



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 3.00; Released August 2021)

WBS Element: 49475.1.1 TIP/Proj No: HB-0001 County(ies): Dare Tyrrell Page 1 of 2

General Project Information

WBS Element:	49475.1.1	TIP Number:	HB-0001	Project Type:	Bridge Replacement	Date:	3/2/2023
NCDOT Contact:	John Conforti, REM		Contractor / Designer:		Patrick Hartnett, PE		
Address:	Project Management Unit		Address:	Summit Design and Engineering Services			
	1582 Birch Ridge Drive			3301 Benson Dr			
	Raleigh, NC 27610			Raleigh, NC 27609			
Phone:	(919) 707-6015		Phone:	(919) 322-0115			
Email:	jconforti@ncdot.gov		Email:	patrick.hartnett@summitde.com			
City/Town:	Columbia			County(ies):	Dare	Tyrrell	
River Basin(s):	Pasquotank		CAMA County?	Yes	Yes		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	4.246 miles	Surrounding Land Use:	Rural Area with Commercial Land Uses
Proposed Project		Existing Site	
Project Built-Upon Area (ac.)	21.0 ac.		15.0 ac.
Typical Cross Section Description:	2 lane road with 12' travel lanes and 5' paved shoulders. The total bridge length is 3.3 miles and clear roadway of 40' with 8' shoulders.		2 lane road with 12' travel lanes with grass shoulder. The bridge length is 2.8 miles and width of 30'.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 13200	Year: 2043	Existing: 9645 Year: 2023

General Project Narrative:
(Description of Minimization of Water Quality Impacts)

The NCDOT project includes the replacement of NCDOT Bridge 7 on US 64 in Tyrrell and Dare Counties over the Alligator River. The existing structure is approximately 2.8 miles long with a width of 30'. The existing structure has deck drains. The proposed structure will be approximately 3.3 miles long with a clear roadway width of 40'. The Alligator River is the only stream identified in the study area, but it has two separate NCDWR Index Numbers north and south of the existing US 64 bridge. The river section south of the bridge has been designated as an ORW, but the river section north of the existing bridge has not been designated as an ORW. Since the proposed bridge will be located north of the existing bridge, the stormwater from the bridge and approaches will outlet into the non-ORW section of the Alligator River.

Within the project area, the existing impervious area is 15.0 acres, and the proposed impervious area is 21 acres. Please note the project will remove the existing pavement where it is no longer needed. The wider and longer bridge accounts for the majority of the increased area. The existing bridge is 10.6 acres. The proposed bridge will be 15.9 acres. As previously stated, runoff from the proposed bridge will be discharged into the non-ORW segment of the Alligator River. The additional 0.7 acres of impervious area is due to the proposed roadway. The proposed roadway will have shoulder sections. For the SELDM analysis, the location of the analysis was the proposed bridge, and the entire section of US 64 that drains to the Alligator River though the roadside channels was included to be conservative. Even with this conservative approach, the analysis determined that minimum measures can be used to treat stormwater runoff at this stream crossing. Please note that there were several jurisdictional surface waters identified within the study area. These waters all connect to the Alligator River, so the Alligator River was used as the only SELDM analysis point.

The stormwater management plan includes the use of deck drains where there is a minimum of 12 feet of clearance from the deck drain to the surface water. The roadway profile provides at least this minimum vertical clearance for as much of the bridge as possible. The deck drains will be located from Sta. 51+78 to Sta. 213+96 -L- LT/RT. For the sections between the bridge approach and the deck drains, the runoff will accumulate in the shoulder and be collected outside the approach slabs with traditional 2GIs and pipe outlets. The profile and drainage are designed so that spread is kept out of the travel lane and the bypass from the system is less than 0.1 cfs. With this approach, a closed drainage system attached to the bridge is not required. The pipes outlet at the toe of the roadway embankment. There are wetland areas on both sides of the road at both the begin and end bridge. To minimize impacts to the wetland areas, rip-rap pads are utilized at the pipe outlets to dissipate energy. The wetland areas outlet to the Alligator River, so ditching to the Alligator River will not be used to avoid additional wetland impacts. Given the wetland areas at the bridge approaches, Stormwater Control Measures (SCMs) would result in large wetland impacts. To avoid these impacts, the use of SCMs was omitted.

For the roadway sections, fill slopes will be steepened to minimize filling in wetland areas to the greatest extent practicable. Ditching through wetland areas will be avoided, and all closed system drainage outlets will be designed to have non-erosive velocities. Lastly, all cross-pipes with jurisdictional waters will be buried.



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WBS Element: 49475.1.1 TIP/Proj No.: HB-0001 County(ies): Dare Tyrrell Page 2 of 2

General Project Information

Waterbody Information

Surface Water Body (1):	Alligator River		NCDWR Stream Index No.:	30-16-(7)	
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class SC			
	Supplemental Classification:	Swamp Waters (Sw)	Waters (ORW)		
Other Stream Classification:	Areas of Environmental Concern				
Impairments:	None				
Aquatic T&E Species?	Yes	Comments:	See NRTR		
NRTR Stream ID:	30-16-(7)		Buffer Rules in Effect:	N/A	
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
	(If yes, provide justification in the General Project Narrative)				

Surface Water Body (2):	Alligator River		NCDWR Stream Index No.:	30-16-(21.5)	
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class SC			
	Supplemental Classification:	Swamp Waters (Sw)			
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	Yes	Comments:	See NRTR		
NRTR Stream ID:	30-16-(21.5)		Buffer Rules in Effect:	N/A	
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	Yes	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
	(If yes, provide justification in the General Project Narrative)				

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

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

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

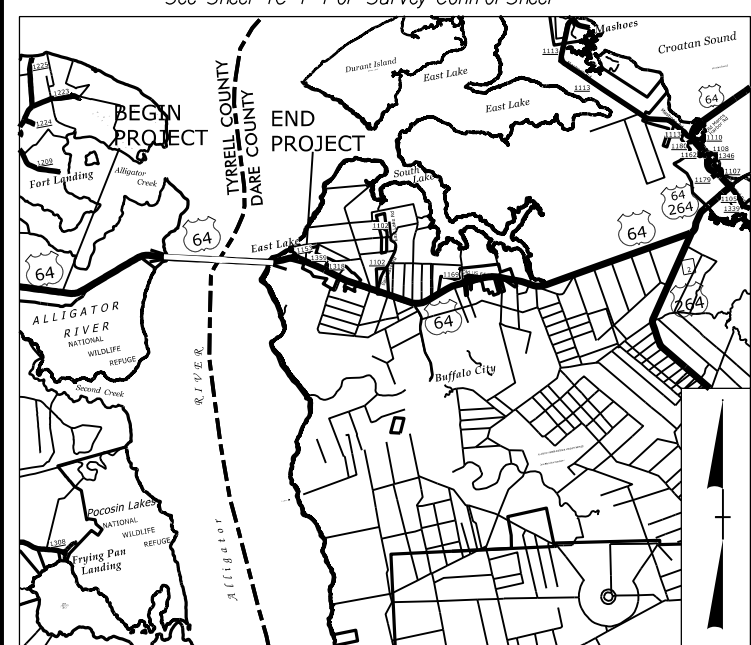
WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 1 OF 78

ROW PLAN SET

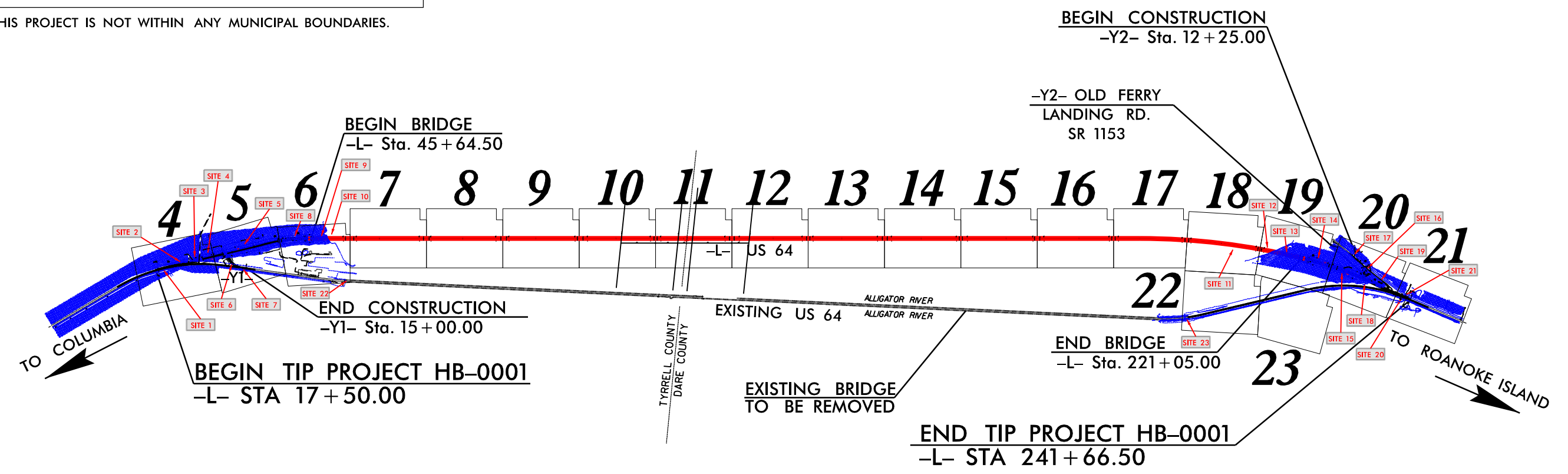


TIP PROJECT: HB-0001



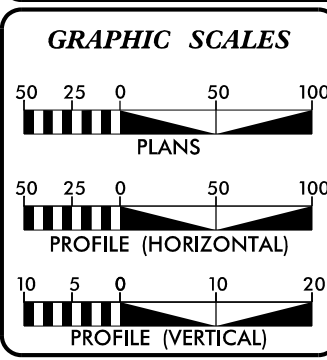
VICINITY MAP

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
DESIGN AND ENGINEERING SERVICES
FIRM NO. P-0339

320 Executive Ct.
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 16, 2022

LETTING DATE: OCTOBER 2024

NEIL J. DEAN, PE
PROJECT ENGINEER

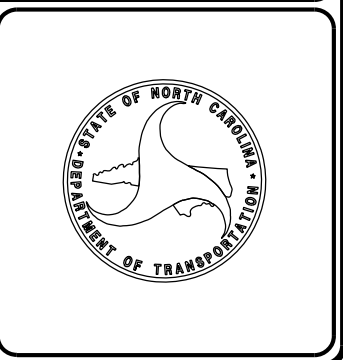
FAITH E. JAHNKE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

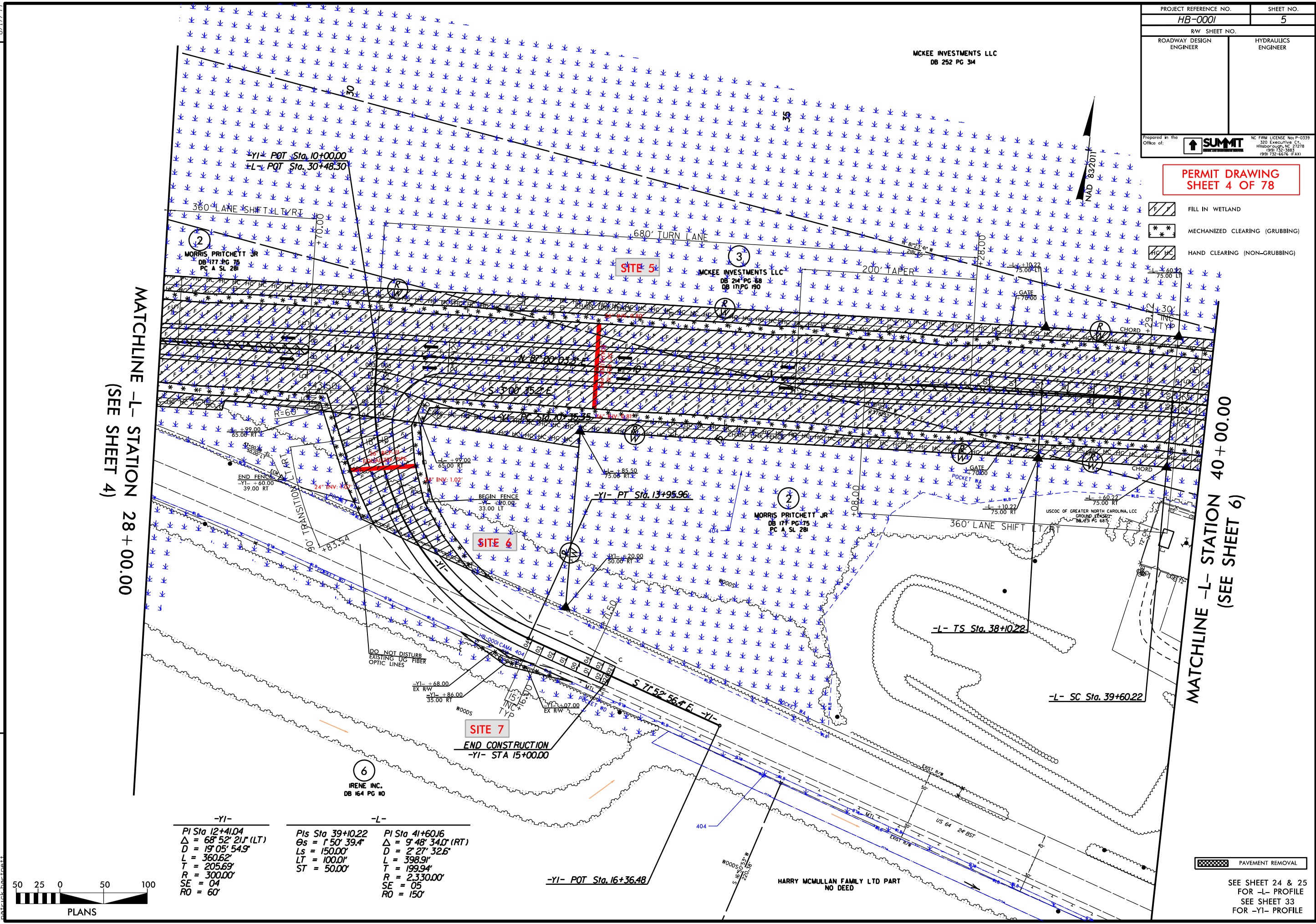
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**PERMIT DRAWING
SHEET 4 OF 78**

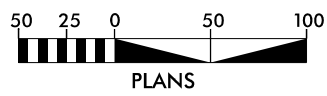
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- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)



MATCHLINE -L- STATION 28+00.00
(SEE SHEET 4)

MATCHLINE -L- STATION 40+00.00
(SEE SHEET 6)

<p>-YI-</p> <p>PI Sta 12+41.04 Δ = 68° 52' 21" (LT) D = 19' 05' 54.9" L = 360.62' T = 205.69' R = 300.00' SE = 04' RO = 60'</p>	<p>-L-</p> <p>PIs Sta 39+10.22 θs = 1° 50' 39.4" Ls = 150.00' LT = 100.01' ST = 50.00'</p>	<p>-L-</p> <p>PI Sta 41+60.16 Δ = 9° 48' 34.0" (RT) D = 2° 27' 32.6" L = 398.91' T = 199.94' R = 2,330.00' SE = 05' RO = 150'</p>
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PAVEMENT REMOVAL

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

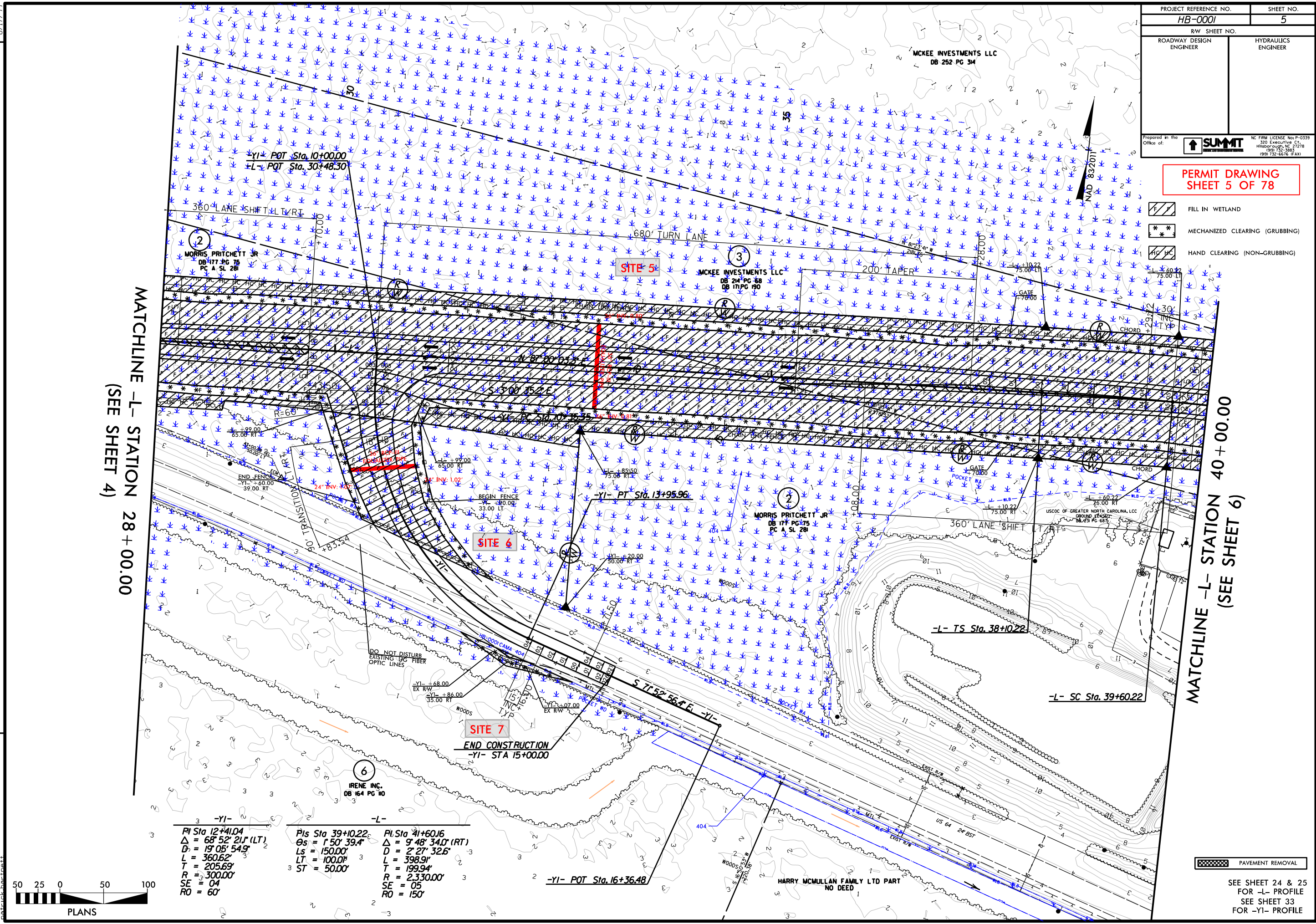
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**PERMIT DRAWING
SHEET 5 OF 78**

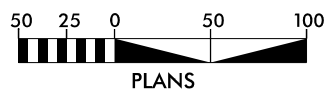
- FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)



MATCHLINE -L- STATION 28+00.00
(SEE SHEET 4)

MATCHLINE -L- STATION 40+00.00
(SEE SHEET 6)

-YI- PI Sta 12+41.04 $\Delta = 68^{\circ} 52' 21''$ (LT) $D = 19' 05' 54.9''$ $L = 360.62'$ $T = 205.69'$ $R = 300.00'$ $SE = 04'$ $RO = 60'$	-L- PI Sta 39+10.22 $\Delta = 1^{\circ} 50' 39.4''$ $D = 150.00'$ $LT = 100.00'$ $ST = 50.00'$	-YI- PI Sta 41+60.16 $\Delta = 9^{\circ} 48' 34.0''$ (RT) $D = 2^{\circ} 27' 32.6''$ $L = 398.91'$ $R = 199.94'$ $T = 2,330.00'$ $SE = 05'$ $RO = 150'$
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PAVEMENT REMOVAL

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

REVISIONS

8/17/99

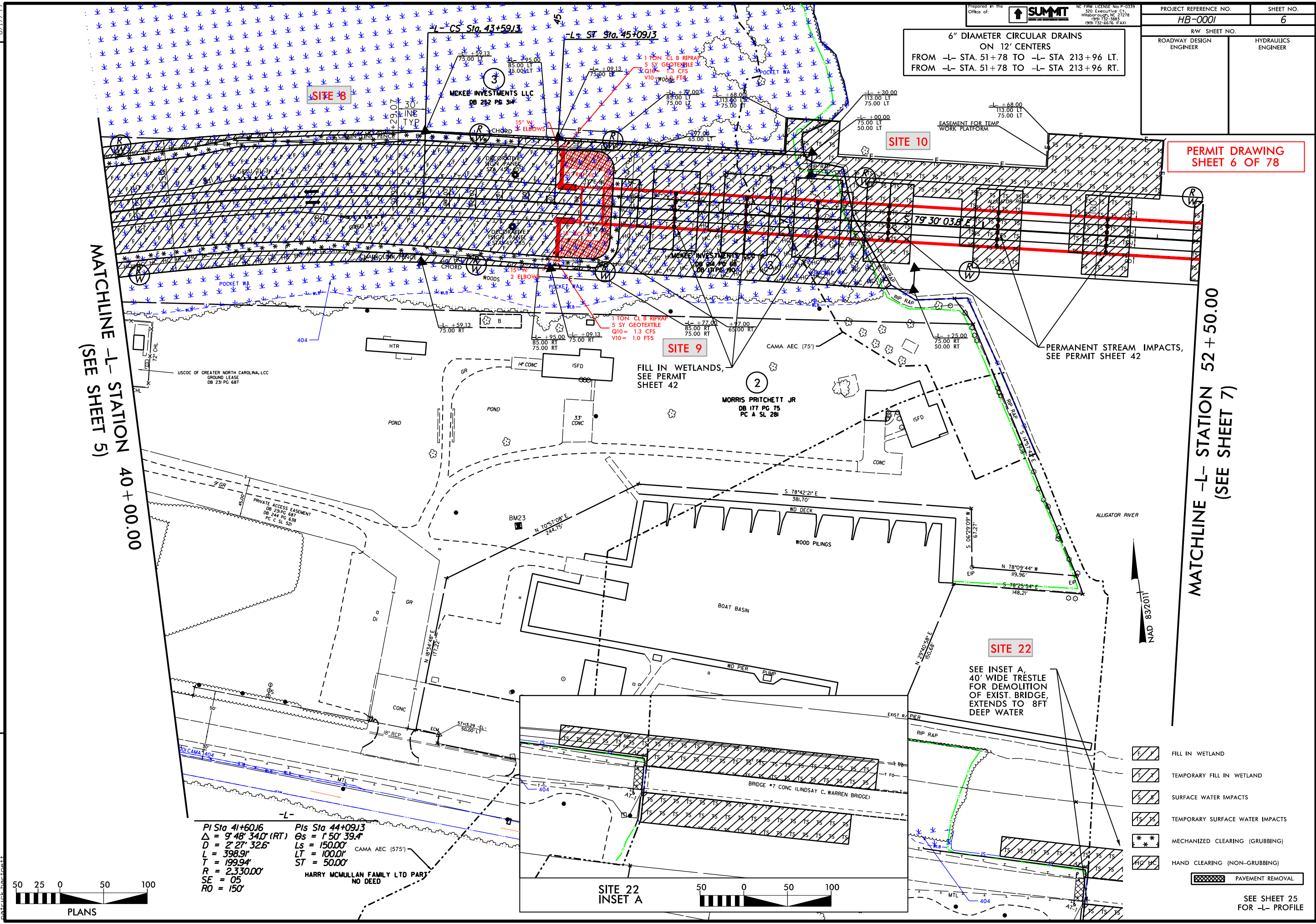
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6" DIAMETER CIRCULAR DRAINS ON 12' CENTERS
 FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
 FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

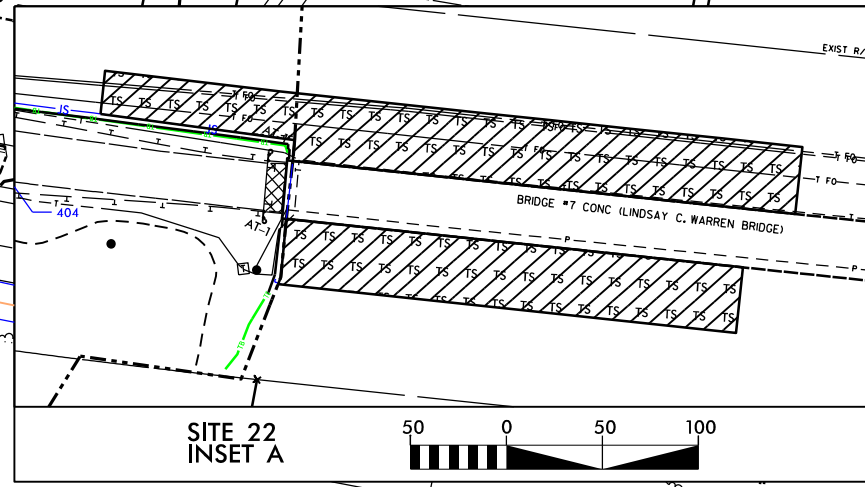
PERMIT DRAWING SHEET 6 OF 78

MATCHLINE -L- STATION 40+00.00
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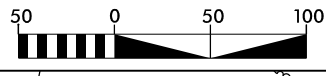
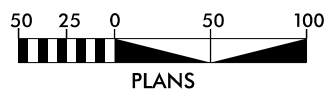
MATCHLINE -L- STATION 52+50.00
 (SEE SHEET 7)



PI Sta 41+60.16 PIs Sta 44+09.13
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 $D = 2^{\circ}27'32.6"$ $L_s = 150.00'$ CAMA AEC (575)
 $L = 398.91'$ $LT = 100.00'$
 $T = 199.94'$ $ST = 50.00'$
 $R = 2,330.00'$
 $SE = 05$
 $RO = 150'$
HARRY McMULLAN FAMILY LTD PART NO DEED



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



SEE SHEET 25 FOR -L- PROFILE

REVISIONS

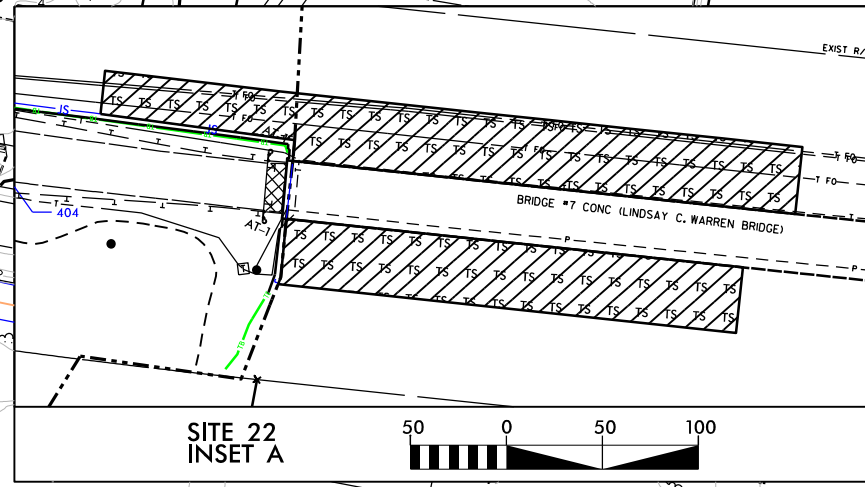
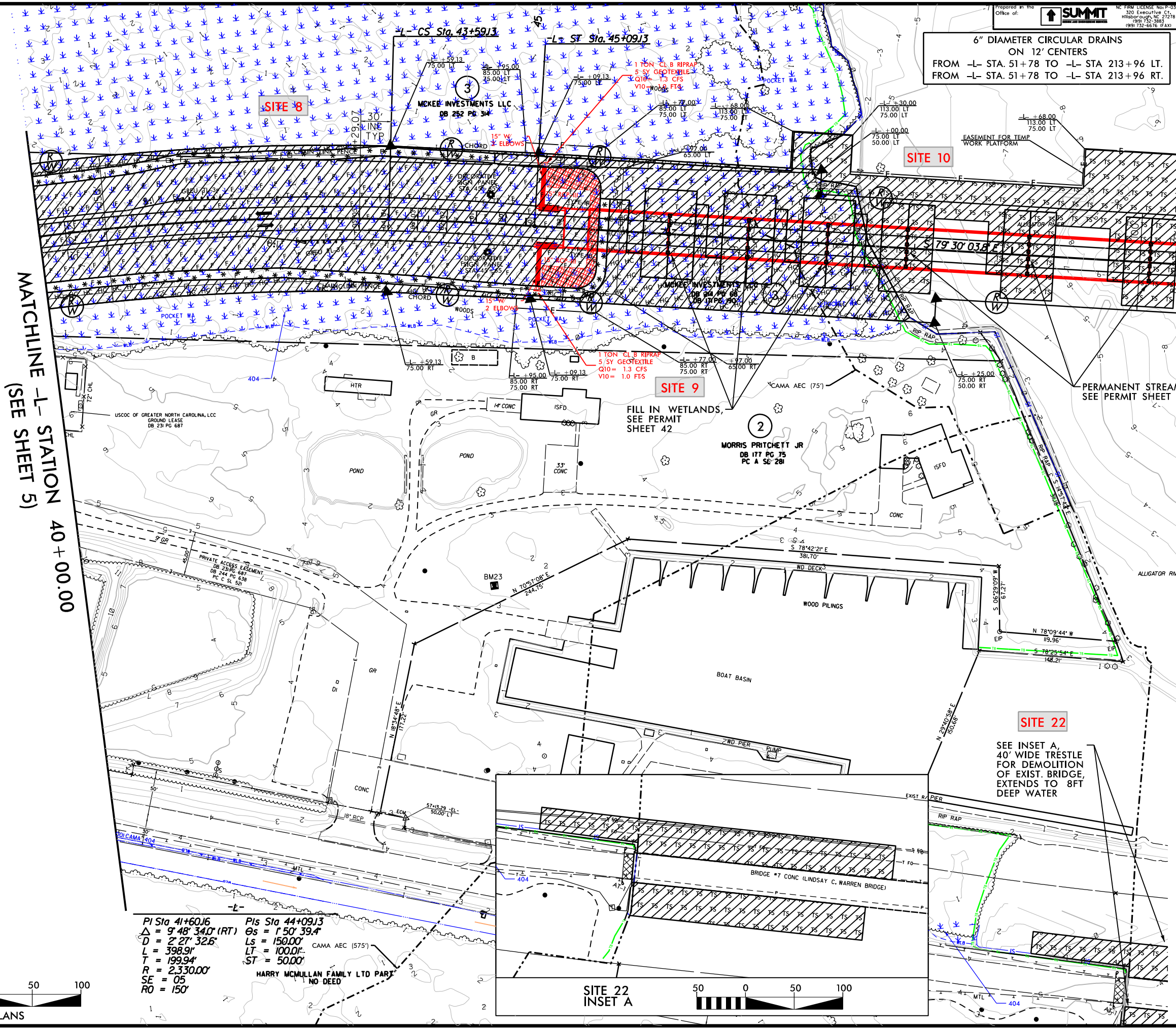
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 ON 12' CENTERS
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 FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

PERMIT DRAWING
 SHEET 7 OF 78

MATCHLINE -L- STATION 40+00.00
 (SEE SHEET 5)

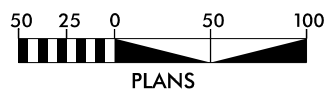
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 (SEE SHEET 7)



PI Sta 41+60.16
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 $D = 2' 27'' 32.6''$
 $L = 398.9'$
 $T = 199.94'$
 $R = 2,330.00'$
 $SE = 05$
 $RO = 150'$

PIs Sta 44+09.13
 $Gs = 1' 50'' 39.4''$
 $Ls = 150.00'$
 $LT = 100.00'$
 $ST = 50.00'$

CAMA AEC (5751)
 HARRY McMULLAN FAMILY LTD PART
 NO DEED




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

SEE SHEET 25
 FOR -L- PROFILE

REVISIONS

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

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Prepared in the Office of: 	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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.

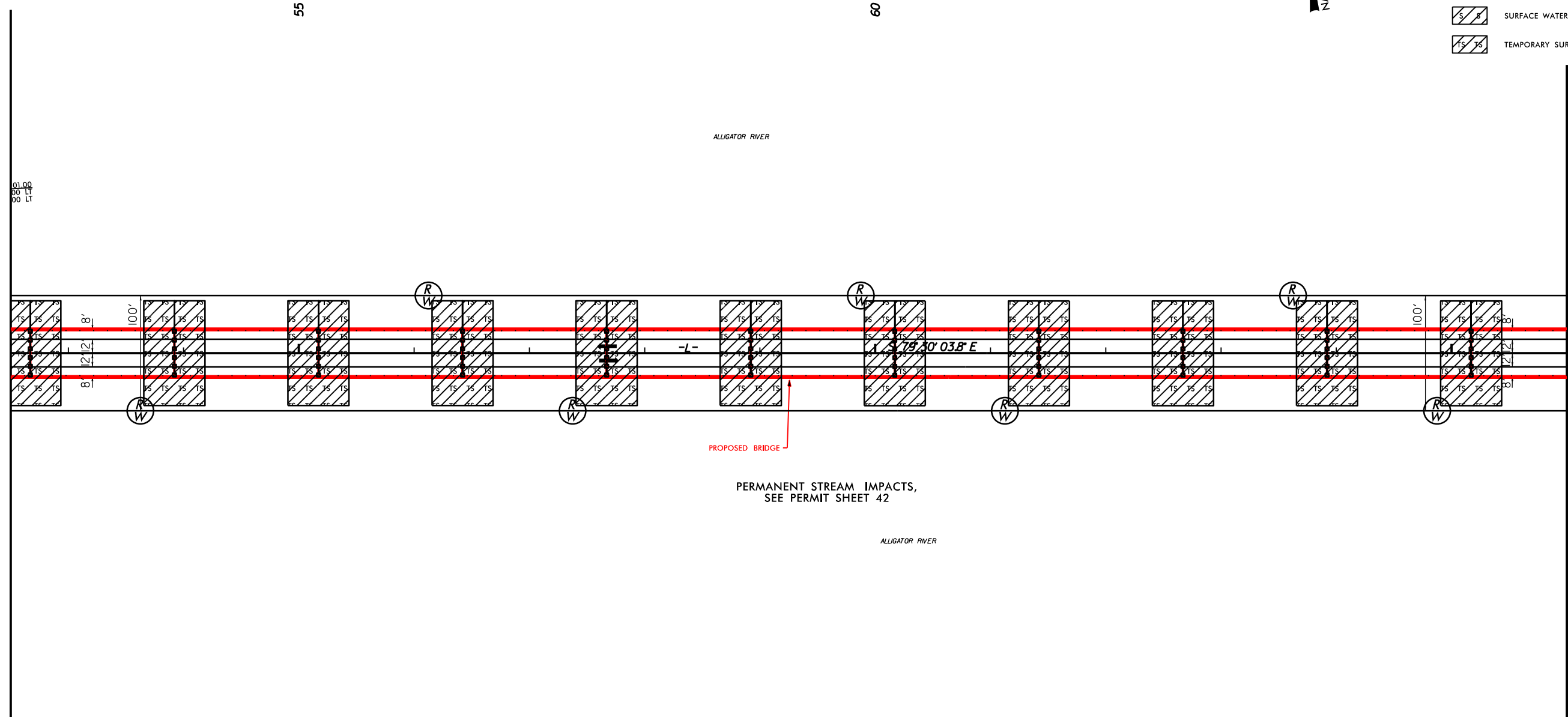


**PERMIT DRAWING
SHEET 8 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

REVISIONS

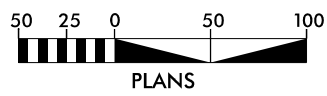
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PROPOSED BRIDGE
PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

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



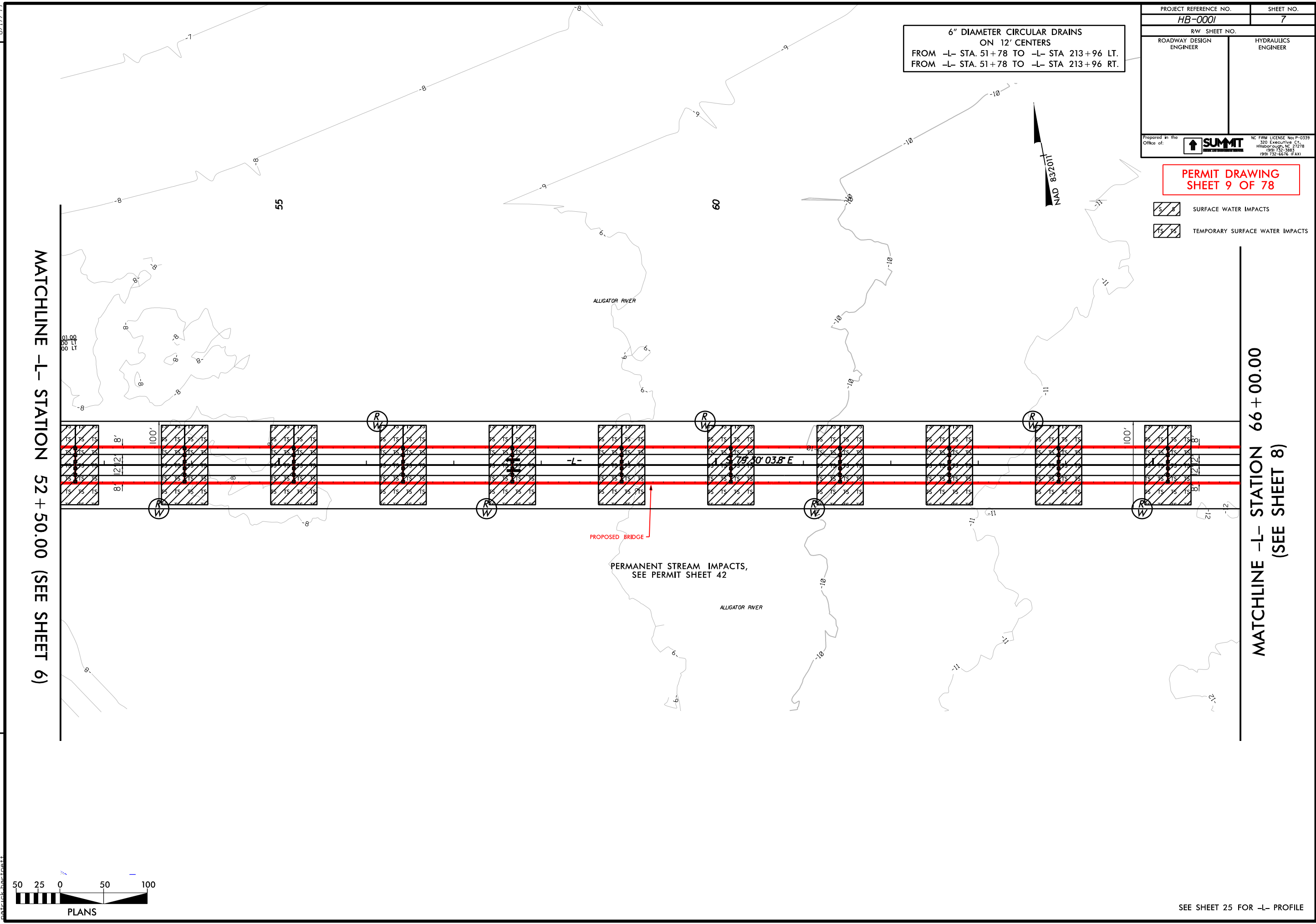
SEE SHEET 25 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001	SHEET NO. 7
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Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (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.

**PERMIT DRAWING
SHEET 9 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

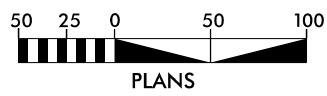


MATCHLINE -L- STATION 52+50.00 (SEE SHEET 6)

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

REVISIONS

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PLANS

SEE SHEET 25 FOR -L- PROFILE

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REVISIONS

PROJECT REFERENCE NO. HB-0001	SHEET NO. 8
RW SHEET NO.	
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Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

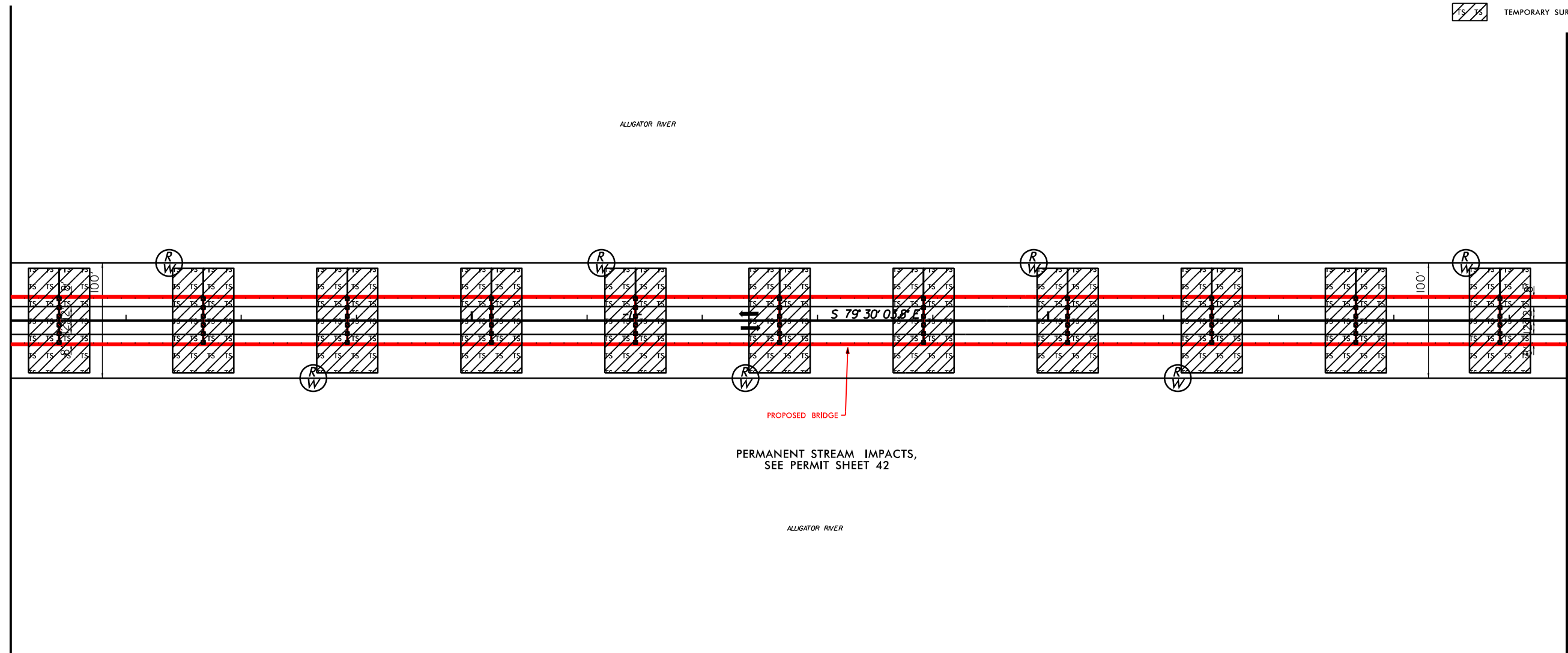
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.



**PERMIT DRAWING
SHEET 10 OF 78**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

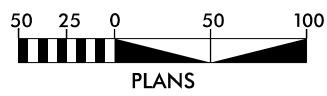
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MATCHLINE -L- STATION 79+50.00
(SEE SHEET 9)

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

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



SEE SHEET 26 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001	SHEET NO. 8
RW SHEET NO.	
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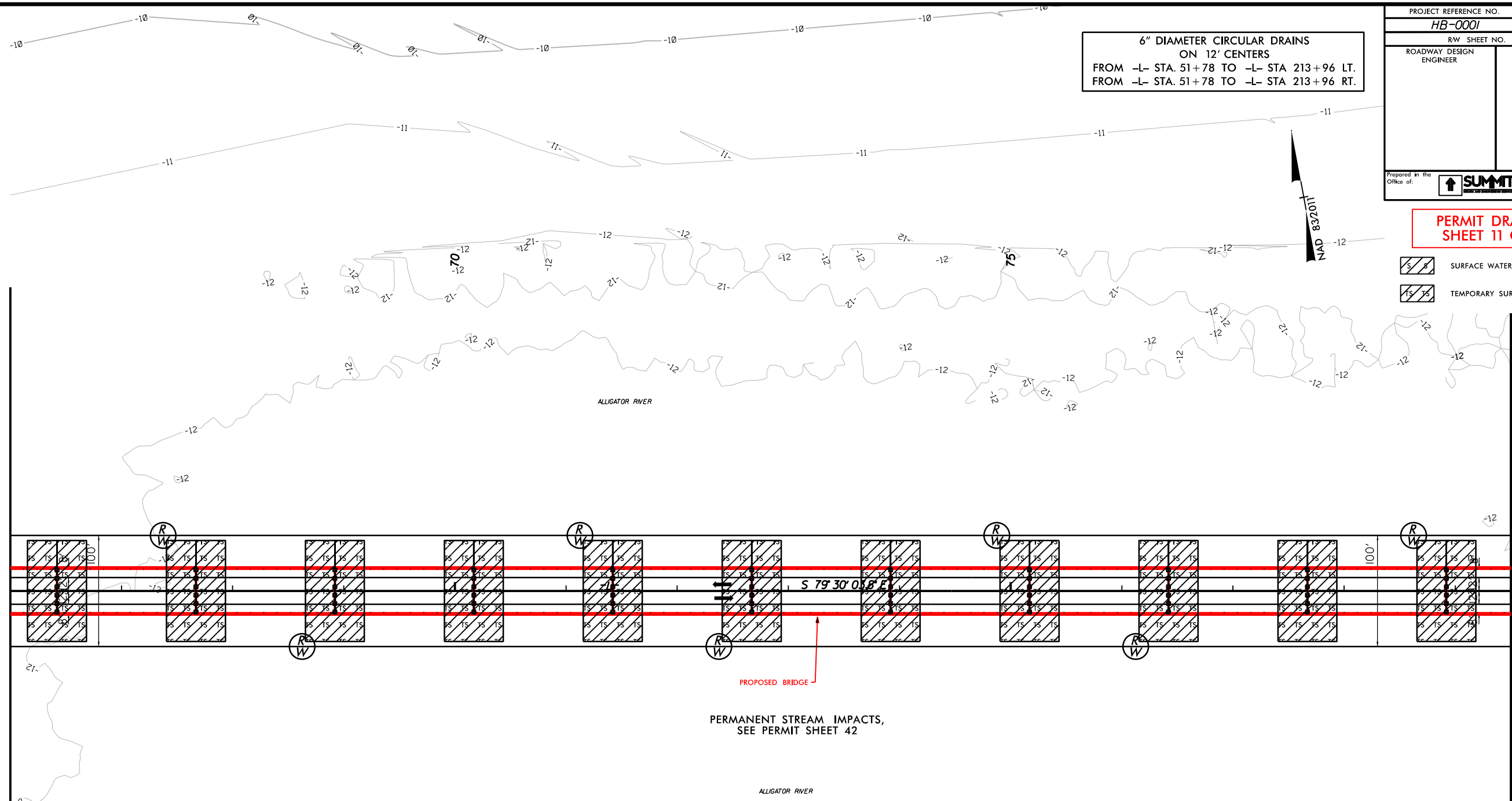
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

**PERMIT DRAWING
SHEET 11 OF 78**

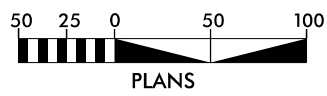
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42



SEE SHEET 26 FOR -L- PROFILE

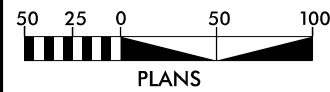
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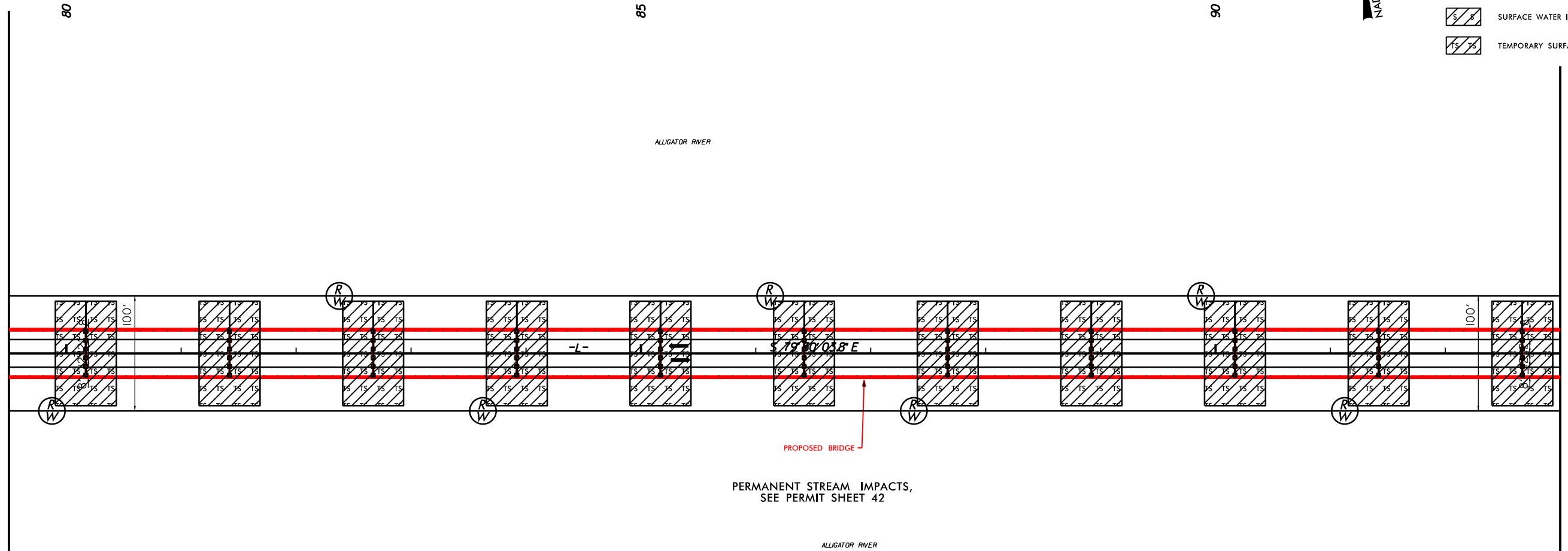
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REVISIONS

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HB-0001.dwg
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MATCHLINE -L- STATION 79+50.00 (SEE SHEET 8)



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

ALLIGATOR RIVER

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. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: 	
NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)	

**PERMIT DRAWING
SHEET 12 OF 78**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS



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

SEE SHEET 26 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (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.

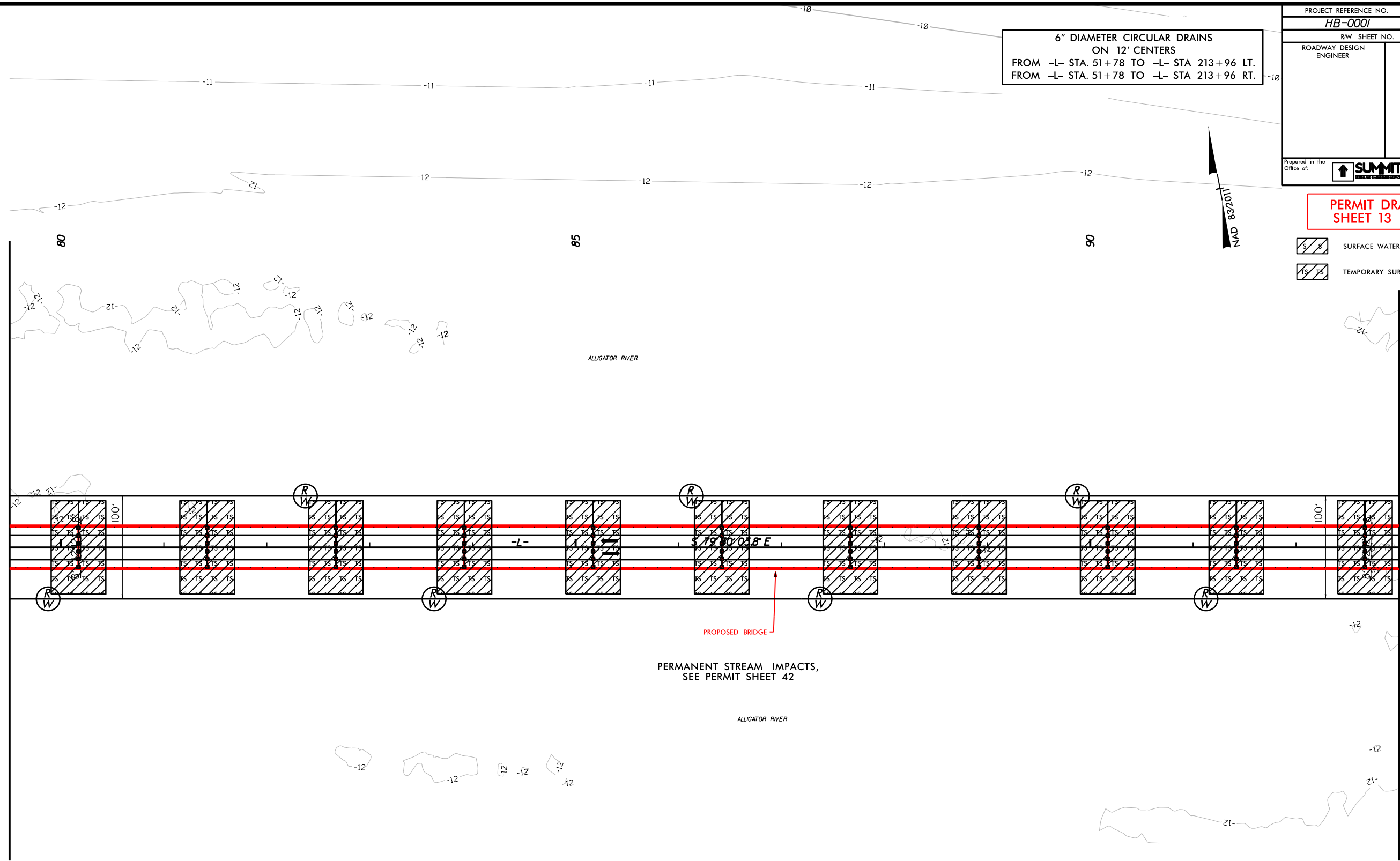
**PERMIT DRAWING
SHEET 13 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

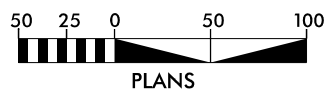


MATCHLINE -L- STATION 79+50.00 (SEE SHEET 8)

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



REVISIONS




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SEE SHEET 26 FOR -L- PROFILE

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

REVISIONS

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: 	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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.

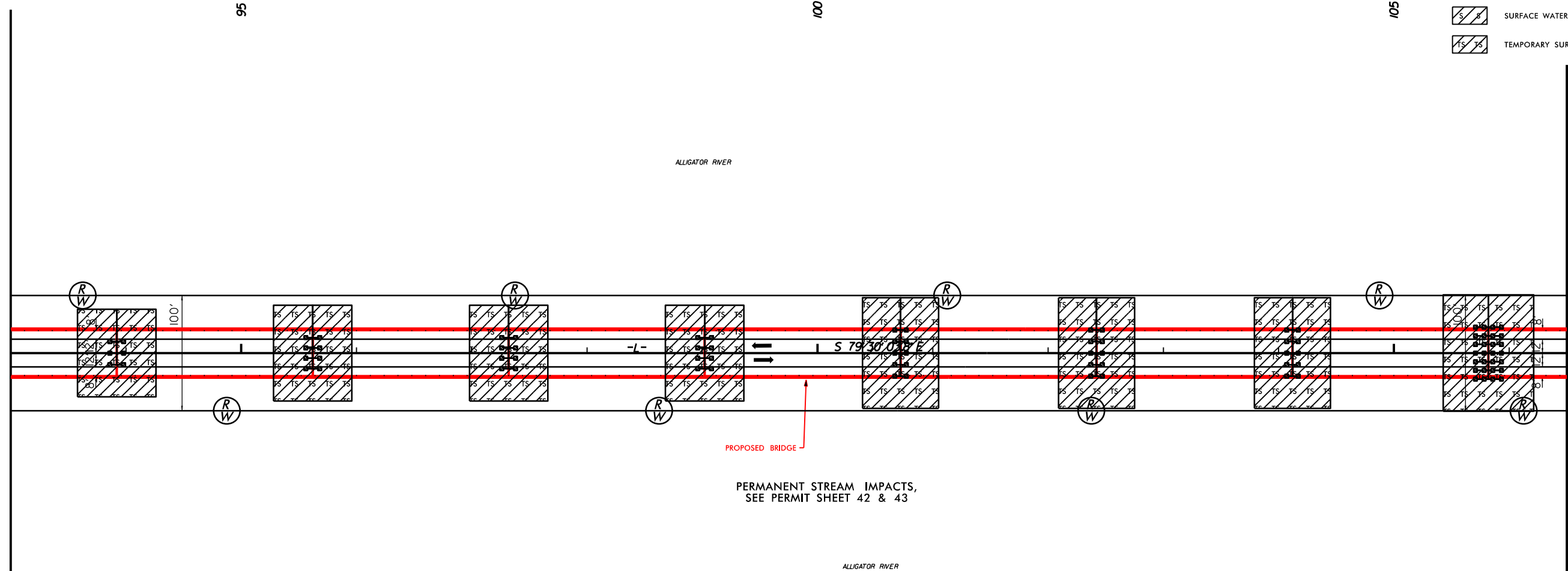


**PERMIT DRAWING
SHEET 14 OF 78**

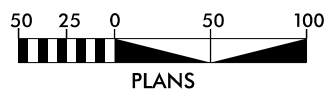
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42 & 43



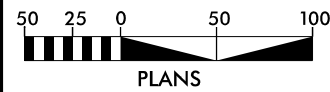
SEE SHEET 26 & 27 FOR -L- PROFILE

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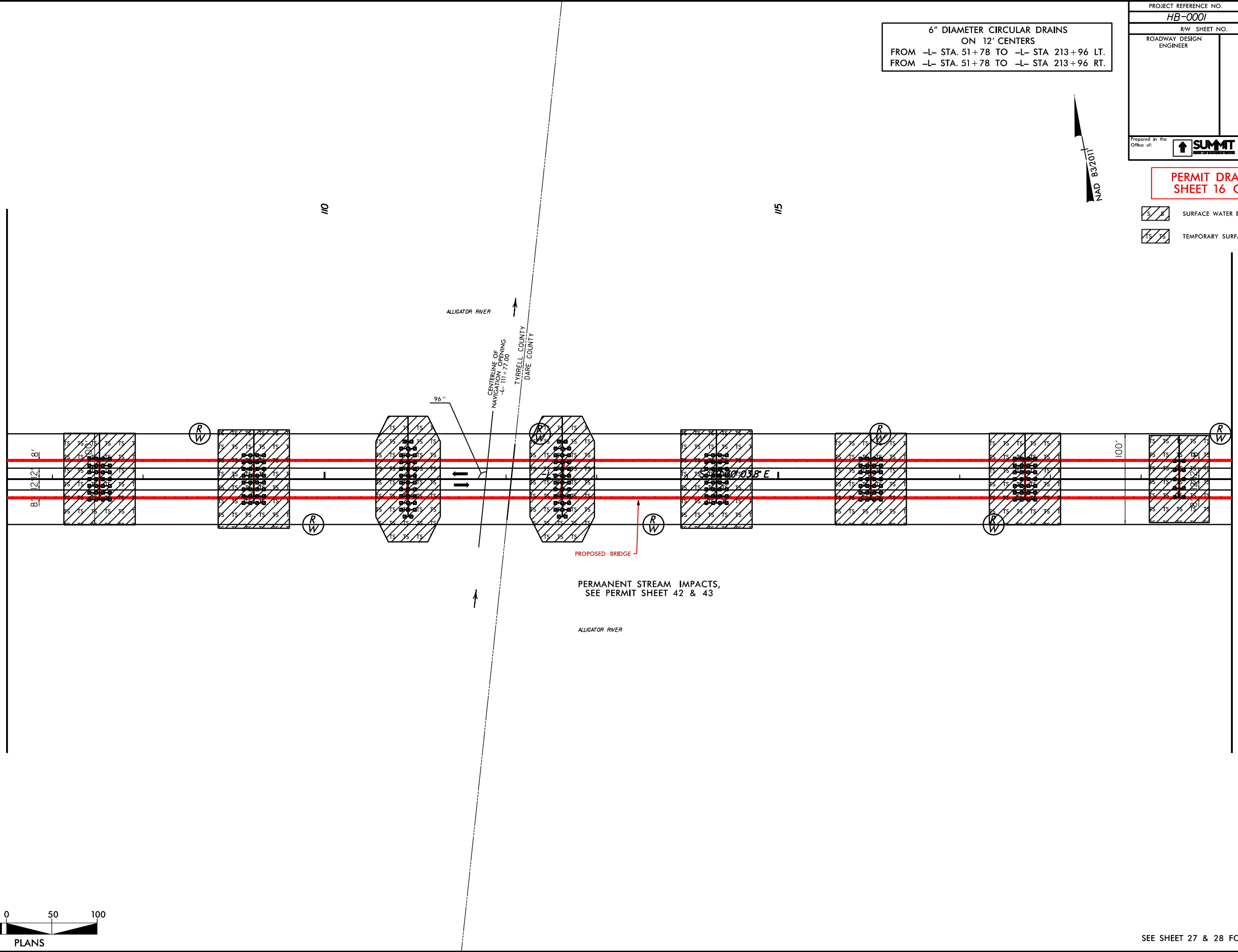
8/17/99

REVISIONS

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08/17/2023 14:38



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



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


PROJECT REFERENCE NO. HB-0001	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: NC FIRM LICENSE No P-0339 300 Executive Ct. Hildebrand, NC 27278 (919) 332-2863 (919) 732-6616 (FAX)	

**PERMIT DRAWING
SHEET 16 OF 78**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS



SEE SHEET 27 & 28 FOR -L- PROFILE

8/17/99

PROJECT REFERENCE NO. HB-0001	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hildebrand, NC 27728 (919) 332-2863 (919) 732-6616 (FAX)	

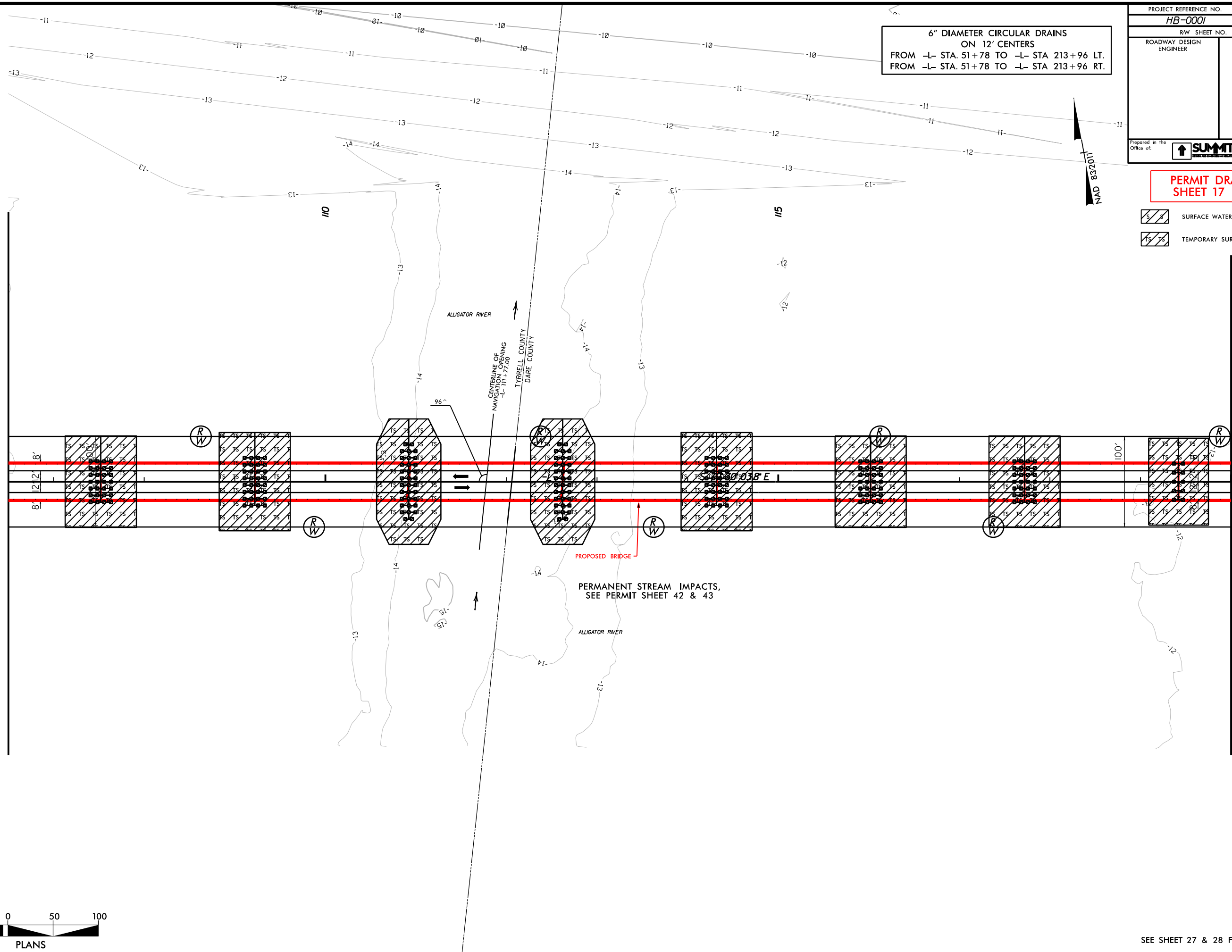
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

**PERMIT DRAWING
SHEET 17 OF 78**

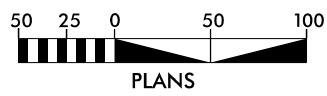
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42 & 43




SEE SHEET 27 & 28 FOR -L- PROFILE

REVISIONS

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

REVISIONS

PROJECT REFERENCE NO. HB-0001	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: 	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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.

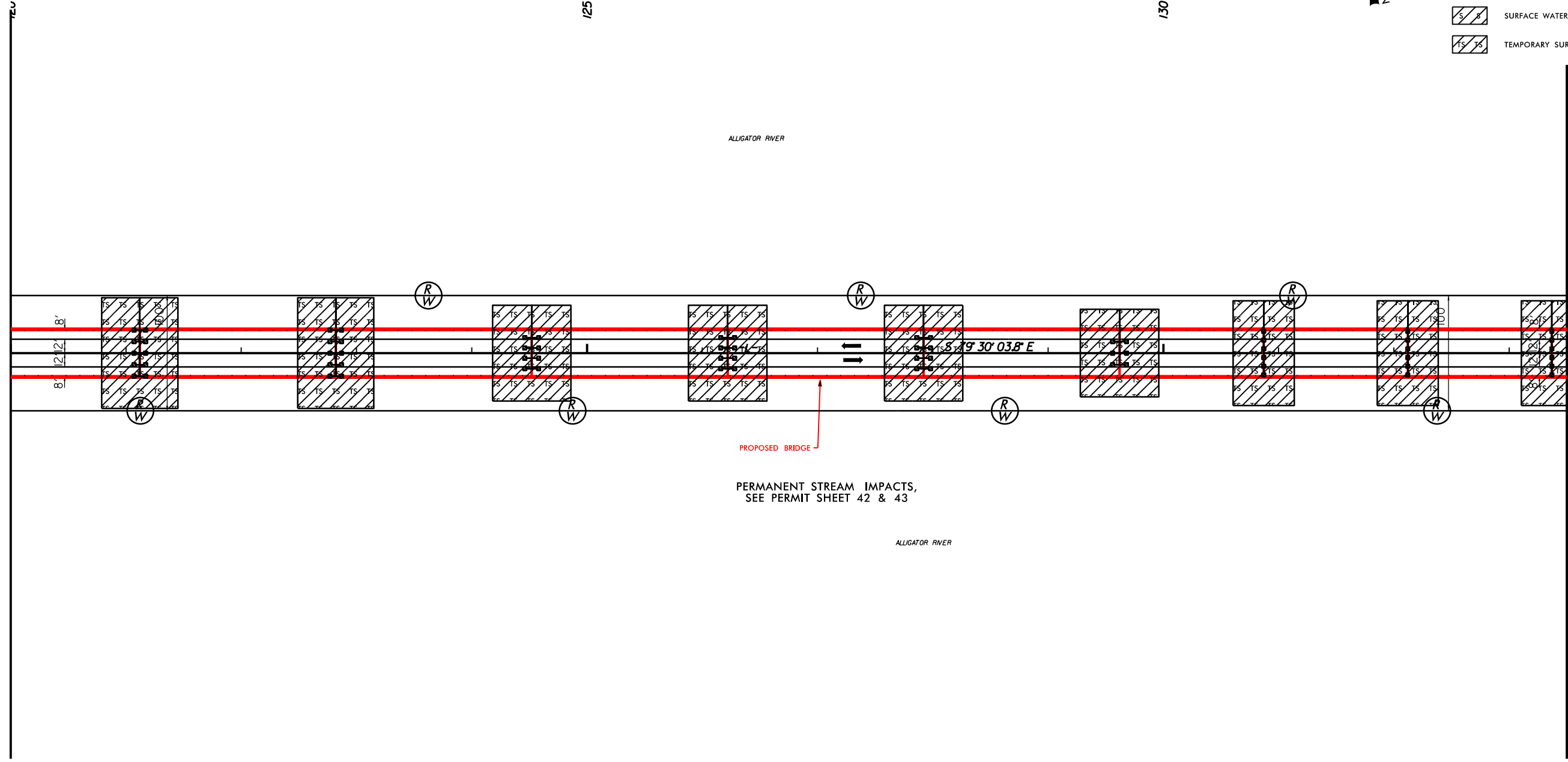


**PERMIT DRAWING
SHEET 18 OF 78**

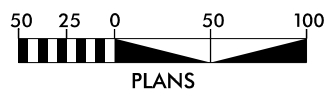
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -L- STATION 120+00.00 (SEE SHEET 11)

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



PROPOSED BRIDGE
PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42 & 43



SEE SHEET 28 & 29 FOR -L- PROFILE

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PROJECT REFERENCE NO. HB-0001	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-3863 (919) 732-6616 (FAX)</small>	

**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.**

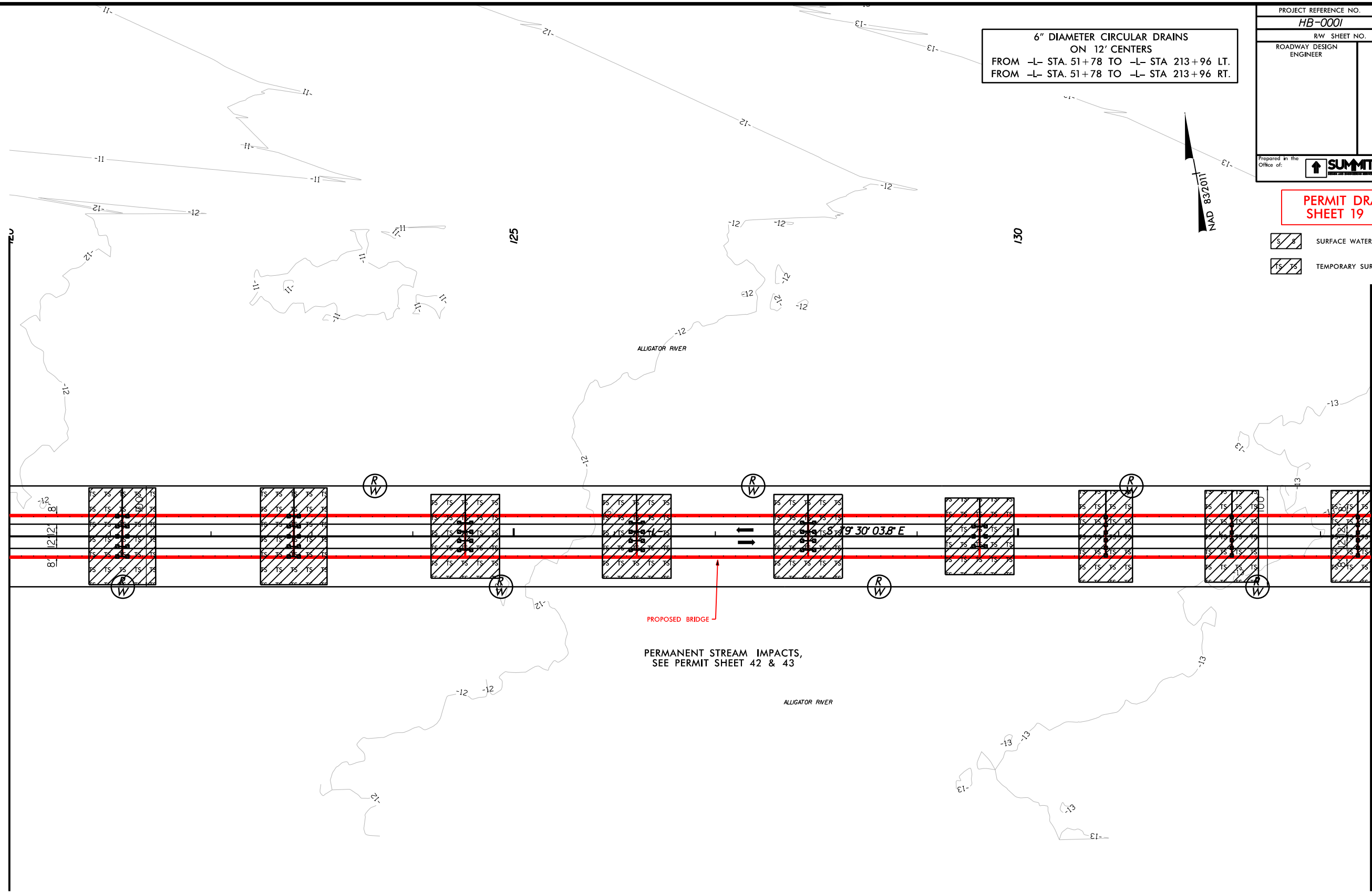


**PERMIT DRAWING
SHEET 19 OF 78**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -L- STATION 120+00.00 (SEE SHEET 11)

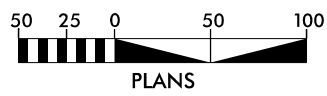
MATCHLINE -L- STATION 133+50.00 (SEE SHEET 13)



PROPOSED BRIDGE
PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42 & 43


REVISIONS

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SEE SHEET 28 & 29 FOR -L- PROFILE



8/17/99

PROJECT REFERENCE NO. <i>HB-0001</i>	SHEET NO. <i>13</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<small>Prepared in the Office of:</small>  <small>NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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.



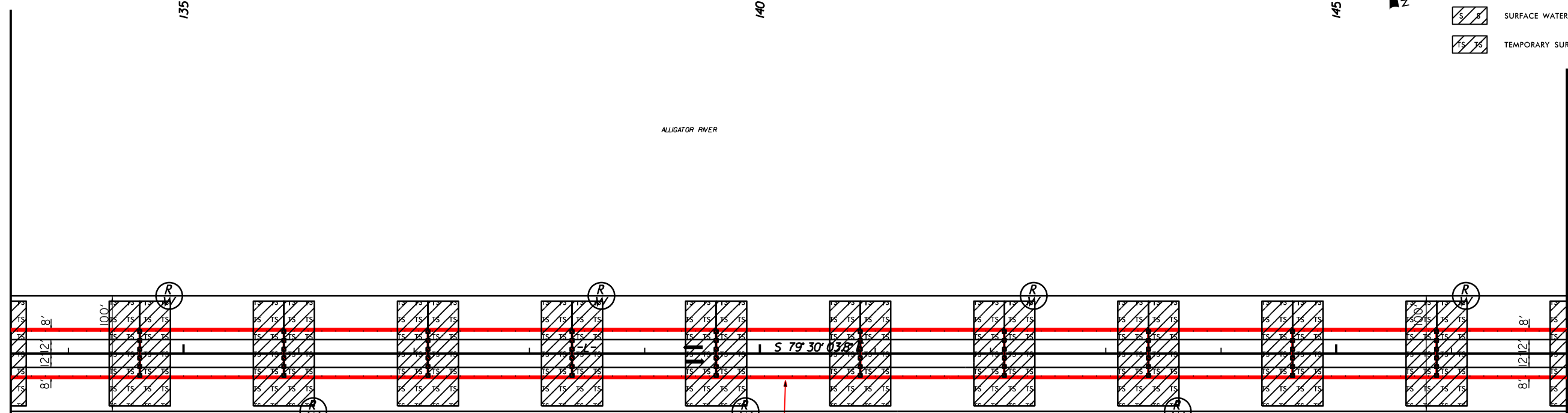
**PERMIT DRAWING
SHEET 20 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

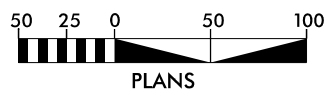
REVISIONS

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

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




PROPOSED BRIDGE
PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42





SEE SHEET 29 FOR -L- PROFILE

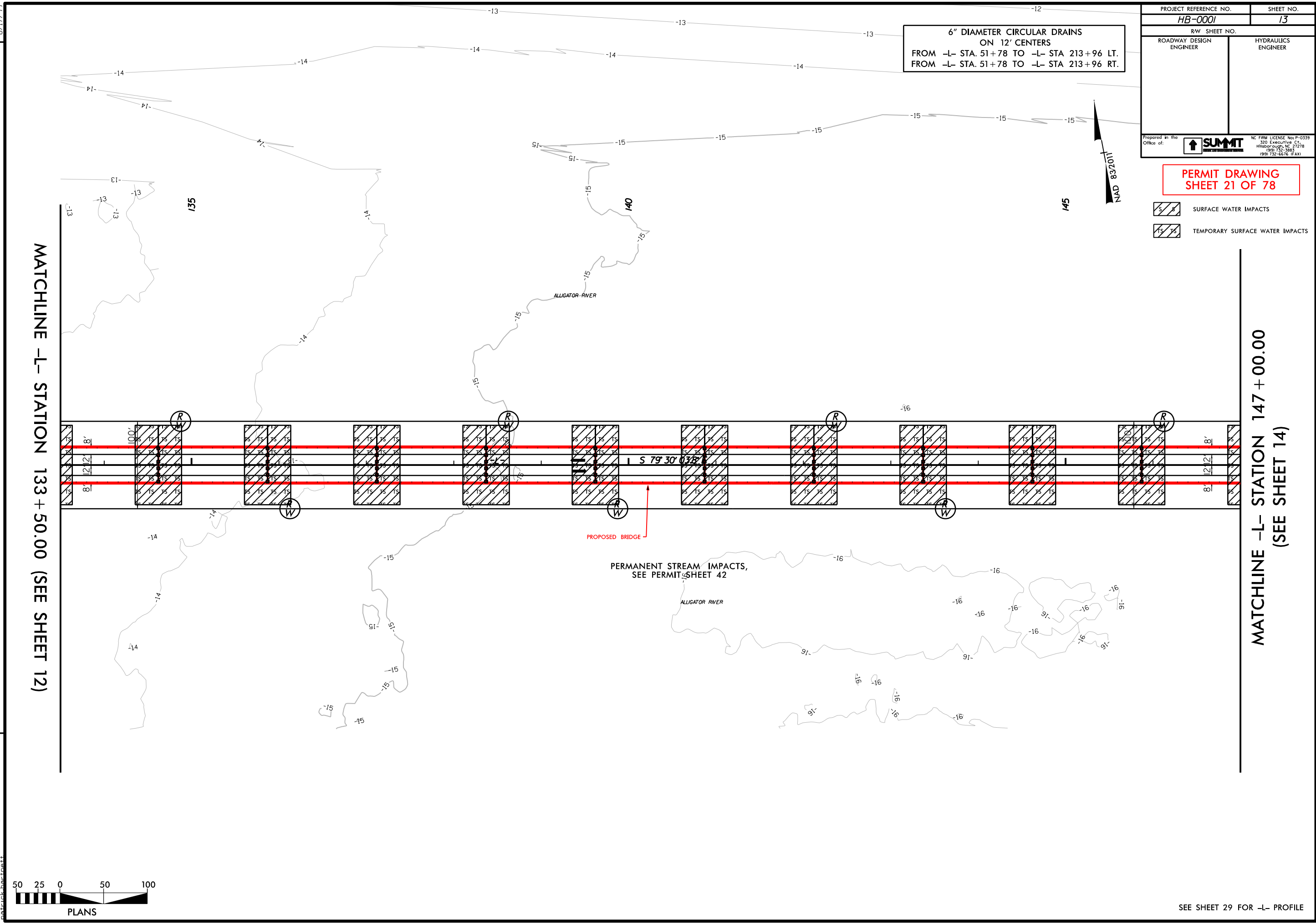
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PROJECT REFERENCE NO. HB-0001	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)	

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.

**PERMIT DRAWING
SHEET 21 OF 78**

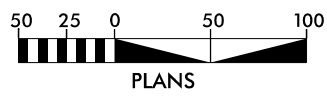
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS



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

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


REVISIONS



SEE SHEET 29 FOR -L- PROFILE

8/17/99
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

8/17/99

PROJECT REFERENCE NO. HB-0001	SHEET NO. 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hildebrand, NC 27278 (919) 332-2863 (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.

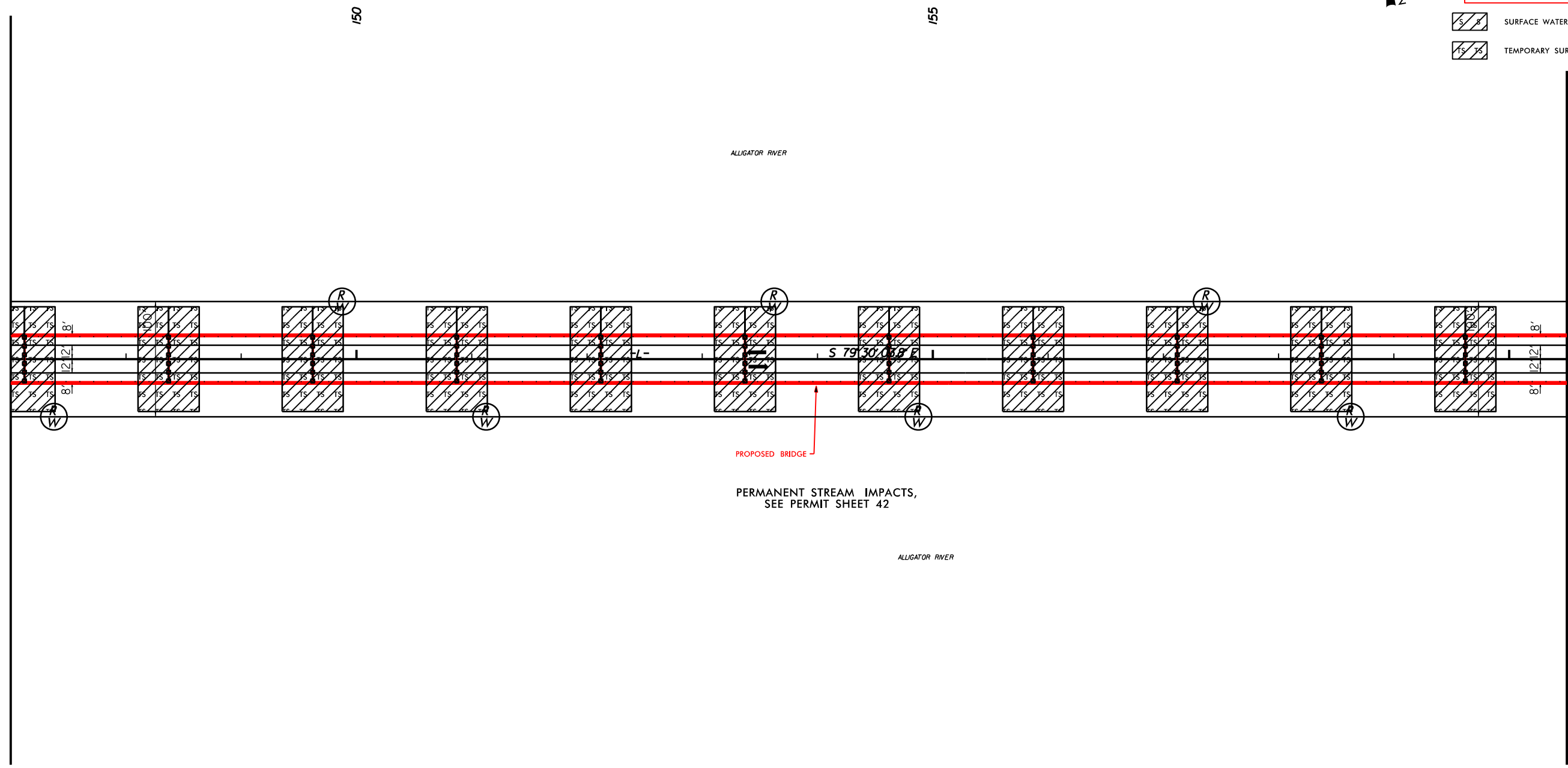


**PERMIT DRAWING
SHEET 22 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

REVISIONS

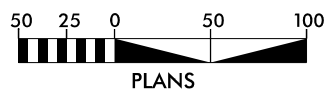
MATCHLINE -L- STATION 147+00.00 (SEE SHEET 13)




PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

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

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

SEE SHEET 29 & 30 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001	SHEET NO. 14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (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.

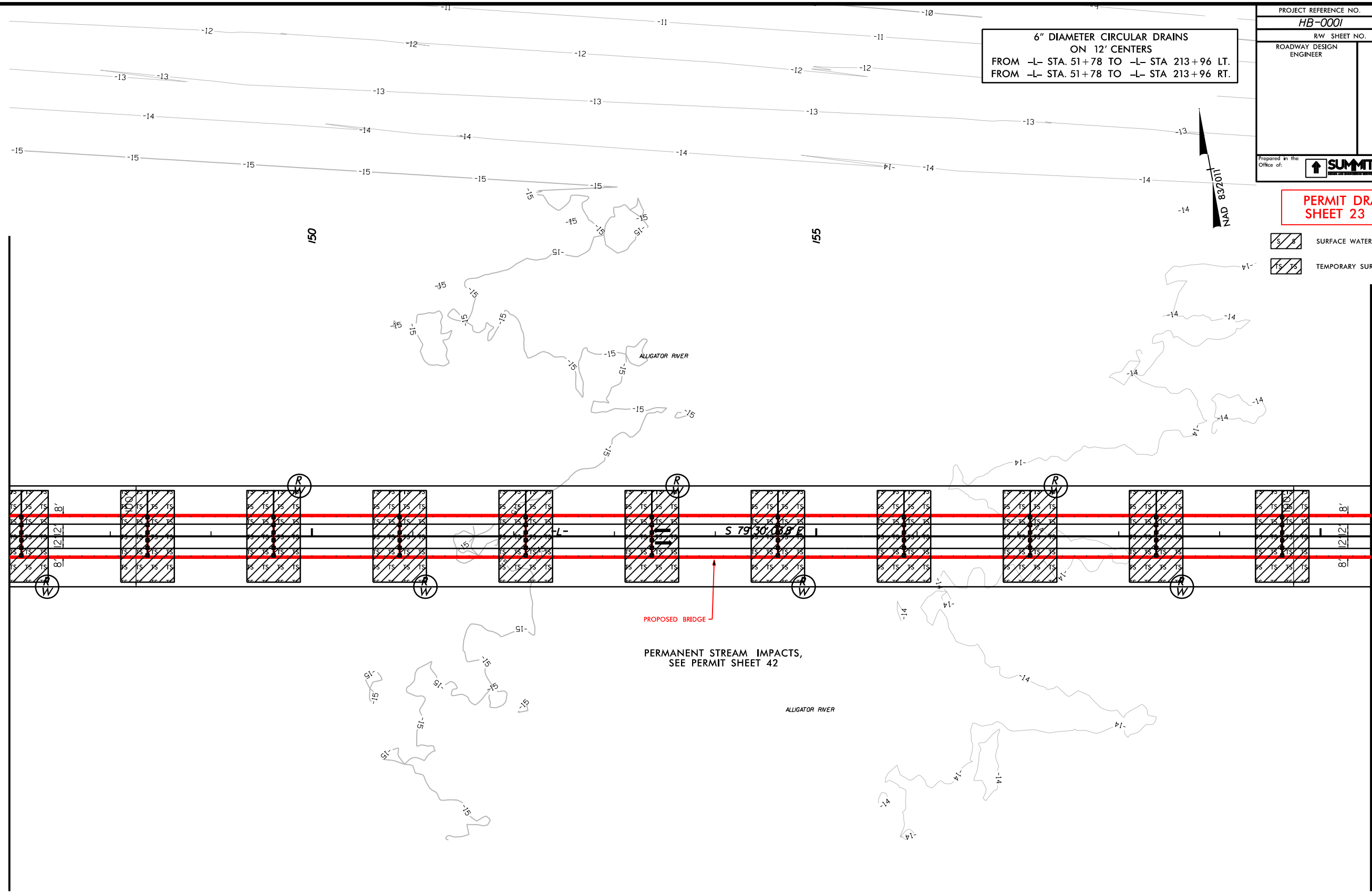


PERMIT DRAWING
SHEET 23 OF 78

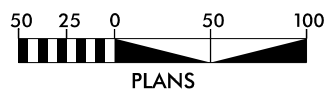
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



REVISIONS




SEE SHEET 29 & 30 FOR -L- PROFILE

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

REVISIONS

PROJECT REFERENCE NO. <i>HB-0001</i>	SHEET NO. <i>15</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<small>Prepared in the Office of:</small>  <small>NC PERM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-3883 (919) 732-6676 (FAX)</small>	

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.

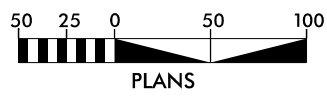
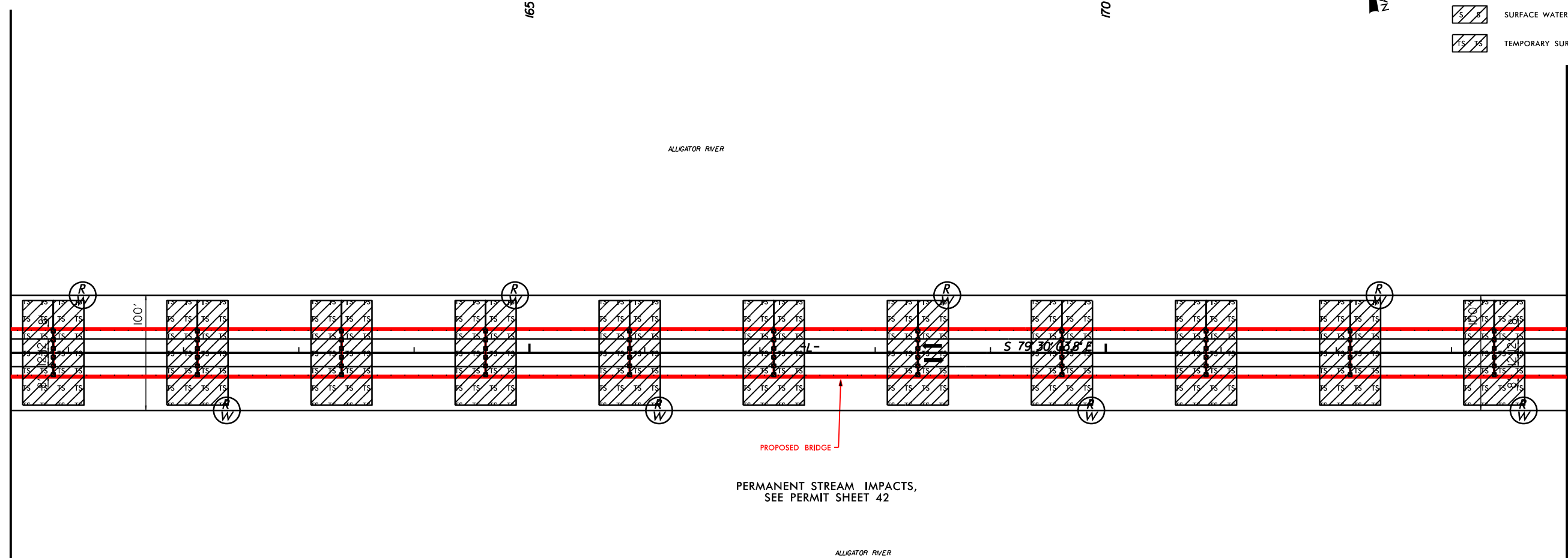


**PERMIT DRAWING
SHEET 24 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS


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

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





SEE SHEET 30 FOR -L- PROFILE

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PROJECT REFERENCE NO. HB-0001	SHEET NO. 15
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) 732-3883 (919) 732-6676 (FAX)	

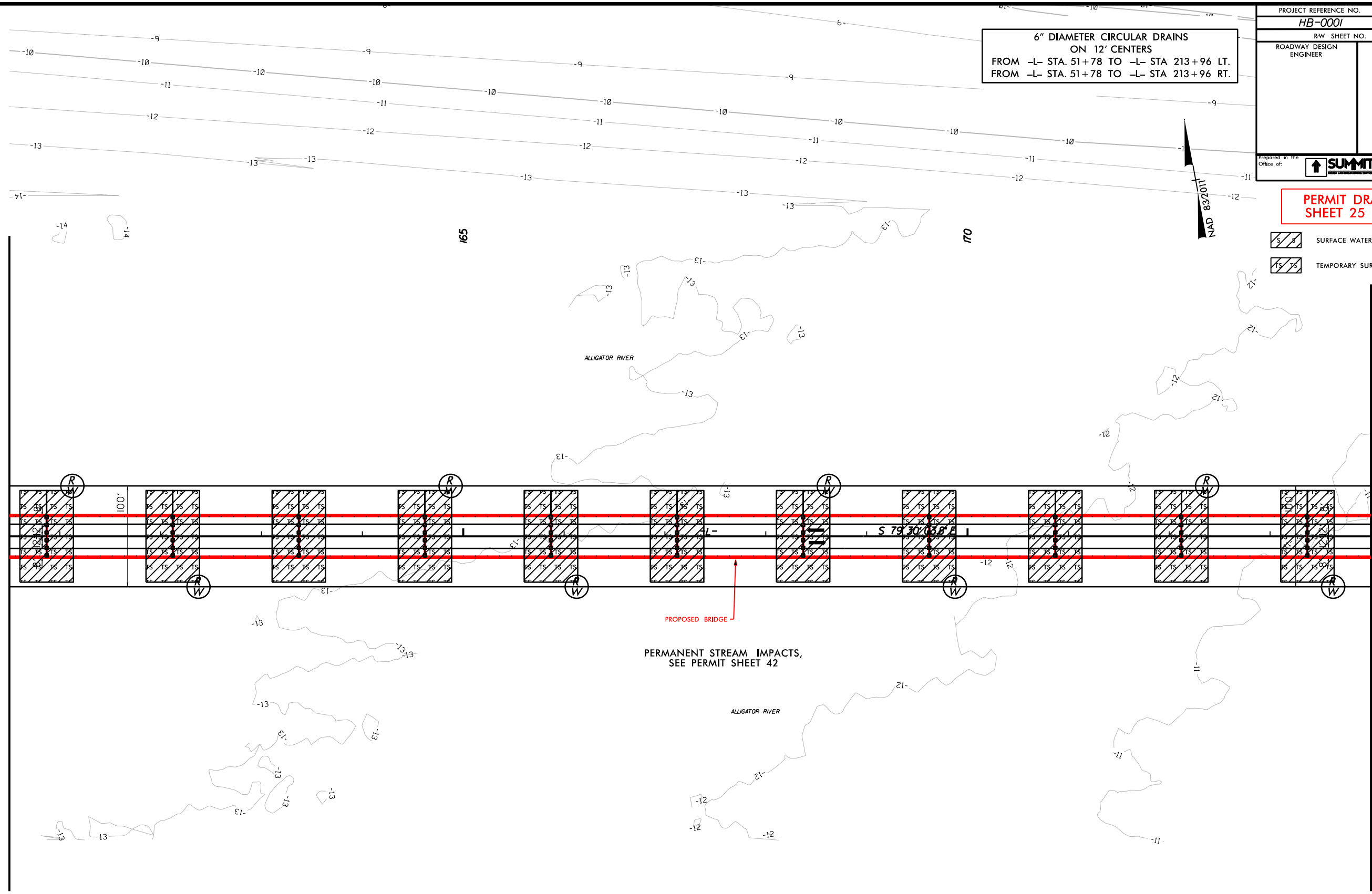
**6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.**

**PERMIT DRAWING
SHEET 25 OF 78**

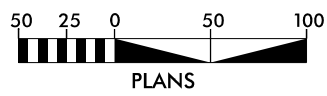
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42




SEE SHEET 30 FOR -L- PROFILE

REVISIONS

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

8/17/99

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: 	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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.

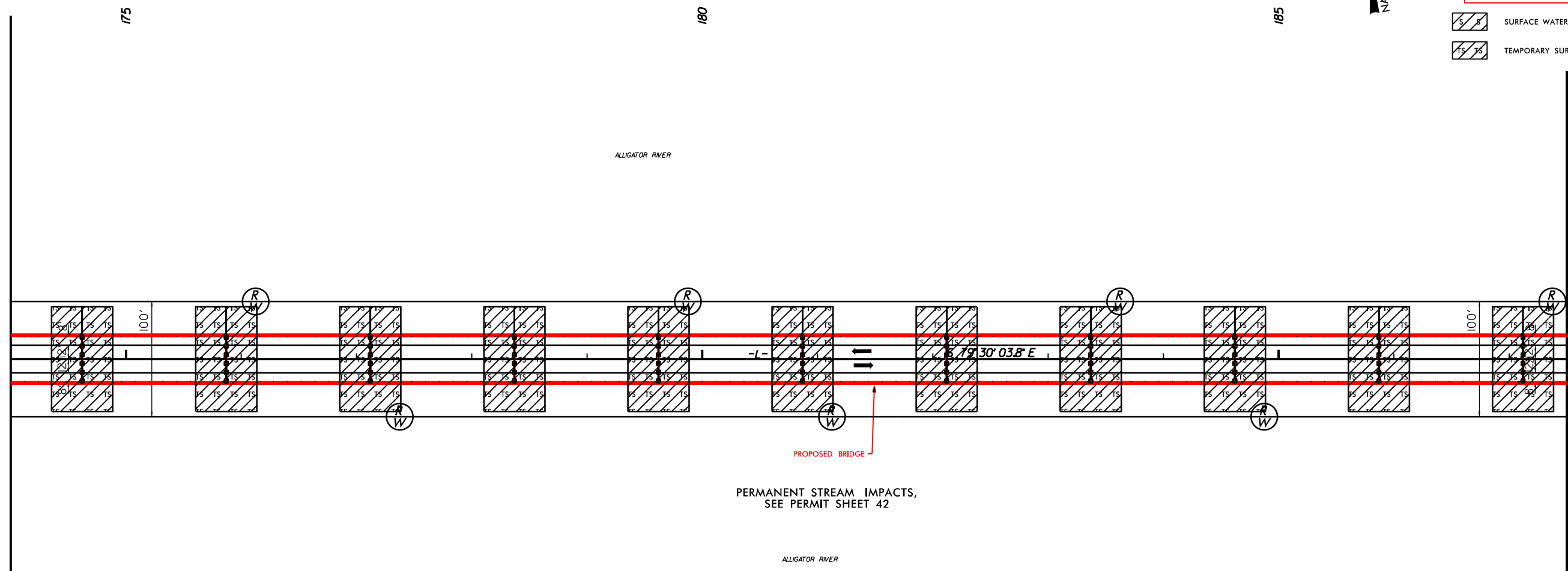


**PERMIT DRAWING
SHEET 26 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

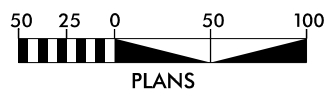
REVISIONS

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



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

PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42





SEE SHEET 30 & 31 FOR -L- PROFILE

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PROJECT REFERENCE NO. HB-0001	SHEET NO. 16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

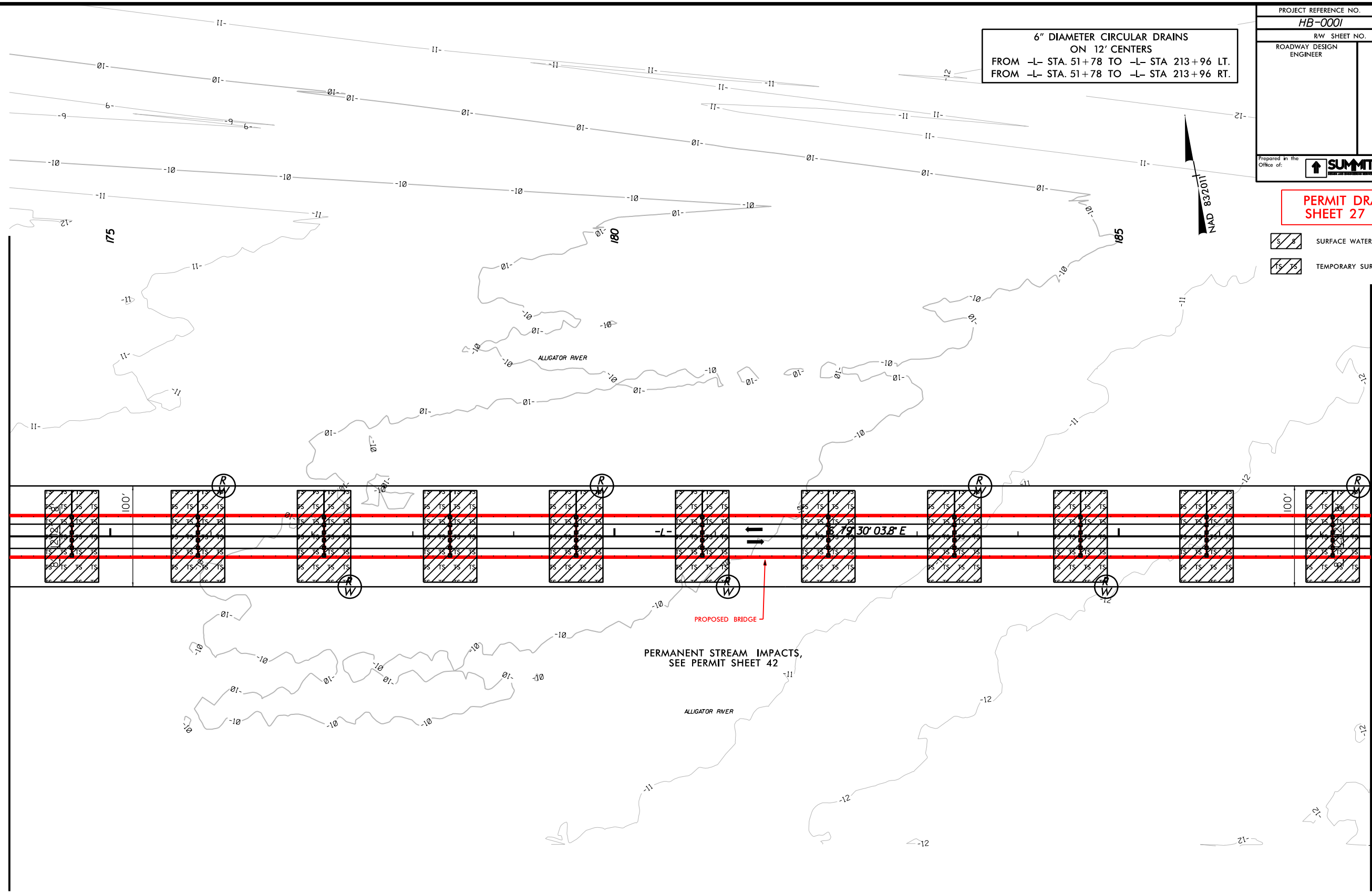
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA. 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA. 213+96 RT.

**PERMIT DRAWING
SHEET 27 OF 78**

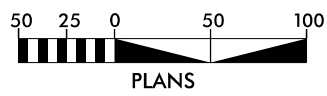
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42




SEE SHEET 30 & 31 FOR -L- PROFILE

REVISIONS

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8/17/99



PROJECT REFERENCE NO. HB-0001	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: 	
<small>NC FIRM LICENSE No P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 332-3863 (919) 732-6676 (FAX)</small>	

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

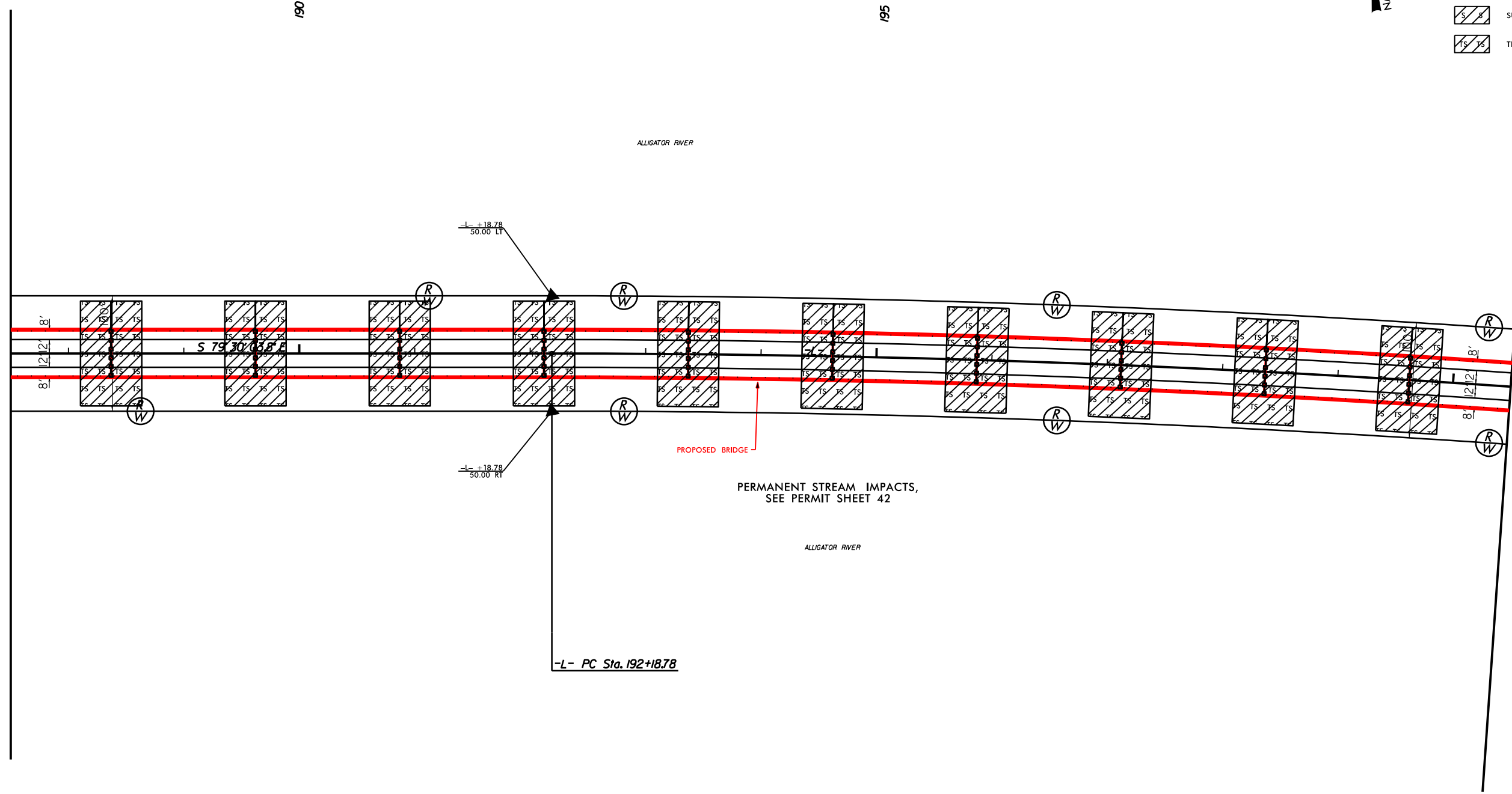


**PERMIT DRAWING
SHEET 28 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

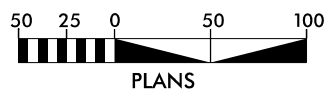
REVISIONS

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



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

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HB-0001-CHD_msh_28.dgn
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SEE SHEET 31 FOR -L- PROFILE

PROJECT REFERENCE NO. HB-0001	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 320 Executive Ct. Harrisborough, NC 27278 (919) 332-3863 (919) 732-6676 (FAX)</small>	

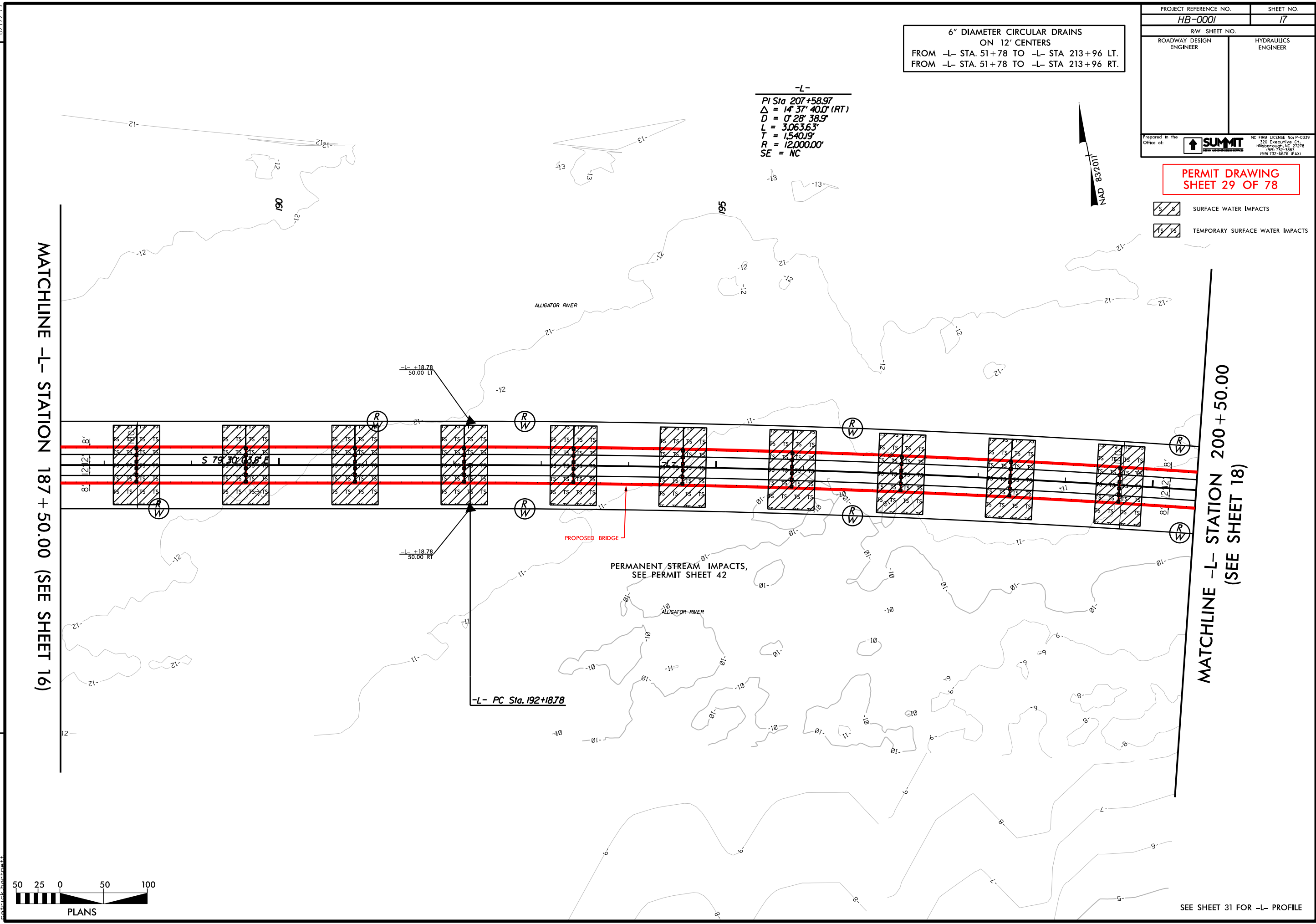
6" DIAMETER CIRCULAR DRAINS
ON 12' CENTERS
FROM -L- STA. 51+78 TO -L- STA 213+96 LT.
FROM -L- STA. 51+78 TO -L- STA 213+96 RT.

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



PERMIT DRAWING SHEET 29 OF 78

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS



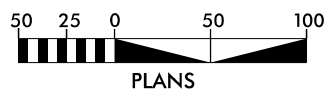
MATCHLINE -L- STATION 187+50.00 (SEE SHEET 16)

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

-L- PC Sta. 192+18.78

PERMANENT STREAM IMPACTS, SEE PERMIT SHEET 42

PROPOSED BRIDGE



SEE SHEET 31 FOR -L- PROFILE

REVISIONS

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PROJECT REFERENCE NO. HB-0001	SHEET NO. 18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

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

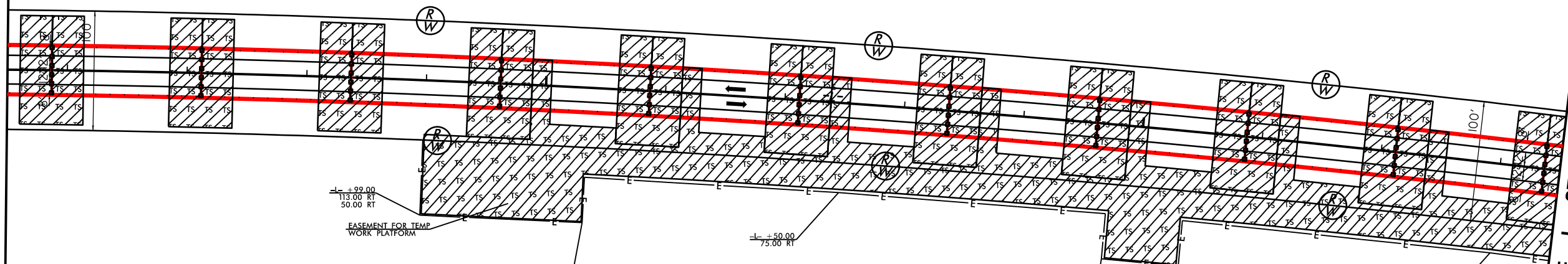


**PERMIT DRAWING
SHEET 30 OF 78**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

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

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



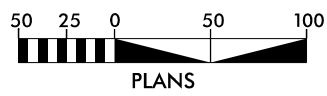
PERMANENT STREAM IMPACTS,
SEE PERMIT SHEET 42

SITE 11

UNITED STATES
FISH & WILDLIFE
DB 364 PG 2th

CAMA AEC (75')


SEE SHEET 31 & 32 FOR -L- PROFILE



REVISIONS

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

8/17/99

PROJECT REFERENCE NO. HB-0001	SHEET NO. 18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:  NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (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.

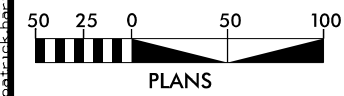
-L-
PI Sta 207+58.97
 $\Delta = 14' 37" 40.0" (RT)$
 $D = 0' 28" 38.9"$
 $L = 3,063.63'$
 $T = 1,540.19'$
 $R = 12,000.00'$
SE = NC

**PERMIT DRAWING
SHEET 31 OF 78**

-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS

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

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



PERMANENT STREAM IMPACTS, SEE PERMIT SHEET 42

SITE 11

UNITED STATES
FISH & WILDLIFE
DB 364 PG 2nd

CAMA AEC (75)

SEE SHEET 31 & 32 FOR -L- PROFILE

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
HB-0001	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Prepared in the Office of:

SUMMIT
 NC FIRM LICENSE Nos P-0339
 300 Executive Ct.
 Hillsborough, NC 27278
 (919) 332-3863
 (919) 732-6676 (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.

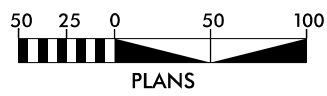
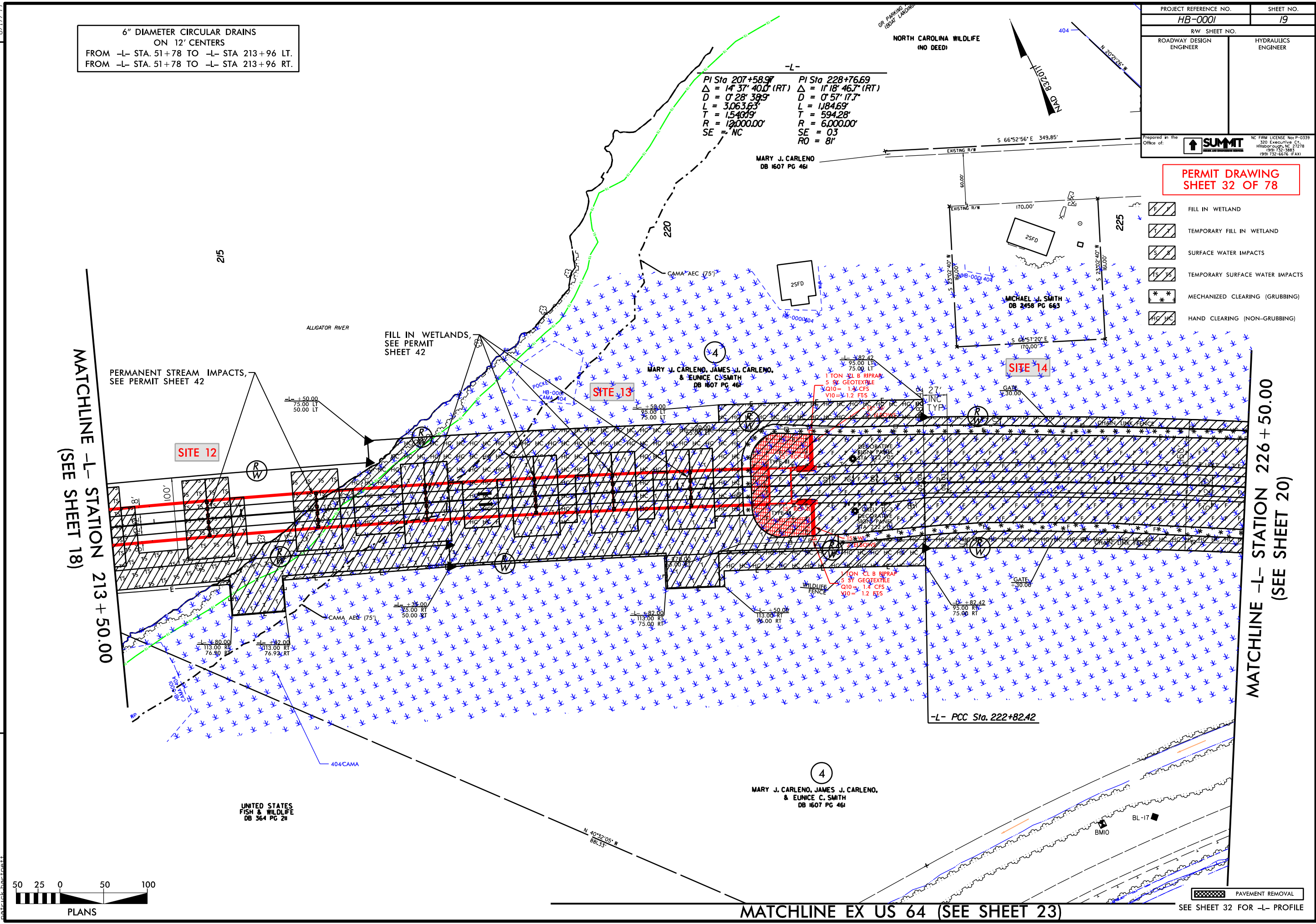
-L-
 PI Sta 207+58.97 PI Sta 228+76.69
 $\Delta = 14' 37" 40.0" (RT)$ $\Delta = 11' 18" 46.7" (RT)$
 $D = 0' 28" 39.9"$ $D = 0' 57" 17.7"$
 $L = 3,063.63'$ $L = 1,844.69'$
 $T = 1,540.19'$ $T = 594.28'$
 $R = 12,000.00'$ $R = 6,000.00'$
 $SE = NC$ $SE = 03$
 $RO = 81'$

**PERMIT DRAWING
 SHEET 32 OF 78**

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

MATCHLINE -L- STATION 213+50.00
 (SEE SHEET 18)

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



MATCHLINE EX US 64 (SEE SHEET 23)


SEE SHEET 32 FOR -L- PROFILE

REVISIONS

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UNITED STATES
 FISH & WILDLIFE
 DB 364 PG 21







MARY J. CARLENO, JAMES J. CARLENO,
 & EUNICE C. SMITH
 DB 1607 PG 461

PROJECT REFERENCE NO.	SHEET NO.
HB-0001	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:	
	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 332-3863 (919) 732-6676 (FAX)</small>	

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.

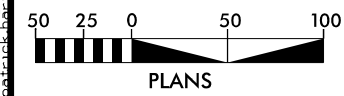
PI Sta 207+58.97 PI Sta 228+76.69
 $\Delta = 14^{\circ} 37' 40.0''$ (RT) $\Delta = 11^{\circ} 18' 46.7''$ (RT)
 $D = 0^{\circ} 28' 39.9''$ $D = 0^{\circ} 57' 17.7''$
 $L = 3,063.63'$ $L = 1,184.69'$
 $T = 1,540.19'$ $T = 594.28'$
 $R = 12,000.00'$ $R = 6,000.00'$
 $SE = NC$ $SE = 03$
 $RO = 8'$

**PERMIT DRAWING
SHEET 33 OF 78**


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

MATCHLINE -L- STATION 213+50.00
(SEE SHEET 18)

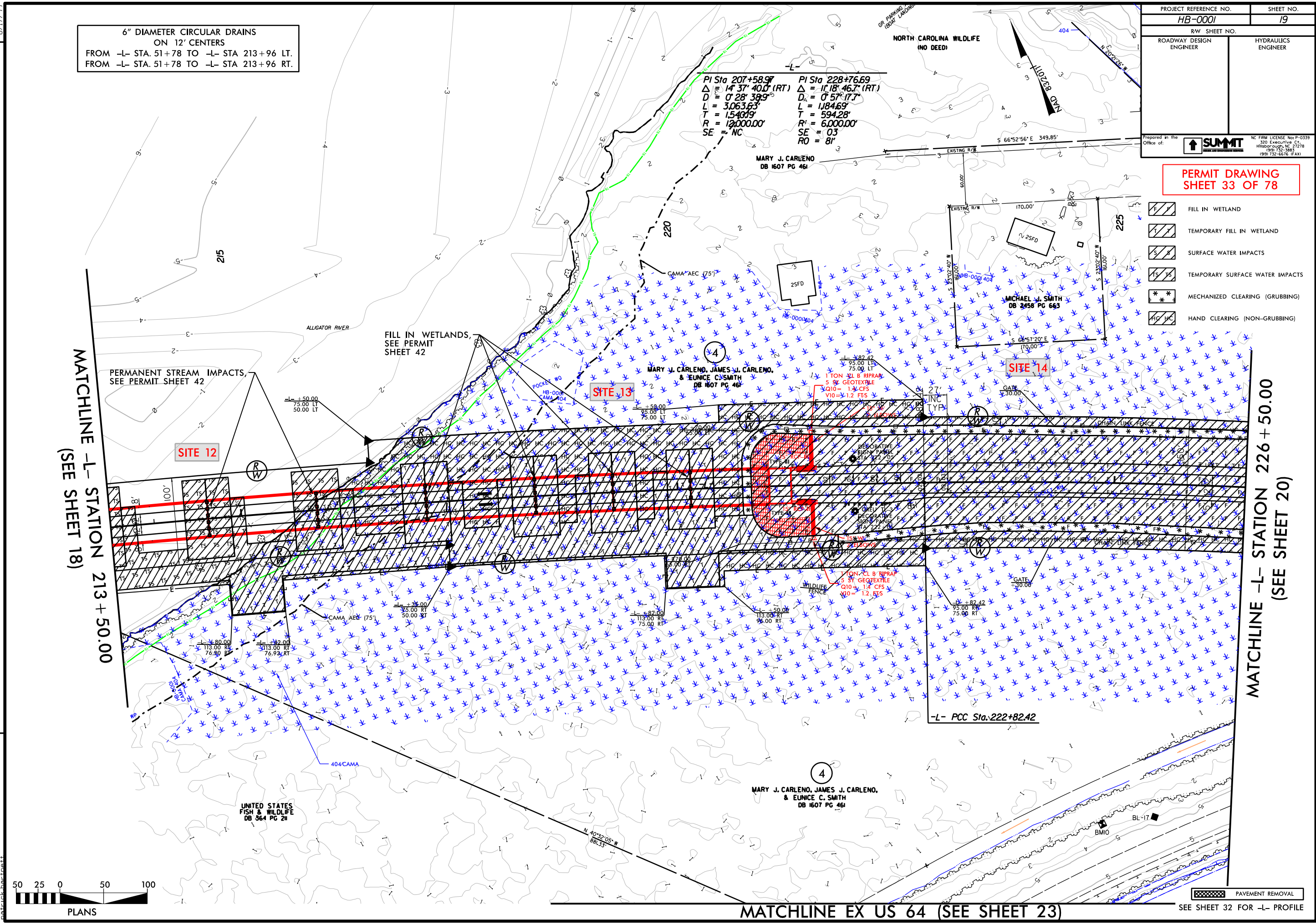
MATCHLINE -L- STATION 226+50.00
(SEE SHEET 20)




MATCHLINE EX US 64 (SEE SHEET 23)







 PAVEMENT REMOVAL
SEE SHEET 32 FOR -L- PROFILE

REVISIONS
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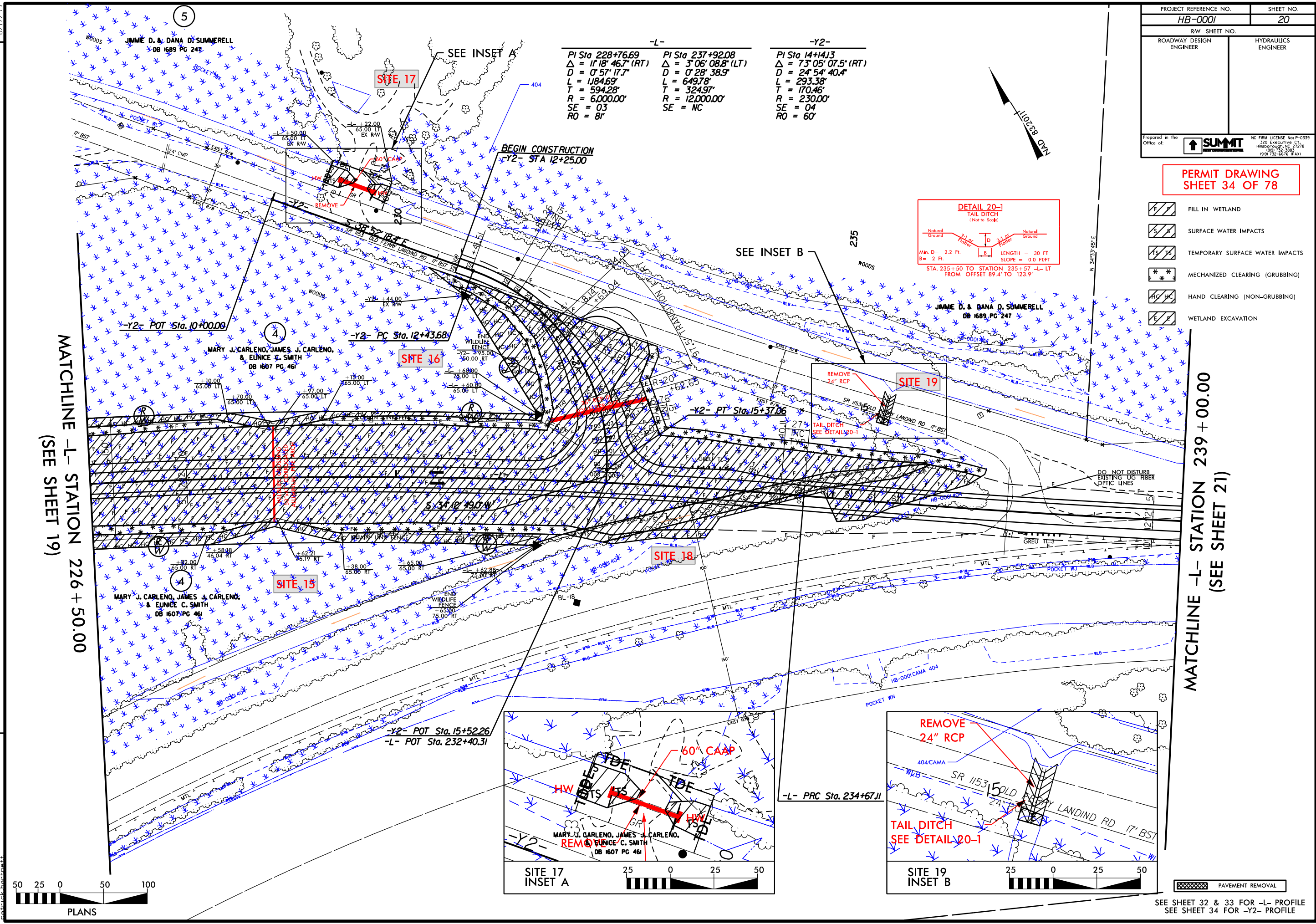
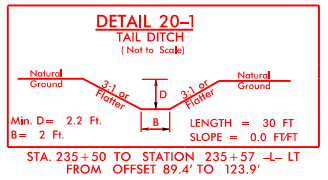


PROJECT REFERENCE NO. HB-0001	SHEET NO. 20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of:	
	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-3863 (919) 732-6616 (FAX)</small>	

**PERMIT DRAWING
SHEET 34 OF 78**

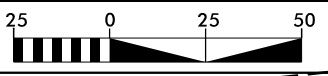
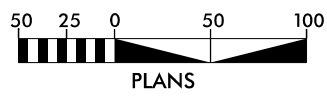
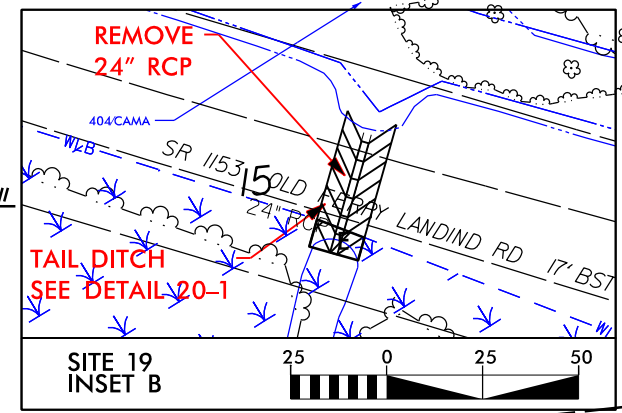
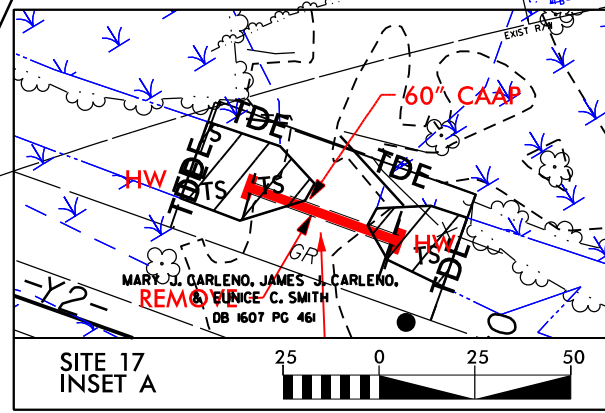
-  FILL IN WETLAND
-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS
-  MECHANIZED CLEARING (GRUBBING)
-  HAND CLEARING (NON-GRUBBING)
-  WETLAND EXCAVATION

-L-	-Y2-	-Y2-
PI Sta 228+76.69	PI Sta 237+92.08	PI Sta 14+14.3
$\Delta = 11^{\circ} 18' 46.7" (RT)$	$\Delta = 3^{\circ} 06' 08.8" (LT)$	$\Delta = 7^{\circ} 05' 07.5" (RT)$
$D = 0^{\circ} 57' 17.7"$	$D = 0^{\circ} 28' 38.9"$	$D = 24^{\circ} 54' 40.4"$
$L = 1184.69'$	$L = 649.78'$	$L = 293.38'$
$T = 594.28'$	$T = 324.97'$	$T = 170.46'$
$R = 6000.00'$	$R = 12000.00'$	$R = 230.00'$
$SE = 03$	$SE = NC$	$SE = 04$
$RO = 8'$		$RO = 60'$



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

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REVISIONS

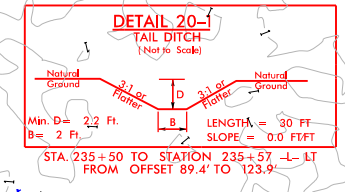
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
HB-0001	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-3863 (919) 732-6616 (FAX)</small>	

PERMIT DRAWING SHEET 35 OF 78

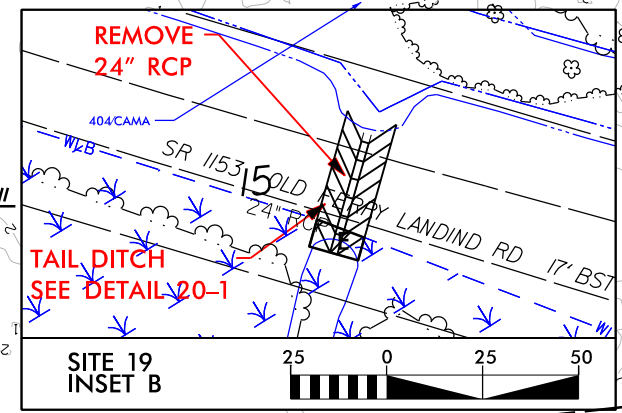
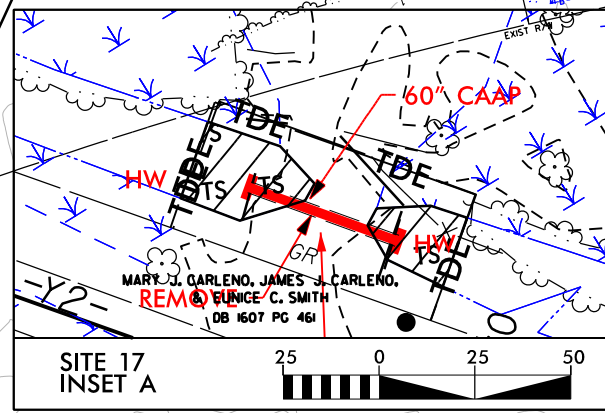
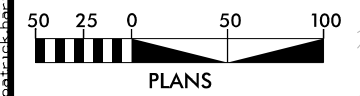
- FILL IN WETLAND
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)
- WETLAND EXCAVATION

-L-	-Y2-	-Y2-
PI Sta 228+76.69	PI Sta 237+92.08	PI Sta 14+14.3
$\Delta = 11^{\circ}18'46.7''$ (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 = 1184.69'	L = 649.78'	L = 293.38'
T = 594.28'	T = 324.97'	T = 170.46'
R = 6000.00'	R = 12000.00'	R = 230.00'
SE = 03	SE = NC	SE = 04
RO = 8'		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

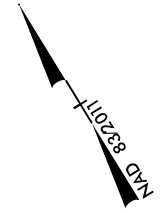
REVISIONS

31-MAR-2023 10:36
HB-0001.dwg
pesh_35.dgn

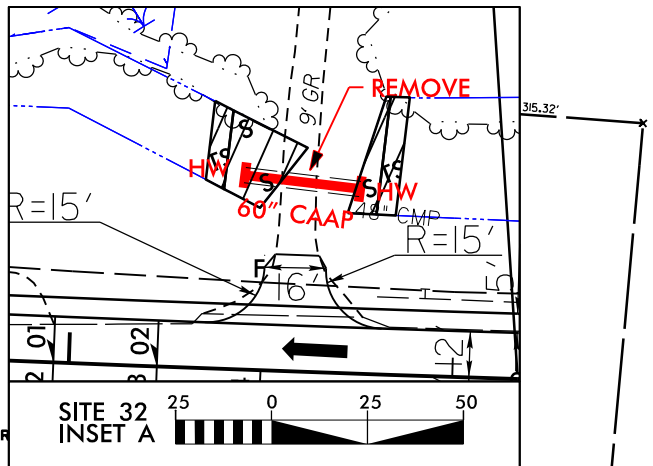
PROJECT REFERENCE NO. HB-0001	SHEET NO. 21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 919-732-3863 919-732-6616 (FAX)</small>	

PERMIT DRAWING SHEET 36 OF 78

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



-L-
 PI Sta 237+92.08
 $\Delta = 3' 06'' 08.8'' (LT)$
 $D = 0' 28'' 38.9''$
 $L = 649.78'$
 $T = 324.97'$
 $R = 12,000.00'$
 $SE = NC$

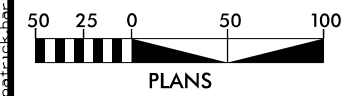


BARRY S. & ROSE MARIE DOSHER
 DB 283 PG III
 PC C SLIDE 1988
 (PARCEL 'E')

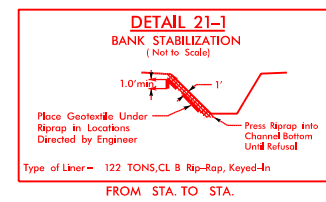
BARRY S., ROSE MARIE DOSHER, & STEPHANIE DOSHER
 DB 1693 PG I
 PC C SLIDE 1988
 (PARCEL 'C')

BARRY S., ROSE MARIE DOSHER, & EARNEST A. DOSHER
 DB 1692 PG 500
 PC C SLIDE 1988
 (PARCEL 'B')

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



PLANS




 PAYMENT REMOVAL

SEE SHEET 32 FOR -L- PROFILE

REVISIONS

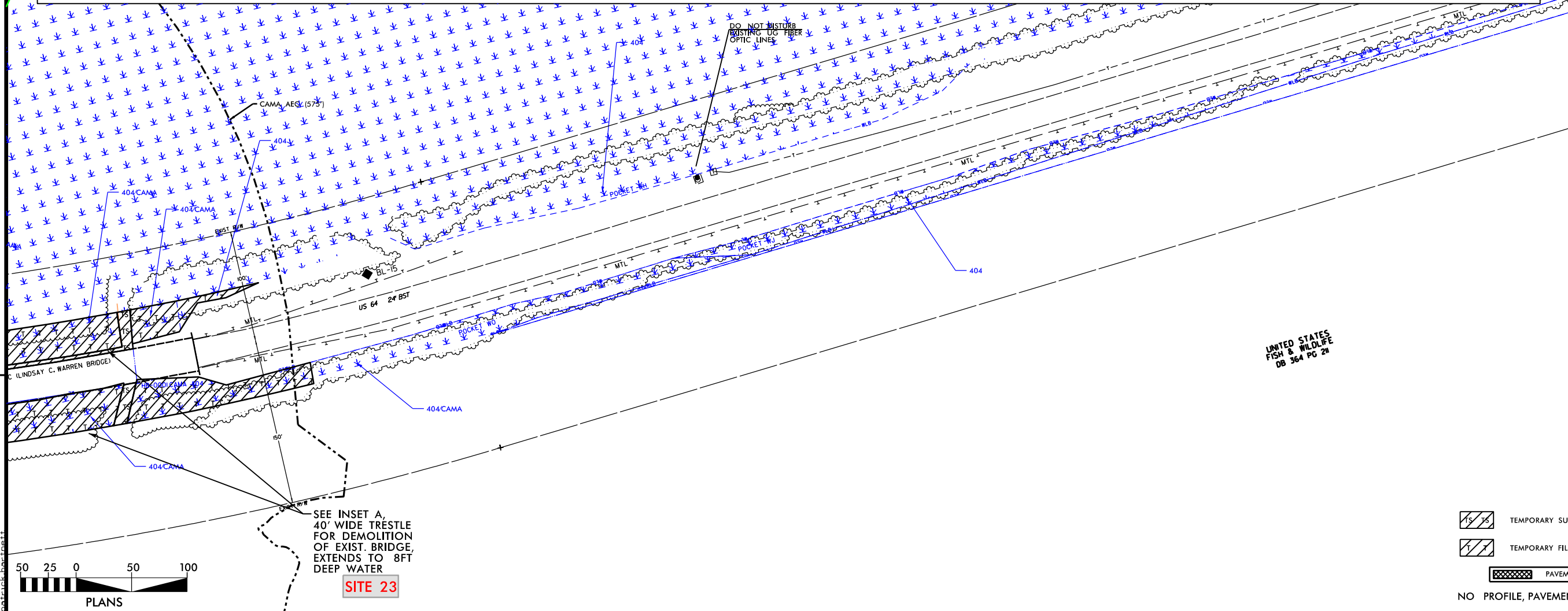
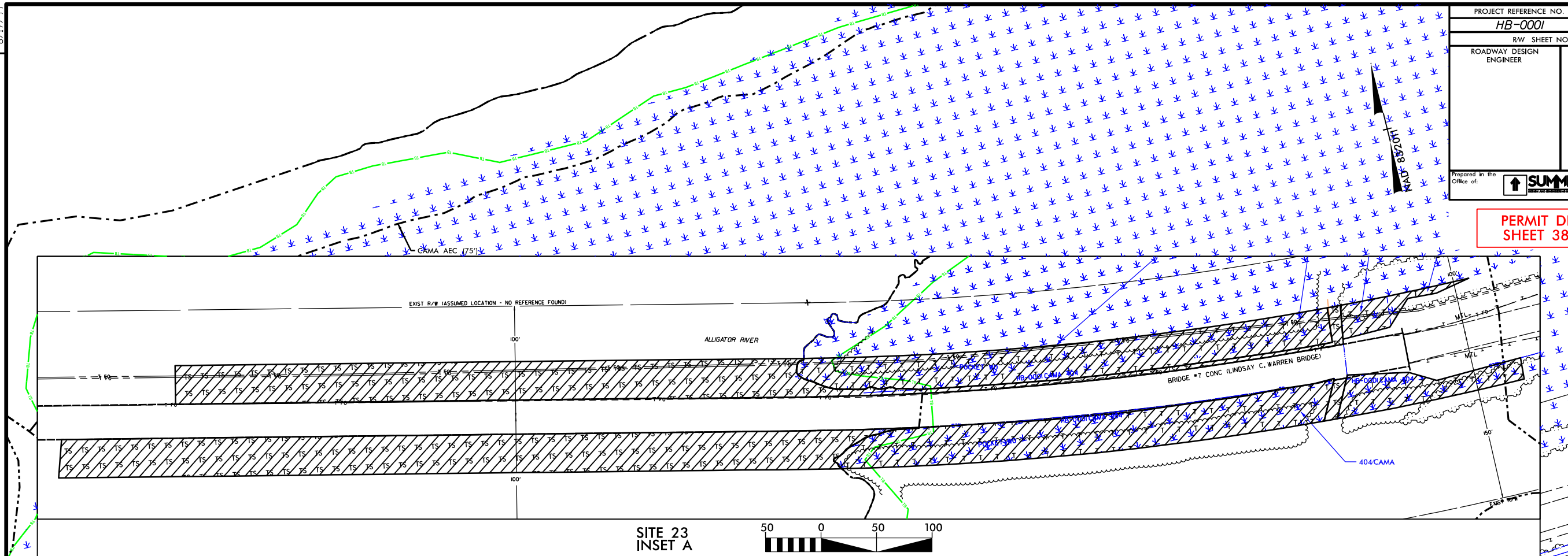
8/17/99

21-MAR-2023 12:15
 HB-0001.dwg
 psh-36.dgn

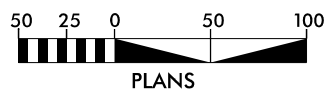
PROJECT REFERENCE NO. HB-0001	SHEET NO. 22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: 	
<small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	




**PERMIT DRAWING
SHEET 38 OF 78**

**MATCHLINE EX US 64
(SEE SHEET 23)**



SEE INSET A,
40' WIDE TRESTLE
FOR DEMOLITION
OF EXIST. BRIDGE,
EXTENDS TO 8FT
DEEP WATER
SITE 23



-  TEMPORARY SURFACE WATER IMPACTS
 -  TEMPORARY FILL IN WETLAND
 -  PAVEMENT REMOVAL
- NO PROFILE, PAVEMENT REMOVAL ONLY

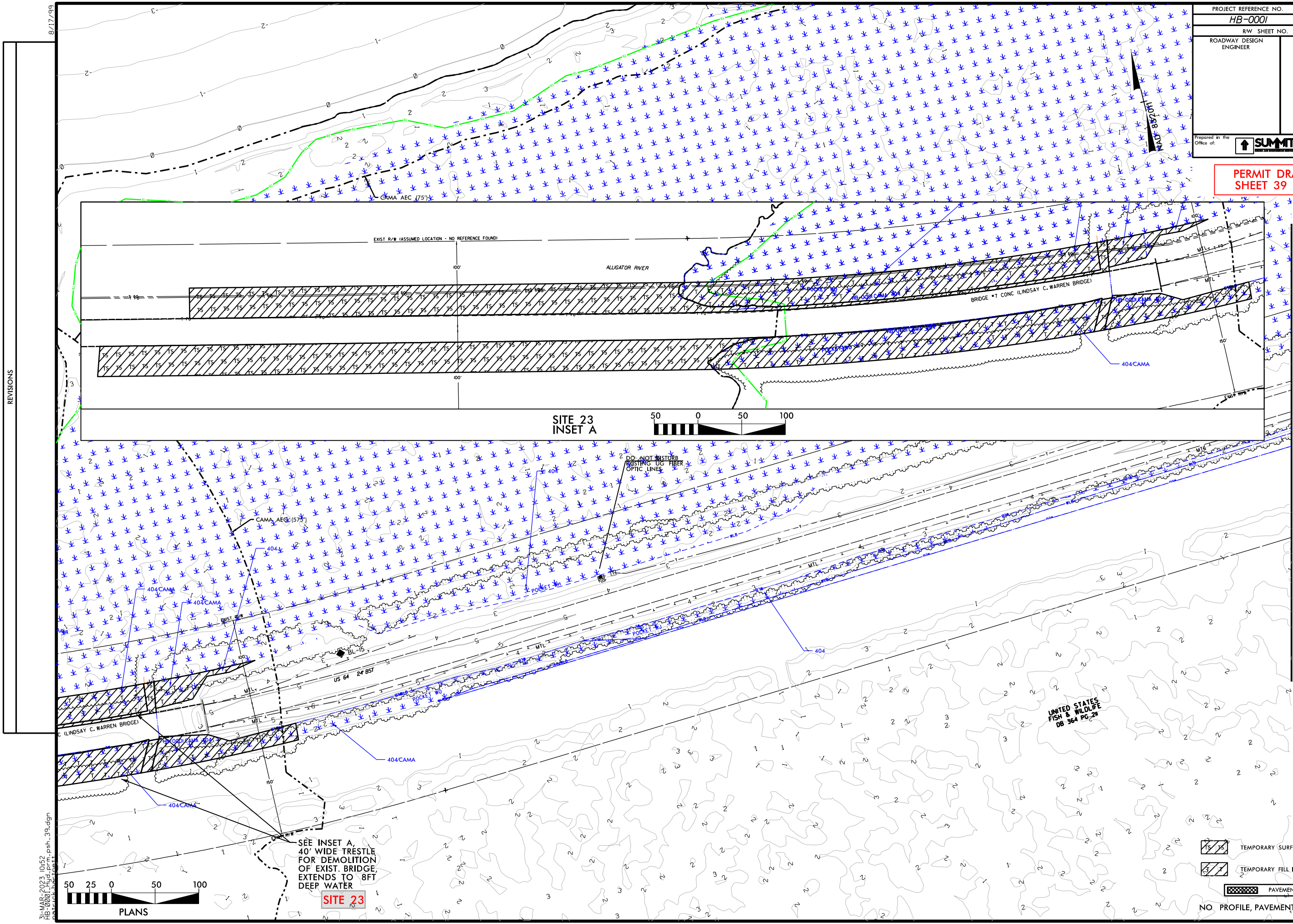
REVISIONS

8/17/99

3/1/MAR-2023 10:52
HB-0001.dwg
psh_38.dgn

PROJECT REFERENCE NO. HB-0001	SHEET NO. 22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: SUMMIT <small>NC FIRM LICENSE No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)</small>	

**PERMIT DRAWING
SHEET 39 OF 78**

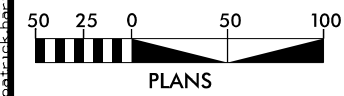


REVISIONS

**SITE 23
INSET A**






**MATCHLINE EX US 64
(SEE SHEET 23)**



PLANS

SEE INSET A,
40' WIDE TRESTLE
FOR DEMOLITION
OF EXIST. BRIDGE,
EXTENDS TO 8FT
DEEP WATER


SITE 23

-  TEMPORARY SURFACE WATER IMPACTS
 -  TEMPORARY FILL IN WETLAND
 -  PAVEMENT REMOVAL
- NO. PROFILE, PAVEMENT REMOVAL ONLY

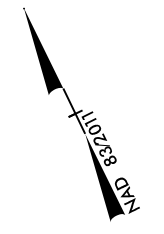
UNITED STATES
FISH & WILDLIFE
DB 364 PG. 24

31-MAR-2023 10:52
 HB-0001.dwg
 39.dgn

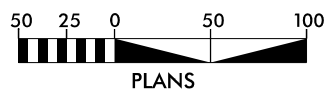
MATCHLINE EX US 64 (SEE SHEET 19)

PROJECT REFERENCE NO. <i>HB-0001</i>	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 No. P-0339 300 Executive Ct. Hillsborough, NC 27278 (919) 732-2863 (919) 732-6616 (FAX)

PERMIT DRAWING
SHEET 40 OF 78



MATCHLINE EX US 64
(SEE SHEET 22)



 PAVEMENT REMOVAL

NO PROFILE, PAVEMENT REMOVAL ONLY

8/17/99

REVISIONS

28-MAR-2007 16:39
PB-0001-CHD.dwg
c:\atask\hob\trst\

MATCHLINE EX US 64 (SEE SHEET 19)

PROJECT REFERENCE NO.	SHEET NO.
HB-0001	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:

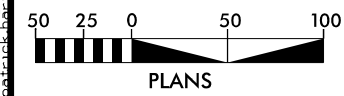



NC FIRM LICENSE No P-0339
300 Executive Ct.
Hillsborough, NC 27278
(919) 732-3863
(919) 732-6616 (FAX)

PERMIT DRAWING SHEET 41 OF 78



MATCHLINE EX US 64 (SEE SHEET 22)



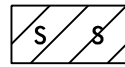
 PAVEMENT REMOVAL
NO PROFILE, PAVEMENT REMOVAL ONLY

REVISIONS

28-MAR-2023 16:39
PB-0001-CHD_psh_41.dgn
c:\ata\c\h\c\psh_41.dgn

8/17/99

BENT TYPICAL IMPACTS



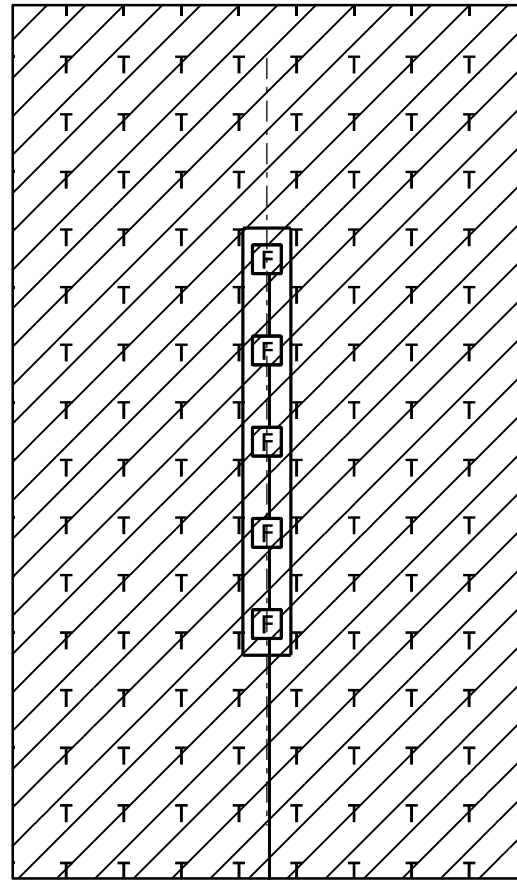
SURFACE WATER IMPACTS



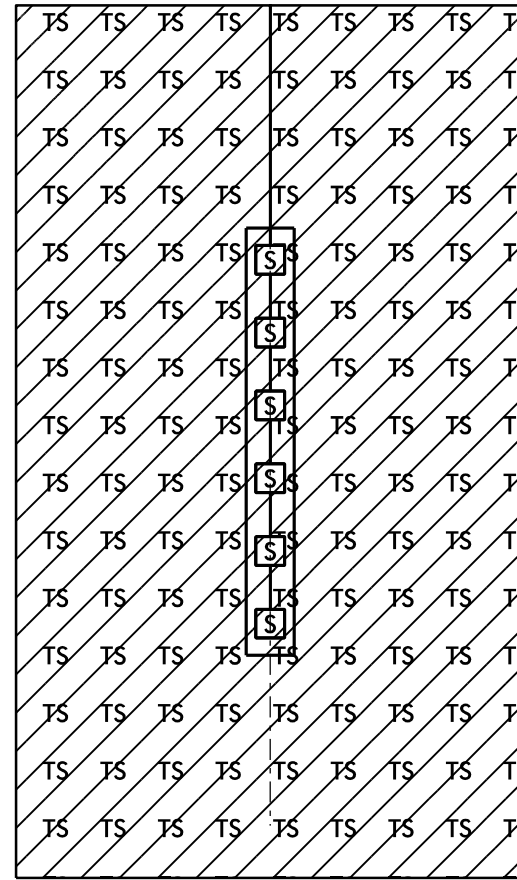
TEMPORARY SURFACE WATER IMPACTS

**PERMIT DRAWING
SHEET 42 OF 78**

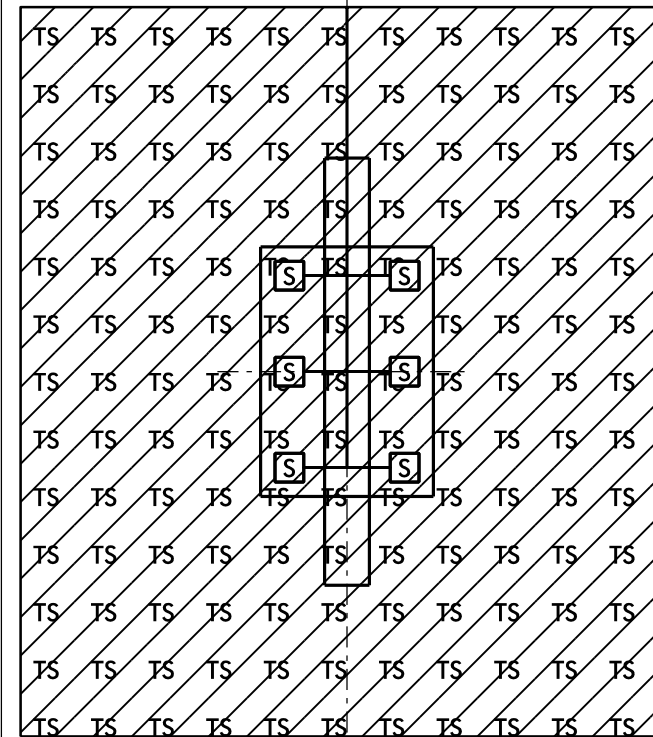
REVISIONS



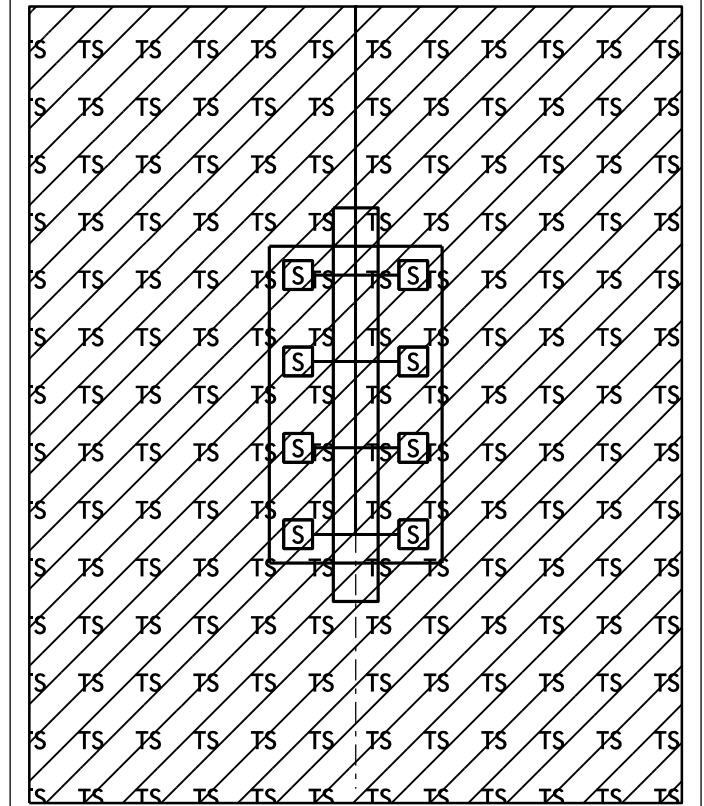
BENTS 1-3, 133-134
44'-6" x 5'-0"
36" PRESTRESSED CONCRETE PILE



BENTS 4-39, 62-132
44'-6" x 5'-0"
36" PRESTRESSED CONCRETE PILE

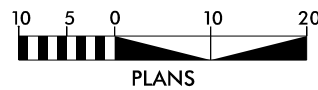


BENTS 40 & 61
26'-0" x 18'-0"
36" PRESTRESSED CONCRETE PILE



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

3-MAR-2023 15:05
HB-0001-TYP-psh-42.dgn
psh-42.dgn



BENT TYPICAL IMPACTS



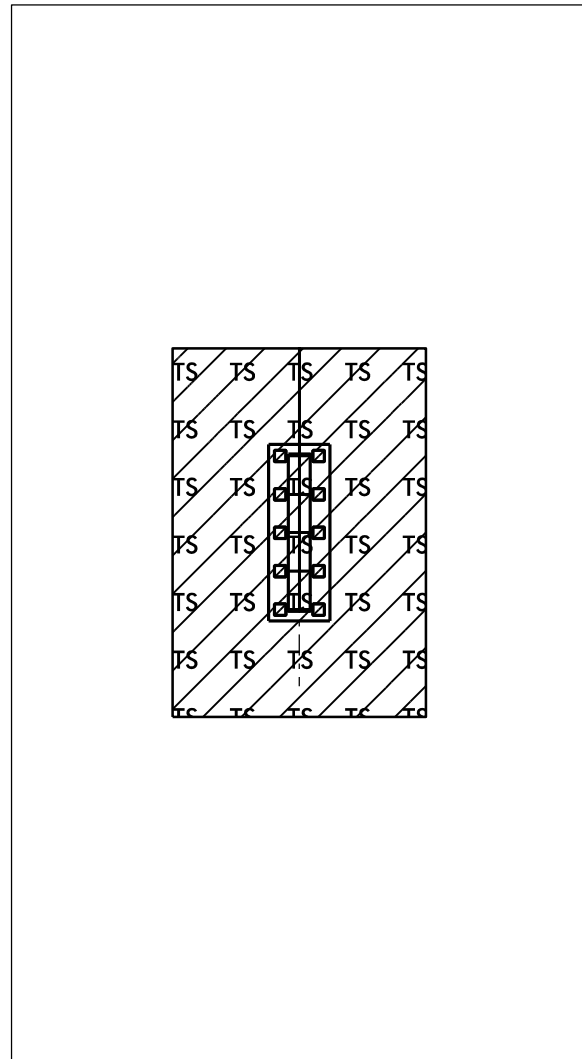
SURFACE WATER IMPACTS



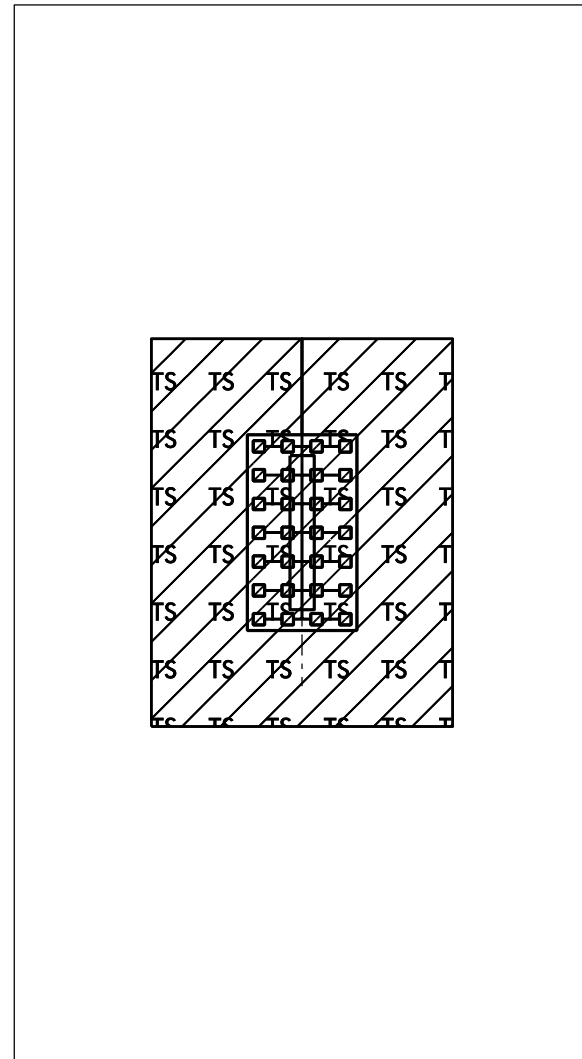
TEMPORARY SURFACE WATER IMPACTS

**PERMIT DRAWING
SHEET 43 OF 78**

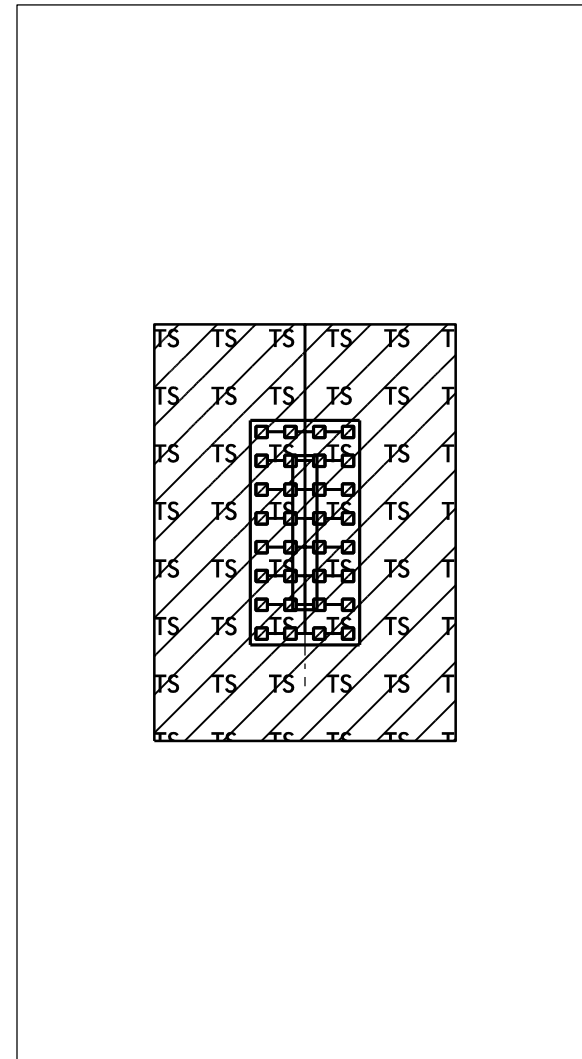
REVISIONS



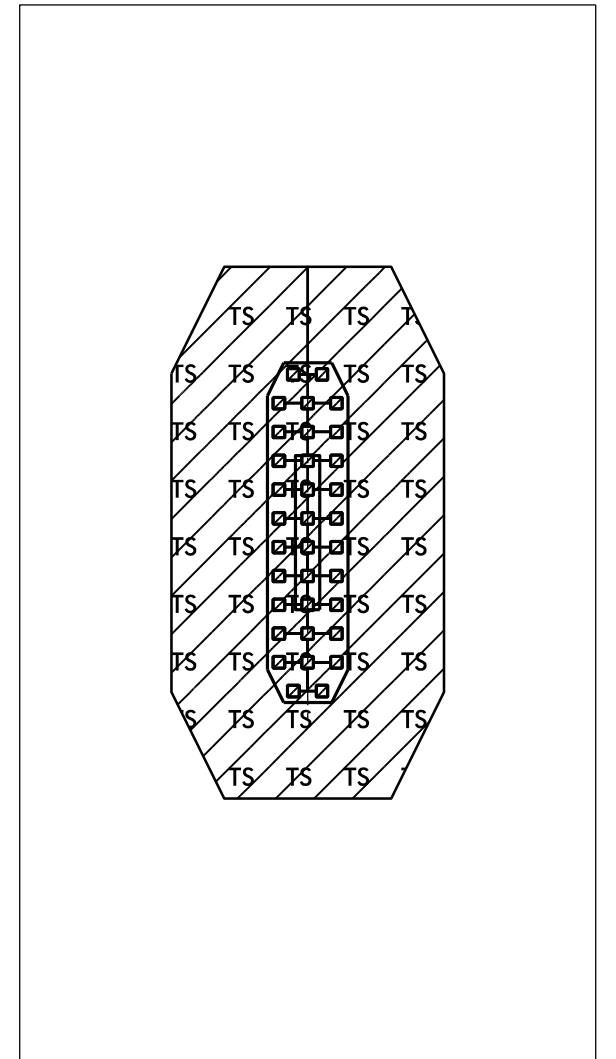
BENTS 44-46, 55-57
46'-0" x 16'-0"
36" PRESTRESSED CONCRETE PILE



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

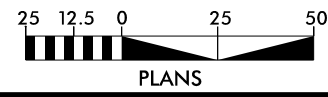


BENTS 49 & 52
58'-6" x 28'-6"
36" PRESTRESSED CONCRETE PILE



BENTS 50 & 51
88'-6" x 21'-0"
36" PRESTRESSED CONCRETE PILE

3-MAR-2023 15:05
HB-0001-TYP_psh_43.dgn
backtrack



5/14/99

Prepared in the Office of: **SUMMIT** ENGINEERS, INC. NC PERM LICENSE No. P-0339 320 Executive Ct. Hillsborough, NC 27278 (919) 732-3383 (919) 732-6676 (FAX)

PROJECT REFERENCE NO. <i>HB-0001</i>	SHEET NO. <i>28</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 48 OF 78

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

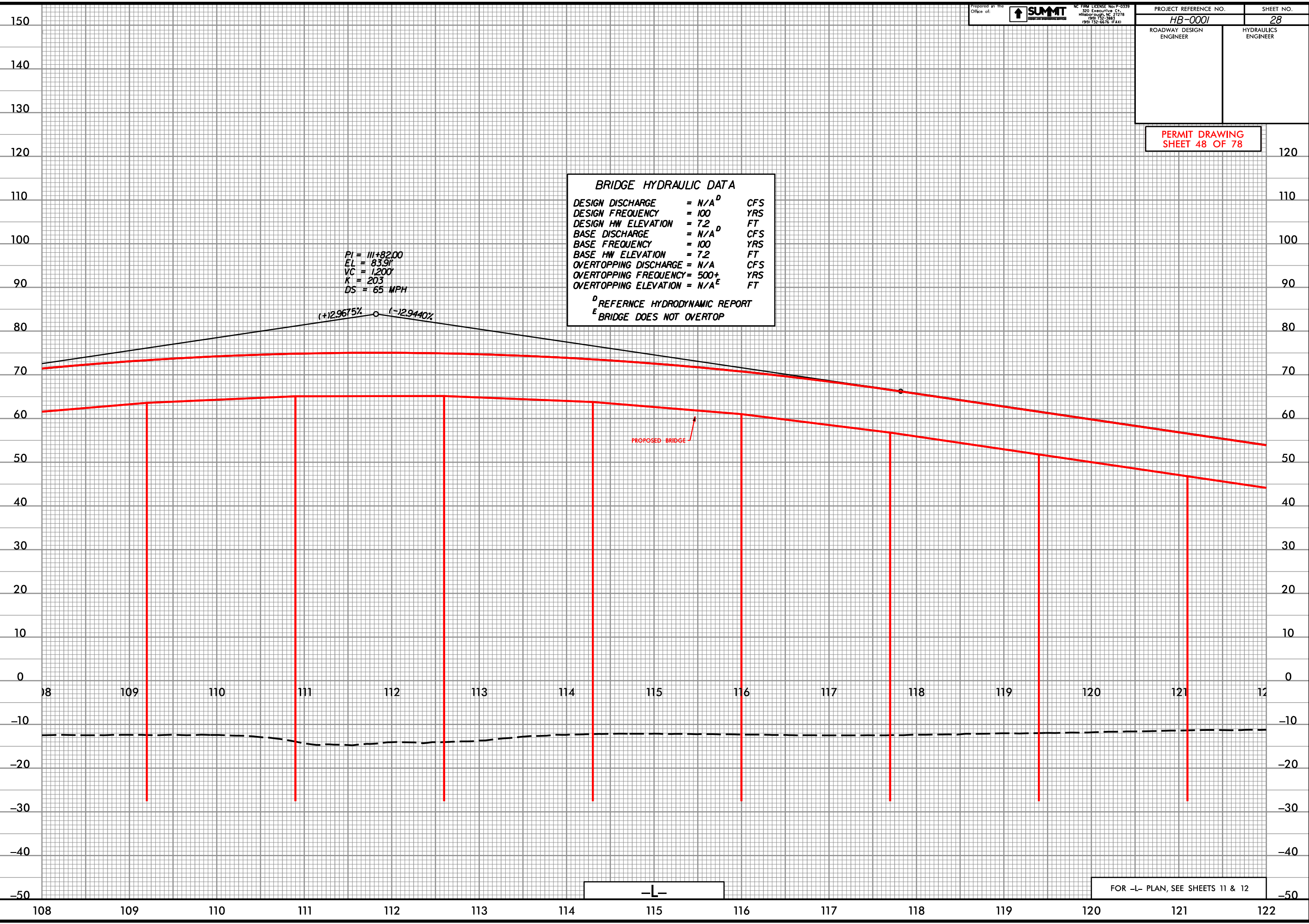
^D REFERENCE HYDRODYNAMIC REPORT
^E BRIDGE DOES NOT OVERTOP

PI = 111+82.00
 EL = 83.91'
 VC = 1200'
 K = 203
 DS = 65 MPH

(+12.9675% (-12.9440%)

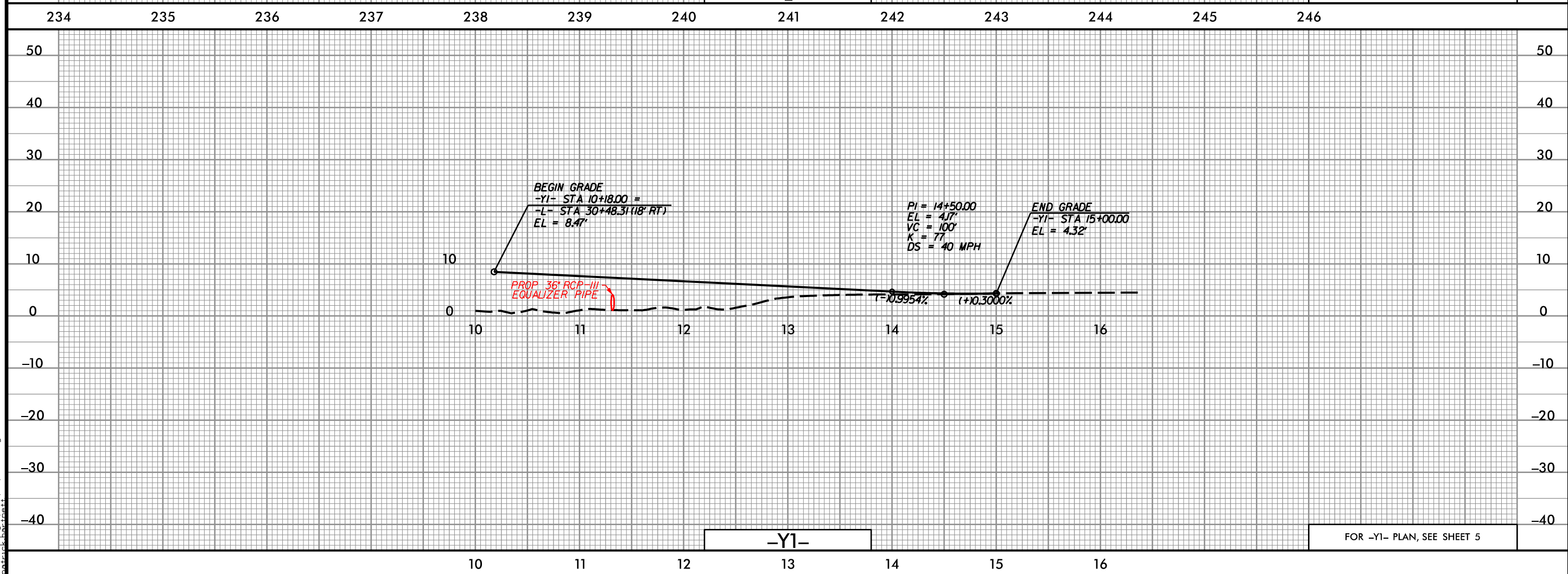
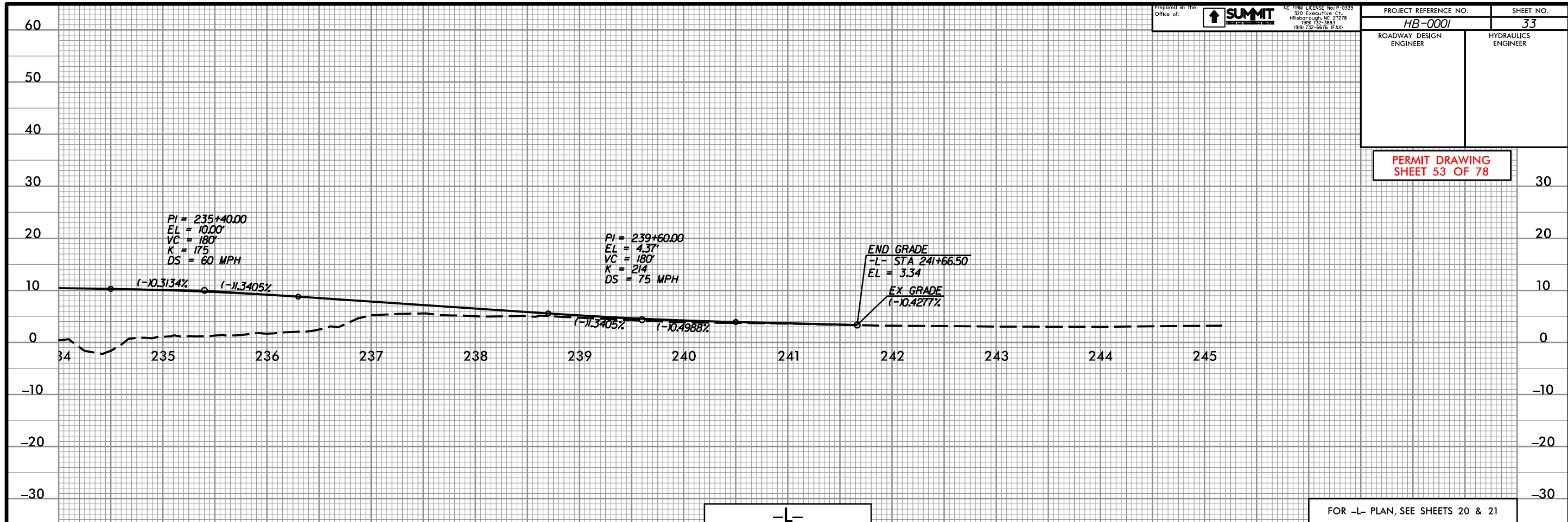
PROPOSED BRIDGE

28-118-2023 16:40
 28-118-001-11-bshpfl_48.dgn
 ceatruick_bshpfl_48.dgn



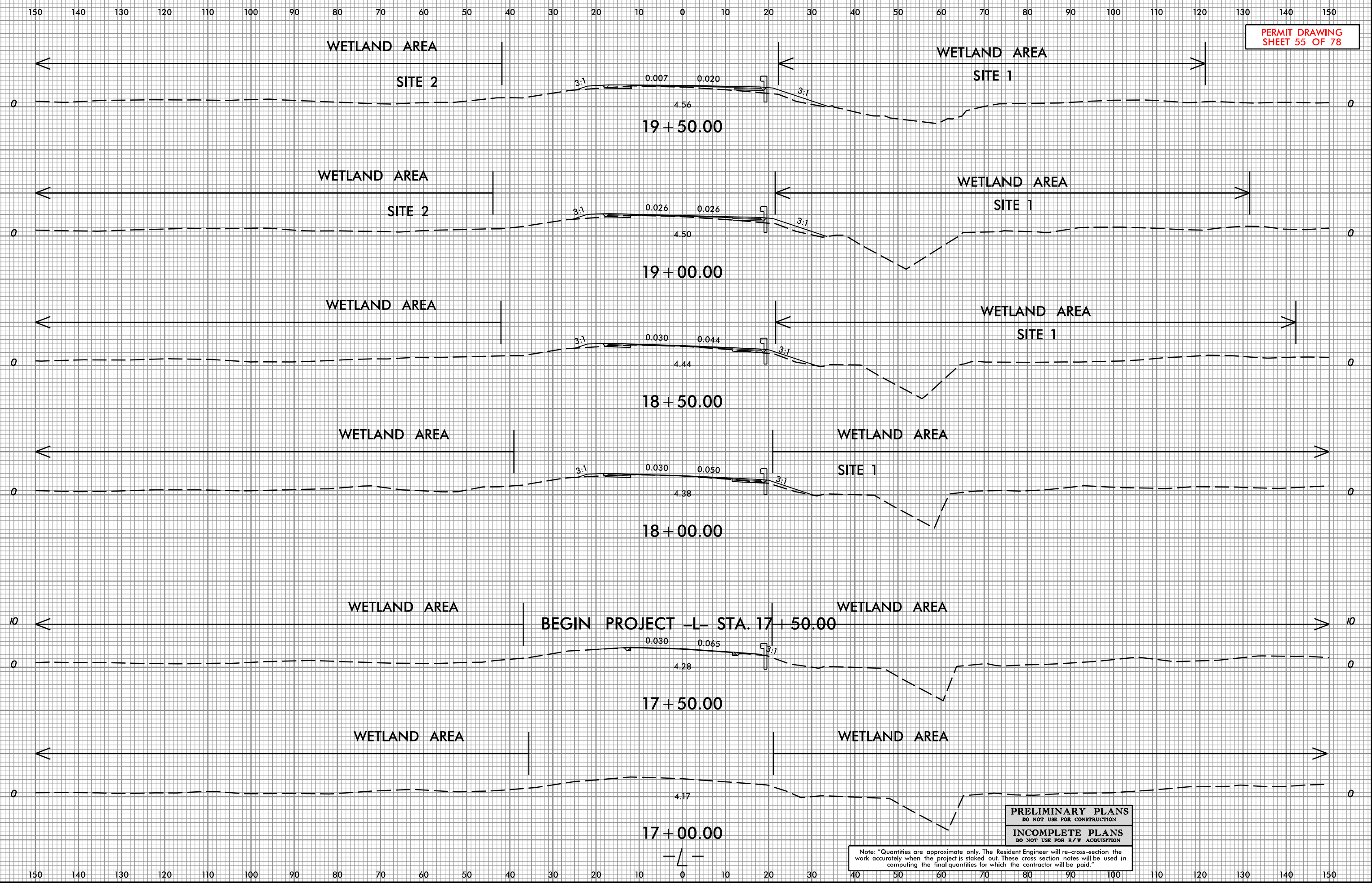
-L-

FOR -L- PLAN, SEE SHEETS 11 & 12



28-118-2023 16:40
 28-118-2023 16:40
 28-118-2023 16:40
 28-118-2023 16:40

**PERMIT DRAWING
SHEET 55 OF 78**



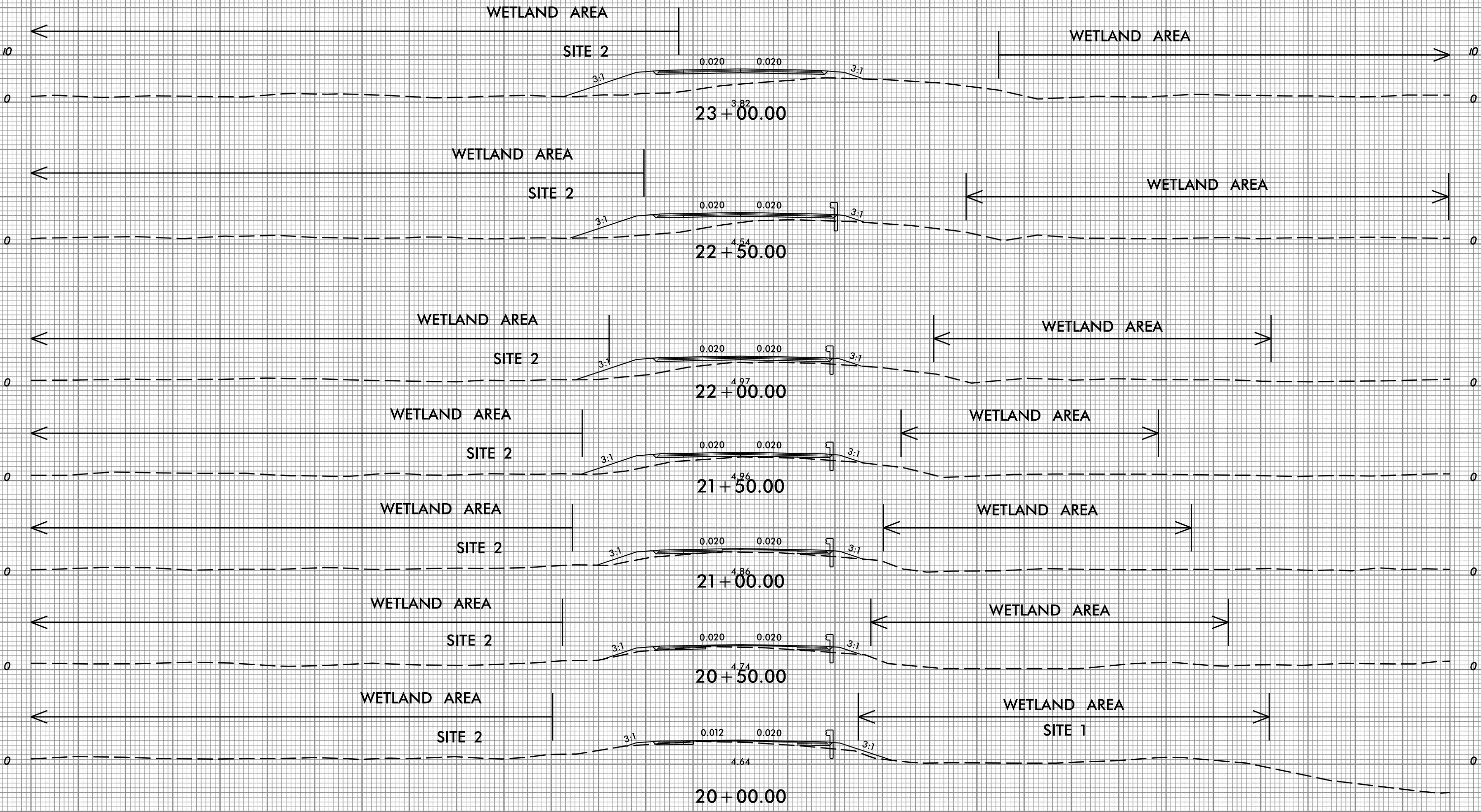
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION

Note: "Quantities are approximate only. The Resident Engineer will re-cross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid."

28-MAR-2023 6:40
 HB-0001_Hydro_xpl_17+00-50+00.dgn
 gaurkash.gnet

PERMIT DRAWING
 SHEET 56 OF 78

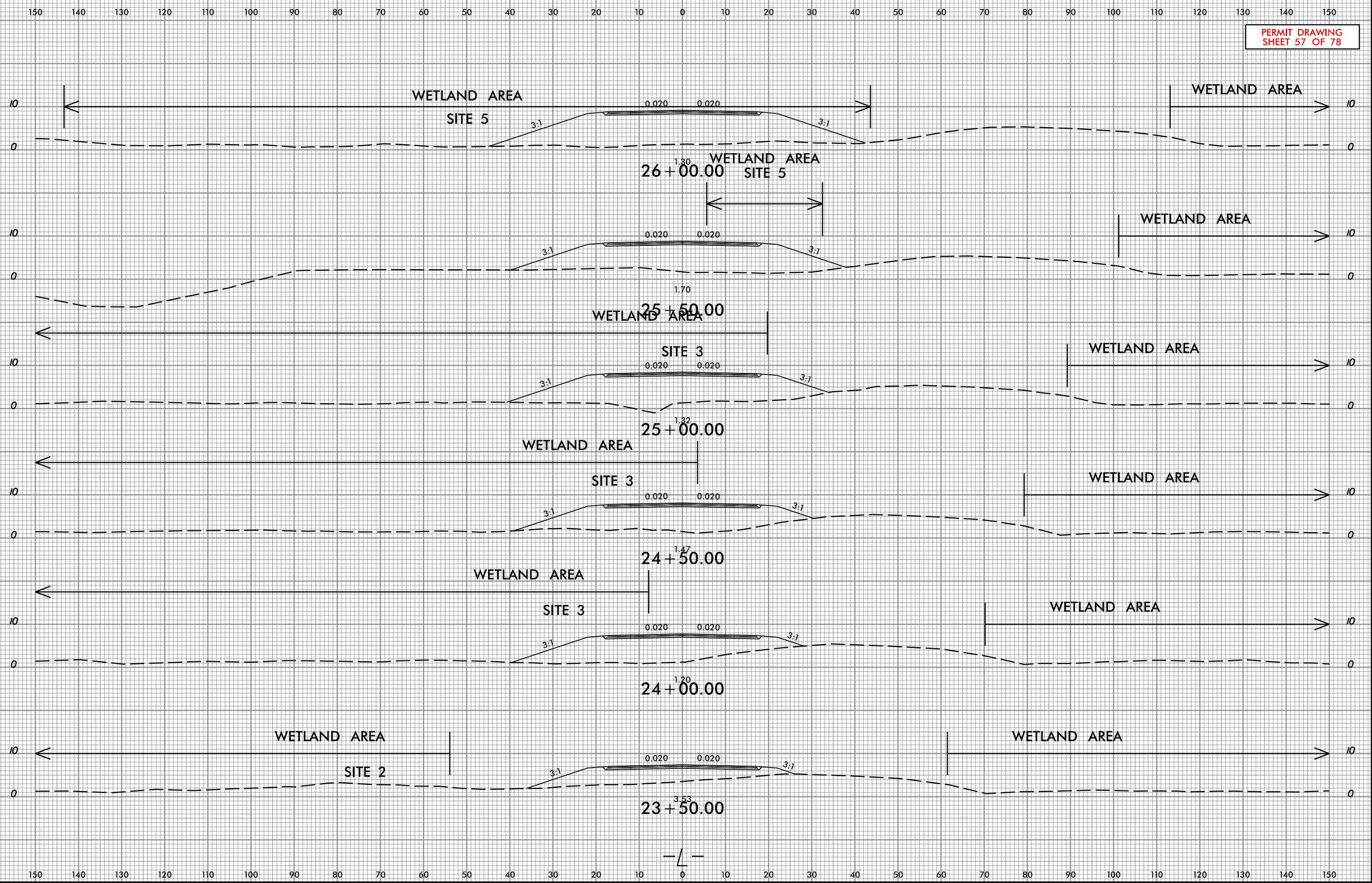
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



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

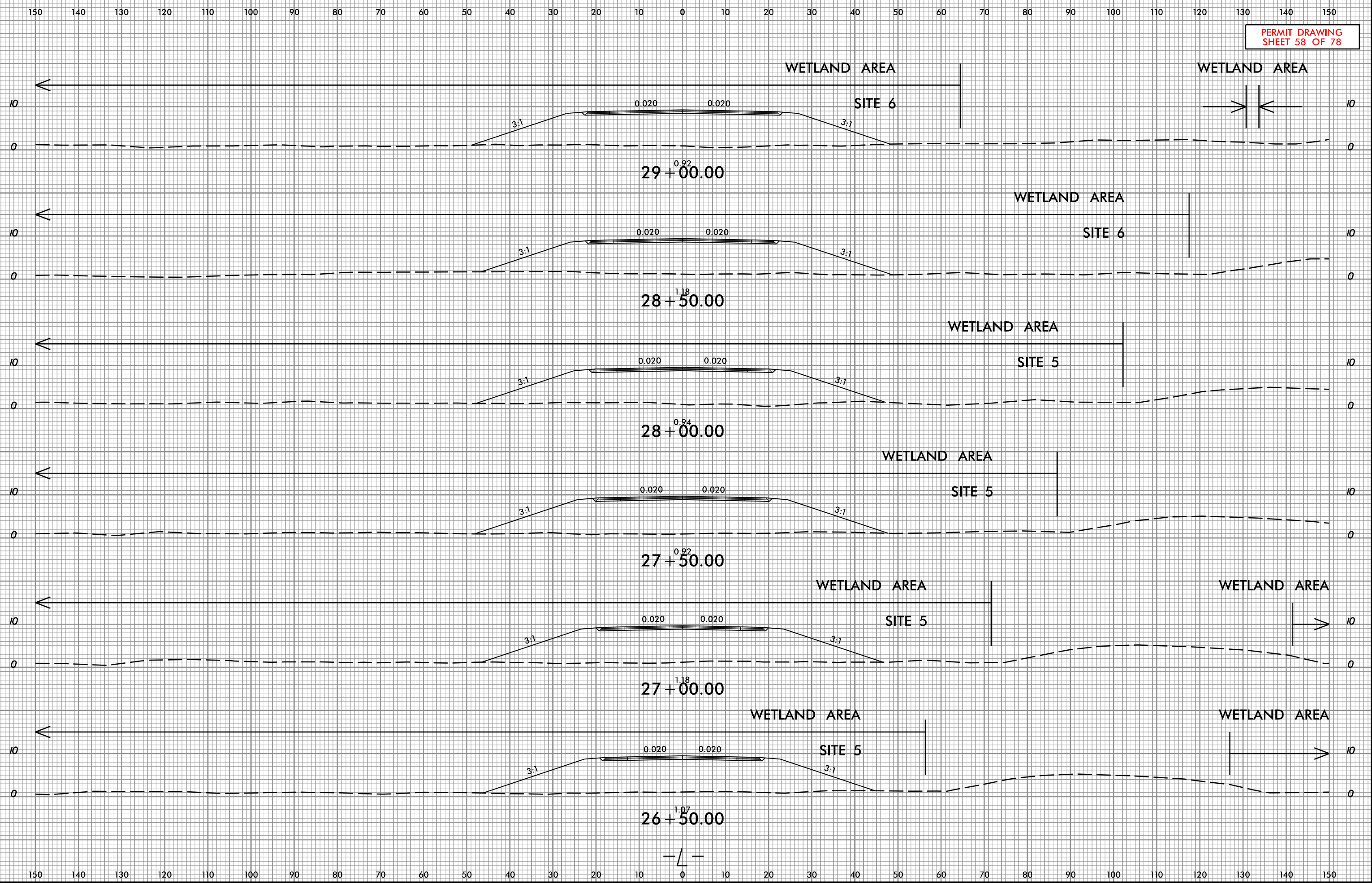
28-MAR-2023 6:40
 HB-0001_Hydro_xpl_L_17-00-50+00.dgn
 gaurav@summit.com

PERMIT DRAWING
SHEET 57 OF 78



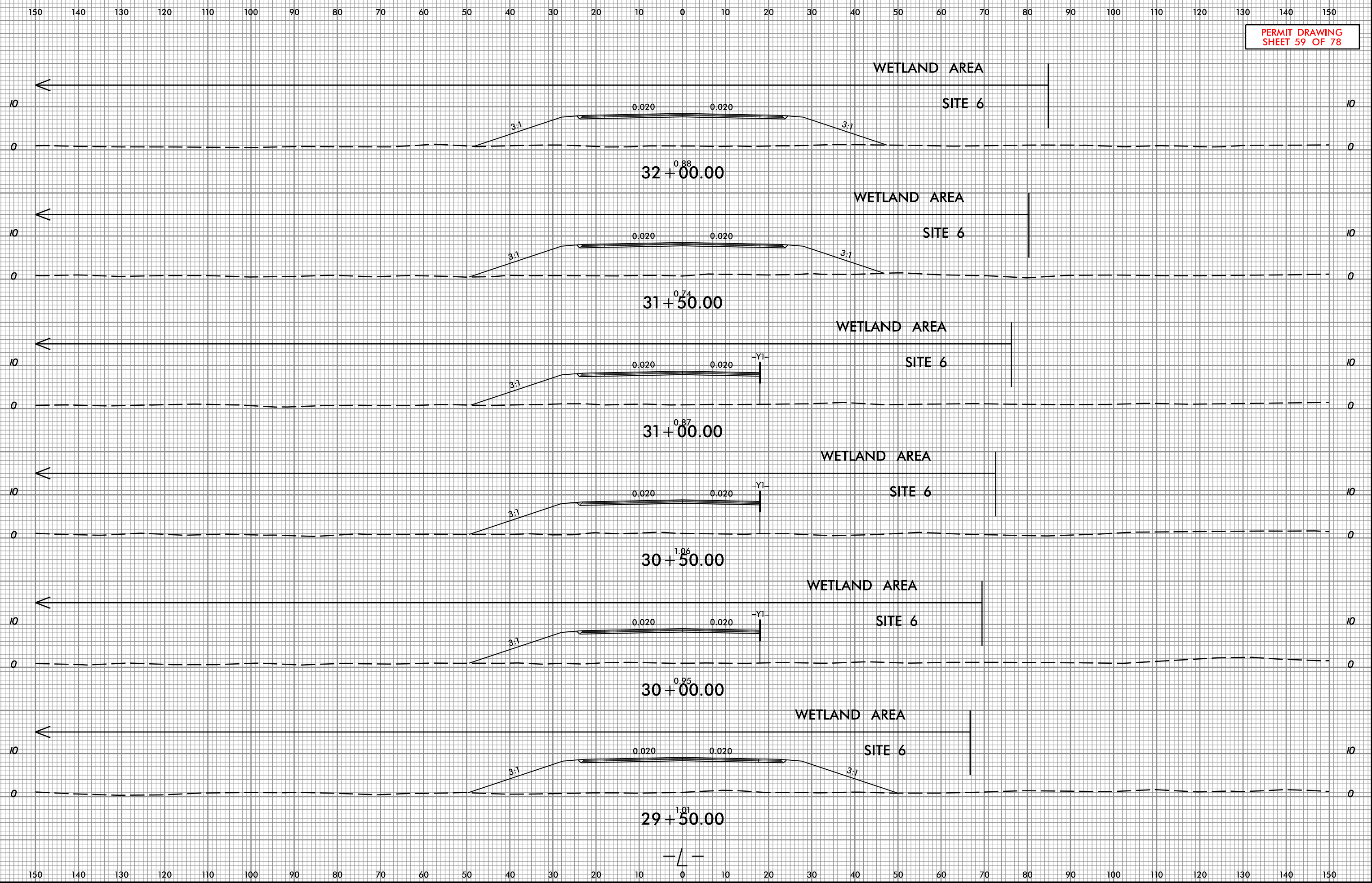
28-MAR-2023 6:40
 HB-0001_Hydro_xpl_17-00-50+00.dgn
 gaurika.nor@summit

**PERMIT DRAWING
 SHEET 58 OF 78**



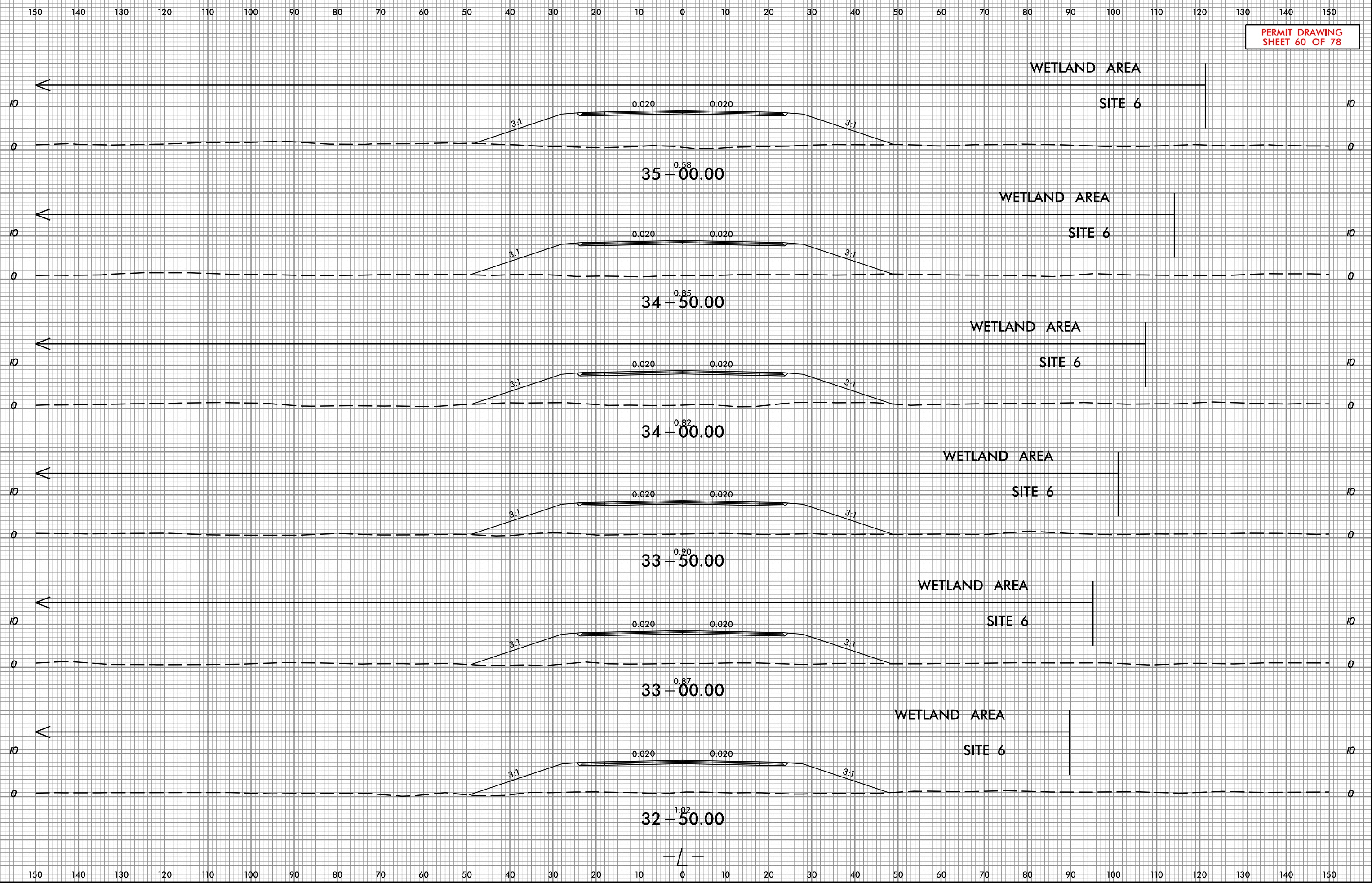
28-MAR-2023 6:40
 HB-0001_Hyd_xpl_17+00-50+00.dgn
 gaurkashor.cmett

PERMIT DRAWING
 SHEET 59 OF 78



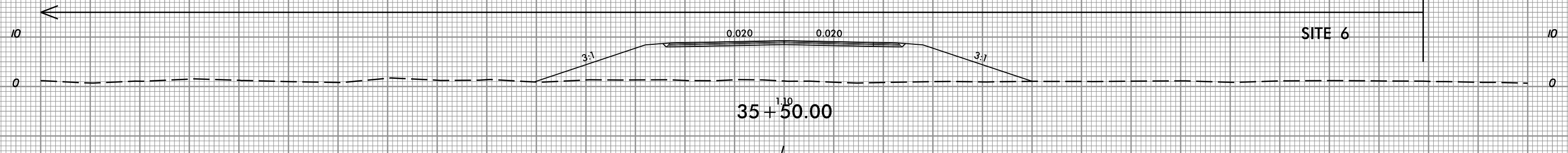
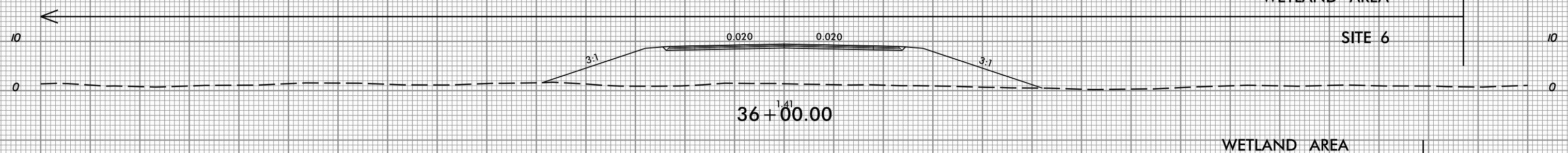
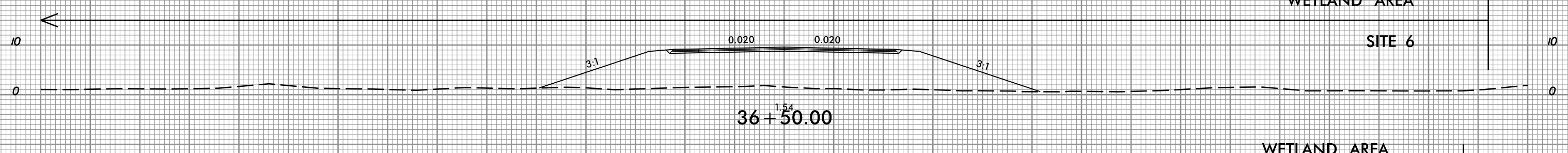
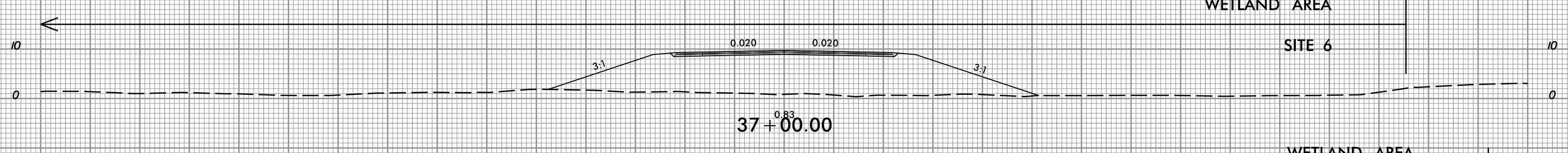
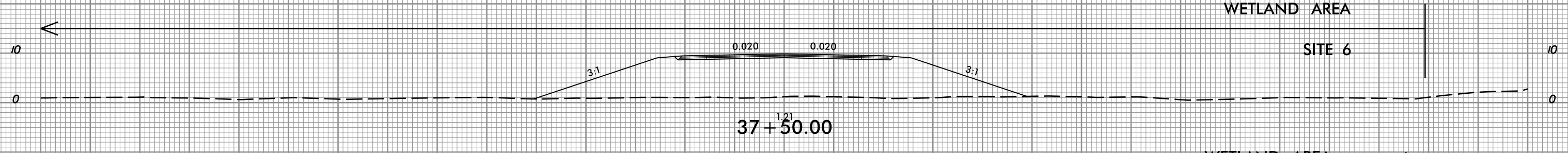
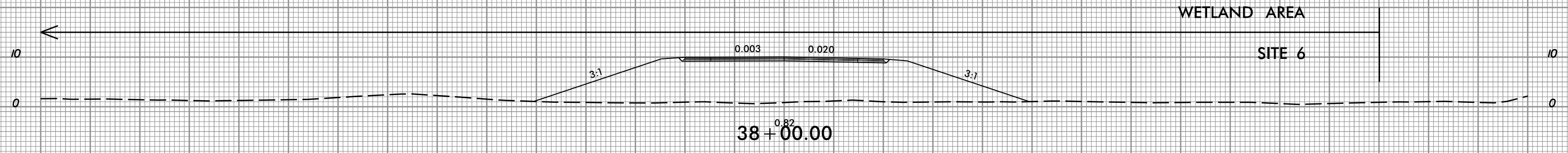
28-MAR-2023 6:40
 HB-0001_Hyd_xpl_17-00-50+00.dgn
 gaurkashor.gnelt

**PERMIT DRAWING
 SHEET 60 OF 78**



PERMIT DRAWING
 SHEET 61 OF 78

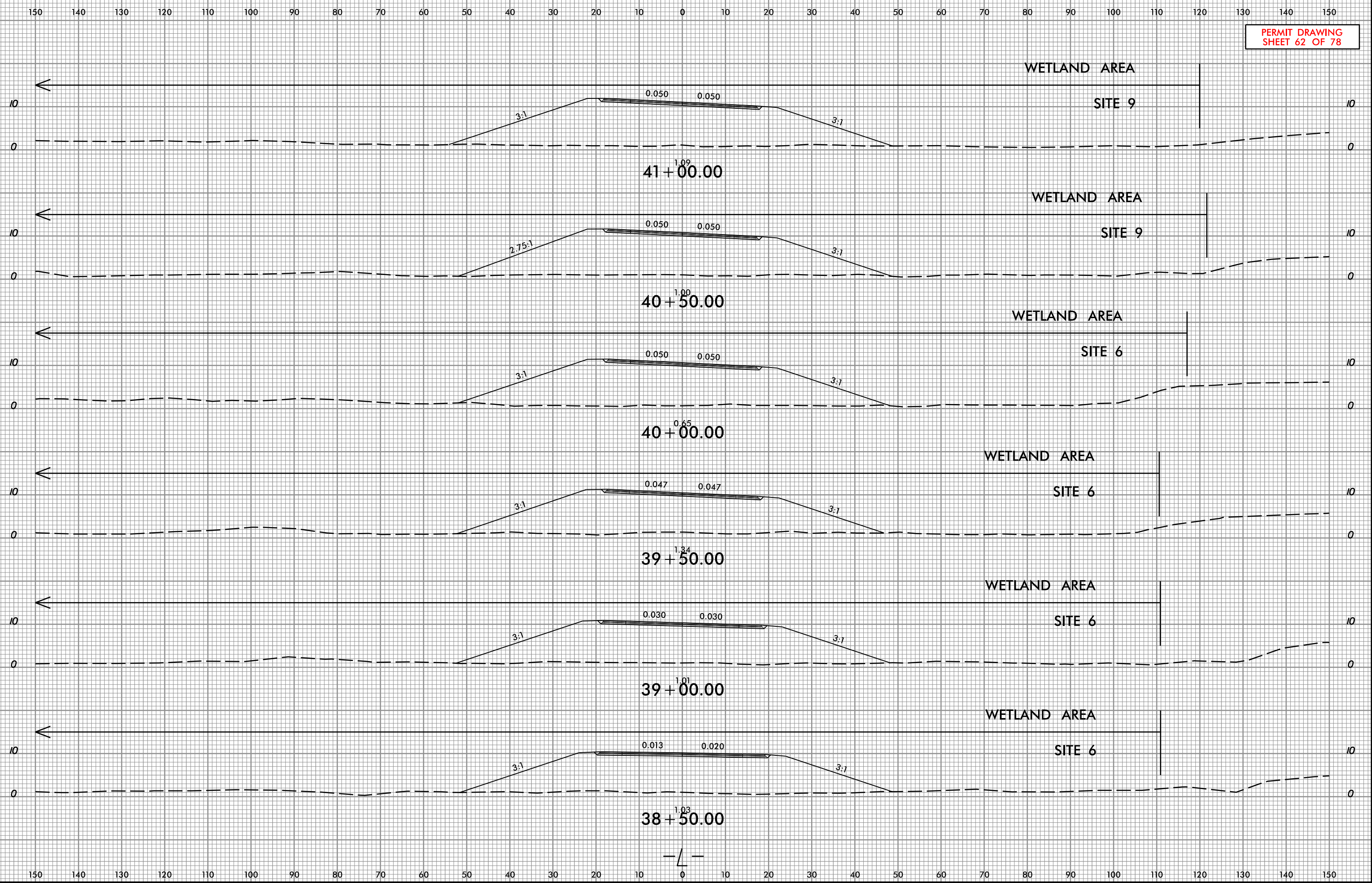
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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

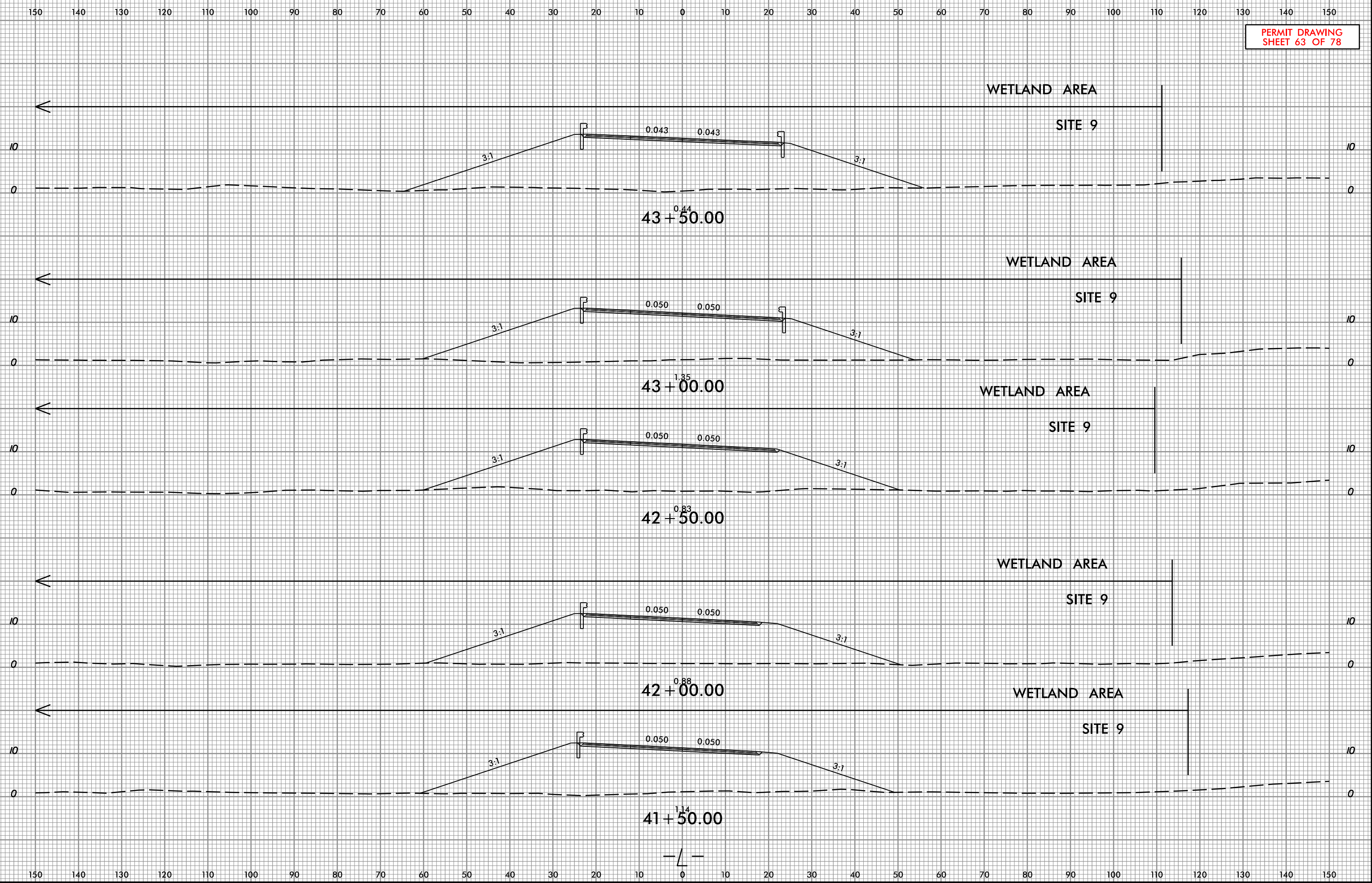
28-MAR-2023 6:40
 HB-0001_Hyd_xpl_17+00-50+00.dgn
 gaurkash.gn

**PERMIT DRAWING
 SHEET 62 OF 78**



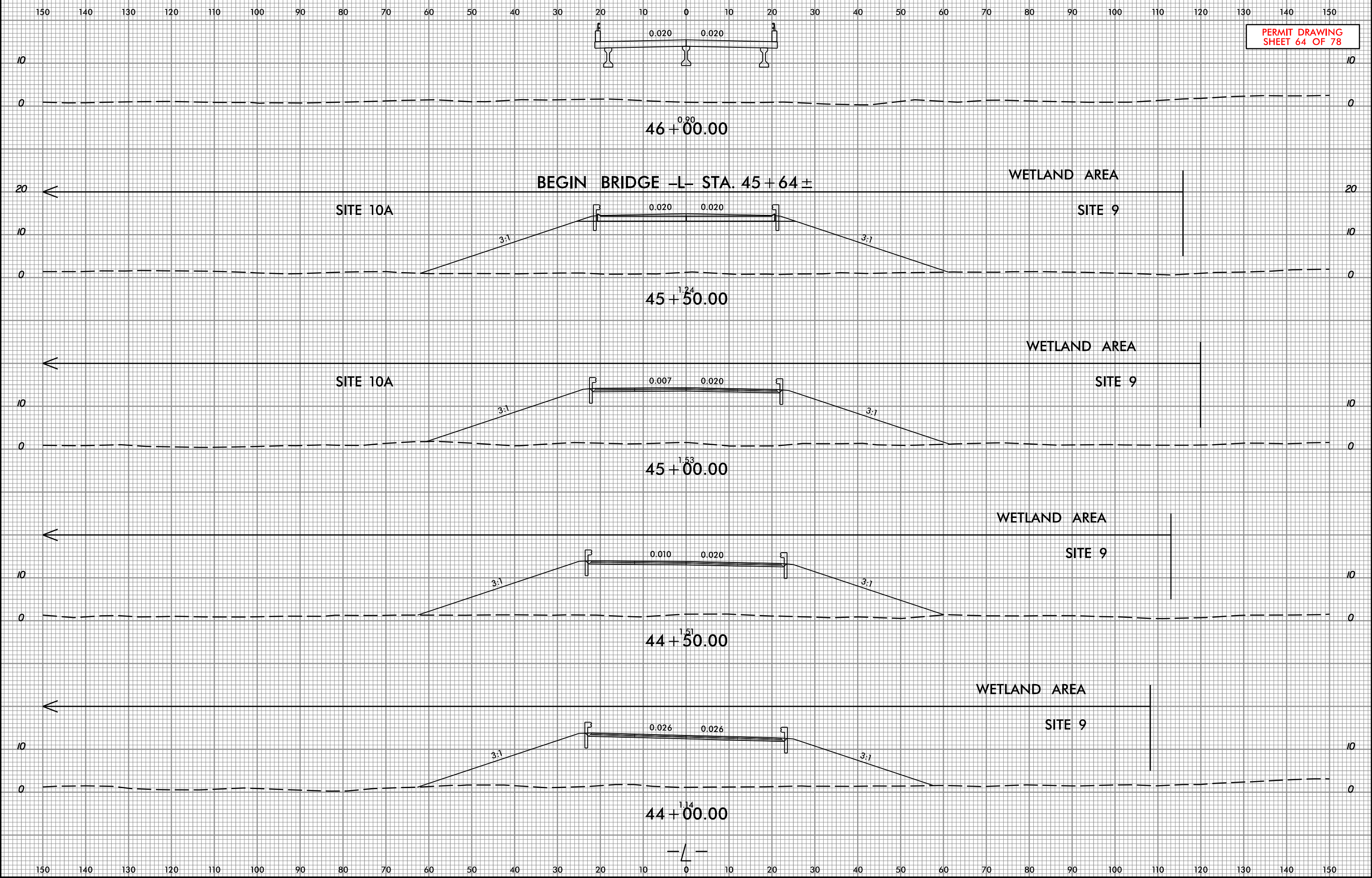
28-MAR-2023 6:40
 HB-0001_Hydro_xpl_17-00-50+00.dgn
 gaurav.ganapati

**PERMIT DRAWING
 SHEET 63 OF 78**



28-MAR-2023 6:40
 HB-0001_Hydro_xpl_17+00-50+00.dgn
 gaurkashor.cmett

PERMIT DRAWING
SHEET 64 OF 78



28-MAR-2023 6:40
 HB-0001_Hyd_xpl_L_17+00-50+00.dgn
 gaurav@summit.com

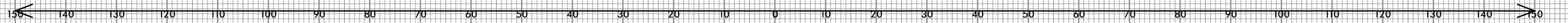
WETLAND AREA

Prepared in the Office of: **SUMMIT** No. P80 LICENSE No. P-0330 120 Executive Ct. Hillsdale County, NJ 07738 (908) 752-3883 (908) 752-0676 FAX



PROJ. REFERENCE NO. HB-0001

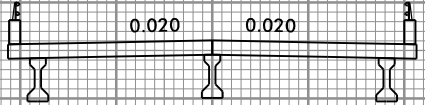
SHEET NO. X-15



SITE 25B

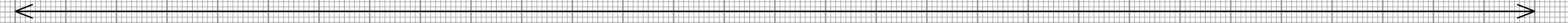
SITE 26B

PERMIT DRAWING SHEET 65 OF 78



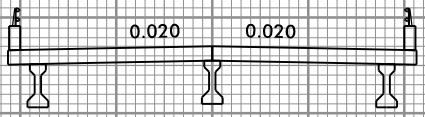
220+00.00

WETLAND AREA



SITE 25B

SITE 26B



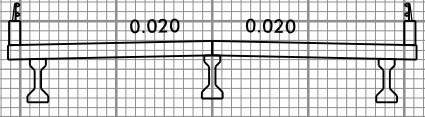
219+50.00

WETLAND AREA

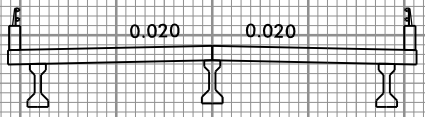


SITE 25B

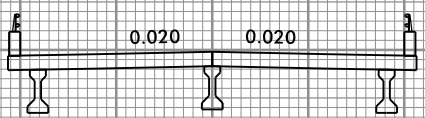
SITE 26B



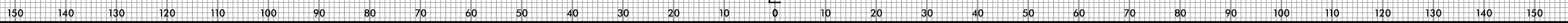
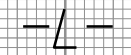
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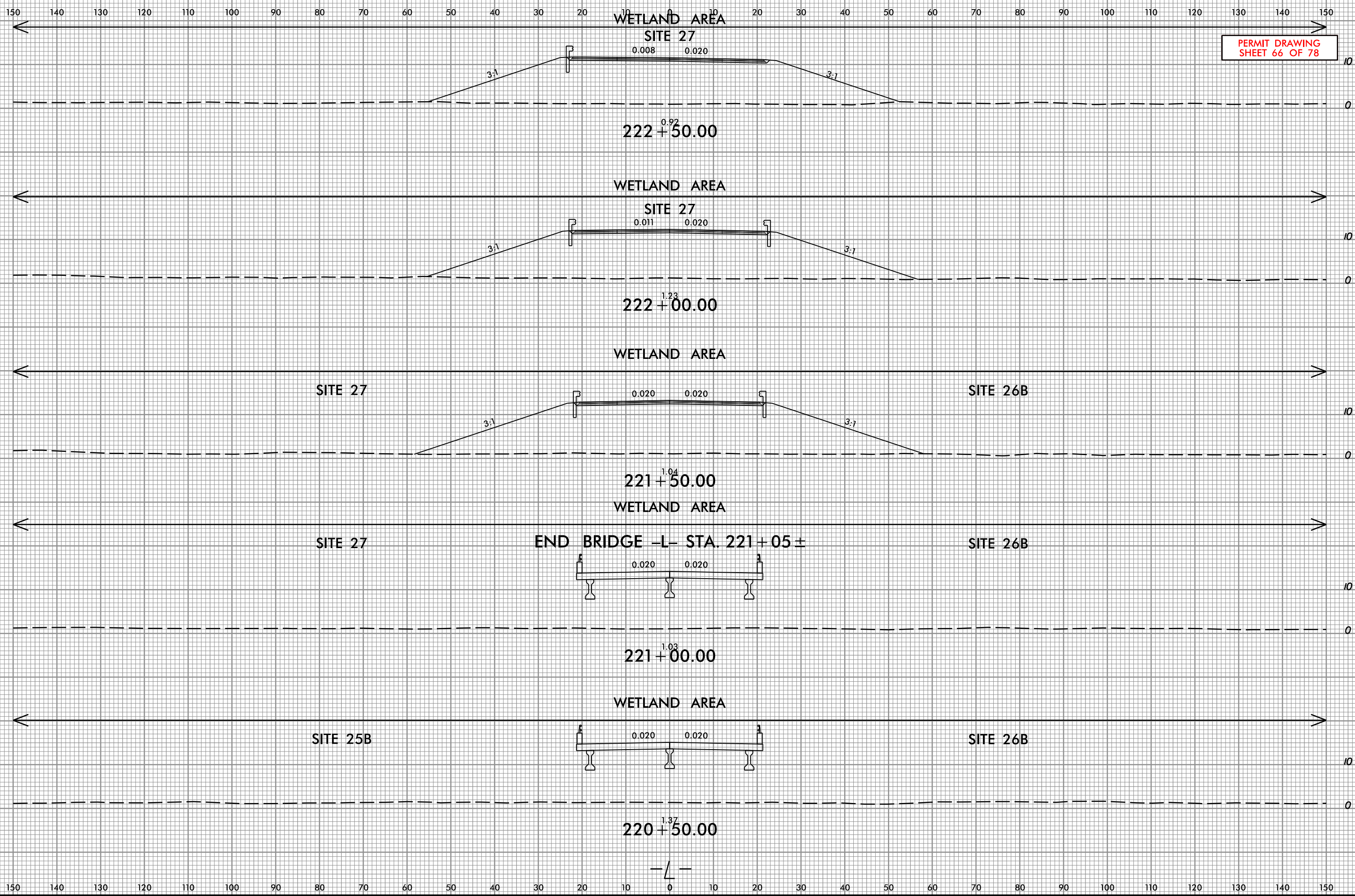
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218+00.00



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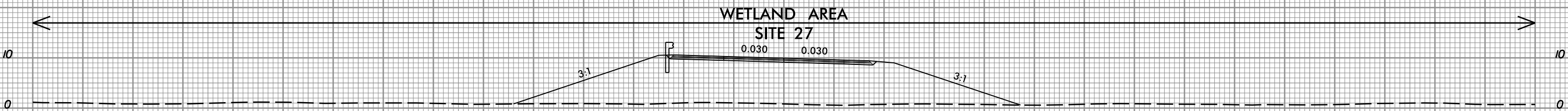


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 SHEET 66 OF 78

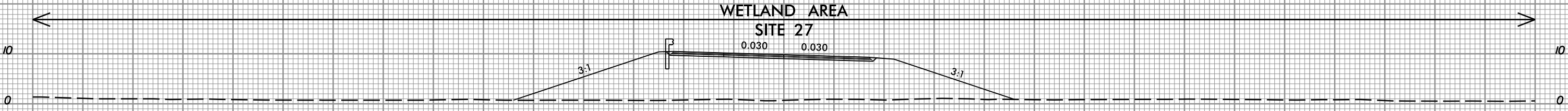
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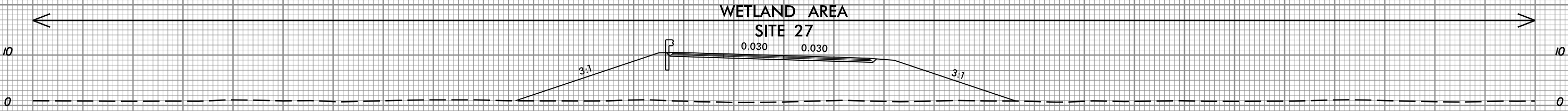
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SHEET 67 OF 78



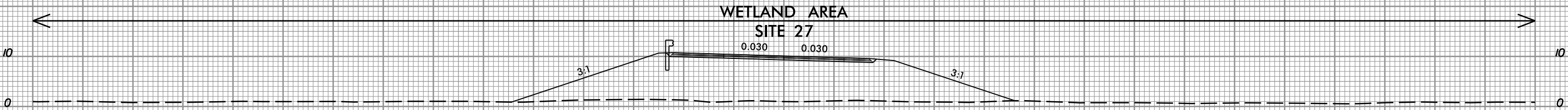
225^{0.82}+50.00



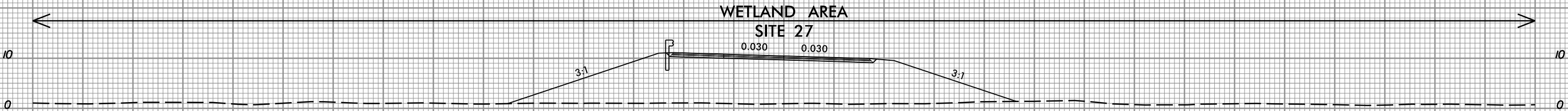
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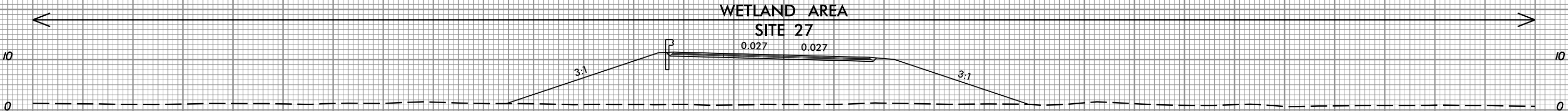
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224^{0.97}+00.00



223^{0.92}+50.00



223^{1.07}+00.00

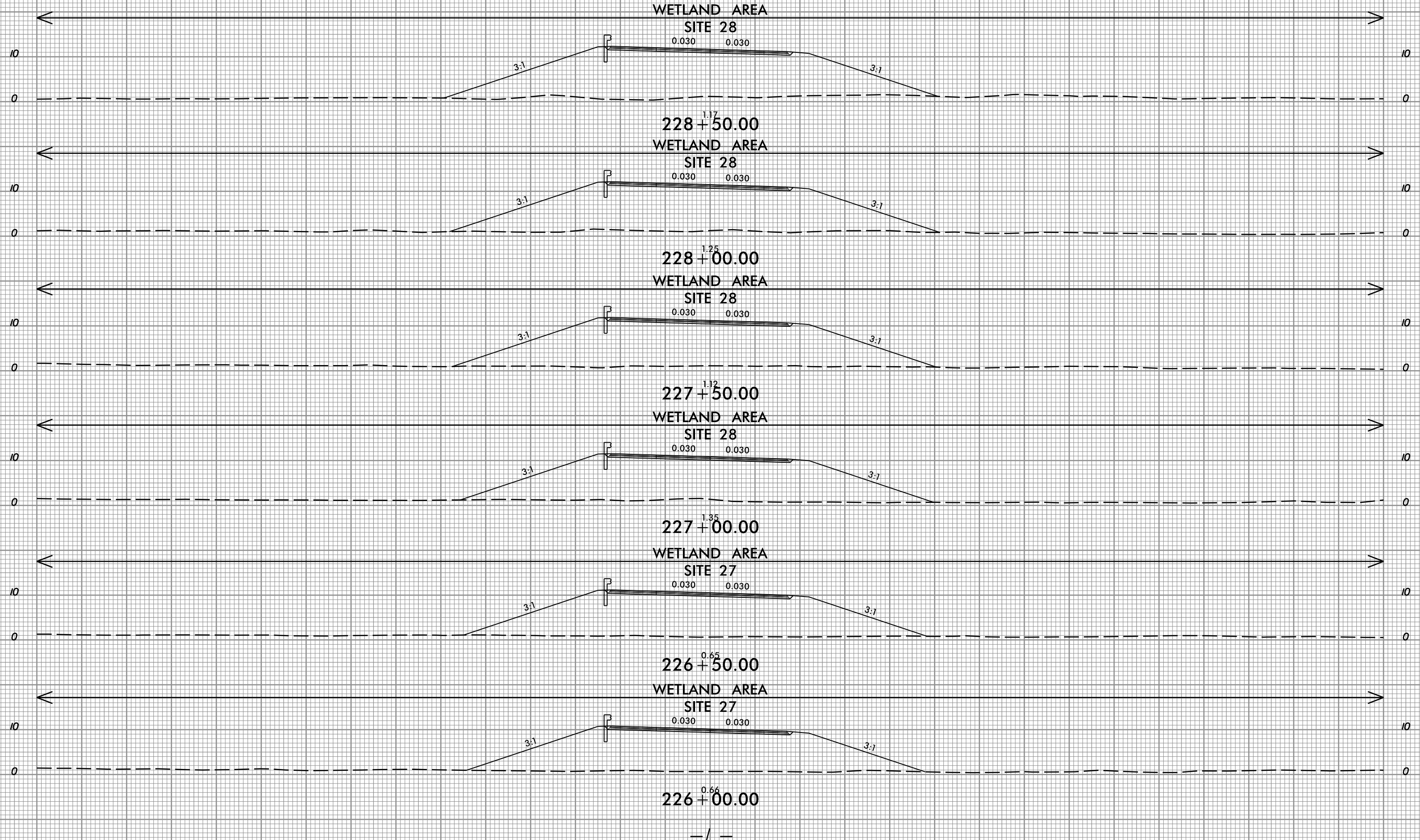
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SHEET 68 OF 78

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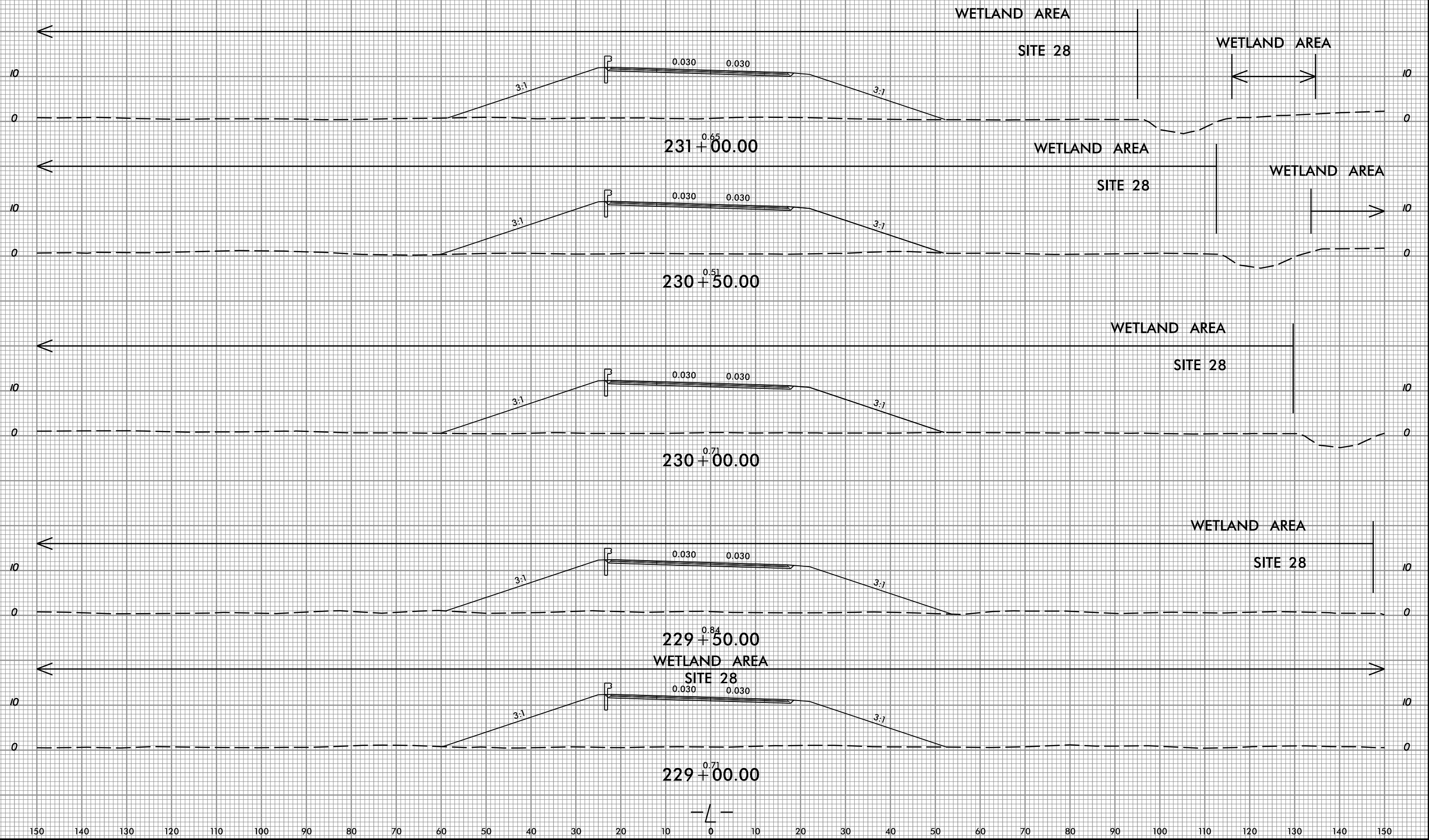


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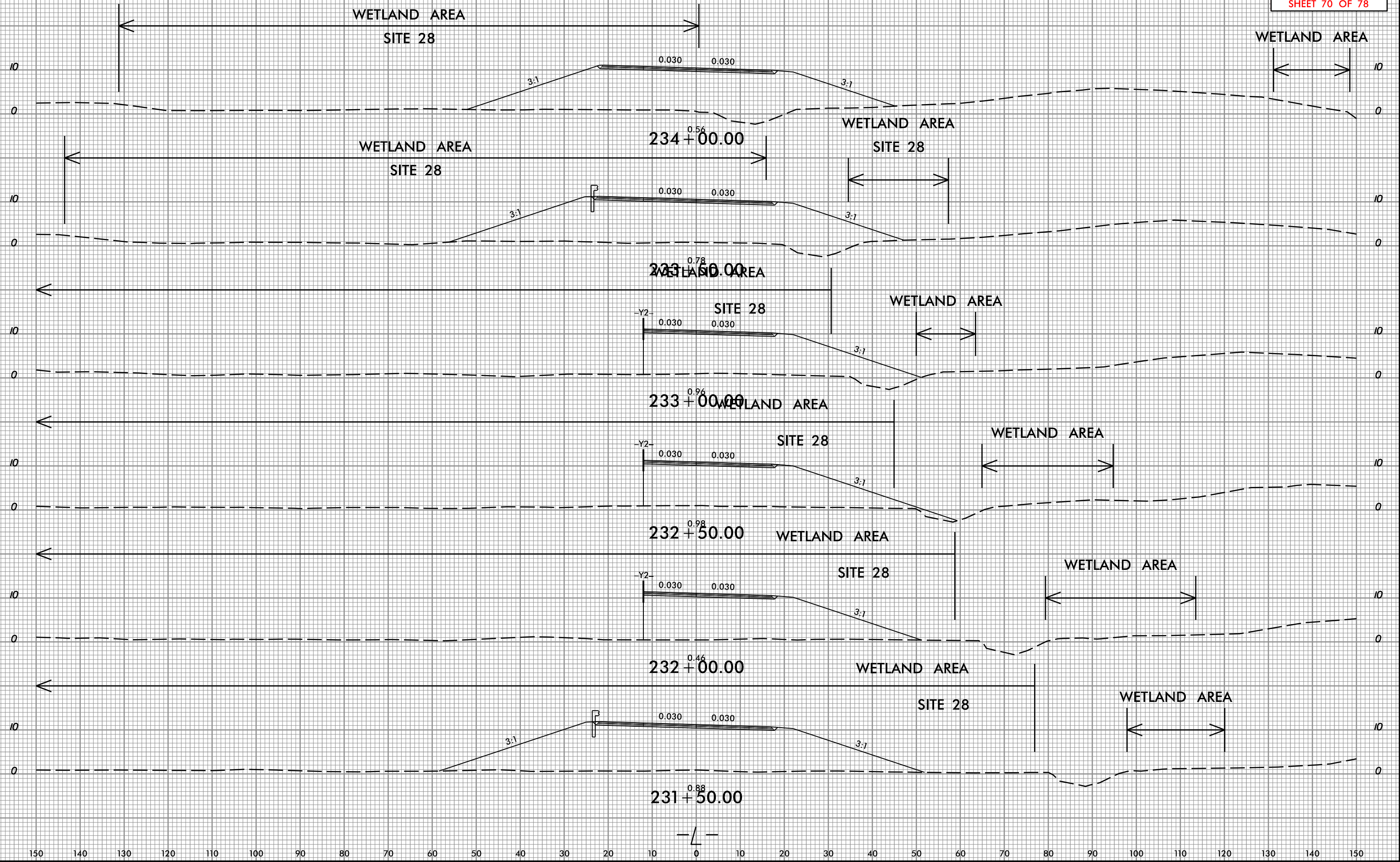
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 SHEET 69 OF 78



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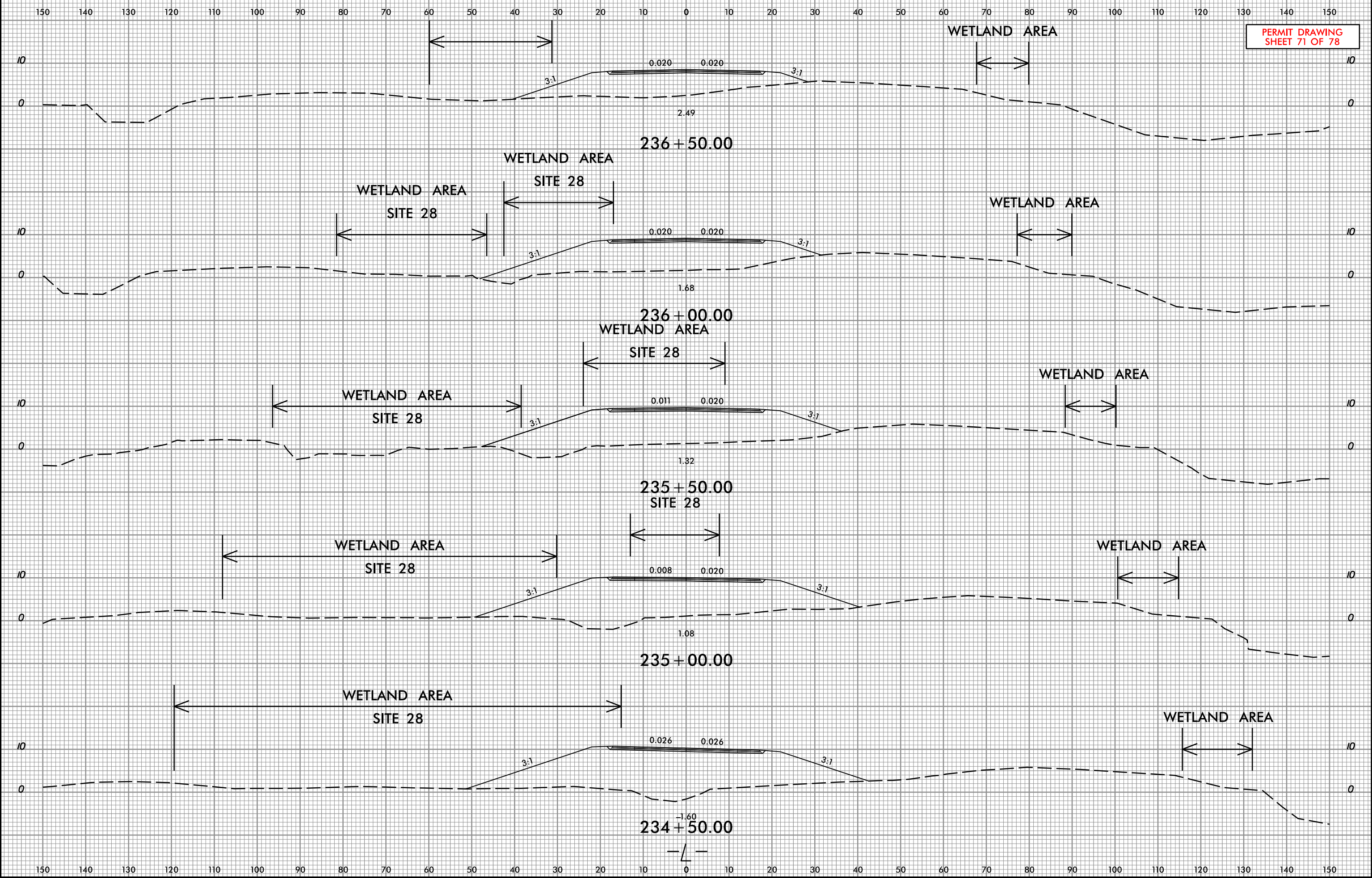
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PERMIT DRAWING
SHEET 70 OF 78

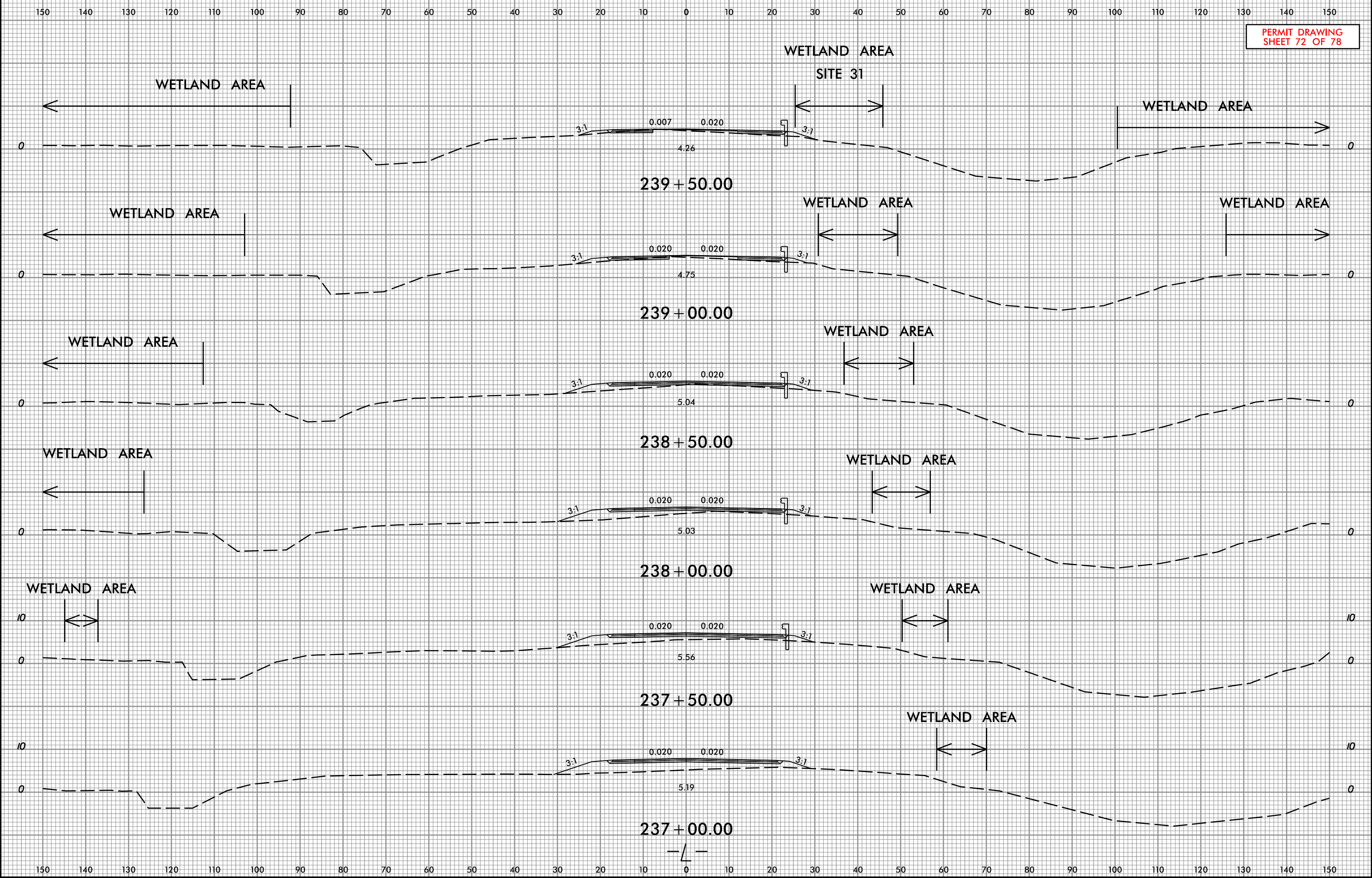


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PERMIT DRAWING
 SHEET 71 OF 78



PERMIT DRAWING
SHEET 72 OF 78



28-MAR-2023 6:41
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 gaurav@summit.com

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 74 OF 78**

WETLAND AREA



SITE 7

WETLAND AREA



0.040 0.040
 3:1 3:1
 13+00.00

WETLAND AREA



SITE 7

WETLAND AREA



0.040 0.040
 3:1 3:1
 12+50.00

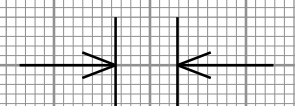
WETLAND AREA



SITE 7

0.040 0.040
 3:1 3:1
 12+00.00

WETLAND AREA



0.040 0.040
 3:1 3:1
 11+50.00

WETLAND AREA

SITE 6



0.040 0.040
 3:1 3:1
 11+00.00

WETLAND AREA

SITE 6



0.024 0.024
 3:1 3:1
 10+50.00

BEGIN CONSTRUCTION-Y1- STA. 10+18.00

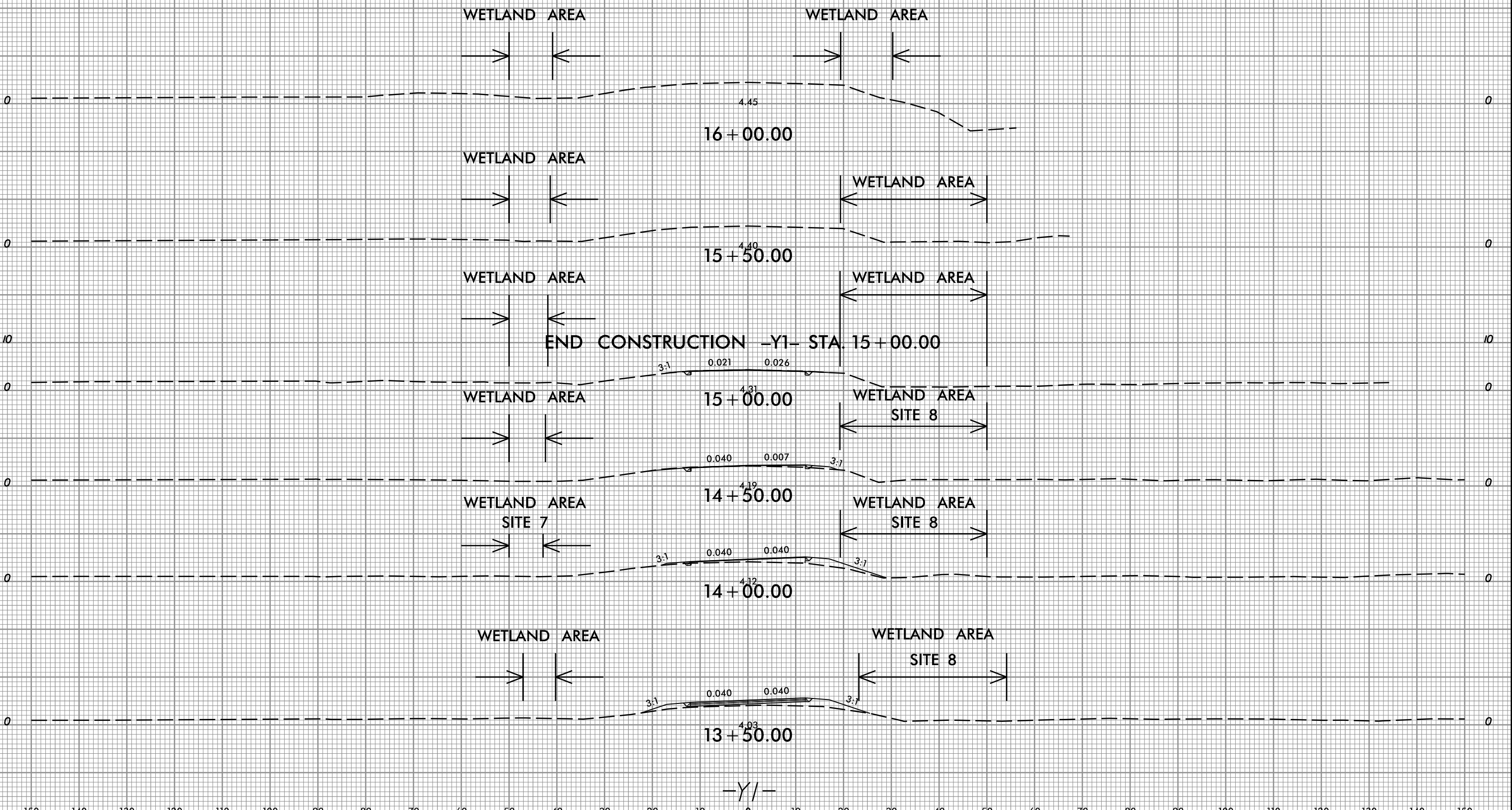
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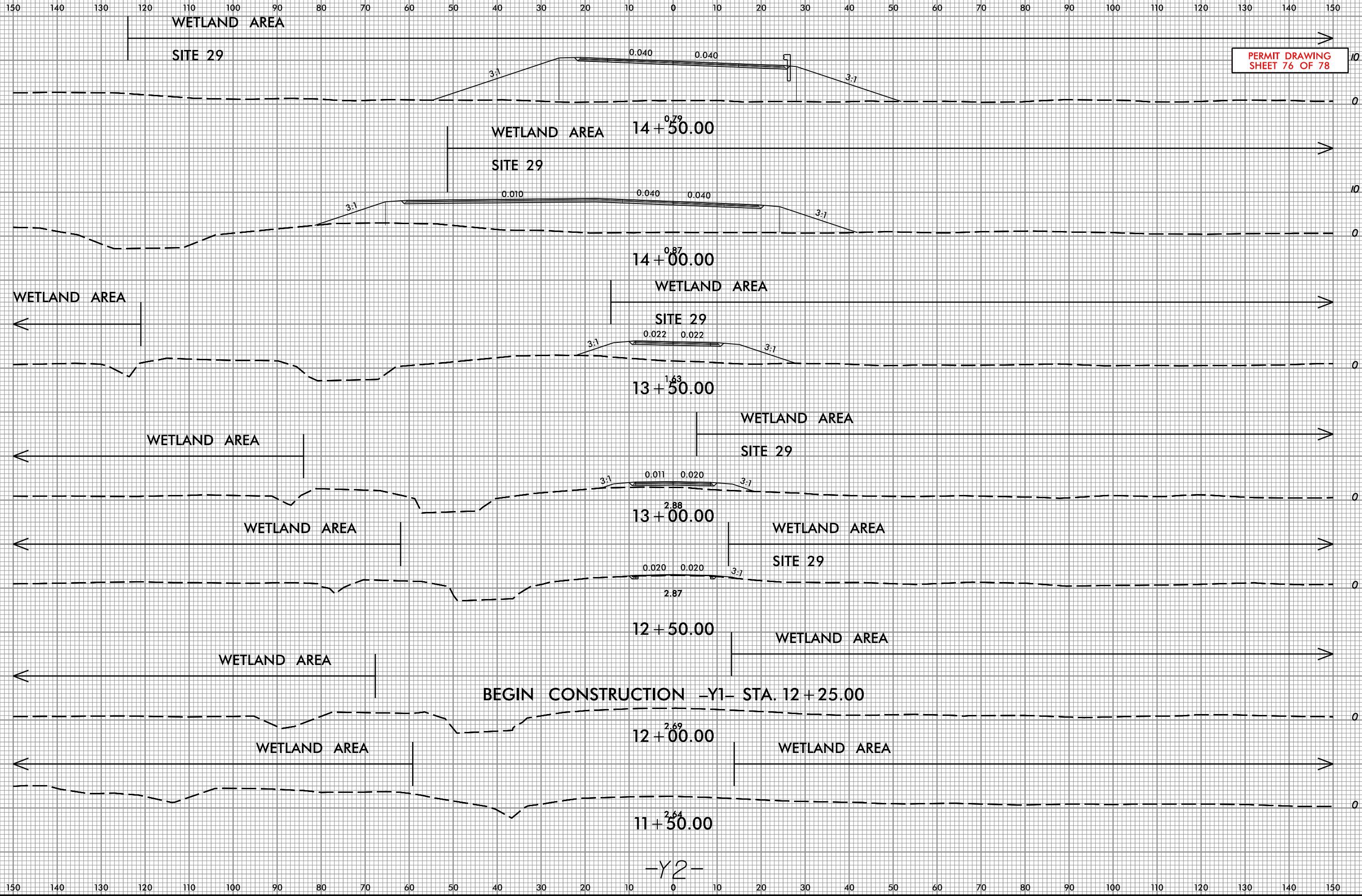
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PERMIT DRAWING
 SHEET 75 OF 78





28-MAR-2023 6:41 AM
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 gaurav@summit.com

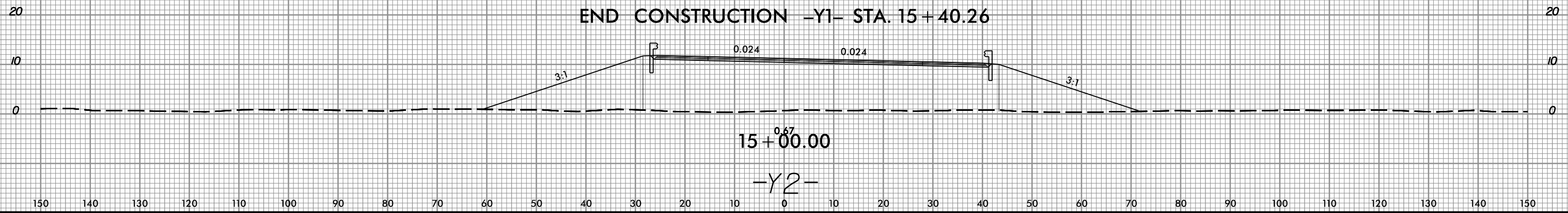
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PERMIT DRAWING
SHEET 77 OF 78

WETLAND AREA

SITE 29

END CONSTRUCTION -Y1- STA. 15+40.26



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