



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN



(Version 3.00; Released August 2021)

FOR NCDOT PROJECTS

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:	11/16/2022
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:	keemoore2@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
Project Built-Up Area (ac.)		Existing Site	
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 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 outfalling 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.



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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:			
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:			
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:			
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

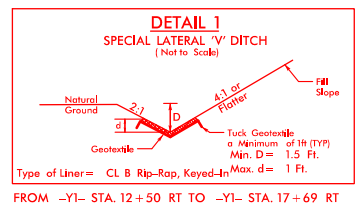
Additional Comments

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.

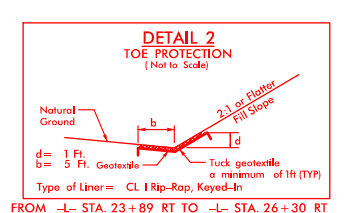
Due to the topography, ground water elevations, and the nature of the project, it was not possible to incorporate many of the features that were investigated. Large SCMs would also further increase impacts to surrounding areas resulting in more clearing and land disturbance which we are trying to minimize. 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.

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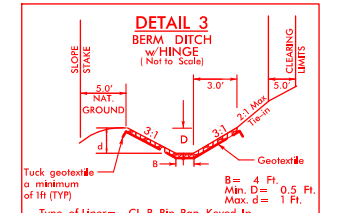
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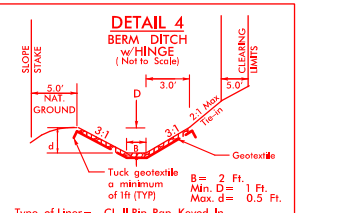
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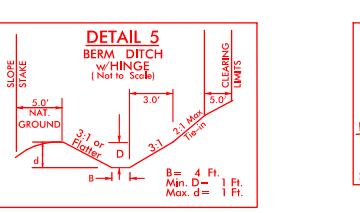
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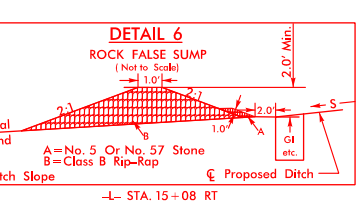
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FROM -L- STA. 37+87 RT TO -L- STA. 39+25 RT



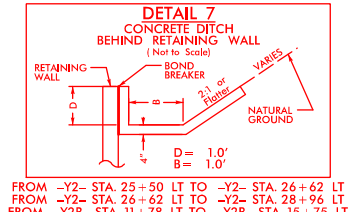
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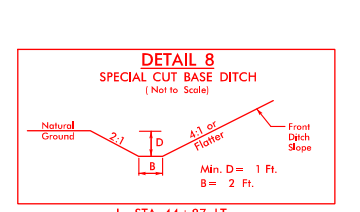
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FROM -L- STA. 35+50 RT TO -L- STA. 36+14 RT
FROM -L- STA. 36+14 RT TO -L- STA. 37+19 RT
FROM -L- STA. 39+25 RT TO -L- STA. 42+00 RT



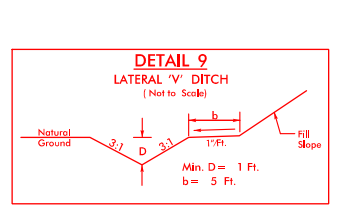
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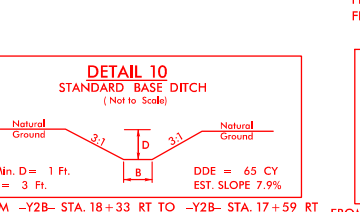
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FROM -Y2B- STA. 11+78 LT TO -Y2B- STA. 15+75 LT
FROM -Y2RBP- STA. 21+28 LT TO -Y2B- STA. 14+44 RT
FROM -L- STA. 54+78 TO -L- STA. 55+33 RT
FROM -L- STA. 55+33 TO -L- STA. 63+75 LT
FROM -L- STA. 60+17 TO -L- STA. 80+86 RT
FROM -L- STA. 85+57 TO -L- STA. 98+25 LT
FROM -L- STA. 88+32 TO -L- STA. 97+50 RT
FROM -L- STA. 115+50 RT TO -L- STA. 121+00 RT



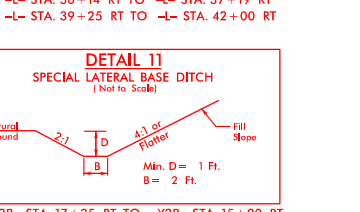
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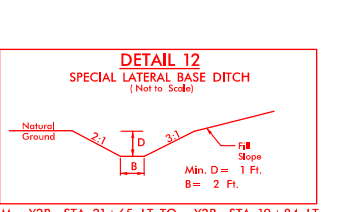
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FROM -L- STA. 18+50 LT TO -L- STA. 19+40 LT



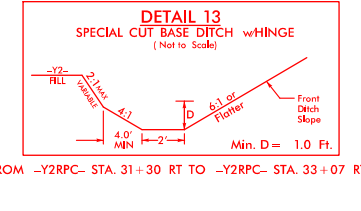
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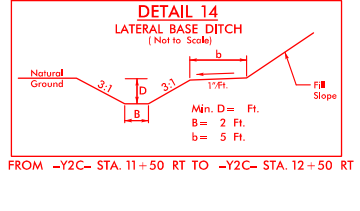
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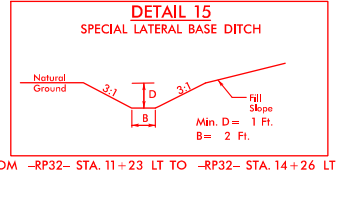
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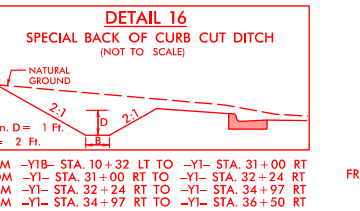
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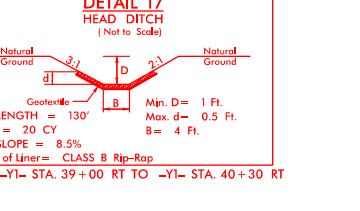
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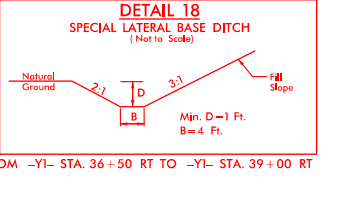
FROM -RP32- STA. 11+23 LT TO -RP32- STA. 14+26 LT



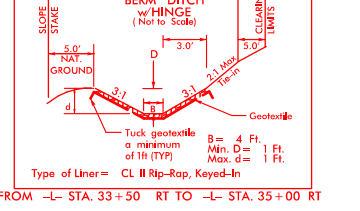
FROM -Y1B- STA. 10+32 LT TO -Y1- STA. 31+00 RT
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FROM -Y1- STA. 32+24 RT TO -Y1- STA. 34+97 RT
FROM -Y1- STA. 34+97 RT TO -Y1- STA. 36+50 RT



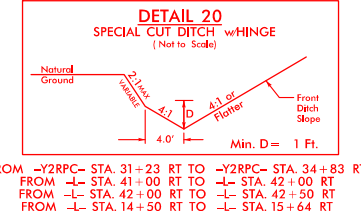
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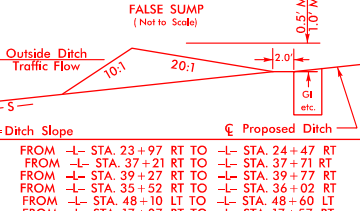
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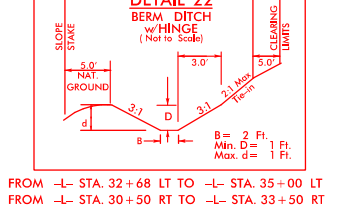
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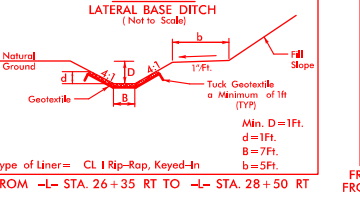
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FROM -L- STA. 41+00 RT TO -L- STA. 42+00 RT
FROM -L- STA. 42+00 RT TO -L- STA. 42+50 RT
FROM -L- STA. 14+50 RT TO -L- STA. 15+64 RT
FROM -L- STA. 15+64 RT TO -L- STA. 16+40 RT
FROM -L- STA. 17+00 LT TO -L- STA. 18+50 LT



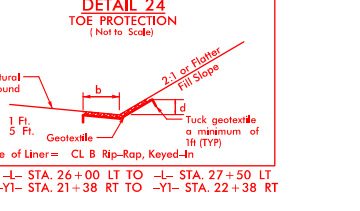
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FROM -L- STA. 39+27 RT TO -L- STA. 39+77 RT
FROM -L- STA. 35+52 RT TO -L- STA. 36+02 RT
FROM -L- STA. 48+10 LT TO -L- STA. 48+60 LT
FROM -L- STA. 17+07 RT TO -L- STA. 17+57 RT



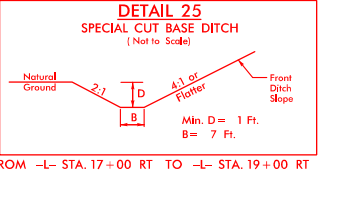
FROM -L- STA. 32+68 LT TO -L- STA. 35+00 LT
FROM -L- STA. 30+50 RT TO -L- STA. 33+50 RT



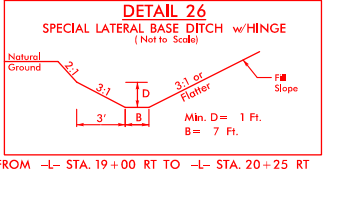
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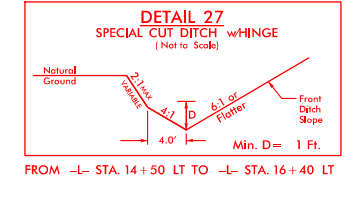
FROM -L- STA. 26+00 LT TO -L- STA. 27+50 LT
FROM -Y1- STA. 21+38 RT TO -Y1- STA. 22+38 RT



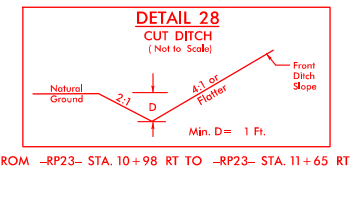
FROM -L- STA. 17+00 RT TO -L- STA. 19+00 RT



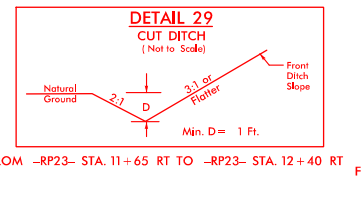
FROM -L- STA. 19+00 RT TO -L- STA. 20+25 RT



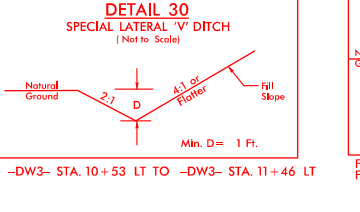
FROM -L- STA. 14+50 LT TO -L- STA. 16+40 LT



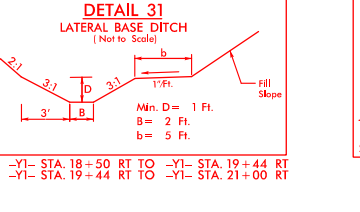
FROM -RP23- STA. 10+98 RT TO -RP23- STA. 11+65 RT



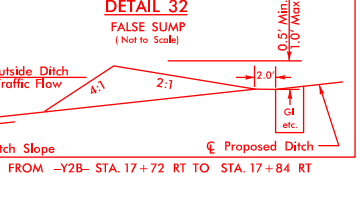
FROM -RP23- STA. 11+65 RT TO -RP23- STA. 12+40 RT



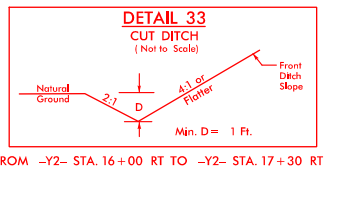
FROM -DW3- STA. 10+53 LT TO -DW3- STA. 11+46 LT



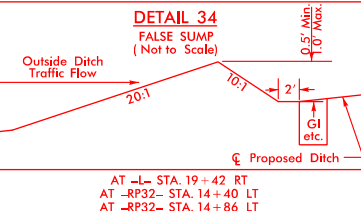
FROM -Y1- STA. 18+50 RT TO -Y1- STA. 19+44 RT
FROM -Y1- STA. 19+44 RT TO -Y1- STA. 21+00 RT



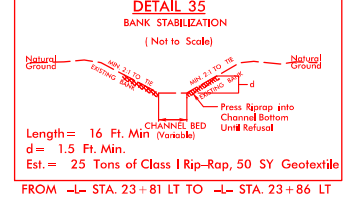
FROM -Y2B- STA. 17+72 RT TO STA. 17+84 RT



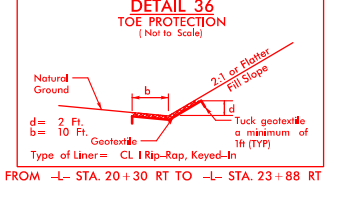
FROM -Y2- STA. 16+00 RT TO -Y2- STA. 17+30 RT



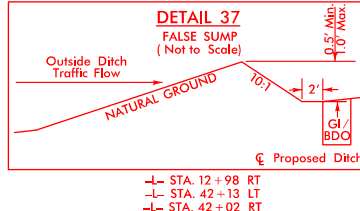
FROM -L- STA. 19+42 RT
AT -RP32- STA. 14+40 LT
AT -RP32- STA. 14+86 LT
AT -RP32- STA. 16+09 RT
AT -Y3RPA- STA. 16+49 LT
AT -L- STA. 106+38 RT
AT -L- STA. 108+39 RT
AT -L- STA. 111+97 RT
AT -L- STA. 115+87 RT
AT -L- STA. 117+85 RT



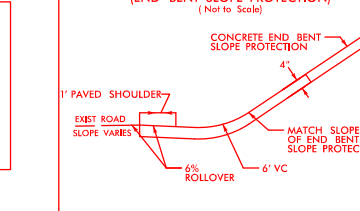
FROM -L- STA. 23+81 LT TO -L- STA. 23+86 LT



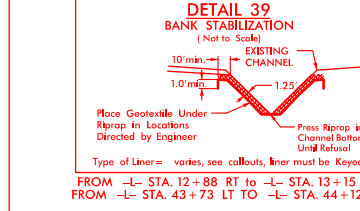
FROM -L- STA. 20+30 RT TO -L- STA. 23+88 RT



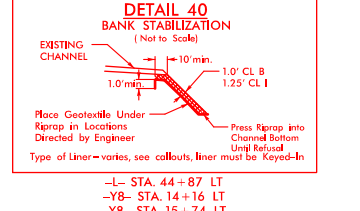
FROM -L- STA. 12+98 RT
FROM -L- STA. 42+13 LT
FROM -L- STA. 42+02 RT
FROM -L- STA. 30+50 RT
FROM -Y2RPC- STA. 31+27 RT



FROM -Y8- STA. 15+66 RT TO -Y8- STA. 18+33 RT



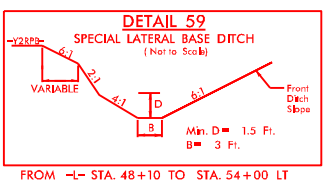
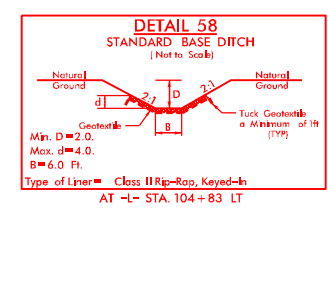
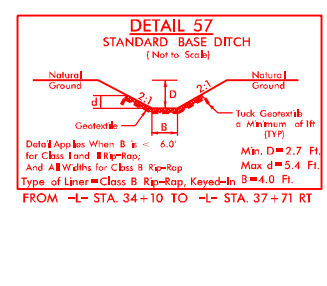
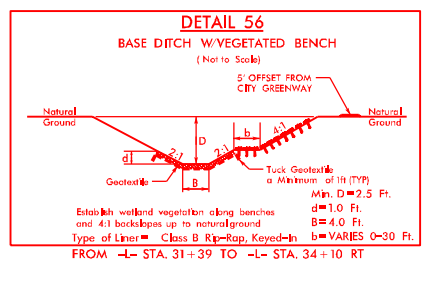
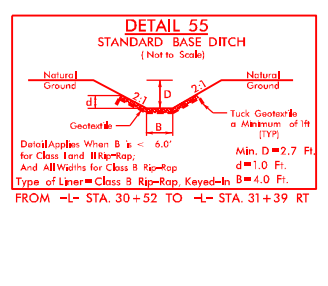
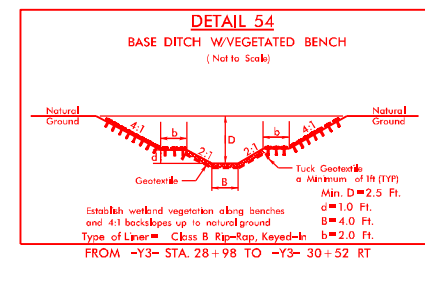
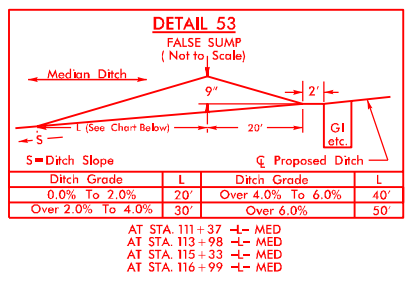
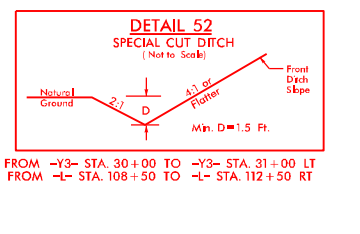
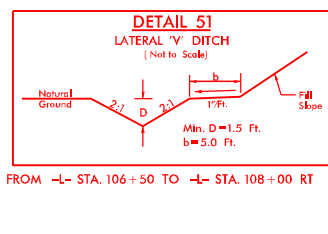
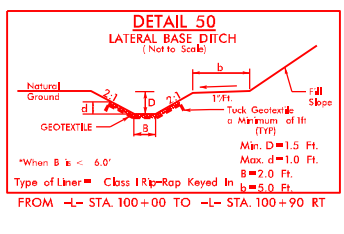
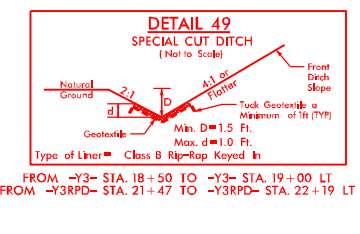
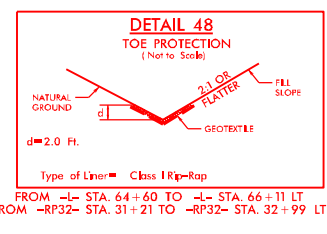
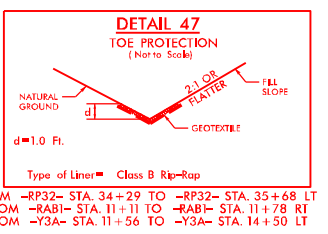
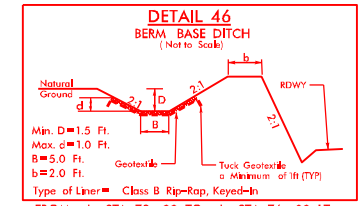
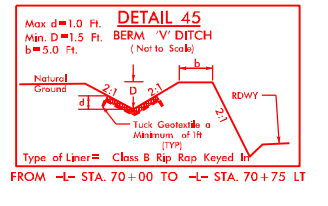
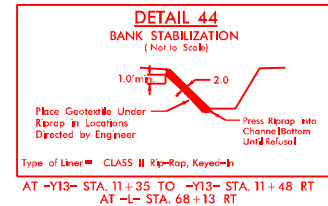
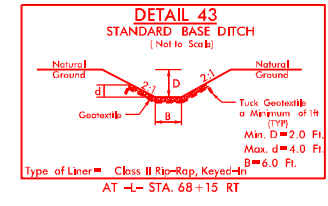
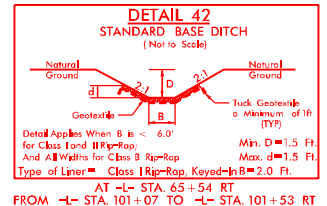
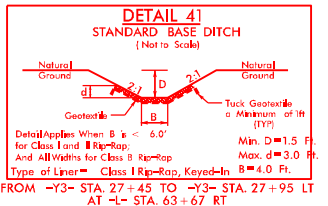
FROM -L- STA. 12+88 RT TO -L- STA. 13+15 RT
FROM -L- STA. 43+73 LT TO -L- STA. 44+12 LT



FROM -L- STA. 44+87 LT
FROM -Y8- STA. 14+16 LT
FROM -Y8- STA. 15+74 LT
FROM -Y8- STA. 17+70 LT
FROM -Y8- STA. 18+54 LT

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 5/14/99

PROJECT REFERENCE NO.	SHEET NO.
1-2513AC	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

PERMIT DRAWING
SHEET 4 OF 36

FILL EXISTING SCOUR HOLE
WITH NATIVE MATERIAL
EST. 17 TONS CL I RIP RAP
EST. 38 SY GEOTEXTILE

EST. 2 TON CL B RIP RAP
EST. 7 SY GEOTEXTILE

EMERGENCY
SPILLWAY

OUTLET
STRUCTURE

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

DRY DETENTION
BASIN LINED WITH
CLASS B RIP RAP

GRADE
TO
DRAIN

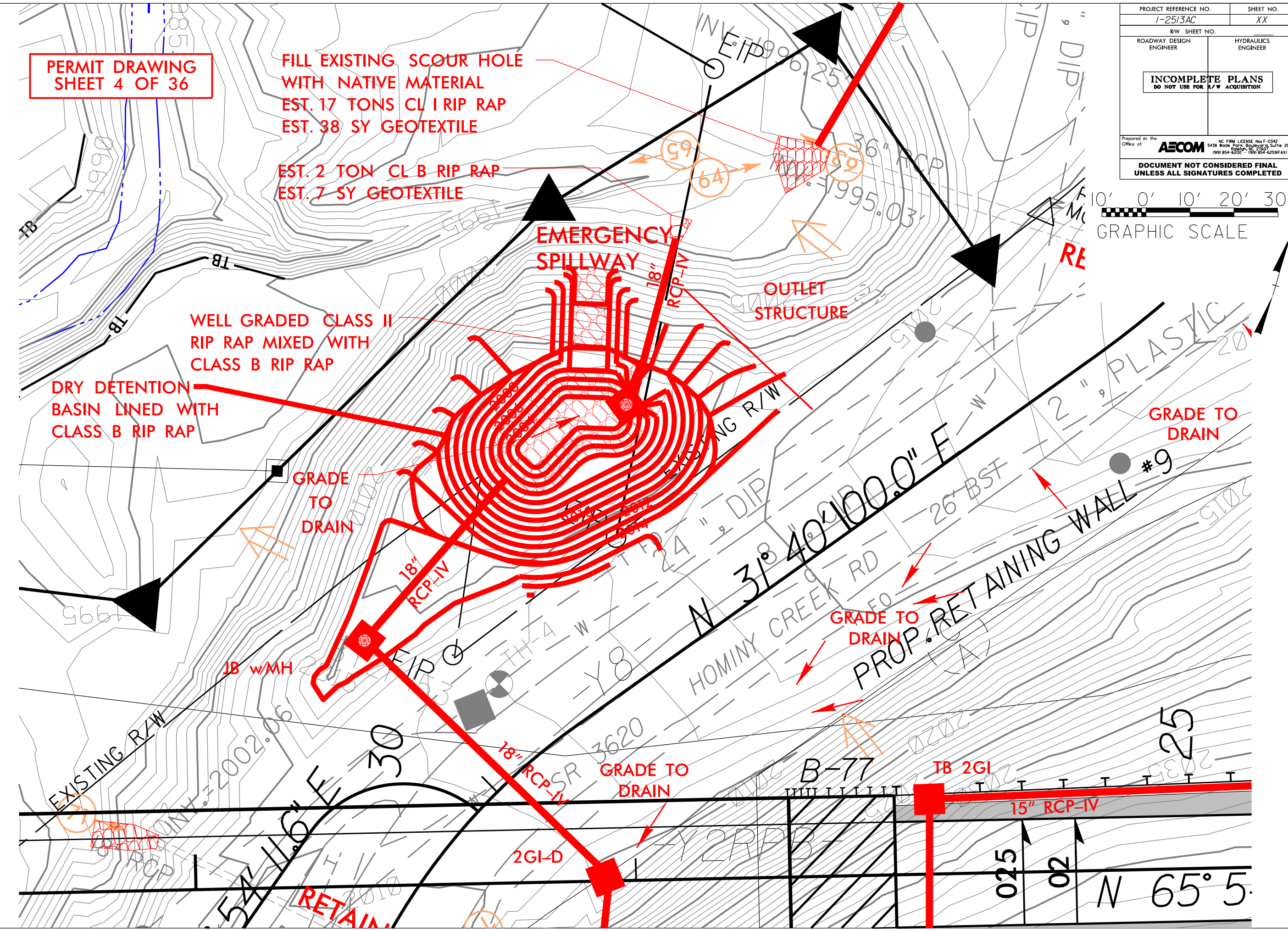
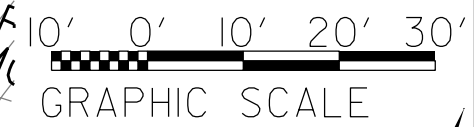
GRADE
TO
DRAIN

GRADE
TO
DRAIN

GRADE
TO
DRAIN

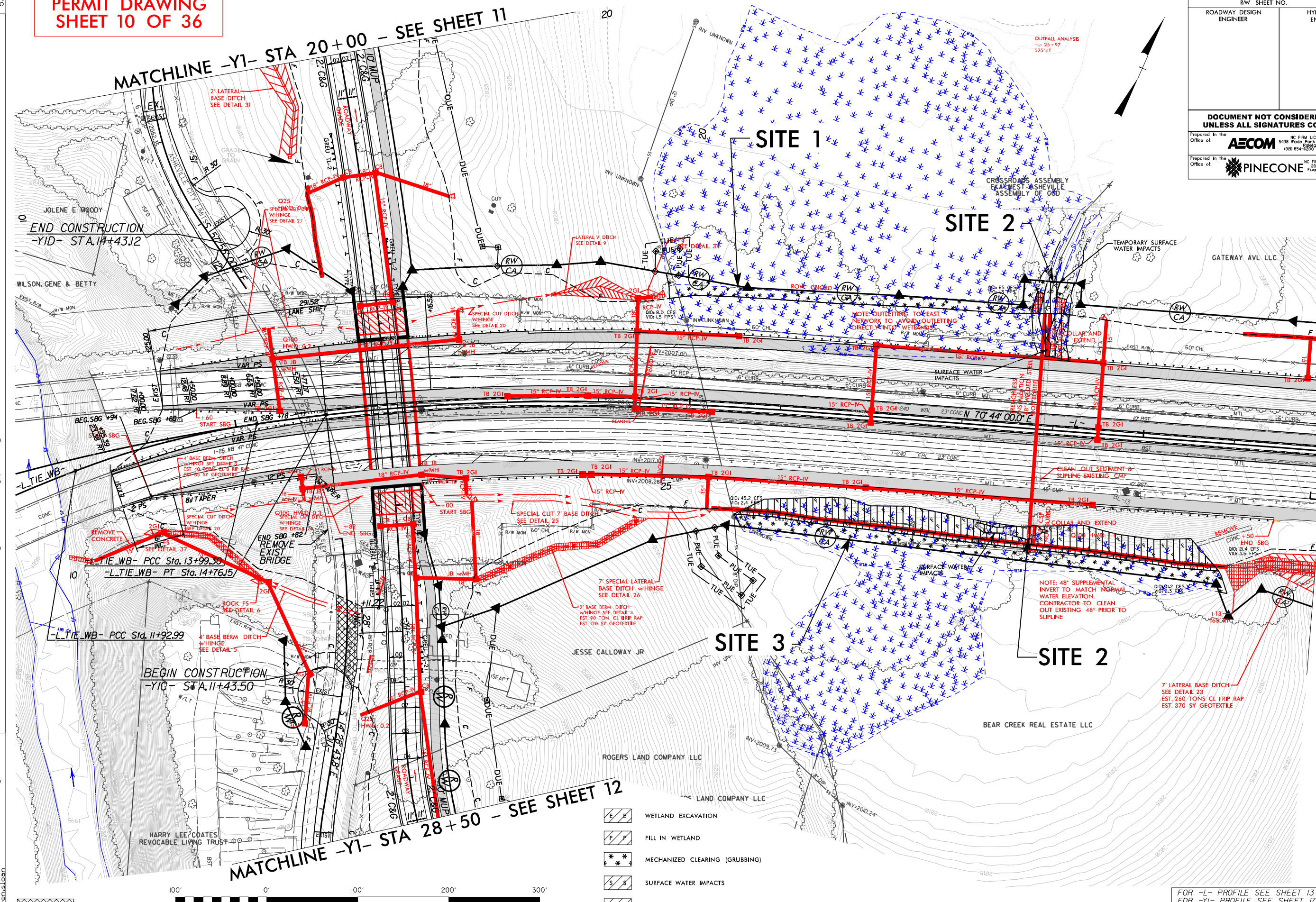
5/14/99
REVISIONS
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ma.tbekemp

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. XX
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Prepared in the Office of: AECOM NC FIRM LICENSE No F-0342 5438 Wood 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 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 by the Office of: AECOM	NC FIRM LICENSE No. F-0342 5438 West Park Boulevard, Suite 200 Raleigh, NC 27617 (919) 854-4200 • (919) 854-6259 (FAX)
Prepared by the Office of: PINECONE	NC FIRM LICENSE No. P-804 205 E. Spring Street, Suite 200 Fayetteville, NC 28404 (919) 656-8514



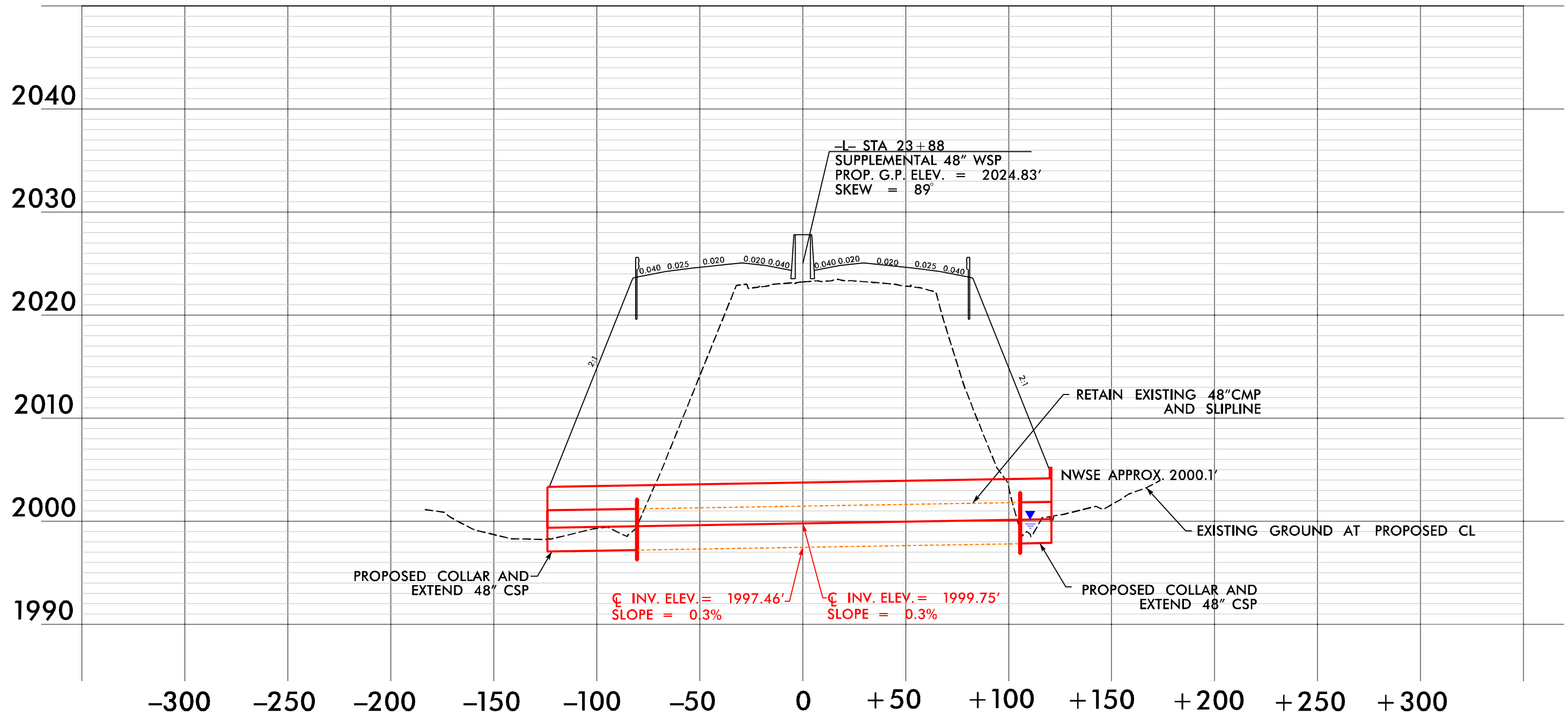
MATCHLINE -Y- STA 27+00 - SEE SHEET 5

REVISIONS
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5/14/99



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

SITES 2 – PROFILE VIEW ALONG STRUCTURE



PROFILE

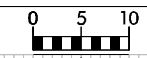
SCALE
 VERT. 1" = 10'
 HORIZ. 1" = 50'

NCDOT

DIVISION OF HIGHWAYS
 BUNCOMBE COUNTY

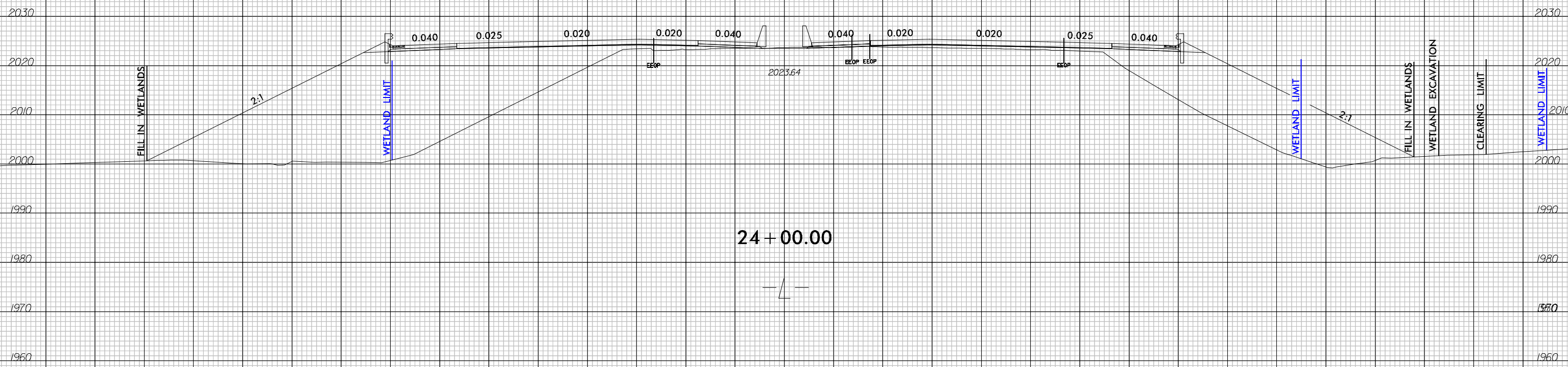
PROJECT: 34165.13 (I-2513AC)
 I-26 / I-40 / I-240 INTERCHANGE TO
 SR 3548 (HAYWOOD RD)

PERMIT DRAWING
 SHEET 11 OF 36



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

**PERMIT DRAWING
SHEET 12 OF 36**



24 + 00.00

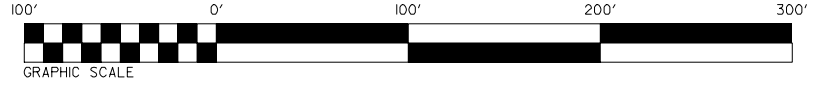
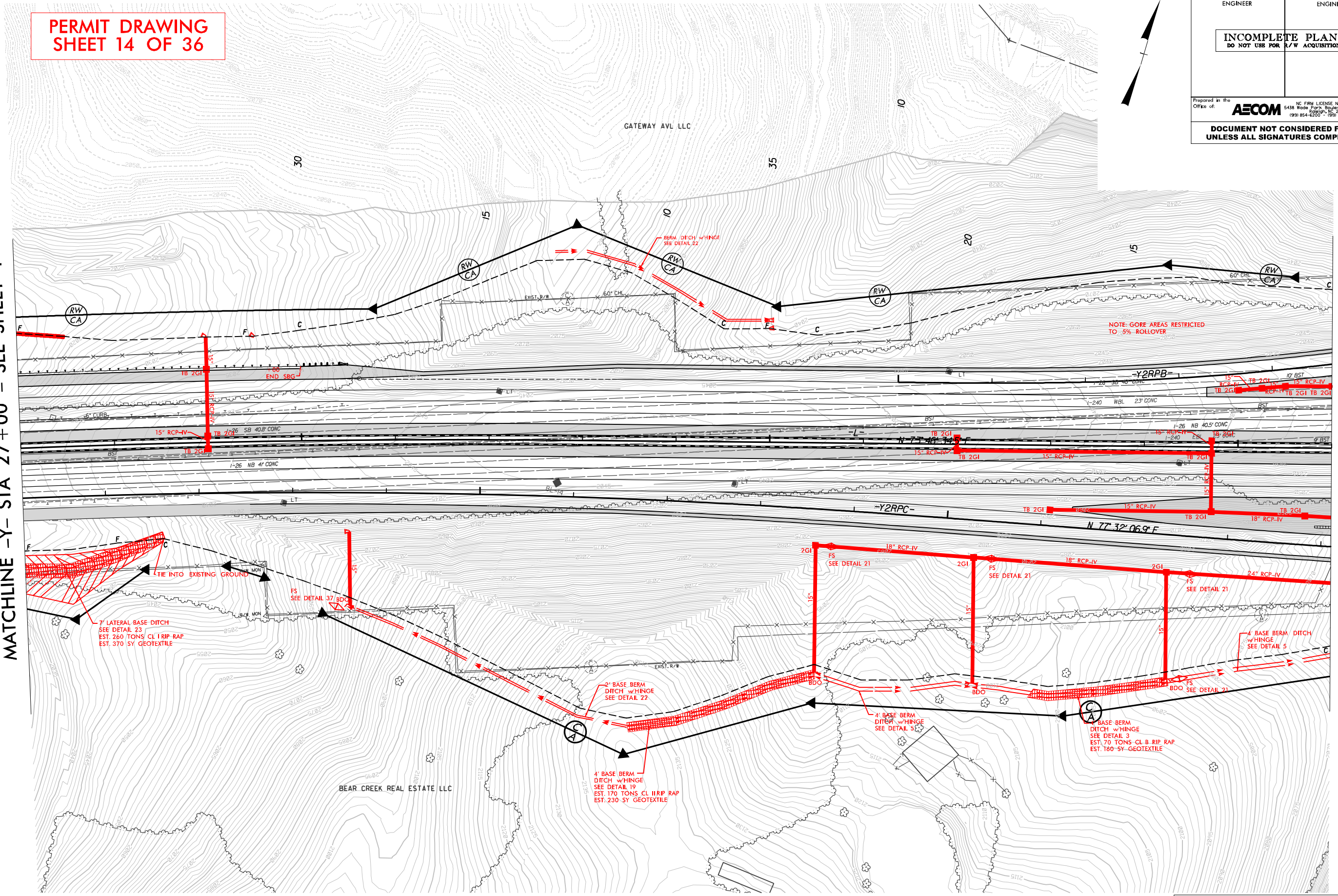


PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
Prepared in the Office of: AECOM NC FIRM LICENSE No. F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6291(FAX)	
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PERMIT DRAWING
SHEET 14 OF 36

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

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



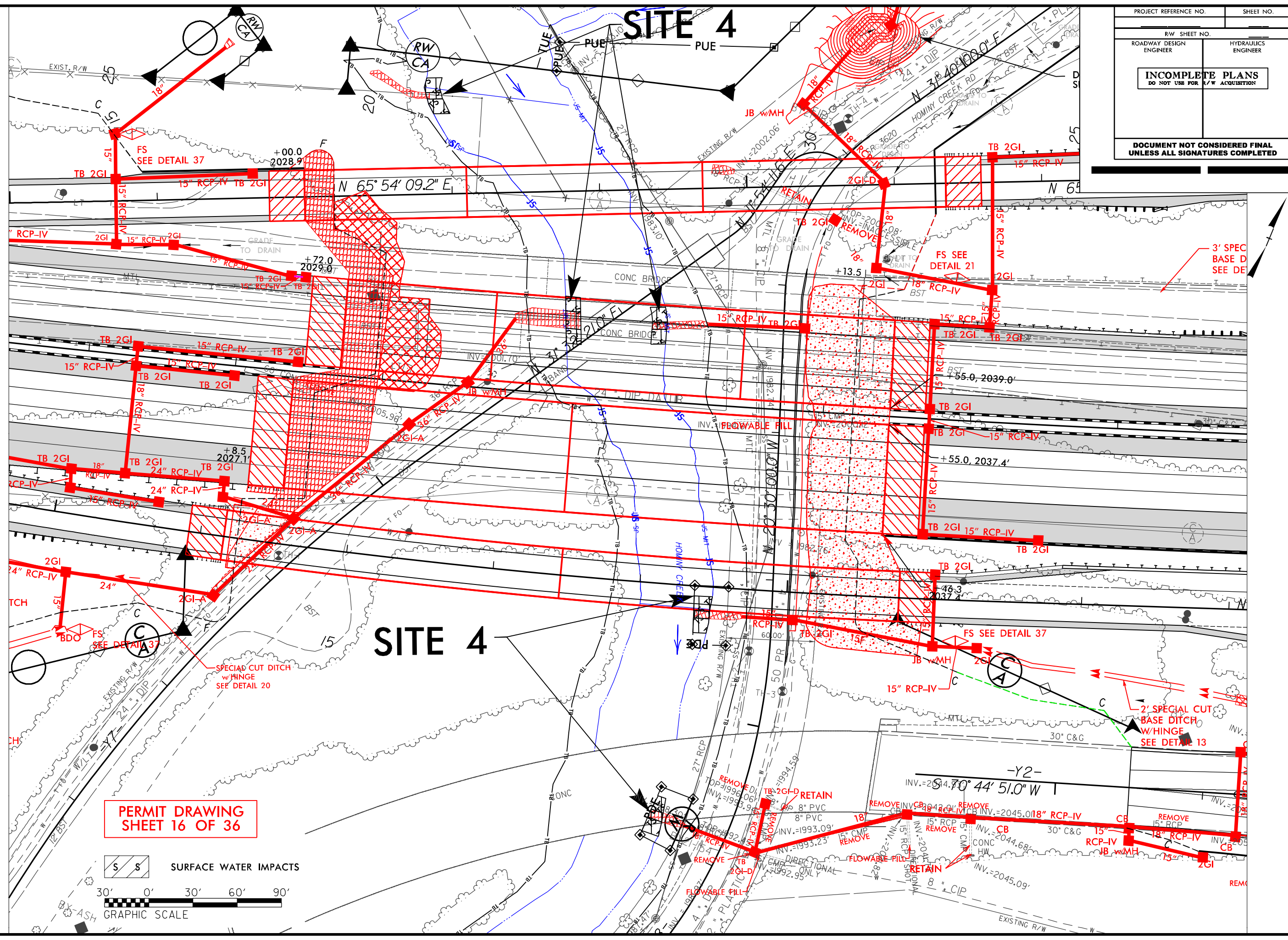
FOR -L- PROFILE SEE SHEET 13
FOR -Y2RPB- PROFILE SEE SHEET 21
FOR -Y2RPC- PROFILE SEE SHEET 22

REVISIONS

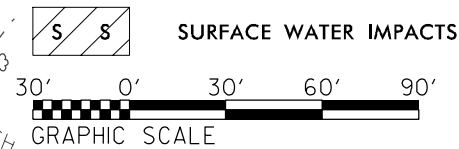
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PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SITE 4



PERMIT DRAWING
SHEET 16 OF 36



REVISIONS

8/17/99
 I:\2\2022\pwa\vecom-ma-pw.bentley.com\AECOM_DS21_NA_2020\Documents\60646756-1-2613A\900-CAD-GIS\910-CAD\70-NCDDOT-TIP\Hydraulics\Permits_Environmental\AECOM\1-2913-AC\Drawings\16-12613AC_perm-wet_Site_4.dgn
 11/2/2022
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5/14/99
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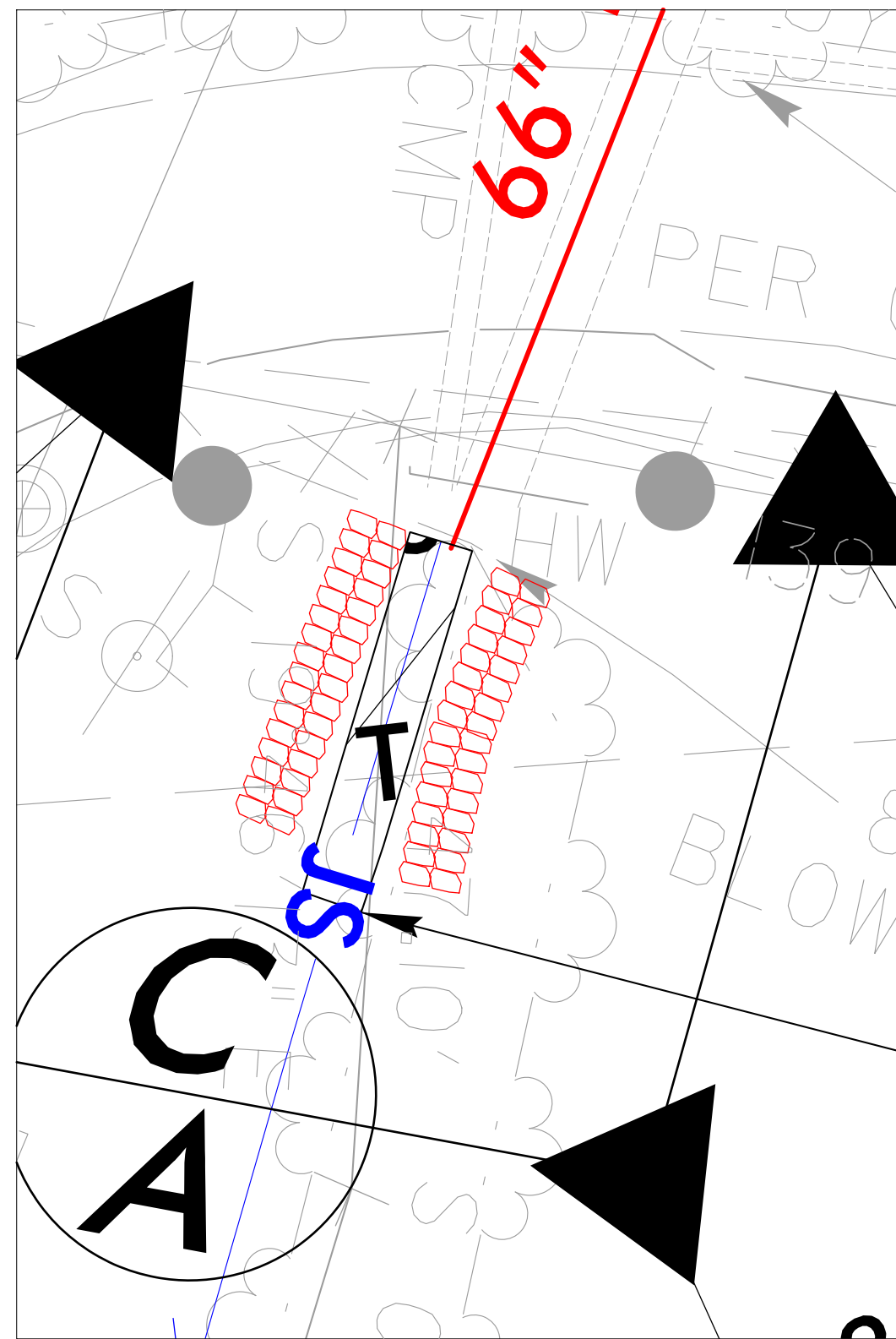
REVISIONS

NO.	DESCRIPTION	DATE

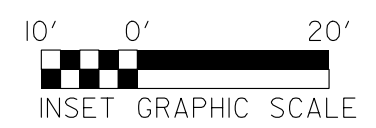


TEMPORARY SURFACE WATER IMPACTS

SITE 7



TEMPORARY SURFACE WATER



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 27607 (919) 854-6200 • (919) 854-6259(FAX)	
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**PERMIT DRAWING
SHEET 23 OF 36**



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

-RABI-

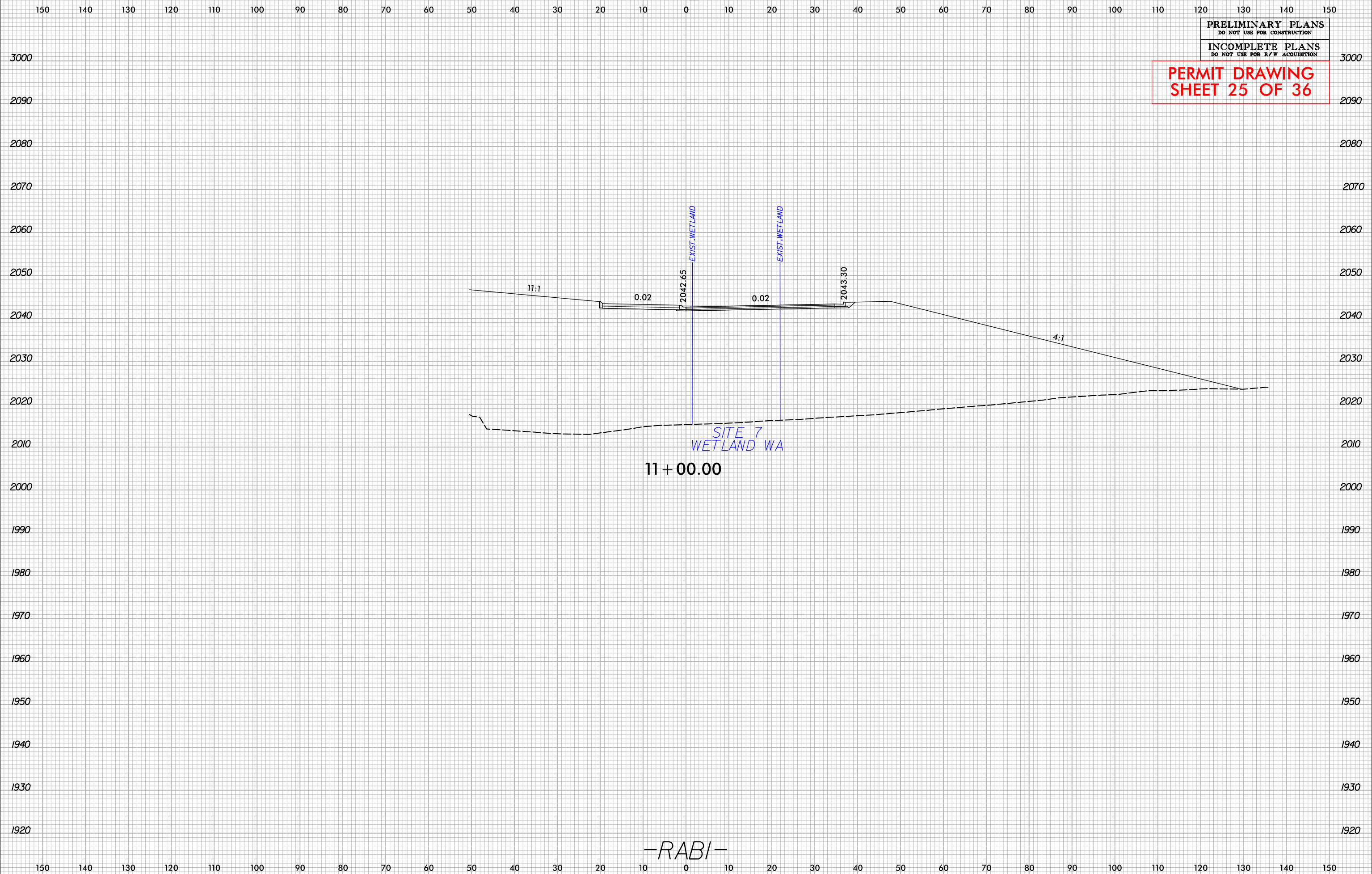


PROJECT REFERENCE	SHEET NO.
BP6.R017 - HARNETT 54	X-1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 25 OF 36



-RABI-

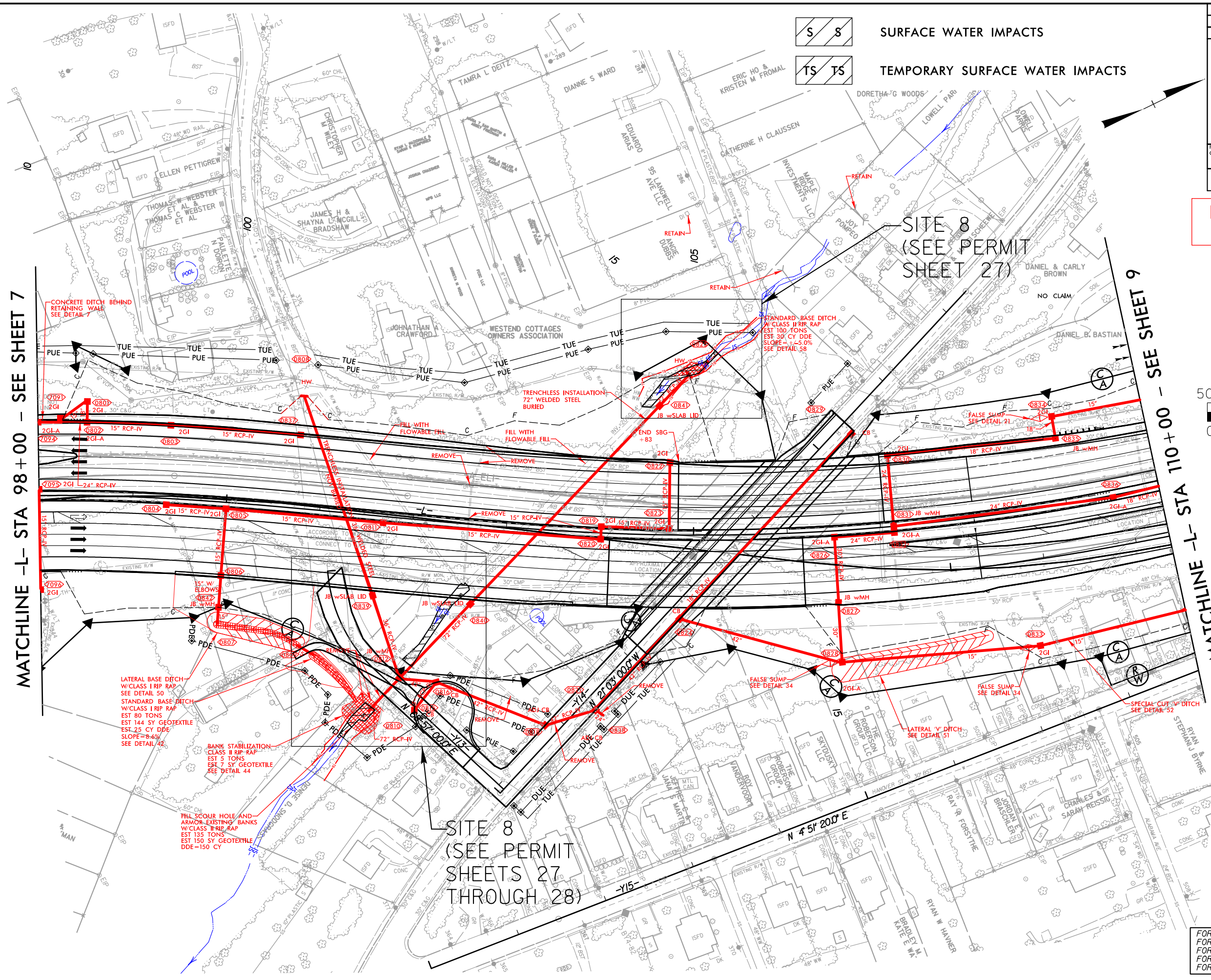
11/11/2022 9:39:54 AM
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PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM NC FIRM LICENSE No F-0342 5438 Wade Park Boulevard, Suite 200 Raleigh, NC 27607 (919) 854-6200 • (919) 854-6259(FAX)	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING SHEET 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)

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

REVISIONS

9:08:40 AM 5/14/99 GIS\910_CAD\70_NCDOT_TIP\Hydro\ulca\Permits_Environmental\VHB\12513A_hyd_perm_wat_psh_08.dgn 5756-1-2513AC

5/14/99

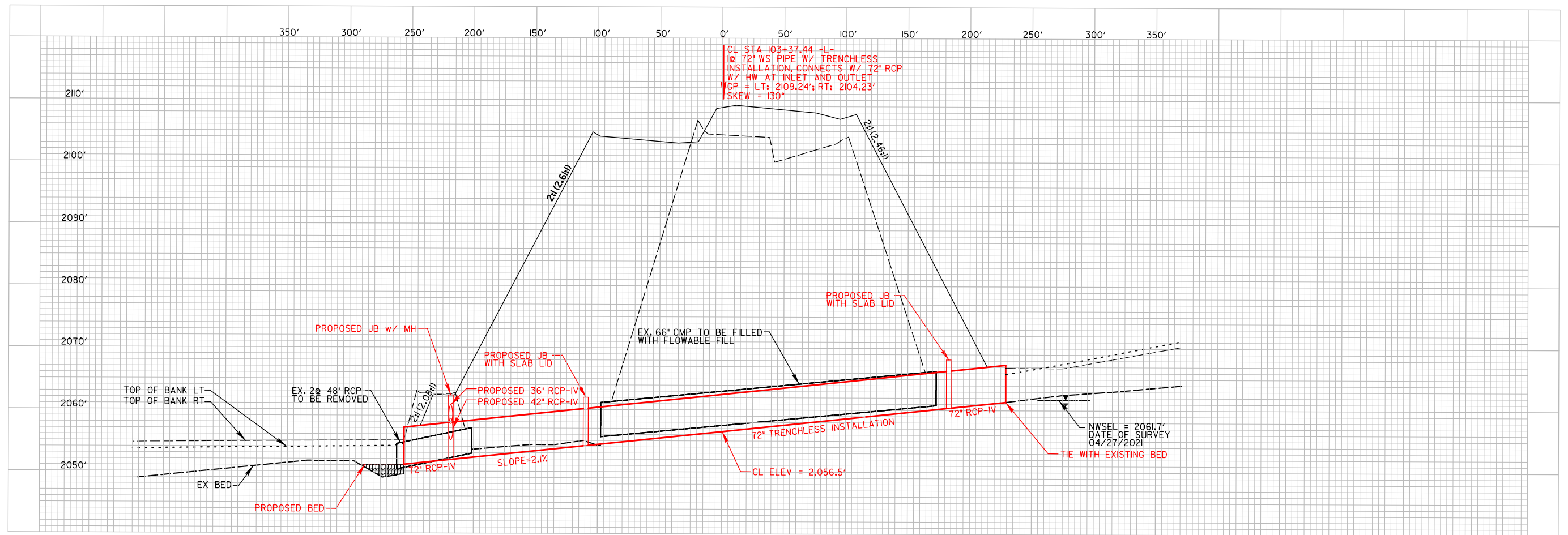
REVISIONS

9:15:56 AM
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PROJECT REFERENCE NO. 1-2513AC		SHEET NO.	
RW SHEET NO.		HYDRAULICS ENGINEER	
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			

SITE 8 - PROFILE VIEW ALONG STRUCTURE

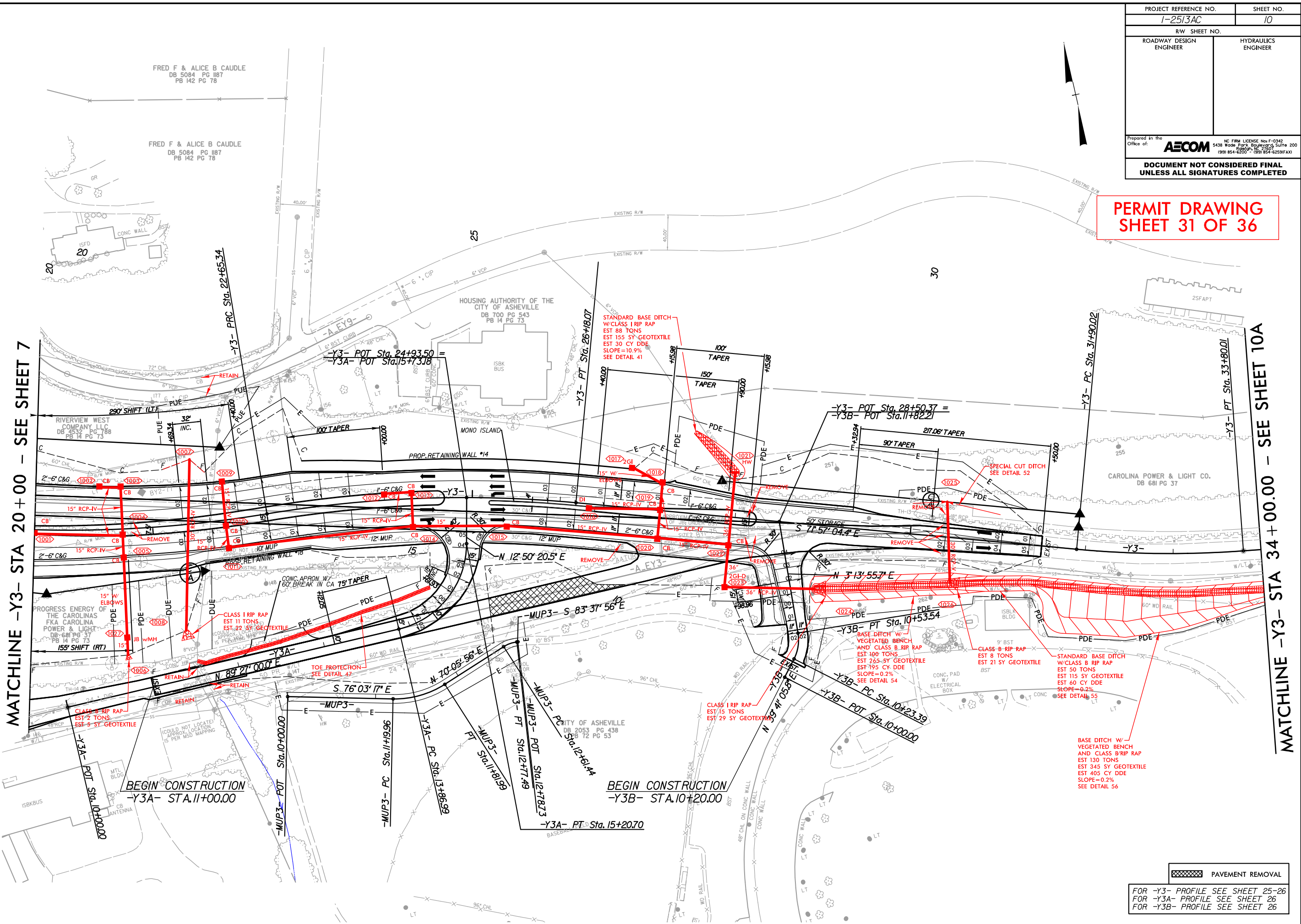
PERMIT DRAWING
SHEET 30 OF 36



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. 1-2513AC	SHEET NO. 10
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 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

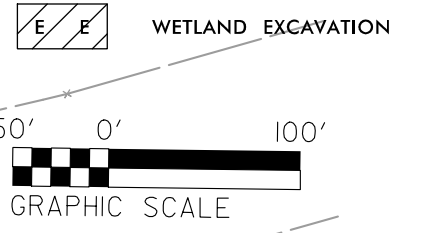
FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

REVISIONS

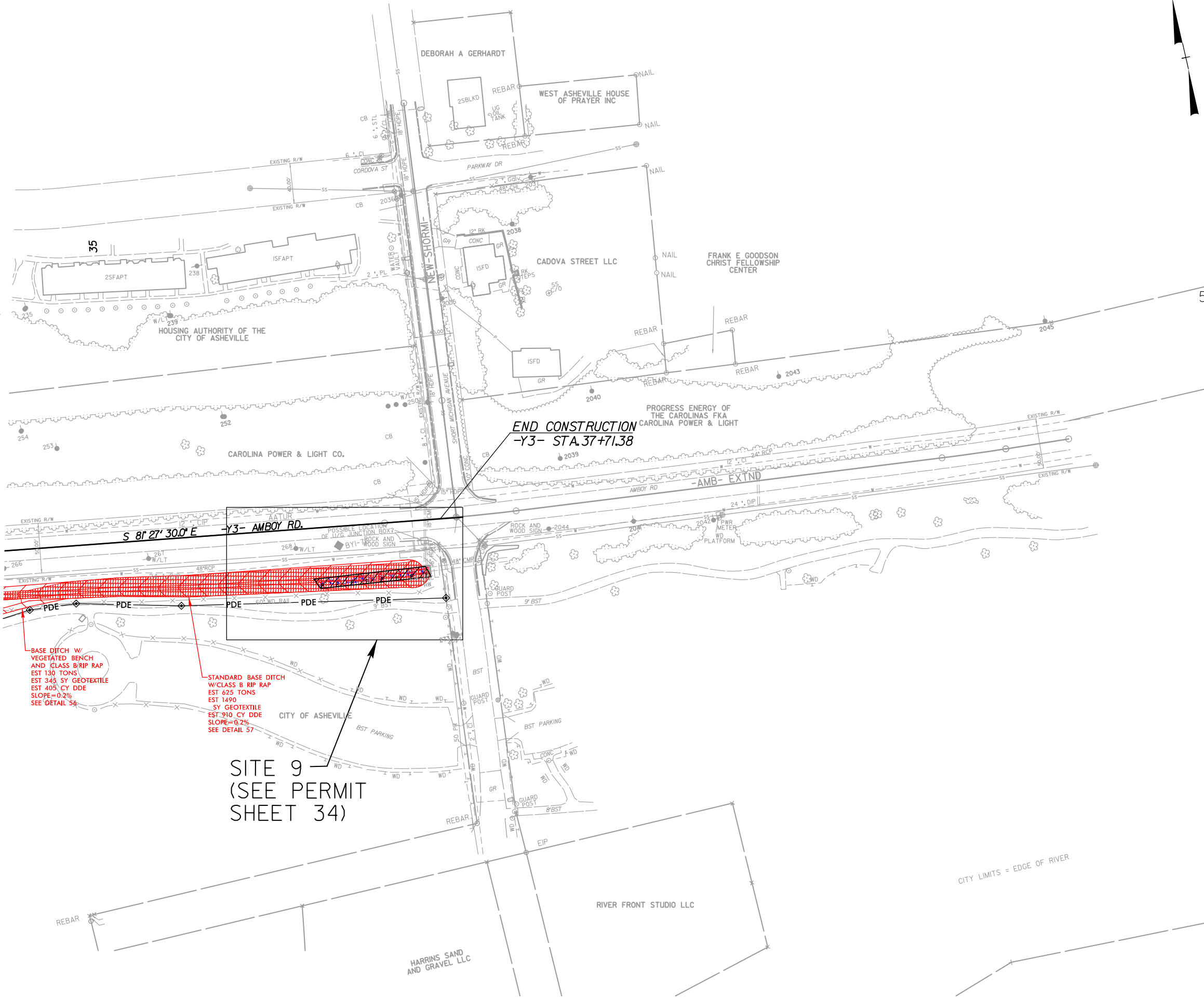
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 05/14/99

PROJECT REFERENCE NO. 1-2513AC	SHEET NO. 10A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
Prepared in the Office of: AECOM <small>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

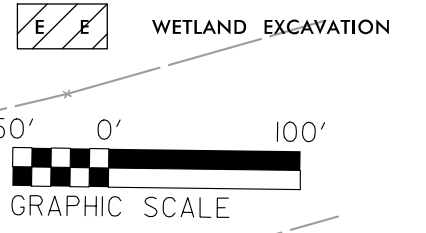
FOR -Y3- PROFILE SEE SHEET 25-26
FOR -Y3A- PROFILE SEE SHEET 26
FOR -Y3B- PROFILE SEE SHEET 26

REVISIONS

5/14/99
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 S-1-2513A

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**



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

5/14/99
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102517 GSA
-2513A\900-2513A\CAD\701.NCDDOT_TIP\Hydraulics\Permits_Environmental\Y3\12513A_hyd.prm_wet_psh_10A_Ditch_con.dgn

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		127		
		(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						
	20+56 to 26+05 -L- LT	Toe Protection			0.06							
4	L 43+90 to 46+71 RT/LT	Bank Stabilization							0.02	32	93	
5	64+23 to 66+24 -L- RT/LT	2 @ 48" RCP							< 0.01		11	
		1 @ 72" / 2 @ 48" RCP							< 0.01		24	
		Roadway Fill						0.02		168		
		Bank Stabilization							< 0.01		15	
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		24	
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*:			0.70		0.09	0.31		0.11	0.06	769	281	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 11/16/2022
 BUNCOMBE
 I-2513
 34165.1.2
 SHEET 36 OF 36