



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 34400.1.S5 TIP No.: R-2233BA County(ies): Rutherford Page 1 of 4

General Project Information

WBS Element:	34400.1.S5	TIP Number:	R-2233BA	Project Type:	New Location	Date:	6/16/2020
NCDOT Contact:	Michelle Berry, PE Hydraulics Unit		Contractor / Designer:	Steven Bondor, PE Dewberry Engineers Inc			
Address:	NCDOT Hydraulics Unit		Address:	Dewberry Engineers Inc.			
	1000 Birch Ridge Road			2610 Wycliff Road, Suite 410			
	Raleigh, NC 27610			Raleigh, NC 27607			
Phone:	919-707-6719		Phone:	919-636-6334			
Email:	mqberry@ncdot.gov		Email:	sbondor@dewberry.com			
City/Town:	Rutherfordton		County(ies):	Rutherford			
River Basin(s):	Broad		CAMA County?	No			
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	3.8 miles	Surrounding Land Use:	Residential, light industrial, rural undeveloped					
Project Built-Up Area (ac.)		Proposed Project			Existing Site			
40 (proposed pavement) ac.					12.0 ac.			
Typical Cross Section Description:	The R-2233BA project is new alignment approximately 3.8 miles long and includes one interchange. Typical section is four lane divided highway with grass median, paved shoulders, and median ditches.			Existing alignment to be widened includes four lane divided and two lane shoulder sections. Existing Y lines crossing the project corridor are shoulder sections.				
Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	10,400 / 12,900	Year:	2022/2040	Existing:	7000	Year:	2016

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

Roadway runoff flows to grass shoulders in fill sections and is collected in median and grass side ditches in cut sections to pipe systems. Pipe systems include riprap pads at outfalls. Two locations include dry detention ponds to reduce post construction runoff to the preconstruction discharge. Ditches include riprap lining where shear stress exceeds allowable for grass. The project includes four box culverts and one bridge that cross jurisdictional streams. Pipe systems were minimized in length and riprap ditches were utilized to maximum extent possible to avoid direct discharge from pipe systems. Fill slopes 2:1 used to minimize wetland impact.

Waterbody Information

Surface Water Body (1):	LONG BRANCH		NCDWR Stream Index No.:	9-37-1			
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C				
	Supplemental Classification:						
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?	Comments:						
NRTR Stream ID:			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?		N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)							



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
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WBS Element: 34400.1.S5 **TIP No.:** R-2233BA **County(ies):** Rutherford **Page** 2 **of** 4

Additional Waterbody Information

Surface Water Body (2):		Cleghorn Creek		NCDWR Stream Index No.:	9-26-(0.5)	
NCDWR Surface Water Classification for Water Body		Primary Classification:		Class C		
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				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?		N/A
Deck Drains Discharge Over Water Body?		(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):		STONECUTTER CREEK		NCDWR Stream Index No.:	N/A	
NCDWR Surface Water Classification for Water Body		Primary Classification:		Class C		
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				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?		N/A
Deck Drains Discharge Over Water Body?		(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 (4):		STONECUTTER CREEK		NCDWR Stream Index No.:	9-26-1	
NCDWR Surface Water Classification for Water Body		Primary Classification:		Class C		
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				Buffer Rules in Effect:		N/A
Project Includes Bridge Spanning Water Body?	Yes	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?		N/A
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

09/08/99

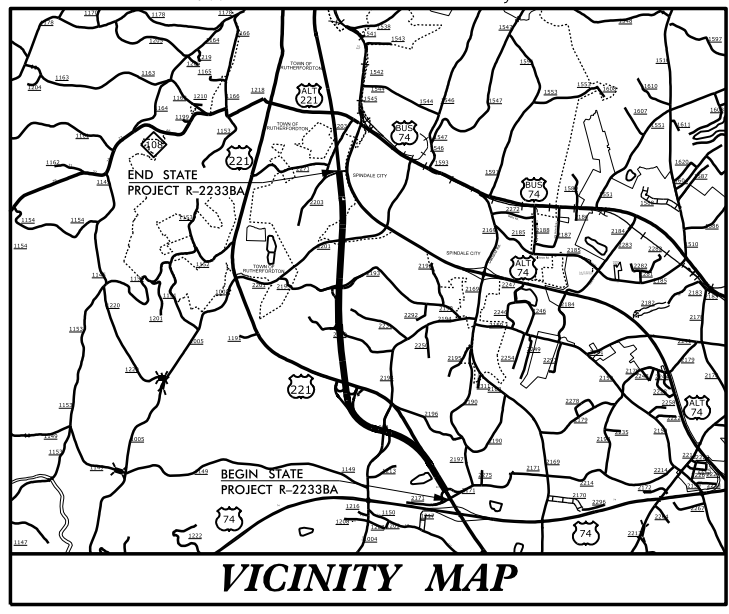
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERMIT DRAWING
SHEET 1 OF 32

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233BA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34400.1.S5		PE	
34400.2.S5		RW & UTIL	

CONTRACT: TIP PROJECT: R-2233BA



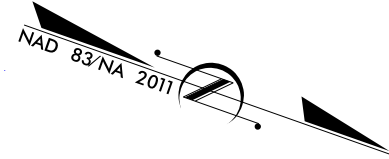
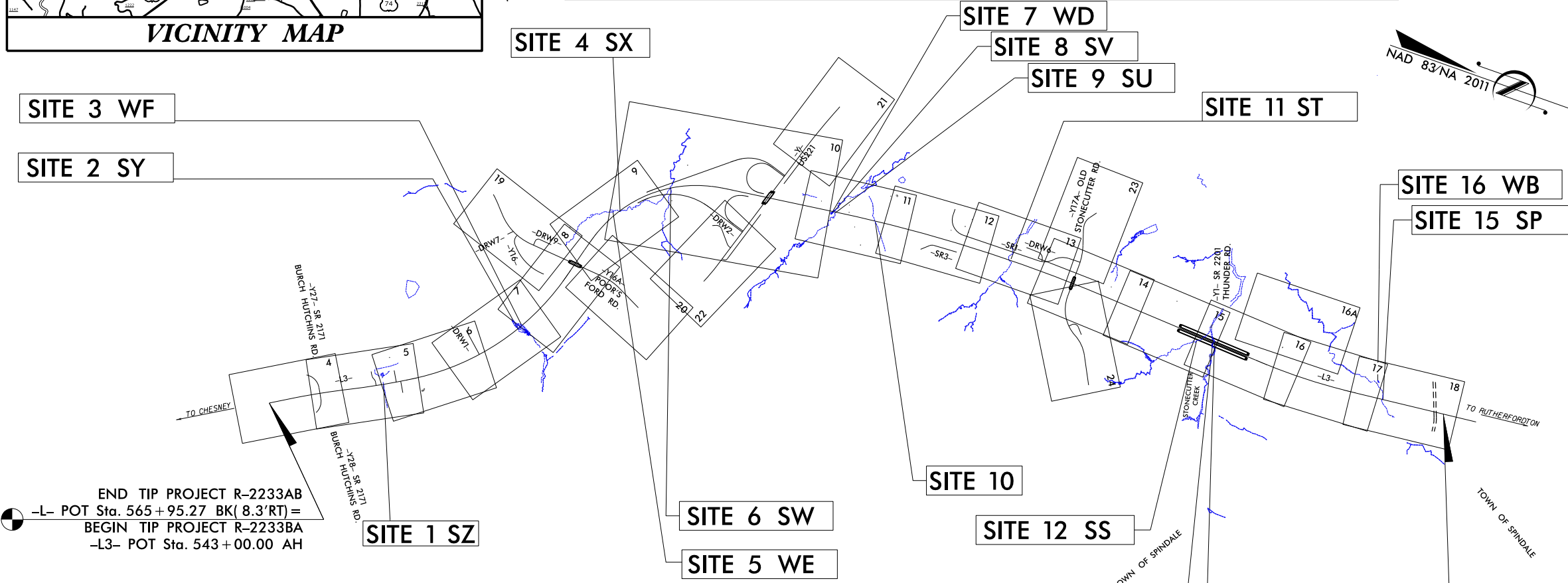
ROW PLANS

RUTHERFORD COUNTY

**LOCATION: RUTHERFORDTON BYPASS FROM US 74 BYPASS
TO US 221 SOUTH OF US 74 BUSINESS (CHARLOTTE ROAD)**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING
AND STRUCTURES**

PRELIMINARY WETLAND AND SURFACE WATER PERMIT DRAWINGS



END TIP PROJECT R-2233AB
 -L- POT Sta. 565+95.27 BK(8.3'RT) =
 BEGIN TIP PROJECT R-2233BA
 -L3- POT Sta. 543+00.00 AH

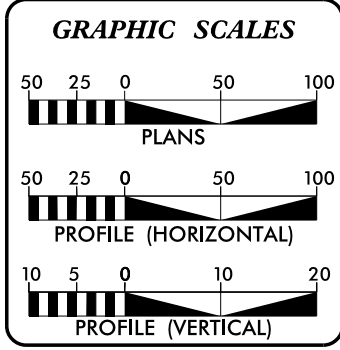
END TIP PROJECT R-2233BA
 -L3- POC Sta. 744+75.00

A PORTION OF THIS PROJECT IS FULL CONTROLLED-ACCESS WITH ACCESS BEING LIMITED TO INTERCHANGES.
 A PORTION OF THIS PROJECT IS PARTIAL CONTROLLED-ACCESS WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
 CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.
 A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF SPINDALE.

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

NCDOT CONTACT: NATHAN ADIMA, P.E.

CONTRACT: TIP PROJECT: R-2233BA



DESIGN DATA

ADT 2022 =	10400
ADT 2040 =	12900
K =	8 %
D =	55 %
T =	7 % *
V =	70 MPH
* TTST 2% DUAL 5%	
FUNC CLASS =	
ARTERIAL	
REGIONAL	TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233BA =	3.616 MILES
LENGTH STRUCTURE TIP PROJECT R-2233BA =	0.205 MILES
TOTAL LENGTH TIP PROJECT R-2233BA =	3.821 MILES

STRUCTURE LENGTH BASED ON -L3- NB STATIONING.

PLANS PREPARED FOR NCDOT BY:

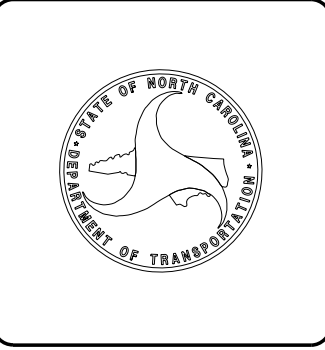
	2610 WYCLIFF ROAD SUITE 410 RALEIGH, NC 27607 PHONE: 919.881.9939 NC COA No. F-0929
	DENNIS J. MORY, P.E. PROJECT ENGINEER
RIGHT OF WAY DATE: JUNE 19, 2020	
LETTING DATE: JUNE 21, 2022	BRYAN LAMBETH, P.E. PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



5/24/2020
5/26/2020
R2233BA Permit Drawings 20200526.pdf

5/14/99



2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9329
NC CDA No. P-40029

PROJECT REFERENCE NO.	SHEET NO.
R-2233BA	5

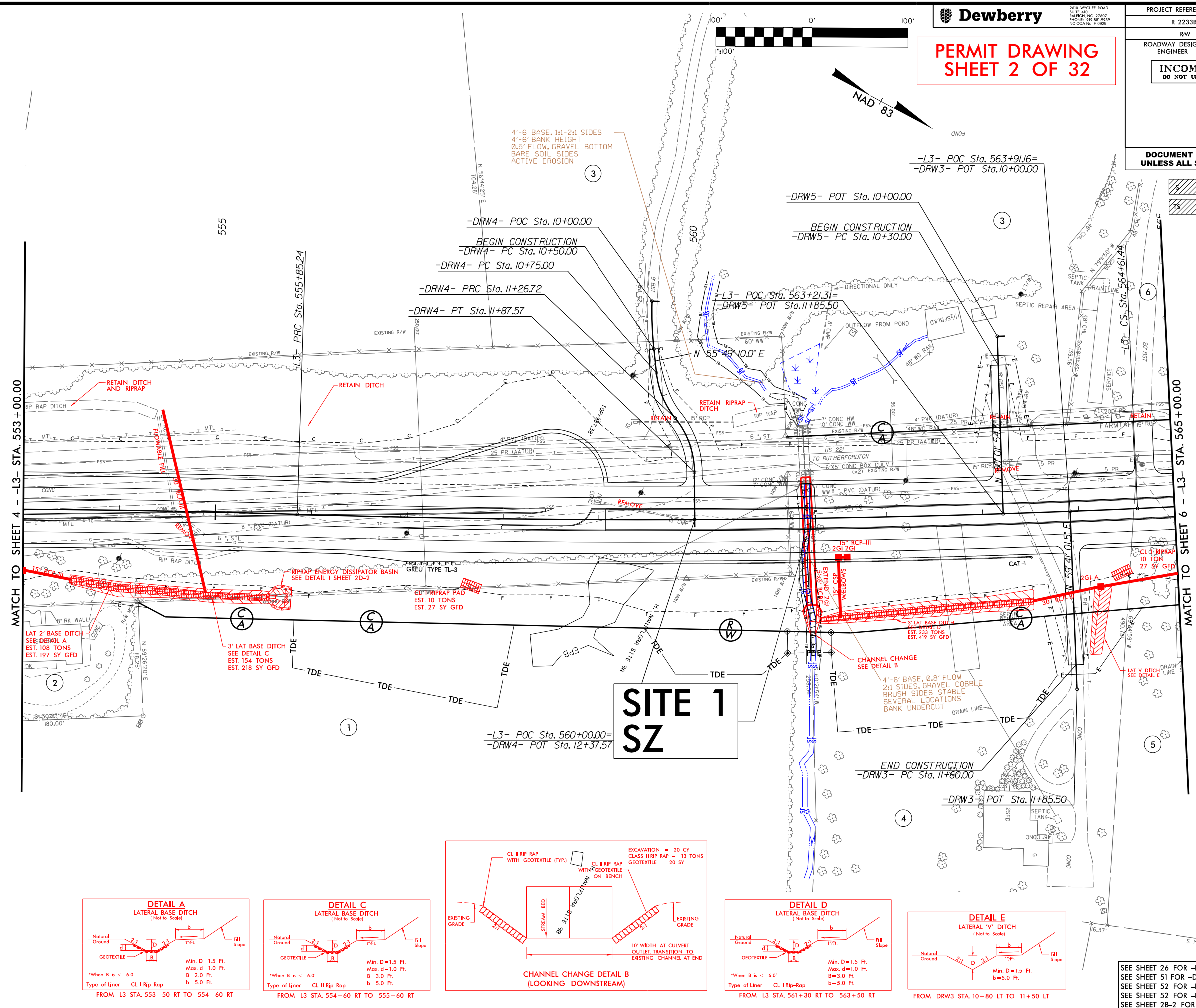
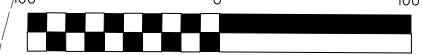
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

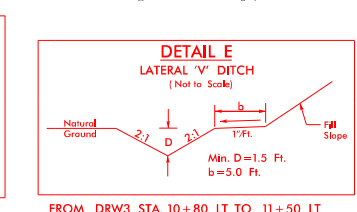
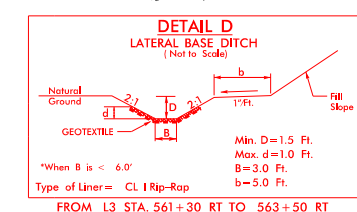
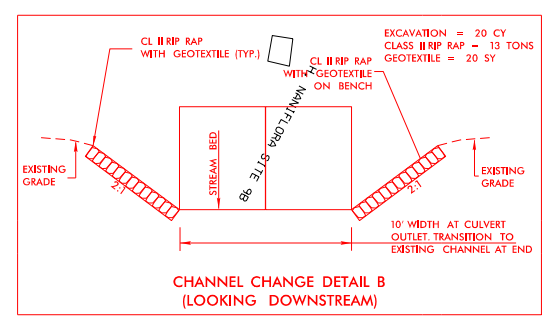
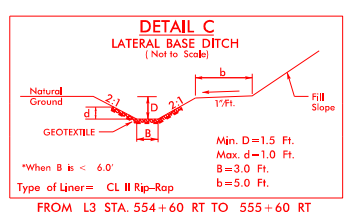
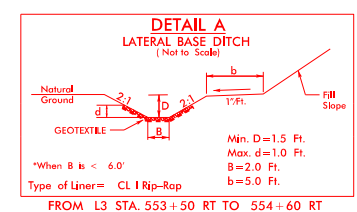
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	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 2 OF 32



SITE 1 SZ



SEE SHEET 26 FOR -L3- PROFILE
SEE SHEET 51 FOR -DRW3- PROFILE
SEE SHEET 52 FOR -DRW4- PROFILE
SEE SHEET 52 FOR -DRW5- PROFILE
SEE SHEET 2B-2 FOR INTERSECTION DETAILS

5/14/99
Dewberry
R-2233BA Permit Drawings 20200526.pdf

5/14/19



2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9329
NC CCA No. P-4009

PROJECT REFERENCE NO.	SHEET NO.
R-2233BA	5

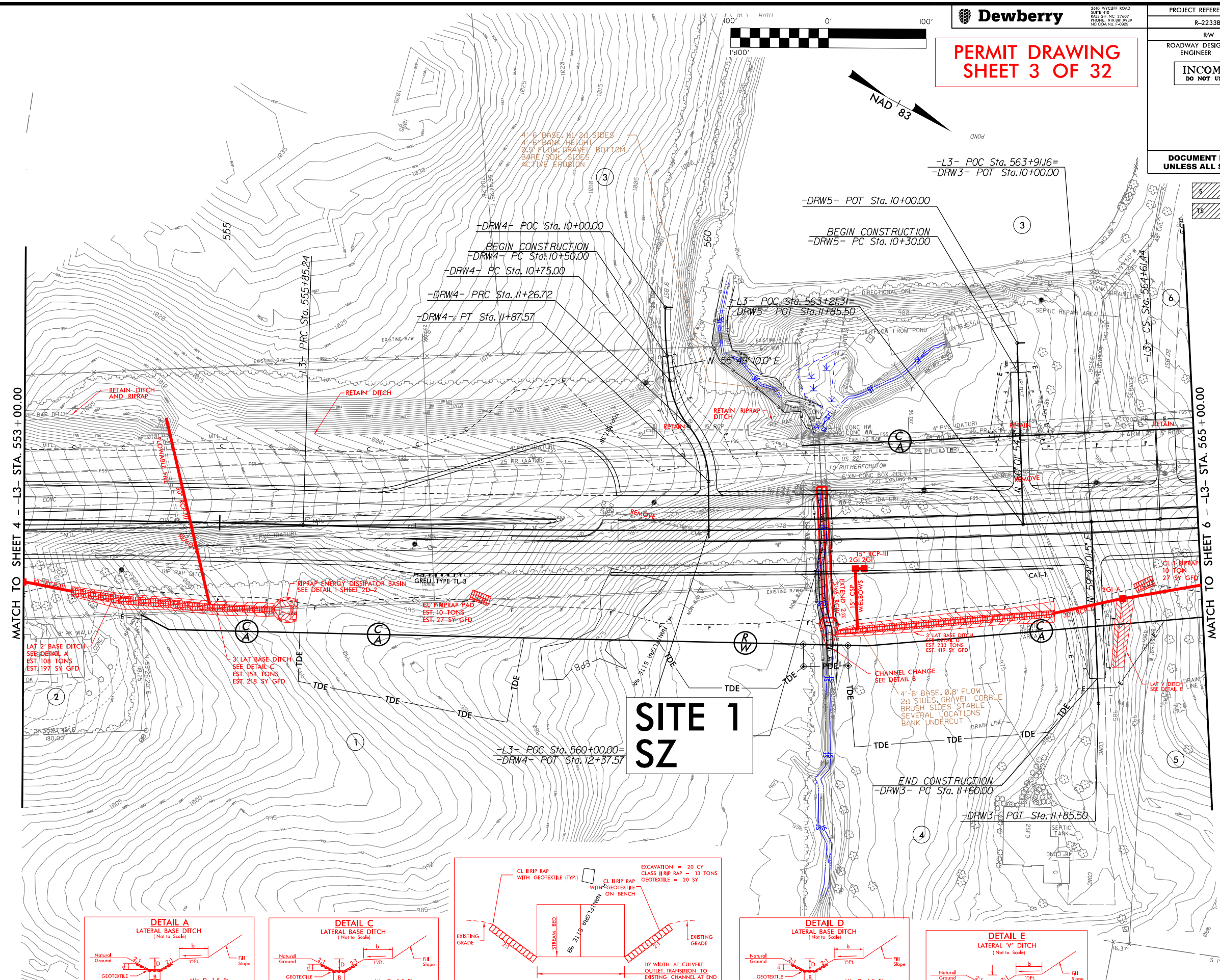
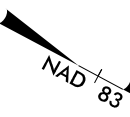
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

	DENOTES IMPACTS IN SURFACE WATER
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

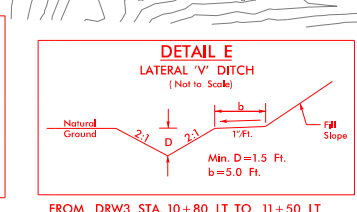
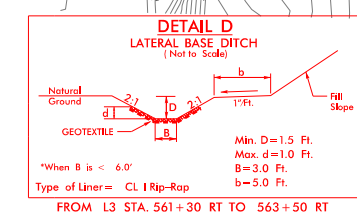
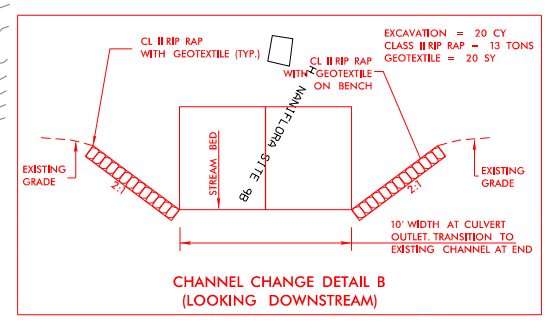
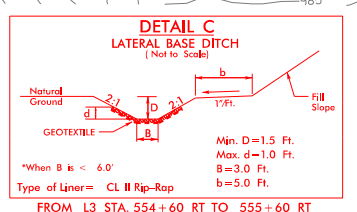
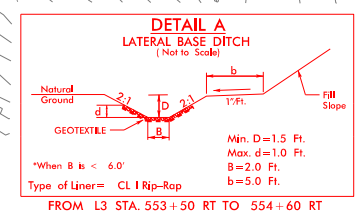
PERMIT DRAWING
SHEET 3 OF 32



MATCH TO SHEET 4 - L3- STA. 553+00.00

MATCH TO SHEET 6 - L3- STA. 565+00.00

SITE 1
SZ



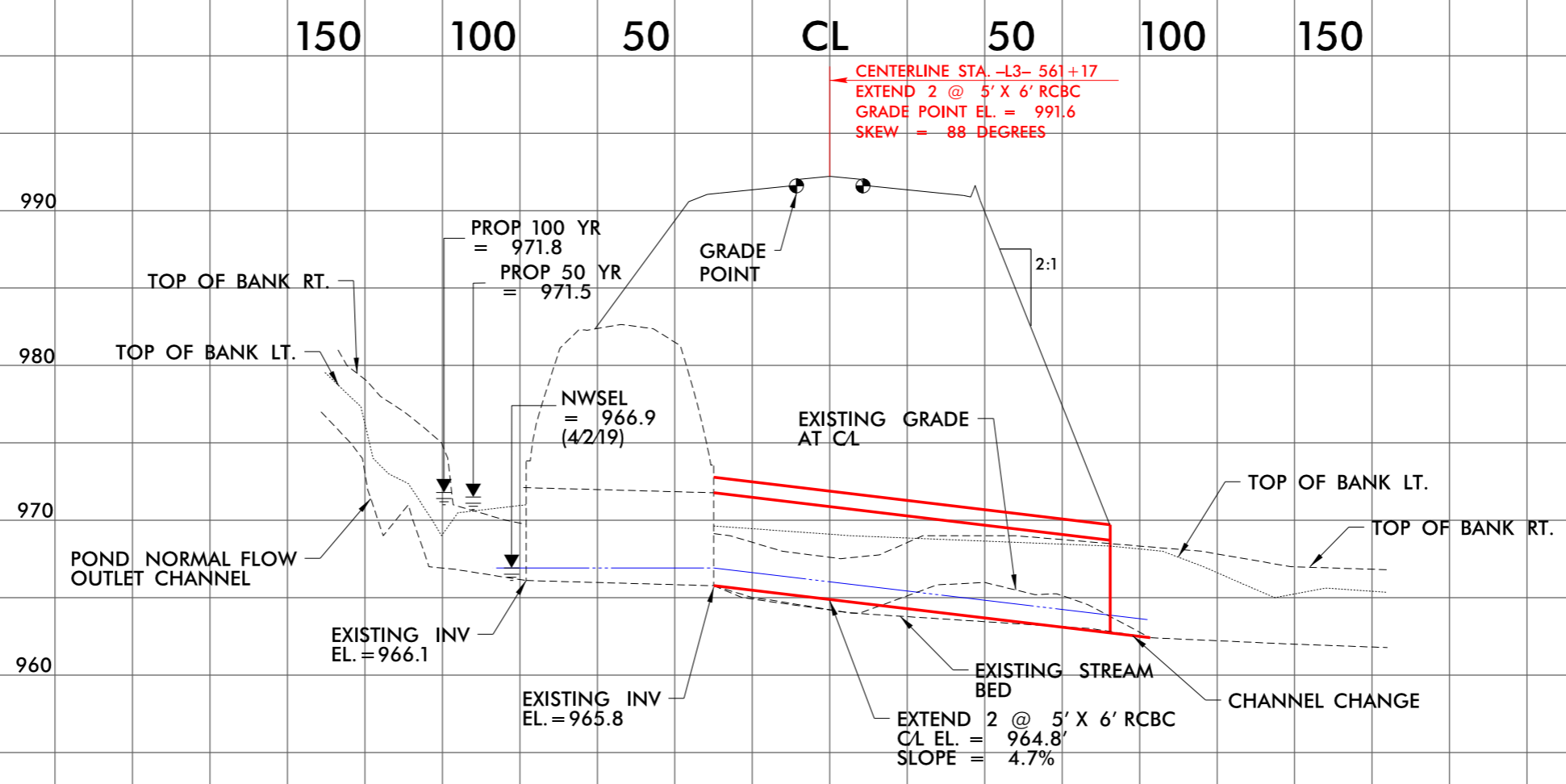
5/14/19
Dewberry
R-2233BA Permit Drawings, 20200526.pdf

SEE SHEET 26 FOR -L3- PROFILE
SEE SHEET 51 FOR -DRW3- PROFILE
SEE SHEET 52 FOR -DRW4- PROFILE
SEE SHEET 52 FOR -DRW5- PROFILE
SEE SHEET 2B-2 FOR INTERSECTION DETAILS

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

SITE 1 SZ

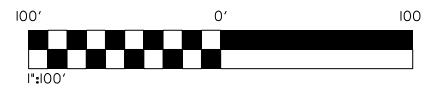
**PERMIT DRAWING
SHEET 4 OF 32**



5/14/99

5/16/2020
DEWBERRY
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5/14/19
5626520
Dewberry
R22338A Permit Drawings, 20200526.PDF

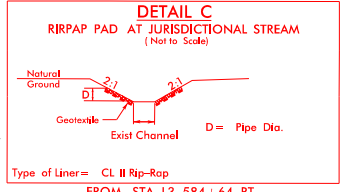
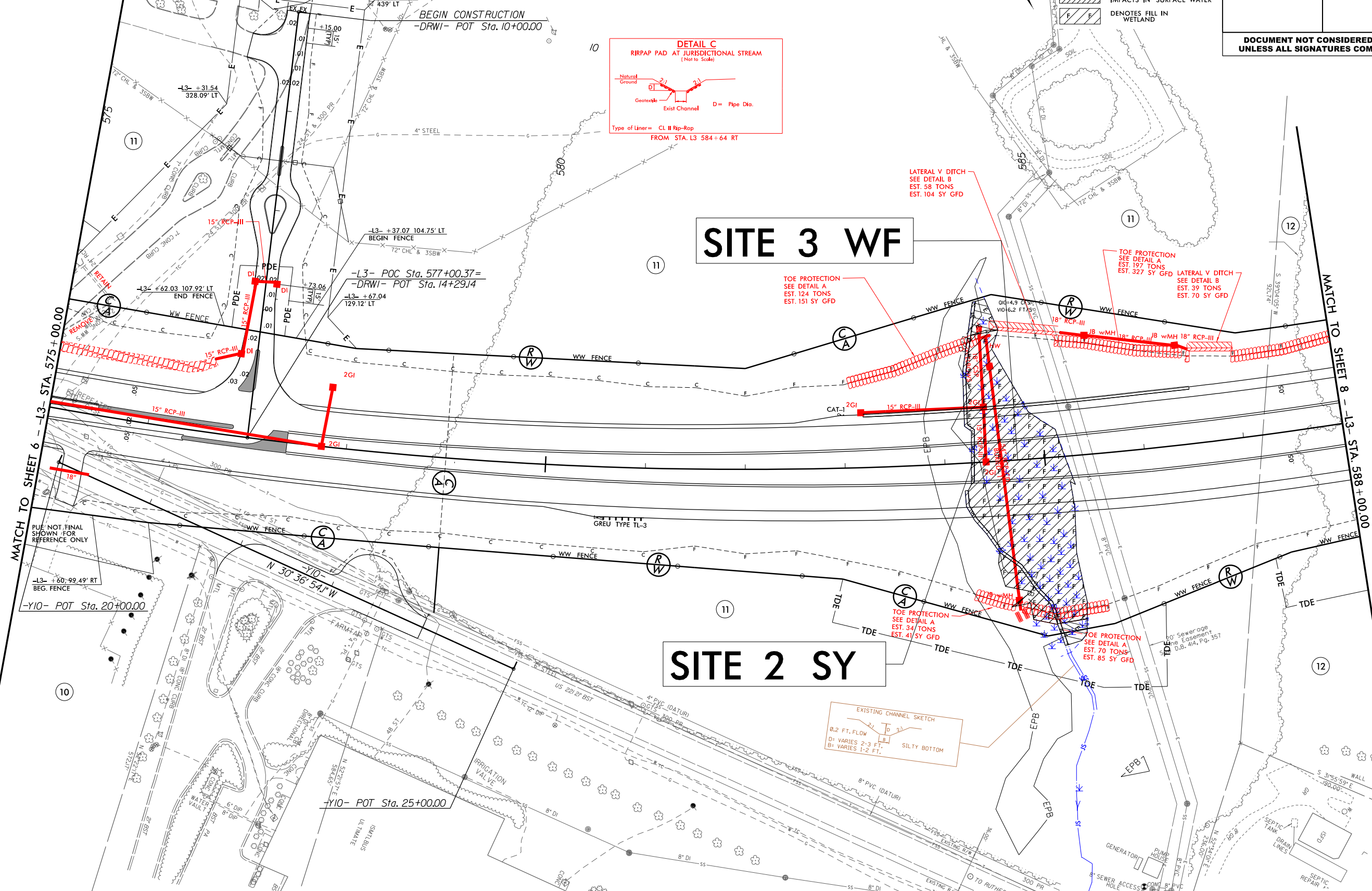


Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9329
NC CDA No. F-40029

**PERMIT DRAWING
SHEET 5 OF 32**

- Denotes Impacts in Surface Water
- Denotes Temporary Impacts in Surface Water
- Denotes Fill in Wetland

PROJECT REFERENCE NO. R-22338A	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	



LATERAL V DITCH
SEE DETAIL B
EST. 58 TONS
EST. 104 SY GFD

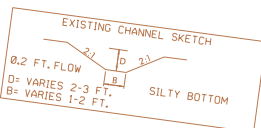
SITE 3 WF

TOE PROTECTION
SEE DETAIL A
EST. 124 TONS
EST. 151 SY GFD

TOE PROTECTION
SEE DETAIL A
EST. 197 TONS
EST. 327 SY GFD

LATERAL V DITCH
SEE DETAIL B
EST. 39 TONS
EST. 70 SY GFD

SITE 2 SY



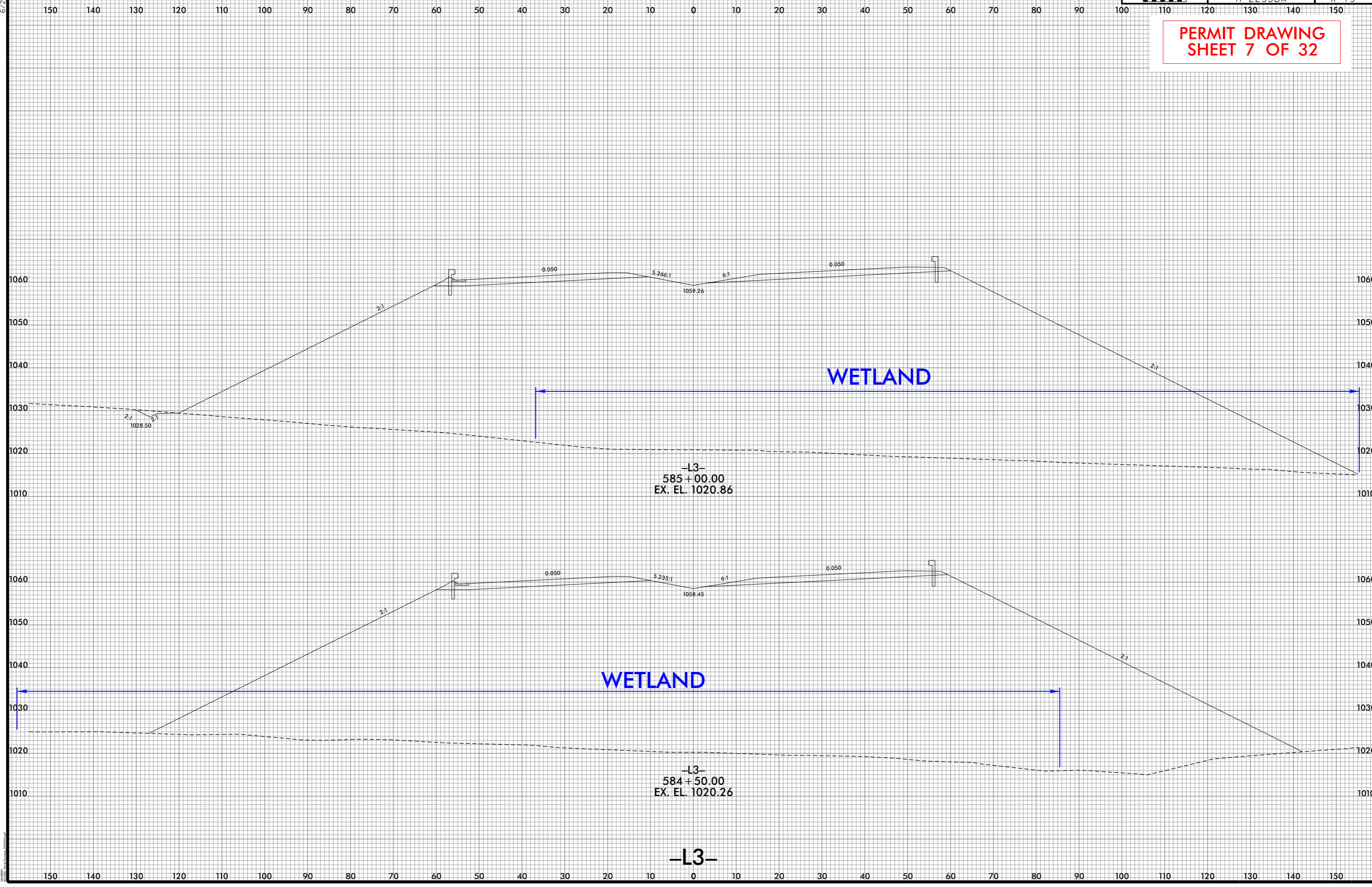
TOE PROTECTION
SEE DETAIL A
EST. 34 TONS
EST. 41 SY GFD

TOE PROTECTION
SEE DETAIL A
EST. 70 TONS
EST. 85 SY GFD

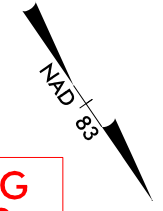
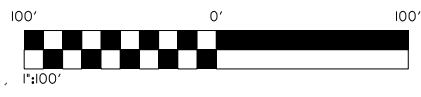
SEE SHEET 28 FOR -L3- PROFILE
SEE SHEET 51 FOR -DRWI- PROFILE
SEE SHEET 2B-2 FOR INTERSECTION DETAIL

6/23/16

PERMIT DRAWING
 SHEET 7 OF 32



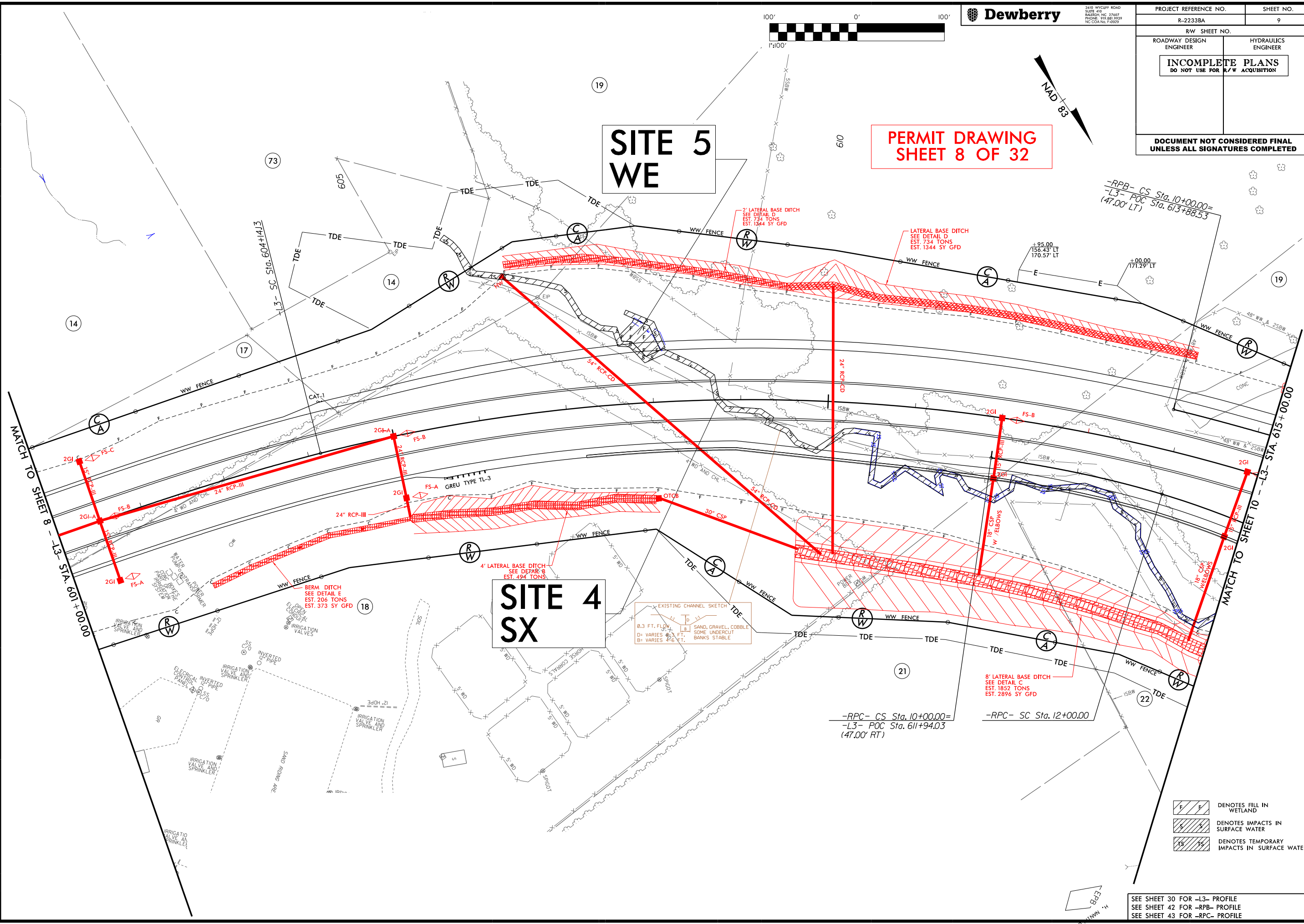
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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PERMIT DRAWING
SHEET 8 OF 32

SITE 5
WE

SITE 4
SX



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

SEE SHEET 30 FOR -L3- PROFILE
SEE SHEET 42 FOR -RPB- PROFILE
SEE SHEET 43 FOR -RPC- PROFILE

5/14/19

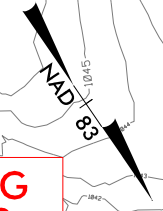
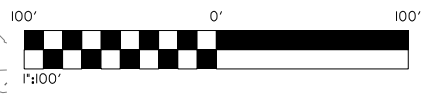


2410 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9929
NC CDA No. P-0029

PROJECT REFERENCE NO.	SHEET NO.
R-2233BA	9

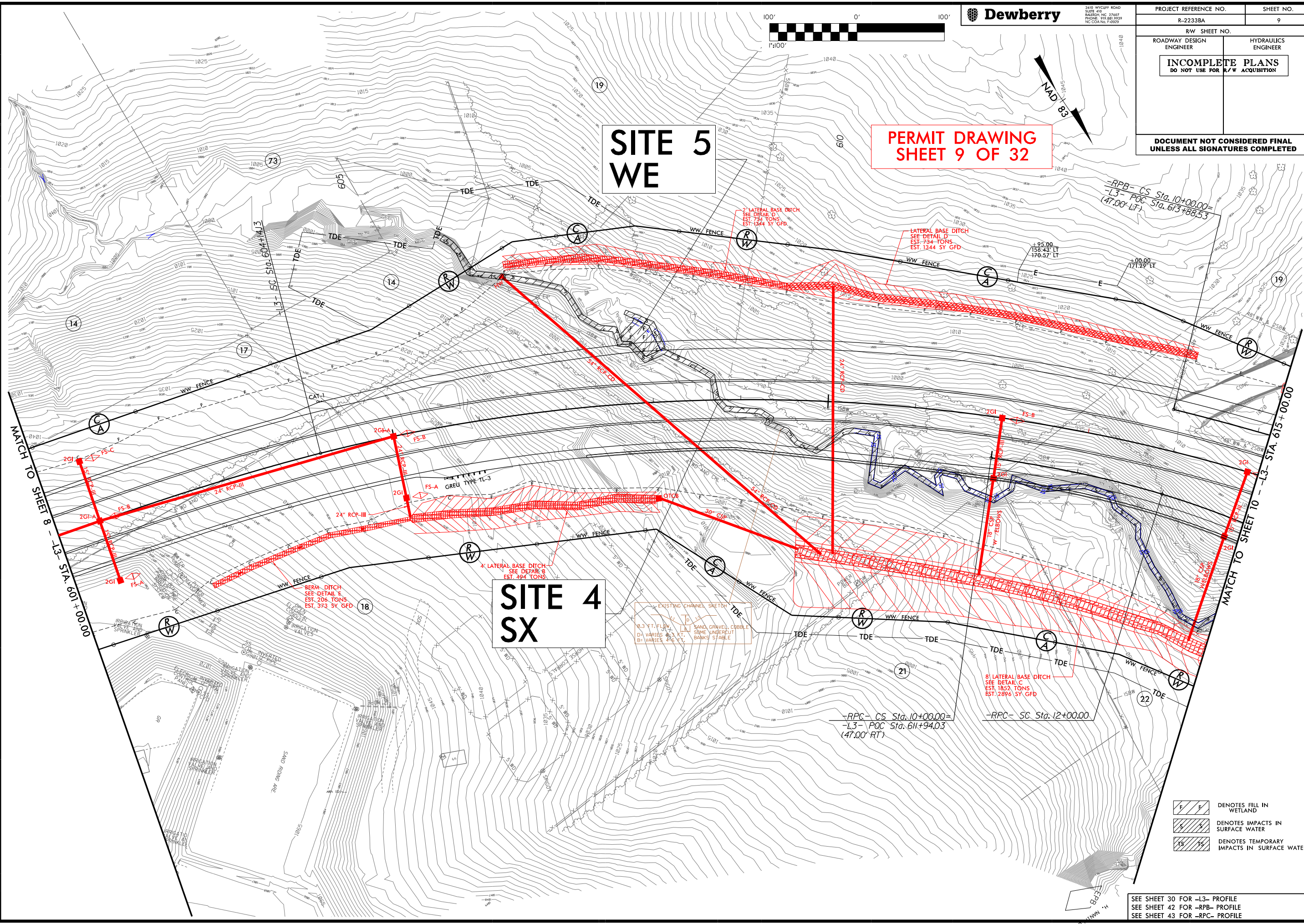
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SITE 5 WE

PERMIT DRAWING SHEET 9 OF 32



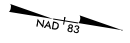
SITE 4 SX

EXISTING CHANNEL SKETCH
 0.3 FT. FLOW
 1.5 FT. D
 SAND GRAVEL COBBLE
 SOME UNDERCUT
 BANKS STABLE
 D: VARIES 2-3 FT.
 B: VARIES 4-6 FT.

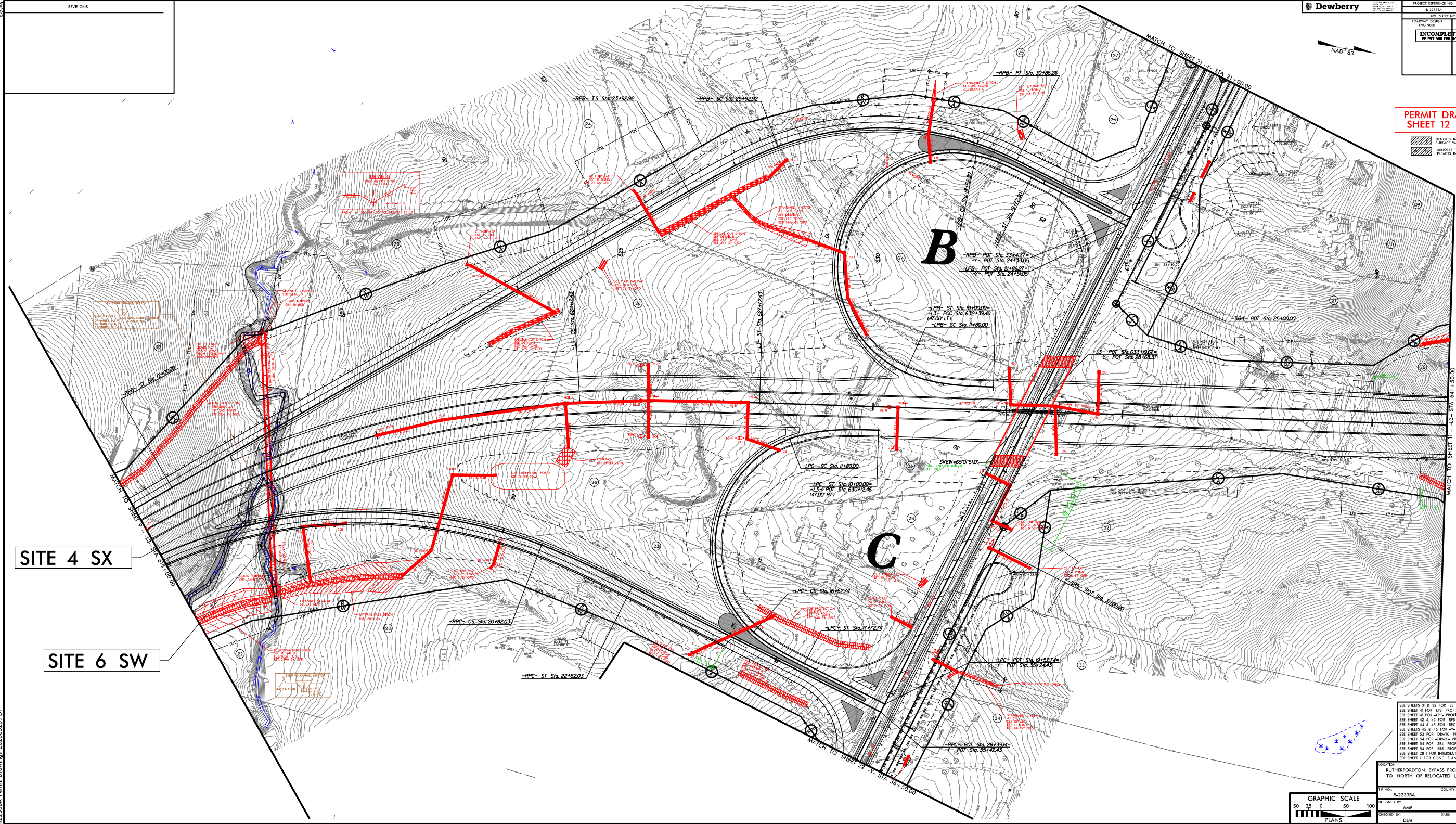
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEET 30 FOR -L3- PROFILE
 SEE SHEET 42 FOR -RPB- PROFILE
 SEE SHEET 43 FOR -RPC- PROFILE

05/14/2019
 05/14/2019
 R2233BA Permit Drawings 20200526.pdf



REVISIONS



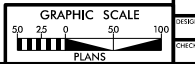
SITE 4 SX

SITE 6 SW

B

C

SEE SHEETS 31 & 32 FOR -L&L- PROFILE
 SEE SHEET 41 FOR -J&L- PROFILE
 SEE SHEET 41 FOR -AFC- PROFILE
 SEE SHEET 42 & 43 FOR -RPP- PROFILE
 SEE SHEET 44 & 45 FOR -RPP- PROFILE
 SEE SHEETS 45 & 46 FOR -RPP- PROFILE
 SEE SHEET 53 FOR -DRW1- PROFILE
 SEE SHEET 54 FOR -DRW1- PROFILE
 SEE SHEET 54 FOR -DRW1- PROFILE
 SEE SHEET 54 FOR -DRW1- PROFILE
 SEE SHEET 28- FOR INTERSECTION DETAILS
 SEE SHEET 1 FOR CONC. ISLAND DETAILS



LOCATION: RUTHERFORDTON BYPASS FROM US 74 BYPASS TO NORTH OF RELOCATED LAUREL HILL ROAD	COUNTY: RUTHERFORD
IP NO.: R-22338A	DESIGNED BY: AMP
CHECKED BY: DJA	DATE: 6/24/2020

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

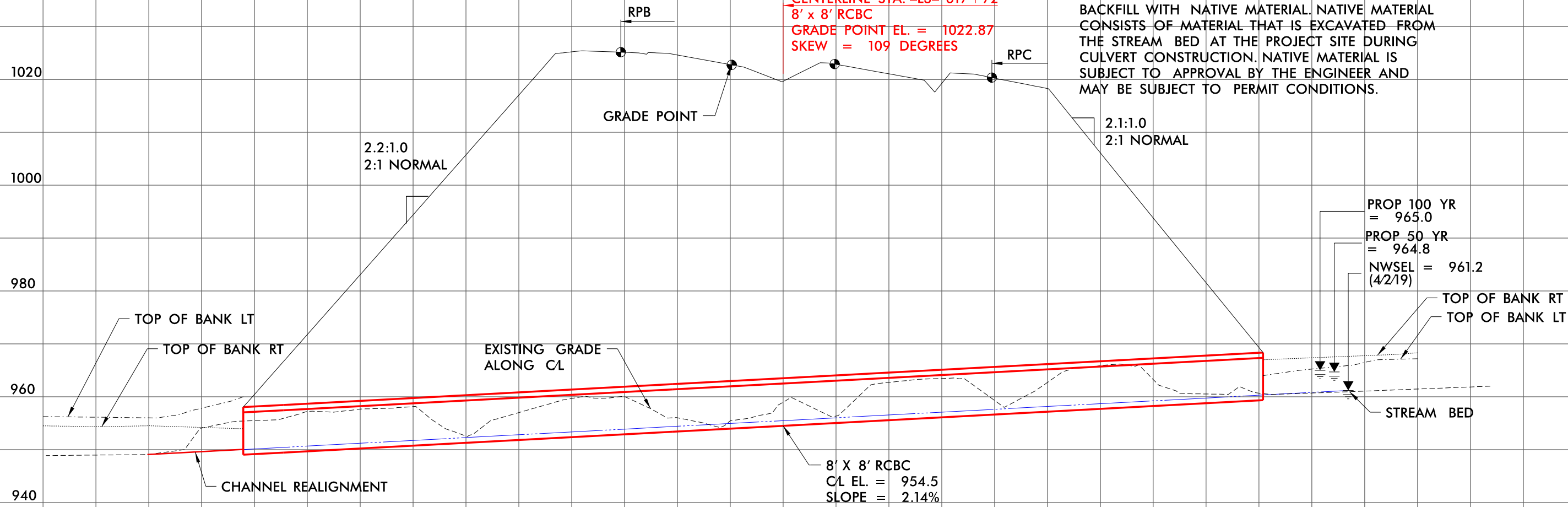
**PERMIT DRAWING
SHEET 13 OF 32**

SITE 6 SW

200 100 CL 100 200

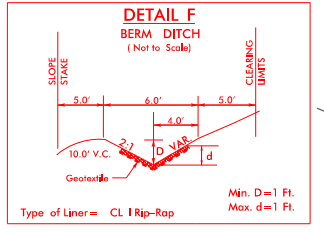
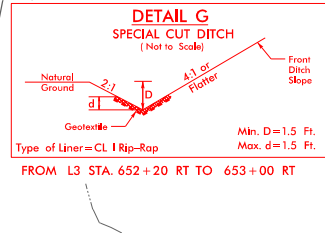
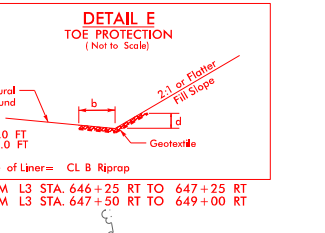
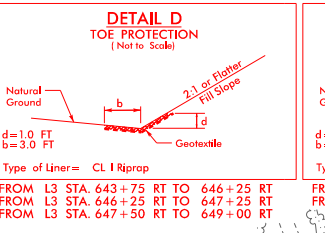
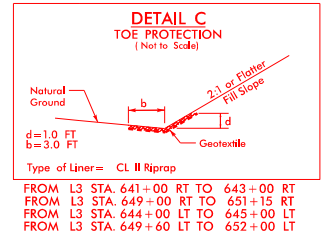
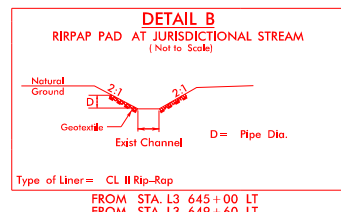
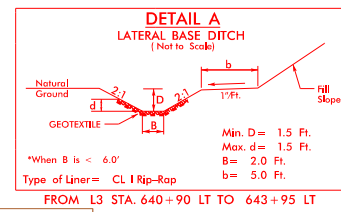
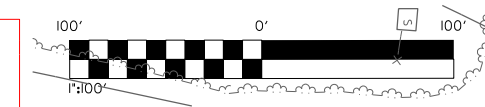
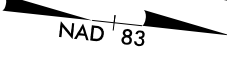
CENTERLINE STA. -L3- 617+72
8' x 8' RCBC
GRADE POINT EL. = 1022.87
SKEW = 109 DEGREES

NOTE:
BACKFILL WITH NATIVE MATERIAL. NATIVE MATERIAL
CONSISTS OF MATERIAL THAT IS EXCAVATED FROM
THE STREAM BED AT THE PROJECT SITE DURING
CULVERT CONSTRUCTION. NATIVE MATERIAL IS
SUBJECT TO APPROVAL BY THE ENGINEER AND
MAY BE SUBJECT TO PERMIT CONDITIONS.



PERMIT DRAWING SHEET 14 OF 32

- Denotes impacts in surface water
- Denotes temporary impacts in surface water
- Denotes fill in wetland



SITE 8 SV

SITE 7 WD

SITE 10

SITE 9 SU

MATCH TO SHEET 10 - L3- STA. 641+50.00

MATCH TO SHEET 12 - L3- STA. 654+50.00

8/26/2020 9:01:24 PM R:\BA_R\p\PS111.dgn

SEE SHEET 33 FOR L3- PROFILE

PERMIT DRAWING
SHEET 15 OF 32

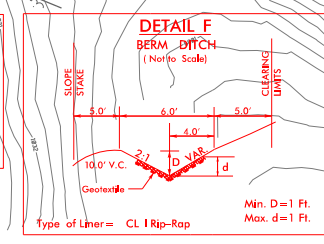
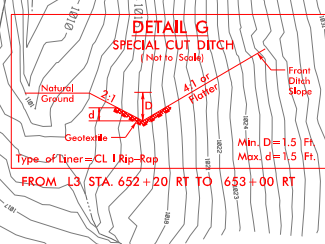
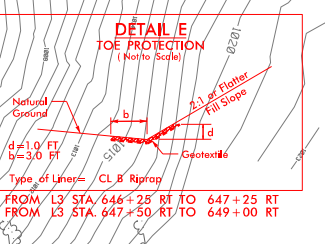
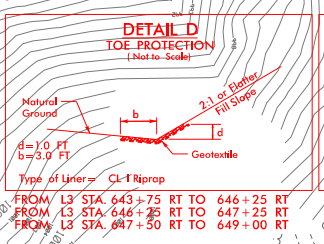
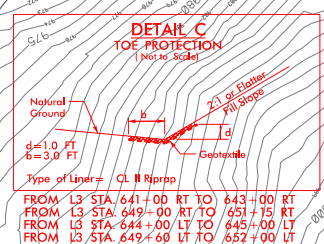
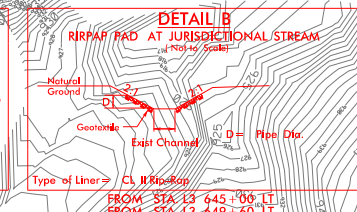
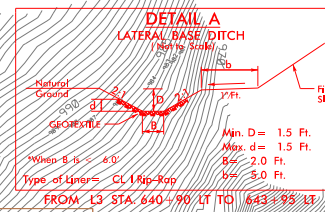
- Denotes IMPACTS IN SURFACE WATER
- Denotes TEMPORARY IMPACTS IN SURFACE WATER
- Denotes FILL IN WETLAND

SITE 8 SV

SITE 7 WD

SITE 10

SITE 9 SU



MATCH TO SHEET 10 - L3- STA. 641 + 50.00

MATCH TO SHEET 12 - L3- STA. 654 + 50.00

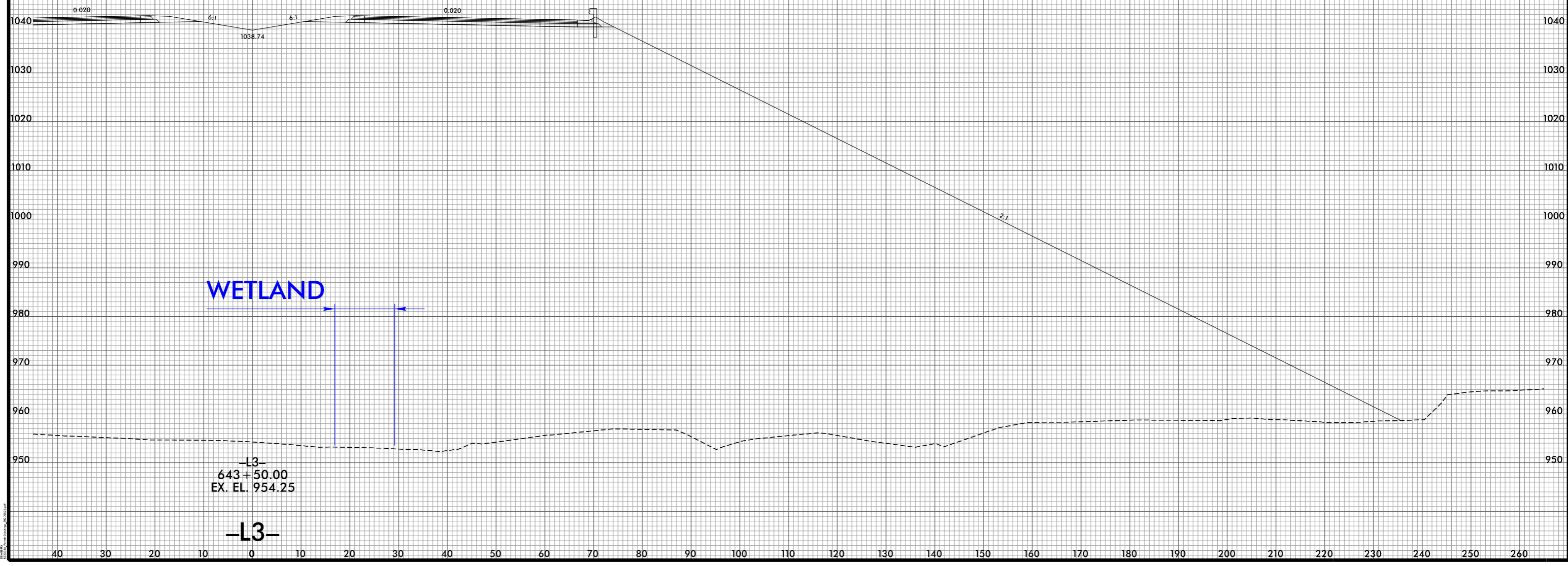
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D:\Projects\2020\2233BA\Drawings\PSH11.dgn

SEE SHEET 33 FOR L3- PROFILE

6/23/16

40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260

**PERMIT DRAWING
SHEET 16 OF 32**



02/02/2016 09:11:16 AM

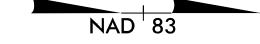
5/14/99

PERMIT DRAWING SHEET 17 OF 32

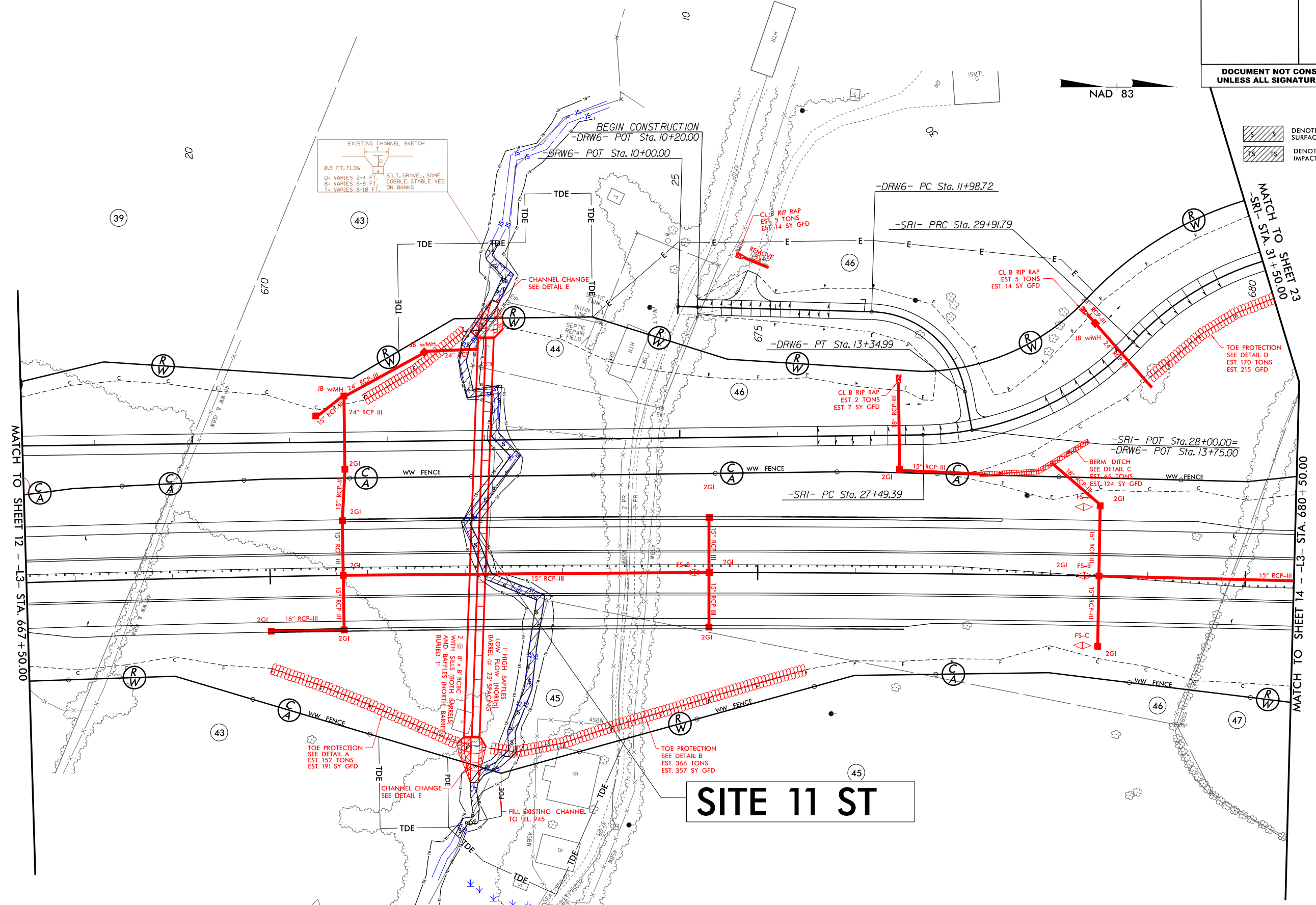


PROJECT REFERENCE NO. R-2233BA	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SITE 11 ST

SEE SHEET 35 FOR -L3- PROFILE
 SEE SHEETS 49 & 50 FOR -SRI- PROFILE
 SEE SHEET 52 FOR -DRW6- PROFILE

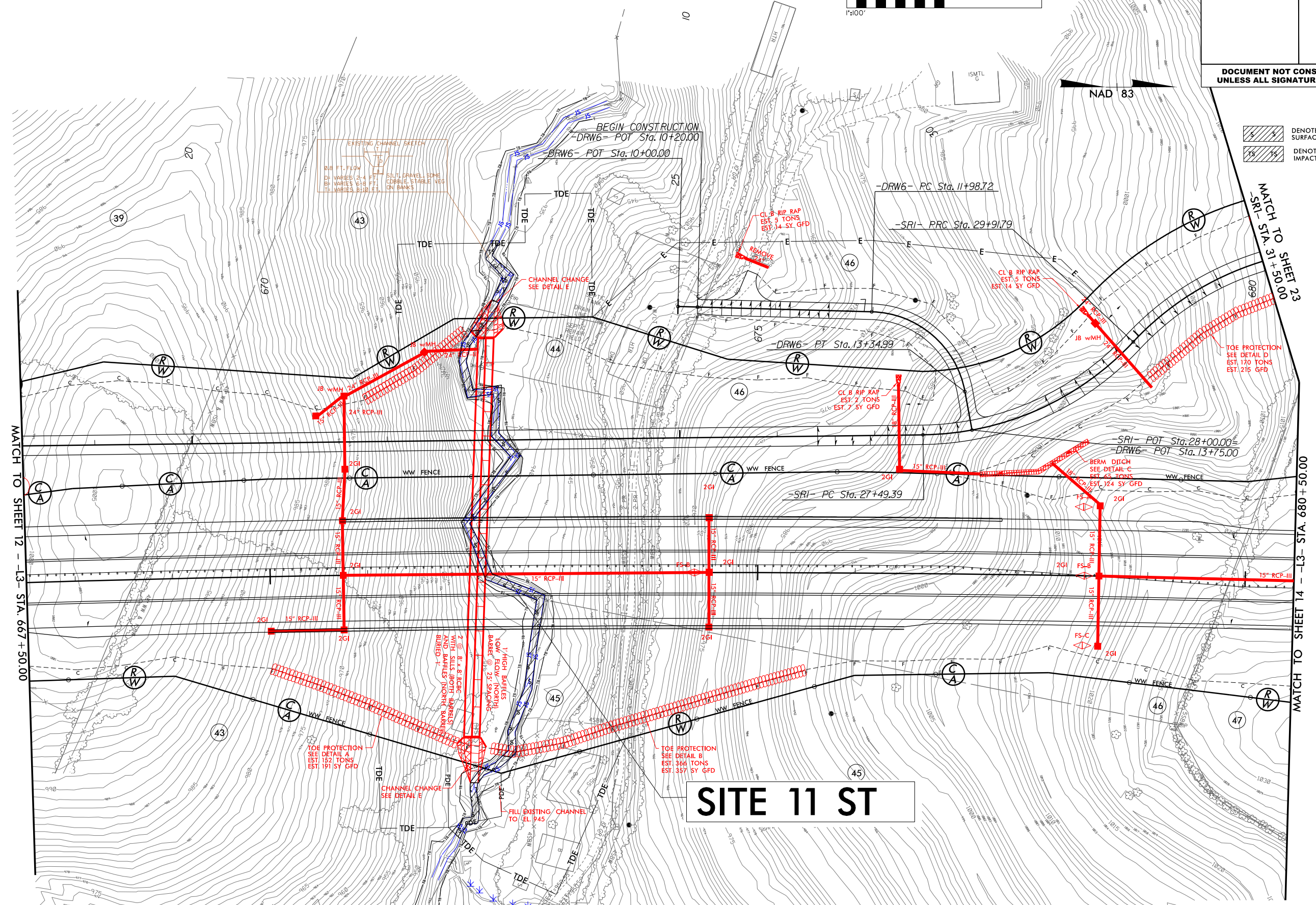
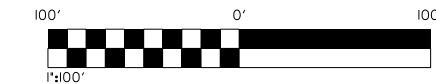
05/26/2020
 DEWBERRY
 R-2233BA Permit Drawing 20200526.dwg

5/14/99

PERMIT DRAWING SHEET 18 OF 32

Dewberry
2410 WYCLIFF ROAD
SUITE 400
RALEIGH, NC 27607
PHONE: 919.885.9399
NC CCA No. P-0029

PROJECT REFERENCE NO. R-2233BA	SHEET NO. 13
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	



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCH TO SHEET 12 - L3- STA. 667+50.00

MATCH TO SHEET 23
SRI- STA. 31+50.00

MATCH TO SHEET 14 - L3- STA. 680+50.00

SITE 11 ST

SEE SHEET 35 FOR -L3- PROFILE
 SEE SHEETS 49 & 50 FOR -SRI- PROFILE
 SEE SHEET 52 FOR -DRW6- PROFILE

105262020
 DEWBERRY
 R-2233BA Permit Drawing 20200526.dwg

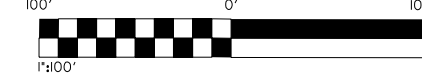
5/14/99



2010 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9339
NC CEA No. F0029

PROJECT REFERENCE NO. R-2233BA	SHEET NO. 15
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	

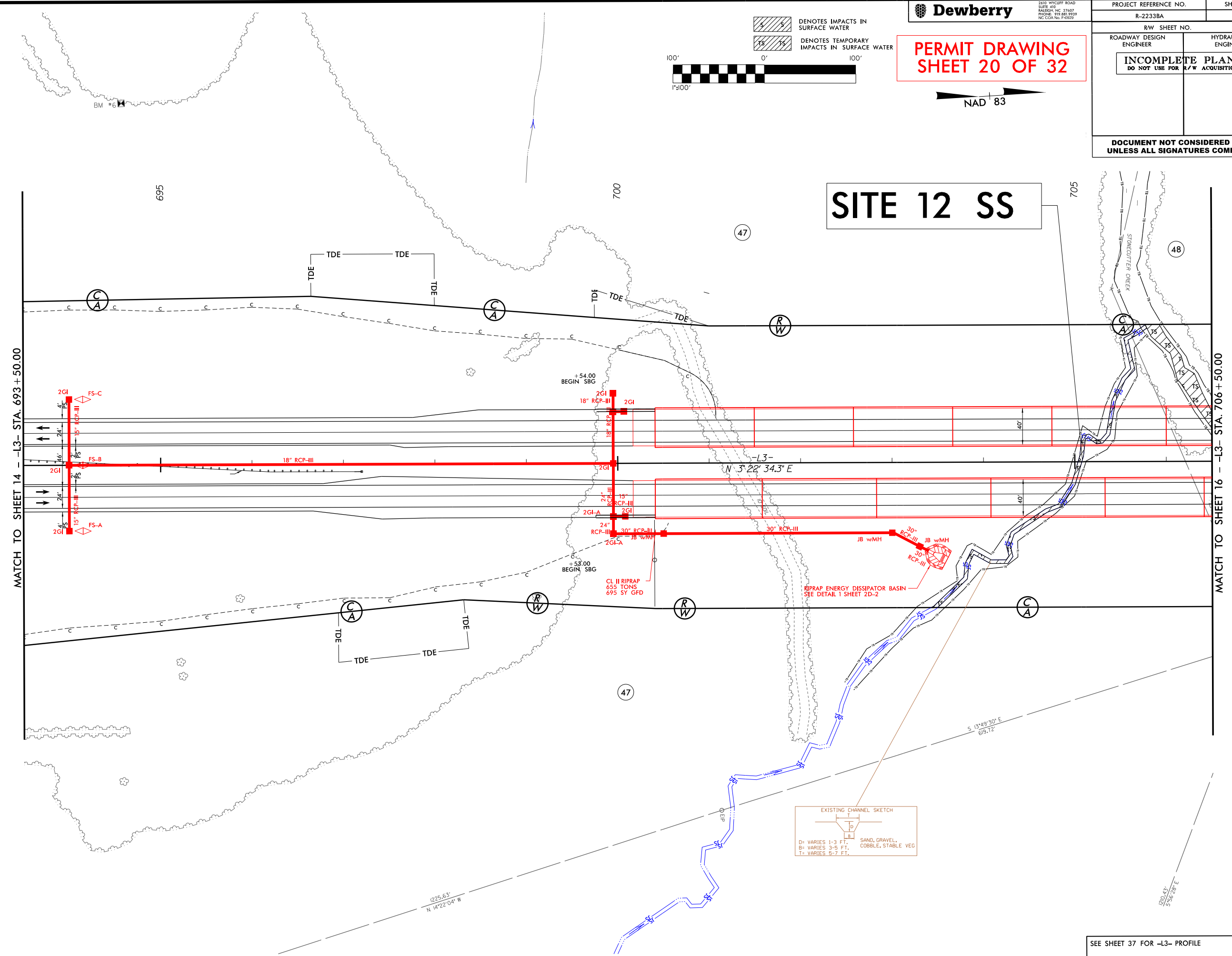
DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



**PERMIT DRAWING
SHEET 20 OF 32**

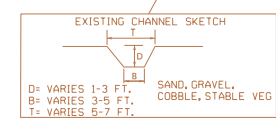


SITE 12 SS



MATCH TO SHEET 14 - L3- STA. 693+50.00

MATCH TO SHEET 16 - L3- STA. 706+50.00

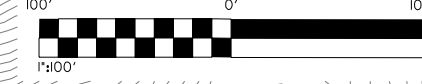


SEE SHEET 37 FOR -L3- PROFILE

5/14/99
 DEWBERRY
 R-2233BA Permit Drawings_20200526.PDF

PROJECT REFERENCE NO. R-2233BA	SHEET NO. 15
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	

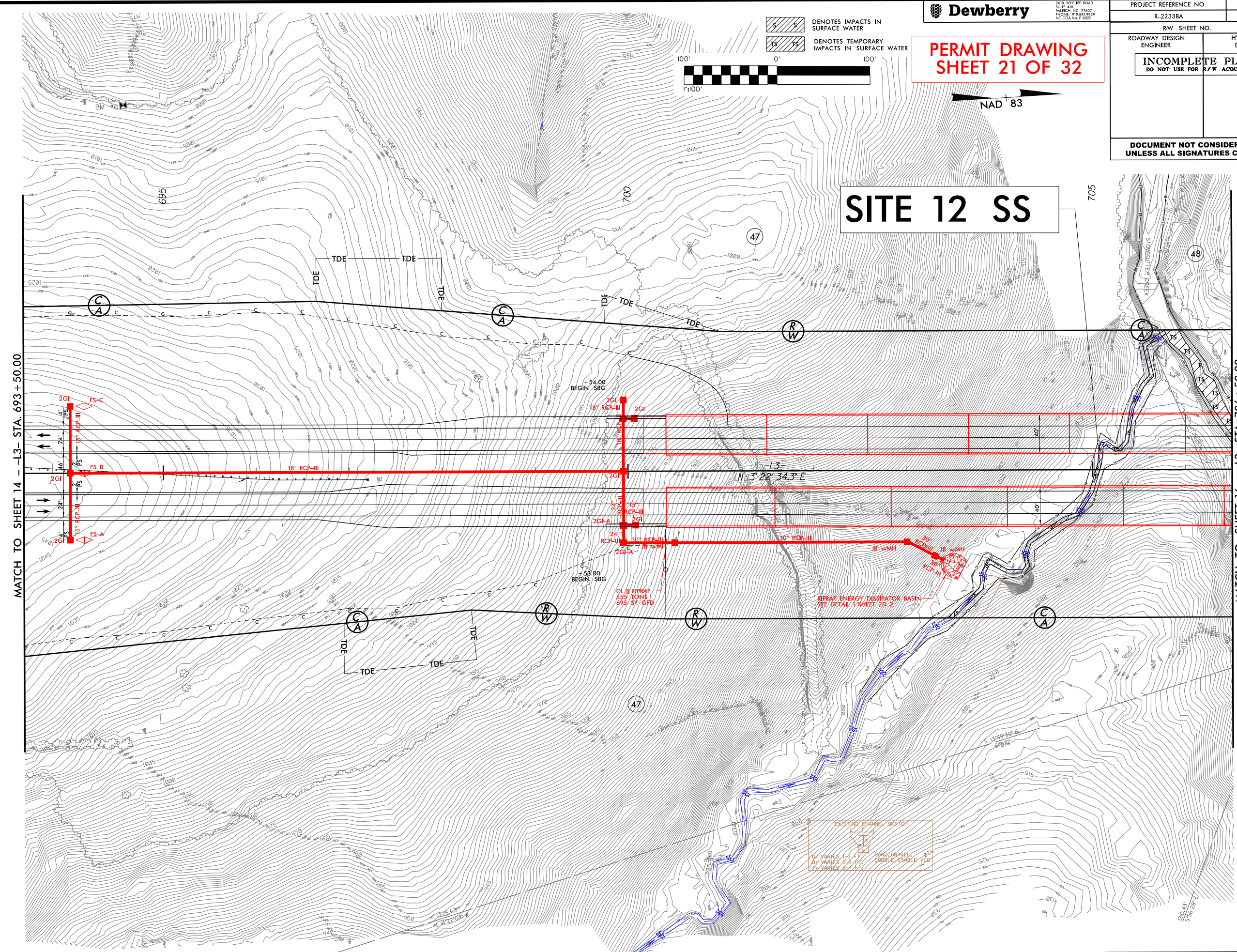
DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



**PERMIT DRAWING
SHEET 21 OF 32**

NAD 83

SITE 12 SS



MATCH TO SHEET 14 - L3- STA. 693+50.00

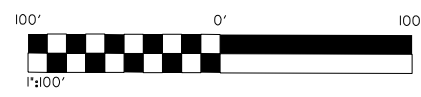
MATCH TO SHEET 16 - L3- STA. 706+50.00

EXISTING CHANNEL SKETCH
 CH VARIES 1-3 FT
 BV VARIES 3-5 FT
 TW VARIES 8-11 FT
 SAND, BRAYEL
 COBBLE, STABLE VEG

SEE SHEET 37 FOR -L3- PROFILE

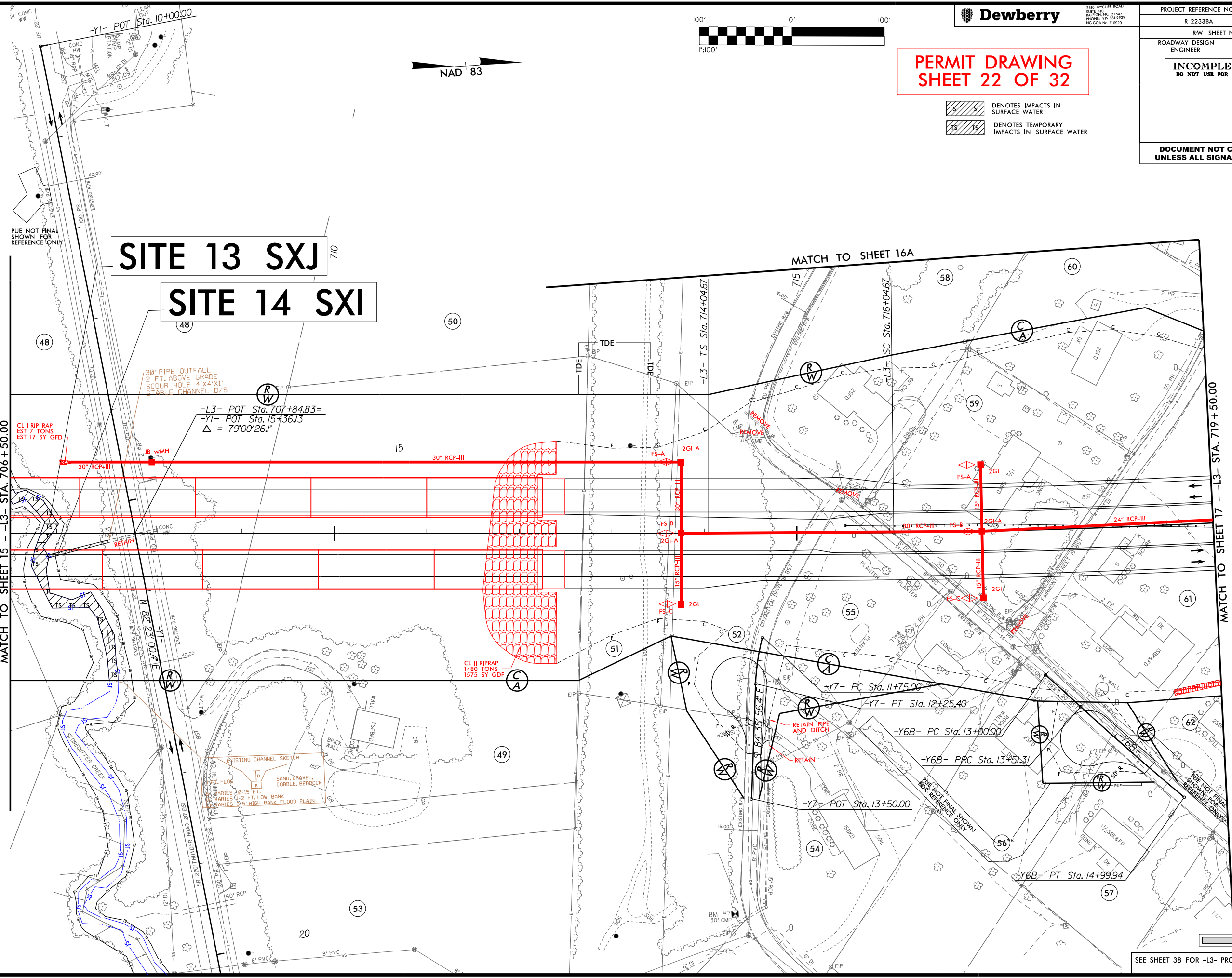
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PERMIT DRAWING
SHEET 22 OF 32

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



05/14/2020
Dewberry
R2233BA_Permit Drawings_20200526.PDF

PROP PAVED SHOULDER

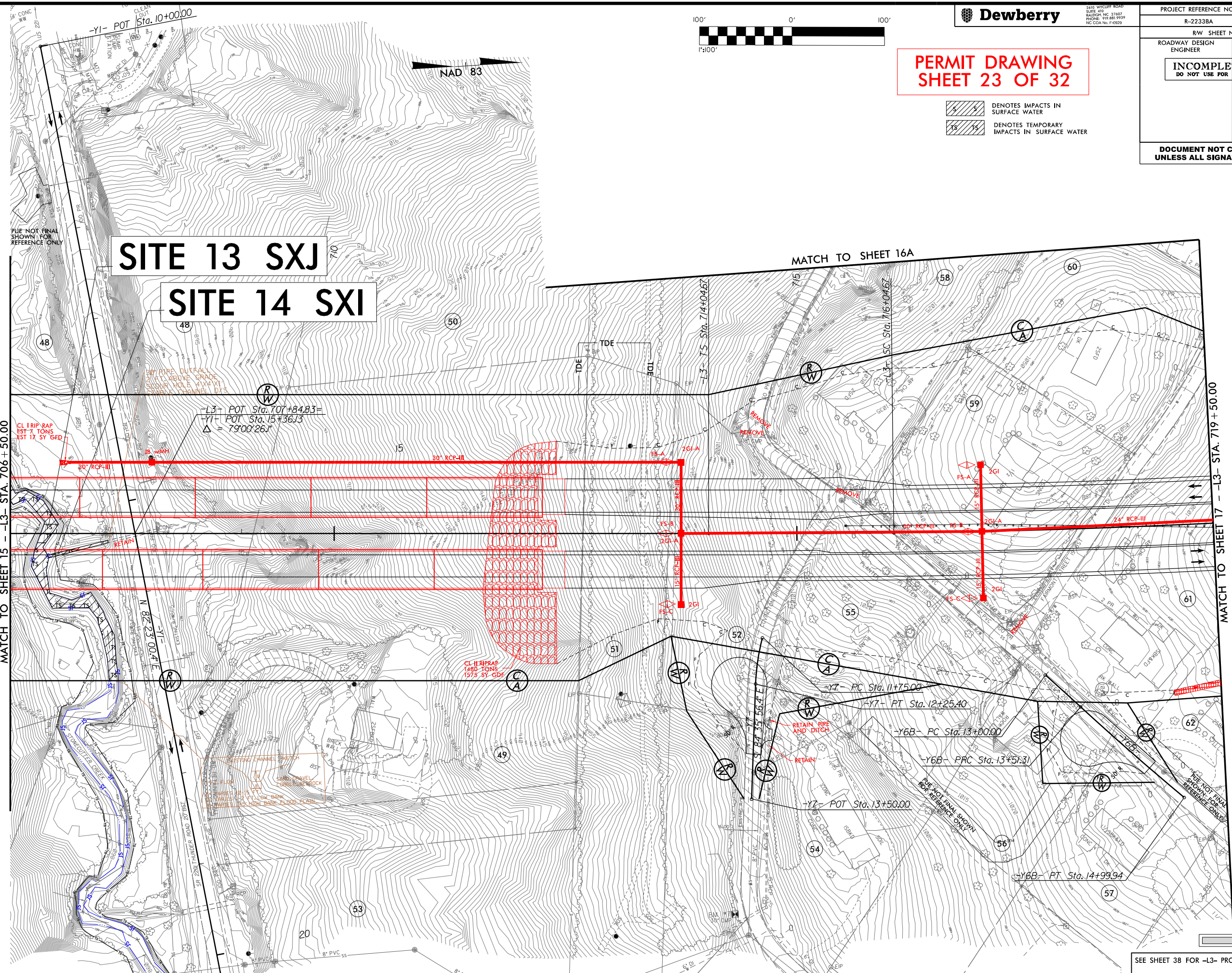
SEE SHEET 38 FOR -L3- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2233BA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



**PERMIT DRAWING
SHEET 23 OF 32**

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



SITE 13 SXJ

SITE 14 SXI

MATCH TO SHEET 15 - L3- STA. 706+50.00

MATCH TO SHEET 17 - L3- STA. 719+50.00

SEE SHEET 38 FOR -L3- PROFILE

**PERMIT DRAWING
SHEET 24 OF 32**

-L3-

BM #6
-L3- STA 695+58.14
395.76' LEFT
ELEV. 1000.12'
RR SPIKE IN BASE 6" REDCEDAR

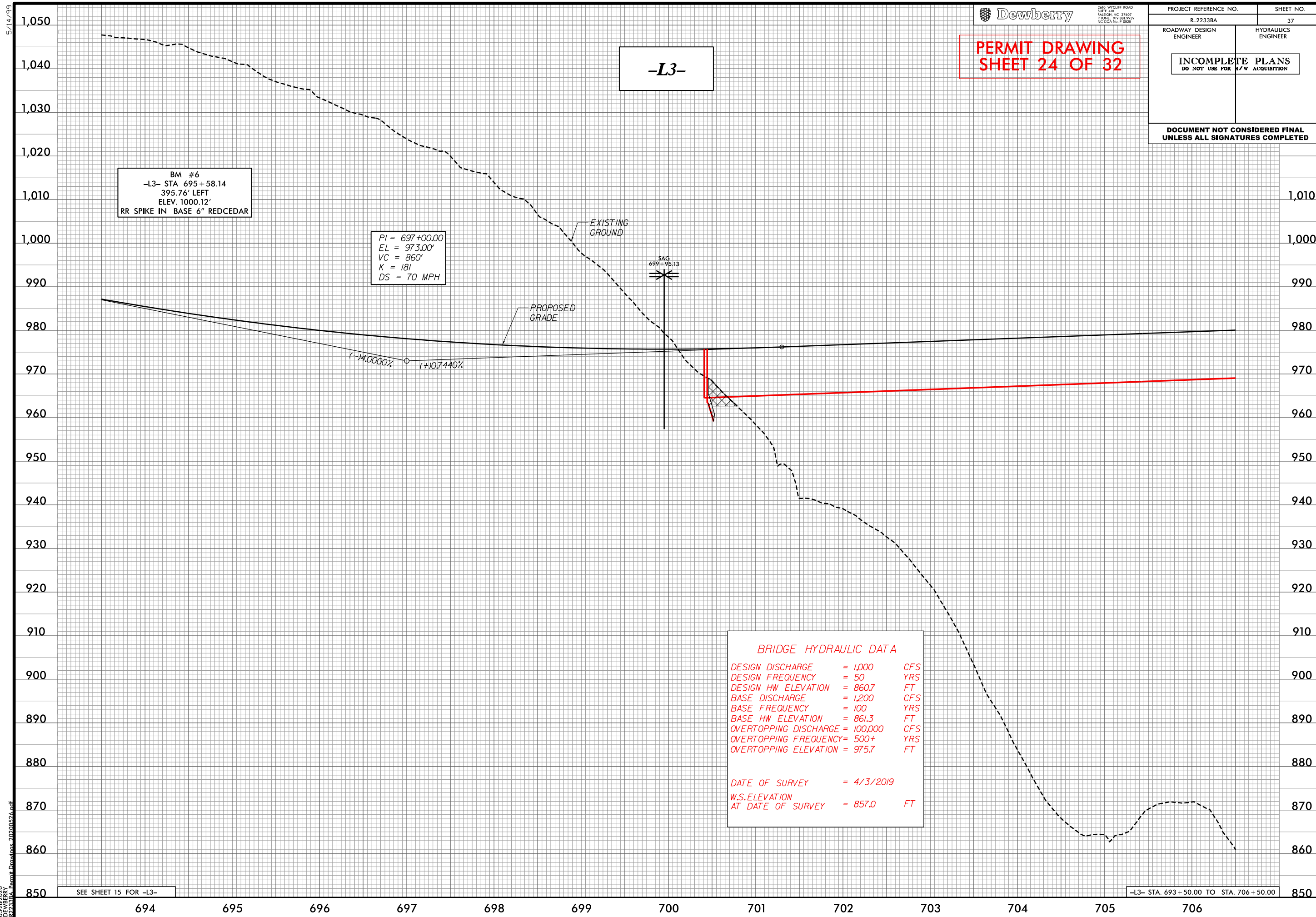
PI = 697+00.00
EL = 973.00'
VC = 860'
K = 181
DS = 70 MPH

SAG
699+95.13

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1,000 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 860.7 FT
BASE DISCHARGE = 1,200 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 861.3 FT
OVERTOPPING DISCHARGE = 100,000 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 975.7 FT

DATE OF SURVEY = 4/3/2019
W.S. ELEVATION AT DATE OF SURVEY = 857.0 FT



SEE SHEET 15 FOR -L3-

-L3- STA. 693+50.00 TO STA. 706+50.00

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R-2233BA
Permit Drawings - 20200526.pdf

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**PERMIT DRAWING
SHEET 25 OF 32**



PROJECT REFERENCE NO. R-2233BA		SHEET NO. 38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

-L3-

BM #7
 -L3- STA 714.33:14
 411.46' RIGHT
 ELEV. 974.54'
 RR SPIKE IN BASE 12" HONEYLOCUST

-L3- Sta. 707+84.83 =
-YI- Sta. 15+36.13

(+0.7440%)

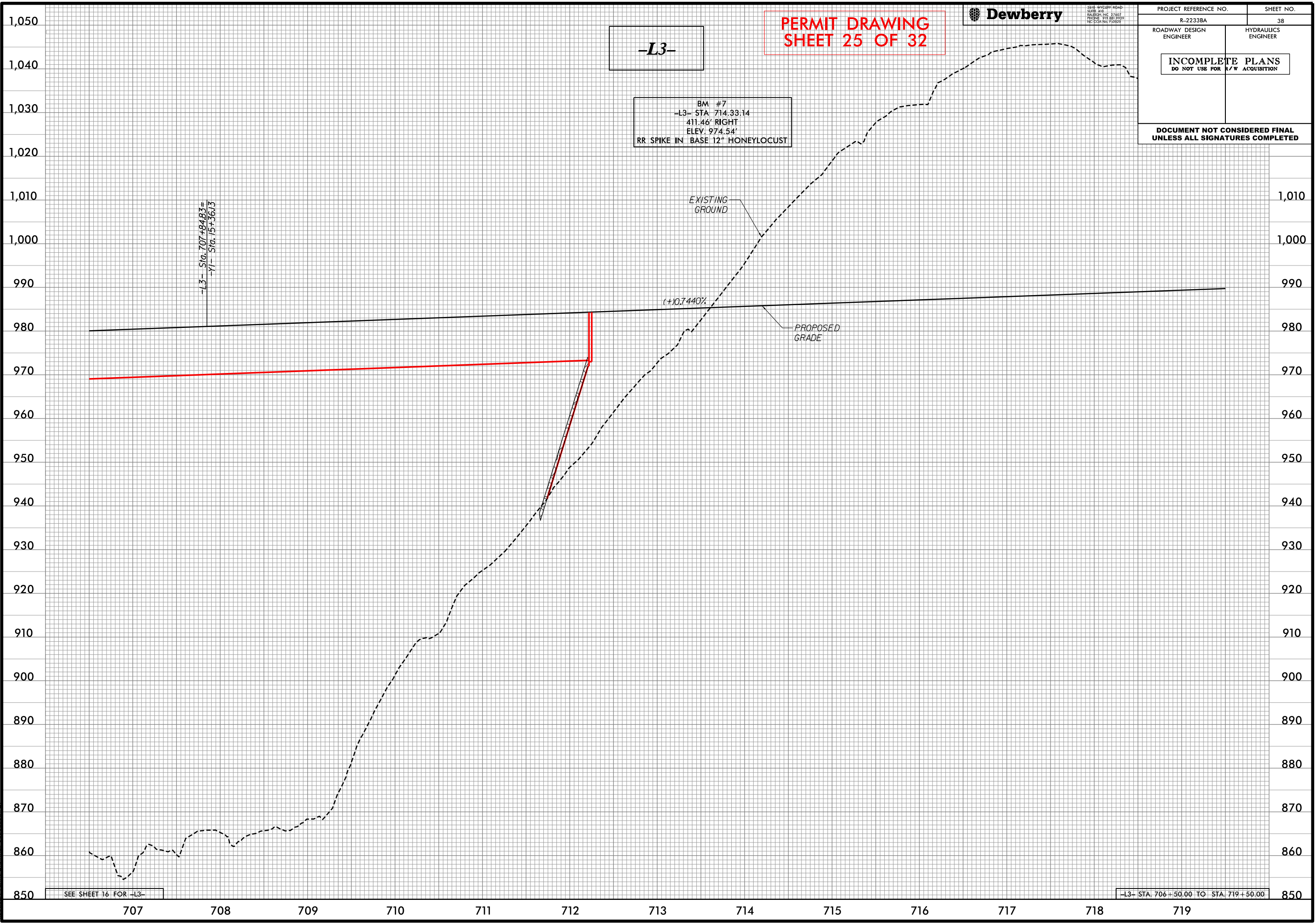
EXISTING
GROUND

PROPOSED
GRADE

SEE SHEET 16 FOR -L3-

-L3- STA. 706+50.00 TO STA. 719+50.00

05/26/2020
DEWBERRY
R-2233BA - Permit Drawings - 20200526.dwg



5/14/19



2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9329
NC CDA No. P-40029

PROJECT REFERENCE NO. R-2233BA SHEET NO. 17

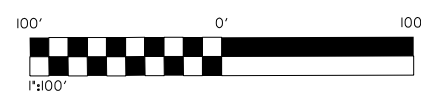
R/W SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

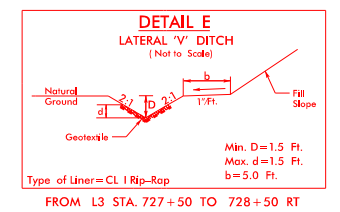
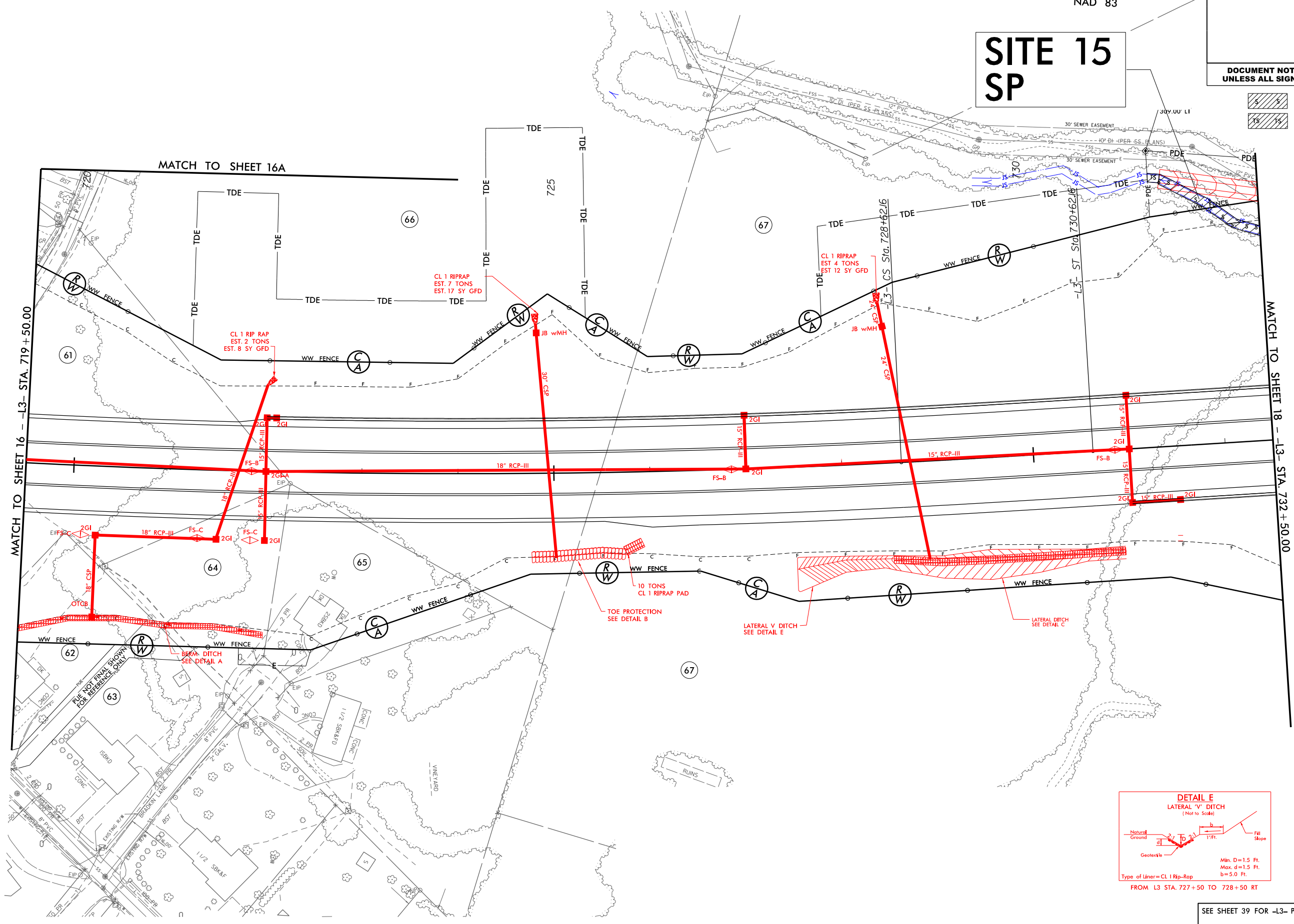
DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 26 OF 32



NAD 83

SITE 15 SP



5/14/19
Dewberry
R-2233BA Permit Drawings 20200526.PDF

SEE SHEET 39 FOR -L3- PROFILE

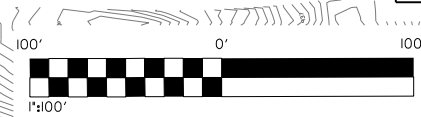
5/14/19



2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.883.9329
NC CDA No. F-40029

PROJECT REFERENCE NO. R-2233BA		SHEET NO. 17	
R/W SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

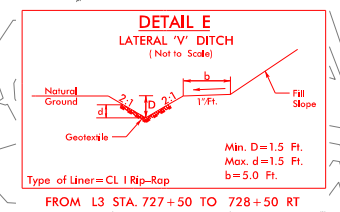
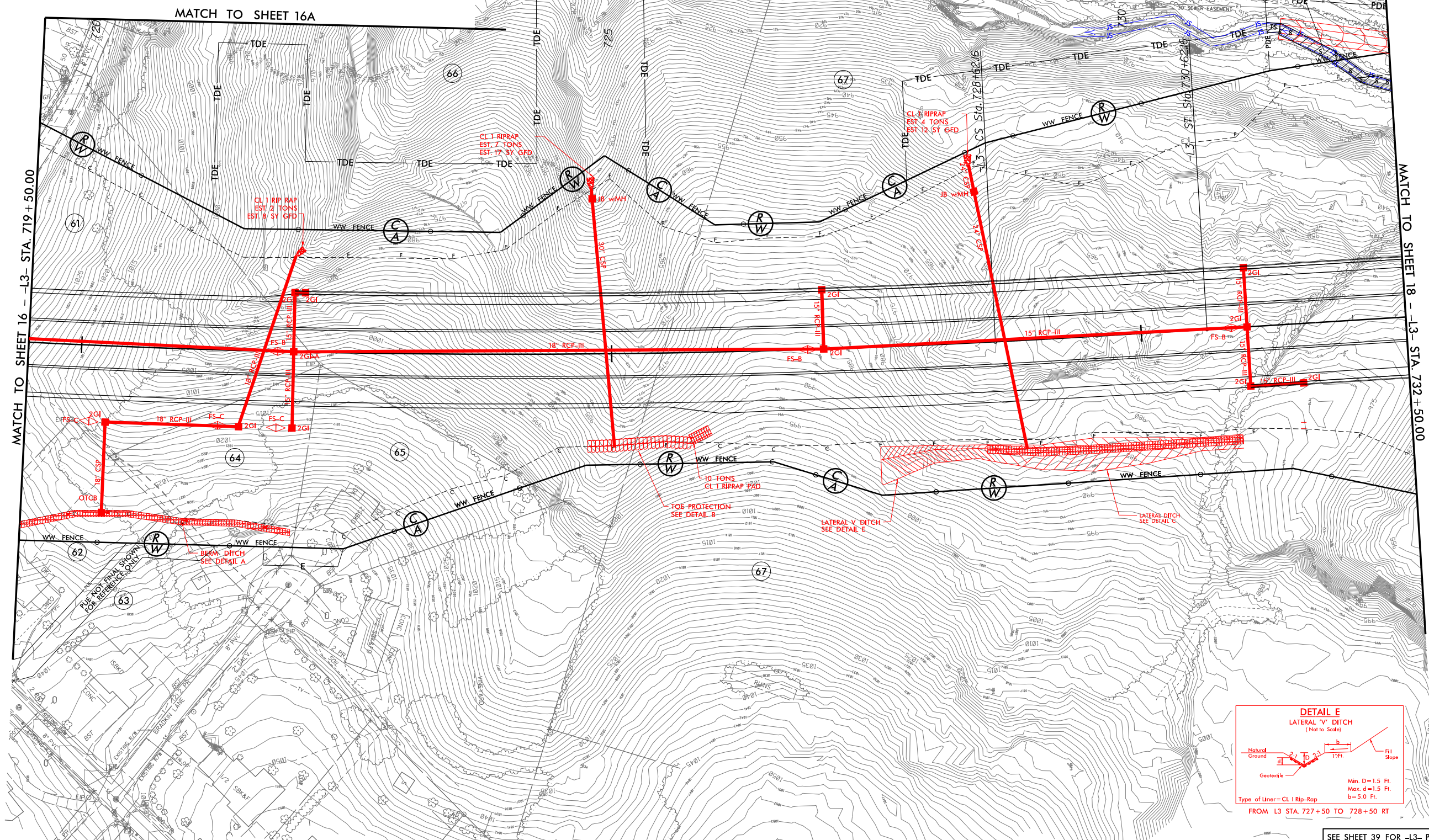
PERMIT DRAWING SHEET 27 OF 32



NAD 83

SITE 15 SP

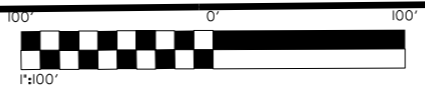
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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Dewberry
R-2233BA Permit Drawings 20200526.PDF

SEE SHEET 39 FOR -L3- PROFILE

5/14/20



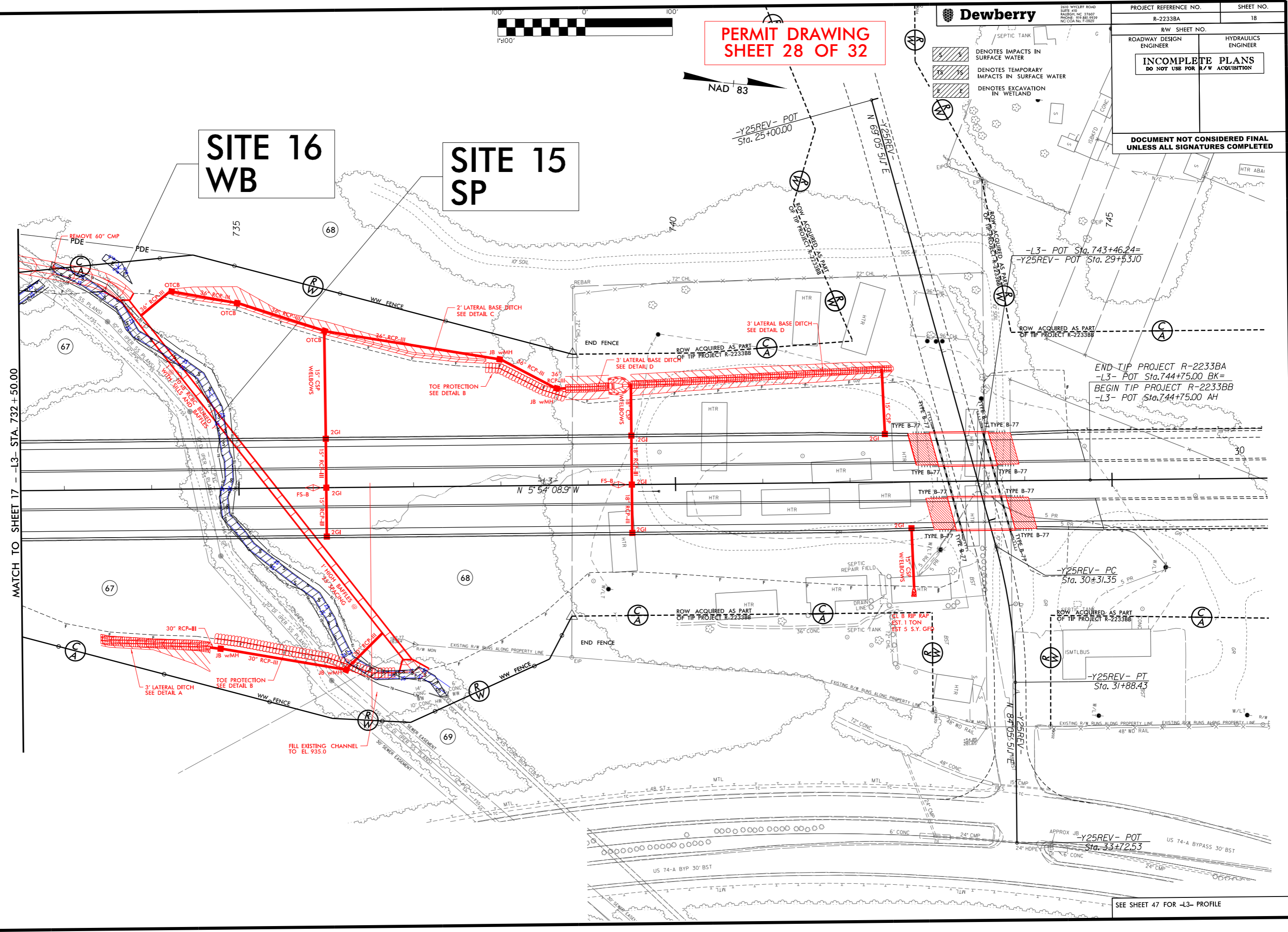
PERMIT DRAWING SHEET 28 OF 32

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9299
NC CONTRACTOR LICENSE NO. 77002

PROJECT REFERENCE NO. R-2233BA	SHEET NO. 18
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 16
WB

SITE 15
SP

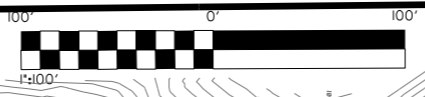


MATCH TO SHEET 17 -L3- STA. 732+50.00

END TIP PROJECT R-2233BA
-L3- POT Sta. 744+75.00 BK=
BEGIN TIP PROJECT R-2233BB
-L3- POT Sta. 744+75.00 AH

5/26/2020
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R-2233BA_Permit Drawings_20200526.pdf

SEE SHEET 47 FOR -L3- PROFILE



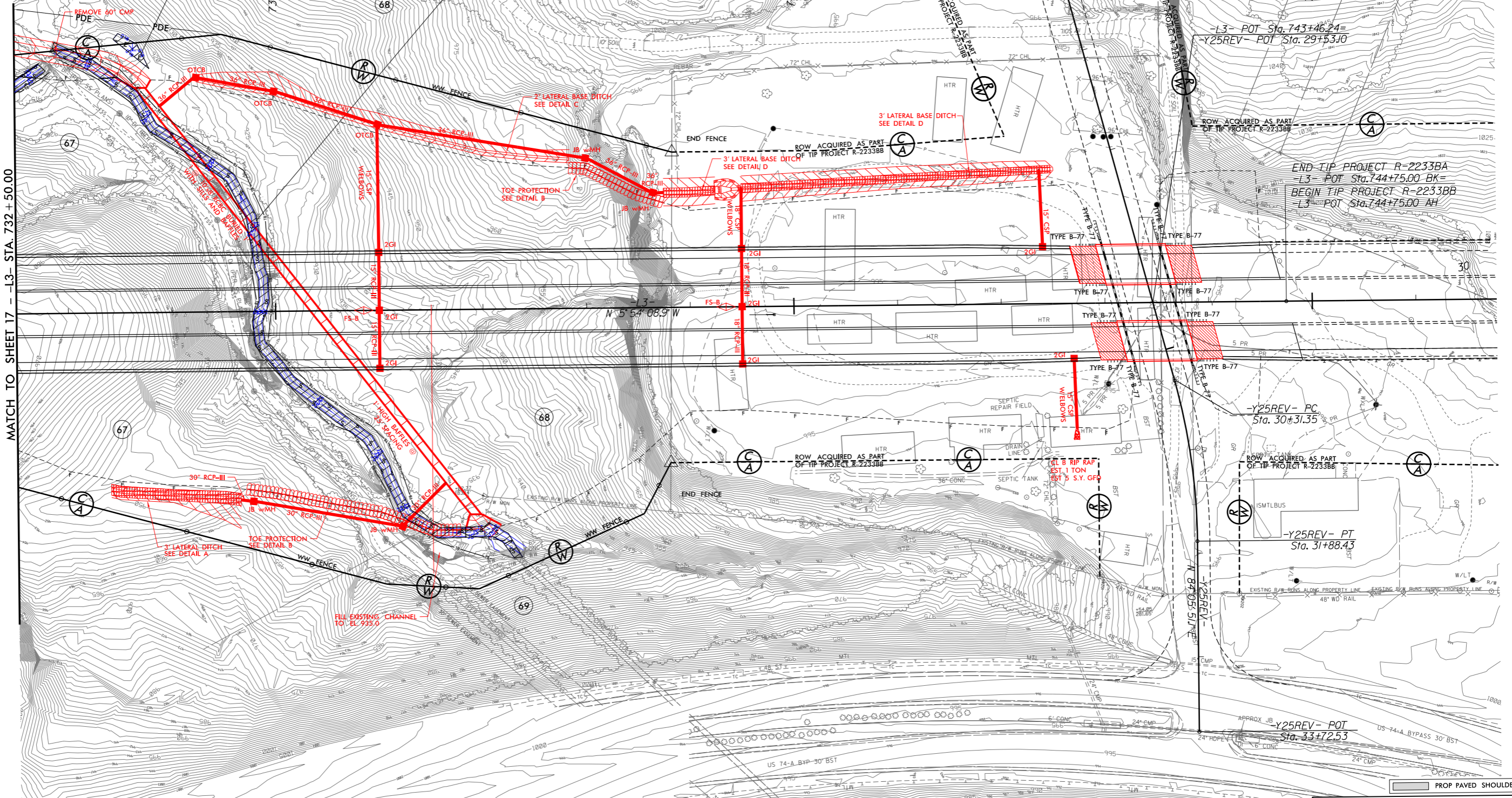
PERMIT DRAWING SHEET 29 OF 32

SITE 16 WB

SITE 15 SP

MATCH TO SHEET 17 - L3- STA. 732+50.00

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND



END TIP PROJECT R-2233BA
-L3- POT Sta. 744+75.00 BK=
BEGIN TIP PROJECT R-2233BB
-L3- POT Sta. 744+75.00 AH

-Y25REV- PC
Sta. 30+31.35

-Y25REV- PT
Sta. 31+88.43

-Y25REV- POT
Sta. 33+72.53

PROP PAVED SHOULDER

SEE SHEET 47 FOR -L3- PROFILE

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

**PERMIT DRAWING
SHEET 30 OF 32**

SITE 15 SP

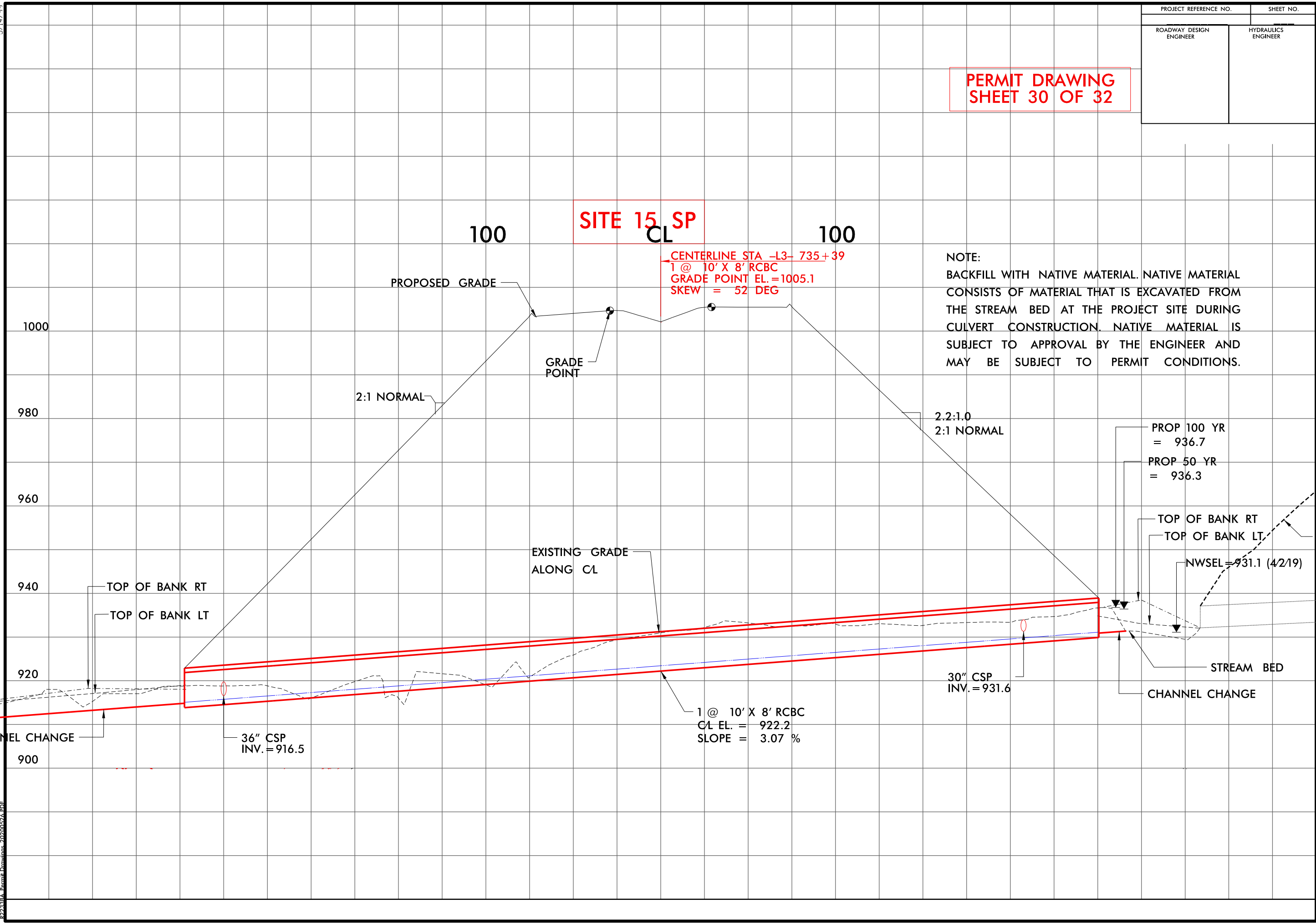
100

CL

100

CENTERLINE STA -L3- 735+39
1 @ 10' X 8' RCBC
GRADE POINT EL. = 1005.1
SKEW = 52 DEG

NOTE:
BACKFILL WITH NATIVE MATERIAL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.



5/14/99
E242090
DEWBERRY
8/22/88A Permit Drawings 20200526.PDF

6/23/16

260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10

0 5 10	PROJ. REFERENCE NO. R-2233BA	SHEET NO. X-154
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PERMIT DRAWING
SHEET 31 OF 32



-L3-

260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40

03/20/2010
C:\Users\j...
03/20/2010

WETLAND AND SURFACE WATER IMPACTS SUMMARY													
Site No.	JD ID	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	SZ	L3 561+11 TO 561+24 RT	2 -5' x 6' RCBC						0.02		136		
1	SZ	L3 561+24 RT	CHANNEL REALIGNMENT						< 0.01	< 0.01	24	18	
2	SY	L3 584+19 TO 585+04	54" RCP						0.03	< 0.01	323	60	
3	WF	L3 584+16 TO 585+35	ROADWAY FILL	0.47			0.02						
3	WF	L3 584+16 TO 585+35	TEMPORARY BYPASS CHANNEL			0.01							
4	SX	L3 606+50 TO 617+50	54" RCP / LAT BASE DITCH						0.21	0.01	1509	88	
5	WE	L3 607+66 TO 608+22 LT	ROADWAY FILL	0.02									
6	SW	L3 616+76 LT TO 618+60 RT	8' X 8' RCBC						0.09		583		
6	SW	L3 617+00 RT	CHANNEL REALIGNMENT						< 0.01	< 0.01	21	48	
6	SW	L3 618+58 LT	CHANNEL REALIGNMENT						0.01	< 0.01	75	18	
7	WD	L3 643+23 RT TO 643+80 RT	ROADWAY FILL	0.02									
8	SV	L3 643+38 RT TO 643+91 LT	ROADWAY FILL						< 0.01		102		
9	SU	L3 643+13 RT TO 645+10 LT	66" RCP						0.10	0.02	702	136	
9	SU	L3 645+10 LT	CL II RIPRAP ON BANKS						< 0.01	< 0.01	20	10	
10		L3 649+55 LT TO 651+18 RT	30" RCP						0.02	< 0.01	369	29	
10		L3 649+55 LT	CL II RIPRAP ON BANKS						< 0.01	< 0.01	8	91	
11	ST	L3 671+97 LT TO 672+82 RT	2 @ 8' x 8' RCBC						0.10		582		
11	ST	L3 672+08 RT	CHANNEL REALIGNMENT						< 0.01	0.01	44	66	
11	ST	L3 672+34 LT	CHANNEL REALIGNMENT						< 0.01	0.01	36	70	
12	SS	L3 703+45 RT TO 705+77 LT	TEMPORARY WORK BRIDGE							0.04		457	
13	SXJ	L3 705+79 RT TO 707+66 RT	TEMPORARY WORK BRIDGE							0.11		410	
14	SXI	L3 706+90 RT TO 707+54 RT	TEMPORARY STREAM CROSSING							< 0.01		67	
15	SP	L3 733+34 LT TO 736+81 RT	10' X 8' RCBC						0.14		605		
15	SP	L3 731+47 TO 732+16 LT	CHANNEL REALIGNMENT						0.02		92		
15	SP	L3 732+16 TO 732+71 LT	ROADWAY FILL						0.01		60		
15	SP	L3 732+71 TO 733+34 LT	CHANNEL REALIGNMENT						0.02		76		
15	SP	L3 731+22 TO 731+47 LT	CHANNEL REALIGNMENT							< 0.01		12	
15	SP	L3 736+81 TO 737+26 RT	CHANNEL REALIGNMENT						0.01		46		
15	SP	L3 737+26 TO 737+36 RT	CHANNEL REALIGNMENT							< 0.01		18	
16	WB	L3 733+46 LT TO 733+80 LT	CHANNEL REALIGNMENT			< 0.01							
TOTALS*:				0.51		0.02	0.02		0.80	0.24	5413	1598	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 6/11/2020
 RUTHERFORD
 R-2233BA
 34400.1.S5