



**Maryland**  
Department of  
the Environment

Wes Moore, Governor  
Aruna Miller, Lt. Governor

Serena McIlwain, Secretary Designate  
Suzanne E. Dorsey, Deputy Secretary

January 19, 2023

Maryland Dept of Natural Resources  
c/o KCI Technologies Inc  
Attention: Chris Shipley  
936 Ridgebrook Road  
Sparks, MD 21152

Via email: [Chris.Shipley@kci.com](mailto:Chris.Shipley@kci.com)

Re: Agency Interest Number: 175012  
Tracking Number: 202260695  
Tidal Authorization Number: 22-WQC-0046

Maryland Dept of Natural Resources:

Your project did not qualify for approval under the Maryland State Programmatic General Permit (MDSPGP); therefore, a separate review and issuance of the federal permit will be required by the U.S. Army Corps of Engineers. The federal permit is not attached.

Additionally, your project required a Wetlands License to be approved and issued by the Maryland Board of Public Works (BPW). The Wetlands License will be sent to you by BPW's Wetlands Administrator.

A project that does not qualify for approval under the MDSPGP requires an individual Water Quality Certification (WQC) to be issued by the Maryland Department of the Environment, which is attached. Please take a moment to read and review your WQC to ensure that you understand the limits of the authorized work and all of the general and special conditions.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please contact Robert M Simmons at [robertm.simmons@maryland.gov](mailto:robertm.simmons@maryland.gov) or 410-901-4044 with any questions.

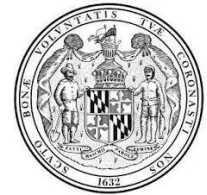
Sincerely,

A handwritten signature in black ink that reads "Tammy K. Roberson".

Tammy K. Roberson, Chief  
Wetlands & Waterways Protection Program  
Tidal Wetlands Division



STATE OF MARYLAND  
DEPARTMENT OF THE ENVIRONMENT  
WATER AND SCIENCE ADMINISTRATION  
WATER QUALITY CERTIFICATION



**22-WQC-0046**

EFFECTIVE DATE: **January 19, 2023**  
CERTIFICATION HOLDER: **Maryland Dept of Natural Resources**  
ADDRESS: **580 Taylor Avenue**  
**Annapolis, MD 21401-8239**  
PROJECT LOCATION: **Love Point State Park**  
**400 Pier Avenue**  
**Stevensville, MD 21666**

**UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH § 9-313 THROUGH § 9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER AND SCIENCE ADMINISTRATION HAS DETERMINED THAT THE REGULATED ACTIVITIES DESCRIBED IN THE REQUEST FOR CERTIFICATION FOR THE PROPOSED MARINA RECONFIGURATION AND AS DESCRIBED IN THE ATTACHED PLAN SHEETS DATED SEPTEMBER 20, 2021 AND ANY SUBSEQUENT MODIFICATIONS APPROVED BY THE DEPARTMENT WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION.**

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS. THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

## **PROJECT DESCRIPTION**

- 1) Remove, cut, or demolish an existing bulkhead and construct 210 linear feet of revetment a maximum of 8.6' channelward of the mean high water line;
- 2) Construct 526 linear feet of bulkhead a maximum of 18 inches channelward of the mean high water line;
- 3) Remove, cut, or demolish an existing bulkhead and construct 194 linear feet of bulkhead a max. of 18-inches channelward of an existing deteriorated bulkhead;
- 4) Remove two in-water structures and construct three 4.5-foot wide by 18.5-foot long finger piers and emplace fifteen mooring piles a maximum of 43 feet channelward of the mean high water line;

- 5) Construct a 20-foot wide by 37.5-foot long boat ramp with two wing walls a maximum of 20 feet channelward of the mean high water line;
- 6) Construct a 10-foot wide by 58-foot long pier with a 3.5-foot wide by 24-foot long gangway, one 6-foot wide by 30-foot long finger pier, one 15-foot wide by 30-foot long platform a maximum of 77 feet channelward of the mean high water line;
- 7) Mechanically maintenance dredge an irregular shaped 1,960 square foot area to a depth of 5.5 at mean low water and emplace 200 cubic yards of dredge material on site for dewatering to be beneficially reused as fill landward of the constructed bulkheads.

## **GENERAL CONDITIONS**

1. This Certification does not obviate the need to obtain required authorizations or approvals from other State, federal or local agencies as required by law.
2. All additional authorizations or approvals, including self-certifying General Permits issued by the Department, shall be obtained and all conditions shall be completed in compliance with such authorizations.
3. The proposed project shall be constructed in accordance with the approved final plan by the Department, or, if Department approval is not required, the plan approved by the U.S. Army Corps of Engineers, and its approved revisions.
4. All fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.
5. This Certification does not authorize any injury to private property, any invasion of rights, or any infringement of federal, state, or local laws or regulations.
6. Authorized representatives of the Department shall be provided access to the site of authorized activities during normal business hours to conduct inspections and evaluations of the operations and records necessary to assure compliance with this Certification.
7. Authorized work under this Certification shall be performed in accordance with the required Soil Erosion and Sediment Control Plan as approved by the Maryland Department of the Environment.
8. No stockpiles of any material shall be placed in Waters of the U.S. or state or private tidal wetlands.
9. Temporary construction trailers or structures, staging areas and stockpiles shall not be located within tidal wetlands, nontidal wetlands, nontidal wetlands buffers, or the 100-year floodplain unless specifically included on the Approved Plan.
10. This Certification is valid for the project identified herein and the associated U.S. Army Corps of Engineers authorization NAB-2022-60695 until such time that it expires or is not administratively extended.

## **SPECIAL CONDITIONS**

1. The Certificate Holder shall notify the Maryland Department of the Environment, Water and Science Administration, Compliance Program at least 10 days before starting the authorized activities at (410) 537-3510.
2. All water quality-related performance standards and conditions required by the Department in any state issued authorization for activities in tidal wetlands, nontidal waterways, their 100-year floodplains, nontidal wetland buffers, or nontidal wetland expanded buffers to ensure that any discharges will not result in a failure to comply with water quality standards in COMAR 26.08.02. or other water quality requirements of state law or regulation shall be met.
3. All Critical Area requirements shall be followed and all necessary authorizations from the Critical Area Commission (“Commission”) shall be obtained. This Certificate does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. “Disturbance” in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from the Commission in the form of a Buffer Management Plan.
4. All work performed under this Water Quality Certificate shall be conducted by a marine contractor licensed by the Marine Contractors Licensing Board (MCLB) in accordance with Title 17 of the Environment Article of Annotated Code of Maryland. Licensing by MCLB shall occur prior to the beginning of construction activities. A list of licensed marine contractors may be obtained by contacting the MCLB at 410-537- 3249, by e-mail at [MDE.MCLB@maryland.gov](mailto:MDE.MCLB@maryland.gov) or by accessing the Maryland Department of the Environment, Environmental Boards webpage.
5. The Certification Holder shall not perform any dredging from April 15<sup>th</sup> through October 15<sup>th</sup> of any year due to submerged aquatic vegetation restrictions unless a turbidity curtain is deployed to fully protect the SAV bed.
6. The Certification Holder shall not perform any construction from November 15<sup>th</sup> through March 1<sup>st</sup> of any year to protect wintering waterfowl. The proposed project site is located in a Historic Waterfowl Concentration Area.
7. The Certification Holder shall perform all works in accordance with the required approved Soil Erosion and Sediment Control Plan.
8. The Certification Holder shall complete construction of the bulkhead prior to filling behind the bulkhead. The bulkhead shall be designed and constructed to prevent the loss of fill material to waters of the State of Maryland. Only clean fill, which is free of organic, toxic, contaminated, or deleterious materials, shall be used.
9. The Certification Holder shall design and construct the stone revetment to prevent the loss of fill material to waters of the State of Maryland.
10. The Certification Holder shall not use asphalt rubble in the revetment. Filter cloth shall be placed between the riprap and the soil. Prior to emplacement of the revetment, all rebar is to be cut off flush with the concrete. After emplacement of the revetment, any rebar exposed as a result of the concrete

breaking during the emplacement is to be cut flush with the concrete. Except for the larger material placed along the leading edge of the revetment, the concrete shall be broken prior to emplacement so that random sized interlocking pieces are formed.

11. The Certification Holder shall stake the dredge area and receive approval from the Water and Science Administration's, Compliance Division prior to the start of dredging.
12. The Certification Holder shall conduct a post dredge bathymetric survey and forward to the Water and Science Administration, Tidal Wetlands Division within 45 days after the termination of any phase of dredging.
13. The Certification Holder shall dispose of dredged material only at the dredge disposal site approved by this Wetland License. The Licensee shall submit an application for modification of the License to MDE for approval of any dredge disposal site not authorized within this License.
14. The Certificate Holder, to reduce any potential adverse effects to aquatic resources, shall construct and maintain a cofferdam around and channelward of the boat ramp area prior to any excavation and backfilling along the shoreline through completion of any excavation and backfilling along the shoreline.

## **STATEMENTS OF NECESSITY AND CITATIONS**

### CITATIONS AND STATEMENTS OF NECESSITY

#### 1) General Authorities; Need for Other Permits and Authorizations

##### a) General Conditions 1, 2, 10; Special Condition 3

Statement of Necessity for Condition: The condition is necessary to ensure that water quality standards are met under unique circumstances for discharges which may otherwise qualify under the certified Nationwide Permits and to maintain designated uses of waters.

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10G(3); COMAR 26.23.02.06; COMAR 26.17.01; COMAR 26.23; COMAR 26.24

##### b) General Condition 3

Statement of Necessity for Condition: The condition is necessary to ensure that water quality standards are met under unique circumstances for discharges which may otherwise qualify under the terms of the federal authorization and to maintain designated uses of waters. The Corps of Engineers authorization and plans include details about amount and location of discharges, as well as other conditions for reducing adverse effects to water quality, which ultimately supports maintaining designated uses. The Certification conditions and decision are based upon based on the details of the Corps of Engineers authorization and plans.

Citation: COMAR 26.08.02.01E(2)

c) General Condition 5

Statement of Necessity for Condition: The condition is necessary to clarify the scope of this certification to ensure compliance with water quality regulations, without limiting restrictions through other requirements.

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.23.02.06; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

2) Unauthorized or Incidental Discharges - General Conditions 4, 8, 9; Special Conditions 7, 8, 9, 10, 13, 14

Statement of Necessity for Condition: Fill or construction material within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

Citation: 26.08.02.03B(1)-B(2); COMAR 26.23; COMAR 26.24; COMAR 26.17.04

3) Inspections and Compliance - General Condition 6; Special Conditions 1, 11, 12

Statement of Necessity for Condition: Conditions of certification involve precise actions to comply with water quality standards. Site inspection may be necessary to ensure that limits, methods, and other requirements are met to ensure that water quality standards are met and designated uses are maintained. These conditions are necessary to ensure that the activity was conducted, and project completed according to terms of the authorization/certification, while allowing for review of in-field modifications which may have resulted in discharges to ensure that water quality standards were met. Designated uses include support of estuarine and marine aquatic life and shellfish harvesting and for growth and propagation of fish, other aquatic life, and wildlife

Citation: Federal and state laws that authorize this condition include but are not limited to: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03B(1)(b); COMAR 26.08.02.03B(2); COMAR 26.23.02.06; COMAR 26.23; COMAR 26.24; COMAR 26.17.04

4) Erosion and Sediment Control – General Conditions 1, 2, 7; Special Condition 7

Statement of Necessity for Condition: Erosion and sediment control plans are necessary to ensure that sediment discharges from construction activities will not enter waters of the United States. Sediment discharges from earth disturbance or discharges at erosive rates within or

adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance

Citation: Env. Article, Title 4, Subtitle 1 COMAR 26.17.01; 26.08.02.03B(1)-B(2)

5) Performance Standards for Water Quality - Special Condition 2

Statement of Necessity for Condition: This condition is necessary to ensure that discharges will be conducted in a manner which does not violate water quality criteria nor interfere with designated uses.

Citation: COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2);

6) Licensed Marine Contractor - Special Condition 4

Statement of Necessity: Expertise for conducting certain activities is required to ensure that there is no violation of water quality standards nor interference with designated uses.

This condition is necessary to ensure that discharges will be conducted in a manner which does not violate water quality criteria nor interfere with designated uses.

Citation: COMAR 26.08.02.02B(2)- B(4); COMAR 26.08 02.03B(2)(d) – (e ); COMAR 26.08.02.03B(1)(b); 26.08.02.03B(2); COMAR 23.02.04.04

7) Time of Year Restriction for Conducting Activities – Special Conditions 5, 6

Statement of Necessity for Condition: The time of year restriction is necessary to maintain the designated use- support of estuarine and marine aquatic life and shellfish harvesting.

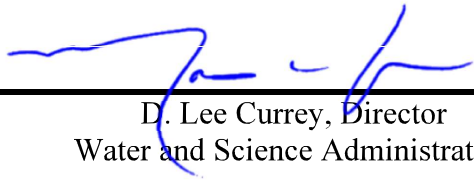
Citation: COMAR: 26.08.02.02B(1)(d); 26.08.02.02B(3); COMAR 26.08.02.02-1

8) Inadvertent Discharges – Special Condition 7

Statement of Necessity for Condition: Unauthorized discharges may enter regulated waters as result of activity or structural failure. A plan to address inadvertent discharges will prevent or address further violations of water quality standards and failure of water to meet designated uses, including uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

Citation COMAR 26.08.02.02B(1)d; COMAR 26.08.02.02B(3); COMAR 26.08.02.03B(1) and B(2); 26.08.02.01B(2); 26.08.02.02B(1)

**CERTIFICATION APPROVED**



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D. Lee Currey, Director  
Water and Science Administration

1/23/2023

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Date

Tracking Number: 202260695  
Agency Interest Number: 175012

Effective Date: **January 19, 2023**

Enclosure: Plan Sheets dated **October 26, 2022**

cc: WSA Inspection & Compliance Program  
U.S. Army Corps of Engineers





AERIAL PHOTO

SCALE: 1" = 200'

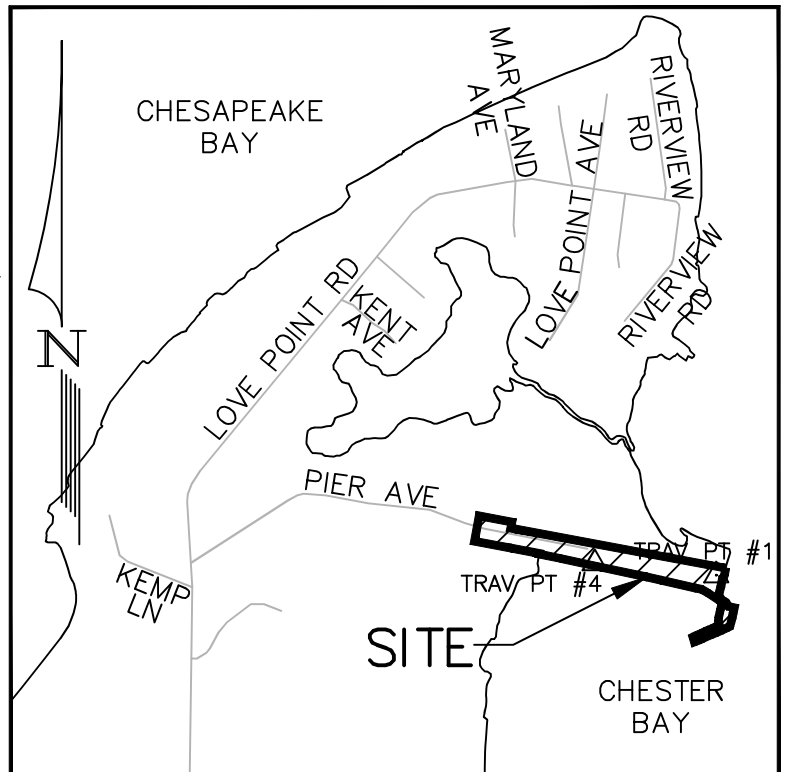


22-WQC-0046

**BENCHMARK**

TRAVERSE POINT #1  
 N. 497945.706  
 E. 1510772.584  
 REBAR AND CAP SET  
 ELEV. 3.60

TRAVERSE POINT #4  
 N. 498008.038  
 E. 1510140.408  
 MAG NAIL SET  
 ELEV. 3.74



VICINITY MAP  
 SCALE: 1" = 1000'

SHEET 1 OF 32



ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

DATE  
 10/26/2022

SCALE  
 AS SHOWN

DESIGNED BY  
 CTS

DRAWN BY  
 CTS

AERIAL PHOTO AND VICINITY  
 MAP  
 PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
 PHASE 1 MARINE IMPROVEMENT PROJECT  
 AT  
 LOVE POINT STATE PARK  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
 ANNAPOLIS, MD 21401

PLOTTED: \$DATE\$  
 BY: \$USERNAME\$  
 FILE: \$FILE\$

# LEGEND

EX. INDEX CONTOUR	— 10 —	— LOC —	LIMITS OF CONTRACT (LOC) ==
EX. INTERMEDIATE CONTOUR	— 4 —	— LOD —	LIMITS OF DISTURBANCE (LOD)
PROPERTY LINE	— — —	— IO —	PROPOSED MAJOR CONTOUR
EASEMENT LINE	— — —	4	PROPOSED MINOR CONTOUR ==
EX. ELECTRIC	— E —		PROPOSED STONE REVETMENT
EX. WOODS, BUSHES & SHRUB LINE			PROPOSED BULKHEAD ==
EX. BUILDING/CONC SLAB			PROPOSED PIER
EX. POWER POLE			PROPOSED PILE
EX. LIGHT POLE			PROPOSED DOLPHIN PILE
CRITICAL AREA BUFFER			PROPOSED BOAT RAMP
EX. STONE REVETMENT			PROPOSED TURBIDITY == CURTAIN/BARRIER
EX. PILE			PROPOSED STABILIZED == CONSTRUCTION ENTRANCE
EX. PIER			FILL REMOVAL FOR MITIGATION - APPROX 1,430 SF TO BE == RESTORED TO SHALLOW OPEN == WATER
EX. DOLPHIN PILE			MECHANICAL DREDGING, TO == ELEVATION -5.5 MAX. FOR NRP == BOAT CLEARANCE, APPROX 1,960 SF, 200 CY
FEMA FLOODPLAIN LINE AND DESIGNATION	— (ZONE X) — — (ZONE AE) —		
PROPOSED COFFERDAM	— * —		

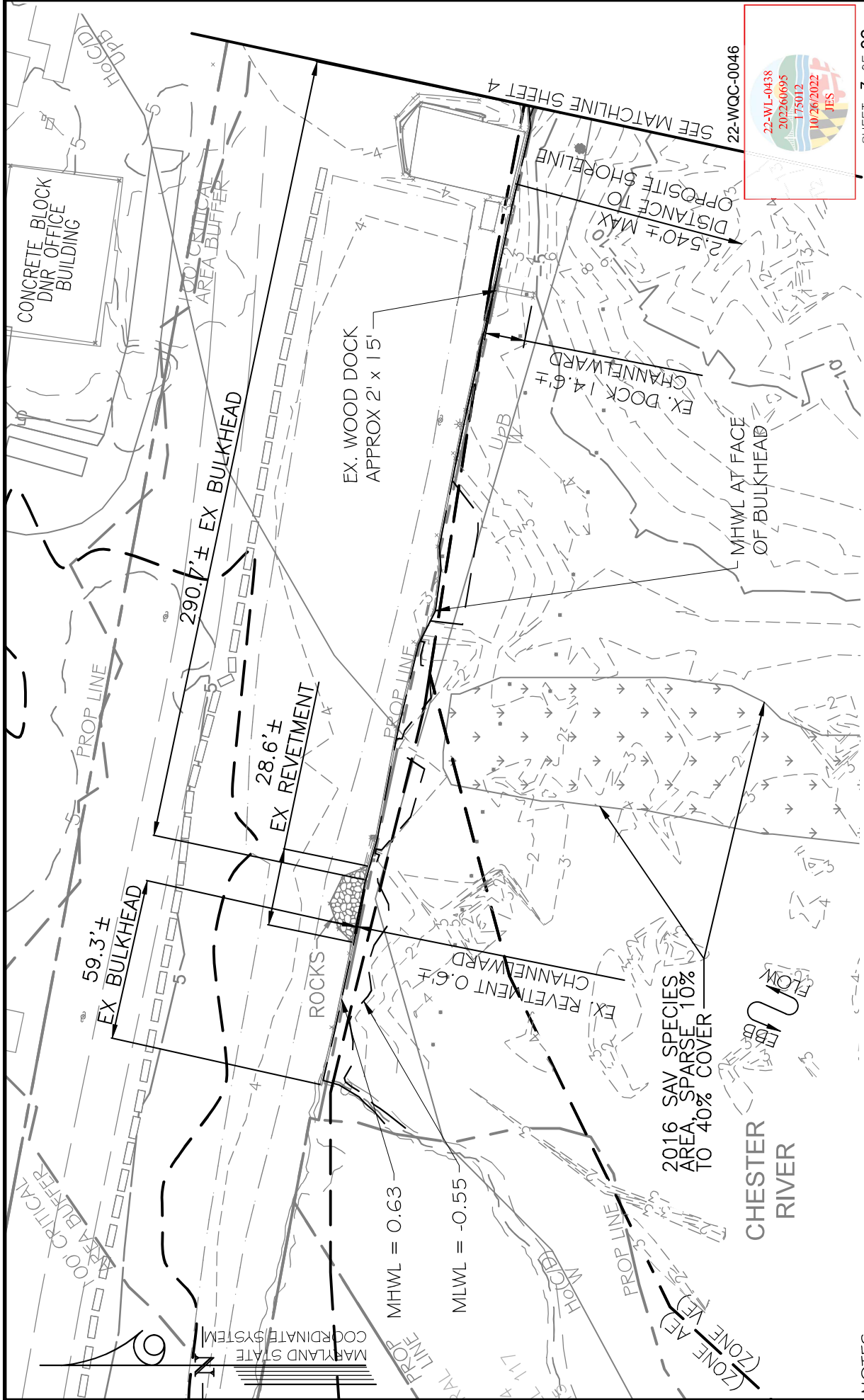
## IMPACT TABLE

IMPACT TYPE	LENGTH (FT)	WIDTH (FT)	ORIGINALLY PROPOSED CHANNELWARD DISTANCE (FT)	REVISED CHANNELWARD DISTANCE (FT)	IMPACTS TO TIDAL WETLANDS (SF)
REVETMENT	210	15	23.8	8.6	1,589
BULKHEADS	795	1.5	26	7.1*	558
COMMERCIAL SLIPS/PIERS(3)	15.5(EA)	4.5(EA)	37	18.5	211
BOAT RAMP	37.6	20	28	20	392
DNR FINGER PIER	120	10	79	78.3	1,180
DREDGING	116±	16±	-	20.8	1,960

\*BULKHEAD NOTES:  
 - 7.1' IS THE MAXIMUM CHANNELWARD DISTANCE OF THE PROPOSED LINEAR BULKHEAD (BULKHEADS AT BOAT RAMP PERPENDICULAR TO MHWL, 19.9' CHANNELWARD).  
 - 338 LF OF PROPOSED BULKHEAD IS 0' - 1.5' CHANNELWARD OF EXISTING BULKHEAD/MHWL.  
 - 69 LF OF PROPOSED BULKHEAD IS GREATER THAN 1.5' CHANNELWARD OF EXISTING BULKHEAD/MHWL, CREATING 95 SF OF REQUIRED MITIGATION.  
 - 370 LF OF PROPOSED BULKHEAD IS BEHIND MHWL.

 <b>KCI</b> TECHNOLOGIES	ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS	DATE <b>10/26/2022</b>	LEGEND
	936 RIDGEBROOK ROAD SPARKS, MARYLAND 21152 TELEPHONE: (410) 316-7800 FAX: (410) 316-7818	SCALE NOT TO SCALE	PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT PHASE 1 MARINE IMPROVEMENT PROJECT AT LOVE POINT STATE PARK FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401
DESIGNED BY <b>CTS</b>		IMPACTS TO TIDAL WETLANDS (SF) 1,589	
DRAWN BY <b>CTS</b>		CHANNELWARD DISTANCE (FT) 8.6	
REVISED CHANNELWARD DISTANCE (FT) 7.1*		558	
ORIGINAL CHANNELWARD DISTANCE (FT) 37		211	
20		392	
78.3		1,180	
20.8		1,960	

22-WL-0438  
 202206095  
 175012  
 10/26/2022  
 JES



22-WQC-0046



SHEET 3 OF 32

**EXISTING CONDITIONS**

**PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT PHASE 1 MARINE IMPROVEMENT PROJECT**

**AT LOVE POINT STATE PARK**

FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY, ANNAPOLIS, MD 21401

DATE	10/26/2022
SCALE	1" = 50'
DESIGNED BY	CTS
DRAWN BY	CTS

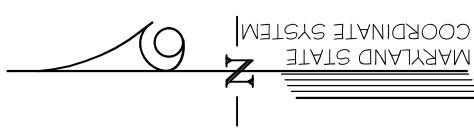
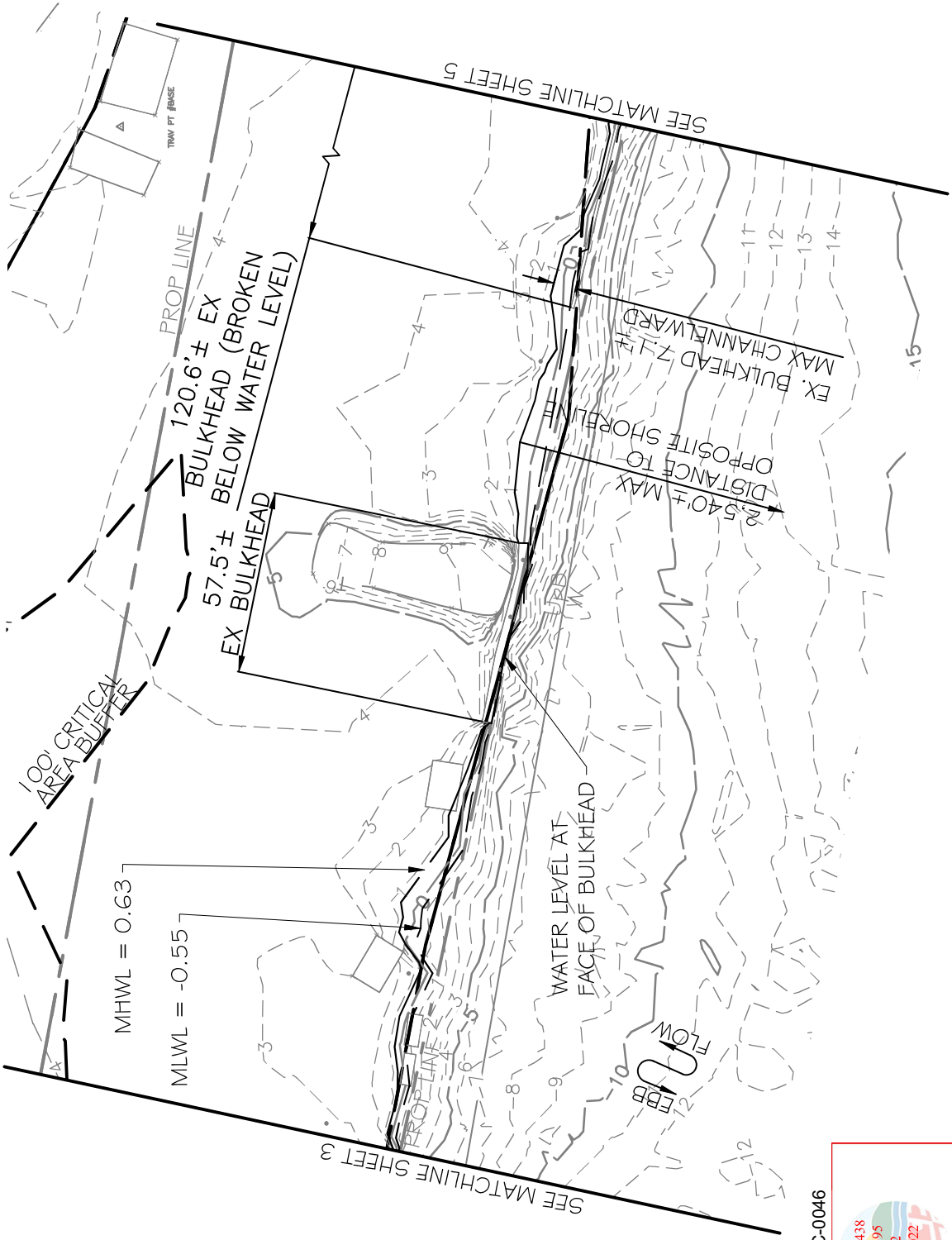
**ENGINEERS**  
**PLANNERS**  
**SCIENTISTS**  
**CONSTRUCTION MANAGERS**

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**NOTES:**

- ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.
- LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 375'±.

PLOTTED: \$DATE\$  
BY: \$USERNAME\$  
FILE: \$FILE\$



22-WQC-0046



NOTES:  
 1. ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.  
 2. LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 330'±.

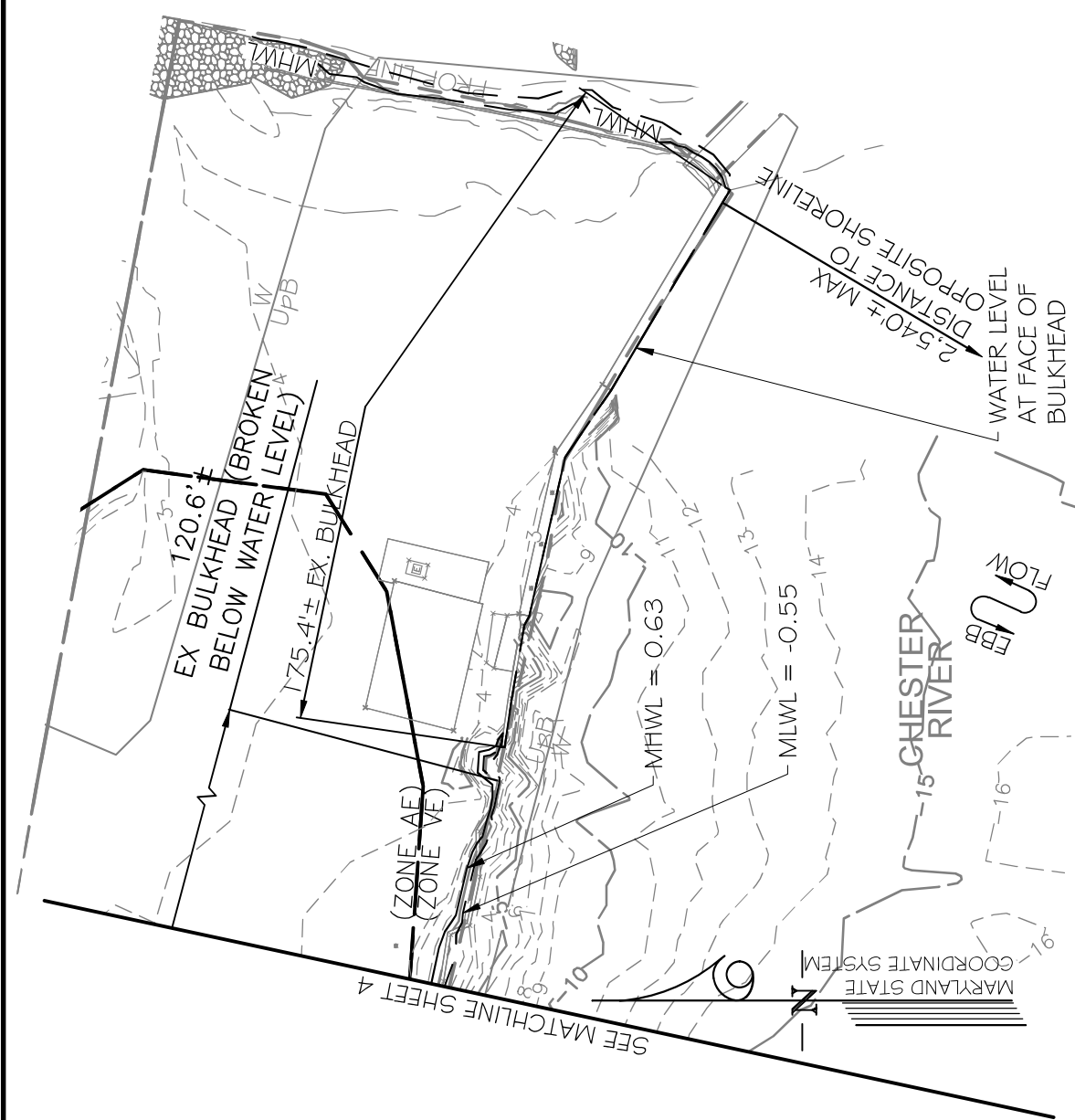
**ENGINEERS  
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936 RIDGEBROOK ROAD  
 SPARKS, MARYLAND 21152  
 TELEPHONE: (410) 316-7800  
 FAX: (410) 316-7818

DATE	10/26/2022
SCALE	1" = 50'
DESIGNED BY	CTS
DRAWN BY	CTS

**EXISTING CONDITIONS**

**PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
 PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY,  
 ANNAPOLIS, MD 21401



22-WQC-0046



SHEET 5 OF 32

NOTES:  
 1. ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.  
 2. LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 265'±.

**ENGINEERS**  
**PLANNERS**  
**SCIENTISTS**  
**CONSTRUCTION MANAGERS**

**KCI**  
 TECHNOLOGIES

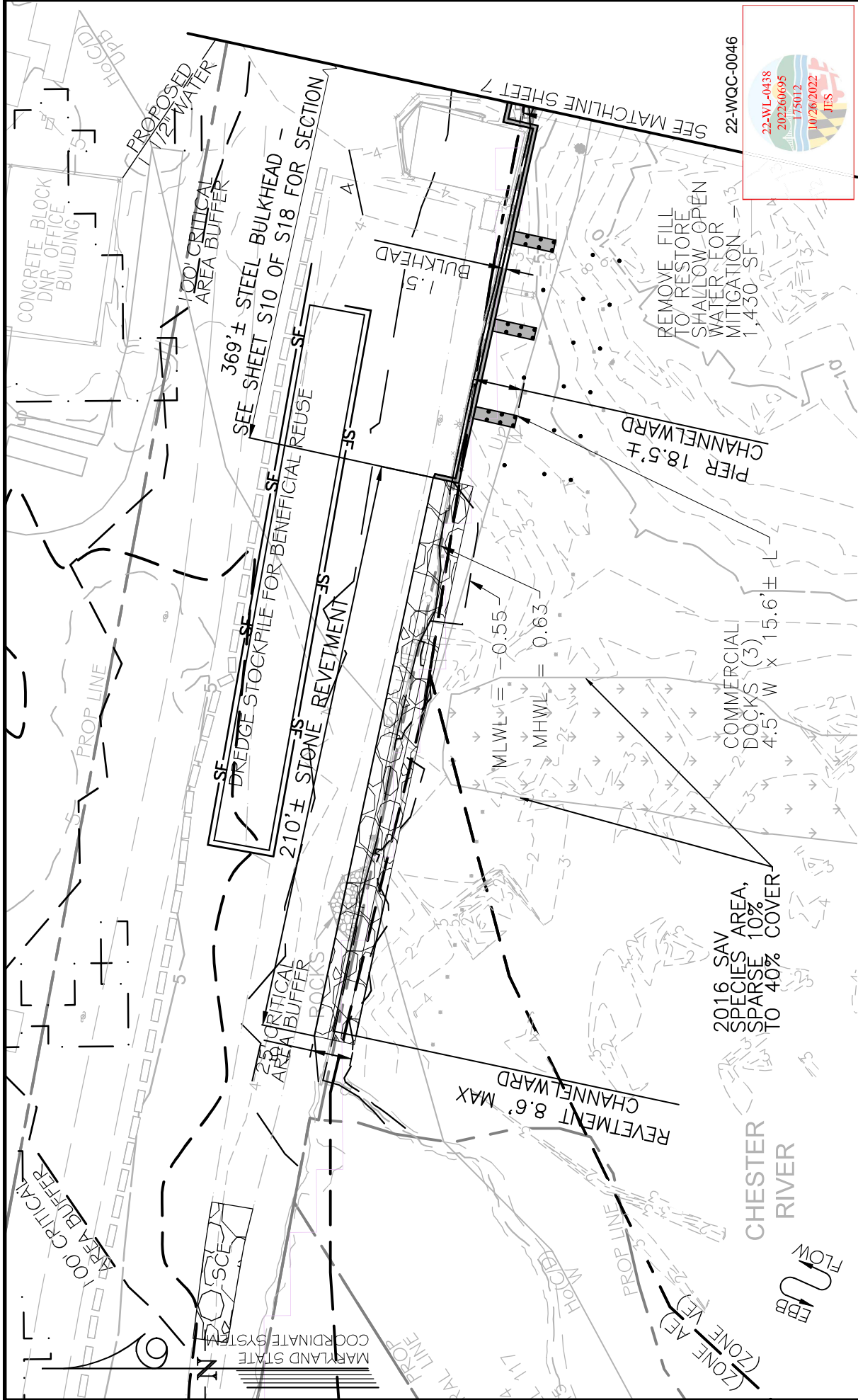
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SCALE	1" = 50'
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DRAWN BY	CTS

**EXISTING CONDITIONS**

**PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY, ANNAPOLIS, MD 21401

PLOTTED: \$DATE\$  
 BY: \$USERNAME\$  
 FILE: \$FILE\$



22-WQC-0046



SHEET 6 OF 32

DATE	10/26/2022
SCALE	1" = 50'
DESIGNED BY	CTS
DRAWN BY	CTS

**ENGINEERS**  
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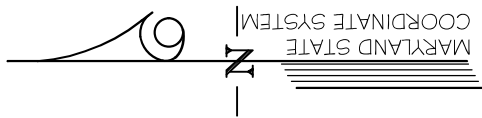
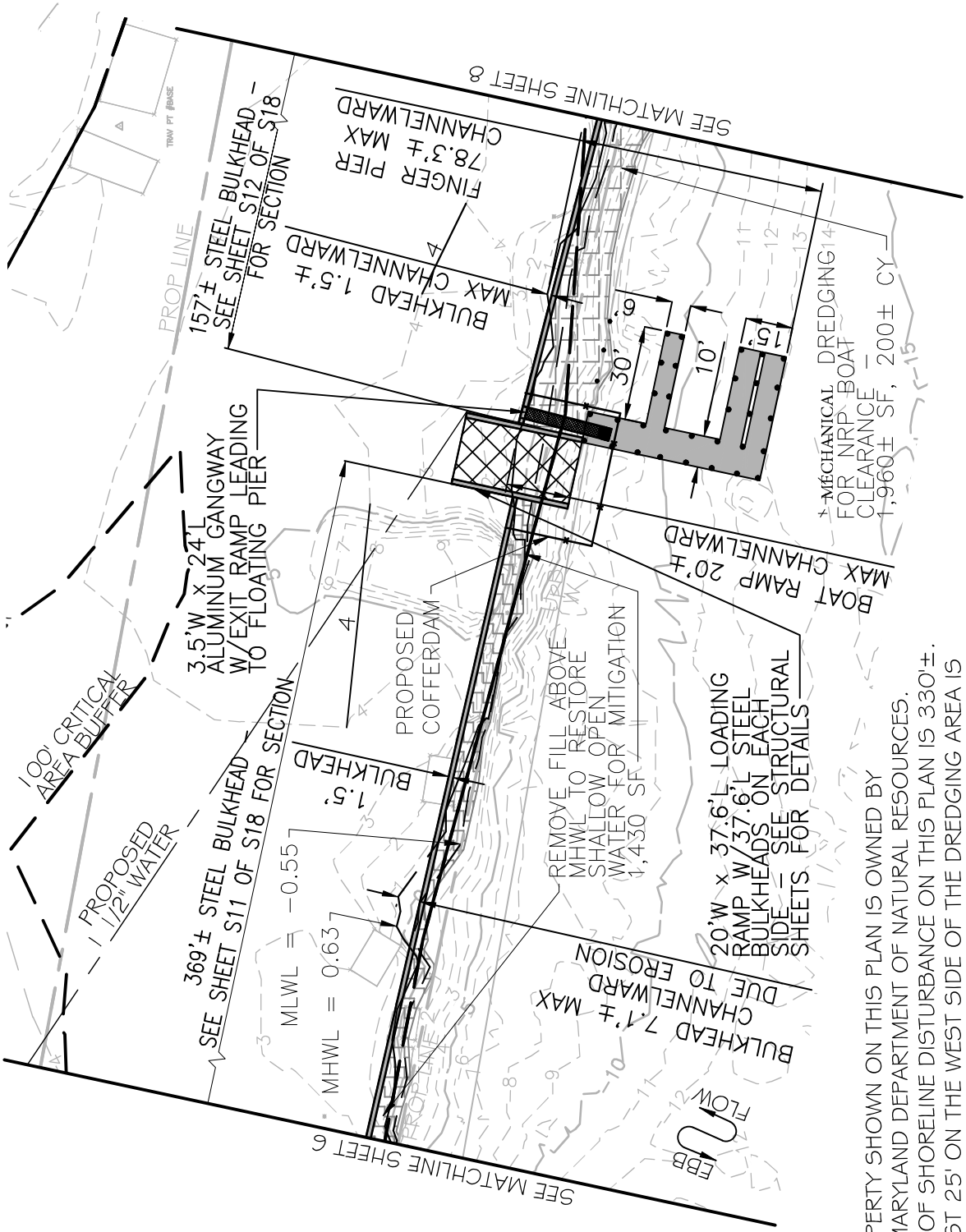


# PROPOSED CONDITIONS

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
 PHASE 1 MARINE IMPROVEMENT PROJECT  
 AT  
 LOVE POINT STATE PARK  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY,  
 ANNAPOLIS, MD 21401

NOTES:  
 1. ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.  
 2. LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 375'±.

PLOTTED: \$DATE\$  
 BY: \$USER\$  
 FILE: \$FILE\$



NOTES:

1. ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.
2. LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 330'±.
- \*3. THE LAST 25' ON THE WEST SIDE OF THE DREDGING AREA IS TO BE TAPERED UP TO MATCH EXISTING ELEVATIONS. DREDGE MATERIAL TO DRIED ON-SITE FOR BENEFICIAL REUSE.
- \*4. THE PLANS AND NUMBERS FOR DREDGING INCLUDE A 6" OVERDRAFT ALLOWANCE TO ELEVATION -5.5. HOWEVER, DREDGING SHOULD TAKE PLACE ONLY TO ELEVATION -5.

REMOVE FILL ABOVE PROPOSED MHWL TO RESTORE SHALLOW OPEN WATER FOR MITIGATION 1,430 SF

20'W x 37.6'L LOADING RAMP W/ 37.6'L STEEL BULKHEADS ON EACH SIDE - SEE STRUCTURAL SHEETS FOR DETAILS

BOAT RAMP 20'± MAX CHANNELWARD

↑ MECHANICAL DREDGING 14' FOR NRP BOAT CLEARANCE 1,960± SF, 200± CY

369'± STEEL BULKHEAD SEE SHEET S11 OF S18 FOR SECTION

157'± STEEL BULKHEAD SEE SHEET S12 OF S18 FOR SECTION

157'± STEEL BULKHEAD SEE SHEET S18 FOR SECTION

3.5'W x 24'L ALUMINUM GANGWAY W/ EXIT RAMP LEADING TO FLOATING PIER

PROPOSED COFFERDAM

100' CRITICAL AREA BUFFER

PROPOSED 1/2" WATER

MLWL = -0.55

MHWL = 0.63

BULKHEAD 7.7'± MAX CHANNELWARD DUE TO EROSION

BULKHEAD 1.5'± MAX CHANNELWARD

FINGER PIER 78.3'± MAX CHANNELWARD

SEE MATCHLINE SHEET 6

SEE MATCHLINE SHEET 8

PROP LINE

FLOW

EBB

22-WQC-0046

22-WL-0438  
202260695  
175012  
10/26/2022  
JES

DATE	10/26/2022
SCALE	1" = 50'
DESIGNED BY	CTS
DRAWN BY	CTS

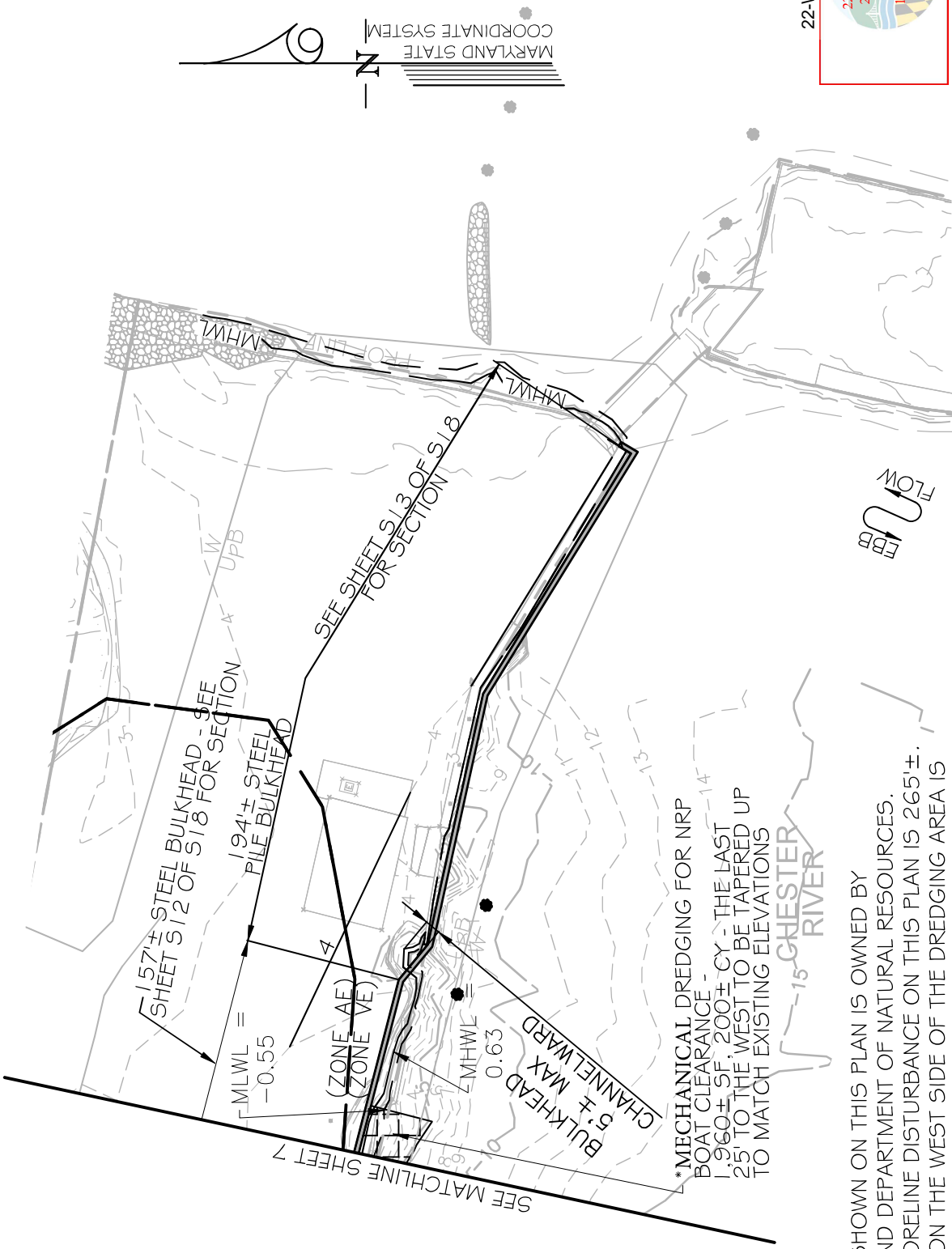
**ENGINEERS**  
**PLANNERS**  
**SCIENTISTS**  
**CONSTRUCTION MANAGERS**

**KCI**  
TECHNOLOGIES

936 RIDGEBROOK ROAD  
SPARKS, MARYLAND 21152  
TELEPHONE: (410) 316-7800  
FAX: (410) 316-7818

**PROPOSED CONDITIONS**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT** AT  
**LOVE POINT STATE PARK**  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
ANNAPOLIS, MD 21401



22-WQC-0046



SHEET 8 OF 32

NOTES:

1. ALL PROPERTY SHOWN ON THIS PLAN IS OWNED BY STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES.
2. LENGTH OF SHORELINE DISTURBANCE ON THIS PLAN IS 265'±.
- \*3. THE LAST 25' ON THE WEST SIDE OF THE DREDGING AREA IS TO BE TAPERED UP TO MATCH EXISTING ELEVATIONS. DREDGE MATERIAL TO BE DRIED ON-SITE FOR BENEFICIAL REUSE.
- \*4. THE PLANS AND NUMBERS FOR DREDGING INCLUDE A 6" OVERDRAFT ALLOWANCE TO ELEVATION -5.5. HOWEVER, DREDGING SHOULD TAKE PLACE ONLY TO ELEVATION -5.

\*MECHANICAL DREDGING FOR NRP BOAT CLEARANCE - 14' 1.960± SF, 200± CY - THE LAST 25' TO THE WEST TO BE TAPERED UP TO MATCH EXISTING ELEVATIONS

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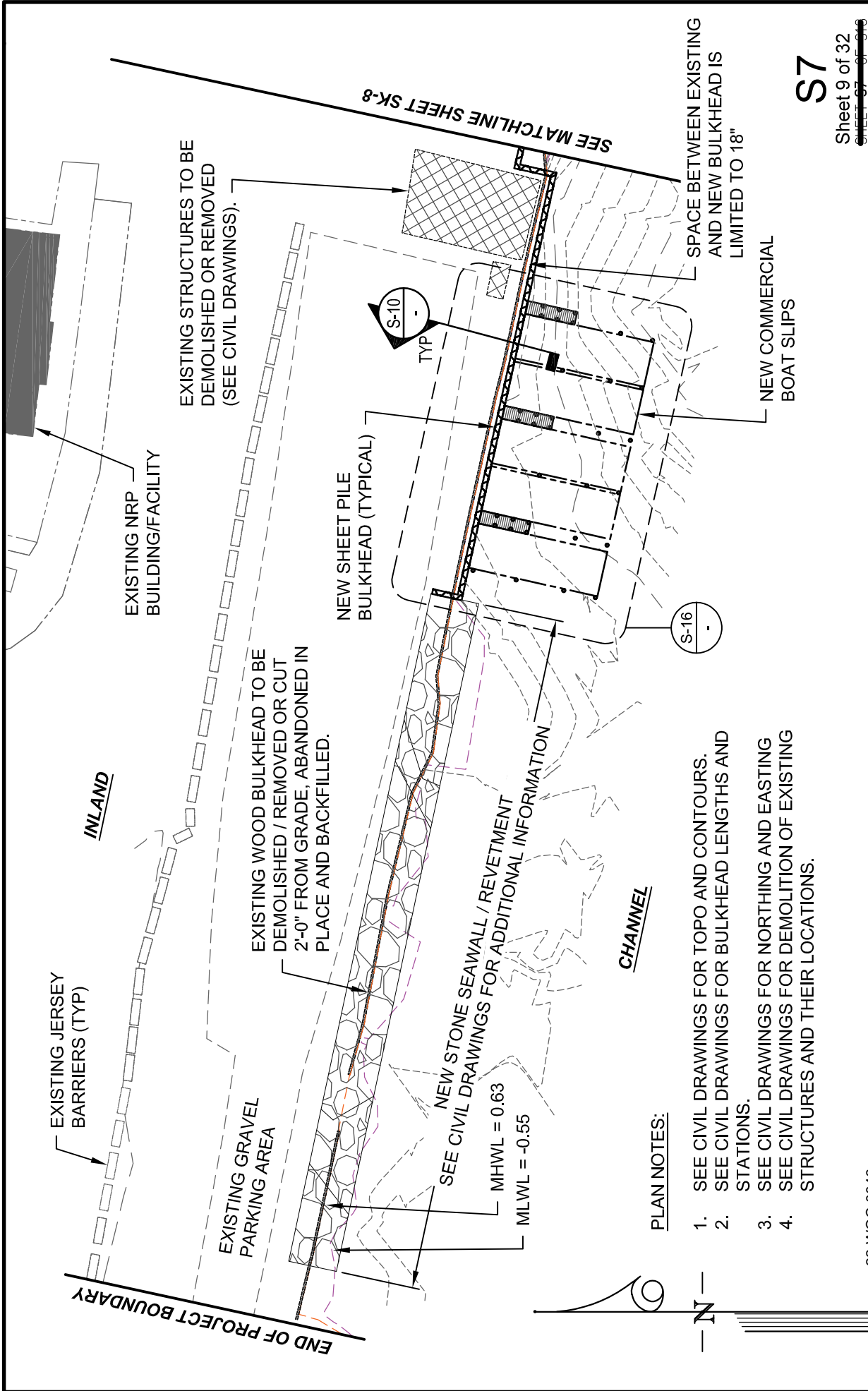
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SCALE	1" = 50'
DESIGNED BY	CTS
DRAWN BY	CTS

**PROPOSED CONDITIONS**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY,  
 ANNAPOLIS, MD 21401

FILE: \$FILE\$  
 PLOTTED: \$DATE\$  
 BY: \$USER\$





**PLAN NOTES:**

1. SEE CIVIL DRAWINGS FOR TOPO AND CONTOURS.
2. SEE CIVIL DRAWINGS FOR BULKHEAD LENGTHS AND STATIONS.
3. SEE CIVIL DRAWINGS FOR NORTHING AND EASTING
4. SEE CIVIL DRAWINGS FOR DEMOLITION OF EXISTING STRUCTURES AND THEIR LOCATIONS.

**S7**

Sheet 9 of 32  
~~Sheet 9 of 32~~

22-WQC-0046



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SCALE	1"=50'
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**BULKHEAD PLAN &  
 COMMERCIAL BOAT SLIPS**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
 PHASE 1 MARINE IMPROVEMENT PROJECT

AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
 ANNAPOLIS, MD 21401

INLAND

EXISTING STRUCTURES TO BE DEMOLISHED OR REMOVED (SEE CIVIL DRAWINGS).

EXISTING SHELL STOCKPILE TO BE USED AS BACKFILL.

NEW NRP CONCRETE BOAT RAMP

NEW SHEET PILE BULKHEAD (TYPICAL)

EXISTING BULKHEAD TO BE DEMOLISHED/REMOVED (SEE CIVIL DRAWINGS).

NEW NRP FLOATING PIER (TO BE DESIGNED BY OTHERS).

SEE MATCHLINE SHEET SK-7

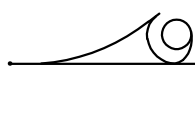
SEE MATCHLINE SHEET SK-9

CHANNEL

NEW SHEET PILE BULKHEAD (TYPICAL)

MHWL = 0.63

MLWL = -0.55



PLAN NOTES:

1. SEE CIVIL DRAWINGS FOR TOPO AND CONTOURS.
2. SEE CIVIL DRAWINGS FOR BULKHEAD LENGTHS AND STATIONS.
3. SEE CIVIL DRAWINGS FOR NORTHING AND EASTING
4. SEE CIVIL DRAWINGS FOR DEMOLITION OF EXISTING STRUCTURES AND THEIR LOCATIONS.

22-WQC-0046



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10/24/2022

SCALE  
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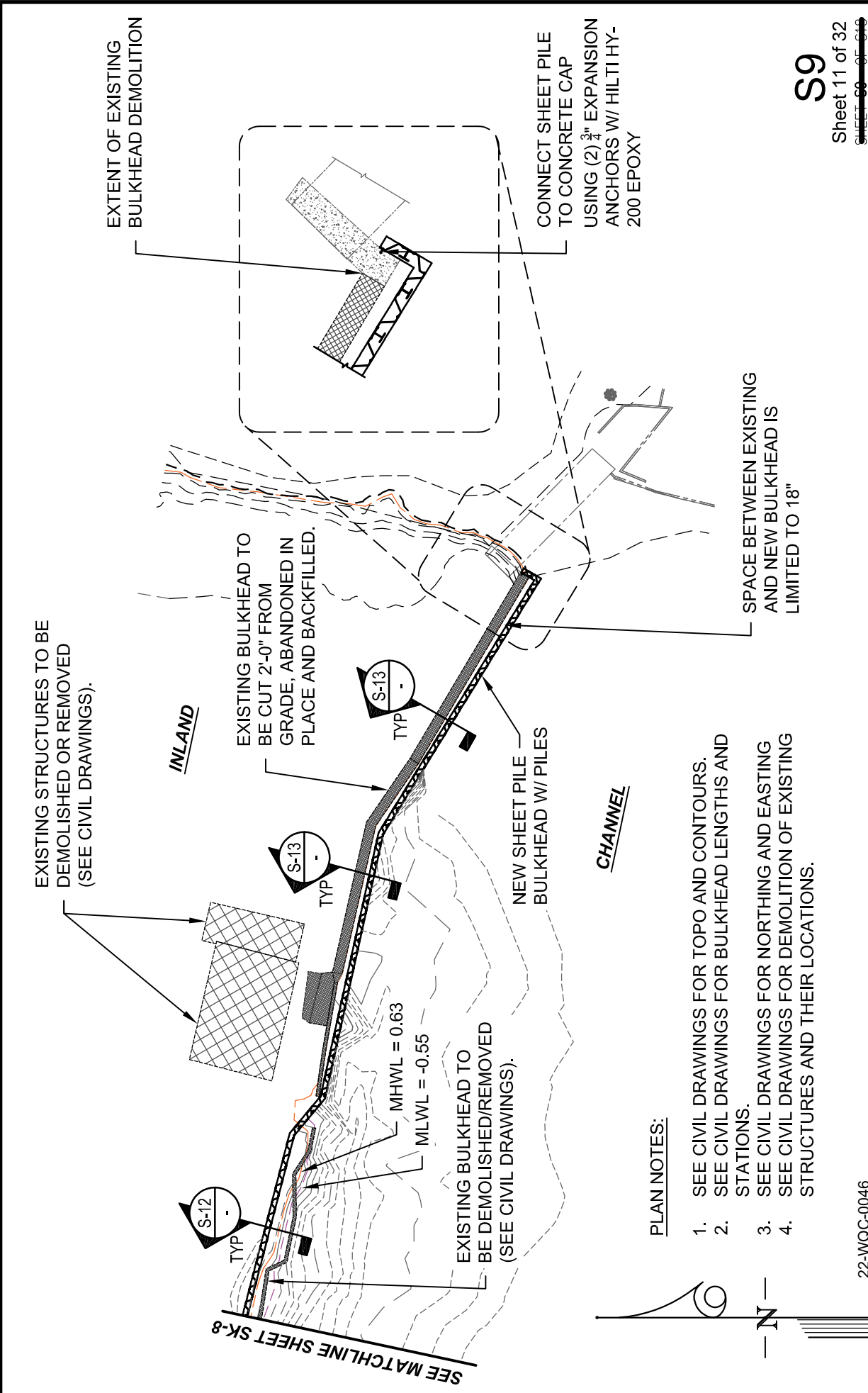
# BULKHEAD PLAN & NRP PIER / BOAT RAMP

## PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT PHASE 1 MARINE IMPROVEMENT PROJECT

AT  
**LOVE POINT STATE PARK**  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401

Sheet 10 of 32  
~~SHEET 09 OF 096~~

**S8**



**PLAN NOTES:**

1. SEE CIVIL DRAWINGS FOR TOPO AND CONTOURS.
2. SEE CIVIL DRAWINGS FOR BULKHEAD LENGTHS AND STATIONS.
3. SEE CIVIL DRAWINGS FOR NORTHING AND EASTING
4. SEE CIVIL DRAWINGS FOR DEMOLITION OF EXISTING STRUCTURES AND THEIR LOCATIONS.

**S9**

Sheet 11 of 32  
~~SHEET 09 OF 049~~

<b>BULKHEAD PLAN</b>	
PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT <b>PHASE 1 MARINE IMPROVEMENT PROJECT</b> AT <b>LOVE POINT STATE PARK</b> FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401	
DATE	10/24/2022
SCALE	1"=50'
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22-WQC-0046

22-WL-0438  
202206095  
175012  
10/26/2022  
JES

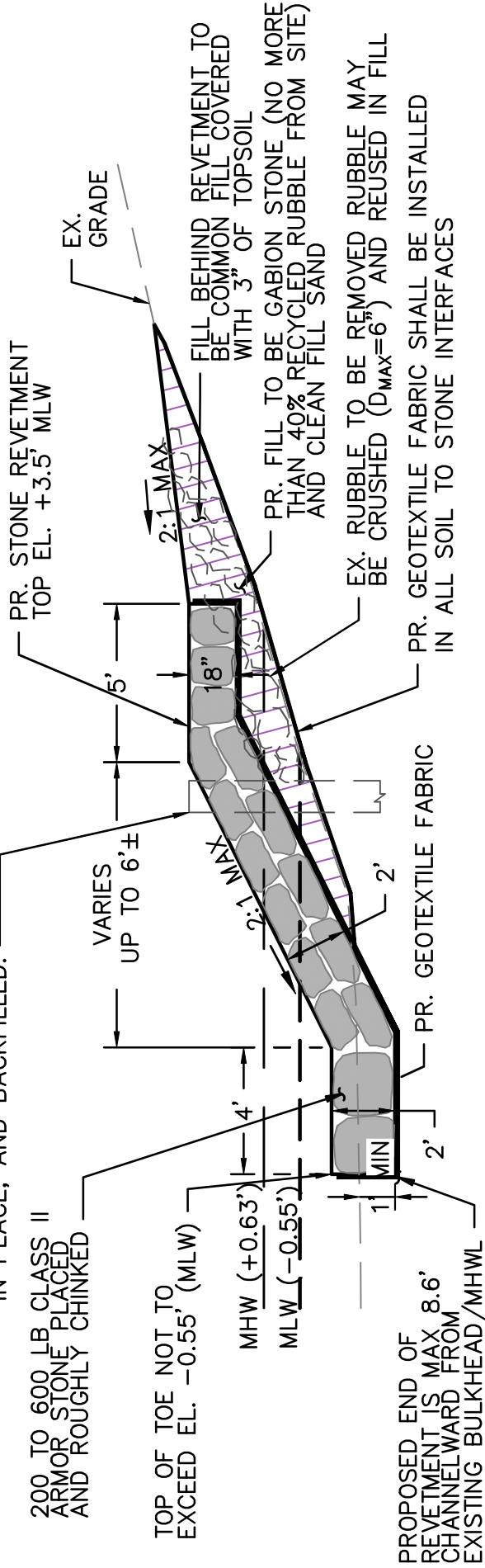
EXISTING WOOD BULKHEAD TO BE DEMOLISHED/REMOVED OR CUT 2'-0" FROM GRADE, ABANDONED IN PLACE, AND BACKFILLED.

200 TO 600 LB CLASS II ARMOR STONE PLACED AND ROUGHLY CHINKED

TOP OF TOE NOT TO EXCEED EL. -0.55' (MLW)

MHW (+0.63')  
MLW (-0.55')

PROPOSED END OF REVETMENT IS MAX 8.6' CHANNELWARD FROM EXISTING BULKHEAD/MHWL



NOTE: EXISTING RUBBLE SALVAGED FROM THE SITE MAY BE ADDED UNIFORMLY, (NO MORE THAN 40% BY VOLUME AND  $D_{max}=6"$ ) TO THE FILL MATERIAL, AVOIDING LARGE VOIDS. ANY REMAINING REBAR IN RUBBLE TO BE CUT FLUSH.

TYPICAL +3.5' (MLW) REVETMENT DETAIL  
STA. 1+18 - 3+28  
SCALE: NOT TO SCALE

22-WQC-0046



Sheet 12 of 32  
SUBJECT: ~~0-0146~~

DATE	10/26/2022
SCALE	NOT TO SCALE
DESIGNED BY	CTS
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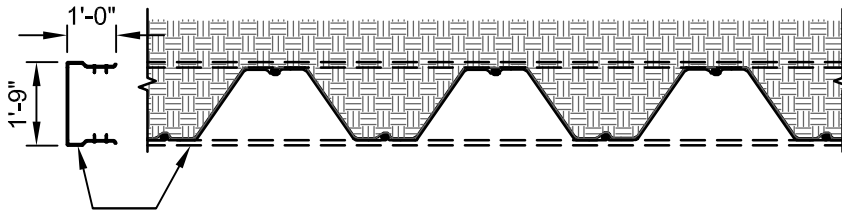
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REVETMENT CROSS SECTION

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT  
AT  
LOVE POINT STATE PARK  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
ANNAPOLIS, MD 21401



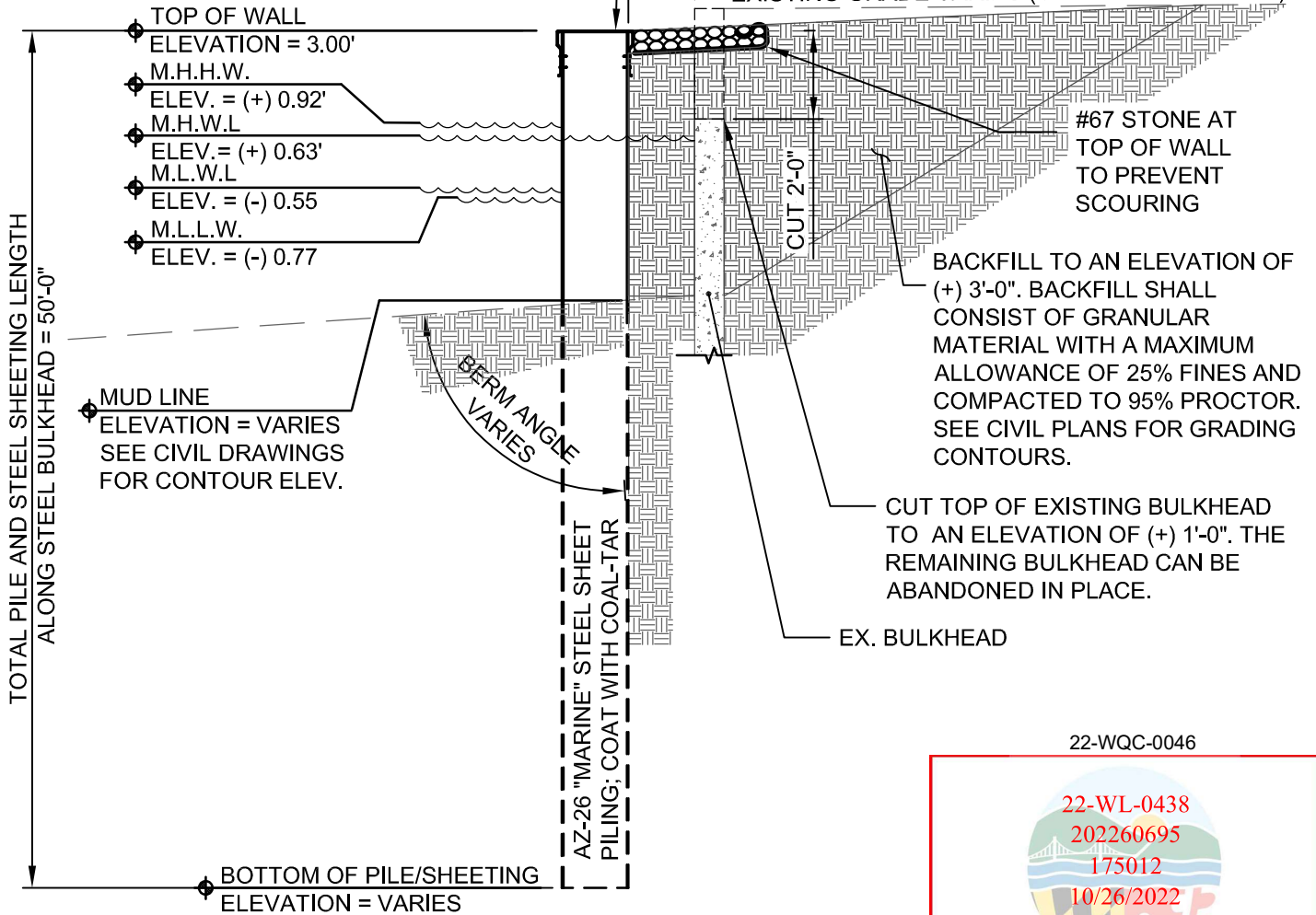
## STEEL SHEET PILE (PLAN VIEW)

3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

1'-6" CHANNEL WARD FROM M.H.W.L (WORSE CASE)

EXISTING GRADE VARIES (SEE CIVIL DRAWINGS)



22-WQC-0046



**S10** Sheet 13 of 32  
~~SHEET 010 OF 010~~



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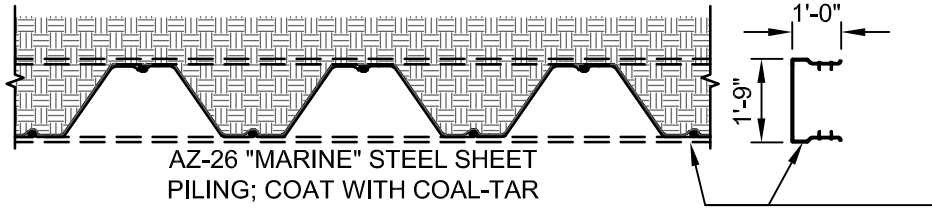
DATE  
10/14/2022

SCALE  
1/4" = 1'-0"

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PDB

TYPICAL STEEL SHEET PILE BULKHEAD SECTION (NO PILES)  
PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT  
AT  
LOVE POINT STATE PARK  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401

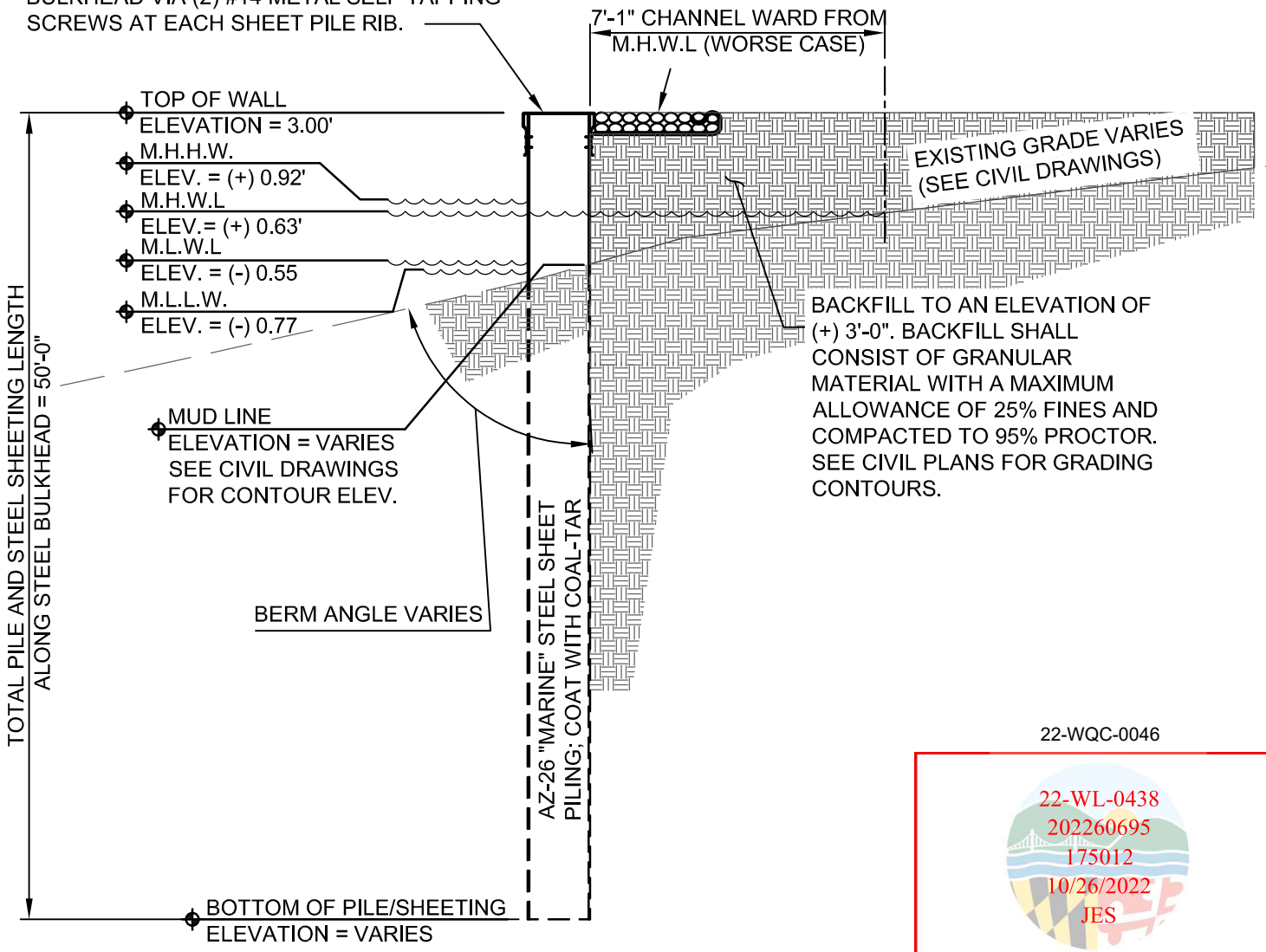


**STEEL SHEET PILE (PLAN VIEW)**

3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

#67 STONE AT TOP OF WALL TO PREVENT SCOURING



BACKFILL TO AN ELEVATION OF (+) 3'-0". BACKFILL SHALL CONSIST OF GRANULAR MATERIAL WITH A MAXIMUM ALLOWANCE OF 25% FINES AND COMPACTED TO 95% PROCTOR. SEE CIVIL PLANS FOR GRADING CONTOURS.

22-WQC-0046

22-WL-0438  
 202260695  
 175012  
 10/26/2022  
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**S11** Sheet 14 of 32  
SHEET 014 OF 010

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DATE  
**10/24/2022**

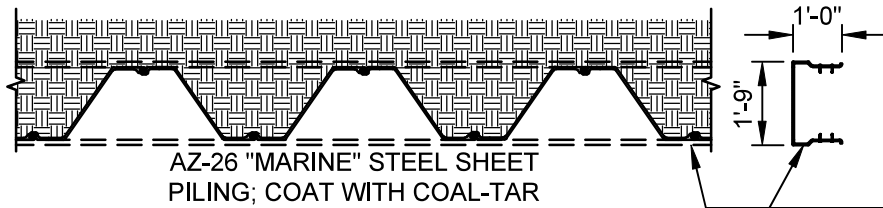
SCALE  
**1/4" = 1'-0"**

DESIGNED BY  
**PDB**

DRAWN BY  
**PDB**

**TYPICAL STEEL SHEET PILE BULKHEAD SECTION (NO PILES)**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401



**STEEL SHEET PILE (PLAN VIEW)**

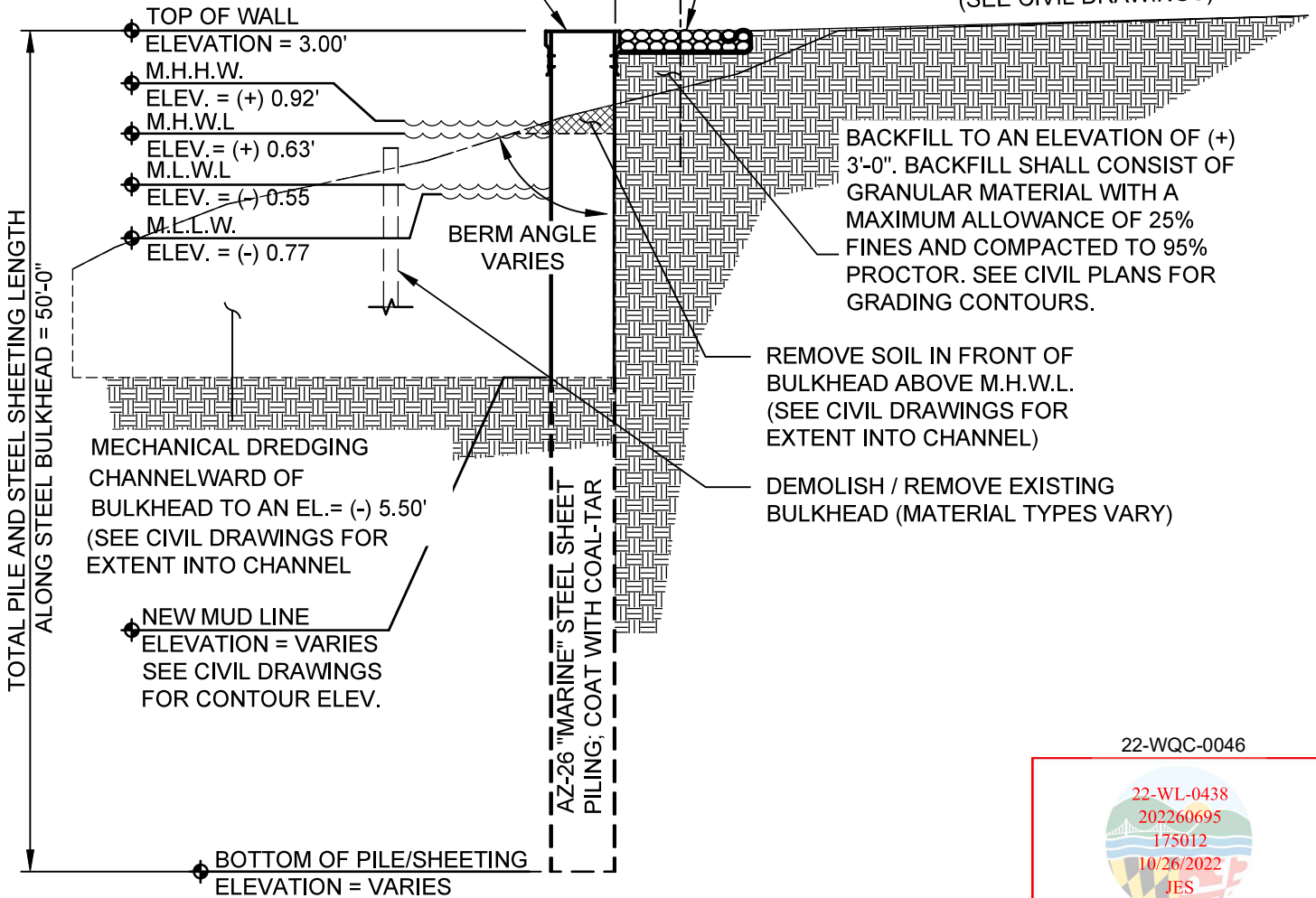
3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.

#67 STONE AT TOP OF WALL TO PREVENT SCOURING

1'-6" CHANNEL WARD FROM M.H.W.L (WORSE CASE)

EXISTING GRADE VARIES (SEE CIVIL DRAWINGS)



BACKFILL TO AN ELEVATION OF (+) 3'-0". BACKFILL SHALL CONSIST OF GRANULAR MATERIAL WITH A MAXIMUM ALLOWANCE OF 25% FINES AND COMPACTED TO 95% PROCTOR. SEE CIVIL PLANS FOR GRADING CONTOURS.

REMOVE SOIL IN FRONT OF BULKHEAD ABOVE M.H.W.L. (SEE CIVIL DRAWINGS FOR EXTENT INTO CHANNEL)

DEMOLISH / REMOVE EXISTING BULKHEAD (MATERIAL TYPES VARY)

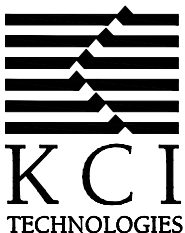
MECHANICAL DREDGING CHANNELWARD OF BULKHEAD TO AN EL.= (-) 5.50' (SEE CIVIL DRAWINGS FOR EXTENT INTO CHANNEL)

NEW MUD LINE ELEVATION = VARIES SEE CIVIL DRAWINGS FOR CONTOUR ELEV.

22-WQC-0046

22-WL-0438  
202260695  
175012  
10/26/2022  
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**S12** Sheet 15 of 32  
~~SHEET 012 OF 018~~



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FAX: (410) 316-7818

DATE  
10/24/2022

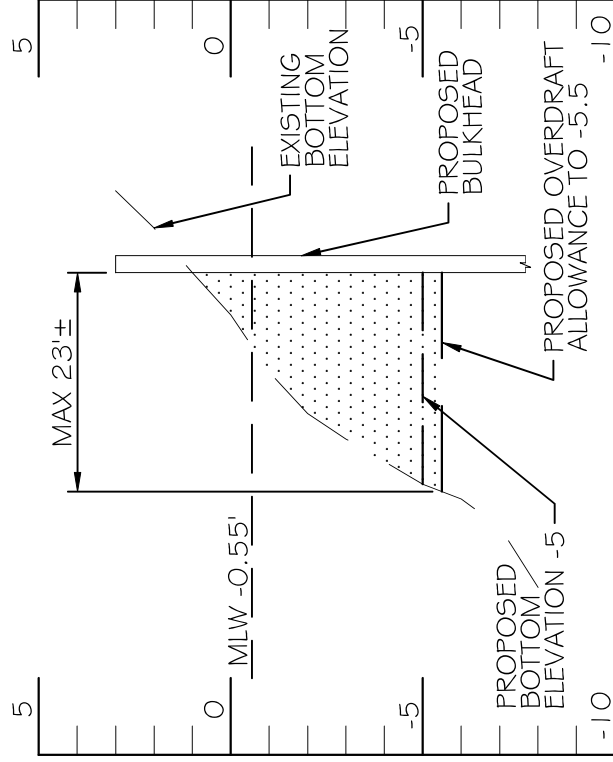
SCALE  
1/4"=1'-0"

DESIGNED BY  
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**TYPICAL STEEL SHEET PILE BULKHEAD SECTION (W/PILES)**  
PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
AT  
**LOVE POINT STATE PARK**  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401

PLOTTED: \$DATE\$  
BY: \$USERNAME\$  
FILE: \$FILES\$



## DREDGING CROSS-SECTION

SCALE: HORIZ. 1" = 20'  
VERT. 1" = 5'

22-WQC-0046



### DREDGE NOTES

- 1,960± SF DREDGE AREA
- 200± CY OF DREDGE MATERIAL
- THE PLANS AND NUMBERS FOR DREDGING INCLUDE A 6" OVERDRAFT ALLOWANCE TO ELEVATION -5.5.
- HOWEVER, DREDGING SHOULD TAKE PLACE ONLY TO ELEVATION -5.

**S12** Sheet 16 of 32

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DATE	01/03/2023
SCALE	NOT TO SCALE
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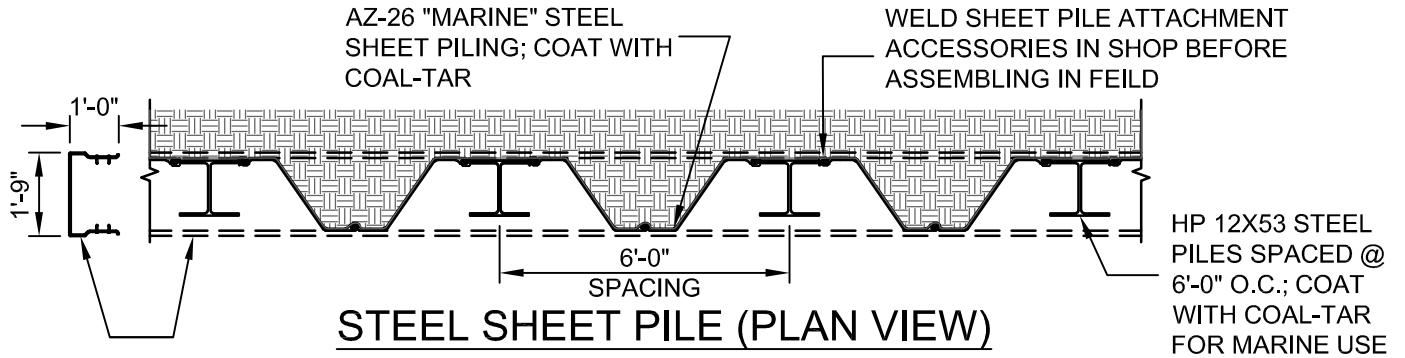
**DREDGING CROSS-SECTION**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**

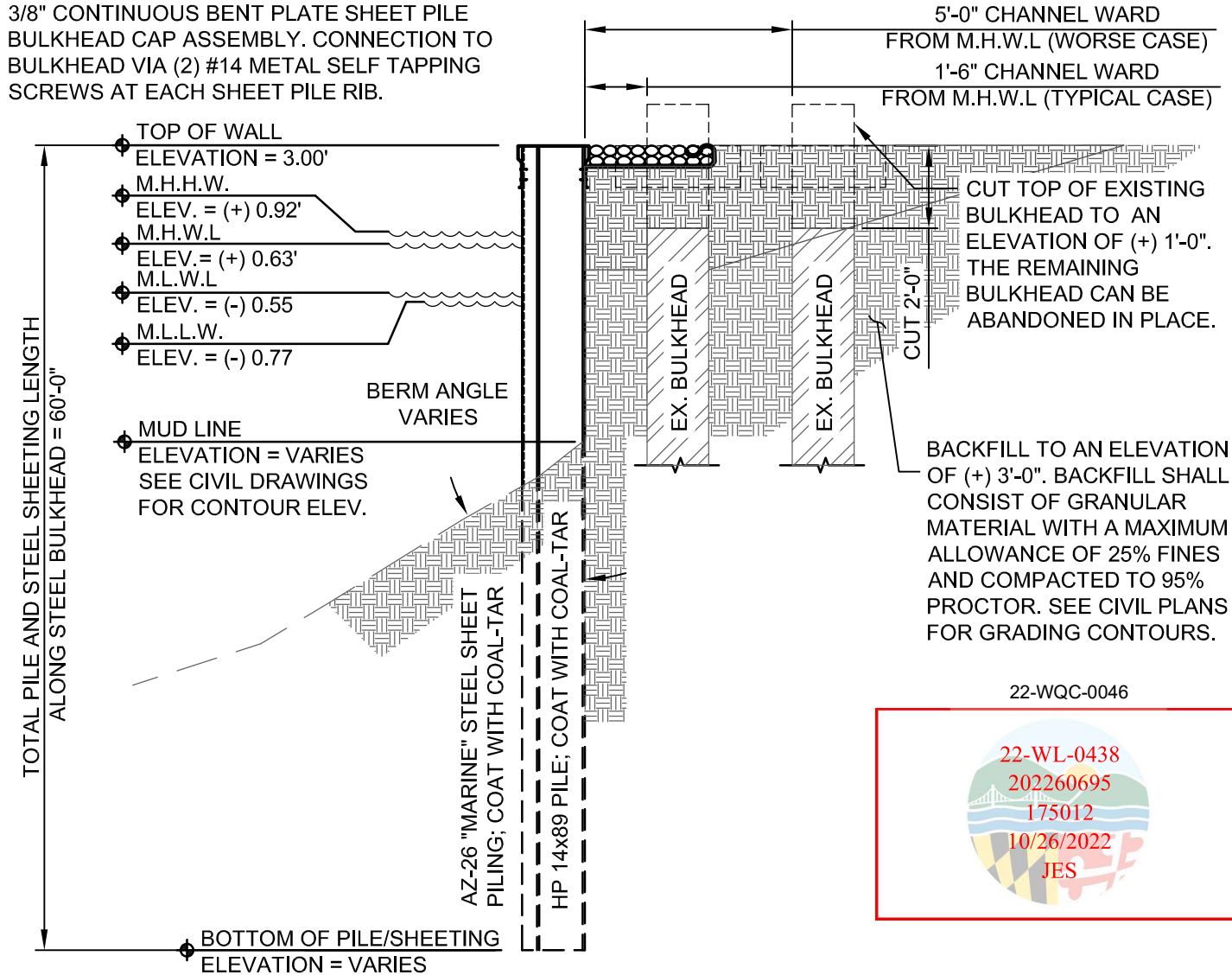
AT  
**LOVE POINT STATE PARK**

FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNES COUNTY,  
ANNAPOLIS, MD 21401





3/8" CONTINUOUS BENT PLATE SHEET PILE BULKHEAD CAP ASSEMBLY. CONNECTION TO BULKHEAD VIA (2) #14 METAL SELF TAPPING SCREWS AT EACH SHEET PILE RIB.



22-WQC-0046



**S13**

Sheet 17 of 32

~~SHEET 043 OF 049~~



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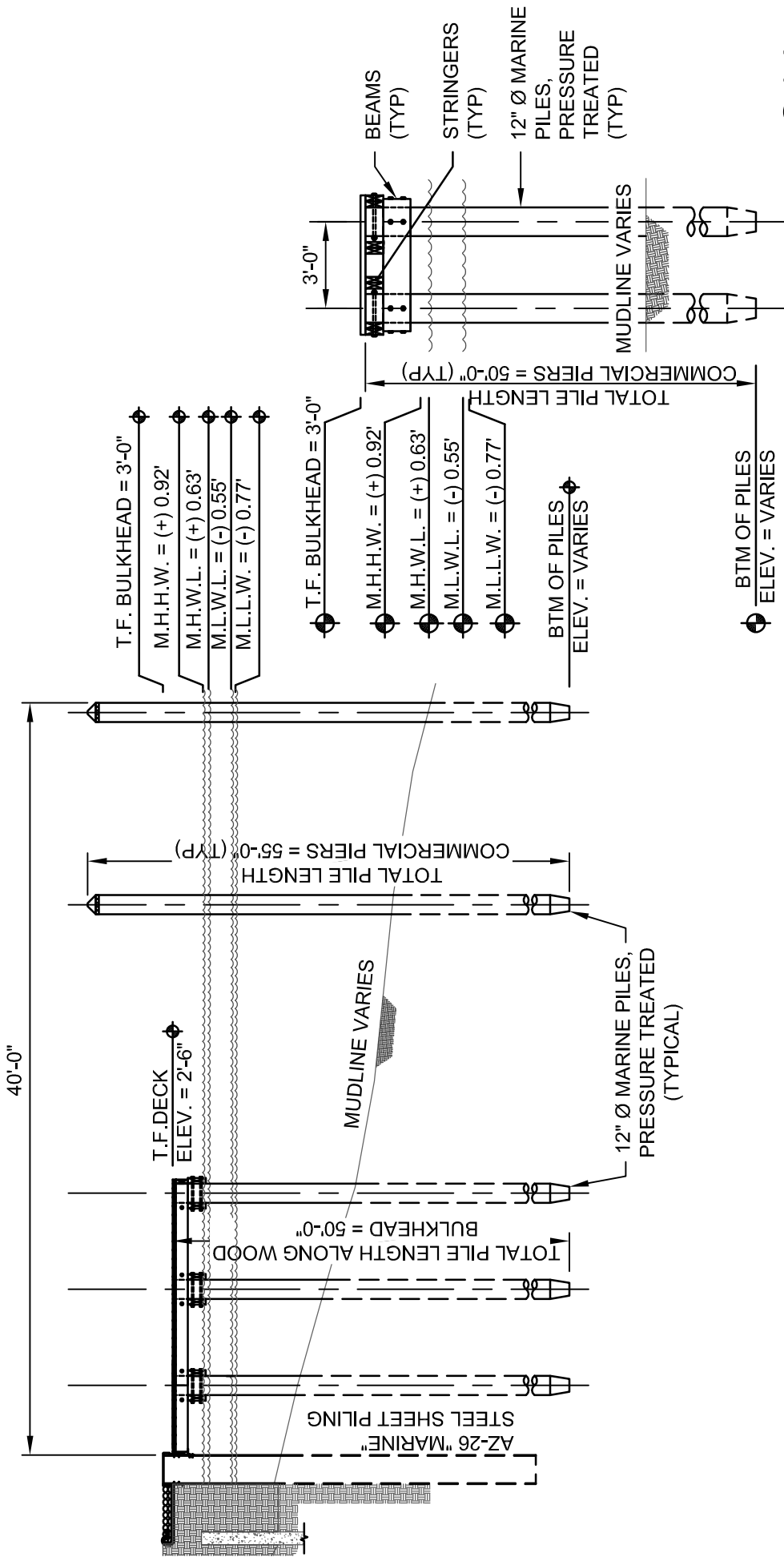
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10/24/2022

SCALE  
1/4" = 1'-0"

DESIGNED BY  
PDB

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PDB

**TYPICAL STEEL SHEET PILE BULKHEAD SECTION (W/PILES)**  
PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, RETEMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
AT  
**LOVE POINT STATE PARK**  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY, ANNAPOLIS, MD 21401



**S14**

Sheet 18 of 32  
~~SHEET 01 OF 016~~

22-WQC-0046



**COMMERCIAL BOAT SLIPS SECTIONS**

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
 ANNAPOLIS, MD 21401

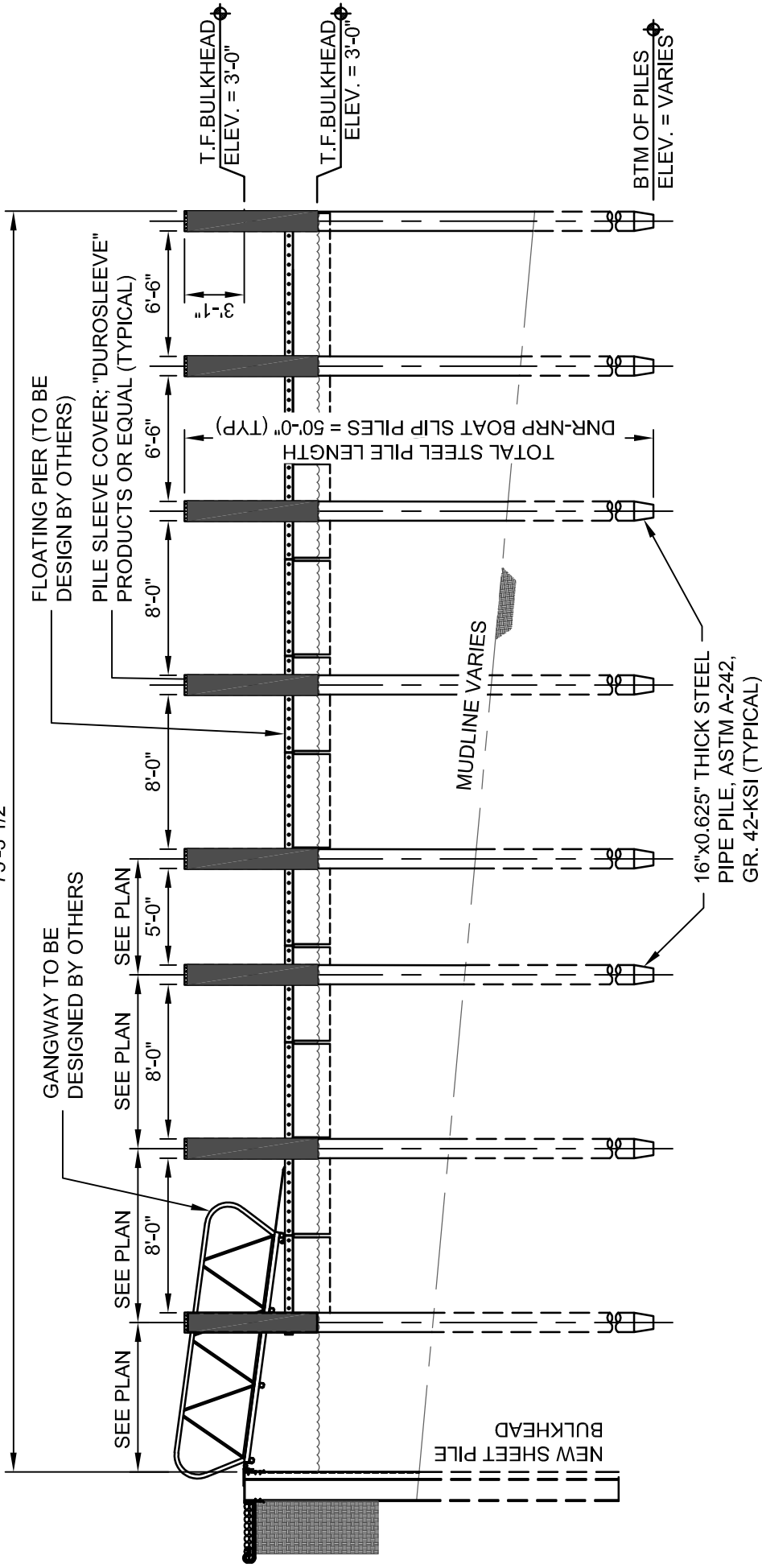
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SCALE	1/8"=1'-0"
DESIGNED BY	PDB
DRAWN BY	PDB

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75'-3 1/2"



S15

Sheet 19 of 32

~~SHEET 616 OF 616~~

22-WQC-0046



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DATE  
10/24/2022

SCALE  
1/8"=1'-0"

DESIGNED BY  
PDB

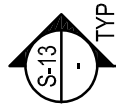
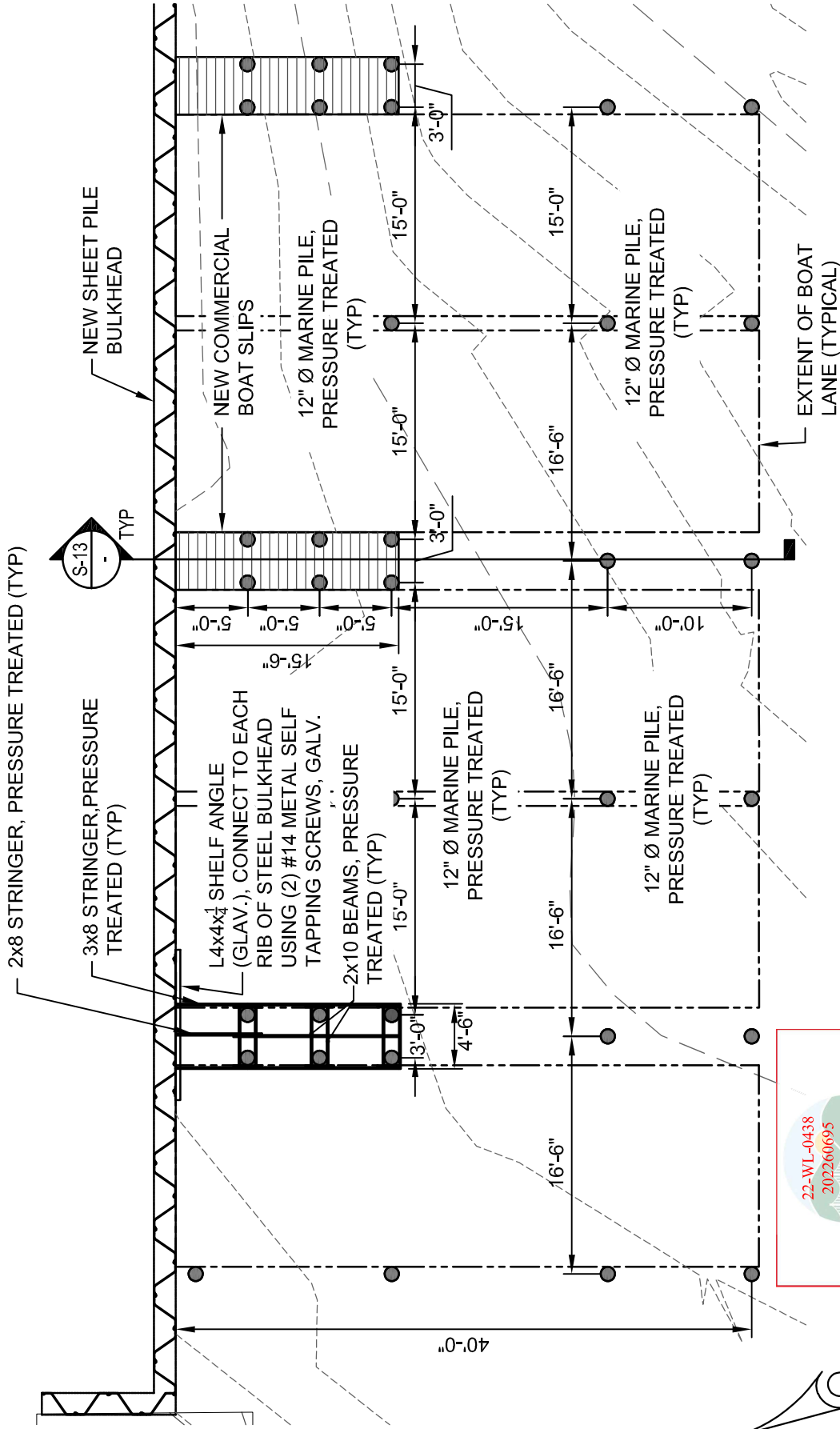
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# NRP FLOATING PIER SECTION

## PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT PHASE 1 MARINE IMPROVEMENT PROJECT

AT  
**LOVE POINT STATE PARK**

FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
ANNAPOLIS, MD 21401



**S16** Sheet 20 of 32

**BULKHEAD PLAN & COMMERCIAL BOAT SLIPS**  
 PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
 PHASE 1 MARINE IMPROVEMENT PROJECT  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
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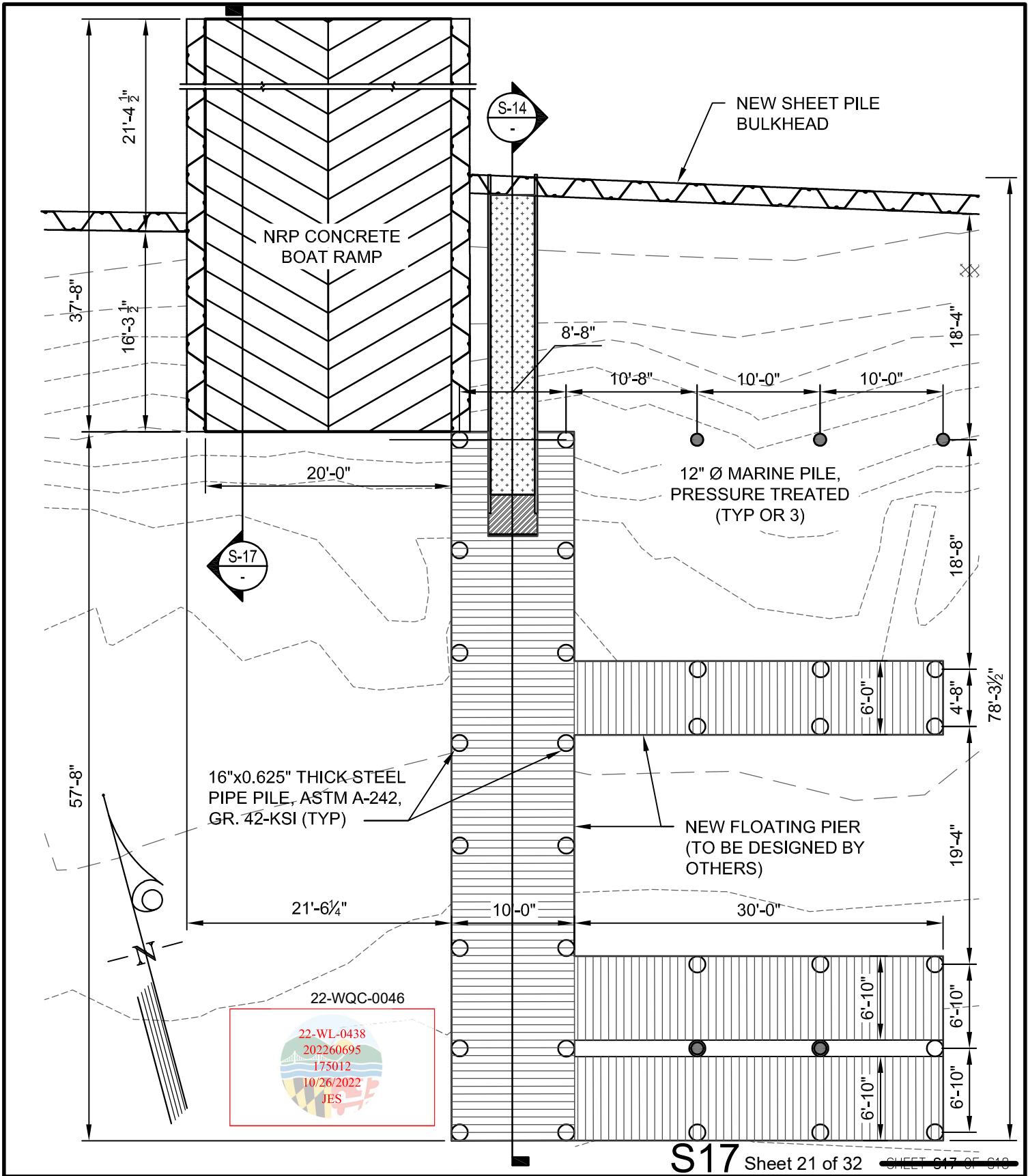
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SCALE	3/32" = 1'-0"
DESIGNED BY	PDB
DRAWN BY	PDB

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10/26/2022  
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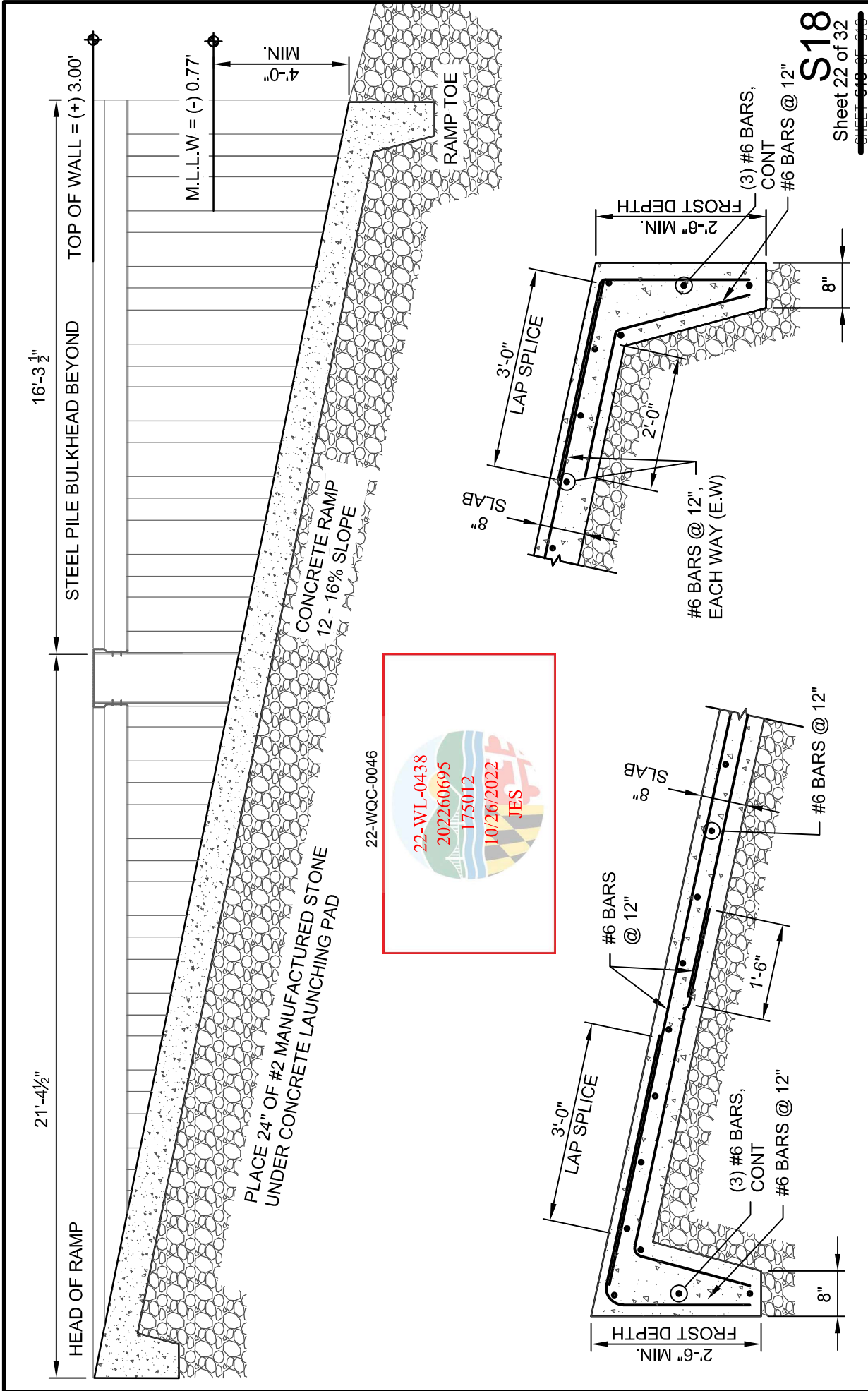
SCALE  
3/32"=1'-0"

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PDB


DRAWN BY  
PDB

DNR-NRP SLIPS PARTIAL  
PLAN

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT  
AT  
LOVE POINT STATE PARK  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
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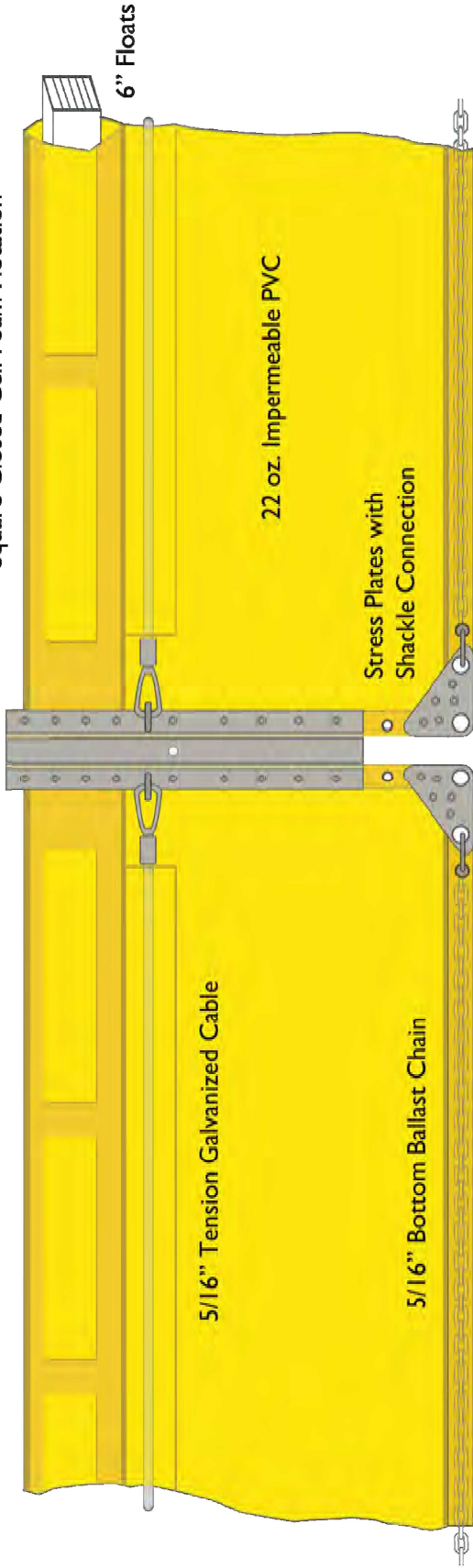


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SHEET 9-18 OF 21-06

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Universal Connectors

Square Closed Cell Foam Flotation



Eye Bolt Anchor Point (every 50 feet)

22-WQC-0046



AERIAL PHOTO  
SCALE: 1" = 200'

Drawing is for illustrative purposes only. Not to scale.  
Copyright © GEI Works 2018  
Natural forces such as current, wind, waves, and location affect your product and may require engineering, additional anchoring, and customization.



772-646-0597  
www.GEIWorks.com  
info@geiworks.com

### Type 2 HD Turbidity Curtain

Scale:	Drawing:	Revision:	Date:	By:
Not to Scale		1		

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TURBIDITY CURTAIN  
BY GEI WORKS, OR  
APPROVED EQUAL

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## TURBIDITY CURTAIN DETAIL

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT

AT

LOVE POINT STATE PARK  
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# Turbidity Curtain Installation Guide

22-WQC-0046

The following is a typical installation guide for installing the floating silt and turbidity curtain. Sites may require additional designs, layouts, and performance requirements.

**\*\*\*\* PLEASE NOTE: PROPER ANCHORING OF TURBIDITY CURTAINS IS EXTREMELY IMPORTANT. LOADING, VELOCITY, FLOW AND LOCATION OF SUBMERGED DEBRIS WILL IMPACT THE PERFORMANCE OF THIS PRODUCT—AND MAY CONTRIBUTE TO PRODUCT FAILURE. PLEASE ASK YOUR TEAM MEMBER FOR PROPER ANCHORING RECOMMENDATIONS BASED ON YOUR SITE AND CONDITIONS.**

(Prior to deploying, it is helpful to mark off your curtain layout using buoys or markers. This can help to direct boats along the right path during deployment and positioning.)

When arriving to your location, each section of the turbidity curtain will be bundled separately and secured with a vinyl strap. (Fig 1)

In addition, skirts located on the barrier will be additionally furled or rolled up to the flotation device with a light twine. DO NOT CUT THE TWINE REEFING LINES UNTIL YOUR CURTAIN HAS BEEN TOWED AND ANCHORED INTO POSITION. (see note page 2)

**Step 1:** Lay out bundles/sections of turbidity curtain along the shoreline of your location. Each bundle should be placed approximately 15 to 20 inches apart. Once in place, cut or untie the vinyl BUNDLE straps. (Fig 2)

**Step 2:** Slide together the aluminum section connectors. (Fig 3a) (These connectors will only be present on Type 2 or Type 3 curtains). Once together, insert the toggle pin to keep in place. (Fig 3b) (These types of Connectors will not be present on a Type 1 turbidity curtain.)

**Step 3:** Connect the grommet eyes of the sections using rope ties or heavy duty zip ties. This should be done by aligning the grommet eye of one section to the grommet eye of the next section. Once aligned, tie the rope through both grommet eyes.

Repeat for the entire depth of the skirt. (Fig 4)

(Steps 4 -7 Continued on p. 2)

For additional information regarding your curtain design, layout, or deployment method, please contact your local technical representative.



Fig 1



Fig2



Fig 3a



Fig 3b

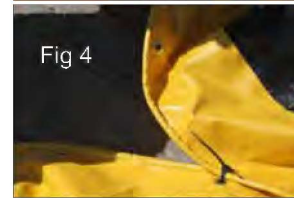


Fig 4



TURBIDITY CURTAIN BY GEI WORKS, OR APPROVED EQUAL

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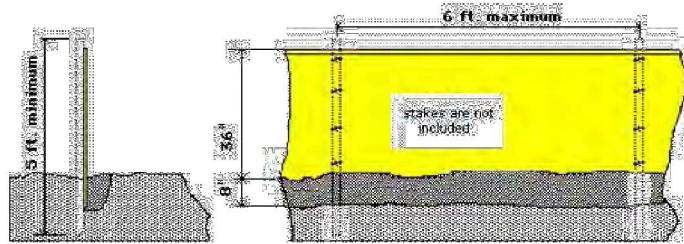
## TURBIDITY CURTAIN DETAILS

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
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AT  
LOVE POINT STATE PARK  
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FILE: \$FILE\$



# 44" STAKED TURBIDITY BARRIER



**Staked Barrier**

## Specifications for Staked Barrier with 18oz fabric

	ENGLISH	METRIC	TESTING METHOD
Weight	18 oz./yd <sup>2</sup>	610 g/m <sup>2</sup>	FS 5040 / ASTM D3776
Std. Dimensions	44 in. high x 100 ft	1.13m high x 30.5m	
Construction	9 x 9/1" by 840 x 840	4 x 4/cm by 924 x 924	
Grab Tensile	281 x 247 lbs./2"	1250 x 1100 N/5 cm	FS 5100 / ASTM D5034
Tongue Tear	51 x 45 lbs./1"	225 x 200 N/2.5 cm	FS 5134 / ASTM D2261
Adhesion	20 lbs./2"	90 N/5 cm	FS 5970 / ASTM D751
Finish	Matte		
Cold Crack	-4° F	-20° C	FS 5874 / ASTM D2136
Fire Retardant	Self Extinguishing		Pass

**All seams heat sealed**  
**Stakes are not included**  
**Standard size: 100ft. length X 44 in.**

TURBIDITY BARRIER BY GEI WORKS, OR APPROVED EQUAL



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**STAKED TURBIDITY BARRIER  
 DETAIL**  
 PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
**PHASE 1 MARINE IMPROVEMENT PROJECT**  
 AT  
**LOVE POINT STATE PARK**  
 FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
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 BY: \$USERNAME\$  
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DESIGN LOADING NOTES:

1. DEAD LOAD: CALCULATED WEIGHT OF THE CONSTRUCTION MATERIALS
2. LIVE LOAD: 60 POUNDS PER SQUARE FOOT
3. WIND LOAD DESIGN CRITERIA:
  - NOMINAL DESIGN WIND SPEED ( $V_{asd}$ ): 112 MPH
  - RISK CATEGORY: II
  - WIND EXPOSURE: D
  - INTERNAL PRESSURE COEFFICIENT ( $GC_{pi}$ ): 0.85
4. SNOW LOAD DESIGN CRITERIA:
  - GROUND SNOW LOAD ( $P_g$ ): 25 PSF
  - FLAT ROOF SNOW LOAD ( $P_f$ ): 20 PSF
  - EXPOSURE FACTOR ( $C_e$ ): 1.0
  - IMPORTANCE FACTOR ( $I_s$ ): 1.0
  - THERMAL FACTOR ( $C_t$ ): 1.0
5. MAXIMUM TOTAL ALLOWABLE LATERAL LOADING OF PILES: 3 KIPS

TIMBER PILING NOTES:

1. TIMBER PILES SHALL BE SOUTHERN YELLOW PINE AND HAVE A MINIMUM BUTT DIAMETER OF 12 INCHES, MINIMUM TIP DIAMETER OF 8 INCHES (12-3-8) CLASS B PILE MATERIAL, TAPER, STRAIGHTNESS, AND ALLOWABLE DEFECTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-25.
2. TIMBER PILES SHALL BE PRESERVATIVE PRESSURE TREATED IN ACCORDANCE WITH AWPA USE CATEGORY UC5A AND P5 FOR CHROMATED COPPER ARSENATE (CCA) TO A MINIMUM RETENTION OF 2.5 PCF.
3. PILES SHALL BE DRIVEN TO SPECIFIED TIP ELEVATION OR PRACTICAL REFUSAL, WHICHEVER IS ACHIEVED FIRST.
4. PILES SHALL BE INSTALLED TRUE AND PLUMB TO THE EMBEDMENT DEPTH AS SPECIFIED ON THESE DRAWINGS.
5. TIMBER PILES SHALL BE FREE FROM DEFECTS THAT MAY IMPAIR STRENGTH, DURABILITY, OR DRIVE ABILITY; CUT FROM SOLID SOUND LINE; CLOSED GRAINED TREES; FREE FROM INJURIOUS RINGS AND LARGE UNSOUND KNOTS OR DECAY. USE TREES THAT HAVE A UNIFORM TAPER FROM BUTT TO TIP.
6. HANDLE TIMBER PILES CAREFULLY WITHOUT SUDDEN DROPPING, BREAKING OF OUTER FIBERS, BRUISING OR PENETRATING THE SURFACE WITH TOOLS.
7. CUT AND DRILLED EXPOSED SURFACES SHALL BE LIBERALLY RECOATED BY BRUSH WITH A FIELD TREATMENT ACCEPTED BY THE OWNER'S REPRESENTATIVE.

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**S1** Sheet 26 of 32  
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STRUCTURAL NOTES  
PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT  
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WOOD AND TIMBER NOTES:

1. TIMBER CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF AITC 108 "STANDARD FOR HEAVY TIMBER CONSTRUCTION."
2. LUMBER AND TIMBER SHALL BE SOUTHERN PINE NO.2 GRADE OR BETTER AND CONFORM TO THE GRADING AND SIZING REQUIREMENTS OF DOC PS 20. WOOD TO BE PRESSURE TREATED.
3. LUMBER AND DECKING, INCLUDING STRINGERS AND BEAMS SHALL BE PRESERVATIVE PRESSURE TREATED IN ACCORDANCE WITH AWWA USE CATEGORY UC4B AND P5 FOR CHROMATED COPPER ARSENATE (CCA) TO A MINIMUM RETENTION OF 0.60 PCF FOR DECKING AND 1.5 PCF FOR OTHER MEMBERS.
4. CUT AND DRILLED EXPOSED TIMBER AND LUMBER SURFACES SHALL BE LIBERALLY RECOATED WITH PRESERVATIVE COMPOUND BY BRUSH WITH A FIELD TREATMENT ACCEPTED BY THE OWNER'S REPRESENTATIVE.
5. ALL STEEL BOLTS, CONNECTION PLATES AND OTHER HARDWARE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A 123 OR ASTM A 153, AS APPLICABLE.
6. ALL BOLTS SHALL BE THRU BOLTED AND RECESSED ON THE OUTBOARD SIDE.

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GENERAL NOTES:

1. ELEVATIONS ARE BASED ON NAVD88 DATUM AS SHOWN ON THIS DRAWING. ELEVATION 0.0 IS SET AT MEAN LOW WATER.
2. ALL EXISTING DIMENSIONS, ELEVATIONS AND CONDITIONS RELATING TO THE WORK SHALL BE FIELD VERIFIED BY THE CONTRACTOR. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ORDERING MATERIALS AND STARTING THE WORK.
3. STRUCTURAL PLANS AND SPECIFICATIONS, TO THE BEST OF THE ENGINEER'S KNOWLEDGE, COMPLY WITH THE APPLICABLE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC)2018.
4. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE FEDERAL, STATE AND MUNICIPAL REGULATIONS, INCLUDING THE FEDERAL DEPARTMENT OF GENERAL SERVICES, NRG, DNR, STANDARD SPECIFICATIONS FOR CONSTRUCTION.
5. WORK NOT INDICATED ON A PART OF THE DRAWINGS BUT REASONABLY IMPLIED TO BE SIMILAR TO THAT SHOWN AT CORRESPONDING PLACES SHALL BE REPEATED AND INCLUDED IN THE PROJECT.
6. IN THE CASE OF CONFLICTS BETWEEN THE NOTES, DETAILS AND SPECIFICATIONS, THE MOST RIGID REQUIREMENTS SHALL GOVERN.
7. THE CONTRACTOR SHALL NOT MAKE DEVIATIONS FROM THE DESIGN DRAWINGS WITHOUT WRITTEN APPROVAL OF THE ENGINEER.
8. THE CONTRACTOR SHALL TAKE ALL THE NECESSARY PRECAUTIONS/MEASURES TO PROTECT EXISTING FACILITIES, STRUCTURES AND UTILITY LINES FROM DAMAGES. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY DAMAGES THAT MAY OCCUR DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGE DONE TO EXISTING STRUCTURES, UTILITIES AND ROADWAYS THAT ARE NOT PART OF THIS SPECIFIC PROJECT. ANY DAMAGE CAUSED BY CONSTRUCTION OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AND AT NO ADDITIONAL COST TO THE OWNER.

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STRUCTURAL NOTES  
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PHASE 1 MARINE IMPROVEMENT PROJECT  
AT  
LOVE POINT STATE PARK  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
ANNAPOLIS, MD 21401

**GENERAL NOTES:**

1. OWNER: STATE OF MARYLAND FOR THE DEPARTMENT OF NATURAL RESOURCES  
580 TAYLOR AVENUE, E-4  
ANNAPOLIS, MD 21401  
DEED REF.: 01747700115  
PLAT REF.: --  
PLAT NO.: --  
TAX MAP: 0040 GRID: 0018 PARCEL: 0043  
SITE ADDRESS: 400 PIER AVENUE, STEVENSVILLE, MD 21666
2. ZONING: S1  
MIN. LOT AREA: N/A  
MIN. LOT WIDTH: 35 FT.  
FRONT YARD DEPTH: 34 FT.  
SIDE YARD: 15 FT.  
REAR YARD: 25 FT.  
BLDG. HEIGHT: N/A
3. TOTAL AREA IMPACTED, BELOW MHWL, BY PROPOSED BULKHEAD AND FILL IS 558± SQUARE FEET. 69 LF OF PROPOSED BULKHEAD IS GREATER THAN 1.5' CHANNELWARD OF EXISTING BULKHEAD/MHWL, CREATING 95 SF OF REQUIRED MITIGATION. TOTAL AREA OF FILL REMOVAL TO CREATE OPEN WATER HABITAT IS APPROXIMATELY 1,430 SF.
4. EXISTING SITE CONSISTS OF MULTIPLE BOAT SLIPS/BOATYARD.
5. NO PERSON SHALL PLACE ANY OBSTRUCTION IN AN EASEMENT ASSOCIATED WITH A FEDERAL OR STATE REGULATED RESOURCE WITHOUT PRIOR WRITTEN AUTHORIZATION BY THE APPROPRIATE REGULATORY AUTHORITY.
6. STORMWATER MANAGEMENT WILL BE ADDRESSED THROUGH REDUCTION OF IMPERVIOUS AREA.
7. TOPOGRAPHIC SURVEY BASED ON SURVEY PROVIDED BY CLIENT. SURVEY PERFORMED AUGUST 2019.
8. WATER SERVICE IS PRIVATE.
9. SEWER SERVICE IS PUBLIC.
10. THERE ARE EXISTING FLOODPLAINS ON THIS SITE.
11. THERE ARE EXISTING TIDAL WETLANDS SURROUNDING THIS SITE.
12. THERE ARE NO KNOWN CEMETERIES, HISTORIC STRUCTURES OR SCENIC ROADS ON OR ADJACENT TO THIS PROPERTY.
13. THERE ARE MULTIPLE ENVIRONMENTAL CONSTRAINTS ON THE PROPERTY INCLUDING TIDAL WETLANDS, TIDAL FLOODPLAINS, AND CRITICAL AREA.
14. FOREST CONSERVATION IS NOT REQUIRED FOR THIS PROJECT.
15. PARKING LOT AND COMMERCIAL SLIPS ARE COMMERCIAL ACCESSIBLE. REMAINING DRIVE AND SLIPS ARE PRIVATE.

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16. PLAN WAS CREATED WITHOUT OBTAINING A TITLE REPORT.
17. ALL ADJOINERS ARE ALSO ZONED S1.
18. REFER TO DGS STANDARD SELECTIVE DEMOLITION SPECIFICATION, "024119 - SELECTIVE DEMOLITION 07192021" AND MDOT SHA "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS JULY 2021".
19. CONSTRUCTION TO TAKE PLACE PER THE 2018 INTERNATIONAL PLUMBING CODE (IPC) AND THE 2018 INTERNATIONAL BUILDING CODE (IBC) AS ADOPTED BY QUEEN ANNES COUNTY AND THE STATE OF MARYLAND.
20. ALL WORK IS TO TAKE PLACE IN 1 PHASE.
21. INSIDE THE DNR BUILDING, PROVIDE 1 1/2" DOMESTIC COLD WATER PIPING AND CONNECT TO THE EXISTING DOMESTIC COLD WATER MAIN INSIDE THE MECHANICAL CLOSET. PROVIDE AN ISOLATION VALVE AND HOSE BIBB CONNECTION FOR WINTERIZATION OF PIPE SERVING DOCK PEDESTALS. PENETRATE BUILDING EXTERIOR WALL ABOVE GRADE, KEEPING PIPE TIGHT TO EXTERIOR WALL OF BUILDING.
22. APPROXIMATE AMOUNT OF MATERIALS TO BE PLACED IN WETLANDS:  
  - #67 STONE - 3' x 6' x 796' = 1,194 CF±
  - #4 RIP-RAP - 3' x 9' x 796' = 1,791 CF±
  - GRANULAR BACKFILL - 12,500 SF x 1.5' = 18,750 CF±
  - CLASS II ARMOR STONE - 3,150 SF x 2' = 6,300 CF±
  - GEOTEXTILE FABRIC - 4,050 SF±
  - SAND FILL - 2,550 CF±
  - GABION STONE - 210' x 1' x 5' = 1,050 CF±
  - #2 STONE - 20' x 30' x 2' = 1,200 CF±
23. TYPE 2 HD TURBIDITY CURTAIN, PER GEI WORKS, OR APPROVED EQUAL TO BE UTILIZED IN CHESTER RIVER FOR SEDIMENT CONTROL. INSTALL AND ANCHORED PER MANUFACTURER SPECIFICATIONS. MINIMUM 1' OF CLEARANCE BELOW CURTAIN, TO GROUND, WHERE POSSIBLE. IN WATER 30" OR SHALLOWER, STAKED TURBIDITY BARRIER IS TO BE UTILIZED. SEE SHEETS 9-11 FOR ADDITIONAL INFORMATION AND PLAN SHEETS FOR APPROXIMATE LOCATION. CURTAIN TO BE FREQUENTLY INSPECTED THROUGHOUT CONSTRUCTION TO ENSURE THAT IT IS FUNCTIONING PROPERLY.
24. EXISTING BULKHEAD TO BE CUT TO ELEVATION OF 1.0. IF INTERFERENCE OCCURS WITH REMAINING EXISTING BULKHEAD, EXISTING BULKHEAD TO BE REMOVED IN ORDER TO ALLOW FOR PROPOSED CONSTRUCTION.
25. TO THE EXTENT PRACTICABLE, USE A VIBRATORY HAMMER TO INSTALL STEEL PIPE PILE TO MINIMIZE ADVERSE IMPACTS ASSOCIATED WITH UNDERWATER NOISE.
26. TO THE EXTENT PRACTICABLE, AVOID USE OF CARCINOGENIC MATERIALS (E.G., COAL TAR) IN CONSTRUCTION MATERIALS THAT ARE IN FREQUENT CONTACT WITH WATER.
27. PILES WITHIN THE SAV AREA ARE TO BE CUT OFF AT GROUND LEVEL WITH MINIMAL DISTURBANCE TO THE SAV.

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9. JOB SAFETY, CONSTRUCTION PROCEDURES AND CONSTRUCTION MEANS AND METHODS ARE THE RESPONSIBILITY OF THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE CONSTRUCTION PROCEDURES AND SEQUENCE TO ENSURE JOB-SITE SAFETY. ALL PROPOSED STAGING AREAS SHALL BE COORDINATED WITH THE ENGINEER AND OWNER BEFORE STARTING THE WORK.
10. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ENVIRONMENTAL CONTROLS AS REQUIRED BY FEDERAL, STATE, AND MUNICIPAL REGULATIONS. ENVIRONMENTAL CONTROLS SHALL INCLUDE BUT NOT BE LIMITED TO TURBIDITY, DUST AND DEBRIS.
11. STORAGE, FUELING AND LUBRICATION OF EQUIPMENT AND MOTORIZED VEHICLES SHALL BE CONDUCTED IN A MANNER THAT AFFORDS THE MAXIMUM PROTECTION AGAINST SPILL AND EVAPORATION. FUEL, LUBRICANTS AND OIL SHALL BE MANAGED AND STORED IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. THERE SHALL BE NO STORAGE OF FUEL ON THE PROJECT SITE. FUEL MUST BE BROUGHT TO THE SITE AS NEEDED.
12. INSPECTION OF THE COMPLETED WORK WILL BE PERFORMED FOLLOWING NOTIFICATION FROM THE CONTRACTOR THAT A SPECIFIED PORTION OF THE WORK HAS BEEN COMPLETED.
13. CONTRACTOR MUST DISPLAY ON SITE THAT APPROPRIATE CONSTRUCTION PLACARDS AS REQUIRED BY THE PERMITTING AGENCIES HAVING JURISDICTION THROUGHOUT THE PROJECT.

FLOATING PIER DESIGN AND LOAD CONDITIONS:

1. VERTICAL LOADS:

- DEAD LOADS SHALL CONSIST OF THE ENTIRE WEIGHT OF THE FLOATING STRUCTURE, INCLUDING UTILITIES, RAMPS, DOCK BOXES AND OTHER ACCESSORIES.
- DECK SURFACE AND STRUCTURAL FRAME LIVE LOAD SHALL BE EQUAL TO 50 PSF APPLIED TO THE FULL SURFACE AREA OF THE DECK.
- BRIDGES AND RAMPS FOUR FEET (4') IN WIDTH OR LESS SHALL BE DESIGNED FOR 40 PSF APPLIED TO THE FULL SURFACE AREA AND 50 PSF FOR WIDTHS OVER FOUR FEET. BRIDGE AND RAMP HANDRAILS SHALL BE DESIGNED FOR A 200 POUND LOAD APPLIED IN ANY DIRECTION AND AT ANY POINT ALONG THE HANDRAIL.
- FLOTATION SHALL BE DESIGNED TO SUPPORT THE DEAD LOAD PLUS 30 PSF LIVE LOAD APPLIED TO THE FULL AREA OF THE DECK SURFACE.
- FREEBOARD UNDER DEAD LOAD CONDITIONS ONLY SHALL EQUAL 20" +/- 1", FREEBOARD UNDER COMBINED DEAD LOAD AND 30 LBS. PER SQUARE FOOT UNIFORMLY DISTRIBUTED LIVE LOAD SHALL NOT BE LESS THAN 8".
- CONCENTRATED LIVE LOAD: 400 LBS. AT ANY ONE POINT ON THE DECK SHALL NOT TILT THE DOCK MORE THAN SIX DEGREES FROM HORIZONTAL.
- NOTE: HIGHER LIVE LOADS MAY BE SPECIFIED DEPENDING ON CONDITIONS AND TRAFFIC.



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2. HORIZONTAL LOADS:

- A UNIFORM HORIZONTAL WIND LOADING FROM ANY DIRECTION SHALL BE CALCULATED AT 15 PSF ON ALL PROJECTED SURFACES, ASSUMING 100% BOAT OCCUPANCY. CRAFT PROFILE HEIGHTS SHALL BE DETERMINED FROM FIGURE 4-9, PAGE 106, ASCE REPORT NO. 50 REVISED. FULL WIND LOAD IS TO BE APPLIED TO ALL UNSHIELDED DOCK AND BOAT PROFILES AND 10% OF THE WIND LOAD IS TO BE APPLIED TO EACH SHIELDED BOAT PROFILE.
- A HORIZONTAL LOAD DUE TO IMPACT ON A FINGER DOCK SHALL BE THE RESULT OF THE LARGEST BERTHED CRAFT NORMALLY USING THE ADJACENT SLIP STRIKING THE END OF THE FINGER DOCK 10 DEGREES OFF CENTER LINE. FOR PURPOSES OF CALCULATIONS, THE WEIGHT OF THE CRAFT SHALL BE 12 TIMES THE FINGER LENGTH SQUARED (12L). THE CRAFT SHALL BE CONSIDERED MOVING AT A SPEED OF 3 FPS.

CAST IN PLACE CONCRETE:

1. CODES AND STANDARDS:

- a. ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
- b. ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
- c. ACI 117 "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS"
- d. ACI 305 "RECOMMENDED PRACTICE FOR HOT WEATHER CONCRETING"
- e. ACI 306 "RECOMMENDED PRACTICE FOR COLD WEATHER CONCRETING"
- f. ACI 347 "RECOMMENDED PRACTICE FOR CONCRETE FORM WORK"
- g. ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
- h. CRSI "MANUAL OF STANDARD PRACTICE"

2. REINFORCING MATERIALS:

- a. STEEL REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED
- b. PLAIN-STEEL WELDED WIRE REINFORCEMENT: ASTM A 185

3. CONCRETE MATERIALS:

- a. PORTLAND CEMENT: ASTM C 150, TYPE III
- b. FLY ASH: ASTM C 618, CLASS F
- c. GROUND GRANULATED BLAST FURNACE SLAG: ASTM C 989, GRADE 120
- d. NORMAL WEIGHT AGGREGATES: ASTM C 33
  - MAXIMUM COARSE AGGREGATE SIZE: 1 INCH NOMINAL
  - FINE AGGREGATE SHALL BE FREE OF MATERIAL WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT.
- e. WATER: ASTM C 94, POTABLE

4. ADMIXTURES:

- a. AIR ENTRAINMENT: ASTM C 260
- b. WATER-REDUCER: ASTM C 494
- c. SILICA FUME: ASTM C 1240
- d. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE SHALL BE PERMITTED.



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5. CONCRETE MIXTURES:

- a. FLY ASH, POZZOLAN, GROUND GRANULATED BLAST FURNACE SLAG, AND SILICA FUME MAY BE USED AS NEEDED TO REDUCE THE TOTAL AMOUNT OF PORTLAND CEMENT WHICH WOULD OTHERWISE BE USED BY NOT MORE THAN 40 PERCENT.
  - MAXIMUM SUBSTITUTION OF FLY ASH SHALL BE 20 PERCENT.
  - MAXIMUM SUBSTITUTION OF SILICA FUME SHALL BE 10 PERCENT.

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DATE  
10/24/2022

SCALE  
AS SHOWN

DESIGNED BY  
PDB

DRAWN BY  
PDB

STRUCTURAL NOTES

PROJECT: REPLACEMENT BULKHEADS, PIERS, PILES, REVETMENT  
PHASE 1 MARINE IMPROVEMENT PROJECT  
AT  
LOVE POINT STATE PARK  
FOR STATE OF MD DNR, 580 TAYLOR AVE E-4, QUEEN ANNE'S COUNTY,  
ANNAPOLIS, MD 21401

6. PROPORTION NORMAL WEIGHT CONCRETE MIXES AS FOLLOWS:

<u>LOCATION</u>	<u>28 DAY STRENGTH (fc)</u>	<u>WATER-CEMENTIOUS RATIO</u>	<u>SLUMP LIMIT</u>	<u>AIR CONTENT</u>
SLABS ON GRADE	5000 PSI	0.45	4" ± 1"	6.0% ± 1.5%

7. ALL CONCRETE MIX DESIGNS, INCLUDING CEMENT CONTENT, WATER CEMENT RATIO, FINE AND COARSE AGGREGATE CONTENT AND ALL ADMIXTURES, SHALL BE REVIEWED AND APPROVED BY ENGINEER PRIOR TO PLACING FIRST CONCRETE.
8. ALL CONCRETE SHALL BE SAMPLED AND TESTED BY THE TESTING AGENCY. THE CONTRACTOR SHALL NOTIFY THE TESTING AGENCY 48 HOURS PRIOR TO THE PLACING OF ANY CONCRETE.
9. THE CONCRETE STRUCTURE SHALL NOT SUPPORT THE DESIGN LIVE LOAD FOR A MINIMUM OF 28 DAYS AND ALL SHORING AND RESHORING REQUIRED TO SUPPORT THE CONCRETE STRUCTURE DURING CONSTRUCTION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR. SHOP DRAWINGS, SIGNED AND SEALED BY A REGISTERED ENGINEER IN THE STATE OF MARYLAND, SHALL BE SUBMITTED FOR REVIEW. SHOP DRAWINGS SHALL INDICATE THE TYPE, EXTENT, SIZE, AND LOCATION OF ALL SHORING AND RESHORING AS WELL AS THE SEQUENCE OF CONSTRUCTION.
10. MINIMUM COVER FOR ALL REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE INDICATED:

FOUNDATIONS	3 INCHES
SLABS ON GRADE	2 INCHES (TOP)



STRUCTURAL AND MISCELLANEOUS STEEL:

1. CODES AND STANDARDS:
- a. AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.
  - b. AISC 303 "CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES" 22-WQC-0046
  - c. AISC 360 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"
  - d. RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS"
  - e. AWS D1.1 "STRUCTURAL WELDING CODE"
  - f. AISC "SPECIFICATION FOR ARCHITECTURALLY EXPOSED STRUCTURAL STEEL"
2. SUBMITTALS:
- a. SHOP DRAWINGS INDICATING THE SIZES, EXTENT, AND LOCATION OF ALL STRUCTURAL AND MISCELLANEOUS STEEL FRAMING INCLUDING ALL CONNECTIONS, FASTENERS, AND BEARINGS.
3. MATERIALS:
- a. CHANNELS, ANGLES, PLATES: ASTM A 36
  - b. STEEL PIPE: ASTM A 53, TYPE E OR S, GRADE B
  - c. GALVANIZE: HOT-DIP ZINC COATING, ASTM A 123
4. CONNECTIONS:
- a. WELDED CONNECTIONS: E70XX ELECTRODES
  - b. HIGH-STRENGTH BOLTS: ASTM F 3125, A 325, TYPE 1, HEAVY-HEX STEEL STRUCTURAL BOLTS  
ASTM F 3125, A 490, TYPE 1, HEAVY-HEX STEEL STRUCTURAL BOLTS
  - c. SHEAR CONNECTORS: ASTM A 108, GRADES 1015 THROUGH 1020, HEADED STUD TYPE

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5. INSPECTIONS BY INDEPENDENT INSPECTION AGENCY:
- a. BOLTED CONNECTIONS: RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING A-325 OR A-490 BOLTS"
  - b. WELDED CONNECTIONS: VISUAL INSPECTION, TESTING AND INSPECTION PER AWS D1.1
  - c. VERIFY, WITH ERECTOR PRESENT, ELEVATIONS OF CONCRETE AND MASONRY BEARING SURFACES AND LOCATIONS OF ANCHOR BOLTS AND OTHER EMBEDDED ITEMS.
6. INSTALLATION
- a. ALL CONNECTIONS, UNLESS OTHERWISE NOTED, SHALL BE DOUBLE ANGLE OR SINGLE PLATE SHEAR CONNECTIONS DESIGNED AND DETAILED IN ACCORDANCE WITH AISC MANUAL OF STEEL CONSTRUCTION.
    - MINIMUM EDGE DISTANCE: 1 1/2 INCHES
    - BOLT SPACING: 3 INCHES
  - b. BEAM CONNECTIONS SHALL USE NO LESS THAN TWO 3/4" DIAMETER ASTM A 325N OR A 490 HIGH STRENGTH BOLTS.
  - c. ALL SHOP AND FIELD WELDS SHALL BE PERFORMED BY CERTIFIED WELDERS.
  - d. WELDS SHALL DEVELOP THE FULL STRENGTH OF MATERIALS BEING WELDED UNLESS OTHERWISE INDICATED.
  - e. THE CONTRACTOR SHALL NOT SPLICE OR CUT OPENINGS IN STEEL MEMBERS NOT SHOWN ON CONTRACT DRAWINGS WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER.

SPECIAL INSPECTIONS NOTES:

1. PER THE CONTRACT REQUIREMENTS, THE OWNER WILL ENGAGE THE SERVICES OF ONE OR MORE INSPECTION AGENCIES TO PROVIDE INSPECTION SERVICES DURING CONSTRUCTION ON WORK INDICATED IN THE SCHEDULE OF SPECIAL INSPECTIONS. IN ACCORDANCE WITH THE PROVISIONS OF THE 2018 INTERNATIONAL BUILDING CODE.
2. SPECIAL INSPECTIONS AND TESTING SHALL BE PERFORMED ON A CONTINUOUS OR PERIODIC FREQUENCY AS NOTED IN THE SCHEDULE.
3. REFER TO THE GENERAL NOTES, SPECIFICATIONS, AND GEOTECHNICAL REPORT FOR ADDITIONAL INSPECTION AND TESTING REQUIREMENTS.
4. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF DISCREPANCIES ARE NOT RECTIFIED, THE ENGINEER OF RECORD SHALL BE NOTIFIED PRIOR TO COMPLETION OF THAT PHASE OF WORK.
5. EACH INSPECTION AGENCY SHALL SUBMIT INSPECTION REPORTS TO THE CONTRACT, ARCHITECT, OWNER OR ENGINEER OF RECORD FOR REVIEW. REPORTS SHALL DOCUMENT REQUIRED INSPECTIONS AND CORRECTIONS OF ANY DISCREPANCIES. REPORTS SHALL BE PROVIDED AT INTERVALS CONVEYING THE PROGRESS OF CONSTRUCTION.



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