North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

(Version 3.00; Released August 2021) **FOR NCDOT PROJECTS**

WBS Element: 49742.3 **TIP/Proj No:** HE-0001 **County(ies):** Buncombe

General Project Information

WBS Element:	49742.3	**TIP Number:**	HE-0001	**Project Type:**	Other	**Date:**	1/6/2022
NCDOT Contact:	McCray Coates, PE			**Contractor / Designer:**	Rick Tipton, PE		
Address:	NCDOT Division 13 55 Orange Street Asheville, NC 28801			**Address:**	Gannett Fleming One Glenwood Avenue, Suite 900 Raleigh, NC 27603		
Phone:				**Phone:**			
Email:				**Email:**			
City/Town:	Biltmore Park, NC			**County(ies):**	Buncombe		
River Basin(s):	French Broad			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	1.016 mi	**Surrounding Land Use:**	Wooded, Commercial/Residential				
	Proposed Project			**Existing Site**			
Project Built-Upon Area (ac.)	9.0	ac.		3.6	ac.		
Typical Cross Section Description:	Widening: 8-lane, divided with concrete median barrier. Widen paved shoulder on LT side with roadside ditches. New Location: Ramps - 1 lane w/ paved shoulder. Y line - 2 lane, divided with concrete median barrier. Paved shoulders and roadside ditches.			8-lane, divided with concrete median barrier. Paved shoulders with roadside ditches.			
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	113700	Year: 2045	Existing:	89900	Year:	2023

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

The purpose of this project is to construct a new Diverging Diamond Interchange at Exit 35 on I-26 with a new location Y-line from the interchange to a roundabout on East Frederick Law Olmsted Way.The project will be broken into two sections for construction. The first section will consist of the proposed Y-line from the interchange to the roundabout on East Frederick Law Olmsted Way. This portion of the project is new location and can be constructed in one continuous phase. The interchange will be constructed inside the currently active TIP Project I-4700. During Phase IA of construction for I-4700, the Eastbound lanes along I-26 are shifted to the inside so that the outer two lanes and shoulder can be reconstructed. Ideally, Ramps A and B as well as end bent two would be constructed first to minimize impacts to traffic. End bent one would be better suited for construction during Phase IB of I-4700 as the traffic will be shifted into the outer two lanes. During Phase II of construction for I-4700, the Westbound lanes of I-26 are shifted adjacent to EB traffic. Ramps C and D can be constructed during this period. Jurisdictional features including wetlands, and streams are all present within the project limits. The proposed drainage system for this project will primarily tie to the exisitng network proposed by the I-4700 project. Retaining walls are currently under design to reduce impacts along the corridor of this project.

North Carolina Department of Transportation

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FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 49742.3 **TIP/Proj No.:** HE-0001 **County(ies):** Buncombe

General Project Information

Waterbody Information

Surface Water Body (1):	FBR		**NCDWR Stream Index No.:**	6-(54.75)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	Yes	Comments:	FBR is occupied by the endangered Appalachian elktoe habitat.			
NRTR Stream ID:	FBR			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?	N/A	(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):	UT to FBR (SA)		**NCDWR Stream Index No.:**	N/A		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:	No listed species in waterbody; however, receiving body, FBR, is occupied app. elktoe habitat.			
NRTR Stream ID:	S(A-O)			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(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 (3):	UT to FBR (SD)		**NCDWR Stream Index No.:**	N/A		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:	No listed species in waterbody; however, receiving body, FBR, is occupied app. elktoe habitat.			
NRTR Stream ID:	SD(X-Z)			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(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)						

WBS Element: 49742.3 **TIP No.:** HE-0001 **County(ies):** Buncombe

Additional Waterbody Information

Surface Water Body (4):	UT to FBR SE		**NCDWR Stream Index No.:**	N/A		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:	No listed species in waterbody; however, receiving body, FBR, is occupied app. elktoe habitat.			
NRTR Stream ID:	SE(Q-W)			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(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 (5):	UT to FBR (SDX)		**NCDWR Stream Index No.:**	N/A		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	Yes	Comments:	No listed species in waterbody; however, receiving body, FBR, is occupied app. elktoe habitat.			
NRTR Stream ID:	SDX			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(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)						

North Carolina Department of Transportation

Highway Stormwater Program

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WBS Element: 49742.3 **TIP/Proj No.:** HE-0001 **County(ies):** Buncombe

Swale

Sheet No.	Line	Station	Location (LT,RT,CL)	Latitude	Longitude	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
6	RpB	19+00	LT	937098.9387	658089.219	(5)UT to FBR (SDX)	2.0	6.0	6.0	7.2	715	350	0.60%	11.6	1.9	15.5	2.0	Yes	No

Additional Comments

Note: Due to topographical co straints, the length of swale was limited to maximum extent practicable. Weirs are spaced to hold the first flush volumn.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: **TIP/Proj No.:** HE-0001 **County(ies):** Buncombe

Preformed Scour Holes and Energy Dissipators

Sheet No.	Line	Station	Location (LT,RT,CL)	Latitude	Longitude	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe (in) / Structure Dimensions (ft)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
5	RpC	30+75	LT	35.3016956	-82.3413634	(5)UT to FBR (SDX)	Riprap Energy Dissipator Basin	Class 'B'	0.3	Pipe	15	1.4	0.4	No
6	RpB	16+54	LT	35.3017831	-82.3418961	(5)UT to FBR (SDX)	Riprap Energy Dissipator Basin	Class 'B'	3.4	Pipe	18	7.0	1.2	No
6	RpB	19+00	LT	35.3022216	-82.3425352	(5)UT to FBR (SDX)	Riprap Energy Dissipator Basin	Class 'B'	3.4	Pipe	18	6.8	1.1	No
6	Y1	36+00	LT	35.3011007	-82.3438601	(2)UT to FBR (SA)	Riprap Energy Dissipator Basin	Class 'B'	1.7	Pipe	15	6.0	1.0	No
7	RpA	22+00	LT	35.303118	-82.3430029	(5)UT to FBR (SDX)	Riprap Energy Dissipator Basin	Class 'B'	0.8	Ditch		0.8	0.4	No
7	RpA	27+00	LT	35.3033863	-82.3435081	(5)UT to FBR (SDX)	Riprap Energy Dissipator Basin	Class 'B'	0.4	Ditch		0.4	0.2	No
8	L	1138+00	LT	35.3032919	-82.3432993	(2)UT to FBR (SA)	Riprap Energy Dissipator Basin	Class 'B'	0.8	Ditch		1.3	0.6	No
9	Y1	27+00	LT	35.3018127	-82.3432884	(3)UT to FBR (SD)	Riprap Energy Dissipator Basin	Class 'B'	3.3	Pipe	15	5.7	0.0	No
10	Y1	38+15	RT	35.3010782	-82.3441154	(2)UT to FBR (SA)	PSH	Class 'B'	0.2	Pipe	15	3.6	0.5	No
10	Y1	39+00	RT	35.301066	-82.3442176	(2)UT to FBR (SA)	Riprap Energy Dissipator Basin	Class 'B'	3.6	Pipe	18	6.4	1.0	No
9	Y1	25+72	RT	35.3019949	-82.3431706	(4)UT to FBR SE	Riprap Energy Dissipator Basin	Class 'B'	1.4	Pipe	15	3.9	0.7	No
10	Y1	33+72	RT	35.3013198	-82.3437235	(2)UT to FBR (SA)	Riprap Energy Dissipator Basin	Class 'B'	0.3	Pipe	15	1.5	0.1	No
10	Y1	38+50	LT	35.309281	-82.3441673	(2)UT to FBR (SA)	PSH	Class 'B'	0.3	Pipe	15	0.9	2.8	No
6	Rp C	36+00	lt											

Additional Comments

delete row 25

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

TIP PROJECT: HE–0001

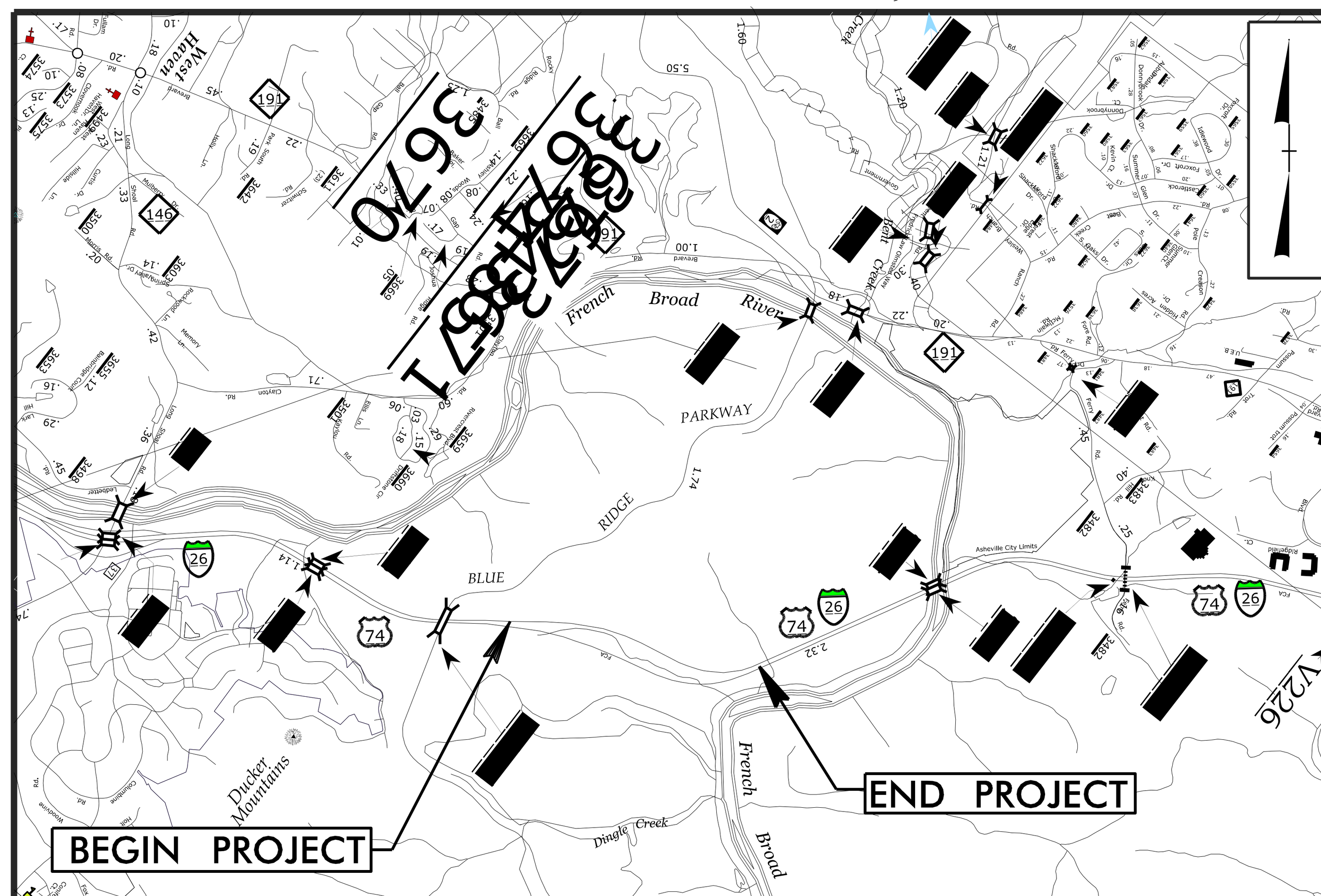
CONTRACT: ________

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	HE–0001	1	11

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
XXXXXXXX	XXXXXX	PE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

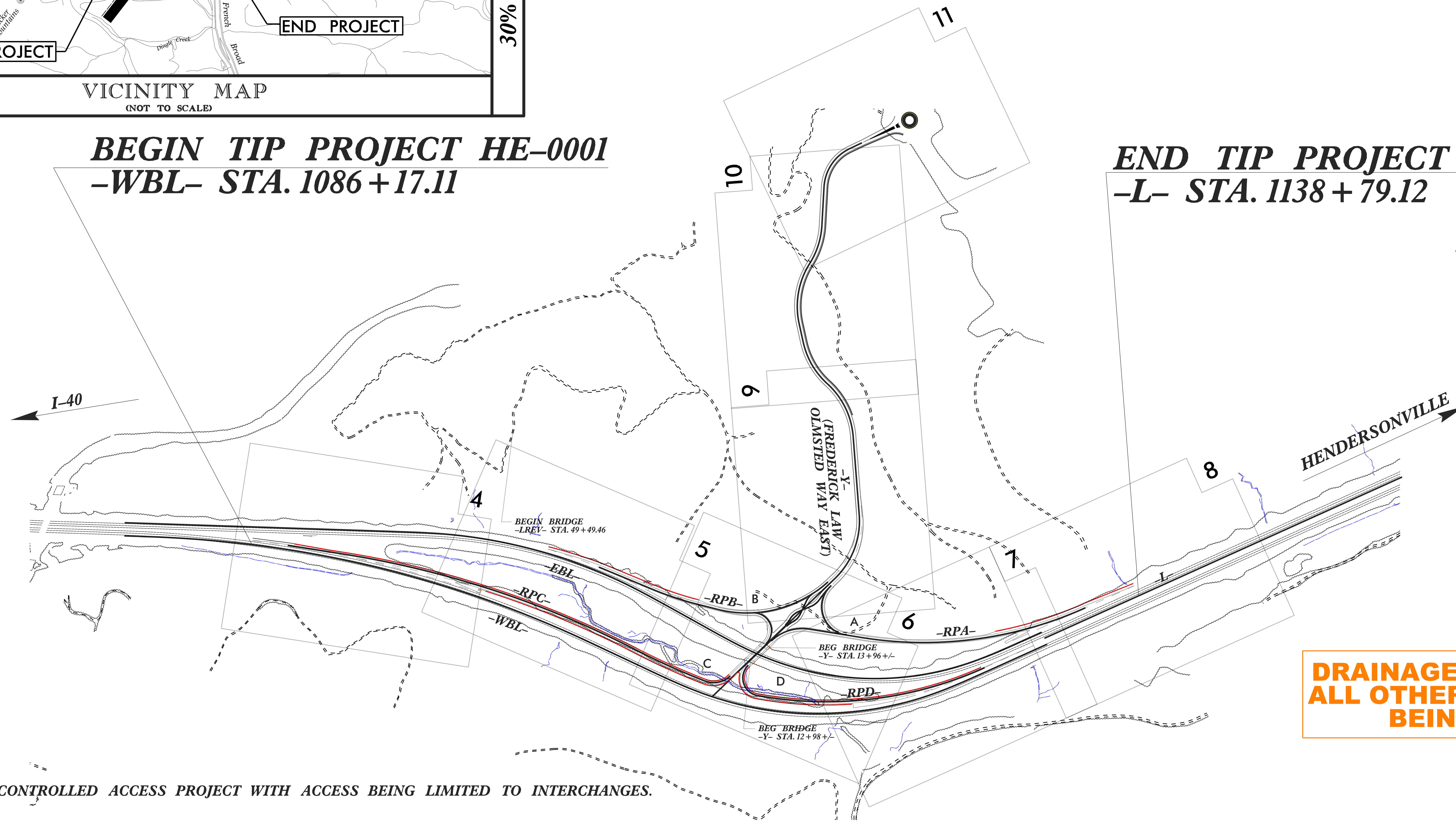
BUNCOMBE COUNTY



VICINITY MAP
(NOT TO SCALE)

LOCATION: NEW I–26 DIVERGING DIAMOND INTERCHANGE (EXIT 35) AND ACCESS ROAD CONNECTING TO NC 191 (BREVARD RD)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURE, SIGNALS, AND RETAINING WALLS



4C PLANS
1/11/2023

DRAINAGE IN RED IS PART OF HE-0001
ALL OTHER DRAINAGE IS EXISTING OR BEING BUILT UNDER I-4700

NOTES:
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270

GRAPHIC SCALES

50′ 25′ 0 50′ 100′
PLANS

50′ 25′ 0 50′ 100′
PROFILE (HORIZONTAL)

10′ 5′ 0 10′ 20′
PROFILE (VERTICAL)

DESIGN DATA

ADT 2021 = 9,100
ADT 2046 = 18,600
K = 10 %
D = 55 %

V = 75 MPH
* TTST = 1% DUAL 4%

FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT HE–0001	=	2.033 Miles
LENGTH STRUCTURES	=	0.019 Miles
TOTAL LENGTH TIP PROJECT HE–0001	=	2.052 Miles

NCDOT CONTACT: MCCRAY COATES, PE
DIVISION 13 PROJECT MANAGER

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 2022

LETTING DATE:

RICK TIPTON, PE
PROJECT ENGINEER

ANGEL B. PRIDGEN, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA ★ DEPARTMENT OF TRANSPORTATION ★

$$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
HE-0001A	4

RW SHEET NO.

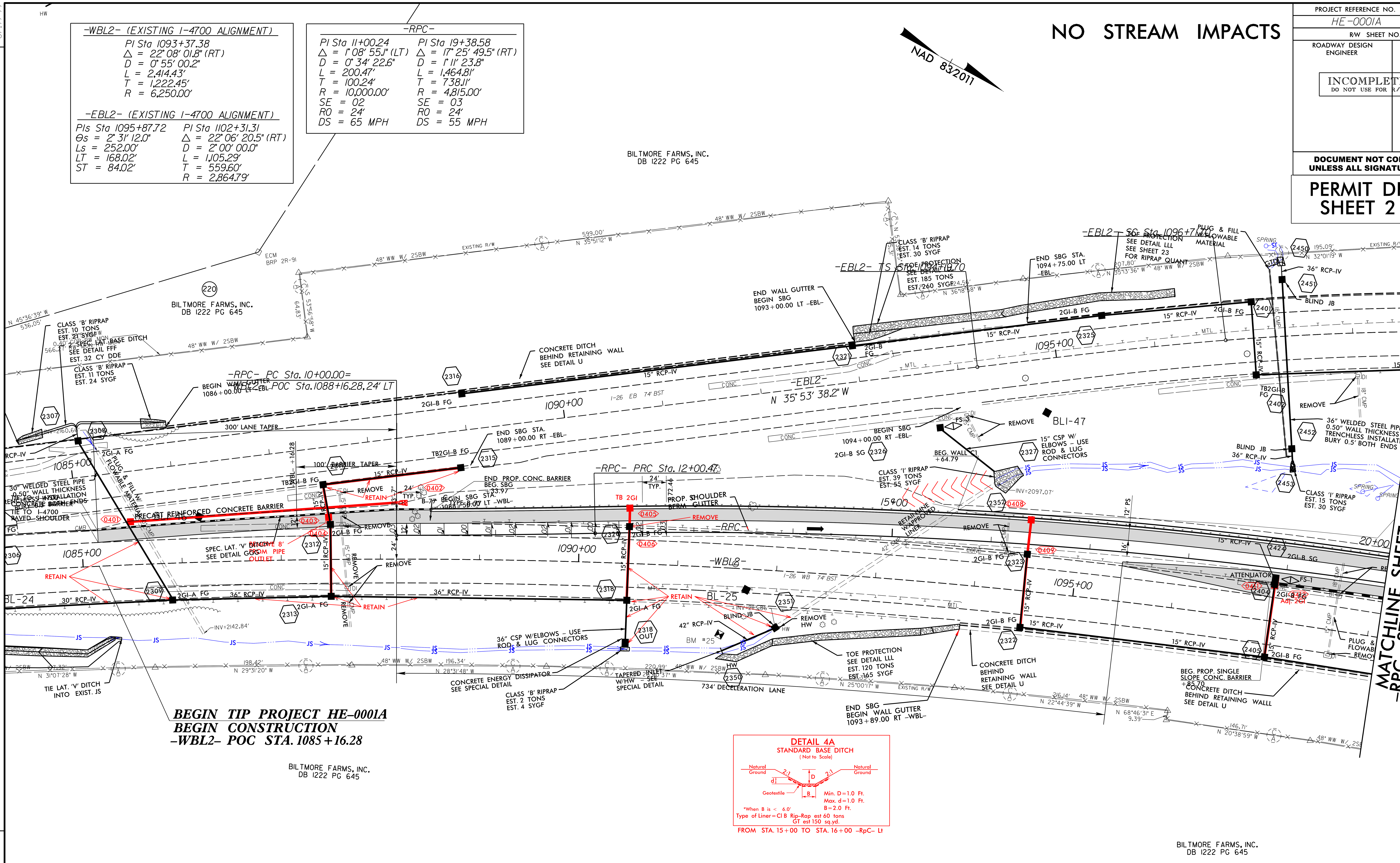
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 14

NO STREAM IMPACTS

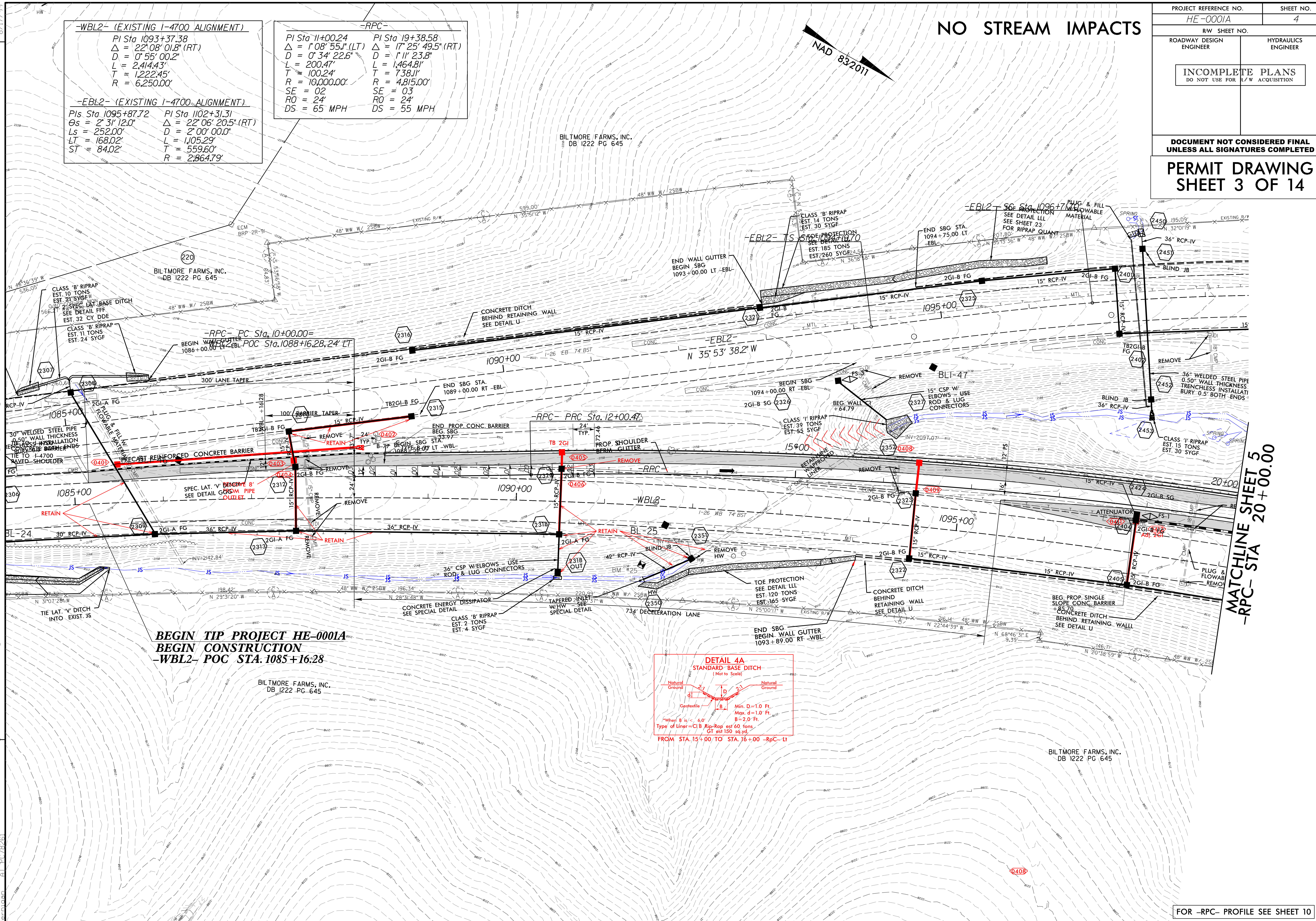


FOR -RPC- PROFILE SEE SHEET 10

8/17/99

REVISIONS

25-JAN-2023 09:41
C:\Users\...\OneDrive - Gannett Fleming Inc\Documents\Working\HE-0001 - I-26\Permits\Plan_Sheets\HE-0001A_hyd_psh04A.dgn



PROJECT REFERENCE NO.
SHEET NO.
HE-0001A
4
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 3 OF 14
NO STREAM IMPACTS
NAD 83/2011
-WBL2- (EXISTING I-4700 ALIGNMENT)
PI Sta 1093+37.38
Δ = 22° 08' 01.8" (RT)
D = 0° 55' 00.2"
L = 2,414.43'
T = 1,222.45'
R = 6,250.00'
-EBL2- (EXISTING I-4700 ALIGNMENT)
PIs Sta 1095+87.72
Θs = 2° 31' 12.0"
Ls = 252.00'
LT = 168.02'
ST = 84.02'
PI Sta 1102+31.31
Δ = 22° 06' 20.5" (RT)
D = 2° 00' 00.0"
L = 1,105.29'
T = 559.60'
R = 2,864.79'
-RPC-
PI Sta 11+00.24
Δ = 1° 08' 55.1" (LT)
D = 0° 34' 22.6"
L = 200.47'
T = 100.24'
R = 10,000.00'
SE = 02
RO = 24'
DS = 65 MPH
PI Sta 19+38.58
Δ = 17° 25' 49.5" (RT)
D = 1° 11' 23.8"
L = 1,464.81'
T = 738.11'
R = 4,815.00'
SE = 03
RO = 24'
DS = 55 MPH
BILTMORE FARMS, INC.
DB 1222 PG 645
-RPC- PC Sta. 10+00.00= -WBL2- POC Sta.1088+16.28, 24' LT
-RPC- PRC Sta. 12+00.47
-EBL2- N 35° 53' 38.2" W
-WBL2-
-RPC-
PRECAST REINFORCED CONCRETE BARRIER
BEGIN TIP PROJECT HE-0001A
BEGIN CONSTRUCTION
-WBL2- POC STA. 1085+16.28
734' DECELERATION LANE
300' LANE TAPER
MATCHLINE SHEET 5
-RPC- STA 20+00.00
DETAIL 4A
STANDARD BASE DITCH
(Not to Scale)
Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=2.0 Ft.
Type of Liner=Cl B Rip-Rap est 60 tons
GT est 150 sq.yd.
FROM STA. 15+00 TO STA. 16+00 -RpC- Lt
FOR -RPC- PROFILE SEE SHEET 10
REVISIONS
8/17/99

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 4 OF 14

-EBL2- (EXISTING I-4700 ALIGNMENT)

PI Sta 1102+31.31
Δ = 22° 06' 20.5" (RT)
D = 2° 00' 00.0"
L = 1,105.29'
T = 559.60'
R = 2,864.79'

PIs Sta 1108+61.00
θs = 2° 31' 11.3"
Ls = 251.98'
LT = 168.00'
ST = 84.01'

-WBL2-(EXISTING I-4700 ALIGNMENT)

PI Sta 1093+37.38
Δ = 22° 08' 01.8" (RT)
D = 0° 55' 00.2"
L = 2,414.43'
T = 1,222.45'
R = 6,250.00'

PIs Sta 1105+71.35
θs = 0° 34' 39.0"
Ls = 125.99'
LT = 83.99'
ST = 42.00'

-RPB-

PI Sta 14+59.58
Δ = 8° 20' 52.0" (LT)
D = 3° 10' 59.2"
L = 262.25'
T = 131.36'
R = 1,800.00'
SE = 06
RO = 92'
DS = 50MPH

-RPC-

PI Sta 19+38.58
Δ = 17° 25' 49.5" (RT)
D = 1° 11' 23.8"
L = 1,464.81'
T = 738.11'
R = 4,815.00'
SE = 03
RO = 24'
DS = 55MPH

PI Sta 33+17.83
Δ = 7° 07' 24.0" (LT)
D = 2° 17' 04.3"
L = 311.81'
T = 156.11'
R = 2,508.00'
SE = 04
RO = 24'
DS = 45MPH

NAD 83\2011

BILTMORE FARMS, INC.
DB 1222 PG 645

MATCHLINE SHEET 6
-RPB- STA 15+00.00

MATCHLINE SHEET 6
-RPC- STA 32+67.09

MATCHLINE SHEET 4
-RPC- STA 20+00.00

LEGEND
- TEMPORARY FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- SAFETY FENCE

FOR -RPB- PROFILE SEE RDY SHEET 12
FOR -RPC- PROFILE SEE RDY SHEET 13

BILTMORE FARMS, INC.

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WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 14

-EBL2- (EXISTING I-4700 ALIGNMENT)

PI Sta 1102+31.31
△ = 22° 06' 20.5" (RT)
D = 2° 00' 00.0"
L = 1,105.29'
T = 559.60'
R = 2,864.79'

PIs Sta 1108+61.00
θs = 2° 31' 11.3"
Ls = 251.98'
LT = 168.00'
ST = 84.01'

-WBL2-(EXISTING I-4700 ALIGNMENT)

PI Sta 1093+37.38
△ = 22° 08' 01.8" (RT)
D = 0° 55' 00.2"
L = 2,414.43'
T = 1,222.45'
R = 6,250.00'

PIs Sta 1105+71.35
θs = 0° 34' 39.0"
Ls = 125.99'
LT = 83.99'
ST = 42.00'

-RPB-

PI Sta 14+59.58
△ = 8° 20' 52.0" (LT)
D = 3° 10' 59.2"
L = 262.25'
T = 131.36'
R = 1,800.00'
SE = 06
RO = 92'
DS = 50MPH

-RPC-

PI Sta 19+38.58
△ = 17° 25' 49.5" (RT)
D = 1° 11' 23.8"
L = 1,464.81'
T = 738.11'
R = 4,815.00'
SE = 03
RO = 24'
DS = 55MPH

PI Sta 33+17.83
△ = 7° 07' 24.0" (LT)
D = 2° 17' 04.3"
L = 311.81'
T = 156.11'
R = 2,508.00'
SE = 04
RO = 24'
DS = 45MPH

NAD 83/2011

BILTMORE FARMS, INC.
DB 1222 PG 645

LEGEND
- TEMPORARY FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- SAFETY FENCE

MECHANIZED CLEARING IN WETLANDS
PERMANENT FILL IN WETLANDS

MATCHLINE SHEET 6 -RPB- STA 15+00.00

MATCHLINE SHEET 6 -RPC- STA 32+67.09

MATCHLINE SHEET 4 -RPC- STA 20+00.00

FOR -RPB- PROFILE SEE RDY SHEET 12
FOR -RPC- PROFILE SEE RDY SHEET 13

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wjernigan

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 8/17/99

LEGEND

- S S — SURFACE WATER IMPACTS
- TS TS — TEMPORARY SURFACE WATER IMPACTS
- * * — MECHANIZED CLEARING (GRUBBING)
- F F — FILL IN WETLAND
- SAFETY FENCE

PERMIT DRAWING SHEET 6 OF 14

NAD 83 NC GRID NA 2011

BILTMORE FARMS, INC. DB 1222 PG 645

PERMANENT FILL IN WETLANDS

PERMANENT FILL IN WETLANDS

MECHANIZED CLEARING IN WETLANDS

TEMPORARY STREAM IMPACT

PERMANENT STREAM IMPACT

MATCHLINE SHEET 5 –RPB– STA 15+00.00

MATCHLINE SHEET 5 –RPC– STA 32+67.09

MATCHLINE SHEET 7 –RPA– STA 15+00.00

MATCHLINE SHEET 7 –RPD– STA 18+50.00

SEE SHEET 6A FOR INTERCHANGE CURVE DATA DETAIL (RDY SHEETS)

FOR –Y– PROFILE SEE SHEET 9
FOR –YWB– PROFILE SEE SHEET 10
FOR –YEB– PROFILE SEE SHEET 10
FOR –RPA– PROFILE SEE SHEET 11–12
FOR –SPURA– PROFILE SEE SHEET 12
FOR –RPB– PROFILE SEE SHEET 12
FOR –SPURB– PROFILE SEE SHEET 12
FOR –RPC– PROFILE SEE SHEET 13
FOR –RPD– PROFILE SEE SHEET 14

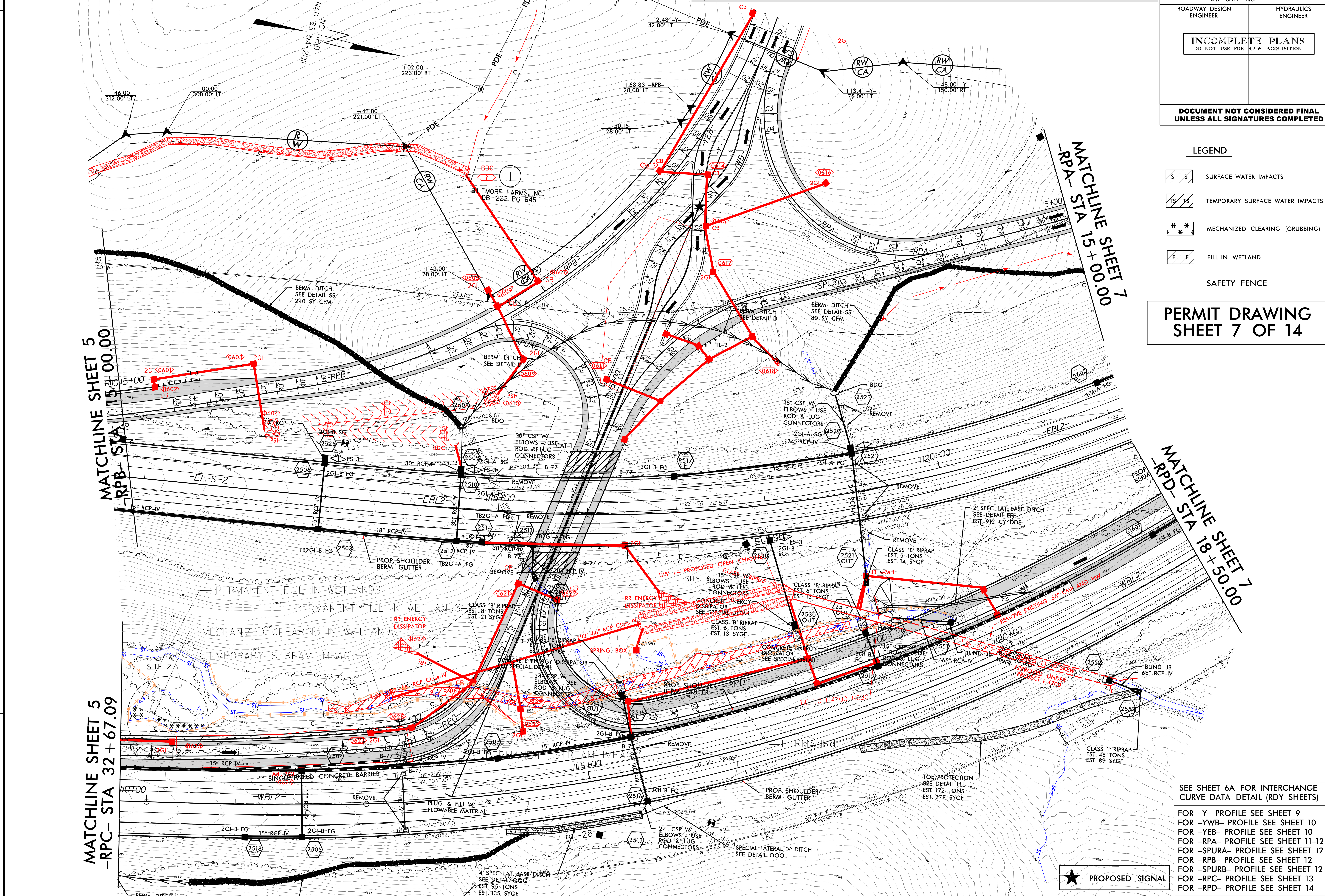
★ PROPOSED SIGNAL

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



LEGEND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
FILL IN WETLAND
SAFETY FENCE
PERMIT DRAWING SHEET 7 OF 14
MATCHLINE SHEET 7 -RPA- STA 15+00.00
MATCHLINE SHEET 7 -RPD- STA 18+50.00
MATCHLINE SHEET 5 -RPB- STA 15+00.00
MATCHLINE SHEET 5 -RPC- STA 32+67.09
NAD 83 NC GRID NA 2011
BILTMORE FARMS, INC. DB 1222 PG 645
PERMANENT FILL IN WETLANDS
MECHANIZED CLEARING IN WETLANDS
TEMPORARY STREAM IMPACT
PERMANENT STREAM IMPACT
SITE 2
SITE 3
175' +/- PROPOSED OPEN CHANNEL
RR ENERGY DISSIPATOR
SPRING BOX
TIE TO I-4700 RCB
SEE SHEET 6A FOR INTERCHANGE CURVE DATA DETAIL (RDY SHEETS)
FOR -Y- PROFILE SEE SHEET 9
FOR -YWB- PROFILE SEE SHEET 10
FOR -YEB- PROFILE SEE SHEET 10
FOR -RPA- PROFILE SEE SHEET 11-12
FOR -SPURA- PROFILE SEE SHEET 12
FOR -RPB- PROFILE SEE SHEET 12
FOR -SPURB- PROFILE SEE SHEET 12
FOR -RPC- PROFILE SEE SHEET 13
FOR -RPD- PROFILE SEE SHEET 14
PROPOSED SIGNAL

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

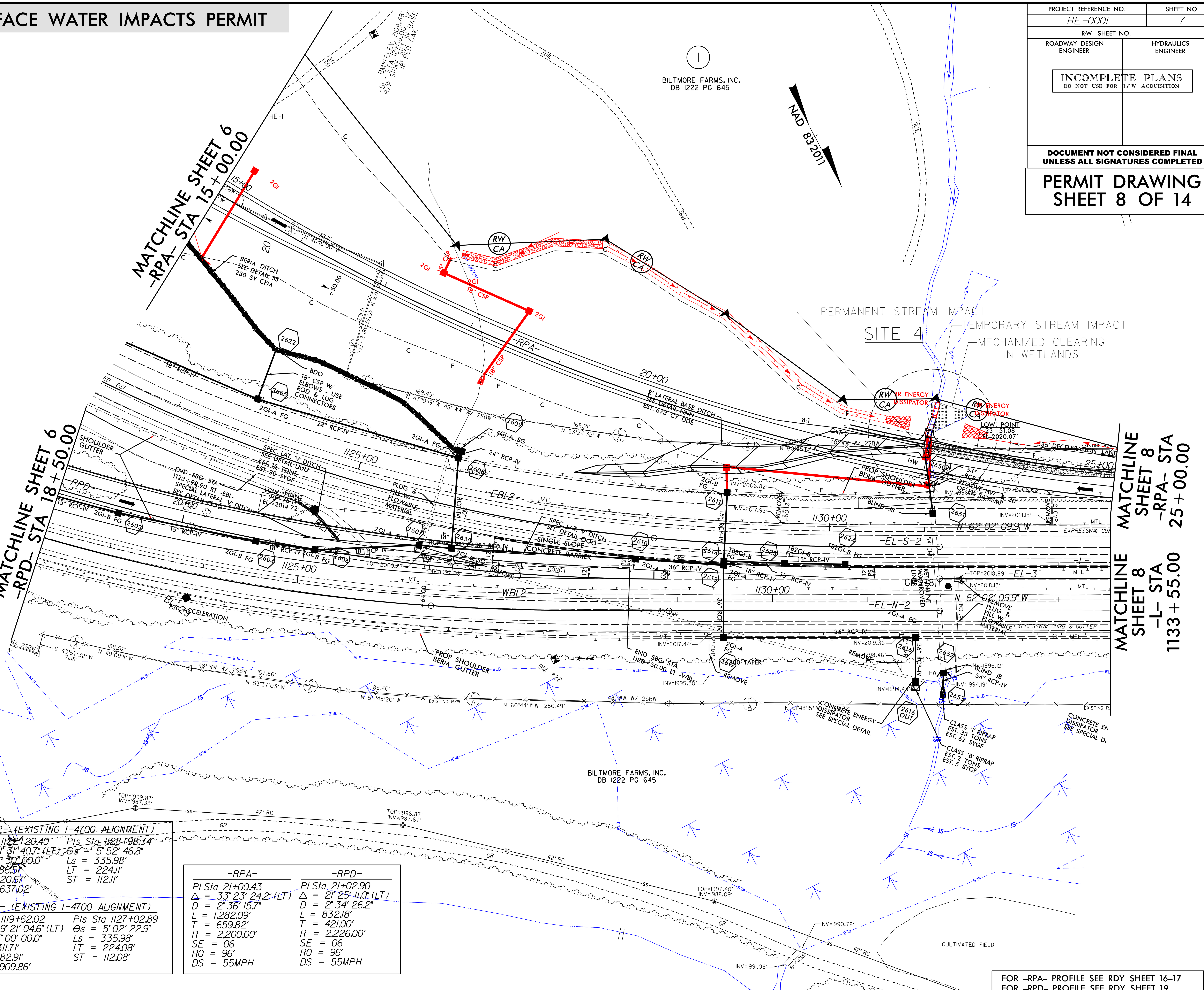
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 8 OF 14

LEGEND

▨ SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)



-EBL2- (EXISTING I-4700 ALIGNMENT)	
PI Sta 1122+20.40	PIs Sta 1128+98.34
Δ = 41° 31' 40.7" (LT)	Θs = 5° 52' 46.8"
D = 3° 30' 00.0"	Ls = 335.98'
L = 1,186.51'	LT = 224.11'
T = 620.67'	ST = 112.11'
R = 1,637.02'	

-WBL2- (EXISTING I-4700 ALIGNMENT)	
PI Sta 1119+62.02	PIs Sta 1127+02.89
Δ = 39° 21' 04.6" (LT)	Θs = 5° 02' 22.9"
D = 3° 00' 00.0"	Ls = 335.98'
L = 1,311.71'	LT = 224.08'
T = 682.91'	ST = 112.08'
R = 1,909.86'	

-RPA-	-RPD-
PI Sta 21+00.43	PI Sta 21+02.90
Δ = 33° 23' 24.2" (LT)	Δ = 21° 25' 11.0" (LT)
D = 2° 36' 15.7"	D = 2° 34' 26.2"
L = 1,282.09'	L = 832.18'
T = 659.82'	T = 421.00'
R = 2,200.00'	R = 2,226.00'
SE = .06	SE = .06
RO = 96'	RO = 96'
DS = 55MPH	DS = 55MPH

FOR -RPA- PROFILE SEE RDY SHEET 16-17
FOR -RPD- PROFILE SEE RDY SHEET 19

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 9 OF 14

LEGEND

- SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)
- SAFETY FENCE

MATCHLINE SHEET 6 –RPA– STA 15+00.00

MATCHLINE SHEET 6 –RPD– STA 18+50.00

MATCHLINE SHEET 8 –RPA– STA 25+00.00

MATCHLINE SHEET 8 –L– STA 1133+55.00

BILTMORE FARMS, INC. DB 1222 PG 645

NAD 83/2011

PERMANENT STREAM IMPACT
TEMPORARY STREAM IMPACT
MECHANIZED CLEARING IN WETLANDS
SITE 4

–EBL2– (EXISTING I-4700 ALIGNMENT)
PI Sta 1123+20.40
△ = 41° 31' 40.7" (LT)
D = 3° 30' 00.0"
L = 1,186.51'
T = 620.67'
R = 1,637.02'
PIs Sta 1128+98.34
Θs = 5° 52' 46.8"
Ls = 335.98'
LT = 224.11'
ST = 112.11'

–WBL2– (EXISTING I-4700 ALIGNMENT)
PI Sta 1119+62.02
△ = 39° 21' 04.6" (LT)
D = 3° 00' 00.0"
L = 1,311.71'
T = 682.91'
R = 1,909.86'
PIs Sta 1127+02.89
Θs = 5° 02' 22.9"
Ls = 335.98'
LT = 224.08'
ST = 112.08'

–RPA–	–RPD–
PI Sta 21+00.43	PI Sta 21+02.90
△ = 33° 23' 24.2" (LT)	△ = 21° 25' 11.0" (LT)
D = 2° 36' 15.7"	D = 2° 34' 26.2"
L = 1,282.09'	L = 832.18'
T = 659.82'	T = 421.00'
R = 2,200.00'	R = 2,226.00'
SE = 06	SE = 06
R0 = 96'	R0 = 96'
DS = 55MPH	DS = 55MPH

FOR –RPA– PROFILE SEE RDY SHEET 16–17
FOR –RPD– PROFILE SEE RDY SHEET 19

8/17/99

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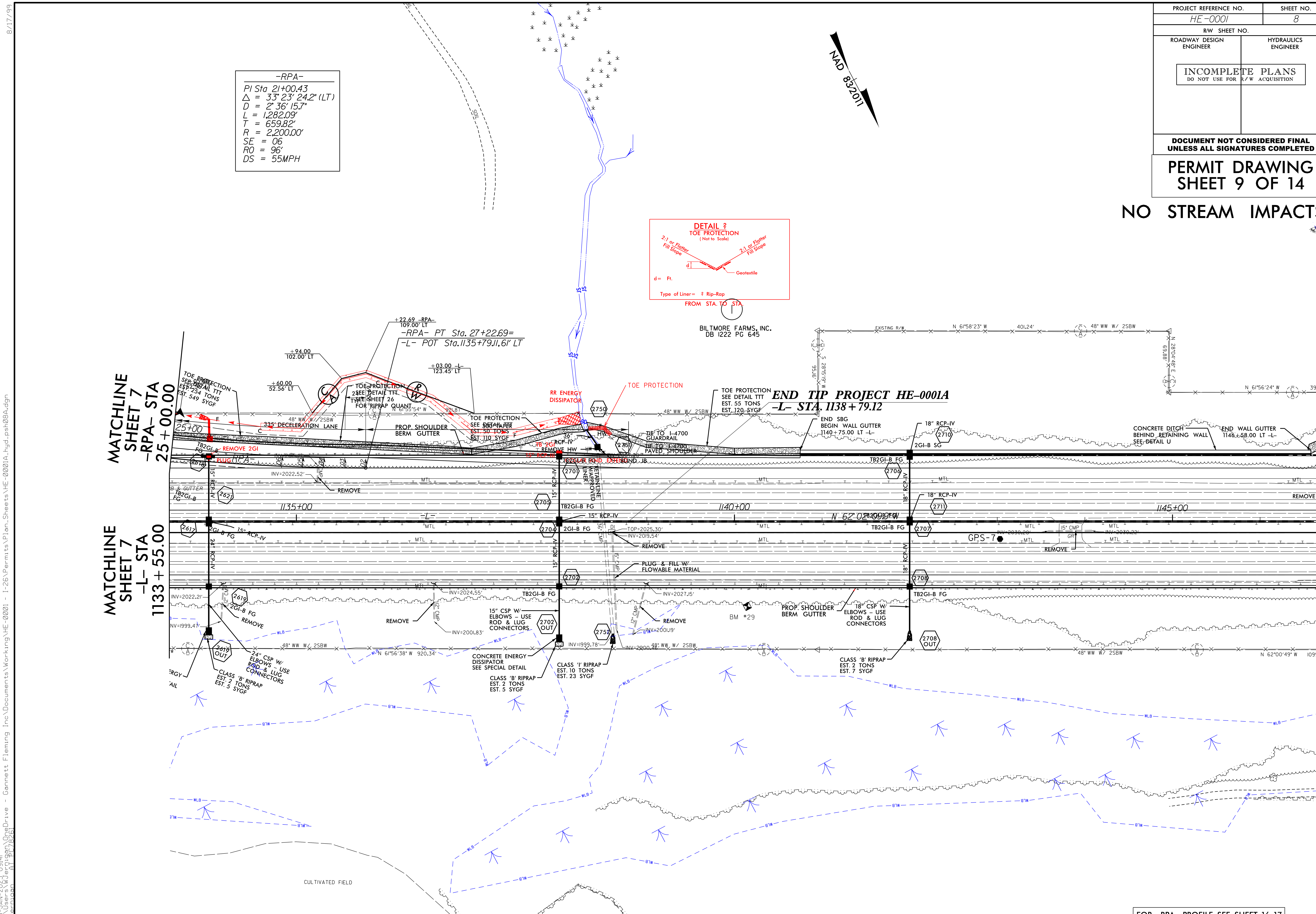
PROJECT REFERENCE NO.	SHEET NO.
HE-0001	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 9 OF 14

NO STREAM IMPACTS



-RPA-
PI Sta 21+00.43
△ = 33° 23' 24.2" (LT)
D = 2° 36' 15.7"
L = 1,282.09'
T = 659.82'
R = 2,200.00'
SE = .06
RO = 96'
DS = 55MPH
NAD 83/2011
DETAIL ?
TOE PROTECTION
(Not to Scale)
2:1 or Flatter Fill Slope
Geotextile
Type of Liner = ' Rip-Rap
FROM STA. TO STA.
BILTMORE FARMS, INC.
DB 1222 PG 645
+22.69 -RPA-
109.00' LT
-RPA- PT Sta. 27+22.69=
-L- POT Sta.1135+79.11.61' LT
+94.00
102.00' LT
+03.00 -L-
123.45' LT
+60.00
52.56' LT
RR ENERGY DISSIPATOR
TOE PROTECTION
TOE PROTECTION SEE DETAIL TTT EST. 55 TONS EST. 120 SYGF
END TIP PROJECT HE-0001A
-L- STA. 1138+79.12
END SBG
BEGIN WALL GUTTER
1140+75.00 LT -L-
335' DECELERATION LANE
PROP. SHOULDER BERM GUTTER
TOE PROTECTION SEE DETAIL TTT EST. 50 TONS EST. 110 SYGF
TIE TO -L-4700 GUARDRAIL
TIE TO -L-4700 PAVED SHOULDER
REMOVE 2GI
REMOVE HW
CONCRETE DITCH BEHIND RETAINING WALL SEE DETAIL U
END WALL GUTTER 1146+58.00 LT -L-
MATCHLINE SHEET 7 -RPA- STA 25+00.00
MATCHLINE SHEET 7 -L- STA 1133+55.00
1135+00
1140+00
1145+00
N 62° 02' 09.9" W
GPS-7
PLUG & FILL W/ FLOWABLE MATERIAL
REMOVE
15" CSP W/ ELBOWS - USE ROD & LUG CONNECTORS
CONCRETE ENERGY DISSIPATOR SEE SPECIAL DETAIL
CLASS 'B' RIPRAP EST. 2 TONS EST. 5 SYGF
CLASS 'I' RIPRAP EST. 10 TONS EST. 23 SYGF
PROP. SHOULDER BERM GUTTER
18" CSP W/ ELBOWS - USE ROD & LUG CONNECTORS
CLASS 'B' RIPRAP EST. 2 TONS EST. 7 SYGF
24" CSP W/ ELBOWS - USE ROD & LUG CONNECTORS
CLASS 'B' RIPRAP EST. 2 TONS EST. 5 SYGF
BM #29
CULTIVATED FIELD

FOR -RPA- PROFILE SEE SHEET 16-17

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
HE-0001	8

RW SHEET NO.

ROADWAY DESIGN ENGINEER

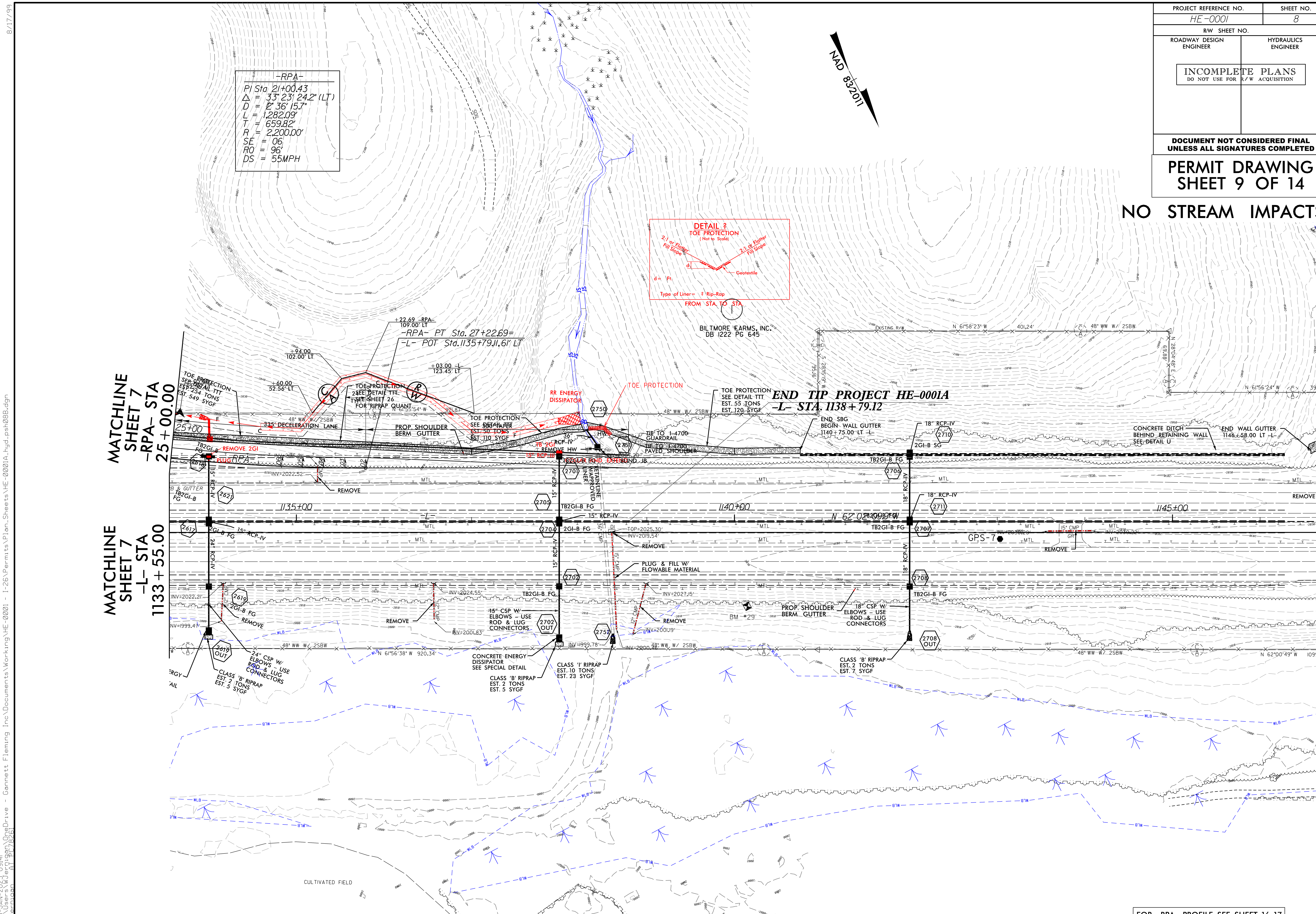
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 9 OF 14

NO STREAM IMPACTS



FOR -RPA- PROFILE SEE SHEET 16-17

WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

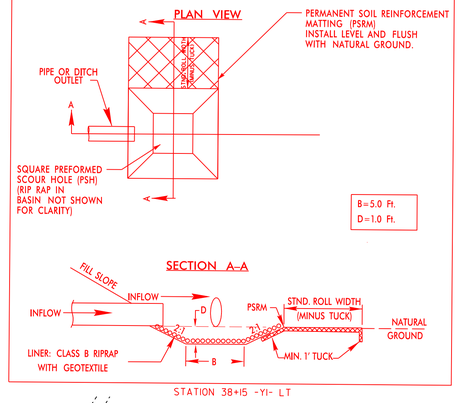
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 8 OF 14

LEGEND

- S / S — SURFACE WATER IMPACTS
- TS / TS — TEMPORARY SURFACE WATER IMPACTS

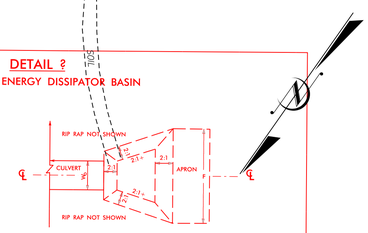
DETAIL 10H
PREFORMED SCOUR HOLE



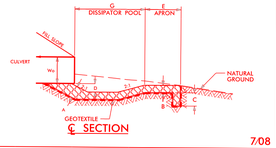
DETAIL ?
RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 0905	0915	?
A	1.5'	1.5'	?
B	1.0'	1.0'	?
C	1.0'	1.0'	?
D	3.0'	3.0'	?
E	4.0'	4.0'	?
F	13.0'	21.0'	?
G	26'	26'	?

ALL DIMENSIONS APPROXIMATE



BASIN #	LOCATION (AT OUTLET)
0905	STA 26+98 -Y1 LT
0915	STA 25+27 Y1 RT



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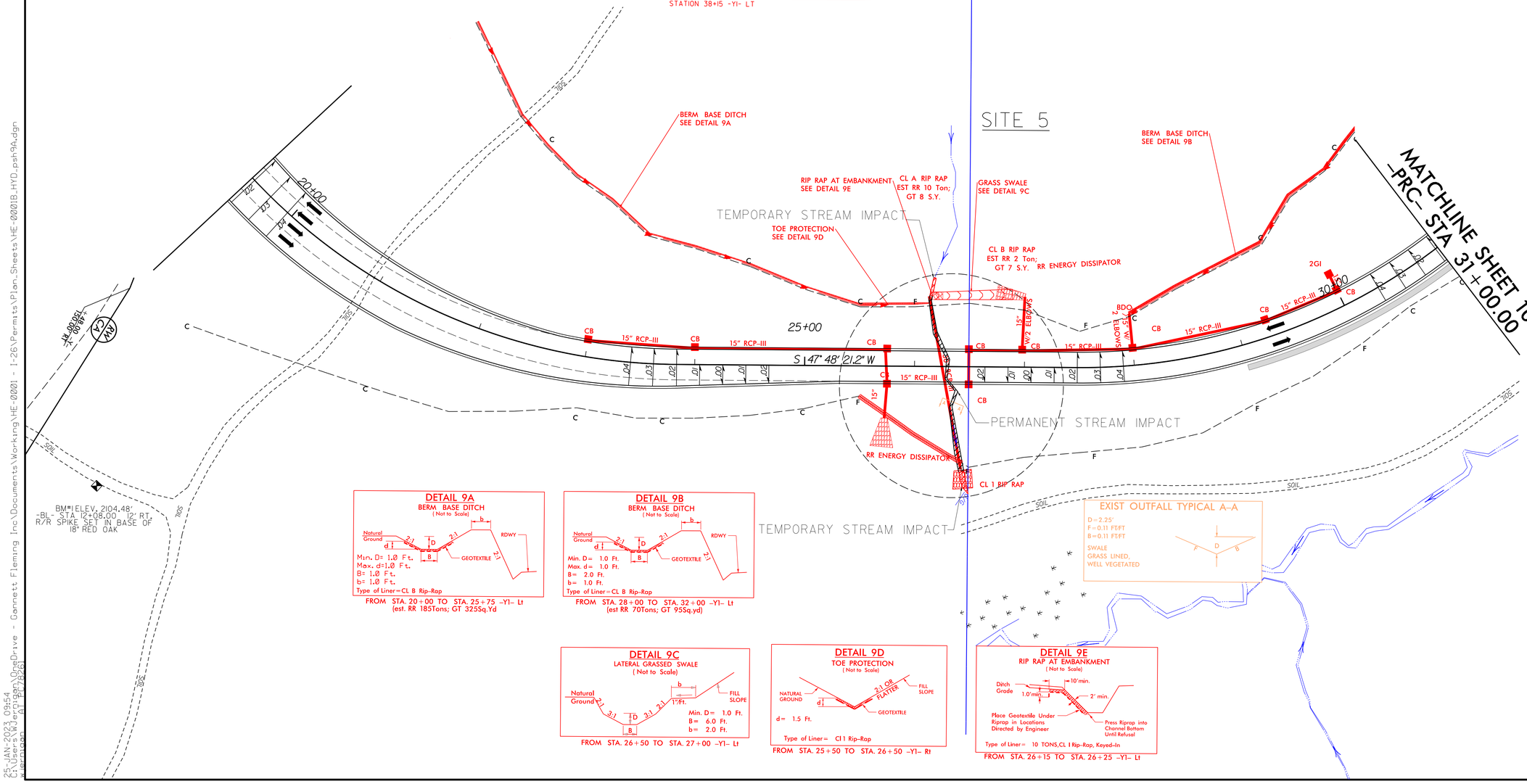
FROM STA. TO STA.

Sag 26+49.33

SITE 5



DETAIL 9A
BERM BASE DITCH
(Not to Scale)

FROM STA. 20+00 TO STA. 25+75 -Y1- Lt
(est. RR 185Tons; GT 325Sq.Yd

DETAIL 9B
BERM BASE DITCH
(Not to Scale)

FROM STA. 28+00 TO STA. 32+00 -Y1- Lt
(est RR 70tons; GT 95Sq.yd)

DETAIL 9C
LATERAL GRASSED SWALE
(Not to Scale)

FROM STA. 26+50 TO STA. 27+00 -Y1- Lt

DETAIL 9D
TOE PROTECTION
(Not to Scale)

FROM STA. 25+50 TO STA. 26+50 -Y1- Rt

DETAIL 9E
RIP RAP AT EMBANKMENT
(Not to Scale)

FROM STA. 26+15 TO STA. 26+25 -Y1- Lt

WETLAND AND SURFACE WATER IMPACTS PERMIT

LEGEND

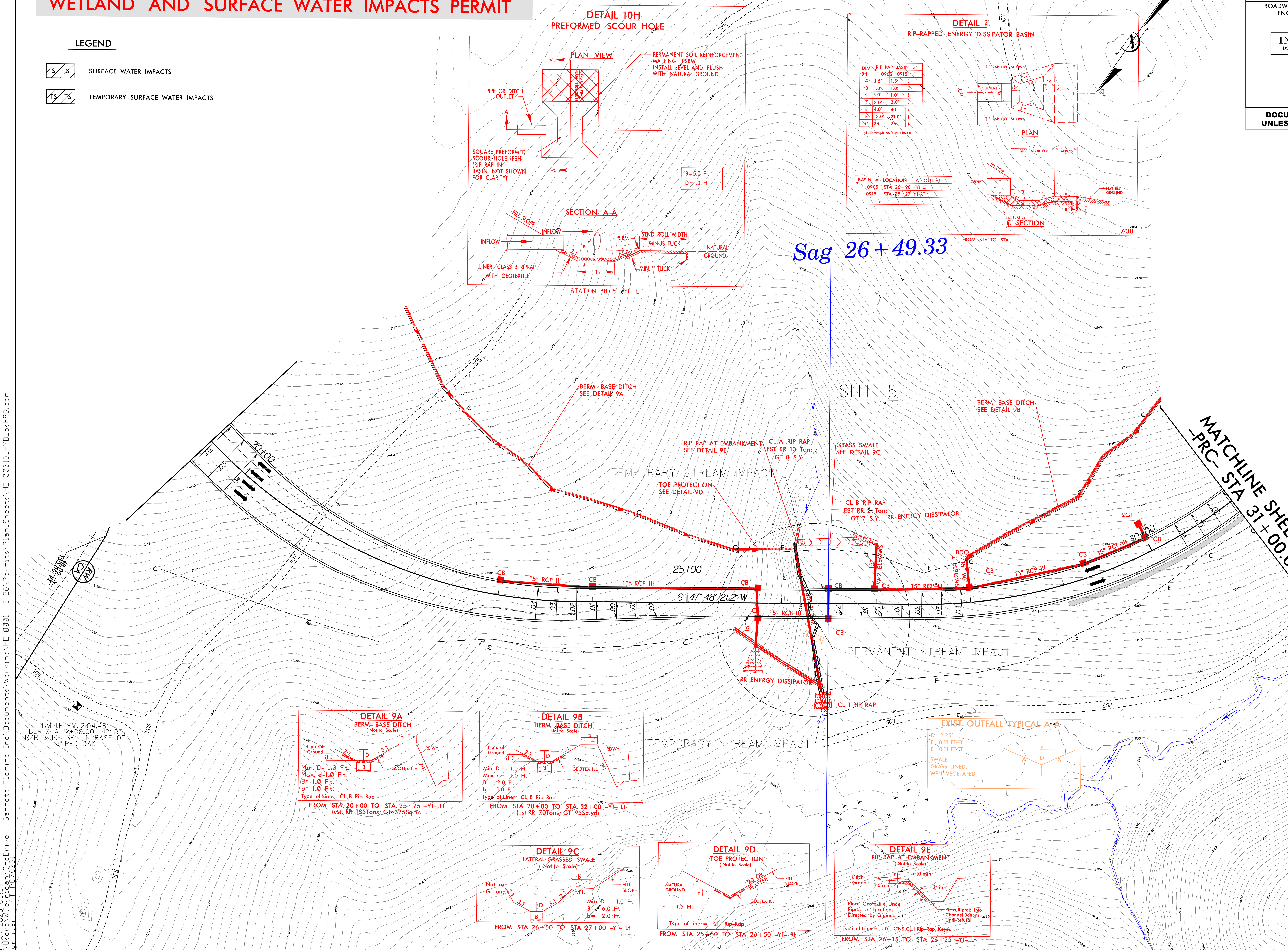
- S S — SURFACE WATER IMPACTS
- TS TS — TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 14



DETAIL 10H
PREFORMED SCOUR HOLE
PLAN VIEW
PERMANENT SOIL REINFORCEMENT MATTING (PSRM) INSTALL LEVEL AND FLUSH WITH NATURAL GROUND.
PIPE OR DITCH OUTLET
SQUARE PREFORMED SCOUR HOLE (PSH) (RIP RAP IN BASIN NOT SHOWN FOR CLARITY)
B=5.0 Ft.
D=1.0 Ft.
SECTION A-A
FILL SLOPE
INFLOW
PSRM
STND. ROLL WIDTH (MINUS TUCK)
NATURAL GROUND
LINER, CLASS B RIPRAP WITH GEOTEXTILE
MIN. 1' TUCK
STATION 38+15 -Y1- LT
DETAIL ?
RIP-RAPPED ENERGY DISSIPATOR BASIN
PLAN
SECTION
BASIN # LOCATION (AT OUTLET)
0905 STA 26+98 -Y1 LT
0915 STA 25+27 Y1 RT
FROM STA. TO STA.
Sag 26+49.33
SITE 5
BERM BASE DITCH SEE DETAIL 9A
BERM BASE DITCH SEE DETAIL 9B
RIP RAP AT EMBANKMENT SEE DETAIL 9E
CL A RIP RAP EST RR 10 Ton; GT 8 S.Y.
GRASS SWALE SEE DETAIL 9C
TEMPORARY STREAM IMPACT
TOE PROTECTION SEE DETAIL 9D
CL B RIP RAP EST RR 2 Ton; GT 7 S.Y.
RR ENERGY DISSIPATOR
PERMANENT STREAM IMPACT
RR ENERGY DISSIPATOR
CL 1 RIP RAP
15" RCP-III
S 47° 48' 21.2" W
25+00
20+00
30+00
MATCHLINE SHEET 10
-PRC- STA 31+00.00
BM#1 ELEV. 2104.48' -BL- STA 12+08.00 12' RT. R/R SPIKE SET IN BASE OF 18" RED OAK
EXIST. OUTFALL TYPICAL A-A
SWALE GRASS LINED, WELL VEGETATED
DETAIL 9A
BERM BASE DITCH (Not to Scale)
Min. D= 1.0 Ft.
Max. d=1.0 Ft.
B= 1.0 Ft.
b= 1.0 Ft.
Type of Liner=CL.B Rip-Rap
FROM STA. 20+00 TO STA. 25+75 -Y1- Lt (est. RR 185Tons; GT 325Sq.Yd)
DETAIL 9B
BERM BASE DITCH (Not to Scale)
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 1.0 Ft.
Type of Liner=CL.B Rip-Rap
FROM STA. 28+00 TO STA. 32+00 -Y1- Lt (est RR 70Tons; GT 95Sq.Yd)
DETAIL 9C
LATERAL GRASSED SWALE (Not to Scale)
Min. D= 1.0 Ft.
B= 6.0 Ft.
b= 2.0 Ft.
FROM STA. 26+50 TO STA. 27+00 -Y1- Lt
DETAIL 9D
TOE PROTECTION (Not to Scale)
d= 1.5 Ft.
Type of Liner= CL.1 Rip-Rap
FROM STA. 25+50 TO STA. 26+50 -Y1- Rt
DETAIL 9E
RIP-RAP AT EMBANKMENT (Not to Scale)
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refusal
Type of Liner= 10 TONS,CL I Rip-Rap, Keyed-In
FROM STA. 26+15 TO STA. 26+25 -Y1- Lt

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WETLAND AND SURFACE WATER IMPACTS PERMIT

PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 10 OF 14

LEGEND

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)

DETAIL ?
RIP-RAPPED ENERGY DISSIPATOR BASIN

SITE 6

DIM. (ft)	RIP RAP BASIN # 1017
A	1.5'
B	1.0'
C	1.0'
D	3.0'
E	4.0'
F	14.0'
G	22.0'

ALL DIMENSIONS APPROXIMATE

RIP RAP NOT SHOWN

PLAN

BASIN #	LOCATION (AT OUTLET)
1017	STA 39+00 -Y1- RT
1018	

℄ SECTION

7.08

DETAIL 10H
PREFORMED SCOUR HOLE

PLAN VIEW

PERMANENT SOIL REINFORCEMENT MATTING (PSRM) INSTALL LEVEL AND FLUSH WITH NATURAL GROUND.

PIPE OR DITCH OUTLET

SQUARE PREFORMED SCOUR HOLE (PSH) (RIP RAP IN BASIN NOT SHOWN FOR CLARITY)

B=5.0 Ft.
D=1.0 Ft.

SECTION A–A

INFLOW, D, PSRM, STND. ROLL WIDTH (MINUS TUCK), NATURAL GROUND, MIN. 1' TUCK, B

LINER: CLASS B RIPRAP WITH GEOTEXTILE

STATIONS 39+00 -Y1- LT

Sag 33+82.94

S 40° 01' 59.9" W

TEMPORARY STREAM IMPACT

PERMANENT STREAM IMPACT

TEMPORARY STREAM IMPACT

TEMPORARY STREAM IMPACT

EXCAVATION IN WETLANDS

TEMPORARY STREAM IMPACT

PERMANENT STREAM IMPACT

TEMPORARY STREAM IMPACT

ERM BASE DITCH EE DETAIL 10D

BERM BASE DITCH SEE DETAIL 10C

LATERAL BASE DITCH SEE DETAIL 10F

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 10E

CL B RIP RAP EST RR 2 Ton; GT 7 S.Y.

CL I RIP RAP

CL B RIP RAP EST RR 1 Ton; GT 5 S.Y.

CL B RIP RAP EST RR 1 Ton; GT 5 S.Y.

RIP RAP AT EMBANKMENT SEE DETAIL 10I

CL A RIP RAP EST RR 10 Ton; GT 8 S.Y.

elev at Sta 33+83 with .037 super is 2090.32
elev at Sta 33+75 with .04 super is 2090.26

RIP RAP AT EMBANKMENT SEE DETAIL 10I

ROCK BERM

RR ENERGY DISSIPATOR

TOE PROTECTION SEE DETAIL 10G

MATCHLINE SHEET 9 -PRC- STA 31+00.00

MATCHLINE SHEET 11 -PRC- STA 44+00.00

S 55° 24' 44.4" W

35+00

40+00

15" RCP-III

18" RCP-III

W/2 ELBOWS

2GI

CB

CB wMH

RDWY

SOIL

WV STREAM

SPRING

NW-2066.53

NW-2065.99

EXIST OUTFALL TYPICAL B–B

D = 0.6'
G = 3'2.9
F = 0.125 FT/FT
B = 0.125 FT/FT

SWALE,
HEAVILY VEGETATED BANK,
FAIRLY STABLE

EXIST OUTFALL TYPICAL C–C

D = 2'
G = 3'
F = 0.28 FT/FT
B = 0.28 FT/FT

SWALE,
HEAVILY VEGETATED BANK,
FAIRLY STABLE

DETAIL 10A
BERM 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, b, 2:1, RDWY, 2:1

Min. D = 1.0 Ft.
b = 1.0 Ft.

FROM STA. 35+00 TO STA. 36+50 –Y1– Lt

DETAIL 10B
LATERAL GRASSED SWALE
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1, b, 1' Ft., 1 FILL SLOPE

Min. D=1.0 Ft.
B=2.0 Ft.
b=2.0 Ft.

FROM STA. 38+50 TO STA. 38+85 –Y1– Rt

DETAIL 10C
BERM BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, B, 2:1, b, RDWY, 2:1, GEOTEXTILE

Min. D= 1.0 Ft.
Max. d=1.0 Ft.
B= 1.0 Ft.
b= 1.0 Ft.
Type of Liner = CL B Rip-Rap

FROM STA. 32+00 TO STA. 34+00 –Y1– Lt
(est. RR 55Tons; GT 100Sq.Yd

DETAIL 10D
BERM BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, B, 2:1, b, RDWY, 2:1, GEOTEXTILE

Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 1.0 Ft.
Type of Liner = CL B Rip-Rap

FROM STA. 28+00 TO STA. 34+00 –Y1– Lt
(est RR 70Tons; GT 95Sq.yd)

DETAIL 10E
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)

NATURAL GROUND, 2:1, 4:1

FROM STA. 38+00 TO STA. 35+00

DETAIL 10F
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, 2:1, b, 1'Ft., Fill Slope, GEOTEXTILE, B

*When B is < 6.0'
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
b= 2.0 Ft.
Type of Liner= CL I Rip-Rap

FROM STA. 34+00 TO STA. 34+35 –Y1– Lt
FROM STA. 33+85 TO STA. 34+12 –Y1– Rt
est. RR 10 Tons; GT 20Sq.Yd

DETAIL 10G
TOE PROTECTION
(Not to Scale)

Natural Ground, b, 2:1 or Flatter Fill Slope, d, Geotextile

d=1.5 Ft.
b=2.0 Ft.
Type of Liner= CI I Rip-Rap

FROM STA. 38+50 TO STA. 38+80 –Y1– Lt
FROM STA. 38+85 TO STA. 43+00 –Y1– Lt
est RR 100 Tons; GT 1655q.Yd

DETAIL 10I
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade, 1.0' min., 10' min., 2' min.

Place Geotextile Under Riprap in Locations Directed by Engineer

Press Riprap into Channel Bottom Until Refusal

Type of Liner= 10 TONS,CL I Rip-Rap, Keyed-In

FROM STA. 38+40 TO STA. 38+50 –Y– Lt
FROM STA. 33+85 TO STA. 34+12 –Y1– Rt

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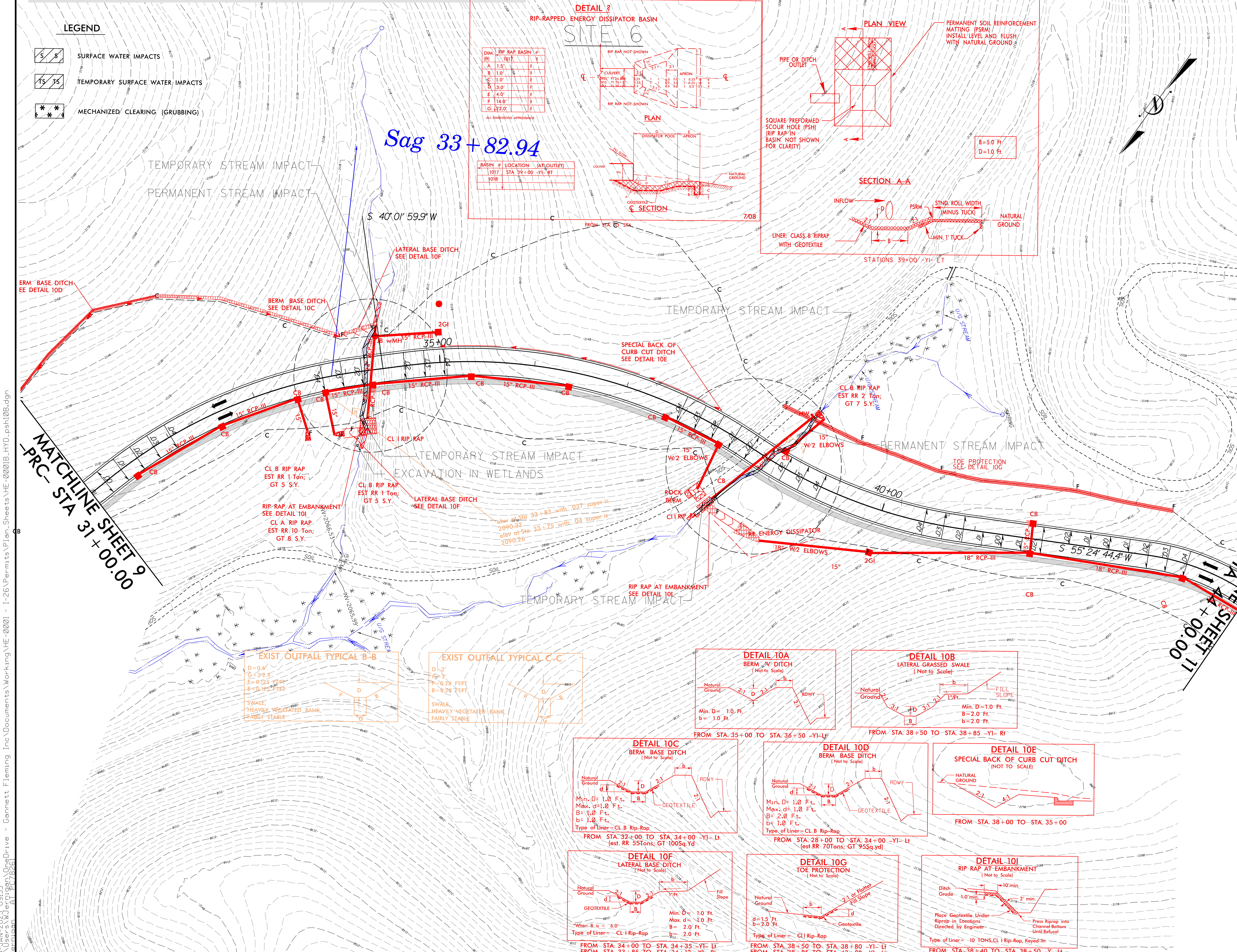
WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 11 OF 14

PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING SHEET 12 OF 14

NO STREAM IMPACTS

-Y-
PI Sta 44+33.13
△ = 61° 21' 23.2" (RT)
D = 22° 55' 05.9"
L = 267.72'
T = 148.31'
R = 250.00'
SE = 04
RO = 42'
DS = 30MPH

DETAIL 11A
BERM 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, RDWY, 2:1
Min. D=1.0 Ft.
b=1.0 Ft.

FROM STA. 45+40 TO STA. 46+50 -Y1- Lt
FROM STA. 46+50 TO STA. 48+00 -Y1- Lt

BM#2 ELEV. 2178.99'
BL - STA 49+27.29
S 60°07'32.6" W DIST. 27.53'
R/R SPIKE SET IN BASE OF 12" RED OAK
BM #2

END TIP PROJECT HE-0001B
END CONSTRUCTION
-Y- POT Sta. 48+59.99

-Y- PT Sta. 45+52.54

-Y- POT Sta. 49+24.98

BERM 'V' DITCH SEE DETAIL 11A

15" W/ 2 ELBOWS

BDO

15" RCP-III

21' TYP.

36.39'

15.54'

150' TAPER

100'R

2'-6" C&G

CB

45+00

-Y-

N 63°13'52.4" W

15" RCP-III

18" RCP-III

5' S/W

MATCHLINE SHEET 11
-PC- STA 44+00.00

END SIDEWALK +54.76

INV=2175.77'
RIP-RAP
18" CMP
30" CMP
INV=2166.6'
INV=2166.6'
RIP-RAP
INV=2161.41'

SILT

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PROJECT REFERENCE NO.	SHEET NO.
HE-0001B	11

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 13 OF 14

NO STREAM IMPACTS

WETLAND AND SURFACE WATER IMPACTS PERMIT

-Y-
PI Sta 44+33.13
Δ = 61° 21' 23.2" (RT)
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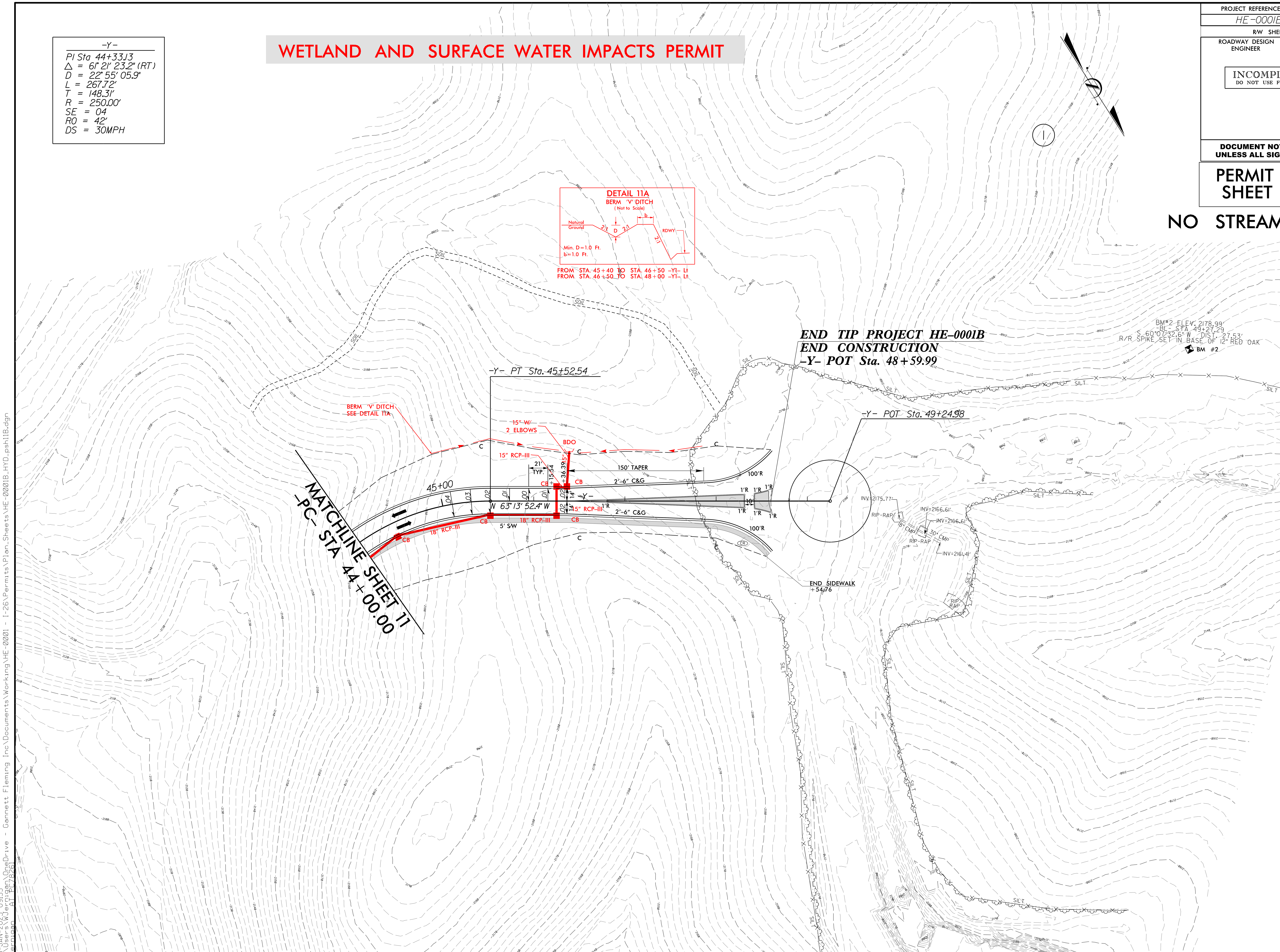

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WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	RPC 25+17 to 25+30 LT	Fill in Wetlands/Mechanized Clearing Due to Roadway Widening	< 0.01			0.01						
2	RPC 31+75 to 32+62 LT	Fill in Wetlands/Mechanized Clearing due to Roadway Widening	0.02			0.03						
3	RPC 34+99 to 36+35 RPD 11+38 to 15+16 LT	Stream relocated to Proposed Channel Due to Roadway Widening and Extension of Proposed 9'X7' RCBC and 66in RCP (292')	< 0.01							512	73	
4	RPA 22+89 to 23+34	Inlet of Proposed 54in RCP/Mechanized Clearing Due to Roadway Widening and Installation of Proposed 54in RCP extension				0.02				50	16	
5	-Y- 26+12 to 26+39	Proposed 30in RCP								160	40	
6	-Y- 33+95 to 34+08	Excavation in Wetland Due to Outlet of Proposed 24in RCP			0.01							
6	-Y- 34+08 to 34+46	Proposed 24in RCP								114	45	
6	-Y- 38+34 to 38+94	Proposed 36in RCP								145	16	
TOTALS*:			0.03		0.01	0.06				981	190	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1/10/2023
BUNCOMBE
HE-0001A-B