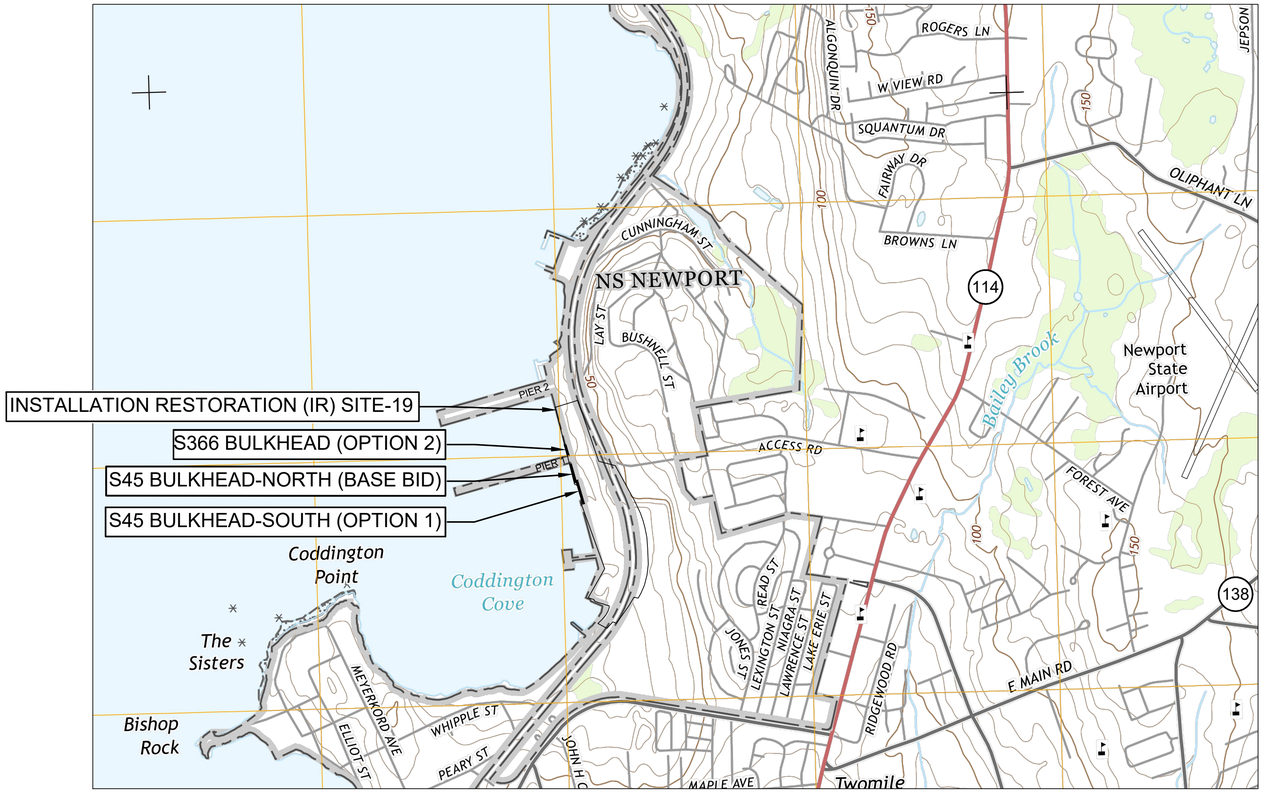
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS (INSTALLATION RESTORATION SITE)

NAVAL STATION, NEWPORT, RHODE ISLAND

WORK ORDER NO. 1569253



VICINITY MAP

NOT TO SCALE

INDEX OF DRAWINGS				
SHEET NO.	NAVFAC NO.	NAVSTA NO.	SHEET ID	SHEET DETAIL
1	12781696	44029-407	G-001	TITLE SHEET & SHEET INDEX
2	12781697	44030-407	G-002	CONTRACTOR'S HAUL ROUTE
3	12781698	44031-407	G-101	GENERAL NOTES
4	12781699	44032-407	G-201	GENERAL NOTES
5	12781700	44033-407	G-301	GENERAL NOTES
6	12781701	44034-407	G-401	DRAINAGE AND EROSION CONTROL NOTES & LEGEND
7	12781702	44035-407	V-100	EXISTING CONDITIONS (S-366)
8	12781703	44036-407	V-101	EXISTING CONDITIONS (S-45)
9	12781703	44036-407	V-102	PROJECT BENCHMARK
10	12781704	44037-407	CD-100	S45 DEMOLITION PLAN
11	12781705	44038-407	CD-101	S45 BULKHEAD ROCK REMOVAL SECTIONS
12	12781706	44039-407	CD-102	S45 AND S366 BULKHEAD ROCK REMOVAL SECTIONS
13	12781707	44040-407	CD-103	S366 DEMOLITION PLAN
14	12781707	44040-407	CD-104	DREDGING PLAN
15	12781708	44041-407	CD-105	STAGING AND DREDGE/DEBRIS TESTING AND DEWATERING AREA
16	12781709	44042-407	B-101	SOIL BORINGS - S45 BULKHEAD (REFERENCE SHEET)
17	12781710	44043-407	B-102	SOIL BORINGS - S366 BULKHEAD (REFERENCE SHEET)
18	12781711	44044-407	B-103	SOIL BORINGS - S366 BULKHEAD (REFERENCE SHEET)
19	12781712	44045-407	B-104	SOIL BORINGS - S366 BULKHEAD (REFERENCE SHEET)
20	12781713	44046-407	C-100	OVERALL PLAN & LIMITS OF WORK PLAN
21	12781714	44047-407	C-101	S45 NEW WORK PLAN AND GRADING PLAN
22	12781715	44048-407	C-102	S45 STORM DRAINAGE UTILITIES PLAN
23	12781716	44049-407	C-103	S366 GRADING PLAN AND STORM DRAINAGE UTILITIES PLAN
24	12781717	44050-407	C-104	STORM DRAINAGE UTILITES DETAILS
25	12781718	44051-407	C-105	CIVIL SITE DETAILS
26	12781719	44052-407	C-106	S366 NEW CONCRETE PAVEMENT JOINT LAYOUT PLAN
27	12781720	44053-407	L-101	OVERALL LANDSCAPE PLAN
28	12781721	44054-407	L-501	LANDSCAPE DETAILS
29	12781721	44054-407	L-502	PLANT SCHEDULE
30	12781722	44055-407	CH-101	SOIL EROSION AND SEDIMENT CONTROL PLAN - S366 BULKHEAD
31	12781723	44056-407	CH-102	SOIL EROSION AND SEDIMENT CONTROL PLAN - S45 BULKHEAD
32	12781724	44057-407	CH-103	SOIL EROSION AND SEDIMENT CONTROL DETAILS
33	12781725	44058-407	CH-104	SOIL EROSION AND SEDIMENT CONTROL DETAILS
34	12781726	44059-407	S-101	GENERAL PLAN & ELEVATION (S366)
35	12781727	44060-407	S-102	GENERAL PLAN & ELEVATION (S45-1)
36	12781728	44061-407	S-103	GENERAL PLAN & ELEVATION (S45-2)
37	12781729	44062-407	S-301	TYPICAL SECTION - S45 BULKHEAD
38	12781730	44063-407	S-302	TYPICAL SECTION - S366 BULKHEAD
39	12781731	44064-407	S-501	BULKHEAD DETAILS - S45 BULKHEAD
40	12781732	44065-407	S-502	BULKHEAD DETAILS - S366 BULKHEAD
41	12781733	44066-407	S-503	BULKHEAD DETAILS - DEADMAN TYPES A TO D
42	12781734	44067-407	S-504	BULKHEAD DETAILS - DEADMAN TYPES E TO K
43	12781735	44068-407	S-505	BULKHEAD DETAILS - CONCRETE COPING
44	12781736	44069-407	S-506	BULKHEAD DETAILS - DRAINAGE PIPE PENETRATIONS
45	12781737	44070-407	REF #1	EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD
46	12781738	44071-407	REF #2	EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD
47	12781739	44072-407	REF #3	EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD
48	12781740	44073-407	REF #4	EXISTING BOLLARD PLANS NEAR S366 BULKHEAD

Gerard A. Montani

1 Nov 21

PME BRACH HEAD NEWPORT

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES — DRW DJM CHK PWF

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<COMPONENT NAME>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

TITLE SHEET AND SHEET INDEX

SCALE: NONE

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781696

SHEET 1 OF 48

G-001

DRAWFORM REVISION: 31 JANUARY 2017

BENCHMARK
(SEE SHEET V-102)

PIER 2

BURMA ROAD

S366
(OPTION 2)

PIER 1

S45 NORTH
(BASE BID)

S45 SOUTH
(OPTION 1)

GATE 17

CONTRACTOR
STAGING AREA

CODDINGTON
COVE

HAUL ROUTE

BURMA ROAD

S50 BULKHEAD

T PIER

INSTALLATION RESTORATION (IR)
SITE - 19

Admiralty Drive

HAUL ROUTE

GATE 17 ROAD

ACCESS ROAD

HAUL ROUTE

ROAD 114

Chases Lane

Chases Lane

Harbor Village Drive

ROAD 114

N

APPR	DATE	DESCRIPTION	NAS

NAVFAC

SEAL

Michael Baker
INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

100% DESIGN

SATISFACTORY TO DATE November 2021

DES	—	DRW	DJM	CHK	PWF

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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

CONTRACTOR'S HAUL ROUTE

SCALE:	NONE
EPROJECT NO.:	1569253
CONSTR. CONTR. NO.	
NAVFAC DRAWING NO.	12781697
SHEET	2 OF 48

G-002

DRAWFORM REVISION: 31 JANUARY 2017

BUILDING CODE
ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2018 INTERNATIONAL BUILDING CODE AND ALL LOCAL AMENDMENTS IN EFFECT AT THE TIME OF THE CONTRACT AWARD.

DESIGN CRITERIA
SOIL UNIT WEIGHT g=125 pcf
SOIL UNIT WEIGHT g (UNDER GROUND WATER TABLE) = 61 pcF
BULKHEAD SURCHARGES:
Distributed Live Load = 600 psf (governing load)
Design Vehicle: AASHTO HS25 (90,000 lb) (40,000 lb max axle load)
80 ton crane with max outrigger float load of 120,000 lb (short-term operation)

PERMIT REQUIREMENTS & ENVIRONMENTAL CONTROLS
1. CONTRACTOR SHALL COMPLY WITH THE DEPARTMENT OF THE ARMY GENERAL PERMITS FOR THE STATE OF RHODE ISLAND AND LANDS LOCATED WITHIN THE BOUNDARIES OF THE NARRAGANSETT LAND CLAIM SETTLEMENT AREA, EFFECTIVE MARCH 3, 2017 AND EXPIRES MARCH 3, 2022. THE CONTRACTOR SHALL BE FURNISHED A COPY OF THE RHODE ISLAND COASTAL RESOURCES MANAGEMENT COUNCIL'S CONCURRENCE LETTER, THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT'S (RIDEM) WATER QUALITY CERTIFICATE AND ANY CORRESPONDENCE WITH THE DEPARTMENT OF THE ARMY. THE CONTRACTOR SHALL REVIEW AND COMPLY WITH ALL REGULATORY CONDITIONS. NAVAL STATION NEWPORT ENVIRONMENTAL OFFICE SHALL COORDINATE SUBMISSION OF ANY REQUIRED PERMIT APPLICATION MATERIALS WITH STATE AND FEDERAL AGENCIES.
2. THE CONTRACTOR SHALL PREVENT TRASH OR CONSTRUCTION DEBRIS FROM ENTERING THE WATERCOURSE, AND SHALL RECOVER ANY ITEMS THAT ENTER THE WATERCOURSE IMMEDIATELY.
3. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A FLOATING SILT CURTAIN DURING ALL PORTIONS OF THE WORK.
4. CONTRACTOR SHALL PROVIDE TURBIDITY MONITORING AT ALL TIMES DURING IN WATER WORK. SEE SHEET G-101 NOTES AND SHEET CH-104 FOR DETAILS ON TURBIDITY MONITORING.

REFERENCE DATUM
ELEVATIONS SHOWN ON DRAWINGS ARE RELATIVE TO NAVD88 (NORTH AMERICAN VERTICAL DATUM OF 1988). HORIZONTAL COORDINATES ARE NAD83 RI STATE PLANE NORTHINGS (Y) AND EASTINGS (X) IN SURVEY FEET FOR UTM ZONE 19 FIPS ZONE 3800.

GENERAL REQUIREMENTS
1. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING.
2. THE CONTRACTOR SHALL THOROUGHLY REVIEW THESE DRAWINGS AND REFERENCE RECORD DRAWINGS OF THE FACILITY PRIOR TO BIDDING.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR, MATERIALS AND EQUIPMENT NECESSARY TO ACCOMPLISH THE WORK SHOWN IN THE CONTRACT DOCUMENTS.
4. THE CONTRACTOR SHALL PROVIDE ALL FIELD SURVEYS NECESSARY TO COMPLETE CONSTRUCTION IN ACCORDANCE WITH THESE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AS NEEDED TO PROVIDE A COMPLETE INSTALLATION IN ACCORDANCE WITH THESE PLANS.
5. THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, AND SAFETY OF THE WORK.
6. THE CONTRACTOR SHALL OBSERVE ALL SAFETY, OPERATION, AND SCHEDULING LIMITATIONS DICTATED BY THE NAVY DURING THE PERFORMANCE OF THIS WORK.
7. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE NAVY TO PREVENT OR MINIMIZE ANY INTERRUPTION TO FACILITY OPERATIONS. THE WORK AREA IS WITHIN THE OPERATIONAL AREA OF THE US COAST GUARD. THE CONTRACTOR SHALL ATTEND COORDINATION MEETINGS WITH THE NAVY PORT OPS AND USCG DURING THE PERFORMANCE OF THIS CONTRACT. THE CONTRACTOR SHALL NOT IMPACT NAVY OR USCG OPERATIONS.
8. THE CONTRACTOR SHALL PROVIDE DRIVING LOGS TO VERIFY PROPER EMBEDMENT DEPTH FOR ALL SHEET PILING, FENDER PILES, OR KING PILES, IN ACCORDANCE WITH THE RELEVANT SPECIFICATION SECTIONS.
9. THE EXISTING ASPHALT ROAD IS TWO-WAY TRAFFIC. ROADWAY ACCESS MUST BE MAINTAINED TO PIER 2 AND USCG OPERATIONS THROUGHOUT THE PROJECT.

DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF CONTRACTING OFFICERS EM 385-1-1
1. CONTRACTORS SHALL COMPLY WITH THE LATEST VERSION OF EM 385-1-1 (INCLUDING INTERIM CHANGES) THAT IS IN EFFECT ON THE DATE OF SOLICITATION.

SOIL MANAGEMENT:
1. THE DIRECT EXPOSURE PATHWAY IS THE PRIMARY CONCERN AT THE SITE. INDIVIDUALS ENGAGED IN ACTIVITIES AT THE SITE MAY BE EXPOSED THROUGH INCIDENTAL INGESTION, DERMAL CONTACT, OR INHALATION OF ENTRAINED SOIL PARTICLES IF PROPER PRECAUTIONS ARE NOT MET.
2. DURING ALL SITE/EARTHWORK, DUST SUPPRESSION (I.E. WATERING) TECHNIQUES MUST BE EMPLOYED AT ALL TIMES.
3. IF EXCESS SOIL IS GENERATED, THE SOIL IS TO REMAIN ON-SITE FOR ANALYTICAL TESTING, TO BE PERFORMED BY AN ENVIRONMENTAL PROFESSIONAL, IN ORDER TO DETERMINE THE APPROPRIATE DISPOSAL. THE SOIL MUST BE PLACED ON AND COVERED WITH POLYETHYLENE/PLASTIC SHEETING DURING THE ENTIRE DURATION OF ITS STAGING AND SECURED UNTIL REMOVED FROM NAVAL STATION NEWPORT.
4. EXCAVATED SOILS WILL BE STAGED AND TEMPORARILY STORED IN A DESIGNATED AREA OF THE PROPERTY.
5. NO SOIL WILL BE STOCKPILED ON-SITE FOR GREATER THAN NINETY (90) DAYS WITHOUT (NAVY) APPROVAL.
6. SOILS EXCAVATED FROM THE SITE MAY NOT BE RE-USED AS FILL UNLESS SOIL IS TESTED AND MEETS THE CRITERIA OF CLEAN FILL.

SOIL MANAGEMENT (CONT.):
7. SITE SOILS, WHICH ARE TO BE DISPOSED OF OFF-SITE (AND NOT RE-USED OFF-SITE), MUST BE DONE SO AT A LICENSED FACILITY IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS. COPIES OF THE MATERIAL SHIPPING RECORDS ASSOCIATED WITH THE DISPOSAL OF THE MATERIAL SHALL BE MAINTAINED BY CONTRACTOR AND PROVIDED TO THE NAVY. THE CONTRACTOR SHALL PREPARE AND SUBMIT AN OFFSITE RULE (OSR) FORM FOR ANY SOILS OR SEDIMENTS REQUIRING OFFSITE DISPOSAL OR REUSE. THE OSR FORM SHALL BE PROVIDED TO THE NAVAL STATION NEWPORT ENVIRONMENTAL OFFICE FOR SUBMISSION AND APPROVAL OF THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S (USEPA) SOLID WASTE PROGRAM MANAGER.
8. BEST SOIL MANAGEMENT PRACTICES SHOULD BE EMPLOYED AT ALL TIMES AND REGULATED SOILS SHOULD BE SEGREGATED INTO SEPARATE PILES (OR CELLS OR CONTAINERS) AS APPROPRIATE BASED UPON ANALYTICAL TESTING, WHEN MULTIPLE SOIL DISPOSAL PAY DESCRIPTIONS APPLY, SUCH AS ASBESTOS OR PCBS WHICH SHOULD BE DISPOSED SEPARATELY AND EACH HAVE AN ASSOCIATED EXPENSE.
9. ALL NON-DISPOSABLE EQUIPMENT USED DURING THE SOIL DISTURBANCE ACTIVITIES WILL BE PROPERLY DECONTAMINATED AS APPROPRIATE PRIOR TO REMOVAL FROM SITE. ALL VEHICLES UTILIZED DURING THE WORK SHALL PROPERLY DECONTAMINATED AS APPROPRIATE PRIOR TO LEAVING THE SITE.
10. AT THE COMPLETION OF SITE WORK, ALL EXPOSED SOILS THAT REMAIN ON THE SITE ARE REQUIRED TO BE RECAPPED WITH ENGINEERING CONTROLS (I.E. 2 FEET OF CLEAN FILL OR EQUIVALENT APPROVED BY THE USEPA, NAVY AND RIDEM REMEDIAL PROJECT MANAGERS) CONSISTENT OR BETTER THAN THE SITE SURFACE CONDITIONS PRIOR TO THE WORK THAT TOOK PLACE.
11. ANY CLEAN FILL MATERIAL BROUGHT ON-SITE IS REQUIRED TO MEET THE DEPARTMENT'S METHOD 1 RESIDENTIAL DIRECT EXPOSURE CRITERIA OR BE DESIGNATED BY AN ENVIRONMENTAL PROFESSIONAL AS NON-JURISDICTIONAL UNDER THE REMEDIATION REGULATIONS.
12. ALL SOIL CONTAINS HIGH LEVELS OF NATURALLY OCCURRING ARSENIC.
13. PRIOR TESTING INDICATES THAT TRACE AMOUNTS OF ASBESTOS HAVE BEEN FOUND IN THE WATER-SIDE SEDIMENTS AND LAND-SIDE SOILS.

WORKER HEALTH AND SAFETY:
1. TO ENSURE THE HEALTH AND SAFETY OF ON-SITE WORKERS, PERSONS INVOLVED IN THE EXCAVATION AND HANDLING OF THE MATERIAL ON-SITE ARE REQUIRED TO WEAR A MINIMUM OF LEVEL D PERSONAL PROTECTION EQUIPMENT, INCLUDING GLOVES, WORK BOOTS AND EYE PROTECTION. WORKERS ARE ALSO REQUIRED TO WASH THEIR HANDS WITH SOAP AND WATER PRIOR TO EATING, DRINKING, SMOKING, OR LEAVING THE SITE.
2. ALL PERSONS THAT WORK ON THIS PROJECT SHALL BE 40 HOUR CERTIFIED IN OSHA HAZWOPER 1910.120.

INSTALLATION RESTORATION (IR) SITE-19:
LAND USE CONTROL REMEDIAL DESIGN FOR SITE 19 - FORMER DERECKTOR SHIPYARD OPERABLE UNITS 5 AND 12:
BACKGROUND:
THIS DOCUMENT CONSTITUTES THE LAND USE CONTROL (LUC) REMEDIAL DESIGN (RD) FOR IR SITE 19 - THE FORMER DERECKTOR SHIPYARD, AN INDUSTRIAL PORT AT THE NAVAL STATION (NAVSTA) NEWPORT. SITE 19 INCLUDES TWO OPERABLE UNITS (OUs) ASSOCIATED WITH THE FORMER DERECKTOR SHIPYARD: OU5, WHICH IS THE MARINE SEDIMENT ASSOCIATED WITH THE FORMER DERECKTOR SHIPYARD; AND OU12, WHICH IS THE ON-SHORE AREA OF THE FORMER DERECKTOR SHIPYARD , INCLUDING SOIL AND GROUNDWATER. THIS DOCUMENT REPRESENTS THE OVERALL CLEANUP OF SITE 19 AT NAVAL STATION NEWPORT.

FINAL RECORD OF DECISION FOR SITE 19 FORMER DERECKTOR SHIPYARD MARINE SEDIMENT OPERABLE UNIT 5 (OU 5) NS NEWPORT RI
09/01/2014

RECORD OF DECISION SITE 19 ON SHORE DERECKTOR SHIPYARD SOIL AND GROUNDWATER OPERABLE UNIT 12 (OU 12) NS NEWPORT RI
09/01/2014

OU5:
1. ESTABLISH A DEWATERING AREA ON-SHORE AND/OR ON BARGES, AND TREATING WATER FROM THE DEWATERING PROCESS.
2. COVERS TO PREVENT POTENTIAL EXPOSURE TO ASBESTOS THAT COULD BE POTENTIALLY PRESENT IN DREDGED OU5 SEDIMENTS.

OU12:
1. SHORT-TERM (SEE SOIL MANAGEMENT PLAN) PROTECTIVE MEASURES WILL BE IMPLEMENTED TO RESTRICT EXPOSURE TO ASBESTOS CONTAMINATED MATERIALS IN DEBRIS/SOIL AND POTENTIALLY CONTAMINATED SEDIMENT UNTIL THEY ARE REMOVED FROM THE SITE. THESE MEASURES WILL INCLUDE CONTAINMENT OF THE EXISTING STOCKPILES AND MANAGEMENT OF EROSION AND STORMWATER RUNOFF.
2. COVERS TO PREVENT EXPOSURE TO CONTAMINATES OF CONCERN IN SOIL. PRECAUTIONARY MEASURES ARE REQUIRED TO ENSURE AWARENESS OF THE POTENTIAL FOR PRESENCE OF ASBESTOS AND PROTECT WORKERS FROM EXPOSURE TO THE POTENTIAL ASBESTOS THAT MAY REMAIN IN THE SOIL.

SPECIFICATION SECTION GENERAL NOTES:
01 33 00 - SUBMITTAL PROCEDURES:
GOVERNMENT APPROVAL IS REQUIRED FOR SUBMITTAL WITH "G" DESIGNATION; SUBMITTALS NOT HAVING A "G" DESIGNATION ARE FOR CONTRACTOR QC APPROVAL. SUBMITTAL REQUIREMENTS ARE SPECIFIED IN THE TECHNICAL SECTIONS. PROVIDE ALL LISTED SUBMITTALS TO THE NAVY FOR REVIEW AND APPROVAL. ALL DRAWINGS TO BE SUBMITTED IN PDF FORMAT.

TEMPORARY BYPASS PUMPING SYSTEMS FOR STORM DRAINS:
1. THE CONTRACTOR IS REQUIRED TO FURNISH ALL MATERIALS, LABOR, EQUIPMENT, POWER, MAINTENANCE, ETC. TO IMPLEMENT A TEMPORARY PUMPING SYSTEM FOR THE PURPOSE OF DIVERTING THE EXISTING FLOW AROUND THE WORK AREA FOR THE DURATION OF THE PROJECT.
2. THE DESIGN, INSTALLATION AND OPERATION OF THE TEMPORARY PUMPING SYSTEM SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL EMPLOY THE SERVICES OF A VENDOR WHO CAN DEMONSTRATE TO THE NAVY AND/OR CONTRACTING OFFICER THAT HE/SHE SPECIALIZES IN THE DESIGN AND OPERATION OF TEMPORARY BYPASS PUMPING SYSTEMS. THE VENDOR SHALL PROVIDE AT LEAST FIVE (5) REFERENCES OF PROJECTS OF A SIMILAR SIZE AND COMPLEXITY AS THIS PROJECT PERFORMED BY HIS FIRM WITHIN THE PAST THREE YEARS. THE BYPASS SYSTEM SHALL MEET THE REQUIREMENTS OF ALL CODES AND REGULATORY AGENCIES HAVING JURISDICTION.
3. THE CONTRACTOR IS REQUIRED TO PROVIDE A N ACCEPTABLE PLAN FOR THE TEMPORARY BYPASS PUMPING SYSTEM. THE CONTRACTOR SHALL SUBMIT TO THE NAVY AND/OR CONTRACTING OFFICER DETAILED PLANS AND DESCRIPTIONS OUTLINING ALL PROVISIONS AND PRECAUTIONS TO BE TAKEN BY THE CONTRACTOR REGARDING THE HANDLING OF EXISTING STORMWATER FLOWS. THIS PLAN MUST BE SPECIFIC AND COMPLETE, INCLUDING SUCH ITEMS AS SCHEDULES, LOCATIONS, ELEVATIONS, CAPACITIES OF EQUIPMENT, MATERIALS, AND ALL OTHER INCIDENTAL ITEMS NECESSARY AND/OR REQUIRED TO INSURE PROPER PROTECTION OF THE ACCESS AND BYPASS PUMPING LOCATIONS FROM DAMAGE DUE TO THE DISCHARGE OF FLOWS, AND COMPLIANCE WITH REQUIREMENTS AND PERMIT CONDITIONS SPECIFIED IN THE CONTRACT DOCUMENTS. NO CONSTRUCTION SHALL BEGIN UNTIL ALL PROVISIONS WHICH SHALL INCLUDE SUCH ITEMS BUT NOT BE LIMITED TO: REDUNDANCIES, IF PUMP FAILS, WHO RESPONDS AND HOW.
4. THE PLAN SHALL INCLUDE BUT NOT LIMITED TO DETAILS OF THE FOLLOWING:
(4.1) STAGING AREAS FOR PUMPS;
(4.2) SEWER PLUGGING METHOD AND TYPES OF PLUGS;
(4.3) NUMBER, SIZE, MATERIAL, METHOD OF INSTALLATION AND LOCATION OF DISCHARGE PIPING;
(4.4) BYPASS PUMP SIZES, CAPACITY, NUMBER OF EACH SIZE TO BE ON SITE AND POWER REQUIREMENTS;
(4.5) CALCULATIONS OF STATIC LIFT, FRICTION LOSSES, AND FLOW VELOCITY (PUMP CURVES SHOWING PUMP OPERATION RANGE SHALL BE SUBMITTED).
(4.6) STANDBY POWER GENERATOR SIZE, LOCATION;
(4.7) DOWNSTREAM DISCHARGE PLAN;
(4.8) PLAN INDICATING SELECTION LOCATION OF BYPASS PUMPING LINE LOCATIONS.
5. ALL PUMPS USED SHALL BE FULLY AUTOMATIC SELF-PRIMING UNITS THAT DO NOT REQUIRE THE USE OF FOOT-VALVES OR VACUUM PUMPS IN THE PRIMING SYSTEM. THE PUMPS MAY BE ELECTRIC OR DIESEL POWERED.
6. THE CONTRACTOR SHALL PROVIDE THE NECESSARY STOP/START CONTROLS FOR EACH PUMP.
7. THE CONTRACTOR SHALL INCLUDE ONE STAND-BY PUMP TO BE MAINTAINED ON-SITE.
8. BYPASS PUMPING SYSTEM WILL BE REQUIRED TO BE OPERATED 24 HOURS PER DAY.
9. THE CONTRACTOR SHALL HAVE ADEQUATE STANDBY EQUIPMENT AVAILABLE AND READY FOR IMMEDIATE OPERATION AND USE IN THE EVENT OF AN EMERGENCY OR BREAKDOWN.

STORMWATER CONSTRUCTION PERMIT AND WATER QUALITY CERTIFICATION
THE CONTRACTOR SHALL BE FURNISHED THE STORMWATER CONSTRUCTION PERMIT AND WATER QUALITY CERTIFICATION FOR THE PROJECT. THE CONTRACTOR MAY ACCESS APPLICATION BACKGROUND FROM THE RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT, OFFICE OF WATER RESOURCES AT THE WEBSITE LISTED HERE.
http://www.dem.ri.gov/programs/water/permits/water-quality-certification.php

DEPARTMENT OF THE ARM GENERAL PERMIT
THE CONTRACTOR SHALL BE FURNISHED WITH AND SHALL COMPLY WITH THE DEPARTMENT OF THE ARMY GENERAL PERMITS FOR THE STATE OF RHODE ISLAND AND LANDS LOCATED WITHIN THE BOUNDARIES OF THE NARRAGANSETT LAND CLAIM SETTLEMENT AREA, AFFECTIVE MARCH 3, 2017 AND EXPIRES MARCH 3, 2022.G-101:

DATUM CONVERSION TABLE:

DATUM CONVERSION TABLE (ELEVATION IN FEET)

DATUM	NAVSTA MLW	MLLW	NAVD88
HIGHEST OBSERVED - 09/21/1938	15.80	15.20	13.16
TOP OF BULKHEAD (S45)	15.24	14.64	12.50
TOP OF BULKHEAD (S366)	13.84	13.24	11.10
MEAN HIGH WATER (MHW)	4.21	3.61	1.57
NAVD88	2.64	2.04	0.00
NGVD29	3.52	2.92	0.88
MEAN LOW WATER (MLW)	0.74	0.14	-1.90
MLLW	0.60	0.00	-2.04
NAVSTA MLW	0.00	-0.60	-2.64

APPR | DATE | DESCRIPTION | MKS

NAVFAC

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DEPARTMENT OF THE NAVY
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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

GENERAL NOTES

SCALE: NONE
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781698
SHEET 3 OF 48
G-101
DRAWFORM REVISION: 31 JANUARY 2017

TURBIDITY MONITORING GENERAL NOTES:

1. THE BUOYS WILL BE ANCHORED IN PLACE AROUND THE WORK AREA AND, AS WORK PROCEEDS, MOVED WHERE ACTIVE WORK IS OCCURRING; THE DEPTHS OF THE MONITORS WILL REMAIN FIXED.
2. TURBIDITY MONITORING WILL BE CONDUCTED NEAR THE SURFACE, NEAR THE BOTTOM (1 TO 2 FEET ABOVE THE BAY FLOOR DURING LOW TIDE CONDITIONS), AND MIDWAY BETWEEN UPPER AND LOWER DEPTHS. IN ADDITION, WATER DEPTH MEASUREMENTS WILL BE COLLECTED AS THE MONITORS ARE BEING DEPLOYED TO ENSURE THE SONDES ARE PLACED AT THE APPROPRIATE DEPTHS. IN ADDITION, WATER DEPTH MEASUREMENTS WILL BE COLLECTED AS THE MONITORS ARE BEING DEPLOYED TO ENSURE THE SONDES ARE PLACED AT THE APPROPRIATE DEPTHS.
3. THE TURBIDITY MONITORS TO BE USED DURING THE WORK ACTIVITIES WILL BE PLACED WITHIN 15 FEET OF EACH TURBIDITY CURTAIN, FOR EACH WORK ACTIVITY.
4. CRITERIA FOR OPENING AND CLOSING THE TURBIDITY CURTAIN WILL BE LINKED TO THE TURBIDITY LEVELS INSIDE THE CURTAIN MEETING ACCEPTABLE LEVELS AND SHALL NOT BE DICTATED BY A SPECIFIC TIME FRAME.
5. THE BUOY-MOUNTED MONITORS AND ONE HAND HELD TURBIDIMETER WILL HAVE IDENTICAL SONDES, SO THAT TURBIDITY DATA COLLECTED IS COMPARABLE. THERE WILL BE ONE TURBIDITY MONITOR LOCATION ON THE SIDE OF EACH WORK AREA EXPOSED TO OPEN OCEAN. AS WORK PROCEEDS, A TURBIDITY MONITOR WILL BE MOVED WHERE ACTIVE WORK IS OCCURRING. ONE HAND HELD METER (WILL HAVE SUFFICIENT CORD TO MEASURE THE SAME THREE DEPTHS AS BUOY MOUNTED SONDES) (WILL BE USED TO DETERMINE IF THE TURBIDITY CURTAIN CAN BE OPENED).
6. TO VERIFY THE CONTROL OF RE-SUSPENDED SEDIMENT, TURBIDITY WILL BE MONITORED OUTSIDE THE WORK AREA USING THE BUOY-MOUNTED SONDES TO COLLECT REAL TIME BACKGROUND TURBIDITY DATA. THIS MONITORING WILL PROVIDE AN OPPORTUNITY TO ADJUST THE OPERATIONS TO REDUCE TURBIDITY. CONTRACTOR WILL HAVE ACCESS TO REAL-TIME TURBIDITY DATA FROM EACH MONITORING STATION AND CAN ADJUST THE OPERATIONAL PROCEDURE (CYCLE TIME, CLEANING, ETC.) TO ENSURE THAT THE TURBIDITY READINGS DO NOT EXCEED THE ESTABLISHED STANDARDS.
7. IF THE ACTION LEVEL OF THE REAL TIME BACKGROUND TURBIDITY MEASUREMENT PLUS 10 NTUS IS EXCEEDED AT EITHER OF THE TURBIDITY MONITORS POSITIONED OUTSIDE OF THE TURBIDITY CURTAINS, CONTRACTOR WILL TAKE IMMEDIATE ACTION TO REDUCE THE AMOUNT OF SEDIMENT BEING RE-SUSPENDED (I.E., EVALUATE CAUSE, SLOW WORK ACTIVITIES, ETC.). IF THE TURBIDITY ACTION LEVEL IS CONTINUOUSLY EXCEEDED AND CANNOT BE ATTRIBUTED TO MIGRATION FROM WITHIN THE WORK AREA, THE TURBIDITY ACTION LEVEL WILL BE REVIEWED WITH THE NAVY TO DETERMINE A COURSE OF ACTION. THE PROPOSED COURSE OF ACTION WILL BE DISCUSSED WITH AND AGREED TO BY USEPA AND RIDEM PRIOR TO IMPLEMENTATION.
8. THE BUOY-MOUNTED SONDES WILL BE CALIBRATED ON A MONTHLY BASIS PER MANUFACTURER'S REQUIREMENTS.
9. THE BUOY-MOUNTED EQUIPMENT WILL COLLECT MONITORING RESULTS AT 10-MINUTE INTERVALS IN REAL-TIME USING NEXSENS' ICHART SOFTWARE OR EQUIVALENT (SERVES AS THE CENTRALIZED DATABASE FOR ALL INCOMING DATA) AND EXPORTED TO MICROSOFT EXCEL FORMAT. IN ADDITION, IT FEATURES AN 'ALARM NOTIFICATION' TO QUICKLY NOTIFY PROJECT MEMBERS WITH NO DELAY IF TURBIDITY LEVELS ARE APPROACHING A SPECIFIED RANGE. THE NEXSENS WQDATA WEB DATA CENTER IS AUTOMATICALLY GENERATED FROM ICHART SOFTWARE AND PROVIDES AN ON-LINE INTERFACE FOR VIEWING DATA IN REAL-TIME. THIS DATA CENTER ALLOWS PROJECT MEMBERS AND STAKEHOLDERS TO EVALUATE THE PROJECT INFORMATION AND DATA TO MONITOR TURBIDITY DURING WORK ACTIVITIES. CONTRACTOR WILL DOWNLOAD TURBIDITY AND ASSOCIATED DATA (E.G., RUNNING AVERAGE) FROM THE TELEMETRY UNITS 4 TIMES PER DAY AND UPLOAD THE DATA TO A CONTINUOUS MICROSOFT EXCEL SPREADSHEET AND TIME-SERIES GRAPH. THE ICHART SOFTWARE WILL ALSO BE USED TO MANUALLY FILTER ANOMALOUS DATA, WHICH WILL LIMIT THE POTENTIAL FOR TURBIDITY SPIKES.
10. EACH WATER QUALITY SONDE WILL BE CALIBRATED BY THE VENDOR AND SHIPPED WITH A VENDOR CALIBRATION REPORT SHOWING THE PRE-CALIBRATION READINGS OF EACH SENSOR. TURBIDITY CALIBRATION IS TYPICALLY A 2-POINT CALIBRATION AT 0 NTU AND 123 NTU. THE 0 NTU VALUE CAN BE OBTAINED USING DEIONIZED WATER. THE 123 NTU IS OBTAINED USING THE 1-GALLON BOTTLE OF 6073G CALIBRATION STANDARD. CONTRACTOR WILL USE THIS STANDARD THROUGHOUT THE PROJECT TO MAINTAIN CALIBRATION OF THE EQUIPMENT.
11. THE SONDE ASSOCIATED WITH THE HAND-HELD EQUIPMENT WILL BE CALIBRATED ON A MONTHLY BASIS PER MANUFACTURER'S REQUIREMENTS. WHEN THE OPENING OF THE TURBIDITY CURTAIN IS IMMINENT, CONTRACTOR WILL TAKE SEVERAL MEASUREMENTS IN THE WATER ALONG THE INSIDE THE TURBIDITY CURTAIN. MEASUREMENTS WILL BE TAKEN AT THREE DEPTH INTERVALS. THIS WILL BE DONE BY LOWERING THE SONDE SO THAT THE BOTTOM OF THE HAND HELD CORRESPONDS TO THE DEPTHS AT WHICH THE ANCHORED METERS ARE COLLECTING DATA. THE HAND-HELD DISPLAY WILL PROVIDE CONTRACTOR WITH A REAL TIME TURBIDITY MEASUREMENT. IF ALL TURBIDITY MEASUREMENTS ARE FOUND TO BE LESS THAN THE TURBIDITY ACTION LEVEL, THE CONTRACTOR CAN OPEN THE TURBIDITY CURTAIN. IF A TURBIDITY MEASUREMENT IS FOUND TO BE ABOVE THE ACTION LEVEL, THE THREE DEPTHS AT THIS LOCATION WILL BE DESIGNATED FOR RE-MONITORING. CONTRACTOR WILL DOWNLOAD TURBIDITY DATA FROM THE HAND-HELD EQUIPMENT AT THE END OF EACH WORK DAY IT IS USED AND IMPORT IT TO A MICROSOFT EXCEL SPREADSHEET FOR PROJECT FILES. FIELD DEPLOYMENT, CALIBRATION AND VARIOUS EQUIPMENT MAINTENANCE AND OPERATION WILL BE RECORDED IN DAILY REPORTS.
12. CONTINUOUS TURBIDITY MONITORING DURING MARINE CONSTRUCTION WORK AT NAVAL STATION NEWPORT REQUIRES CONTINUOUS MONITORING OF TURBIDITY DURING IN-WATER IMPROVEMENTS ACTIVITIES TO HELP MANAGE AND REDUCE WATER QUALITY IMPACTS. THE CONTRACTOR SHALL IMPLEMENT A TURBIDITY MONITORING PLAN WHICH WILL REQUIRE APPROVAL FROM THE U.S. NAVY AND EPA PRIOR TO THE START OF DREDGING ACTIVITIES.

PROJECT SPECIFICATION GENERAL NOTES:
SPECIFICATION SECTION:

TURBIDITY MONITORING SPECIFICATIONS (CONTINUED):

A TURBIDITY MONITORING SYSTEM SHALL BE PROVIDED TO MONITOR THE TURBIDITY IN REAL-TIME DURING IN-WATER CONSTRUCTION ACTIVITIES.

DATA BUOY

1. THE TURBIDITY MONITORING SYSTEM SHALL CONSIST OF TWO (2) DATA BUOY PLATFORMS LOCATED UPSTREAM AND DOWNSTREAM OF THE DREDGING AND IN WATER WORK ACTIVITIES.
2. THE DATA BUOY FLOTATION SHALL BE CONSTRUCTED OF A CLOSED CELL, CROSS-LINKED POLYETHYLENE FOAM HULL WITH A POLYUREA SKIN AND KEVLAR REINFORCED TOP COAT PROVIDING 450 LBS OF BUOYANCY. THE FLOTATION SHALL BE YELLOW IN COLOR IN ACCORDANCE WITH INTERNATIONAL DATA BUOY STANDARDS.
3. THE DATA BUOY STRUCTURE SHALL CONSIST OF AN INTERNAL TYPE 304 STAINLESS STEEL FRAME, (3) TOPSIDE LIFTING EYES AND SUBSURFACE MOORING EYES FOR BOTH SINGLE-POINT AND TWO-POINT MOORINGS. THE FRAME SHALL SUPPORT ATTACHMENT OF INSTRUMENT MOUNTING CAGES DIRECTLY BELOW THE CENTER OF THE BUOY.
4. THE DATA BUOY SHALL BE FITTED WITH AN INTEGRAL DATA WELL PROVIDING ADEQUATE SPACE FOR BATTERIES AND INSTRUMENTATION. BOTH FEED-THROUGH GLAND FITTINGS AND WATERTIGHT CONNECTORS SHALL BE AVAILABLE ON AN O-RING SEALED LID.
5. THE DATA BUOY SHALL ALLOW ADEQUATE TOPSIDE SPACE TO ACCOMMODATE VARIOUS TELEMETRY MODULES INCLUDING RADIO, CELLULAR, IRIDIUM SATELLITE AND WIFI.
6. THE DATA BUOY SHALL BE FITTED WITH (3) 10-WATT SOLAR PANELS WITH A WATERPROOF TERMINATION FOR CHARGING (2) 28 A-HR BATTERIES.
7. THE DATA BUOY SHALL SUPPORT MOUNTING OF BOTH TOPSIDE AND SUBSURFACE SENSORS. A TOP PLATE SHALL BE PRE-DRILLED FOR MOUNTING A 1-3 NAUTICAL MILE RANGE LED BEACON, WEATHER STATION MAST AND OTHER SENSOR SUPPORTS. THE PLATE SHALL ACCOMMODATE PASSAGE OF MULTIPLE SENSOR CABLES AND CONNECTORS UP TO 1.5 INCHES IN DIAMETER.
8. (3) 4-INCH PIPES, EACH WITH 4-INCH NPT FEMALE THREADED FITTING, SHALL ALLOW SENSOR PASS-THROUGH AND ACCOMMODATE DEPLOYMENT PIPES BELOW THE BUOY. HATCHES SHALL COVER THE PASSAGES AND CONCEAL CABLES.
9. THE COMPLETE DATA BUOY SHALL BE SERIES CB-450 AS MANUFACTURED BY NEXSENS TECHNOLOGY, INC. OR SIMILAR.

TURBIDITY INSTRUMENT

1. THE TURBIDITY MONITORING SYSTEM SHALL SUPPORT THREE (3) TURBIDITY SENSORS MOUNTED AT NEAR THE SURFACE, NEAR THE BOTTOM (1 TO 2 FEET ABOVE THE BAY FLOOR DURING LOW TIDE CONDITIONS), AND MIDWAY BETWEEN UPPER AND LOWER DEPTHS IN THE WATER COLUMN.
2. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF OPERATING IN WATER DEPTHS UP TO 250 METERS.
3. THE TURBIDITY INSTRUMENT SHALL BE A PLATFORM WITH UNIVERSAL PORTS THAT CAN ACCOMMODATE A VARIETY OF SENSORS, WHICH CAN BE USED OR RECONFIGURED AT ANY TIME BY THE END USER IN THE FIELD. SIMILARLY, THE SENSORS SHALL HAVE HERMAPHRODITIC WET-MATEABLE CONNECTORS, ALLOWING THEM TO BE PLUGGED INTERCHANGEABLY INTO ANY SENSOR PORT.
4. THE TURBIDITY INSTRUMENT SHALL BE DESIGNED TO WITHSTAND THE HARSH CONDITIONS OF FIELD USE BY USING RUGGED MATERIALS, INCLUDING TITANIUM, LASER-WELDED PROBE HOUSINGS TO RESIST LEAKS; WETMATEABLE CONNECTORS THAT RESIST CORROSION; IMPACT-RESISTANT AND CHEMICAL-RESISTANT XENOY POLYMER REINFORCED HOUSING; AND SAPPHIRE GLASS ON OPTICAL SENSOR WINDOWS.
5. THE TURBIDITY INSTRUMENT SHALL BE EQUIPPED WITH BUILT-IN BLUETOOTH WIRELESS TECHNOLOGY FOR CABLE-FREE COMMUNICATIONS WHEN CALIBRATING, COMMUNICATING AND DOWNLOADING DATA. AN INTERNAL MAGNETIC SWITCH AND EXTERNAL ACTIVATION KEY FOR WIRELESS CONTROL OF THE BLUETOOTH RADIO SHALL BE INCLUDED.
6. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF HAVING CONNECTORIZED FIELD-REPLACEABLE PROBES FOR TURBIDITY, CONDUCTIVITY, TEMPERATURE, AND THE CENTRAL WIPER. THESE SENSORS SHALL BE CAPABLE OF BEING REMOVED WITHOUT OPENING THE SONDE OR EXPOSING THE INTERNAL ELECTRONICS TO THE ENVIRONMENT.
7. THE TURBIDITY INSTRUMENT SENSORS SHALL BE "SMART" AND STORE ALL CALIBRATION DATA INTERNALLY TO THE SENSOR. SENSORS SHALL BE ABLE TO SWAPPED FROM ONE SONDE TO ANOTHER OR FROM ONE SONDE PORT TO ANOTHER WITHOUT RECALIBRATION.
8. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF MEASURING TURBIDITY WITH A NEPHLOMETRIC TYPE PROBE CAPABLE OF MEASURING TURBIDITY FROM 0-4000 NTU. THE SENSOR WILL HAVE AN ACCURACY OF +/- 2% OF READING OR 0.3 NTUS (WHICHEVER IS GREATER) IN AMCO-AEPA POLYMER STANDARDS FROM 0-999 NTU AND AN ACCURACY OF +/- 5% OF READING FROM 1000-4000 NTU.
9. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF MEASURING TEMPERATURE USING A NIST-TRACEABLE CALIBRATED THERMISTOR IN THE RANGE OF -5 TO 50 DEGREES C WITH AN ACCURACY OF +/- 0.01 DEGREES C AND A RESOLUTION OF 0.01 DEGREES C FROM -5 TO 35 DEGREES C AND AN ACCURACY OF +/-0.05 DEGREES C FROM 35 TO 50 DEGREES C. EACH TEMPERATURE SENSOR MUST INCLUDE A FACTORY CALIBRATION/NIST REFERENCE SHEET.
10. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF MEASURING CONDUCTIVITY USING A FOUR-ELECTRODE CELL IN THE RANGE OF 0-200 MS/CM WITH AN ACCURACY OF +/- 0.5% OR 0.001 MS/CM AND A RESOLUTION OF TO 0.1 MS/CM. ADDITIONALLY, THE CELL DESIGN SHOULD PREVENT BUBBLES FROM SETTLING ON ELECTRODES AND INTERFERING WITH MEASUREMENTS. THE CONDUCTIVITY SENSOR MUST BE A LINEAR DEVICE REQUIRING ONLY A SINGLE-POINT CALIBRATION.
11. THE TURBIDITY INSTRUMENT SHALL BE CAPABLE OF HAVING A NON-VENTED CHARACTERIZED DEPTH SENSOR CAPABLE OF MEASURING IN THE RANGE OF (*SPECIFY 10M, 100M OR 250M*) WITH AN ACCURACY OF +/- 0.04% FS AND A RESOLUTION OF 0.001 METERS OR FEET.
12. THE TURBIDITY INSTRUMENT SHALL PROVIDE ANTIFOULING PROTECTION WITH A CENTRAL MOTORIZED WIPER WITH ROTATING NYLON-BRISTLE BRUSH THAT REMOVES BIOFOULING FROM ALL OPTICAL SENSORS. THE WIPER SHALL BE PROTECTED FROM SEDIMENT ACCUMULATION BY A WIPER GUARD (AKA PARKING GARAGE). THE WIPER SHALL BE FIELD-SERVICEABLE AND REPLACEABLE.
13. THE TURBIDITY INSTRUMENT SENSOR PORTS SHALL HAVE SECONDARY BACKUP SEALS, THUS PROTECTING THE INTERNAL ELECTRONICS FROM THE ENVIRONMENT.
14. THE TURBIDITY INSTRUMENT SHALL INCLUDE A TITANIUM BULKHEAD TO REDUCE THE INCIDENCES OF STRIPPING THREADS AND FIELD REPLACEABLE TITANIUM RETAINING NUTS ON SENSORS.
15. THE TURBIDITY INSTRUMENT SHALL PROVIDE ELECTRICAL OVERLOAD PROTECTION TO THE INDIVIDUAL SENSORS THAT WILL PREVENT DATA LOSS IN THE EVENT THAT A SINGLE SENSOR EXPERIENCES CATASTROPHIC FAILURE.
16. THE COMPLETE TURBIDITY INSTRUMENT SHALL BE EXO2 AS MANUFACTURED BY YSI INC./XYLEM INC. OR SIMILAR.

WEB DATACENTER

1. THE TURBIDITY MONITORING SYSTEM SHALL INCLUDE A WEB DATACENTER FOR PROJECT AND DATA MANAGEMENT.
2. THE WEB DATACENTER SHALL PROVIDE 24/7 INSTANT ACCESS TO ENVIRONMENTAL DATA FOR PROJECT PERSONNEL.
3. THE WEB DATACENTER SHALL ALLOW USERS TO BE ADDED AS ADMINISTRATORS WITH THE ABILITY TO EDIT THE WEBSITE THEME, PHOTOS AND DESCRIPTIONS OR AS COLLABORATORS WITH ACCESS ONLY TO VIEW DATA AND SUBMIT FORMS.
4. THE WEB DATACENTER SHALL HAVE AN INTERACTIVE GOOGLE MAPS INTERFACE THAT ALLOWS FOR QUICK VIEWING OF THE MOST RECENT SITE DATA.
5. THE WEB DATACENTER SHALL DISPLAY DATA IN CUSTOMIZABLE GRAPHICAL AND TABULAR FORMATS WITH THE ABILITY TO SAVE DAILY, WEEKLY, AND MONTHLY REPORTS.
6. THE WEB DATACENTER SHALL HAVE THE ABILITY TO MANUALLY OR AUTOMATICALLY SEND DATA VIA EMAIL AND FTP AND TO DOWNLOAD DATA IN AN EXCEL-COMPATIBLE CSV FORMAT.
7. THE WEB DATACENTER SHALL ALLOW CONFIGURATION OF ALARMS AND ALERTS TO NOTIFY PROJECT PERSONNEL VIA EMAIL OR TEXT MESSAGE WHEN PARAMETERS EXCEED DEFINED THRESHOLD CONDITIONS.
8. THE WEB DATACENTER SHALL PROVIDE A FIELDBOOK MODULE FOR STORING PROJECT NOTES, IMAGES AND CALIBRATION DATA.
9. THE WEB DATACENTER SHALL HAVE A COMPATIBLE MOBILE APPLICATION THAT CAN BE USED TO SYNC FIELD NOTES AND CALIBRATION FORMS.
10. THE WEB DATACENTER SHALL BE A SECURE, PASSWORD-PROTECTED WEBSITE.
11. THE WEB DATACENTER SHALL PROVIDE A PUBLIC PORTAL TO GRANT LIMITED ACCESS TO THE GENERAL PUBLIC THROUGH A PUBLIC WEBSITE, SLIDESHOW PRESENTATION VIEW OR WEB APPLET.
12. THE WEB DATACENTER SHALL PROVIDE A MEDIA ARCHIVE FOR UPLOAD OF SITE PHOTOS AND VIDEOS.
13. THE WEB DATACENTER SHALL BE WQDATA LIVE FROM NEXSENS TECHNOLOGY, INC. OR APPROVED EQUAL.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES – | DRW DJM | CHK PWF

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

GENERAL NOTES

SCALE: NONE

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781699

SHEET 4 OF 48

G-201

DRAWFORM REVISION: 31 JANUARY 2017

GENERAL NOTES:

1. ALL UTILITIES, PUBLIC AND PRIVATE, SHALL BE IDENTIFIED BY THE CONTRACTOR PRIOR TO ANY SITE DISTURBANCE AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT. (SEE RHODE ISLAND GENERAL LAWS, SECTION 39-1.2). CALL "DIG SAFE" 1-888-DIG-SAFE (888-344-7233). DETERMINING THE ACTUAL LOCATION OF ANY EXISTING UTILITIES IS THE CONTRACTOR'S RESPONSIBILITY. BEFORE COMMENCING WORK, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT DIG SAFE WHO WILL CONTACT THE VARIOUS UTILITY COMPANIES WHICH MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA. THE CONTRACTOR MUST HIRE A PRIVATE UTILITY LOCATING COMPANY TO LOCATE UTILITIES USING ELECTROMAGNETIC OR SONIC EQUIPMENT AND MARK THE GROUND WHERE EXISTING UNDERGROUND UTILITIES ARE DISCOVERED. FIELD VERIFICATION OF THE UNDERGROUND UTILITIES AT LEAST 15 DAYS PRIOR TO COMMENCING EXCAVATION OR GROUND PENETRATING ACTIVITIES. THE CONTRACTOR MUST FULLY COMPLY WITH THE STATE OF RHODE ISLAND DIG SAFE LAWS. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE NAVY AND CONTRACTING OFFICER ASSUME NO LIABILITY FOR ANY DAMAGES SUSTAINED OR COSTS INCURRED BECAUSE OF THE CONTRACTOR'S OPERATIONS IN THE VICINITY OF EXISTING UTILITIES OR STRUCTURES, NOR FOR TEMPORARY BRACING AND SHORING OF SAME. SCHEDULE AND EXECUTE ALL WORK INVOLVING EXISTING UTILITIES IN ORDER TO MINIMIZE INTERRUPTION OF SERVICES. WHENEVER SUCH INTERRUPTION IS NECESSARY FOR COMPLETION OF THE WORK. ALL WORK TO REPAIR/RESTORE UTILITY SERVICE SHALL BE PERFORMED AS REQUIRED BY THE APPROPRIATE UTILITY. IF IT IS NECESSARY TO SHORE, BRACE, OR SWING A UTILITY, CONTACT THE UTILITY COMPANY OR NAVY AND OBTAIN PERMISSION. ALL COSTS RELATED TO SERVICE, MAINTENANCE, INTERRUPTION, REPAIR, RELOCATION AND RESTORATION ARE TO BE INCLUDED IN THE CONTRACTOR'S BID. ANY DELAY OR INCONVENIENCE CAUSED TO THE CONTRACTOR BY THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION SHALL BE PAID.

2. KNOWN UTILITIES AND STRUCTURES ADJACENT TO OR ENCOUNTERED IN THE WORK ARE SHOWN ON THE DRAWINGS. THE LOCATIONS SHOWN ARE TAKEN FROM EXISTING RECORDS AND FIELD SURVEYS. THERE MAY BE SOME DISCREPANCIES AND OMISSIONS IN THE LOCATIONS AND QUANTITIES OF UTILITIES AND STRUCTURES SHOWN. CONTRACTOR SHALL HAVE UTILITIES IDENTIFIED AND LOCATED PRIOR TO CONSTRUCTION. THIS SHALL INCLUDE VERIFYING DIMENSIONS AND LOCATIONS OF EXISTING INFRASTRUCTURE. CONTRACTOR SHALL FIELD VERIFY LOCATION OF PROPOSED IMPROVEMENTS AND EXISTING INFRASTRUCTURE TO LOCATE POTENTIAL CONFLICTS PRIOR TO CONSTRUCTION. IN THE EVENT THE CONTRACTOR DISCOVERS ANY APPARENT ERROR OR DISCREPANCY, HE SHALL NOTIFY THE CONTRACTING OFFICER IMMEDIATELY IN WRITING.

3. THE CONTRACTOR SHALL COORDINATE WITH THE NAVY PRIOR TO PERFORMING EXCAVATION OPERATIONS ADJACENT TO OVERHEAD POWER LINES AND POLE.

4. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING TO INCLUDE HORIZONTAL AND VERTICAL CONTROL FOR ALIGNMENT OF WORK. ALL SURVEY WORK TO ESTABLISH THE HORIZONTAL AND VERTICAL CONTROL SHALL BE UNDER THE GUIDANCE AND DIRECT SUPERVISION OF A RHODE ISLAND REGISTERED PROFESSIONAL SURVEYOR. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCHMARKS, PROPERTY CORNERS, REFERENCE POINTS, STAKES AND OTHER SURVEY REFERENCE MONUMENTS OR MARKERS.

5. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL VERIFY THE ACCURACY OF ALL SURVEY OR EXISTING SITE INFORMATION AS INDICATED IN THE DRAWINGS OR SPECIFICATIONS. SHOULD THE CONTRACTOR DISCOVER ANY ERRORS, INACCURACIES OR OMISSIONS IN THE SURVEY DATA, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CONTRACTING OFFICER. BEFORE BEGINNING WORK, TAKE CARE TO PRESERVE ALL CONTROL STAKES, BENCH MARKS, REFERENCE POINTS AND PROPERTY CORNERS. MONUMENTS AND/OR REFERENCE POINTS SHALL BE REPLACED BY A RHODE ISLAND REGISTERED PROFESSIONAL SURVEYOR WHO WILL BE HIRED BY THE CONTRACTOR. THE NAVY WILL NOT MAKE FINAL PAYMENT TO THE CONTRACTOR UNTIL ALL DISTURBED OR DESTROYED PROPERTY CORNERS AND PERMANENT BENCH MARKS HAVE BEEN REPLACED BY THE RHODE ISLAND REGISTERED SURVEYOR.

6. THE CONTRACTOR WILL BE RESPONSIBLE TO MAINTAIN TRAFFIC AND TRAFFIC CONTROLS TO PIER 2 AT ALL TIMES.

7. ALL WORK WILL BE COORDINATED IN ADVANCE WITH THE NAVY PRIOR TO CONSTRUCTION ACTIVITIES. AT NO TIME DURING THE PROJECT SHALL CONSTRUCTION ACTIVITIES INTERRUPT UNITED STATES COAST GUARD OPERATIONS.

8. RESTORE ALL PROPERTY AFFECTED BY THIS WORK TO A CONDITION EQUAL TO OR BETTER THAN EXISTED BEFORE COMMENCING CONSTRUCTION WORK, UNLESS SPECIFICALLY EXEMPTED BY THE DRAWINGS. RESTORATION WORK INCLUDES, BUT IS NOT LIMITED TO PAVEMENT, BASE SUBGRADE, CONCRETE CURBS, THERMOPLASTIC TRAFFIC MARKINGS, SIDEWALKS, STORM WATER PIPE, ETC. ALL RESTORATION WORK SHALL BE PER R.I.D.O.T. STANDARDS, SPECIFICATIONS, AND R.I.D.O.T. PERMIT REQUIREMENTS. IF THERE IS A CONFLICT WITH R.I.D.O.T. REQUIREMENTS AND THE CONTRACT DOCUMENTS, THE MORE STRINGENT REQUIREMENT SHALL GOVERN. IF ADDITIONAL TOPOGRAPHY OR ANY OTHER INFORMATION IS NECESSARY FOR THE CONTRACTOR TO RECONSTRUCT ALL FACILITIES TO PRECONSTRUCTION GRADES AND DIMENSIONS, THE ACQUISITION OF SUCH ADDITIONAL INFORMATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY, AND AT HIS EXPENSE. RECONSTRUCT ALL FACILITIES TO PRECONSTRUCTION GRADES AND DIMENSIONS, UNLESS OTHERWISE NOTED. SUPPLY ALL ITEMS AND CARE NECESSARY TO MAINTAIN THE HEALTH OF ALL NEW VEGETATION AND VEGETATION REMOVED AND REPLACED, AT NO EXPENSE TO THE NAVY. VEGETATE, WATER AND FERTILIZE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

9. THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC MAINTENANCE IN ACCORDANCE WITH THE SPECIFICATIONS, U.S. DEPARTMENT OF TRANSPORTATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", R.I.D.O.T. STATE AID SPECIFICATIONS AND OTHER GOVERNING AGENCY'S SPECIFICATIONS. IN THE EVENT OF A CONFLICT, THE MORE STRINGENT SPECIFICATION OR REQUIREMENT SHALL GOVERN. PROVIDE ALL NECESSARY BARRICADES WARNING SIGNS, DELINEATORS, FLAG MEN, PILOT CARS, ETC. REQUIRED FOR TRAFFIC CONTROL DURING THE PROJECT.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND TEMPORARILY RELOCATING ALL INFORMATION AND TRAFFIC SIGNS DURING CONSTRUCTION. SIGNAGE SHOULD BE VISIBLE TO MOTORIZED VEHICLES. REPOSITION SIGNS IN PRECONSTRUCTION LOCATION IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL EXISTING SIGNS DURING THE DURATION OF CONSTRUCTION AND UNTIL THE PLACEMENT OF NEW SIGNS IS MADE.

11. PROVIDE ANY TEMPORARY CONTROLS AND/OR STRUCTURES REQUIRED TO MAINTAIN SUITABLE AND SAFE WORKING CONDITIONS AT ALL TIMES. SUCH ITEMS SHALL BE REMOVED ONCE THAT PORTION OF WORK HAS BEEN COMPLETED.

12. STORE CONSTRUCTION EQUIPMENT AND MATERIALS ONLY IN THOSE AREAS APPROVED BY THE NAVY. SECURITY OF CONSTRUCTION EQUIPMENT AND MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR.

13. THE CONTRACTOR SHALL MAINTAIN TWO (2) SETS OF "REDLINED" PRINTS OF THE CONSTRUCTION PLANS. THE "REDLINED" PRINTS SHALL BE KEPT CURRENT TO ACCURATELY REPRESENT DIMENSIONS AND LOCATIONS OF ALL WORK PERFORMED BY THE CONTRACTOR. PRIOR TO FINAL PAYMENT, THE CONTRACTOR MUST PROVIDE "AS-BUILT" DRAWINGS TO THE NAVY.

14. THE STATIONS AND OFFSETS FOR PROPOSED PROJECT ARE APPROXIMATE.

15. PROVIDE EMPHASIS ON EXCAVATION SAFETY AND TRENCH CONSTRUCTION.

16. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT EXCAVATIONS DO NOT ENDANGER WORKMEN, EXISTING STRUCTURES, UTILITIES, OR OTHER FACILITIES. IF SUCH CONDITIONS OCCUR WHICH MAY ENDANGER WORKMEN, EXISTING STRUCTURES, UTILITIES, OR OTHER FACILITIES, IMMEDIATELY INSTALL AND MAINTAIN ADEQUATE SHEETING AND BRACING. CEASE ALL WORK UNTIL THE SHEETING AND BRACING HAS BEEN PROPERLY AND COMPLETELY INSTALLED. INSTALL THE SHEETING AND BRACING IN A MANNER THAT WILL ALLOW REMOVAL WITHOUT INJURING OR ENDANGERING WORKMEN, THE WORK, ADJACENT STRUCTURES, AND THE LIKE. PROMPTLY AND COMPLETELY FILL ALL VOIDS CAUSED BY THE WITHDRAWAL OF SHEETING WITH SAND AND COMPACT TO A DEGREE EQUAL TO THE SURROUNDING SOIL. REMOVE THE SHEETING AS THE WORK PROGRESSES.

17. THE CONTRACTOR SHALL LIMIT THE DISTURBED AREA FOR PIPE LAYING PROCEDURES TO A MAXIMUM TRENCH WIDTH AS INDICATED ON THE TYPICAL DETAIL. THE COST OF LOAM AND SEEDING OR SODDING OF ANY ADDITIONAL DISTURBANCE SHALL BE BORNE BY THE CONTRACTOR.

18. UNLESS SPECIFIED WITHIN THE CONTRACT DOCUMENTS, CLASS 3 OR GREATER REINFORCED CONCRETE PIPE SHALL BE USED FOR STORM SEWER PIPE.

19. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE "RHODE ISLAND STANDARD SPECIFICATIONS FOR STATE AID ROAD AND BRIDGE CONSTRUCTION, AMENDED AUGUST 2013."

20. STORM SEWER INFRASTRUCTURE SURVEY PERFORMED BY CROSSMAN CONTRACTING OFFICERING, MARCH 2017. TOPOGRAPHY (UAS) SURVEY PERFORMED BY MICHAEL BAKER INTERNATIONAL, JUNE 2017. BATHYMETRY SURVEY PERFORMED BY STEELE ASSOCIATES, MARCH 2018.

21. LIFTING HOLES WILL NOT BE ALLOWED IN ANY PIPE.

22. THE CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICES TO CONTROL RUNOFF VELOCITIES AND TO REDUCE EROSION BY EMPLOYING HAY BALES, SILT FENCE, AND RIP RAP AS INDICATED ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING THE EARTH MOVING ACTIVITIES IN A MANNER THAT WILL PREVENT ACCELERATED EROSION AND RESULTING SEDIMENTATION, IN ACCORDANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN DEVELOPED FOR THIS PROJECT.

23. THE CONTRACTOR SHALL OBSERVE APPLICABLE WEIGHT RESTRICTIONS FOR VEHICLES AND/OR ROADWAYS. THE CONTRACTOR SHALL IMMEDIATELY REMOVE AND CONSTRUCTION DEBRIS AND MUD TRACKED ONTO EXISTING ROADWAYS.

24. THE CONTRACTOR SHALL CONFINE ALL WORK TO THE LIMITS OF CONSTRUCTION.

25. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES.

26. UNLESS OTHERWISE DIRECTED BY NAVY, ALL EXISTING MATERIAL TO BE REMOVED FROM THE PROJECT SITE SHALL BE THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF AT HIS EXPENSE.

27. THE CONTRACTOR SHALL KEEP ALL EXCAVATIONS FREE FROM WATER TO SUCH EXTENT AS MAY BE NECESSARY WHILE EXCAVATION WORK IS BEING CARRIED ON. THE CONTRACTOR IS RESPONSIBLE FOR DE-WATERING. THE CONTRACTOR SHALL SUBMIT A DE-WATERING PLAN TO THE CONTRACTING OFFICER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING EXCAVATION.

28. THE DEPICTED LAND IS SITUATED ENTIRELY WITHIN THE BOUNDARIES OF THE NAVAL STATION NEWPORT, RI.

29. THE CONTRACTOR SHALL PLACE ALL EQUIPMENT AND MATERIAL AS FAR AWAY AS POSSIBLE FROM THE EDGE OF THE TRAVEL LANE SO AS NOT TO CAUSE A SAFETY HAZARD, IN ACCORDANCE WITH SECTION 106.06 OF THE R.I.D.O.T. STANDARD SPECIFICATION, LATEST EDITION.

30. THE LIMITS OF WORK AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS IN ADDITION TO THOSE AREAS SPECIFICALLY DESIGNATED ON THE PLANS. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND PLACING, AT HIS OWN EXPENSE, SURFACE IN AREAS WHICH ARE OUTSIDE OF THE PROJECT'S AREAS OF DISTURBANCE AND WHICH ARE IMPACTED BY CONSTRUCTION OPERATIONS INCLUDING THOSE AREAS WHERE VEHICLES, EQUIPMENT AND MATERIALS ARE STORED.

31. CLEANING AND SWEEPING OF PAVEMENT WILL INCLUDE REMOVAL OF ALL PAVEMENT DEBRIS PRIOR TO THE PLACEMENT OF EACH BITUMINOUS PAVEMENT LIFT. ALL CLEANING AND SWEEPING SHALL BE DONE TO THE SATISFACTION OF THE CONTRACTING OFFICER.

32. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ROADWAYS FREE OF DEBRIS RESULTING FROM THEIR CONSTRUCTION OPERATIONS. ALL DEBRIS SHALL BE REMOVED TO THE SATISFACTION OF THE CONTRACTING OFFICER AT NO ADDITIONAL COST TO THE NAVY.

33. NO FUEL STORAGE, VEHICLE REFUELING, OR EQUIPMENT STORAGE SHALL TAKE PLACE WITHIN 100' OF THE WATER. THIS REQUIREMENT SHALL NOT SUPERSEDE ANY FEDERAL, STATE OR LOCAL LAW, ORDINANCE, RULE OR REGULATION THAT APPLIES TO THE SAME.

34. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT AT THE END OF FINAL PAVING OPERATIONS, FLOW TO DRAINAGE STRUCTURES HAS BEEN ESTABLISHED AND THAT NO ISOLATED DEPRESSIONS REMAIN. THERE SHALL BE NO SEPARATE PAYMENT FOR THIS PROVISION; IT SHALL BE CONSIDERED INCIDENTAL TO PAVING AND COLD PLANING OPERATIONS.

35. ALL EMBANKMENTS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 12" (AFTER COMPACTION) AND SHALL BE COMPACTED AS SPECIFIED BEFORE THE NEXT LAYER IS PLACED. ALSO, EMBANKMENT CONSTRUCTION SHALL CONFORM TO SECTION 202.03.2 OF THE R.I.D.O.T. STANDARD SPECIFICATION, LATEST EDITION.

36. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND COMPLY FULLY TO ALL OF THE PROVISIONS, CONDITIONS, AND STIPULATIONS STATED IN THE ENVIRONMENTAL PERMITTING FOR THE PROJECT FROM THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (RIDEM), THE ARMY CORPS OF CONTRACTING OFFICERS (ACOE), AND/OR THE COASTAL RESOURCES MANAGEMENT COUNCIL (CRMC). COPIES OF EACH OF THESE PERMITS ARE INCLUDED IN THE CONTRACT DOCUMENTS.

37. THE CONTRACTOR SHALL PROTECT AND NOT DISTURB THE EXISTING MONITORING WELLS.

38. THE CONTRACTOR SHALL HIRE A LICENSED STRUCTURAL ENGINEER TO PERFORM AN ANALYSIS OF THE EXISTING BULKHEAD TO DETERMINE THE SAFE OPERATING SETBACK DISTANCE FOR CONSTRUCTION EQUIPMENT. SUBMIT ANALYSIS TO THE NAVY FOR REVIEW.

39. DREDGING IS RESTRICTED TO THE PERIOD OF 1 NOV. TO 31 DEC. DUE TO WINTER FLOUNDER. THERE MAY BE OTHER RESTRICTIONS WITH UFWS AND NOAA NMFS IN REGARD TO DRIVING THE SHEET PILE.

40. DISTURBED AREA(S) IN TIDAL WATERS:
    - BASE BID- S45 NORTH (STEEL SHEETPILE BULKHEAD) - 3,900 SF. (0.09 AC.)
    - OPTION 1- S45 SOUTH (RIPRAP REVETMENT) - 8,600 SF. (0.20 AC.)
    - OPTION 2- S366 - 1,000 SF. (0.02 AC.)

41. DISTURBED AREA(S) LANDSIDE:
    - BASE BID- S45 NORTH (STEEL SHEETPILE BULKHEAD) - 23,522 SF. (0.54 AC.)
    - OPTION 1-S45 SOUTH (RIPRAP REVETMENT) - 21,780 SF. (0.5 AC.)
    - OPTION 2-S366 - 8,046 SF. (0.18 AC.)

SYM	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES – DRW DJM CHK PWF

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

GENERAL NOTES

SCALE: NONE

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781700

SHEET 5 OF 48

G-301

DRAWFORM REVISION: 31 JANUARY 2017

DRAINAGE AND EROSION CONTROL NOTES

1. A SITE SPECIFIC STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED FOR COMPLIANCE WITH THE RIPDES GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL READ, BECOME FAMILIAR WITH, AND ADHERE TO ALL OF THE PROVISIONS, CONDITIONS AND STIPULATIONS OF THE GENERAL PERMIT AND IS SITE SPECIFIC SWPPP FOR THIS PROJECT. COPIES OF THESE DOCUMENTS ARE INCLUDED IN THE CS PAGES OF THE CONTRACT DOCUMENTS. ALL COSTS ASSOCIATED WITH ADHERENCE TO THE SWPPP SHALL BE CONSIDERED INCIDENTAL TO THE CONSTRUCTION AND INCLUDED WITH THE COST FOR THE ASSOCIATED BID ITEM. THE PROJECT WILL REQUIRE A WATER QUALITY CERTIFICATE AS IT IS CONSIDERED AN IN-WATER DREDGING PROJECT.

2. NO UNDISTURBED AREAS SHALL BE CLEARED OF EXISTING VEGETATION AFTER OCTOBER 15 OF ANY CALENDAR YEAR OR DURING ANY PERIOD OF FULL OR LIMITED WINTER SHUTDOWN. ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDED OR PROTECTED BY THAT DATE. ANY AREAS NOT STABILIZED (MINIMUM 6" VEGETATION STAND) BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR HAY MULCH, IN ACCORDANCE WITH SPECIFICATION CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODEABLE SOIL MUST BE RESTABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION, IT SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.

3. NAVSTA NEWPORT EV OFFICE WILL COORDINATE SUBMISSION OF ANY REQUIRED PLANS AND INFORMATION WITH STATE AND FEDERAL AGENCIES.

4. JUTE MESH SHALL BE USED TO STABILIZE PLANTABLE SOIL AND/OR LOAM IN ALL DITCHES, ON ALL SLOPES ADJACENT TO WETLANDS AND WETLAND PERIMETERS, AND ON ALL SLOPES WITHIN WATER QUALITY BASINS. JUTE MESH IN DITCHES SHALL EXTEND TO AN ELEVATION 2 FEET ABOVE THE BOTTOM OF THE DITCH.

5. SEEDING ON ALL SLOPES 3 TO 1 OR STEEPER SHALL CONSIST OF THE FOLLOWING APPLICATIONS UNLESS CHANGED IN THE CONTRACT. a. SEEDING TYPE I. b. ADHESIVE MULCH STABILIZER

6. UNVEGETATED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR PERIODS IN EXCESS OF 2 WEEKS OR THROUGH THE INACTIVE WINTER SEASON.

7. PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE LOCATION (HORIZONTAL AND VERTICAL) OF ALL EXISTING PIPES AND/OR STRUCTURES WHICH ARE TO BE CONNECTED. ANY VARIATION FOUND FROM THE PLANS MUST BE BROUGHT TO THE CONTRACTING OFFICER'S ATTENTION PRIOR TO DRAINAGE AND UTILITY CONSTRUCTION. THE CONTRACTOR MUST HIRE A PRIVATE UTILITY LOCATING COMPANY TO LOCATE UTILITIES USING ELECTROMAGNETIC OR SONIC EQUIPMENT AND MARK THE GROUND WHERE EXISTING UNDERGROUND UTILITIES ARE DISCOVERED. FIELD VERIFICATION OF THE UNDERGROUND UTILITIES AT LEAST 15 DAYS PRIOR TO COMMENCING EXCAVATION OR GROUND PENETRATING ACTIVITIES. THE CONTRACTOR MUST FULLY COMPLY WITH THE STATE OF RHODE ISLAND DIG SAFE LAWS.

8. ALL DRAINAGE AND UTILITY STRUCTURES WITHIN THE PAVED ROADWAY SHALL BE ADJUSTED TO GRADE WITH THE SURROUNDING PAVEMENT PRIOR TO THE WINTER SHUTDOWN.

9. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF DURING STORMS AND PERIODS OF RAINFALL THROUGHOUT THE WORK AREA.

10. CATCH BASIN RIM GRADES NOTED ON PLANS ARE DEPRESSED 0.1' LOWER THAN THE GUTTER GRADE. RIM ELEVATIONS SHOWN ARE FINAL GRADES. THE CONTRACTOR SHALL PLACE FRAMES AND GRATES 0.1' BELOW THE GRADE CONSTRUCTED IN THIS CONTRACT.

11. PROVISIONS FOR CLEARING TO ACCESS OUTFALLS DURING THE CLEANING AND FLUSHING OF THE CLOSED DRAINAGE SYSTEM SHALL BE KEPT TO A MINIMUM:
    a. ANY VEGETATIVE CLEARING SHALL BE LIMITED TO BRUSH AND TREES LESS THAN 3" DIAMETER,
    b. NO HEAVY EQUIPMENT MAY ENCROACH UPON VEGETATED PERIMETER OR RIVERBANK WETLANDS AS WELL AS BIOLOGICAL WETLANDS.

12. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL FOR OUTLET PROTECTION PRIOR TO CLEANING AND FLUSHING STORM WATER DRAINAGE. EROSION CONTROL SHALL REMAIN IN PLACE UNTIL ALL FLUSHED SEDIMENTS ARE REMOVED. AT ALL OUTFALL LOCATIONS WHERE PIPES ARE TO BE CLEANED AND FLUSHED, OUTLET PROTECTION (R.IL; STD. 9.1.0 OR 9.3.00 SHALL BE INSTALLED TO TRAP SEDIMENTS. THESE SEDIMENTS SHALL THEN BE REMOVED AND DEPOSED OF LEGALLY BEFORE THE OUTLET PROTECTION DEVICES ARE REMOVED. IF OUTLET PROTECTION AT THE OUTFALL IS NOT FEASIBLE, THEN THE OUTLET PIPE OF THE LAST DRAINAGE STRUCTURE TO BE CLEANED SHALL BE PLUGGED TO CAPTURE ALL MATERIALS FLUSHED FROM PIPES. AFTER THE MATERIALS ARE REMOVED FROM THE DRAINAGE STRUCTURE, THE OUTLET SHALL BE UNPLUGGED TO RESUME NORMAL FUNCTIONING.

13. CATCH BASINS AND INLETS SHALL BE PROTECTED BY ANY MEANS STATED IN THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK WHERE SUBBASE IS EXPOSED, AND SHALL REMAIN IN PLACE UNTIL THE ABUTTING GROUND SURFACES ARE STABILIZED.

14. WHERE BALED HAY INLET PROTECTION AND SILT FENCES ARE USED AT CATCH BASINS, THEY SHALL BE REMOVED AT THE END OF THE PROJECT OR AS DIRECTED BY THE CONTRACTING OFFICER IN ORDER TO PREVENT CLOGGING OF THE INLET.

15. THE TOE OF ANY FILL SLOPE IS TO REMAIN AT LEAST 1' INSIDE OF ALL EROSION CONTROLS. UNDER NO CIRCUMSTANCES SHALL THE CONTRACTOR COVER ANY PORTION OF THE EROSION CONTROL MEASURES WITH MATERIAL. ANY MATERIAL THAT IS PLACED ON ANY EROSION CONTROLS BY THE CONTRACTOR, OR ANY AGENT OF THE CONTRACTOR, SHALL BE IMMEDIATELY REMOVED BY THE CONTRACTOR, AND ANY NECESSARY REPAIRS TO THE EROSION CONTROLS ACCOMPLISHED.

16. PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES, EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED. CLEARING MAY OCCUR PRIOR TO INSTALLATION OF SUCH CONTROLS, HOWEVER NO GRUBBING, GRADING, FILLING, OR OTHER SOIL DISTURBANCE SHALL OCCUR PRIOR TO INSTALLATION. THE LIMITS OF CLEARING AND SURFACE DISTURBANCE MUST BE STRICTLY ADHERED TO IN ALL AREAS.

17. ALL HAY BALES, SILT FENCE OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS IS ESTABLISHED. IF NEEDED, TEMPORARY SEEDING CAN HELP TO MINIMIZE EROSION. TEMPORARY SEED WILL CONFORM TO R.I.D.O.T. STANDARD TEMPORARY SEED MIX.

18. THE CONTRACTOR MUST REPAIR AND/OR LOAM AND SEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND HE SHALL DO SO AT NO ADDITIONAL EXPENSE TO THE NAVY.

19. THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE SPECIFIED IN SUBSECTION L.02.03 OF THE R.I.D.O.T. STANDARD SPECIFICATIONS, LATEST EDITION.

20. IT IS IMPORTANT THAT THE CONTRACTOR FULLY UNDERSTANDS THAT THE PROPOSED CONSTRUCTION IS TO BE CONDUCTED ON AN INSTALLATION RESTORATION (IR) SITE. ALL WORK ACTIVITIES ASSOCIATED WITH SOIL DISTURBANCE SHALL COMPLY WITH THE SOIL MANAGEMENT PLAN AND LAND USE CONTROL REMEDIAL DESIGN FOR SITE 19 - FORMER DERECKTOR SHIPYARD OPERABLE UNITS 5 AND 12. NAVSTA.

21. CONTRACTOR SHALL PROVIDE A TEMPORARY BYPASS PUMPING PLAN PRIOR TO DISRUPTING THE EXISTING STORMWATER SYSTEM. THE BYPASS PUMPING PLAN SHALL BE DESIGNED BY THE CONTRACTOR, AND SHALL INCLUDE PUMP SIZE, PIPING, SEQUENCE OF WORK, AND CALCULATIONS. BYPASS PUMPING SHALL BE IN ACCORDANCE WITH THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

LEGEND & ABBREVIATIONS

△	SURVEY CONTROL STATION	MP	METAL POST
•	PK	MS	METAL STEPS
H/T	HUB AND TACK	NPV	NO PIPE VISIBLE
MAG	MAGNETIC	NOPV	NO OTHER PIPES VISIBLE
SSM	STEEL SURVEY MARKER	OD	OUTSIDE DIAMETER
(R)	RECORD	OHW	OVERHEAD WIRE
(M)	MARKED	POL	FUEL LINE
(ABAN)	ABANDONED	PS	PARKING SPACE(S)
✺	EVERGREEN TREE, WITH DIAMETER	PVC	POLYVINYL CHLORIDE
❀	DECIDUOUS TREE, WITH DIAMETER	PVI	POST VALVE INDICATOR
❀	BUSH	(R)	COMPILED FROM RECORD INFORMATION(SEE NOTE 2)
⌒⌒⌒	RAILING	R=	RIM ELEVATION
⌒⌒⌒	TREELINE	RCP	REINFORCED CONCRETE PIPE
BCC	BIT CONC CURB	SCO	SEWER CLEAN-OUT
BIT CONC	BITUMINOUS CONCRETE	SBCC	SLOPED BIT CONC CURB
◒	BORE HOLE	○ SMH	SEWER MANHOLE
BRP	BORE REFERENCE POINT	○ S	SIGN
BWIRE	BARBED WIRE	STG	STEAM GATE
CB	CATCH BASIN	STK	STOCKADE
CBL	CONCRETE BLOCK LANDING	○ STMH	STEAM MANHOLE
CC	CONCRETE CURB	TEL	TELEPHONE
CIP	CAST IRON PIPE	TH=	THRESHOLD
CMP	CORRUGATED METAL PIPE	○ TMH	TELEPHONE MANHOLE
COMM	COMMUNICATIONS	TOP	TOP OF PIPE
CONC	CONCRETE	TOS	TOP OF SILT
CP	CONCRETE PAD	TRANS	TRANSFORMER
○ DMH	DRAIN MANHOLE	TS	TRAFFIC SIGNAL
EBOX	ELECTRIC BOX	TSHH	TRAFFIC SIGNAL HANDHOLE
ELEC	ELECTRIC	TYP	TYPICAL
EM	ELECTRIC METER	-○- UP#	UTILITY POLE
○ EMH	ELECTRIC MANHOLE	-○- UP/LP	UTILITY POLE/LIGHT POLE
EOP	EDGE OF PAVEMENT	UNK	UNKNOWN
ES	ELECTRIC SUBMARINE	VCP	VITRIOUS CLAY PIPE
E/T	ELECTRIC/TELEPHONE	VZ	VERIZON
EXPJ	EXPANSION JOINT	VCP	VITRIOUS CLAY PIPE
FA	FIRE ALARM	○ WG	WATER GATE
FF=	FIRST FLOOR ELEVATION	WM	WATER METER
FM	FORCE MAIN	○ WMH	WATER MANHOLE
FND	FOUND	——D——	DRAIN LINE
GC	GRANITE CURB	——E——	ELECTRIC LINE
GRAN	GRANITE	——G——	GAS LINE
GP	GUARD POST	——S——	SEWER LINE
GPR	GROUND PENETRATING RADAR	——ST——	STEAM LINE
GRND	GROUND	—— T ——	TELEPHONE LINE
⌽	HYDRANT	—— W ——	WATER LINE
I=	INVERT ELEVATION	+ 4.442	SPOT ELEVATION
☼	LIGHT POLE	6.404 / 6.280	TOP & BOTTOM CURB ELEVATION
mm	MILLIMETER	----------	INTERMEDIATE CONTOUR
m	METER	---- 8.000 ----	INDEX CONTOUR
MC	METAL COVER		

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES – DRW DJM CHK PWF

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

DRAINAGE AND EROSION CONTROL NOTES, & LEGEND

SCALE: NONE

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781701

SHEET 6 OF 48

G-401

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND:

- = ELECTRICAL LINES
- = POWER POLES
- = LIGHT POLES
- = METER POLES
- = GUY WIRE
- = WATER VALVE
- = CHAIN LINK FENCE LINE
- = UNDERGROUND ELECTRIC LINE
- = STORM DRAIN LINE
- = WATER LINE
- = TELEPHONE LINE
- = CONTOUR ELEVATION
- = FIRE HYDRANT
- = WATER METER
- = TELEPHONE PEDESTAL
- = SEWER MANHOLE
- = DRAIN MANHOLE
- = CATCH BASIN
- = EXISTING BULKHEAD
- = RIP-RAP SURFACE
- = CONCRETE SURFACE
- = GRASS/GRAVELLY SURFACE

N

20' 10' 0 20'

EXISTING WATER LINE

ASPHALT PARKING LOT

ASPHALT ROADWAY

BIORETENTION

BIORETENTION

BIORETENTION

CONCRETE BUOY ANCHORS

9-86
RIM=9.95
INV(6")(E)=4.96
INV(18")(S)=4.41
INV(6")(W)=5.53

9-27
RIM=9.45
INV(12")(N)=3.27
INV(12")(S)=4.95

PIPE SIZE CHANGE

12"Ø

6"Ø

24"Ø

18"Ø

6"Ø

6"Ø

PIPE SIZE CHANGE

9-26
RIM=14.86
INV(6")=9.46

12"Ø

9-25
RIM=14.84
INV(12")=9.04

OE OE OE OE

OVERHEAD ELECTRIC

FUEL/OIL LINES (2)

BIORETENTION

ASPHALT PARKING LOT

9-28
RIM=10.56
INV(18")(N)=4.15
INV(24")(S)=3.18
INV(24")(W)=3.18

UNDERGROUND ELECTRIC

MATCH LINE – SEE SHEET V-101

ZONE AE
(BFE=14 FT)

LANE STRIPING

CONCRETE SURFACE

ASPHALT

CONCRETE ANCHORS (TYP)

CONCRETE

MOORING BOLLARDS

STORM DRAIN (TYP)

ABANDON IN-PLACE STEEL SHEET PILE (TYP)

9-29
RIM=8.67
INV(24")(E)=2.39
INV(24")(W)=2.29

FUEL/OIL PIT

CATCH BASIN (TYP)

ASPHALT

HTL=3.20

ZONE VE
(BFE=16 FT)

STA 0+00

STA 0+50

STA 0+90.26

MLW=-1.92

MHW=1.57

OUTFALL NO. 9-95
INV=2.26

USCG BULKHEAD

S366 BULKHEAD
TOP ELEV. = 11.10

DO NOT DISTURB
PIER ONE
BULKHEAD TO REMAIN

OPTION 2 – S366
(STA. 0+00 TO STA. 0+90.26)

CODDINGTON COVE

PIER ONE

NOTE:

1. THE COASTAL WETLAND RESOURCES INCLUDE THE EXISTING BULKHEAD AND RIP RAP REVETMENT, BOTH CONSIDERED MANMADE SHORELINE FEATURES. THE 200 FOOT CONTIGUOUS AREA EXTENDS FROM THE EDGE OF THE SHORELINE FEATURES.
2. ACCORDING TO RIDEM'S GROUNDWATER CLASSIFICATION, WELLHEAD PROTECTION AREAS AND DRINKING WATER RESERVOIR WATERSHEDS FOR RHODE ISLAND ON-LINE MAP, THE SITE IS CLASSIFIED AS GB, WHICH ARE GROUNDWATER RESOURCES DESIGNATED BY THE DIRECTOR WHICH MAY NOT BE SUITABLE FOR PUBLIC OR PRIVATE DRINKING WATER USE WITHOUT TREATMENT DUE TO KNOWN OR PRESUMED DEGRADATION.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

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ACTIVITY

FINAL DESIGN

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DES	LZ	DRW	DM	CHK	DS

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BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

EXISTING CONDITIONS

SCALE: 1" = 20'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781702

SHEET 7 OF 48

V-100

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND:

- = ELECTRICAL LINES
- PP = POWER POLES
- LP = LIGHT POLES
- MP = METER POLES
- = GUY WIRE
- WV = WATER VALVE
- = CHAIN LINK FENCE LINE
- = UNDERGROUND ELECTRIC LINE
- = STORM DRAIN LINE
- = WATER LINE
- = TELEPHONE LINE
- = CONTOUR ELEVATION
- = FIRE HYDRANT
- WM = WATER METER
- T = TELEPHONE PEDESTAL
- S = SEWER MANHOLE
- D = DRAIN MANHOLE
- = CATCH BASIN
- = EXISTING BULKHEAD
- = RIP-RAP SURFACE
- = CONCRETE SURFACE
- = GRASS/GRAVELLY SURFACE

NOTE:

1. THE COASTAL WETLAND RESOURCES INCLUDE THE EXISTING BULKHEAD AND RIP RAP REVETMENT, BOTH CONSIDERED MANMADE SHORELINE FEATURES. THE 200 FOOT CONTIGUOUS AREA EXTENDS FROM THE EDGE OF THE SHORELINE FEATURES.
2. ACCORDING TO RIDEM'S GROUNDWATER CLASSIFICATION, WELLHEAD PROTECTION AREAS AND DRINKING WATER RESERVOIR WATERSHEDS FOR RHODE ISLAND ON-LINE MAP, THE SITE IS CLASSIFIED AS GB, WHICH ARE GROUNDWATER RESOURCES DESIGNATED BY THE DIRECTOR WHICH MAY NOT BE SUITABLE FOR PUBLIC OR PRIVATE DRINKING WATER USE WITHOUT TREATMENT DUE TO KNOWN OR PRESUMED DEGRADATION.

N

20' 10' 0 20'

MATCH LINE - SEE SHEET V-100

EXISTING PIER ONE

WATER LINE
TELEPHONE LINE
PIPE SIZE CHANGE
STORM DRAIN
STORM DRAIN PIPE
MISCELLANEOUS MANHOLE 100% FULL OF SEDIMENT. COULD NOT IDENTIFY UTILITY TYPE
P24, 12"D (P24 FROM ABANDONED CB)
P22, 12"D (P22 FROM ABANDONED CB)
ASPHALT PARKING LOT
ASPHALT ROADWAY
CHAINLINK FENCE
ASPHALT PAVEMENT
CONCRETE BARRIERS (TYP)
CONCRETE BARRIERS
CONCRETE BUOY ANCHORS
CONCRETE DEBRIS
TIMBER DEBRIS
FIRE HYDRANT
CONCRETE PAD
CHAIN LINK FENCE W/ GATE
GRAVEL
APPROXIMATE LOCATION OF MONITORING WELL (DO NOT DISTURB!)
THICK BRUSH
ROCK FILL ERODED AREA
REVENTMENT
S45 BULKHEAD TOP ELEV. = 12.50
HTL=3.20
MHW=1.57
MLW=-1.92
ELECTRICAL BOX
OUTFALL NO. 9-94 INV=3.96
OUTFALL NO. 9-92 INV=1.65
OUTFALL NO. 9-124 (OUT-1)
OUTFALL NO. 9-110 INV=4.06
9-114 RIM=8.08 INV(24")(N)=3.83 INV(18")(S)=3.83
9-115 RIM=8.09 INV(18")(N)=4.61 INV(12")(S)=4.61
9-90 RIM=7.92 INV(6")(N)=4.17 INV(6")(W)=4.17
9-116 RIM=8.78 INV(12")=6.28
9-25 RIM=14.84 INV(12")=9.04
9-22 RIM=9.95 INV(3")(N)=6.36 INV(6")(N)=4.31 INV(12")(W)=4.10
9-20 RIM=9.47 INV(36")(E)=4.02 INV(24")(S)=4.12 INV(36")(W)=3.72
9-87 RIM=9.35 INV(6")=6.50
9-119, STORMGEPTOR RIM=9.40 INV(24")(S)=3.80 INV(24")(N)=3.60
9-88 RIM=8.45 INV(8")(N)=2.81 INV(8")(S)=3.25 INV(8")(W)=2.81
9-89 RIM=7.90 INV(6")(E)=4.15 INV(6")(S)=4.15
9-101, VORTECHNIC SYSTEM 1 RIM=10.65 INV(8")(E)=3.69
9-102, VORTECHNIC SYSTEM 2 RIM=10.62 INV(8")(W)=3.66
9-117 RIM=9.23 INV(12")(W)=5.48
12"Ø
6"Ø
3"Ø
18"Ø
24"Ø
8"Ø HDPE
0+00
1+00
2+00
3+05
3+50
4+00
4+50
5+00
5+50

BASE BID - S45 NORTH
(STA. 0+00 TO STA. 3+05.43)

OPTION 1 - S45 SOUTH
(STA. 3+05.43 TO BREAKWATER)

ZONE AE
(BFE=14 FT)

ZONE VE
(BFE=16 FT)

DO NOT DISTURB
EXISTING BREAKWATER JETTY

BREAKWATER JETTY

CODDINGTON COVE

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	DM	CHK	DS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION - NEWPORT, RHODE ISLAND
NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

EXISTING CONDITIONS

SCALE: 1" = 20'

EPROJECT NO.: 1569253

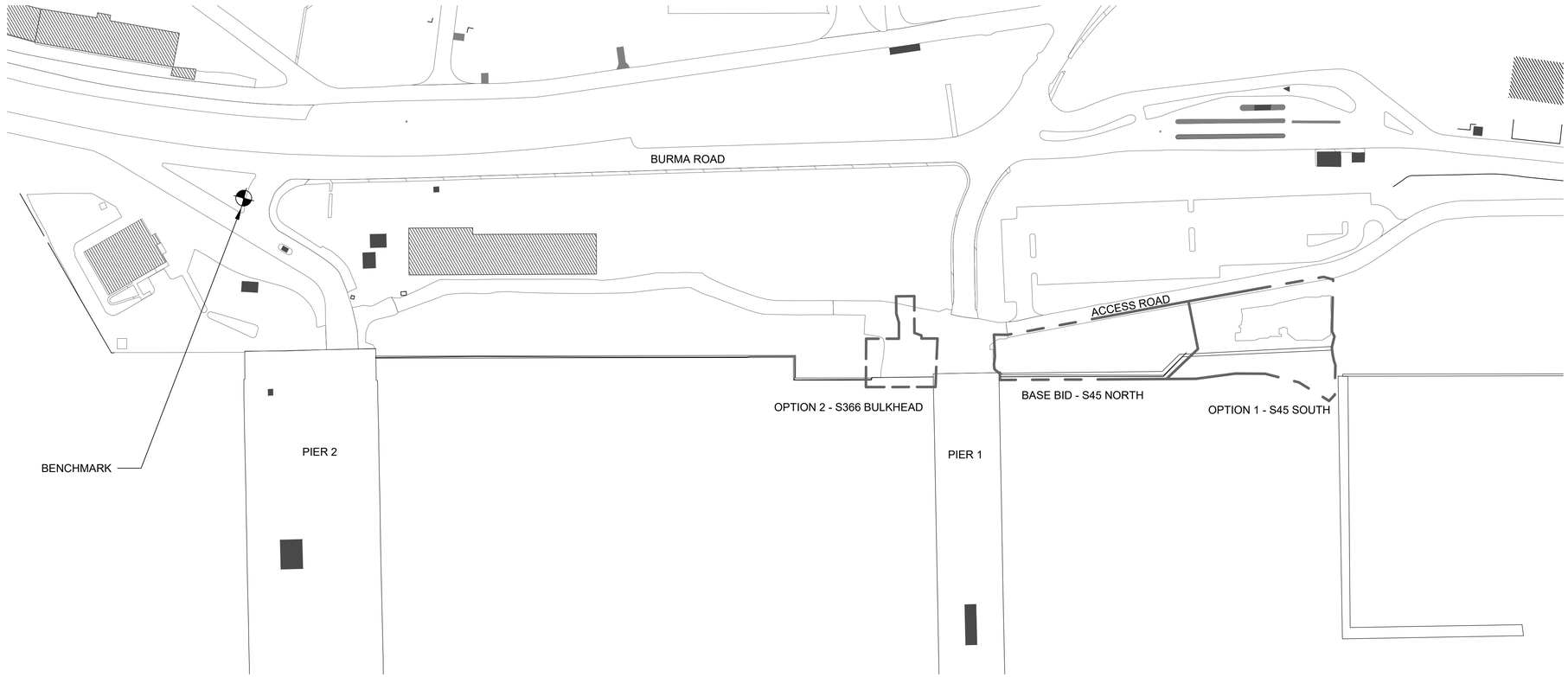
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781703

SHEET 8 OF 48

V-101

DRAWFORM REVISION: 31 JANUARY 2017



N

100' 50' 0 100'

BENCHMARK

Horizontal Datum: NAD 83 Rhode Island State Plane Coordinate System
Vertical Datum: NAVD 88
U.S. DEPT. OF NAVY SURVEY MARKER - NEWP 03 (BRASS DISK)
UTM ZONE: 19 NORTH

DESCRIPTION: FROM INTERSECTION OF BURMA RD AND ACCESS, PROCEED NORTH ALONG BURMA FOR 1,200' AND THE STATION WILL BE ON THE LEFT.
NORTHING: 163312.86
EASTING: 379293.60
ELEV. = 26.39 FT.

Control(s) notes:

THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING TO INCLUDE HORIZONTAL AND VERTICAL CONTROL FOR ALIGNMENT OF WORK. ALL SURVEY WORK TO ESTABLISH THE HORIZONTAL AND VERTICAL CONTROL SHALL BE UNDER THE GUIDANCE AND DIRECT SUPERVISION OF A RHODE ISLAND REGISTERED PROFESSIONAL SURVEYOR.

THE ENGINEER CANNOT GUARANTEE THAT TEMPORARY BENCH MARKS (TBM'S) OR OTHER SURVEY CONTROL POINTS WILL NOT BE DISTURBED PRIOR TO CONSTRUCTION. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL SATISFY HIMSELF AS TO THE ACCURACY OF ALL SURVEY OR EXISTING SITE INFORMATION AS INDICATED IN THE DRAWINGS OR SPECIFICATIONS. SHOULD THE CONTRACTOR DISCOVER ANY ERRORS, INACCURACIES OR OMISSIONS IN THE EXISTING CONDITIONS PLAN, HE SHALL IMMEDIATELY NOTIFY THE NAVY CONTRACTING OFFICER. BEFORE BEGINNING WORK, TAKE CARE TO PRESERVE ALL CONTROL STAKES, BENCH MARKS, REFERENCE POINTS AND PROPERTY CORNERS. THE NAVY WILL GRANT NO CLAIM FOR DAMAGES OR LOSS OF TIME BY THE CONTRACTOR DUE TO LOSS OR DISTURBANCE OF SURVEY CONTROL STAKES, BENCH MARKS, REFERENCE POINTS AND PROPERTY CORNERS DISTURBED BY THE CONTRACTOR'S WORK. MONUMENTS AND/OR REFERENCE POINTS SHALL BE REPLACED BY A RHODE ISLAND REGISTERED PROFESSIONAL SURVEYOR WHO WILL BE SELECTED BY AND PAID BY THE CONTRACTOR. THE NAVY WILL NOT MAKE FINAL PAYMENT TO THE CONTRACTOR UNTIL ALL DISTURBED OR DESTROYED PROPERTY CORNERS AND PERMANENT BENCH MARKS HAVE BEEN REPLACED BY THE RHODE ISLAND REGISTERED SURVEYOR.

NO.	DESCRIPTION	DATE	APPR

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	DM	DRW	DM	CHK	JK

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION - NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

PROJECT BENCHMARK

SCALE: 1" = 100'

EPROJECT NO.: 1569253

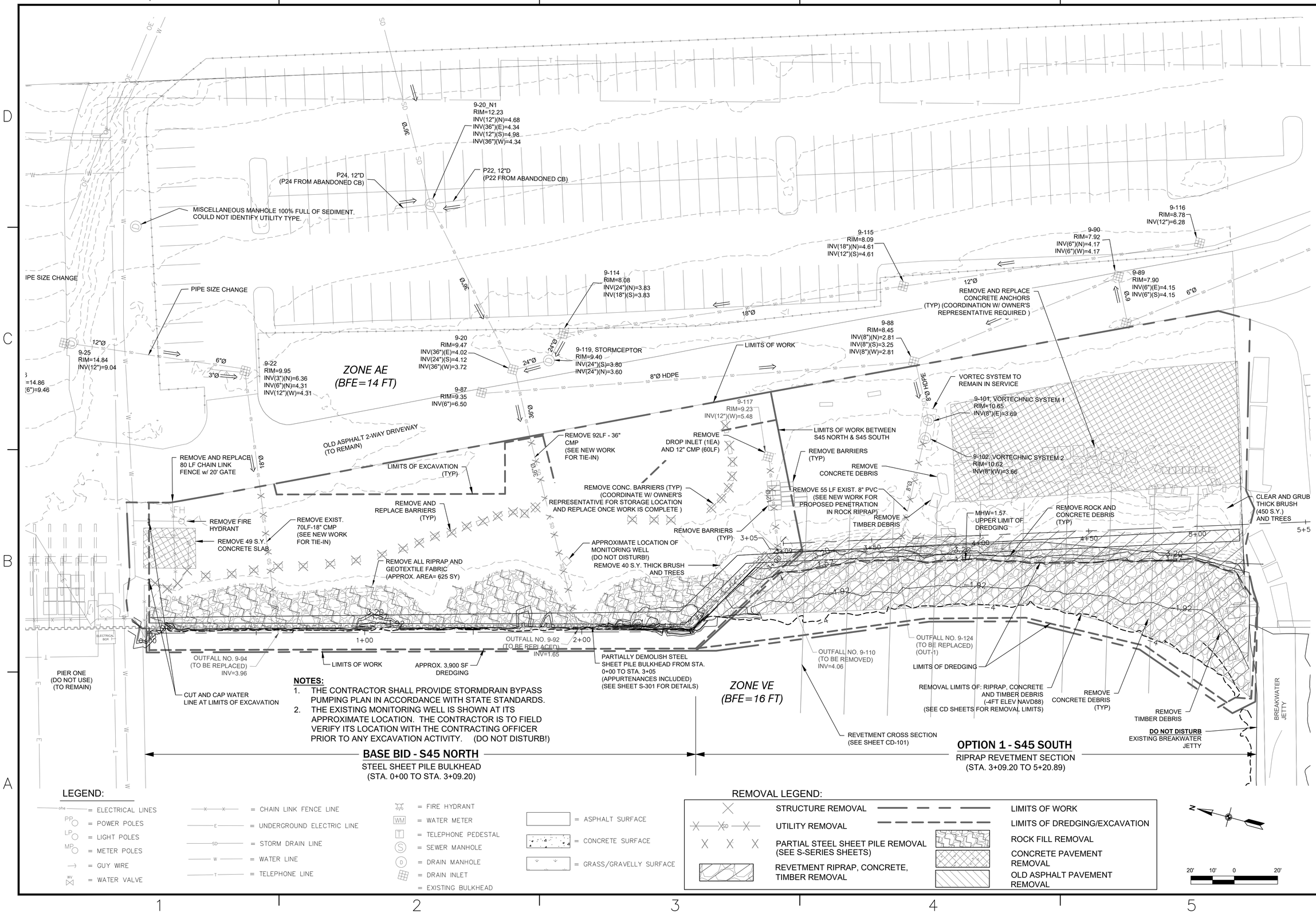
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781703

SHEET 9 OF 48

V-102

DRAWFORM REVISION: 31 JANUARY 2017



APPR | DATE | DESCRIPTION | STM | MJS

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES PWF | DRW PWF | CHK JM

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION ~ NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S45 DEMOLITION PLAN

SCALE: 1" = 20'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781704

SHEET 10 OF 48

CD-100

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND:

= LIMITS OF DREDGING, UNINTENTIONAL CONCRETE DEBRIS / RIP-RAP REMOVAL

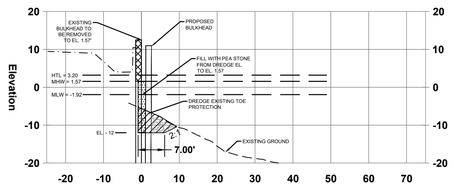
= LIMITS OF EXISTING BULKHEAD REMOVAL

= RIP RAP STONE PLACED IN FRONT OF PROPOSED BULKHEAD

NOTE: REPLACEMENT TOE PROTECTION - THE UNIT WEIGHT OF ROCK FOR THIS DESIGN IS 165 LB/FT3 WITH MEAN INDIVIDUAL ARMOR UNIT WEIGHT OF 2.7 LBS.

20' 10' 0 20'

S-45 BASE BID
STA. 0+00 - 3+.05.43

0+00.00


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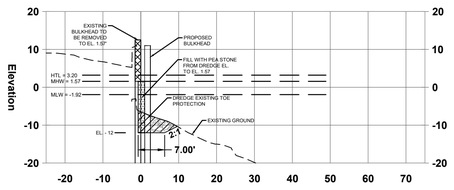

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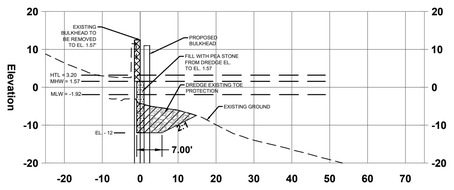

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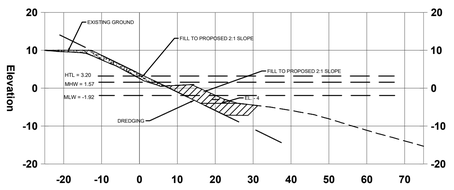

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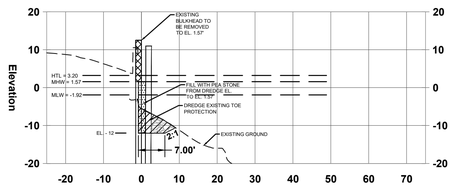

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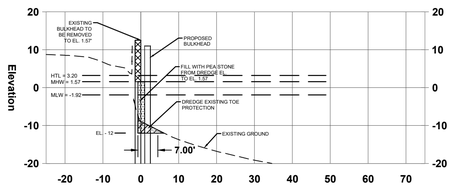

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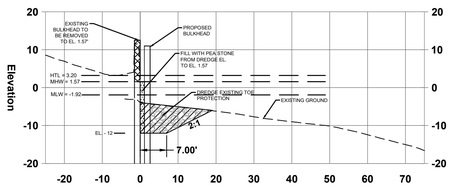

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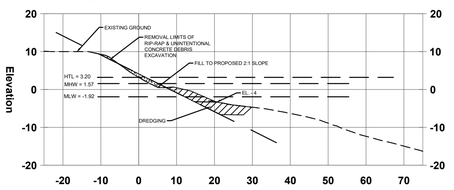

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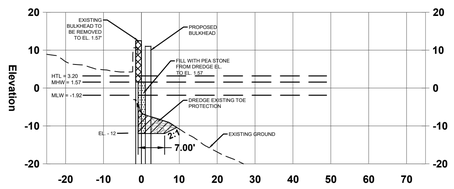

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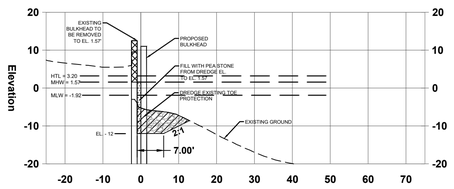

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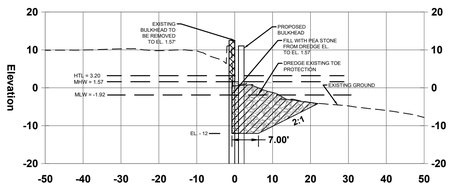

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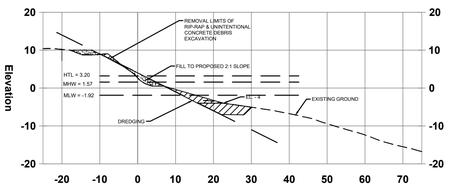

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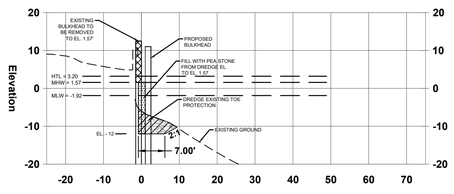

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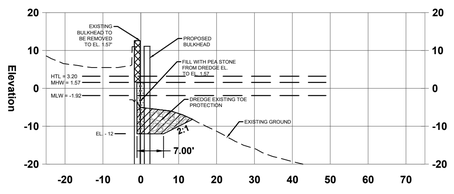

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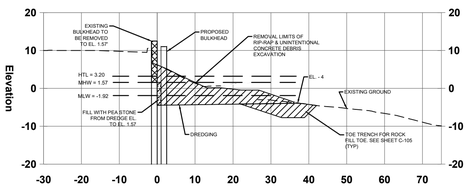

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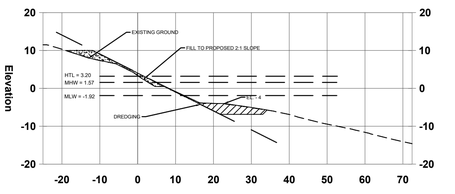

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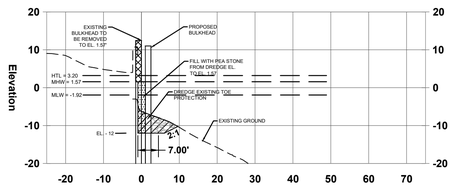

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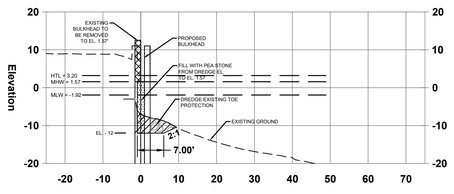
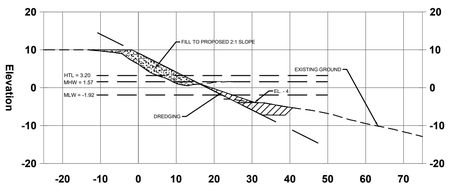


S-45 OPTION 1
STA. 3+.05.43 - EXISTING ROCK JETTY

3+20.00


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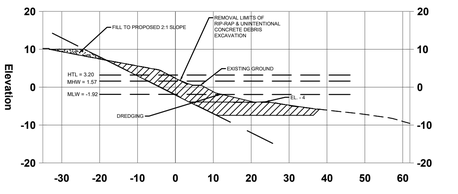
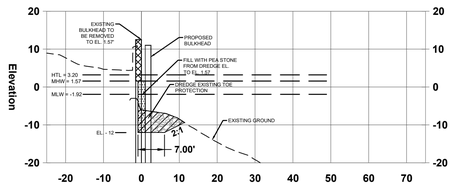


1+00.00


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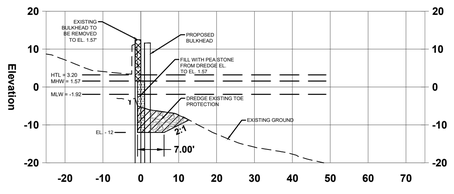

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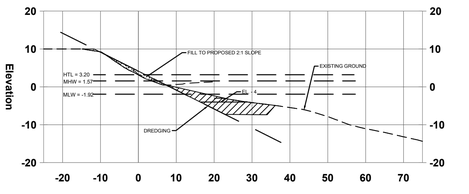

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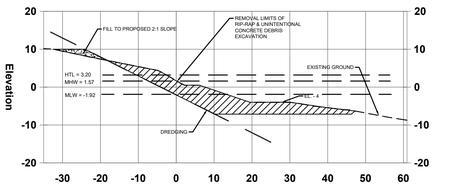


APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES PWF DRW EAW CHK DS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME2>>
NAVAL STATION
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S45 BULKHEAD ROCK REMOVAL SECTIONS

SCALE: 1"=20'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781705

SHEET 11 OF 48

CD-101

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND:

= LIMITS OF DREDGING, UNINTENTIONAL CONCRETE DEBRIS / RIP-RAP REMOVAL

= LIMITS OF EXISTING BULKHEAD REMOVAL

= RIP RAP STONE PLACED IN FRONT OF PROPOSED BULKHEAD

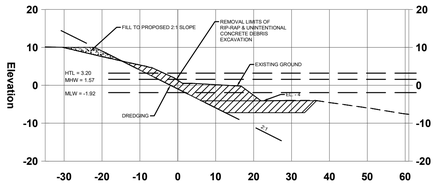
= LIMITS OF EXISTING BULKHEAD REMOVAL

20' 10' 0 20'

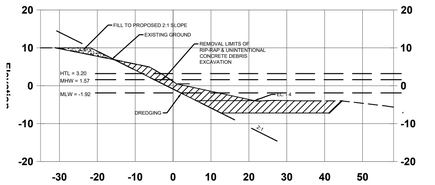
NOTE: REPLACEMENT TOE PROTECTION - THE UNIT WEIGHT OF ROCK FOR THIS DESIGN IS 165 LB/FT3 WITH MEAN INDIVIDUAL ARMOR UNIT WEIGHT OF 2.7 LBS.

S-366 OPTION 2
STA. 0+00 - 0+90.25

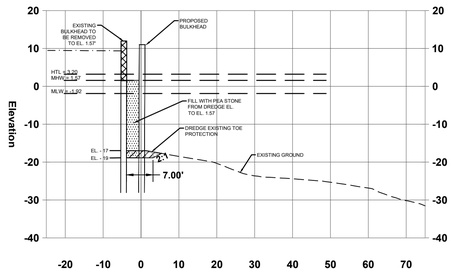
4+80.00



5+00.00



0+00.00



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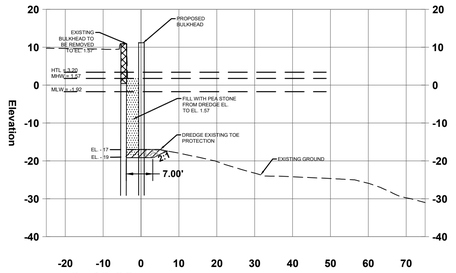

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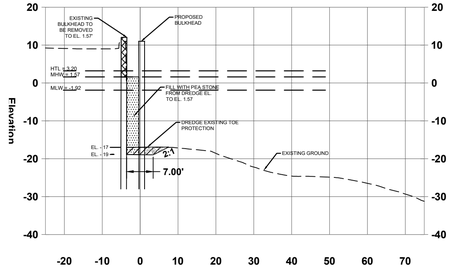
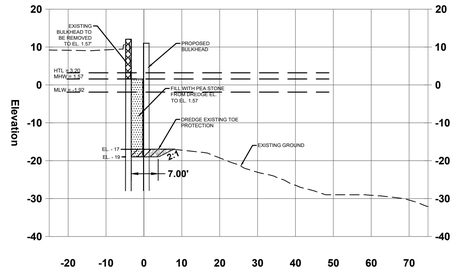


0+60.00



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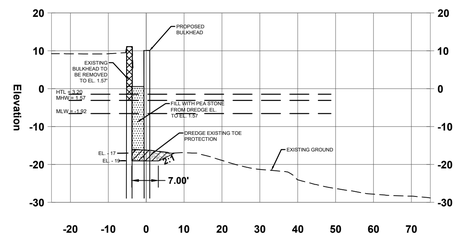


APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES PWF DRW EAW CHK DS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 and S45 AND STORMWATER REPAIRS

S45 AND S366 BULKHEAD ROCK REMOVAL SECTIONS

SCALE: 1"=20'

EPROJECT NO.: 1569253

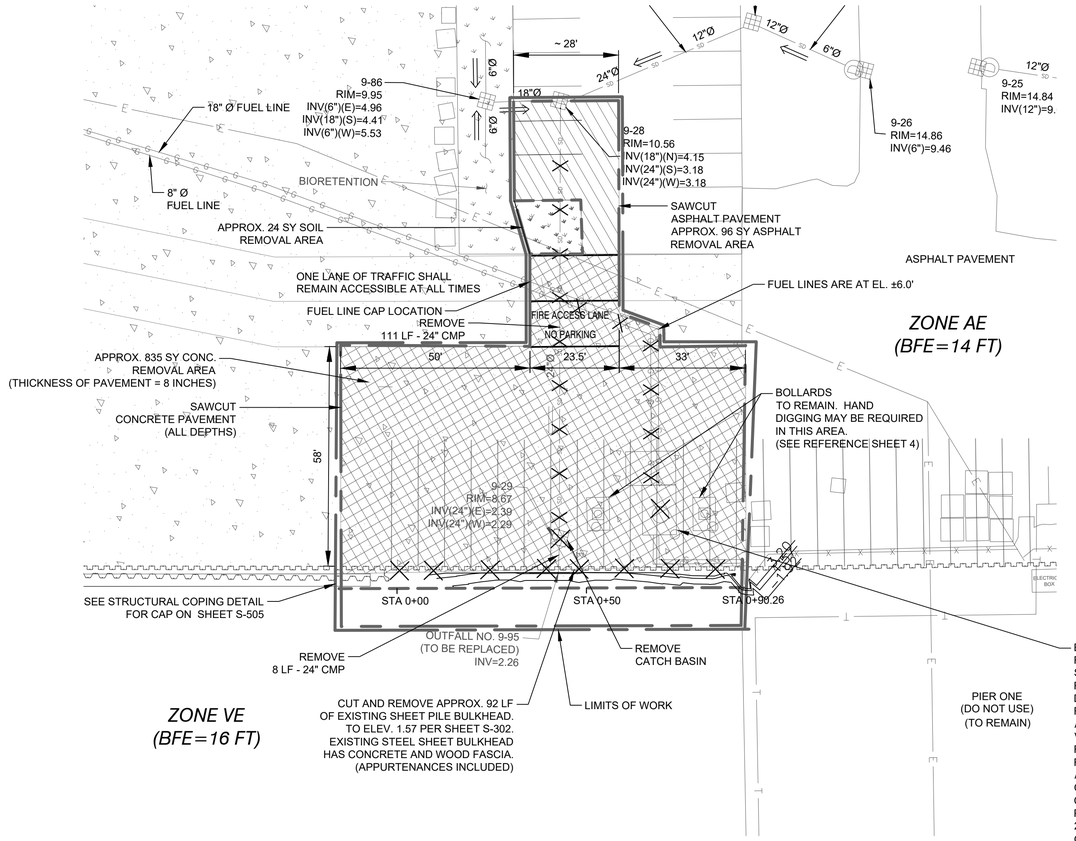
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781706

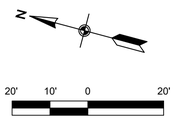
SHEET 12 OF 48

CD-102

DRAWFORM REVISION: 31 JANUARY 2017

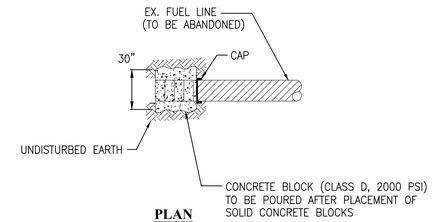


OPTION 2 - S366

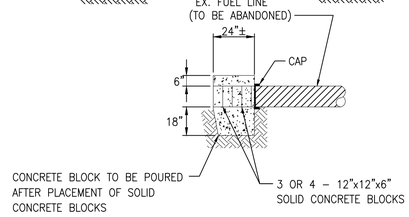


NOTES:

1. REFER TO SHEET G-101 REGARDING BYPASS PUMPING.
2. ONE LANE OF TRAFFIC SHALL REMAIN ACCESSIBLE AT ALL TIMES.
3. CONTRACTOR SHALL PROVIDE JERSEY BARRIERS AROUND ROADWAY FOR WORKER PROTECTION TO VEHICULAR TRAFFIC. JERSEY BARRIERS SHALL BE ILLUMINATED FOR VEHICLE SAFETY AND HAVE REFLECTORS.



PLAN



PROFILE

CUT AND CAP FUEL LINES

NOT TO SCALE

LEGEND:

- = ELECTRICAL LINES
- = POWER POLES
- = LIGHT POLES
- = METER POLES
- = GUY WIRE
- = WATER VALVE
- = CHAIN LINK FENCE LINE
- = UNDERGROUND ELECTRIC LINE
- = STORM DRAIN LINE
- = WATER LINE
- = TELEPHONE LINE
- = FUEL LINES
- = FIRE HYDRANT
- = WATER METER
- = TELEPHONE PEDESTAL
- = SEWER MANHOLE
- = DRAIN MANHOLE
- = CATCH BASIN
- = EXISTING BULKHEAD
- = ASPHALT SURFACE
- = CONCRETE SURFACE
- = GRASS/GRAVELLY SURFACE

REMOVAL LEGEND:

- STRUCTURE REMOVAL
- UTILITY REMOVAL
- PARTIAL STEEL SHEET PILE REMOVAL (SEE S-SERIES SHEETS)
- CONCRETE PAVEMENT REMOVAL
- OLD ASPHALT PAVEMENT REMOVAL
- LIMITS OF WORK
- LIMITS OF DREDGING
- LIMITS OF EXCAVATION
- GRASS REMOVAL

NOTE:

THE COASTAL WETLAND RESOURCES INCLUDE THE EXISTING BULKHEAD AND RIP RAP REVETMENT, BOTH CONSIDERED MANMADE SHORELINE FEATURES. THE 200 FOOT CONTIGUOUS AREA EXTENDS FROM THE EDGE OF THE SHORELINE FEATURES.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES	PWF	DRW	PWF	CHK	JM

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S366 DEMOLITION PLAN

SCALE: 1" = 20'

EPROJECT NO.: 1569253

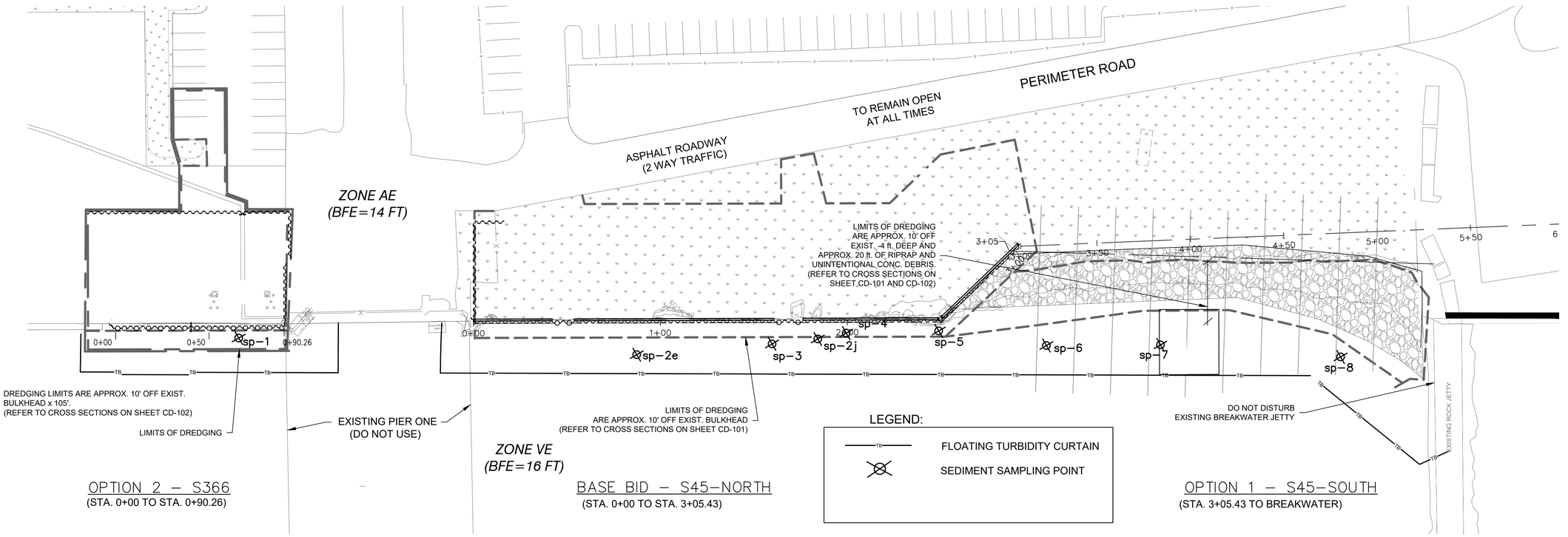
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781707

SHEET 13 OF 48

CD-103

DRAWFORM REVISION: 31 JANUARY 2017



OPTION 2 – S366
(STA. 0+00 TO STA. 0+90.26)

BASE BID – S45–NORTH
(STA. 0+00 TO STA. 3+05.43)

OPTION 1 – S45–SOUTH
(STA. 3+05.43 TO BREAKWATER)

SEDIMENT SAMPLING LOCATIONS

Station ID	X (Easting)	Y (Northing)	Latitude	Longitude
sp-1	379287.8	162244.4	41.528459	-71.312996
sp-2e	379334.3	162036.4	41.527888	-71.312828
sp-2j	379367.5	161945.0	41.527637	-71.312708
sp-3	379358.6	161967.9	41.527700	-71.312740
sp-4	379374.5	161931.1	41.527599	-71.312682
sp-5	379388.4	161883.6	41.527468	-71.312632
sp-6	379395.8	161825.9	41.527310	-71.312605
sp-7	379411.9	161767.0	41.527148	-71.312547
sp-8	379430.6	161672.3	41.526888	-71.312479

APPR | DATE | DESCRIPTION | SYM

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NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

DREDGING PLAN

SCALE: 1"=30'

EPROJECT NO.: 1569253

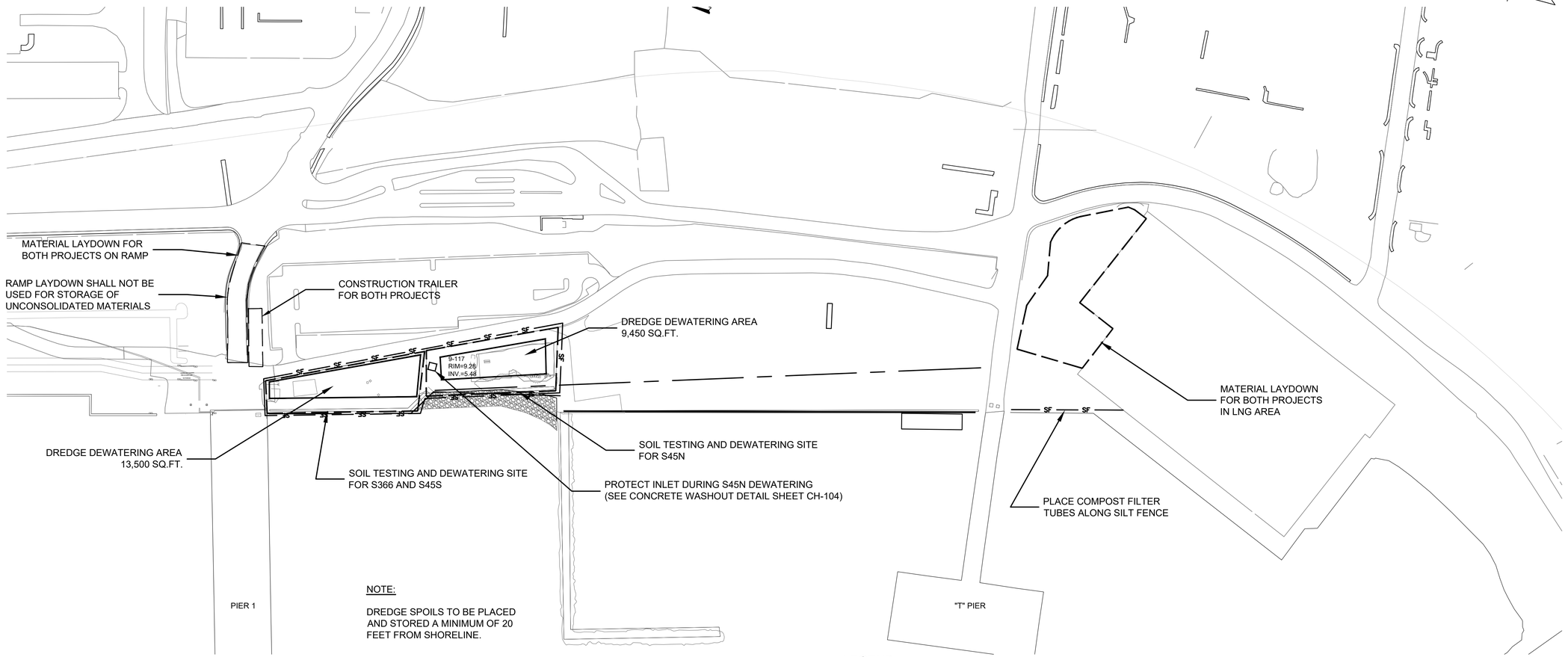
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781707

SHEET 14 OF 48

CD-104

DRAWFORM REVISION: 31 JANUARY 2017



NOTE:

DREDGE SPOILS TO BE PLACED AND STORED A MINIMUM OF 20 FEET FROM SHORELINE.

REFER TO SPECIFICATION SECTIONS:

01 50 00, 3.4	TRAFFIC PROVISIONS
02 61 13	EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL;
02 61 23	REMOVAL AND DISPOSAL OF PCB CONTAMINATED SOILS;
02 81 00	TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS; AND
02 82 16.00 20	ENGINEERING CONTROL OF ASBESTOS CONTAINING MATERIALS.

THE WORK CONSISTS OF EXCAVATION AND TEMPORARY STORAGE OF APPROXIMATELY 5,750 CUBIC YARDS OF CONTAMINATED MATERIAL. APPROXIMATE LIMITS OF CONTAMINATED MATERIAL FROM IR SITE 19 ARE SHOWN ON DRAWING G-001.

CHARACTERIZATION DATA ON THE NATURE AND EXTENT OF THE CONTAMINATED MATERIAL IS SHOWN IN THE RECORD OF DECISION SITE 19 ON SHORE DERECKTOR SHIPYARD SOIL AND GROUNDWATER OPERABLE UNIT 12 (OU12) NS NEWPORT, R.I. AND THE INSTALLATION RESTORATION (IR) SITE 19 DOCUMENTS.

STOCKPILING OF CONTAMINATED MATERIAL SHALL INCLUDE ALL ASPECTS OF GRADING, PREPARATION, HANDLING, PLACEMENT, MAINTENANCE, REMOVAL, TREATMENT, AND OTHER DISPOSAL OF STOCKPILE COVER MATERIALS AND LINER MATERIALS AND ALL OTHER ITEMS INCIDENTAL TO CONSTRUCTION OF STOCKPILES. STOCKPILES SHALL BE CONSTRUCTED TO ISOLATE STORED CONTAMINATED MATERIAL FROM THE ENVIRONMENT. THE MAXIMUM STOCKPILE VOLUME SHALL BE 500 CUBIC YARDS. MULTIPLE STOCKPILES OF 500 CUBIC YARDS IS PERMITTED PROVIDED SPACE AND FACILITIES ARE AVAILABLE.

LIQUID COLLECTED FROM EXCAVATIONS AND STOCKPILES SHALL BE TEMPORARILY STORED IN 55 GALLON BARRELS. LIQUID STORAGE CONTAINERS SHALL BE WATER-TIGHT AND SHALL BE LOCATED IN CONTAMINATED STORAGE AREA (LANDSIDE OF S50 STEEL SHEET PILE BULKHEAD).

TEST SAMPLES OF STORED MATERIALS SHALL BE COLLECTED AT A FREQUENCY OF ONCE PER 500 TONS.

PROVIDE APPRORIATE SPILL RESPONSE MATERIALS INCLUDING, BUT NOT LIMITED TO THE FOLLOWING: CONTAINERS, ABSORBANTS, SHOVELS, AND PERSONAL PROTECTIVE EQUIPMENT. SPILL REPSONSE MATERIALS SHALL BE AVAILABLE AT ALL TIMES WHEN CONTAMINATED MATERIALS/WASTERS ARE BEING HANDLED OR TRANSPORTED. SPILL RESPONSE MATERIALS SHALL BE COMPATIBLE WITH THE TYPE OF MATERIALS AND CONTAMINATES BEING HANDLED.

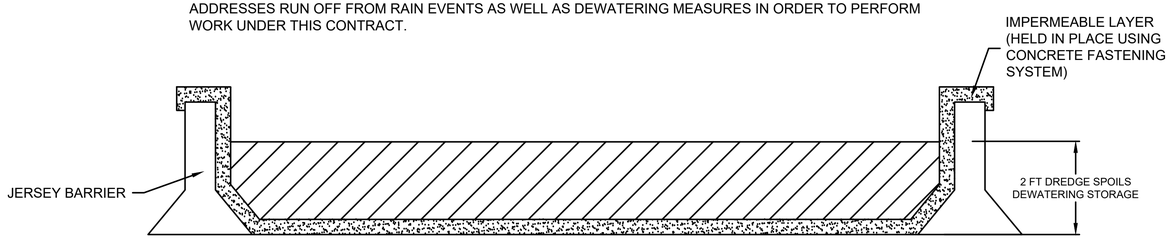
DEWATERING SHALL BE PERFORMED TO ADDRESS GROUNDWATER & SURFACE WATER AND DREDGE SPOILS. CONTRACTOR SHOULD SUBMIT SEPARATE PLANS.

OFFISTE DISPOSAL OF CONTAMINATED MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

LEGEND:

—— SF ——	SILT FENCE
— — —	FILTER MEMBRANE
☐	CONCRETE WASHOUT (SEE DETAIL SHEET CH-104)

NOTE: CONTRACTOR SHALL PROVIDE ALL EROSION CONTROL MEASURES AND DEWATERING MEASURES TO COMPLY WITH RIDEM REQUIREMENTS AND CRMC. THE EROSION CONTROL MEASURES SHOWN ON THIS DRAWING DO NOT SHOW ALL EROSION CONTROL MEASURES TO BE IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A COMPREHENSIVE EROSION CONTROL PLAN THAT ADDRESSES RUN OFF FROM RAIN EVENTS AS WELL AS DEWATERING MEASURES IN ORDER TO PERFORM WORK UNDER THIS CONTRACT.



DEWATERING SITE TYPICAL CROSS SECTION
(NOT TO SCALE)

APPR	DATE	DESCRIPTION	SYM

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ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	DM	CHK	DS

PM/DM

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<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

STAGING AND DREDGE/DEBRIS TESTING AND DEWATERING AREA

SCALE: 1"=100'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781708

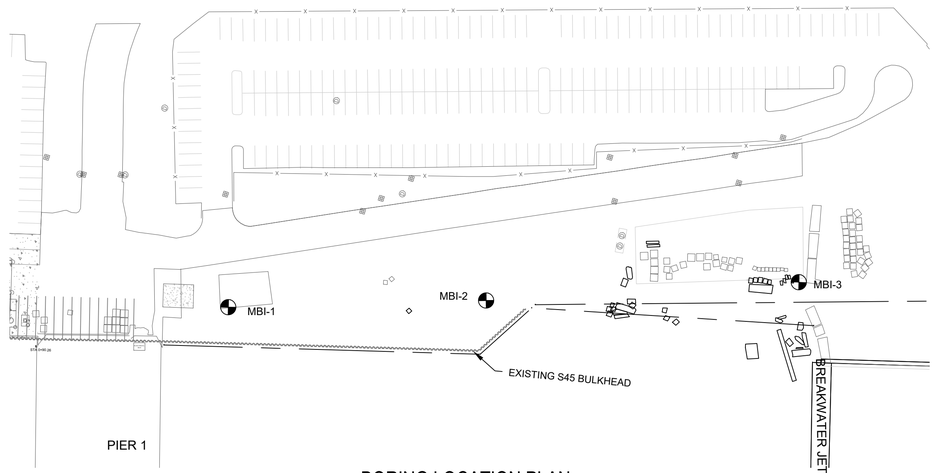
SHEET 15 OF 48

CD-105

DRAWFORM REVISION: 31 JANUARY 2017

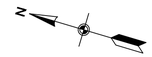
LEGEND:

MBI-1 = BORING LOCATION AND NUMBER



BORING LOCATION PLAN

N.T.S



GRAPHIC BAR SCALE

60' 0 60' 120'

One Inch = Sixty Feet

BORING LOGS WERE DEVELOPED BASED ON NAVSTA MLW DATUM, WHICH DEFINES THE MEAN LOW WATER ELEVATION AT EL. 0.0. IMPERIAL UNITS WERE USED.

Driller:	Terracon / S. Shaw	Boring Log	Hole No.: MBI-1
Inspector:	R. States	TOWN: Newport, RI	Stat./Offset:
Engineer:	R. States	MBI Project No. 160122	Northing:
Start Date:	7/6/2017	Route No.:	Easting:
Finish Date:	7/62017	Bridge No.:	Surface Elevation (FT): 13
Project Description:	Stormwater and Bulkhead Repairs, Naval Station Newport, RI		
Casing Size/Type:	4" ID Flush Joint	Sampler Type/Size: 1-3/8" ID Split Barrel (S-)	Core Barrel Type: NQ2
Hammer Wt.: 300	Fall: 30"	Hammer Wt.: 140 lb Fall: 30"	

Groundwater Observations: 12 Feet @ 0 hours inferred from wet sample

Depth (ft)	Sample Type/ No.	Blows per 6 inches (minutes per foot)	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0	S-1	7 - 7 - 11 - 15	24	16		FILL	Medium dense gray silty SAND with gravel (moist) FILL **SM**	13
5	S-2	6 - 12 - 13 - 10	24	10			Medium dense gray silty SAND with gravel (moist) FILL **SM**	8
10	S-3	13 - 15 - 8 - 6	24	8			Medium dense gray poorly-graded GRAVEL with silt and sand (wet) FILL GP-GM	3
15	S-4	7 - 8 - 7 - 6	24	10		GRAVELLY SAND	Medium dense gray silty SAND with gravel (wet) **SP-SM**	-2
20	S-5	5 - 4 - 3 - 6	24	14			Loose gray silty SAND with gravel (wet) **SP-SM**	-7
25	S-6	10 - 4 - 3 - 11	24	10			Loose gray well-graded SAND with silt and gravel (wet) SW-SM	-12
30	S-7	22 - 27 - 23 - 25	24	20		GLACIAL TILL	Dense gray silty SAND with gravel (moist) **SM**	-17
35	S-8	23 - 51 - 53 - 54/3 in.	21	18		RESIDUAL SOIL / BEDROCK	Very dense gray well-graded SAND with silt and gravel includes light gray highly decomposed bedrock mm layering (moist) SW-SM	-22
40							Dense gray highly weathered SHALE	-27

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50 %

Total Penetration (feet) in: Earth: 37 Rock:
No. of Samples: 8

NOTES: CME 75 rig with automatic hammer
Cobble or boulder at 12 ft depth inferred from roller bit and casing advance
Weathered bedrock inferred from rock chips in spoon and drill chatter.

Sheet 1 of 1
SM-001-M REV. 1/02

Driller:	Terracon / S. Shaw	Boring Log	Hole No.: MBI-2
Inspector:	R. States	TOWN: Newport, RI	Stat./Offset:
Engineer:	R. States	MBI Project No. 160122	Northing:
Start Date:	7/6/2017	Route No.:	Easting:
Finish Date:	7/6/2017	Bridge No.:	Surface Elevation (FT): 13
Project Description:	Stormwater and Bulkhead Repairs, Naval Station Newport, RI		
Casing Size/Type:	4" ID Flush Joint	Sampler Type/Size: 1-3/8" ID Split Barrel (S-)	Core Barrel Type: NQ2
Hammer Wt.: 300	Fall: 30"	Hammer Wt.: 140 lb Fall: 30"	

Groundwater Observations: 12 Feet @ 0 hours inferred from wet sample

Depth (ft)	Sample Type/ No.	Blows per 6 inches (minutes per foot)	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0	S-1	22 - 12 - 12 - 11	24	14		FILL	3 inches Asphalt overlying medium dense gray to black silty SAND (moist) FILL **SM**	13
5	S-2	10 - 15 - 20 - 15	24	8			Dense gray silty SAND with trace concrete chips (moist) FILL **SM**	8
10	S-3	5 - 4 - 4 - 4	24	12			Loose gray well-graded SAND with silt and gravel (wet) FILL **SW-SM**	3
15	S-4	5 - 2 - 3 - 2	24	12			Loose gray poorly-graded silty SAND (wet) SP-SM	-2
20	S-5	3 - 5 - 6 - 6	24	14		SAND	Medium dense gray poorly-graded silty SAND with silt and gravel (wet) SP-SM	-7
25	S-6	16 - 17 - 12 - 8	24	14			Medium dense gray well-graded SAND with silt, trace light gray rock chips (wet) **SW-SM**	-12
30	S-7	12 - 17 - 24 - 30	24	18		GLACIAL TILL	Dense gray silty SAND, trace rock chips (wet) **SW-SM**	-17
35	S-8	19 - 26 - 23 - 26	24	16		WEATHERED BEDROCK	Dense light gray highly decomposed shale; fine grained, near horizontal laminations. Silty SAND with gravel **SM**	-22
40							Dense light gray highly weathered SHALE	-27

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50 %

Total Penetration (feet) in:
No. of Samples: 8

NOTES: CME 75 rig with automatic hammer

Sheet 1 of 1
SM-001-M REV. 1/02

Driller:	Terracon / S. Shaw	Boring Log	Hole No.: MBI-3
Inspector:	R. States	TOWN: Newport, RI	Stat./Offset:
Engineer:	R. States	MBI Project No. 160122	Northing:
Start Date:	7/7/2017	Route No.:	Easting:
Finish Date:	7/7/2017	Bridge No.:	Surface Elevation (FT): 13
Project Description:	Stormwater and Bulkhead Repairs, Naval Station Newport, RI		
Casing Size/Type:	4" ID Flush Joint	Sampler Type/Size: 1-3/8" ID Split Barrel (S-)	Core Barrel Type: NQ2
Hammer Wt.: 300	Fall: 30"	Hammer Wt.: 140 lb Fall: 30"	

Groundwater Observations: 12 Feet @ 0 hours inferred from wet sample

Depth (ft)	Sample Type/ No.	Blows per 6 inches (minutes per foot)	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0	S-1	21 - 12 - 17 - 18	24	14		FILL	Medium dense gray to black silty SAND with gravel (moist) FILL **SM**	12
5	S-2	7 - 8 - 11 - 8	24	16			Medium dense gray to black poorly-graded SAND with silt (moist) FILL SP-SM	7
10	S-3	2 - 1 - 1/1 foot	24	8			Very loose gray to black poorly-graded SAND with silt (moist) FILL SP-SM	2
15	S-4	1 - 1/1 foot - 3	24	14			Very loose gray to black poorly-graded SAND with silt (moist) FILL SP-SM	-3
20	S-5	2 - 3 - 4 - 5	24	16		SAND	Loose gray silty SAND (wet) **SM**	-8
25	S-6	20 - 30 - 22 - 14	24	14			Very dense gray silty GRAVEL with sand (wet) **GM**	-13
30	S-7	10 - 14 - 17 - 17	24	15		GLACIAL TILL	Dense gray silty GRAVEL with sand (wet) **GM**	-18
35	S-8	16 - 18 - 23 - 19	24	20			Dense gray silty GRAVEL with sand (wet) **GM**	-23
40	S-9	12 - 15 - 20 - 35	24	16		RESIDUAL / BEDROCK	Dense gray highly weathered SHALE	-28

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50 %

Total Penetration (feet) in:
No. of Samples: 9

NOTES: CME 75 rig with automatic hammer
Top of bedrock inferred from sample and drill chatter.

Sheet 1 of 2
SM-001-M REV. 1/02

Driller:	Terracon / S. Shaw	Boring Log	Hole No.: MBI-3
Inspector:	R. States	TOWN: Newport, RI	Stat./Offset:
Engineer:	R. States	MBI Project No. 160122	Northing:
Start Date:	7/7/2017	Route No.:	Easting:
Finish Date:	7/7/2017	Bridge No.:	Surface Elevation (FT): 13
Project Description:	Stormwater and Bulkhead Repairs, Naval Station Newport, RI		
Casing Size/Type:	4" ID Flush Joint	Sampler Type/Size: 1-3/8" ID Split Barrel (S-)	Core Barrel Type: NQ2
Hammer Wt.: 300	Fall: 30"	Hammer Wt.: 140 lb Fall: 30"	

Groundwater Observations: 12 Feet @ 0 hours inferred from wet sample

Depth (ft)	Sample Type/ No.	Blows per 6 inches (minutes per foot)	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
45	C-1	(1 - 1 - 2 - 4 - 5)	60	0		RESIDUAL SOIL / HIGHLY WEATHERED BEDROCK	Roller bit advance through weathered bedrock to firm bedrock (chatter and shaking)	-33
50							Light gray tailings similar to residual soil recovered in sample S-9. No water loss during coring.	-38
55								-43
60								-48
65								-53
70								-58
75								-63
80								-68
								-73

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50 %

Total Penetration (feet) in:
Earth: Rock:
No. of Samples:

NOTES: CME 75 rig with automatic hammer
Top of bedrock inferred from sample and drill chatter.

Sheet 2 of 2
SM-001-M REV. 1/02

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test
Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50 %

Total Penetration (feet) in: Earth: 45 Rock: 5
No. of Samples: 9

NOTES: CME 75 rig with automatic hammer
Top of bedrock inferred from sample and drill chatter.

Sheet 1 of 2
SM-001-M REV. 1/02

APPR	DATE	DESCRIPTION	SYM

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FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES MBI DRW DM CHK DS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

BORING LOCATION AND LOGS FOR BASED BID AND OPTION 1 – S45 BULKHEAD

SCALE: 1" = 60'

EPROJECT NO.: 1569253

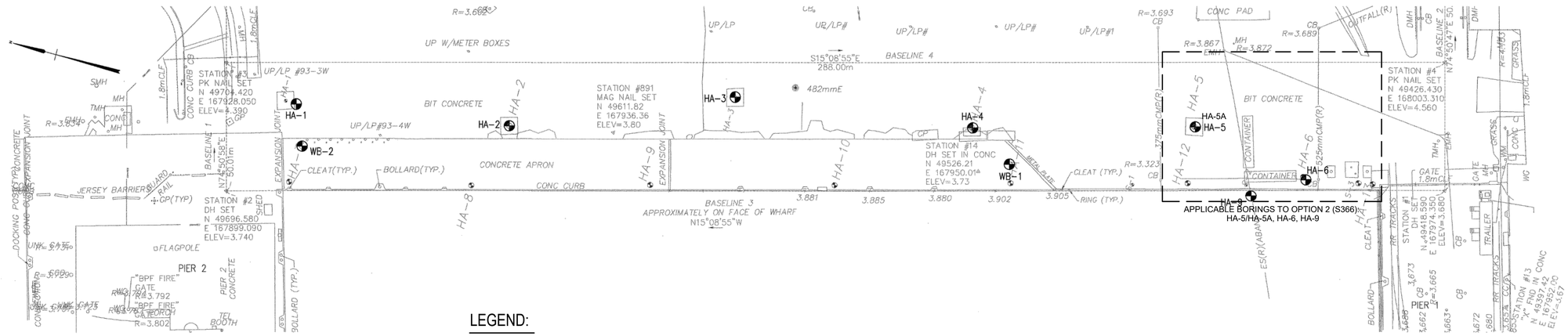
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781709

SHEET 16 OF 48

B-101

DRAWFORM REVISION: 31 JANUARY 2017



LEGEND:

MBI-1 = BORING LOCATION AND NUMBER

BORING LOCATION PLAN

N.T.S

HALEY & ALDRICH — TEST BORING REPORT — METRIC — Boring No. HA-1

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

File No. 35219-000 | Sheet No. 1 of 4 | Start June 6, 2008 | Finish June 9, 2008 | Driller S. Bolduc | H&A Rep. F. Marowitz | Elevation 3.85 m | Datum Naval Station MLW | Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	NX
Inside Diameter (mm)	102	34.8	47.5
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures: Rig Make & Model: CME 75 | Bit Type: Roller Bit | Drill Mud: None | Casing: HW Drives to 9.1 m | Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	Field Test % Dilatancy	Toughness	Plasticity	Strength
0							Drill through 0.15 m of asphalt									
	14 24 32 44	S1 0.4	0.15 0.76		3.08 0.15	SM	-ASPHALT- Very dense gray silty SAND (SM), mps 20 mm, no structure, no odor, dry PID = 0.0/0.0 ppm	5	5	5	15	45	25			
1							-FILL-									
2	38 37 44 27	S2 0.3	1.53 2.13		NO WELL INSTALLED	SM	Very dense gray silty SAND with gravel (SM), mps 30 mm, no structure, no odor, moist PID = 0.0/0.0 ppm	10	15	5	5	35	30			
3	5 3 1 WOH*	NR 0.0	3.05 3.66				Note: No recovery. Note: *WOH = Weight of Hammer.									
4							Note: Gravel in cuttings to 4.0 m.									

Water Level Data				Sample Identification		Well Diagram		Summary	
Date	Time	Elapsed Time (hr.)	Depth (m) to: Bottom of Casing	Bottom of Hole	Water (m)	O Open End Rod	Riser Pipe	Overburden (lin. m)	16.76
					Not taken	T Thin Wall Tube	Screen	Rock Cored (lin. m)	1.52
						U Undisturbed Sample	Filter Sand	Samples	S9, C1
						S Split Spoon	Cuttings	Boring No. HA-1	METRIC
						G Geoprobe	Grout		
							Concrete Bentonite Seal		

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None | Toughness: L-Low, M-Medium, H-High | Plasticity: N-Nonplastic, L-Low, M-Medium, H-High | Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-1 (Sheet 2 of 4) — File No. 35219-000

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	Field Test % Dilatancy	Toughness	Plasticity	Strength
- 5 -	8 6 5 5	S3 0.1	4.57 5.18		-5.79 9.64	SP-SM	Medium dense gray poorly graded SAND with silt and gravel (SP-SM), mps 20 mm, no structure, no odor, wet PID = 0.0/0.0 ppm	5	10	10	45	20	10			
- 6 -	7 7 7 8	NR 0.0	6.1 6.71				Note: No recovery. -FILL-									
- 7 -	10 11 13 12	S4 0.4	7.62 8.23		-8.79 10.64	SM	Medium dense gray silty SAND (SM), mps 20 mm, well bonded, no odor, wet PID = 0.0/0.0 ppm	5	5	15	15	15	45			
- 8 -							-GLACIAL TILL-									
- 9 -	15 14 13 14	S5 0.4	9.14 9.75			SM	Medium dense gray silty SAND with gravel (SM), mps 20 mm, well bonded, no odor, wet PID = 0.0/0.0 ppm	5	15	15	10	10	45			
- 10 -																

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-1

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-1 (Sheet 3 of 4) — File No. 35219-000

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	Field Test % Dilatancy	Toughness	Plasticity	Strength
- 11 -	12 18 19 24	S6 0.3	10.67 11.28		-7.45 11.28	SM	Similar to above except dense PID = 0.0/0.0 ppm	5	15	15	10	10	45			
							Note: Weathered shale in spoon tip at 11.28 m indicating stratum change. TOP OF WEATHERED BEDROCK 11.28 M									
- 12 -	24 29 43 48	S7 0.3	12.19 12.8			ML	Hard olive gray sandy SILT with gravel (ML), mps 30 mm, distinct shale structure, no odor, wet, with quartzite inclusions PID = 0.0/0.0 ppm	10	10	10	5	5	60	R	L	N	L
- 13 -							-WEATHERED BEDROCK-									
- 14 -	57 100/ 0.13 m	S8 0.3	13.72 13.99			ML	Hard olive gray SILT with sand (ML), mps 5 mm, distinct shale structure, no odor, wet PID = 0.0/0.0 ppm	5	5	5	5	80	R	L	N	L
- 15 -	100/ 0.10 m	S9 0.1	15.24 15.33		-11.41 15.24	ML	Similar to above except with quartzite inclusions PID = 0.0/0.0 ppm	5	5	5	5	80	R	L	N	L
- 16 -							Note: Advance boring with roller bit to 16.76 m prior to coring. -COREABLE BEDROCK- SEE CORE BORING REPORT FOR ROCK DETAILS									

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-1

HALEY & ALDRICH — CORE BORING REPORT — Boring No. HA-1 (Sheet No. 4 of 4) — File No. 35219-000

Depth (m)	Drilling Rate min/0.30m	Run No.	Depth (m)	Recovery/RQD cm	Recovery/RQD %	Weathering	Elev./Depth (m)	Visual Description and Remarks
								SEE TEST BORING REPORT FOR OVERBURDEN DETAILS
17.0	2	C1*	16.76 18.29	36 0	23 0	High		Soft highly weathered gray fine grained SHALE with quartzite inclusions. Joint set horizontal, extremely to very close, rough planar, decomposed to disintegrated, open to very wide. Notes: * Indicates RQD not figured for soft, highly weathered bedrock. -COREABLE BEDROCK-
	2							
	2							
18.0	3							
	3						18.29	BOTTOM OF EXPLORATION 18.29 M

FROM ALL BORINGS SHOWN ON THE BORING LOCATION PLAN, APPLICABLE BORINGS TO OPTION 2 (S366) ARE: HA-5, HA-5A, HA-6 AND HA-9. BORING LOGS WERE OBTAINED FROM RECORD OF BORINGS IN ACCORDANCE WITH NAVSTA MLW DATUM WHICH DEFINES THE MEAN LOW WATER ELEVATION AT EL.0.0 BASED ON METRIC UNIT SYSTEM. LOGS OF OTHER BORINGS SHOWN ON THE PLAN ARE ALSO PRESENTED TO DESCRIBE THE SUBSURFACE CONDITION WITHIN THE GENERAL PROJECT AREA. CONTRACTOR SHALL EVALUATE ALL DETAILED BORING LOG INFORMATION TO DEVELOP APPROPRIATE MEANS AND METHODS FOR PILE INSTALLATIONS TO THE DESIGN TIP ELEVATIONS. REFER TO PLAN SHEET S-302 - ADDITIONAL CONSTRUCTION NOTES FOR DETAILS.

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BURLINGTON, MA 01803

DAVID P. ANDERSON CIVIL No. 37119 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS
11/18/08

DES. – DRN. RWT CHK. DPA
FIRE PROTECTION
BRANCH MANAGER
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
NORTHEAST IPT
NAVAL STATION
NEWPORT, R.I.
P-469 WATERFRONT IMPROVEMENTS
NAVAL STATION, NEWPORT, RHODE ISLAND
BORING LOCATION PLAN AND LOGS

CODE ID. NO. 80091 | SIZE D
SCALE: AS NOTED
WAVHO NO. N/A
JOB ORDER NO. 5A3370
WORK ORDER NO. 794165
CONSTR. CONTR. NO. N40085–09–R–7002
NAVFAC DRAWING NO. 12527015
SHEET 16 OF 57
B–102
DRAWFORM REVISION: 6 AUG 2007

Michael Baker INTERNATIONAL
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
FINAL DESIGN
SATISFACTORY TO DATE November 2021
DES DRW DM CHK DS
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NEWPORT, R.I.
NAVAL STATION
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS
BORING LOCATION AND LOGS FOR OPTION 2 – S366 BULKHEAD

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781710
SHEET 17 OF 48
B-102
DRAWFORM REVISION: 31 JANUARY 2017

FILE NAME: R:\BO-13\BAO MAVSTA P-469\02 cad\Geotechnical\P469-794165-B-102.dwg LAYOUT NAME: B-102 PLOTTED: Tuesday, November 18, 2008 - 9:48am USER: FMarowitz

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-4

METRIC Boring No. HA-4

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

File No. 35219-000
Sheet No. 1 of 2
Start June 5, 2008
Finish June 5, 2008
Driller B. Wordel
H&A Rep. F. Marowitz

Elevation 3.80 m
Datum Naval Station MLW
Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	-
Inside Diameter (mm)	102	34.8	
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures: Rig Make & Model: CME 75; Bit Type: Roller Bit; Drill Mud: None; Casing: HW Driven to 7.6 m; Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
0					3.65		-ASPHALT-									
	6 8 18 20	S1 0.4	0.15 0.76		0.15	SM	Medium dense dark brown silty SAND with gravel (SM), mps 20 mm, no structure, no odor, moist PID = 0.0/0.0 ppm	5	10	15	30	20	20			
1							-FILL-									
	11 10 6 4	S2 0.3	1.52 2.13			SM	Similar to above except wet PID = 0.0/0.0 ppm		10	15	20	15	25			
2				NO WELL INSTALLED												
3	7 3 5 6	S3 0.1	3.05 3.66			SM	Similar to above except loose PID = 0.0/0.0 ppm		10	10	15	25	15			
							Note: Drill action suggests material change at 3.96 m.									
4																
5	13 8 5 5	S4 0.1	4.57 5.18			GM	Medium dense gray silty GRAVEL with sand (GM), mps 25 mm, no structure, no odor, moist PID = 0.0/0.0 ppm	15	30	10	15	15	15		
6																
7																
8																

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (m); Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. m) 10.94; Rock Cored (ft. m); Samples S8

Boring No. HA-4 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-4 (2 of 2)

File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
6							-FILL-									
	13 8 5 5	S5 0.3	6.1 6.71			SM	Medium dense gray silty SAND (SM), mps 1 mm, no structure, no odor, wet PID = 0.0/0.0 ppm				55	30	15			
7					-3.21 7.01		TOP OF WEATHERED BEDROCK 7.01 M									
	5 5 8 8	S6 0.3	7.62 8.23			ML	Note: Drill action suggests material change at 7.01 m. Stiff gray SILT (ML), mps <1 mm, decomposed shale structure, no odor, wet, with oxidation PID = 0.0/0.0 ppm					100	R	L	N	L
8							-WEATHERED BEDROCK-									
9	14 10 16 50/ 0.08 m	S7 0.3	9.14 9.69			GM	Medium dense gray silty GRAVEL with sand (GM), mps 35 mm, distinct shale structure, no odor, wet PID = 0.0/0.0 ppm	25	15	5	5	5	45		
10																
	38 50/ 0.13 m	S8 0.3	10.67 10.94		-7.14 10.94	GM	Similar to above except very dense PID = 0.0/0.0 ppm	25	15	5	5	5	45			
							BOTTOM OF EXPLORATION 10.94 M									

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-4

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-5

METRIC Boring No. HA-5

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

File No. 35219-000
Sheet No. 1 of 2
Start June 4, 2008
Finish June 4, 2008
Driller B. Wordel
H&A Rep. F. Marowitz

Elevation 3.65 m
Datum Naval Station MLW
Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	-
Inside Diameter (mm)	102	34.8	
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures: Rig Make & Model: CME 75; Bit Type: Roller Bit; Drill Mud: None; Casing: HW Driven to 6.1 m; Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
0					3.5		-ASPHALT PAVEMENT-									
	20 20 29 31	S1 0.5	0.15 0.76		0.15	SP-SM	Dense gray poorly graded SAND with silt (SP-SM), mps 4 mm, 7.6-cm stratified layers, no odor, dry PID = 0.0/0.0 ppm	5			60	25	10			
1							-FILL-									
	20 10 8 11	S2 0.2	1.52 2.13			SP-SM	Similar to above except medium dense PID = 0.0/0.0 ppm	5	5	55	25	10				
2				NO WELL INSTALLED												
3	19 10 4 3	S3 0.1	3.05 3.66			SM	Medium dense gray silty SAND (SM), mps 25 mm, no structure, no odor, wet PID = 0.0/0.0 ppm	5	5	10	35	25	20		
4																
5																
6																
7	7 4 4 6	S4 0.3	4.57 5.18			SM	Loose gray silty SAND (SM), mps 1 mm, no structure, no odor, wet PID = 0.0/0.0 ppm				40	40	20		
8																

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (m); Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. m) 7.01; Rock Cored (ft. m); Samples S5

Boring No. HA-5 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-5

File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
6							-FILL-									
	5 4 3 6	S5 0.4	6.1 6.71			SM	Similar to above PID = 0.0/0.0 ppm				60	25	15			
7					-3.35 7.01		Note: Refusal of drill tools on steel; possible tie rod. Offset boring to restart as HA-5A. BOTTOM OF EXPLORATION 7.01 M									
							Note: See HA-5A for subsurface data below 7.01 m.									

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-5

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-5A

METRIC Boring No. HA-5A

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

File No. 35219-000
Sheet No. 1 of 2
Start June 4, 2008
Finish June 5, 2008
Driller B. Wordel
H&A Rep. F. Marowitz

Elevation 3.65 m
Datum Naval Station MLW
Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	-
Inside Diameter (mm)	102	34.8	
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures: Rig Make & Model: CME 75; Bit Type: Roller Bit; Drill Mud: None; Casing: HW Driven to 9.1 m; Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
0																
1																
2																
3							Note: See Test Boring Log HA-5 for overburden details to 7.01 m.									
4																
5																
6																
7																
8																

NO WELL INSTALLED

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (m); Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. m) 12.47; Rock Cored (ft. m); Samples S4

Boring No. HA-5A METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-5A (2 of 2)

File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
6					-3.36 7.01		Note: Drill action suggests material change at 7.01 m.									
7																
8	14 9 7 10	S1 0.2	7.62 8.23			SM	Medium dense gray brown silty SAND (SM), mps 5 mm, bonded, no odor, wet PID = 0.0/0.0 ppm	5	20	30	20	25			
9							-GLACIAL TILL-									
10	17 19 22 24	S2 0.5	9.14 9.75			SM	Dense gray brown silty SAND (SM), mps 15 mm, well bonded, no odor, wet PID = 0.0/0.0 ppm	10	15	30	25	20			
11					-7.03 10.67		TOP OF WEATHERED BEDROCK 10.67 M									
	23 33 25 28	S3 0.3	10.67 11.28			ML	Hard gray SILT with gravel (ML), mps 10 mm, distinct rock structure with visible foliations, no odor, wet, with quartzite PID = 0.0/0.0 ppm	15				85	R	L	N	L
12							-WEATHERED BEDROCK-									
	27 100/ 0.13 m	S4 0.3	12.19 12.47		-8.81 12.47	ML	Similar to above	20				80	R	L	N	L
							BOTTOM OF EXPLORATION 12.47 M									

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-5A

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-6

METRIC Boring No. HA-6

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

File No. 35219-000
Sheet No. 1 of 4
Start June 3, 2008
Finish June 4, 2008
Driller B. Wordel
H&A Rep. F. Marowitz

Elevation 3.49 m
Datum Naval Station MLW
Location See Plan

	Casing	Sampler	Barrel
Type	HW	S	NX
Inside Diameter (mm)	102	34.8	47.5
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures: Rig Make & Model: CME 75; Bit Type: Roller Bit; Drill Mud: None; Casing: HW Driven to 12.2 m; Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
0							Note: Drill through 0.15 m of asphalt.									
	6 7 7 10	S1 0.2	0.15 0.76		0.34 0.15	SM	-ASPHALT- Medium dense dark brown silty SAND with gravel (SM), mps 20 mm, no structure, no odor, dry PID = 0.0/0.0 ppm	5	15	20	15	20	25			
1							-FILL-									
	5 4 3 4	S2 0.1	1.52 2.13			SM	Loose gray brown silty SAND (SM), mps 1 mm, no structure, no odor, wet, piece of gravel lodged in spoon tip PID = 0.0/0.0 ppm				65	5	30			
2				NO WELL INSTALLED												
3	3 3 1 WOH*	S3 0.2	3.05 3.66			SP-SM	Very loose gray poorly graded SAND with silt (SP-SM), mps 1 mm, no structure, no odor, wet Note: *WOH = Weight of Hammer. PID = 0.0/0.0 ppm				10	60	20	10		
4																
5																
6	7 10 7	S4 0.3	4.57 5.18			SW-SM	Medium dense gray well graded SAND with silt (SW-SM), mps 5 mm, no structure, no odor, wet PID = 0.0/0.0 ppm	10	25	30	25	10			
7																
8																

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (m); Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. m) 19.81; Rock Cored (ft. m) 1.52; Samples S13, C1

Boring No. HA-6 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT — Boring No. HA-6 (2 of 4)

File No. 35219-000
Sheet No. 2 of 4

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	% Gravel	% Fines	% Coarse	% Medium	% Fines	Dilatancy	Toughness	Plasticity	Strength
5	23															
6	4 6 2 1	S5 0.3	6.1 6.71			SW-SM	Similar to above except loose PID = 0.0/0.0 ppm		10	25	35	20	10			
7							-FILL-									
8	7 5 6 7	S6 0.4	7.62 8.23			SM	Medium dense gray silty SAND (SM), mps 3 mm, no structure, no odor, wet PID = 0.0/0.0 ppm		10	40	35	15			
9					-4.74 8.23		Note: Drill action suggests stratum change at 8.23 m.									
10	27 11 12 16	S7 0.3	9.14 9.75			SM	Medium dense gray black silty SAND (SM), mps 5 mm, well bonded, no odor, wet PID = 0.0/0.0 ppm		10	10	15	25	40			
11							-GLACIAL TILL-									
12	17 20 34 34	S8 0.1	10.67 11.28			SM	Similar to above except dense PID = 0.0/0.0 ppm		10	10	15	25	40			
	19	S9 0.4	12.19 12.8		-8.85 12.34		TOP OF WEATHERED BEDROCK 12.34 M									

*SPT = Sampler blows per .15 m

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. HA-6

APPR | DATE | DESCRIPTION | SYM

NAVFAC

ENGINEERS FST Since 1914
FAY, SPOFFORD & THORNDIKE
5 BURLINGTON WOODS
BURLINGTON, MA 01803

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

DAVID P. ANDERSON CIVIL No. 37119 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS 11/19/08

DES — DRW RWT CHK MN
FIRE PROTECTION
BRANCH MANAGER
CHIEF ENG/ARCH
PM/DM DES DRW DM CHK DS
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

FOR COMMANDER NAVFAC

ACTIVITY: FINAL DESIGN

SATISFACTORY TO DATE November 2021

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NORFOLK, VIRGINIA
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.
P-469 WATERFRONT IMPROVEMENTS
NAVAL STATION, NEWPORT, RHODE ISLAND
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS
BORING LOCATION AND LOGS FOR OPTION 2 – S366 BULKHEAD
BORING LOGS – PART 2

CODE ID. NO. 80091 SIZE D
SCALE: NONE
MASMO NO. N/A
JOB ORDER NO. 5A3370
WORK ORDER NO. 794165
CONSTR. CONTR. NO. N40085–09–R–7002
NAVFAC DRAWING NO. 12527017
SHEET 18 OF 57
B–002
DRAWFORM REVISION: 6 AUG 2007

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781711
SHEET 18 OF 48
B-103
DRAWFORM REVISION: 31 JANUARY 2017

SEAL

FILE NAME: R:\DG–12840 NWSTA P–469\02 cadd\Geotechnical\P469–7941t05–B–002.dwg LAYOUT NAME: B–002 PLOTTED: Tuesday, November 18, 2008 – 9:48am USER: Fiber_H

HALEY & ALDRICH — TEST BORING REPORT

Boring No. HA-6
File No. 35219-000
Sheet No. 3 of 4

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
13	15 17 27					ML	Hard blue gray SILT (ML), mps <1 mm, distinct shale structure, no odor, wet, with quartzite PID = 0.0/0.0 ppm										
14	70 64 64 67	S10 0.5	13.72 14.33			ML	Similar to above PID = 0.0/0.0 ppm						100	R	L	N	L
							-WEATHERED BEDROCK-										
15	27 37 49 58	S11 0.5	15.24 15.85			GM	Very dense gray silty GRAVEL with sand (GM), mps 20 mm, distinct shale structure, no odor, wet, with quartzite PID = 0.0/0.0 ppm	25	45	5	5	5	15				
16																	
17	31 40 59 100	S12 0.5	16.76 17.37			GM	Similar to above PID = 0.0/0.0 ppm	20	30	5	5	5	15				
18	58 60 100/ 0.13 m	S13 0.4	18.29 18.68		-15.19 18.68	GM	Similar to above PID = 0.0/0.0 ppm TOP OF COREABLE ROCK 18.68 M	20	30	5	5	5	15				
19							Note: Advance roller bit to 19.8 m prior to coring. SEE CORE BORING REPORT FOR ROCK DETAILS										

*SPT = Sampler blows per .15 m — Boring No. HA-6

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — CORE BORING REPORT

Boring No. HA-6
File No. 35219-000
Sheet No. 4 of 4

Depth (m)	Drilling Rate min/0.30m	Run No.	Depth (m)	Recovery/RQD cm	Recovery/RQD %	Weath-ering	Elev./ Depth (m)	Visual Description and Remarks
20.0	4 4 6 4 4	C1*	19.81 21.34	35 0	23 0	High		SEE TEST BORING REPORT FOR OVERBURDEN DETAILS Soft to medium highly weathered gray fine to medium grained SHALE with quartzite inclusions. Joint set horizontally, extremely to very close, rough planar, decomposed to disintegrated, open to very wide. -COREABLE BEDROCK-
21.0							21.34	BOTTOM OF EXPLORATION 21.34 M

HALEY & ALDRICH — TEST BORING REPORT

METRIC
Boring No. HA-9
File No. 35219-000
Sheet No. 1 of 2
Start July 8, 2008
Finish July 8, 2008
Driller B. Thompson
H&A Rep. F. Marowitz
Elevation -6.00 m (est.)
Datum Naval Station MLW
Location See Plan

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

	Casing	Sampler	Barrel
Type	HW	S	-
Inside Diameter (mm)	102	34.8	-
Hammer Weight (kg)	136	63.5	-
Hammer Fall (cm)	61.0	76.2	-

Drilling Equipment and Procedures
Rig Make & Model: Diedric D-25
Bit Type: Roller Bit
Drill Mud: None
Casing: HW Driven to 7.6 m
Hoist/Hammer: Cat-Head, Safety Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 10 21 16	S1 0.2	0 0.61			SM	Dense gray and black silty SAND with gravel (SM), mps 25 mm, no structure, slight organic odor, wet, with organics and shells PID = 0.0/0.0 ppm	5	10	25	25	20	15				
					-4.61 0.61		-MARINE DEPOSITS-										
1	9 11 13 18	S2 0.3	1.52 2.13			SM	Medium dense gray silty SAND (SM), mps 20 mm, bonded, no odor, wet PID = 0.0/0.0 ppm	5	10	5	10	25	45				
							-GLACIAL TILL-										
2	12 19 18 23	S3 0.2	3.05 3.65	NO WELL INSTALLED		ML	Hard gray SILT with SAND (ML), mps 5 mm, well bonded, no odor, moist PID = 0.0/0.0 ppm	5	5	5	5	80	S	L	L	L	
					-7.96 3.96		Note: Drill action suggests material change at 3.96 m. -WEATHERED ROCK-										
4	16 23 28 50/3	S4 0.2	4.57 5.18			SM	Very dense gray silty SAND with gravel (SM), mps 20 mm, with shale-like structure, no odor, moist PID = 0.0/0.0 ppm	5	10	5	20	30	30				

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (+0.0) | Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. or m) 6.34; Rock Cored (ft. or m); Samples S4

Boring No. HA-9 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT

Boring No. HA-9
File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
6							-WEATHERED ROCK-										
	12 50/3	NR 0.0	6.1 6.34		-10.34 6.34		Note: No recovery. Shale and quartzite in spoon tip.										
							BOTTOM OF EXPLORATION 6.34 M BELOW MUDLINE										

Note: All depths and elevations above taken from mudline.

*SPT = Sampler blows per .15 m — Boring No. HA-9

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT

METRIC
Boring No. WB-1
File No. 35219-000
Sheet No. 1 of 2
Start July 15, 2008
Finish July 15, 2008
Driller B. Thompson
H&A Rep. F. Marowitz
Elevation -1.37 m (est.)
Datum Naval Station MLW
Location See Plan

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

	Casing	Sampler	Barrel
Type	ODEX	-	-
Inside Diameter (mm)	102	-	-
Hammer Weight (kg)	-	-	-
Hammer Fall (cm)	-	-	-

Drilling Equipment and Procedures
Rig Make & Model: CME 550X ATV
Bit Type:
Drill Mud:
Casing: ODOX to 8.84 m below mudline
Hoist/Hammer:

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0							Note: Drill action suggests hard rock. Note: Elevations taken below mudline. -POSSIBLE ROCK FILL-										
					-1.98 0.61		Note: Drill action suggests change to soft granular material at 0.61 m.										
1				NO WELL INSTALLED			-POSSIBLE FILL OR MARINE DEPOSITS-										
2																	
3																	
4					-5.49 4.11		Note: Drill action suggests change to harder material with gravel at 4.11 m.										

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (+0.0) | Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. or m) 8.84; Rock Cored (ft. or m); Samples -

Boring No. WB-1 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT

Boring No. WB-1
File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
5							-POSSIBLE GLACIAL TILL-										
6					-7.92 6.55		Note: Drill action suggests material change at 6.55 m. Note: Cuttings suggest weathered rock.										
7							-POSSIBLE WEATHERED ROCK-										
8					-10.21 8.84		BOTTOM OF EXPLORATION 8.84 M										

*SPT = Sampler blows per .15 m — Boring No. WB-1

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT

METRIC
Boring No. WB-2
File No. 35219-000
Sheet No. 1 of 2
Start July 15, 2008
Finish July 16, 2008
Driller B. Thompson
H&A Rep. F. Marowitz
Elevation -3.05 m (est.)
Datum Naval Station MLW
Location See Plan

Project P-469 WATERFRONT IMPROVEMENTS, NAVY STATION
Client FAY, SPOFFORD & THORNDIKE, INC.
Contractor NEW HAMPSHIRE BORING, INC.

	Casing	Sampler	Barrel
Type	HW/ODEX	S	NX
Inside Diameter (mm)	102	34.8	47.5
Hammer Weight (kg)	-	63.5	-
Hammer Fall (cm)	-	76.2	-

Drilling Equipment and Procedures
Rig Make & Model: CME 550X ATV
Bit Type: Roller Bit
Drill Mud: None
Casing: HW Driven to 1.22 m; ODEX to 7.01 m
Hoist/Hammer: Automatic Hammer

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	4 10 26 5	S1 0.2	0 0.61			SW	Dense gray well graded SAND with silt and gravel (SW), mps 25 mm, no structure, marine organic odor, wet Note: Elevations taken below mudline. PID = 0.0/0.0 ppm	5	20	25	15	10					
					-4.27 1.22		-MARINE DEPOSITS-										
1	4 100/ 0.10 m	S2 0.1	0.91 1.46			SW	Similar to above except very dense PID = 0.0/0.0 ppm	5	20	25	15	10					
2				NO WELL INSTALLED			Note: HW casing refusal at 1.22 m. Clean out to 2.44 m with roller bit, still in rock fill. Switch to 102-mm ODEX system.										
3	12 100/ 0.035 m	NR 0.0	2.74 2.96				Note: Drill cuttings suggest black silt layer at 2.59 m. -ROCK FILL-										
4	100/ 0.10 m	NR 0.0	3.96 4.05		-7.92 4.88		Note: Drill action and cuttings suggest material change at 4.88 m. -WEATHERED BEDROCK-										

Water Level Data: Date | Time | Elapsed Time (hr.) | Depth (m) to: Bottom of Casing | Bottom of Hole | Water (+0.0) | Not taken

Sample Identification: O Open End Rod; T Thin Wall Tube; U Undisturbed Sample; S Split Spoon; G Geoprobe

Well Diagram: Riser Pipe; Screen; Filter Sand; Cuttings; Grout; Concrete; Bentonite Seal

Summary: Overburden (ft. or m) 7.62; Rock Cored (ft. or m); Samples S4

Boring No. WB-2 METRIC

Field Tests: Dilatancy: R-Rapid, S-Slow, N-None; Plasticity: N-Nonplastic, L-Low, M-Medium, H-High; Toughness: L-Low, M-Medium, H-High; Dry Strength: N-None, L-Low, M-Medium, H-High, V-Very High

*SPT = Sampler blows per .15 m

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

HALEY & ALDRICH — TEST BORING REPORT

Boring No. WB-2
File No. 35219-000
Sheet No. 2 of 2

Depth (m)	SPT*	Sample No. & Rec. (m)	Sample Depth (m)	Well Diagram	Elev./Depth (m)	USCS Symbol	Visual-Manual Identification and Description (Density/consistency, color, GROUP NAME, structure, odor, moisture, optional descriptions, geologic interpretation)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Silt/Clay	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
6	8 17 19 15	S3 0.3	5.49 6.1			SW	Dense gray silty SAND with gravel (SM), mps 20 mm, weathered shale structure, no odor, moist PID = 0.0/0.0 ppm	5	10	5	20	30	30				
							-WEATHERED BEDROCK-										
7	18 31 34 37	S4 0.6	7.01 7.62		-10.67 7.62	SM	Similar to above except very dense	5	10	10	25	20	30				
							BOTTOM OF EXPLORATION 7.62 M										

*SPT = Sampler blows per .15 m — Boring No. WB-2

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

ENGINEERS
FST
Since 1914
FAY, SPOFFORD & THORNDIKE
5 BURLINGTON WOODS
BURLINGTON, MA 01803

COMMONWEALTH OF MASSACHUSETTS
DAVID P. ANDERSON
CIVIL
No. 37110
REGISTERED PROFESSIONAL ENGINEER
11/18/08

Michael Baker
INTERNATIONAL

DES — DRW RWT CHK MN
FIRE PROTECTION
BRANCH MANAGER
CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND — MID-ATLANTIC
NAVAL STATION — NORFOLK, VIRGINIA
NORTHEAST IPT
NAVAL STATION — NEWPORT, R.I.
P-469 WATERFRONT IMPROVEMENTS
NAVAL STATION, NEWPORT, RHODE ISLAND
BORING LOGS — PART 3

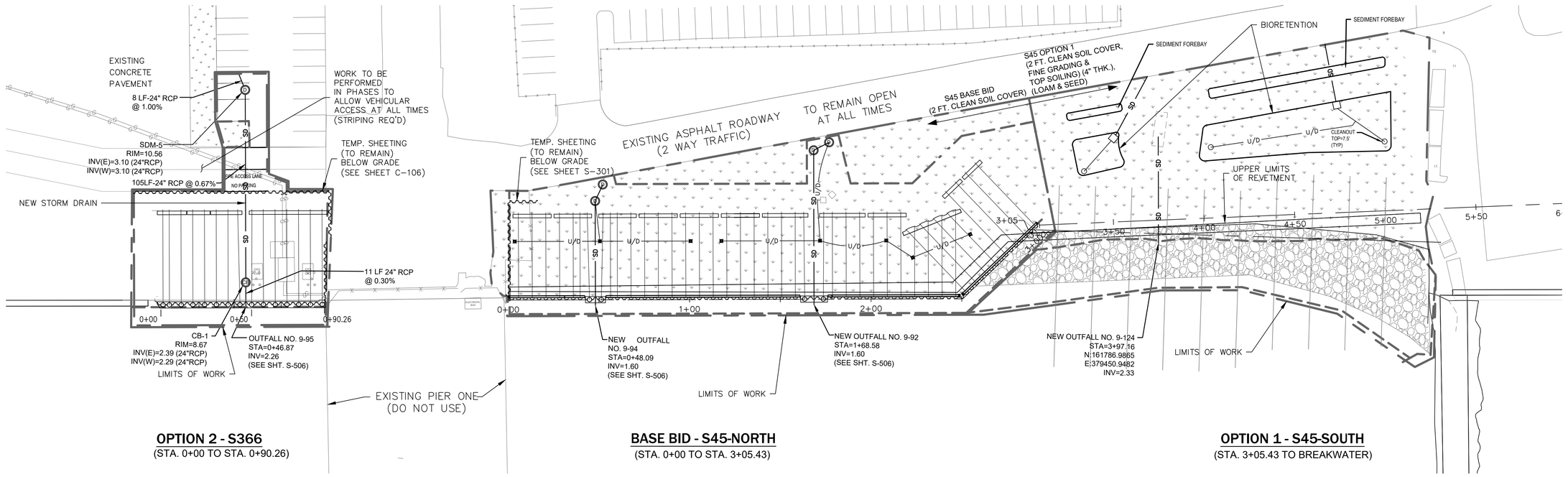
CODE ID. NO. 80091 — SIZE D
SCALE: NONE
MAXIMO NO. N/A
JOB ORDER NO. 5A3370
WORK ORDER NO. 794165
CONSTR. CONTR. NO. N40085-09-R-7002
NAVFAC DRAWING NO. 12527018
SHEET 19 OF 57
B-003
DRAWFORM REVISION: 6 AUG 2007

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND — MID-ATLANTIC
<<COMPONENT NAME>>
NAVAL BASE — NEWPORT, RHODE ISLAND
NAVAL STATION — NEWPORT, R.I.
BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS
BORING LOCATION AND LOGS FOR OPTION 2 — S366 BULKHEAD

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781712
SHEET 19 OF 48
B-104
DRAWFORM REVISION: 31 JANUARY 2017

APPR | DATE | DESCRIPTION | SYM
A/E INFO
APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
FINAL DESIGN
SATISFACTORY TO DATE November 2021
DES — DRW DM CHK DS
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION
SEAL

FILE NAME: R:\80--13840 NAVSTA P-469\02 cadd\Geotechnical\P469-794165--B-003.dwg LAYOUT NAME: B-003 PLOTTED: Tuesday, November 18, 2008 - 9:48am USER: FHoer_H



OPTION 2 - S366
(STA. 0+00 TO STA. 0+90.26)

BASE BID - S45-NORTH
(STA. 0+00 TO STA. 3+05.43)

OPTION 1 - S45-SOUTH
(STA. 3+05.43 TO BREAKWATER)

LEGEND:

- NEW MANHOLE
- NEW CATCH BASIN
- NEW STORM DRAIN
- NEW CONCRETE PAVEMENT
- NEW LOAM AND SEEDING
- NEW RIP-RAP REVETMENT
- NEW STEEL SHEET PILING (APPURTENANCES INCLUDED)
- LIMITS OF WORK
- LIMITS OF EXCAVATION
- LIMITS OF DREDGING

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	DM	CHK	DS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

OVERALL PLAN AND LIMITS OF WORK PLAN

SCALE: 1" = 30'

EPROJECT NO.: 1569253

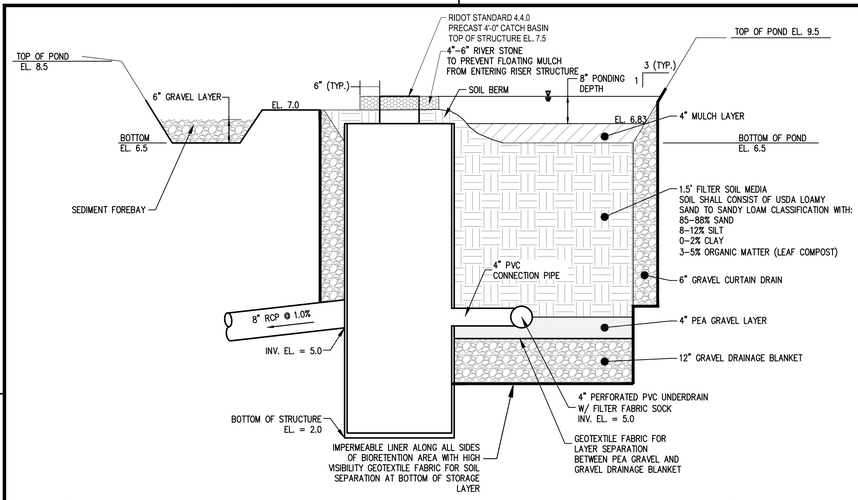
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781713

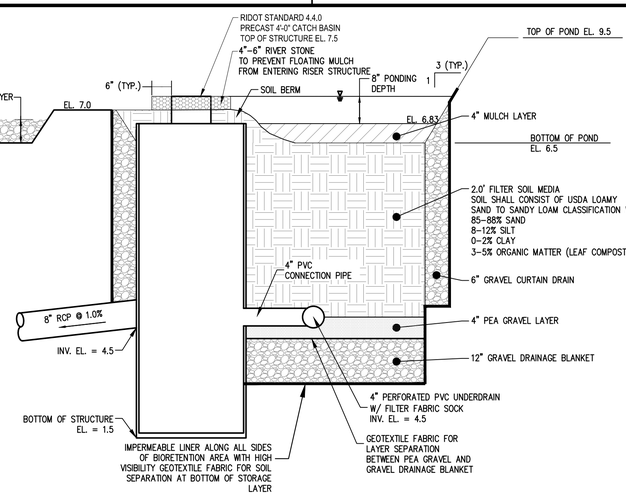
SHEET 20 OF 45

C-100

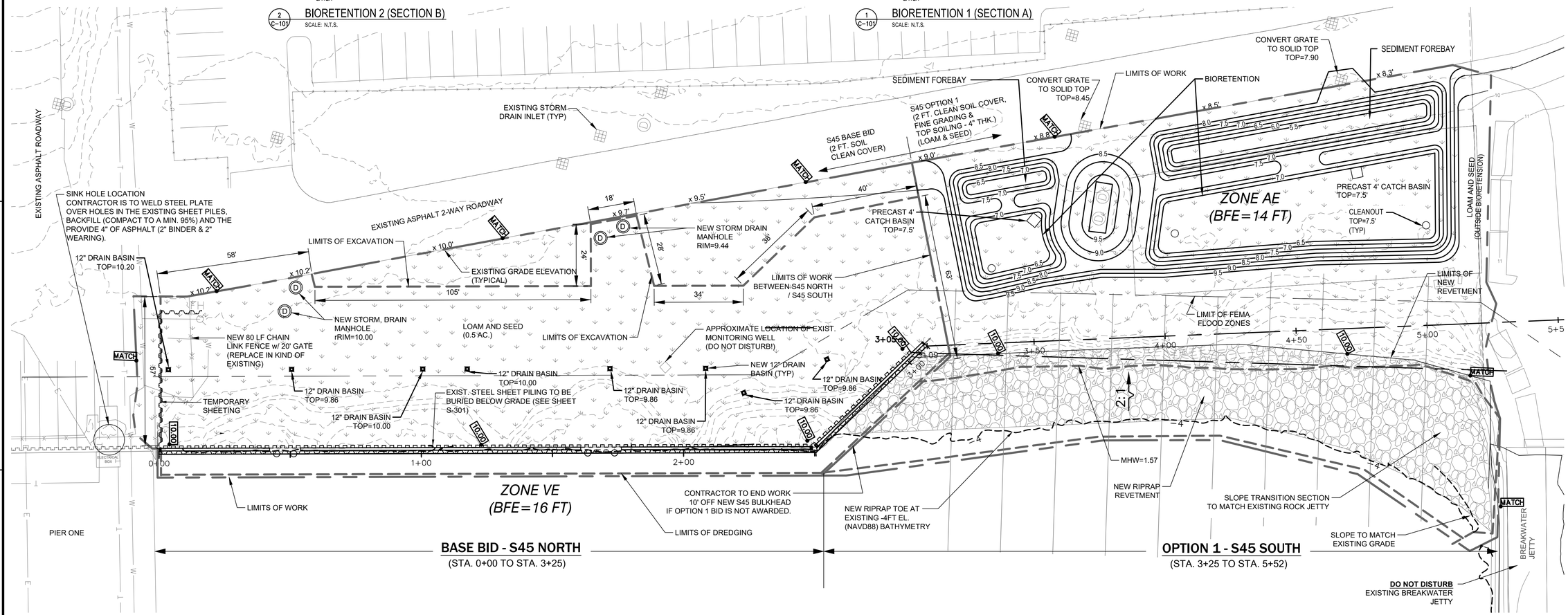
DRAWFORM REVISION: 31 JANUARY 2017



2 C-101 BIORETENTION 2 (SECTION B)
SCALE: N.T.S.



1 C-101 BIORETENTION 1 (SECTION A)
SCALE: N.T.S.



LEGEND:

D	STORM DRAIN MANHOLE	x 10.0	EXISITNG GRADE
		10	PROPOSED CONTOUR
	LOAM AND SEED	10.00	FINISHED GRADE
			DRAIN BASIN
	SHEET PILING		LIMITS OF DREDGING / EXCAVATION
	CLEANOUT		LIMITS OF WORK

N

20' 10' 0 20'

APPR					
DATE					
DESCRIPTION					
SYM					

NAVFAC

SEAL

Michael Baker
INTERNATIONAL
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
FINAL DESIGN
SUBMITTED TO DATE November 2021
DES PWF DRW PWF CHK JM
PM/TM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

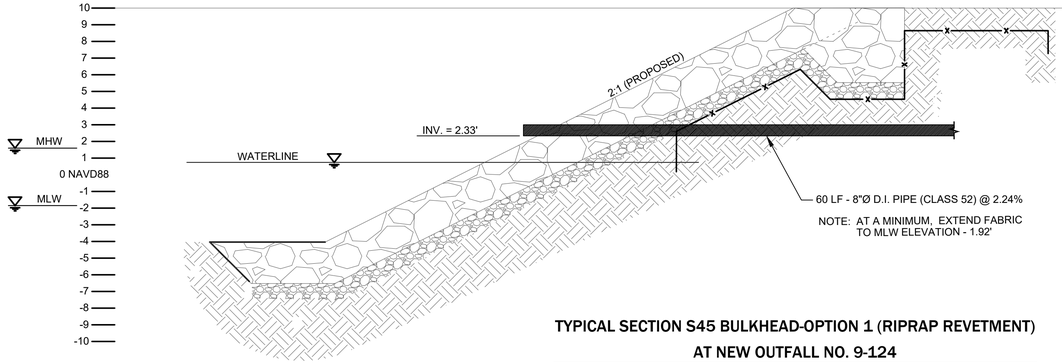
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION - NEWPORT, RHODE ISLAND
NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

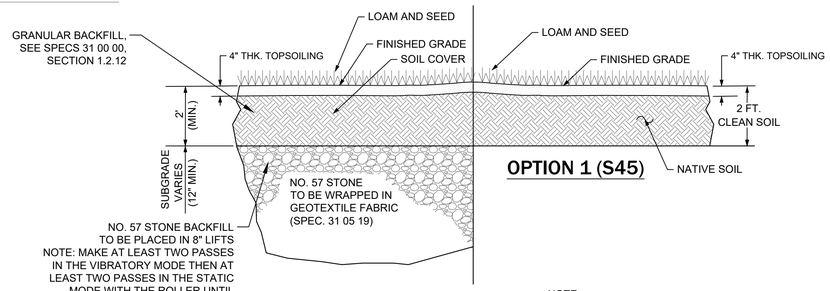
S45 NEW WORK PLAN AND GRADING PLAN

SCALE: 1" = 20'
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781713
SHEET 21 OF 45
C-101

DRAWFORM REVISION: 31 JANUARY 2017

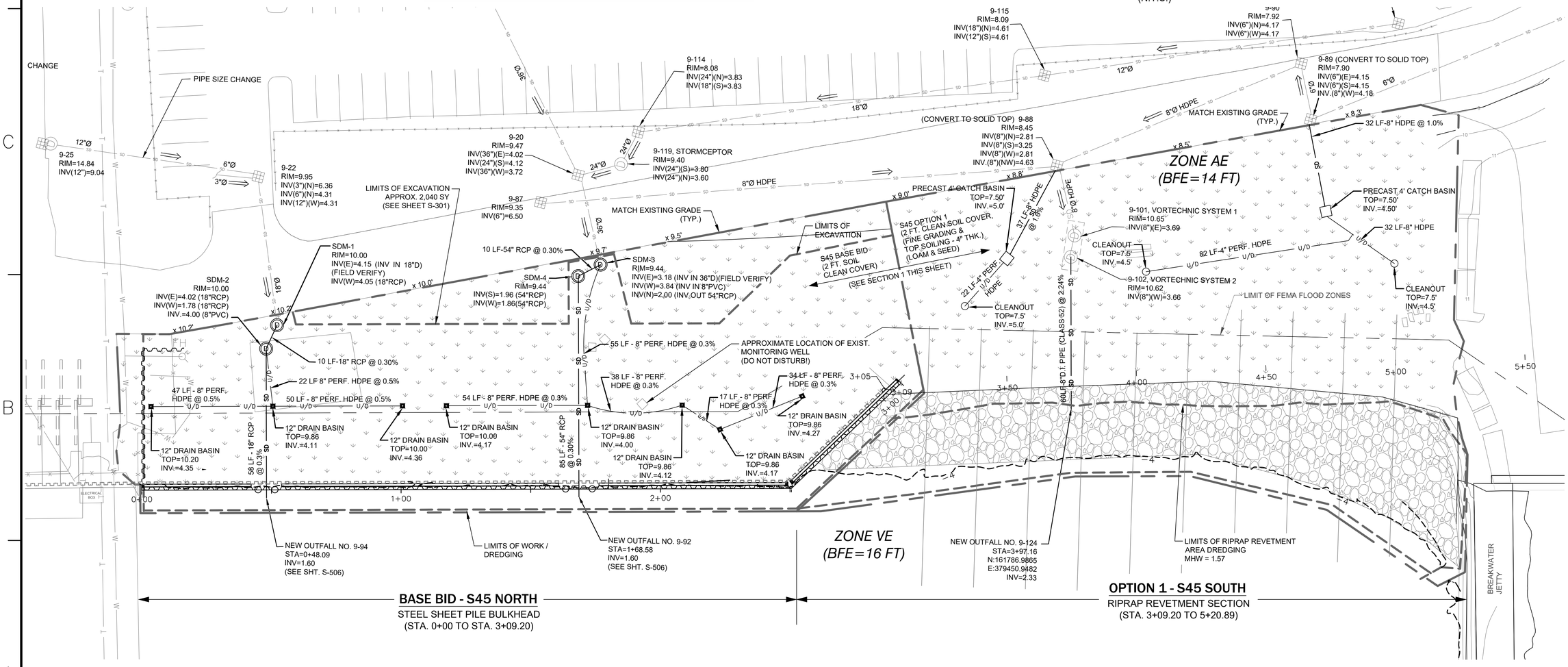


TYPICAL SECTION S45 BULKHEAD-OPTION 1 (RIPRAP REVETMENT) AT NEW OUTFALL NO. 9-124



NOTE:
20" NATIVE SOIL AND 4" TOP SOIL ARE CLEAN FILL

SECTION 1
(N.T.S.)



BASE BID - S45 NORTH
STEEL SHEET PILE BULKHEAD
(STA. 0+00 TO STA. 3+09.20)

OPTION 1 - S45 SOUTH
RIPRAP REVETMENT SECTION
(STA. 3+09.20 TO 5+20.89)

NOTE:
1. REFER TO SHEET G-101 FOR BYPASS PUMPING NOTES.
2. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY ELEVATIONS AND CONFIRM PROPOSED ELEVATIONS ARE ACCEPTABLE.

STRUCTURE DESCRIPTION	NORTHING	EASTING
SDM-1	162092.7157	379406.5327
SDM-2	162095.5455	379396.8673
SDM-3	161978.6907	379461.2171
SDM-4	161981.5209	379451.5505

LEGEND:

(D)	NEW STORM DRAIN MANHOLE
SD	NEW STORM DRAIN
	NEW GRASSING (SEEDING)
U/D	NEW UNDER DRAIN
	NEW CATCH BASIN
	LIMITS OF DREDGING / EXCAVATION
	LIMITS OF WORK

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES PWF DRW PWF CHK JM

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
<<COMPONENT NAME>>
NAVAL STATION – NEWPORT, RHODE ISLAND
NAVAL FACILITIES ENGINEERING COMMAND
NAVAL STATION NEWPORT, R.I.

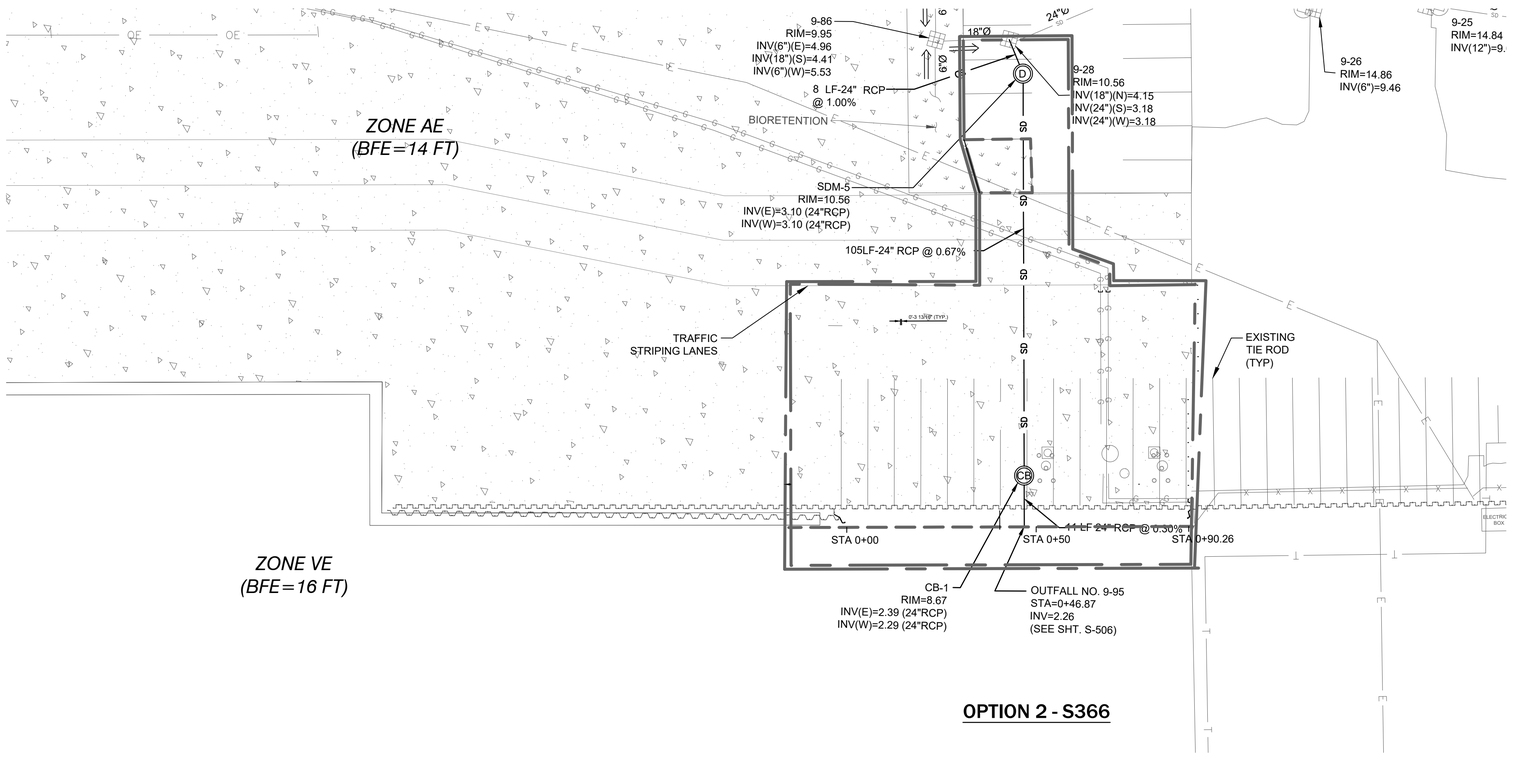
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S45 STORM DRAINAGE UTILITIES PLAN

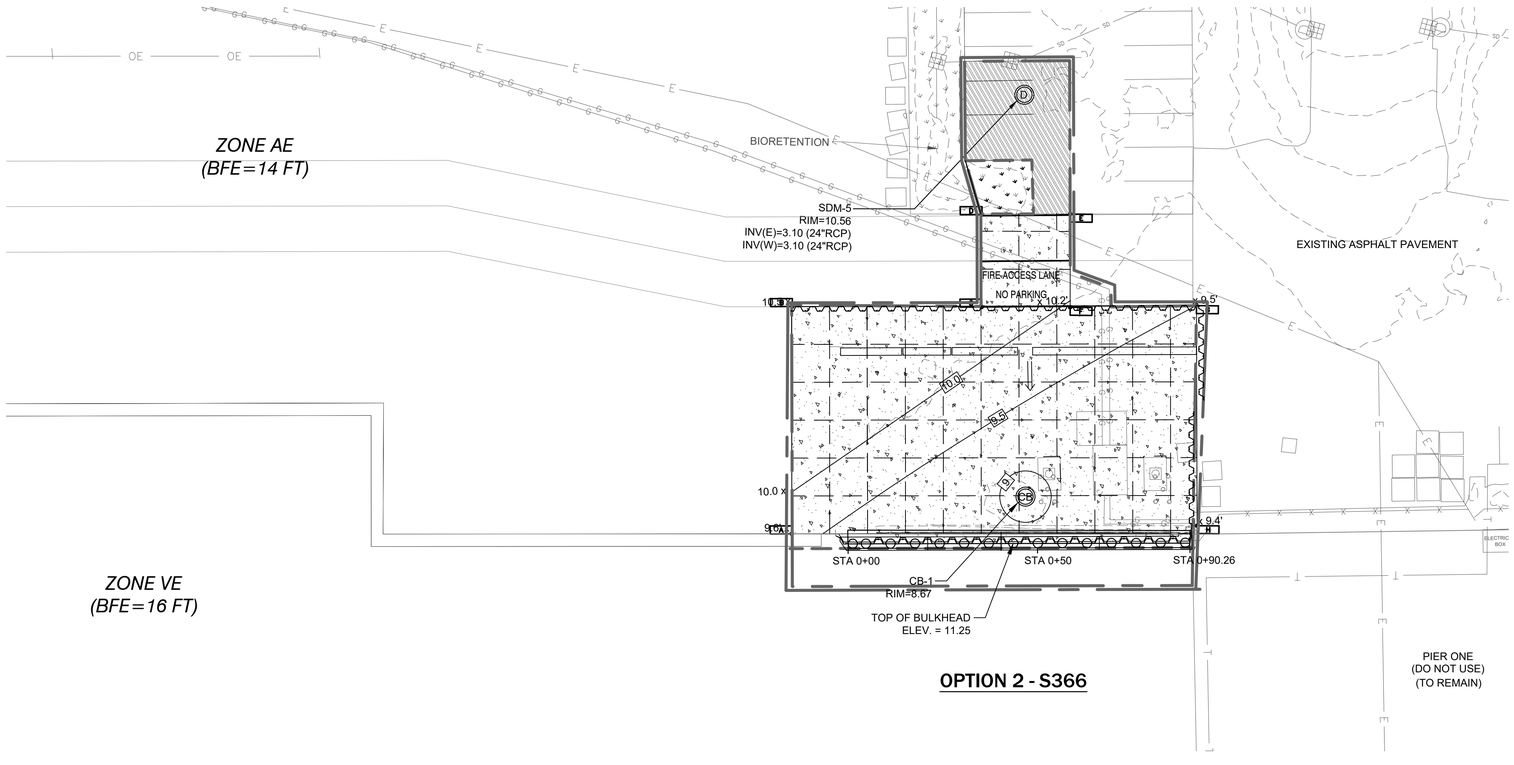
SCALE: 1" = 20'
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781715
SHEET 22 OF 48

C-102

DRAWFORM REVISION: 31 JANUARY 2017



OPTION 2 - S366



OPTION 2 - S366

STRUCTURE DESCRIPTION	NORTHING	EASTING
CB-1	162269.7219	379299.1327
SDM-5	162297.4553	379401.5231

LEGEND:

D	NEW STORM DRAIN MANHOLE
CB	NEW CATCH BASIN
SD	NEW STORM DRAIN
	LIMITS OF WORK
	EXISTING CONCRETE PAVEMENT

NOTE:

1. REFER TO SHEET G-101 FOR BYPASS PUMPING NOTES.
2. CONTRACTOR TO FIELD VERIFY EXISTING UTILITY ELEVATIONS AND CONFIRM NEW ELEVATIONS ARE ACCEPTABLE.
3. CONTRACTOR SHALL VERIFY EXISTING INVERT ELEVATIONS AND CONFIRM NEW INVERT ELEVATIONS ARE ACCEPTABLE.

STORM DRAINAGE UTILITIES

LEGEND:

D	NEW MANHOLE
CB	NEW CATCH BASIN
SD	NEW STORM DRAIN
	NEW CONCRETE PAVEMENT
	NEW ASPHALT PAVEMENT
	NEW GRASS AREA
x 10.0	EXISITNG GRADE
10	PROPOSED CONTOUR
10	EXISTING CONTOUR
	LIMITS OF WORK

GRADING PLAN

APPR | DATE | DESCRIPTION | STM | MCS

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES PWF | DRW PWF | CHK JM

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND

NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S366 GRADING PLAN AND STORM DRAINAGE UTILITIES PLAN

SCALE: 1" = 20'

EPROJECT NO.: 1569253

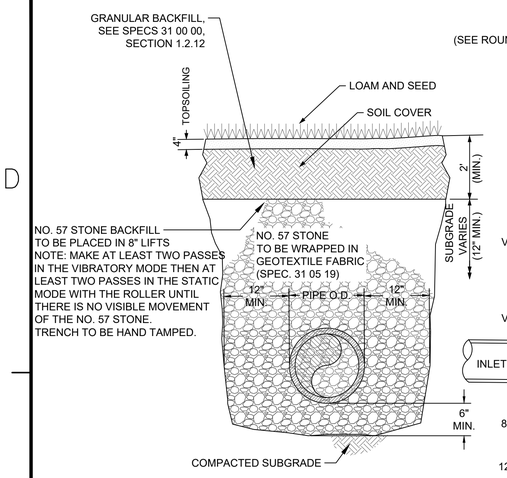
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781716

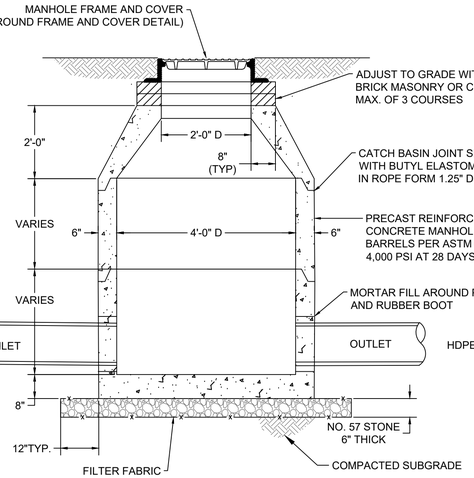
SHEET 23 OF 48

C-103

DRAWFORM REVISION: 31 JANUARY 2017



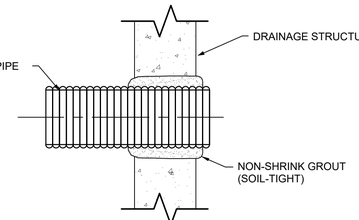
BASE BID (S45)
STORM DRAIN PIPE BEDDING DETAIL
N.T.S.



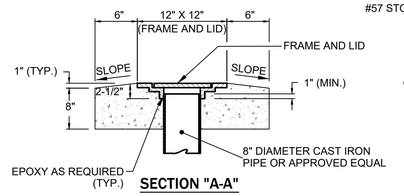
STORM DRAIN MANHOLE DETAIL
N.T.S.

(SHALL BE IN ACCORDANCE WITH SECTION 702 OF R.I. STANDARD SPECIFICATIONS AND STANDARD DETAIL 3.2.0)

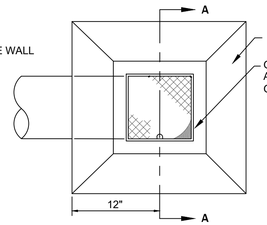
NOTES:
1. PIPE OPENING TO BE PRECAST IN BARREL SECTION
2. CATCH BASIN AND MANHOLE STEPS (1'-0" O.C.) SHALL CONFORM TO SECTION M.04 OF THE RHODE ISLAND STANDARD SPECIFICATIONS.
3. BRICK/SOLID BLOCK INVERT



UNDERDRAIN CONNECTION AT DRAINAGE STRUCTURE
N.T.S.



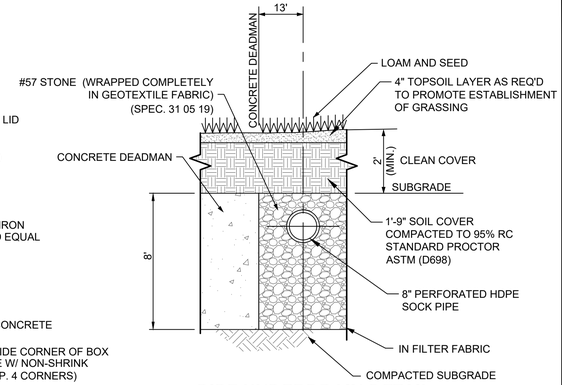
SECTION "A-A"



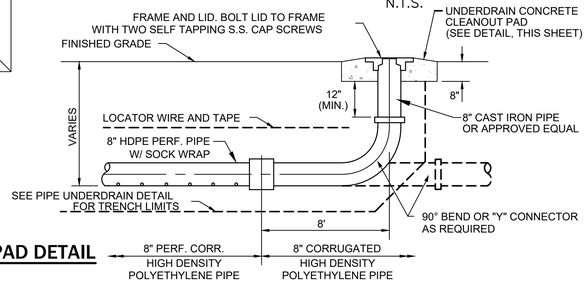
PLAN
UNDERDRAIN CLEANOUT PAD DETAIL
N.T.S.

NOTE:

1) ALL CLEANOUT TOPS, GRATE TYPE COVERS, AND PIPE FITTINGS SHALL BE INCLUDED IN THE PRICE FOR 8" UNDERDRAIN PIPE.



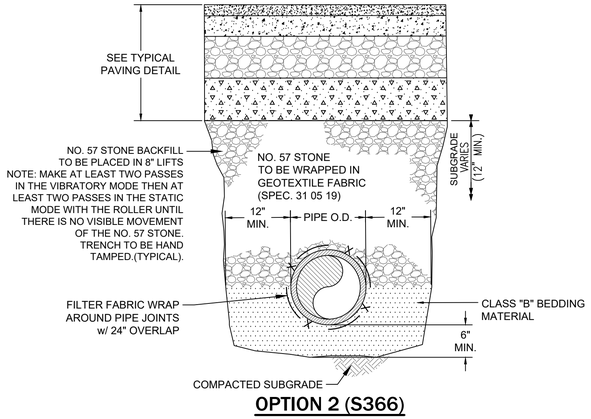
PIPE UNDERDRAIN DETAIL
N.T.S.



UNDERDRAIN CLEANOUT DETAIL
N.T.S.

NOTE:

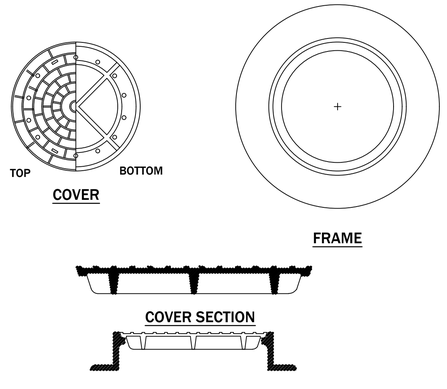
PROPOSED DRAINAGE STRUCTURE RIMS AND INVERTS ARE BASED ON DATA OBTAINED BY OTHERS AND DATA COLLECTED BY MICHAEL BAKER INTERNATIONAL. THE CONTRACTOR SHALL VERIFY ALL RIM AND INVERT ELEVATIONS IN THE FIELD.



OPTION 2 (S366)
STORM DRAIN PIPE BEDDING DETAIL

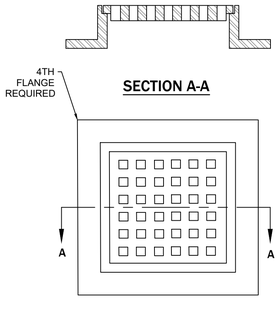
NOTES N.T.S.

1. CONCRETE PIPE SHALL BE FREE OF LIFTING HOLES.
2. CLASS "B" BEDDING SHALL BE INCIDENTAL TO THE UNIT PRICE OF THE PIPE, IF REQUIRED.
3. FILTER FABRIC MATERIAL FOR JOINT WRAPS SHALL BE INCIDENTAL TO THE UNIT PRICE OF THE PIPE.



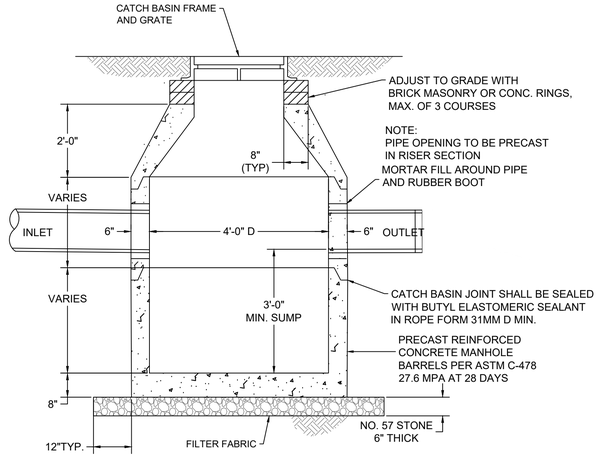
ROUND FRAME AND COVER - HEAVEY DUTY

NOTES:
1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS AND STANDARD DETAIL 6.3.0.
2. FRAME AND GRATE SHALL BE HEAVY DUTY GRAY IRON.



SQUARE FRAME AND GRATE

NOTES:
1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS AND STANDARD DETAIL 6.3.0.
2. FRAME AND GRATE SHALL BE HEAVY DUTY GRAY IRON.



STORM DRAIN CATCH BASIN DETAIL
NOT TO SCALE

NOTES:
1. PIPE OPENING TO BE PRECAST IN BARREL SECTION
2. CATCH BASIN AND MANHOLE STEPS (1'-0" O.C.) SHALL CONFORM TO SECTION M.04 OF THE RHODE ISLAND STANDARD SPECIFICATIONS.
3. BRICK/SOLID BLOCK INVERT

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

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DES PWF | DRW PWF | CHK JM

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FIRE PROTECTION

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NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

STORM DRAINAGE UTILITIES DETAILS

SCALE: 1" = 20'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

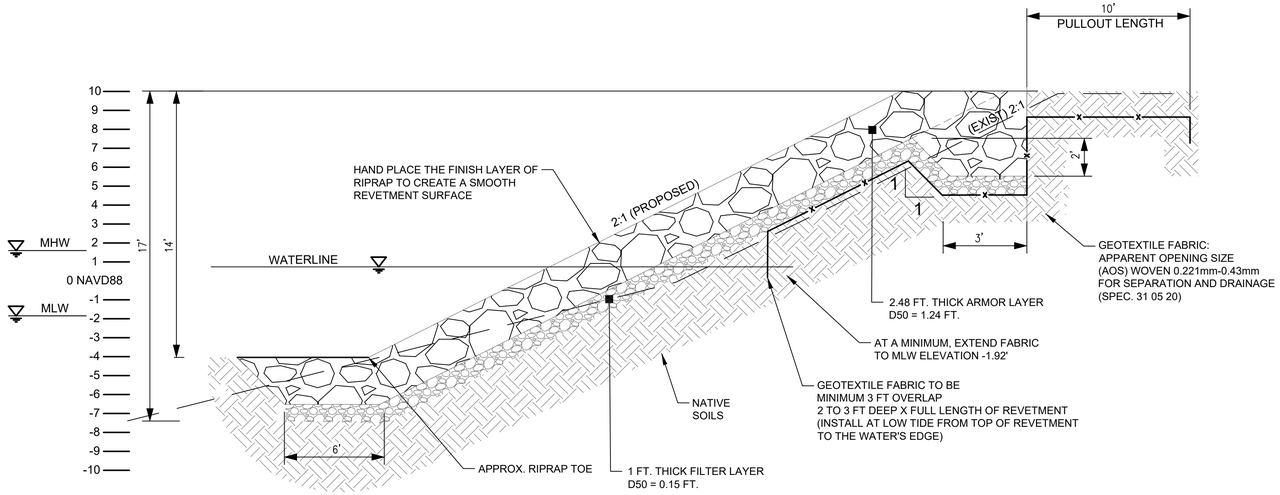
NAVFAC DRAWING NO. 12781717

SHEET 24 OF 48

C-104

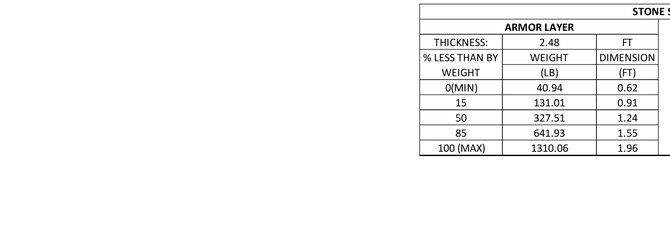
DRAWFORM REVISION: 31 JANUARY 2017

STONE SIZE GRADATION					
ARMOR LAYER			FILTER LAYER		
THICKNESS:	2.48	FT	THICKNESS:	1.0	FT
% LESS THAN BY WEIGHT	WEIGHT (LB)	DIMENSION (FT)	% LESS THAN BY WEIGHT	WEIGHT (LB)	DIMENSION (FT)
0(MIN)	40.94	0.62	0(min)	0.06	0.07
15	131.01	0.91	15	0.31	0.12
50	327.51	1.24	50	0.62	0.15
85	641.93	1.55	85	2.05	0.23
100 (MAX)	1310.06	1.96	100 (max)	3.41	0.27



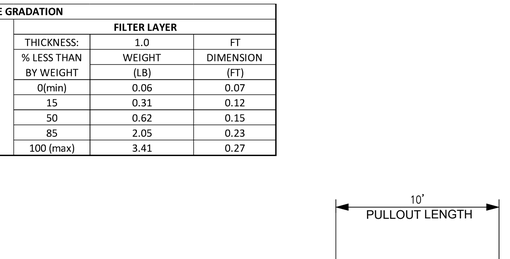
TYPICAL SECTION S45 BULKHEAD-OPTION 1 (RIPRAP REVETMENT)

0 3" 6" 9" 1'
3" = 3' – 0"



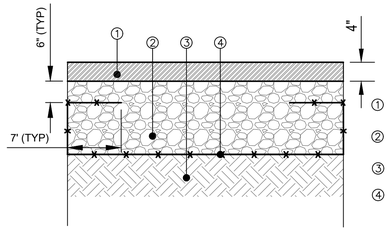
① 8" THICKNESS PLAIN PORTLAND CEMENT CONCRETE PAVEMENT (P–501)
② ASPHALT BITUMINOUS BASE COURSE – 2" THICK
③ 12" MIN. NO. 57 STONE COMPACTED TO FIELD OBSERVATION.
④ COMPACTED EXISTING SUBGRADE
⑤ GEOTEXTILE FABRIC BELOW NO. 57 STONE (SPEC. 31 05 19)

TYPICAL CONCRETE PAVING SECTION
N.T.S.



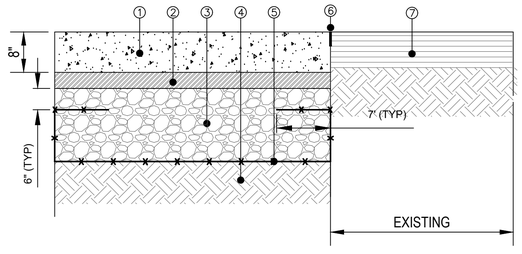
① 8" THICKNESS PLAIN PORTLAND CEMENT CONCRETE PAVEMENT (P–501)
② ASPHALT BITUMINOUS BASE COURSE – 2" THICK
③ 12" MIN. NO. 57 STONE COMPACTED TO FIELD OBSERVATION.
④ COMPACTED EXISTING SUBGRADE
⑤ GEOTEXTILE FABRIC BELOW NO. 57 STONE (SPEC. 31 05 19)
⑥ NO. 5 DOWEL BARS, 18" LENGTH, 9" EMBEDMENT, 12" O.C.
⑦ EXPANSION JOINT (SEE DETAIL 1)
⑧ 8" EXISTING CONCRETE PAVEMENT

TYPICAL CONCRETE PAVING TIE–IN SECTION
(TO CONCRETE)



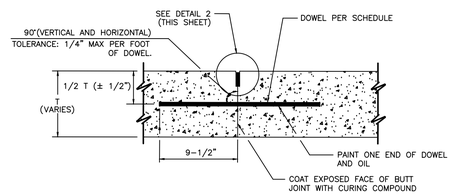
① 4" THICKNESS ASPHALT PAVEMENT (12.5mm) 2 LIFTS (2" BINDER and 2" SURFACE)
② 12" MIN. NO. 57 STONE COMPACTED TO FIELD OBSERVATION.
③ COMPACTED EXISTING SUBGRADE
④ GEOTEXTILE FABRIC BELOW NO. 57 STONE (SPEC. 31 05 19)

TYPICAL ASPHALT PAVING SECTION
N.T.S.



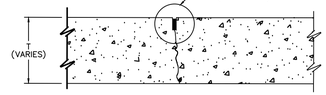
① 8" THICKNESS PLAIN PORTLAND CEMENT CONCRETE PAVEMENT (P–501)
② ASPHALT BITUMINOUS BASE COURSE – 2" THICK
③ 12" MIN. NO. 57 STONE COMPACTED TO FIELD OBSERVATION.
④ COMPACTED EXISTING SUBGRADE
⑤ GEOTEXTILE FABRIC BELOW NO. 57 STONE (SPEC. 31 05 19)
⑥ EXPANSION JOINT (SEE DETAIL 1)
⑦ EXISTING ASPHALT PAVEMENT

TYPICAL CONCRETE PAVING TIE–IN SECTION
(TO ASPHALT)



TYPE "E" - DOWELED CONSTRUCTION JOINT
N.T.S.

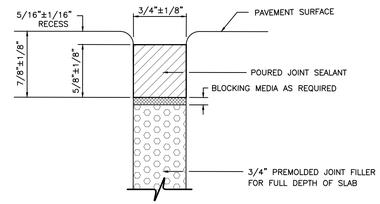
DOWEL BAR SCHEDULE			
Thickness of slab (T)	Diameter (D)	Length	Spacing
6 to 7 in.	3/4 in.	18 in.	12 in.
8 to 12 in.	1 in.	19 in.	12 in.
13 to 16 in.	1–1/4 in. (1)	20 in.	15 in.
17 to 20 in.	1–1/2 in. (1)	20 in.	18 in.
21 to 24 in.	2 in. (1)	24 in.	18 in.



TYPE "D" - SAWED CONTRACTION JOINT
N.T.S.

NOTES: P.C.C. PAVEMENT JOINTS

1. CONTRACTION AND CONSTRUCTION JOINT SEALANT RESERVOIR DIMENSIONS SHALL BE SIZED TO PROVIDE SHAPE FACTOR, W/D, RECOMMENDED BY SEALANT MANUFACTURER AND APPROVED BY THE ENGINEER.
2. DIAMETER OF BACKER ROD SHALL NOT BE LESS THAN W+1/8".
3. WIDTH OF SEPARATION TAPE SHALL NOT BE LESS THAN W.



NOTE: JOINT DIMENSIONS SHALL BE MODIFIED TO MEET APPROVED SEAL MANUFACTURER'S SPECIFICATION.

DETAIL 1
EXPANSION JOINT SEALANT
N.T.S.

DETAIL 2
CONTRACTION JOINT SEALANT
N.T.S.

APPR	
DATE	
DESCRIPTION	
SYM	

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<<COMPONENT NAME>>
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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL STATION – NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

CIVIL SITE DETAILS

SCALE: 1" = 20'
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781718
SHEET 25 OF 48

C-105

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND:

NEW GRASS

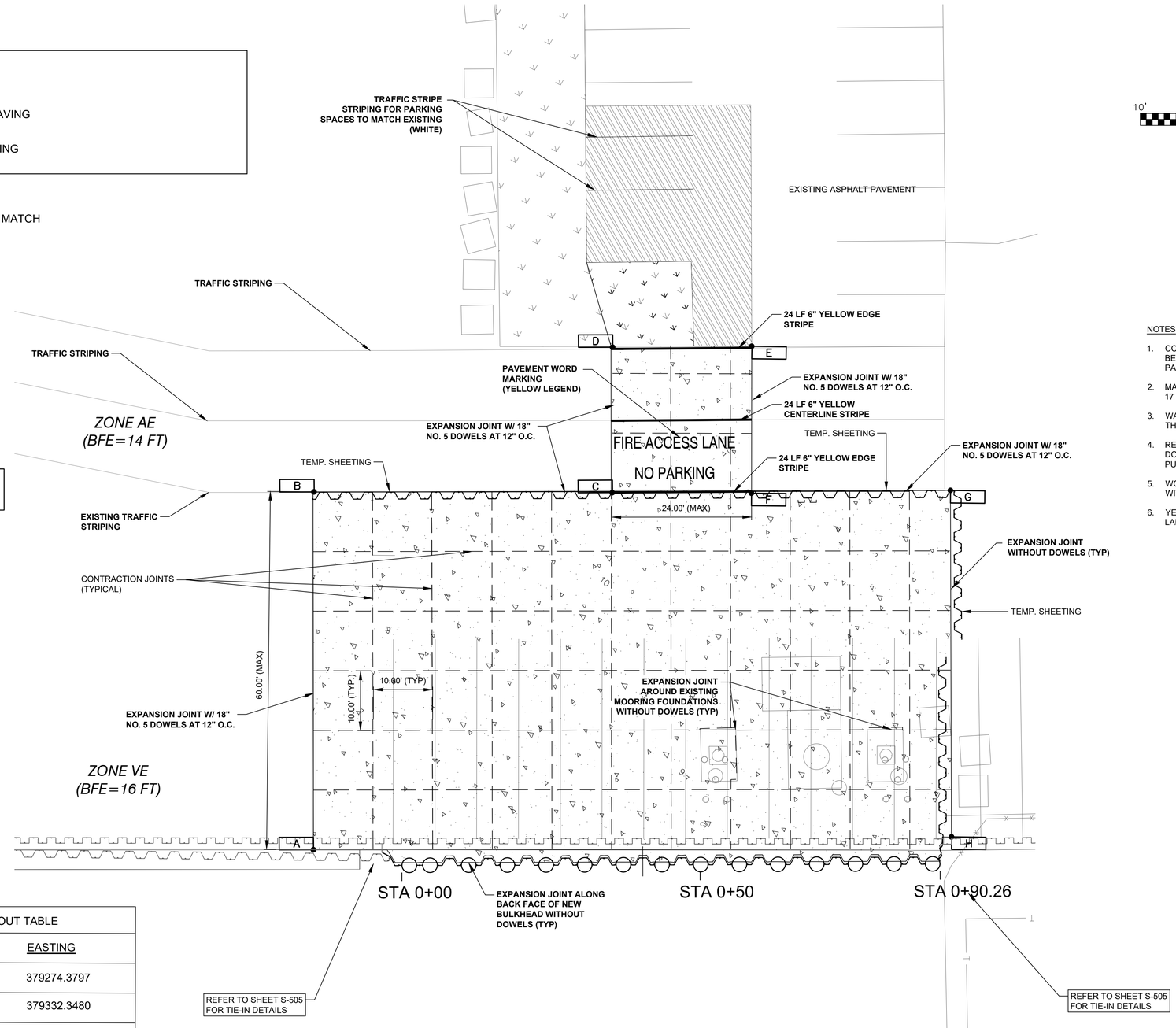
NEW CONCRETE PAVING

NEW ASPHALT PAVING

NOTE:

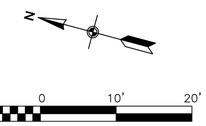
1. CENTERLINE AND EDGE STRIPE TO MATCH EXISTING STRIPING ALIGNMENT

CONTRACTOR TO PROVIDE STRIPING ON NEW ASPHALT AND NEW CONCRETE PAVEMENT TO MATCH ALL PAVEMENT MARKINGS PRIOR TO CONSTRUCTION.



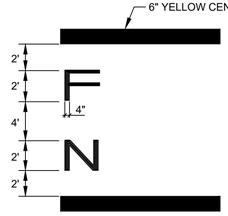
OPTION 2 - S366

PAVEMENT LAYOUT TABLE		
POINT ID	NORTHING	EASTING
A	162324.4063	379274.3797
B	162341.7844	379332.3480
C	162291.4679	379345.1884
D	162297.7125	379368.7525
E	162275.2450	379374.9615
F	162268.9261	379351.1530
G	162236.8255	379360.2299
H	162221.6236	379304.1039



NOTES

1. CONTRACTOR SHALL CUT THE TEMPORARY SHEETING 12" BELOW THE BOTTOM OF THE CONCRETE AND ASHALT PAVEMENT.
2. MARKING MATERIAL SHALL BE PER SPECIFICATION SECTION 32 17 23.
3. WATERBORNE TRAFFIC MARKINGS SHALL BE 15 MILS THICKNESS.
4. REFER TO RIDOT TRAFFIC DESIGN MANUAL FOR RHODE ISLAND DOT'S PREFERENCES AND PRACTICES (FOR INFORMATIONAL PURPOSES ONLY).
5. WORK ZONE TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE LATEST MUTCD.
6. YELLOW LEGEND PAVEMENT WORD MARKING "FIRE ACCESS LANE NO PARKING" SHALL BE 24" TALL X 4" WIDE. EXAMPLE:



APPR
DATE
DESCRIPTION
SYM

NAVFAC

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PM/DM

BRANCH MANAGER

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FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION ~ NEWPORT, RHODE ISLAND

NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

S366 NEW CONCRETE PAVEMENT JOINT LAYOUT PLAN

SCALE: 1" = 10'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781719

SHEET 26 OF 48

C-106

DRAWFORM REVISION: 31 JANUARY 2017

LEGEND

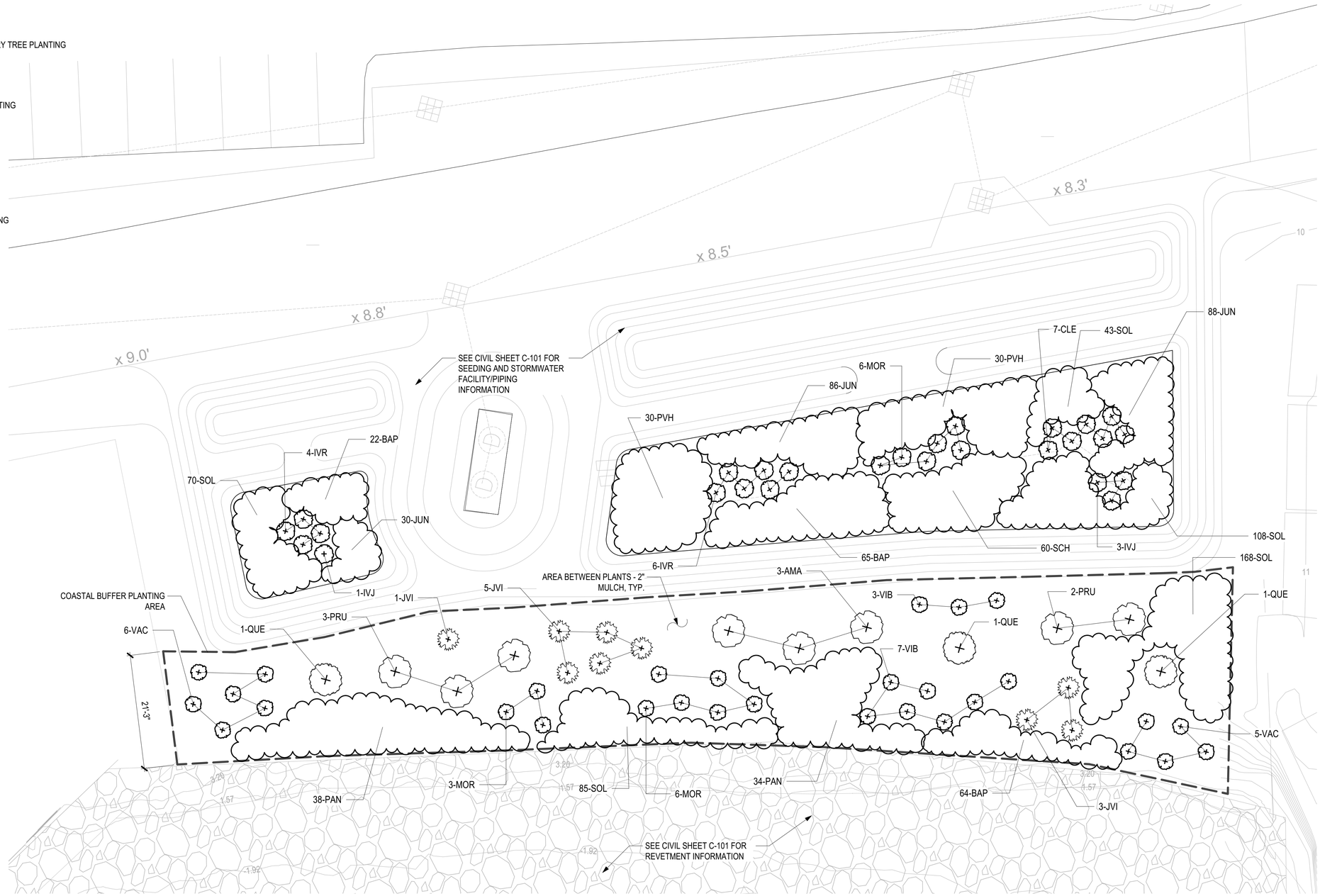
	C1 / L-501	SHADE AND UNDERSTORY TREE PLANTING
	A1 / L-501	EVERGREEN TREE PLANTING
	C2 / L-501	SHRUB PLANTING
	C4 / L-501	GROUNDCOVER PLANTING

GENERAL LANDSCAPE NOTES

1. GUARANTEE LANDSCAPING FOR A PERIOD OF ONE YEAR. PROVIDE A ONE YEAR ESTABLISHMENT AND MAINTENANCE PERIOD. LANDSCAPING GUARANTEE AND ESTABLISHMENT AND MAINTENANCE PERIODS MUST COMMENCE ON THE DATE THAT THE INSPECTION BY THE CONTRACTING OFFICER SHOWS THAT ALL LANDSCAPING UNDER THIS CONTRACT HAS BEEN SATISFACTORILY INSTALLED.
2. PROVIDE COMPLETE LANDSCAPING MAINTENANCE, INCLUDING BUT NOT LIMITED TO, ROUTINE LAWN MOWING, EDGING, PRUNING, PEST INSPECTION/TREATMENT, RE-MULCHING OF MULCH PRODUCTS, WATERING, WEEDING, AND FERTILIZING THROUGHOUT THE GUARANTEE PERIOD.
3. REPLACE TREES, SHRUBS, AND GROUND COVERS THAT DIE OR HAVE 20 PERCENT OR MORE OF THEIR CROWNS THAT DIE DURING PLANTING OPERATIONS OR THE GUARANTEE PERIOD WITH HEALTHY PLANTS OF THE SAME SPECIES OR VARIETY DURING THE APPROPRIATE PLANTING SEASON.
4. PROVIDE 2" OF DOUBLE SHREDDED HARDWOOD BARK MULCH. DO NOT ALLOW MULCH TO TOUCH TRUNK OR CROWN OF PLANTS. NO DYES OR COLORING SHALL BE PERMITTED.

COASTAL BUFFER LANDSCAPE NOTES

1. AREAS BETWEEN BUFFER ZONE PLANTINGS SHOULD NEVER BE MOWED OR CLEARED, UNLESS PART OF AN APPROVED SHORELINE ACCESS PATH OR RECREATION AREA. NATIVE VOLUNTEER SPECIES THAT BECOME ESTABLISHED IN THE BUFFER ZONE SHOULD NOT BE REMOVED.
2. AFTER INITIAL MULCH APPLICATION, AREA CAN THEN BE LEFT ALONE TO PROMOTE THE ESTABLISHMENT OF A LEAF LITTER OR "DUFF" LAYER.
3. PLANT SYMBOLS SHOWN ARE BASED ON PLANT SIZE AT INSTALLATION - PER COASTAL BUFFER ZONE PLANTING GUIDE (2008) BY CRMC.



0 10 20 FT

N

SCALE: 1"=30'-0" AT 22x34"

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

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FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES BC | DRW BC | CHK JF

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

OVERALL LANDSCAPE PLAN

SCALE: AS SHOWN

EPROJECT NO.: 1569253

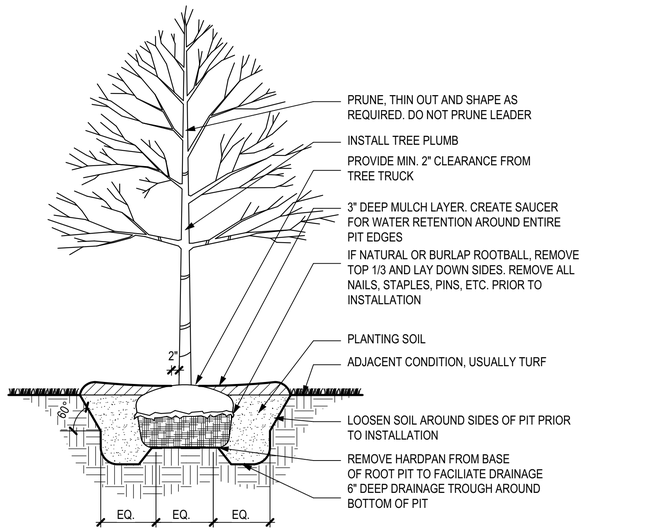
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781720

SHEET 27 OF 48

L-101

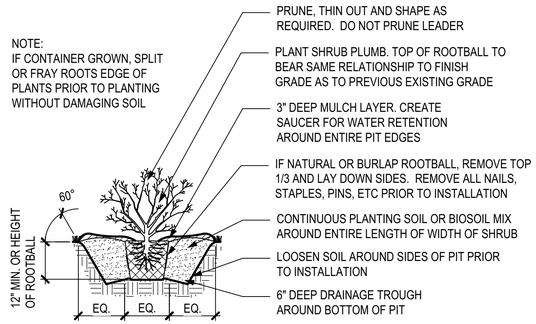
DRAWFORM REVISION: 31 JANUARY 2017



TREE PLANTING

SCALE: 1/2" = 1'-0"

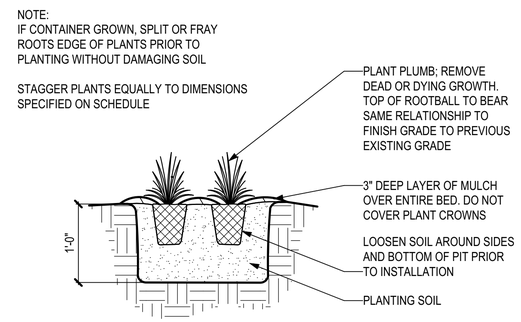
C1



SHRUB PLANTING

SCALE: 1/2" = 1'-0"

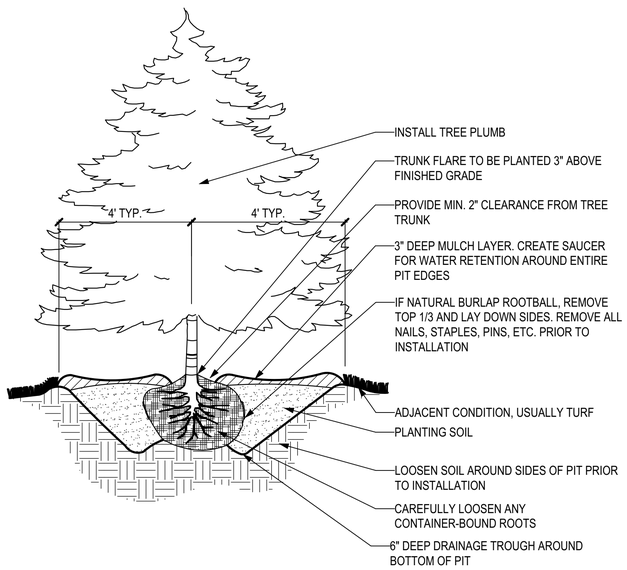
C2



GROUNDCOVER PLANTING

SCALE: 1/2" = 1'-0"

C4



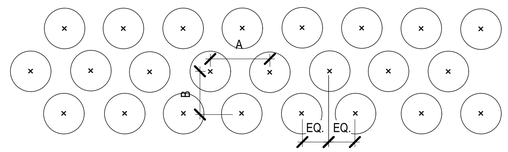
EVERGREEN TREE PLANTING

SCALE: 1/2" = 1'-0"

A1

(SEE PLANT LIST -SPACING COLUMN)

SPACING "A"	ROW "B"	NUMBER OF PLANTS PER SQUARE FOOT
6" o.c.	5.20"	4.00
8" o.c.	6.93"	2.60
12" o.c.	10.40"	1.00
18" o.c.	15.60"	0.45
24" o.c.	20.80"	0.25
30" o.c.	25.40"	0.16
36" o.c.	29.70"	0.11
48" o.c.	39.60"	0.0625



PLANT SPACING CHART

SCALE: 3/4" = 1'-0"

A2

NO.	DESCRIPTION	DATE	APPR

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION, NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

LANDSCAPE DETAILS

SCALE: AS SHOWN

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781721

SHEET 28 OF 48

L-501

DRAWFORM REVISION: 31 JANUARY 2017

PLANT SCHEDULE - BIORETENTION

ID	Qty	Botanical Name	Common Name	Spacing	Scheduled Size	Notes
BAP	87	*BAPTISIA AUSTRALIS*	BLUE FALSE INDIGO	24" O.C.	1 GAL.	SPECIMEN QUALITY, CONTAINER
CLE	7	*CLETHRA ALNIFOLIA 'SIXTEEN CANDLES'*	SIXTEEN CANDLES SUMMERSWEET	PLAN	5 GAL.	SPECIMEN QUALITY, CONTAINER
IVJ	4	*ILEX VERTICILLATA 'JIM DANDY'*	JIM DANDY WINTERBERRY (MALE)	PLAN	5 GAL.	SPECIMEN QUALITY, CONTAINER
IVR	10	*ILEX VERTICILLATA 'RED SPRITE'*	RED SPRITE WINTERBERRY (FEMALE)	PLAN	5 GAL.	SPECIMEN QUALITY, CONTAINER
JUN	204	*JUNCUS EFFUSUS*	SOFT RUSH	18" O.C.	1 GAL.	SPECIMEN QUALITY, CONTAINER
MOR	6	*MORELLA PENSYLVANICA*	NORTHERN BAYBERRY	PLAN	5 GAL.	SPECIMEN QUALITY, CONTAINER
PVH	60	*PANICUM VIRGATUM 'HEAVY METAL'*	HEAVY METAL SWITCHGRASS	36" O.C.	1 GAL.	SPECIMEN QUALITY, CONTAINER
SCH	60	*SCHIZACHYRIUM SCOPARIUM 'STANDING OVATION'*	STANDING OVATION LITTLE BLUESTEM	18" O.C.	1 GAL.	SPECIMEN QUALITY, CONTAINER
SOL	221	*SOLIDAGO SEMPERVIRENS*	SEASIDE GOLDENROD	18" O.C.	1 GAL.	SPECIMEN QUALITY, CONTAINER

PLANT SCHEDULE - COASTAL BUFFER						
TOTAL BUFFER	5,736 SF					
SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	COMMENT
SHADE TREES: 25% OF BUFFER						
QUE	3	*QUERCUS ALBA*	WHITE OAK	2" CAL.	PLAN	SPECIMEN QUALITY, B&B, STRONG CENTRAL LEADER
SHADE TREE CANOPY REQUIRED:		*1,434 SF*				
SHADE TREE CANOPY PROVIDED:		2,120 SF				
UNDERSTORY TREES, EVERGREEN TREES, SHRUBS: 50% OF BUFFER						
UNDERSTORY TREES						
AMA	3	*AMELANCHIER ARBOREA*	SERVICEBERRY	2" CAL.	PLAN	SPECIMEN QUALITY, B&B, MIN 7 CANES
PRU	5	*PRUNUS MARITIMA*	BEACH PLUM	2" CAL.	PLAN	SPECIMEN QUALITY, B&B, EVEN BRANCHING
UNDERSTORY TREE CANOPY PROVIDED:		1,414 SF				
EVERGREEN TREES						
JVI	9	*JUNIPERUS VIRGINIANA*	EASTERN REDCEDAR	6-8' HT.	PLAN	SPECIMEN QUALITY, B&B, STRONG CENTRAL LEADER
EVERGREEN TREE CANOPY PROVIDED:		707 SF				
SHRUBS						
VAC	11	*VACCINIUM CORYBOSUM*	HIGHBUSH BLUEBERRY	5 GAL.	PLAN	SPECIMEN QUALITY, CONTAINER
MOR	9	*MORELLA PENSYLVANICA*	NORTHERN BAYBERRY	5 GAL.	PLAN	SPECIMEN QUALITY, CONTAINER
VIB	10	*VIBURNUM DENTATUM*	ARROWWOOD	5 GAL.	PLAN	SPECIMEN QUALITY, CONTAINER
SHRUBS CANOPY PROVIDED		848 SF				
TOTAL CANOPY REQUIRED:		*2,868 SF*				
TOTAL UNDERSTORY CANOPY PROVIDED:		*2,968 SF*				
HERBACOUS (GRASSES AND PERENNIALS) 12.5% OF BUFFER						
PAN	38	*PANICUM VIRGATUM*	SWITCHGRASS	1 GAL.	36" O.C.	SPECIMEN QUALITY, CONTAINER
SOL	85	*SOLIDAGO SEMPERVIRENS*	SEASIDE GOLDENROD	1 GAL.	18" O.C.	SPECIMEN QUALITY, CONTAINER
PAN	34	*PANICUM VIRGATUM*	SWITCHGRASS	1 GAL.	36" O.C.	SPECIMEN QUALITY, CONTAINER
BAP	64	*BAPTISIA AUSTRALIS*	BLUE FALSE INDIGO	1 GAL.	24" O.C.	SPECIMEN QUALITY, CONTAINER
SOL	168	*SOLIDAGO SEMPERVIRENS*	SEASIDE GOLDENROD	1 GAL.	18" O.C.	SPECIMEN QUALITY, CONTAINER
TOTAL HERBACEOUS COVER REQUIRED:		*717 SF*				
TOTAL HERBACEOUS COVER PROVIDED:		*1,370 SF*				

APPR | DATE | DESCRIPTION | STM

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BRANCH MANAGER

CHIEF ENG/ARCH

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL STATION - NEWPORT, R.I.

NAVAL FACILITIES ENGINEERING COMMAND

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

PLANT SCHEDULE

SCALE: AS SHOWN

EPROJECT NO.: 1569253

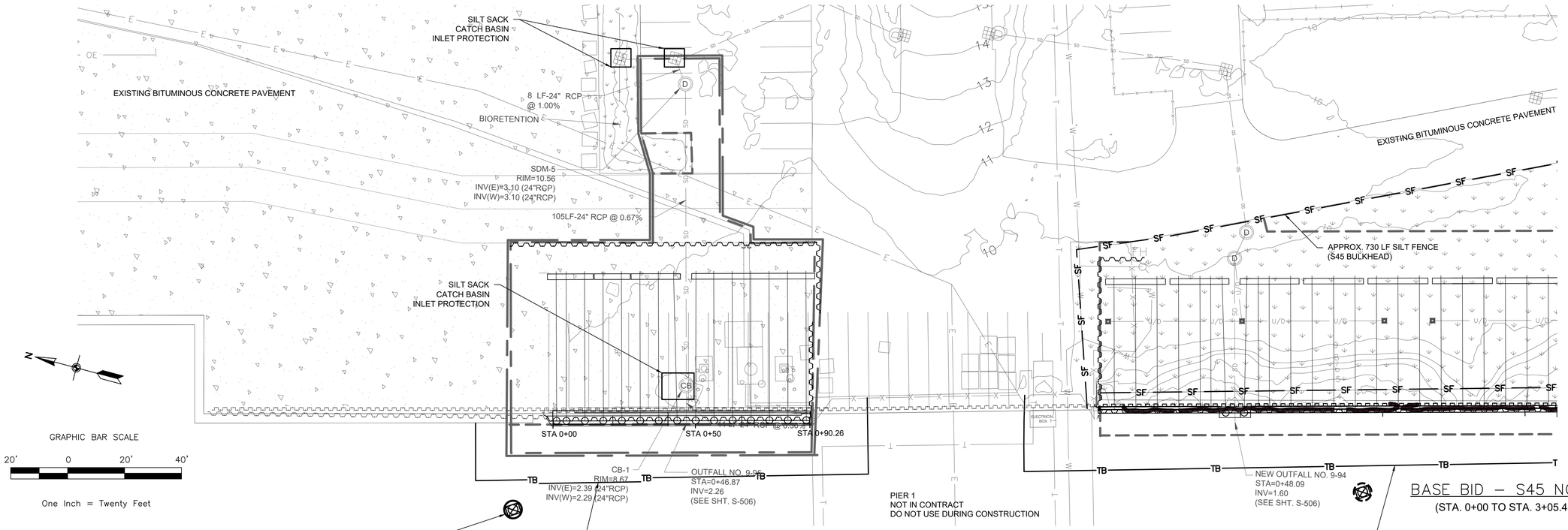
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781721

SHEET 29 OF 48

L-502

DRAWFORM REVISION: 31 JANUARY 2017



OPTION 2 – S366
(STA. 0+00 TO STA. 0+90.26)

BASE BID – S45 NORTH
(STA. 0+00 TO STA. 3+05.43)

LEGEND:

SF	SILT FENCE
TB	FLOATING TURBIDITY CURTAIN
	LIMITS OF EXCAVATION
	LIMITS OF DREDGING
	NEW LOAM AND SEED
	NEW RIP-RAP REVETMENT
	NEW STEEL SHEET PILING (APPURTENANCES INCLUDED)
	TURBIDITY MONITORING BUOY (INSTALL PER MANUFACTURER'S RECOMMENDATION)

NOTE: CONTRACTOR SHALL PROVIDE ALL EROSION CONTROL MEASURES AND DEWATERING MEASURES TO COMPLY WITH RIDEM REQUIREMENTS AND CRMC. THE EROSION CONTROL MEASURES SHOWN ON THIS DRAWING DO NOT SHOW ALL EROSION CONTROL MEASURES TO BE IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A COMPREHENSIVE EROSION CONTROL PLAN THAT ADDRESSES RUN OFF FROM RAIN EVENTS AS WELL AS DEWATERING MEASURES IN ORDER TO PERFORM WORK UNDER THIS CONTRACT.

APPR | DATE | DESCRIPTION | SYM

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DES	DM	DRW	DM	CHK	DS

PM/DM JK

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

SOIL EROSION AND SEDIMENT CONTROL PLAN – S366 BULKHEAD

SCALE: 1" = 20'

EPROJECT NO.: 1569253

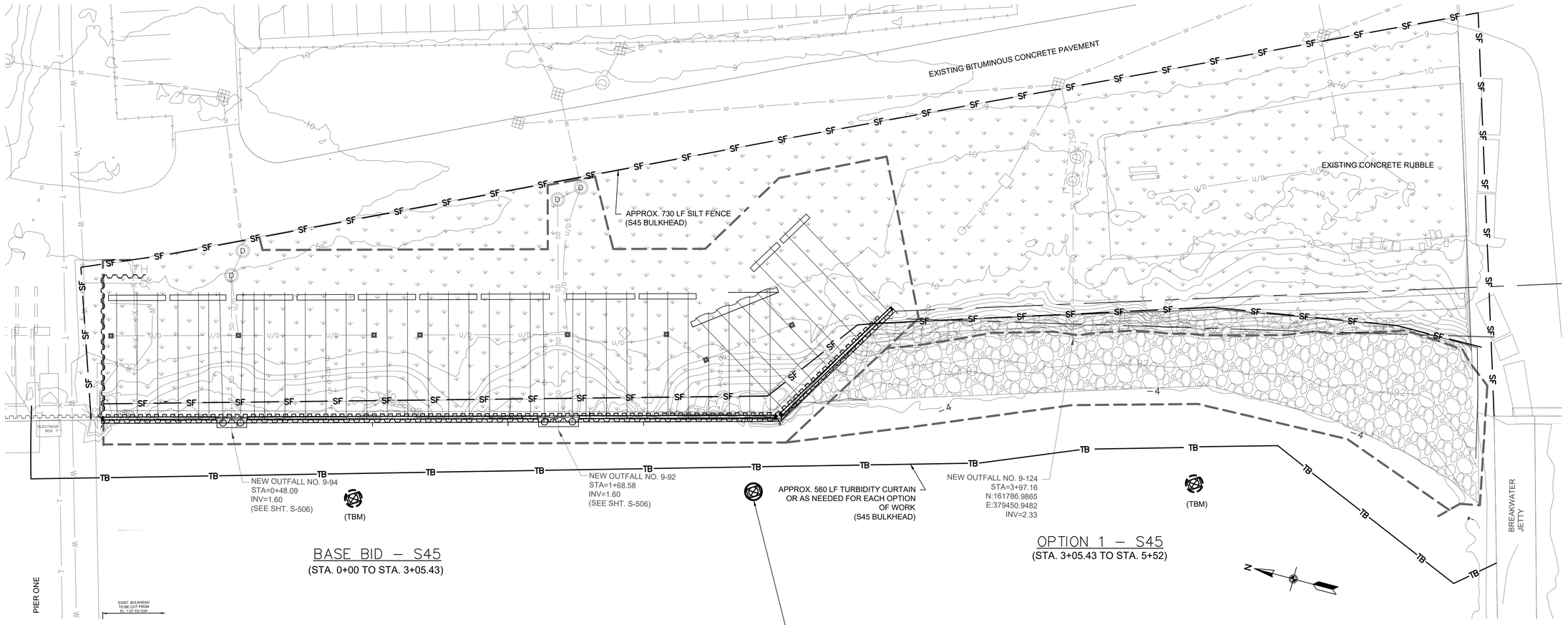
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781722

SHEET 30 OF 48

CH-101

DRAWFORM REVISION: 31 JANUARY 2017



LEGEND:

SF	SILT FENCE
TB	FLOATING TURBIDITY CURTAIN
	LIMITS OF EXCAVATION
	LIMITS OF DREDGING
	NEW LOAM AND SEED
	NEW RIP-RAP REVETMENT
	NEW STEEL SHEET PILING (APPURTENANCES INCLUDED)
	TURBIDITY MONITORING BUOY (INSTALL PER MANUFACTURER'S RECOMMENDATION) (TBM)

NOTES:

1. CONTRACTOR SHALL PROVIDE ALL EROSION CONTROL MEASURES AND DEWATERING MEASURES TO COMPLY WITH RIDEM REQUIREMENTS AND CRMC. THE EROSION CONTROL MEASURES SHOWN ON THIS DRAWING DO NOT SHOW ALL EROSION CONTROL MEASURES TO BE IMPLEMENTED BY THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE A COMPREHENSIVE EROSION CONTROL PLAN THAT ADDRESSES RUN OFF FROM RAIN EVENTS AS WELL AS DEWATERING MEASURES IN ORDER TO PERFORM WORK UNDER THIS CONTRACT.

2. ALL DISTURBED SOILS SHALL BE GRADED SMOOTH TO A MAXIMUM 3:1 SLOPE AND RE-VEGETATED IMMEDIATELY AFTER CONSTRUCTION, OR TEMPORARILY STABILIZED WITH MULCH, JUTE MATTING, OR SIMILAR MEANS UNTIL SEASONAL CONDITIONS PERMIT SUCH RE-VEGETATION

APPR | DATE | DESCRIPTION | SYM

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NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

SOIL EROSION AND SEDIMENT CONTROL PLAN – S45 BULKHEAD

SCALE: 1" = 20'

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

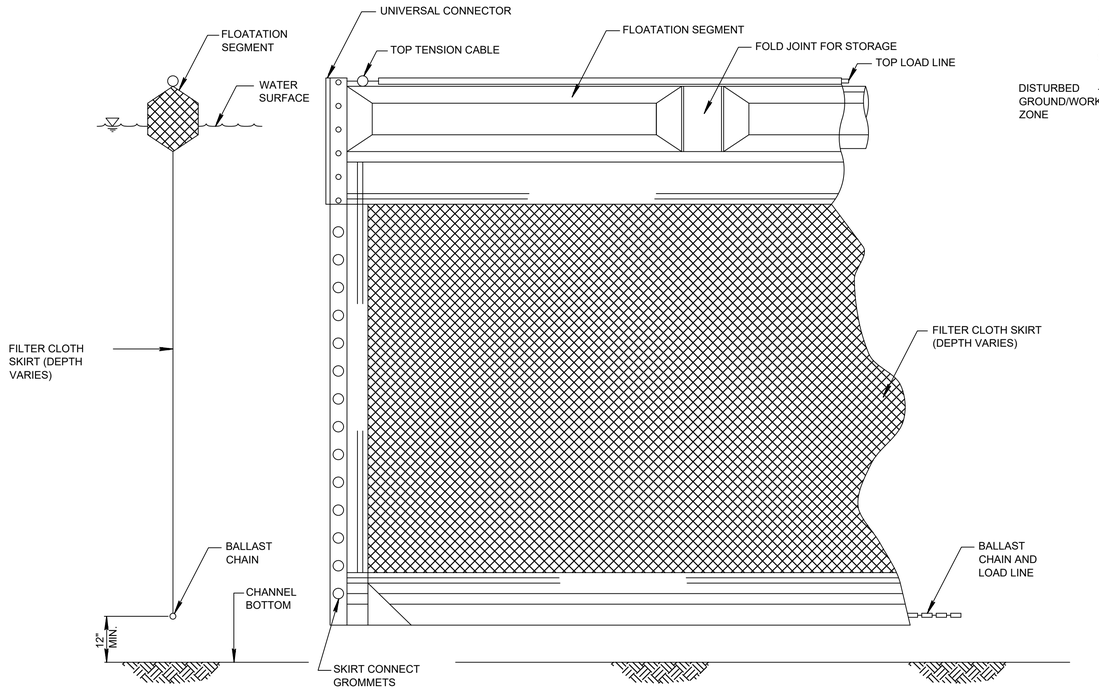
NAVFAC DRAWING NO.
12781723

SHEET 31 OF 48

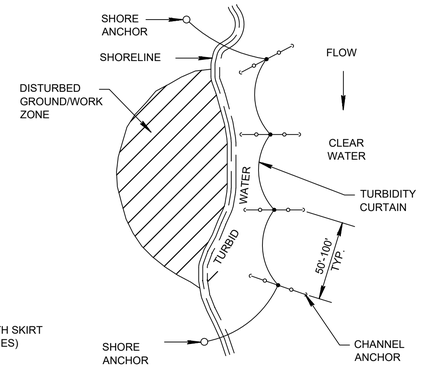
CH-102

DRAWFORM REVISION: 31 JANUARY 2017

FLOATING TURBIDITY CURTAIN

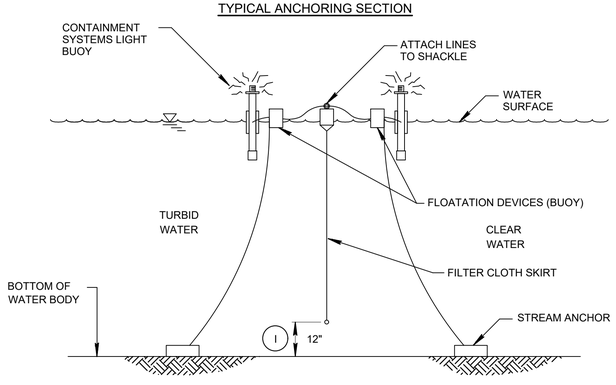


TYPICAL ANCHORING PLAN FOR SHORELINE/RIVER EDGE WORK



PLAN VIEW

TYPICAL ANCHORING SECTION



SECTION A-A

AUTOMATIC FLASHING LIGHT BUOY (ON AT DUSK-OFF AT DAWN) 100' ON CENTER SHALL BE USED IN NAVIGABLE CHANNELS ONLY

FLOATING TURBIDITY CURTAIN GENERAL NOTES

(A) FLOATING SILT CURTAINS (ALSO KNOWN AS TURBIDITY BARRIERS OR SILT CURTAINS) CREATE A BARRIER TO PREVENT TURBID WATER FROM ENTERING CLEAR WATER. FLOATING TURBIDITY CURTAINS SHOULD BE USED TO ISOLATE ACTIVE CONSTRUCTION AREAS WITHIN OR ADJACENT TO A BODY OF WATER TO MINIMIZE THE MIGRATION OF SILT LADEN WATER OUT OF THE CONSTRUCTION ZONE.

(B) TURBIDITY CURTAINS SHALL NOT BE INSTALLED PERPENDICULAR ACROSS THE MAIN FLOW OF A SIGNIFICANT BODY OF MOVING WATER.

(C) FLOATING TURBIDITY CURTAINS SHALL NOT BE USED WHERE THE ANTICIPATED FLOW VELOCITIES WILL EXCEED 5 FT/SEC.

(D) TURBIDITY CURTAINS SHALL BE ANCHORED TO PREVENT DRIFT SHOREWARD OR DOWNSTREAM. ANCHORAGE SHALL BE INSTALLED ON BOTH THE SHORE AND STREAM SIDE. CURTAINS SHALL BE INSTALLED AS CLOSE TO PROJECT SITE AS POSSIBLE. BARRIERS SHOULD BE A BRIGHT COLOR (YELLOW OR "INTERNATIONAL" ORANGE ARE RECOMMENDED) THAT WILL ATTRACT THE ATTENTION OF NEARBY BOATERS.

(E) SHORE ANCHORS SHALL CONSIST OF A POST WITH DEADMAN OR APPROVED EQUAL. STREAM ANCHORS SHALL BE OF SUFFICIENT SIZE TO STABILIZE THE BARRIER WITH NUMBER AND SPACING DEPENDENT ON WATERWAY VELOCITIES AND MANUFACTURER'S RECOMMENDATIONS.

(F) FABRIC SECTIONS SHALL BE CONNECTED END TO END WITH MINIMUM †" DIAMETER POLYPROPYLENE ROPE. FABRIC SHALL BE SEAMED TOGETHER IN A MANNER THAT RETAINS THE OVERALL TENSILE STRENGTH.

(G) DESIGN OF CURTAIN AND ANCHORAGE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. FILTER CLOTH SKIRT SHOULD BE ABLE TO WITHSTAND THE FORCES IMPARTED ON IT DUE TO THE EXPECTED WIND VELOCITY OR STREAM VELOCITY. FABRIC SHALL BE MADE OF A NON-DETERIORATING MATERIAL, SUCH AS PLASTIC OR NYLON, WHICH WILL ALLOW WATER TO PASS THROUGH WHILE STILL RETAINING SEDIMENT.

(H) THE TURBIDITY CURTAIN AND ADJACENT WORK AREAS SHALL NOT BE DISTURBED 12 HOURS PRIOR TO REMOVAL FROM WATER BODY. MAINTENANCE SHALL BE PERFORMED AS NEEDED. CONTRACTOR SHALL REMOVE THE CURTAIN AT COMPLETION OF WORK IN A MANNER THAT WILL PREVENT SILTATION OF THE WATERWAY. DURING REMOVAL, EXTREME CARE SHOULD BE TAKEN TO MINIMIZE DISTURBANCE OF ANY SEDIMENT DEPOSITS.

(I) MAINTAIN 12" MINIMUM GAP BETWEEN SKIRT BOTTOM AND CHANNEL BOTTOM AT LOW TIDE TO PREVENT ACCUMULATED SEDIMENT FROM PULLING TOP OF CURTAIN BELOW WATER SURFACE.

(J) IN WIND OR WAVE ACTION SITUATIONS, THE MAXIMUM DEPTH OF THE CURTAIN SHALL BE 12 FEET.

(K) CONCENTRATED FLOW SHALL NOT DISCHARGE BEYOND FLOATING TURBIDITY CURTAIN. CURTAINS ARE NOT TO BE INSTALLED ACROSS A FLOWING BODY OF WATER.

(L) WHEN INSTALLED IN A NAVIGABLE WATERWAY, BUOYS SHOULD BE LIT ACCORDING TO REGULATORY AGENCY STANDARDS.

(M) WHEN ESTIMATING THE LENGTH OF TURBIDITY CURTAIN, ALLOW 10 TO 20 PERCENT VARIANCE IN STRAIGHT LINE MEASUREMENT.

(N) PAYMENT FOR FLOATING TURBIDITY CURTAIN SHALL INCLUDE ALL MATERIAL AND LABOR NECESSARY FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TURBIDITY CURTAINS

TURBIDITY CURTAIN

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NAVAL BASE - RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

SOIL EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NONE

EPROJECT NO.: 1569253

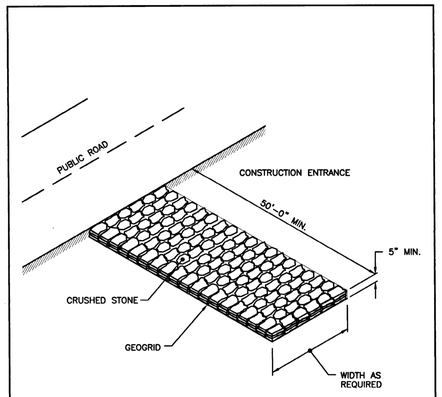
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781724

SHEET 32 OF 48

CH-103

DRAWFORM REVISION: 31 JANUARY 2017



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION 211 OF THE R.I. STANDARD SPECIFICATIONS.

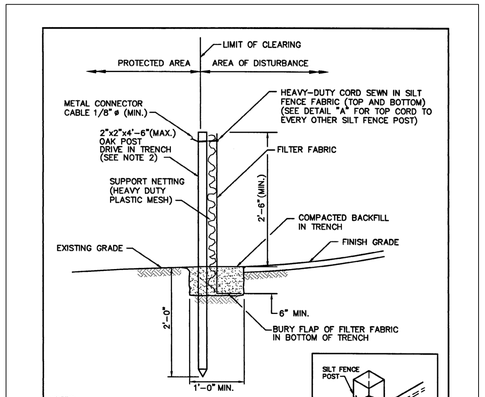
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

CONSTRUCTION ACCESS

Chief Engineer Transportation — Chief Design Engineer Transportation — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 9.9.0



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. 2"x2"x4'-6"(MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'-0" (MAX.) O.C. IN WETLAND AREAS AND 4'-0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
3. 1"x1"x4'-6"(MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

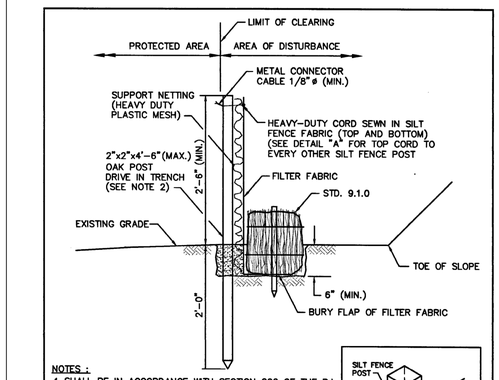
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

SILT FENCE DETAIL

Chief Engineer Transportation — Chief Design Engineer Transportation — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 9.2.0



NOTES :
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. STD. 9.1.0 IS INSTALLED "TIGHT" AGAINST SILT FENCE. THOROUGHLY COMPACT EXCAVATED SOILS BACK INTO TRENCH AFTER INSTALLATION OF EROSION CONTROL DEVICE. SILT FENCE FABRIC SHALL NOT BE SLIT. STD. 9.1.0 POST SHALL BE DRIVEN THROUGH SILT FENCE FABRIC. 2"x2"x4'-6"(MAX.) OAK POST FOR SILT FENCE SHALL BE LOCATED 8'-0"(MAX.) O.C. IN WETLAND AREAS AND 4'-0"(MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
3. 1"x1"x4'-6"(MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
4. SILT FENCE AND BALED HAY SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

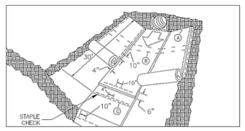
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

BALED HAY EROSION CHECK AND SILT FENCE COMBINED

Chief Engineer Transportation — Chief Design Engineer Transportation — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 9.3.0



MATTING IN DITCHES

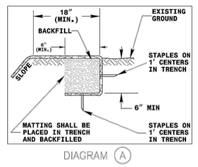
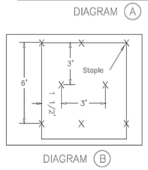


DIAGRAM (A)

MATTING ON SLOPES



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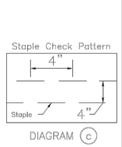
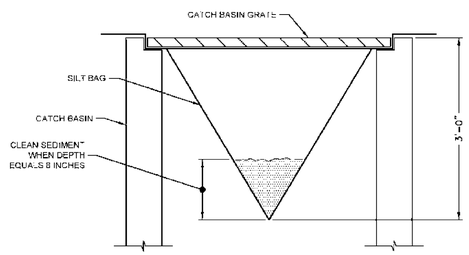


DIAGRAM (C)

NOTES:
THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.
STAPLE SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 8 INCHES IN LENGTH.

Appendix N. Erosion Control Blankets (ECBs) - Page 3



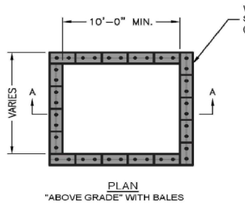
NOTE:
SEDIMENT BAG INLET PROTECTION TO BE SILTSACK MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS INC. RICHMOND, VA OR APPROVED EQUAL.

S.I.T SACK DETAIL
NOT TO SCALE

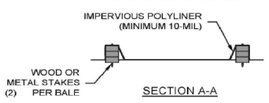
SILT SACK NOTES

INSPECTION SHOULD BE MADE AFTER EACH STORM EVENT OR 1 / WEEK AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED.

LIFT INTERNAL INLET FILTERS CAREFULLY FROM THE DRAINAGE STRUCTURE. REMOVE ANY ACCUMULATED SEDIMENT AND REINSERT DEVICE INTO THE DRAIN OPENING. REPLACE DAMAGED SILT SACKS.

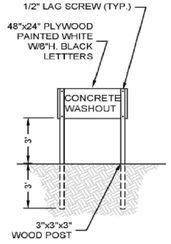


PLAN
"ABOVE GRADE" WITH BALES



SECTION A-A

CONCRETE WASHOUT
NOT TO SCALE



CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

CONCRETE WASHOUT NOTES

CONCRETE WASHOUT SPECIFICATIONS

1. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE AREAS SUCH AS STORM DRAINS, OPEN DITCHES, OR WATER BODIES INCLUDING JURISDICTIONAL WETLANDS.
2. ALLOW CONVENIENT TRUCK ACCESS.
3. THE NUMBER OF FACILITIES SHOULD DEPEND ON THE DEMAND FOR STORAGE CAPACITY.
4. CONCRETE WASHOUT FACILITIES SHALL BE CONSTRUCTED AND MAINTAINED IS SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED.

CONCRETE WASHOUT INSTALLATION REQUIREMENTS

1. THE CONCRETE WASHOUT SHOULD BE A MINIMUM OF 10 FOOT BY 10 FOOT AREA.
2. THE WASHOUT WILL BE CONSTRUCTED WITH STRAW BALES ARRANGED AROUND THE PERIMETER AND LINED WITH TWO LAYERS OF 10 MIL POLYETHYLENE SHEETING. THE POLYETHYLENE SHEETING WILL WRAP OVER THE STRAW BALES (OR APPROVED EQUAL) AND WILL BE SECURED WITH SAND BAGS.
3. THE WASHOUT SHALL BE SIZED TO ACCOMMODATE ALL OF THE WASHOUT WATER AND CONCRETE AND SHOULD INCLUDE 12-INCHES OF FREEBOARD ABOVE THE WASHOUT WASTE.

CONCRETE WASHOUT MAINTENANCE

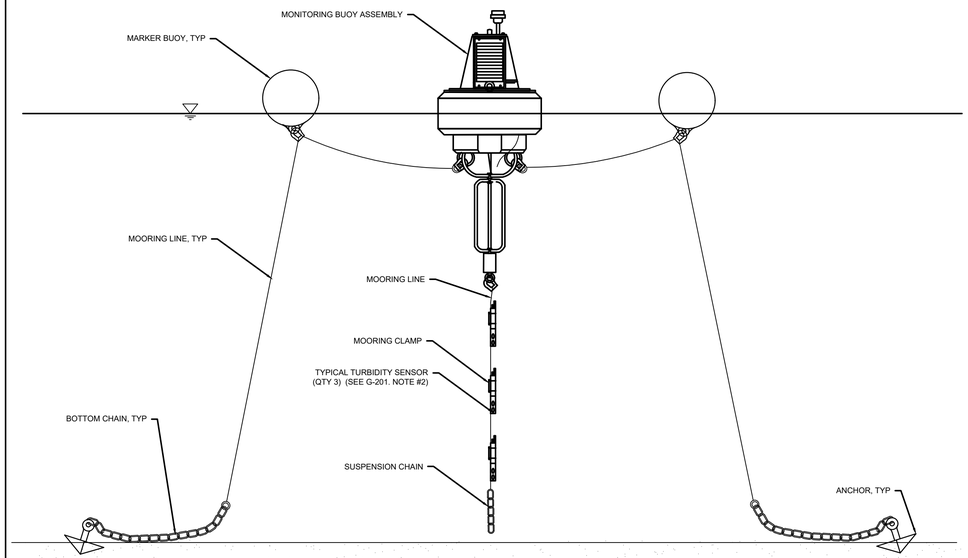
1. INSPECT AND VERIFY THAT THE CONCRETE WASHOUT HAS BEEN PROPERLY CONSTRUCTED PRIOR TO THE COMMENCEMENT OF CONCRETE WORK.
2. INSPECT DAILY FOR DAMAGE OR ISSUES.
3. CHECK REMAINING CAPACITY.
4. VERIFY THAT LINERS ARE INTACT.
5. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED ONCE THE WASHOUT IS 75% FULL.
6. IF WASHOUT IS NEARING CAPACITY, VACUUM AND DISPOSE OF THE WASTE MATERIAL IN AN APPROVED MANNER.
7. DO NOT DISCHARGE LIQUID OR SLURRY TO WATERWAYS, STORM DRAINS, OR ONTO THE GROUND SURFACE.
8. COVER THE WASHOUT WITH A NON-WATER COLLECTING COVER PRIOR TO STORM EVENTS TO PREVENT OVERFLOW.
9. REMOVE AND DISPOSE OF HARDENED CONCRETE AND RETURN THE WASHOUT TO FUNCTIONAL CONDITION.

SILT SACK NOTES

INSPECTION SHOULD BE MADE AFTER EACH STORM EVENT OR 1 / WEEK AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED.

LIFT INTERNAL INLET FILTERS CAREFULLY FROM THE DRAINAGE STRUCTURE. REMOVE ANY ACCUMULATED SEDIMENT AND REINSERT DEVICE INTO THE DRAIN OPENING. REPLACE DAMAGED SILT SACKS.

TURBIDITY MONITORING BUOY DETAIL



* SEE SHEET G-201 FOR TURBIDITY MONITORING SPECIFICATIONS AND ADDITIONAL INFORMATION

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO — DATE: November 2021

DES	DM	DRW	DM	CHK	DS

PW/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE ~ RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

SOIL EROSION AND SEDIMENT CONTROL DETAILS

SCALE: NONE

EPROJECT NO.: 1569253

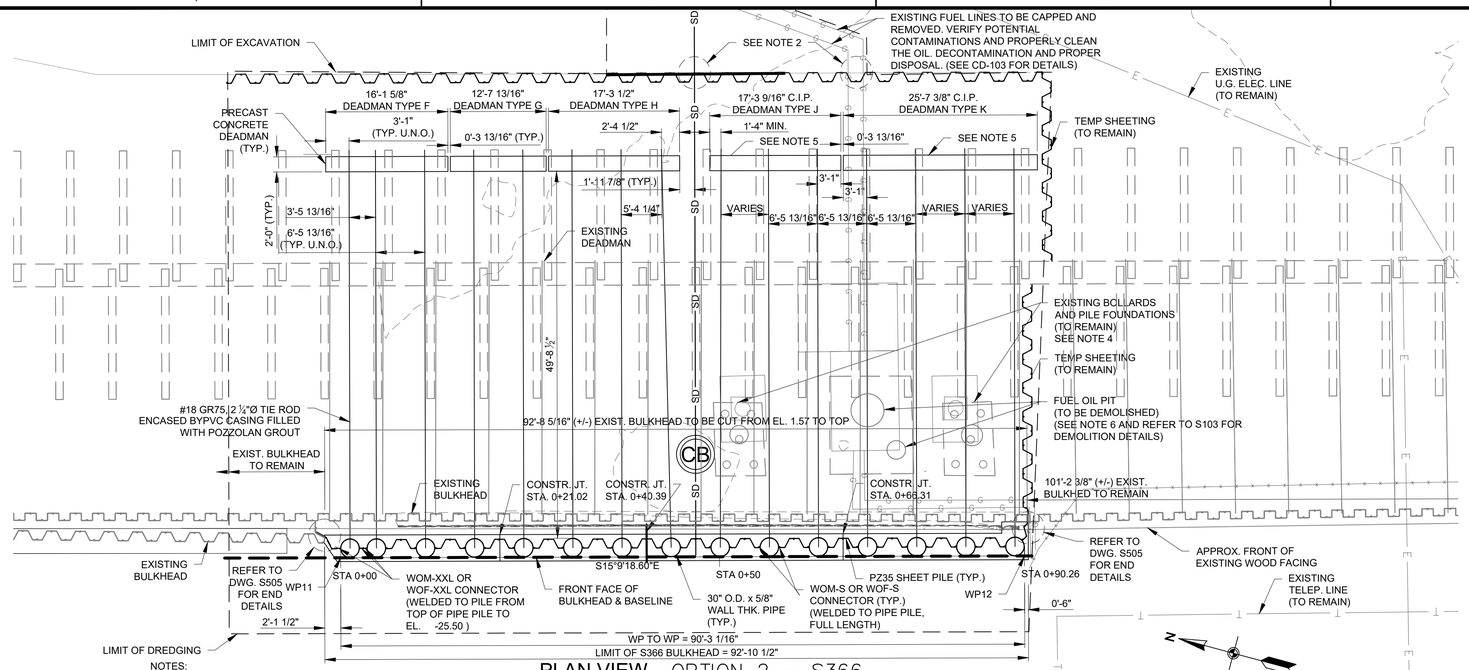
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781725

SHEET 33 OF 48

CH-104

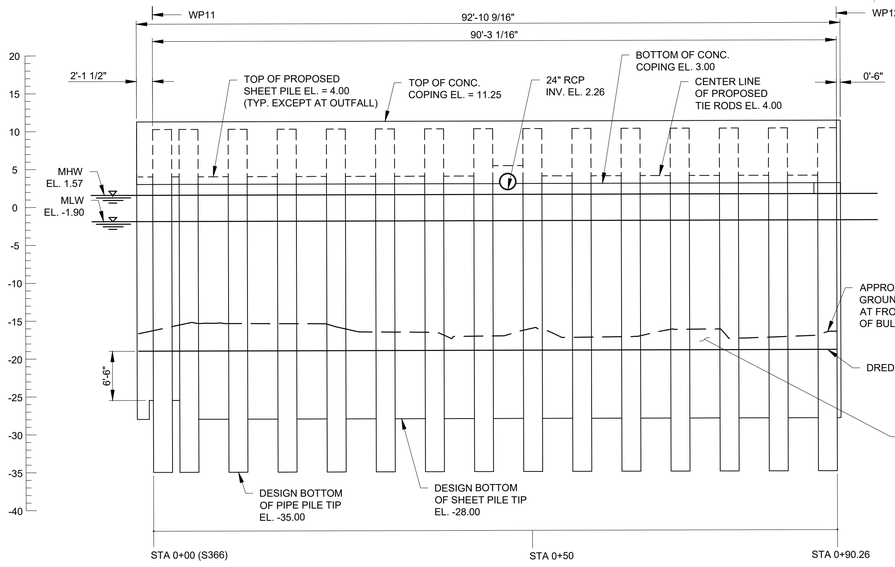
DRAWFORM REVISION: 31 JANUARY 2017



PLAN VIEW OPTION 2 – S366

NOTES:

1. PRIOR TO ANY FABRICATION AND CONSTRUCTION, FIELD VERIFY THE BEARING DIRECTION AND WORK POINTS FOR PROPER FIT OF THE NEW BULKHEAD.
2. TEMPORARY SHEETING SYSTEM IS REQUIRED TO PROTECT EXISTING ROADWAY TRAFFIC TO PIER 1, DURING THE EXCAVATION OF S366. SUCH SYSTEM SHALL BE DESIGNED BY CONTRACTOR TO PROVIDE THE REQUIRED STRENGTH, STABILITY, AND TO CONTROL DEFLECTIONS TO MINIMIZE IMPACTS TO TRAFFIC AND NEARBY EXISTING STRUCTURES. CONTRACTOR SHALL SUBMIT PROPOSED DESIGN AND CALCULATIONS WITH PE STAMP BY A PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL. REMOVE EXISTING FUEL LINES AND EXISTING STORM DRAIN LINE PRIOR TO DRIVE TEMPORARY SHEETING. INSTALL NEW 24" STORM DRAIN LINE AFTER DRIVING TEMPORARY SHEETING.
3. REFERENCE DWG. S505 FOR DETAILS OF CONSTRUCTION JOINTS OF S366 CONCRETE COPING.
4. THE EXISTING BOLLARDS AND THE SUPPORTING TIMBER PILE FOUNDATIONS SHALL REMAIN DURING THE EXCAVATION FOR WALL CONSTRUCTION. CONTRACTOR SHALL SURVEY AND FIELD VERIFY EXACT LOCATION OF THE BOLLARDS. WHEN THE EXISTING TIMBER PILES ARE EXPOSED UPON EXCAVATION, THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO REMOVE THE SOIL AMONG THE TIMBER PILES BY MANUAL EXCAVATION. TIEROD INSTALLATION ANGLE CAN BE ADJUSTED WHERE NECESSARY TO AVOID THE TIMBER PILES AS POTENTIAL OBSTRUCTION. NOTIFY THE CONTRACTING OFFICER AND THE ENGINEER FOR SUCH ADJUSTMENT FOR APPROVAL PRIOR TO THE INSTLLATION. UPON COMPLETION OF TIEROD INSTALLATION AND PRESTRESS, BACKFILL #57 STONES IN SIX INCH COMPACTED LIFTS TO THE BOTTOM OF BOLLARD CAP. THE CONTRACTOR IS SUGGESTED TO PERFORM THE BACKFILL UNDERNEATH AND AROUND THE BOLLARD PRIOR TO THE REST BACKFILL AREA TO FACILITATE STONE FILL TO THE BOTTOM OF THE BOLLARD CAP, OR PROVIDE OWN MEANS AND METHODS AS APPROPRIATE TO ENSURE SUCH A REQUIREMENT. STONES SHALL BE COMPACTED WITH THE BEST EFFORT UNDERNEATH THE BOLLARD.
5. THE TIE RODS ASSOCIATED WITH THE C.I.P. DEADMAN SHALL BE PLACED AS DESIGNED BEFORE POURING CONCRETE IN C.I.P. DEADMAN.
6. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN REMOVING THE FUEL LINES AND THE RECEIVING OIL PIT. IF RESIDUAL FUEL IS PRESENTED, PERFORM TESTS TVERIFY POTENTIAL CONTAMINANTS AND PROPERLY CLEAN THE OIL PIT PRIOR TO THE DEMOLITION. UPON TESTING, ANY IDENTIFIED HAZARDOUS MATERIAL REQUIRES DECONTAMINATION AND PROPER DISPOSAL. SEE CD-103 FOR DETAILS.



S366 BULKHEAD WORKING POINT TABLE*		
POINT	NORTHING	EASTING
WP11	162309.0678	379274.4848
WP12	162221.9536	379298.0800

* CONTRACTOR SHALL PERFORM FIELD SURVEY AND VERIFY WORKING POINTS BEFORE COMMENCING WORK. NOTIFY ENGINEER OF DISCREPANCIES, AND RESOLVE BEFORE PROCEEDING.

LEGEND:

SD ——— STORM DRAIN PIPE

CB CATCH BASIN

ELEVATION VIEW

GENERAL NOTES:

MATERIAL SPECIFICATIONS

1. CONCRETE
   - 1.1. SPECIFICATIONS
     - 1.1.1. CONCRETE STRENGTH
       PRECAST CONCRETE DEADMAN (MARINE CONCRETE): f'c=5,000 psi , MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO 0.40
       CAST IN PLACE CONCRETE DEADMAN (MARINE CONCRETE): f'c=5,000 psi, MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO 0.40
       CAST IN PLACE CONCRETE COPING AND PIPE PILE FILL CONCRETE (MARINE CONCRETE): f'c=5,000 psi, MAXIMUM WATER/CEMENTITIOUS MATERIAL RATIO 0.40
     - 1.1.2. REINFORCING STEEL A615 GR.60 fy=60 ksi
       ALL REINFORCEMENT SHALL BE EPOXY COATED.
   - 1.2. SUBMITTALS
     - 1.2.1. CONCRETE MIX DESIGN
     - 1.2.2. REINFORCEMENT SHOP DRAWINGS
   - 1.3. CONTROLLED LOW STRENGTH MATERIAL (CLSM), IF AND WHERE DIRECTED
     - 1.3.1. SHALL BE NORMAL-WEIGHT CEMENT, SAND AND FLY-ASH MIX PER ACI 229R-99. CLSM MIX MAY BE EXTENDED WITH PEA GRAVEL.
     - 1.3.2. MAXIMUM f'c=250 psi
     - 1.3.3. NO FOAMING AGENTS ALLOWED. ADMIXTURES SHALL BE COMPATIBLE FOR PLACEMENT IN SALT WATER.
     - 1.3.4. ANTI-WASHOUT ADMIXTURE SHALL BE USED FOR IN-WATER PLACEMENT.
2. STRUCTURAL STEEL FABRICATIONS
   - 2.1. FABRICATION, DETAILING, AND CONSTRUCTION SHALL CONFORM TO AISC 15th SPECIFICATION, LRFD DESIGN.
   - 2.2. ALL WELDING SHALL CONFORM WITH AWS D1.1. CURRENT EDITION.
   - 2.3. STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM SPECIFICATION.
     - 2.3.1. UNLESS NOTED OTHERWISE, FOR MISC SHAPES A36 fy=36 ksi
     - 2.3.2. UNLESS NOTED OTHERWISE, FOR PLATES A36 fy=36 ksi
     - 2.3.3. HIGH STRENGTH STRUCTURAL BOLTS A325 THREADS EXCLUDED FROM SHEAR PLANE. UNLESS NOTED OTHERWISE, ALL HIGH STRENGTH BOLTS SHALL BE INITIALLY INSTALLED SNUG TIGHT, AND THEN FULLY TENSIONED TO THE MINIMUM BOLT PRETENSION REQUIRED BY AISC 360 TABLE J3.1
     - 2.3.4. THREADED TIE RODS A615Gr75 fy=75 ksi
       TIE ROD BEARING PLATE A588Gr50 fy=50 ksi
       TIE ROD HEX NUTS ASTM A108
       TIE ROD HARDENED FLAT WASHERS: ASTM F436 TYPE 1
       TIE ROD SPHERICAL HEX NUTS: ASTM A536, DUCTILE IRON
   - 2.4. STEEL SHALL BE COATED IN ACCORDANCE WITH "COATING OF STEEL WATERFRONT STRUCTURES" SECTION OF THESE GENERAL NOTES.
   - 2.5. SUBMITTALS:
     - 2.5.1. MATERIAL MILL CERTIFICATES
     - 2.5.2. FABRICATION SHOP DRAWINGS - STEEL SUPPLIER SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER PER AISC CODE OF STANDARD PRACTICE.
3. STEEL WATERFRONT STRUCTURES COATING
   - 3.1. SHEET PILE, KING PILES, CONNECTOR PILES, STEEL WALES, BULKHEAD CAP, MISCELLANEOUS STEEL.
     - 3.1.1. COAT PER SPECIFICATION SECTION 09 97 13.26.
     - 3.1.2. SURFACE PREP AND COATING ON STEEL SHEET PILES, PIPE PILES, AND CONNECTOR PILES SHALL BE INSTALLED ON BOTH LAND SIDE AND WATER SIDE TO A MINIMUM DEPTH OF 2' BELOW THE PLANNED DREDGE DEPTH.
   - 3.2. STEEL HARDWARE AND FASTENERS, THREADED TIE RODS
     - 3.2.1. DUAL COATINGS BY HOT DIP GALVANIZED PER ASTM A153 AND EPOXY COATED PER SPECIFICATION SECTION 09 97 13.26.
     - 3.2.2. THREADED TIE RODS SHALL BE HOT DIP GALVANIZED PER ASTM A153 AND ENCASED IN POZZOLAN GROUT AS SHOWN, FULL LENGTH. ANY EXPOSED PORTION NOT ENCASED, SUCH AS THE END OF TIE ROD, SHALL BE COATED AS SPECIFIED IN 3.2.1.
   - 3.3. SUBMITTALS - SEE SPECIFICATION SECTION 09 97 13.26, 09 97 13.28.
4. STEEL SHEET PILING, KING (PIPE) PILE, AND STEEL WALE
   - 4.1. SHEET PILE AND KING PILE ASTM A690 GRADE 50. STEEL WALE SYSTEM ASTM A572 GRADE 50
   - 4.2. STEEL SHEET PILING, KING (PIPE) PILE, AND STEEL WALE SHALL BE COATED IN ACCORDANCE WITH "COATING OF STEEL WATERFRONT STRUCTURES" SECTION OF THESE GENERAL NOTES.
   - 4.3. SHEET PILE PROTECTORS (DRIVING SHOES) SHALL BE USED.
     - 4.3.1. ASSOCIATED PILE AND FITTING MODEL X-09800 (30" STRAIGHT BAR) OR EQUAL WITH ENGINEER APPROVAL SHALL BE USED.
     - 4.3.2. A 1 ½" LONG GROOVE WELD WITH 5/8" ROOT AT EACH CORNER SHALL BE USED AT SHEET PILE FLANGES. A 3" LONG GROOVE WELD WITH 5/16" ROOT AT EACH CORNER SHALL BE USED AT SHEET PILE WEBS.
     - 4.3.3. ALL WELDS SHALL BE PERFORMED WITH AN E-7018 WELDING ROD OR E71T-1 FLUX CORE.
   - 4.4. DRIVING CONDITIONS IN WEATHERED ROCK LAYER WILL REQUIRE HAMMER DRIVING OF INDIVIDUAL SHEETS. VIBRATORY DRIVING OR HAMMER DRIVING SHEETS IN PAIRS WILL NOT BE ALLOWED IN THE LAST 8 FEET OF EMBEDMENT.
   - 4.5. SUBMITTALS:
     - 4.5.1. MATERIAL MILL CERTIFICATES
     - 4.5.2. FABRICATION SHOP DRAWINGS - STEEL SUPPLIER SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER PER AISC CODE OF STANDARD PRACTICE.
     - 4.5.3. EQUIPMENT TO BE USED FOR DRIVING SHEET PILES AND KING (PIPE) PILES.
     - 4.5.4. THE CONTRACTOR SHALL PREPARE AND SUBMIT DRIVING LOGS TO VERIFY PROPER EMBEDMENT DEPTH AND CUTOFF ELEVATION FOR ALL SHEET PILES AND KING (PIPE) PILES.

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES LZ DRW LZ/DM CHK GS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

GENERAL PLAN & ELEVATION (S366)

SCALE: 1" = 10'

EPROJECT NO.: 1569253

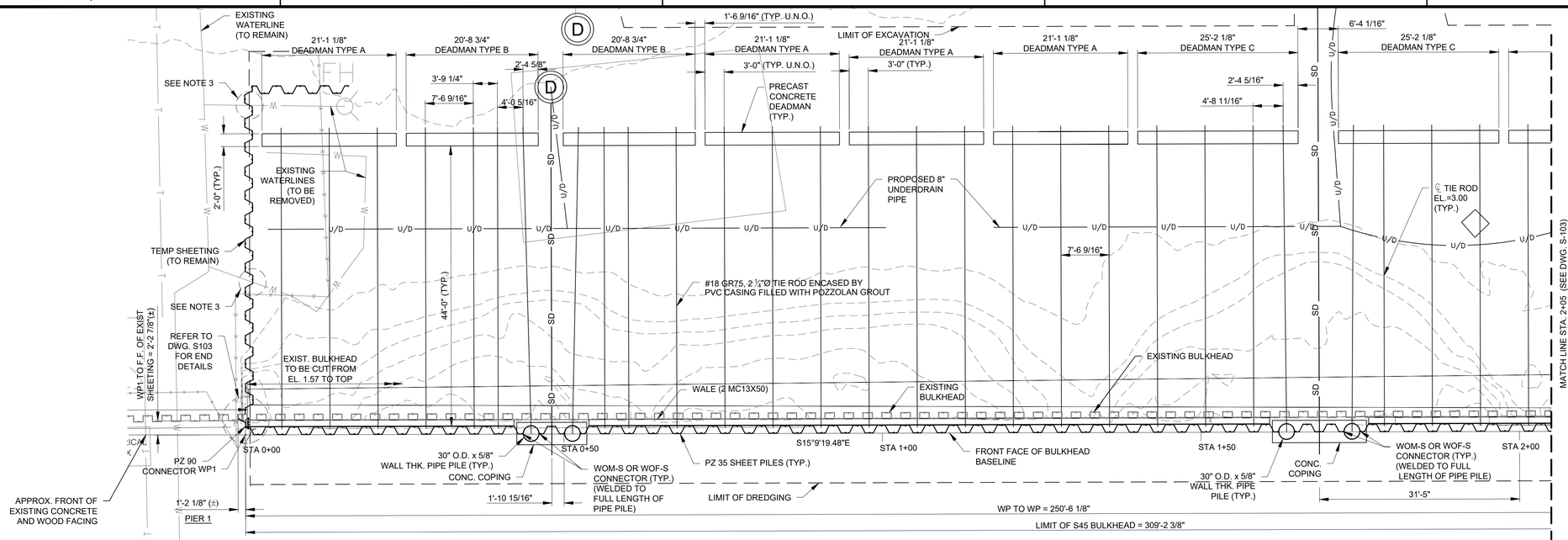
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781726

SHEET 34 OF 48

S-101

DRAWFORM REVISION: 31 JANUARY 2017



S45 BULKHEAD WORKING POINT TABLE*		
POINT	NORTHING	EASTING
WP1	162125.1146	379327.8590
WP2	161883.3176	379393.3518
WP3	161852.9252	379443.5591

* CONTRACTOR SHALL PERFORM FIELD SURVEY AND VERIFY WORKING POINTS BEFORE COMMENCING WORK. NOTIFY ENGINEER OF DISCREPANCIES, AND RESOLVE BEFORE PROCEEDING.

NOTES:

1. PRIOR TO ANY FABRICATION AND CONSTRUCTION, FIELD VERIFY THE BEARING DIRECTION AND WORK POINTS FOR PROPER FIT OF THE NEW BULKHEAD.
2. TEMPORARY SHEETING IS REQUIRED TO PROTECT EXISTING ROADWAY TRAFFIC TO EXISTING PIER 1, DURING EXCAVATION FOR S45. TEMPORARY SHEETING SHOWN ON CONTRACT DRAWINGS IS TO SHOW LOCATION ONLY. TEMPORARY SHEETING SHALL BE DESIGNED BY CONTRACTOR'S STRUCTURAL ENGINEER TO PROVIDE THE REQUIRED STRENGTH, STABILITY, AND TO CONTROL DEFLECTIONS TO MINIMIZE IMPACTS TO TRAFFIC AND NEARBY EXISTING STRUCTURES.
3. CONTRACTOR SHALL SUBMIT PROPOSED DESIGN AND CALCULATIONS WITH PE STAMP BY A PROFESSIONAL STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.
4. REMOVE EXISTING UNDERGROUND WATERLINE AT THE INTERFERENCE POINTS SHOWN PRIOR TO DRIVE TEMPORARY SHEETING. SEE CD-100 FOR MORE DETAILS.

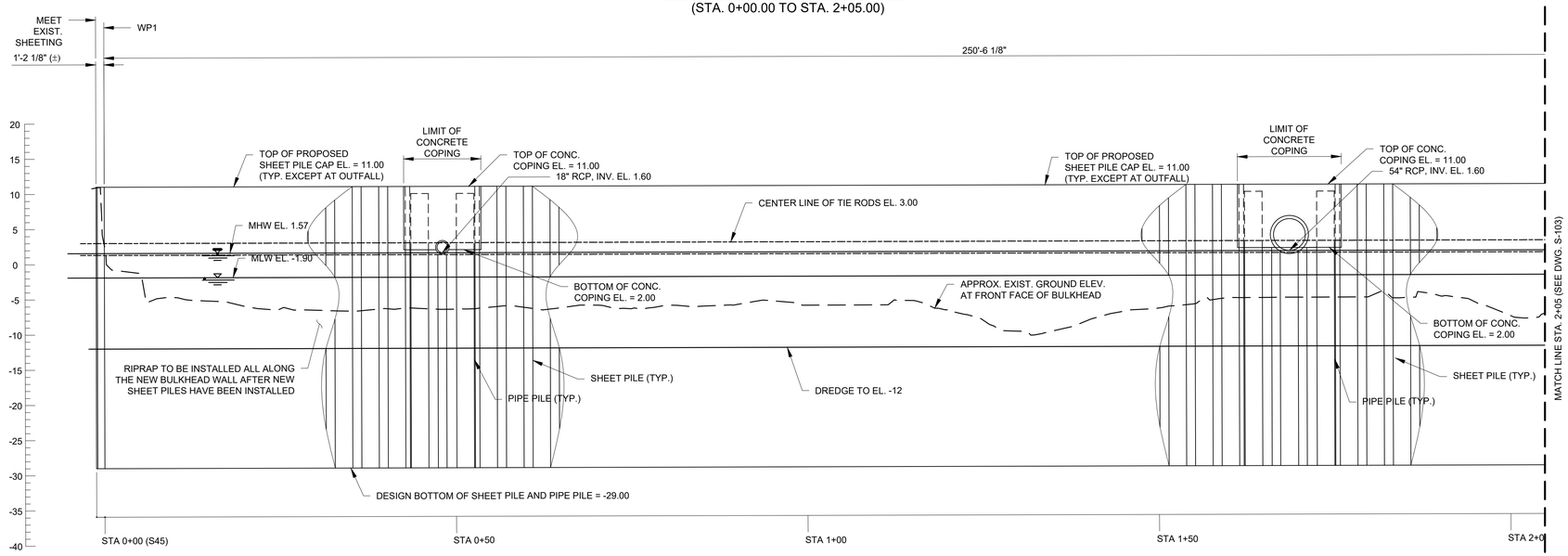
N

10' 0 10' 20'

PLAN VIEW

BASE BID – S45 NORTH

(STA. 0+00.00 TO STA. 2+05.00)



ELEVATION VIEW

APPR		
DATE		
DESCRIPTION		
SYM		

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES LZ DRW LZ/DM CHK GS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVY STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

GENERAL PLAN & ELEVATION (S45-1)

SCALE: 1" = 10'

EPROJECT NO.: 1569253

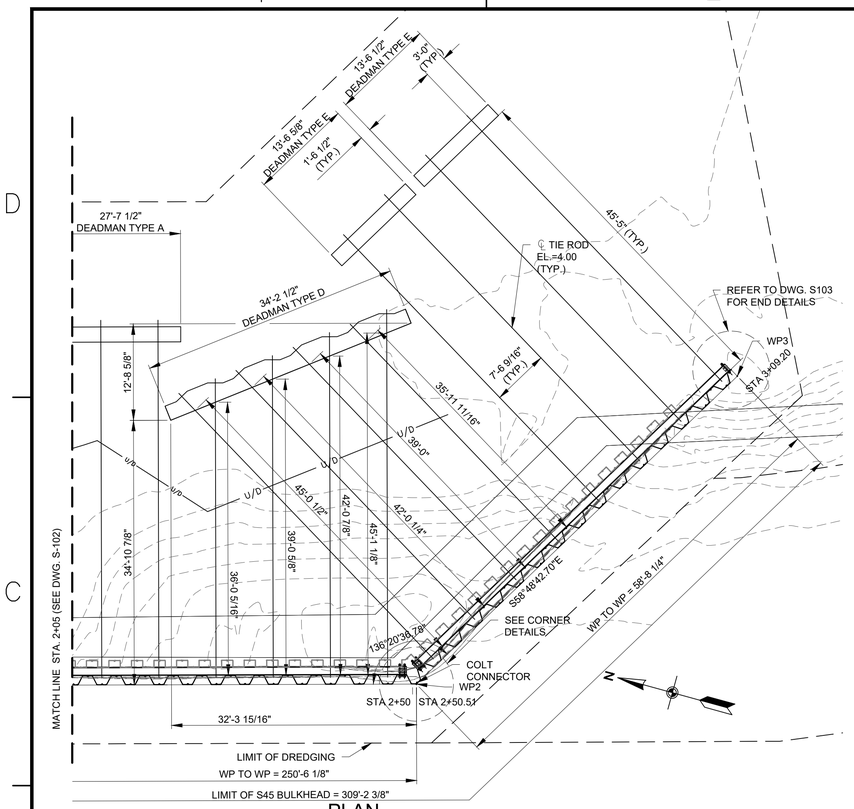
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781727

SHEET 35 OF 48

S-102

DRAWFORM REVISION: 31 JANUARY 2017

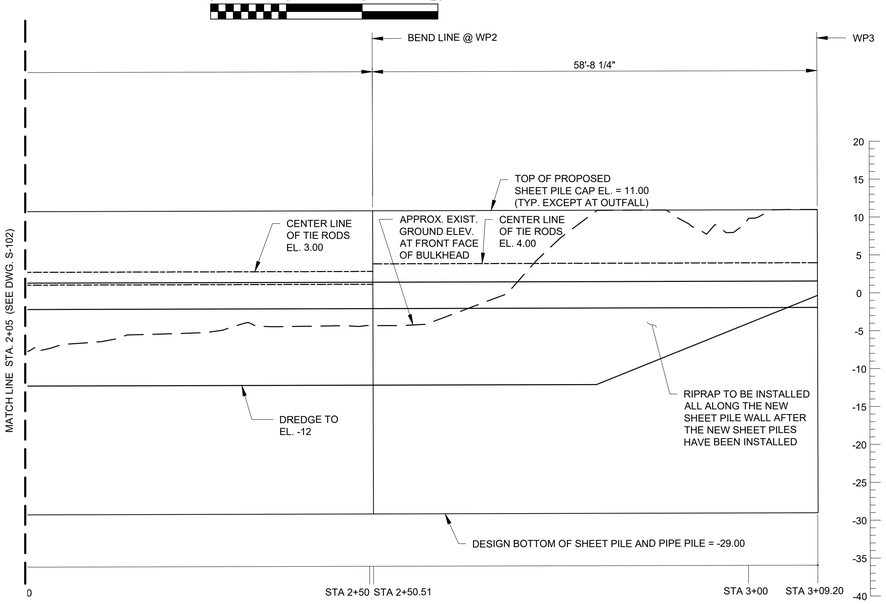


PLAN

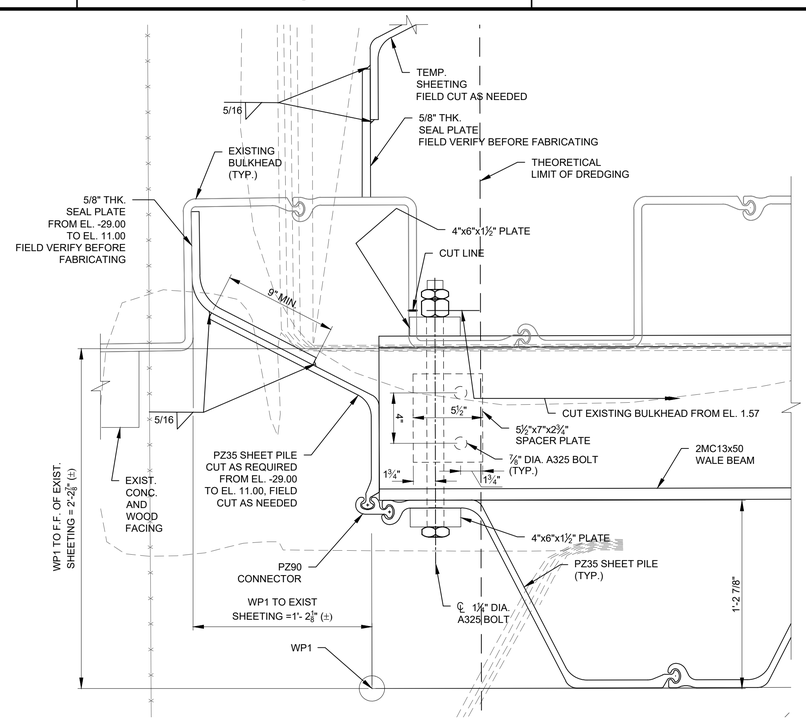
BASE BID – S45 NORTH

(STA. 2+05.00 TO STA. 3+09.20)

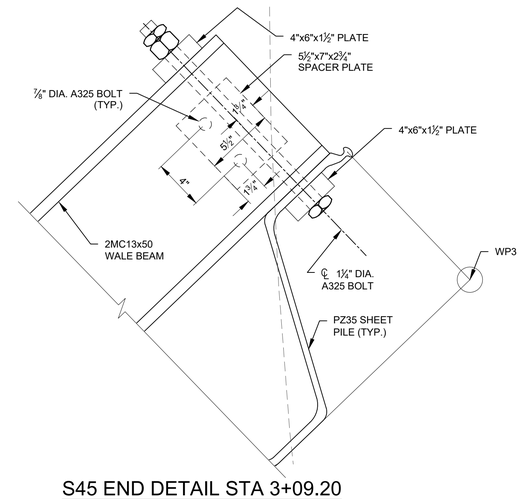
10' 0 10' 20'



DEVELOPED ELEVATION

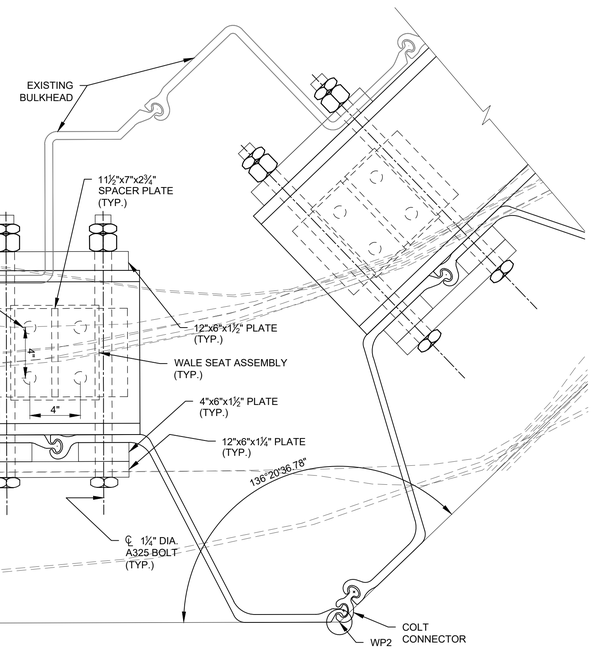


S45 END DETAIL STA 0+00.00

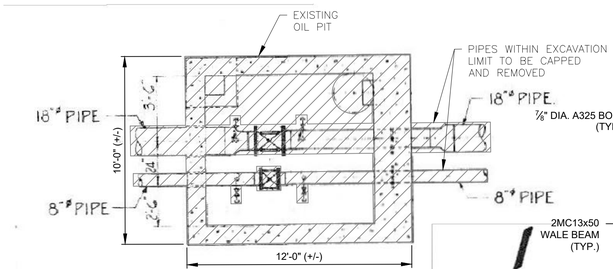


S45 END DETAIL STA 3+09.20

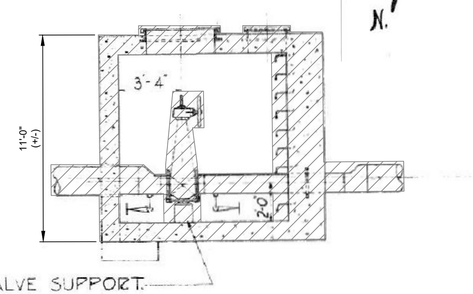
0 1/2' 1' 2'



S45 CORNER DETAIL



FUEL OIL PIT DEMOLITION DETAILS PLAN



FUEL OIL PIT DEMOLITION DETAILS ELEVATION

N.

LIMIT OF DEMOLITION

0 4' 8' 16'

APPR
DATE
DESCRIPTION
SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	LZ/DM	CHK	GS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

GENERAL PLAN & ELEVATION (S45–2)

SCALE: 1" = 10'

EPROJECT NO.: 1569253

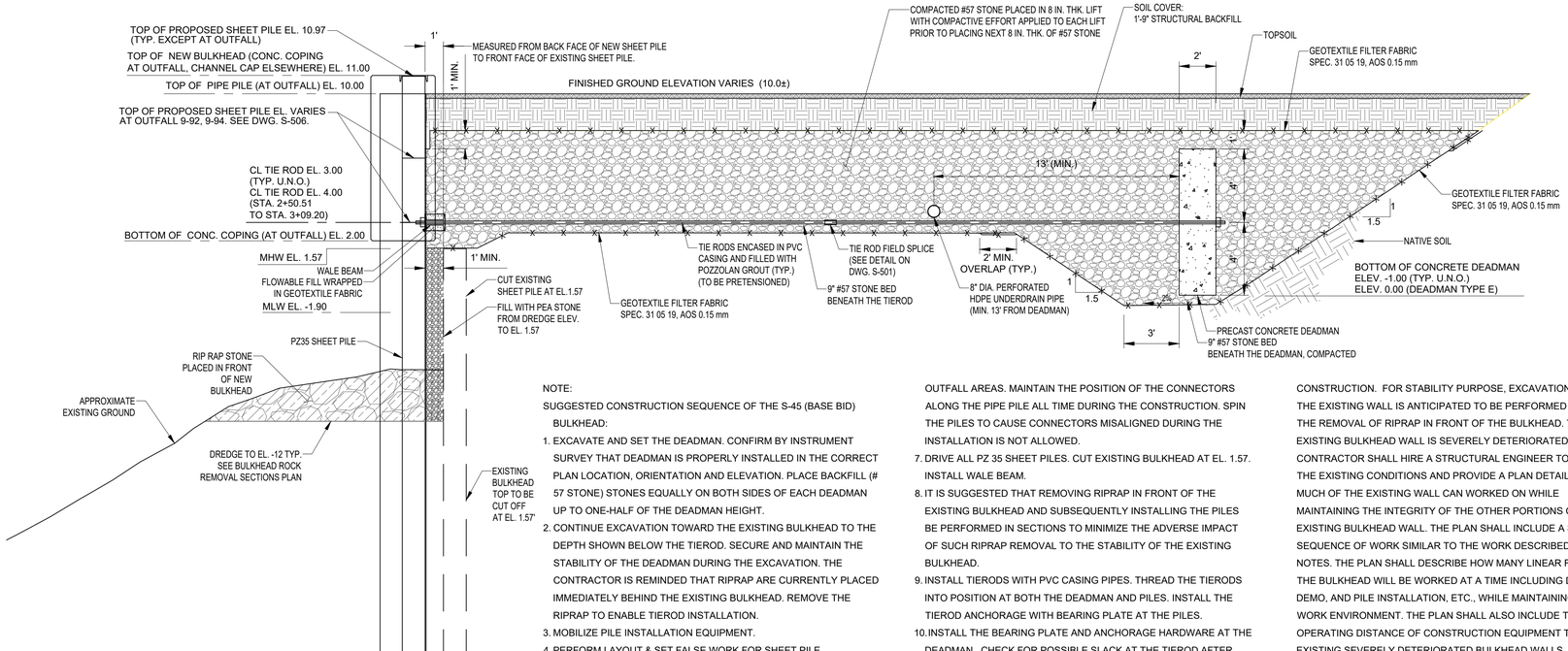
CONSTR. CONTR. NO.

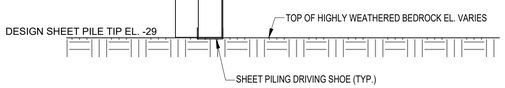
NAVFAC DRAWING NO.
12781728

SHEET 36 OF 48

S-103

DRAWFORM REVISION: 31 JANUARY 2017





VOLUME TO BE DREDGED
(SEE NOTE 1)

RIP RAP STONE
PLACED IN FRONT OF
NEW BULKHEAD

VOLUME TO BE BACK FILLED
WITH #57 STONE

NOTE:

SUGGESTED CONSTRUCTION SEQUENCE OF THE S-45 (BASE BID) BULKHEAD:

1. EXCAVATE AND SET THE DEADMAN. CONFIRM BY INSTRUMENT SURVEY THAT DEADMAN IS PROPERLY INSTALLED IN THE CORRECT PLAN LOCATION, ORIENTATION AND ELEVATION. PLACE BACKFILL (# 57 STONE) STONES EQUALLY ON BOTH SIDES OF EACH DEADMAN UP TO ONE-HALF OF THE DEADMAN HEIGHT.
2. CONTINUE EXCAVATION TOWARD THE EXISTING BULKHEAD TO THE DEPTH SHOWN BELOW THE TIEROD. SECURE AND MAINTAIN THE STABILITY OF THE DEADMAN DURING THE EXCAVATION. THE CONTRACTOR IS REMINDED THAT RIPRAP ARE CURRENTLY PLACED IMMEDIATELY BEHIND THE EXISTING BULKHEAD. REMOVE THE RIPRAP TO ENABLE TIEROD INSTALLATION.
3. MOBILIZE PILE INSTALLATION EQUIPMENT.
4. PERFORM LAYOUT & SET FALSE WORK FOR SHEET PILE INSTALLATION.
5. REMOVE EXISTING RIPRAP TO THE DREDGING DEPTH AND ADDITIONAL OBSTRUCTIONS IN FRONT OF THE EXISTING BULKHEAD IF AND WHERE NECESSARY. RECORD THE ACTUAL REMOVAL DEPTH AND LIMIT FOR THE FINAL RESTORATION PURPOSE UPON COMPLETION OF THE BULKHEAD CONSTRUCTION.
6. INSTALL OPEN-END PIPE PILE FULL-DEPTH AT THE TWO DRAINAGE OUTFALL AREAS. MAINTAIN THE POSITION OF THE CONNECTORS ALONG THE PIPE PILE ALL TIME DURING THE CONSTRUCTION. SPIN THE PILES TO CAUSE CONNECTORS MISALIGNED DURING THE INSTALLATION IS NOT ALLOWED.
7. DRIVE ALL PZ 35 SHEET PILES. CUT EXISTING BULKHEAD AT EL. 1.57. INSTALL WALE BEAM.
8. IT IS SUGGESTED THAT REMOVING RIPRAP IN FRONT OF THE EXISTING BULKHEAD AND SUBSEQUENTLY INSTALLING THE PILES BE PERFORMED IN SECTIONS TO MINIMIZE THE ADVERSE IMPACT OF SUCH RIPRAP REMOVAL TO THE STABILITY OF THE EXISTING BULKHEAD.
9. INSTALL TIERODS WITH PVC CASING PIPES. THREAD THE TIERODS INTO POSITION AT BOTH THE DEADMAN AND PILES. INSTALL THE TIEROD ANCHORAGE WITH BEARING PLATE AT THE PILES.
10. INSTALL THE BEARING PLATE AND ANCHORAGE HARDWARE AT THE DEADMAN. CHECK FOR POSSIBLE SLACK AT THE TIEROD AFTER ALL THE TIERODS ARE INSTALLED WITHIN A LATERAL DISTANCE OF 45 FEET AND RETIGHTEN THE TIEROD NUT, IF REQUIRED, TO RESTORE THE SPECIFIED PRELOAD IN THE TIERODS. TIGHTEN THE NUT AT THE DEADMAN TO INCLUDE A 2-KIP PRELOAD IN THE TIEROD.
11. FILL THE PIPE ANNULUS AT THE PIPE PILE WITH CONCRETE BETWEEN ELEVATIONS SHOWN ON THE PLAN.
12. FILL THE PVC CASING WITH PUMPABLE POZZOLAN GROUT TO ENCAPSULATE THE TIERODS.
13. CONSTRUCT THE BULKHEAD COPING WHERE DESIGNED.
14. PLACE COARSE AGGREGATE TO BACKFILL THE SPACE BETWEEN THE NEW AND THE EXISTING BULKHEADS. RESTORE RIPRAP IN FRONT OF THE NEW BULKHEAD TO ITS INITIAL CONDITION DESCRIBED IN SHEETS CD-101 AND CD-102.
15. BACKFILL THE EXCAVATION WITH NO. 57 STONE IN 8-INCH LIFTS TYPICAL (UNLESS NOTED ON PLAN OTHERWISE) TO THE SOIL COVER AND PLACE THE SOIL COVER TO THE FINAL GRADE. EXERCISE EXTREME CAUTION DURING THE INITIAL FEW LIFTS OF STONE INSTALLATION AROUND TIE RODS.
16. THE CONSTRUCTION SEQUENCE IS SUGGESTED ONLY. CONTACTOR MAY MODIFY UPON EVALUATION OR OPT TO DEVELOP AND SUBMIT THEIR OWN CONSTRUCTION PROCEDURE FOR REVIEW AND APPROVAL. STAGE THE WORK SUCH THAT THE STABILITY OF THE EXISTING BULKHEAD IS MAINTAINED DURING THE CONSTRUCTION. FOR STABILITY PURPOSE, EXCAVATION BEHIND THE EXISTING WALL IS ANTICIPATED TO BE PERFORMED PRIOR TO THE REMOVAL OF RIPRAP IN FRONT OF THE BULKHEAD. THE EXISTING BULKHEAD WALL IS SEVERELY DETERIORATED AND THE CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER TO EVALUATE THE EXISTING CONDITIONS AND PROVIDE A PLAN DETAILING HOW MUCH OF THE EXISTING WALL CAN WORKED ON WHILE MAINTAINING THE INTEGRITY OF THE OTHER PORTIONS OF THE EXISTING BULKHEAD WALL. THE PLAN SHALL INCLUDE A SPECIFIC SEQUENCE OF WORK SIMILAR TO THE WORK DESCRIBED IN THESE NOTES. THE PLAN SHALL DESCRIBE HOW MANY LINEAR FEET OF THE BULKHEAD WILL BE WORKED AT A TIME INCLUDING DREDGING, DEMO, AND PILE INSTALLATION, ETC., WHILE MAINTAINING A SAFE WORK ENVIRONMENT. THE PLAN SHALL ALSO INCLUDE THE SAFE OPERATING DISTANCE OF CONSTRUCTION EQUIPMENT TO THE EXISTING SEVERELY DETERIORATED BULKHEAD WALLS. STAMP THE PLAN BY THE STRUCTURAL PROFESSIONAL ENGINEER.

ADDITIONAL CONSTRUCTION NOTES:

1). DREDGING VOLUMES SHOWN ARE APPROXIMATE. IF AFTER THE REQUIRED DREDGING DEPTH IS MET, ADDITIONAL OBSTRUCTIONS, SUCH AS RIPRAP OR OTHERS, ARE STILL IDENTIFIED, CONTRACTOR SHALL CONTINUE TO REMOVE SUCH OBSTRUCTIONS TO ENABLE PILE INSTALLATION.

2). PRIOR TO THE CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO EVALUATE DETAILED BORING INFORMATION PUBLISHED ON SHEETS B-101 THROUGH B-104. HARD MATERIAL IS ANTICIPATED DURING THE SHEET PILE INSTALLATION. A SHEET PILE INSTALLATION SYSTEM WITH A PREDRILLING OR SIMULTANEOUS DRILLING CAPABILITY MAY BE WARRANTED. PROVIDE APPROPRIATE MEANS AND METHODS FOR SHEET PILE INSTALLATION WITHOUT OVERSTRESSING THE PILES, INTERLOCKS AND CONNECTORS. SUBMIT A COMPLETE PILE INSTALLATION PROCEDURE TO THE ESTIMATED TIP ELEVATION FOR CONTRACTING OFFICER AND ENGINEER'S REVIEW AND APPROVAL. IN THE SUBMISSION, CONTRACTOR MUST PROVIDE PROOF OF EXPERIENCE IN SHEET PILE INSTALLATION WITH THE PRESENCE OF HARD SUBSURFACE MATERIAL. LIST THREE PREVIOUS PROJECTS WITH DESCRIPTIONS DEMONSTRATING THAT SHEET PILES WERE SUCCESSFULLY INSTALLED UNDER SIMILAR SUBSURFACE CONDITIONS WITH THE SELECTED CONSTRUCTION METHODS. PROVIDE CONTACT INFORMATION OF QUALIFIED KEY PERSONNEL INVOLVED IN THESE PROJECTS. SUCCESSFUL PILE INSTALLATION EXPERIENCE WITHIN THE NEW PORT, RI AREA IS PREFERRED.

3). TIP REINFORCEMENT (PILE SHOES) IS REQUIRED TO FACILITATE DRIVING OF THE SHEET PILES. TO AVOID POTENTIAL OVERSTRESS OF THE PILES AND INTERLOCKS, INDIVIDUAL SHEET PILE INSTALLATION WITH HAMMER DRIVING FOR APPROXIMATELY THE LAST 3 FEET TO 7 FEET OF EMBEDMENT MAY BE NEEDED. SHEET PILE INSTALLATION DEEPER THAN THE DESIGN TIP ELEVATION SHALL NOT INDUCE OVERSTRESS POTENTIAL AND SHALL BE DIRECTED OR APPROVED BY THE ENGINEER.

4). FOR THE PIPE PILES AT THE OUTFALL AREAS, THE SAME INSTALLATION METHOD AND ASSOCIATED REQUIREMENTS AS S-366 MAY BE USED. IF A DRILLING METHOD IS CHOSEN FOR THE PIPE PILE, DO NOT OVER DRILL MORE THAN ONE FOOT BELOW THE DESIGN PILE TIP ELEVATION, UNLESS APPROVED BY THE ENGINEER.

5). THE 2-FOOT SOIL COVER ABOVE THE #57 STONE SHALL CONSIST OF 1'-9" GRANULAR BACKFILL, WITH 3" TOPSOIL AT THE TOP FOR TURF ESTABLISHMENT.

6). COMPACT SUBGRADE SOIL, #57 STONE AND SOIL COVER (EXCLUDING TOPSOIL) IN ACCORDANCE WITH SECTIONS 3.11 AND 3.13 OF PROJECT SPECIFICATION REQUIREMENTS.

7). IF A SHEET PILE IS TERMINATED ABOVE THE DESIGN TIP ELEVATION DUE TO A DIFFICULT INSTALLTION CONDITION, INFORM THE CONTRACTING OFFICER AND THE ENGINEER, WITH THE ACTUAL MUDLINE DEPTH AT SUCH PILE LOCATION, FOR EVALUATION AND ACCEPTANCE. PROVIDE PILE DRIVING INFORMATION TO THE ENGINEER FOR EVALUATION INCLUDING THE ELEVATION OF THE OBSTRUCTION AND THE COMPOSITION OF THE OBSTRUCTION (ROCK, CONCRETE, STEEL, ETC.).

8). USE JERSEY BARRIER WHERE NECESSARY FOR TRAFFIC MAINTENANCE DURING THE EXCAVATION.

9). FOR CRANE OPERATION DURING THE SERVICE LIFE OF THE NEW BULKHEAD, THE MINIMUM DISTANCE OF THE CRANE AND SUPPORTING PAD TO BACK THE NEW BULKHEAD IS 13 FEET.

10). THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. IF TEMPORARY SUPPORT IS USED, THE FOLLOWING PARAMETERS ARE RECOMMENDED FOR DESIGN OF BRACING AND SHORING, ASSUMING HORIZONTAL SLOPES BEHIND AND IN FRONT OF SHORING.

Ka = 0.33
Ko = 0.5
Kp = 3.00
SOIL INTERNAL FRICTION ANGLE, = 30°
MOIST AND SATURATED UNIT WEIGHT: 120 PCF
STATIC GROUNDWATER DEPTH: 5 FEET BELOW THE TOP OF THE EXCAVATION SLOPE
PERFORM EXCAVATIONS IN ACCORDANCE WITH OSHA & EM-385-1-1 REQUIREMENTS.

11). PIER 1 CANNOT BE USED IN ANY WAY DURING THIS CONTRACT.

12). INTERLOCKS BETWEEN SHEET PILES ALSO SERVE AS DRAINAGE PATHS, AND THEREFORE, INTERLOCK SEALING IS NOT ALLOWED DURING THE SERVICE LIFE OF THE WALL.

TYPICAL SECTION S45 BULKHEAD
BASE BID

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER, NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES LZ | DRW DJM | CHK GS

PMDM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL STATION
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS

TYPICAL SECTION – S45 BULKHEAD

SCALE: 1/4" = 1'

EPROJECT NO.: 1569253

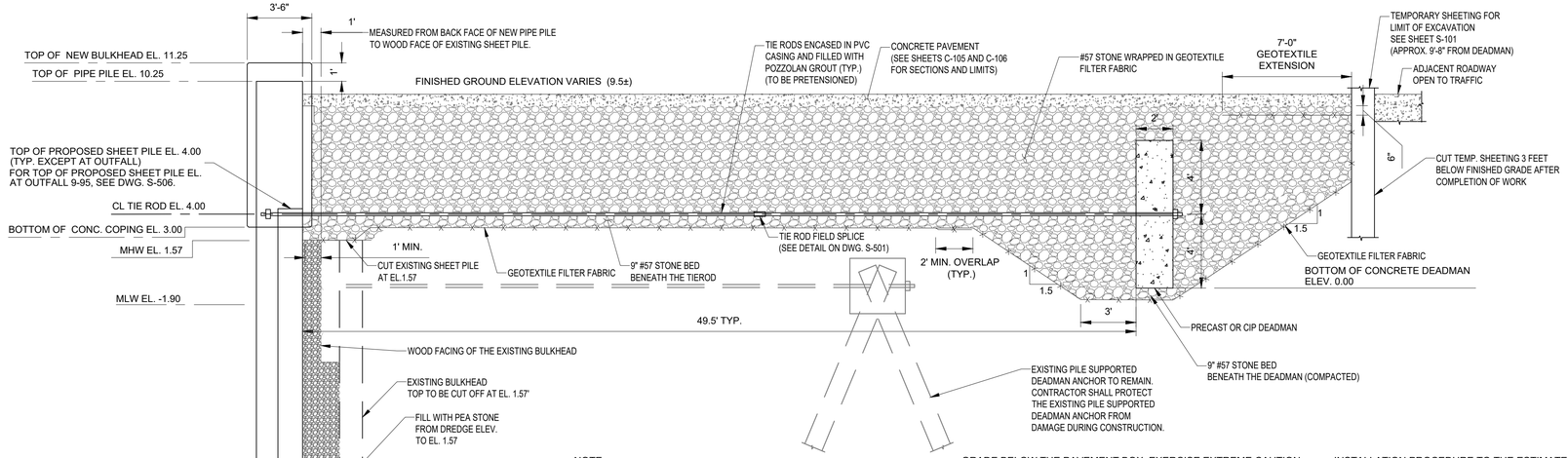
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781729

SHEET 37 OF 48

S-301

DRAWFORM REVISION: 31 JANUARY 2017



BITUMINOUS CONCRETE PAVEMENT (SEE SECTION DETAIL ON SHEET C-102)

VOLUME TO BE BACK FILLED WITH #57 STONE

VOLUME TO BE DREDGED (SEE NOTE 1)

RIP RAP STONE PLACED IN FRONT OF NEW BULKHEAD

NOTE:

SUGGESTED CONSTRUCTION SEQUENCE OF THE S366 BULKHEAD:

1. EXCAVATE AND SET DEADMAN. CONFIRM BY INSTRUMENT SURVEY THAT DEADMAN IS PROPERLY INSTALLED AT THE CORRECT PLAN LOCATION, ORIENTATION AND ELEVATION. PLACE BACKFILL (# 57 STONE) STONES EQUALLY ON BOTH SIDES OF EACH DEADMAN UP TO ONE-HALF OF THE DEADMAN HEIGHT.
2. CONTINUE EXCAVATION TOWARD THE EXISTING BULKHEAD TO THE DEPTH SHOWN BELOW THE TIEROD. SECURE AND MAINTAIN THE STABILITY OF THE DEADMAN DURING THE EXCAVATION.
3. PERFORM DREDGING TO THE REQUIRED DEPTH AND REMOVE ADDITIONAL OBSTRUCTIONS IN FRONT OF THE EXISTING BULKHEAD IF AND WHERE NECESSARY. RECORD THE ACTUAL REMOVAL DEPTH AND LIMIT FOR THE FINAL RESTORATION PURPOSE UPON COMPLETION OF THE BULKHEAD CONSTRUCTION.
4. MOBILIZE PILE INSTALLATION EQUIPMENT.
5. PERFORM LAYOUT AND SET FALSE WORK FOR SHEET PILE INSTALLATION.
6. INSTALL PIPE PILES FULL-DEPTH IN SEQUENTIAL ORDER. MAINTAIN THE POSITION OF THE CONNECTORS ALONG THE KING PILE ALL TIME DURING THE CONSTRUCTION. SPIN THE PILES TO CAUSE CONNECTORS MISALIGNED IS NOT ALLOWED. PITCH AND DRIVE THE INTERMEDIATE PZ 35 SHEET PILING IN COMBINATION WITH THE KING PILE INSTALLATION OPERATION.
7. FILL BEHIND THE SHEET PILING UP TO A MAXIMUM OF 1-FOOT BELOW THE TIEROD ELEVATION UPON CUTTING PORTIONS OF THE EXISTING BULKHEAD SHEET PILING. CUT THE EXISTING SHEET PILE AT EL.1.57.
8. INSTALL TIERODS WITH PVC CASING PIPES. THREAD THE TIERODS INTO POSITION AT BOTH THE DEADMAN AND THE KING PILES. INSTALL THE TIEROD ANCHORAGE WITH BEARING PLATE AT THE KING PILES. LOCALLY, UPON SURVEYING THE EXISTING BOLLARDS, SLIGHT ADJUSTMENT OF TIEROD INSTALLATION ANGLE MIGHT BE NECESSARY TO AVOID POTENTIAL OBSTRUCTIONS.
9. INSTALL THE BEARING PLATE AND ANCHORAGE HARDWARE AT THE DEADMAN. TIGHTEN THE NUT AT THE DEADMAN TO INCLUDE A 2- KIP PRELOAD IN THE TIEROD. CHECK FOR POSSIBLE SLACK AT THE TIEROD AFTER ALL THE TIERODS ARE INSTALLED WITHIN A LATERAL DISTANCE OF 50 FEET AND RETIGHTEN THE TIEROD NUT, IF REQUIRED, TO RESTORE THE SPECIFIED PRELOAD IN THE TIERODS.
10. FILL THE PIPE ANNULUS AT THE KING PILE WITH CONCRETE BETWEEN ELEVATIONS SHOWN ON THE PLAN.
11. FILL THE PVC CASING WITH PUMPABLE POZZOLAN GROUT TO ENCAPSULATE THE TIERODS.
12. CONSTRUCT THE BULKHEAD COPING.
13. PLACE COARSE AGGREGATE TO BACKFILL THE SPACE BETWEEN THE COPING AND THE EXISTING BULKHEAD. RESTORE RIPRAP IN FRONT OF THE NEW BULKHEAD TO ITS INITIAL CONDITION DESCRIBED IN SHEETS CD-101 AND CD-102.
14. BACKFILL THE EXCAVATION WITH NO. 57 STONE IN 8-INCH LIFTS TYPICAL (UNLESS NOTED ON PLAN OTHERWISE) TO THE DESIGN GRADE BELOW THE PAVEMENT BOX. EXERCISE EXTREME CAUTION DURING THE INITIAL FEW LIFTS OF STONE INSTALLATION AROUND TIE RODS.
15. AFTER THE COMPLETION OF THE BULKHEAD CONSTRUCTION, RESTORE RIPRAP IN FRONT OF THE NEW BULKHEAD TO ITS INITIAL CONDITION DESCRIBED IN SHEETS CD-101 AND CD-102 .
16. THE CONSTRUCTION SEQUENCE IS SUGGESTED ONLY. CONTRACTOR MAY MODIFY UPON EVALUATION OR OPT TO DEVELOP AND SUBMIT THEIR OWN CONSTRUCTION PROCEDURE FOR REVIEW AND APPROVAL. IF THE CONTRACTOR OPTS TO REMOVE THE EXISTING RIPRAP AND INSTALL THE KING PILE SYSTEM FIRST, BEFORE EXCAVATION BEHIND THE EXISTING BULKHEAD, EVALUATION OF THE STABILITY OF THE EXISTING BULKHEAD IS REQUIRED BY A PROFESSIONAL ENGINEER.

ADDITIONAL CONSTRUCTION NOTES:

1). DREDGING VOLUMES SHOWN ARE APPROXIMATE. IF AFTER THE REQUIRED DREDGING DEPTH IS MET, ADDITIONAL OBSTRUCTIONS, SUCH AS RIPRAP OR OTHERS, ARE STILL IDENTIFIED, CONTRACTOR SHALL CONTINUE TO REMOVE SUCH OBSTRUCTIONS TO ENABLE PILE INSTALLATION. STAGE THE WORK SUCH THAT THE STABILITY OF THE EXISTING BULKHEAD IS MAINTAINED AT ALL TIMES.

2). THE EXISTING BULKHEAD WALL IS SEVERELY DETERIORATED AND THE CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER TO EVALUATE THE EXISTING CONDITIONS AND PROVIDE A PLAN DETAILING HOW MUCH OF THE EXISTING WALL CAN WORKED ON WHILE MAINTAINING THE INTEGRITY OF THE OTHER PORTIONS OF THE EXISTING BULKHEAD WALL. THE PLAN SHALL INCLUDE A SPECIFIC SEQUENCE OF WORK SIMILAR TO THE WORK DESCRIBED IN THESE NOTES. THE PLAN SHALL DESCRIBE HOW MANY LINEAR FEET OF THE BULKHEAD WILL BE WORKED AT A TIME INCLUDING DREDGING, DEMO, AND PILE INSTALLATION, ETC WHILE MAINTAINING A SAFE WORK ENVIRONMENT. THE PLAN SHALL ALSO INCLUDE THE SAFE OPERATING DISTANCE OF CONSTRUCTION EQUIPMENT TO THE EXISTING SEVERELY DETERIORATED BULKHEAD WALLS. THE PLAN SHALL BE STAMPED BY THE STRUCTURAL PROFESSIONAL ENGINEER.

3). PRIOR TO THE CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO EVALUATE DETAILED BORING INFORMATION PUBLISHED ON SHEETS B-101 THROUGH B-104. HARD MATERIAL IS TO BE ENCOUNTERED DURING THE PILE INSTALLATION. PROVIDE APPROPRIATE MEANS AND METHODS FOR KING PILE INSTALLATION. OPTIONS FOR THE INSTALLATION OF THE PIPE SECTION OF THE KING SYSTEM INCLUDE, BUT ARE NOT LIMITED TO, ADVANCING PIPE PILES USING VIBRATORY OR IMPACT HAMMER TO THE HARD LAYER AND DRILLING INSIDE THE PIPE SUCH AS REVERSE DRILLING WITH PERIODIC BOTTOM SEAL IF NECESSARY TO FURTHER ADVANCE PIPE PILES, DOWNHOLE HAMMER, PREDRILLING OR OTHER INSTALLATION METHODS TO ENSURE THE DESIGN TIP ELEVATION OF THE PIPE PILES IS ACHIEVED WITHOUT OVERSTRESSING THE INTERLOCKS. SUBMIT A COMPLETE PILE INSTALLATION PROCEDURE TO THE ESTIMATED TIP ELEVATION FOR CONTRACTING OFFICER AND ENGINEER'S REVIEW AND APPROVAL. IN THE SUBMISSION, CONTRACTOR MUST PROVIDE PROOF OF EXPERIENCE IN PILE INSTALLATION INTO A HARD LAYER. LIST THREE PREVIOUS PROJECTS WITH DESCRIPTIONS DEMONSTRATING THAT PILES WERE SUCCESSFULLY INSTALLED UNDER SIMILAR SUBSURFACE CONDITIONS WITH THE SELECTED CONSTRUCTION METHODS. PROVIDE CONTACT INFORMATION OF QUALIFIED KEY PERSONNEL INVOLVED IN THESE PROJECTS. SUCCESSFUL PILE INSTALLATION EXPERIENCE WITHIN THE NEW PORT, RI AREA IS PREFERRED.

4). IF HARD MATERIAL IS ENCOUNTERED ABOVE THE PILE TIP AND DRILLING INSIDE THE PIPE PILE IS NEEDED, DO NOT OVER DRILL MORE THAN 2.5 FEET FOR FURTHER ADVANCING THE KING PILE AND DO NOT OVER DRILL ONE FOOT BELOW THE DESIGN PILE TIP ELEVATION, UNLESS APPROVED BY THE ENGINEER. FOR SHEET PILE INSTALLATION, REFER TO SHEET S-301 ADDITIONAL CONSTRUCTION NOTES NO.2 AND NO. 3 FOR DETAILS.

5). IF A PREDRILLING METHOD IS OPTED AND TO AVOID CREATING A LOOSE ENVIRONMENT SURROUNDING PIPE KING PILES, PREDRILLING APPARENT LARGER SIZED BOREHOLE THAN THE PIPE PILE DIAMETER IS NOT PERMITTED FOR PILE INSTALLATION.

6). TIP REINFORCEMENT (PILE SHOES) IS REQUIRED FOR THE SHEET PILES. DURING THE INSTALLATION, IF A SHEET PILE IS TERMINATED MORE THAN 2.5 FEET ABOVE THE DESIGN TIP ELEVATION, INFORM THE CONTRACTING OFFICER AND THE ENGINEER, WITH THE ACTUAL MUDLINE DEPTH AT SUCH PILE LOCATION, FOR EVALUATION AND ACCEPTANCE. PROVIDE PILE DRIVING INFORMATION TO THE ENGINEER FOR EVALUATION INCLUDING THE ELEVATION OF OBSTRUCTION AND THE COMPOSITION OF THE OBSTRUCTION (ROCK, CONCRETE, STEEL, ETC.). KING PILE SYSTEM INSTALLATION DEEPER THAN THE DESIGN TIP ELEVATIONS SHALL NOT INDUCE OVERSTRESS POTENTIAL AND SHALL BE APPROVED BY THE ENGINEER.

7). BASED ON THE AS-BUILT PLANS, THE EXISTING DEADMEN WITHIN S366 IS 8.5-8.9 FEET BELOW THE ROADWAY SURFACE. UPON EXCAVATION, CONDUCT SURVEYS OF THE EXISTING DEADMEN DEPTH, IF IT IS FOUND TO EXIST HIGHER AND EXPOSED. INFORMED THE ENGINEER FOR SOLUTION IF THE ACTUAL DEPTH OF EXISTING DEADMAN IS DIFFERENCE FROM THE AS-BUILT PLAN INFORMATION AND CONFLICTS WITH THE TIEROD DEPTH.

8). UPON EXCAVATION, SURVEY THE LOCATIONS OF THE TIMBER PILES THAT SUPPORT THE EXISTING BOLLARDS. NOTIFY THE CONTRACTING OFFICER AND THE ENGINEER IF PILES COULD BE ENCOUNTERED AS AN OBSTRUCTION TO TIEROD INSTALLATION. THE CONTRACTOR MAY PROPOSE TO SLIGHTLY ADJUST THE TIEROD INSTALLATION ANGLE TO AVOID THE OBSTRUCTION ENCOUNTERED. ANGLE OF SUCH ADJUSTMENT FROM THE KING PILE CONNECTION SHALL NOT EXCEED 4.5°. APPROVAL BY THE CONTRACTING OFFICER AND ENGINEER TO SUCH AN ADJUSTMENT IS REQUIRED BEFORE PROCEEDING. USE JERSEY BARRIER FOR TRAFFIC MAINTENANCE DURING EXCAVATION. DURING THE EXCAVATION, THE PETROLEUM OIL TANK BETWEEN THE EXISTING BOLLARDS IS TO BE REMOVED FOR TIEROD INSTALLATION. A PERMANENT CLOSURE APPLICATION WILL NEED TO BE COMPLETED BY THE CONTRACTOR AT LEAST 10 DAYS PRIOR TO THE REMOVAL.

9). COMPACT SUBGRADE SOIL, AND #57 STONE IN ACCORDANCE WITH SECTIONS 3.11 AND 3.13 OF PROJECT SPECIFICATION METHODS AND REQUIREMENTS.

10). FOR CRANE OPERATION DURING THE SERVICE LIFE OF THE NEW BULKHEAD, THE MINIMUM DISTANCE OF THE CRANE AND ITS SUPPORTING PAD TO THE BACK EDGE OF THE NEW BULKHEAD IS 12 FEET.

11). THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF ALL EXCAVATED SLOPES. IF TEMPORARY SUPPORT IS USED, THE FOLLOWING PARAMETERS ARE RECOMMENDED FOR DESIGN OF BRACING AND SHORING, ASSUMING HORIZONTAL SLOPES BEHIND AND IN FRONT OF SHEETING.

Ka = 0.33
Ko = 0.5
Kp = 3.00
INTERNAL FRICTION ANGLE = 30°
MOIST AND SATURATED UNIT WEIGHT: 120LB/FT3
STATIC GROUNDWATER DEPTH: 5 FEET BELOW THE TOP OF THE EXCAVATION SLOPE
PERFORM EXCAVATIONS IN ACCORDANCE WITH OSHA AND EM-385-1-1 REQUIREMENTS.

12). PIER 1 CANNOT BE USED IN ANY WAY DURING THIS CONTRACT.

13). INTERLOCKS BETWEEN SHEET PILES ALSO SERVE AS DRAINAGE PATHS, AND THEREFORE, INTERLOCK SEALING IS NOT ALLOWED DURING THE SERVICE LIFE OF THE WALL.

14). BOTH PRECAST AND CAST-IN-PLACE DEADMAN TYPES ARE REQUIRED FOR THE S-366 BULKHEAD. REFER TO SHEETS S-101 AND S-504 FOR LOCATIONS AND DETAILS. DEVELOP APPROPRIATE CONSTRUCTION SEQUENCE TO INSTALL THE DEADMEN.

TYPICAL SECTION OPTION 2 - S366 BULKHEAD

APPR | DATE | DESCRIPTION | STM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES LZ | DRW DJM | CHK GS

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<COMPONENT NAME>

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

TYPICAL SECTION - S366 BULKHEAD

SCALE: 1/4" = 1'

EPROJECT NO.: 1569253

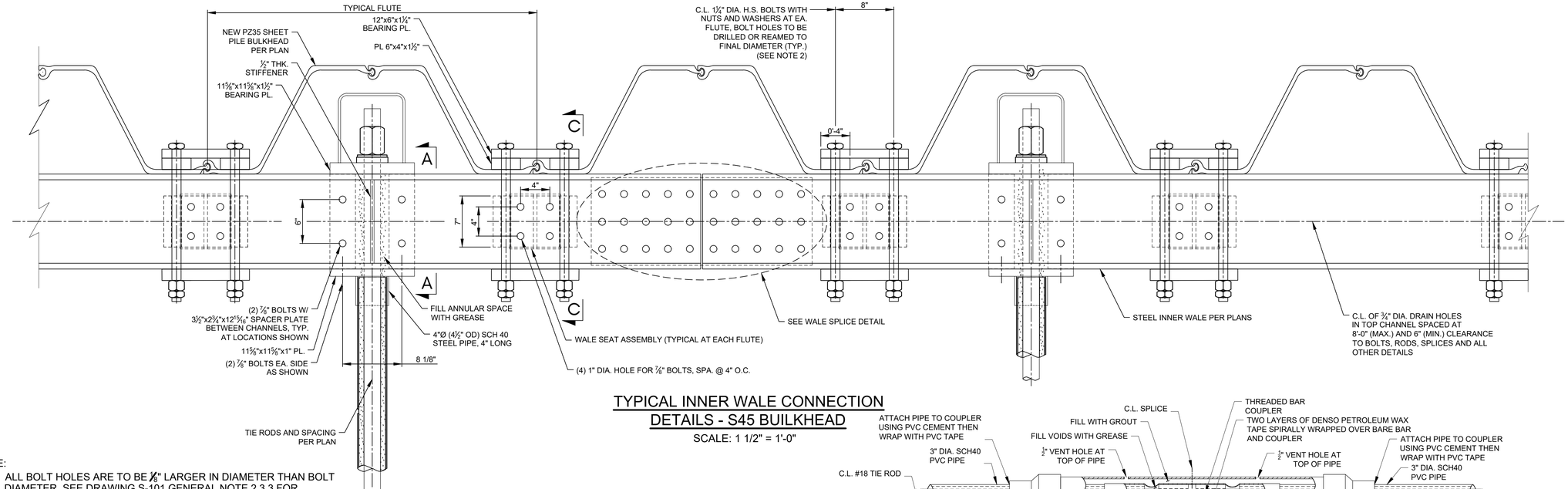
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781730

SHEET 38 OF 48

S-302

DRAWFORM REVISION: 31 JANUARY 2017



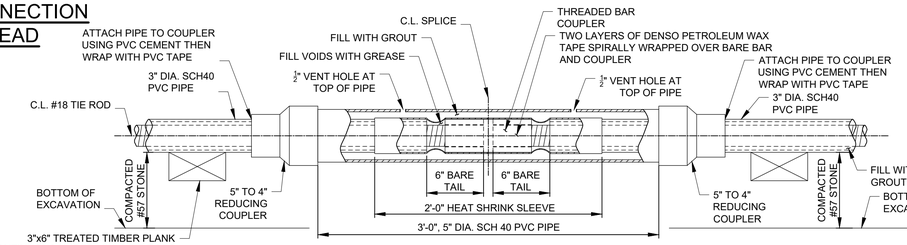
TYPICAL INNER WALE CONNECTION DETAILS - S45 BUILKHEAD

SCALE: 1 1/2" = 1'-0"

NOTE:

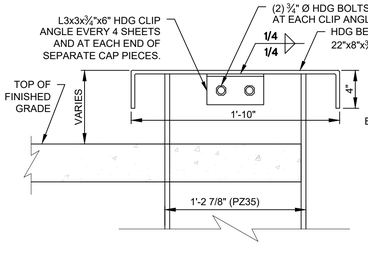
1. ALL BOLT HOLES ARE TO BE ⅛" LARGER IN DIAMETER THAN BOLT DIAMETER. SEE DRAWING S-101 GENERAL NOTE 2.3.3 FOR TIGHTENING OF BOLTS.

2. THE 1¼" DIAMETER HIGH STRENGTH BOLTS CONNECTING SHEET PILE AND WALE BEAM ARE NOT REQUIRED TO BE FULLY TENSIONED. INSTALL THE BOLTS SNUG TIGHT, THEN MAKE ADDITIONAL ONE SIXTH TURN BEYOND SNUG TIGHT, AND THEN INSTALL HEAVY JAM NUT TO PREVENT NUT FROM LOOSENING.



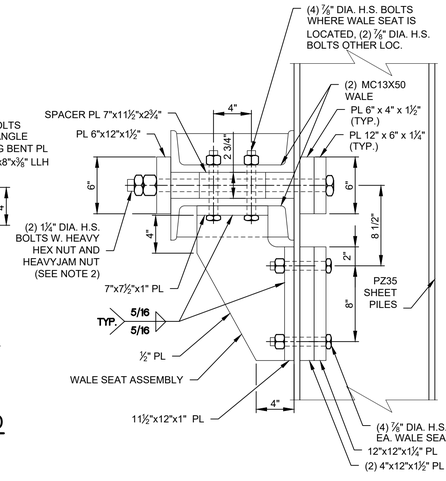
TIE ROD SPLICE DETAIL

SCALE: 1 1/2" = 1'-0"



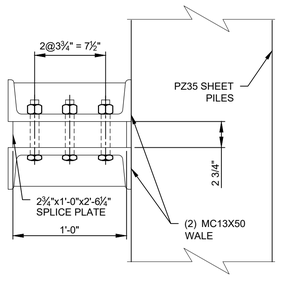
TYPICAL SHEET PILE CAP - S45 BULKHEAD

SCALE: 1 1/2" = 1'-0"



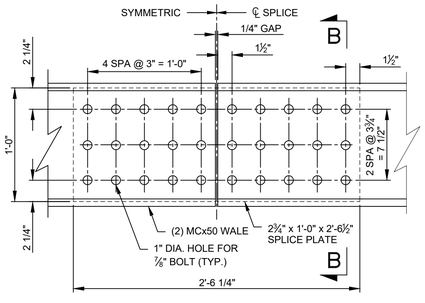
SECTION C-C

SCALE: 1 1/2" = 1'-0"



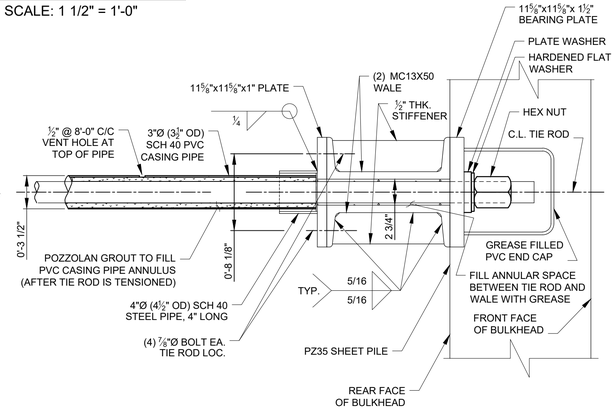
SECTION B-B

SCALE: 1 1/2" = 1'-0"



WALE SPLICE DETAIL

SCALE: 1 1/2" = 1'-0"



NOTE: ¾"x2¾"x12'-5⅛" SPACER PLATES AT NEAR SIDE AND FAR SIDE OF THE TIE ROD, BETWEEN THE (2) MC13X50, ARE NOT SHOWN FOR CLARITY.

SECTION A-A

SCALE: 1 1/2" = 1'-0"

APPR	DATE	DESCRIPTION	STM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	EW	CHK	LZ

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE ~ NEWPORT, RHODE ISLAND

NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS - S45 BULKHEAD

SCALE: AS NOTED

EPROJECT NO.: 1569253

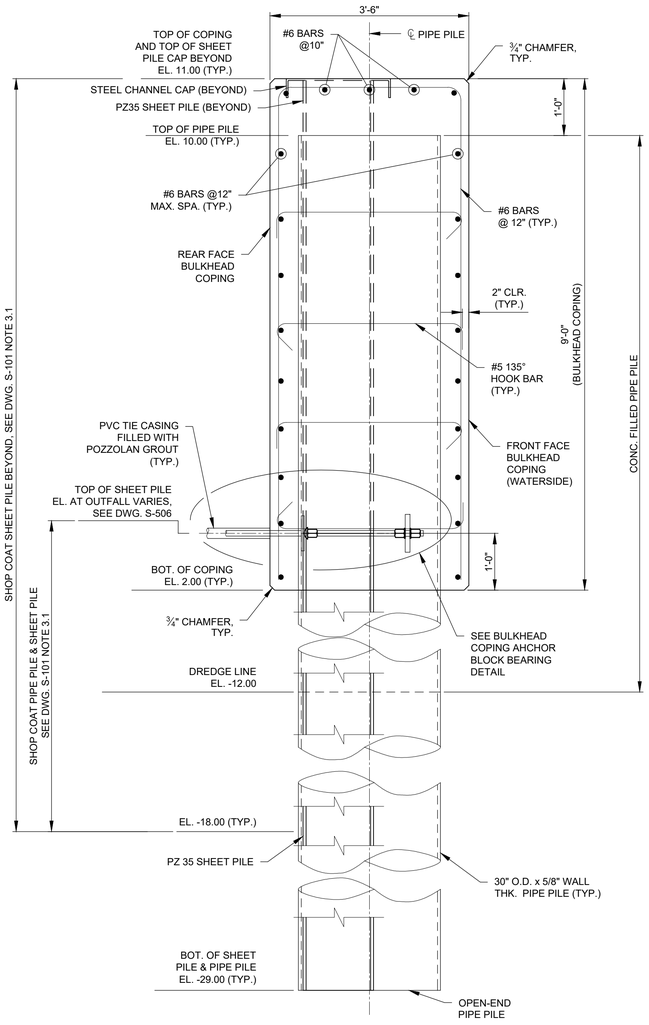
CONSTR. CONTR. NO.

NAVFAC DRAWING NO. 12781731

SHEET 39 OF 48

S-501

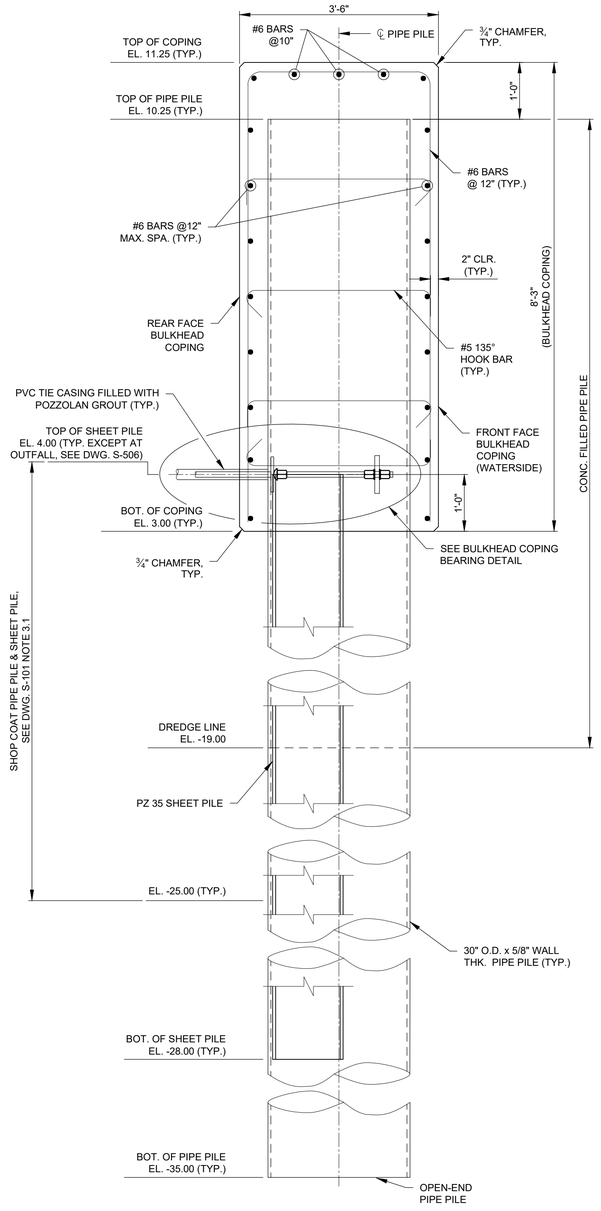
DRAWFORM REVISION: 31 JANUARY 2017



BASE BID
SECTION A-A (BULKHEAD - S45)
(REINFORCEMENT NOT SHOWN FOR CLARITY)

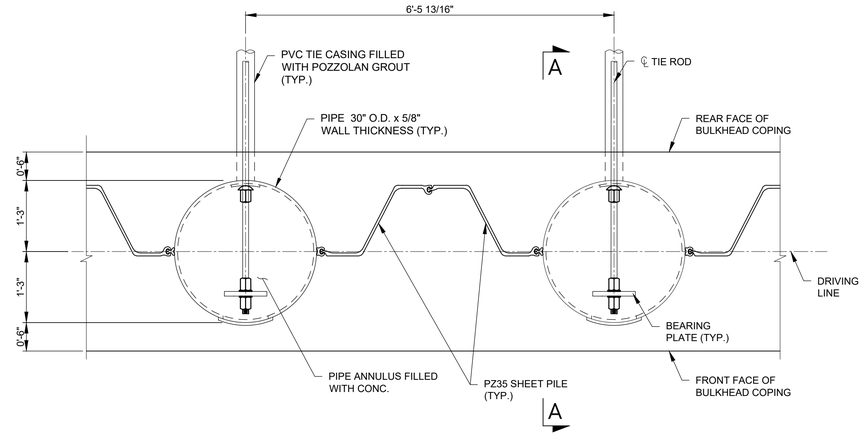
SCALE: 3/4" = 1'-0"

NOTE: ALL PIPE PILES ARE CONCRETE FILLED TO TOP OF PIPE PILE PRIOR TO PLACING CONCRETE FOR BULKHEAD COPING.



OPTION 2
SECTION A-A (BULKHEAD - S366)
(REINFORCEMENT NOT SHOWN FOR CLARITY)

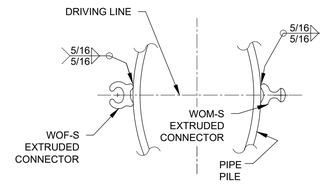
SCALE: 3/4" = 1'-0"



BULKHEAD COPING - PLAN
(REINFORCEMENT NOT SHOWN FOR CLARITY)

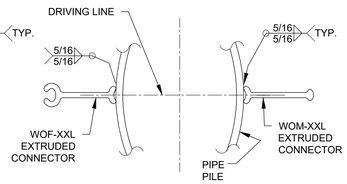
NOT TO SCALE

(PIPE PILE DETAIL)



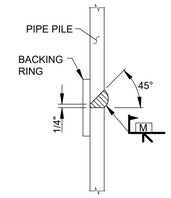
ENLARGED DETAIL - 1
PIPE PILE CONNECTION

NOT TO SCALE



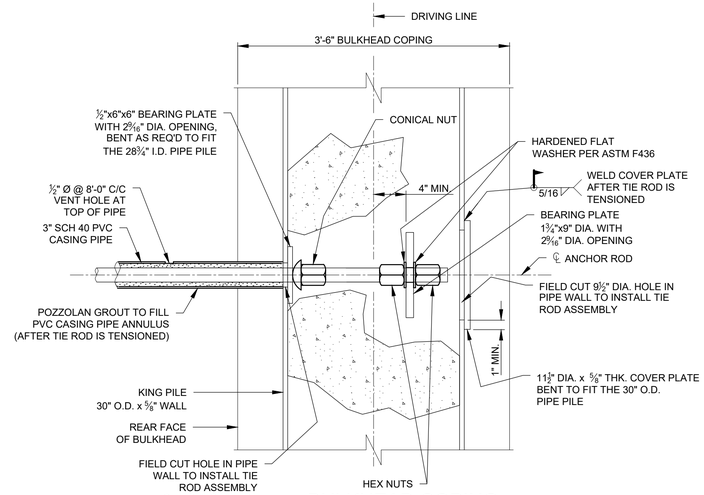
ENLARGED DETAIL - 2
PIPE PILE CONNECTION

NOT TO SCALE



(OPTIONAL) PIPE SPLICE WELD DETAIL

NOT TO SCALE



BULKHEAD COPING BEARING DETAIL

NOT TO SCALE

(PIPE PILE DETAIL)

NO.	DESCRIPTION	DATE	APPR

NAVFAC

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY: FINAL DESIGN

SATISFACTORY TO | DATE: November 2021

DES	LZ	DRW	EW	CHK	LZ

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

SEAL

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND NAVAL BASE - NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS – S366 BULKHEAD

SCALE: AS NOTED

EPROJECT NO.: 1569253

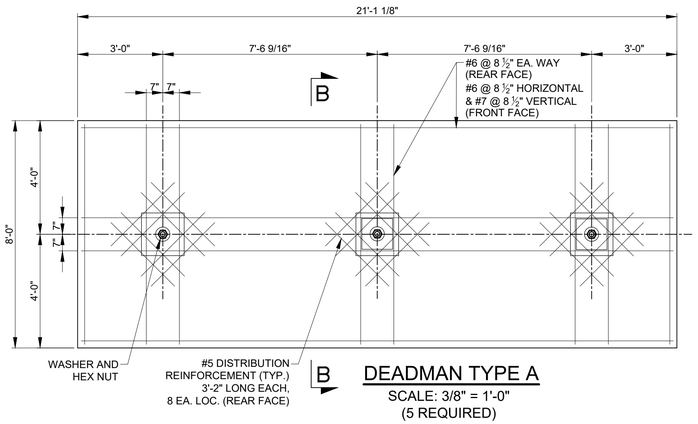
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781732

SHEET 40 OF 48

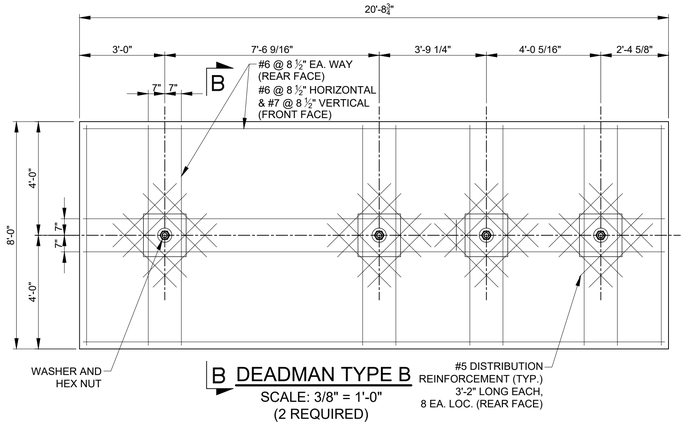
S-502

DRAWFORM REVISION: 31 JANUARY 2017



DEADMAN TYPE A

SCALE: 3/8" = 1'-0"
(5 REQUIRED)

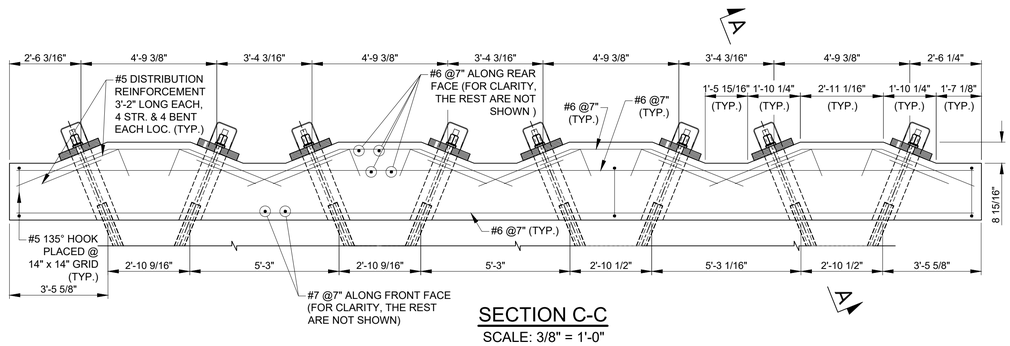


DEADMAN TYPE B

SCALE: 3/8" = 1'-0"
(2 REQUIRED)

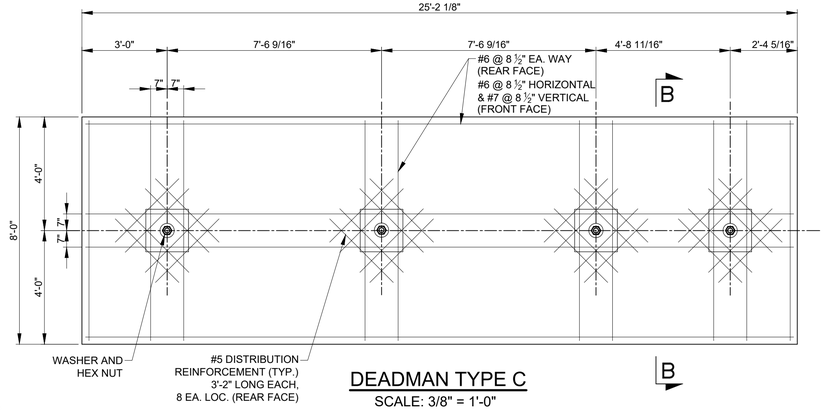
NOTES:

1. THE #5 HOOK BARS ARE NOT SHOWN IN ELEVATION VIEWS OF THE DEADMAN.
2. FABRICATOR SHALL MARK THE FRONT AND REAR SIDE ON THE PRECAST DEADMAN.
3. FIELD INSPECTOR MAY USE THE 1" CHAMFERS TO IDENTIFY THE FRONT FACES OF DEADMEN IN CASE OF THE FRONT/REAR FACE MARKINGS ARE INVISIBLE.
4. DEADMAN TYPE A TO TYPE H TO BE PRE-CASTED. USE CONCRETE (MARINE CONCRETE) WITH 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI FOR PRE-CAST DEADMAN.
5. USE CONCRETE (MARINE CONCRETE) WITH 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI FOR CAST-IN-PLACE DEADMAN.
6. THE LOCATIONS OF TIE RODS NEED TO BE FIELD VERIFIED BEFORE CASTING OF THE C.I.P. DEADMAN.



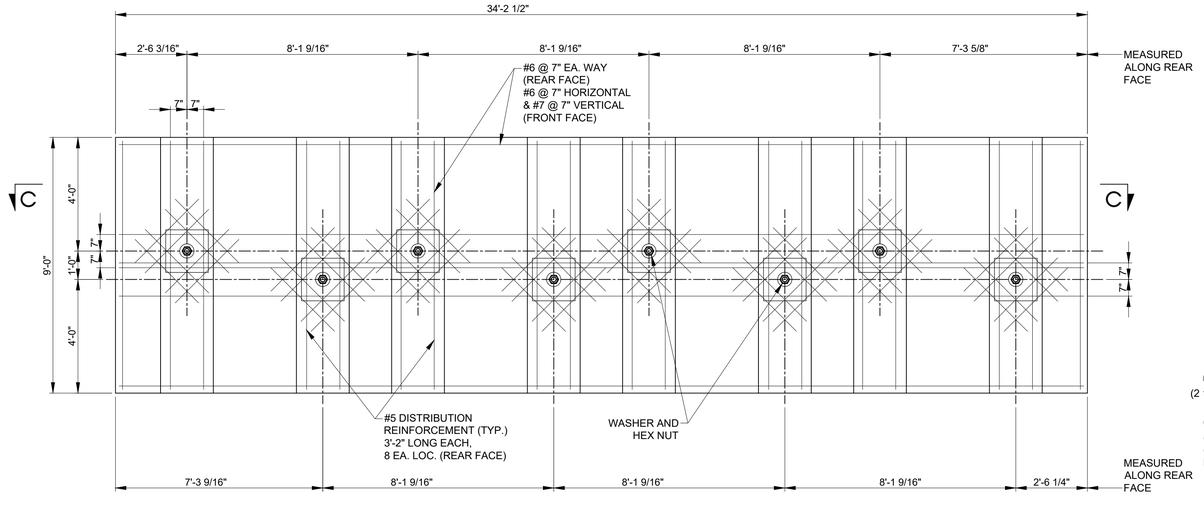
SECTION C-C

SCALE: 3/8" = 1'-0"



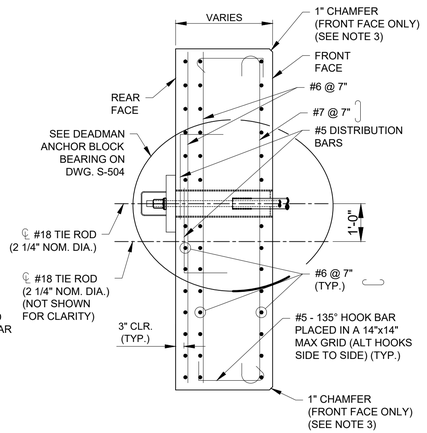
DEADMAN TYPE C

SCALE: 3/8" = 1'-0"
(2 REQUIRED)



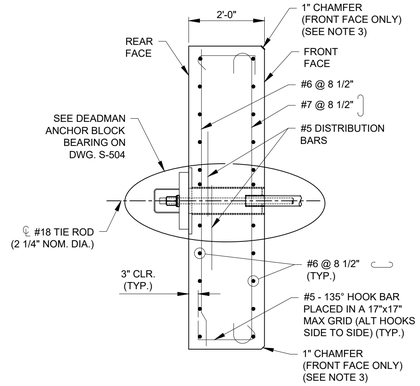
DEADMAN TYPE D

SCALE: 3/8" = 1'-0"
(1 REQUIRED)



SECTION A-A

SCALE: 1/2" = 1'-0"



SECTION B-B

SCALE: 1/2" = 1'-0"

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker
INTERNATIONAL
A/E INFO

APPROVED
FOR COMMANDER NAVFAC

ACTIVITY
FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	LZ	DRW	EW	CHK	NL

PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
NAVAL STATION
NEWPORT, R.I.

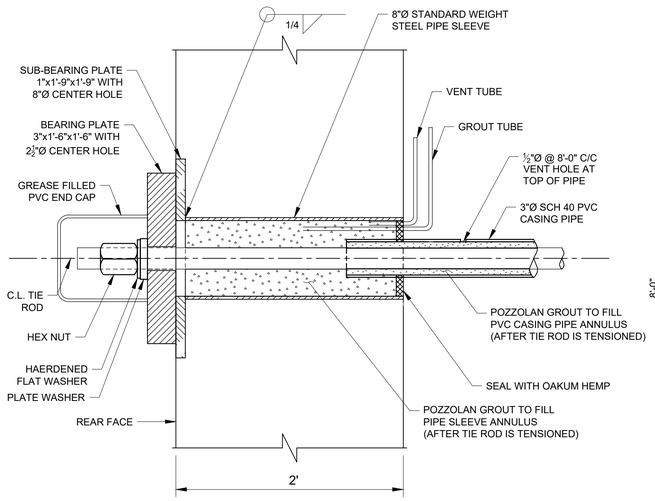
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS – DEADMAN TYPES A TO D

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.
12781733
SHEET 41 OF 48

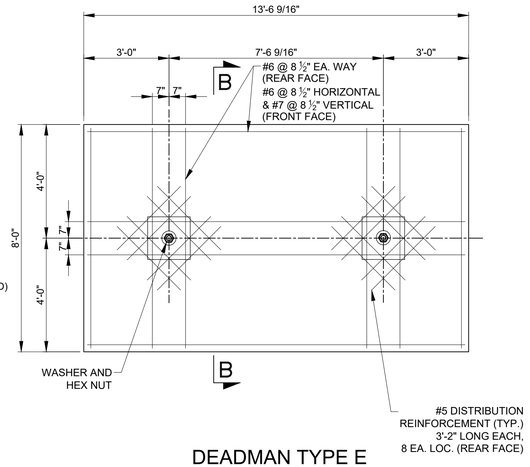
S-503

DRAWFORM REVISION: 31 JANUARY 2017



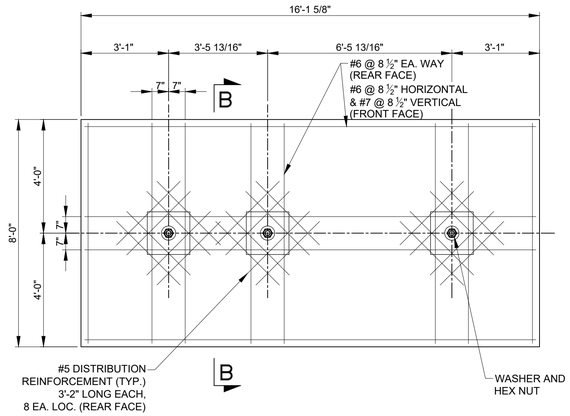
DEADMAN ANCHOR BLOCK BEARING DETAIL

SCALE: 1 1/2" = 1'-0"



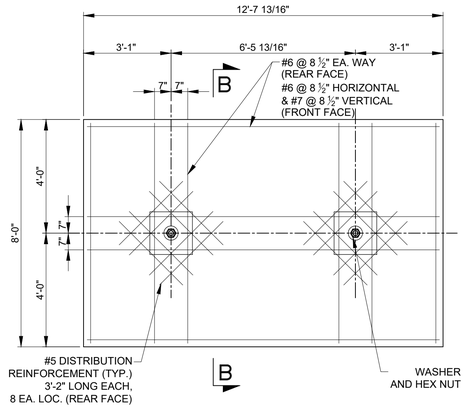
DEADMAN TYPE E

SCALE: 3/8" = 1'-0"
(2 REQUIRED)



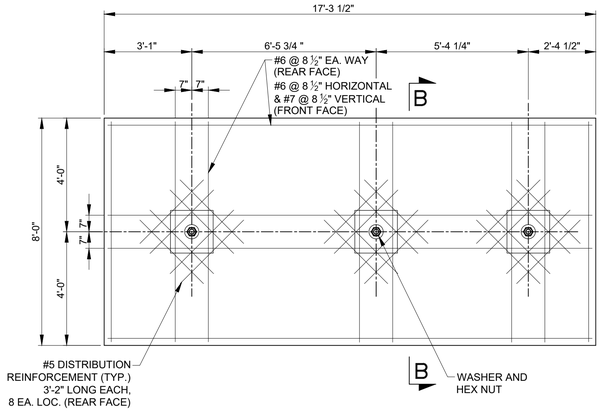
DEADMAN TYPE F

SCALE: 3/8" = 1'-0"
(1 REQUIRED)



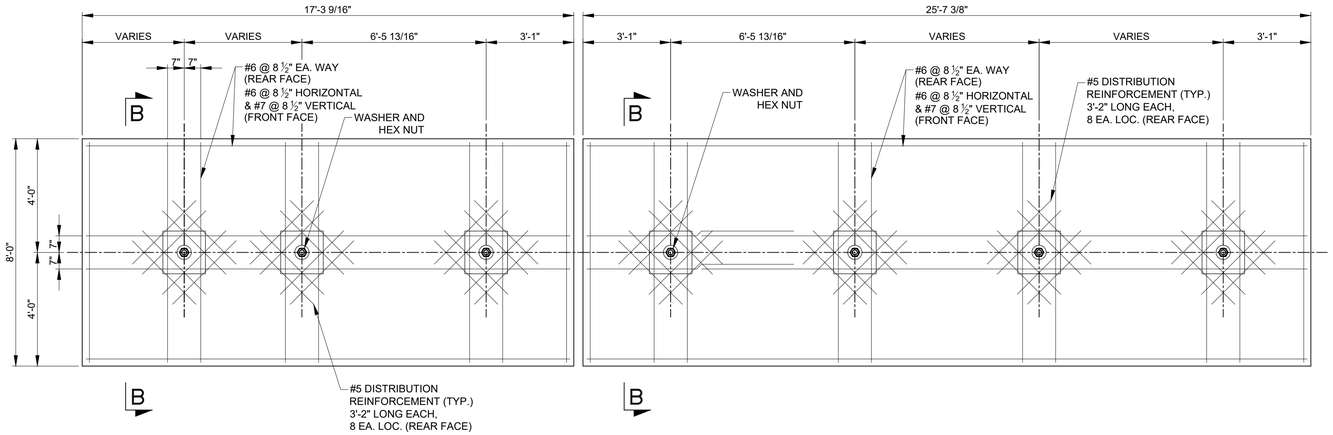
DEADMAN TYPE G

SCALE: 3/8" = 1'-0"
(1 REQUIRED)



DEADMAN TYPE H

SCALE: 3/8" = 1'-0"
(2 REQUIRED)



C.I.P. DEADMAN TYPE J

SCALE: 3/8" = 1'-0"

C.I.P. DEADMAN TYPE K

SCALE: 3/8" = 1'-0"

NOTES:

1. THE #5 HOOK BARS ARE NOT SHOWN IN ELEVATION VIEWS OF THE DEADMAN.
2. FABRICATOR SHALL MARK THE FRONT AND REAR SIDE ON THE PRECAST DEADMAN.
3. FIELD INSPECTOR MAY USE THE 1" CHAMFERS TO IDENTIFY THE FRONT FACES OF DEADMEN IN CASE OF THE FRONT/REAR FACE MARKINGS ARE INVISIBLE.
4. DEADMAN TYPE A TO TYPE H TO BE PRE-CASTED. USE CONCRETE (MARINE CONCRETE) WITH 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI FOR PRE-CAST DEADMAN.
5. USE CONCRETE (MARINE CONCRETE) WITH 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI FOR CAST-IN-PLACE DEADMAN.
6. THE LOCATIONS OF TIE RODS NEED TO BE FIELD VERIFIED BEFORE CASTING OF THE C.I.P. DEADMAN.
7. FOR SECTION B-B, SEE DRAWING S-503.

APPR	DATE	DESCRIPTION	SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY: FINAL DESIGN

SATISFACTORY TO | DATE: November 2021

DES: LZ | DRW: EW | CHK: NL

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND
NAVAL STATION NEWPORT, R.I.

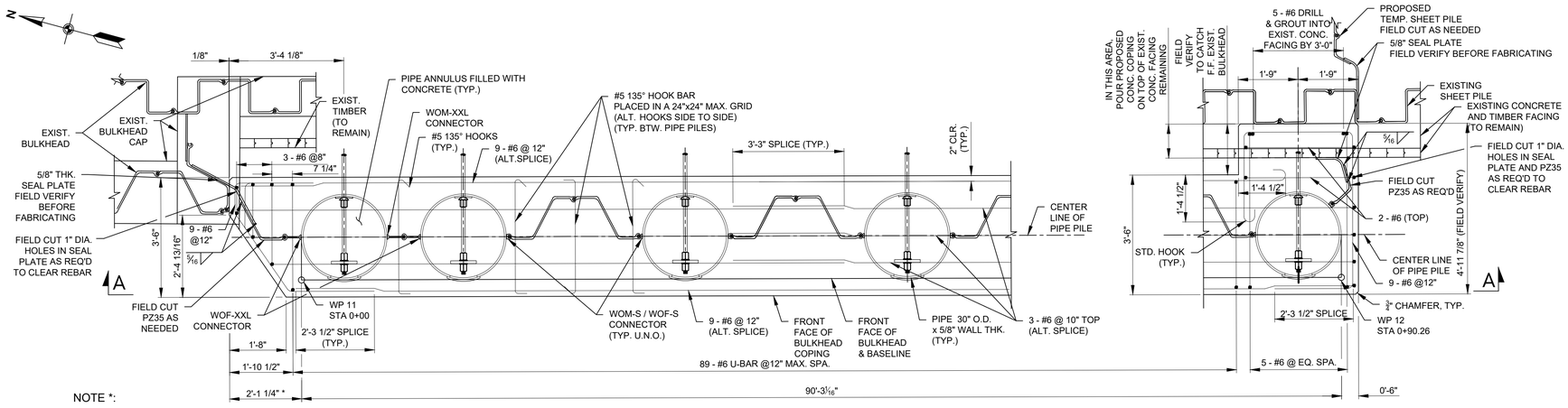
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS - DEADMAN TYPES E TO K

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO.: 12781734
SHEET 42 OF 48

S-504

DRAWFORM REVISION: 31 JANUARY 2017

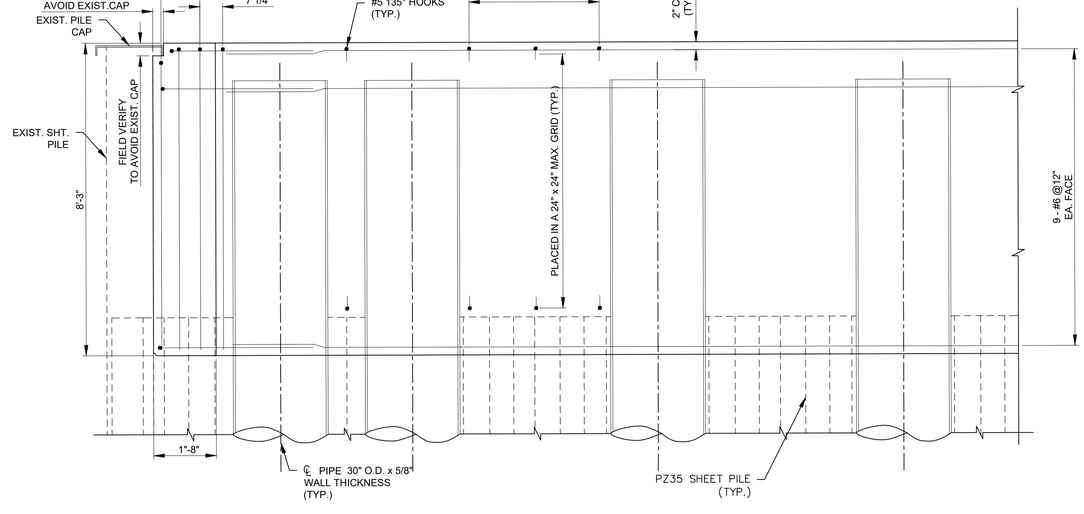


NOTE *:

DIMENSION MAY VARY. FIELD VERIFY. COPING CONCRETE TO BE CAST TO FRONT FACE OF EXISTING BULKHEAD AS SHOWN.

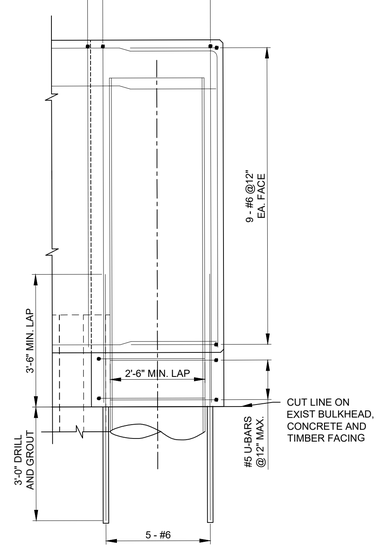
BULKHEAD COPING REINFORCEMENT

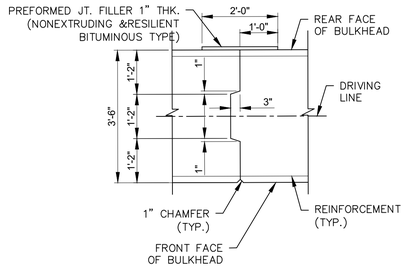
SCALE: 1/2" = 1'-0"



SECTION A-A
(OPTION 2 S366 DETAILS)

SCALE: 1/2" = 1'-0"





CONSTR. JT.

SCALE: 1/2" = 1'-0"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES LZ DRW LZ/DM CHK LZ

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND

NAVAL STATION
NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS – CONCRETE COPING

SCALE: 1" = 10'

EPROJECT NO.: 1569253

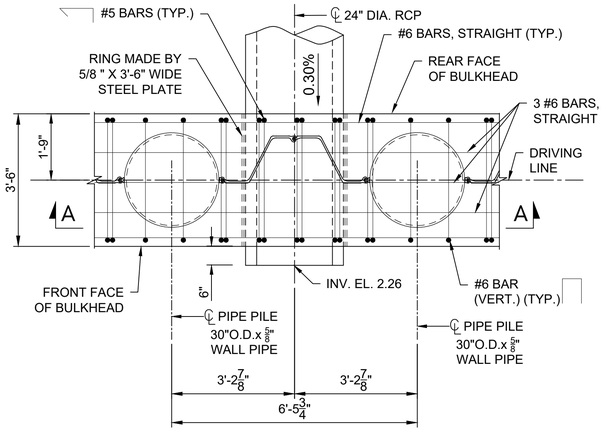
CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781735

SHEET 43 OF 48

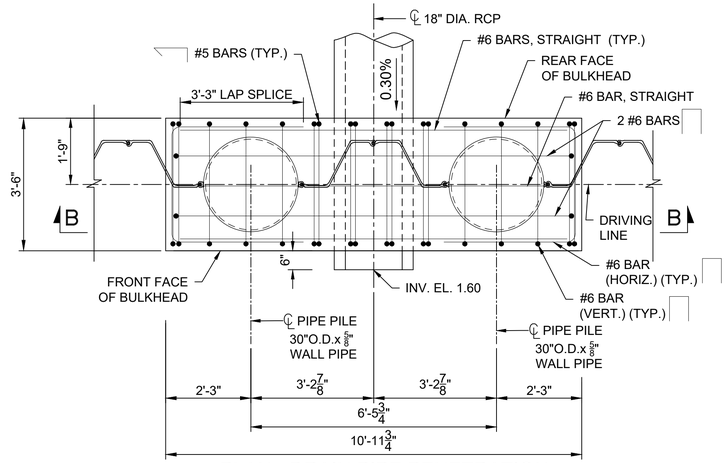
S-505

DRAWFORM REVISION: 31 JANUARY 2017



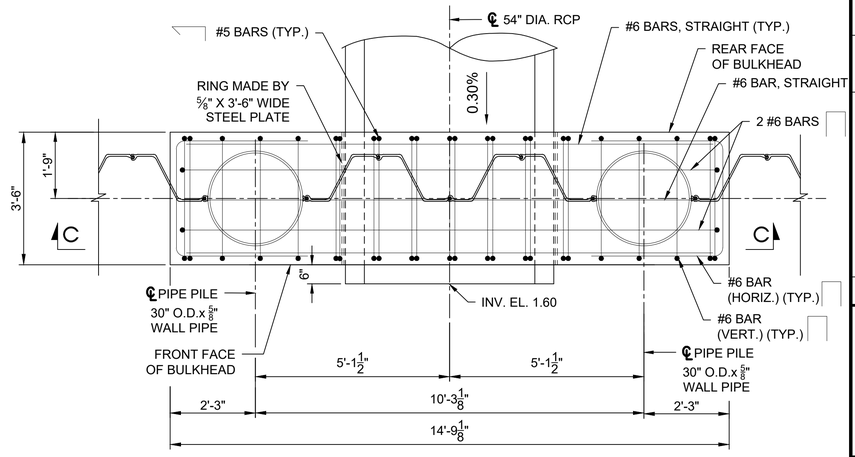
PLAN - DRAIN PIPE PENETRATION AT OUTFALL 9-95

SCALE: 1/2" = 1'-0"



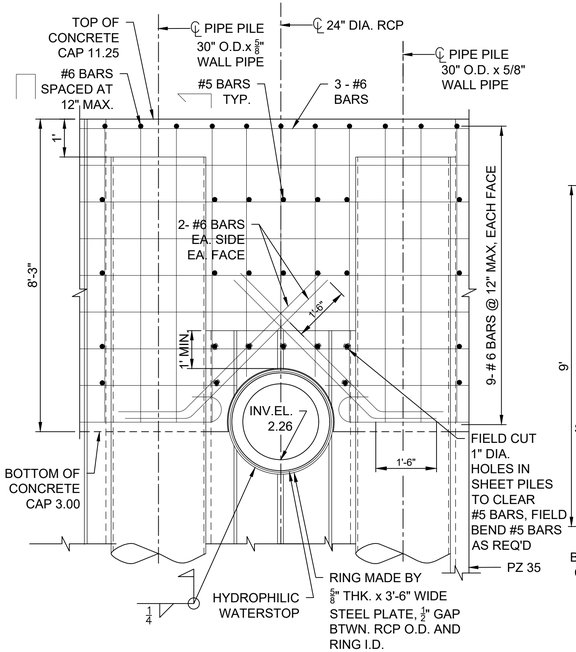
PLAN - DRAIN PIPE PENETRATION AT OUTFALL 9-94

SCALE: 1/2" = 1'-0"



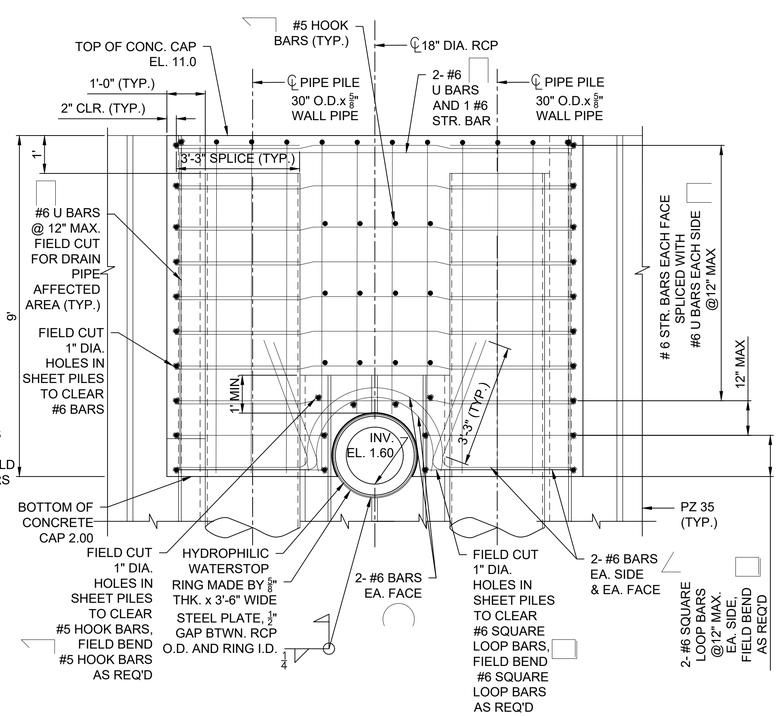
PLAN - DRAIN PIPE PENETRATION AT OUTFALL 9-92

SCALE: 1/2" = 1'-0"



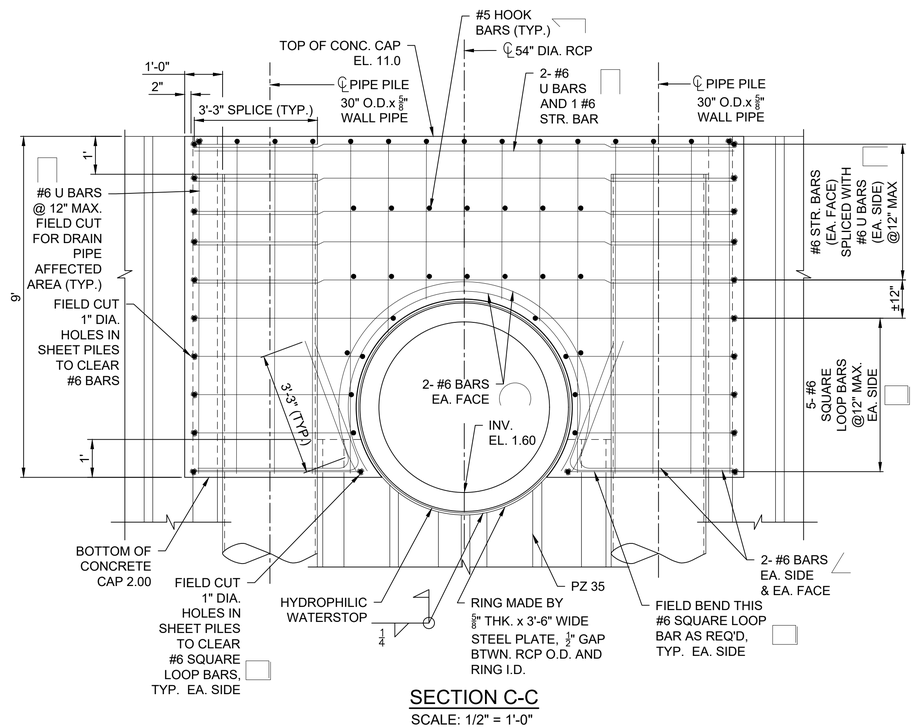
SECTION A-A

SCALE: 1/2" = 1'-0"



SECTION B-B

SCALE: 1/2" = 1'-0"



SECTION C-C

SCALE: 1/2" = 1'-0"

APPR | DATE | DESCRIPTION | SYM

NAVFAC

SEAL

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO | DATE November 2021

DES LZ | DRW EW | CHK NL

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>

NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE – RHODE ISLAND

NAVAL STATION NEWPORT, R.I.

BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

BULKHEAD DETAILS – DRAINAGE PIPE PENETRATIONS

SCALE: AS NOTED

EPROJECT NO.: 1569253

CONSTR. CONTR. NO.

NAVFAC DRAWING NO.
12781736

SHEET 44 OF 48

S-506

DRAWFORM REVISION: 31 JANUARY 2017

PLAN - PIT V.1
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092230

SECTION "A" - "A"
SCALE 1/4" = 1'-0"

SECTION "B" - "B"
SCALE 1/4" = 1'-0"

PLAN - PIT V.2
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092230

PLAN - NEW TWH
SCALE 1/4" = 1'-0"

SECTION "C" - "C"
SCALE 1/4" = 1'-0"

PLAN - PIT V.3
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092230

SECTION "D" - "D"
SCALE 1/4" = 1'-0"

SECTION "E" - "E"
SCALE 1/4" = 1'-0"

PLAN - PIT S1
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092231

SECTION "F" - "F"
SCALE 1/4" = 1'-0"

PLAN - PIT S2
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092232

SECTION "G" - "G"
SCALE 1/4" = 1'-0"

PLAN - PIT P1
SCALE 1/4" = 1'-0"
FOR LOCATION SEE V&D DWG NO. 1092232

SECTION "H" - "H"
SCALE 1/4" = 1'-0"

DETAIL OF MANHOLE FRAME & COVER
SCALE 1" = 1'-0"

DETAIL OF MANHOLE RUNGS
SCALE 1" = 1'-0"

DETAIL OF PIPE SLEEVES
NO SCALE

PLAN
ELEVATION
DETAIL - SUPPORT - PEDESTAL FOR PIPE IN MH'S
SCALE 1" = 1'-0"

USE GRAPHIC SCALES

NOTES:
1. FOR CONCRETE, SHEILD BLOCKS SEE V&D DWG NO. 1092232
2. FOR STRUCTURAL REINFORCING TO BUILD IN PIT P-2 SEE STRUCTURAL DWGS NO. 1092232 & 1092233
3. CONCRETE FOR PITS TO BE CLASS D-1

CONCRETE PIT DETAILS

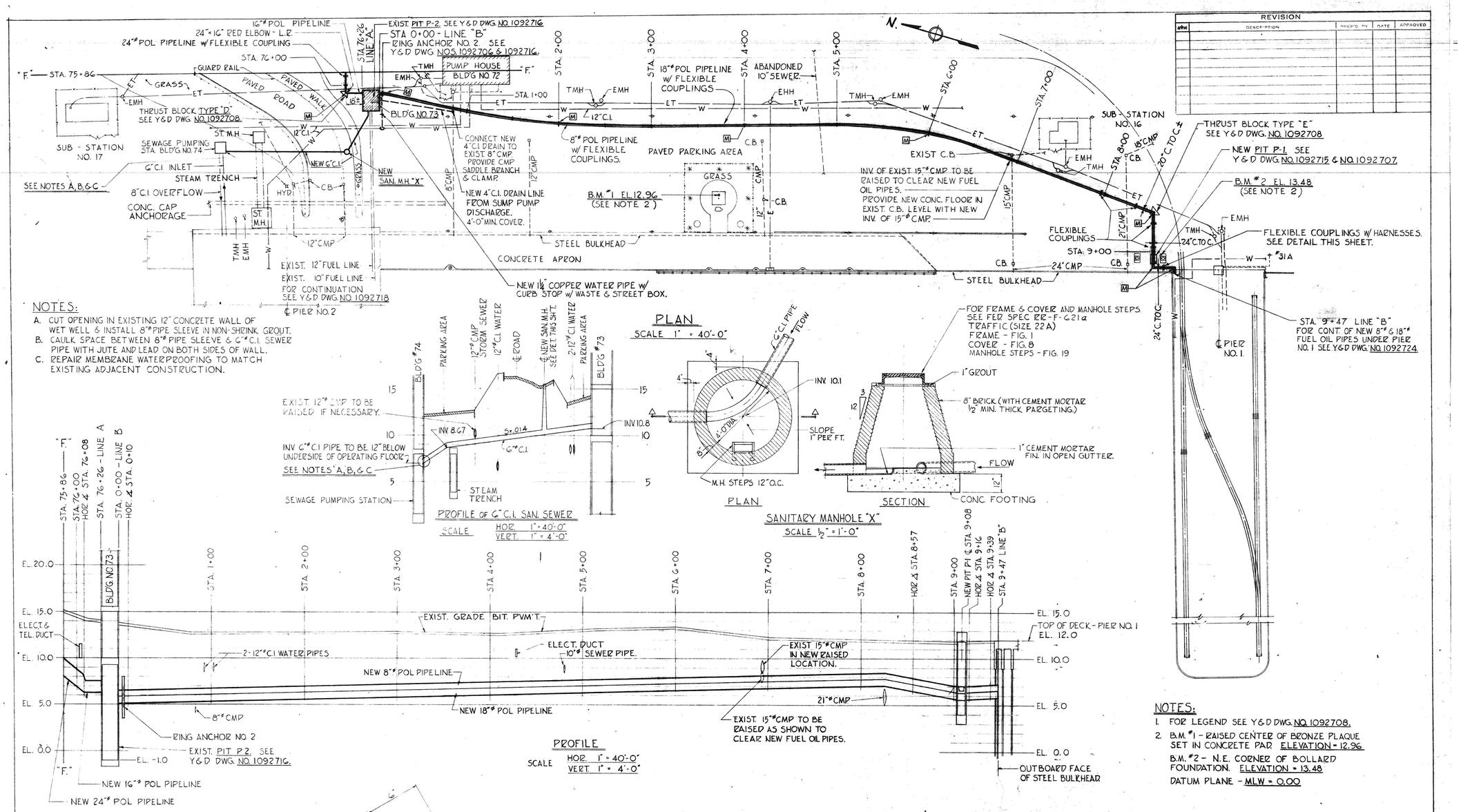
DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND
PROJECT STATION/INSTALLATION
PROJECT CITY, STATE
BULKHEAD REPAIRS S366 AND S45
AND STORMWATER REPAIRS
EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD

Michael Baker INTERNATIONAL
A/E INFO

APPROVED
FOR COMMANDER NAVFAC
ACTIVITY
FINAL DESIGN
SATISFACTORY TO DATE November 2021
DES | DRW | CHK
PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781737
SHEET 45 OF 48
REF #1

DRAWFORM REVISION: 31 JANUARY 2017



NOTES:

A. CUT OPENING IN EXISTING 12" CONCRETE WALL OF WET WELL & INSTALL 8"ø PIPE SLEEVE IN NON-SHRINK GROUT.
B. CAULK SPACE BETWEEN 8"ø PIPE SLEEVE & 6"ø C.I. SEWER PIPE WITH JUTE AND LEAD ON BOTH SIDES OF WALL.
C. REPAIR MEMBRANE WATERPROOFING TO MATCH EXISTING ADJACENT CONSTRUCTION.

PROFILE OF 6"C.I. SAN. SEWER

SCALE HOR. 1"=40'-0" VERT. 1"=4'-0"

PLAN

SCALE 1" = 40'-0"

PLAN

SECTION

SANITARY MANHOLE "X"

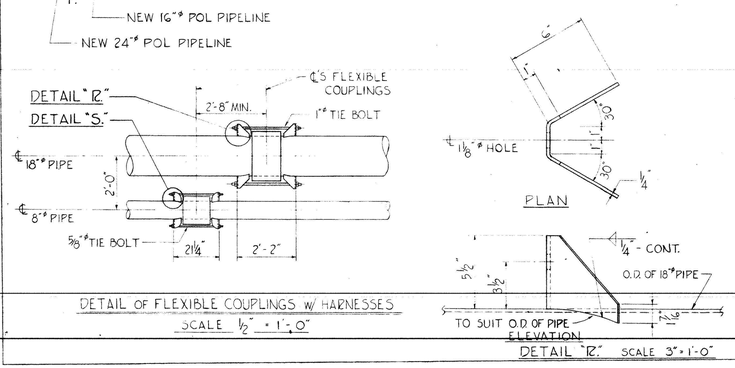
SCALE ½" = 1'-0"

PROFILE

SCALE HOR. 1"=40'-0" VERT. 1"=4'-0"

NOTES:

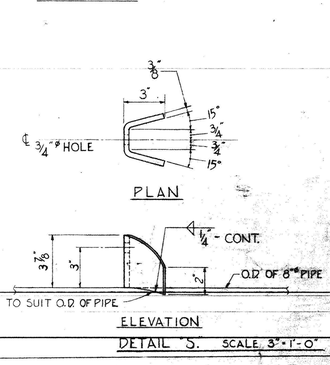
1. FOR LEGEND SEE Y&D DWG. NO. 1092708.
2. B.M. #1 - RAISED CENTER OF BRONZE PLAQUE SET IN CONCRETE PAD ELEVATION = 12.96
   B.M. #2 - N.E. CORNER OF BOLLARD FOUNDATION. ELEVATION = 13.48
   DATUM PLANE - MLW = 0.00



DETAIL OF FLEXIBLE COUPLINGS W/ HARNESSES

SCALE ½" = 1'-0"

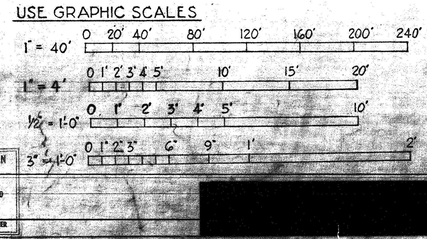
DETAIL "R" SCALE 3"=1'-0"



DETAIL "S." SCALE 3"=1'-0"

ALBERT H. JUSTIN No. 660 REGISTERED PROFESSIONAL ENGINEER

USE GRAPHIC SCALES



PWC DRAWING NO. 16636-173

A. H. JUSTIN & ASSOCIATES PROVIDENCE, R. I.	DEPARTMENT OF THE NAVY BUREAU OF YARDS & DOCKS NORTHEAST DIVISION BOSTON, MASS.
ARCHITECTS - ENGINEERS	NAVAL SUPPLY DEPOT NEWPORT, R.I.
DES. [illegible] OR SIMONDS CHK. JUSTIN	POL PIPELINES
SUPV. [illegible] CM ENGR. LAMOND	PLAN & PROFILE - STA. 75+86 TO STA 76+26 & LINE "B"
SIGNED [illegible] DATE 11/19/65	CODE IDENT NO. 80091 SIZE F Y & D DRAWING NO. 1092714
FIRM MEMBER / OWNER	SCALE GRAPHIC SPEC 66434/65 NO. 66434 SHEET 9 OF 24
DIVISION	
FIRE PROTECTION ENGINEER	
SAFE ENGINEER	
HEAD, [illegible] DIV. SEASON	
[illegible] DATE 11/19/65	
DIRECTOR FOR CHIEF OF BUREAU	

REVISION

SYM	DESCRIPTION	PREP'D BY	DATE	APPROVED

NAVFAC

Michael Baker INTERNATIONAL

A/E INFO

APPROVED

FOR COMMANDER NAVFAC

ACTIVITY

FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	DRW	CHK

PM/DM

BRANCH MANAGER

CHIEF ENG/ARCH

FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND ~ MID-ATLANTIC
NAVAL BASE - NEWPORT, RHODE ISLAND
PROJECT STATION/INSTALLATION
PROJECT CITY, STATE

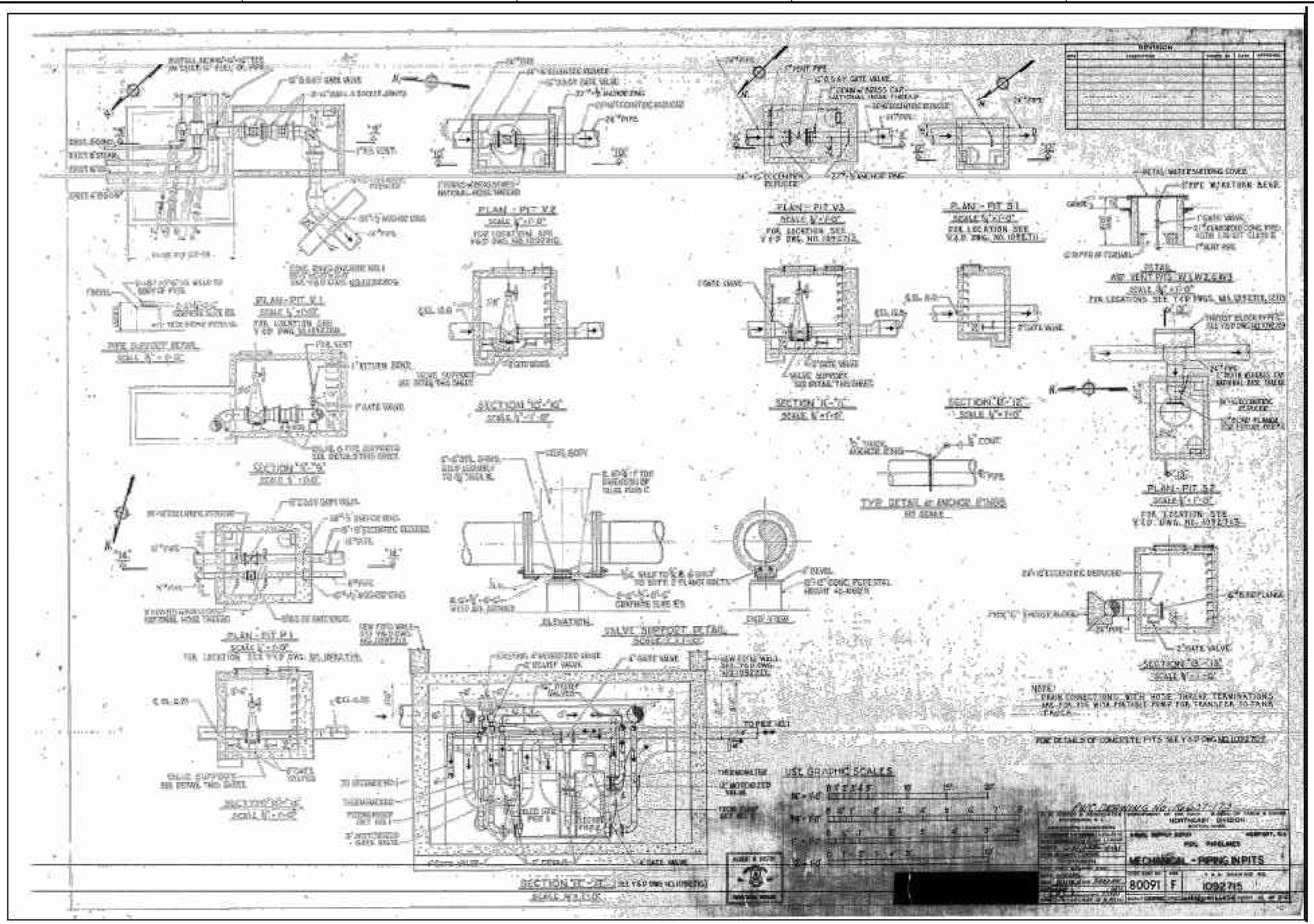
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781738
SHEET 46 OF 48

REF #2

DRAWFORM REVISION: 31 JANUARY 2017



NAVFAC

Michael Baker
INTERNATIONAL
A/E INFO

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FOR COMMANDER NAVFAC

ACTIVITY
FINAL DESIGN

SATISFACTORY TO DATE November 2021

DES	DRW	CHK

PM/DM
BRANCH MANAGER
CHIEF ENG/ARCH
FIRE PROTECTION

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
NAVAL BASE – NEWPORT, RHODE ISLAND
PROJECT STATION/INSTALLATION
PROJECT CITY, STATE

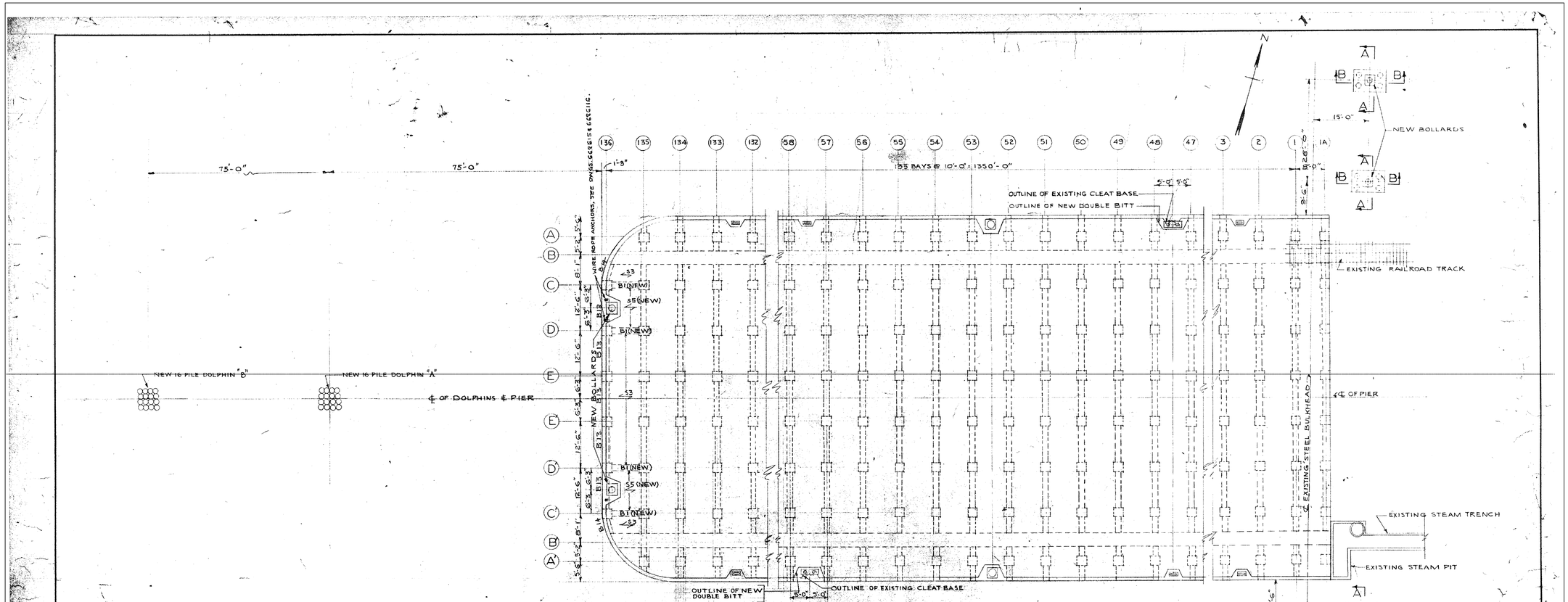
BULKHEAD REPAIRS S366 AND S45 AND STORMWATER REPAIRS

EXISTING FUEL PIT PLANS NEAR S366 BULKHEAD

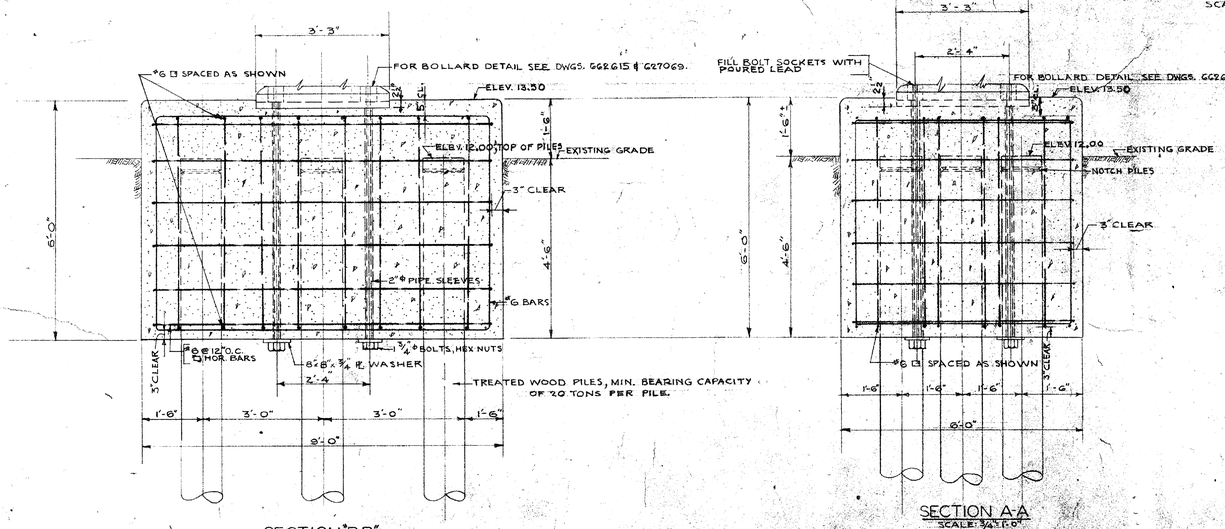
SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781739
SHEET 47 OF 48

REF #3

DRAWFORM REVISION: 31 JANUARY 2017



DECK FRAMING PLAN WITH R.R. TRACKS
SCALE: 3/32" = 1'-0"



SECTION "BB"
SCALE 1/4" = 1'-0"

SECTION A-A
SCALE: 3/4" = 1'-0"

DETAILS OF NEW BOLLARD SUPPORTS
SCALE: 3/4" = 1'-0"

NOTES:
FOR GENERAL NOTES SEE Y&D DWG. 627074.
WOOD PILES SHALL BE YELLOW PINE OR DOUGLAS FIR, CLASS B, TYPE II, IN ACCORDANCE WITH SPEC. NO. MM-P-371. WOOD PILES TO BE CREOSOTED, WITH A MIN. BEARING CAPACITY OF 20 TONS PER PILE.

GRAPHIC SCALES
3/32" = 1'-0"
3/4" = 1'-0"

12287-129

REVISION	DATE	DESCRIPTION	BY

DPW DRAWING No. NEN-29 ST

DEPARTMENT OF THE NAVY BUREAU OF YARDS AND DOCKS
DISTRICT PUBLIC WORKS OFFICE
FIRST NAVAL DISTRICT, BOSTON, MASS.

DRAWN BY: TURCO
TRACED BY:
CHECKED BY: SWEETZ
SUBMITTED: 9/14/55 SANTOS BRANCH MANAGER
APPROVED: SEDDEN DIRECTOR OF DESIGN
SATISFACTORY TO:
DATE

U.S. NAVAL BASE NEWPORT R.I.
AMENDMENT No 6
FLEET BERTHING FACILITIES
DECK FRAMING PLAN & INBOARD BOLLARDS
STRUCTURAL

APPROVED: [signature] DATE 16 Sept 55
DISTRICT PUBLIC WORKS OFFICER

SCALE: AS SHOWN SPEC. No. 3482
SHEET No. 1 OF 3 SHEETS
Y & D DRAWING No. 662644

NAVFAC

			APPR
			DATE
			DESCRIPTION
			STM

SEAL

Michael Baker INTERNATIONAL

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SATISFACTORY TO DATE November 2021

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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
<<COMPONENT NAME>>
NAVAL FACILITIES ENGINEERING COMMAND – MID-ATLANTIC
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EXISTING BOLLARD CONSTRUCTION PLAN

SCALE: AS NOTED
EPROJECT NO.: 1569253
CONSTR. CONTR. NO.
NAVFAC DRAWING NO. 12781740
SHEET 48 OF 48

REF #4

DRAWFORM REVISION: 31 JANUARY 2017