



PUBLIC NOTICE

Comment Period Begins: October 1, 2024

Comment Period Ends: October 31, 2024

File Number: NAE-2024-02025

In Reply Refer to: CT/RI Section, Regulatory Division

Phone: (800) 343-4789 or (800) 362-4367

Email: CENAE-R-PN-CTRI@usace.army.mil

The District Engineer, U.S. Army Corps of Engineers, New England District (USACE), has received a permit application, file number NAE-2024-02025, to conduct work in waters of the United States from Paul Harren, Electric Boat Corporation, 75 Eastern Point Road, Groton, CT. This work is proposed within the Thames River at 75 Eastern Point Road, Groton, CT, latitude 41.043703, longitude -73.5422202.

The work involves construction of two 54-foot-wide by 700-foot-long piers, filling approximately 0.9 acres of the Thames River as part of a reconfiguration to accommodate larger vessels, removal of rock via blasting, and mechanically dredging approximately 138,800 cubic yards of material over a total area of approximately 12.4 acres within the Thames River to a depths of -37 and -39 feet mean low water with 2 feet of allowable overdepth. The dredged material will be disposed at an upland disposal site.

The work is shown on the enclosed plans titled "PROPOSED SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS, GENERAL DYNAMICS ELECTRIC BOAT, 75 EASTERN POINT ROAD, GROTON, CT", on 12 sheets, and dated "May 17, 2024", with sheet 10 dated "June 28, 2024"; and "GENERAL DYNAMICS ELECTRIC BOAT, SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS, GROTON SHIPYARD, 75 EASTERN POINT ROAD, GROTON, CONNECTICUT 06390", on 40 sheets, and dated "May 31, 2024".

AUTHORITY

Permits are required pursuant to:

- ☒ Section 10 of the Rivers and Harbors Act of 1899
- ☒ Section 404 of the Clean Water Act
- ☐ Section 103 of the Marine Protection, Research and Sanctuaries Act
- ☒ Section 14 of the Rivers and Harbors Act of 1899 (33 USC 408)

The decision whether to issue a permit will be based on an evaluation of the probable impact 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 may reasonably accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered, including the cumulative effects thereof; among those are: conservation, economics, aesthetics, general environmental concerns, wetlands, cultural value, fish and wildlife values, flood hazards, flood plain value, 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.

The USACE 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. The USACE will consider all comments received 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.

Where the activity involves the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of disposing it in ocean waters, the evaluation of the impact of the activity in the public interest will also include application of the guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404(b) of the Clean Water Act, and/or Section 103 of the Marine Protection Research and Sanctuaries Act of 1972, as amended.

The activities proposed herein will also require permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a USACE federally authorized Civil Works project known as the New London Harbor Federal Navigation Project (FNP). The proposed alteration involves the following work within the New London FNP offset: The mechanical dredging of approximately 6,330 cubic yards of material from an area of approximately 96,507 square feet, the installation of two (2) 64 square foot mooring dolphins located approximately 47 feet and 92 feet away from the channel line, and 893 feet of security barrier anchored by mooring blocks. Approximately 10 cubic yards of material will be mechanically dredged from a 10,159 square foot area within the New London Harbor FNP channel limits. The proposed alteration is located within the New London Harbor FNP and FNP offset at 75 Eastern Point Road, Groton, Connecticut. A permit pursuant to Section 10/404 shall not be granted until the Section 408 permission is issued. Through this public notice, we are soliciting information necessary to inform the USACE evaluation and review.

ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires all federal agencies to consult with the National Marine Fisheries Service on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). Essential Fish Habitat describes waters and substrate necessary for fish for spawning, breeding, feeding or growth to maturity. This project will impact approximately 0.9 acres of EFH. This habitat consists of mud, silt, clay, and rock. Loss of this habitat may adversely affect species that use these waters and substrate. However, the District Engineer has made a preliminary determination that the site-specific adverse effect will not be substantial. Further consultation with the National Marine Fisheries Service regarding EFH conservation recommendations is being conducted and will be concluded prior to the final decision.

NATIONAL HISTORIC PRESERVATION ACT

Based on our initial review of the proposed project and coordination with the State Historic Preservation Officer and/or Tribal Historic Preservation Officer(s), no historic properties were identified within the permit area and the area of potential effects. Additional review and consultation to fulfill requirements under Section 106 of the National Historic Preservation Act of 1966, as amended, will be ongoing as part of the permit review process.

ENDANGERED SPECIES CONSULTATION

The USACE has reviewed the application for the potential impact on federally-listed threatened or endangered species and their designated critical habitat pursuant to section 7 of the Endangered Species Act (ESA) as amended. It is our preliminary determination that the proposed activity for which authorization is being sought is designed, situated or will be operated/used in such a manner that it is not likely to adversely affect a listed species or their critical habitat. We are coordinating with the National Marine Fisheries Service and/or U.S. Fish and Wildlife Service on listed species under their jurisdiction and the ESA consultation will be concluded prior to the final decision.

OTHER GOVERNMENT AUTHORIZATIONS

The states of Connecticut, Maine, Massachusetts, New Hampshire and Rhode Island have approved Coastal Zone Management Programs. Where applicable, the applicant states that any proposed activity will comply with and will be conducted in a manner that

is consistent with the approved Coastal Zone Management Program. By this public notice, we are requesting the state concurrence or objection to the applicant's consistency statement.

The following authorizations have been applied for, or have been, or will be obtained:

- ☒ Permit, license or assent from State
- ☐ Permit from local wetland agency or conservation commission.
- ☒ Water Quality Certification in accordance with Section 401 of the Clean Water Act

COMMENTS

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

Comments should be submitted in writing by the above date. If you have any questions, please contact the CT/RI Section, Regulatory Division, at CENAE-R-PN-CTRI@usace.army.mil, (800) 343-4789 or (800) 362-4367.

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider the application. Requests for a public hearing shall specifically state the reasons for holding a public hearing. The USACE holds public hearings for the purpose of obtaining public comments when that is the best means for understanding a wide variety of concerns from a diverse segment of the public.

CENAE-R
File No. NAE-2024-02025

The initial determinations made herein will be reviewed in light of facts submitted in response to this notice. Copies of letters of objection will be forwarded to the applicant who will normally be requested to contact objectors directly in an effort to reach an understanding.

THIS NOTICE IS NOT AN AUTHORIZATION TO DO ANY WORK.

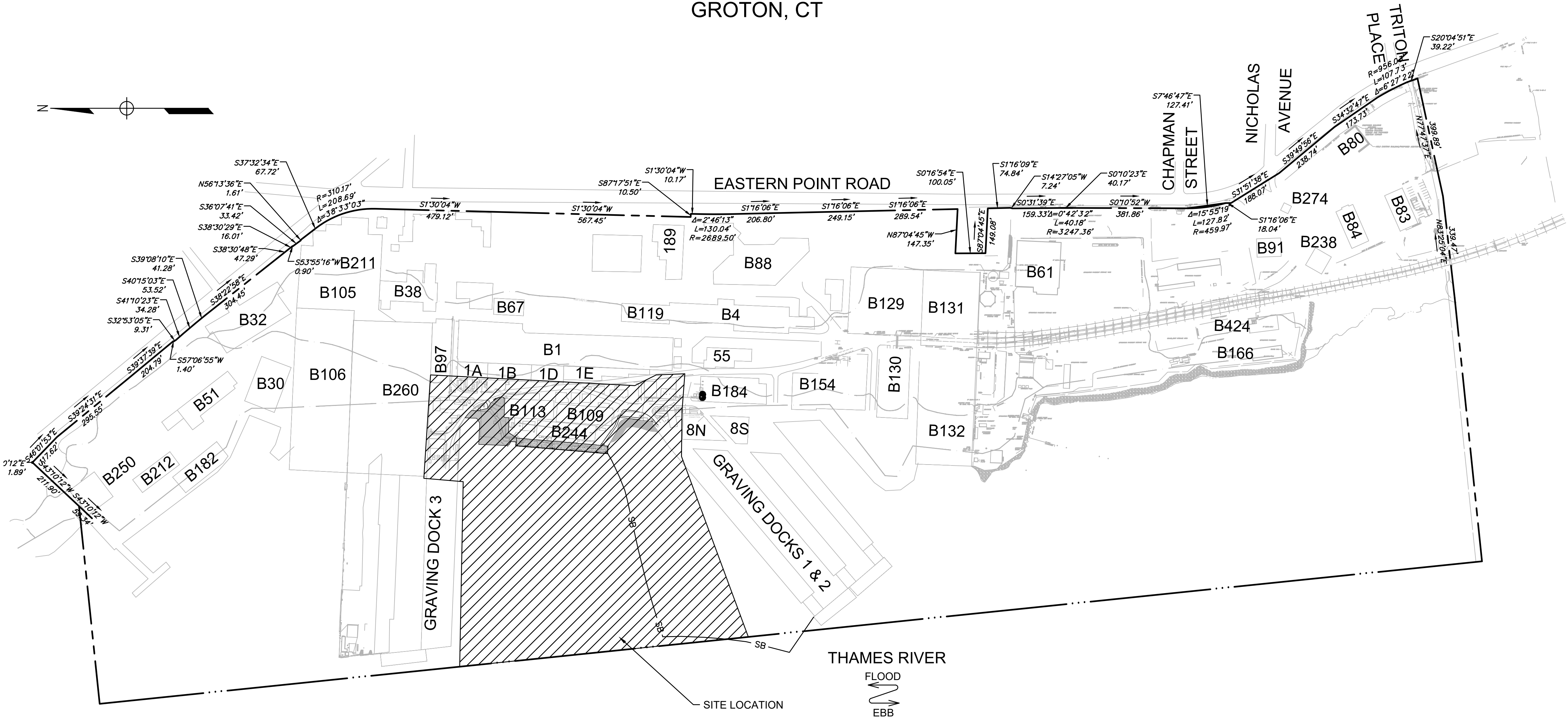
Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, CT/RI Section
Regulatory Division

Please contact Ms. Tina Chaisson at bettina.m.chaisson@usace.army.mil or (978) 318-8058 if you would like to be removed from our public notice mailing list.

PROPOSED SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS
GENERAL DYNAMICS ELECTRIC BOAT

75 EASTERN POINT ROAD
GROTON, CT



GENERAL NOTES

- TOPOGRAPHIC SURVEY WAS PERFORMED BY LOUREIRO ENGINEERING ASSOCIATES, INC. APRIL 2024.
- OVERALL SITE SURVEY IS GIS TOPOGRAPHY SUPPLEMENTED WITH FIELD RUN SURVEY.
- ELEVATIONS SHOWN ON THESE PLANS ARE ON ELECTRIC BOAT FACILITY DATUM (EBFD). EBFD IS NAVD 88 DATUM +2.63'.
- HYDROGRAPHIC SURVEY WAS PERFORMED BY FOTH AND DATED 3/30/2021 ON EBFD DATUM.
- EXISTING TOPOGRAPHIC AND BATHYMETRIC BASE MAPPING, OUTSIDE OF THE LIMITS OF FIELD RUN SURVEY AREAS, ARE APPROXIMATE AND BASED ON THE BEST AVAILABLE INFORMATION. THESE SOURCES INCLUDE, BUT ARE NOT LIMITED TO, HISTORICAL MAPS; RECORD DRAWINGS; PUBLICLY AVAILABLE TOPOGRAPHIC PRODUCTS.

DRAWING INDEX

NO.	DRAWING	SHEET TITLE
1 OF 12	G0-01	COVER SHEET
2 OF 12	C1-00	EXISTING CONDITIONS PLAN
3 OF 12	C1-01	PROPOSED CONDITIONS PLAN
4 OF 12	PS1-00	PIER SECTIONS PLAN
5 OF 12	PS1-01	PIER SECTIONS
6 OF 12	RI1-01	RIVER IMPACT SUMMARY
7 OF 12	DP1-01	DREDGING PLAN
8 OF 12	DS1-01	DREDGING SECTIONS
9 OF 12	DS1-02	DREDGING SECTIONS
10 OF 12	SWM1-01	STORMWATER MANAGEMENT PLAN
11 OF 12	ES1-01	EROSION & SEDIMENT CONTROL PLAN
12 OF 12	CS-01	SITE DETAILS

REVISIONS

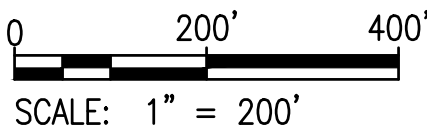
CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION



Whitman, Requardt & Associates, LLP
801 South Caroline Street, Baltimore, Maryland 21231

COVER SHEET

DRAWING NO.

G0-01

SCALE: AS SHOWN

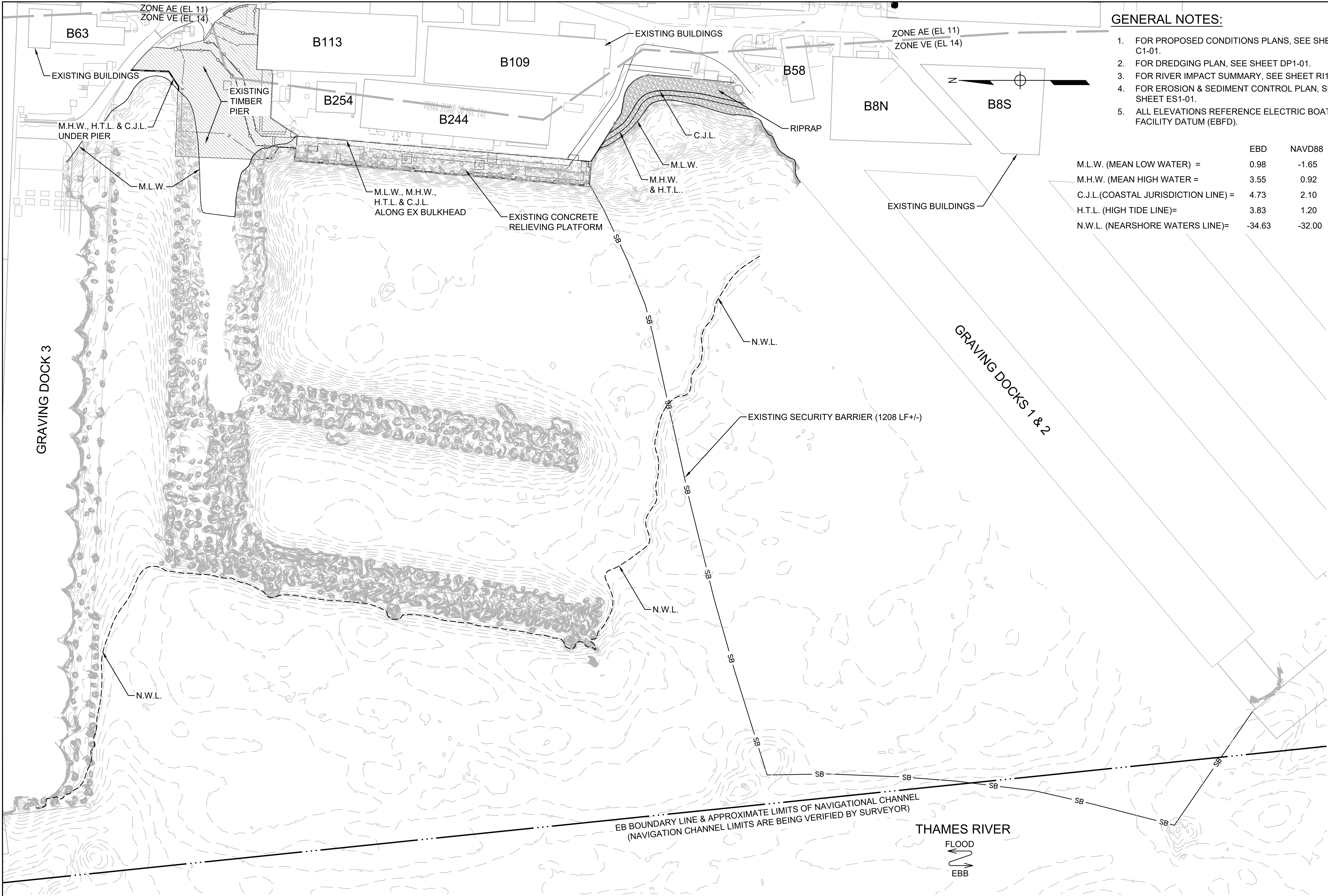
DATE: MAY 17, 2024

SHEET 1 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



GENERAL NOTES:

- 1. FOR PROPOSED CONDITIONS PLANS, SEE SHEET C1-01.
- 2. FOR DREDGING PLAN, SEE SHEET DP1-01.
- 3. FOR RIVER IMPACT SUMMARY, SEE SHEET R11-01.
- 4. FOR EROSION & SEDIMENT CONTROL PLAN, SEE SHEET ES1-01.
- 5. ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

	EBD	NAVD88
M.L.W. (MEAN LOW WATER) =	0.98	-1.65
M.H.W. (MEAN HIGH WATER) =	3.55	0.92
C.J.L.(COASTAL JURISDICTION LINE) =	4.73	2.10
H.T.L. (HIGH TIDE LINE)=	3.83	1.20
N.W.L. (NEARSHORE WATERS LINE)=	-34.63	-32.00

GRAVING DOCK 3

GRAVING DOCKS 1 & 2

EB BOUNDARY LINE & APPROXIMATE LIMITS OF NAVIGATIONAL CHANNEL
(NAVIGATION CHANNEL LIMITS ARE BEING VERIFIED BY SURVEYOR)

THAMES RIVER

FLOOD
EBB

PLAN VIEW
SCALE: 1" = 50'

DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

REVISIONS

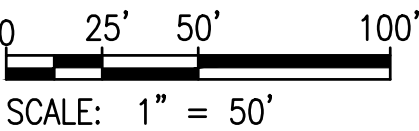
CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



SIGNATURE

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Whitman, Requardt & Associates, LLP
801 South Caroline Street, Baltimore, Maryland 21231

EXISTING CONDITIONS PLAN

DRAWING NO.

C1-00

SCALE: AS SHOWN

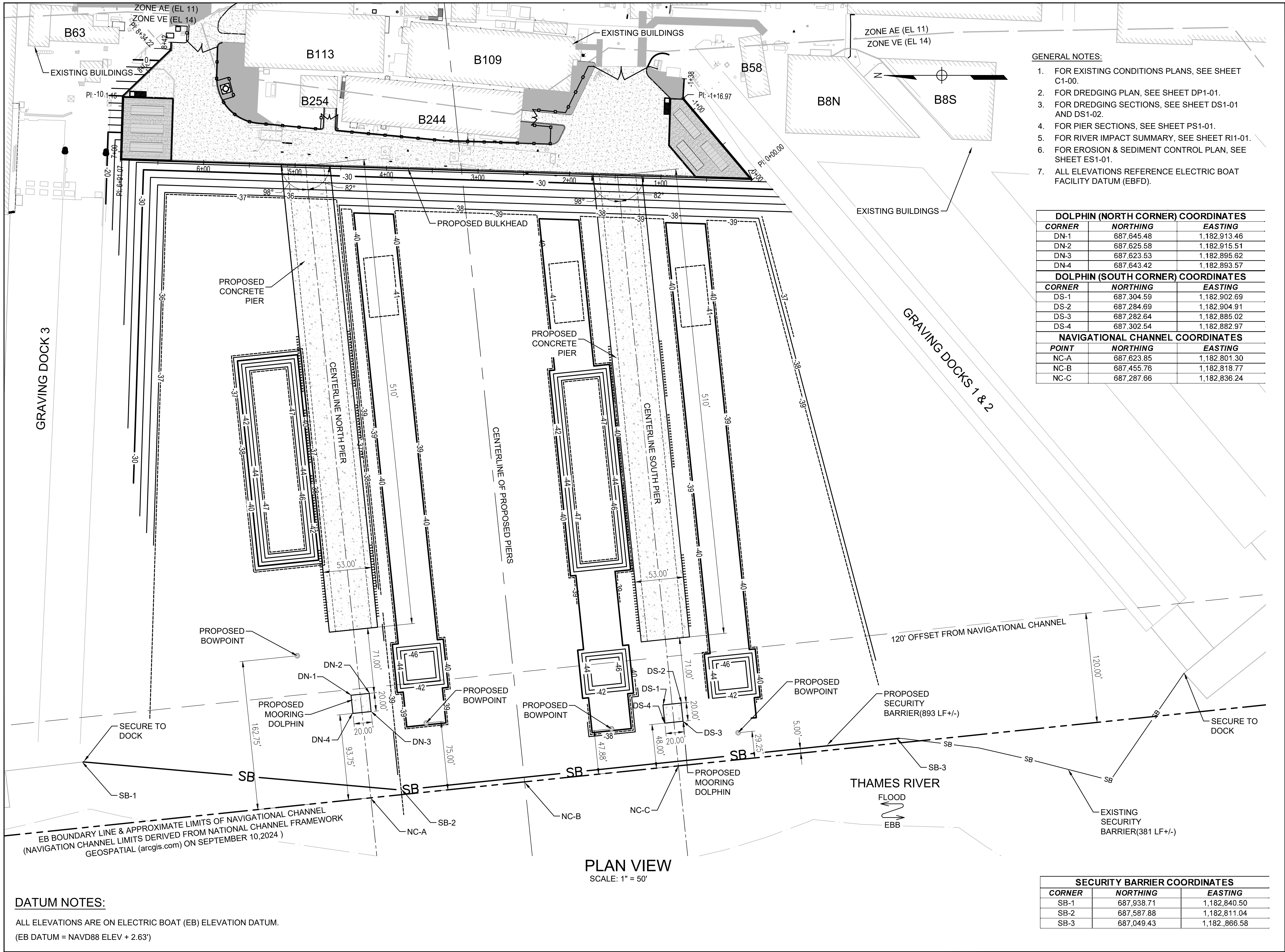
DATE: MAY 17, 2024

SHEET 2 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

GENERAL NOTES:

- FOR EXISTING CONDITIONS PLANS, SEE SHEET C1-00.
- FOR DREDGING PLAN, SEE SHEET DP1-01.
- FOR DREDGING SECTIONS, SEE SHEET DS1-01 AND DS1-02.
- FOR PIER SECTIONS, SEE SHEET PS1-01.
- FOR RIVER IMPACT SUMMARY, SEE SHEET RI1-01.
- FOR EROSION & SEDIMENT CONTROL PLAN, SEE SHEET ES1-01.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

DOLPHIN (NORTH CORNER) COORDINATES		
CORNER	NORTHING	EASTING
DN-1	687,645.48	1,182,913.46
DN-2	687,625.58	1,182,915.51
DN-3	687,623.53	1,182,895.62
DN-4	687,643.42	1,182,893.57
DOLPHIN (SOUTH CORNER) COORDINATES		
CORNER	NORTHING	EASTING
DS-1	687,304.59	1,182,902.69
DS-2	687,284.69	1,182,904.91
DS-3	687,282.64	1,182,885.02
DS-4	687,302.54	1,182,882.97
NAVIGATIONAL CHANNEL COORDINATES		
POINT	NORTHING	EASTING
NC-A	687,623.85	1,182,801.30
NC-B	687,455.76	1,182,818.77
NC-C	687,287.66	1,182,836.24

SECURITY BARRIER COORDINATES		
CORNER	NORTHING	EASTING
SB-1	687,938.71	1,182,840.50
SB-2	687,587.88	1,182,811.04
SB-3	687,049.43	1,182,,866.58

REVISIONS		
1	GENERAL REVISIONS FOR USACE	9/12/24

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0

25'

50'

100'

SCALE: 1" = 50'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

WRA

Whitman, Requardt & Associates, LLP

801 South Caroline Street, Baltimore, Maryland 21231

PROPOSED CONDITIONS PLAN

DRAWING NO.

C1-01

SCALE: AS SHOWN

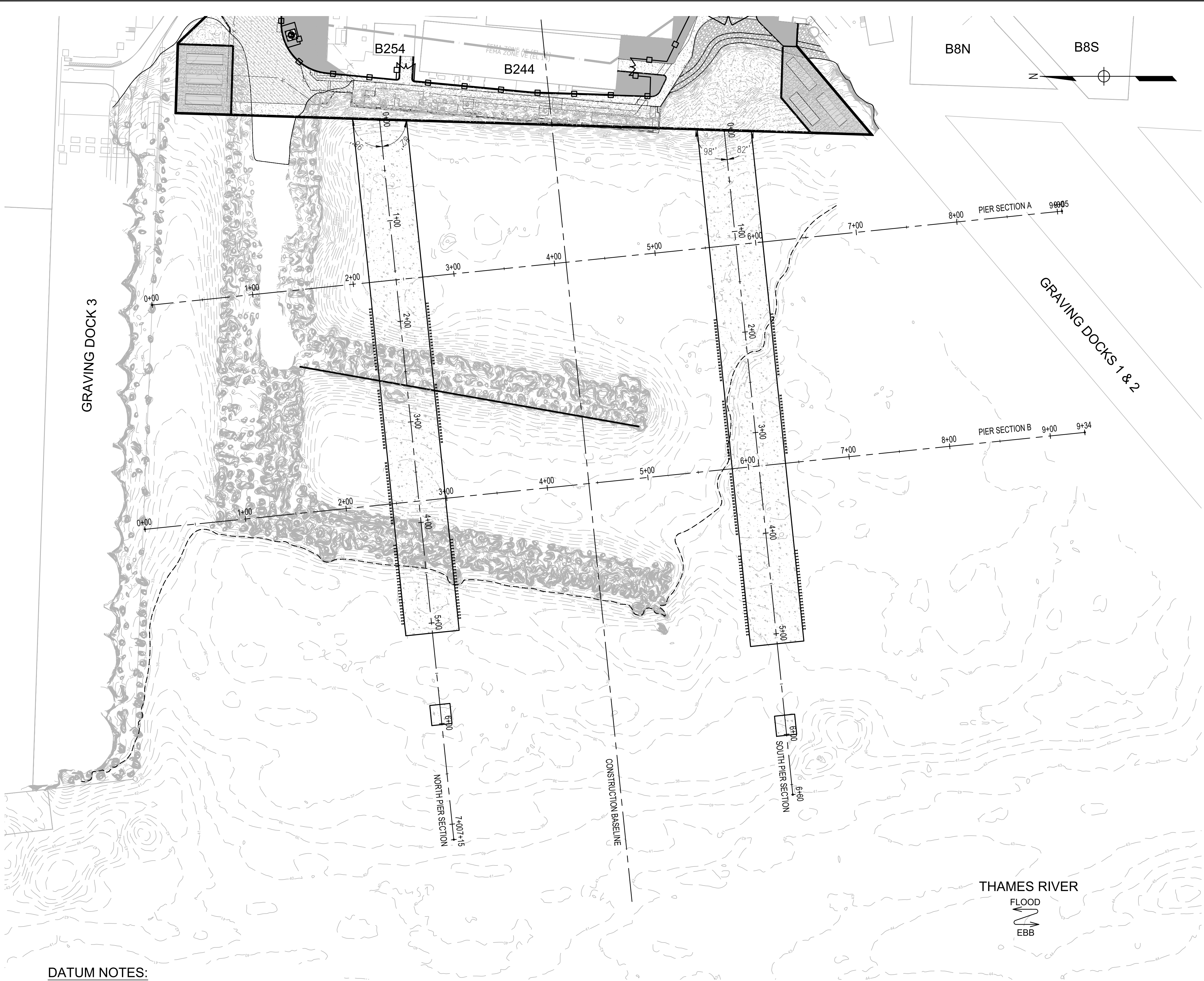
DATE: MAY 17, 2024

SHEET 3 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

PLAN VIEW
SCALE: 1" = 50'

GENERAL NOTES:

- FOR PIER SECTIONS, SEE SHEET PS1-01.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

025'50'100'

SCALE: 1" = 50'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

WRA

Whitman, Requardt & Associates, LLP
801 South Caroline Street, Baltimore, Maryland 21231

PIER SECTIONS PLAN

DRAWING NO.

PS1-00

SCALE: AS SHOWN

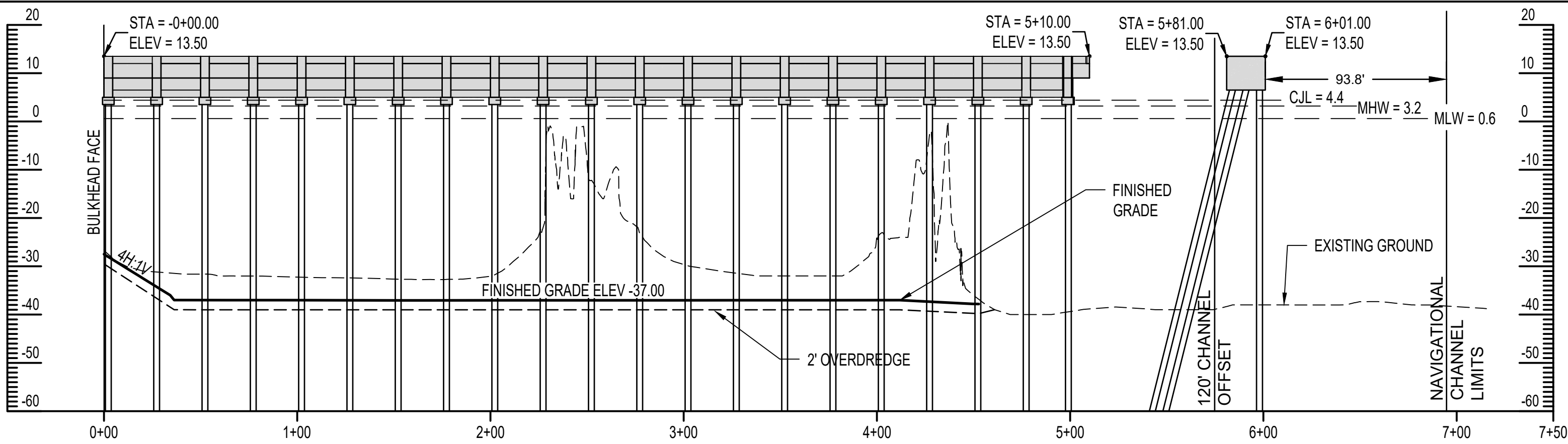
DATE: MAY 17, 2024

SHEET 4 OF 12

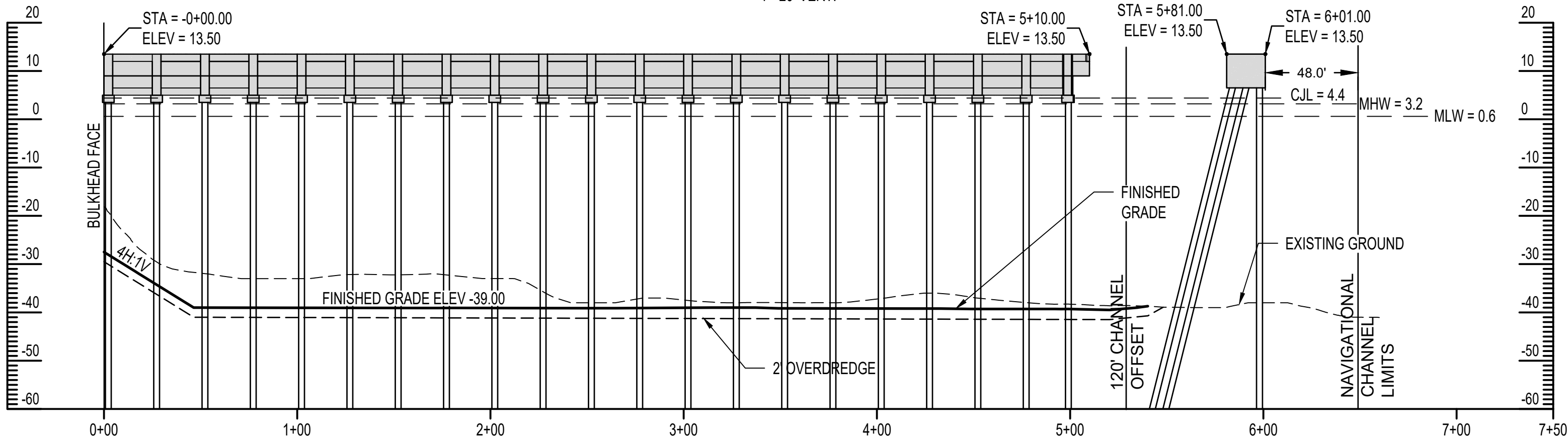
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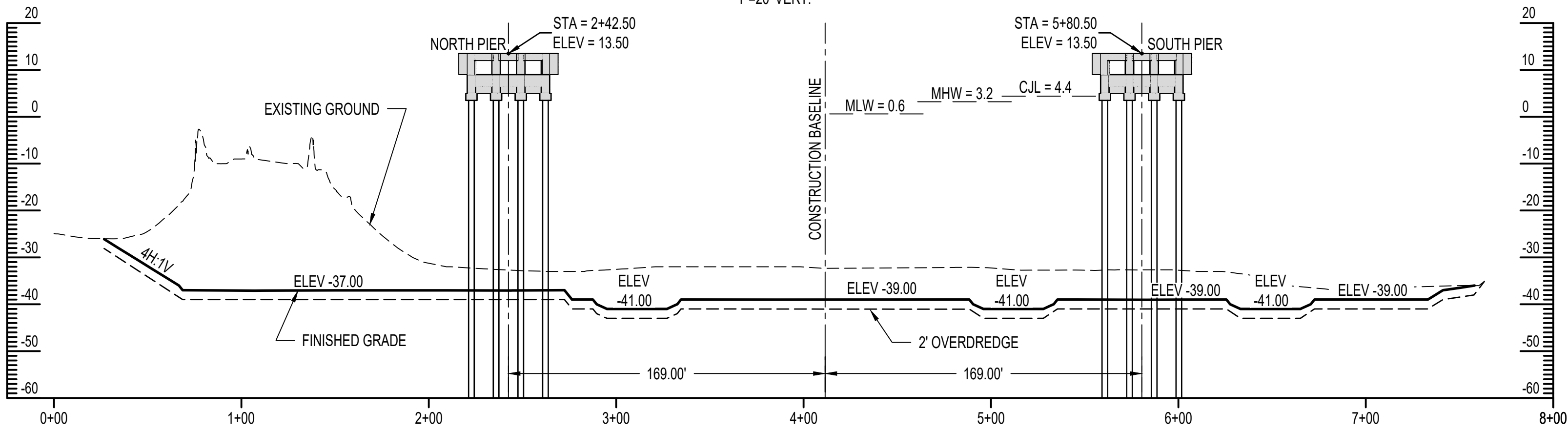
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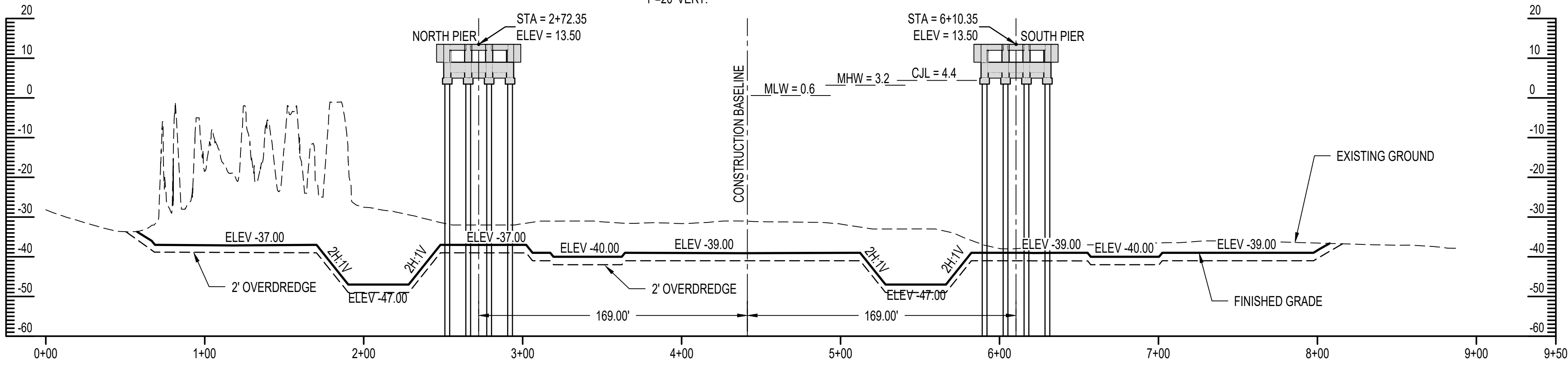
NORTH PIER SECTION
SCALES: 1"=50' HORIZ.
1"=20' VERT.



SOUTH PIER SECTION
SCALES: 1"=50' HORIZ.
1"=20' VERT.



SECTION A
SCALES: 1"=50' HORIZ.
1"=20' VERT.



SECTION B
SCALES: 1"=50' HORIZ.
1"=20' VERT.

GENERAL NOTES:

- FOR PIER SECTION PLAN, SEE SHEET PS1-00.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

REVISIONS		
1	GENERAL REVISIONS FOR USACE	9/12/24

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0 25' 50' 100'
SCALE: 1" = 50'

0 10' 20' 40'
SCALE: 1" = 20'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

WRA
Whitman, Requardt & Associates, LLP
801 South Caroline Street, Baltimore, Maryland 21231

PIER SECTIONS

DRAWING NO.

PS1-01

SCALE: AS SHOWN

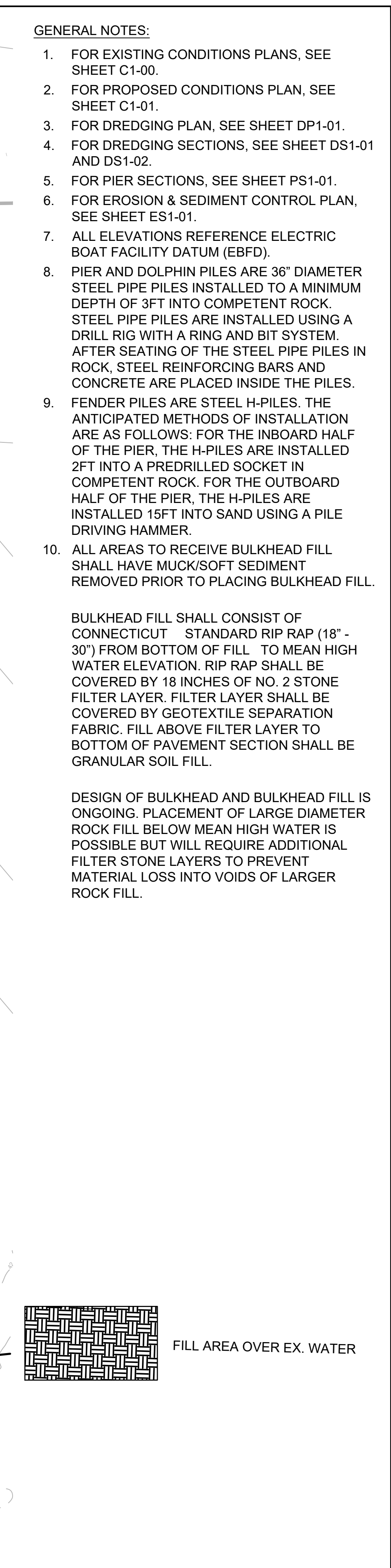
DATE: MAY 17, 2024

SHEET 5 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



REVISIONS		

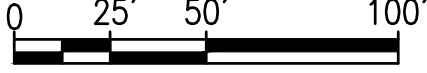
CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

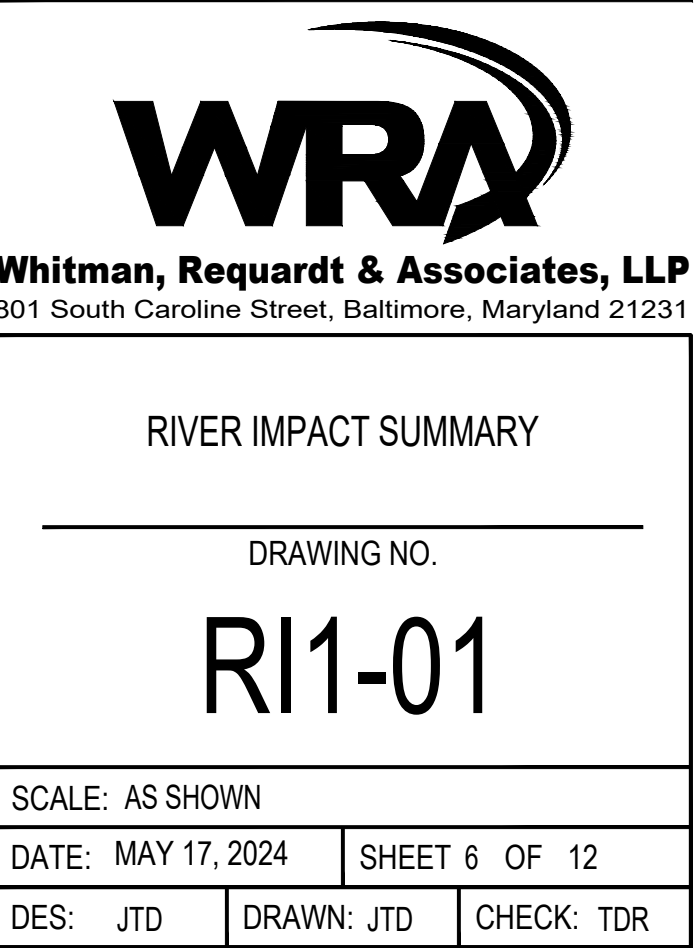


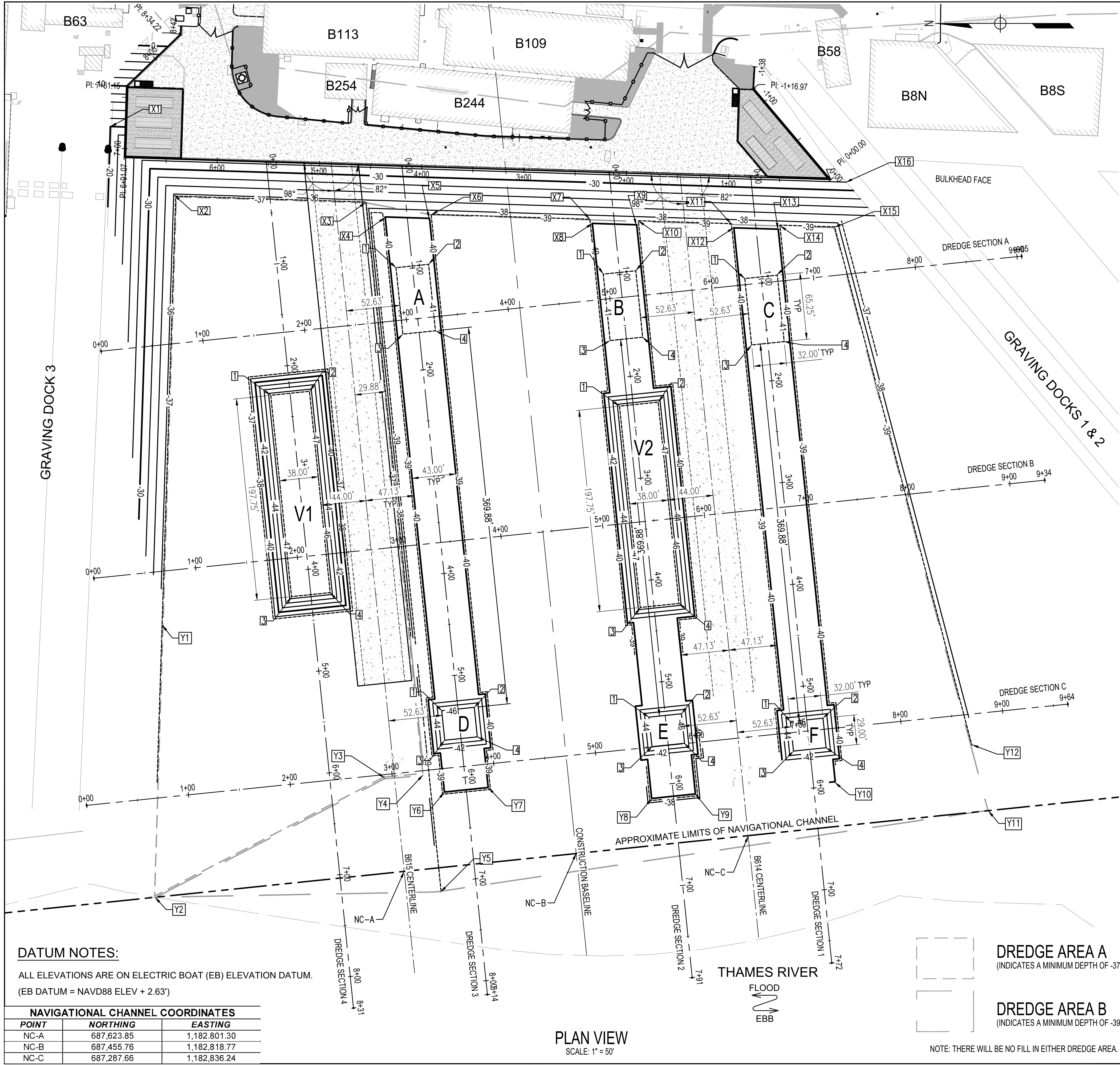
0 25' 50' 100'

SCALE: 1" = 50'

SIGNATURE

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DREDGING COORDINATES				
TEST HOLE	CORNER	NORTHING	EASTING	ELEVATION
A	1	687631.84	1183391.19	-41.00
	2	687600.01	1183394.48	-41.00
	3	687625.14	1183326.29	-41.00
	4	687593.31	1183329.57	-41.00
B	1	687429.29	1183384.91	-41.00
	2	687397.45	1183388.19	-41.00
	3	687422.59	1183320.00	-41.00
	4	687390.76	1183323.29	-41.00
C	1	687290.95	1183380.60	-41.00
	2	687259.12	1183383.88	-41.00
	3	687284.26	1183315.69	-41.00
	4	687252.43	1183318.97	-41.00
D	1	687587.19	1182958.32	-46.00
	2	687555.36	1182961.61	-46.00
	3	687584.21	1182929.48	-46.00
	4	687543.61	1182925.62	-46.00
E	1	687384.64	1182952.04	-46.00
	2	687352.81	1182955.32	-46.00
	3	687381.66	1182923.19	-46.00
	4	687349.83	1182926.47	-46.00
F	1	687246.30	1182947.72	-46.00
	2	687214.47	1182951.01	-46.00
	3	687243.33	1182918.88	-46.00
	4	687211.50	1182922.16	-46.00
V1	1	687754.27	1183266.52	-47.00
	2	687716.47	1183270.42	-47.00
	3	687733.98	1183069.81	-47.00
	4	687696.18	1183073.71	-47.00
V2	1	687413.39	1183255.92	-47.00
	2	687375.59	1183259.82	-47.00
	3	687393.10	1183059.21	-47.00
	4	687355.30	1183063.11	-47.00
DREDGE LIMITS				
ZONE	REF #	NORTHING	EASTING	ELEVATION
X	1	687911.05	1183529.15	-20.00
	2	687847.18	1183461.13	-37.00
	3	687661.25	1183455.35	-37.00
	4	687642.48	1183440.76	-40.00
	5	687599.11	1183439.41	-40.00
	6	687597.51	1183443.36	-39.00
	7	687442.36	1183438.54	-39.00
	8	687439.93	1183434.46	-40.00
	9	687396.56	1183433.11	-40.00
	10	687394.95	1183437.06	-39.00
	11	687304.02	1183434.23	-39.00
	12	687301.59	1183430.16	-40.00
	13	687258.23	1183428.81	-40.00
	14	687256.62	1183432.76	-39.00
	15	687203.13	1183431.10	-39.00
	16	687191.64	1183474.76	-28.00
Y	1	687860.50	1183042.09	-37.00
	2	687867.68	1182775.97	-37/-39
	3	687642.67	1182892.08	-37/-39
	4	687605.12	1182896.49	-37/-39
	5	687587.87	1182782.98	-39.00
	6	687584.52	1182878.84	-40.00
	7	687541.75	1182883.26	-40.00
	8	687381.97	1182872.56	-40.00
	9	687339.19	1182876.97	-40.00
	10	687200.86	1182872.66	-40.00
	11	687053.21	1182860.60	-39.00
	12	687068.95	1182924.74	-39.00

- GENERAL NOTES:**
- THIS PRELIMINARY DREDGE PLAN AND COORDINATES ARE BASED ON EXISTING BASE FILES THAT HAVE BEEN PROVIDED BY GENERAL DYNAMICS ELECTRIC BOAT (GDEB). THE COORDINATE SYSTEM IS THE CT - CONNECTICUT (600) STATE PLANE COORDINATE SYSTEM, DATUM: NAD83. THIS DREDGE PLAN WILL BE UPDATED TO REFLECT ACTUAL SURVEY INFORMATION ONCE THAT INFORMATION IS AVAILABLE.
 - THE EXISTING WATER DEPTH INFORMATION DEPICTED ON THIS SHEET IS BASED ON A HYDROGRAPHIC SURVEY PERFORMED BY STEELE ASSOCIATES MARINE CONSULTANTS, LLC ON MARCH 23, 2023. SOUNDINGS ARE IN FEET AND TENTHS BELOW ELECTRIC BOAT FACILITY DATUM (EBFD). MEAN LOW WATER (MLW) ELEVATION = EBFD +0.98'.
 - DREDGING ELEVATIONS ARE REFERENCED TO THE ELECTRIC BOAT FACILITY DATUM (EBFD). MEAN LOW WATER (MLW) ELEVATION = EBFD +0.98'.
 - FOR DREDGING SECTIONS, SEE SHEETS DS1-01 AND DS1-02.
 - THE GENERAL DREDGE AREA AND THE VESSEL SPECIFIC SPECIAL DREDGE ZONES ARE BASED ON INFORMATION PROVIDED BY GDEB. THE DREDGE EXTENTS HAVE BEEN PRELIMINARILY LOCATED BASED ON THE FOLLOWING ASSUMPTIONS, WHICH ARE SUBJECT TO CHANGE AS THE WET BERTH DESIGN PROGRESSES.
 - THE CONSTRUCTION BASELINE IS PARALLEL TO THE PIER CENTERLINES AND IS LOCATED HALFWAY BETWEEN THEM.
 - CLEAR DISTANCE BETWEEN EDGES OF PIERS: 285FT
 - PIER WIDTH: 53FT
 - DEPTH OF FENDERING AND FENDER PILES: 3.25FT
 - BERTHS 1-3 ASSUME THE USE OF UNIVERSAL CAMELS. BERTH 284 ASSUME THE USE OF UNIVERSAL CAMELS OR YOKOHAMA FENDERS.
 - VESSEL SPECIFIC DREDGE ZONES ARE LOCATED BASED ON VESSEL POSITIONS COORDINATED WITH GDEB.

REVISIONS		
1	GENERAL REVISIONS FOR USACE	9/12/24

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0

25'

50'

100'

SCALE: 1" = 50'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

WRA

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DREDGING PLAN

DRAWING NO.

DP1-01

SCALE: AS SHOWN

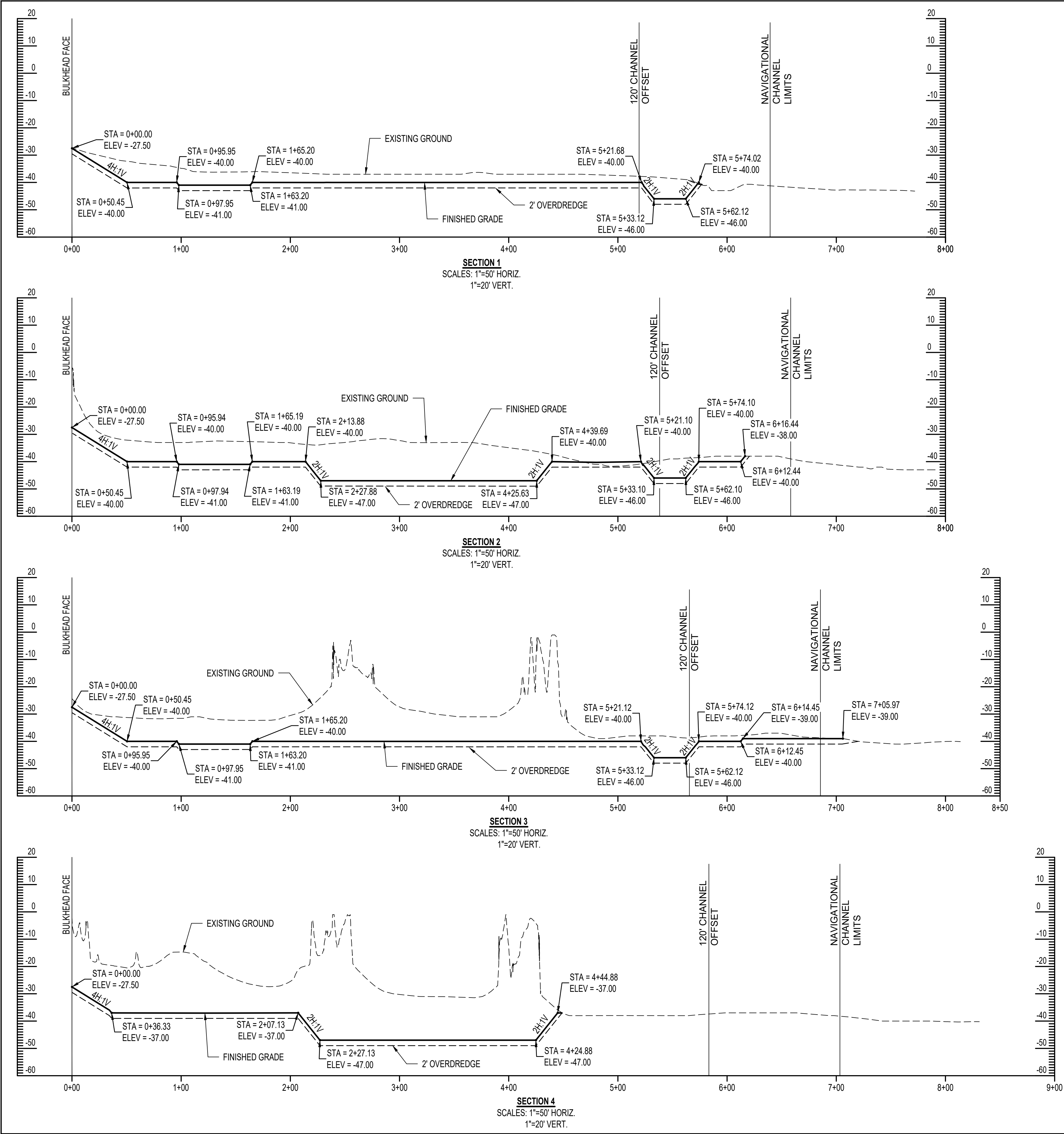
DATE: MAY 17, 2024

SHEET 7 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



GENERAL NOTES:

- FOR DREDGING PLAN WITH SECTION LINES, SEE SHEET DP1-01.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

REVISIONS		
1	GENERAL REVISIONS FOR USACE	9/12/24

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0 25' 50' 100'

SCALE: 1" = 50'

0 10' 20' 40'

SCALE: 1" = 20'

SIGNATURE

PERMIT PLANS
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DREDGING SECTIONS PLAN

DRAWING NO.

DS1-01

SCALE: AS SHOWN

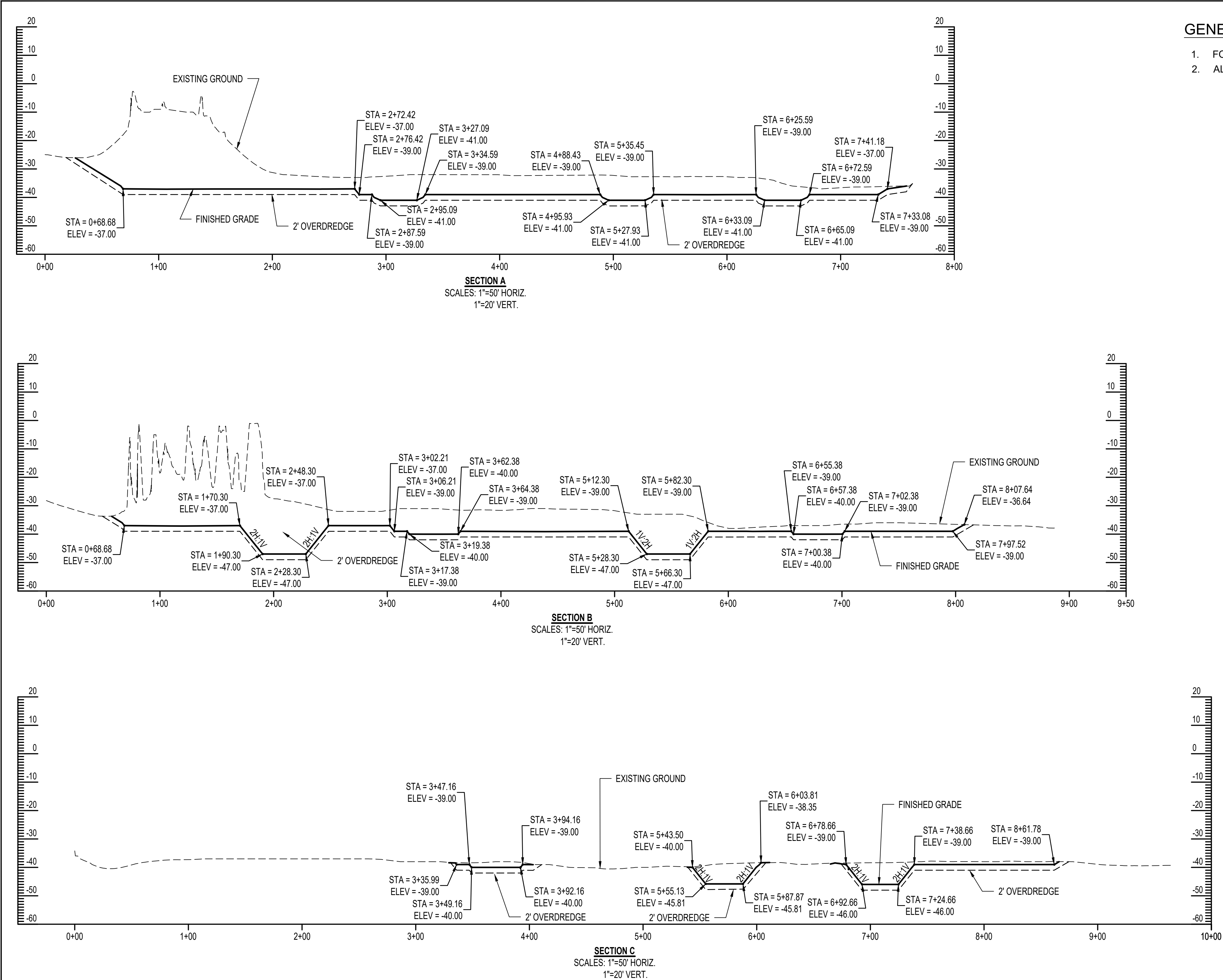
DATE: MAY 17, 2024

SHEET 8 OF 12

DES: JTD

DRAWN: JTD

CHECK: TDR



DATUM NOTES:

ALL ELEVATIONS ARE ON ELECTRIC BOAT (EB) ELEVATION DATUM.
(EB DATUM = NAVD88 ELEV + 2.63')

GENERAL NOTES:

- FOR DREDGING PLAN WITH SECTION LINES, SEE SHEET DP1-01.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0 25' 50' 100'
SCALE: 1" = 50'

0 10' 20' 40'
SCALE: 1" = 20'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

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DREDGING SECTIONS

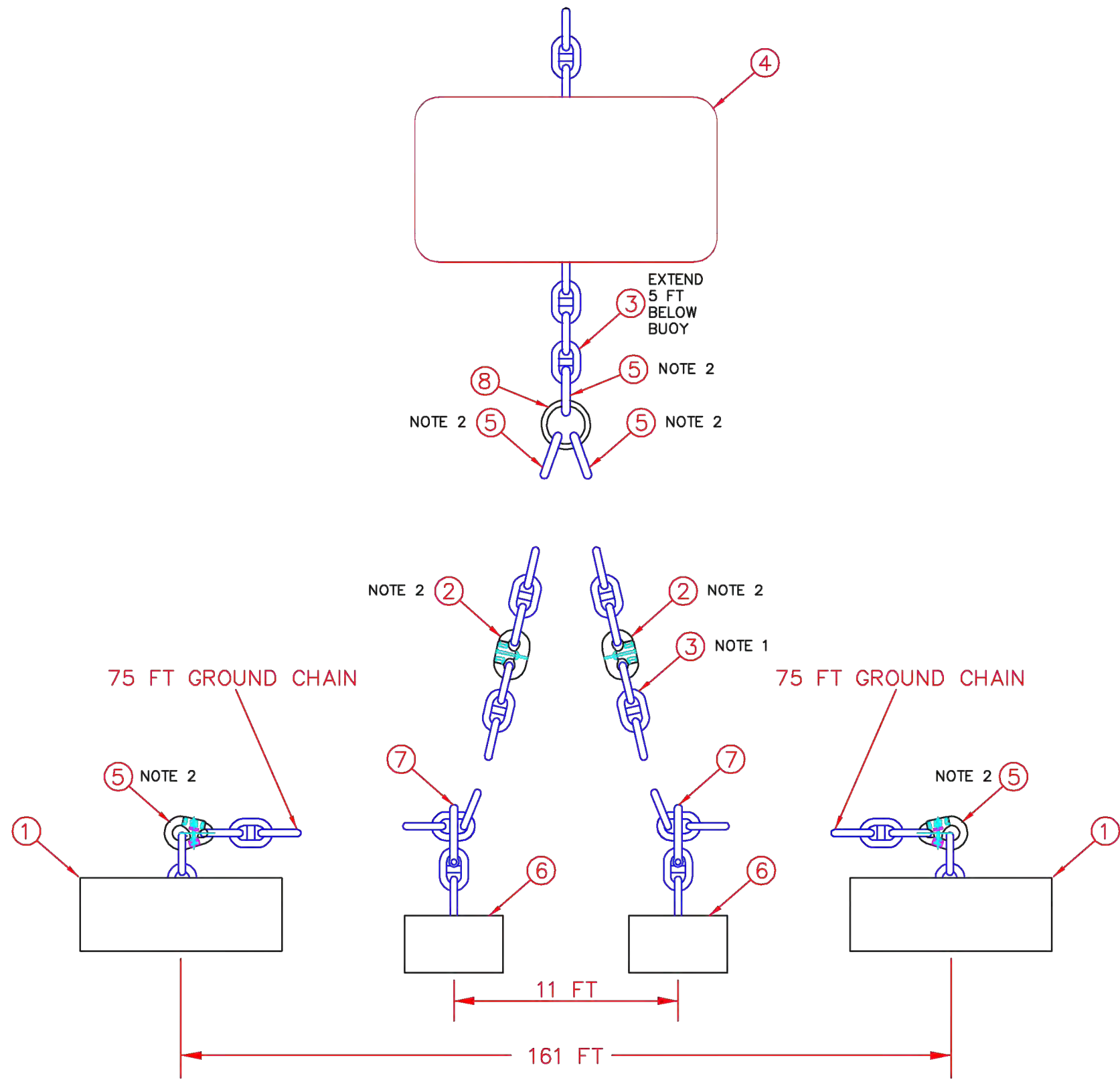
DRAWING NO.

DS1-02

SCALE: AS SHOWN

DATE: MAY 17, 2024 | SHEET 9 OF 12

DES: JTD | DRAWN: JTD | CHECK: TDR



SECURITY BARRIER DETAIL
SCALE: N.T.S.

NOTES:

1. MEASURE WATER DEPTH AT THE MOORING SITE AND SET RISER CHAIN LENGTH SO CHAIN IS TIGHT AT LOW WATER.
2. SECURE ITEM NO 2&5 PER MANUFACTURES RECOMMENDATIONS AND WELD SHUT TO HELP ENSURE IT DOES NOT ACCIDENTALLY SEPARATE IN USE

NOTE:
THIS SECTION IS FROM A PREVIOUS SECURITY BARRIER DESIGN AT THIS SITE. THE SECURITY BARRIER DESIGN HAS NOT BEEN COMPLETED FOR THIS PROJECT. BASED ON PREVIOUS SECURITY BARRIER DESIGNS AT THIS SITE, THE SYSTEM FOR THIS PROJECT IS EXPECTED TO INCLUDE APPROXIMATELY 2 BUOYS AND ASSOCIATED MOORINGS, 4 SUBSURFACE ANCHORS, AND 4 SHORE/STRUCTURE TERMINATIONS. 30-TON ANCHORS ARE EXPECTED TO HAVE AN APPROXIMATE FOOTPRINT OF 12FT X 12FT.

BILL OF MATERIAL			
8	1	GROUND RING, 1.75-INCH	STEEL
7	2	SINKER SHACKLE, 1.75-INCH	STEEL
6	2	SINKER, 7-TON	4930-003
5	AR	ANCHOR JOINING LINK, 1.75-INCH	ABS GRADE 3
4	1	BUOY	FOAM/STEEL
3	AR	CHAIN, 1.75-INCH	ABS GRADE 3
2	AR	CHAIN JOINING LINK, 1.75-INCH	ABS GRADE 3
1	2	ANCHOR, 25-TON OR 30-TON	4926C-000 OR 4930-002
PART NO.	REQ'D	DESCRIPTION	SPEC.

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

0

15'

30'

60'

SCALE: 1" = 30'

SIGNATURE

PERMIT PLANS
NOT FOR CONSTRUCTION

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SITE DETAILS

DRAWING NO.

C5-01

SCALE: AS SHOWN

DATE: MAY 17, 2024

SHEET 12 OF 12

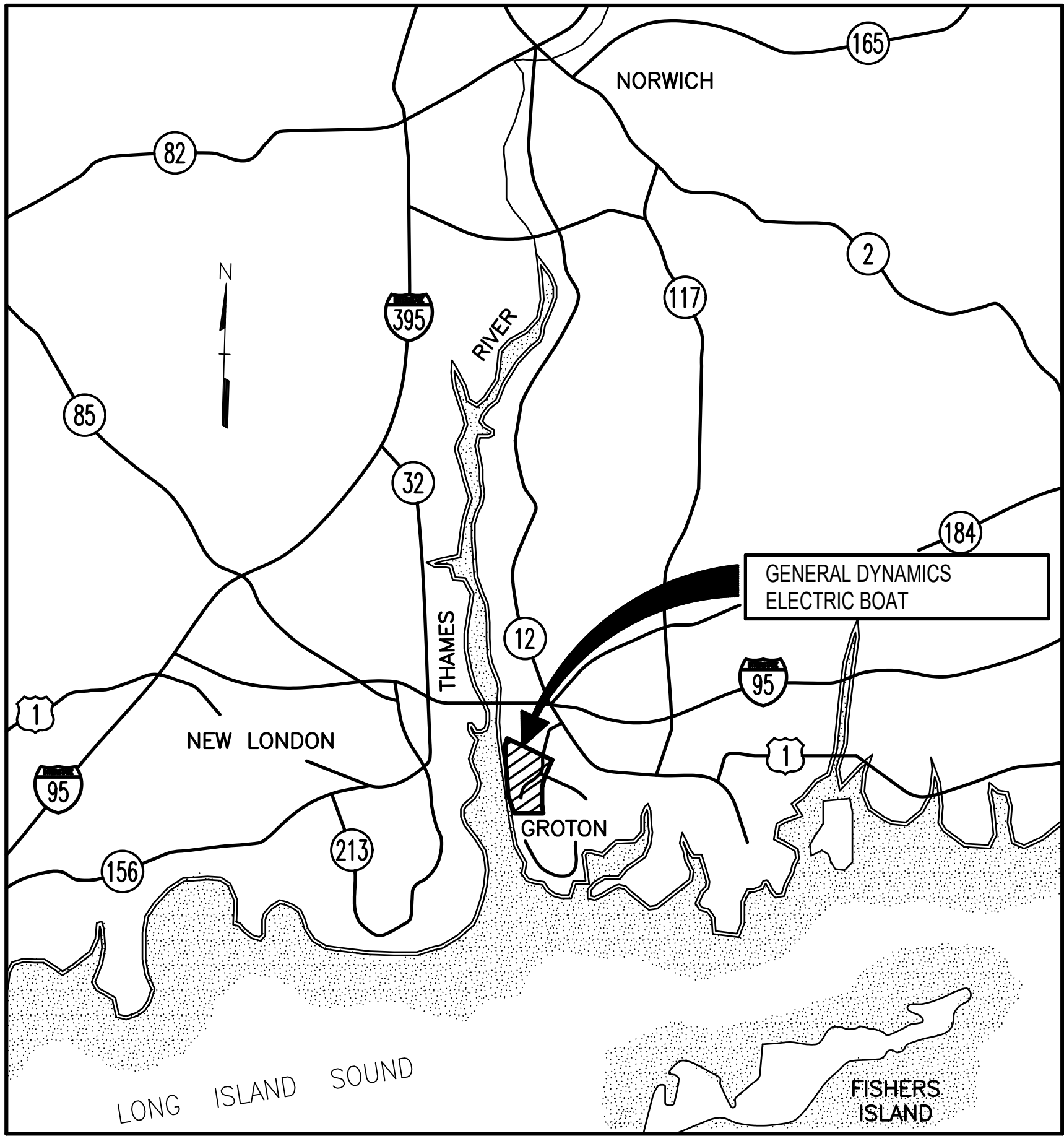
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CHECK: TDR

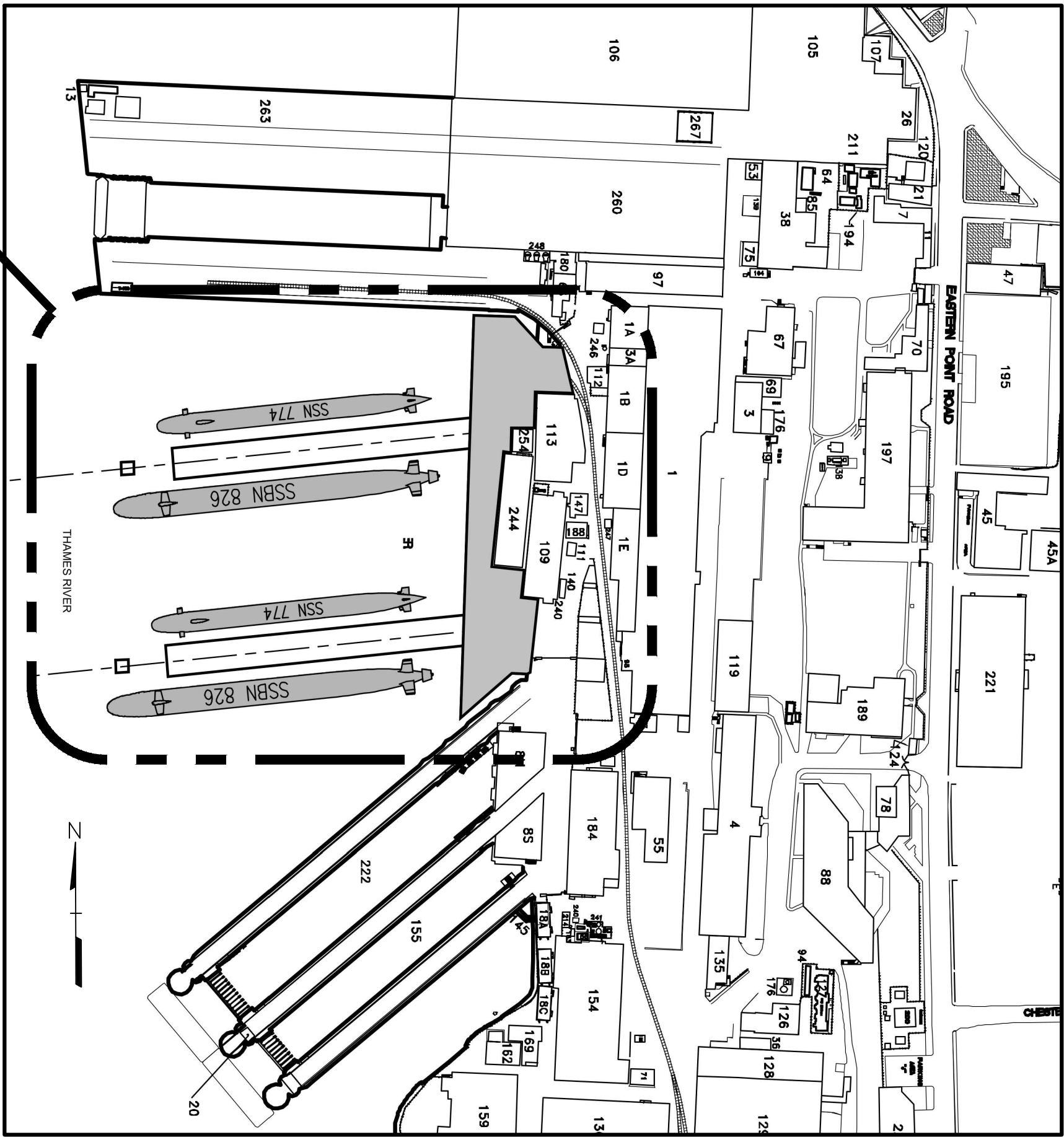
GENERAL DYNAMICS ELECTRIC BOAT SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS

GROTON SHIPYARD
75 EASTERN POINT ROAD
GROTON, CONNECTICUT 06390



VICINITY MAP

PROJECT SITE



LOCATION MAP

NOTES TO REVIEWERS

- Notes from designers to reviewers are provided throughout the drawing set in boxes like this. These notes are used to provide additional context for items shown or information related to items not shown at this level of development.
- These notes will only be used for milestone submissions. Notes to reviewers will not be necessary for the final submission and will not be provided.

REVISIONS

NO.	DESCRIPTION	DATE

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

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COVER SHEET

DRAWING NO.

G-001

SCALE: NOT TO SCALE

DATE: MAY 31, 2024 SHEET 1 OF 63

DES: TDR DRAWN: TDR CHECK: WC

[illegible][illegible]

SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS

[illegible][illegible]

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MAY 31, 2024



DES: TDR	DRAWN: TDR	CHECK: TDR
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1. THIS PROJECT INCLUDES TWO SUBMARINE BERTHING PIERS AND A SHORELINE BULKHEAD. THIS PLAN IS PROVIDED AS A GENERAL PROJECT ORIENTATION.
2. REFER TO SHEET G-102 FOR A PIER GENERAL ARRANGEMENT PLAN AND G-201 FOR A PIER GENERAL ARRANGEMENT SECTION.
3. REFER TO OTHER DISCIPLINES' DRAWINGS FOR DETAILED INFORMATION.

1. This project includes two piers as depicted on this sheet. At this level of design development, some disciplines' drawings depict only the south pier; it should be assumed by the reviewer that specific design details of the north pier are identical to those shown for the south pier. Refer to civil drawings for site layout and information required for locating piers.

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

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MAY 31, 2024



PROJECT GENERAL ARRANGEMENT PLAN

DRAWING NO.

G-101

SCALE: 1" = 40'-0"

DATE: MAY 31, 2024

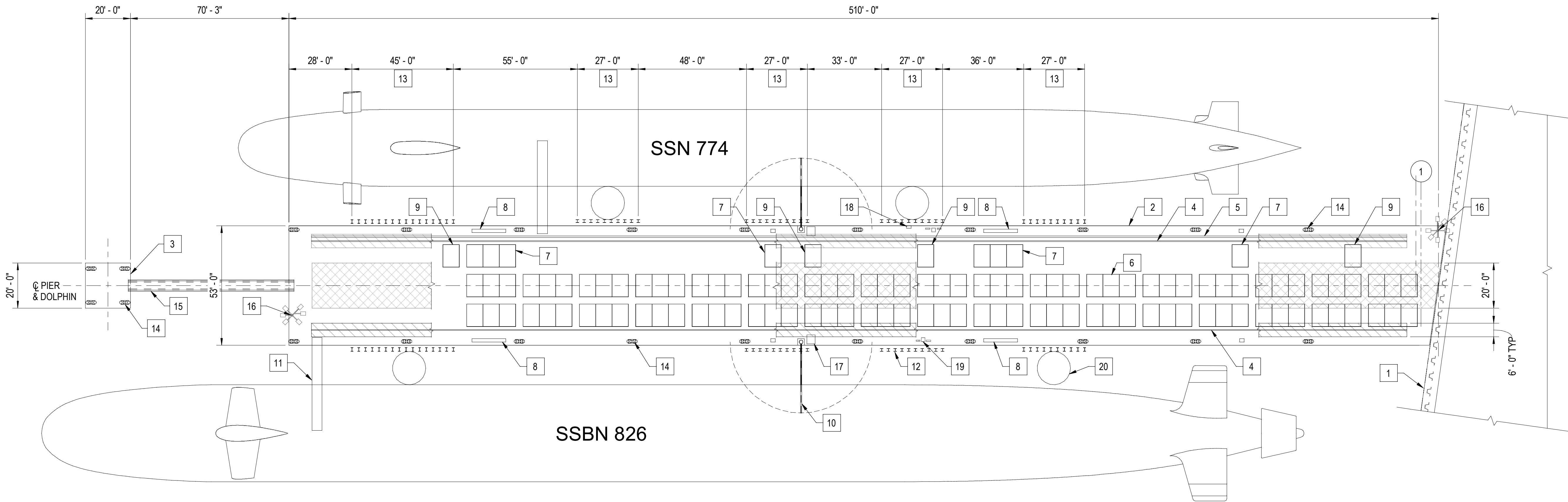
SHEET 3 OF 63

DES: TDF

DRAWN: TDR

CHECK: WC

5/31/2024 10:29:50 AM



1
G-102
PIER GENERAL ARRANGEMENT PLAN
SCALE: 1" = 25'-0"

NOTES TO REVIEWERS

- The depicted outline for CLB is based on sketch provided by EB. We understand that this sketch is outdated and the parallel midbody extends further aft - please provide updated outline.
- Jib crane provided at shore power connection only. Please advise if additional jib cranes are required.

GENERAL SHEET NOTES

- THE PROPOSED GENERAL ARRANGEMENT OF THE SOUTH PIER IS DEPICTED. GENERAL ARRANGEMENT OF NORTH PIER IS SIMILAR.
- REFER TO INDIVIDUAL DISCIPLINES DRAWINGS FOR ADDITIONAL DETAILED INFORMATION.

SHEET KEYNOTES

- BULKHEAD WALL
- CONCRETE PIER
- CONCRETE MOORING DOLPHIN
- CRANE RAIL FOR 300-TON PORTAL CRANE (CRANE NOT DEPICTED).
- CRANE POWER TRENCH
- LONGITUDINAL MECHANICAL UTILITY TRENCH WITH REMOVABLE COVERS (TYPICAL)
- TRANSVERSE MECHANICAL UTILITY TRENCH WITH REMOVABLE COVERS (TYPICAL AT MECHANICAL UTILITY STATIONS)
- MECHANICAL UTILITY STATION.
- ELECTRICAL VAULT WITH REMOVABLE COVER.
- JIB CRANE (TYPICAL)
- RETRACTABLE BROW (TYPICAL)
- STEEL H-PILE FENDER PILE (TYPICAL)
- EXTENT OF FENDER PILE GROUP, AVAILABLE LOCATION FOR FENDER PLACEMENT
- DOUBLE BITT BOLLARD (TYPICAL)
- GALVANIZED STEEL WALKWAY TO MOORING DOLPHIN
- HIGH MAST LIGHT POLE
- SHORE POWER FOR SUBMARINES (EACH SIDE)
- CRANE POWER.
- POWER FOR MECHANICAL UTILITIES (EACH SIDE)
- YOKOHAMA FLOATING FENDER (TYPICAL, NOT IN CONTRACT)

SHEET LEGEND

- CRANE RAIL OBSTRUCTION ENVELOPE
- FIRE LANE

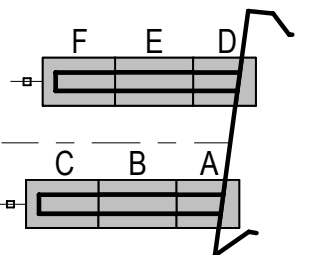
REVISIONS

CLIENT INFORMATION

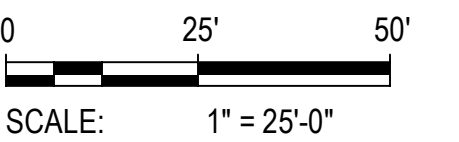
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN



GRAPHIC SCALES



SIGNATURE

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PIER GENERAL ARRANGEMENT PLAN

Drawing No.

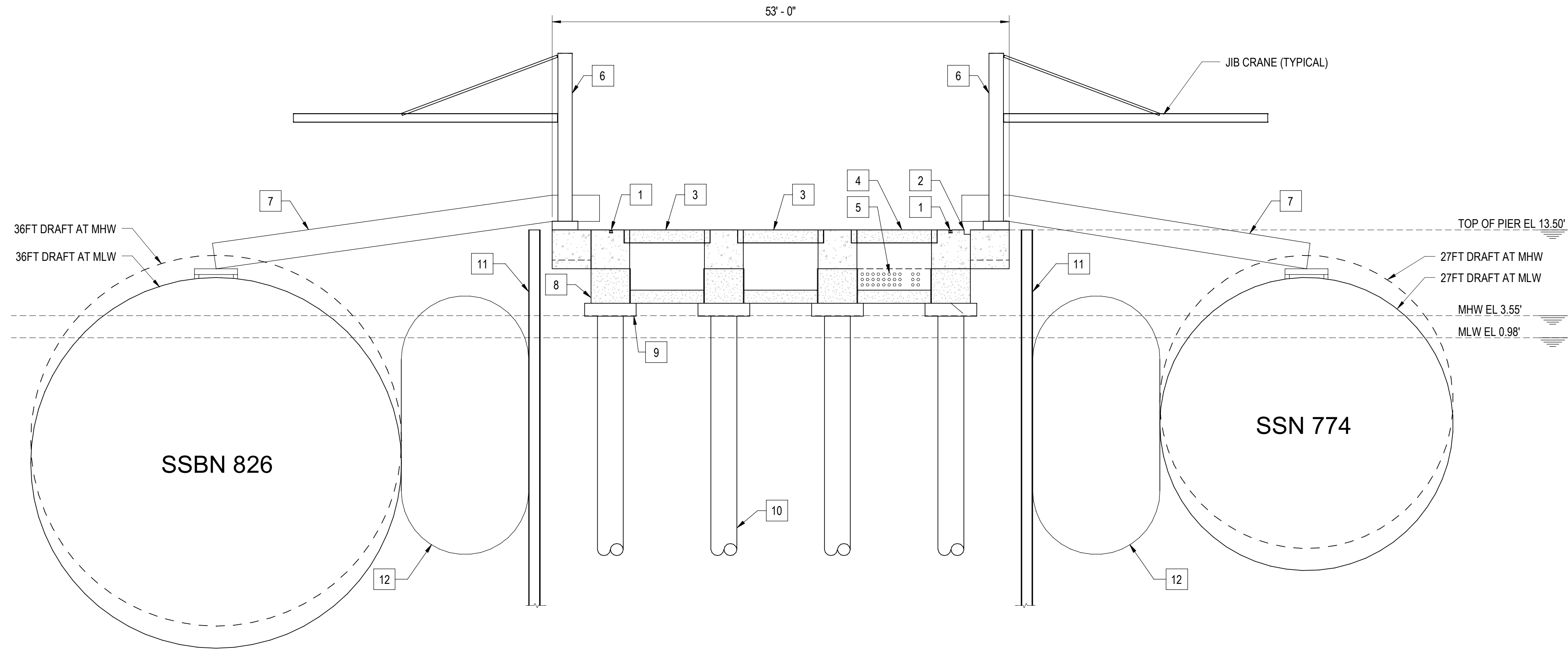
G-102

Scale: 1" = 25'-0"

Date: MAY 31, 2024 Sheet 4 of 63

Des: TDR Drawn: TDR Check: WC

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1
G-201
SCALE: 1/8" = 1'-0"

GENERAL ARRANGEMENT SECTION
LOOKING WEST

GENERAL SHEET NOTES

- THE PROPOSED GENERAL ARRANGEMENT OF THE SOUTH PIER IS DEPICTED. GENERAL ARRANGEMENT OF NORTH PIER IS SIMILAR.
- REFER TO INDIVIDUAL DISCIPLINES DRAWINGS FOR ADDITIONAL DETAILED INFORMATION.

SHEET KEYNOTES

- CRANE RAIL FOR 300-TON PORTAL CRANE (CRANE NOT DEPICTED)
- CRANE POWER TRENCH
- LONGITUDINAL MECHANICAL UTILITY TRENCH WITH REMOVABLE COVERS
- ELECTRICAL VAULT WITH REMOVABLE COVER
- ELECTRICAL DUCTBANK (BEYOND)
- JIB CRANE
- RETRACTABLE BROW
- PRECAST CONCRETE LONGITUDINAL BEAM (TYPICAL)
- PRECAST CONCRETE PILE CAP (TYPICAL)
- CONCRETE FILLED STEEL PIPE PILE (TYPICAL).
- STEEL H-PILE FENDER PILE
- YOKOHAMA FLOATING FENDER (NOT IN CONTRACT).

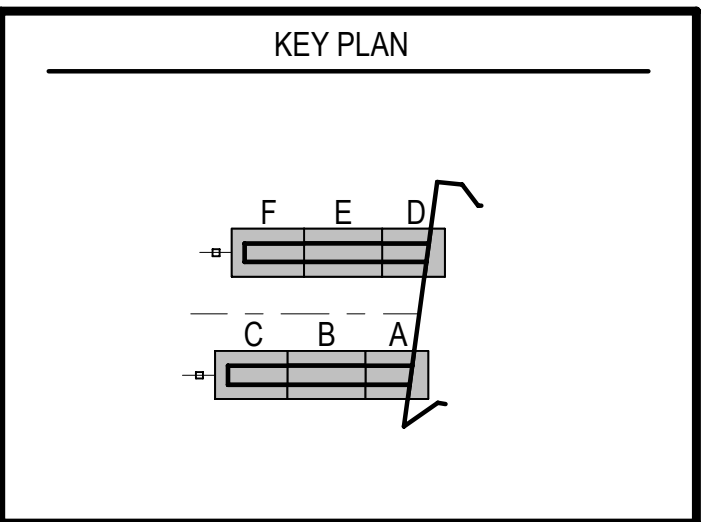
NOTES TO REVIEWERS

- Designers add any notes to reviewers here....

REVISIONS		

CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS



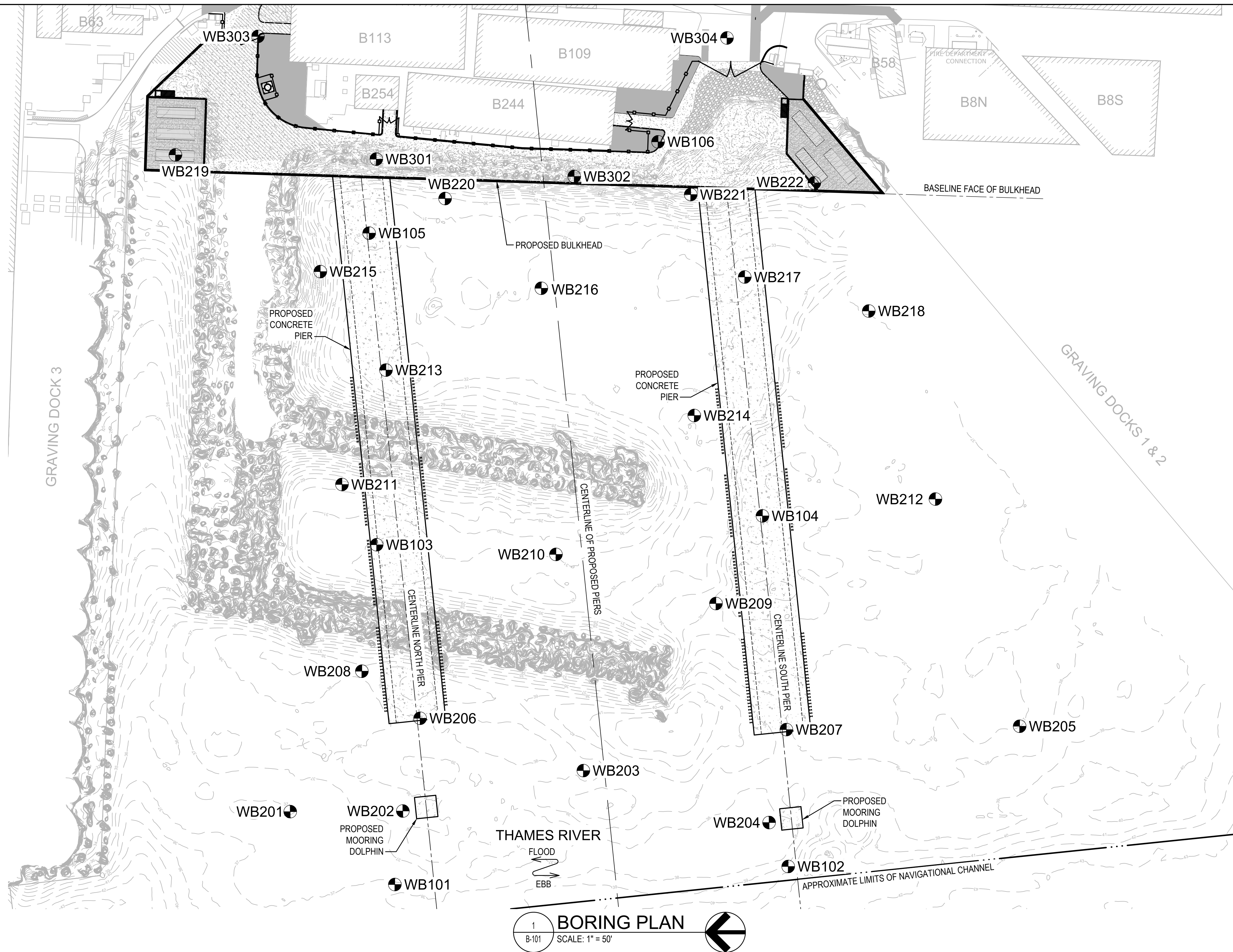
GRAPHIC SCALES	

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MAY 31, 2024

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PIER GENERAL ARRANGEMENT SECTION		
Drawing No. G-201		
Scale: 1/8" = 1'-0"		
Date: MAY 31, 2024	Sheet 5 of 63	
Des: TDR	Drawn: TDR	Check: WC



GENERAL SHEET NOTES

- REFER TO STRUCTURAL DRAWINGS FOR MORE INFORMATION ABOUT PROPOSED CONCRETE PIERS.
- WB101 THROUGH WB106 SOIL TEST BORINGS ARE AS-DRILLED LOCATIONS. WB201 THROUGH WB222 ARE PROPOSED SOIL TEST BORING LOCATIONS WITH BARGE ACCESS. WB301 THROUGH WB304 ARE SOIL TEST BORING LOCATIONS WITH LAND ACCESS.

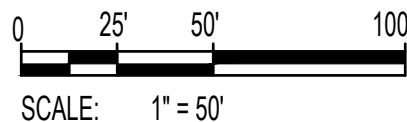
REVISIONS		

CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



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MAY 31, 2024



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BORING PLAN

DRAWING NO.

B-101

SCALE: 1" = 50'

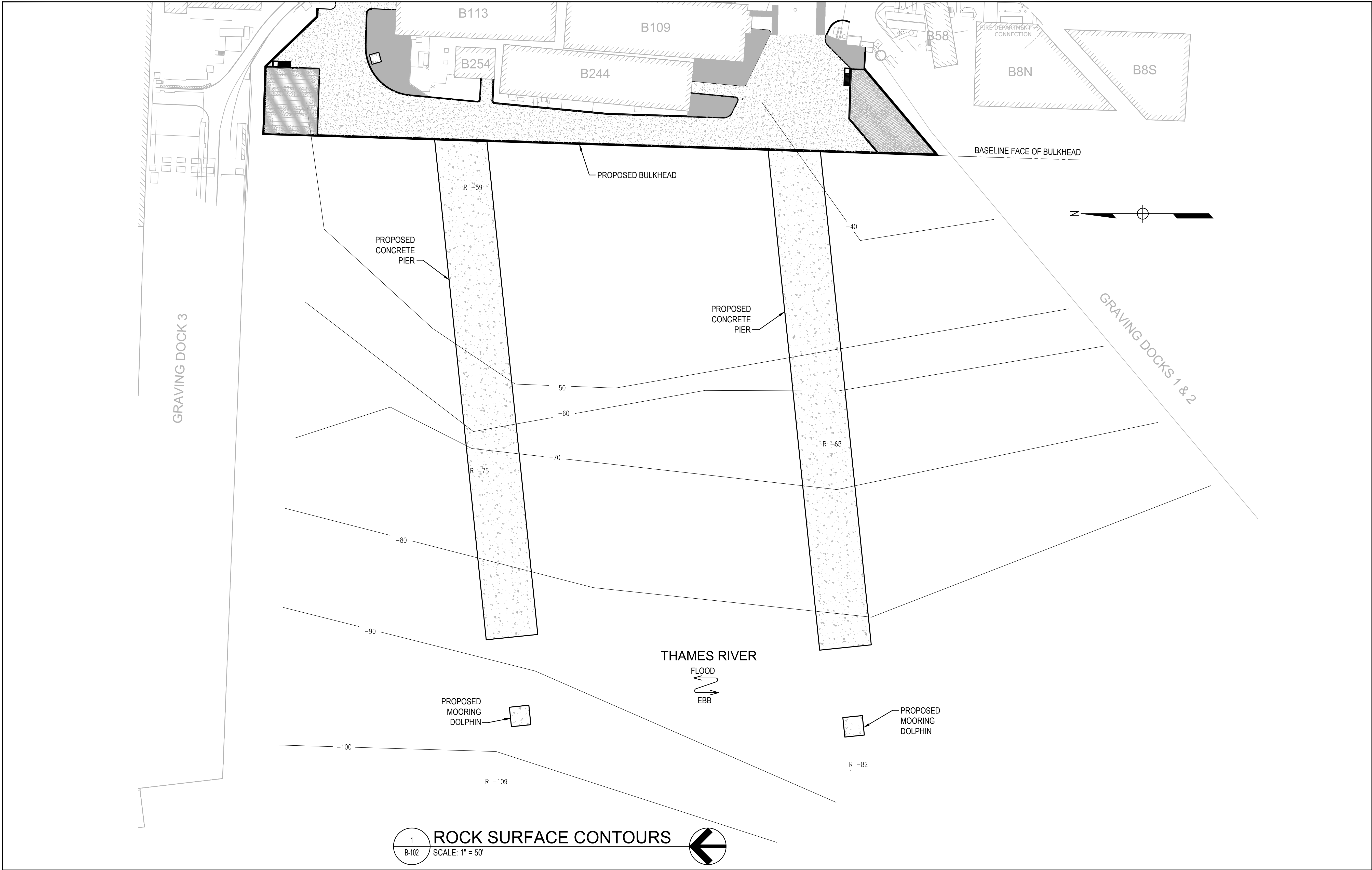
DATE: MAY 31, 2024

SHEET 6 OF 63

DES: GEI

DRAWN: GEI

CHECK: CFT



GENERAL SHEET NOTES

- ROCK SURFACE CONTOURS WILL BE REVISED BASED ON RESULTS OF FUTURE PLANNED SUBSURFACE INVESTIGATIONS. ROCK SURFACE IS OBSCURED BY LARGE BOULDERS.
- TOP OF ROCK CONTOURS ARE APPROXIMATE BASED ON HISTORIC ROCK PROBE INFORMATION, CONTRACTOR PROVIDED PROBE MEASUREMENTS, AND LIMITED SUBSURFACE INVESTIGATIONS AT THE LOCATION OF THE NEW WET BERTHS.

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

025'50'100'

SCALE: 1" = 50'

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ROCK SURFACE CONTOURS

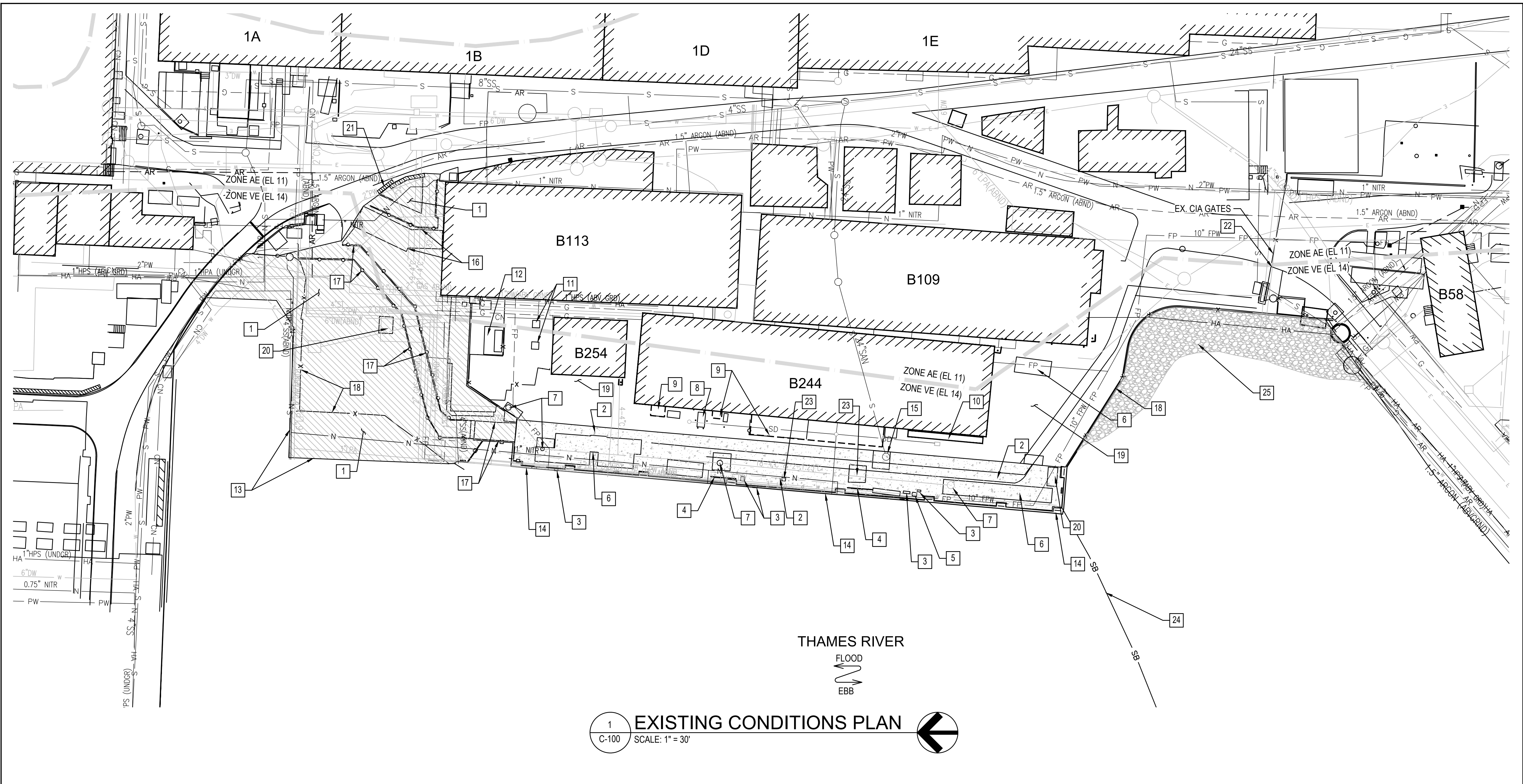
DRAWING NO.

B-102

SCALE: 1" = 50'

DATE: MAY 31, 2024SHEET 7 OF 63

DES: CFTDRAWN: CFTCHECK: CFT



GENERAL SHEET NOTES

- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET CD101 FOR SITE DEMOLITION PLAN.
- REFER TO SHEET CD102 FOR UTILITY DEMOLITION PLAN.
- REFER TO SHEET B-101 FOR BORING PLAN.

SHEET KEYNOTES

- | | |
|---|---|
| 1. TIMBER PIER | 15. SANITARY MANHOLE |
| 2. CONCRETE RELIEVING PLATFORM | 16. METAL PLATES OVER TIMBER PIER |
| 3. UTILITY CABINET | 17. ASPHALT PATH WITH WOODEN HANDRAILS ON EITHER SIDE |
| 4. ABOVE GRADE PIPE SYSTEM | 18. CHAIN LINK FENCE |
| 5. CATHODE | 19. BITUMINOUS CONCRETE PAVEMENT |
| 6. CONEX BOX | 20. STORAGE SHED |
| 7. ELECTRIC MANHOLE | 21. CONCRETE JERSEY BARRIERS. |
| 8. AIR CONDITION CONDENSER UNIT | 22. CIA SECURITY GATES |
| 9. BUILDING OVERHANG | 23. CONCRETE PAD |
| 10. METAL STORAGE RACK | 24. SECURITY BARRIER |
| 11. SWITCH GEAR | 25. RIP RAP |
| 12. GENERATOR | |
| 13. EDGE OF TIMBER PIER | |
| 14. EDGE OF CONCRETE RELIEVING PLATFORM | |

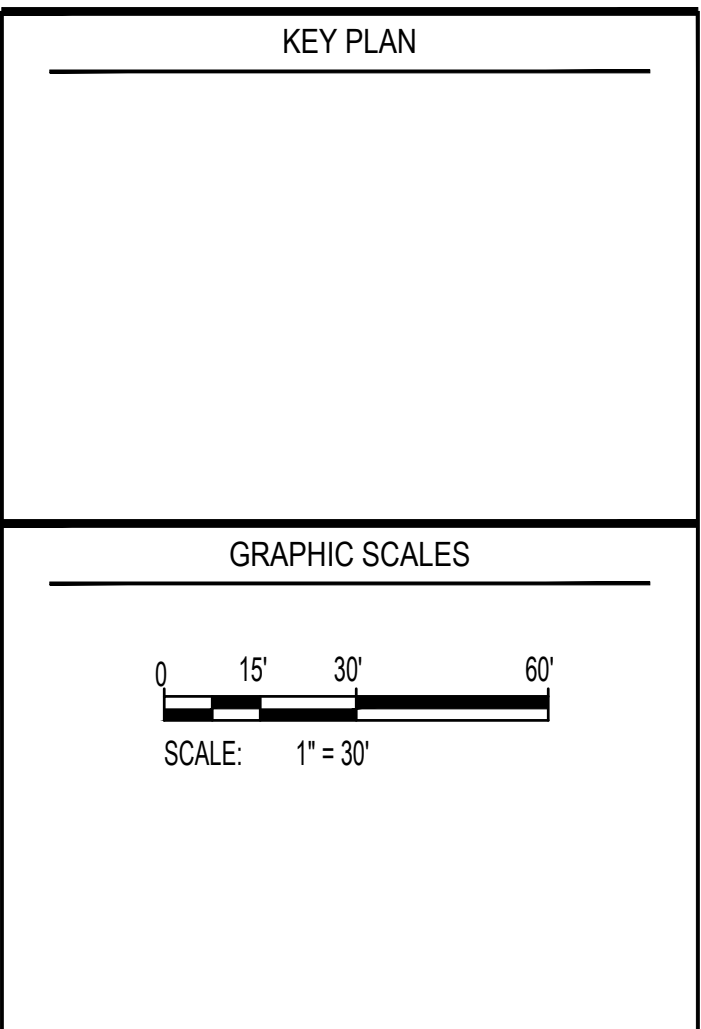
SHEET LEGEND

- | | |
|--|-----------------------------|
| | TIMBER PIER |
| | CONCRETE RELIEVING PLATFORM |
| | RIP RAP |

REVISIONS		

CLIENT INFORMATION
**GENERAL DYNAMICS
ELECTRIC BOAT**

**SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS**

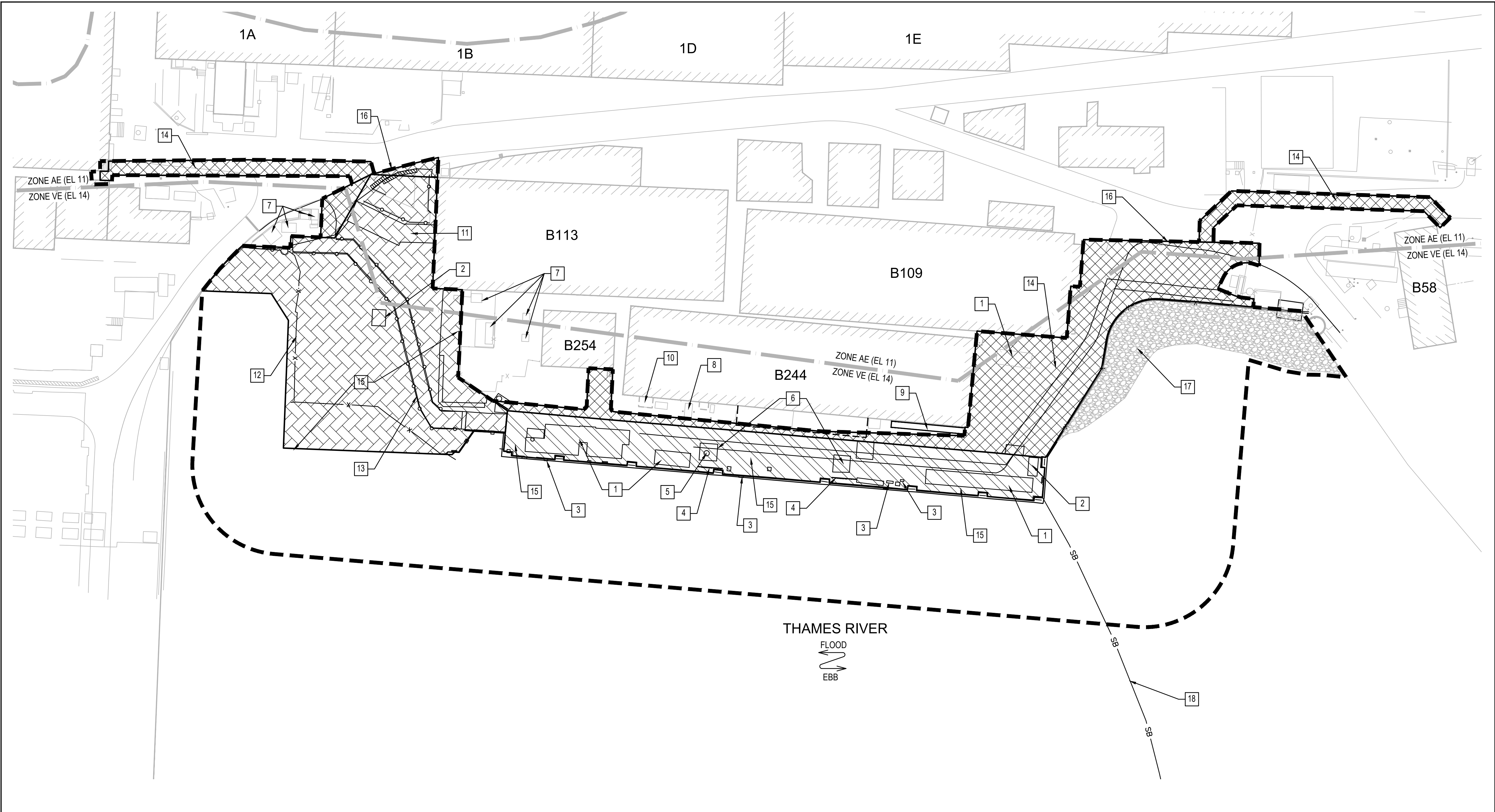


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EXISTING CONDITIONS PLAN		
DRAWING NO.		
C-101		
SCALE: 1" = 30'-0"		
DATE: MAY 31, 2024	SHEET 9 OF 63	
DES: JTD	DRAWN: JTD	CHECK: CJK



GENERAL SHEET NOTES

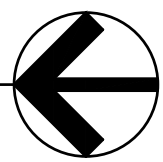
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET CD-102 FOR UTILITY DEMOLITION.
- ALL EQUIPMENT WITHIN HATCHED AREAS ARE TO BE REMOVED AND RETURNED TO OWNER OR DISPOSED OF. OWNER WILL DETERMINE WHAT ITEMS WILL BE RETURNED AND WHICH WILL BE DISPOSED OF.
- REFER TO SHEET B-101 FOR BORING PLAN.
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.

SHEET KEYNOTES

- REMOVE AND SALVAGE CONEX BOXES.
- REMOVE WOODEN STORAGE SHED. RETURN TO OWNER IF REQUESTED.
- REMOVE UTILITY CABINET.
- REMOVE ABOVE-GROUND PIPE SYSTEM.
- REMOVE ELECTRIC MANHOLE.
- REMOVE CONCRETE PAD.
- ELECTRIC SWITCH GEAR AND GENERATORS TO REMAIN. DO NOT DISTURB
- AIR CONDITIONER CONDENSER TO REMAIN OPERATIONAL DURING CONSTRUCTION.
- METAL STORAGE RACK TO BE REMOVED AND RETURNED TO OWNER.
- REMOVE BUILDING OVERHANG AND SALVAGE.
- REMOVE AND SALVAGE METAL PLATES AND RETURN TO OWNER.

1 SITE DEMOLITION PLAN
CD101 SCALE: 1" = 30'

- REMOVE CHAIN LINK FENCE.
- REMOVE BITUMINOUS PATHWAY AND WOOD HAND RAIL.
- REMOVE BITUMINOUS CONCRETE PAVEMENT AND AGGREGATE SUBBASE.
- REMOVE TIMBER DECKING, FRAMING AND PILES.
- SAWCUT PAVEMENT.
- REMOVE RIP RAP.
- SECURITY BARRIER TO BE RELOCATED BY OTHERS.



SHEET LEGEND

- REMOVE CONCRETE RELIEVING PLATFORM, FRAMING, PILES. (APPROX 7500 SF) SHEET PILE WALL TO REMAIN IN PLACE AND DEMOLISHED AS NEEDED FOR NEW CONSTRUCTION.
- REMOVE BITUMINOUS CONCRETE PAVEMENT AND SUBBASE. (APPROX 9,500 SF)
- REMOVE TIMBER DECKING (APPROX 14,600 SF)
- REMOVE RIP RAP (APPRX 4,100 SF)
- DEMOLITION LIMIT

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

SIGNATURE

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SITE DEMOLITION PLAN

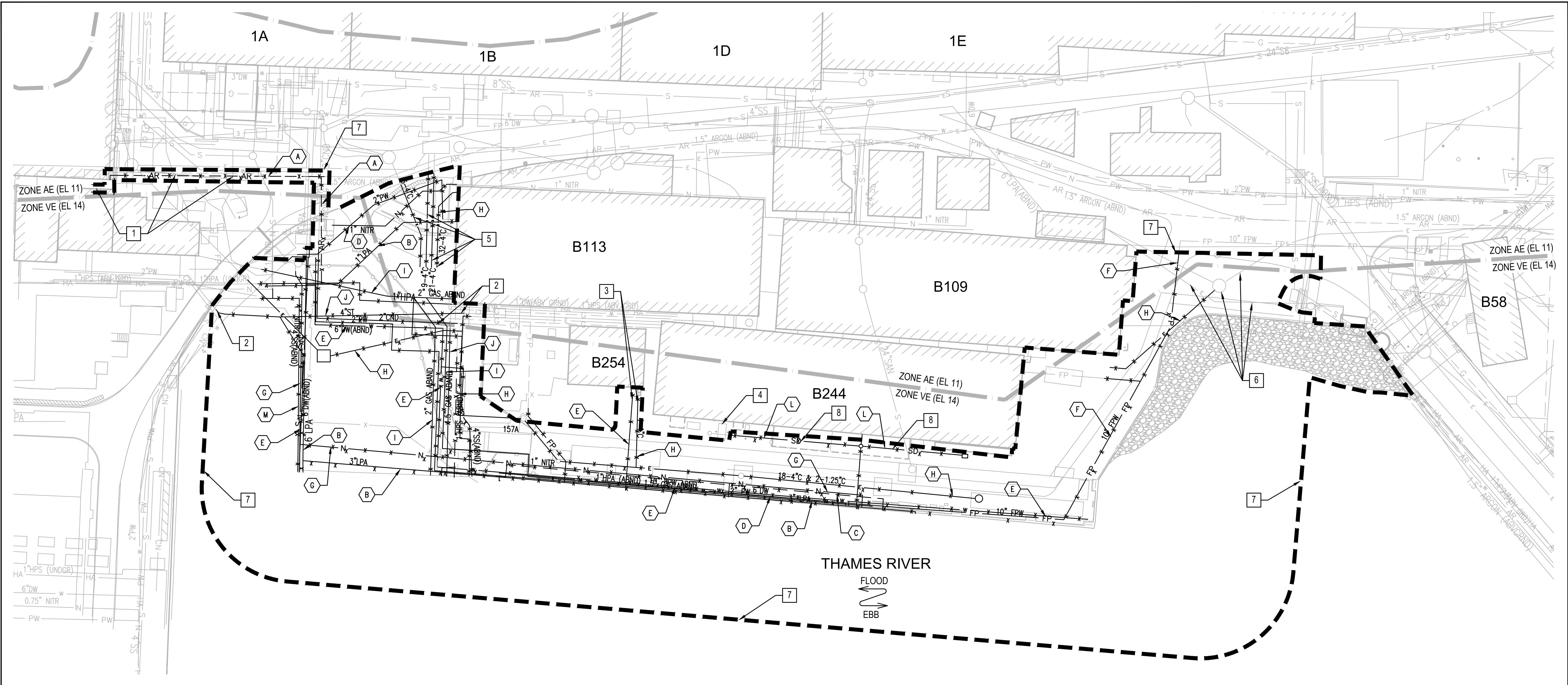
DRAWING NO.

CD-101

SCALE: 1" = 30'-0"

DATE: MAY 31, 2024 | SHEET 10 OF 63

DES: JTD | DRAWN: JTD | CHECK: CJK



GENERAL NOTES

- REFER TO SHEET CD-101 FOR SITE DEMOLITION PLAN.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-104 FOR UTILITY PLAN.
- REFER TO SHEET B-101 FOR BORING PLAN.
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- EXISTING UTILITY SHOWN ARE FROM UTILITY MAPS PROVIDED BY THE OWNER. FIELD LOCATIONS ARE UNDERWAY AND WILL BE REFLECTED IN FUTURE SUBMISSIONS.

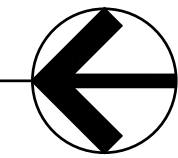
SHEET KEYNOTES

- REMOVE ABANDONED ARGON PIPE.
- CUT AND REMOVE EXISTING STEAM LINE AND CONDENSATION LINE. PROVIDE TEMPORARY OVERHEAD SERVICE UNTIL A PERMANENT REPLACEMENT PIPE IS IN SERVICE.
- REMOVE EXISTING WATER AND ELECTRIC SERVICE TO BUILDING 254. PROVIDE TEMPORARY AERIAL ELECTRIC SERVICE AND ABOVE GROUND WATER SERVICE UNTIL PERMANENT REPLACEMENTS ARE IN SERVICE.
- AIR CONDITIONING CONDENSER AND FOUNDATION TO REMAIN. DO NOT DISTURB. ELECTRIC SERVICE TO THE UNIT TO BE MAINTAINED FOR THE DURATION OF CONSTRUCTION.
- OWNER TO CONFIRM WHAT BUILDINGS/EQUIPMENT THE ELECTRICAL DUCT BANKS FEED. TEMPORARY ELECTRIC SERVICE WILL NEED TO BE PROVIDED WHERE NECESSARY.
- ELECTRIC MANHOLE AND DUCT BANKS TO REMAIN.
- REMOVE ALL UTILITIES WITHIN THE DEMOLITION LIMITS EXCEPT WHERE NOTED. ANY ACTIVE SERVICES THAT WILL NEED TO BE MAINTAINED DURING CONSTRUCTION WILL REQUIRE TEMPORARY CONNECTIONS.
- REMOVE STORM DRAIN PIPES AND INLETS.

1
CD102

UTILITY DEMOLITION PLAN

SCALE: 1" = 30'



SHEET LEGEND

--- DEMOLITION LIMIT

UTILITY DEMOLITION TABLE

REF	UTILITY	SIZE	** LF REMOVED	NOTES
A	ARGON	1.5"	213	REMOVE ABANDON PIPE TO BE REPLACED IN SAME TRENCH
B	LOW PRESSURE AIR	1"	94	CUT & CAP
		3"	330	CUT & CAP
		6"	134	CUT & CAP
C	HIGH PRESSURE AIR	1"	114	CUT & CAP
D	PURE WATER	2"	538	CUT & CAP
E	DOMESTIC WATER	6"	650	CUT & CAP
F	FIRE PROTECTION WATER	10"	529	CUT & CAP
G	NITROGEN	1"	502	CUT & CAP
H	ELECTRIC DUCT	VARIES	765	DIFFERENT SIZE DUCT BANKS - SOME TERMINATIONS UNKNOWN TEMPORARY ELECTRIC SERVICE MAY BE REQUIRED
I	NATURAL GAS	1.5"	315	CUT & CAP
		2"	203	CUT & CAP
J	STEAM	4"	176	NEED TEMPORARY SERVICE PROVIDED DURING CONSTRUCTION
K	CONDENSATE	2"	112	CUT & CAP
L	STORM DRAIN	UNKNOWN	154	EXISTING PIPE TO BE REPLACED
M	SANITARY SEWER	4"	191	CUT & CAP

** UTILITY REMOVAL LINEAR FOOTAGES ARE APPROXIMATE. EXISTING UTILITIES ARE TAKEN FROM MAPPING PROVIDED BY THE OWNER AND HAS NOT BEEN FIELD VERIFIED OR SURVEYED.

REVISIONS

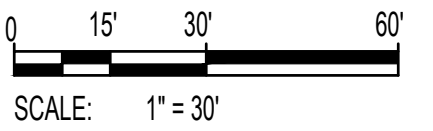
CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



SIGNATURE

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UTILITY DEMOLITION PLAN

DRAWING NO.

CD-102

SCALE: 1" = 30'-0"

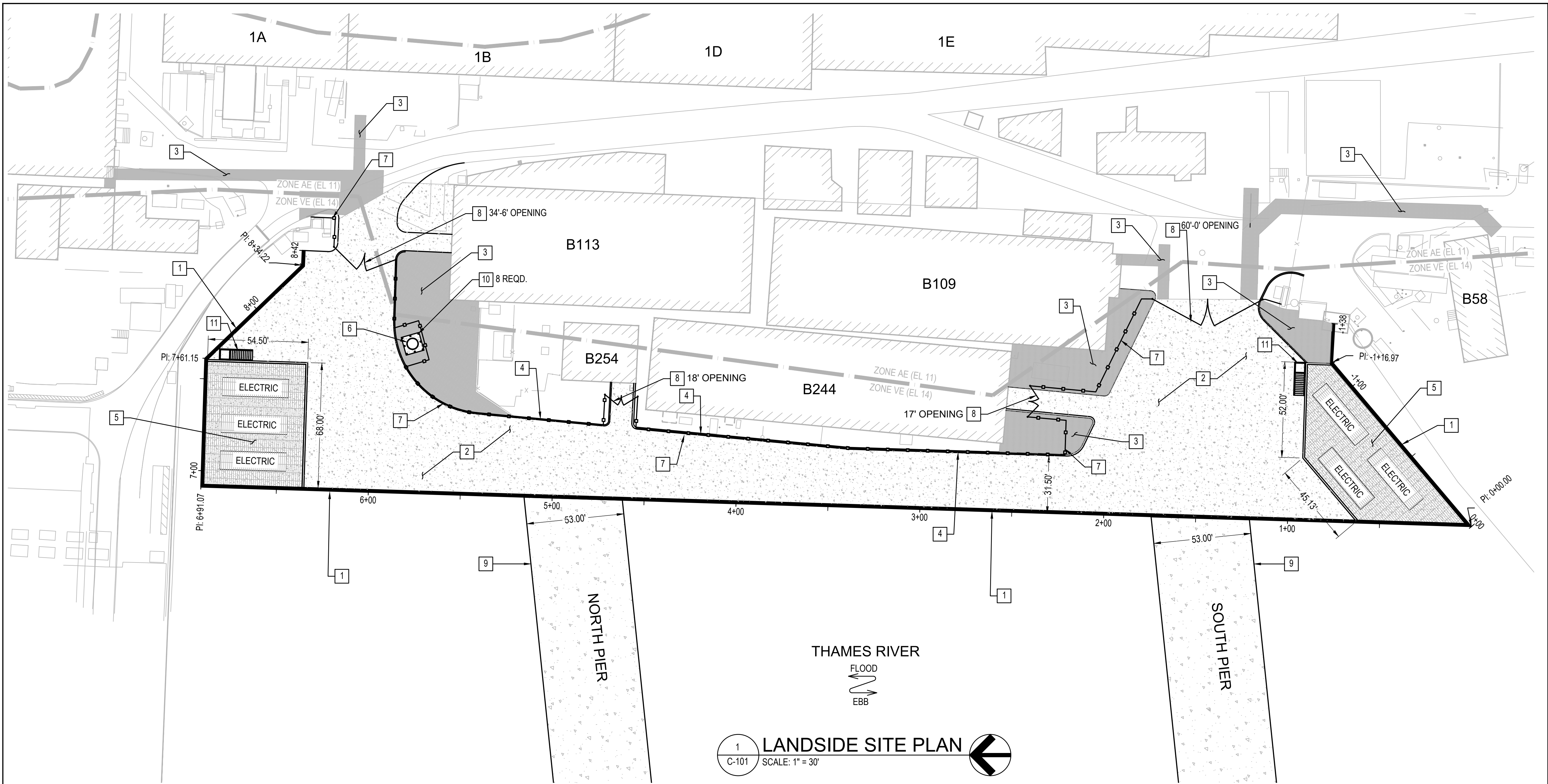
DATE: MAY 31, 2024

SHEET 11 OF 63

DES: JTD

DRAWN: JTD

CHECK: CJK



GENERAL SHEET NOTES

- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-103 FOR LANDSIDE GRADING AND DRAINAGE PLAN.
- REFER TO SHEET C-105 FOR UTILITIES PLAN.
- REFER TO SHEET C-106 FOR STORMWATER MANAGEMENT PLAN.
- REFER TO SHEET C-104 FOR PIER LAYOUT PLAN.
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET B-101 FOR BORING PLAN.

SHEET KEYNOTES

- BULKHEAD. REFER TO SHEET S-701 FOR DETAILS
- CONCRETE PAVEMENT (APPROXIMATELY 12" REINFORCED)
- BITUMINOUS CONCRETE PAVEMENT (APPROXIMATELY 12" AGGREGATE BASE, 4" BITUMINOUS BASE AND 3" SURFACE COURSE)
- RETAINING WALL. HEIGHT VARIES. (AVERAGE 18" HIGH)
- ELEVATED EQUIPMENT PLATFORM
- ABOVE GROUND C5 GAS TANK ON CONCRETE PAD AND 8 BOLLARDS. TANK REGULATOR STATION AND VALVES TO BE PROVIDED BY OTHERS.
- CONTROLLED INDUSTRIAL AREA (CIA) FENCE AND GATES (7' TALL BLACK VINYL CHAIN LINK WITH 3 STRANDS OF BARBED WIRE)
- CIA SWING GATE, CLEAR OPENING AS NOTED
- REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS
- CONCRETE-FILLED BOLLARD
- METAL STAIRS

SHEET LEGEND

- | | |
|--|------------------------------|
| | CONCRETE PAVEMENT / PAD |
| | EQUIPMENT PLATFORM |
| | BITUMINOUS CONCRETE PAVEMENT |
| | SECURITY FENCE |

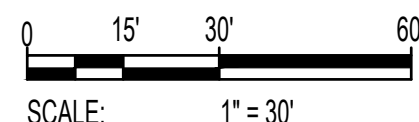
REVISIONS		

CLIENT INFORMATION
**GENERAL DYNAMICS
ELECTRIC BOAT**

**SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS**

KEY PLAN

GRAPHIC SCALES



SIGNATURE

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LANDSIDE SITE PLAN

DRAWING NO.

C-102

SCALE: 1" = 30'-0"

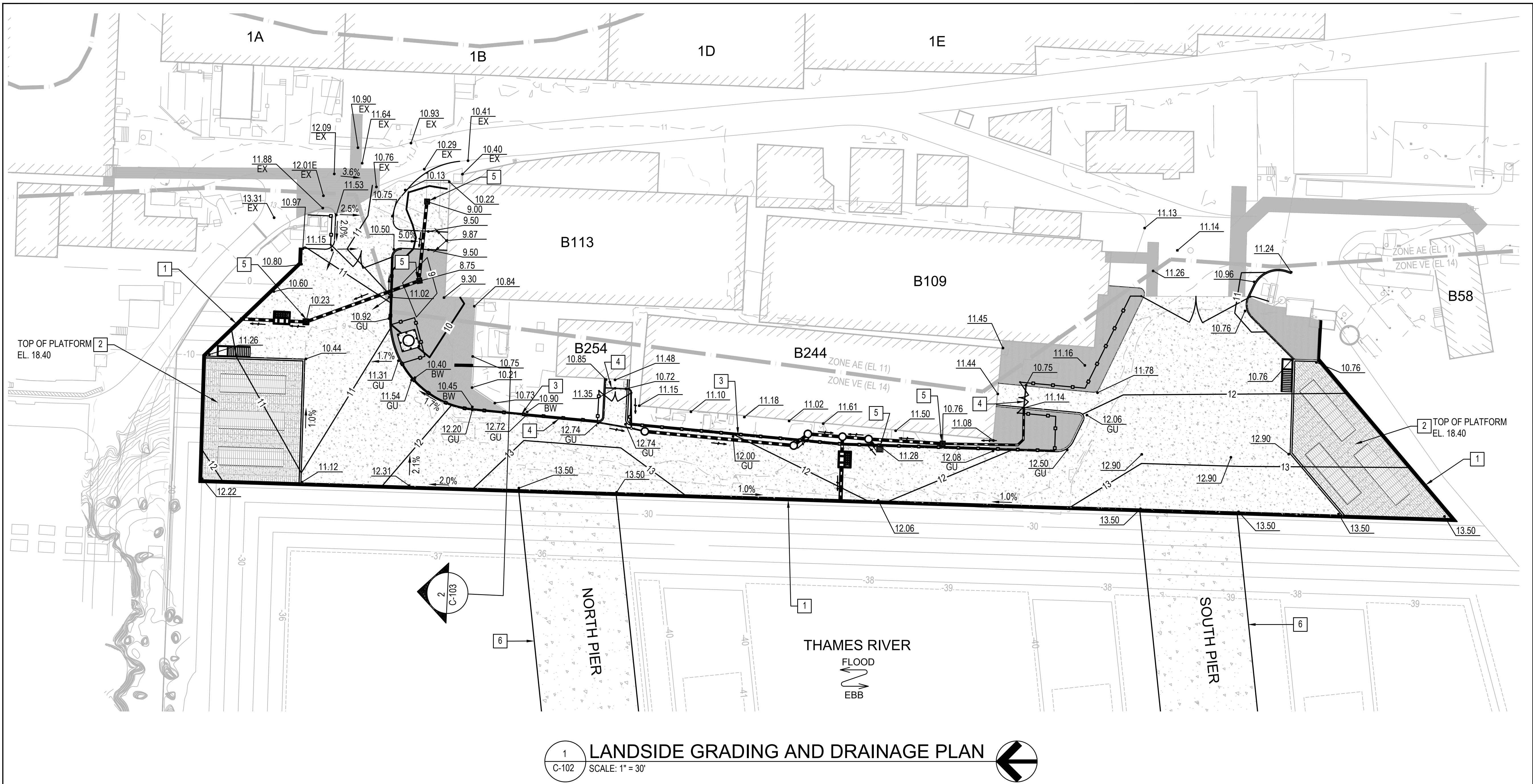
DATE: MAY 31, 2024

SHEET 12 OF 63

DES: JTD

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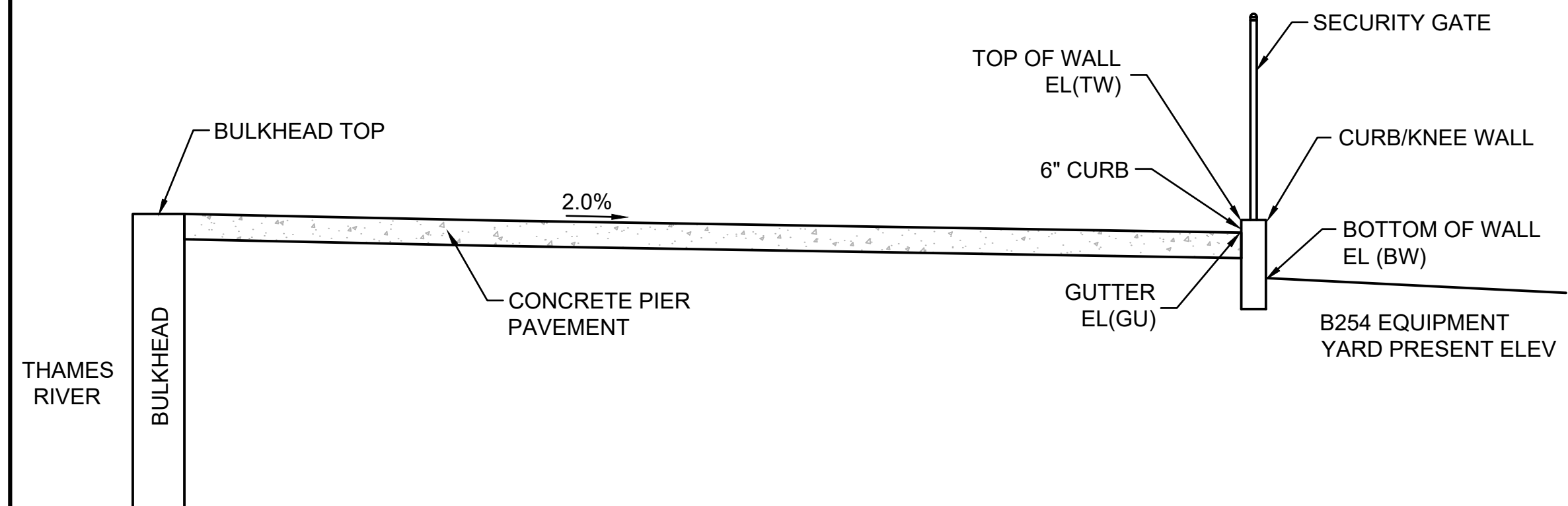


GENERAL SHEET NOTES

- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-102 FOR LANDSIDE SITE PLAN.
- REFER TO SHEET C-105 FOR LANDSLIDE UTILITIES PLAN.
- REFER TO SHEET C-106 FOR STORMWATER MANAGEMENT PLAN.
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET B-101 FOR BORING PLAN.

SHEET KEYNOTES

- BULKHEAD. REFER TO SHEET S-701 FOR DETAILS.
- ELEVATED EQUIPMENT PLATFORM.
- RETAINING WALL
- TRENCH DRAIN
- STORM DRAIN INLET
- REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS.

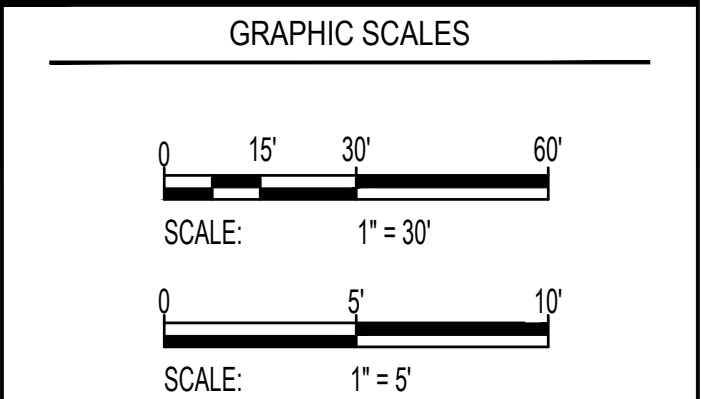
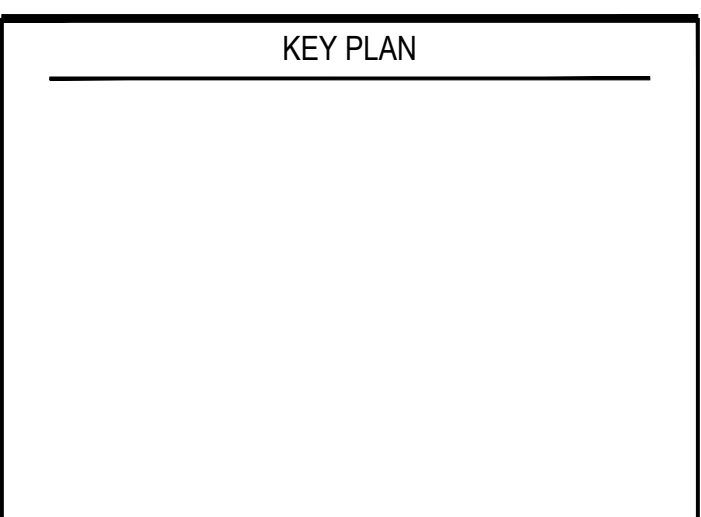


2
C-102 BULKHEAD/PIER SECTION
SCALE: 1" = 5'

REVISIONS		

CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

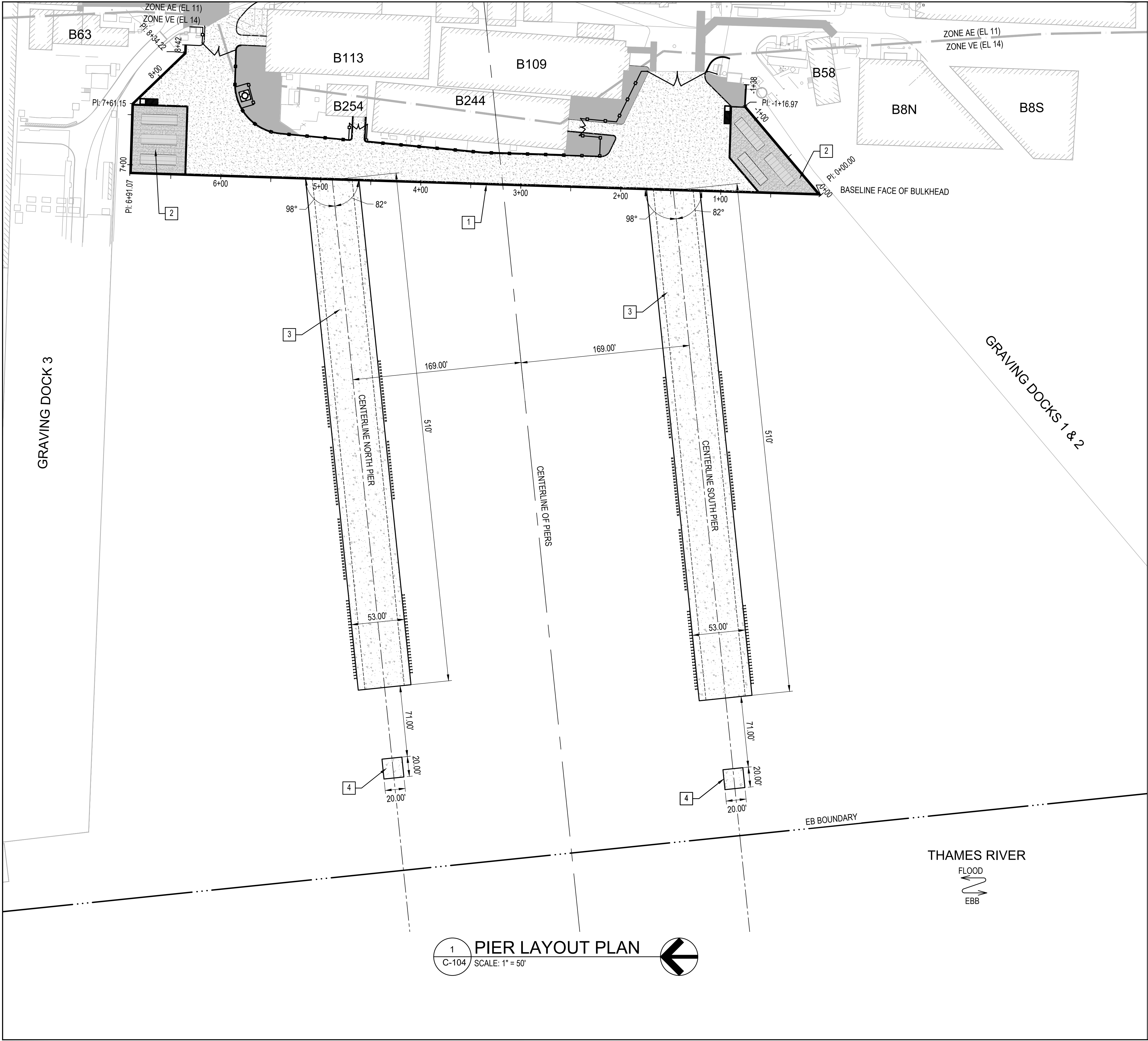


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LANDSIDE GRADING PLAN		
DRAWING NO.		
C-103		
SCALE: 1" = 30'-0"		
DATE: MAY 31, 2024	SHEET 13 OF 63	
DES: JTD	DRAWN: JTD	CHECK: CJK



GENERAL SHEET NOTES

- 1. ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- 2. REFER TO SHEET C-102 FOR LANDSIDE SITE PLAN.

SHEET KEYNOTES

- 1. BULKHEAD. REFER TO SHEET S-701 FOR DETAILS.
- 2. ELEVATED EQUIPMENT PLATFORM.
- 3. REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS.
- 4. MOORING DOLPHINS.

SHEET LEGEND

- CONCRETE PAVEMENT / PAD
- EQUIPMENT PLATFORM
- BITUMINOUS CONCRETE PAVEMENT

REVISIONS

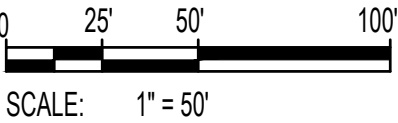
CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



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PIER LAYOUT PLAN

DRAWING NO.

C-104

SCALE: 1" = 50'-0"

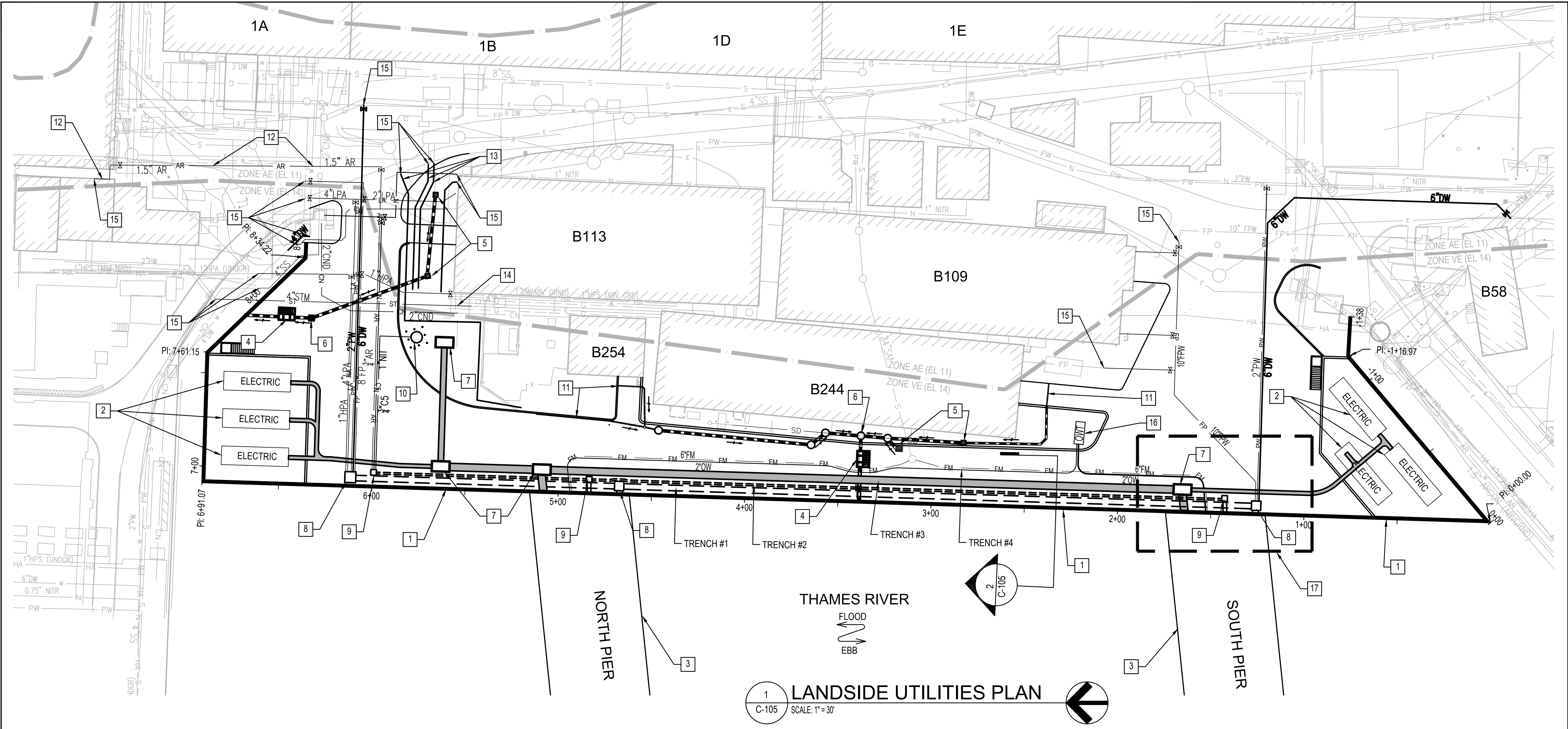
DATE: MAY 31, 2024

SHEET 14 OF 63

DES: JTD

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GENERAL SHEET NOTES

- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-102 FOR LANDSIDE SITE PLAN.
- REFER TO SHEET C-103 FOR LANDSIDE GRADING AND DRAINAGE PLAN.
- REFER TO SHEET C-106 FOR STORMWATER MANAGEMENT PLAN.
- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET B-101 FOR BORING PLAN.

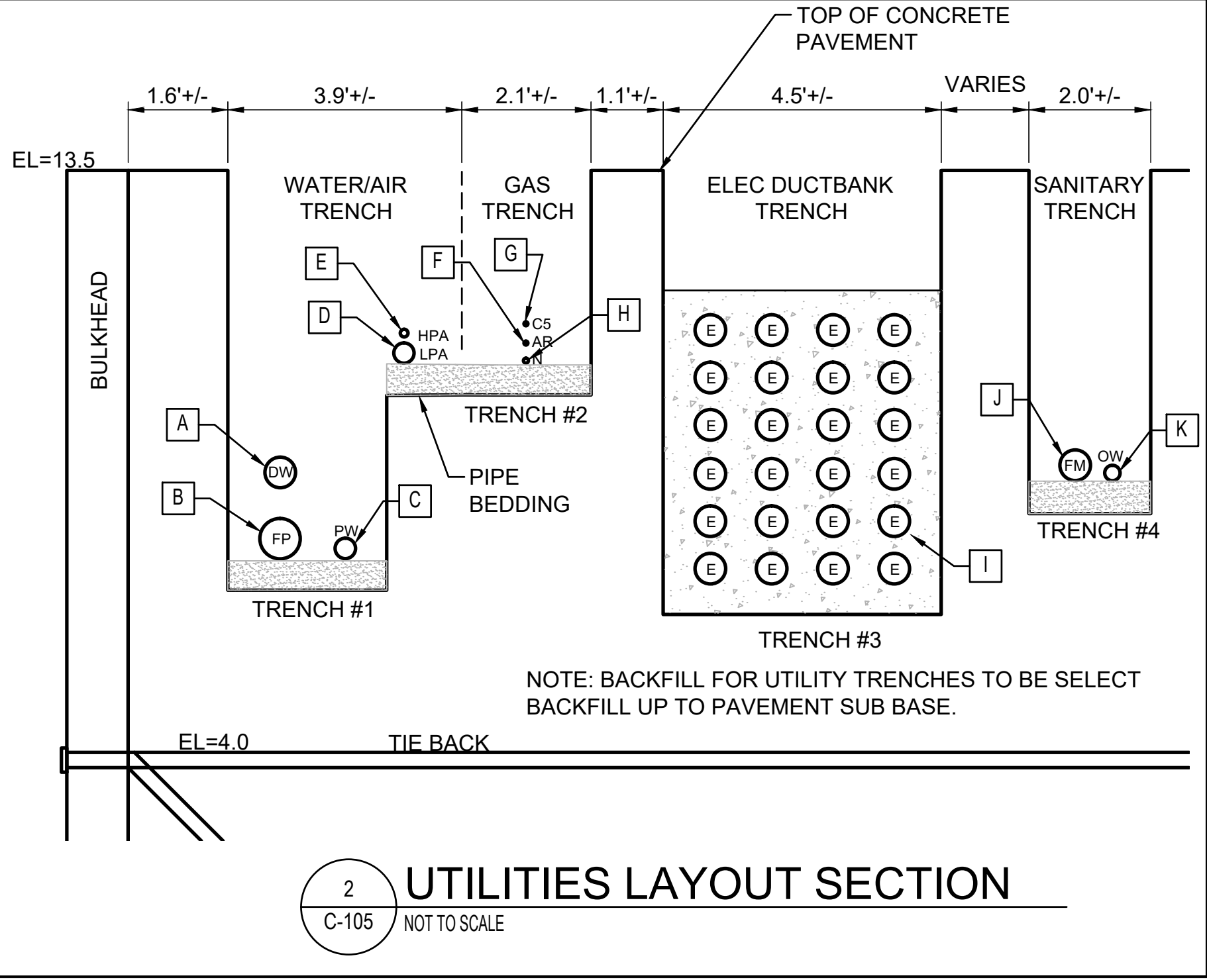
NOTES TO REVIEWERS

- EB TO PROVIDE SIZE OF C5 TANK AND OILY WASTE TANK
- CONTRACTOR TO SUPPLY TANKS OR EB.

REF	SYMB	UTILITY	DIAM (IN)	MATERIAL
A	DW	WATER - DOMESTIC	6"	DUCTILE IRON PIPE, CEMENT LINED W/ MECHANICAL JOINTS
B	FP	WATER - FIRE PROTECTION	8"	DUCTILE IRON PIPE, CEMENT LINED W/ MECHANICAL JOINTS
C	PW	PURIFIED WATER	2"	STAINLESS STEEL W/ MECHANICAL JOINTS
D	LA	AIR - LOW PRESSURE	4"	SCH 40 RED BRASS
E	HA	AIR - HIGH PRESSURE	1"	BLACK STEEL SCH 160 GRADE B W/ WELDED JOINTS
F	AR	GAS - ARGON	3/4"	SCH 40 RED BRASS
G	C5	GAS - C5	3/4"	SCH 40 RED BRASS
H	NI	NITROGEN	1"	SCH 40 RED BRASS
I	E	ELECTRIC DUCT BANK	VARIES	4" PVC SCH 40 CONCRETE ENCASED
J	OW	OILY WASTE	2"	DUCTILE IRON PIPE, CEMENT LINED W/ MECHANICAL JOINTS
K	FM	SANITARY FORCE MAIN	6"	DUCTILE IRON PIPE, CEMENT LINED W/ MECHANICAL JOINTS

- ### SHEET KEYNOTES

 - BULKHEAD. REFER TO SHEET S-701 FOR BULKHEAD DETAILS.
 - SECONDARY UNIT SUBSTATIONS ON ELEVATED EQUIPMENT PLATFORM.
 - REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS.
 - JELLYFISH FILTER STORMWATER MANAGEMENT FACILITY. SEE DETAIL 2/C-501.
 - STORM DRAIN INLET
 - CASCADE STORMWATER PRETREATMENT STRUCTURE. SEE DETAIL 1/C-501.
 - TRAFFIC BEARING ELECTRICAL VAULT.
 - TRAFFIC BEARING WATER AND COMPRESSED AIR VAULT.
 - TRAFFIC BEARING GAS VAULT (NITROGEN, ARGON & C5).
 - ABOVE GROUND C5 GAS TANK WITH BOLLARDS. SIZE TO BE DETERMINED BY THE OWNER.
 - 12" WIDE TRAFFIC BEARING TRENCH DRAIN.
 - ARGON PIPE.
 - RELOCATED ELECTRICAL DUCTS. EXISTING LIVE ELECTRICAL FEEDS TO REMAIN IN SERVICE DURING CONSTRUCTION WITH TEMPORARY OVERHEAD CONNECTIONS.
 - LIVE STEAM PIPE FEEDING BUILDING B113 TO REMAIN IN SERVICE DURING CONSTRUCTION WITH OVERHEAD TEMPORARY CONNECTION.
 - CONNECT TO EXISTING.
 - 500 GALLON ABOVE GROUND OIL WASTE TANK.
 - REFER TO MECHANICAL, FIRE PROTECTION AND ELECTRICAL DRAWINGS FOR PIER UTILITY PLANS.



REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

015'30'60'

SCALE: 1" = 30'

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LANDSIDE UTILITIES PLAN

DRAWING NO.

C-105

SCALE: 1" = 30'-0"

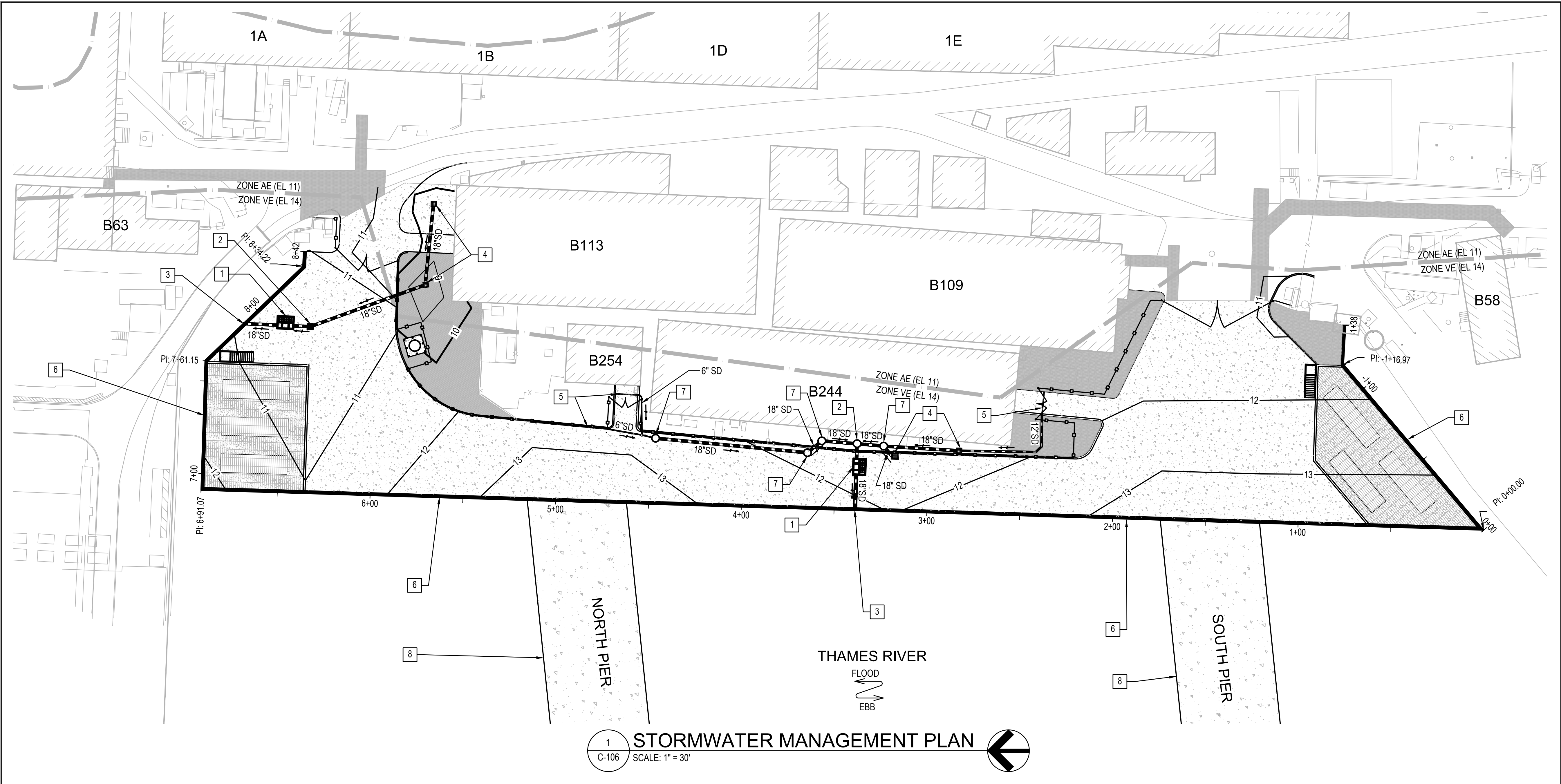
DATE: MAY 31, 2024

SHEET 15 OF 63

DES: JTD

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GENERAL SHEET NOTES

- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET B-101 FOR BORING PLAN.
- REFER TO SHEET C-103 FOR LANDSIDE GRADING AND DRAINAGE PLAN.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-102 FOR LANDSIDE SITE PLAN.
- REFER TO SHEET C-105 FOR LANDSIDE UTILITIES PLAN.

SHEET KEYNOTES

- JELLYFISH FILTER STORMWATER MANAGEMENT FACILITY. SEE DETAIL 2/C-501.
- CASCADE STORMWATER PRETREATMENT STRUCTURE. SEE DETAIL 1/C-501.
- TIDE GATE. SEE DETAIL 3/C-501.
- STORM DRAIN INLET.
- TRENCH DRAIN.
- BULKHEAD. REFER TO SHEET S-701 FOR DETAILS
- STORM DRAIN MANHOLE.
- REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS.

SHEET LEGEND

- | | |
|--|------------------------------|
| | CONCRETE PAVEMENT / PAD |
| | EQUIPMENT PLATFORM |
| | BITUMINOUS CONCRETE PAVEMENT |

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

SCALE: 1" = 30'

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STORMWATER MANAGEMENT PLAN

DRAWING NO.

C-106

SCALE: 1" = 30'-0"

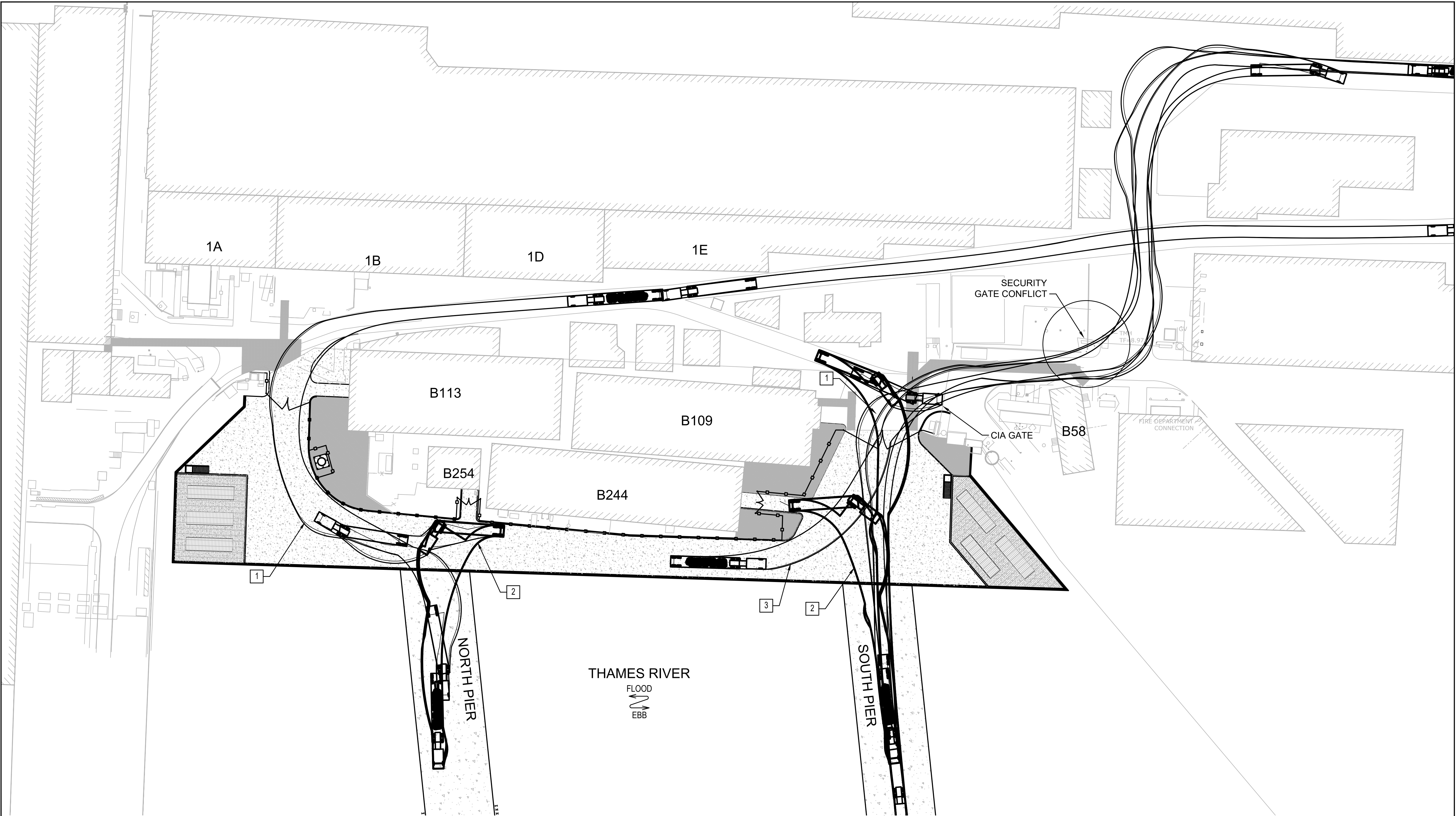
DATE: MAY 31, 2024

SHEET 16 OF 63

DES: JTD

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☐ SHEET KEYNOTES

- 1. WB-67 TRACTOR TRAILER VEHICLE MANEUVERING PATH TO ENTER PIER
- 2. WB-67 TRACTOR TRAILER VEHICLE MANEUVERING PATH TO EXIT PIER
- 3. WB-67 TRACTOR TRAILER VEHICLE MANEUVERING PATH TO EXIT SITE

1

C-107

VEHICLE CIRCULATION PLAN

←

SCALE: 1" = 40'

NOTES TO REVIEWERS

1. Tractor trailers will be required to pass through CIA area. Gates may require modifications.

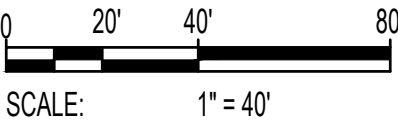
REVISIONS		

CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES



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TRAFFIC CIRCULATION PLAN

DRAWING NO.

C-107

SCALE: 1" = 40'-0"

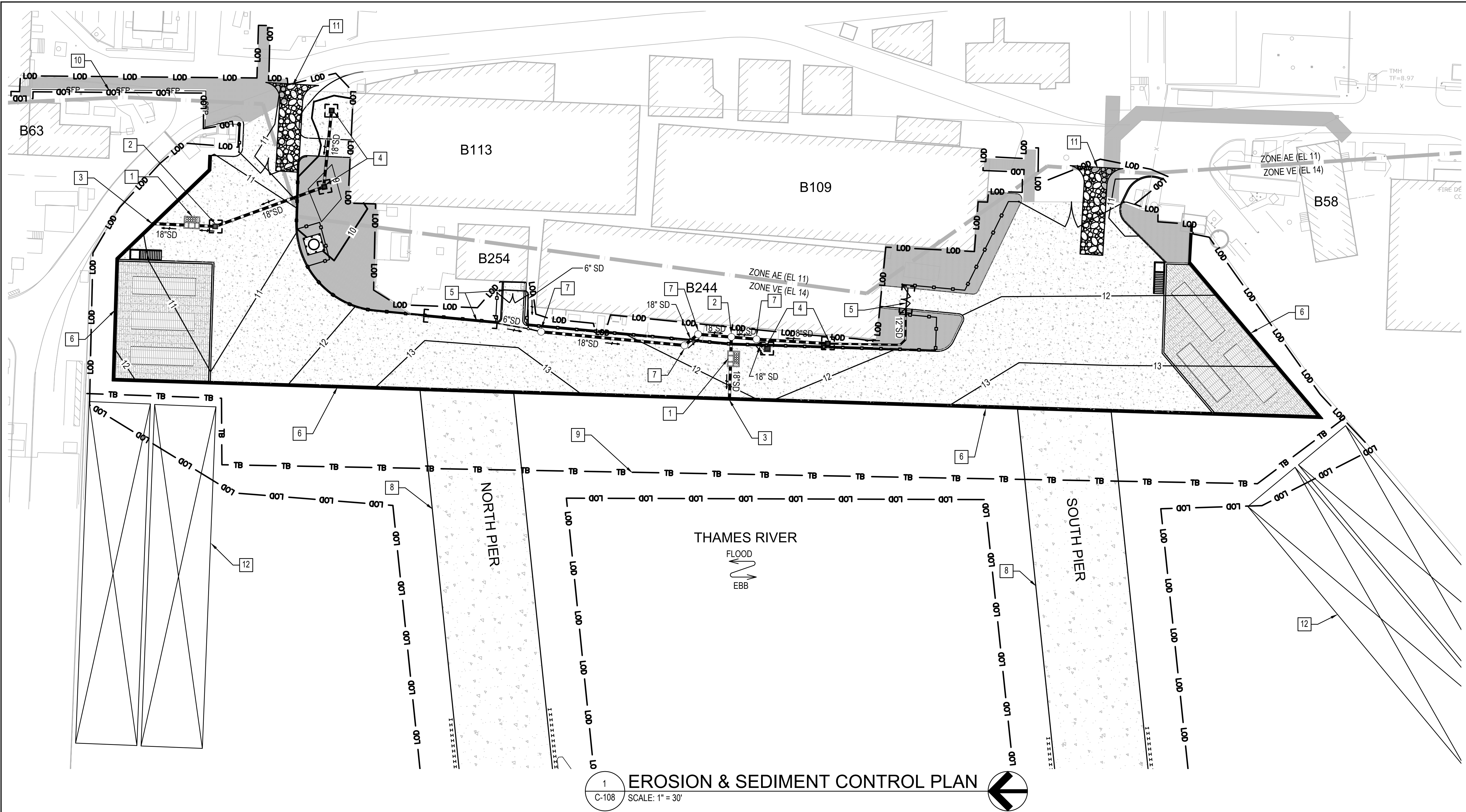
DATE: MAY 31, 2024

SHEET 17 OF 63

DES: JTD

DRAWN: JTD

CHECK: CJK



GENERAL SHEET NOTES

- REFER TO SHEET C-001 FOR GENERAL CIVIL NOTES, LEGENDS AND ABBREVIATIONS.
- REFER TO SHEET B-101 FOR BORING PLAN.
- REFER TO SHEET C-103 FOR LANDSIDE GRADING AND DRAINAGE PLAN.
- ALL ELEVATIONS REFERENCE ELECTRIC BOAT FACILITY DATUM (EBFD).
- REFER TO SHEET C-102 FOR LANDSIDE SITE PLAN.
- REFER TO SHEET C-105 FOR LANDSIDE UTILITIES PLAN.

SHEET KEYNOTES

- JELLYFISH FILTER STORMWATER MANAGEMENT FACILITY. SEE DETAIL 2/C-501.
- CASCADE STORMWATER PRETREATMENT STRUCTURE. SEE DETAIL 1/C-501.
- TIDE GATE. SEE DETAIL 3/C-501.
- STORM DRAIN INLET PROTECTION.
- 12" WIDE TRAFFIC BEARING TRENCH DRAIN WITH INLET PROTECTION.
- BULKHEAD. REFER TO SHEET S-701 FOR DETAILS.
- STORM DRAIN MANHOLE.
- REFER TO STRUCTURAL DRAWINGS FOR PIER PLAN, SECTIONS AND DETAILS.
- TURBIDITY CURTAIN.
- SILT FENCE ON PAVEMENT.
- STABILIZED CONSTRUCTION ENTRANCE.
- 2 BARGES TIED TOGETHER TO PROVIDE LAYDOWN AND STORAGE.

NOTES TO REVIEWERS

- DUE TO SPACE CONSTRAINTS, OWNER WILL NEED TO ADVISE WHERE LAYDOWN AND STORAGE AREAS CAN BE LOCATED WHILE NOT DISRUPTING ELECTRIC BOAT OPERATIONS.

SHEET LEGEND

- | | |
|--|----------------------------------|
| | CONCRETE PAVEMENT / PAD |
| | EQUIPMENT PLATFORM |
| | BITUMINOUS CONCRETE PAVEMENT |
| | LIMITS OF DISTURBANCE |
| | TURBIDITY CURTAIN |
| | INLET PROTECTION |
| | SILT FENCE ON PAVEMENT |
| | STABILIZED CONSTRUCTION ENTRANCE |

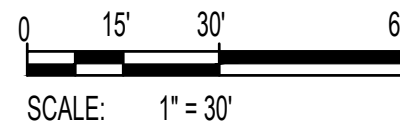
REVISIONS

CLIENT INFORMATION
**GENERAL DYNAMICS
ELECTRIC BOAT**

**SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS**

KEY PLAN

GRAPHIC SCALES



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EROSION AND SEDIMENT CONTROL PLAN

DRAWING NO.

C-108

SCALE: 1" = 30'-0"

DATE: MAY 31, 2024

SHEET 18 OF 63

DES: JTD

DRAWN: JTD

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GENERAL STRUCTURAL NOTES

GENERAL:

1.

NOT ALL OPENINGS IN THE STRUCTURAL WORK ARE SHOWN. REVIEW DRAWINGS FROM OTHER DISCIPLINES AND COORDINATE OPENINGS AND EMBEDDED ITEMS SUCH AS SLEEVES, ANCHORS, CONDUITS, ETC. INCORPORATED INTO THE STRUCTURAL WORK.
2.

THE DRAWINGS SHOW THE FINAL CONDITION OF THE STRUCTURES. PROVIDE MEANS TO STABILIZE THE STRUCTURES DURING TEMPORARY CONDITIONS.
3.

THE SIZES AND LOCATIONS OF EQUIPMENT PADS, AS WELL AS EQUIPMENT OR UTILITY-RELATED OPENINGS, ARE DEPENDENT ON THE ACTUAL EQUIPMENT PROVIDED. VERIFY AND COORDINATE SUCH ITEMS. DO NOT ALTER DIMENSIONS ON THESE DRAWINGS WITHOUT APPROVAL OF THE ENGINEER. STRUCTURAL DRAWINGS MAY NOT SHOW ALL EQUIPMENT PADS AND OTHER EQUIPMENT OR UTILITY SUPPORTS/OPENINGS REQUIRED. REFER TO DRAWINGS BY OTHER DISCIPLINES.
4.

SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DO NOT OBTAIN DIMENSIONAL INFORMATION FROM DIRECT SCALING OF THE DRAWINGS.

DEEP FOUNDATIONS:

1.

PROVIDE SPIRAL WELDED STEEL PIPE PILES CONFORMING TO ASTM A252 GRADE 60.
2.

INSTALL PILES IN THE LOCATION AS SHOWN ON THE DRAWINGS. ANY DEVIATION OF THE LOCATION MUST BE APPROVED BY THE ENGINEER.
3.

INSTALL PILES WITHIN 3 INCHES OF THE LOCATION INDICATED ON THE PLANS.
4.

FILL THE ENTIRE LENGTH OF THE STEEL PIPE PILES WITH CONCRETE.
5.

PROVIDE REINFORCING SPACERS TO MAINTAIN REQUIRED CLEAR SPACE BETWEEN THE INSIDE FACE OF THE STEEL PIPE PILES AND REINFORCING FOR THE ENTIRE LENGTH OF THE PILE REINFORCING.
6.

SAND-BLAST PILE SURFACES TO AN SSPC SP-10 CLEANLINESS PRIOR TO APPLYING COATING. PROVIDE COAL TAR EPOXY TO STEEL PIPE PILES IN TWO COATS (7 MILS EACH AND MINIMUM 14 MILS TOTAL). EXTEND COATING FROM TOP OF PILE TO TWO FEET BELOW MUDLINE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS INCLUDING SUBSTRATE AND ATMOSPHERIC CONDITIONS AND TEMPERATURES.

MARINE CONCRETE:

1.

PROVIDE MARINE CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 6000 PSI AT 28 DAYS.
2.

DETAIL AND CONSTRUCT REINFORCED CONCRETE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301, "SPECIFICATION FOR STRUCTURAL CONCRETE."
3.

DETAIL REINFORCING STEEL IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE SP-66, "ACI DETAILING MANUAL," WHICH INCLUDES ACI 315, "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT."
4.

PROVIDE REINFORCEMENT STEEL CONFORMING TO ASTM A615 GRADE 60 DEFORMED BARS OR ASTM A706 GRADE 60 WELDABLE DEFORMED BARS FOR ALL MARINE CONCRETE. PROVIDE ASTM A970 HEADED BARS.
5.

PROVIDE 3 INCH CONCRETE COVER FOR ALL REINFORCING BARS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6.

SUBMIT REINFORCING STEEL DETAILS (SHOP DRAWINGS) AND RECEIVE APPROVAL BEFORE PROCEEDING WITH FABRICATION.
7.

CHAMFER EXPOSED CONCRETE EDGES 3/4 INCHES UNLESS OTHERWISE NOTED.
8.

DETAIL SPLICES FOR REINFORCING BARS NOT DIMENSIONED ON THE DRAWINGS AS TABULATED.
9.

SUBMIT A PLAN INDICATING THE TYPE AND LOCATION OF EACH CONSTRUCTION JOINT NOT SHOWN ON THE DRAWINGS.
10.

ON SURFACES WHERE NEW CONCRETE IS PLACED AGAINST HARDENED CONCRETE, ROUGHEN THE EXISTING HARDENED CONCRETE SURFACE TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH.
11.

SURFACE OF HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS MUST BE CLEANED OF LAITANCE AND MUST EXPOSE CLEAN COARSE AGGREGATE SOLIDLY EMBEDDED IN MORTAR MIX. THE SURFACE OF CONSTRUCTION JOINTS MUST BE THOROUGHLY CLEANED AND WETTED JUST PRIOR TO PLACING CONCRETE.

MARINE CONCRETE (CONTINUED):

12.

REVIEW DRAWINGS FROM OTHER DISCIPLINES AND COORDINATE ALL OPENINGS AND EMBEDDED ITEMS SUCH AS SLEEVES, ANCHORS, CONDUIT, ETC. THAT MUST BE INCORPORATED INTO CONCRETE WORK.
13.

PROVIDE CLASS A FINISH FOR FORMED SURFACES EXPOSED TO COMMON VIEW. PROVIDE CLASS D FINISH FOR ALL OTHER FORMED SURFACES. PROVIDE BROOM FINISH PERPENDICULAR TO THE MAIN DIRECTION OF PEDESTRIAN TRAFFIC TO UNFORMED SURFACES SUBJECTED TO PEDESTRIAN TRAFFIC.
14.

COLD WEATHER PLACEMENT OF CONCRETE MUST BE IN ACCORDANCE WITH ACI 306R, ACI 306.1, AND THE SPECIFICATIONS.
15.

HOT WEATHER PLACEMENT OF CONCRETE MUST BE IN ACCORDANCE WITH ACI 305R, ACI 305.1, AND THE SPECIFICATIONS.

STRUCTURAL STEEL

1.

FABRICATE AND ERECT STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), "STEEL CONSTRUCTION MANUAL".
2.

SUBMIT ERECTION PLANS AND SHOP DETAILS AND RECEIVE APPROVAL FROM THE ENGINEER BEFORE PROCEEDING WITH FABRICATION.
3.

PROVIDE STRUCTURAL STEEL WIDE-FLANGE SHAPES CONFORMING TO ASTM A992, HSS MEMBERS CONFORMING TO ASTM A500 GRADE C, PIPE CONFORMING TO ASTM A53 GRADE B, AND ALL OTHER MEMBERS CONFORMING TO ASTM A36 UNLESS OTHERWISE NOTED.
4.

PROVIDE HOT-DIP GALVANIZED ANCHOR RODS CONFORMING TO ASTM F1554, GRADE 55 WITH SUPPLEMENTARY REQUIREMENT S-1 (WELDABLE) AND NUTS CONFORMING TO ASTM A563, GRADE DH (HEAVY HEX). PROVIDE DOUBLE NUTS SPUN TIGHT AGAINST WASHER AT ANCHOR ROD END EMBEDDED IN CONCRETE.
5.

MILL BOTTOM OF ALL COLUMNS/POSTS AND FINISH TOP OF ALL BASE PLATES IN ACCORDANCE WITH AISC SPECIFICATIONS. WELD BASE PLATES TO BOTTOM OF COLUMNS/POSTS.
6.

ALL STEEL SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. HOT-DIP GALVANIZE STEEL AND CONNECTIONS PER ASTM A123 AND A153.
7.

REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 ZINC-RICH PAINT FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. COATING THICKNESS OF ZINC-RICH PAINT MUST BE 50% GREATER THAN THE SURROUNDING GALVANIZED COATING THICKNESS, BUT NOT TO EXCEED 4.0 MILS.
8.

EMBRITTLEMENT MITIGATION BY THERMAL TREATMENT OF HOT-DIP GALVANIZED STEEL MEMBERS WITH COLD BEND RADII OF LESS THAN THREE TIMES THE MEMBER THICKNESS MUST BE PERFORMED BY SUBCRITICAL ANNEALING IN ACCORDANCE WITH ASTM A143. PRIOR TO GALVANIZATION, THERMALLY TREAT ALL HSS SQUARE AND RECTANGULAR SECTIONS. SUBMIT PROPOSED THERMAL TREATMENT PROCEDURE TO THE ENGINEER FOR APPROVAL PRIOR TO TREATMENT.
9.

PROVIDE A CONTINUOUS SEAL WELDED CAP PLATE FOR HSS MEMBERS, UNLESS NOTED OTHERWISE. CAP PLATE THICKNESS TO MATCH HSS WALL THICKNESS.
10.

FIELD MODIFICATION OF THE STRUCTURAL STEEL IS NOT PERMITTED WITHOUT APPROVAL FROM THE ENGINEER.
11.

WELD IN COMPLIANCE WITH AMERICAN WELDING SOCIETY, AWS D1.1, "STRUCTURAL WELDING CODE".
12.

PROVIDE HIGH-STRENGTH BOLTS THAT CONFORM TO ASTM F3125, GRADE A325. PROVIDE COMPRESSIBLE-WASHER-TYPE DIRECT-TENSION INDICATOR WASHERS CONFORMING TO ASTM F959 FOR PRETENSIONED AND SLIP-CRITICAL JOINTS. PROVIDE 5/16" THICK PLATE WASHERS CONFORMING TO ASTM A36 FOR LONG-SLOTTED HOLES.
13.

HIGH-STRENGTH BOLTS MUST BE INSTALLED AS PRETENSIONED JOINTS PER RCSC, "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS", EXCEPT WHERE SNUG-TIGHTENED JOINTS ARE SPECIFICALLY PERMITTED ON THE DRAWINGS, OR WHERE SLIP-CRITICAL JOINTS ARE REQUIRED.
14.

PROVIDE HOT-DIP GALVANIZED BOLTS, WASHERS, AND NUTS IN ACCORDANCE WITH ASTM A153 WHEN INSTALLED IN CONTACT WITH GALVANIZED STEEL MEMBERS.
15.

PROVIDE SLIP-CRITICAL CONNECTIONS FOR BRACING MEMBERS.

ADHESIVE ANCHORS:

1.

PROVIDE STAINLESS STEEL THREADED RODS CONFORMING TO ASTM A193, GRADE B8M CLASS 1, TYPE 304.
2.

THE ADHESIVE ANCHOR SYSTEM USED FOR POST INSTALLED ANCHORAGE TO CONCRETE MUST CONFORM TO THE REQUIREMENTS OF THE MOST RECENTLY PUBLISHED ACI 355.4, "ACCEPTANCE CRITERIA FOR QUALIFICATION OF POST-INSTALLED ADHESIVE ANCHORS IN CONCRETE AND COMMENTARY." EACH ADHESIVE ANCHOR SYSTEM MUST SATISFY THE STRENGTH REQUIREMENTS FOR ITS USE. BULK-MIXED ADHESIVES ARE NOT PERMITTED. ADHESIVE ANCHORAGE DESIGN IS IN ACCORDANCE WITH ACI 318-14. ADHESIVE ANCHORS IN CONCRETE MUST BE QUALIFIED FOR USE IN CRACKED CONCRETE IN ACCORDANCE WITH ACI 355.4. PROVIDE THE FOLLOWING ANCHOR SYSTEMS, OR APPROVED EQUALS:

A.

ANCHORAGE TO CONCRETE: HILTI RE 500 V3 WITH HAS-R STAINLESS STEEL THREADED ROD.
3.

CONCRETE AT THE TIME OF ADHESIVE ANCHOR INSTALLATION MUST HAVE A MINIMUM AGE OF 21 DAYS.
4.

INSTALL ADHESIVE ANCHORS WITH A MINIMUM EDGE DISTANCE OF 3 INCHES TO ANY FREE EDGE OF CONCRETE OR EDGE DISTANCE INDICATED ON DRAWINGS, WHICHEVER IS GREATER.
5.

INSTALL ADHESIVE ANCHORS WITH TRAINED QUALIFIED PERSONNEL, IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS.
6.

PROVIDE THOROUGHLY CLEANED ANCHOR HOLES PRIOR TO ADHESIVE INJECTION, AS REQUIRED BY THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. PROTECT DRILLED AND CLEANED ANCHOR HOLES FROM CONTAMINATION UNTIL THE ADHESIVE IS INSTALLED.
7.

PROVIDE ANCHORS CLEAN, OIL-FREE, AND FREE OF LOOSE RUST, PAINT, OR OTHER COATINGS.
8.

PROVIDE INSTALLED ADHESIVE ANCHORS SECURELY FIXED IN-PLACE TO PREVENT DISPLACEMENT WHILE THE ADHESIVE CURES.
9.

DO NOT DAMAGE EXISTING REINFORCING STEEL IN THE CONCRETE DURING ANCHOR INSTALLATION. PRIOR TO ANCHOR INSTALLATION, DETERMINE LOCATION OF EXISTING REINFORCING STEEL BY NON-DESTRUCTIVE MEANS AND NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN REINFORCING STEEL AND ANCHOR LOCATION PRIOR TO FABRICATION OF MATERIALS.

MOORING HARDWARE:

1.

DOUBLE BITT BOLLARDS: TRELLEBORG 100 TON DOUBLE BITT BOLLARDS CONFORMING TO ASTM A536 GRADE 65-45-12 SPHEROIDAL GRAPHITE CAST IRON (SG IRON).
2.

THREADED RODS CONFORMING TO ASTM F1554, GRADE 105 WITH A MINIMUM TENSILE STRENGTH OF 120 KSI AND A MINIMUM YIELD STRENGTH OF 105 KSI. NUTS CONFORMING TO ASTM A563, GRADE DH, TYPE HEAVY HEX. WASHERS CONFORMING TO ASTM F436. HOT-DIP GALVANIZE HARDWARE IN ACCORDANCE WITH ASTM A153.

CODES AND STANDARDS:

1.

2022 CONNECTICUT STATE BUILDING CODE.
2.

UFC 4-152-01: DESIGN: PIER AND WHARVES, DATED 24 JANUARY 2017
3.

UFC 4-159-03: MOORINGS, DATED 12 MARCH 2020
4.

AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 61-14: SEISMIC DESIGN OF PIERS AND WHARVES (2014)
5.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) LRFD BRIDGE DESIGN SPECIFICATIONS 9TH EDITION (2020)
6.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360-16: SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (2016)
7.

INTERNATIONAL BUILDING CODE IBC (2021), INCLUDING THE MODIFICATIONS MADE BY THE 2022 CONNECTICUT STATE BUILDING CODE
8.

AMERICAN CONCRETE INSTITUTE ACI 318 (2019), "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"
9.

AMERICAN SOCIETY OF CIVIL ENGINEERS ASCE 7 (2016), "MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES"
10.

AMERICAN WELDING SOCIETY AWS D1.1 (2020), "STRUCTURAL WELDING CODE - STEEL"

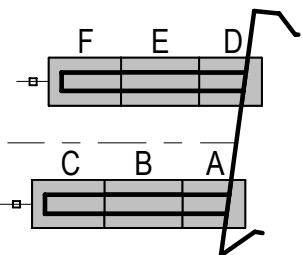
REVISIONS

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN



GRAPHIC SCALES

SIGNATURE

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GENERAL STRUCTURAL NOTES, LEGEND,
ABBREVIATIONS, AND NOTES

Drawing No.

S-001

Scale: NOT TO SCALE

Date: MAY, 31 2024 Sheet 20 of 63

Des: JFB Drawn: JFB Check: MHL

DESIGN LOADS AND CRITERIA

1.

ALL LOADS INDICATED BELOW ARE UNFACTORED.
2.

RISK CATEGORY: III
3.

DEAD LOADS

A.

STRUCTURES:

ACTUAL WEIGHT

B.

WEIGHT OF SOIL:

80 PCF ORGANIC, 130 PCF SAND
4.

LIVE LOADS

A.

UNIFORM LOADING:

600 PSF

B.

PORTAL CRANE:

93.5 KIPS/WHEEL

C.

TRUCK LOADING:

AASHTO HS-20 DESIGN TRUCK

D.

MOBILE CRANE:

165 TON (GRT9165)

E.

FORKLIFT:

26 TON

F.

SPMT:

12.5 TON PER AXLE
5.

SEISMIC LOAD

A.

SEISMIC IMPORTANCE FACTOR (I_e):

1.25

B.

MAX SHORT PERIOD SPECTRAL RESPONSE ACCELERATION:

S_s=0.19g

C.

MAX ONE SECOND SPECTRAL RESPONSE ACCELERATION:

S₁=0.052g

D.

SITE CLASS:

B (HARD ROCK)

E.

SEISMIC SITE COEFFICIENTS:

F_A=1.0 AND F_V=1.0

F.

SHORT PERIOD SPECTRAL RESPONSE COEFFICIENT:

S_{DS}=0.127g

G.

ONE SECOND SPECTRAL RESPONSE COEFFICIENT:

S_{D1}=0.035g

H.

SEISMIC DESIGN CATEGORY:

A

I.

BASIC SEISMIC-FORCE-RESISTING SYSTEM:

PIPE PILE MOMENT FRAME

J.

RESPONSE MODIFICATION FACTOR (R):

2.0

K.

SEISMIC RESPONSE COEFFICIENT (C_s):

0.05

L.

ANALYSIS PROCEDURE:

EQUIVALENT LATERAL FORCE

M.

SEISMIC BASE SHEAR:

V = 1312 KIPS
6.

BERTHING AND MOORING DESIGN IS CONTROLLED BY COLUMBIA CLASS (NOTED BELOW), VARIOUS VIRGINIA CLASS SUBMARINE BLOCKS HAVE ALSO BEEN CONSIDERED IN THE DESIGN.
7.

COLUMBIA CLASS SUBMARINE CHARACTERISTICS

A.

LENGTH OVERALL:

560 FT

B.

BEAM:

43 FT

C.

DRAFT:

36 FT

D.

DISPLACEMENT:

18520 LT
8.

COLUMBIA CLASS SUBMARINE BERTHING LOAD

A.

APPROACH VELOCITY:

0.4 FT/SEC

B.

BERTHING COEFFICIENT:

0.89

C.

NORMAL BERTHING ENERGY:

326 KIP-FT

D.

ABNORMAL BERTHING ENERGY:

489 KIP-FT

E.

BERTHING REACTION:

1.

YOKOHAMA PNEUMATIC FENDER:

XXX KIP

2.

UNIVERSAL COMPOSITE CAMEL:

XXX KIP
9.

COLUMBIA CLASS SUBMARINE HEAVY WEATHER MOORING LOAD PARAMETERS

A.

MOORING SERVICE TYPE:

TYPE III HEAVY WEATHER MOORING

B.

WIND VELOCITY:

81 KNOTS (30 SEC GUST 50 YR RETURN)

C.

CURRENT VELOCITY:

2 KNOTS AT XXX DEGREES

D.

SIGNIFICANT WAVE HEIGHT:

X.XX FEET AT XXX DEGREES

NOTES TO REVIEWERS

1.

Berthing reaction not listed for either Universal Composite Camel or Yokohama Pneumatic Fender. Yokohama Pneumatic Fenders are assumed to be used for berthing energy absorption. Pier has been designed for assumed berthing load based on product literature and Columbia Class parameters. WRA can provide additional information regarding berthing load assumptions used in design thus far. It is assumed that EB will reach out to Yokohama to:

A.

Confirm use of vertical pneumatic fenders is appropriate for Columbia Class submarine.

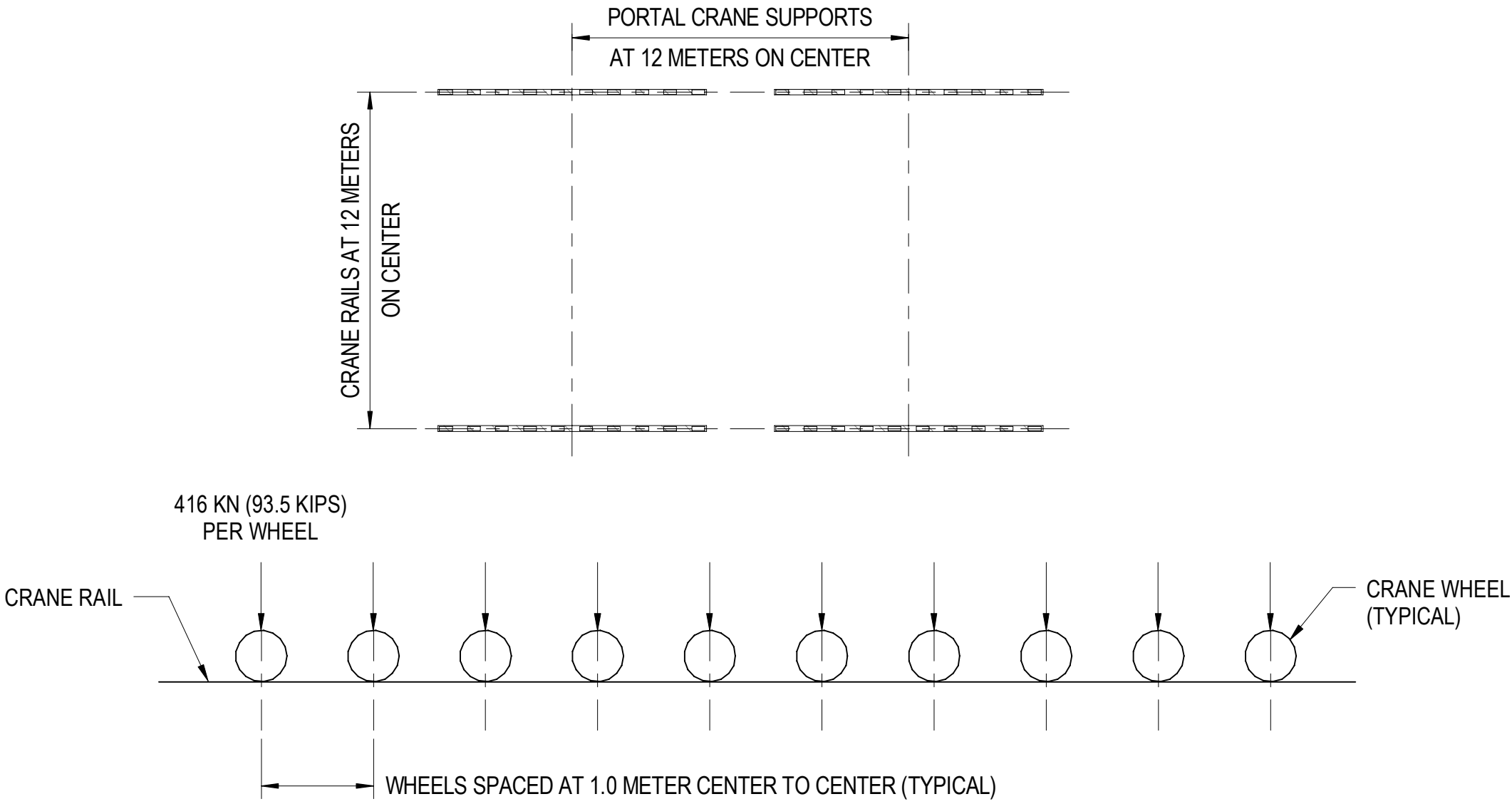
B.

Determine requirements for geomotry of backing structure (e.g., max gap between fender piles).

C.

Confirm berthing reaction or indicate analysis approach for curved hull.
2.

Heavy weather mooring parameters not listed. WRA has performed preliminary mooring analysis and seen preliminary mooring analysis performed by EB. It is assumed that EB will provide mooring line arrangement and mooring analysis results in order to finalize the design.



- NOTES:

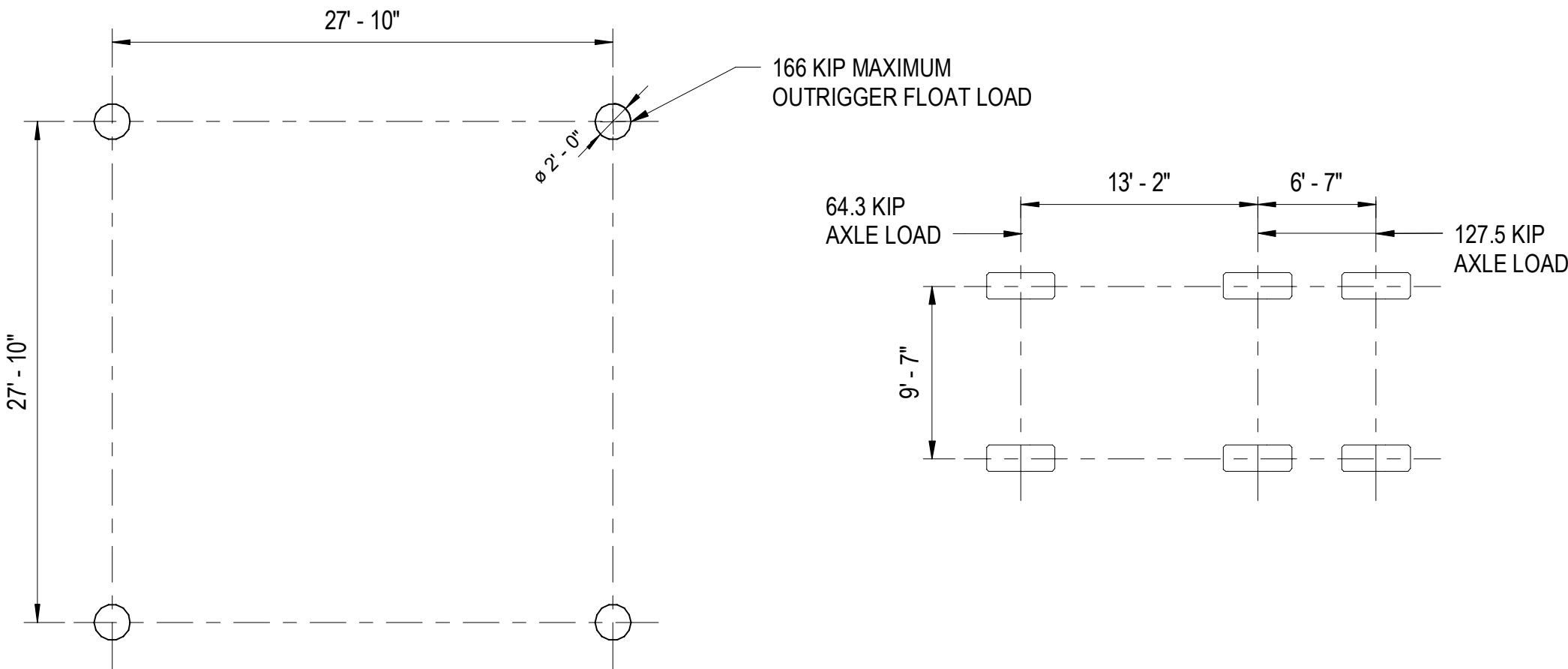
1.

DIAGRAM INDICATES MAX LOADING ON SINGLE SUPPORT. 4 SUPPORTS TOTAL, 10 WHEELS PER SUPPORT.

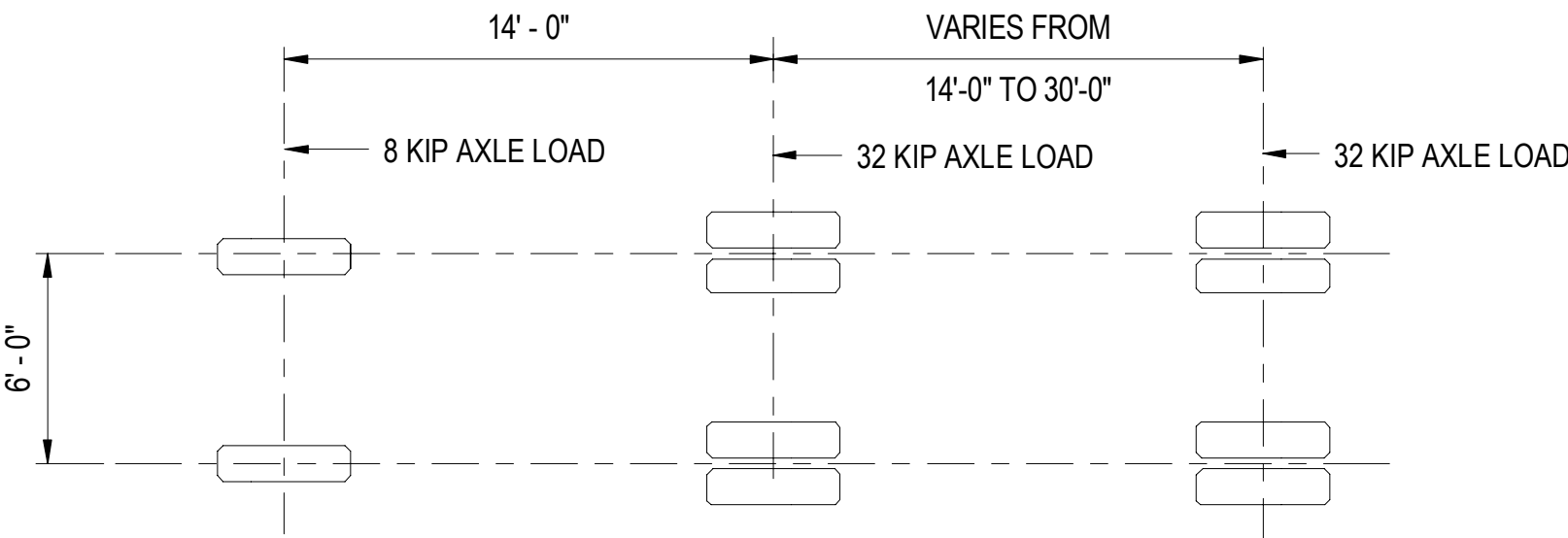
2.

PORTAL CRANE WHEEL LOAD IS 80% DEAD LOAD AND 20% LIVE LOAD.

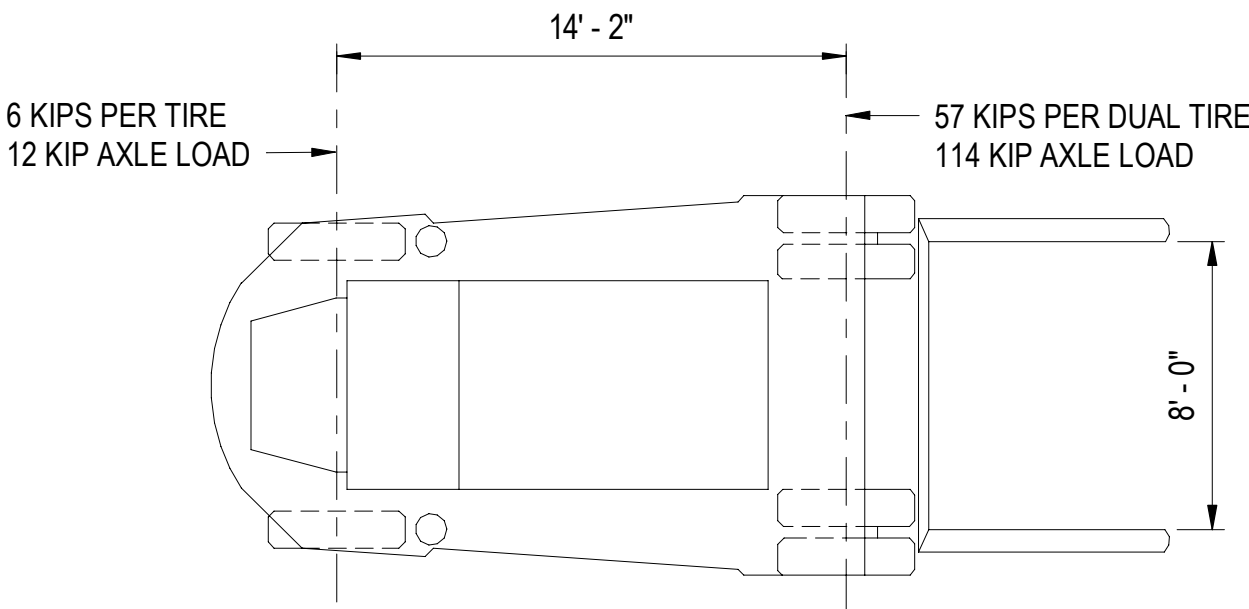
1
S-002
PORTAL CRANE WHEEL LOADING DIAGRAM
SCALE: NOT TO SCALE



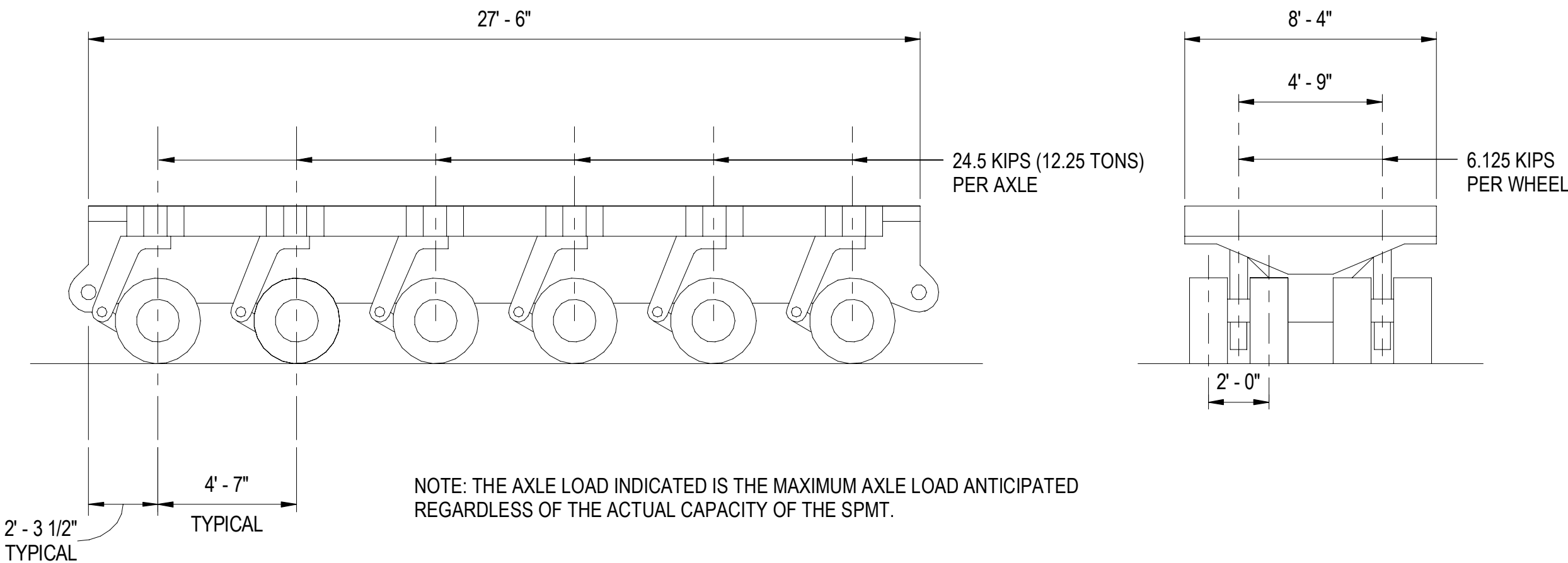
3
S-002
MOBILE CRANE LOADING DIAGRAM
SCALE: NOT TO SCALE



5
S-002
AASHTO HS20-44 TRUCK LOADING DIAGRAM
SCALE: NOT TO SCALE



2
S-002
FORKLIFT LOADING DIAGRAM
SCALE: NOT TO SCALE



4
S-002
SPMT LOADING DIAGRAM
SCALE: NOT TO SCALE

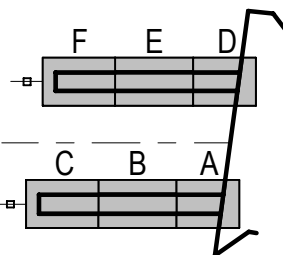
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CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN



GRAPHIC SCALES

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DESIGN LOADS AND CRITERIA

Drawing No.

S-002

Scale: NOT TO SCALE

Date: MAY, 31 2024 Sheet 21 of 63

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ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

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PILE PLAN - COMPOSITE

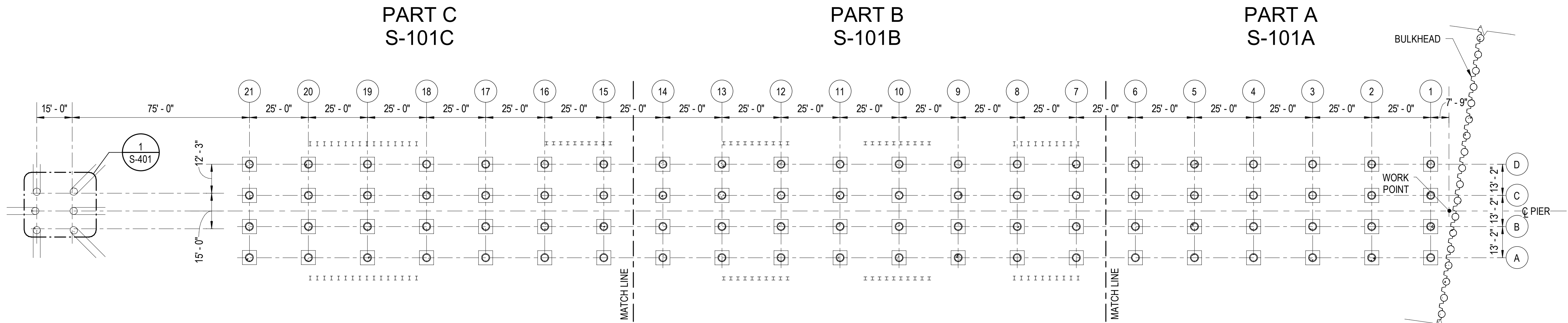
Drawing No.

S-101

Scale: 1" = 25'-0"

Date: MAY, 31 2024 Sheet 22 of 63

Des: JFB Drawn: AAB Check: MHL



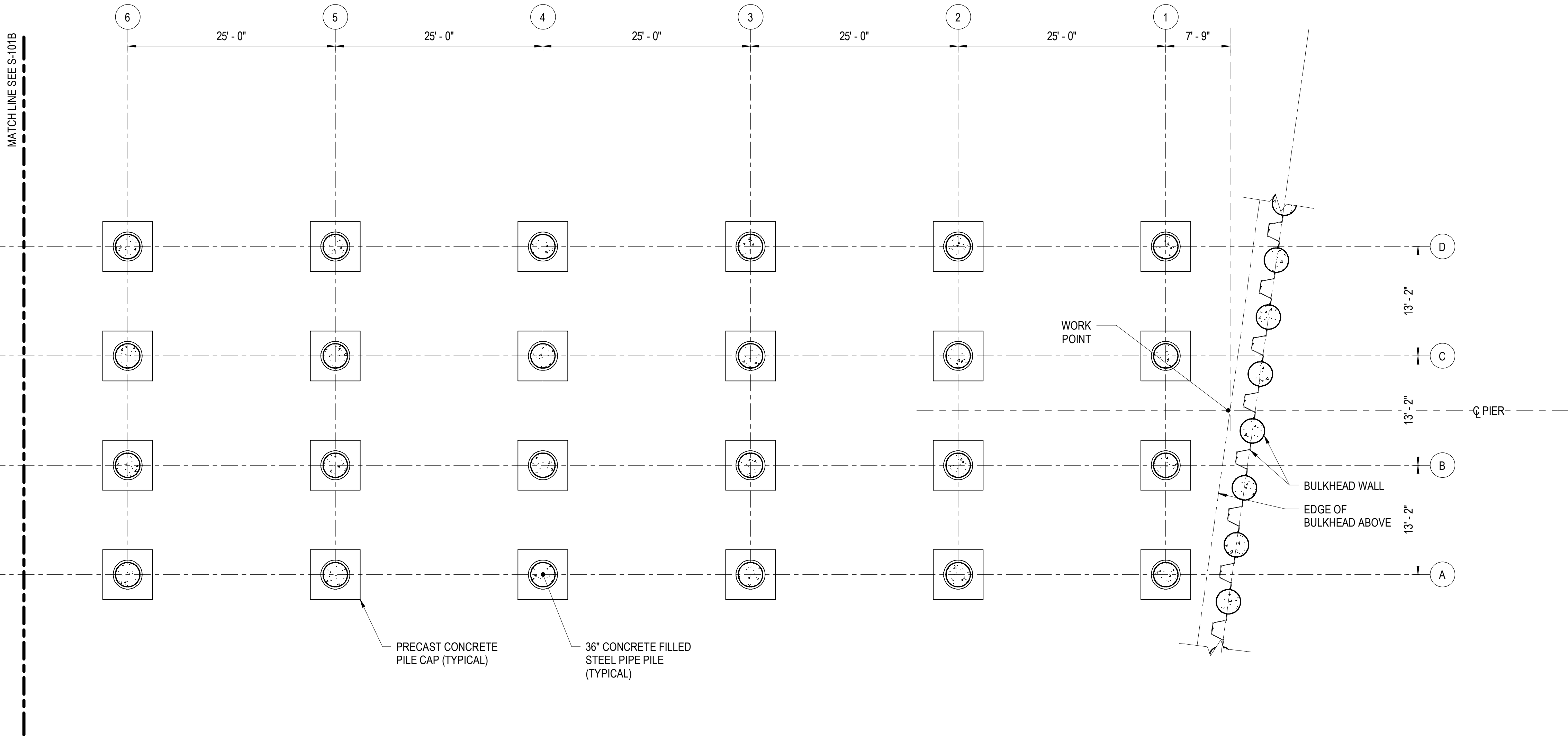
1 PILE PLAN - COMPOSITE
S-101 SCALE: 1" = 25'-0"

NOTES TO REVIEWERS

1. This project includes the design of two piers. Only the south pier is depicted at this level of development. Assume the north pier is identical. Refer to General and Civil drawings for overall site layout including locations of both piers.

GENERAL SHEET NOTES

- REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
- REFER TO S-101A, S-101B, AND S-101C FOR PILE PART PLANS.



1
S-101A

PILE PLAN - PART A

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

↑

GENERAL SHEET NOTES

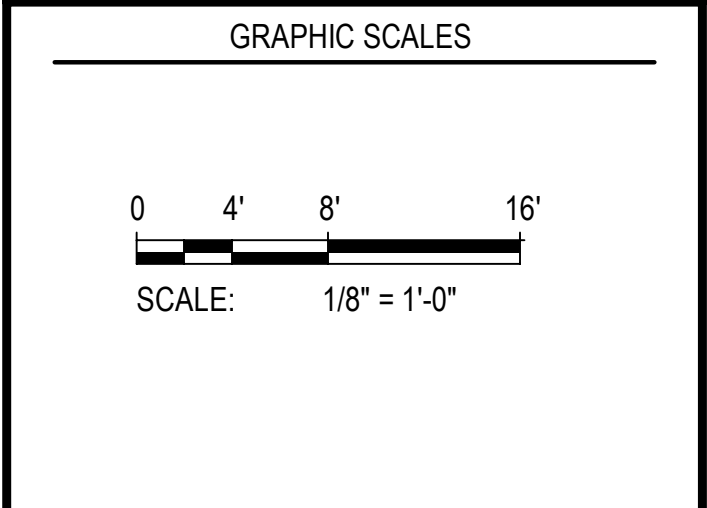
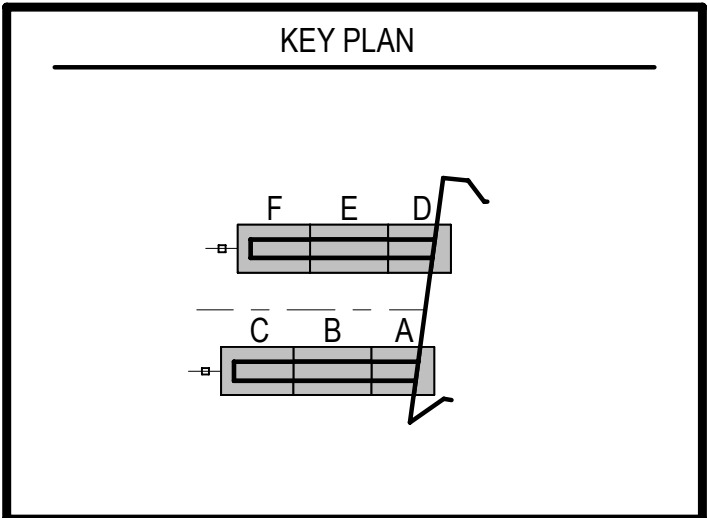
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-601 FOR PILE DETAILS AND TIP ELEVATIONS.
3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS



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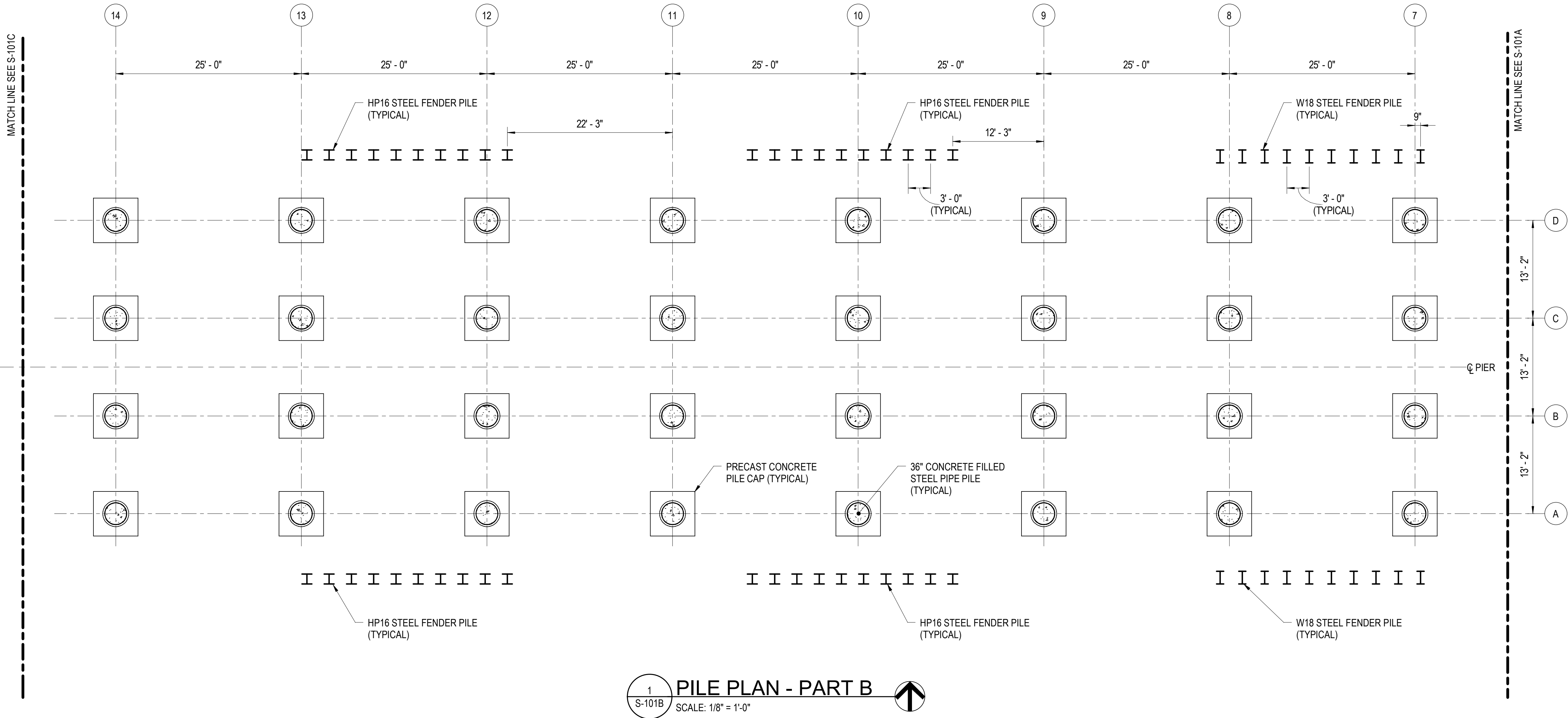
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PILE PLAN - PART A		
Drawing No.		
S-101A		
Scale: 1/8" = 1'-0"		
Date: MAY, 31 2024	Sheet 23	of 63
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1
S-101B

PILE PLAN - PART B

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

- GENERAL SHEET NOTES**
- 1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
 - 2. REFER TO S-601 FOR PILE DETAILS AND TIP ELEVATIONS.
 - 3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

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

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PILE PLAN - PART B

Drawing No.

S-101B

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024

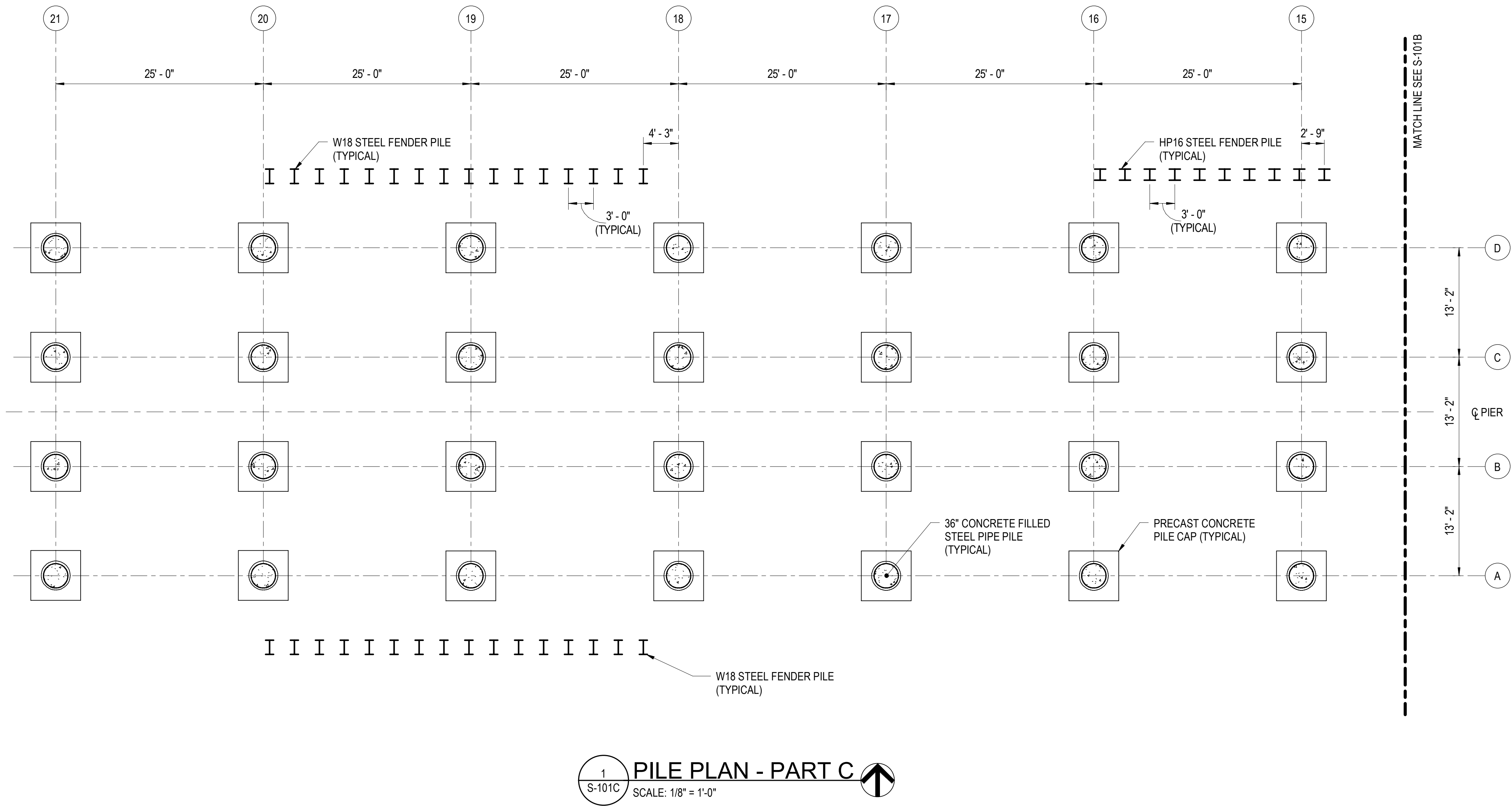
Sheet 24 of 63

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GENERAL SHEET NOTES

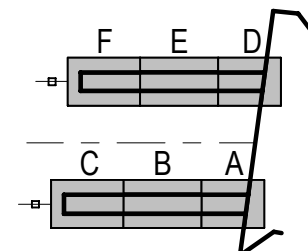
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-601 FOR PILE DETAILS AND TIP ELEVATIONS.
3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS

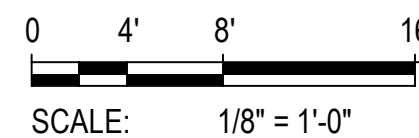
CLIENT INFORMATION
**GENERAL DYNAMICS
ELECTRIC BOAT**

**SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS**

KEY PLAN



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PILE PLAN - PART C

Drawing No.

S-101C

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024 Sheet 25 of 63

Des: JFB Drawn: AAB Check: MHL

REVISIONS		

CLIENT INFORMATION

GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN

GRAPHIC SCALES

SIGNATURE

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FRAMING PLAN - COMPOSITE

Drawing No.

S-102

Scale: 1" = 25'-0"

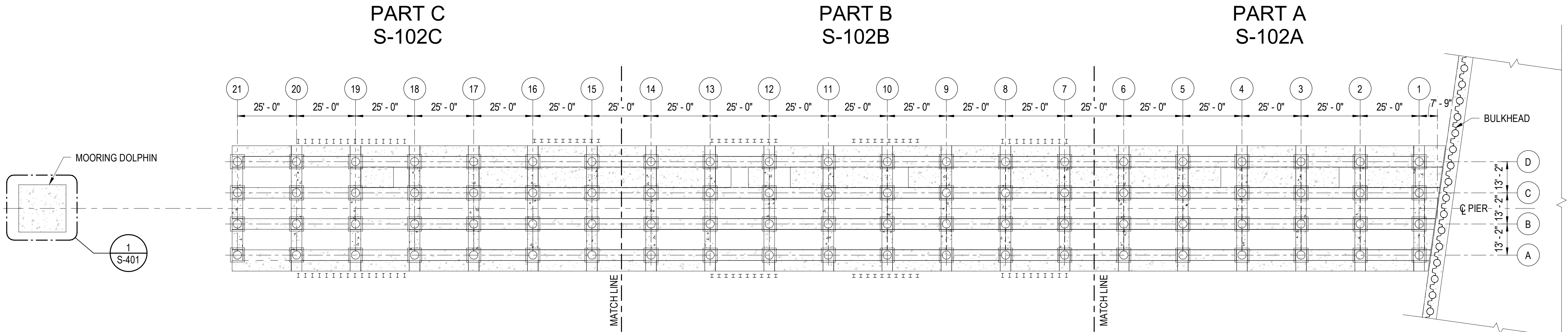
Date: MAY, 31 2024

Sheet 26 of 63

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S-102

FRAMING PLAN - COMPOSITE

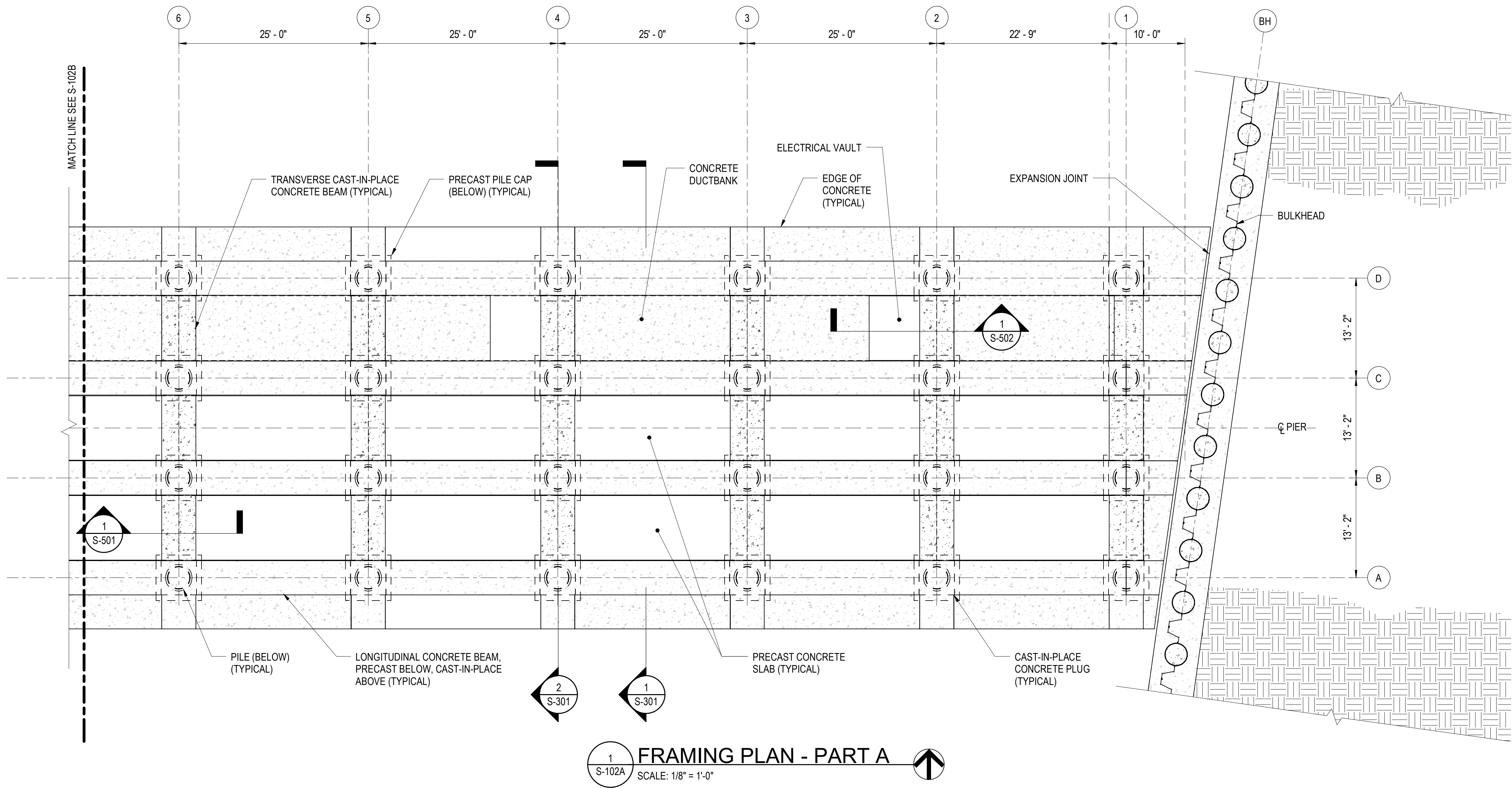
SCALE: 1" = 25'-0"

NOTES TO REVIEWERS

1. This project includes the design of two piers. Only the south pier is depicted at this level of development. Assume the north pier is identical. Refer to General and Civil drawings for overall site layout including locations of both piers.

- GENERAL SHEET NOTES
- REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
 - REFER TO S-102A, S-102B, AND S-102C FOR FRAMING PART PLANS.

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GENERAL SHEET NOTES

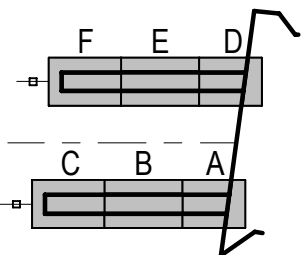
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-501 FOR LONGITUDINAL AND TRANSVERSE BEAM DETAILS.
3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS

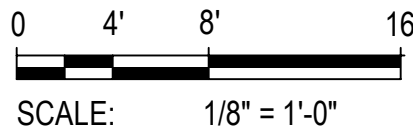
CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN



GRAPHIC SCALES



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FRAMING PLAN - PART A

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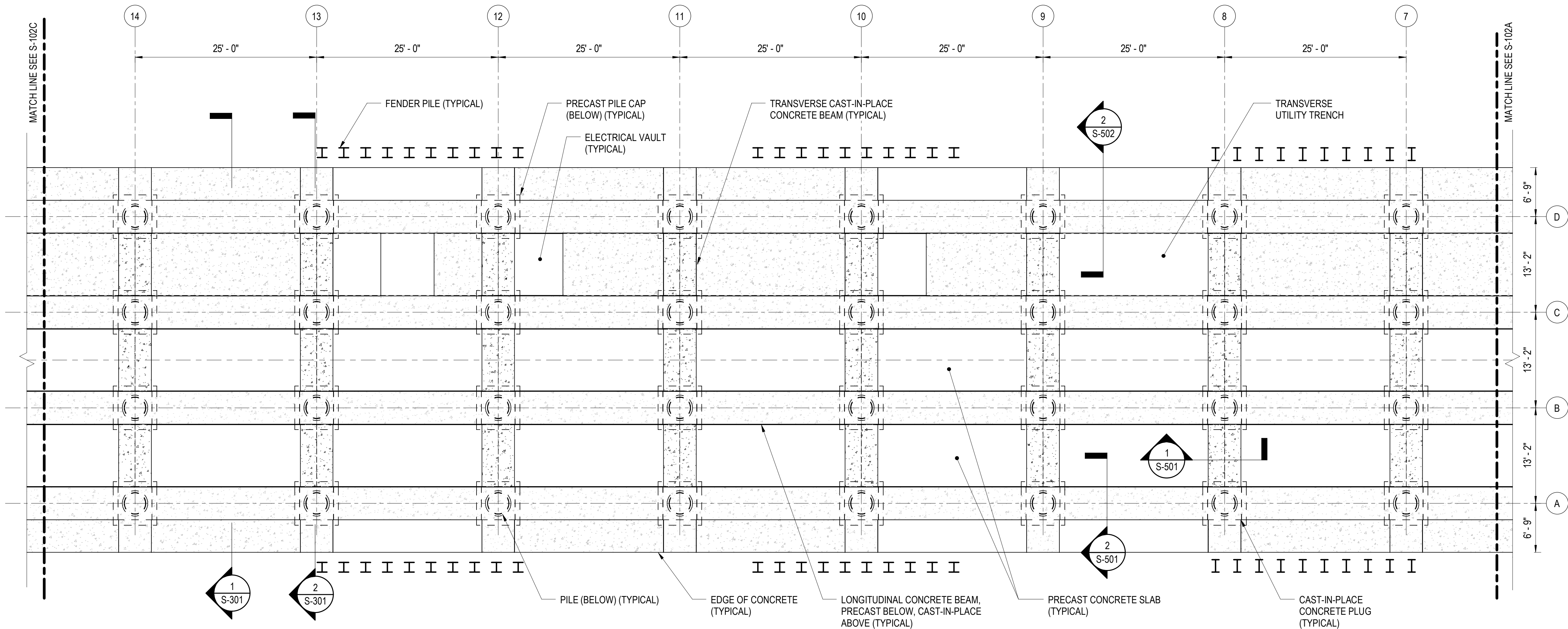
S-102A

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024 Sheet 27 of 63

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1
S-102B
FRAMING PLAN - PART B
SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

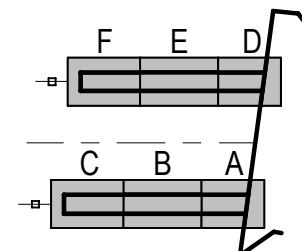
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-501 FOR LONGITUDINAL AND TRANSVERSE BEAM DETAILS.
3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS

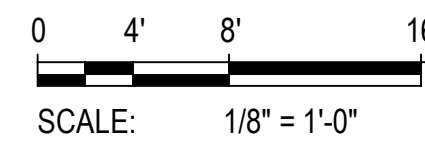
CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
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KEY PLAN



GRAPHIC SCALES



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FRAMING PLAN - PART B

Drawing No.

S-102B

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024 Sheet 28 of 63

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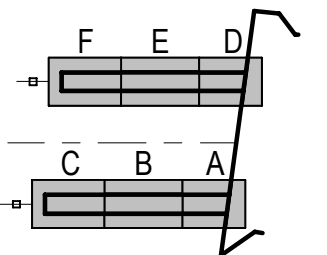
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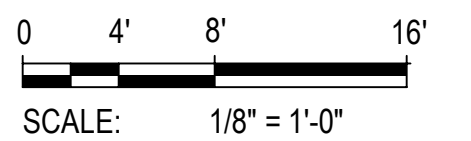
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ELECTRIC BOAT

SUBMARINE WET BERTHS AND SHORELINE IMPROVEMENTS

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FRAMING PLAN - PART C

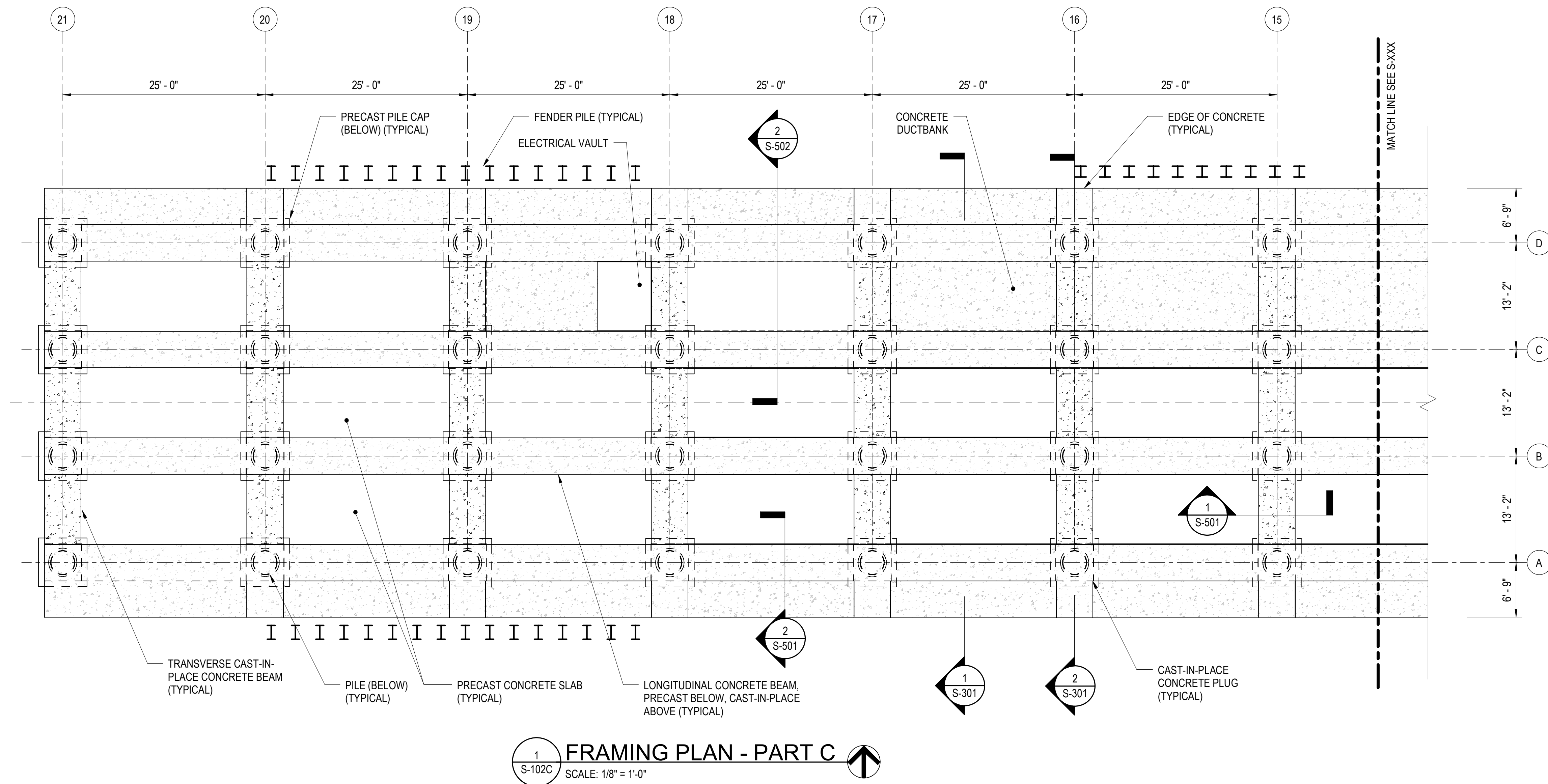
Drawing No.

S-102C

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024	Sheet 29 of 63
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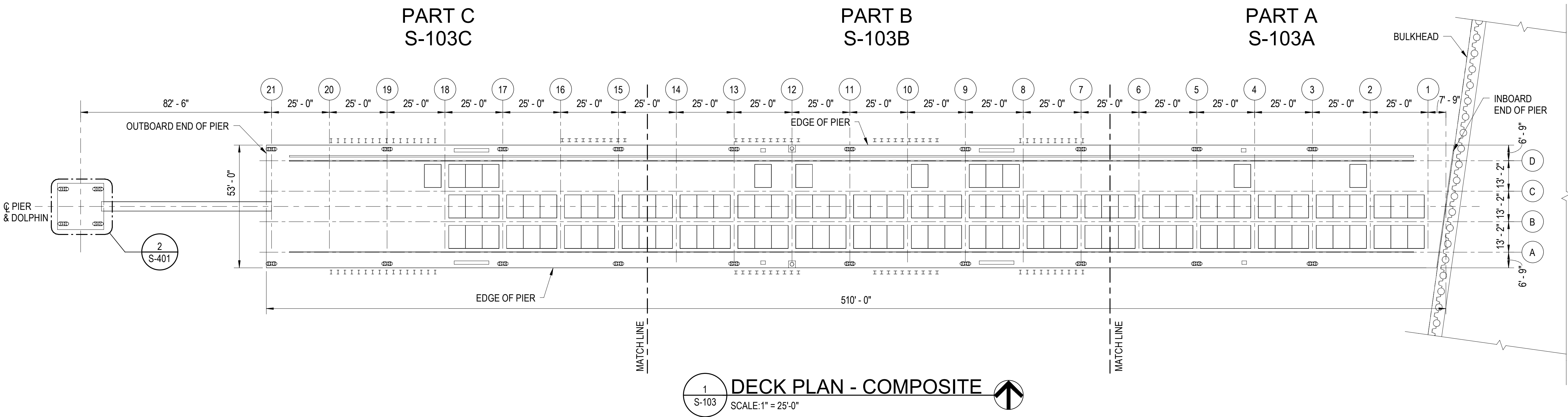
Des: JFB	Drawn: AAB	Check: MHL
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GENERAL SHEET NOTES

1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-501 FOR LONGITUDINAL AND TRANSVERSE BEAM DETAILS.
3. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

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1 DECK PLAN - COMPOSITE
S-103 SCALE: 1" = 25'-0"

NOTES TO REVIEWERS

1. WRA recommends providing positive draining (0.5% slope) on the pier deck. EB input is requested as slope may impact operations. Options for providing slope include:
 - A. High point along/between lines B & C, sloping towards each side. This would result in approximately 1" of elevation differential and a flat center between B & C.
 - B. Crowning piers along line C and sloping towards the sides. This would result in either (1) different side elevations or (2) different slopes on each side.
 - C. Slope the edges of the piers outboard of crane rails. This would provide for drainage along working surfaces along pier edges and a flat surface between crane rails.
2. This project includes the design of two piers. Only the south pier is depicted at this level of development. Assume the north pier is identical. Refer to General and Civil drawings for overall site layout including locations of both piers.

GENERAL SHEET NOTES

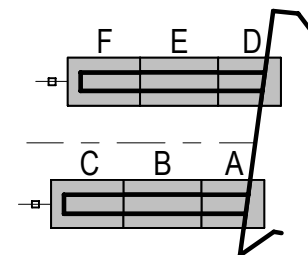
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-103A, S-103B, AND S-103C FOR DECK PART PLANS.

REVISIONS

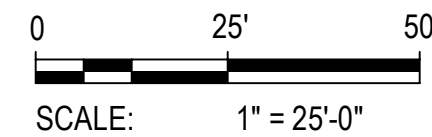
CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

SUBMARINE WET BERTHS
AND SHORELINE
IMPROVEMENTS

KEY PLAN



GRAPHIC SCALES



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DECK PLAN - COMPOSITE

Drawing No.

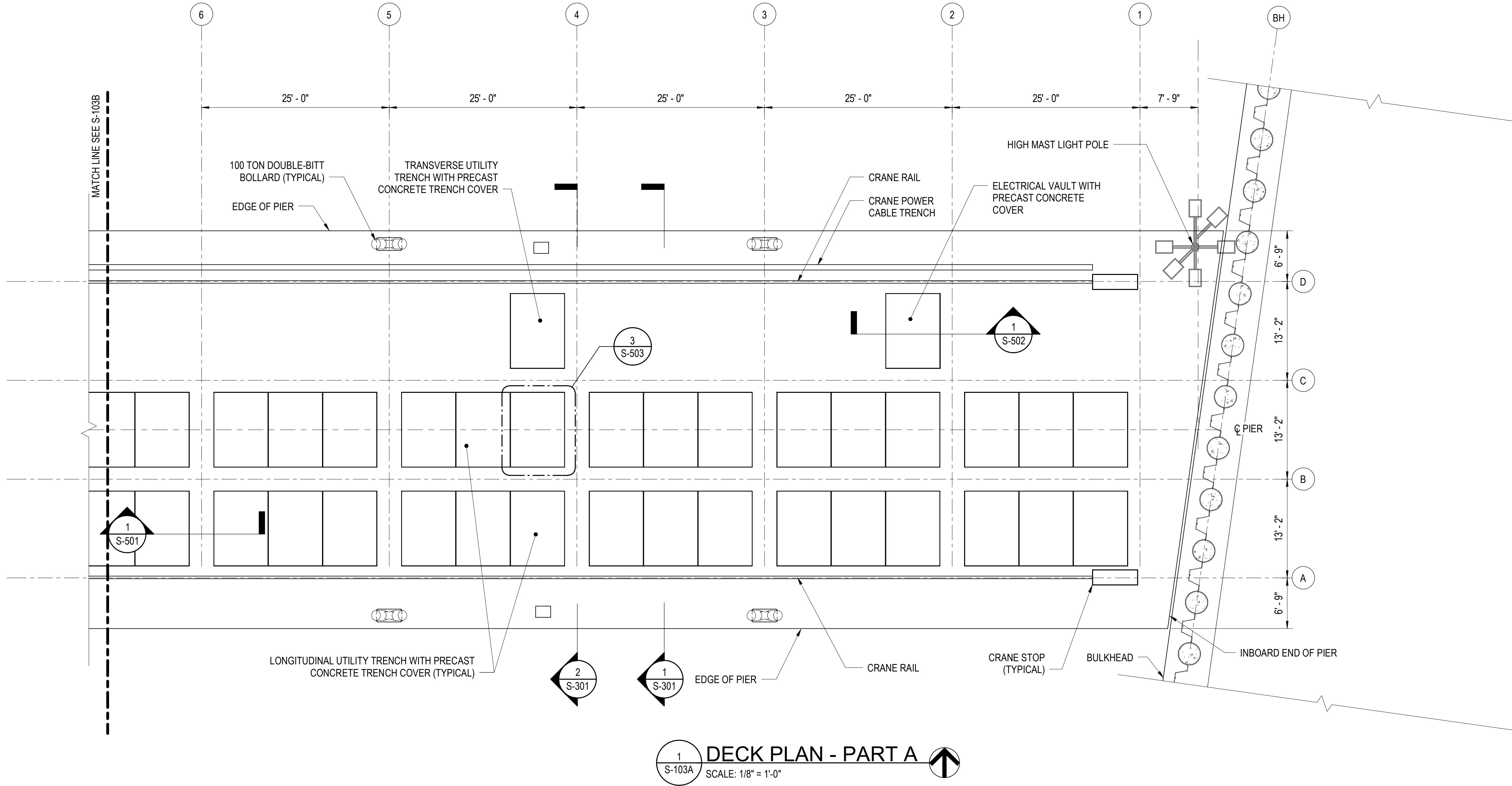
S-103

Scale: 1" = 25'-0"

Date: MAY, 31 2024 Sheet 30 of 63

Des: JFB Drawn: AAB Check: MHL

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GENERAL SHEET NOTES

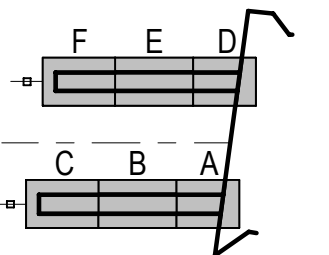
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS

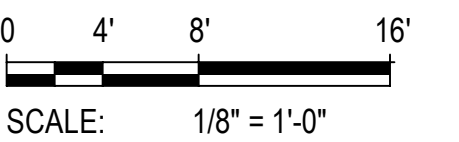
CLIENT INFORMATION
**GENERAL DYNAMICS
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DECK PLAN - PART A

Drawing No.

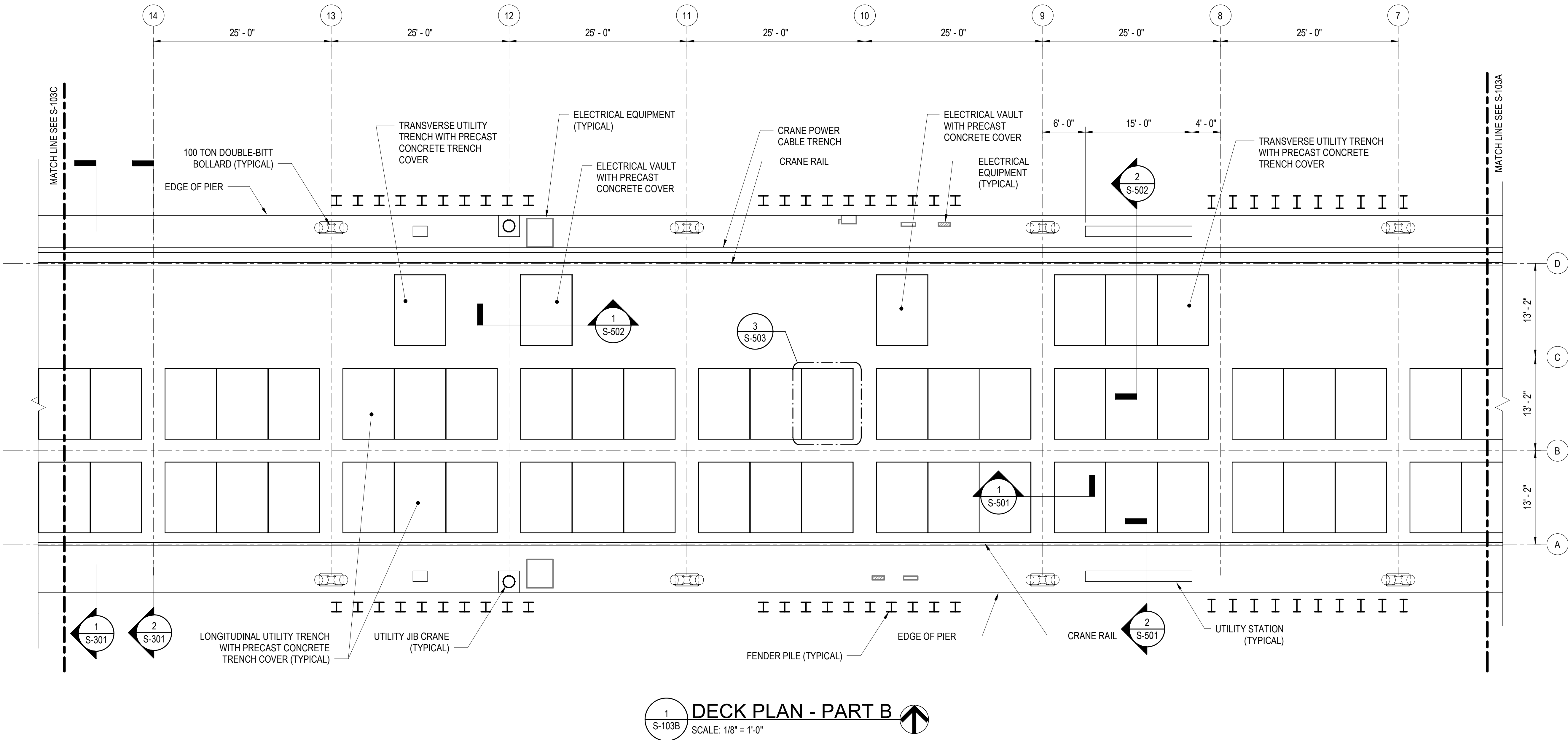
S-103A

Scale: 1/8" = 1'-0"

Date: MAY, 31 2024 Sheet 31 of 63

Des: JFB Drawn: AAB Check: MHL

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GENERAL SHEET NOTES

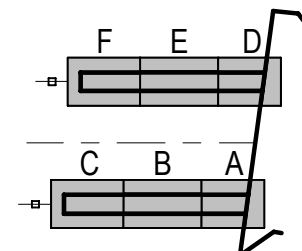
1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

REVISIONS

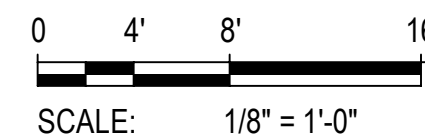
CLIENT INFORMATION
**GENERAL DYNAMICS
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IMPROVEMENTS**

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DECK PLAN - PART B

Drawing No.

S-103B

Scale: 1/8" = 1'-0"

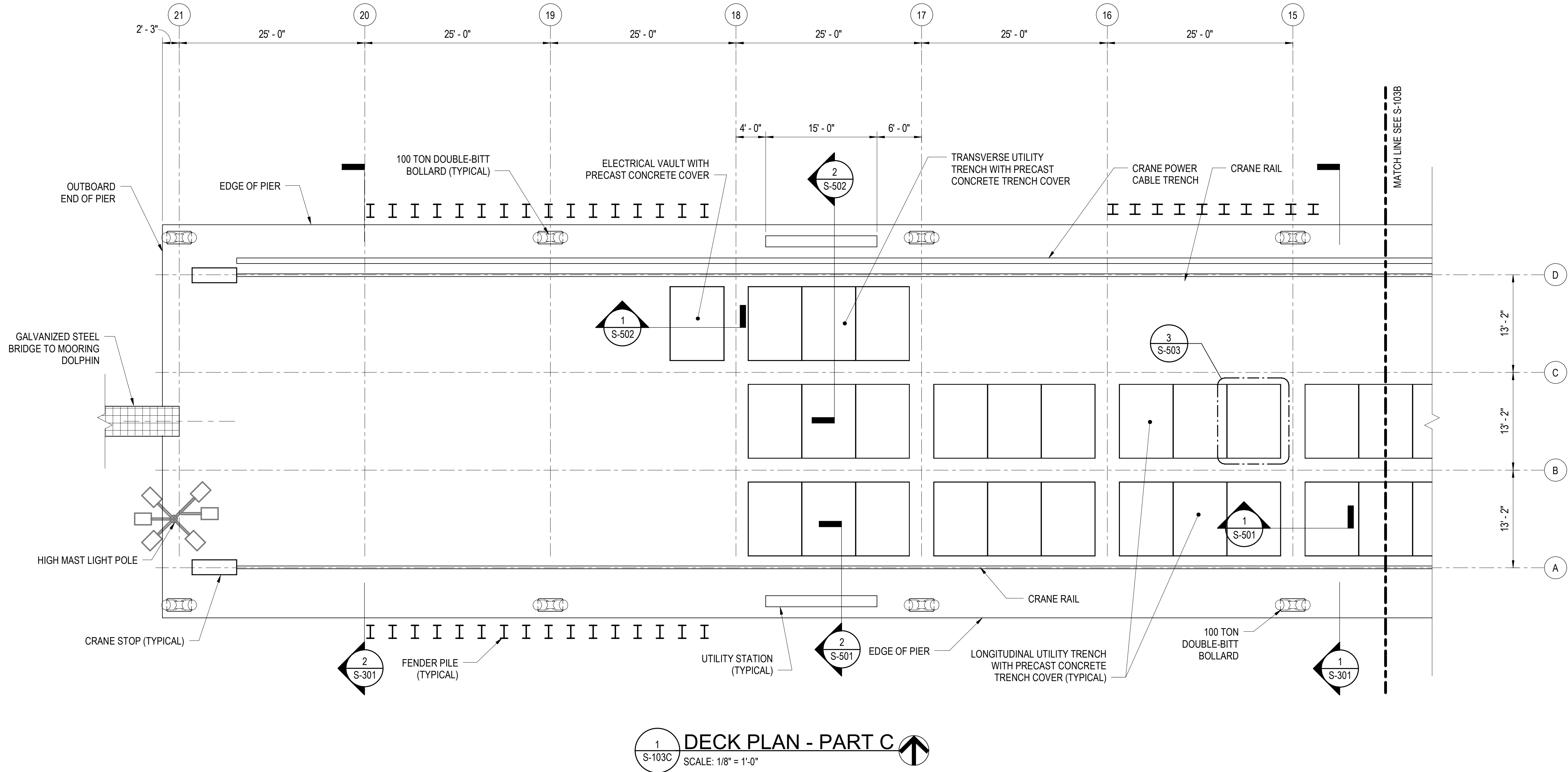
Date: MAY, 31 2024 Sheet 32 of 63

Des: JFB Drawn: AAB Check: MHL

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GENERAL SHEET NOTES

1. REFER TO S-001 AND S-002 FOR GENERAL STRUCTURAL NOTES AND LOADS AND CRITERIA.
2. REFER TO S-701 FOR BULKHEAD WALL DETAILS.

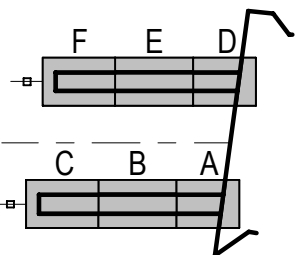


REVISIONS

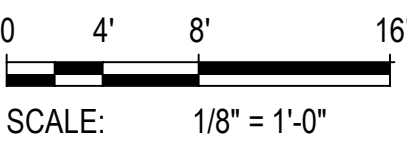
CLIENT INFORMATION
GENERAL DYNAMICS
ELECTRIC BOAT

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IMPROVEMENTS

KEY PLAN



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DECK PLAN - PART C

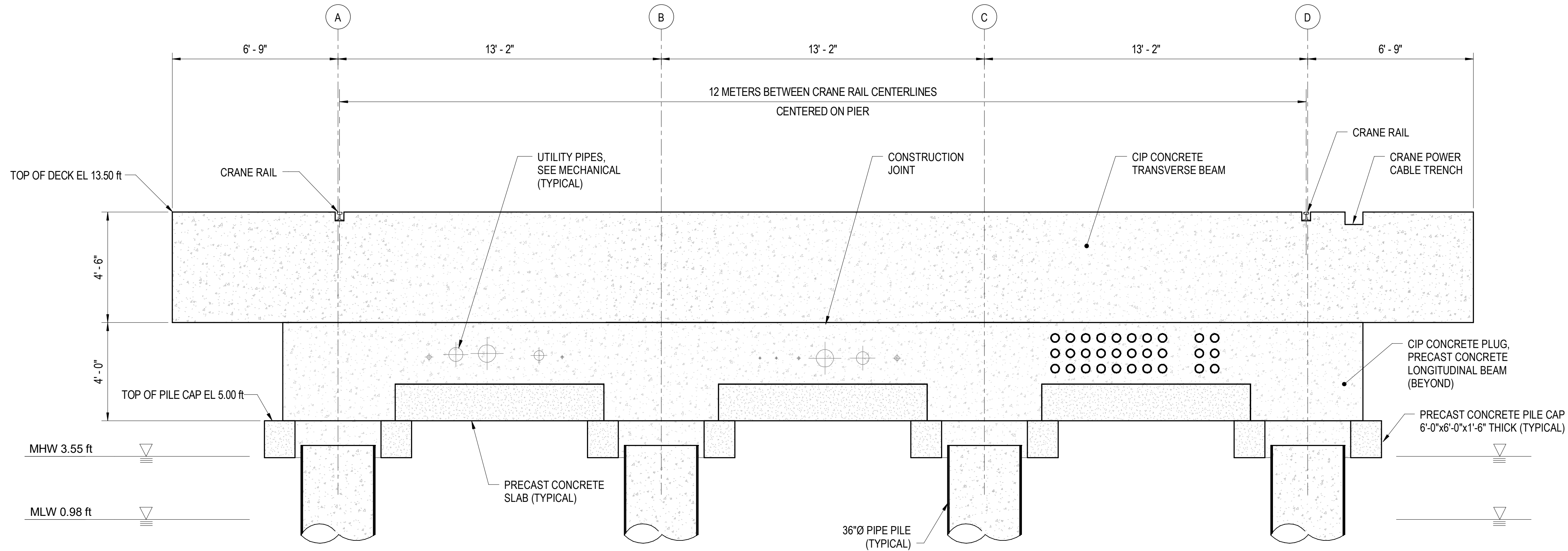
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S-103C

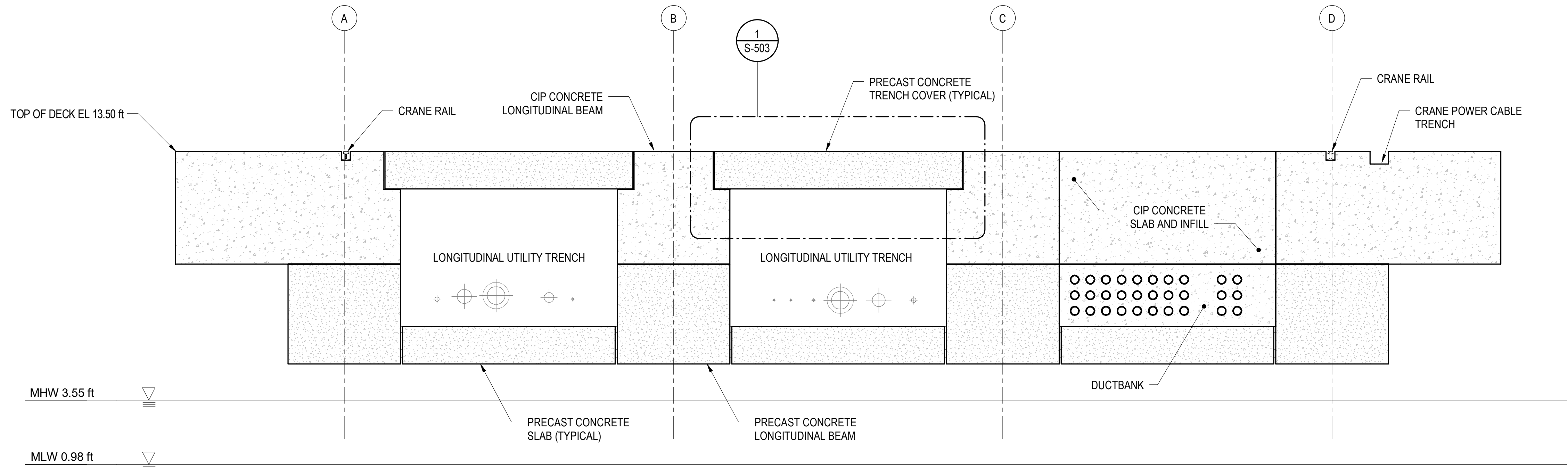
Scale: 1/8" = 1'-0"

Date: MAY, 31 2024 Sheet 33 of 63
Des: JFB Drawn: AAB Check: MHL

5/30/2024 5:16:57 PM



2
S-301
PIER SECTION AT BENT
SCALE: 3/8" = 1'-0"



1
S-301
PIER SECTION BETWEEN BENTS
SCALE: 3/8" = 1'-0"

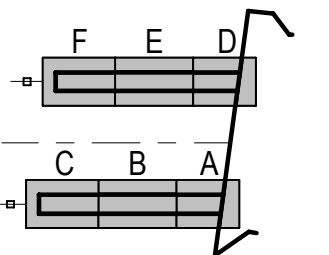
REVISIONS

CLIENT INFORMATION

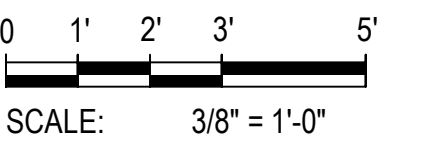
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KEY PLAN



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PIER CROSS SECTIONS

Drawing No.

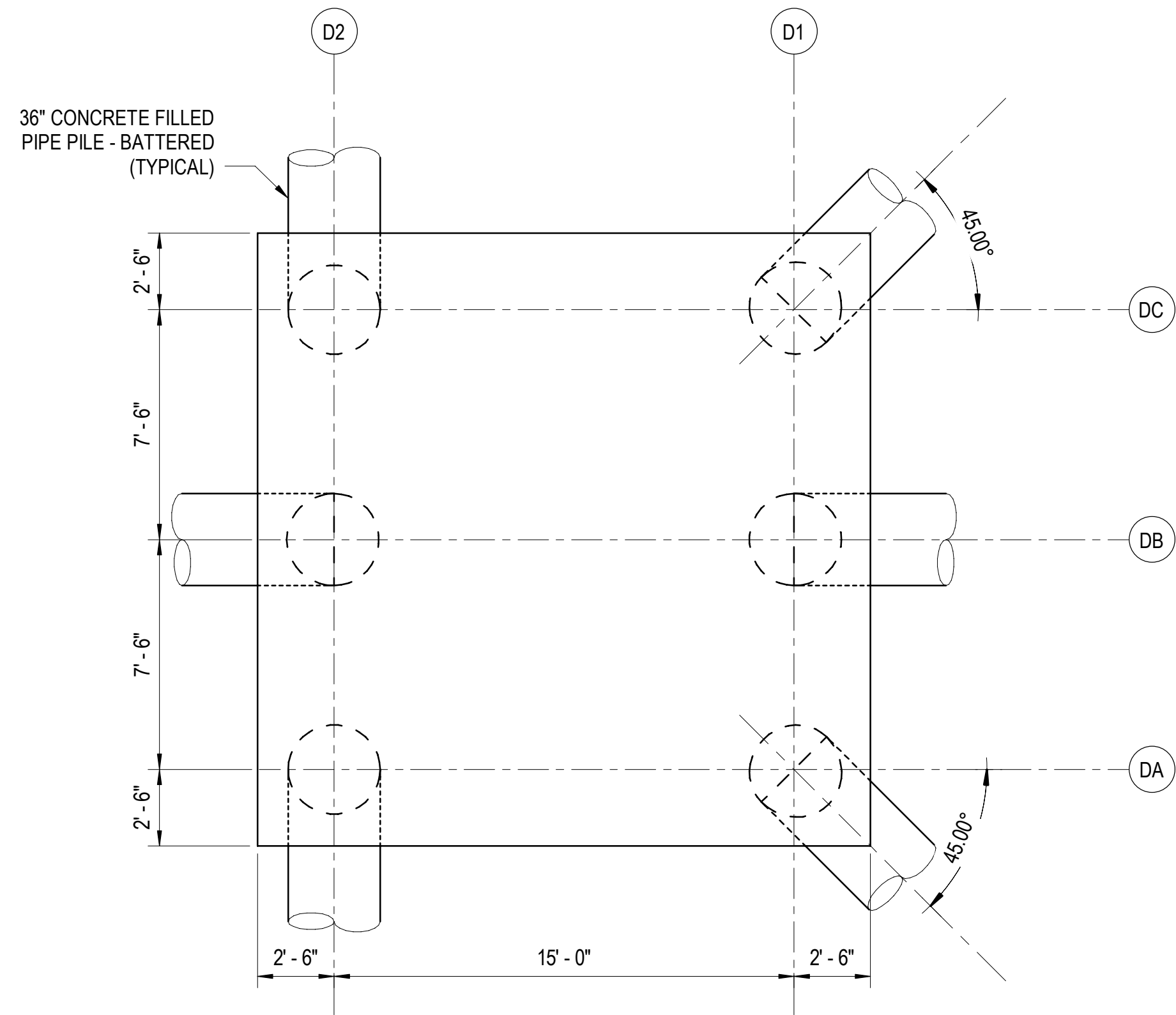
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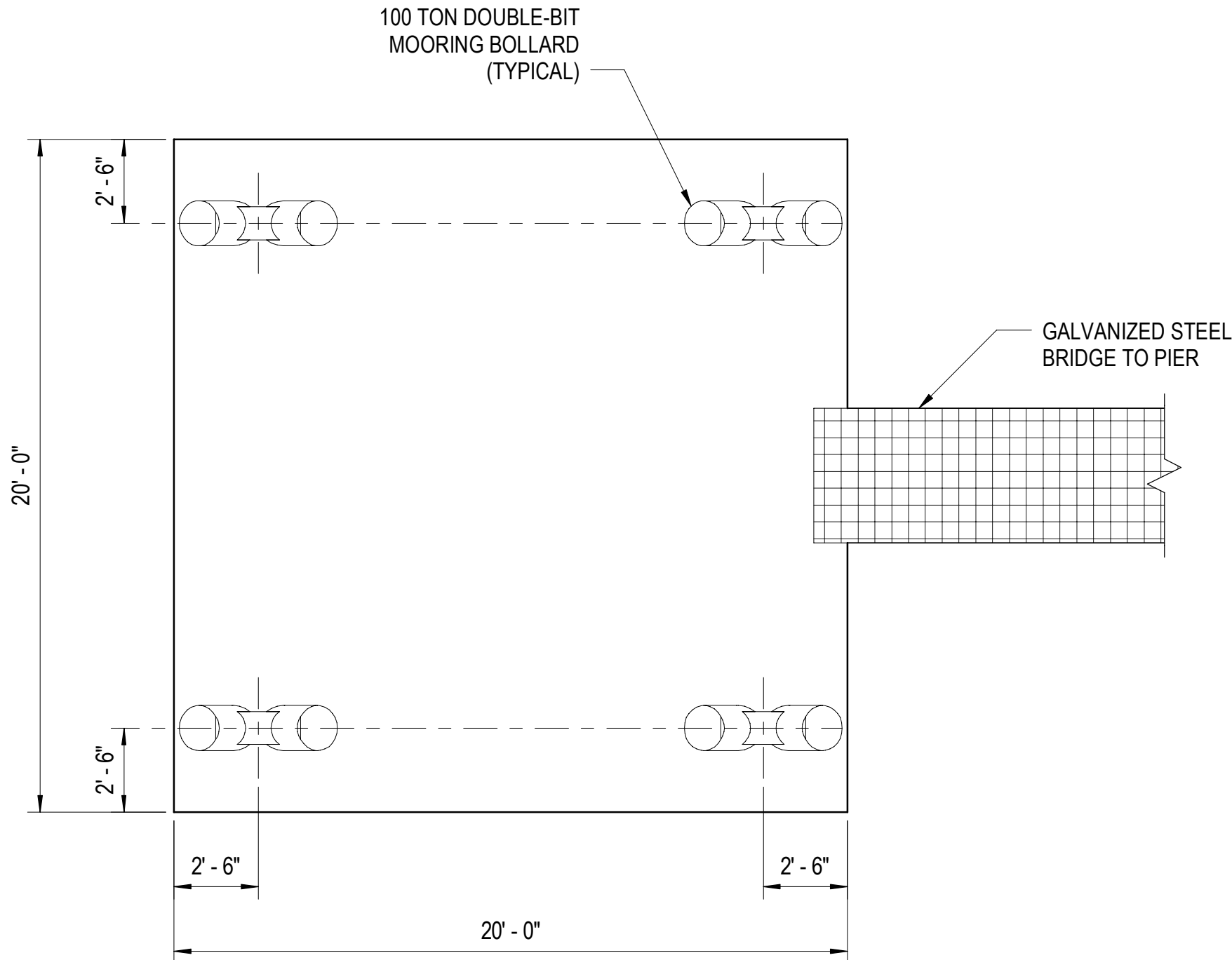
Date: MAY, 31 2024 Sheet 34 of 63

Des: JFB Drawn: AAB Check: MHL

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1
S-401
DOLPHIN PILE PLAN
SCALE: 1/4" = 1'-0"
REF: S-101



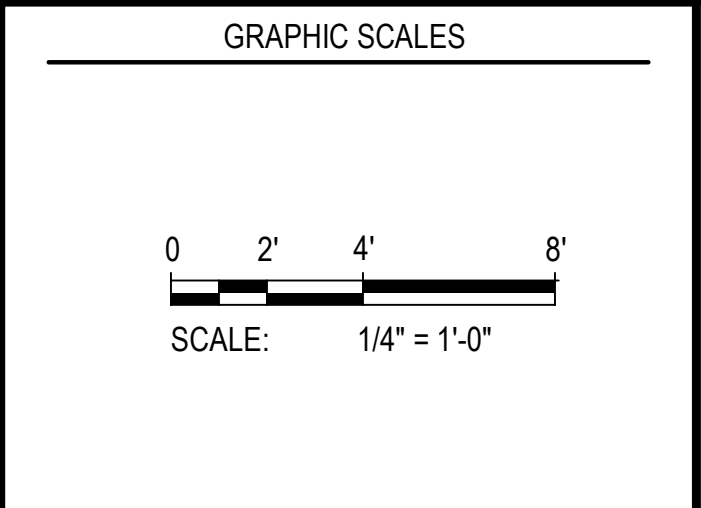
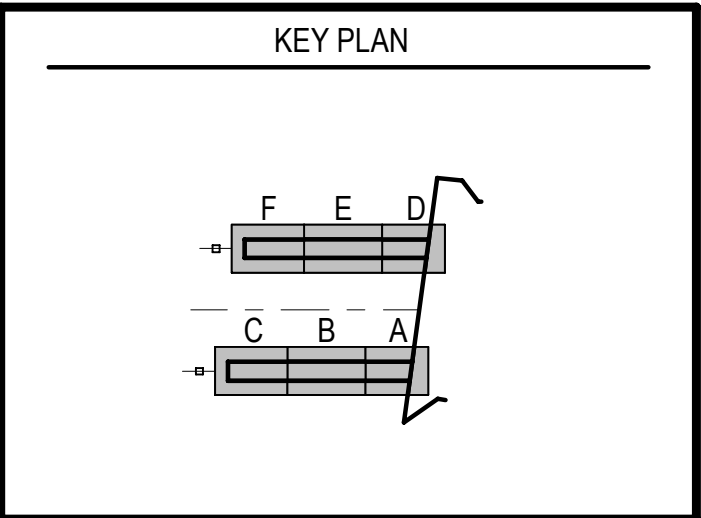
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S-401
DOLPHIN PLAN
SCALE: 1/4" = 1'-0"
REF: S-103

REVISIONS		

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MOORING DOLPHIN PLANS AND SECTIONS

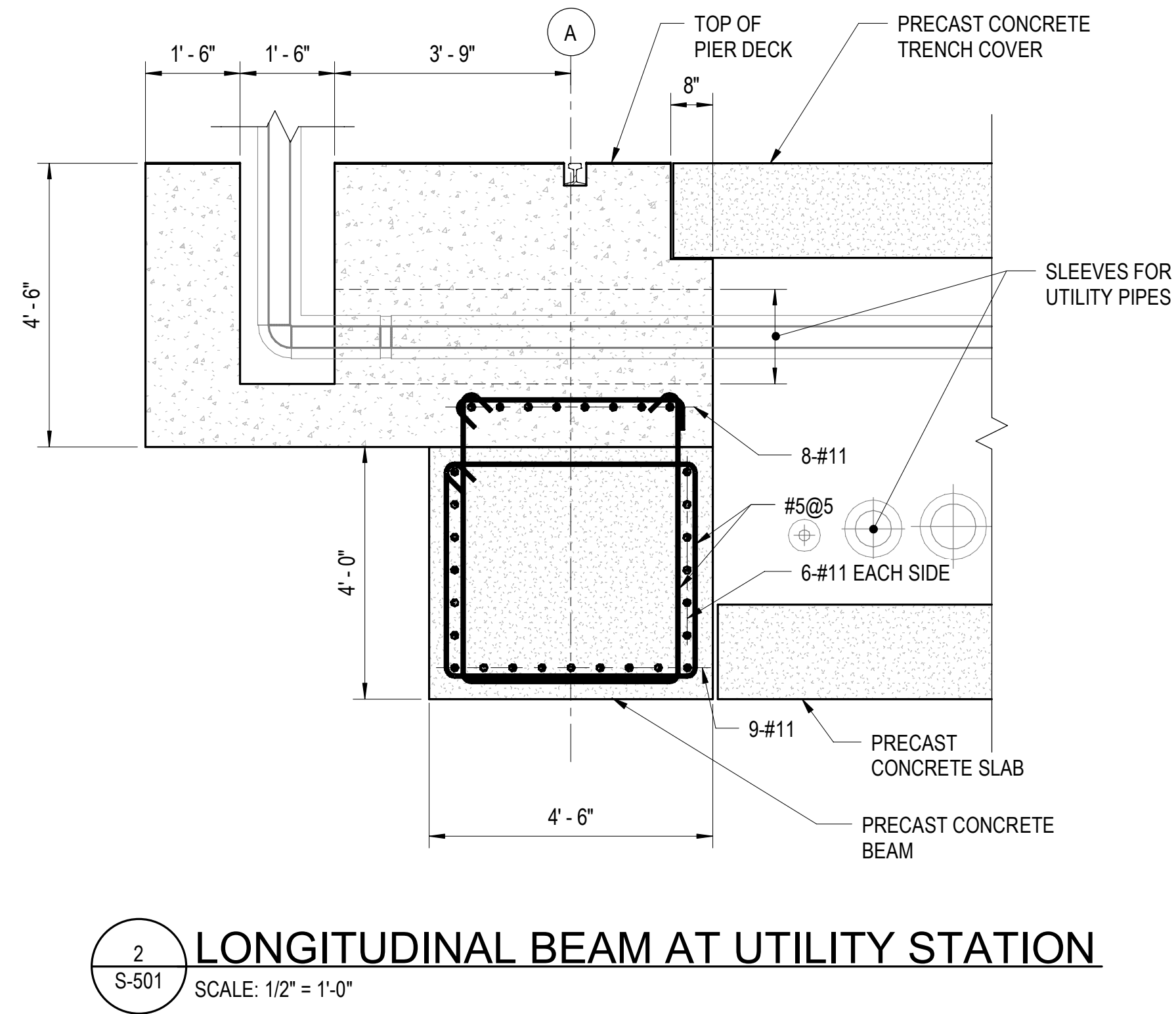
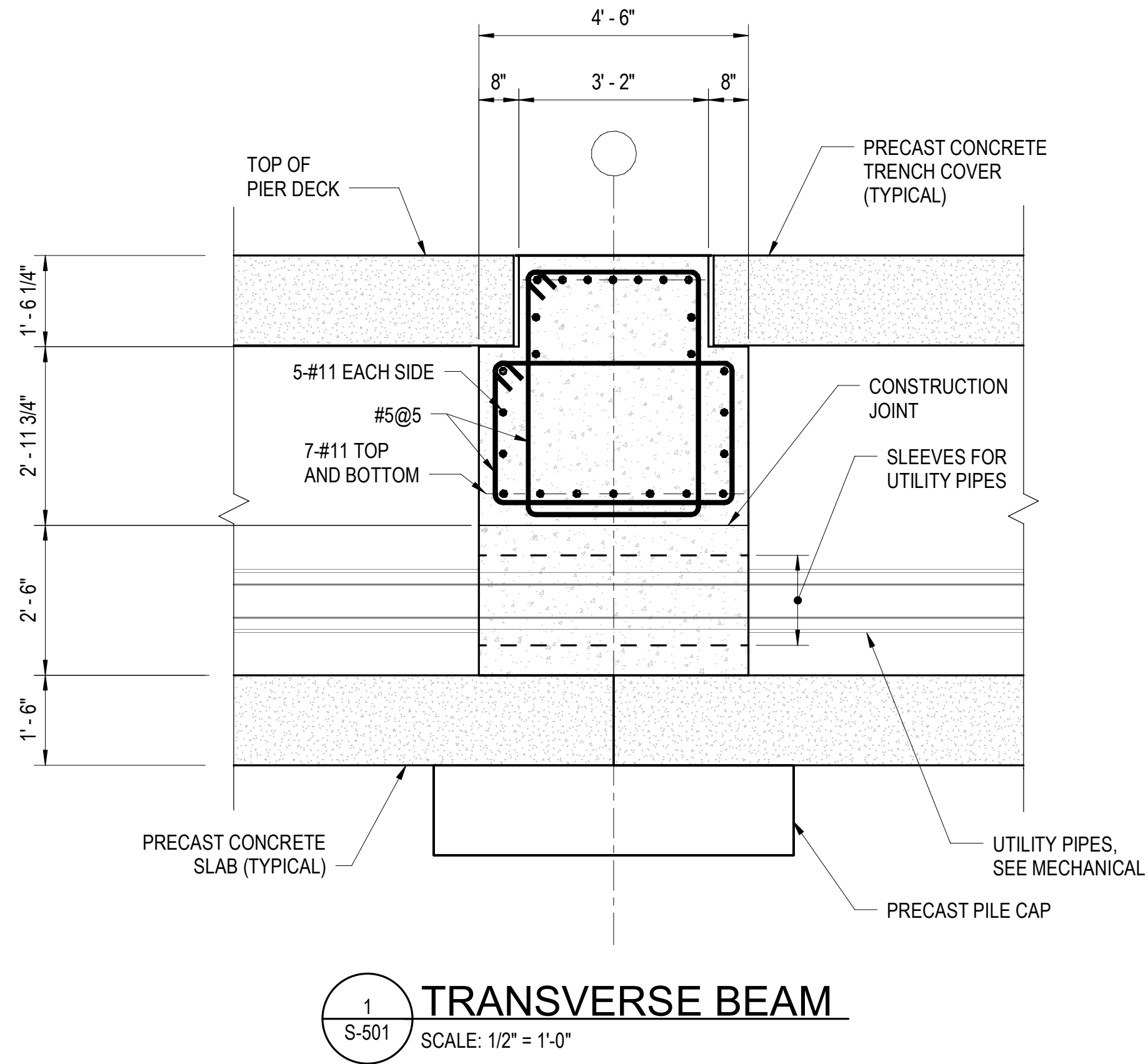
Drawing No.
S-401

Scale: 1/4" = 1'-0"

Date: MAY, 31 2024 Sheet 35 of 63

Des: JFB Drawn: JFB Check: MHL

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NOTES TO REVIEWERS

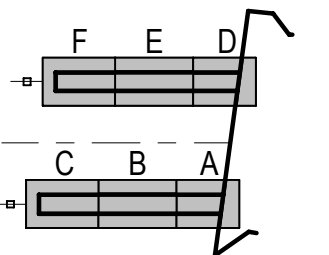
- Reinforcing shown only in select elements. Reinforcing of all concrete elements will be developed for future submissions.

REVISIONS		

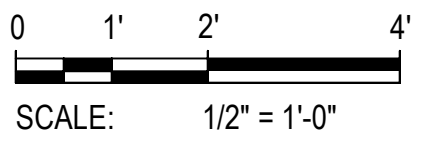
CLIENT INFORMATION
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SUBMARINE WET BERTHS
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IMPROVEMENTS

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SECTIONS AND DETAILS

Drawing No.

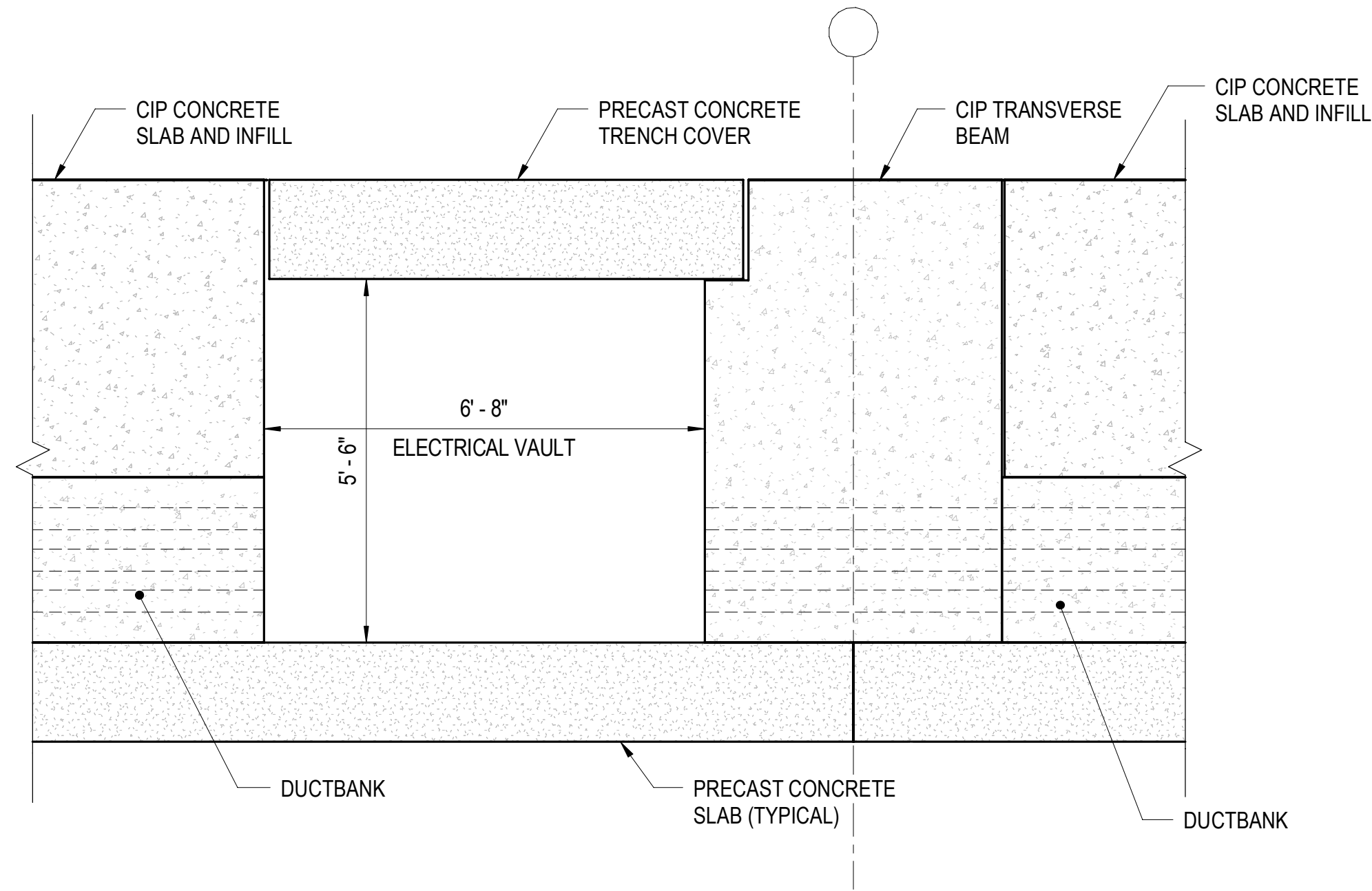
S-501

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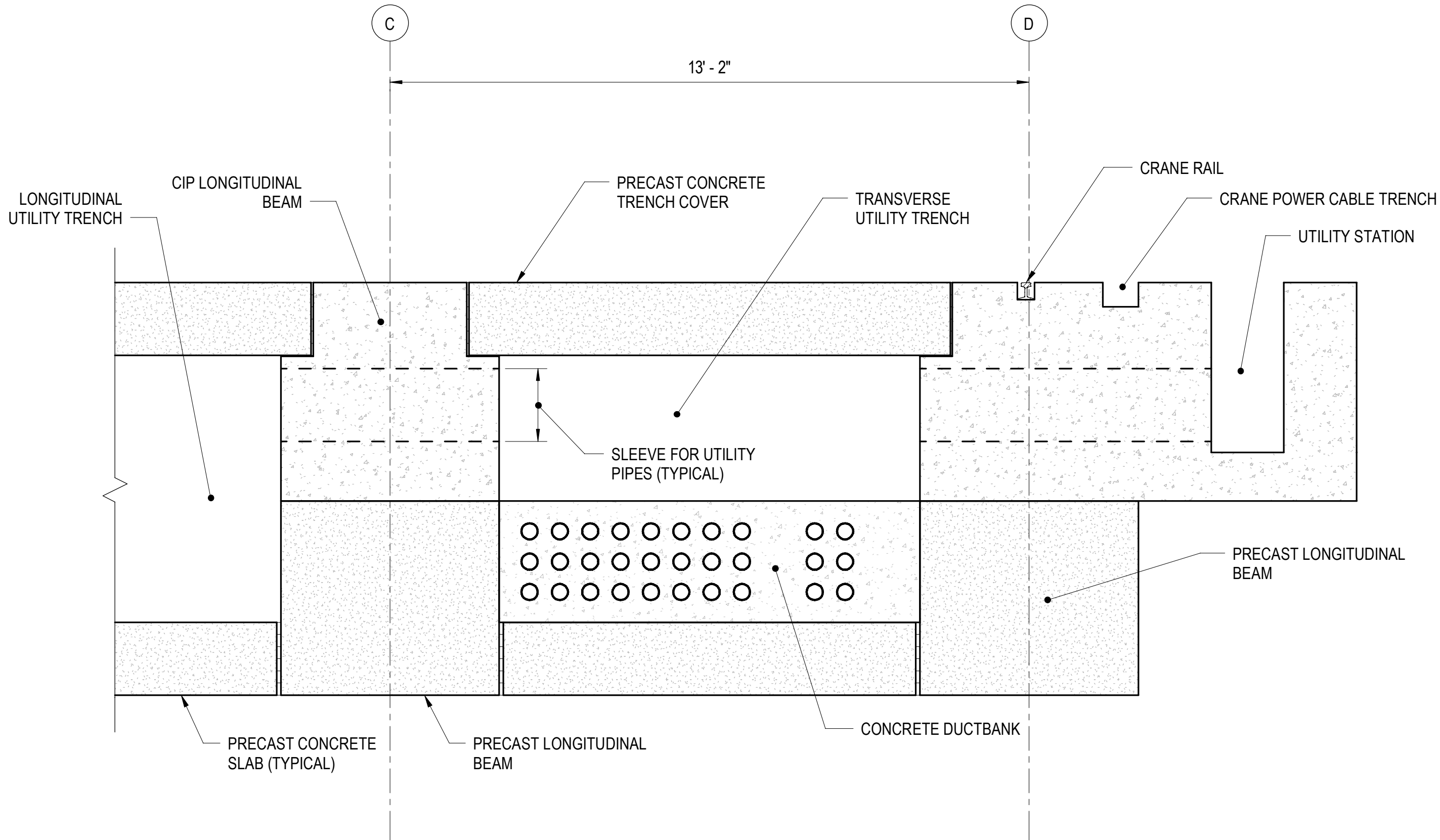
Date: MAY, 31 2024 Sheet 36 of 63

Des: JFB Drawn: JFB Check: MHL

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1 SECTION AT ELECTRICAL VAULT
S-502 SCALE: 1/2" = 1'-0"



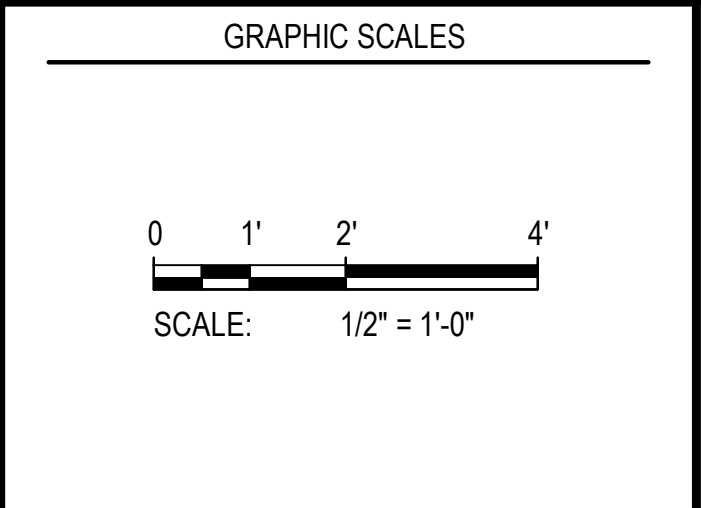
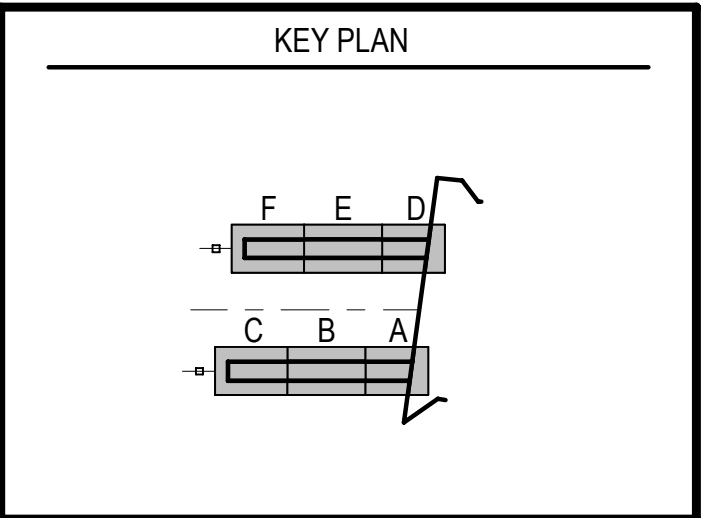
2 SECTION AT UTILITY STATION
S-502 SCALE: 1/2" = 1'-0"

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SECTIONS AND DETAILS

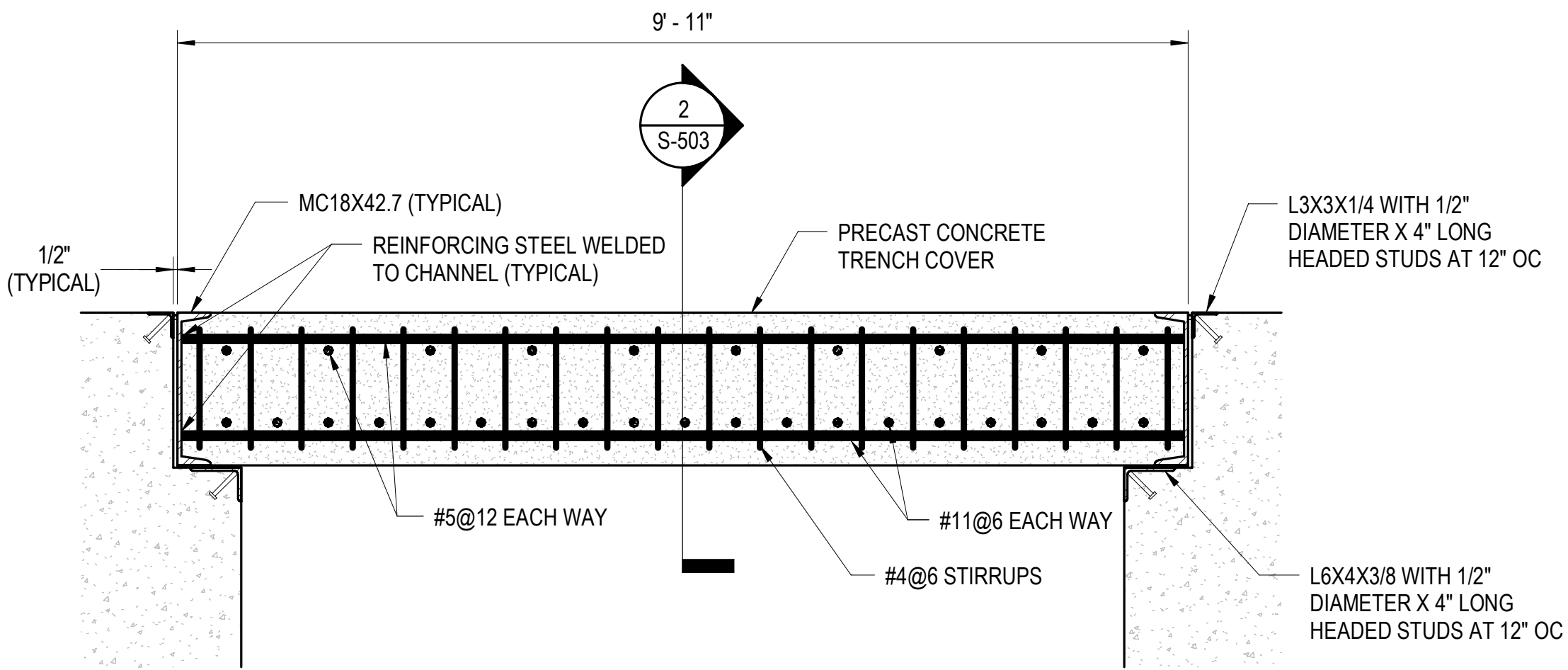
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S-502

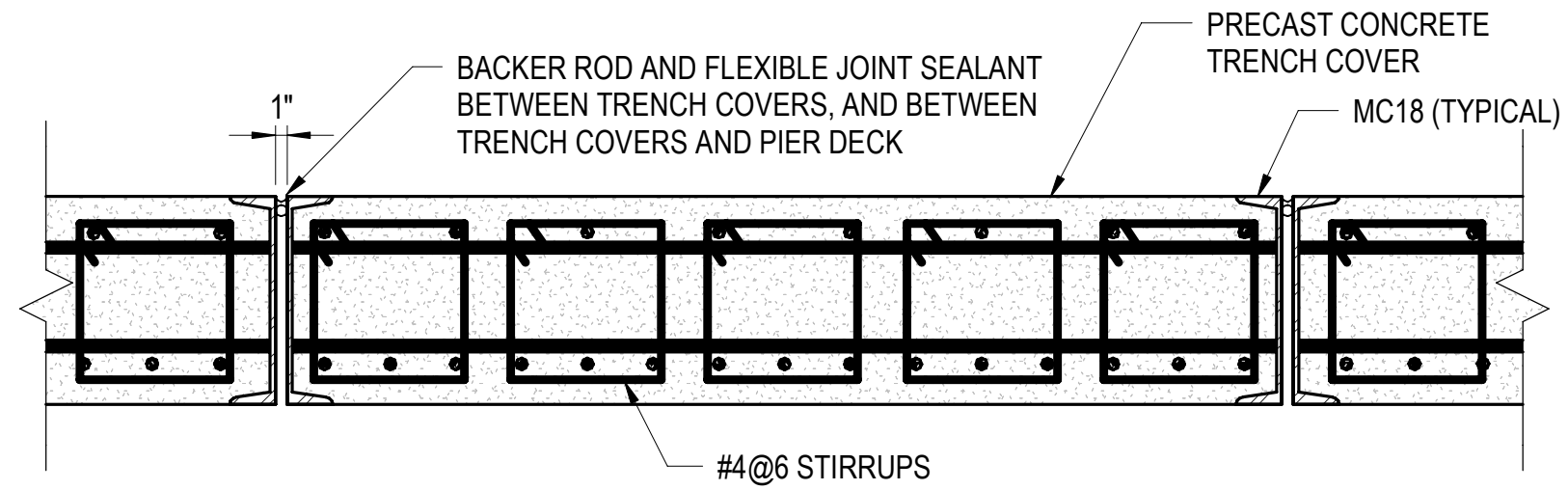
Scale: 1/2" = 1'-0"

Date: MAY, 31 2024 Sheet 37 of 63

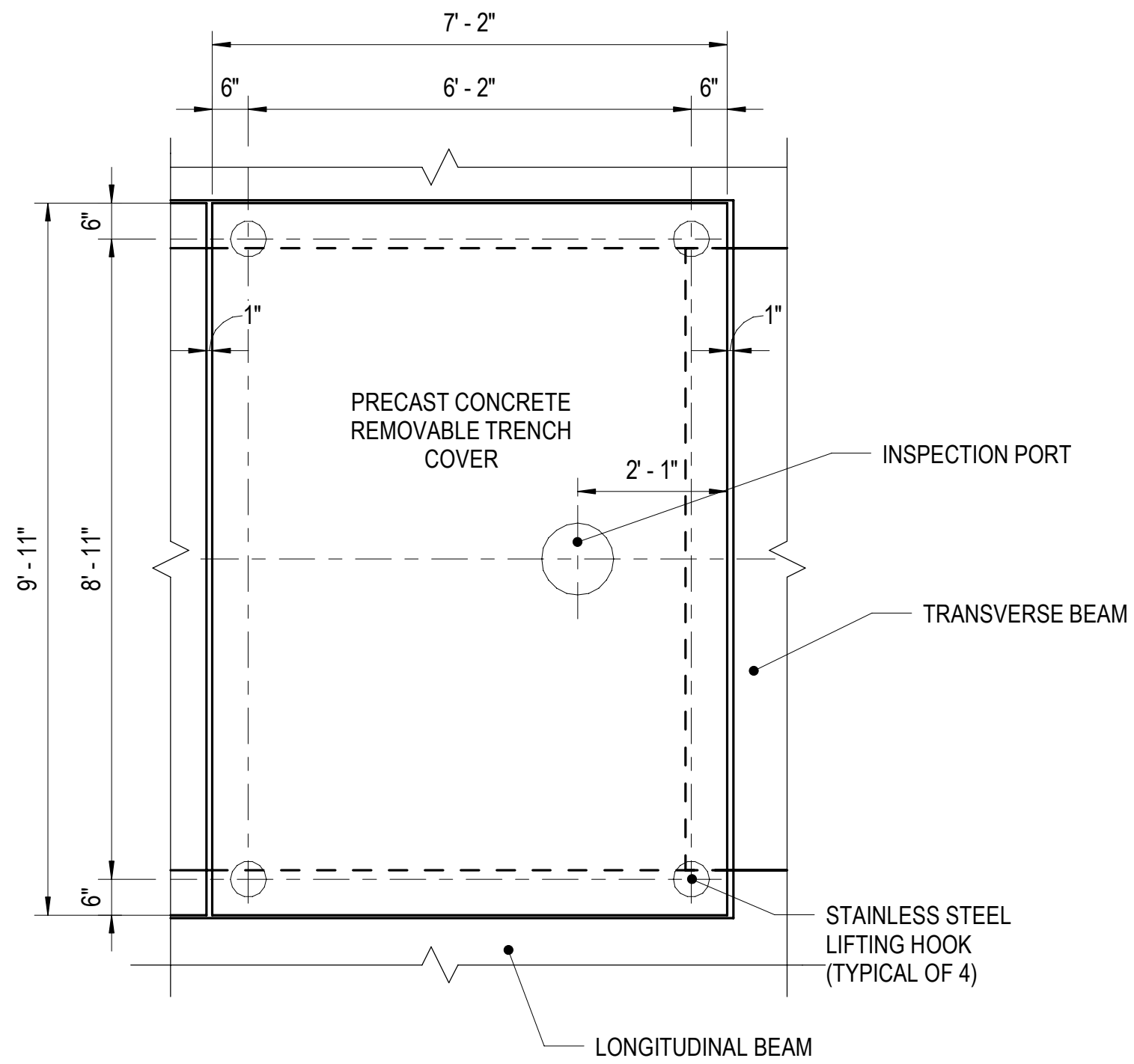
Des: JFB Drawn: JFB Check: MHL



1
S-503
REMOVABLE TRENCH COVER
SCALE: 3/4" = 1'-0"
REF: S-301



2
S-503
REMOVEABLE TRENCH COVER SECTION
SCALE: 3/4" = 1'-0"



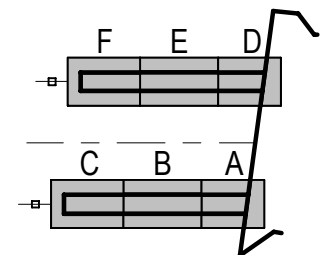
3
S-503
REMOVABLE TRENCH COVER PLAN DETAIL
SCALE: 1/2" = 1'-0"

REVISIONS		

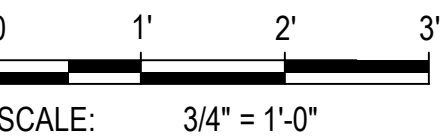
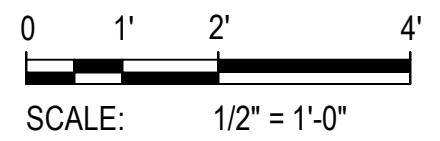
CLIENT INFORMATION
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SUBMARINE WET BERTHS
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SECTIONS AND DETAILS

Drawing No.

S-503

Scale: AS SHOWN

Date: MAY, 31 2024

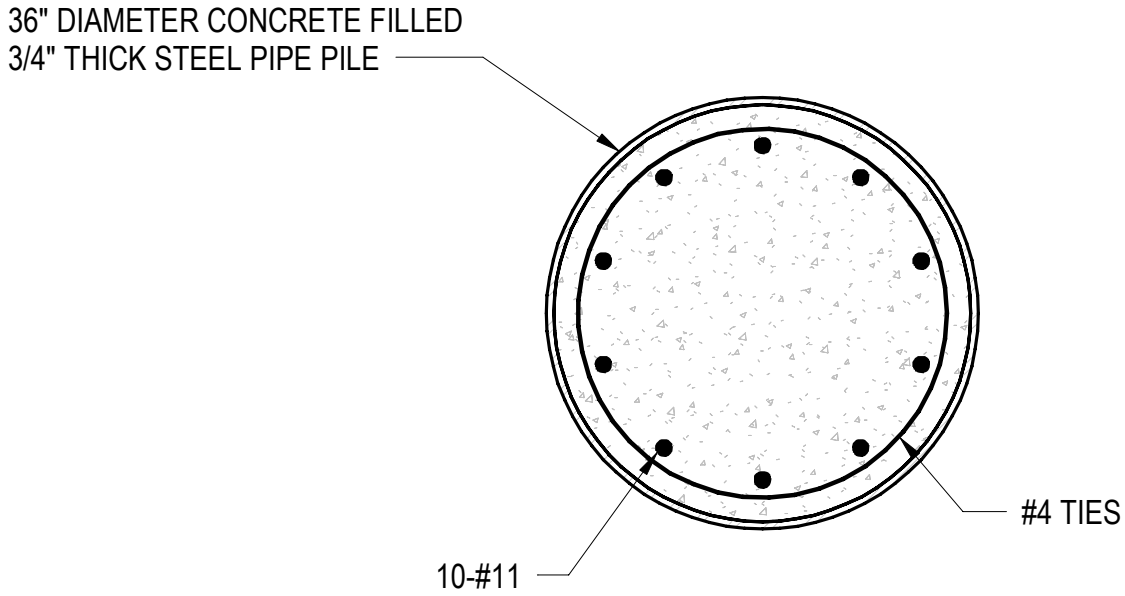
Sheet 38 of 63

Des: JFB

Drawn: MHL

Check: MHL

5/30/2024 5:16:59 PM



1
S-601

PIPE PILE SECTION

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

PIER PILE TIP ELEVATIONS		
PILE LOCATION (PIER BENT NO.)	APPROXIMATE TOP OF COMPETENT ROCK ELEVATION (FEET)	ESTIMATED PILE TIP ELEVATION (FEET)
1-5	-55	-58
6-10	-51	-54
11-15	-70	-73
16-21	-80	-83

DOLPHIN PILE TIP ELEVATIONS			
PILE LOCATION	REFERENCE BORING	TOP OF ROCK ELEVATION (FEET)	PILE TIP ELEVATION (FEET)
NORTH PIER DOLPHIN	WB101	-109	-112
SOUTH PIER DOLPHIN	WB102	-82	-85

FENDER PILE TIP ELEVATIONS				
PILE LOCATION (PIER BENT NO.)	TOP OF COMPETENT ROCK ELEVATION (FEET)	PILE TIP ELEVATION (FEET)	TOP OF SAND ELEVATION (FEET)	PILE TIP ELEVATION (FEET)
6-7	-41	-43	-	-
8-11	-51	-53	-	-
12-17	-	-	-40	-55
17-21	-	-	-50	-65

NOTES TO REVIEWERS

- Reinforcing steel is full length of pipe piles.
- Top of rock elevations are estimated based on limited subsurface data. Top of rock and pile tip elevations will be updated based on future subsurface investigations.
- PIER PILES: Anticipated pier pile tips are embedded 3' (1D) into top of competent rock with no rock socket. Pile tips may change to include a rock socket depending on future analysis.
- DOLPHIN PILES: Anticipated dolphin pile tips are embedded 3' (1D) into top of competent rock with no rock socket. Pile tips may change to include a rock socket depending on pile loading in tension.
- FENDER PILES: Depending on top of sand/gravel and top of rock elevations, fender piles will either be set in predrilled holes 2' into rock or driven approximately 15' into sand/gravel layer. Sand and rock layers to be determined based on future subsurface investigations.

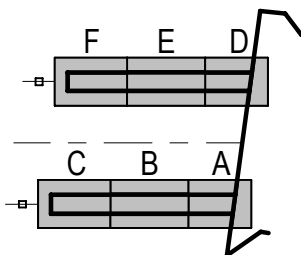
REVISIONS

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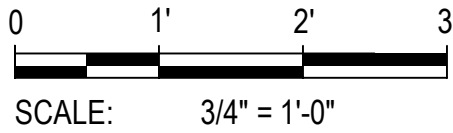
**GENERAL DYNAMICS
ELECTRIC BOAT**

**SUBMARINE WET BERTHS
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IMPROVEMENTS**

KEY PLAN



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PILE DETAILS

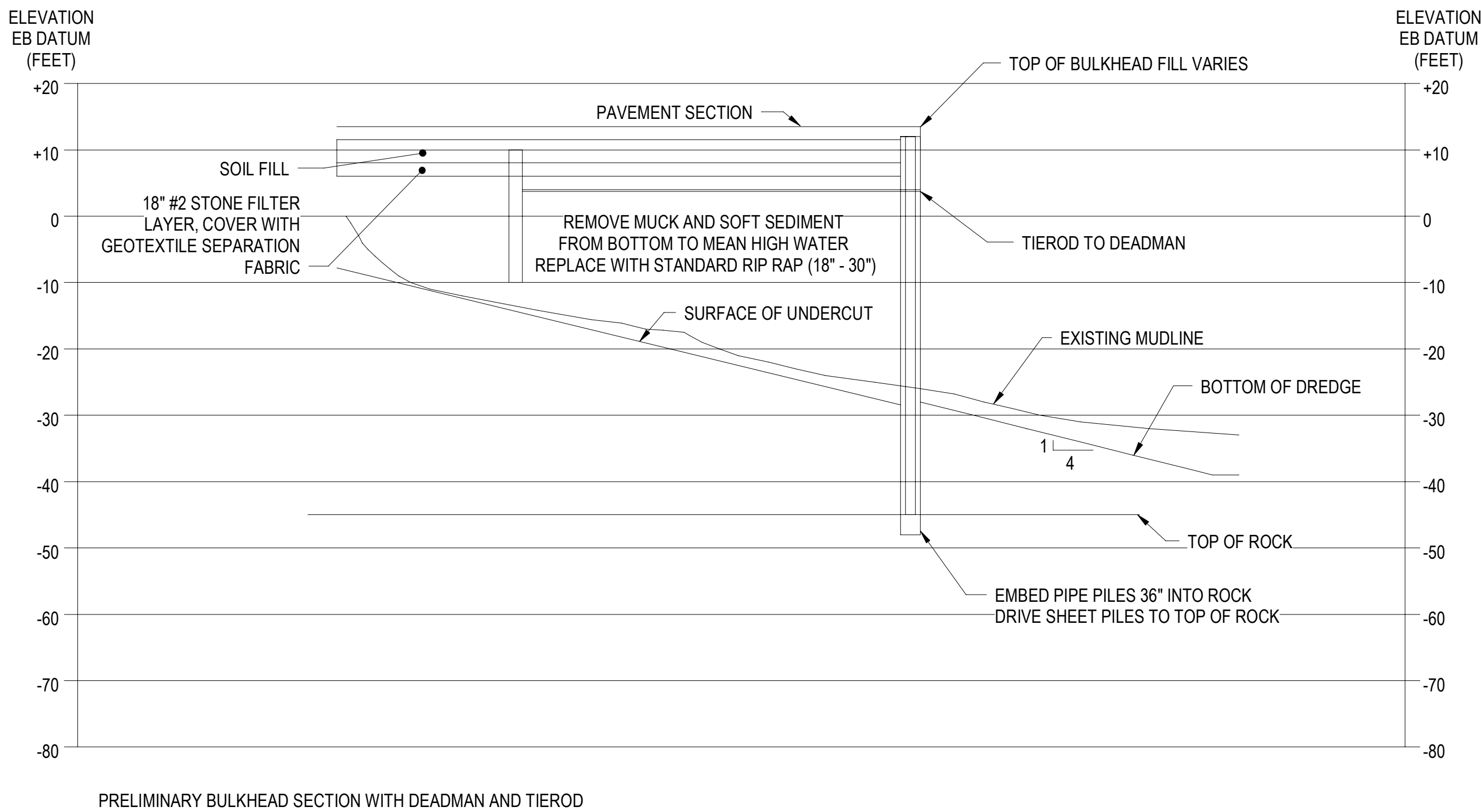
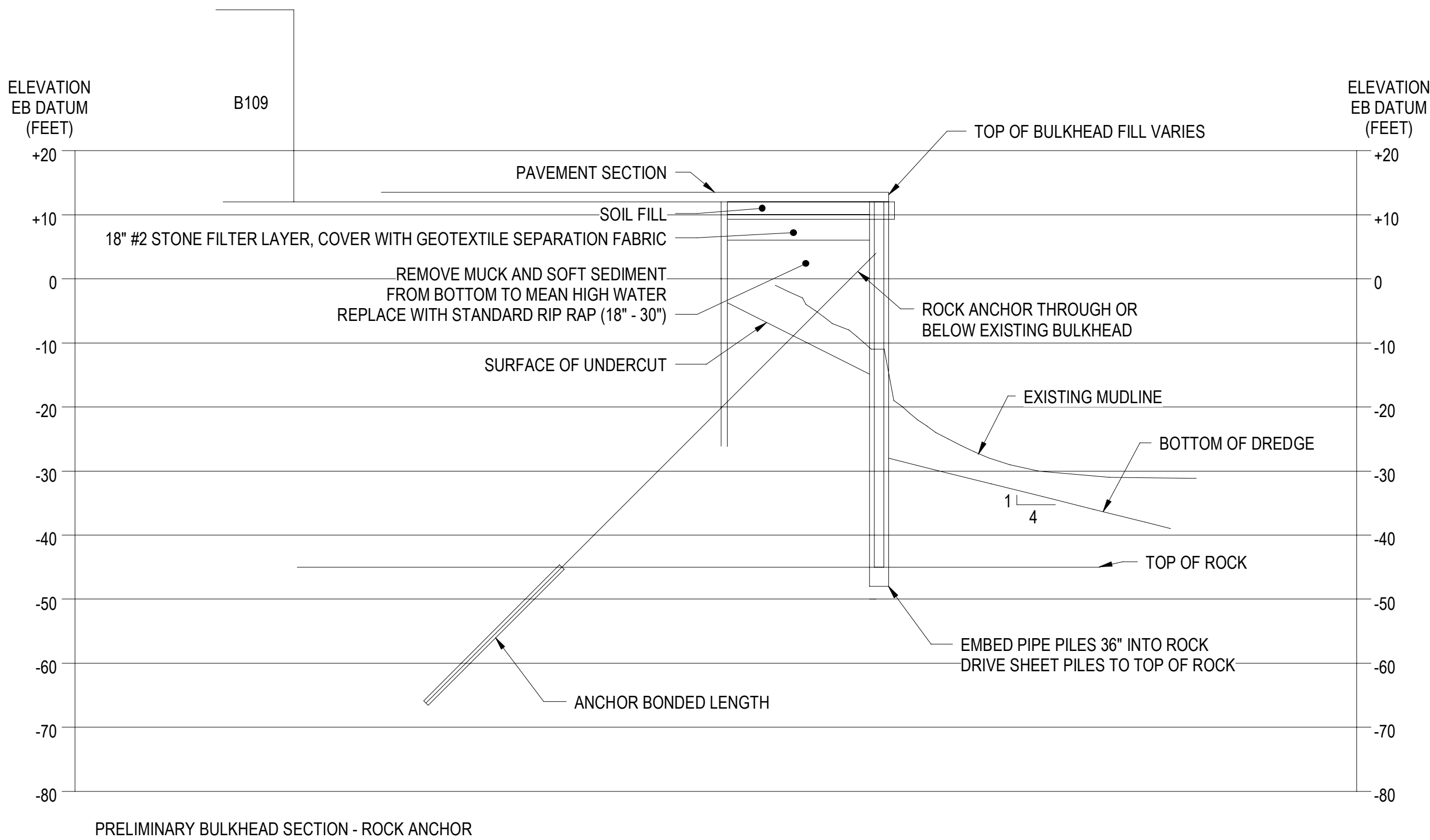
Drawing No.

S-601

Scale: AS SHOWN

Date: MAY, 31 2024 Sheet 39 of 63

Des: JFB Drawn: MHL Check: MHL



1
S-701

PRELIMINARY BULKHEAD SECTIONS

SCALE: NOT TO SCALE

BULKHEAD WALL TYPE AND EXTENTS			
EXTENTS OF WALL TYPE (STATION*)	BULKHEAD WALL TYPE	ASSUMED TOP OF ROCK ELEVATION (FEET)	PRELIMINARY PILE TIP ELEVATION (FEET)
-1+38 TO -0+90	O-PILE WALL WITH DEADMAN	- 18.5	- 21.5
-0+90 TO 0+90	O-PILE WALL WITH CORNER BRACING	- 35.0	- 38.0
0+90 TO 2+50	COMBINATION WALL WITH DEADMAN	- 43.0	- 46.0
2+50 TO 3+10	COMBINATION WALL WITH TIEBACK ANCHOR	- 46.0	- 49.0
3+10 TO 4+50	O-PILE WALL WITH TIEBACK ANCHOR	- 41.0	- 44.0
4+50 TO 5+50	COMBINATION WALL WITH TIEBACK ANCHOR	- 52.0	- 52.0
5+50 TO 6+35	COMBINATION WALL WITH DEADMAN	- 47.0	- 50.0
6+35 TO 7+45	COMBINATION WALL WITH CORNER BRACING	- 49.0	- 52.0
7+45 TO 8+42	O-PILE WALL WITH DEADMAN	- 40.0	- 43.0

*NOTE: REFER TO C-101 FOR STATIONS ALONG BULKHEAD.

NOTES TO REVIEWERS

- Bulkhead wall is planned as either O-pile wall with 36-inch pipe piles installed at 36-inch spacing (end-to-end) with 3' embedment into competent rock or combination/king piles with 36-inch pipe piles embedded 3' into competent rock and sheet pile driven to/into top of rock, depending on location. Preliminary analysis indicates 3/4" thick pipe piles and one pair of AZ50 sheets.
- Bulkhead support is planned as either anchored to deadman sheet/block or drilled and grouted tieback anchors at steep inclination, depending on location. Preliminary analysis indicates a 25' tall AZ 50 sheetpile deadman, 60" behind bulkhead with 3" diameter 75 ksi anchor rods spaced at 6' will be required. Grouted anchors will require coring through existing sheet pile bulkhead and are expected to consist of 9 strand, 270ksi, 0.6in diameter strands, spaced at 5', inclined 45 degrees with 75' free length and 30' bonded length. Both anchor types to be located above MHW at bulkhead.
- Backfill of bulkhead is planned as rock/gravel fill to water line and then compacted backfill to bottom of pavement section. No settlement wait period is anticipated and therefore soft material/muck should be undercut before bulkhead fill placement.

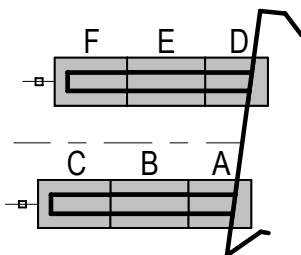
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GENERAL DYNAMICS
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SUBMARINE WET BERTHS
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BULKHEAD SECTIONS AND DETAILS

Drawing No.

S-701

Scale: AS SHOWN

Date: MAY, 31 2024

Sheet 40 of 63

Des: JFB

Drawn: MHL

Check: MHL