Project Submittal Interim Form

Updated September 4, 2020

*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Project Type: *

- ( ) For the Record Only (Courtesy Copy)
- (•) New Project
- ( ) Modification/New Project with Existing ID
- ( ) More Information Response
- ( ) Other Agency Comments
- ( ) Pre-Application Submittal
- ( ) Re-Issuance\Renewal Request
- ( ) Stream or Buffer Appeal

Submittal Type: *

Individual

Project Contact Information

Name: Jason Dilday

Who is submitting the information?

Email Address: * jldilday@ncdot.gov

Project Information

Project Name: * NC 24 Living Shoreline

Is this a public transportation project? *

- (•) Yes
- ( ) No

Is this a DOT project? *

- (•) Yes
- ( ) No

Is the project located within a NC DCM Area of Environmental Concern (AEC)? *

(•) Yes ( ) No ( ) Unknown

TIP#: M-540A

WBS#: 49083.1.1

(Applies to DOT projects only)

County (ies) *

Onslow

Please upload all files that need to be submited.

Click the upload button or drag and drop files here to attach document

M-0540 Individual CAMA Onslow January 28 2022.pdf 24.56MB

Only pdf or kmz files are accepted.

Describe the attachments or add comments:

Cover letter, CAMA MP forms, ENG Form, Permit Drawings.

* ☑ By checking the box and signing box below, I certify that:

- I, the project proponent, hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.
- I, the project proponent, hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- I agree that submission of this online form is a “transaction” subject to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the online form.

Signature: * Mack C. Riverbank, III

Submittal Date: 1/28/2022

Is filled in automatically once submitted.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

January 28, 2022

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

Attention: Mr. Thomas Steffens
NCDOT Coordinator

Dear Sir:

Subject: **Application for Section 404 Individual Permit, Section 401 Water Quality Certification and CAMA Major Development Permit** for the proposed NC 24 Living Shoreline Project in Onslow County. TIP No. M-0540. Debit $475 from WBS 49083.1.1.

The NCDOT proposes to repair the roadway embankment/causeway and adjacent sidewalk along NC 24, southeast of Swansboro, NC.

The purpose of this letter is to request approval for a Section 404 Individual Permit, Section 401 Water Quality Certification, and CAMA Major Development Permit. In addition to this cover letter, this application package includes the following for M-0540: ENG Form 4345, NCDCM MP forms, stormwater management plan, permit drawings and roadway plans.

Purpose and Need

Wave action from several storm events is causing severe erosion and threatening the integrity of the NC 24 roadway embankment/causeway along its northern edge, immediately southeast of the White Oak River bridge. NC 24 has an annual average daily traffic volume of 29,000 vehicles per day (2019) and is an important corridor connecting the towns of Swansboro and Cedar Point to Jacksonville and Morehead City. It is also a Connector on the Strategic Highway Network (STRAHNET) and is a designated NC Hurricane Evacuation route.

Project Description

As a more resilient repair and stabilization solution for this location, NCDOT is pursuing a nature based, living shoreline design as opposed to traditional construction techniques. Living shorelines use native vegetation in combination with low sills to stabilize the shoreline and protect the roadway. Research also indicates that living shorelines are more resilient than bulkheads in protecting against wave action and will adapt to future sea level rise. The area just southeast of the White Oak River bridge was identified to construct the proposed work. The Department in conjunction with the NC Coastal Federation, has been awarded a National Fish and Wildlife Federation (NFWF) grant to advance the state's resiliency goals by

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENT ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 212-5785
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

using living shoreline techniques to stabilize the shoreline and restore/enhance marsh habitat at the affected sites.

Project Schedule

Currently, the let is scheduled for July 21, 2022.

Summary of Impacts

As a result of fill, 0.22 acre of impact will occur to coastal marsh. An additional 0.90 acre of impact will occur to open water. This impact results from fill (0.43 ac.), placement of rock sills (0.37 ac.) and placement of oyster structures (0.10 ac.). A channel that has developed at the base of the fill slope will be filled with this work which will not be re-established after completion of the project. However, it is possible that a channel may reform on the outside of the rock sills over time, due to natural hydraulic functions.

Summary of Mitigation

Due to the nature of the work as a habitat enhancement project, it is anticipated that impacts incurred during construction of this project will result in a net gain in coastal marsh. In the event that the project is deemed unsuccessful, compensatory mitigation has been reserved for the 0.22 ac. coastal marsh impact using the Turner Street Mitigation Site.

NEPA Document Status

A Minimum Criteria Determination Checklist (MCDC) was completed in June 2021. This document can be found at https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/.

Resource Status

The project is located in the White Oak River Basin (Hydrologic Unit 03020301). This project occurs near the outlet of the White Oak River at it's connection with the Atlantic Ocean at Bogue Inlet. The White Oak River at this location is considered as High Quality Waters (HQW) by the North Carolina Division of Water Resources. No stream that flows through the project study corridors is designated as National Wild and Scenic River or a State Natural and Scenic River.

Impacts to Jurisdictional Resources

Currently there is no low marsh habitat at the site however project construction would create this habitat in addition to resilient protection for the causeway. Final proposed impacts to jurisdictional wetlands and surface waters associated with the living shoreline project are summarized in Tables 1 and 2 respectively. The project is located within the White Oak River Drainage Basin and is part of USGS hydrologic unit 03020301.

Table 1. M-0540A Wetland Impacts

Permit Drawing Site Number	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Mitigation Required
3	Fill	0.22*	0	Yes

***Impacts to Coastal Marsh**

Table 2. M-0540A Surface Water Impacts

Permit Drawing Site Number	Type	Perm. (ac.)	Temp. (ac.)	Mitigation Required
3	Rock Sill	0.37	0	No
3	Oyster Structure	0.10	0	No
3	Fill	0.43	0	No
Total		**0.90**		

Utility impacts

There are no impacts associated with utilities with this project. There is the potential for conflicts with overhead utility lines, however any movement of the current lines would result in no impact to jurisdictional resources.

Federally Protected Species

Table 3 lists the federally protected species identified using the USFWS Information for Planning and Consultation (IPaC) for the project area as of November 20, 2021. Species with the federal classification of Endangered (E), Threatened (T), or officially Proposed (P) for such listing, are protected under Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Species listed as Threatened due to Similarity of Appearance [T(S/A)], such as the American alligator, are not subject to Section 7 consultation. The Bald Eagle is protected by the Bald and Golden Eagle Protection Act and is not subject to Section 7 consultation.

Table 3. Federally protected species listed for the project area.

Common Name	Scientific Name	Federal Status	Habitat Present	Biological Conclusion
American alligator	*Alligator mississippiensis*	Threatened (S/A)	N/A	Not required
Green sea turtle	*Chelonia mydas*	Threatened	No	No Effect
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	No	No Effect
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	No	No Effect
Loggerhead sea turtle	*Caretta caretta*	Threatened	No	No Effect
Eastern black rail	*Laterallus jamicensis*	Threatened	Yes	MANLAA*
Piping plover	*Charadrius melodus*	Threatened	Yes	MANLAA*
Red-cockaded woodpecker	*Picoides borealis*	Endangered	No	No Effect
Red knot	*Calidris canutus rufa*	Threatened	Yes	MANLAA*
West Indian manatee	*Trichechus manatus*	Endangered	Yes	MANLAA*
Cooley's meadowrue	*Thalictrum cooleyi*	Endangered	No	No Effect
Golden sedge	*Carex lutea*	Endangered	No	No Effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	Endangered	No	No Effect
Pondberry	*Lindera melissifolia*	Endangered	No	No Effect
Seabeach amaranth	*Amaranthus pumilus*	Threatened	No	No Effect

*MANLAA – May Affect, Not Likely to Adversely Affect

Biological Conclusions for ESA Listed Species

Habitat evaluations and surveys for federally protected species were conducted in February 2020 by biologists with RK&K. It was determined from these surveys that suitable nesting habitat was not present for green sea turtle, Kemp's ridley sea turtle, leatherback sea turtle, and loggerhead sea turtle. Also, suitable habitat for red-cockaded woodpecker, Cooley's meadowrue, golden sedge, rough-leaved loosestrife, pondberry, and seabeach amaranth was not available. The American alligator is listed due to its similarity in appearance and does not require surveys.

Along the causeway, there are tidal flats and adjacent low marsh that are considered foraging habitat for the black rail, piping plover, and red knot. A biological opinion of "May Affect, Not Likely to Adversely Affect" was rendered for these species. NCDOT believes that it is highly improbable that interactions with these species would occur due to construction of this project. There is also the potential for the creation of additional foraging habitat within the study area for the species. Much of the offshore structures will be constructed in-water and will not disturb the low marsh areas. Access will be needed for the placement of fill at the sites. Impact to the low marsh will be minimized by the use of matting and trestles.

Foraging habitat maybe available for the West Indian manatee in the form of open water adjacent to the causeway. Water depth may be conducive for access to the manatee. The biological conclusion conclusion is "May Affect, Not Likely to Adversely Affect". NCDOT commits to adhere to the "*Guidelines for Avoiding Impacts to the West Indian Manatee: Precautionary Measures for Construction Activities in North Carolina Waters*" for this project.

The US Fish and Wildlife Service has revised the previous programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, NLEBs are currently only known in 22 counties, but may potentially occur in 8 additional counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 current known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Onslow County, where M-0540A is located.

Concurrence from the USFWS was received on March 22, 2021 for the biological conclusions presented. Communication with NMFS on 5/26/2021 indicated no anticipated impacts to sea turtles or marine fishes. Section 7 has been satisfied for this project.

Bald and Golden Eagle Protection Act (BGPA)

In the July 9, 2007, Federal Register (72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) became the primary law protecting bald eagles. Surveys conducted in February 2020 concluded that the proposed project will have no impact on the bald eagle due to the absence of nest trees within the project area. Foraging habitat is available, however a review of the N.C. Natural Heritage Program, updated January 2021, revealed no known occurrences within one mile of the project

Moratoria

Currently there is no regulatory authority that would require a moratorium at this site. However, reviewing agencies have expressed a desire for a moratorium between February 1- June 30 to protect juvenile fishes that maybe in the vicinity.

Essential Fish Habitat

In the lower reach of the White Oak River, Essential Fish Habitat (EFH) is present for 18 different marine species. Unlike hardened methods like riprap or bulkheads, living shorelines provide additional benefits including nutrient pollution remediation and may promote essential fish habitat. Living shorelines are self-maintaining and therefore minimize the need for future maintenance resulting in potential future impacts to fisheries habitat. Shoreline hardening may create scour which leads to a loss of shallow water habitat, submerged aquatic vegetation, fringe marshes, and decrease in benthic abundance/diversity; living shorelines however combat this. Therefore, the proposed project will likely result in a negligible net effect on available EFH.

Prior to construction, an additional survey for submerged aquatic vegetation (SAV) will be conducted within the project footprint to assure no impacts will occur. Previous surveys have found no SAVs in the area. Also, a survey for shellfish will be conducted and any specimens encountered will be relocated into adjacent suitable habitat prior to construction.

Cultural Resources

A Cultural Resources Programmatic Agreement Screening Checklist for Section 106 was completed for the project on December 16, 2021and resulted in no further cultural resources review.

FEMA Compliance

No floodplain compliance is needed. In the project area, the effective base flood elevations in the Flood Insurance Study are based on coastal analyses rather than riverine. Therefore, the requirements of 44 CFR 60.3(d)(3) and 60.3(d)(4) do not apply.

Mitigation Options

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Avoidance measures were taken during planning and SEPA compliance stages; minimization measures were incorporated as part of the project design.

<u>Avoidance and Minimization:</u>

- Granite sill location moved closer to causeway (50’ vs 150’ originally); sill alignment modified to better follow contours; reduces overall amount of proposed fill.
- Proposed oyster structures and beds to be hand placed without the use of heavy machinery to minimize impacts to the existing environment.
- Oyster structures are built from degradable materials that will eventually decay and leave the natural oyster rock/bed material.
- All proposed stabilization work on embankment to be completed from the NC-24 right-of-way to minimize impacts to the existing environment.
- Access for construction of the proposed living sill and tidal low marsh to utilize a temporary trestle bridge in an effort minimize impacts to the existing environment.

- Currently no low marsh habitat existing at site; proposed plan would add this habitat while also adding resilient protection to the causeway.
- Sill breaks (for all sill types) are placed every 100' to allow for aquatic life passage and to allow water to flow in/out to avoid stagnant water.
- Possible use of sediment curtains around proposed construction areas where practicable to minimize sediment escaping.

Indirect and Cumulative Effects

Potential indirect and cumulative effects (ICE) attributable to the construction of the living shoreline project on NC 24 immediately southeast of the White Oak River bridge would be insignificant. Due to minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.

Regulatory Approvals

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are requesting a Section 401 Water Quality Certification from NCDWR. We are providing this application to NCDEQ, for their approval. Please coordinate with the NC Division of Coastal Management for the joint permit application fee.

CAMA: NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Permit. Adjacent riparian landowner certified mail return receipts will be provided once they are received. Authorization to debit the $570 Permit Application Fee from WBS 49083.1.1 is hereby given.

A copy of this permit application and its distribution list will be posted on the NCDOT website at: https://connect.ncdot.gov/resources/Environmental

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jason Dilday at jldilday@ncdot.gov or (919) 707-6111.

Sincerely,

DocuSigned by:
Mack C. Rivenbark III
AAAD1248B309416...

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

cc:

NCDOT Permit Application Standard Distribution List

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

(33 CFR 325)

OMB APPROVAL NO. 0710-0003
EXPIRES: 31 AUGUST 2012

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Philip Middle - S. Last - Harris	First - Middle - Last -
Company - NCDOT-EAU	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6111 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
M-0540A

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
White Oak River	Address
15. LOCATION OF PROJECT Latitude: ◦N 34.685031 Longitude: ◦W -77.114446	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

As a more resilient repair and stabilization solution for this location, NCDOT is pursuing a nature based, living shoreline design as opposed to traditional construction techniques. Living shorelines use native vegetation in combination with low sills to stabilize the shoreline and protect the roadway. The area just southeast of the White Oak River bridge was identified to construct the proposed work. The Department in conjunction with the NC Coastal Federation, has been awarded a National Fish and Wildlife Federation (NFWF) grant to advance the state's resiliency goals by using living shoreline techniques to stabilize the shoreline and restore/enhance marsh habitat at the affected sites. Concrete sills, biodegradable oyster structures and sand fill will be used.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Wave action from several storm events is causing severe erosion and threatening the integrity of the NC 24 roadway embankment/ causeway along its northern edge, immediately southeast of the White Oak River bridge. NC 24 has an annual average daily traffic volume of 29,000 vehicles per day (2019) and is an important corridor connecting the towns of Swansboro and Cedar Point to Jacksonville and Morehead City. It is also a Connector on the Strategic Highway Network (STRAHNET) and is a designated NC Hurricane Evacuation route.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Impacts will result as a result of fill in coastal wetlands and open water from the construction of concrete sills, oyster structure and sand used for constructing low/high marsh areas.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
See attached cover letter.		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached cover letter.

or

Linear Feet See attached cover letter.

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See attached cover letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See attached list.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
USACE	NWP 6	SAW-2020-00406		3/11/2020	

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Mack C. Rivenbark, III Digitally signed by Mack C. Rivenbark, III Date: 2022.01.28 14:12:49 -05'00' | | for Philip S. Harris, III, P.E., C.P.M. | |

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

DCM MP-1

APPLICATION for Major Development Permit

(last revised 12/27/06)

North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information

Business Name North Carolina Department Of Transportation		Project Name (if applicable) M-540A		
Applicant 1: First Name Philip	MI S	Last Name Harris, III		
Applicant 2: First Name	MI	Last Name		
If additional applicants, please attach an additional page(s) with names listed.				
Mailing Address 1598 Mail Service Center		PO Box	City Raleigh	State NC
ZIP 27699 1598	Country USA	Phone No. 919 - 707 - 6000 ext.	FAX No. - -	
Street Address *(if different from above)* 1000 Birch Ridge Drive		City Raleigh	State NC	ZIP 27610- 4328
Email jldilday@ncdot.gov				

2. Agent/Contractor Information

Business Name				
Agent/ Contractor 1: First Name	MI	Last Name		
Agent/ Contractor 2: First Name	MI	Last Name		
Mailing Address		PO Box	City	State
ZIP		Phone No. 1 - - ext.	Phone No. 2 - - ext.	
FAX No.		Contractor #		
Street Address *(if different from above)*		City	State	ZIP -
Email				

<Form continues on back>

3. Project Location

County (can be multiple)	Street Address	State Rd. #
Onslow	NC-24 Causeway between Swansboro bridges & Cedar Point	NC-24

Subdivision Name	City	State	Zip
	Swansboro	NC	28584 -

Phone No.	Lot No.(s) *(if many, attach additional page with list)*
- - ext.	, , , ,

a. In which NC river basin is the project located?	b. Name of body of water nearest to proposed project
White Oak River	White Oak River
c. Is the water body identified in (b) above, natural or manmade? ☒Natural ☐Manmade ☐Unknown	d. Name the closest major water body to the proposed project site. White Oak River
e. Is proposed work within city limits or planning jurisdiction? ☒Yes ☐No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. Swansboro

4. Site Description

a. Total length of shoreline on the tract (ft.)	b. Size of entire tract (sq.ft.)
830	215,000
c. Size of individual lot(s) , , , *(If many lot sizes, please attach additional page with a list)*	d. Approximate elevation of tract above NHW *(normal high water)* or NWL *(normal water level)* 0-8 ft ☐NHW or ☒NWL

e. Vegetation on tract
Coastal marsh grasses, shrubs

f. Man-made features and uses now on tract
NCDOT Hwy 24, bridge, sidewalk, riprap

g. Identify and describe the existing land uses adjacent to the proposed project site.
Retail, recreational charters

h. How does local government zone the tract?	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) ☐Yes ☐No ☒NA
Commercial	

j. Is the proposed activity part of an urban waterfront redevelopment proposal? ☐Yes ☒No

k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy. ☐Yes ☒No ☐NA

If yes, by whom?

l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property? ☐Yes ☒No ☐NA

<Form continues on next page>

m. (i) Are there wetlands on the site?	☒Yes ☐No
(ii) Are there coastal wetlands on the site?	☒Yes ☐No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? *(Attach documentation, if available)*	☐Yes ☒No
n. Describe existing wastewater treatment facilities. N/A	
o. Describe existing drinking water supply source. N/A	
p. Describe existing storm water management or treatment systems. N/A	

5. Activities and Impacts

a. Will the project be for commercial, public, or private use?	☐Commercial ☒Public/Government ☐Private/Community
b. Give a brief description of purpose, use, and daily operations of the project when complete. The proposed living shoreline will create a more resilient and stable shoreline along N.C. 24, a road vital to the local communities (connects the towns of Cedar Point and Swansboro) and nearby military bases (Camp Lejeune, Cherry Point). This portion of N.C. 24 sustained damages from hurricanes Florence, Irene, and Ophelia and is particularly vulnerable to future damage and degradation	
c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored. Install traffic control and erosion and sediment control measures, and install temporary construction trestle. Excavators will be used to install the granite sills and fill. Materials will be imported to the site using dump trucks and temporarily stockpiled in the shoulder and closed lane of traffic prior to installation.	
d. List all development activities you propose. Construction of living shoreline, marsh restoration, place living sills and oyster structures at toe of low marsh, repair damaged sidewalk, add supplemental granite riprap	
e. Are the proposed activities maintenance of an existing project, new work, or both?	Both repairs and new erosion control structures
f. What is the approximate total disturbed land area resulting from the proposed project?	151,575 ☒Sq.Ft or ☐Acres
g. Will the proposed project encroach on any public easement, public accessway or other area that the public has established use of?	☒Yes ☐No ☐NA
h. Describe location and type of existing and proposed discharges to waters of the state. Stormwater runoff from the existing bridge will be diffused with the proposed riprap and living shoreline into adjacent marsh and White Oak River.	
i. Will wastewater or stormwater be discharged into a wetland?	☒Yes ☐No ☐NA
If yes, will this discharged water be of the same salinity as the receiving water?	☐Yes ☒No ☐NA
j. Is there any mitigation proposed? If yes, attach a mitigation proposal.	☒Yes ☐No ☐NA

<Form continues on back>

6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

a. A project narrative.

b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.

c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.

d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.

e. The appropriate application fee. Check or money order made payable to DENR.

f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.

Name See attached letters	**Phone No.**
Address	
Name	Phone No.
Address	
Name	**Phone No.**
Address	

g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee, and issuing dates.

SAW-2020-00406 Nationwide Permit 6, USACE, 3/11/2020

h. Signed consultant or agent authorization form, if applicable.

i. Wetland delineation, if necessary.

j. A signed AEC hazard notice for projects in oceanfront and inlet areas. *(Must be signed by property owner)*

k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

Date 1/28/2022 Print Name Philip S. Harris, III, P.E., C.P.M.

Signature Mark C. Rl III for

Please indicate application attachments pertaining to your proposed project.

☒DCM MP-2 Excavation and Fill Information
☐DCM MP-3 Upland Development
☐DCM MP-4 Structures Information
☐DCM MP-5 Bridges and Culverts

Form DCM MP-2

EXCAVATION and FILL

(Except for 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.

Describe below the purpose of proposed excavation and/or fill activities. **All values should be given in feet.**

	Access Channel (NLW or NWL)	Canal	Boat Basin	Boat Ramp	Rock Groin	Rock Breakwater	Other (excluding shoreline stabilization)
Length		830				830	
Width		15				35	
Avg. Existing Depth		1			NA	NA	
Final Project Depth		0			NA	NA	

1. EXCAVATION

☐ *This section not applicable*

a. Amount of material to be excavated from below NHW or NWL in cubic yards.

297 CY

b. Type of material to be excavated.

sand

c. (i) Does the area to be excavated include 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:

Excavation needed to set the rock sill. Excavation of 6" at base of ~~each granite rock sill.~~

d. High-ground excavation in cubic yards.

none

2. DISPOSAL OF EXCAVATED MATERIAL

☐ *This section not applicable*

a. Location of disposal area.

We will be re-using the sand material to create the low & high marsh fringe.

b. Dimensions of disposal area.

c. (i) Do you claim title to disposal area?

☐Yes ☐No ☒NA

(ii) If no, attach a letter granting permission from the owner.

d. (i) Will a disposal area be available for future maintenance?

☐Yes ☐No ☒NA

(ii) If yes, where?

e. (i) Does the disposal area include any 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 disposal in these areas:

f. (i) Does the disposal include any area in the water?

☐Yes ☐No ☒NA

(ii) If yes, how much water area is affected?

3. SHORELINE STABILIZATION

☐ *This section not applicable*

(If development is a wood groin, use MP-4 – Structures)

a. Type of shoreline stabilization:
☐Bulkhead ☒Riprap ☒Breakwater/Sill ☒Other: Oyster Structure

b. Length: 830
Width: 85

c. Average distance waterward of NHW or NWL: 45 ft

d. Maximum distance waterward of NHW or NWL: 70 ft

e. Type of stabilization material:
Marsh fringe, Rock sill, Oyster structure

f. (i) Has there been shoreline erosion during preceding 12 months?
☒Yes ☐No ☐NA
(ii) If yes, state amount of erosion and source of erosion amount information.
Generalized instability along the top and toe of the embankment. The instability along the top of bank isi due to storm surges from the south overtopping the road, which has resulted in the failure of the sidewalk in several locations. The toe of the bank has eroded due to wave and wake action, which is amplified by the depth of water immediately offshore.

g. Number of square feet of fill to be placed below water level.
Bulkhead backfill 18731 sqft Riprap _____
Breakwater/Sill 16117 sqft Other 4356 sqft

h. Type of fill material.
Stone (primarily castle hayne limestone and granite rip rap) to construct the sill, sand backfill to create the high & low marsh fringe areas, and oyster structures for promoting the recruitement of oysters.

i. Source of fill material.
To be determined by contractor

4. OTHER FILL ACTIVITIES

☒ *This section not applicable*

(Excluding Shoreline Stabilization)

a. (i) Will fill material be brought to the site? ☐Yes ☐No ☐NA
If yes,
(ii) Amount of material to be placed in the water _____
(iii) Dimensions of fill area _____
(iv) Purpose of fill

b. (i) Will fill material be placed in 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 fill in these areas:

5. GENERAL

a. How will excavated or fill material be kept on site and erosion controlled?
The project installs a living shoreline and repairs riprap to control erosion

b. What type of construction equipment will be used (e.g., dragline, backhoe, or hydraulic dredge)?
Excavators, dump trucks

c. (i) Will navigational aids be required as a result of the project?
☐Yes ☒No ☐NA
(ii) If yes, explain what type and how they will be implemented.

d. (i) Will wetlands be crossed in transporting equipment to project site? ☒Yes ☐No ☐NA
(ii) If yes, explain steps that will be taken to avoid or minimize environmental impacts.
Utilize a temporary trestle bridge while instaling living sill and tidal marsh to minimize impacts to existing environment

1/28/2022

Date

M-540A

Project Name

Philip S. Harris, III, P.E., C.P.M.

Applicant Name

for Mark C. Rik III

Applicant Signature

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh ES Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726
March 4, 2020

Philip S. Harris III, P.E.
NC Department of Transportation
Environmental Analysis Unit
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

This letter is in response to your letter of February 28, 2020 which provided the U.S. Fish and Wildlife Service (Service) with the biological conclusion of the North Carolina Department of Transportation that the proposed geotechnical borings associated with the living shoreline project on NC 24 in Onslow and Carteret Counties (STIP No. M-0540A) may affect, but are not likely to adversely affect the federally threatened piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), and roseate tern (*Sterna dougallii dougallii*). The following response is provided in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

Although foraging habitat is present at the project site at low tide for the aforementioned species, the probability of any being present at the time of work is low. Even if the species are present, the level of disturbance will likely be discountable. Based on available information, the Service concurs with your conclusion that the proposed action may affect, but is not likely to adversely affect the piping plover, red knot, and roseate tern. We believe that the requirements of Section 7(a)(2) of the ESA have been satisfied. We remind you that obligations under Section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Gary Jordan

for Pete Benjamin
Field Supervisor

Electronic copy:

Chris Rivenbark, NCDOT, Raleigh, NC
Jason Dilday, NCDOT, Raleigh, NC
Brad Shaver, USACE, Wilmington, NC
Travis Wilson, NCWRC, Creedmoor, NC

Submitted 1/28/2022

09/08/99

TIP PROJECT: M-0540A

CONTRACT: _____

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	M-0540A	1	

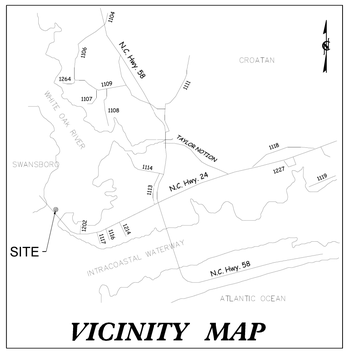
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

PLANS FOR NC-24 RESILIENCY AND LIVING SHORELINES ONSLOW COUNTY

LOCATION: NC-24 CAUSEWAY BETWEEN THE SWANSBORO BRIDGES AND CEDAR POINT

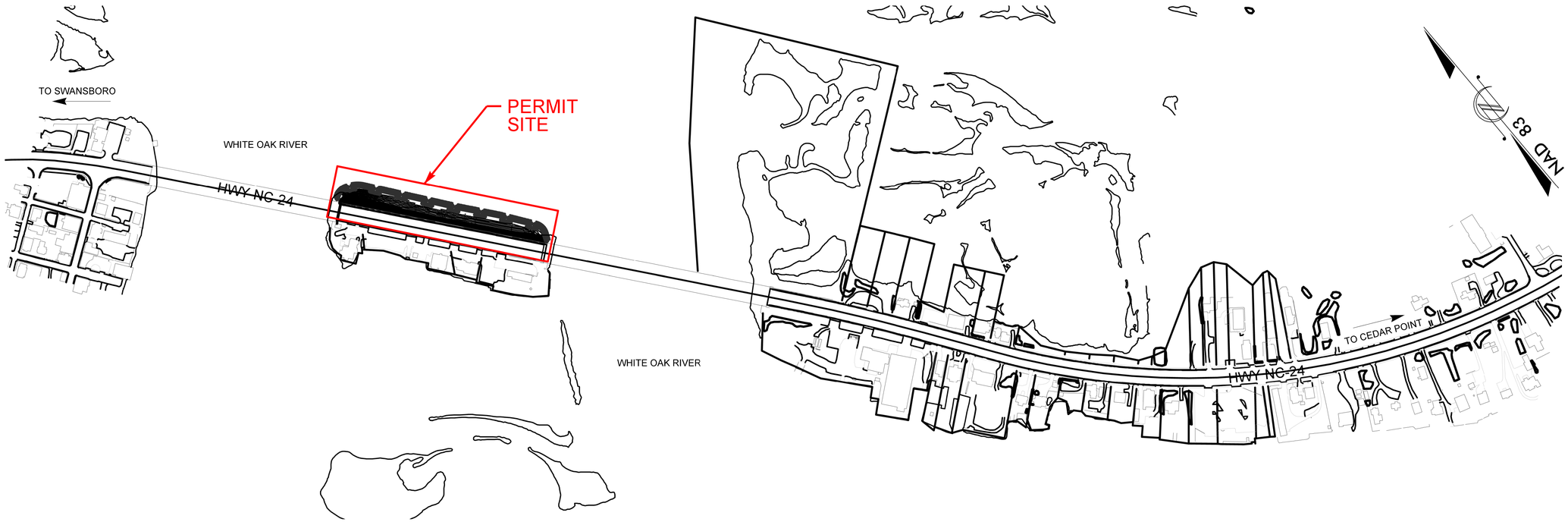
TYPE OF WORK: SHORELINE STABILIZATION, ENVIRONMENTAL RESILIENCY

PERMIT DRAWING
SHEET 1 OF 10



VICINITY MAP

WETLAND AND SURFACE WATER IMPACTS PERMIT



INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

40 20 0 40 80
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

DESIGN DATA

PROJECT LENGTH

CAUSEWAY SITE ±830 LF

Prepared In the Office of:

SWCA ENVIRONMENTAL CONSULTANTS

SWCA Environmental Consultants
201 Chatham Street, Suite 3
Sanford, NC 27330
(p) 919.292.2200
www.swca.com

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
N/A

LETTING DATE:
XX/XX/XXX

PROJECT ENGINEER

P.E.
SIGNATURE:

Prepared for:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

Submitted 1/28/2022

5/14/99

LEGEND

- PROPOSED SILL
- PROPOSED OYSTER STRUCTURE
- PROPOSED RIPRAP
- PROPOSED GEOTEXTILE
- EXISTING MARSH

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OVERALL SITE PLAN

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	5

PROJECT ENGINEER

APPROVED

DATE

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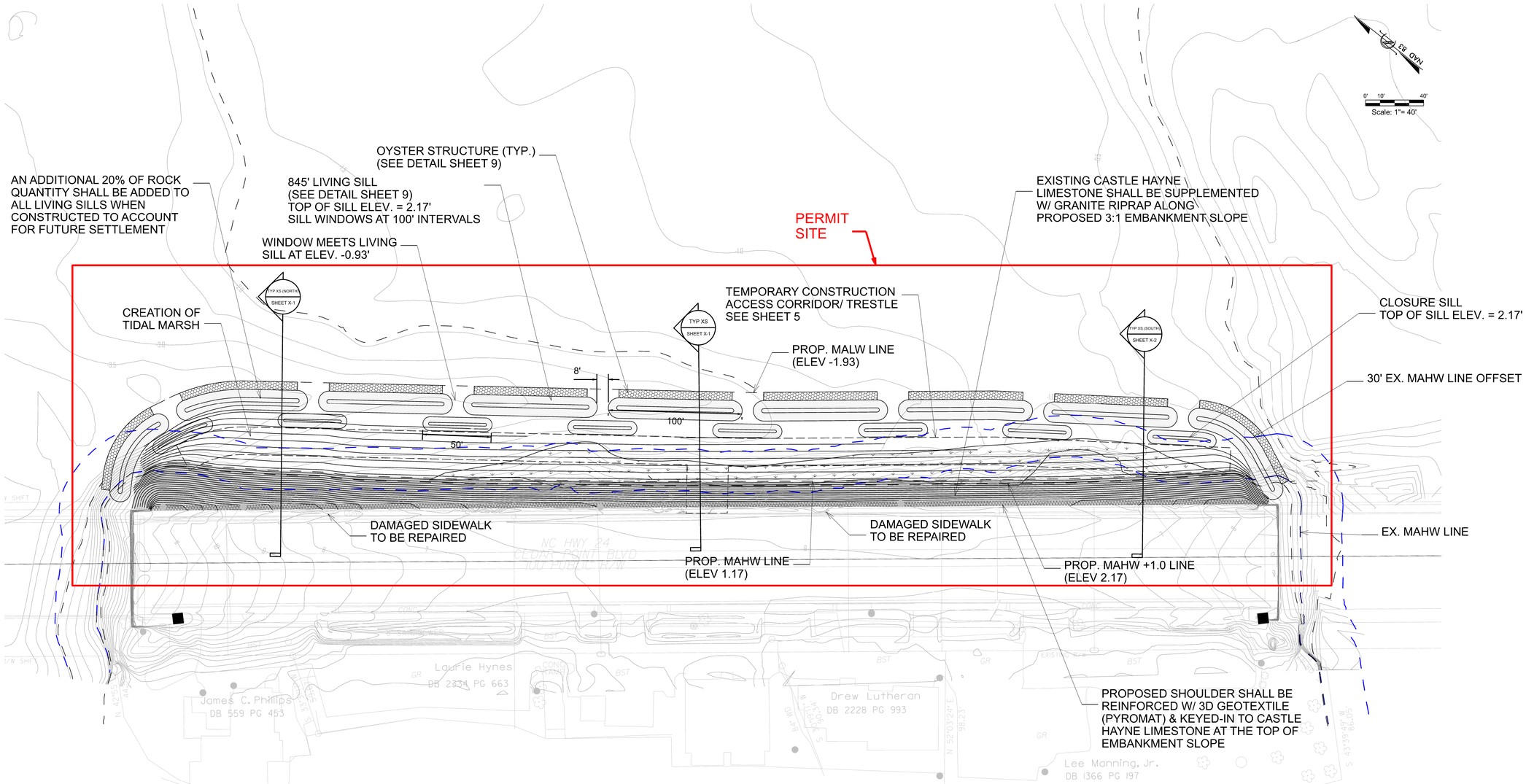
PERMIT DRAWING
SHEET 2 OF 10



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1/4/2022
Legend\Legend1

Submitted 1/28/2022

5/14/99

LEGEND

- PROPOSED SILL
- PROPOSED OYSTER STRUCTURE
- PROPOSED RIPRAP
- PROPOSED GEOTEXTILE
- EXISTING MARSH

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SITE PLAN - NORTH

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	5

PROJECT ENGINEER

APPROVED

DATE

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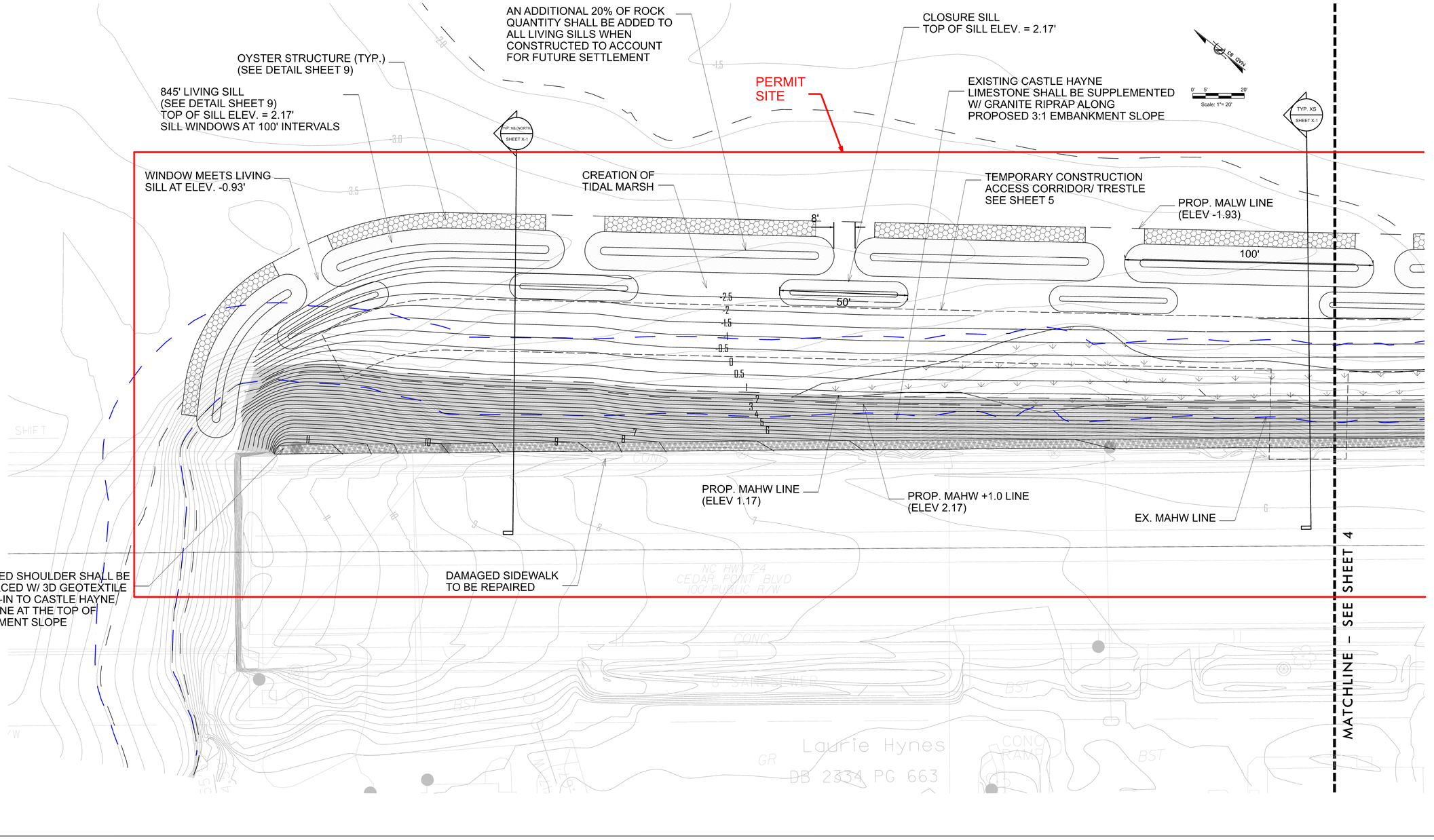
PERMIT DRAWING
SHEET 3 OF 10



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1/4/2022
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Submitted 1/28/2022

5/14/99

LEGEND

- PROPOSED SILL
- PROPOSED OYSTER STRUCTURE
- PROPOSED RIPRAP
- PROPOSED GEOTEXTILE
- EXISTING MARSH

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SITE PLAN - SOUTH

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	6

PROJECT ENGINEER

APPROVED

DATE

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PERMIT DRAWING
SHEET 4 OF 10

OYSTER STRUCTURE (TYP.)
(SEE DETAIL SHEET 9)

845' LIVING SILL
(SEE DETAIL SHEET 9)
TOP OF SILL ELEV. = 2.17'
SILL WINDOWS AT 100' INTERVALS

WINDOW MEETS LIVING
SILL AT ELEV. -0.93'

AN ADDITIONAL 20% OF ROCK QUANTITY SHALL BE ADDED TO ALL LIVING SILLS WHEN CONSTRUCTED TO ACCOUNT FOR FUTURE SETTLEMENT

PERMIT SITE

PROP. MALW LINE
(ELEV -1.93)

CREATION OF
TIDAL MARSH

TEMPORARY CONSTRUCTION
ACCESS CORRIDOR/ TRESTLE
SEE SHEET 5

CLOSURE SILL
TOP OF SILL ELEV. = 2.17'

8'

100'

50'

TYP. XS (SOUTH)
SHEET X-2

NAD 83 (NSRS)

0' 5' 20'
Scale: 1"= 20'

MATCHLINE – SEE SHEET 3

DAMAGED SIDEWALK
TO BE REPAIRED

PROP. MAHW +1.0 LINE
(ELEV 2.17)

PROP. MAHW LINE
(ELEV 1.17)

EX. MAHW LINE

PROPOSED SHOULDER SHALL BE REINFORCED W/ 3D GEOTEXTILE & KEYED-IN TO CASTLE HAYNE LIMESTONE AT THE TOP OF EMBANKMENT SLOPE

EXISTING CASTLE HAYNE
LIMESTONE SHALL BE SUPPLEMENTED
W/ GRANITE RIPRAP ALONG
PROPOSED 3:1 EMBANKMENT SLOPE

NC HWY 24
CEDAR POINT BLVD
100' PUBLIC R/W

EXISTING R/W

BST GR BST

1/4/2022
P - Documents\NCDOT_NC24\Current Drawings\dgn\Permit\Site 3\M540A_HYD_PSH-2.dgn
jscroggins

Submitted 1/28/2022

5/14/99

LEGEND

- PROPOSED SILL
- PROPOSED OYSTER STRUCTURE
- PROPOSED RIPRAP
- PROPOSED GEOTEXTILE
- EXISTING MARSH
- TEMPORARY CONSTRUCTION ACCESS CORRIDOR

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CONSTRUCTION ACCESS PLAN

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	5

PROJECT ENGINEER

APPROVED

DATE

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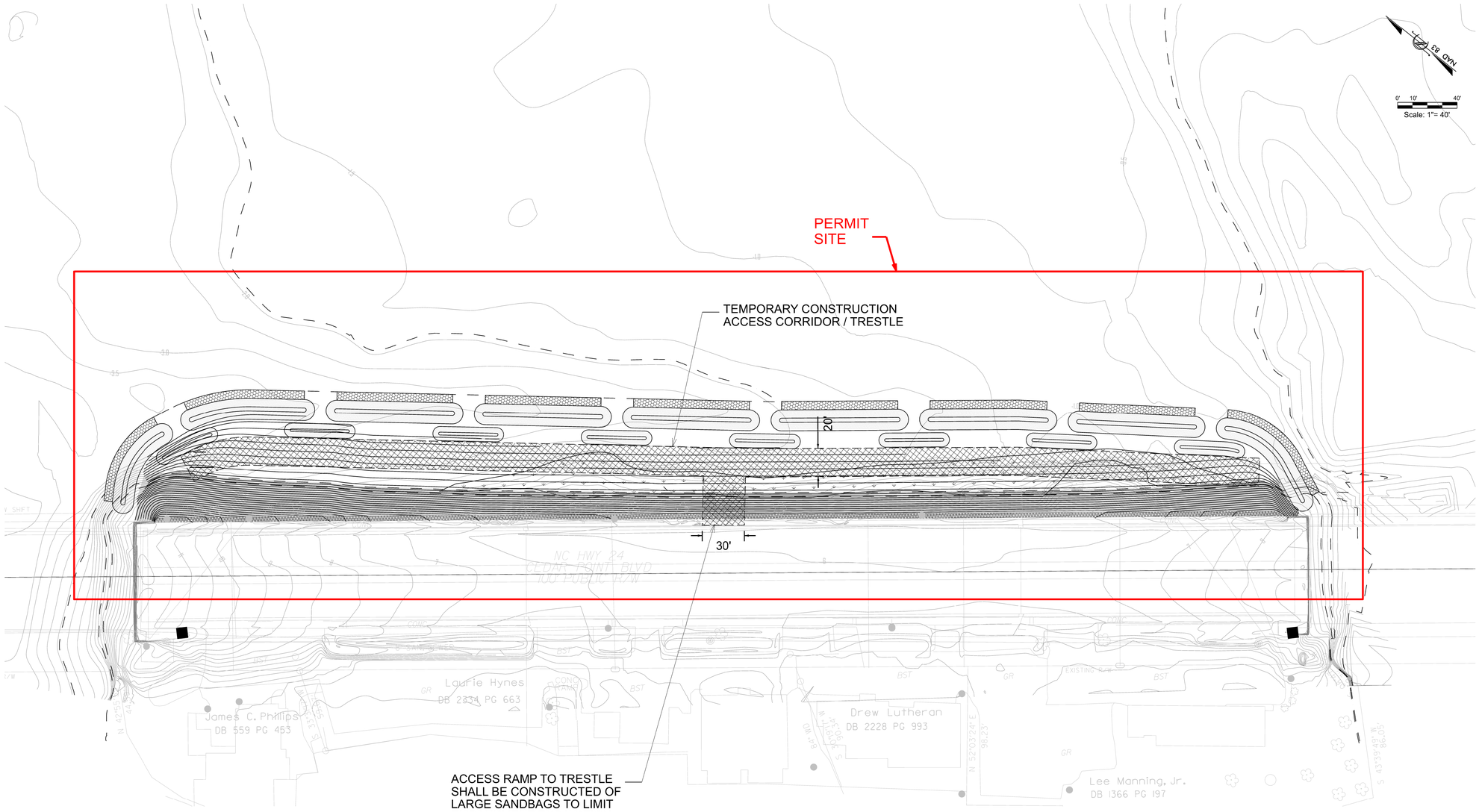
PERMIT DRAWING
SHEET 5 OF 10



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1/4/2022
Legend(1).dgn

Submitted 1/28/2022

5/14/99

LEGEND

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

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SITE IMPACTS PLAN

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	5

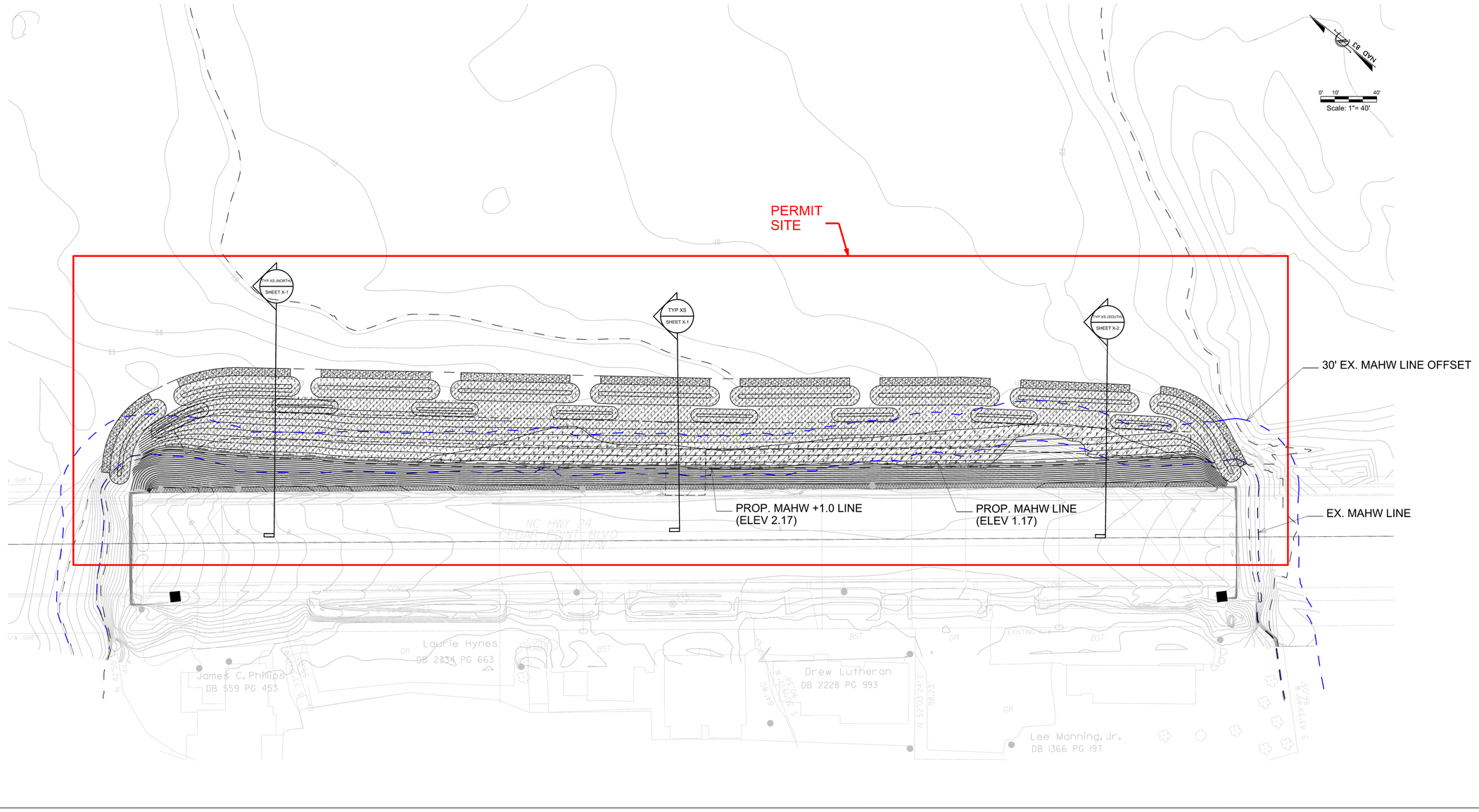
PROJECT ENGINEER

APPROVED

DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 6 OF 10



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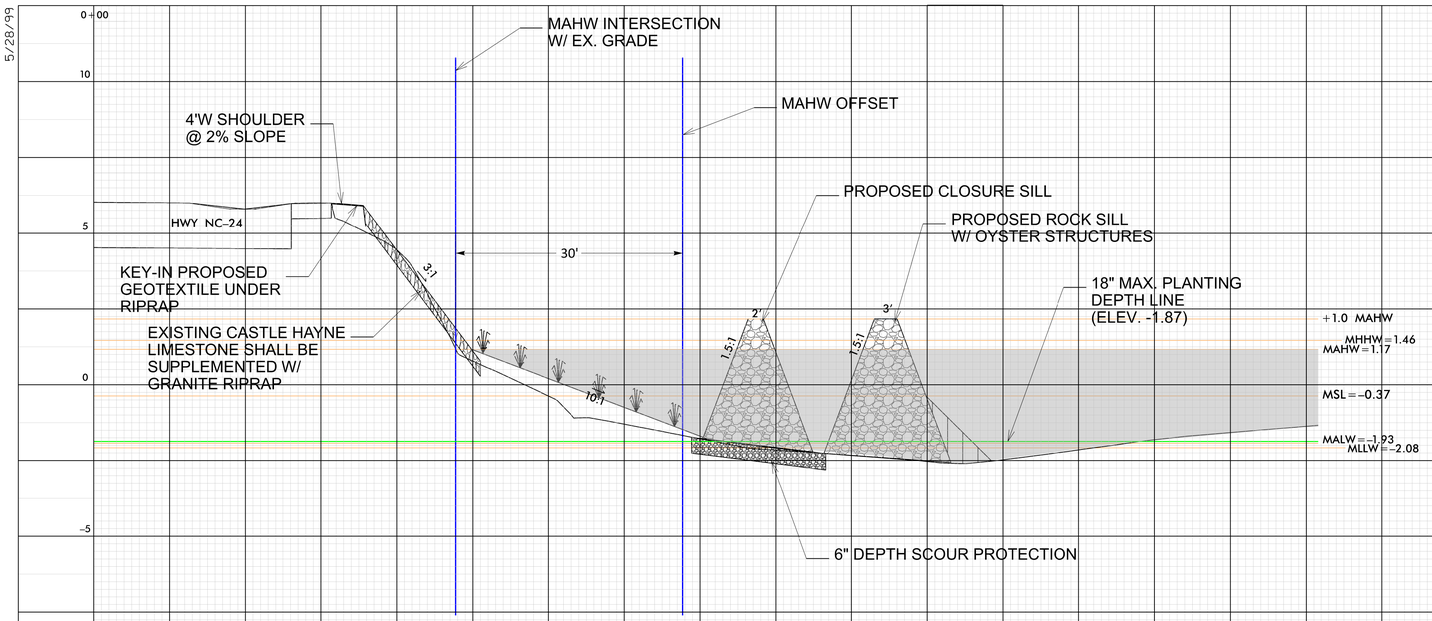
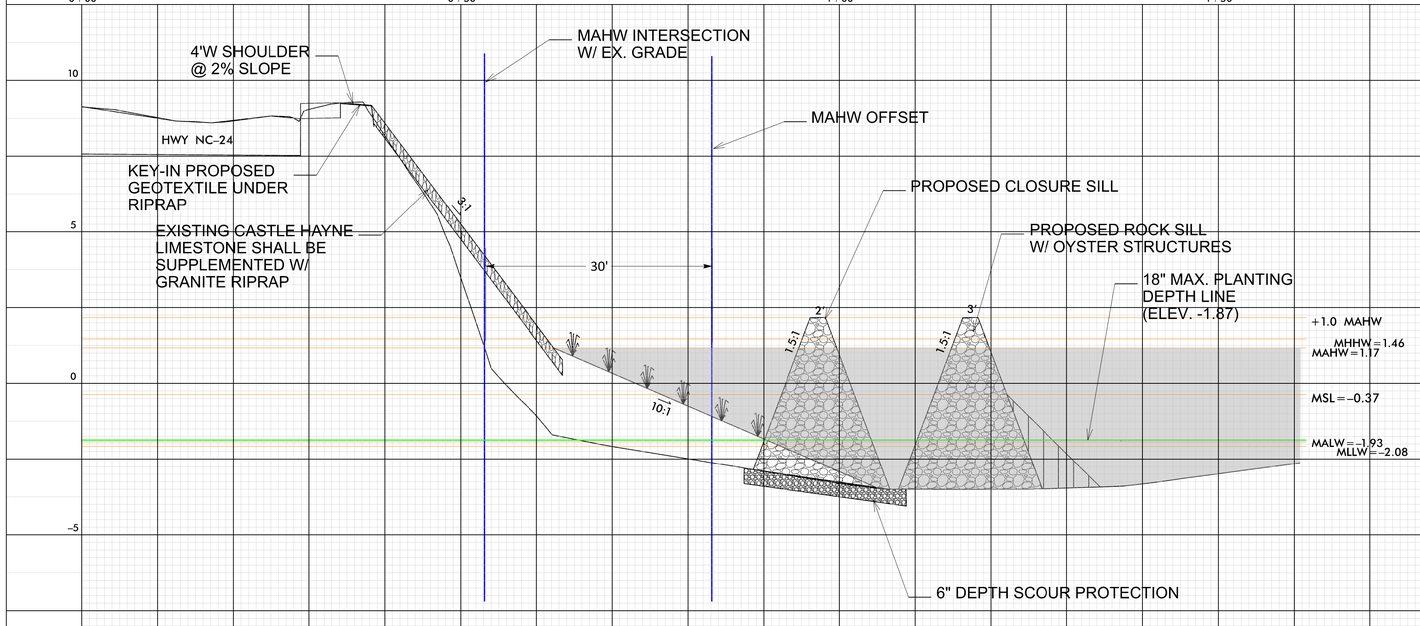
1/4/2022
Legend\Level1

Submitted 1/28/2022

5/28/99



TYPICAL CROSS SECTION



TYPICAL CROSS SECTION (NORTH)

NOTES:
1. MAX. WATER DEPTH FOR WETLAND PLANTINGS (SPARTINA) IS 18 INCHES.
2. AN ADDITIONAL 20% OF ROCK QUANTITY SHALL BE ADDED TO ALL LIVING SILLS WHEN CONSTRUCTED TO ACCOUNT FOR FUTURE SETTLEMENT.

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	X-1

PROJECT ENGINEER

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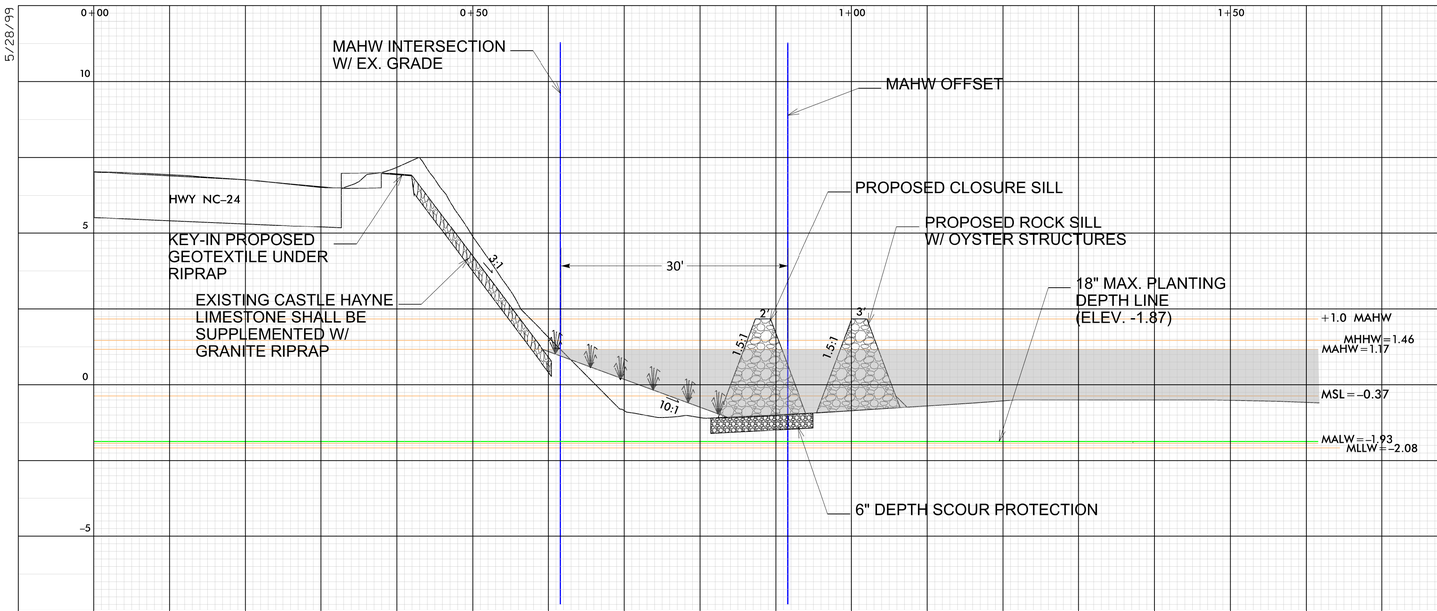
PERMIT DRAWING
SHEET 7 OF 10

Submitted 1/28/2022

5/28/99



TYPICAL CROSS SECTION (SOUTH)

NOTES:
1. MAX. WATER DEPTH FOR WETLAND PLANTINGS (SPARTINA) IS 18 INCHES.
2. AN ADDITIONAL 20% OF ROCK QUANTITY SHALL BE ADDED TO ALL LIVING SILLS WHEN CONSTRUCTED TO ACCOUNT FOR FUTURE SETTLEMENT.

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	X-2

PROJECT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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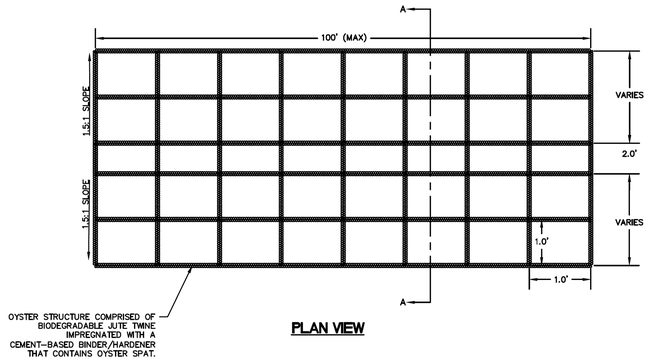
PERMIT DRAWING
SHEET 8 OF 10

Submitted 1/28/2022

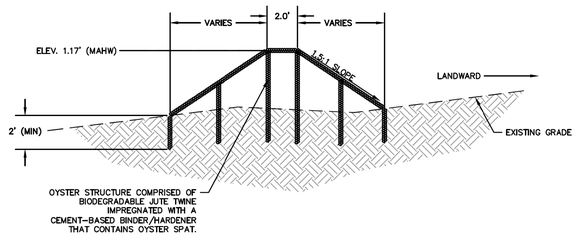
12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
M-0540A	D-1

PERMIT DRAWING
SHEET 9 OF 10



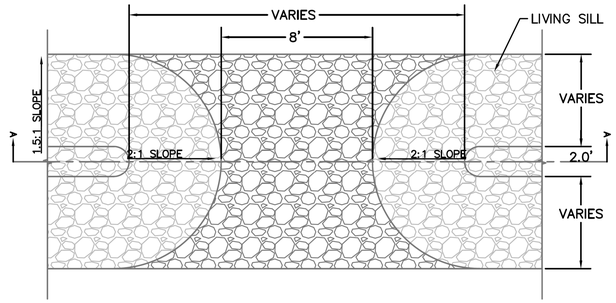
PLAN VIEW



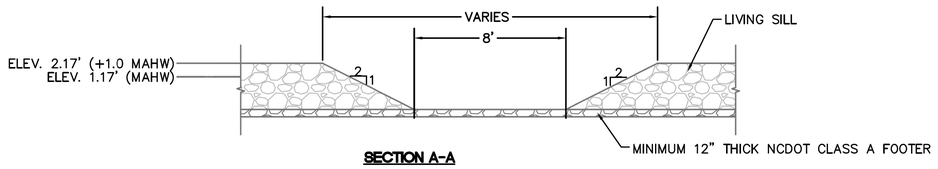
SECTION A-A

NOTE: ALTERNATIVE OYSTER STRUCTURE MAY BE USED WITH ENGINEER'S APPROVAL.

1 OYSTER STRUCTURE
Not to Scale



PLAN VIEW

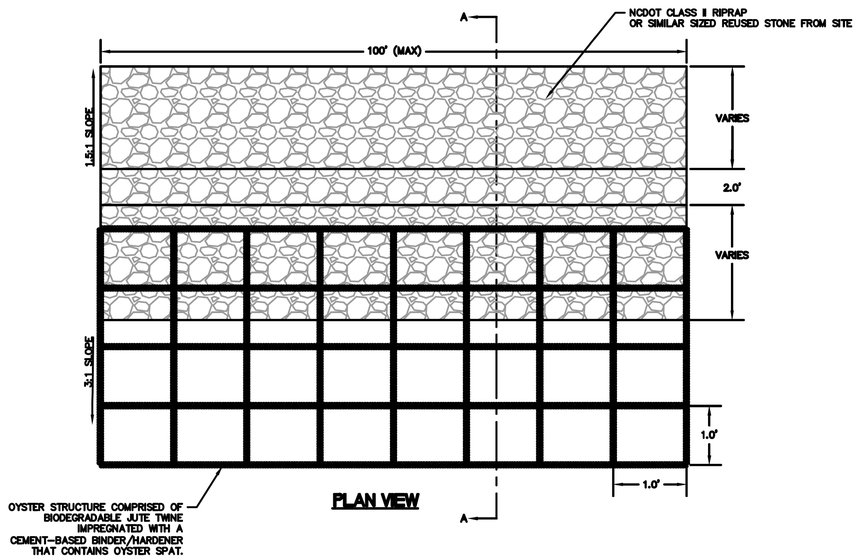


SECTION A-A

NOTES:

1. LIVING SILL WINDOWS SHALL BE PLACED AT A MINIMUM EVERY 100 LINEAR FEET ALONG THE LIVING SILL.
2. THE INTENT OF THIS DETAIL IS TO SHOW THE GENERAL REQUIREMENTS OF FOR CONSTRUCTING THE LIVING SILL. THE OVERALL DIMENSIONS OF THE SILL WILL VARY DEPENDING ON THE UNDERLYING SOIL CONDITIONS. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR BORING INFORMATION.

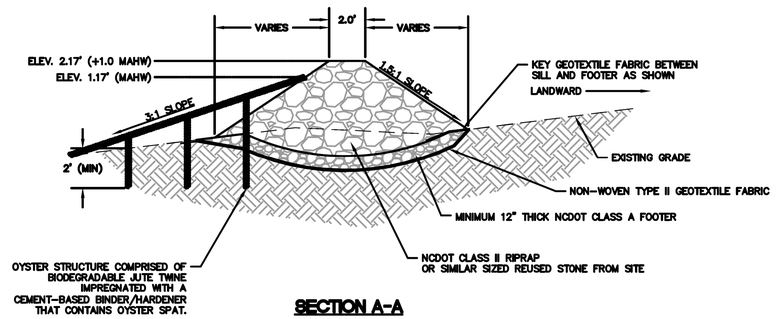
3 LIVING SILL WINDOW
Not to Scale



PLAN VIEW

NOTES:

1. TOP LAYER OF STONE ON SILL (MINIMUM 24") SHALL BE NCDOT CLASS II RIPRAP AND NOT REUSED STONE FROM SITE.
2. THE INTENT OF THIS DETAIL IS TO SHOW THE GENERAL REQUIREMENTS OF FOR CONSTRUCTING THE LIVING SILL. THE OVERALL DIMENSIONS OF THE SILL WILL VARY DEPENDING ON THE UNDERLYING SOIL CONDITIONS. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR BORING INFORMATION.



SECTION A-A

2 LIVING SILL
Not to Scale

Submitted 1/28/2022

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
3		Rock Sill						0.37				
		Oyster Structure						0.10				
		Fill	0.22					0.43				
TOTALS*:			**0.22**	**0.00**	**0.00**	**0.00**	**0.00**	**0.90**	**0.00**	**0**	**0**	**0**

*Rounded totals are sum of actual impacts

NOTES:

1. OYSTER STRUCTURES TO BE HAND PLACED WITHOUT THE USE OF HEAVY MACHINERY TO MINIMIZE IMPACTS TO THE EXISTING ENVIRONMENT.
2. ALL PROPOSED STABILIZATION WORK ON EMBANKMENT TO BE COMPLETED FROM THE NC-24 RIGHT-OF-WAY TO MINIMIZE IMPACTS TO THE EXISTING ENVIRONMENT.
3. (SITE 3) ACCESS FOR CONSTRUCTION OF THE PROPOSED LIVING SILL AND TIDAL LOW MARSH TO UTILIZE A TEMPORARY TRESTLE BRIDGE IN AN EFFORT TO MINIMIZE IMPACTS TO THE EXISTING ENVIRONMENT.

ımpacts to coastal marsh equal 9,583 sqft.

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
4/27/2021
CARTERET/ONSLOW
M-0540A
WBS #N/A