

SITE 35A

MATCH LINE STA. 422+00 SEE SHEET 29

[illegible]

11/5/2018
mgberry
R:\Hydraulics\PERMITS Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh30.dgn

A rectangular cross-section of a beam, oriented vertically. The interior of the rectangle is filled with diagonal hatching lines sloping from the top-left to the bottom-right. Two capital letters 'F' are placed within the rectangle, one on the left side and one on the right side, representing the normal force.

50' 0' 50' 100' 150'

GRAPHIC SCALE

SEE SHEETS 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

SITE 35A

MATCH LINE STA. 422+00 SEE SHEET 29

W67



SEE SHEETS 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS	
7/13/2018 -	PARCEL 2 - CHANGED PDE TO TCE STATION PARCEL 2 - CHANGED PDE TO TCE STATION -L- 431+98 TO 432+98 RT -L- 432+68 TO 433+42 LT

SYSTEMS DGN

11/5/2018
mgberry
R:\Hydraulics\PERMITS Environmental\Drawings\Wetland & Stream\1015 Hyd prm wet psh30.dgn

R. GRAHAM WILLIAMS, et ux

W67

SITE 35A

MATCH LINE STA. 436+00 SEE SHEET 30

MATCH LINE STA. 450+00 SEE SHEET 32

BOLING FAMILY INVESTMENTS, L.L.C., et al

11

R. GRAHAM WILLIAMS, et ux

10

50' 0' 50' 100' 150'

GRAPHIC SCALE

SEE SHEET 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS.

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

440

445

DENOTES FILL IN
WETLAND

DENOTES MECHANIZED
CLEARING

DEPARTMENT OF AGRICULTURE
CROATIAN NATIONAL FOREST

LENA EBRON

8/17/99

REVISIONS

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DDGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

8/17/99

REVISIONS

11/15/2018
mgberry
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DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON



PROJECT REFERENCE NO.	SHEET NO.
R-1015	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-1884 FAX
NC LICENSE NO. F-0105

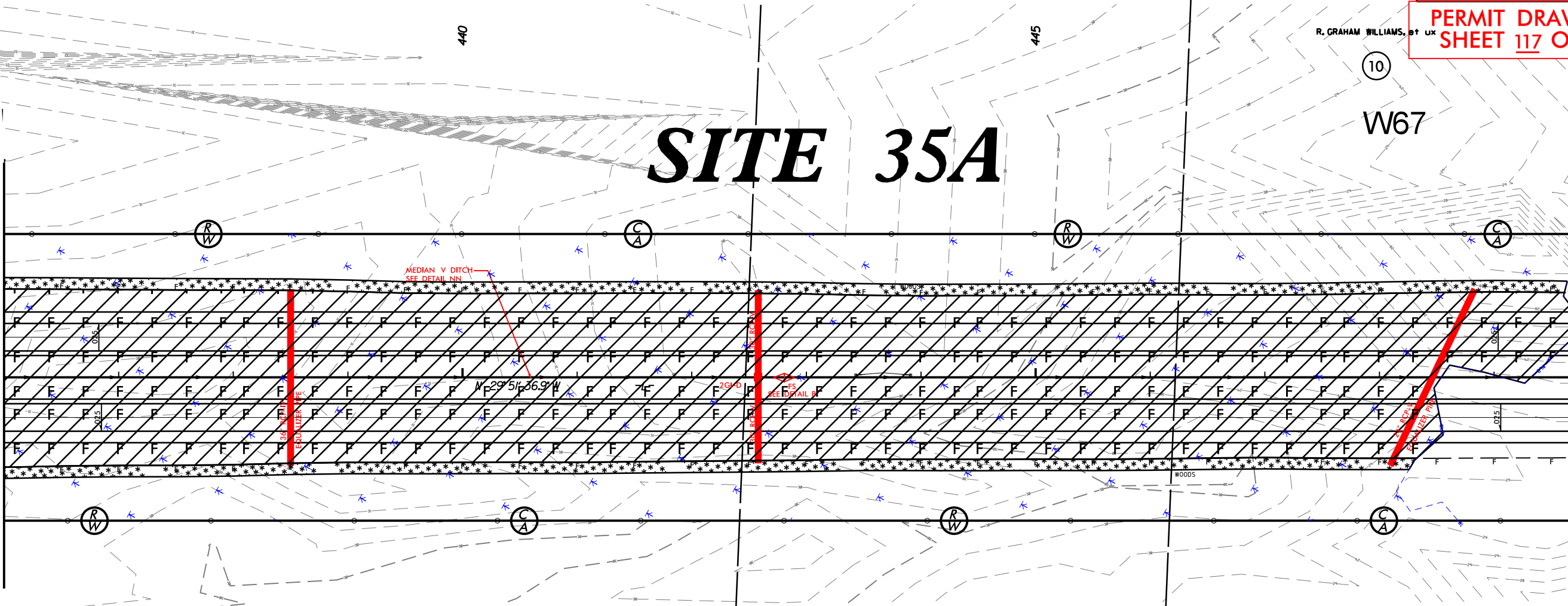
PERMIT DRAWING
SHEET 117 OF 167

MATCH LINE STA. 436+00 SEE SHEET 30

MATCH LINE STA. 450+00 SEE SHEET 32

SITE 35A

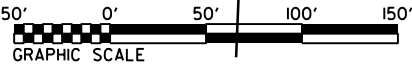
R. GRAHAM WILLIAMS, et ux
10
W67



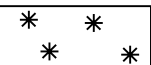
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

LENA EBRON

R. GRAHAM WILLIAMS, et ux



DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING

SEE SHEET 64 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

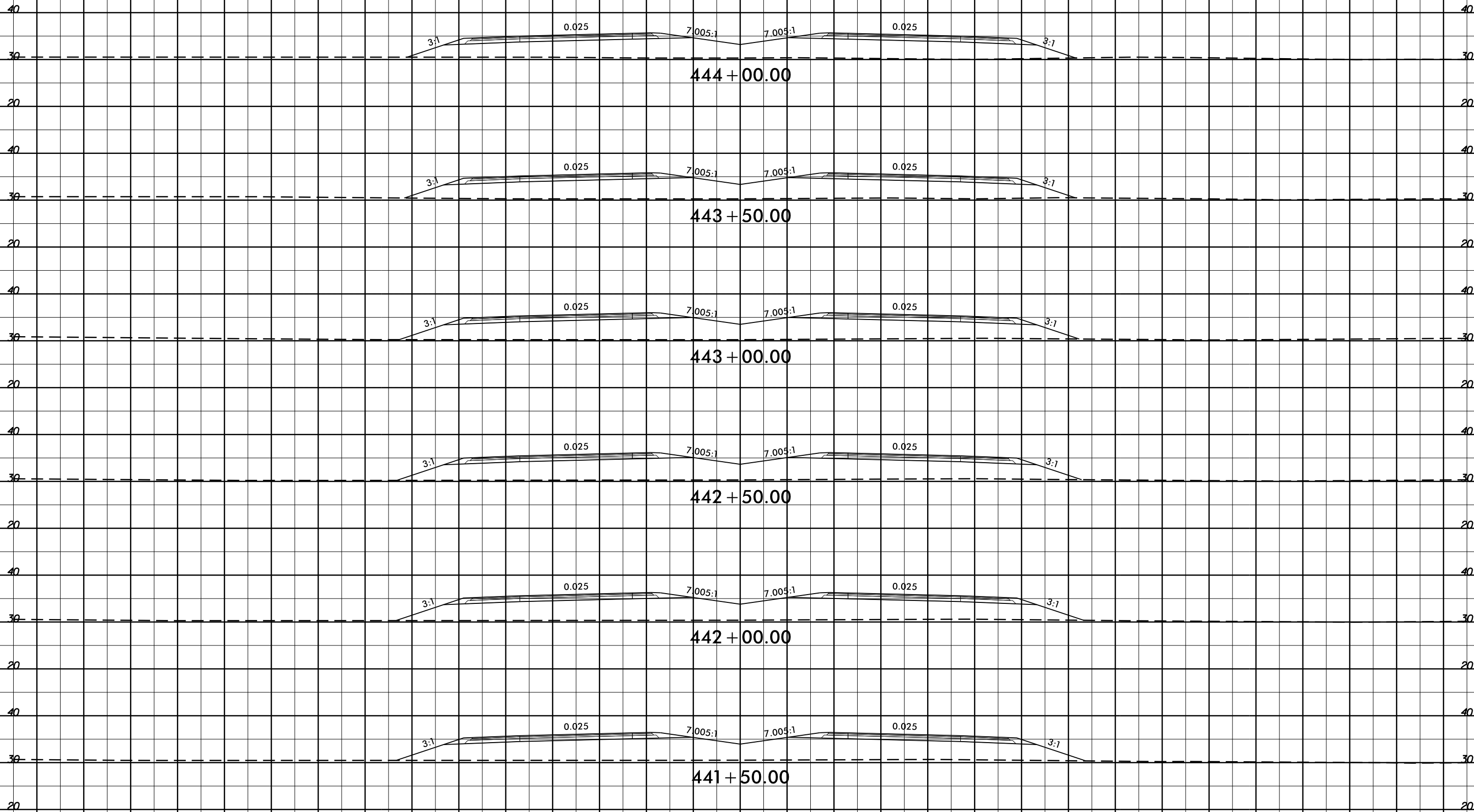
BOLING FAMILY INVESTMENTS, L.L.C., et al

11

6/23/16

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 118 OF 167



8/17/99

REVISIONS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\1015_Hyd_perm_wet_psh32.dgn

R. GRAHAM WILLIAMS, et ux

BOLING FAMILY INVESTMENTS, L.L.C., et al

CLYDE O. BELANGIA, JR., et al

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
R-1015	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-4884 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 119 OF 167

SITE 35B

SITE 36A SITE 36B

MATCH LINE STA. 450+00 SEE SHEET 31

MATCH LINE STA. 464+00 SEE SHEET 33

CL B RIP RAP
EST. 1 TONS
EST. 5 SY GF

2GI-D SEE DETAIL B

MEDIAN 'V' DITCH
SEE DETAIL NN

N 29° 51' 36.9" W

CL I RIP RAP
EST. 26 TONS
EST. 50 SY GF

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

15" RCP-IV

2GI

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

2GI

FS SEE DETAIL B

15" RCP-IV

2GI

CL I RIP RAP
EST. 57 TONS
EST. 104 SY GF

FS SEE DETAIL B

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

2GI

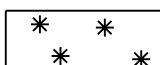
BOLING FAMILY INVESTMENTS, L.L.C., et al

CLYDE O. BELANGIA, JR., et al

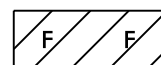
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



SEE SHEETS 65 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS



DENOTES MECHANIZED
CLEARING



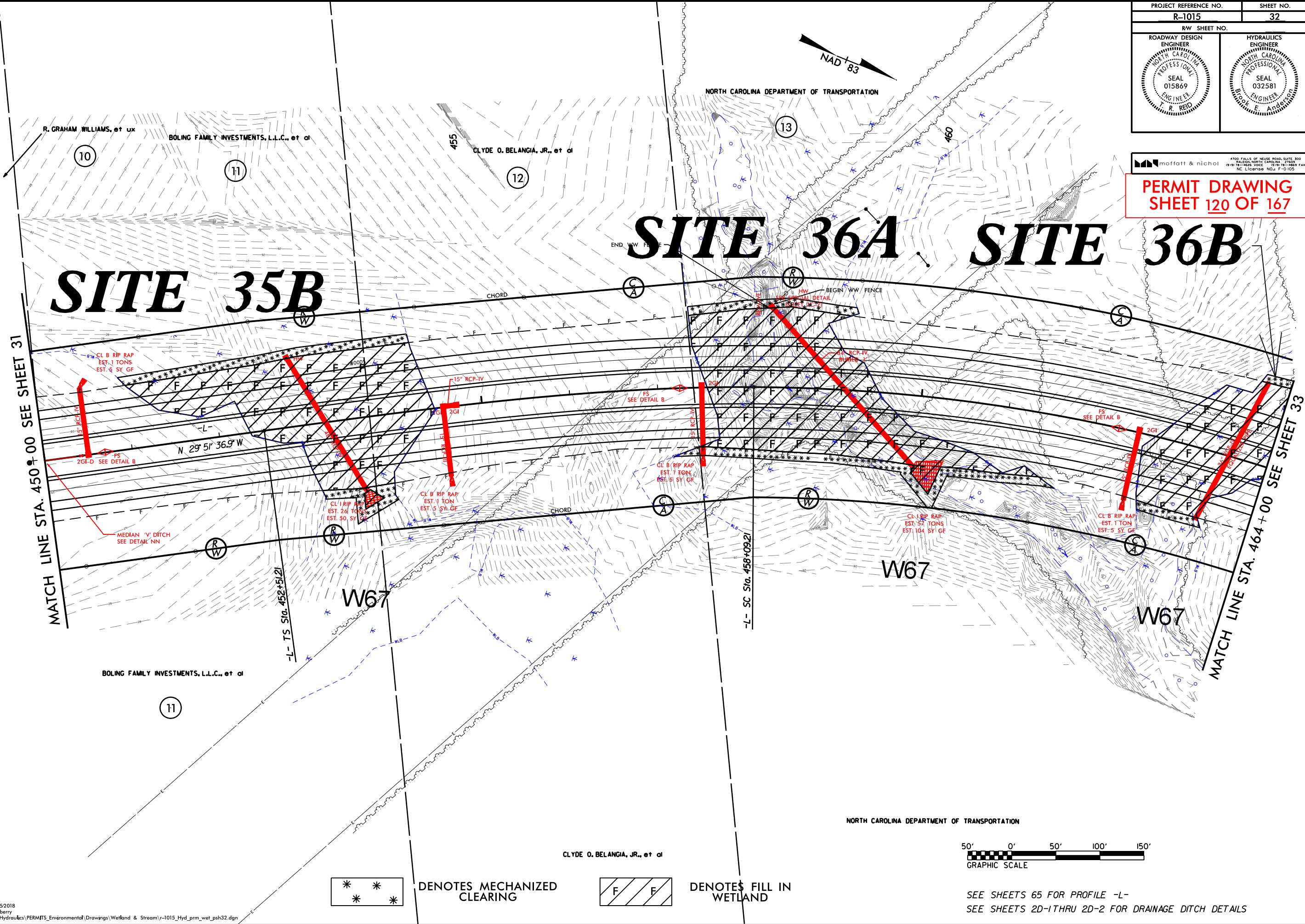
DENOTES FILL IN
WETLAND

8/17/99

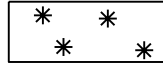
REVISIONS

PROJECT REFERENCE NO.		SHEET NO.	
R-1015		32	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

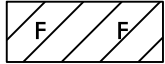
PERMIT DRAWING
SHEET 120 OF 167



11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_perm_wet_psh32.dgn



DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



SEE SHEETS 65 FOR PROFILE -L-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

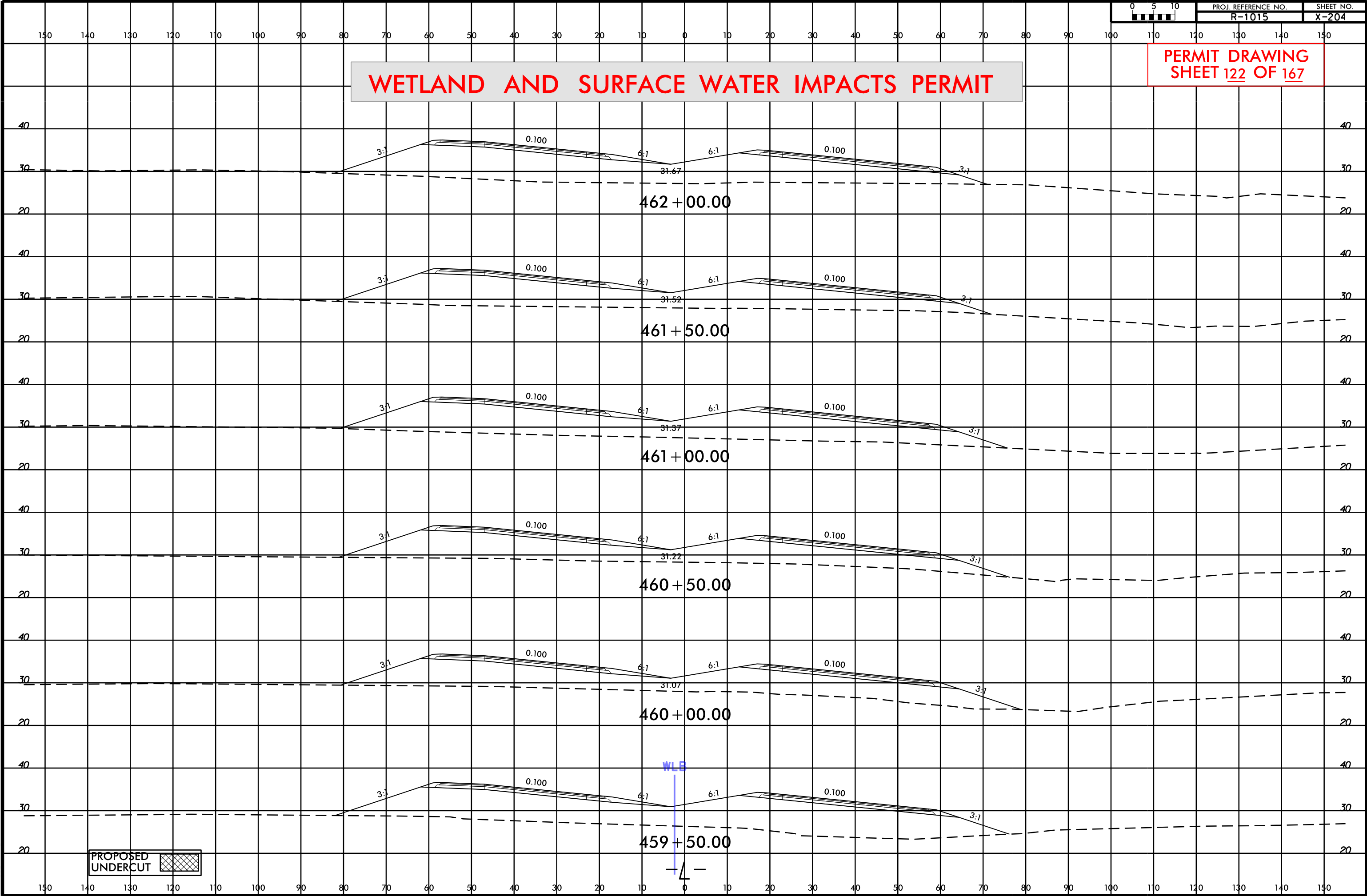
PERMIT DRAWING
SHEET 121 OF 167



6/23/16

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 122 OF 167



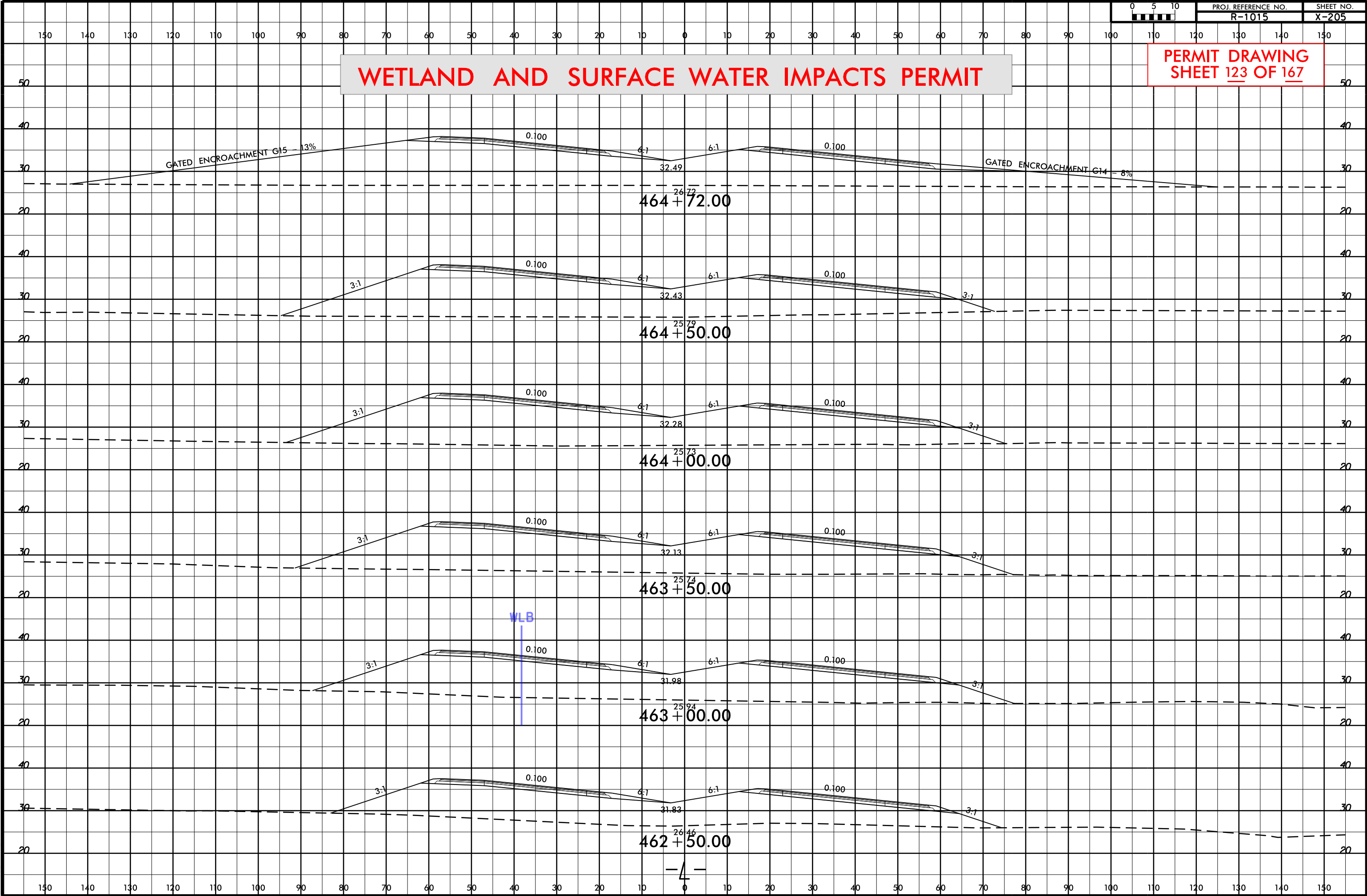
PROPOSED
UNDERCUT

WLE

6/23/16

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 123 OF 167



7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RI
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT

8/17/99

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0017ft/ft
DDE=14 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.00273ft/ft
DDE=14 c.y.

EXCAVATION
Q10=6.0cfs
V10=1.4fps

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0012ft/ft
DDE=45 c.y.

TIE TO EXIST.
DITCH

HW

MATCH LINE STA. 464+00 SEE SHEET 32

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

TIE TO EXIST.
DITCH

CL I RIP RAP
EST. 15 TONS
EST. 30 SY GF

TIE TO EXIST.
DITCH

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0016ft/ft
DDE=23 c.y.

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL EE
S=0.0028ft/ft
DDE=16 c.y.

Q10=2.9cfs
V10=1.3fps

W69

EXCAVATION

SPECIAL LATERAL 'V' DITCH
SEE DETAIL R

SEE DETAIL B

2GI

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

TOE PROTECTION
CLASS B RIP RAP
EST. = 43 TONS
GT EST. = 115 SY
SEE DETAIL J

CL I RIP RAP
EST. 10 TONS
EST. 23 SY GF

W69

TOE PROTECTION
CLASS B RIP RAP
EST. = 76 TONS
EST. = 140 SY, GT
SEE DETAIL J

SEE DETAIL B

2GI

CL B RIP RAP
EST. 1 TON
EST. 5 SY GF

-L- CS Sta. 473+67.19

FILL IN WETLANDS

MATCH LINE STA. 478+00 SEE SHEET 34

SITE 36B 13

SITE 37

SITE 37

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
R-1015	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-4884 FAX
NC LICENSE NO. F-0105

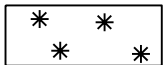
PERMIT DRAWING
SHEET 124 OF 167

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

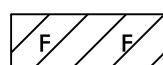
50' 0' 50' 100' 150'
GRAPHIC SCALE



DENOTES EXCAVATION
IN WETLAND



DENOTES MECHANIZED
CLEARING



SEE SHEET 65 FOR PROFILE -L-
DENOTES MECHANIZED CLEARING
WETLAND

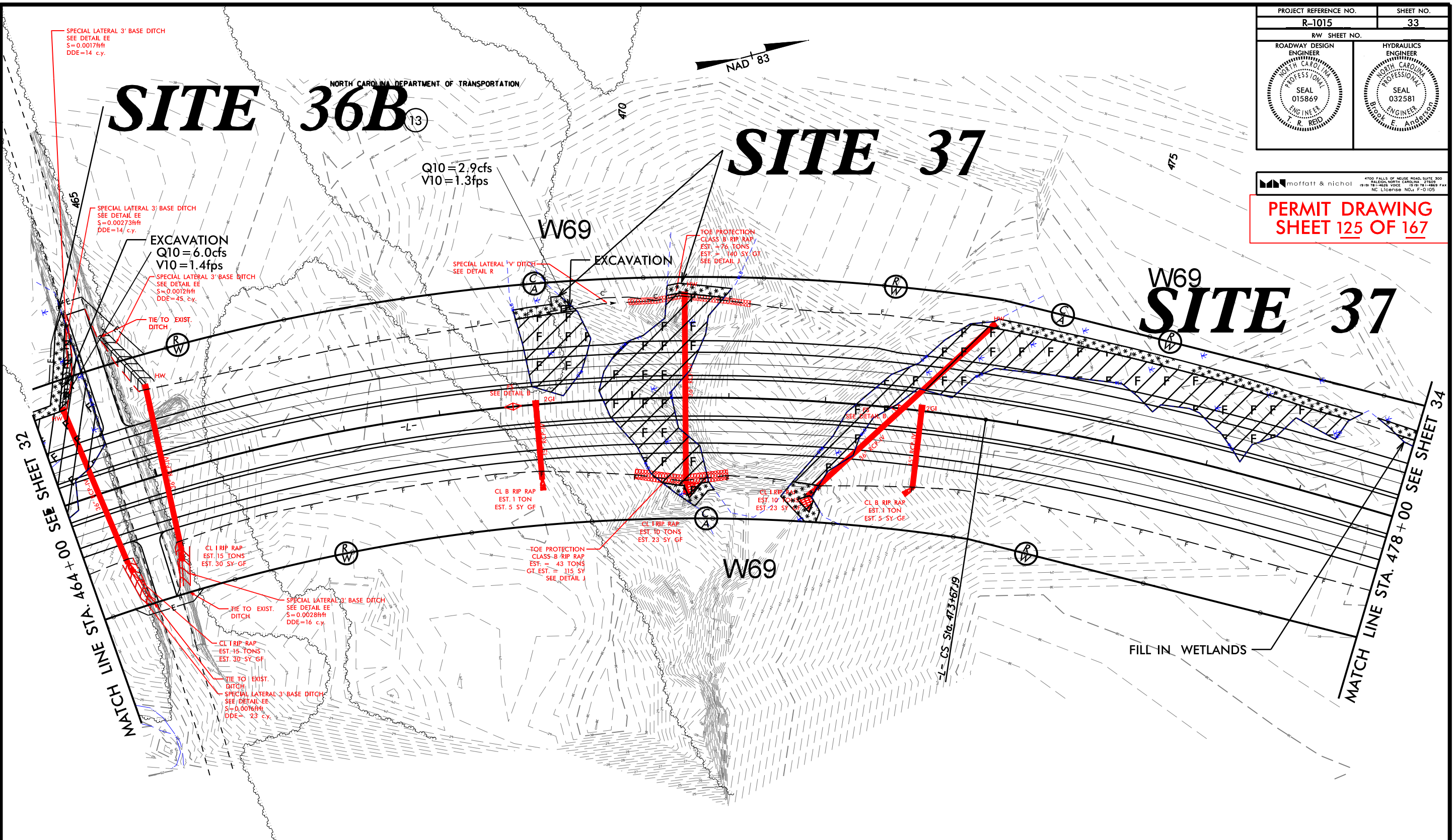
11/15/2018
mgberry
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PROJECT REFERENCE NO.	SHEET NO.
R-1015	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
	

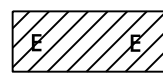
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-4884 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 125 OF 167

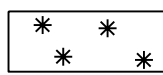
REVISIONS
7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RI
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



DENOTES EXCAVATION
IN WETLAND



DENOTES MECHANIZED
CLEARING



SEE SHEET 65 FOR PROFILE -L-
DENOTES MECHANIZED CLEARING
WETLAND

11/15/2018
mgberry
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8/17/99

REVISIONS

11/15/2018
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mgberry

MATCH LINE STA. 478+00 SEE SHEET 33

-L- ST Sta. 479+25.19

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

13

480

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

485

SITE 37
W69

EXCAVATION

TIE PROP. DITCH
TO NATURAL GROUND

Q10=1.6cfs
V10=1.1fps

SITE 38A

PERMIT DRAWING
SHEET 126 OF 167

PROJECT REFERENCE NO. R-1015	SHEET NO. 34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 BROCK E. ANDERSON

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-4884 FAX
NC LICENSE NO. F-0105

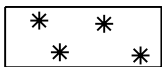
MATCH LINE STA. 492+00 SEE SHEET 35

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2



DENOTES EXCAVATION
IN WETLAND



DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND

SEE SHEETS 66 FOR PROFILE -L-
SEE SHEETS 2D-1THRU 2D-2 FOR DRAINAGE DITCH DETAILS

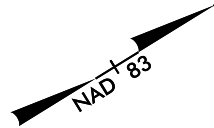
8/17/99

REVISIONS

11/15/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\1015_Hyd_prm_wet_psh34.dgn

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

13

480

485

490

SITE 37
W69

SITE 38A

PERMIT DRAWING
SHEET 127 OF 167

PROJECT REFERENCE NO. R-1015		SHEET NO. 34	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	
		NORTH CAROLINA PROFESSIONAL SEAL 032581 B. E. ANDERSON	

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4826 VOICE (919) 781-1884 FAX
NC LICENSE NO. F-0105

MATCH LINE STA. 478+00 SEE SHEET 33

-L- ST Sta. 479+25.19

EXCAVATION

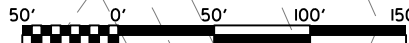
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V10=1.1fps

N 31° 42' 45.4" E

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

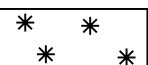
MATCH LINE STA. 492+00 SEE SHEET 35



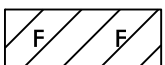
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION GRAPHIC SCALE



DENOTES EXCAVATION
IN WETLAND



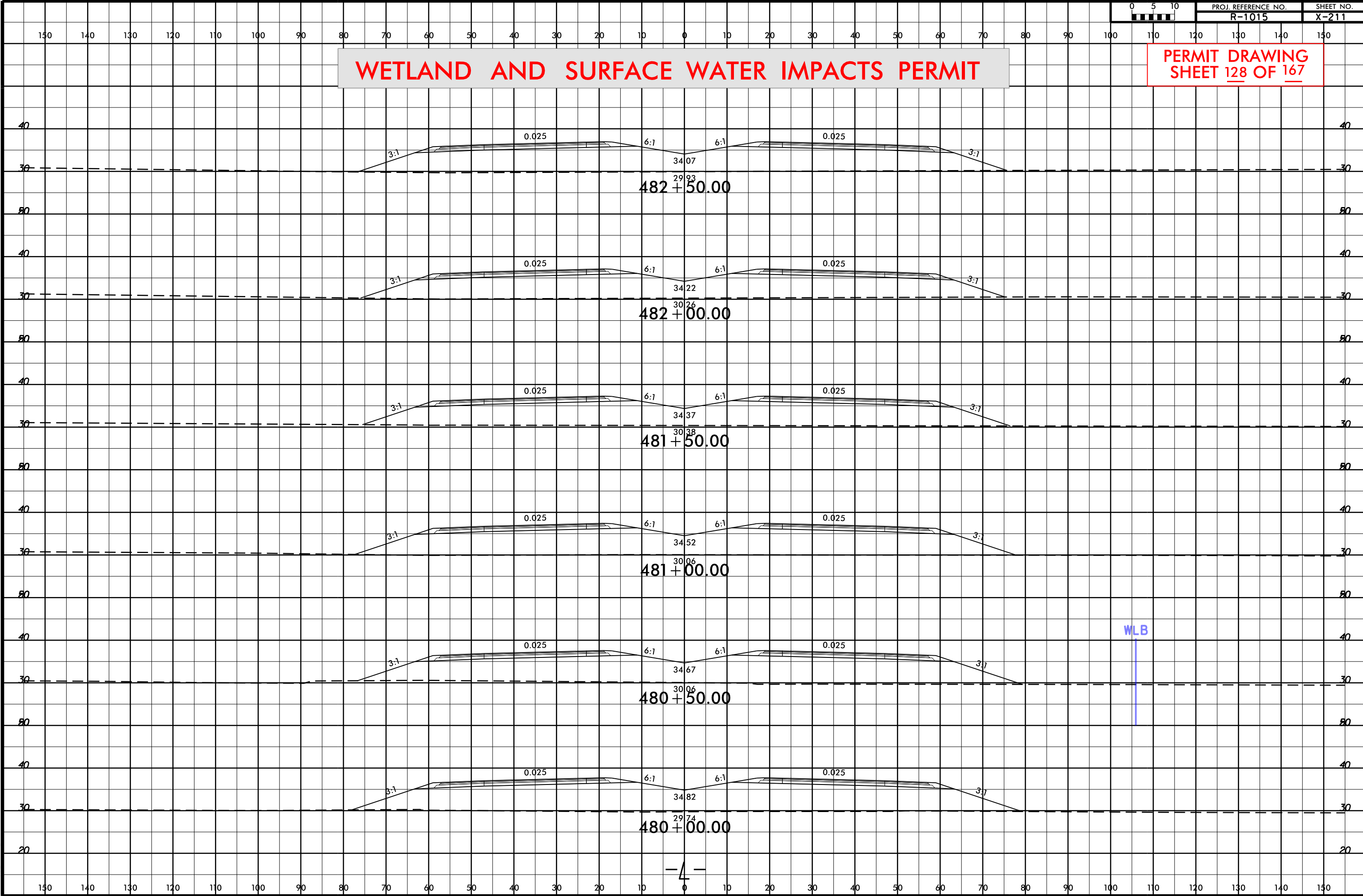
DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND

SEE SHEETS 66 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

6/23/16
9/2/2018
R:\Hydro\Permits\Environmental Drawings\XPL\01015_Hyd_XPL_37.dgn
\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$DOGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$



WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 128 OF 167

PROJ. REFERENCE NO.	SHEET NO.
R-1015	X-211

6/23/16

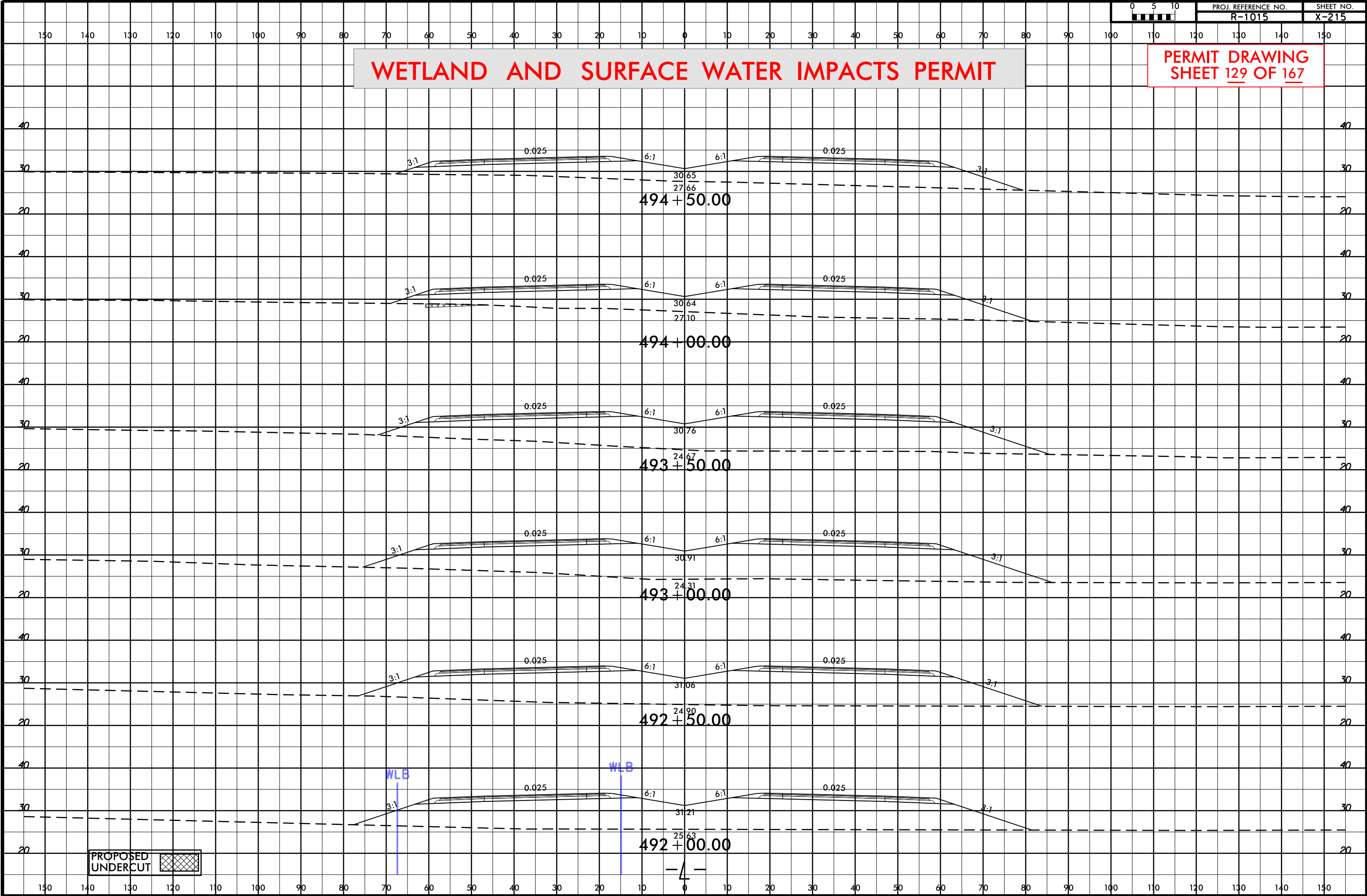


PROJ. REFERENCE NO.	SHEET NO.
R-1015	X-215

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 129 OF 167

SYSTEMS
DESIGN
CONSTRUCTION
SERVICES





SITE 38B

MATCH LINE STA 505+00 SEE SHEET 36

MATCH LINE STA. 492+00 SEE SHEET 34

Mech. Clearing
W70

W70

RR -EY3- POT Sta. 16+92.14

50' 0' 50' 100' 150'

GRAPHIC SCALE

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

**DENOTES MECHANIZED
CLEARING**

DENOTES FILL IN
WETLAND

SEE SHEET 66 FOR PROFILE -L-
SEE SHEET 85 FOR PROFILE -RP2C-
SEE SHEET 91 FOR PROFILE -G12-
SEE SHEET 2B-9 SKETCH 5 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS	
7/13/2018	- PARCEL 2 - CHANGED TCE TO PUE AND REVISED AREA STATION -L- 495+14 TO 496+10 RT

8/17/99

SYTIME\$\$\$\$\$
DGN\$\$\$\$\$

11/5/2018
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh35.dgn

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
R-1015	X-216

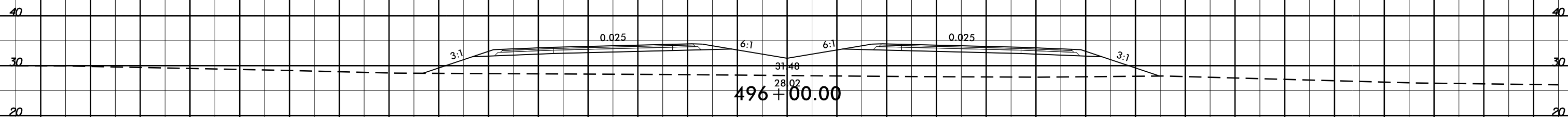
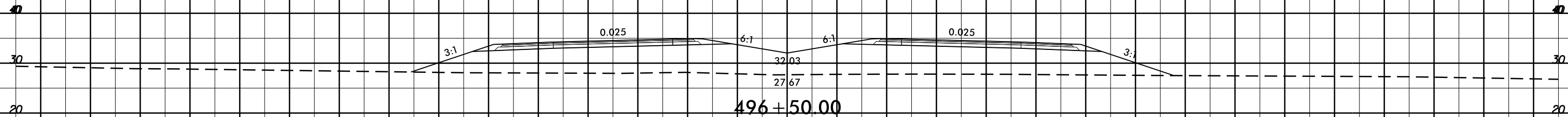
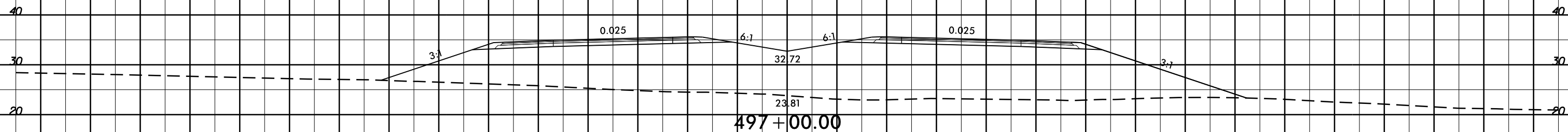
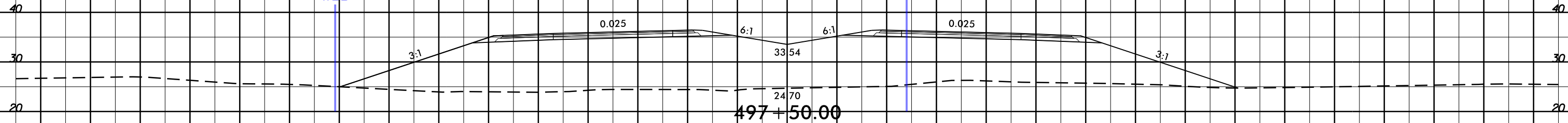
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WETLAND AND SURFACE WATER IMPACTS PERMIT

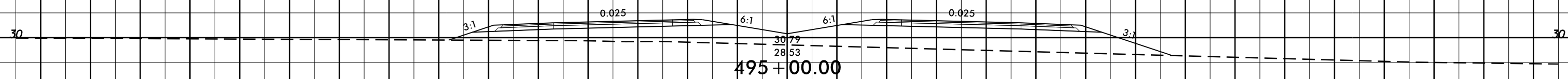
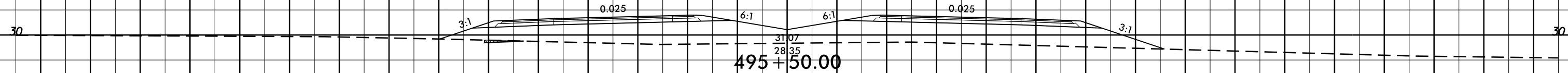
PERMIT DRAWING
SHEET 132 OF 167

WLB

WLB



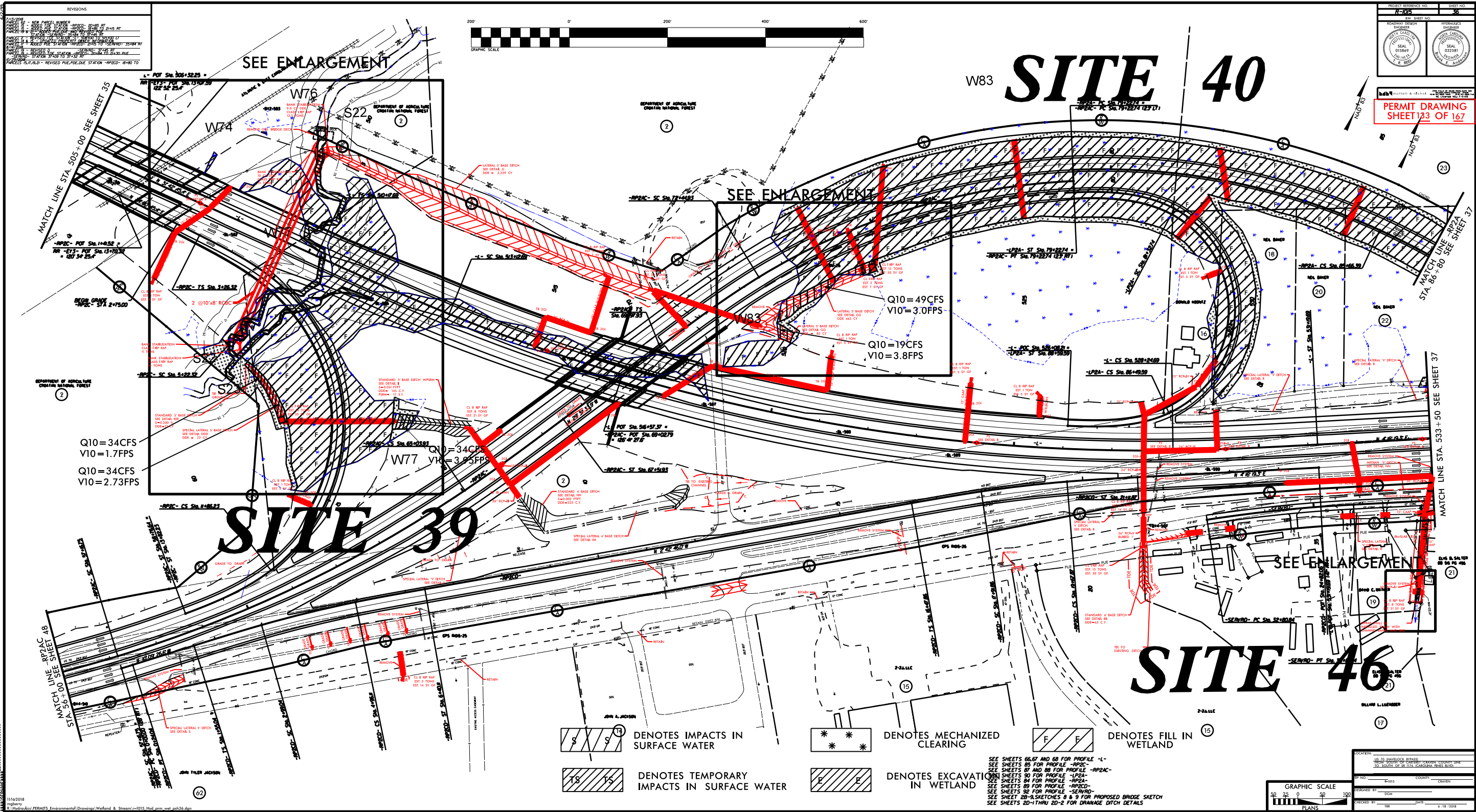
END UNDERCUT - L- STA 495+75 +/-



PROPOSED
UNDERCUT

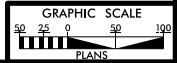


-4-



11/16/2018
mgjerry
R:\Hydrology\PERMITS\Environmental Drawings\Wetland & Stream\1015-Hyd-001-wet-pub36.dgn

SEE SHEETS 06.67 AND 68 FOR PROFILE -L-
SEE SHEETS 05 FOR PROFILE -RP2C-
SEE SHEETS 07 AND 08 FOR PROFILE -RP2AC-
SEE SHEETS 09 FOR PROFILE -LP2A-
SEE SHEETS 04 FOR PROFILE -RP2A-
SEE SHEETS 06 FOR PROFILE -RP2C-
SEE SHEETS 08 FOR PROFILE -SERVING-
SEE SHEET 20-1 THRU 20-2 FOR PROPOSED BRIDGE SKETCH
SEE SHEETS 20-1 THRU 20-2 FOR DRAINAGE DITCH DETAILS



LOCATION	
US-70 (HARTFORD BYPASS)	
THRU SOUTH OF CORNER GREEN COUNTRY LINE	
TO SOUTH OF 35.175 (CARPENTER BRIDGE BUD)	
PROJECT NO.	1015
SHEET NO.	123
DATE	6/18/2018
DESIGNED BY	DOH
CHECKED BY	100