



U.S. Army Corps  
of Engineers

Baltimore District  
PN-20-69

# Public Notice

In Reply to Application Number  
**NAB-2020-60853-P13 (City of Havre De Grace/Water Street  
Living Shoreline & Heritage Park Boating Access Project)**

Comment Period: December 3, 2020 to December 24, 2021

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**THE PURPOSE OF THIS PUBLIC NOTICE IS TO INFORM INTERESTED PARTIES OF THE PROPOSED ACTIVITY AND TO SOLICIT COMMENTS. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.**

This District has received an application for a Department of the Army permit pursuant to Section 10 of the Rivers and Harbors Act (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344), as described below:

**APPLICANT:** Mayor and City Council of Havre De Grace  
711 Pennington Avenue  
Havre De Grace, Maryland 21078

**WATERWAY AND LOCATION OF THE PROPOSED WORK:** The proposed project is located along the Susquehanna River, adjacent to Water Street, in the City of Havre De Grace, in Harford County, Maryland. (Latitude: 39° 33' 13.31" N; Longitude 76° 5' 26.86" W).

**OVERALL PROJECT PURPOSE:** To provide approximately 2,863 linear feet of living shoreline protection, and proper stormwater management to the City of Havre De Grace for compliance with Total Maximum Daily Load reductions. In addition, adequate public boating access is needed along this section of shoreline and will require the installation of new boating/kayaking launches and bulkhead replacement.

**PROPOSED WORK:** The applicant is seeking Section 10 and 404 authorization for the following work: 1) construct 2,863 linear feet of living shoreline using a headland and bay design extending a maximum of 107 feet channelward of the mean high water line; 2) fill and grade approximately 32,989 cubic yards of sand wood chip mix and cobble fill, plant 52,734 square feet (1.21 acres) of high and low march tidal wetlands; 3) construct a two lane 37-foot wide by 80-foot long boat ramp with a 60-foot long by 6-foot wide floating dock; and 4) construct 645 linear feet of new steel sheet pile bulkhead approximately 18-inches in front of the existing bulkhead to be replaced.

The work is proposed in accordance with the enclosed plans.

**LEAD FEDERAL AGENCY:** The U.S. Army Corps of Engineers, as the lead federal agency, is responsible for all coordination pursuant to applicable federal authorities.

**APPLICANT'S PROPOSED AVOIDANCE, MINIMIZATION, AND COMPENSATORY**

**MITIGATION:** Steps were taken to ensure avoidance and minimization of impacts to waters of the United States to the maximum extent practicable. No impacts to tidal wetland are proposed. In addition, the conceptual plans were modified to minimize impacts to existing Submerged Aquatic Vegetation (SAV) habitat and limit waterward construction limits. The project will impact approximately 2.03 acres of open water and 2.05 acres of SAV habitat, of which, approximately 1.89 acres will be permanent SAV impact. Compensatory mitigation is not being proposed by the applicant for the 1.89 acres of permanent SAV impact as approximately 1.21 acres of native freshwater tidal marsh grasses will be planted within the living shoreline area.

**CORPS EVALUATION REQUIREMENTS:** This project will be evaluated pursuant to Corps Regulatory Program Regulations (33 CFR Parts 320-332). The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonable may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are conservation, economic, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, and consideration of property ownership and in general, the needs and welfare of the people. The evaluation of the impact of this project will also include application of the Clean Water Act Section 404(b)(1) Guidelines promulgated by the Administrator, U.S. Environmental Protection Agency.

**ENDANGERED SPECIES:** A preliminary review of this application indicates that the proposed work will have no effect on federally listed threatened or endangered species or their critical habitat, pursuant to Section 7 of the Endangered Species Act, as amended. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.

**ESSENTIAL FISH HABITAT:** The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 04-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH), including species of concern, life cycle habitat, or Habitat Areas of Particular Concern. The project site lies in or adjacent to EFH as described under MSFCMA for managed species under the MSFCMA. The Baltimore District has made a preliminary determination that the project will not have a substantial adverse effect on EFH. The Baltimore District has made a preliminary determination that mitigative measures are not required to minimize adverse effects on EFH at this time. This determination may be modified if additional information indicates otherwise.

**HISTORIC RESOURCES:** Pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 and applicable guidance, the Corps has reviewed the latest published version of the National Register of Historic Places and initially determined that no registered properties listed as eligible for inclusion, therein, are located at the site of the proposed work. The Corps has made the preliminary determination that the proposed project would have no effect on historic properties. The Corps final eligibility and effect determination will be based on coordination with the State Historic Preservation Office as appropriate and required, and with full consideration given to the proposed undertaking's potential direct and indirect effects on historic properties within the Corps' identified permit area.

**TRIBAL RESOURCES:** Section 106 of the NHPA also requires federal agencies to consult with federally recognized American Indian tribes that attach religious and cultural significance to historic properties that may be affected by the agency's undertaking. Corps Tribal Consultation Policy mandates an open, timely, meaningful, collaborative, and effective deliberative communication process that emphasizes trust, respect, and shared responsibility. The policy further emphasizes that, to the extent practicable and permitted by law, consultation works toward mutual consensus and begins at the earliest planning stages, before decisions are made and actions taken. The Corps final eligibility and effect determination will be based on coordination with interested tribes, in accordance with the Corps current tribal standard operating procedures as appropriate and required, and with full consideration given to the proposed undertaking's potential direct and indirect effects on tribal resources.

**WATER QUALITY CERTIFICATION:** The applicant is required to obtain a water quality certification in accordance with Section 401 of the Clean Water Act.

**COASTAL ZONE MANAGEMENT PROGRAMS:** Where applicable, the applicant has certified in this application that the proposed activity complies with and will be conducted in a manner consistent with the approved Coastal Zone Management Program. By this public notice, we are requesting the state concurrence or objection to the applicant's consistency statement.

The applicant must obtain any state or local government permits which may be required.

**SUBMISSION OF COMMENTS:** The Corps of Engineers is soliciting comments from the public; federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National

Environmental Policy Act. Comments provided will become part of the public record for this action and are subject to release to the public through the Freedom of Information Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Written comments concerning the work described above related to the factors listed above or other pertinent factors must be received by the U.S. Army Corps of Engineers, Baltimore District within the comment period specified above through postal mail at the address below or electronic submission to the project manager email address below. Written comments should reference the application number NAB-2020-60853-P13.

**PUBLIC HEARING REQUESTS:** Any person who has an interest which may be adversely affected by the issuance of this permit may request a public hearing. The request, which must be in writing, must be received within the comment period as specified above to receive consideration. Also, it must clearly set forth the interest which may be adversely affected by this activity and the manner in which the interest may be adversely affected. The public hearing request may be submitted by electronic mail or mailed to the following address:

[amy.h.elliott@usace.army.mil](mailto:amy.h.elliott@usace.army.mil)

Mrs. Amy Elliott

U.S. Army Corps of Engineers, Baltimore District

Regulatory Branch

State College Field Office

1631 South Atherton Street

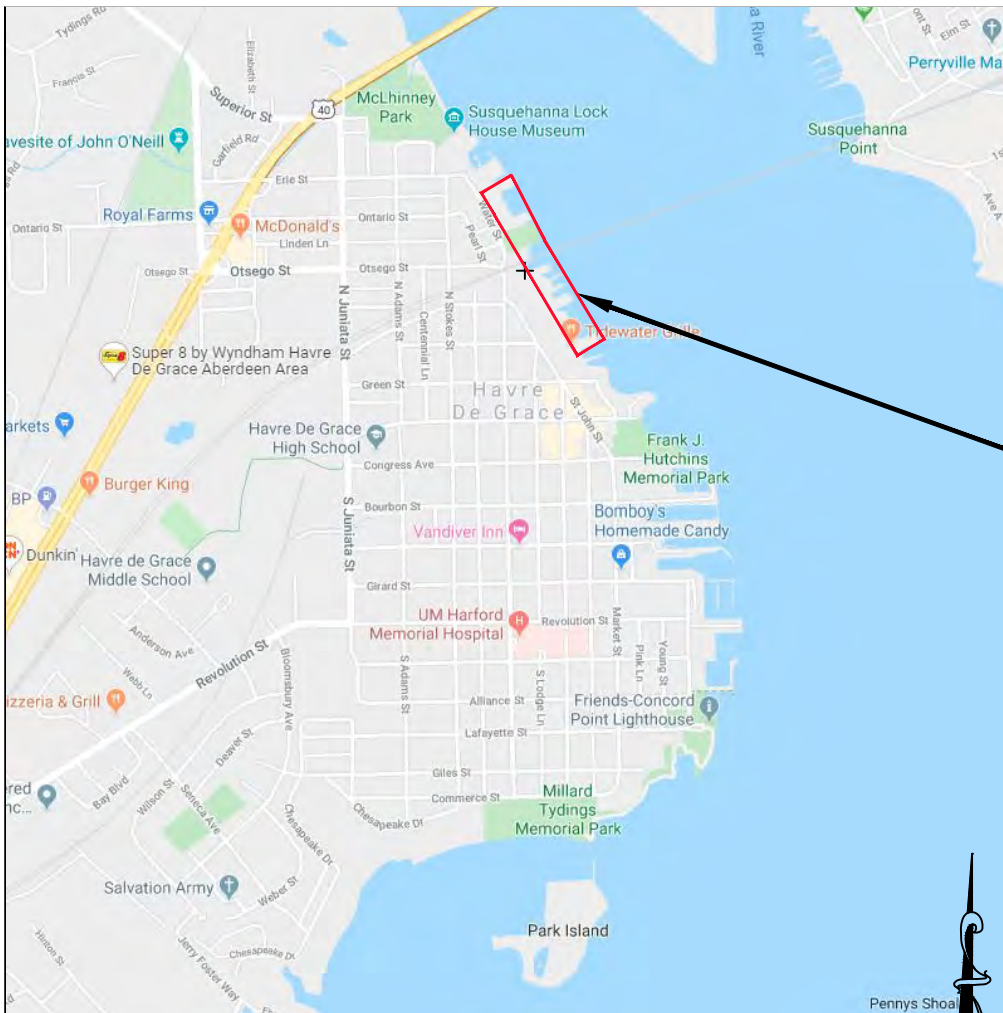
Suite 101

State College, PA 16801

It is requested that you communicate this information concerning the proposed work to any persons known by you to be interested, who did not receive a copy of this notice.

General information regarding the Corps' permitting process can be found on our website at <https://www.nab.usace.army.mil/Missions/Regulatory.aspx>. This public notice has been prepared in accordance with Corps implementing regulations at 33 CFR 325.3. If you have any questions concerning this specific project or would like to request a paper copy of this public notice, please contact Mrs. Amy Elliott, at 814-235-0573, or at amy.h.elliott@usace.army.mil. This public notice is issued by the Chief, Regulatory Branch.





VICINITY MAP



PROJECT AREA

PLAN

SCALE: 1"=500'

## SHEET INDEX

DESCRIPTION	SHEET
VICINITY MAP AND AERIAL PHOTO .....	1
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**UNDERWOOD & ASSOCIATES**  
 LANDSCAPE ARCHITECTURE • ECOLOGICAL RESTORATION  
 A DESIGN/BUILD Co.  
 1753 EBLING TRAIL • ANNAPOLIS, MD 21401  
 Tel. 410-849-3211 Fax. 410-849-2136

OCTOBER 20, 2020	
Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	1 Of 23
USACE Project No.	CENAB-OPR-MN 2020-60853
MDE Permit No.	20-WL-0558
VICINITY MAP AND AERIAL PHOTO	
<b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY	





FETCH = 38,232'



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# PLAN

SCALE: 1"=1000'

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OCTOBER 20, 2020		
PROJECT VICINITY CONDITIONS		
Scale	AS SHOWN	<b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY
Drawn By	J.H./J.K./K.B.	
Approved By	D.W.	
Sheet No.	2 OF 23	
USACE Project No.	CENAB-OPR-MN 2020-60853	
MDE Permit No.	20-WL-0558	

NAD 83

SUSQUEHANNA RIVER



# KEY TO PROPERTY OWNERS

ARVID INC .....	1
MTBM YACHT CLUB LLC .....	2
MAYOR AND CITY COUNCIL OF HdG .....	3-5,7,10-11
NATIONAL RR PASS CORP. ....	6
AMERICAN LEGION DEPT OF MD INC .....	8
WOOD, ROBERT L ET AL .....	9
FRANKLIN STREET PARTNERSHIP LLP .....	12

OCTOBER 20, 2020

250' 0 250'  
SCALE: 1"=250'

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Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	3 Of 23
USACE Project No.	CENAB-OPR- MN2020-60120
MDE Permit No.	20-WL-0558

## EXISTING CONDITIONS INDEX

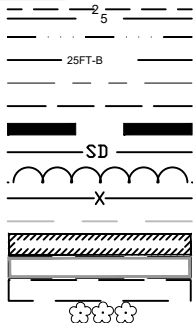
**WATER STREET LIVING  
SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY



SUSQUEHANNA R I

**LEGEND****EXISTING FEATURES**

CONTOURS  
 STREAMLINE  
 25' MODIFIED BUFFER  
 PROPERTY LINES  
 EASEMENTS  
 ZONING  
 STORM DRAIN  
 TREE CANOPY  
 FENCE  
 25' STEEP SLOPE BUFFER  
 BUILDINGS  
 ROADS  
 DRIVEWAY  
 TREES



100' 0 100'  
 SCALE: 1"=100'

**NOTES**

- MHW (+1.89) & MLW (0.0') BASED ON NOAA'S HAVRE DE GRACE STATION ID: 8574070 USING MLW DATUM.

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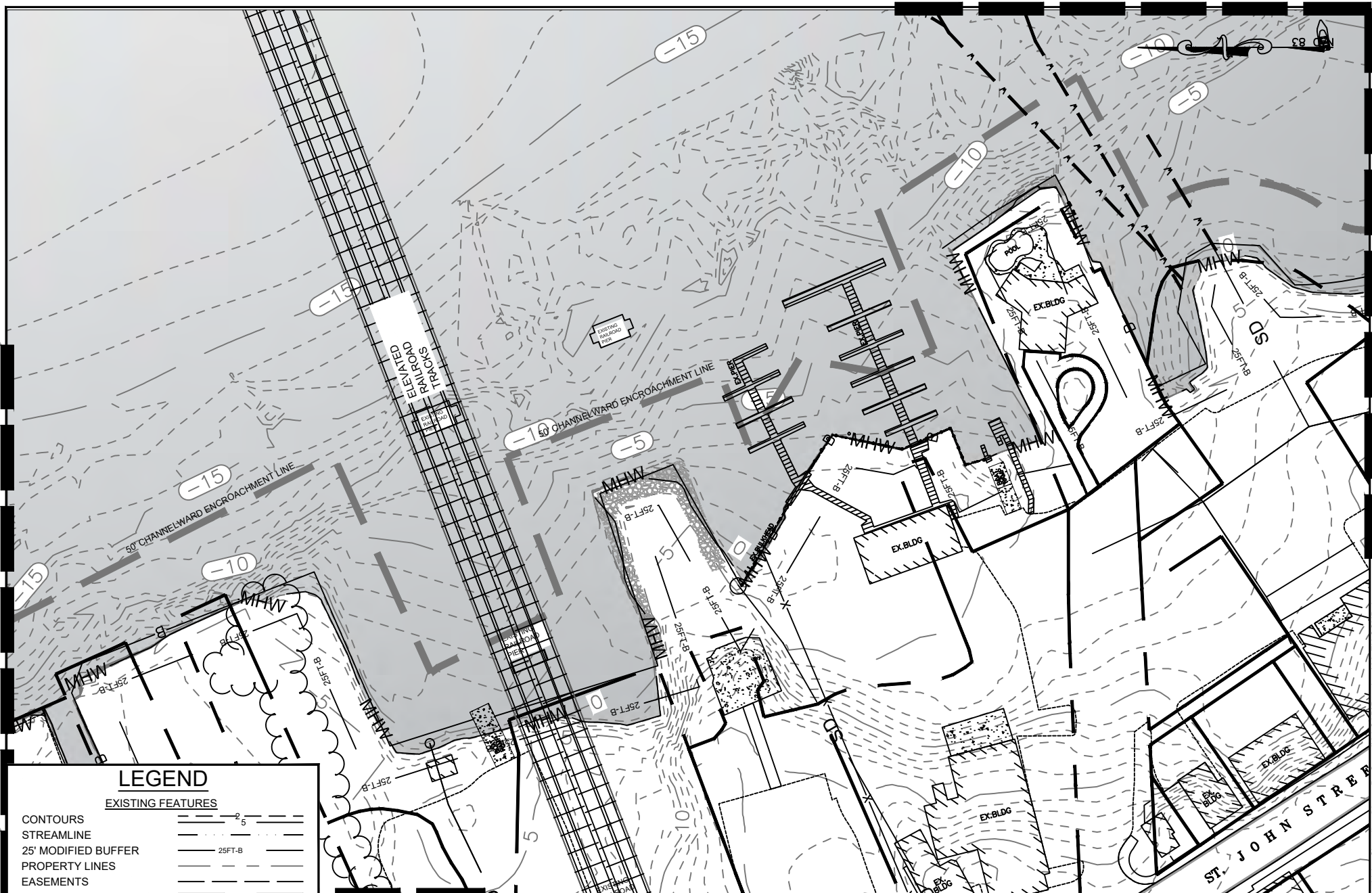
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OCTOBER 20, 2020

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Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	4 OF 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

**EXISTING CONDITIONS**

**WATER STREET LIVING  
 SHORELINE HAVRE DE GRACE**  
 TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
 653, 652, 473, 472, 470, & 463  
 6TH ELECTION DISTRICT, HARFORD COUNTY



# LEGEND

## EXISTING FEATURES

CONTOURS	
STREAMLINE	
25' MODIFIED BUFFER	
PROPERTY LINES	
EASEMENTS	
ZONING	
STORM DRAIN	
TREE CANOPY	
FENCE	
25' STEEP SLOPE BUFFER	
BUILDINGS	
ROADS	
DRIVEWAY	
TREES	
WATER INTAKE PIPES	

100' 0 100'

SCALE: 1"=100'

## UNDERWOOD & ASSOCIATES

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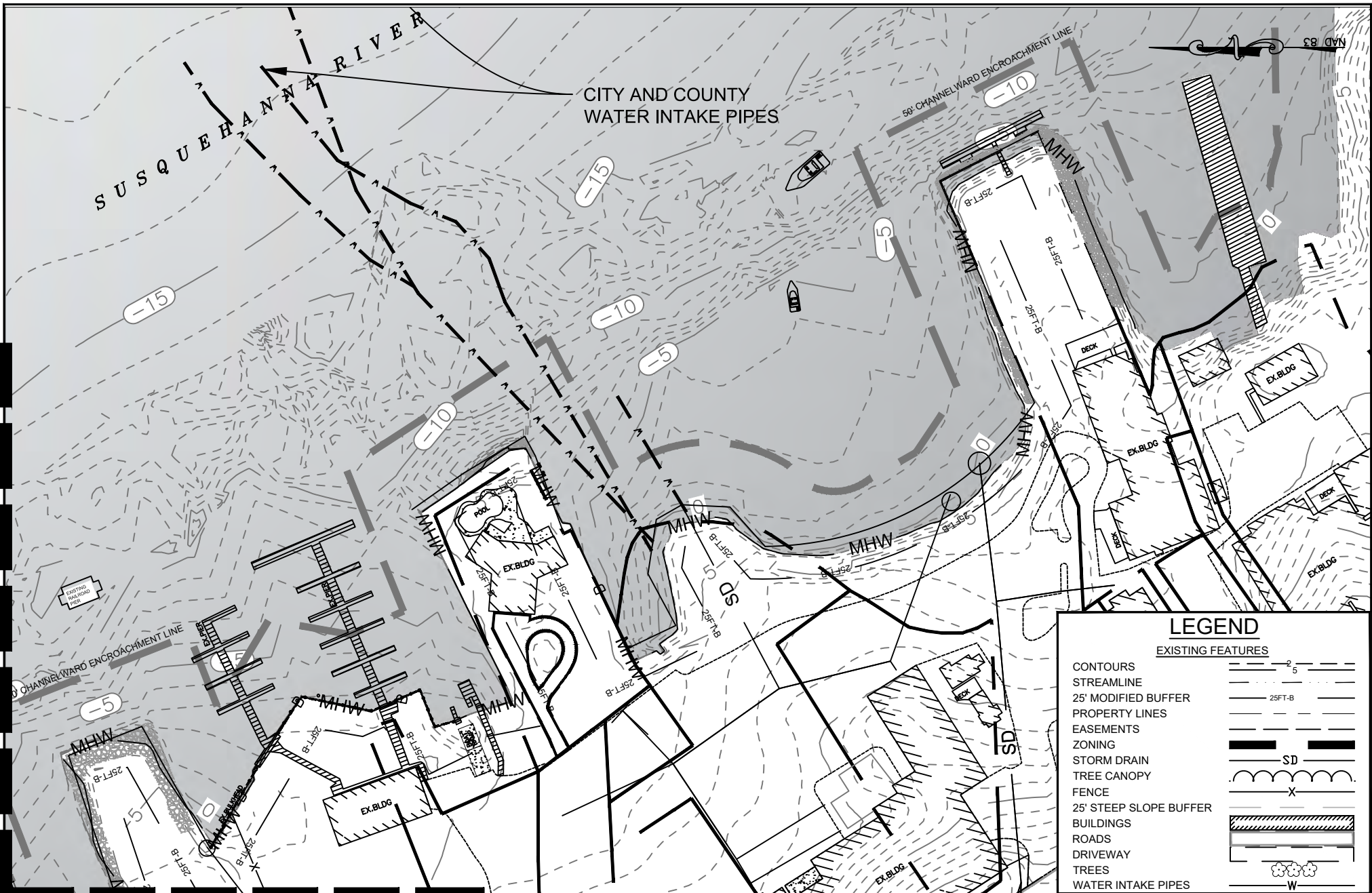
OCTOBER 20, 2020

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Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	5 OF 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

## EXISTING CONDITIONS

**WATER STREET LIVING**  
**SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY





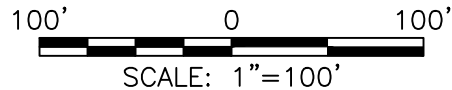
### LEGEND

**EXISTING FEATURES**

- CONTOURS: 2, 5
- STREAMLINE: 25FT-B
- 25' MODIFIED BUFFER: 25FT-B
- PROPERTY LINES: 25FT-B
- EASEMENTS: 25FT-B
- ZONING: SD
- STORM DRAIN: SD
- TREE CANOPY: X
- FENCE: X
- 25' STEEP SLOPE BUFFER: X
- BUILDINGS: EX.BLDG
- ROADS: SD
- DRIVEWAY: SD
- TREES: X
- WATER INTAKE PIPES: W

OCTOBER 20, 2020

SEE SHEET 5



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Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	6 OF 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

**EXISTING CONDITIONS**

**WATER STREET LIVING SHORELINE HAVRE DE GRACE**  
 TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463  
 6TH ELECTION DISTRICT, HARFORD COUNTY

NAD 83



200 0 200'

SCALE: 1"=200'

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tel. 410-849-9211 fax. 410-849-2196

OCTOBER 20, 2020	
Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	7 Of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558
<b>PROPOSED CONDITIONS INDEX</b>	
<b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b>	
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463	
6TH ELECTION DISTRICT, HARFORD COUNTY	



PROPOSED HEADLAND  
WILL TIE INTO EXISTING  
LARGE CONCRETE  
STRUCTURE

PROPOSED COARSE WOODY DEBRIS

PROPOSED POCKET EMBAYMENT

PROPOSED MLW  
0'




103 FT FROM MHW

## NOTES

- MHW (+1.89') & MLW (0.0') BASED ON NOAA'S HAVRE DE GRACE STATION ID: 8574070 USING MLW DATUM.

## LEGEND

### PROPOSED FEATURES

CONTOUR	— 1 —
DESIGNED BY BAY STATE	— — — — —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SUBMERGED COBBLE TOE	
BOULDERS	
COARSE WOODY DEBRIS	

50' 0 50'

SCALE: 1"=50'

**UNDERWOOD & ASSOCIATES**  
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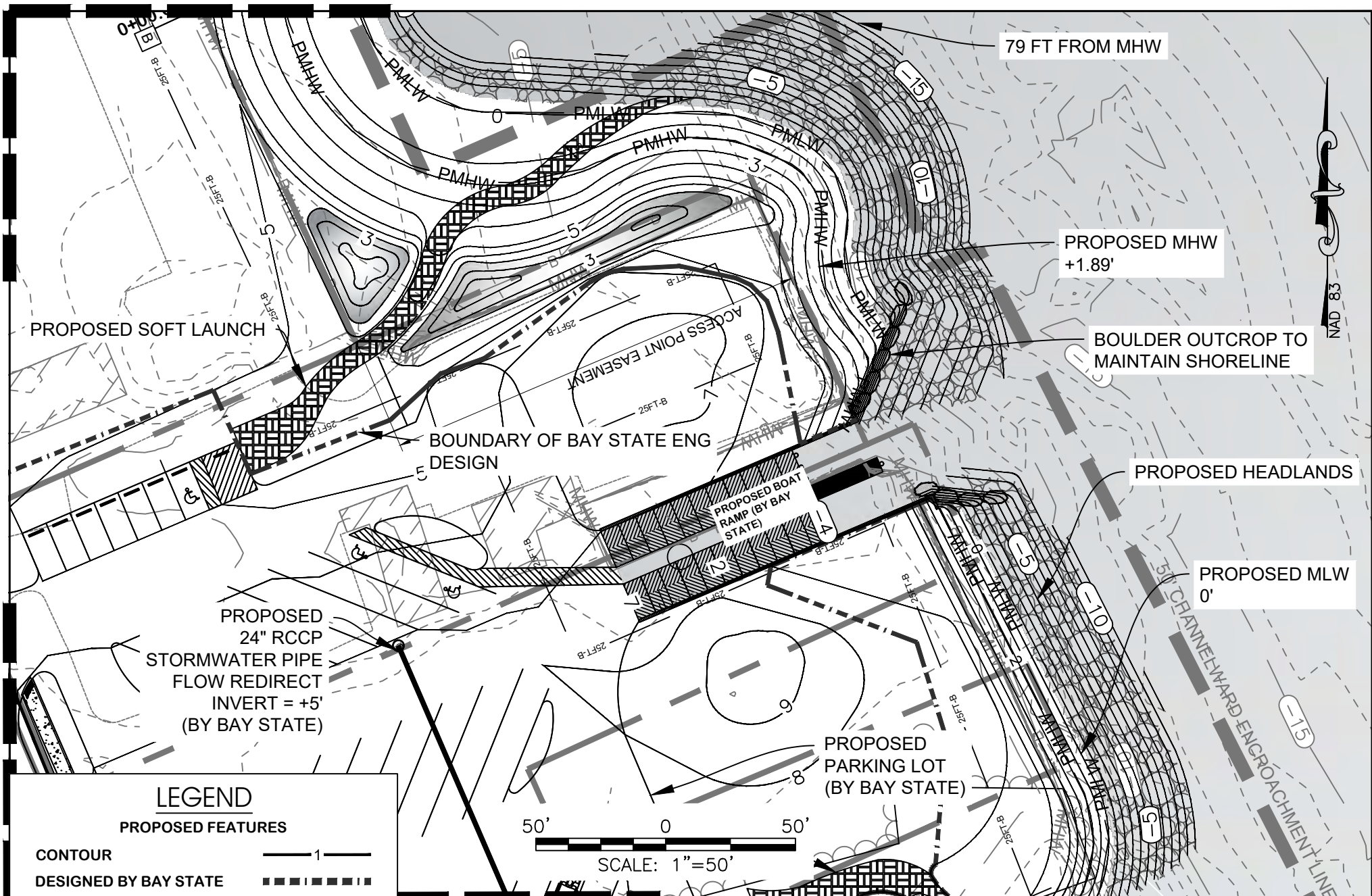
OCTOBER 20, 2020

Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	8 OF 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

**PROPOSED CONDITIONS**

**WATER STREET LIVING  
SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY





## LEGEND

### PROPOSED FEATURES

CONTOUR	— 1 —
DESIGNED BY BAY STATE	— ■ ■ ■ ■ ■ —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SUBMERGED COBBLE TOE	— [Cobble Pattern] —
BOULDERS	— [Boulder Pattern] —
COARSE WOODY DEBRIS	— [Woody Debris Pattern] —

SEE SHEET 10

SCALE: 1"=50'



Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	9 Of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

### PROPOSED CONDITIONS

**WATER STREET LIVING SHORELINE HAVRE DE GRACE**  
 TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
 653, 652, 473, 472, 470, & 463  
 6TH ELECTION DISTRICT, HARFORD COUNTY

OCTOBER 20, 2020

SEE SHEET 9

PROPOSED SIDEWALK  
(BY OTHERS)

PROPOSED  
COBBLE/GRAVEL  
OUTFALL APRONS

PROPOSED  
BUBBLER AT +5'  
INVERT = +1.9'  
(BY BAY STATE)

PROPOSED  
COARSE  
WOODY  
DEBRIS

84 FT FROM MHW

PROPOSED MHW  
+1.89'

PROPOSED SPSC

PROPOSED SIDEWALK  
(BY SHA)

0 50'  
SCALE: 1"=50'

## LEGEND

### PROPOSED FEATURES

CONTOUR	— 1 —
DESIGNED BY BAY STATE	— ■ ■ ■ ■ ■ —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SUBMERGED COBBLE TOE	— [Pattern] —
BOULDERS	— [Pattern] —
COARSE WOODY DEBRIS	— [Pattern] —

SEE SHEET 11

UNDERWOOD & ASSOCIATES

LANDSCAPE ARCHITECTURE • ECOLOGICAL RESTORATION

A DESIGN/BUILD Co.

1753 EBLING TRAIL • ANNAPOLIS, MD 21401  
Tel. 410-849-3211 Fax. 410-849-2136

OCTOBER 20, 2020

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Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	10 Of 23
USACE Project No.	CENAB-OPR- MN2020-60120
MDE Permit No.	20-WL-0558

### PROPOSED CONDITIONS

**WATER STREET LIVING  
SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY

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PROPOSED SIDEWALK  
(BY SHA)

PROPOSED SPSC

PROPOSED BOULDER  
OUTCROP

PROPOSED HEADLAND

PROPOSED MHW  
+1.89'PROPOSED MLW  
0'**LEGEND****PROPOSED FEATURES**

CONTOUR	— 1 —
FENCE	— x —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SUBMERGED COBBLE TOE	
BOULDERS	
COBBLE WEIR	

50' 0 50'  
SCALE: 1"=50'

SEE SHEET 12

**UNDERWOOD & ASSOCIATES**  
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OCTOBER 20, 2020

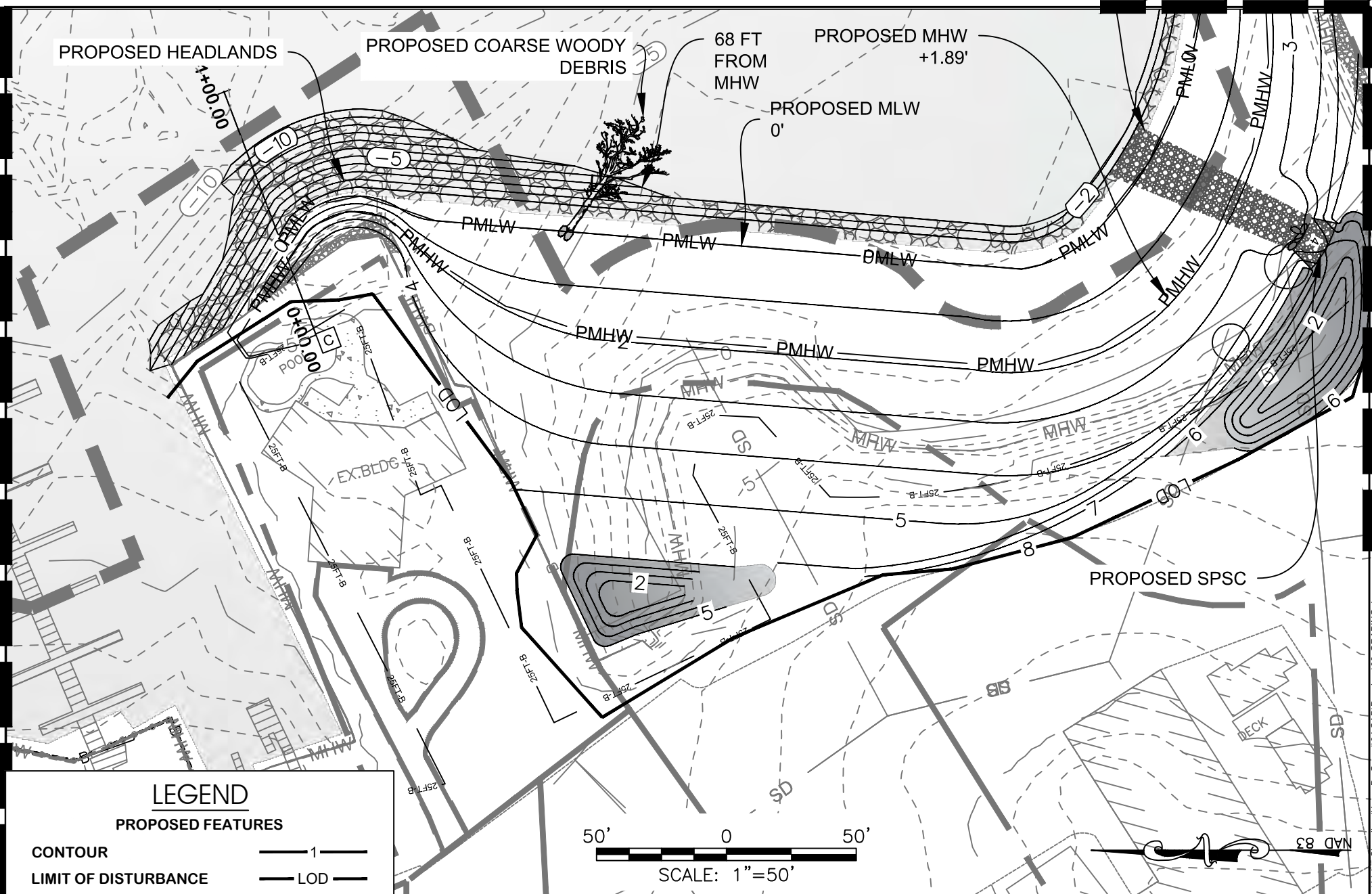
Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	11 Of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

**PROPOSED CONDITIONS**

**WATER STREET LIVING  
SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY

SEE SHEET 11

SEE SHEET 13



## LEGEND

### PROPOSED FEATURES

CONTOUR	1
LIMIT OF DISTURBANCE	LOD
MEAN HIGH WATER	PMHW
MEAN LOW WATER	PMLW
SUBMERGED COBBLE TOE	
BOULDERS	
COARSE WOODY DEBRIS	

50' 0 50'  
SCALE: 1"=50'

**UNDERWOOD & ASSOCIATES**  
LANDSCAPE ARCHITECTURE • ECOLOGICAL RESTORATION  
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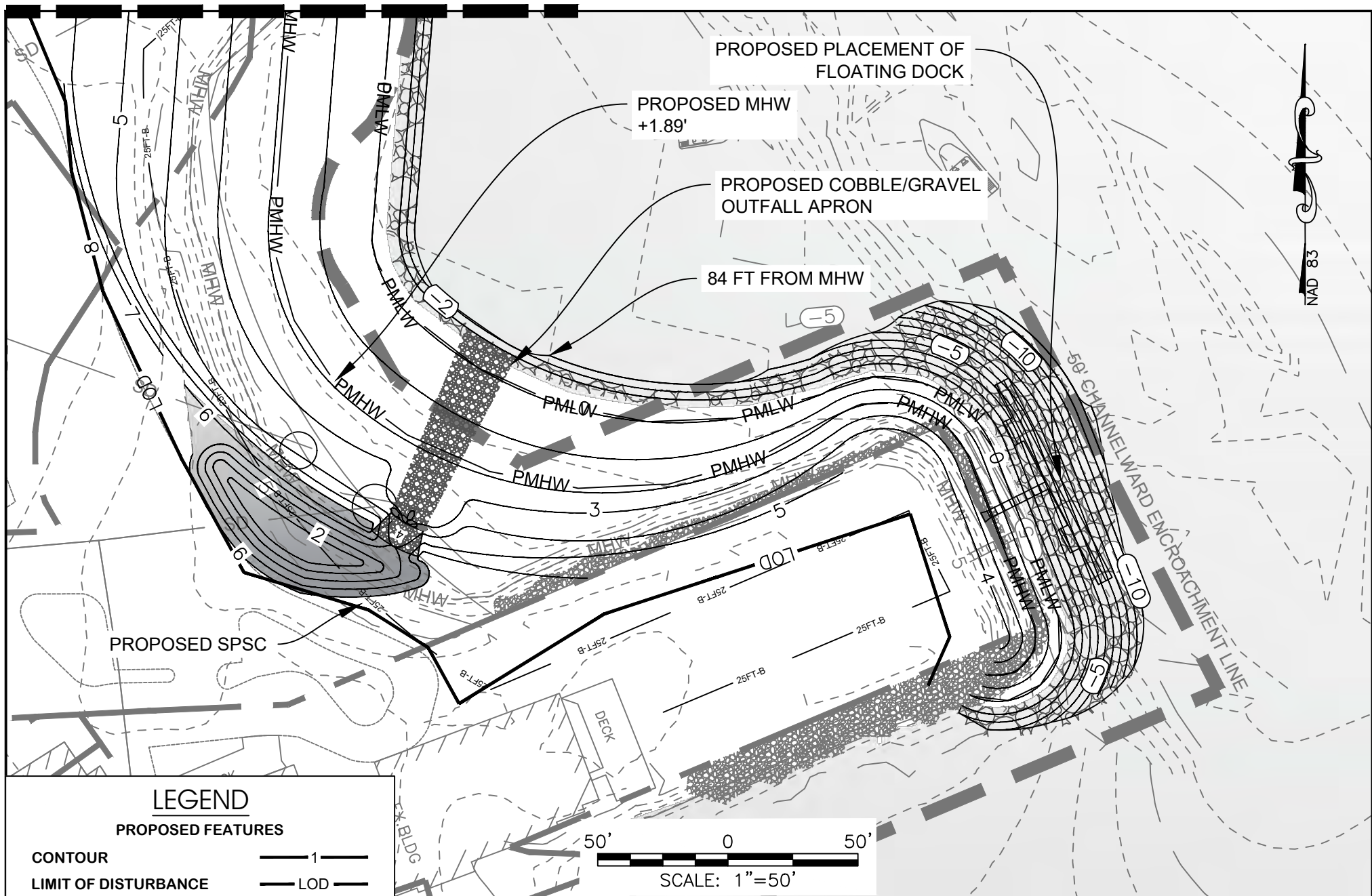
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Sheet No.	12 Of 23
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MDE Permit No.	20-WL-0558

### PROPOSED CONDITIONS

**WATER STREET LIVING SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY





NAD 83

## LEGEND

### PROPOSED FEATURES

CONTOUR	— 1 —
LIMIT OF DISTURBANCE	— LOD —
MEAN HIGH WATER	— PMHW —
MEAN LOW WATER	— PMLW —
SUBMERGED COBBLE TOE	
BOULDERS	
COARSE WOODY DEBRIS	

50' 0 50'

SCALE: 1"=50'

## UNDERWOOD & ASSOCIATES

LANDSCAPE ARCHITECTURE • ECOLOGICAL RESTORATION

A DESIGN/BUILD Co.

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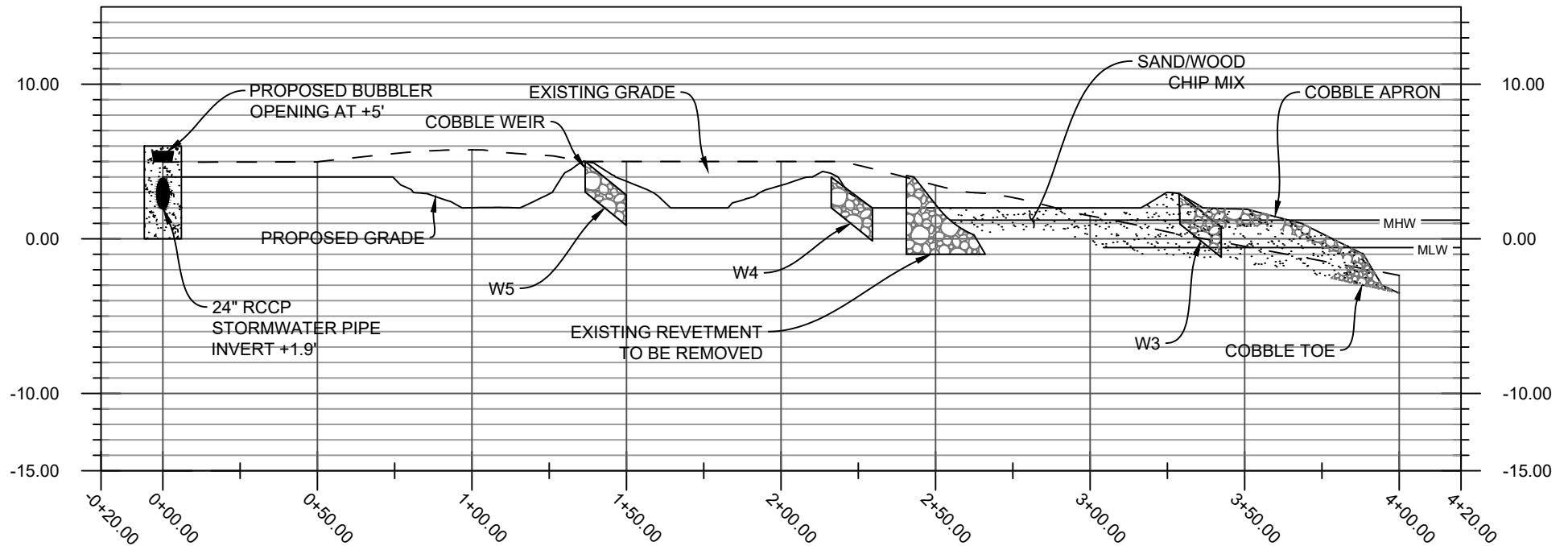
OCTOBER 20, 2020

Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	13 Of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

## PROPOSED CONDITIONS

**WATER STREET LIVING SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY

# **A: PROPOSED STEP-POOL STORMWATER CONVEYANCE PROFILE**



SCALE: 1"=50'

1753 EBLING TRAIL • ANNAPOLIS, MD 21401  
tel. 410-849-3211 fax. 410-849-2136

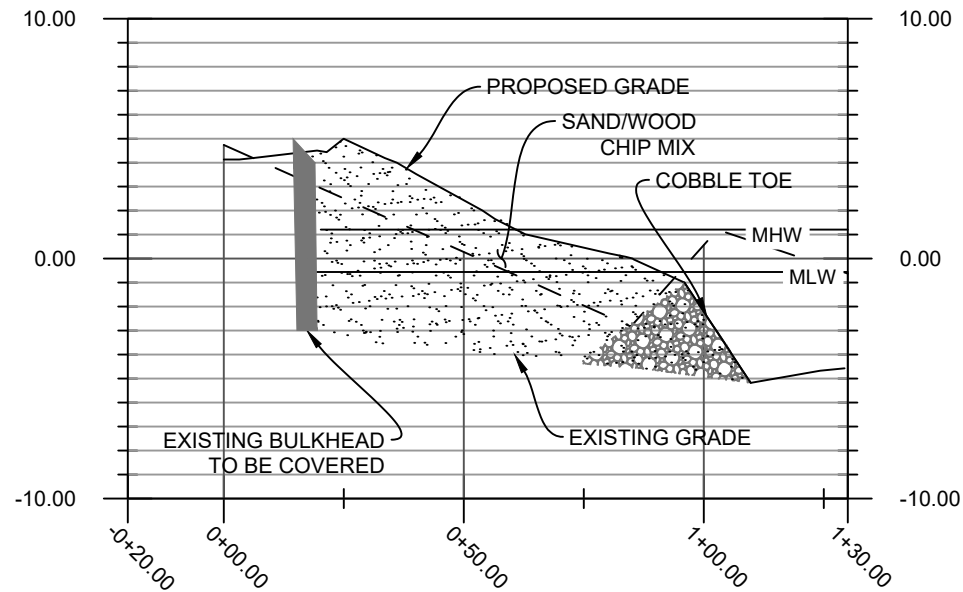
OCTOBER 20, 2020

Scale	AS SHOWN
Drawn By	J.H./J.K./K.B.
Approved By	D.W.
Sheet No.	14 of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558

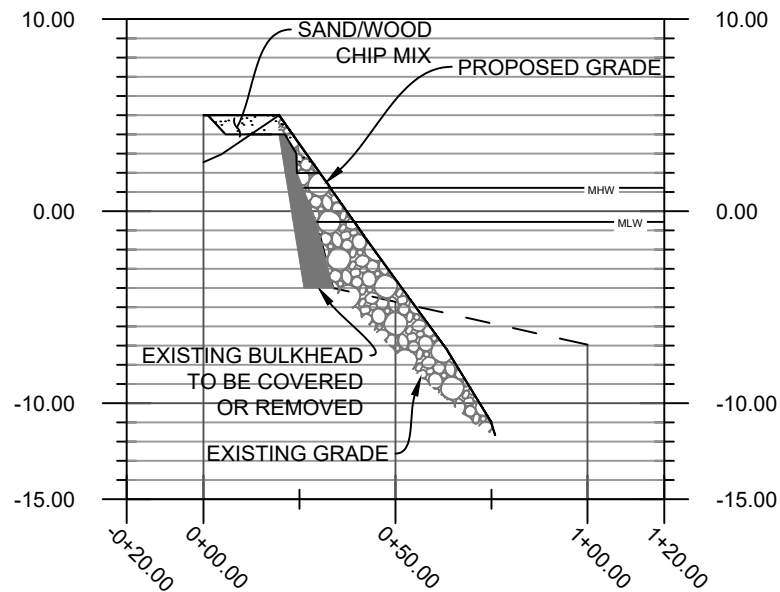
**PROFILES**

**WATER STREET LIVING**  
**SHORELINE HAVRE DE GRACE**  
 TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
 653, 652, 473, 472, 470, & 463  
 6TH ELECTION DISTRICT, HARFORD COUNTY

## B: PROPOSED POCKET BEACH PROFILE



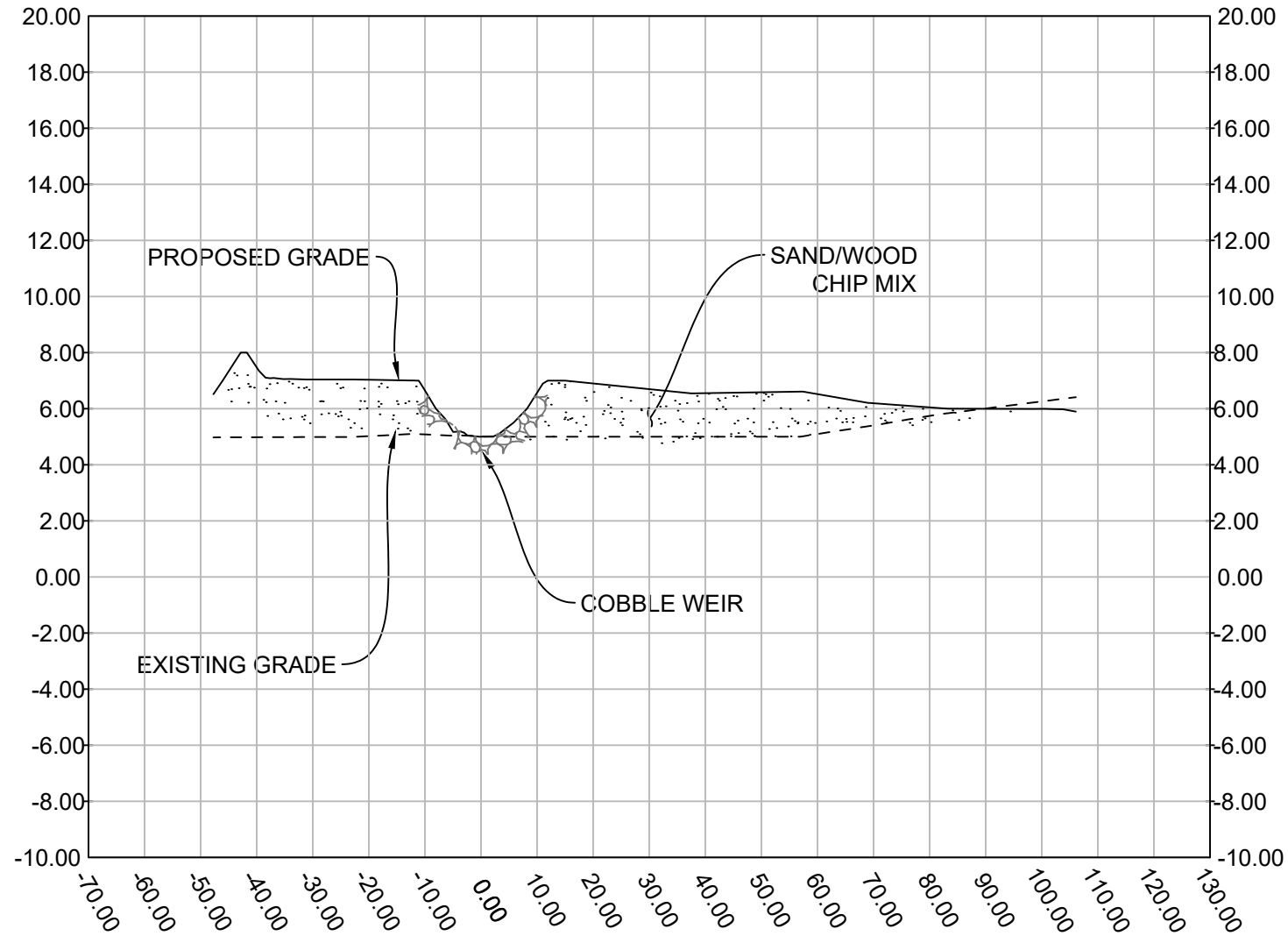
## C: PROPOSED HEADLAND PROFILE



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OCTOBER 20, 2020		
Scale	AS SHOWN	<b>PROFILES</b>  <b>WATER STREET LIVING</b> <b>SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY
Drawn By	J.H./J.K./K.B.	
Approved By	D.W.	
Sheet No.	15 Of 23	
USACE Project No.	CENAB-OPR-MN2020-60120	
MDE Permit No.	20-WL-0558	

# D: WEIR EL 6'



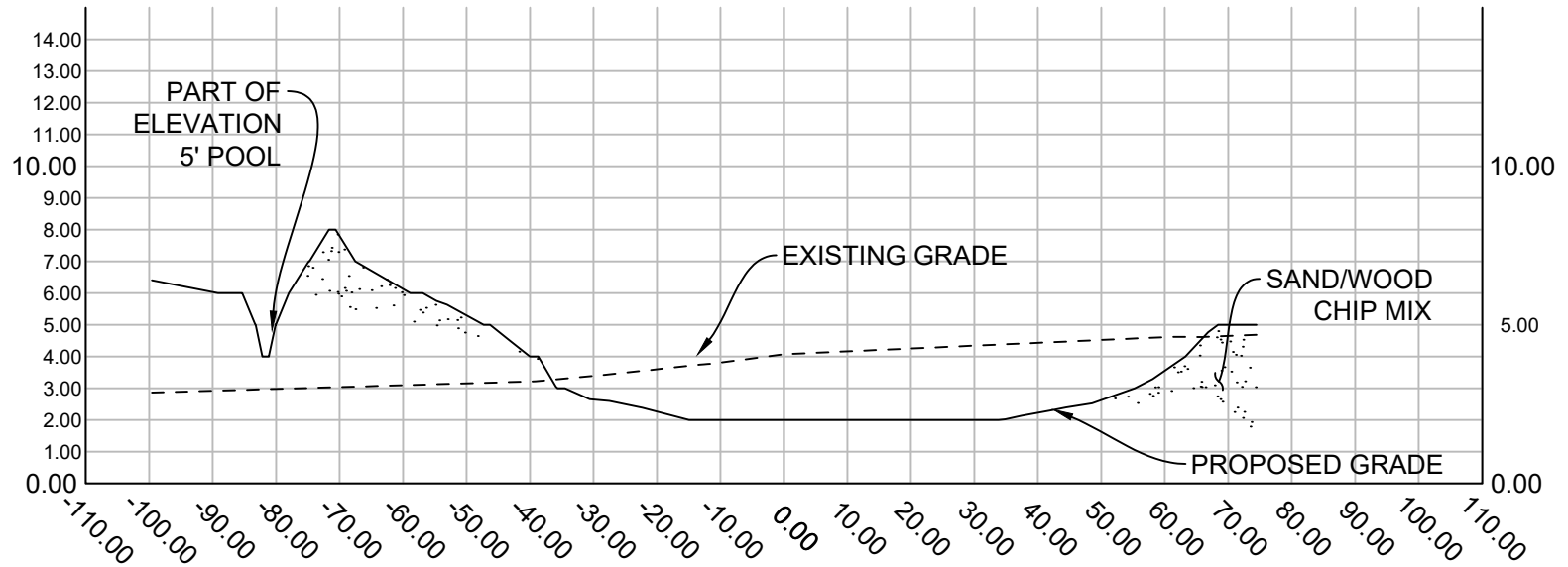
30' 0 30'  
SCALE: 1"=30'

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Approved By	D.W.
Sheet No.	16 of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558
<b>CROSS-SECTIONS</b>	
<b>WATER STREET LIVING</b>	
<b>SHORELINE HAVRE DE GRACE</b>	
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463	
6TH ELECTION DISTRICT, HARFORD COUNTY	



# E: POOL EL 4'



30' 0 30'  
SCALE: 1"=30'

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Sheet No.	17 Of 23
USACE Project No.	CENAB-OPR-MN2020-60120
MDE Permit No.	20-WL-0558
<b>CROSS-SECTIONS</b>	
<b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b>	
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463	
6TH ELECTION DISTRICT, HARFORD COUNTY	


# WOODY DEBRIS ANCHORING (TYP.) - PLAN VIEW

TOMBOLO (TYP.)

EMBEDDED TREE  
(EXPOSED CROWN)

BOULDER BURIED TO ANCHOR  
DEBRIS AT TRUNK INTERSECTION

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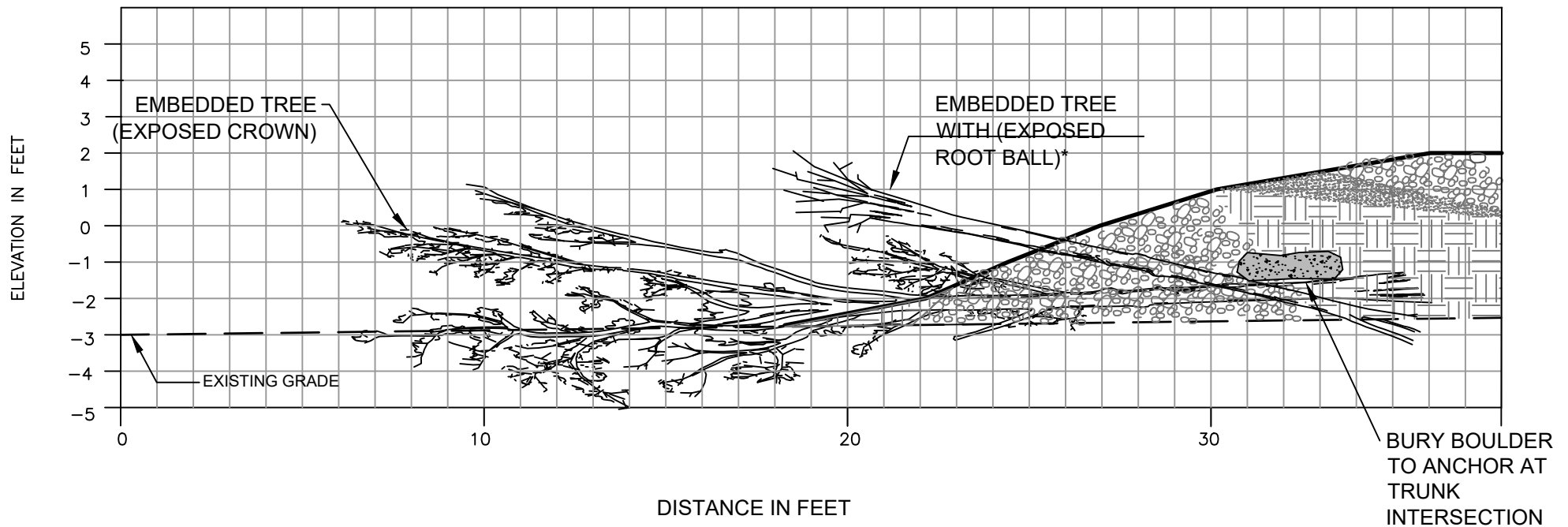
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OCTOBER 20, 2020

Scale	AS SHOWN
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Approved By	D.W.
Sheet No.	18 OF 23
USACE Project No.	CENAB-OPR-MIN 2020-60853
MDE Permit No.	20-WL-0558

**PROJECT DETAILS**  
**WATER STREET LIVING**  
**SHORELINE HAVRE DE GRACE**  
TAX MAP 0601, PARCELS 1787, 744, 715, 714,  
653, 652, 473, 472, 470, & 463  
6TH ELECTION DISTRICT, HARFORD COUNTY

# WOODY DEBRIS ANCHORING (TYP.) - PROFILE VIEW



\*NOTE: THE EMBEDDED TREE WITH EXPOSED ROOT BALL IS SET AT THE EXISTING GRADE. THIS DETAIL SHOWS THE ROOT BALL SLIGHTLY ELEVATED IN ORDER TO DISPLAY BOTH TREES. SEE PLAN VIEW FOR ALIGNMENT.

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OCTOBER 20, 2020		
Scale	AS SHOWN	<b>PROJECT DETAILS</b> <b>WATER STREET LIVING</b> <b>SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY
Drawn By	J.H./J.K./K.B.	
Approved By	D.W.	
Sheet No.	19 Of 23	
USACE Project No.	CENAB-OPR-MN 2020-60853	
MDE Permit No.	20-WL-0558	

## AT A GLANCE


Feature	Existing	Proposed	Difference
High Marsh (SF)	0	16,842	+16842
Low Marsh (SF)	0	35,892	+35892
Total Tidal Wetlands (SF)	0	52,734	+52734
Transitional Planting (SF)	0	60,642	+60642
Bulkhead (LF)	1345	0	-1345
Revetment (LF)	1518	0	-1518
Living Shoreline at MHW (LF)	0	2,214	+2214
<b>Channelward Area of Impact (SF)</b>	<b>176,335</b>		
Cut (CY)	0	Fill (CY)	27,427

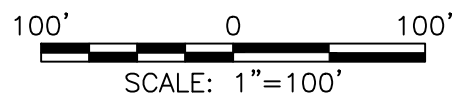
### NOTE

BAY STATE LAND SERVICES IS DESIGNING THE PARKING LOT AND BOAT RAMP. THEIR AREA OF RESPONSIBILITY HAS BEEN CLEARLY DEMARCATED IN THE PROPOSED CONDITIONS SHEETS. OUR TWO FIRMS WORKED CLOSELY TOGETHER TO ENSURE OUR RESPECTIVE PROJECTS WERE IN UNION WITH EACH OTHER.

Map Unit Symbol	Soil Description	Hydrologic Soil Grouping	Acres in DA	Percent of Area
Cx	Cut and Fill land	Not Rated	5.3	12.4%
MkB	Matapeake silt loam, 2 to 5 percent slopes	C	25.6	60.1%
MlaA	Mattepe silt loam, 0 to 2 percent slopes, northern coastal plain	C	11.7	27.5%
<b>Totals for Area of Interest</b>			<b>42.6</b>	<b>100%</b>

Waters of the US Impact					
WOTUS type	Area (SF)	Permanent (SF)	Temporary (SF)	Area (%)	Deliniation Criteria
Open Water	88,218	75,462	12,756	49.7%	Area of WOTUS below ex. MHW excluding Special Aquatic Sites
Tidal Wetland	0	0	0	0%	Section 404(b)(1), Subpart E - Special Aquatic Sites, § 230.41 Wetlands
Mudflat	0	0	0	0%	Section 404(b)(1), Subpart E - Special Aquatic Sites, § 230.42 Mudflats
Vegetated Shallows	89,411	82,495	6,916	50.3%	Section 404(b)(1), Subpart E - Special Aquatic Sites, § 230.43 Vegetated Shallows
<b>Total</b>	<b>177,629</b>	<b>157,957</b>	<b>19,672</b>		<b>Total area of WOTUS impacted</b>

 <p style="text-align: center;"><b>UNDERWOOD &amp; ASSOCIATES</b> LANDSCAPE ARCHITECTURE • ECOLOGICAL RESTORATION A DESIGN/BUILD Co.</p> <p style="text-align: center; font-size: small;">1753 EBLING TRAIL • ANNAPOLIS, MD 21401 Tel. 410-849-3211 Fax. 410-849-2136</p>		<p style="text-align: right;">OCTOBER 20, 2020</p>	
		<p><b>PROJECT DATA TABLES</b></p> <p><b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, &amp; 463 6TH ELECTION DISTRICT, HARFORD COUNTY</p>	
<p>Scale AS SHOWN</p> <p>Drawn By J.H./J.K./K.B.</p> <p>Approved By D.W.</p> <p>Sheet No. 20 Of 23</p> <p>USACE Project No. CENAB-OPR-MN2020-60120</p> <p>MDE Permit No. 20-WL-0558</p>			

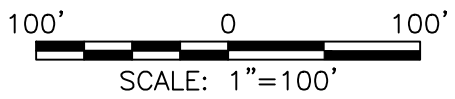
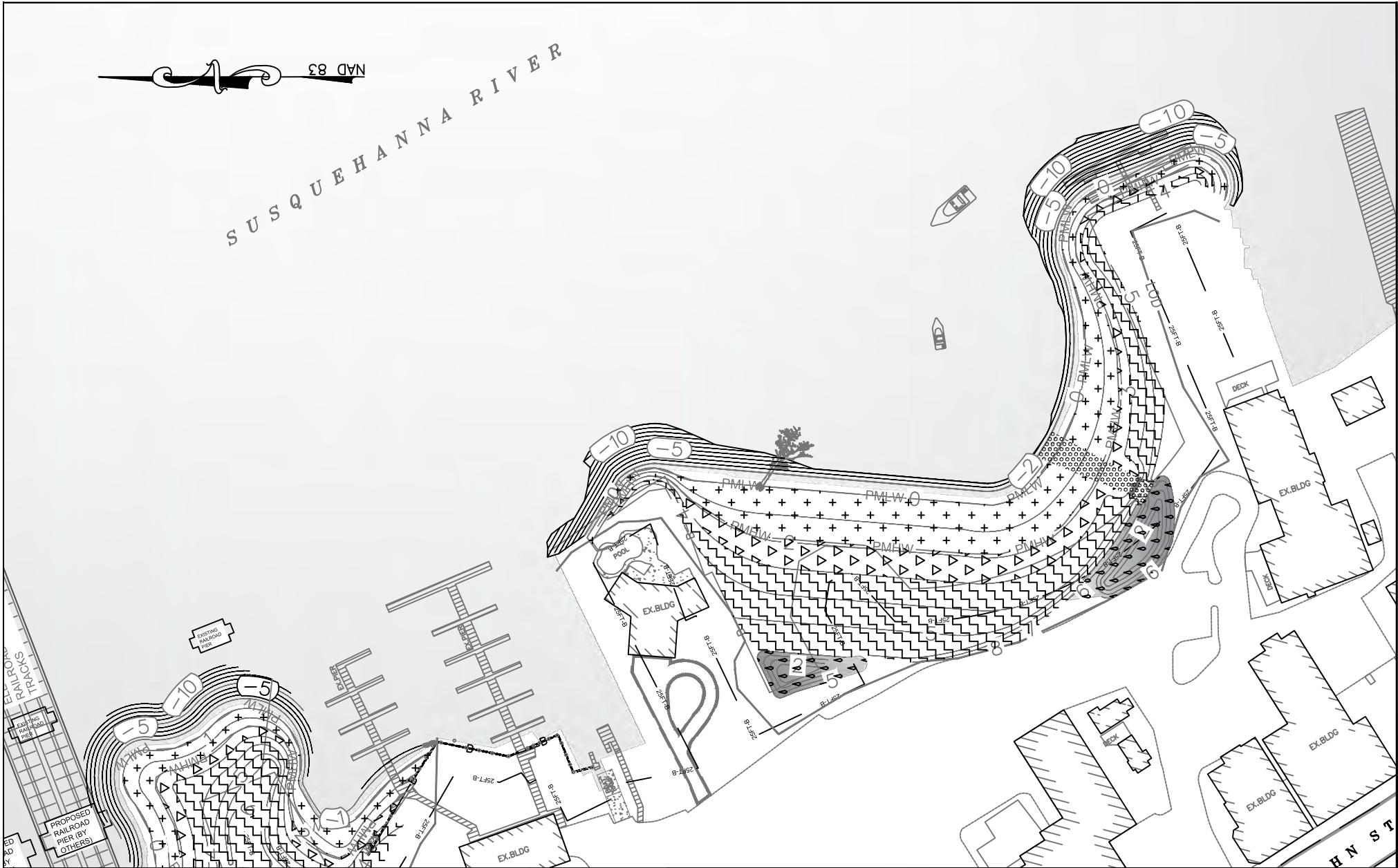


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OCTOBER 20, 2020	
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Approved By	D.W.
Sheet No.	21 Of 23
USACE Project No.	CENAB-OPR-MN 2020-60853
MDE Permit No.	20-WL-0558
<b>PLANTING PLAN</b>	
<b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b>	
TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463	
6TH ELECTION DISTRICT, HARFORD COUNTY	

Code File :S:\006-Projects\Water Street Living Shoreline (Havre De Grace)\04-CAD\Drawings\03\_PLANTING.dwg





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Approved By	D.W.
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USACE Project No.	CENAB-OPR-MN 2020-60853
MDE Permit No.	20-WL-0558
<b>PLANTING PLAN</b> <b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY	

Code: File :S:\006-Projects\Water Street Living Shoreline (Havre De Grace)\04-CAD\Drawings\09\_PLANTING.dwg

## Havre De Grace - Water Street Living Shoreline Phase 1 - Planting Schedule and Mitigation Calculations

Planting Zone	Symbol	Total Area (SF)	Common Name	Scientific Name	Type	Size	Distribution	Avg Spacing (ft)	Quantity	Credit Area (SF per plant)	Total Credit Area (SF)	Description				
Low marsh	<div>+</div> <div>+</div> <div>+</div> <div>+</div> <div>+</div>	35,892	Arrow arum	<i>Peltandra virginica</i>	Herbaceous	Gal	Random	2	2,243	2	4,487	Between MLW and MHW.				
			Pickernelweed	<i>Pontederia cordata</i>	Herbaceous	Gal	Random	2	2,243	2	4,487					
			Soft stem bulrush	<i>Scirpus tabernaemontani</i>	Herbaceous	Gal	Random	2	2,243	2	4,487					
			Three-square	<i>Scirpus pungens</i>	Herbaceous	Gal	Random	2	2,243	2	4,487					
High marsh	<div>▽</div> <div>▽</div> <div>▽</div> <div>▽</div> <div>▽</div> <div>▽</div>	16,842	Switchgrass	<i>Panicum virgatum</i>	Herbaceous	Gal	Random	2	702	2	1,404	Generally above MHW to elevation 3 ft.				
			Soft rush	<i>Juncus effusus</i>	Herbaceous	Gal	Random	2	702	2	1,404					
			Marsh hibiscus	<i>Hibiscus moscheutos</i>	Herbaceous	Gal	Random	2	702	2	1,404					
			Blueflag Iris	<i>Iris versicolor</i>	Herbaceous	Gal	Random	2	702	2	1,404					
			Goldenrod	<i>Solidago sempervirens</i>	Herbaceous	Gal	Random	2	702	2	1,404					
			Cardinal flower	<i>Lobelia cardinalis</i>	Herbaceous	Gal	Random	2	702	2	1,404					
Dry Pools / Stormwater Management Areas	<div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div> <div>⬇</div>	43,472	Blueflag Iris	<i>Iris versicolor</i>	Herbaceous	Gal	Random	5	97	2	194	Within intermittently flooded areas - mainly, SPSC pools.				
			Cardinal Flower	<i>Lobelia cardinalis</i>	Herbaceous	QT	Random	5	97	2	194					
			Cinnamon Fern	<i>Osmunda cinnamomea</i>	Herbaceous	QT	Random	5	97	2	194					
			Dense Blazing Star	<i>Liatris spicata</i>	Herbaceous	QT	Random	5	97	2	194					
			Little Bluestem	<i>Schizachyrium scoparium</i>	Herbaceous	QT	Random	5	97	2	194					
			Path Rush	<i>Juncus tenuis</i>	Herbaceous	QT	Random	5	97	2	194					
			Royal Fern	<i>Osmunda regalis</i>	Herbaceous	QT	Random	5	97	2	194					
			New England Aster	<i>Symphotrichum novae angliae</i>	Herbaceous	QT	Random	5	97	2	194					
			Swamp Milkweed	<i>Asclepias incarnata</i>	Herbaceous	QT	Random	5	97	2	194					
			American Cranberry	<i>Vaccinium macrocarpon</i>	Shrub	Gal	Random	10	24	50	1,250					
			Black Huckleberry	<i>Gaylussacia baccata</i>	Shrub	Gal	Random	10	24	50	1,250					
			Dwarf Huckleberry	<i>Gaylussacia dumosa</i>	Shrub	Gal	Random	10	24	50	1,250					
			Inkberry	<i>Ilex glabra</i>	Shrub	Gal	Random	10	24	50	1,250					
			Smooth Alder	<i>Alnus serrulata</i>	Shrub	Gal	Random	10	24	50	1,250					
			Summersweet	<i>Clethra alnifolia</i>	Shrub	Gal	Random	10	24	50	1,250					
			Swamp Azelea	<i>Rhododendron viscosum</i>	Shrub	Gal	Random	10	24	50	1,250					
			Swamp Bayberry	<i>Myrica heterophylla</i>	Shrub	Gal	Random	10	24	50	1,250					
			Wax Myrtle	<i>Myrica cerifera</i>	Shrub	Gal	Random	10	24	50	1,250					
Cobble Riffle Grade Controls / Stormwater Management Areas	<div>○</div> <div>○</div> <div>○</div> <div>○</div> <div>○</div>	3,319	Bladder Sedge	<i>Carex intumescens</i>	Herbaceous	Qt	Random	2	166	2	332	Within the footprint of constructed riffle weirs above limits of baseflow, between cobbles				
			Broomsedge	<i>Andropogon virginicus</i>	Herbaceous	Qt	Random	2	166	2	332					
			Bushy Bluestem	<i>Andropogon glomeratus</i>	Herbaceous	Qt	Random	2	166	2	332					
			Fringed Sedge	<i>Carex crinita</i>	Herbaceous	Qt	Random	2	166	2	332					
			Tussock Sedge	<i>Carex stricta</i>	Herbaceous	Qt	Random	2	166	2	332					
Transitional	<div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div> <div>◀</div> <div>▶</div>	60,642	American Beech	<i>Fagus grandiflora</i>	Tree	2-3'	Random	10	67	100	6,800	Replanting areas that are outside intermittently flooded areas.				
			Atlantic White Cedar	<i>Chamaecyparis thyoides</i>	Tree	2-3'	Random	5	270	100	27,000					
			Sweetbay Magnolia	<i>Magnolia virginiana</i>	Tree	2-3'	Random	10	67	100	6,800					
			Broomsedge	<i>Andropogon glomeratus</i>	Herbaceous	Qt	Random	5	270	2	540					
			New england aster	<i>Dryopteris arguta</i>	Herbaceous	Qt	Random	5	270	2	540					
			Summersweet	<i>Clethra alnifolia</i>	Herbaceous	Qt	Random	5	270	2	540					
			Dense Blazing Star	<i>Liatris spicata</i>	Herbaceous	Qt	Random	5	270	2	540					
			Cardinal Flower	<i>Lobelia cardinalis</i>	Herbaceous	Qt	Random	5	270	2	540					
			Wax Myrtle	<i>Morella cerifera</i>	Herbaceous	Qt	Random	5	270	2	540					
			Path Rush	<i>Juncus tenuis</i>	Herbaceous	Qt	Random	5	270	2	540					
			Switchgrass	<i>Panicum virgatum</i>	Herbaceous	Qt	Random	5	270	2	540					
			Milkweed	<i>Asclepias incarnata</i>	Herbaceous	Qt	Random	5	270	2	540					
			Critical Area Mitigation Calculations			Total Area of Disturbed Canopy (SF)		Mitigation Ratio		Total Mitigation Credit Required (SF)			Total Credit Area (SF)		Percent Mitigation (%)	
						2,129		2:1		4,258			96,383		2264%	

Living Shoreline (Havre De Grace)04-CADDrawings10\_PLANTING DETAILS.dwg



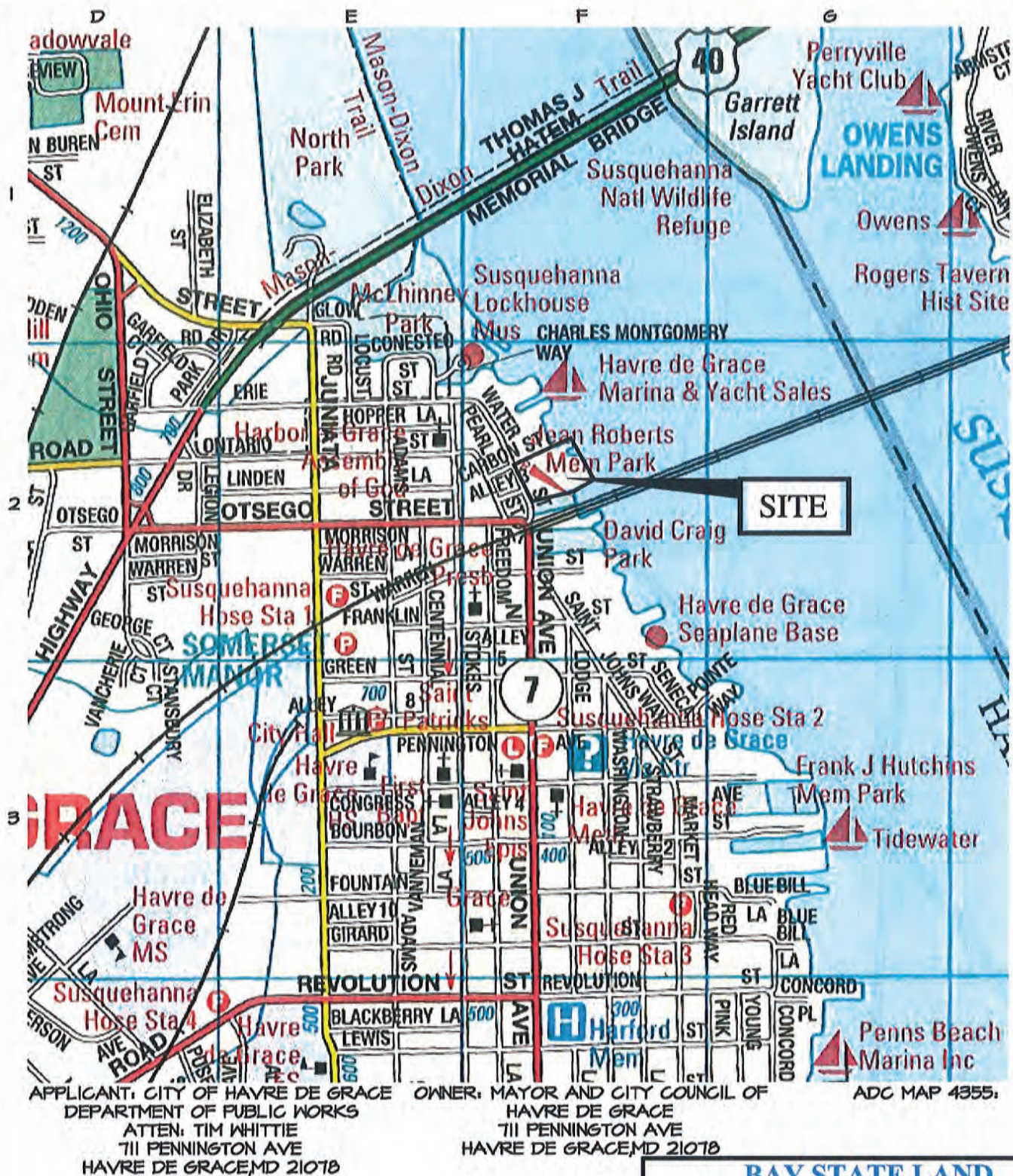
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Sheet No.	23 Of 23
USACE Project No.	CENAB-OPR-AMN 2020-60863
MDE Permit No.	20-WL-0558
<b>PLANTING DETAILS</b> <b>WATER STREET LIVING SHORELINE HAVRE DE GRACE</b> TAX MAP 0601, PARCELS 1787, 744, 715, 714, 653, 652, 473, 472, 470, & 463 6TH ELECTION DISTRICT, HARFORD COUNTY	

Cadd File: S:\006-Projects\Water Street Living Shoreline (Havre De Grace)\04-CAD\Drawings\10 - PLANTING DETAILS.dwg





LOCATION MAP

# WATER STREET HERITAGE PARK

SHEET 1 OF 22 CITY OF HAVRE DE GRACE, MARYLAND  
SCALE: 1" = 1000' DATE: 5-20-2020 DRAWN BY: RAL JOB NO. 18058

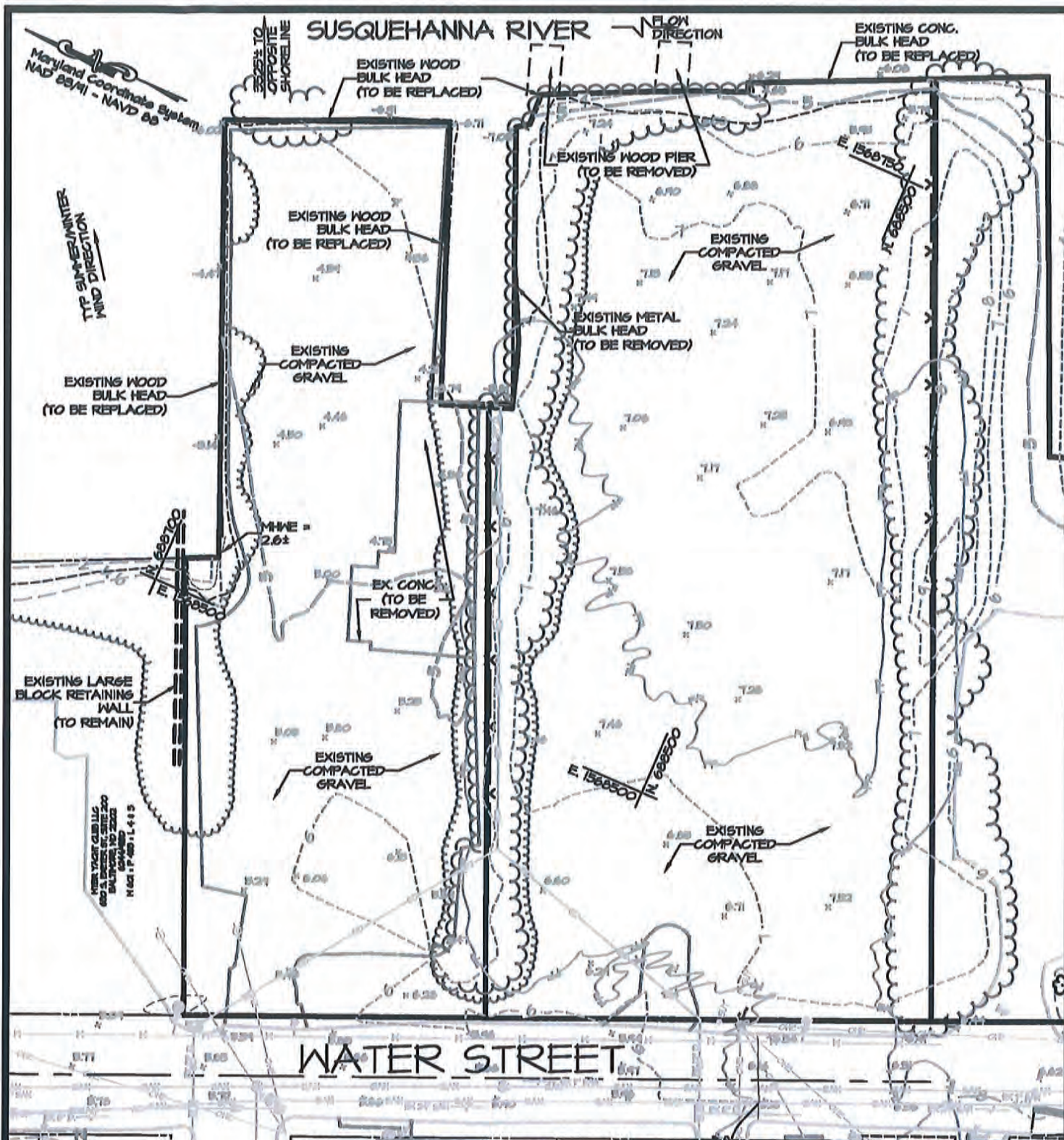
## BAY STATE LAND SERVICES

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Land Planners & Land Surveyors  
Environmental Engineers  
Geo-Technical, Materials Testing and Inspections



2012 Rock Spring Road  
Suite D  
Forest Hill, Maryland 20150  
Phone: 410-879-4747  
Fax: 410-420-3949  
[www.baystatelandservices.com](http://www.baystatelandservices.com)





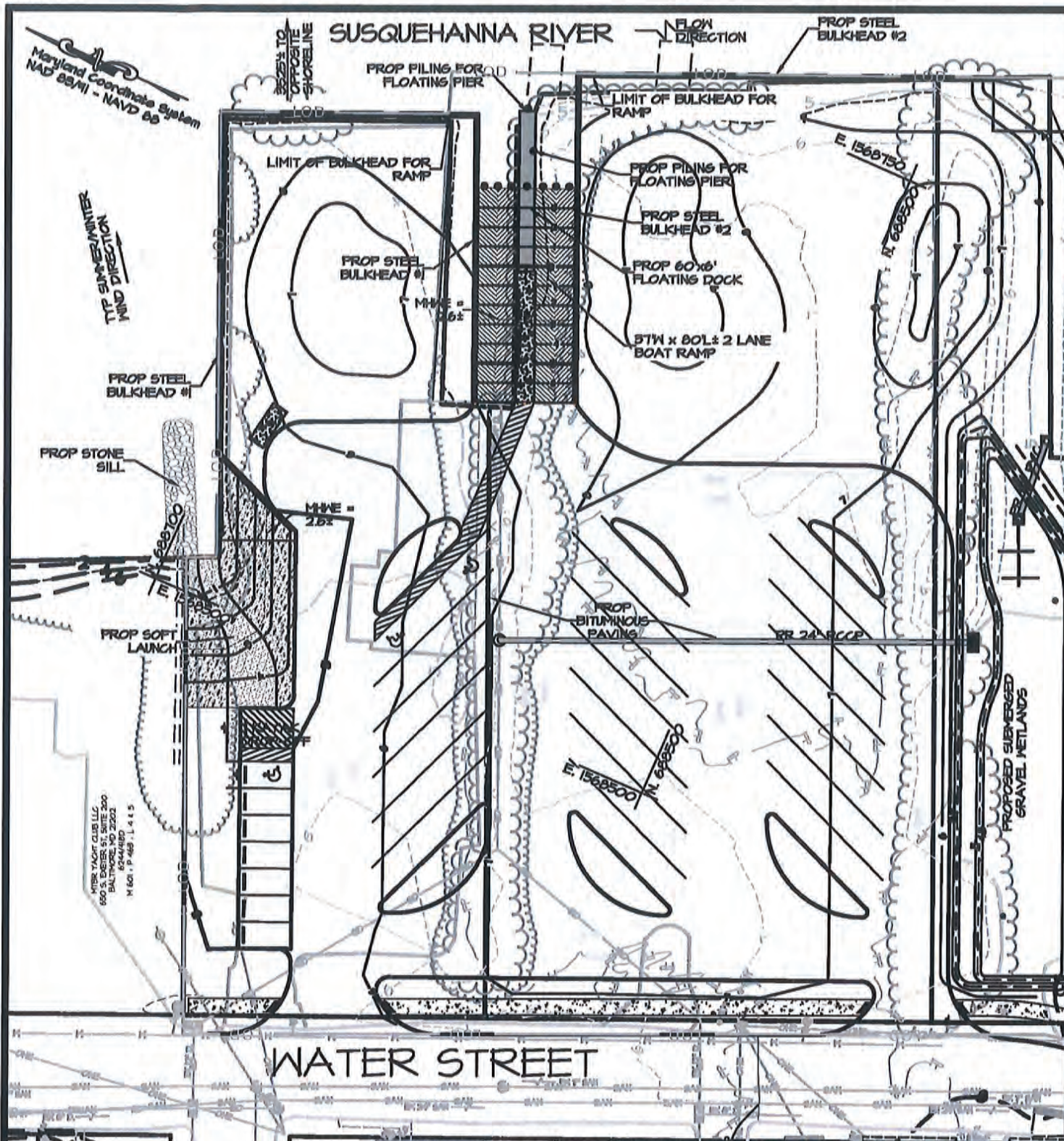
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Land Planners & Land Surveyors  
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WATER YACHT CLUB LLC  
6500 ALBANY RD. SUITE 200  
BALTIMORE, MD 21203  
410.444.4180  
M 410.444.4180

MEAN LOW WATER ELEV = 0.4±  
MEAN HIGH WATER ELEV = 2.6±

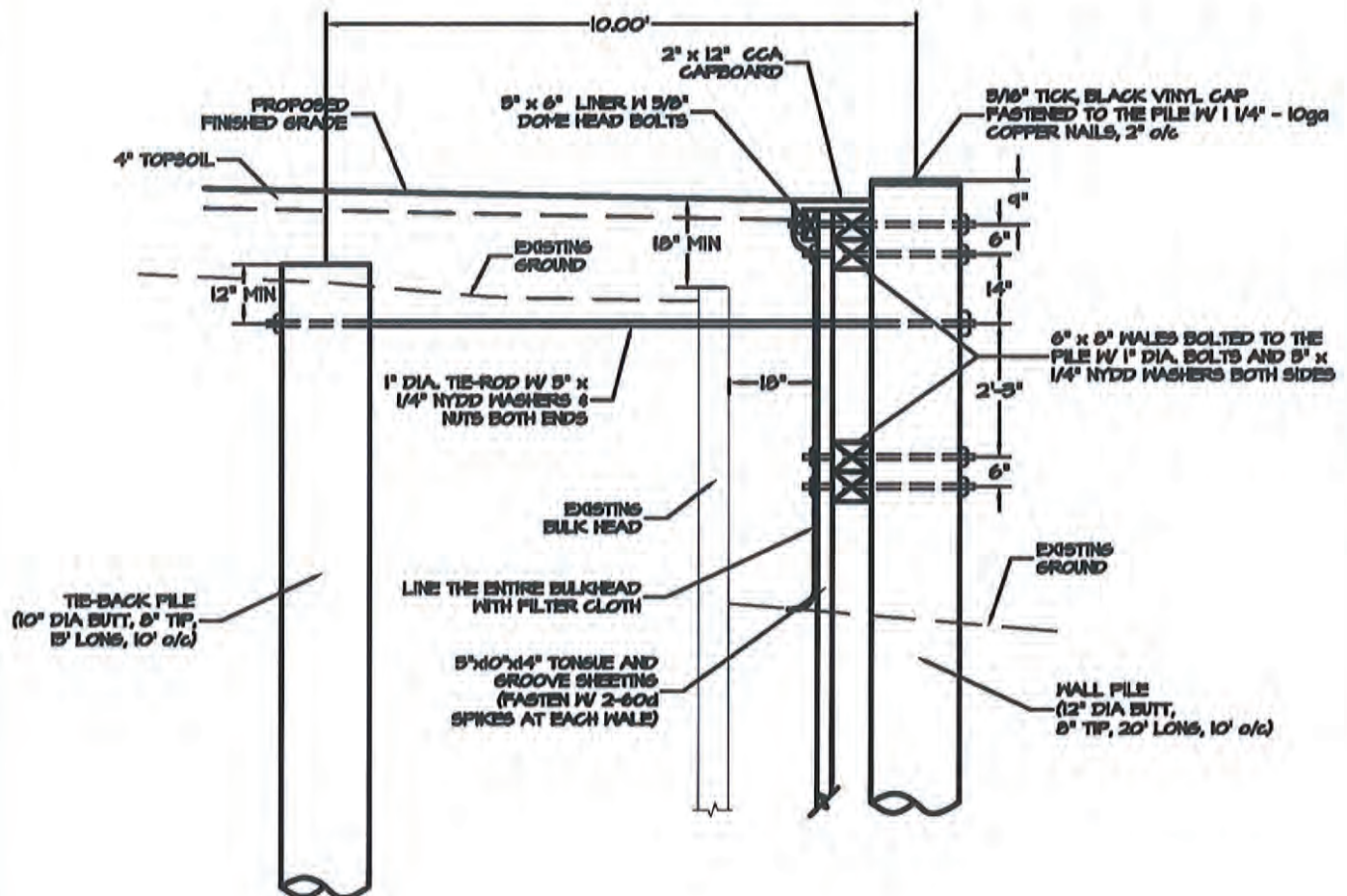
PROPOSED CONDITIONS PLAN  
**WATER STREET  
HERITAGE PARK**

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**TYPICAL BULKHEAD SECTION**  
NOT TO SCALE

**NOTES:**

1. EXISTING BULK HEAD TO BE REMOVED TO AT LEAST 10' BELOW PROPOSED GRADE.
2. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED.
3. ALL TIMBER MATERIAL SHALL BE TREATED WITH 2.5lbs/cu.ft. CCA.

BULKHEAD REPLACEMENT DETAIL

# **WATER STREET HERITAGE PARK**

SHEET 4 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

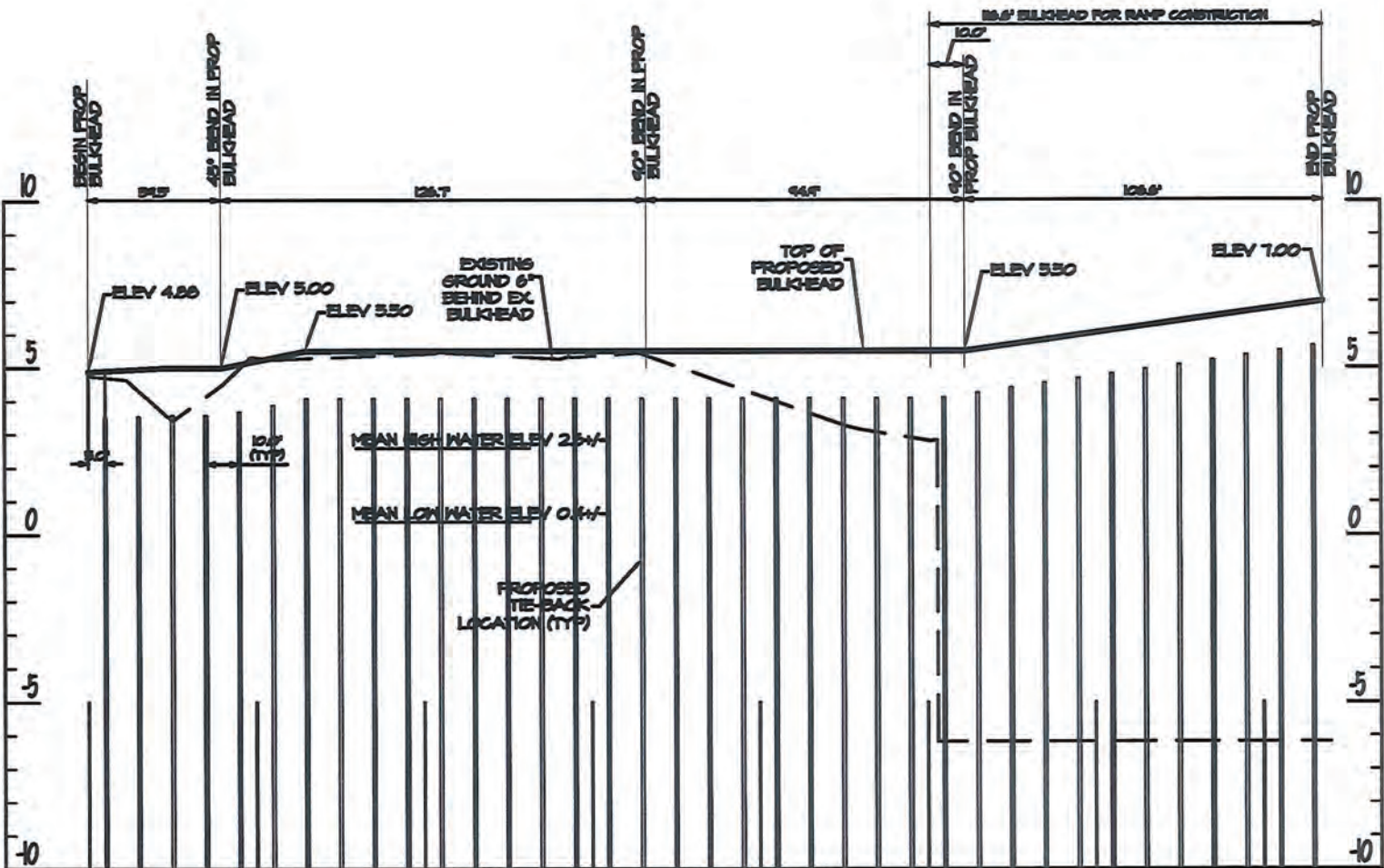
SCALE: AS SHOWN | DATE: 5-20-2020 | DRAWN BY: RAL | JOB NO. 18058

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**BULKHEAD #1 PROFILE**  
 SCALE: HORIZ: 1"=50'  
 VERT: 1"=5'

**BULKHEAD #1 PROFILE**  
**WATER STREET**  
**HERITAGE PARK**

SHEET 5 OF 22  
 SCALE: AS SHOWN DATE: 5-20-2020 CITY OF HAYRE DE GRACE, MARYLAND  
 DRAWN BY: RAL JOB NO. 18058

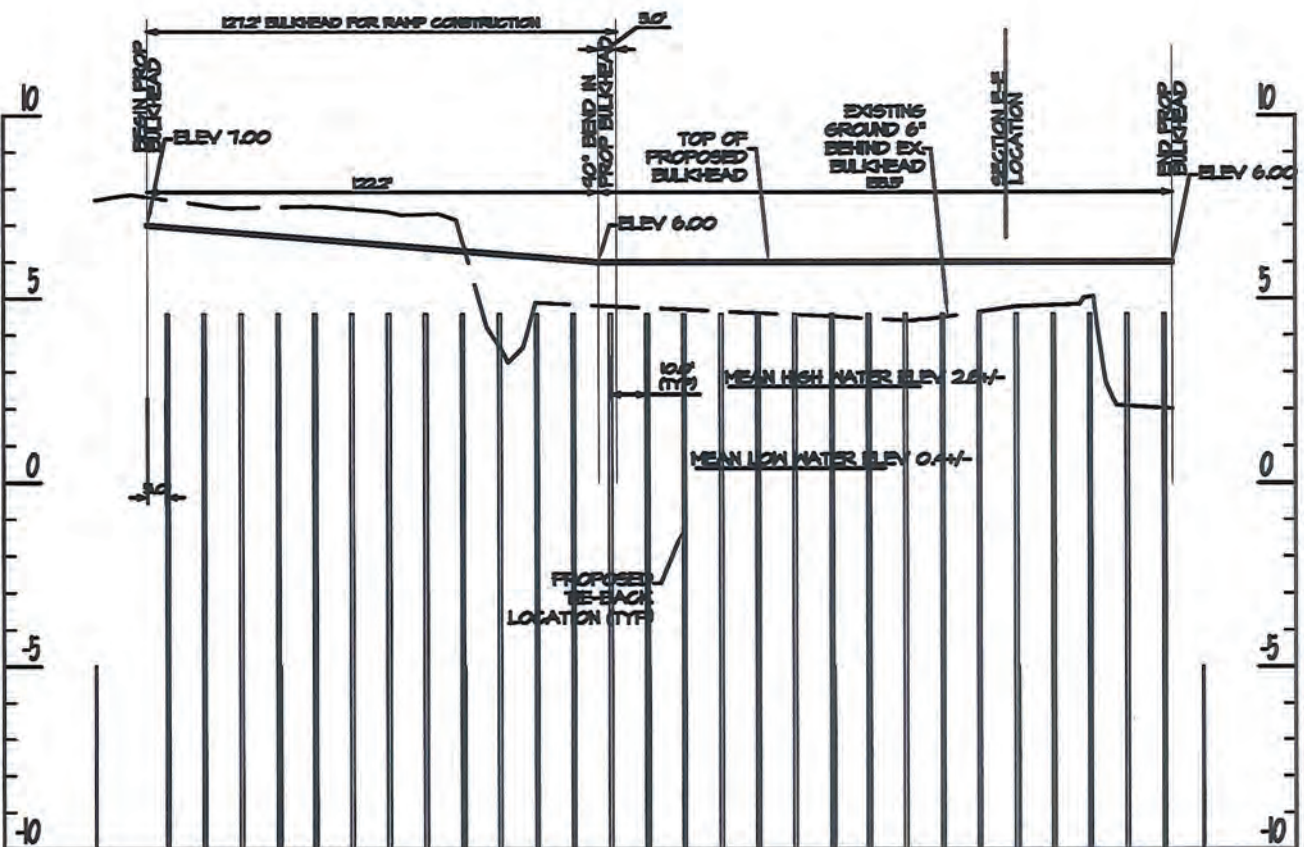


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# BULKHEAD #2 PROFILE

SCALE: HORIZ: 1"=50'  
VERT: 1"=5'

## BULKHEAD #2 PROFILE WATER STREET HERITAGE PARK

SHEET 6 OF 22  
CITY OF HAVRE DE GRACE, MARYLAND  
SCALE: AS SHOWN DATE: 5-20-2020 DRAWN BY: RAL JOB NO. 18058

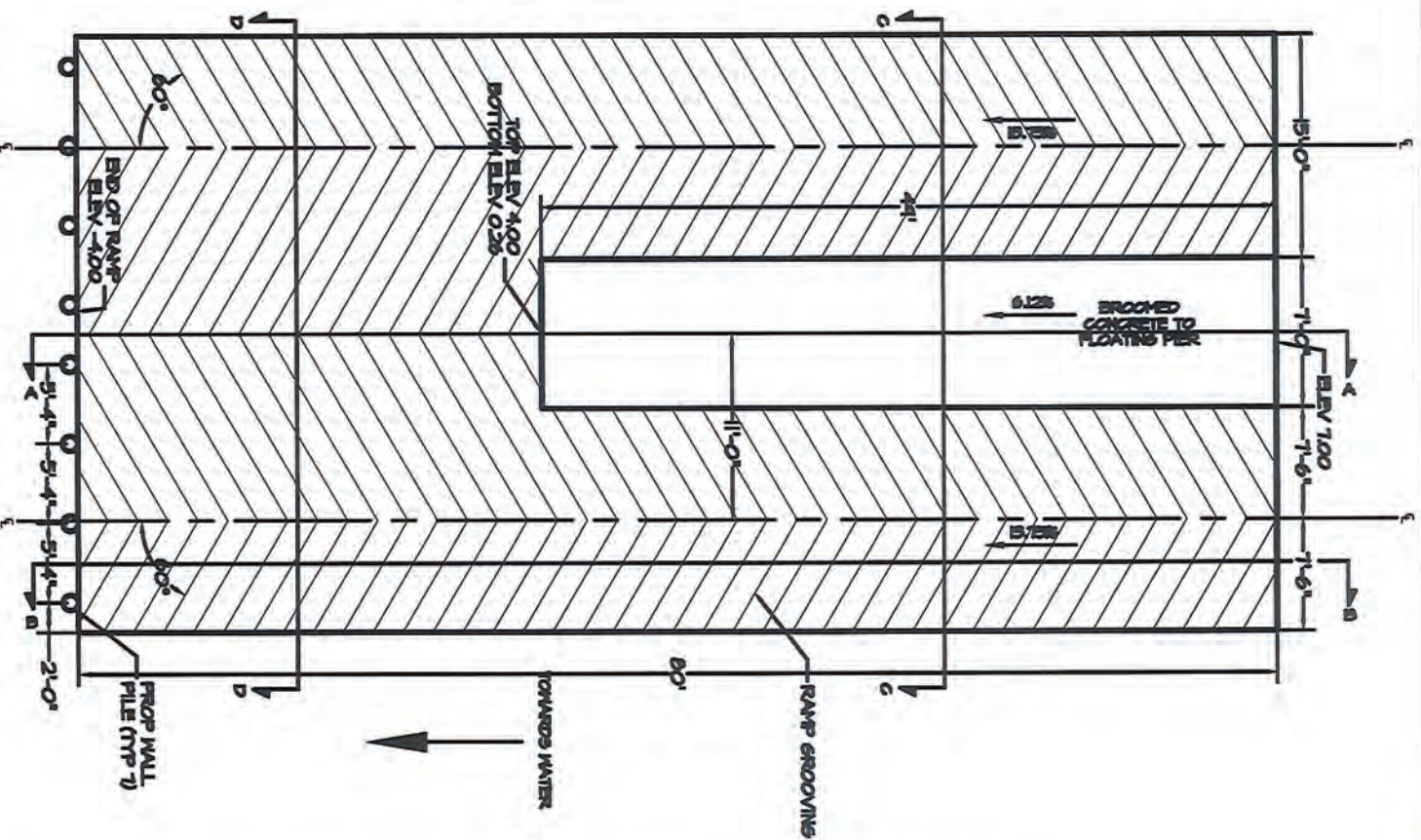
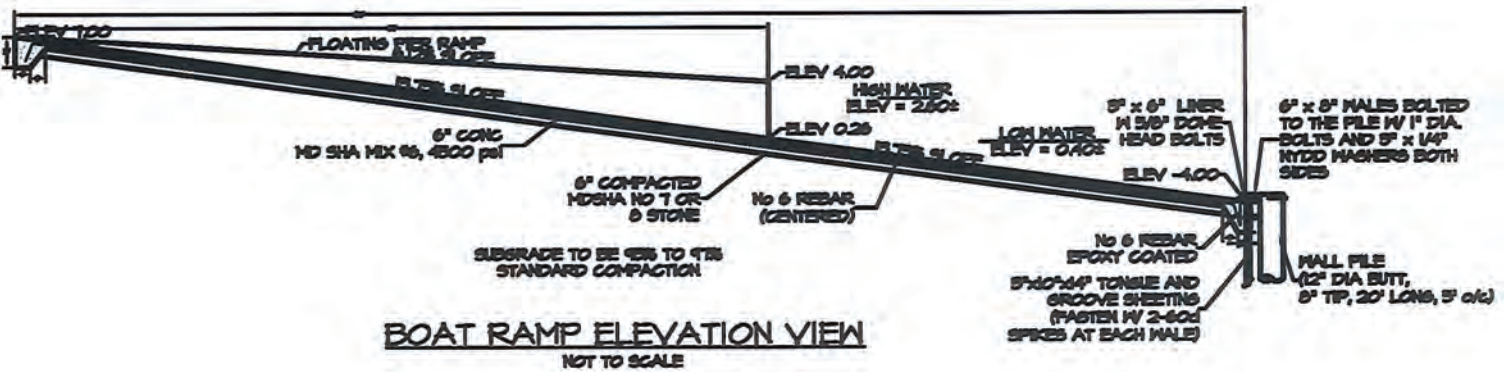


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## BOAT RAMP DETAILS

# WATER STREET HERITAGE PARK

SHEET 1 OF 22

SCALE: AS SHOWN DATE: 5-20-2020

DRAWN BY: RAL

JOB NO. 18059

CITY OF HAYRE DE GRACE, MARYLAND

## BAY STATE LAND SERVICES

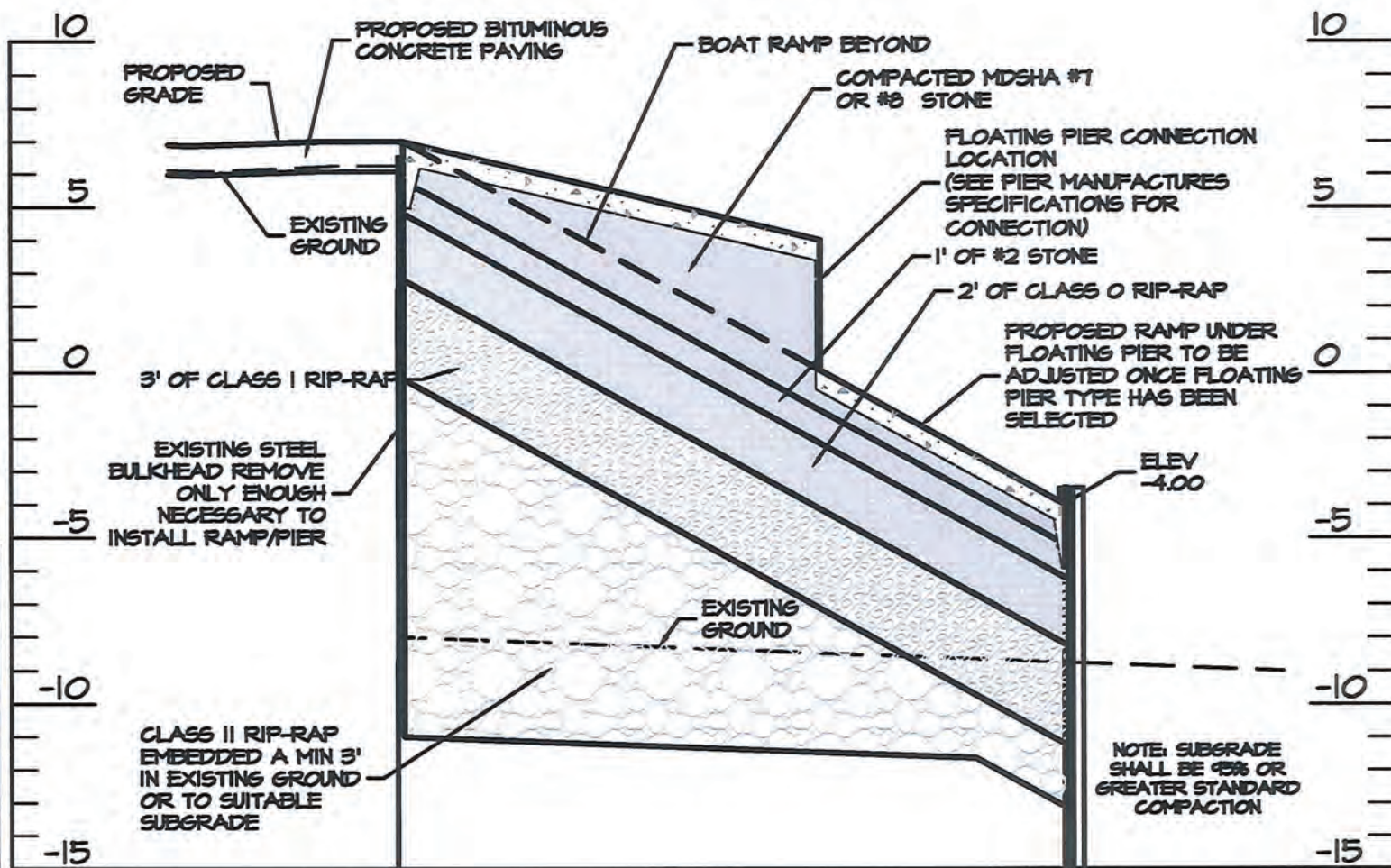
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# BOAT RAMP SECTION A-A NOT TO SCALE



## BOAT RAMP SECTION A-A WATER STREET HERITAGE PARK

SHEET 8 OF 22  
SCALE: AS SHOWN  
DATE: 5-20-2020  
CITY OF HAYRE DE GRACE, MARYLAND  
DRAWN BY: RAL  
JOB NO. 16059



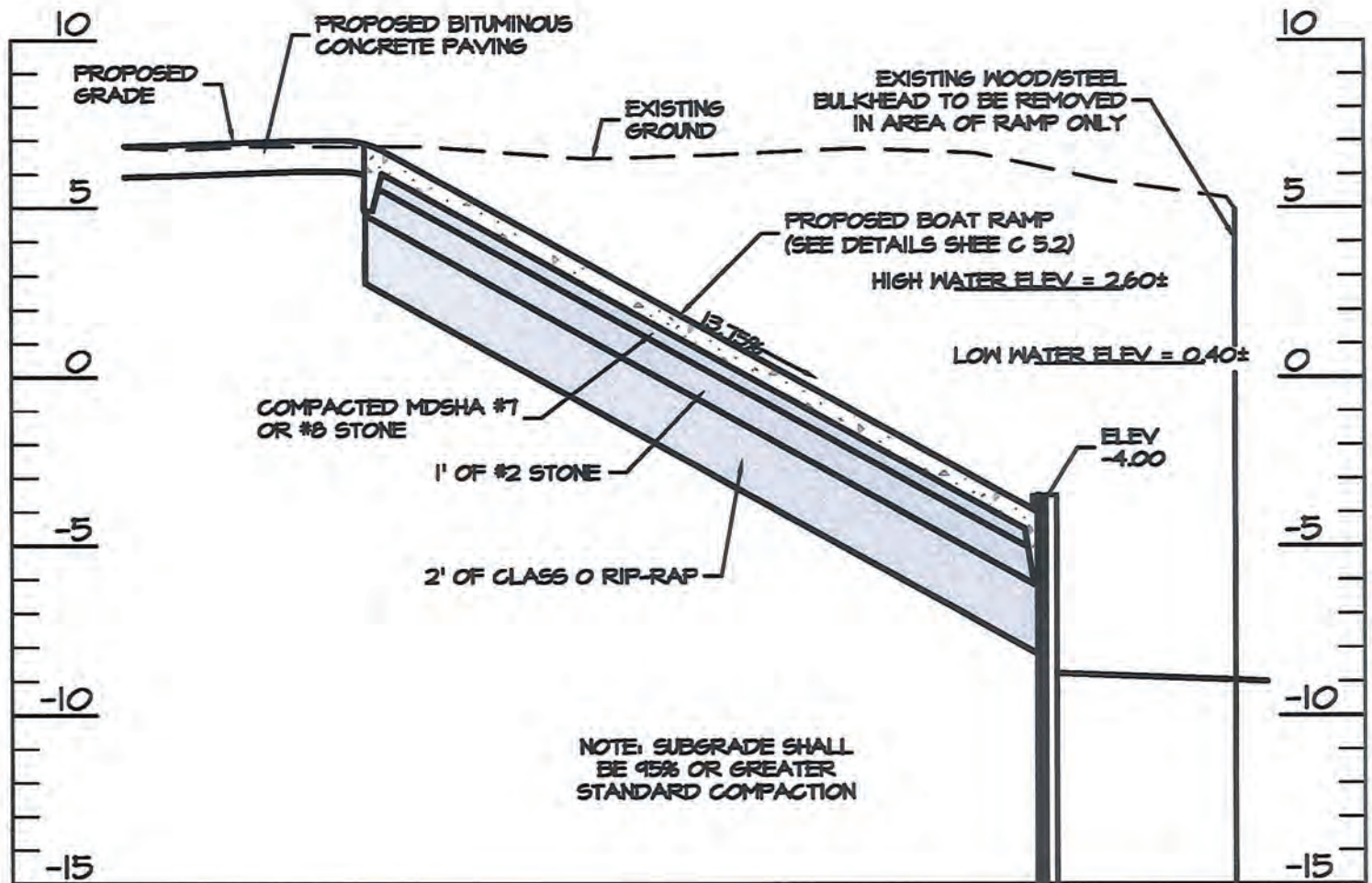
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**BOAT RAMP SECTION B-B**  
NOT TO SCALE

**BOAT RAMP SECTION B-B**  
**WATER STREET**  
**HERITAGE PARK**

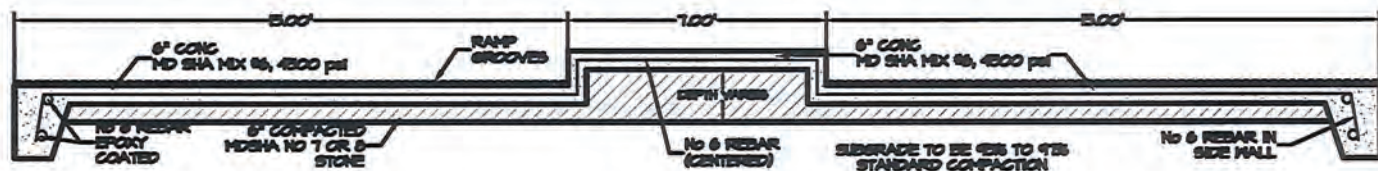
SHEET 4 OF 22  
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DATE: 5-20-2020  
CITY OF HAYRE DE GRACE, MARYLAND  
DRAWN BY: RAL  
JOB NO. 18039



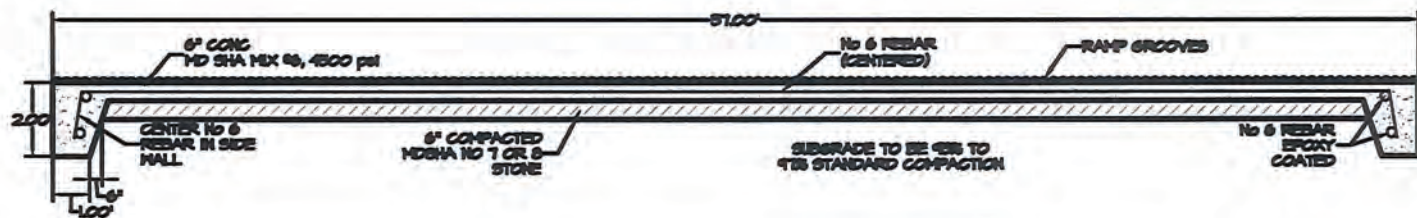
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BOAT RAMP SECTION C-C  
NOT TO SCALE



BOAT RAMP SECTION D-D  
NOT TO SCALE

BOAT RAMPS SECTIONS C-C & D-D

WATER STREET  
HERITAGE PARK

SHEET 10 OF 22  
SCALE: AS SHOWN DATE: 5-20-2020  
CITY OF HAYRE DE GRACE, MARYLAND  
DRAWN BY: RAL JOB NO. 18036



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## SEQUENCE OF CONSTRUCTION

- |         |     |   |
|---------|-----|---|
| 2 Days  | 1.  | Notify City of Havre De Grace, Construction and Program Management @ (410) 939-1800 and Maryland Department of the Environment (410)-537-3510 at least forty-eight (48) hours prior to beginning construction.  |
| 1 Day   | 2.  | Clear and grub for Stabilized Construction Entrances w/ Mountable Berm.   |
| 1 Day   | 3.  | Install Stabilized Construction Entrance w/ Mountable Berm.   |
| 2 Days  | 4.  | Clear and Grub for perimeter sediment controls. (Silt Fence)  |
| 2 Days  | 5.  | Install Silt Fence.   |
| 4 Weeks | 6.  | Install new sheet pile bulkhead and tie backs. Note silt fence shall be removed and replaced daily as installation commences.   |
| 1 Week  | 7.  | Install Temporary Bulkhead for construction of Boat Ramp. Dewater area via Filter Bag.  |
| 3 Weeks | 8.  | Muck out area of Boat Ramp and install Ramp per details on the Site Plans. Stockpile removed material onsite to dry out and be used as fill.  |
| 4 Weeks | 9.  | Commence grading operations with approval from City of Havre De Grace or MDE Sediment Control Inspector. Stockpile topsoil at location shown hereon. Grade Submerged Gravel Wetlands to Elevation 5.00 and temporarily stabilize. Install soft launch ramp and stone sill as shown on the Site Plans.   |
| 1 Week  | 10. | Install storm drains and Submerged Gravel Wetlands outfall.   |
| 3 Days  | 11. | Install base paving and concrete sidewalks.   |
| 1 Week  | 12. | Fine grade pervious areas of site and permanently stabilize.  |
| 1 Weeks | 13. | Once pervious areas have 90% or greater vegetative cover, base paving is in place and with approval from the City of Havre De Grace or MDE Sediment control Inspector begin installation of the Submerged Gravel Wetlands per stormwater management plans. Contact As-Building Engineer at least 48 hour prior to construction of Submerged Gravel Wetlands for inspections and pictures can be taken. Install landscaping once brought to final grade. |
| 2 Weeks | 14. | Install any remaining Landscaping.  |
| 1 Week  | 15. | Install final paving followed by parking striping and signage.  |
| 2 Days  | 16. | Remove any remaining sediment control measures and permanently stabilize any additional areas disturbed.  |

ESTIMATED START DATE: OCT 2020  
ESTIMATED COMPLETION DATE: BED 2021

SEQUENCE OF CONSTRUCTION

## WATER STREET HERITAGE PARK

SHEET 11 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN    DATE: 5-20-2020    DRAWN BY: RAL    JOB NO. 18058

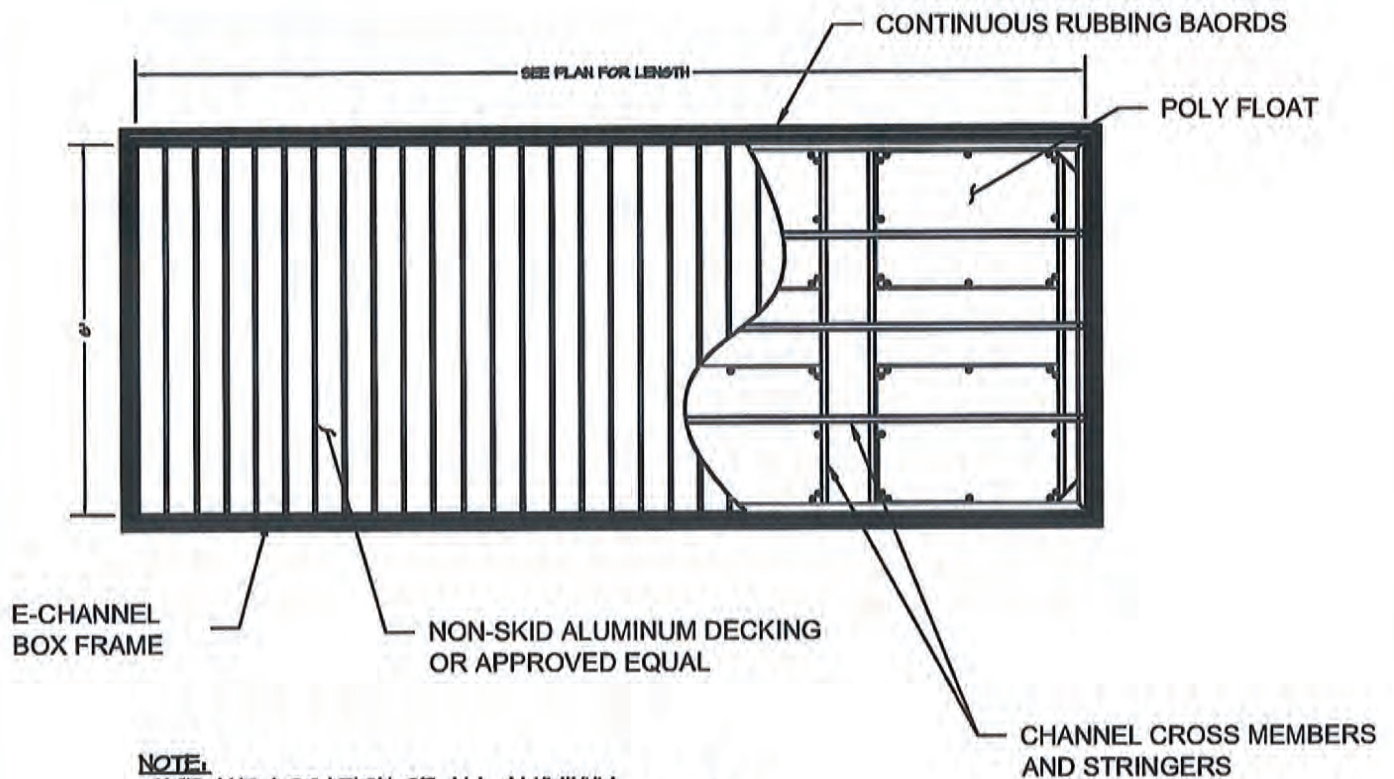
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**NOTE:**  
 SIZE AND LOCATION OF ALL ALUMINUM  
 STRUCTURAL MEMBERS AND FLOTATION UNITS TO  
 RESIST SPECIFIED LOADING SHALL BE DETERMINED  
 BY THE MANUFACTURER.

## FLOATING PIER PLAN VIEW

NOT TO SCALE

FLOATING PIER DETAIL SHEET #1

# WATER STREET HERITAGE PARK

SHEET 12 OF 22

CITY OF HAYRE DE GRACE, MARYLAND

SCALE: AS SHOWN | DATE: 5-20-2020 | DRAWN BY: RAL | JOB NO. 18056

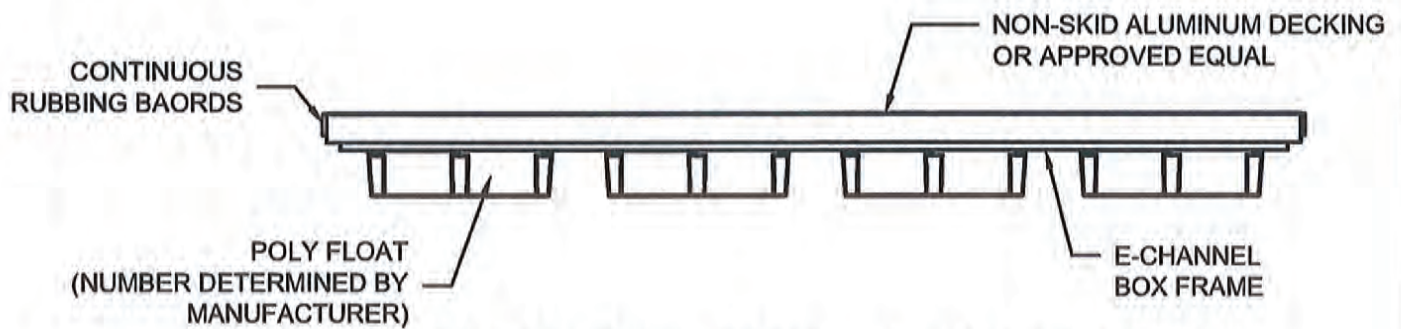
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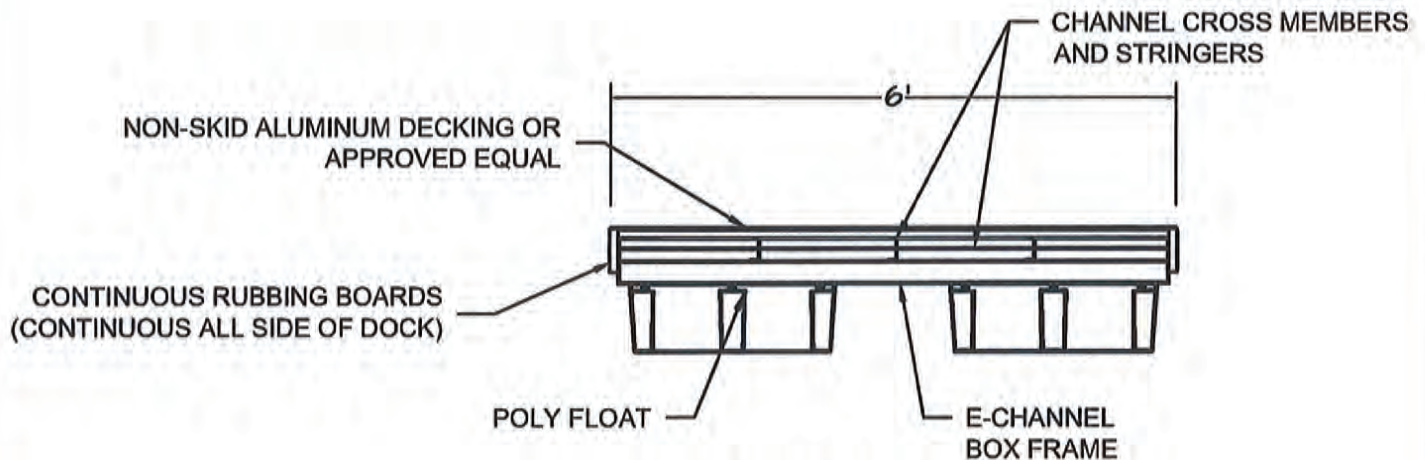


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FLOATING PIER ELEVATION  
NOT TO SCALE



FLOATING PIER SECTION  
NOT TO SCALE

FLOATING PIER DETAIL SHEET #2

# WATER STREET HERITAGE PARK

SHEET 13 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN DATE: 5-20-2020

DRAWN BY: RAL

JOB NO. 18056

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### FLOATING PIER NOTES

1. ALL MATERIALS SHALL BE AS MANUFACTURED BY A REPUTABLE PIER MANUFACTURER AS APPROVED BY THE CITY OF HAVRE DE GRACE OR DESIGN ENGINEER.
2. THE DECK AND FRAME STRUCTURAL COMPONENTS OF THE FLOATING DOCKS SHALL BE DESIGNED WITH MINIMUM SAFETY FACTORS ON WORKING STRESS WHICH CONFORM TO THOSE SET FORTH IN THE LATEST ISSUE OF THE ALUMINUM ASSOCIATION "SPECIFICATIONS FOR ALUMINUM STRUCTURES" FOR BUILDINGS AND SIMILAR TYPE STRUCTURES.
3. THE MANUFACTURER/SUPPLIER SHALL HAVE A MINIMUM OF 5 YEARS CONTINUOUS EXPERIENCE IN COMMERCIAL DOCK FABRICATION.
4. ALUMINUM EXTRUSIONS FOR DOCK STRUCTURES SHALL BE ALUMINUM ALLOY 6061-T6 "E" CHANNELS EXTRUDED IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE SECTIONS OF FEDERAL SPECIFICATIONS QQ-A-200. MISCELLANEOUS ALUMINUM MAY BE 6063-T5 OR 5052-H32.
5. ALUMINUM DECKING SHALL BE SYMMETRICALLY EXTRUDED SLATS WITH INTEGRATED RIBS AND MECHANICAL KNURLING TO PROVIDE A NON SKID SURFACE. DECKING TO BE ALUMINUM ALLOY 6061-T6.
6. ALL FLOATING DOCKS SHALL BE DESIGNED FOR A MINIMUM FREEBOARD OF 8 INCHES UNDER FULL DEAD PLUS LIVE LOAD, AND 10 INCHES UNDER A DEADLOAD PLUS CONCENTRATED LOAD OF 400 POUNDS APPLIED AT ANY LOCATION ON THE DOCK WALKING SURFACE. ADDITIONAL FLOTATION SHALL BE ADDED TO SUPPORT THE GANGWAY DEAD LOADS WITHOUT CREATING UNDUE DISTORTION IN THE DOCK. POLY FLOATS SHALL BE DESIGNED FOR A MINIMUM OF 20 PSF LIVE LOAD PROVIDING A MINIMUM OF 16 INCHES UNLOADED FREEBOARD.
7. HINGED OR BOLTED FLOATING DOCK MODULE CONNECTORS SHALL BE ABLE TO WITHSTAND A LOAD OF 3000 POUNDS APPLIED TO THE FULL CONNECTOR.
8. ALL WELDS SHALL BE MADE IN A CLEAN AND NEAT MANNER TO RESULT IN A HIGH QUALITY WELD. FABRICATOR IS RESPONSIBLE FOR REMOVING ALL BURS AND SHARP EDGES FROM ALUMINUM MEMBERS OR WELDS THAT MAY POSE A HAZARD TO USERS.
9. CONTRACTOR IS REQUIRED TO SUBMIT SHOP DRAWINGS AND ENGINEERING CALCULATIONS FOR ALL GANGWAY, FIXED PIERS, AND FLOATING DOCKS FROM THE MANUFACTURER APPROVED BY THE ENGINEER. THE MANUFACTURERS SHOP DRAWINGS AND CALCULATIONS SHALL BE SIGNED AND STAMPED BY A MARYLAND REGISTERED PROFESSIONAL ENGINEER.
10. CONTRACTOR SHALL PROPERLY INSULATE ANY POTENTIALLY CORROSIVE OR DISSIMILAR METALS BY USE OF NEOPRENE, NYLON, OR A OTHER MATERIAL AS APPROVED BY THE ENGINEER.
11. ALL HARDWARE FOR CONNECTING THE RUBBING BOARDS SHALL BE COUNTERSUNK.
12. LAND SIDE GANGWAY ATTACHMENT IS A FIXED LOCATION AND ANY FIELD ADJUSTMENTS SHALL BE MADE TO FLOATING DOCK.
13. CONTRACTOR SHALL SLIGHTLY FIELD-ADJUST THE LOCATION OF THE FLOATING DOCK TO ENSURE THAT THE REQUIRED CLEARANCES ARE MAINTAINED.
14. GANGWAY SHALL NOT BE ALLOWED TO HAVE INTERFERENCE DURING ANY STAGE OF THE TIDE.
15. PRIOR TO PERFORMING ANY FIELD ADJUSTMENTS, CONTRACTOR SHALL NOTIFY THE CITY OF HAVRE DE GRACE AND DESIGN ENGINEER.
16. PEAR ANCHOR PILE LOCATION AND ATTACHMENT TYPE SHALL BE DETERMINED ONCE A PIER MANUFACTURE AND PIER TYPE HAVE BEEN SELECTED.

FLOATING PIER DETAIL SHEET #3

## WATER STREET HERITAGE PARK

SHEET 14 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN | DATE: 5-20-2020 | DRAWN BY: RAL | JOB NO. 18058

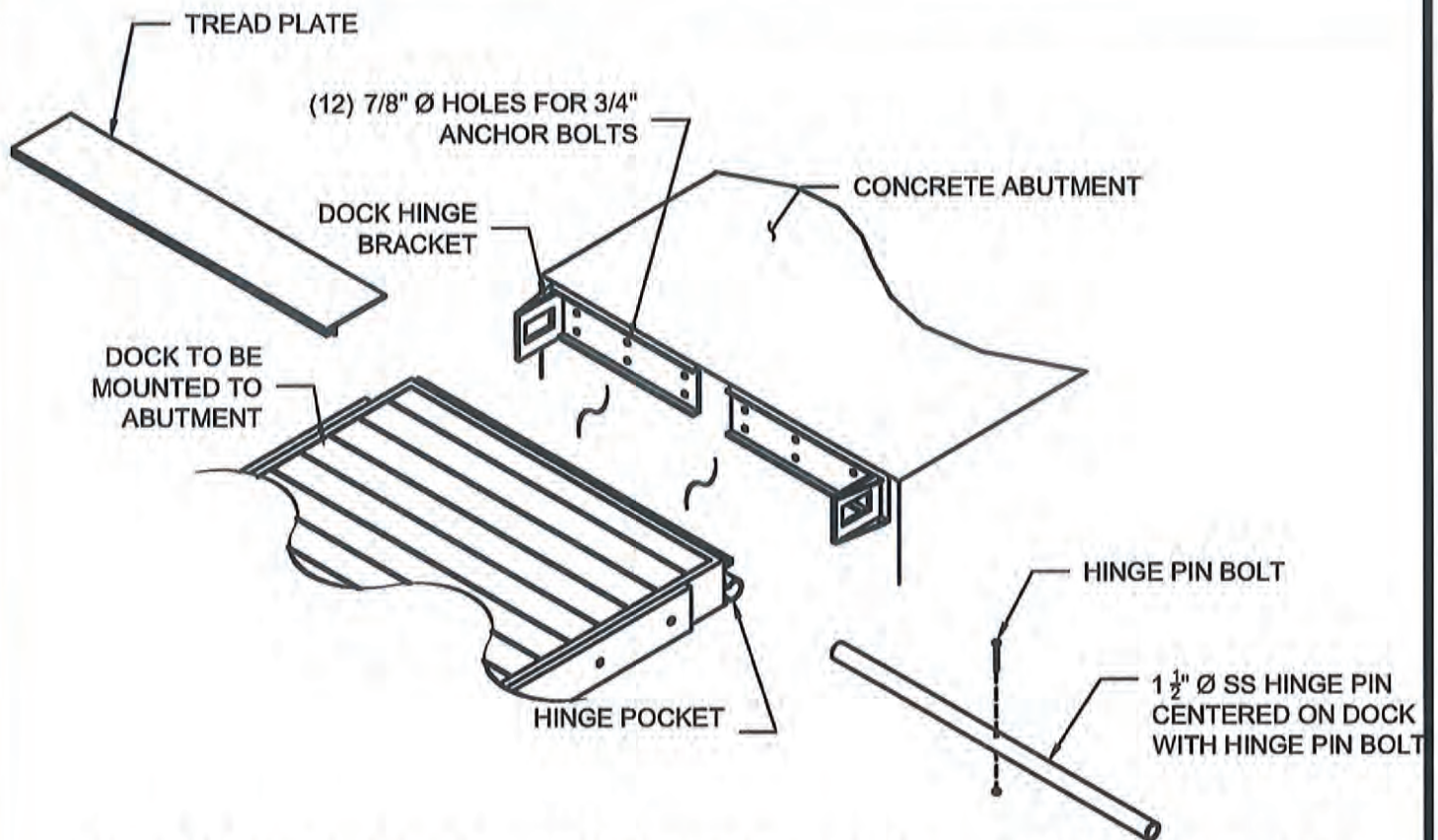
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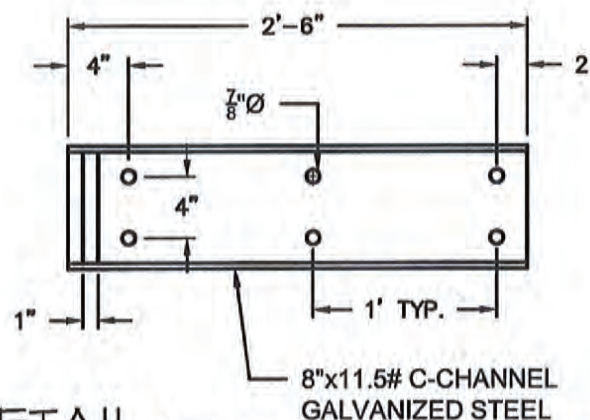
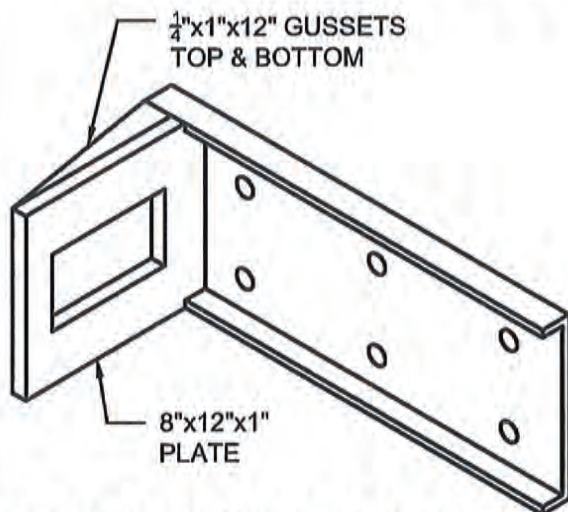


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NARRAGANSETT HINGE DETAILS AND ASSEMBLY  
NOT TO SCALE



DOCK HINGE BRACKET DETAIL  
NOT TO SCALE

FLOATING PIER DETAIL SHEET #4

## WATER STREET HERITAGE PARK

SHEET 15 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN DATE: 5-20-2020

DRAWN BY: RAL

JOB NO. 18058

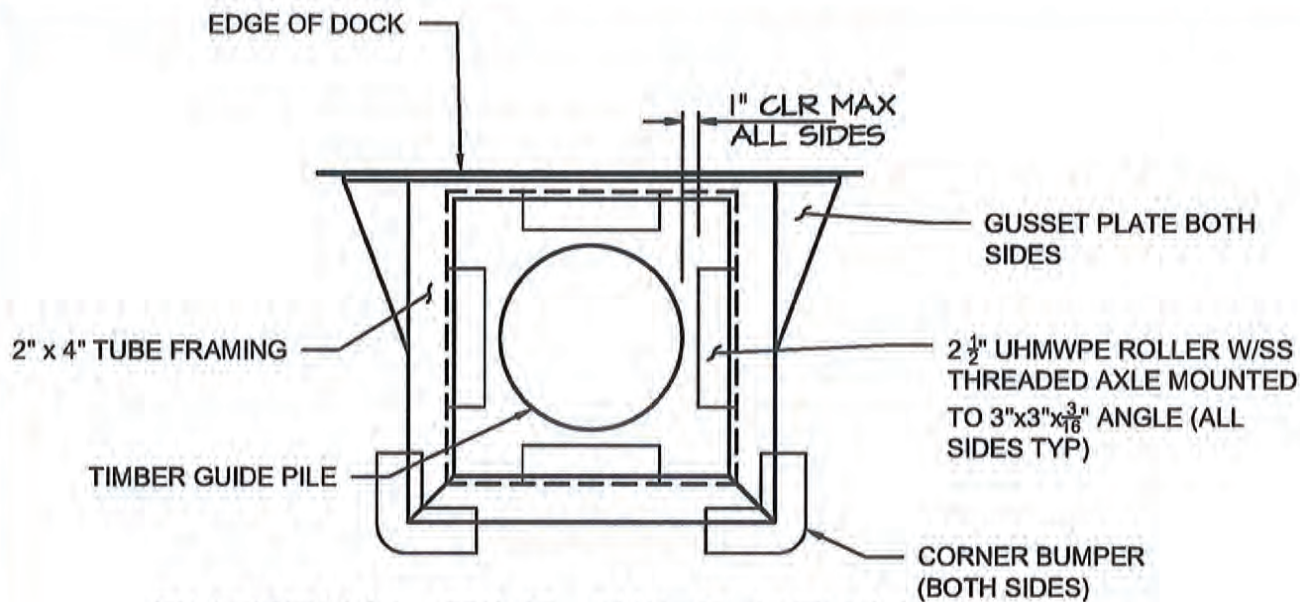
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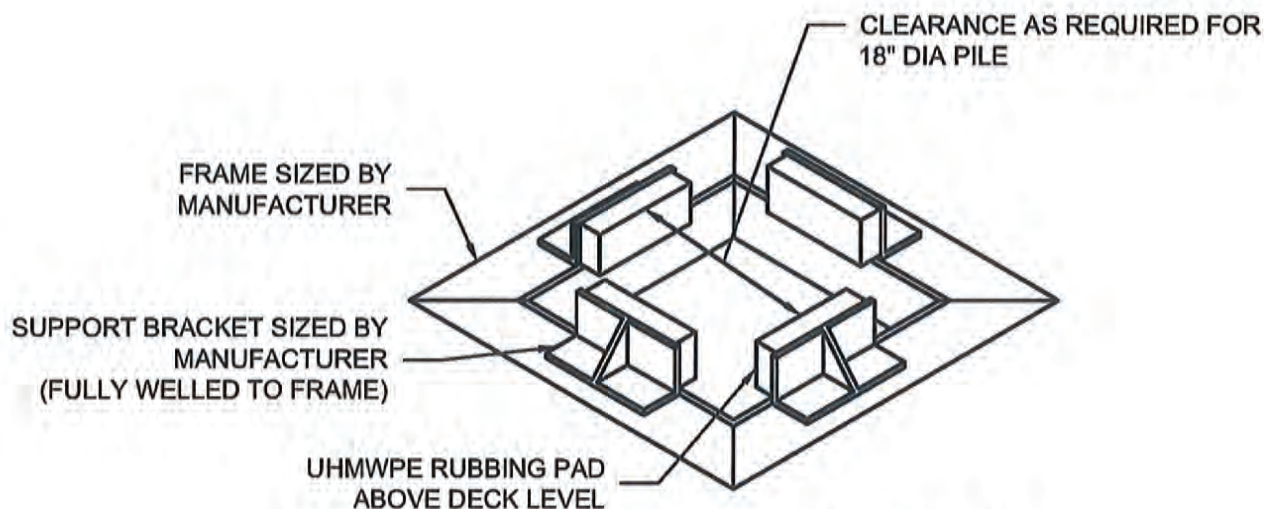


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EXTERNAL PILE GUIDE DETAIL  
NOT TO SCALE



INTERNAL PILE GUIDE DETAIL  
NOT TO SCALE

FLOATING PIER DETAIL SHEET #5

## WATER STREET HERITAGE PARK

SHEET 16 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN | DATE: 5-20-2020 | DRAWN BY: RAL | JOB NO. 18058

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### PILE GUIDE NOTES:

1. PILE GUIDE SHALL BE SIZED FOR HEAVY DUTY SERVICE IN THE MARINE ENVIRONMENT.
2. PILE GUIDE FRAME AND SUPPORT BRACKETS SHALL BE ALUMINUM OR STAINLESS STEEL AS DETERMINED BY THE MANUFACTURER IN ORDER TO RESIST THE FORCES GENERATED BY THE FLOATING DOCK.
3. RUBBING PADS SHALL BE UHMWPE AND SHALL BE BOLTED TO THE SUPPORT BRACKET USING STAINLESS STEEL HARDWARE. ALL HARDWARE SHALL BE RECESSED OR COUNTERSUNK WITHIN THE RUBBING PAD.
4. SUPPORT BRACKETS SHALL BE WELDED TO THE PILE GUIDE FRAME MEMBERS.
5. STIFFENERS FOR THE ANGLE SUPPORT BRACKETS SHALL BE PROVIDED WHERE DEEMED NECESSARY BY THE MANUFACTURER.
6. ALL HARDWARE SHALL BE STAINLESS STEEL WITH NYLON LOCK NUTS WHERE APPLICABLE.
7. ANCHORING DEVICES FOR THE FLOATING DOCK SHALL ALLOW FREE MOVEMENT OF THE DOCK WHILE MINIMIZING DAMAGE DUE TO NORMAL DOCK MOVEMENT CAUSED BY TIDES, BOAT WAKES, WATER FLUCTUATION AND SEASONAL WINDS. GUIDES SHALL BE OF SUFFICIENT NUMBER TO RESTRAIN A UNIFORM LATERAL FORCE OF 150 POUNDS PER LINEAR FOOT APPLIED ALONG THE ENTIRE LENGTH OF THE DOCK.
8. ALL FABRICATED COMPONENTS SHALL BE OF THE SAME MATERIAL.

12" ALUMINUM CLEAT



CLEAT DETAIL  
NOT TO SCALE

### CLEAT NOTES:

1. CLEATS SHALL BE CAST ALUMINUM ALLOY MEETING THE REQUIREMENT OF THE FEDERAL SPECIFICATIONS QQ-A-571F AND QQ-A-601E
2. CLEATS SHALL BE DESIGNED TO WITHSTAND A MOORING LINE LOAD OF 1500 POUNDS IN ANY DIRECTION.
3. CLEATS ON ALUMINUM DECKED DOCKS SHALL BE WELDED WITH A CONTINUOUS FILLET WELD.
4. CLEATS ON A WOODEN DECKED DOCK SHALL BE FASTEN IN SUCH A WAY AS TO WITHSTAND A MOORING LINE LOAD OF 1500 POUNDS IN ANY DIRECTION.

FLOATING PIER DETAIL SHEET #6

## WATER STREET HERITAGE PARK

SHEET 17 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN DATE: 5-20-2020 DRAWN BY: RAL JOB NO. 18058

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# SOFT LAUNCH RAMP PLAN

## WATER STREET HERITAGE PARK

SHEET 18 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: 1" = 20'

DATE: 5-20-2020

DRAWN BY: RAL

JOB NO. 18058

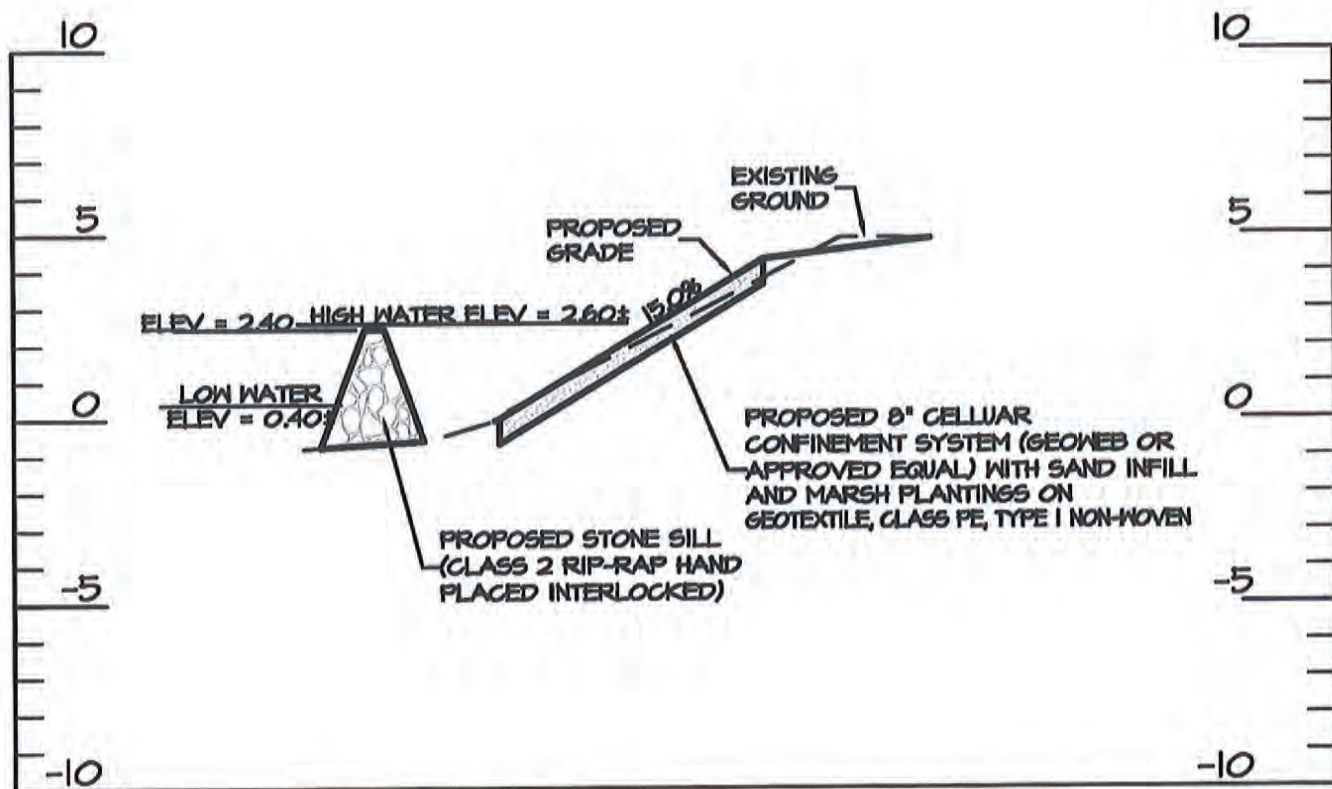
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## SOFT LAUNCH SECTION A-A

SCALE: HORIZ: 1"=20'

VERT: 1"=5'

## SOFT LAUNCH SECTION A-A WATER STREET HERITAGE PARK

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SHEET 19 OF 22

CITY OF HAYRE DE GRACE, MARYLAND

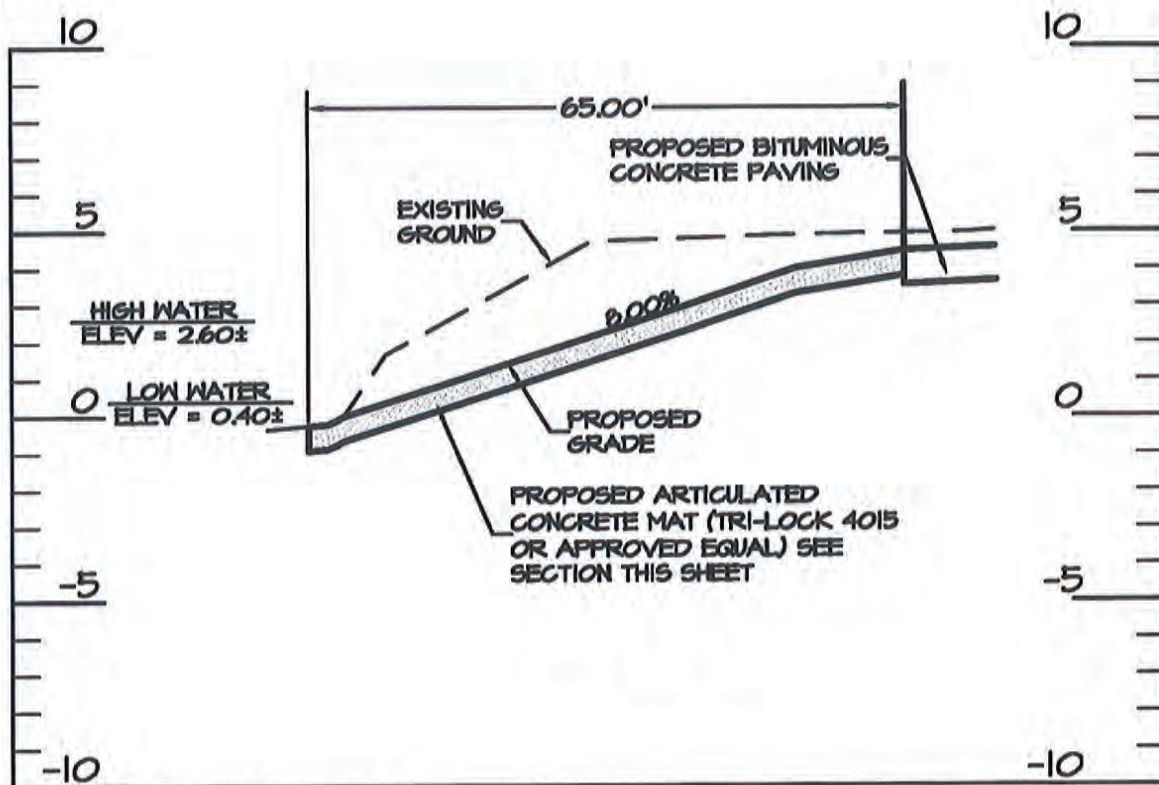
SCALE: AS SHOWN

DATE: 5-20-2020

DRAWN BY: RAL

JOB NO. 18058





## SOFT LAUNCH SECTION B-B

SCALE: HORIZ: 1"=20'

VERT: 1"=5'

## SOFT LAUNCH SECTION B-B WATER STREET HERITAGE PARK

SHEET 20 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN

DATE: 5-20-2020

DRAWN BY: RAL

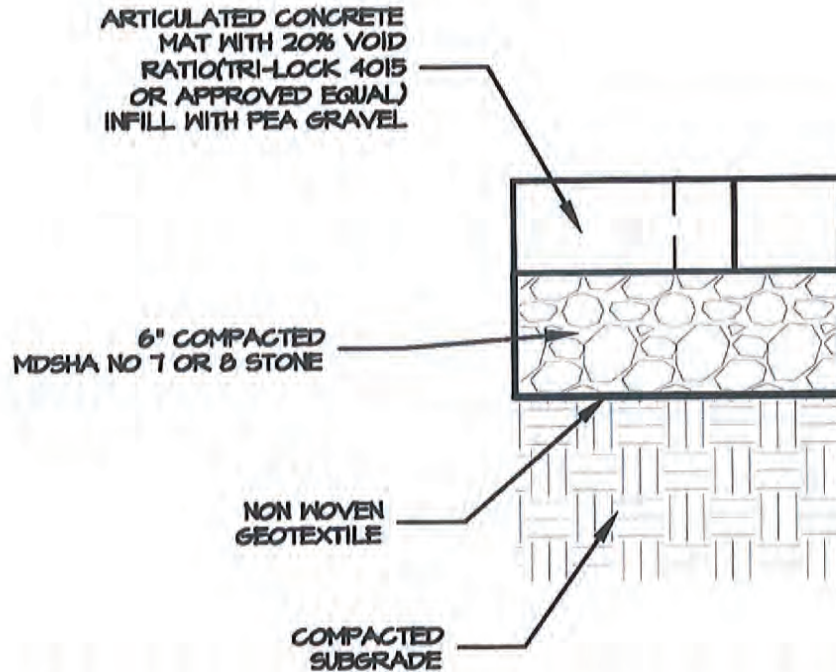
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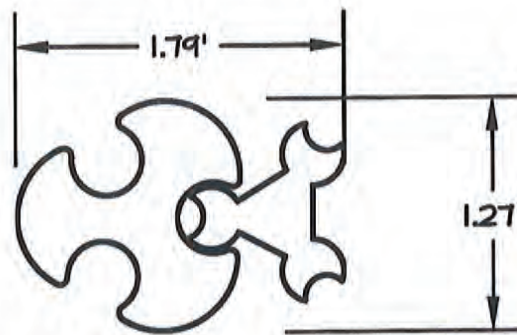
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ARTICULATED CONCRETE MAT SECTION  
NOT TO SCALE



TRI-LOCK 4015 DETAIL  
NOT TO SCALE

SOFT LAUNCH DETAILS  
**WATER STREET  
HERITAGE PARK**

SHEET 21 OF 22

CITY OF HAVRE DE GRACE, MARYLAND

SCALE: AS SHOWN

DATE: 5-20-2020

DRAWN BY: RAL

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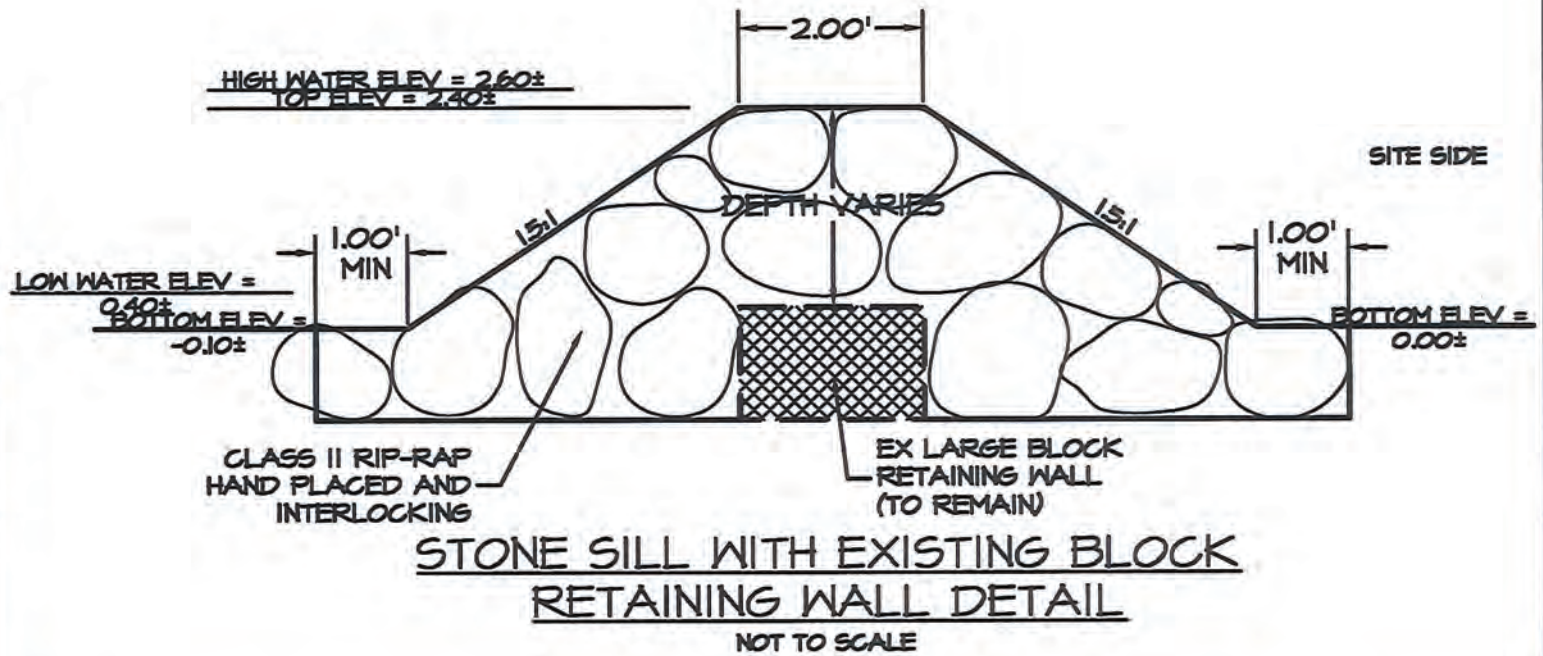
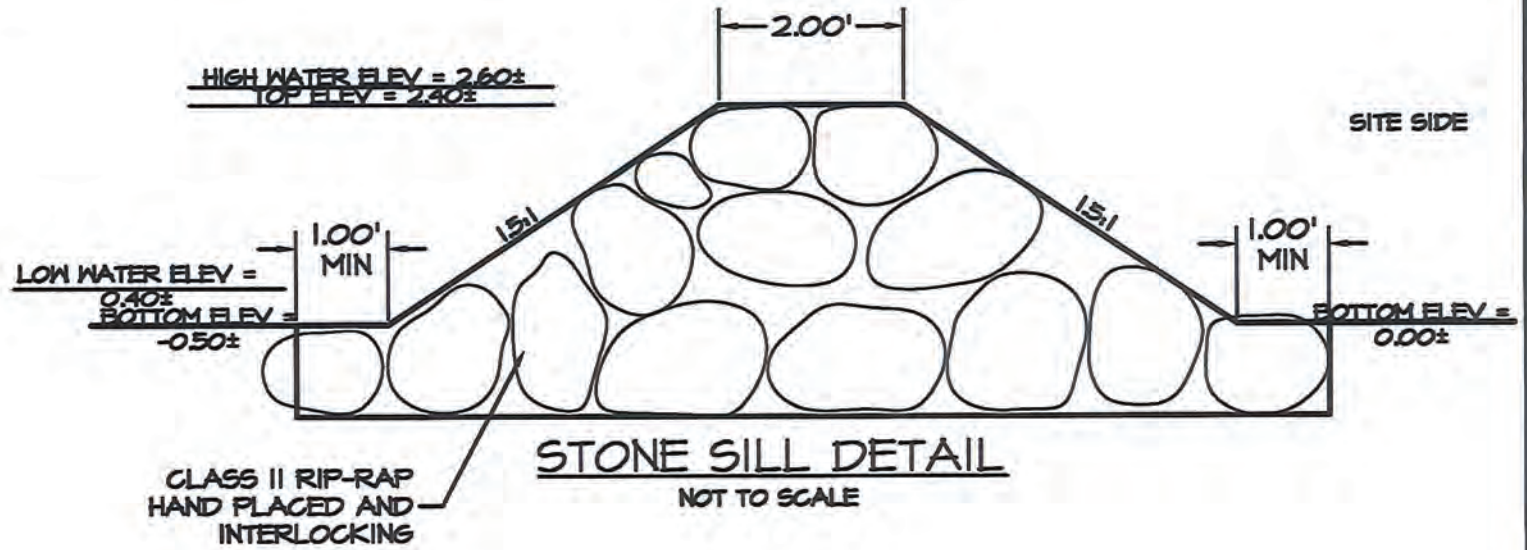
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SOFT LAUNCH STONE SILL SECTIONS  
 WATER STREET  
 HERITAGE PARK



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