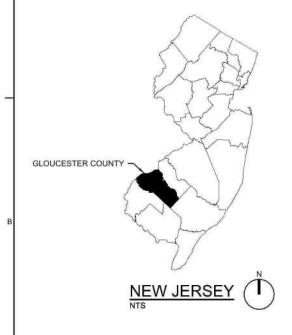
PAULSBORO DOWNRIVER RORO BERTH DREDGING ØRSTED

PAULSBORO, NEW JERSEY







VICINITY MAP

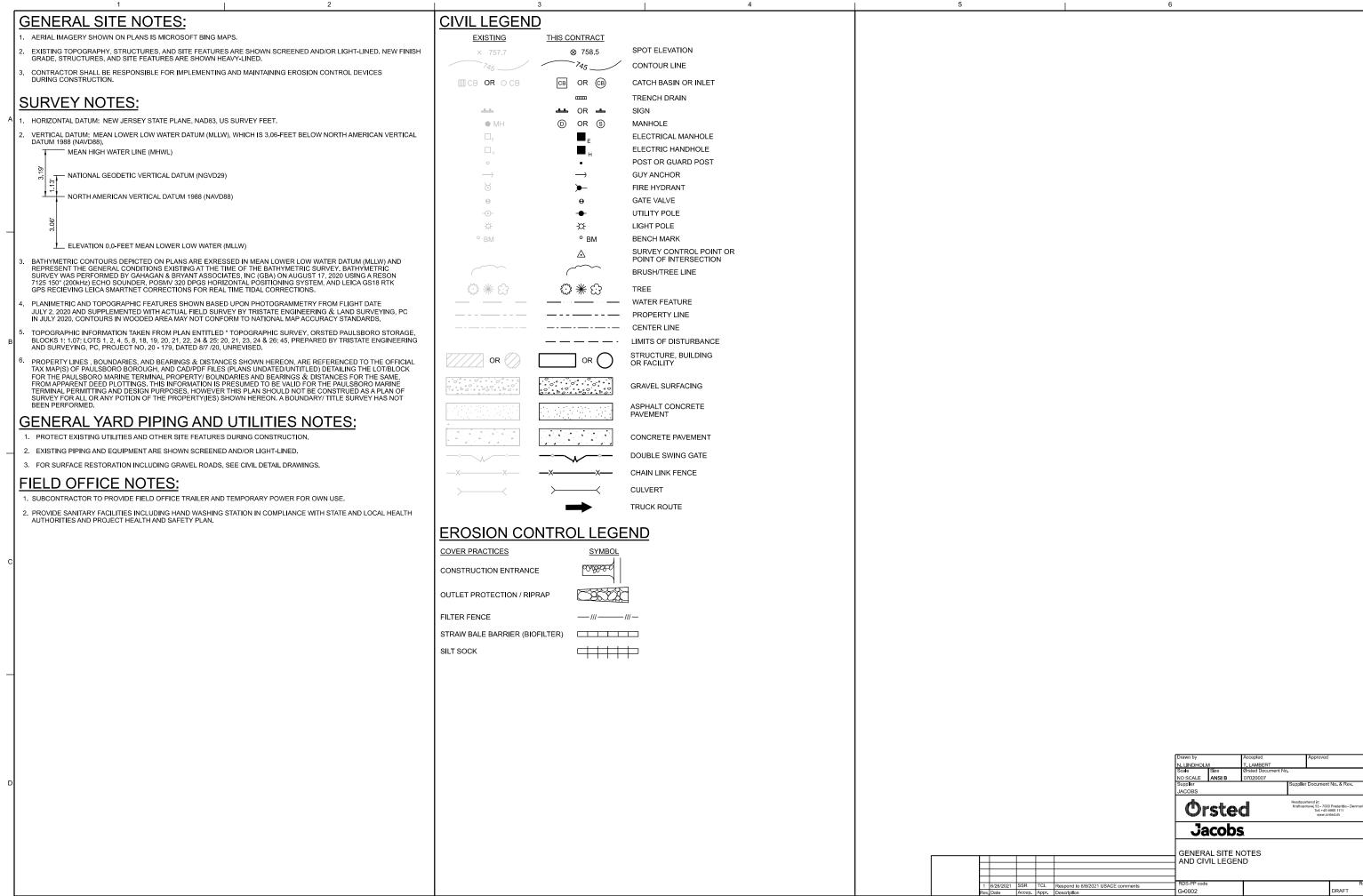
INDEX TO DRAWINGS

SHEET NO.	DRAWING NO.	DESCRIPTION
GENERAL		
1	G-001	TITLE SHEET, VICINITY / LOCATION MAPS, AND INDEX TO DRAWINGS
2	G-002	GENERAL SITE NOTES AND CIVIL LEGEND
CIVIL		
3	C-2001	SITE OVERVIEW
4	C-2101	EXISTING BATHYMETRY PLAN
5	C-2201	DREDGING PLAN
6	C-2202	DREDGED MATERIAL MANAGEMENT PLAN
7	C-2203	DREDGED MATERIAL PLACEMENT PLAN
8	C-3001	DREDGE CROSS SECTIONS
9	C-5001	DETAILS

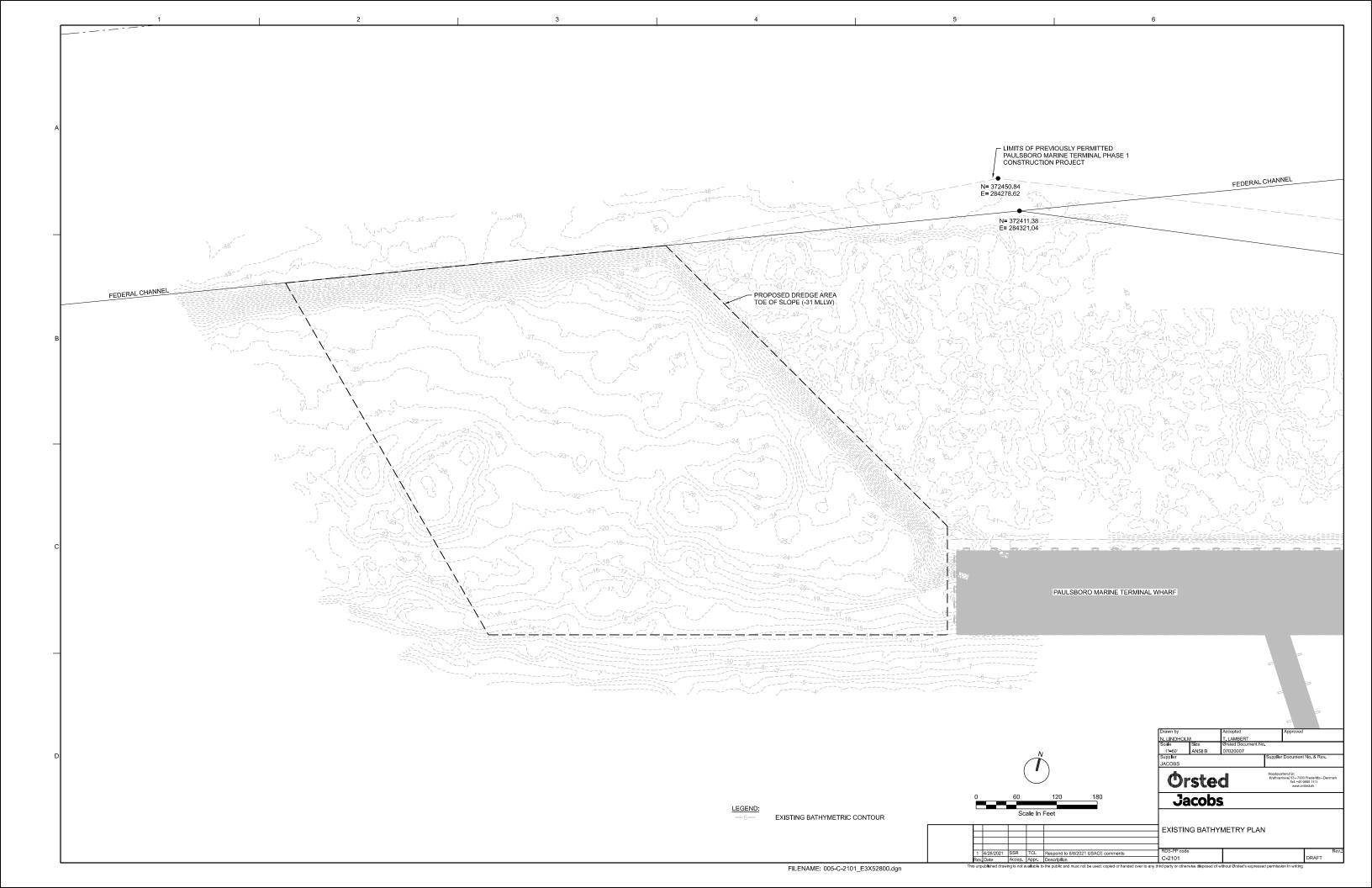


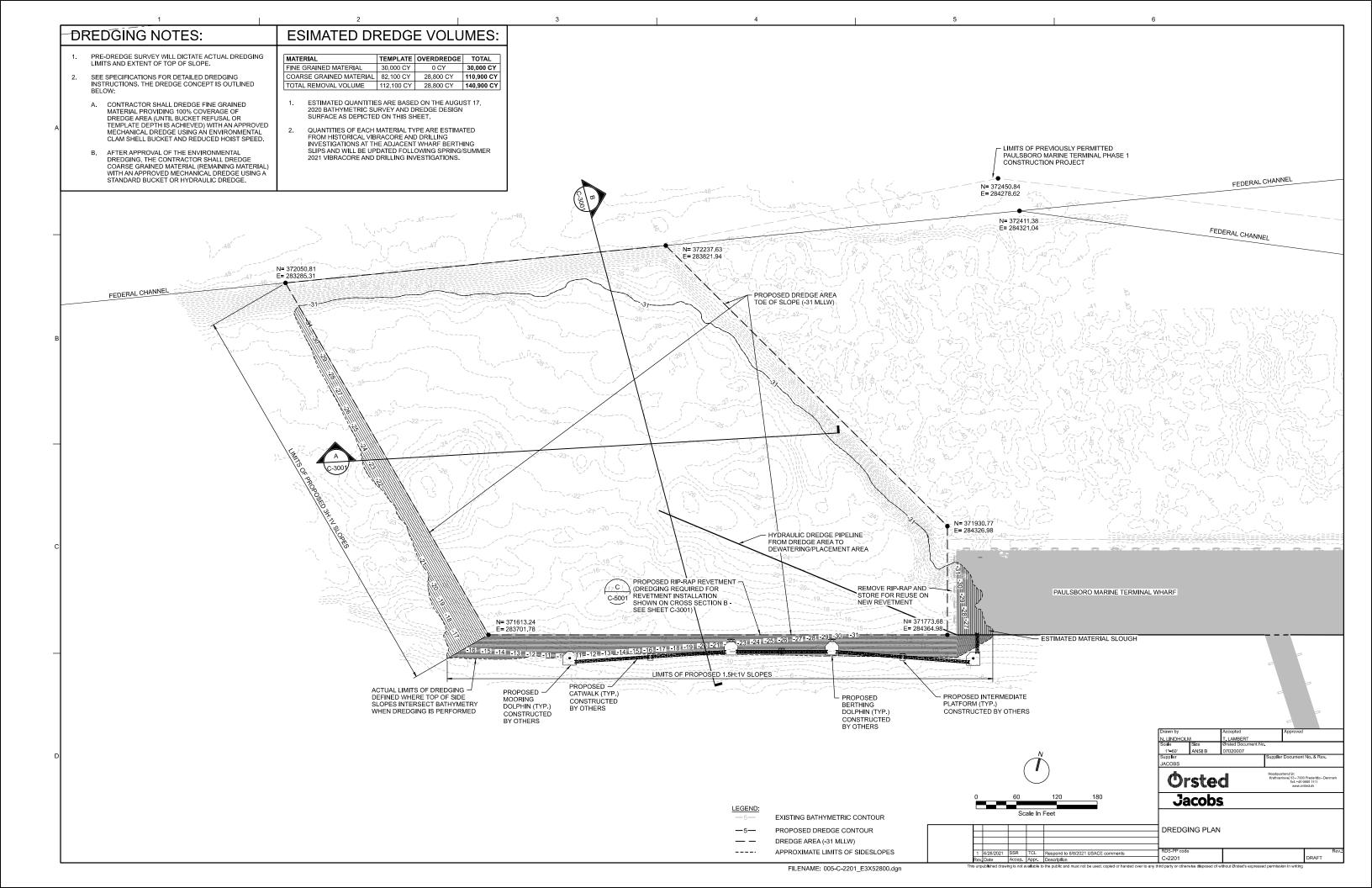
LOCATION MAP

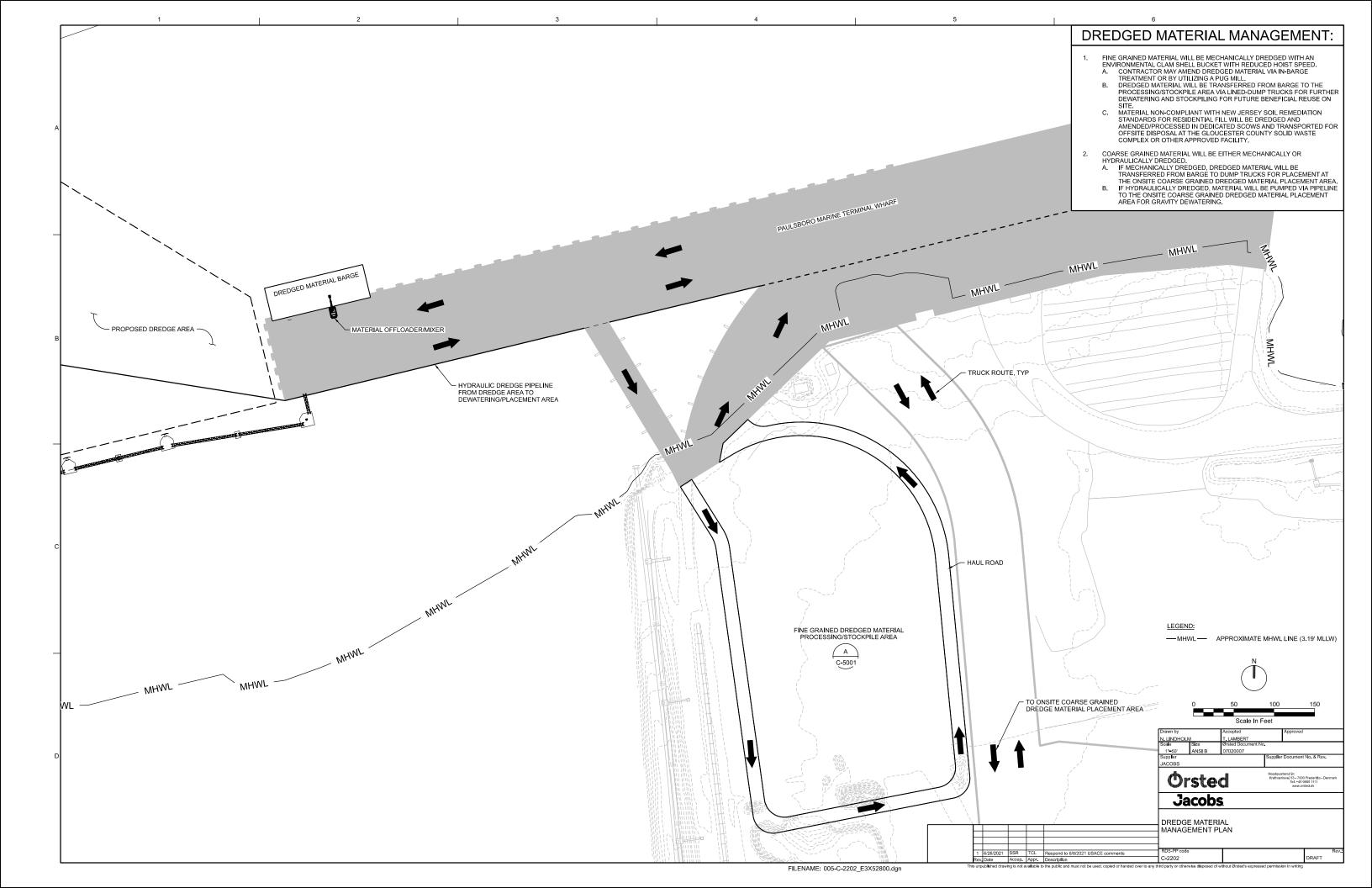
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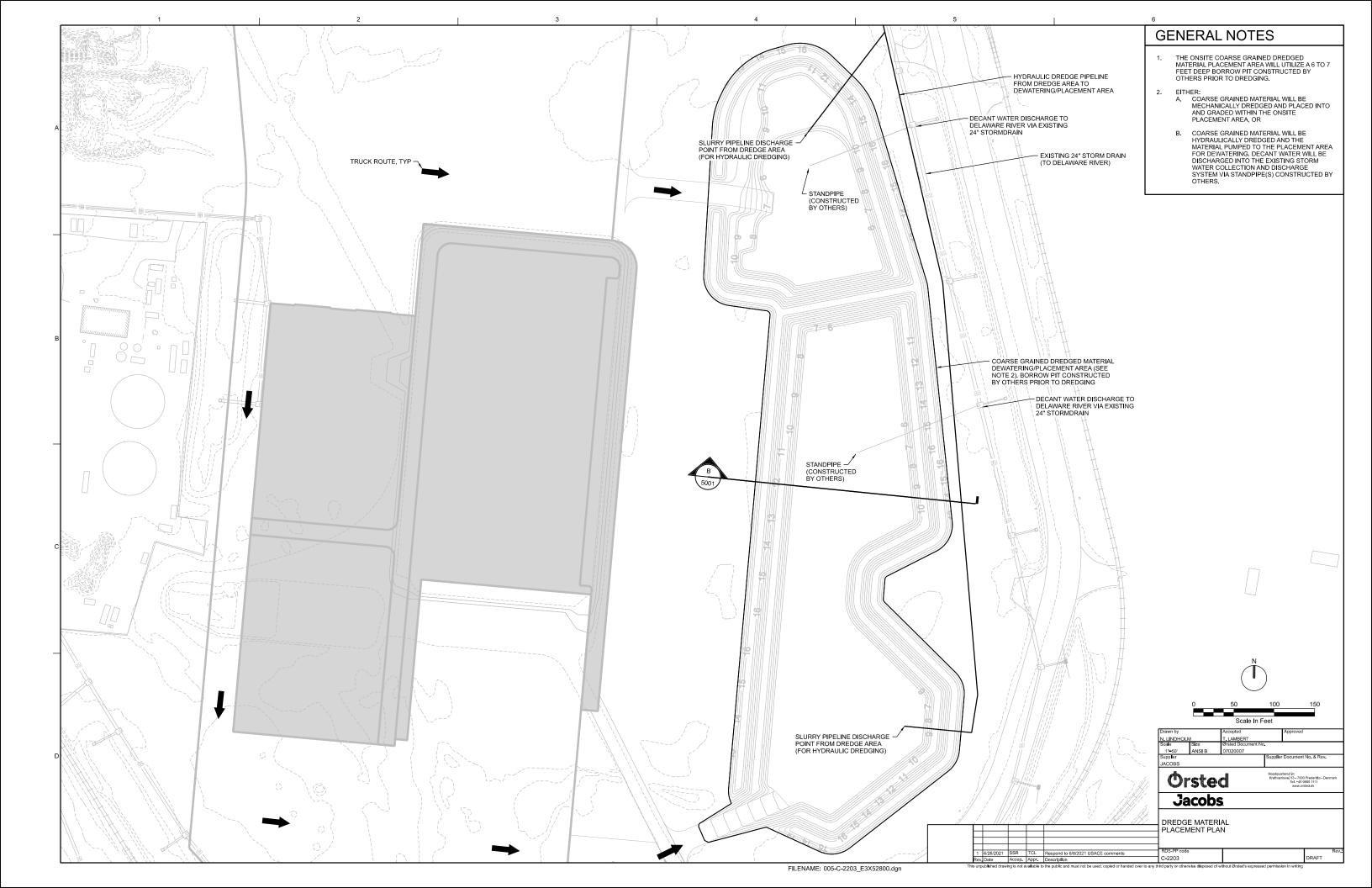


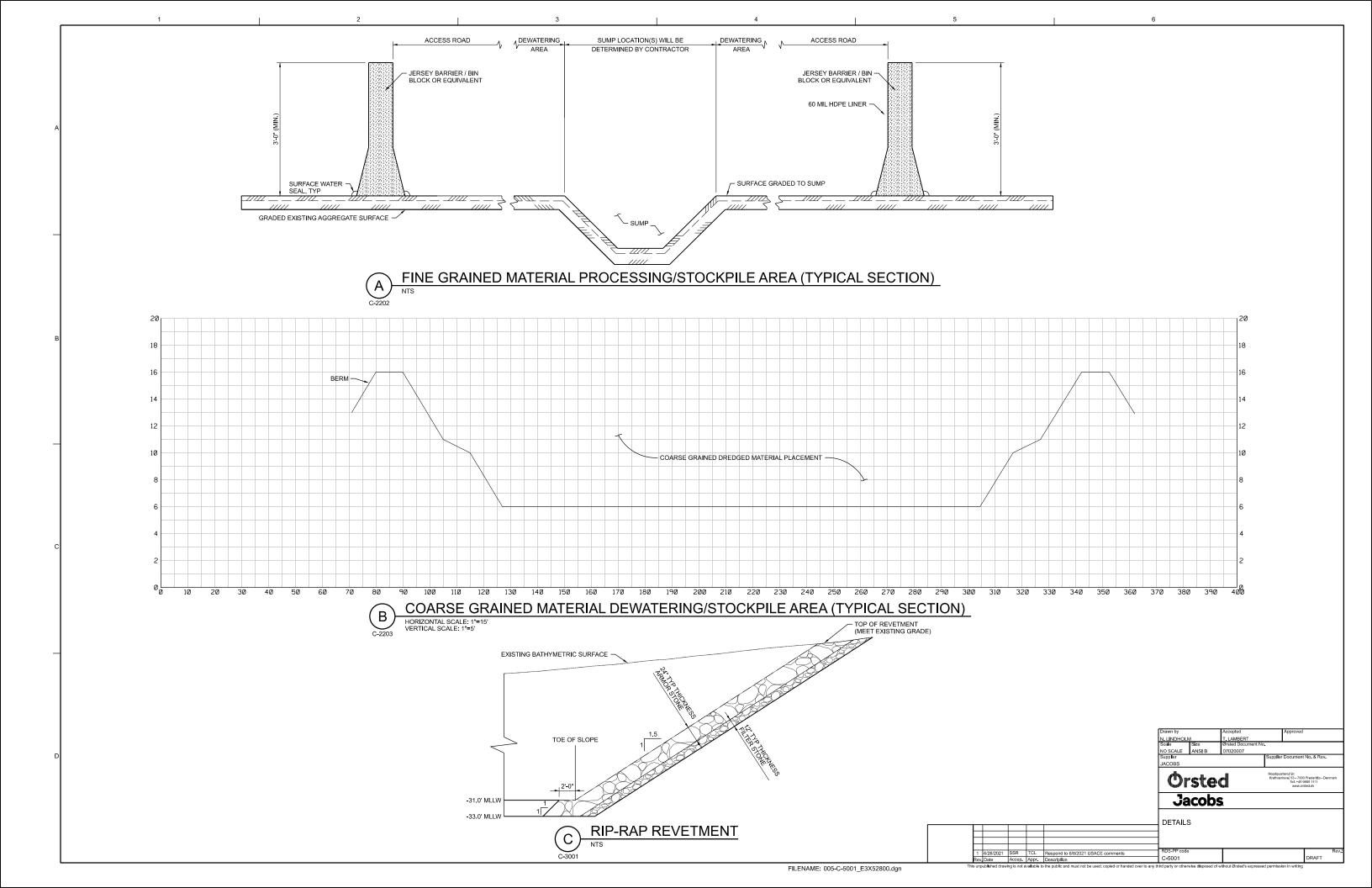




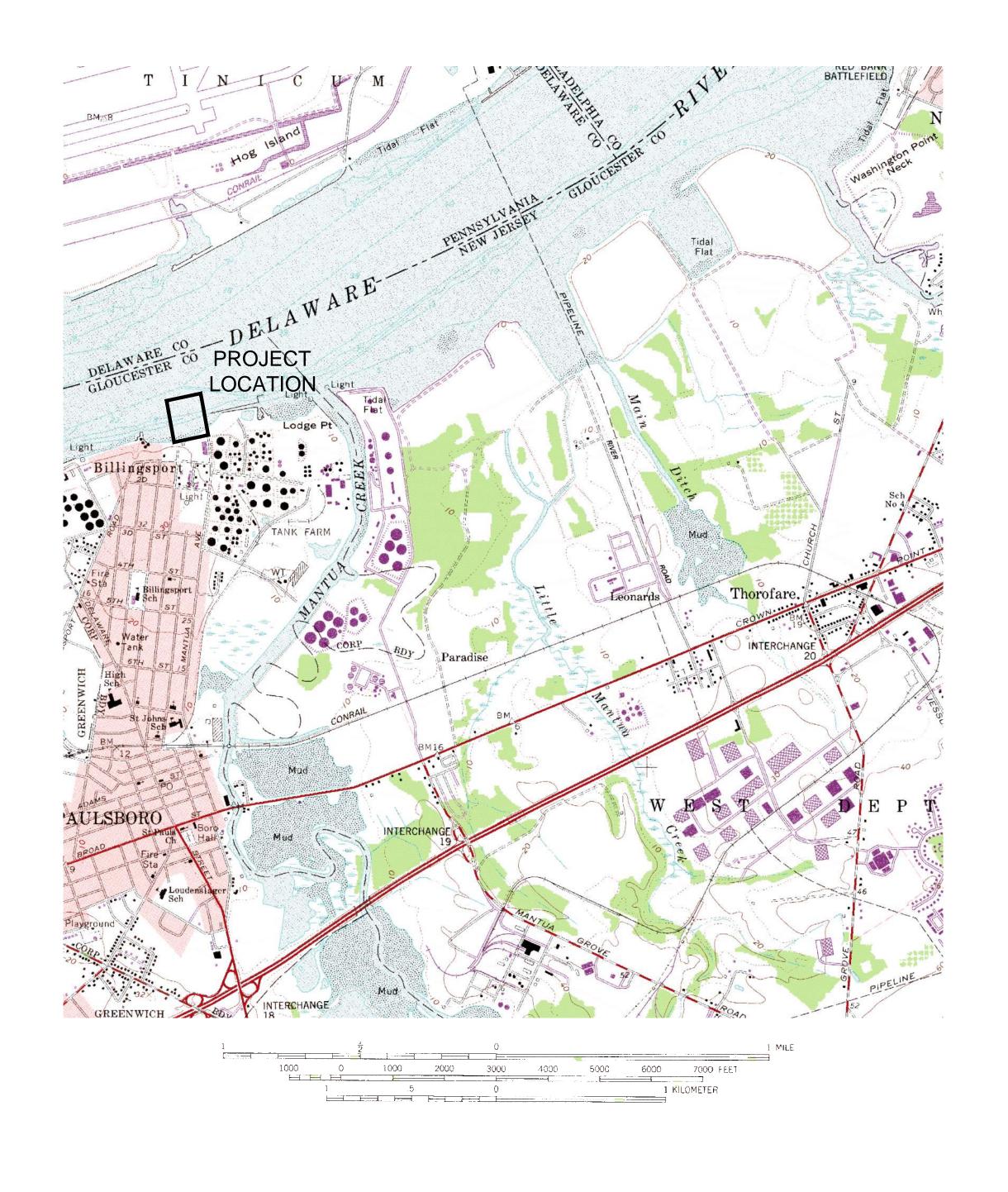








ØRSTED NORTH AMERICA RORO BERTH DOLPHIN DESIGN PAULSBORO MARINE TERMINAL BOROUGH OF PAULSBORO GLOUCESTER COUNTY, NEW JERSEY



DRAWING INDEX						
SHEET	SHEET NO.	SHEET TITLE				
1	G-001	COVER SHEET AND DRAWING INDEX				
2	G-002	GENERAL NOTES				
3	S-101	OVERALL PLAN				
4	S-301	BERTHING DOLPHINS BD-1 AND BD-2 PLANS AND SECTION				
5	S-310	MOORING DOLPHINS MD-1 AND MD-2 PLANS AND SECTION				
6	S-320	INTERMEDIATE PLATFORM PLANS AND SECTION				
7	S-401	CATWALK DETAILS				
8	S-501	PILE CAP REINFORCEMENT 1 OF 2				
9	S-502	PILE CAP REINFORCEMENT 2 OF 2				
10	S-510	PIPE PILE SECTIONS AND DETAILS				
11	S-521	BOLLARD DETAILS				
12	S-531	FENDER DETAILS				
13	S-551	HANDRAIL AND CURB DETAILS				
14	S-552	LADDER DETAILS				

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GENERAL NOTES

- 1. DESIGN AND CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE STATE AND LOCAL CODES AND STANDARDS, THE PROJECT SPECIFICATIONS, DRAWINGS AND NOTES, GENERAL NOTES AND SPECIFIC NOTES ON EACH DRAWING SHALL TAKE PRECEDENCE OVER PROJECT SPECIFICATIONS. NOTES ON DETAIL DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES. STATE AND LOCAL CODES SHALL TAKE PRECEDENCE OVER PROJECT SPECIFICATIONS AND NOTES.
- 2. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS PRIOR TO MOBILIZING. ALL EXISTING & PROPOSED DIMENSIONS AND ELEVATIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY FABRICATION AND ERECTION. NOTIFY ENGINEER OF ANY DISCREPANCIES IMMEDIATELY.
- 3. THE CONTRACTOR SHALL PLACE BOOMS, TARPAULINS, FLOATS, STAGING, AND OTHER DEVICES AS NECESSARY TO PREVENT CONSTRUCTION MATERIALS FROM ENTERING THE WATER AND LEAVING THE IMMEDIATE VICINITY OF THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANUP OF ALL MATERIALS.
- 4. THE CONTRACTOR SHALL REMOVE FROM THE SITE ANY WASTE MATERIAL AND DEBRIS GENERATED DURING THE COURSE OF THE WORK. DISPOSAL OF ALL GENERATED WASTE MATERIAL AND DEBRIS IS THE CONTRACTORS RESPONSIBILITY, UNO.
- 5. THE CONTRACTOR SHALL ABIDE BY ALL APPLICABLE ENVIRONMENTAL PROTECTION STANDARDS, CODES LAWS, REGULATIONS, AND PERMITS.
- 6. THE CONTRACTOR SHALL CONDUCT THEIR OPERATIONS SO AS TO NOT INTERFERE, WITH OR BE DETRIMENTAL TO, VESSEL AND VEHICULAR TRAFFIC DURING THE COURSE OF THE WORK.
- 7. ALL STRUCTURES ARE DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER ERECTION IS FULLY COMPLETE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE ERECTION PROCEDURES AND SEQUENCE AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENTS PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIE DOWNS WHICH MAY BE NECESSARY. SUCH MATERIAL SHALL REMAIN CONTRACTORS PROPERTY AFTER COMPLETION OF PROJECT.
- 8. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
- 9. ELEVATIONS SHOWN ON DRAWINGS ARE REFERENCED TO MLLW, UNO.
- 10. IN ACCORDANCE WITH CFR TITLE 14 PART 77, THE CONTRACTOR SHALL FILE FAA FORM 7460-1, NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION, FOR ANY CONSTRUCTION EQUIPMENT THAT EXCEEDS THE NOTICE CRITERIA SET FORTH IN SECTION 77.9.
- 11. CONTRACTOR AND ALL SITE WORKERS SHALL HAVE TWIC (TRANSPORTATION WORKER IDENTIFICATION CREDENTIALS) CARDS PRIOR TO ACCESSING THE SITE, AND SHALL COMPLY WITH ALL SITE SECURITY REGULATIONS.

STRUCTURAL STEEL AND STEEL PILINGS

- 1. ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL.
- 2. STRUCTURAL AND MISCELLANEOUS STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING, UNO:

ANCHOR BOLTS:

ASTM A 449

- NUTS SHALL CONFORM TO ASTM A 563 AND WASHERS SHALL CONFORM TO ASTM F436.
- 4. ALL MISCELLANEOUS METALS INCLUDING BOLTS, WASHERS, NUTS, ANGLES, INSERTS, PLATES, AND OTHER FABRICATIONS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123 AND/OR ASTM A 153, AS APPLICABLE AFTER FABRICATION, UNLESS OTHERWISE NOTED OR SPECIFIED.
- FIELD TREAT DAMAGED GALVANIZED FINISH WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT, COLD GALVANIZING COMPOUNDS OR APPROVED EQUAL. IN ADDITION, ALL EXPOSED THREADED SURFACES SHALL BE CLEANED AND PAINTED WITH TWO COATS OF HIGH ZINC DUST OXIDE PAINT AFTER INSTALLATION OF THE NUT.
- WHEN CONNECTING HARDWARE IS SHOWN ON STRUCTURAL DRAWINGS, THE TYPE, SIZE, SPACING, AND ALIGNMENT ARE CRITICAL AND MUST BE MAINTAINED.
- 7. ALL WELDING SHALL CONFORM TO AWS D.1.1., LATEST EDITION, UNLESS OTHERWISE SPECIFIED.
- 8. WELDING PERSONNEL AND PROCEDURES ARE TO BE QUALIFIED PER AWS D1.1 UNLESS SPECIFICALLY SHOWN OTHERWISE, DESIGN, FABRICATION, AND ERECTION ARE TO BE GOVERNED BY THE LATEST **REVISIONS OF:**
 - A. AISC MANUAL OF STEEL CONSTRUCTION LATEST EDITION
 - B. AISC CODE OF STANDARD PRACTICE
 - C. STRUCTURAL WELDING CODE, AWS D1.1 OF THE AMERICAN WELDING SOCIETY
 - D. SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS
- 9. ALL WELDS SHALL BE WITH E70XX ELECTRODES IN ACCORDANCE WITH AWS D1.1. USE HIGHER STRENGTH ELECTRODE IF REQUIRED BY AWS D1.1, UNO.
- 10. PIPE PILES SHALL BE COAL TAR EPOXY COATED FULL PERIMETER (AT ALL FACES) FROM CUT-OFF EL TO EL.-50.0' MLLW.

C.I.P. CONCRETE AND REINFORCING STEEL

- 1. ALL CONCRETE WORK SHALL COMPLY WITH THE RECOMMENDATIONS OF ACI 301 AND ACI 318.
- 2. CAST-IN-PLACE CONCRETE STRENGTH SHALL BE 5,000 PSI MINIMUM AT 28 DAYS, U.N.O.
- 3. NONMETALLIC NON-SHRINK GROUT STRENGTH SHALL BE 5,000 PSI MINIMUM AT 28 DAYS, U.N.O.
- 4. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING STEEL SHALL CONFORM TO THE ACI MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315.
- 5. REINFORCING STEEL FOR CAST-IN-PLACE CONCRETE SHALL CONFORM TO ASTM A 615, GR 60, EXCEPT REINFORCING STEEL TO BE WELDED SHALL CONFORM TO ASTM A 706.
- MINIMUM CONCRETE PROTECTION FOR ALL REINFORCING SHALL BE 3 INCHES, U.N.O.
- 7. LAP SPLICE REINFORCING STEEL AS INDICATED. LAP SPLICES NOT SPECIFICALLY DIMENSIONED SHALL BE IN ACCORDANCE WITH ACI 318, CLASS "B." TOP BARS ARE HORIZONTAL BARS WITH 12 INCHES OR MORE OF CONCRETE CAST BELOW THE BARS.

BAR SIZES	TOP BARS	OTHER BARS			
DAR SIZES	5,000 PSI	5,000 PSI			
#3	22"	17"			
#4	29"	23"			
#5	36"	28"			
#6	44"	34"			
#7	63"	49"			
#8	72"	56"			
#9	81"	63"			
#10	92"	71"			
#11	102"	78"			

- CHAMFER ALL EXTERNAL EXPOSED CORNERS OF CONCRETE WITH A 1 INCH, 45-DEGREE CHAMFER, U.N.O.
- 9. SINCE THE CONCRETE INSTALLATION AND CURING MAY OCCUR DURING COLD WEATHER, THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF ACI 306R - COLD WEATHER CONCRETING. BIDDERS SHALL REVIEW THE REQUIREMENTS OF THIS SPECIFICATION PRIOR TO SUBMITTING THE BID AND INCLUDE COSTS FOR COMPLYING WITH THIS SPECIFICATION.

ALUMINUM STRUCTURES

- 1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF THE ALUMINUM TRUSS CATWALK STRUCTURES, AND ASSOCIATED APPERTUNANCES, SUCH AS RAILIINGS, BEARINGS, AND SAFETY CHAINS. DESIGN SHALL BE SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW JERSEY.
- 2. THE MIDSPAN DEFLECTION UNDER DESIGN SERVICE LOADS SHALL NOT EXCEED L/240, WHERE "L" IS THE LENGTH OF THE UNSUPPORTED SPAN.
- 3. ALUMINUM SHALL CONFORM WITH GRADE 6061-T6.
- 4. ALL ALUMINUM BASES IN CONCTACT WITH CONCRETE OR OTHER DISSIMILAR MATERIALS SHALL BE COATED WITH BITUMINOUS PAINT PER THE ALUMINUM CATWALK MANUFACTURER'S RECOMMENDATIONS

DESIGN LOADS

- DESIGN VESSELS
- A. LARGEST DESIGN VESSEL: PAN OCEAN SUR RISE: SUBMERSIBLE CARRIER LOA = 552.8 FTBEAM = 131.2 FTDESIGN DISPLACEMENT = 26,700 TONNES MAX. DESIGN DRAFT = 23.3 FT MIN. DESIGN DRAFT = 19 FT
- UNDERKEEL CLEARANCE = 7 FT MAX. TRANSVERSE WIND SAIL AREA = 9,114 SF MAX. LONGITUDINAL WIND SAIL AREA = 14.691 SF
- B. DESIGN BARGE: CROWLEY 455 LOA = 400 FTBEAM = 105 FTDESIGN DISPLACEMENT = 20, 950 TONNES MAX DESIGN DRAFT: 10.6FT
- MAX TRANSVERSE WIND SAIL AREA: 1,512 SF MAX LONGITUDINAL WIND SAIL AREA: 5,285 SF
- MOORING LOADS
 - BASED ON THE FOLLOWING CRITERIA:
 - CASE 1: STORM CONDITIONS (MOORING SERVICE TYPE IIB)
 - WIND VELOCITY = 64 KNOTS) **CURRENT VELOCITY = 2.0 KNOTS**
 - CASE 2: OPERATING CONDITIONS
 - WIND VELOCITY = 50 KNOTS (MAX OPERATING WIND) CURRENT VELOCITY = 1.5 KNOTS
- BERTHING FORCES
 - BASED ON THE FOLLOWING CRITERIA:
 - VESSEL DISPLACEMENT: 26,700 TONNES
 - APPROACH VELOCITY: 0.33 m/s
 - MAX. APPROACH ANGLE: 3°
- DEAD LOAD WEIGHT OF ALL STRUCTURES, MACHINERY, AND MATERIALS ATTACHED TO OR SUPPORTED BY THE STRUCTURE
- 5. LIVE LOADS 100 PSF ON DOLPHINS CAPS
 - 60 PSF AND 200 LBS APPLIED ANYWHERE ON TRUSS CATWALK.

TIDE LEVELS	ELEVATION, FT
MAX TIDE, HIGHEST OBSERVED TIDE (OCTOBER 2012	+10.62
MEAN HIGHER-HIGH WATER (MHHW)	+6.69
MEAN HIGH WATER	+6.29
MEAN TIDE LEVEL (MTL)	+3.24
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)	+3.10
MEAN LOW WATR (MLW)	+0.19
MEAN LOWER-LOW WATER (MLLW)	+0.00

SPECIAL INSPECTION

LEGEND:

ACI

ALT

BOT

CP

CF

CIP

CL

CLR

CJ

DIA

EΑ

EJ

ΕW

FΥ

GR

IN

LG

MIN

MISC

MLLW

MLW

M/S

MSL

MTL

= MINIMUM

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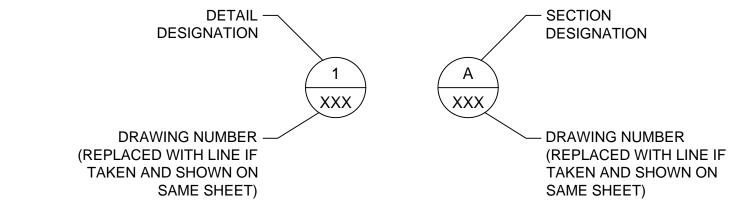
= MEAN LOW WATER

= MEAN SEA LEVEL

= MEAN TIDE LEVEL

= METER PER SECOND

= MEAN LOWER LOW WATER



CIVIL/STRUCTURAL ABBREVIATIONS, U.N.O.

= AMERICAN CONCRETE INSTITUTE = NORTH AISC = AMERICAN INSTITUTE OF STEEL = NORTH AMERICAN DATUM OF 1983 CONSTRUCTION = NOT TO SCALE = NORTH AMERICAN VERTICAL DATUM OF 1988 = ALTERNATE NGVD-29 = NATIONAL GEODETIC VERTICAL DATUM OF 1929 = AMERICAN NATIONAL ANSI = NOTICE TO PROCEED STANDARDS INSTITUTE = NOT IN CONTRACT = APPROXIMATE **APPROX** = ON CENTER = AMERICAN SOCIETY FOR ASTM = OCCUPATIONAL SAFETY AND HEALTH ADMINSTRATION TESTING AND MATERIALS = POUNDS PER SQUARE FOOT = AVERAGE AVG = POUNDS PER SQUARE INCH = AMERICAN WELDING SOCIETY AWS REQD = REQUIRED = BOTTOM = SQUARE FEET = CENTER POINT SHT = SHEET = SIMILAR = CUBIC FEET = SHORT TON = CAST IN PLACE = STEEL = CENTERLINE = TOP AND BOTTOM = CLR = TO BE DETERMINED CONC = CONCRTE TEMP = TEMPORARY CONST = CONSTRUCTION = CONTINUOUS CONT TOC = TOP OF CONCRETE = CONSTRUCTION JOINT TONNE = METRIC TON = DIAMETER TYP = TYPICAL = DRAWING DWG UNMWPE = ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE = EACH = UNLESS NOTED OTHERWISE UNO = ELEVATION EL/ELEV W/ = EXPANSION JOINT = ELECTRICAL = WORKING POINT **ELEC** = EACH WAY = WALL THICKNESS = EXISTING **EXIST** = NUMBER = FEET = AT = YIELD STRESS **GALV** = GALVANIZED = BY = GRADE = DIAMETER = INCH/INCHES **INTERMED** = INTERMEDIATE = PER = LONG = LENGTH OVERALL LOA MAX = MAXIMUM MEA = MEASURED MHHW = MEAN HIGHER HIGH WATER MHW = MEAN HIGH WATER

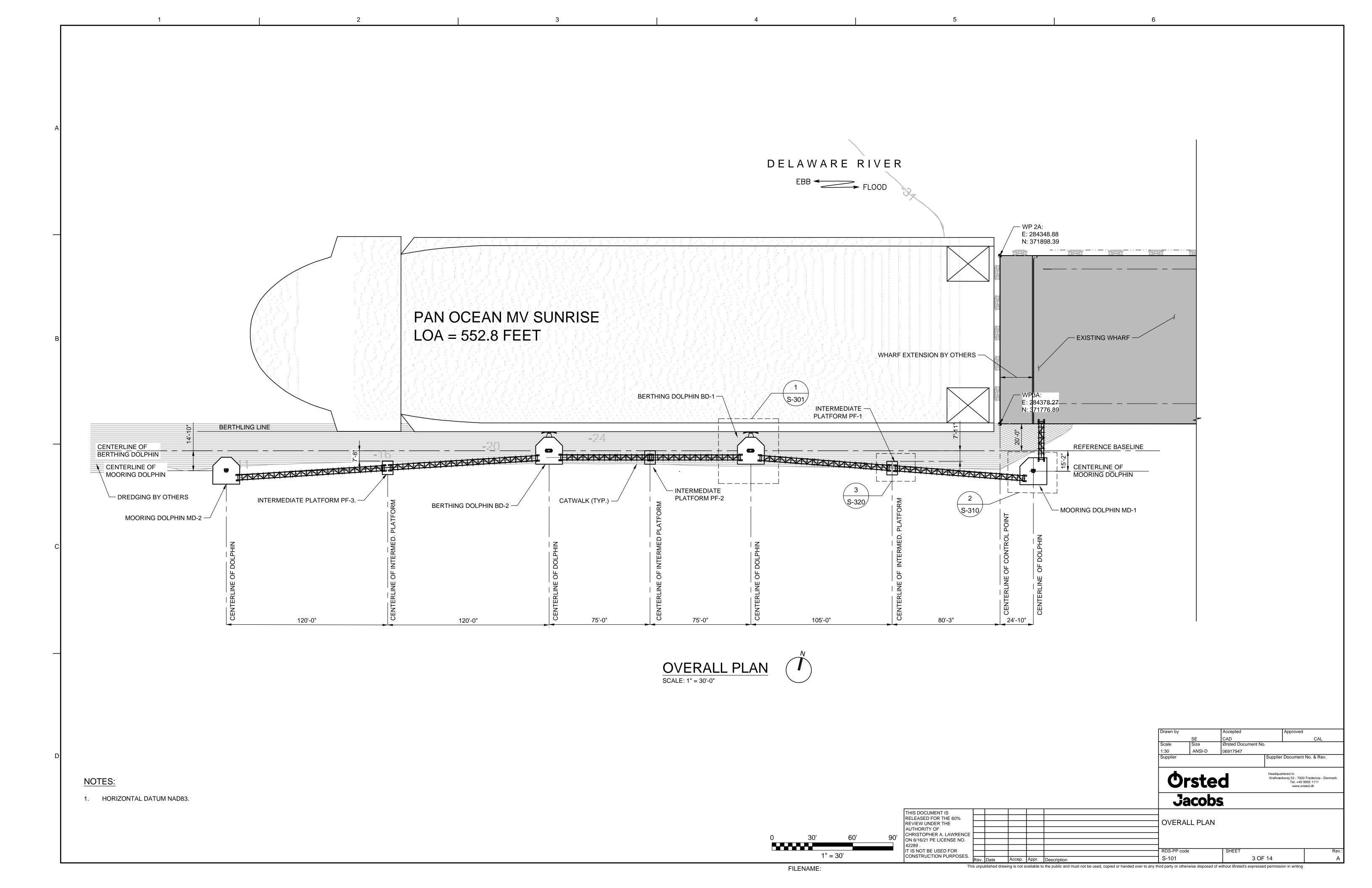
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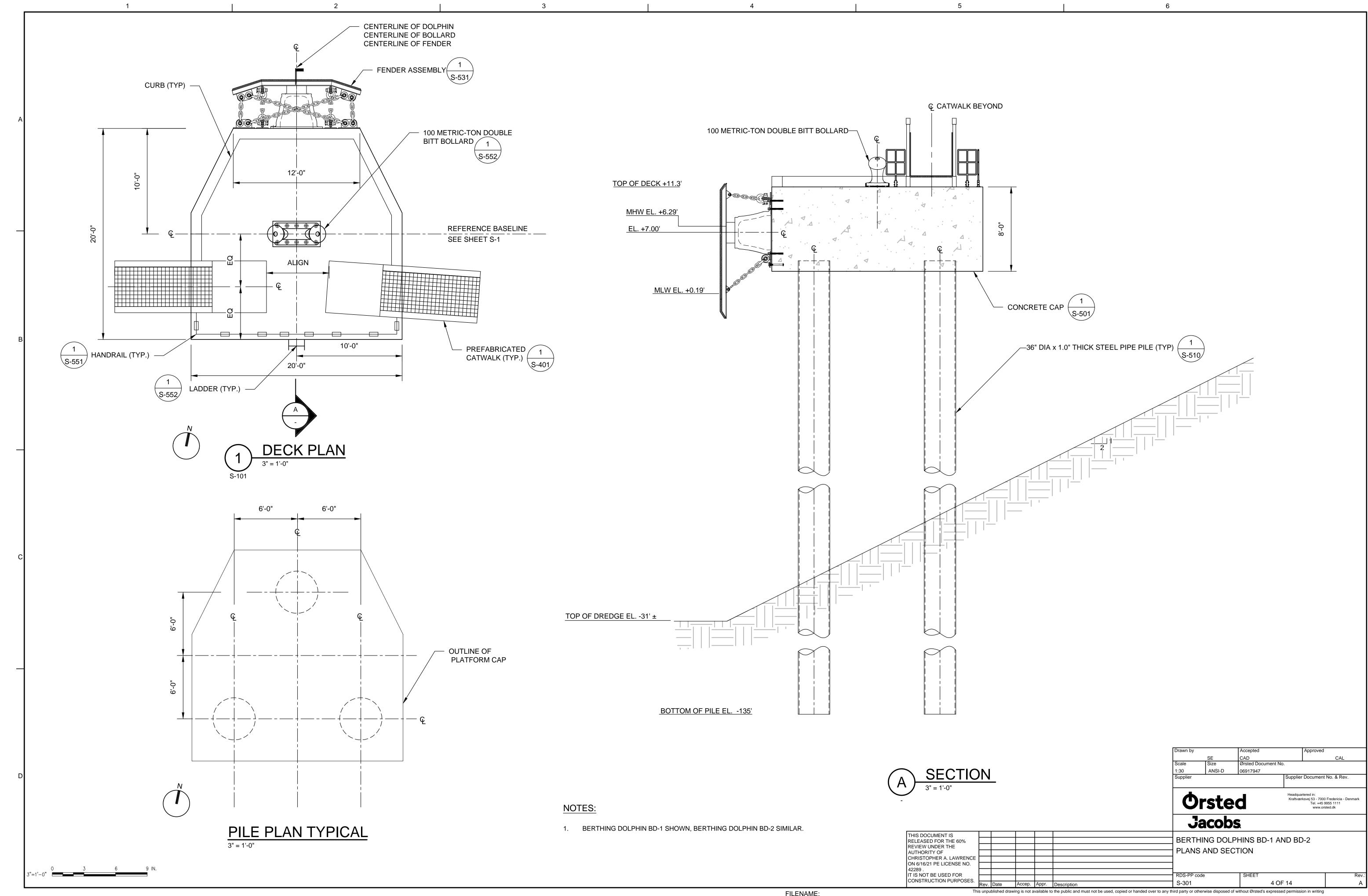
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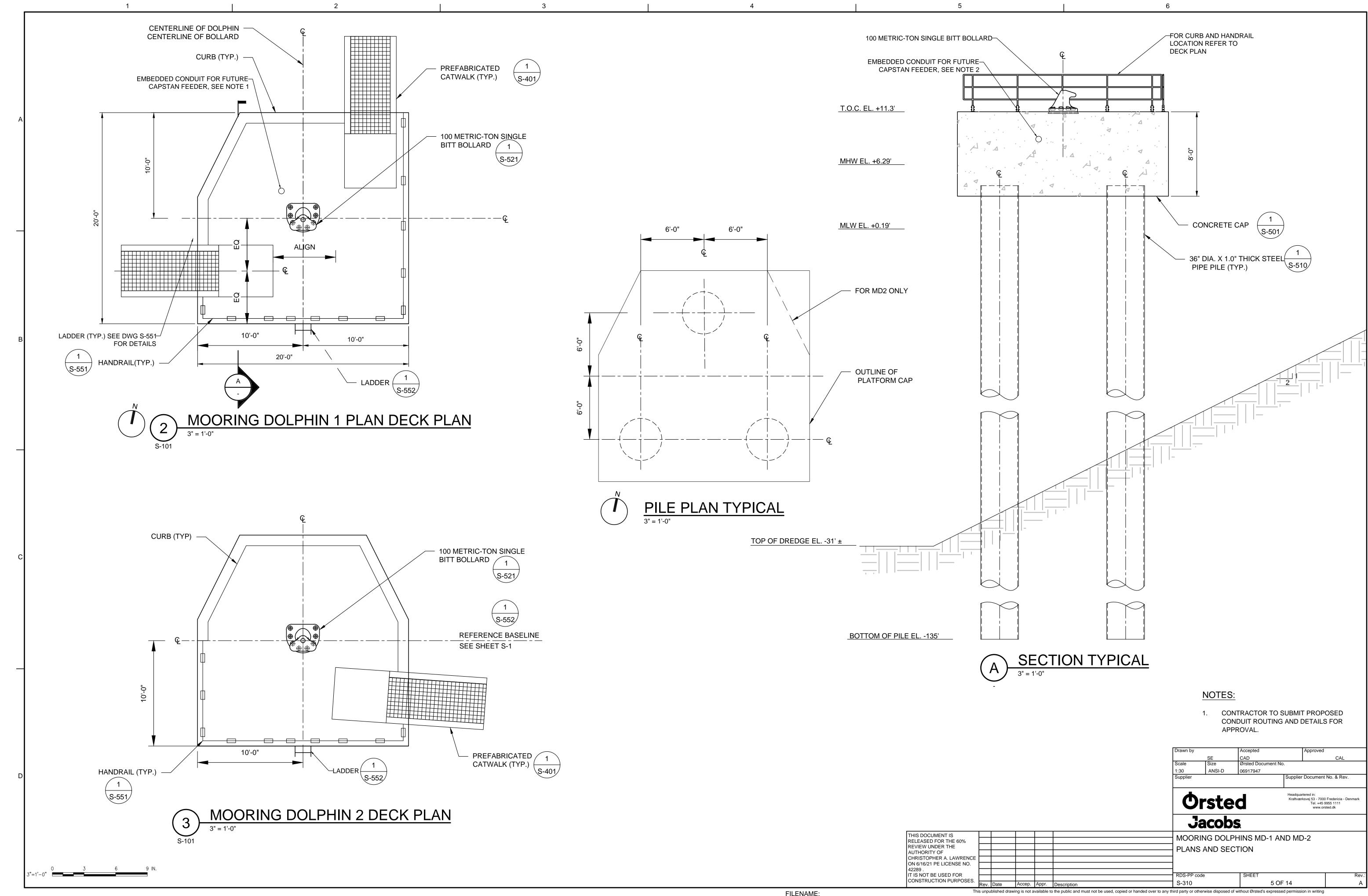
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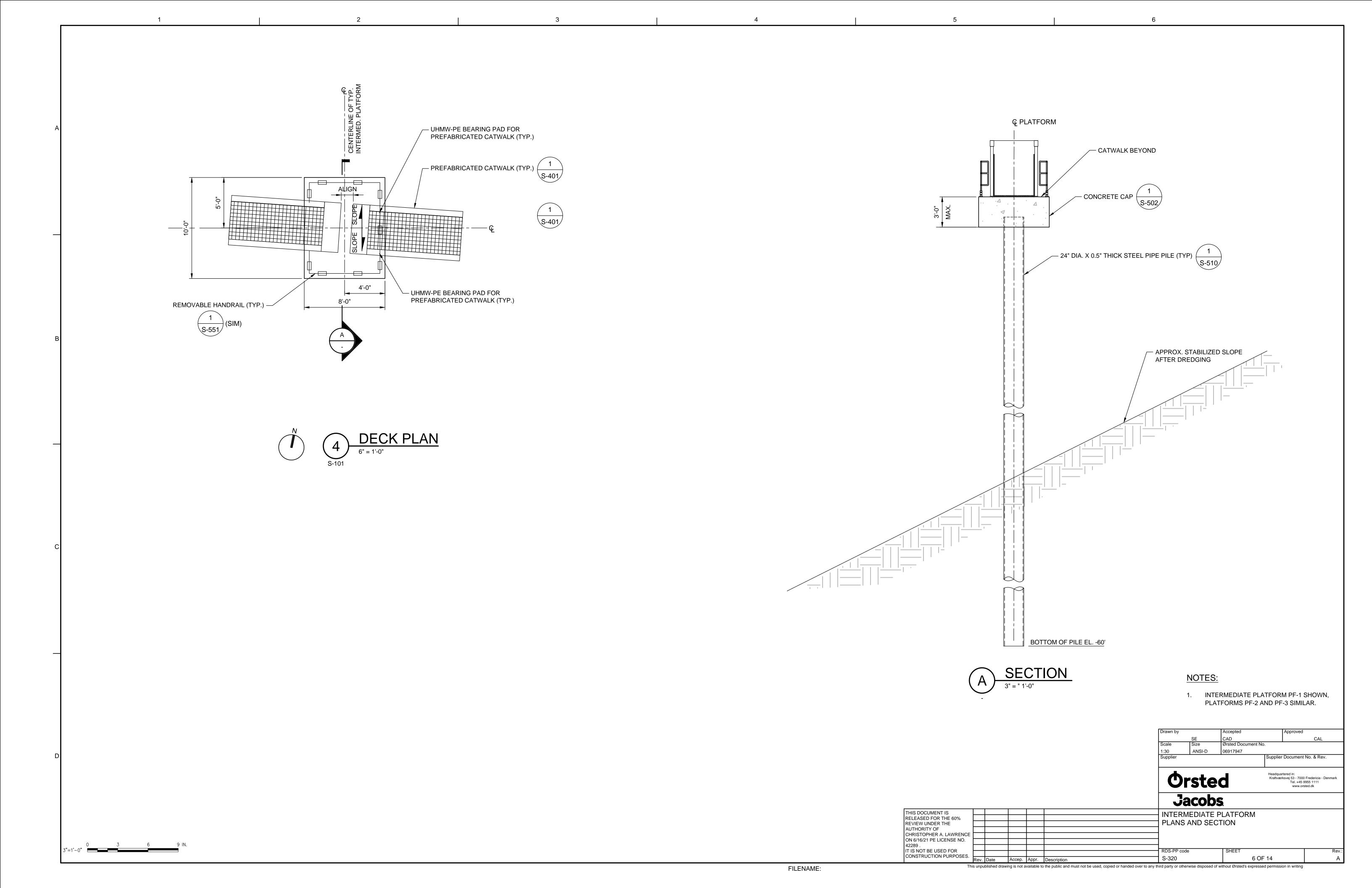
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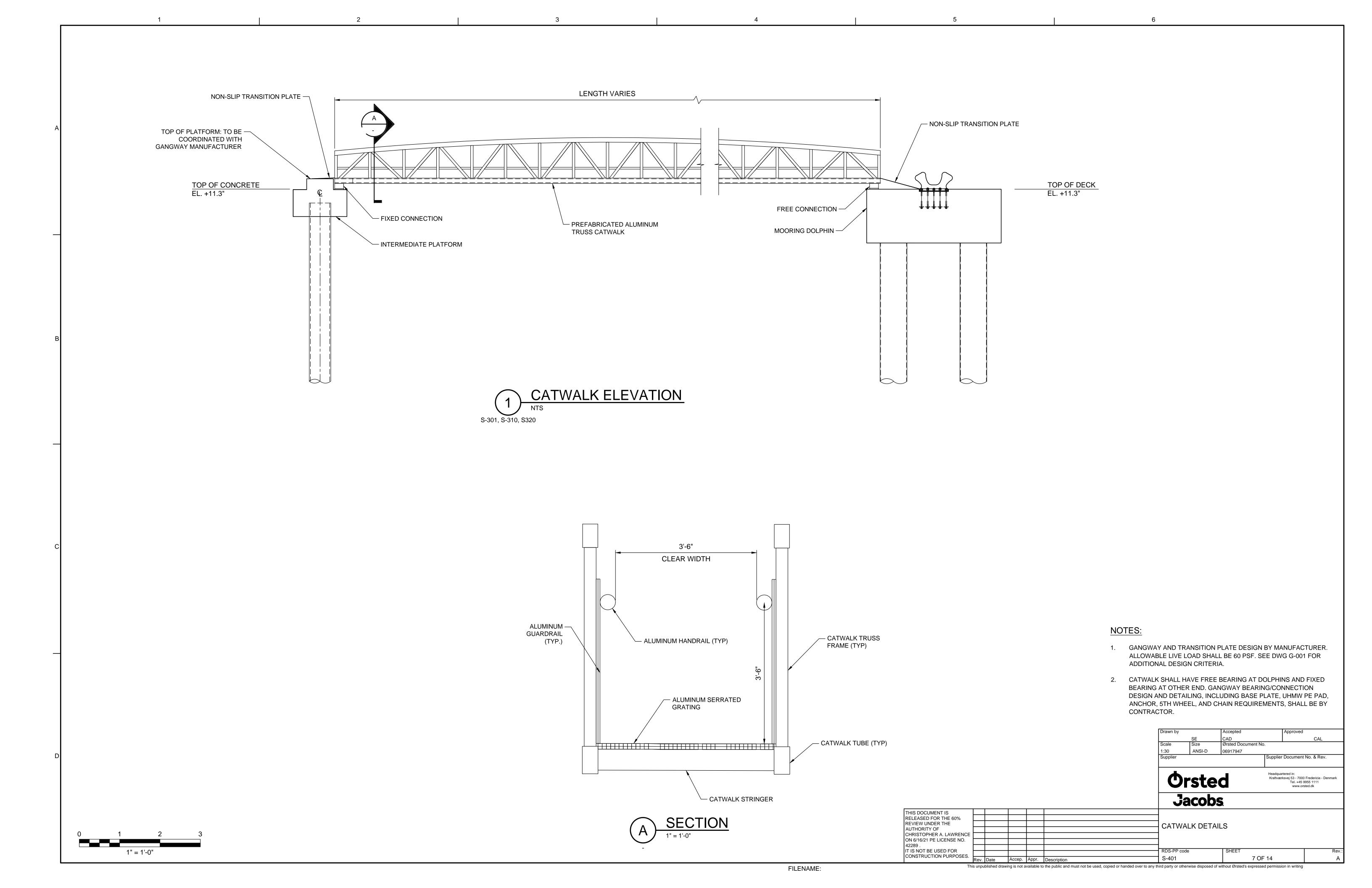
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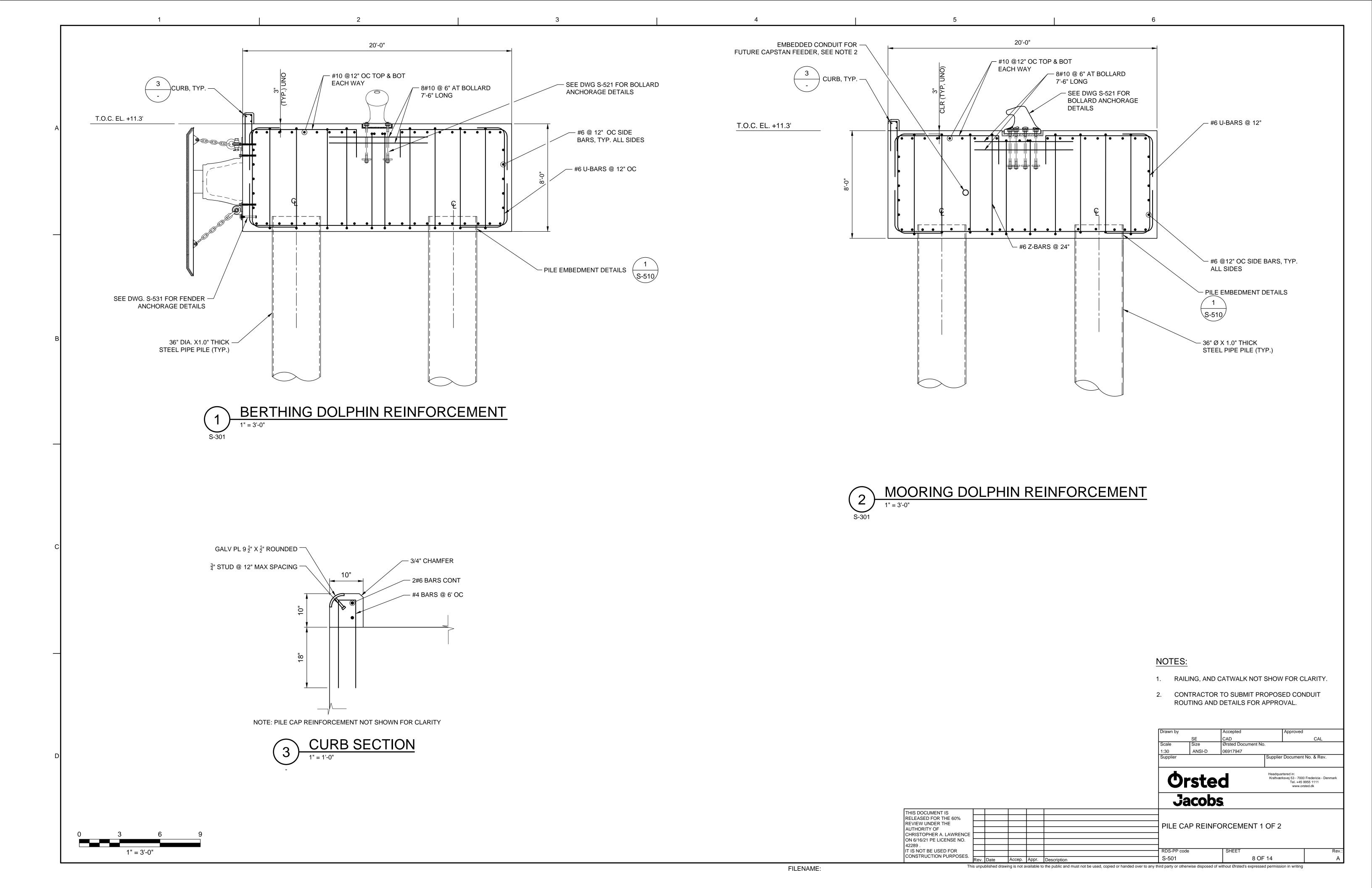


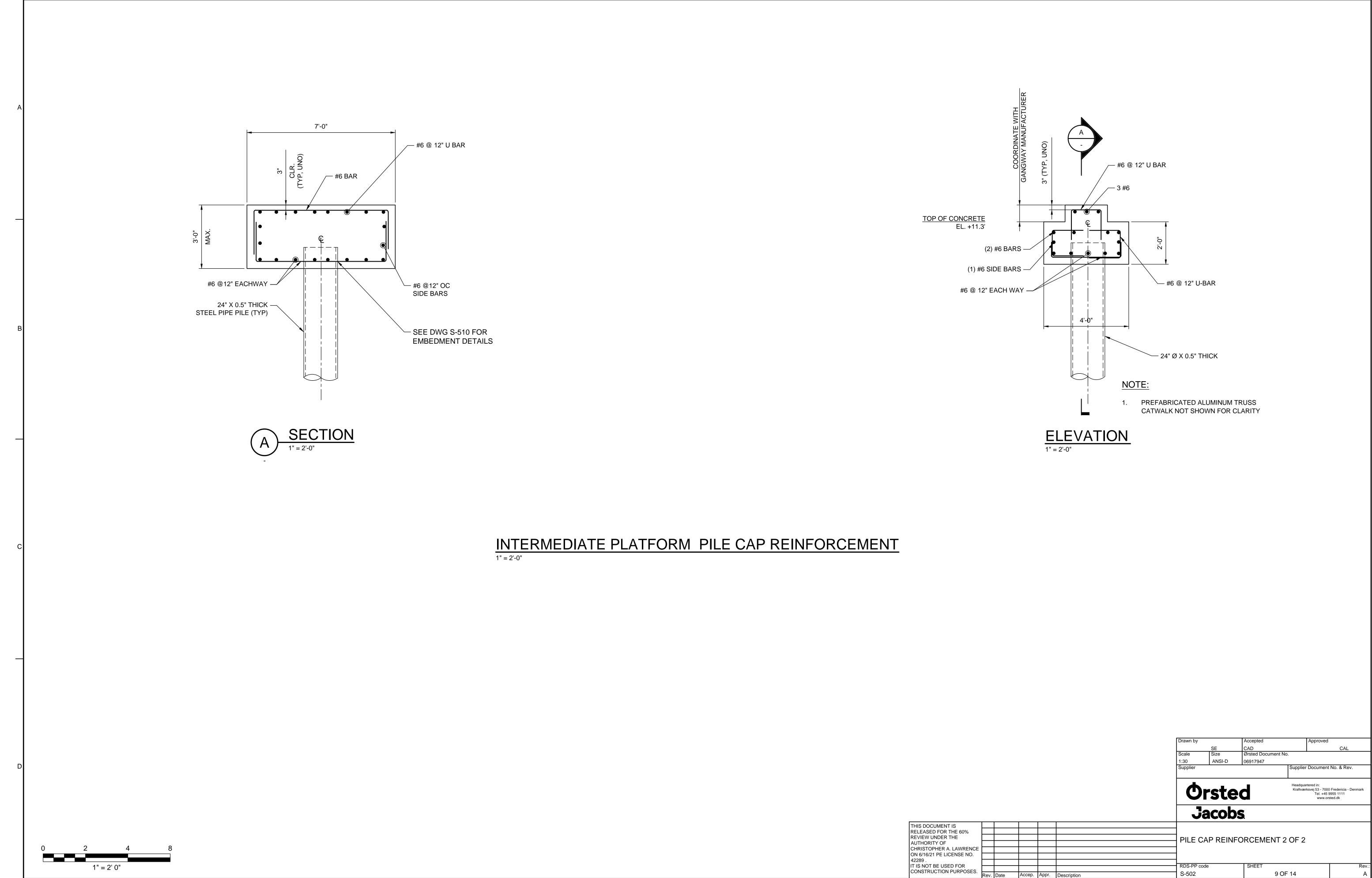




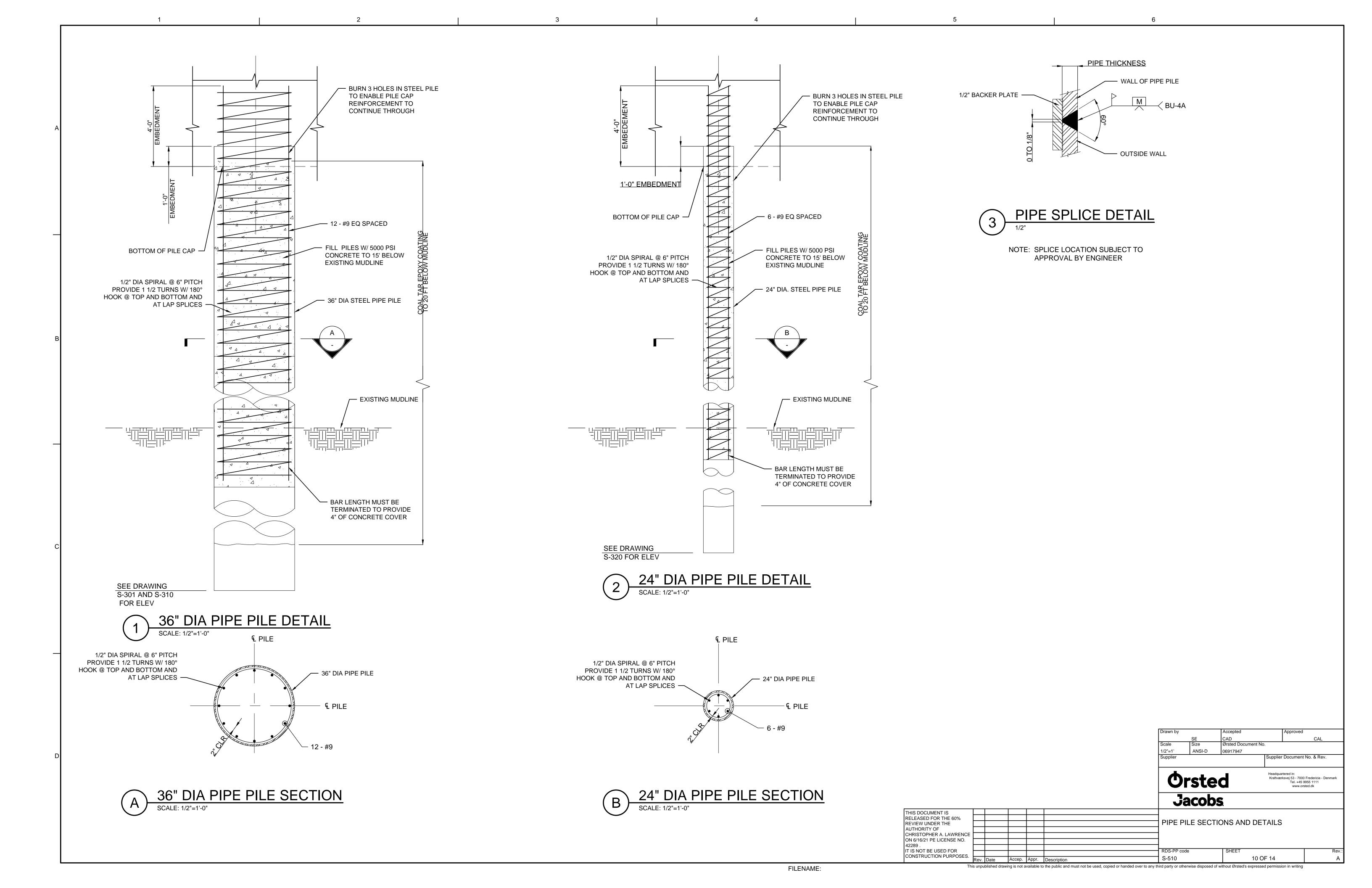


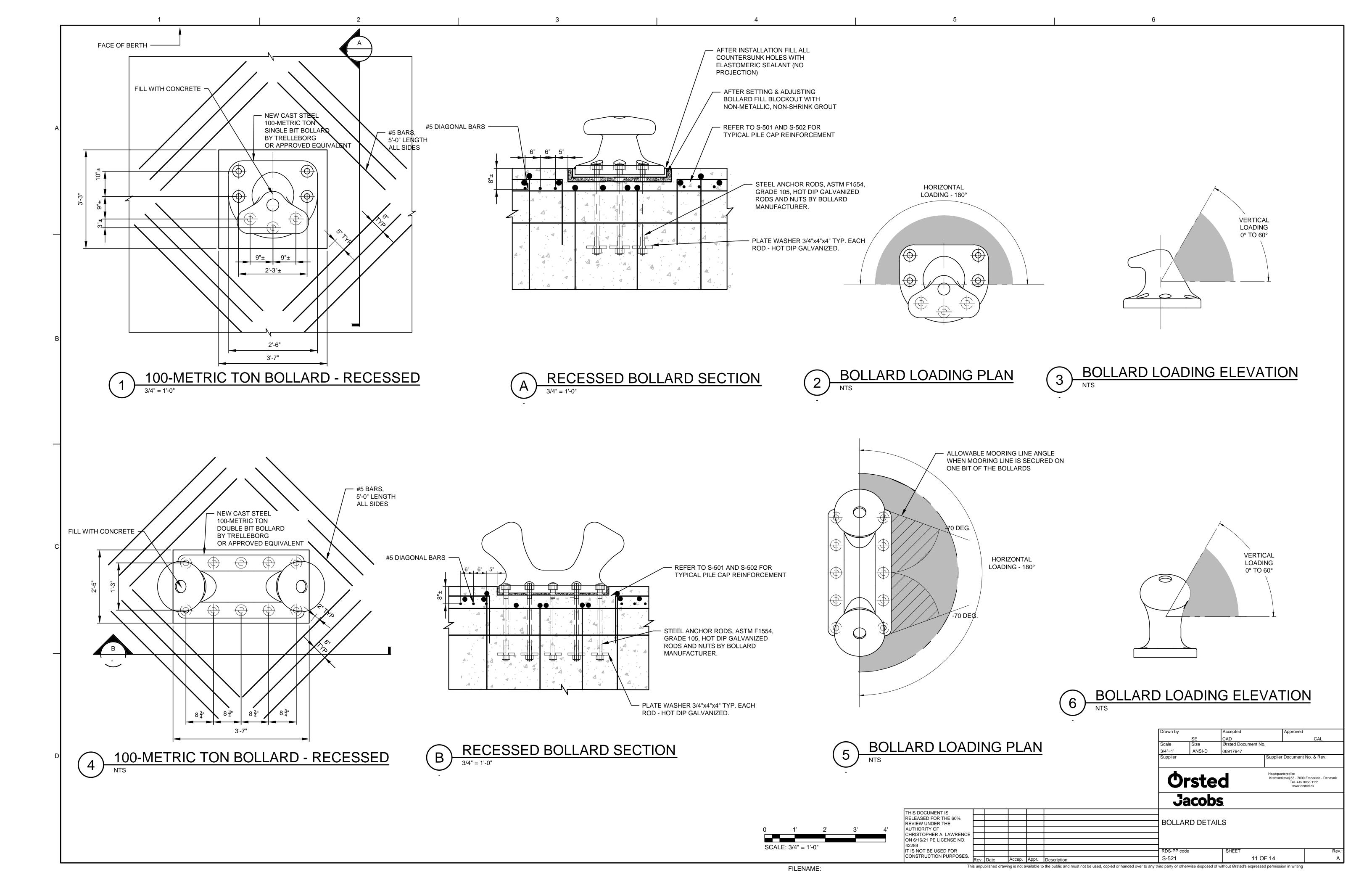


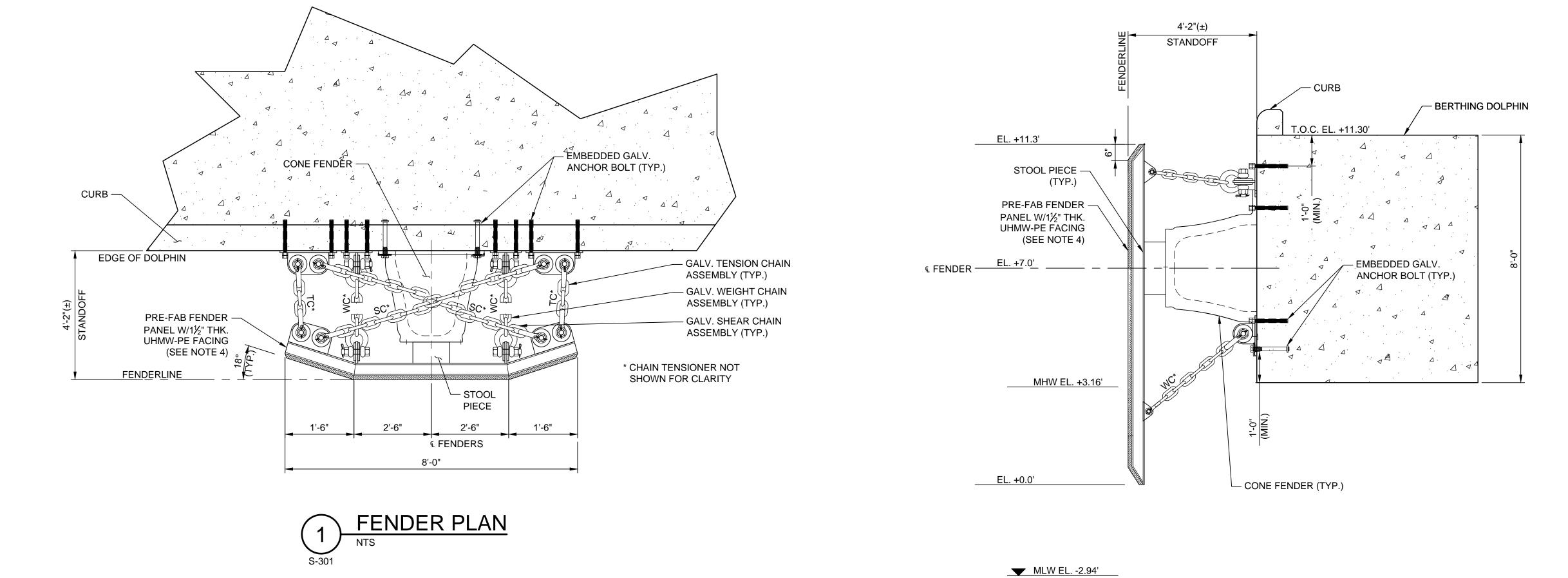




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LEGEND:

TENSION CHAIN

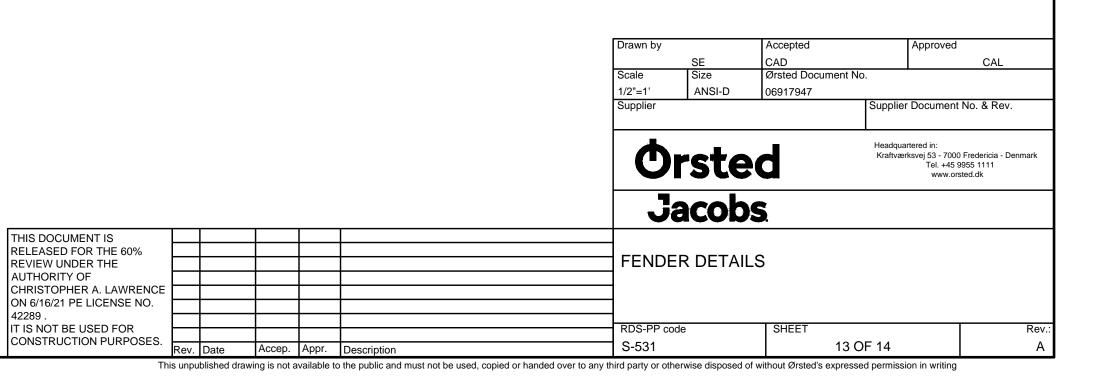
SHEAR CHAIN

NOTES:

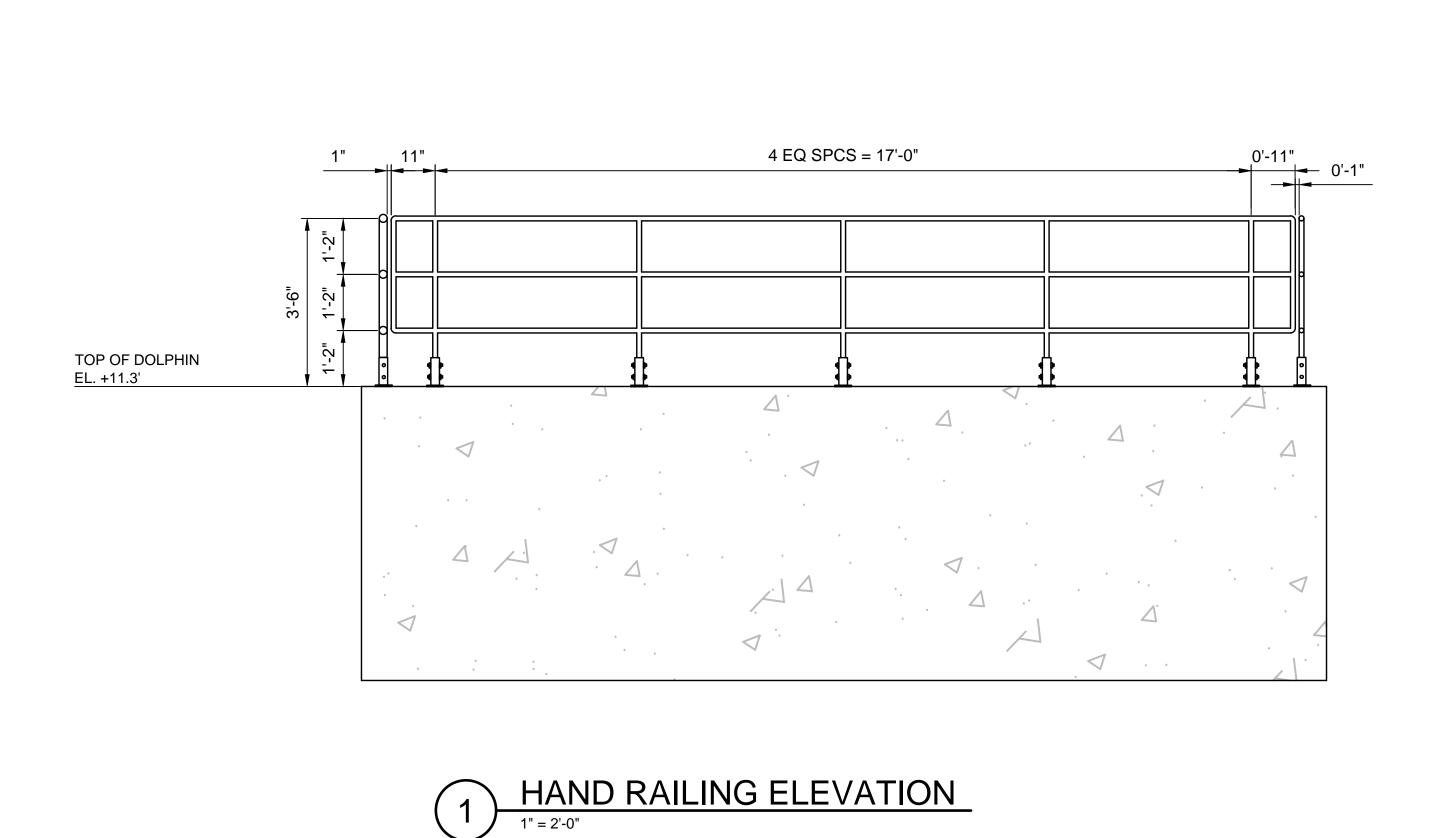
FOR GENERAL NOTES, SEE DWG G-001.

WEIGHT CHAIN

- RUBBER FENDER SHALL BE A 1100MM NOMINAL CONE TYPE MARINE FENDER WITH A MINIMUM RATED ENERGY CAPACITY OF 457 KIP-FT AND A MAXIMUM RATED REACTION OF 212 KIPS. FENDER DEFLECTION SHALL BE RATED AT 70%. FENDER SHALL BE TYPE F1.5.
- EACH TENSION CHAIN AND WEIGHT CHAIN SHALL BE EQUIPPED WITH A COMPATIBLE CHAIN TENSIONER
- COATED FENDER PANEL SHALL BE PURCHASED FROM THE SUPPLIER OF THE RUBBER FENDER AND DESIGNED TO **RESULT IN 29 PSI**
- CONTRACTOR SHALL HIRE AN ENGINEER REGISTERED IN THE STATE OF NEW JERSEY TO DESIGN THE SHEAR, TENSION AND WEIGHT CHAIN ASSEMBLIES (CHAINS, SHACKLES, PADEYES, TENSIONER AND ANCHORS) FOR THE LOADING CONDITIONS SPECIFIED IN TECHNICAL SPECIFICATIONS, SECTION 3 5-60-00.
- ALL STEEL ON THIS DRAWING SHALL BE SHOP COATED W/ COAL TAR EPOXY, EXCEPT ELEMENTS SPECIFIED TO BE GALVANIZED.
- 7. OVERALL HEIGHT AND WIDTH OF PANELS SHALL BE MAINTAINED AS SHOWN ON THE DRAWINGS.
- MANUFACTURER SHALL DETERMINE ANCHOR ROD SIZE AND EMBEDMENT LENGTH.



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NOTE:

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS FOR THE HANDRAILS, SIGNED AND SEALED BY ANY ENGINEER LICENSED IN NEW JERSEY. DESIGN LOADS SHALL BE IN ACCORDANCE WITH ASCE 7-16.

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