

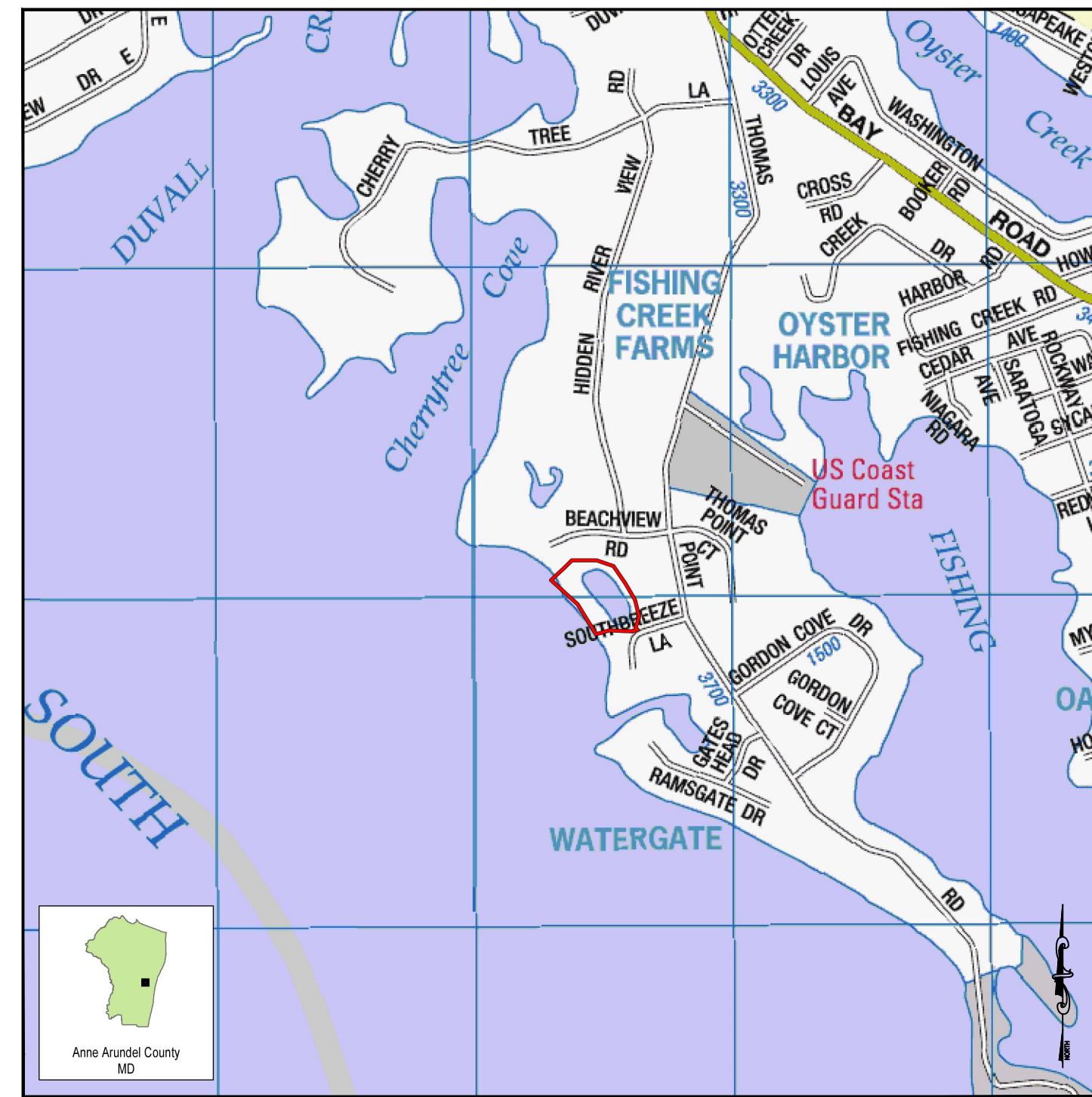
# SOUTHBREEZE COMMUNITY SHORELINE STABILIZATION

## FINAL DESIGN PLAN

### ANNE ARUNDEL COUNTY, MARYLAND

#### GENERAL NOTES

- OWNER/DEVELOPER/  
ESC APPLICANT: FISHING CREEK FARMS HOA  
1222 CHERRY TREE LANE  
ANNAPOLIS, MD 21403
- ENGINEER: WETLAND STUDIES AND SOLUTIONS, INC.  
1131 BENFIELD BOULEVARD, SUITE L  
MILLERSVILLE, MARYLAND 21108  
TELEPHONE: 410-672-5990  
ATTN: INGRID BAUER, P.E.
- CHESAPEAKE BAY CRITICAL AREA: THIS PROJECT SITE IS LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
- 100-YEAR FLOODPLAIN DESIGNATION: THE PROJECT AREA IS DESIGNATED AS FEMA ZONES "VE" AND "AE."
- SITE ANALYSIS:  
TOTAL SITE AREA: 3.90 ACRES  
TOTAL DISTURBED AREA\*: 2.05 ACRES  
TOTAL AREA TO BE VEGETATIVELY STABILIZED: 1.08 ACRES  
TOTAL AREA TO BE PERMANENTLY STABILIZED: 2.05 ACRES  
TOTAL PROPOSED IMPERVIOUS: 0.0 ACRES
- RIVER:  
WATERSHED: SOUTH RIVER  
MD 8-DIGIT BASIN CODE: 02131003  
8-DIGIT HUC: 02060004
- MEAN HIGH WATER (MHW): 0.3 FT  
MEAN LOW WATER (MLW): -0.7 FT
- STREAM USE CLASS IS USE II, NO INSTREAM WORK IS PERMITTED DURING THE PERIOD OF FEBRUARY 15 THROUGH JUNE 15, INCLUSIVE, DURING ANY GIVEN YEAR.
- THE SITE IS AN ASSUMED HISTORIC WATERFOWL CONCENTRATION AREA. NO INSTREAM CONSTRUCTION ACTIVITY IS PERMITTED WITHIN THE BOUNDARIES OF A HISTORIC WATERFOWL CONCENTRATION AREA DURING THE PERIOD OF NOVEMBER 15 THROUGH MARCH 1, INCLUSIVE, DURING ANY GIVEN YEAR, EXCEPT FOR MARSH RESTORATION LESS THAN OR EQUAL TO 375 FEET IN LENGTH.
- REFER TO PERMITS FOR CONFIRMATION OF TIME OF YEAR RESTRICTIONS.
- CONSTRUCTION SHALL BE LIMITED TO NO MORE THAN 20 ACRES OF DISTURBANCE AT ANY TIME.
- NO OTHER WORK OUTSIDE OF THE SHOWN LIMITS OF DISTURBANCE AND LIMITS OF PLANTING SHALL TAKE PLACE.
- ALL STAGING/STOCKPILE AREAS, SOIL BORROW, AND SPOIL SITES MUST HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AND A VALID GRADING PERMIT.



SOURCE: ADC 2008-2012  
USED WITH PERMISSION

VICINITY MAP  
SCALE: 1" = 1000'

#### SEQUENCE OF CONSTRUCTION:

- NOTIFY THE ANNE ARUNDEL COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS (410-222-7780) AT LEAST 48 HOURS BEFORE COMMENCING WORK. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PERSONNEL HAVE MET ON SITE WITH THE EROSION AND SEDIMENT (ESC) CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS. (1 DAY)
- PRIOR TO THE START OF ANY EARTH DISTURBANCE, THE CONTRACTOR SHALL NOTIFY THE U.S. ARMY CORPS OF ENGINEERS (USACE) AND MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) IN ACCORDANCE WITH THE APPROVED PERMITS. IN ADDITION, AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (AT A MINIMUM: PROJECT OWNER, DESIGN ENGINEER, CONTRACTOR, USACE, MDE, AND ANNE ARUNDEL COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS) FULLY UNDERSTAND THE CONSTRUCTION SEQUENCING. (1 DAY)
  - PROJECT OWNER REPRESENTATIVE - SEE CONSTRUCTION CONTRACT FOR CONTACT
  - DESIGN ENGINEER (WSSI) - 410-672-5990
  - USACE - SEE PERMIT FOR CONTACT
  - MDE INSPECTION AND COMPLIANCE - 410-537-3510
  - ANNE ARUNDEL COUNTY DEPARTMENT OF INSPECTIONS AND PERMITS - 410-222-7780
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AT 1-800-257-7777 FOR THE LOCATION OF ALL PUBLIC AND PRIVATE UTILITY LINES, PIPES, CABLES, AND ASSOCIATED FEATURES PRIOR TO ANY CONSTRUCTION WORK; ALL UTILITIES SHALL BE CLEARLY IDENTIFIED PRIOR TO CONSTRUCTION. (1 DAY)
- STAKE OUT THE LIMITS OF DISTURBANCE (LOD) AS SHOWN ON THE ESC PLAN USING STAKES AND FLAGGING PRIOR TO THE CLEARING OF TREES, INSTALLATION OF ESC MEASURES, OR OTHER EARTH DISTURBING ACTIVITIES. AS APPLICABLE, CLEARLY MARK AREAS TO BE PROTECTED. THE LOD AND EXISTING CONDITIONS MUST BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR PRIOR TO COMMENCING WORK. (1 DAY)
- PRIOR TO ANY EARTH DISTURBING ACTIVITIES, ALL TERRESTRIAL PERIMETER ESC MEASURES AND DEVICES SHALL BE INSTALLED AS SPECIFIED ON THE ESC PLAN SHEETS. CLEAR THE MINIMUM AREA NECESSARY TO INSTALL SEDIMENT CONTROL AND STAGING AREA.
  - INSTALL SUPER SILT FENCE (SSF) ON POND SIDE OF SITE, JUST INSIDE THE LOD. (1 DAY)
  - INSTALL TEMPORARY ORANGE CONSTRUCTION FENCE ALONG ANY PORTION OF LOD THAT DOES NOT HAVE SSF AND IS ABOVE 1.5' ELEVATION. (1 DAY)
  - FLAG PLANNED ANCHOR POINTS FOR TURBIDITY CURTAIN. (1 DAY)
- ONCE TERRESTRIAL PERIMETER SEDIMENT CONTROLS HAVE BEEN INSTALLED, CONTACT THE SEDIMENT CONTROL INSPECTOR FOR APPROVAL PRIOR TO COMMENCING WORK. (1 DAY)
- PRIOR TO ANY ADDITIONAL EARTH DISTURBING ACTIVITIES, ALL REMAINING NECESSARY ESC MEASURES AND DEVICES SHALL BE INSTALLED AS SPECIFIED ON THE ESC PLAN SHEETS. CLEAR THE MINIMUM AREA NECESSARY TO INSTALL SEDIMENT CONTROL AND STAGING AREA.
  - INSTALL STABILIZED CONSTRUCTION ENTRANCE (SCE). (1 DAY)
  - IF CONTRACTOR PLANS TO USE THE STAGING AND STOCKPILING AREA, INSTALL TEMPORARY ACCESS WATER CROSSING AND ESTABLISH STAGING/STOCKPILE AREA. THIS AREA SHALL BE FOR TEMPORARY USE ONLY AND SHALL BE RETURNED TO EXISTING CONDITIONS AT THE END OF CONSTRUCTION. (1 DAY)
  - CLEAR PATH FOR ACCESS ROAD, THEN INSTALL ROAD AND ASSOCIATED SSF. (1 DAY)
  - INSTALL TURBIDITY CURTAIN. (1 DAY)
- ALL NECESSARY ESC AND TREE PROTECTION MEASURES MUST BE IMPLEMENTED PRIOR TO THE COMMENCEMENT OF GRADING WORK AND MAINTAINED THROUGH THE COMPLETION OF CONSTRUCTION UNLESS OTHERWISE DIRECTED BY AN ENGINEER OR SEDIMENT CONTROL INSPECTOR.
- STAKE OUT THE BREAKWATER ALIGNMENT AS SHOWN ON THE GRADING PLAN. (1 DAY)
- INSTALL STONE BREAKWATERS ACCORDING TO LOCATIONS, ELEVATIONS, AND CONSTRUCTION DETAILS SHOWN ON PLANS (20 DAYS):
  - DIG TRENCH FOR STONE TOE WITHIN AREA OF PLANNED WORK.
  - LAY GEOTEXTILE ON EXISTING GRADE AND WITHIN TRENCH IN ACCORDANCE WITH CONSTRUCTION DETAIL.
  - CONSTRUCT THE BREAKWATER CORE IN ACCORDANCE WITH THE GRADING PLAN, SECTIONS, PROFILE, AND CONSTRUCTION DETAIL.
  - CONSTRUCT THE STONE TOE AND BREAKWATER ARMOR LAYER IN ACCORDANCE WITH THE GRADING PLAN AND CONSTRUCTION DETAIL.
  - CHINK VOIDS.
  - TRIM AND KEY-IN GEOTEXTILE IN ACCORDANCE WITH THE CONSTRUCTION DETAIL.
- AS APPLICABLE, SELECTIVELY REMOVE TREE STUMPS AND BRUSH WITHIN THE LIMITS OF DISTURBANCE. CLEAR THE MINIMUM AREA NECESSARY TO ACHIEVE PROPOSED DESIGN. (2 DAYS)
- STAKE OUT THE DUNE REFERENCE POINTS AS SHOWN ON THE GRADING PLAN. (1 DAY)
- CONSTRUCT DUNE AND BERM ACCORDING TO LOCATIONS, ELEVATIONS, AND CONSTRUCTION DETAILS SHOWN ON PLANS (15 DAYS).
- ONCE CONSTRUCTION OF BREAKWATER, DUNE, AND BERM IS COMPLETE, PERFORM AN INITIAL INSPECTION OF THESE FEATURES WITH THE ENGINEER AND PROJECT OWNER. REPAIR AND ADDRESS DEFICIENCIES IDENTIFIED DURING THE INSPECTION. (5 DAYS)
- AFTER PLACEMENT, ALL GRADED ZONES SHALL BE ALLOWED TO ADJUST INTO FINAL POSITION BY TIDAL AND WAVE ACTION. PLANTING ACTIVITIES SHALL BE PERFORMED A MINIMUM OF TWO WEEKS AFTER SAND PLACEMENT. (10 DAYS)
- WITH APPROVAL OF THE COUNTY INSPECTOR, REMOVE ESC ONLY AS REQUIRED TO INSTALL GEOGRID PEDESTRIAN ACCESS. RESTORE GRADES WITHIN THIS AREA AS NECESSARY. INSTALL PEDESTRIAN ACCESS IN ACCORDANCE WITH GRADING PLAN, DETAILS, AND SPECIFICATIONS. NO HEAVY MACHINERY SHALL BE DRIVEN ON GEOGRID PEDESTRIAN ACCESS. (5 DAYS)
- INSTALL ALL LANDSCAPING IN CONFORMANCE WITH THE LANDSCAPE PLAN SHEETS. (5 DAYS)
- REMOVE TRASH AND EXCESS MATERIALS FROM SITE. (1 DAY)
- CONDUCT FINAL INSPECTION PRIOR TO DE-MOBILIZING FROM THE SITE. REPAIR AND ADDRESS DEFICIENCIES IDENTIFIED DURING THE FINAL INSPECTION WITHIN 5 DAYS OF RECEIPT PUNCH LIST. (10 DAYS)
- UPON APPROVAL OF COUNTY INSPECTOR, REMOVE ESC MEASURES. (1 DAY)

MISS UTILITY  
CALL "MISS UTILITY" AT 1-800-257-7777. 48 HOURS PRIOR TO THE START OF WORK, THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.

#### CONSULTANT'S CERTIFICATION

The Developer's plan to control silt and erosion is adequate to contain the silt and erosion on the property covered by the plan. I certify that this plan of erosion and sediment control represents a practical and workable plan based on my personal knowledge of this site and was prepared in accordance with the requirements of the AASCD Plan Submittal Guidelines and the current Maryland Standards and Specifications for Soil Erosion and Sediment Control. I have reviewed this erosion and sediment control plan with the owner/developer.

MD P.E. License # 46317

MD Land Surveyor License #

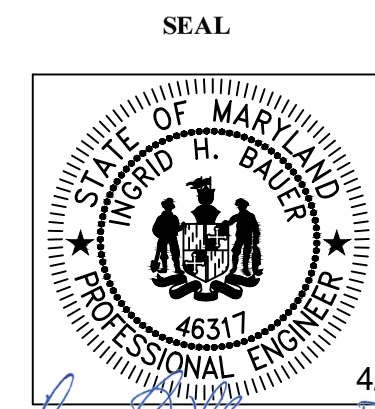
MD Landscape Architect #

Name Ingrid Bauer, P.E.

Firm Name Wetland Studies & Solutions, Inc.

Address 1131 Benfield Blvd, Suite L

City Millersville, State MD, Zip Code 21108



4/17/2024

Ingrid H. Bauer, P.E.

#### STANDARD RESPONSIBILITY NOTES

- 1 (We) certify that:
  - All development and construction will be done in accordance with this sediment and erosion control plan, and further, authorize the right of entry for periodic on-site evaluation by the Anne Arundel Soil Conservation District (AASCD) Board of Supervisors or their authorized agents.
  - Any responsible personnel involved in the construction project will have a certificate of attendance from the Maryland Department of the Environment's approved training program for the control of sediment and erosion before beginning the project.  
Responsible personnel on site: \_\_\_\_\_
  - If applicable, the appropriate enclosure will be constructed and maintained on sediment basin(s) included in this plan. Such structure(s) will be in compliance with the Anne Arundel County Code.
- The developer is responsible for the acquisition of all easements, right, and/or rights-of-way that may be required for the sediment and erosion control practices, storm water management practices and the discharge of storm water onto or across adjacent or downstream properties included in the plan.
- For initial soil disturbance or re-disturbance, permanent and/or temporary stabilization per the AASCD Vegetative Establishment shall be completed within three calendar days for the surface of all controls, dikes, swales, ditches, perimeter slopes and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven days for all other disturbed or graded areas on the project site.
- The grading and sediment control approval on this plan extends only to those areas within the limits of disturbance.
- The approval of this plan for sediment and erosion control does not relieve the developer/consultant from complying with Federal, State or County requirements pertaining to environmental issues.
- The developer must request that the sediment and erosion control inspector approve work completed in accordance with the approved erosion and sediment control plan, the grading or building permit, and the ordinance.
- All material shall be taken to a site with an approved sediment and erosion control plan.
- First phase inspection and approval of the sediment and erosion control inspector shall be required upon completion of the installation of erosion and sediment controls prior to proceeding with any other earth disturbance or grading. Other building or grading inspection approvals may not be authorized until the initial approval by the sediment and erosion control inspector is given. Inspection and Permits may also require that an inspection and certification of the installation of sediment control also be performed by a design professional prior to construction commencing.
- Approval from the inspector must be requested on final stabilization of all sites prior to removal of sediment and erosion controls.
- Existing topography must be field verified by responsible personnel to the satisfaction of the sediment control inspector prior to commencing work.

Signature of Developer/Owner \_\_\_\_\_ Date \_\_\_\_\_

Print: Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Affiliation: \_\_\_\_\_  
Address: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_  
Email Address: \_\_\_\_\_

#### SHEET INDEX

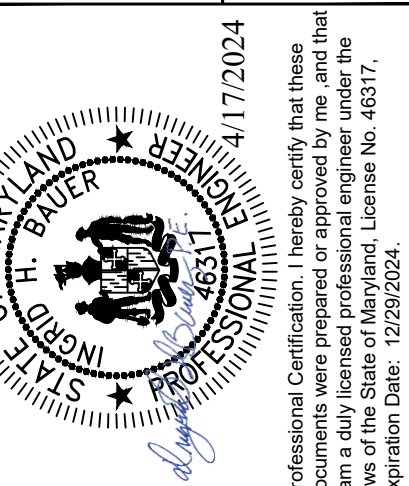
- COVER SHEET
- CONSTRUCTION NOTES AND TOLERANCES
- GRADING PLAN
- CROSS SECTIONS AND BREAKWATER PROFILE
- CONSTRUCTION DETAILS
- EROSION AND SEDIMENT CONTROL PLAN
- EROSIONS AND SEDIMENT CONTROL DETAILS
- PLANTING PLAN
- PLANTING AND SEEDING NOTES AND DETAILS
- VEGETATION SCHEDULE
- PEDESTRIAN ACCESS DETAILS AND SPECIFICATIONS
- 12-14 DESIGN NARRATIVE

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Millersville, Maryland 21108  
Phone: 410-672-5990 • Fax: 410-672-5993  
www.wetlandstudies.com

Southbreeze Community Shoreline Stabilization  
Final Design Plan  
Anne Arundel County, Maryland

Cover Sheet

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Professional Certification: I hereby certify that these plans were prepared by me or under my direct supervision and that I am a duly licensed professional engineer in accordance with the laws of the State of Maryland. License No. 46317. Expiration Date: 12/31/2024.

REVISIONS		App. By	Rev. By
No.	Date	Description	

Horizontal Datum: NAD83

Vertical Datum: NAVD88

Boundary and Topo Source: WSSI & Anne Arundel County Data

Design	Draft	Approved
IHB	MCJ	IHB

Sheet #  
1 of 14

Computer File Name:

**GENERAL NOTES:**

- PLANS ARE HORIZONTALLY REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, MARYLAND STATE PLANE, U.S. SURVEY FOOT (MD83F) AND VERTICALLY REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- EXISTING TOPOGRAPHIC AND BATHYMETRIC CONDITIONS DISPLAYED ON THE PLANS WITHIN THE PROJECT AREA ARE FROM A FIELD RUN GROUND SURVEY PERFORMED ON JULY 19 & 20, 2023. IT IS DISPLAYED AT 1' CONTOUR INTERVALS. THE INFORMATION SHOWN IS TO BE EXCLUSIVELY USED FOR THE SHORELINE STABILIZATION DESIGN. EXISTING CONDITIONS AT THE TIME OF CONSTRUCTION MAY VARY FROM THE SURVEY DUE TO ONGOING EROSION AT THE SITE.
- THE BOUNDARY AND EXISTING EASEMENT INFORMATION WAS COMPILED FROM EXISTING LAND RECORDS SUPPLIED TO WSSI BY THE CLIENT AND DOES NOT REPRESENT THE RESULTS OF AN ACTUAL FIELD RUN BOUNDARY SURVEY.
- TOPOGRAPHIC CONTOUR DATA OUTSIDE THE SURVEYED AREA WAS DERIVED FROM LIDAR DATA PRODUCED FOR THE USGS AND FEMA IN 2011, IT IS DISPLAYED AT 2' CONTOUR INTERVALS.
- FLOODZONE DATA IS SOURCED FROM 2015 FEMA DIGITAL FLOOD INSURANCE RATE MAPS, INSERTED IN MD83D COORDINATES.
- THE TIDAL DATUM ELEVATIONS, MEAN HIGH WATER (MHW) AND MEAN LOW WATER (MLW), WERE OBTAINED USING NOAA'S ONLINE VERTICAL DATA TRANSFORMATION TOOL, VDATUM ONLINE, ACCESSED OCTOBER 2023, USING LATITUDE: 38.9191320084 AND LONGITUDE: -76.4786642350.
- ALL OTHER DATA IS SOURCED FROM ANNE ARUNDEL COUNTY DIGITAL DATA.
- THE PRIMARY WORK HOURS FOR DELIVERIES AND OPERATION OF HEAVY MACHINERY SHALL BE BETWEEN 8AM AND 6PM, MONDAY THROUGH FRIDAY. IF CONTRACTOR WISHES TO OPERATE HEAVY MACHINERY OR RECEIVE DELIVERIES OUTSIDE OF THIS TIMEFRAME, THEY SHOULD REQUEST THIS THROUGH THE PROJECT OWNER AT LEAST 24 HOURS IN ADVANCE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ALL PUBLIC AND PRIVATE FEATURES DAMAGED AS A RESULT OF PROJECT CONSTRUCTION. FEATURES INCLUDE, BUT ARE NOT LIMITED TO: ROADWAYS, ROADWAY SHOULDER, RIPRAP SWALES, STORMWATER FEATURES, PRIVATE SHORELINE FEATURES, AND EXISTING BRICK COLUMN. REPAIR OF ROADWAY AND SWALE SHALL MATCH EXISTING IN MATERIAL AND CONSTRUCTION. DETERMINATION OF WHETHER A REPAIR OR REPLACEMENT IS ACCEPTABLE SHALL BE MADE BY THE ENGINEER, PROJECT OWNER, OR OWNER OF THE PARTICULAR FEATURE. PRIOR TO MOBILIZATION, CONTRACTOR SHOULD PHOTOGRAPHICALLY DOCUMENT EXISTING CONDITIONS.
- THE CONTRACTOR SHALL REMOVE ANY/ALL REFUSE FROM THE WORK AREA. THIS REFUSE SHALL BE HAULED OFF SITE AND DISPOSED OF AT APPROVED SITE.

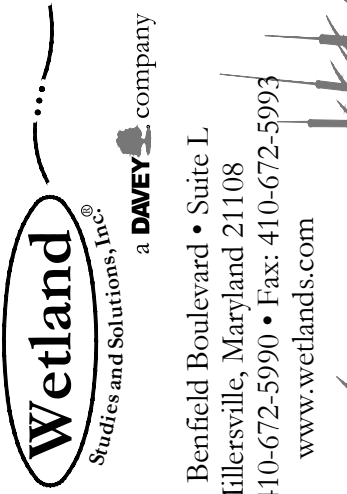
**GRADING NOTES**

- THIS PROJECT IS BEING AUTHORIZED UNDER A USACE INDIVIDUAL PERMIT AND MDE LETTER OF AUTHORIZATION. REFER TO PERMITS, AUTHORIZATIONS, AND APPROVALS FROM USACE, MDE, AND ANNE ARUNDEL COUNTY FOR ADDITIONAL CONDITIONS.
- CONTRACTOR SHALL COORDINATE SITE ACCESS WITH ENGINEER AND PROJECT OWNER PRIOR TO CONSTRUCTION.
- CONTACT MISS UTILITY (800-257-7777 OR 811) PRIOR TO COMMENCING ANY WORK.
- THE EXISTING UTILITIES SHOWN ON THE SURVEY WERE TAKEN FROM THE BEST AVAILABLE INFORMATION AND ARE NOT GUARANTEED TO BE ACCURATE. FIELD CONDITIONS MAY VARY. THE CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING UTILITIES, SURFACES, AND SITE FEATURES PRIOR TO CONSTRUCTION.
- EXISTING CONDITIONS AT THE TIME OF CONSTRUCTION MAY VARY SIGNIFICANTLY FROM THE SURVEY DUE TO ONGOING EROSION AT THE SITE. GPS SURVEY BY WSSI ON FEBRUARY 17, 2024, INDICATED ELEVATIONS ALONG THE DUNE CREST WERE HALF A FOOT OR MORE LOWER THAN AT THE TIME OF THE EXISTING CONDITIONS SURVEY.
- CONTRACTOR SHALL REVIEW AND CONFIRM THE EXISTING CONDITIONS AND SUBSOIL SUPPORTING QUALITIES PRIOR TO PREPARING A PROPOSAL AND SHALL INCLUDE IN THE SUBMITTED BID ESTIMATE ANY AND ALL CHANGES THAT WOULD BE NECESSARY TO FULLY ACCOMPLISH THE SHOWN CONSTRUCTION.
  - IT SHOULD BE EXPECTED THAT SOME SETTLEMENT AND DISPLACEMENT OF THE STONE STRUCTURES MAY OCCUR DURING CONSTRUCTION AND SHOULD BE TAKEN INTO ACCOUNT IN DETERMINING THE TOTAL VOLUME OF STONE REQUIRED. NO ADDITIONAL PAYMENT WILL BE MADE FOR ADDITIONAL STONE REQUIRED DUE TO SETTLEMENT OR DISPLACEMENT.
  - FINAL VOLUME OF SAND FILL FOR BEACH AND DUNE MAY BE REVISED ONCE AFTER CONTRACT AWARD. THIS CHANGE IN QUANTITY MUST BE SUBMITTED TO PROJECT OWNER WITH JUSTIFICATION AT LEAST ONE MONTH PRIOR TO MOBILIZATION. NO SAND PLACEMENT SHALL OCCUR PRIOR TO WRITTEN APPROVAL OF REVISED QUANTITY FROM PROJECT OWNER.
- THE SOURCE MATERIAL USED FOR SAND FILL MUST BE QUALITY BEACH SAND. GRAINS SHALL BE ROUND OR SEMI-ROUND WITH A MEDIAN DIAMETER THAT IS THE SIZE OR SLIGHTLY LARGER (+/- 0.3 MM) THAN THAT OF THE NATIVE BEACH MATERIAL. SAND SHALL BE FREE FROM PERCEPTIBLE AMOUNTS OF WOOD AND DEBRIS. IT SHALL BE FREE OF FROST AT THE TIME OF PLACEMENT AND SHALL NOT CONTAIN MARL OR OTHER ELEMENTS WHICH TEND TO KEEP IT IN A PLASTIC STATE. SAND MATERIAL SHALL HAVE NO MORE THAN 10% PASSING A #100 SIEVE AND NO MORE THAN 5% PASSING A #200 SIEVE.
- NO FILLS MAY BE PLACED ON FROZEN GROUND. EVERY EFFORT SHALL BE MADE TO PERFORM SAND GRADING WORK BELOW MHW DURING LOW TIDE. ALL FILL IS TO BE PLACED IN APPROXIMATELY HORIZONTAL LAYERS, EACH LAYER HAVING A LOOSE THICKNESS OF NOT MORE THAN 8 INCHES. ALL COMPACTION REQUIREMENTS ARE IN ACCORDANCE TO ANNE ARUNDEL COUNTY STANDARD SPECIFICATIONS FOR CONSTRUCTION AS AS THE AA COUNTY DESIGN MANUAL AND STANDARD DETAILS. ALL FILLS SHALL BE COMPACTED SUFFICIENTLY SO AS TO BE STABLE AND PREVENT EROSION AND SLIPPAGE.
- EVERY EFFORT SHALL BE MADE TO PERFORM SAND GRADING WORK BELOW MHW DURING LOW TIDE.
- LOCATION OF TIE-IN WITH EXISTING GRADE WILL VARY BASED ON CONDITIONS IN THE FIELD AT THE TIME OF CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN STRUCTURES UNTIL THEY ARE ACCEPTED AND ANY MATERIAL DISPLACED BY ANY CAUSE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.
- PROVIDE STABLE CONNECTION WITH EXISTING GRADES. PROPOSED GRADING SHALL TIE INTO EXISTING GRADE AT THE SLOPES INDICATED ON THE PLANS, LOCATION OF FILL EXTENTS VARY FROM THAT SHOWN IN THE PLANS BUT SHALL STAY WITHIN THE LOD.
- THE CONTRACTOR SHALL MAINTAIN STRUCTURES UNTIL THEY ARE ACCEPTED AND ANY MATERIAL DISPLACED BY ANY CAUSE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.
- THE PROPOSED RESTORATION AREAS SHALL BE STABILIZED AT THE END OF EACH WORKDAY.
- FOLLOWING CONSTRUCTION, ALL GRADES (OUTSIDE OF SPECIFIED RESTORATION AREAS) SHALL BE RETURNED TO EXISTING CONDITIONS AND ANY OTHER DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR.
- REFER TO SEQUENCE OF CONSTRUCTION AND CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.
- SEE EROSION AND SEDIMENT CONTROL PLAN SHEETS FOR FULL ACCESS DETAILS.

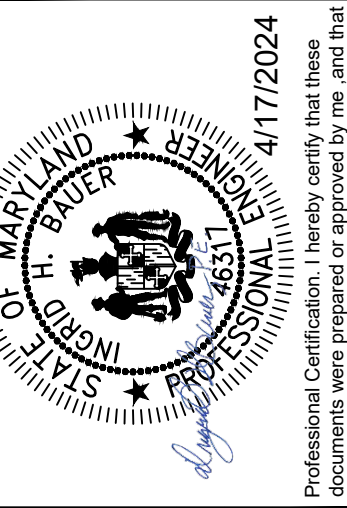
**CONSTRUCTION TOLERANCES**

- DURING CONSTRUCTION, THE CONTRACTOR SHALL ADHERE TO THE FOLLOWING CONSTRUCTION GRADING TOLERANCES NOTED AS FOLLOWS:
  - LOCATIONS, ELEVATIONS, AND DIMENSIONS OF STONE STRUCTURES SHALL BE:
    - VERTICAL TOLERANCE: +/- 0.1' MAXIMUM; AND,
    - HORIZONTAL TOLERANCE: +/- 0.5' MAXIMUM
  - NO NEGATIVE OR POSITIVE TOLERANCE WILL BE ALLOWED OVER AN AREA GREATER THAN FIFTY SQUARE FEET.
- LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL GRADING FEATURES SHALL BE:
  - VERTICAL TOLERANCE: +/- 0.2' MAXIMUM; AND,
  - HORIZONTAL TOLERANCE: +/- 0.5' MAXIMUM
- SHOULD THE CONTRACTOR ENCOUNTER A SITUATION WHERE THEY BELIEVE TOLERANCES OVERLAP AND/OR CONFLICT, THE CONTRACTOR SHALL REQUEST CLARIFICATION OF THE TOLERANCE PRIORITY FROM ENGINEER.
- IT IS RECOGNIZED THAT FIELD CONDITIONS MAY WARRANT ADJUSTMENTS TO DESIGN ELEMENTS. SUCH AN ADJUSTMENT SHOULD BE CONFIRMED BY THE ENGINEER. IF A TOLERANCE IS ADJUSTED, SUBSEQUENT POINTS WITHIN A GIVEN STRUCTURE AND/OR CROSS SECTION MUST BE SHIFTED EQUALLY TO MAINTAIN DIMENSIONAL INTEGRITY. THE RESTORED DIMENSIONS CANNOT VARY FROM THE DESIGN DIMENSIONS WITHOUT ENGINEER APPROVAL.
 

ANY SUCH CHANGE SHALL BE NOTED ON THE FINAL AS-BUILT DRAWING AS WELL AS ON THE PRELIMINARY AS-BUILT FORMS WITH JUSTIFICATION FOR CHANGE. ACCEPTANCE OF FIELD CHANGES AND/OR AREAS OUTSIDE OF TOLERANCES DOES NOT RELIEVE THE CONTRACTOR OF LIABILITY FOR THE STRUCTURES OR GARDING FEATURES DURING THE WARRANTY PERIOD.
- ADHERENCE TO THE TOLERANCES SHALL BE DOCUMENTED AS SPECIFIED IN THE 'SHORELINE STABILIZATION CERTIFICATION AS-BUILT SURVEY' DOCUMENT FOR THIS PROJECT.



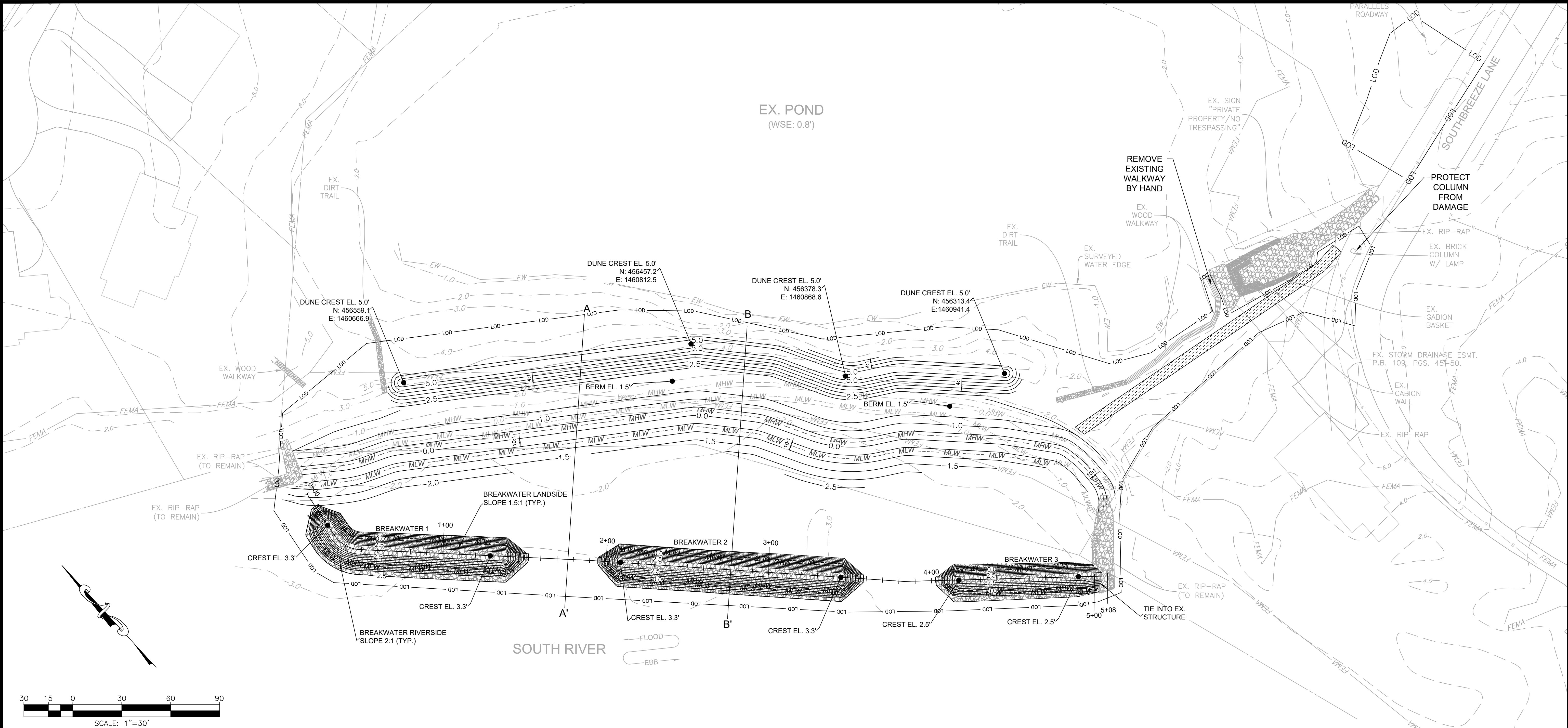
Southbreeze Community Shoreline Stabilization  
Final Design Plan  
Anne Arundel County, Maryland  
Construction Notes And Tolerances



REVISONS		App. By	By
No.	Date	Description	

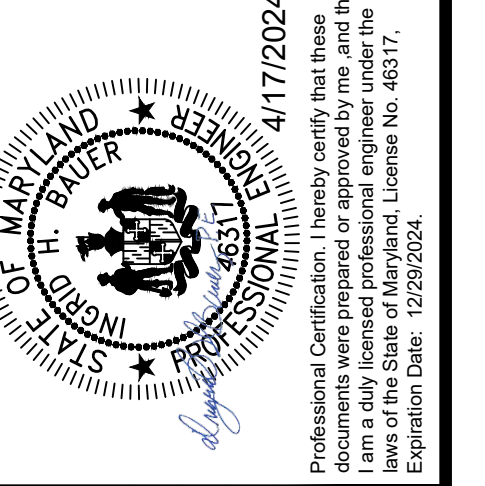
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Vertical Datum: N/A		
Boundary and Topo Source: N/A		
Design	Draft	Approved
IHB	MCJ	IHB
Sheet #		
2 of 14		



**Wetland**  
 a **DAVEY** company  
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 Millersville, Maryland 21108  
 Phone: 410-672-5990 • Fax: 410-672-5993  
 www.wetlands.com

**Southbreeze Community Shoreline Stabilization  
 Final Design Plan**  
 Anne Arundel County, MD  
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No.	Date	Description	Rev. By	App. By

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Design	Draft	Approved
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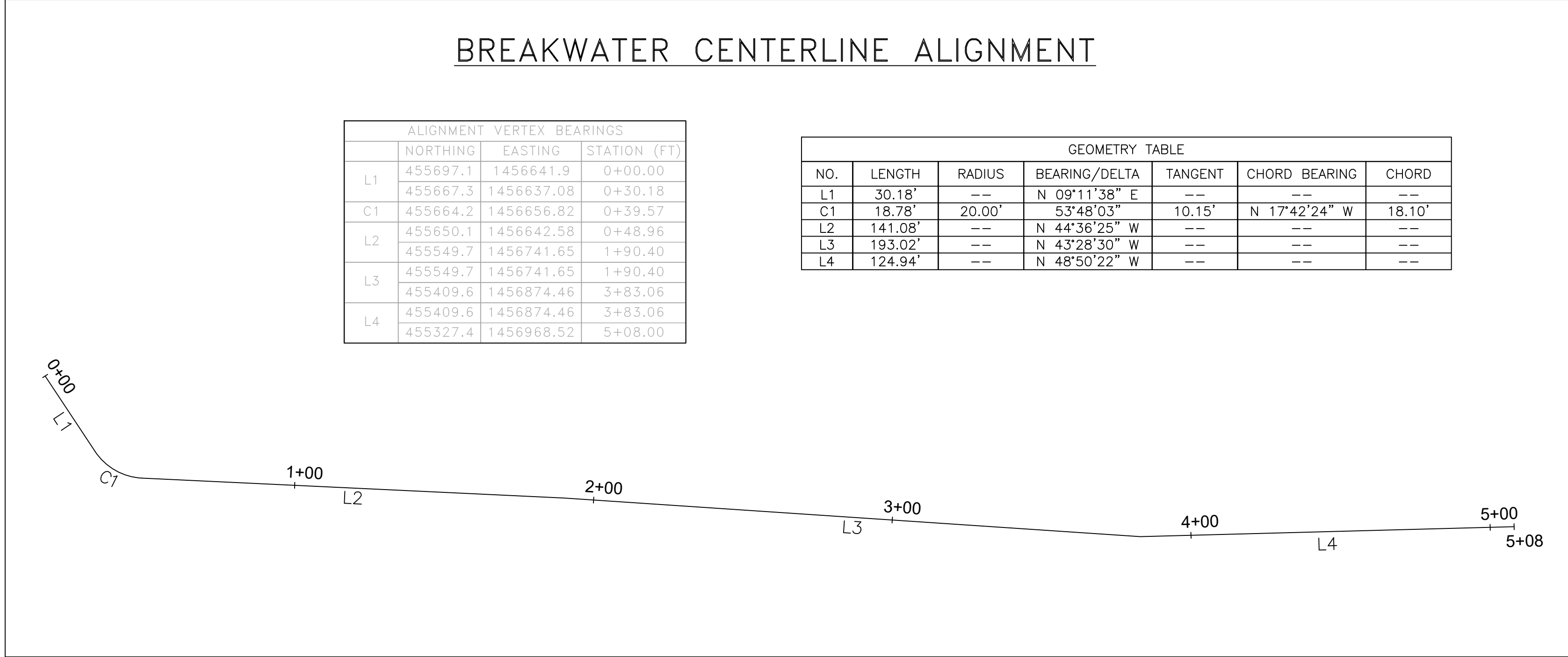
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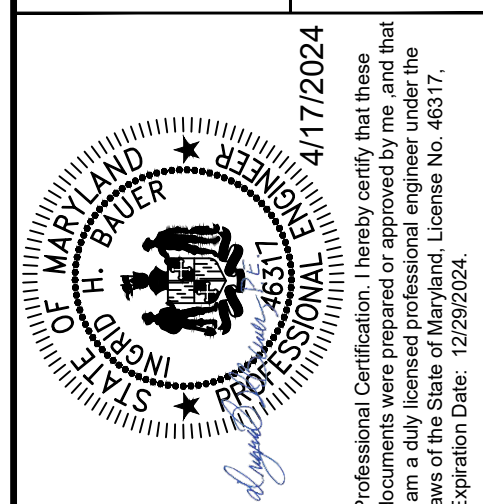
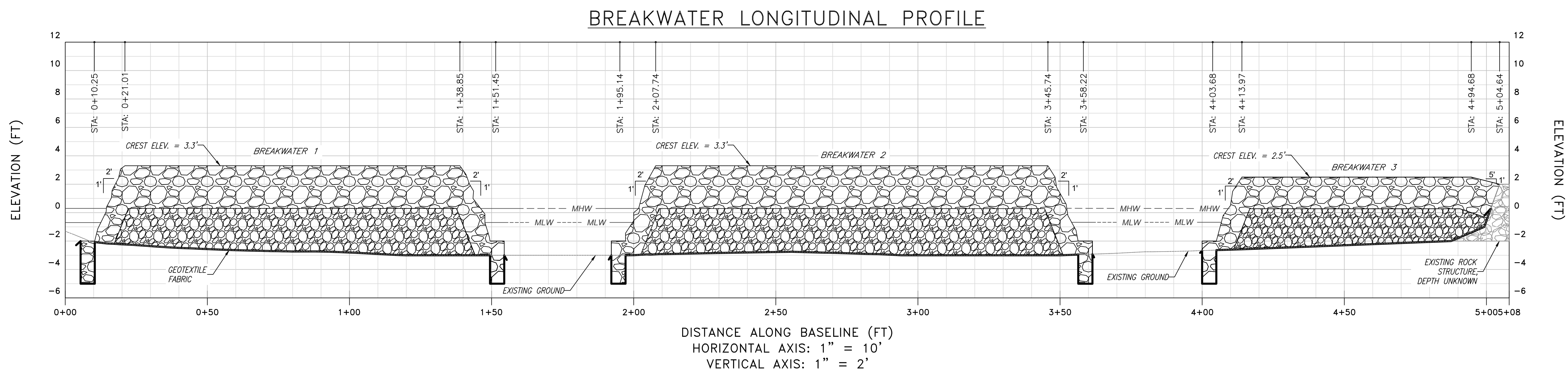
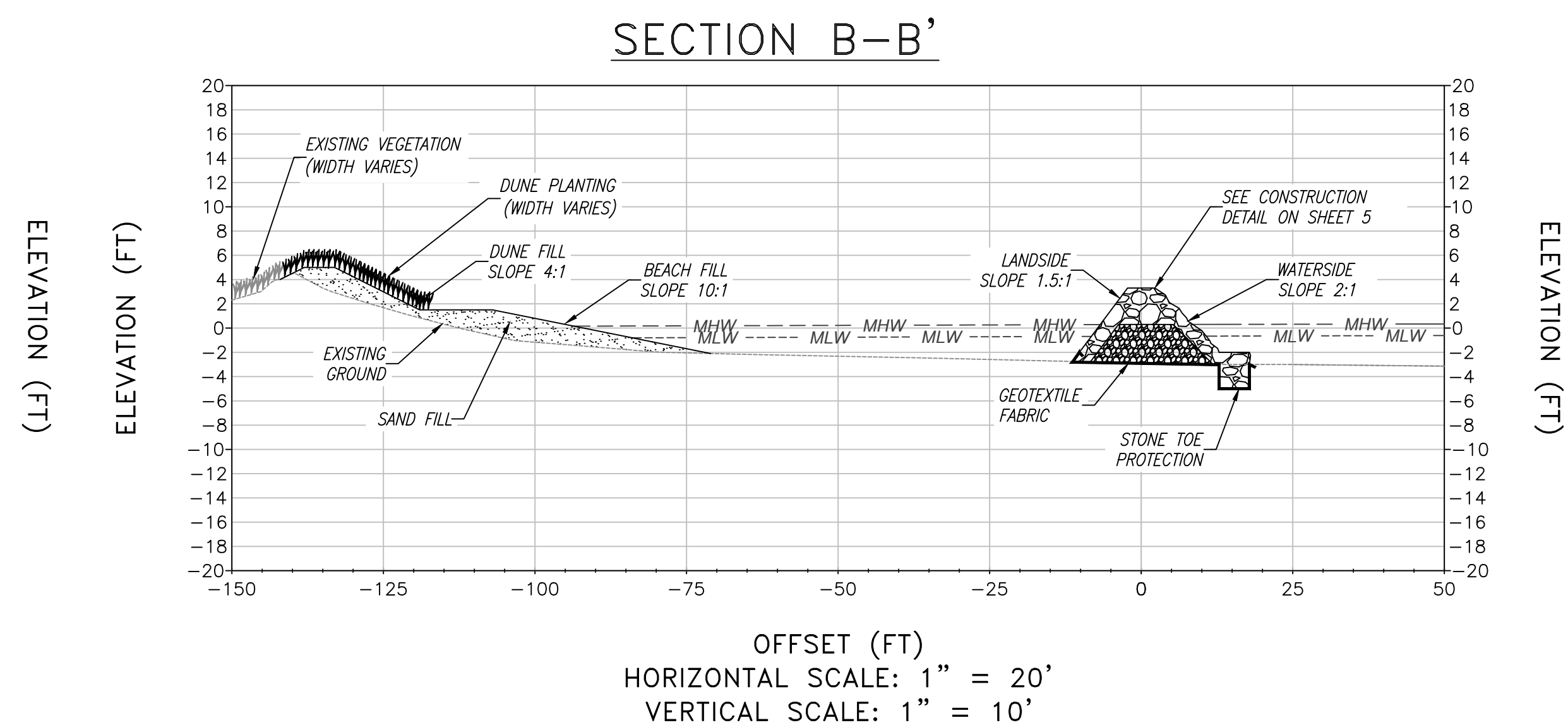
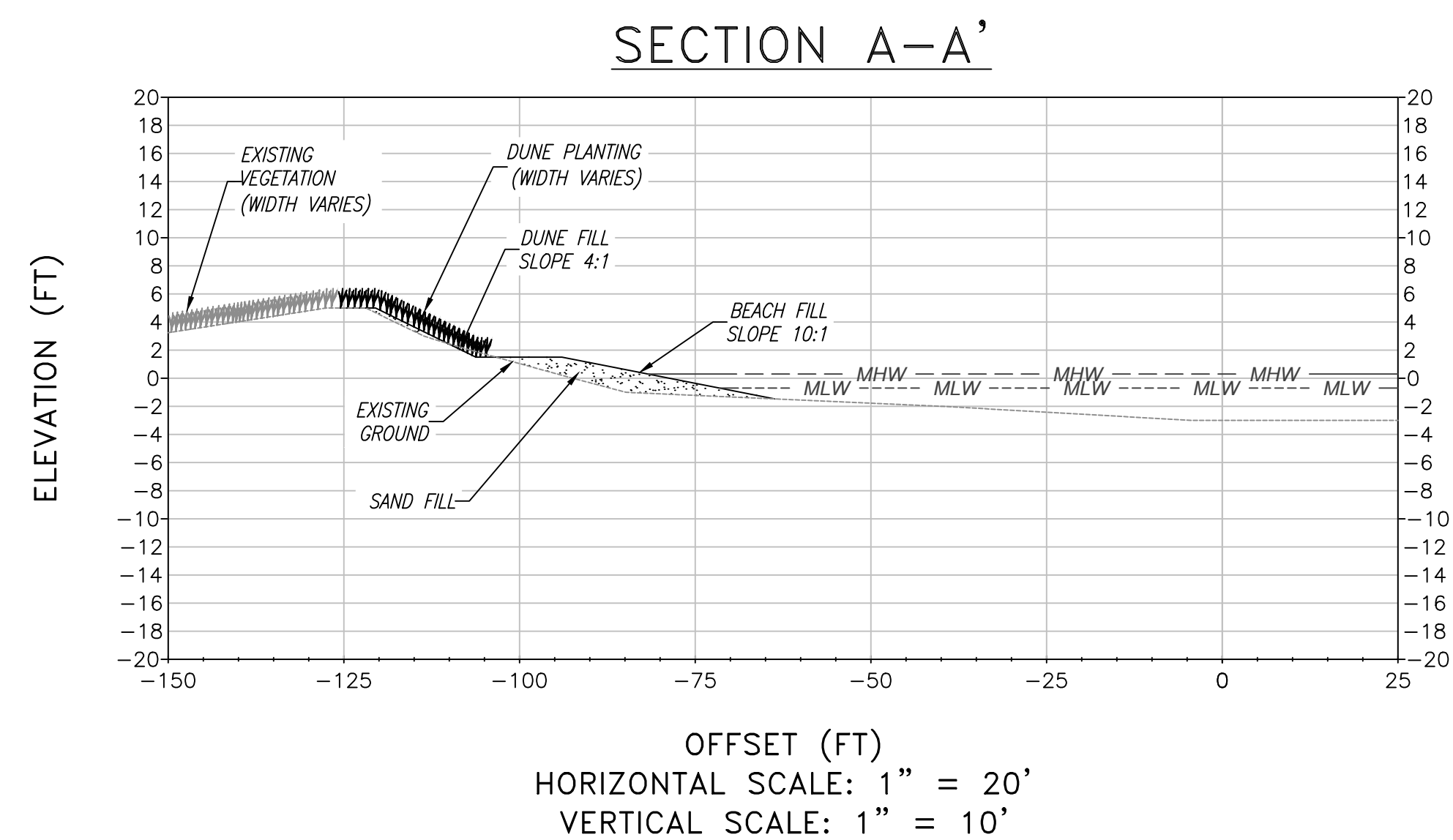
**BREAKWATER CENTERLINE ALIGNMENT**

	ALIGNMENT VERTEX BEARINGS		
	NORTHING	EASTING	STATION (FT)
L1	455697.1	1456641.9	0+00.00
C1	455667.3	1456637.08	0+30.18
L2	455664.2	1456656.82	0+39.57
L3	455650.1	1456642.58	0+48.96
L4	455549.7	1456741.65	1+90.40
L3	455549.7	1456741.65	1+90.40
L4	455409.6	1456874.46	3+83.06
L4	455409.6	1456874.46	3+83.06
L4	455327.4	1456968.52	5+08.00

GEOMETRY TABLE						
NO.	LENGTH	RADIUS	BEARING/Delta	TANGENT	CHORD BEARING	CHORD
L1	30.18'	---	N 09°11'38" E	---	---	---
C1	18.78'	20.00'	53°48'03" E	10.15'	N 17°42'24" W	18.10'
L2	141.08'	---	N 44°36'25" W	---	---	---
L3	193.02'	---	N 43°28'30" W	---	---	---
L4	124.94'	---	N 48°50'22" W	---	---	---



LEGEND	
--- PROPERTY BOUNDARIES	--- PROPOSED GRADING (0.5')
--- EASEMENT BOUNDARIES	--- MHW --- PROPOSED MEAN HIGH WATER LINE (0.3' EL.)
--- EXISTING INFRASTRUCTURE	--- MLW --- PROPOSED MEAN LOW WATER LINE (-0.7' EL.)
--- 350 --- EXISTING CONTOURS (0.5')	--- LOD --- LIMIT OF DISTURBANCE
--- MHW --- EXISTING MEAN HIGH WATER LINE (0.3' EL.)	--- PROPOSED BREAKWATER
--- MLW --- EXISTING MEAN LOW WATER LINE (-0.7' EL.)	--- PROPOSED GEOGRID PATH
--- EW --- EX. POND EDGE OF WATER	
--- FEMA --- FEMA FLOODPLAIN	

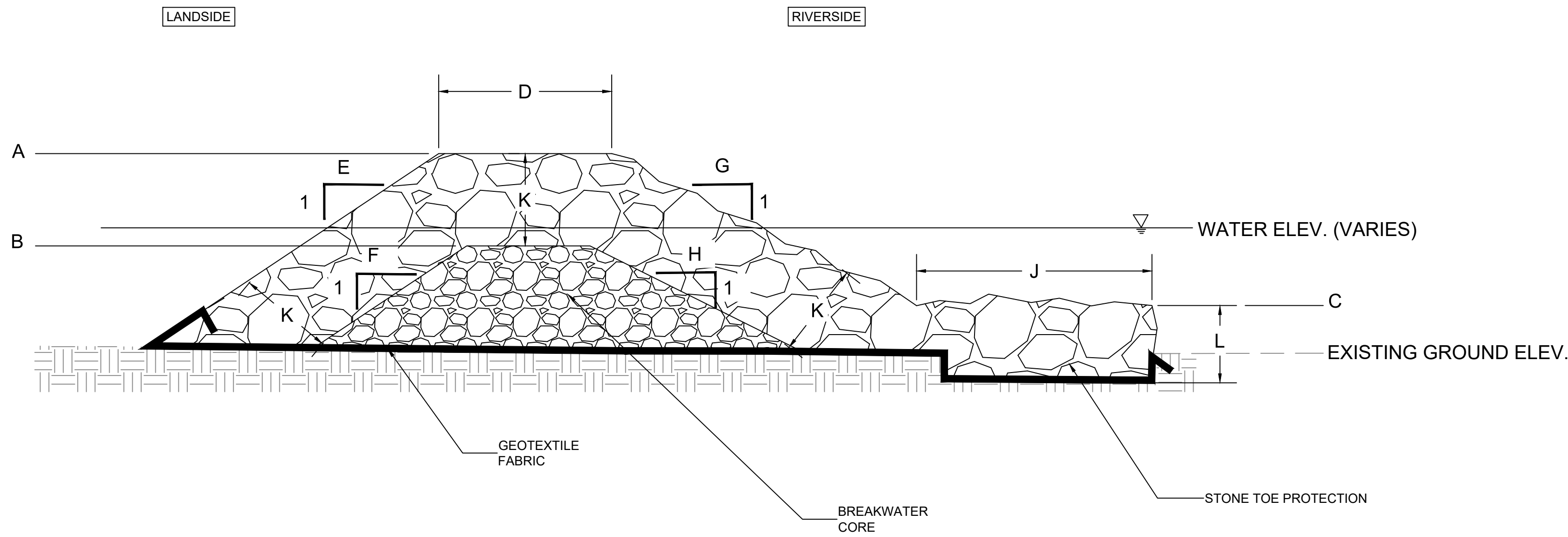


REVISIONS		App. By	By
No.	Date	Description	

DATE: APRIL 2024      SCALE: AS SHOWN

# BREAKWATER

NOT TO SCALE



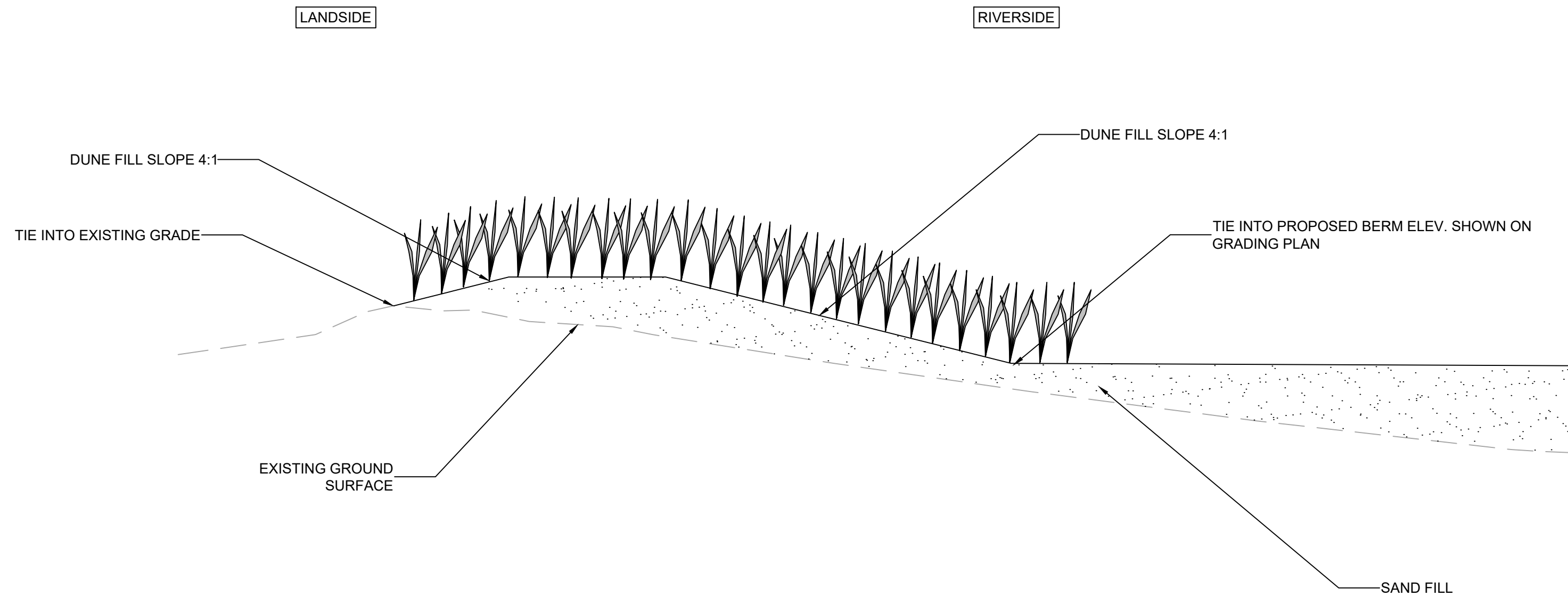
BREAKWATER ID	SITE LOCATION PER BASELINE STATION*		ELEVATIONS (FT)			BREAKWATER DIMENSIONS CROSS SECTION PARAMETERS (FT)										NOTES
	FROM	TO	A	B	C	D	E	F	G	H*	J	K	L			
BREAKWATER 1	0+21.01	1+38.85	3.3'	0.3'	-2.0'	4.5'	1.5:1	1.5:1	2.0:1	2.0:1	5.0'	3.0'	3.0' MIN			
BREAKWATER 2	2+07.74	3+45.74	3.3'	0.3'	-2.0'	4.5'	1.5:1	1.5:1	2.0:1	2.0:1	5.0'	3.0'	3.0' MIN			
BREAKWATER 3	4+13.97	4+94.68	2.5'	-0.5'	-2.0'	4.5'	1.5:1	1.5:1	2.0:1	2.0:1	5.0'	3.0'	3.0' MIN			

### BREAKWATER NOTES

- STRUCTURES SHALL BE UNDERLAIN WITH WOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI FW700X, OR APPROVED EQUAL. THE FABRIC SHALL HAVE PUNCTURE RESISTANCE GREATER THAN 100 LBS, APPARENT OPENING SIZE SHALL BE U.S. 70 SIEVE, AND PERCENT OPEN AREA LESS THAN 6%. IT SHALL BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS, ROT AND MILDEW RESISTANT, AND SHALL RESIST DETERIORATION FROM UV RADIATION.
- GEOTEXTILE PLACEMENT
  - ENSURE THAT THE SUBGRADE IS SMOOTH AND FIRM, FREE FROM PROTRUDING OBJECTS THAT WOULD DAMAGE THE GEOTEXTILE.
  - LAY GEOTEXTILE ON THE PREPARED SUBGRADE TO COVER THE ENTIRE BOTTOM OF THE BREAKWATER AND TOE, WITH ENOUGH TO KEY A MINIMUM OF 12 INCHES ON ALL SIDES OF THE STRUCTURE.
  - THE STRIPS OF GEOTEXTILE SHALL BE SPREAD PARALLEL TO THE MAJOR AXIS OF THE STRUCTURE. THE FABRIC SHALL BE LOOSELY LAID (NOT STRETCHED). ROLLS OF AS GREAT A LENGTH AS IS ECONOMICAL FOR THE CONTRACTOR TO HANDLE SHALL BE USED WHENEVER POSSIBLE IN ORDER TO MINIMIZE THE NUMBER OF OVERLAPS PERPENDICULAR TO THE MAJOR AXIS OF THE STRUCTURE. OVERLAPS PERPENDICULAR TO THE MAJOR AXIS OF THE STRUCTURE SHALL BE STAGGERED A MINIMUM OF 5 FEET. OVERLAP SHALL BE A MINIMUM OF 3 FEET. OVERLAP AT OR ONTO EXISTING STRUCTURE FROM SUBGRADE SHALL ALSO BE A MINIMUM OF 3 FEET.
  - THE GEOTEXTILE MAY BE TEMPORARILY PINNED IN PLACE WITH SECURING PINS TO PREVENT SLIPPAGE DURING CONSTRUCTION. THE PINS SHALL BE RETAINED UNTIL SUFFICIENT ARMOR STONES ARE SET TO HOLD THE GEOTEXTILE. THE SECURING PINS SHALL THEN BE REMOVED AS ADDITIONAL ARMOR STONES ARE PLACED TO RELIEVE HIGH TENSILE STRESS WHICH MAY CAUSE DAMAGE TO THE GEOTEXTILE. ALTERNATE ANCHORING MAY BE USED AS APPROPRIATE.
  - ADEQUATE PRECAUTION SHALL BE TAKEN TO PREVENT DAMAGE OF THE GEOTEXTILE FROM PLACEMENT OF OVERLAYING MATERIALS. STONE WEIGHING MORE THAN 100 POUNDS SHOULD NOT BE DROPPED FROM A HEIGHT GREATER THAN 5 FEET ONTO THE CLOTH. STONES WEIGHING MORE THAN 500 POUNDS SHOULD NOT BE DROPPED FROM A HEIGHT GREATER THAN 2 FEET. ANY GEOTEXTILE DAMAGED OR DISPLACED BEFORE OR DURING PLACEMENT OF OVERLAYING LAYERS SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION OF THE ENGINEER OR PROJECT OWNER AT THE CONTRACTOR'S EXPENSE.
- STONE SPECIFICATIONS
  - ARMOR STONE SHALL BE SIZED SUCH THAT A MINIMUM OF 90% OF THE INDIVIDUAL STONES SHALL WEIGH FROM 800 TO 3,000 POUNDS AND SHALL HAVE A WELL GRADED DISTRIBUTION THROUGHOUT THESE LIMITS. NOT MORE THAN 10% OF THE INDIVIDUAL STONES SHALL WEIGH MORE OR LESS THAN THE NOTED RANGE LIMITS.
  - CORE STONE SHALL BE WELL-GRADED CLASS I RIPRAP WITH A D50 OF 9.5 INCHES AND MINIMAL FINES.
  - CHINKING STONE SHALL BE SIZED APPROPRIATELY TO FILL VOIDS.
  - ALL STONE SHALL BE DURABLE QUARRIED STONE, GRAY OR BROWN IN COLOR, WITH A MINIMUM DENSITY OF 165 POUNDS PER CUBIC FOOT. THE STONE SHALL BE HARD AND ANGULAR, FREE FROM EITHER LAMINATIONS, WEAK CLEAVAGES OR UNDESIRABLE WEATHERING, AND OF SUCH CHARACTER THAT IT WILL NOT DISINTEGRATE FROM THE ACTION OF AIR, SALTWATER, OR HANDLING. SEDIMENTARY STONE WILL GENERALLY BE UNACCEPTABLE. INDIVIDUAL STONES WILL BE APPROXIMATELY RECTANGULAR IN CROSS-SECTION AND FREE FROM THIN, SLABBY PIECES HAVING A MAXIMUM DISTANCE OF MORE THAN THREE AND ONE-HALF TIMES THE LEAST DIMENSION. CONTRACTOR SHALL PROVIDE AN EXAMPLE OF ALL STONE TO BE USED FOR ENGINEER AND PROJECT OWNER APPROVAL.
- STONE PLACEMENT
  - STONE SHALL BE PLACED IN SUCH A MANNER AS TO PRODUCE A WELL-GRADED MASS OF ROCK WITH A MINIMUM PERCENTAGE OF VOIDS AND SHALL BE CONSTRUCTED TO THE SPECIFIED LINES AND GRADES SHOWN IN THE DRAWINGS AND NOTED IN THE CONSTRUCTION DETAIL TABLE. STONES SHALL BE PLACED SUCH THAT THERE IS A WELL-GRADED DISTRIBUTION OF THE VARIOUS SIZES THROUGHOUT THE APPROPRIATE ZONE. ANY OVERSIZED STONES SHALL BE PLACED AT THE TOE OF THE STRUCTURE. THE FINISHED STRUCTURE SHALL BE FREE FROM POCKETS OF SMALL STONES AND CLUSTERS OF LARGE STONES. REARRANGING OF INDIVIDUAL STONES BY MECHANICAL EQUIPMENT OR BY HAND WILL BE REQUIRED TO THE EXTENT NECESSARY TO OBTAIN A WELL-GRADED DISTRIBUTION OF STONE SIZE, TO ENSURE STABILITY AND OBTAIN AT LEAST THREE POINTS OF CONTACT BETWEEN ADJACENT ARMOR STONES, AND TO ACHIEVE THE LINES AND GRADES SHOWN ON THE DRAWINGS.
  - STONES ON THE LANDSIDE AND CREST OF THE STRUCTURES SHALL CREATE A RELATIVELY SMOOTH SURFACE. STONES ON THE RIVERSIDE OF THE STRUCTURE AND ON TIE-OUT FACES PERPENDICULAR TO THE ALIGNMENT SHALL BE ROUGH AND ANGULAR TO BREAK UP WAVE ENERGY.
  - CONTRACTOR SHALL CREATE A STABLE CONNECTION BETWEEN BREAKWATER 3 AND THE EXISTING RIPRAP STRUCTURE. EXISTING STRUCTURE SHALL NOT BE ALTERED UNLESS APPROVED BY ENGINEER, PROJECT OWNER, AND PROPERTY OWNER.
  - CHINKING STONE SHALL BE APPLIED AFTER THE PLACEMENT OF ARMOR STONE. ONLY SURFACE VOIDS AT OR NEAR GRADE ON THE LANDSIDE OR CREST WHICH ARE LARGE ENOUGH TO RECEIVE CHINKING STONE SHALL BE FILLED.
- STATION RANGE PROVIDED INDICATES THE EXTENT OF THE GIVEN ARMOR CREST ELEVATION. TIE-OUT SLOPES ALONG THE MAJOR AXIS OF THE STRUCTURES SHALL BE 2:1 UNLESS OTHERWISE NOTED. REFER TO THE GRADING PLAN AND LONGITUDINAL PROFILE FOR ADDITIONAL INFORMATION.
- PARAMETER H MAY VARY BETWEEN 1.5:1 AND 2:1 PROVIDED OTHER PARAMETERS ARE ADHERED TO; IF PARAMETER H VARIES FROM THE VALUE IN THE TABLE, PARAMETER C SHALL BE THE MINIMUM ARMOR THICKNESS ALLOWED.

# DUNE

NOT TO SCALE



### DUNE NOTES

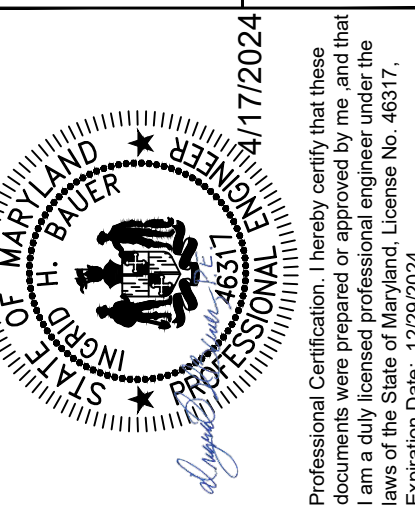
- DUNE SHALL BE CONSTRUCTED TO THE SPECIFIED LINES AND GRADES SHOWN IN THE DRAWINGS. DUNE CREST SHALL BE CONSTRUCTED TO AN ELEVATION OF 5 FT WITH A MINIMUM CREST WIDTH OF 5 FT.
- SAND FILL SHALL BE PLACED FROM THE BOTTOM UP IN SUCCESSIVE HORIZONTAL LAYERS NO MORE THAN 8 INCHES THICK.
- ALL DUNE SLOPES SHALL BE 4:1 OR FLATTER, WHETHER TYING INTO EXISTING GRADE OR PROPOSED BEACH ELEVATION.
- LOCATION OF TIE-IN WITH EXISTING GRADE WILL VARY BASED ON CONDITIONS IN THE FIELD AT THE TIME OF CONSTRUCTION; FILL SLOPE SHALL REMAIN 4:1 OR FLATTER. SEE PLANTING PLAN AND VEGETATION SCHEDULE FOR ADDITIONAL INFORMATION.

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Southbreeze Community Shoreline Stabilization
   
 Final Design Plan
   
 Anne Arundel County, Maryland

Construction Details

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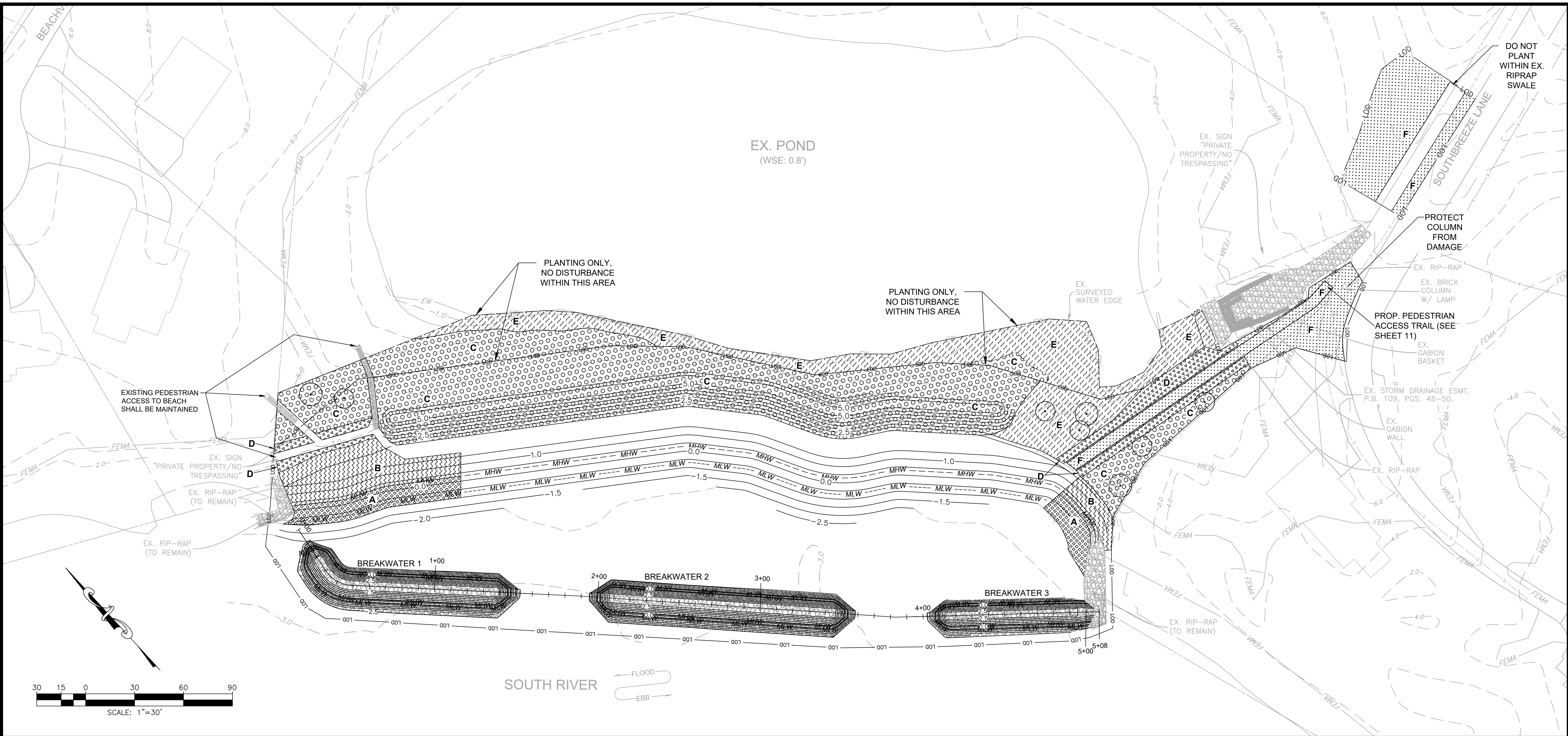


No.	Date	Description	Rev. By	App. By	SCALE: AS NOTED

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Design	Draft	Approved
IHB	MCJ	IHB
Sheet #		
5 of 14		
Computer File Name:		







**PLANTING AREAS**

	LOW MARSH
	HIGH MARSH
	DUNE STABILIZATION*
	PATH BORDER*
	POND TRANSITION ZONE*
	TURFGRASS SEEDING*

\*APPROPRIATE SEED MIXES SHALL BE DISTRIBUTED EVENLY THROUGHOUT ALL DISTURBED AREAS IN THE AMOUNT AND TYPE SPECIFIED ON THE SEEDING AND VEGETATION SCHEDULE SHEETS.

**LEGEND**

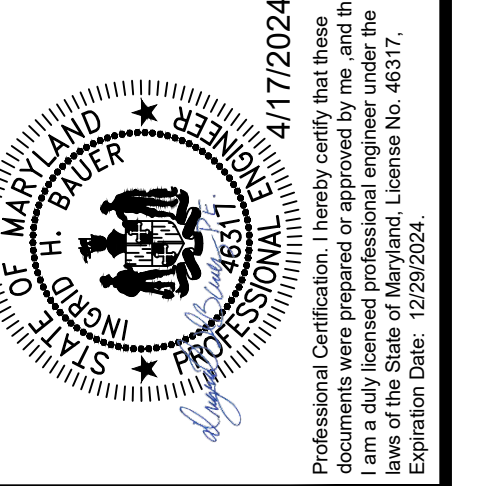
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	EASEMENT BOUNDARIES		PROPOSED MEAN HIGH WATER LINE (0.3' EL.)
	EXISTING INFRASTRUCTURE		PROPOSED MEAN LOW WATER LINE (-0.7' EL.)
	EXISTING CONTOURS (1.0')		PLANTING ONLY EXTENT
	EX. POND EDGE OF WATER		PROPOSED BREAKWATER
	FEMA FLOODPLAIN		PROPOSED OVERSTORY TREE (SEE PLANTING SCHEDULE, SHEET 10)

**PLANTING NOTES:**

- THE INTENT OF THE PLANTING ONLY OUTSIDE THE LOD IS TO RESTORE THE DUNE TO A FULLY VEGETATED STATE. STORMS DURING THE WINTER OF 2023-2024 CAUSED SIGNIFICANT EROSION AND SAND MOVEMENT ALONG THE DUNE, AND IT IS CURRENTLY UNCERTAIN WHETHER VEGETATION WITHIN THE AREA WILL FULLY RECOVER. AFTER CONSTRUCTION, AREAS WITHIN THE PLANTING ONLY ZONE THAT LACK SUFFICIENT VEGETATIVE COVERAGE SHALL BE PLANTED AND/OR SEEDING AS INDICATED.
- ADDITIONAL LANDSCAPING ON PRIVATE PROPERTY WITHIN LOD MAY BE REQUESTED BY PROJECT OWNER VIA CHANGE ORDER. THESE CHANGES AND THIS AGREEMENT WILL BE NEGOTIATED AND AGREED UPON BETWEEN THE PROJECT OWNER AND THE LAND OWNER.

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**Southbreeze Community Shoreline Stabilization  
Southbreeze Final Sheetset**  
Anne Arundel County, Maryland  
**Planting Plan**  
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**REVISIONS**

No.	Date	Description	App. By	Rev. By

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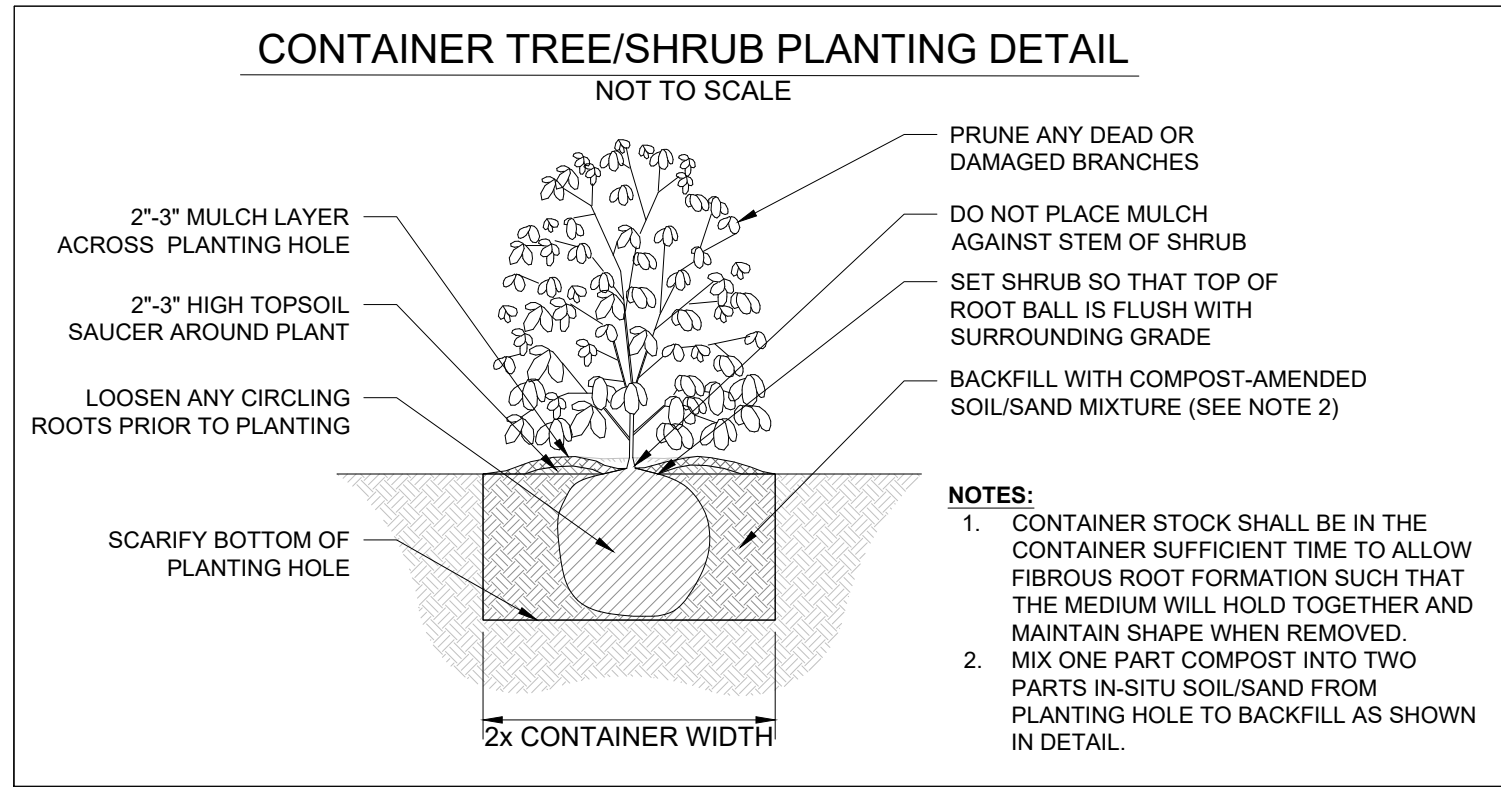
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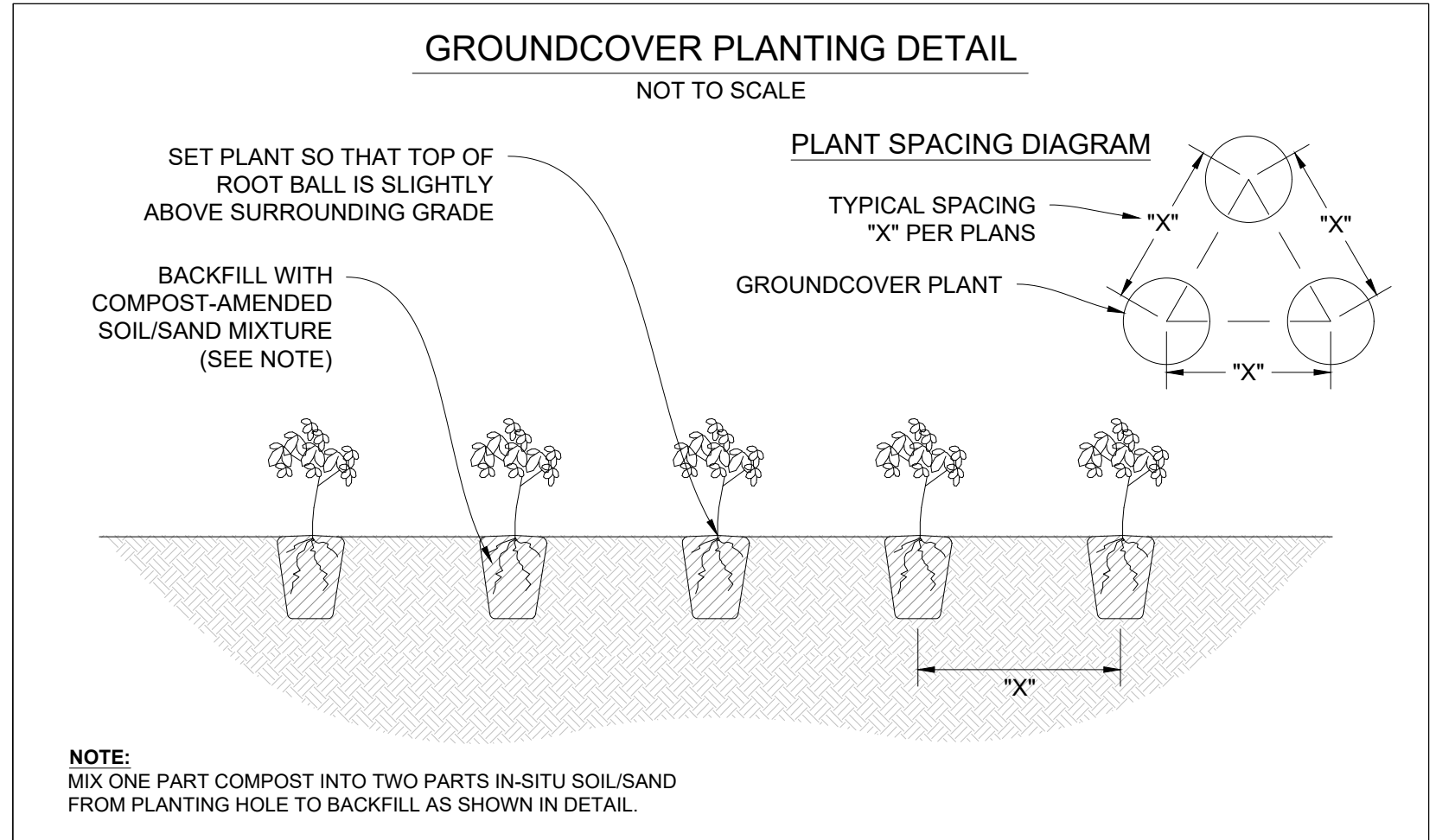
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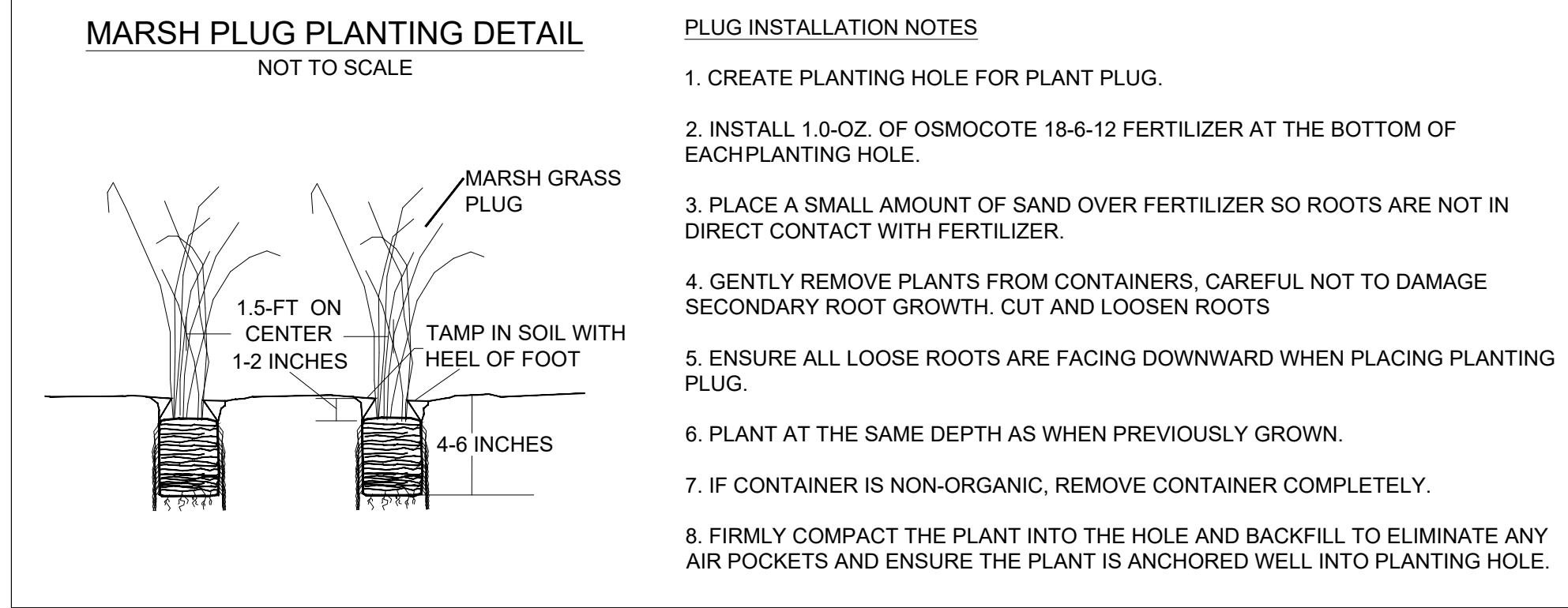




- NOTES:**
- CONTAINER STOCK SHALL BE IN THE CONTAINER SUFFICIENT TIME TO ALLOW FIBROUS ROOT FORMATION SUCH THAT THE MEDIUM WILL HOLD TOGETHER AND MAINTAIN SHAPE WHEN REMOVED.
  - MIX ONE PART COMPOST INTO TWO PARTS IN-SITU SOIL/SAND FROM PLANTING HOLE TO BACKFILL AS SHOWN IN DETAIL.



**NOTE:**  
MIX ONE PART COMPOST INTO TWO PARTS IN-SITU SOIL/SAND FROM PLANTING HOLE TO BACKFILL AS SHOWN IN DETAIL.



- PLUG INSTALLATION NOTES**
- CREATE PLANTING HOLE FOR PLANT PLUG.
  - INSTALL 1.0-OZ. OF OSMOCOTE 18-6-12 FERTILIZER AT THE BOTTOM OF EACH PLANTING HOLE.
  - PLACE A SMALL AMOUNT OF SAND OVER FERTILIZER SO ROOTS ARE NOT IN DIRECT CONTACT WITH FERTILIZER.
  - GENTLY REMOVE PLANTS FROM CONTAINERS. CAREFUL NOT TO DAMAGE SECONDARY ROOT GROWTH. CUT AND LOOSEN ROOTS.
  - ENSURE ALL LOOSE ROOTS ARE FACING DOWNWARD WHEN PLACING PLANTING PLUG.
  - PLANT AT THE SAME DEPTH AS WHEN PREVIOUSLY GROWN.
  - IF CONTAINER IS NON-ORGANIC, REMOVE CONTAINER COMPLETELY.
  - FIRMLY COMPACT THE PLANT INTO THE HOLE AND BACKFILL TO ELIMINATE ANY AIR POCKETS AND ENSURE THE PLANT IS ANCHORED WELL INTO PLANTING HOLE.

### ANNE ARUNDEL COUNTY VEGETATIVE ESTABLISHMENT NOTES

FOLLOWING INITIAL SOIL DISTURBANCES OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE CALENDAR DAYS FOR THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) AND SEVEN DAYS FOR ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

- PERMANENT SEEDING\***
    - SEEDBED PREPARATION:** AREA TO BE SEEDDED SHALL BE LOOSE AND FRIABLE TO A DEPTH OF AT LEAST 3-5 INCHES. THE TOP LAYER SHALL BE LOOSENED BY RAKING, DISKING OR OTHER ACCEPTABLE MEANS BEFORE SEEDING OCCURS. FOR SITES LESS THAN 5 ACRES, APPLY 100 POUNDS DILOMITIC LIMESTONE AND 21 POUNDS OF 10-10-10 FERTILIZER PER 1,000 SQUARE FEET. HARROW OR DISK LIME AND FERTILIZER INTO THE SOIL TO A DEPTH OF AT LEAST 3-5 INCHES ON SLOPES FLATTER THAN 3:1.
    - MULCHING:** MULCH SHALL BE APPLIED TO ALL SEEDDED AREAS IMMEDIATELY AFTER SEEDING. DURING THE TIME PERIODS WHEN SEEDING IS NOT PERMITTED, MULCH SHALL BE APPLIED IMMEDIATELY AFTER GRADING. MULCH SHALL BE UNROTTED, UNCHOPPED, SMALL GRAIN STRAW APPLIED AT A RATE OF 2 TONS PER ACRE OR 90 POUNDS PER 1,000 SQUARE FEET (2 BALES). APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. IF A MULCH-ANCHORING TOOL IS USED, APPLY 2.5 TONS PER ACRE. MULCH MATERIALS SHALL BE RELATIVELY FREE OF ALL KINDS OF WEEDS AND SHALL BE COMPLETELY FREE OF PROHIBITED NOXIOUS WEEDS. SPREAD MULCH UNIFORMLY, MECHANICALLY OR BY HAND, TO A DEPTH OF 1-2 INCHES.
    - SECURING STRAW MULCH:** STRAW MULCH SHALL BE SECURED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE MOVEMENT BY WIND OR WATER. THE FOLLOWING METHODS ARE PERMITTED:
      - USE A MULCH-ANCHORING TOOL WHICH IS DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE TO A MINIMUM DEPTH OF 2 INCHES. THIS IS THE MOST EFFECTIVE METHOD FOR SECURING MULCH, HOWEVER, IT IS LIMITED TO RELATIVELY FLAT AREAS WHERE EQUIPMENT CAN OPERATE SAFELY.
      - WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. IF MIXED WITH WATER, USE 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
      - LIQUID BINDERS MAY BE USED. APPLY AT HIGHER RATES AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF SLOPES. THE REMAINDER OF THE AREA SHOULD APPEAR UNIFORM AFTER BINDER APPLICATION. BINDERS LISTED IN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL OR APPROVED EQUAL SHALL BE APPLIED AT RATES RECOMMENDED BY THE MANUFACTURERS.
      - LIGHTWEIGHT PLASTIC NETTING MAY BE USED TO SECURE MULCH. THE NETTING WILL BE STAPLED TO THE GROUND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- \* STANDARD NOTES A AND C DO NOT APPLY AND HAVE NOT BEEN INCLUDED.

### PLANTING NOTES

- CONTRACTOR SHALL USE CURRENT ANNE ARUNDEL COUNTY LANDSCAPE SPECIFICATIONS AND THOSE SPECIFICATIONS SHALL GOVERN IN ALL QUESTIONS WHERE THERE ARE CONFLICTS BETWEEN THE PLANS AND THE LANDSCAPE SPECIFICATIONS.
- ALL PLANT MATERIALS SHALL BE WARRANTED FOR ONE YEAR.
- ALL PLANT MATERIALS SHALL BE IN A HEALTHY CONDITION AND SHALL CONFORM TO THE STANDARDS OF THE MOST RECENT EDITION OF THE AMERICAN STANDARD OF NURSERY STOCK, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION, AND SHALL BE INSTALLED ACCORDING TO STANDARD PLANTING PRACTICES AND PROCEDURES.
- ALL PLANTING SHALL BE INSTALLED IN A SOUND, WORKMANSHIP-LIKE MANNER AND ACCORDING TO ACCEPTED, GOOD PLANTING PRACTICES AND PROCEDURES.
- ALL PLANT MATERIAL SHALL BE TRANSPORTED AND STORED OUT OF DIRECT EXPOSURE TO SUN AND WIND AND SHALL BE KEPT MOIST THROUGH PERIODIC WATERING UNTIL THE TIME OF PLANTING. THE PLANTS SHALL BE PROTECTED BY COVERING WITH STRAW, PEAT MOSS, COMPOST, OR OTHER SUITABLE MATERIALS AND SHALL BE MAINTAINED MOIST THROUGH PERIODIC WATERING, UNTIL THE TIME OF PLANTING.
- ALL REQUIRED PLANTINGS MUST BE APPROVED AT THE END OF THE FIRST PLANTING SEASON FOLLOWING CONSTRUCTION.
- THE OWNER SHALL BE RESPONSIBLE FOR THE CONTINUED PROPER MAINTENANCE FOLLOWING THE ORIGINAL WARRANTY, REPAIR, AND REPLACEMENT OF ALL LANDSCAPING MATERIALS.
- REPLACEMENT OF NEW PLANTINGS: AT THE END OF THE WARRANTY PERIOD OR AT ANY TIME DURING THE WARRANTY PERIOD, INSPECTIONS WILL BE MADE BY THE OWNER, OR HIS DESIGNEE, AT HIS DISCRETION. ANY PLANT REQUIRED UNDER THIS CONTRACT THAT IS DEAD, UNHEALTHY, UNSIGHTLY, OR IN A BADLY IMPAIRED CONDITION, AS DETERMINED BY THE OWNER, OR HIS DESIGNEE, SHALL BE REMOVED FROM THE SITE AND REPLACED WITHIN TEN (10) WORKING DAYS, WEATHER CONDITIONS PERMITTING, AT NO ADDITIONAL COST TO THE OWNER. ALL REPLACEMENTS SHALL BE IN COMPLIANCE WITH PLANS AND SPECIFICATIONS.
- REPLACEMENT PLANT WARRANTY: ALL PLANTS REPLACED SHALL BE WARRANTED FOR ONE YEAR. THE MAINTENANCE OF THESE PLANTS WILL BE THE RESPONSIBILITY OF THE PLANTING CONTRACTOR UNTIL THE ORIGINAL ONE YEAR WARRANTY PERIOD EXPIRES. AFTER THE EXPIRATION OF THE ORIGINAL WARRANTY PERIOD, THE OWNER WILL PROVIDE MAINTENANCE FOR THE REMAINDER OF THE REPLACEMENT PLANT WARRANTY PERIOD.
- IN-SITU SOIL AND/OR SAND FROM PLANTING HOLES SHALL BE COMBINED WITH ONE PART COMPOST PER TWO PARTS IN-SITU SOIL/SAND BEFORE USING BACKFILLING PLANTING HOLE WITH MIXTURE.

### LOW AND HIGH MARSH PLANTING NOTES

- A MINIMUM OF 1-FOOT OF CLEAN SAND SHALL BE APPLIED TO THE GRADED WETLAND PLANTING AREA. SEE CLEAN SAND NOTES BELOW.
- WHEN PURCHASING PLANT SPECIES THE CONTRACTOR SHALL TEST WATER SALINITY AT THE SITE AND ADVISE THE NURSERY OF SITE SALINITY TO OBTAIN PLANTS CONDITIONED TO SITE SALINITY CONDITIONS.
- EACH PLANT PLUG SHALL HAVE ONE OUNCE OF OSMOCOTE 18-6-12 FERTILIZER OR A BALANCED SLOW RELEASE FERTILIZER, PLACED BENEATH IT. THE FERTILIZER SHALL BE COVERED WITH A SMALL AMOUNT OF SAND SO NOT TO BE IN DIRECT CONTACT WITH THE ROOTS.
- SPARTINA ALTERNIFLORA* PLUGS SHALL BE INSTALLED 24" ON CENTER AT THE AREA LABELED LOW MARSH PLANTING ZONE, AS SHOWN ON THE PLANTING PLAN.
- SPARTINA PATENS* AND *JUNCUS EFFUSUS* PLUGS SHALL BE INSTALLED 24" ON CENTER AT THE AREA LABELED HIGH MARSH PLANTING AREA, AS SHOWN ON THE PLANTING PLAN.
- LITTER REMOVAL SHALL BE PERFORMED AS NECESSARY TO REMOVE TRASH, DEBRIS, AND FLOATABLES, WHICH SHALL NOT BE ALLOWED TO SMOOTH THE PLANTED MARSH GRASS SPECIES.

### SEEDING NOTES

- A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER OR OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
- THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
- PRIOR TO SEEDING, THE SEEDING AREA SHALL BE RAKED SMOOTH AND CLEARED OF ALL TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
- CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
- THE SPECIFIED SEED SHALL BE BROADCAST IN AREAS SPECIFIED ON THE PLANTING PLAN FOLLOWING SEEDING, MECHANICALLY SOW SEED TO THE MAXIMUM DEPTH OF AN INCH BY THE USE OF A HAND RAKE.
- APPLY STRAW MULCH ABOVE MHW AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.

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**Southbreeze Community Shoreline Stabilization**  
**Southbreeze Final Sheetset**  
Anne Arundel County, Maryland  
**Planting And Seeding Notes And Details**



REVISIONS		App. By	4/17/2024
No.	Date	Description	

DATE: APRIL 2024 SCALE: N/A

Horizontal Datum: NAD83  
Vertical Datum: NAVD88  
Boundary and Topo Source: WSSI & Anne Arundel County Data

Design	Draft	Approved
SEH	SEH	IHB

Sheet #  
**9 of 14**

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**SOUTHBREEZE SHORELINE STABILIZATION VEGETATION SCHEDULE**

**STABILIZATION PLANTING SCHEDULE**

**PLANTING QUANTITIES**

Table with columns: CONTAINER PLANTING ZONE, SPECIES 1,2, INDICATOR STATUS (AGCP), STOCK SIZE, PLANT SPACING 3, QUANTITY, AREA (SF), AREA (AC), A, B, C, D, E.

**PLANTING NOTES:**

- 1. It is expected and preferred that all species in each of the Species Groups are planted. The tolerances listed in this note are intended to incorporate flexibility according to species availability...
2. Substitutions for selected species based upon availability shall be requested in writing to engineer...
3. The planted forb, grass, and shrub species shall be randomly mixed at the spacing specified throughout the planting areas.

**SUPPLEMENTARY OVERSTORY TREE PLANTING SCHEDULE**

Table with columns: SYMBOL, CODE, SPECIES, STOCK SIZE, QTY. Includes rows for DIOPSYROS VIRGINIANA, NYSSA SYLVATICA, and PINUS TAEDA.

**SOUTHBREEZE SHORELINE STABILIZATION VEGETATION SCHEDULE**

**RESTORATION SEEDING SCHEDULE**

**SEEDING QUANTITIES**

Table with columns: SEED MIX, SPECIES 1, INDICATOR STATUS (AGCP), SEEDING RATE 2 (LBS/AC), QUANTITY (LBS), AREA (SF), AREA (AC), C, D, E.

**SEEDING NOTES:**

- 1. Substitutions based upon availability shall be requested in writing to engineer, documenting the lack of availability.
2. All seeding rates are expressed in pounds of pure live seed (PLS).

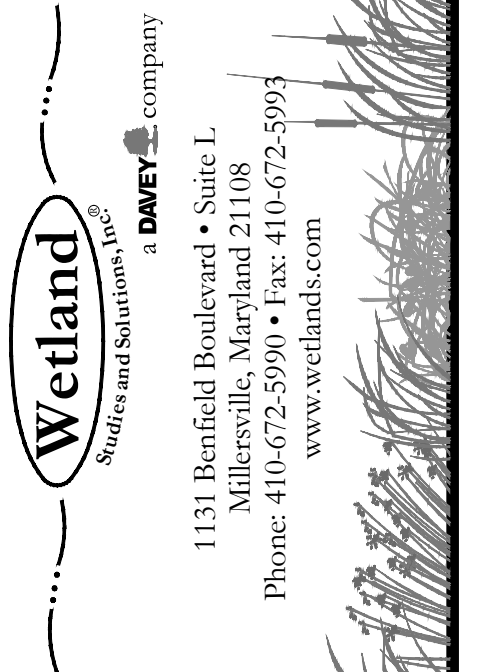
**SOUTHBREEZE TURFGRASS SEEDING SCHEDULE**

**SEEDING QUANTITIES**

Table with columns: SEED PLANTING ZONE, SPECIES 1,2, INDICATOR STATUS (AGCP), SEEDING RATE 3 (LBS/AC), PERCENT OF MIX, AREA (SF), AREA (AC), F.

**TURFGRASS SEEDING NOTES:**

- 1. Substitutions for selected species based upon availability shall be requested in writing to engineer, documenting the lack of availability.
2. All cultivars shall be selected from the most current University of Maryland Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" and certified by the Maryland Department of Agriculture, Turf and Seed Section.
3. All seeding rates are expressed in pounds of pure live seed (PLS).

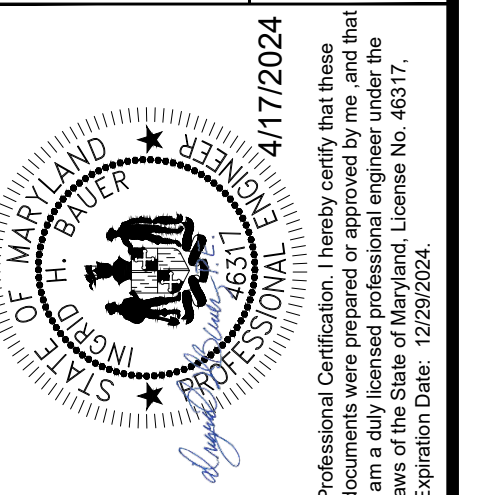


**Southbreeze Community Shoreline Stabilization  
Southbreeze Final Sheetset**

Anne Arundel County, Maryland

**Vegetation Schedule**

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REVISIONS table with columns: No., Date, Description, App. By, Rev. By.

Horizontal Datum: N/A

Vertical Datum: N/A

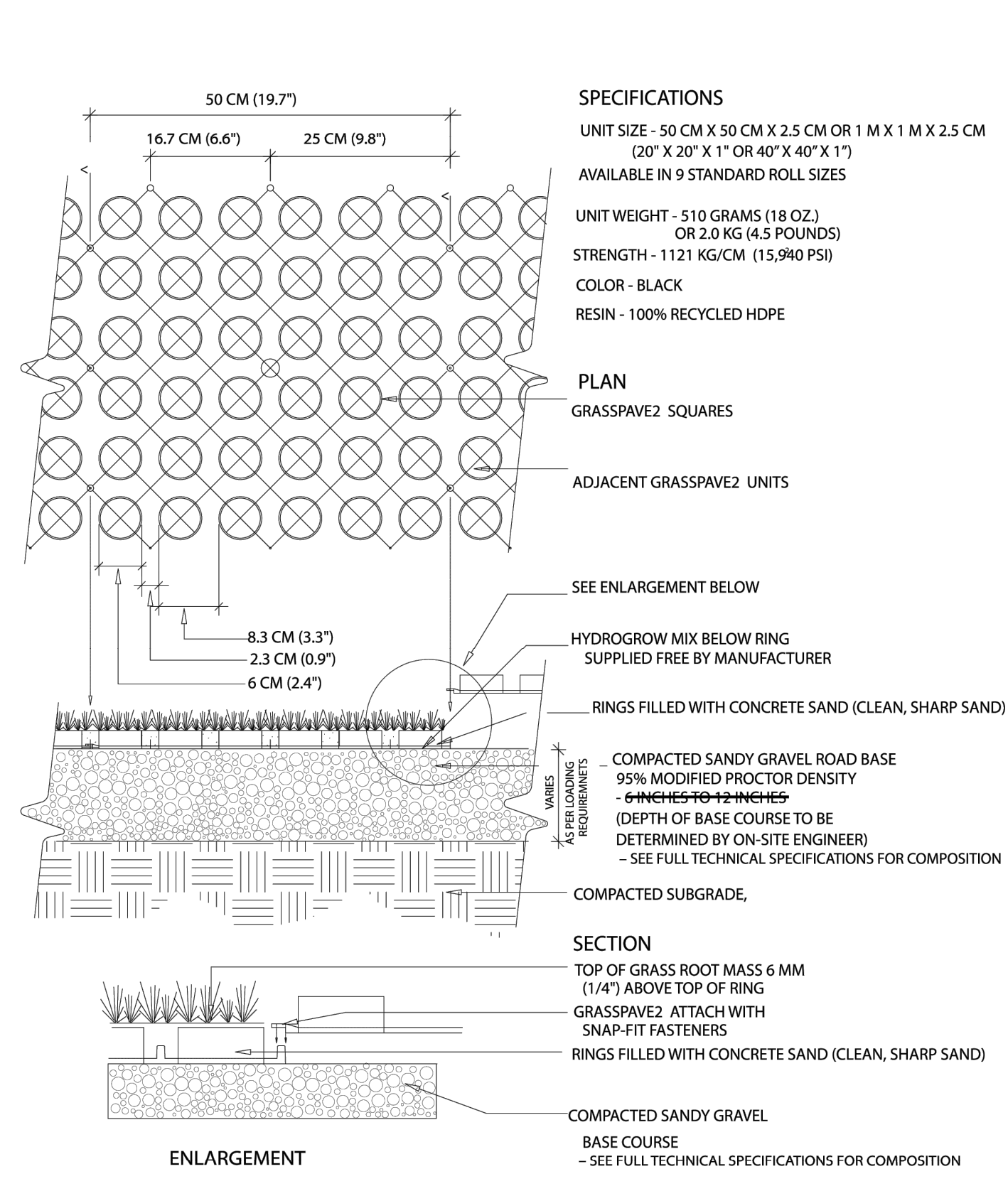
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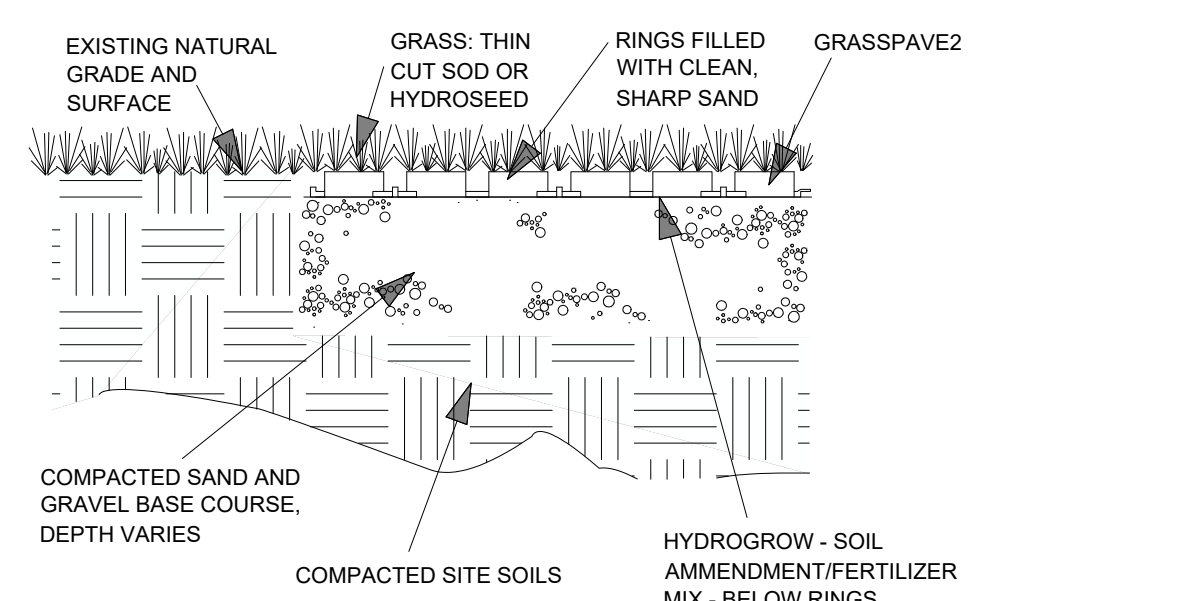
Sheet #  
10 of 14

**PEDESTRIAN ACCESS TRAIL**

NOT TO SCALE



**FLUSH, NATURAL (EXISTING) EDGING**



- NOTES
1. PEDESTRIAN ACCESS PATH SHALL BE GRASSPAVE2, MODEL 2020. AN EQUAL PRODUCT MAY BE USED IF APPROVED BY ENGINEER.
2. BASE COURSE DEPTH SHALL BE 2 INCHES.
3. ACCESS PATH BASE COURSE SHALL BE UNDERLAIN WITH WOVEN OR NON-WOVEN POLYPROPYLENE GEOTEXTILE, SUCH AS MIRAFI 700X, MIRAFI 70/20, FILTERWEAVE 500, N060, OR APPROVED EQUAL. THE FABRIC SHALL HAVE PUNCTURE RESISTANCE GREATER THAN 100 LBS, APPARENT OPENING SIZE GREATER THAN U.S. 70 SIEVE, AND 30 LBS. OF TENSILE STRENGTH AT 20% (MAXIMUM).
4. REFER TO 'INSTALLATION GUIDE - GRASSPAVE2 POROUS GRASS PAVEMENT' ON THIS SHEET AND THE OTHER LANDSCAPING SHEETS IN THIS PLAN FOR ADDITIONAL INFORMATION.



Base Course Depth Recommendations
GRASSPAVE2 and GRAVELPAVE2

Table with columns for vehicle types and traffic frequency, and rows for various traffic loading conditions. The table specifies base course depths in inches for different traffic scenarios.

Base course shall have a depth of 2 inches

\* THESE DEPTH RECOMMENDATIONS SHOULD BE VERIFIED BY THE PROJECT ENGINEER AND LOCAL AUTHORITIES



INSTALLATION GUIDE - Grasspave2 Porous Grass Pavement

Introduction
A. This document describes step-by-step information on how to properly install the Grasspave2 Porous Pavement System. Grasspave2 provides vehicular and pedestrian load support for grass areas, while protecting grass roots from harmful effects of traffic.
B. Contractors: Only licensed contractors should install the Grasspave2 system. The contractor should have a good performance record with similar construction projects. Homeowners should only attempt installation after they have read and understood fully this installation guide and/or our Technical Specifications.

C. Landscaping: Plant in a location that is climate appropriate, will receive the necessary minimum annual water, and is not in a shade-tolerant area (if applicable). SEE PLANTING SHEETS.
F. Warning: Unless there is an emergency, DO NOT DRIVE, PARK ON, or use Grasspave2 system for two or three mowing cycles until grass root system has matured (about 3 to 4 weeks for sod or 6 to 8 weeks for seeded areas). Any barricades constructed to prevent traffic flow must still be accessible by emergency and fire equipment during and after installation.
G. Warranty: Invisible Structures, Inc. (ISI) warrants to its purchasers that all products furnished by ISI will be free from defects in material and/or workmanship. This warranty shall be extended for a period of five (5) years following the date of shipment by ISI.

- Delivery, Storage, and Handling
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Protect Grasspave2 units/rolls from damage during delivery and store rolls upright (like a soda can), and under a tarp to protect from sunlight when time for delivery to installation exceeds one week. Do not store rolls on their sides.
C. Store Hydrogrow in a dark and dry location.
D. Handling: Protect materials during handling and installation to prevent damage.

Installation Considerations

- A. Examine subgrade and base course installed conditions. Do not start porous paving installation until satisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradings.
B. For fire lane installations: prior to installing base course for turf paving, obtain approval of local fire authorities of sub-base.
C. Start of installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Architect for resolution.

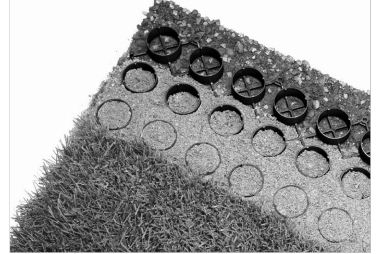
- Preparation
(Ensure that subbase materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally, excavation into undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextiles, geogrids, and/or compaction (not to exceed 90%). Ensure that grading and soil porosity of the subbase will provide adequate subsurface drainage)
A. Subgrade Preparation:
1. Prepare subgrade as specified for project.
2. Proper subgrade preparation will enable the Grasspave2 rolls/units to connect properly and remain level and stationary after installation.
3. Excavate area allowing for unit thickness (1 in), the engineered base depth (where required), and 0.5 inch (1.25 cm) for depth of sod root zone or topsoil germination area (when applicable).
4. Provide adequate drainage from excavated area if area has potential to collect water, when working with in-place soils that have poor permeability.
5. Ensure in-place soil is relatively dry and free from standing water.
6. Uniformly grade base.
7. Level and clear base of large objects, such as rocks and pieces of wood.

- B. Base Preparation:
1. Install Base as specified.
2. Coordinate base installation and preparation with subdrains (if necessary).
3. If required, place a geotextile separation layer between the natural ground and the 'engineered base'.
4. If required, install the specified sub-drain and outlet according to construction drawings.
5. Coordinate base installation and preparation with irrigation and drip irrigation lines.
6. Place engineered base in lifts not to exceed 6 inches (150 mm), compacting each lift separately to 95 percent Modified Proctor.
7. Leave 1 inch (2.5 cm) of depth below final grade for porous paver unit and sand fill and 0.5 inch (1.25 cm) for depth of sod root zone or topsoil germination area (when applicable).

- Hydrogrow Installation
A. Spread all Hydrogrow mix provided (spread rate = 4.53 kg per 100 m2 (10 lbs per 1076 ft2) evenly over the surface of the base course with a hand-held, or wheeled, rotary spreader.

- A. Review installation procedures and coordinate Grasspave2 work with other work affected. Generally, Grasspave2 is installed at the same time as project grass installation, nearly the last site construction activity.
B. Do not begin installation of porous pavements until all hard surface paving adjacent to porous pavement areas, including concrete walks and asphalt paving, is completed.
C. Install turf when ambient air temperatures is at least 55 degrees F (13 degrees C).
D. In cold weather, do not use frozen materials or materials mixed or coated with ice or frost, and do not build on frozen base or wet, saturated or muddy subgrade.
E. Protect partially completed paving against damage from other construction traffic when work is in progress.
F. Adequately water sod or grass seed to assure germination of seed and growth of root system.
G. Grass coverage on the sand-filled Grasspave2 rings must be completed within one week.
H. DO NOT DRIVE, PARK ON, or use Grasspave2 system for two or three mowing cycles until grass root system has matured (about 3 to 4 weeks for sod or 6 to 8 weeks for seeded areas). Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.

- Materials
A. Grasspave2 Porous Paving Rolls
B. Base Course: Sandy gravel material from local sources commonly used for road base construction (recycled materials such as crushed concrete or crushed aggregate are NOT acceptable).
1. Conforming to the following sieve analysis and requirements:
100 percent passing sieve size 1 inch (25 mm).
90-100 percent passing sieve size 3/4 inch (19 mm).
70-80 percent passing sieve size 3/8 inch (9 mm).
55-70 percent passing sieve size #4.
45-55 percent passing sieve size #10.
25-35 percent passing sieve size #40.
3-8 percent passing sieve size #200.
2. Provide a base course material nearly neutral in pH (range from 6.5 to 7.2) to provide adequate root zone development for turf.
3. Material may be either 'pit run' or 'crusher run.' Avoid using clay based crusher run/pit run. Crusher run material will generally require coarse, well-draining sand conforming to AASHTO M6 or ASTM C 33 to be added to mixture (20 to 30 percent by volume) to ensure long-term porosity.
4. Alternative materials such as crushed shell, limerock, or crushed lava may be used for base course use, provided they are mixed with sharp sand (20 to 30 percent by volume) to ensure long-term porosity, and are brought to proper compaction. Without added sand, crushed shell and limerock set up like concrete and become impervious.
5. Alternative size and/or composition of base course materials should be submitted to Invisible Structures, Inc. (Manufacturer) for approval.



- A. The Hydrogrow mix should be placed immediately before installing the Grasspave2.

Grasspave2 Unit Installation

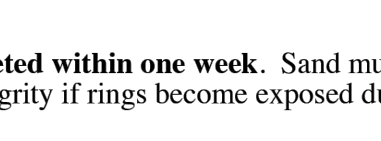
- A. Install the Grasspave2 units by placing units with rings facing up, and using snap-fit connectors, pegs and holes, provided to maintain proper spacing and interlock the units. Units can be easily shaped with pruning shears or knife. Units placed on curves, slopes, and high traffic areas shall be anchored to the base course, using 40d common nails with fender washer, as required to secure units in place. Tops of rings shall be between 6 mm to 13 mm (0.25\" to 0.5\") below the surface of adjacent hard-surface pavements.
B. Install sand in rings as they are laid in sections by 'back-dumping' directly from a dump truck, or from buckets mounted on tractors, which then exit the site by driving over rings already filled with sand. The sand is then spread laterally from the pile using flat bottomed shovels and/or wide 'asphalt rakes' to fill the rings. A stiff bristled broom should be used for final 'finishing' of the sand. The sand must be 'compacted' by top water from hose, irrigation heads, or rainfall, with the finish grade no less than the top of rings and no more than 6 mm (0.25\") above top of rings.



- Installation of Grass
A. Grass coverage on the sand-filled rings must be completed within one week. Sand must be re-installed and leveled and Grasspave2 checked for integrity if rings become exposed due to wind, rain, traffic, or other factors.

Notes: Choose one paragraph below to match grass installation method

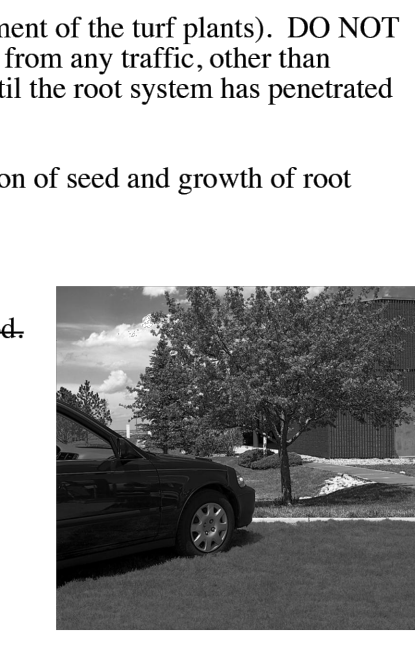
- 1. Preferred method: Hydroseeding/hydro-mulching - A combination of water, seed and fertilizer are homogeneously mixed in a purpose-built, truck-mounted tank. The seed mixture is sprayed onto the site at rates shown on plans and per hydroseeding manufacturer's recommendations. Coverage must be uniform and complete. Following germination of the seed, areas lacking germination larger than 20 cm x 20 cm (8\" x 8\") must be reseeded immediately. Seeded areas must be fertilized and kept moist during development of the turf plants. - DO NOT DRIVE ON SYSTEM: Hydroseeded/hydro-mulch areas must be protected from any traffic, other than emergency vehicles, for a period of 6 to 8 weeks, or until the root system has penetrated and established well below the Grasspave2 units.
OR
2. Install thin sod directly over sand-filled rings, filled no higher than the top of the rings. Sod strips should be placed with very tight joints. Sodded areas must be fertilized and kept moist during root establishment (minimum of 3 weeks). - DO NOT DRIVE ON SYSTEM: Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated and established well below the Grasspave2 units.
OR
3. Install grass seed at rates per grass type. A light 'dusting' of commercial topsoil mix, not to exceed 1/2\" (25 mm) will be placed above the rings and seed mix to aid germination rates. Seeded



- C. Sand Fill for Rings and Spaces Between Rings: Clean sharp sand (washed concrete sand). Choose one of the following:
1. Coarse, well-draining sand, such as washed concrete sand conforming to AASHTO M6 or ASTM C 33.
2. United States Golf Association (USGA) greens, section - sand mix "The Root Zone Mixture."
D. Turf Conditioner:
1. Hydrogrow a proprietary soil amendment manufactured by Invisible Structures, Inc. and provided with Grasspave2.
2. NO SUBSTITUTIONS.
E. Grass - Choose either sod or seed. Use grass species resistant to wear by traffic generally a Blue/Rye/Fescue mix used for athletic fields in northern climates, and Zoysia, Fescue, or Bermuda types in southern climates. Check with local sod and seed suppliers for preferred mixtures. Dedicated fire lanes can use same grass species used on surrounding turf. Parking applications require greatest wear-resistant species possible, generally available only by seed or hydroseeding/hydro-mulching.
1. Sod: Use 13 mm (0.5\") thick (soil thickness) rolled sod from a reputable local grower. Species should be wear resistant, free from disease, and in excellent condition. Sod shall be grown in sand or sandy loam soils only. Sod grown in soils of clay, silt, or high organic materials such as peat, will not be accepted.
2. Seed: Use seed materials AS SPECIFIED IN PLANTING SHEETS. Traffic conditions, from current sources, can be provided in commercial bags labeled to show seed name, lot number, net weight, % weed seed content, and guaranteed % of purity and germination. Pure Live Seed types and amount shall be as shown on plans.
a. Mulch - needed only for hydroseeding. Wood or paper cellulose commercial mulch materials compatible with hydroseeding operations. Mulch depth according to mulch manufacturers' recommendation. DO NOT use mulch of straw, pine needles, etc., because of their low moisture holding capacity.
b. Topsoil - needed only for seeding, recommended for hydroseeding: Obtain specified topsoil for a light 'dusting' (NO MORE than 1/2\" or 15mm) above rings filled with sand for seeding germination.
F. Fertilizer: A commercial fertilizer recommended by local soil analysis of 17-23-6, or as recommended by local soil analysis.
G. Grasspave2 Signage - A sign indicating that special maintenance is required, with the Manufacturer's phone number, and made of durable materials for outdoor exposure shall be provided and installed.
H. Fire Lane Signage & Delineation: Fire lanes must be identified regarding their entrance and physical location with the placement of signs, gates, curbs, bollards, etc. Specific signage wording and other details must be coordinated with and approved by local fire authorities.

INSTALLATION Inspection
(For Fire Lanes and Emergency Access, it is recommended that Fire Department inspectors be scheduled to inspect installation of Grasspave2 during preparation of the subbase, installation of the base course, and installation of Grasspave2 units. Most small projects can accommodate these inspections all on the same day. Verify with Fire Department if certificates of inspection are required.)

- A. Seeded areas must be protected from any traffic, other than emergency vehicles, for a period of 4 to 8 weeks, or until the grass is mature to handle traffic.
B. Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated below the Grasspave2 units.



Field Quality Control

- A. Remove and replace segments of Grasspave2 units where three or more adjacent rings are broken or damaged, reinstalling as specified, so no evidence of replacement is apparent.
B. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

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Southbreeze Community Shoreline Stabilization Southbreeze Final Sheetset Anne Arundel County, Maryland Pedestrian Access Details And Specifications Copyright © 2024 Wetland Studies and Solutions, Inc.

Professional Engineer seal for H. E. Eister, State of Maryland, License No. 46317, Expires 4/17/2024.

REVISIONS table with columns for No., Date, Description, App. By, and Rev. By.

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Sheet #: 11 of 14
Computer File Name: I:\\_mshb\Project\MD2024\MD2024-10-24-CADD\04-ENG-11.dwg



EXHIBIT A: 1952 AERIAL IMAGERY



\*Approximate Site  
**1952 Aerial Imagery**  
 Southbreeze Shoreline Stabilization

0 500  
 Feet  
 Original Scale: 1" = 500'

Source: Anne Arundel County GIS  
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EXHIBIT B: FALL 2002 AERIAL IMAGERY



Site  
**Fall 2002 Aerial Imagery**  
 Southbreeze Shoreline Stabilization

0 200  
 Feet  
 Original Scale: 1" = 200'

Source: Aerials Express  
**Wetland Studies and Solutions, Inc.**  
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EXHIBIT C: FEBRUARY 2022 AERIAL IMAGERY

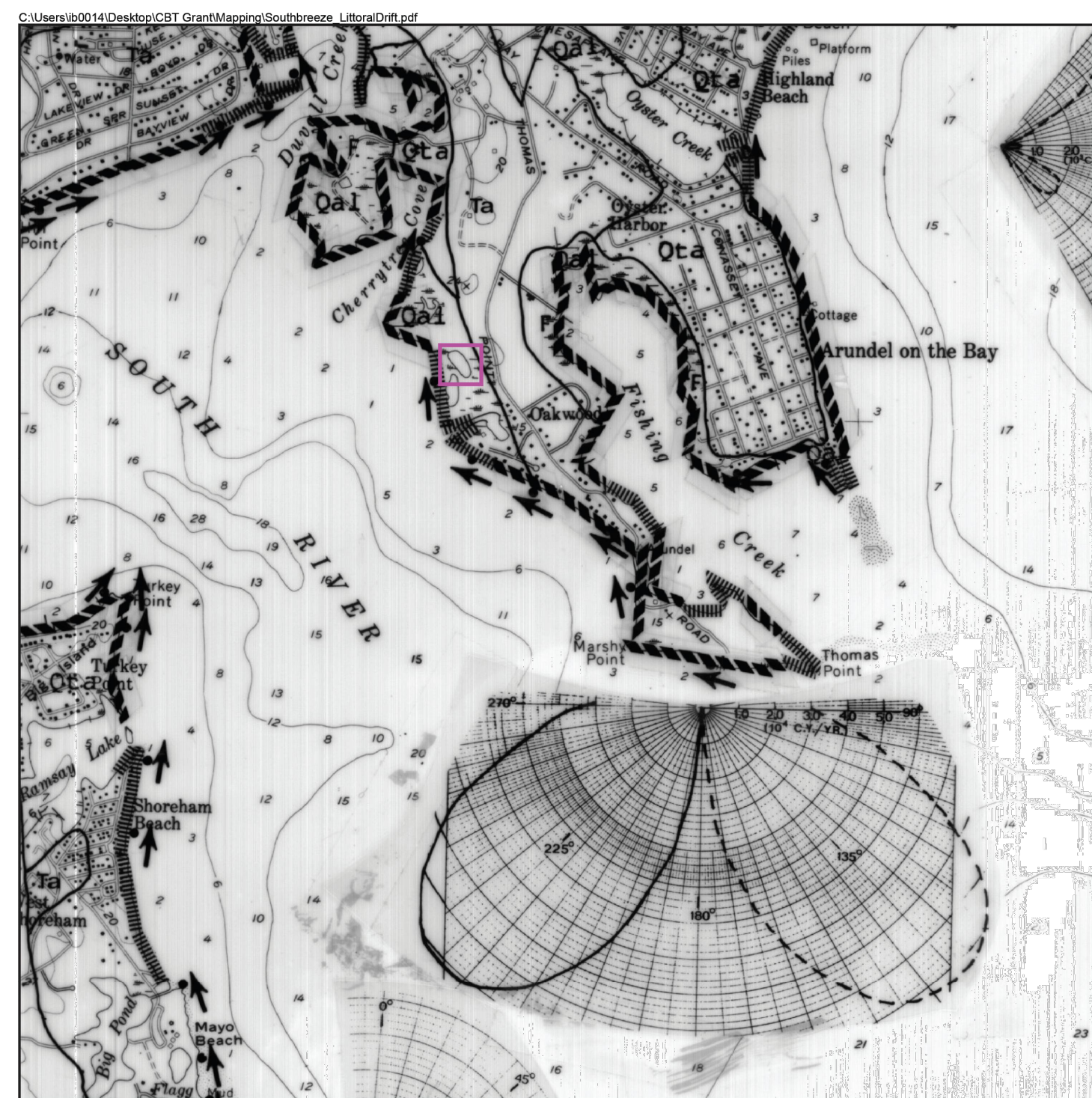


Site  
**February 2022 Aerial Imagery**  
 Southbreeze Shoreline Stabilization

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 Feet  
 Original Scale: 1" = 100'

Source: Neormap®  
**Wetland Studies and Solutions, Inc.**  
 a DAVEY company

EXHIBIT D: SHORELINE CONDITIONS AND LITTORAL DRIFT

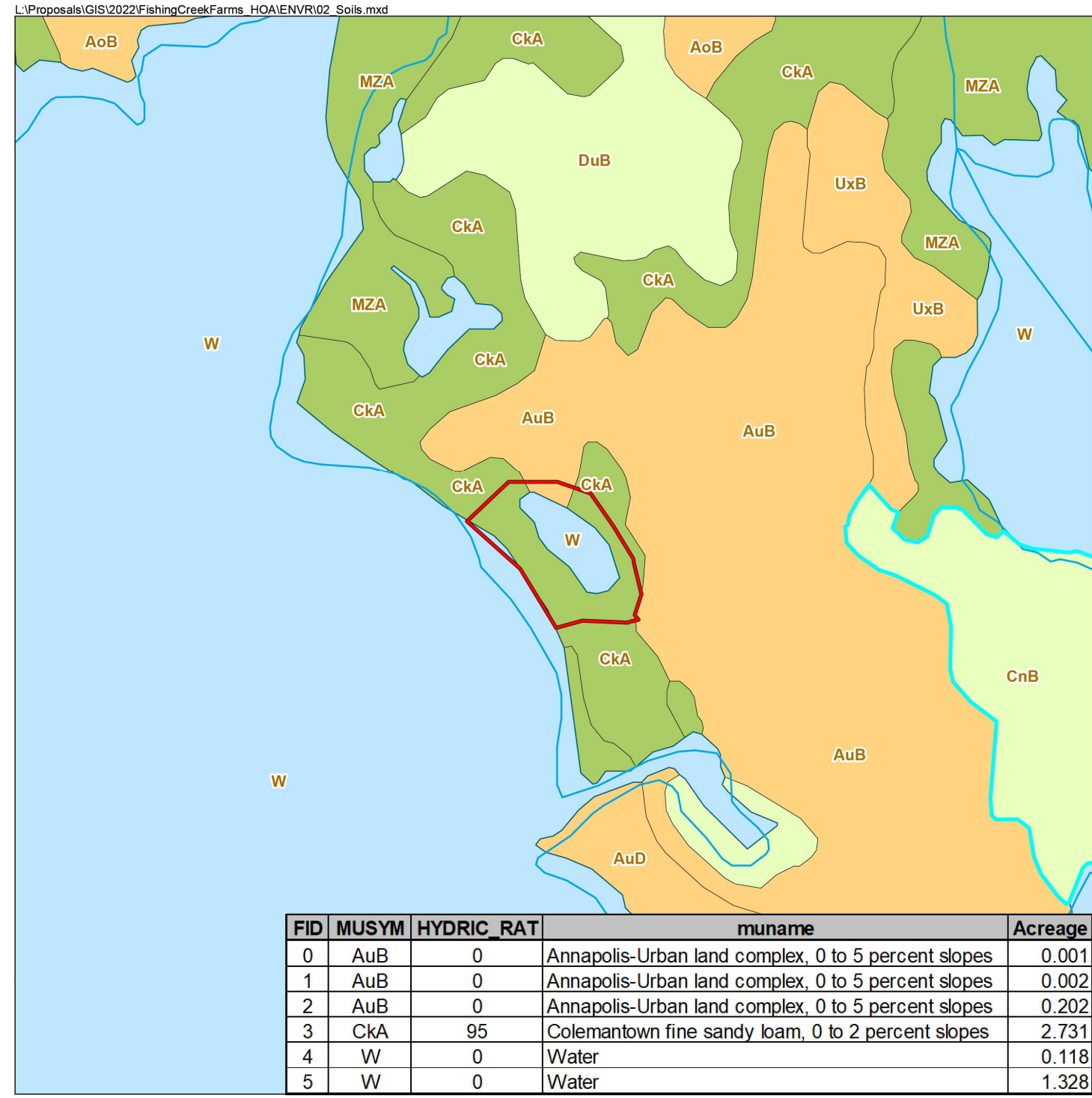


Project Vicinity  
**Shoreline Conditions and Littoral Drift**  
 Southbreeze Shoreline Stabilization

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 Original Scale: 1" = 1000'

Source: Wang et al. 1982  
 Vertical Datum: MSL  
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EXHIBIT E: SOILS MAP



Site  
**Soils Map**  
 Southbreeze Shoreline Stabilization

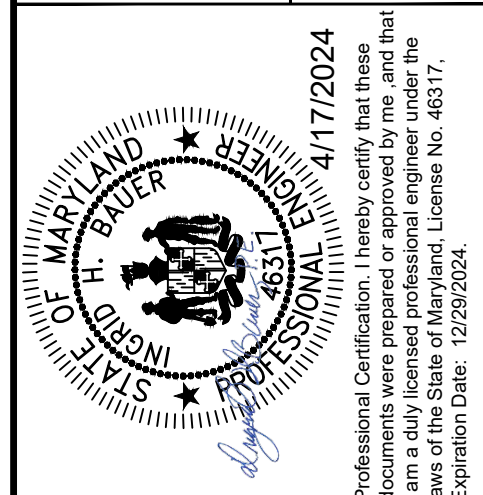
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Major Land Resource Area: Northern Coastal Plain, 148A  
 Land Resource Region: Northern Atlantic Slope Diversified Farming Region, S  
 Source: Anne Arundel County Digital Data, U.S. Department of Agriculture, 2021  
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**Southbreeze Community Shoreline Stabilization**  
**Southbreeze Final Sheetset**  
 Anne Arundel County, Maryland  
**Design Narrative Exhibits**

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No.	Date	Description	

DATE: APRIL 2024      SCALE: AS NOTED

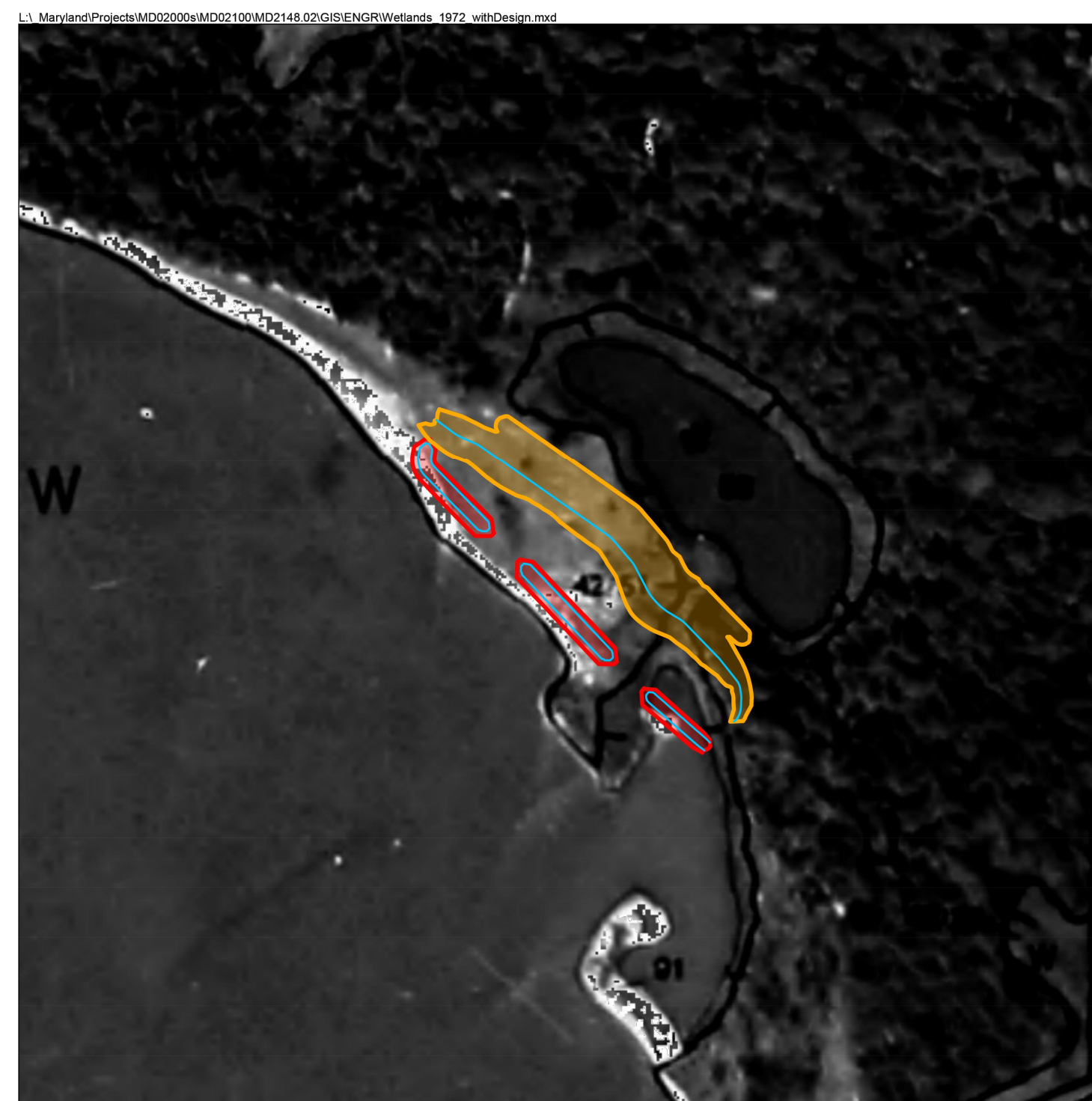
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Design	Draft	Approved
IHB	MCJ	IHB

Sheet #  
**13 of 14**

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EXHIBIT F: FINAL DESIGN OVER 1972 WETLAND MAP



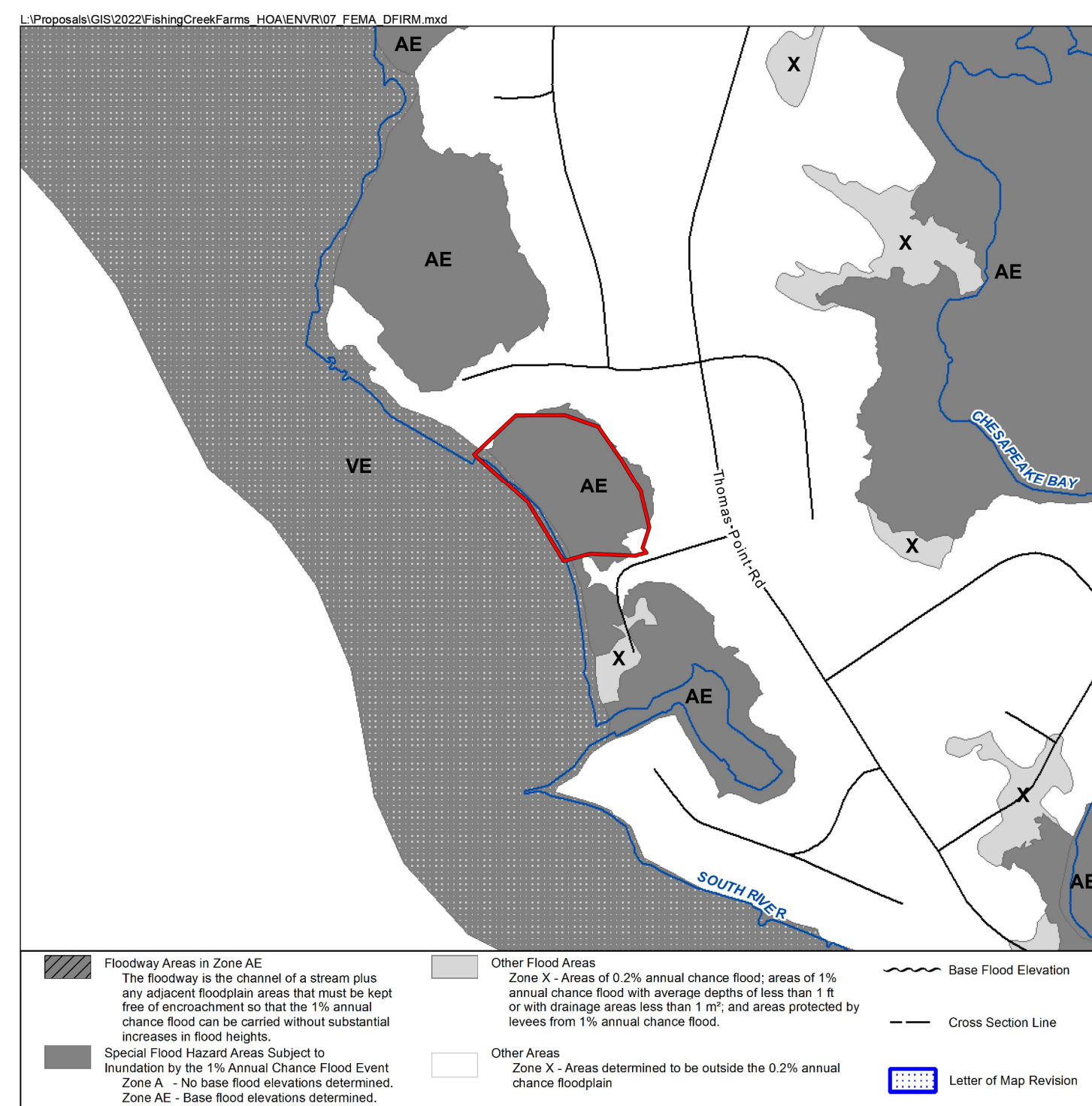
**Final Design Over 1972 Wetland Map**  
**Southbreeze Shoreline Stabilization**  
 WSSI #W5I9001812

Legend:  
 Pr. Sand Fill Extent (Yellow)  
 Pr. Breakwater Footprint (Red)  
 Pr. Mean High Water (MHW) (Blue)

Scale: 1" = 167'  
 NORTH

Source: MD IMap Data Catalog  
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EXHIBIT G: FEMA FLOOD INSURANCE MAP



**FEMA Digital Flood Insurance Rate Map**  
**Southbreeze Shoreline Stabilization**

Legend:  
 Floodway Areas in Zone AE  
 Other Flood Areas  
 Special Flood Hazard Areas Subject to Inundation by the 1% Annual Chance Flood Event  
 Zone A - No base flood elevations determined.  
 Zone AE - Base flood elevations determined.

Scale: 1" = 500'  
 NORTH

Panel: 24003C0261F, Effective: 02/18/2015  
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EXHIBIT H: SITE FETCH MAP - NORTH



**Site Fetch Map - North**  
**Southbreeze Shoreline Stabilization**  
 WSSI #MD2148.02

Legend:  
 Site (Yellow)  
 Fetch - Component of Average (mi.) (Green)  
 Fetch - Longest and Component of Average (mi.) (Purple)

Scale: 1" = 2,000'  
 NORTH

Source: Nearemap - February 2023 and Spring 2019 MD IMap, DoIT  
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EXHIBIT I: SITE FETCH MAP - SOUTH



**Site Fetch Map - South**  
**Southbreeze Shoreline Stabilization**  
 WSSI #MD2148.02

Legend:  
 Site (Yellow)  
 Fetch - Component of Average (mi.) (Green)  
 Fetch - Longest and Component of Average (mi.) (Purple)

Scale: 1" = 4,000'  
 NORTH

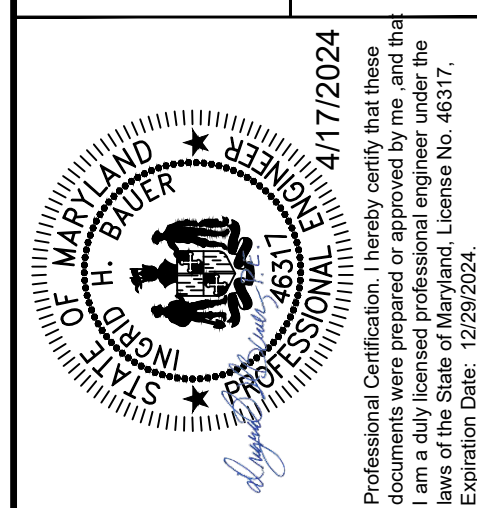
Source: Spring 2019 MD IMap, DoIT  
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 Anne Arundel County, Maryland

**Design Narrative Exhibits (cont.)**

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No.	Date	Description	Rev. By	App. By

DATE: APRIL 2024      SCALE: AS NOTED

Horizontal Datum: NAD 83  
 Vertical Datum: NAVD 88  
 Boundary and Topo Source: WSSI & Anne Arundel County Data

Design	Draft	Approved
IHB	MCI	IHB

Sheet #  
**14 of 14**

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