



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

August 7, 2018

Mr. Steve Thompson
National Park Service
Outer Banks Group
1401 National Park Drive
Manteo, NC 27954

Subject: Special Use Permit for Construction Activities
NC-12 – Rodanthe Breach Long-Term Improvements, Bonner Bridge Replacement Project
Phase IIb in Dare County, North Carolina; TIP Project B-2500B, Federal Aid Project No.
BRNHF-0012(56); WBS Element 32635.3.FR7

The North Carolina Department of Transportation (NCDOT) proposes construction of the NC-12 Rodanthe Bridge as part of the Rodanthe Breach Long-Term Improvements project (TIP Project B-2500B (Phase II)) in Dare County, North Carolina. A completed Special Use Permit Application and appropriate site drawings are attached for your review. As portions of the Cape Hatteras National Seashore (Seashore) will be utilized during this work, approval is required.

Phase II of B-2500B (Project) has been contracted to a Design-Build Team, selected to design and permit the Project and take it through construction once permits and approvals are issued. The contractor, Flatiron, and their subcontractors and consultants have designed and will construct the new bridge. This application focuses on the activities proposed to take place within the Seashore, as presented to Seashore staff and other state/federal agencies at meetings over the past several months.

The proposed improvement project is approximately 2.8 miles in length, including 2.4 miles of bridge. The bridge will extend approximately 1,400 feet into Pamlico Sound at its farthest point. NC 12 will leave the existing NC 12 easement within the Pea Island National Wildlife Refuge (Refuge) boundary at a point approximately 1.8 miles north of the Refuge boundary with Rodanthe and enter the Seashore and Pamlico Sound. The bridge will be in Pamlico Sound until a point north of the emergency ferry terminal, where the relocated NC 12 will turn east and enter Rodanthe. The road would then re-join NC 12 just north of the Liberty Service Station/Island Convenience Store.

Several documents and plan sheets are attached to this application for your reference. Included in these are permit impact sheets, roadway drawings, and an easement drawing.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1548 MAIL SERVICE CENTER
RALEIGH, NC 27699-1548

Telephone: (919) 707-6000
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Previous Coordination

NCDOT and FHWA completed the NEPA studies for B-2500B and issued a Record of Decision (ROD) in December 2016. Following the issuance of the ROD, NCDOT awarded a design-build contract for B-2500B and requested that the Design-Build Team design the new bridge such that it reduces the amount of new easement needed within the Seashore and Refuge from what was estimated in the ROD. Since the team began the final design process, NCDOT has coordinated with your office on that design and its potential impacts to the Seashore. This application reflects this final design.

In March 2008, a Biological Assessment with addendum was finalized. A Biological and Conference Opinion was issued July 10, 2008 by the USFWS for effects on piping plover, loggerhead sea turtle, green sea turtle, and leatherback sea turtle. Section 7 consultation was reinitiated with USFWS in December 2014 to account for the listing of the rufa red knot as a federally threatened species. USFWS issued an addendum to their July 2008 Biological Opinion in a letter dated February 9, 2015. It included a non-jeopardy opinion. NCDOT agreed to avoid disturbing foraging and roosting rufa red knots and avoid or minimize opportunities for avian predator perches, as previously agreed to for the piping plover. Copies of this Biological Opinion and Conference Opinion are available upon request.

Proposed Schedule

Based on the current anticipated schedule, construction has begun and has a proposed completion date of April 2020. The proposed schedule is subject to change, depending on permit approvals.

Easement Minimization

The Design-Build Team and NCDOT have minimized impacts to the Seashore and lessened the easement requirements for the Project. The primary goal was to align the bridge so that impact to the Seashore was minimized while adhering to NCDOT and FHWA design standards.

Permanent New Easement

New easement within the Seashore is necessary for the northern approach to the new bridge. The northern approach, within the Refuge and the Seashore, is located west of existing NC 12 in order to avoid potential future breaches that could wash out NC 12. This new easement area is 0.344 acre in size.

NCDOT will incorporate several Best Management Practices (BMPs) into the design and construction of the Project. The BMPs have been reviewed and approved by state and federal resource agencies. Wetland areas and environmentally sensitive areas immediately adjacent to but not affected by the Project will be protected from unnecessary encroachment using tree protection fencing or an equivalent measure. The project will be consistent with those measures outlined in the Project Commitments of the ROD. Individual avoidance and minimization measures that affect the Seashore include the following:

Design Measures

- The final bridge substructure was redesigned such that a water-line footing was no longer required, thus reducing impacts surface water impacts and potential SAV shading by 0.17 acre.
- Stormwater will be collected on both bridge approaches (107 feet southern end left, 239 feet southern end right, and 121 feet northern end right) and discharged away from jurisdictional features.
- Deck drains will be installed at variable distances throughout the entire length of the bridge and will be a minimum of 14 feet or more from surface water.

Protected Species Measures

- A pre-construction lighting design coordination meeting to establish the parameters of the lighting set-up will be conducted with representatives of USFWS and NMFS prior to construction
- An educational night lighting meeting will be scheduled with USFWS and all contractors in order to minimize disturbance to sea turtles and other protected species. Night lighting will meet the requirements specified in the attached USFWS Biological and Conference Opinions, unless otherwise specified by USFWS.
- On-site personnel will implement the “Guidelines for Avoiding Impacts to the West Indian Manatee: Precautionary Measures for North Carolina Waters.”
- On-site personnel will follow the NOAA Fisheries document “Sea Turtle and Smalltooth Sawfish Construction Conditions.”

Advancing Rail System

A specially designed advancing rail system that runs along both sides of the new bridge will be used for construction. The system will have an open grate to allow for sunlight to minimize shading impacts to SAV. Cranes will run along the rail system and be used for construction. The rail system will be approximately 1,300 feet in length at each end. Each span of the rail system will be in place for approximately 4 months prior to being moved forward, which is what allows the rail system to be limited to the 1,300 feet length on each end. Impacts due to the pipe piles for the rail system will be limited as much as possible.

Construction Staging Measures

- On the southern end, staging of construction equipment or storage of construction supplies will occur within the lay-down yard as designated on the plans. This area was chosen due to its proximity to the roadway and minimizes impacts to the driving public.
- On the northern end, staging will occur in a parking area adjacent to NC 12 and under the bridge to minimize disturbance within the Refuge. Wetlands that are not otherwise impacted will be avoided.
- The contractor will minimize traffic impacts to Seashore visitors, while also minimizing the footprint of personnel access (parking vehicles, etc.) by utilizing the staging areas, unopened bridge deck, and off-site parking lots.
- Lighting required at the staging areas will be coordinated with USFWS along with other construction lighting to ensure no adverse effects to nesting sea turtles.
- Fueling stations will be contained to avoid inadvertent spills reaching surface waters. Any spills will be controlled and reported as applicable.

Jetting Measures

In order to minimize the effects of the jetting process for pile installation, the contractor will utilize primary and secondary containment systems to capture the jetting effluent. The primary and secondary containment systems will be used at bents 6 through 91 in the open water. A similar system will be used in wetlands and upland to capture the sediment prior to leaving the containment area, which are bents 4 and 5 and 92 through 101. The setup may vary due to other constraints such as wetlands and shorelines. Further details of the jetting and containment area are provided in the attached Alternative Analysis of Pile Installation Methods.

- Jetting spoils will be contained within the primary containment area until access is available to remove via the bridge deck (approximately 8 months). Spoils will be transported from the containment area to a temporary stockpile at the bridge approaches for drying. The spoils will then be incorporated into the project or disposed of in accordance with standard NCDOT waste agreement protocol.

General Construction Measures

- NCDOT will carry out the stipulations in the Section 106 Programmatic Agreement that outlines mitigative measures pertaining to the Refuge.
- NCDOT has elected to use more hand clearing rather than mechanized clearing where feasible to minimize impacts to wetlands.
- To ensure that all borrow and waste activities occur on high ground, except as authorized by permit, the NCDOT shall require its contractors to identify all areas to be used to borrow material, or to dispose of dredged, fill or waste material.
- Sediment and erosion control measures shall adhere to the Design Standards in Sensitive Watersheds during construction.
- Special Sediment Control Fence and Environmentally-Sensitive Area fencing will be used where applicable.
- Once the new bridge is constructed and traffic can be directed over the bridge, the existing NC 12 within the Refuge will be removed and the area returned to its natural state. Road demolition material will be shipped to a designated third-party contractor for re-use in construction material if possible.
- The Contractor will develop an Environmental Commitment Monitoring Plan that will provide an easily referenced guide of the project commitments that are particularly pertinent for construction personnel.

Construction Sequence

Construction of the south end will begin first with construction of the north end to begin following relocation of a power line utility. A rail system will be used for construction of the bridge. It will run along both sides of the bridge. Cranes will run along the rail system and be used for construction. The rail system will be approximately 1,300 feet long at each end (north and south). Each span of the rail system will be in place for approximately 4 months prior to being moved forward, which is what allows the rail system to be limited to the 1,300 feet length.

Traffic

Traffic will be maintained on existing NC-12 during construction of the new bridge. A round-about will be installed at the south end of the Project to tie the new roadway into existing NC 12. Once the new bridge and round-about are complete, then traffic will be moved to the new facility and the abandoned NC 12 within the Refuge will be removed.

Regulatory Approvals

NCDOT anticipates that these activities will also be authorized under the following permits:

- USACE Individual Section 404 Permit (issued 6/22/18)
- NC Division of Water Resources 401 Water Quality Certification (issued 6/11/18)
- NC Division of Coastal Management CAMA Major Development Permit Modification (issued 6/11/18)
- US Coast Guard Permit (pending)
- USACE Nationwide 6 Permit for the geotechnical investigation (issued 4/14/17)
- US National Park Service Special Use Permit for geotechnical investigation (issued 6/15/17)
- US Fish and Wildlife Service Species Use Permit for geotechnical investigation (issued 3/25/17)
- US Fish and Wildlife Service Special Use Permit

We are hereby requesting a Special Use Permit from the National Park Service for this activity. If you have any questions or would like additional information, please contact Michael Turchy at maturchy@ncdot.gov or (919) 707-6157. A copy of this application will also be posted at <https://xfer.services.ncdot.gov/pdea/PermApps/>.

Sincerely,



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

cc: David Hering, Design Build Unit

Revised NPS Form 10-930
 OMB No. 1024-0026
 10-2010
 Expires 6/30/2013

**National Park Service
 Outer Banks Group
 1401 National Park Drive
 Manteo, NC 27954
 (252) 473-2111**



Revised Application for Special Use Permit

Please supply the information requested below. Attach additional sheets, if necessary, to provide required information. You will be notified of the disposition of the application and the necessary steps to secure your final permit. For special events, a non-refundable processing fee should be included and your permit may require the payment of cost recovery charges and proof of liability insurance naming the United States of America as also insured. Pursuant to the 2010 NPS Interim Regulations, parks have up to 10 days to process a fully executed application that seeks to engage in a demonstration or the sale or distribution of printed matter.

Applicant Name: NC Dept. of Transportation	Organization Name: NC Dept. of Transportation
Social Security #: not applicable	Tax ID # not applicable
Street/Address: 1020 Birch Ridge Drive	Street/Address: 1020 Birch Ridge Drive
City/State/Zip Code: Raleigh, NC 27610	City/State/Zip Code: Raleigh, NC 27610
Telephone #: 919-707-6157	Telephone #: 919-707-6157
Cell phone #:	Cell phone #:
Fax #: 919-707-6000	Fax#: 919-707-6000
E-mail: maturchy@ncdot.gov	E-mail: maturchy@ncdot.gov
Responsible person on site during event (Name, address and cell# if not Applicant): Adrian Price, 26200 West Vista Drive, Waves NC 27982; (336) 479-3844	

Description of Proposed Activity (attach diagram, attach additional pages if necessary):

This request is for NCDOT Transportation Improvement Project No. B-2500B (Phase II), the NC 12 – Rodanthe Breach Long-Term Improvements in Dare County. As discussed with Seashore staff, the purpose of this application is for the construction of the bridge and removal of a portion of existing NC 12.

Requested Location: Please reference attached mapping

Dates:

Event set up will begin: (date and time)	Event will begin: (date and time)	Event will end: (date and time)	Removal will be done: (date and time)
August 2018 (Approximate)	August 2018 (Approximate)	Sept 2020 (Approximate)	Sept 2020 (Approximate)

Maximum Number of Participants: generally 120-150 people (Please provide best estimate)

Maximum Number of Vehicles: Numerous vehicles that will vary throughout the stages of construction. Will utilize new parking area and locations on easement under constructed bridge during construction. Impacts to the Seashore and its visitors will be minimized and closely coordinated with Seashore and NCDOT Division 1 staff (attach parking plan if more than 5 vehicles)

Support Equipment (list all equipment; attach additional pages if necessary)

Advancing rail system, cranes, typical construction equipment, and various pickup trucks

List support personnel (contractors, etc. including addresses and telephones attach additional pages if necessary.)

Flatiron, 26200 West Vista Drive, Waves NC 27982. Contact: Adrian Price (336) 479-3844
NCDOT, 1020 Birch Ridge Rd, Raleigh, NC 27610. Contact: Michael Turchy, (919) 707-6157
RK&K 900 Ridgefield Dr, Suite 350, Raleigh, NC 27609. Contact: Matt Cook (919) 878-9560
Three Oaks Engineering, 324 Blackwell Street, Suite 1200, Durham, NC 27701. Contact: Michael Wood, (919) 732-1300

- Is this an exercise of First Amendment Rights? Y N
- Are you familiar with/ have you visited the requested area? Y N
- Have you obtained a permit from the National Park Service in the past? Y N
 (If yes, provide a list of permit dates and locations on a separate page.)
- Do you plan to advertise or issue a press release before the event? Y N
- Will you distribute printed material? Y N
- Is there any reason to believe there will be attempts to disrupt, protest or prevent your event? (If yes, please explain on a separate page.) Y N
- Do you intend to solicit donations, engage in fundraising, or offer items for sale? (If yes, please explain on a separate page and provide park with an example of each such item with this application.) Y N

The applicant by his or her signature certifies that all the information given is complete and correct, and that no false or misleading information or false statements have been given.

Signature for Philip S. Harris, III, P.E. Date 8/7/18

Information provided will be used to determine whether a permit will be issued. Certain activity and event permits require proof of liability insurance naming the United States as an additional insured and are subject to cost recovery and administrative charges which must be paid before the permit is issued. You will be advised as to those requirements if your application is approved. Assessed charges must be paid in advance of receiving the permit in the form of a check or money order payable to National Park Service. Payments are non-refundable.

This completed application should be mailed to the Park address found at the top of this application.

Note that this is an application only, and does not serve as permission to conduct any use of the park. If your request is approved, a permit containing applicable terms and conditions will be sent to the person designated on the application. The permit must be signed by the responsible person and returned to the park prior to the event.

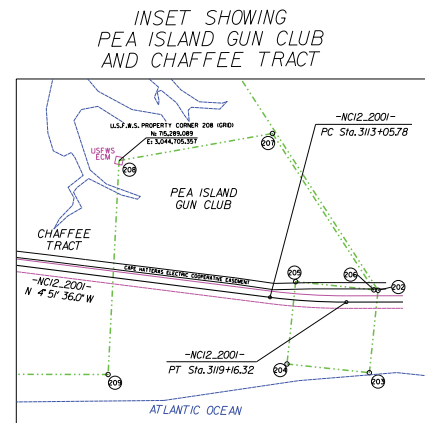
NOTICES

Privacy Act Statement: The Privacy Act of 1974 (5 U.S.C. 552a) provides that you be furnished with the following information in connection with information required by this application. This information is being collected to allow the park manager to make a value judgment on whether or not to allow the requested use. Applicants are required to provide their social security or taxpayer identification number or activities subject to collection of fees by the National Park Service (31 U.S.C. 7701) Information from the application may be transferred to appropriate Federal, State, local agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

Paperwork Reduction Act Statement: This information is being collected subject to the Paperwork Reduction Act (44 U.S.C. 3501) to allow the park manager to make a value judgment on whether or not to allow the requested use. All applicable parts of the form must be completed. A Federal agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Estimated Burden Statement: Public reporting burden for this form is estimated to average 30 minutes per response including the time it takes to read, gather and maintain data, review instructions and complete the form. Direct comments regarding this burden estimate or any aspects of this form to the National Park Service, Special Park Uses Program Manager, 1849 C Street NW (2460), Washington, D.C. 20240

**METES AND BOUNDS DESCRIPTION
of NC 12
PROPOSED AND EXISTING EASEMENTS
ON PEA ISLAND WILDLIFE REFUGE TO
THE VILLAGE OF RODANTHE**



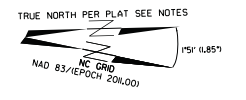
NEW NC 12 R/W

COURSE	BEARING	DISTANCE
USFWS ECM 218 - 132	N 14°10'16" W	7120.65'
132 - 137	S 27°48'07" W	150.00'
137 - 138	N 09°02'39" E	40.31'
138 - 139	N 46°31'39" W	90.40'
139 - 134	N 27°48'07" E	150.00'
134 - 133	S 46°31'39" W	90.40'
133 - 132	S 09°02'39" W	40.31'

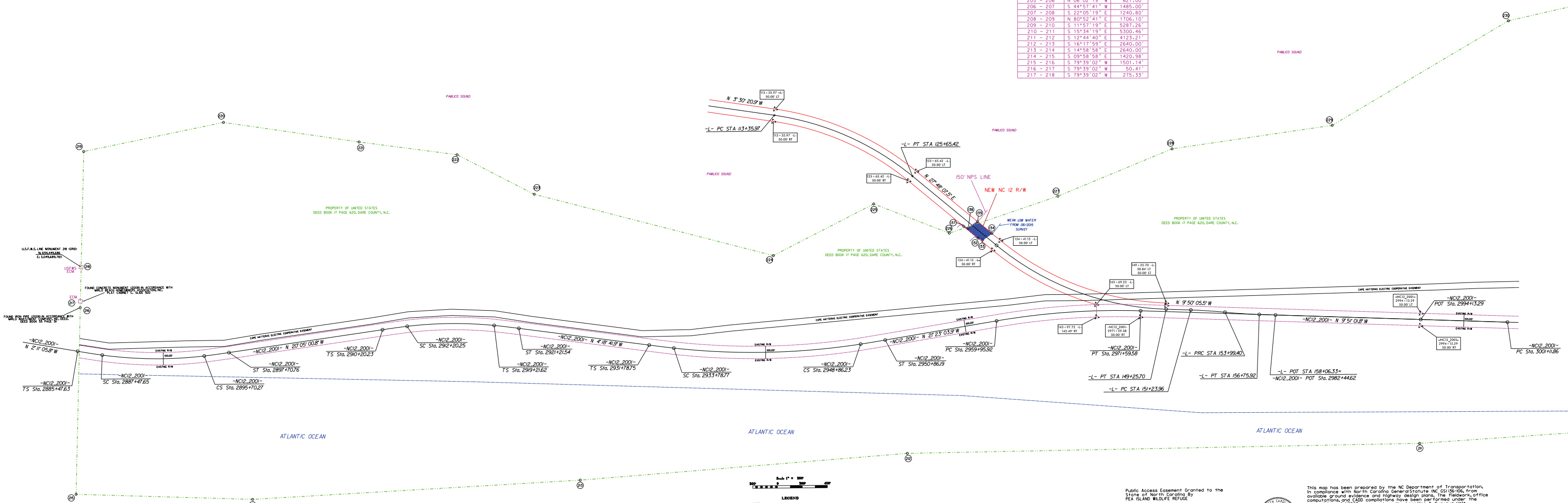
15,000 SQ. FT. 0.344 AC.

CHAFFEE METES AND BOUNDS

COURSE	BEARING	DISTANCE
218 - 219	S 79°39'02" W	929.28'
219 - 220	N 23°21'58" W	1149.06'
220 - 221	N 03°24'58" W	1101.54'
221 - 222	N 04°12'58" W	795.30'
222 - 223	N 15°29'02" E	697.62'
223 - 224	N 02°45'02" E	1985.28'
224 - 225	N 38°49'58" W	908.16'
225 - 226	N 09°30'02" E	652.08'
226 - 227	N 30°24'58" W	922.02'
227 - 228	N 34°07'58" W	995.28'
228 - 229	N 19°57'58" W	1301.52'
229 - 230	N 42°16'42" W	1648.09'
230 - 231	N 24°27'58" W	790.68'
231 - 232	N 30°48'58" W	1016.40'
232 - 233	N 36°57'58" W	223.74'
233 - 234	N 03°57'58" W	1088.34'
234 - 235	N 57°35'58" W	429.66'
235 - 236	N 19°21'58" W	124.08'
236 - 237	N 22°04'02" E	876.98'
237 - 238	N 13°29'58" W	894.96'
238 - 239	N 16°28'58" W	1193.28'
239 - 240	N 15°58'58" W	1959.54'
240 - 241	S 64°09'02" E	706.86'
241 - 242	N 36°31'58" W	1267.86'
242 - 243	N 11°16'02" E	642.18'
243 - 244	N 58°14'08" E	894.39'
244 - 201	N 57°57'41" E	124.08'
201 - 202	N 44°57'41" E	3501.30'
202 - 203	N 83°57'41" E	660.00'
203 - 204	S 06°02'19" E	660.00'
204 - 205	S 83°57'41" W	660.00'
205 - 206	N 06°02'19" W	627.00'
206 - 207	S 44°57'41" W	1485.00'
207 - 208	S 22°05'19" E	1240.80'
208 - 209	N 80°52'41" E	1706.10'
209 - 210	S 11°57'19" E	5287.26'
210 - 211	S 15°34'19" E	5300.46'
211 - 212	S 12°44'40" E	4123.21'
212 - 213	S 16°17'59" E	2640.00'
213 - 214	S 14°58'58" E	2640.00'
214 - 215	S 09°58'58" E	1420.98'
215 - 216	S 09°59'02" W	1501.14'
216 - 217	S 79°39'02" W	50.41'
217 - 218	S 79°39'02" W	275.33'



- NOTES
- LOCALIZED PROJECT COORDINATES ARE BASED ON THE NAD83/CORS/96EPOCH 201.001
 - STATE PLANE COORDINATES FOR "CENTROID" - N 76200.000 IUS FT/E 3049800.000 IUS FT)
 - USING AN AVERAGE COMBINED GRID FACTOR (LOCALIZED TO GRID OF 0.999902567)
 - ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES, UNITS ARE "AS SURVEY FOOT", VERTICAL DATUM IS NAVD83 (1985).
 - GRID COORDINATES FOR USFWS ECM "208" (LINE MONUMENT) - N 694449.686 IUS FT/E 3049689.783 IUS FT)
 - LOCALIZED PROJECT COORDINATES FOR USFWS ECM "208" (LINE MONUMENT) - N 694448.850 IUS FT/E 3049689.783 IUS FT)
 - LOCALIZED PROJECT COORDINATES FOR USFWS ECM "208" (COR NO. 8) - N 76289.089 IUS FT/E 3044705.357 IUS FT)
 - LOCALIZED PROJECT COORDINATES FOR USFWS ECM "208" (COR NO. 8) - N 76289.089 IUS FT/E 3044705.357 IUS FT)
 - LOCALIZED PROJECT COORDINATES FOR USFWS ECM "208" (COR NO. 8) - N 76289.089 IUS FT/E 3044705.357 IUS FT)
 - LOCALIZED PROJECT COORDINATES FOR USFWS ECM "208" (COR NO. 8) - N 76289.089 IUS FT/E 3044705.357 IUS FT)
 - TRUE NORTH ESTABLISHED FROM USFWS ECM 208 (LINE MONUMENT) AND USFWS ECM 208 (COR NO. 8)
 - U.S. FISH & WILDLIFE SERVICE PLAT ENTITLED PEA ISLAND MIGRATORY WATERFOWL REFUGE, H.L. CHAFFEE ESTATE TRACT (NO. 4) L.S.M. SURVEY, 1936
 - USFWS ECM "208" TO USFWS ECM "208" AS MEASURED MAY 2016: N 132°05' E 2429.30'
 - ALL STATION VALUES RELATIVE TO EXISTING CENTERLINE OF NC 12 AS MEASURED IN 2001.



Public Access Easement Granted to the State of North Carolina by PEA ISLAND WILDLIFE REFUGE.
Date:



This map has been prepared by the NC Department of Transportation, in compliance with North Carolina General Statute (NC GS) 136-106, from available ground evidence and highway design plans. The fieldwork, office computations, and CAD compilations have been performed under the supervision of NCDOT personnel of the Location & Surveys Unit. This map is not intended to comply with GS 47-50. This map is not for recordation.

KEITH E. HONEYCUTT, PE, PLS

09.08/99

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

DARE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2500B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32635.3.FR7	BRNH-0012(56)		

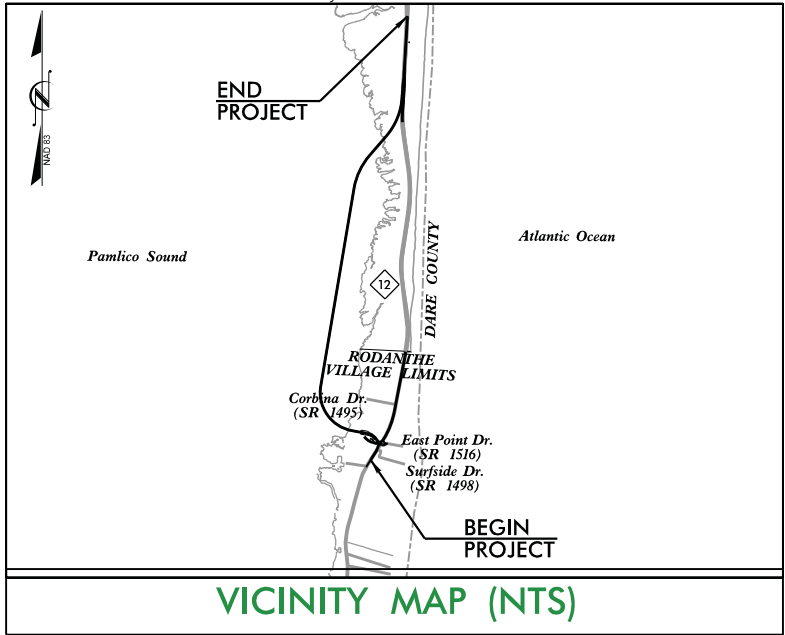


NPS Drawing
Sheet 1 of 9



TIP PROJECT: B-2500B

CONTRACT: C203474

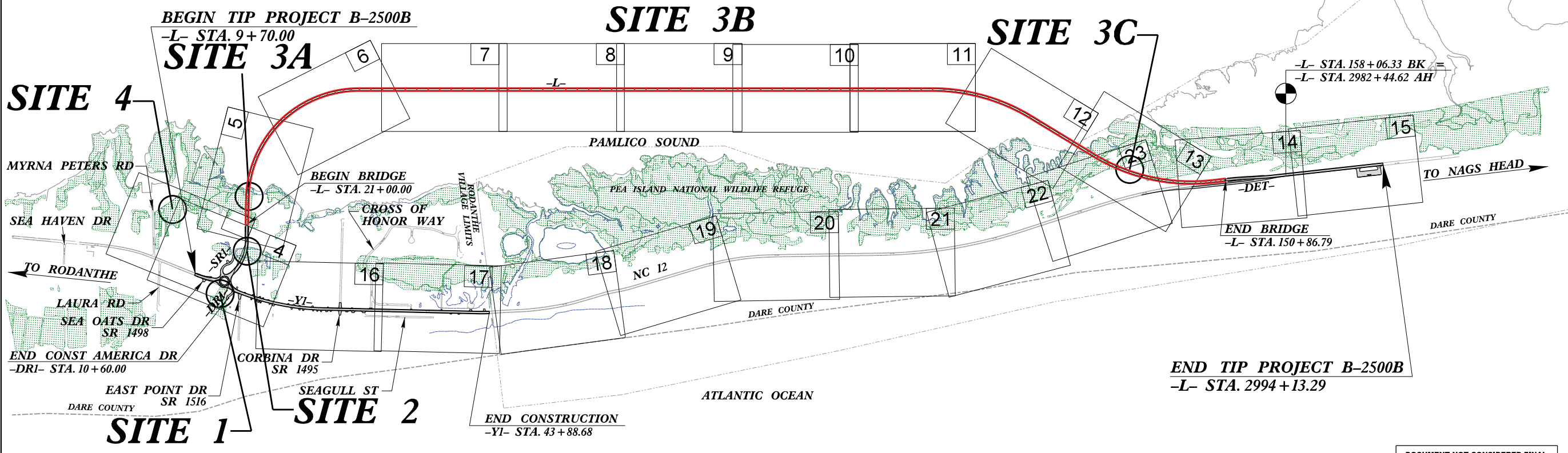


LOCATION: NC 12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE IIB)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING & STRUCTURES

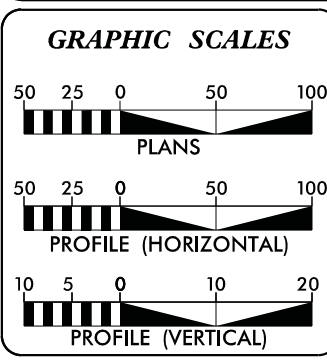


WETLAND AND STREAM IMPACTS



THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2017 = 9,800
ADT 2037 = 14,200
V = 40 /60 MPH
FUNC. CLASSIFICATION = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-2500B.....0.572 mi
LENGTH STRUCTURE TIP PROJECT B-2500B.....2.460 mi
TOTAL LENGTH TIP PROJECT B-2500B.....3.032 mi

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER - DESIGN-BUILD GROUP

PLANS PREPARED BY:

RK&K RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-2012

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 25, 2017

FLATIRON

B. Keith Skinner, P.E.
PROJECT ENGINEER

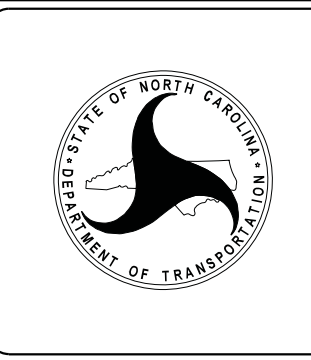
Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

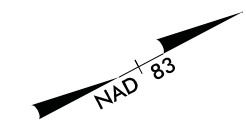


11/21/2017 R:\Hydraulics\PERMITS_Environmental\Drawings\4C\B2500B_Hyd_prm_tsh.dgn Freys

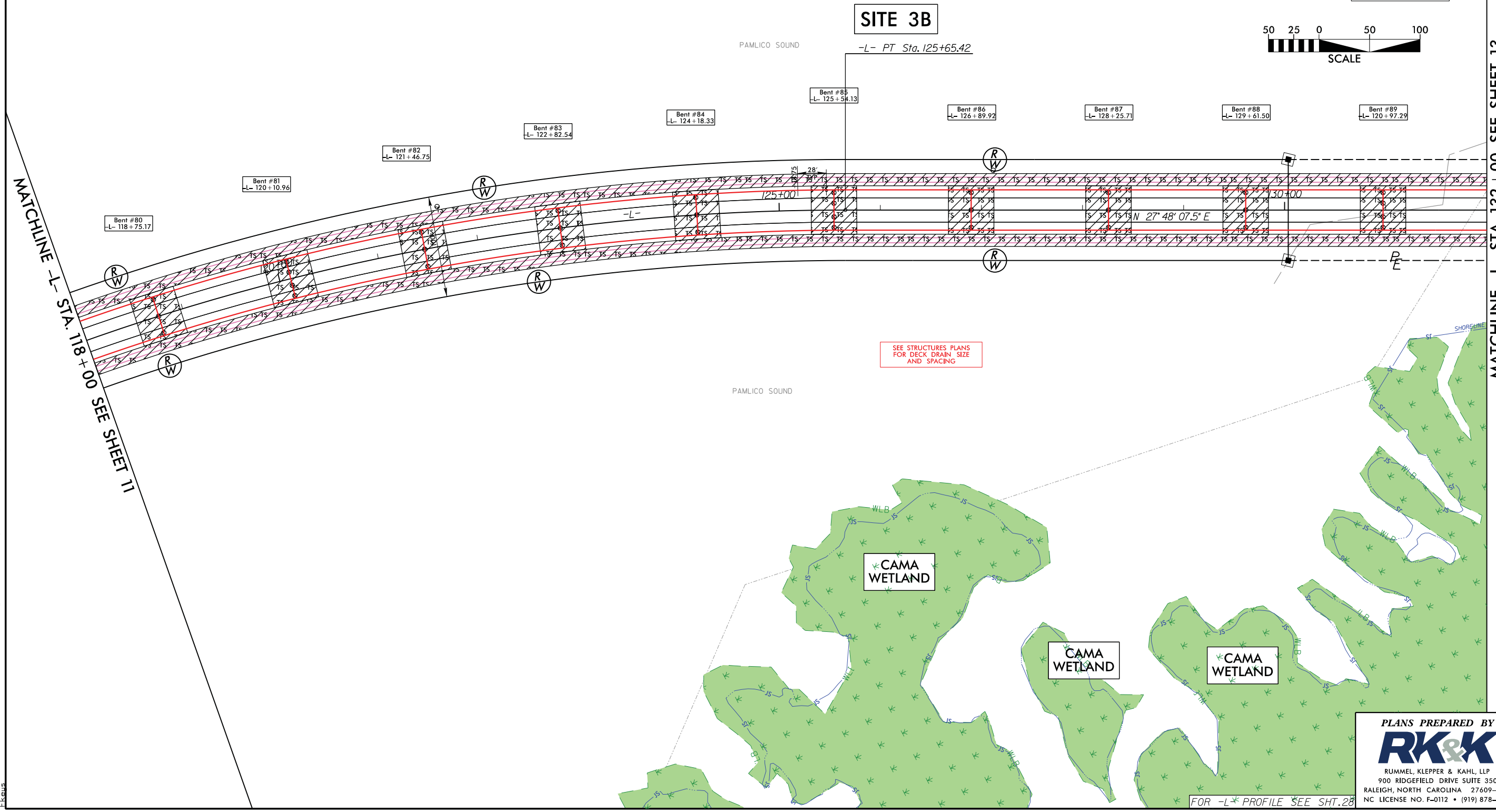
8/17/99

PROJECT REFERENCE NO. B-2500B	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NPS Drawing
Sheet 2 of 9



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ADVANCING RAIL SYSTEM



K:\2\2017
 R:\Hydro\lics\PERMITS_Environmental\Drawings\4C\B2500B_Hyd_prm_wet.psh12.dgn
 E:\

PLANS PREPARED BY :

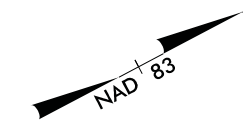
 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

FOR -L* PROFILE SEE SHT. 28

8/17/99

PROJECT REFERENCE NO. B-2500B	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

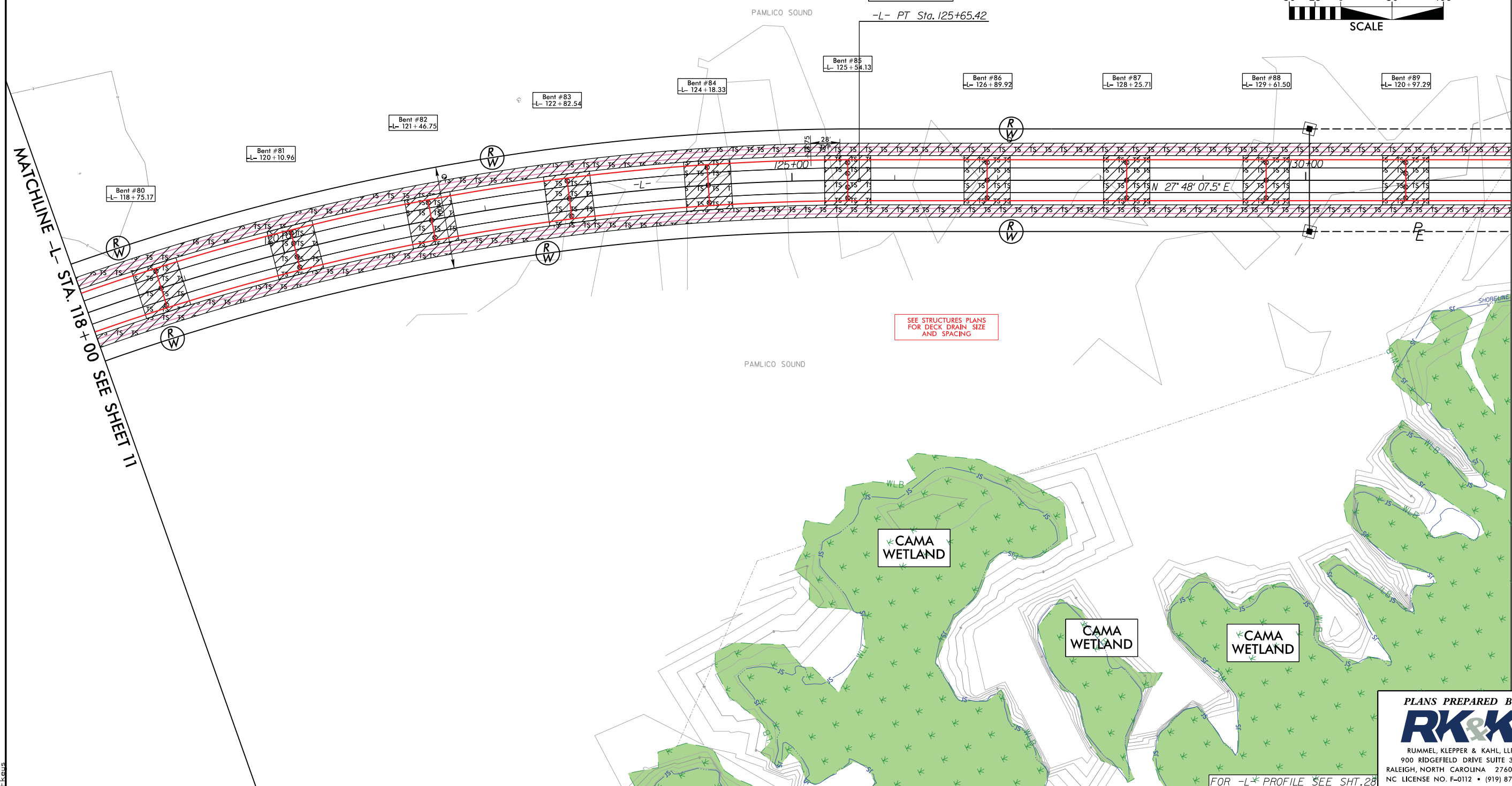
NPS Drawing
Sheet 3 of 9



- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ADVANCING RAIL SYSTEM



SITE 3B



MATCHLINE -L- STA. 118 + 00 SEE SHEET 11

MATCHLINE -L- STA. 132 + 00 SEE SHEET 13

SEE STRUCTURES PLANS FOR DECK DRAIN SIZE AND SPACING

K:\2\1\2017\Hydro\Permits\Environmental\Drawings\4C\B2500B_Hyd_prm_wet.psh12.con.dgn

PLANS PREPARED BY :





RUMMEL, KLEPPER & KAHL, LLP
300 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

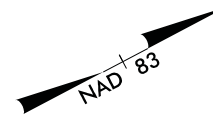
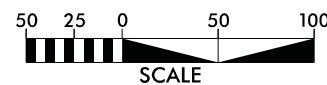
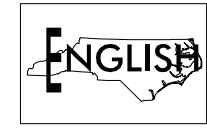
FOR -L* PROFILE SEE SHT. 28

8/17/99

PROJECT REFERENCE NO. B-2500B	SHEET NO. 12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

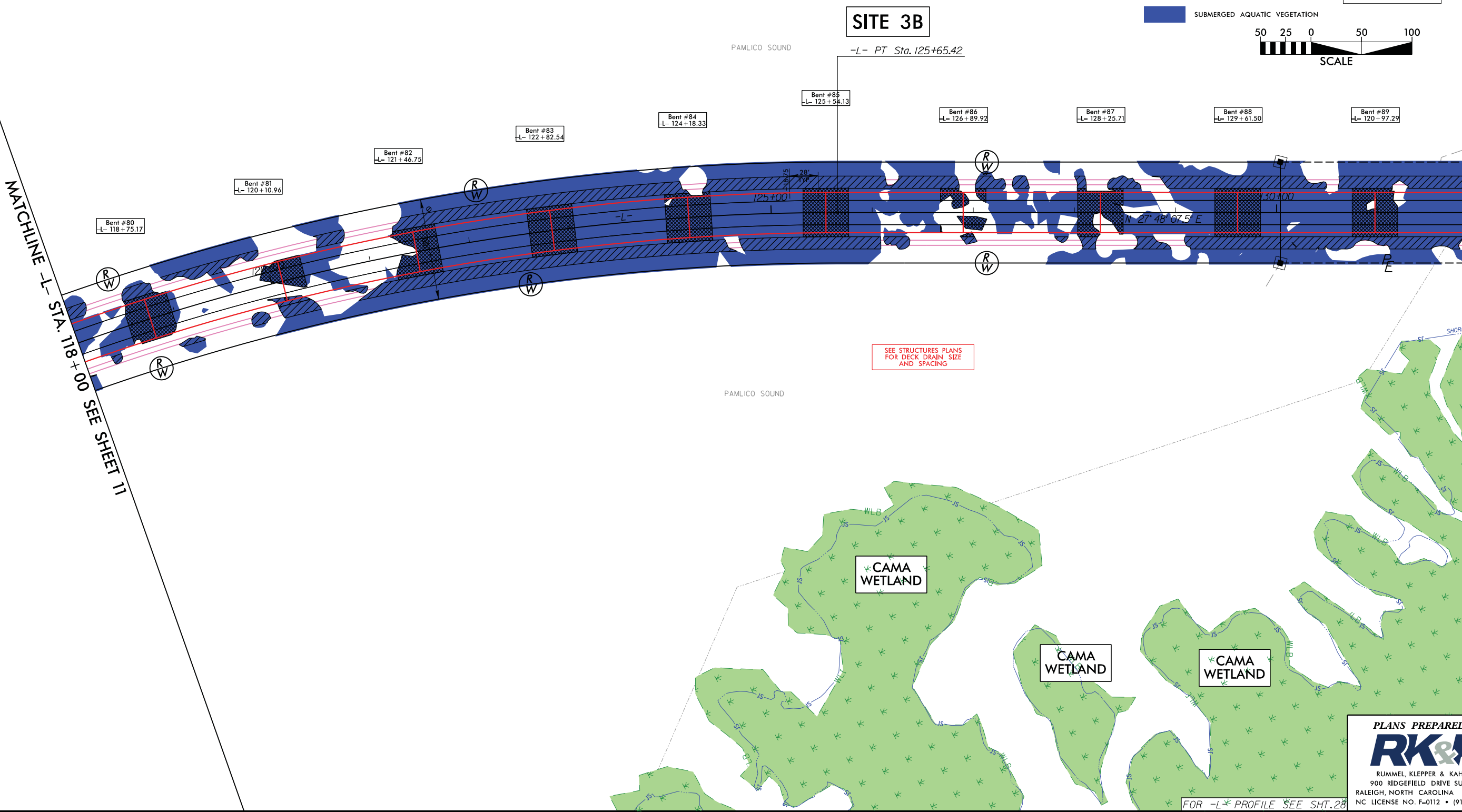
**NPS Drawing
Sheet 4 of 9**

-  PERMANENT IMPACTS TO SAV
-  TEMPORARY IMPACTS TO SAV
-  ADVANCING RAIL SYSTEM
-  SUBMERGED AQUATIC VEGETATION



MATCHLINE -L- STA. 118+00 SEE SHEET 11

MATCHLINE -L- STA. 132+00 SEE SHEET 13



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PLANS PREPARED BY :








RK&K

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 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
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FOR -L* PROFILE SEE SHT. 28

8/17/99

NPS Drawing Sheet 5 of 9

-  DENOTES FILL IN WETLAND
-  DENOTES HAND CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY FILL IN WETLAND
-  CAMA WETLAND BOUNDARY
-  ADVANCING RAIL SYSTEM

PAMLICO SOUND

PROJECT REFERENCE NO. B-2500B	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -L- STA. 132+00 SEE SHEET 12

SITE 3B

SITE 3C

CAMA WETLAND

CAMA WETLAND

SITE 3C

Bent #90
L- 132+33.08

Bent #91
L- 133+68.88

Bent #92
L- 135+04.67

Bent #93
L- 136+40.46

Bent #94
L- 137+76.25

Bent #95
L- 139+12.04

Bent #96
L- 140+47.83

Bent #97
L- 141+83.63

Bent #98
L- 143+19.42

Bent #99
L- 144+55.21

Bent #100
L- 145+91.00

-L- PC Sta. 134+41.13

-DET- PC Sta. 10+00.00

TUE-DET PRC Sta. 14+88.65


SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

MATCHLINE SEE SHEET 23

ATLANTIC OCEAN

K:\2\2017\B-2500\PERMITS\Environmental\Drawings\4C\B2500B_Hyd_prm_wet.psh13.dgn








-L-
 PI Sta 142+11.31
 $\Delta = 37^{\circ} 38' 12.9" (LT)$
 $D = 2^{\circ} 32' 06.8"$
 $L = 1,484.57'$
 $T = 770.18'$
 $R = 2,260.00'$
 $V = 60 \text{ mph}$
 $SE = .05$

PLANS PREPARED BY :

 RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
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FOR -L- PROFILE SEE SHT.28
FOR -DET- PLAN SEE SHT.2B-1

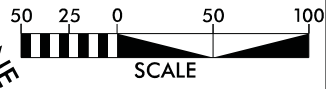
8/17/99

NPS Drawing Sheet 6 of 9

-  DENOTES FILL IN WETLAND
-  DENOTES HAND CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY FILL IN WETLAND
-  CAMA WETLAND BOUNDARY
-  ADVANCING RAIL SYSTEM

PAMLICO SOUND

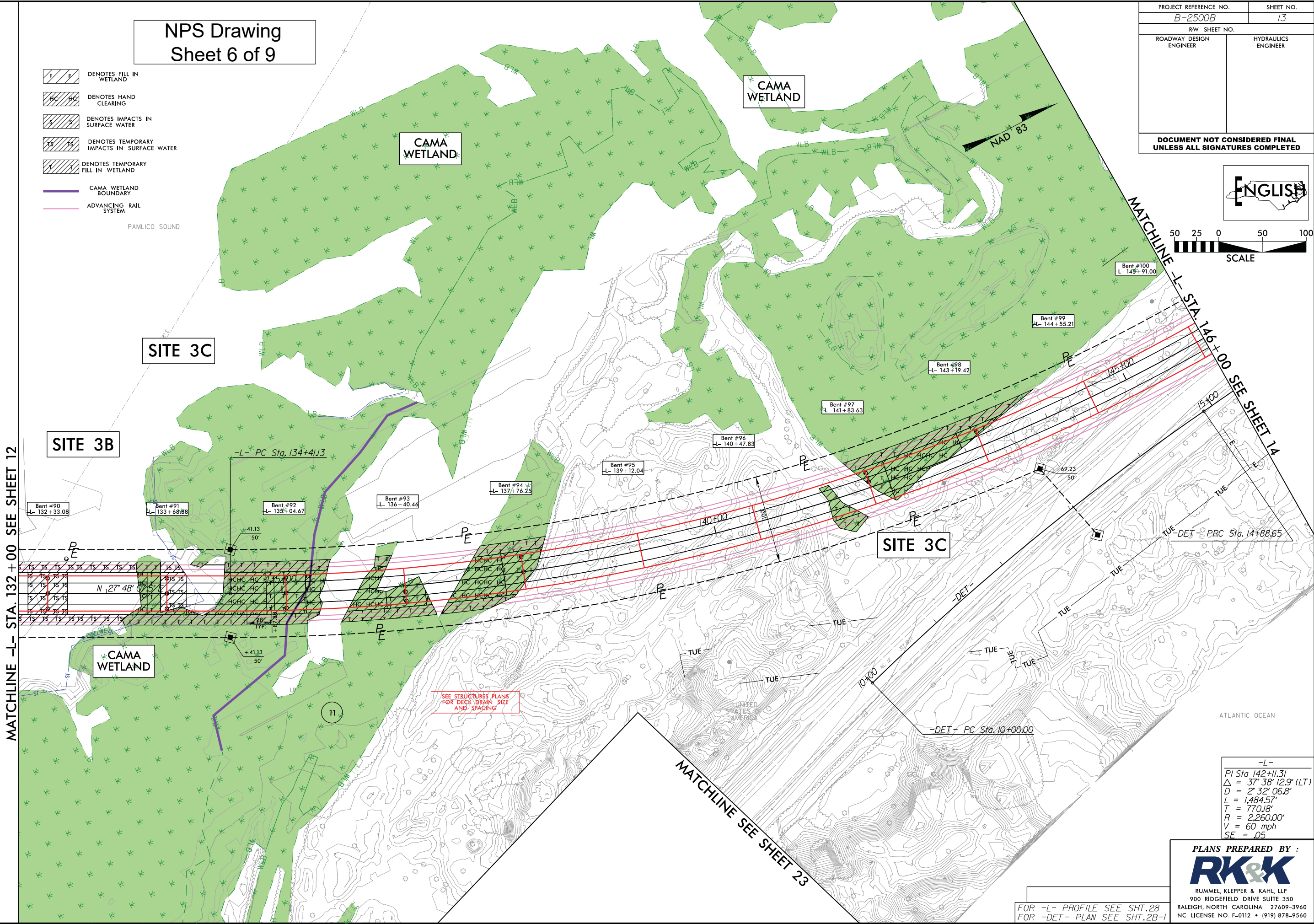
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



MATCHLINE -L- STA. 132+00 SEE SHEET 12

MATCHLINE -L- STA. 146+00 SEE SHEET 14

MATCHLINE SEE SHEET 23



ATLANTIC OCEAN

-L-

PI Sta. 142+11.31
 $\Delta = 37^{\circ} 38' 12.9''$ (LT)
 $D = 2^{\circ} 32' 06.8''$
 $L = 1,484.57'$
 $T = 770.18'$
 $R = 2,260.00'$
 $V = 60$ mph
 $SE = .05$

PLANS PREPARED BY :








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 RALEIGH, NORTH CAROLINA 27609-3960
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FOR -L- PROFILE SEE SHT. 28
 FOR -DET- PLAN SEE SHT. 2B-1

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8/17/99

NPS Drawing Sheet 7 of 9

-  PERMANENT IMPACTS TO SAV
-  TEMPORARY IMPACTS TO SAV
-  CAMA WETLAND BOUNDARY
-  ADVANCING RAIL SYSTEM
-  SUBMERGED AQUATIC VEGETATION

PAMLICO SOUND

CAMA WETLAND

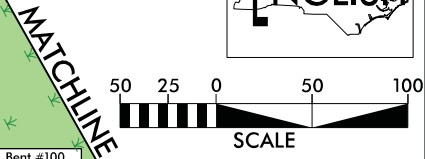
CAMA WETLAND

SITE 3C

SITE 3B

SITE 3C

MATCHLINE -L- STA. 132 + 00 SEE SHEET 12



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO. B-2500B	SHEET NO. 13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Bent #90
L- 132+33.08

Bent #91
L- 133+68.88

Bent #92
L- 135+04.67

Bent #93
L- 136+40.46

Bent #94
L- 137+76.25

Bent #95
L- 139+12.04

Bent #96
L- 140+47.83

Bent #97
L- 141+83.63

Bent #98
L- 143+19.42

Bent #99
L- 144+55.21

Bent #100
L- 145+91.00

-L- PC Sta. 134+41.13

145+00

145+00

145+00

145+00

145+00

145+00

145+00

145+00

145+00

145+00

CAMA WETLAND

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

UNITED STATES OF AMERICA

ATLANTIC OCEAN

-DET- PC Sta. 10+00.00

-L-
 PI Sta. 142+11.31
 $\Delta = 37^\circ 38' 12.9" (LT)$
 $D = 2^\circ 32' 06.8"$
 $L = 1,484.57'$
 $T = 770.18'$
 $R = 2,260.00'$
 $V = 60 \text{ mph}$
 $SE = .05$

PLANS PREPARED BY :



RUMMEL, KLEPPER & KAHL, LLP
 900 RIDGEFIELD DRIVE SUITE 350
 RALEIGH, NORTH CAROLINA 27609-3960
 NC LICENSE NO. F-0112 • (919) 878-9560

FOR -L- PROFILE SEE SHT. 28
 FOR -DET- PLAN SEE SHT. 2B-1

MATCHLINE SEE SHEET 23

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6/23/16



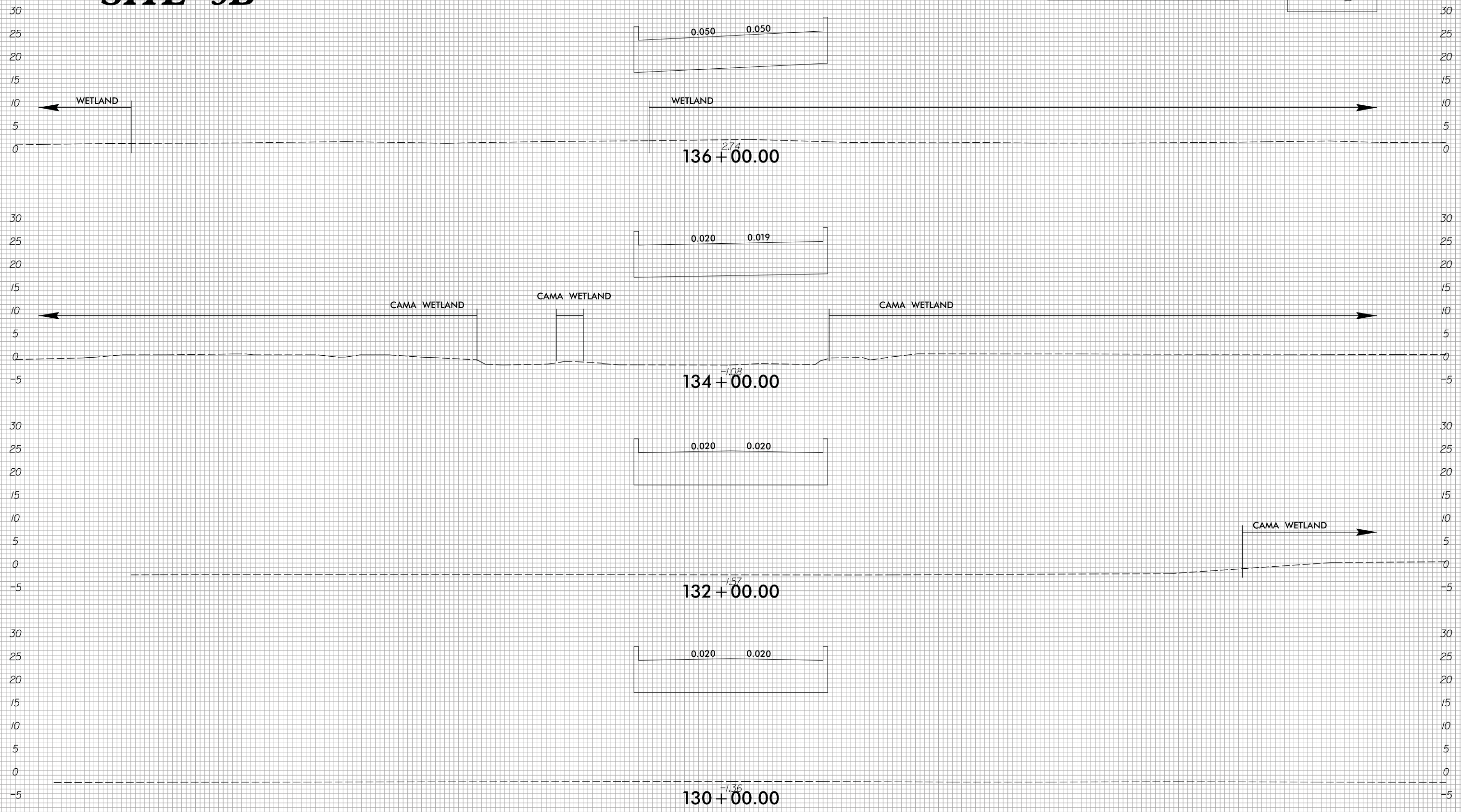
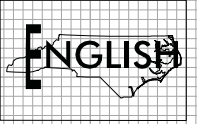
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B-2500B

SHEET NO.
X-18

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SITE 3B

NPS Drawing
Sheet 8 of 9



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

11/21/2017
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KdyB

6/23/16



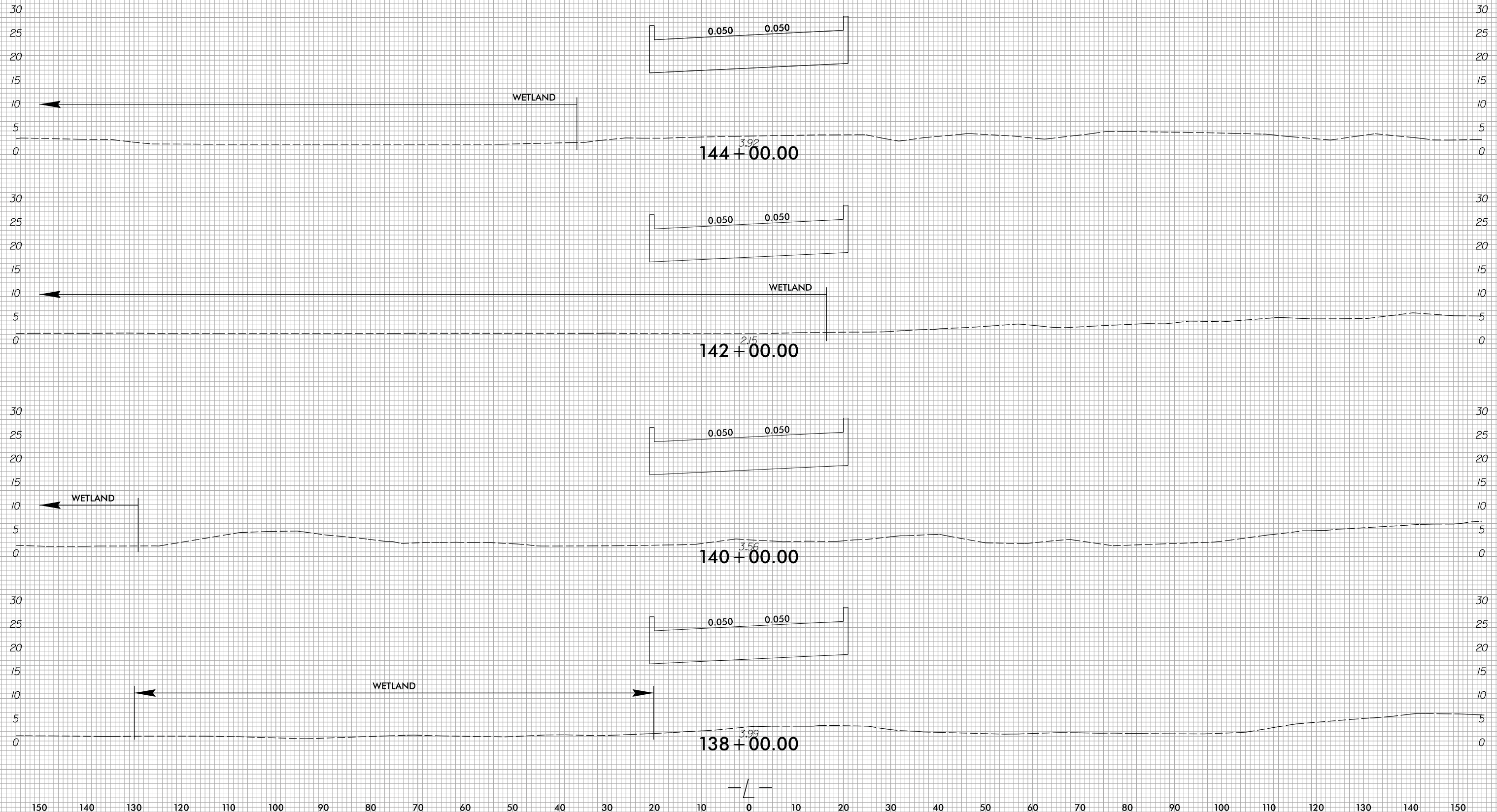
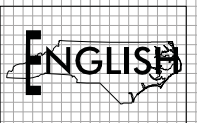
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B-2500B

SHEET NO.
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SITE 3B

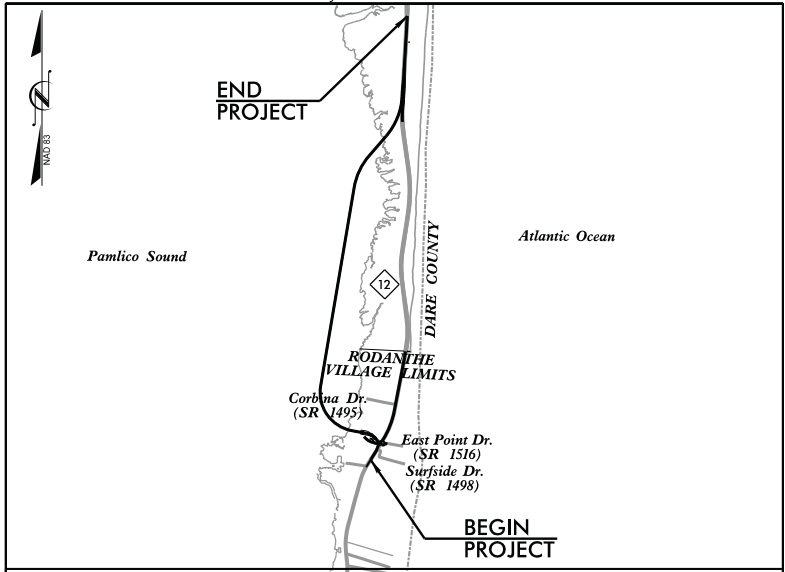
NPS Drawing
Sheet 9 of 9



11/21/2017
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KdyB

09/28/17

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



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
DARE COUNTY

LOCATION: NC 12 - RODANTHE BREACH LONG TERM IMPROVEMENTS (PHASE IIB)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING & STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-2500B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32635.3.FR7	BRNH-0012(56)		



RFC

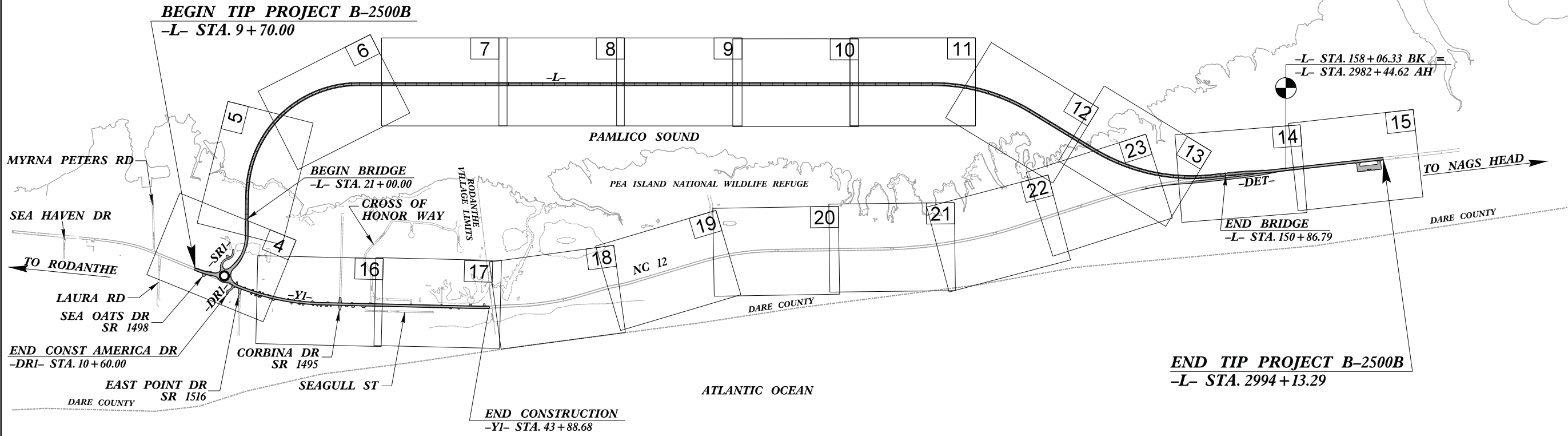
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RFC ROADWAY PLANS
SUBMITTAL NO.: S-037
DATE: 12-22-17



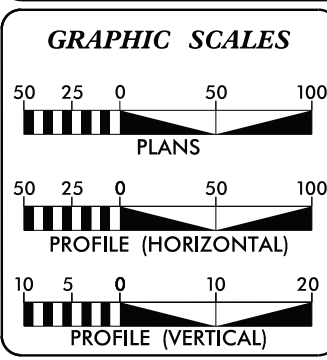
TIP PROJECT: B-2500B

CONTRACT: C203474



THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2017 = 9,800
ADT 2037 = 14,200
V = 40 /60 MPH
FUNC. CLASSIFICATION = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-2500B.....0.572 mi
LENGTH STRUCTURE TIP PROJECT B-2500B.....2.460 mi
TOTAL LENGTH TIP PROJECT B-2500B.....3.032 mi

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER - DESIGN-BUILD GROUP

PLANS PREPARED BY:

RK&K RUMMEL, KLEPPER & KAHN, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F-20112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JANUARY 25, 2017

FLATIRON

B. Keith Skinner, P.E.
PROJECT ENGINEER

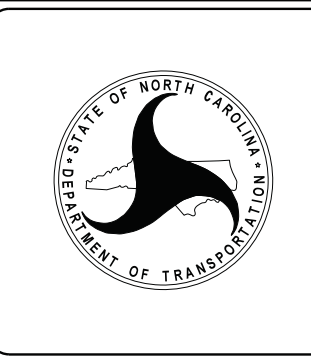
Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Prepared by: Matthew L. Cook 12/21/2017
SEAL 27434
P.E.

ROADWAY DESIGN ENGINEER

Designed by: Brandon J. McInnis 12/21/2017
SEAL 29470
P.E.



12/21/2017 R:\Roadway\Proj\B2500B_Rdy_t sh.dgn Freys

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale *S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	✕
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	☠
Potential Contamination Area: Soil	?
Known Contamination Area: Water	☠
Potential Contamination Area: Water	?
Contaminated Site: Known or Potential	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	↑
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	~~~~~
Hydro, Pool or Reservoir	□
Jurisdictional Stream	-JS-
Buffer Zone 1	-BZ 1-
Buffer Zone 2	-BZ 2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⊥
Proposed Lateral, Tail, Head Ditch	← FLD →
False Sump	◇

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	○ RW
Proposed Right of Way Line with Iron Pin and Cap Marker	○ RW ▲
Proposed Right of Way Line with Concrete or Granite RW Marker	▲ RW
Proposed Control of Access Line with Concrete CA Marker	○ CA

Existing Control of Access	○ CA
Proposed Control of Access	○ CA
Existing Easement Line	-E-
Proposed Temporary Construction Easement	-E-
Proposed Temporary Drainage Easement	-TDE-
Proposed Permanent Drainage Easement	-PDE-
Proposed Permanent Drainage / Utility Easement	-DUE-
Proposed Permanent Utility Easement	-PUE-
Proposed Temporary Utility Easement	-TUE-
Proposed Aerial Utility Easement	-AUE-
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-C-
Proposed Slope Stakes Fill	-F-
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	-T-T-T-
Proposed Guardrail	-T-T-T-
Existing Cable Guiderail	-□-□-□-
Proposed Cable Guiderail	-□-□-□-

Equality Symbol	⊕
Pavement Removal	⊗

VEGETATION:

Single Tree	☼
Single Shrub	☼
Hedge	~~~~~
Woods Line	~~~~~

Orchard	☼ ☼ ☼ ☼
Vineyard	□ Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	-S-

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	□
H-Frame Pole	●-●
U/G Power Line LOS B (S.U.E.*)	-----P-----
U/G Power Line LOS C (S.U.E.*)	-----P-----
U/G Power Line LOS D (S.U.E.*)	-----P-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	□
U/G Telephone Cable LOS B (S.U.E.*)	-----T-----
U/G Telephone Cable LOS C (S.U.E.*)	-----T-----
U/G Telephone Cable LOS D (S.U.E.*)	-----T-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----TC-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----TC-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----TF-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----TF-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----TF-----

WATER:

Water Manhole	⊕
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	-----W-----
U/G Water Line LOS C (S.U.E.*)	-----W-----
U/G Water Line LOS D (S.U.E.*)	-----W-----
Above Ground Water Line	-A/G Water-

TV:

TV Pedestal	⊕
TV Tower	⊗
U/G TV Cable Hand Hole	□
U/G TV Cable LOS B (S.U.E.*)	-----TV-----
U/G TV Cable LOS C (S.U.E.*)	-----TV-----
U/G TV Cable LOS D (S.U.E.*)	-----TV-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----TV FO-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----TV FO-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----TV FO-----

GAS:

Gas Valve	◇
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	-----G-----
U/G Gas Line LOS C (S.U.E.*)	-----G-----
U/G Gas Line LOS D (S.U.E.*)	-----G-----
Above Ground Gas Line	-A/G Gas-

SANITARY SEWER:

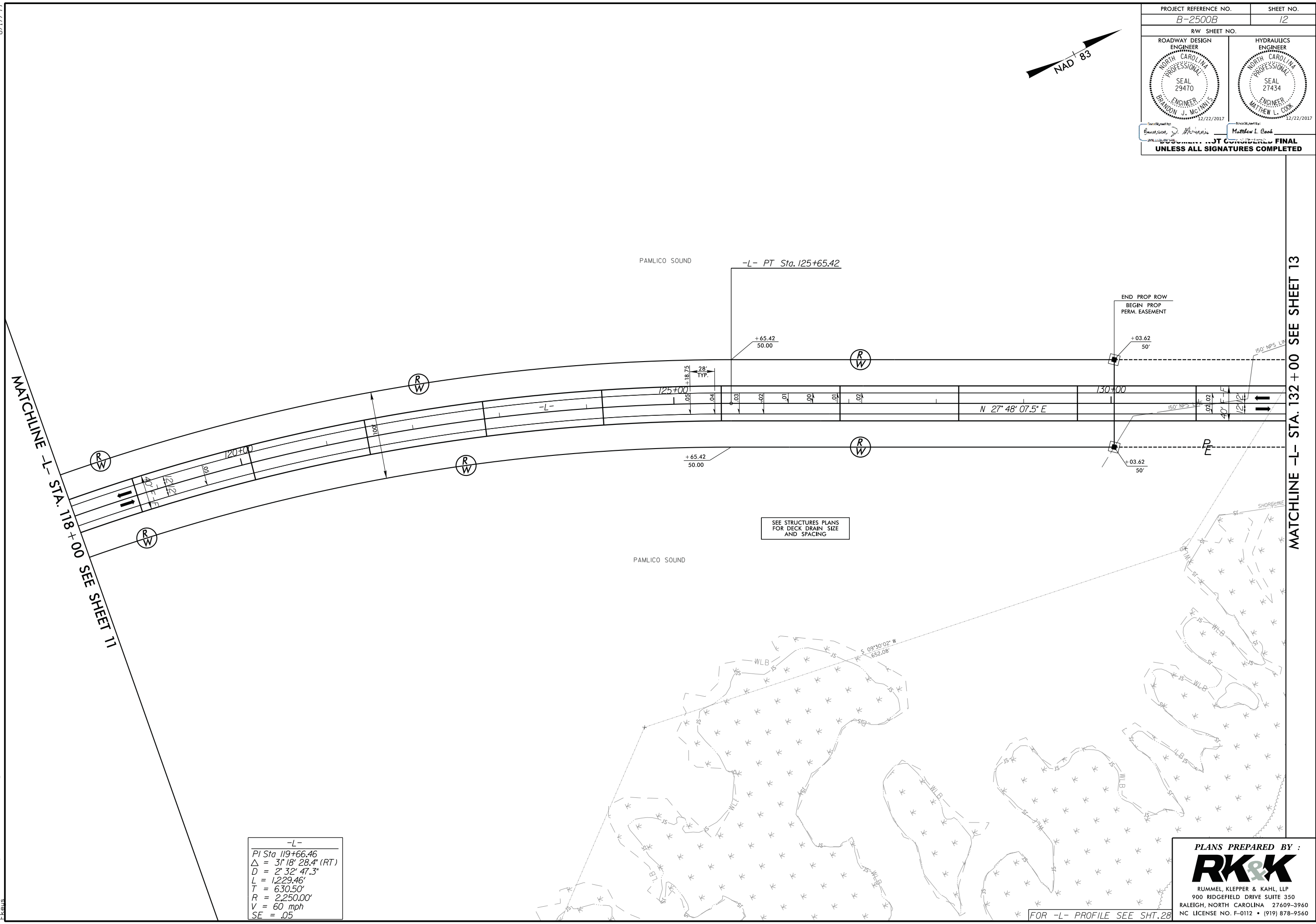
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----SS-----
Above Ground Sanitary Sewer	-A/G Sanitary Sewer-
SS Forced Main Line LOS B (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS C (S.U.E.*)	-----FSS-----
SS Forced Main Line LOS D (S.U.E.*)	-----FSS-----

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	-----2UTL-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

8/17/99

PROJECT REFERENCE NO. <i>B-2500B</i>		SHEET NO. <i>12</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29470 BRANDON J. NGUYEN 12/22/2017		HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27434 MATTHEW L. COOK 12/22/2017	
Reviewed by: <i>Matthew L. Cook</i>		Reviewed by: <i>Matthew L. Cook</i>	
JT CONTRACTS, INC. FINAL UNLESS ALL SIGNATURES COMPLETED			



-L-

PI Sta 119+66.46
$\Delta = 31^{\circ} 18' 28.4''$ (RT)
D = 2' 32' 47.3"
L = 1,229.46'
T = 630.50'
R = 2,250.00'
V = 60 mph
SE = .05

PLANS PREPARED BY :

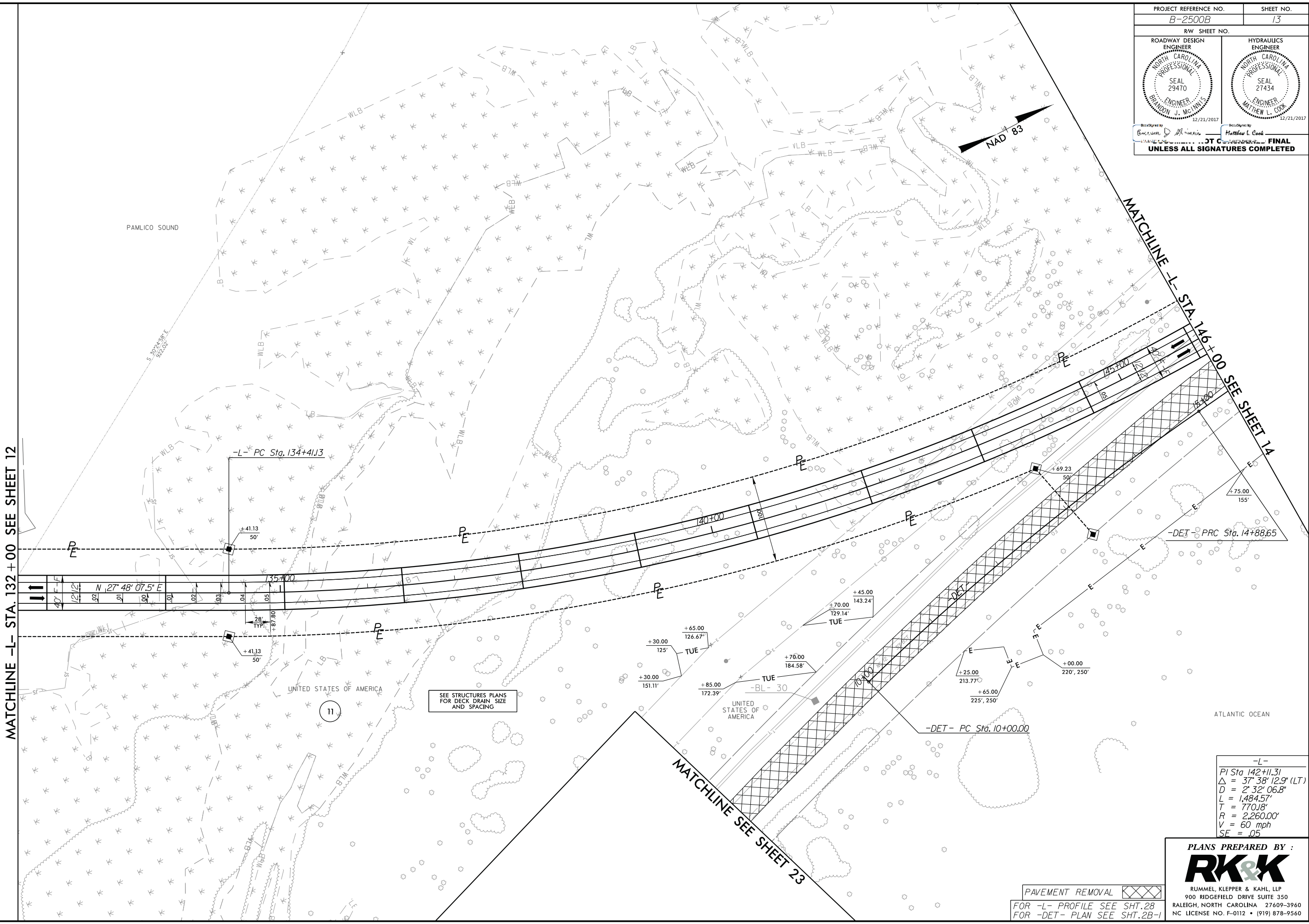
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12/22/2017
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PROJECT REFERENCE NO. <i>B-2500B</i>	SHEET NO. <i>13</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29470 BRANDON J. MCINNIS 12/21/2017	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 21434 MATTHEW L. COOK 12/21/2017
Prepared by: <i>Brandon J. McInnis</i> / <i>Matthew L. Cook</i> Checked by: <i>JT C</i> UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE -L- STA. 132 + 00 SEE SHEET 12

MATCHLINE -L- STA. 146 + 00 SEE SHEET 14

MATCHLINE SEE SHEET 23

-L-
 PI Sta 142+11.31
 $\Delta = 37^\circ 38' 12.9" (LT)$
 $D = 2^\circ 32' 06.8"$
 $L = 1,484.57'$
 $T = 770.18'$
 $R = 2,260.00'$
 $V = 60 \text{ mph}$
 $SE = .05$

PAVEMENT REMOVAL 
 FOR -L- PROFILE SEE SHT.28
 FOR -DET- PLAN SEE SHT.28-1

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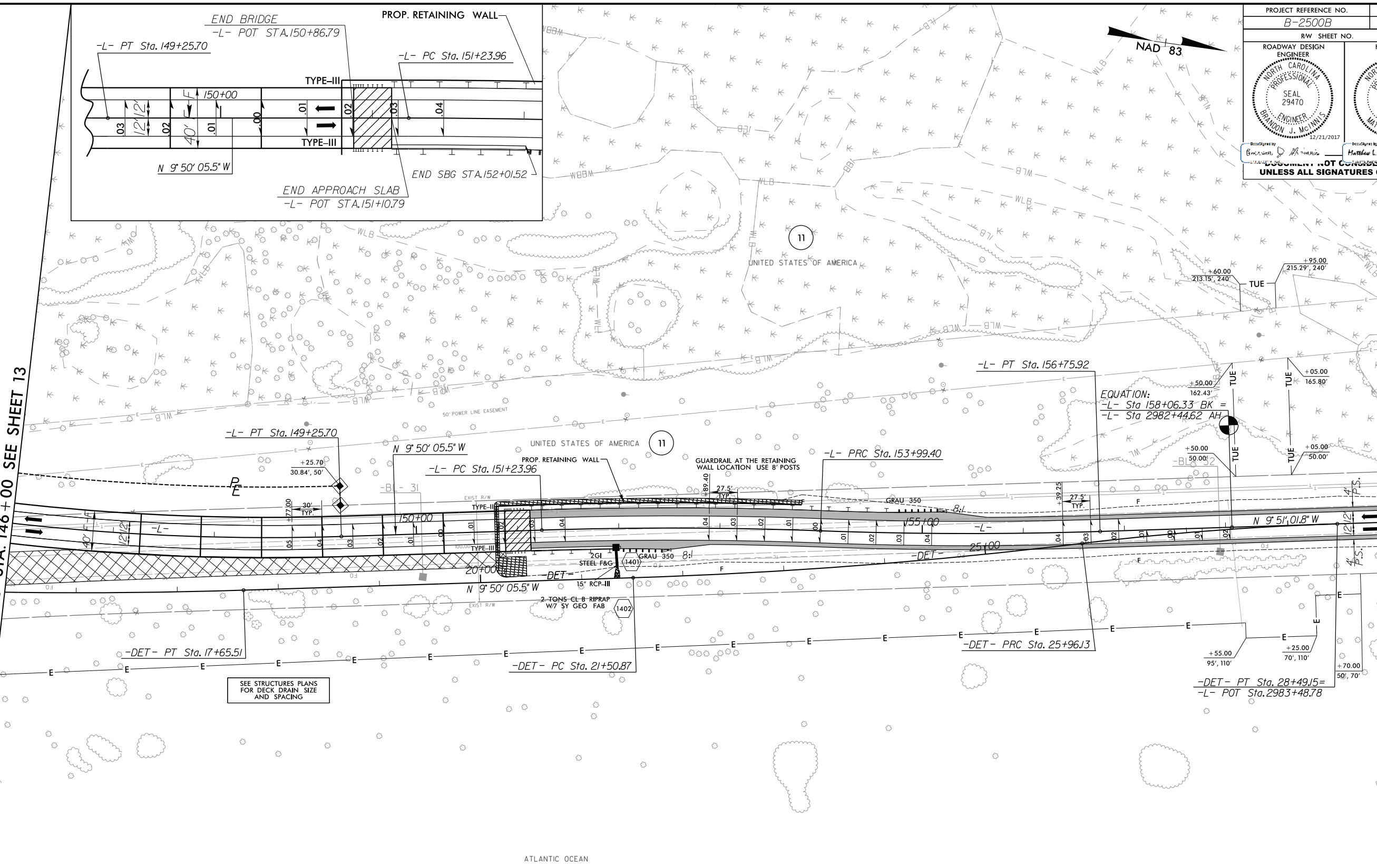
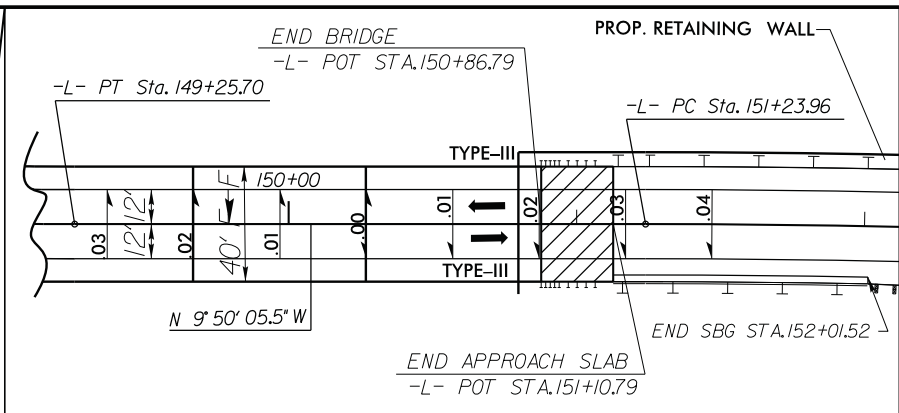
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8/17/99

PROJECT REFERENCE NO. B-2500B		SHEET NO. 14	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29470 BRANDON J. MCINNIS 12/21/2017		HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27434 MATTHEW L. COOK 12/21/2017	
UNLESS ALL SIGNATURES COMPLETED			

MATCHLINE -L- STA. 146+00 SEE SHEET 13

MATCHLINE -L- STA. 2984+00 SEE SHEET 15



-L-		
PI Sta 142+11.31	PI Sta 152+61.73	PI Sta 155+37.72
$\Delta = 37^{\circ} 38' 12.9\"$ (LT)	$\Delta = 3^{\circ} 56' 43.1\"$ (RT)	$\Delta = 3^{\circ} 57' 39.5\"$ (LT)
$D = 2^{\circ} 32' 06.8\"$	$D = 1^{\circ} 25' 56.6\"$	$D = 1^{\circ} 25' 56.6\"$
$L = 1,484.57'$	$L = 275.43'$	$L = 276.53'$
$T = 770.18'$	$T = 137.77'$	$T = 138.32'$
$R = 2,260.00'$	$R = 4,000.00'$	$R = 4,000.00'$
$V = 60 \text{ mph}$	$V = 60 \text{ mph}$	$V = 60 \text{ mph}$
$SE = .05$	$SE = .04$	$SE = .04$

PAVEMENT REMOVAL FOR -L- PROFILE SEE SHT.29 FOR -DET- PLAN SEE SHTS.2B-1 & 2B-2

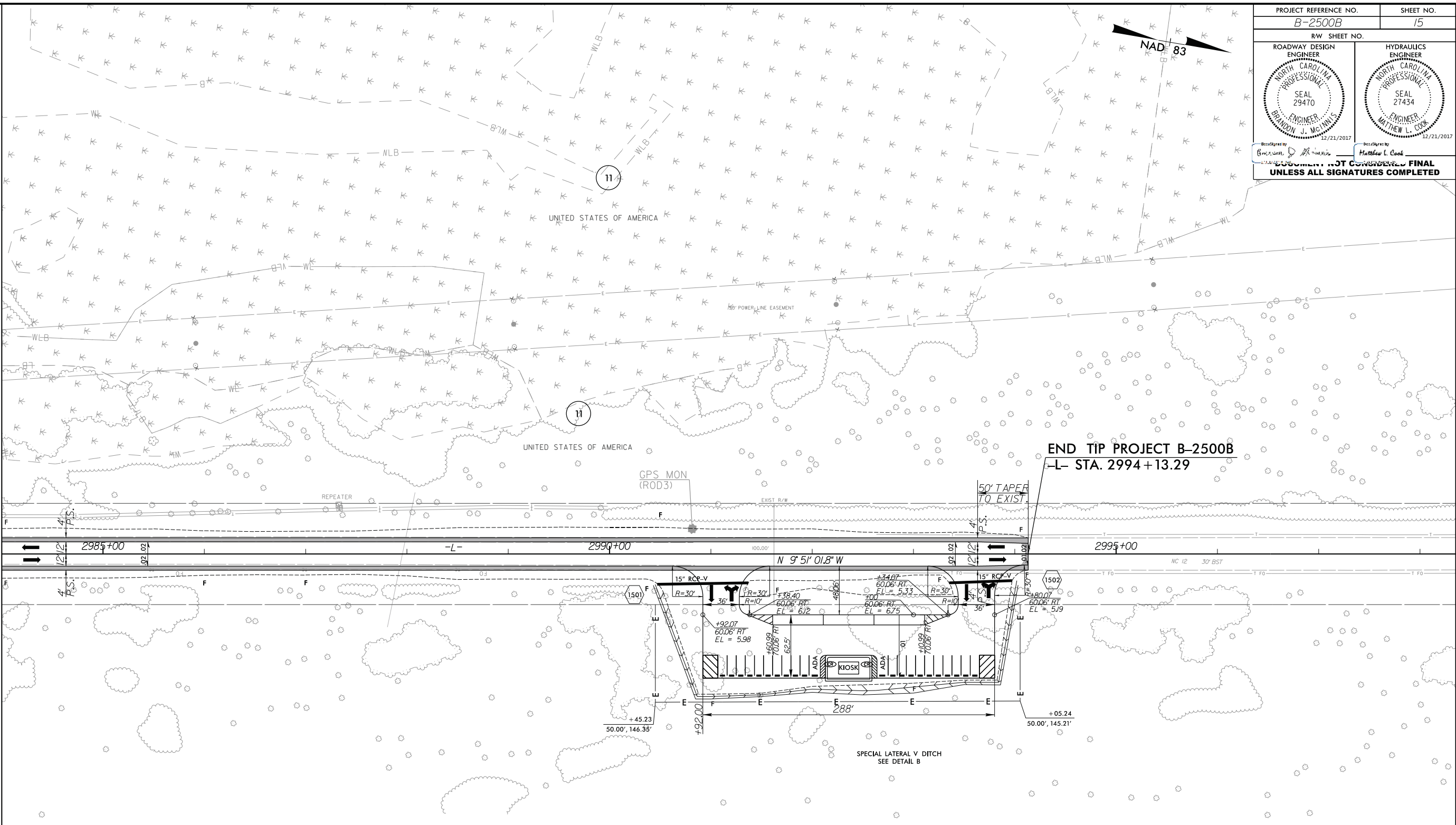
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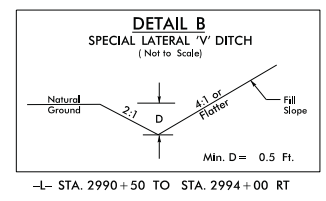
8/17/99

PROJECT REFERENCE NO. B-2500B	SHEET NO. 15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER BRANDON J. MCINNIS NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 29470 12/21/2017	HYDRAULICS ENGINEER MATTHEW L. COOK NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 27434 12/21/2017
DESIGNED BY: <i>Brandon J. McInnis</i> CHECKED BY: <i>Matthew L. Cook</i> FOR CONSTRUCTION - NOT FOR CONSTRUCTION - FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -L- STA. 2984+00 SEE SHEET 14



END TIP PROJECT B-2500B
-L- STA. 2994+13.29



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FOR -L- PROFILE SEE SHT. 29

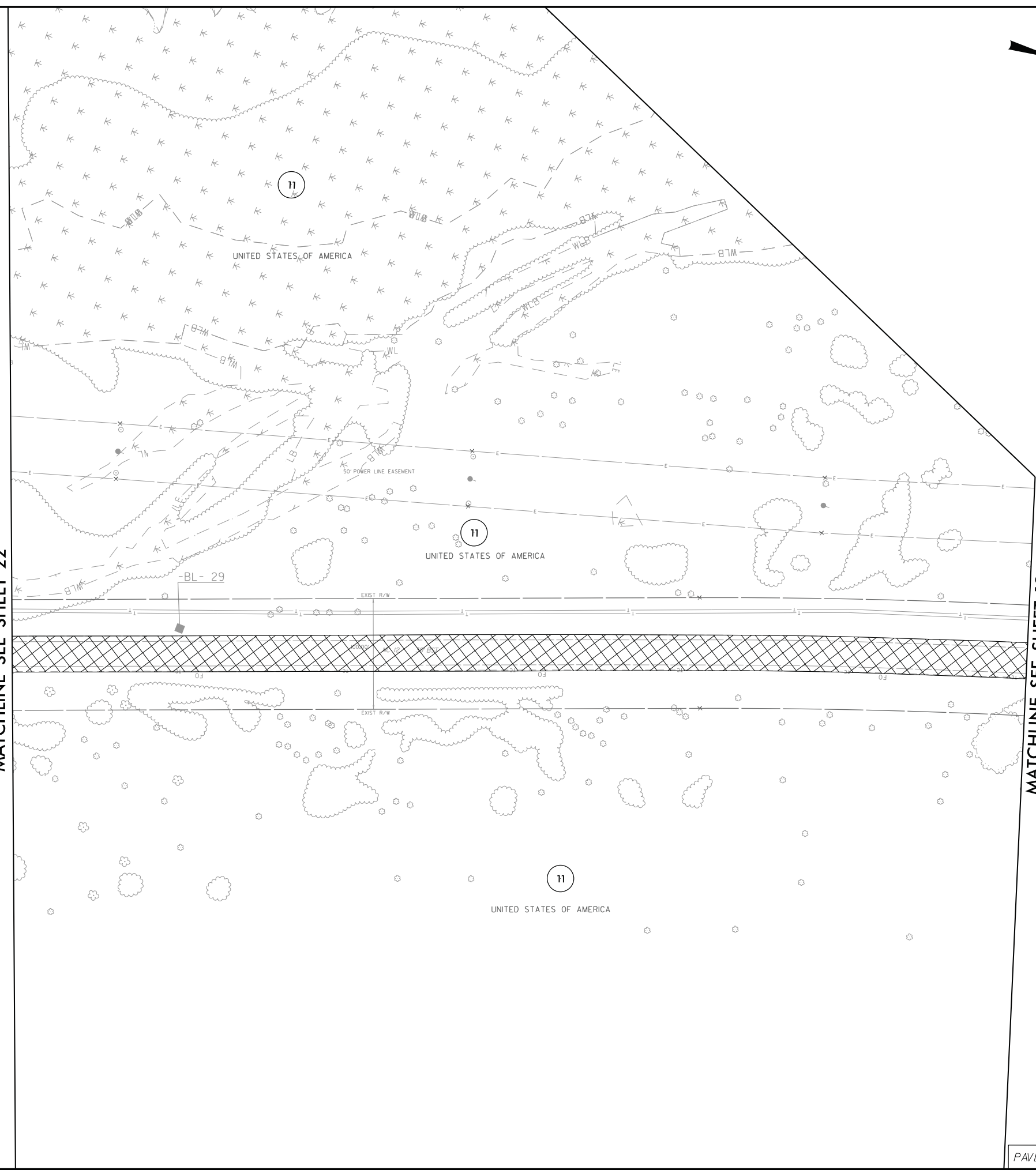
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E.Lewis

8/17/99

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MATCHLINE SEE SHEET 22

MATCHLINE SEE SHEET 13



PROJECT REFERENCE NO. <i>B-2500B</i>		SHEET NO. 23	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
Checked by: <i>[Signature]</i> Date: 8/17/2017		Checked by: <i>[Signature]</i> Date: 8/17/2017	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PAVEMENT REMOVAL

PLANS PREPARED BY :

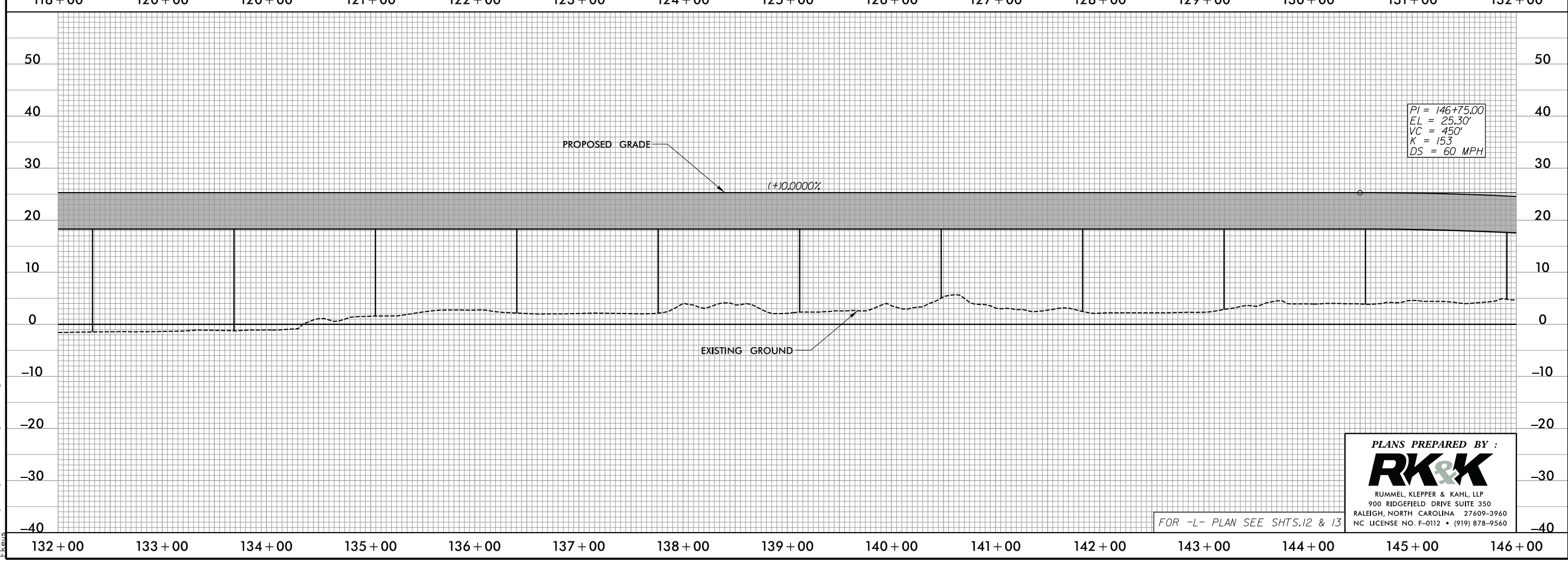
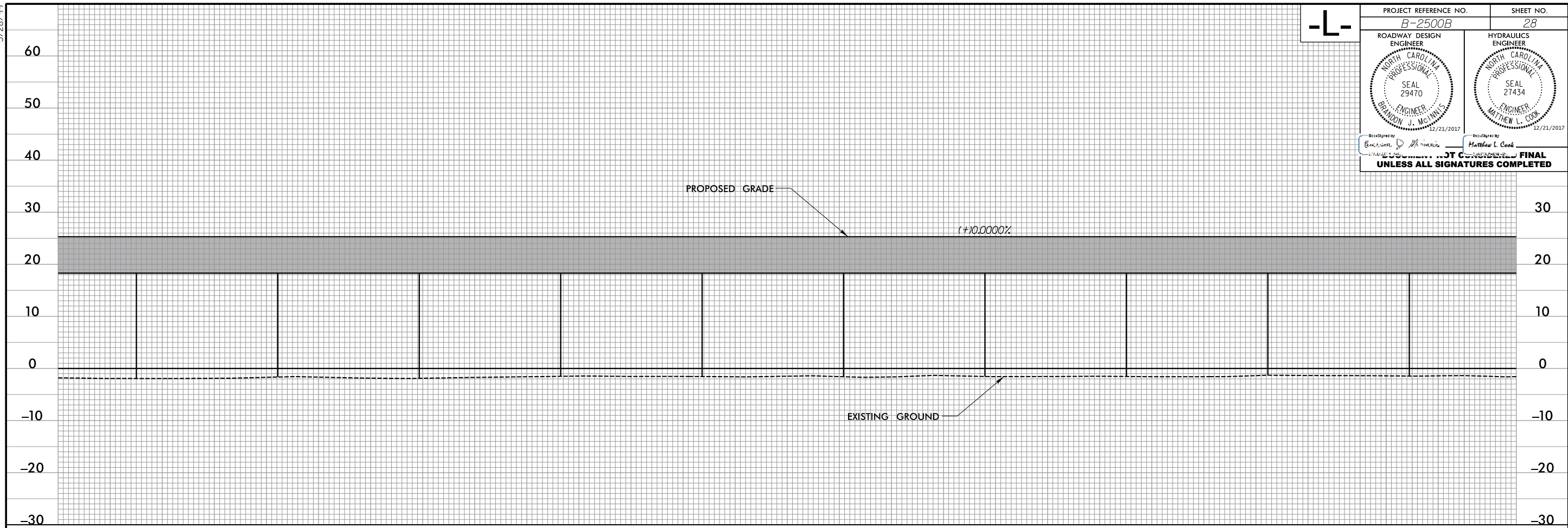
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5/28/99

-L-

PROJECT REFERENCE NO. <i>B-2500B</i>	SHEET NO. <i>28</i>
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29470 BRANDON J. MCINNIS 12/23/2017	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27434 MATTHEW L. COOK 12/23/2017
Designated by: <i>Brandon J. McInnis</i> Designated by: <i>Matthew L. Cook</i> UNLESS ALL SIGNATURES COMPLETED	



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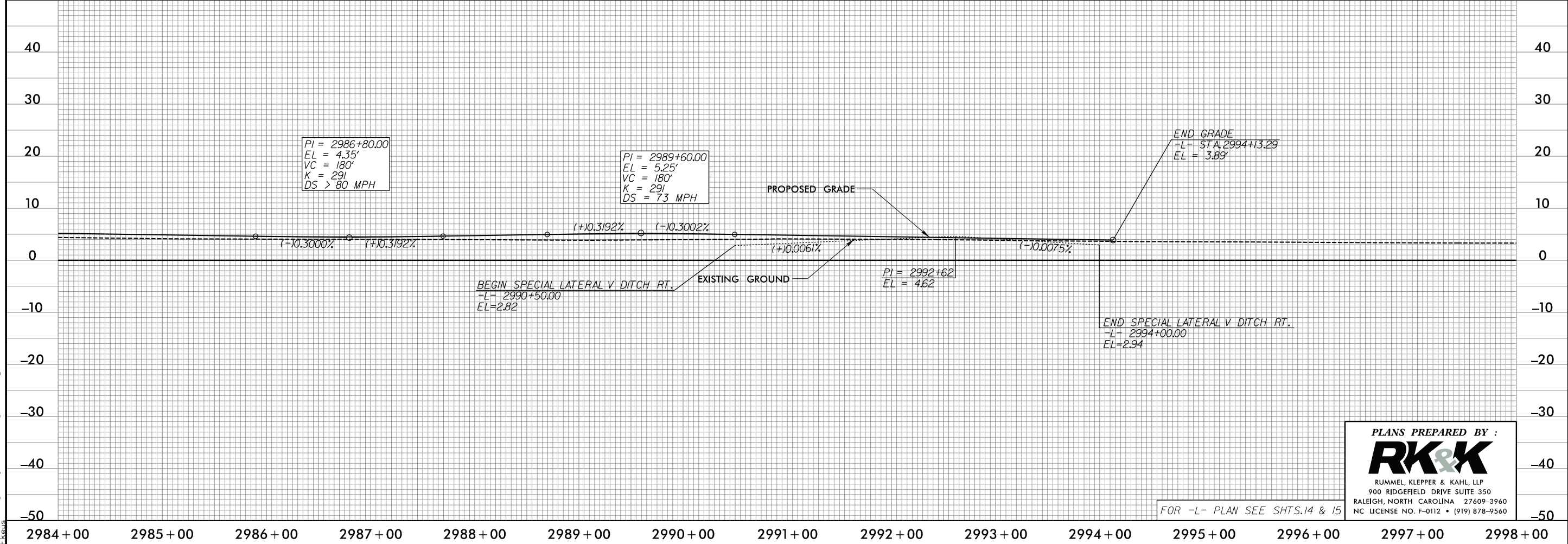
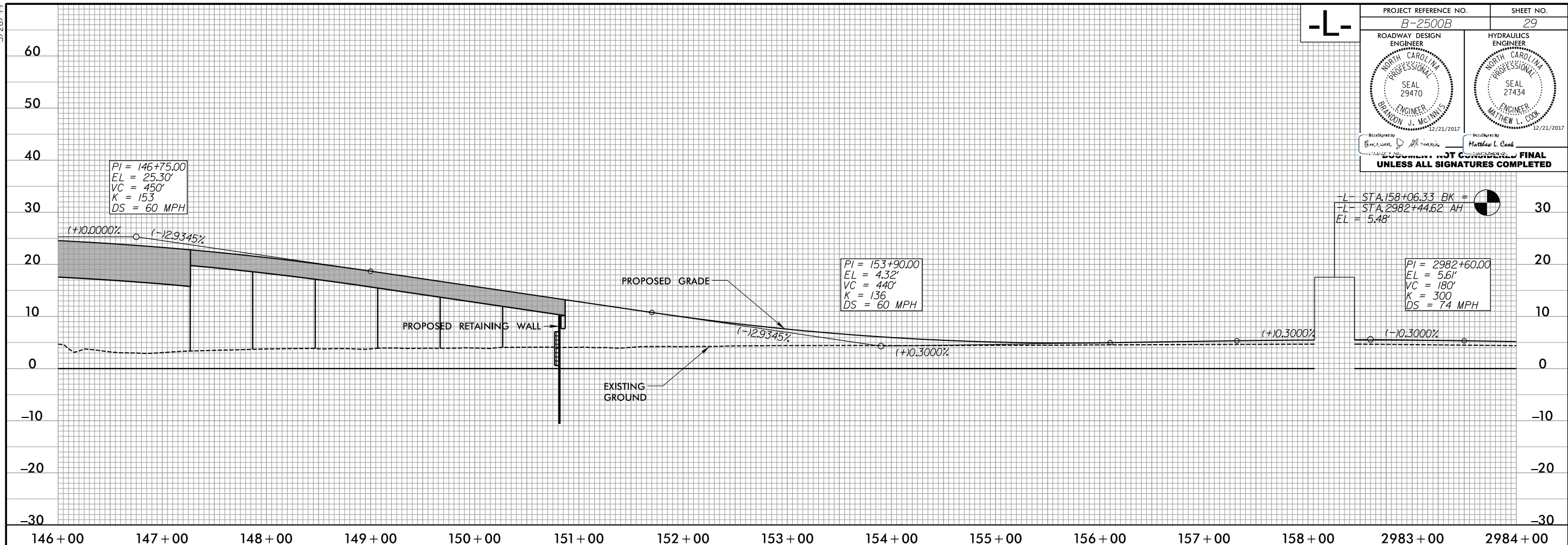
FOR -L- PLAN SEE SHTS. 12 & 13

12/21/2017
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5/28/17

-L-

PROJECT REFERENCE NO. B-2500B	SHEET NO. 29
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 29470 BRANDON J. MCINNIS 12/21/2017	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 27434 MATTHEW L. COOK 12/21/2017
UNLESS ALL SIGNATURES COMPLETED UNLESS ALL SIGNATURES COMPLETED	



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FOR -L- PLAN SEE SHTS. 14 & 15

12/21/2017
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