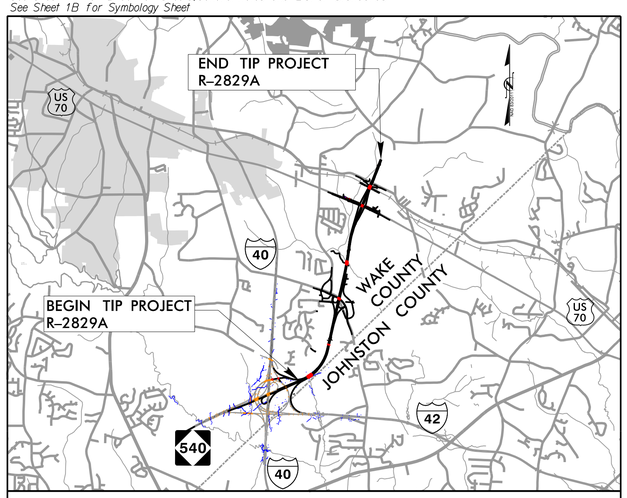
09/08/99

# TIP PROJECT: R-2829A

# CONTRACT: C204824

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet




VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# WAKE COUNTY

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | R-2829A | 1 | |

| STATE PROJ. NO. | F. A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 35517.3.TA1 | N/A, 0540047 | DESIGN-BUILD |
| 35517.3. TAGV1 | N/A, 0540047 | DESIGN-BUILD |

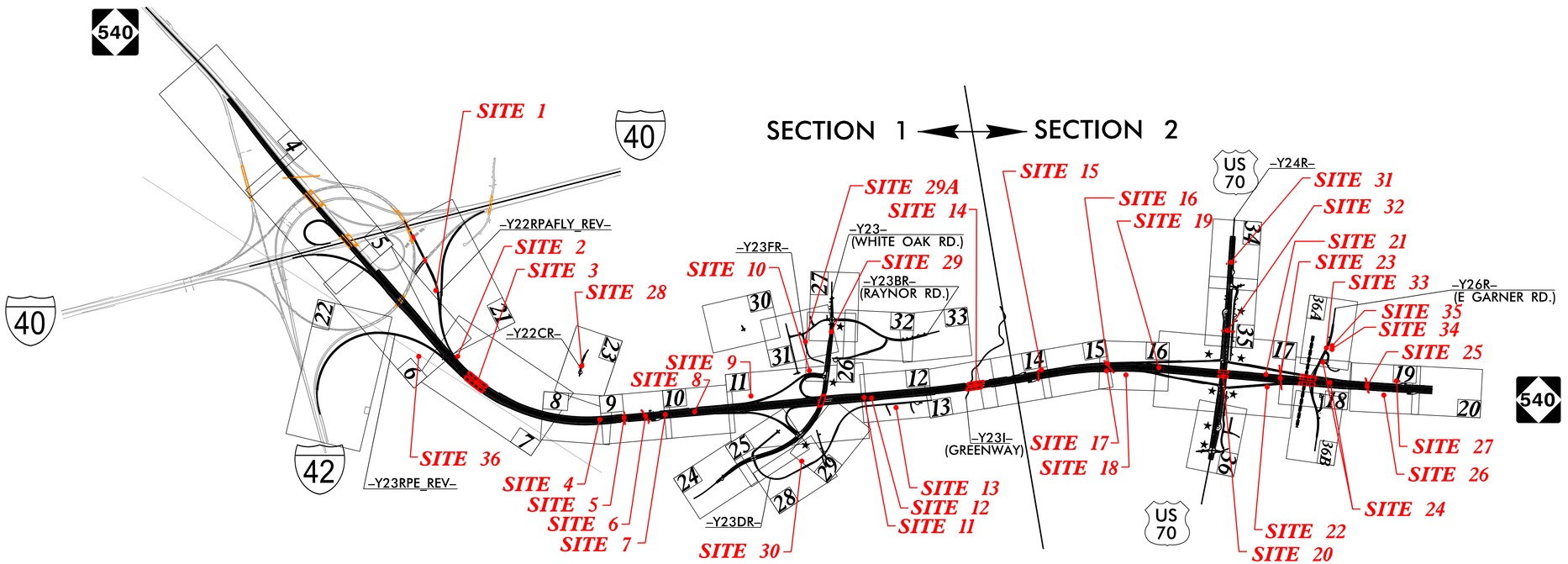



***LOCATION:*** ***TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I-40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)***

***TYPE OF WORK:*** ***GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES***

## SAFETEA-LU SECTION 6002
## HYDRAULIC DESIGN MEETING PLANS

PERMIT DRAWING
SHEET 1 OF 103




NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
2. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
3. THIS PROJECT IS NOT WITHIN MUNICIPAL LIMITS.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

***GRAPHIC SCALES***

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

***DESIGN DATA***

ADT 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

***PROJECT LENGTH***

LENGTH ROADWAY TIP PROJECT R-2829A.....3.924 MILES
LENGTH STRUCTURE TIP PROJECT R-2829A.....0.241 MILES
TOTAL LENGTH TIP PROJECT R-2829A.....4.165 MILES

***NCTA CONTACT***

*Ron McCollum, PE*
*DEPUTY CHIEF ENGINEER for PRECONSTRUCTION TURNPIKE AUTHORITY*

***PLANS PREPARED BY:***

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. F-0112

*FOR NORTH CAROLINA TURNPIKE AUTHORITY*

*2018 STANDARD SPECIFICATIONS*

*LETTING DATE:*
October 17, 2023

C. Byron Holden, PE
*PROJECT ENGINEER*

Anthony A. Houser, PE
*PROJECT DESIGN ENGINEER*

***HYDRAULICS ENGINEER***

*SIGNATURE:* *P.E.*

***ROADWAY DESIGN ENGINEER***

*SIGNATURE:* *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

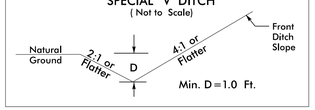
6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\R-2829A_hyd_wet_tsh.dgn
dburke

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-1 |
| | HYDRAULICS DESIGN ENGINEER |

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

**PERMIT DRAWING SHEET 2 OF 103**

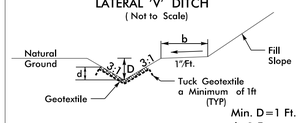
## DETAIL A
SPECIAL 'V' DITCH
( Not to Scale)




–Y22RPE_REV– STA. 42+00 TO STA. 45+50 LT
–Y22RPE_REV– STA. 48+88 TO STA. 51+93.23 RT
–L– STA. 996+00 TO STA. 1000+00 LT
–L– STA. 1000+00 TO STA. 1001+00 LT
–L– STA. 1000+50 TO STA. 1002+10 RT
–L1– STA. 1025+50 TO STA. 1026+50 LT
–L1– STA. 1027+50 TO STA. 1030+35 LT
–L1– STA. 1040+35 TO STA. 1044+50 RT
–L1– STA. 1045+50 TO STA. 1048+50 RT
–L1– STA. 1057+00 TO STA. 1057+50 LT
–L1– STA. 1071+50 TO STA. 1073+00 LT
–L1– STA. 1093+50 TO STA. 1094+00 RT
–Y22CR– STA. 15+00 TO STA. 15+50 LT
–Y23R– STA. 15+50 TO STA. 16+50 LT
–Y23R– STA. 15+50 TO STA. 16+00 RT
–Y23R– STA. 19+00 TO STA. 20+00 RT
–Y23R– STA. 22+50 TO STA. 23+80 RT
–Y23R– STA. 23+80 TO STA. 25+30 LT
–Y23R– STA. 23+80 TO STA. 25+25 RT
–Y23R– STA. 26+00 TO STA. 27+15 RT
–Y23R– STA. 62+00 TO STA. 62+75 RT
–Y23R– STA. 63+00 TO STA. 63+32 LT
–Y23R– STA. 63+00 TO STA. 63+35 RT
–Y23R– STA. 68+75 TO STA. 69+00 RT
–Y23AR– STA. 10+30 TO STA. 12+50 RT
–Y23AR– STA. 16+50 TO STA. 17+50 RT
–Y23BR– STA. 10+77 TO STA. 16+00 LT
–Y23BR– STA. 18+50 TO STA. 22+00 LT
–Y23CR– STA. 19+00 TO STA. 20+50 LT
–Y23DR– STA. 10+50 TO STA. 11+50 LT
–Y23DR– STA. 15+00 TO STA. 15+50 LT
–Y23DR– STA. 10+50 TO STA. 16+50 RT
–Y23DR– STA. 20+50 TO STA. 23+50 RT
–Y23DR– STA. 37+00 TO STA. 40+00 LT
–Y23DR– STA. 38+38 TO STA. 41+00 RT
–Y23DR– STA. 54+94 TO STA. 55+65 RT
–Y23E– STA. 10+00 TO STA. 10+56 RT
–Y23E– STA. 10+20 TO STA. 10+50 LT
–Y23G– STA. 10+50 TO STA. 11+50 LT
–Y23J– STA. 14+00 TO STA. 15+30 RT
–DR2– STA. 10+24 TO STA. 11+50 LT
–DR2– STA. 10+70 TO STA. 11+50 RT

–Y24A– STA. 11+85 TO STA. 13+49 LT
–Y24E– STA. 10+50 TO STA. 11+00 LT
–Y24F– STA. 10+50 TO STA. 12+50 LT
–Y24R– STA. 13+00 TO STA. 16+00 RT
–Y24R– STA. 14+00 TO STA. 15+50 LT
–Y24R– STA. 23+50 TO STA. 24+48 LT
–Y24R– STA. 25+75 TO STA. 26+50 LT
–Y24RPC– STA. 26+30 TO STA. 28+50 LT
–Y26R– STA. 13+00 TO STA. 14+50 LT
–Y26_DRW1– STA. 10+10 TO STA. 12+50 LT
–Y26_DRW1– STA. 10+50 TO STA. 12+50 RT
–Y26RSR1– STA. 12+25 TO STA. 13+82 RT
–Y26RSR2– STA. 10+10 TO STA. 10+50 RT
–L1– STA. 1094+00 TO STA. 1097+00 RT
–Y26R– STA. 13+00 TO STA. 13+50 RT
–L1– STA. 1131+00 TO STA. 1134+50 RT

## DETAIL M
LATERAL 'V' DITCH
( Not to Scale)

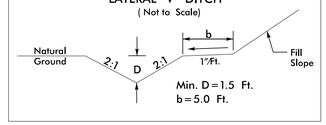



Type of Liner= CL I Rip–Rap, Keyed–In

–Y23RPB– STA. 28+50 TO STA. 29+80 LT
–Y22RPA_REV– STA. 10+00 TO STA. 12+00 RT
–Y22RPAFLY_REV– STA. 19+75 TO 21+46 RT
–Y23AR– STA. 19+60 TO STA. 19+80 LT

–Y26R– STA. 22+02 TO STA. 22+40 LT

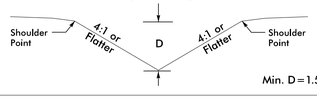
## DETAIL B
LATERAL 'V' DITCH
( Not to Scale)




*–Y22RPAFLY_REV– STA. 32+50 TO STA. 34+50 RT
–Y22RPAFLY_REV– STA. 18+54 TO STA. 20+00 LT
–Y22RPA_REV– STA. 21+36 TO STA. 23+00 LT
–Y22RPE_REV– STA. 35+50 TO STA. 39+00 LT
–Y23R– STA. 48+00 TO STA. 49+50 RT
–Y23BR– STA. 22+00 TO STA. 22+75 LT
–L1– STA. 1026+50 TO STA. 1027+50 LT
–L1– STA. 1033+00 TO STA. 1034+00 LT
–L1– STA. 1069+50 TO STA. 1071+50 LT

–L1– STA. 1135+50 TO STA. 1136+00 RT
–L1– STA. 1164+50 TO STA. 1168+50 LT

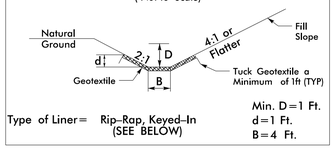
## DETAIL G
MEDIAN 'V' DITCH
( Not to Scale)




*–L– STA. 962+50 TO STA. 964+00 RT
–L1– STA. 1038+50 TO STA. 1043+50 CL
–L1– STA. 1038+00 TO STA. 1040+35 RT
–L1– STA. 1038+00 TO STA. 1040+50 LT
–L1– STA. 1044+50 TO STA. 1045+00 RT
–L1– STA. 1060+00 TO STA. 1071+00 RT
–Y23RPB– STA. 24+50 TO STA. 25+50 RT
–Y23RPC– STA. 19+00 TO STA. 20+00 LT

–L1– STA. 1128+50 TO STA. 1131+00 RT

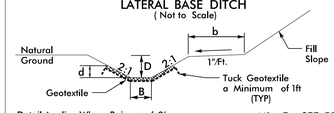
## DETAIL J
SPECIAL LATERAL BASE DITCH
( Not to Scale)




Type of Liner= Rip–Rap, Keyed–In (SEE BELOW)

*–Y22RPAFLY_REV– STA. 32+00 TO STA. 32+50 RT, CL I RIPRAP (TEMPORARY DITCH)

## DETAIL N
LATERAL BASE DITCH
( Not to Scale)

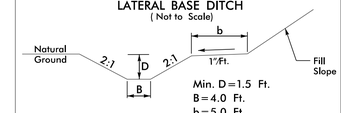



Type of Liner= CL I Rip–Rap, Keyed–In

–Y22RPAFLY_REV– STA. 15+37 TO 19+75 RT, D/d=2.75'
–Y22RPAFLY_REV– STA. 21+24 TO STA. 28+00 LT, D/d=2.5'
–Y22RPE_REV– STA. 21+00 TO STA. 28+00 LT, D/d=2.5'
–L– STA. 979+00 TO STA. 982+00 RT, D/d=1.5'
–L– STA. 980+24 TO STA. 986+00 LT, D/d=1.5'
–L1– STA. 1064+00 TO STA. 1066+50 LT, D/d=1.0'
–Y23R– STA. 31+50 TO STA. 34+75 RT, D/d=1.5'
–Y23DR– STA. 24+50 TO STA. 27+50 LT, D/d=1.0'
–Y23DR– STA. 24+00 TO STA. 24+75 RT, D/d=1.0'
–Y23DR– STA. 32+50 TO STA. 34+15 LT, D/d=1.0'
–Y23DR– STA. 51+93 TO STA. 52+50 LT, D/d=1.0'

–L1– STA. 1163+00 TO STA. 1164+50 RT, D/d=1.5'
–L1– STA. 1163+00 TO STA. 1164+50 LT, D/d=1.5'
–L1– STA. 1165+50 TO STA. 1167+50 RT, D/d=1.5'
–L1– STA. 1170+00 TO STA. 1171+38 RT, D/d=1.5'
–L1– STA. 1179+40 TO STA. 1181+00 LT, D/d=1.5'
–Y24RPAR– STA. 21+00 TO STA. 21+78 RT, D/d=1.5'
–Y24RPDR– STA. 12+80 TO STA. 14+24 LT, D/d=1.5'
–Y24R– STA. 15+50 TO STA. 18+00 LT, D/d=1.5'
–Y24R– STA. 16+00 TO STA. 19+00 RT, D/d=1.5'

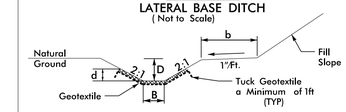
## DETAIL C
LATERAL BASE DITCH
( Not to Scale)




–L– STA. 1003+00 TO STA. 1004+34 RT
–Y23R– STA. 53+00 TO STA. 55+00 RT
–Y23R– STA. 55+00 TO STA. 56+16 LT
–Y22RPA_REV– STA. 14+55 TO STA. 19+50 RT
–Y22RPE_REV– STA. 41+00 TO STA. 42+00 LT

–Y26R– STA. 29+25 TO STA. 34+50 RT

## DETAIL H
LATERAL BASE DITCH
( Not to Scale)

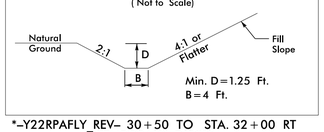



Type of Liner= CL B RIPRAP, Keyed–In

–Y22RPA_REV– 19+50 TO STA. 20+73 RT, D/d=1.0'
–Y22RPE_REV– STA. 39+00 TO STA. 41+00 LT, D/d=1.0'
–L– STA. 966+00 TO STA. 971+50 LT, D/d=3.0'
–L– STA. 1002+40 TO STA. 1003+00 RT, D/d=1.5'
–L1– STA. 1015+50 TO STA. 1018+00 LT, D/d=1.0'
–L1– STA. 1018+15 TO STA. 1019+00 RT, D/d=1.0'
–L1– STA. 1087+00 TO STA. 1089+50 RT, D/d=1.0'
–L1– STA. 1092+00 TO STA. 1094+00 LT, D/d=1.0'
–Y23DR– STA. 34+15 TO STA. 36+00 LT D/d=1.0'
–Y23DR– STA. 51+00 TO STA. 51+93 RT, D/d=1.0'
–Y23RPB– STA. 22+50 TO STA. 23+50 RT, D/d=1.0'

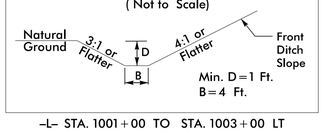
–Y24RPDR– STA. 14+75 TO STA. 17+48 LT, D/d=2.0'
–Y24RPC– STA. 19+00 TO STA. 21+50 RT, D/d=1.0'

## DETAIL K
SPECIAL LATERAL BASE DITCH
( Not to Scale)




*–Y22RPAFLY_REV– 30+50 TO STA. 32+00 RT (TEMPORARY DITCH)

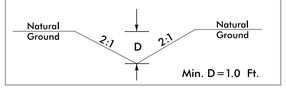
## DETAIL O
SPECIAL CUT GRASSED SWALE
( Not to Scale)




–L– STA. 1001+00 TO STA. 1003+00 LT
–L1– STA. 1005+50 TO STA. 1007+00 RT
–L1– STA. 1010+50 TO STA. 1012+50 RT
–L1– STA. 1018+00 TO STA. 1021+50 LT
–L1– STA. 1019+00 TO STA. 1020+00 RT
–L1– STA. 1022+50 TO STA. 1024+18 RT
–L1– STA. 1026+00 TO STA. 1029+50 RT
–L1– STA. 1054+50 TO STA. 1056+00 RT
–L1– STA. 1059+00 TO STA. 1060+50 LT
–L1– STA. 1096+16 TO STA. 1098+00 LT
–Y23R– STA. 18+50 TO STA. 19+00 LT
–Y23R– STA. 38+20 TO STA. 39+00 LT
–Y23R– STA. 59+00 TO STA. 60+00 RT
–Y23RPC– STA. 14+29 TO STA. 17+00 RT
–Y23RPC– STA. 18+00 TO STA. 19+00 RT
–Y23RPC– STA. 20+00 TO STA. 23+50 LT
–Y23RPC– STA. 19+00 TO STA. 24+00 RT
–Y23LPC– STA. 14+00 TO STA. 15++45 RT
–Y23RPB– STA. 16+08 TO STA. 17+12 LT
–Y23RPB– STA. 18+05 TO STA. 22+50 RT
–Y23AR– STA. 13+30 TO STA. 14+50 RT
–Y23BR– STA. 18+50 TO STA. 21+50 RT
–Y23CR– STA. 20+50 TO STA. 22+50 LT
–Y23DR– STA. 21+00 TO STA. 23+00 LT
–Y23DR– STA. 29+85 TO STA. 32+50 LT
–Y23DR– STA. 36+00 TO STA. 37+00 LT
–Y23DR– STA. 44+43 TO STA. 45+43 RT
–Y23J– STA. 14+00 TO STA. 14+85 LT
–L– STA. 992+00 TO STA. 996+00 LT

–L1– STA. 1097+00 TO STA. 1098+50 RT
–L1– STA. 1101+00 TO STA. 1101+50 RT
–L1– STA. 1119+00 TO STA. 1124+50 RT
–Y24R– STA. 32+50 TO STA. 33+99 RT
–Y24A– STA. 19+51 TO STA. 20+01 LT
–Y24RPBR– STA. 30+50 TO STA. 32+00 LT
–Y24RPC– STA. 21+50 TO STA. 24+50 RT
–L1– STA. 1094+00 TO STA. 1096+16 LT
–L1– STA. 1180+00 TO STA. 1181+50 RT

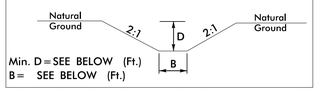
## DETAIL D
STANDARD 'V' DITCH
( Not to Scale)




–Y22RPE_REV– STA. 51+93.23 TO STA. 53+40 RT
BEGIN ELEV=245.6, END ELEV=242.30
S=2.25%, L=151'
—Y23DR– STA. 55+65 TO STA. 56+18 RT
BEGIN ELEV=278.7, END ELEV=277.5
S=4.5%, L=53'

–L1– STA. 1161+20 RT
BEGIN ELEV=308.10, END ELEV=307.60
S=1.92%, L=26'
–Y24RPC– STA. 28+50 TO 28+76 LT
BEGIN ELEV=300.00, END ELEV=299.80
S=0.34%, L=58'

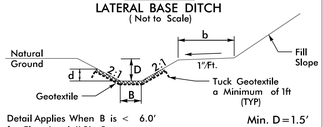
## DETAIL I
STANDARD BASE DITCH
( Not to Scale)




*–Y22RPAFLY_REV– STA. 30+50 RT, L=138', S=6.52%
BEGIN ELEV=284.0, END ELEV=275.0',
MIN D=1.0', B=4' (TEMPORARY DITCH)
–L– STA. 971+50 TO STA. 972+93 LT, L=143'
BEGIN ELEV=217.45', END ELEV=217.00', S=0.31%
MIN D=2.75', B=10'
–Y23R– STA. 23+80 RT, L=82', S=0.3%
BEGIN ELEV=335.25, END ELEV=335.0',
MIN D=1.5', B=4'
–Y23BR– STA. 22+75 LT, L=80', S=0.7%
BEGIN ELEV=340.20, END ELEV=339.65',
MIN D=1.5', B=3'
–Y23DR– STA. 15+50 RT, L=100', S=0.45%
BEGIN ELEV=316.6, END ELEV=316.15',
MIN D=1.5', B=4'
–L1– STA. 1027+00 LT, L=205', S=0.3%
BEGIN ELEV=296.7, END ELEV=296.0,
MIN D=1.5', B=4'
–L1– STA. 1030+35 LT, L=172', S=0.5%
BEGIN ELEV=301.8, END ELEV=301.0,
MIN D=1.5', B=4'
–Y23DR– STA. 51+00 LT, L=97', S=1.24%
BEGIN ELEV=265.0 END ELEV=263.8,
MIN D=2.0', B=4'

–Y24E– STA. 10+60 LT
BEGIN ELEV=336.2', END ELEV=336.0', L=58', S=0.3%
MIN D=1', B=2'
–Y24R– STA. 37+00 RT
BEGIN ELEV=264.2', END ELEV=264.1', L=37', S=0.3%
MIN D=2', B=4'

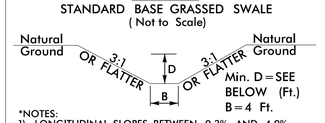
## DETAIL P
LATERAL BASE DITCH
( Not to Scale)




Type of Liner= CL II Rip–Rap, Keyed–In

–Y24RPBR– STA. 32+00 TO STA. 34+00 LT

## DETAIL Q
STANDARD BASE GRASSED SWALE
( Not to Scale)

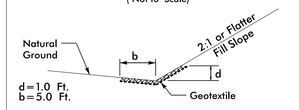



*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1084+71 TO STA. 1087+00 RT, D=2'
BEGIN ELEV=230.0, END ELEV=231.0, S=0.36%, L=279'
–L1– STA. 1056+00 RT, D=1'
BEGIN ELEV=311.9, END ELEV=311.0, S=0.9%, L=100'
–L1– STA. 1085+06 LT, D=2'
BEGIN ELEV=230.4, END ELEV=230.0, S=0.3%, L=117'

–L1– STA. 1118+85 TO STA. 1119+00 RT, D=1'
–L1– STA. 1179+10 TO STA. 1180+00 RT, D=1'

## DETAIL E
TOE PROTECTION
( Not to Scale)

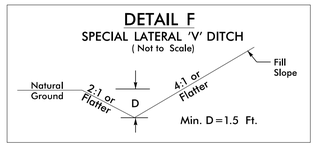



Type of Liner= CLASS B RIPRAP

*–Y22RPAFLY1– STA. 62+90 TO 63+70 LT
*–Y22RPAFLY_REV– STA. 39+50 TO 39+69 LT
*–Y22LPC– STA. 24+13 TO STA. 26+25 RT
*–L– STA. 930+24 TO STA. 930+72 RT
–Y22RPE– STA. 27+50 TO STA. 33+50 RT
–Y22RPE_REV– STA. 39+00 TO STA. 43+00 RT
–L– STA. 1002+00 TO STA. 1002+75 RT
–L– STA. 1003+50 TO STA. 1004+50 LT
–L– STA. 1004+25 TO STA. 1004+75 RT
–L1– STA. 1007+00 TO STA. 1010+00 RT
–L1– STA. 1007+50 TO STA. 1008+75 LT
–L1– STA. 1012+50 TO STA. 1013+50 LT
–L1– STA. 1013+00 TO STA. 1014+00 RT
–L1– STA. 1091+69 TO STA. 1093+51 LT
–Y22CR– STA. 15+50 TO STA. 16+00 LT
–Y22CR– STA. 15+50 TO STA. 16+00 RT
–Y23RPB– STA. 12+50 TO STA. 15+15 LT
–Y23R– STA. 39+00 TO STA. 40+60 RT
–Y23DR– STA. 34+70 TO STA. 35+50 RT
–Y23DR– STA. 51+88 TO STA. 52+47 RT
–Y23E– STA. 10+66 TO STA. 10+81 RT
–DR1– STA. 10+33 TO STA. 11+12 RT
–Y23DR– STA. 47+54 TO STA. 47+92 RT
–Y23DR– STA. 49+24 TO STA. 49+83 RT
–Y23RPB– STA. 27+50 TO STA. 28+00 LT
–Y23FR– STA. 11+15 TO STA. 11+67 LT

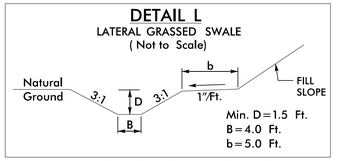
–Y24RPAR– STA. 22+86 TO STA. 24+04 RT
–Y24RPDR– STA. 24+10 TO STA. 25+50 LT
–Y26R– STA. 21+70 TO STA. 22+75 RT
–L1– STA. 1104+59 TO STA. 1105+35 LT
–L1– STA. 1170+60 TO STA. 1172+00 LT
–L1– STA. 1123+12 TO STA. 1124+20 LT
–L1– STA. 1125+00 TO STA. 1126+07 LT
–L1– STA. 1128+50 TO STA. 1129+00 LT
–L1– STA. 1098+63 TO STA. 1104+59 LT
–L1– STA. 1169+54 TO STA. 1170+37 LT
–L1– STA. 1174+50 TO STA. 1175+55 LT
–L1– STA. 1113+24 TO STA. 1114+41 RT
–L1– STA. 1110+09 TO STA. 1113+58 LT
–L1– STA. 1113+86 TO STA. 1116+96 LT
–L1– STA. 1124+19 TO STA. 1125+00 LT
–Y23RPBR– STA. 27+50 TO STA. 28+00 LT
–Y24R– STA. 19+75 TO STA. 20+50 LT
–Y24R– STA. 20+00 TO STA. 21+50 RT
–Y24R– STA. 61+15 TO STA. 62+50 LT
–Y24RPAR– STA. 21+70 TO STA. 22+86 RT
–Y24RPDR– STA. 14+30 TO STA. 14+80 LT
–Y24RPDR– STA. 17+40 TO STA. 18+00 LT
–Y26R– STA. 16+80 TO STA. 18+40 RT

## DETAIL F
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




*–Y22RPA_REV– STA. 23+00 TO STA. 27+50 RT
*–Y22RPA_REV– STA. 23+00 TO STA. 27+85 LT
–Y23R– STA. 21+50 TO STA. 22+50 RT
*–L– STA. 958+00 TO STA. 962+50 RT
*–L– STA. 957+00 TO STA. 962+50 LT

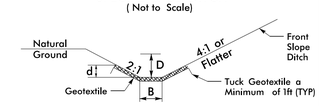
## DETAIL L
LATERAL GRASSED SWALE
( Not to Scale)




–L– STA. 1003+00 TO STA. 1003+80 LT
–L1– STA. 1009+03 TO STA. 1011+50 LT
–L1– STA. 1013+77 TO STA. 1015+50 LT
–L1– STA. 1023+00 TO STA. 1023+84 LT
–L1– STA. 1024+18 TO STA. 1025+00 RT
–L1– STA. 1034+00 TO STA. 1036+33 LT
–L1– STA. 1089+50 TO STA. 1093+50 RT
–L1– STA. 1090+00 TO STA. 1092+00 LT
–Y23R– STA. 19+00 TO STA. 23+00 LT
–Y23R– STA. 39+00 TO STA. 41+00 LT
–Y23R– STA. 49+50 TO STA. 53+00 RT
–Y23R– STA. 60+00 TO STA. 62+00 RT
–Y23RPB– STA. 27+50 TO STA. 28+75 RT
–Y23RPC– STA. 17+00 TO STA. 18+00 RT
–Y23BR– STA. 21+50 TO STA. 22+50 RT
–Y23BR– STA. 23+40 TO STA. 25+50 RT
–Y23CR– STA. 22+50 TO STA. 23+15 LT
–Y23FR– STA. 10+25 TO STA. 11+15 LT
–Y23FR– STA. 11+69 TO STA. 12+40 RT
–Y23FR– STA. 11+94 TO STA. 13+50 LT

–L1– STA. 1136+00 TO STA. 1137+00 RT
–L1– STA. 1164+50 TO STA. 1165+50 RT
–L1– STA. 1167+50 TO STA. 1170+00 RT
–L1– STA. 1168+50 TO STA. 1169+50 LT
–Y24RPBR– STA. 29+50 TO STA. 30+50 LT
–Y24RPDR– STA. 11+60 TO STA. 12+80 LT
–Y24R– STA. 18+00 TO STA. 19+17 LT
–Y24R– STA. 19+00 TO STA. 20+11 RT
–Y24R– STA. 33+99 TO STA. 34+68 RT
–L1– STA. 1113+00 TO STA. 1113+26 RT

## DETAIL R
SPECIAL BASE DITCH
( Not to Scale)




Type of Liner= CL B Rip–Rap

–L– STA. 982+00 TO STA. 988+00 RT
–L1– STA. 1025+00 TO STA. 1026+00 RT
–L1– STA. 1029+50 TO STA. 1030+35 RT
–L1– STA. 1077+25 TO STA. 1078+90
–Y23R– STA. 30+00 TO STA. 31+50 RT
–Y23K– STA. 11+98 TO STA. 12+60 LT
–Y23AR– STA. 11+50 TO STA. 15+50 LT (Min. D=2.0')

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/5/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4CR-2829A_hyd_wet_DitchDetails.dgn
aburke

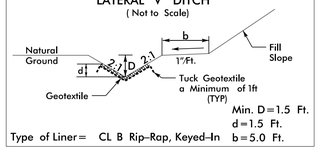
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-2 |

HYDRAULICS DESIGN ENGINEER

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

**PERMIT DRAWING SHEET 3 OF 103**

## DETAIL S
LATERAL 'V' DITCH
( Not to Scale)



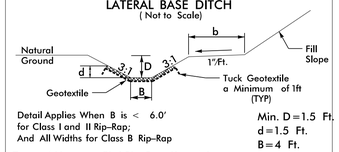

Min. D=1.5 Ft.
d=1.5 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22RPAFLY_REV– STA. 20+00 TO STA. 21+24 LT
–Y23R– STA. 41+00 TO STA. 43+00 LT
–Y23RPB– STA. 23+50 TO STA. 24+50 RT
–Y23FR– STA. 13+50 TO STA. 14+00 LT

–Y26R– STA. 20+30 TO STA. 22+02 LT
–Y26R– STA. 28+50 TO STA. 29+25 RT

## DETAIL T
LATERAL BASE DITCH
( Not to Scale)



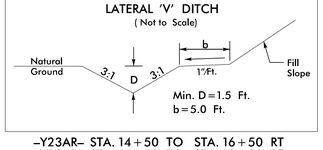

Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=1.5 Ft.
d=1.5 Ft.
B=4 Ft.
b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23RPB– STA. 28+20 TO STA. 28+50 LT
–Y23RPB– STA. 28+75 TO STA. 30+45 RT
–Y22RPE_REV–STA. 28+00 TO STA. 30+00 LT
–Y22RPAFLY_REV– STA. 28+00 TO STA. 30+00 LT

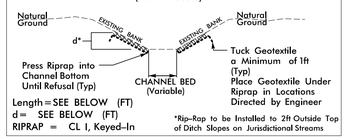
## DETAIL U
LATERAL 'V' DITCH
( Not to Scale)




Min. D=1.5 Ft.
b=5.0 Ft.

–Y23AR– STA. 14+50 TO STA. 16+50 RT
–Y23AR– STA. 17+50 TO STA. 19+80 RT

## DETAIL V
BANK STABILIZATION
( Not to Scale)

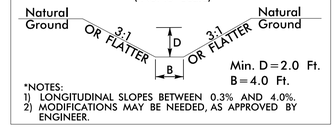



Length = SEE BELOW (FT)
d = SEE BELOW (FT)
RIPRAP = CL I, Keyed-In

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

–Y26R– STA. 22+25 LT,
L=72', d=3'
48 TONS CL I RIPRAP, W/107 SY GEOFAB

## DETAIL W
STANDARD BASE GRASSED SWALE
( Not to Scale)

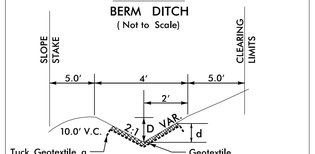



Min. D=2.0 Ft.
B=4.0 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–Y23RPB– STA. 23+50 RT, L=143'
BEGIN ELEV=317.1', END ELEV=315.70', S=1.0%
MIN D=1.0', B=4'

## DETAIL X
BERM DITCH
( Not to Scale)



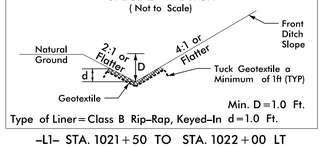

Min. D=1.0 Ft.

Type of Liner=CLASS B RIPRAP, Keyed-In d=1.0 Ft.

–Y23RPC– STA. 14+29 TO STA. 16+00 RT
–L1– STA. 1053+30 TO STA. 1058+00 LT

–L1– STA. 1108+85 TO STA. 1112+50 RT

## DETAIL Y
SPECIAL 'V' DITCH
( Not to Scale)



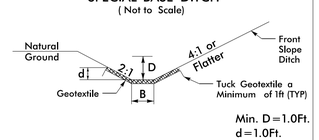

Min. D=1.0 Ft.

Type of Liner=Class B Rip-Rap, Keyed-In d=1.0 Ft.

–L1– STA. 1021+50 TO STA. 1022+00 LT
–L1– STA. 1020+00 TO STA. 1021+00 RT
–L1– STA. 1096+50 TO STA. 1097+00 RT
–L1– STA. 1073+00 TO STA. 1075+50 LT
–Y22CR– STA. 14+50 TO STA 15+00 LT
–Y23R– STA. 56+50 TO STA. 59+00 RT
–Y23R– STA. 64+65 TO STA. 69+00 LT
–Y23R– STA. 66+50 TO STA. 68+30 RT
–Y23LPB– STA. 14+50 TO STA. 15+00 LT
–Y23DR– STA. 27+50 TO STA. 28+80 LT
–Y23DR– STA. 36+00 TO STA. 38+38 RT

–L1– STA. 1181+50 TO STA. 1182+50 RT
–Y24R– STA. 31+00 TO STA. 32+50 RT
–Y24A– STA. 10+90 TO STA. 11+45 LT (L=83')
–Y24A– STA. 10+75 TO 11+00 RT (L=33')
–Y24A– STA. 11+00 TO 12+65 RT (L=97')
–Y24A– STA. 12+65 TO 13+49 RT
–Y24A– STA. 19+01 TO STA. 19+51 LT

## DETAIL Z
SPECIAL BASE DITCH
( Not to Scale)

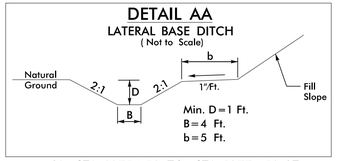



Min. D=1.0Ft.
d=1.0Ft.
B=4Ft.

Type of Liner= CL B Rip-Rap

–L1– STA. 1077+50 TO STA. 1079+00 LT
–Y23DR– STA. 23+50 TO STA. 24+00 RT
–L1– STA. 1061+00 TO STA. 1062+61 LT

## DETAIL AA
LATERAL BASE DITCH
( Not to Scale)

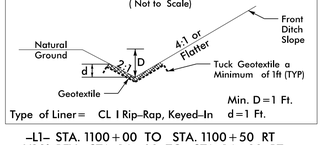



Min. D=1 Ft.
B=4 Ft.
b=5 Ft.

–L1– STA. 1075+50 TO STA. 1077+50 LT
–L1– STA. 1066+00 TO STA. 1069+50 LT
–L1– STA. 1098+00 TO STA. 1098+80 LT

–Y24R– STA. 37+00 TO STA. 39+50 RT
–Y24RPDR– STA. 18+00 TO STA. 21+50 LT
–L1– STA. 1128+74 TO STA. 1130+00 RT
–L1– STA. 1098+00 TO STA. 1098+80 LT
–L1– STA. 1114+70 TO STA 1115+77 RT

## DETAIL AB
SPECIAL 'V' DITCH
( Not to Scale)



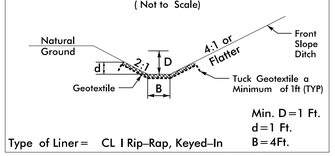

Min. D=1 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In d=1 Ft.

–L1– STA. 1100+00 TO STA. 1100+50 RT
–Y23I_REV– STA. 14+00 TO STA. 14+90 RT
–Y23I_REV– STA. 14+00 TO STA. 15+00 LT
–Y23DR– STA. 52+50 TO STA 53+23 RT
–Y23FR– STA. 13+50 TO STA. 14+00 RT

–Y24B– STA. 10+26 TO STA. 11+00 RT

## DETAIL AC
SPECIAL BASE DITCH
( Not to Scale)



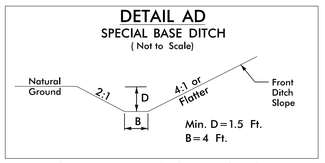

Min. D=1 Ft.
d=1 Ft.
B=4Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–L– STA. 990+00 TO STA. 991+00 LT
–Y23DR– STA. 23+00 TO STA. 24+50 LT
–Y23H– STA. 10+50 TO STA. 11+85 RT
–Y23R– STA. 32+50 TO STA. 33+50 LT
–Y23R– STA. 64+50 TO STA. 66+50 RT

–Y24R– STA. 47+00 TO STA. 51+50 RT

## DETAIL AD
SPECIAL BASE DITCH
( Not to Scale)

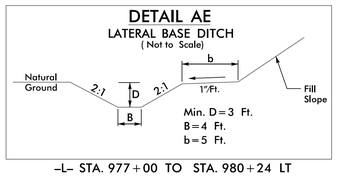



Min. D=1.5 Ft.
B=4 Ft.

–L1– STA. 1094+50 TO STA. 1096+26 LT
–Y23AR– STA. 10+30 TO STA. 11+50 LT
–Y23R– STA. 33+50 TO STA. 36+00 LT
–Y23RPC– STA. 24+00 TO STA. 27+00 RT

–Y26R– STA. 34+50 TO STA. 39+50 RT

## DETAIL AE
LATERAL BASE DITCH
( Not to Scale)

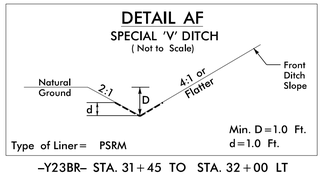



Min. D=3 Ft.
B=4 Ft.
b=5 Ft.

–L– STA. 977+00 TO STA. 980+24 LT

–Y24RPC– STA. 15+67 TO STA. 17+32 RT

## DETAIL AF
SPECIAL 'V' DITCH
( Not to Scale)

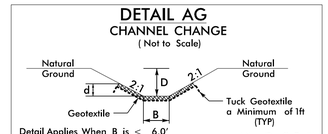



Min. D=1.0 Ft.
d=1.0 Ft.

Type of Liner= PSRM

–Y23BR– STA. 31+45 TO STA. 32+00 LT

## DETAIL AG
CHANNEL CHANGE
( Not to Scale)




Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

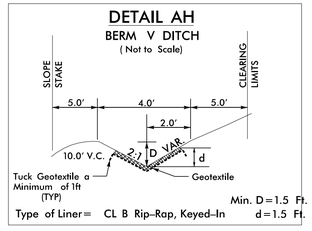
Min. D=2.5 Ft.
d=2.5 Ft.
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23DR– STA. 24+75 RT, L=38', S=0.5%
BEGIN ELEV=279.6, END ELEV=279.4', D/d=3.5'

–L1– STA. 1161+40 TO 1162+07 LT
BEGIN ELEV=291.0', END ELEV=288.5', L=110', S=2.3%
–L1– STA. 1162+07 TO 1163+00 LT
BEGIN ELEV=294.5', END ELEV=291.0', L=108', S=3.2%

## DETAIL AH
BERM V DITCH
( Not to Scale)

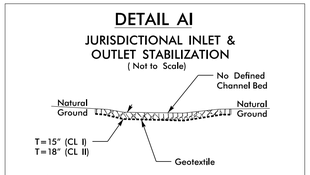



Min. D=1.5 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In d=1.5 Ft.

–L1– STA. 1030+50 TO STA. 1034+50 RT
–L1– STA. 1058+00 TO STA. 1059+50 LT

## DETAIL AI
JURISDICTIONAL INLET & OUTLET STABILIZATION
( Not to Scale)



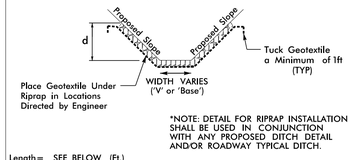

Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In/Countersunk

–L– STA. 1004+00 LT, CL I RIPRAP, L=20'
–L1– STA. 1036+50 LT, CL I RIPRAP, L=20'

## DETAIL AJ
RIPRAP STABILIZATION
( Not to Scale)



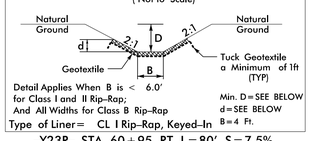

*NOTE: DETAIL FOR RIPRAP INSTALLATION SHALL BE USED IN CONJUNCTION WITH ANY PROPOSED DITCH DETAIL AND/OR ROADWAY TYPICAL DITCH.

Length= SEE BELOW (Ft.)
Type of Liner= CL B or I Rip-Rap – Keyed-In (SEE BELOW)

–Y22RPA_REV– STA. 20+80 LT (RDY TYPICAL DITCH)
L=110', MIN d=1.0'
45 TONS CL B RIPRAP, W/101 SY GEOFAB
–Y23DR– STA. 15+50 RT (END OF STD. DITCH),
L=6', MIN d=1.5'
3 TONS CL B RIPRAP, W/9 SY GEOFAB
–Y23DR– STA. 51+07 RT (END OF STD. DITCH),
L=6', MIN d=2.0'
4 TONS CL I RIPRAP, W/9 SY GEOFAB
–L1– STA. 1086+20 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1084+85 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1087+05 LT (END OF SWALE),
L=20', MIN d=2.0'
23 TONS CL I RIPRAP, W/46 SY GEOFAB

–L1– STA. 1145+00 TO 1147+00 RT
L=200', MIN d=1.0'
82 TONS CL B RIPRAP, W/183 SY GEOFAB
–L1– STA. 1179+10 RT (END OF SWALE),
L=12', MIN d=1.0'
6 TONS CL B RIPRAP, W/14 SY GEOFAB

## DETAIL AK
STANDARD BASE DITCH
( Not to Scale)




Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

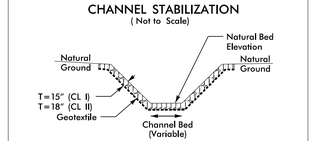
Min. D=SEE BELOW
d=SEE BELOW
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23R– STA. 60+95 RT, L=80', S=7.5%
BEGIN ELEV=332.0, END ELEV=326.0', D/d=1.0'
–Y23AR– STA. 11+50 RT, L=24', S=1.4%
BEGIN ELEV=299.0', END ELEV=298.67', D/d=2.5'
–L– STA. 975+75 TO STA. 977+00 LT, L=125', S=0.3%
BEGIN ELEV=214.5, END ELEV=214.88, D/d=3.5'
–Y23DR– STA. 23+85 LT, L=91', S=8.0%
BEGIN ELEV=293.4, END ELEV=286.1, D/d=1.5'
–Y23DR– STA. 38+35 RT, L=27', S=6.7%
BEGIN ELEV=293.8, END ELEV=292, D/d=1.0'
–Y23RPB– STA. 12+06 LT, L=50'
BEGIN ELEV=284.0', END ELEV=284.2', S=0.30%
MIN D=3.25', B=4'
–Y23RPB– STA. 12+69 LT, L=193'
BEGIN ELEV=284.2', END ELEV=295.0', S=5.6%
MIN D=1.5', B=4'

–Y26– STA. 14+50 LT, L=73', S=14.0%, D/d=1.0'
BEGIN ELEV=300.0', END ELEV=289.8'
–Y26_DRW1– STA. 10+50 RT, L=40', S=16.6%, D/d=1.0'
BEGIN ELEV=297.3', END ELEV=290.6'

## DETAIL AL
JURISDICTIONAL INLET & OUTLET CHANNEL STABILIZATION
( Not to Scale)




Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

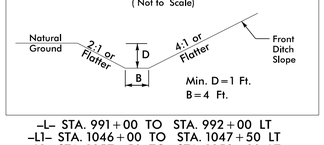
Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In/Countersunk

–L– STA. 1003+00 RT, CL I RIPRAP, L=16'
–L1– STA. 1023+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1062+62 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 46+25 RT, CL I RIPRAP, L=20'
–Y23R– STA. 61+14 LT, CL I RIPRAP, L=20'
–Y23DR– STA. 34+15 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 34+31 RT, CL I RIPRAP, L=20'
–Y23FR– STA. 11+71 LT, CL II RIPRAP, L=20'
–Y23FR– STA. 11+64 RT, CL II RIPRAP, L=20'

–L1– STA. 1024+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1163+00 RT, CL II RIPRAP, L=20'
–Y24RPBR– STA. 34+00 RT, CL II RIPRAP, L=20'
–Y24RPDR– STA. 24+73 LT, CL I RIPRAP, L=20'
–Y26R– STA. 21+69 RT, CL II RIPRAP, L=20'
–Y26R– STA. 22+02 LT, CL II RIPRAP, L=20'

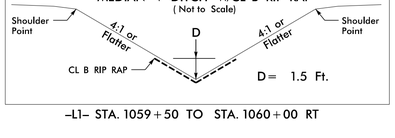
## DETAIL AM
SPECIAL BASE DITCH
( Not to Scale)




Min. D=1 Ft.
B=4 Ft.

–L– STA. 991+00 TO STA. 992+00 LT
–L1– STA. 1046+00 TO STA. 1047+50 LT
–L1– STA. 1057+50 TO STA. 1059+00 LT
–Y23R– STA. 23+00 TO STA. 23+80 LT
–Y23R– STA. 31+50 TO STA. 32+50 LT
–Y23LPB– STA. 13+22 TO STA. 14+50 LT

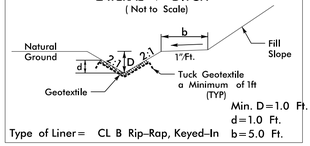
## DETAIL AN
MEDIAN V DITCH W/CL B RIP RAP
( Not to Scale)




D= 1.5 Ft.

–L1– STA. 1059+50 TO STA. 1060+00 RT

## DETAIL AO
LATERAL 'V' DITCH
( Not to Scale)




Min. D=1.0 Ft.
d=1.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22CR– STA. 13+61 TO STA 14+50 LT
–Y22CR– STA. 14+26 TO STA 15+50 RT
–L1– STA. 1070+50 TO STA. 1071+50 RT

–L1– STA. 1161+20 TO STA. 1161+60 RT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC Lic. No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/5/2024 R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn aburke

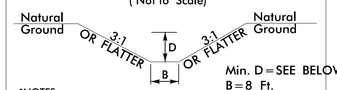
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-3 |

HYDRAULICS DESIGN ENGINEER

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

**PERMIT DRAWING SHEET 4 OF 103**

## DETAIL AP
STANDARD BASE GRASSED SWALE
( Not to Scale)

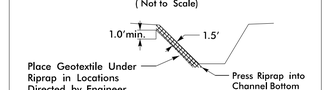



Min. D = SEE BELOW (Ft.)
B = 8 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1086+70 TO STA. 1090+00 LT, D=2 FT
–BEGIN ELEV=231.0, END ELEV=230.0, S=0.3%, L=330'

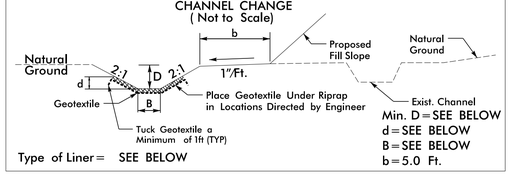
## DETAIL AQ
BANK STABILIZATION
( Not to Scale)




Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1086+29 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086+92 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086+75 RT
5 TONS CL I RIPRAP, W/10 SY GEOFAB

## DETAIL AR
CHANNEL CHANGE
( Not to Scale)



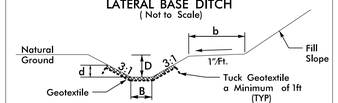

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW
b = 5.0 Ft.

Type of Liner = SEE BELOW

–L1– 1014+00 RT, B=7', CL II RIPRAP, D/d=3.0'
BEGIN ELEV.=255.5, END ELEV.=257.0, L=73' (RCBC INLET)
–L1– STA. 1014+50 TO STA. 1015+10 RT, B=7', CL II RIPRAP, MIN D/d=3.0'
–L1– STA. 1015+10 TO STA. 1016+00 RT, B=7', CL II RIPRAP, MIN D/d=1.0'
–L1– STA. 1016+50 TO STA. 1018+29 RT, B=5', GRASS, MIN D/d=1.5'

–L1– STA. 1171+38 TO STA. 1176+30 RT, CL I RIPRAP, MIN D/d=4.0'
–L1– STA. 1175+56 TO STA. 1178+09 LT, CL I RIPRAP, MIN D/d=4.0'
–L1– STA. 1115+82 TO STA. 1118+85 RT, CL II RIP RAP, MIN D/d=2.5, B=8
–L1– STA. 1118+85 TO STA. 1119+12 RT, CL II RIP RAP, MIN D/d=3.0, B=4
–L1– STA. 1179+00 TO STA. 1179+40 LT, CL I RIP RAP, MIN D/d=5.0, B=4

## DETAIL AS
LATERAL BASE DITCH
( Not to Scale)




Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

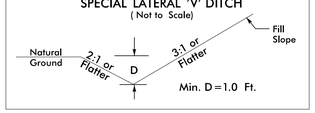
Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B RIPRAP, Keyed–In

–L1– STA. 1079+00 TO STA. 1083+35 LT, D/d=1.0'

–L1– STA. 1159+62 TO STA. 1161+20 RT, D/d=1.0'
–L1– STA. 1161+60 TO STA. 1163+00 RT, D/d=1.0'
–L1– STA. 1083+35 TO STA. 1084+35 RT, D/d=1.0'

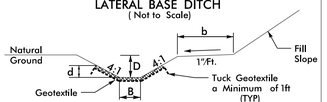
## DETAIL AT
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.

–Y26RSR2– STA. 10+70 TO STA. 14+20 LT

## DETAIL AU
LATERAL BASE DITCH
( Not to Scale)



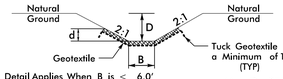

Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D = 2 Ft.
d = 2 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–Y23AR– STA. 16+55 TO STA. 18+90 LT

## DETAIL AV
STANDARD BASE DITCH
( Not to Scale)



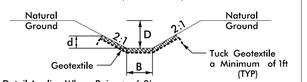

Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 978+30 TO STA. 979+00 RT, L=78'
BEGIN ELEV=221.82', END ELEV=222.10', S=0.36%
MIN D=2.5', B=6'
–Y22RPE REV– STA. 42+00 RT, L=330'
BEGIN ELEV=252.7', END ELEV=240.4', S=3.76%
MIN D=1.5', B=4'
–Y22RPE REV– STA. 45+00 RT, L=100'
BEGIN ELEV=240.4', END ELEV=240.0', S=0.40%
MIN D=2.5', B=4'

## DETAIL AW
STANDARD BASE DITCH
( Not to Scale)



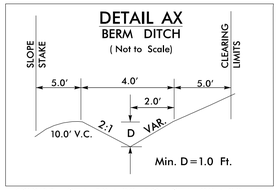

Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D = 1.5 Ft.
d = 1.5 Ft.
B = 4 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1161+64 LT
BEGIN ELEV=295.0', END ELEV=289.6', L=90', S=6.0%

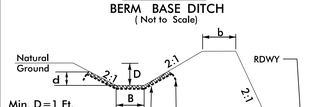
## DETAIL AX
BERM DITCH
( Not to Scale)




Min. D = 1.0 Ft.

–Y23DR– STA. 13+00 TO STA. 23+00 LT

## DETAIL AY
BERM BASE DITCH
( Not to Scale)



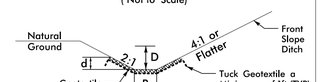

Min. D = 1 Ft.
d = 1 Ft.
B = 4 Ft.
b = 4 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 987+50 TO STA. 997+50 RT
–L1– STA. 1058+00 TO STA. 1060+50 LT

–L1– STA. 1103+79 TO STA. 1108+85 RT

## DETAIL AZ
SPECIAL BASE DITCH
( Not to Scale)

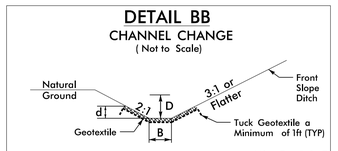



Min. D = 1 Ft.
d = 1 Ft.
B = 5 Ft.

Type of Liner = CL II Rip–Rap, Keyed–In

–L1– STA. 1100+00 TO STA. 1101+00 RT

## DETAIL BB
CHANNEL CHANGE
( Not to Scale)

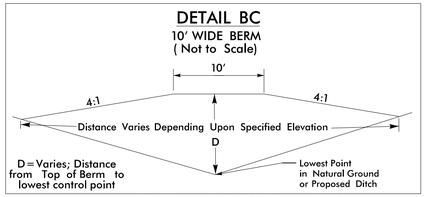



Min. D = 1.0 Ft.
d = 1.0 Ft.
B = 7.0 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

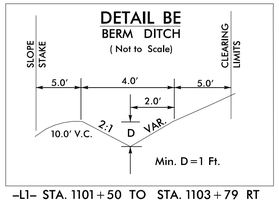
–L1– STA. 1016+00 TO STA. 1016+50 RT

## DETAIL BC
10' WIDE BERM
( Not to Scale)




–L1– STA. 1161+60 LT, TOP ELEV=311.0'

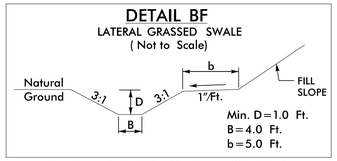
## DETAIL BE
BERM DITCH
( Not to Scale)




Min. D = 1 Ft.

–L1– STA. 1101+50 TO STA. 1103+79 RT

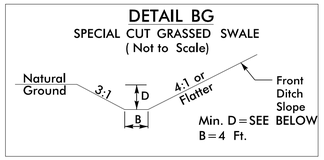
## DETAIL BF
LATERAL GRASSED SWALE
( Not to Scale)




Min. D = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L1– STA. 1099+00 TO STA. 1100+00 RT
–L1– STA. 1098+50 TO STA. 1098+83 RT
–Y24A– STA. 20+01 TO STA. 20+50 LT

## DETAIL BG
SPECIAL CUT GRASSED SWALE
( Not to Scale)

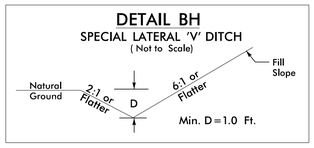



Min. D = SEE BELOW
B = 4 Ft.

–L– STA. 986+00 TO STA. 990+00 LT, D=1.5'
–L1– STA. 1060+50 TO STA. 1061+00 LT, D=1.5'

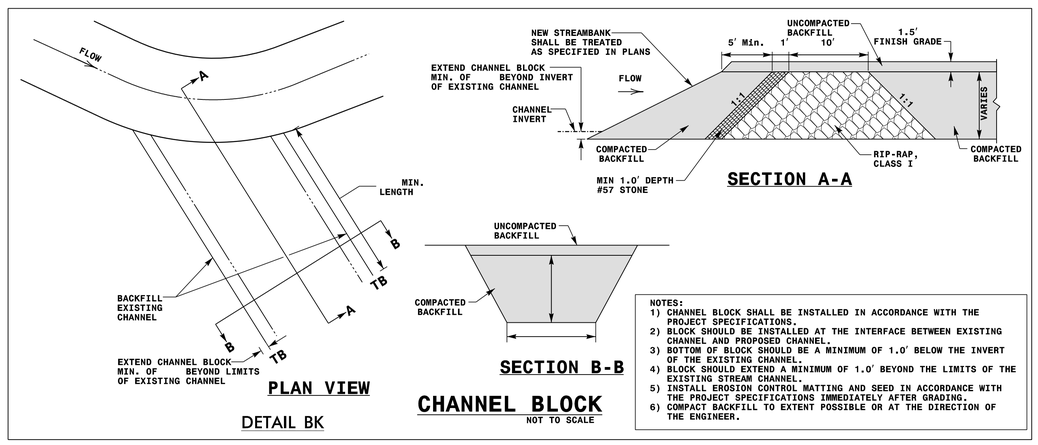
–Y24RPC– STA. 24+50 TO STA. 29+00 RT, D=2'

## DETAIL BH
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.

–Y24R– STA. 41+75 TO STA. 43+00 LT

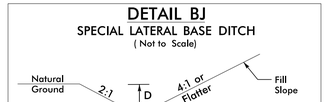



**CHANNEL BLOCK**
NOT TO SCALE

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 1.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

DETAIL BK

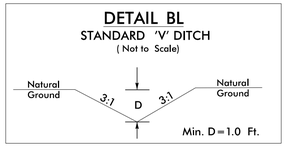
## DETAIL BJ
SPECIAL LATERAL BASE DITCH
( Not to Scale)




Min. D = 0.5 Ft.
B = 2 Ft.

–Y24E– STA. 10+80 TO STA. 12+00 RT

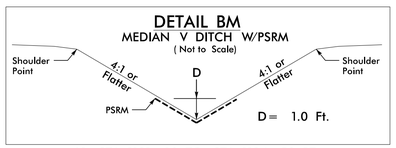
## DETAIL BL
STANDARD 'V' DITCH
( Not to Scale)




Min. D = 1.0 Ft.

–Y23J– STA. 13+00 TO STA. 14+00 RT
BEGIN ELEV=321.65, END ELEV=317.95
S=3.7%, L=100'
–Y23J– STA. 13+00 TO STA. 14+00 LT
BEGIN ELEV=323.05, END ELEV=317.00
S=6.1%, L=100'

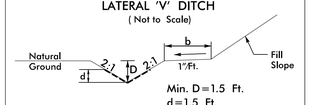
## DETAIL BM
MEDIAN V DITCH W/PSRM
( Not to Scale)




D = 1.0 Ft.

–L1– STA. 1131+00 TO STA. 1134+50 RT

## DETAIL BN
LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1.5 Ft.
d = 1.5 Ft.
b = 5.0 Ft.

Type of Liner = PSRM

–Y22RPE– STA. 30+00 TO STA. 31+50 LT
–Y22RPAFLY_REV– STA. 30+00 TO STA. 31+50 LT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



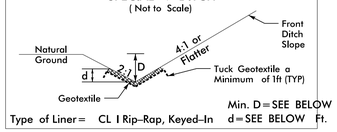
6/5/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn
aburke

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-4 |
| | HYDRAULICS DESIGN ENGINEER |

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

**PERMIT DRAWING SHEET 5 OF 103**

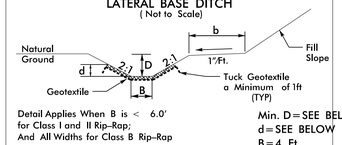
## DETAIL BO
SPECIAL 'V' DITCH
( Not to Scale)




Min. D = SEE BELOW Ft.
Type of Liner = CL I Rip–Rap, Keyed–In d = SEE BELOW Ft.

–L1– STA. 1063 + 00 TO STA. 1066 + 00 LT, D/d = 2.0′
–L1– STA. 1057 + 50 TO STA. 1058 + 00 LT, D/d = 1.5′

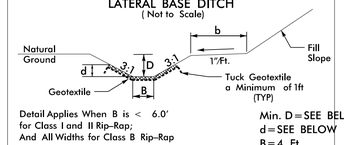
## DETAIL BP
LATERAL BASE DITCH
( Not to Scale)




Detail Applies When B is < 6.0′ for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D = SEE BELOW Ft.
d = SEE BELOW Ft.
B = 4 Ft.
b = 5 Ft.
Type of Liner = CL I Rip–Rap, Keyed–In

–Y24RPC– STA. 17 + 32 TO STA. 19 + 00 RT, D/d = 2.5′
–L1– STA. 1124 + 50 TO STA. 1125 + 30 RT, D/d = 1.0′

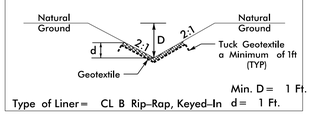
## DETAIL BQ
LATERAL BASE DITCH
( Not to Scale)




Detail Applies When B is < 6.0′ for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap
Min. D = SEE BELOW Ft.
d = SEE BELOW Ft.
B = 4 Ft.
b = 5 Ft.
Type of Liner = CL I Rip–Rap, Keyed–In

–Y23RPB– STA. 28 + 75 TO STA. 30 + 45 RT
–Y22RPE_REV–STA. 28 + 00 TO STA. 30 + 00 LT

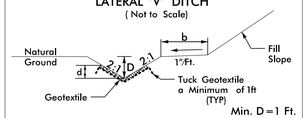
## DETAIL BR
STANDARD 'V' DITCH
( Not to Scale)




Min. D = 1 Ft.
Type of Liner = CL B Rip–Rap, Keyed–In d = 1 Ft.

–Y23J– STA. 9 + 50 TO STA. 10 + 00 RT
BEGIN ELEV = 316.8, END ELEV = 313.8
S = 6.0%, L = 50′

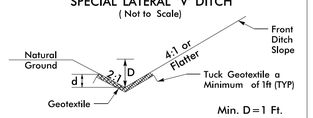
## DETAIL BT
LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1 Ft.
d = 1 Ft.
Type of Liner = CL I Rip–Rap, Keyed–In b = 5 Ft.

–Y23FR– STA. 12 + 40 TO STA. 13 + 50 RT

## DETAIL BU
SPECIAL LATERAL 'V' DITCH
( Not to Scale)




Min. D = 1 Ft.
Type of Liner = CL B Rip–Rap, Keyed–In d = 1 Ft.

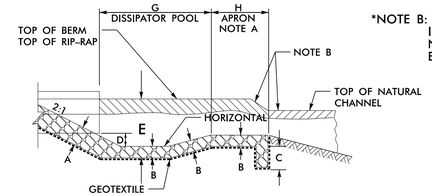
–Y23R– STA. 20 + 00 TO STA. 21 + 50 RT

## DETAIL BS
### RIP–RAPPED ENERGY DISSIPATOR BASIN

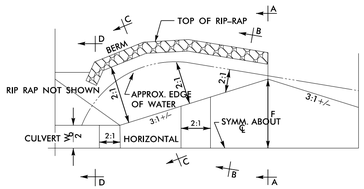
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A) = SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



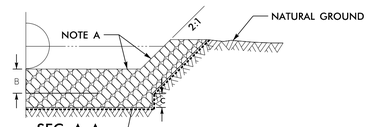

HALF PLAN

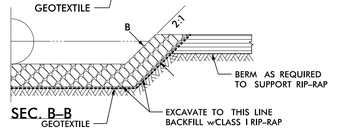


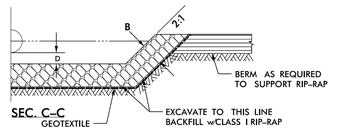

| DIM. | RIP RAP BASIN # | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| A | 0.4′ | 0.4′ | | | | | | |
| B | 0.3′ | 0.3′ | | | | | | |
| C | 3.0′ | 3.0′ | | | | | | |
| D | 2.1′ | 4.7′ | | | | | | |
| E | 3.3′ | 5.2′ | | | | | | |
| F | 15.0′ | 17.6′ | | | | | | |
| G | 21.1′ | 47.0′ | | | | | | |
| H | 10.5′ | 23.5′ | | | | | | |

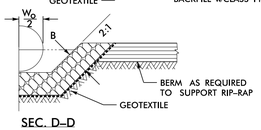
*ALL DIMENSIONS APPROXIMATE IN FT

| BASIN # | LOCATION (AT OUTLET) |
|---|---|
| 1 | –Y23RPB– 23 + 55 |
| 2 | –L1– STA. 1105 + 37 LT |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |



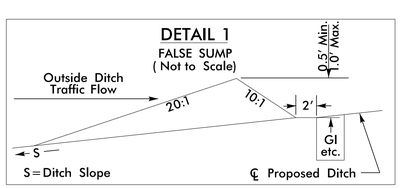



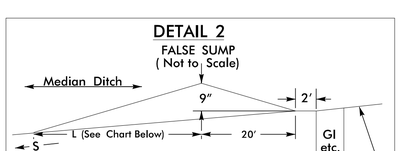

NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

5/05

## DETAIL 1
FALSE SUMP
( Not to Scale)

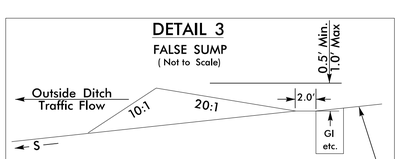



## DETAIL 2
FALSE SUMP
( Not to Scale)




| Ditch Grade | L | Ditch Grade | L |
|---|---|---|---|
| 0.0% To 2.0% | 20′ | Over 4.0% To 6.0% | 40′ |
| Over 2.0% To 4.0% | 30′ | Over 6.0% | 50′ |

## DETAIL 3
FALSE SUMP
( Not to Scale)




NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

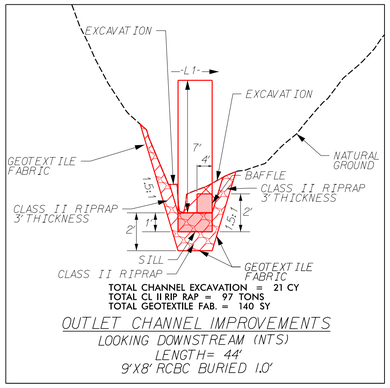


6/5/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn
aburke

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-5 |
| | HYDRAULICS DESIGN ENGINEER |

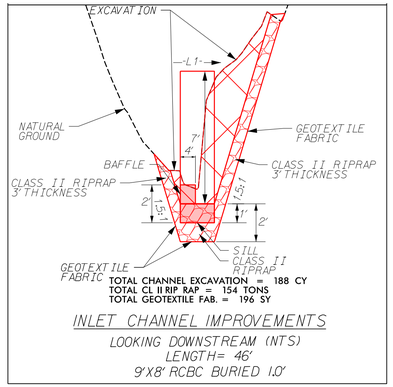
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 6 OF 103**




TOTAL CHANNEL EXCAVATION = 21 CY
TOTAL CL II RIP RAP = 97 TONS
TOTAL GEOTEXTILE FAB. = 140 SY

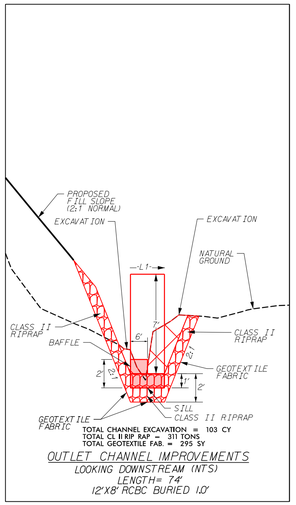
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 44'
9'X8' RCBC BURIED 1.0'




TOTAL CHANNEL EXCAVATION = 188 CY
TOTAL CL II RIP RAP = 154 TONS
TOTAL GEOTEXTILE FAB. = 196 SY

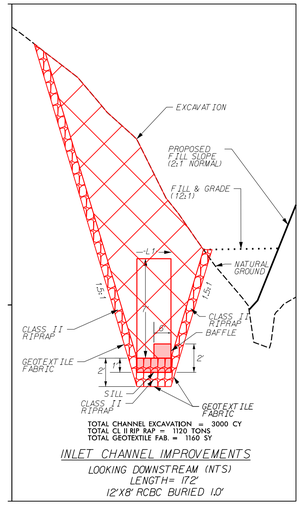
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
9'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C100
-L- STA. 1008+75
(DETAIL CA)




TOTAL CHANNEL EXCAVATION = 103 CY
TOTAL CL II RIP RAP = 311 TONS
TOTAL GEOTEXTILE FAB. = 295 SY

OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 74'
12'X8' RCBC BURIED 1.0'

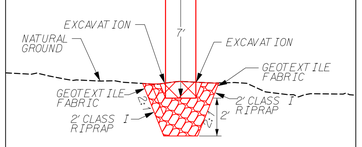



TOTAL CHANNEL EXCAVATION = 3000 CY
TOTAL CL II RIP RAP = 1120 TONS
TOTAL GEOTEXTILE FAB. = 1160 SY

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 172'
12'X8' RCBC BURIED 1.0'

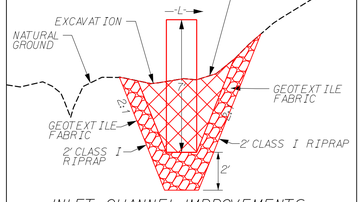
CULVERT INLET/OUTLET DETAILS
C200
-L- STA. 1013+50
(DETAIL CB)

TOTAL CHANNEL EXCAVATION = 38 CY
TOTAL CL I RIP RAP = 44 TONS
TOTAL GEOTEXTILE FAB. = 32 SY



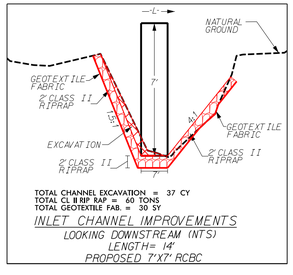

OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 25'
8'X7' RCBC NOT BURIED

TOTAL CHANNEL EXCAVATION = 338 CY
TOTAL CL I RIP RAP = 252 TONS
TOTAL GEOTEXTILE FAB. = 139 SY



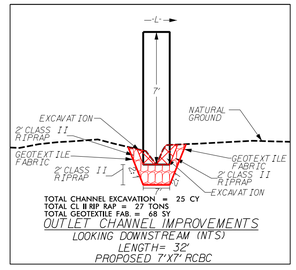

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
8'X7' RCBC NOT BURIED

CULVERT INLET/OUTLET DETAILS
C300
-L1- STA. 1099+00
(DETAIL CC)




TOTAL CHANNEL EXCAVATION = 37 CY
TOTAL CL II RIP RAP = 60 TONS
TOTAL GEOTEXTILE FAB. = 30 SY

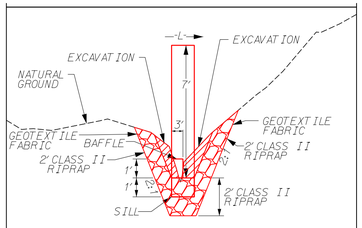
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 14'
PROPOSED 7'X7' RCBC




TOTAL CHANNEL EXCAVATION = 25 CY
TOTAL CL II RIP RAP = 27 TONS
TOTAL GEOTEXTILE FAB. = 68 SY

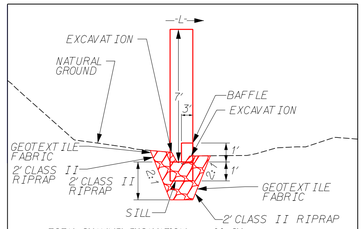
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 32'
PROPOSED 7'X7' RCBC

CULVERT INLET/OUTLET DETAILS
C400
-L1- STA. 1114+75
(DETAIL CD)




TOTAL CHANNEL EXCAVATION = 40 CY
TOTAL CL II RIP RAP = 46 TONS
TOTAL GEOTEXTILE FAB. = 35 SY

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 20'
6'X8' RCBC BURIED 1.0'




TOTAL CHANNEL EXCAVATION = 28 CY
TOTAL CL II RIP RAP = 39 TONS
TOTAL GEOTEXTILE FAB. = 71 SY

OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C500
-L1- STA. 1152+00
(DETAIL CE)


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

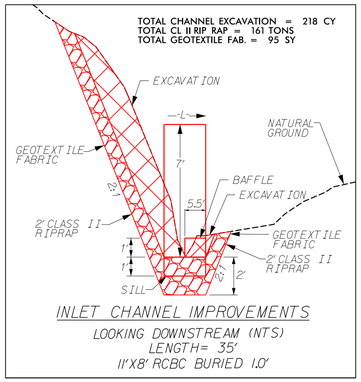


6/5/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn
aburke

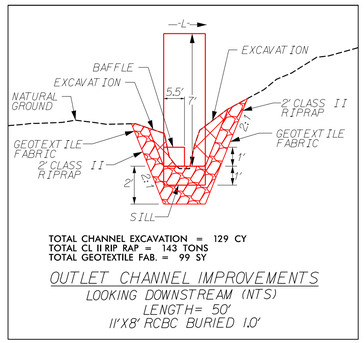
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 2D-6 |
| | HYDRAULICS DESIGN ENGINEER |

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

**PERMIT DRAWING SHEET 7 OF 103**



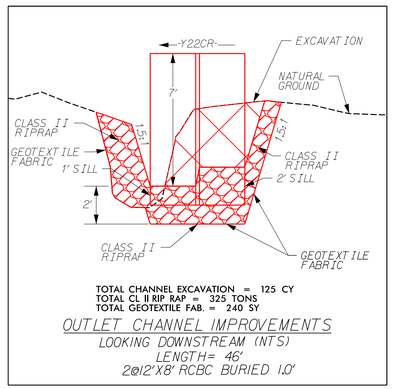

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 35'
11'X8' RCBC BURIED 1.0'




TOTAL CHANNEL EXCAVATION = 129 CY
TOTAL CL II RIP RAP = 143 TONS
TOTAL GEOTEXTILE FAB. = 99 SY

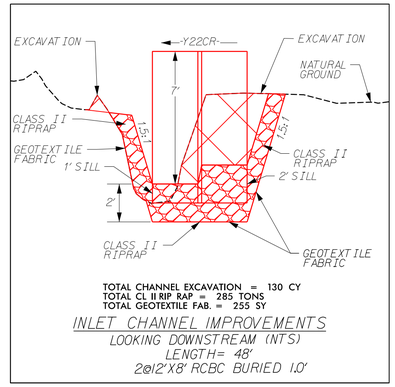
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 50'
11'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C600
–L1– STA. 1171+00
(DETAIL CF)




TOTAL CHANNEL EXCAVATION = 125 CY
TOTAL CL II RIP RAP = 325 TONS
TOTAL GEOTEXTILE FAB. = 240 SY

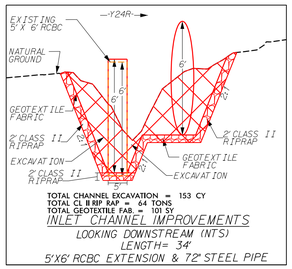
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
2@12'X8' RCBC BURIED 1.0'




TOTAL CHANNEL EXCAVATION = 130 CY
TOTAL CL II RIP RAP = 285 TONS
TOTAL GEOTEXTILE FAB. = 255 SY

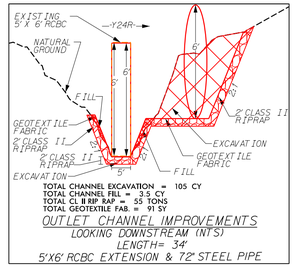
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 48'
2@12'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C700
–Y22CR– STA. 14+00
(DETAIL CG)




TOTAL CHANNEL EXCAVATION = 153 CY
TOTAL CL II RIP RAP = 64 TONS
TOTAL GEOTEXTILE FAB. = 101 SY

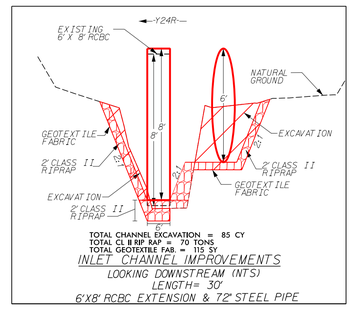
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE




TOTAL CHANNEL EXCAVATION = 105 CY
TOTAL CHANNEL FILL = 3.5 CY
TOTAL CL II RIP RAP = 55 TONS
TOTAL GEOTEXTILE FAB. = 91 SY

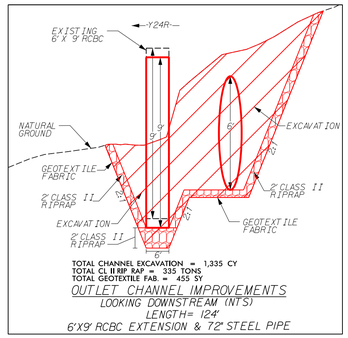
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C800
–Y24R– 19+50
(DETAIL CH)




TOTAL CHANNEL EXCAVATION = 85 CY
TOTAL CL II RIP RAP = 70 TONS
TOTAL GEOTEXTILE FAB. = 115 SY

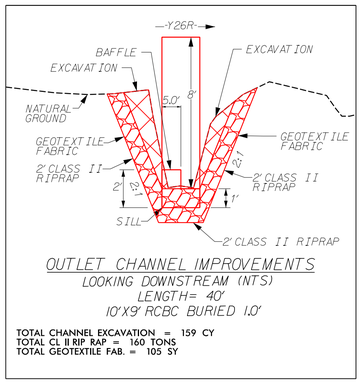
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC EXTENSION & 72" STEEL PIPE




TOTAL CHANNEL EXCAVATION = 1,335 CY
TOTAL CL II RIP RAP = 335 TONS
TOTAL GEOTEXTILE FAB. = 455 SY

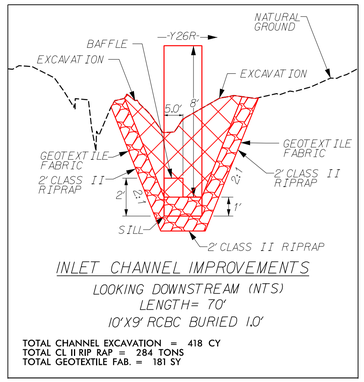
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 124'
6'X9' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C900
–Y24R– 34+50
(DETAIL CI)




OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 40'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 159 CY
TOTAL CL II RIP RAP = 160 TONS
TOTAL GEOTEXTILE FAB. = 105 SY




INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 418 CY
TOTAL CL II RIP RAP = 284 TONS
TOTAL GEOTEXTILE FAB. = 181 SY

CULVERT INLET/OUTLET DETAILS
C1000
–Y26R– 18+75
(DETAIL CJ)


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/5/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn
aburke

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2828A | 6 |
| R/W SHEET NO. | |

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|
| | |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 8 OF 103

MATCHLINE -L- STA. 939+00
SEE SHEET 5

MATCHLINE -Y22RPD-
STA. 25+00
SEE SHEET 5

MATCHLINE -Y22FLYCC-
STA. 100+00 SEE SHT 21

MATCHLINE - Y22RPAFLY REV-
STA. 23+00 SEE SHEET 21

MATCHLINE -L- STA. 965+50 SEE SHEET 7

MATCHLINE -Y22RPE REV-STA. 35+00
SEE SHEET 22

1 NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

2 MARY WHITE, ISABELL & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

NCDOT
(ROBERT BRYAN, SR)

ROBERT BRYAN, SR
DB 3400 PG 208 (JOHNSTON COUNTY)

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA TWO & THREE

SITE 36

SEE INSET A

INSET A

WFK

WFL

PROP. GUIDERAIL

300' TAPER LANE

RETAIN PIPES AND SYSTEMS INSTALLED BY OTHERS

RETAIN SYSTEM

RETAIN CB SYSTEM

18" CSP W/ELBOWS

24" CSP W/ELBOWS

LATERAL V DITCH W/CL 1 RIPRAP SEE DETAIL M

LAT. 4' BASE DITCH W/CL 3 RIPRAP SEE DETAIL N

LATERAL 4' BASE DITCH W/CL 3 RIPRAP SEE DETAIL N

JB W/SLAB (ID AND SIZING DETERMINED PREV. INSTALLED IN EARLY START PKG.)

LATERAL V DITCH W/CL 3 RIPRAP SEE DETAIL N

FS MIN ELEV=237.0

LATERAL V DITCH SEE DETAIL B

SP. LATERAL V DITCH SEE DETAIL F

#10CB-WSS

MEDIAN V DITCH SEE DETAIL G

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL A

LATERAL 4' BASE DITCH SEE DETAIL C

TOE PROTECTION W/CL 8 RIPRAP SEE DETAIL E

DRAIN. POND (SEE POND DRAINAGE PLANS)

STANDARD 4' BASE DITCH W/CL 8 RIPRAP SEE DETAIL AY

DITCH EOD=33.0±ft Y=0.1.57%

BEGIN WW FENCE =Y22RPE REV-1 00.38 119.20' RT

BM#36 (FROM R-2828_ncdot_FS.dgn FILE)
N: 686,830
E: 2,130,500
-BL- STA: 937+36.37
D=1' 486.89' RT
ELEV.= 237.0
BENCH TIE IN BASE OF 14" GUM

BM#36
N: 686,830
E: 2,130,500
-BL- STA: 937+36.37
D=1' 486.89' RT
ELEV.= 237.0
BENCH TIE IN BASE OF 14" GUM

ENGLISH

SCALE
100 0 100 200

SCALE FOR INSETS
50 0 50 100

MECHANIZED CLEARING (GRUBBING)

GRAPHIC SCALE
50 25 0 50 100
PLANS

RK&K
P: (919) 278-0800
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-2980
Engineers | Architects
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/15/2024
R-2828A_Roadway Summary Environmental\10-Drawings\45-Yearly\prod\R-2828A_hyd_45_pw4.dgn JBlodgett

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 6 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 103

MATCHLINE -Y22FLYCC- STA. 100+00 SEE SHT 21

MATCHLINE -Y22RPAFLY_REV- STA. 23+00 SEE SHEET 21

MATCHLINE -L- STA. 939+00 SEE SHEET 5

MATCHLINE -Y22RPD- STA. 25+00 SEE SHEET 5

MATCHLINE -L- STA. 965+50 SEE SHEET 7

MATCHLINE -Y22RPE REV- STA. 35+00 SEE SHEET 22

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

MARY WHITE, ISABEL & ADRIA WALKER BM 2012 PG 1326 DB 4163 PG 369

NCDOT
(ROBERT BRYAN, SR)

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA TWO & THREE

ROBERT BRYAN, SR
DB 3400 PG 208 (JOHNSTON COUNTY)

SEE INSET A

SITE 36

INSET A

WFK

WFL

PDE

300' TAPER LANE

PROP. GUIDERAIL

DRAIN POND (SEE POND DRAWING PLANS)

ENGLISH

MECHANIZED CLEARING (GRUBBING)

SCALE 100 0 100 200

SCALE FOR INSETS 50 0 50 100

GRAPHIC SCALE 50 25 0 50 100
PLANS

RK&K
P: (919) 870-6000
2000 Regency Road, Forum 1, Suite 700
Raleigh, North Carolina 27610-2060
NC Firm License No. P-0431
Engineers | Construction Managers | Planners | Scientists
www.RKK.com
Responsible People | Creative Solutions

8/5/2024
10:42:28
C:\Users\Parrotta.Ernesto\Documents\ID Drawings\R-2829A Work Area\R-2829A_hyd_KC_pw4_BK_mm.dgn

REVISIONS

| | |
|---|---|
| PROJECT REFERENCE NO. | SHEET NO. |
| R-2829A | 7 |
| 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 10 OF 103

NAD 83/NSRS 2011

ENGLISH

SCALE 100 0 100 200

| | | | |
|---|---|---|---|
| S S | SURFACE WATER IMPACTS | * * * * | MECHANIZED CLEARING (GRUBBING) |
| TS TS | TEMPORARY SURFACE WATER IMPACTS | E E | WETLAND EXCAVATION |
| HC HC | HAND CLEARING (NON-GRUBBING) | F F | FILL IN WETLAND |

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

POSSIBLE DEED OVERLAP
MARY WHITE, ISABELL WARD, & ADRIA WALKER
ROBERT BRYAN, SR

SITE 2

SITE 3

SEE INSET A
SHEET 12 OF 103

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA. 992+00 SEE SHEET 8

WFN(1)

WFJ

SEW

SEY

WFN(2)

WFW

WFX

JS BEGINS

JS ENDS

WAKE COUNTY
JOHNSTON COUNTY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

GRAPHIC SCALE
50 25 0 50 100
PLANS

RK&K
P: (919) 870-6000
8601 Six Forks Road | Forum 1, Suite 700
Raleigh, North Carolina 27615-5280
NC Firm License: C-0910
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsible People | Creative Solutions

C:\Users\...\Environmental\Drawings\ATWorkSet\R-2829A_Sht_ATL.dgn, BT Page

REVISIONS

ENGLISH

SCALE 100 0 100 200

| | | | |
|---|---|---|---|
| S S | SURFACE WATER IMPACTS | * * * * | MECHANIZED CLEARING (GRUBBING) |
| TS TS | TEMPORARY SURFACE WATER IMPACTS | E E | WETLAND EXCAVATION |
| HC HC | HAND CLEARING (NON-GRUBBING) | F F | FILL IN WETLAND |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 7 |
| 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 11 OF 103

NAD 83/NSRS 2011

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

POSSIBLE DEED OVERLAP
MARY WHITE, ISABELL WARD, & ADRIA WALKER
ROBERT BRYAN, SR

SITE 2

SITE 3

SEE INSET A
SHEET 12 OF 103

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA 992+00 SEE SHEET 8

WFN(1)

WFJ

SEW

SEY

WFW

WFX

WFN(2)

JS BEGINS

JS ENDS

WAKE COUNTY
JOHNSTON COUNTY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

GRAPHIC SCALE
50 25 0 50 100
PLANS

RK&K
Raleigh Office
901-B Tetra Road | Forum 1 Suite 700
Raleigh, North Carolina 27615-2000
Tel: (919) 790-0243
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsible People | Creative Solutions

8/5/2024

8/17/99

ENGLISH

25 0 25 50
SCALE FOR INSETS

S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS
HC HC HAND CLEARING (NON-GRUBBING)
F F FILL IN WETLAND
* * MECHANIZED CLEARING (GRUBBING)
E E WETLAND EXCAVATION

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

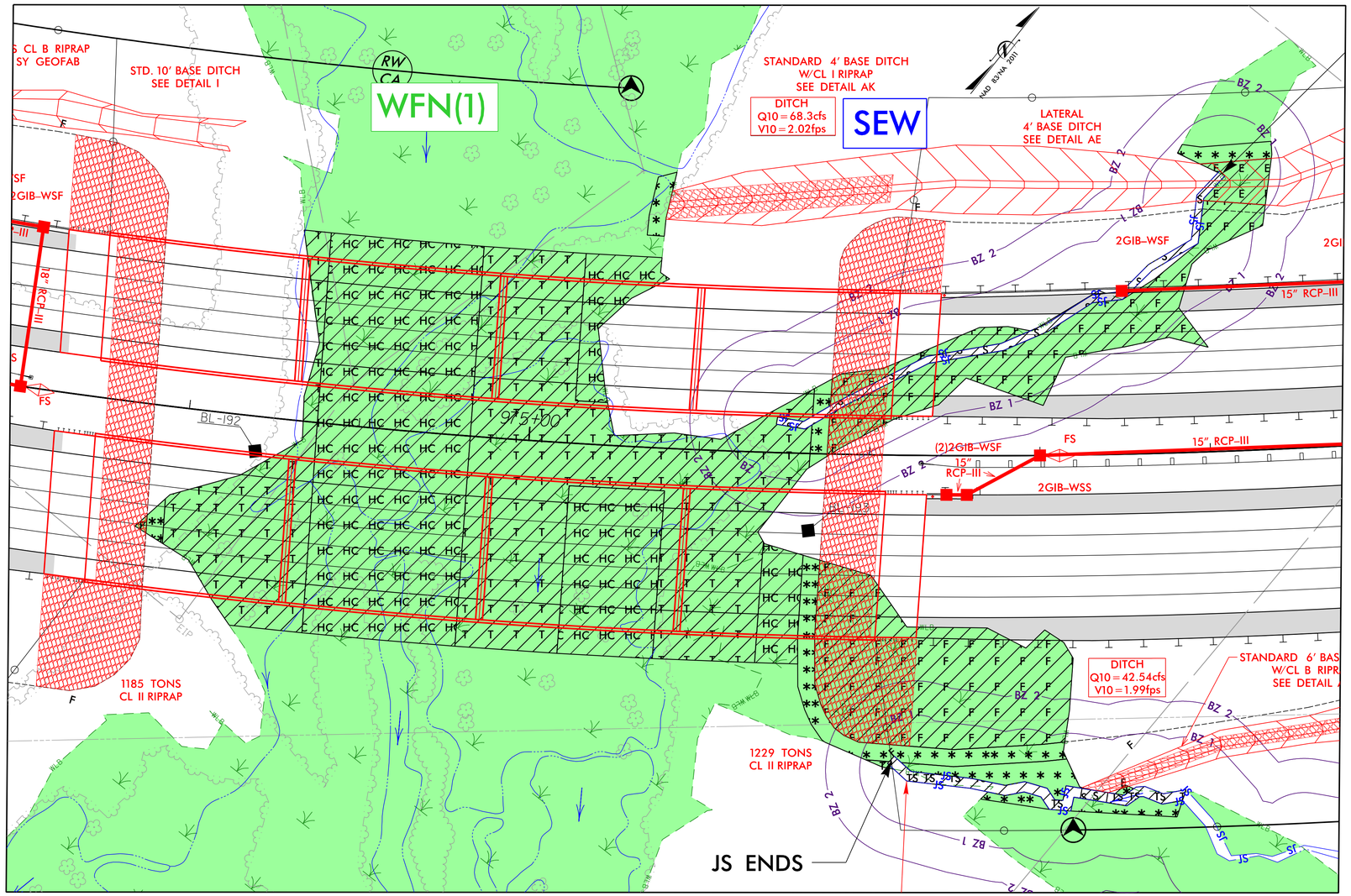
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

PERMIT DRAWING
SHEET 12 OF 103

# SITE 3

## INSET A




6/5/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_07_con.dgn
dwise

8/17/99

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

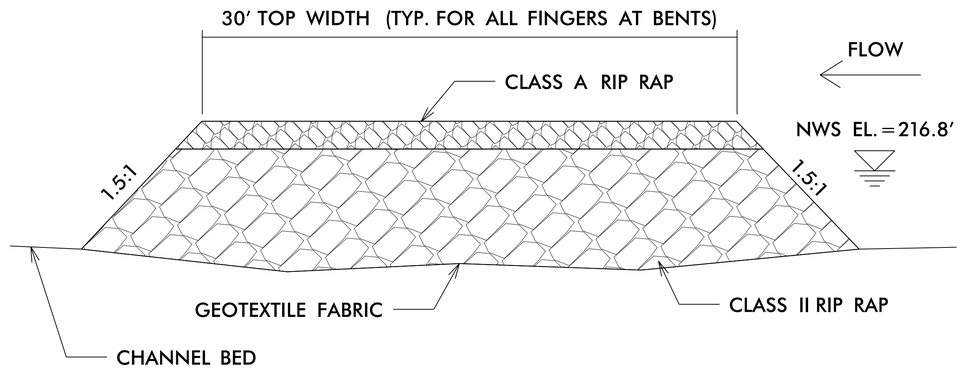
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

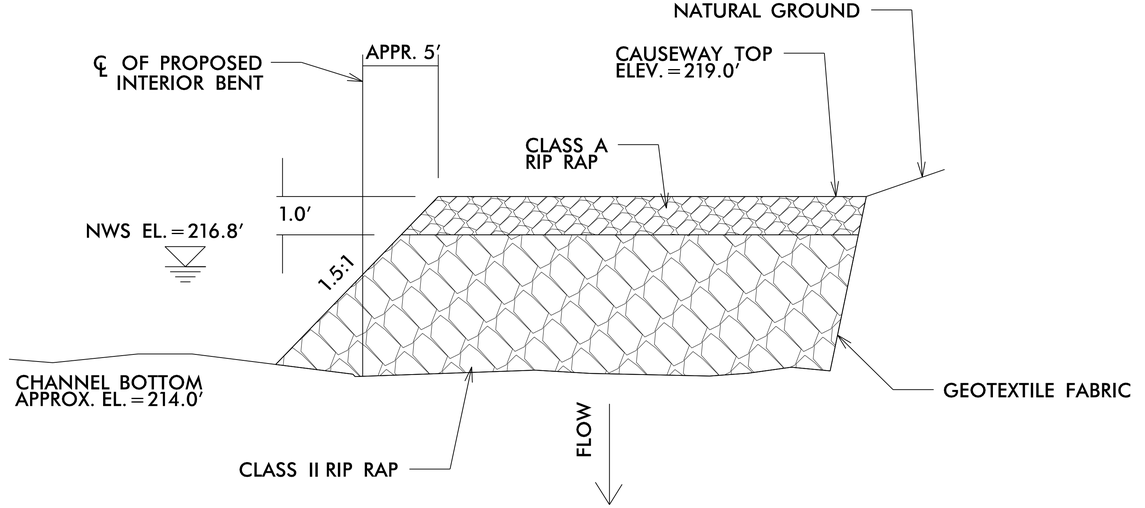
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 13 OF 103

# *TEMPORARY WORK PAD DETAIL*

***NOT TO SCALE***




8/5/2024
R:\Hydraulics\Permits_Envirometal\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_07_tempcauseway.dgn
dwg

5/28/99

# –LSEC1–

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 39 |
| 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 14 OF 103

BM#36 (FROM R-2828_ncdot_FS.dgn FILE)
N:686,830 E:2,130,512
-BL- STA 457+36.37 O/S 466.89' RT
-L- STA 948+16.59 O/S 502.55' RT
ELEV.= 278.56', BENCH TIE IN 14" GUM

–Y22FLYCC–

EXISTING GROUND

PROPOSED GRADE

(-)12.2351%

END PAVING ONLY
BEGIN GRADING AND PAVING
-LSEC1- STA.957+30.00
EL = 261.60'

PI = 959+80.00
EL = 256.01'
VC = 500'
K = 303
DS > 80 MPH

BEGIN SP.LAT.V DITCH LT
-L- STA.957+00.00
EL = 258.47'

(-) 3.0200%

(-) 2.6489%

(-) 2.2778%

PI = 958+00.00 LT
EL = 255.45'

BEGIN SP.LAT.V DITCH RT
-L- STA.958+00.00
EL = 255.99'

945+00 946+00 947+00 948+00 949+00 950+00 951+00 952+00 953+00 954+00 955+00 956+00 957+00 958+00 959+00

320 310 300 290 280 270 260 250 240 230

BM#37 (FROM R-2828_ncdot_FS.dgn FILE)
N:688,017 E:2,132,602
-BL- STA 481+51.64 O/S 262.92' RT
-L- STA 971+76.64 O/S 265.42' RT
ELEV.= 221.92', BENCH TIE IN 14" POPLAR

# –LSEC1–

SITE 3

PI = 959+80.00
EL = 256.01'
VC = 500'
K = 303
DS > 80 MPH

(-)12.2351%

(-)10.5827%

(-) 2.6489%

(-) 2.2778%

(-) 0.3000%

PI = 961+50.00 RT
EL = 246.72'

END SP.LAT.V DITCH RT
BEGIN MEDIAN V DITCH RT
-L+ STA.962+50.00 RT
EL = 246.42'

END SP.LAT.V DITCH LT
-L- STA.962+50.00
EL = 245.20'

(+) 2.2933%

END MEDIAN V DITCH RT
-L+ STA.964+00.00
EL = 249.86'

BEGIN SP.V DITCH RT
-L- STA.965+00.00
EL = 248.00'

BEGIN LAT.BASE DITCH LT
-L+ STA.966+00.00
EL = 227.00'

END SP.V DITCH RT
BEGIN V DITCH RT
-L+ STA.966+50.00
EL = 246.20'

(-) 1.2000%

PI = 967+50.00 RT
EL = 245.00'

(-) 1.2000%

(-) 2.8723%

END V DITCH RT
-L+ STA.968+44.00
EL = 242.30'

(-) 1.7364%

BEGIN BRIDGE
-LSEC1- STA.972+46.00+/-

PROPOSED GRADE

EXISTING GROUND

SITE 5

CLASS II RIPRAP (TYP.)

1.5:1 NORMAL TO END BENT

3'-6" KEY-IN (TYP.)

(-) 0.3147%

END LAT.BASE DITCH LT
BEGIN BASE DITCH LT
-L+ STA.971+50.00
EL = 217.45'

END BASE DITCH LT
-L- STA.972+93.00
EL = 217.00'

LEFT DITCH

RIGHT DITCH

FOR –LSEC1– PLAN SEE SHTS. 6 THRU 7

959+00 960+00 961+00 962+00 963+00 964+00 965+00 966+00 967+00 968+00 969+00 970+00 971+00 972+00 973+00

280 270 260 250 240 230 220 210 200 190

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
R:\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_Rdy_pf1_39_PSH7_BBPFLs.dgn
Default

5/28/99

# –LSEC1–

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 40 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

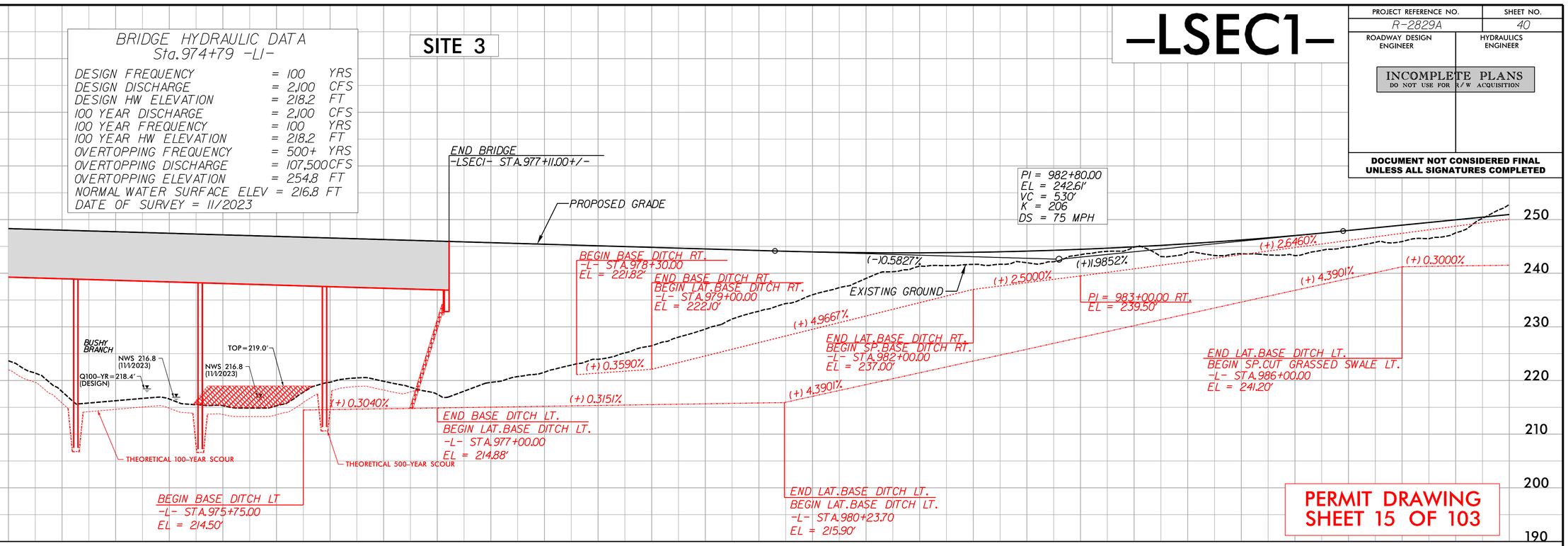
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

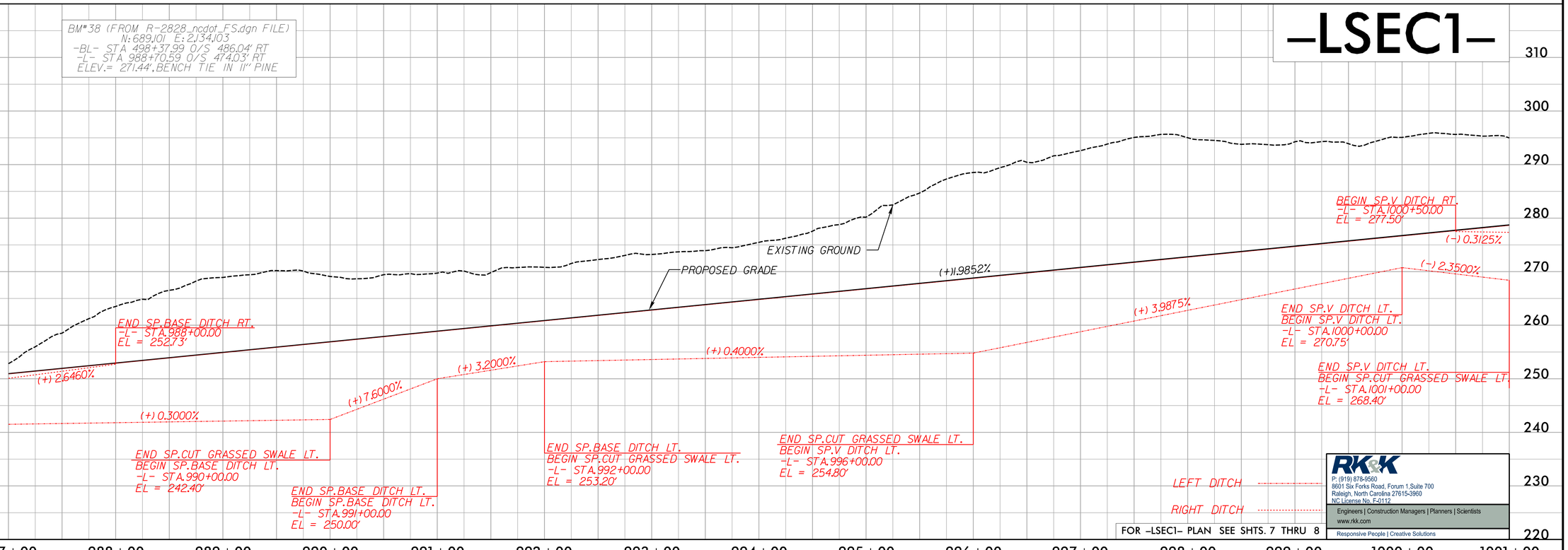
## BRIDGE HYDRAULIC DATA
Sta. 974+79 –LI–

| | | |
|---|---|---|
| DESIGN FREQUENCY | = 100 | YRS |
| DESIGN DISCHARGE | = 2,100 | CFS |
| DESIGN HW ELEVATION | = 218.2 | FT |
| 100 YEAR DISCHARGE | = 2,100 | CFS |
| 100 YEAR FREQUENCY | = 100 | YRS |
| 100 YEAR HW ELEVATION | = 218.2 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 107,500 | CFS |
| OVERTOPPING ELEVATION | = 254.8 | FT |

NORMAL WATER SURFACE ELEV = 216.8 FT
DATE OF SURVEY = 11/2023

SITE 3




FOR –LSEC1– PLAN SEE SHTS. 7 THRU 8

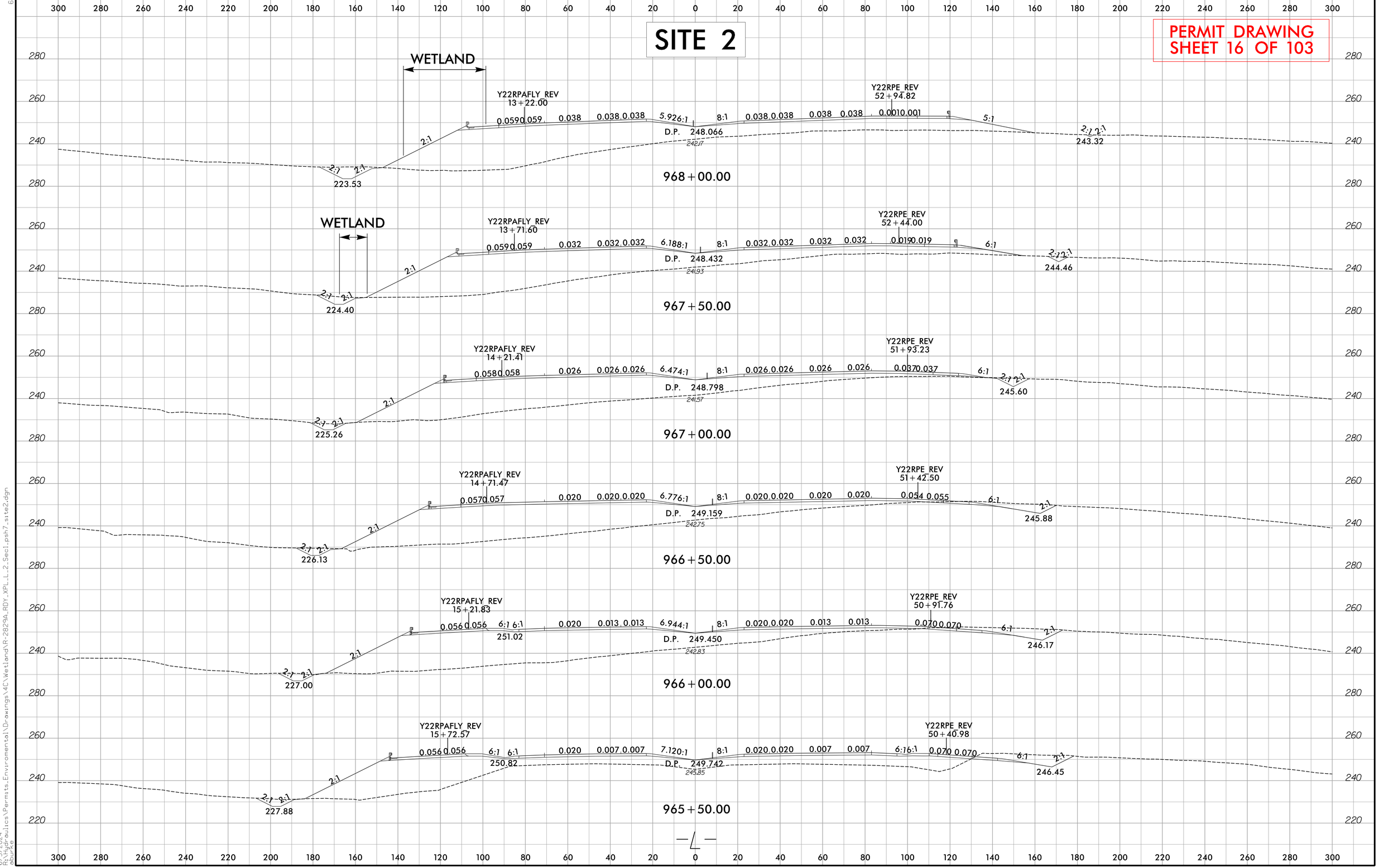
RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
K:\Highways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_Rdy_pf1_40_PSH7_BBPFLb.dgn
Default

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-42 |

PERMIT DRAWING
SHEET 16 OF 103

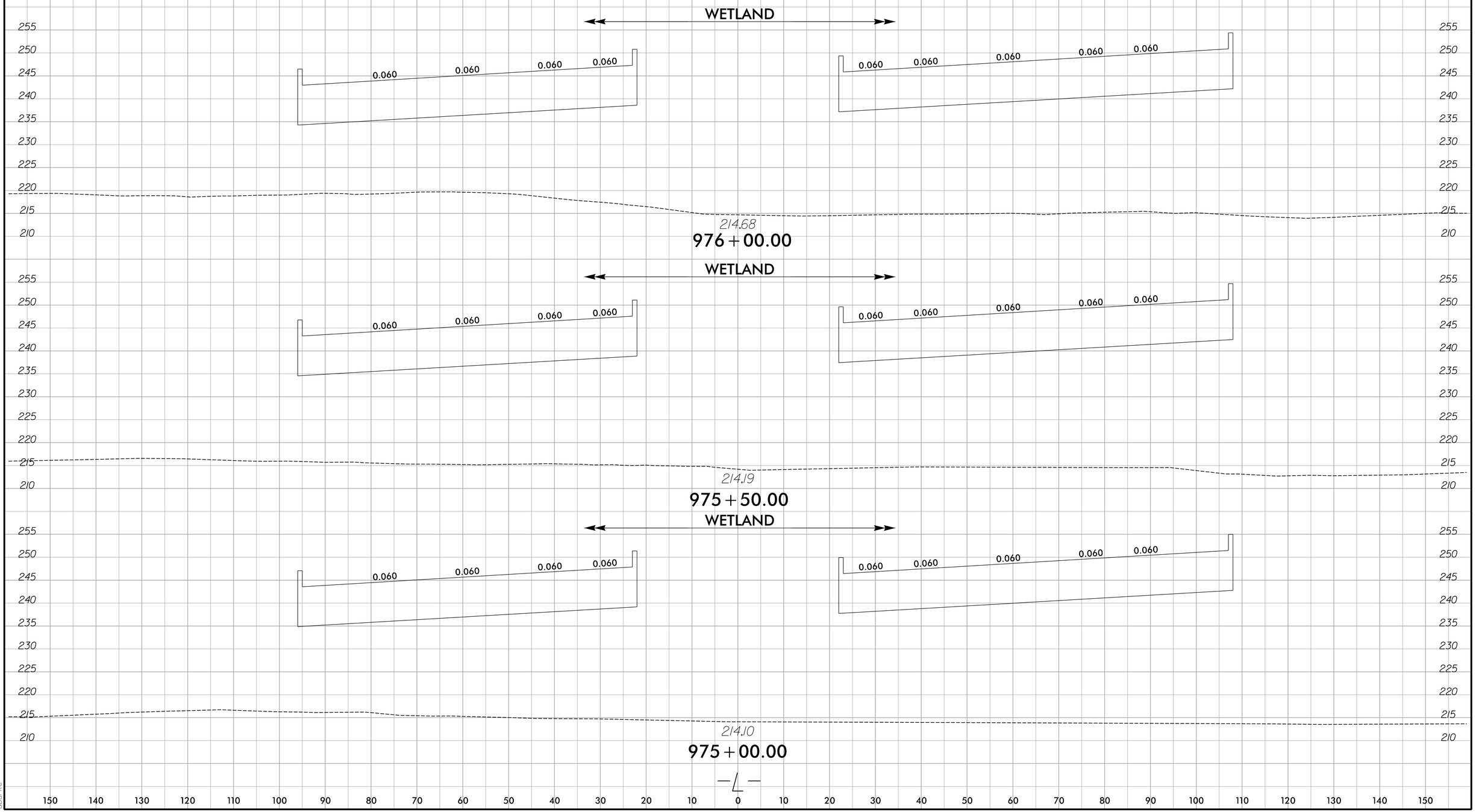
# SITE 2



| 0 5 10 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-46 |

PERMIT DRAWING
SHEET 17 OF 103

# SITE 3




6/5/2024
S:\Highways\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_RDY_XPL_L_2_Sec1.psh7_site3.dgn
dbuie

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 8 |
| 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**

**PERMIT DRAWING SHEET 18 OF 103**

ENGLISH

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSETS

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

JOHN AMAN

## INSET A

0806
Q10 = 43.0cfs
V10 = 1.67fps

0801
Q10 = 4.7cfs
V10 = 0.87fps

15" RCP

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL

MATCHLINE -L- STA. 992+00 SEE SHEET 7

MATCHLINE -L- STA. 1005+00 SEE SHEET 9

NC 540

PROP. WW FENCE

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH SEE DETAIL A

995+00

1000+00

1005+00

15" RCP-III

FS

2GIB-WSS

RW CA

SITE 4

WFY

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

OUTLET STABILIZATION W/CL I RIPRAP SEE DETAIL AI

40 TONS CL I RIPRAP W/75 SY GEOFAB

SWALE
Q10 = 9.83cfs
V10 = 1.83fps

SEE INSET A

0806
Q10 = 43.0cfs
V10 = 1.67fps

0801
Q10 = 4.7cfs
V10 = 0.87fps

15" RCP-III

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL I

FS MIN. ELEV = 278.9

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

HW

LATERAL 4' BASE DITCH SEE DETAIL C

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

DITCH
Q10 = 0.80cfs
V10 = 0.89fps

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

JOHN AMAN

JOHN AMAN

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_08.dgn
dwhite

8/17/99

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSETS 25 0 25 50

F F FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

JOHN AMAN

## INSET A




NAD 83/NA 2011

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 8 |

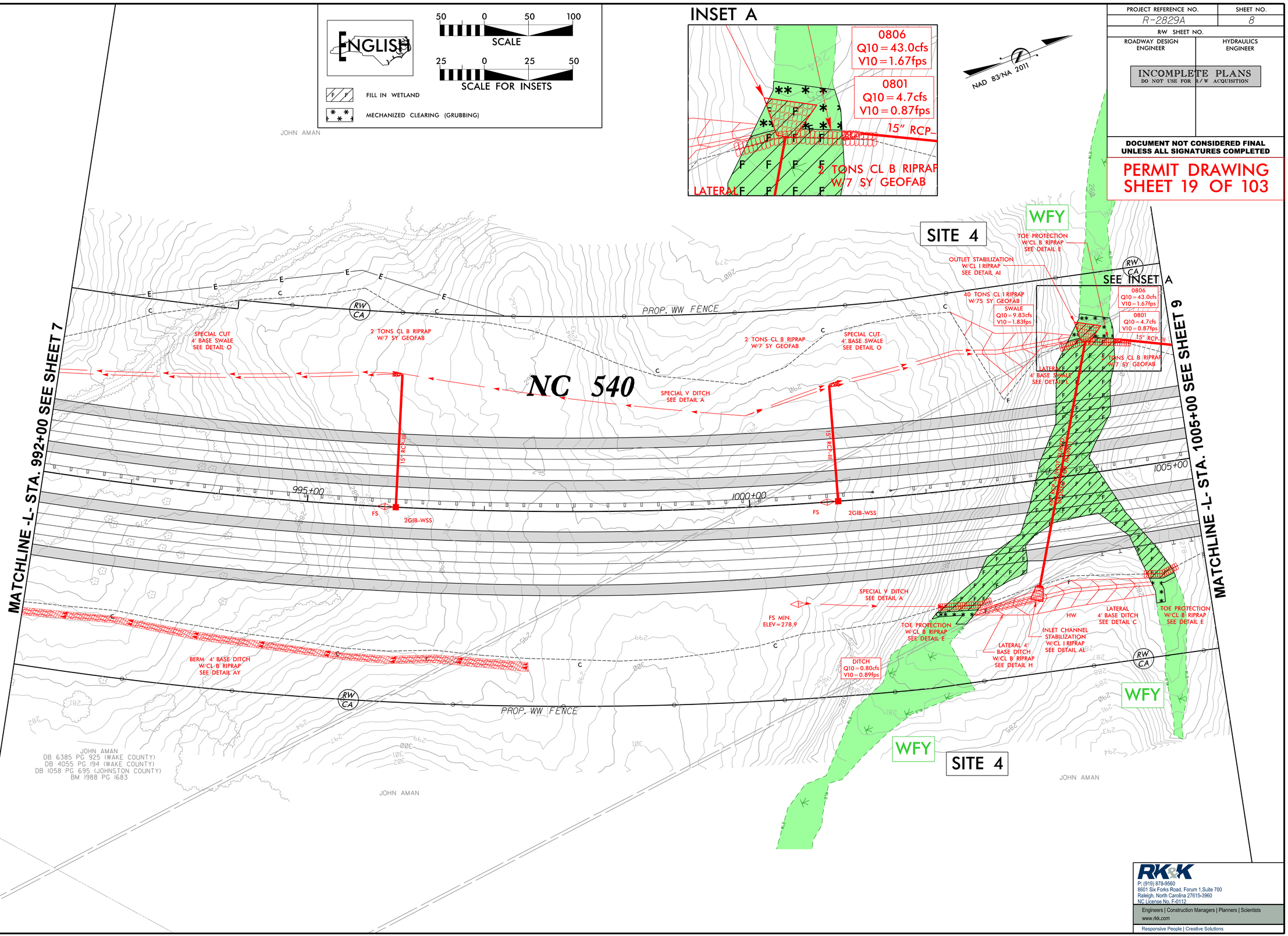
RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

**PERMIT DRAWING SHEET 19 OF 103**




JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

JOHN AMAN

JOHN AMAN


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



8/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_08_con.dgn
dbuie

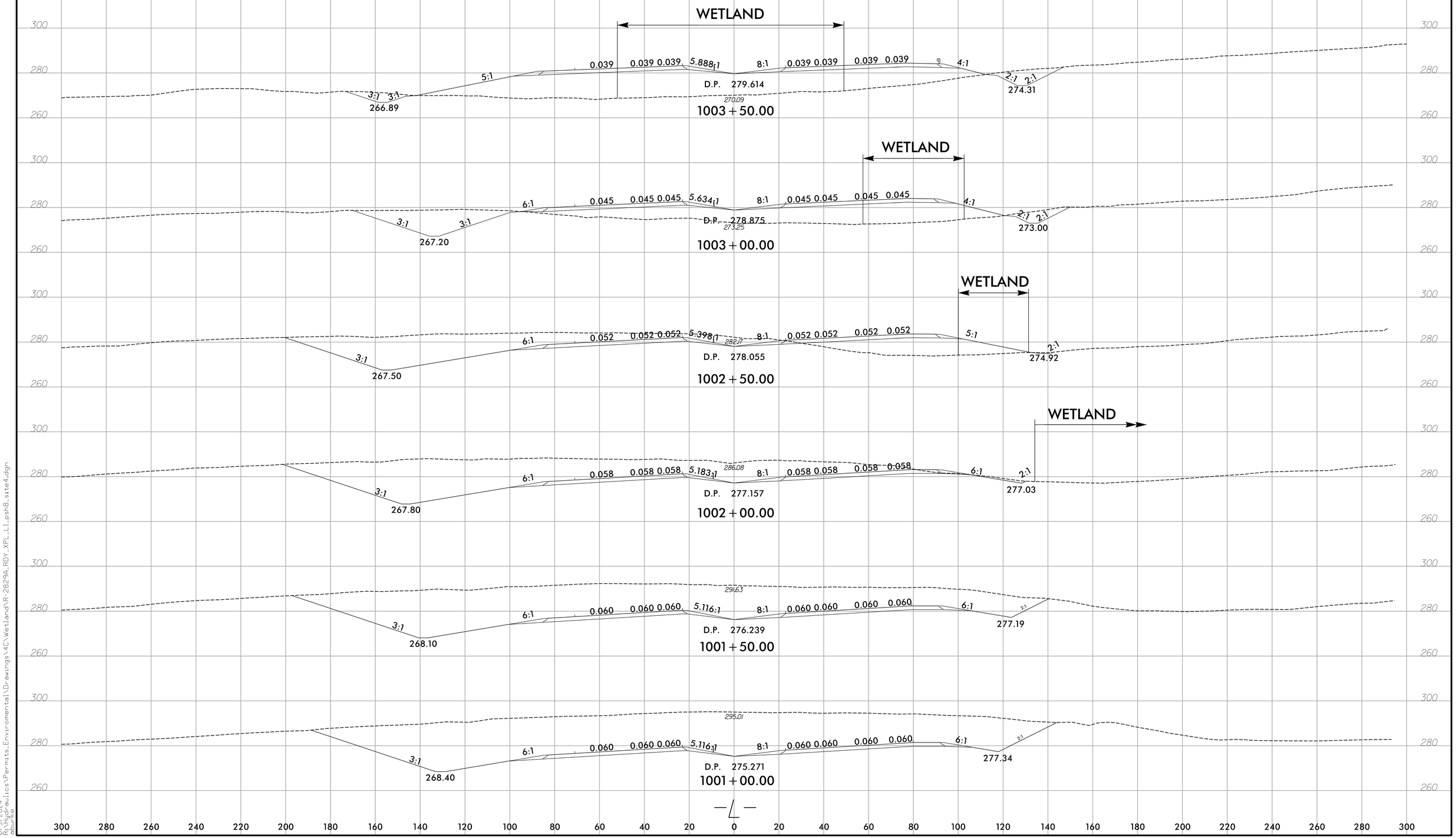
6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-56 |

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

# SITE 4

**PERMIT DRAWING**
**SHEET 20 OF 103**




6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_RDY_XPL_LL.psh8_site4.dgn
dsurge

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 9 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 21 OF 103**

50 0 50 100
SCALE

ENGLISH

| | |
|---|---|
| S S | SURFACE WATER IMPACTS |
| TS TS | TEMPORARY SURFACE WATER IMPACTS |
| F F | FILL IN WETLAND |
| E E | WETLAND EXCAVATION |

NAD 83/NA 2011

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

SFE

SFH

SITE 6

SITE 7

SITE 5

SFE

SFH

SITE 5

SITE 6

SFF

SFG

SITE 7

WFZ

JOHN AMAN

R. GARLAND BURNETTE

SEE INSET A SHEET 23 OF 103

SEE INSET B SHEET 23 OF 103

SEE INSET C SHEET 23 OF 103

C100 OUTLET STABILIZATION 41 TONS CL II RIPRAP W/111 SY GEOFAB SEE DETAIL CA

C200 OUTLET STABILIZATION 95 TONS CL II RIPRAP W/241 SY GEOFAB SEE DETAIL CB

2 TONS CL B RIPRAP W/7 SY GEOFAB

5 TONS CL B RIPRAP W/14 SY GEOFAB

C100 INLET STABILIZATION 24 TONS CL II RIPRAP W/178 SY GEOFAB SEE DETAIL CA

C200 INLET STABILIZATION 368 TONS CL II RIPRAP W/730 SY GEOFAB SEE DETAIL CB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

CHANNEL BLOCK SEE DETAIL BK

FILL REMAINDER OF CHANNEL

GRADE TO DRAIN

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

CHANNEL CHANGE SEE DETAIL AR

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL BB

JB w/MH

15" RCP-III

24" RCP-III

15" CSP

24" CSP W/ELBOWS

2GIB-WSS

2GIB-WSF

2GIA-WSS

2GIA-WSF

FS

1005+00

1010+00

1015+00

12'x8' RCBC BURIED 1.0'

9'-8" RCBC BURIED 1.0'

CAROLINA HEELSPLITTER DARTER HABITAT

BOULDERS


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/5/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_09.dgn
dlucas

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 9 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 22 OF 103**

50 0 50 100
SCALE

ENGLISH

| | |
|---|---|
| S S | SURFACE WATER IMPACTS |
| TS TS | TEMPORARY SURFACE WATER IMPACTS |
| F F | FILL IN WETLAND |
| E E | WETLAND EXCAVATION |

NAD 83/NA 2011

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

SFE

SFH

SITE 5

SITE 6

SITE 7

SFF

SFG

WFZ

JOHN AMAN

R. GARLAND BURNETTE

SEE INSET A SHEET 23 OF 103

SEE INSET B SHEET 23 OF 103

SEE INSET C SHEET 23 OF 103

C100 OUTLET STABILIZATION 41 TONS CL II RIPRAP W/111 SY GEOFAB SEE DETAIL CA

C200 OUTLET STABILIZATION 95 TONS CL II RIPRAP W/241 SY GEOFAB SEE DETAIL CB

2 TONS CL B RIPRAP W/7 SY GEOFAB

5 TONS CL B RIPRAP W/14 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

CHANNEL BLOCK SEE DETAIL BK

FILL REMAINDER OF CHANNEL

GRADE TO DRAIN

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

C100 INLET STABILIZATION 24 TONS CL II RIPRAP W/178 SY GEOFAB SEE DETAIL CA

C200 INLET STABILIZATION 368 TONS CL II RIPRAP W/730 SY GEOFAB SEE DETAIL CB

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL BB

CHANNEL CHANGE SEE DETAIL AR

15" RCP-III

18" RCP-III

24" RCP-III

15" CSP W/ELBOWS

24" CSP W/ELBOWS

2GIB-WSS

2GIB-WSF

2GIA-WSS

2GIA-WSF

JB w/HH

1005+00

1010+00

1015+00

RK&K

P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Responsive People | Creative Solutions

6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_09_con.dgn
dlucas

8/17/99

25 0 25 50

SCALE FOR INSET

ENGLISH

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

NAD 83/NA 2011

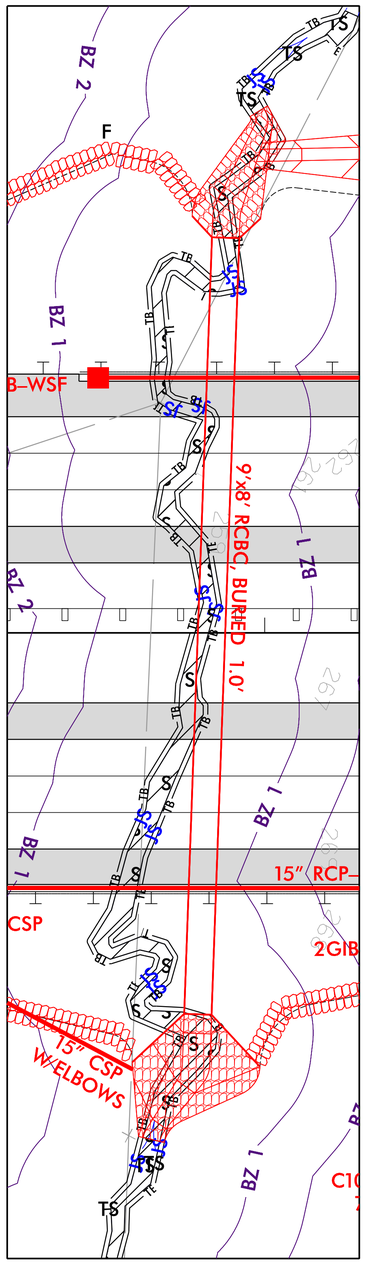
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

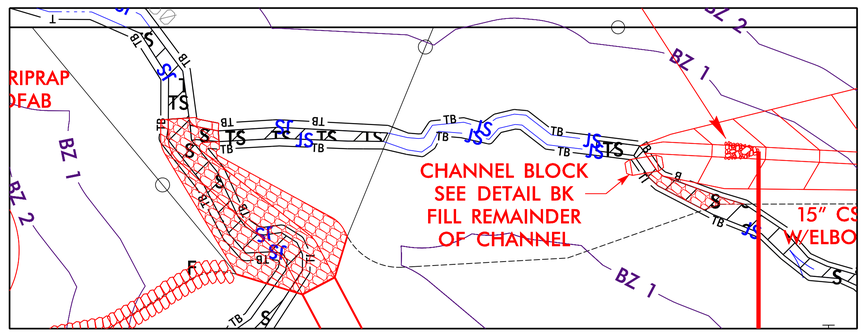
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 23 OF 103**

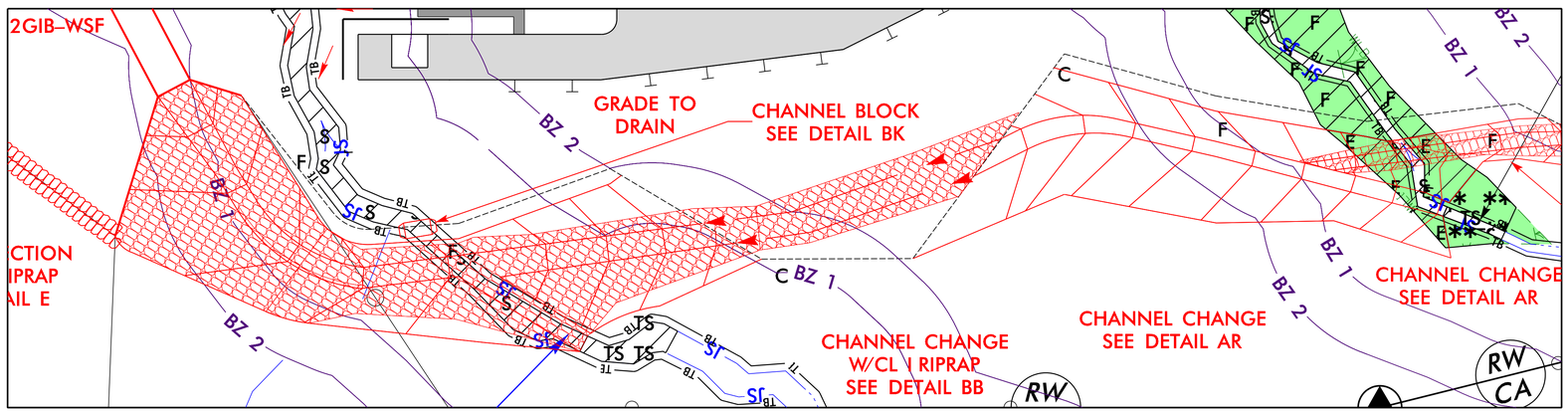
## INSET A




## INSET B




## INSET C





RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
Engineering\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_09_insets.dgn

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

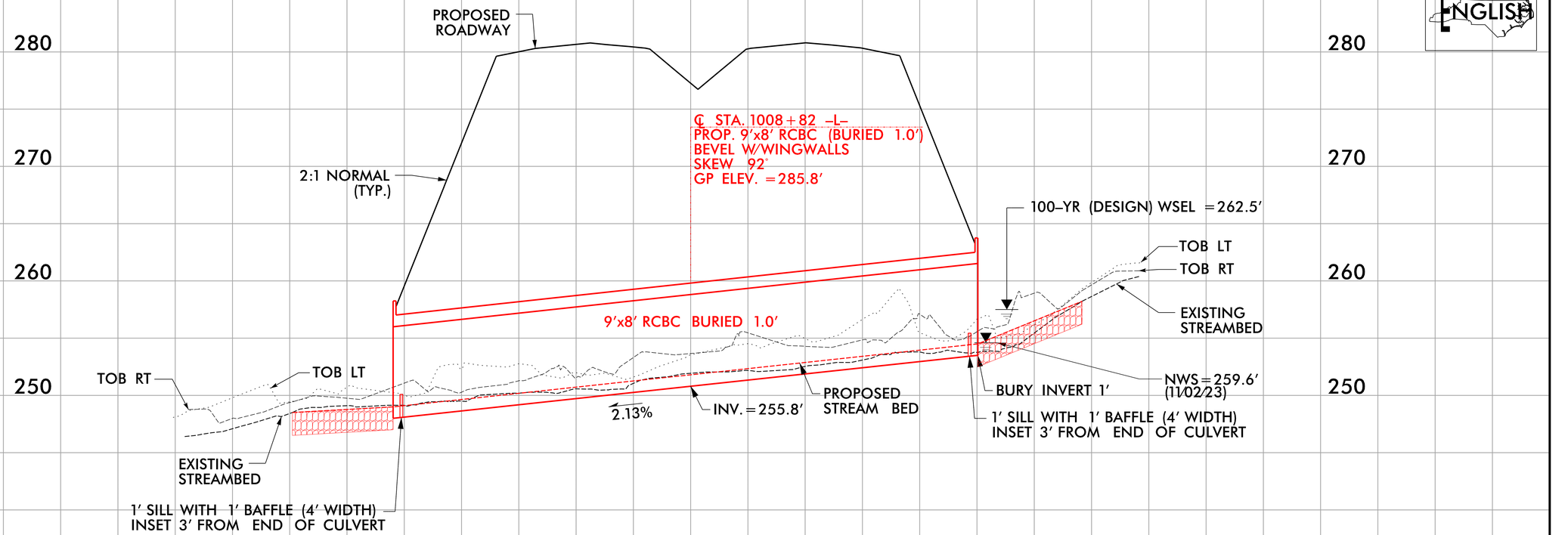
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 24 OF 103

ENGLISH

# SITE 5
# –L1– STA. 1008 + 82




## 9'x8' RCBC
## (Buried 1.0', Length = 258')

8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_09_SITE5_PFL.dgn

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

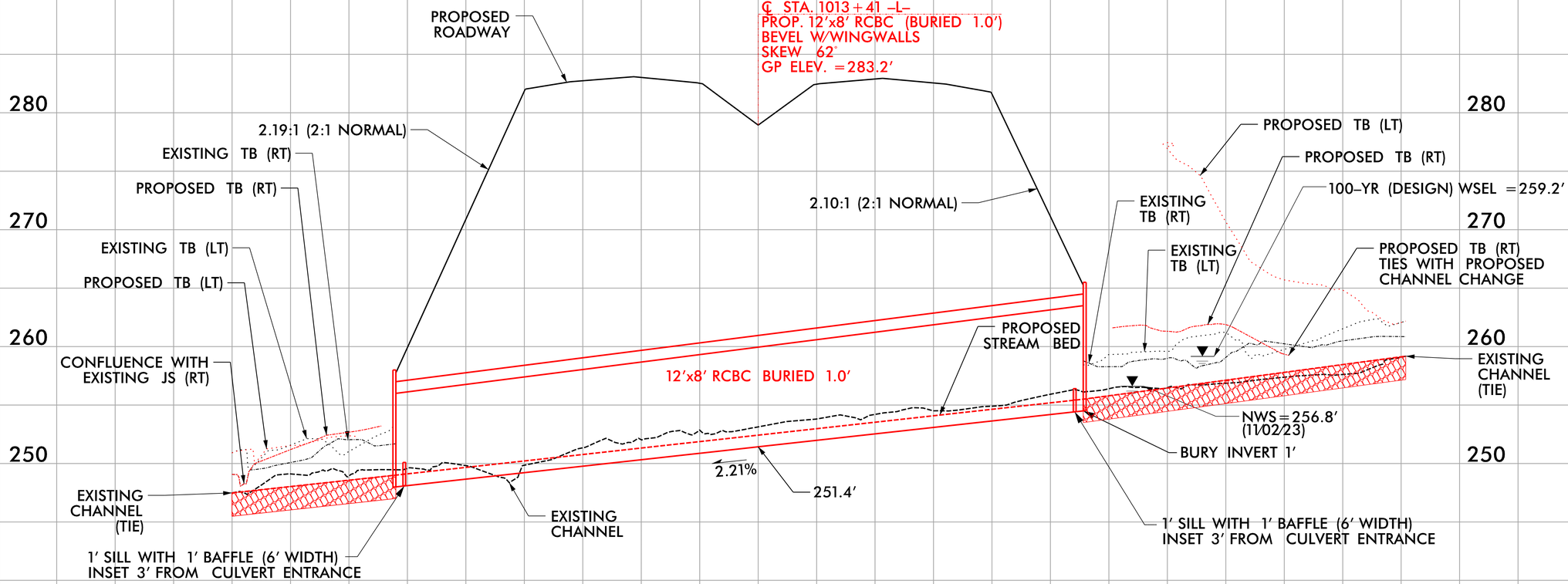
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 25 OF 103

ENGLISH

# SITE 6
# –L1– STA. 1013 + 41



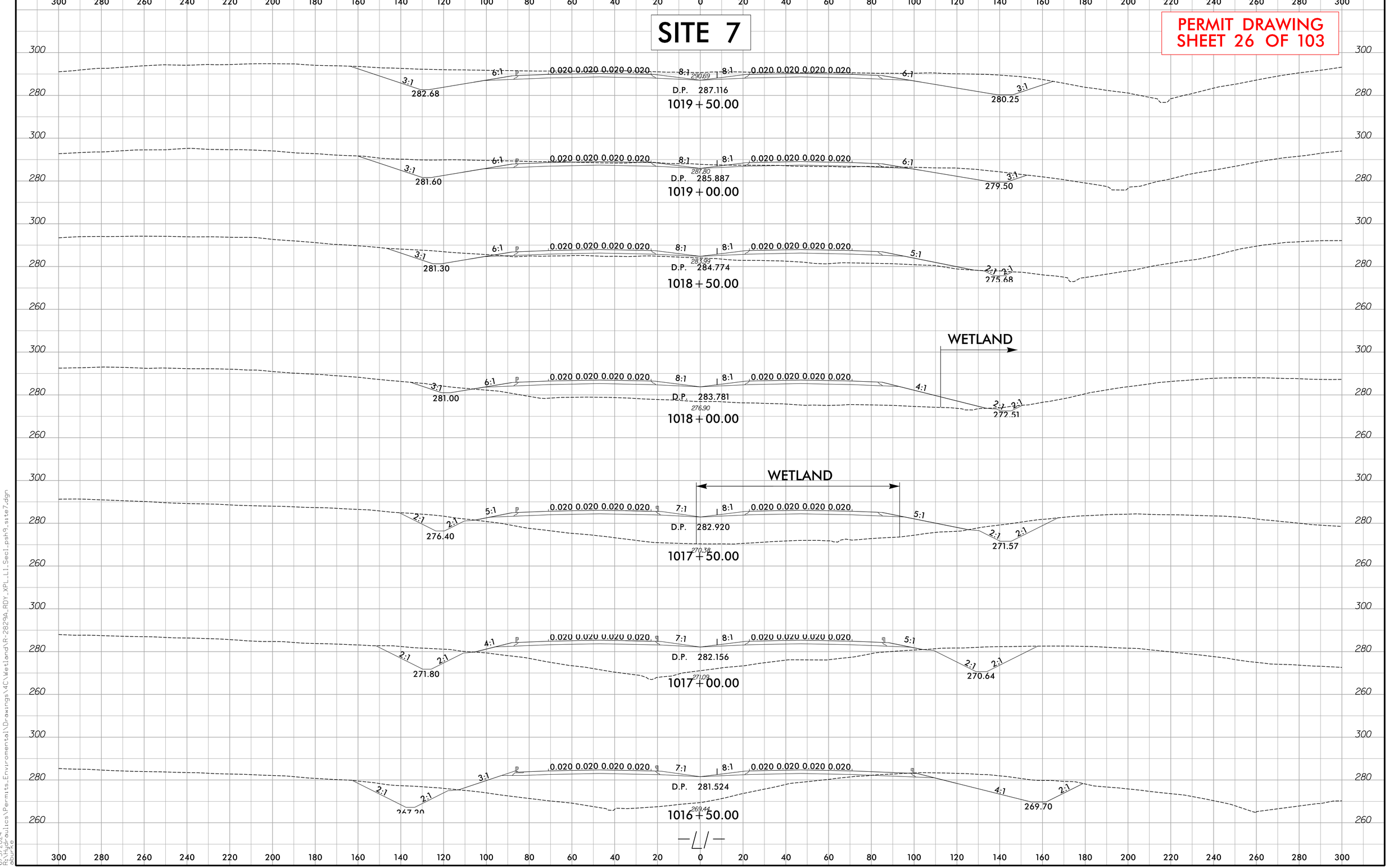

## 12'x8' RCBC
## (Buried 1.0', Length = 294')

8/5/2024
R:\Highways\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_09_SITE6_PFL.dgn

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-64 |

# SITE 7

**PERMIT DRAWING**
**SHEET 26 OF 103**




6/5/2024
R:\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_RDY_XPL_LI_Sec1.psh?_site7.dgn
dbuck

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 10 |
| 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**

**PERMIT DRAWING SHEET 27 OF 103**

NAD 83/NA 2011

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

R. GARLAND BURNETTE

PDE

WGD

WGE

PDQ

SITE 8

SFB

SEE INSET A
SHEET 29 OF 103

1009
Q10 = 18.0cfs
V10 = 1.25fps

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

SWALE
Q10 = 4.00cfs
V10 = 1.63fps

DITCH
Q10 = 15.44cfs
V10 = 1.78fps

STANDARD 4' BASE DITCH SEE DETAIL I

STANDARD 4' BASE DITCH SEE DETAIL I

18 TONS CL I RIPRAP W/30 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

LATERAL 4' BASE SWALE SEE DETAIL L

WGC

2 TONS CL B RIPRAP W/7 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH SEE DETAIL A

STANDARD 4' BASE DITCH SEE DETAIL I

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE = 311.5'

PIPES DO NOT INTERSECT

2GIB-WSF

15" RCP-IV

15" CSP W/ELBOWS

42" RCP-III NOT BURIED UPSIZED FOR MAINT.

18" RCP-IV

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

15" RCP-III 2GIB-WSF

42" RCP-III NOT BURIED UPSIZED FOR MAINT.

1020+00

1025+00

1030+00

FS

2GIB-WSS

JS BEGINS

SEE INSET C ON PERMIT DRAWING 23 OF 103

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

CHANNEL CHANGE SEE DETAIL AR

FS MIN ELEV = 296.0'

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

2GIB-WSS

24" CSP W/ELBOWS

BDO

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

HW

WGB

SITE 8

-Y23RPC- POT Sta. 10+00.00=
-L1- POT Sta. 1030+22.59 (71' RT)

WFZ

SFE

SITE 7

WGA

BZ 1

BZ 2

JS

RW CA

C

F

FS

ENGLISH

SCALE 50 0 50 100

MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

T T TEMPORARY FILL IN WETLAND

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/25/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_10.dgn
dbuie

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 10 |
| 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**

**PERMIT DRAWING SHEET 28 OF 103**

NAD 83/NA 2011

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

R. GARLAND BURNETTE

PDQ

WGE

WGD

SITE 8

INSET A

SEE INSET A SHEET 29 OF 103

SWALE Q10 = 4.00cfs V10 = 1.63fps

SFB

1009 Q10 = 18.0cfs V10 = 1.25fps

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

DITCH Q10 = 15.44cfs V10 = 1.78fps

STANDARD 4' BASE DITCH SEE DETAIL I

15 TONS CL I RIPRAP W/30 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

LATERAL 4' BASE SWALE SEE DETAIL L

WGC

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE = 311.5'

PIPES DO NOT INTERSECT

15" RCP-IV

2GIB-WSF

42" RCP-III NOT BURIED UPSIZED FOR MAINT.

18" RCP-IV

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

15" RCP-III 2GIB-WSF

1020+00

1025+00

1030+00

FS

2GIB-WSS

JS BEGINS

24" CSP W/ELBOWS

SEE INSET C ON PERMIT DRAWING 23 OF 103

CHANNEL CHANGE SEE DETAIL AR

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

FS MIN ELEV = 296.0'

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

WGB

HW

BDO

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

-Y23RPC- POT Sta. 10+00.00= -L1- POT Sta. 1030+22.59 (71' RT)

WFZ

SFE

SITE 7

WGA

ENGLISH

SCALE 50 0 50 100

MECHANIZED CLEARING (GRUBBING)

SURFACE WATER IMPACTS

FILL IN WETLAND

TEMPORARY FILL IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

WETLAND EXCAVATION

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_10_con.dgn
dlucas

8/17/99

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

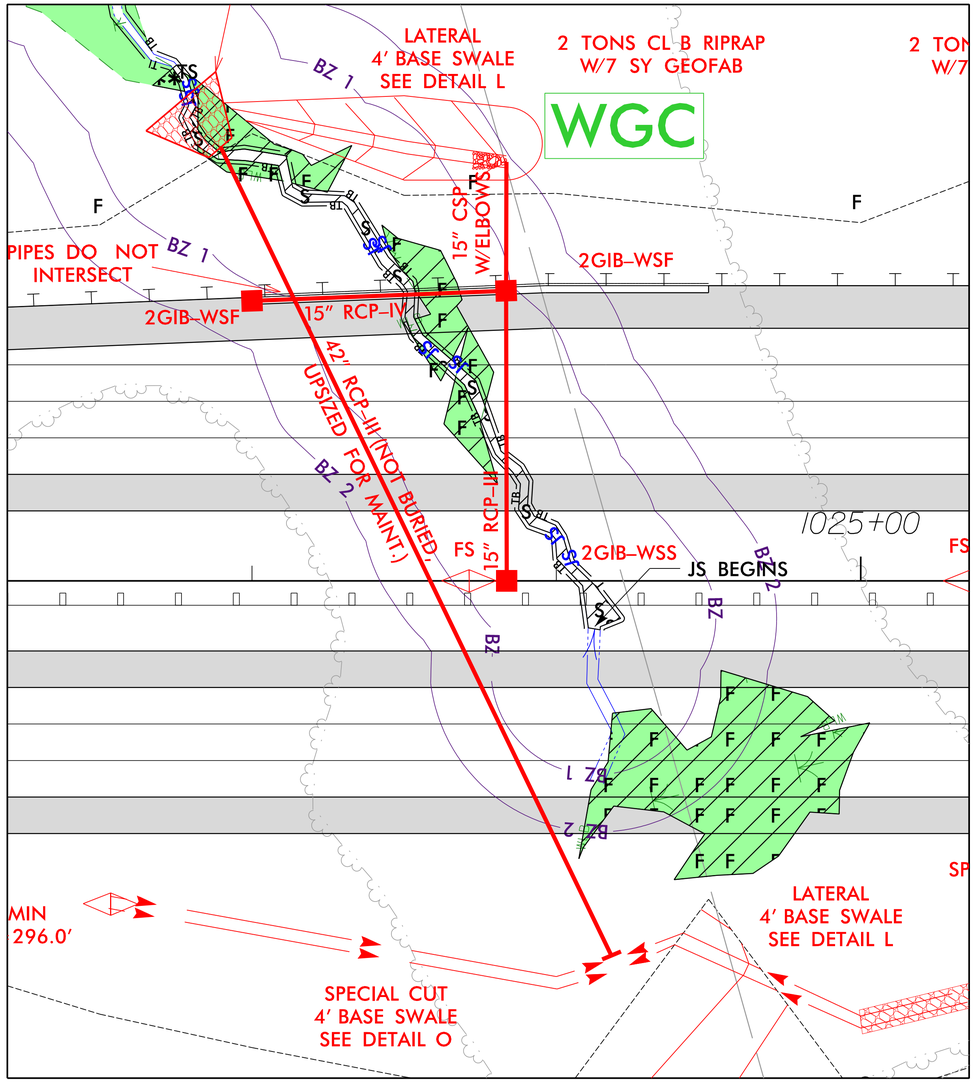
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

**PERMIT DRAWING SHEET 29 OF 103**

NAD 83/NA 2011

# INSET A




ENGLISH

25 0 25 50
SCALE FOR INSET

MECHANIZED CLEARING (GRUBBING)

| | |
|---|---|
| F F | FILL IN WETLAND |
| T T | TEMPORARY FILL IN WETLAND |
| S S | SURFACE WATER IMPACTS |
| TS TS | TEMPORARY SURFACE WATER IMPACTS |
| E E | WETLAND EXCAVATION |


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

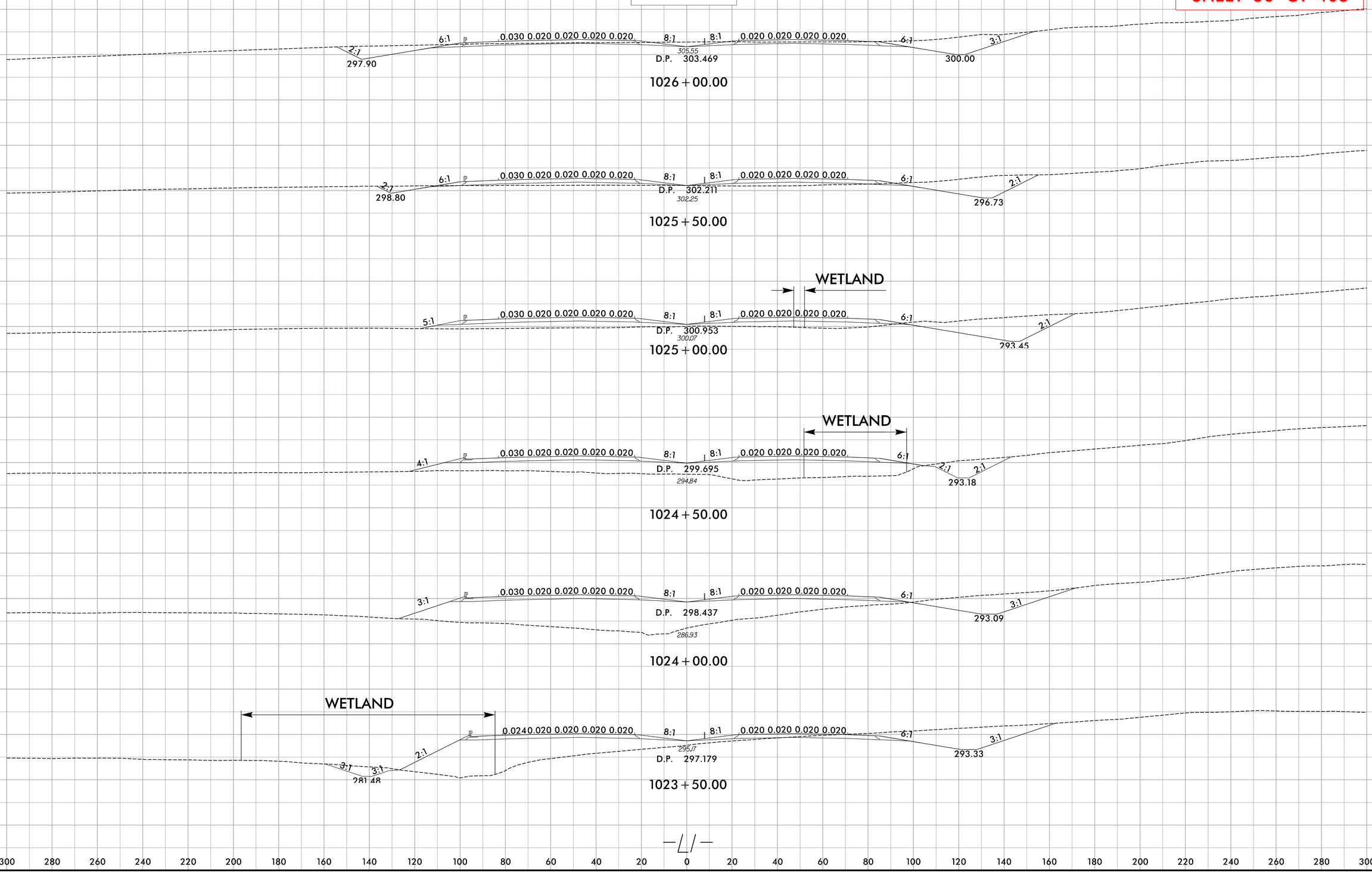

6/5/2024
C:\pwworkingdirectories\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_10_inset.dgn
dbrege

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-66 |

# SITE 8

**PERMIT DRAWING**
**SHEET 30 OF 103**




6/5/2024
R:\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_RDY_XPL_L1_psh10_site8.dgn
site8

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 11 |
| 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 31 OF 103

MATCHLINE -L1- STA. 1032+00 SEE SHEET 10

MATCHLINE -L1- STA. 1061+00 SEE SHEET 12

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 26

SITE 9

SITE 10

SITE 11

SEE INSET A

SEE INSET B

INSET A

INSET B

MATCHLINE -Y23G- STA. 16+00 SEE SHEET 25

MATCHLINE -Y23R- STA. 36+00 SEE SHEET 25

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 29

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 29

ENGLISH

SCALE
100 0 100 200

SCALE FOR INSET
50 0 50 100

P P SURFACE WATER IMPACTS POND
S S SURFACE WATER IMPACTS
T T TEMPORARY FILL IN WETLAND
* * MECHANIZED CLEARING (GRUBBING)
F F FILL IN WETLAND

Additional Taking for Parcel 1002

Additional Taking for Parcel 1002

RKK
P: (919) 870-6950
8601 Six Forks Road | Forum 1, Suite 700
Raleigh, North Carolina 27615-5393
NC Firm License: C-0910
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/2/2024

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 11 |
| 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 32 OF 103

MATCHLINE -L1- STA. 1032+00 SEE SHEET 10

MATCHLINE -L1- STA. 1061+00 SEE SHEET 12

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 26

SITE 9

SITE 10

SITE 11

SEE INSET A

SEE INSET B

INSET A

INSET B

WAAF

WAAE

WGI

WGJ

SFK

PAD

SFA

WGF

WGG

WGM

2GIB-WSF

2GIB-WSS

-Y23RRB-

JS/ENDS

TOE PROTECTION W/CL B RIPRAP SEE DETAIL F

RW CA **

33.57

MATCHLINE -Y23G- STA. 16+00 SEE SHEET 25

MATCHLINE -Y23R- STA. 36+00 SEE SHEET 25

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 29

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 29

Additional Taking for Parcel 1002

Additional Taking for Parcel 1002

ENGLISH

100 0 100 200
SCALE

50 0 50 100
SCALE FOR INSET

P P SURFACE WATER IMPACTS POND

S S SURFACE WATER IMPACTS

T T TEMPORARY FILL IN WETLAND

* * * MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

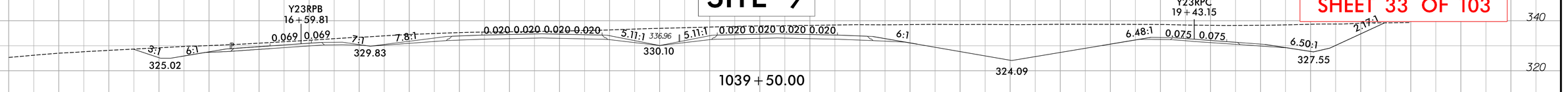
RK&K
P: (919) 870-6950
8601 Six Forks Road | Forum 1, Suite 700
Raleigh, North Carolina 27615-5393
NC Firm License: C-0910
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

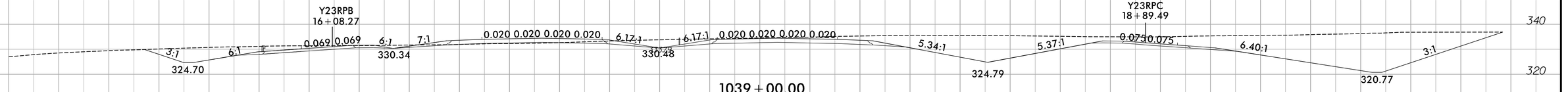
8/2/2024

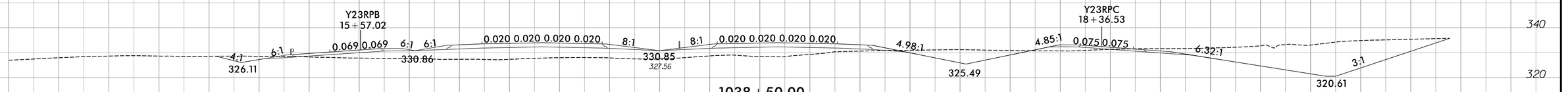
| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-71 |

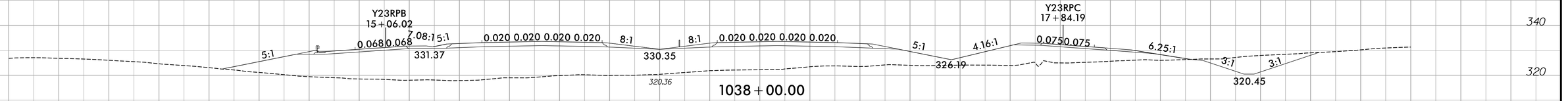
PERMIT DRAWING
SHEET 33 OF 103

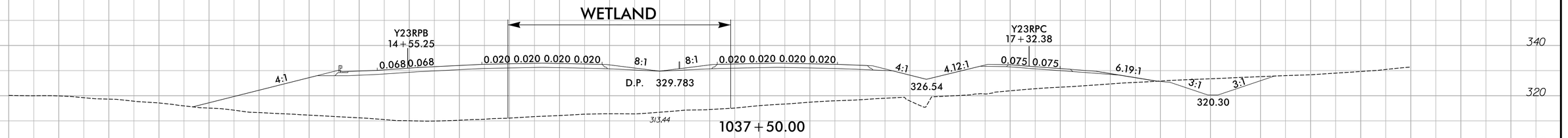
# SITE 9

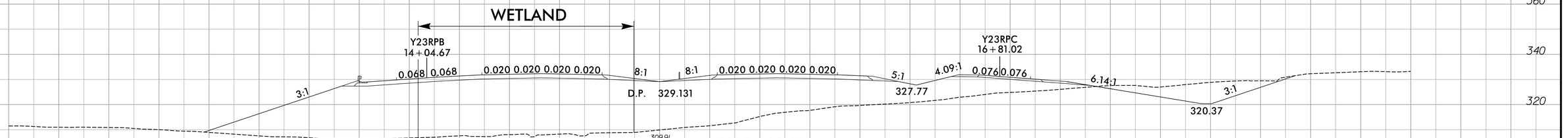


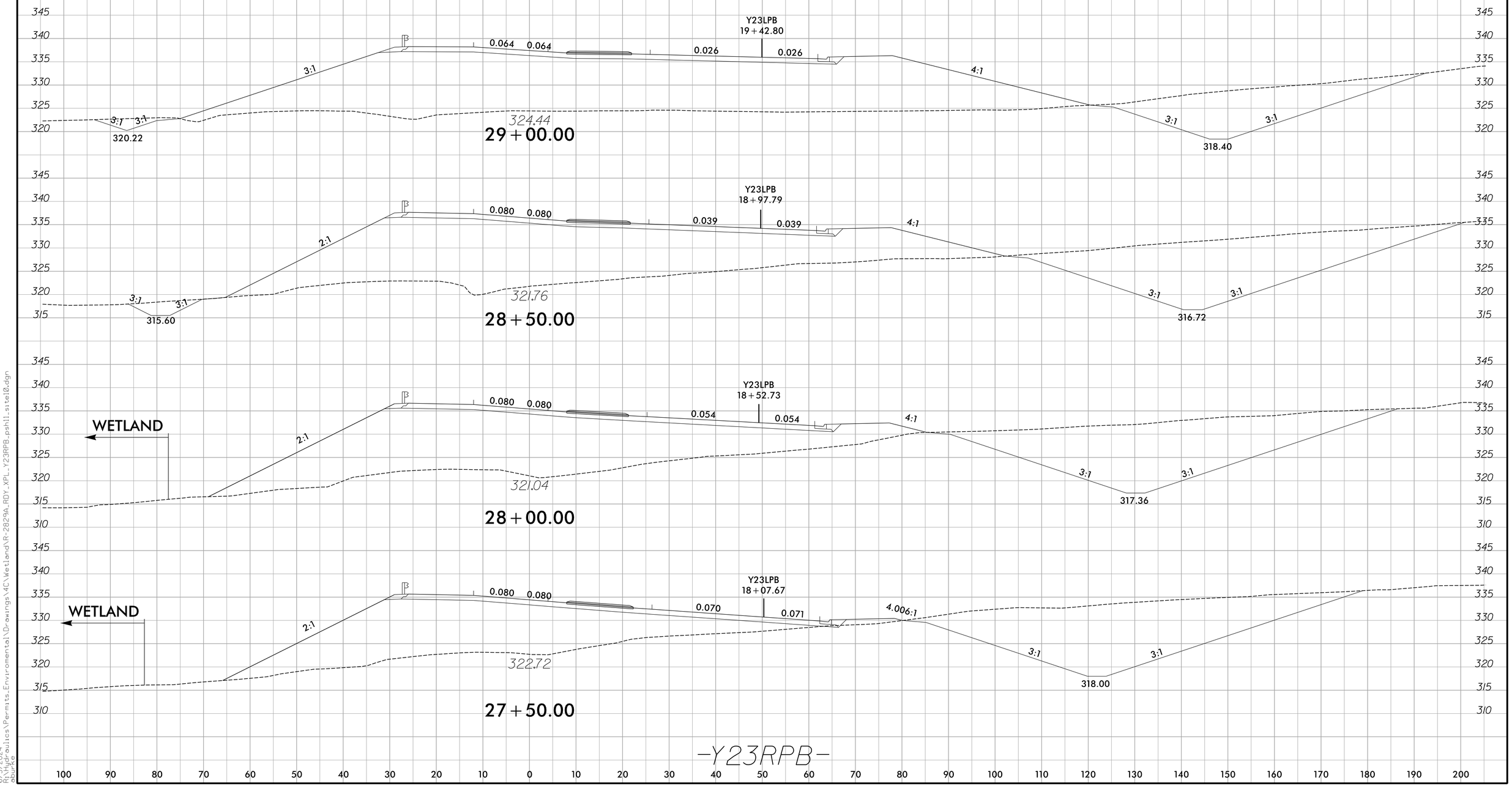



6/23/16

| 0 5 10 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-164 |

# SITE 10

**PERMIT DRAWING**
**SHEET 34 OF 103**




6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_RDY_XPL_Y23RPB_pshl1_site10.dgn
dbuse

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 12 |
| 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**

**PERMIT DRAWING SHEET 35 OF 103**

ENGLISH

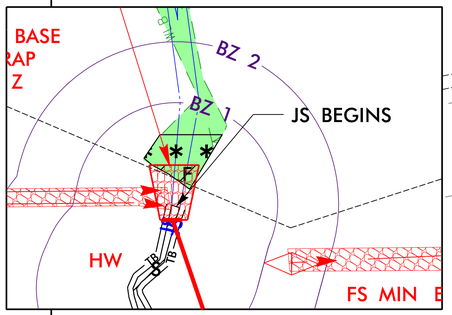
| | |
|---|---|
| F F | FILL IN WETLAND |
| * * * | MECHANIZED CLEARING (GRUBBING) |
| S S | SURFACE WATER IMPACTS |
| TS TS | TEMPORARY SURFACE WATER IMPACTS |

SCALE: 50 0 50 100

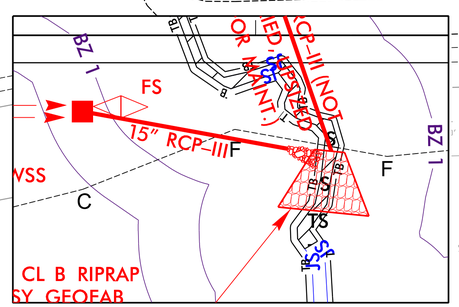
SCALE FOR INSET: 25 0 25 50

NAD 83/NA 2011

INSET A




INSET B




MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

ELIZABETH BURNETTE

SARA EARLY

JOSEPH & VELANCIA BAILEY

CLAYTON PROPERTIES GROUP INC

SITE 12

WGN

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

SFC

SEE INSET A

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

FS MIN ELEV 309.0

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

WGM

SFD

MEDIAN V DITCH SEE DETAIL G

SITE 11

SEE INSET B

SPECIAL CUT SWALE SEE DETAIL O

1 TON CL B RIPRAP W/5 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

20 TON CL I RIPRAP W/39 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD. V DITCH SEE DETAIL D

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

1220
Q10=14.4cfs
V10=1.89fps

WGO

SITE 13

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

2701 HWY 70 E

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

1065+00 1070+00 1075+00 45+00 50+00 55+00

15" RCP-III 18" RCP-III 24" RCP-IV 15" RCP-IV 18" RCP-IV 42" RCP-IV (NOT BURIED UNSHIELD FOR MAINT.)

2GIB-WSS TB 2GIB-NSF 24" CSP W/ELBOWS 18" CSP W/ELBOWS

PUE DUE PDE


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R-2829A_Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_12.dgn
dbuse

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 12 |
| 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**

**PERMIT DRAWING SHEET 36 OF 103**

ENGLISH

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

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

NAD 83/NA 2011

INSET A

INSET B

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

SITE 12

SITE 11

SITE 13

WGN

WGM

WGO

SFC

SFD

SEE INSET A

SEE INSET B

JS BEGINS

FS MIN ELEV 309.0

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

MEDIAN V DITCH SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL O

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

1 TON CL B RIPRAP W/5 SY GEOFAB

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

1220
Q10=14.4cfs
V10=1.89fps

3 TON CL B RIPRAP W/11 SY GEOFAB

20 TON CL I RIPRAP W/39 SY GEOFAB

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL N

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD V DITCH SEE DETAIL D

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

15" RCP-III

18" RCP-III

24" RCP-IV

15" RCP-IV

42" RCP-IV (NOT BURIED UNLESS REQUIRED FOR MAINT.)

18" RCP-IV

24" CSP W/ELBOWS

18" CSP W/ELBOWS

TB 2GIB-NSF

2GIB-WSS

1065+00

1070+00

1075+00

45+00

50+00

55+00

CLAYTON PROPERTIES GROUP INC

SARA EARLY

ELIZABETH BURNETTE

JOSEPH & VELANCIA BAILEY

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

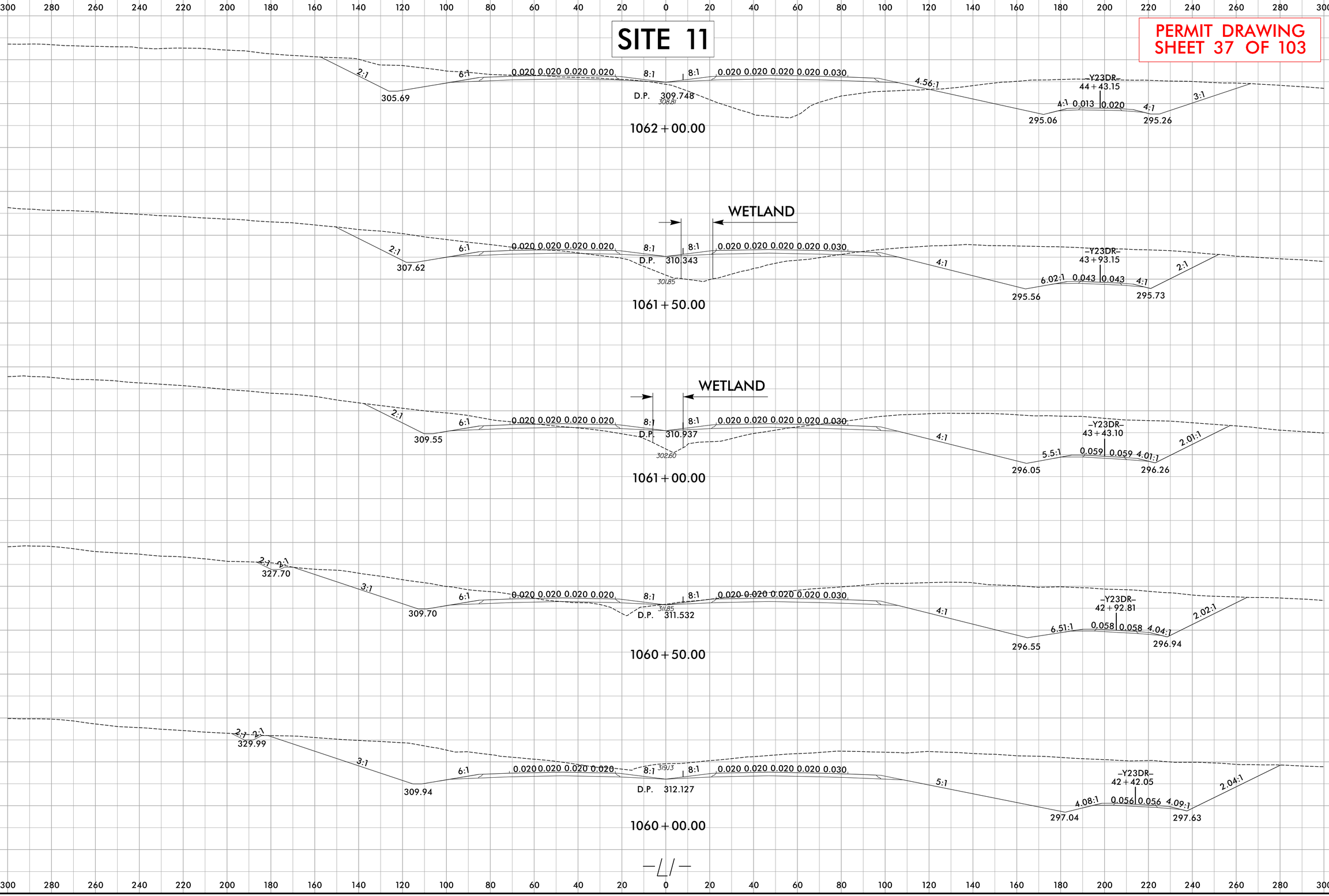

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
Engineering\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_12.dgn

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-79 |

# SITE 11

**PERMIT DRAWING**
**SHEET 37 OF 103**

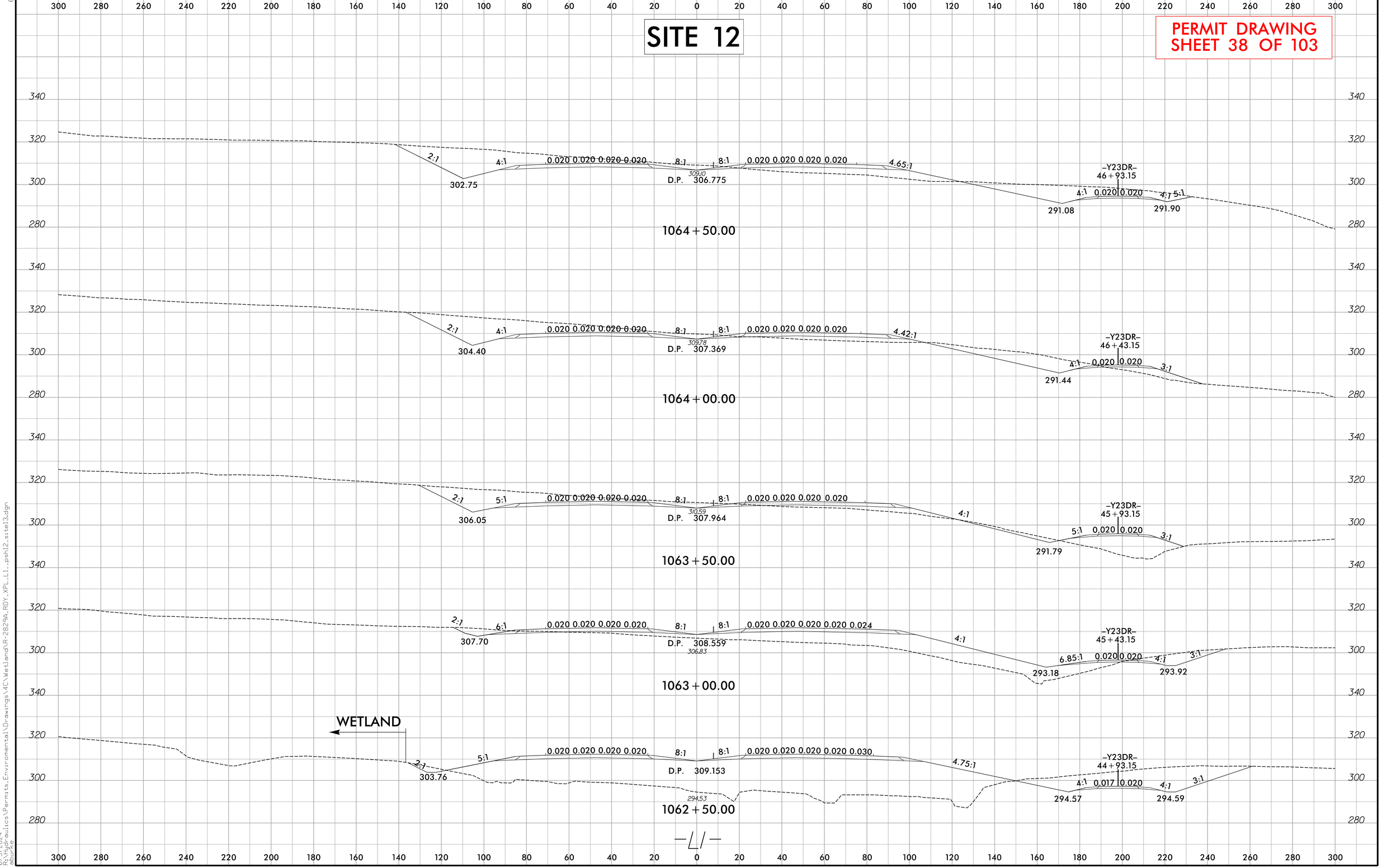



6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_RDY_XPL_LL_pshi2_sitel2.dgn
dsmith

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-80 |

# SITE 12

**PERMIT DRAWING**
**SHEET 38 OF 103**

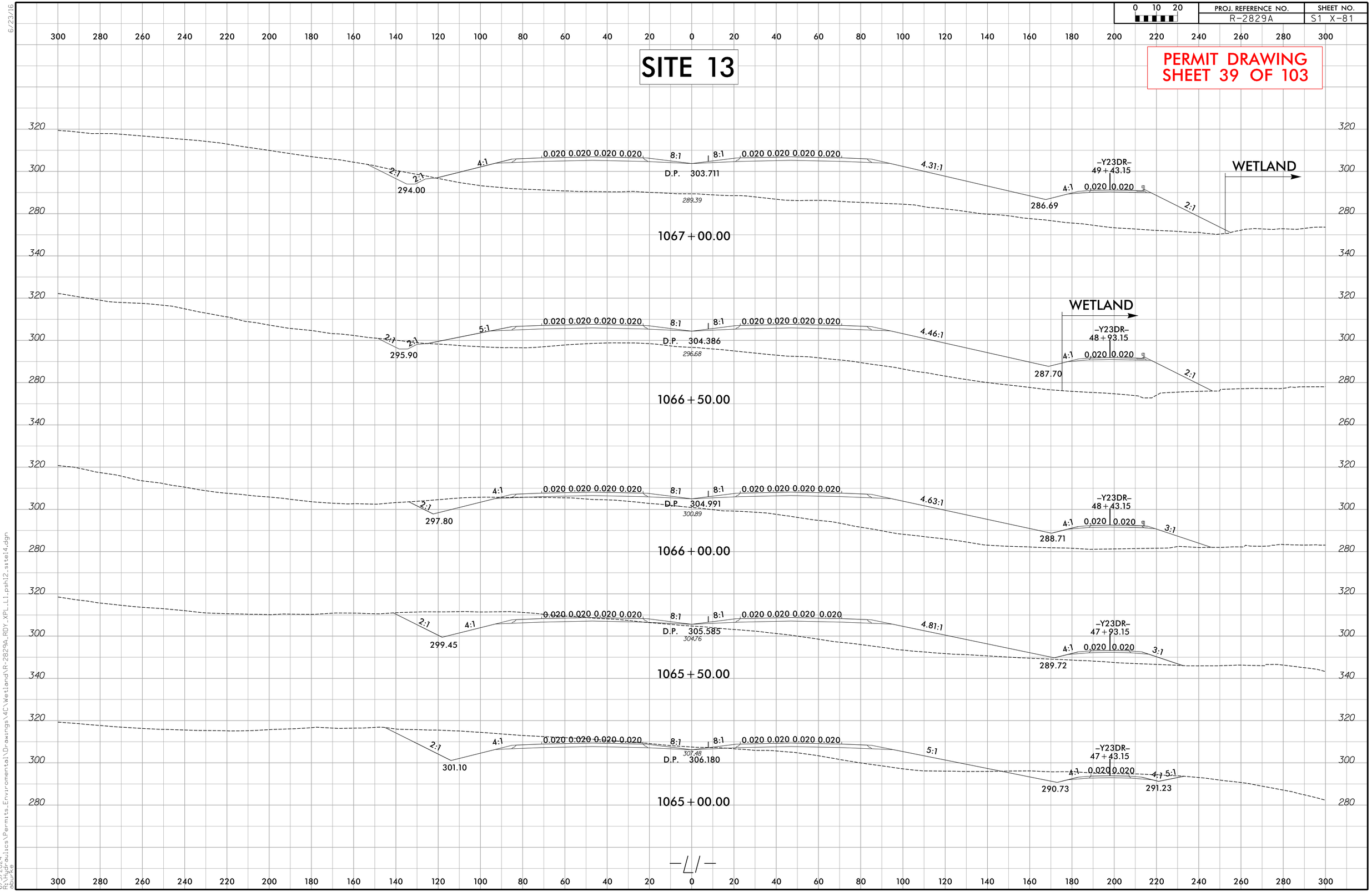


6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-81 |

# SITE 13

**PERMIT DRAWING**
**SHEET 39 OF 103**




6/5/2024
C:\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_RDY_XPL_L1_psh12_site14.dgn
dsmith

8/17/99

ENGLISH

50 0 50 100
SCALE

S/S SURFACE WATER IMPACTS

TS/TS TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 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**

**PERMIT DRAWING SHEET 40 OF 103**

SITE 14

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

CLAYTON PROPERTIES GROUP INC

CAPITAL CITIES COMMUNICATIONS, INC.

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

SP. CUT DITCH W/CL I RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL AB

STD. 4' BASE SWALE SEE DETAIL Q

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

STD. 8' BASE SWALE SEE DETAIL AP

85 MIN ELEV = 235.5

HW

36" RCP-IV BURIED

15 TON CL I RIPRAP W/30 SY GEOFAB

END FENCE

BEG FENCE

15" CSP W/ELBOWS

2GIB-WSS

2GIB-WSF

15" RCP-IV

1 TON CL B RIPRAP W/5 SY GEOFAB

GRADE TO DRAIN

1190 TONS CL II RIPRAP

776 TONS CL II RIPRAP

15" RCP-III

2GIB-WSF 2GIB-WSF 15" CSP W/ ELBOWS

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

BEG FENCE

STD. 4' SWALE SEE DETAIL Q

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

WHITEOAK CREEK

SFV

WGP

1075+00

1080+00

1085+00

1090+00

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
K:\TPDpublics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hgd_4C_psh_13.dgn
dbuffa

8/17/99

ENGLISH

50 0 50 100
SCALE

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 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

PERMIT DRAWING SHEET 41 OF 103

SITE 14

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

CLAYTON PROPERTIES GROUP INC

CAPITAL CITIES COMMUNICATIONS, INC.

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

SP. CUT DITCH W/CL I RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL AB

STD. 4' BASE SWALE SEE DETAIL Q

STD. 8' BASE SWALE SEE DETAIL AP

PS MIN 7 ELEV = 235.5

15" CSP W/ELBOWS

2GIB-WSS

2GIB-WSF

15" RCP-IV

15" RCP-III

1 TON CL B RIPRAP W/5 SY GEOFAB

15 TON CL I RIPRAP W/30 SY GEOFAB

1190 TONS CL II RIPRAP

776 TONS CL II RIPRAP

GRADE TO DRAIN

END FENCE

BEG FENCE

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

WHITEOAK CREEK

SFV

WGP

RW CA

1075+00 1080+00 1085+00 1090+00

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
K:\TPDpublics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hgd_4C_psh_13_con.dgn
dbuffa

5/28/99

# –L1SEC1–

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 43 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM#5 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 696,293 E: 2,135,230
-BL- STA 64+65.00 O/S 371.90' LT
-LI- STA 1059+73.27 O/S 345.52' LT
ELEV.= 345.06', BENCH TIE IN 10" GUM

## PIPE HYDRAULIC DATA
48" RCP @ -LI- STA.1063+00

| | | |
|---|---|---|
| DRAINAGE AREA | = 14.6 | AC |
| DESIGN FREQUENCY | = 100 | YRS |
| DESIGN DISCHARGE | = 67.0 | CFS |
| DESIGN HW ELEVATION | = 307.23 | FT |
| 100 YEAR DISCHARGE | = 67.0 | CFS |
| 100 YEAR HW ELEVATION | = 307.23 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 125.0 | CFS |
| OVERTOPPING ELEVATION | = 310.8 | FT |

## PIPE HYDRAULIC DATA
42" RCP @ -LI- STA.1069+18

| | | |
|---|---|---|
| DRAINAGE AREA | = 8.0 | AC |
| DESIGN FREQUENCY | = 100 | YRS |
| DESIGN DISCHARGE | = 27.9 | CFS |
| DESIGN HW ELEVATION | = 287.42 | FT |
| 100 YEAR DISCHARGE | = 27.9 | CFS |
| 100 YEAR HW ELEVATION | = 287.42 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 88.0 | CFS |
| OVERTOPPING ELEVATION | = 291.6 | FT |

BEGIN BERM BASE DITCH LT.
-LI- STA.1058+00.00
EL = 339.17'

(-) 4.5868%

END BERM BASE DITCH LT.
-LI- STA.1060+50.00
EL = 327.70'

EXISTING GROUND

END SP.BASE DITCH LT.
BEGIN SP.CUT GRASSED SWALE LT.

END SP.CUT GRASSED SWALE LT.
BEGIN SP.CUT BASE DITCH LT.
-L- STA.1061+00.00
EL = 309.55'

PROPOSED GRADE

(-) 11.200%

(-) 3.3800%

PI = 1058+00 LT
EL = 310.66'

(-) 0.4800%

PI = 1060+50.00 LT
EL = 309.70'

(-) 0.3000%

(-) 3.8571%

PI = 1070+15.00
EL = 303.00'
VC = 780'
K = 313
DS = 75 MPH

(-) 11.1893%

(-) 3.3000%

BEGIN MED.V DITCH RT.
-LI- STA.1059+50.00
EL = 299.79'

(-) 5.5000%

(-) 0.9880%

48" RCP

(-) 2.7800%

PI = 1065+00.00 RT.
EL = 290.73'

(-) 0.7067%

END MED.V DITCH RT.
BEGIN MED.V DITCH RT.
-LI- STA.1060+00.00
EL = 297.04'

PI = 1062+50.00 RT.
EL = 294.57'

PI = 1063+50.00 RT.
EL = 291.79'

(-) 3.8000%

(-) 3.6400%

(-) 2.0200%

END SP.V DITCH LT.
BEGIN SP.BASE DITCH LT.
-LI- STA.1057+50.00
EL = 314.04'

END DITCH LT.
BEGIN SP.V DITCH LT.
-L- STA.1062+61.00
EL = 303.34'

BEGIN SP.CUT DITCH LT.
-LI- STA.1063+00.00
EL = 307.70'

END SP.CUT DITCH LT.
BEGIN LAT.BASE DITCH LT.
-LI- STA.1066+00.00
EL = 297.80'

PI = 1067+00.00 LT
EL = 294.00'

PI = 1068+00.00 RT.
EL = 284.67'

(+) 0.3000%

(-) 1.7933%

42" RCP

PI = 1069+50 RT.
EL = 281.98'

BEGIN SP.V DITCH LT.
-LI- STA.1057+00.00
EL = 314.60'

END LAT.BASE DITCH LT.
BEGIN LAT.V DITCH LT.
-LI- STA.1069+50.00
EL = 284.90'

1056+00 1057+00 1058+00 1059+00 1060+00 1061+00 1062+00 1063+00 1064+00 1065+00 1066+00 1067+00 1068+00 1069+00 1070+00

260 270 280 290 300 310 320 330 340 350

–L1SEC1–

PI = 1070+15.00
EL = 303.00'
VC = 780'
K = 313
DS = 75 MPH

BM#6 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 698,091 E: 2,136,341
-BL- STA 87+23.00 O/S 369.10' RT
-LI- STA 1079+60.57 O/S 356.75' RT
ELEV.= 233.77', BENCH TIE IN 20" OAK

(-)3.6842%

EXISTING GROUND

(+) 0.3000%

(+) 0.4667%

(+) 0.5533%

PROPOSED GRADE

(-) 5.9800%

END LAT.V DITCH LT.
BEGIN SP.V DITCH LT.
-LI- STA.1071+50.00
EL = 285.50'

END MED.V DITCH RT.
-LI- STA.1071+00
EL = 282.81'

END SP.V DITCH LT.
BEGIN SP.V DITCH LT.
-LI- STA.1073+00.00
EL = 286.20'

(-) 2.6250%

(-) 4.3333%

END SP.V DITCH LT.
BEGIN LAT.BASE DITCH LT.
-LI- STA.1075+50.00
EL = 271.25'

END LAT.BASE DITCH LT.
BEGIN SP.BASE DITCH LT.
-LI- STA.1077+50.00
EL = 266.00'

END SP.BASE DITCH LT.
BEGIN LAT.BASE DITCH LT.
-LI- STA.1079+00.00
EL = 259.50'

SITE 14

BEGIN BRIDGE
-L1SEC1- STA.1083+72.50+/-

PI = 1082+50.00
EL = 257.50'
VC = 700'
K = 207
DS = 75 MPH

(-)3.6842%

(-)0.3065%

PI= 1083+50.00 LT.
EL= 237.00'

(-) 5.0000%

(-)11.7059%

LEFT DITCH

RIGHT DITCH

FOR –L1SEC1– PLAN SEE SHTS. 11 THRU 13

1070+00 1071+00 1072+00 1073+00 1074+00 1075+00 1076+00 1077+00 1078+00 1079+00 1080+00 1081+00 1082+00 1083+00 1084+00

220 230 240 250 260 270 280 290 300 310

PERMIT DRAWING
SHEET 42 OF 103

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/5/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_Rdy_psh13_pf1A.dgn
dbrunet

8/17/99

# –L1SEC2–

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 44 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

BM#7 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 700,050 E: 2,136,602
-BL- STA 106+96.00 O/S 271.20' RT
-L1- STA 1099+19.29 309.96' RT
ELEV.= 259.88' BENCHTIE IN 12" POPLAR

**PERMIT DRAWING SHEET 43 OF 103**

## BRIDGE HYDRAULIC DATA
Sta.1085+31 -L-

| | | |
|---|---|---|
| DESIGN FREQUENCY | = 100 | YRS |
| DESIGN DISCHARGE | = 3,160 | CFS |
| DESIGN HW ELEVATION | = 238.7 | FT |
| 100 YEAR DISCHARGE | = 3,160 | CFS |
| 100 YEAR FREQUENCY | = 100 | YRS |
| 100 YEAR HW ELEVATION | = 238.7 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 50,000 | CFS |
| OVERTOPPING ELEVATION | = 254.0 | FT |
| NORMAL WATER SURFACE ELEV | = 231.0 | FT |
| DATE OF SURVEY | = 12/2023 | |

SITE 14

℄ STA. 1085+31 -L1-
PROP. 3 SPAN (1@122',1@117',1@78')
OAL 317', 54" FIB
SKEW 110, GP ELEV. 256.8'

END BRIDGE
-L1SEC1- STA.1086+89.50+/-

PROPOSED GRADE

EXISTING GROUND

WHITE OAK CREEK GREENWAY

Q100-YR=238.54' (FEMA)

Q100-YR=238.7' (DESIGN)

NWS 231.0' (12.07.2023)

END BENT

END LAT. BASE DITCH LT.
-L1- STA.1084+35.00
EL = 231.50'

BEGIN BASE GRASSED SWALE LT.
-L1- STA.1084+88.00
EL = 230.35'

BEGIN BASE GRASSED SWALE RT.
-L1- STA.1085+67.00
EL = 231.00'

END BASE GRASSED SWALE LT.
-L1- STA.1086+05.00
EL = 230.00'

1.5:1 NORMAL TO END BENT

END BASE GRASSED SWALE RT.

PI = 1088+82.00 RT.
EL = 238.30'

(+) 3.9706%

(+) 4.1207%

(+) 0.3030%

BEGIN BASE GRASSED SWALE LT.
-L1- STA.1086+70.00
EL = 230.90'

CEASE 3:1 SLOPE MAP (TYP)

(+) 0.5000%

END LAT.GRASSED SWALE RT.
BEGIN LAT.GRASSED SWALE RT.
-L1- STA.1089+50.00
EL = 241.00'

(+) 0.3500%

END BASE GRASSED SWALE LT.
BEGIN LAT.GRASSED SWALE LT.
-L1- STA.1090+00.00
EL = 231.00'

END LAT.GRASSED SWALE RT.
BEGIN SP.V DITCH RT.
-L1- STA.1093+50
EL = 243.00'

(+) 5.7143%

PI= 1093+47.00 LT.
EL= 240.10'

END LAT.GRASSED SWALE LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1092+00.00
EL = 231.70'

END GRADE SECTION 1
BEGIN GRADE SECTION 2
-LSEC2- STA.1094+00.00
EL = 253.98'

BEGIN SP.V DITCH RT.
-L1- STA.1094+00.00
EL = 244.00'

(+) 2.0000%

(+) 5.4117%

END LAT.BASE DITCH LT.
BEGIN SP.V GRASSED SWALE LT.
-L1- STA.1094+00.00
EL = 243.00'

(+) 2.7500%

(+) 1.3889%

PI= 1096+00.00 RT.
EL = 249.50'

(-)10.3065%

PI= 1096+16.00 LT.
EL = 246.00'

(-) 1.7500%

(-) 0.8152%

END SP.V DITCH RT.
BEGIN SP.V GRASSED SWALE RT.
-L1- STA.1097+00.00
EL = 247.75'

(-) 0.8333%

END SP.V GRASSED SWALE LT.
BEGIN LAT.GRASSED SWALE LT.
-L1- STA.1098+00.00
EL = 244.50'

PI = 1098+00.00
EL = 252.75'
VC = 500'
K = 214
DS = 75 MPH

FOR –L1– PLAN SEE SHTS. 13 & 14

1084+00 1085+00 1086+00 1087+00 1088+00 1089+00 1090+00 1091+00 1092+00 1093+00 1094+00 1095+00 1096+00 1097+00 1098+00

310 300 290 280 270 260 250 240 230 220

# –L1SEC2–

## CULVERT HYDRAULIC DATA
8'x7' RCBC NOT BURIED @ -L1- STA.1099+26

| | | |
|---|---|---|
| DRAINAGE AREA | = 0.12 | SQ MI |
| DESIGN FREQUENCY | = 100 | YRS |
| DESIGN DISCHARGE | = 170 | CFS |
| DESIGN HW ELEVATION | = 248.4 | FT |
| 100 YEAR DISCHARGE | = 170 | CFS |
| 100 YEAR HW ELEVATION | = 248.4 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 400 | CFS |
| OVERTOPPING ELEVATION | = 251.2 | FT |

END SP.V GRASSED SWALE RT.
BEGIN LAT.GRASSED SWALE RT.
-L1- STA.1098+50.00
EL = 246.50'

END LAT.GRASSED SWALE RT.
-L1- STA.1098+83.00
EL = 245.97'

END LAT.GRASSED SWALE RT.
BEGIN SP.BASE DITCH RT.
-L1- STA.1100+00.00
EL = 246.35'

PI = 1098+00.00
EL = 252.75'
VC = 500'
K = 214
DS = 75 MPH

(+)2.0294%

8' x 7' RCBC

(+) 0.4118% (+) 0.4287%

(-) 1.6061%

(-) 0.9375%

PI= 1099+17 RT.
EL = 246.00'

BEGIN LAT.GRASSED SWALE RT.
-L1- STA.1099+00.00
EL = 245.93'

END LAT.GRASSED SWALE LT.
-L1- STA.1098+80.00
EL = 243.75'

END SP.V GRASSED SWALE LT.
BEGIN LAT.GRASSED SWALE LT.
-L1- STA.1098+00.00
EL = 244.50'

(+) 1.5600%

(+) 8.6500%

END SP.V GRASSED SWALE RT.
-L1- STA.1101+50.00
EL = 255.78'

END SP.BASE DITCH RT.
BEGIN SP.V GRASSED SWALE RT.
-L1- STA.1101+00.00
EL = 255.00'

PI = 1106+50.00
EL = 270.00'
VC = 850'
K = 363
DS = 79 MPH

(+)2.0294%

(-)0.3095%

(-) 2.1800%

BEGIN LAT.V DITCH RT.
-L1- STA.1111+50.00
EL = 263.36'

FOR –L1– PLAN SEE SHTS. 14 & 15

STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1098+00 1099+00 1100+00 1101+00 1102+00 1103+00 1104+00 1105+00 1106+00 1107+00 1108+00 1109+00 1110+00 1111+00 1112+00

310 300 290 280 270 260 250 240 230 220

8/5/2024
R-2829A_Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_Rdy_psh13_pl18.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 14 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 44 OF 103**

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

# INSET A

PROTECTION W/CL B RIP RAP SEE DETAIL E

TOE W/C SE

15" RCP-III 2GIB-WSF

CAPITAL CITIES COMMUNICATIONS, INC.

N 82°57'19" E 405.28'

SITE 15 WGR

STD. 8' BASE SWALE SEE DETAIL AP

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

INV OUT = 240.1

SPECIAL 4' BASE SWALE SEE DETAIL O

24" CSP W/ELBOWS 2GIB-WSF 15" RCP-III 2GIB-WSF

24" RCP-IV

SWALE V10=1.9 FT/S Q10=3.6 CFS

2 TON CL B RIPRAP W/7 SY GEOFAB

SPECIAL 4' BASE DITCH SEE DETAIL AA

C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

PROP. WW FENCE

SEE INSET A

GRADE TO DRAIN

15" CSP W/ELBOWS 2GIB-WSF

15" RCP-IV 2GIB-WSF

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

JS ENDS

1100+00

1090+00

1095+00

-L1-

15" RCP-III

FS

2GIB-WSS

18" RCP-III

SEE INSET B

SPECIAL V DITCH SEE DETAIL A

GRADE TO DRAIN

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL 4' BASE SWALE SEE DETAIL L

PROP. WW FENCE

TDE

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

SFR WGR

SITE 15

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

CAPITAL CITIES COMMUNICATIONS, INC.

CAPITOL BROADCASTING COMPANY, INC.

**MATCHLINE -L1- STA. 1089+00 SEE SHEET 13**

**MATCHLINE -L1- STA. 1100+50 SEE SHEET 15**

# INSET B

ENGLISH

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

SCALE: 50 0 50 100

SCALE FOR INSET: 25 0 25 50


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
Hydraulics
dwg


...Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_14.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 14 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

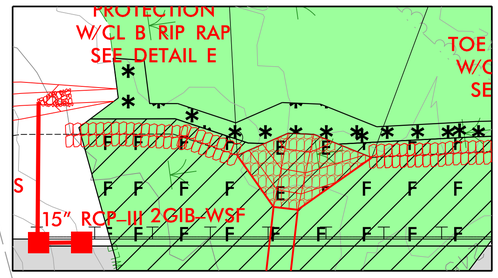
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 45 OF 103**

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

## INSET A




SITE 15 WGR

MATCHLINE -L1- STA. 1089+00
SEE SHEET 13

MATCHLINE -L1- STA. 1100+50
SEE SHEET 15

CAPITAL CITIES COMMUNICATIONS, INC.

STD. 8' BASE SWALE SEE DETAIL AP

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

PDE

RW CA

INV OUT = 240.1

SPECIAL 4' BASE SWALE SEE DETAIL O

24" CSP W/ELBOWS

2GIB-WSF

15" RCP-III

24" RCP-N

1090+00

1095+00

1100+00

-L1-

TL-3

FS

2GIB-WSS

18" RCP-III

JS ENDS

SWALE V10=1.9 FTS Q10=3.6 CFS

2 TON CL B RIPRAP W/7 SY GEOFAB

SPECIAL 4' BASE DITCH SEE DETAIL AA

C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

PROP. WW FENCE

SEE INSET A

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

GRADE TO DRAIN

15" CSP W/ELBOWS

15" RCP-IV 2GIB-WSF

SEE INSET B

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

TDE

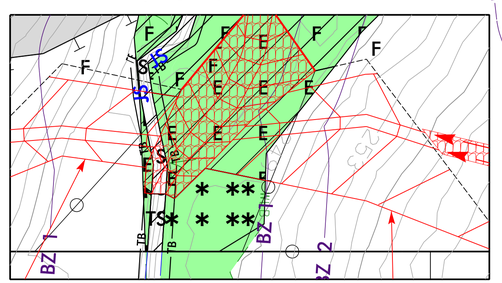
SFR WGR

SITE 15

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

CAPITOL BROADCASTING COMPANY, INC.

## INSET B




ENGLISH

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

SCALE: 50 0 50 100

SCALE FOR INSET: 25 0 25 50


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
Engineering\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_14_con.dgn

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|

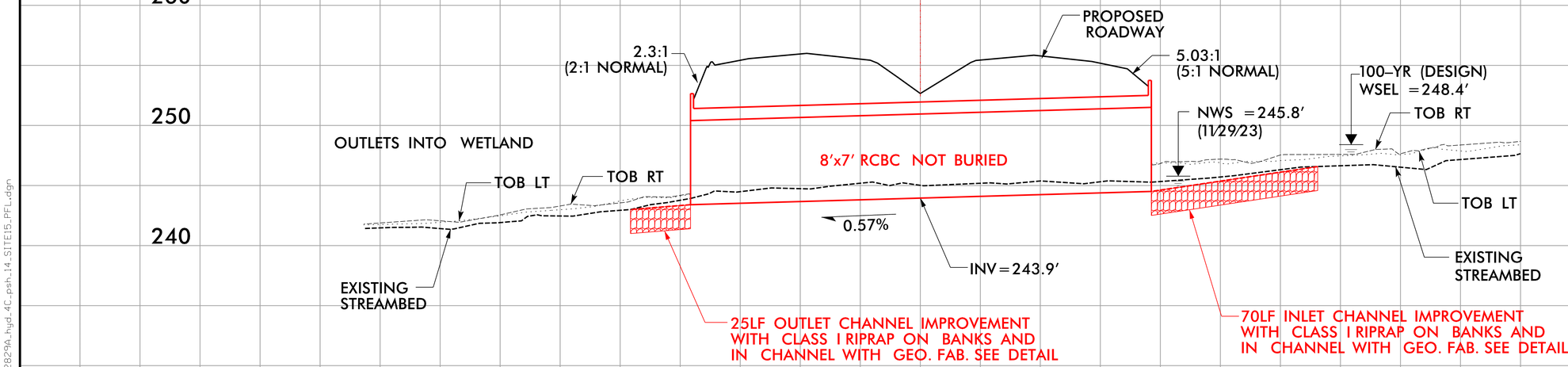
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 46 OF 103

ENGLISH

# SITE 15
# –L1– STA. 1099+00




## 8'x7' RCBC
## (Not Buried, Length =192')

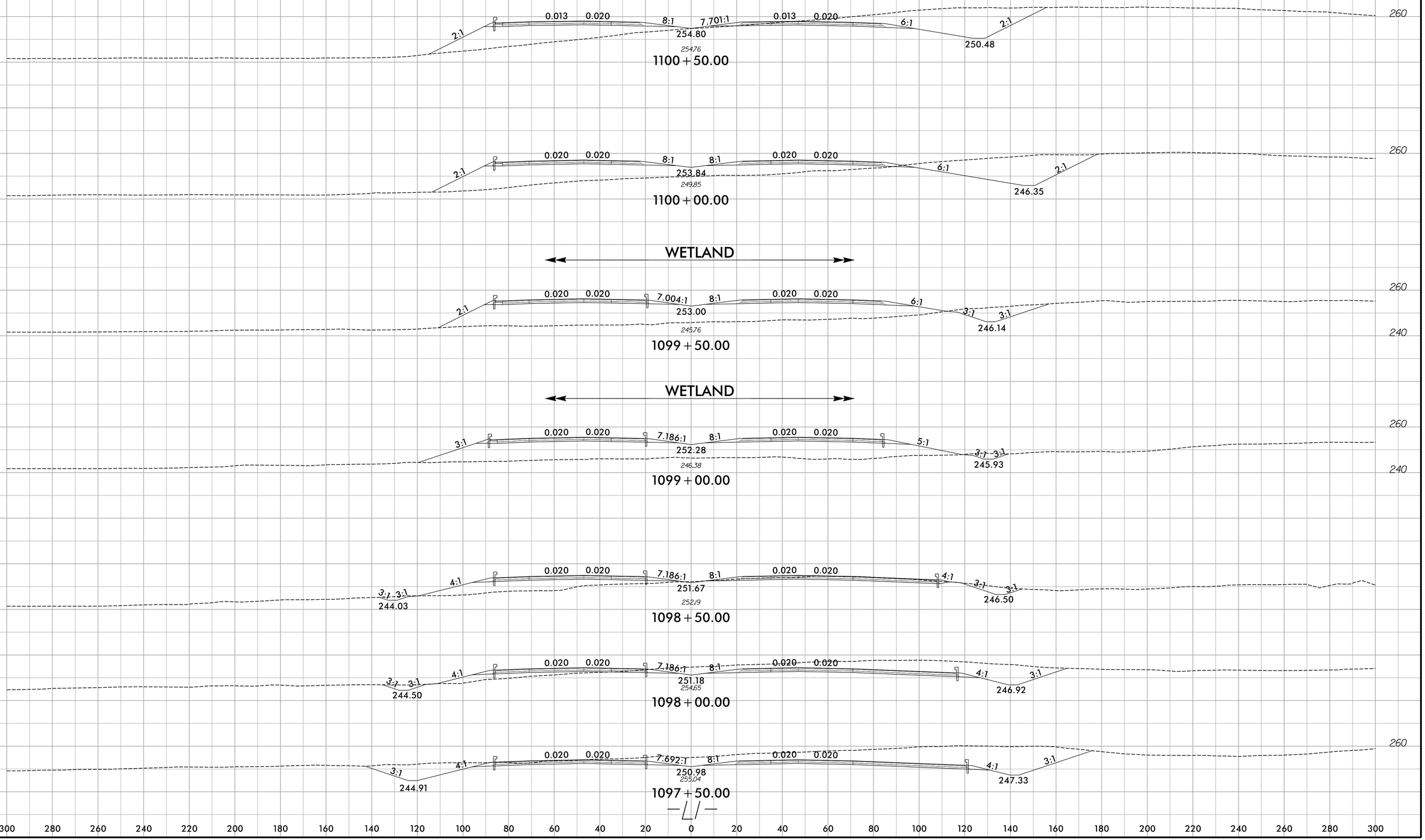
8/5/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hgd_4C_psh_14_SITE15_PFL.dgn

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-2 |

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

# SITE 15

**PERMIT DRAWING**
**SHEET 47 OF 103**



8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 15 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 48 OF 103**

INSET A

NC DEPARTMENT OF TRANSPORTATION

BOBBY & MARGARET RAYNOR

NAD 83/NA 2011

SITE 15

WGR

SITE 16

WGR

SFN

WGR

NC 540

ENERGY DISSIPATOR BASIN SEE DETAIL BS

DISSIPATOR V10=1.0 FT/S Q10=30.0 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)

SP. DET. 2GIB-WSF

36" RCP-III (UPSIZED FOR MAINT.)

2GIA-WSS

1105+00

1110+00

-L1-

C400 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CD

SEE INSET A

JS ENDS

2GIB-WSS

15" RCP-III

24" RCP-IV

30" CSP W/ ELBOWS

SPECIAL CUT 4' SWALE SEE DETAIL O

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BERM DITCH SEE DETAIL BE

BDO

BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY

BERM DITCH W/CL B RIPRAP SEE DETAIL X

SPECIAL V DITCH SEE DETAIL A

18" CSP W/ELBOWS

5 TON CL B RIPRAP W/14 SY GEOFAB

FS MIN ELEV=272.0

BDO 3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE V10=1.8 FT/S Q10=21.5 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

WGS

SITE 17

APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR

CAPITOL BROADCASTING COMPANY, INC.

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

MATCHLINE -L1- STA. 1100+50 SEE SHEET 14

MATCHLINE -L1- STA. 1114+00 SEE SHEET 16

ENGLISH

SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


6/5/2024
R-2829A_hyd_4C_psh_15.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 15 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 49 OF 103**

INSET A

NC DEPARTMENT OF TRANSPORTATION

BOBBY & MARGARET RAYNOR

NAD 83/NA 2011

SITE 15

WGR

SITE 16

WGR

SFN

NC 540

ENERGY DISSIPATOR BASIN SEE DETAIL BS

DISSIPATOR V10=1.0 FTS Q10=30.0 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)

SP. DET. 2GIB-WSF

36" RCP-III (UPSIZED FOR MAINT.)

2GIA-WSS

1105+00

1110+00

C400 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CD

SEE INSET A

JS ENDS

2GIB-WSF

15" RCP-III

24" RCP-IV

30" CSP W/ELBOWS

SPECIAL CUT 4' SWALE SEE DETAIL O

BDO

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BERM DITCH SEE DETAIL BE

BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY

BERM DITCH W/CL B RIPRAP SEE DETAIL X

SPECIAL V DITCH SEE DETAIL A

18" CSP W/ELBOWS

5 TON CL B RIPRAP W/14 SY GEOFAB

FS MIN ELEV=272.0

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE V10=1.8 FTS Q10=21.5 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

WGS

SITE 17

APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR

CAPITOL BROADCASTING COMPANY, INC.

MATCHLINE -L1- STA. 1100+50 SEE SHEET 14

MATCHLINE -L1- STA. 1114+00 SEE SHEET 16

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

ENGLISH

SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



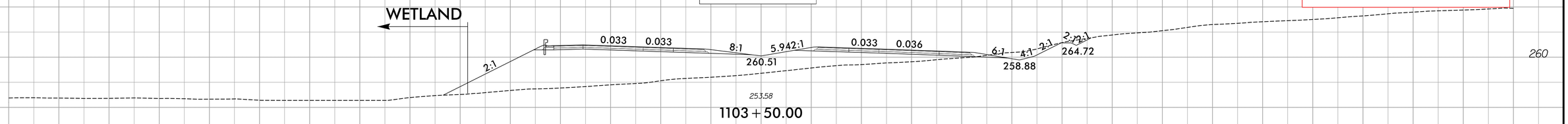
6/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_15_con.dgn
dsmith

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-3 |

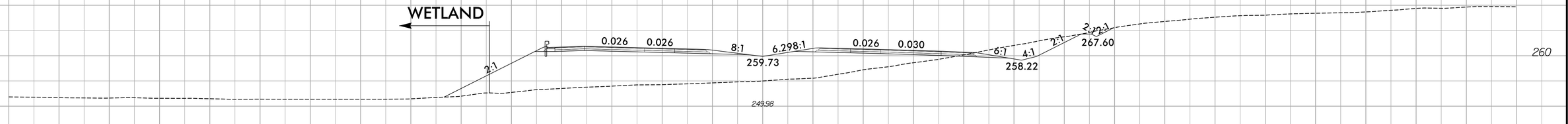
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

# SITE 15

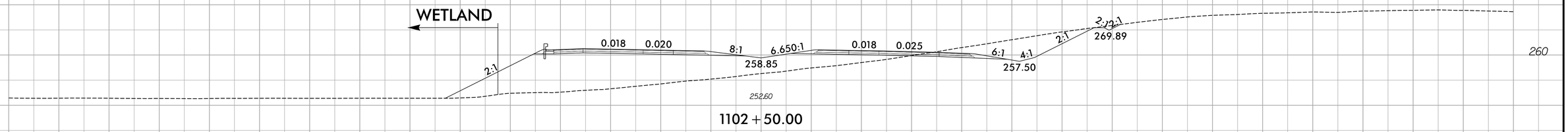
**PERMIT DRAWING**
**SHEET 50 OF 103**



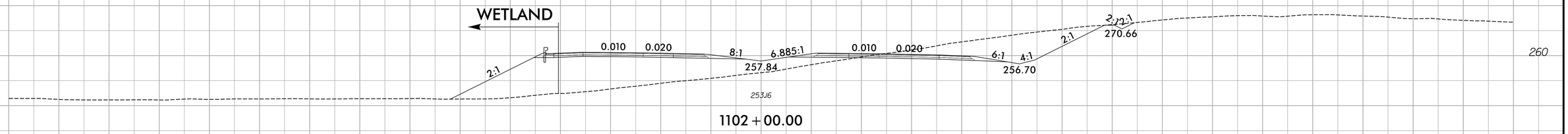

1103 + 50.00



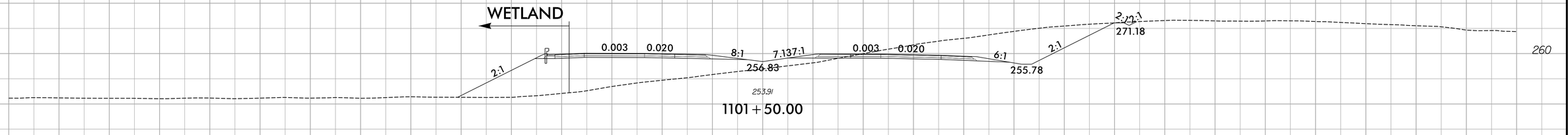

1103 + 00.00



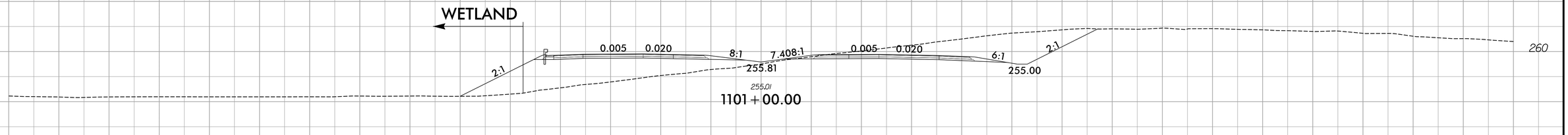

1102 + 50.00




1102 + 00.00




1101 + 50.00




1101 + 00.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

6/23/16

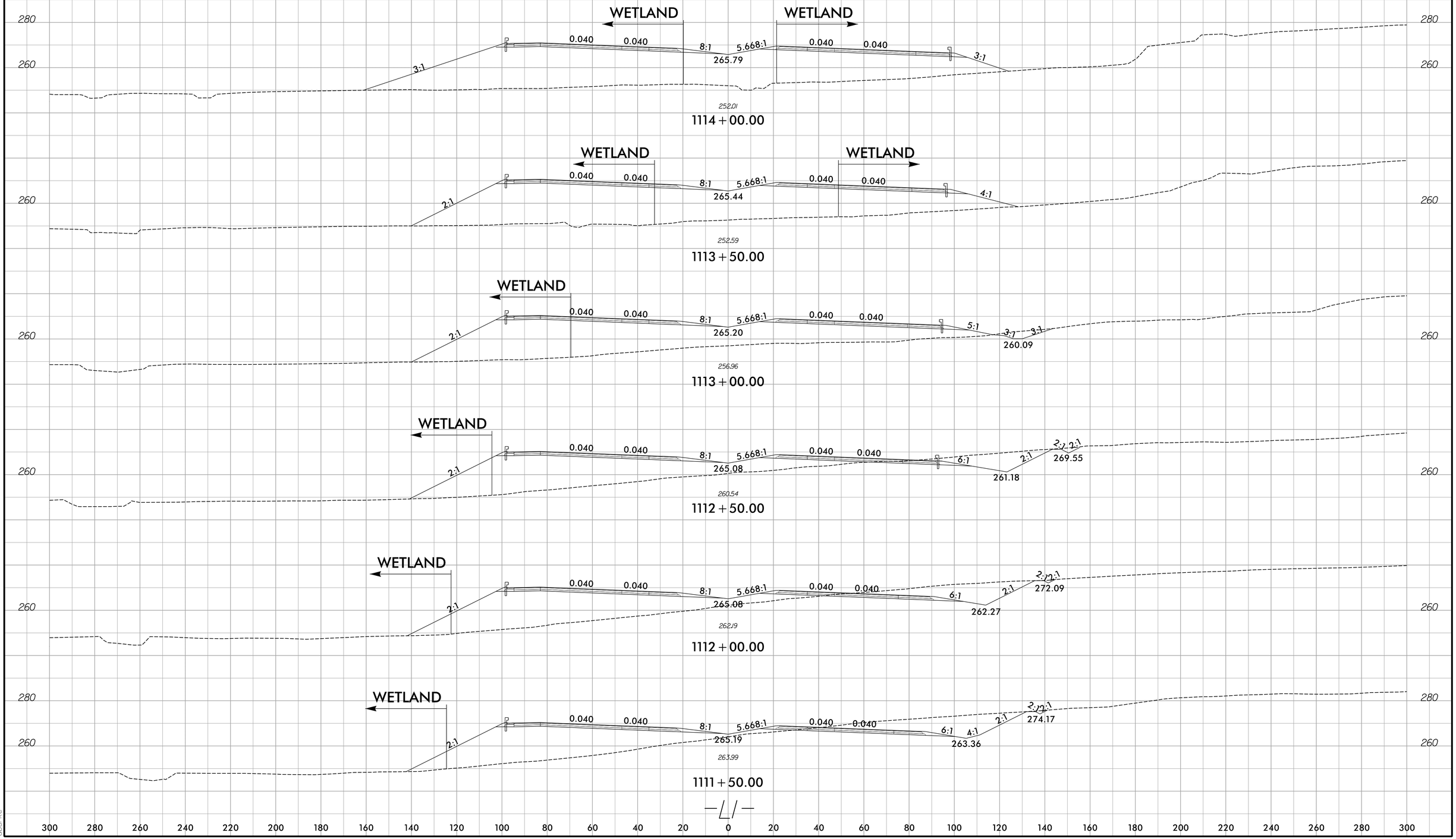
| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-7 |

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

# SITE 16

# SITE 17

**PERMIT DRAWING**
**SHEET 51 OF 103**




6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_L_SEC2_XPL_psh15_SITE16_17.dgn
abunce

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 16 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 52 OF 103**

BOBBY & MARGARET RAYNOR

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

SITE 16 WGR

SFQ SITE 18

SITE 19

WGR

SFS

SEE INSET A
SHEET 54 OF 103

RICHARD RAGSDALE REVOCABLE

MATCHLINE -L1- STA. 1114+00
SEE SHEET 15

MATCHLINE -L1- STA. 1127+00
-Y24RPBR- STA. 22+00
SEE SHEET 17

MATCHLINE
-Y24RPC- STA. 16+50
SEE SHEET 17

-L1- 1120+00

-Y24RPBR-

-Y24RPC-

15+00

20+00

1125+00

1115+00

OUTLET CHANNEL STABILIZATION
W/CL II RIPRAP
SEE DETAIL AL
48 TONS CL II RIPRAP
W/90 SY GEOFAB

TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

TOE PROTECTION
W/CL B RIP RAP 1 TON CL B RIPRAP
W/5 SY GEOFAB
SEE DETAIL E

LINE CUTFILL TRANSITION
TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

1612
V10 = 0.5 FT/S
Q10 = 1.9 CFS

15" CSP
W/ELBOWS

2GIB-WSF

15" RCP-III

2GIB-WSS

JS ENDS

TOE PROTECTION
W/CL B RIP RAP

JS BEGINS

STANDARD 4' BASE SWALE
SEE DETAIL O

SPECIAL CUT 4' SWALE
SEE DETAIL O

FS MIN
ELEV = 279.5

CHANNEL BLOCK
SEE DETAIL BK

TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

LATERAL 4' BASE DITCH
SEE DETAIL AA

2 TONS CL B RIPRAP
W/7 SY GEOFAB

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

2 TON CL B RIPRAP
W/7 SY GEOFAB

SPECIAL CUT 4' SWALE
SEE DETAIL O

LATERAL 4'
BASE DITCH
W/CL I RIP RAP
SEE DETAIL BP

LATERAL 4'
BASE DITCH
SEE DETAIL AE

SEE INSET B
SHEET 54 OF 103

SITE 18 SFQ

WGS SFN WGT

SITE 17

SITE 16

SFS

SITE 19

C400 INLET
STABILIZATION
39 TONS CL II RIPRAP
W/73 SY GEOFAB
SEE DETAIL CD

PAF

CAPITOL BROADCASTING COMPANY, INC.

PDE

TDE

BZ 1

BZ 2

ENGLISH

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

SCALE 50 0 50 100


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


6/5/2024
...\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_16.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 16 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING SHEET 53 OF 103**

BOBBY & MARGARET RAYNOR

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

SITE 16 WGR

SFQ SITE 18

SITE 19

WGR

SFS

SEE INSET A SHEET 54 OF 103

MATCHLINE -L1- STA. 1114+00 SEE SHEET 15

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 17

MATCHLINE -L1- STA. 1127+00 SEE SHEET 17

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 17

JS ENDS

TOE PROTECTION W/CL B RIP RAP

BZ 2

RW CA

LINE CUTFILL TRANSITION TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

48 TONS CL II RIPRAP W/90 SY GEOFAB

OUTFALL 16-1

PDE

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

TOE PROTECTION W/CL B RIP RAP 1 TON CL B RIPRAP W/5 SY GEOFAB

1612 INV OUT=278.5

1612 V10=0.5 FT/S Q10=1.9 CFS

15" CSP W/ELBOWS

INV OUT=259.6

1610 2GIB-WSF

1611 2GIB-WSF

15" RCP-III

RCP-III

1614 2GIB-WSS

1609 2GIB-WSS

15" RCP-III

20+00

15+00

-Y24RPBR-

-L1- 1120+00

FS

1603 2GIB-WSS

1605 2GIB-WSS

FS

15" RCP-IV

1125+00

1710 2GIB-WSS

FS

-Y24RPC-

STANDARD 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' SWALE SEE DETAIL O

FS MIN ELEV= 279.5

1606 INV OUT=278.4 2 TON CL B RIPRAP W/7 SY GEOFAB

INV IN=271.0

1607 INV

1613 2GIB-WSF

15" RCP-III

15+00

1710 2GIB-WSS

JS BEGINS

CHANNEL BLOCK SEE DETAIL BK

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LATERAL 4' BASE DITCH SEE DETAIL AA

1602 2 TONS CL B RIPRAP W/7 SY GEOFAB INV OUT=255.1

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

1604 INV OUT=260.3

PDE

SEE INSET B SHEET 54 OF 103

SFN

WGT

WGS

SITE 17

SITE 16

SITE 18

SFQ

SFS

SITE 19

C400 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CD INV IN=250.4 RCBC INV=251.4

INV=265.3

15" CSP

PAF

CAPITOL BROADCASTING COMPANY, INC.

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL BP

LATERAL 4' BASE DITCH SEE DETAIL AE

TDE

JS BEGINS

ENGLISH

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

50 0 50 100

SCALE


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_16_con.dgn

8/17/99

REVISIONS

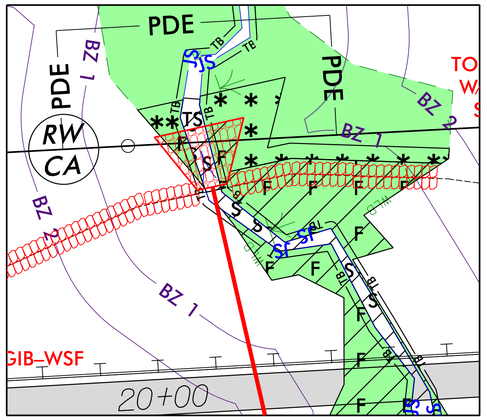
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

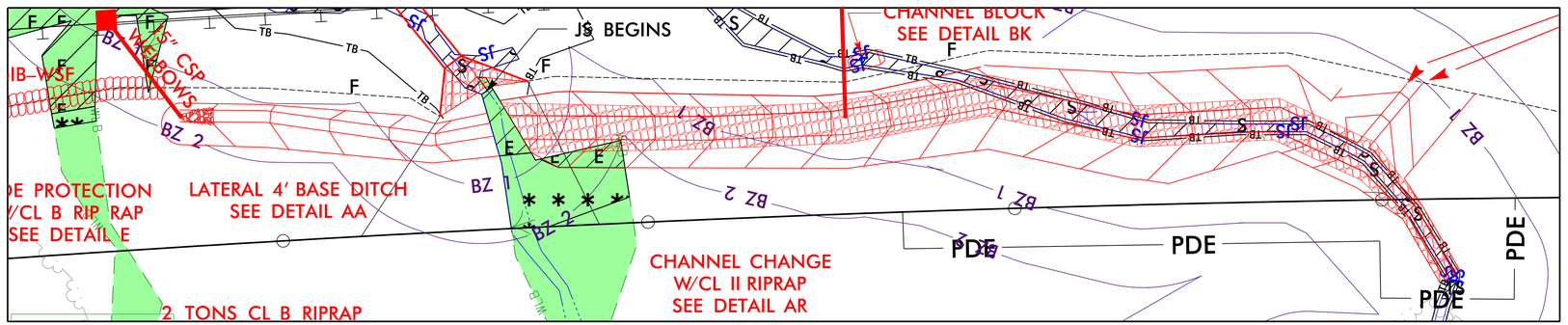
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 54 OF 103**

NAD 83/NA 2011




INSET A




INSET B

ENGLISH

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

25 0 25 50
SCALE FOR INSERT


STV Engineers, Inc.
P: (704) 372-1685
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112


Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Responsive People | Creative Solutions

6/5/2024
H:\Hydraulics\Permits,Environmental\Drawings\40_Wetland\R-2829A_hyd_4C_psh_16_insets.dgn
dcruz

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

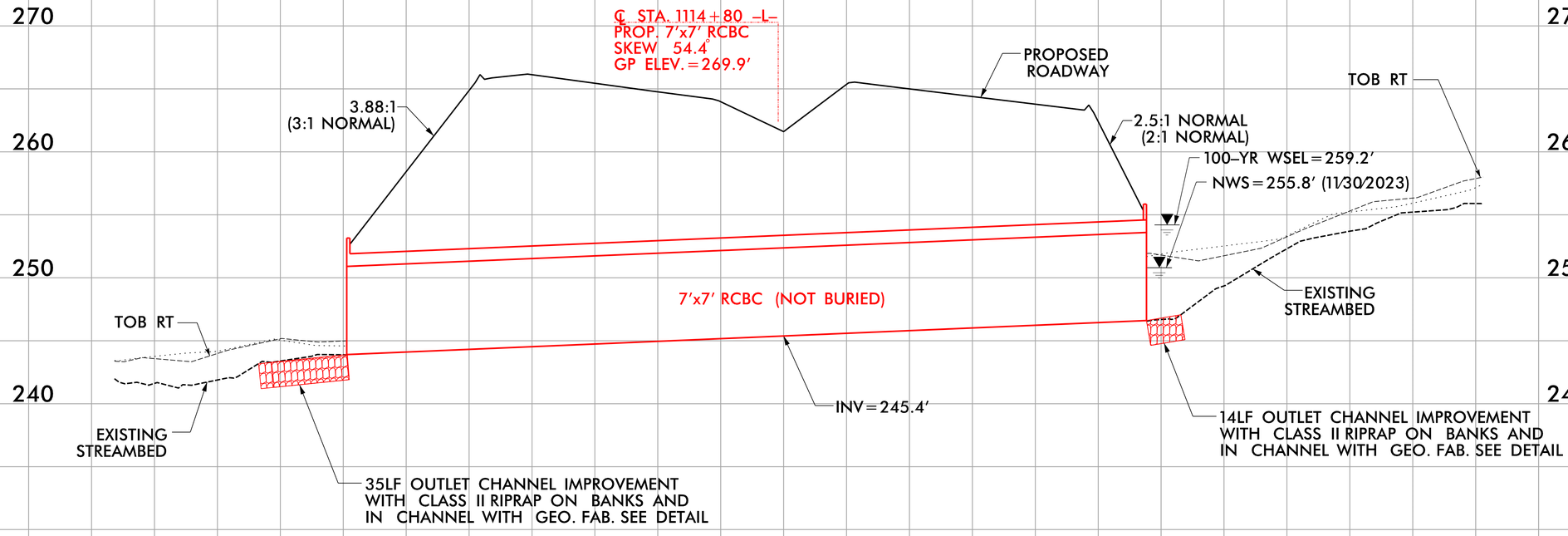
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 55 OF 103

ENGLISH

# SITE 16, 17, & 18
# –L1– STA. 1114+80




***7'x7' RCBC***
***(Not buried, Length =318')***

8/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_16_SITE16_PFL.dgn
dlucas

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

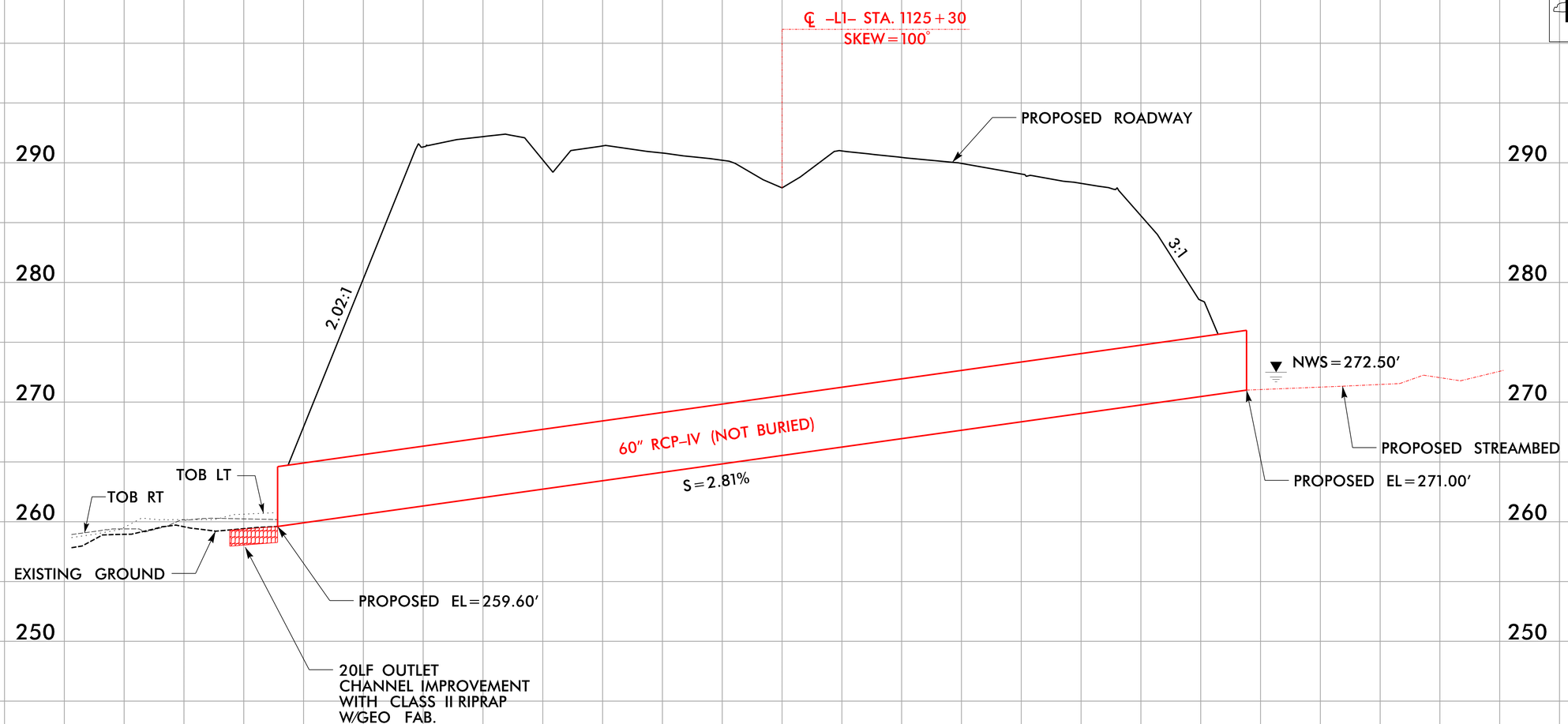
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 56 OF 103

ENGLISH

# SITE 19
# –L1– STA. 1125+30




## 60" RCP–IV
## (Not buried, Length =405')

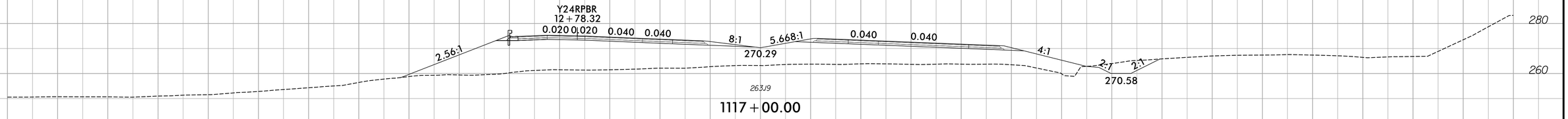
6/6/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_16_60RCP_PFL.dgn

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-8 |

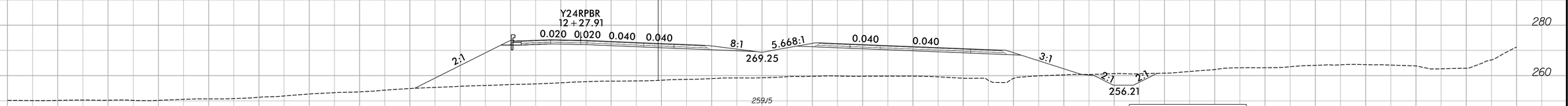
PERMIT DRAWING
SHEET 57 OF 103

# SITE 16




1117+00.00

WETLAND
0.040

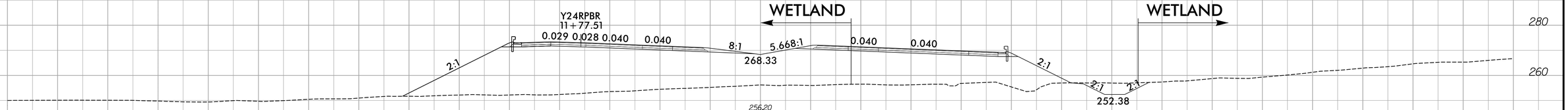



1116+50.00

# SITE 18

WETLAND

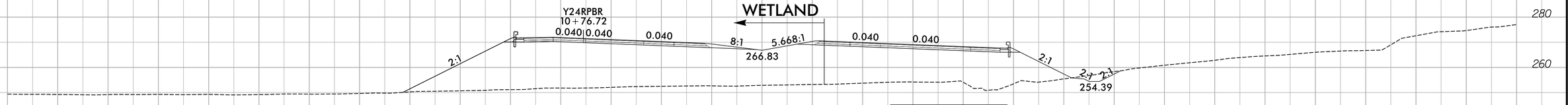
WETLAND




1116+00.00




1115+50.00




1115+00.00

# SITE 17

WETLAND

WETLAND




1114+50.00

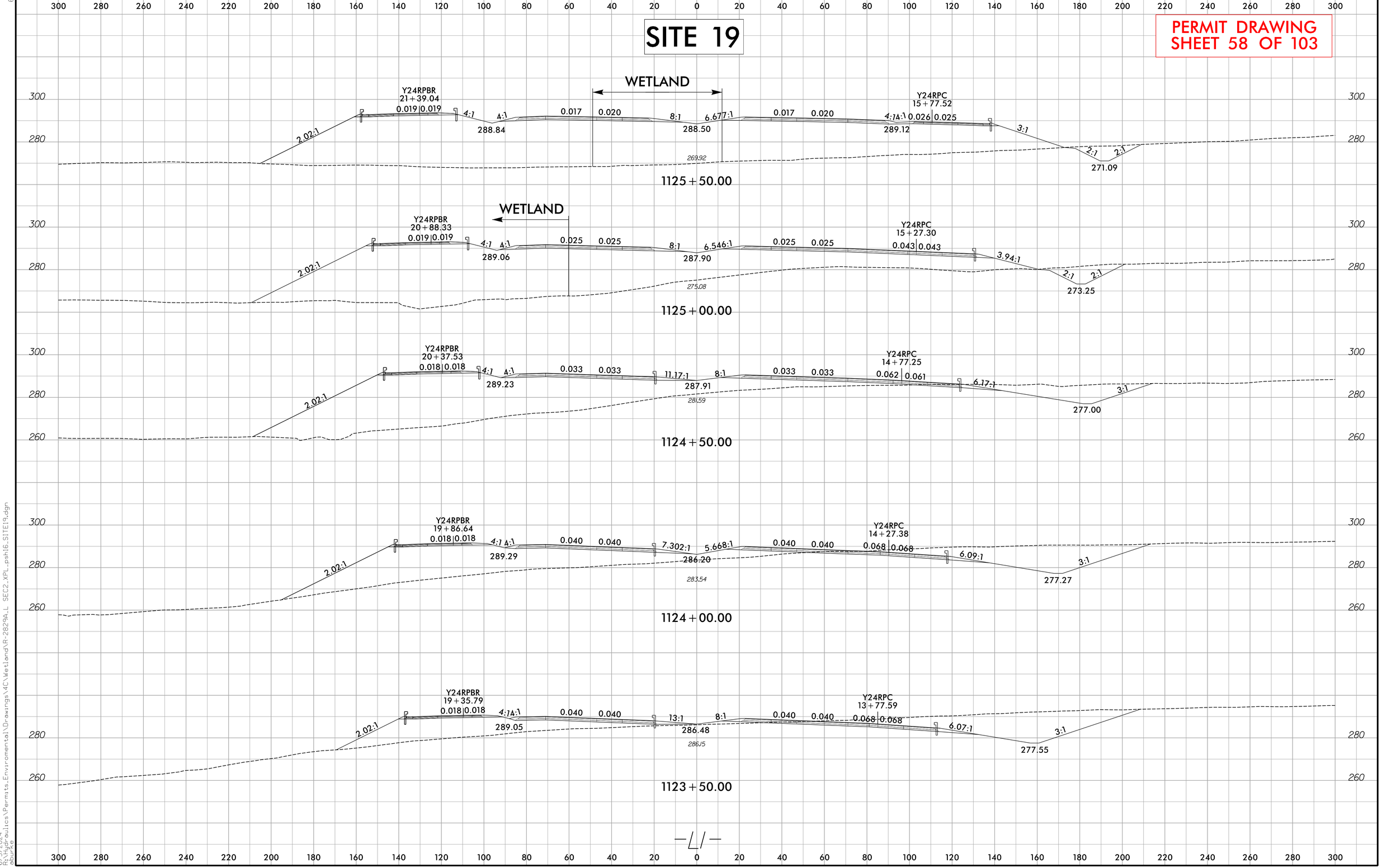
6/5/2024
R:\Roadbuilders\Permits_Environmental\Drawings\MC\Wetland\R-2829A_L SEC2_XPL_psh16_SITE16_17_18.dgn
dsmith

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-11 |

PERMIT DRAWING
SHEET 58 OF 103

# SITE 19




6/5/2024
R:\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_L SEC2_XPL_psh16_SITE19.dgn
bburke

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 17 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 59 OF 103

MATCHLINE
-Y24R- STA. 36+50
SEE SHEET 35

INSET A

INSET C

NAD 83/NA 1011

SITE 20A

SITE 20

SITE 21

SITE 22

SITE 23

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

MATCHLINE
-Y24RPBR- STA. 22+00
SEE SHEET 16

MATCHLINE
-L1- STA. 1127+00
SEE SHEET 16

MATCHLINE
-Y24RPC- STA. 16+50
SEE SHEET 16

MATCHLINE
-Y24RPAR- STA. 20+00
SEE SHEET 18

MATCHLINE
-L- STA. 1154+00
SEE SHEET 18

MATCHLINE
-Y24RPDR- STA. 12+50
SEE SHEET 18

MATCHLINE
-Y24R- STA. 51+50
SEE SHEET 36

MATCHLINE
-Y24CR- STA. 14+00
SEE SHEET 36

INSET B

INSET D

ENGLISH

SCALE
100 0 100 200

SCALE FOR INSET
50 0 50 100

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


STV Engineers, Inc.
P: (704) 370-1985
900 West Trade St. Suite 710
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 870-0090
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-2965
NC License Number C-0910

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Passionate People | Creative Solutions



6/5/2024
R:\Highway\Active\Projects\Exchange\NCSite\Layout\R-2829A_layout_NC_sht_17.dgn

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 17 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 60 OF 103

MATCHLINE
-Y24R- STA. 36+50
SEE SHEET 35

INSET A

INSET C

SITE 20A

SITE 20

SITE 21

SITE 22

SITE 23

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

INSET B

INSET D

MATCHLINE
-Y24RPBR- STA. 22+00
SEE SHEET 16

MATCHLINE
-L1- STA. 1127+00
SEE SHEET 16

MATCHLINE
-Y24RPC- STA. 16+50
SEE SHEET 16

MATCHLINE
-Y24RPAR- STA. 20+00
SEE SHEET 18

MATCHLINE
-L- STA. 1154+00
SEE SHEET 18

MATCHLINE
-Y24RPDR- STA. 12+50
SEE SHEET 18

MATCHLINE
-Y24R- STA. 51+50
SEE SHEET 36

MATCHLINE
-Y24CR- STA. 14+00
SEE SHEET 36

SGA WGU (2) WGU (1) WGX(2) WGX(1) SFT SGC WHB WGY WGZ WHA SFS

ENGLISH

SCALE 100 0 100 200

SCALE FOR INSET 50 0 50 100

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

STV Engineers, Inc.
P: (704) 370-1985
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RKK
P: (919) 870-0010
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-2960
NC License Number C-0910

Highways | Construction Managers | Planners | Scientists
www.rkk.com

Personalize Proudly | Creative Solutions

6/5/2024
R:\Highways\Projects\Environmental\Wetland\R-2829A_hyd_4C_pss_17.dwg

6/23/16

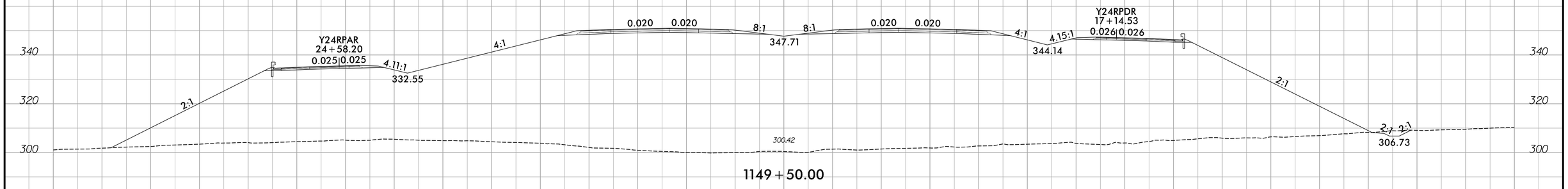
| PROJ. REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | S2 X-20 |

0 10 20

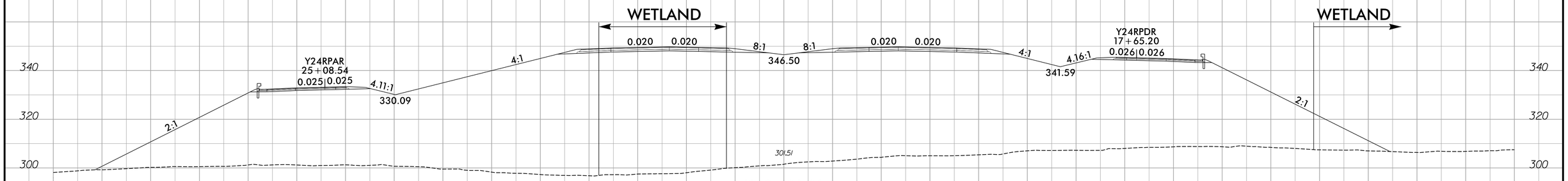
PERMIT DRAWING
SHEET 61 OF 103

# SITE 21

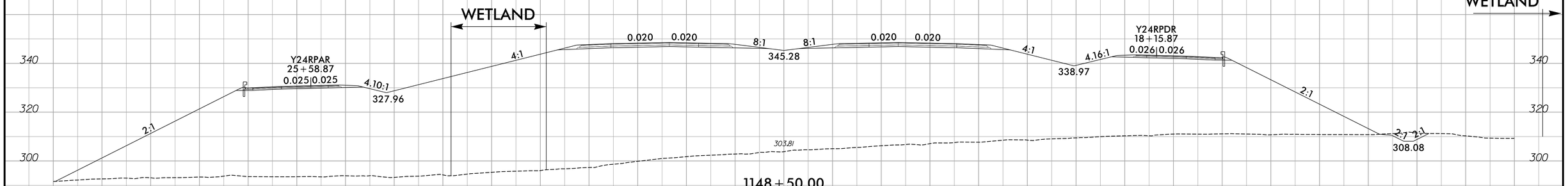
# SITE 22



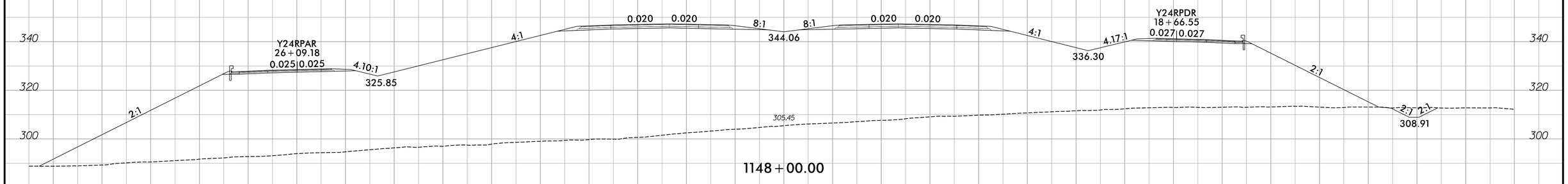

1149+50.00




1149+00.00




1148+50.00




1148+00.00

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

6/5/2024
P:\Highways\Projects\Permits\Environmental\Drawings\MC\Wetland\R-2829A_L SEC2_XPL_psh17_SITE22.23.dgn
Bruce

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

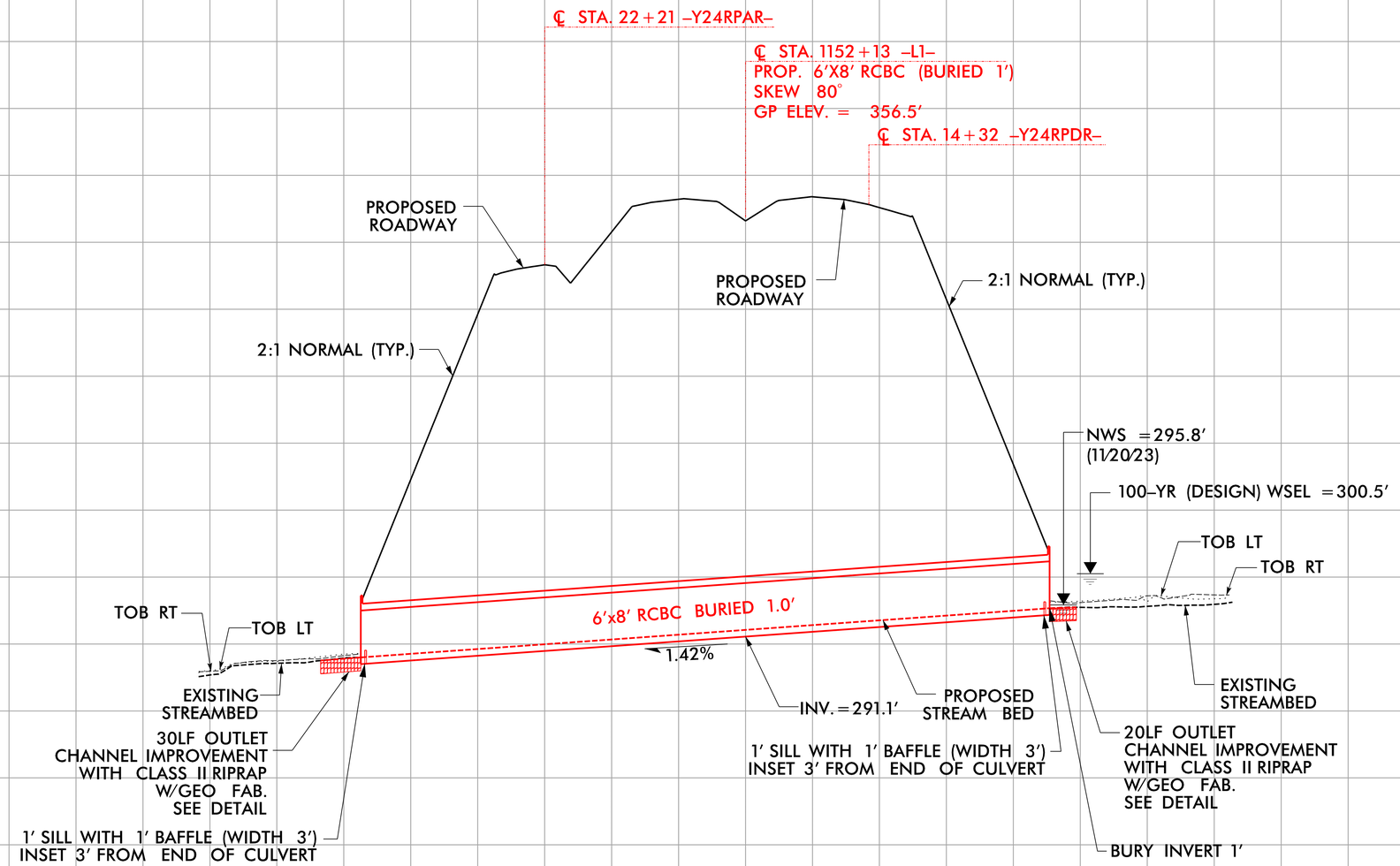
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 62 OF 103

ENGLISH

# SITE 23
# –L1– STA. 1152+13




## 6'x8' RCBC
## (Buried 1.0', Length =516')

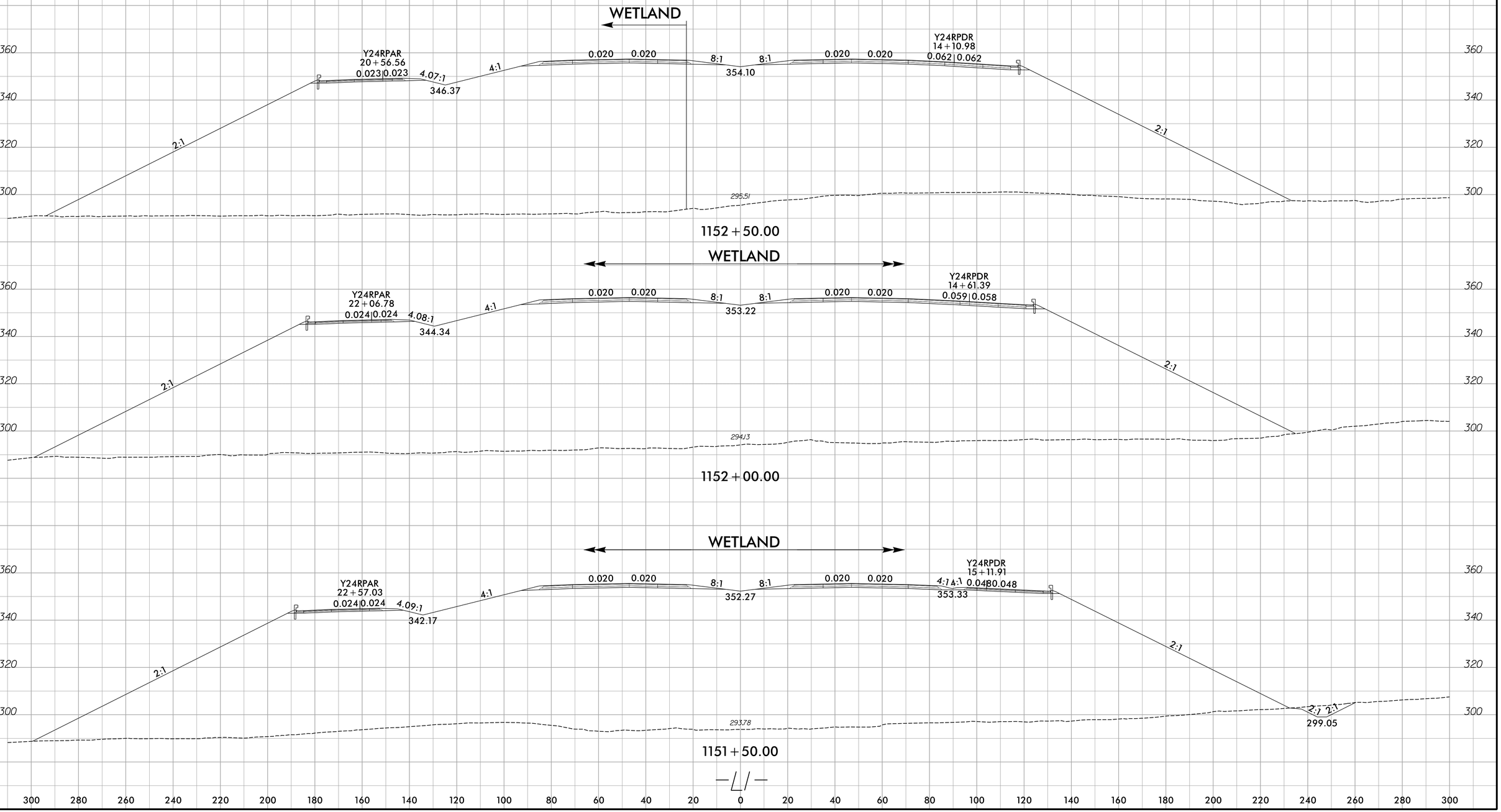
8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_17_SITE24_PFL.dgn

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-22 |

# SITE 23

**PERMIT DRAWING**
**SHEET 63 OF 103**




6/5/2024
R:\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_L SEC2_XPL_psh17_SITE24.dgn
dsmith

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 18 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 64 OF 103**

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SEE INSET A SHEET 66 OF 103

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

A

D

NC 540

SITE 24

SITE 23

WHB

WHC

SGD

SEE INSET B SHEET 66 OF 103

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

NAD 83/NA 2011

JEFFREY P CATES & NANCY S CATES

NC RAILROAD COMPANY

APUGRAF HOLDINGS LLC

WILLIAM T RHODES

EDGE OF AUBURN LLC

RUSSELL G & ANNETTE K BULLOCK JR

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

BRENDA J & MARK R CUNNINGHAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

LAURA L WATTS &

BARBARA W GAUL

EAST GARNER ROAD

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

BANK STABIL W/CL I RIP RAPREMOVE SEE DETAIL V CMP

REMOVE RCBC

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

SP. CUT DITCH SEE DETAIL A

CHANNEL CHANGE W/CL II RIP RAP SEE DETAIL AG

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

DRAIN POND & FILL TO ELEV. 307.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH SEE DETAIL B

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AS

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AO

10' WIDE BERM SEE DETAIL BC

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

LATERAL 4' BASE DITCH SEE DETAIL C

42" CAMP NOT BURIED UPSIZED FOR MAINLINE

54" CAMP NOT BURIED UPSIZED FOR MAINLINE

30" RCP III NOT BURIED

15" RCP III

15" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

2GIB-NSS

FS

REMOVE

RETAIN

ENGLISH

SCALE 50 0 50 100

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/25/2024
R-2829A_hyd_4C_psh_18.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 18 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 65 OF 103**

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SEE INSET A SHEET 66 OF 103

SITE 24

NAD 83/NA 2011

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

A

D

NC 540

-Y24RPAR-

-Y24RPDR-

-Y25-

-Y26R-

-L1-

-Y26RSR2-

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

BANK STABIL W/CL I RIP RAPREMOVE SEE DETAIL V CMP

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

REMOVE RCBC

CHANNEL CHANGE W/CL II RIP RAP SEE DETAIL AG

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

SP. CUT DITCH SEE DETAIL A

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH SEE DETAIL B

DRAIN POND & FILL TO ELEV. 307.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

LATERAL 4' SWALE SEE DETAIL L

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AO

10' WIDE BERM SEE DETAIL BC

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH SEE DETAIL C

SEE INSET B SHEET 66 OF 103

SITE 23

SITE 24

WHB

SGD

WHC

2GIB-WSF

2GIB-WSS

15" RCP-III

15" RCP-IV

42" CAMP NOT BURIED UPSIZED FOR MAINT.

54" CAMP NOT BURIED UPSIZED FOR MAINT.

15" CSP W/ELBOWS

20' ROCK NOT BURIED

REMOVE

RETAIN

NCDOT

NC RAILROAD COMPANY

JEFFREY P CATES & NANCY S CATES

APWGRAF HOLDINGS LLC

WILLIAM T RHODES

RUSSELL G & ANNETTE K BULLOCK JR

EDGE OF AUBURN LLC

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

BRENDA J & MARK R CUNNINGHAM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

LAURA L WATTS &

BARBARA W GAUL

EAST GARNER ROAD

ENGLISH

SCALE 50 0 50 100

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


6/25/2024
R-2829A_hyd_4C_psh_18.dgn
Hydraulics

8/17/99

REVISIONS

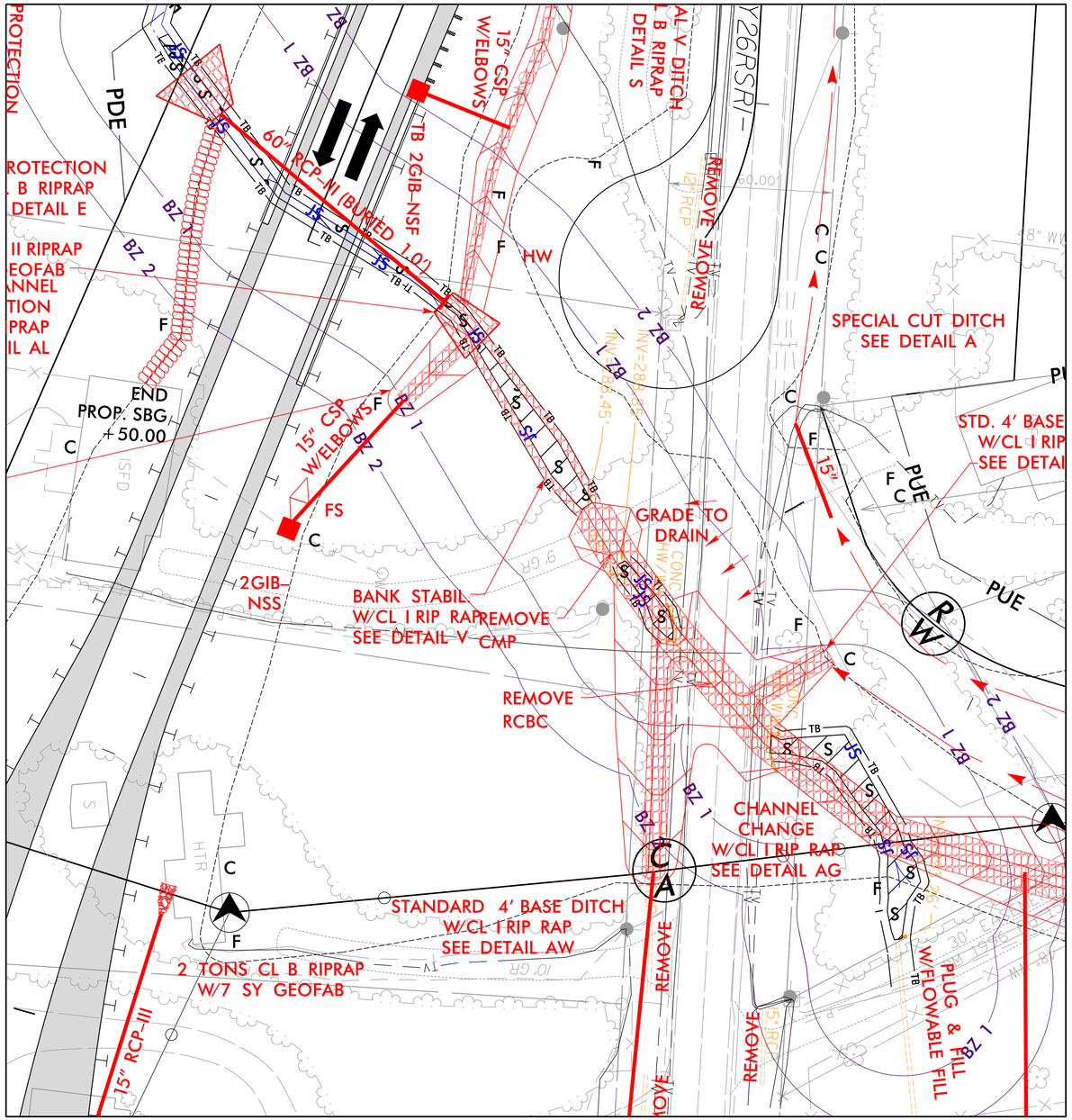
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

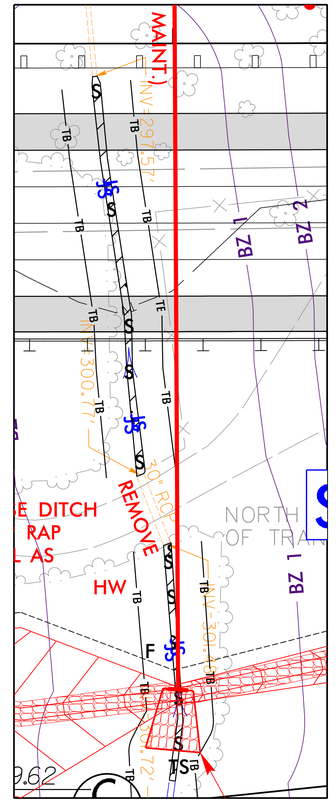
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 66 OF 103**

NAD 83/NA 2011




INSET A




INSET B

ENGLISH

25 0 25 50
SCALE FOR INSET

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112


Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Responsive People | Creative Solutions


6/5/2024
H:\Hydraulics\Permits_Environmental\Drawings\40_Wetland\R-2829A_hyd_4C_psh_18_inset.dgn
dbuie

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 19 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 67 OF 103**

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

WHD(2)

SGA

SITE 25

SGE

WHD(2)

SITE 27

SGF

WHD(2)

SGG

SITE 26

WHD(1)

SGE

SITE 25

WHF

EDGE OF AUBURN LLC

JANET P STORMS & LINDA S POWELL

LARRY R STALLINGS

DENNIS R YARBROUGH

DONALD R & SANDRA C LOCKAMON JR

JOHN B MCINTYRE

AUBURN AS

AUBURN ASSOCIATES

NAD 83/NA 2011

SWALE Q10 = 6.45cfs V10 = 2.01fps

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

C600 OUTLET STABILIZATION 43 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

PROP. WW FENCE

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

SEE INSET A SHEET 69 OF 103

LATERAL 4' SWALE SEE DETAIL L

15" CSP W/ 2 ELBOWS

2GIB-WSF

11+18 RCCP W/BEVELED ENDS

1170+00

1175+00

1180+00

15" RCP-III

15" RCP-IV

24" CSP W/ ELBOWS

24" RCP-IV

18" RCP-IV

18" CSP W/ELBOWS

15" CSP W/ BZ ELBOWS

2GIB-WSS

FS

-L1-

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

CHANNEL BLOCK SEE DETAIL BK

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

SEE INSET C SHEET 69 OF 103

SEE INSET D SHEET 69 OF 103

SEE INSET B SHEET 69 OF 103

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

LATERAL 4' SWALE SEE DETAIL I

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

2 TONS CL B RIPRAP W/7 SY GEOFAB

GRADE TO DRAIN

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

JS BEGINS

PUE

ENGLISH

50 0 50 100

SCALE

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


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R:\Highways\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_19.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 19 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 68 OF 103**

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

WHD(2) SGA SGE WHD(2) SITE 25 SEE INSET A SHEET 69 OF 103 SEE INSET C SHEET 69 OF 103 WHD(2) SGF SITE 27 SEE INSET B SHEET 69 OF 103 WHD(1) SGE SITE 25 SEE INSET D SHEET 69 OF 103 SGG SITE 26 WHF

EDGE OF AUBURN LLC

JANET P STORMS & LINDA S POWELL

NAD 83/NA 2011

LARRY R STALLINGS

DENNIS R YARBROUGH

DONALD R & SANDRA C LOCKAMON JR

JOHN B MCINTYRE

AUBURN ASSOCIATES

SWALE Q10 = 6.45cfs V10 = 2.01fps

LATERAL V DITCH SEE DETAIL B

2 TONS CL B RIPRAP W/7 SY GEOFAB

C600 OUTLET STABILIZATION 42 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

PROP. WW FENCE

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LATERAL 4' SWALE SEE DETAIL L

15" CSP W/2 ELBOWS

2GIB-WSF

11.8' RCCP BARREL 15" RCP-III

1170+00

1175+00

1180+00

15" RCP-III

24" CSP W/ ELBOWS

24" RCP-IV

18" RCP-IV

15" CSP W/ELBOWS

CHANNEL BLOCK SEE DETAIL BK

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

15" CSP W/ BZ ELBOWS

18" CSP W/ELBOWS

GRADE TO DRAIN

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

JS BEGINS

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' SWALE SEE DETAIL L

50 0 50 100

SCALE

ENGLISH

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions



6/5/2024
R:\hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_19_con.dgn

8/17/99

REVISIONS

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

RW SHEET NO.

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|

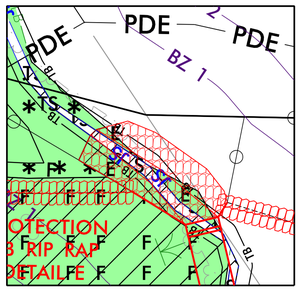
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

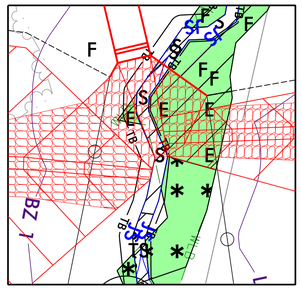
**PERMIT DRAWING SHEET 69 OF 103**

NAD 83/NA 2011

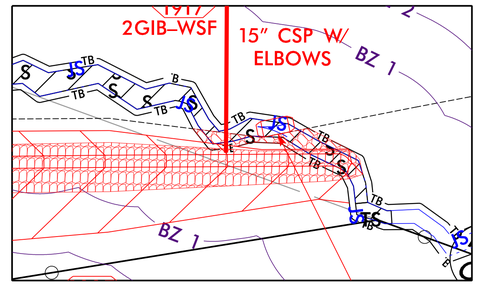
## INSET A

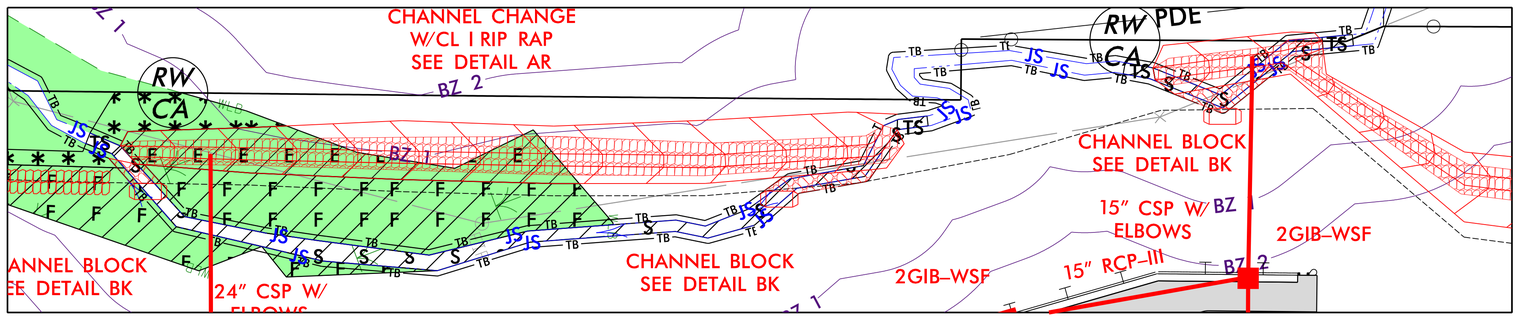



## INSET B




## INSET D




## INSET C

ENGLISH

25 0 25 50
SCALE FOR INSET

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


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St, Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_19_insets.dgn
dsmith

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

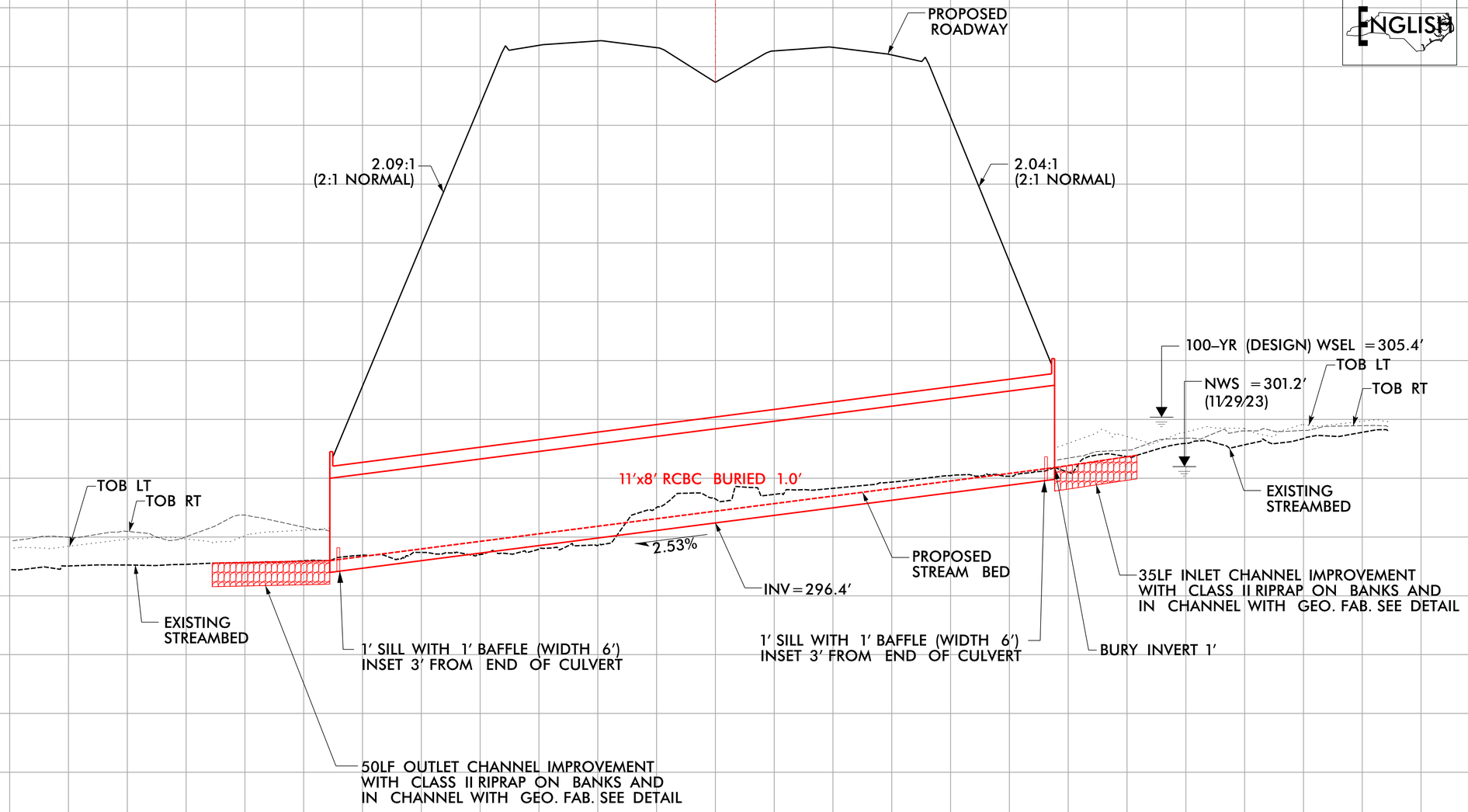
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 70 OF 103

ENGLISH

# SITE 25
# –L1– STA. 1171+00

℄ BRIDGE STA. 1171+00 –L1–
PROP. 11'X8' RCBC (BURIED 1')
SKEW 75°
GP ELEV. = 336.6'




## 11'x8' RCBC
## (Buried 1.0', Length =313')

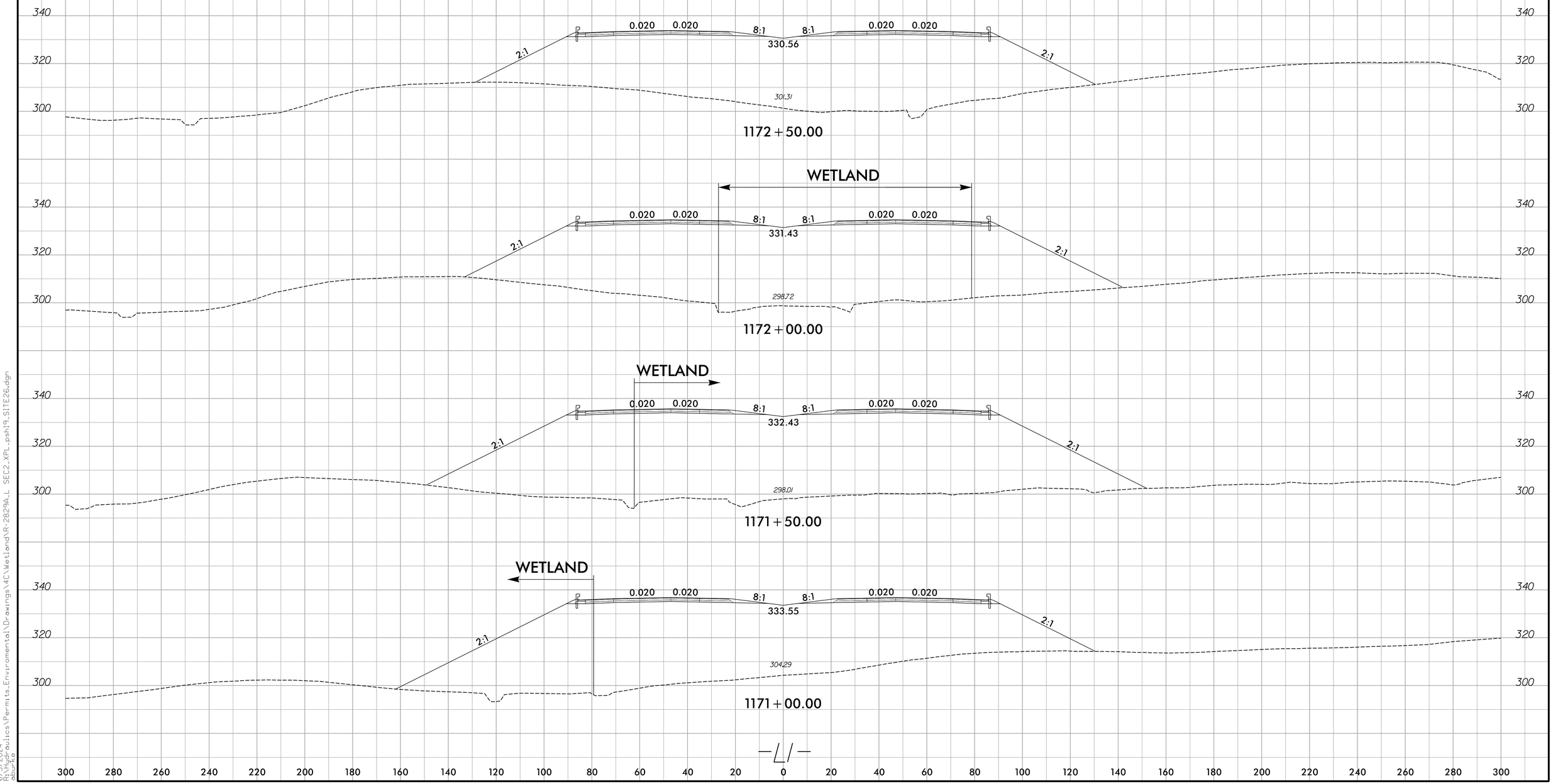
8/5/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_19_site26_PFL.dgn
Default

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-32 |

# SITE 25

**PERMIT DRAWING**
**SHEET 71 OF 103**



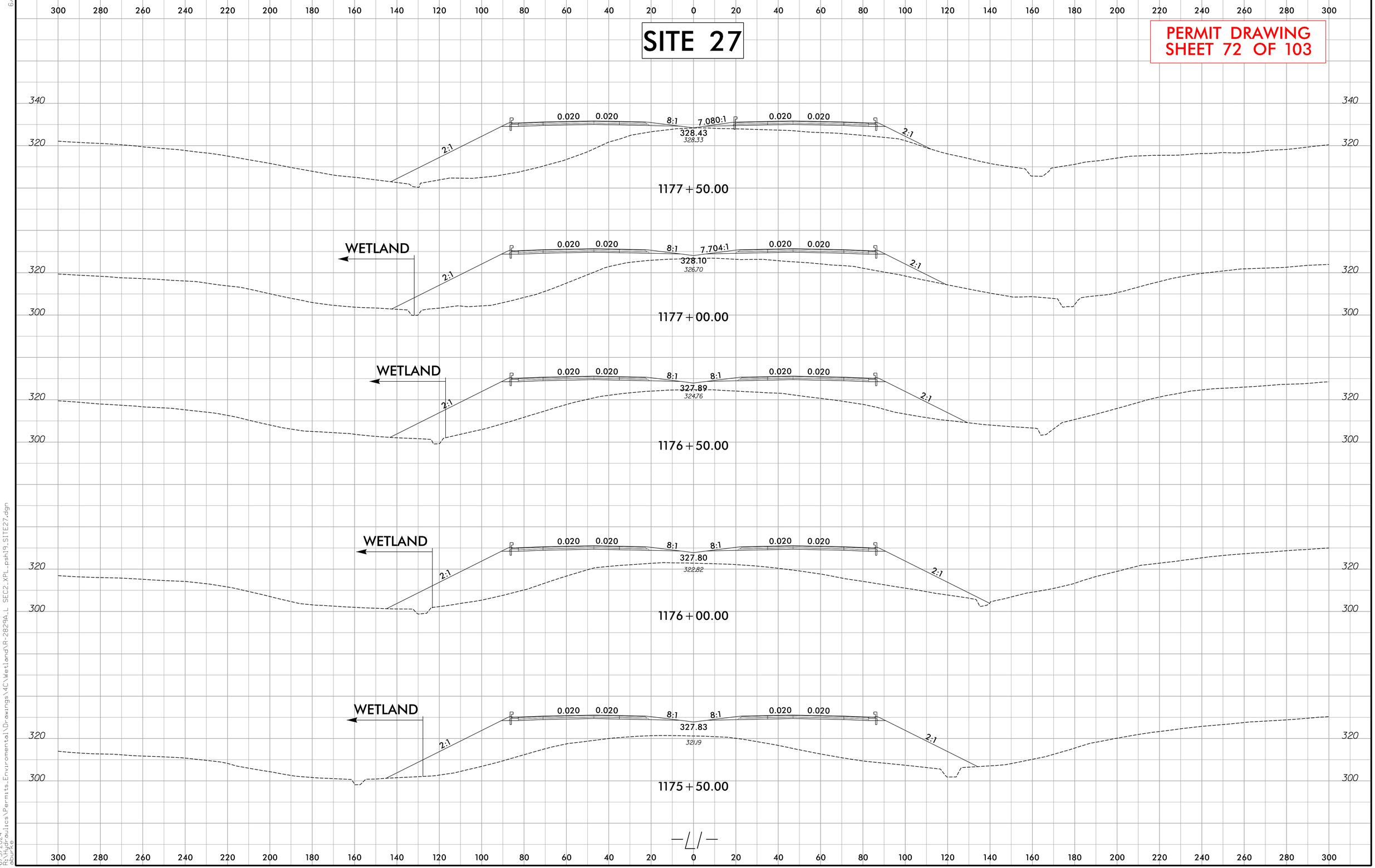

6/5/2024
P:\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_L SEC2_XPL_psh19_SITE26.dgn
dburke

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-34 |

# SITE 27

**PERMIT DRAWING**
**SHEET 72 OF 103**




6/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_L SEC2_XPL_psh19_SITE27.dgn
dsurbe

| REVISIONS |
|---|
| |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 27 |
| 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 73 OF 103

NAD 83/NSRS 2011

DOROTHY BEASLEY

TIMOTHY COLLINS

DOROTHY BEASLEY

MARY POWELL WARD WHITE

DOROTHY BEASLEY
DB 1797 PG 28

DOROTHY BEASLEY
DB 2573 PG 482

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

MARY WHITE

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

JOYCE J. NIXON

SUSAN [illegible] DAVIS
DB 8284 [illegible]
BM 1999 [illegible]

INSET A

WFG

SITE 1

WNP

SEE INSET A

WFG

SITE 1

WFB

I-5111
SITE 34
WORK BY OTHERS

*WORK BY OTHERS
I-5111 SITE 33

WFD

SDT

MATCHLINE -Y22FLYCC-
STA. 100+00 SEE SHT 6

MATCHLINE -Y22RPAFLY REV-
STA. 23+00 SEE SHEET 6

ENGLISH

FILL IN WETLAND

SCALE
100 0 100 200

SCALE FOR INSET
50 0 50 100

RK&K
(C) 2019 RK&K
3621 Ben Franklin Blvd, Durham | Suite 700
Raleigh, North Carolina 27610-2000
Tel: 919.614.1184
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Pennsylvania | Raleigh | Columbia Salisbury

| REVISIONS |
|---|
| |

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 27 |
| 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 74 OF 103**

NAD 83/NSRS 2011

DOROTHY BEASLEY

TIMOTHY COLLINS

DOROTHY BEASLEY

MARY POWELL WARD WHITE

DOROTHY BEASLEY DB 1797 PG 28

JOYCE J. NIXON

SUSAN [illegible] DB 8284 PG [illegible] BM 1999 [illegible]

DOROTHY BEASLEY DB 2573 PG 482

MARY WHITE, ISABELL WARD, & ADRIA WALKER BM 2012 PG 1326 DB 4163 PG 369

MARY WHITE

NC DEPT. OF TRANSPORTATION DB 18373 PG 815 AREA ONE

INSET A

WFG

SITE 1

WNP

SEE INSET A

WFG

SITE 1

WFB

I-5111 SITE 34 WORK BY OTHERS

*WORK BY OTHERS I-5111 SITE 33

WFD

SDT

MATCHLINE -Y22FLYCC- STA. 100+00 SEE SHT 6

MATCHLINE -Y22RPAFLY REV- STA. 23+00 SEE SHEET 6

ENGLISH

FILL IN WETLAND

SCALE 100 0 100 200

SCALE FOR INSET 50 0 50 100

RK&K
[illegible]
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Pennsylvania Philadelphia | Limestone Solicitors

6/5/2024
R:\Highways\Projects\Environmental\401\westworth-28259_sup\401_permit_70_coversheet.dgn

6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-105 |

# SITE 1

**PERMIT DRAWING**
**SHEET 75 OF 103**

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

320 300 280 260

WETLAND

0.056 0.056 4:1 4:1 298.16 Y22RPA_REV 17+12.63 0.016 0.016 3.02:1 2:1 2:1 285.56

4:1 2:1 3:1 270.13 275.22

**28+50.00**

WETLAND

0.041 0.041 4:1 4:1 297.44 Y22RPA_REV 16+59.40 0.016 0.016 3:1 2:1 2:1 284.11

4:1 3:1 3:1 267.00 278.89

**28+00.00**

0.026 0.026 4:1 4:1 296.44 Y22RPA_REV 16+07.32 0.016 0.016 2.57:1 2:1 2:1 282.70

4:1 2:1 2:1 264.18 281.03

**27+50.00**

0.011 0.011 4:1 4:1 295.31 Y22RPA_REV 15+56.10 0.016 0.016 2.60:1 2:1 2:1 281.31

4:1 2:1 2:1 261.36 279.23

**27+00.00**

240

-Y22RPAFLY_REV-

6/5/2024
C:\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_RDY_XPL_Y22RPAFLY_REV_psh21_SITE1.dgn
dsmith

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 23 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

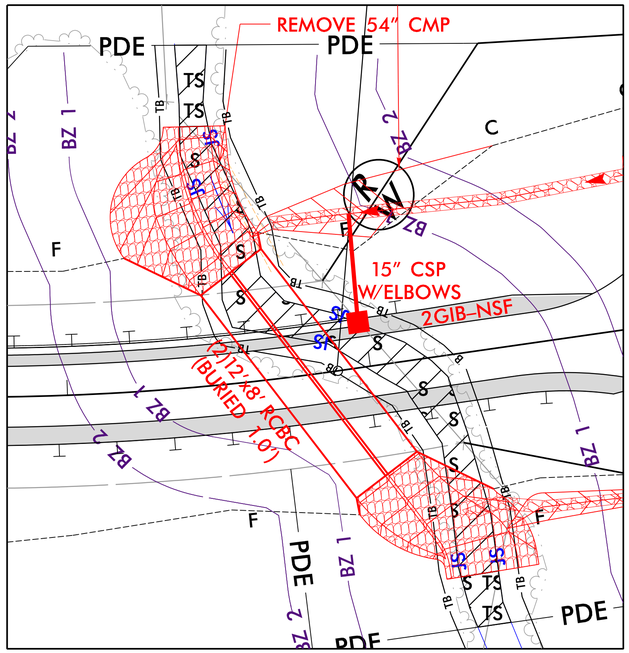
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING SHEET 76 OF 103**

NAD 83/NA 2011

JOHN AMAN

## INSET A




APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

LARRY WHEELER, JR.

SITE 28

SKR

C700 INLET STABILIZATION
285 TONS CL II RIPRAP
W/255 SY GEOFAB
SEE DETAIL CG

2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SPECIAL V DITCH
W/CL B RIPRAP
SEE DETAIL Y

SPECIAL V DITCH
SEE DETAIL A

SEE INSET A

HTR

SR 3956 ALONZO RD

10+00

15+00

RETAIN

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SYLVIA ALLEN

HERBERT, JR. & ELIZABETH THOMASON

C700 OUTLET STABILIZATION
325 TONS CL II RIPRAP
W/240 SY GEOFAB
SEE DETAIL CG

20' DRAINAGE EASEMENT
BM 2004 PG 423

PATRICIA & RAYFORD PAGE

ENGLISH

SCALE
50 0 50 100

SCALE FOR INSET
25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS


RK&K
P: (919) 878-8560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
Z:\Highways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_23.dgn
ABUTZ

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 23 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

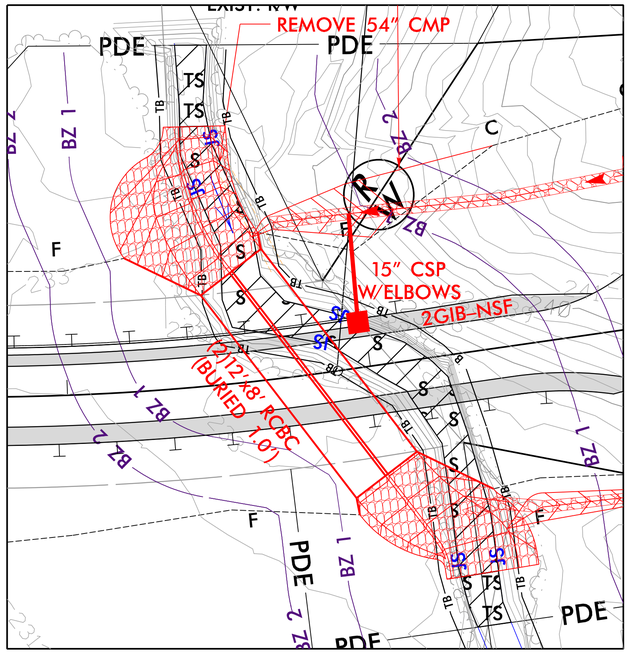
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

**PERMIT DRAWING SHEET 77 OF 103**

NAD 83/NA 2011

## INSET A




JOHN AMAN

APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

SITE 28

SKR

LARRY WHEELER, JR.

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL V DITCH SEE DETAIL A

C700 INLET STABILIZATION 285 TONS CL II RIPRAP W/255 SY GEOFAB SEE DETAIL CG

2 TONS CL B RIPRAP W/7 SY GEOFAB

SEE INSET A

REMOVE 54" CMP

15" CSP W/ELBOWS

2GIB-NSF

(2)12'x8' RCBC (BURIED 1.0')

RETAIN

SR 3866 ALONZO RD

10+00

15+00

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

SYLVIA ALLEN

HERBERT, JR. & ELIZABETH THOMASON

C700 OUTLET STABILIZATION 325 TONS CL II RIPRAP W/240 SY GEOFAB SEE DETAIL CG

20' DRAINAGE EASEMENT BM 2004 PG 423

PATRICIA & RAYFORD PAGE

ENGLISH

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

SCALE

SCALE FOR INSET


RK&K
P: (919) 878-8560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_23_con.dgn

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|

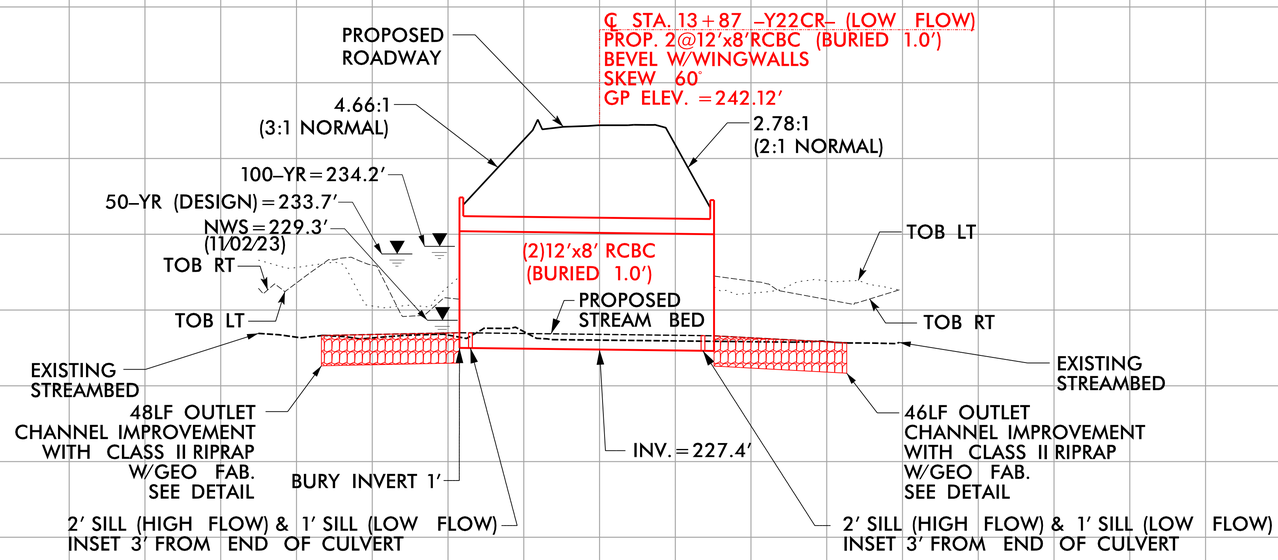
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 78 OF 103

ENGLISH

# SITE 28
# –Y22CR– STA. 14+00




## 2@ 12'x8' RCBC
## (Buried 1.0', Length =80')


6/5/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_23_siteXX_PFL.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 26 |
| 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**

**PERMIT DRAWING SHEET 79 OF 103**

ENGLISH

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

NAD 83/NA 2011

SFJ

SITE 29

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR- STA. 14+50 SEE SHEET 32

SDO INVESTMENTS, LLC.

TIM FOWLER

SCOTT PEACOCK, SYLVIA MATTHEWS, & STEPHEN PEACOCK

MOUNT HERMAN CHRISTIAN CHURCH

ELLA & PHILLIP PARRISH

CLAYTON PROPERTIES GROUP INC

CITY OF RALEIGH WATER EASEMENT

SR 2700 WHITE OAK RD

MUP BY OTHERS

LATERAL 4' BASE DITCH SEE DETAIL C

LATERAL 4' BASE DITCH SEE DETAIL C

8 TONS CL B RIPRAP W/21 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' SWALE SEE DETAIL O

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

LATERAL 4' BASE SWALE SEE DETAIL L

REMOVE PIPE

REMOVE SYSTEM

REMOVE EX. DI TB JB wMH

ADJUST DI

ADJ. DI

GRADE TO DRAIN

RETAIN

SEE INSET A

INSET A




RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/25/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_26.dgn
dbuie

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 26 |
| 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**

**PERMIT DRAWING SHEET 80 OF 103**

ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

NAD 83/NA 2011

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR- STA. 14+50 SEE SHEET 32

SFJ

SITE 29

SEE INSET A

INSET A

SOO INVESTMENTS, LLC.

TIM FOWLER

SCOTT PEACOCK, SYLVIA MATTHEWS, & STEPHEN PEACOCK

MOUNT HERMAN CHRISTIAN CHURCH

ELLA & PHILLIP PARRISH

CLAYTON PROPERTIES GROUP INC

MUD BY OTHERS

CITY OF RALEIGH WATER EASEMENT

LATERAL 4' BASE DITCH SEE DETAIL C

8 TONS CL B RIPRAP W/21 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' SWALE SEE DETAIL O

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

LATERAL 4' BASE SWALE SEE DETAIL L

REMOVE SYSTEM

REMOVE PIPE

ADJUST DI

ADJ. DI

REMOVE EX. DI TB JB wMH

GRADE TO DRAIN

RETAIN

55+00

60+00

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

6/25/2024
R-2829A_hyd_4C_psh_26_con.dgn
C:\Users\...\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_26_con.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 28 |
| 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 81 OF 103**

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

15+00

18" CSP W/ELBOWS

BDO

FS

18" RCP-III

2GIB-WSS

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

PDE

3 TONS CL B RIPRAP W/10 SY GEOFAB

Additional Taking for Parcel 1002

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

WGH

NCDOT
(R. G. (GARLAND) & ETHEL BURNETTE)

PAO

BRAIR POND
DEEP POND DRAINAGE PLENUM

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

CLARENCE, JR. & SAMANTHA BOYD

JOHN CAVINESS

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AP

HW

BDO

SP. CUT 4' SWALE SEE DETAIL O

20+00

SPECIAL V DITCH SEE DETAIL A

JS BEGINS

REMOVE

42" RCP-III (NOT BZ 1 BURIED)

15" CSP W/ELBOWS

2GIB-NSF

2GIB 25+00 NSF

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

SEE INSET A

SHT SITE 30

JOHN & DIANE CAVINESS

R. G. (GARLAND) & ETHEL BURNETTE

INSET A

ENGLISH

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS POND

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/5/2024
R:\Highways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_28.dgn
dlucas

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 28 |
| 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 82 OF 103

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

15+00

18" CSP W/ELBOWS

BDO

FS

18" RCP-III

2GIB-WSS

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

PDE

3 TONS CL B RIPRAP W/10 SY GEOFAB

SPECIAL CUT DITCH SEE DETAIL A

Additional Taking for Parcel 1002

WGH

NCDOT
(R) G. (GARLAND) & ETHEL BURNETTE

PAO

RAIN POND
PROPOSED DRAINAGE PIPING

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

CLARENCE, JR. & SAMANTHA BOYD

JOHN CAVINESS

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AP

HW

BERM V DITCH SEE DETAIL AX

SP. CUT 4' SWALE SEE DETAIL O

20+00

SPECIAL V DITCH SEE DETAIL A

REMOVE

42" RCP-III (NOT BURIED)

2GIB-NSF

JS BEGINS

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

15" CSP W/ELBOWS

25+00

2GIB-NSF

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

SEE INSET A

Additional Taking for Parcel 1002

SHT SITE 30

JOHN & DIANE CAVINESS

R. G. (GARLAND) & ETHEL BURNETTE

INSET A

ENGLISH

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS POND

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/5/2024
R:\Highways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_28_con.dgn
dwg

8/17/99

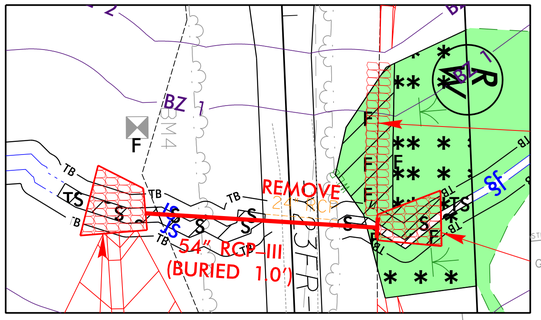
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 31 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

**PERMIT DRAWING SHEET 83 OF 103**

NAD 83/NA 2011




INSET A

ERNEST DeVANE & CLARLYNDA WILLIAMS-DeVANE

LESLIE & JOSEPH WARD

JENNY BIGGS

LAURENCIO & LEONARDA BENITEZ

JOHN BOYKIN

SDO INVESTMENTS, LLC.

APPROX. LOCATION OF EXISTING 100' WELL EASEMENT BM 2005 PG 470

BORASKI, STEVEN
BORASKI, GINA

STEVEN C & GINA BORASKI

JERRY LENGER

HEATHER YARBROUGH

KATIE S EDGERTON

KENNETH E SMITH

HOMECRE-DO, INC

LILA SMITH

PAMELA BATEY BRIGHT REVOCABLE LIVING TRUST, PAMELA BATEY BRIGHT TRUSTEE

GANUS

VILLA ST 17' BST

OLD CASCADE DR 25' SCM

EXISTING R/W

MATCHLINE -Y23AR- STA. 17+00 SEE SHEET 27

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 26

SP. CUT 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

INV OUT=311.0'

HW INV IN=313.0

54" RCP III (NOT BURIED)

SPECIAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL 4' BASE DITCH SEE DETAIL AD

SP. CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

HW INV IN=300.7

42" RCP

48" RCP

42" RCP (NOT BURIED)

SP. CUT DITCH SEE DETAIL A

SP. CUT DITCH SEE DETAIL

INV OUT=300.0

SEE INSET A

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AU

SPECIAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL U

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE Q10=6.9 CFS V10=1.8 FT/S

DO NOT INSTALL TOE PROTECTION WITHIN 16' OF TRAVEL LANE

HW INV IN=305.2 PIPE INV IN=304.3

INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 33 TONS CL II RIPRAP W/62 SY GEOFAB

DITCH Q10=1.6 CFS V10=1.9 FT/S

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

OUTFALL 31-1

INV OUT=297.7 PIPE INV OUT=296.8

LATERAL 4' SWALE SEE DETAIL L

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL BT

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

LATERAL 4' SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

SITE 29A

WNM

SFJ

15+00

10+00

RETAIN 15" RCP

RETAIN 18" HDPE

RETAIN 12" CMP

RETAIN 24" CMP

REMOVE 24" CMP

REMOVE 12" CMP

PDE

PUE

DUE

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND


RK&K
P: (919) 878-8560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_31.dgn
dbuse

8/17/99

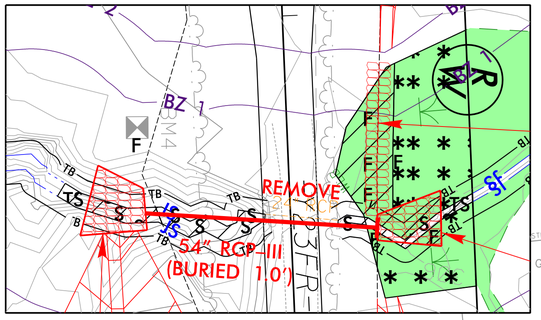
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 31 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

**PERMIT DRAWING SHEET 84 OF 103**

NAD 83/NA 2011

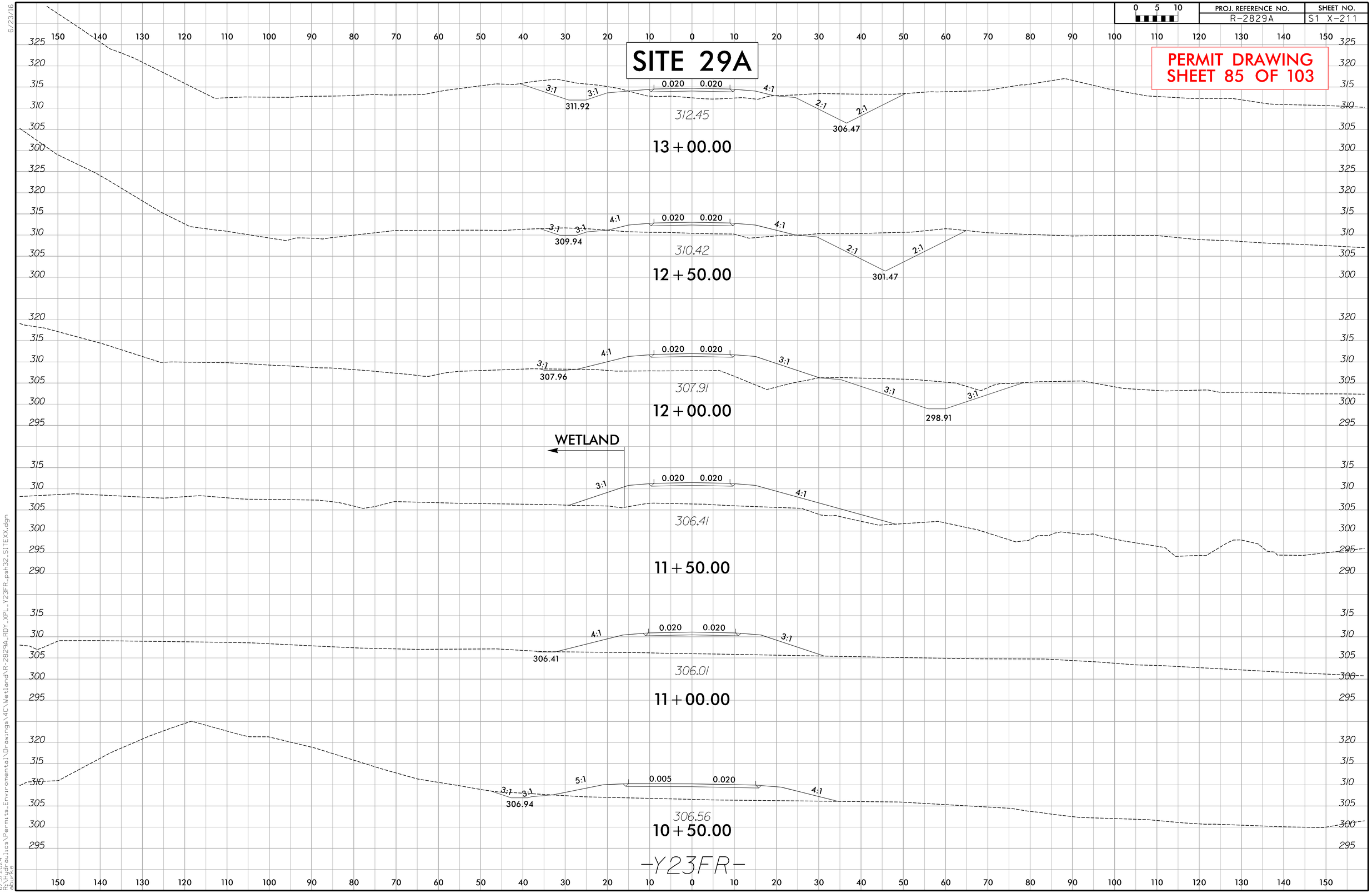

BZ 1
M4
F
TB
T5
S
REMOVE
54" RCP III
(BURIED 1.0')
Y23FR-
T5
F
F
F

6/23/16

| 0 5 10 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S1 X-211 |

# SITE 29A

**PERMIT DRAWING**
**SHEET 85 OF 103**




6/5/2024
P:\Highways\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_RDY_XPL_Y23FR_psh32_SITEXX.dgn
dsmith

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 34 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 86 OF 103**

ENGLISH

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

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

NAD 83/NA 2011

MATCHLINE -Y24R- STA. 24+00
SEE SHEET 35

## INSET A

SEE DETAIL E

PUE

(CHECK STORM/SEWER)

SP. DET. HW.

CONC HW/WW

EXTEND EXISTING 5'x6'

2GIB –WSF

15" CSP W/ELBOWS

BY3-314

144 FO

24 FO

96 FO

REMOVE 60' EXIST 15"

20+00

FS

REMOVE DI

2GIB–

TB JB w/MH

15" RCP-III

TRENCHLESS INSTALLATION 72" WELDED STEEL

PLUG & FILL W/FF

END UNK

15" CMP

15" CSP W/ELBOWS

EXTEND EXISTING 5'x6'

SP. DET. HW.

600 PR

BZ 1

BZ 2

PUE

DUE

STEC

DAVID HAWLEY

CHRISTOPHER DANIELS

SEVENTY EAST ASSOCIATES, LLC.

R. GARLAND BURNETTE

SITE 31

WGW

C800 INLET STABILIZATION 58 TONS CL II RIPRAP W/86 SY GEOFAB SEE DETAIL CH

SEE INSET A

3406 Q10 = 1.03cfs V10 = 0.36fps

SWALE Q10 = 12.57cfs V10 = 1.97fps

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

2 TONS CL B RIPRAP W/7 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

RETAIN SYSTEM

SEPTIC

CONTROL BOX

INLET

18" RCP

24" RCP

SILT FENCE

-Y24R-

2GIB–WSS

US 70 BUS WB 3rf BST

US 70 BUS EB 3rf BST

CABLE

REMOVE CONC PAVED DITCH ~ 100 LF

CONC PAVED DITCH

2GIB–WSF

1 TONS CL B RIPRAP W/5 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE Q10 = 25.43cfs V10 = 1.94fps

2 TONS CL B RIPRAP W/7 SY GEOFAB

C800 OUTLET STABILIZATION 51 TONS CL II RIPRAP W/68 SY GEOFAB SEE DETAIL CH

SFZ(1)

SITE 31

WGV(1)

SFY


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_34.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 34 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 87 OF 103**

ENGLISH

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

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

NAD 83/NA 2011

SEVENTY EAST ASSOCIATES, LLC.

CHRISTOPHER DANIELS

DAVID HAWLEY

R. GARLAND BURNETTE

STEC

## INSET A

SEE DETAIL E

PUE (CHECK STORM SEWER)

6" PVC 16" PVC

SP. DET. HW.

CONC HW/WW

EXTEND EXISTING 5'x6'

2GIB –WSF

15" CSP W/ELBOWS

TRENCHLESS INSTALLATION 72" WELDED STEEL

REMOVE 60' EXIST 15"

20+00

REMOVE DI

2GIB–

FS

TB JB w/MH

15" RCP–III

PLUG & FILL W/FF

BZ 1 BZ 2

600 PR

SP. DET. HW.

PUE DUE

SITE 31

WGW

C800 INLET STABILIZATION 58 TONS CL II RIPRAP W/86 SY GEOFAB SEE DETAIL CH

SEE INSET A

3406 Q10 = 1.03cfs V10 = 0.36fps

SWALE Q10 = 12.57cfs V10 = 1.97fps

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

2 TONS CL B RIPRAP W/7 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

RETAIN SYSTEM

18" RCP

LATERAL 4' BASE SWALE SEE DETAIL I

REMOVE CONC PAVED DITCH ~ 100 LF

2GIB–WSS

2GIB–WSF

1 TONS CL B RIPRAP W/5 SY GEOFAB

SPECIAL V DITCH SEE DETAIL F

-Y24R-

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 35

SFZ(1)

SITE 31

WGV(1)

SFY

C800 OUTLET STABILIZATION 51 TONS CL II RIPRAP W/68 SY GEOFAB SEE DETAIL CH

8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_34_con.dgn


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

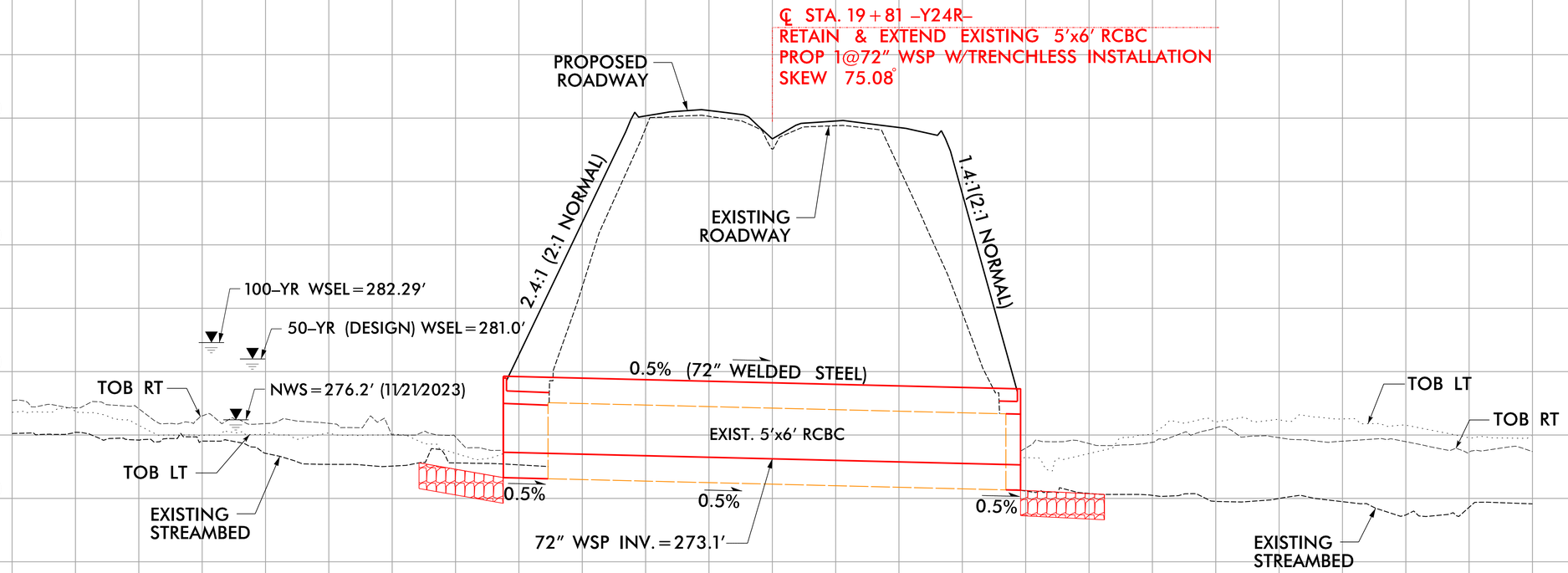
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 88 OF 103

ENGLISH

# SITE 31
# –Y24R– STA. 19+81




## RETAIN AND EXTEND 5'x6' RCBC + 72" WELDED STEEL PIPE
## (Not buried, Length =181')

8/5/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_34_SITEXX_PFL.dgn
dlucas

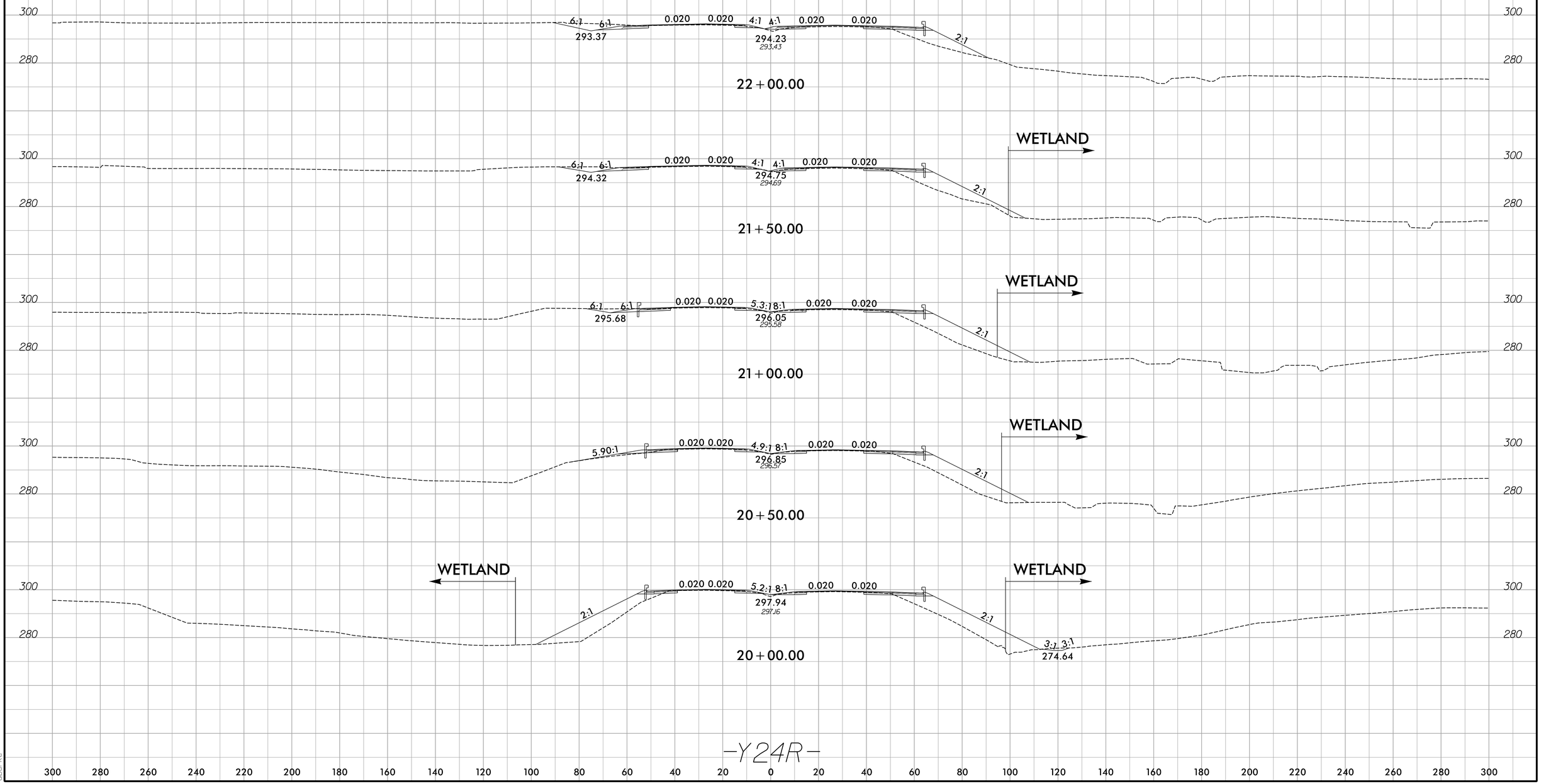
6/23/16

| 0 10 20 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-40 |

# SITE 31

**PERMIT DRAWING**
**SHEET 89 OF 103**

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300




-Y24R-

6/25/2024
C:\Highways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_Y24R_XPL_psh34_SITEXX .dgn
dbrue

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 35 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 90 OF 103**

# INSET A

WGX(2)

SGI

SITE 32

SGA

SEE INSET A

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

SEVENTY EAST ASSOCIATES, LLC.

ENTERPRISES, LLC.

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

BUFFALO ACRES LN

WALNUT DR

NAD 83/NA 2011

TDE

PUE

30" RCP–III

15" RCP–III

2GIB–NSF

2GIB–WSS

EXTEND EXIST 6'x8'

18" RCP–III

24" RCP–III

SP. DET. HW.

PROP. SIGN

35+00

15+00

20+00

25+00

30+00

-Y24A-

-Y24R-

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

2 TONS CL B RIPRAP W/7 SY GEOFAB

8 TONS CL B RIPRAP W/21 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE SWALE SEE DETAIL O

C900 INLET STABILIZATION 52 TONS CL II RIPRAP W/89 SY GEOFAB SEE DETAIL CI

C900 OUTLET STABILIZATION 241 TONS CL II RIPRAP W/294 SY GEOFAB SEE DETAIL CI

LATERAL 4' BASE SWALE SEE DETAIL L

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SEE INSET B

TRENCHLESS INSTALLATION (60' WELDED STEEL)

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

REMOVE JB

REMOVE SYSTEM

15" CSP W/ELBOWS

(2) 2GIB–WSF

(2) 15" RCP–III

15" RCP–IV

2GIB–NSS

2GIB–WSS

TBDI

(2) TBDI

# INSET B

EXTEND EXIST 6'x9'

3524

STEEL CASING

SP. DET. HW.

LATERAL 4' BASE SWALE SEE DETAIL L

PDE

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

ENGLISH

SCALE

SCALE FOR INSET


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_35.dgn
dbuse

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 35 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 91 OF 103**

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

INSET A

INSET B

SEE INSET A

SEE INSET B

SITE 32

SITE 32

WGX(2)

SGI

SGA

SGA

NAD 83/NA 2011

SEVENTY EAST ASSOCIATES, LLC.

ENTERPRISES, LLC.

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

-Y24A-

-Y24R-

TDE

PUE

PROP. SIGN

SP. DET. HW.

EXTEND EXIST 6'x8'

EXTEND EXIST 6'x9'

30" RCP-III

24" RCP-III

18" RCP-III

15" RCP-III

15" RCP-IV

2GIB-NSS

2GIB-NSF

2GIB-WSS

2GIB-WSF

(2) 2GIB-WSF

(2) 15" RCP-III

15" CSP W/ELBOWS

TBDI

(2) TBDI

REMOVE DI

REMOVE JB

REMOVE SYSTEM

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION (60' WELDED STEEL)

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

2 TONS CL B RIPRAP W/7 SY GEOFAB

8 TONS CL B RIPRAP W/21 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE SWALE SEE DETAIL O

C900 INLET STABILIZATION 52 TONS CL II RIPRAP W/89 SY GEOFAB SEE DETAIL CI

C900 OUTLET STABILIZATION 241 TONS CL II RIPRAP W/294 SY GEOFAB SEE DETAIL CI

LATERAL 4' BASE SWALE SEE DETAIL L

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

ENGLISH

SCALE

SCALE FOR INSET

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


8/5/2024
R-2829A_hyd_4C_psh_35_con.dgn
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_35_con.dgn
dbuse

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

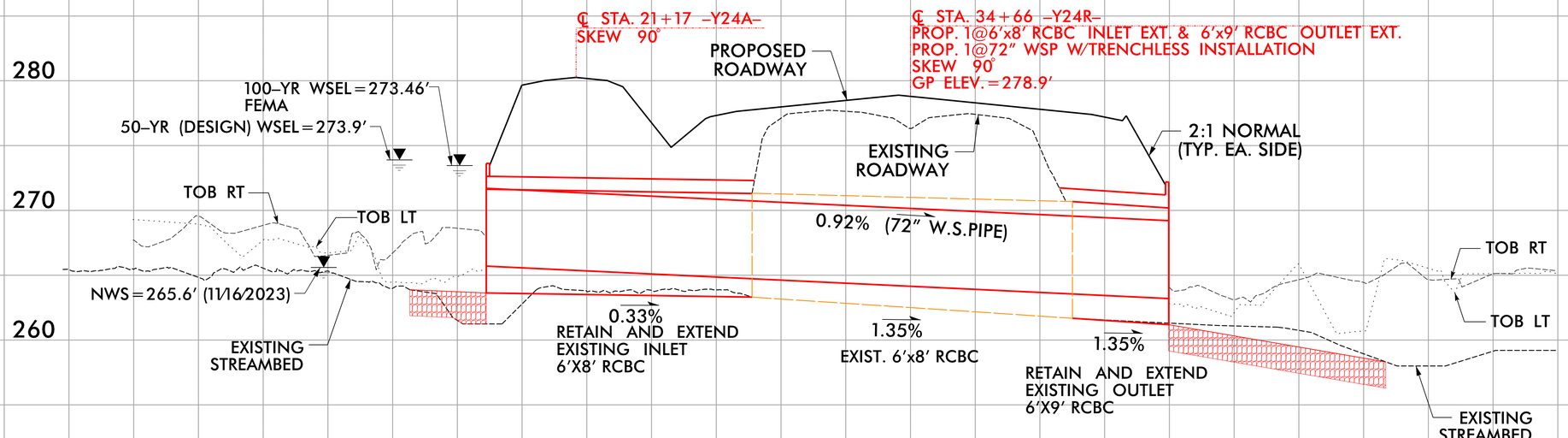
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 92 OF 103

ENGLISH

# SITE 32
# –Y24– STA. 34+66




***5'x6' RETAIN AND EXTEND EXISTING RCBC***
***72" WELDED STEEL SUPPLEMENTAL PIPE***
***(Not buried, Length =124')***

6/5/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\VR-2829A_hyd_4C_psh_35_SITE64_PFL.dgn

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 36A |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 93 OF 103**

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

E E WETLAND EXCAVATION

* * * MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

BOBBY B GRADY

JANET P STORMS & LINDA S POWELL

JANET P HINTON

JANET P STORMS & LINDA S POWELL

POND WSE=304'

SAAL

SITE 35

SAAK

EDGE OF AUBURN LLC

SITE 34

SITE 33

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

SEE INSET A

WAAJ

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

WHD(2)

SPECIAL CUT DITCH SEE DETAIL A 2 TONS CL B RIP RAP W/ SY GEOFAB

GRADE TO DRAIN

REMOVE

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

15" CSP W/ELBOWS

TB 2GIB-NSF

2GIB-NSS

FS 15" RCP III

1 TONS CL B RIP RAP W/5 SY GEOFAB

36A05 Q10=1.00cfs V10=1.22fps

WAAK

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CJ

SITE 33

SGA

48 TONS CL II RIPRAP W/98 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

JEFFREY P CATES & NANCY S CATES

L & L COMPANY LLC

SGD

SITE 24

NC RAILROAD COMPANY

NORFOLK-SOUTHERN RR

-Y26R-

-Y26RSR1-

-Y25-

15+00

10+00

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 18

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 18

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

INSET A

GRADE TO DRAIN

REMOVE

4'X4' RCBC

10'x9' RCBC

15" RCP III

15" CSP W/ELBOWS

TB 2GIB-NSF

TONS CL B RIP RAP W/5 SY GEOFAB


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112



Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions


6/5/2024
N:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_36A.dgn
dlucas

8/17/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| R-2829A | 36A |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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

**PERMIT DRAWING SHEET 94 OF 103**

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

E E WETLAND EXCAVATION

* * MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

BOBBY B GRADY

JANET P STORMS & LINDA S POWELL

JANET P HINTON

JANET P STORMS & LINDA S POWELL

EDGE OF AUBURN LLC

SAAL

SITE 35

SAAK

SITE 34

SITE 33

WAAJ

WHD(2)

WAAK

SITE 33

SGA

SGD

SITE 24

POND WSE=304'

15+00

10+00

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

SEE INSET A

SPECIAL CUT DITCH SEE DETAIL A 2 TONS CL B RIP RAP W/7 SY GEOFAB

GRADE TO DRAIN

REMOVE

TB 2GIB-NSF

2GIB-NSS

15" RCP III

-Y26R-

-Y26RSR1-

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

15" CSP W/ELBOWS

1 TONS CL B RIP RAP W/5 SY GEOFAB

36A05 Q10 = 1.00cfs V10 = 1.22fps

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/138 SY GEOFAB SEE DETAIL CJ

48 TONS CL II RIPRAP W/98 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

JEFFREY P CATES & NANCY S CATES

NC RAILROAD COMPANY

NORFOLK SOUTHERN RR

-Y25-

RETAIN

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 18

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 18

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

INSET A


STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St, Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112


Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Responsive People | Creative Solutions

6/5/2024
C:\Projects\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_36A_con.dgn

5/14/99

# SITE 24
# –Y26R– STA. 24+84

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

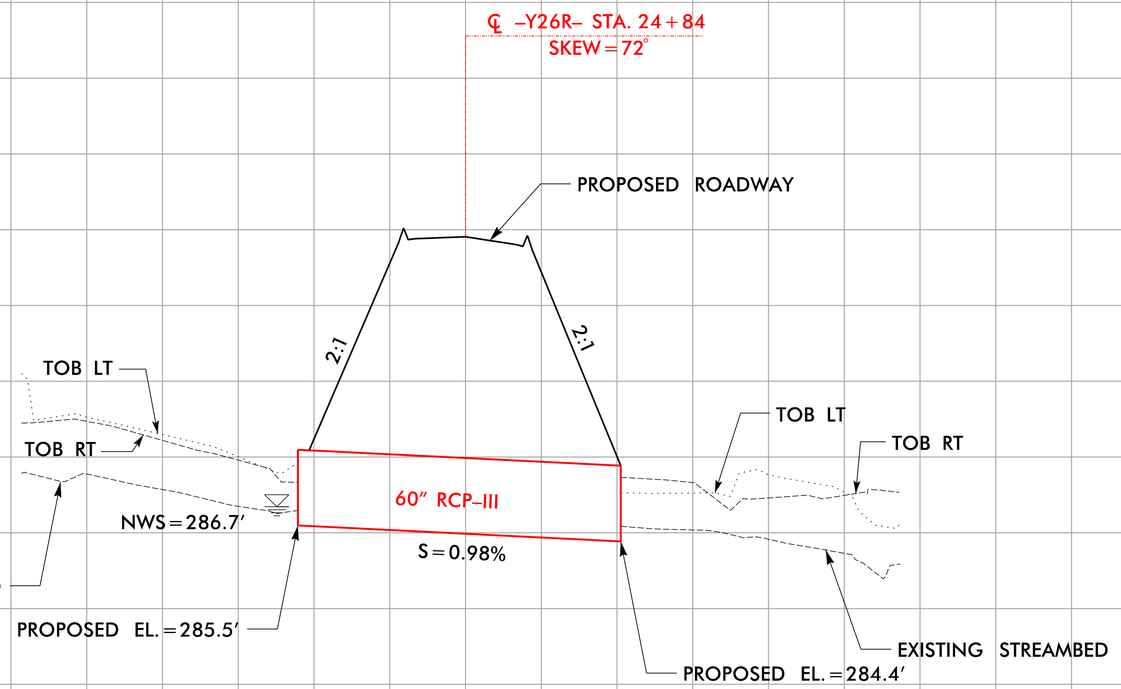
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 95 OF 103

ENGLISH




## 60" RCP–III
## (Buried 1.0', Length =107')

8/5/2024
K:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_36A_site25_PFL.dgn
dbuffington

5/14/99

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| | |

| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|---|---|

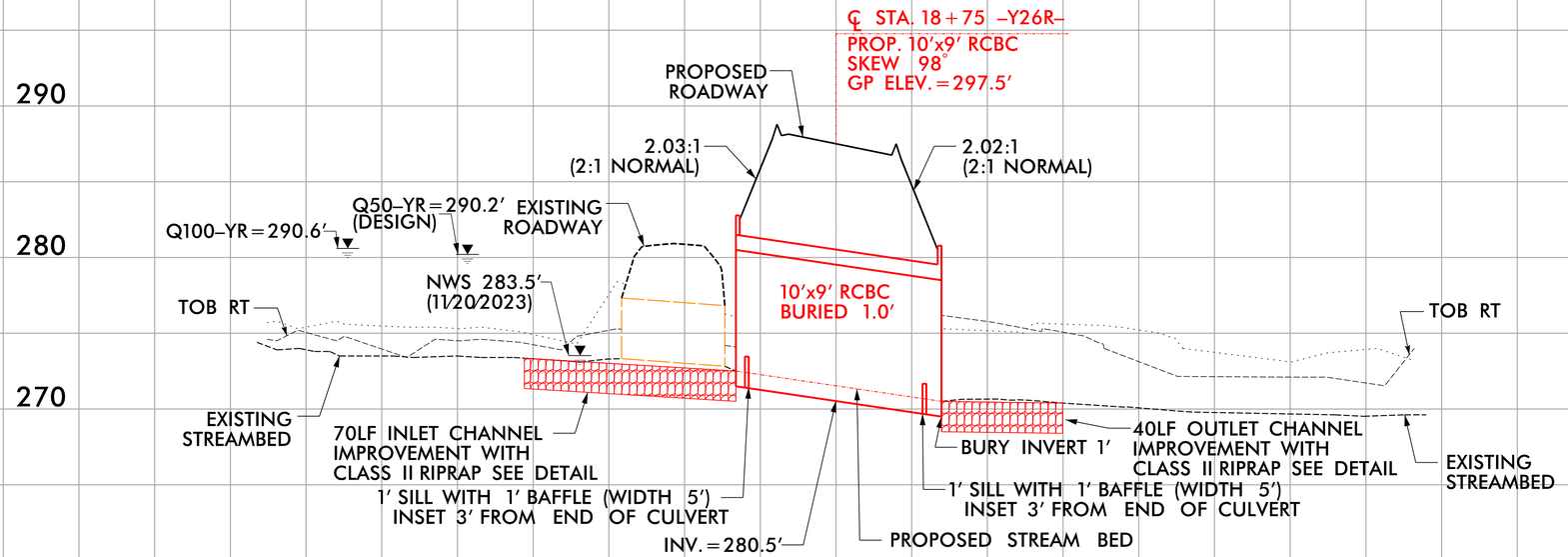
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 96 OF 103

ENGLISH

# SITE 33, 34, & 35
# –Y26R– STA. 18+75




## 10'x9' RCBC
## (Buried 1.0', Length = 68')

6/5/2024
C:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_36A_SITE353637_PFL.dgn

6/23/16

| 0 5 10 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-85 |

# SITE 34

**PERMIT DRAWING**
**SHEET 97 OF 103**

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

310
300
290

SHEAR @
–Y26RSR1–

0.004 0.020

298.70

2:1

294.07

**20+00.00**

300
290

2:1

0.025 0.025

297.77

2:1

286.68

**19+50.00**

300
290
280

298.19

0.040 0.040

296.94

2:1 2:1

286.20

**19+00.00**

300
290

WETLAND

297.85

0.040 0.040

296.60

2:1 2:1

286.69

**18+50.00**

–Y26R–

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

6/5/2024
C:\Projects\Permits.Environmental\Drawings\MC\Wetland\R-2829A_Y26RATC_XPL_psh36a_site36.dgn
bburke

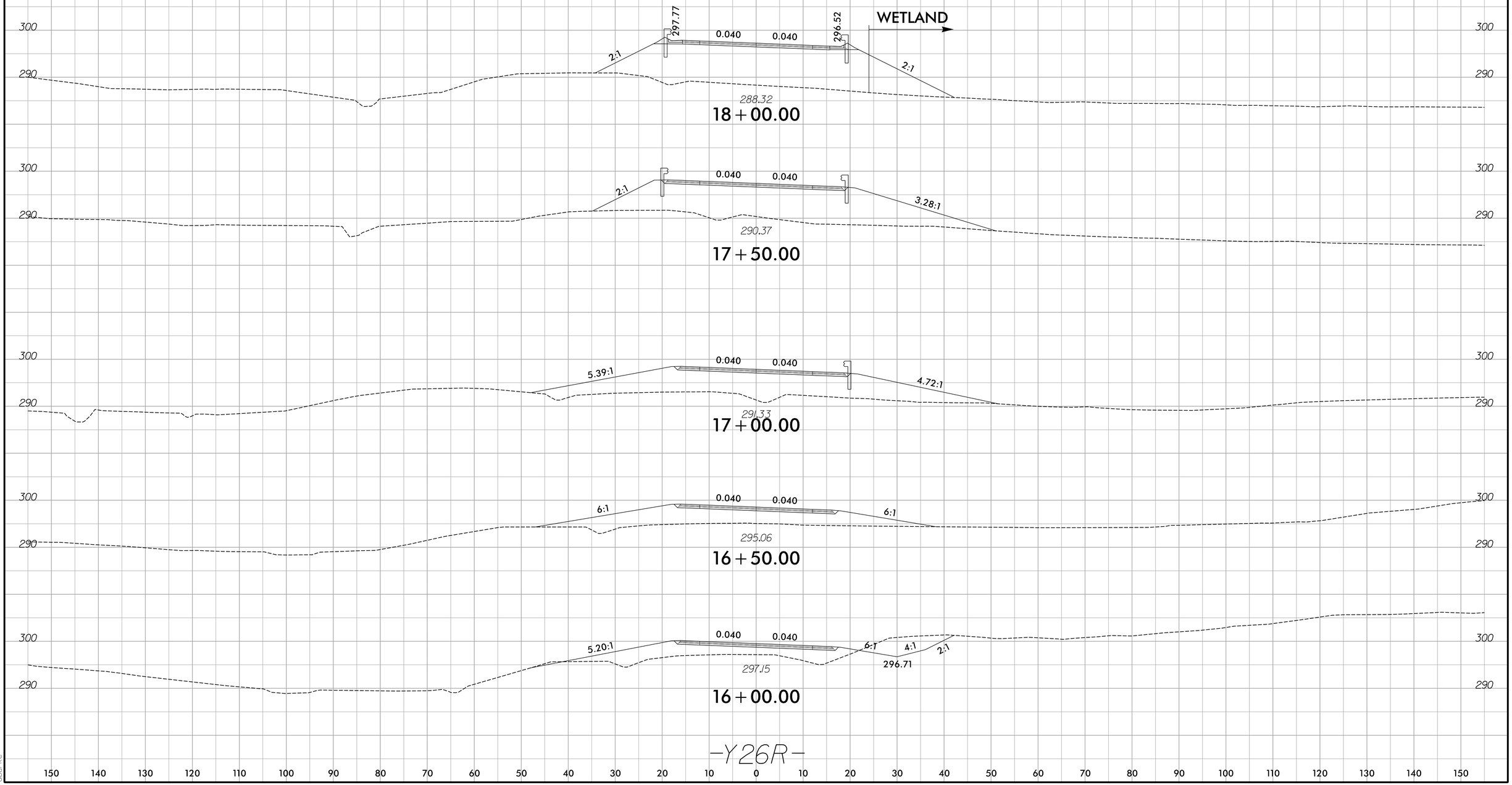
6/23/16

| 0 5 10 | PROJ. REFERENCE NO. | SHEET NO. |
|---|---|---|
| | R-2829A | S2 X-84 |

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

# SITE 35

**PERMIT DRAWING**
**SHEET 98 OF 103**




6/5/2024
R:\Projects\Permits_Environmental\Drawings\MC\Wetland\R-2829A_Y26RATC_XPL_psh36a_ste37.dgn
dburke

## WETLAND AND SURACE WATER IMPACTS SUMMARY

| | | | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site No. | Station (From/To) | Structure Size / Type | 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 | -Y22RPAFLY_REV- 28+00 - 29+58 LT | Roadway Fill: WFG | 0.055 | | | | | | | | | |
| | | | | | | | | | | | | |
| 2 | -L- 967+04 - 968+83 LT | Roadway Fill: WFJ | 0.098 | | 0.023 | | | | | | | |
| 3 | -L- 972+77 - 979+44 LT | Bridge: SEW | | | | | | 0.031 | | 319 | | |
| | | WFN(1) | 0.176 | 0.765 | 0.018 | 0.034 | 0.697 | | | | | |
| | -L- 976+61 - 978+80 RT | Roadway Fill: SEY | | | | | | 0.002 | 0.023 | 15 | 174 | |
| | | WFN(2) | 0.257 | | 0.001 | 0.098 | | | | | | |
| 4 | -L- 1001+92 - 1004+65 RT | 48" RCP: WFY | 0.449 | | | 0.034 | | | | | | |
| 5 | -L1- 1008+79 | 9'x8' RCBC, SFH | | | | | | 0.049 | 0.010 | 447 | 96 | |
| 6 | -L1- 1013+72 | 12'x8' RCBC, SFF | | | | | | 0.082 | 0.009 | 619 | 65 | |
| 7 | -L1- 1012+26 LT - 1018+49 RT | Roadway Fill: SFE | | | | | | 0.054 | 0.007 | 688 | 89 | |
| | | WFZ | 0.113 | | 0.015 | 0.008 | | | | | | |
| 8 | -L1- 1022+67 LT - 1025+03 RT | 42" RCP: SFB | | | | | | 0.017 | | 222 | | |
| | | Structure Stabilization | | | | | | 0.001 | 0.001 | 24 | 10 | |
| | | WGD | 0.021 | | | | | | | | | |
| | | WGC | 0.013 | | | 0.001 | | | | | | |
| | | WGB | 0.079 | | | | | | | | | |
| SHEET TOTALS*: | | | **1.261** | **0.765** | **0.057** | **0.175** | **0.697** | **0.236** | **0.050** | **2334** | **434** | **0** |

*Rounded totals are sum of actual impacts

NOTES:

Site 3: 4 interior bents with 4 @ 3.5' diameter columns per bent= total 154.4sq ft (0.004ac) permanent wetland impact (included above)

Site 3: WFN(1) piece above SEW is a total take in summary above; hatching outside construction impacts is not shown

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A

## WETLAND AND SURACE WATER IMPACTS SUMMARY

| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS: Permanent Fill In Wetlands (ac) | WETLAND IMPACTS: Temp. Fill In Wetlands (ac) | WETLAND IMPACTS: Excavation in Wetlands (ac) | WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac) | WETLAND IMPACTS: Hand Clearing in Wetlands (ac) | SURFACE WATER IMPACTS: Permanent SW impacts (ac) | SURFACE WATER IMPACTS: Temp. SW impacts (ac) | SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft) | SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft) | SURFACE WATER IMPACTS: Natural Stream Design (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | -L1- 1035+14 - 1037+70 LT | 48" RCP: SFA | | | | | | 0.008 | | 124 | | |
| | | WGF | 0.016 | | | | | | | | | |
| | | WGG | 0.156 | | | | | | | | | |
| | | WAAE | 0.092 | | | | | | | | | |
| | | WAAF | | 0.010 | | | | | | | | |
| | -L1- 1033+83 - 1038+36 LT | PAD | | | | | | 2.695 | | | | |
| | | | | | | | | | | | | |
| 10 | -Y23RPB- 27+59 - 28+23 LT | Roadway Fill: WGJ | 0.013 | | | 0.010 | | | | | | |
| | | | | | | | | | | | | |
| 11 | -L1- 1060+75 - 1062+35 CL | Roadway Fill: SFD | | | | | | 0.009 | | 71 | | |
| | | WGM | 0.023 | | | | | | | | | |
| | | | | | | | | | | | | |
| 12 | -L1- 1062+62 LT - 1063+75 RT | Roadway Fill: SFC | | | | | | 0.038 | | 479 | | |
| | | Structure Stabilization | | | | | | 0.002 | 0.001 | 22 | 13 | |
| | | WGN | 0.001 | | | 0.005 | | | | | | |
| | | | | | | | | | | | | |
| 13 | -L1- 1066+33 - 1067+40 RT | Roadway Fill: WGO | 0.028 | | | 0.004 | | | | | | |
| | | | | | | | | | | | | |
| 14 | -L1- 1084+46 RT - 1086+92 LT | Ditches: SFV (White Oak Creek) | | | | | | 0.017 | 0.029 | 70 | 115 | |
| | | | | | | | | | | | | |
| 15 | -L1- 1098+69 - 1104+74 LT | 8'x7' RCBC, SFR | | | | | | 0.015 | 0.002 | 169 | 19 | |
| | | WGR | 0.760 | | 0.061 | 0.112 | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| SHEET TOTALS*: | | | **1.089** | **0.010** | **0.061** | **0.131** | **0.000** | **2.784** | **0.032** | **935** | **147** | **0** |

*Rounded totals are sum of actual impacts

NOTES:

Site 15: WGR is a total take in summary above; hatching outside construction impacts is not shown

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A

## WETLAND AND SURACE 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) |
| 16 | -L1- 1110+56 LT - 1116+24 RT | Roadway Fill, 7'x7' RCBC: SFN | | | | | | 0.041 | | 413 | | |
| | | WGR | 1.387 | | | 0.088 | | | | | | |
| | | WGT | | | 0.008 | 0.018 | | | | | | |
| | | | | | | | | | | | | |
| 17 | -L1- 1113+08 - 1114+68 RT | Roadway Fill: WGS | 0.237 | | | 0.009 | | | | | | |
| | | | | | | | | | | | | |
| 18 | -L1- 1114+82 LT - 1119+07 RT | Roadway Fill: SFQ | | | | | | 0.050 | 0.001 | 605 | 8 | |
| | | | | | | | | | | | | |
| 19 | -L1- 1124+16 LT - 1126+26 RT | 60" RCP: SFS | | | | | | 0.031 | | 445 | | |
| | | Structure Stabilization | | | | | | 0.003 | 0.002 | 21 | 10 | |
| | | WGR | 0.202 | | | 0.020 | | | | | | |
| | | | | | | | | | | | | |
| 20 | -L1- 1137+84 LT - 1142+30 RT | 54" RCP/CAAP: SFT | | | | | | 0.054 | | 757 | | |
| | | Structure Stabilization | | | | | | 0.004 | 0.002 | 47 | 25 | |
| | | | | | | | | | | | | |
| 20A | -Y24R- 36+70 RT | Ditch: WGU(2) | | | | 0.002 | | | | | | |
| | | | | | | | | | | | | |
| 21 | -L1- 1148+27 LT - 1149+37 RT | Roadway Fill: WGY | 0.099 | | | | | | | | | |
| | | | | | | | | | | | | |
| 22 | -L1- 1148+75 - 1149+39 RT | Roadway Fill: WGZ | 0.059 | | | 0.016 | | | | | | |
| | | | | | | | | | | | | |
| 23 | -L1- 1151+32 LT - 1154+50 RT | 6'x8' RCBC, SGC | | | | | | 0.027 | 0.002 | 418 | 25 | |
| | | WHB | 1.178 | | 0.002 | 0.061 | | | | | | |
| | | | | | | | | | | | | |
| SHEET TOTALS*: | | | **3.162** | **0.000** | **0.010** | **0.214** | **0.000** | **0.210** | **0.007** | **2706** | **68** | **0** |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A

## WETLAND AND SURACE 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) |
| 24 | -L1- 1159+88 LT - 1162+99 RT | 54" CAAP / 60" RCP: SGD | | | | | | 0.034 | | 387 | | |
| | | Structure Stabilization | | | | | | 0.007 | 0.003 | 92 | 25 | |
| | -L1- 1161+00 - 1161+40 LT | Bank Stabilization | | | | | | 0.010 | | 71 | | |
| | | | | | | | | | | | | |
| 25 | -L1- 1169+38 LT - 1172+22 RT | 11'x8' RCBC: SGE | | | | | | 0.036 | 0.002 | 443 | 23 | |
| | | Structure Stabilization | | | | | | 0.003 | 0.002 | 46 | 33 | |
| | | WHD(1) | 0.255 | | 0.015 | 0.027 | | | | | | |
| | | WHD(2) | 0.195 | | 0.009 | 0.013 | | | | | | |
| | | | | | | | | | | | | |
| 26 | -L1- 1171+28 LT - 1178+18 RT | Roadway Fill: SGG | | | | | | 0.086 | 0.001 | 744 | 11 | |
| | | | | | | | | | | | | |
| 27 | -L1- 1174+66 - 1179+63 LT | Roadway Fill: SGF | | | | | | 0.033 | 0.004 | 346 | 40 | |
| | | WHD(2) | 0.108 | | 0.037 | 0.023 | | | | | | |
| | | | | | | | | | | | | |
| 28 | -Y22CR- 13+50 LT - 14+26 RT | 2 @ 12'x8' RCBC: SKR | | | | | | 0.052 | 0.011 | 192 | 44 | |
| | | | | | | | | | | | | |
| 29 | -Y23R- 61+16 LT | 36" RCP: SFJ | | | | | | 0.008 | | 64 | | |
| | | Structure Stabilization | | | | | | 0.002 | 0.001 | 20 | 10 | |
| | | | | | | | | | | | | |
| 29A | -Y23FR- 11+07 - 12+01 LT | 54" RCP: SFJ | | | | | | 0.007 | 0.001 | 78 | 12 | |
| | | Structure Stabilization | | | | | | 0.003 | 0.001 | 24 | 10 | |
| | | WNM | 0.021 | | | 0.044 | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| SHEET TOTALS*: | | | **0.579** | **0.000** | **0.061** | **0.107** | **0.000** | **0.281** | **0.026** | **2507** | **208** | **0** |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A

## WETLAND AND SURACE 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) |
| 30 | -Y23DR- 23+90 LT - 25+00 RT | 42" RCP: SHT | | | | | | 0.011 | | 225 | | |
| | -Y23DR- 23+59 - 25+53 LT | PAO | | | | | | 0.792 | | | | |
| | | | | | | | | | | | | |
| 31 | -Y24R- 19+06 LT - 21+74 RT | 5'x6' RCBC Ext / 72" WSP: SFY | | | | | | 0.001 | | 6 | | |
| | | Structure Stabilization | | | | | | 0.005 | 0.002 | 34 | 10 | |
| | | WGW | 0.023 | | 0.004 | 0.019 | | | | | | |
| | | WGV(1) | 0.055 | | 0.010 | 0.021 | | | | | | |
| | | | | | | | | | | | | |
| 32 | -Y24R- 34+65 CT | 6'x8'/9' RCBC Ext / 72" WSP: SGA | | | | | | 0.064 | 0.001 | 270 | 7 | |
| | | Structure Stabilization | | | | | | 0.007 | 0.003 | 30 | 12 | |
| | | | | | | | | | | | | |
| 33 | -Y26R- 18+73 CT | 10'x9' RCBC: SGA | | | | | | 0.016 | 0.001 | 137 | 11 | |
| | | Structure Stabilization | | | | | | 0.007 | 0.006 | 40 | 37 | |
| | | WHD | | | 0.007 | 0.014 | | | | | | |
| | | WAAK | 0.026 | | | 0.020 | | | | | | |
| | | | | | | | | | | | | |
| 34 | -Y26R- 18+50 LT | 10'x9' RCBC: SAAK | | | | | | 0.002 | 0.001 | 31 | 11 | |
| | | | | | | | | | | | | |
| 35 | -Y26R- 18+35 LT | 10'x9' RCBC: SAAL | | | | | | | 0.001 | | 10 | |
| | | | | | | | | | | | | |
| 36 | -Y22RPE_REV- 45+95 - 46+14 RT | Ditch: WFK | | | | 0.005 | | | | | | |
| | | | | | | | | | | | | |
| SHEET TOTALS*: | | | **0.104** | **0.000** | **0.021** | **0.079** | **0.000** | **0.905** | **0.015** | **773** | **98** | **0** |
| | | | | | | | | | | | | |
| PROJECT TOTALS*: | | | **6.229** | **0.775** | **0.179** | **0.706** | **0.697** | **4.416** | **0.130** | **9256** | **954** | **0** |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/6/2024
Wake County
R-2829A