



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

May 1, 2020

US Army Corps of Engineers
2407 West 5th Street
Washington, North Carolina 27889-1000

Attention: Mr. Tom Steffens
NCDOT Coordinator

Dear Sir:

Subject: Revised Modification Request for the Section 404 Individual Permit and Section 401 Water Quality Certification for the proposed Havelock Bypass in Craven County. TIP No. R-1015. Debit \$ 570 from WBS 34360.1.2

The North Carolina Department of Transportation (NCDOT) submitted a modification request on March 12, 2020 for revisions to the project permits. Based on further coordination with the NC Division of Water Resources, further revisions need to be made to this request. This letter is a revised version of the March 12, 2020 request, showing additional and modified information highlighted in red.

Wetland and Stream Impacts:

These changes reflect both roadway design changes and changes in accommodations for Duke Energy. Coordination with Duke Energy resulted in a reduction in the number of access points to their transmission lines, and a reduction in impacts.

- Detail sheets updated (permit drawings 2 & 3)
- Site 1 (permit sheets 17&18) added riprap in the excavation area due to riprap pads at two pipes. A driveway was added, which did increase the impacts from fill, but decreased the mechanized clearing and excavation. The permitted total (1.16 acre) did not change.
- **Site 3: (permit sheets 28 & 29) a driveway was relocated and an error found in the original permit total from 4/9/2019. Fill increases by 0.12 acre. Mechanized Clearing decreased by 0.03 acre. Total difference a 0.09 increase in permanent impacts.**
 - Actual new Fill Impacts = 26.034 acre, Total old Fill impacts=25.906 acre; actual difference 0.128 acre, rounded difference (26.03-25.91) = 0.12 acre as reported
- **Site 7: omitted in 3/12/20 modification request, (permit sheets 35 & 36). Access driveway was removed. Fill in wetlands reduced by 0.04 acre. Mechanized Clearing reduced by 0.01ac.**
- Update to permit sheets 124 & 125. Changes were outside of impacted areas
- Update to permit sheets 130 & 131. Changes were outside of impacted areas

- Site 21 (permit sheets 148 & 149) pipe outlet shifted, fill increased, excavation decreased, no change to total impacts permitted for site (0.85 acre).
- Site 26: omitted in 3/12/20 modification request, (permit sheets 93 & 94). Slope stake lines were updated due to error in cross slope reported on plan sheets versus cross-sections. Fill in wetlands reduced by 0.01 acre. Hand Clearing increased, but the reported amount did not change.
 - Fill decreased by 0.0098 acre, Hand Clearing increased by 0.0076 acre (new = 0.1139 acre, old 0.1063 acre)
- Site 27: omitted in 3/12/20 modification request (permit sheets 93 & 94). Access drive was removed. Fill in wetlands reduced by 0.04 acre. Excavation in Wetlands increased by 0.03 acre. Hand Clearing reduced by 0.01 ac.
 - Actual Excavation in Wetlands increase by 0.0265 acre (new = 0.079 acre, old = 0.053 acre)
- Site 31: omitted in 3/12/20 modification request (permit sheets 102 & 103). Access drive was removed. Fill in wetlands reduced by 0.01 acre. Excavation in Wetlands reduced, but the reported amount did not change.
 - Fill in Wetlands (new = 2.2231 acre, old 2.2289 acre)
 - Excavation in Wetlands (new = 0.068 acre, old 0.072 acre)
- Site 47, (permit sheets 142 & 143) pipe shortened to eliminate easement on property, HW added. “Temporary Impacts in Surface Water” reduced by 0.01 ac. “Existing Channel Impacts Temp.” reduced by 10’.
- Summary sheets are updated to reflect changes to impacts and date (permit sheets 165, 166 & 167).
- Permanent fill in wetlands is increased slightly from 98.66 to 98.74 acres. Mechanized clearing is reduced from 11.43 to 11.38 acres. Changes at Site 47 caused reductions in temporary surface water and temporary channel impacts.
- Total permanent impact from hydraulics and roadway changes increased by 0.03 acre.
- Additional sheets have been prepared for the underground utility which requires additional impacts in wetland Sites 1, 2 and 3. The permit drawings showed underground utilities through these sections, but with no splice pits or hand holes, which are required. These supplemental drawings were revised by Division 2 to show the permanent hand holes and temporary splice pits with the total impacts required. Impacts shown on the supplemental permit drawings are as follows:
 - = NE-03 (Site 1), 409 s.f. for splice pits and 15 s.f. for hand holes
 - = NE-04 (Site 2), 518 s.f. for splice pits and 30 s.f. for hand holes
 - = NE-05 (Site 3), 600 s.f. for splice pits and 30 s.f. for hand holes
 - = Additional total impacts needed = 1,602 s.f. (0.037 acre) of excavation and handclearing for bore splice pits and hand holes. Additional coordination with Division 2 staff indicated this work should be counted as permanent impacts. Five utility impact sheets and the utility impact summary sheet have been updated. These three additions can be seen listed at the bottom of the site list as excavation impacts.

The net increase in permanent wetland impacts from these changes is 0.07 acre. An updated mitigation acceptance letter will be forwarded as soon as it is available.

Buffer Impacts:

- Site 7 (buffer sheet 13) reduced Allowable Zone 1 impacts by 282 s.f. The pipe was shortened to eliminate easement on a property, and a headwall added.
- Summary updated (buffer sheet 18 & 19). Allowable Zone 1 impacts are reduced from 42,810 s.f. to 42,529 s.f. due to the changes at Site 7.

A copy of this modification request and its distribution list will be posted on the NCDOT website at: <https://xfer.services.ncdot.gov/pdea/PermApps/>

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Gordon Cashin at gcashin@ncdot.gov or (919) 707-6107.

Sincerely,

DocuSigned by:

Mack C. Rivenbark III

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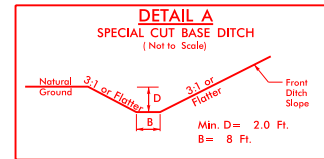
for Philip S. Harris III, P.E., C.P.M., Unit Head
Environmental Analysis Unit

cc: Mr. Garcy Ward, NC Division of Water Resources

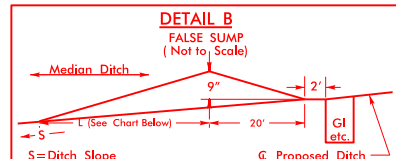
Details

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

PERMIT DRAWING
SHEET 2 OF 167



FROM STA. 32+60 TO STA. 64+74.20 -L- (LT)
FROM STA. 0+00 TO STA. 7+00 -RP1B- (LT)
FROM STA. 10+75 TO STA. 29+00 -RP1CD- (LT)

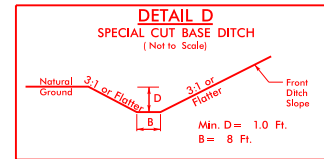


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

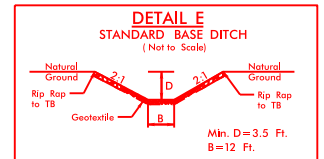
SEE PLANSHEETS FOR LOCATIONS



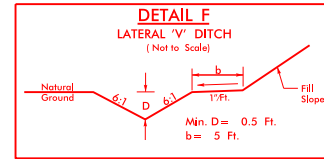
FROM STA. 79+50 TO STA. 86+87 -L- (LT)



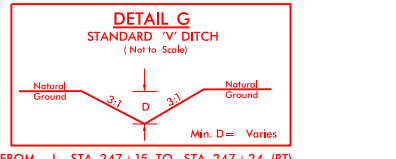
FROM STA. 74+26 TO STA. 76+06.30 -L- (RT)
FROM STA. 0+00 TO STA. 7+50 -RP1CD- (RT)
FROM STA. 330+40 TO STA. 336+35 -L- (LT)
FROM STA. 330+17 TO STA. 335+00 -L- (RT)
FROM STA. 356+50 TO STA. 361+50 -L- (LT)



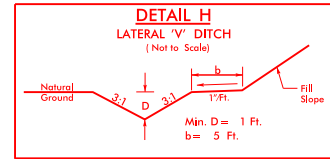
FROM -L- STA. 138+00 (LT) TO STA. 140+17 (RT)



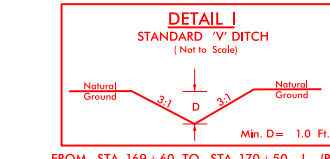
FROM -L- STA. 150+50 TO STA. 154+76 (RT)



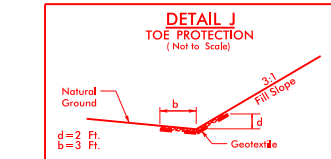
FROM -L- STA. 247+15 TO STA. 247+24 (RT)



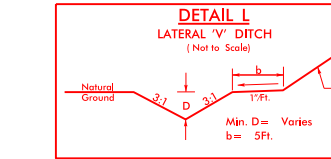
FROM STA. 165+23 TO STA. 169+60 -L- (RT)
FROM STA. 219+40 TO STA. 223+55 -L- (LT)
FROM STA. 363+57 TO STA. 364+30 -L- (RT)



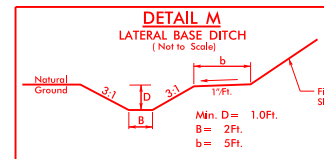
FROM STA. 169+60 TO STA. 170+50 -L- (RT)
FROM STA. 350+75 (-213') TO STA. 351+46 (-182') -L- (LT)



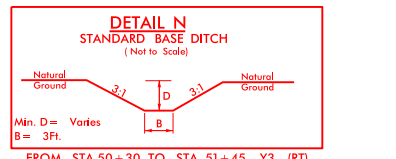
FROM STA. 214+74 TO STA. 218+15 -L- (RT)
FROM STA. 16+60 TO STA. 19+49 -Y3RPB- (LT)
FROM STA. 271+00 TO STA. 273+10 -L- (RT)
FROM STA. 292+34 TO STA. 293+00 -L- (LT)
FROM STA. 470+00 TO STA. 471+20 -L- (LT)
FROM STA. 470+00 TO STA. 471+00 -L- (RT)



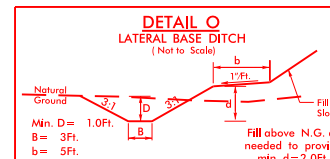
FROM STA. 13+31 TO STA. 16+56 -Y3RPB- (LT)
FROM STA. 267+67 TO STA. 271+88 -L- (RT)



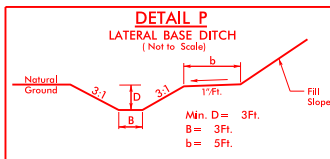
FROM STA. 60+31 TO STA. 64+79 -Y3- (RT)
FROM STA. 250+09 TO STA. 253+89 -L- (RT)



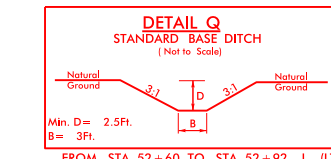
FROM STA. 50+30 TO STA. 51+45 -Y3- (RT)
FROM STA. 52+76 TO STA. 53+50 -Y4- (LT)
FROM STA. 56+71 TO STA. 56+83 -Y4- (RT)



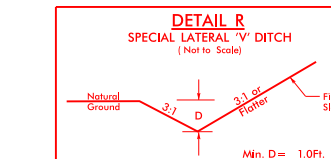
FROM STA. 47+45 TO STA. 50+30 -Y3- (RT)



FROM STA. 53+03 TO STA. 60+30 -Y3- (LT)

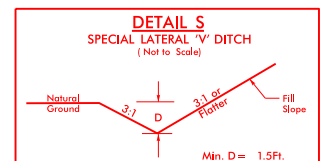


FROM STA. 52+60 TO STA. 52+92 -L- (LT)

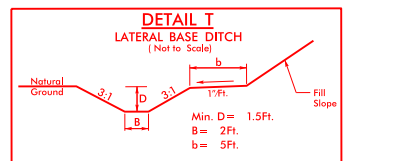


FROM STA. 68+34 TO STA. 73+89 -Y3- (LT)
FROM STA. 246+22 TO STA. 248+00 -L- (LT)
FROM STA. 58+00 TO STA. 59+25 -Y4- (RT)
FROM STA. 469+33 TO STA. 470+27 -L- (LT)
FROM STA. 529+15 TO STA. 530+50 -L- (LT)
FROM STA. 531+50 TO STA. 533+55 -L- (LT)
FROM STA. 526+50 TO STA. 530+14 -L- (RT)
FROM STA. 32+80.84 TO STA. 33+38 -SERVRD- (RT)
FROM STA. 35+17 TO STA. 37+10 -SERVRD- (RT)
FROM STA. 91+56 TO STA. 92+95 -RP2A- (LT)
FROM STA. 42+50 TO STA. 48+90 -SERVRD- (RT)
FROM STA. 53+92 TO STA. 56+47 -SERVRD- (RT)
FROM STA. 558+00 TO STA. 559+00 -L- (LT)
FROM STA. 10+25 TO STA. 14+50 -SERVEXT- (LT)
FROM STA. 53+92 TO STA. 56+47 -SERVRD- (RT)
FROM STA. 552+25 TO STA. 556+50 -L- (LT)
FROM STA. 16+00 TO STA. 17+80 -SERVEXT- (LT)

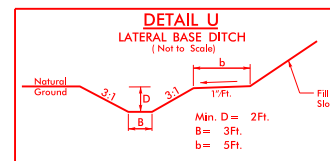
WETLAND AND SURFACE WATER IMPACTS PERMIT



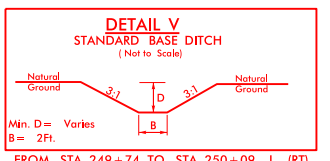
FROM STA. 65+16 TO STA. 73+89 -Y3- (RT)
FROM STA. 65+00 TO STA. 67+86 -Y3- (LT)
FROM STA. 63+00 TO STA. 65+86 -RP2AC- (RT)
FROM STA. 53+50 TO STA. 58+30 -RP2AC- (RT)
FROM STA. 37+45 TO STA. 42+50 -SERVRD- (RT)
FROM STA. 48+90 TO STA. 53+92 -SERVRD- (RT)



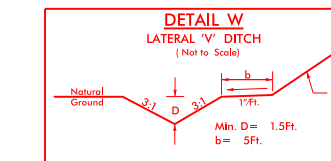
FROM STA. 41+56 TO STA. 45+65 -Y3- (LT)
FROM STA. 37+00 TO STA. 43+34 -Y4- (LT)
FROM STA. 38+00 TO STA. 43+50 -Y4- (RT)
FROM STA. 10+52 TO STA. 12+00 -Y4DR- (LT)
FROM STA. 45+26 TO STA. 49+73 -Y4- (RT)
FROM STA. 48+30 TO STA. 49+74 -Y4- (RT)



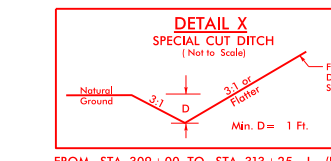
FROM STA. 60+30 TO STA. 62+00 -Y3- (LT)
FROM STA. 47+50 TO STA. 51+00 -Y3- (LT)



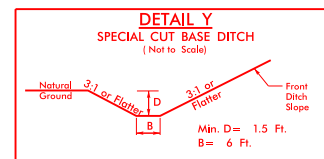
FROM STA. 249+74 TO STA. 250+09 -L- (RT)
FROM STA. 10+20 TO STA. 10+71 -Y3- (LT)
FROM STA. 379+47 TO STA. 380+98.5 -L- (RT)



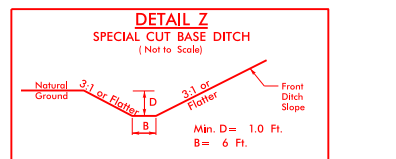
FROM STA. 269+75 TO STA. 278+50 -L- (LT)



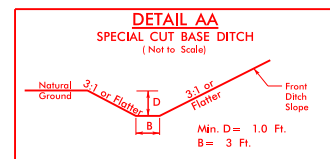
FROM STA. 309+00 TO STA. 313+25 -L- (RT)



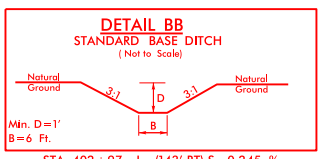
FROM STA. 310+00 -L- TO STA. 313+00 -L- (LT)



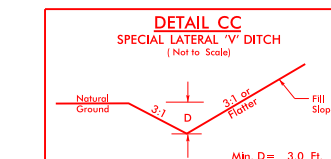
FROM STA. 313+00 TO STA. 319+50 -L- (LT)
FROM STA. 329+67 TO STA. 330+40 -L- (LT)
FROM STA. 361+50 TO STA. 372+10 -L- (LT)



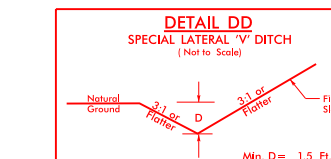
FROM STA. 342+60 TO STA. 345+56 -L- (RT)
FROM STA. 352+35 TO STA. 356+50 -L- (LT)



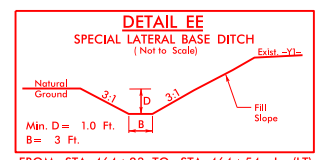
STA. 402+97 -L- (143' RT) S=0.245 %
STA. 403+42 -L- (120' RT) S=0.213 %
STA. 21+17 -RP2CD- (133' RT) S=0.200 %



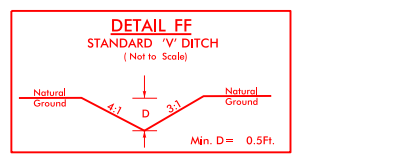
FROM STA. 10+50 TO STA. 13+50 -DR1- (LT)



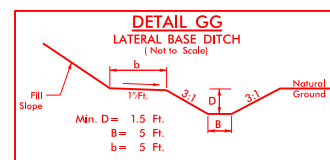
FROM STA. 40+50 TO STA. 41+63 -RP2AC- (RT)



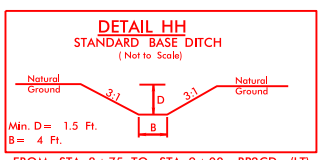
FROM STA. 464+23 TO STA. 464+54 -L- (LT)
FROM STA. 464+83 TO STA. 465+29 -L- (LT)



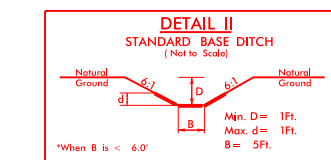
FROM STA. 153+37 TO STA. 153+63 -L- (LT)
FROM STA. 486+30 TO STA. 486+76 -L- (LT)
FROM STA. 21+18 (137') TO STA. 22+52 (117.3') -RP2CD- (RT)



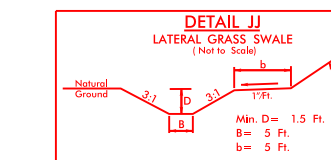
FROM STA. 71+92 TO STA. 74+75 -RP2AC- (RT)
FROM STA. 519+38 TO STA. 520+10 -L- (LT)



FROM STA. 8+75 TO STA. 9+00 -RP2CD- (LT)



FROM STA. 512+94 TO STA. 514+35 -L- (RT)



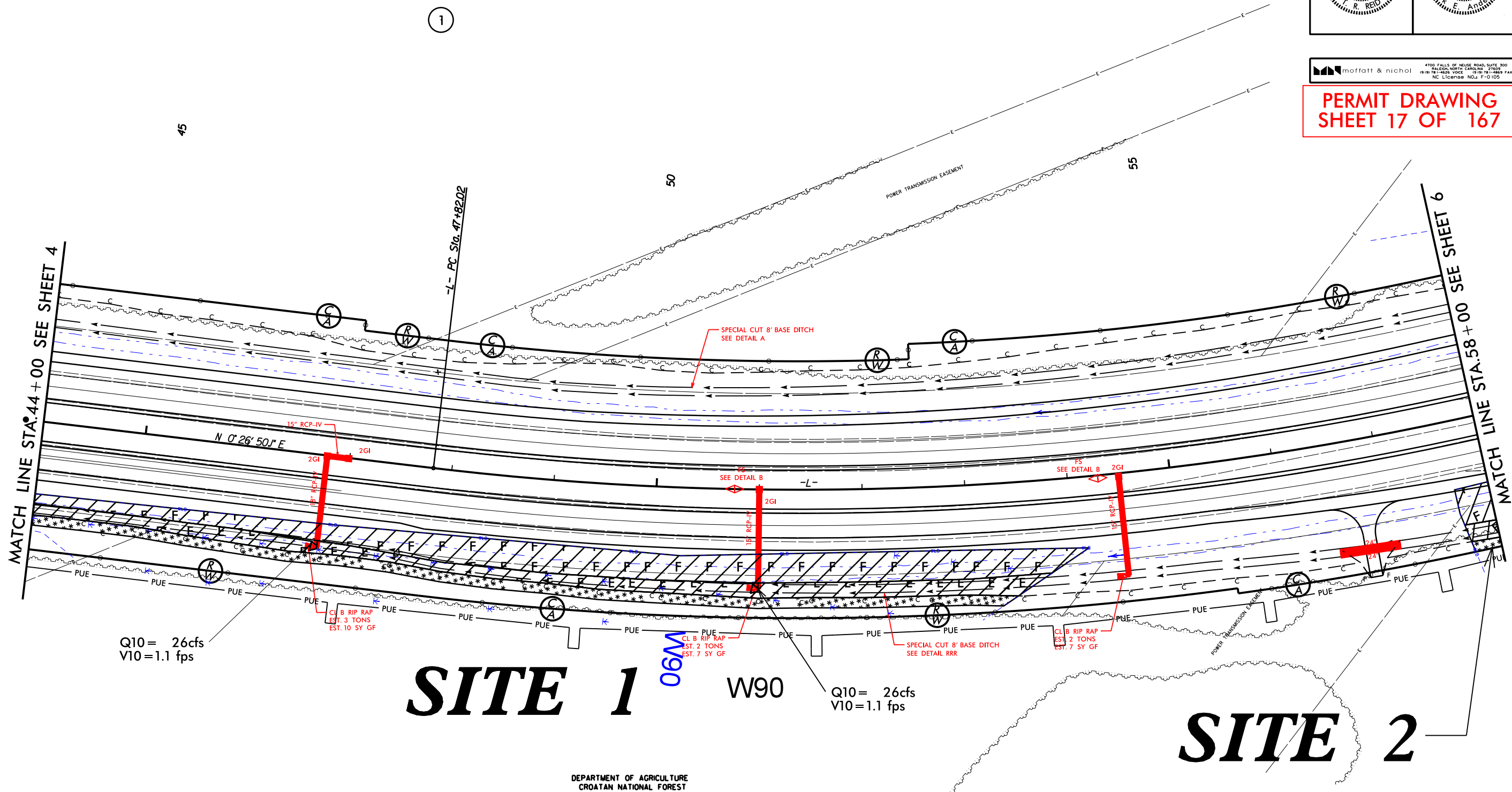
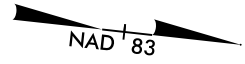
FROM STA. 509+37 TO STA. 517+00 -L- (LT)

PROJECT REFERENCE NO. R-1015	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. A. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 BOOK E. A. REID

4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919/781-4625 VOICE 919/781-4625 FAX
NC LICENSE NO. F-0105

**PERMIT DRAWING
SHEET 17 OF 167**

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST



MATCH LINE STA. 44+00 SEE SHEET 4

MATCH LINE STA. 58+00 SEE SHEET 6

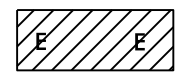
Q10 = 26cfs
V10 = 1.1 fps

Q10 = 26cfs
V10 = 1.1 fps

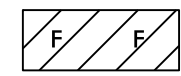
SITE 1

SITE 2

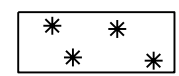
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST



DENOTES EXCAVATION
IN WETLAND



DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING

REVISIONS
11/13/2018 - PARCEL 1 - ADDITIONAL PUE ON PARCEL 1 FROM -L- STA. 44+00 RT TO STA. 58+00 RT
- REVISED EXISTING R/W LINE

8/17/99

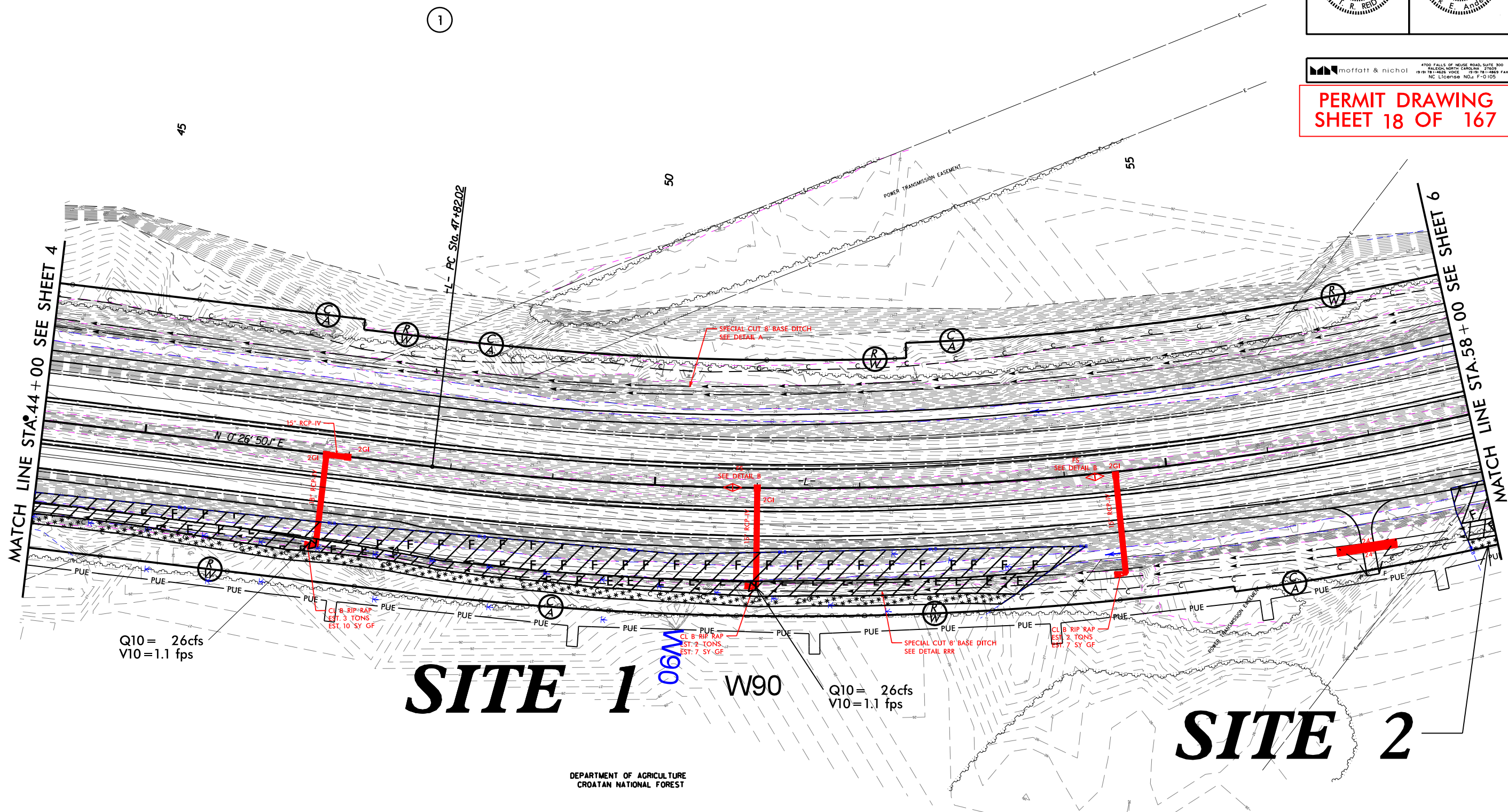
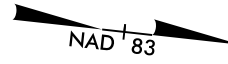
SYSTEMS DESIGN

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

PROJECT REFERENCE NO. R-1015	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER T. R. REID SEAL 015869 NORTH CAROLINA PROFESSIONAL ENGINEER	HYDRAULICS ENGINEER T. R. REID SEAL 032581 NORTH CAROLINA PROFESSIONAL ENGINEER

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919/781-4625 VOICE 919/781-4625 FAX
NC LICENSE NO. F-0105

**PERMIT DRAWING
SHEET 18 OF 167**



MATCH LINE STA. 44+00 SEE SHEET 4

MATCH LINE STA. 58+00 SEE SHEET 6

Q10 = 26cfs
V10 = 1.1 fps

Q10 = 26cfs
V10 = 1.1 fps

SITE 1

SITE 2

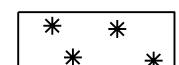
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST



DENOTES EXCAVATION
IN WETLAND



DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING

REVISIONS
11/13/2018 - PARCEL 1 - ADDITIONAL PUE ON PARCEL 1 FROM -L- STA. 44+00 RT TO STA. 58+00 RT
- REVISED EXISTING R/W LINE

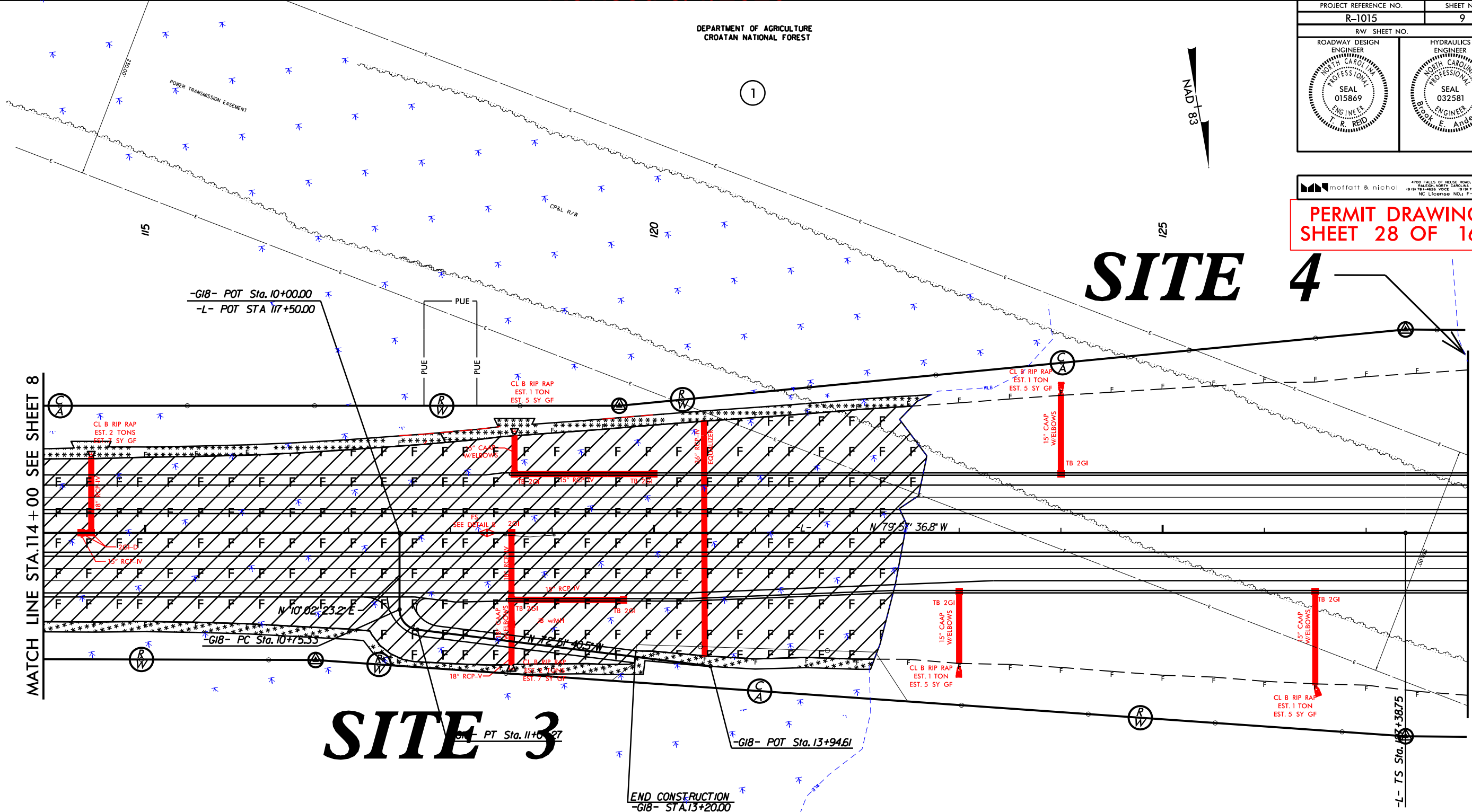
8/17/99

SYSTEMS DESIGN

PROJECT REFERENCE NO. R-1015	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 BOOK E ADDRESS

moffatt & nichol

**PERMIT DRAWING
SHEET 28 OF 167**



REVISIONS

MATCH LINE STA. 114 + 00 SEE SHEET 8

MATCH LINE STA. 128 + 00 SEE SHEET 10

SITE 3

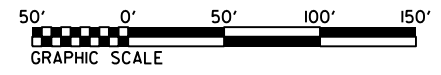
SITE 4

END CONSTRUCTION
-GIB- STA. 13+20.00

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

* * * DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND



4/30/2020
mgberry
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland & Stream\r-1015_Hyd_prm_wet_psh9.dgn

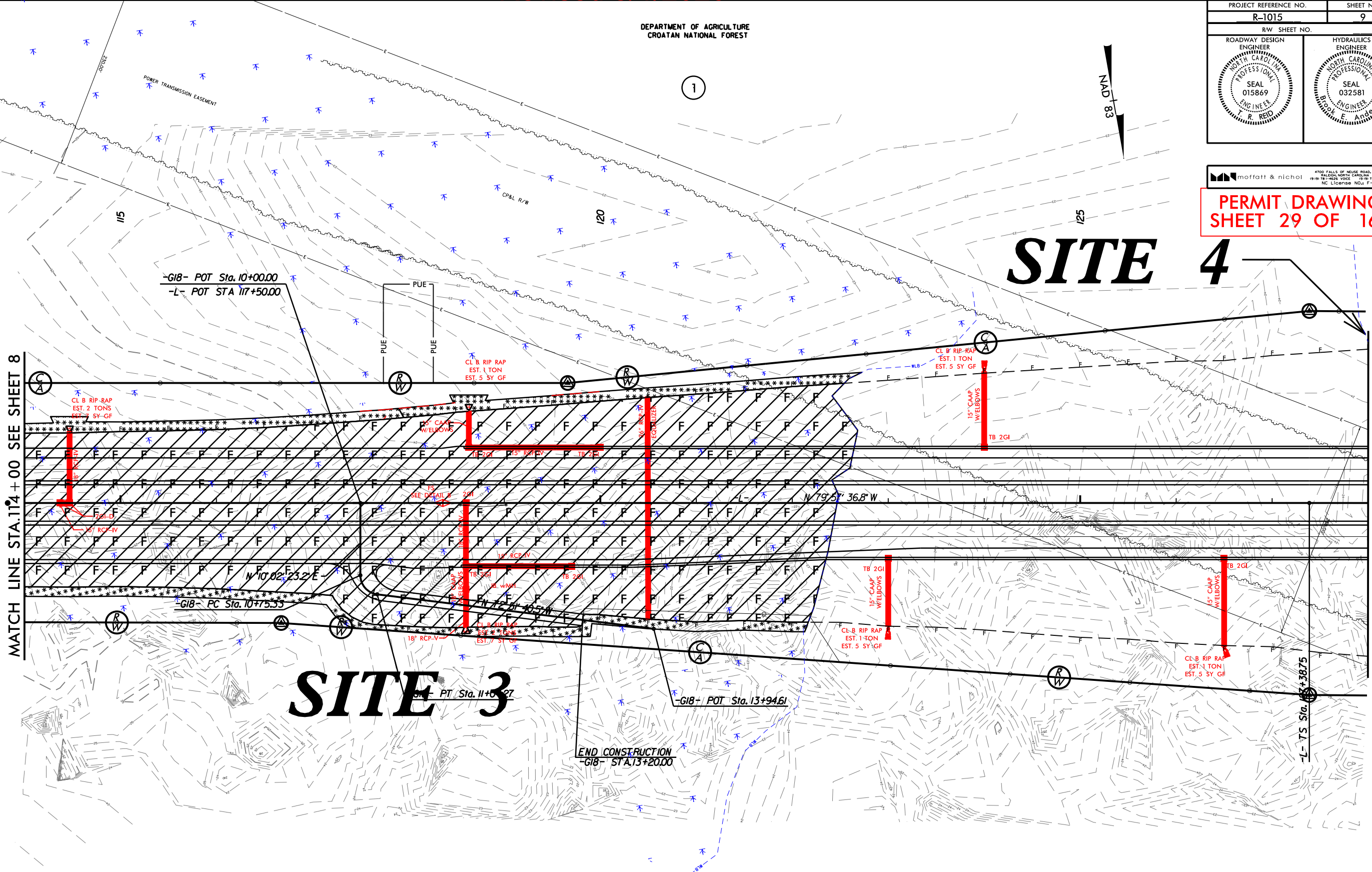
PROJECT REFERENCE NO. R-1015	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 B. O. ANDERSON

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
919.781.4828 VOICE 919.781.1888 FAX
NC LICENSE NO. F-0105

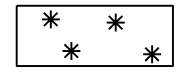
PERMIT DRAWING
SHEET 29 OF 167

SITE 4

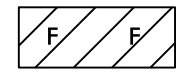
SITE 3



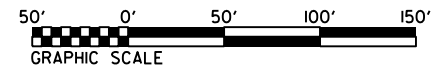
REVISIONS



DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND



4/30/2020
mgberry
R:\Hydraulics\PERMITS Environmental\Drawings\Wetland & Stream\1015_Hyd_prm_wet_psh9.dgn

8/17/99

MATCH LINE STA. 128+00 SEE SHEET 10

MATCH LINE STA. 114+00 SEE SHEET 8

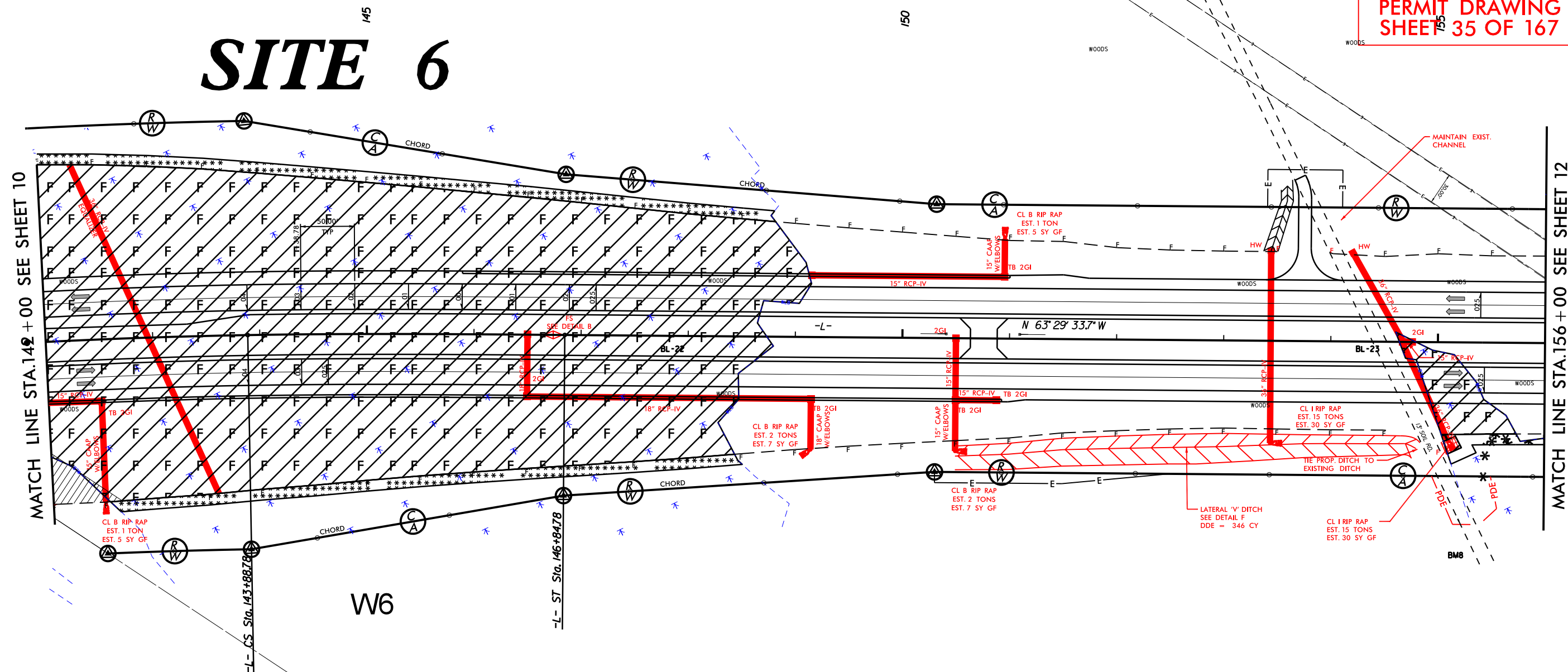
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1

PROJECT REFERENCE NO. R-1015	SHEET NO. 11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 BOOK E ADDRESS

4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919.781.4625 VOICE 919.781.4625 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING SHEET 35 OF 167



7/13/2018 - PARCEL 2 - REVISED PDE AT STA. 149+00 AND REVISED AREA AT STA. 154+00 LT
 11/13/2018 - PARCEL 2 - CHANGED PDE TO 5% AND REVISED AREA AT STA. 150+31 TO 152+50 RT
 11/13/2018 - PARCEL 2 - ADDED ICE STATION - 150+31 TO 152+50 RT
 11/13/2018 - REVISED R/W MONUMENT CALLOUT AT +88.78 -L- LT

8/17/99

4/30/2020
mgberry
R:\Hydraulics\PERMITS Environmental\Drawings\Wetland & Stream\R1015 Hyd prn_wet_psh1.dgn

* * DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

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

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

2

SITE 6

SITE 7

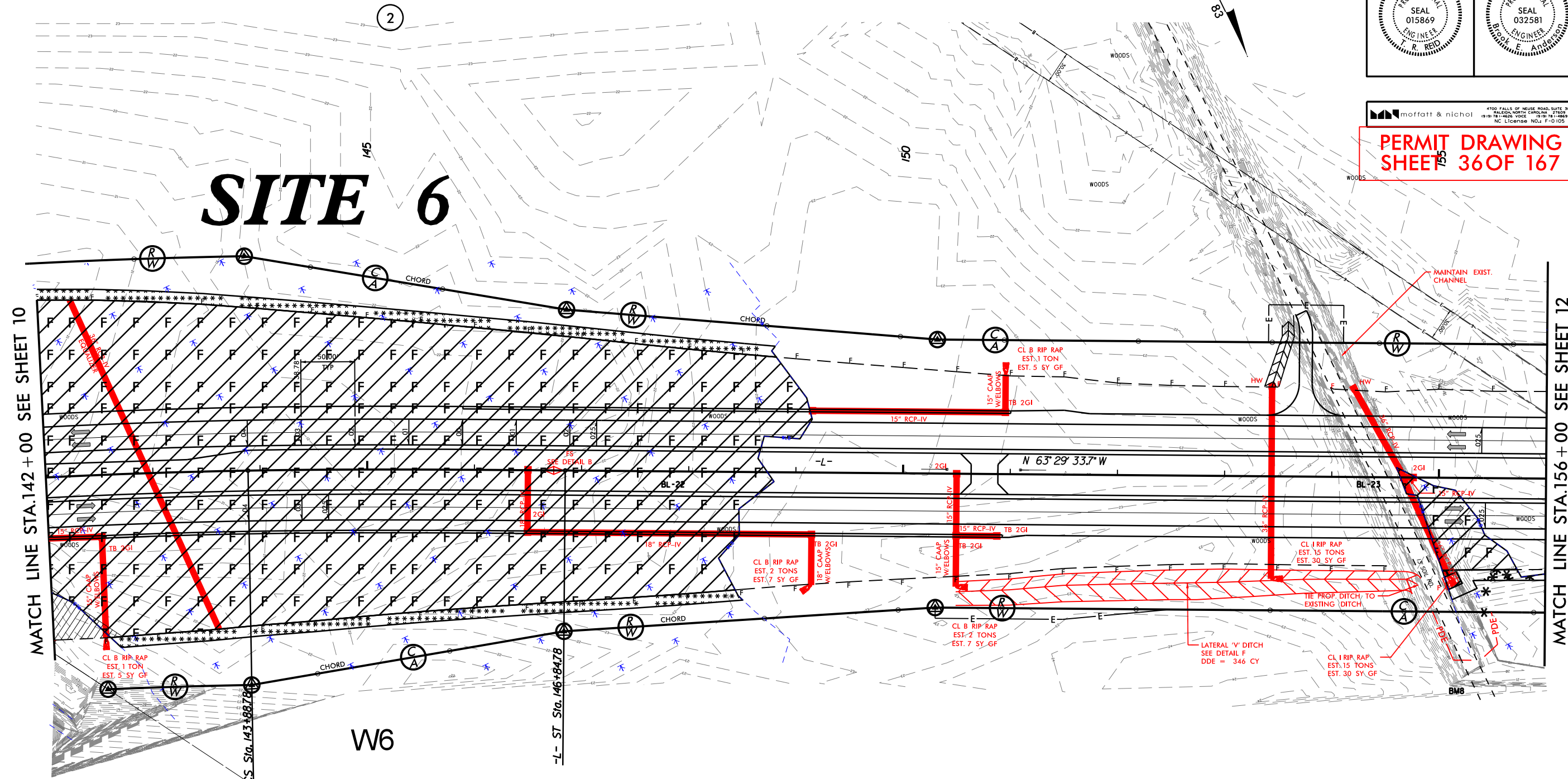
MATCH LINE STA. 149 + 00 SEE SHEET 10

MATCH LINE STA. 156 + 00 SEE SHEET 12

PROJECT REFERENCE NO. R-1015	SHEET NO. 11
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 B. C. BROWN

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919.781.4626 VOICE 919.781.4669 FAX
NC LIC#08188 NCDOT F-D 105

PERMIT DRAWING SHEET 36 OF 167



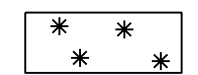
MATCH LINE STA. 142 + 00 SEE SHEET 10

MATCH LINE STA. 156 + 00 SEE SHEET 12

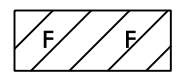
REVISIONS
7/13/2018 - PARCEL 2 - REVISED PDE AT 638'-L- 155+00 FT AND REVISED AREA AT 63A'-L- STATION 154+00 LT
11/13/2018 - PARCEL 2 - CHANGED PDE TO 500' TYP AND REVISED AREA AT 63A'-L- STATION 152+50 FT
11/13/2018 - PARCEL 2 - ADDED TCE STATION -L- 150+31 TO 152+50 FT
11/13/2018 - PARCEL 2 - REVISED R/W MONUMENT CALLOUT AT +8878'-L- LT

SITE 7

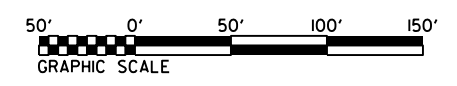
F
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
2



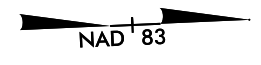
DENOTES MECHANIZED CLEARING



DENOTES FILL IN WETLAND

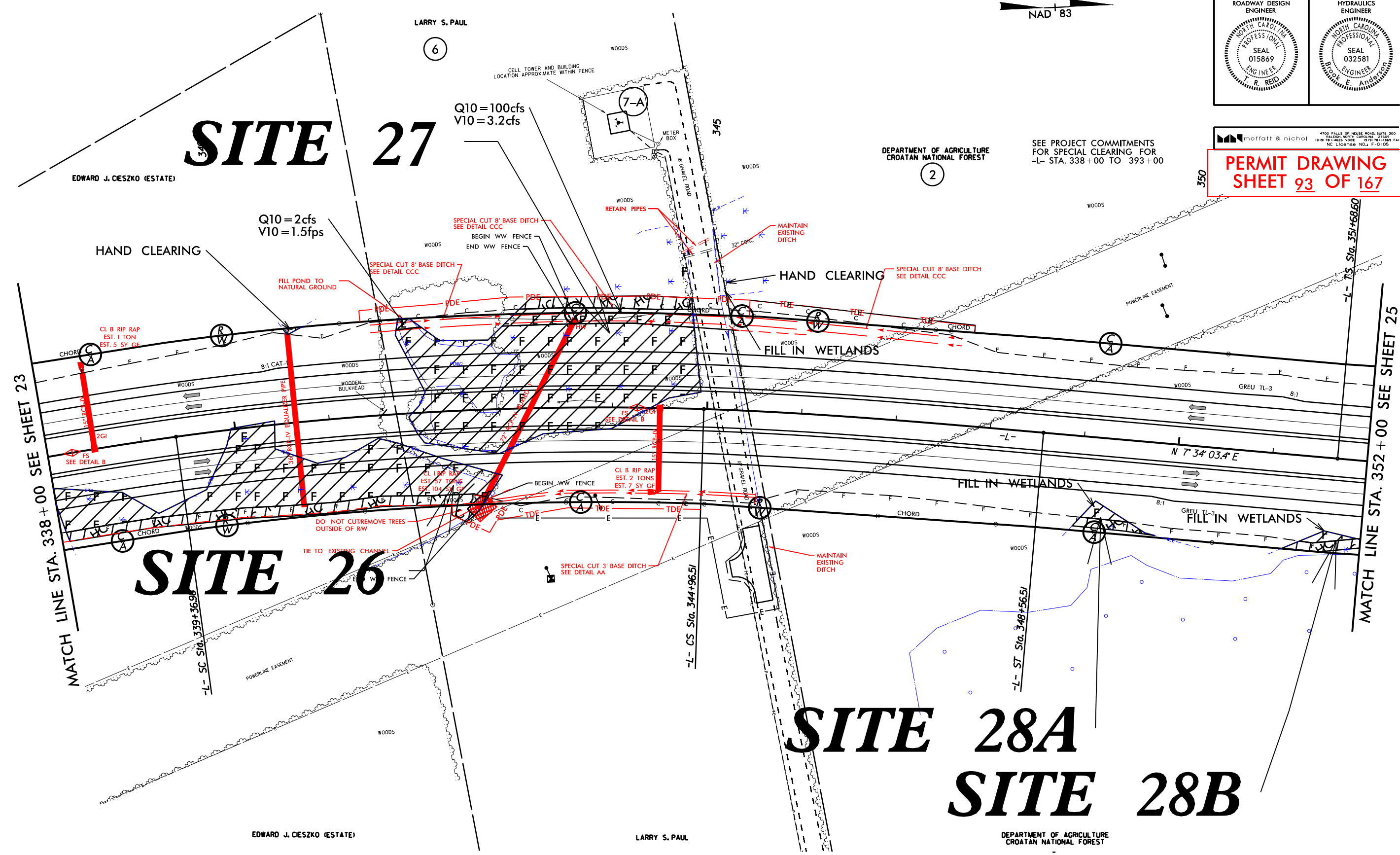


PROJECT REFERENCE NO. R-1015	SHEET NO. 24
ROADWAY DESIGN ENGINEER SEAL 015869 R. REID	HYDRAULICS ENGINEER SEAL 032581 BROOK E. ANDERSON

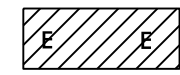


SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

PERMIT DRAWING SHEET 93 OF 167



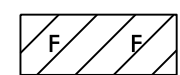
REVISIONS



DENOTES EXCAVATION IN WETLAND



DENOTES HAND CLEARING



DENOTES FILL IN WETLAND

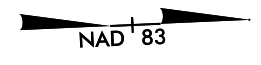


SEE SHEETS 61 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

8/17/99

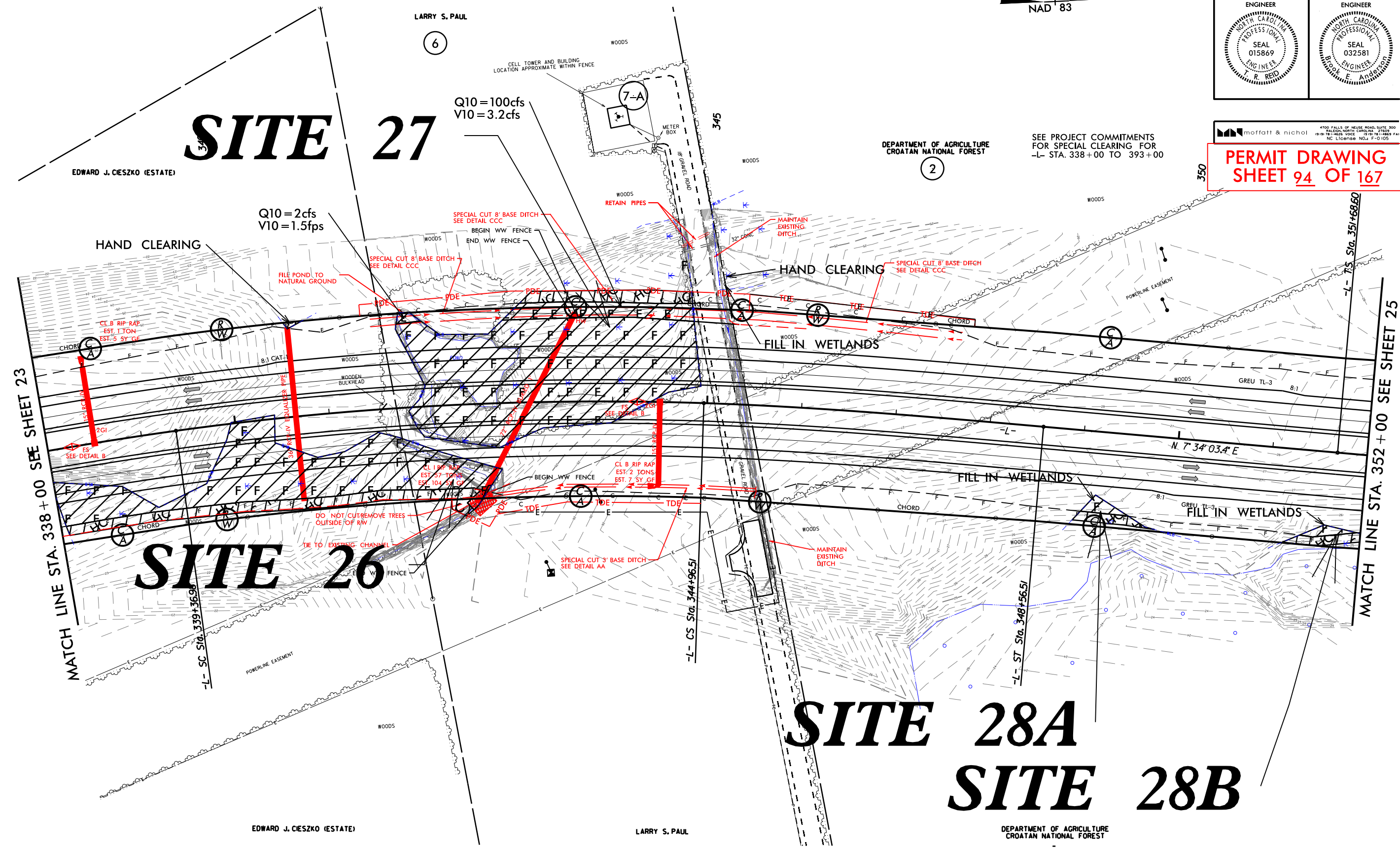
4/9/2020
mgberry
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PROJECT REFERENCE NO. R-1015	SHEET NO. 24
ROADWAY DESIGN ENGINEER SEAL 015869 R. REID	HYDRAULICS ENGINEER SEAL 032581 BUCK E. ANDERSON



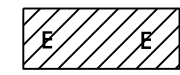
SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

PERMIT DRAWING SHEET 94 OF 167



REVISIONS

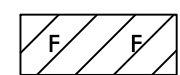
4/9/2020
mgberry
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DENOTES EXCAVATION IN WETLAND



DENOTES HAND CLEARING



DENOTES FILL IN WETLAND



SEE SHEETS 6I FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

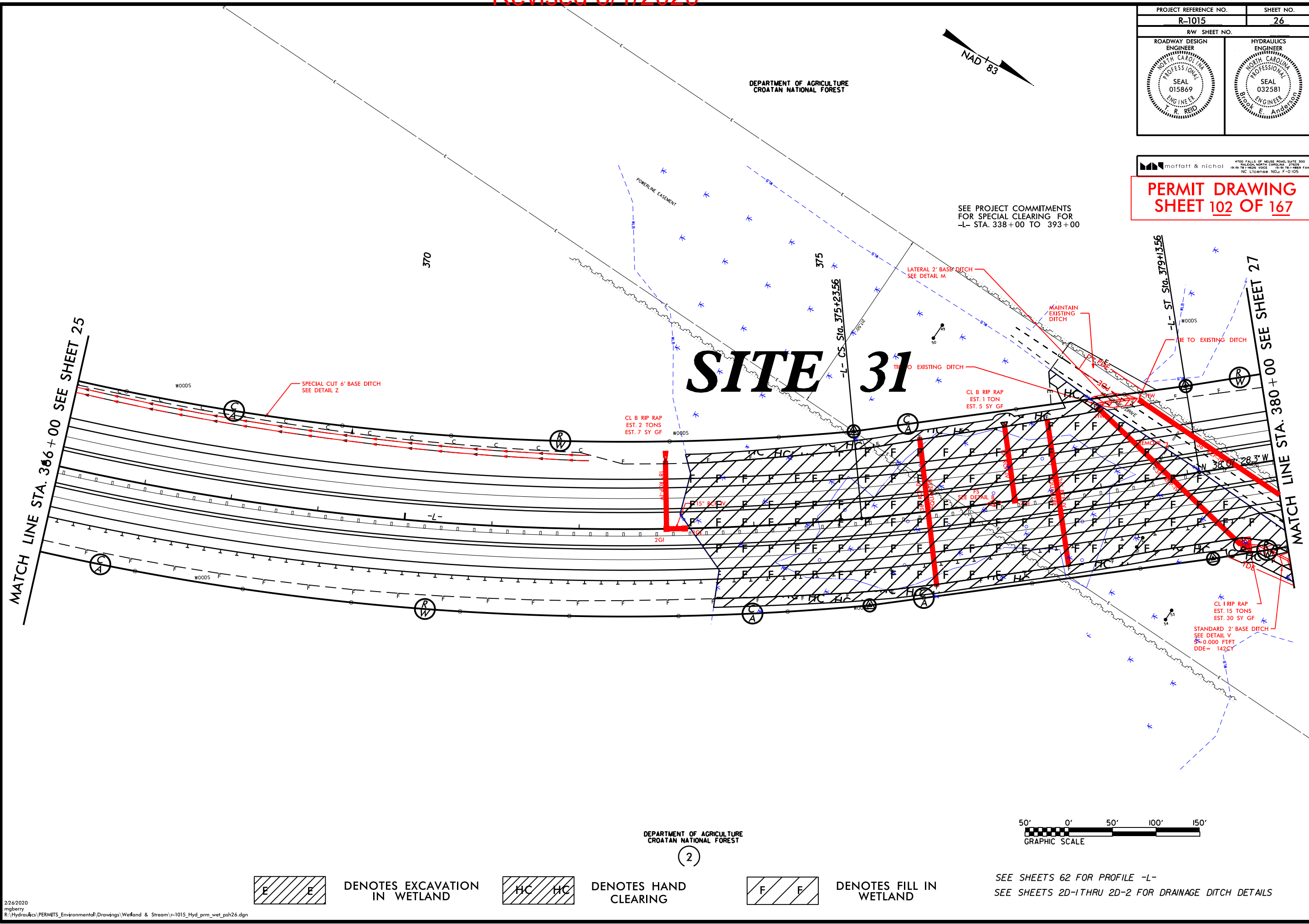
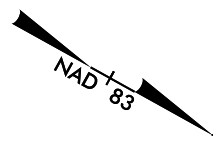
PROJECT REFERENCE NO. R-1015	SHEET NO. 26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 T. R. REID

4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919-781-4625 VOICE 919-781-1869 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 102 OF 167

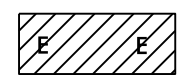
SEE PROJECT COMMITMENTS FOR SPECIAL CLEARING FOR -L- STA. 338+00 TO 393+00

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST



7/13/2018 - REVISIONS

PARCEL 2 - ELIMINATED POE STATION -L- 369+50 TO 369+50 RT
PARCEL 2 - ELIMINATED POE STATION -L- 370+05 TO 377+70 RT
PARCEL 2 - ADDED POE STATION -L- 379+30 TO 380+00 RT
PARCEL 2 - CHANGED IDE TO POE AND REVISED AREA STATION -L- 378+35 TO 378+66 LT
PARCEL 2 - REVISED ICE AREA STATION -L- 377+58 TO 378+80 LT



DENOTES EXCAVATION IN WETLAND



DENOTES HAND CLEARING



DENOTES FILL IN WETLAND

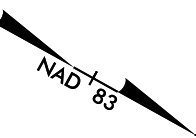


SEE SHEETS 62 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO. R-1015	SHEET NO. 26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 E. ANDERSON

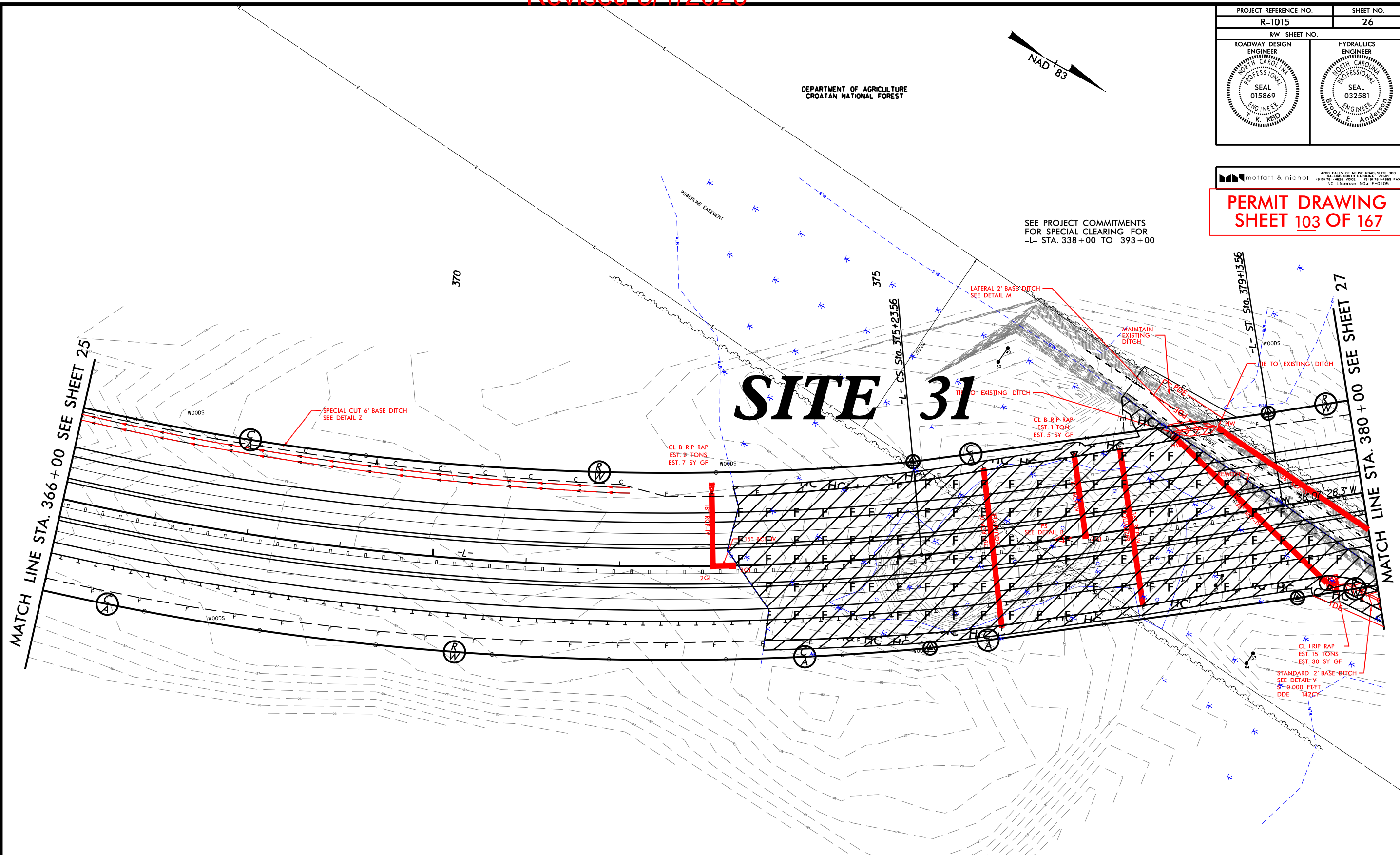
moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919/781-4626 VOICE 919/781-1868 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 103 OF 167



DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

SEE PROJECT COMMITMENTS
FOR SPECIAL CLEARING FOR
-L- STA. 338+00 TO 393+00



7/13/2018 --
PARCEL 2 -- ELIMINATED POE STATION -L- 369+50 TO 369+50 RT
PARCEL 2 -- ELIMINATED TCE STATION -L- 370+05 TO 371+70 RT
PARCEL 2 -- ADDED TCE STATION -L- 379+30 TO 380+00 RT
PARCEL 2 -- CHANGED TCE TO POE AND REVISED AREA STATION -L- 378+35 TO 378+66 LT
PARCEL 2 -- REVISED TCE AREA STATION -L- 377+58 TO 378+80 LT

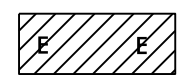
REVISIONS

MATCH LINE STA. 366+00 SEE SHEET 25

MATCH LINE STA. 380+00 SEE SHEET 27

SITE 31

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST



DENOTES EXCAVATION
IN WETLAND



DENOTES HAND
CLEARING



DENOTES FILL IN
WETLAND

SEE SHEETS 62 FOR PROFILE -L-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO. R-1015	SHEET NO. 33
RW SHEET NO.	
ROADWAY DESIGN ENGINEER T. R. REID SEAL 015869 NORTH CAROLINA PROFESSIONAL ENGINEER	HYDRAULICS ENGINEER T. R. REID SEAL 032581 NORTH CAROLINA PROFESSIONAL ENGINEER

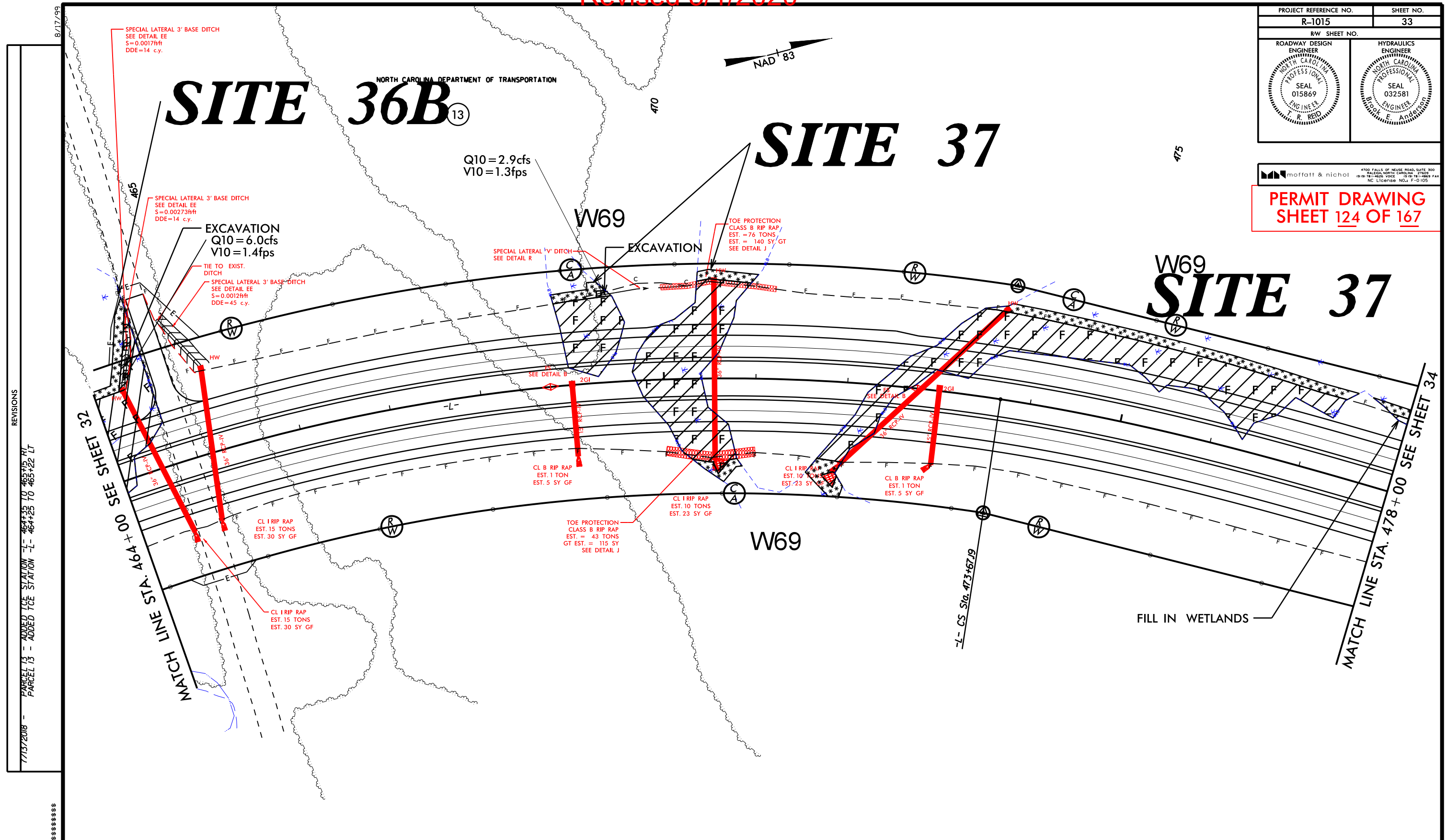
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919/781-4626 VOICE 919/781-1868 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 124 OF 167

SITE 36B¹³

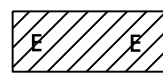
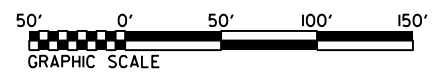
SITE 37

SITE 37

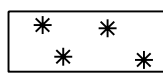


REVISIONS
7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RI
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT

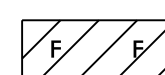
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



DENOTES EXCAVATION
IN WETLAND



DENOTES MECHANIZED
CLEARING



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

2/25/2020
mgberry
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Revised 5/1/2020

PROJECT REFERENCE NO. R-1015	SHEET NO. 33
RW SHEET NO.	
ROADWAY DESIGN ENGINEER T. REID SEAL 015869	HYDRAULICS ENGINEER E. ANDERSON SEAL 032581

moftatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4626 VOICE (919) 781-4626 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 125 OF 167

SITE 36B

SITE 37

SITE 37

Q10 = 2.9cfs
V10 = 1.3fps

EXCAVATION
Q10 = 6.0cfs
V10 = 1.4fps

EXCAVATION

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

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

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

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

SPECIAL LATERAL 3' DITCH
SEE DETAIL R

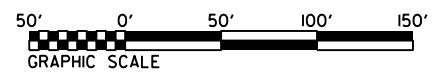
MATCH LINE STA. 464+00 SEE SHEET 32

MATCH LINE STA. 478+00 SEE SHEET 34

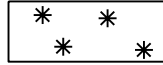
REVISIONS
7/13/2018 - PARCEL 13 - ADDED TCE STATION -L- 464+35 TO 465+15 RL
PARCEL 13 - ADDED TCE STATION -L- 464+25 TO 465+22 LT

FILL IN WETLANDS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



DENOTES EXCAVATION IN WETLAND



DENOTES MECHANIZED CLEARING



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

2/25/2020
mgberry
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PROJECT REFERENCE NO. R-1015	SHEET NO. 39
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 R. HARDISON

4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27607
(919) 781-4626 VOICE (919) 781-7888 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 142 OF 165

-L-
 PI Sta 555+33.32 Δ = 10° 16' 02.6" (LT)
 D = 0° 52' 23.3" Ls = 148.00'
 L = 1,175.9' LT = 98.67'
 T = 589.53' ST = 49.33'
 R = 6,562.00'
 SE = 0.025
 RO = 148.00'
 DS = 60 mph

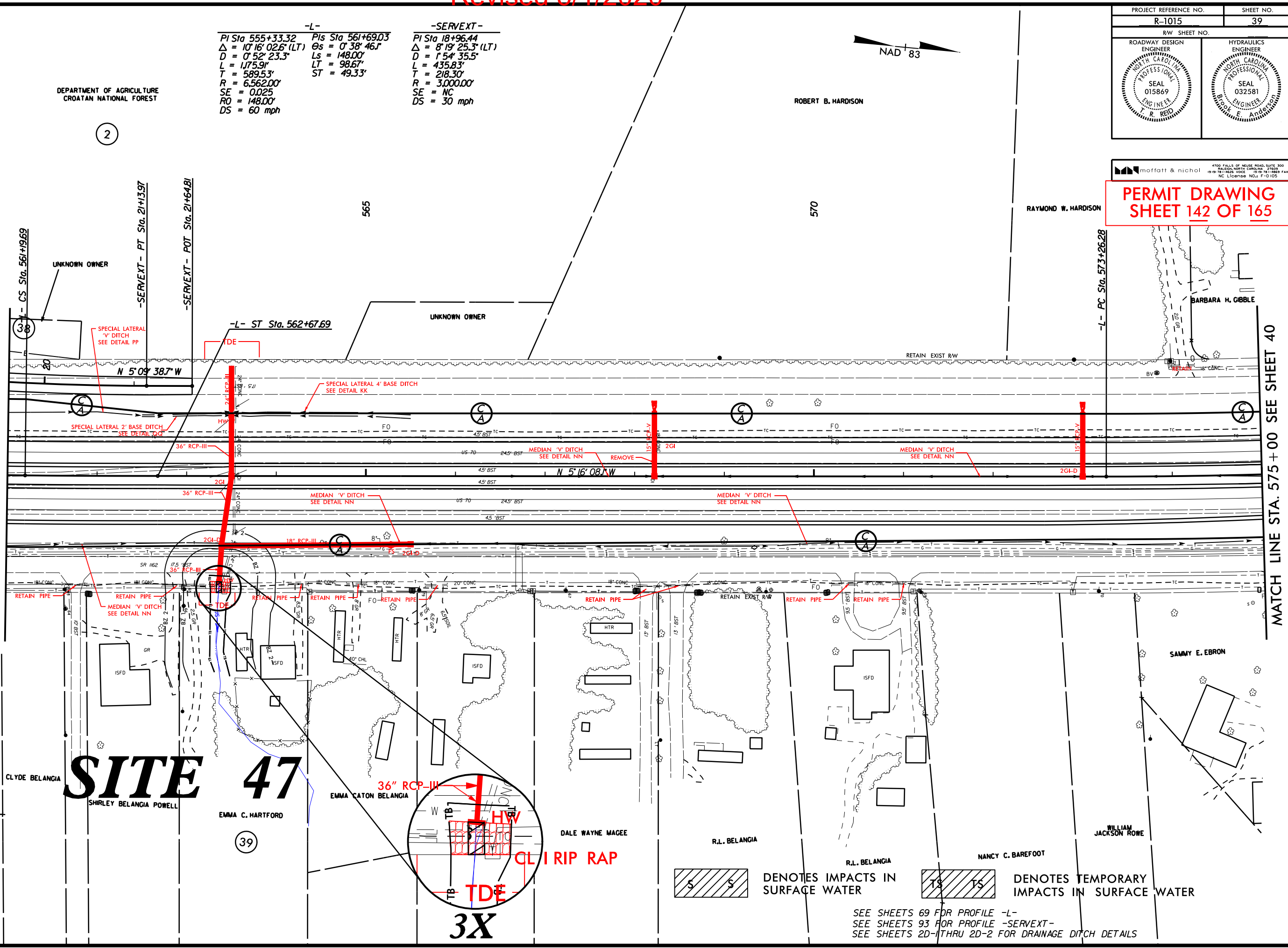
-SERVEXT-
 PI Sta 18+96.44 Δ = 8° 19' 25.3" (LT)
 D = 1° 54' 35.5" Ls = 435.83'
 L = 2,183.0' LT = 3,000.00'
 T = 218.30' ST = NC
 R = 3,000.00'
 SE = NC
 DS = 30 mph



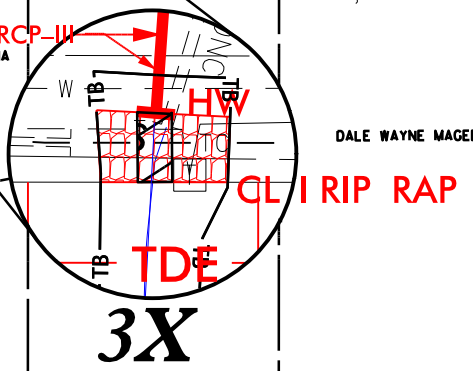
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

MATCH LINE STA. 561 + 00 SEE SHEET 38

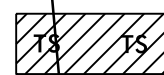
MATCH LINE STA. 575 + 00 SEE SHEET 40



SITE 47



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

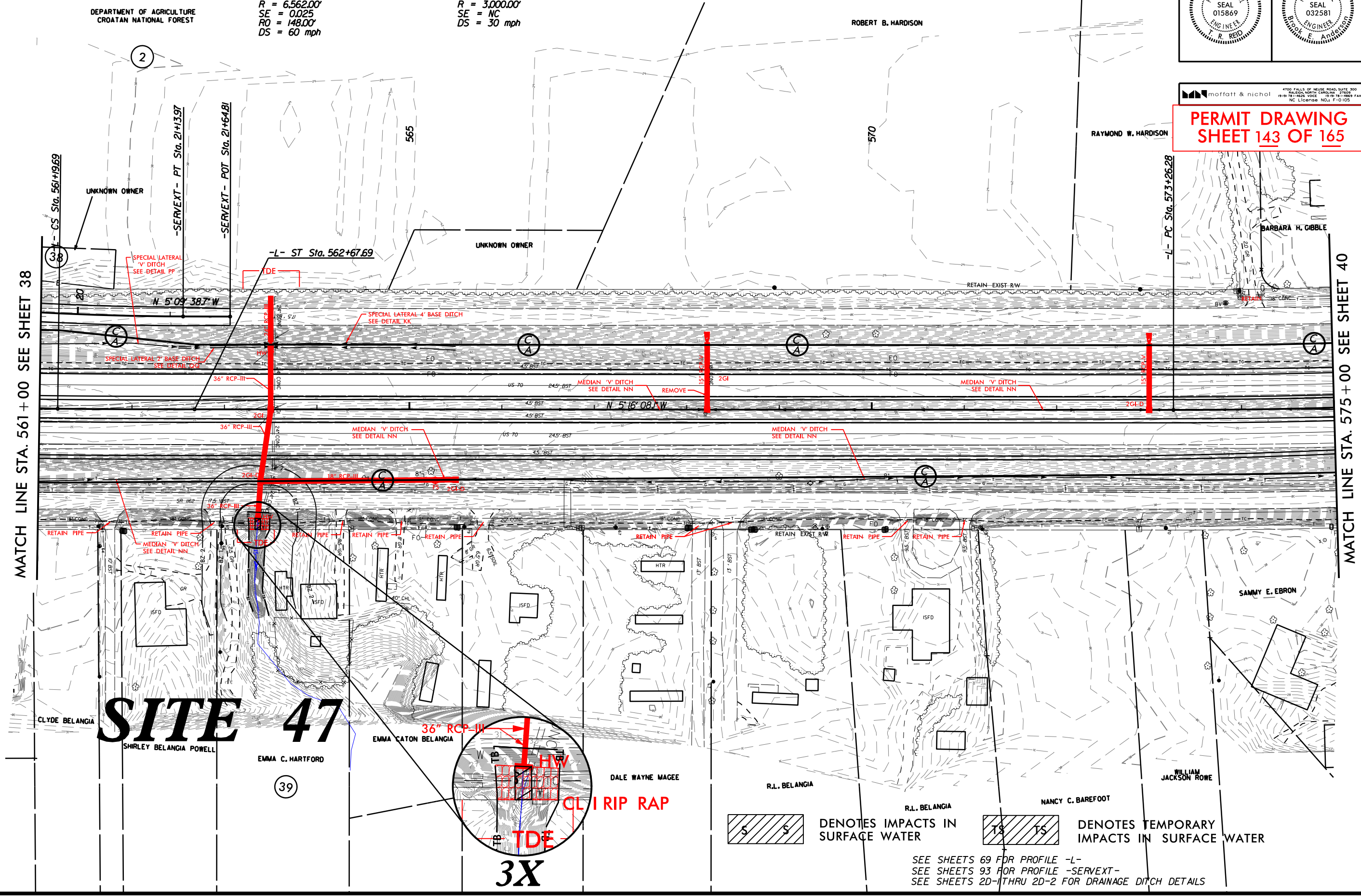
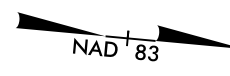
SEE SHEETS 69 FOR PROFILE -L-
 SEE SHEETS 93 FOR PROFILE -SERVEXT-
 SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS
 7/13/2018 - PARCEL 38 - REVISED TDE STATION -L- 563+14 TO 563+64 RT
 PARCEL 38 - ADDED TCE STATION -L- 561+00 TO 561+78 LT

PROJECT REFERENCE NO. R-1015	SHEET NO. 39
ROADWAY DESIGN ENGINEER T. REID	HYDRAULICS ENGINEER R. HARDISON

PERMIT DRAWING
SHEET 143 OF 165

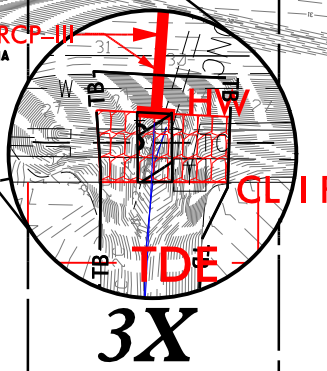
-L-	-SERVEXT-
PI Sta 555+33.32 Δ = 10° 16' 02.6" (LT) D = 0' 52' 23.3" L = 1,175.9' T = 589.53' R = 6,562.00' SE = 0.025 RO = 148.00' DS = 60 mph	PIs Sta 561+69.03 θs = 0° 38' 46" Ls = 148.00' LT = 98.67' ST = 49.33'
PI Sta 18+96.44 Δ = 8° 19' 25.3" (LT) D = 1° 54' 35.5" L = 435.83' T = 218.30' R = 3,000.00' SE = NC DS = 30 mph	



MATCH LINE STA. 561 + 00 SEE SHEET 38

MATCH LINE STA. 575 + 00 SEE SHEET 40

SITE 47



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEETS 69 FOR PROFILE -L-
SEE SHEETS 93 FOR PROFILE -SERVEXT-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

REVISIONS
7/13/2018 - PARCEL 38 - REVISED TDE STATION -L- 563+14 TO 563+64 RT
PARCEL 38 - ADDED TCE STATION -L- 561+00 TO 561+78 LT

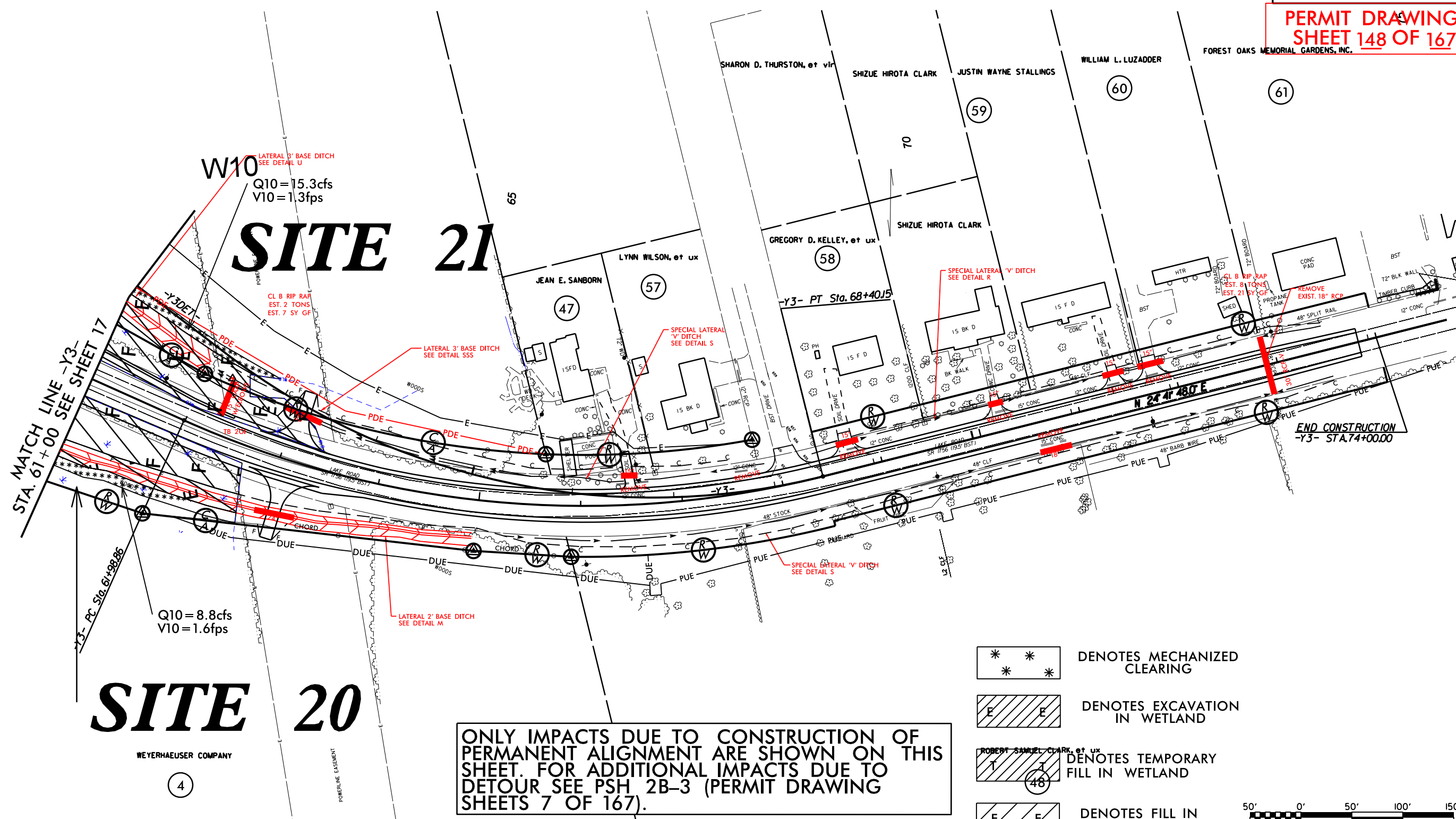
PROJECT REFERENCE NO. R-1015	SHEET NO. 44
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 Book E Address

moffatt & nichol
4700 FALLS OF NEESE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
TEL: 919.781.4225 VOICE TEL: 919.781.4225 FAX
NC LICENSE NO. E-105

PERMIT DRAWING
SHEET 148 OF 167

REVISIONS
7/13/2018 - PARCELS 4, 4B - CHANGED PUE TO DUE AND REVISED AREA STATION - PARCELS 4, 4B - REVISED DUE
PARCEL 4B - ADDED RW AND REMOVED ICE STATION - PARCELS 4, 4B - REVISED DUE TO 66+40 RT
PARCELS 4, 4B - REVISED ICE STATION - PARCELS 4, 4B - REVISED DUE TO 66+10 LT
PARCEL 4 - ADDED PUE STATION - PARCELS 4, 4B - REVISED DUE TO 65+64 LT
PARCEL 4B - ADDED PUE STATION - PARCELS 4, 4B - REVISED DUE TO 66+10 LT
PARCELS 4, 4B - ADDED NEW PARCEL NUMBERS AND NEW STATION - PARCELS 4, 4B - REVISED DUE
PARCELS 4, 4B - ADDED NEW PARCEL NUMBERS AND NEW STATION - PARCELS 4, 4B - REVISED DUE

STA. 61+00
MATCH LINE -Y3-
SEE SHEET 17



SITE 21
W10
Q10=15.3cfs
V10=1.3fps
LATERAL 3' BASE DITCH
SEE DETAIL U

SITE 20
WEYERHAEUSER COMPANY
Q10=8.8cfs
V10=1.6fps
LATERAL 2' BASE DITCH
SEE DETAIL M

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-3 (PERMIT DRAWING SHEETS 7 OF 167).

- * * DENOTES MECHANIZED CLEARING
- E E DENOTES EXCAVATION IN WETLAND
- T T DENOTES TEMPORARY FILL IN WETLAND
- F F DENOTES FILL IN WETLAND



SEE SHEET 79 FOR PROFILE -Y3-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

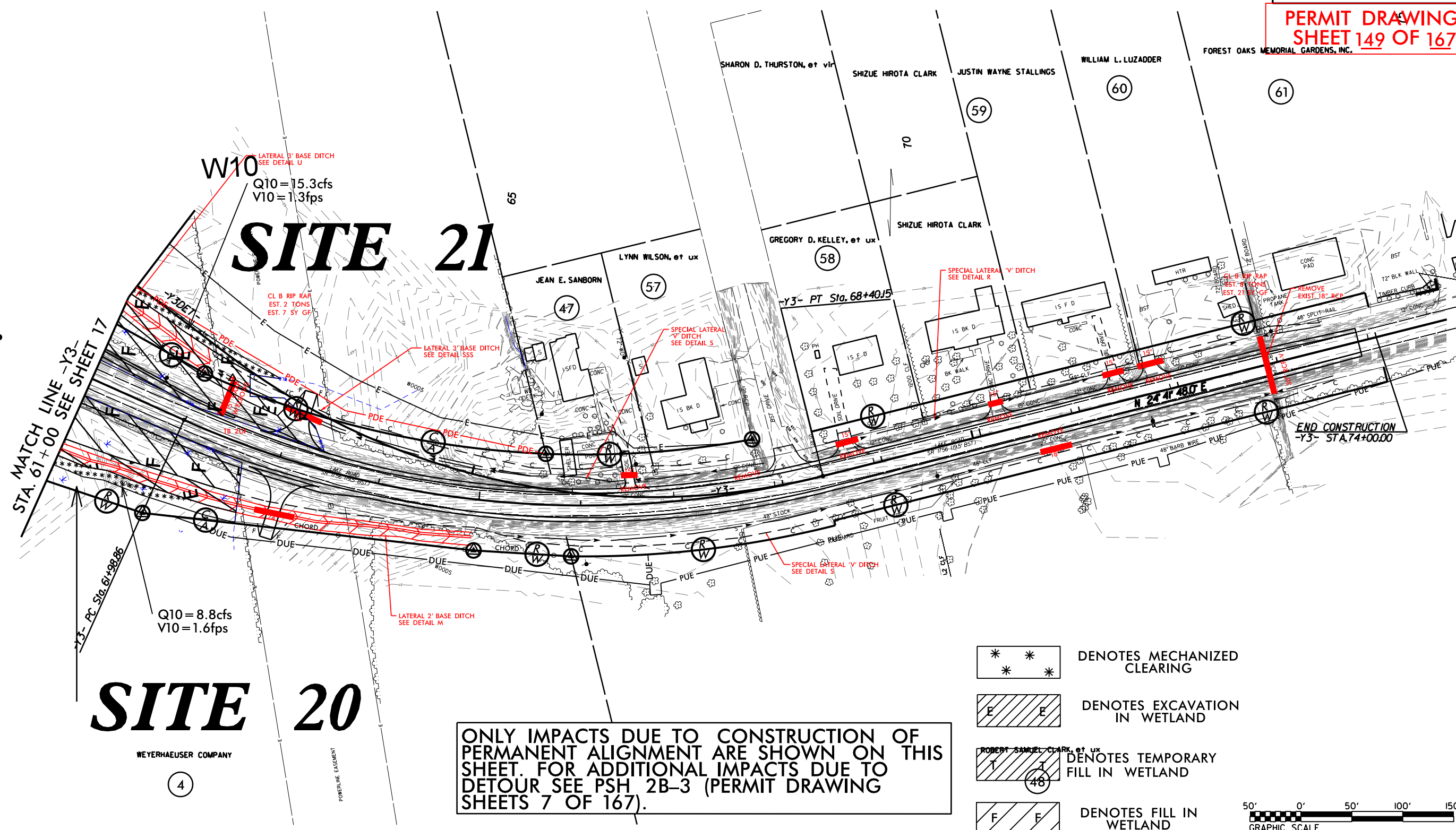
PROJECT REFERENCE NO. R-1015	SHEET NO. 44
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 BOOK E ADDRESS

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919.781.4625 VOICE 919.781.4625 FAX
NC LICENSE NO. F-0105

PERMIT DRAWING
SHEET 149 OF 167

REVISIONS

7/13/2018 - PARCELS 4, 4B - CHANGED PUE TO DUE AND REVISED AREA STA. 62+32 TO 66+40 RT. 8/14/2018 - PARCELS 4, 4B - REVISED DUE
 PARCELS 4B - ADDED RW AND REMOVED ICE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4, 4B - REVISED ICE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4 - ADDED PUE STATION -Y3- 61+00 TO 65+64 LT
 PARCELS 4B - ADDED PUE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4B - ADDED PUE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4B - ADDED PUE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4B - ADDED PUE STATION -Y3- 61+00 TO 66+70 LT
 PARCELS 4B - ADDED PUE STATION -Y3- 61+00 TO 66+70 LT



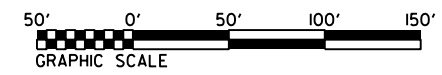
SITE 20

WEYERHAEUSER COMPANY

4

ONLY IMPACTS DUE TO CONSTRUCTION OF PERMANENT ALIGNMENT ARE SHOWN ON THIS SHEET. FOR ADDITIONAL IMPACTS DUE TO DETOUR SEE PSH 2B-3 (PERMIT DRAWING SHEETS 7 OF 167).

- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES FILL IN WETLAND



SEE SHEET 79 FOR PROFILE -Y3-
SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	42+12 TO 54+15 -L- RT	ROADWAY FILL	0.59		0.32	0.25						
2	57+70 TO 76+06 -L- RT	ROADWAY FILL	2.68		1.65	0.73						
	0+00 TO 33+68 -RP1CD- RT											
3	70+94 TO 122+68 -L- RT/LT	ROADWAY FILL	26.03		0.32	3.07						
	22+61 TO 29+63 -RP1AB- LT											
4	127+97 TO 132+42 -L- LT/RT	ROADWAY FILL	1.53			0.09						
5	136+88 TO 140+23 -L- LT/RT	ROADWAY FILL	0.10		0.06	0.07	0.08					
6	138+19 TO 149+15 -L- LT/RT	ROADWAY FILL	5.17			0.37						
7	154+60 TO 163+94 -L- LT/RT	ROADWAY FILL	2.52			0.32						
8	167+89 TO 168+21 -L- LT/RT	ROADWAY FILL	0.02			< 0.01						
9	170+05 TO 197+19 -L- LT/RT	Dual Bridges; 12@ 135', 72" MBT	4.90			0.64	3.95					
10	197+45 TO 210+28 -L- LT/RT	ROADWAY FILL	6.69			0.55						
11	211+31 TO 218+97 -L- LT/RT	ROADWAY FILL	2.82			0.21						
12	218+39 TO 224+77 -L- LT/RT	ROADWAY FILL	2.46		< 0.01	0.16						
13	229+73 TO 238+69 -L- LT/RT	ROADWAY FILL	6.85			0.37						
14	7+87 TO 11+18 -Y3RPB- LT/RT	72" RCP, BURIED	0.83			0.16		0.05	< 0.01	337.9	56.1855	
15	12+60 TO 13+72 -Y3RPB- LT/RT	ROADWAY FILL	0.32			0.03						
16	237+79 TO 244+33 -L- LT/RT	72" RCP, BURRIED 1'	2.42			0.22		0.03	< 0.01	200.9	58.8936	
17	52+61 TO 53+18 -Y3DET- LT/RT	72" RCP, BURRIED 1'	0.04		0.01	0.01		0.03	0.02	129.7	88.99	
17A	52+61 TO 53+18 -Y3DET- LT/RT	60" TEMP PIPE		0.05			0.01					
18	20+55 TO 24+91 -Y3RPD- LT/RT	ROADWAY FILL	0.98		0.02	0.10						
18A	55+30 TO 57+16-Y3DET- LT/RT	TEMP DETOUR		0.15			0.03					
19	16+94 TO 17+92 -Y3RPD- LT/RT	84" RCP, BURIED 1'	0.09			0.05		0.06	< 0.01	261.2	44.1	
TOTALS*:			67.06	0.20	2.38	7.41	4.07	0.16	0.04	930	248	0

*Rounded totals are sum of actual impacts

NOTES:
Bridge Impacts at Site 9: 0.02 acres for Temporary Bents, <0.01 acres for all permanent bents.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
04/09/2020
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 165 OF 167

Revised 2016 09 09

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
20	57+34 TO 62+48 -Y3- RT	ROADWAY FILL	1.46		0.10	0.18						
21	58+29 TO 63+51 -Y3- RT	ROADWAY FILL	0.56		0.21	0.08						
21A	58+89 TO 64+03Y3DET- LT/RT	TEMP DETOUR		0.25	0.11		0.12					
22	267+83 TO 273+90 -L- LT/RT	84" RCP, BURIED 1'	0.86			0.12		0.05	0.01	583.6	61.1099	
23	280+57 TO 293+27 -L- LT/RT	Dual Bridge; 7 @ 135', 72" MBT	1.03			0.15	3.05					
24	308+19 TO 314+60 -L- LT/RT	42" RCP	0.74		0.04	0.06						
25A	328+41 TO 336+80 -L- LT/RT	2@ 72" RCP, BURIED 1'	1.80		0.10	0.12						
25B	325+13 TO 325+48 -L- RT	ROADWAY FILL	< 0.01			< 0.01						
26	337+97 TO 342+81 -L- RT	72" RCP, BURIED 1'	0.47		< 0.01		0.11					
27	340+63 TO 344+93 -L- LT	72" RCP, BURIED 1'	0.75		0.08		0.05					
28A	348+96 TO 349+65 -L- RT	ROADWAY FILL	0.01				0.02					
28B	351+33 TO 352+19 -L- RT	ROADWAY FILL	< 0.01				0.02					
29	355+33 TO 357+51 -L- LT	ROADWAY FILL	0.03		0.07		0.04					
30	355+83 TO 357+47 -L- RT	ROADWAY FILL	0.27				0.04					
31	373+16 TO 380+23 -L- LT/RT	ROADWAY FILL	2.22		0.07		0.32					
32	392+99 TO 399+33 -L- LT/RT	ROADWAY FILL	0.56			0.15						
33	408+22 TO 408+87 -L- LT	ROADWAY FILL	< 0.01			0.01						
34	409+25 TO 409+75 -L- RT	ROADWAY FILL	0.18			< 0.01						
35A	432+62 TO 449+72 -L- LT/RT	ROADWAY FILL	5.49			0.77						
35B	450+94 TO 454+47 -L- LT/RT	ROADWAY FILL	0.71			0.11						
36A	456+65 TO 461+70 -L- LT/RT	84" RCP, BURIED 1'	0.79			0.15						
36B	462+57 TO 464+60 -L- LT/RT	ROADWAY FILL	0.50		0.02	0.05						
37	468+85 TO 486+94 -L- LT/RT	ROADWAY FILL	3.43		0.01	0.50						
SUB TOTALS THIS SHEET*:			21.89	0.25	0.80	2.47	3.77	0.05	0.01	584	61	0

*Rounded totals are sum of actual impacts

NOTES:
Bridge Impacts at Site 23: 0.04 acres for Temporary Bents, <0.01 acres for all permanent bents.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
04/09/2020
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 166 OF 167

Revised 2016 09 09

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
38A	489+64 TO 493+80 -L- LT/RT	ROADWAY FILL	0.49			0.03						
38B	496+92 TO 498+23 -L- LT/RT	ROADWAY FILL	0.30			0.06						
39	507+39 TO 518+70 -L- LT/RT	2 @ 10'X8' RCBC	2.99		0.07	0.20		0.22	0.03	984.87	116.37	
40	RP2AC/RP2A/LP2A	ROADWAY FILL	5.38		0.12	0.78						
41	41+40 TO 47+97 -RP2AC- LT/RT	EXTEND 3@ 9'X7' RCBC	0.03			0.12		0.05	0.08	48.71	56.79	
42	34+08 TO 37+91 -Y4- LT	72" RCP, BURIED 1'	0.01		0.04	0.06		< 0.01	< 0.01	20.43	11.6	
43	33+80 TO 35+02 -Y4- RT	72" RCP, BURIED 1'	< 0.01		0.01	0.04		< 0.01	< 0.01	41.75	10.35	
44	51+17 TO 53+70 -Y4- LT	2 @ 84" RCP, BURIED1'	0.24		0.02	0.09		0.02	< 0.01	121.5	10.7	
45	50+49 TO 57+08 -Y4DET- LT/RT	2 @ 84" RCP, BURIED1'	0.35			0.12		0.04	0.02	116.4	98.9	
45A	50+47 TO 57+03 -Y4DET-	TEMP DETOUR		0.51			0.19					
46	533+11 -L- RT	30" RCP						< 0.01	< 0.01	10.0	16.0	
47	563+36 -L- RT	36" RCP						< 0.01		12.0		
SUB TOTAL THIS SHEET:			9.79	0.51	0.27	1.50	0.19	0.34	0.13	1356	321	
SUB TOTAL SHEET 1:			67.06	0.20	2.38	7.41	4.07	0.16	0.04	930	248	
SUB TOTAL SHEET 2:			21.89	0.25	0.80	2.47	3.77	0.05	0.01	584	61	
TOTALS*:			98.74	0.96	3.45	11.38	8.03	0.55	0.18	2869	630	0

*Rounded totals are sum of actual impacts

NOTES:
At Site 45/45A, 0.03 acre of Temporary Fill in Wetlands in the Hand Clearing area for erosion control measures.

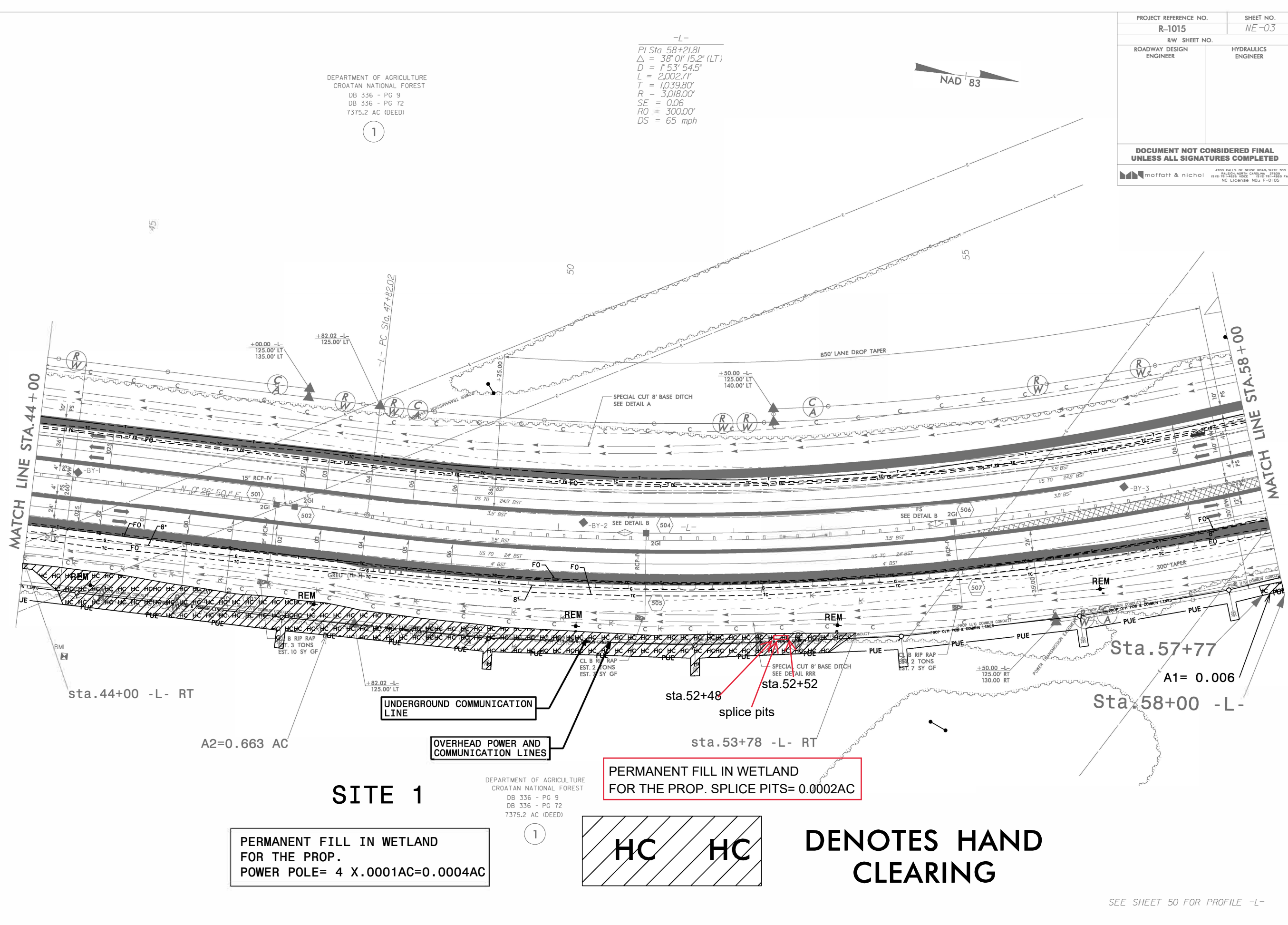
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
04/9/2020
CRAVEN COUNTY
R-1015
34360.1.2
SHEET 167 OF 167

Revised 2016 09 09

PROJECT REFERENCE NO. R-1015		SHEET NO. NE-03
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
		4750 FALLS OF NEUSE ROAD, SUITE 300 RALEIGH, NORTH CAROLINA 27609 919 881-4825 VOICE 919 881-4825 FAX NC License NO. F-0105

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)

-L-
PI Sta. 58+21.81
 $\Delta = 38^{\circ} 01' 15.2''$ (LT)
D = 1' 53" 54.5"
L = 2,002.71'
T = 1,039.80'
R = 3,018.00'
SE = 0.06
RO = 300.00'
DS = 65 mph



SITE 1

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 72
7375.2 AC (DEED)

PERMANENT FILL IN WETLAND
FOR THE PROP. SPLICE PITS = 0.0002AC

PERMANENT FILL IN WETLAND
FOR THE PROP.
POWER POLE= 4 X 0.0001AC=0.0004AC




**DENOTES HAND
CLEARING**

SEE SHEET 50 FOR PROFILE -L-

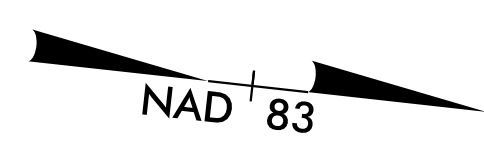
REVISIONS

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B/17/49

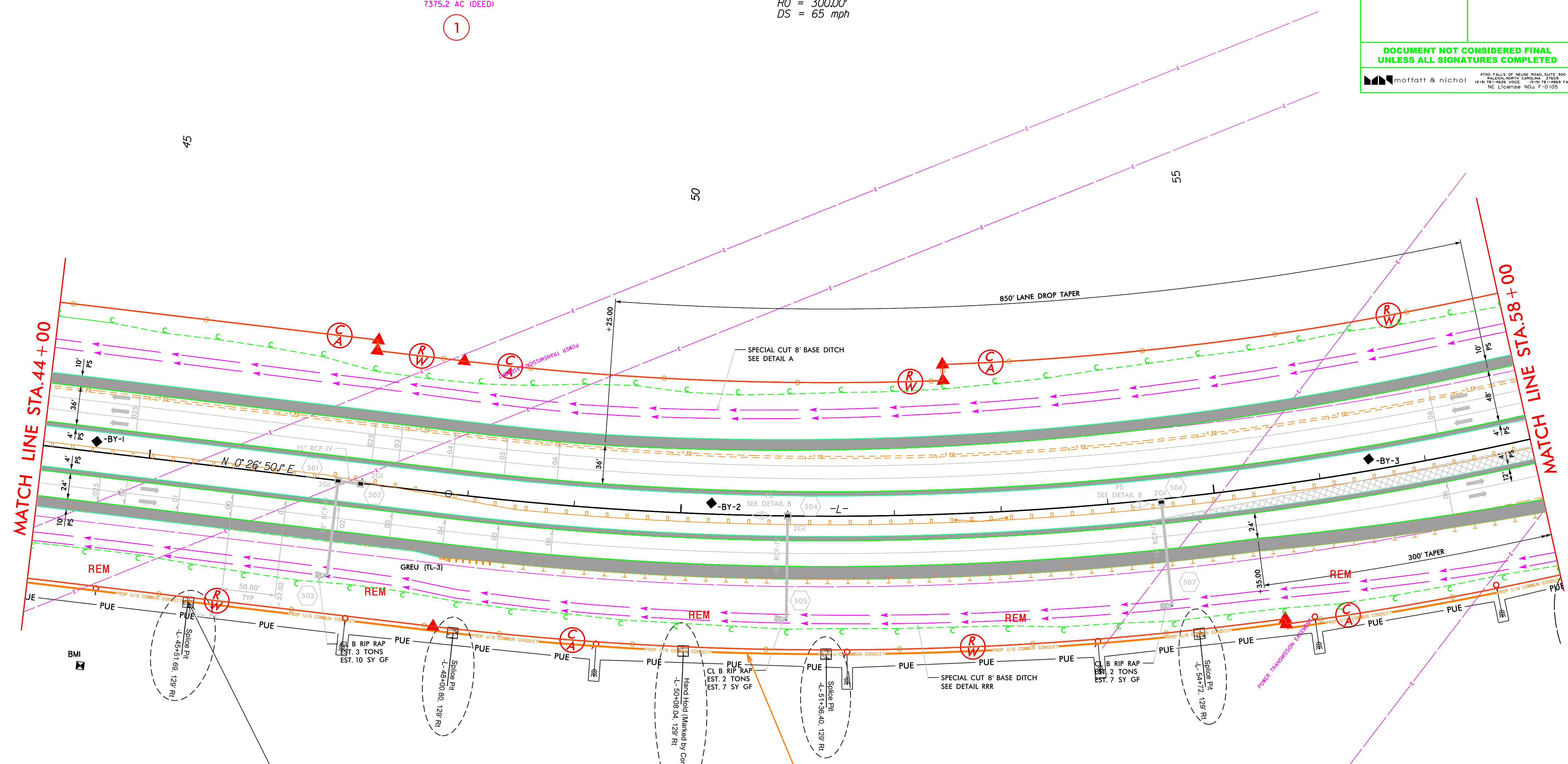
PROJECT REFERENCE NO. R-1015	SHEET NO. NE-03
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
 <small>4700 FALLS OF REHE ROAD, SUITE 200 RALEIGH, NORTH CAROLINA 27603 919 781-4226 VOICE 919 781-7885 FAX NC License No. F-0105</small>	

-L-
 PI Sta 58+21.81
 $\Delta = 38^{\circ} 01' 15.2''$ (LT)
 $D = 1' 53' 54.5''$
 $L = 2,002.71'$
 $T = 1,039.80'$
 $R = 3,018.00'$
 $SE = 0.06$
 $RO = 300.00'$
 $DS = 65$ mph



DEPARTMENT OF AGRICULTURE
 CROATAN NATIONAL FOREST
 DB 336 - PG 9
 DB 336 - PG 72
 7375.2 AC (DEED)

1



Splice Pits Hand Clearing Impacts =
 10.0' x 10.0' (100.0 Sf) x 4 Splice Pits = 400 SF
 HandHold Pit Hand Clearing Impacts =
 5.0' x 3.0' (15.0 SF) x 1 HandHold Pit = 15 SF
 TOTAL For This Sheet = 415 SF

DEPARTMENT OF AGRICULTURE
 CROATAN NATIONAL FOREST
 DB 336 - PG 9
 DB 336 - PG 72
 7375.2 AC (DEED)

1

UNDERGROUND
 COMMUNICATION LINES

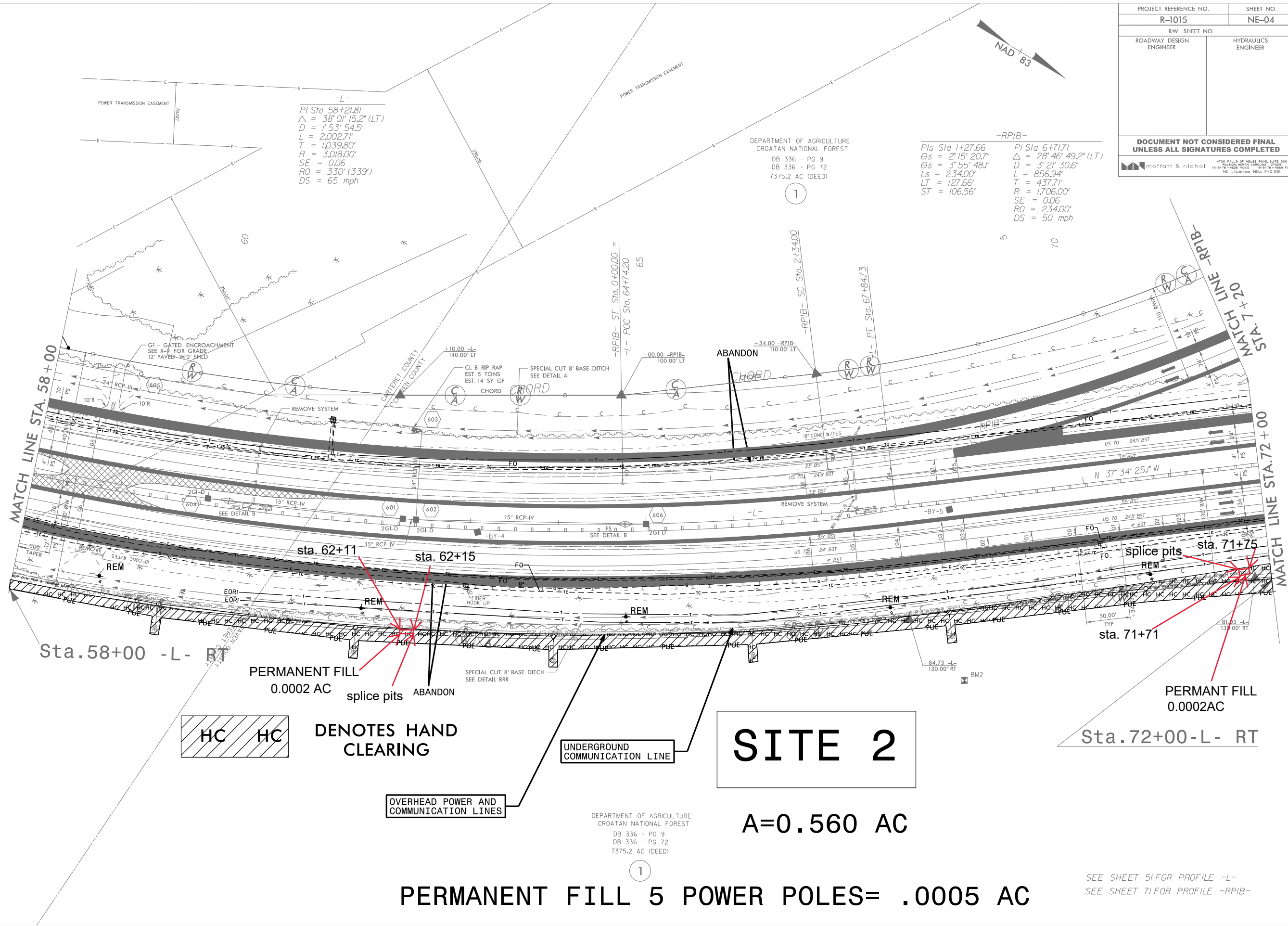
SEE SHEET 50 FOR PROFILE -L-

REVISIONS

8/17/99
 05-DEC-2018 11:45
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 1015-NE03

Revised 5/1/2020

PROJECT REFERENCE NO. R-1015	SHEET NO. NE-04
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
<small>4700 PULL OF THESE ROADWAYS 100' W/ALCON NORTH CAROLINA 17525 300' 25' 18" 4250 VOICE 10' 10' 10' 10' 10' 10' NC License NO. F-0105</small> moffatt & nichol	



-L-
 PI Sta 58+21.81
 $\Delta = 38^{\circ} 01' 15.2''$ (LT)
 $D = 1' 53' 54.5''$
 $L = 2,002.71'$
 $T = 1,039.80'$
 $R = 3,018.00'$
 $SE = 0.06$
 $RO = 330' (339')$
 $DS = 65$ mph

-RPIB-
 Pls Sta 1+27.66
 $\theta_s = 2^{\circ} 15' 20.7''$
 $\theta_s = 3^{\circ} 55' 48.1''$
 $L_s = 234.00'$
 $LT = 127.66'$
 $ST = 106.56'$
 PI Sta 6+71.71
 $\Delta = 28^{\circ} 46' 49.2''$ (LT)
 $D = 3' 21' 30.6''$
 $L = 856.94'$
 $T = 437.71'$
 $R = 1,706.00'$
 $SE = 0.06$
 $RO = 234.00'$
 $DS = 50$ mph

HC HC
**DENOTES HAND
 CLEARING**

SITE 2

A=0.560 AC

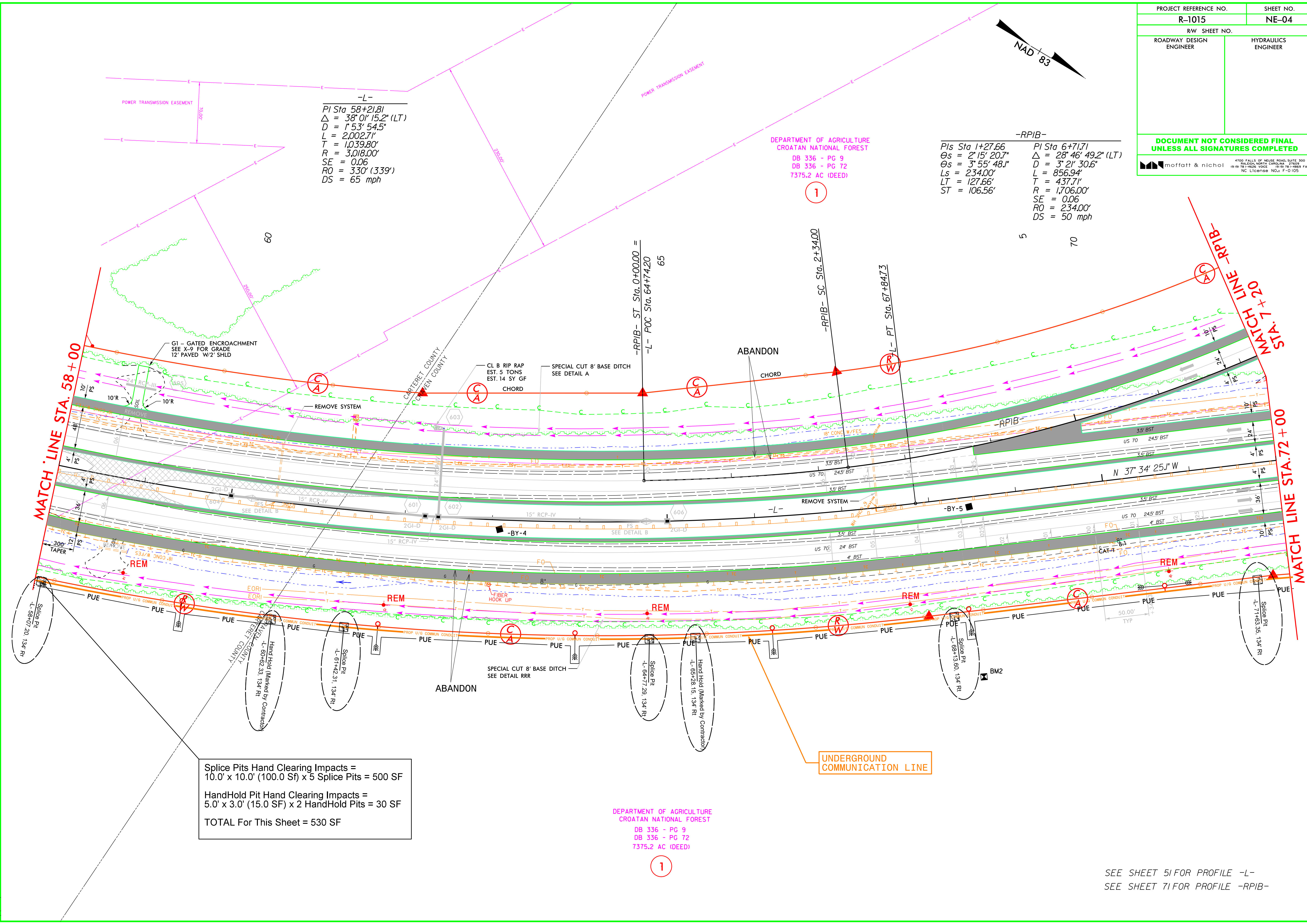
PERMANENT FILL 5 POWER POLES= .0005 AC

SEE SHEET 5I FOR PROFILE -L-
 SEE SHEET 7I FOR PROFILE -RPIB-

8/17/09
 REVISIONS
 19-NOV-2018 09:59
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PROJECT REFERENCE NO. R-1015	SHEET NO. NE-04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
moftatt & nichol	

8/17/99
 REVISIONS
 05-DEC-2018 IP02
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 facep01a



-L-
 PI Sta 58+21.81
 $\Delta = 38^{\circ} 01' 15.2" (LT)$
 $D = 1' 53" 54.5"$
 $L = 2,002.71'$
 $T = 1,039.80'$
 $R = 3,018.00'$
 $SE = 0.06$
 $RO = 330' (339')$
 $DS = 65 \text{ mph}$

-RPIB-
 Pls Sta 1+27.66
 $\Theta_s = 2^{\circ} 15' 20.7"$
 $\Theta_s = 3^{\circ} 55' 48.1"$
 $L_s = 234.00'$
 $LT = 127.66'$
 $ST = 106.56'$

PI Sta 6+71.71
 $\Delta = 28^{\circ} 46' 49.2" (LT)$
 $D = 3' 21' 30.6"$
 $L = 856.94'$
 $T = 437.71'$
 $R = 1,706.00'$
 $SE = 0.06$
 $RO = 234.00'$
 $DS = 50 \text{ mph}$

Splice Pits Hand Clearing Impacts =
 10.0' x 10.0' (100.0 Sf) x 5 Splice Pits = 500 SF
 HandHold Pit Hand Clearing Impacts =
 5.0' x 3.0' (15.0 Sf) x 2 HandHold Pits = 30 SF
 TOTAL For This Sheet = 530 SF

DEPARTMENT OF AGRICULTURE
 CROATAN NATIONAL FOREST
 DB 336 - PG 9
 DB 336 - PG 72
 7375.2 AC (DEED)

SEE SHEET 51 FOR PROFILE -L-
 SEE SHEET 71 FOR PROFILE -RPIB-

REVISIONS
7/13/2018 - PARCEL 1 - ADDED TIE
STATION -RPICD- 5+51 TO 11+00 RT

PROJECT REFERENCE NO.	R-1015	SHEET NO.	NE-05
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

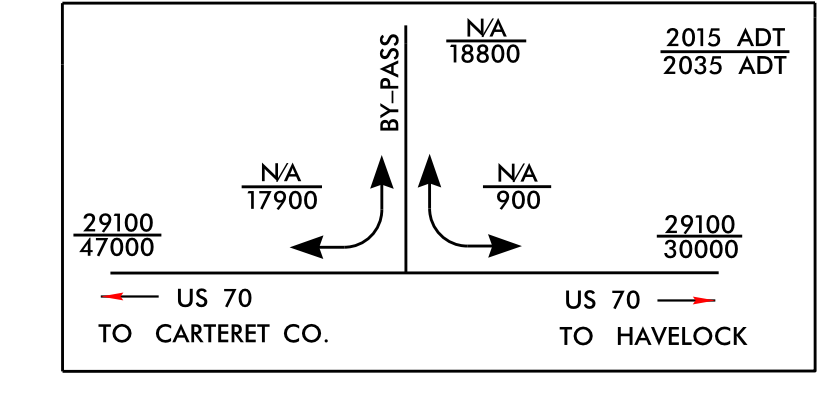
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

-RP1B-

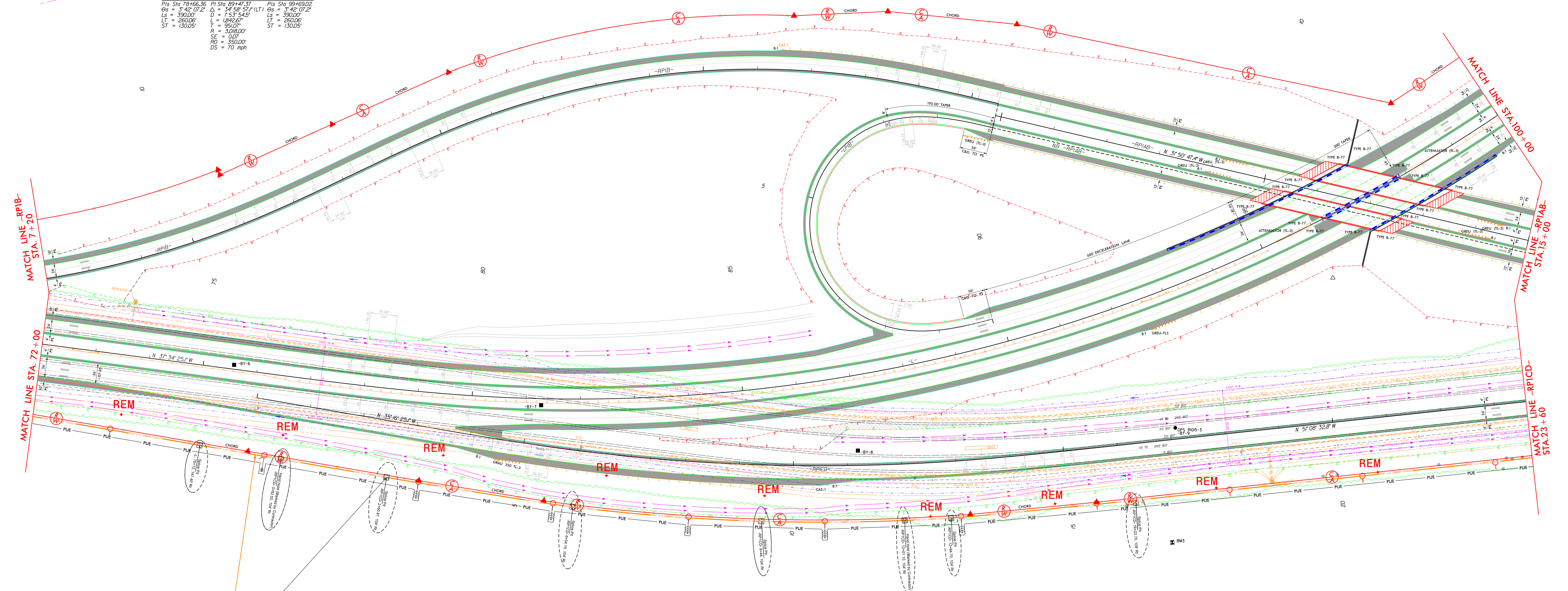
PI Sta 6+71.71	PI Sta 11+68.98	PI Sta 14+76.99	PI Sta 19+46.74	PI Sta 23+98.64
$\Delta = 28^{\circ}46'49.2"$ (LT)	$\Delta = 3^{\circ}55'45.9"$	$\Delta = 4^{\circ}25'31.0"$	$\Delta = 29^{\circ}52'36.5"$ (RT)	$\Delta = 4^{\circ}25'31.0"$
D = 37.21' 30.6"	Ls = 234.00'	Ls = 228.00'	D = 37.21' 30.6"	Ls = 228.00'
L = 856.94'	LT = 156.04'	LT = 152.05'	L = 763.66'	LT = 152.05'
T = 437.71'	T = 78.03'	T = 76.04'	T = 393.79'	T = 76.04'
R = 1706.00'	SE = 0.06'	SE = 0.06'	R = 1476.00'	SE = 0.06'
RO = 234.00'	RO = 234.00'	RO = 228.00'	RO = 228.00'	RO = 228.00'
DS = 50 mph	DS = 50 mph	DS = 50 mph	DS = 50 mph	DS = 50 mph

-L-

PI Sta 78+66.36	PI Sta 89+42.37	PI Sta 99+69.02
$\Delta = 3^{\circ}42'07.2"$	$\Delta = 54^{\circ}38'57.1"$ (LT)	$\Delta = 3^{\circ}42'07.2"$
Ls = 390.00'	D = 153' 54.5"	Ls = 390.00'
LT = 260.06'	L = 1842.67'	LT = 260.06'
T = 130.05'	T = 39.07'	T = 130.05'
R = 3018.00'	SE = 0.07'	R = 3018.00'
RO = 350.00'	RO = 0.07'	RO = 350.00'
DS = 70 mph	DS = 70 mph	DS = 70 mph



DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 12
7375.2 AC (DEED)



UNDERGROUND COMMUNICATION LINE

Splice Pits Hand Clearing Impacts =
10.0' x 10.0' (100.0 Sf) x 6 Splice Pits = 600 SF

HandHold Pit Hand Clearing Impacts =
5.0' x 3.0' (15.0 Sf) x 2 HandHold Pits = 30 SF

TOTAL For This Sheet = 630 SF

-LP1B-

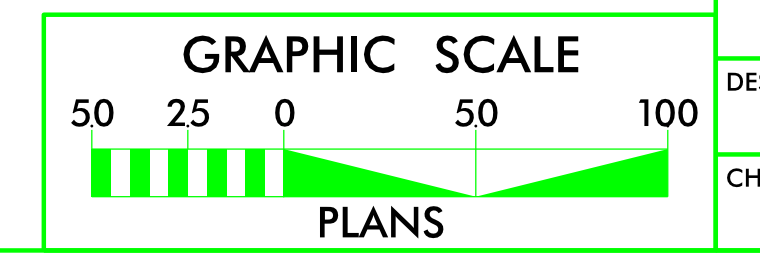
PI Sta 1+28.02	PI Sta 9+18.76	PI Sta 7+75.74
$\Delta = 1^{\circ}48'34.4"$	$\Delta = 149^{\circ}32'49.5"$ (RT)	$\Delta = 28^{\circ}21'25.4"$
$\Delta = 28^{\circ}25'38.6"$	D = 24' 05' 02.5"	Ls = 195.00'
Ls = 195.00'	L = 54.09'	LT = 131.71'
LT = 128.02'	T = 72.376'	T = 66.56'
ST = 70.92'	R = 197.00'	SE = 0.075'
SE = 0.075'	RO = 135.00'	RO = 135.00'
RO = 135.00'	DS = 25 mph	DS = 25 mph

-RP1CD-

PI Sta 4+74.02	PI Sta 9+36.75	PI Sta 13+96.57
$\Delta = 1^{\circ}50'01.2"$	$\Delta = 12^{\circ}12'05.4"$ (LT)	$\Delta = 1^{\circ}50'01.2"$
Ls = 231.00'	D = 135' 15.3"	Ls = 231.00'
Ls = 195.00'	L = 154.09'	LT = 131.71'
LT = 131.71'	T = 385.74'	T = 77.01'
ST = 77.01'	R = 3609.00'	SE = 0.03'
SE = 0.03'	RO = 231.00' (108')	RO = 231.00' (108')
RO = 231.00' (108')	DS = 50 mph	DS = 50 mph

DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST
DB 336 - PG 9
DB 336 - PG 12
7375.2 AC (DEED)

SEE SHEETS 51 AND 52 FOR PROFILE -L-
SEE SHEET 71 AND 72 FOR PROFILE -RP1B-
SEE SHEET 72 FOR PROFILE -RP1AB-
SEE SHEET 76 FOR PROFILE -RP1CD-
SEE SHEET 77 FOR PROFILE -LP1B-



LOCATION:
US 70 (HAVLOCK BYPASS)
FROM SOUTH OF CARTER (CRAVEN COUNTY LINE
TO SOUTH OF SR 1176 (CAROLINA PINES BLVD))

TIP NO.	R-1015	COUNTY:	CRAVEN
DESIGNED BY:	DGM		
CHECKED BY:	TRK	DATE:	6/18/2018

es:\s1805\1512\2018\1015\main\cwg\NEU\18-015-rd7_NE05.plt.dgn

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	44+00 TO 53+78 -L-	POWER LINE&POWER POLE	< 0.01				0.66					
	57+77 TO 58+00 -L-	POWER LINE					< 0.01					
2	58+00 TO 72+00 -L-	POWER LINE & POWER POLE	< 0.01				0.56					
3	72+00 TO 89+04 -L-	POWER LINE & POWER POLE	< 0.01				0.95					
	89+24 TO 92+37 -L-	POWER LINE					0.05					
	92+96 TO 96+80 -L-	POWER LINE					0.06					
4	116+63 TO 120+51 -L-	POWER LINE					0.73					
	119+66 TO 121+28 -L-	POWER LINE					0.58					
5	128+97 TO 136+09 -L-	POWER LINE					1.83					
6	53+97 TO 55+60 -Y3-	POWER LINE&POWER POLE	< 0.01				0.09					
	59+17 TO 61+00 -Y3-	POWER LINE&POWER POLE	< 0.01				0.09					
7	61+00 TO 62+82 -Y3-	POWER LINE&POWER POLE	< 0.01				0.04					
8	35+14 TO 38+00 -Y4-	POWER LINE&POWER POLE	< 0.01				0.12					
9	50+78 TO 51+05 -Y4-	POWER LINE&POWER POLE	< 0.01				< 0.01					
	52+17 TO 53+78.82 -Y4-	POWER LINE&POWER POLE	< 0.01				0.07					
1	44+00 TO 58+00 -L-	SPLICE PITS & HAND HOLES			0.01							
2	58+00 TO 72+00 -L-	SPLICE PITS & HAND HOLES			0.01							
3	72+00 TO 16+22 -L-	SPLICE PITS & HAND HOLES			0.01							
TOTALS*:			< 0.01		0.04		5.84			0	0	0

*Rounded totals are sum of actual impacts

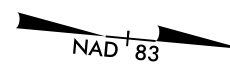
NOTES:
 NOTES: Total Permanent Fill in the wetlands are for the power poles
 #REF!

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 04/29/2020
 CRAVEN COUNTY
 R-1015
 34360.1.2
 SHEET 0 OF 0

Revised 2016 09 09

PROJECT REFERENCE NO. R-1015	SHEET NO. 39
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 015869 T. R. REID	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 032581 E. A. HARDISON

moffatt & nichol
4700 FALLS OF NEUSE ROAD, SUITE 300
RALEIGH, NORTH CAROLINA 27609
919/971-4625 VOICE 919/971-1865 FAX
NC LICENSE NO. F-0105



ALLOWABLE IMPACTS ZONE 1

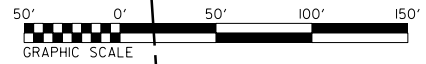
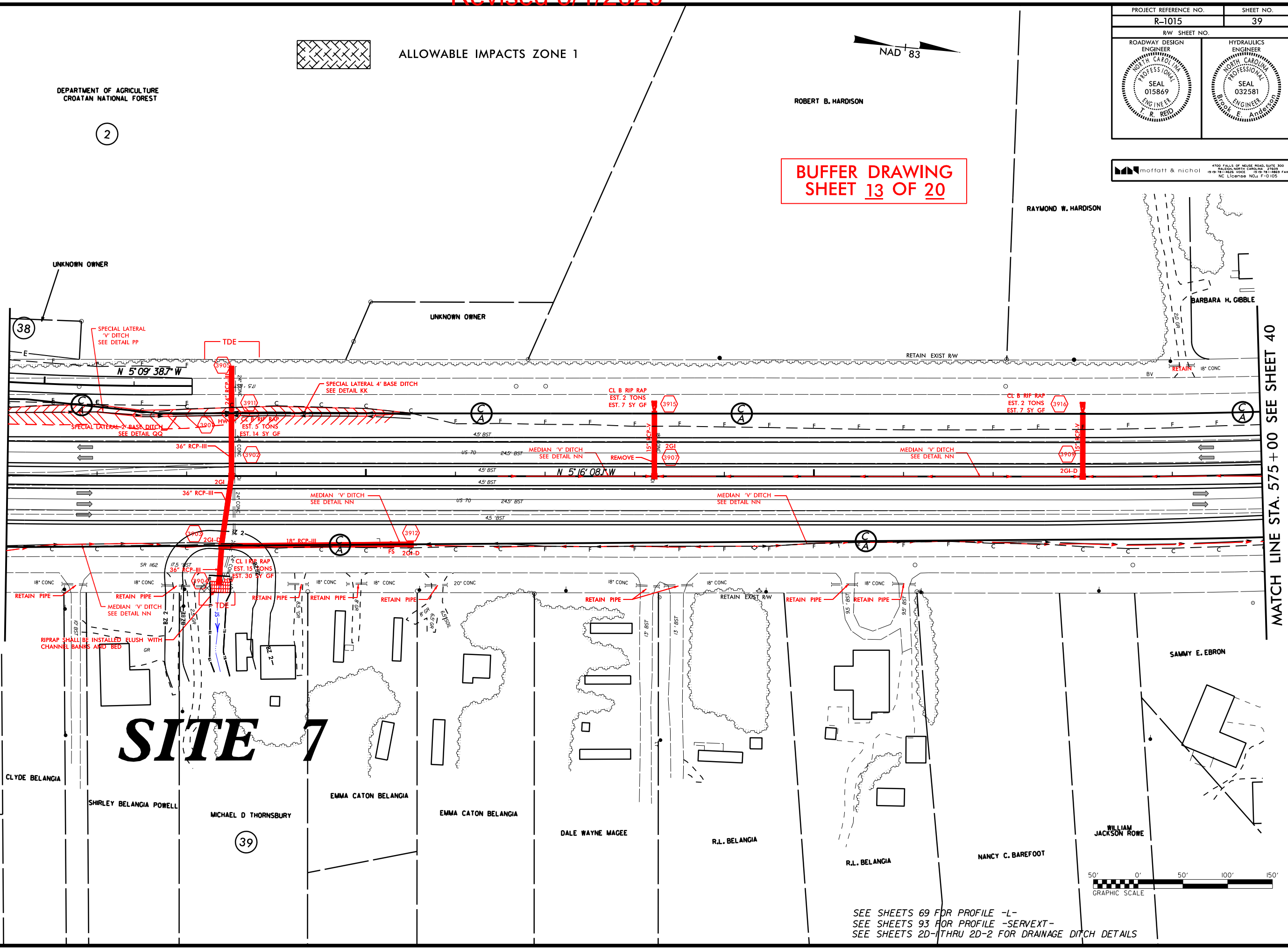
DEPARTMENT OF AGRICULTURE
CROATAN NATIONAL FOREST

BUFFER DRAWING SHEET 13 OF 20

22/5/2020
 R:\Hydro\Permits_Environmental\Drawings\Buffer\1-1015_Hyd_gm_bur_bul_bul39.dgn
 7/13/2018 - PARCEL 38 - REVISED TDE STATION -L- 563+14 TO 563+64 RT
 PARCEL 38 - ADDED TCE STATION -L- 561+00 TO 561+78 LT
 REVISIONS
 \$\$\$\$\$\$SYTIME\$\$\$\$\$\$
 \$\$\$\$\$\$DESIGN\$\$\$\$\$\$
 \$\$\$\$\$\$CHECK\$\$\$\$\$\$
 \$\$\$\$\$\$DATE\$\$\$\$\$\$

MATCH LINE STA. 561 + 00 SEE SHEET 38

MATCH LINE STA. 575 + 00 SEE SHEET 40



SEE SHEETS 69 FOR PROFILE -L-
 SEE SHEETS 93 FOR PROFILE -SERVEXT-
 SEE SHEETS 2D-1 THRU 2D-2 FOR DRAINAGE DITCH DETAILS

SITE 7

CLYDE BELANGIA
 SHIRLEY BELANGIA POWELL
 MICHAEL D THORNSBURY
 EMMA CATON BELANGIA
 EMMA CATON BELANGIA
 DALE WAYNE MAGEE
 R.L. BELANGIA
 R.L. BELANGIA
 NANCY C. BAREFOOT
 SAMMY E. EBON
 WILLIAM JACKSON ROWE

39

38

2

8/17/99

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	BRIDGE	TEMP ROAD CROSSING	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
1	12 @ 135' Dual Bridge	-L- 170+00 to -L- 176+39		X		11874	8173	20048					
2	72" RCP-V, Buried 1'	-Y3RPB- 8+09 to -Y3RPB- 9+96	X						21342	12842	34184		
3	72" RCP-V, Buried 1'	-L- 242+20 to -L- 245+59	X						20168	13088	33256		
3	Temp. Detour	-L- 245+59 to -L- 246+42			X	4312	2113	6425					
4	84" RCP-V, Buried 1'	-Y3RPD- 16+26 to -Y3RPD-18+42	X						17227	9603	26830		
5	7@ 135' Dual Bridge	-L- 287+68 to -L- 290+04		X		11674	7869	19544					
6	2 @ 10'X8' RCBC	-L- 509+18 to -L- 511+11	X						55373	29278	84651		
7	36" RCP	-L- 563+14 to -L- 563+54	X			135							
8	72" RCP-IV, Buried 1'	-Y4- 33+67 to -Y4- 34+86	X			3321	1827	5148					
9	2@ 84" RCP, Buried 1'	-Y4- 51+04 to -Y4- 52+99	X						12648	6275	18923		
SUB TOTAL:						31317	19982	51164	126759	71086	197845		

NOTE: Site 9: Zone 1 Mitigable Impacts include 331 sqft of Bank Stabilization.

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

CRAVEN COUNTY
PROJECT: 34360.1.2 (R-1015)

2/25/2020
SHEET 18 OF 20

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			ROAD CROSSING	TEMP ROAD CROSSING	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)		
9	DETOUR	-Y4DET- 51+85 to -Y4DET- 54+45		X		5555	4250	9805					
10	3 @ 9'X7' RCBC	-RP2AC- 43+26 to -RP2AC- 46+15	X			5656	2116	7773					
SUB TOTAL FROM THIS SHEET :						11212	6366	17578					
SUB TOTAL FROM SHEET 18 :						31317	19982	51164	126759	71086	197845		
TOTAL:						42529	26348	68742	126759	71086	197845		

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 CRAVEN COUNTY
 PROJECT: 34360.1.2 (R-1015)

 2/25/2020
 SHEET 19 OF 20