



North Carolina Department of Transportation



Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 3.00; Released August 2021)

WBS Element: 34165.1.11/34165.1. TIP/Proj No: I-2513AA/AB County(ies): Buncombe Page 1 of 5

General Project Information

WBS Element:	34165.1.11/34165.1.12	TIP Number:	I-2513AA/AB	Project Type:	Roadway Widening	Date:	9/21/2022
NCDOT Contact:	Kevin E Moore, PE		Contractor / Designer:		Matthew Harvey, PE		
Address:	NCDOT PMU		Address:	Wetherill Engineering, Inc.			
	1000 Birch Ridge Drive			1223 Jones Franklin Road			
	Raleigh, NC 27610, USA			Raleigh, NC 27606			
Phone:	919-707-6287		Phone:	919-851-8077			
Email:	kemoore2@ncdot.gov		Email:	MHarvey@wetherilleng.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):	2.656 Miles	Surrounding Land Use:	Residential/Commercial				
Proposed Project			Existing Site				
Project Built-Upon Area (ac.)	41.7	ac.	35.9	ac.			
Typical Cross Section Description:	Variable - See Project Typical Sections			Variable - See Project Typical Sections			

Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	118,800	Year:	2040	Existing:	95,100	Year:	2024
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General Project Narrative:
(Description of Minimization of Water Quality Impacts)

The project consists of roadway improvements on I-40 from east of SR 1224 (Monte Vista Road) to pavement joint west of SR 3412 (Sand Hill Road) and I-26 from Pond Road bridge to I-26/I-40/I-240 interchange. The project will also include initial improvements at I-40EB, to I-26EB Ramp and US 19/23 (Smokey Park Highway). 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 4/5:
---Since this portion of the project is almost entirely a pavement overlay with no new built upon area, no SCMs were proposed here.

Plan Sheet 6:
---The gore area between -Y5LPB- and -Y- was looked for a potential SCM. This area was mentioned by the aesthetics committee and will likely be facilitated with plantings. Since this is not a new built upon area, a SCM will not be pursued.
---The area to the right of -Y5RPA- at Station 24+00 +/- was investigated for a SCM. A SCM was designed at the location to treat the water quality volume (WQV). It was found that the headwater from the crosspipe will back up the basin, even in smaller storm events. This will decrease the functionality of the basin and cause long term maintenance concerns. NCDOT maintenance personnel voiced concern with the basin interfering with their daily operations which would hinder their public safety operations. Since this facility serves one of the larger more vital locations in the area during icing/winter storm events, it was determined that a device could not be installed at this location without negatively impacting the community's safety.
---The area right of -Y5RPA- at Station 17+00 +/- at the outlet of the Ragsdale Creek culvert was investigated for an SCM and found to not be feasible. Railroads do not typically allow SCMs in their right of way and accessibility for long term maintenance would be difficult. For this reason, a SCM will not be pursued at this location.

Plan Sheet 7:
---The 5' base ditch left of -Y- 67+50 +/- along Montgomery Street was looked at, but disturbance to the Asheville School property will need to be limited since the property is a 4F property. For this reason a SCM will not be pursued.
---The outlet at drainage structure 0721 is a JS upstream and non-JS on the downstream side. The outfall is designed for larger storm events due to the large drainage area coming to this location. A SCM is not feasible at this location.
---There are no opportunities available right of -Y- on this plan sheet due to access issues. For this reason a SCM will not be pursued.

Plan Sheet 8:
---All outlets on this sheet are not easily accessible due to their existing locations in steep ravines. For this reason a SCM will not be pursued.

Plan Sheet 9:
---A SCM cannot be placed at the outlet of 0914 due to the steepness of the existing banks and the stream having a JS designation, as well as the site not being easily accessible.
---All outlets on this sheet are not easily accessible. The SCMs would have to be placed behind the proposed noise wall. For this reason an SCM will not be pursued.

Plan Sheet 10:
---An SCM was looked at for the existing outlet at -Y_WB- 30+50 +/-, but the basin would be in the floodplain of Ragsdale Creek and not easily accessible. For this reason an SCM will not be pursued.
---The drainage structure 1014 outlet is not easily accessible and adjacent to a residential property. For this reason an SCM will not be pursued.



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Additional General Project Information

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

Plan Sheet 11:

---The concrete ditches will be removed between -RPC- and -L1_EB- and be replaced with a step down infiltration SCM. This is one of the few options at this location due to the steep grade.

Plan Sheet 12:

---The 4' base outlet right of -RPC- 46+00 +/- is very steep and near an existing utility tower access. This site is not easily accessible. For this reason an SCM will not be pursued.

---Drainage outlet e1204 is within a floodplain. For this reason an SCM will not be pursued.

Plan Sheet 13:

---The outlet of drainage structure 1308 is a large drainage area. An SCM is not feasible here due to topography restrictions. For this reason an SCM will not be pursued.

Impact and Minimization Efforts: The project has been designed to minimize wetland and stream impacts along the corridor. Drainage has been designed so that outlets discharging into wetlands have non-erosive velocities to minimize disturbance to the wetlands. 2:1 fill slopes have been used throughout the project in order to minimize impacts in areas with wetlands and streams. Box culverts in the project area that convey jurisdictional streams have been buried a minimum of 1 foot and circular culverts have been buried 20% of their diameter so that they provide aquatic passage where applicable. Grassed shoulders and ditches with vegetated lined ditches were used throughout the project where possible.



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General Project Information

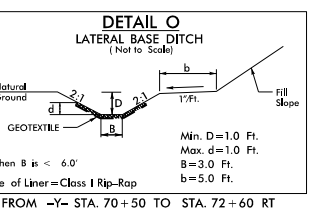
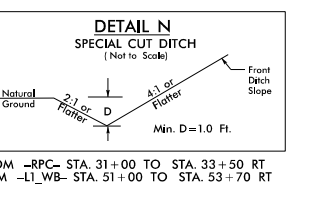
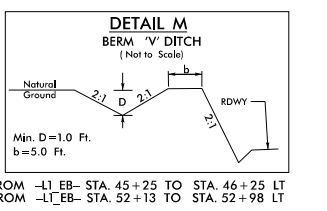
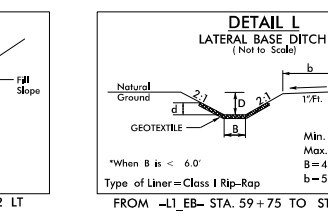
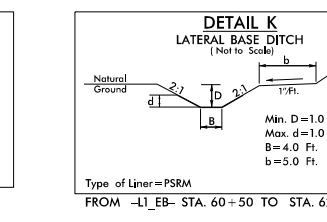
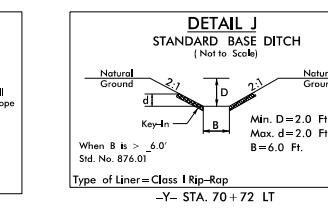
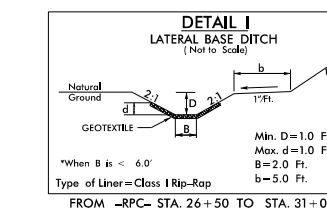
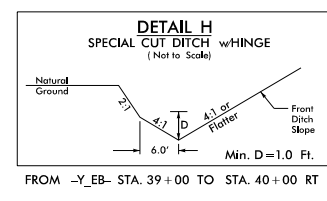
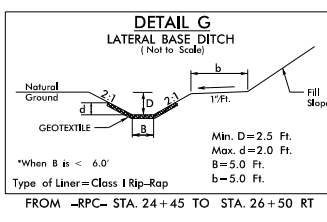
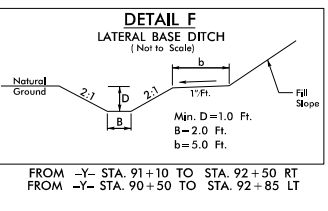
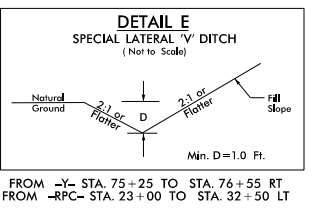
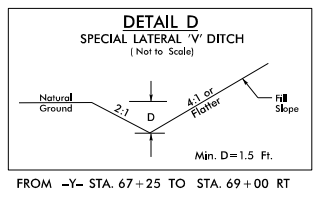
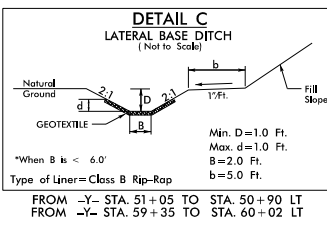
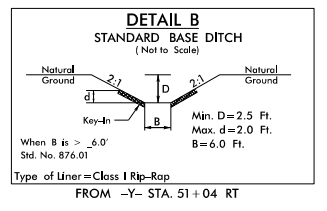
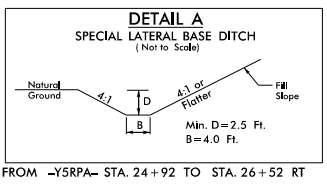
Waterbody Information

Surface Water Body (1):	Ragsdale Creek		NCDWR Stream Index No.:	6-76-11	
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:	SV			Buffer Rules in Effect:	N/A
Project Includes Bridge Spanning Water Body?	No	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 (2):	Trent Branch		NCDWR Stream Index No.:	6-76-10	
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:	SW			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 (3):	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:	fecal coliform				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SX			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)					

PROJECT REFERENCE NO. 1-2513AA/AB	SHEET NO. 2D-1
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	
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 1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-43377 Bus: 919 851 9077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION	



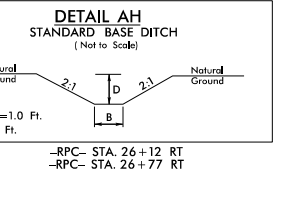
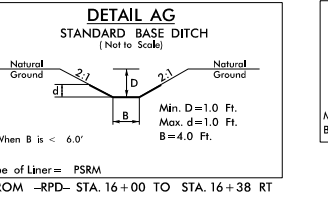
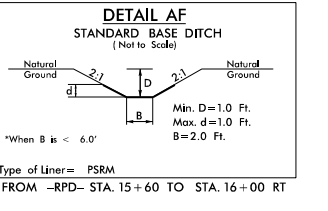
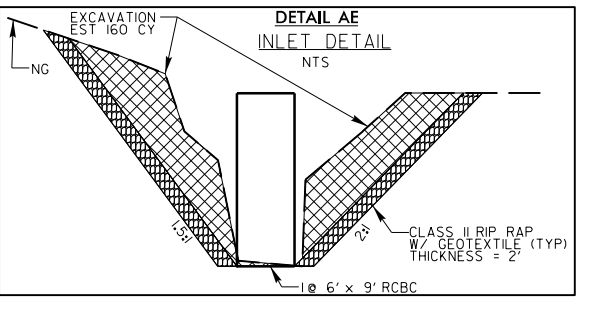
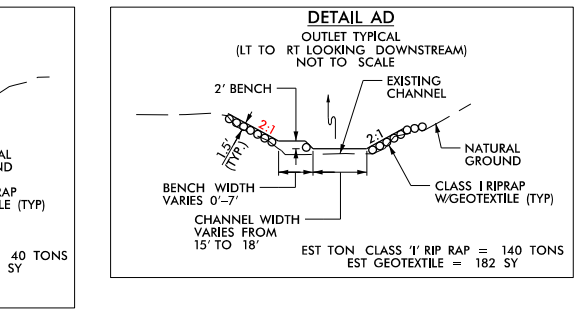
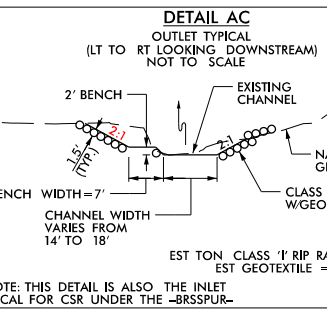
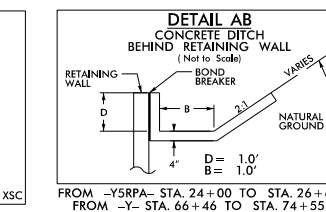
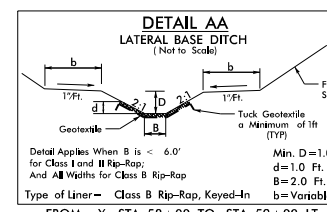
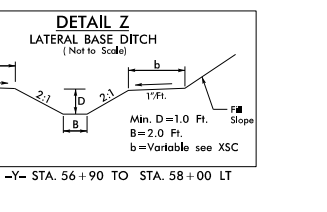
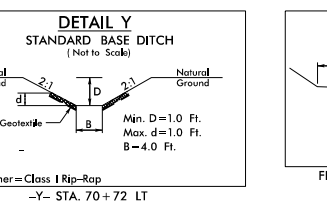
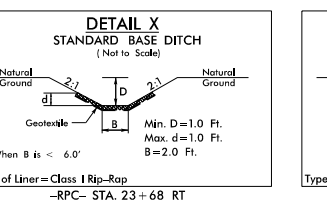
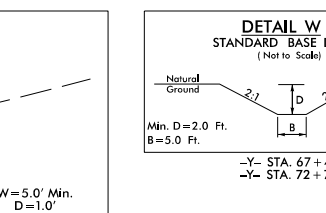
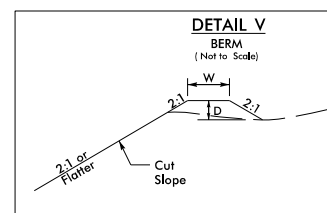
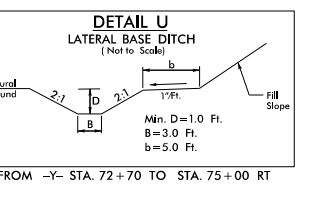
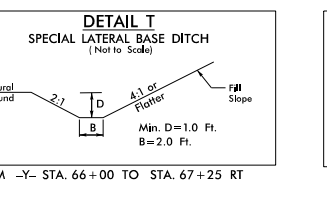
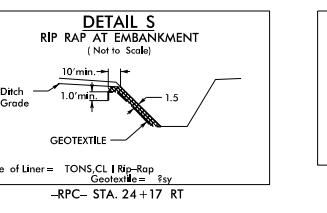
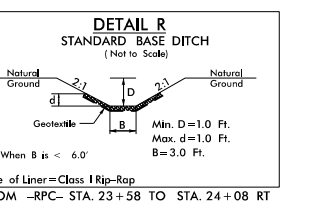
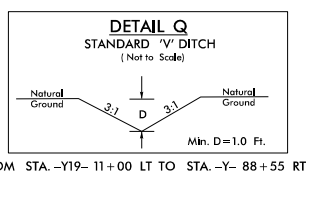
DETAIL P
RIP-RAPPED ENERGY DISSIPATOR BASIN
(Not to Scale)

DIM. (ft)	1	2	?
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B	1.7	1.4	?
C	1.4	0.5	?
D	1.4	0.5	?
E	7.0	2.5	?
F	18.0	9.0	?
G	14.0	7.5	?

ALL DIMENSIONS APPROXIMATE

BASIN #	LOCATION (AT OUTLET)
1	-Y- 92+94 LT
2	-Y- 93+22 LT
-	-

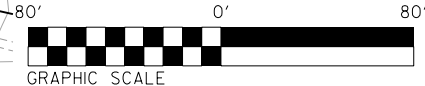
7/08



STEP POOL STRUCTURES

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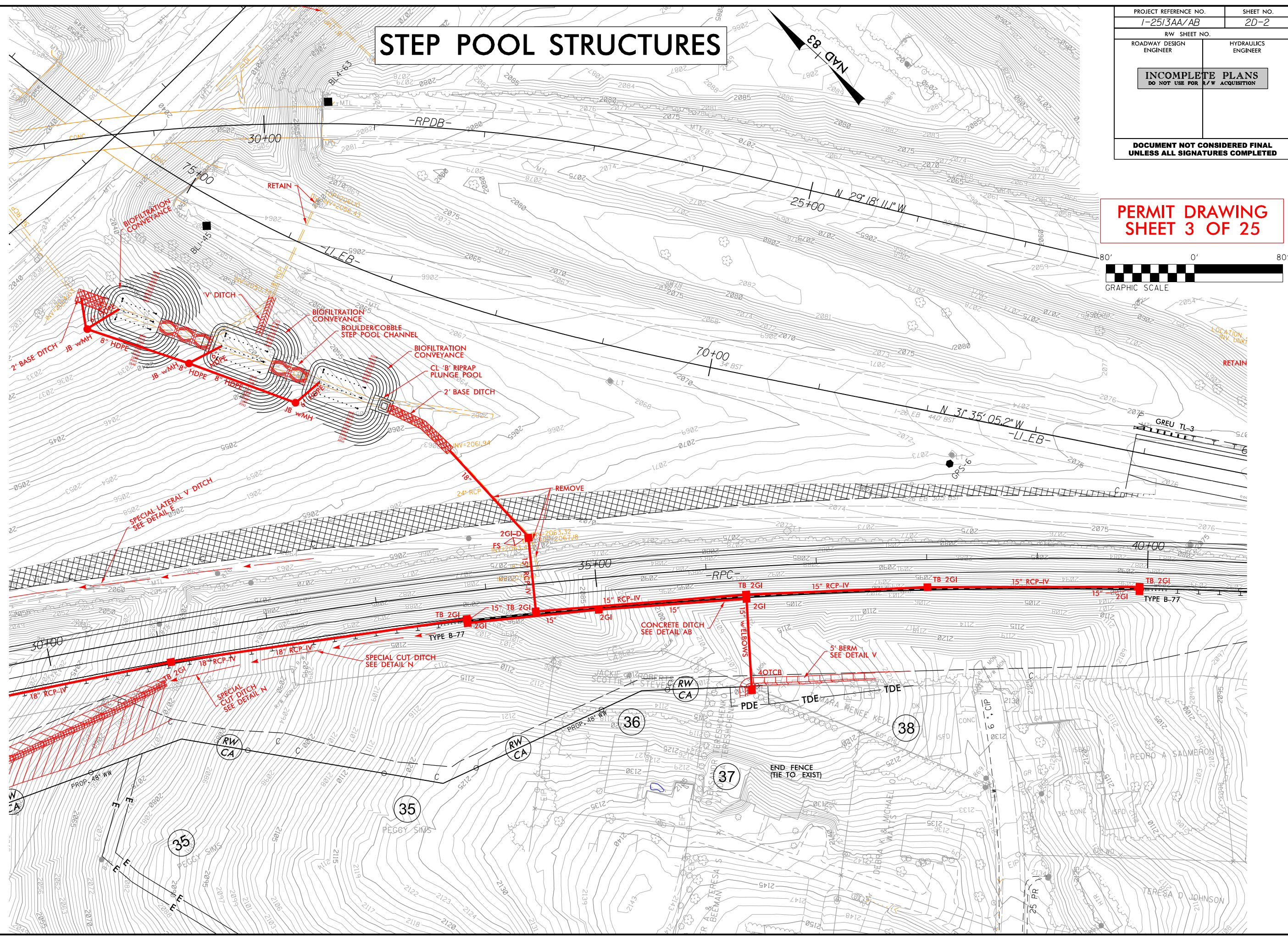
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SHEET 3 OF 25




REVISIONS

8/17/99

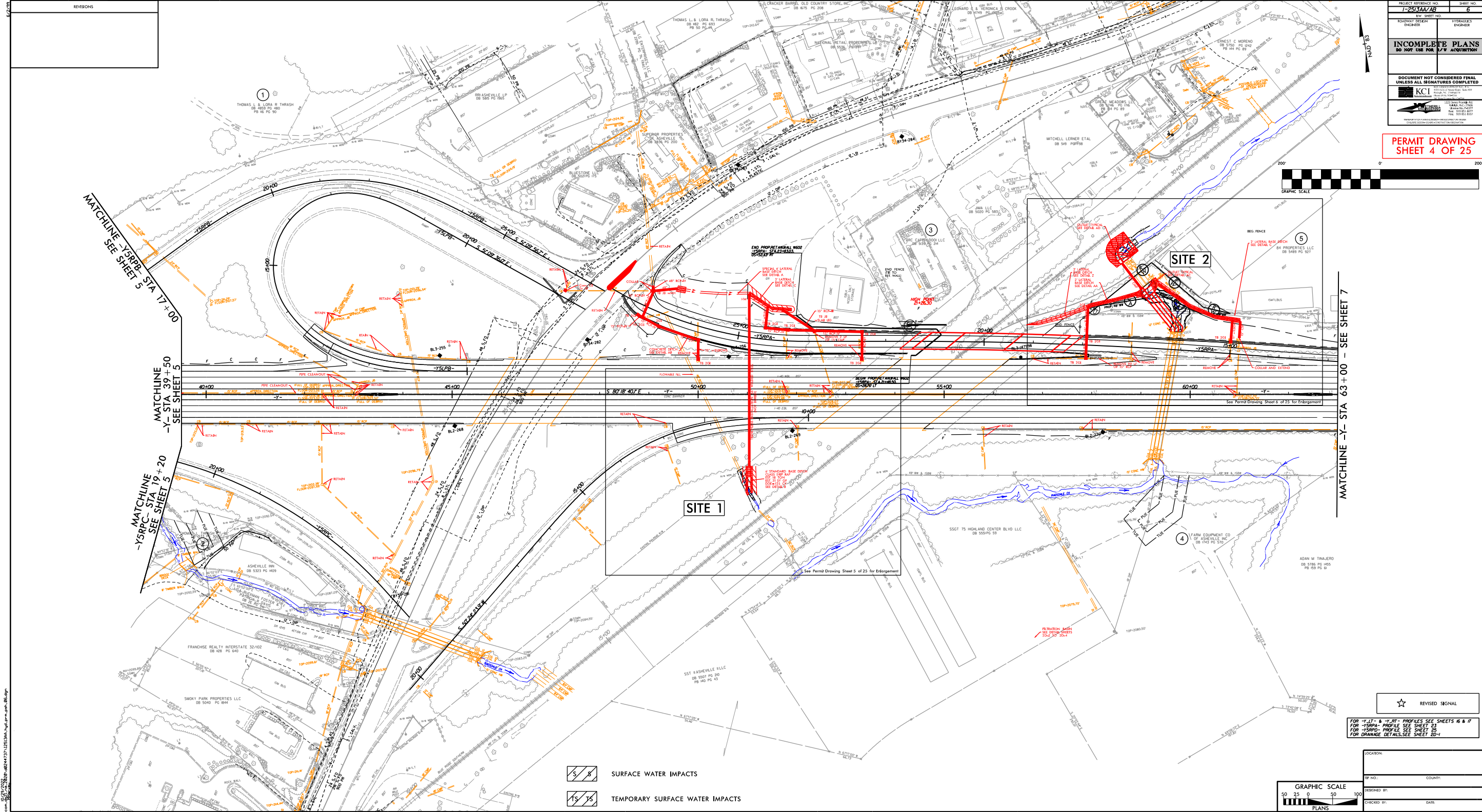
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



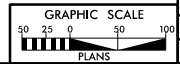
NO.	REVISIONS

PROJECT REFERENCE NO. 7-25144/AR	SHEET NO. 6
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PERMIT DRAWING
SHEET 4 OF 25



-  SURFACE WATER IMPACTS
-  TEMPORARY SURFACE WATER IMPACTS



★ REVISED SIGNAL

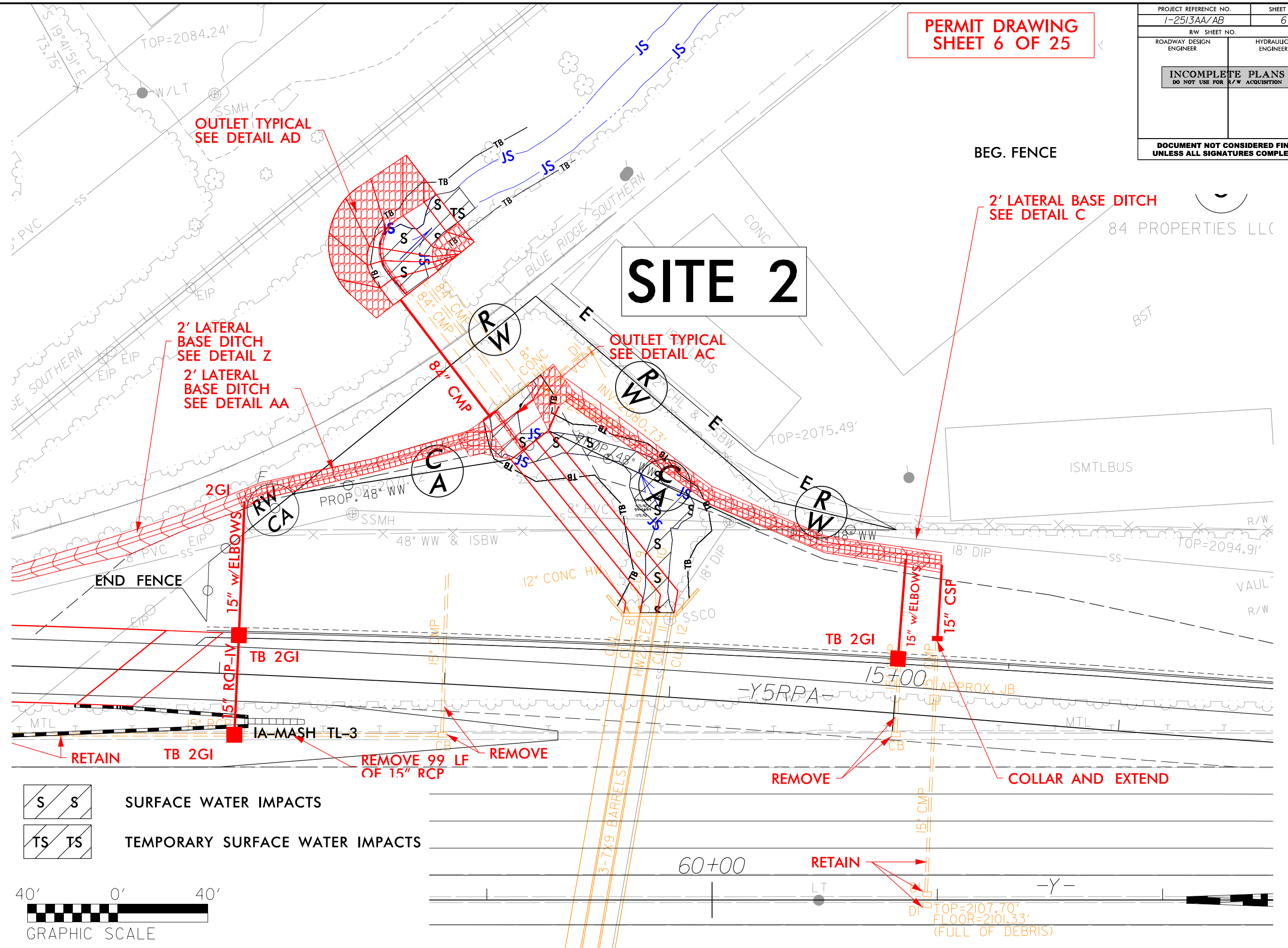
FOR -Y- & -Y-IT- PROFILES SEE SHEETS 16 & 17
FOR -Y5RPA- PROFILE SEE SHEET 23
FOR -Y5WD- PROFILE SEE SHEET 25
FOR DRAINAGE DETAILS SEE SHEET 20-1

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DESIGNED BY:	
CHECKED BY:	DATE:

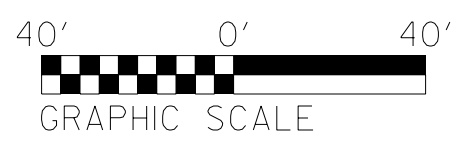
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PROJECT REFERENCE NO. I-25/3AA/AB	SHEET NO. 6
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SITE 2



S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS



REVISIONS

10/28/2022
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BEG. FENCE

84 PROPERTIES LLC

ISMTLBUS

VAULT
R/W

60+00

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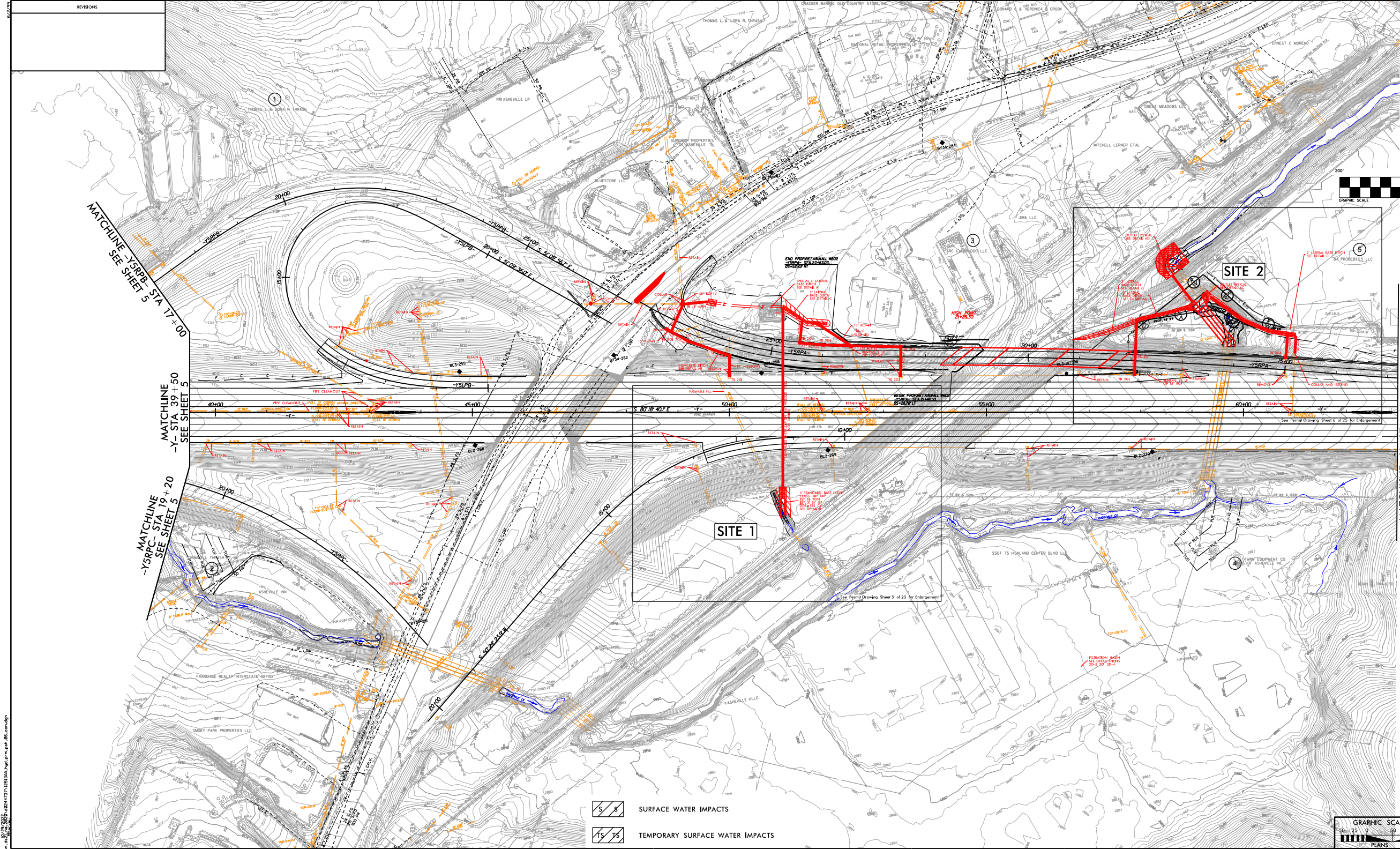
-Y-

DI
 TOP=2107.70'
 FLOOR=2101.33'
 (FULL OF DEBRIS)

NO.	REVISIONS

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PERMIT DRAWING
SHEET 7 OF 25



MATCHLINE -Y- STA 17+00
SEE SHEET 5

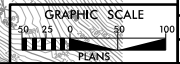
MATCHLINE -Y- STA 39+50
SEE SHEET 5

MATCHLINE -Y- STA 19+20
SEE SHEET 5

MATCHLINE -Y- STA 63+00 - SEE SHEET 7

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS



★ REVISED SIGNAL

FOR -Y-AT- & -Y-RT- PROFILES SEE SHEETS 16 & 17
FOR -Y-SPA- PROFILE SEE SHEET 23
FOR -Y-SD- PROFILE SEE SHEET 25
FOR DRAINAGE DETAILS SEE SHEET 20-1

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CHECKED BY:	DATE:

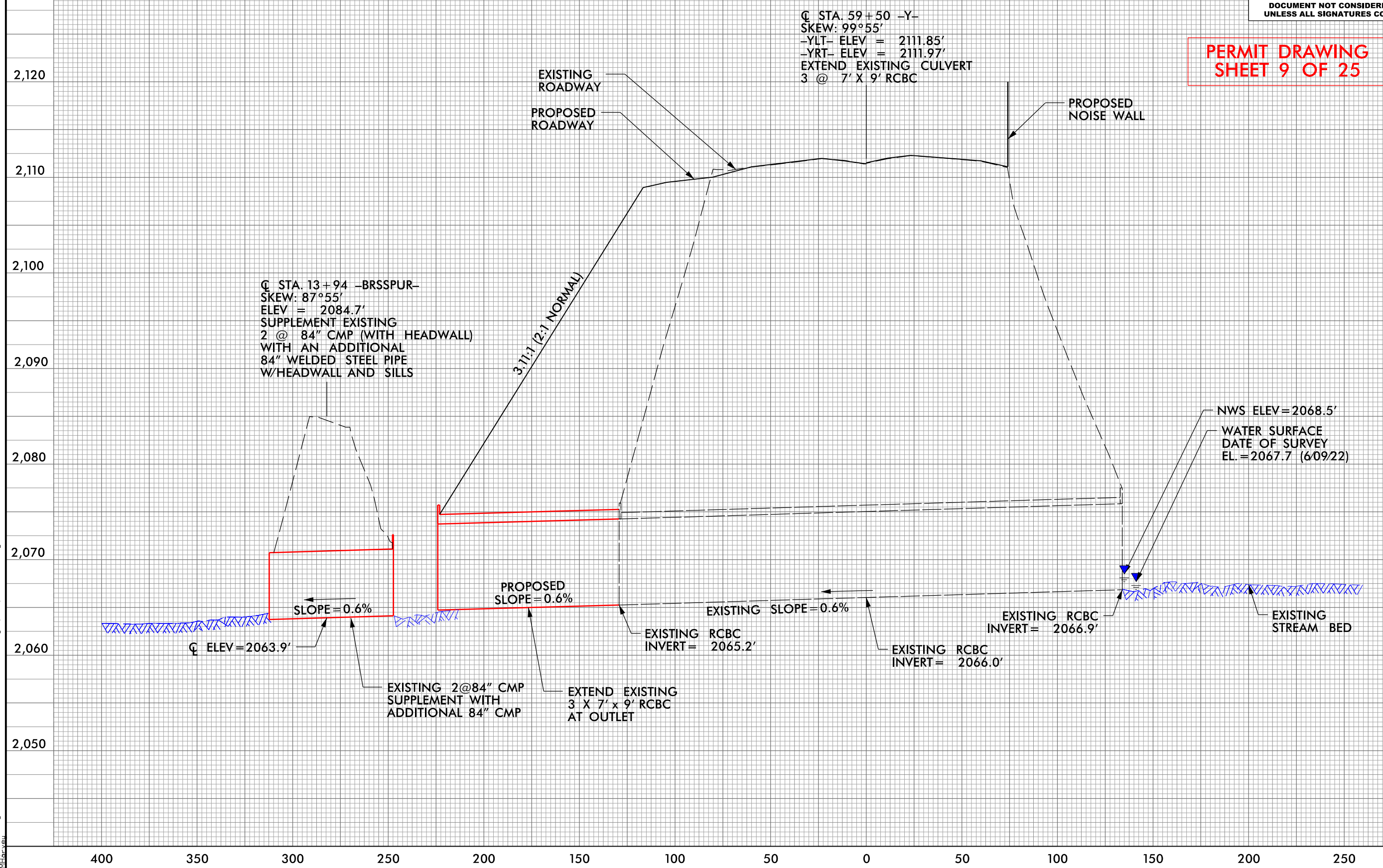
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10/29/2022
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PROJECT REFERENCE NO. 1-2513AA/AB	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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SITE 2

PERMIT DRAWING
SHEET 9 OF 25

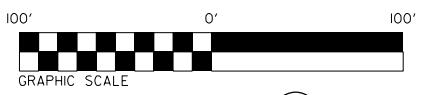


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- FILL IN WETLAND
- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- WETLAND EXCAVATION
- HAND CLEARING (NON-GRUBBING)

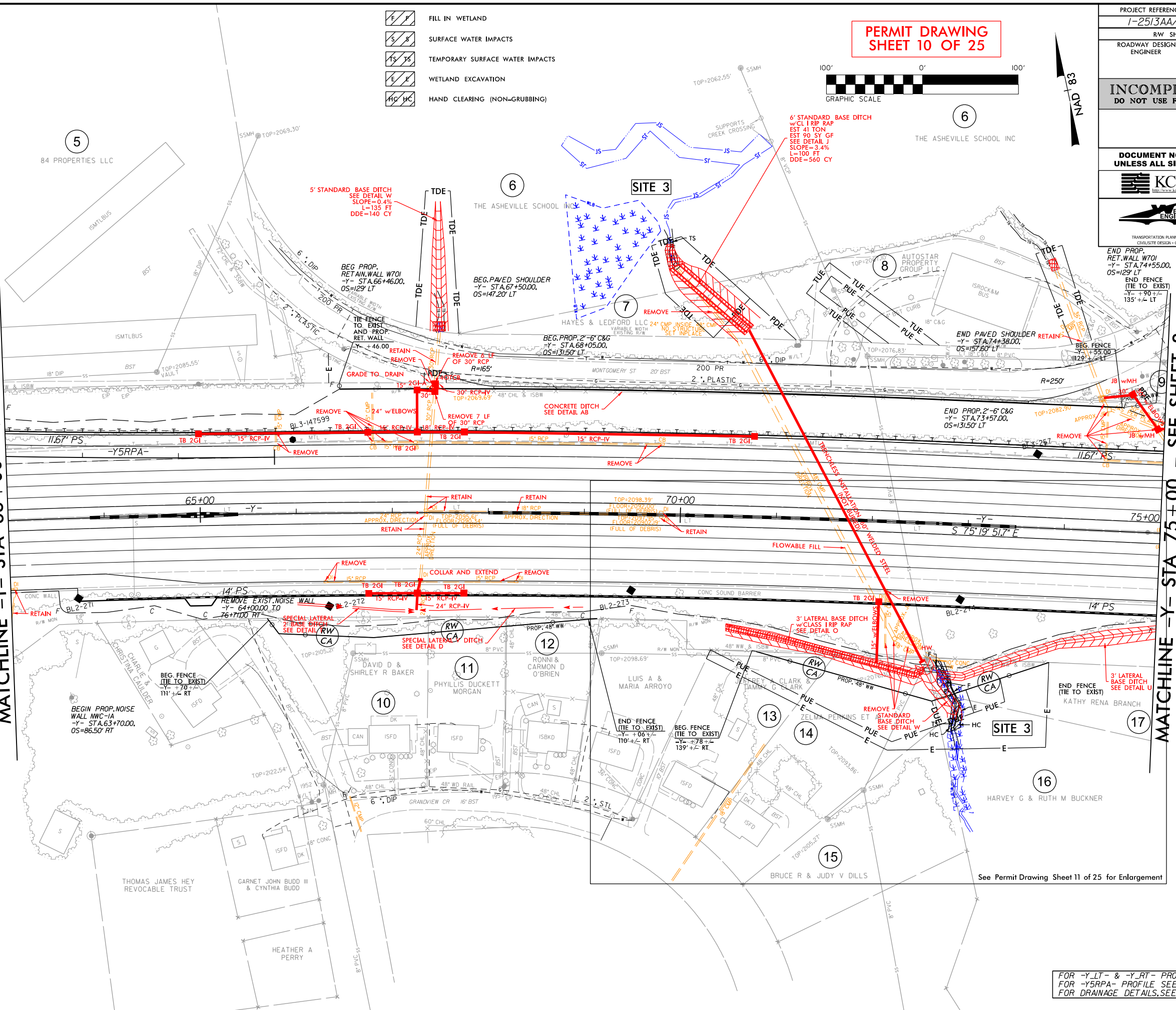
**PERMIT DRAWING
SHEET 10 OF 25**



PROJECT REFERENCE NO. 1-2513AA/AB	SHEET NO. 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	
	KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-0214 NC Firm License No. C-0764
	1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-43377 Bus: 919 851 9077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GIS/PS - CONSTRUCTION OBSERVATION	

MATCHLINE -Y- STA 63+00 - SEE SHEET 6

MATCHLINE -Y- STA 75+00 - SEE SHEET 8



FOR -Y-LT- & -Y-RT- PROFILES SEE SHEET 18
FOR -Y5RPA- PROFILE SEE SHEET 23
FOR DRAINAGE DETAILS SEE SHEET 20-1

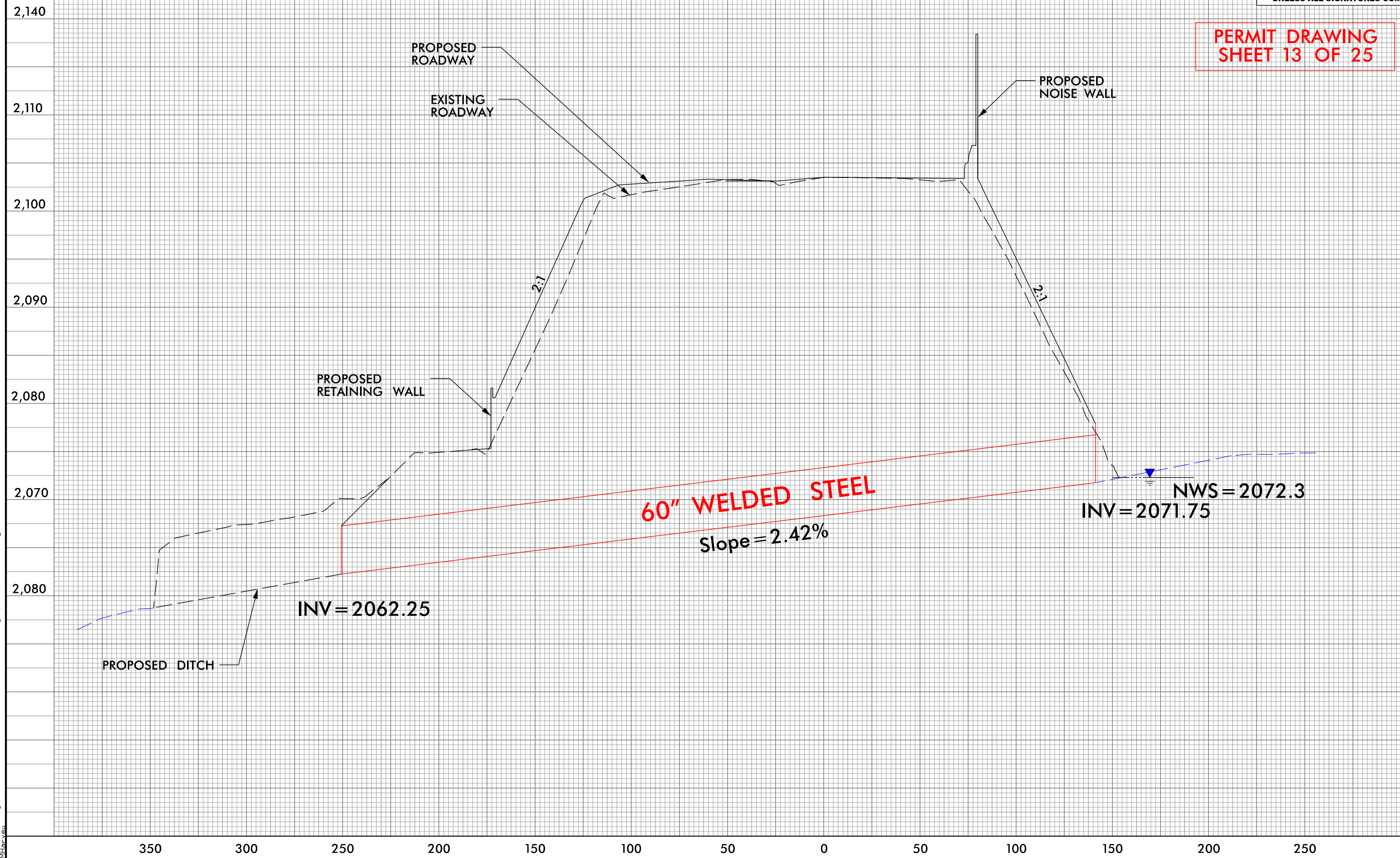
5/14/99

PROJECT REFERENCE NO. I-25/3AA/AB	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 3

-Y- 71+74

PERMIT DRAWING
SHEET 13 OF 25



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Shawyer

6/23/16

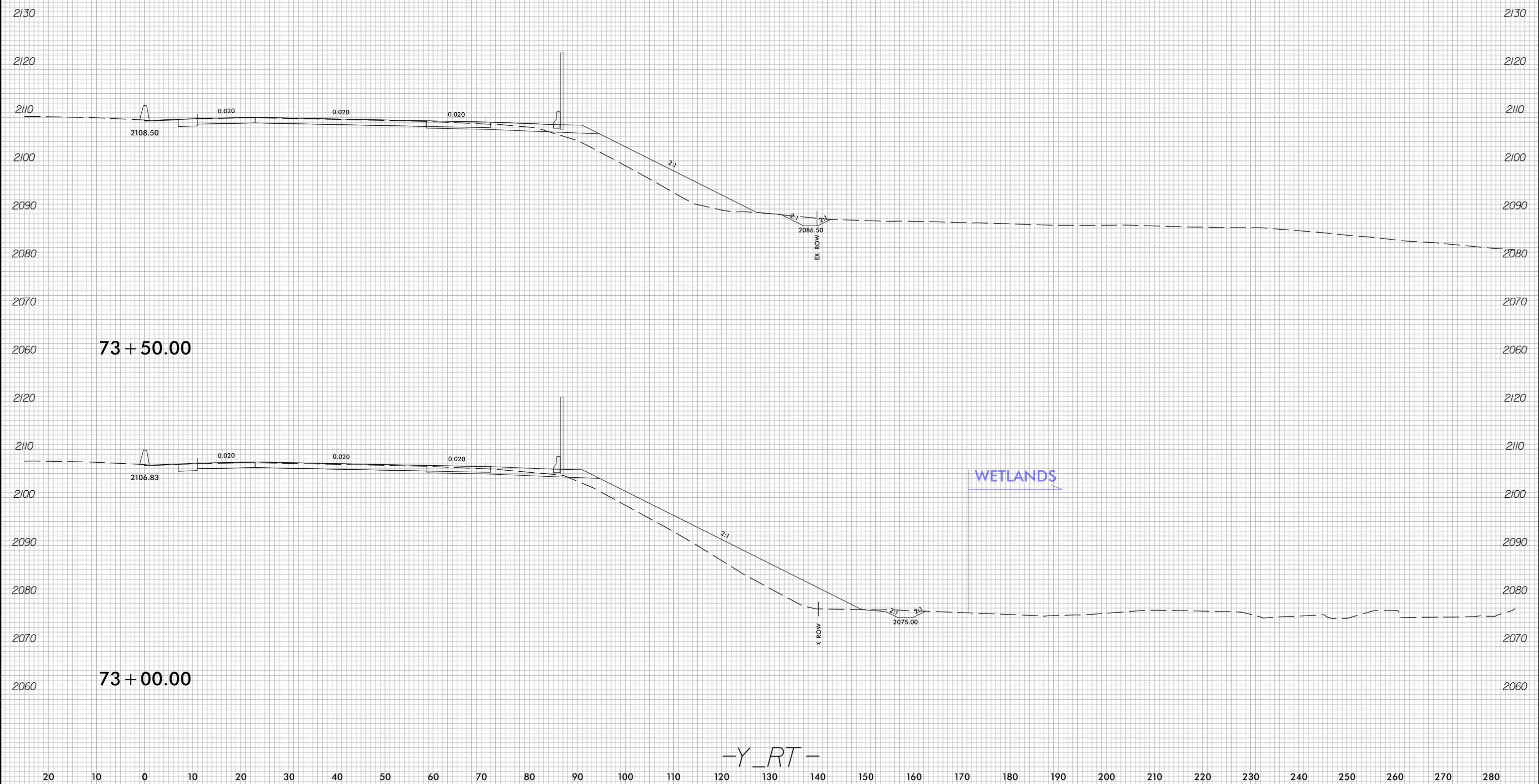


PROJ. REFERENCE NO.	SHEET NO.
I-2513AA/AB	X-YRT50

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**PERMIT DRAWING
SHEET 14 OF 25**

SITE 3



10/29/2022
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USER: mferveij

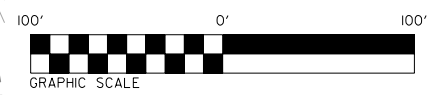
-Y_RT-

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**PERMIT DRAWING
SHEET 18 OF 25**

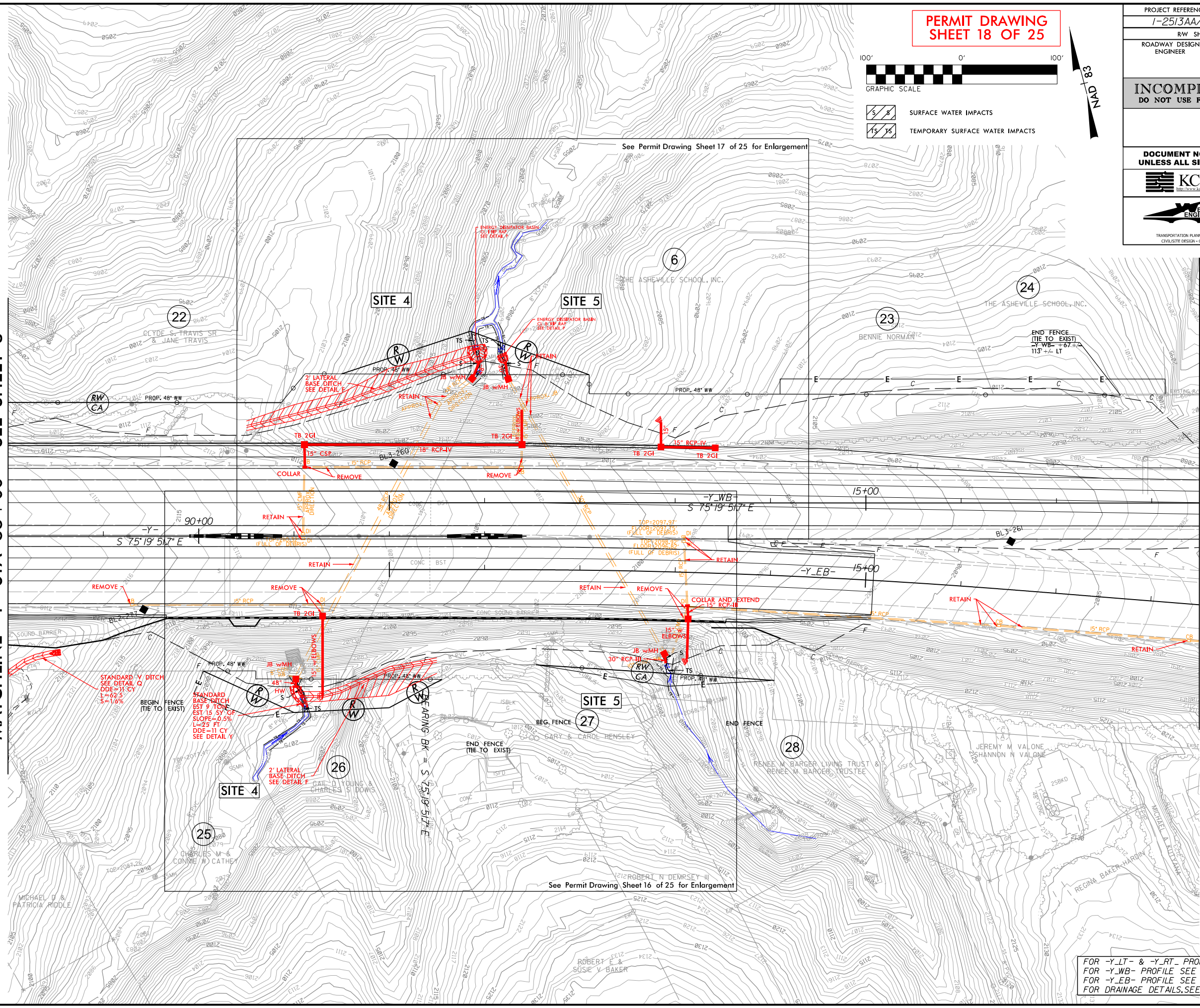
PROJECT REFERENCE NO. 1-2513AA/AB	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-6270 Phone (919) 783-0214 NC Firm License No. C-0764
	1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-43377 Bus: 919 851 9077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GIS/PS - CONSTRUCTION OBSERVATION	



- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -Y- STA 88+00 - SEE SHEET 8

MATCHLINE -Y_WB- STA 18+50 - SEE SHEET 10



REVISIONS

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FOR -Y_LT- & -Y_RT- PROFILES SEE SHEET 20
 FOR -Y_WB- PROFILE SEE SHEET 21
 FOR -Y_EB- PROFILE SEE SHEET 21
 FOR DRAINAGE DETAILS, SEE SHEET 20-1

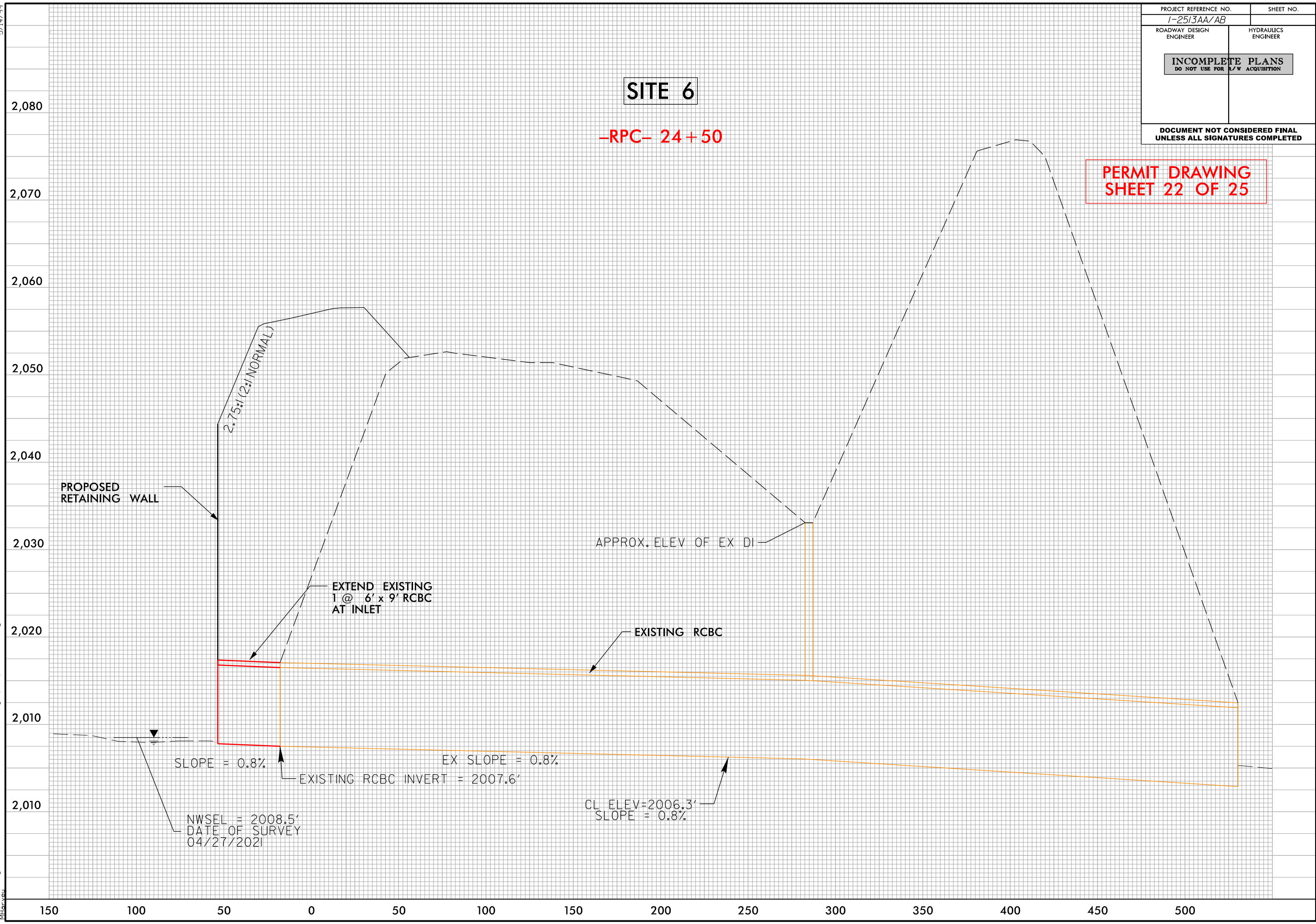
PROJECT REFERENCE NO. I-25/3AA/AB	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

SITE 6

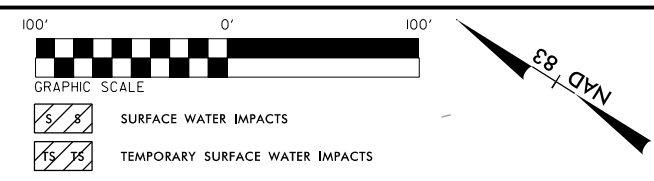
-RPC- 24+50

PERMIT DRAWING SHEET 22 OF 25

5/14/99
10/29/2022
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10/23/2022
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PROJECT REFERENCE NO. 1-2513AA/AB	SHEET NO. 12
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	
	KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 NC Firm License No. C-0764
	1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-43377 Bus: 919 851 9077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GIS - CONSTRUCTION OBSERVATION	

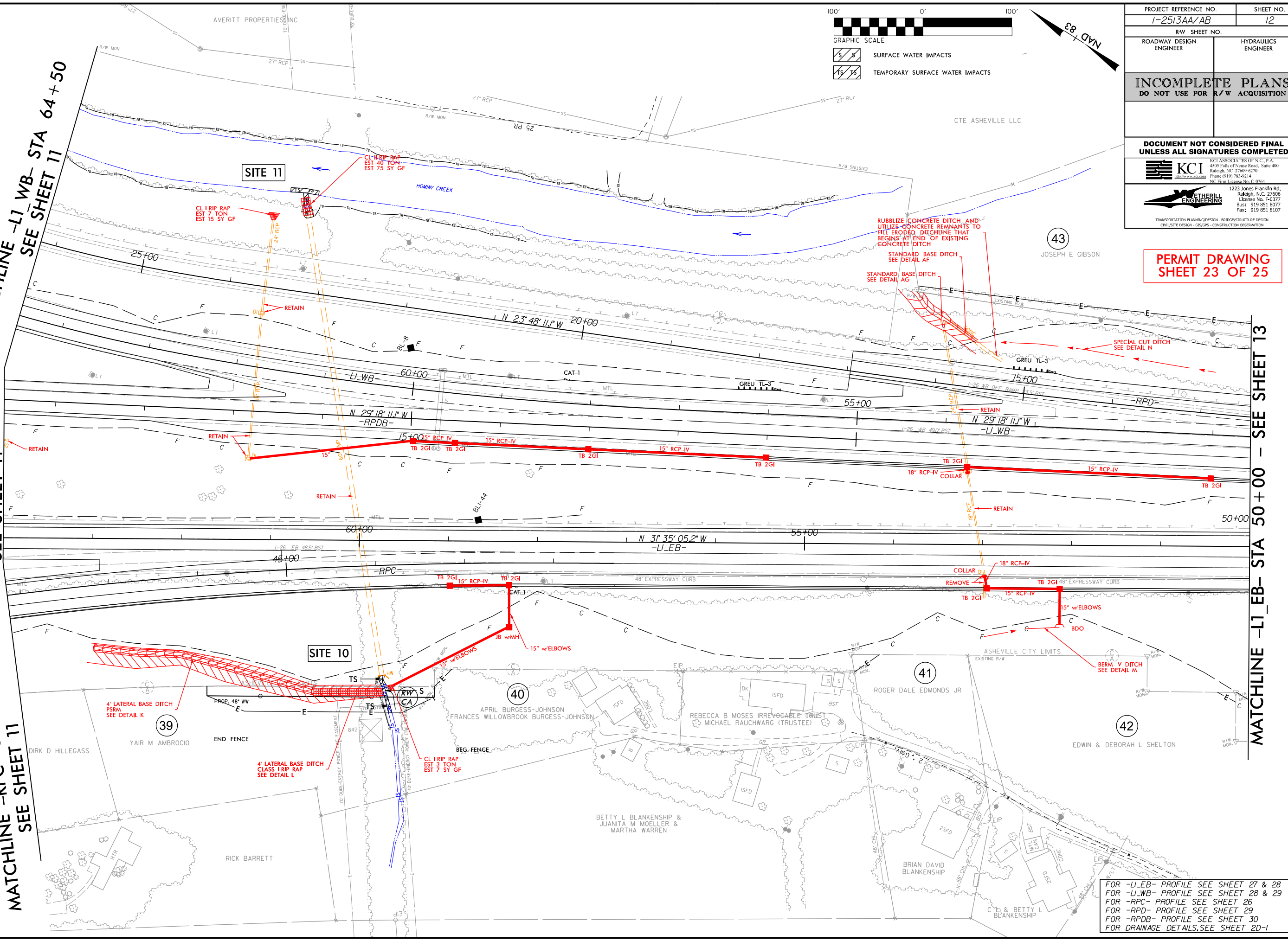
**PERMIT DRAWING
SHEET 23 OF 25**

MATCHLINE -LI WB- STA 64+50
SEE SHEET 11

MATCHLINE -LI EB- STA 64+00
SEE SHEET 11

MATCHLINE -RPC- STA 41+85
SEE SHEET 11



MATCHLINE -LI EB- STA 50+00 - SEE SHEET 13





FOR -LI EB- PROFILE SEE SHEET 27 & 28
FOR -LI WB- PROFILE SEE SHEET 28 & 29
FOR -RPC- PROFILE SEE SHEET 26
FOR -RPD- PROFILE SEE SHEET 29
FOR -RPDB- PROFILE SEE SHEET 30
FOR DRAINAGE DETAILS, SEE SHEET 2D-1

5/14/99

GRAPHIC SCALE
 100' 0' 100'

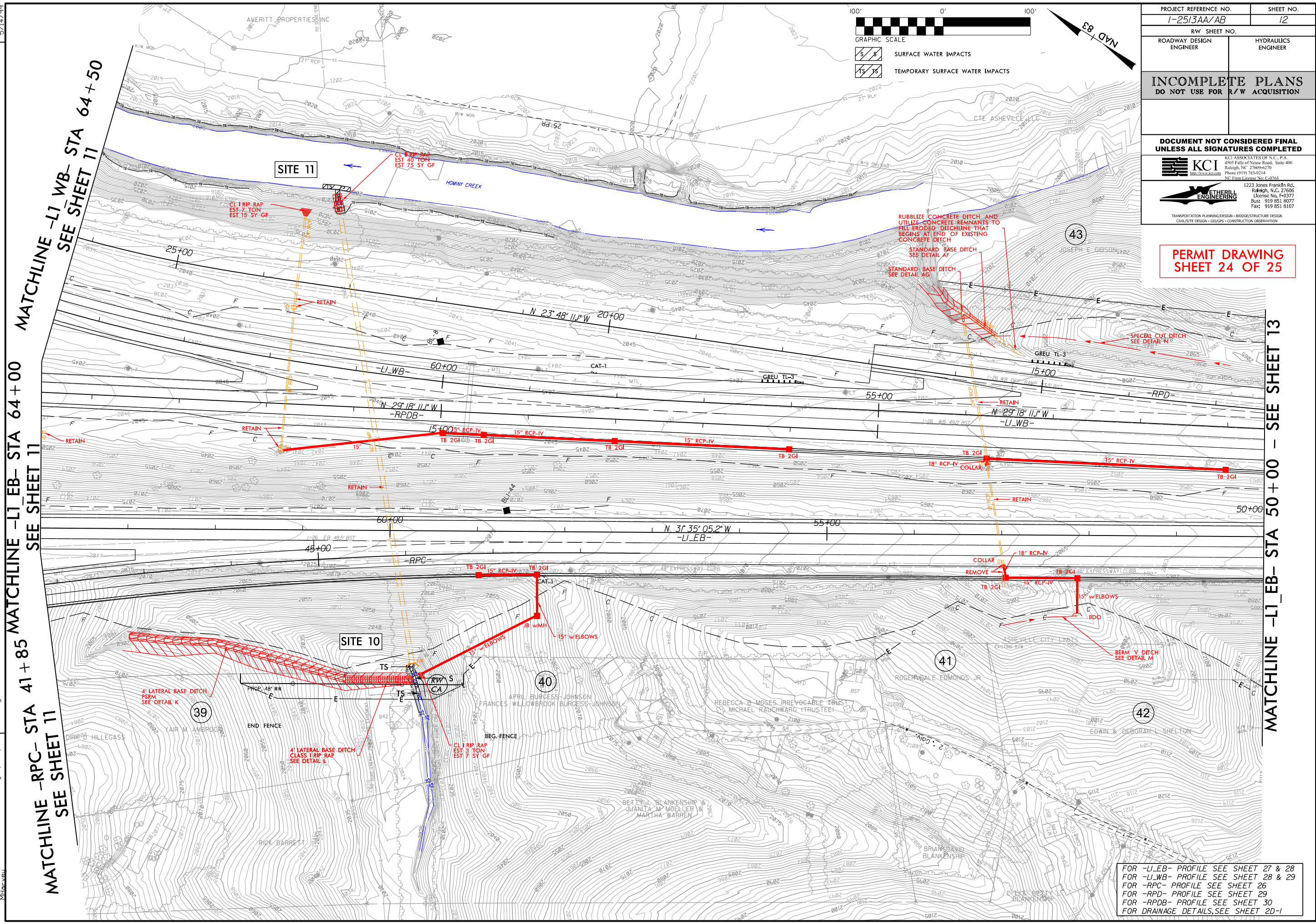
 SURFACE WATER IMPACTS
 TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO. I-25/3AA/AB	SHEET NO. 12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 KCI KCI ASSOCIATES OF N.C., P.A. 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609-4270 Phone (919) 783-9214 NC Firm License No. C-0761	 ETHERHILL ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-43377 Bus: 919 851 9077 Fax: 919 851 8107 TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING
SHEET 24 OF 25

MATCHLINE -LI WB- STA 64+50 SEE SHEET 11
 MATCHLINE -LI EB- STA 64+00 SEE SHEET 11
 MATCHLINE -RPC- STA 41+85 SEE SHEET 11
 MATCHLINE -LI WB- STA 64+50 SEE SHEET 11

MATCHLINE -LI EB- STA 50+00 - SEE SHEET 13



FOR -LI EB- PROFILE SEE SHEET 27 & 28
 FOR -LI WB- PROFILE SEE SHEET 28 & 29
 FOR -RPC- PROFILE SEE SHEET 26
 FOR -RPD- PROFILE SEE SHEET 29
 FOR -RPDB- PROFILE SEE SHEET 30
 FOR DRAINAGE DETAILS, SEE SHEET 2D-1

REVISIONS

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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	-Y- 50+95 Rt	Existing 48" Pipe							< 0.01		11		
	-Y- 50+95 Rt	Base Ditch							< 0.01	< 0.01	39	15	
2	-Y- 59+50 Lt	3@7x9 RCBC Extention							0.04		147		
	-Y- 58+70 Lt	84"CMP							0.02	< 0.01	44	10	
3	-Y- 69+85 Lt / -Y- 72+95 Rt	Channel Relocation	< 0.01		< 0.01			< 0.01	0.02	< 0.01	89	17	
4	-Y- 91+05 Rt	Channel Relocation							< 0.01	< 0.01	24	5	
	-Y- 91+05 Rt	48" Pipe							< 0.01		8		
	-Y- 92+92 Lt	48" Pipe							0.01		19		
	-Y- 92+92 Lt	Energy Dissipator							0.01	< 0.01	19	14	
5	-Y- 93+44 Rt	30' Pipe							< 0.01	< 0.01	10	11	
	-Y- 93+20 Lt	30' Pipe							< 0.01		17		
	-Y- 93+20 Lt	Energy Dissipator							< 0.01	< 0.01	10	12	
6	-RPC- 24+24 to 26+90 Rt	1@6'X9' RCBC Extension							< 0.01	< 0.01	58	8	
	-RPC- 24+24 to 26+90 Rt	Bank Stabilization							< 0.01		40		
7	-RPC- 25+50 Rt	Base Ditch							0.01	< 0.01	246	9	
8	-RPC- 26+05 Rt	Base Ditch							< 0.01	< 0.01	60	5	
9	-RPC- 26+50 Rt	Base Ditch							< 0.01		34	9	
10	-RPC- 46+05 Rt	Base Ditch							< 0.01	< 0.01	19	24	
11	-RPD- 23+30 Rt	Outfall Protection							< 0.01	< 0.01		32	
TOTALS*:			< 0.01		< 0.01			< 0.01	0.14	0.02	894	171	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 10/31/2022
 Buncombe County
 I-2513 AA/AB
 34165.1.11/34165.1.12
 SHEET 25 OF 25