

# MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT

STONINGTON CONNECTICUT

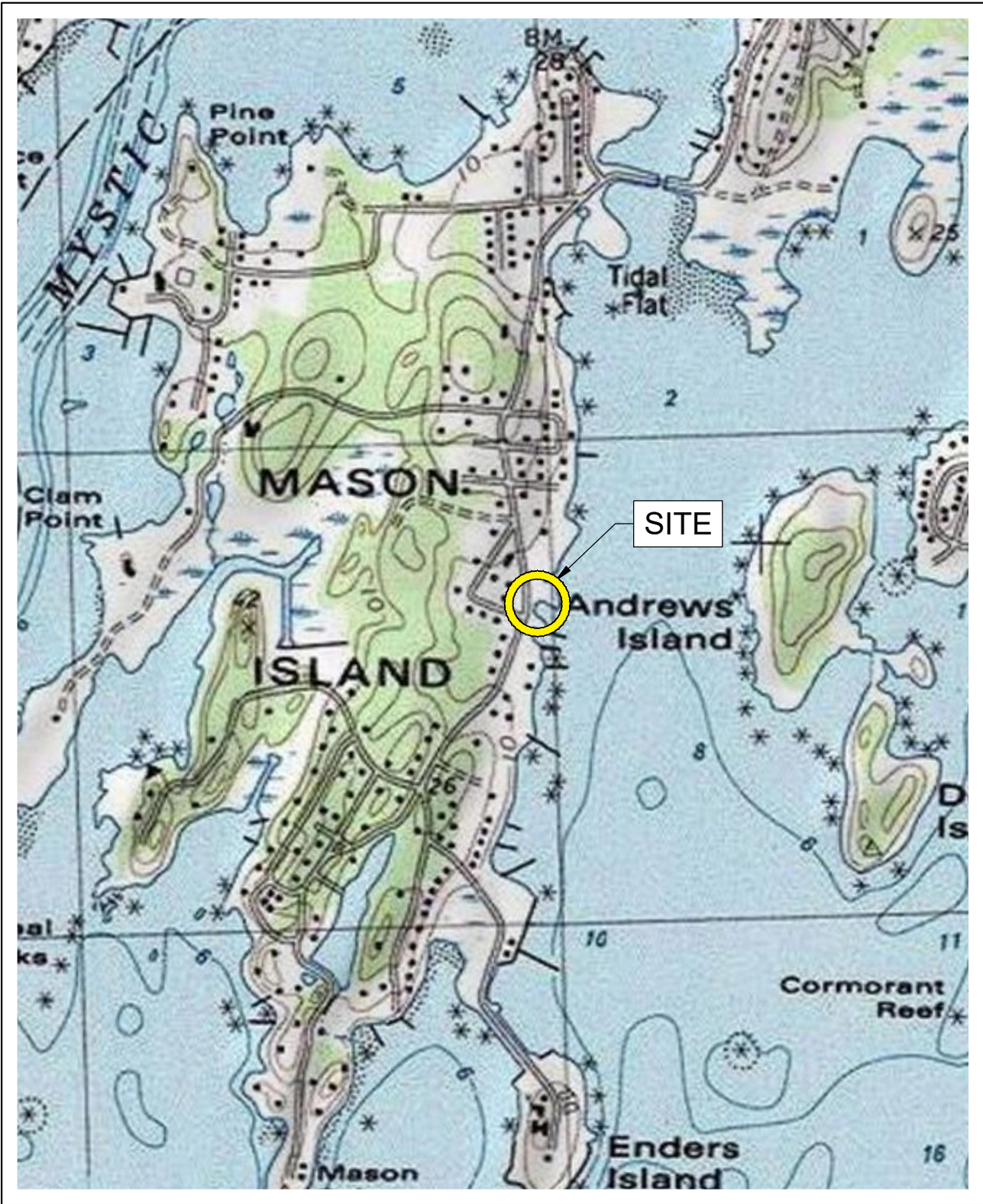
## PERMIT PLAN SET

**OWNER**

MASON'S ISLAND PROPERTY  
OWNERS ASSOCIATION (MIPOA)  
P.O. BOX 344  
MYSTIC, CT 06355

**ENGINEER**

GZA GEOENVIRONMENTAL, INC.  
95 GLASTONBURY BOULEVARD, 3rd FLOOR  
GLASTONBURY, CT 06033



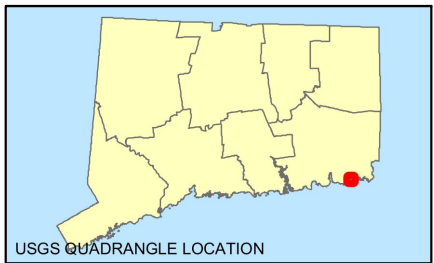
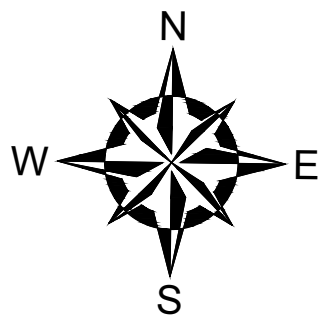
PROJECT LOCUS MAP

SOURCE: USGS TOPOGRAPHIC QUADRANGLES  
SCANNED BY MASSGIS AND DISTRIBUTED IN JUNE 2001



PROJECT PHOTOGRAPHIC LOCUS MAP

SOURCE: BING



STONINGTON CONNECTICUT

NOTE: ALL SCALES APPLICABLE FOR 34" X 22" DRAWINGS. USE SCALE BAR FOR ALTERNATE SIZE DRAWINGS.

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**PERMIT PLAN  
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NO.	ISSUE/DESCRIPTION	BY	DATE
UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.			
MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
TITLE PAGE, SITE LOCUS AND INDEX OF DRAWINGS			
PREPARED BY: <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>G0.01</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	

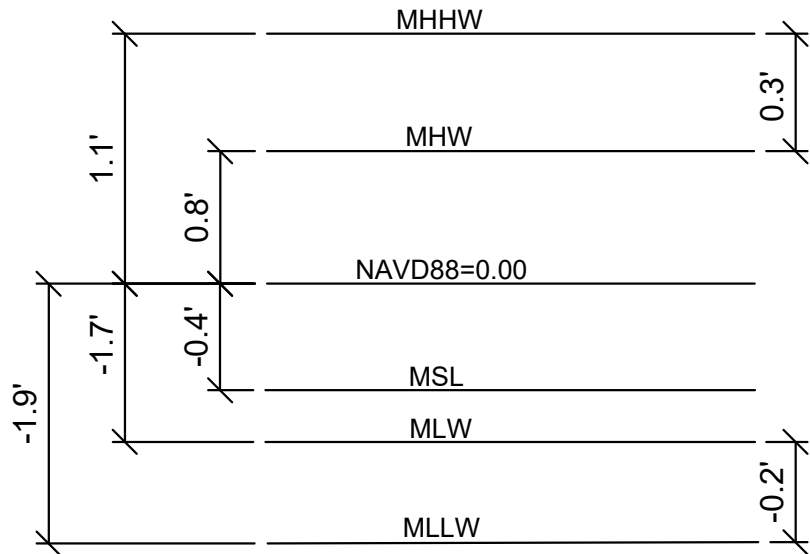
APPROVED:

GZA HAS DESIGNED THE LIVING SHORELINE USING A DESIGN APPROACH AND METHODOLOGIES CONSISTENT WITH THE CURRENT STATE OF PRACTICE USED BY PRACTITIONERS FOR SIMILAR PROJECTS. LIVING SHORELINES ARE DYNAMIC SYSTEMS, INCLUDING NATURAL MATERIALS THAT ARE SUSCEPTIBLE TO CHANGE DUE TO EXPOSURE TO NORMAL COASTAL PROCESSES AND TO MINOR TO SEVERE DAMAGE DURING COASTAL STORMS. DAMAGE AND MAINTENANCE SHOULD BE EXPECTED.



EXISTING CONDITIONS PLAN BASE MAP DEVELOPED FROM THE FOLLOWING:

- EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
- ELEVATIONS ARE IN FEET AND REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER GAUGE.
- AERIAL PHOTO OBTAINED FROM CTECO.UCONN.EDU, 2019 ORTHOPHOTOGRAPHY.
- HABITAT SURVEYED BY GZA GEOENVIRONMENTAL INC. ON AUGUST 17, 2021.
- FEMA FLOOD HAZARD BOUNDARY BASED ON FLOOD INSURANCE RATE MAP FOR NEW LONDON COUNTY, CT, MAP NUMBER 09011C0529J REVISED ON AUGUST 5, 2021. AREA EAST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE VE (EL. 14'). AREA WEST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE AE (EL 11').
- PROPERTY BOUNDARIES OBTAINED FROM CT DEEP GIS OPEN DATA WEBSITE.
- SWITCHGRASS PLANTED ALONG EASTERN SIDE OF CHIPPECHAUG TRAIL IN FALL 2021. PLANTING LOCATIONS ARE APPROXIMATE ONLY AND BASED ON EMAIL/PHONE COMMUNICATIONS WITH MS. KRISTIN FOSTER.
- EXISTING DUNE VEGETATION CONSISTS OF PHRAGMITES.
- KEY DESIGN PARAMETERS INCLUDE:
  - ANNUAL STORM STILLWATER ELEVATION 3.4 FEET NAVD88
  - 10% ANNUAL CHANCE STORM (10-YEAR) STILLWATER ELEVATION 5.0 FEET NAVD88
  - 1% ANNUAL CHANCE STORM (100-YEAR) STILLWATER ELEVATION 9.8 FEET NAVD88
  - CONNECTICUT SEA LEVEL RISE FOR 2050 20 INCHES OR 1.67 FEET (0.5 METER)
  - CONNECTICUT SEA LEVEL RISE FOR 2100 40 INCHES OR 3.33 FEET (1.0 METER)
  - STONE MARSH SILL DESIGN RECURRENCE INTERVAL 10 YEARS



DATUM RELATIONSHIP  
NOT TO SCALE

NOTE:

TIDAL ELEVATIONS ARE REFERENCED TO NOAA TIDE GAUGE 8460751 (WEST MYSTIC RIVER).

SURVEY AND PROJECT DATUM:

- ALL ELEVATIONS SHOWN ON PLANS ARE IN U.S. FEET AND REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- COORDINATES ARE BASED ON NORTH AMERICAN DATUM OF 1983 (NAD83), CONNECTICUT STATE PLANE, U.S. FEET (CT83F).
- CONTRACTOR SHALL MAINTAIN ADEQUATE SURVEY CONTROL AT ALL TIMES TO ESTABLISH AND MAINTAIN ALL LINES AND ELEVATIONS.

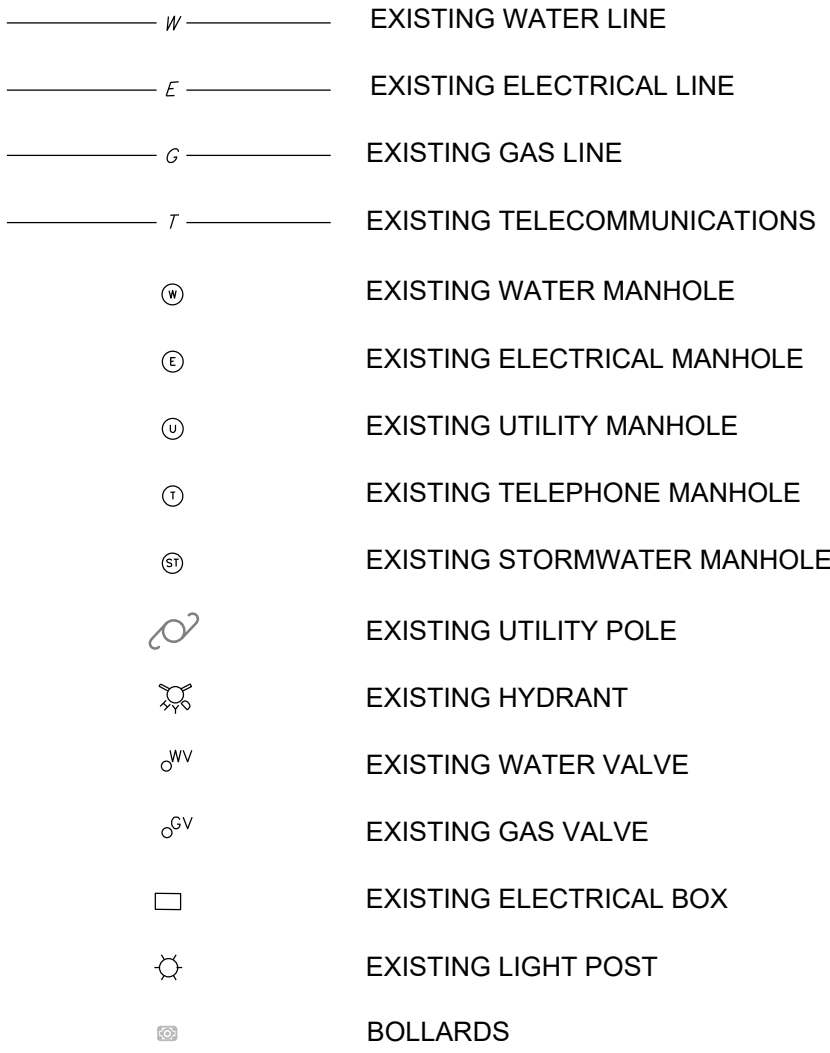
GENERAL NOTES

- LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY, AND ARE NOT WARRANTED TO BE CORRECT. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT INDICATED ON THESE PLANS. ALL EXISTING UTILITIES SHALL BE VERIFIED FOR SERVICE, SIZE, INVERT ELEVATION, LOCATION, ETC. PRIOR TO ANY CONSTRUCTION WORK IN THE VICINITY THEREOF. THE CONTRACTOR MUST NOTIFY DIGSAFE (PHONE NUMBER: 811) AT LEAST 3 FULL WORKING DAYS PRIOR TO ANY CONSTRUCTION. APPROPRIATE MUNICIPAL DEPARTMENTS MUST ALSO BE NOTIFIED. NOTIFY OWNER AND ENGINEER IN WRITING OF ANY AND ALL DISCREPANCIES PRIOR TO COMMENCING WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINDING, VERIFYING, AND RE-SETTING (IF NECESSARY) CONTROL POINTS AND BENCHMARKS FOR THE WORK OF THE CONTRACT OR OTHERWISE ESTABLISHING THEIR OWN.
- THE RESPONSIBILITY FOR SAFETY IN, ON, OR ABOUT THE JOBSITE SHALL BE THAT OF THE CONSTRUCTION CONTRACTOR. THESE DRAWINGS DO NOT INCLUDE COMPONENTS WHICH MAY BE NECESSARY FOR CONSTRUCTION SAFETY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION, EXCEPT WHERE SPECIFICALLY DETAILED IN THE PLANS. LIKEWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SEQUENCE OF THE WORK, EXCEPT WHERE SPECIFICALLY DETAILED IN THE PLANS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURFACE AND GROUNDWATER CONTROL DURING THE WORK OF THE CONTRACT. TEMPORARY WATER CONTROL MEASURES SHALL BE, AT MINIMUM, AS REQUIRED BY THE PROJECT PLANS, SPECIFICATIONS, AND PERMIT CONDITIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ADDITIONAL MEASURES NECESSARY FOR WATER CONTROL NECESSARY TO EXECUTE THE WORK OF THE CONTRACT "IN THE DRY". WATER CONTROL MEASURES ARE SUBJECT TO SPECIFIC LIMITS AND CONDITIONS AS MAY BE SHOWN ON THE PLANS.
- ACCESS TO THE SITE SHALL BE FROM CHIPPECHAUG TRAIL. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION AS PER THE PLANS AND SPECIFICATIONS. WHERE NO SPECIFIC INSTRUCTION IS GIVEN, RESTORATION SHALL BE TO THE ORIGINAL CONDITION OR BETTER AND AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR IS SPECIFICALLY INFORMED THAT THE RESTORATION REQUIREMENT APPLIES TO ALL AREAS DISTURBED AS A RESULT OF THE PROJECT, INCLUDING ACCESS ROADS.
- SPECIFIC AREAS HAS BEEN DESIGNATED AND DELINEATED ON THE PLANS AS A CONTRACTOR STAGING AREAS. THE CONTRACTOR SHALL USE THESE AREAS AND THESE AREAS ONLY FOR ON-SITE PARKING, OFFICE TRAILERS (IF NECESSARY), EQUIPMENT AND MATERIAL STORAGE, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY NECESSARY SIGNAGE, FENCING, SAFETY, SEDIMENT/EROSION CONTROL, IMPROVEMENTS, RESTORATIONS, ETC. IN THESE AREAS. AREAS WITHIN THE LIMITS OF THE WORK MAY BE USED FOR TEMPORARY STORAGE, HAUL ROADS, PARKING, ETC.; HOWEVER, NO ADDITIONAL CONSIDERATIONS OR PAYMENT WILL BE MADE FOR WORK NECESSARY TO RE-GRADE AND RESTORE SUCH AREAS TO PRE-CONSTRUCTION CONDITIONS OR RELOCATE ANY MATERIALS OR EQUIPMENT TEMPORARILY STORED WITHIN THE LIMITS OF THE WORK. IF THE CONTRACTOR REQUIRES AND IDENTIFIES ADDITIONAL STAGING AREAS ON THE OWNER'S PROPERTY, THE CONTRACTOR SHALL MAKE A WRITTEN REQUEST TO THE OWNER AND ENGINEER DESCRIBING THE NEED AND LOCATION OF THE PROPOSED AREA. NO GUARANTEE IS MADE THAT ADDITIONAL STAGING AREAS WILL BE MADE AVAILABLE.
- PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL DEVELOP, SUBMIT, AND MAINTAIN AN EMERGENCY CONTACT LIST WITH NAMES AND PHONE NUMBERS (DAY AND NIGHT) OF ALL KEY PERSONNEL INVOLVED WITH THE PROJECT. THE LIST SHALL SPECIFICALLY INCLUDE THE PERSON FROM THE CONTRACTOR WHO SHALL BE RESPONSIBLE FOR ENVIRONMENTAL COMPLIANCE. THE LIST SHALL BE PROVIDED TO THE OWNER, ENGINEER, AND CTDEEP AND UPDATED AS NEEDED.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL PENALTIES AND DELAYS DUE TO NON-COMPLIANCE WITH PERMIT CONDITIONS.
- THE CONTRACTOR SHALL PROTECT EXISTING WETLANDS (INCLUDING HIGH AND LOW MARSHES). FENCING IS REQUIRED.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
- PLEASE REFER TO THE LONG-TERM MONITORING PLAN FOR PRELIMINARY PLANTING SCHEDULE. ACTUAL PLANTING SCHEDULE WILL BE PROVIDED DURING FINAL DESIGN.

LEGEND



UTILITIES LEGEND:



ABBREVIATIONS AND ACRONYMS

CJL	COASTAL JURISDICTION LINE
DEEP	DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
DIA.	DIAMETER
D.I.	DUCTILE IRON
EL.	ELEVATION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
HASP	HEALTH AND SAFETY PLAN
HDPE	HIGH-DENSITY POLYETHYLENE
HTL	HIGH TIDED LINE
INV.	INVERT
MHHW	MEAN HIGH, HIGH WATER
MHW	MEAN HIGH WATER
MAX.	MAXIMUM
MIFD	MASON'S ISLAND FIRE DISTRICT
MIN.	MINIMUM
MLLW	MEAN LOW, LOW WATER
MLW	MEAN LOW WATER
MSL	MEAN SEA LEVEL
N / F	NON OR FORMERLY
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OHW	OVERHEAD WIRES
PCP	PRE-CAST PIPE
STA.	STATION
TYP.	TYPICAL
USACE	UNITED STATES ARMY CORPS OF ENGINEERS

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PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>G0.02</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
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CONTRACTOR QUALIFICATIONS

1. THE CONTRACTOR SHALL HAVE EXPERIENCE AND CAPABILITIES WITH CONSTRUCTION PROJECTS INVOLVING NATURAL AND NATURE-BASED FEATURES, INCLUDING SALT MARSH RESTORATION AND CONSTRUCTION, MARSH PLANTING, AND LIVING SHORELINES.
2. THE CONTRACTOR SHALL HAVE SUCCESSFULLY COMPLETED A MINIMUM OF 10 PROJECTS THAT INVOLVED NATURAL AND NATURE-BASED FEATURES INCLUDING A MINIMUM OF 5 LIVING SHORELINE PROJECTS AND 5 TIDAL MARSH RESTORATION PROJECTS. QUALIFICATIONS DEMONSTRATING THE CONTRACTOR'S EXPERIENCE SHALL BE SUBMITTED WITH THEIR PROJECT BID.

PROJECT DESCRIPTION

1. THE PROJECT INCLUDES CONSTRUCTION OF A LIVING SHORELINE, POST-CONSTRUCTION SITE RESTORATION; AND 1-YEAR PROJECT MAINTENANCE. THE LIVING SHORELINE PROJECT COMPONENTS INCLUDE:
  - a. EROSION AND SEDIMENT CONTROLS TO SUPPORT THE LIVING SHORELINE CONSTRUCTION;
  - b. SITE PREPARATION (INCLUDING SITE ACCESS AND STAGING AREA) AND ESTABLISH WATER CONTROL IF NEEDED;
  - c. ESTABLISH CONTROL STATIONS;
  - d. CONSTRUCTION OF NEW MARSH STONE SILLS;
  - e. STAKED COIR LOG INSTALLATION AND NEW MARSH AND SWITCHGRASS PLANTINGS;
  - f. MOWING PHRAGMITES (INVASIVE SPECIES). CUT/MOW TO THE DEPTH REQUIRED. PERFORM THE MOWING AT THE START AND END OF GROWING SEASON FOR YEAR ONE. REPEAT ONCE PER YEAR FOR THREE ADDITIONAL YEARS.;
2. THE PROJECT SCOPE INCLUDES ALL WORK REQUIRED TO COMPLETE THE PROJECT INCLUDING LABOR, MATERIALS, TRANSPORTATION, SITE MOBILIZATION, SITE PREPARATION, CONSTRUCTION, EROSION AND SEDIMENT CONTROLS, SITE SURVEY AS REQUIRED TO COMPLETE THE CONSTRUCTION, DEMOBILIZATION AND SITE RESTORATION, PROVISION OF ALL REQUIRED SUBMITTALS, SHOP DRAWINGS, ETC., AND PREPARATION AND SUBMITTAL OF AS-BUILT CONSTRUCTION DRAWINGS. THE PROJECT ALSO INCLUDES PROJECT VEGETATION MAINTENANCE FOR 1 YEAR, STARTING AT THE END OF CONSTRUCTION.
3. PROJECT QUANTITIES ARE PRESENTED FOR PERMITTING AND GENERAL INFORMATION PURPOSES ONLY. NUMERIC VALUES ROUNDED TO THE NEAREST TEN (10) FOR SIMPLICITY. CONTRACTOR SHALL INDEPENDENTLY ESTIMATE QUANTITIES FOR PURPOSE OF PROJECT BID (SF - SQUARE FEET; CY - CUBIC YARD):

a. STONE SILL AREA:	2,460 SF
b. NEW MARSH AREA:	100 SF
c. STONE SILL: - ANCHOR STONES	40 EACH
g. PLANTINGS: DISTICLIS SPICATA PANICUM VIRGATUM	PLUGS 115 EACH PLUGS 20 EACH

GENERAL REQUIREMENTS FOR CONSTRUCTION:

1. ALL WORK WILL BE MONITORED AND INSPECTED BY THE DESIGN ENGINEER DURING CONSTRUCTION.
2. CONSTRUCTION SCHEDULE LIMITATIONS:
  - a. NO INVASIVE SPECIES TREATMENT SHALL COMMENCE WITHOUT THE WRITTEN APPROVAL OF THE CLIENT.
3. ALL VEHICULAR WORK IN TIDAL WETLANDS TO BE DONE USING WOOD MATS, DURA-BASE MATS OR EQUIVALENT.
4. NO TIDAL MARSH OUTSIDE OF THE LIMITS OF THE PROJECT WORK SHALL BE DISTURBED, ALTERED OR DAMAGED DURING CONSTRUCTION. CONTRACTOR SHALL CLEARLY DEMARCAT E EXISTING TIDAL MARSH AREAS TO PREVENT DISTURBANCE DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL BE PREPARED TO WORK WITHIN THE TIDAL CYCLE TO AVOID INUNDATION OF THE WORK AREA DURING CONSTRUCTION, WITH SPECIAL ATTENTION TO THE SALT MARSH PLANTING AREAS.
6. ALL MATERIAL LAYDOWN AND STOCKPILE SHALL BE IN AREAS ABOVE THE COASTAL JURISDICTION LINE (CL AS SHOWN ON THE DRAWINGS).
7. THE CONTRACTOR SHALL IMPORT ALL FILL BY LAND AND PERFORM ALL CONSTRUCTION WITHOUT THE USE OF BARGES.
8. ALL CONSTRUCTION MATS AND CONSTRUCTION EQUIPMENT SHALL BE POWER WASHED PRIOR TO DELIVERY TO THE SITE TO PREVENT THE IMPORT OF INVASIVE SPECIES AND PATHOGENS.
9. FILL MATERIALS:
  - a. ALL FILL MATERIALS SHALL BE FREE OF CONTAMINANTS, ARTIFICIAL MATERIALS AND DEEP DELETERIOUS MATERIALS.
  - b. FILL MATERIALS SHALL BE FROM A SOURCE APPROVED BY THE ENGINEER AND OWNER PRIOR TO START OF CONSTRUCTION. TO PREVENT IMPORT OF PATHOGENS, FILL SOURCES SHALL BE LOCATED WITHIN CONNECTICUT OR FROM UPLAND OUT-OF-STATE LOCATIONS.

CONSTRUCTION SEQUENCE:

NOTIFY OWNER, ENGINEER, MASON'S ISLAND FIRE DISTRICT (MIFD), TOWN OF STONINGTON, AND CONNECTICUT DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION (DEEP) OF SCHEDULE AND CONDUCT SITE WALK TO INSPECT SEDIMENT AND EROSION CONTROL MEASURES. MODIFY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED. WORK MAY PROCEED ONCE APPROVAL HAS BEEN PROVIDED BY OWNER, ENGINEER, AND MIFD.

1. THE LIVING SHORELINE CONSTRUCTION SEQUENCE SHALL BE ESTABLISHED BY THE CONTRACTOR. IN GENERAL, THE EXPECTED SEQUENCE IS AS FOLLOWS:
  - a. SITE PREPARATION AND SITE ACCESS.
  - b. INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
  - c. INSTALLATION OF LIVING SHORELINE NEW MARSH STONE SILLS AND OYSTER SHELL BAGS.
  - d. STAKED COIR LOG INSTALLATION.
  - e. HIGH MARSH AND SWITCHGRASS PLANTING.
  - f. MOWING OF EXISTING INVASIVES (E.G., PHRAGMITES).
  - g. MARSH AND GRASS PLANTING PROTECTION.
  - h. REMOVAL OF EROSION AND SEDIMENT CONTROL MEASURES.
  - i. 1-YEAR MAINTENANCE.
  - j. REMOVAL OF PLANTING PROTECTION.
6. MARSH SILL CONSTRUCTION SEQUENCE:
  - a. STONE SILL CONSTRUCTION CAN BE COMPLETED DURING NORMAL TIDE CYCLES. CONTRACTOR USES DISCRETION.
  - b. USE CONSTRUCTION MATS OR LOW PRESSURE OR TRACKED VEHICLES.
  - c. EXCAVATE SILL BASE AS SHOWN ON PLANS.
  - d. INSTALL GEOTEXTILE FABRIC WITHIN AND OVER THE BACK EDGE OF THE SUBGRADE OF THE PROPOSED SILL, SECURING WITH BIODEGRADABLE PINS.
  - e. DELIVER IMPORTED STONE MATERIAL, AND INSTALL BY EXCAVATOR AT THE DESIRED ELEVATIONS:
    - i. PLACE BASE COURSE
    - ii. PLACE TWO LARGER ANCHOR STONES (A MINIMUM OF 1' DIAMETER, MAXIMUM OF 4' DIAMETER) AT TOE OF SILL.
  - f. PLACE SMALLER ROUGH ANGULAR STONE ON TOP OF THE LAND-SIDE ARMOR LAYER.
  - g. PLACE OYSTER BAGS IN BETWEEN STONES OR ON THE LAND-SIDE ARMOR LAYER, IF USED.
  - h. GEOTEXTILE FABRIC THAT IS PINNED UNDER THE BACK EDGE OF THE SILL SHALL BE LIFTED AND WRAPPED AROUND SMALLER ROUGH ANGULAR STONE ON THE BACK SLOPE OF THE SILL AT MARSH FILL ELEVATION)
  - i. ARMOR STONE SHALL BE CAREFULLY AND INDIVIDUALLY PLACED, NOT END DUMPED.
  - j. INSTALL OYSTER SHELL BAGS. TO BE FIELD PLACED.
7. HIGH MARSH CONSTRUCTION SEQUENCE:
  - a. INSTALL ANCHORED STAKED COIR LOG TO THE ERODED LAWN AREA OPENING.
  - b. INSTALL SPIKE GRASS MARSH PLANTINGS IN THE AREA BETWEEN THE COIR LOGS AND EDGE OF ERODED LAWN.
  - c. INSTALL SWITCHGRASS PLANTING IN TWO ROWS AT EDGE OF ERODED LAWN.
  - d. INSTALL HERBIVORE EXCLUSION FENCE AND PROTECTION WITHIN NEWLY PLANTED MARSH.
8. PROJECT DEMOBILIZATION AND SITE RESTORATION (INCLUDING GRAVEL ROADWAY RESTORATION). OFFSITE DISPOSAL OF EXCESS MATERIALS IF ANY.
9. PLANTING NOTES:
  - a. PLANTING OF THE SALT MARSH AND GRASSES SHALL BE PERFORMED AT A TIME OPTIMAL TO THE ESTABLISHMENT AND GROWTH OF THE SPECIES PLANTED. A PLANTING SCHEDULE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF PLANTING.
  - b. PROPOSED PLANTINGS SHALL BE OBTAINED FROM A SOURCE AND NURSERY APPROVED BY THE ENGINEER.
  - c. ALL PLANTINGS SHALL CONFORM TO THE PLANT LIST SHOWN ON THE DRAWINGS AND SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
  - d. SWITCHGRASS (PANICUM SPICATA) CONTAINERS TO BE PLANTED IN ALTERNATING ROWS, AT 18" O.C. THROUGHOUT THE RESTORED AREA. 8 ONE TWO-GALLON CONTAINER PLUGS TO BE PLACED IN EACH HOLE AND THE SAND GENTLY COMPACTED TO SECURE THE CULM OR PLUG.
  - e. SALT MARSH PLUGS (DISTICLIS SPICATA) SHALL BE PLANTED IN ALTERNATING, STAGGERED ROWS, USING 2" PLUGS SPACED AT A MAXIMUM 18" O.C. THROUGHOUT THE CREATED SALT MARSH AREA.
  - f. FOLLOWING COMPLETION OF PLANTING, SNOW FENCING SHALL BE INSTALLED AROUND THE LIMIT OF PLANTINGS AND SHALL REMAIN IN PLACE UNTIL ESTABLISHMENT OF PLANTINGS. SNOW FENCING CAN REMAIN IN PLACE FOR ADDITIONAL SAND ACCRETION IF DESIRED BY THE OWNER AND UPON APPROVAL OF THE ENGINEER..
  - g. THE CONTRACTOR SHALL PROVIDE PLANT MATERIALS IN THE QUANTITIES, SPECIES AND SIZES SHOWN ON THE PLANS AND NOTES.
  - h. ALL PLANT MATERIALS SHALL CONFORM TO THE CURRENT ISSUE OF AMERICAN STANDARD FOR NURSERY STOCK (ASNS), ANSI Z-60.1, LATEST EDITION PUBLISHED BY AMERICAN ASSOCIATION OF NURSERYMEN (AAN), WITH: AMERICAN STANDARD FOR NURSERY STOCK (ASNS), ANSI Z60.1-2004, OR LATEST EDITION, PUBLISHED BY AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (ANLA), (FORMERLY AMERICAN ASSOCIATION OF NURSERYMEN AND LANDSCAPE ASSOCIATION (ANIA), FORMERLY AMERICAN ASSOCIATION OF NURSERYMEN). OTHER SUBSEQUENT REFERENCES TO AAN SHOULD LIKEWISE BE REVISED TO ANLA.
  - i. ALL PLANTS SHALL BE LIVING AND HEALTHY WITH VIGOROUS ROOT SYSTEMS SUITABLE TO ENSURE ESTABLISHMENT OF THE PLANT. SALT MARSH PLANTS SHALL BE NURSERY GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT. PLANTS MAY BE 2-INCH OR LARGER PLUGS, BARE ROOT OR 2-INCH POTS. BAREROT PLANTS SHALL HAVE STEM AND ROOT DEVELOPMENT SIMILAR TO 2-INCH PLUGS. ALL PLANTS SHALL BE FREE FROM MATERIAL DETRIMENTAL TO A HEALTHY STAND OF PLANTS. ANY PLANTS EXPOSED TO EXCESSIVE HEAT OR DRYING SHALL BE REJECTED.
  - j. ALL PLANT MATERIAL SHALL BE SPECIES NATIVE TO THE REGION. AS PER CURRENT RECOMMENDATIONS BY THE NOAA RESTORATION CENTER AND THE EPA ECOREGION ASSESSMENT, IN ORDER TO MAINTAIN GENETIC DIVERSITY, ONLY NATIVE SPECIES OF SEED AND PLANTS FROM THE EPA LEVEL III ECOREGION OF THE PROJECT AREA SHALL BE USED FOR ECOSYSTEM RESTORATION. THE EPA LEVEL III ECOREGIONS OF THE PROJECT SITE IS ECOREGION 59 NORTHEASTERN COASTAL ZONE. THE CURRENT EPA MAP, ECOREGIONS OF THE CONTINENTAL UNITED STATES, IS AVAILABLE THROUGH THE FOLLOWING LINK: <https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-state>
  - k. THE NURSERY SOURCE SHALL CERTIFY THAT THE PROVENANCE, OR ORIGIN, OF THE SEED FROM WHICH THE PLANTS WERE PRODUCED IS FROM THE APPLICABLE EPA LEVEL III ECOREGION.
  - l. ALL PLANT MATERIAL USED SHALL BE NURSERY GROWN AND HEALTHY, SOUND AND FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE, DISCOLORATIONS, LEAF WILTING OR CURLING AND WEEDS. CONTAINER GROWN STOCK SHALL HAVE BEEN GROWN IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL AFTER REMOVAL FROM THE CONTAINER. ROOTS SHALL VISIBLY EXTEND TO THE INSIDE FACE OF THE GROWING CONTAINER BUT SHALL NOT BE ROOT-BOUND OR GIRDLING. PLANTS GROWN IN PEAT POTS SHALL BE WELL-ROOTED THROUGH THE POT WITH 4-6 STEMS PER POT AND PLUGS AT LEAST 6 INCHES IN HEIGHT.
  - m. PLANT MATERIAL INTENDED FOR SALT MARSH CREATION AREAS SHALL BE ACCLIMATED TO THE SALINITY OF THE ADJACENT WATER BODY. SALINITY ACCLIMATION SHALL BE DONE INCREMENTALLY AT THE NURSERY TO BRING THE PLANTS UP TO A TOLERANCE OF THE SITE SALINITY. PLANTS SHALL BE THRIVING IN THE NURSERY AT THE TARGET SALINITY LEVEL FOR A MINIMUM OF TWO WEEKS PRIOR TO DELIVERY.
  - n. FINAL LOCATION OF ALL PLANTINGS TO BE APPROVED IN THE FIELD BY THE ENGINEER.
  - o. UPON COMPLETION OF SALT MARSH PLANTING, HERBIVORY PROTECTION FENCING SHALL BE INSTALLED AROUND THE LIMIT OF PLANTINGS AND SHALL REMAIN IN PLACE THROUGH THE FIRST GROWING SEASON. HERBIVORY PROTECTION FENCING SHALL BE REMOVED BY THE CONTRACTOR ONCE THE PLANT COMMUNITY IS ESTABLISHED TO THE SATISFACTION OF THE ENGINEER.
  - p. FERTILIZER SHALL BE APPLIED 30 DAYS AFTER PLANTING SWITCHGRASS, BUT NO EARLIER THAN MAY 1. FERTILIZER SHALL NOT BE APPLIED TO NEWLY PLANTED PLANTS. ADDITIONAL FERTILIZER SHALL BE APPLIED FOLLOWING THE INITIAL SPRING APPLICATION IN EARLY SUMMER AND AGAIN IN LATE SUMMER DURING THE INITIAL ESTABLISHMENT YEAR.
  - q. AN ORGANIC, GRANULAR FERTILIZER, HIGH IN NITROGEN (30-10-0, 16-8-8 OR 10-10-10) AS APPROVED BY THE PROJECT ECOLOGIST SHALL BE USED. FERTILIZER APPLICATION WILL NOT EXCEED MORE THAN ONE (1) LB. OF NITROGEN PER 1,000 SQ. FT. IN ANY SINGLE APPLICATION.
  - r. FOR OFF-SITE MATERIALS, SUBMIT TO THE ENGINEER FOR REVIEW AND ACCEPTANCE THE NAME OF EACH MATERIAL SUPPLIER WITH SPECIFIC TYPE AND SOURCE OF EACH MATERIAL.
10. CONTRACTOR SHALL USE 16 INCH DIAMETER COIR LOGS WHERE SHOWN ON PLANS AND INSTALL 6 INCHES OF THE LOG BELOW THE SURFACE. COIR LOGS SHALL BE SECURED IN PLACE WITH 4 FEET DUCKBILL ANCHORS EVERY 3 FEET. USE A STACKED CONFIGURATION IF ADDITIONAL HEIGHT AND/OR STABILITY IS NEEDED.

WETLAND SILL AND MARSH MONITORING & MAINTENANCE PROCEDURES

1. THE LIVING SHORELINE WILL BE PERIODICALLY EXPOSED TO EXTREME WATER LEVELS, WAVES AND WIND THAT CAN RESULT IN DAMAGE TO THE VEGETATED COVER AND EROSION OF SEDIMENT. HERBIVORE VEGETATION DAMAGE MAY ALSO OCCUR.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE MARSH, MARSH SILL, OYSTER SHELL BAGS AND VEGETATION FOR A PERIOD OF ONE YEAR TO ENSURE THAT THE VEGETATION IS FULLY ESTABLISHED.
3. NO MAINTENANCE OR REPAIRS ARE TO BE PERFORMED WITHOUT PRIOR APPROVAL OF THE PLANNING & ZONING COMMISSION OR ITS AGENT.
4. MAINTENANCE AND RESTORATION AFTER ONE YEAR WILL BE THE RESPONSIBILITY OF THE PROJECT OWNER (MASON'S ISLAND SHORELINE TASK FORCE) AND/OR TOWN OF STONINGTON.
5. NO MAINTENANCE OR REPAIRS ARE TO BE PERFORMED WITHOUT PRIOR APPROVAL OF THE PLANNING & ZONING COMMISSION OR ITS AGENT.
6. THE PROJECT OWNER SHALL BE ALLOWED TO REMOVE LITTER FROM THE PROJECT AREA AT ANY TIME WITHOUT PRIOR APPROVAL. LITTER SHALL MEAN CARELESSLY DISCARDED REFUSE, BUT NOT STORM DEBRIS SUCH AS ROCKS, LOGS, ETC.
7. REPAIR AND RE-VEGETATION OF THE PROJECT SHALL BE PERFORMED ONLY BETWEEN OCTOBER 1 AND APRIL 1. REVEGETATION OF THE SALT MARSH MUST OCCUR BETWEEN MAY AND SEPTEMBER.
9. THE PROJECT OWNER SHALL ASSURE THAT ALL UNQUALIFIED MATERIALS, CONSTRUCTION DEBRIS, OR OTHER MATERIALS DETERMINED TO BE INADEQUATE WILL BE REMOVED FROM THE SITE AND LAWFULLY DISPOSED.
8. REPAIRS SHALL BE PERFORMED TO A FINAL CONDITION AS ORIGINALLY APPROVED BY THE ENGINEER, THE BOROUGH OF STONINGTON AND THE DEEP. GRAVEL AND SILL ROCK SIZE SHALL BE AS ORIGINALLY APPROVED BY THE ENGINEER AND BY THE TOWN OF STONINGTON.
10. PARAMETERS OF FINISHED REPAIRS SHALL BE CONSISTENT WITH THE APPROVED PLAN. MAXIMUM AND MINIMUM ELEVATION DIFFERENCES SHALL NOT EXCEED THOSE OF THE APPROVED PLAN.
11. DISTURBED AREAS SHALL BE REVEGETATED BASED ON THE PLANTING ZONES SHOWN ON THE DRAWINGS.
12. FERTILIZER FOR BEACHGRASS ESTABLISHMENT SHALL BE APPLIED 30 DAYS AFTER PLANTING, BUT NO EARLIER THAN MAY 1. FERTILIZER SHALL NOT BE APPLIED TO NEWLY PLANTED CULMS. APPLY ADDITIONAL FERTILIZER, FOLLOWING THE INITIAL SPRING APPLICATION IN EARLY SUMMER AND AGAIN IN LATE SUMMER DURING THE INITIAL ESTABLISHMENT YEAR.
13. USE INORGANIC, GRANULAR FERTILIZER, HIGH IN NITROGEN (30-10-0,16-6-6 OR 10-10-10) FOR THE BEACHGRASS AS APPROVED BY THE PROJECT ECOLOGIST. APPLY NO MORE THAN 1 LB. OF NITROGEN PER 1,000 SQ FT IN ANY SINGLE APPLICATION.


CONTRACTOR SUBMITTALS

1. THE FOLLOWING CONTRACTOR SUBMITTALS ARE REQUIRED FOR REVIEW AND APPROVAL BY THE OWNER AND ENGINEER.
  - a. A TREATMENT PLAN FOR INVASIVE SPECIES LOCATED WITHIN THE PROJECT FOOTPRINT SHALL BE SUBMITTED BY THE CONTRACTOR TO THE PROJECT ENGINEER, BOROUGH AND OWNER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK. NO TREATMENT SHALL COMMENCE WITHOUT THE WRITTEN APPROVAL OF THE OWNER.
  - b. THE PROPOSED CONSTRUCTION SEQUENCE SHALL BE SUBMITTED PRIOR TO THE START OF ANY WORK.
  - c. THE CONTRACTOR SHALL PROVIDE UTILITY IDENTIFICATION RESULTS AND DETAILED PLAN FOR:
    - TEMPORARY SUPPORT OF UTILITIES DURING CONSTRUCTION
    - PROTECTION OF UTILITIES FROM CONSTRUCTION TRAFFIC
  - d. THE CONTRACTOR SHALL PERFORM GRADATION TESTS USING SIEVE ANALYSIS FOR ALL IMPORTED MATERIALS AND SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. A MINIMUM OF ONE TEST PER 300 CY OF FILL SHALL BE PERFORMED.
  - e. THE CONTRACTOR SHALL PERFORM FIELD COMPACTION TESTS AS NOTED AND PROVIDE RESULTS TO OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
2. THE CONTRACTOR SHALL IDENTIFY, AT THE START OF WORK, ALL PROPOSED SOURCES OF IMPORTED MATERIALS. MATERIAL SOURCES ARE SUBJECT TO THE APPROVAL OF THE ENGINEER AND OWNER.
3. PROPOSED PLANTING SCHEDULE. A PLANTING SCHEDULE SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF PLANTING.
4. THE SILLS SHALL BE PLACED TO THE LOCATION AND ALIGNMENT AS SHOWN OF THE DRAWINGS. THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING SHOWING THE LOCATION OF THE SILL CRESTS (BOTH SIDES) AND DEFINING THE SILL ALIGNMENT IN STATE PLANE COORDINATES OR LATITUDE/LONGITUDE. THE SHOP DRAWING, AS APPROVED BY THE ENGINEER, SHALL BE UTILIZED BY THE CONTRACTOR DURING THE SILL CONSTRUCTION.
5. THE CONTRACTOR SHALL PROVIDE DETAILS FOR IMPLEMENTATION OF THE 1-YEAR MAINTENANCE PROGRAM (INCLUDING CONFORMANCE WITH THE PROJECT MONITORING AND MAINTENANCE PROGRAM). THE QUANTITATIVE CONDITIONS FOR MAINTENANCE AND MAINTENANCE DETAILS ARE PRESENTED IN THE PERMIT DOCUMENTS, WHICH ARE INCORPORATED AS PART OF THE PROJECT CONSTRUCTION CONTRACT REQUIREMENTS.
6. THE CONTRACTOR SHALL PERFORM (USING A LICENSED SURVEYOR) AND PROVIDE AN AS-BUILT CONSTRUCTION PLAN AT THE END OF THE CONSTRUCTION.
7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER TO OBSERVE AND INSPECT THE SILL STONE PLACEMENT TOWARDS THE END OF SILL CONSTRUCTION.

PHRAGMITES ERADICATION

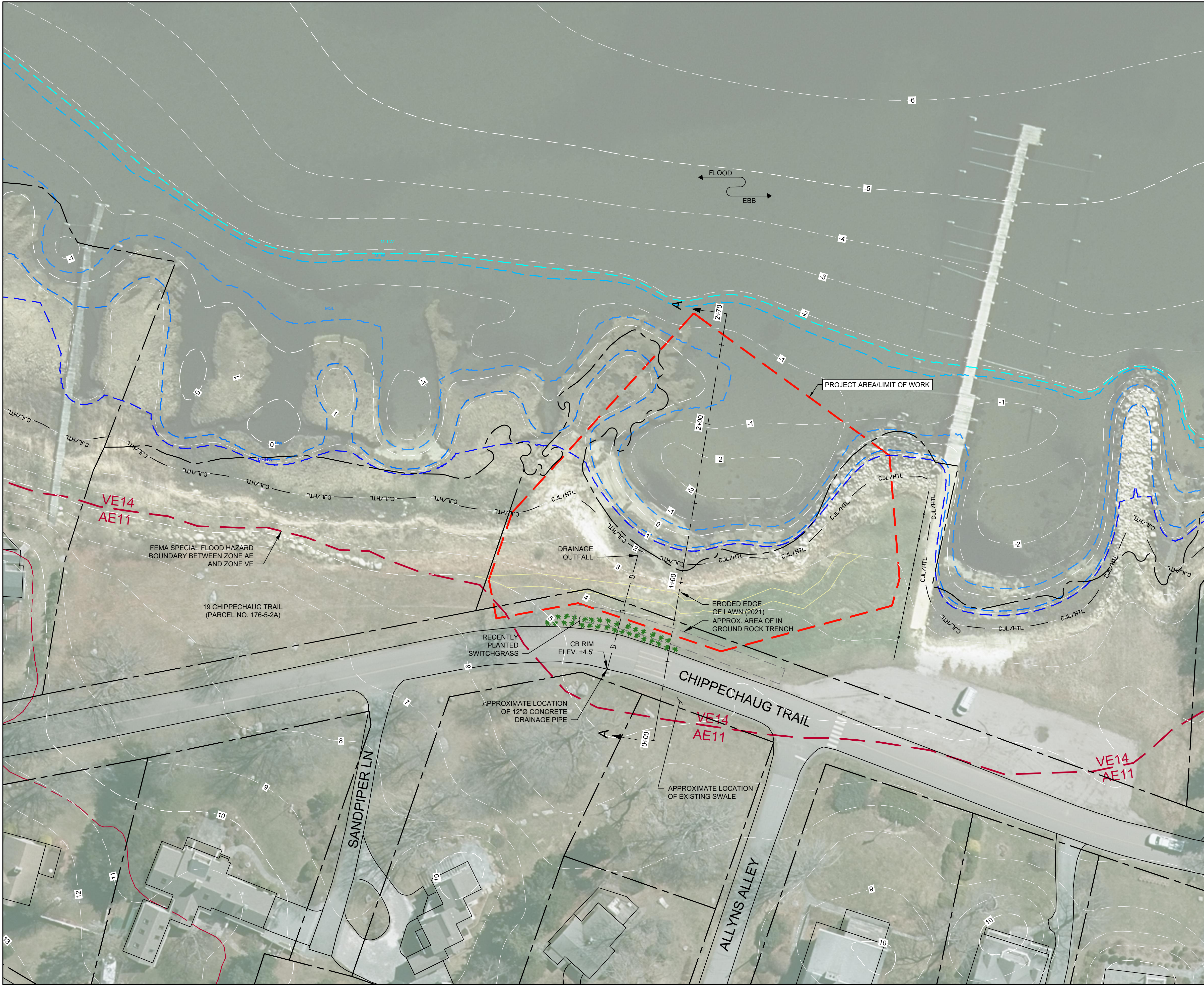
ALTHOUGH IT IS ILLEGAL TO TRANSPORT MATERIAL OF ANY SPECIES LISTED UNDER CONNECTICUT GENERAL STATUTE SEC. 22A-381D AS AN INVASIVE PLANT, THE STATUTE INCLUDES AN EXCEPTION FOR THE MOVING OF PLANT MATERIAL FOR THE PURPOSE OF ERADICATION. THE BEST TIME TO DISPOSE OF INVASIVE PLANTS IS BEFORE PLANTS FLOWER AND PRODUCE SEED. CARE WILL BE TAKEN WHEN DISPOSING OF RHIZOMES (ROOT FRAGMENTS) AND OTHER PLANT PARTS WILL BE DISPOSED AND NOT ALLOW THE MATERIAL TO CONTINUE TO GROW AND SPREAD. COMPOSTING IS NOT RECOMMENDED, AND PLANTS SHOULD NOT BE PLACED IN BRUSH PILES. INCINERATION OF MATERIAL MAY BE A VIABLE OPTION IF IT CAN BE BAGGED AND TRANSPORTED SECURELY TO AN INCINERATOR. AN APPROPRIATE METHOD OF DISPOSAL SHOULD BE EVALUATED.

PERMIT PLAN  
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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
CONSTRUCTION NOTES & SEQUENCE			
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR:	JRC	REVIEWED BY:	SLL
DESIGNED BY:	DCS	DRAWN BY:	BW/EDM
DATE:	OCTOBER, 2025	PROJECT NO.	01.0175256.10
		CHECKED BY:	MT
		SCALE:	AS NOTED
		REVISION NO.	
		FIGURE <b>G0.03</b>	

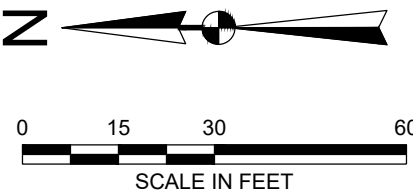


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- NOTES:
- EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
  - ELEVATIONS ARE IN FEET NAVD88.
  - AERIAL PHOTO OBTAINED FROM CTECO.UCONN.EDU, 2019 ORTHOPHOTOGRAPHY
  - TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER
  - HABITAT SURVEYED BY GZA GEOENVIRONMENTAL INC. ON AUGUST 17, 2021.
  - FEMA FLOOD HAZARD BOUNDARY BASED ON FLOOD INSURANCE RATE MAP FOR NEW LONDON COUNTY, CT, MAP NUMBER 09011C0528/ REVISED ON AUGUST 5, 2021. AREA EAST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE VE (EL. 14'), AREA WEST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE AE (EL. 11').
  - PROPERTY BOUNDARIES OBTAINED FROM CT DEEP GIS OPEN DATA WEBSITE.
  - SWITCHGRASS PLANTED ALONG EASTERN SIDE OF CHIPPECHAUG TRAIL IN FALL 2021. PLANTING LOCATIONS ARE APPROXIMATE ONLY AND BASED ON EMAIL/PHONE COMMUNICATIONS WITH MS. KRISTIN FOSTER.

- LEGEND
- TOPOGRAPHIC SURFACE CONTOUR MINOR (1' INTERVAL)
  - TOPOGRAPHIC SURFACE CONTOUR MAJOR (5' INTERVAL)
  - PROPERTY BOUNDARY
  - FEMA FLOOD HAZARD BOUNDARY
  - C.J.L./H.T.L. COASTAL JURISDICTION LIMIT (EL. 2.0 NAVD88) / H.T.L.
  - PROJECT AREA/LIMIT OF WORK
  - MHHW EL. 1.1 MEAN HIGH HIGH WATER
  - MHW EL. 0.8 MEAN HIGH WATER
  - MSL EL. -0.4 MEAN SEA LEVEL
  - MLW EL. -1.7 MEAN LOW WATER
  - MLLW EL. -1.9 MEAN LOW LOW WATER

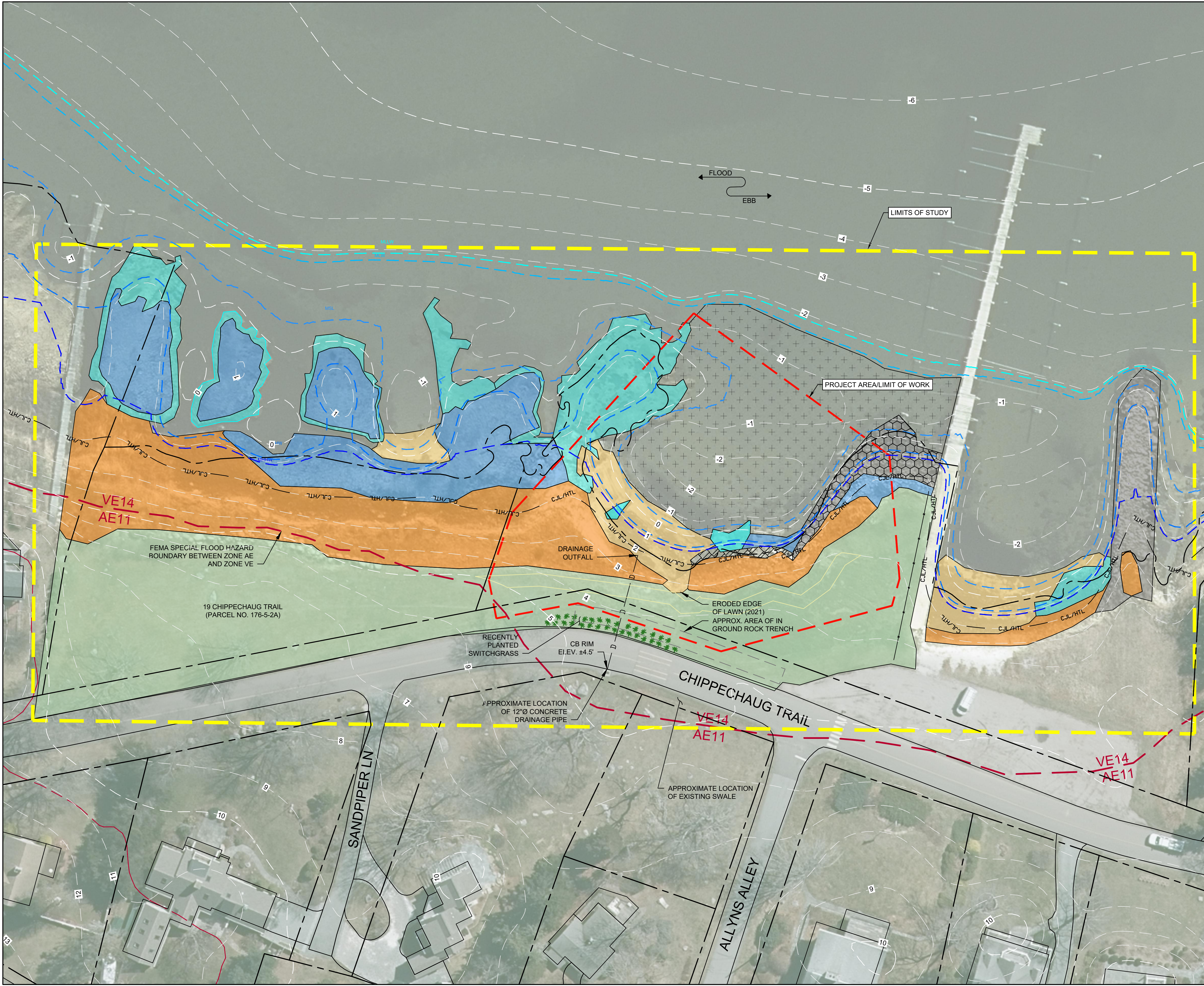


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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
EXISTING CONDITIONS PLAN			
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE V1.01
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	



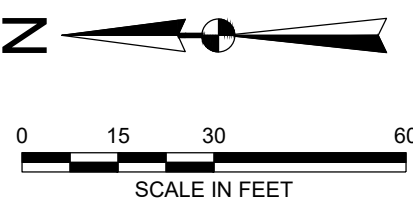
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- NOTES:
1. EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
  2. ELEVATIONS ARE IN FEET NAVD88.
  3. AERIAL PHOTO OBTAINED FROM CTECO.UCONN.EDU, 2019 ORTHOPHOTOGRAPHY
  4. TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER
  5. HABITAT SURVEYED BY GZA GEOENVIRONMENTAL INC. ON AUGUST 17, 2021.
  6. FEMA FLOOD HAZARD BOUNDARY BASED ON FLOOD INSURANCE RATE MAP FOR NEW LONDON COUNTY, CT, MAP NUMBER 09011C0528J REVISED ON AUGUST 5, 2021. AREA EAST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE VE (EL. 14'), AREA WEST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE AE (EL. 11').
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  9. EXISTING DUNE VEGETATION CONSISTS OF PHRAGMITES.

LEGEND

- |     |   |
|-----|---|
| 1   | TOPOGRAPHIC SURFACE CONTOUR MINOR (1' INTERVAL)           |
| 5   | TOPOGRAPHIC SURFACE CONTOUR MAJOR (5' INTERVAL)           |
| --- | PROPERTY BOUNDARY   |
| --- | FEMA FLOOD HAZARD BOUNDARY                                |
| --- | CJL/HTL COASTAL JURISDICTION LIMIT (EL. 2.0 NAVD88) / HTL |
| --- | PROJECT AREA/LIMIT OF WORK                                |
| --- | MHW EL. 1.1 MEAN HIGH HIGH WATER                          |
| --- | MHW EL. 0.8 MEAN HIGH WATER                               |
| --- | MSL EL. -0.4 MEAN SEA LEVEL                               |
| --- | MLW EL. -1.7 MEAN LOW WATER                               |
| --- | MLLW EL. -1.9 MEAN LOW LOW WATER                          |
| --- | EX. LOW MARSH   |
| --- | EX. HIGH MARSH  |
| --- | EX. BEACH   |
| --- | EX. VEGETATED DUNE  |
| --- | EX. ROCK  |
| --- | EX. LAWN  |
| --- | EX. SANDY INTERTIDAL                                      |
| --- | EX. ROCKY INTERTIDAL                                      |
| --- | EX. STONE REVETMENT                                       |



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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
EXISTING HABITATS			
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE V1.02
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	

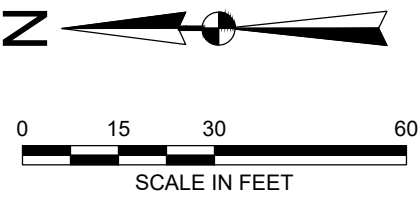


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- NOTES:
- EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
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  - HISTORICAL SHORELINES SHOWN IN THIS DRAWING SET WERE TRACED BY GZA BASED ON HISTORICAL ORTHOIMAGES AVAILABLE ON THE CONNECTICUT STATE GIS WEBSITE AND SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED

- LEGEND
- 1 TOPOGRAPHIC SURFACE CONTOUR MINOR (1' INTERVAL)
  - 5 TOPOGRAPHIC SURFACE CONTOUR MAJOR (5' INTERVAL)
  - PROPERTY BOUNDARY
  - 1934 SHORELINE
  - 1951 SHORELINE
  - 1970 SHORELINE
  - 2019 SHORELINE



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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
HISTORICAL SHORELINES			
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>V1.03</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	



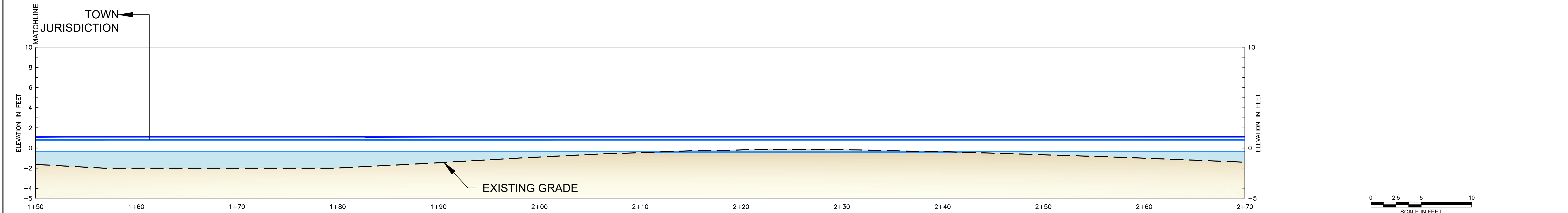
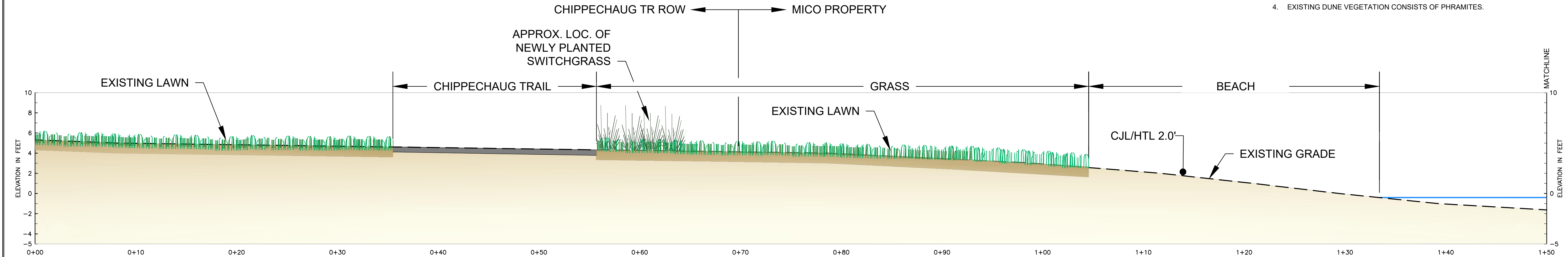
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LEGEND

- MHHW (EL. 1.1')
- MHW (EL. 0.8)
- MSL (EL. -0.4)
- MLW (EL. -1.7)
- MLLW (EL. -1.9)


NOTES:

- EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
- ELEVATIONS ARE IN FEET NAVD88.
- TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER
- EXISTING DUNE VEGETATION CONSISTS OF PHRAMITES.



EXISTING CONDITIONS PROFILE (A - A')

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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
EXISTING CONDITIONS PROFILES			
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	DESIGNED BY: DCS	REVIEWED BY: SLL	CHECKED BY: MT
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			FIGURE V2.01



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STONE SILL SUMMARY TABLE						
SEGMENT ID	SILL ID	CREST ELEV. (FT, NAVD88)	CREST WIDTH (FT)	BOTTOM WIDTH (FT)	SIDE SLOPE (H:V)	DESCRIPTION
1	#1	3.0'	3.0	18.0	1.5:1	ROCK WETLAND SILL
1	#2	3.0'	3.0	18.0	1.5:1	ROCK WETLAND SILL
1	#3	3.0'	3.0	15.0	1.5:1	ROCK WETLAND SILL
2	DEFLECTION BOULDERS (DB)	N/A	N/A	N/A	N/A	2 TO 4' BOULDERS (RANDOMLY PLACED)
3	DEFLECTION BOULDERS (DB)	N/A	N/A	N/A	N/A	2 TO 4' BOULDERS (RANDOMLY PLACED)

LIST OF PLANTINGS BY RESOURCE AREA AND ELEVATION						
BOTANICAL NAME	COMMON NAME	TYPE	SIZE	SPACING " OC	HIGH MARSH EL. 1.0-2.0+	UPLAND EL. 3.0-4.0+
GRASSES AND FORBS						
<i>Panicum virgatum</i>	Switchgrass	PLUG	6"	36		20
<i>Distichlis spicata</i>	Spike Grass	PLUG	6"	14	115	

- NOTES:
- EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
  - ELEVATIONS ARE IN FEET NAVD88.
  - AERIAL PHOTO OBTAINED FROM CTECO.UCONN.EDU, 2019 ORTHOPHOTOGRAPHY
  - TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER
  - HABITAT SURVEYED BY GZA GEOENVIRONMENTAL INC. ON AUGUST 17, 2021.
  - FEMA FLOOD HAZARD BOUNDARY BASED ON FLOOD INSURANCE RATE MAP FOR NEW LONDON COUNTY, CT, MAP NUMBER 08011C0528J REVISED ON AUGUST 5, 2021. AREA EAST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE VE (EL. 14'), AREA WEST OF FLOOD HAZARD BOUNDARY LINE IS WITHIN SPECIAL FLOOD HAZARD AREA ZONE AE (EL. 11').
  - PROPERTY BOUNDARIES OBTAINED FROM CT DEEP GIS OPEN DATA WEBSITE.
  - SWITCHGRASS PLANTED ALONG EASTERN SIDE OF CHIPPECHAUG TRAIL IN FALL 2021. PLANTING LOCATIONS ARE APPROXIMATE ONLY AND BASED ON EMAIL/PHONE COMMUNICATIONS WITH MS. KRISTIN FOSTER.
  - EXISTING DUNE VEGETATION CONSISTS OF PHRAGMITES.

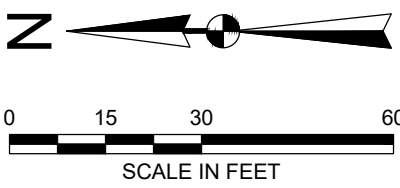
LEGEND

1	TOPOGRAPHIC SURFACE CONTOUR MINOR (1' INTERVAL)
5	TOPOGRAPHIC SURFACE CONTOUR MAJOR (5' INTERVAL)

- PROPERTY BOUNDARY
- FEMA FLOOD HAZARD BOUNDARY
- CJL/HTL COASTAL JURISDICTION LIMIT (EL. 2.0 NAVD88) / HTL
- PROJECT AREA/LIMIT OF WORK

- MHHW EL. 1.1 MEAN HIGH HIGH WATER
- MHW EL. 0.8 MEAN HIGH WATER
- MSL EL. -0.4 MEAN SEA LEVEL
- MLW EL. -1.7 MEAN LOW WATER
- MLLW EL. -1.9 MEAN LOW LOW WATER

- EX. LOW MARSH
- EX. HIGH MARSH
- EX. BEACH
- EX. VEGETATED DUNE
- EX. ROCK
- EX. LAWN
- EX. SANDY INTERTIDAL
- EX. ROCKY INTERTIDAL
- EX. STONE REVETMENT
- PR. STONE SILL
- PR. PHRAGMITES MOWING
- PR. HIGH MARSH
- PR. COIR LOG




PERMIT PLAN  
NOT FOR CONSTRUCTION

NO.	ISSUE/DESCRIPTION	BY	DATE

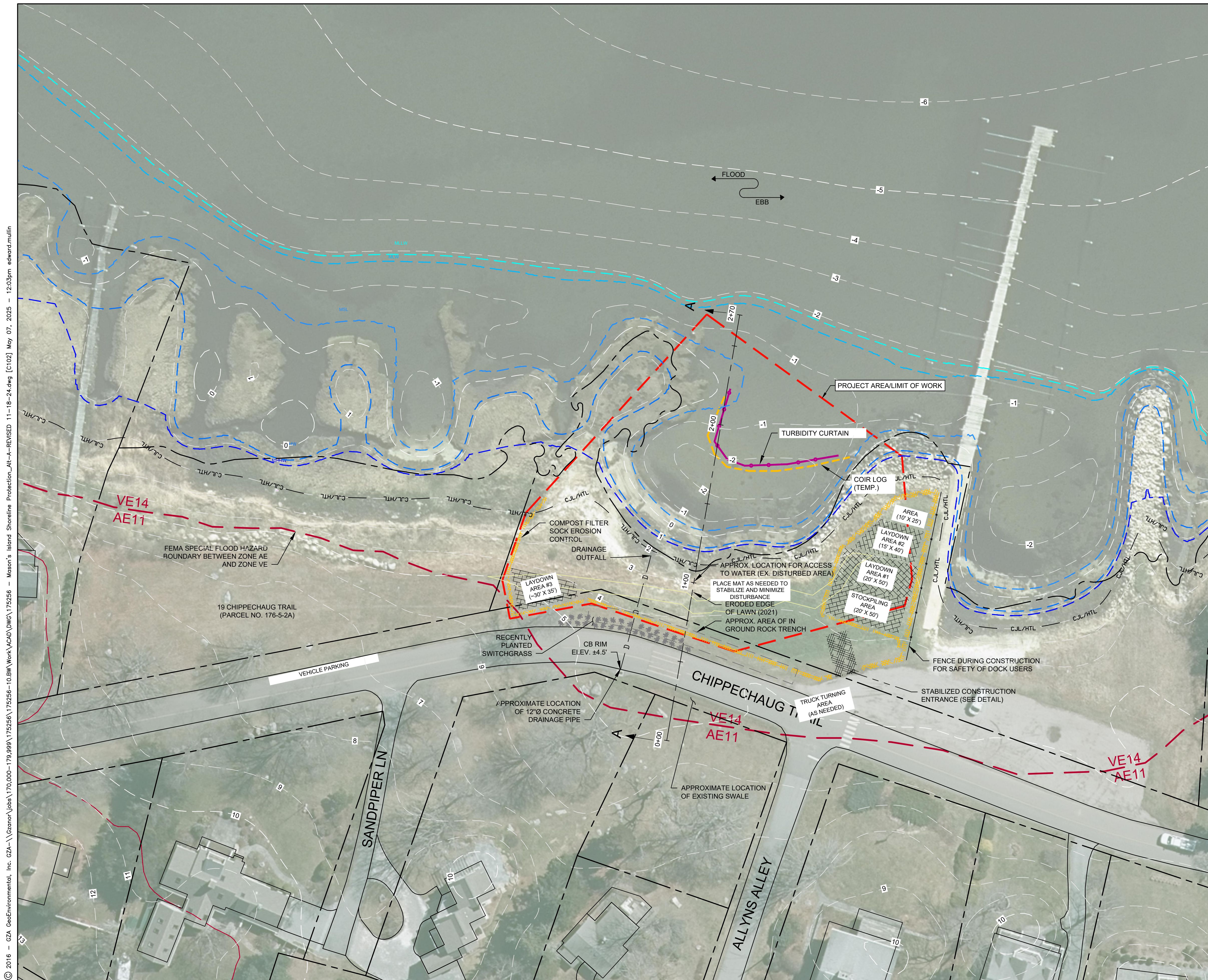
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MASON'S ISLAND FIRE DISTRICT  
SHORELINE PROTECTION PROJECT

PROPOSED CONDITIONS PLAN

PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: BW	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>C1.01</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	

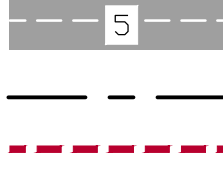






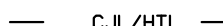








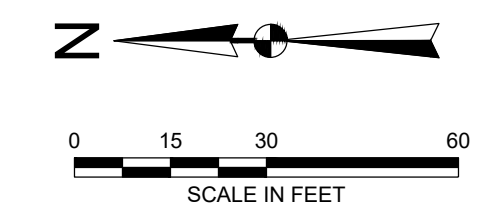
NOTES:

1. EXISTING TOPOGRAPHIC CONTOURS WERE DEVELOPED BASED ON HURRICANE SANDY REGION - TOPOBATHYMETRIC ELEVATION MODEL OF NEW ENGLAND.
2. ELEVATIONS ARE IN FEET NAVD88.
3. AERIAL PHOTO OBTAINED FROM CTECO.UCONN.EDU, 2019 ORTHOPHOTOGRAPHY
4. TIDAL ELEVATIONS BASED ON TIDAL DATUM 8460751 WEST MYSTIC RIVER
5. HABITAT SURVEYED BY GZA GEOENVIRONMENTAL INC. ON AUGUST 17, 2021.
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9. EXISTING DUNE VEGETATION CONSISTS OF PHRAGMITES.

LEGEND



-  TOPOGRAPHIC SURFACE CONTOUR MINOR (1' INTERVAL)
-  TOPOGRAPHIC SURFACE CONTOUR MAJOR (5' INTERVAL)
-  PROPERTY BOUNDARY
-  FEMA FLOOD HAZARD BOUNDARY
-  COASTAL JURISDICTION LIMIT (EL. 2.0 NAVD88) / HTL
-  PROJECT AREA/LIMIT OF WORK
-  MEAN HIGH HIGH WATER
-  MEAN HIGH WATER
-  MEAN SEA LEVEL
-  MEAN LOW WATER
-  MEAN LOW LOW WATER




**PERMIT PLAN  
NOT FOR CONSTRUCTION**

NO.	ISSUE/DESCRIPTION	BY	DATE

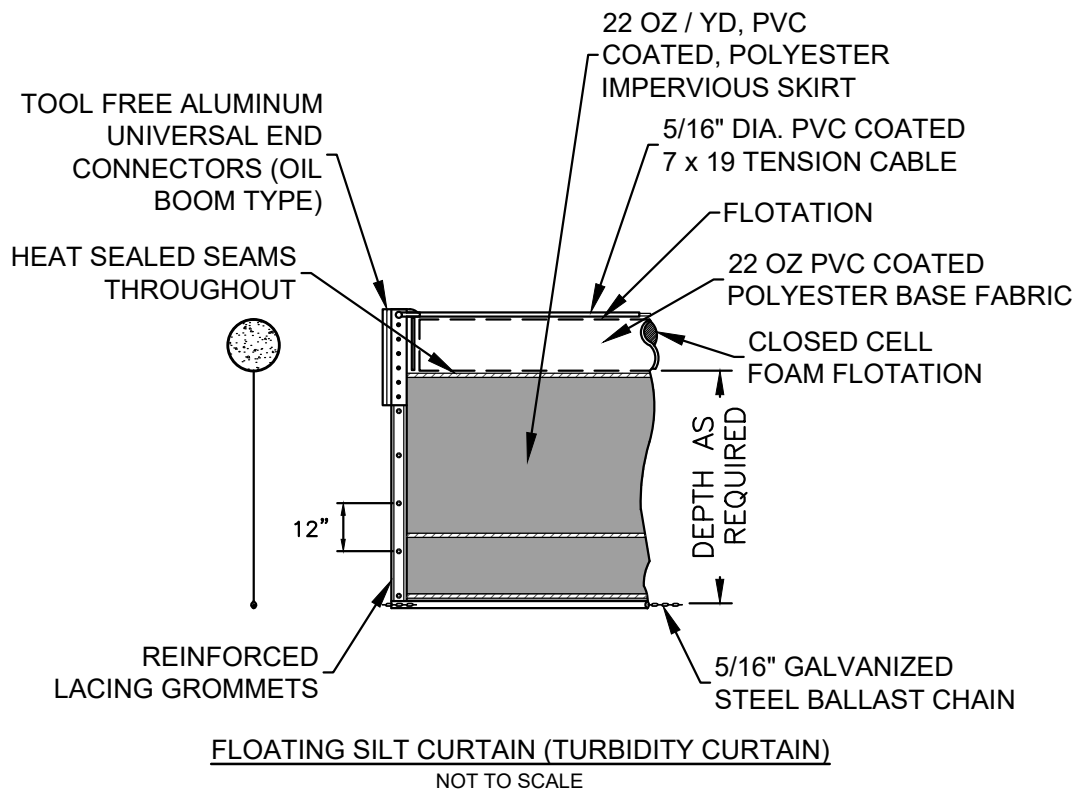
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MASON'S ISLAND FIRE DISTRICT  
SHORELINE PROTECTION PROJECT

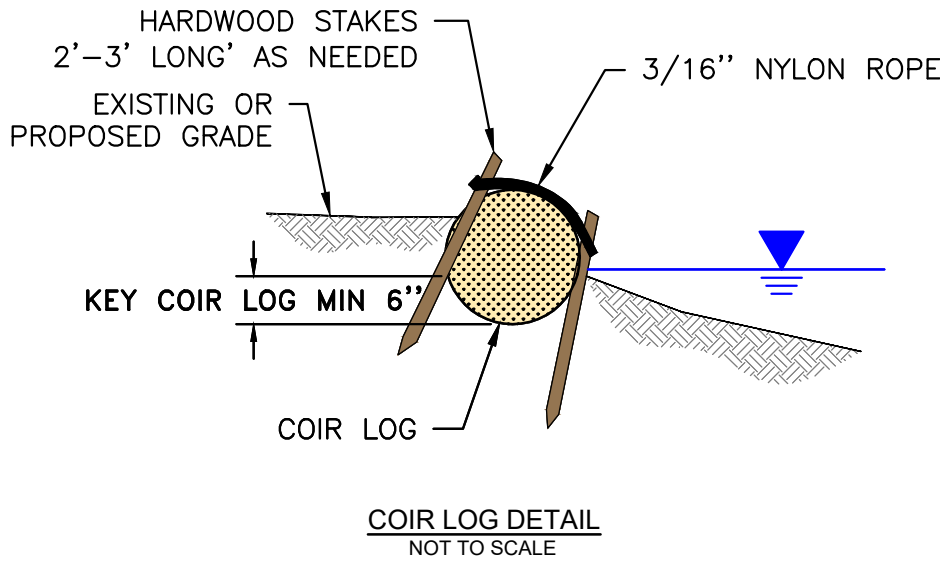
## STAGING ACCESS AND EROSION CONTROL PLAN

PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists <a href="http://www.gza.com">www.gza.com</a>		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC DESIGNED BY: DCS DATE: OCTOBER, 2025	REVIEWED BY: SLL DRAWN BY: BW/DEM PROJECT NO. 01.0175256 10	CHECKED BY: MT SCALE: AS NOTED REVISION NO.	FIGURE <div style="font-size: 2em; font-weight: bold;">C1.02</div>

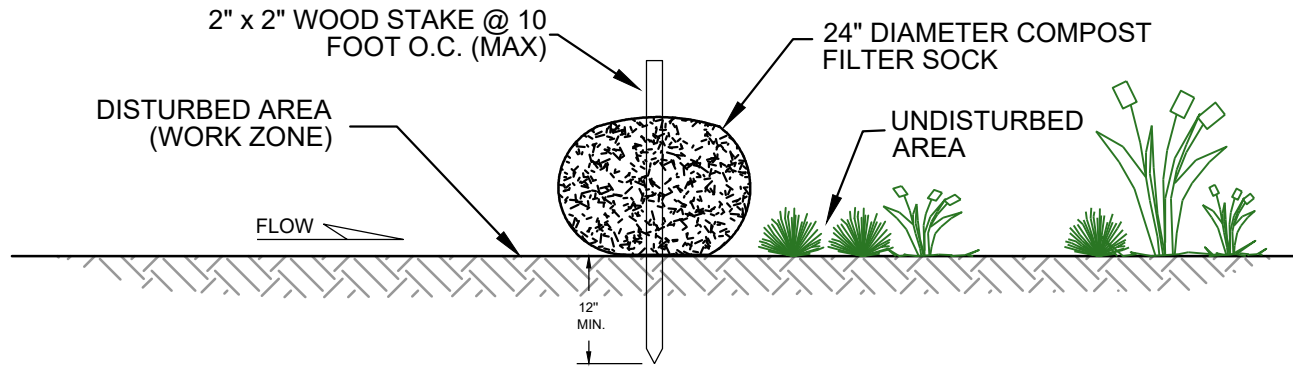




NOTE: DEBRIS BOOM SHALL BE PROVIDED ON THE SEAWARD SIDE OF CURTAIN FOR ALL LIVING SHORELINE WATER WORK.



NOTE: NEED TO INCREASE AND ADJUST ROPE AND STAKE LENGTH FOR A STACKED CONFIGURATION.



TEMPORARY SEDIMENTATION & EROSION CONTROL BARRIER COMPOST FILTER SOCK/TUBE

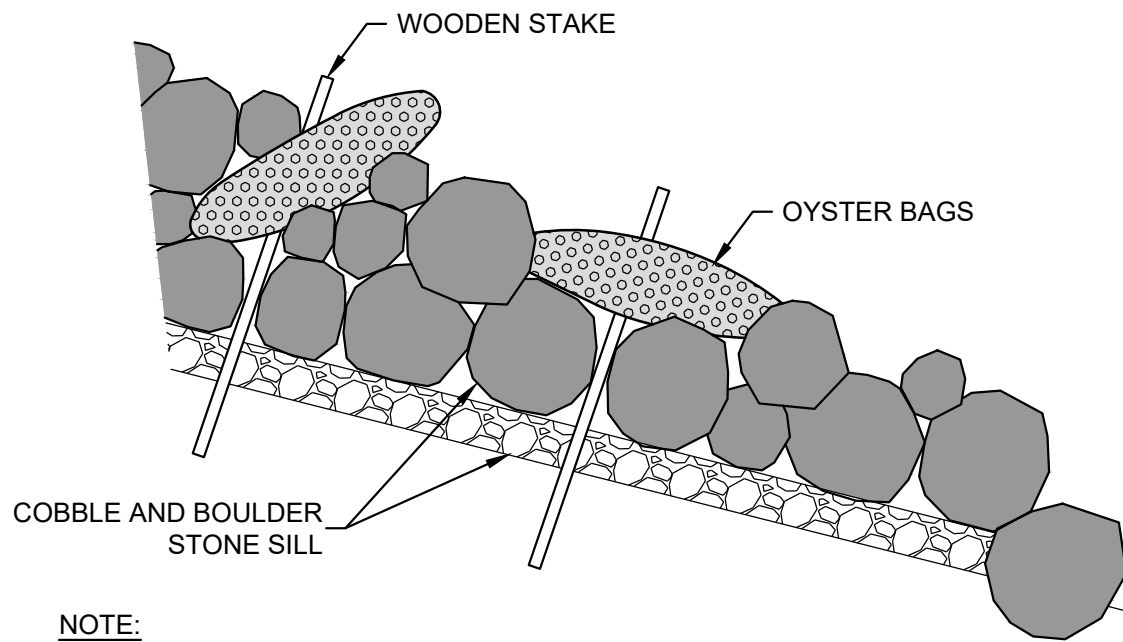
NOTES:

1. FILTER SOCK SHALL BE MADE OF 100% ORGANIC HESSIAN FABRIC (BURLAP) OR BIO-DEGRADABLE 5 MIL HDPE (NO LONGER THAN 6 MONTHS). REPLACEMENT NEEDED AFTER 6 MONTHS.
2. ORGANIC MATTER CONTENT SHALL BE BETWEEN 20 -100% (DRY WEIGHT BASIS) AS DETERMINED BY ASTM D2974 (METHOD A) STANDARD TEST METHODS FOR MOISTURE, ASH, AND ORGANIC MATTER OF PEAT AND OTHER ORGANIC SOILS.
3. MOISTURE CONTENT SHALL BE <150% BY DRY WEIGHT (<60% BY WET WEIGHT) AS MEASURED BY ASTM D2216 STANDARD TEST METHOD FOR LABORATORY DETERMINATION OF WATER CONTE
4. PARTICLE SIZE IS MEASURED BY SIEVING SHALL BE AS FOLLOWS:

SIEVE SIZE	% PASSING
75MM	100%
19MM	70-100%
#4	30- 75%
#20	20-40%

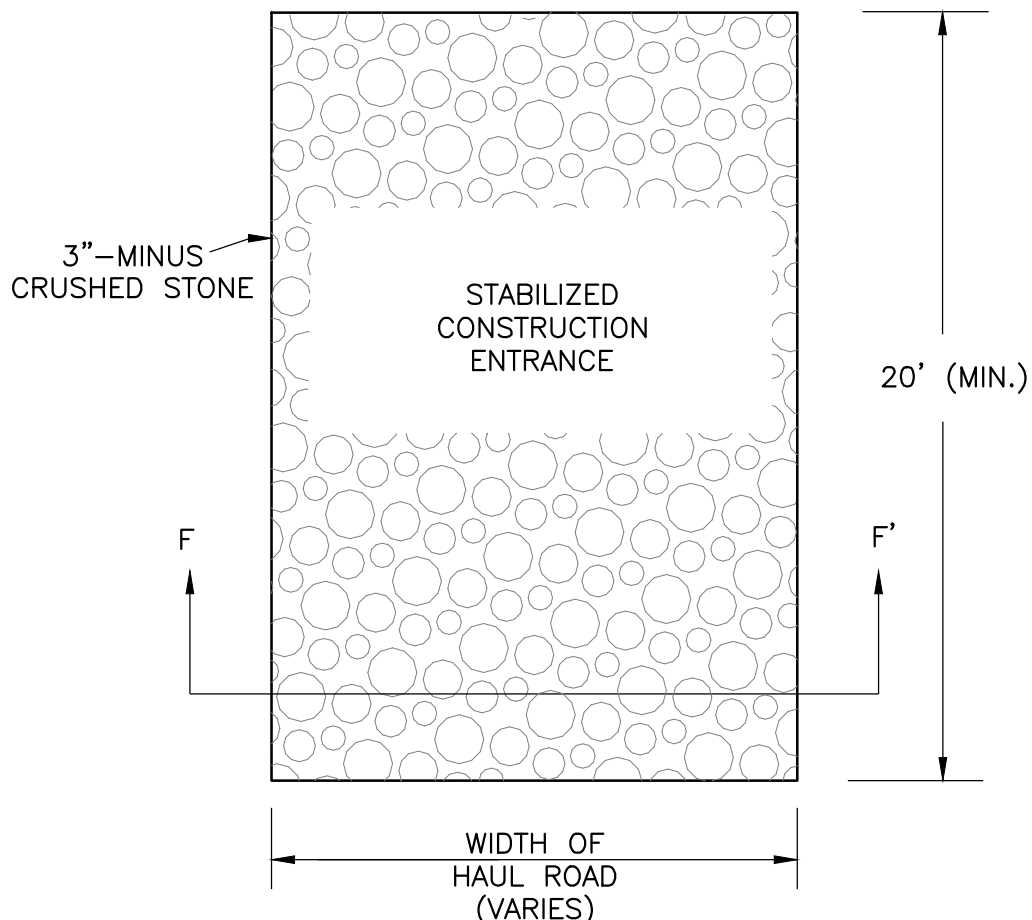
NO PARTICLE MAY BE LONGER THAN 150MM

5. SOLUBLE SALTS SHALL BE <5.0 MMHOS/CM (DS/M).
6. THE PH SHALL BE BETWEEN 5.5 AND 8.0.
7. FILTER SOCKS MUST BE PLACED PARALLEL TO CONTOUR WITH BOTH ENDS OF THE SOCK EXTENDED UPSLOPE AT A 45 DEGREE ANGLE TO THE REST OF THE SOCK TO PREVENT END-AROUNDS.
8. THE CONTRACTOR SHALL MAINTAIN THE FILTER TUBES IN A FUNCTIONAL CONDITION AT ALL TIMES, INCLUDING INSPECTIONS AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.
9. FOR REMOVAL, THE CONTRACTOR SHALL RAKE OUT SO THAT FILTER MATERIAL IS NO GREATER THAN 3" IN DEPTH ON SOIL SUBSTRATE.

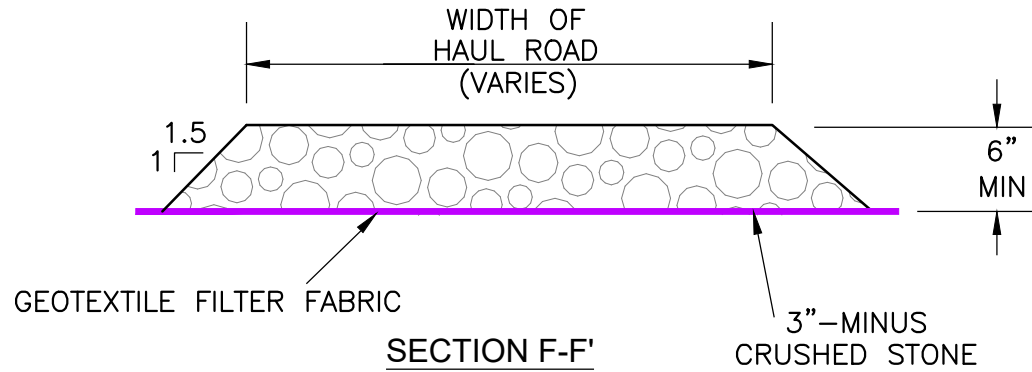


NOTE:  
OYSTER BAGS SHALL BE FIELD-PLACED INTERMITTENTLY AROUND THE ROCK SILLS. EACH BAG SHALL BE SECURELY ANCHORED TO THE ROCK SILLS USING WOODEN STAKES TO ENSURE STABILITY AND PREVENT DISPLACEMENT.

OYSTER BAG DETAIL  
NOT TO SCALE



PLAN VIEW




STABILIZED CONSTRUCTION ENTRANCE DETAIL

NOTE: REMOVE AT END OF PROJECT AND RESTORE AREA.

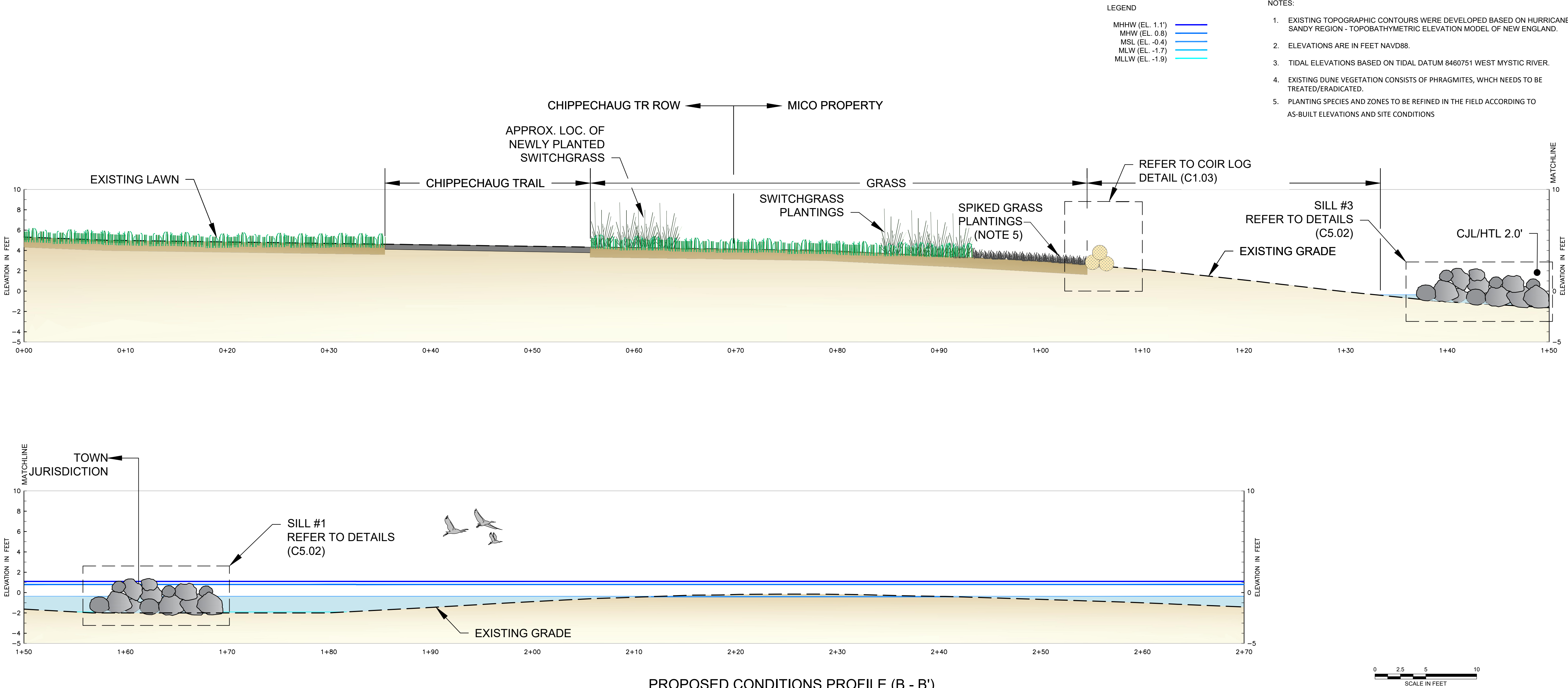


PERMIT PLAN  
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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
SEDIMENTATION AND EROSION CONTROL DETAILS & NOTES			
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>C1.03</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	



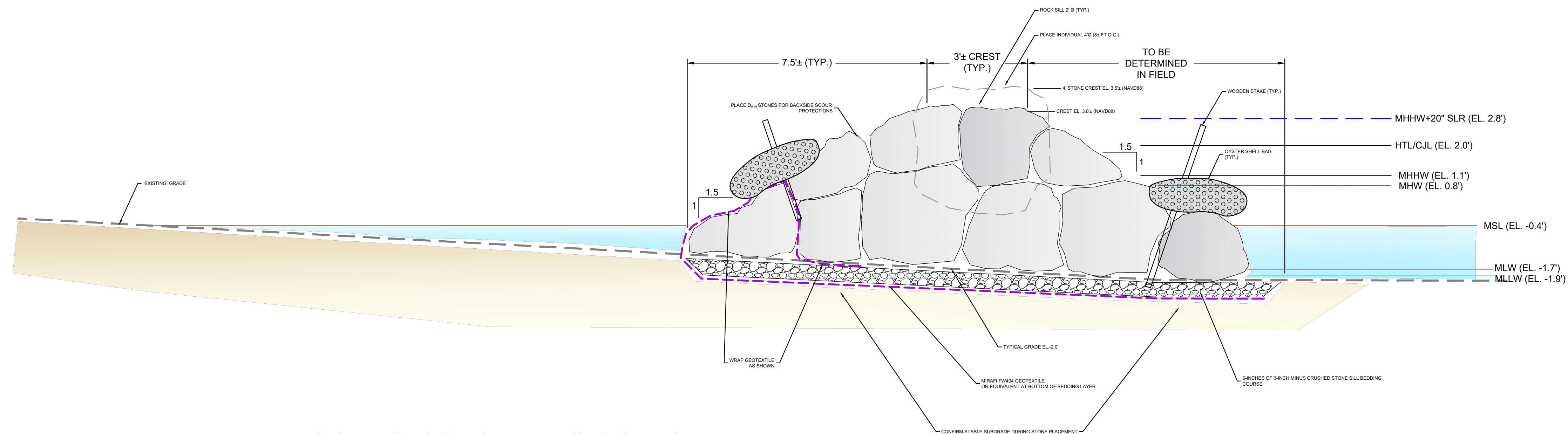
© 2016 - GZA GeoEnvironmental, Inc. CZA-\\Garoner\jobs\170,000-179,999\175256-10.BW\Work\CAD\DWG\175256-11-18-24.dwg [C301] May 07, 2025 - 11:54am edward.mullin



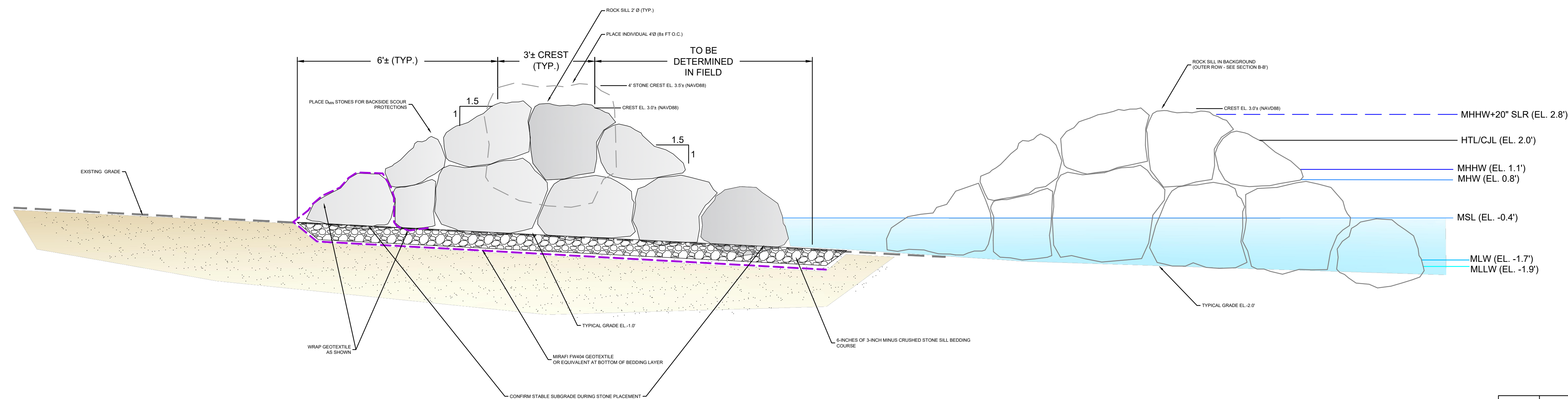
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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT			
PROPOSED CONDITIONS PROFILES			
PREPARED BY: <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR: JRC	REVIEWED BY: SLL	CHECKED BY: MT	FIGURE <b>C3.01</b>
DESIGNED BY: DCS	DRAWN BY: BW/EDM	SCALE: AS NOTED	
DATE: OCTOBER, 2025	PROJECT NO. 01.0175256.10	REVISION NO.	





SEGMENT #1 - STONE SILL DETAIL (SECTION B-B')  
SCALE: 1" = 2'




SEGMENT #1 - STONE SILL DETAIL (SECTION C-C')  
SCALE: 1" = 2'

NOTES:

1. WETLAND SILL TO CONSIST OF ROUGH, ANGULAR GRANITE QUARRYSTONE ARMOR STONE.
2. SILL SHALL BE CONSTRUCTED TO THE DIMENSIONS AND ELEVATIONS INDICATED ON THE DETAIL. CERTAIN DIMENSIONS TO BE FIELD-CONFIRMED.
3. STONES SHALL RANDOMLY BE DISTRIBUTED AND CLOSELY PLACED TO 1) MAXIMIZE STONE TO STONE POINT CONTACT; 2) CREATE A CORE USING PRIMARILY  $D_{MIN}$  STONE; 3)  $D_{MAX}$  TOE STONES AT SEAWARD SIDE; 4) USING  $D_{MIN}$  STONE TO FILL ANNULAR SPACES; AND 5) HAVE EXTERIOR ARMOR LAYER OF  $D_{MAX}$  AND  $D_{50}$  STONE. OYSTER SHELL BAG ST TO BE FIELD PLACED. INSTALL 6 OYSTER BAGS FOR EACH STONE SILL.
4. NOMINAL DIMENSIONS:  $D_{50}$  2 FEET;  $D_{MAX}$  4 FEET; AND  $D_{MIN}$  1.8 FEET. ALL DIMENSIONS APPROXIMATE. REFER TO MATERIAL SPECIFICATIONS FOR MORE INFORMATION.
5. LARGER STONES UP TO 4 FEET IN DIAMETER MAY BE USED AS ARMOR STONES, WHICH NEED TO HAND-PLACED AT APPROXIMATELY 8 FEET O.C. AND NEAR THE TOE OF THE SILL, TO IMPROVE STABILITY.
6. CONNECTICUT SEA LEVEL RISE OF 20 INCHES FOR YEAR 2050 SHOWN FOR REFERENCE.

**PERMIT PLAN  
NOT FOR CONSTRUCTION**

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MASON'S ISLAND FIRE DISTRICT SHORELINE PROTECTION PROJECT				
PROPOSED MARSH SILL DETAILS				
PREPARED BY:  <b>GZA</b> GeoEnvironmental, Inc. Engineers and Scientists www.gza.com			PREPARED FOR: MASON'S ISLAND FIRE DISTRICT P.O. BOX 373 MYSTIC, CT 06355	
PROJ MGR:	JRC	REVIEWED BY:	SLL	FIGURE  C5.01
DESIGNED BY:	DCS	DRAWN BY:	BW/EDM	
DATE:	OCTOBER, 2025	PROJECT NO.	01.0175256.10	
		CHECKED BY:	MT	
		SCALE:	AS NOTED	
		REVISION NO.		