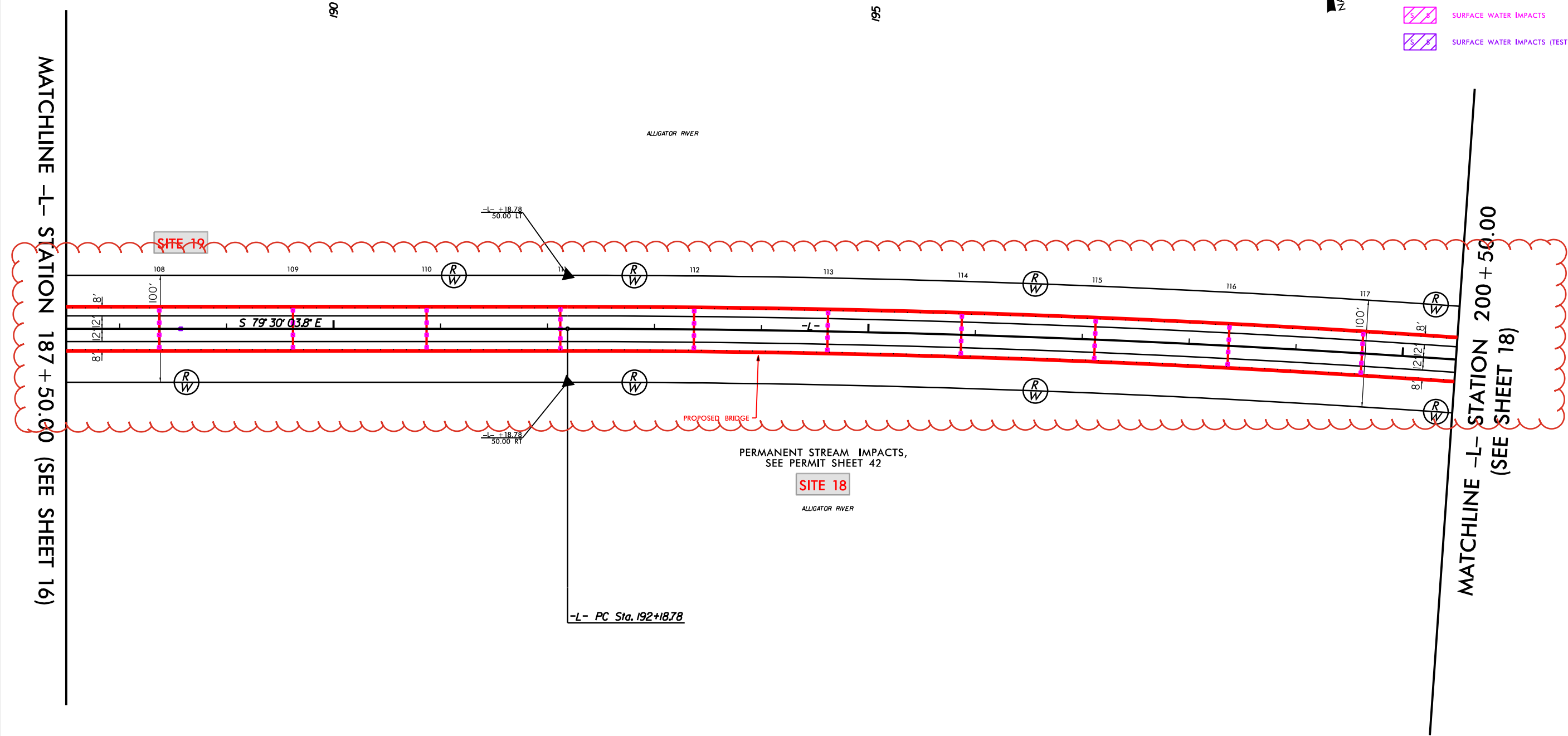
8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 187+50.00 (SEE SHEET 16)



-L-
PI Sta 207+58.97
 $\Delta = 14^\circ 37' 40.0''$ (RT)
 $D = 0^\circ 28' 38.9''$
 $L = 3,063.63'$
 $T = 1,540.19'$
 $R = 12,000.00'$
SE = NC

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>17</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-5863 (919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 28 OF 79

-  SURFACE WATER IMPACTS
-  SURFACE WATER IMPACTS (TEST PILES)

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 18

ALLIGATOR RIVER

-L- PC Sta. 192+18.78

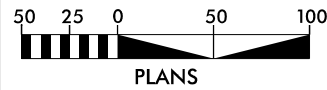
MATCHLINE -L- STATION 200+50.00
(SEE SHEET 18)

SEE SHEET 31 FOR -L- PROFILE

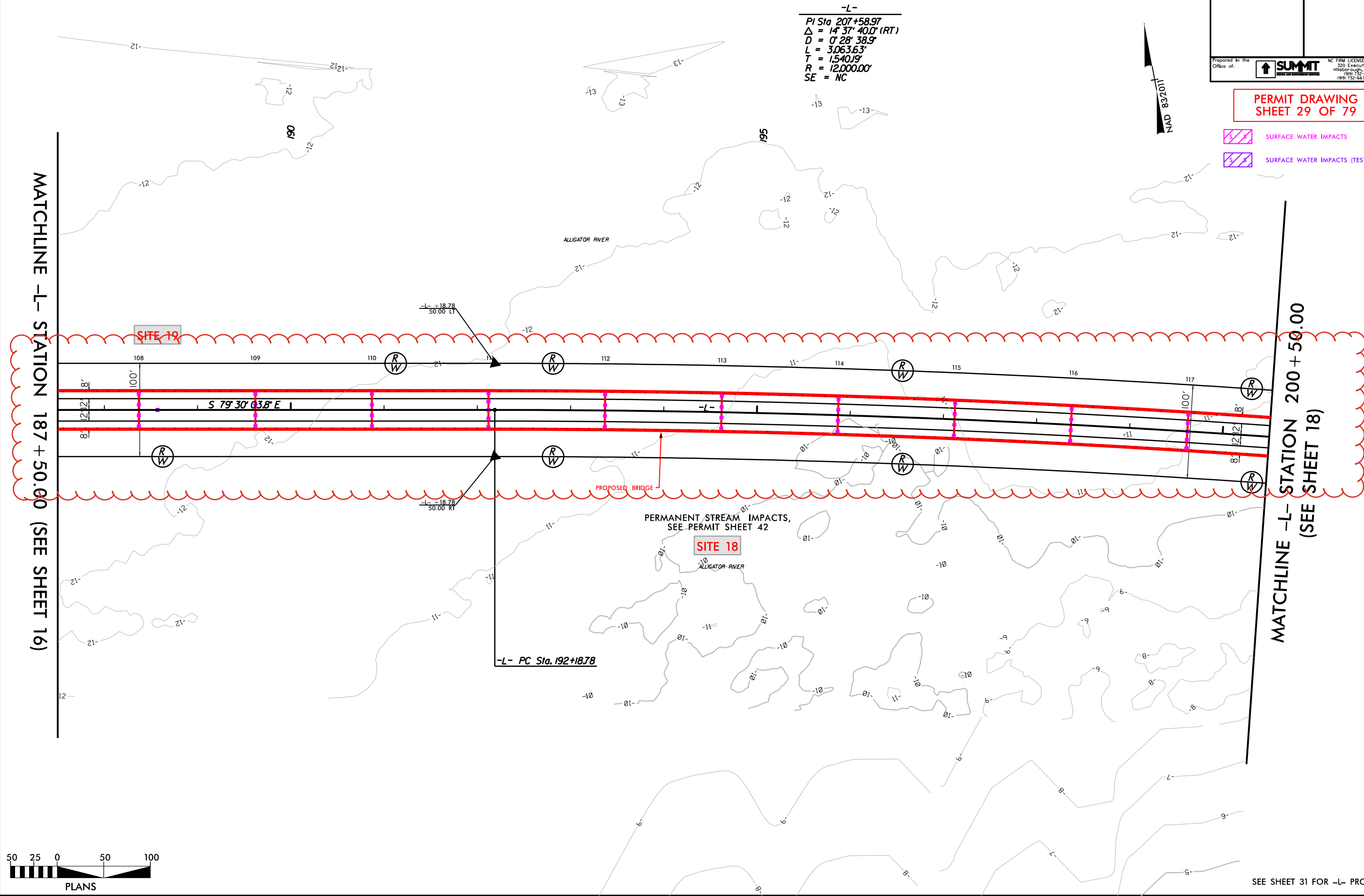
8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 187+50.00 (SEE SHEET 16)



6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

-L-
PI Sta 207+58.97
Δ = 14° 37' 40.0" (RT)
D = 0° 28' 38.9"
L = 3,063.63'
T = 1,540.19'
R = 12,000.00'
SE = NC

NAD 83/2011

PROJECT REFERENCE NO. <i>HB-0001</i>		SHEET NO. <i>17</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-3668 (919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 29 OF 79

- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)

MATCHLINE -L- STATION 200+50.00
(SEE SHEET 18)

SEE SHEET 31 FOR -L- PROFILE

8/17/99

18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn
18-NOV-2024 09:44
HB-0001.dgn

REVISIONS



MATCHLINE -L- STATION 200 + 50.00 (SEE SHEET 17)

SITE 19

SITE 18

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

-L-
PI Sta 207+58.97
 $\Delta = 14' 37" 40.0' (RT)$
 $D = 0' 28' 38.9"$
 $L = 3,063.63'$
 $T = 1,540.19'$
 $R = 12,000.00'$
SE = NC

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



PROJECT REFERENCE NO.		SHEET NO.
HB-0001		18
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-8869 (919) 732-6676 (FAX)

PERMIT DRAWING
SHEET 30 OF 79

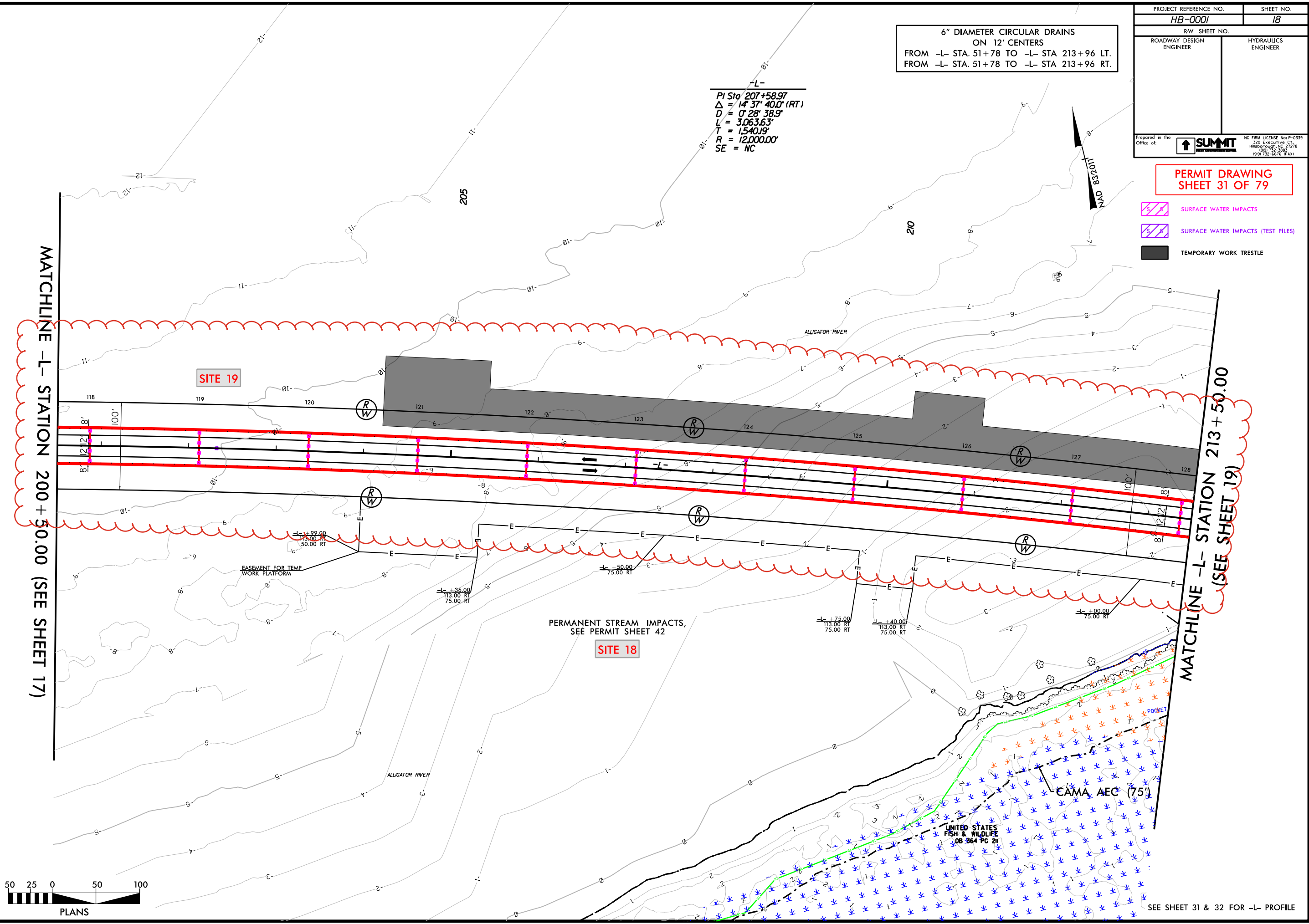
- SURFACE WATER IMPACTS
- SURFACE WATER IMPACTS (TEST PILES)
- TEMPORARY WORK TRESTLE

MATCHLINE -L- STATION 213 + 50.00
(SEE SHEET 19)

SEE SHEET 31 & 32 FOR -L- PROFILE

8/17/99
18-NOV-2024 09:44
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10/25/2024

REVISIONS



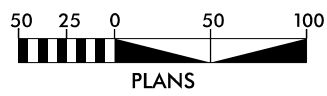
-L-
PI Sta 207+58.97
 $\Delta = 14^\circ 37' 40.0''$ (RT)
 $D = 0^\circ 28' 38.9''$
 $L = 3,063.63'$
 $T = 1,540.19'$
 $R = 12,000.00'$
SE = NC

6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

PROJECT REFERENCE NO. HB-0001		SHEET NO. 18	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:  SUMMIT NC FIRM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-2869 (919) 732-6616 (FAX)			

PERMIT DRAWING
SHEET 31 OF 79

-  SURFACE WATER IMPACTS
-  SURFACE WATER IMPACTS (TEST PILES)
-  TEMPORARY WORK TRESTLE

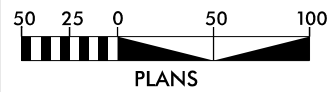


SEE SHEET 31 & 32 FOR -L- PROFILE

PROJECT REFERENCE NO.		SHEET NO.	
HB-0001		19	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
		NC FIRM LICENSE NO. P-0359 320 Executive Ct. Hillsborough, NC 27278 (919) 732-3885 (919) 732-6676 (FAX)	
			

	TEMPORARY FILL IN WETLAND
	FILL IN WETLAND
	SURFACE WATER IMPACTS
	MECHANIZED CLEARING (GRUBBING)
	HAND CLEARING (NON-GRUBBING)
	TEMPORARY WORK TRESTLE

MATCHLINE -L- STATION 226 + 50.00
(SEE SHEET 20)



SEE SHEET 32 FOR -I- PROFILE

PROJECT REFERENCE NO.
HB-0001

SHEET NO.
19

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

Prepared in the Office of:

SUMMIT
ROADWAY AND HYDRAULICS ENGINEERS

NC FIRM LICENSE No. P-0339
320 Executive Ct.
Hillsborough, NC 27278
(919) 732-3869
(919) 732-6616 (FAX)

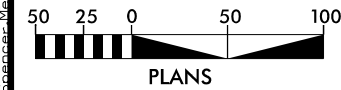
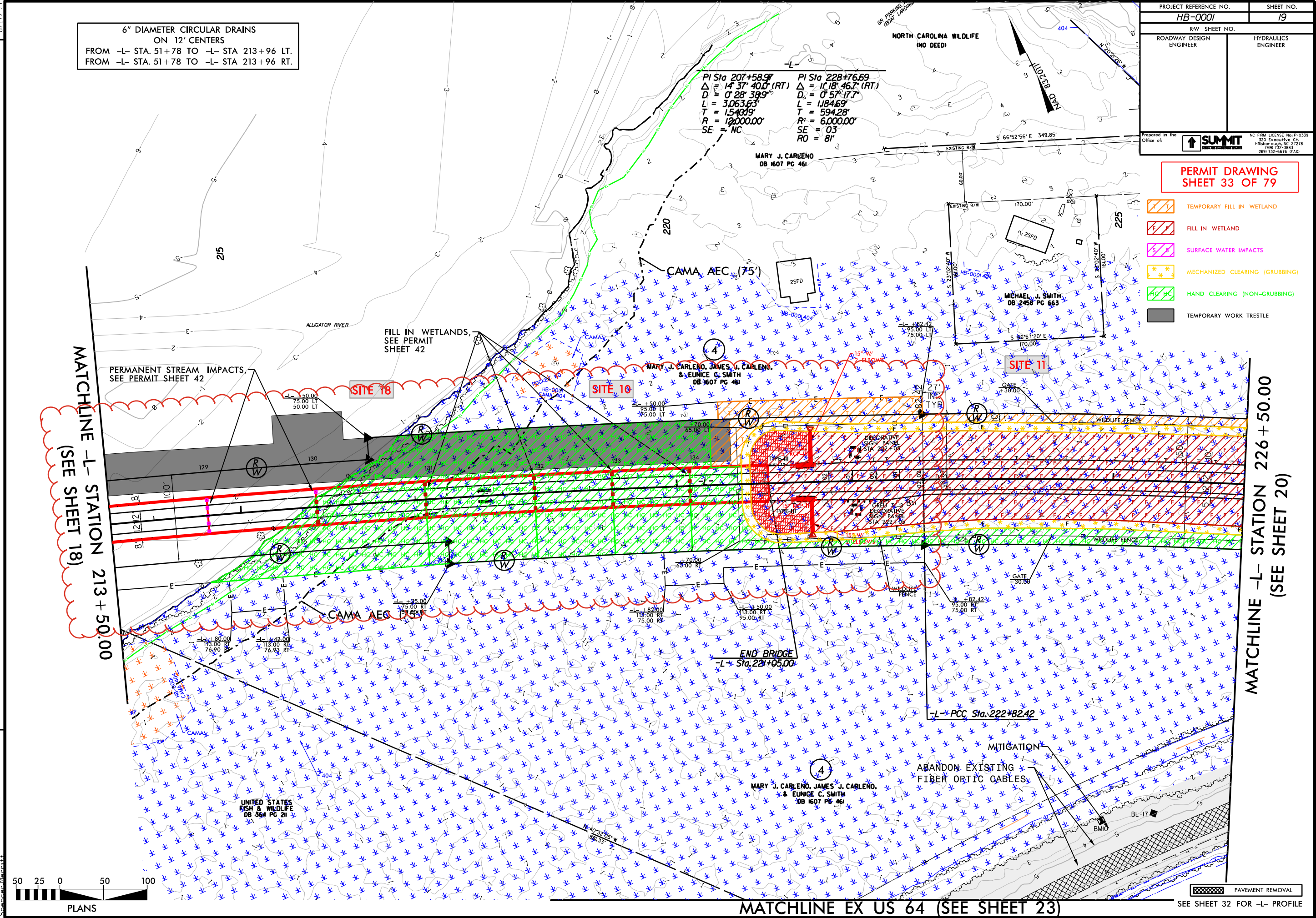
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA. 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA. 213+96 RT.

PI Sta 207+58.97
 $\Delta = 14^{\circ}37'40.0"$ (RT)
 $D = 0^{\circ}28'39.9"$
 $L = 3,063.63'$
 $T = 1,540.19'$
 $R = 12,000.00'$
SE = NC

PI Sta 228+76.69
 $\Delta = 11^{\circ}18'46.7"$ (RT)
 $D = 0^{\circ}57'17.7"$
 $L = 1,844.69'$
 $T = 594.28'$
 $R = 6,000.00'$
SE = 03
RO = 81'

PERMIT DRAWING
SHEET 33 OF 79

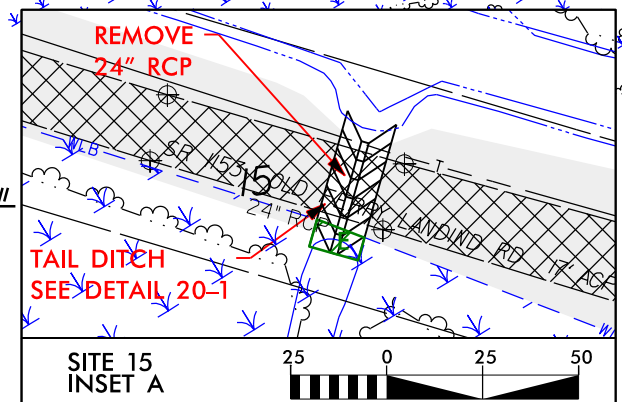
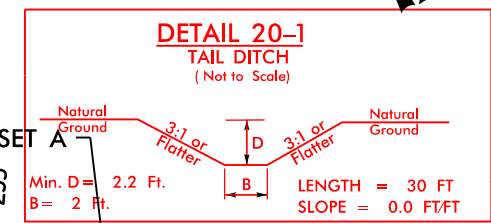
- TEMPORARY FILL IN WETLAND
- FILL IN WETLAND
- SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)
- TEMPORARY WORK TRESTLE



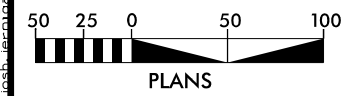
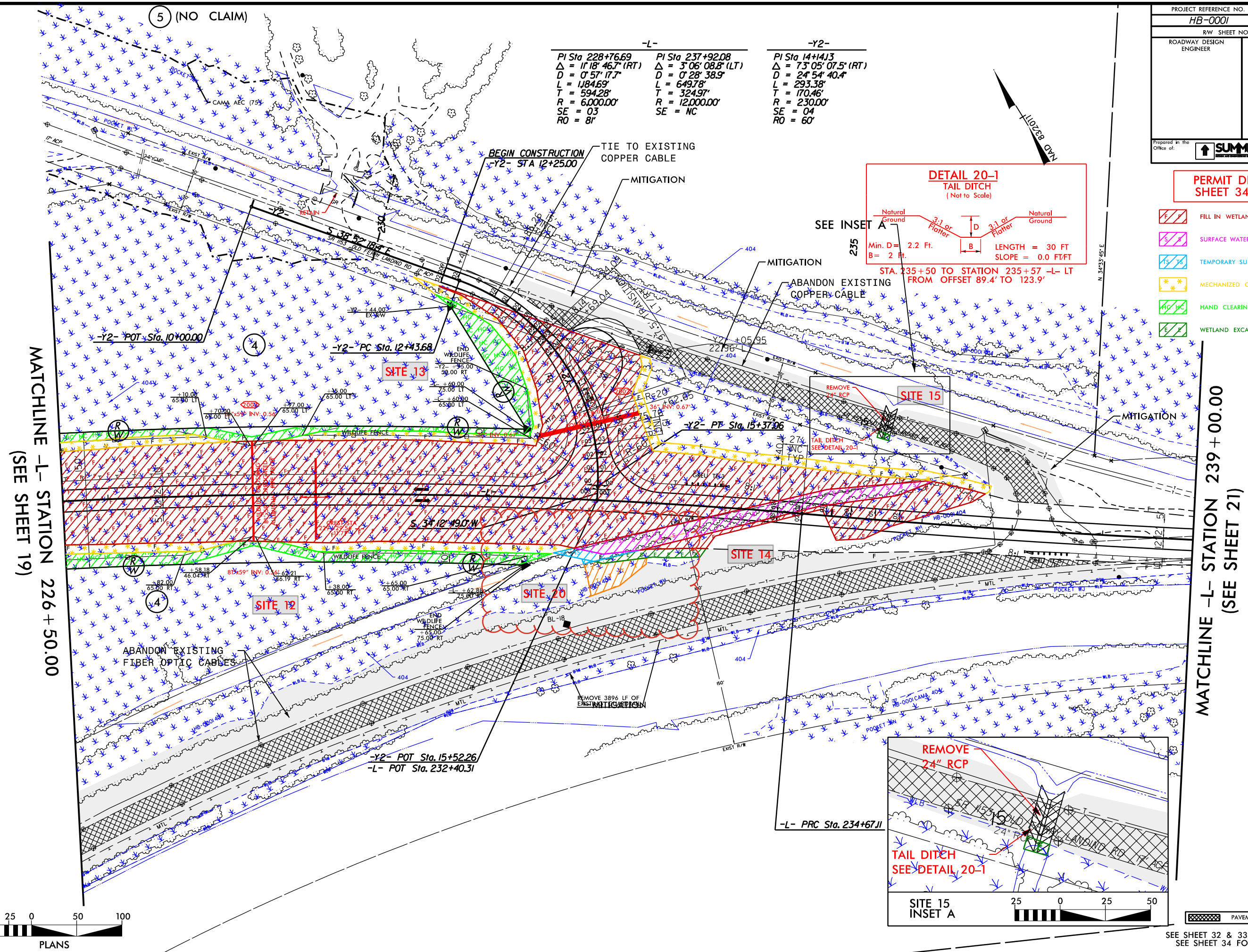
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PERMIT DRAWING
SHEET 34 OF 79

-  FILL IN WETLAND
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS
-  MECHANIZED CLEARING (GRUBBING)
-  HAND CLEARING (NON-GRUBBING)
-  WETLAND EXCAVATION



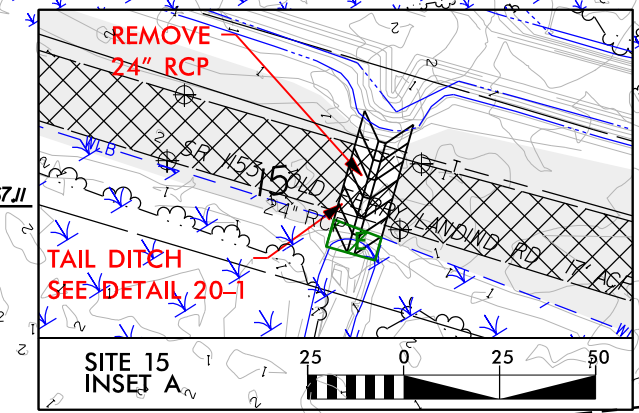
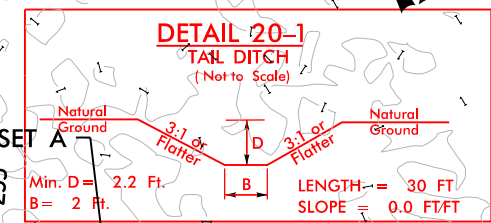
-L-	-Y2-	-Y2-
PI Sta 228+76.69	PI Sta 237+92.08	PI Sta 14+14.13
$\Delta = 11^{\circ} 18' 46.7''$ (RT)	$\Delta = 3^{\circ} 06' 08.8''$ (LT)	$\Delta = 73^{\circ} 05' 07.5''$ (RT)
D = 0' 57' 17.7"	D = 0' 28' 38.9"	D = 24' 54' 40.4"
L = 1,846.9'	L = 649.78'	L = 293.38'
T = 594.28'	T = 324.97'	T = 170.46'
R = 6,000.00'	R = 12,000.00'	R = 230.00'
SE = 03	SE = NC	SE = 04
RO = 8'		RO = 60'



SEE SHEET 32 & 33 FOR -L- PROFILE
SEE SHEET 34 FOR -Y2- PROFILE

**PERMIT DRAWING
SHEET 35 OF 79**

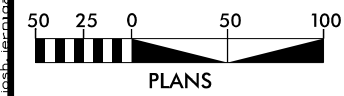
-  FILL IN WETLAND
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS
-  MECHANIZED CLEARING (GRUBBING)
-  HAND CLEARING (NON-GRUBBING)
-  WETLAND EXCAVATION



-L-	-Y2-	-Y2-
PI Sta 228+76.69 Δ = 11° 18' 46.7" (RT) D = 0' 57' 12.7" L = 1,846.9' T = 594.28' R = 6,000.00' SE = 03 RO = 81'	PI Sta 237+92.08 Δ = 3° 06' 08.8" (LT) D = 0' 28' 38.9" L = 649.78' T = 324.97' R = 12,000.00' SE = NC	PI Sta 14+14.13 Δ = 73° 05' 07.5" (RT) D = 24' 54' 40.4" L = 293.38' T = 170.46' R = 230.00' SE = 04 RO = 60'

MATCHLINE -L- STATION 226 + 50.00
(SEE SHEET 19)

MATCHLINE -L- STATION 239 + 00.00
(SEE SHEET 21)



SEE SHEET 32 & 33 FOR -L- PROFILE
SEE SHEET 34 FOR -Y2- PROFILE

PROJECT REFERENCE NO.
HB-0001

SHEET NO.
21

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

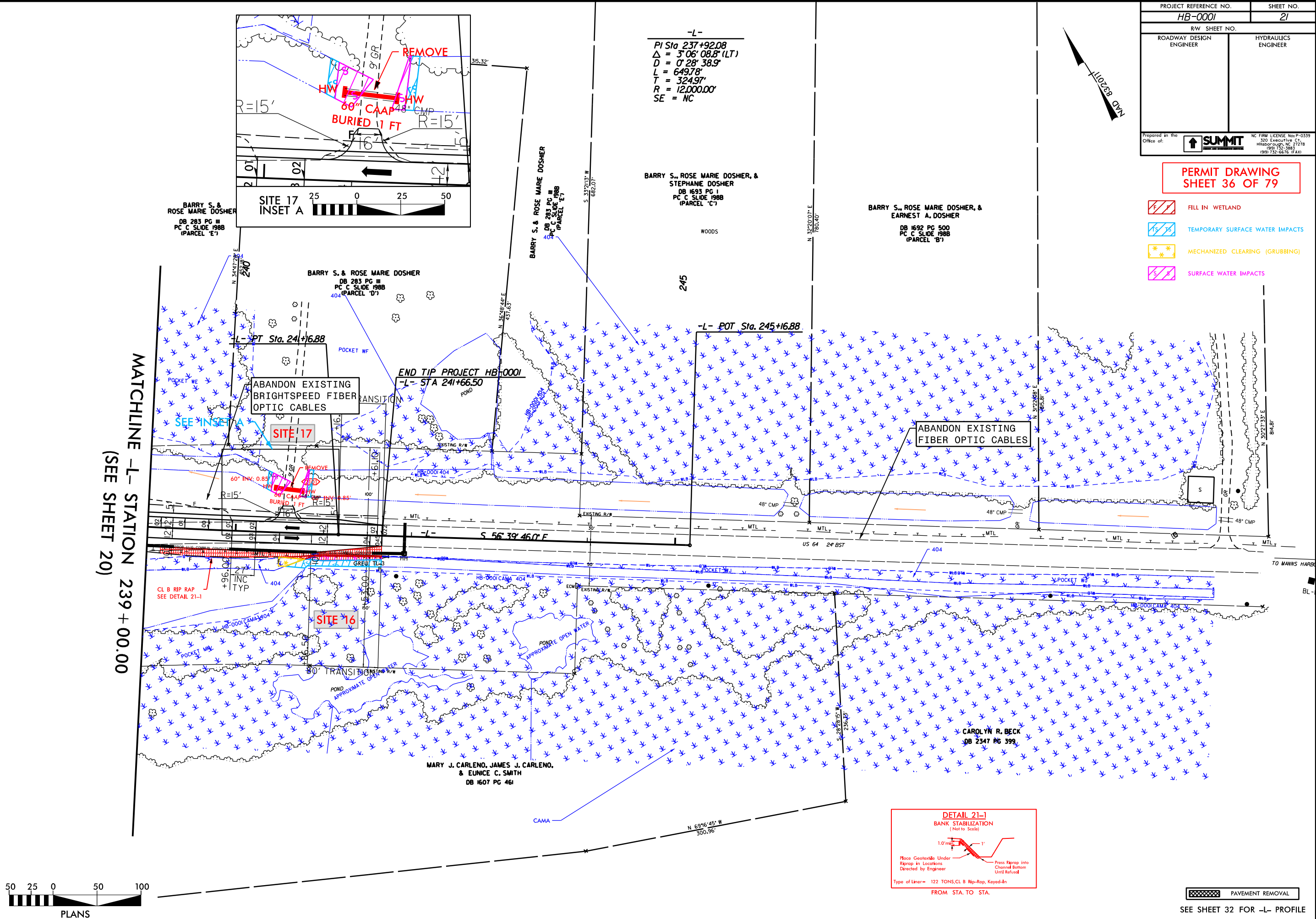
Prepared in the Office of:

**SUMMIT**
Engineering & Construction

NC FIRM LICENSE Nos P-0339
220 Executive Ct
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6876 (FAX)

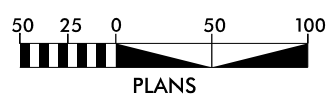
**PERMIT DRAWING
SHEET 36 OF 79**

-  FILL IN WETLAND
-  TEMPORARY SURFACE WATER IMPACTS
-  MECHANIZED CLEARING (GRUBBING)
-  SURFACE WATER IMPACTS



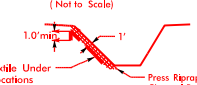
REVISIONS

MATCHLINE -L- STATION 239 + 00.00
(SEE SHEET 20)



PLANS

DETAIL 21-1
BANK STABILIZATION
(Not to Scale)



Place Geotextile Under
Riprap in Locations
Directed by Engineer

Press Riprap into
Channel Bottom
Until Relieved

Type of Liner = 122 TONS/CL B Rip-Rap, Keyed-In
FROM STA. TO STA.

PAVEMENT REMOVAL

SEE SHEET 32 FOR -L- PROFILE

PROJECT REFERENCE NO.
HB-0001

SHEET NO.
21

RW SHEET NO.

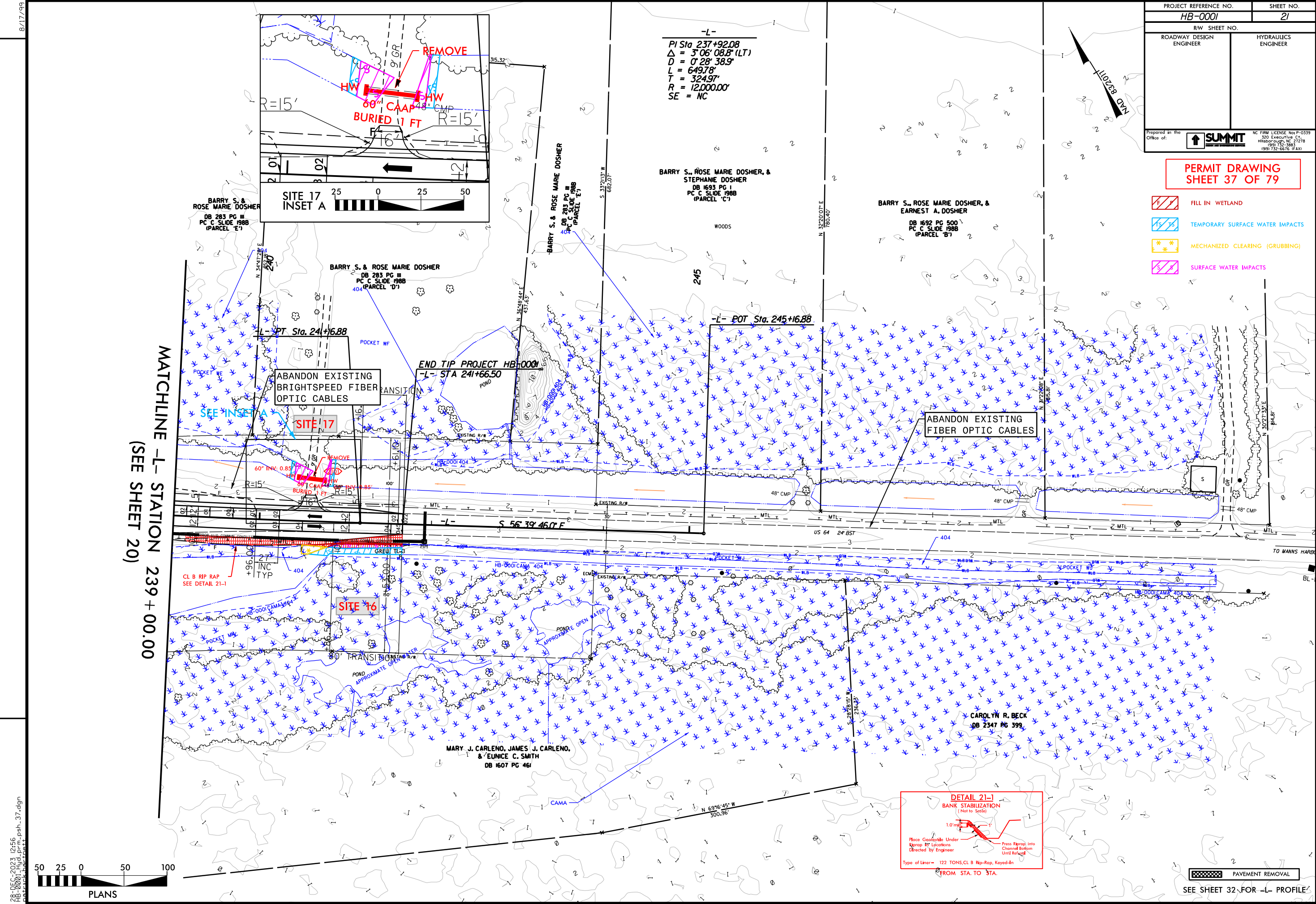
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NC FIRM LICENSE Nos P-0339
220 Executive Ct
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6876 (FAX)

PERMIT DRAWING
SHEET 37 OF 79

- FILL IN WETLAND
- TEMPORARY SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)
- SURFACE WATER IMPACTS



DETAIL 21-1
BANK STABILIZATION
(Not to Scale)

Place Geotextile Under Rip-rap for Locations Directed by Engineer

Press Rip-rap into Channel Bottom Until Relaxed

Type of Liner = 122 TONS CL B Rip-Rap, Keyed-In

FROM STA. TO STA.

REVISIONS

8/17/99

28-DEC-2023 12:56
28-0001-0001-37.dgn
C:\p0001\28-0001-0001-37.dgn

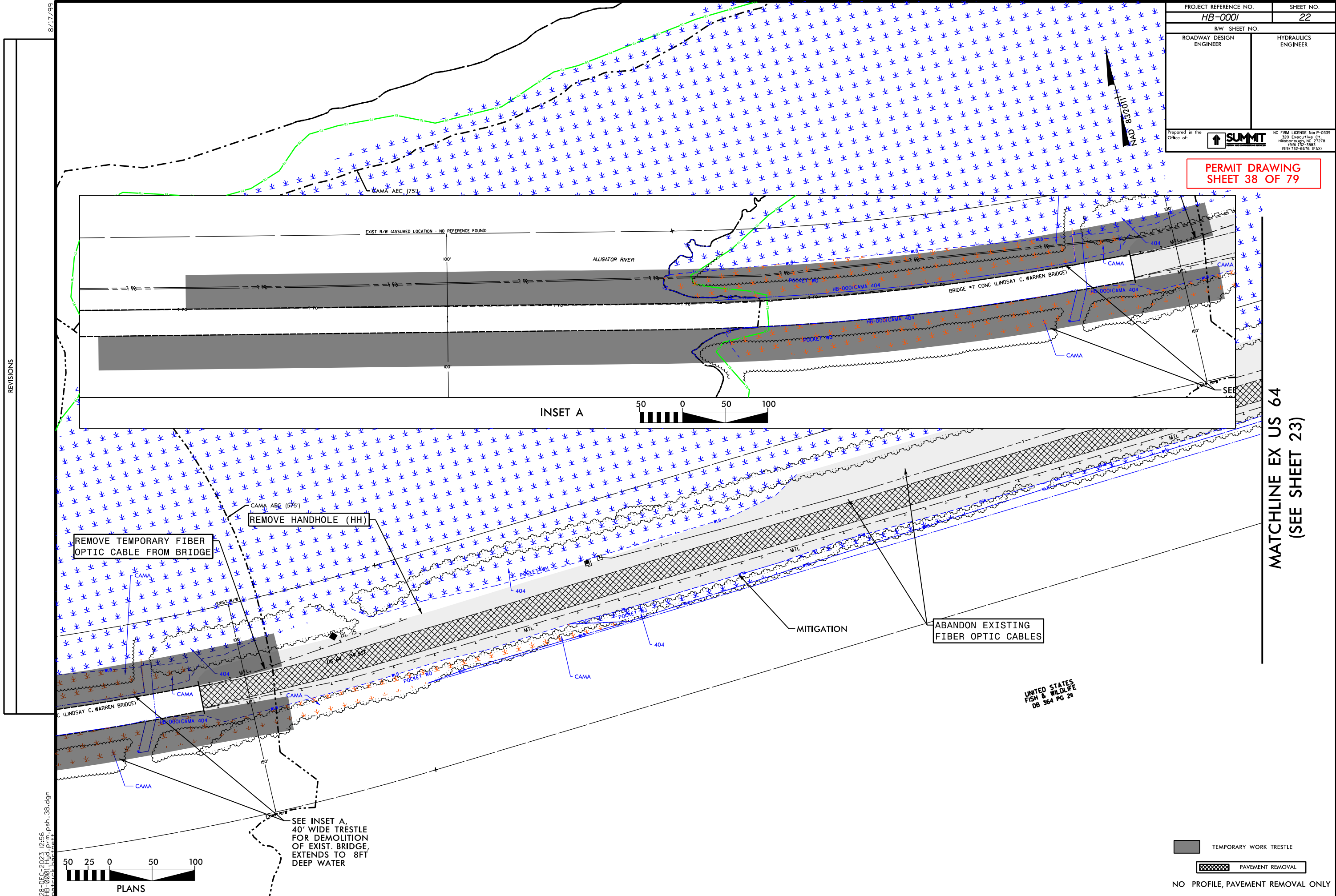


MATCHLINE -L- STATION 239 + 00.00
(SEE SHEET 20)

SEE SHEET 32 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001		SHEET NO. 22
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:  SUMMIT NC FIRM LICENSE No P-0339 320 Executive Ct Hillsborough, NC 27278 (919) 732-3883 (919) 732-6876 (FAX)		

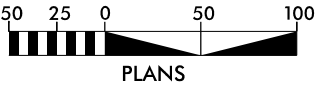
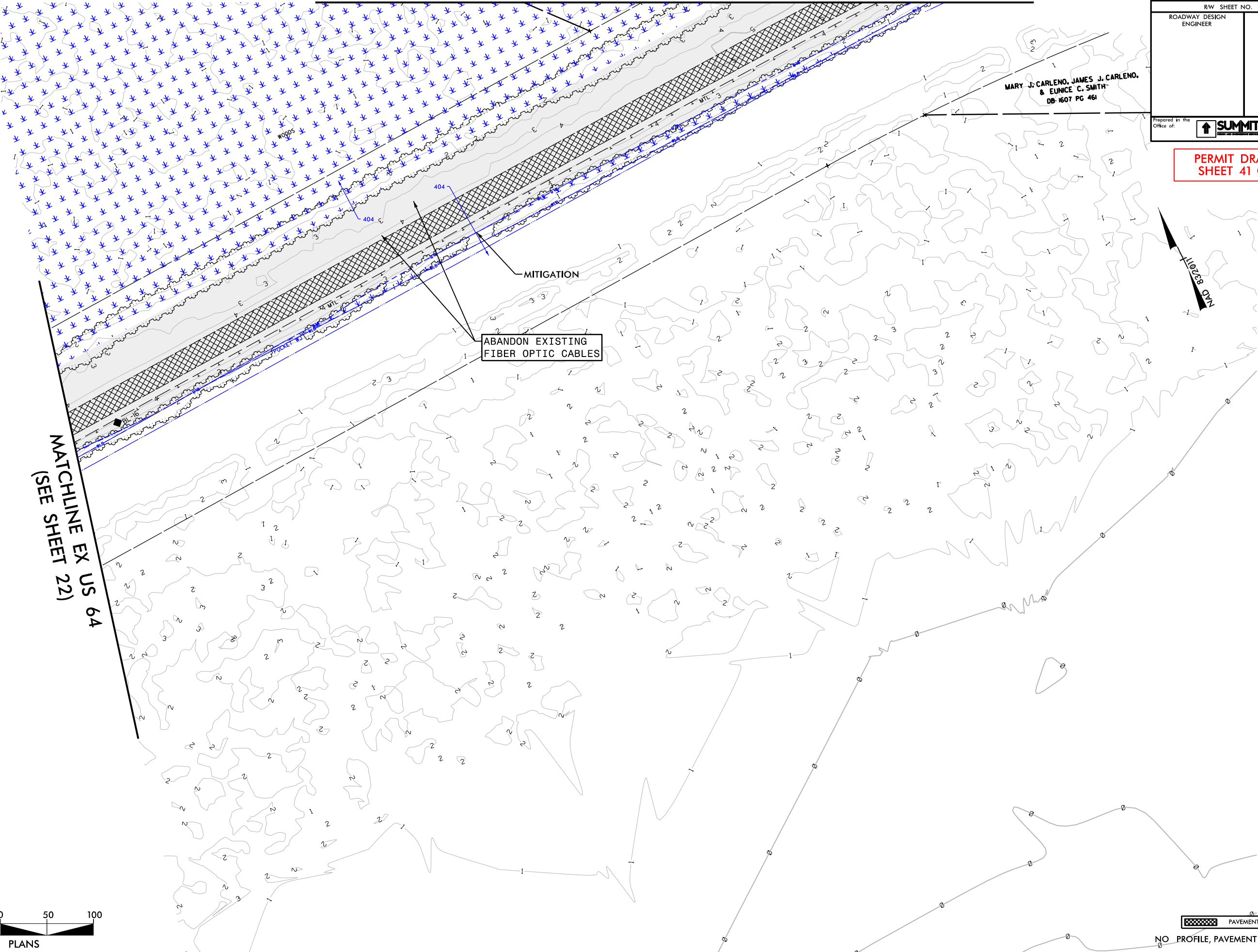
**PERMIT DRAWING
SHEET 38 OF 79**



PROJECT REFERENCE NO. HB-0001		SHEET NO. 23	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
MARY J. CARLENO, JAMES J. CARLENO, & EUNICE C. SMITH DB 1607 PG 461			
Prepared in the Office of:		NC FIRM LICENSE Nos P-0339 320 Executive Five, CT Hillsborough, NC 27278 (919) 732-3883 (919) 732-6876 (FAX)	

PERMIT DRAWING
SHEET 41 OF 79

MATCHLINE EX US 64 (SEE SHEET 19)



PAVEMENT REMOVAL
NO. PROFILE, PAVEMENT REMOVAL ONLY

REVISIONS

8/17/99
28-DEC-2023 12:56
28-0001-23-sh-41.dgn
28-0001-23-sh-41.dgn

8/17/99

REVISIONS

18-NOV-2024 10:52
HB-0001 TYPICAL FORM-42.MXD.dgn
josh.levinson

BENT TYPICAL IMPACTS



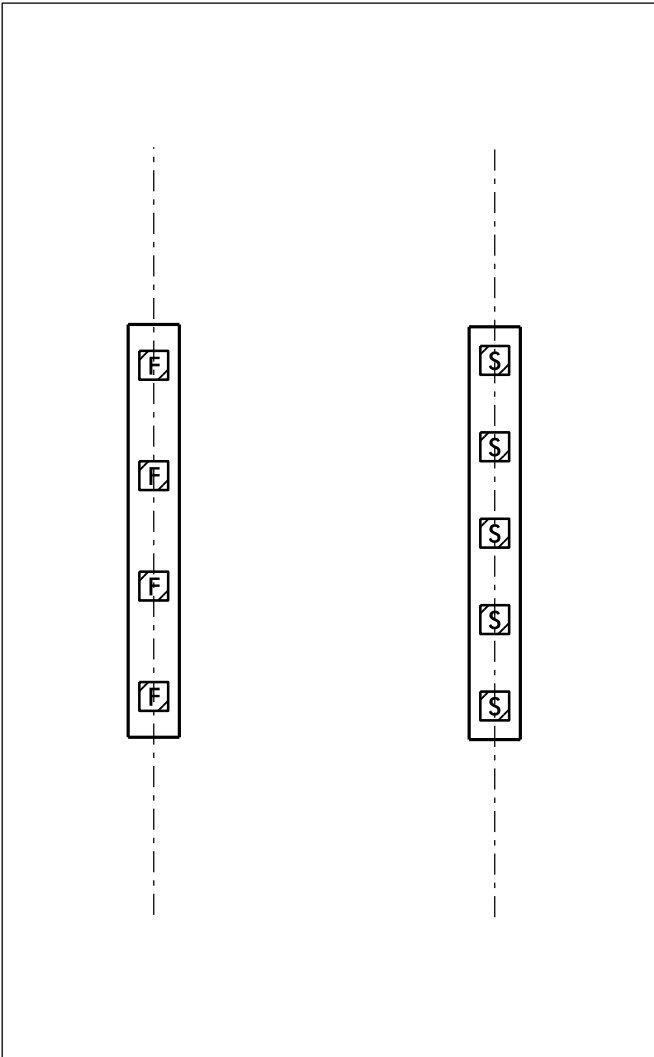
FILL IN WETLAND



SURFACE WATER IMPACTS

PROJECT REFERENCE NO.		SHEET NO.	
HB-0001			
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No. P-0339 320 EXECUTIVE CT. Hillsborough, NC 27278 (919) 732-2868 (919) 732-6616 (FAX)	

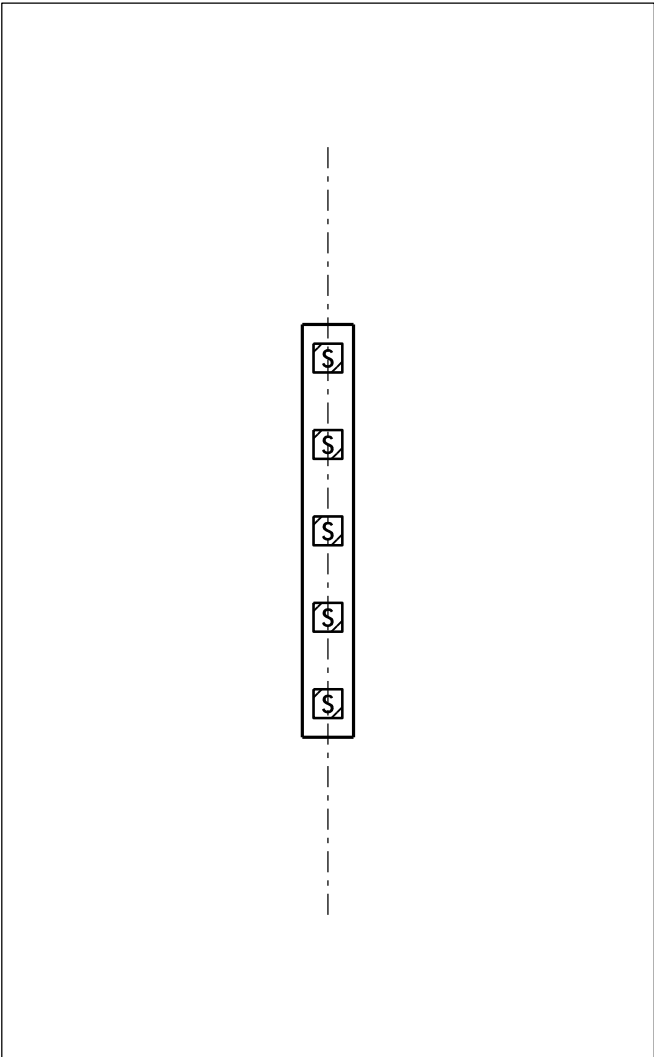
PERMIT DRAWING
SHEET 42 OF 79



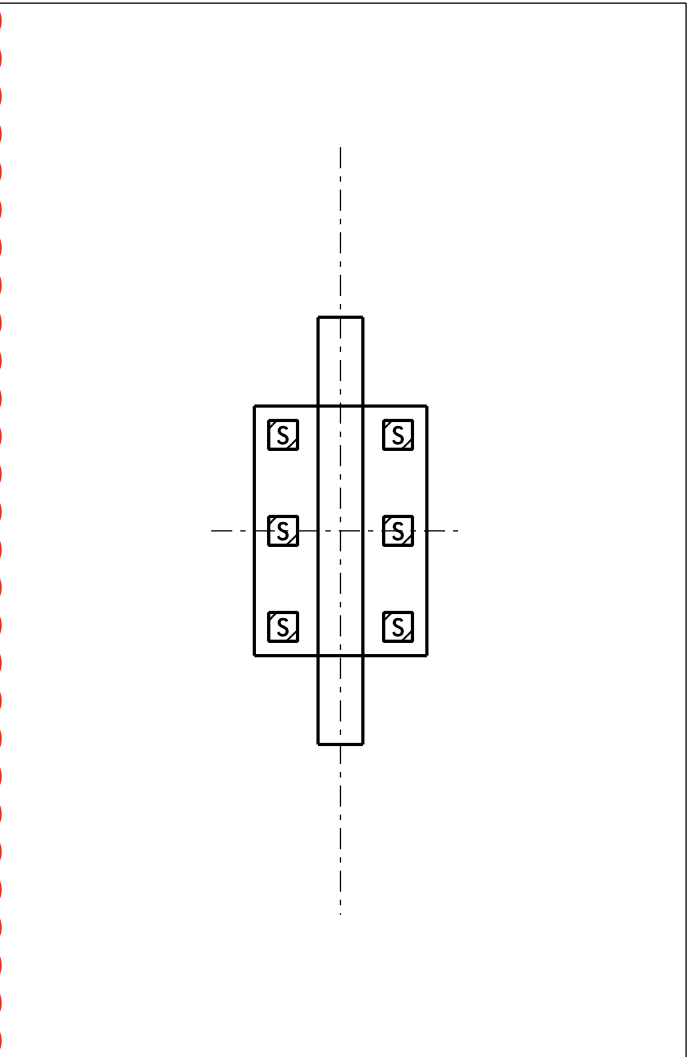
BENTS 1-6, 8-12, 14-18, 20-24,
26-30, 32-36, 38-39, 62-63, 65-68,
70-74, 76-80, 82-86, 88-92, 94-98,
100-104, 106-110, 112-116, 118-122,
124-128, 130-134
43'-0" x 5'-4"
36" PRESTRESSED CONCRETE PILE

Bents 1-3 and 130-134 are in Wetlands

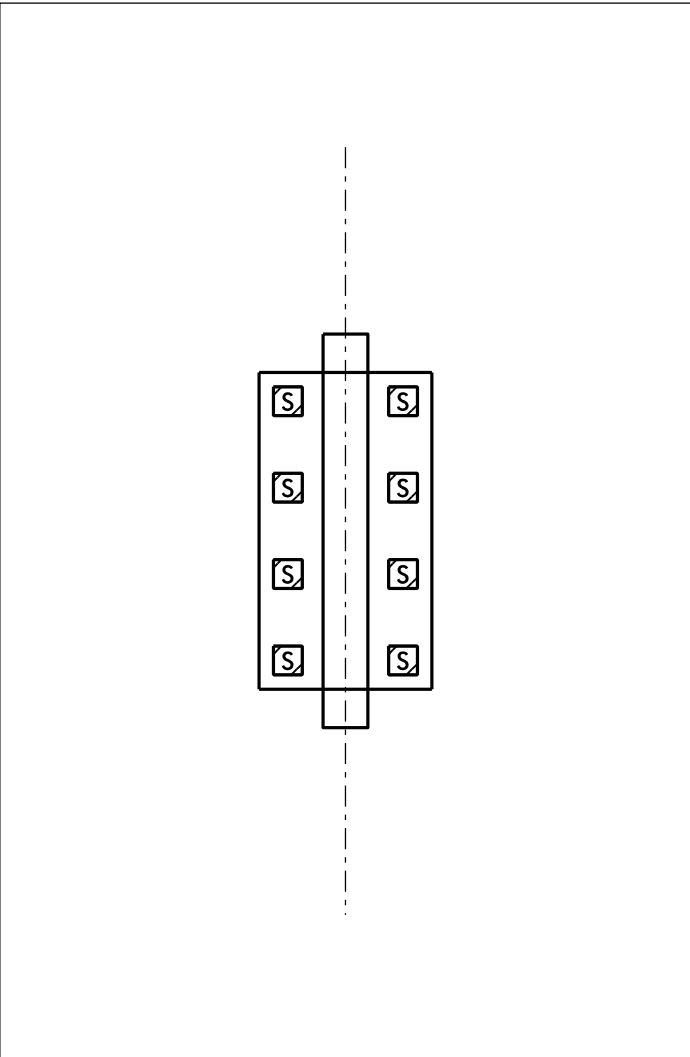
Remainder are in Surface Water



BENTS 7, 13, 19, 25, 31, 37, 64, 69,
75, 81, 87, 93, 99, 105, 111, 117, 123,
129
44'-6" x 5'-0"
36" PRESTRESSED CONCRETE PILE



BENTS 40 & 61
26'-0" x 18'-0"
36" PRESTRESSED CONCRETE PILE



BENTS 41-43, 58-60
33'-0" x 18'-0"
36" PRESTRESSED CONCRETE PILE



8/17/99

REVISIONS

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HB-0001 TYP.psh 43.MCD.dgn
last version

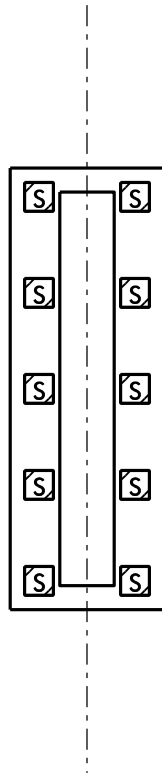
BENT TYPICAL IMPACTS



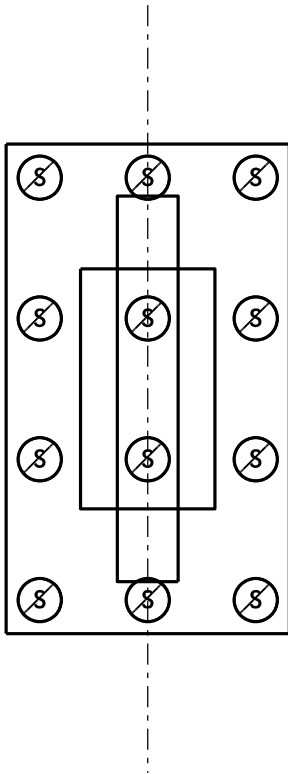
SURFACE WATER IMPACTS

PROJECT REFERENCE NO.		SHEET NO.
HB-0001		
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
Prepared in the Office of:		NC FIRM LICENSE No: P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-2869 (919) 732-4616 (FAX)

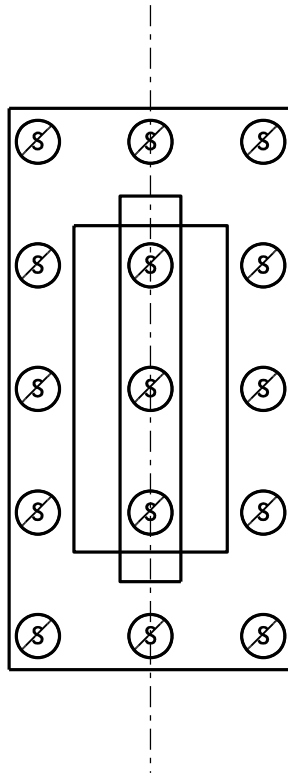
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SHEET 43 OF 79



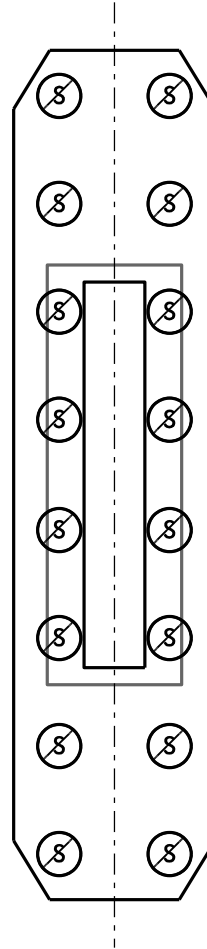
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36" PRESTRESSED CONCRETE PILE



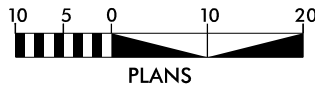
BENTS 47-48, 53-54
51'-0" x 28'-6"
54" PRESTRESSED CONCRETE PILE



BENTS 49 & 52
58'-6" x 28'-6"
54" PRESTRESSED CONCRETE PILE



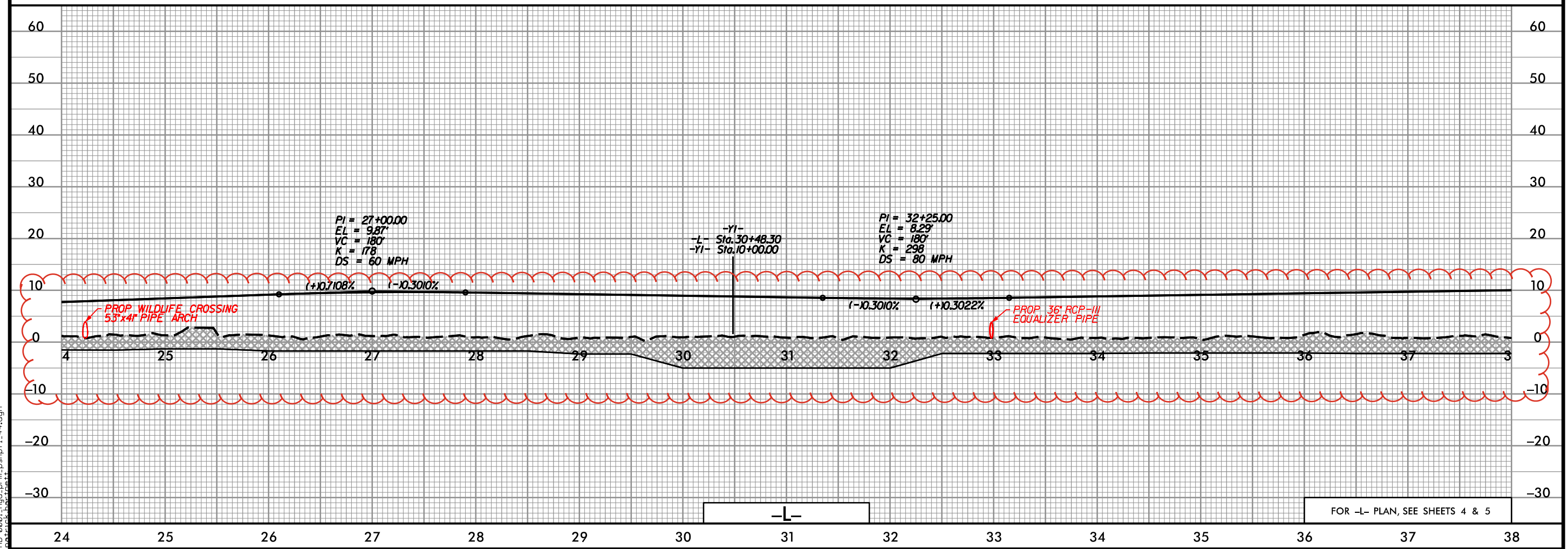
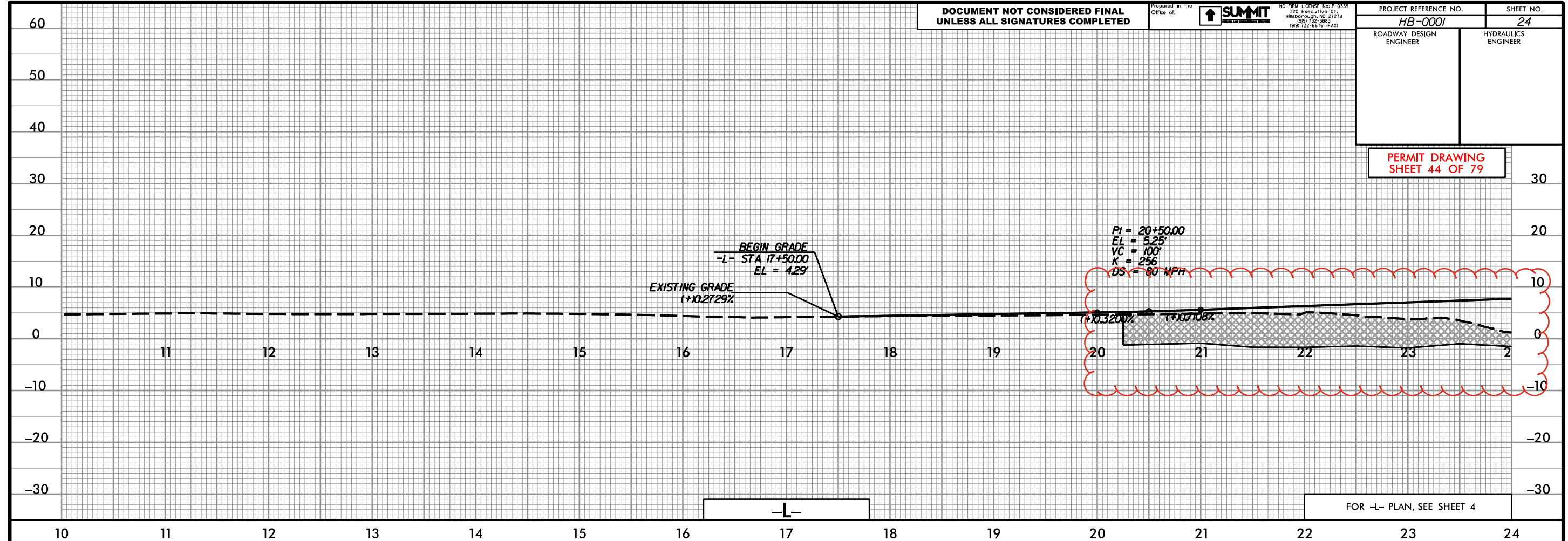
BENTS 50 & 51
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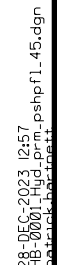
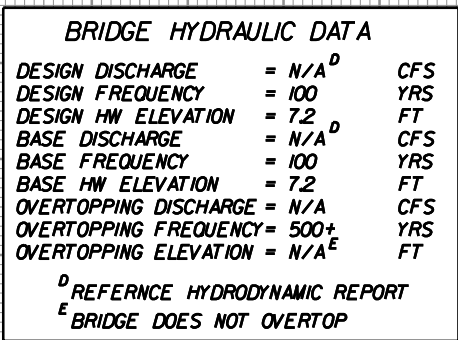
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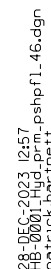
HB-00
ROADWAY DESIGN
ENGINEER

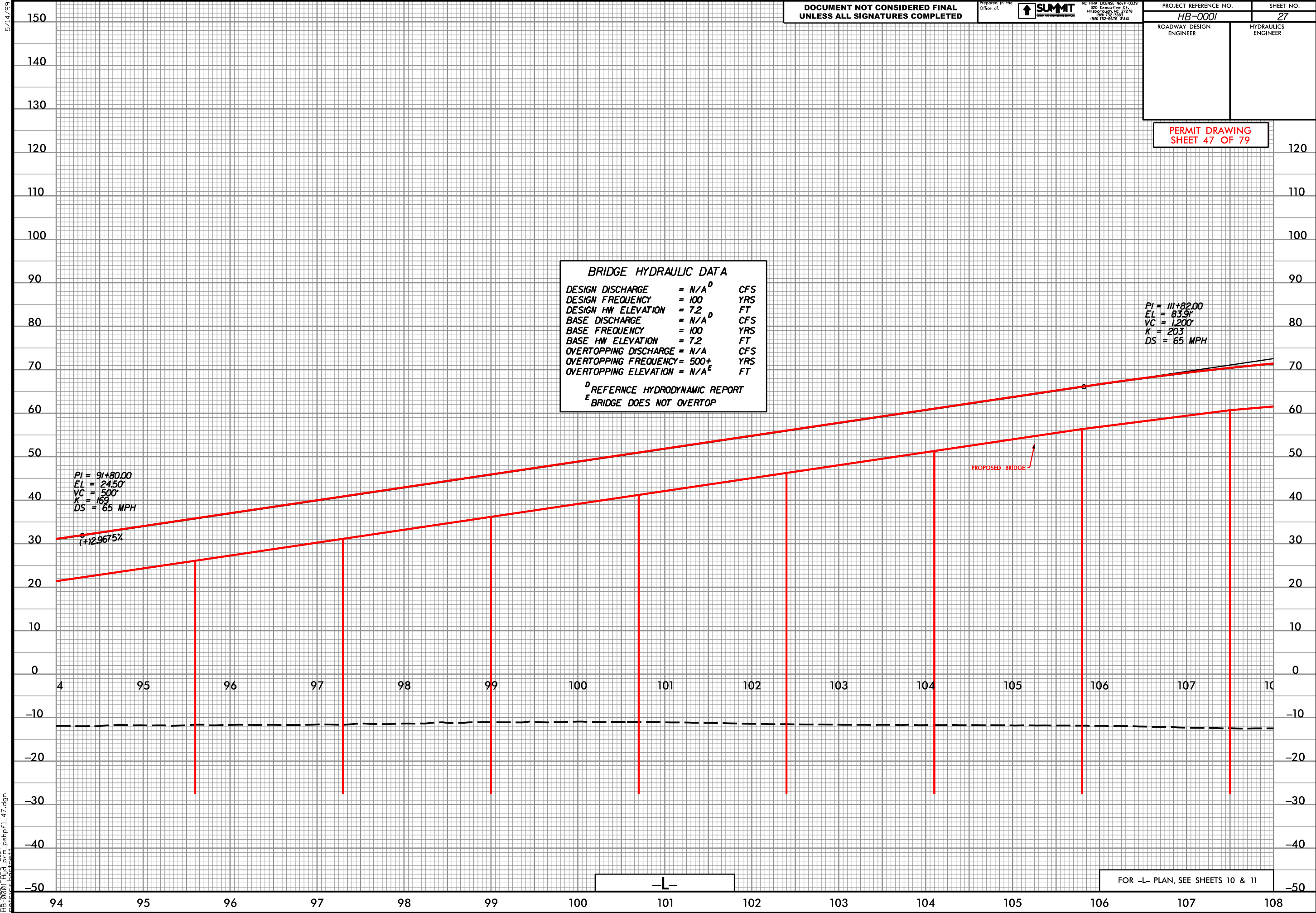
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ENGINEER

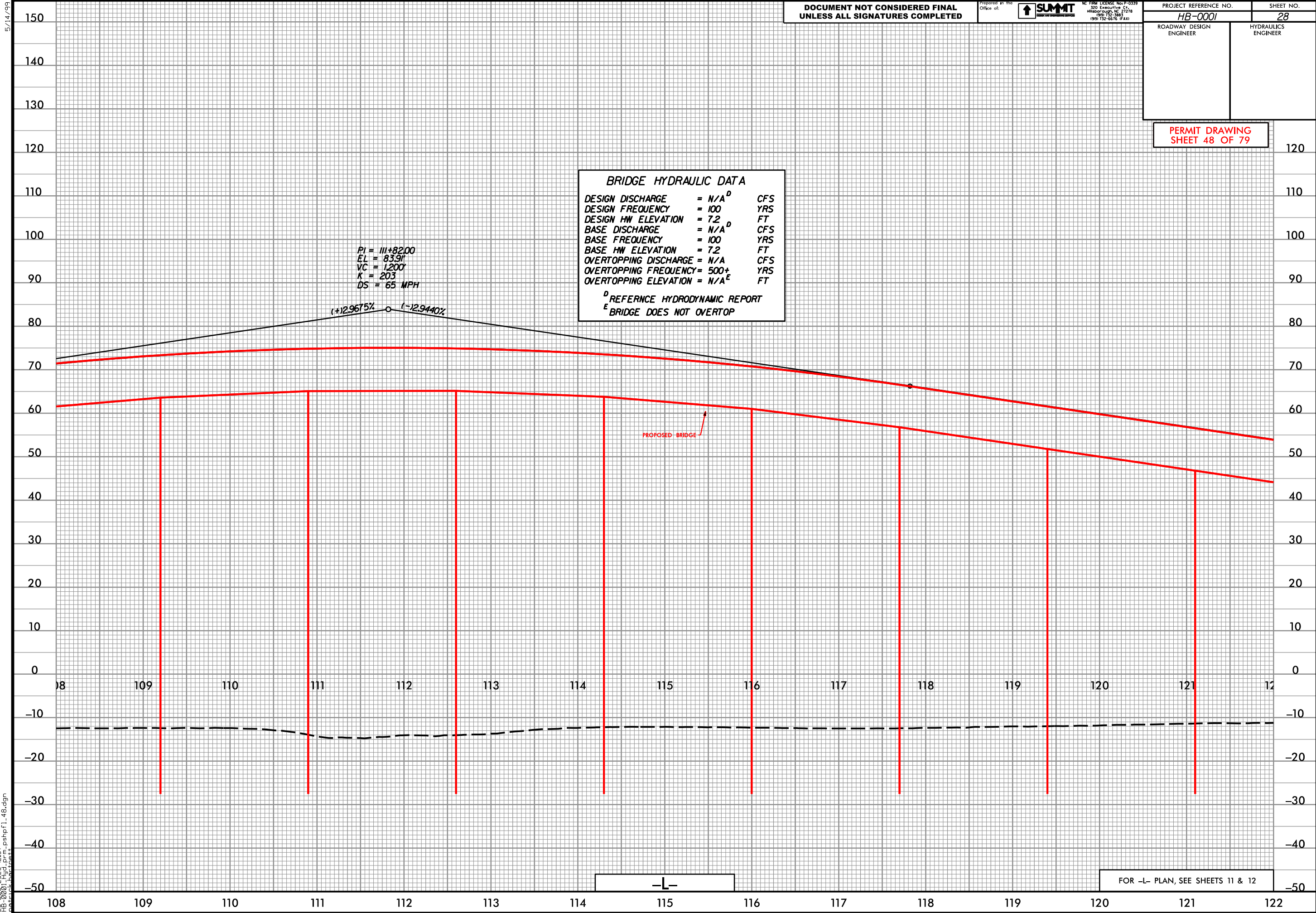
PERMIT DRAWING
SHEET 44 OF 79

$PI = 54 + 25.00$
 $EL = 24.50'$
 $VC = 500'$
 $K = 455$
 $DS = 80 \text{ MPH}$
 $e = 0.000\%$





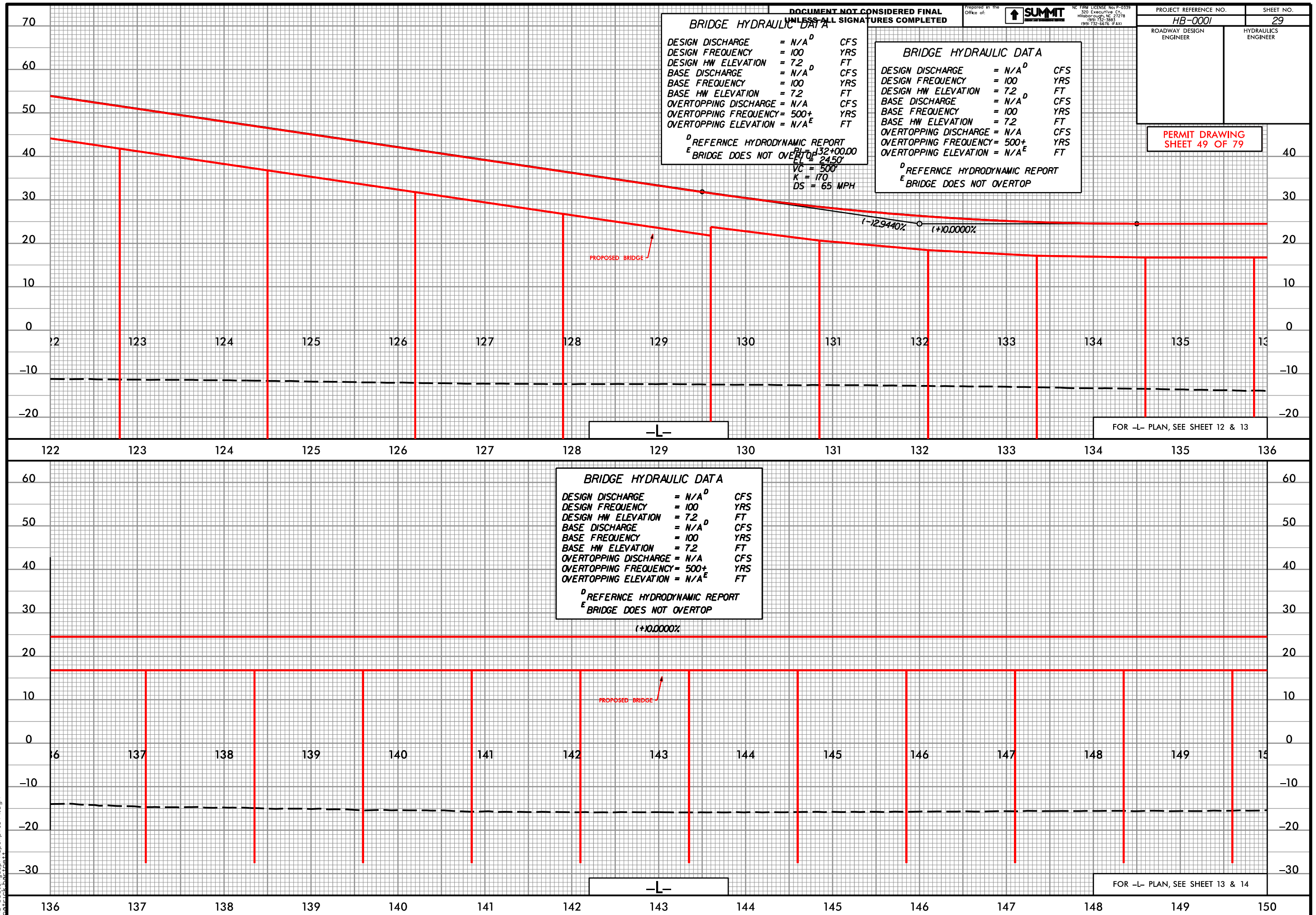




PERMIT DRAWING
SHEET 49 OF 79

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DESIGN FREQUENCY	=	100	YRS
DESIGN HW ELEVATION	=	7.2	FT
BASE DISCHARGE	=	N/A ^D	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.2	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A ^E	FT

^D REFERENCE HYDRODYNAMIC REPORT
^E BRIDGE DOES NOT OVERTOP



PERMIT DRAWING
SHEET 50 OF 79

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A^D	CFS
DESIGN FREQUENCY	=	100	YRS
DESIGN HW ELEVATION	=	7.2	FT
BASE DISCHARGE	=	N/A^D	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.2	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A^E	FT

^D_E REFERENCE HYDRODYNAMIC REPORT

^E BRIDGE DOES NOT OVERTOP

(+10.0000%

PROPOSED BRIDGE

-L-

FOR -L- PLAN, SEE SHEETS 14 & 15

BRIDGE HYDRAULIC DATA

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DESIGN FREQUENCY	=	100	YRS
DESIGN HW ELEVATION	=	7.2	FT
BASE DISCHARGE	=	N/A^D	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.2	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A^E	FT

D REFERENCE HYDRODYNAMIC REPORT

^E BRIDGE DOES NOT OVERTOP

(+)0.0000%

PROPOSED BRIDGE

-L-

FOR -L- PLAN, SEE SHEET 15 & 16

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A ^D	CFS
DESIGN FREQUENCY	=	100	YRS
DESIGN HW ELEVATION	=	7.2	FT
BASE DISCHARGE	=	N/A ^D	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.2	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A ^E	FT

^D REFERENCE HYDRODYNAMIC REPORT
^E BRIDGE DOES NOT OVERTOP

(+10.0000%

PROPOSED BRIDGE ↓

-L-

FOR -L- PLAN, SEE SHEETS 16 & 17

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	N/A ^D	CFS
DESIGN FREQUENCY	=	100	YRS
DESIGN HW ELEVATION	=	7.2	FT
BASE DISCHARGE	=	N/A ^D	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	7.2	FT
OVERTOPPING DISCHARGE	=	N/A	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	N/A ^E	FT

^D REFERENCE HYDRODYNAMIC REPORT
^E BRIDGE DOES NOT OVERTOP

(+10.0000%

PROPOSED BRIDGE

-L-

FOR -L- PLAN, SEE SHEETS 17 & 18

^D REFERENCE HYDRODYNAMIC REPORT
^E BRIDGE DOES NOT OVERTOP

FOR -L- PLAN, SEE SHEETS 18 & 19

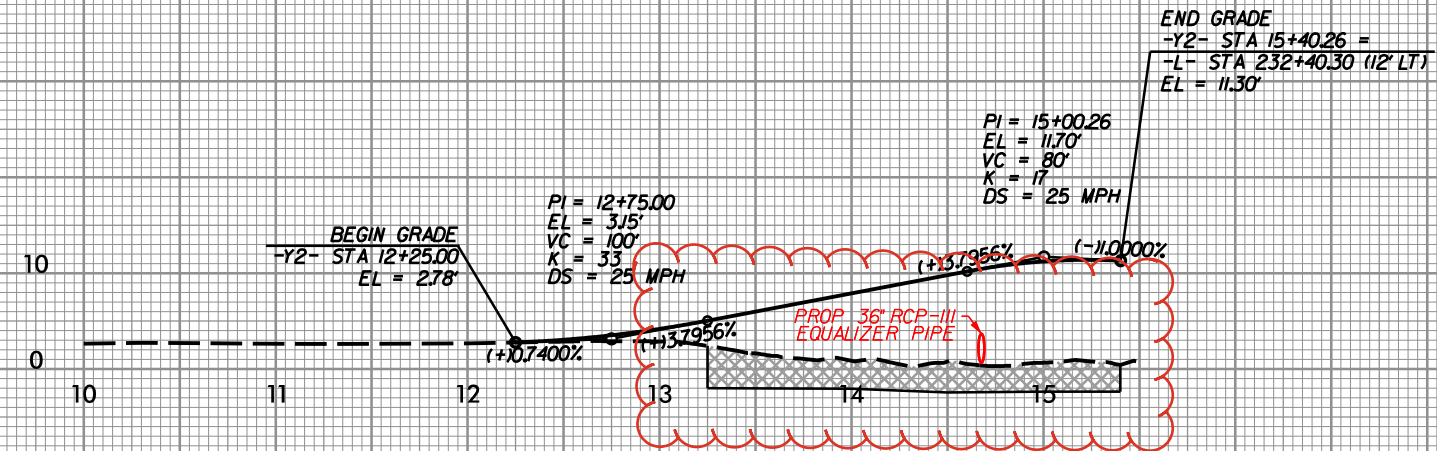
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^E BRIDGE DOES NOT OVERTOP

FOR -L- PLAN, SEE SHEET 19 & 20

HB-0001
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PERMIT DRAWING
SHEET 54 OF 79



-Y2-

FOR -Y2- PLAN, SEE SHEET 21

28-DEC-2023 12:57
HB-0001_Hyd_xpl_L-17+00-50+00.dgn
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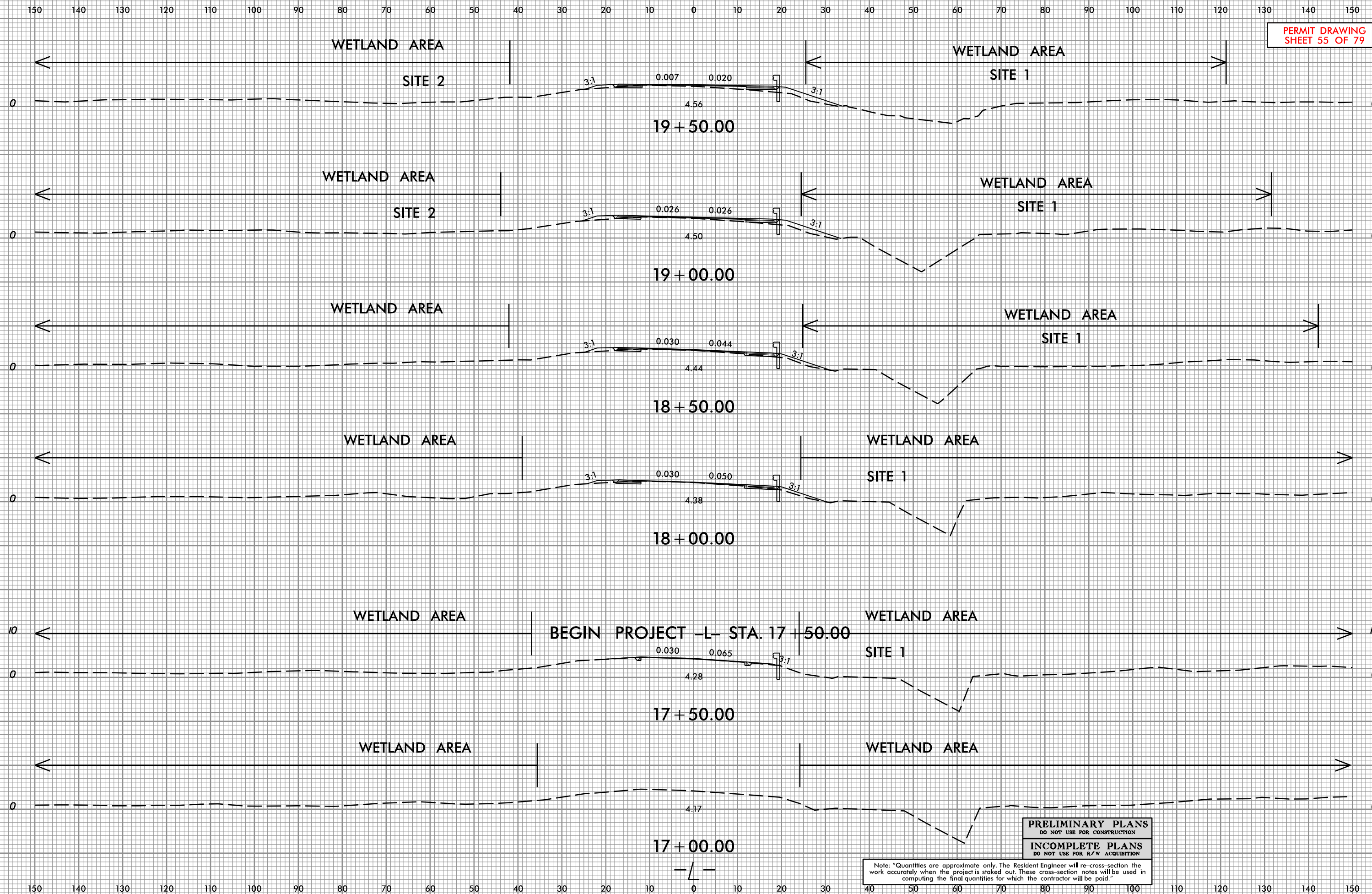
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HB-0001

SHEET NO.

X-1

PERMIT DRAWING
SHEET 55 OF 79



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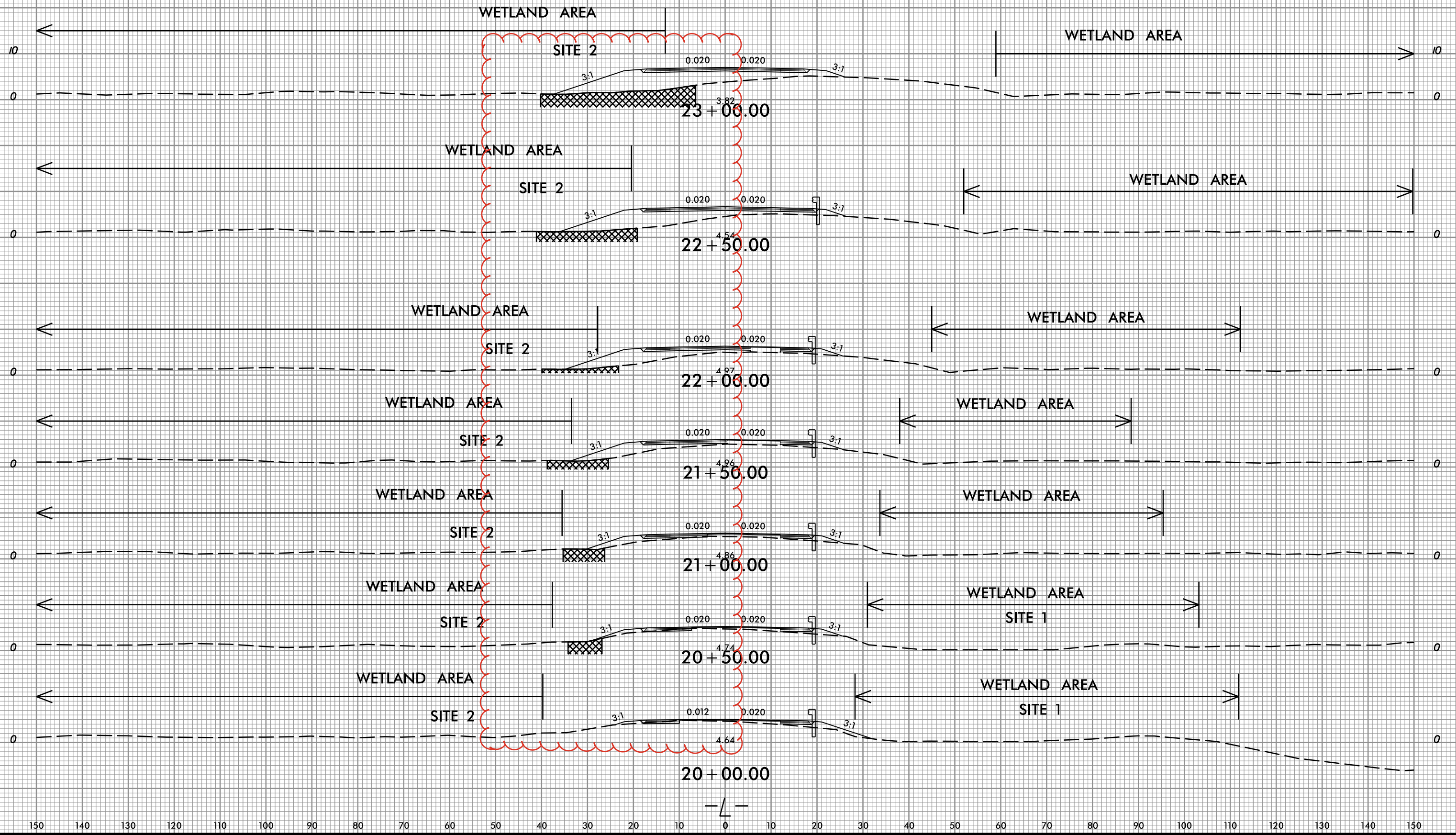
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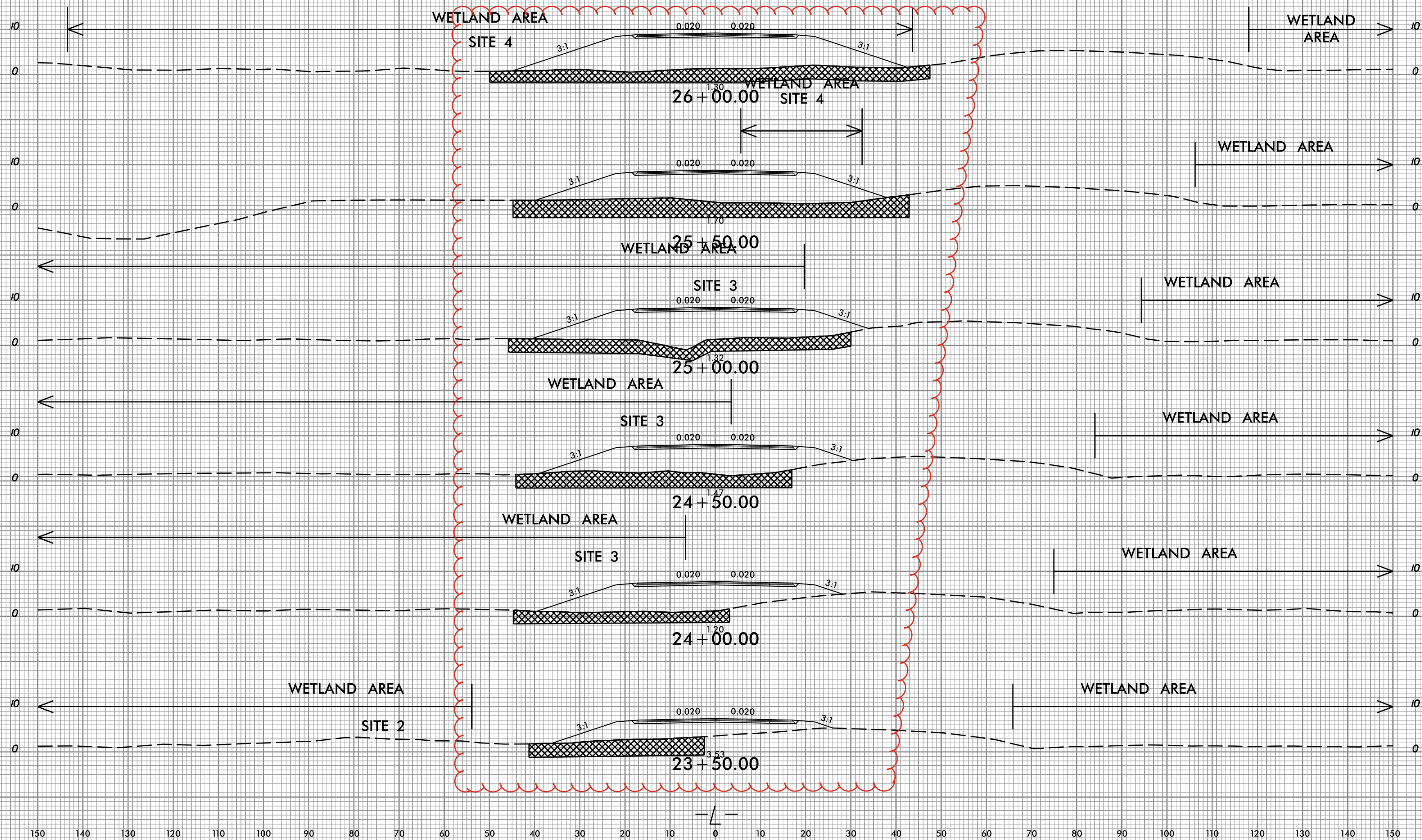


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HB-0001

SHEET NO.
X-2

PERMIT DRAWING
SHEET 56 OF 79



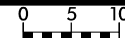
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SHEET 57 OF 79

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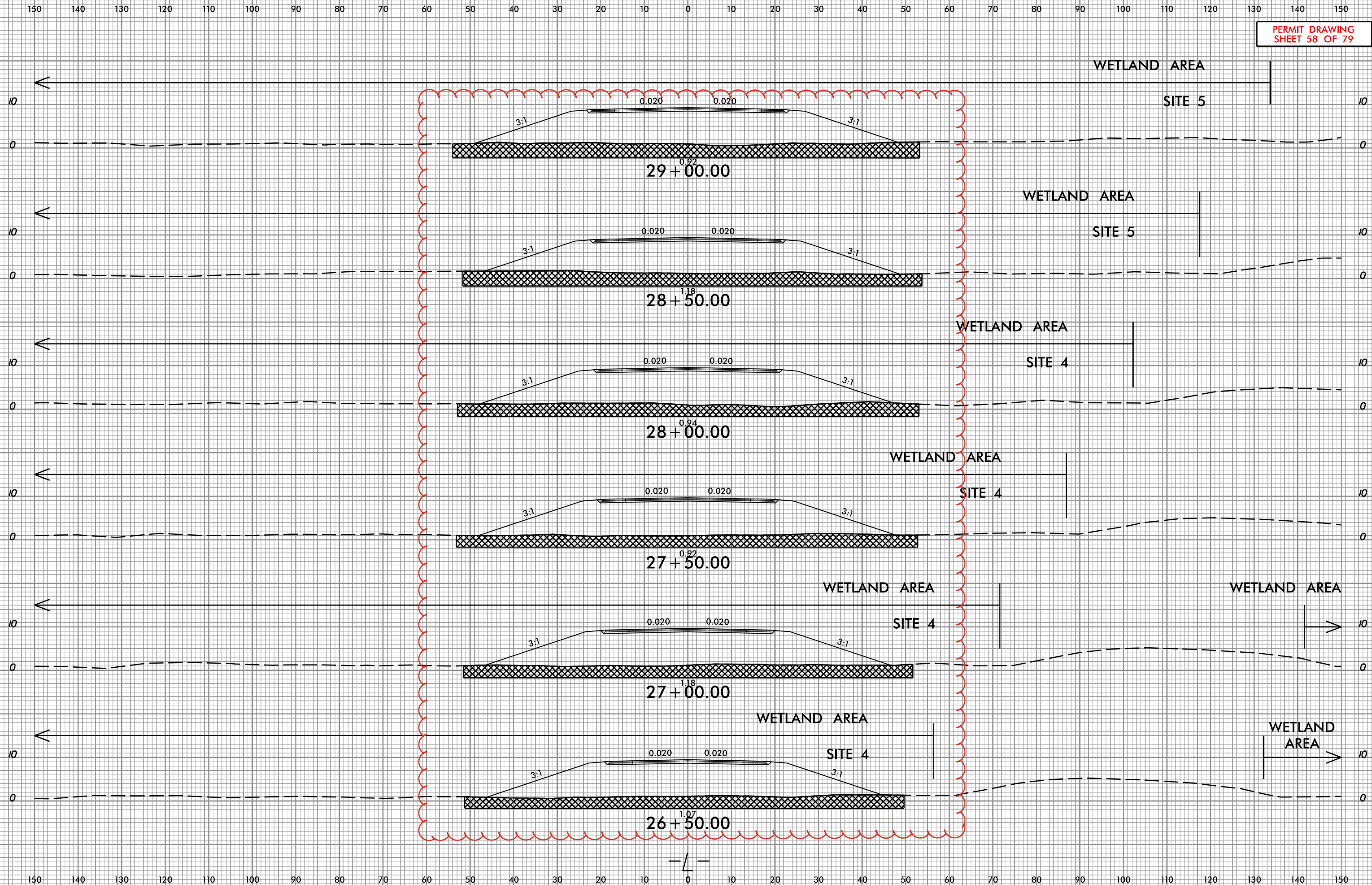
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HB-0001

SHEET NO.

X-4

PERMIT DRAWING
SHEET 58 OF 79



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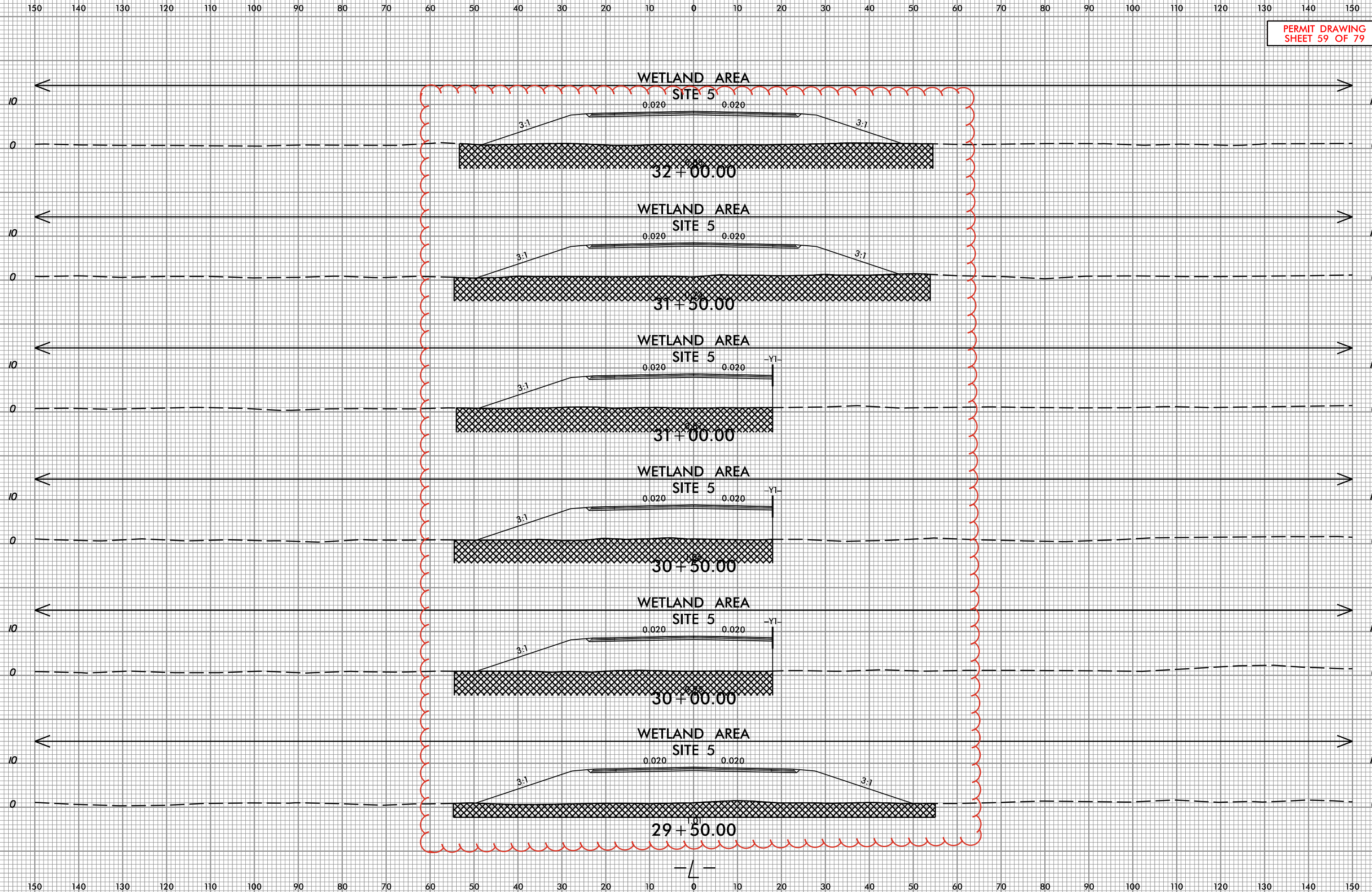
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HB-0001

SHEET NO.

X-5

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SHEET 59 OF 79



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PROJ. REFERENCE NO.

HB-0001

SHEET NO.

X-6

PERMIT DRAWING
SHEET 60 OF 79

WETLAND AREA

SITE 5

0.020 0.020

3:1

3:1

35 + 00.00

WETLAND AREA

SITE 5

0.020 0.020

3:1

3:1

34 + 50.00

WETLAND AREA

SITE 5

0.020 0.020

3:1

3:1

34 + 00.00

WETLAND AREA

SITE 5

0.020 0.020

3:1

3:1

33 + 50.00

WETLAND AREA

SITE 5

0.020 0.020

3:1

3:1

33 + 00.00

WETLAND AREA

SITE 5

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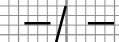
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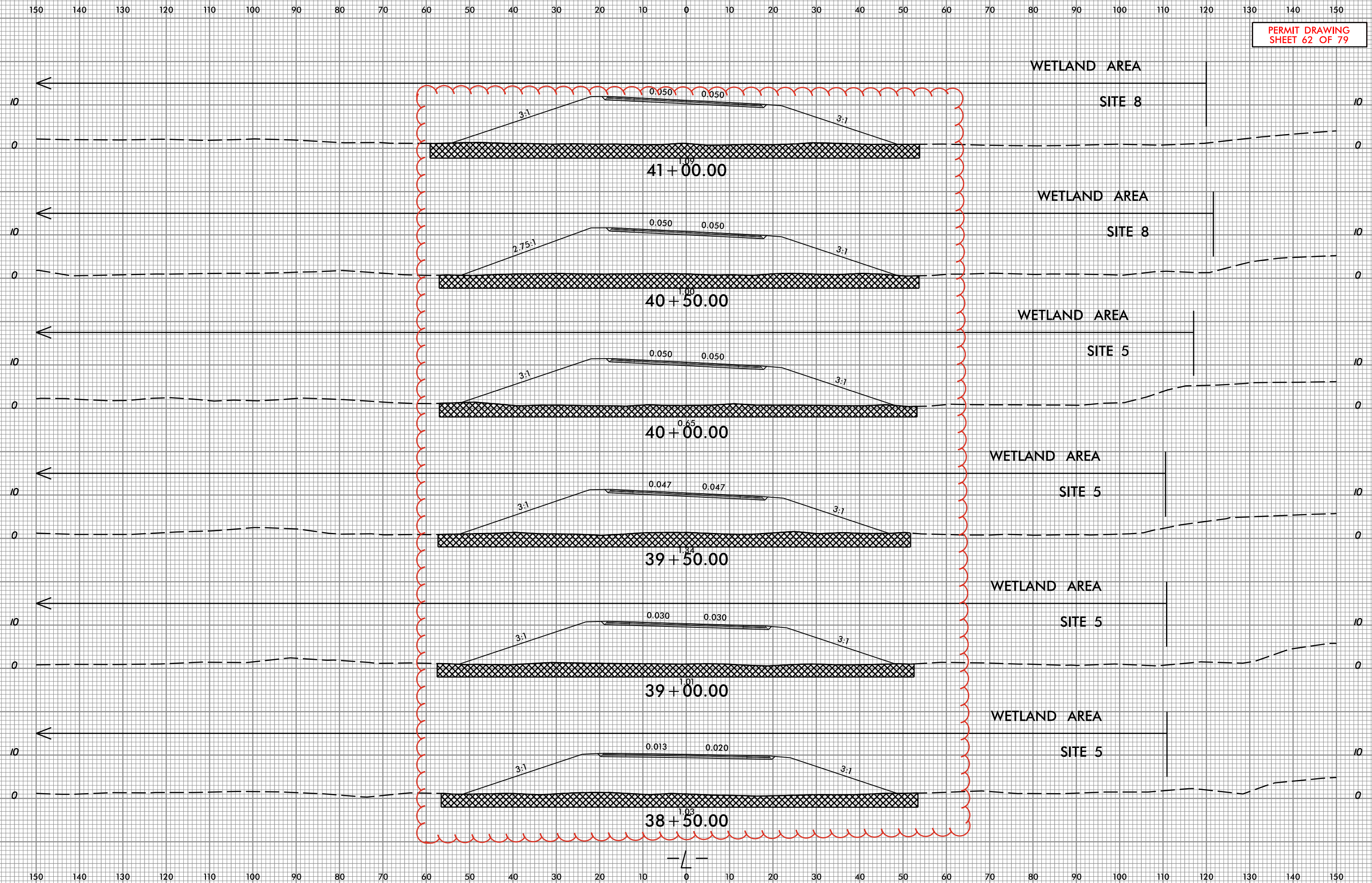
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SITE 5



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SHEET 62 OF 79



28-DEC-2023 12:57
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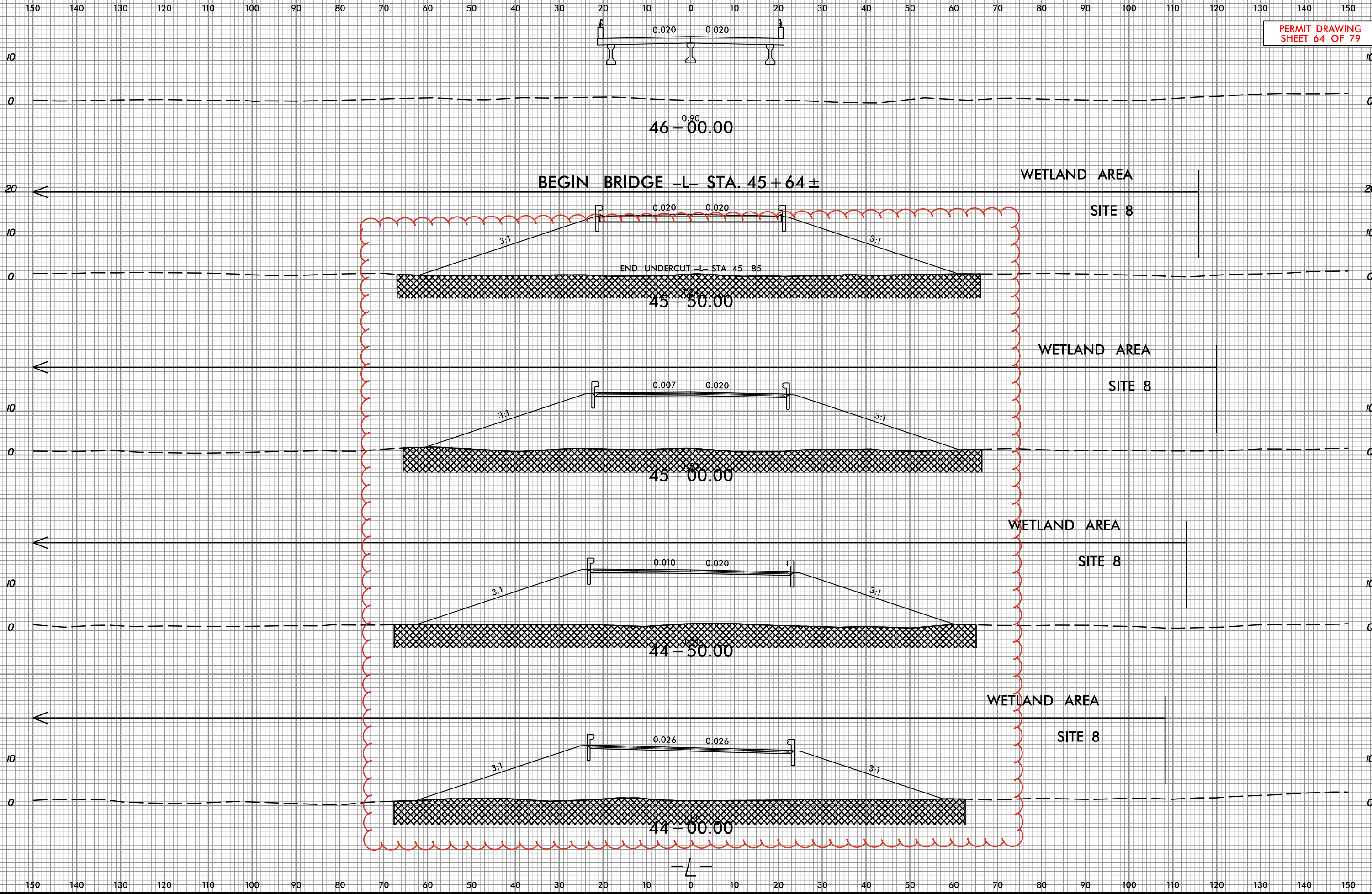
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HB-0001

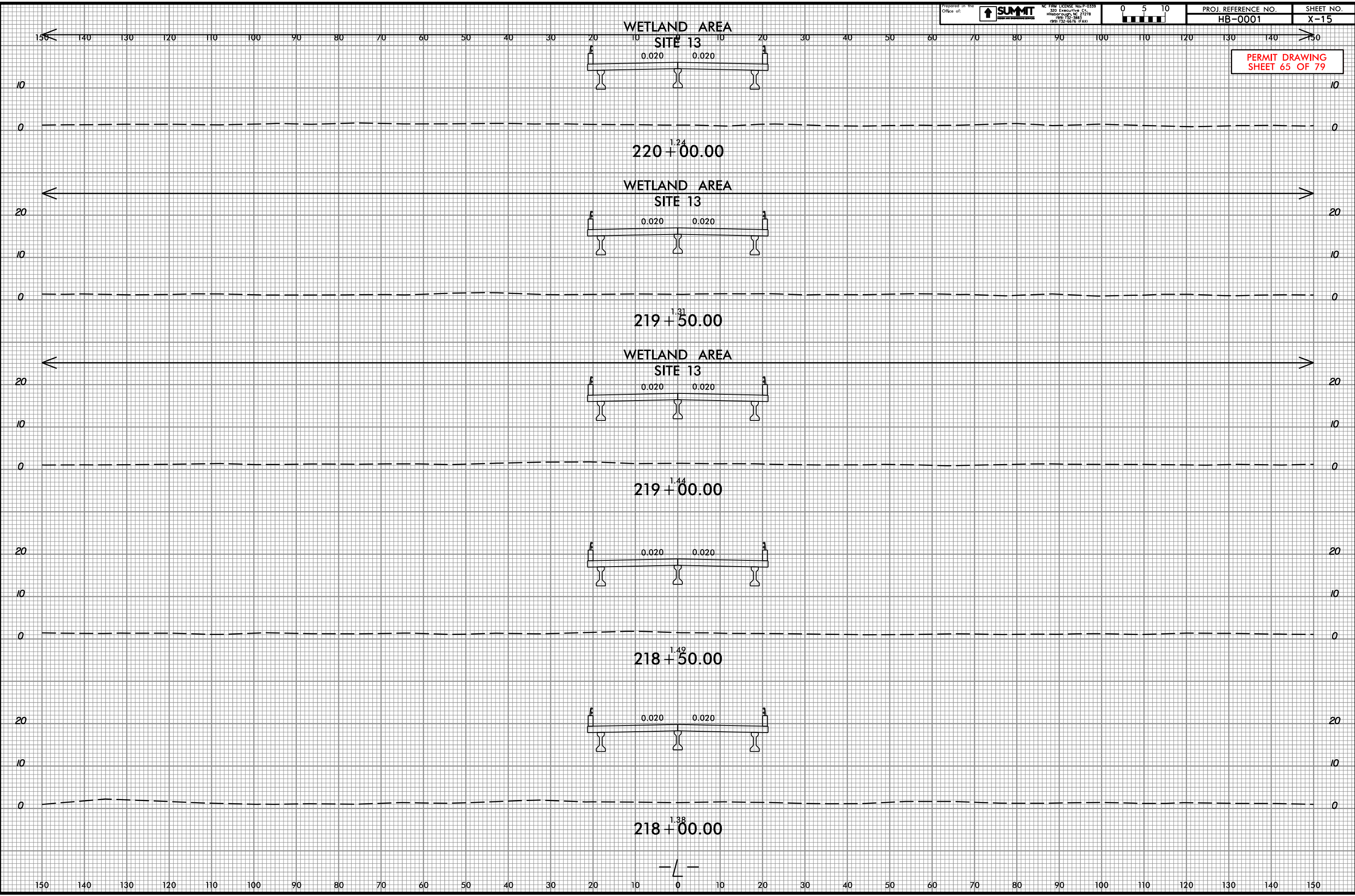
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SHEET 64 OF 79

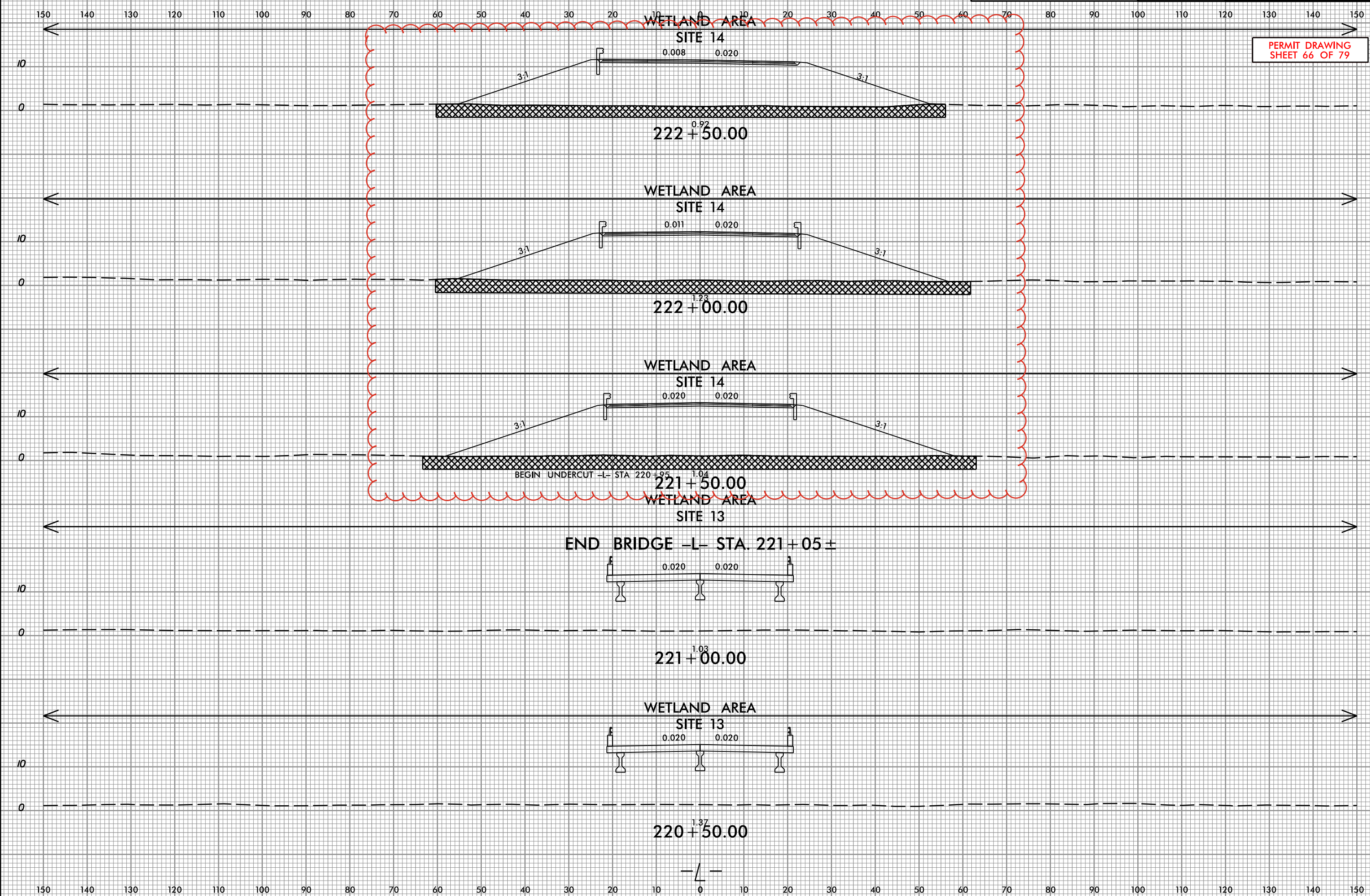


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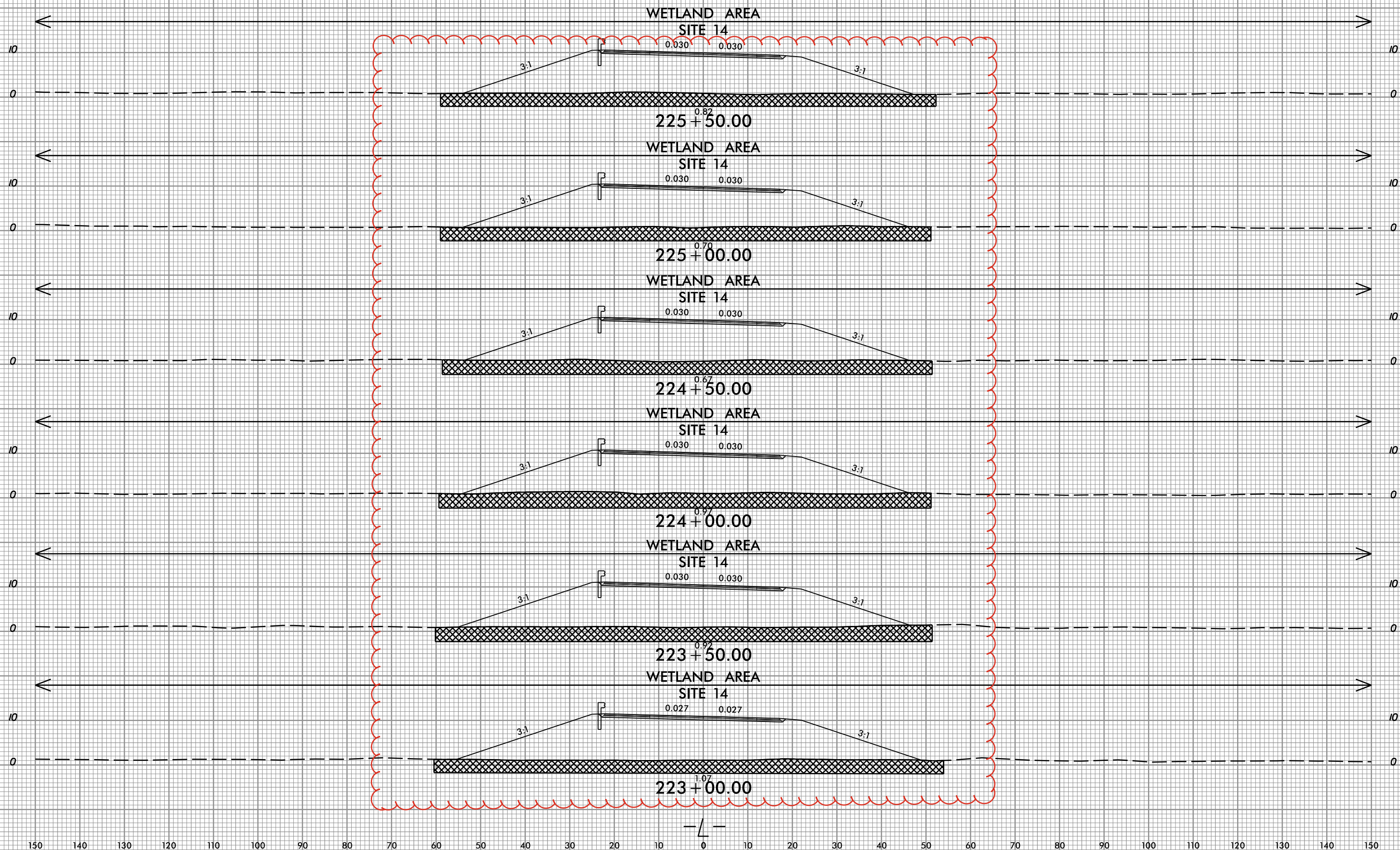


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SHEET 65 OF 79

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patriciarhett

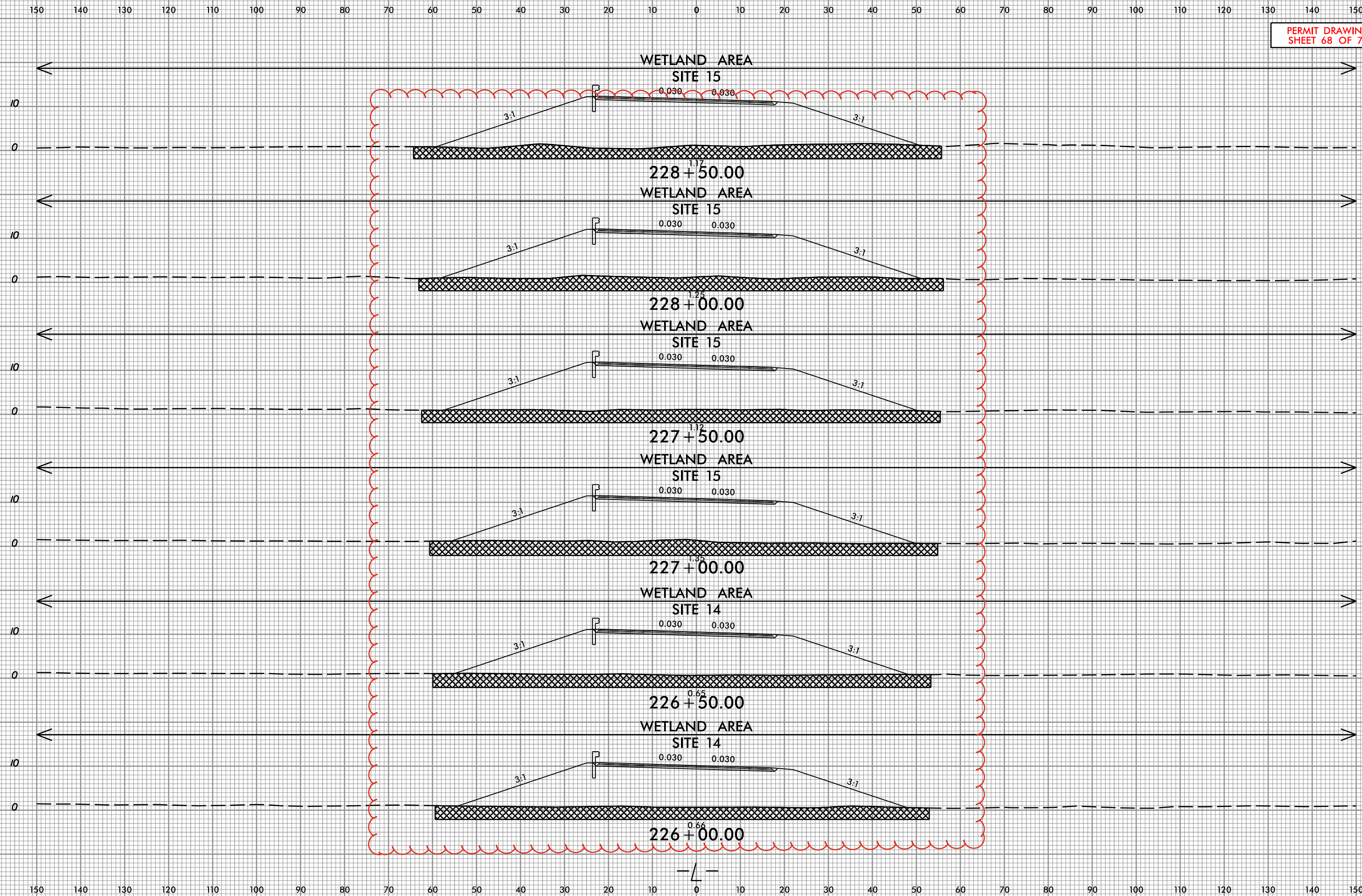


PERMIT DRAWING
SHEET 67 OF 79



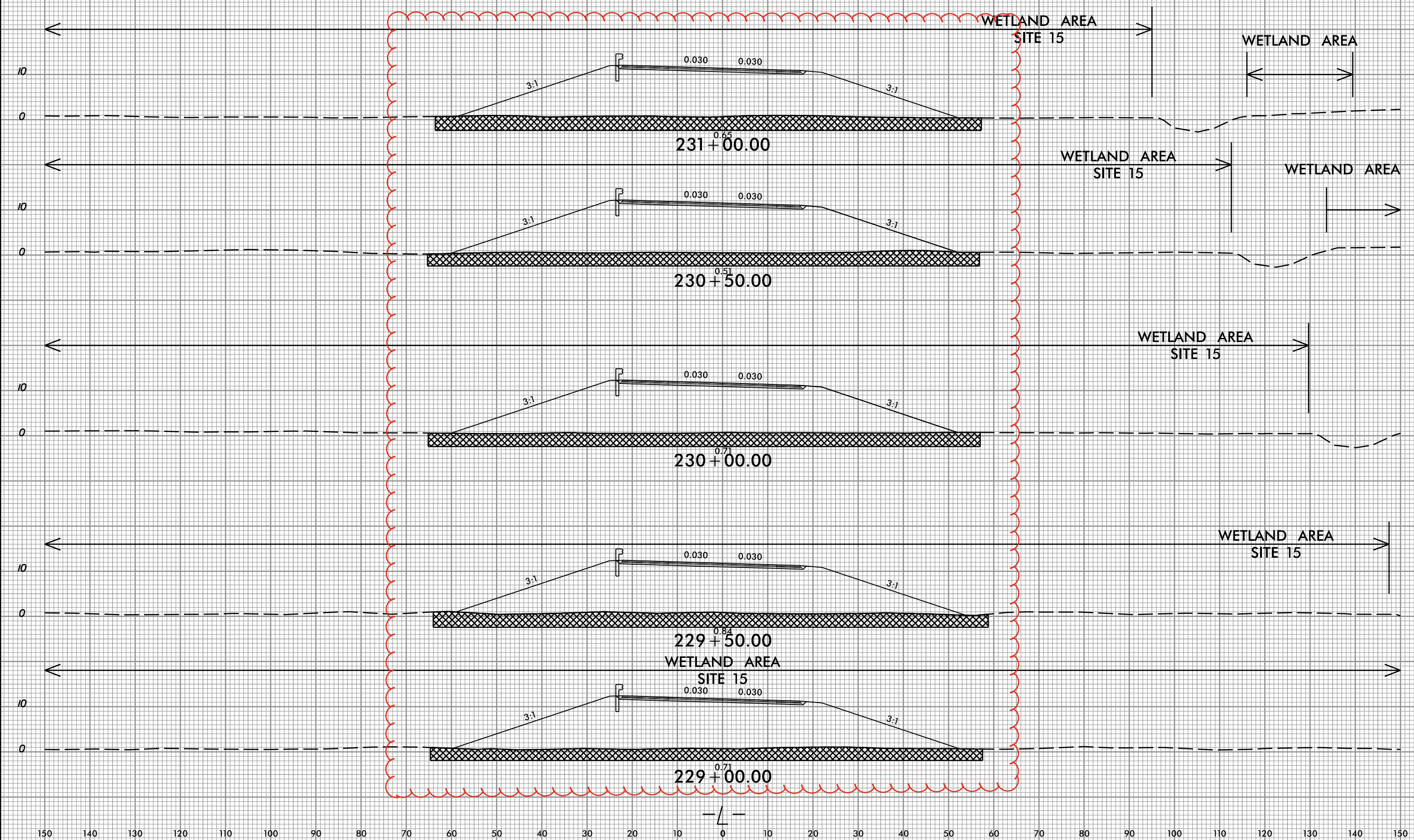
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SHEET 68 OF 79



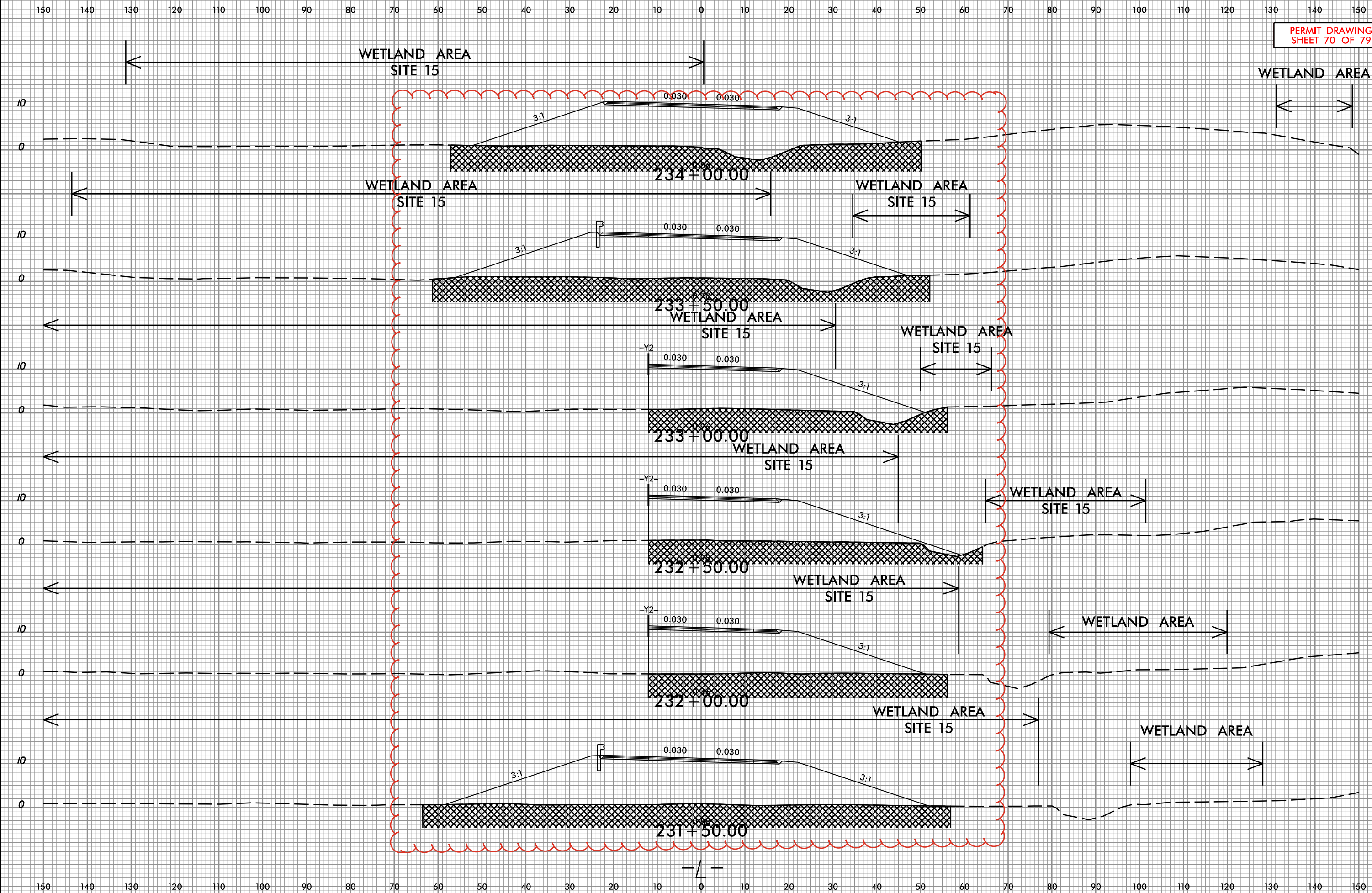
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PERMIT DRAWING
SHEET 69 OF 79



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patric.karim

PERMIT DRAWING
SHEET 70 OF 79

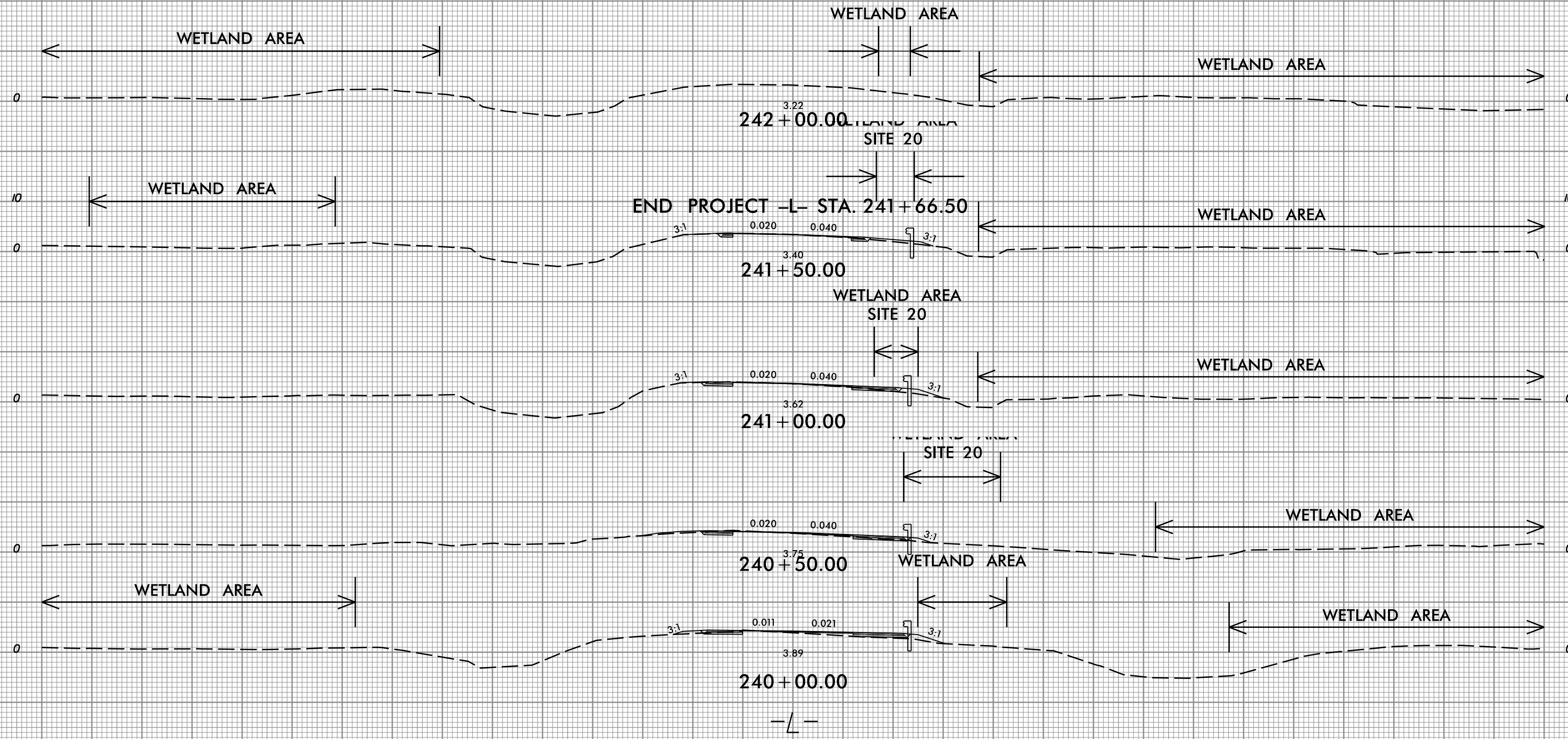


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patric.karim@sumit.com

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patric.karim@net

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PERMIT DRAWING
SHEET 73 OF 79



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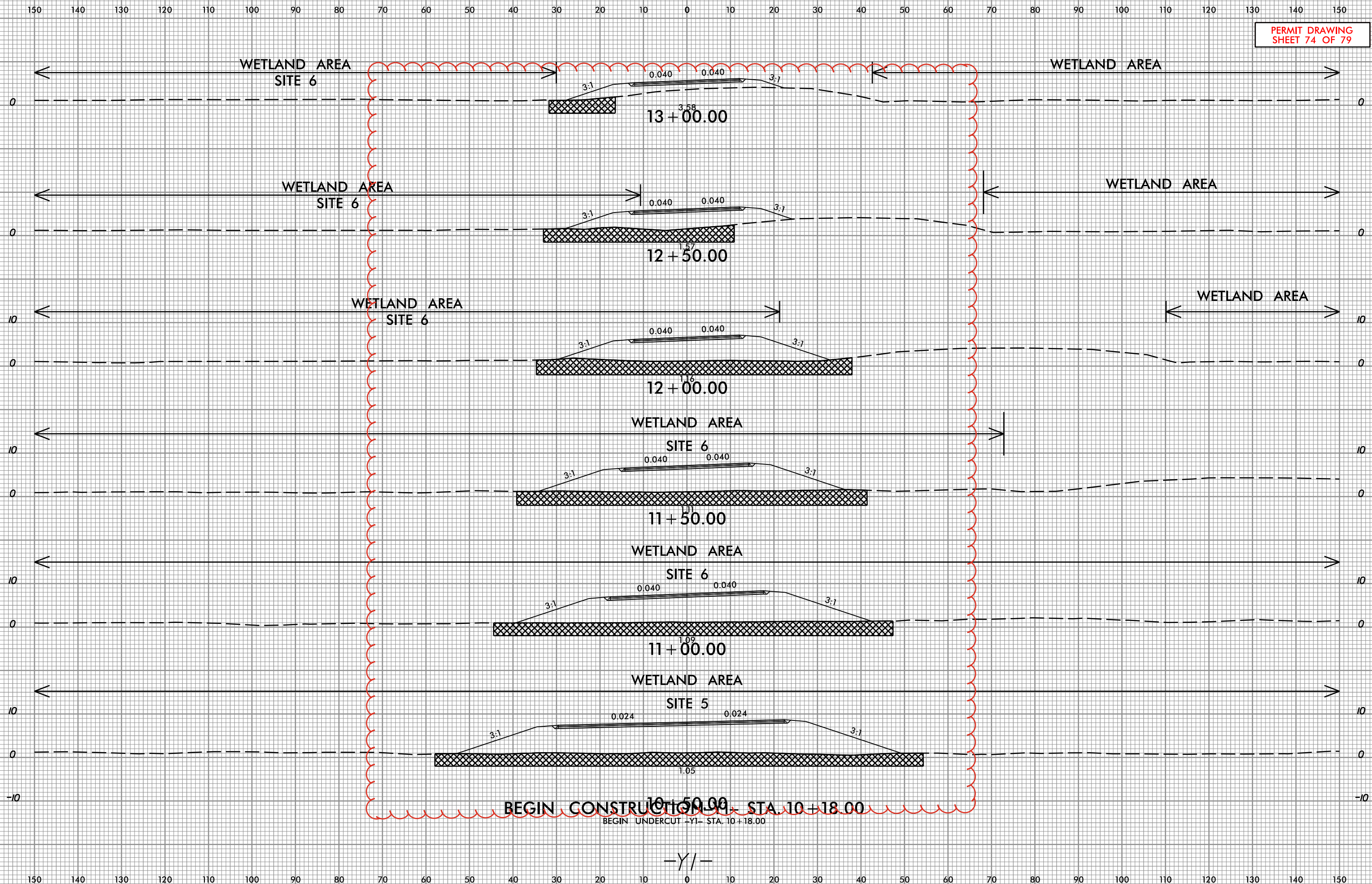
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HB-0001

SHEET NO.

X-24

PERMIT DRAWING
SHEET 74 OF 79



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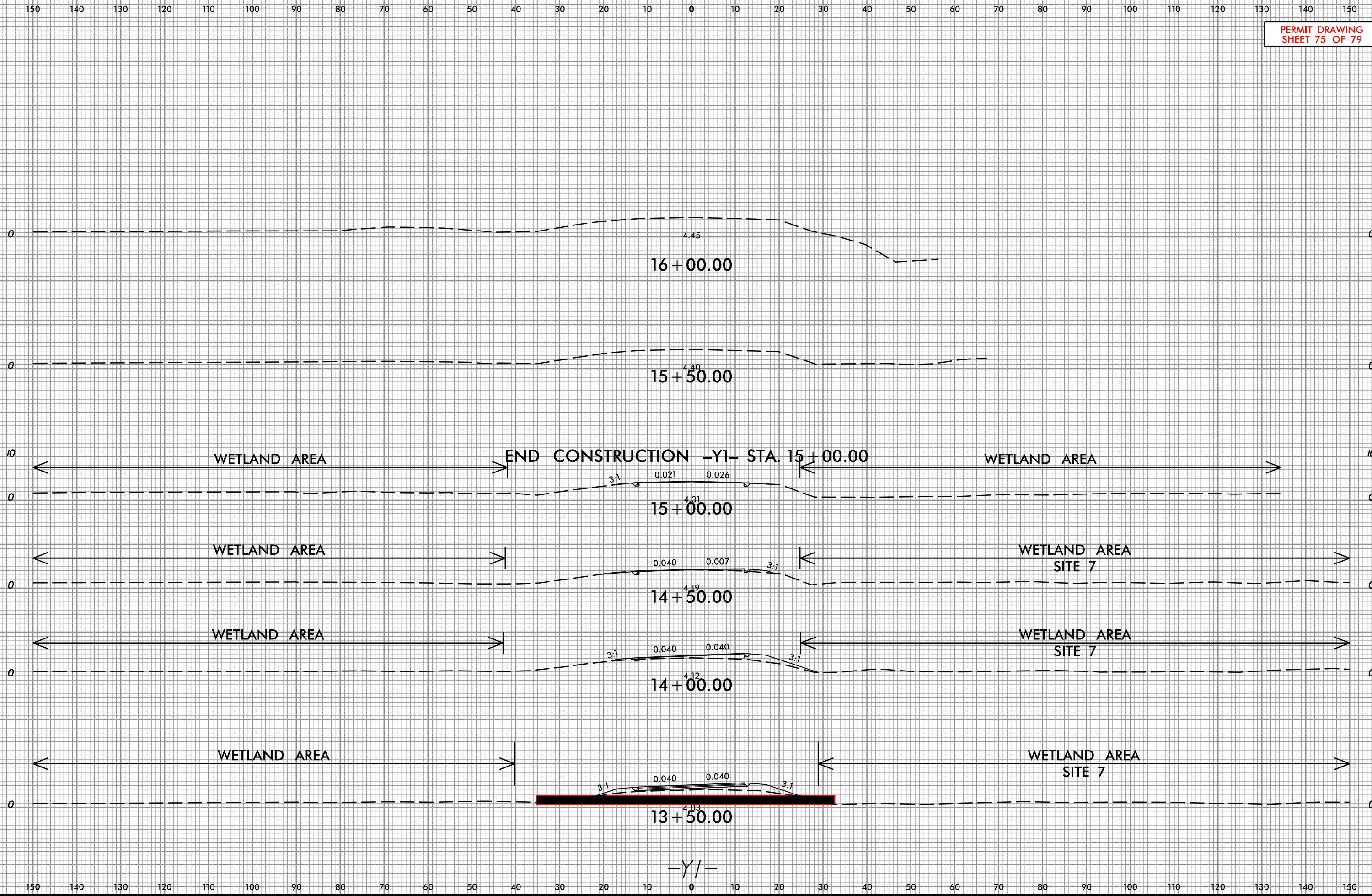
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HB-0001

SHEET NO.

X-25

PERMIT DRAWING
SHEET 75 OF 79



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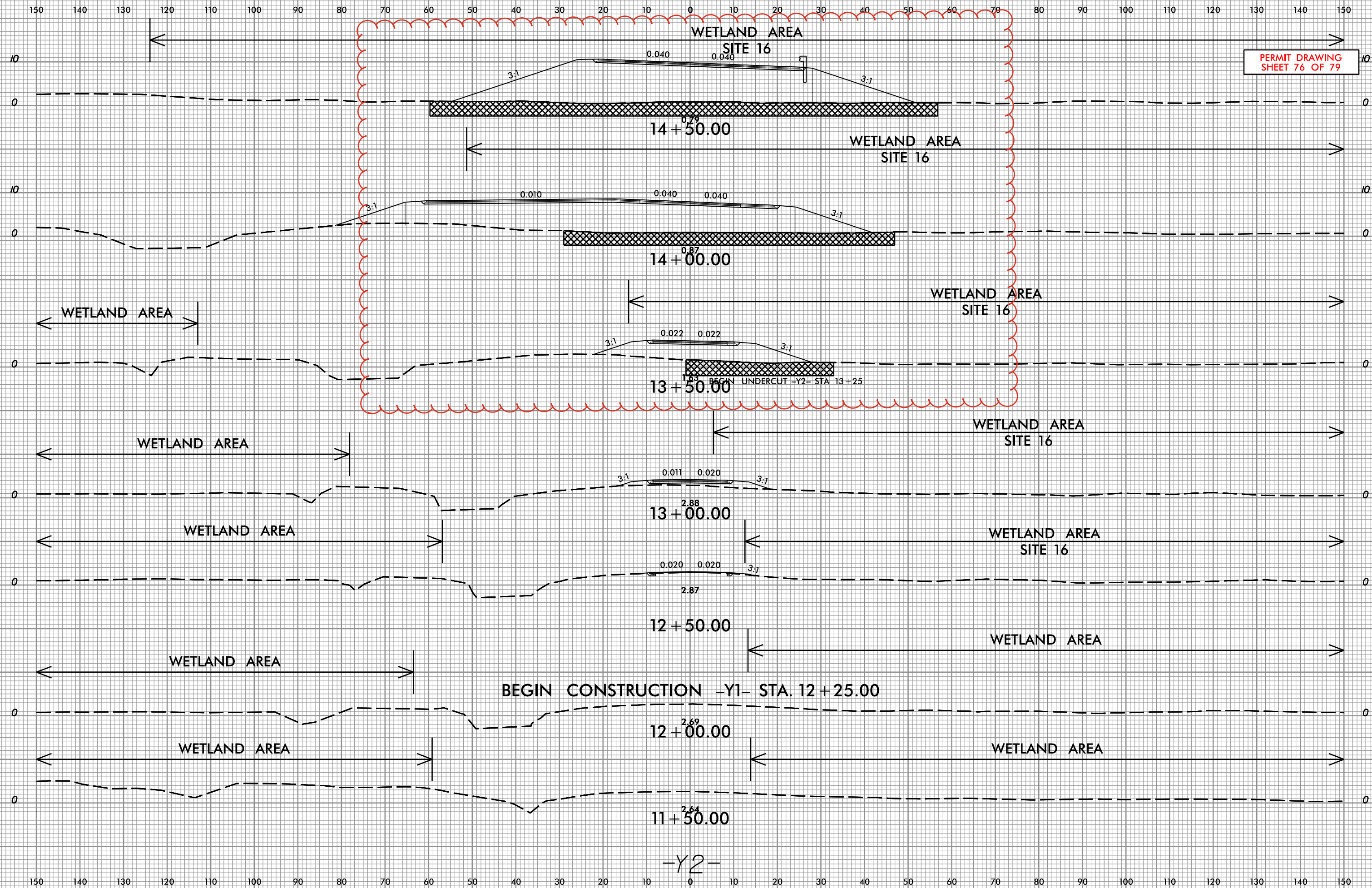


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HB-0001

SHEET NO.

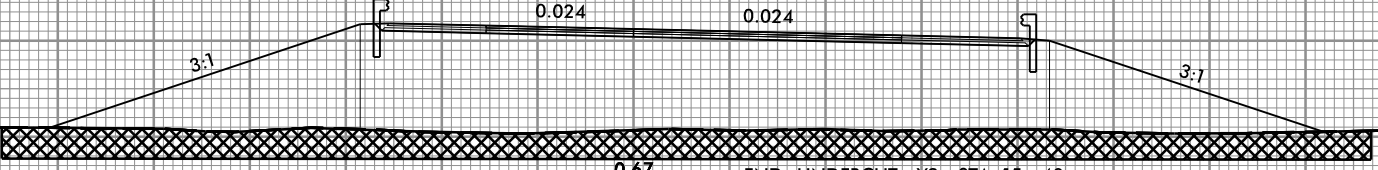
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PERMIT DRAWING
SHEET 77 OF 79

WETLAND AREA
SITE 16

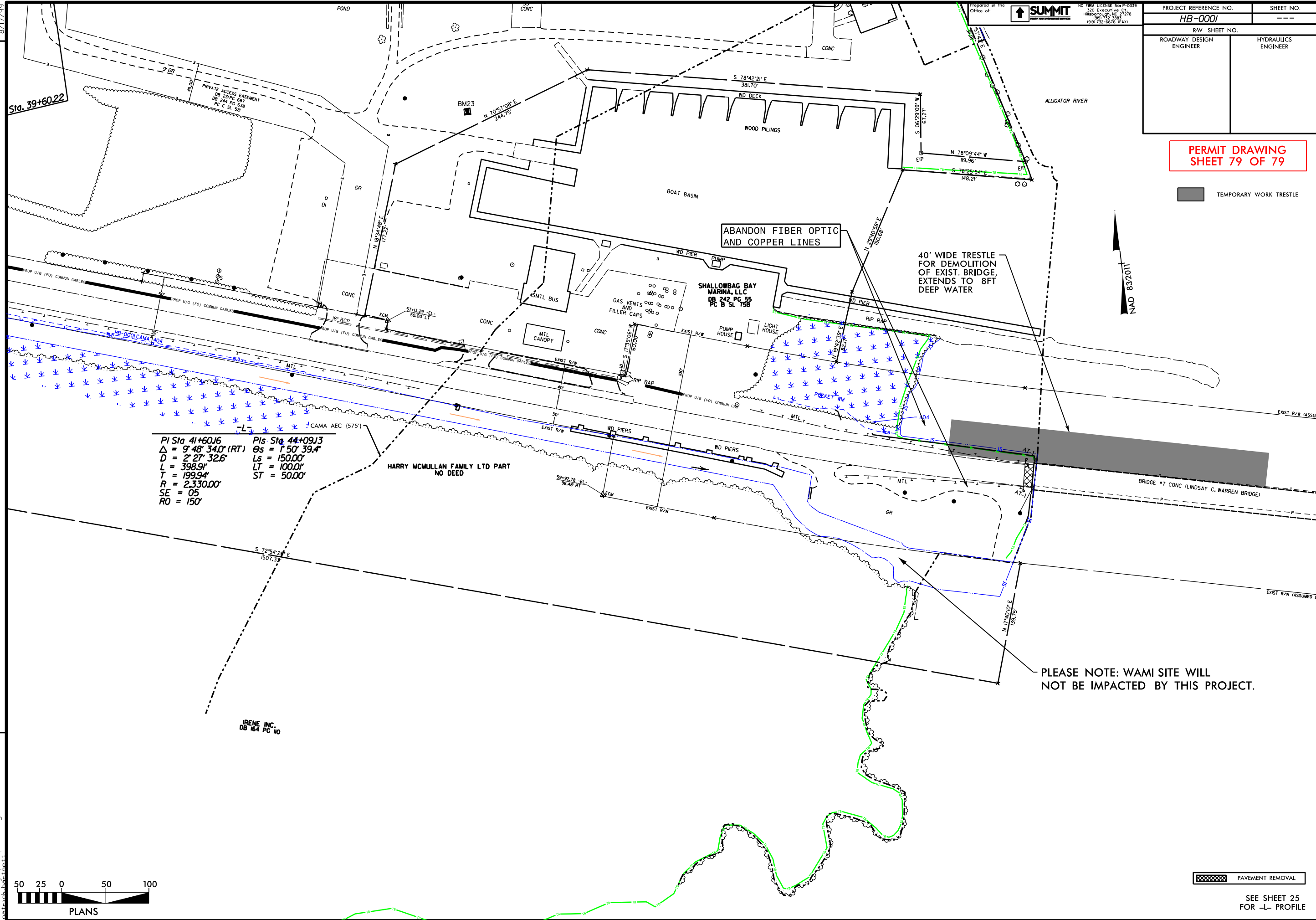
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 TEMPORARY WORK TRESTLE

 PAVEMENT REMOVAL

SEE SHEET 25
FOR -L- PROFILE



REVISIONS

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HB-0001-Hyd-prm_psh_6A.dan

**Onsite Wetland Mitigation Plan
Replacement of Alligator River Bridge
Tyrell/Dare Counties
TIP HB-0001
WBS No. 49475.1.1
November 22, 2024**

1.0 BASELINE INFORMATION

The North Carolina Department of Transportation (NCDOT) proposes to replace the 2.83-mile-long Lindsay C. Warren bridge number 7 on U.S.64 over the Alligator River in Tyrell and Dare Counties (TIP Project HB-0001). The bridge replacement will replace the existing swing-span bridge with a modern two-lane, fixed span, high-rise bridge on new location just north of the existing bridge (Figure 1). HB-0001 will span approximately 4.6 miles in length.

HB-0001 is located within the Pasquotank River basin, Hydrologic Unit 03010205, the coastal plain physiographic region of North Carolina. The topography within the project vicinity is flat to very gently sloping, with level floodplains along the Alligator River. Elevations within the study area range from 0ft to 10ft above sea level, and areas near the shoreline of Alligator River are subject to lunar and wind tides. Land use in the project vicinity consists primarily of vast wetlands associated with the Alligator River National Wildlife Refuge and other conservation properties, along with a few residential homes near US 64 and water access facilities for recreational and commercial uses.

Within the study area of HB-0001, only one drainage canal and two types of jurisdictional wetlands were identified. The chosen alternative for this project will permanently impact 0.050 acres of Coastal Marsh wetlands along with 10.73 acres of Riparian Wetlands.

2.0 SITE SELECTION

HB-0001 was reviewed for potential onsite wetland restoration along portions of the existing causeway of US 64 which will be abandoned. On the west side of the Alligator River in Tyrell County, approximately 0.20 miles (1.20 acres) of existing causeway will be abandoned (Figure 2a). On the east side in Dare County, approximately 0.80 miles (7.30 acres) will be abandoned (Figure 2b). Once closed to traffic, causeway fill material can be removed, and the corridor returned to the natural elevations of the adjacent wetlands.

Extensive wetlands occur throughout the existing US 64 corridor outside of NCDOT Right-of-Way. Natural wetland communities tend to occur as gradual gradients between Tidal Freshwater Marsh near the shoreline of Alligator River and Riverine Swamp Forest farther from the shoreline. Tidal Freshwater Marsh communities are more frequently subjected to tidal flooding and are vegetated with tall grasses and herbs such as black needlerush (*Juncus roemerianus*), sawgrass (*Cladium mariscoides*), smooth rush (*Juncus effusus*), cattail (*Typha latifolia*), and phragmites (*Phragmites australis*), with a few scattered woody stems. These communities transition gradually to Riverine Swamp Forest with increasing woody stem height and density, as

flooding frequency diminishes. Riverine Swamp Forest communities are dominated by trees and shrubs, such as pond pine (*Pinus serotina*), loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), willow oak (*Quercus phellos*), sweetbay magnolia (*Magnolia virginiana*), bald cypress (*Taxodium distichum*) and wax myrtle (*Morella cerifera*).

NCDOT is proposing to restore this natural wetland community gradient by removing the existing causeway on abandoned portions of US 64 to match the elevations of the adjacent wetlands. The existing natural wetlands adjacent to the fill slopes ranged in elevation from approximately 0.0 - 2.5 feet above mean sea level, with the Tidal Freshwater Marshes tending to occur at the lower end of this gradient (up to approximately 0.75 feet msl) and the Riverine Swamp Forests occurring at the upper end of the wetland elevation gradient. The existing causeway elevation of US 64 ranges from approximately 2-5 feet above mean sea level, which will necessitate the removal of approximately 32,000 cubic yards of material. The final target elevations of the wetland communities and the quantities of fill material to be removed were calculated during the design phase, using Light Detection and Ranging (LiDAR) data, surveys with a rod and auto-level, and groundwater monitoring gauge data.

3.0 SITE PROTECTION INSTRUMENT

The proposed mitigation site is located within the current NCDOT Right-of-Way for US 64. After US 64 is realigned for HB-0001, abandoned portions of the US 64 corridor will be blocked from continued transportation use. While under NCDOT ownership, NCDOT will manage the site to prohibit all use inconsistent with its use as mitigation property, including any activity that would materially alter the biological integrity or functional and educational value of the site, consistent with the mitigation plan. Several permit agencies (NCDOT, USACE, NCDWR) have recommended that the eastern portion of the proposed mitigation site be transferred to the adjacent Alligator River National Wildlife Refuge after close-out. NCDOT will pursue this option following site close-out, assuming that USFWS is amenable and that there are no legal impediments to transfer. Proposed causeway removal on the western side of HB-0001 is adjacent to private property. NCDOT will be required to protect the mitigation site in perpetuity by virtue of the HB-0001 permit authorizing impacts to jurisdictional wetlands. Therefore, should NCDOT transfer the mitigation site to a third-party recipient, protection measures will be enacted to guarantee that the site's wetland functions and values are maintained.

The site is designated on the plan sheets as a mitigation area and will be placed on the Environmental Analysis Unit Mitigation GeoDatabase. This database is provided to all NCDOT personnel as a record of mitigation sites and their attributes, including location and prohibited activities.

4.0 OBJECTIVES

The goal of this mitigation project is to remove approximately 32,000 cubic yards of fill material from portions of the existing US 64 corridor to restore Tidal Freshwater Marsh and Riverine Swamp Forest wetlands. Preliminary estimates indicate that approximately 0.50 acres of Tidal Freshwater Marsh wetland and 7.75 acres of Riverine Swamp Forest wetlands can be restored, though precise natural community boundaries may be difficult to define given the gradual

hydrologic transition which characterizes the area. Final quantities and determination of restored area will be refined during monitoring and close-out. Overall, removing fill material from the existing causeways will allow NCDOT to offset approximately 8.25 acres of the wetland impacts associated with HB-0001 at the actual impact site. Once construction for the new bridge has been completed, traffic will be removed from the existing highway, the fill material will be graded down to the target wetland elevation, and the site will be planted with native species representative of the natural wetland community. Restored wetland community gradients will be reflective of the impact areas of HB-0001 and the adjacent wetlands outside of the ROW.

5.0 MITIGATION WORK PLAN

The restoration site will be constructed in conjunction with TIP HB-0001, once the bridge is completed and traffic diverted to the new facility. The designated restoration areas along the abandoned US 64 corridor will be graded to match target elevations of the adjacent wetland communities using the mitigation design plans. Areas immediately adjacent to the restoration area on the Tyrrell County side exhibit a gradual elevation gradient from higher to lower sections moving from west to east. This is also the case on the Dare County side where restoration activities are planned.

The NCDOT Geotechnical Unit also performed 8 borings (3 on Tyrrell side and 5 on the Dare side) at the edge of pavement to determine the characteristics of the substrate material at the proposed target elevations. Findings from these 8 borings only revealed wood fragments as restrictive layers in 2 borings. Due to the difficulty in characterizing the subsurface materials present with limited borings, subsurface materials encountered may be found to be inappropriate for planting. If inappropriate subsurface materials are encountered at these target elevations, additional grading may be necessary to undercut the restoration area and backfill with suitable topsoil to the target elevation of the adjacent wetland communities. To account for this potential issue, the design plan quantities include a line item for undercut excavation for mitigation. If needed, NCDOT will coordinate any proposed undercutting with the permit agencies during the design phase of the proposed mitigation project.

5.1 Confirmation of Existing Site Conditions

During the development of the design plans, ground and water surface elevations were evaluated using existing Light Detection and Ranging (LiDAR) data, through actual field surveys using an auto level to confirm LiDAR elevations, and through the installation of groundwater gauges. Data from these evaluations were used to develop the restoration grading elevations presented in the design plan sheets.

5.2 Vegetation Re-establishment

Areas targeted for Tidal Freshwater Marsh wetlands shall be based on adjacent natural community vegetation and existing ground elevations. Since the majority of the Tidal Freshwater Marsh will not be graded and was previously covered by a bridge, existing elevations should be surveyed throughout the proposed planting area prior to marsh grass plug installation. Additionally, marsh plug species should be planted during the appropriate time periods to ensure

success, typically April 1st through June 15th. These species shall be planted on 3-foot centers with marsh grass plugs at a density of 4,840 plants per acre. Marsh grass plugs planted will include saltgrass (*Distichlis spicata*), black needle rush, smooth cord grass (*Spartina alterniflora*), and salt meadow cordgrass (*Spartina patens*).

Areas targeted for Tidal Freshwater Marsh / Riverine Swamp Forest wetlands will provide a transition zone between the two communities based on adjacent natural community vegetation. To ensure success, existing elevations should be surveyed throughout the proposed planting area prior to the installation of marsh grass plugs or tree and shrub species. Marsh grass plugs will be planted on 5-foot centers at a density of 1,742 plants per acre and only in the appropriate elevation areas. Tree and shrub species will be planted on 10-foot centers at 436 stems per acre. Marsh grass plugs species planted will include saltgrass, black needle rush, smooth cord grass, and salt meadow cordgrass. The tree and shrub species planted will include water tupelo (*Nyssa aquatica*), swamp bay (*Persea palustris*), pond pine, and bald cypress, wax myrtle, and Southern highbush blueberry (*Vaccinium formosum*). This area will be Riverine Swamp Forest for the purposes of monitoring methods and success criteria.

Areas targeted for Riverine Swamp Forest wetlands will be planted on 8-foot centers at 680 trees per acre will be planted. Tree and shrub species planted will include pond pine, bald cypress, pond cypress (*Taxodium ascendens*), swamp blackgum (*Nyssa biflora*), water tupelo, wax myrtle, and Southern highbush blueberry. Actual species planted for each of the areas described above will depend upon commercial availability.

Temporary mulching will be utilized in all disturbed areas in lieu of seeding to prevent competition with the planted species.

5.3 Invasive Species

Invasive phragmites is present in wetland communities outside of NCDOT Right-of-Way and may encroach on the mitigation site following construction. NCDOT will attempt to control phragmites during the monitoring period to limit its prevalence on the site and to enhance the survival of planted target species. However, complete control of phragmites is likely to be unrealistic during the monitoring period and especially after close-out.

6.0 PERFORMANCE STANDARDS

The vegetation component of the Tidal Freshwater Marsh wetlands will be deemed successful if the following criteria are met:

- 1) At year five, the average of all vegetative monitoring plots should have a scale value of 5 (>75% vegetative cover) consisting of wetland herbaceous species, not including any invasive species.
- 2) A minimum of 70% of the plots shall contain the target (planted) species.

The vegetation component of the Riverine Swamp Forest wetlands will be deemed successful based on the survival rate of planted seedlings. A 320 stems per acre survival criterion for planted seedlings will be used to determine success for the first three years. The required survival criterion will decrease by 10% each year after the third year of vegetation monitoring (i.e. for an expected 290 stems per acre for year 4 and 260 stems per acre for year 5).

The vegetation component of the Tidal Freshwater Marsh / Riverine Swamp Forest wetlands (transition zone) will utilize the Riverine Swamp Forest criteria mentioned above in combination with a sufficient number of photos to document and determine success.

7.0 MONITORING REQUIREMENTS

7.1 Tidal Freshwater Marsh Monitoring

The monitoring requirements for the Tidal Freshwater Marsh portions of the restoration site will follow the National Marine Fisheries Service guidance, which is as follows:

Target elevations will be verified during construction to ensure the restoration area achieves the same hydrologic regime as the adjacent Tidal Freshwater Marsh wetlands. The quantitative marsh vegetation monitoring will be accomplished in accordance with the draft guidelines for “Site Monitoring Surveys for Emergent Marsh Mitigation”, established by the National Marine Fisheries Service, through the evaluation of randomly distributed 1 square meter plots located by GPS within the site.

NCDOT will perform the monitoring described above for five years or until the site is deemed successful.

7.2 Riverine Swamp Forest Monitoring

The monitoring requirements of the Riverine Swamp Forest portions of the restoration site will be as follows:

Target elevations will be verified during construction to ensure that the restoration area achieves the same hydrologic regime as the adjacent Riverine Swamp Forest. The quantitative forest vegetation monitoring will be accomplished utilizing fifty feet by fifty feet (50’ x 50’) monitoring plots that will be established upon completion of the site grading and planting.

NCDOT will monitor the site for a minimum of five years or until the site is deemed successful.

7.3 Tidal Freshwater Marsh / Riverine Swamp Forest Monitoring

The monitoring requirements of the Tidal Freshwater Marsh and the Riverine Swamp Forest portions of the restoration site will be as follows:

Target elevations will be verified during construction to ensure the restoration area achieves the same hydrologic regime as the adjacent Tidal Freshwater Marsh or the Riverine Swamp Forest

wetlands. This area will utilize the Riverine Swamp Forest monitoring method described above in combination with sufficient photos to document the annual conditions.

NCDOT will perform the monitoring described above for five years or until the site is deemed successful. The quantitative vegetation monitoring will be accomplished by using a combination of the methods described above. However, since this area is small and the actual plantings installed may differ slightly, the actual species that are planted should dictate the monitoring criteria.

8.0 OTHER INFORMATION

N/A

9.0 DETERMINATION OF CREDITS

NCDOT is proposing to offset approximately 8.25 acres of wetland impacts with coastal marsh/riparian wetland restoration as mitigation for some of the permanent wetland impacts associated with HB-0001. Final credit quantities will be refined through the design, monitoring, and close-out phases of the project. An as-built report will be submitted within 60 days of completion of the project. The final determination of wetland mitigation credits will be based upon successful completion of the monitoring requirements and meeting of the performance standards.

9.1 CREDIT RELEASE SCHEDULE

NCDOT proposes immediate, full release of the proposed wetland restoration credits as on-site mitigation for some wetland impacts associated with HB-0001. Final credit quantities will be approved at project close-out.

10.0 GEOGRAPHIC SERVICE AREA

NCDOT proposes to use the restoration credits exclusively as onsite wetland mitigation for HB-0001.

11.0 MAINTENANCE PLAN

Once monitoring is completed and the site is closed out, it will be placed in the NCDOT Stewardship Program for long term maintenance and protection.

If an appropriate third-party recipient (i.e. Alligator River National Wildlife Refuge) is identified in the future, then transfer of the property will include a conservation easement or other measure to protect the natural features and mitigation value of the site in perpetuity.

12.0 LONG TERM ADAPTIVE MANAGEMENT PLAN

The restoration area will be managed by the NCDOT and protected from impacts according to the mitigation plan. Encroachments into the area will be investigated and appropriate measures taken to minimize any negative effects. In the event that unforeseen issues arise that affect the management or mitigation value, a remediation plan will be developed by NCDOT in coordination with the permit review agencies.

13.0 FINANCIAL ASSURANCES

NCDOT is held by permit conditions associated with HB-0001 to preserve the coastal marsh/riparian wetland restoration area. NCDOT has established funds for each project and within each Division to monitor the mitigation site and to protect it in perpetuity.