PUBLIC NOTICE

U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT

BUILDING STRONG®

APPLICATION FOR PERMIT

NASSCO Shipyard Berths 7 & 8 Bulkhead Improvement Project

Public Notice/Application No.: SPL-2018-00711-RRS
Project: Berths 7 & 8 Bulkhead Upgrade at General Dynamics NASSCO
Comment Period: July 29, 2019 through August 29, 2019
Project Manager: Robert Smith; (760) 602-4831; Robert.R.Smith@usace.army.mil

Applicant
Sara Giobbi
General Dynamics NASSCO
2798 Harbor Drive
(619) 554-7506
San Diego, California 92113

Contact
Corey Sheredy
Wood Environment & Infrastructure Solutions, Inc.
(831) 359-7761
9210 Sky Park Court, Suite 200
San Diego, California 92123

Location
The project is located at Berths 7 & 8 at the General Dynamics NASSCO shipyard within San Diego Bay in the city of San Diego, in San Diego County, CA. Berths 7 & 8 are centrally located in the General Dynamics NASSCO Shipyard immediately West and North-West of the ship building Ways 4 (Figure 1). (Latitude: 32.689339 N, Longitude -117.138958 W).

Activity
The proposed project will include the replacement of a 40 year old failing bulkhead with a new 379 linear feet (ft.) fill and bulkhead four feet outside of the existing bulkhead along with a new fender pile system and corrosion protection system. The work involves replacement of both the bulkhead and the wood fender system and replacing the existing dilapidated bulkhead with new King Piles, batter piles, fender piles, sheet pile, cementitious slurry fill (837 cubic yards (cy)), and sheet pile wall at Berths 7 & 8 (Project). Project will result in the permanent loss of 1,600 square ft. of new fill within waters of the U.S. For more information see Additional Project Information section below.

Interested parties are hereby notified an application has been received for a Department of the Army permit for the activity described herein and shown on the attached drawing(s). We invite you to review today's public notice and provide views on the proposed work. By providing substantive, site-specific comments to the Corps Regulatory Division, you provide information that supports the Corps' decision-making process. All comments received during the comment period become part of the record and will be considered in the decision. This permit will be issued, issued with special conditions, or denied under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act.

Comments should be mailed to:

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
REGULATORY DIVISION
ATTN: Robert Smith
Carlsbad Field Office
5900 La Place Ct., Suite 100
Carlsbad, CA 92008

Alternatively, comments can be sent electronically to: Robert.R.Smith@usace.army.mil

The mission of the U.S. Army Corps of Engineers Regulatory Program is to protect the Nation's aquatic resources, while allowing reasonable development through fair, flexible and balanced permit decisions. The Corps evaluates permit applications for essentially all construction activities that occur in the Nation's waters, including wetlands. The Regulatory Program in the Los Angeles District is executed to protect aquatic resources by developing and implementing short- and long-term initiatives to improve regulatory products, processes, program transparency, and customer feedback considering current staffing levels and historical funding trends.

Corps permits are necessary for any work, including construction and dredging, in the Nation's navigable water and their tributary waters. The Corps balances the reasonably foreseeable benefits and detriments of proposed projects, and makes permit decisions that recognize the essential values of the Nation's aquatic ecosystems to the general public, as well as the property rights of private citizens who want to use their land. The Corps strives to make its permit decisions in a timely manner that minimizes impacts to the regulated public.

During the permit process, the Corps considers the views of other Federal, state and local agencies, interest groups, and the general public. The results of this careful public interest review are fair and equitable decisions that allow reasonable use of private property, infrastructure development, and growth of the economy, while offsetting the authorized impacts to the waters of the United States. The permit review process serves to first avoid and then minimize adverse effects of projects on aquatic resources to the maximum practicable extent. Any remaining unavoidable adverse impacts to the aquatic environment are offset by compensatory mitigation requirements, which may include restoration, enhancement, establishment, and/or preservation of aquatic ecosystem system functions and services.

Evaluation Factors

The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including the cumulative effects thereof. Factors that will be considered include conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people. In addition, if the proposal would discharge dredged or fill material,

the evaluation of the activity will include application of the EPA Guidelines (40 CFR Part 230) as required by Section 404 (b)(1) of the Clean Water Act.

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

Preliminary Review of Selected Factors

EIS Determination- A preliminary determination has been made an environmental impact statement is not required for the proposed work.

Water Quality- The applicant is required to obtain water quality certification, under Section 401 of the Clean Water Act, from the California Regional Water Quality Control Board. Section 401 requires any applicant for an individual Section 404 permit provide proof of water quality certification to the Corps of Engineers prior to permit issuance.

Coastal Zone Management- The applicant has certified the proposed activity would comply with and would be conducted in a manner consistent with the approved State Coastal Zone Management Program and the Port of San Diego Master Plan Coastal Development Permit (CDP). For those projects in or affecting the coastal zone, the Federal Coastal Zone Management Act requires that prior to issuing the Corps authorization for the project, the applicant must obtain concurrence from the California Coastal Commission via the Port of San Diego through their CDP that the project is consistent with the State's Coastal Zone Management Plan. This project is located inside the coastal zone and preliminary review indicates it would affect coastal zone resources. After a review of the comments received on this public notice and in consultation with the Port of San Diego under the CDP, the Corps will make a final determination of whether this project affects coastal zone resources after review of the comments received on this Public Notice.

Essential Fish Habitat- Essential Fish Habitat (EFH), as defined by the Magnuson-Stevens Fishery Conservation and Management Act, occurs within the project area and EFH is affected by the proposed project. The Corps of Engineers preliminary determination indicates the proposed activity would adversely affect EFH. Therefore, formal consultation under Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) is required. The Corps of Engineers preliminary determination indicates the proposed activity may adversely affect EFH. Pursuant to Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Los Angeles District will be requesting initiation of EFH consultation for the proposed project.

This notice supplements the EFH consultation requirements of the Act. In order to comply with the Magnuson-Stevens Fishery Conservation and Management Act (MSA), pursuant to 50 CFR 600.920(e)(3), I am providing, enclosing, or otherwise identifying the following information:

1. Description of the proposed action: See project description on page 6 of this public notice.

2. On-site inspection information: See baseline information on page 6 of this public notice.

3. Analysis of the potential adverse effects on EFH: Project will have adverse effects (noise, pile driving pressure, anchoring impacts, and vessel and equipment impacts) to the surrounding bay and the adjacent waters of the U.S. at NASSCO shipyard. The Corps will be consulting with the National Marine Fisheries Service in reference to the EFH impacts to both Coastal Pelagic and Pacific Ground fish fishery management plans.

4. Proposed minimization, conservation, or mitigation measures: The project will use turbidity monitoring, grunion protection measures, and Section 401 water quality protection measures. Best Management Practices (BMPs) will be used such as pH and protected species monitoring of surrounding waters while slurry fill is poured, a silt curtain to prevent any incidental slurry discharges, pump-out of construction water with treatment and disposal to the onsite NASSCO's onsite wastewater treatment facility and then to the City of San Diego, turbidity monitors, anchoring and barge spud measures to reduce bay bottom disturbance, fueling measures to eliminate fuel spills, daylight work to increase spill safety, and will abide by the Port's Master Plan and Coastal Development Permit with the Corps to avoid and minimize any impacts to the EFH resources.

5. Conclusions regarding effects of the proposed project on EFH: Based on the project description and EFH information provided by the applicant, the proposed project would result in permanent fill of approximately 1600 square feet of bay bottom substrate. Furthermore, the affected substrate would likely consist of soft-bottom sediments, with little or no hard rock substrate affected. With the above measures the effects to EFH resources would be greatly minimized with reduced spills and minimal turbidity, noise and pile driving impact reduction, and onsite treatment of onsite wastewater with water quality protection.

Therefore, it is my initial determination the proposed activity may adversely affect **but would not** have a substantial adverse impact on EFH or federally managed fisheries in California waters with the proposed measures. My final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the NOAA Fisheries.

Cultural Resources- The latest version of the National Register of Historic Places has been consulted and this site is not listed. This review constitutes the extent of cultural resources investigations by the District Engineer, and he is otherwise unaware of the presence of such resources. The Corps has initially determined that the project, due to prior disturbances from dredging and shipyard activities would have little likelihood to impact any cultural resources. Preliminary determinations indicate that the project area has sustained prior disturbances from construction impacts and there is little likelihood that there are any cultural resources.

Endangered Species- Preliminary determinations indicate the proposed activity would not affect federally-listed endangered or threatened species, or their critical habitat. Therefore, formal consultation under Section 7 of the Endangered Species Act does not appear to be required at this time. A Protected Species Observer would monitor the area during all construction activities.

Public Hearing- Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearing shall state with particularity the reasons for holding a public hearing.

Proposed Activity for Which a Permit is Required

Basic Project Purpose- The basic project purpose comprises the fundamental, essential, or irreducible purpose of the proposed project, and is used by the Corps to determine whether the applicant's project is water dependent (i.e., requires access or proximity to or siting within the special aquatic site to fulfill its basic purpose). Establishment of the basic project purpose is necessary only when the proposed activity would discharge dredged or fill material into a special aquatic site (e.g., wetlands, pool and riffle complex, mudflats, coral reefs). Because no fills are proposed within special aquatic sites, identification of the basic project purpose is not necessary. The basic project purpose for the proposed project is berthing for navigation and shipyard activities. The project **is** water dependent.

Overall Project Purpose- The overall project purpose serves as the basis for the Corps' 404(b)(1) alternatives analysis and is determined by further defining the basic project purpose in a manner that more specifically describes the applicant's goals for the project, and which allows a reasonable range of alternatives to be analyzed. The overall project purpose for the proposed project is to replace a deteriorating navigation and shipyard vessel berthing system at NASSCO shipyard, in San Diego Bay, in the city of San Diego, CA.

Additional Project Information

Baseline information- The existing bulkhead at Berths 7 and 8 is degraded and considered structurally insufficient to perform daily shipyard activities. The bulkhead is over 40 years old and shows excessive corrosion. Potholes in the asphalt near the pile cap at the west end of Berth 8 indicate holes in the sheet pile wall. The bulkhead and the wood fender system must be replaced before deformation or failure occurs. A corrosion protection system, which does not currently exist in this area, must be installed to preserve the improvements and prolong useful life. A new fender pile system will be installed outboard of the new bulkhead suitable for tug boats and skiffs.

Assessments of the bulkheads, which included diver inspections and sheet pile wall thickness measurements concluded that repairing the bulkhead was not economically viable. The steel sheet piling and associated support system has been weakened by loss of steel over the years due to excessive corrosion. The most practical solution to maintain the long-term security of Berths 7 and 8 is to a construct new bulkhead outside the existing bulkhead using a combination of steel piles and sheet piles with the wall system laterally restrained by a series of steel batter piles.

The existing bulkhead consists of a Sheet Pile Wall supported by a Waler and Tie Rod System that is considered structurally insufficient to perform daily shipyard activities. The bulkhead is over 40 years old and shows excessive corrosion. Potholes in the asphalt near the pile cap at the west end of Berth 8 indicate holes in the Sheet Pile. The Waler system has completely failed as well as the wood fender system. Figure 2 provides a photo of existing conditions at Berths 7 and 8.

Project description- The proposed project will allow the same shipyard activities to continue. The Project includes the construction of a new bulkhead outside of the existing bulkhead using a combination of 62 steel King Piles (HP14x117) and 379 linear feet of sheet pile (AZ26-700) (Figure 3). King piles would be installed using an impact hammer; sheet pile would be installed using crane placement and

subsequent impact hammering. The existing bulkhead would not be removed. The bulkhead would be laterally restrained by a series of 51 Batter Piles (HP14x89) (Figure 4), installed by impact hammer. The proposed bulkhead will extend 4' from the existing bulkhead to accommodate the Batter Pile network. A concrete cap would be installed to as the deck between the proposed and existing bulkheads, resulting in a net increase of approximately 1,600 square feet (sf) of deck space. The area between the proposed and existing bulkheads (void) will be backfilled with cementitious slurry using a tremie pipe. The tremie pipe will be placed through a hole in the cement cap/deck and will pour slurry at the bottom of the void. As the void fills with slurry, displaced seawater will be pumped out to NASSCO's onsite wastewater treatment facility, where the water would be treated and disposed to the City of San Diego's sewage system. The newly installed sheet pile would be sufficiently water tight; no slurry is anticipated to be lost in the bay, and bay water (from outside the proposed bulkhead) would not come into contact with the cementitious slurry or hardened product. The project will result in approximately 1,600 sf of fill in San Diego Bay (see attached drawings).

Table 1 provides a matrix of materials to be installed and method of installation.

Table 1. Proposed materials, area, and installation methods.

Material	Purpose	Count	Total Area/Linear Footage	Installation Depth	Method of Installation
Sheet Pile (AZ26-700)	New bulkhead	NA	379 linear feet	Extends 3 ft into seafloor	Crane placement and Impact Hammer
King Piles (HP14x117)	New bulkhead	62	14.81 sf*	-50 ft MLLW	Impact Hammer
Batter Piles (HP14x89)	Bulkhead support	51	9.24 sf*	-75 ft MLLW	Impact Hammer
Cementitious Slurry	Bulkhead support	NA	1,600 sf (0.03673 acres)	NA	Cement truck / Tremie pipe
Fender Piles (HP12x84)	Fender system	45	7.6875 sf	-20 ft MLLW	Vibratory Hammer

Note:
*The total area of fill will be approximately 1,600 sf, which encompasses the area of the proposed King Piles and Batter Piles.

To accommodate the proposed bulkhead installation, all structures, equipment and fixtures 20' inboard of the existing bulkhead must be removed. This includes all mechanical piping and electrical infrastructure; no structures will be removed.

On the perimeter of the new bulkhead, a new fender pile system would be installed to replace the failed wood fender system to accommodate tug boats and skiffs. Diver inspections and assessments done by the applicant indicate that replacing the current bulkhead in a like-for-like manner is not a viable option. Fill is required to stabilize the proposed bulkhead, as per the engineering specifications. This will consist of 837 cy of cementitious slurry in the 4-ft void between the existing and proposed bulkhead using a tremie pipe. The tremie pipe will be placed through a hole in the cement cap/deck and will pour slurry at the bottom of the void. As the void fills with slurry, displaced seawater will be pumped out to NASSCO's onsite wastewater treatment facility, where the water would be treated and disposed to the City of San Diego's sewage system. There is no removal of any kind (spoil or otherwise), only fill using

the cementitious slurry will be conducted.

Proposed Mitigation– The proposed mitigation may change as a result of comments received in response to this public notice, the applicant's response to those comments, and/or the need for the project to comply with the 404(b)(1) Guidelines. In consideration of the above, the proposed mitigation sequence (avoidance/minimization/compensation), as applied to the proposed project is summarized below:

Avoidance: The proposed project is largely a bulkhead replacement action that involves a minor amount of new cementitious fill for the new bulkhead that does not trigger the Inland Testing Manual or other onsite or offsite avoidance alternatives or actions.

Best Management Practices (BMPs): The applicant proposes the following BMPs that shall be used to minimize any potential impacts to the waters of the US:

- A Protected Species Observer (PSO) would monitor the area during all construction activities to monitor turbidity and other effects.
- A silt curtain will be deployed around the project area prior to pile installation activities (reduces and contains temporary increases in turbidity that may result from construction activity).
- Anchors will be "flown" to locations and recovered vertically (reduces bay bottom resuspension).
- Anchors will be lowered and recovered slowly (reduces bay bottom resuspension).
- Barge spuds will be slowly recovered during barge movement (reduces bay bottom resuspension).
- On-board refueling will be minimized and will be from an existing 500-gallon tank and close-by avenues with containment curbs, to minimize any oil spill potential.
- During refueling, sorbet material will be placed under the receiving tank to minimize any oil drips or spills.
- Total on-board fuel consists of 790 gallons of diesel and on-board spill response equipment consists of three 55-gallon drum oil spill kits that contain sorbet pads and a deployable containment boom, sufficient to recover large spills.
- Work will only be performed during daylight hours to increase safety and allow unobstructed conditions for visual observers.
- All materials will be stored utilizing BMPs, such as tarping, which will be utilized in the event of inclement weather.
- NASSCO employs a fully closed stormwater diversion system. Potential runoff from the NASSCO facility is captured, treated, and disposed of in the City of San Diego’s sewage system.

Compensation: The project shall have 1,600 square ft. of permanent net loss fill impacts at depths from -20 ft. MLLW to -50 ft. MLLW from the cementitious fill and new bulkhead. The fill next to the bulkhead will occur within un-vegetated substrate which is too deep for eelgrass and there are no wetlands. There are nearby eelgrass beds which are not in the direct impact area. If eelgrass impacts do occur then the Corps will require that any eelgrass mitigation will comply with the California Eelgrass Mitigation Policy (CEMP). The applicant is to meet with the Port and the Corps and relevant agencies on August 7, 2019 and mitigation options may be discussed such as the creation of fish habitat onsite, removal of offsite structures with functional enhancement, or other mitigation sites with eelgrass or wetlands mitigation opportunities.

Proposed Special Conditions

The following list is comprised of proposed Permit Special Conditions, which are required of similar types of projects: No special conditions are proposed at this time.

For additional information please call Robert Smith of my staff at (760) 602-4831 or via e-mail at Robert.R.Smith@usace.army.mil. This public notice is issued by the Chief, Regulatory Division.

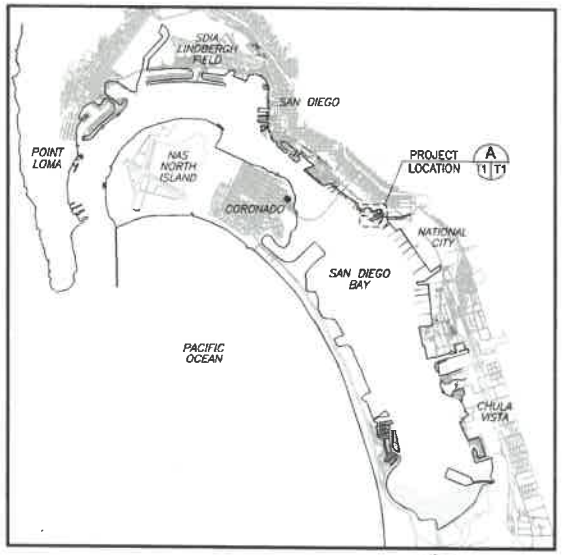
Regulatory Program Goals:

- To provide strong protection of the nation's aquatic environment, including wetlands.
- To ensure the Corps provides the regulated public with fair and reasonable decisions.
- To enhance the efficiency of the Corps' administration of its regulatory program.

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
Carlsbad Field Office
5900 La Place Ct., Suite 100
Carlsbad, CA 92008
WWW.SPL.USACE.ARMY.MIL/MISSIONS/REGULATORY

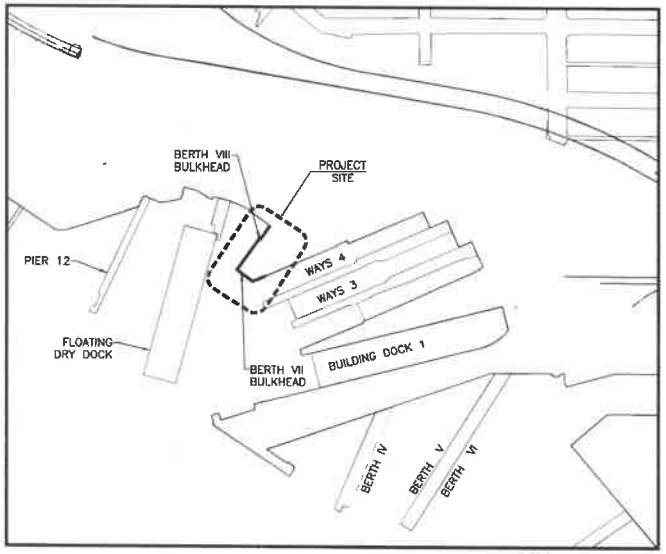
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

GENERAL DYNAMICS - NASSCO FACILITY
SAN DIEGO, CA.



VICINITY MAP
SCALE: 1" = 6,000'

NORTH



A T1 | T1 LOCATION MAP
SCALE: 1" = 300'

NORTH

SHEET INDEX

DETAIL KEY

SHEET WHERE DETAIL IS REFERENCED FROM:
A DASH (–) INDICATES THE DETAIL IS REFERENCED ON THE SAME SHEET, FROM MORE THAN ONE SHEET OR NOT REFERENCED.

A S3|S4 — DETAIL LETTER —— A/4 — SHEET WHERE DETAIL APPEARS

GENERAL DYNAMICS NASSCO
GENERAL DYNAMICS / National Steel & Shipbuilding Company
2798 Harbor Drive
San Diego, Ca. 92113
Ph: (619) 544-3400

APPROVED:

DATE:

REVISIONS			
NO.	DESCRIPTION	BY	DATE
1	60% DRAWINGS FOR REVIEW	JVP	08/10/18

TRITON ENGINEERS
Civil Structural & Waterfront

DRAWN: T. GILLUM DATE: 07/24/18
DESIGN: J. PERRONE DATE: 07/14/18
CHECKED: T. GILLUM DATE: 08/03/18

TITLE:
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

PROJECT TITLE SHEET

SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2892	T1	

GENERAL

1. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS BEFORE STARTING WORK AND NOTIFY NASSCO OF ANY DISCREPANCIES.
2. ELEVATIONS ARE EXPRESSED IN FEET AND ARE REFERENCED TO MEAN LOWER LOW WATER (MLLW), UNLESS OTHERWISE INDICATED.
3. THE CONTRACTOR SHALL OPERATE, HANDLE AND MANEUVER ALL WATERCRAFT IN A SAFE MANNER IN AND AROUND THE EXISTING PIERS AND BULKHEAD. THE CONTRACTOR SHALL PROVIDE ANCHORAGE FOR FLOATING EQUIPMENT SUBJECT TO APPROVAL OF NASSCO.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING UTILITIES IN THE WORK AREA AND SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES AT HIS OWN COST.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING ANY MONUMENTS OR BENCH MARKS THAT ARE DAMAGED, DISTURBED OR DISPLACED DURING THE PERFORMANCE OF CONSTRUCTION WORKS. THE ESTABLISHMENT OF ANY NEW SURVEY MARKS OR THE REINSTATEMENT OF EXISTING MARKS SHALL BE UNDERTAKEN BY A REGISTERED CIVIL ENGINEER WHO IS QUALIFIED TO PRACTICE SURVEYING OR A LICENSED LAND SURVEYOR AND A RECORD OF SURVEY FILED AS REQUIRED BY THE LAND SURVEYOR'S ACT.

SAFETY REQUIREMENTS

1. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS.
2. FOR OCCUPATIONAL SAFETY AND HEALTH ACT REQUIREMENTS (CAL/OSHA), DURING THE ENTIRE CONSTRUCTION PERIOD, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN CONDITIONS AT THE PROJECT SITE SO AS TO MEET IN ALL RESPECTS, THE REQUIREMENTS OF THE CAL/OSHA. THIS PROVISION SHALL COVER THE CONTRACTOR'S EMPLOYEES AND ALL OTHER PERSONS WORKING AT OR VISITING THE SITE.

SPECIFICATIONS

AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, ANSI/AISC 360, LATEST.
AWS	STRUCTURAL WELDING CODE – STEEL, ANSI/AWS D1.1, LATEST.
MOTEMS	MARINE OIL TERMINAL ENGINEERING AND MAINTENANCE STANDARDS, CHAPTER 31F: MARINE OIL TERMINALS, CALIFORNIA BUILDING CODE, LATEST.

REFERENCES

GEOTECHNICAL GEOTECHNICAL DESIGN INPUT SHEET PILE BULKHEAD GENERAL DYNAMICS – NASSCO BERTHS 7 & 8, SAN DIEGO, CALIFORNIA PREPARED BY TERRACOSTA CONSULTING GROUP, JULY 19,2018.

STEEL SHEET PILE

1. STEEL SHALL CONFORM TO ASTM A572 GRADE 50 OR HIGHER STANDARD.
2. STEEL SHEET PILING FOR BULKHEAD SHALL BE HEAVY GAGE, STEEL CONFORMING TO AZ26-700
3. THE INTERLOCK SHALL BE FREE SLIDING AND ALLOW A SWING ANGLE OF AT LEAST 5 DEGREES WHEN THREADED AND SHALL MAINTAIN CONTINUOUS INTERLOCK WHEN INSTALLED.
4. BOTH SIDES AND ALL EDGES OF STEEL SHEET PILES SHALL BE COATED WITH A MINIMUM OF 16 MILS THICKNESS OF A SELF PRIMING HIGH-SOLIDS EPOXY COATING TO THE LIMITS SHOWN ON THE DRAWINGS. APPROVED PRODUCTS ARE AMERLOCK 400 PRODUCED BY AMERON COATINGS AND TARGUARD COAL TAR EPOXY PRODUCED BY SHERWIN WILLIAMS. AN EQUIVALENT ALTERNATIVE PRODUCT MAY BE USED WITH THE APPROVAL OF THE ENGINEER. THE EXTENT OF COATING SHALL BE AS SHOWN ON THE DRAWINGS. STEEL PREPARATION AND COATING APPLICATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS.

GRADING

1. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE NECESSARY PROVISIONS, INCLUDING THE ENGAGEMENT OF A QUALIFIED SOILS ENGINEER TO ENSURE THAT THE REQUIRED STANDARDS FOR SOIL QUALITY AND COMPACTION MEET THE REQUIREMENTS OF THE SPECIFICATIONS. THE QUALITY OF THE GRADING AND SOILS COMPACTION EFFORT MAY BE OBSERVED AND MONITORED BY NASSCO APPOINTED SOILS ENGINEER AT ANY TIME DURING THE CONSTRUCTION OF THE WORKS.
2. ALL AREAS TO BE FILLED SHALL BE CLEARED OF ALL DEBRIS AND PREPARED IN ACCORDANCE WITH REQUIREMENTS AND PROVISIONS OF THE DRAWINGS AND ANY SPECIFIC REQUIREMENTS SET OUT IN NASSCO'S SCOPE OF WORK.

STRUCTURAL STEEL

1. ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (LATEST EDITION).
5. STRUCTURAL WELDING: ALL STRUCTURAL STEEL WELDING SHALL BE IN ACCORDANCE WITH THE LATEST AWS D1.1. WELDING PROCEDURE SPECIFICATIONS (WPS) APPROVED BY THE ENGINEER AND WELDER QUALIFICATIONS SHALL BE AVAILABLE ON THE JOB SITE FOR REVIEW BY THE INSPECTOR.
6. MATERIAL SHALL CONFORM TO THE FOLLOWING:

COMBI-WALL AND SHEET PILES	ASTM A572 GRADE 50
BENT PLATES	ASTM A572 GRADE 50
ANGLES	ASTM A36
PLATE	ASTM A572 GRADE 50
NUTS (SPHERICAL)	ASTM A536
NUTS (JAM)	ASTM A29 AND ASTM C1045
WASHERS:	ASTM F436
POST-INSTALLED ANCHORS	ASTM F1554 GRADE 105, GALVANIZED
SHEAR STUDS	NELSON S3L SHEAR, ASTM A108, GALVANIZED
WELDS	E70X PER AWS D1.1

REINFORCED CONCRETE

1. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI 301, UNLESS OTHERWISE INDICATED.
2. ALL DETAILING, FABRICATION, AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315 AND ACI 301.
3. THE MINIMUM 28-DAY COMPRESSIVE STRENGTH (f'c) AND MAXIMUM SLUMP FOR CONCRETE ELEMENTS SHALL BE AS FOLLOWS:

ELEMENT	f'c (psi)	MAX., SLUMP (INCHES)
CAST-IN-PLACE CONCRETE	4,000	4*

*** PRIOR TO ADDITION OF HIGH RANGE WATER – REDUCING ADMIXTURE MAXIMUM WATER/CEMENT RATIO BY WEIGHT SHALL BE 0.40. CEMENT SHALL BE TYPE II CONFORMING TO ASTM C-150.

4. ADMIXTURES CONTAINING MORE THAN TRACE AMOUNTS OF CHLORIDES SHALL NOT BE USED WITHOUT PRIOR APPROVAL OF THE ENGINEER.
5. CONCRETE COVER FOR REINFORCING STEEL SHALL BE 3 INCHES UNLESS OTHERWISE INDICATED.
6. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CORNERS.
7. CONSTRUCTION JOINTS SHALL BE ADEQUATELY KEYED. THEIR LOCATION AND DETAILS, WHEN NOT SHOWN ON THE PLANS, SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
8. ALL CONSTRUCTION JOINTS SHALL BE CLEANED BY WATER BLAST OR ABRASIVE BLAST METHODS BEFORE PLACING CONCRETE.

REINFORCING STEEL

1. BAR REINFORCEMENT SHALL CONFORM TO ASTM A615, GRADE 60.
2. SPLICES IN REINFORCEMENT SHALL BE IN ACCORDANCE WITH CHAPTER 12 OF ACI 318 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
3. BAR SUPPORTS SHALL BE PROVIDED AS RECOMMENDED IN CHAPTER 3 OF THE 28TH EDITION OF THE MANUAL OF STANDARD PRACTICE OF THE CONCRETE REINFORCING STEEL INSTITUTE.
4. REINFORCING STEEL DETAILING, BENDING AND PLACING SHALL BE IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE" 28TH EDITION.
5. ALL REINFORCING STEEL SHALL BE SECURELY TIED IN PLACE BEFORE PLACING CONCRETE.
6. WELDING OF REINFORCING STEEL WITHOUT PRIOR APPROVAL OF THE ENGINEER SHALL NOT BE PERMITTED.

DRILLED AND EPOXY ANCHOR BOLTS

1. MINIMUM BOLT DIAMETER SHALL BE 1 INCH. MINIMUM EMBEDMENT OF BOLTS SHALL BE 10".
2. ANCHOR SYSTEM FOR EMBEDDED BOLTS SHALL CONSIST OF TWO COMPONENT EPOXY RESIN COMPLYING WITH ASTM C881, TYPE V, GRADE 2, CLASS C. INSTALLATION SHALL COMPLY WITH RESIN MANUFACTURER'S RECOMMENDATION. MINIMUM HOLE DIAMETER SHALL BE 1/8" GREATER THAN BOLT DIAMETER AND MAY BE FORMED BY CORING OR DRILLING.

DESIGN LOADS

1. DEAD LOAD (D):
   WEIGHT OF STRUCTURE AND ALL PERMANENTLY ATTACHED COMPONENTS
   UNIT WEIGHT OF STEEL: 490 PCF
2. EARTH AND HYDROSTATIC PRESSURE (H):
   EARTH PRESSURES INCLUDE THE STATIC AND DYNAMIC EFFECTS OF THE RETAINED SOILS AS WELL AS THE PASSIVE RESISTANCE OF THE SOILS BELOW THE DREDGE LINE. EARTH PRESSURES ARE BASED ON SITE SPECIFIC GEOTECHNICAL DATA SUMMARIZED IN THE GEOTECHNICAL DESAIGN INPUT BY TERRACOSTA CONSULTING GROUP.
3. SURCHARGE LOAD OF 400 LBS/SF BEHIND THE BULKHEADS.
4. HYDROSTATIC AND HYDRODYNAMIC PRESSURES SHALL BE TAKEN INTO ACCOUNT.
   UNIT WEIGHT OF WATER: 64 PCF
   WATER ELEVATION:

MHHW (MEAN HIGHER HIGH WATER)	+ 5.72 FT
MSL (MEAN SEA LEVEL)	+ 2.94 FT
MLLW (MEAN LOWER LOW WATER)	+ 0.00 FT

5. EARTHQUAKE LOAD (E): FULL RESPONSE SPECTRA OF THE MOTEMS EARTHQUAKE EVENTS ARE PROVIDED IN THE GEOTECHNICAL INVESTIGATION REPORT BY TERRACOSTA CONSULTING GROUP.

DESIGN CRITERIA

1. THE BULKHEAD WALL IS DESIGNED FOR THE FOLLOWING LRFD LOAD COMBINATIONS AND FACTORS PER MOTEMS:

MOTEMS EARTHQUAKE EVENT	LEVEL 1	
PROBABILITY EXCEEDANCE IN 50 YRS	50%	
PEAK ACCELERATION (PGA)	0.077 g	

COMBINATION NAME	STATIC	
EARTH AND HYDROSTATIC PRESSURE (H)	1.6	
EARTHQUAKE LOAD (E)	0.0	

2. THE BULKHEAD WALL IS DESIGNED FOR THE FOLLOWING DEFLECTION CRITERIA:
   STATIC COMBINATION: L / 240
   SEISMIC COMBINATION: L / 180
   WHERE L IS THE SPAN LENGTH FOR ANCHORED WALLS.
3. GENERAL PERFORMANCE OBJECTIVE IS TO PROVIDE A DESIGN LIFE OF 50 YEARS.
4. SEISMIC PERFORMANCE OBJECTIVES:

EARTHQUAKE LEVEL	PERFORMANCE OBJECTIVE
1	GROUND MOTIONS AT THIS LEVEL ARE ESTABLISHED ON A 50% PROBABILITY OF EXCEEDANCE IN 50 YEARS. ONLY MINOR REPAIRABLE DAMAGE TO RETAINING STRUCTURE

ENVIRONMENTAL

1. INSTALLATION OF SHEET PILES BY THE USE OF IMPACT HAMMER AND/OR JETTING MAY NOT BE PERMITTED DURING THE LEAST TERN NESTING SEASON WHICH COVERS THE PERIOD APRIL 1 TO SEPTEMBER 15 AS STATED IN THE PROJECT ARMY CORP PERMIT. THE CONTRACTOR SHALL COORDINATE WITH NASSCO TO ESTABLISH AND AGREE ANY RESTRICTIONS PRIOR TO COMMENCEMENT OF WORK. ALL CONDITIONS AND REQUIREMENTS OF THE PROJECT PERMITS SHALL BE STRICTLY ADHERED TO.

SPECIAL INSPECTION

1. CONCRETE: DURING THE TAKING OF TEST SPECIMENS AND PLACING OF REINFORCED CONCRETE.
2. BOLTS EMBEDDED IN CONCRETE: PRIOR TO AND DURING PLACEMENT OF CONCRETE AROUND BOLTS.
3. REINFORCING STEEL: DURING PLACING OF REINFORCING STEEL.
4. PILING: DURING DRIVING.

CONSTRUCTION

1. ALL WORK SHALL CONFORM TO ALL LOCAL BUILDING CODES AND ORDINANCES.
2. COMBI-WALL AND SHEET PILE SYSTEM LAID OUT USING SKYLINE STEEL SECTIONS. DEVIATIONS FROM THIS BULKHEAD WALL LAYOUT SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.
3. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION LOADS REQUIRED TO PRODUCE THE FINAL STRUCTURE SHOWN ON THESE DRAWINGS. STRUCTURE IS DESIGNED FOR FINAL IN-SERVICE LOAD CONDITIONS SHOWN ON THESE DRAWINGS.
4. CONTRACTOR SHALL SUBMIT DETAILED DESCRIPTION OF BULKHEAD WALL INSTALLATION PROCEDURES AND EQUIPMENT FOR THE ENGINEER'S APPROVAL.
5. CONTRACTOR SHALL SUBMIT A WEAP DRIVABILITY/INSTALLATION ANALYSIS CONFIRMING MEANS AND METHODS TO PRODUCE COMBI-WALL AND SHEET PILES TO ELEVATIONS SHOWN ON THE PLANS WITHOUT DAMAGE TO THE INTERLOCKS AND ADJACENT STRUCTURES.
6. CONTRACTOR SHALL SUBMIT PLAN FOR THE DRIVING TEMPLATE.
7. REVIEWS SHALL BE SUBMITTED AT LEAST 30 WORKING DAYS PRIOR TO START OF FIELD OPERATIONS. REVIEWS DO NOT RELIEVE CONTRACTOR FOR COMPLIANCE WITH PLANS AND SPECIFICATIONS.

SURVEY DATA

BENCHMARK:
THE BENCHMARK FOR THIS PROJECT IS

PAINTED AND MARKED WITH ELEVATION ELEVATION = FEET MLLW

BASIS OF COORDINATES:
THE BASIS OF COORDINATES FOR THIS PROJECT IS US COAST GUARD
DIFFERENTIAL GPS CORRECTIONS TRANSMITTED FROM STATION ID 262 AT POINT LOMA

SURVEY POSITIONING

GEODETIC DATA:

DATUM:
PROJECTION:
UNITS:
FALSE EASTING:
FALSE NORTHING:
STANDARD PARALLEL:
STANDARD PARALLEL:

BATHYMETRIC DATA
VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW)
TIDES: NOAA SAN DIEGO (BROADWAY PIER), CALIFORNIA
(ADJUSTED +0.37 FEET TO CLIENT DATUM)

ABBREVIATIONS - GENERAL

&	AND	MIN.	MINIMUM
@	AT	MLLW	MEAN LOWER LOW WATER
APPROX.	APPROXIMATE	(N)	NEW
ACI	AMERICAN CONCRETE INSTITUTE	NO., #	NUMBER
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NOM.	NOMINAL
		PCC	PORTLAND CEMENT CONCRETE
AWS	AMERICAN WELDING SOCIETY	PSF	POUNDS PER SQUARE FOOT
C	CENTERLINE	PL	PLATE
CLR.	CLEAR	REF.	REFERENCE
CONC.	CONCRETE	SDSR	SAN DIEGO SHIP REPAIR
CONT.	CONTINUOUS	SHT.	SHEET
DIA.	DIAMETER	SQ.	SQUARE
DWG.	DRAWING	SSPWC	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
EL.	ELEVATION		
EXIST. (E)	EXISTING	TYP.	TYPICAL
EQ.	EQUAL, EQUALLY	UNO	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	W.P.	WORK POINT
MAX.	MAXIMUM		

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1	60% DRAWINGS FOR REVIEW	JVP	08/10/18

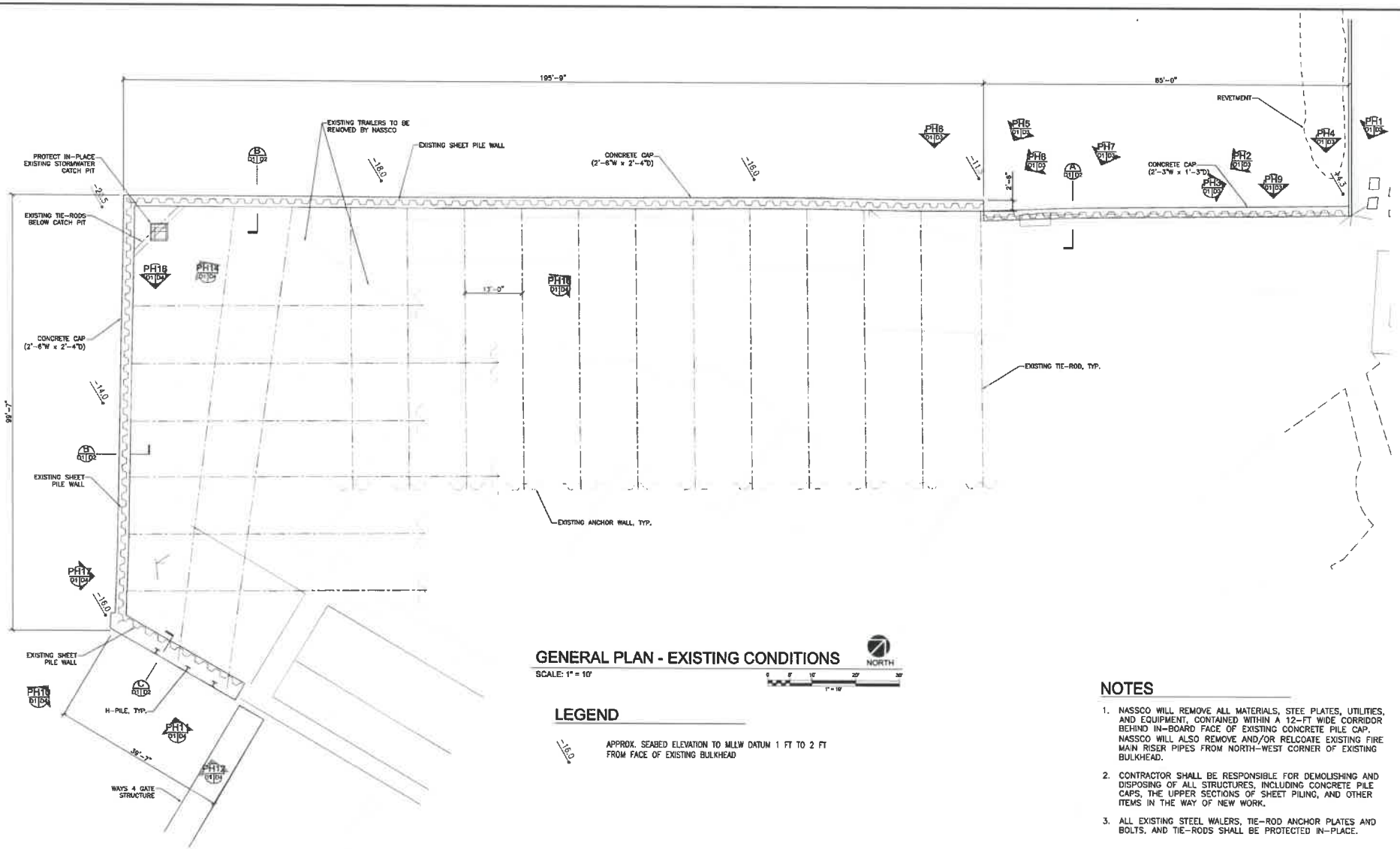
TRITTON ENGINEERS
Civil, Structural & Waterfront

DRAWN: T. GILLUM DATE: 07/24/18
DESIGN: J. PERRONE DATE: 07/14/18
CHECKED: T. GILLUM DATE: 08/03/18

TITLE:
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

GENERAL NOTES

SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2992	G1	



GENERAL PLAN - EXISTING CONDITIONS

SCALE: 1" = 10'

NORTH

0 5' 10' 20' 30'
1" = 10'

LEGEND

-16.0 APPROX. SEABED ELEVATION TO MLLW DATUM 1 FT TO 2 FT FROM FACE OF EXISTING BULKHEAD

NOTES

1. NASSCO WILL REMOVE ALL MATERIALS, STEE PLATES, UTILITIES, AND EQUIPMENT, CONTAINED WITHIN A 12-FT WIDE CORRIDOR BEHIND IN-BOARD FACE OF EXISTING CONCRETE PILE CAP. NASSCO WILL ALSO REMOVE AND/OR RELCOATE EXISTING FIRE MAIN RISER PIPES FROM NORTH-WEST CORNER OF EXISTING BULKHEAD.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR DEMOLISHING AND DISPOSING OF ALL STRUCTURES, INCLUDING CONCRETE PILE CAPS, THE UPPER SECTIONS OF SHEET PILING, AND OTHER ITEMS IN THE WAY OF NEW WORK.
3. ALL EXISTING STEEL WALERS, TIE-ROD ANCHOR PLATES AND BOLTS, AND TIE-RODS SHALL BE PROTECTED IN-PLACE.

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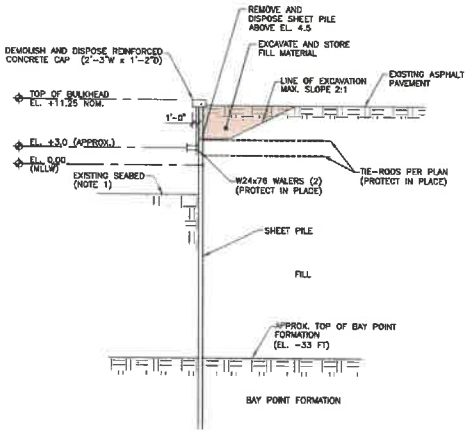
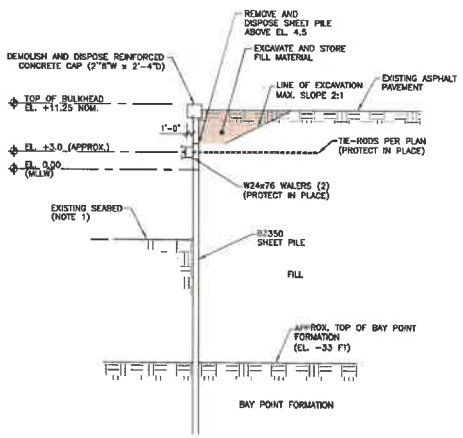
BULKHEAD DEMOLITION PLAN

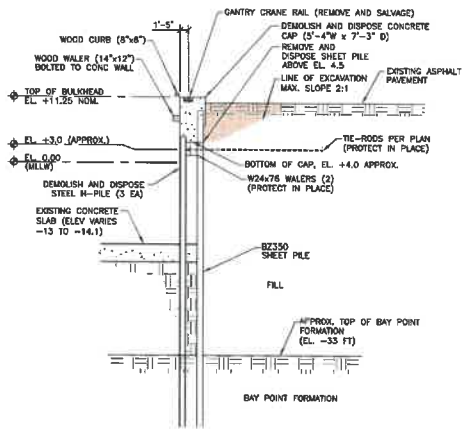
SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2692	D1	



A D1 D2 SECTION
SCALE: 1" = 10.0'



B D1 D2 SECTION
SCALE: 1" = 10.0'



C D1 D2 SECTION
SCALE: 1" = 10.0'

NOTES

1. EXISTING SEABED VARIES. REFER TO DRAWING D1 FOR APPROX. SPOT ELEVATIONS OF SEABED. ADDITIONAL INFORMATION ON SEABED ELEVATIONS ALONG BULKHEAD AND SURROUNDING LCOATIONS WILL BE PROVIDED BY NASSCO.

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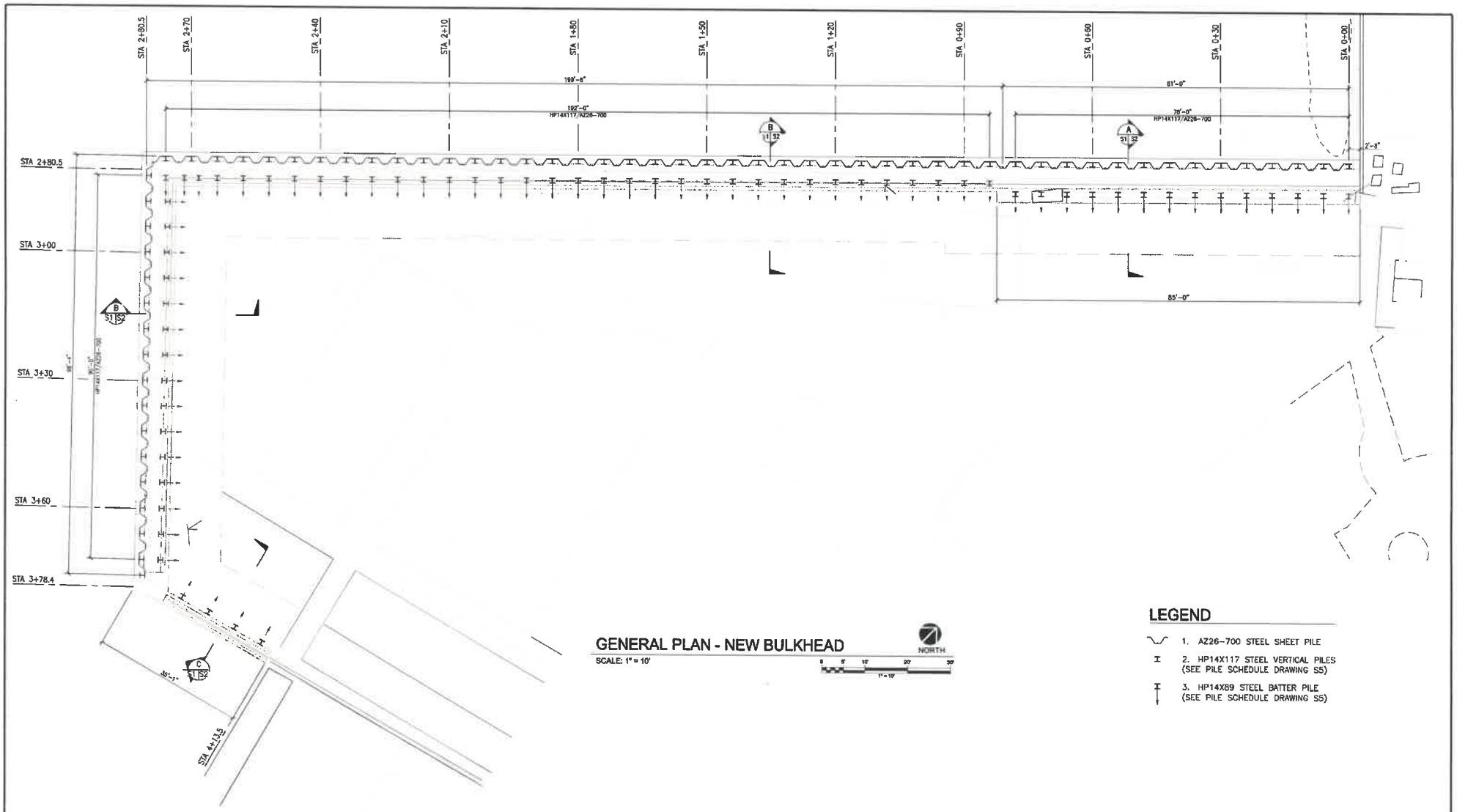
DEMOLITION SECTIONS

SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2892	D2	



GENERAL PLAN - NEW BULKHEAD

SCALE: 1" = 10'

NORTH

LEGEND

1. AZ26-700 STEEL SHEET PILE
2. HP14X117 STEEL VERTICAL PILES (SEE PILE SCHEDULE DRAWING S5)
3. HP14X89 STEEL BATTER PILE (SEE PILE SCHEDULE DRAWING S5)

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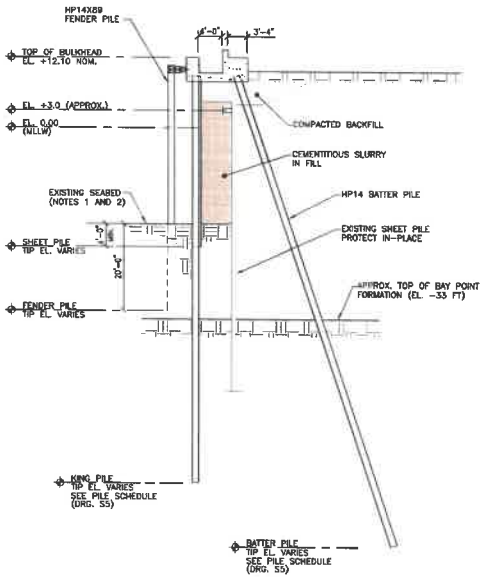
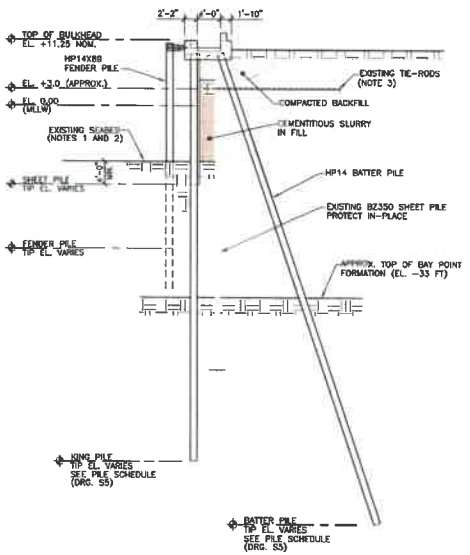
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

NEW BULKHEAD PLAN

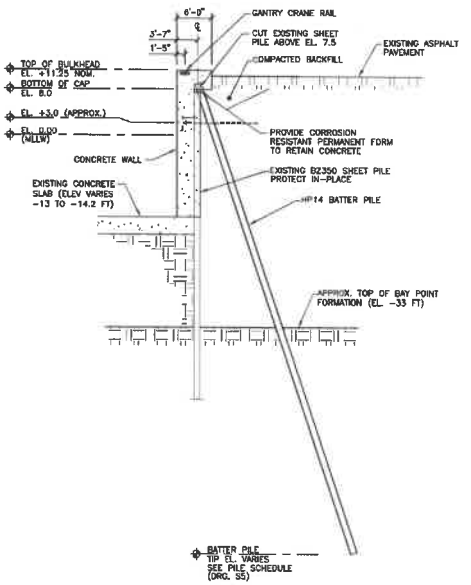
SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2692	S1	



A SECTION
SCALE: 1" = 10.0'



B SECTION
SCALE: 1" = 10.0'



C SECTION
SCALE: 1" = 10.0'

NOTES

1. THE SEA BED AND SUB-SEA BED MATERIALS CONSIST OF STONES AND ROCKS OF UNKNOWN SIZE AND SHAPE BASED ON THE DESCRIPTION OF BACKFILL MATERIAL PROVIDED ON THE ORIGINAL 1971 ENGINEERING DRAWINGS PREPARED BY FERVER ENGINEERING COMPANY. THE DRAWINGS SPECIFIED THE REMOVAL OF 'BAY MUD' ADJACENT AND SEAWARD OF THE PROPOSED BULKHEAD TO A DEPTH OF APPROX. -33 FT. THE BACKFILL MATERIAL, DESCRIBED AS 'REVETMENT' WAS SPECIFIED TO BE PLACED TO A FINISHED ELEVATION OF -14 FT, WITH A 5 FT WIDE BENCH REQUIRED AT THE FACE OF THE BULKHEAD. AVAILBLE BATHYMETRY AND RECENT SOUNDINGS INDICATE THAT THE SEA BED ALONG THE PROPOSED COMBI-WALL IS LOWER THAN -14 FT BY SEVERAL FEET. DIVER OBSERVATIONS IN RECENT YEARS HAVE REVEALED THE PRESENCE OF SEDIMENTS AT THE SURFACE BUT THE CONTRACTOR SHOULD ASSUME THAT STONES AND ROCKS EXIST TO AN UNKNOWN DEPTH BELOW THE VISIBLE SURFACE SEDIMENTS.

2. FOR THE NEW WORKS ON THE BAY SIDE OF THE PROPOSED BULKHEAD, WHICH INCLUDES THE INSTALLATION KING PILES AND SHEET PILES, THE CONTRACTOR SHALL EXPECT THAT THE UNDERLYING REVETMENT MATERIALS MAY RESTRICT OR OBSTRUCT PILE INSTALLATION ACTIVITIES. FOR THE SHEET PILES, CONTRACTOR SHOULD ASSUME THAT THE SEA BED WILL NEED TO BE EXCAVATED TO A DEPTH OF UP TO 4 FT TO ALLOW INSTALLATION OF THE SHEET PILES. FOLLOWING INSTALLATION OF THE SHEET PILES, THE SHEETS SHALL BE BACKFILLED ON THE BAYSIDE OF THE SHEETS TO RESTORE THE SEA BED TO THE ELEVATION THAT EXISTED PRIOR TO EXCAVATION. FOR THE KING PILE INSTALLATION, THE CONTRACTOR SHALL ALLOW FOR TIME AND EFFORT, INCLUDING EXCAVATION, PROBING, OR OTHER METHODS TO ALLOW INSTALLATION OF THE KING PILES TO THE EMBEDMENT DEPTH SPECIFIED ON THE DRAWINGS.

3. THE LAYOUT OF THE EXISTING TIE-RODS SHOWN ON THE DRAWINGS IS APPROXIMATE ONLY BASED ON INFORMATION PROVIDED ON THE ORIGINAL ENGINEERING DRAWINGS. THE CONTRACTOR SHALL DETERMINE ACTUAL TIE-ROD LOCATIONS AND ALIGNMENT BASED ON OBSERVATIONS AND FIELD MEASUREMENTS OF THE TIE-ROD ANCHOR ASSEMBLIES THAT ARE VISIBLE AT THE STEEL WALERS ALONG THE OUTSIDE OF THE EXISTING SHEET PILED BULKHEAD. THE TIE-RODS SHALL BE PROTECTED IN PLACE AS THESE ITEMS WILL CONTINUE TO PROVIDE STRUCTURAL SUPPORT TO THE EXISTING BULKHEAD UNTIL THE NEW BULKHEAD AND CONCRETE CAP ARE COMPLETED. BATTER PILES MAY NEED TO RE-POSITIONED OR THE ORIENTATION OF THE PILE ALIGNMENT ADJUSTED TO CLEAR THE TIE-RODS. BATTER PILES POSITION MAY BE ADJUSTED UP TO 6 INCHES IN ANY DIRECTION TO AVOID TIE-RODS. BATTER PILES MAY ALSO BE SKEWED IN PLAN UP TO A MAXIMUM OF 10 DEGREES IN ANY DIRECTION TO CLEAR TIE-RODS.

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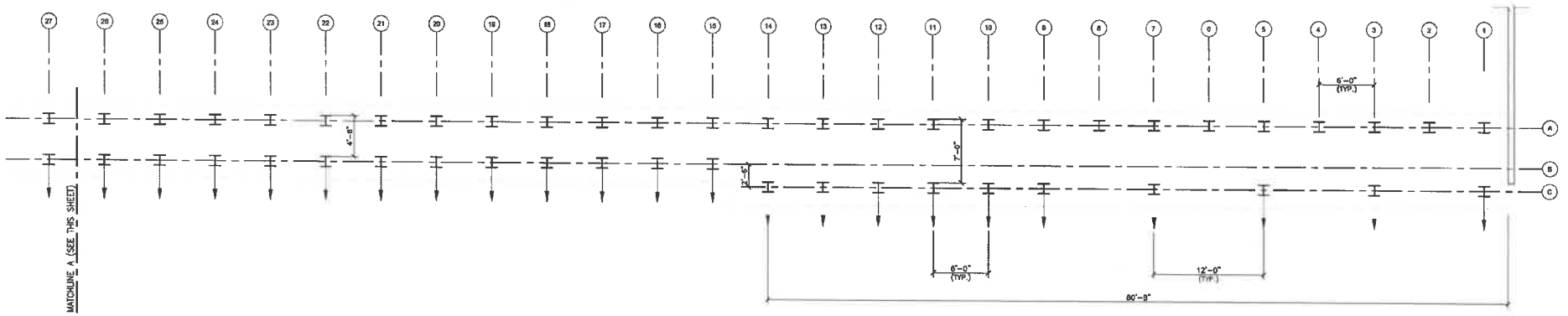
TRITON ENGINEERS

DRAWN: T. GILLUM DATE: 07/24/18
DESIGN: J. PERRONE DATE: 07/14/18
CHECKED: T. GILLUM DATE: 08/03/18

TITLE:
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

BULKHEAD SECTIONS

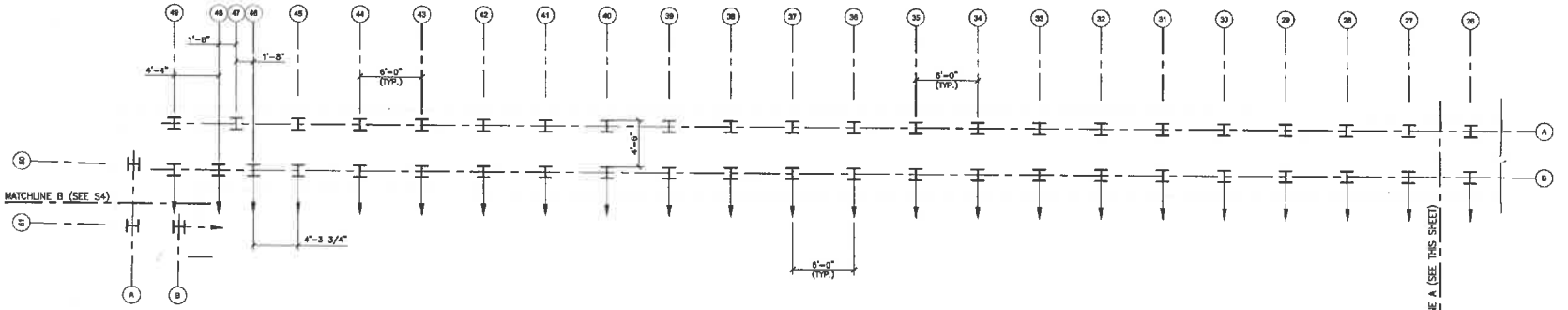
SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2692	S2	



PILE LAYOUT - BERTH VIII

NORTH

SCALE: 3/16" = 1'-0"



PILE LAYOUT - BERTH VIII

NORTH

SCALE: 3/16" = 1'-0"

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TRITON ENGINEERS

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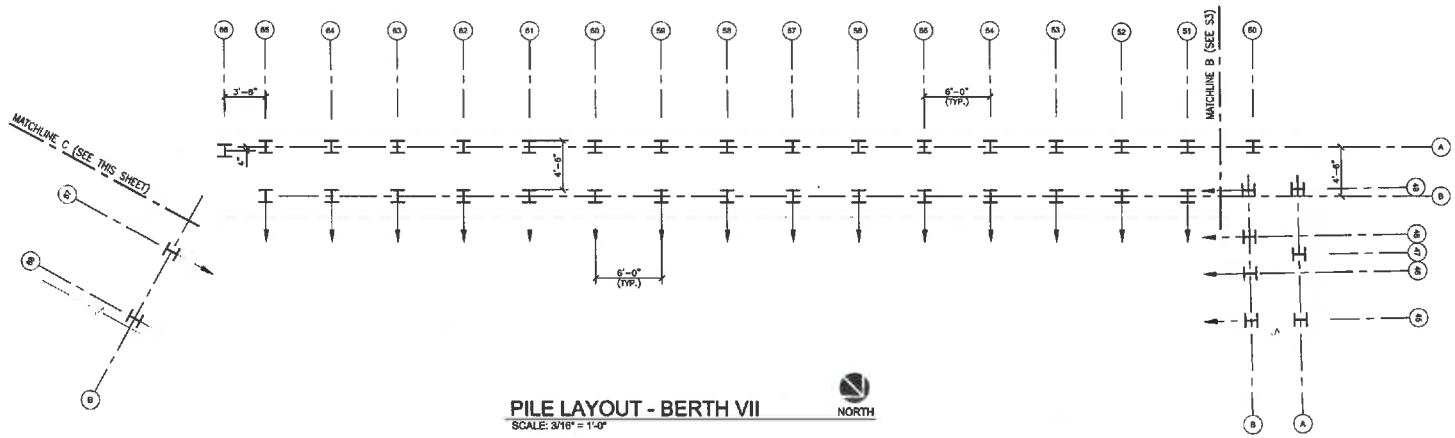
PILE LAYOUT - SHEET 1

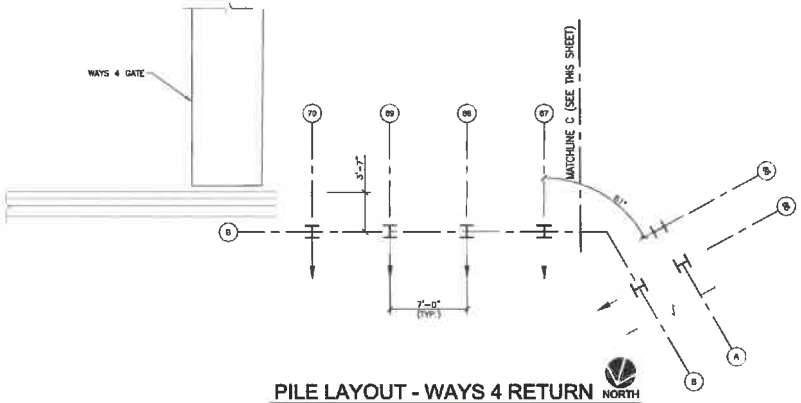
SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2692	S3	



PILE LAYOUT - BERTH VII

SCALE: 3/16" = 1'-0"

NORTH



PILE LAYOUT - WAYS 4 RETURN

SCALE: 3/16" = 1'-0"

NORTH

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TRITON ENGINEERS

DRAWN:	T. GILLUM	DATE: 07/24/18
DESIGN:	J. PERRONE	DATE: 07/14/18
CHECKED:	T. GILLUM	DATE: 08/03/18

TITLE:
BERTH VII & VIII BULKHEAD IMPROVEMENT PROJECT

PILE LAYOUT - SHEET 2

SCALE:	JOB NO.	DRAWING NO.	REV.
NOTED	18-2592	S4	