



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

September 28, 2018

Kyle Barnes
NCDOT Coordinator-Division One
United States Army Corps of Engineers
2407 West Fifth Street
Washington, NC 27889-1000

Greg Daisey
NC Div. of Environmental Quality
Division of Coastal Management
401 S. Griffin St., Suite 300
Elizabeth City, NC 27909

Subject: **Application for Modification of Section 404 and Section 10 Individual Permit, Section 401 Individual Water Quality Certification, and CAMA Major Development** for the proposed 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 32635.3.9

Reference: US Army Corps of Engineers (USACE) 404 Permit issued July 24, 2018, Action ID: SAW-2012-01153, North Carolina Division of Water Resources (NCDWR) Project No. 20180114, NC Division of Coastal Management CAMA Permit No. 106-12
B-2500 II B Application dated February 16, 2018

Dear Sirs,

On February 16, 2018, the North Carolina Department of Transportation (NCDOT) submitted the application for the subject project. As design finalized and preparations for construction have advanced, there are 4 items which require a permit modification:

- bridge pile reduction,
- changes to the footprint of the advancing rail system,
- addition of temporary matting for the jetting intake pipe, and
- finalized utility impacts.

In addition, a clarification of the mechanized clearing impact at Site 2 is noted below.

This permit modification request includes a revised CAMA MP 5 form, revised permit drawings, utility drawings and impact summary tables.

Bridge Pile Reduction - Sites 3A, 3B, 3C

The current permit has a bridge with 3-pile bents and a 4-pile bent at approximately every fourth bent.

Further minimization has resulted such that every bent is now a 3-pile bent. This revision eliminates a pile at 25 locations.

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Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

Impact Revisions:

Permanent fill in surface waters is reduced by 0.02 acre (from 0.11 to 0.09 acre).

Temporary fill in surface waters is reduced by 0.29 acre (from 10.07 to 9.78 acre).

Note that the SAV mitigation plan and values (and recent SAV re-location) were correctly calculated under the 3-pile configuration. Therefore, this reduction will not result in a modification to SAV impacts or the SAV mitigation plan.

Advancing Rail System – Sites 3A, 3B, 3C

The final design of the advancing rail system has slightly changed since the design phase. While this reconfiguration will reduce the overall footprint of the Advancing Rail System, some impact types (such as hand-clearing) may have increased.

Impact Revisions:

Hand clearing:

The edges of the support structure are now closer to the edges of right-of-way. Additionally, clearing logistics have revealed it is not plausible to limit hand clearing to solely the structure supports. As such, hand clearing has been widened to reach from right-of-way to right-of-way.

Hand clearing impacts have increased by 0.42 acre (from 0.46 to 0.88), by way of:

Site 3A: Increase of 0.21 (from 0.21 to 0.42)

Site 3C: Increase of 0.22 (from 0.24 to 0.46)

CAMA/404 Breakdown:

The 0.42 acre increase consists of 0.32 acre in 404, and 0.10 acre in CAMA wetlands.

Temporary fill in wetlands

The advancing rail system support structure was modified at the southern end of the project (at Site 3A) in Rodanthe to avoid a cemetery. This caused the support structure to be moved, and an additional support to be added.

On the north end of the project (at Site 3C), an additional support was added.

Temporary fill in wetlands has increased by 0.14 acre at the following sites:

Site 3A: Increase of 0.03 (from 0.31 to 0.34 acre).

Site 3C: Increase of 0.11 (from 0.38 to 0.49 acre).

CAMA/404 Breakdown:

The 0.14 acre increase consists of 0.07 acre in 404, and 0.06 acre in CAMA wetlands.

Temporary fill in surface waters

Has decreased by 0.2 acre (from 5.95 to 5.75 acre).

Temporary Matting for Jetting Intake Activities – Site 3C

In an effort to minimize impacts/ disturbance to wetlands, temporary mats will be used during the installation and removal of the jetting intake pump, hose, and related equipment.

Temporary fill in surface waters

This impact will result in 0.09 acre of temporary fill in wetlands.

CAMA/404 Breakdown:

The 0.09 acre increase consists of 0.07 acre in 404, and 0.02 acre in CAMA wetlands.

Utility Relocations - New Utility Site 4

As the Utility Relocation has been finalized by Cape Hatteras Electrical Cooperative (CHEC), the details of this relocation, including impacts to Jurisdictional Resources have become available.

Temporary Impacts to wetlands are necessary to temporarily relocate the high voltage transmission lines to accommodate safe bridge construction. Wetlands would be hand cleared and depending on site conditions, temporary mats will be used to support vehicular equipment.

The relocation is anticipated to take five days to complete at which point all temporary fill will be removed. Once bridge construction is complete, the lines will be returned to their original location, which will take another five days to complete.

Utility Impact Site (Site 4) has been created and included on the attached Utility Permit Drawings.

Impact Revisions:

Temporary Wetland Impacts:

This activity will result in 0.6 acre of temporary impacts to wetlands.

CAMA/404 Breakdown:

This 0.6 acre will occur in 404 wetlands only.

Utility Note at Site 3A:

0.01 acre of temporary utility impact was replaced by Advancing Rail System temporary impact once the rail layout was changed.

SAV Impacts

The reconfiguration of the Advancing Rail System reduces the temporary impacts to SAV by 0.20 acre. Reducing every 4th bent on the bridge to the 3-pile configuration reduces permanent impacts to SAV by 0.05 acre.

As previously indicated, the SAV mitigation plan and values (and recent SAV re-location) were correctly calculated under the 3 bent configuration. Therefore, this reduction will not result in a modification to the SAV mitigation plan.

Breakdown of Impacts to Jurisdictional Resources

For clarity, there have been no changes to permanent fill in 404 or CAMA wetlands. Therefore, no changes to project mitigation are proposed.

The impacts to jurisdictional resources described above are summarized in the tables below.

Table 1. Impact Changes Breakdown by Site and Wetland Type (acre).
Black text displays permitted impacts/red text displays modification values

Permit Site	Wetland Impacts			Surface Water Impacts	
	Temporary 404	Temporary CAMA	Hand Clearing	Perm Fill	Temp Fill
1	0.06	(404 wetland)	--	--	--
2	0.68	(404 wetland)	--	--	--
3A	0.27 + 0.03 = 0.3 (ARS) 0.06 - 0.01 = 0.05 (U)	0.03 + 0.01 = 0.04 (ARS)	0.21 + 0.21 = 0.42	--	--
3B	--	--	--	0.11 - 0.02 = 0.09	4.12 - 0.09 = 4.03 (PCA) 5.95 - 0.2 = 5.75 (ARS)
3C	0.27 + 0.01 = 0.28(ARS) -- + 0.07 = 0.07(TM)	0.11 + 0.01 = 0.12(ARS) -- + 0.02 = 0.02(TM)	0.24 + 0.22 = 0.46	--	--
4*	-- + 0.6 = 0.6 (U)	(404 wetland)	--	--	--
TOTAL	1.34 + 0.7 = 2.04	0.14 + 0.04 = 0.18	0.46 + 0.42 = 0.88	0.11 - 0.02 = 0.09	10.07 - 0.29 = 9.78
	1.48 + 0.74 = 2.22				

ARS = Advancing Rail System

U = Utility Impacts

PCA = Primary Containment Area

TM = Temporary Matting

* Wetland biotic communities at Site 4 include: salt shrub/ grassland, salt grassland, maritime shrub thicket, maritime shrub/ grassland.

Table 2. Summary of Total Project Impacts (acre)

Impact Type	Previous Value	Increase/decrease	New Impact Value
Permanent Wetland (404 and CAMA)	0.42 (by way of 0.33 fill, 0.09 mechanized clearing)	no change	0.42 no change
Hand Clearing	0.46	+ 0.42	0.88
Temporary Wetland	1.48	+ 0.74	2.22
Permanent Surface Water	0.11	- 0.02	0.09
Temporary Surface Water	10.07	- 0.29	9.78

Clarification of Mechanized Clearing Impacts at Site 2:

As construction has progressed at Permit Site 2, it has been noted that grade along the 0.03-acre strip of mechanized clearing, between the temporary fill for access from the laydown yard and the roadway, needs to be temporarily raised in order to provide level/flat access.

Temporary geotextile fabric will be placed at the natural grade, and the temporary leveling fill will be placed on top of the geotextile fabric. This material and fabric will be removed when it is no longer needed.

As this activity overlaps the mechanized clearing, the ultimate impact will be in the form of mechanized clearing, a permanent, mitigable impact.

To prevent incidental runoff, the 36" reinforced concrete equalizer pipe at this site will be capped until all temporary fill is removed, which is anticipated to last 24 months.

If you have any questions or need additional information, please contact Michael Turchy at 919-707-6157 or maturchy@ncdot.gov. A copy of this application will also be posted at <https://xfer.services.ncdot.gov/pdea/PermApps/>.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. S. Harris III', followed by a horizontal line and a small mark.

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

cc: NCDOT Permit Application Standard Distribution List
Pablo A. Hernandez, P.E., Resident Engineer

Form DCM MP-5

BRIDGES and CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. BRIDGES

☐ This section not applicable

- a. Is the proposed bridge:
☐ Commercial ☒ Public/Government ☐ Private/Community
- b. Water body to be crossed by bridge:
Pamlico Sound
- c. Type of bridge (construction material):
Prestressed concrete
- d. Water depth at the proposed crossing at NLW or NWL:
Sound average depth approximately 0-4' (NWL)
- e. (i) Will proposed bridge replace an existing bridge? ☐ Yes ☒ No
If yes,
(ii) Length of existing bridge: _____
(iii) Width of existing bridge: _____
(iv) Navigation clearance underneath existing bridge: _____
(v) Will all, or a part of, the existing bridge be removed?
(Explain)

- f. (i) Will proposed bridge replace an existing culvert? ☐ Yes ☒ No
If yes,
(ii) Length of existing culvert: _____
(iii) Width of existing culvert: _____
(iv) Height of the top of the existing culvert above the NHW or NWL: _____
(v) Will all, or a part of, the existing culvert be removed?
(Explain)

- g. Length of proposed bridge: 2.46 miles
- h. Width of proposed bridge: 45'
- i. Will the proposed bridge affect existing water flow? ☐ Yes ☒ No
If yes, explain:

- j. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ☐ Yes ☒ No
If yes, explain:

- k. Navigation clearance underneath proposed bridge: 17'
- l. Have you contacted the U.S. Coast Guard concerning their approval? ☒ Yes ☐ No
If yes, explain: A Permit Determination Request was submitted to the U.S. Coast Guard on July 13, 2017.

- m. Will the proposed bridge cross wetlands containing no navigable waters? ☒ Yes ☐ No
If yes, explain: The wetlands under the bridge on both north and south ends of the proposed bridge are not navigable, but are adjacent to navigable waters.

- n. Height of proposed bridge above wetlands: 14-18'

2. CULVERTS

☒ This section not applicable

- a. Number of culverts proposed: _____
- b. Water body in which the culvert is to be placed:

< Form continues on back >

c. Type of culvert (construction material):

d. (i) Will proposed culvert replace an existing bridge?

☐Yes ☐No

If yes,

(ii) Length of existing bridge: _____

(iii) Width of existing bridge: _____

(iv) Navigation clearance underneath existing bridge: _____

(v) Will all, or a part of, the existing bridge be removed?
(Explain)

e. (i) Will proposed culvert replace an existing culvert?

☐Yes ☐No

If yes,

(ii) Length of existing culvert(s): _____

(iii) Width of existing culvert(s): _____

(iv) Height of the top of the existing culvert above the NHW or
NWL: _____(v) Will all, or a part of, the existing culvert be removed?
(Explain)

f. Length of proposed culvert: _____

g. Width of proposed culvert: _____

h. Height of the top of the proposed culvert above the NHW or NWL.
_____i. Depth of culvert to be buried below existing bottom contour.
_____j. Will the proposed culvert affect navigation by reducing or
increasing the existing navigable opening? ☐Yes ☐NoIf yes, explain:

k. Will the proposed culvert affect existing water flow?

☐Yes ☐NoIf yes, explain:

_____**3. EXCAVATION and FILL**☐ This section not applicablea. (i) Will the placement of the proposed bridge or culvert require any
excavation below the NHW or NWL? ☒Yes ☐No

If yes,

(ii) Avg. length of area to be excavated: varies(iii) Avg. width of area to be excavated: varies(iv) Avg. depth of area to be excavated: varies(v) Amount of material to be excavated in cubic yards: 11,661b. (i) Will the placement of the proposed bridge or culvert require any
excavation within coastal wetlands/marsh (CW), submerged
aquatic vegetation (SAV), shell bottom (SB), or other wetlands
(WL)? If any boxes are checked, provide the number of square
feet affected.☒CW 8,952 (previously 6,098)☒SAV 234,788 (previously 245,678)☐SB _____☒WL 80,150 (previously 76,665) ☐None

(ii) Describe the purpose of the excavation in these areas:

Excavation will be limited to the circumference of the
bridge piles used to support bridge and temporary piles
used to construct advancing rail system (see cover
letter)

Form DCM MP-5 (Bridges and Culverts, Page 3 of 4)

- c. (i) Will the placement of the proposed bridge or culvert require any high-ground excavation? ☐ Yes ☒ No
If yes,
(ii) Avg. length of area to be excavated: _____
(iii) Avg. width of area to be excavated: _____
(iv) Avg. depth of area to be excavated: _____
(v) Amount of material to be excavated in cubic yards: _____
- d. If the placement of the bridge or culvert involves any excavation, please complete the following:
(i) Location of the spoil disposal area: Spoil with either be incorporated into new roadway embankment to disposed at an approved NCDOT facility

(ii) Dimensions of the spoil disposal area: undertermined
(iii) Do you claim title to the disposal area? ☐ Yes ☒ No (If no, attach a letter granting permission from the owner.)
(iv) Will the disposal area be available for future maintenance? ☒ Yes ☐ No
(v) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAVs), other wetlands (WL), or shell bottom (SB)?
☐ CW ☐ SAV ☐ WL ☐ SB ☒ None
If any boxes are checked, give dimensions if different from (ii) above.

(vi) Does the disposal area include any area below the NHW or NWL? ? ☐ Yes ☒ No
If yes, give dimensions if different from (ii) above.

- e. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed below NHW or NWL? ☐ Yes ☒ No
If yes,
(ii) Avg. length of area to be filled: _____
(iii) Avg. width of area to be filled: _____
(iv) Purpose of fill:

- f. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.
☐ CW _____ ☐ SAV _____ ☐ SB _____
☐ WL _____ ☒ None
(ii) Describe the purpose of the excavation in these areas:

- g. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item **d** above) to be placed on high-ground? ☒ Yes ☐ No
If yes,
(ii) Avg. length of area to be filled: 6675'
(iii) Avg. width of area to be filled: 15'-80'
(iv) Purpose of fill: for roadway construction

4. GENERAL

- a. Will the proposed project require the relocation of any existing utility lines? ☒ Yes ☐ No
If yes, explain: Telecommunications, power, and water

- b. Will the proposed project require the construction of any temporary detour structures? ☒ Yes ☐ No
If yes, explain: A short detour will be used to move NC 12 slightly east of the existing alignment to allow the tie-in of the new road to NC 12 in the Refuge

If this portion of the proposed project has already received approval from local authorities, please attach a copy of the approval or certification.

< Form continues on back >

- c. Will the proposed project require any work channels?

☐ Yes ☒ No

If yes, complete Form DCM-MP-2.

- d. How will excavated or fill material be kept on site and erosion controlled?

Will be kept within silt fences on land, specially designed containment areas within Sound (see Cover Letter)

- e. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?

cranes, pile hammers, dozers, trucks, etc.

- f. Will wetlands be crossed in transporting equipment to project site?

☒ Yes ☐ No

If yes, explain steps that will be taken to avoid or minimize environmental impacts.

See Cover Letter

- g. Will the placement of the proposed bridge or culvert require any shoreline stabilization?

☐ Yes ☒ No

If yes, complete form MP-2, Section 3 for Shoreline Stabilization only.

Date

B-2500B, Rodanthe Bridge

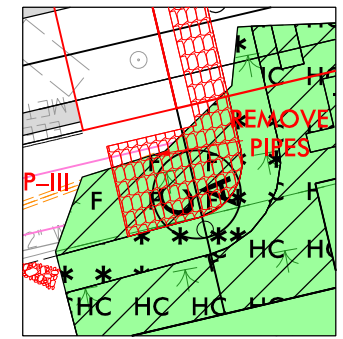
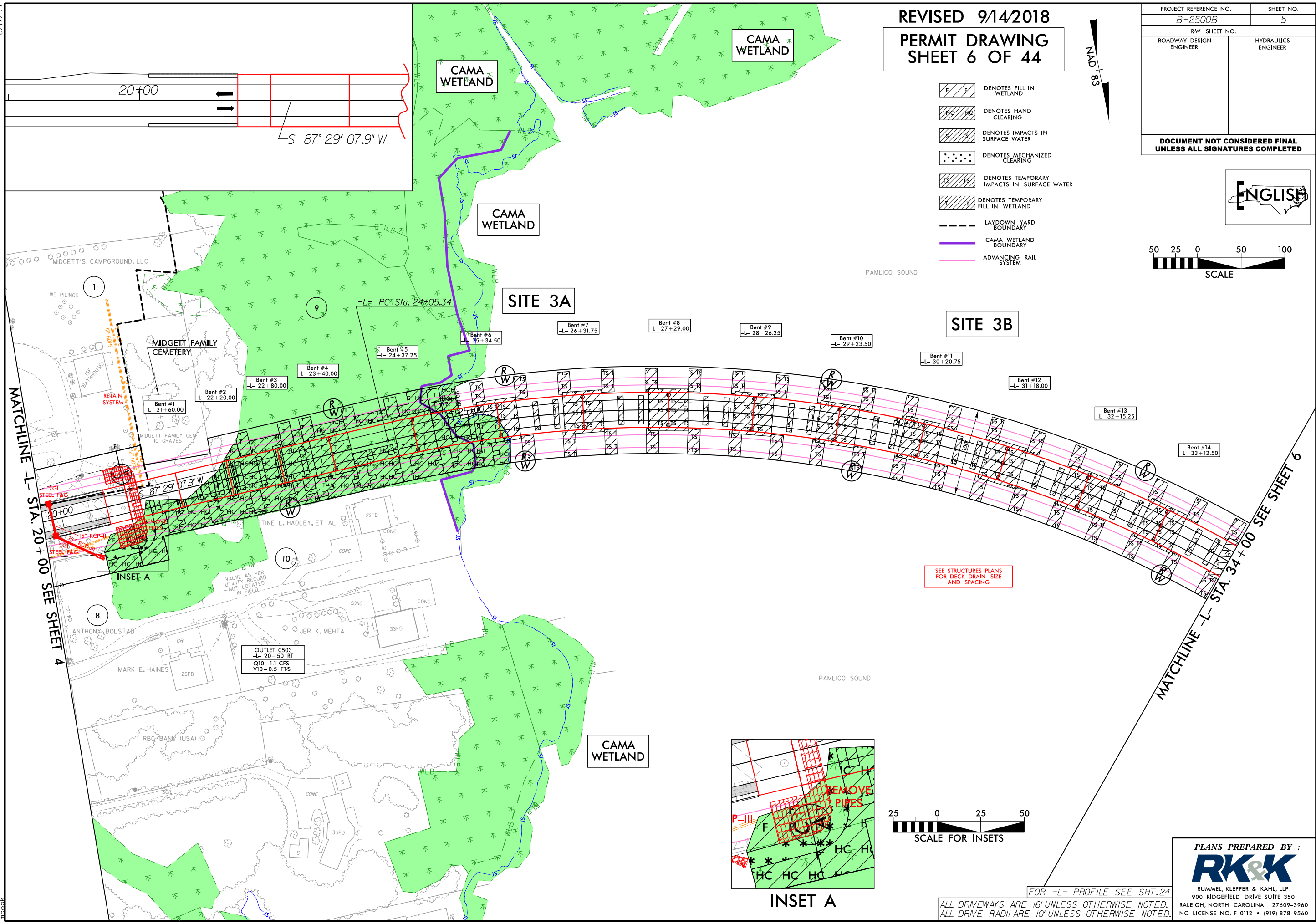
Project Name

Philip S. Harris, III, PE

Applicant Name

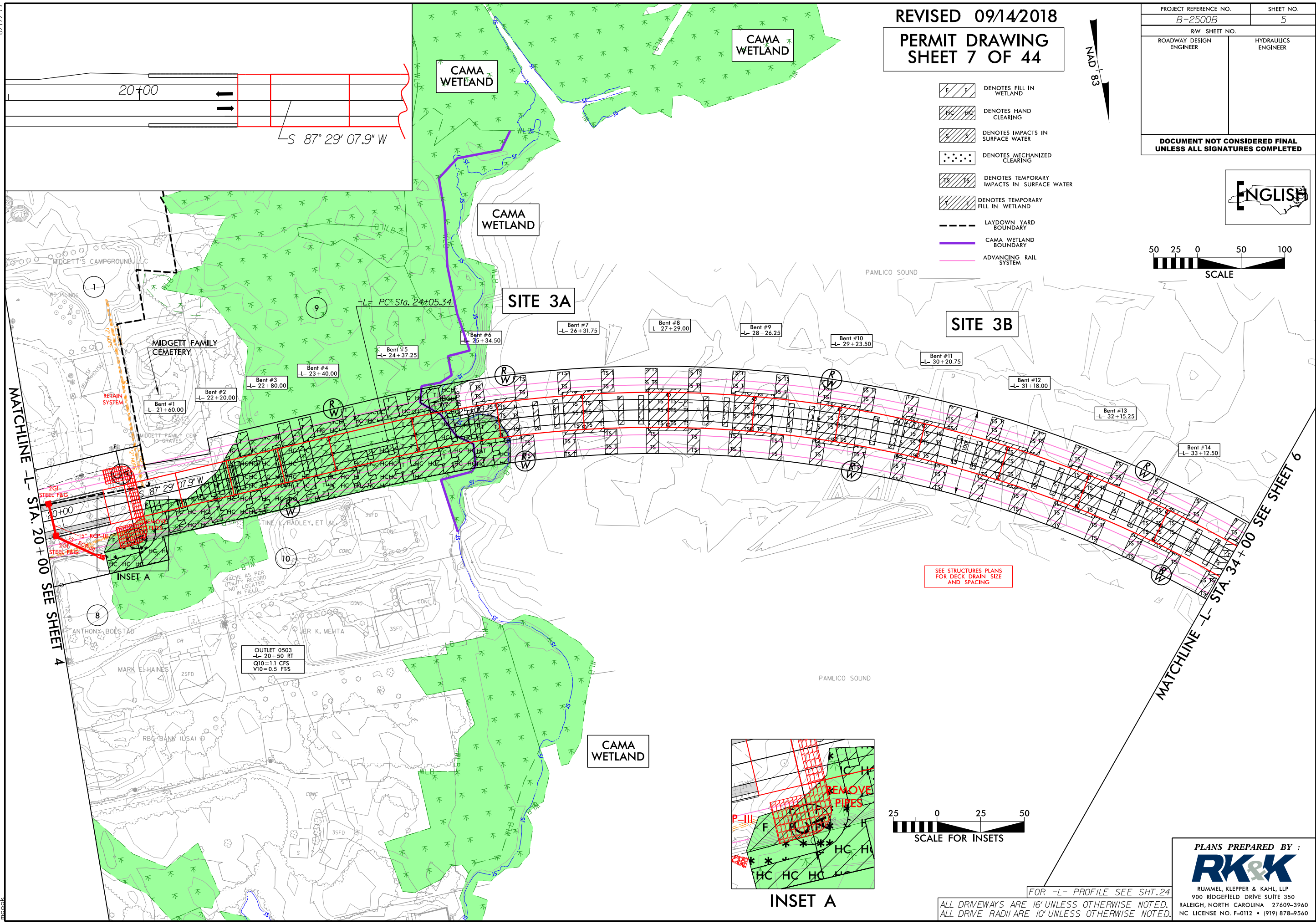
Applicant Signature

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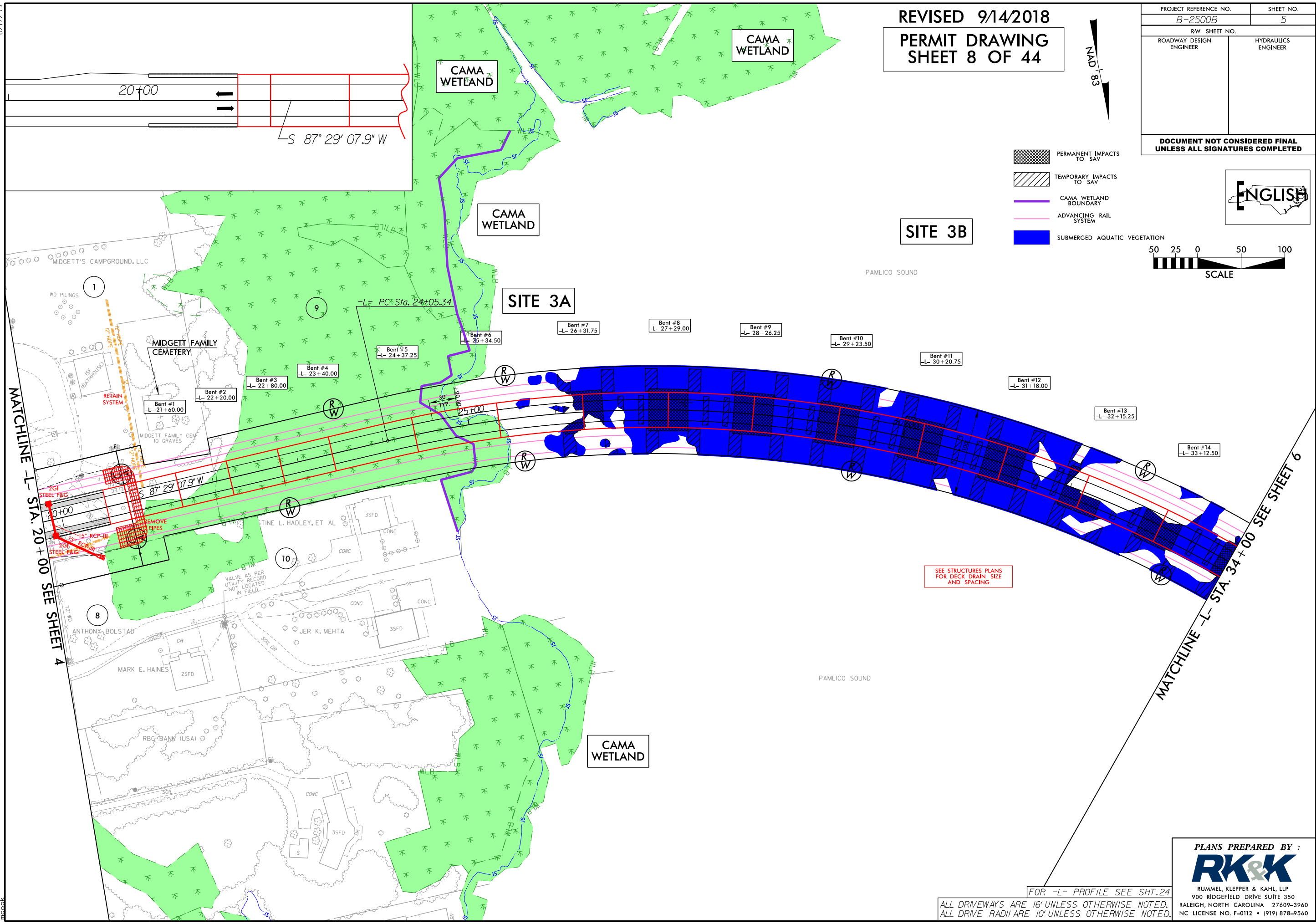


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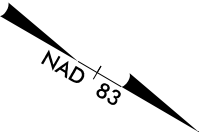
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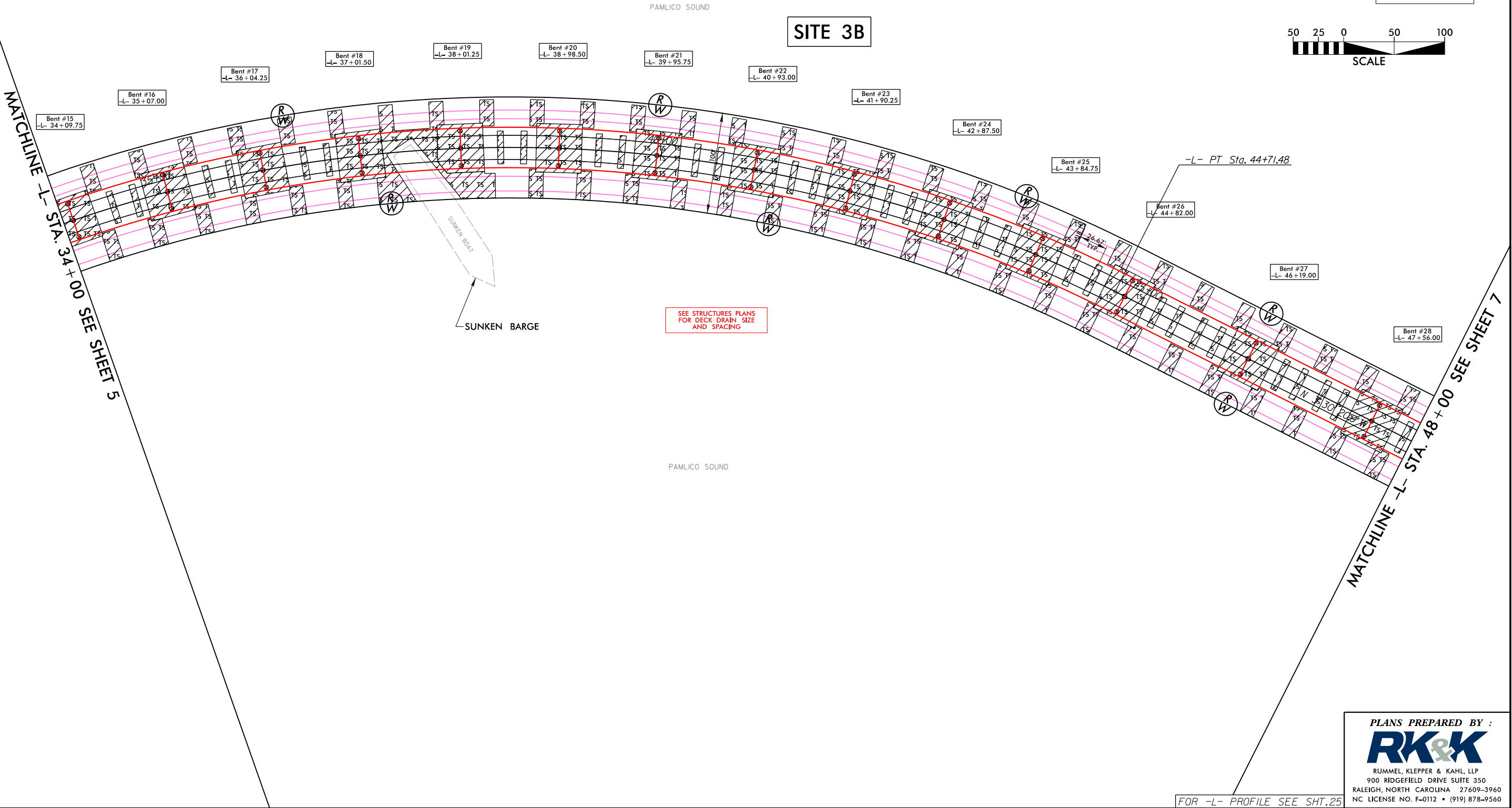
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SHEET 16 OF 44



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

PROJECT REFERENCE NO.		SHEET NO.
B-2500B		6
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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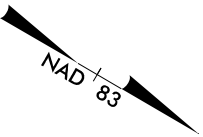
PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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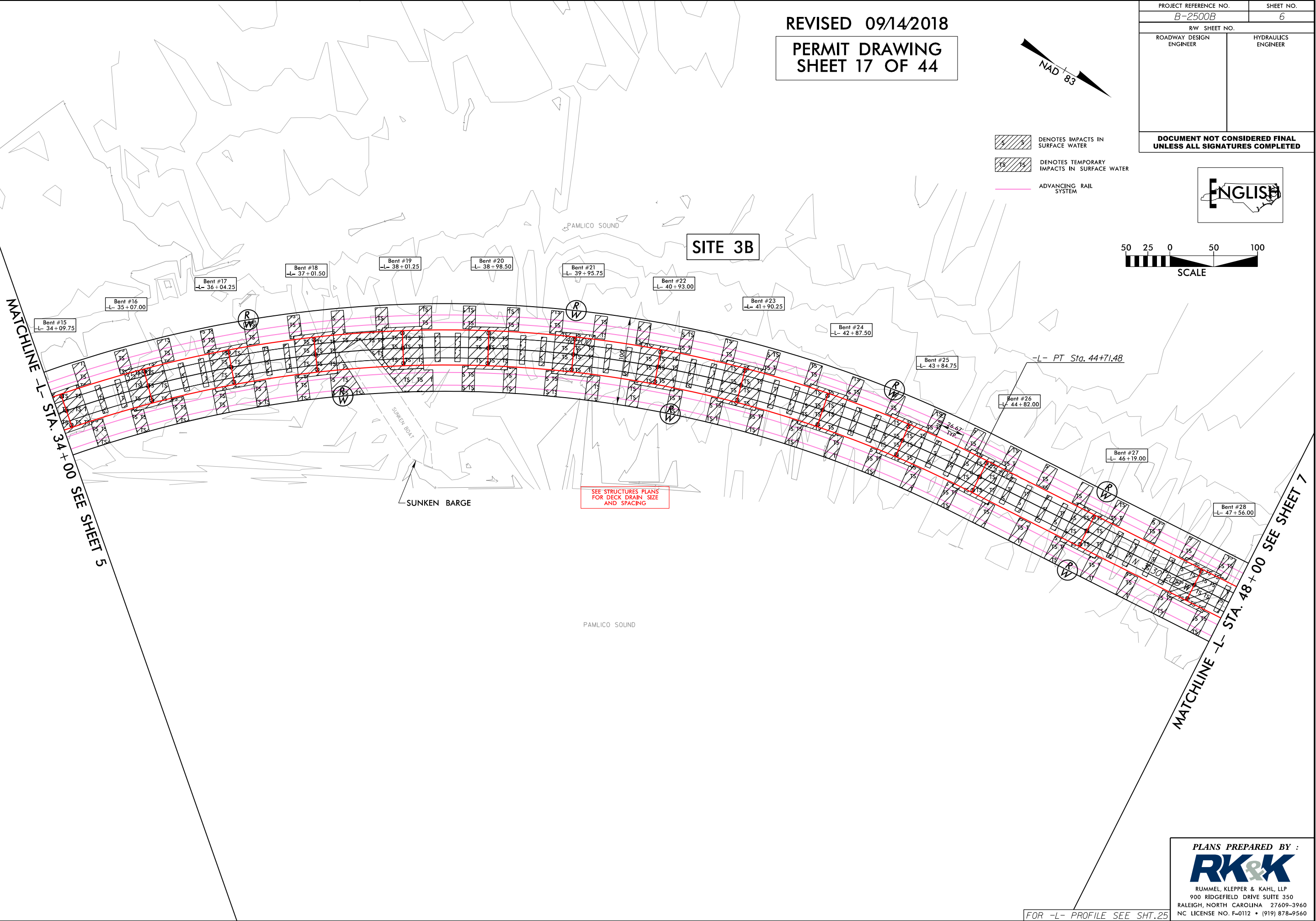
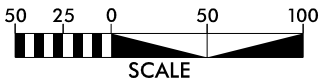
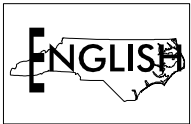
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SHEET 17 OF 44



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

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SHEET 18 OF 44

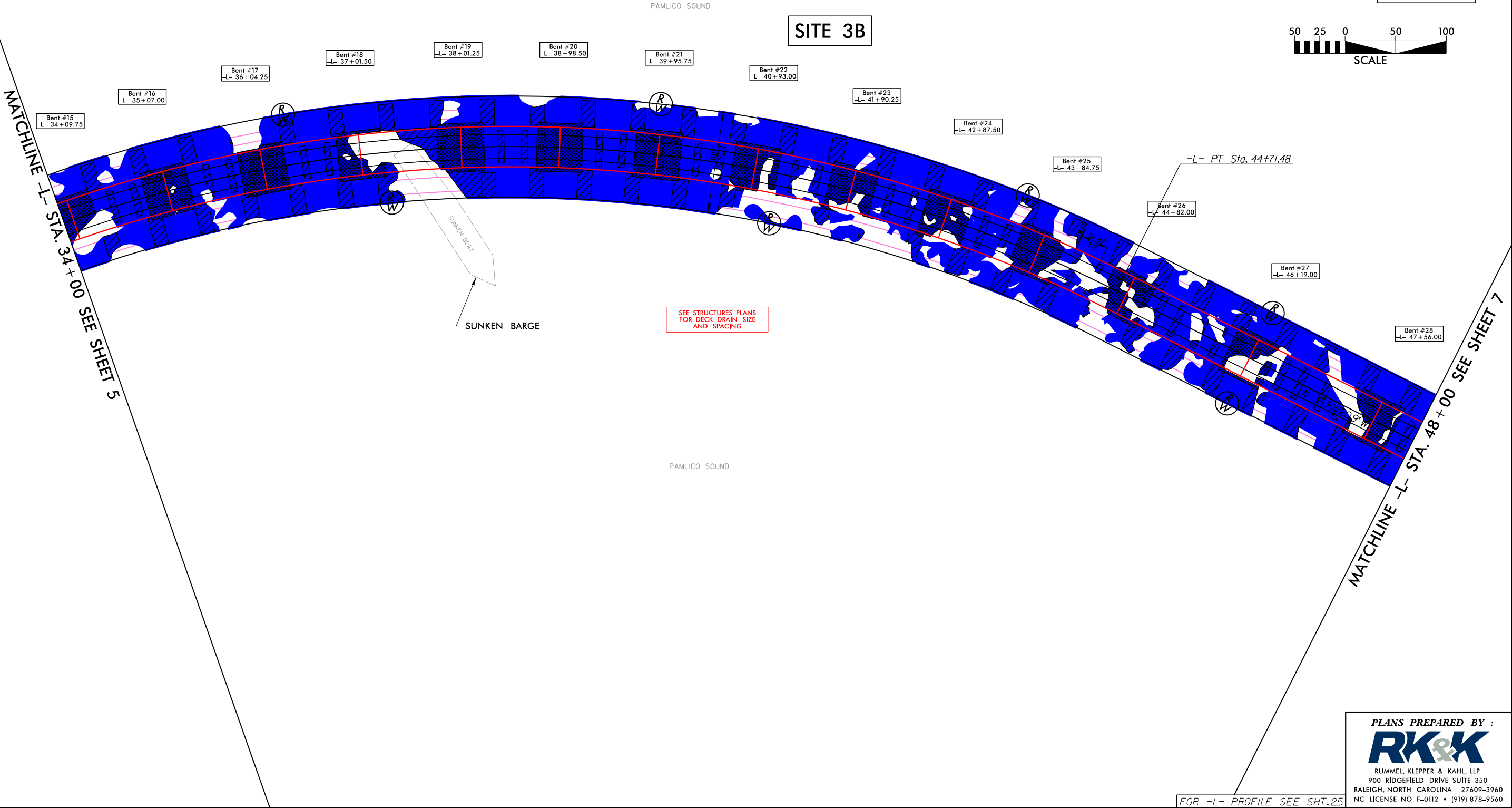
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PERMANENT IMPACTS TO SAV

TEMPORARY IMPACTS TO SAV

ADVANCING RAIL SYSTEM

SUBMERGED AQUATIC VEGETATION



PLANS PREPARED BY :

RK&K

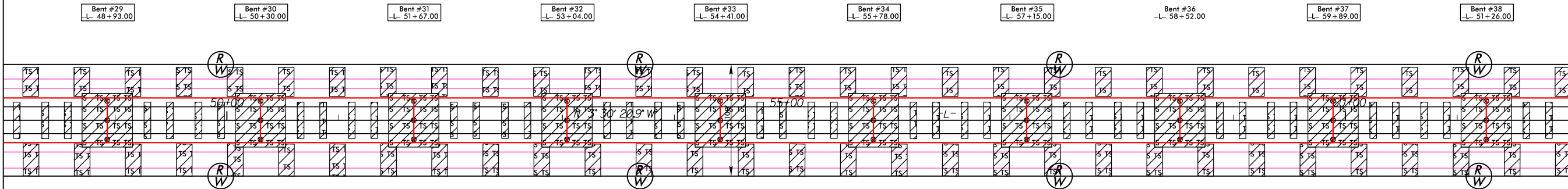
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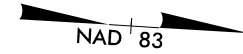
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SHEET 19 OF 44



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



PROJECT REFERENCE NO.		SHEET NO.
B-2500B		7
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ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
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SITE 3B

PAMLICO SOUND

PAMLICO SOUND

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

MATCHLINE -L- STA. 62 + 00 SEE SHEET 8

PLANS PREPARED BY :



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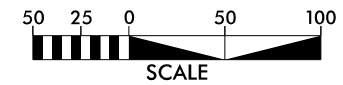
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SHEET 20 OF 44

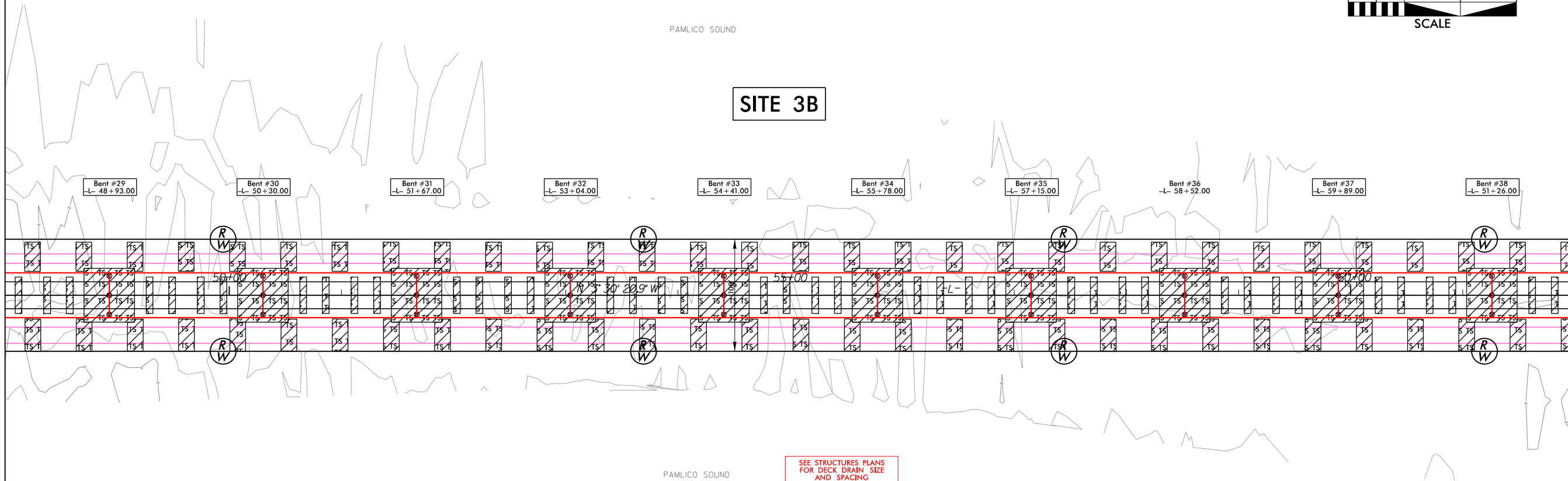


- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ADVANCING RAIL SYSTEM



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MATCHLINE -L- STA. 48 + 00 SEE SHEET 6



MATCHLINE -L- STA. 62 + 00 SEE SHEET 8

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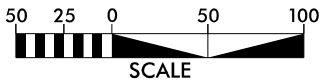
FOR -L- PROFILE SEE SHT.25

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mcook

MATCHLINE -L- STA. 62+00 SEE SHEET 8

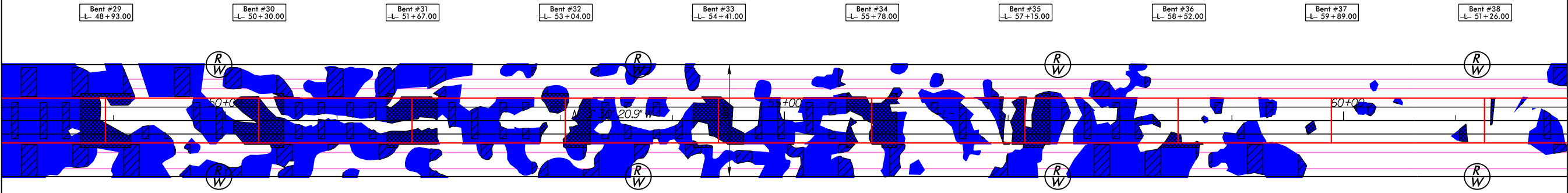
NAD 83

PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		7	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



PAMLICO SOUND

SITE 3B



PAMLICO SOUND

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

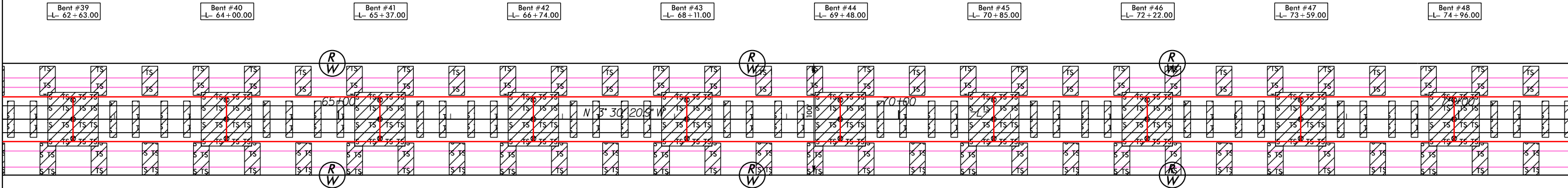
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mcc

MATCHLINE -L- STA. 62 + 00 SEE SHEET 7



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PERMIT DRAWING
SHEET 22 OF 44

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



PROJECT REFERENCE NO.		SHEET NO.
B-2500B		8
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
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MATCHLINE -L- STA. 76 + 00 SEE SHEET 9

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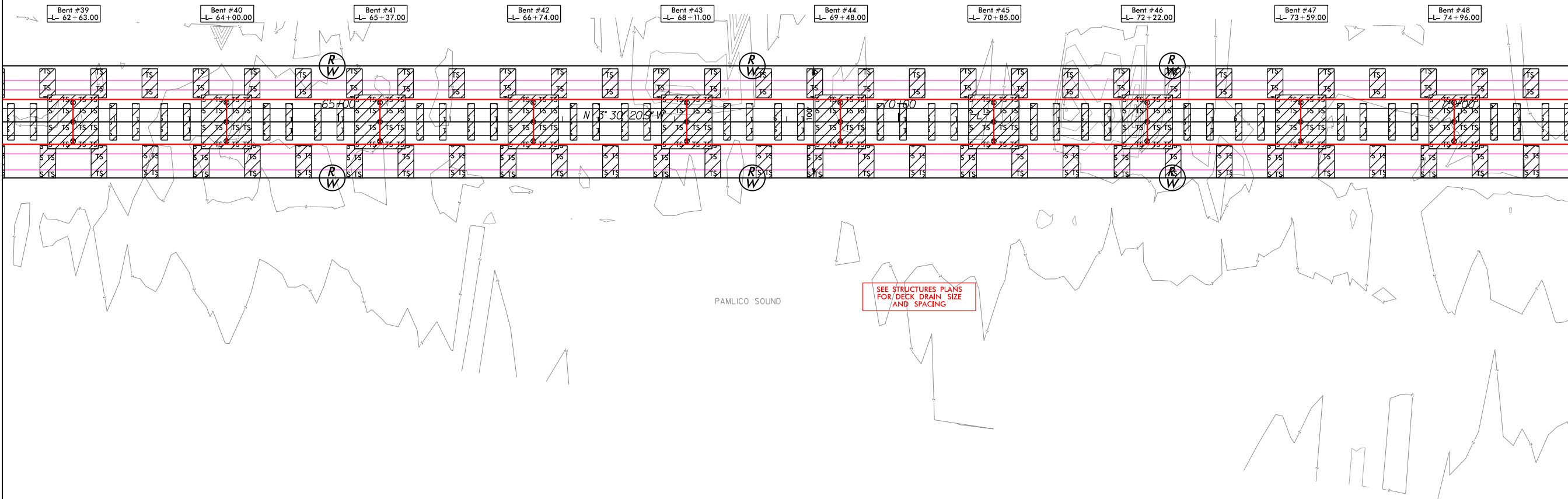
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FOR -L- PROFILE SEE SHT.26

8/17/99

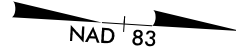
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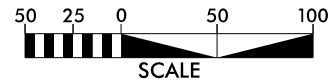


SITE 3B

REVISED 09/14/2018
PERMIT DRAWING
SHEET 23 OF 44



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



PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

MATCHLINE -L- STA. 76 + 00 SEE SHEET 9

PLANS PREPARED BY :



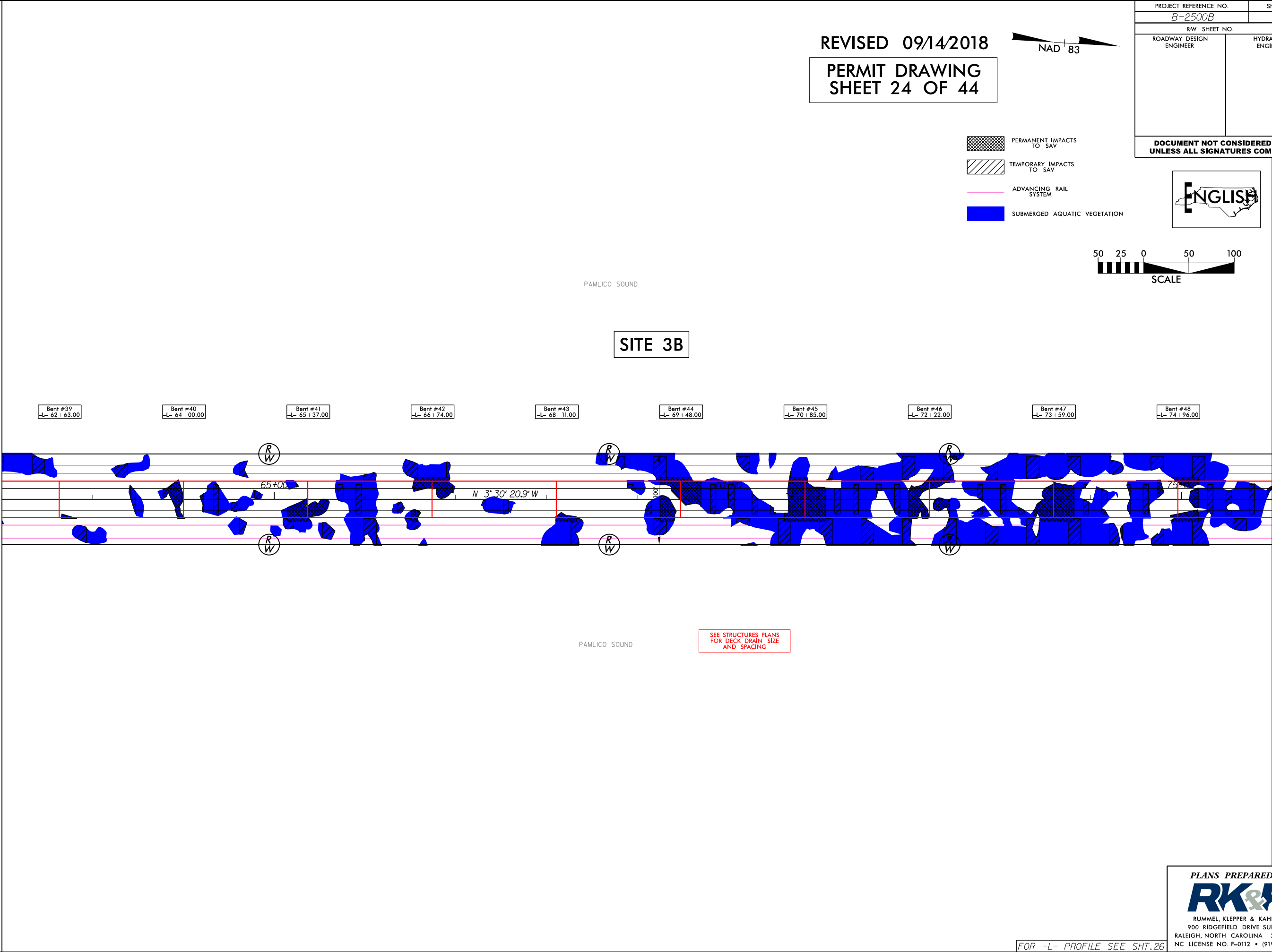
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FOR -L- PROFILE SEE SHT.26

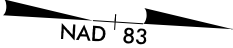
8/17/99

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moob

MATCHLINE -L- STA. 62 + 00 SEE SHEET 7



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PERMIT DRAWING
SHEET 24 OF 44



PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		8	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

MATCHLINE -L- STA. 76 + 00 SEE SHEET 9

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8/12/2018
mccoy

MATCHLINE -L- STA. 76 + 00 SEE SHEET 8

Bent #49
-L- 76 + 33.00

Bent #50
-L- 77 + 70.00

Bent #51
-L- 79 + 07.00

Bent #52
-L- 80 + 44.00

Bent #53
-L- 81 + 81.00

Bent #54
-L- 83 + 18.00

Bent #55
-L- 84 + 55.00

Bent #56
-L- 85 + 92.00

Bent #57
-L- 87 + 29.00

Bent #58
-L- 88 + 66.00

PAMLICO SOUND

SITE 3B

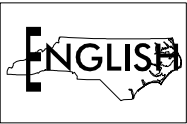
PAMLICO SOUND

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

REVISED 09/14/2018
PERMIT DRAWING
SHEET 25 OF 44



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



PROJECT REFERENCE NO.		SHEET NO.
B-2500B		9
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	

MATCHLINE -L- STA. 90 + 00 SEE SHEET 10

PLANS PREPARED BY :

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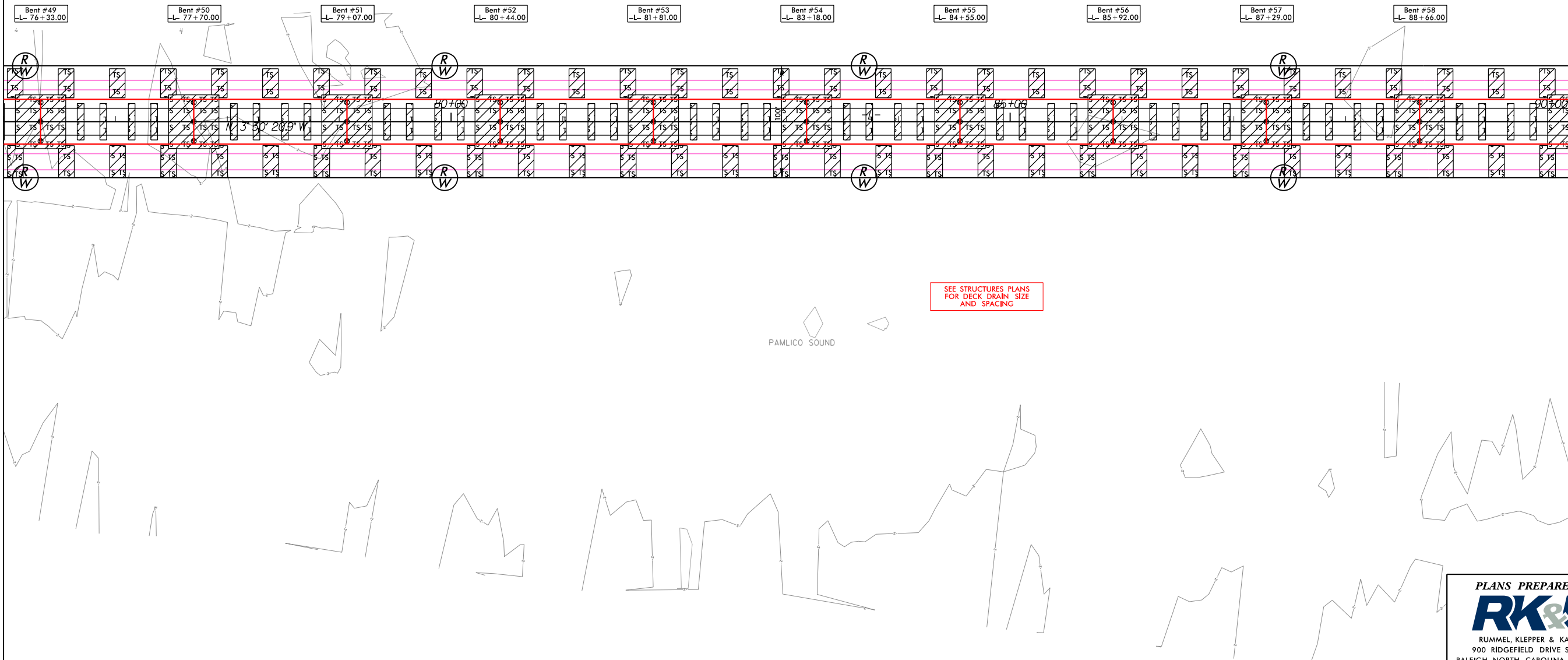
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moob

MATCHLINE -L- STA. 76+00 SEE SHEET 8



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PERMIT DRAWING
SHEET 26 OF 44

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



SITE 3B

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

MATCHLINE -L- STA. 90+00 SEE SHEET 10

PROJECT REFERENCE NO.		SHEET NO.
B-2500B		9
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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FOR -L- PROFILE SEE SHT. 26

8/17/99

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8/12/2018
moose

MATCHLINE -L- STA. 76+00 SEE SHEET 8

Bent #49
-L- 76+33.00

Bent #50
-L- 77+70.00

Bent #51
-L- 79+07.00

Bent #52
-L- 80+44.00

Bent #53
-L- 81+81.00

Bent #54
-L- 83+18.00

Bent #55
-L- 84+55.00

Bent #56
-L- 85+92.00

Bent #57
-L- 87+29.00

Bent #58
-L- 88+66.00

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SITE 3B

PAMLICO SOUND

PAMLICO SOUND

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

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PERMIT DRAWING
SHEET 27 OF 44

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



PROJECT REFERENCE NO.	SHEET NO.
B-2500B	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -L- STA. 90+00 SEE SHEET 10

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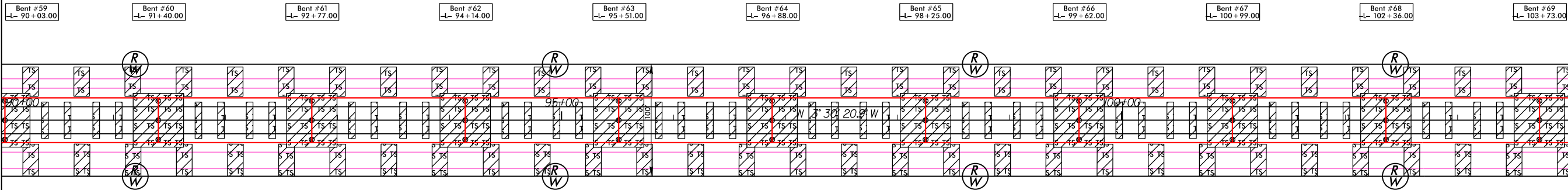
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8/12/2018
mccoy

MATCHLINE -L- STA. 90 + 00 SEE SHEET 9



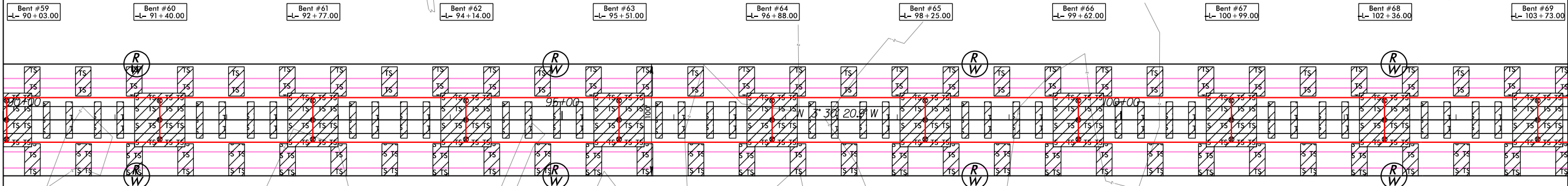
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8/12/2018
moose

MATCHLINE -L- STA. 90 + 00 SEE SHEET 9



SITE 3B

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

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PERMIT DRAWING
SHEET 29 OF 44

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



PROJECT REFERENCE NO.	SHEET NO.
B-2500B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

MATCHLINE -L- STA. 104 + 00 SEE SHEET 11

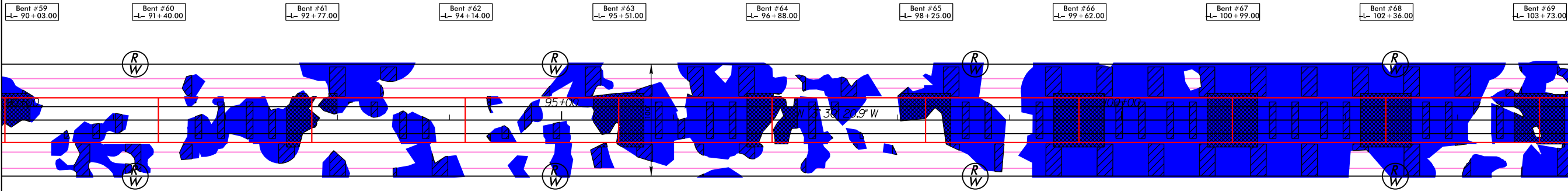
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8/12/2018
moor

MATCHLINE -L- STA. 90 + 00 SEE SHEET 9



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PERMIT DRAWING
SHEET 30 OF 44

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



PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		10	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

MATCHLINE -L- STA. 104 + 00 SEE SHEET 11

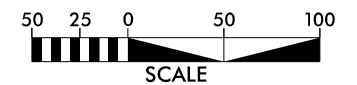
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FOR -L- PROFILE SEE SHT. 27

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



SITE 3B

-L- PC Sta. 113+35.97

MATCHLINE -L- STA. 104+00 SEE SHEET 10

SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

PAMLICO SOUND



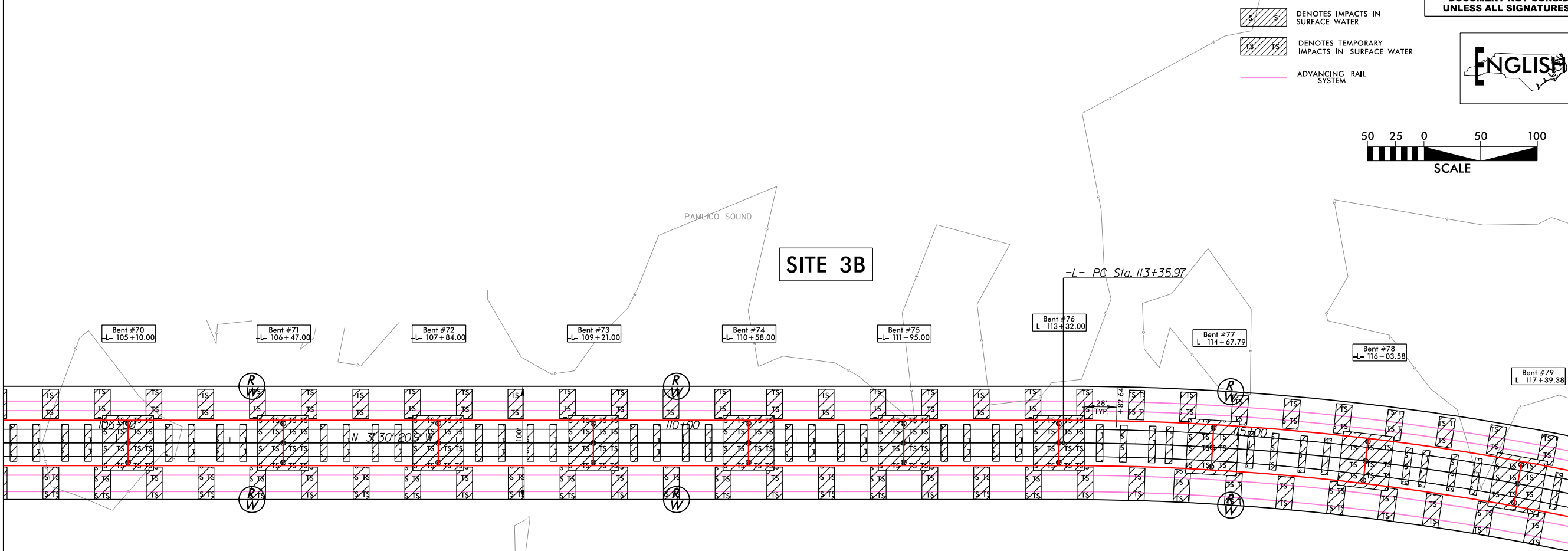
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FOR -L- PROFILE SEE SHT.27

8/17/99

8/12/2018
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mcc

MATCHLINE -L- STA. 104 + 00 SEE SHEET 10



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PERMIT DRAWING
SHEET 32 OF 44

PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		11	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



MATCHLINE -L- STA. 118 + 00 SEE SHEET 12

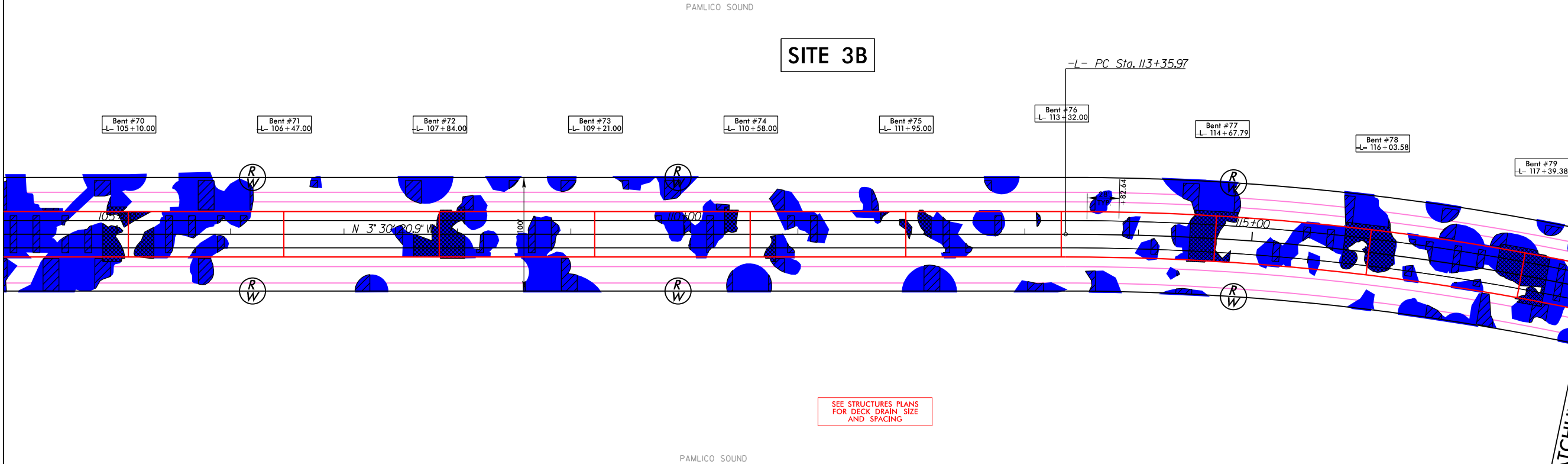
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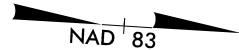
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MATCHLINE -L- STA. 104 + 00 SEE SHEET 10



SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

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PERMIT DRAWING
SHEET 33 OF 44



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



PROJECT REFERENCE NO.		SHEET NO.
B-2500B		11
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
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MATCHLINE -L- STA. 118 + 00 SEE SHEET 12

FOR -L- PROFILE SEE SHT. 27

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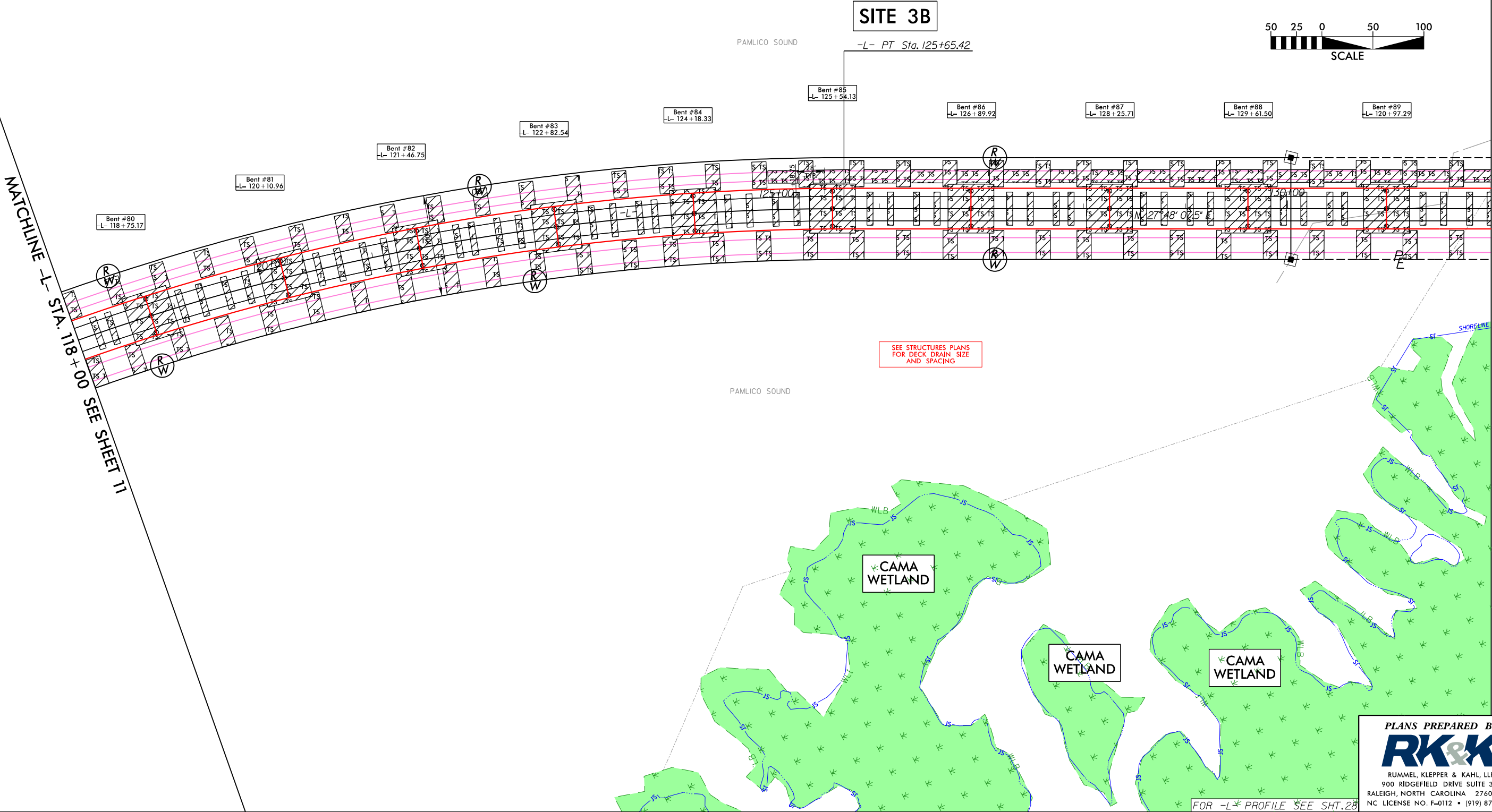
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PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		12	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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PERMIT DRAWING
SHEET 34 OF 44

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



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

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FOR -L* PROFILE SEE SHT. 28

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8/12/2018
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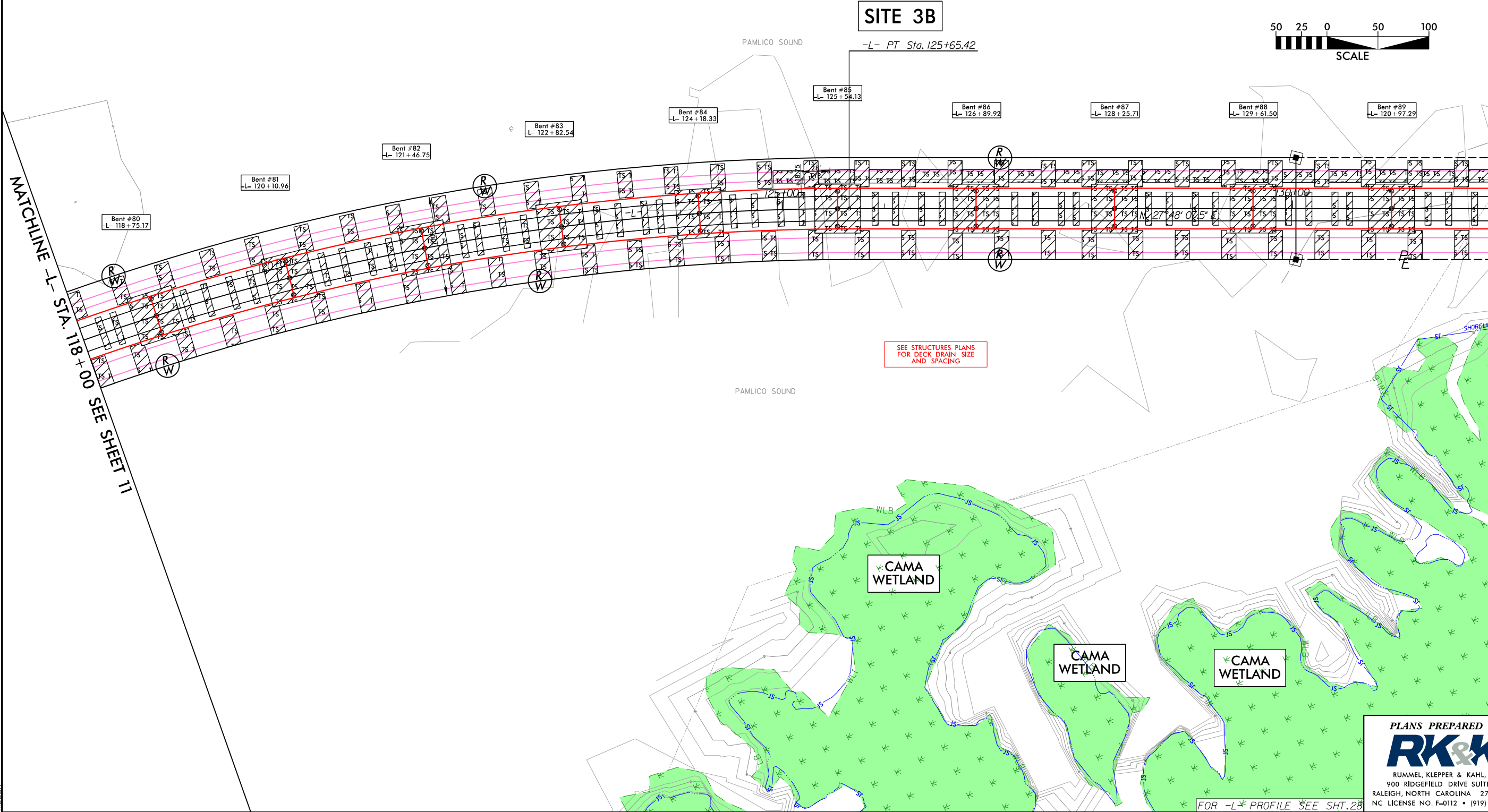
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B-2500B		12	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

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PERMIT DRAWING
SHEET 35 OF 44

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



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



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mccook

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

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PERMIT DRAWING
SHEET 36 OF 44

PERMANENT IMPACTS TO SAV

TEMPORARY IMPACTS TO SAV

ADVANCING RAIL SYSTEM

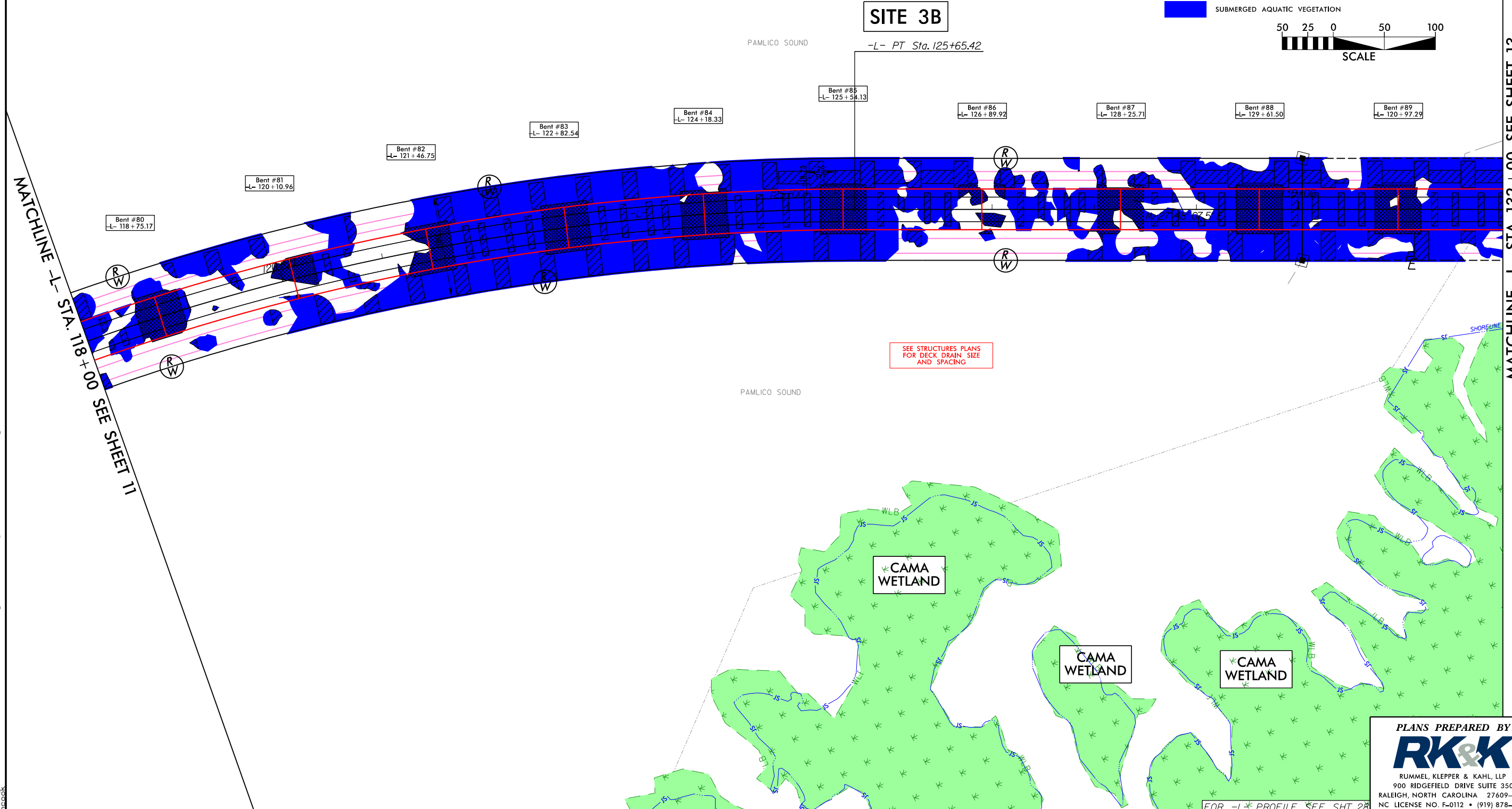
SUBMERGED AQUATIC VEGETATION



ENGLISH

50 25 0 50 100

SCALE



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8/12/2018
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CONSTRUCTION REVISION: DATE: 5/23/2018 - REVISED TEMPORARY ON-SITE DETOUR, TEMPORARY EASEMENT, AND MATCH LINES.

REVISED 09/14/2018
PERMIT DRAWING
SHEET 37 OF 44

- 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

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

SITE 3B

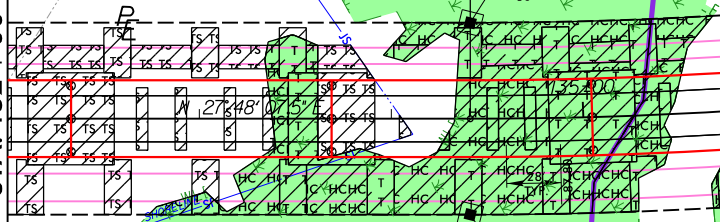
SITE 3C

CAMA WETLAND

CAMA WETLAND

NAD 83

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



SEE STRUCTURES PLANS FOR DECK DRAIN SIZE AND SPACING

MATCHLINE SEE SHEET 23

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

BEGIN CONSTRUCTION
-DET_REV- PC Sta. 10+00.00

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

8/17/99

8/12/2018
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mcook

CONSTRUCTION REVISION: DATE: 5/23/2018 - REVISED TEMPORARY ON-SITE DETOUR, TEMPORARY EASEMENT, AND MATCH LINES.

REVISED 09/14/2018
PERMIT DRAWING
SHEET 38 OF 44

-  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

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

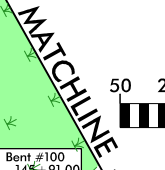
SITE 3B

SITE 3C

CAMA WETLAND

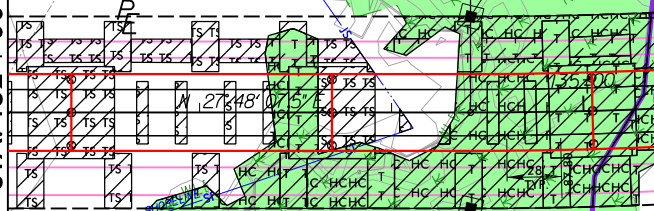
CAMA WETLAND

NAD 83



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



SEE STRUCTURES PLANS
FOR DECK DRAIN SIZE
AND SPACING

MATCHLINE SEE SHEET 23

SITE 3C

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

ATLANTIC OCEAN

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

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FOR -L- PROFILE SEE SHT. 28
FOR -DET_REV- PLAN SEE SHT. 2B-I

BEGIN CONSTRUCTION
-DET_REV- PC Sta. 10+00.00

8/17/99
8/12/2018
R:\Projects\Hydraulics\PERMITS\Environmental\Drawings\4\B2500B_Hyd.prm-wet-ph13_sav.dgn
CONSTRUCTION REVISION: DATE: 5/23/2018 - REVISED TEMPORARY ON-SITE DETOUR, TEMPORARY EASEMENT, AND MATCH LINES.

REVISED 09/14/2018
PERMIT DRAWING
SHEET 39 OF 44

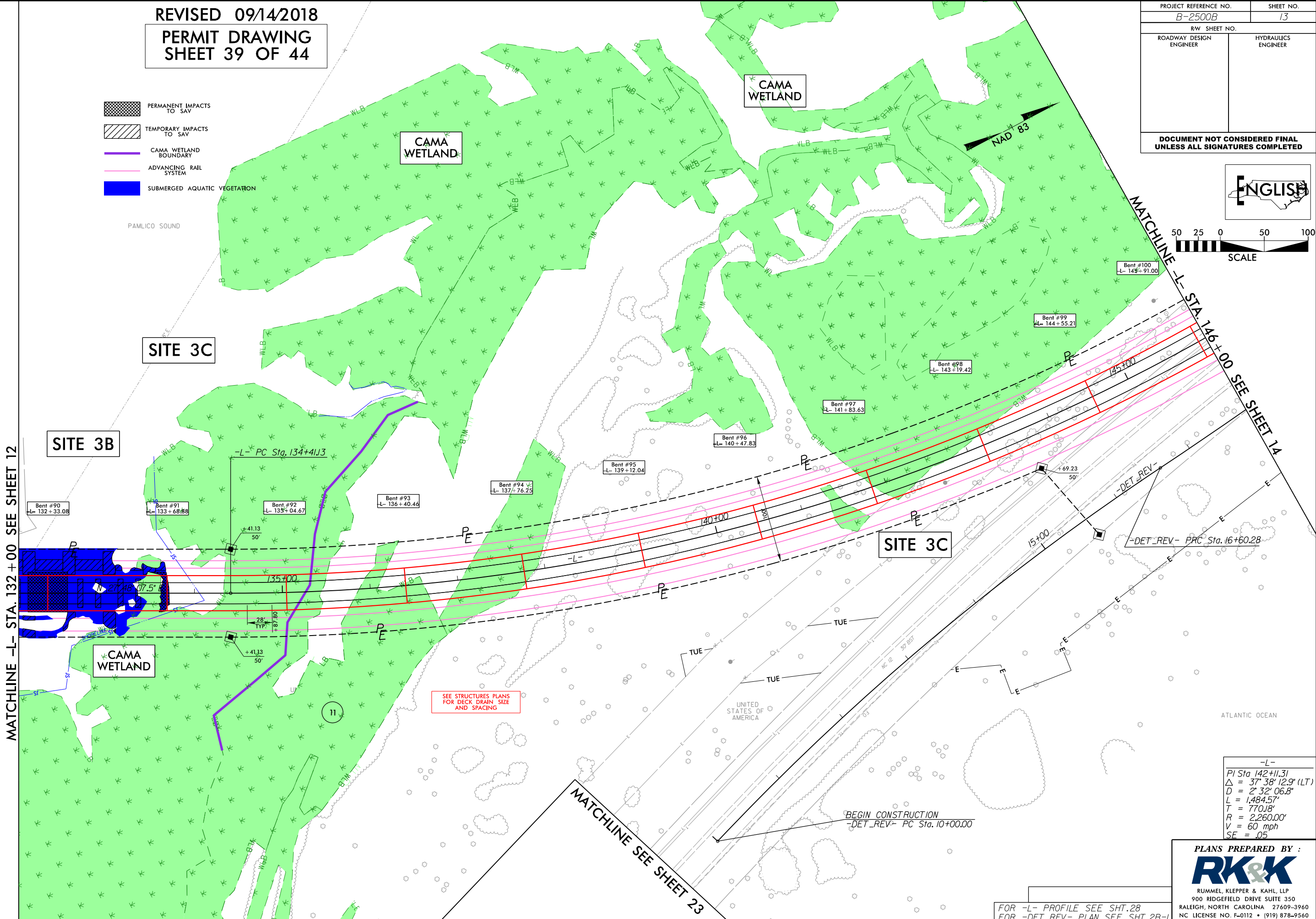
- PERMANENT IMPACTS TO SAV
- TEMPORARY IMPACTS TO SAV
- CAMA WETLAND BOUNDARY
- ADVANCING RAIL SYSTEM
- SUBMERGED AQUATIC VEGETATION

PAMLICO SOUND

SITE 3C

SITE 3B

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



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



SCALE

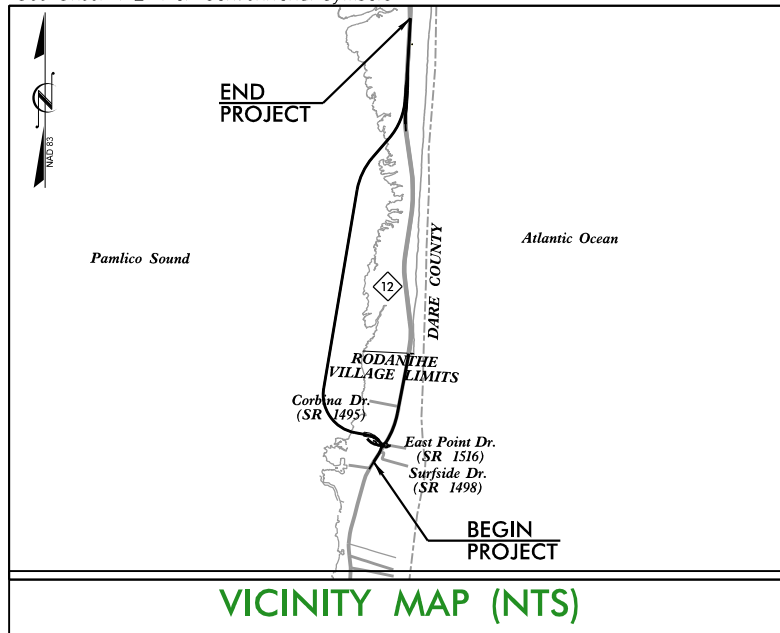
-L-
PI Sta. 142+11.31
 $\Delta = 37^\circ 38' 12.9\"$ (LT)
 $D = 2^\circ 32' 06.8\"$
 $L = 1,484.57'$
 $T = 770.18'$
 $R = 2,260.00'$
 $V = 60 \text{ mph}$
 $SE = .05$

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FOR -L- PROFILE SEE SHT. 28
FOR -DET_REV- PLAN SEE SHT. 2B-I

09/08/99

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)		

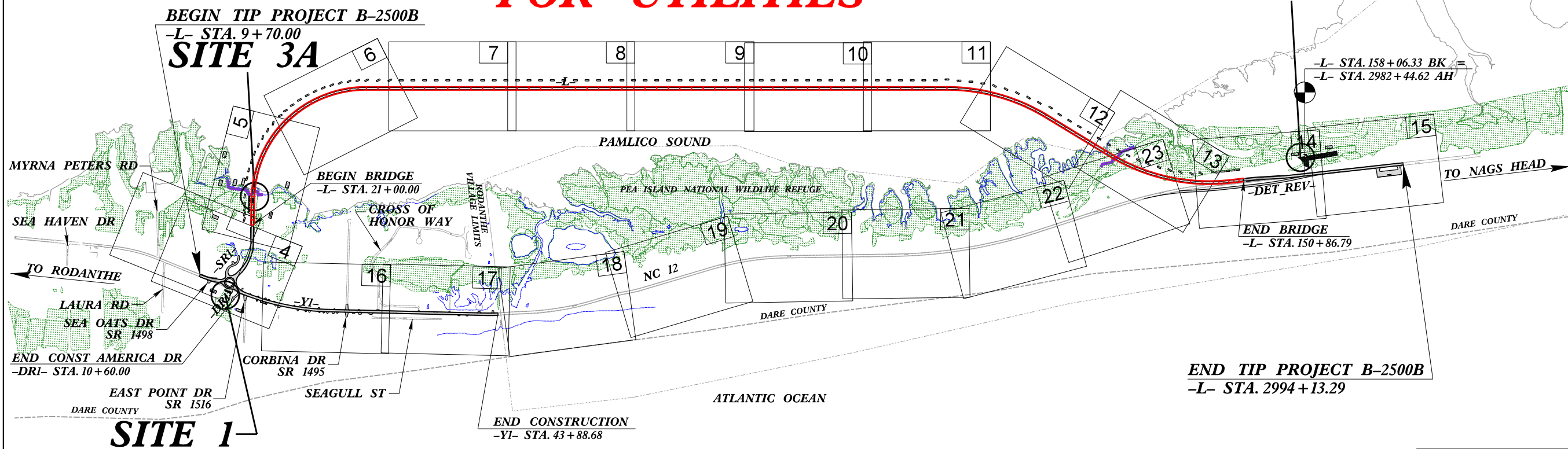


UTILITY
PERMIT DRAWING
SHEET 1 OF 12



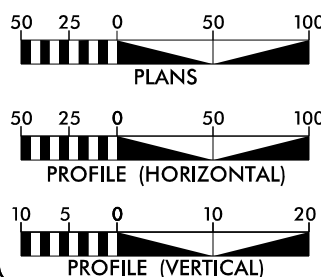
PERMIT MODIFICATION
09/14/2018

**JURISDICTIONAL IMPACTS
FOR UTILITIES**



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

GRAPHIC SCALES



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:

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NC LICENSE NO. F-0112

FOR NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS



B. Keith Skinner, P.E.
PROJECT ENGINEER

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

LETTING DATE:
JANUARY 25, 2017

HYDRAULICS
ENGINEER

SIGNATURE: _____ P.E.

ROADWAY
DESIGN
ENGINEER

SIGNATURE: _____ P.E.

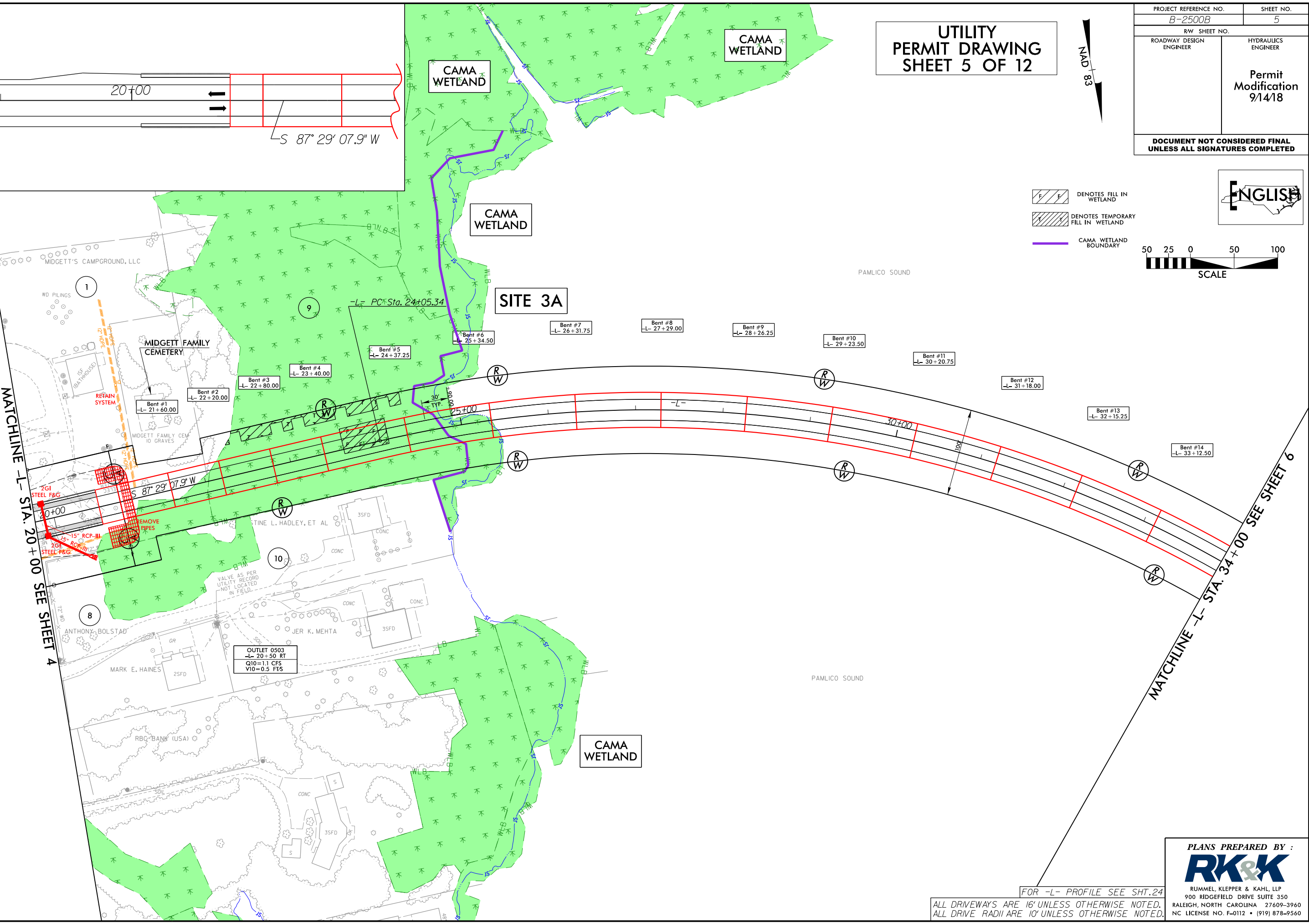


TIP PROJECT: B-2500B

CONTRACT: C203474

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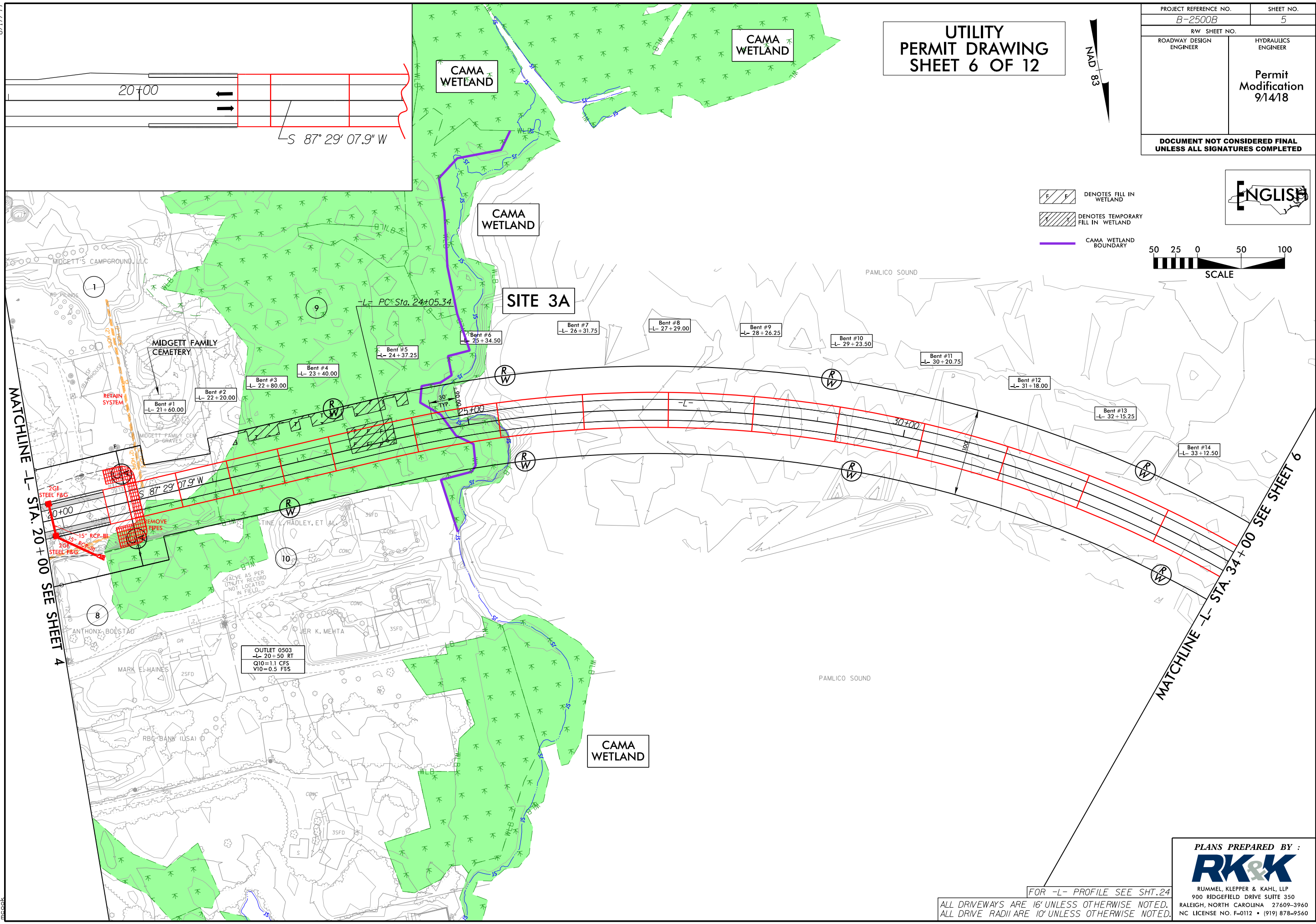
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8/12/2018



FOR -L- PROFILE SEE SHT. 24
ALL DRIVEWAYS ARE 16' UNLESS OTHERWISE NOTED.
ALL DRIVE RADII ARE 10' UNLESS OTHERWISE NOTED.

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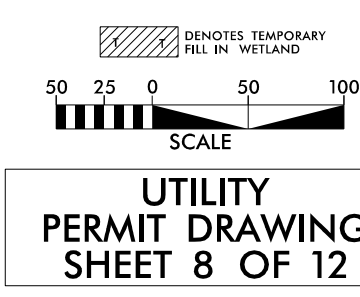
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8/12/2018
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FOR -L- PROFILE SEE SHT. 24
ALL DRIVEWAYS ARE 16' UNLESS OTHERWISE NOTED.
ALL DRIVE RADII ARE 10' UNLESS OTHERWISE NOTED.

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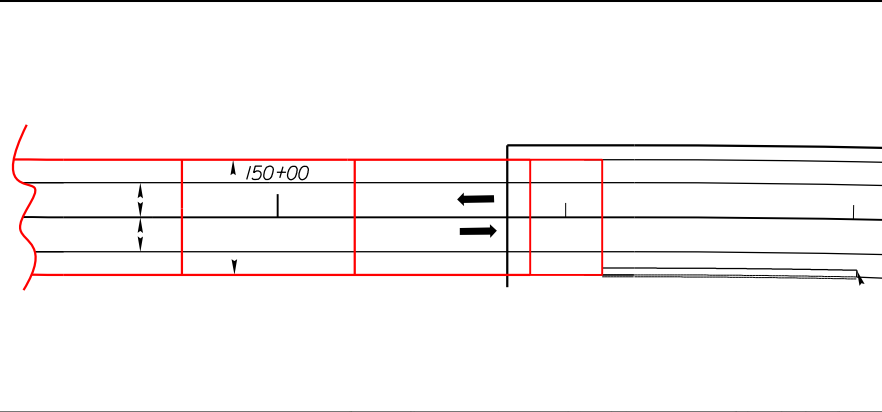
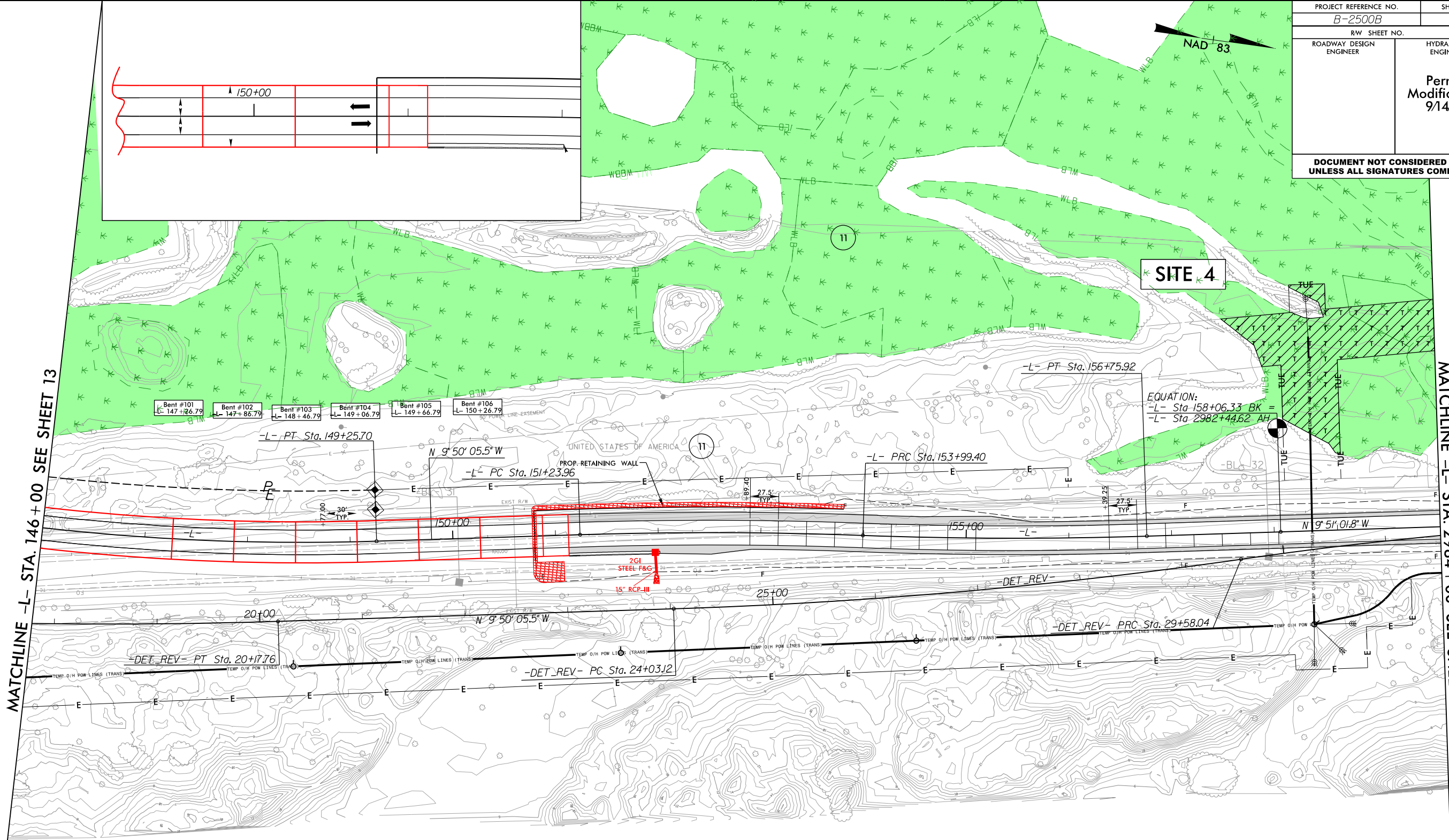


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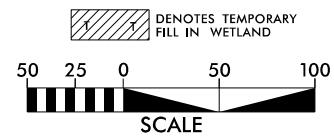
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MATCHLINE -L- STA. 146+00 SEE SHEET 13



ATLANTIC OCEAN



UTILITY
PERMIT DRAWING
SHEET 9 OF 12



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PROJECT REFERENCE NO. <i>B-2500B</i>		SHEET NO. <i>14</i>
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
		Permit Modification 9/14/18
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

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

8/17/99

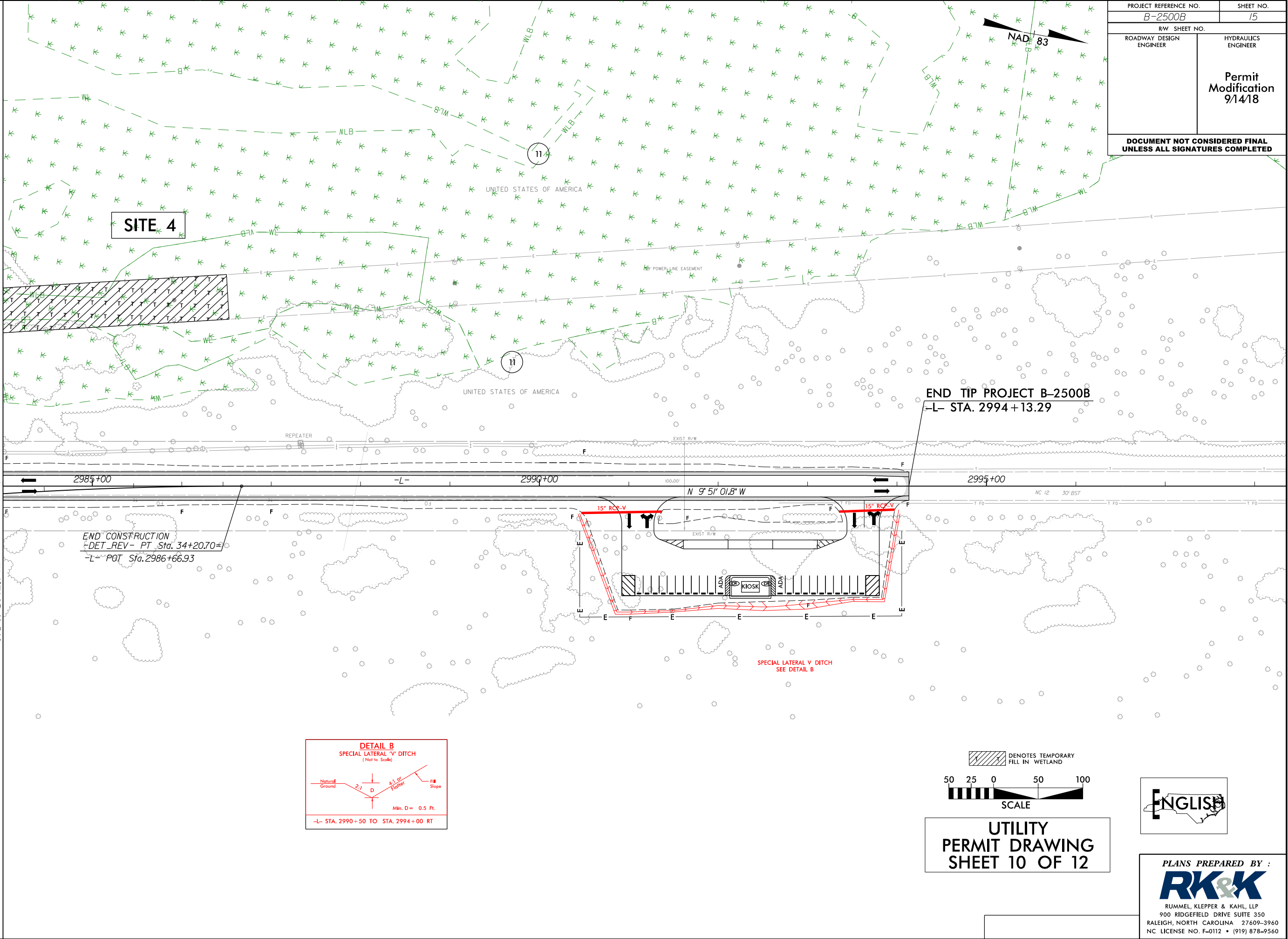
REVISIONS

CONSTRUCTION REVISION: DATE: 5/23/2018 - REVISED TEMPORARY ON-SITE DETOUR.

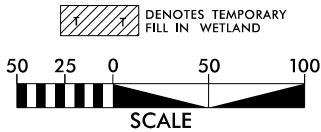
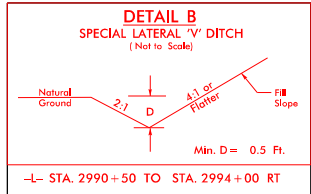
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8/12/2018
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MATCHLINE -L- STA. 2984+00 SEE SHEET 14



PROJECT REFERENCE NO.		SHEET NO.	
B-2500B		15	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
		Permit Modification 9/14/18	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



UTILITY
PERMIT DRAWING
SHEET 10 OF 12

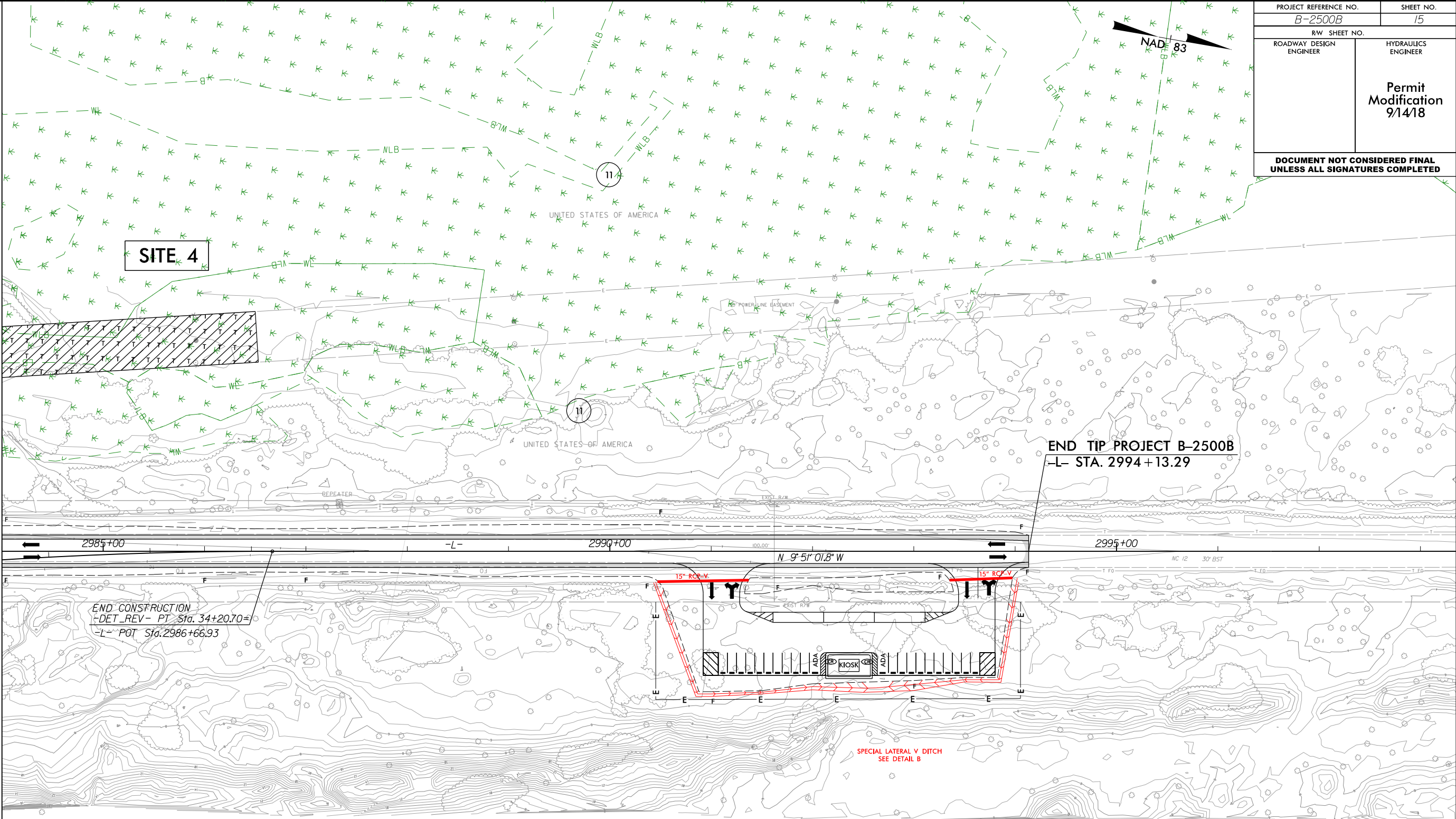


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8/2/2018
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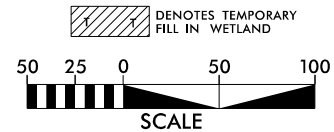
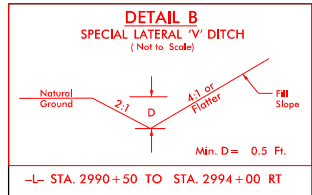
REVISIONS
CONSTRUCTION REVISION: DATE: 5/23/2018 - REVISED TEMPORARY ON-SITE DETOUR.

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



END CONSTRUCTION
-DET_REV- PT Sta. 34+20.70+
-L- POT Sta. 2986+66.93

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



UTILITY
PERMIT DRAWING
SHEET 11 OF 12



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