



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 3.00; Released August 2021)

WBS Element: 34165.1.13 TIP/Proj No: I-2513AC County(ies): Buncombe Page 1 of 5

General Project Information

WBS Element:	34165.1.13	TIP Number:	I-2513AC	Project Type:	Roadway Widening	Date:	3/15/2023
NCDOT Contact:	Kevin E. Moore, P.E.		Contractor / Designer:		Brandon Barham, PE - VHB		
Address:	1000 Birch Ridge Drive Raleigh, NC 27610, USA		Address:	940 Main Campus Drive, Suite 500 Raleigh, NC 27606			
	Phone: 919-707-6210			Phone: 919-741-5779			
	Email: kemoore2@ncdot.gov			Email: bbarham@vhb.com			
City/Town:	Asheville, 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):	1.74	Surrounding Land Use:	Residential/Commercial					
Proposed Project			Existing Site					
Project Built-Upon Area (ac.)	79.2	ac.	33.3	ac.				
Typical Cross Section Description:	Variable - See Project Typical Sections			Variable - See Project Typical Sections				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	101,400	Year:	2040	Existing:	NA	Year:	2024

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

The project consists of roadway improvements on the I-26/I-40/I-240 Interchange starting just east of the I-26/Bear Creek Rd intersection to SR 3548 (Haywood Rd). The proposed stormwater runoff from the roadway widening has been conveyed to roadside ditches and storm drainage systems that drain to existing outfalls. Potential areas for placing Stormwater Control Measures (SCM) were looked at within the project corridor. Below is a list of the locations and reason why or why not a device was proposed at the location:

Plan Sheet 4
--- Ditches ending at -L-15+50 Left and -L-15+51 Left were found to meet swale criteria.
--- Ditch ending at -L- 18+50 Left could not meet swale criteria without additional ROW.
--- A preformed scour hole was investigated for the network outfall at -L- 19+60 Left, however the resulting dimensions were less than a standard NCDOT rip rap pad. Maintenance and access would be challenging given the natural landscape. The drainage was reworked to use a 2GI and false sump to result in a pipe that discharges velocities to the maximum extent practicable.
---The area downstream of -L- Station 20+25 Right was investigated for a SCM, however construction would result in existing utility impacts, additional ROW and wetland impacts
--- The area right of -L- at Station 26+07 +/- was investigated for a SCM and found to not be feasible. The area is too steep and unstable, and would impact the wetlands. Maintenance / access issues would be challenging.
---The network outlet at -Y1- Station 21+72 Right was investigated for a SCM, however the existing landscape would create challenges for access and maintenance and result in additional ROW.

Plan Sheet 5
--- Typical ditches ending at stations -L- 30+50, 35+50, 37+19, 39+25, 41+00 Right meet swale criteria. All other ditches on this sheet could not meet swale criteria without additional ROW.

Plan Sheet 6
--- The network that discharges at -L- Station 42+72 Right was investigated for a SCM but would require additional ROW. Maintenance and access would be challenging due to the existing landscape.
--- The area right of -Y7- at Station 14+00 +/- was investigated for a SCM and found to not be feasible. The area would require safety fence, additional ROW, utility relocations. Infiltration would not be ideal next to bridge foundations. Establishing vegetation under the bridge where the sun doesn't penetrate would be challenging.
--- The area at -Y8- Station 18+82 Left was investigated for a SCM, however this area is within the Hominy Creek Floodplain. No SCMs were pursued. The preferred alternative was proposed at Y8 19+61 as noted below.
--- The area left of -Y8- at Station 21+50 +/- was investigated for a SCM and found to not be feasible. This area would require additional ROW and is currently a popular parking facility for the Hominy Creek Greenway.
---The area left of -Y8- at Station 19+61 +/- was investigated for a SCM and a dry detention basin is being proposed.
---The area right of -Y2B- at Station 16+52 +/- was investigated for a SCM and a filtration basin is being proposed.
---Ditch ending at -Y2RPC Station 31+30 Right was investigated for a SCM. Upstream portions of the ditch utilized a forebay and rip rap lined channel to facilitate a swale before outletting to the closed storm network.
---The ditch ending at -Y2C- 12+50 Right was investigated for a SCM, however a ditch that meets swale criteria would result in over 12' of excavation at the upstream end. A detention basin was investigated but would require 20' of excavation based on the existing landscape constraints.
---The ditch ending at -RP32- Station 14+27 Right results in ditch depths of 12' and would treat a drainage area less than 1 acre if converted to a swale.



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SC

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

Sheet 6 (Cont.):

---Ditches ending at -RP23-Station 11+66 RT could not meet swale criteria due to the proposed roadway geometry constraints.
 ---The ditch ending at -Y2B- 19+84 LT could not meet swale criteria due to the steep existing landscape, a swale would require significant ROW acquisition.
 ---The ditch ending at -Y2- 17+30LT could not meet swale criteria without additional ROW.

Sheet 7:

--There is proposed pavement removal along the east bound ramp of I-26/I-240 from Sta. 33+10 to 35+22 RP23 RT just east of the proposed outfall at Sta. 31+18 RP23 (SN 7108). This area was considered for a potential bio-swale or bioretention SCM that would treat the water draining to outfall 7108 and ultimately connect with the proposed junction box at 7017. Geotech took multiple core samples in this area and it was determined that this would not be a suitable site for a bio-swale or bioretention SCM due to bedrock in this area.
 --There is proposed pavement removal along the east bound ramp of I-26/I-240 from Sta. 35+22 to 39+40 RP23 RT just east of the proposed junction box at 0717. This area was considered for a potential bio-swale or bioretention SCM that would treat the water that outfalls 7033. Geotech took multiple core samples in this area and it was determined that this would not be a suitable site for a bio-swale or bioretention SCM due to bedrock in this area.

Sheet 8/9:

--The project team worked to identify any potential SCM locations on these two sheets but no feasible SCM locations were identified due to steep topography, tight right-of-way and location of residential properties adjacent to the roadway.

Sheet 10/10A:

-- A proposed wet swale will be installed near the intersection of Y3B and Y3 (Amboy Rd) and drain from west to east running parallel with Amboy Rd (Sta. 28+95 to 37+75 Y3 RT) for approximately 925 ft. This swale will utilize a vegetated bench to obtain treatment in the Amboy Rd area. Swale criteria was unable to be met at this location due to the large drainage area, existing topo constraints (flat slope) and limited space constraints (not enough room to utilize flatter slopes).

Plan Sheet 11

---The network that outlets at -Y1- Station 19+39 Right was investigated for a SCM, however it would require additional ROW. The existing landscape would make maintenance and access challenging.
 ---The ditches -Y1- Stations 10+84 Left and 12+80 Right were investigated for a SCM, however it would require additional ROW.

Plan Sheet 12

---All outfalls on this sheet were investigated for SCMs, but would require additional ROW. The existing landscape would also make maintenance and access challenging.

Minimization Efforts:

In addition to the proposed SCMs; the project team strived to incorporate avoidance and minimization practices into the design. When possible, the project team utilized grass shoulders, 2:1 slopes near/adjacent to stream and wetland areas and utilized vegetated ditch linings where possible. Grass lined ditches were used unless the resulting calculations demonstrated that a grass lined ditch would not be stable.

Due to the topography, ground water elevations, and the nature of the project, it was not possible to incorporate many of the features that were investigated. Large SCMs would also further increase impacts to surrounding areas resulting in more clearing and land disturbance which we are trying to minimize. However, existing flow patterns and outfalls were maintained to the maximum extent practical to limit discharge increases to any particular area. Pre/post analyses were completed at areas where concentrated runoff leaves the project and rip rap outlet pads, energy dissipators, and other measures were incorporated to ensure areas downstream of the project remain stable. The project is not expected to have a significant impact on water quality or quantity downstream of the project. It should also be noted that the total added impervious area was divided among multiple outfalls across the project. All outlets were evaluated for stability and the project is not expected to cause or worsen erosion.

Looking at the big picture with regard to the French Broad River and overall impacts from this project, the project team pulled together a drainage area comparison for the I-2513AC proposed project area and compared it to the French Broad watershed just downstream of the proposed project site. The I-2513AC proposed project drainage area (excluding offsite drainage areas from major structures such as Hominy Creek, Moore Branch, etc.) is 0.4 square miles and the French Broad River drainage area is 800 square miles. Overall, the I-2513AC proposed project drainage area is less than 0.1% of the overall drainage area of the French Broad River. Even though this project will increase the built upon area from 33.3 acres to 79.2 acres, it will have a negligible impact on the environmental health of the French Broad River due to the scale of the proposed project watershed in comparison to the size of the French Broad River.



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General Project Information

Waterbody Information

Surface Water Body (1):	French Broad River		NCDWR Stream Index No.:	6-(54.5)	
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: The French Broad River is occupied by the endangered Appalachian elktoe.			
NRTR Stream ID:	SA			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):	Hominy Creek		NCDWR Stream Index No.:	6-76d	
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: Hominy Creek flows into the French Broad River 0.85 miles downstream, where aquatic listed species occur.			
NRTR Stream ID:	SB/SX			Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	No	Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?	No	(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):	Moore Branch		NCDWR Stream Index No.:	6-77	
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: Moore Branch flows into the French Broad River 0.85 miles downstream, where aquatic listed species occur.			
NRTR Stream ID:	SC			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)					



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?
4	L	15+50	LT	35.55996	-82.606950	(1)Hominy Creek	0.0	6.0	4.0	0.2	23	100	1.50%	0.5	1.1	0.7	1.2	No	No
4	L	15+51	LT	35.55996	-82.606950	(1)Hominy Creek	0.0	6.0	4.0	0.1	7	89	1.70%	0.1	0.9	0.2	0.9	No	No
5	L	35+50	RT	35.5614944	-82.6004235	(1)Hominy Creek	0.0	6.0	4.0	0.8	83	164	1.10%	1.9	1.4	2.5	1.5	No	No
5	L	37+19	RT	35.5616113	-82.5998723	(1)Hominy Creek	0.0	6.0	4.0	0.8	82	169	1.90%	2.0	1.7	2.7	1.9	No	No
5	L	39+25	RT	35.5617534	-82.5992003	(1)Hominy Creek	0.0	6.0	4.0	0.9	89	206	1.90%	2.1	1.7	2.8	1.9	No	No
5	L	41+00	RT	35.5618779	-82.5986292	(1)Hominy Creek	0.0	6.0	4.0	0.6	55	175	1.80%	1.2	1.5	1.7	1.6	No	No
6	Y2RPC	31+30	RT	35.5625391	-82.5963428	(1)Hominy Creek	3.0	4.0	4.0	1.5	154	150	1.50%	4.5	2.0	6.1	2.1	No	No
6	L	48+10	LT	35.56316	-82.59664	(1)Hominy Creek	3.0	6.0	4.0	0.9	88	316	2.86%	2.1	1.9	2.9	2.1	No	No
6	L	51+50	LT	35.56351	-82.59560	(1)Hominy Creek	3.0	6.0	4.0	1.9	189	250	1.10%	5.3	1.8	7.2	1.9	No	No
10A	Y3	38+11	RT	35.5663319	-82.5787205	Wetland WM	4.0	2.0	2.0	20.9	2094	924	0.20%	38.7	1.9	53.4	2.4	No	No

Additional Comments

In addition the the proposed SCMs; the project team strived to incorporate avoidance and minimization practices into the design. When possible, the project team utilized grass shoulders, 2:1 slopes near/adjacent to stream and wetland areas and utilized vegetated ditch linings where possible. Grass lined ditches were used unless the resulting calculations demonstrated that a grass lined ditch would not be stable.

Due to the topography, ground water elevations, and the nature of the project, it was not possible to incorporate many of the features that were investigated. Large SCMs would also further increase impacts to surrounding areas resulting in more clearing and land disturbance which we are trying to minimize. However, existing flow patterns and outfalls were maintained to the maximum extent practical to limit discharge increases to any particular area. Pre/post analyses were completed at areas where concentrated runoff leaves the project and rip rap outlet pads, energy dissipators, and other measures were incorporated to ensure areas downstream of the project remain stable. The project is not expected to have a significant impact on water quality or quantity downstream of the project. It should also be noted that the total added impervious area was divided among multiple outfalls across the project.

09/28/2022

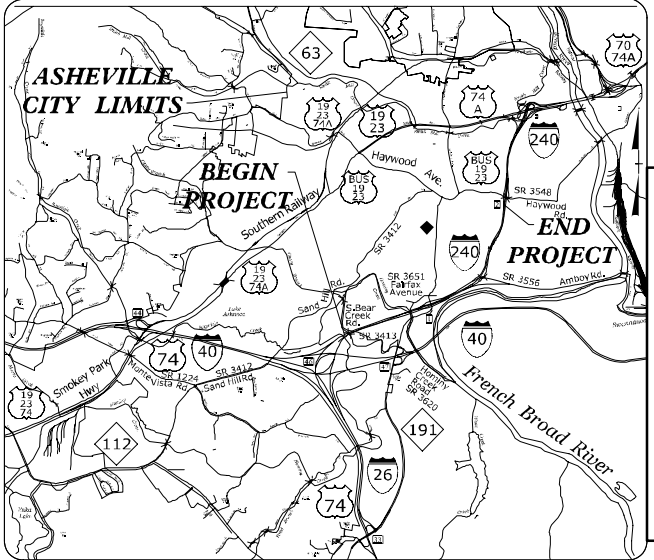
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERMIT DRAWING
SHEET 1 OF 36

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-2513AC	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34165.1.13		P.E.	
34165.2.18		R/W	
34165.2.19		UTIL.	
34165.3.8		CONST.	

TIP PROJECT: I-2513AC



VICINITY MAP

ROW PLANS
DECEMBER 6, 2022

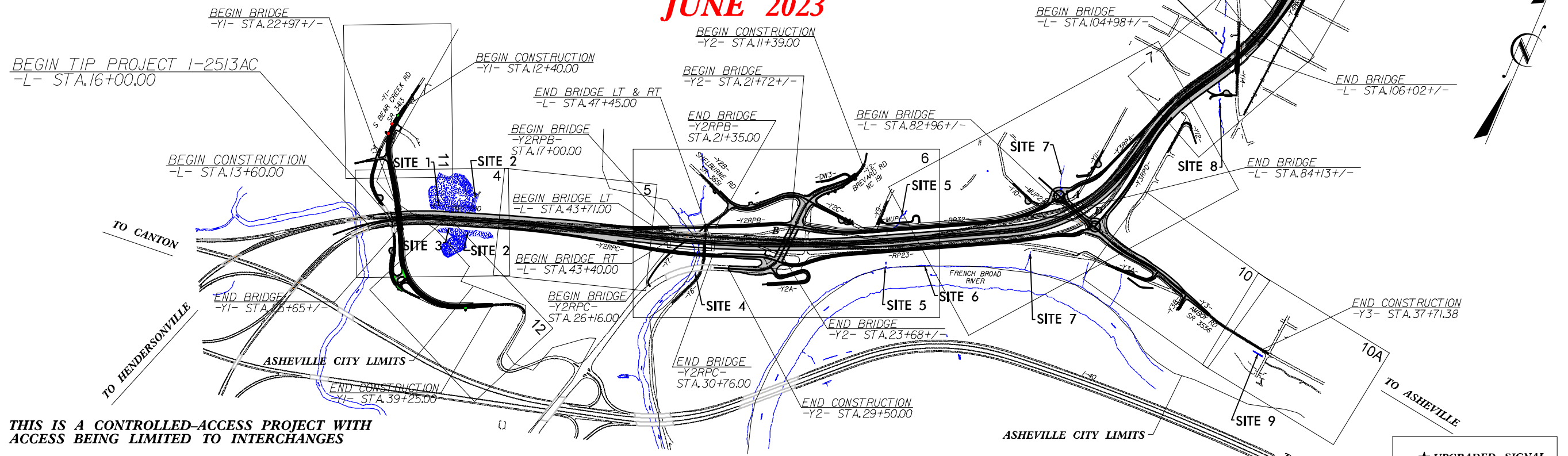
BUNCOMBE COUNTY

LOCATION: I-26/I-40/I-240 INTERCHANGE TO SR 3548 (HAYWOOD RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING,
STRUCTURES, RETAINING WALLS,
SOUND WALLS, SIGNALS, AND SIGNING

**WETLAND AND
SURFACE WATER
IMPACTS PERMIT**

JUNE 2023



THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

THIS PROJECT IS LOCATED WITHIN THE CITY LIMITS OF THE CITY OF ASHEVILLE

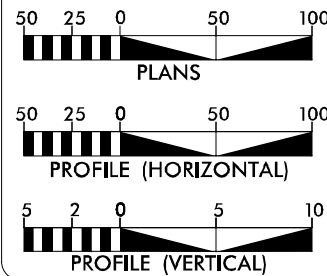
CLEARING ON THIS PROJECT WILL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

A DESIGN EXCEPTION IS REQUIRED FOR HORIZONTAL SSD ON -L-
A DESIGN EXCEPTION IS REQUIRED FOR MINIMUM HORIZONTAL RADIUS ON -Y2-

★ UPGRADED SIGNAL
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT 2024 = NA
 ADT 2040 = 101,400
 K = 9 %
 D = 55 %
 T = 10 % *
 V = 60 MPH
 * TTST = 5% DUAL 5%
 FUNC CLASS = INTERSTATE
 STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-2513AC = 1.623 MI
 LENGTH STRUCTURE TIP PROJECT I-2513AC = 0.119 MI
 TOTAL LENGTH TIP PROJECT I-2513AC = 1.742 MI

AECOM

NC FIRM LICENSE No: F-0342
 5438 Wade Park Blvd., Suite 200
 Raleigh, NC 27607
 (919) 854-6200 - (919) 854-6259(FAX)

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

NOVEMBER 15, 2022

LETTING DATE:

FEBRUARY 20, 2024

JOHN SLOAN, P.E.
PROJECT ENGINEER

ED EDENS, P.E.
PROJECT DESIGN ENGINEER

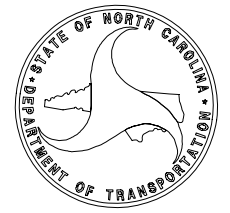
KEVIN E. MOORE, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

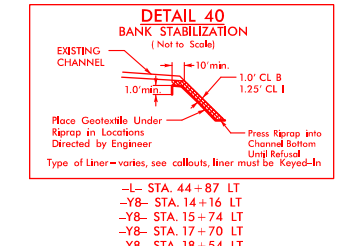
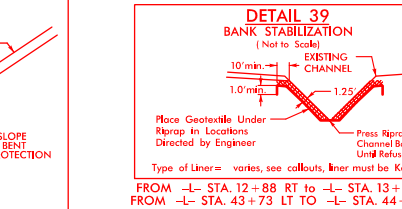
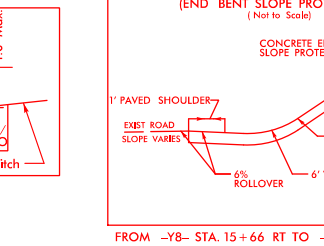
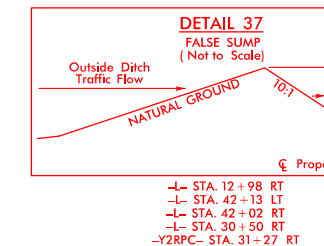
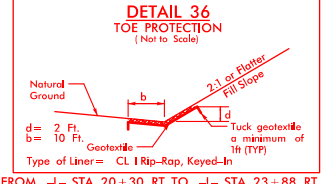
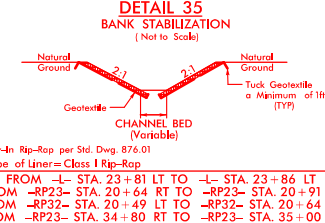
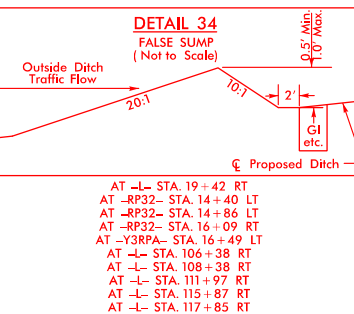
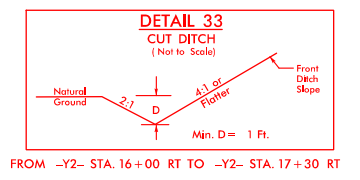
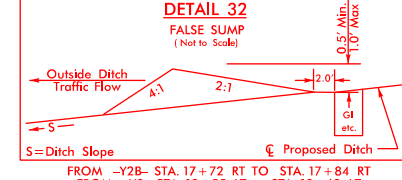
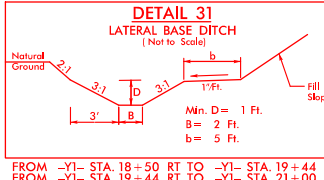
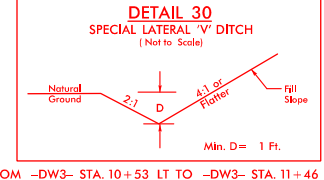
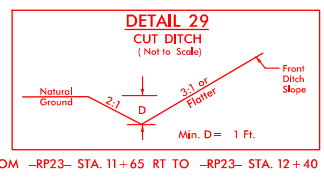
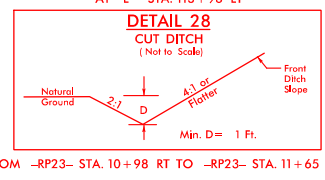
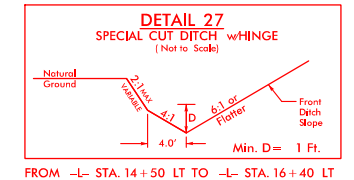
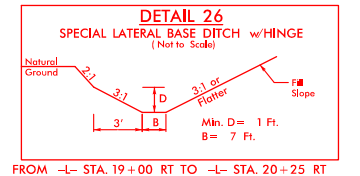
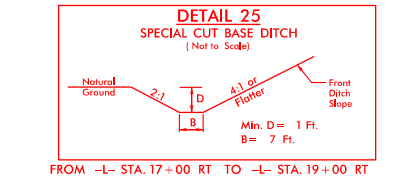
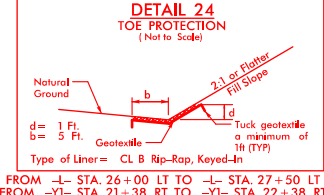
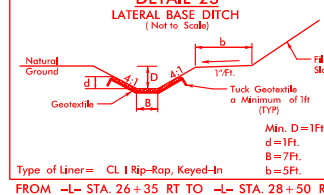
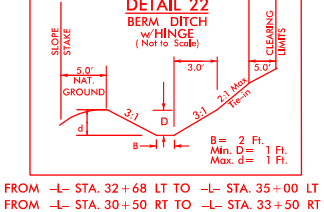
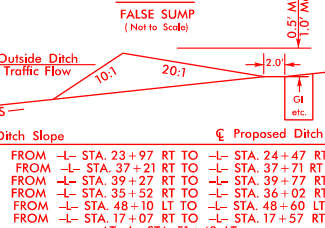
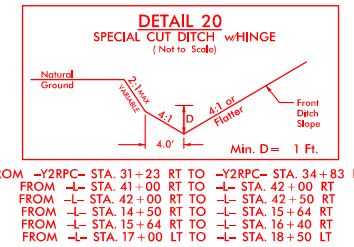
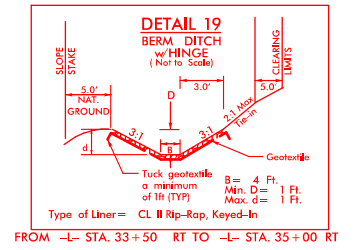
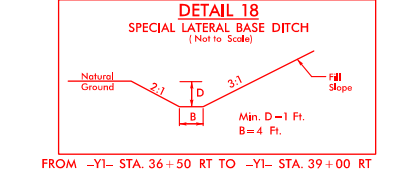
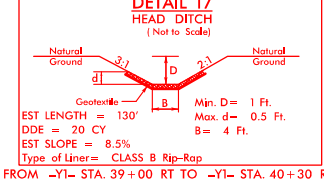
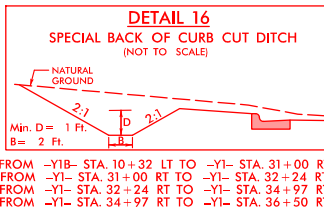
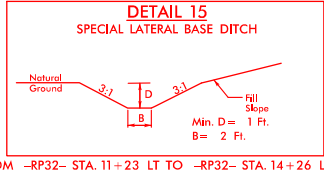
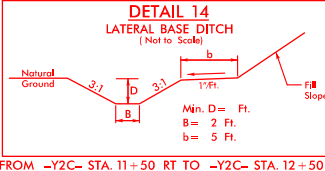
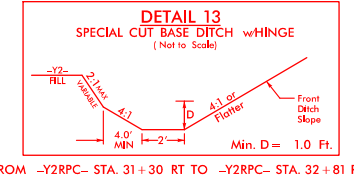
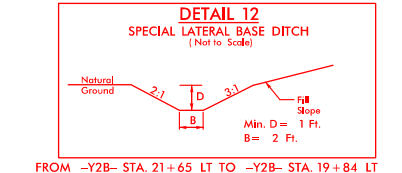
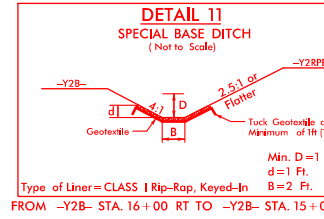
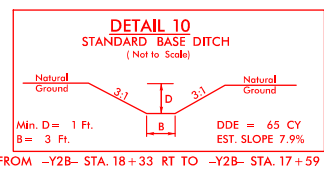
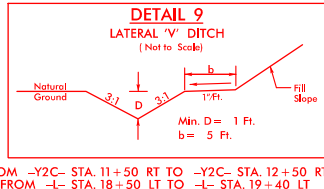
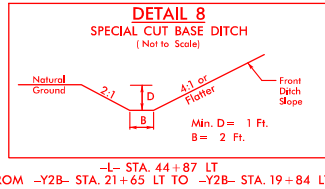
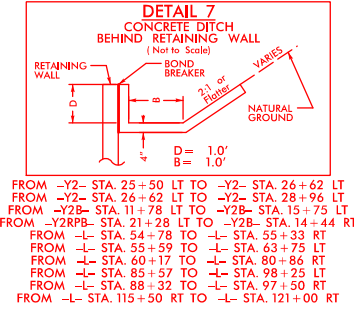
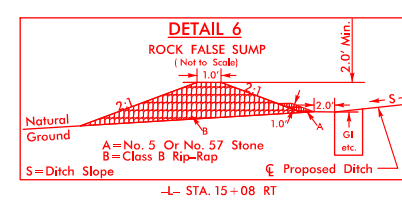
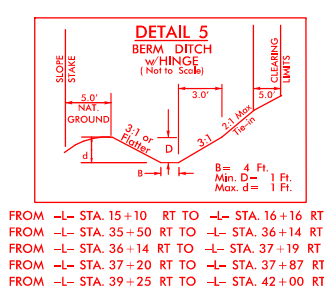
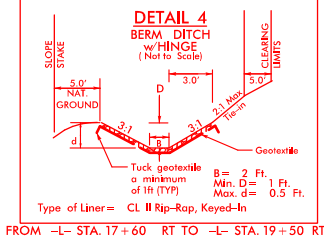
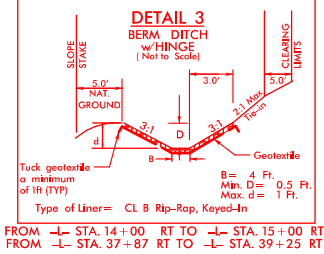
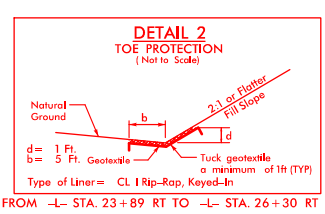
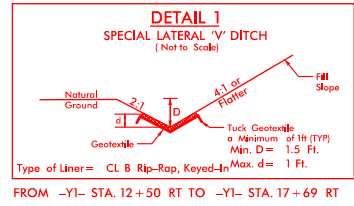
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ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

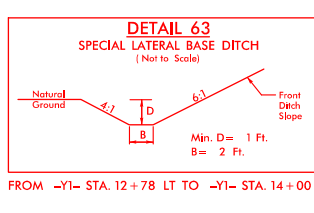
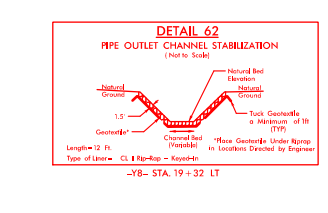
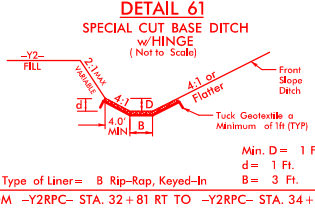
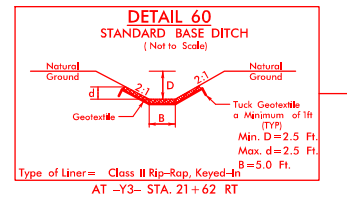
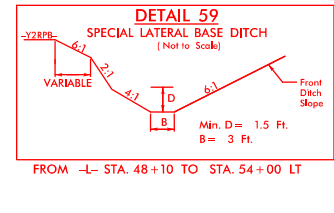
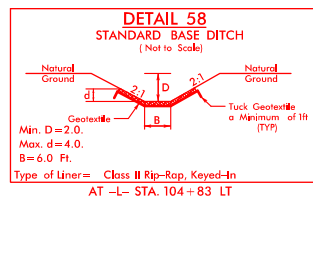
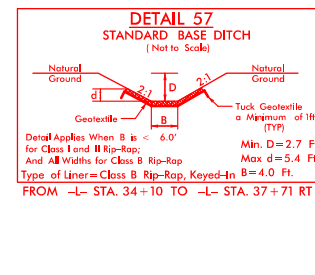
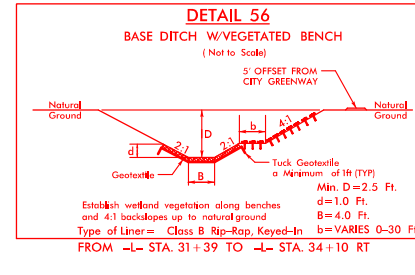
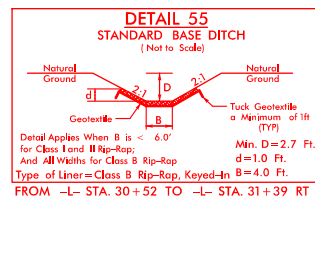
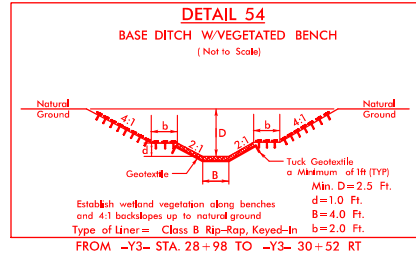
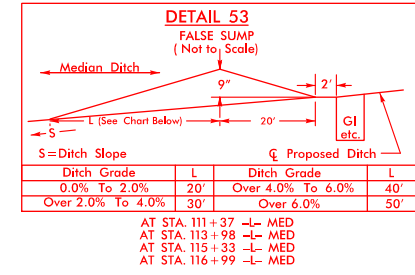
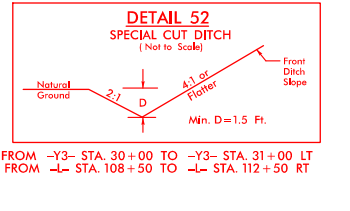
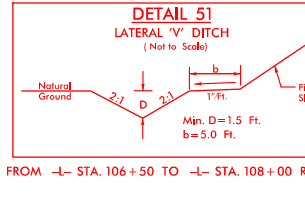
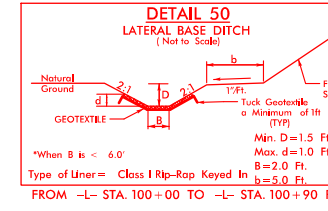
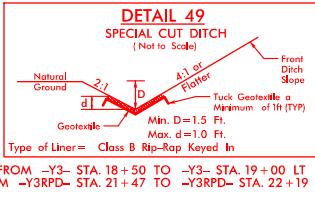
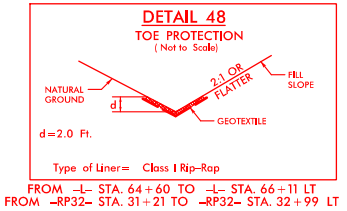
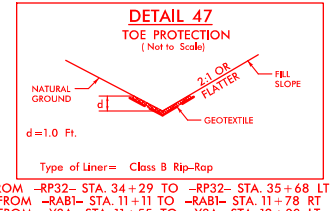
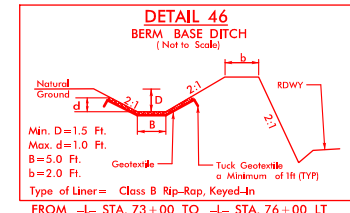
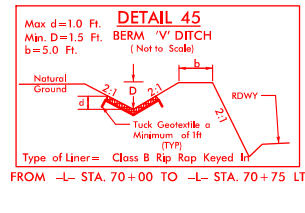
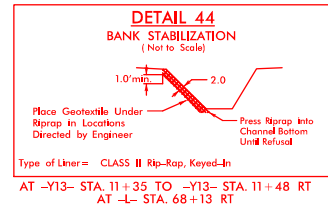
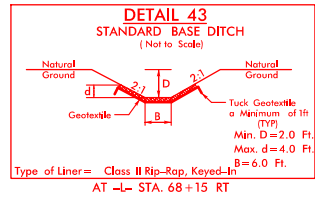
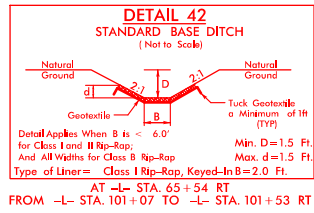
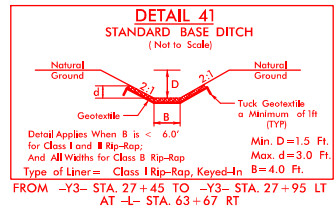


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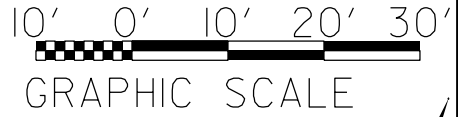
5/14/99
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60646/36-1-2513AC

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 2D-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PERMIT DRAWING
SHEET 3 OF 36

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. XX
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
<small>Prepared in the Office of:</small> AECOM	
<small>NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PERMIT DRAWING
SHEET 4 OF 36

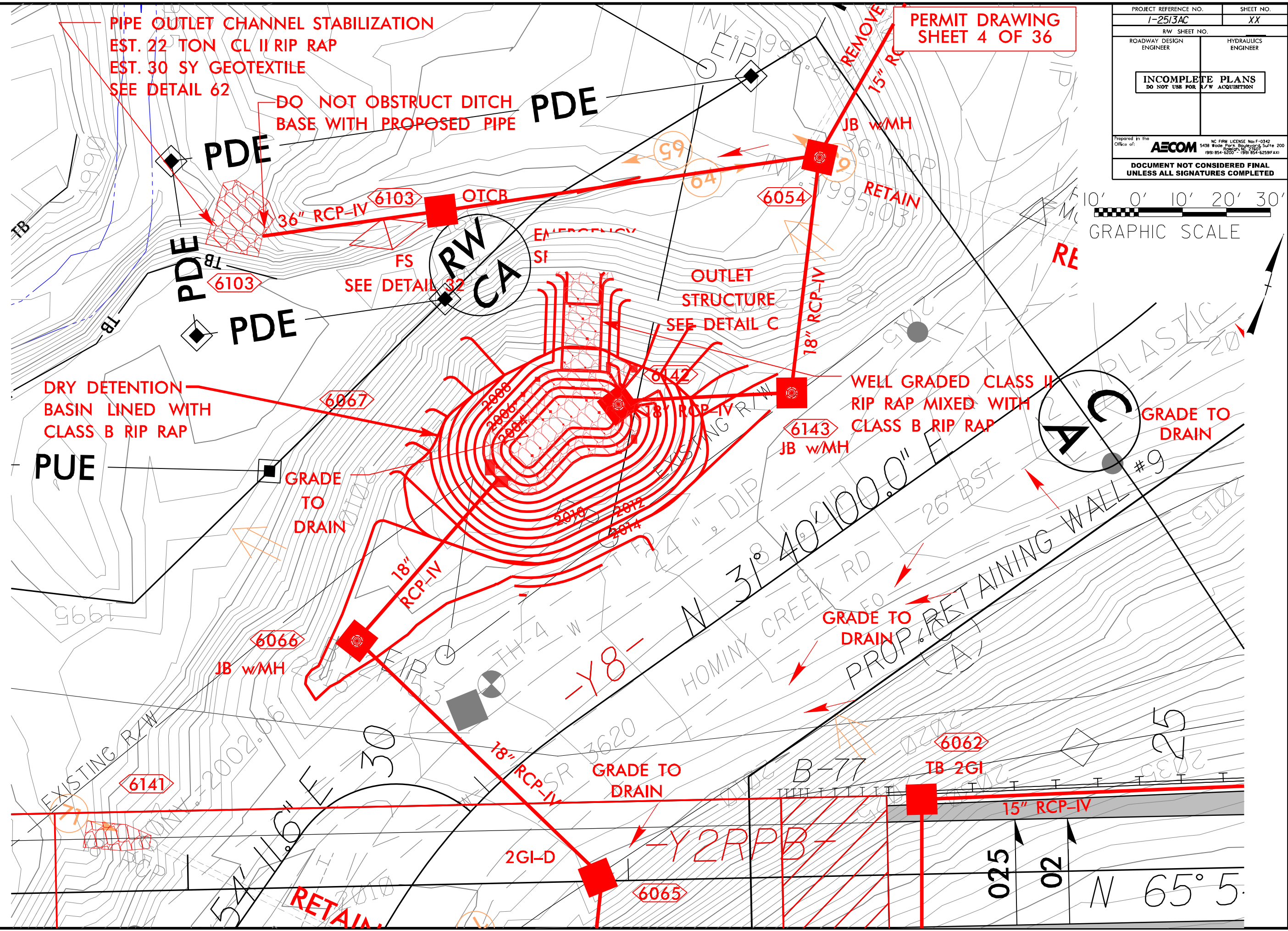
PIPE OUTLET CHANNEL STABILIZATION
EST. 22 TON CL II RIP RAP
EST. 30 SY GEOTEXTILE
SEE DETAIL 62

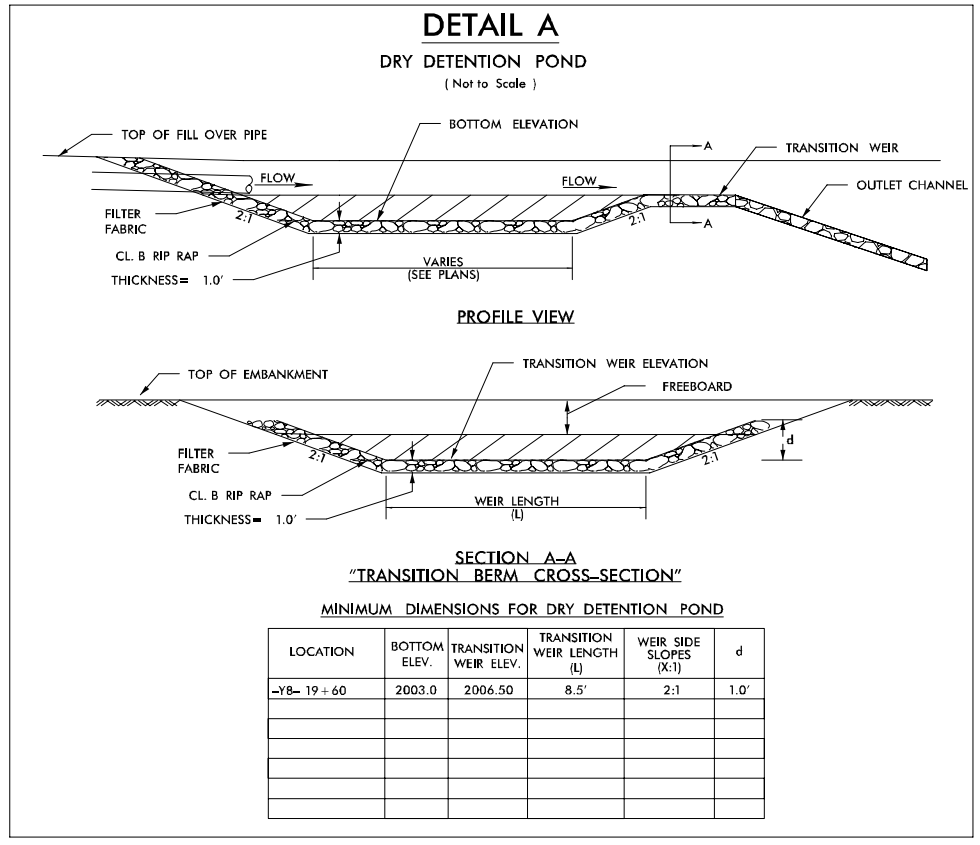
DO NOT OBSTRUCT DITCH
BASE WITH PROPOSED PIPE

DRY DETENTION
BASIN LINED WITH
CLASS B RIP RAP

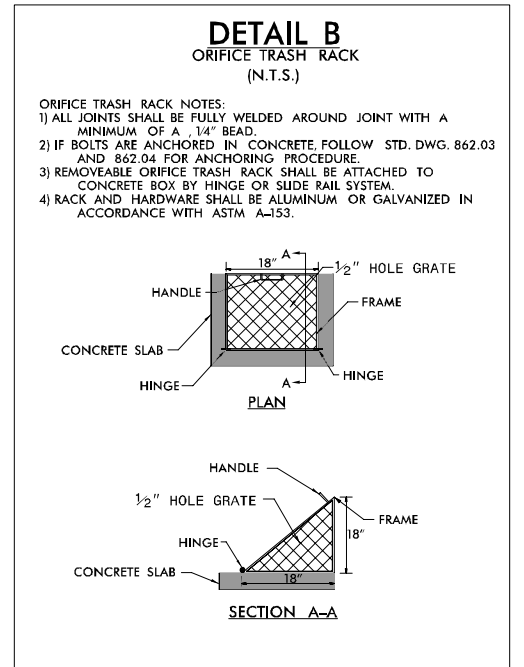
WELL GRADED CLASS II
RIP RAP MIXED WITH
CLASS B RIP RAP

5/14/99
REVISIONS
3/13/2023
2513A-900-CAD-310-CAD-70-NCDDOT-TIP-Hydraulics-Permits-Environmental-AECOM\1-2513-AC\Drawings\04-Dry Detention Plan

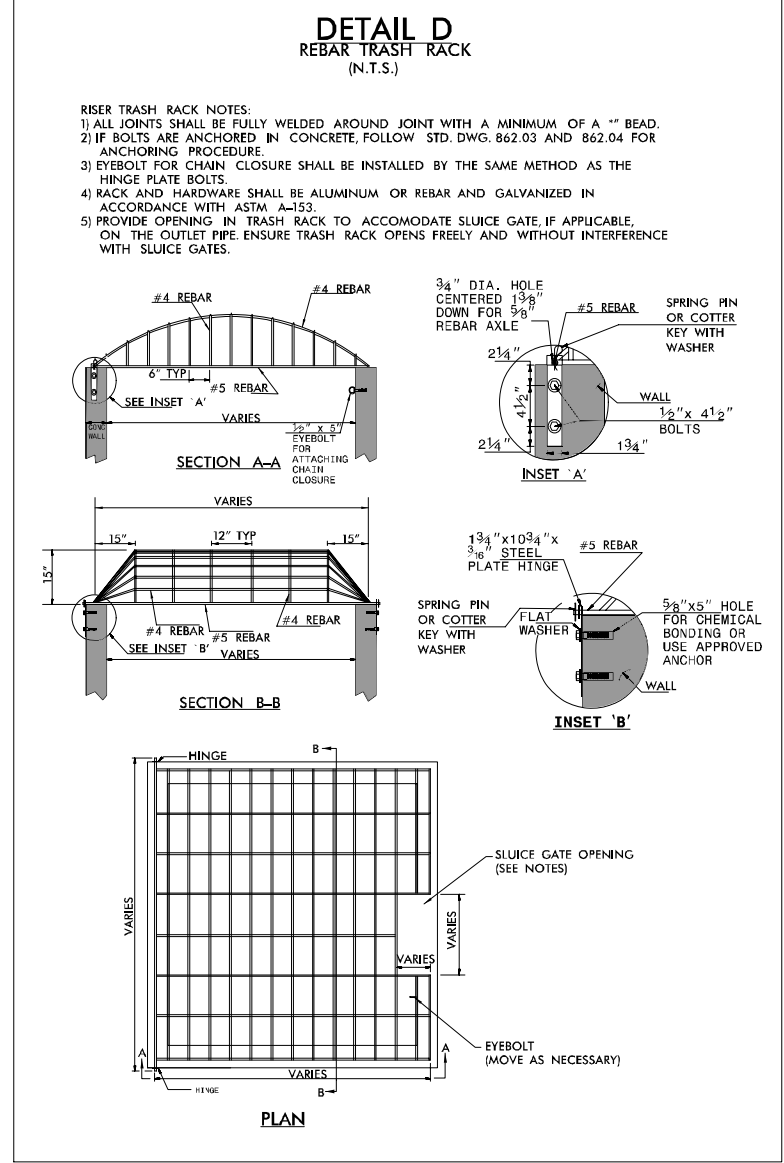
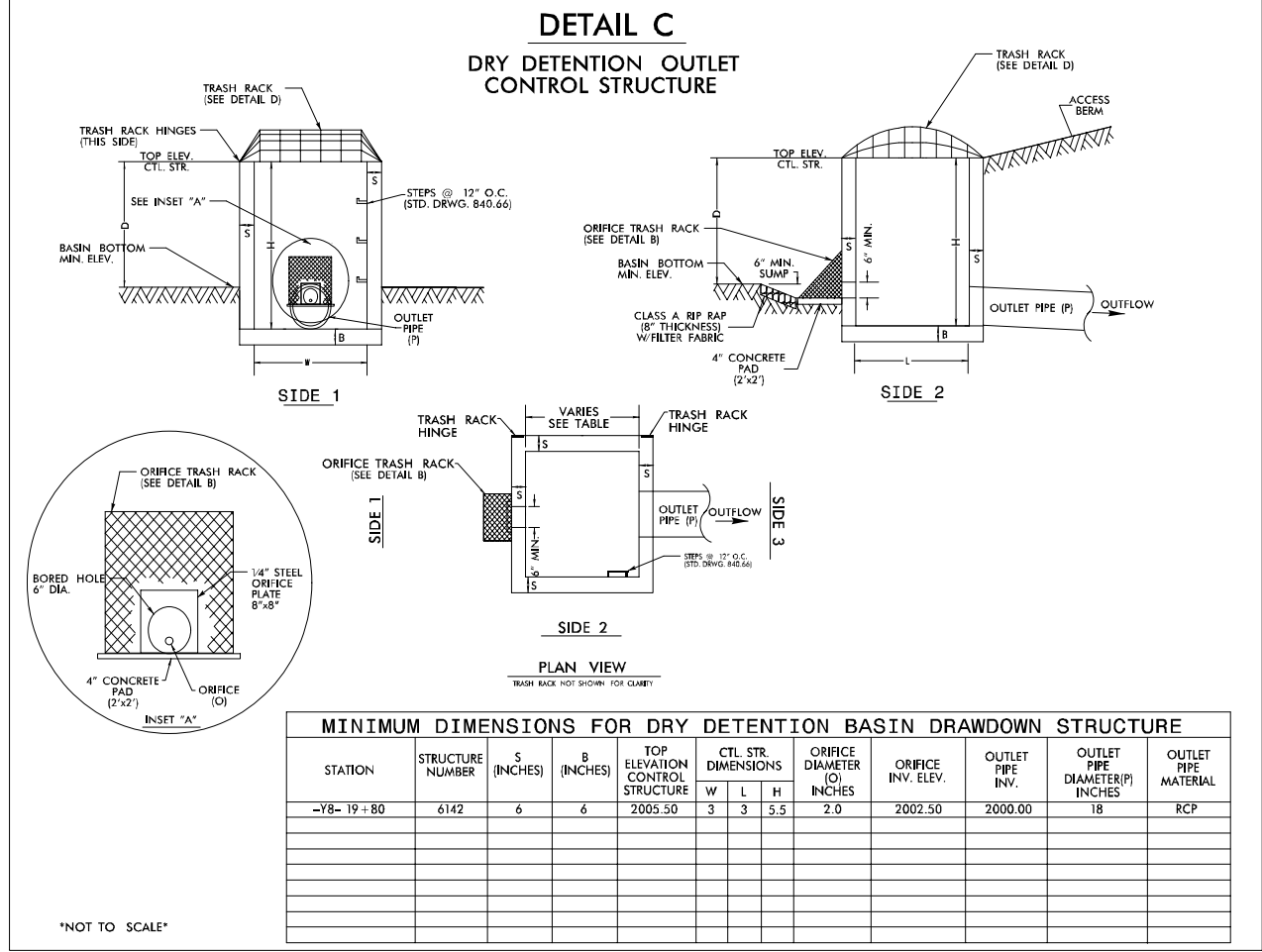




PERMIT DRAWING SHEET 5 OF 36



PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 2D-4
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Prepared in the Office of: AECOM NC FIRM LICENSE No F-0342 5438 Wade Park, Boulevard Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FILTRATION BASIN DETAILS (ALIGNMENT -Y2B-)

PERMIT DRAWING SHEET 7 OF 36

PROJECT REFERENCE NO. I-2513AC	SHEET NO. 2D-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	

GENERAL NOTES:

① ENGINEERED SOIL MEDIA

Filtration Basin Soil Mix Blend

The Engineered Soil Mix shall consist of the following blend:

Recycled Expanded Slate Fines	80%
Approved Compost Organic Component	20%

Mechanically mix 1 part compost with 4 parts of the expanded slate fines until a uniform distribution of the components is achieved. The slate aggregate fines and organic component consist of the following:

Recycled Expanded Slate Fines

The recycled expanded slate aggregate fines shall conform to the following screening operation:

Sieve Size	% Retained
#4	4-8%
#8	28-38%
#16	46-58%
#30	63-75%
#50	74-84%
#100	82-90%
Fine Material	2.79-3.53% passing #100

Organic Component

The compost or organic component shall conform to the following specifications:

- Humus material shall have an ash content of no less than 8 percent and no more than 40 percent.
- The pH of the organic matter shall be between 5.5 and 8.5.
- The salt content shall be less than 10 millimho/cm at 25 degrees C, (E_{cc}<10) on a saturated past extract.
- Types of acceptable composted products can be derived from yard wastes, low in salts, low in phosphorus (P2O5 below 1% wet wt. bas us), free from weed seeds, free of pathogens and other deleterious materials.
- Composted pine bark products are conditionally acceptable (stable humus must be present).
- Sludge based materials are not acceptable including municipal swage sludge bio-solids.
- The organic amendment must have a Carbon/Nitrogen ratio of <25:1.
- The compost shall be aerobic without malodorous presence of decomposition products.
- From 75 to 100 percent organic amendment particles shall pass the 4.0 mm sieve size.
- From 45 to 65 percent moisture measure via wet-weight basis.
- Free of stones, debris, plant material.
- Organic content must be above 50% on a dry weight basis.
- Metals and contaminants must meet or exceed US EPA Standard 40.

② WASHED GRAVEL (NO. 57 STONE), LIMESTONE BASED AGGREGATES SHOULD NOT BE USED

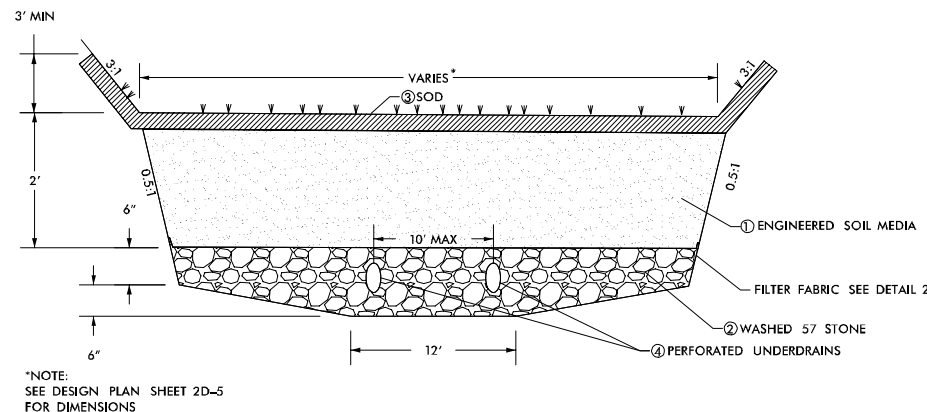
③ FESCUE/BLEUGRASS BLEND SOD; THE SOD SOIL LAYER SHALL CONTAIN MINIMAL CLAY CONTENT IN ORDER TO FACILITATE FILTRATION. THE SOD SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION (TOP OF SOD IS FINISHED GRADE)

④ THE UNDERDRAIN PIPES SHALL HAVE A MINIMUM SLOPE OF 0.005 FT./FT.

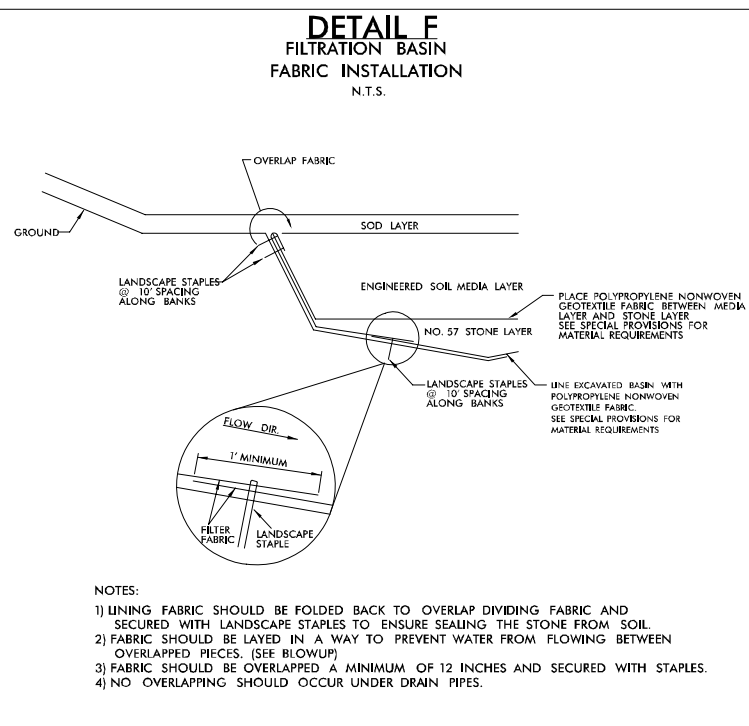
⑤ FOR FURTHER FILTRATION BASIN DETAIL, SEE PROJECT SPECIAL PROVISIONS.

ESTIMATED BILL OF MATERIALS FOR BASIN ALIGNMENT -Y2B-

- SOD - 80 SY
- 6" HDPE PERFORATED UNDERDRAINS - 68 LF
- CLEANOUTS - 4 EA
- SOIL MEDIA, WASHED STONE - SEE SHEET 2D-5
- 6" HDPE - 15 LF

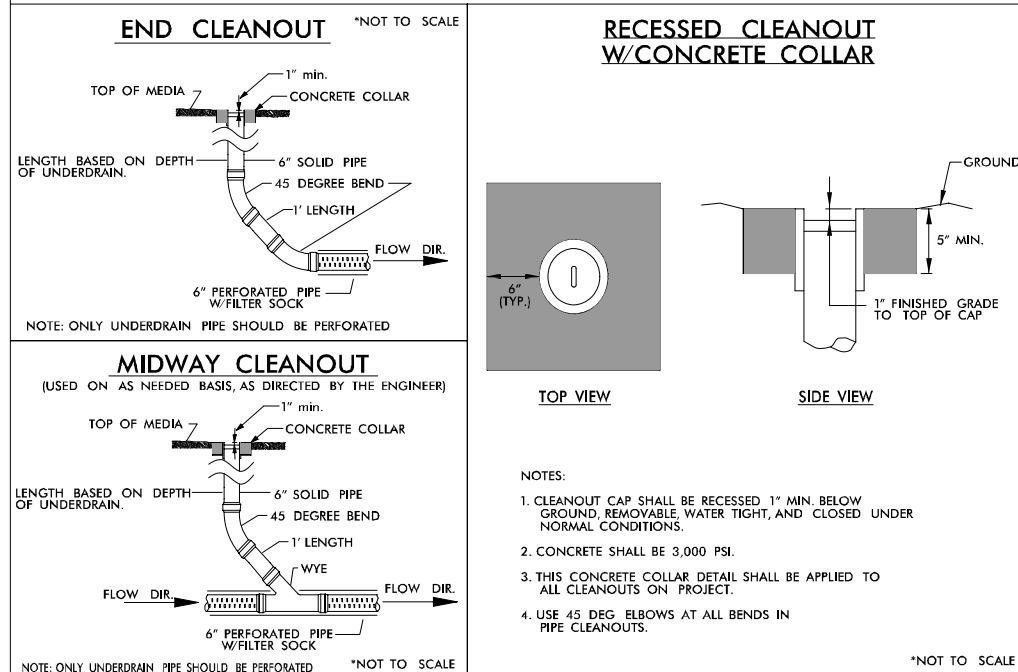


DETAIL E TYPICAL FILTRATION CROSS SECTION
NOT TO SCALE



- NOTES:
- LINING FABRIC SHOULD BE FOLDED BACK TO OVERLAP DIVIDING FABRIC AND SECURED WITH LANDSCAPE STAPLES TO ENSURE SEALING THE STONE FROM SOIL.
 - FABRIC SHOULD BE LAYED IN A WAY TO PREVENT WATER FROM FLOWING BETWEEN OVERLAPPED PIECES. (SEE BLOWUP)
 - FABRIC SHOULD BE OVERLAPPED A MINIMUM OF 12 INCHES AND SECURED WITH STAPLES.
 - NO OVERLAPPING SHOULD OCCUR UNDER DRAIN PIPES.

DETAIL G UNDERDRAIN CLEANOUTS

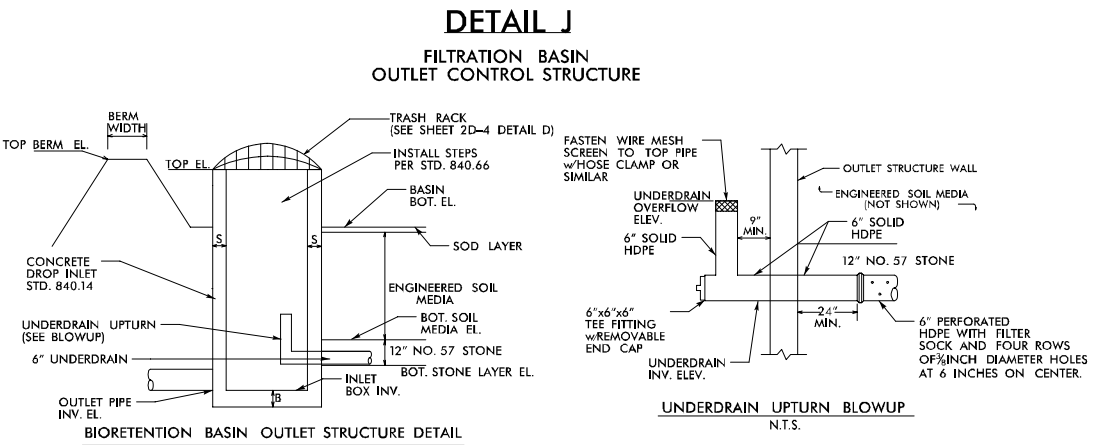
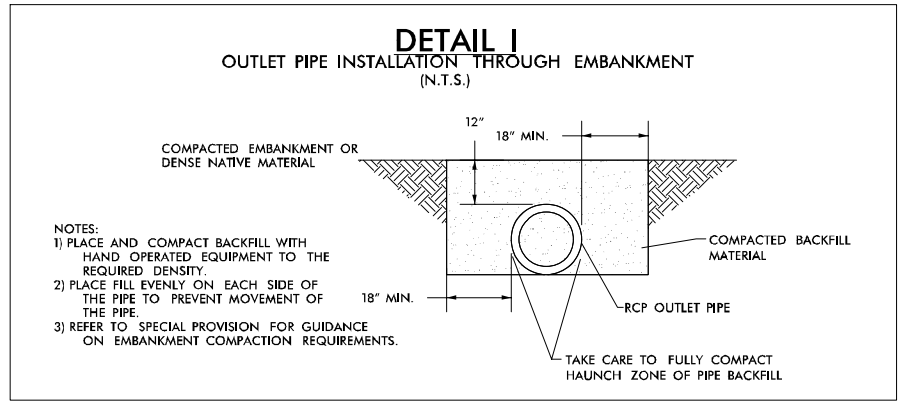
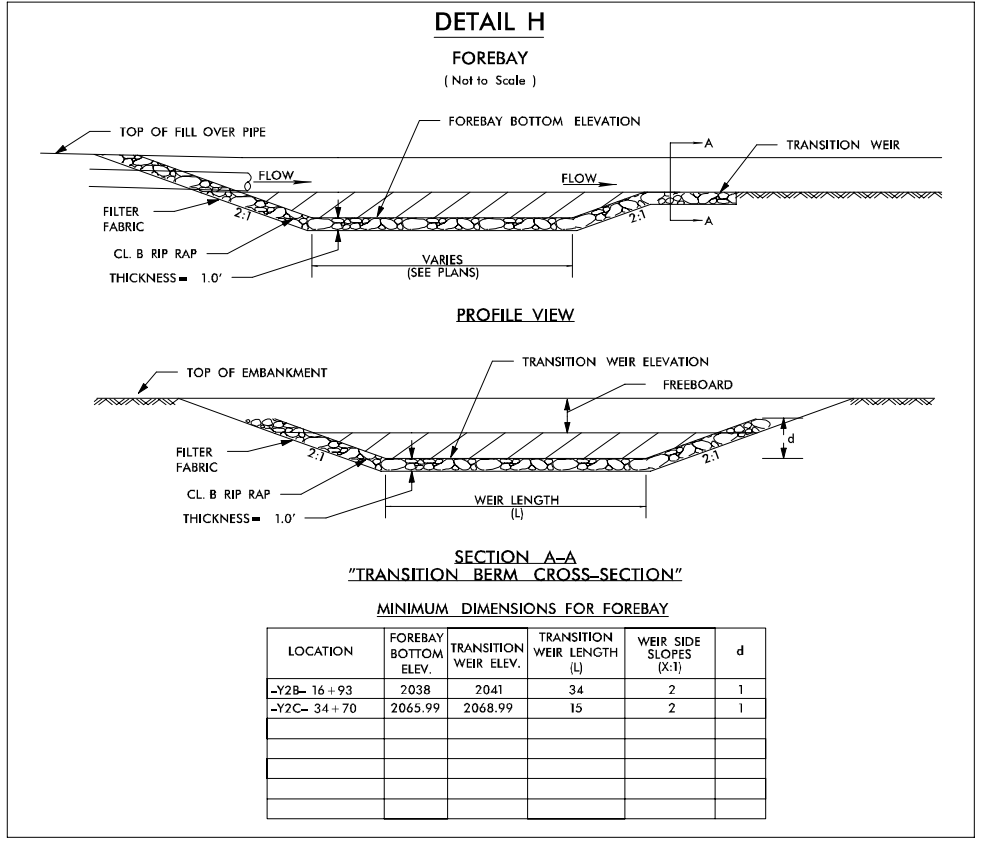


- NOTES:
- CLEANOUT CAP SHALL BE RECESSED 1" MIN. BELOW GROUND, REMOVABLE, WATER TIGHT, AND CLOSED UNDER NORMAL CONDITIONS.
 - CONCRETE SHALL BE 3,000 PSI.
 - THIS CONCRETE COLLAR DETAIL SHALL BE APPLIED TO ALL CLEANOUTS ON PROJECT.
 - USE 45 DEG. ELBOWS AT ALL BENDS IN PIPE CLEANOUTS.

FILTRATION BASIN DETAILS (ALIGNMENT -Y2B-)

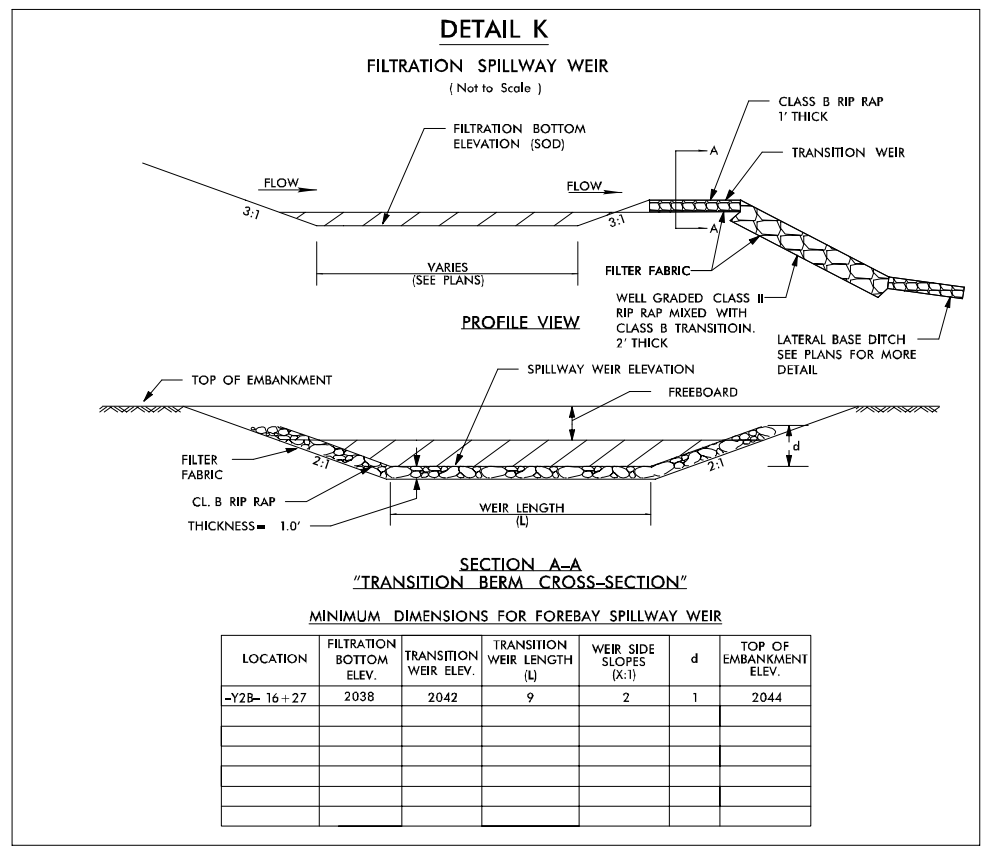
PERMIT DRAWING
SHEET 7A OF 36

PROJECT REFERENCE NO. I-2513AC	SHEET NO. 2D-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	



- NOTES:
 1) PROVIDE WATER TIGHT CONNECTIONS USING WATERSTOP OR COMPRESSION GASKET APPROVED BY ENGINEER ON ALL OUTLET STRUCTURE PENETRATIONS.
 2) INSTALL STEPS IN ACCORDANCE WITH STD. 840.66
 3) FOR UNDERDRAIN, USE SOLID (NON-PERFORATED) PIPE THROUGH STRUCTURE WALL AND EXTEND 2 FT. MIN. INTO NO. 57 STONE LAYER.
 4) SEE ENGINEERED SOIL MEDIA DETAIL SHEET 2-A.
 5) SEE DETAIL THIS SHEET FOR UNDERDRAIN UPTURNED ELBOW/OVERFLOW.
 6) NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT. SEE DETAIL FOR PIPE INSTALLATION THROUGH EMBANKMENT.
 7) ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE.

STATION	STR. #	S (Inches)	B (Inches)	TOP BOX EL.	CTL STR DIMENSIONS W L H	TOP BERM EL.	TOP BERM WIDTH	BASIN BOTTOM EL.	BOTTOM SOIL MEDIA EL.	BOTTOM STONE EL.	UNDERDRAIN INVERT	UNDERDRAIN OVERFLOW EL.	BOX / OUTLET PIPE INVERT
-Y2B- 16+40	6147	6	6	2040.5	3 3 4.5	2044.0	10	2039	2037	2036	2036.25	2037.50	2036.00

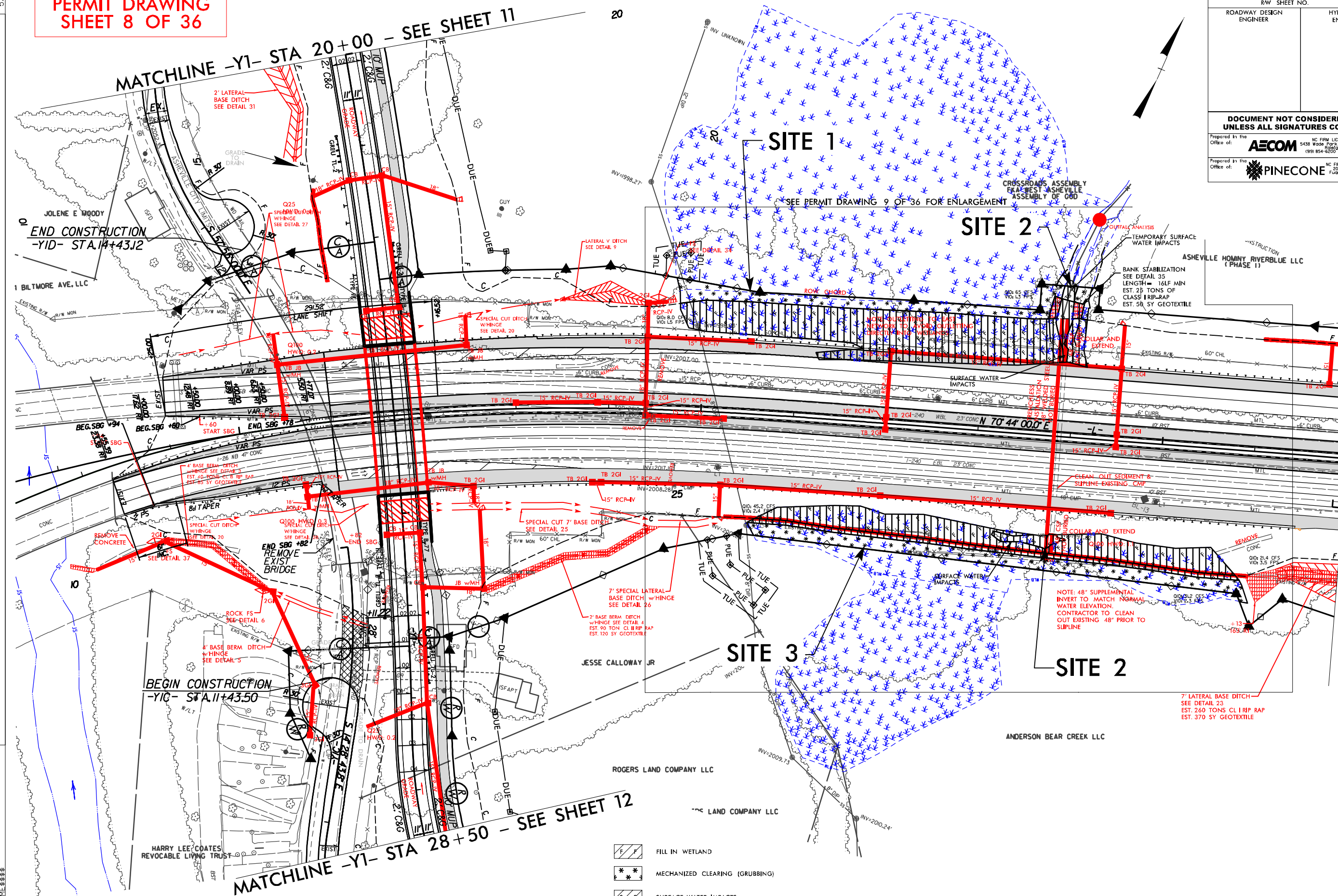


REVISIONS

3/13/2023 pwa\ecomm-no-pw.bentley.com\AECOM_DS21_NA_2020\Documents\60646756-I-2513A\900-CAD-70-NGDDI-TIP\Hydraulics\Permits_Environmental\AECOM-I-2513-AC\CAD\Drawings\07-I-2513A_hud_det-2D-6.karen.sloan

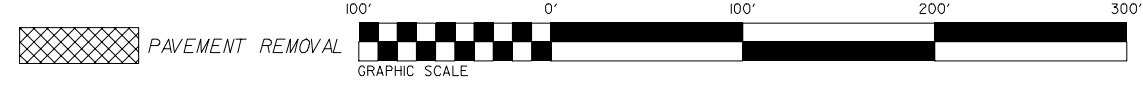
**PERMIT DRAWING
SHEET 8 OF 36**

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Office of: AECOM	NC FIRM LICENSE No. P-0342 5438 Wood Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-4200 / (919) 854-4259 (FAX)
Prepared in the Office of: PINECONE	NC FIRM LICENSE No. P-1804 205 E. Spring Street Fayetteville, NC 28533 (919) 658-6574



MATCHLINE -L- STA 27+00 - SEE SHEET 5

REVISIONS

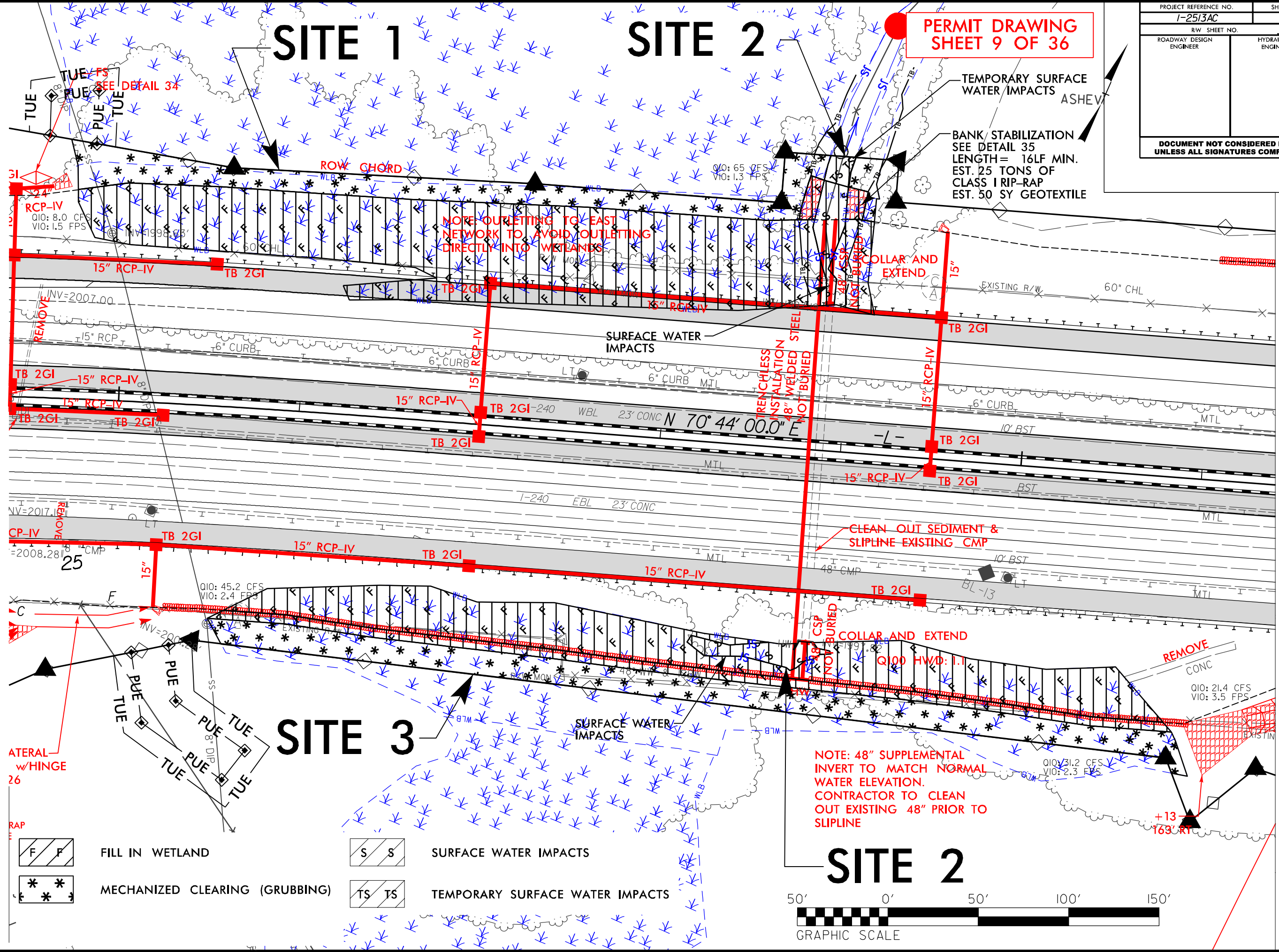


5/14/99

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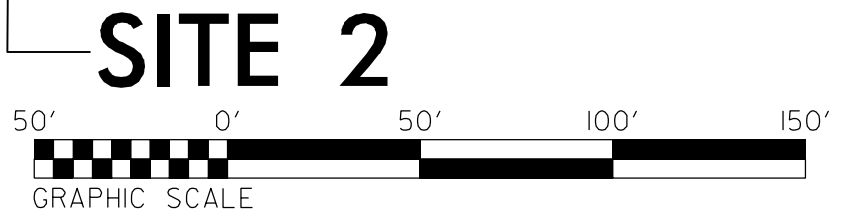
PROJECT REFERENCE NO. 1-2513AC	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 9 OF 36**



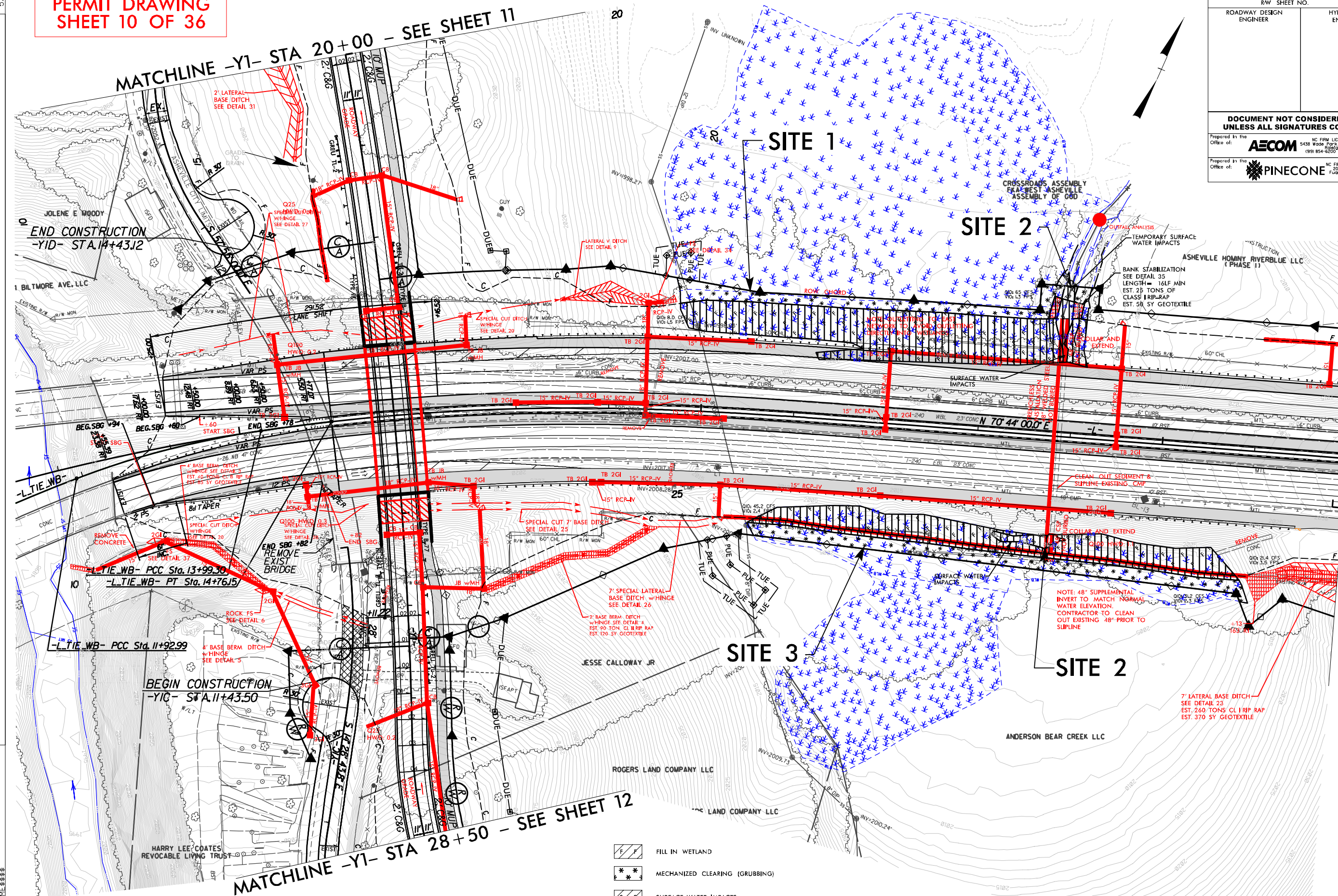
REVISIONS

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



**PERMIT DRAWING
SHEET 10 OF 36**

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
Prepared in the Office of: AECOM	NC FIRM LICENSE No. F-0342 5438 West Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-4200 • (919) 854-6259(FAX)
Prepared in the Office of: PINECONE	NC FIRM LICENSE No. P-1804 205 E. Spring Street Fayetteville, NC 28533 (919) 658-8574



REVISIONS

MATCHLINE -L- STA 27+00 - SEE SHEET 5

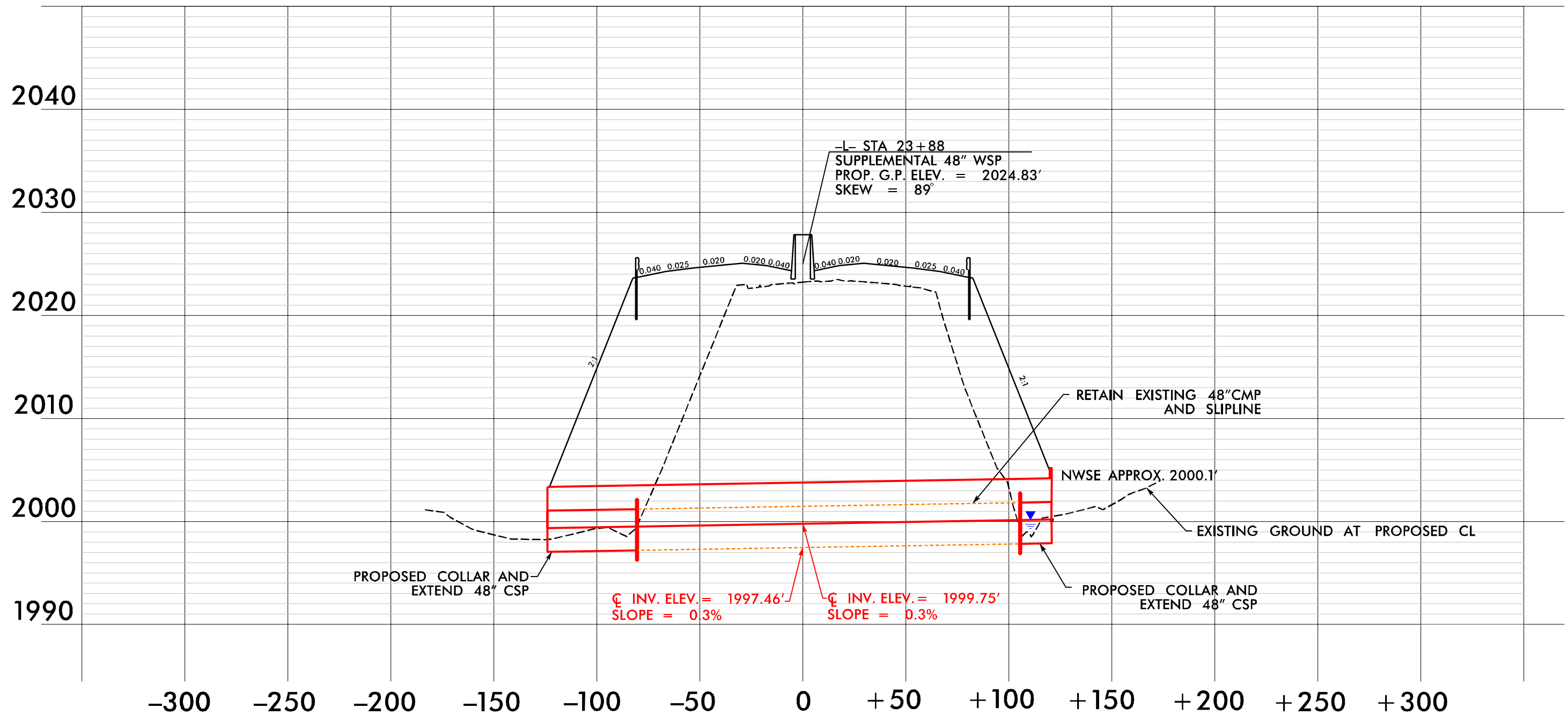


- FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

FOR -L- PROFILE SEE SHEET 13
FOR -Y1- PROFILE SEE SHEET 17
FOR -YIC- PROFILE SEE SHEET 18
FOR -YID- PROFILE SEE SHEET 18

5/14/99

SITES 2 – PROFILE VIEW ALONG STRUCTURE



PROFILE

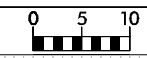
SCALE
 VERT. 1" = 10'
 HORIZ. 1" = 50'

NCDOT

DIVISION OF HIGHWAYS
 BUNCOMBE COUNTY

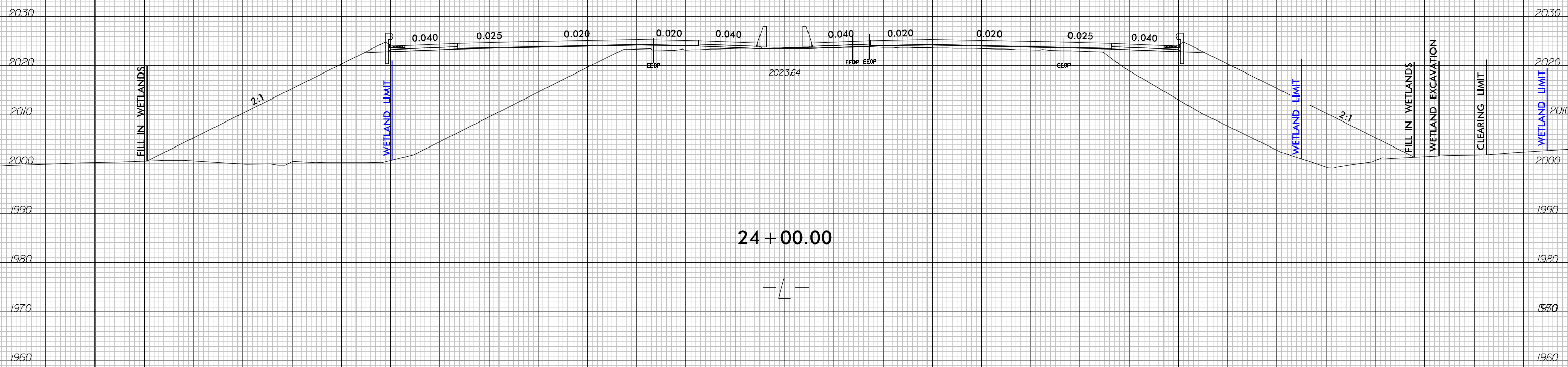
PROJECT: 34165.13 (I-2513AC)
 I-26 // I-40 // I-240 INTERCHANGE TO
 SR 3548 (HAYWOOD RD)

PERMIT DRAWING
 SHEET 11 OF 36



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**PERMIT DRAWING
SHEET 12 OF 36**

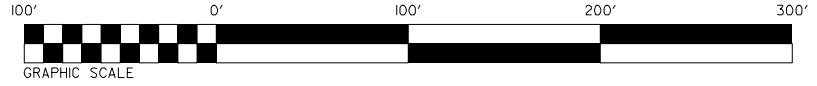
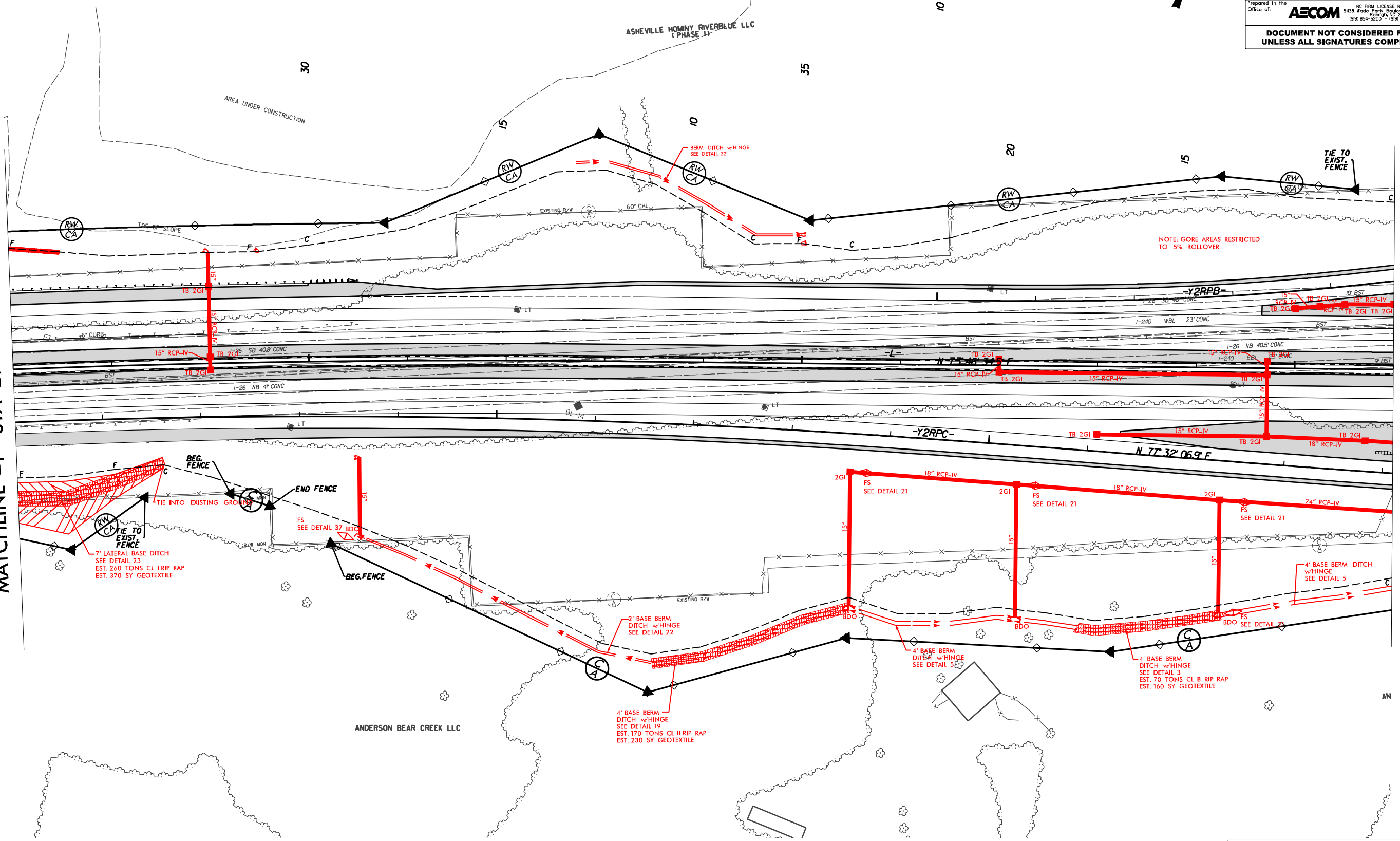


**PERMIT DRAWING
SHEET 13 OF 36**

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Prepared in the Office of: AECOM NC FIRM LICENSE No F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -Y- STA 27+00 - SEE SHEET 4

MATCHLINE -Y- STA 41+00 - SEE SHEET 6



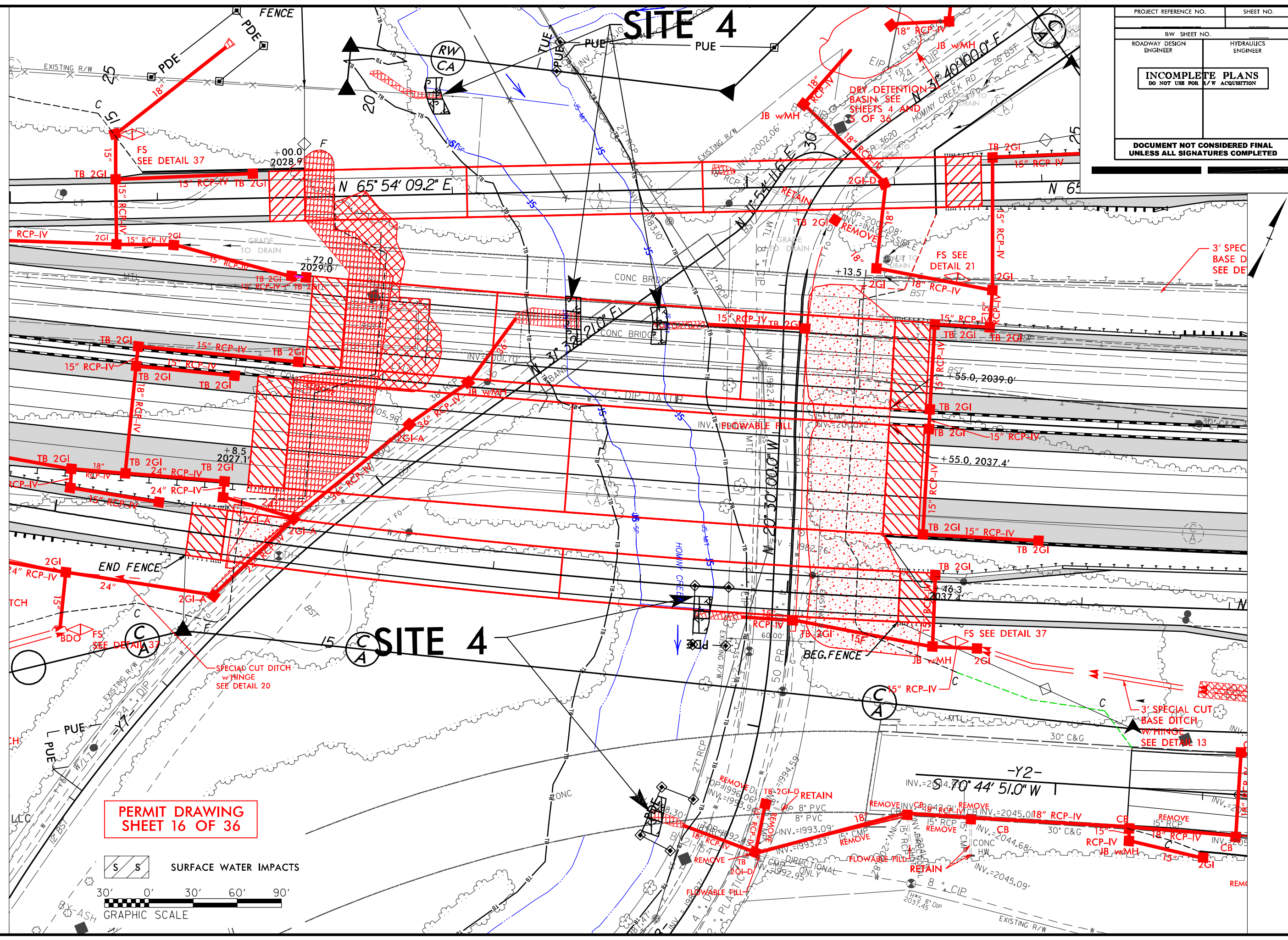
FOR -L- PROFILE SEE SHEET 13
 FOR -Y2RPB- PROFILE SEE SHEET 21
 FOR -Y2RPC- PROFILE SEE SHEET 22

REVISIONS

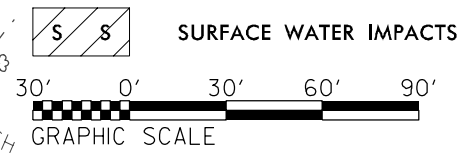
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 3/13/2007
 Kated@alcan.com

PROJECT REFERENCE NO.	SHEET NO.
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	

SITE 4



PERMIT DRAWING
SHEET 16 OF 36

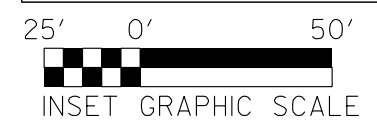
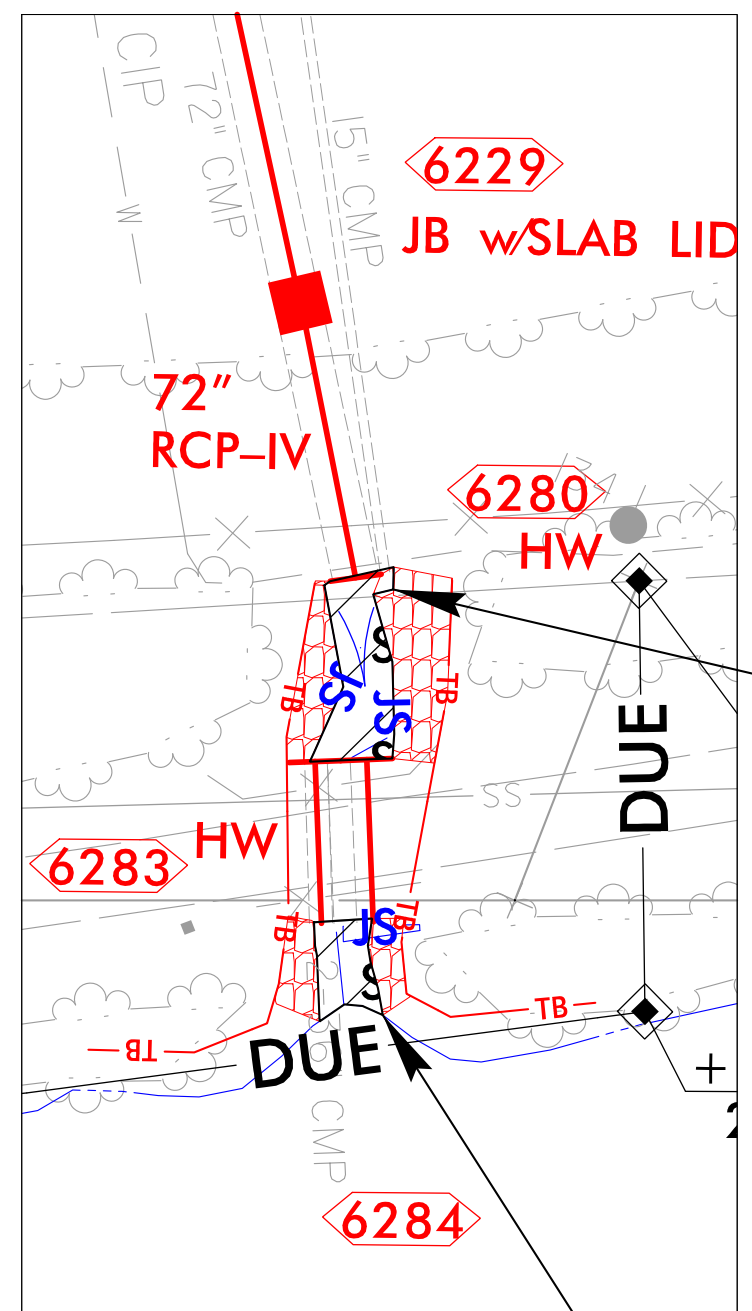


REVISIONS

3/14/2023
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 8/17/99

5/14/99
 REVISIONS
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 05/14/99

SITE 5



BANK STABILIZATION

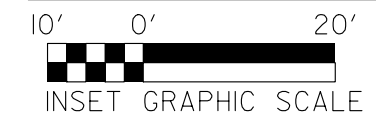
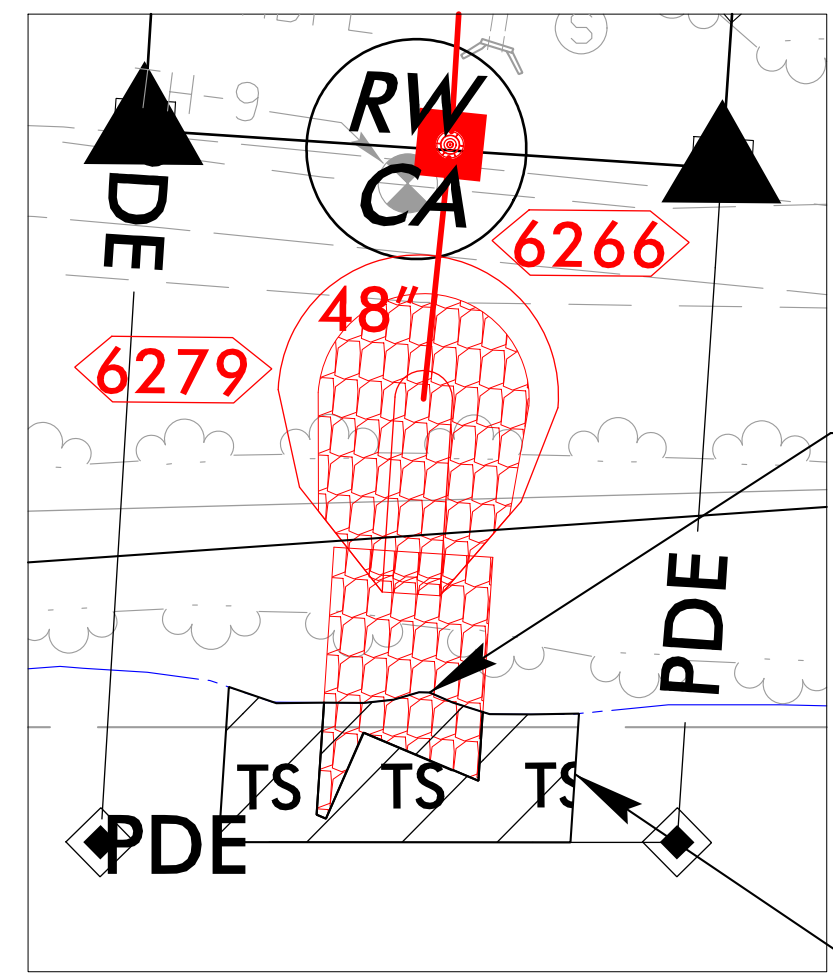
	TEMPORARY SURFACE WATER IMPACTS
	SURFACE WATER IMPACTS

NAD 83/95

PROJECT REFERENCE NO. 1-2513AC		SHEET NO.	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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PERMIT DRAWING
 SHEET 18 OF 36

SITE 6



SURFACE WATER

TEMPORARY SURFACE WATER

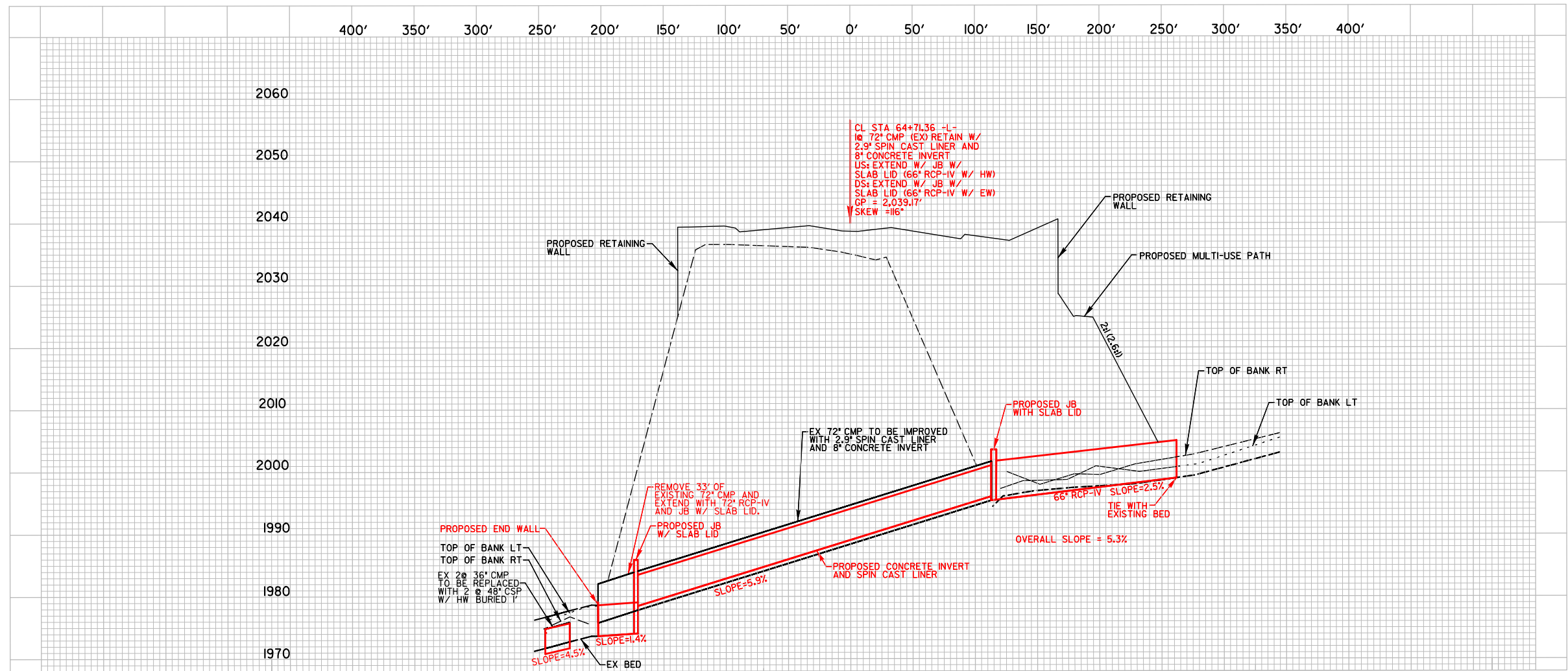
PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEET 16
 FOR -Y4- PROFILE SEE SHEET 28
 FOR -Y4RPC- PROFILE SEE SHEET 29

PROJECT REFERENCE NO. 1-2513AC	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27617 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING
SHEET 20 OF 36

SITE 5 - PROFILE VIEW ALONG STRUCTURE



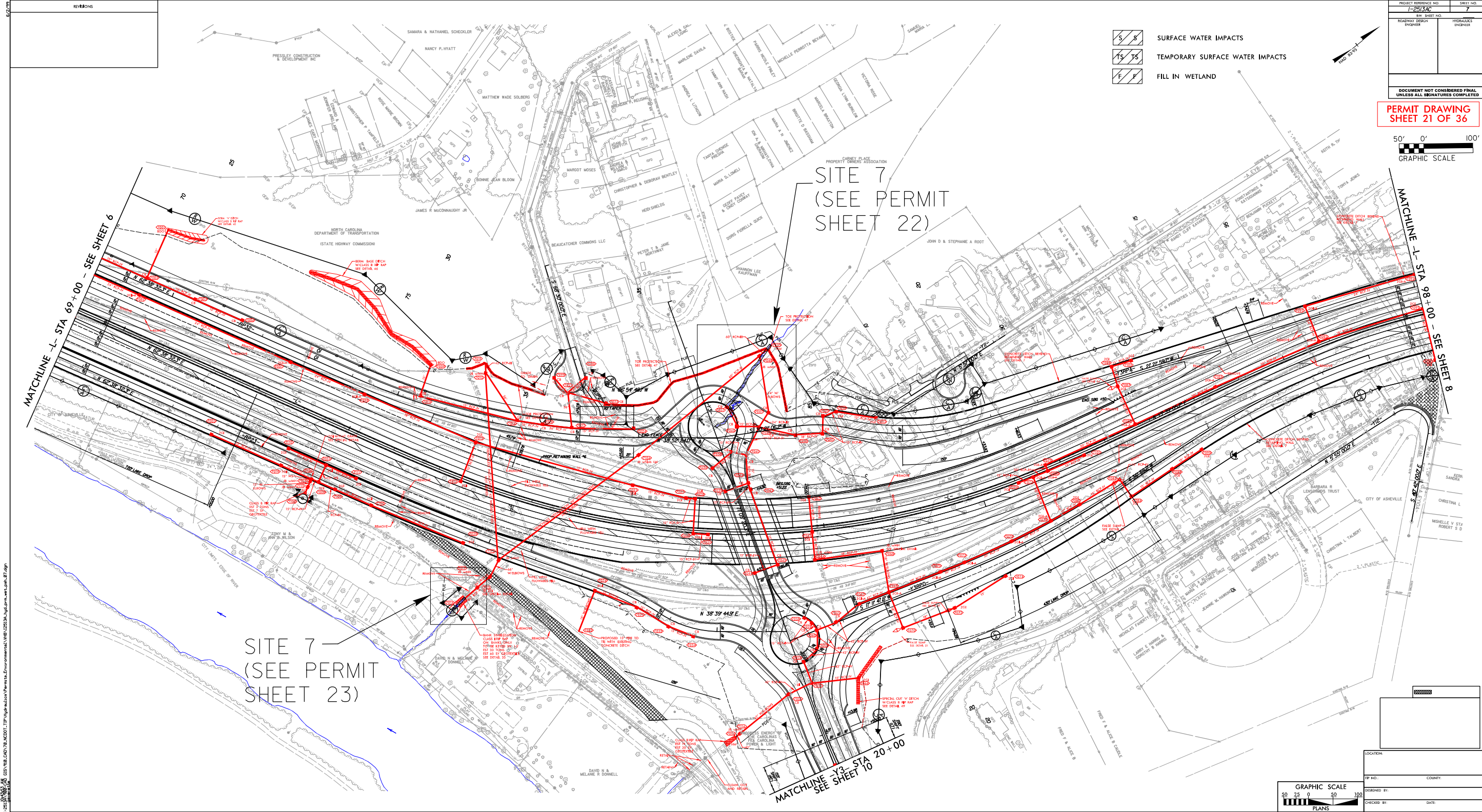
PAVEMENT REMOVAL

FOR -Y3- PROFILE SEE SHEET 25-26
 FOR -Y3A- PROFILE SEE SHEET 26
 FOR -Y3B- PROFILE SEE SHEET 26

REVISIONS

5/14/99
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NAD 83/95

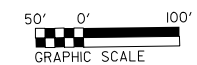


REVISIONS

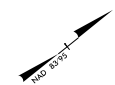
PROJECT REFERENCE NO.	7
SHEET NO.	21
ROADWAY DESIGN ENGINEER	
HYDRAULICS ENGINEER	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 21 OF 36

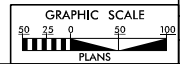


- S/S SURFACE WATER IMPACTS
- TS/TS TEMPORARY SURFACE WATER IMPACTS
- F/F FILL IN WETLAND



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LOCATION:	
TIP NO.:	
COUNTY:	
DESIGNED BY:	
CHECKED BY:	
DATE:	

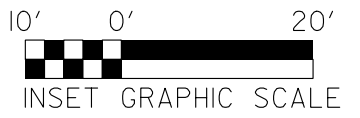
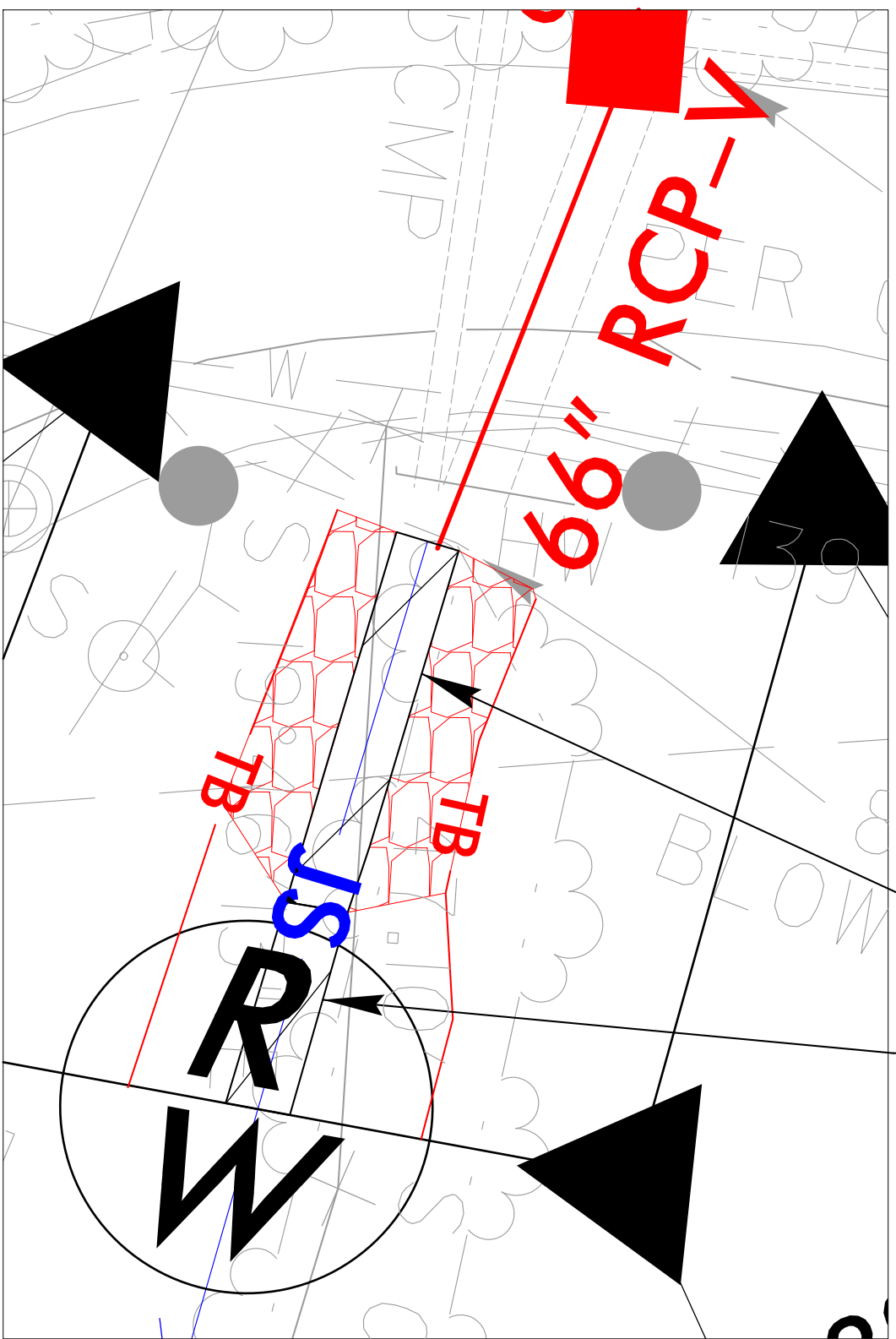


PROJECT REFERENCE NO. 1-2513AC	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<small>Prepared in the Office of: AECOM 5438 Wade Park, Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING SHEET 23 OF 36

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

SITE 7

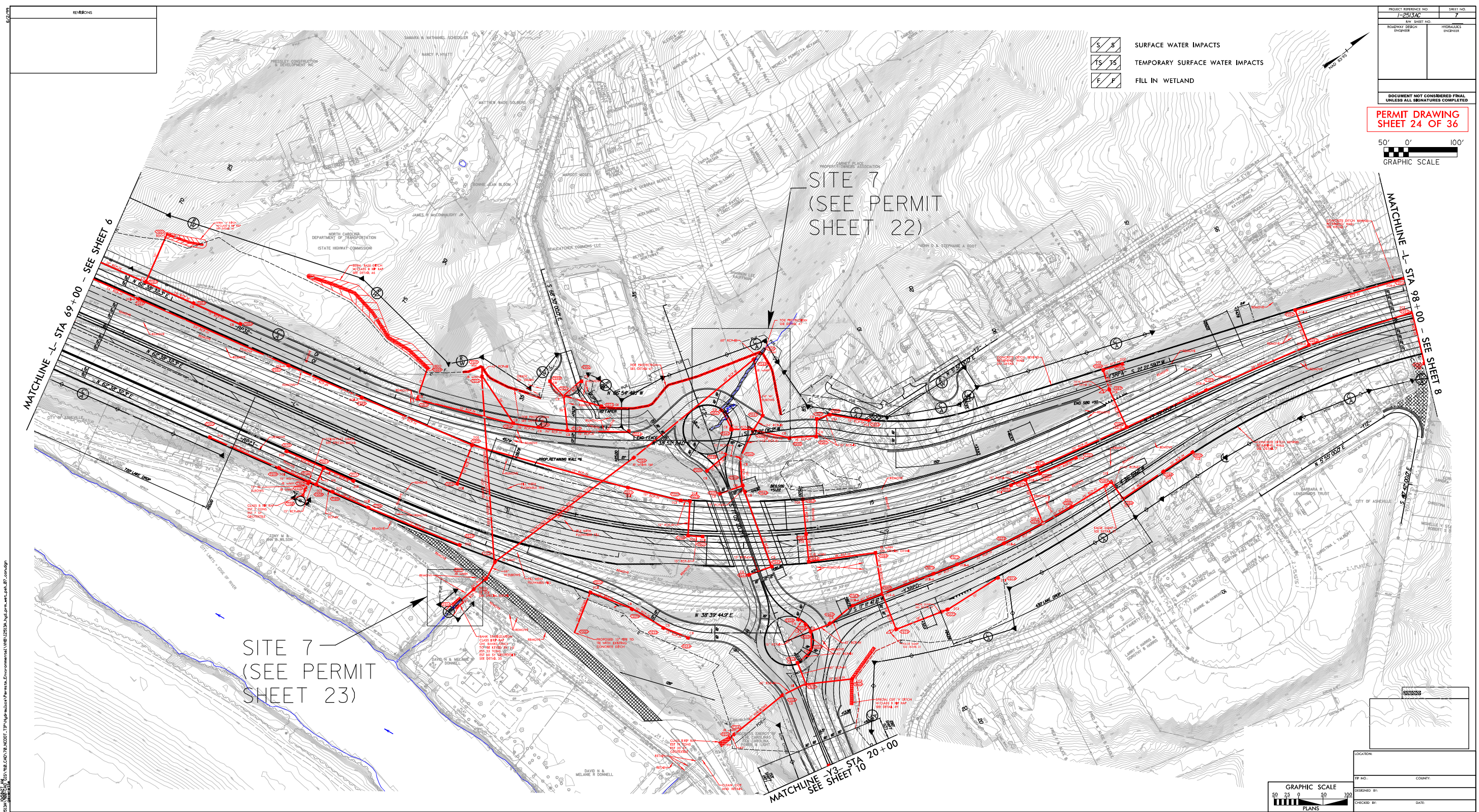


BANK STABILIZATION
TEMPORARY SURFACE WATER

	PAVEMENT REMOVAL
--	------------------

FOR -L- PROFILE SEE SHEET 16
FOR -Y4- PROFILE SEE SHEET 28
FOR -Y4RPC- PROFILE SEE SHEET 29

5/14/99
 REVISIONS
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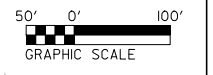


- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- FILL IN WETLAND

PROJECT REFERENCE NO. 1-25376	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

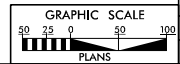
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 24 OF 36



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LOCATION	
TP NO.	COUNTY
DESIGNED BY	
CHECKED BY	DATE



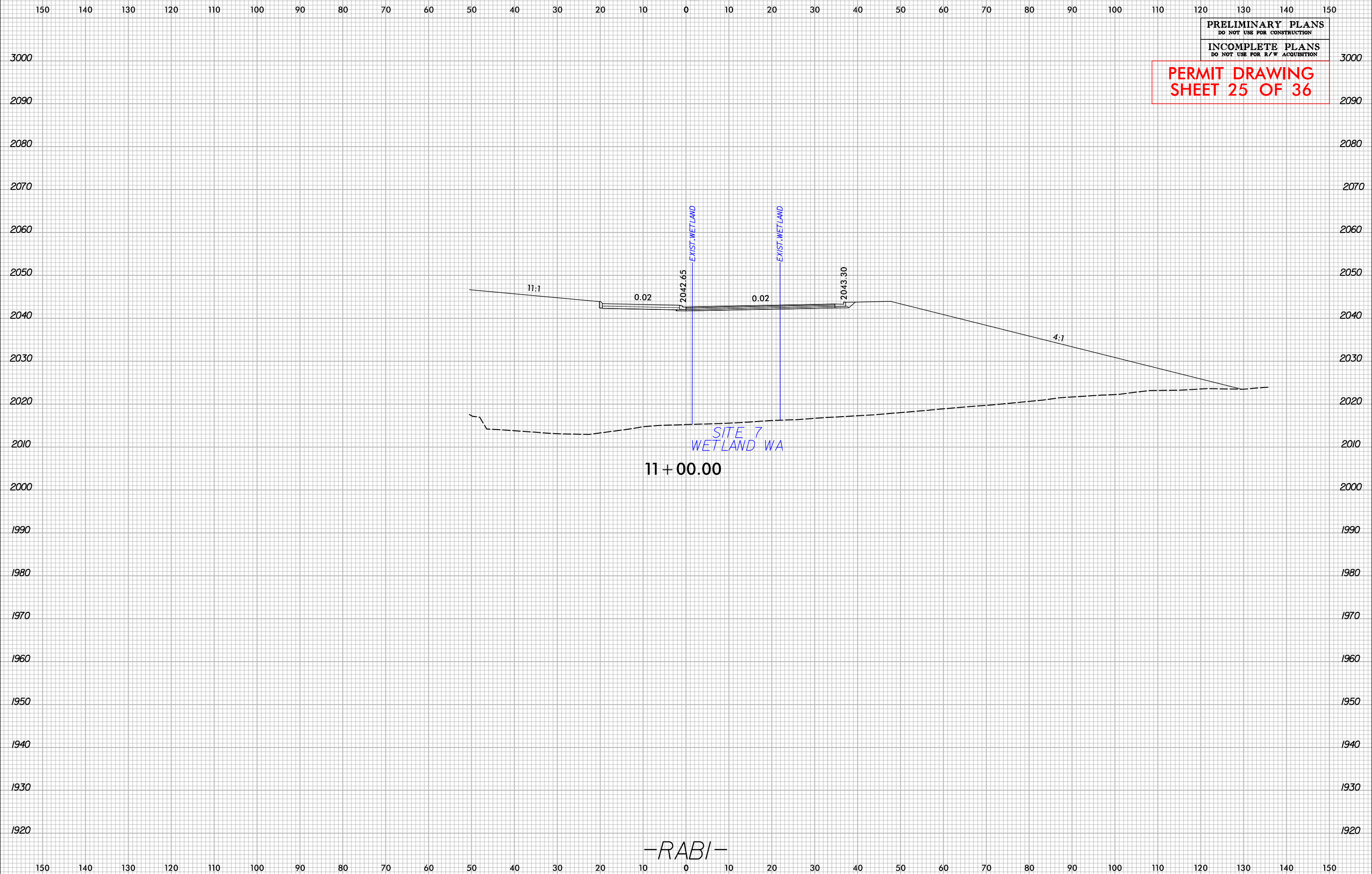
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PROJECT REFERENCE	SHEET NO.
BP6.R017 - HARNETT 54	X-1

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

**PERMIT DRAWING
SHEET 25 OF 36**

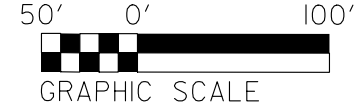


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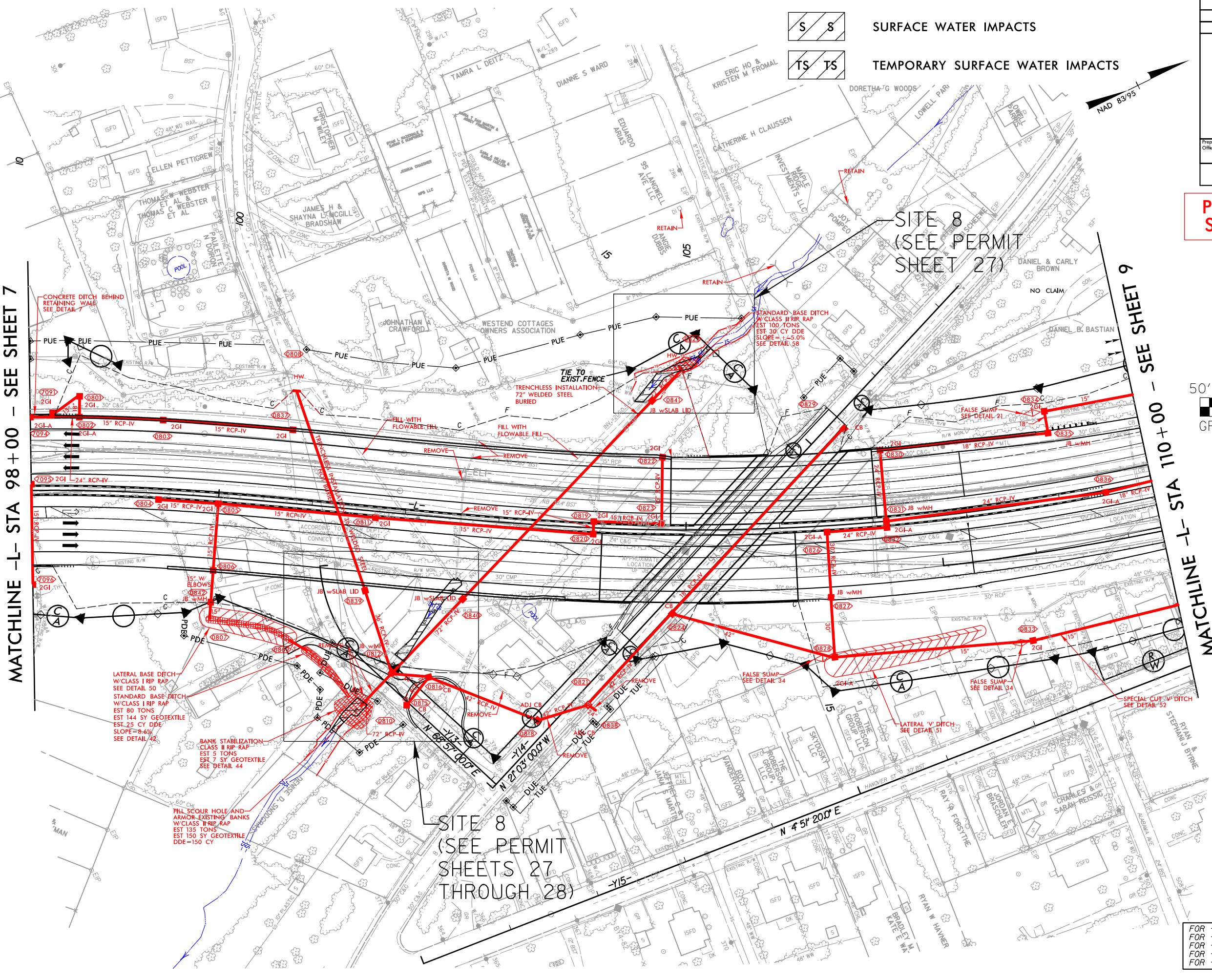
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PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM <small>NC FIRM LICENSE No F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
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**PERMIT DRAWING
SHEET 26 OF 36**



S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS



MATCHLINE -L- STA 98+00 - SEE SHEET 7

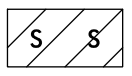
MATCHLINE -L- STA 110+00 - SEE SHEET 9

SITE 8
(SEE PERMIT SHEETS 27 THROUGH 28)

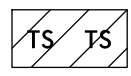
REVISIONS
ROW REV. APRIL 5, 2023 PARCEL 93 AND 94 CHANGED TO TOTAL TAKE
ROW REV. APRIL 5, 2023 PUE ADDED TO PARCEL 95 FOR OH UTILITY
ROW REV. APRIL 5, 2023 PARCEL NUMBER 85 ADDED TO PARCEL 95

FOR -L- PROFILE SEE SHEET 16
FOR -Y3RPA- PROFILE SEE SHEET 27
FOR -Y4RPC- PROFILE SEE SHEET 29
FOR -Y13- PROFILE SEE SHEET 31
FOR -Y14- PROFILE SEE SHEET 31

5/14/99
REVISIONS
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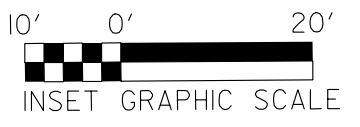
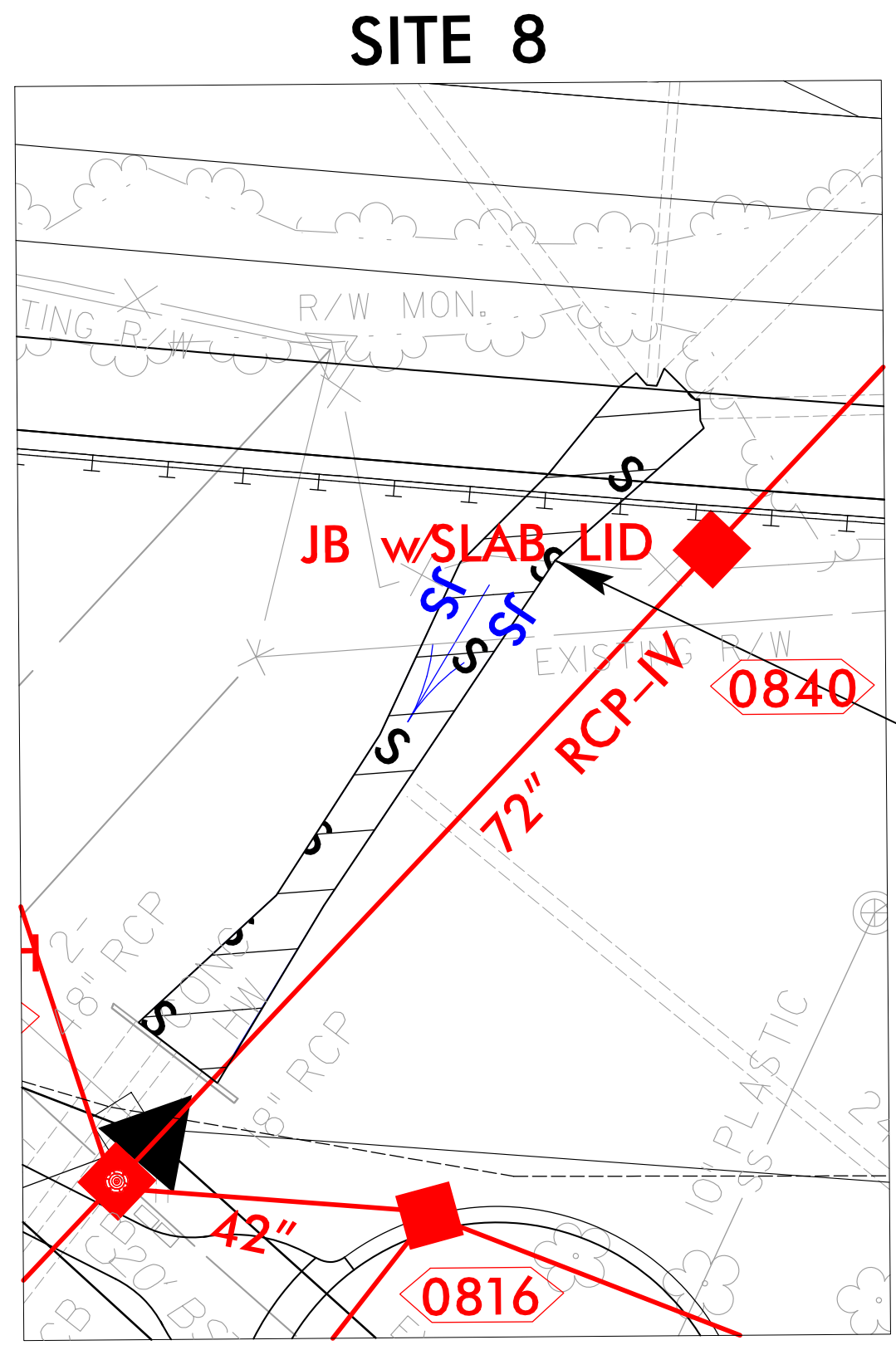
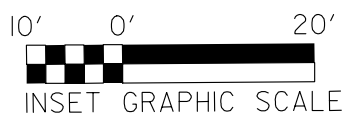
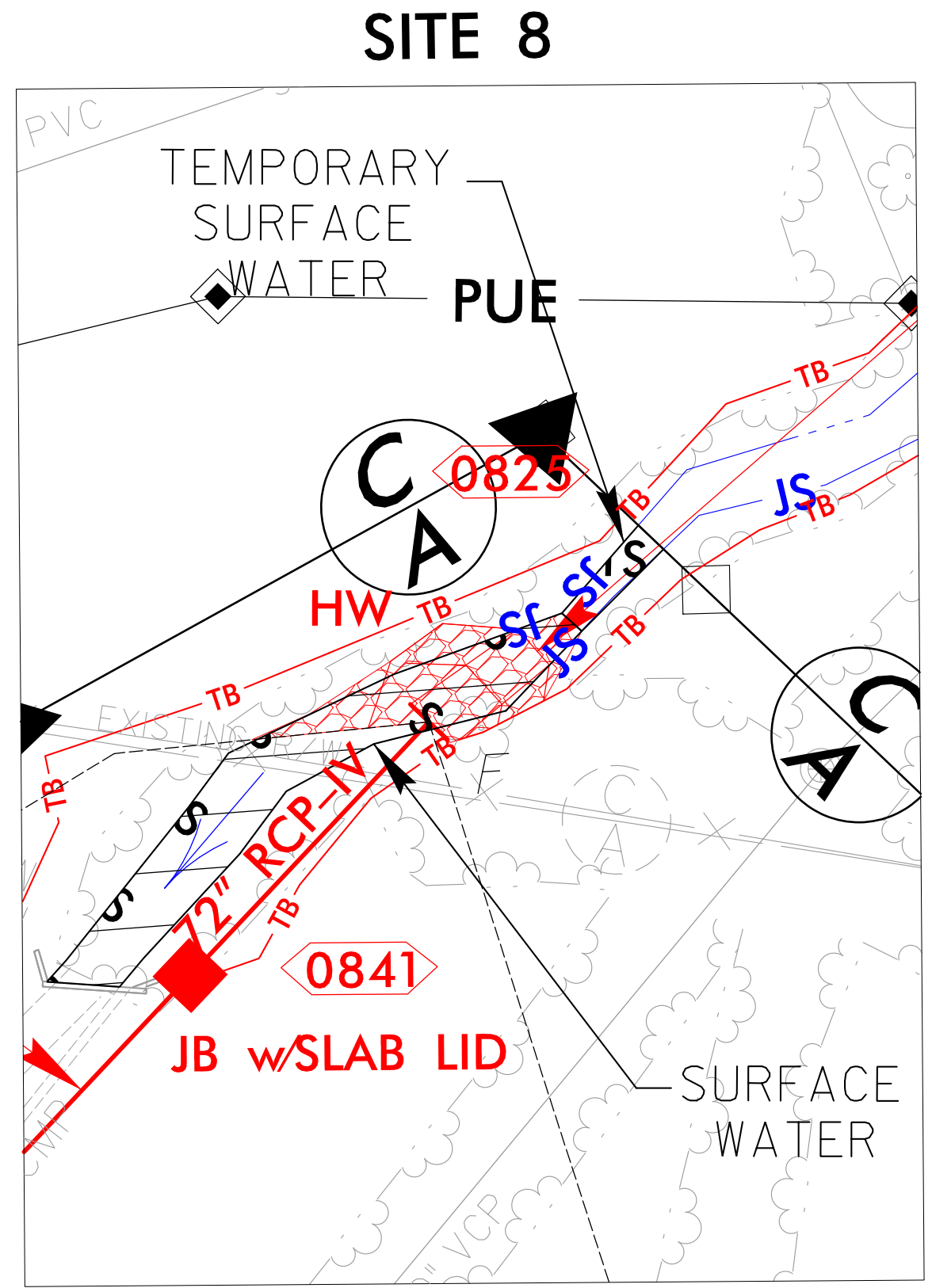
SURFACE WATER IMPACTS



TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO. 1-2513AC	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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PERMIT DRAWING
SHEET 27 OF 36



FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

5/14/99
56-1-2513A
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REVISIONS

SITE 8

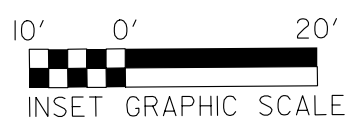
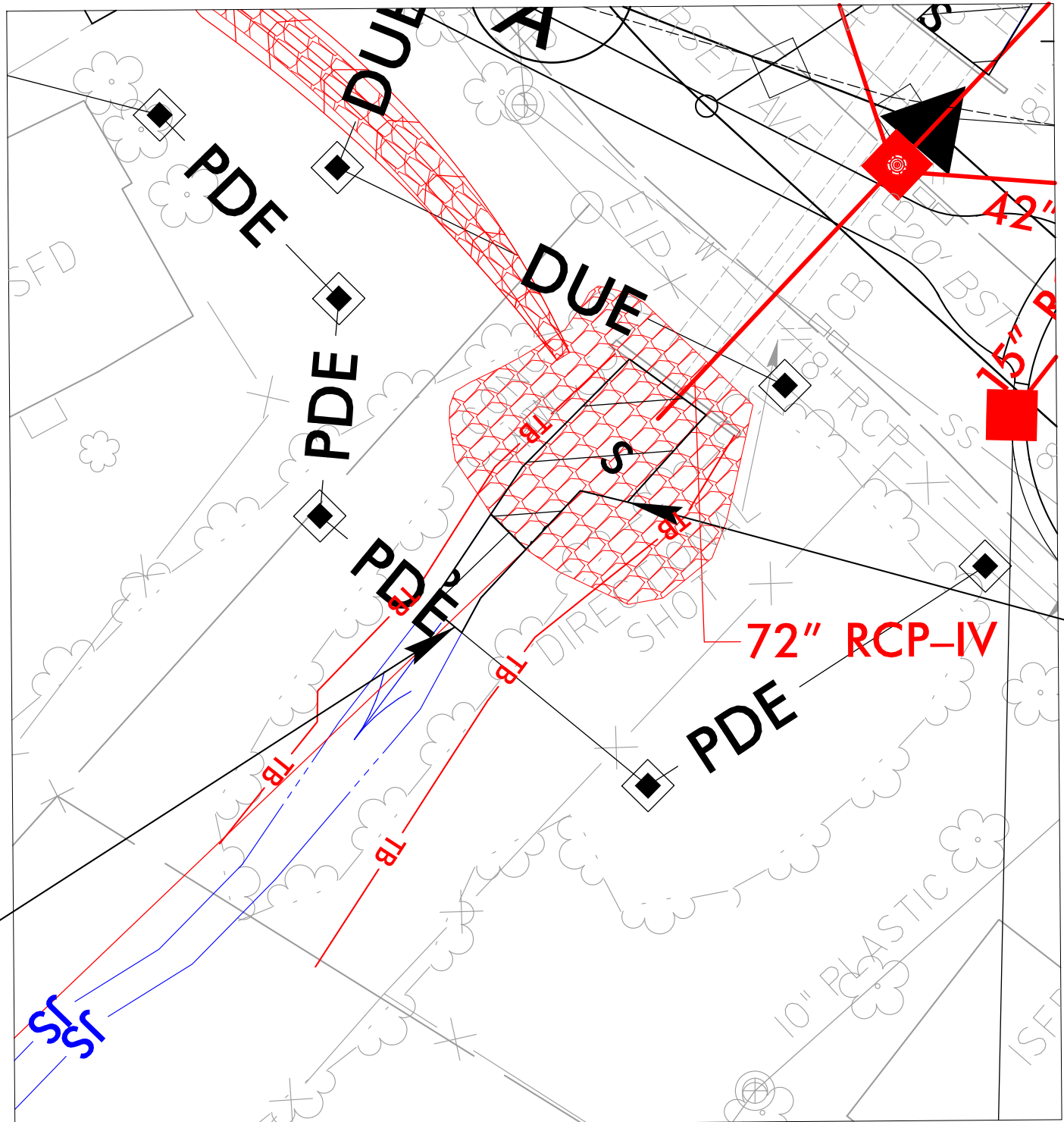
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 28 OF 36**

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

TEMPORARY
SURFACE
WATER

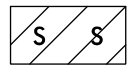
SURFACE
WATER



PAVEMENT REMOVAL
FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259 (FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

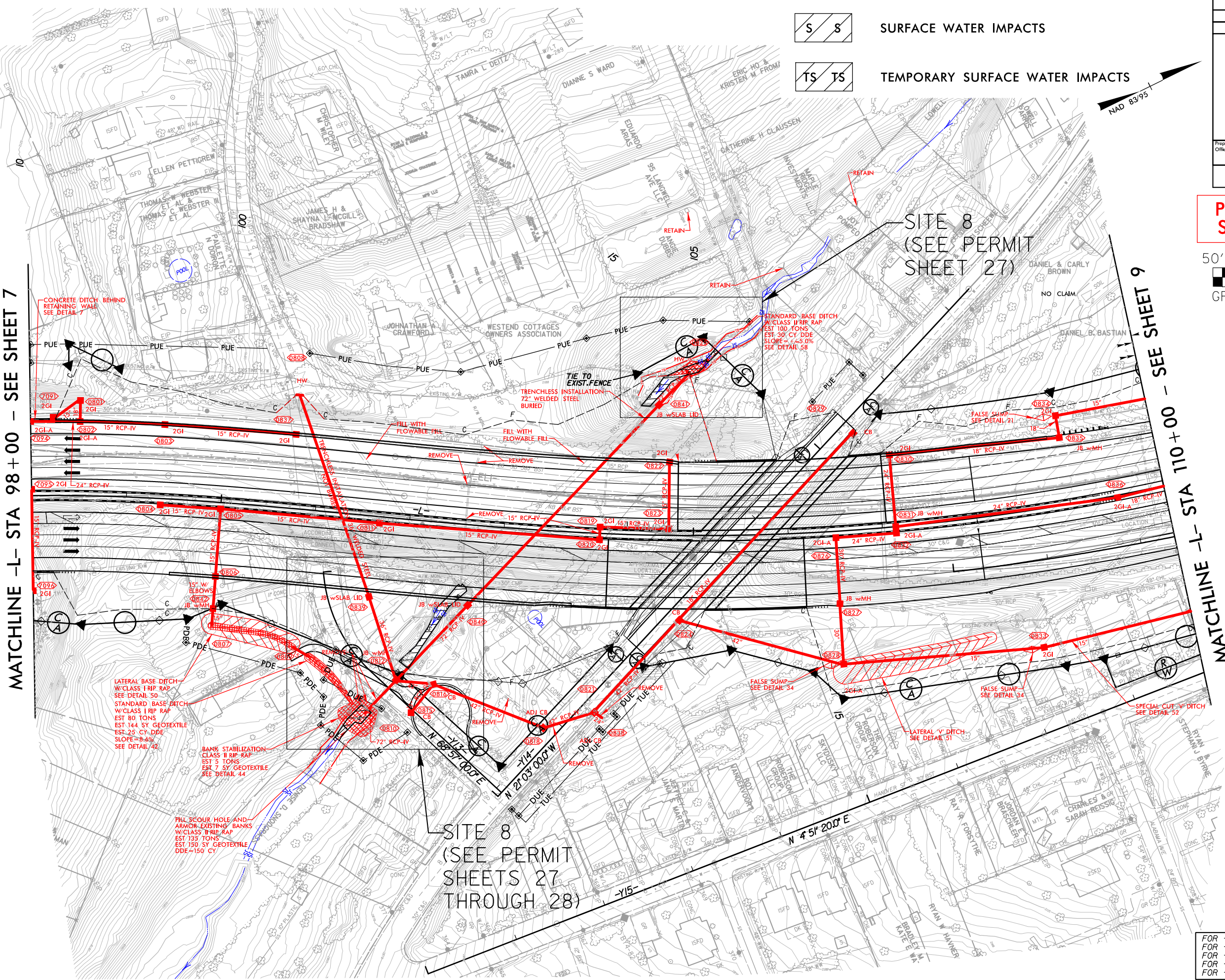
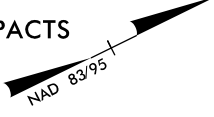
PERMIT DRAWING SHEET 29 OF 36



SURFACE WATER IMPACTS



TEMPORARY SURFACE WATER IMPACTS



MATCHLINE -L- STA 98+00 - SEE SHEET 7

MATCHLINE -L- STA 110+00 - SEE SHEET 9

REVISIONS
 ROW REV. APRIL 5, 2023 PARCEL 93 AND 94 CHANGED TO TOTAL TAKE
 ROW REV. APRIL 5, 2023 PUE ADDED TO PARCEL 95 FOR OH UTILITY
 ROW REV. APRIL 5, 2023 PARCEL MEMBER_85 ADDED TO PARCEL MEMBER_85
 ROW REV. APRIL 5, 2023 PARCEL MEMBER_85 ADDED TO PARCEL MEMBER_85
 ROW REV. APRIL 5, 2023 PARCEL MEMBER_85 ADDED TO PARCEL MEMBER_85

FOR -L- PROFILE SEE SHEET 16
 FOR -Y3RPA- PROFILE SEE SHEET 27
 FOR -Y4RPC- PROFILE SEE SHEET 29
 FOR -Y13- PROFILE SEE SHEET 31
 FOR -Y14- PROFILE SEE SHEET 31

5/14/99

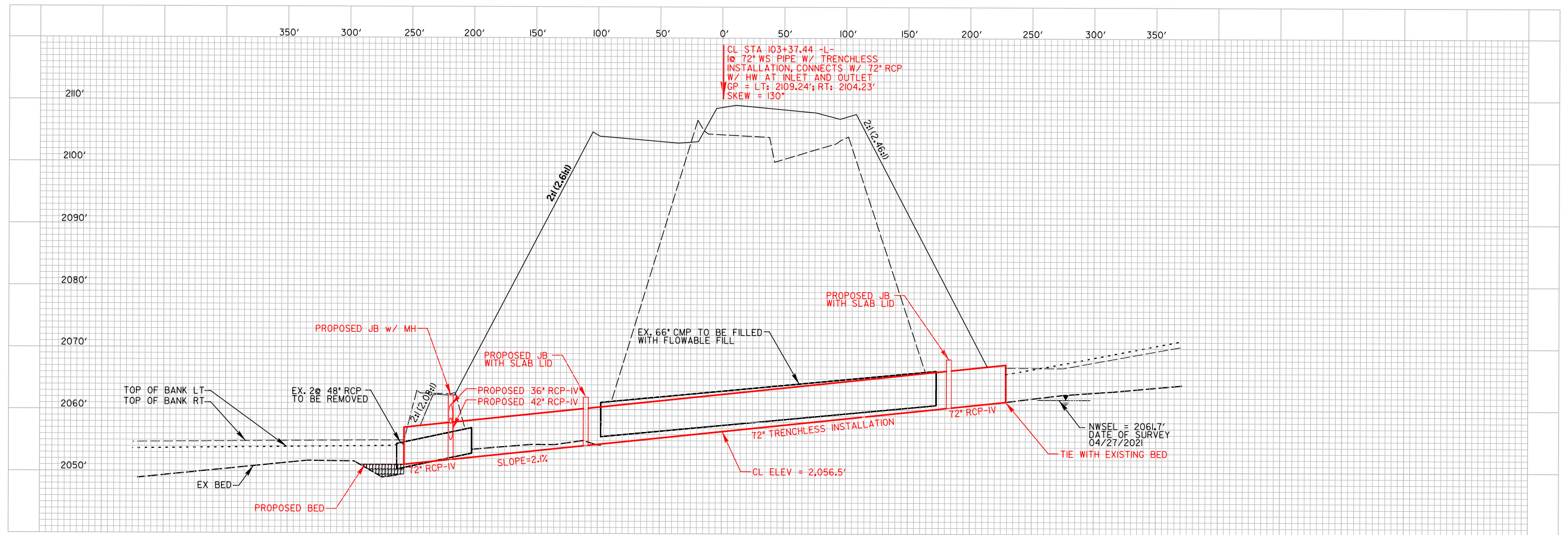
REVISIONS

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PROJECT REFERENCE NO. 1-2513AC		SHEET NO.
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

SITE 8 - PROFILE VIEW ALONG STRUCTURE

PERMIT DRAWING
SHEET 30 OF 36

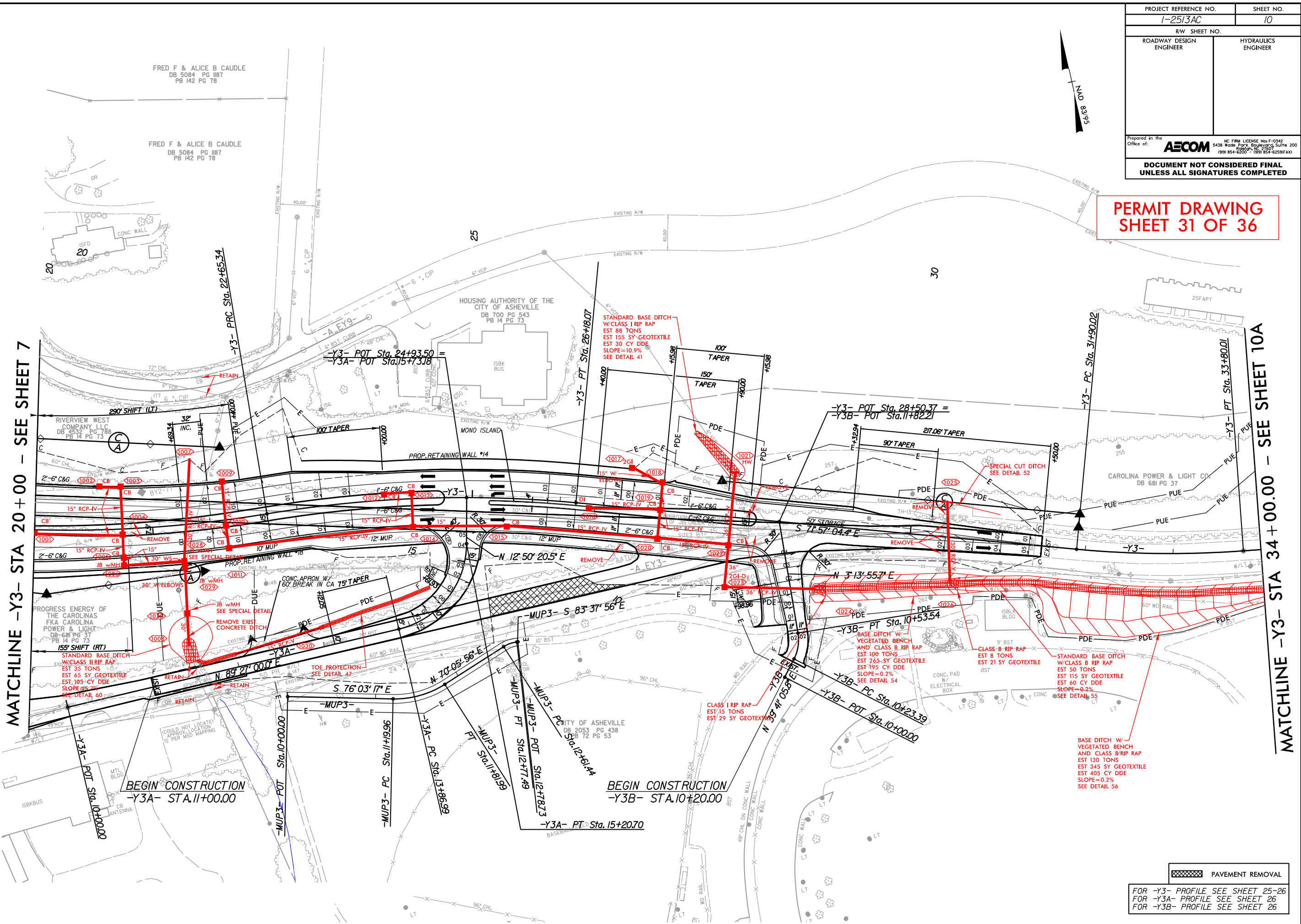


PAVEMENT REMOVAL
PAVEMENT REMOVAL

FOR Y3 - PROFILE SEE SHEET 25-26
 FOR Y3A - PROFILE SEE SHEET 26-26
 FOR Y3B - PROFILE SEE SHEET 26
 FOR Y3B - PROFILE SEE SHEET 26

PROJECT REFERENCE NO.	SHEET NO.
1-2513AC	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING SHEET 31 OF 36



MATCHLINE -Y3- STA 20+00 - SEE SHEET 7

MATCHLINE -Y3- STA 34+00.00 - SEE SHEET 10A

BEGIN CONSTRUCTION
-Y3A- STA.11+00.00

BEGIN CONSTRUCTION
-Y3B- STA.10+20.00

PAVEMENT REMOVAL

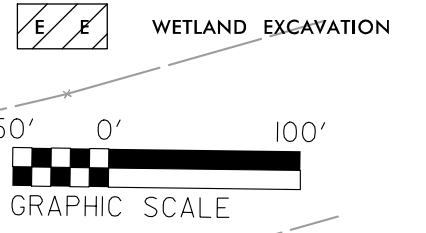
FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

REVISIONS

5/14/99
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05/14/99

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM <small>NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)</small>	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 33 OF 36**



MATCHLINE -Y3- STA 33 + 98.56 - SEE SHEET 10



BASE DITCH W/
VEGETATED BENCH
AND CLASS B/RIP RAP
EST 130 TONS
EST 345 SY GEOTEXTILE
EST 405 CY DDE
SLOPE=0.2%
SEE DETAIL 54

STANDARD BASE DITCH
W/CLASS B/RIP RAP
EST 625 TONS
EST 1490
SY GEOTEXTILE
EST 910 CY DDE
SLOPE=0.2%
SEE DETAIL 57

SITE 9
(SEE PERMIT
SHEET 34)

PAVEMENT REMOVAL

FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

REVISIONS

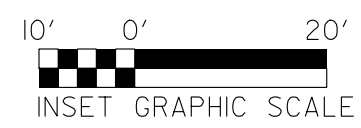
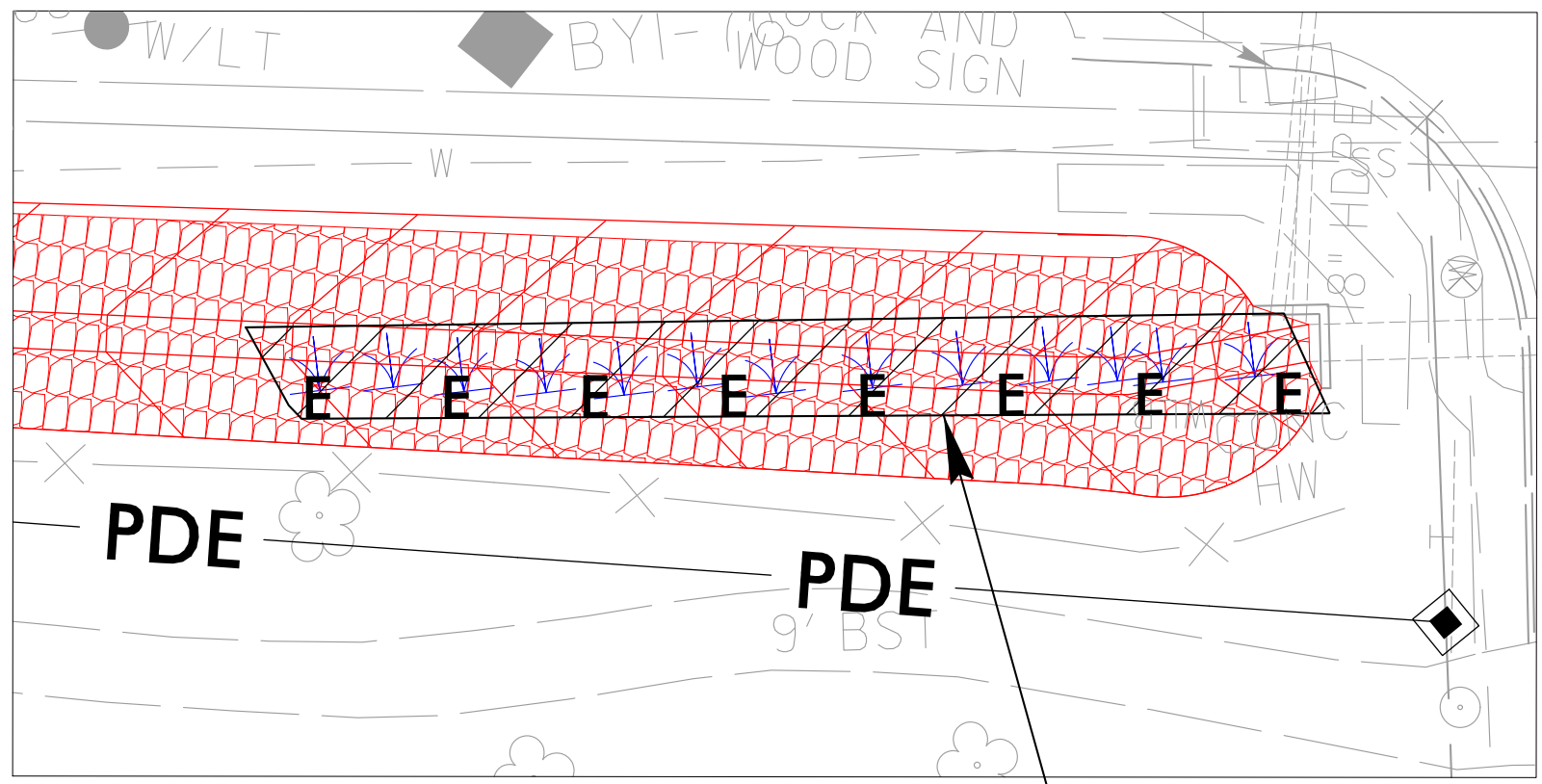
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PROJECT REFERENCE NO. 1-2513AC	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park, Boulevard, Suite 200 Raleigh, NC 27617 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

**PERMIT DRAWING
SHEET 34 OF 36**

 WETLAND EXCAVATION

SITE 9



EXCAVATION

 PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEET 16
FOR -Y4- PROFILE SEE SHEET 28
FOR -Y4RPC- PROFILE SEE SHEET 29

REVISIONS
 5/14/99
 03/15/00 AM 01S\910_CAD\70_NCDOT_TIP\Hydra-e\1\56-1-2513A\1-2513A_hyd_perm_wet_blockups_7.dgn
 03/15/00 AM 01S\910_CAD\70_NCDOT_TIP\Hydra-e\1\56-1-2513A\1-2513A_hyd_perm_wet_blockups_7.dgn

5/14/99

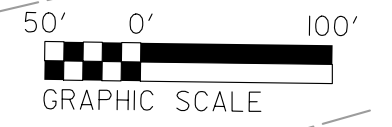
REVISIONS

-2513A\9000\GIS\910_CAD\70_NCDOT_TIP\Hydraulics\Permits_Environmental\Y3\12513A_hyd.prm_wet_psh_10A_Ditch_con.dgn

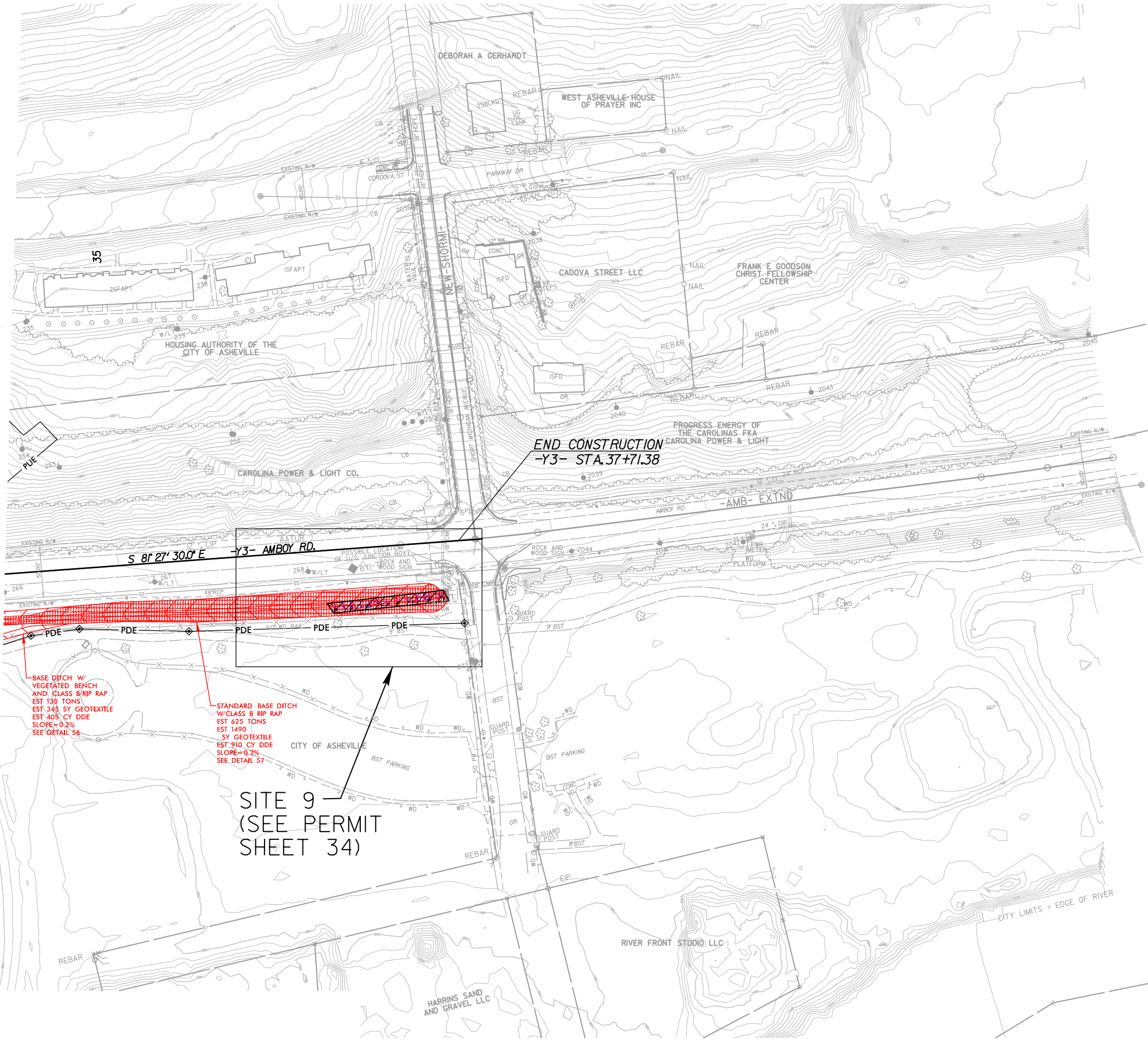
PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING SHEET 35 OF 36

 WETLAND EXCAVATION



MATCHLINE -Y3- STA 33 + 98.56 - SEE SHEET 10



BASE DITCH W/
VEGETATED BENCH
AND CLASS B RIP RAP.
EST 130 TONS
EST 345 SY GEOTEXTILE
EST 405 CY DDE
SLOPE=0.2%
SEE DETAIL 54

STANDARD BASE DITCH
W/CLASS B RIP RAP
EST 625 TONS
EST 1490
SY GEOTEXTILE
EST 910 CY DDE
SLOPE=0.2%
SEE DETAIL 57

SITE 9
(SEE PERMIT
SHEET 34)

 PAVEMENT REMOVAL

FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

WETLAND AND SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			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	19+73 to 24+09 -L- LT	Roadway Fill	0.45			0.14						
2	23+23 to 24+04 L RT/LT	Roadway Fill						0.03		148		
		(2) 48" CMP/WSP							0.01		36	
		Bank Stabilization	< 0.01									
3	20+56 to 26+05 -L- LT	Roadway Fill	0.24			0.17						
		Toe Protection	0.06									
4	43+90 to 46+71 -L- RT/LT	Bank Stabilization							0.02	32	93	
5	64+23 to 66+24 -L- RT/LT	2 @ 48" CSP						< 0.01		11		
		1 @ 72" / 2 @ 48" CSP						< 0.01		24		
		Roadway Fill						0.02		168		
		Bank Stabilization						< 0.01	< 0.01	11	4	
6	67+91 to 68+29 -L- RT	Bank Stabilization							0.01	17	37	
7	82+92 to 84+13 -L- LT	Roadway Fill	< 0.01					0.02	< 0.01	208	11	
	78+23 to 78+35 -L- RT	Bank Stabilization						< 0.01	< 0.01	24	13	
8	101+43 to 105+28 -L- RT/LT	Roadway Fill						0.04	< 0.01	217	30	
9	36+97 to 37+71 -Y3- RT	Ditch Excavation			0.03							
TOTALS*:			0.76		0.03	0.31		0.12	0.05	860	224	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 06/02/2023
 BUNCOMBE
 I-2513
 34165.1.2
 SHEET 36 OF 36