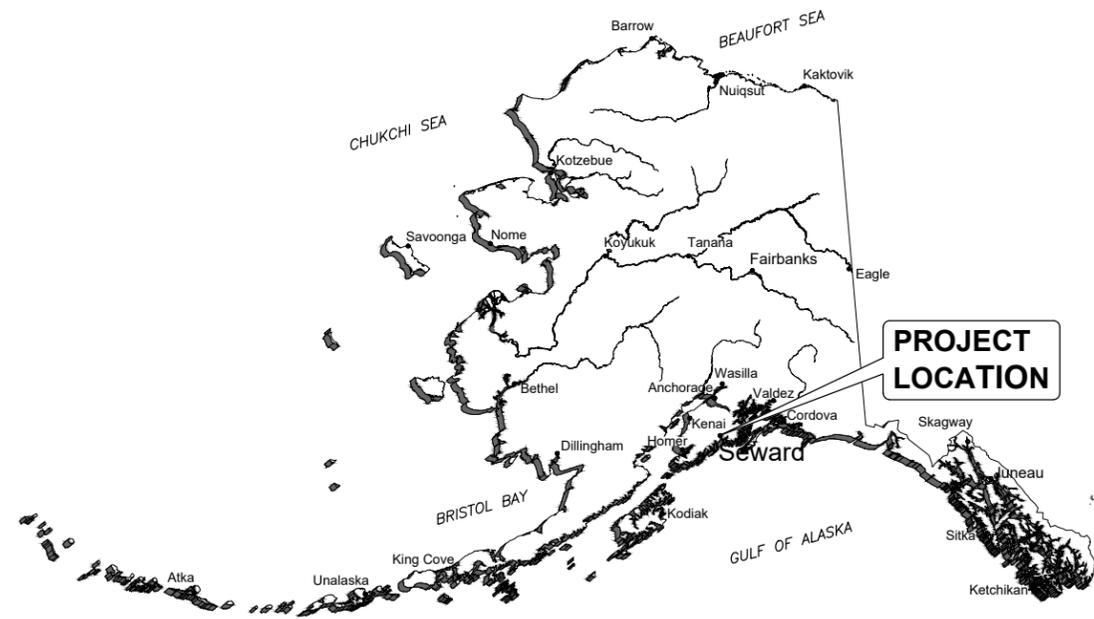


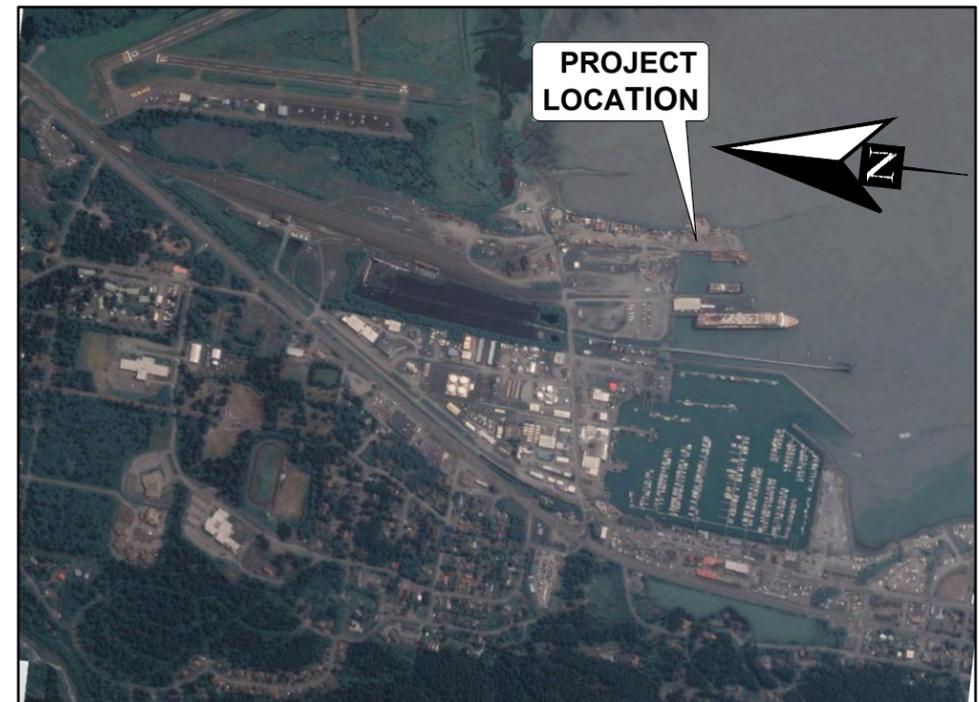
ALASKA RAILROAD FREIGHT DOCK EXPANSION FENDER SYSTEM

MARCH 2026
SEWARD, ALASKA



STATE OF ALASKA

SHEET INDEX	
SHEET NO	SHEET TITLE
01	COVER SHEET
02	GENERAL NOTES (1 OF 2)
03	GENERAL NOTES (2 OF 2)
04	FREIGHT DOCK PLAN
05	FENDER DETAILS (1 OF 3)
06	FENDER DETAILS (2 OF 3)
07	FENDER DETAILS (3 OF 3)



VICINITY MAP

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PROJECT: **ALASKA RAILROAD FREIGHT DOCK
EXPANSION FENDER SYSTEM**

TITLE: **COVER SHEET**

DESIGNED BY: PNM/K	DATE: 03/03/2026	SHEET NO: 01 of 07
CHECKED BY: SB	PROJECT NO: 201122	

GENERAL NOTES

OWNER – ALASKA RAILROAD

SCOPE OF WORK

SIX (6) NEW FENDER SYSTEMS TOTAL. DOCK EXPANSION IS BY OTHERS.

NOTICE TO CONTRACTOR

- ANY DISCREPANCIES FOUND AMONG THE DRAWINGS, SPECIFICATIONS, AND THESE GENERAL NOTES SHALL BE REPORTED TO THE ENGINEER AND OWNER AT ONCE. ANY FURTHER WORK DONE BY THE CONTRACTOR AFTER FINDING SUCH DISCREPANCIES SHALL BE DONE AT THEIR OWN RISK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADHERING TO ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, PERMITS AND SAFETY REQUIREMENTS. IN THE EVENT OF ANY CONFLICTS BETWEEN THESE GENERAL NOTES AND APPLICABLE CODES AND STANDARDS, THE MORE STRINGENT SHALL APPLY.
- THE CONTRACTOR SHALL PROVIDE THE FENDER SYSTEM, WHICH INCLUDES FABRICATION AND SHIPPING TO THE PROJECT LOCATION; INSTALLATION NOT INCLUDED.

MATERIALS

GENERAL

ALL MATERIALS SHALL BE NEW AND PROVIDED BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

STRUCTURAL STEEL

ALL STEEL, UNLESS NOTED OTHERWISE, SHALL BE HOT-DIP GALVANIZED.

MISCELLANEOUS SHAPES AND PLATES SHALL BE IN CONFORMANCE WITH ASTM A572 GR 50, NO CVN REQUIREMENTS.

MISCELLANEOUS STEEL PIPE

MISCELLANEOUS STEEL PIPES SHALL MEET ASTM A252 GRADE 3, OR ASTM A53 GRADE B, TYPE E OR S, OR ASTM A500 GRADE B.

PIPE PILE STEEL

STRAIGHT SEAM PIPE PILE SHALL CONFORM TO ONE OF THE FOLLOWING:

- ASTM A252, GRADE 3, WITH A MODIFIED MINIMUM YIELD STRENGTH AND WITH WELDABLE CHEMISTRY. PILES SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI. DIMENSIONAL TOLERANCE SHALL BE PER API 5L: X52

SPIRAL SEAM PIPE PILE. SPIRAL SEAM PIPE WILL BE PERMITTED FOR DIAMETERS GREATER THAN 18 INCHES AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

- BASE METAL FOR PILES SHALL CONFORM TO ASTM A572 GRADE 50 OR ASTM A709 GRADE 50T3. BUTT JOINTS IN THE BASE METAL SHALL BE NO CLOSER THAN ONE PIPE DIAMETER FROM THE PIPE END.
- THE CONTRACTOR SHALL ENSURE FIT-UP OF SPIRAL SEAM PIPE TO ADJOINING ELEMENTS DOES NOT EXCEED THE WELDING TOLERANCES SPECIFIED IN AWS D1.1 AND AISC 303-05.
- THE OUTSIDE DIAMETER AT ANY POINT IN A LENGTH OF PIPE SHALL BE WITHIN $\pm 3/16$ INCH OF THE NOMINAL DIAMETER. THE MAXIMUM LATERAL OFFSET MEASURED FROM A STRAIGHT CHORD LINE SHALL NOT EXCEED 0.2 PERCENT OF THE PIPE LENGTH, NOT TO EXCEED 3/8 INCH IN ANY 40-FOOT LENGTH. PROVIDE PILE LENGTHS WITHIN ± 2 INCHES FROM THE SPECIFIED LENGTHS.
- FABRICATE PIPE USING THE AUTOMATIC SUBMERGED ARC WELDING OR AUTOMATIC GAS METAL ARC WELDING PROCESS. PRIOR TO WELDING, SUBMIT FOR APPROVAL A WELDING PLAN IN ACCORDANCE WITH THE SECTION 504-3.01.7.
- VISUALLY INSPECT 100 PERCENT OF SEAM WELDS ON THE INTERIOR AND EXTERIOR SURFACES. WELDS SHALL BE ACCEPTABLE IF THE CRITERIA OF AWS D1.1 SECTION 6, TABLE 6.1 ARE SATISFIED. PERFORM UT INSPECTION OF 10 PERCENT OF SEAM WELDS ON EACH LENGTH OF PIPE USING ACCEPTANCE CRITERIA OF AWS D1.1 SECTION 6, TABLE 6.2.
- EVALUATE THE MECHANICAL PROPERTIES OF THE BASE METAL AND WELD IN ACCORDANCE WITH ASTM A370 AND AWS D1.1, INCLUDING SECTION 4.8.3. PERFORM DESTRUCTIVE TESTING OF A FABRICATED PIPE SECTION FOR EACH DIAMETER OF PIPE FURNISHED. A SINGLE TEST CONSISTS OF:
 - ONE BASE METAL YIELD, ONE TENSILE, AND ONE ELONGATION TEST
 - TWO REDUCED SECTION ACROSS THE WELD TENSILE TESTS
 - ONE SIDE BEND WELD TEST
- THE STRENGTH AND ELONGATION OF THE BASE METAL SHALL BE NO LESS THAN THE MINIMUM VALUES OF THE SPECIFIED RANGE. EVALUATE THE PERFORMANCE OF THE WELD USING THE ACCEPTANCE CRITERIA OF AWS D1.1.

BOLTS AND THREADED RODS

ALL BOLTS CALLED OUT AS ASTM A307 SHALL BE HOT-DIP GALVANIZED. THREADED STUDS SHALL BE GALV F1554 GR 55 W/ S1 SUPPLEMENTAL REQUIREMENT FOR WELDING. BOLTS AND NUTS SHALL BE INSTALLED PER AISC SNUG TIGHT METHOD, UNLESS OTHERWISE NOTED ON THE PLANS.

CONNECTING HARDWARE

SHACKLES, CHAIN, AND CHAIN TENSIONER SHALL BE GALVANIZED WITH A MINIMUM ULTIMATE TENSILE LOAD OR BREAKING LOAD OF 120,000 LBS. AT LEAST (1) SHACKLE SHALL BE A WEAK LINK WITH A LOWER BREAKING LOAD OF THE OTHER COMPONENTS. ALL CONNECTION HARDWARE MUST BE GALVANIZED IN ACCORDANCE WITH ASTM A123/A123M OR ASTM A153/A153M, AS APPROPRIATE. ALL CONNECTING BOLTS AND PINS MUST BE OF MILD STEEL, MATCHING THE PROPERTIES OF THE SHACKLE BOW. SHACKLES SHALL BE BOLT TYPE SHACKLES, SECURE THE BOLT OR PINS IN PLACE WITH STAINLESS STEEL (TYPE 316) COTTER PINS OR LOCKING PINS.

GALVANIZING SPECIFICATION

HOT-DIP GALVANIZING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM A385, A123 OR A153. GALVANIZING SHALL BE PERFORMED AFTER FABRICATION. SUBASSEMBLIES THAT MAY BE SUBJECTED TO DEFORMATION DURING GALVANIZING MAY BE GALVANIZED SEPARATELY AND ASSEMBLED AFTER GALVANIZING WITH ENGINEER APPROVAL.

UNCOATED AREAS AND SPLICE AREAS SHALL BE REPAIRED PER THE PROJECT SPECIFICATIONS. DAMAGED GALVANIZING INCLUDING THAT REMOVED FOR WELDING SHALL BE REPAIRED BY THE CONTRACTOR.

GALVANIZING REPAIR

CONTRACTOR SHALL TAKE NECESSARY MEANS TO PROTECT COATINGS DURING TRANSPORTATION HANDLING, WELDING AND CUTTING. GALVANIZING DAMAGE, INCLUDING THAT REMOVED FOR WELDING, BY WELDS, CUTS, GOUGES, OR OTHER HOLIDAYS IN THE COATINGS SHALL BE REPAIRED BY THE CONTRACTOR. REPAIR OF GALVANIZING/METALLIZING. SHOP REPAIR OF GALVANIZING/METALLIZING SHALL BE DONE BY MEANS OF SPRAY METALLIZING. FIELD REPAIR DAMAGED GALVANIZING BY SPRAY METALLIZING IF DAMAGE IS OVER 100 SQUARE INCHES IN AREA. A GALVANIZING REPAIR STICK SUCH AS REGALV BY ROTOMETALS, GALVA-GUARD BY SAN DIEGO GALVANIZING, OR ENGINEER APPROVED EQUAL MAY BE USED FOR FIELD REPAIR IF THE DAMAGED AREA IS LESS THAN 100 SQUARE INCHES. CONTRACTOR SHALL SUBMIT REPAIR MATERIALS AND METHODS TO THE ENGINEER FOR REVIEW AND APPROVAL. ALL REPAIRS SHALL MEET ASTM A780 STANDARD PRACTICE FOR REPAIR OF DAMAGED AND UNCOATED AREAS OF HOT-DIP GALVANIZED COATINGS. GALVANIZING REPAIR STICK SHALL BE ZINC ALLOY. PREPARE DAMAGED GALVANIZING WITH A GRINDER AND THEN ABRASE THE ENTIRE SURFACE WITH A WIRE BRUSH WHERE APPLICATION OF THE GALVANIZING REPAIR IS REQUIRED. CLEAN THE SURFACE TO REMOVE ALL GREASE, OIL AND SURFACE DEPOSITS. HEAT THE LOCAL AREA TO THE MANUFACTURER SUGGESTED TEMPERATURE AND APPLY REPAIR STICK IN SUCH A MANNER TO ACHIEVE A MINIMUM OF 10 MIL TOTAL FINAL THICKNESS.

NON-SKID SURFACING

ALL STEEL WALKING SURFACES SHALL BE SPRAY METALLIZED WITH A NON-SKID PRODUCT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND THESE SPECIFICATIONS.

METAL SURFACES SPECIFIED TO BE NON-SKID SHALL BE THERMAL ARC-SPRAYED WITH TH604 AND/OR TH605, AS MANUFACTURED BY THERMION, TRACLON 500 AS MANUFACTURED BY MBI COATINGS, DURALCAN 90/10 OR 60/40 AS MANUFACTURED BY ALOTEC OR ENGINEER APPROVED EQUAL TO ACHIEVE A VERY AGGRESSIVE SURFACE PROFILE. BLAST SURFACE AND PREP AS REQUIRED BY NON-SKID COATING MANUFACTURER PRIOR TO NON-SKID COATING APPLICATION. SURFACES NOTED SHALL BE SPRAYED TO ACHIEVE A NON-SKID SURFACE WITH PEAK TO VALLEY THICKNESS OF 75 TO 15 MILS.

STRUCTURAL WELDING

PERFORM ALL WELDING AND NONDESTRUCTIVE EXAMINATION (NDE) AS SPECIFIED OR SHOWN ON THE PLANS. ALL WELDING SHALL BE PERFORMED PER THE LATEST AWS D1.1 BY WELDERS QUALIFIED PER AWS FOR THE TYPE AND POSITION OF THE WELDS.

AT LEAST 30 DAYS PRIOR TO WELDING, SUBMIT FOR APPROVAL A WELDING PLAN STAMPED AND SIGNED BY AN AMERICAN WELDING SOCIETY CERTIFIED WELDING INSPECTOR PER QC1 (CWI) RESPONSIBLE FOR THE QUALITY CONTROL (QC) AND CONSISTING OF THE FOLLOWING DOCUMENTS

- QUALITY CONTROL PERSONNEL QUALIFICATIONS INCLUDING CWI NUMBER

- WELDING PROCEDURE SPECIFICATIONS (WPS) USING FORMS IN AWS D1.1, SAMPLE WELDING FORMS
- PROCEDURE QUALIFICATION RECORDS (PQR) WHEN APPLICABLE, USING FORMS IN AWS D1.1, SAMPLE WELDING FORMS
- WELDER PERFORMANCE QUALIFICATION RECORDS (WPQR) USING FORMS IN AWS D1.1, SAMPLE WELDING FORMS WITH DOCUMENTATION OF CURRENT WELDER CERTIFICATION
- TYPE AND EXTENT OF NDE TO BE CONDUCTED, AS REQUIRED IN THE SPECIFICATIONS
- SAMPLE DAILY INSPECTION SHEET

THE CONTRACTOR SHALL PROVIDE A CERTIFIED WELDING INSPECTOR (CWI) TO INSPECT ALL WELDS. ALL WELDS SHALL BE 100% VISUALLY INSPECTED. IN ADDITION, UNLESS NOTED OTHERWISE, 10% OF ALL CJP SHOP WELDS SHALL BE TESTED BY UT EXAMINATION OR OTHER NDT METHODS APPROVED BY THE ENGINEER. SUCH TESTS SHALL BE PERFORMED BY AN INDEPENDENT QUALIFIED THIRD PARTY INSPECTOR. THE CONTRACTOR SHALL SUBMIT WELD INSPECTION/NDT REPORTS TO THE ENGINEER FOR REVIEW.

ANY WELD FAILING INSPECTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, WHICH WILL INCLUDE THE COST FOR RETESTING. THE OWNER MAY PROVIDE ADDITIONAL INSPECTION OF SHOP AND FIELD WELDS AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REPAIRS REQUIRED AS A RESULT OF ADDITIONAL INSPECTIONS.

ACCEPTANCE CRITERIA FOR ALL WELD INSPECTIONS SHALL CONFORM TO AWS D1.1 CRITERIA FOR STATICALLY LOADED STRUCTURES.

DO NOT WELD OR TACK BRACKETS, CLIPS, SHIPPING DEVICES OR OTHER MATERIAL NOT REQUIRED BY THE CONTRACT DOCUMENTS TO THE PERMANENT STRUCTURE, UNLESS SHOWN ON THE WORKING DRAWINGS AND APPROVED BY THE ENGINEER.

CYLINDRICAL ENERGY ABSORBERS

CYLINDRICAL ENERGY ABSORBERS SHALL BE SIZED PER PLANS AND MANUFACTURED BY SHIBATAFENDERTEAM (SFT) OR APPROVED EQUAL. TEST REPORTS ON VERIFICATION TESTING SHALL INCLUDE SERIAL NUMBER AND DESCRIPTION OF TEST UNITS, LOCATION, AND DATE OF THE TEST, PRINTED NAME OF THE TEST SUPERVISOR, PRINTED NAME AND HANDWRITTEN SIGNATURE OF THE QUALITY CONTROL MANAGER, AND DATE SIGNED; TABLE AND GRAPH OF REACTION AND ENERGY VERSUS DEFLECTION; AND SIGNED THIRD PARTY CERTIFICATION OF ALL TEST EQUIPMENT (TO BE ACCURATE WITHIN 1% +/-) DATED NO MORE THAN ONE YEAR PRIOR TO TEST DATE.

FENDER PERFORMANCE REQUIREMENTS:

- ENERGY ABSORPTION: 145 KIP-FT MINIMUM PER 4'-0" LONG UNIT.
- DEFLECTION: 50% OF OD

ALL RUBBER ENERGY ABSORBERS SHALL BE PRE-CONDITIONED BY COMPRESSING THEM TO THE APPROPRIATE RATED DEFLECTION AT LEAST THREE (3) TIMES. COMPRESSION SHALL OCCUR UNIFORMLY AND SYMMETRICALLY AS TO CAUSE THE ENERGY UNIT TO DEFORM AS INTENDED BY THE MANUFACTURER. VERIFICATION TESTING SHALL BE PERFORMED ON 10% OF UNITS ROUNDED UP TO THE NEAREST WHOLE NUMBER.

DURING THE VERIFICATION TEST, COMPRESSION SHALL BE APPLIED TOWARD THE TOP FACE OF THE FENDER, COMPRESSION SPEED SHALL FOLLOW CURRENT PIANC FENDER PERFORMING TESTING GUIDELINES AND SHALL BE RECORDED DURING TESTING.

- THE FENDER IS TO BE CYCLED FOR THREE TIMES UP TO THE DESIGNED DEFLECTION.
- LET THE FENDER STAND FOR AT LEAST ONE HOUR.
- A FOURTH DEFLECTION CYCLE SHALL THEN BE PERFORMED USING CONSTANT OR DECREASING VELOCITY COMPRESSION. THE FOURTH CYCLE SHALL DETERMINE THE FENDER PERFORMANCE.
- THE ROOM TEMPERATURE AT THE TIME OF THE TEST SHALL BE RECORDED.
- CORRECTION FACTORS FOR THE FENDER PERFORMANCE SHALL BE DETERMINED PER PIANC FOR THE TEMPERATURE RECORDED AT THE TIME OF THE TEST.
- ALL FENDERS SHALL ACHIEVE A PERFORMANCE WITH $\pm 10\%$ OF THE STATED NOMINAL DESIGN PERFORMANCE.

CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST TWO WEEKS PRIOR TO VERIFICATION TESTING. VERIFICATION TESTS SHALL BE WITNESSED BY AN ACCREDITED 3RD PARTY TESTING AGENCY. CERTIFICATES SHALL BE PROVIDED BEFORE THE FENDERS ARRIVE ON THE JOBSITE CONFIRMING THAT THE TESTS WERE PERFORMED ACCORDING TO THE CURRENT PIANC STANDARDS. THE CERTIFICATES SHALL ALSO CONFIRM THAT THE RESULTS OF THE TESTS MEET THE ENERGY AND REACTION REQUIREMENTS AS SPECIFIED ABOVE. IF ANY UNIT FAILS THE VERIFICATION TEST IT SHALL BE REJECTED. IF ANY UNIT FAILS, ALL UNITS OF THE SAME SIZE SHALL BE VERIFICATION TESTED AT NO ADDITIONAL EXPENSE TO THE OWNER.

UHMW PE

UHMW-PE PANELS SHALL BE OF THE SIZE AND DIMENSION SHOWN ON THE DRAWINGS. FENDER PANELS SHALL BE BLACK IN COLOR, MADE OF 100% UHMW POLYETHYLENE WITH 2.5% BY WEIGHT UV-STABILIZATION COMPOUND, SHALL BE PARTIALLY OR FULLY CROSS LINKED AND HAVE UV-STABILIZING DYES, AND BE SUITABLE FOR LONG TERM EXTERIOR EXPOSURE. THE FENDER PANELS SHALL CONFORM TO ASTM D3035 AND F714 AND THE FOLLOWING REQUIREMENTS:

TEST	STANDARD	REQUIREMENT
SPECIFIC GRAVITY	ASTM D792	0.94 MIN
MOLECULAR WEIGHT	N/A	3,000,000 MIN
ULTIMATE TENSILE STRENGTH	ASTM D638	3,100 PSI MIN
IZOD IMPACT, DOUBLE NOTCH	ASTM D256A	18 FT-LB/IN MIN
COEFFICIENT OF FRICTION	ASTM D1894	0.20 MAX
ABRASION INDEX (CARBON STL=100)	SAND SLURRY	18 MAX
ABRASION INDEX (CS17 WHEEL, 100G, 5000 REVOLUTIONS)	ASTM D4060	WGT LOSS <30 MG

THE UHMW PANELS SHALL BE DRILLED AND COUNTER BORED FOR THE MOUNTING BOLTS AS SHOWN ON THE DRAWINGS. THE UHMW T-SLOT SHALL BE FABRICATED WITH TOLERANCES TO PROVIDE A SNUG TIGHT FIT. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION OF THE UHMW PANELS.

HDPE PILE SLEEVE

HDPE SLEEVES SHALL FABRICATED FROM BLACK HIGH DENSITY POLYETHYLENE PIPE MEETING THE REQUIREMENTS OF ASTM D3035 AND F714. PIPE SLEEVES SHALL HAVE A MINIMUM WALL THICKNESS OF 2.0 INCHES AND SHALL BE VERIFIED TO FIT OVER THE FENDER PILE PRIOR TO SHIPPING TO THE PROJECT SITE.

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ALASKA
RAILROAD

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REV	DATE	DESCRIPTION



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P | N | D
ENGINEERS, INC.

PROJECT:
**ALASKA RAILROAD FREIGHT DOCK
EXPANSION FENDER SYSTEM**

TITLE:
GENERAL NOTES (1 OF 2)

DESIGNED BY:	PN/MSK	DATE:	03/03/2026	SHEET NO:	02	OF 07
CHECKED BY:	SB	PROJECT NO:	201122			

ANODES

ALL ANODES SHALL BE ALUMINUM ALLOY OF THE SPECIFIED WEIGHT AND NOMINAL DIMENSIONS SHOWN ON THE DRAWINGS AND HAVE THE FOLLOWING PROPERTIES:

- A. ELECTROCHEMICAL CAPACITY GREATER THAN OR EQUAL TO 1,150 A-HR/LB.
- B. CONSUMPTION RATE LESS THAN OR EQUAL TO 7.6 LBS/A-YR.
- C. OPEN CIRCUIT POTENTIAL MORE ELECTRONEGATIVE THAN OR EQUAL TO -1.05V (AG/AGCL)

ANODES SHALL CONFORM TO NACE SP0387 AND THE COMPOSITION SPECIFIED IN U.S. MIL-DTL-24779D (PROVIDED IN TABLE BELOW FOR REFERENCE). CONTRACTOR SHALL SUBMIT A MANUFACTURER'S CERTIFICATE OF CONFORMITY AND PROOF THAT THE FURNISHED MATERIALS CONFORM TO THE SPECIFIED REQUIREMENTS CONTAINED IN NACE SP0387 FOR ENGINEER REVIEW AND APPROVAL AT LEAST 7 DAYS PRIOR TO SHIPMENT. THE LABEL OR LISTING BY THE SPECIFIED AGENCY WILL BE ACCEPTABLE EVIDENCE OF SUCH COMPLIANCE. LIST THE SPECIFIC ALLOY CONSTITUENTS, ELECTROCHEMICAL CAPACITY, CONSUMPTION RATE, OPEN CIRCUIT POTENTIAL, DIMENSIONS, AND ATTACHMENT METHOD. THE CONTRACTOR SHALL SUBMIT STEEL FABRICATION AND ANODE SHOP DRAWINGS AT LEAST 14 DAYS PRIOR TO FABRICATION. SPECIFIED ANODE WEIGHTS SHALL BE THE FINISHED WEIGHT OF THE ANODE AFTER CURING AND EXCLUDING THE WEIGHT OF ANY CORE MATERIAL.

THE STEEL CORE FOR ANODES SHALL BE ASTM A36 OR ENGINEER-APPROVED EQUAL FOR MILD STEEL BAR STOCK. THE CORE SHALL BE PLACED LONGITUDINALLY IN THE ANODE MATERIAL AND BE ABRASIVE BLASTED TO NEAR-WHITE FINISH IN ACCORDANCE WITH SSPC SP-10/NACE NO. 2. THE ANODE MATERIAL SHALL BE CAST WITHIN FOUR (4) HOURS OF BLASTING THE STEEL CORE.

IF ANODES ARE NOT STORED INSIDE A BUILDING, TARPS OR SIMILAR PROTECTION SHALL BE USED TO PROTECT ANODES FROM INCLEMENT WEATHER.

ELEMENT	PERCENT BY WEIGHT
INDIUM (In) ¹	0.014 - 0.020%
GALLIUM (Ga) ¹	LESS THAN 0.02%
ZINC (Zn) ¹	4.0 - 6.5%
SILICON (Si)	0.08 - 0.20%
COPPER (Cu)	LESS THAN 0.005%
IRON (Fe)	LESS THAN 0.8%
MERCURY (Hg)	LESS THAN 0.0001%
TIN (Sn)	LESS THAN 0.001%
NICKEL (Ni)	LESS THAN 0.005%
MAGNESIUM (Mn)	LESS THAN 0.010%
MANGANESE (Mn)	LESS THAN 0.010%
BISMUTH (Bi)	LESS THAN 0.002%
CADMIUM (Cd)	LESS THAN 0.002%
TITANIUM (Ti)	LESS THAN 0.002%
LEAD (Pb)	LESS THAN 0.002%
BORON (B)	LESS THAN 0.001%
ALUMINUM (Al) ¹	REMAINING BALANCE

NOTE:
1. INDIUM, GALLIUM, ZINC, AND ALUMINUM RAW MATERIAL PURITY SHALL BE A MINIMUM OF 99.8% BY WEIGHT.

SUBMIT MANUFACTURER'S PRODUCT AND CATALOG CUT INFORMATION SHOWING ANODE COMPOSITION MEETS THESE SPECIFICATIONS.

ANODE WELDING

WELDING OF ANODES TO PILE SHALL BE PERFORMED PER LATEST AWS D1.1 BY WELDERS QUALIFIED PER AWS FOR THE TYPE AND POSITION OF THE WELDS. ALL FILLER METAL SHALL MEET CHARPY V-NOTCH (CVN) IMPACT ENERGY CRITERIA OF 20 FT-LBS @ -20 °F AND SHALL HAVE A MAXIMUM CARBON (C) CONTENT OF 0.20%. ELECTRODES SHALL BE PROPERLY CONDITIONED E7018 OR E71T-8. SUBMIT WELDER QUALIFICATIONS AND WELDING PROCEDURES TO ENGINEER FOR APPROVAL AT LEAST 14 DAYS PRIOR TO WELDING.

THE CONTRACTOR SHALL PROVIDE AN AWS CERTIFIED WELDING INSPECTOR (CWI) TO INSPECT ALL WELDS. ALL WELDS SHALL BE 100% VISUALLY INSPECTED (VT). CONTRACTOR SHALL SUBMIT WELD INSPECTION/NDT REPORTS TO THE ENGINEER/OWNER FOR REVIEW. ANY WELD FAILING INSPECTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, WHICH WILL INCLUDE THE COST FOR RETESTING/INSPECTION. THE OWNER MAY PROVIDE ADDITIONAL INSPECTION OF SHOP AND FIELD WELDS AS REQUIRED. THE CONTRACTOR SHALL BE RESPONSIBLE TO ALL REPAIRS REQUIRED AS A RESULT OF ADDITIONAL OWNER INSPECTIONS. ACCEPTANCE CRITERIA FOR ALL WELD INSPECTIONS SHALL CONFORM TO AWS D1.1 CRITERIA FOR STATICALLY-LOADED STRUCTURES.

GRIND LOCALIZED AREA OF PILE PRIOR TO WELDING TO ENSURE METALLIC CONTACT BETWEEN ANODE AND PILE. REPAIR COATING AFTER WELDING PER "GALVANIZING REPAIR".

CONSTRUCTION

STEEL FABRICATION

ALL STEEL FABRICATION SHALL BE PER THE LATEST AISC SPECIFICATIONS AND IN ACCORDANCE WITH THE PLANS AND APPROVED SHOP OR WORKING DRAWINGS. WORKMANSHIP AND FINISH SHALL BE IN ACCORDANCE WITH THE AISC STANDARD CODE OF PRACTICE. PORTIONS OF THE WORK EXPOSED TO VIEW SHALL BE FINISHED NEATLY. SHEARING AND FLAME CUTTING SHALL BE DONE CAREFULLY AND ACCURATELY. ALL PARTS SHALL BE ACCURATELY FABRICATED AND ASSEMBLED AS SHOWN ON THE DRAWINGS. THE MATERIAL SHALL BE CAREFULLY HANDLED SO THAT NO PARTS WILL BE BENT, BROKEN OR OTHERWISE DAMAGED. BEARING SURFACES AND SURFACES TO BE IN PERMANENT CONTACT SHALL BE CLEANED PRIOR TO MEMBERS BEING ASSEMBLED.

STRUCTURAL MATERIAL SHALL BE STORED IN A COVERED LOCATION AT THE FABRICATING SHOP ABOVE THE GROUND ON PLATFORMS, SKIDS OR OTHER SUPPORTS. IT SHALL BE KEPT FREE FROM DIRT, GREASE, OR OTHER FOREIGN MATTER AND SHALL BE PROTECTED FROM CORROSION. MATERIAL STORED ONSITE SHALL BE KEPT CLEAN, PROTECTED FROM DAMAGE AND PROPERLY DRAINED. ENSURE THAT ROLLED MATERIAL IS STRAIGHT BEFORE BEING LAID OFF OR WORKED. IF STRAIGHTENING OF PLATES AND ANGLES OR OTHER SHAPES IS REQUIRED IT SHALL BE DONE BY METHODS THAT WILL NOT INJURE THE METAL, AND THAT CONFORM TO AISC AND AWS STANDARDS. THE STEEL SHALL NOT BE HEATED UNLESS PERMITTED BY THE ENGINEER. DO NOT USE MATERIAL WITH SHARP KINKS OR BENDS. STEEL OR WROUGHT IRON MAY BE FLAME CUT PROVIDED A MECHANICAL GUIDE IS USED TO SECURE A SMOOTH SURFACE. FLAME CUT BY HAND ONLY WHERE APPROVED, AND SMOOTH THE SURFACE BY PLANING, CHIPPING, OR GRINDING. MANIPULATE THE CUTTING FLAME TO AVOID CUTTING BEYOND THE PRESCRIBED LINES. FILLET RE-ENTRANT CUTS TO A RADIUS OF AT LEAST 1 INCH.

ENSURE THAT FINISHED MEMBERS ARE TRUE TO LINE AND FREE FROM TWISTS, BENDS, AND OPEN JOINTS. PLANE SHEARED EDGES OF PLATES MORE THAN 5/8 INCH THICK AND CARRYING CALCULATED STRESSES TO A DEPTH OF 1/4 INCH DEEP. FILLET RE-ENTRANT CUTS BEFORE CUTTING.

MAKE SURE THE SURFACE FINISH OF BEARING SURFACES THAT WILL CONTACT EACH OTHER MEETS THE SURFACE ROUGHNESS REQUIREMENTS AS DEFINED IN ANSI/ASME B-46.1, SURFACE ROUGHNESS, WAVINESS AND LAY, PART 1:

- STEEL SLABS ANSI 2000
- MILLED ENDS OF COMPRESSION MEMBERS, STIFFENERS, AND FILLERS ANSI 500
- SLIDE BEARINGS ANSI 125

FACE AND BRING TO AN EVEN BEARING ABUTTING JOINTS IN COMPRESSION MEMBERS AND GIRDER FLANGES, AND IN TENSION MEMBERS WHERE SPECIFIED ON THE DRAWINGS. WHERE JOINTS ARE NOT FACED, KEEP THE OPENING AT 1/4 INCH OR LESS.

SUBMITTALS

THE CONTRACTOR SHALL SUBMIT EVIDENCE IN THE FORM OF BILLS OF MATERIALS, FABRICATOR'S SHOP DRAWINGS, CERTIFICATIONS, MANUFACTURER'S DATE, SAMPLES, OR OTHER INFORMATION THAT MAY BE REQUIRED BY THE ENGINEER TO VERIFY THAT ALL MATERIALS AND METHODS USED ON THE PROJECT CONFORM TO THE PLANS AND SPECIFICATIONS, GOOD WORKMANSHIP, ACCEPTABLE INDUSTRIAL STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL ALSO SUBMIT A DETAILED SCHEDULE AND WORK PLAN FOR THE PROJECT BEFORE CONSTRUCTION BEGINS.

THE ENGINEER'S REVIEW OF SUBMITTALS WILL BE FOR GENERAL CONFORMANCE ONLY, AND IT SHALL REMAIN THE RESPONSIBILITY OF THE CONTRACTOR TO CONFORM TO ALL REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. ANY INTENDED DEVIATION FROM THE PLANS AND SPECIFICATIONS MUST BE SPECIFICALLY IDENTIFIED BY THE CONTRACTOR AND SPECIFICALLY APPROVED BY THE ENGINEER TO BE ACCEPTABLE.

THE FOLLOWING IS A LIST OF REQUIRED SUBMITTALS FOR THIS PROJECT. THE ENGINEER MAY REQUIRE ADDITIONAL SUBMITTALS.

1. WORK AND PLAN SCHEDULE.
2. MATERIAL CERTIFICATIONS FOR ALL STEEL AND FASTENING HARDWARE INCLUDING CHEMISTRY, YIELD AND MILL NUMBERS.
3. ANODE MANUFACTURER'S CERTIFICATE OF CONFORMITY (COC) AND PROOF THAT THE FURNISHED MATERIALS CONFORM TO THE SPECIFIED REQUIREMENTS CONTAINED IN NACE SP0387.
4. ALL SHOP DRAWINGS INCLUDING ANODE, FENDERS, UHMW, AND HDPE.
5. WELDER QUALIFICATIONS AND CONTINUITY FOR ALL FIELD AND SHOP WELDERS.
6. WPS AND/OR PQR FOR ALL FIELD AND SHOP WELDS.
7. HOT DIP GALVANIZING CERTIFICATIONS
8. PRODUCT DATA SHEETS FOR ANCHOR BOLTS, STUDS, CHAINS, SHACKLES, AND TENSIONERS.
9. GALVANIZING REPAIR PLAN.
10. FENDER TEST DATA.
11. RED LINE AS-BUILT DRAWINGS.

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Fax: 907.563.4220

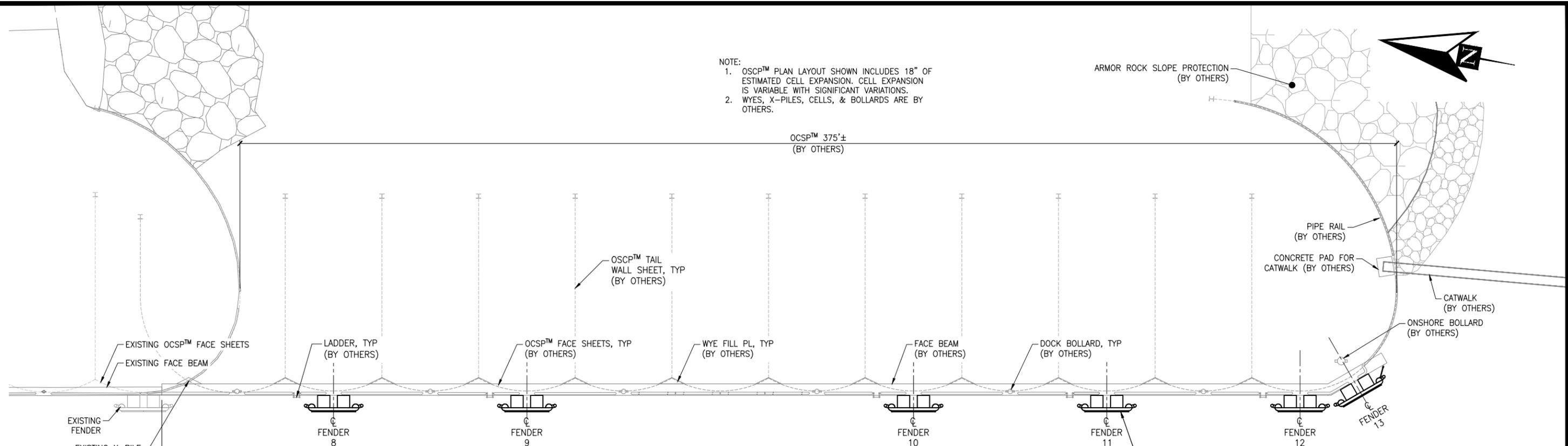
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ALASKA RAILROAD FREIGHT DOCK EXPANSION FENDER SYSTEM

GENERAL NOTES (2 OF 2)

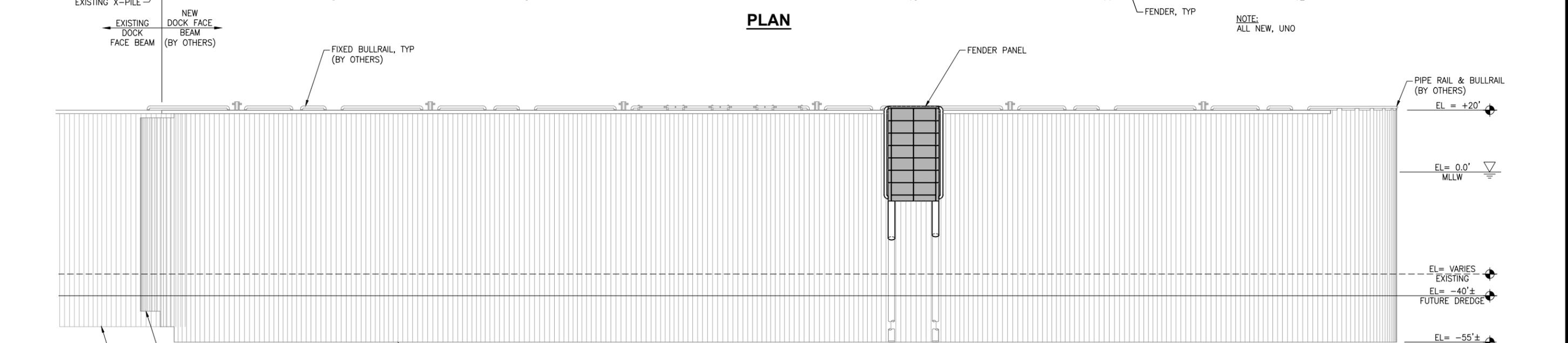
DESIGNED BY:	PN/ML	DATE:	03/03/2026	SHEET NO:	03 of 07
CHECKED BY:	SB	PROJECT NO:	201122		



NOTE:
 1. OSCP™ PLAN LAYOUT SHOWN INCLUDES 18" OF ESTIMATED CELL EXPANSION. CELL EXPANSION IS VARIABLE WITH SIGNIFICANT VARIATIONS.
 2. WYES, X-PILES, CELLS, & BOLLARDS ARE BY OTHERS.

PLAN

NOTE:
 ALL NEW, UNO



ELEVATION

NOTES:
 1. ONLY ONE (1) FENDER PANEL SHOWN FOR CLARITY. SIX (6) FENDER SYSTEMS TOTAL.
 2. LADDERS, ETC NOT SHOWN FOR CLARITY.
 3. ALL COMPONENTS ARE NEW UNO.

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ALASKA RAILROAD

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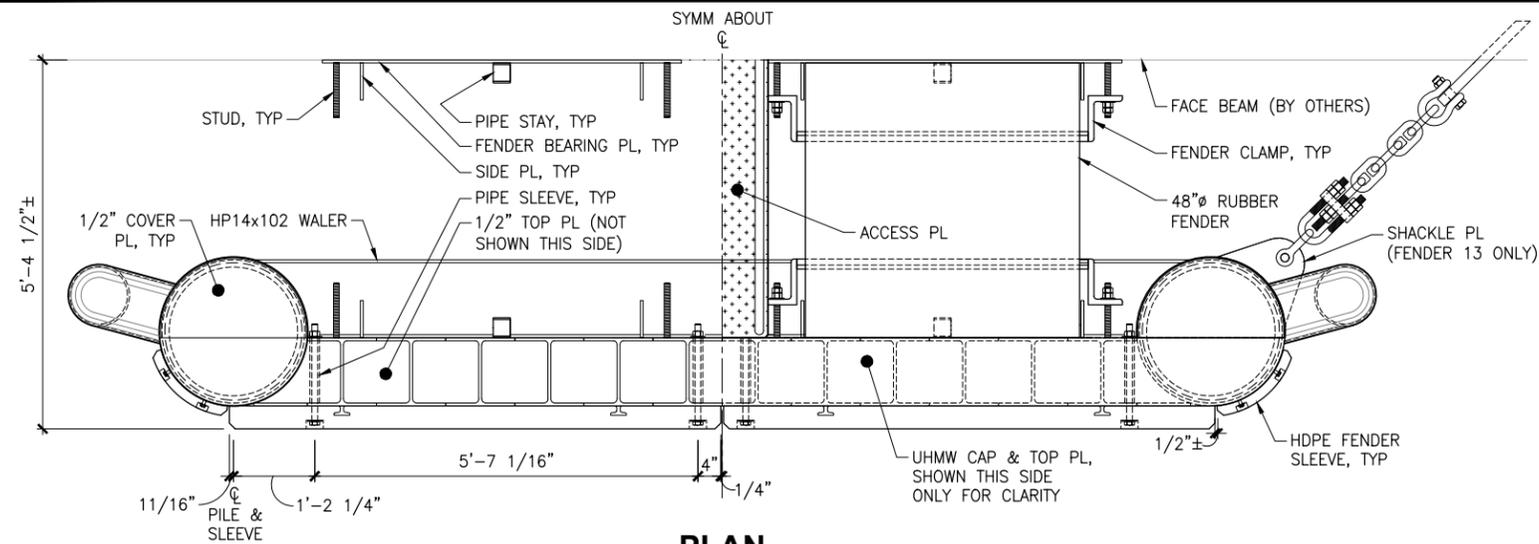
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PROJECT: **ALASKA RAILROAD FREIGHT DOCK EXPANSION FENDER SYSTEM**

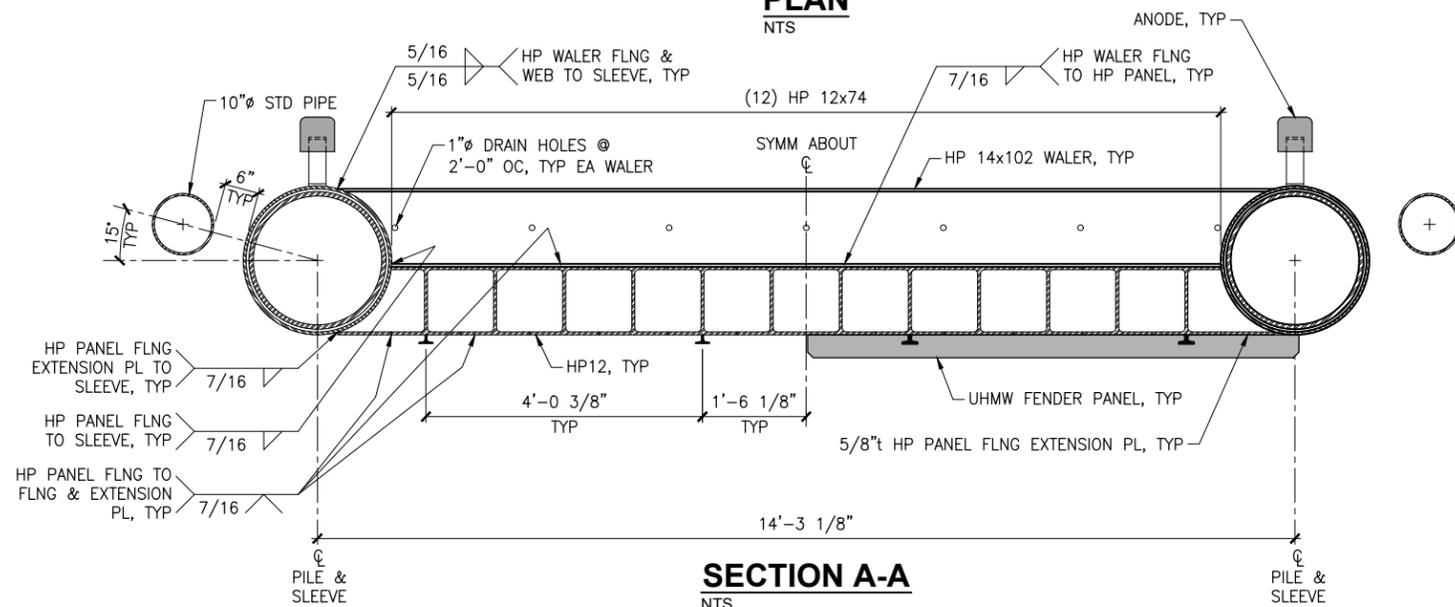
TITLE: **FREIGHT DOCK PLAN**

DESIGNED BY: PNM/K DATE: 03/03/2026 SHEET NO: **04** OF **07**

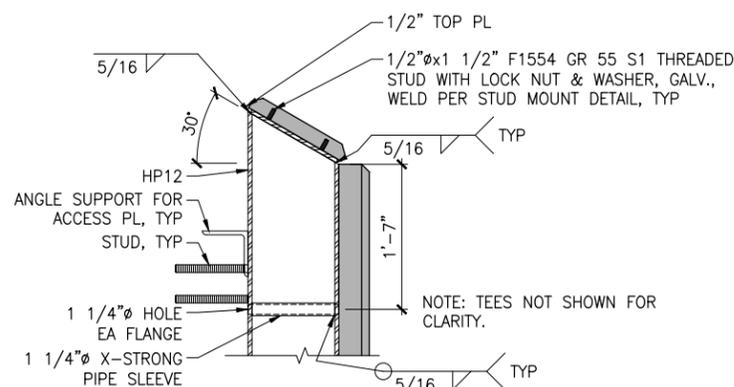
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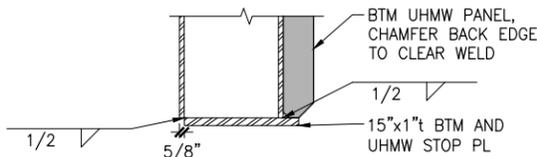
PLAN
NTS



SECTION A-A
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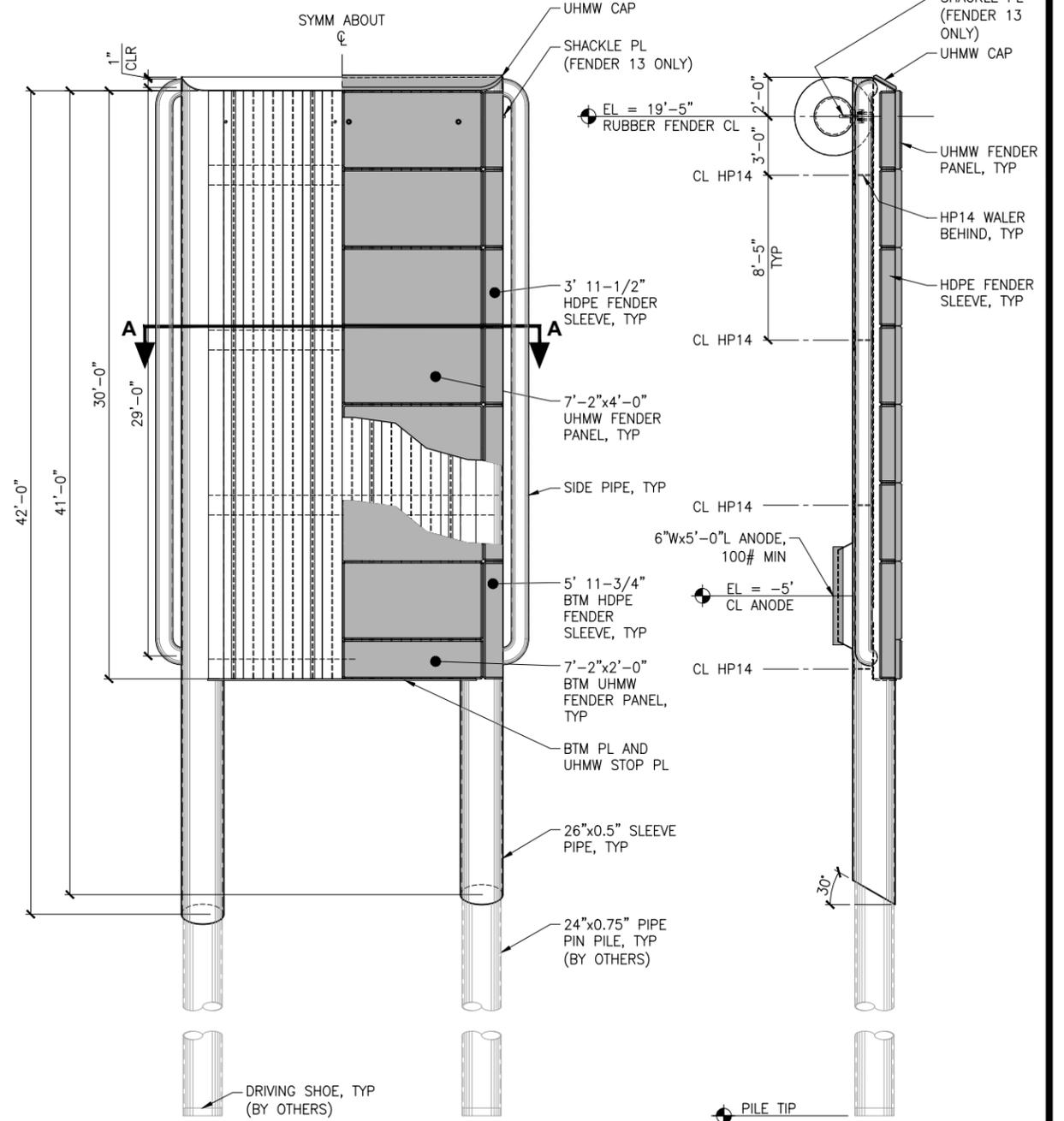
HP SECTION AT TOP
NTS



HP SECTION AT BOTTOM
NTS

SHEET NOTES:

1. RUBBER ENERGY ABSORBER SHALL BE HELD BY CLAMPS IN A POSITION CENTERED ON SUPPORTS AND WALERS. STUDS FOR CLAMPS SHALL HAVE LONG THREAD LENGTHS CAPABLE OF TIGHTENING UNTIL RUBBER IS DEFORMED AROUND CLAMPS AS APPROVED BY THE ENGINEER. BOLTS SHALL BE TIGHTENED IN AN ALTERNATING SEQUENCE SUCH THAT THE CLAMP IS EVENLY TIGHT IN FINAL POSITION. AFTER TIGHTENING, A SECOND NUT SHALL BE INSTALLED AGAINST THE FIRST NUT.
2. WELD ALL COMPONENT JOINTS W/ 5/16" FILLET WELD OR EQUIVALENT SEAL WELD ALL AROUND OR AS OTHERWISE DETAILED.



FACE

SIDE

ELEVATION
NTS

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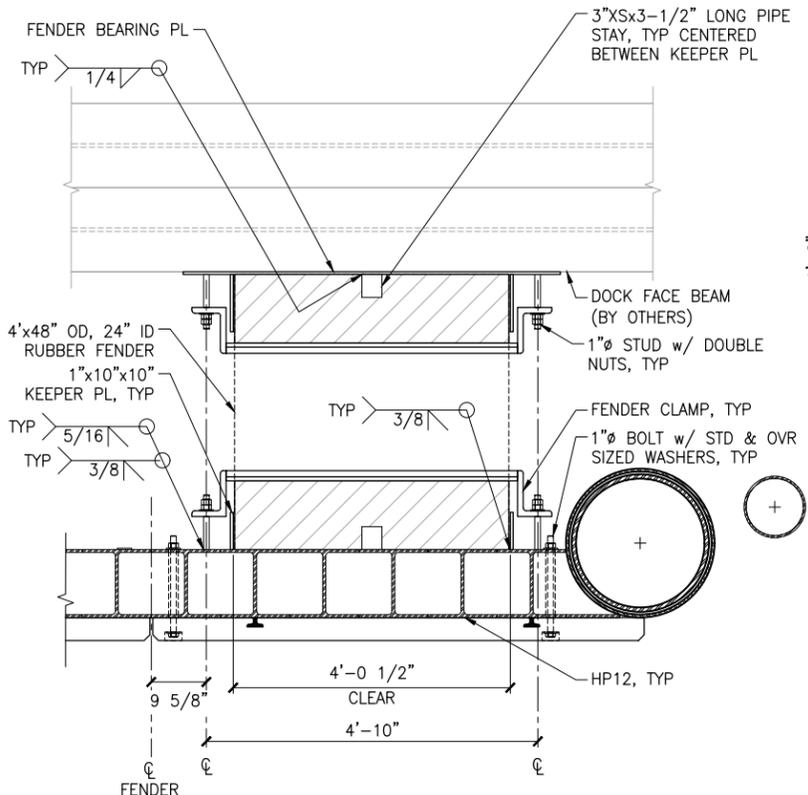
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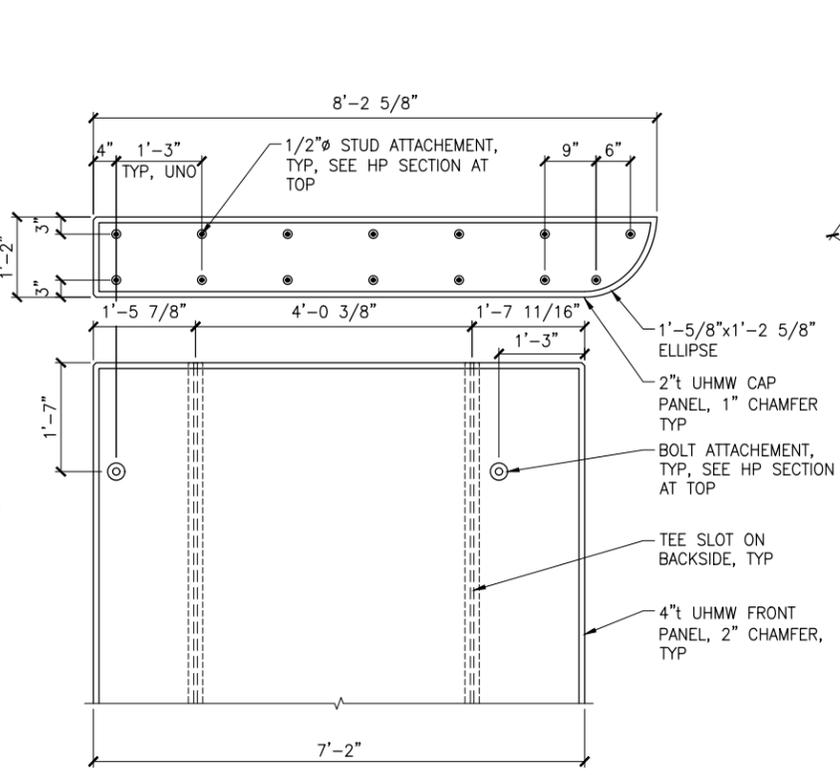
ALASKA RAILROAD FREIGHT DOCK EXPANSION FENDER SYSTEM

FENDER DETAILS (1 OF 3)

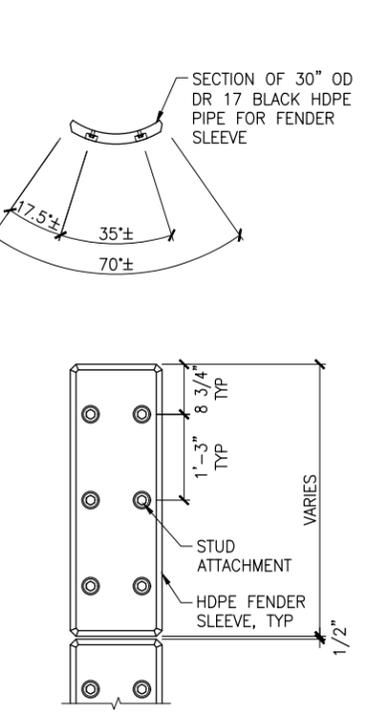
DESIGNED BY: PN/IMK	DATE: 03/03/2026	SHEET NO: 05 OF 07
CHECKED BY: SB	PROJECT NO: 201122	



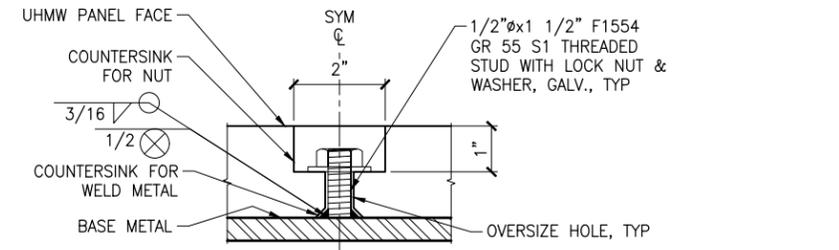
FENDER ATTACHMENT PLAN
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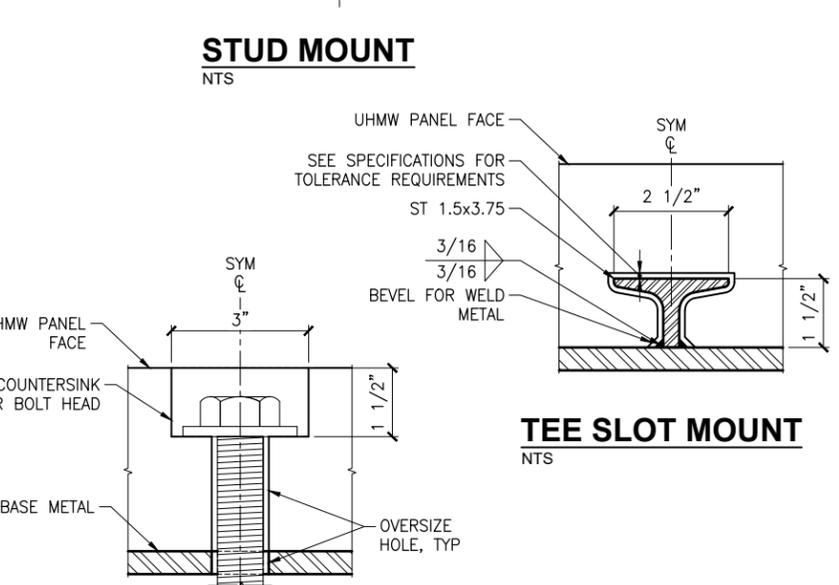
UHMW FENDER PANEL DETAIL
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UHMW FENDER SLEEVE DETAIL
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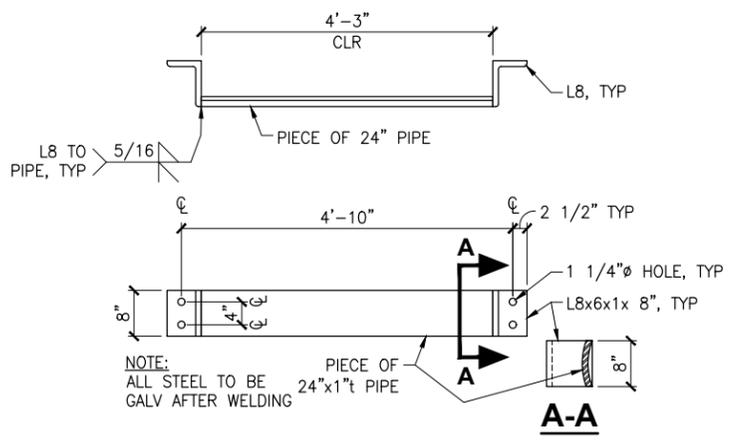


STUD MOUNT
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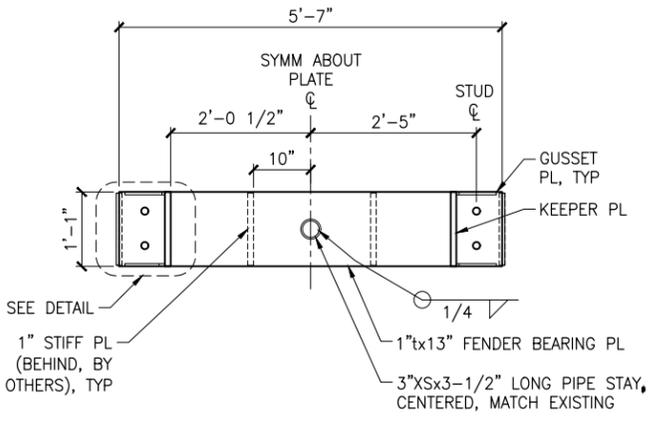


TEE SLOT MOUNT
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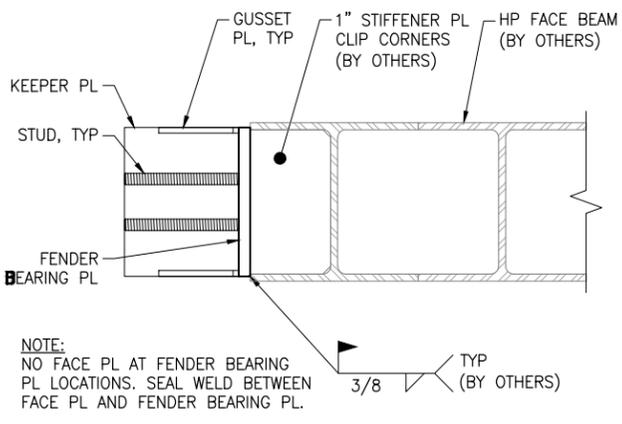
BOLT MOUNT
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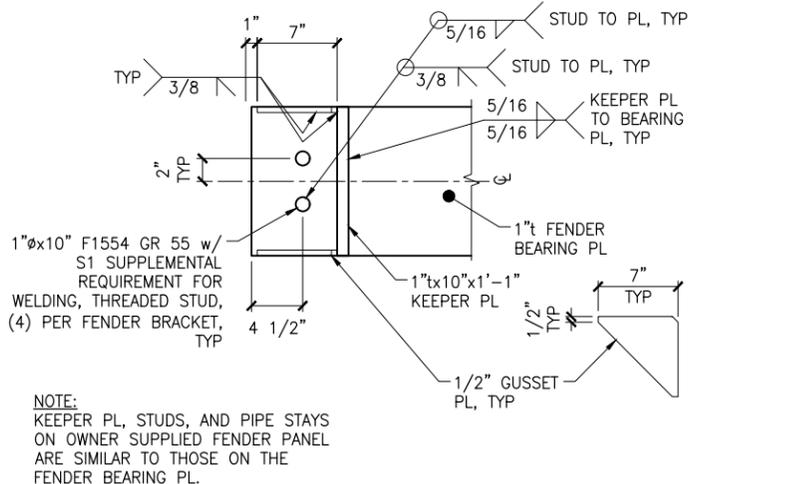
FENDER CLAMP
NTS



FACE BEAM FENDER BEARING PL
NTS



FENDER BEARING PL CONNECTION
NTS



FENDER BEARING PL CONNECTION DETAIL
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ALASKA RAILROAD

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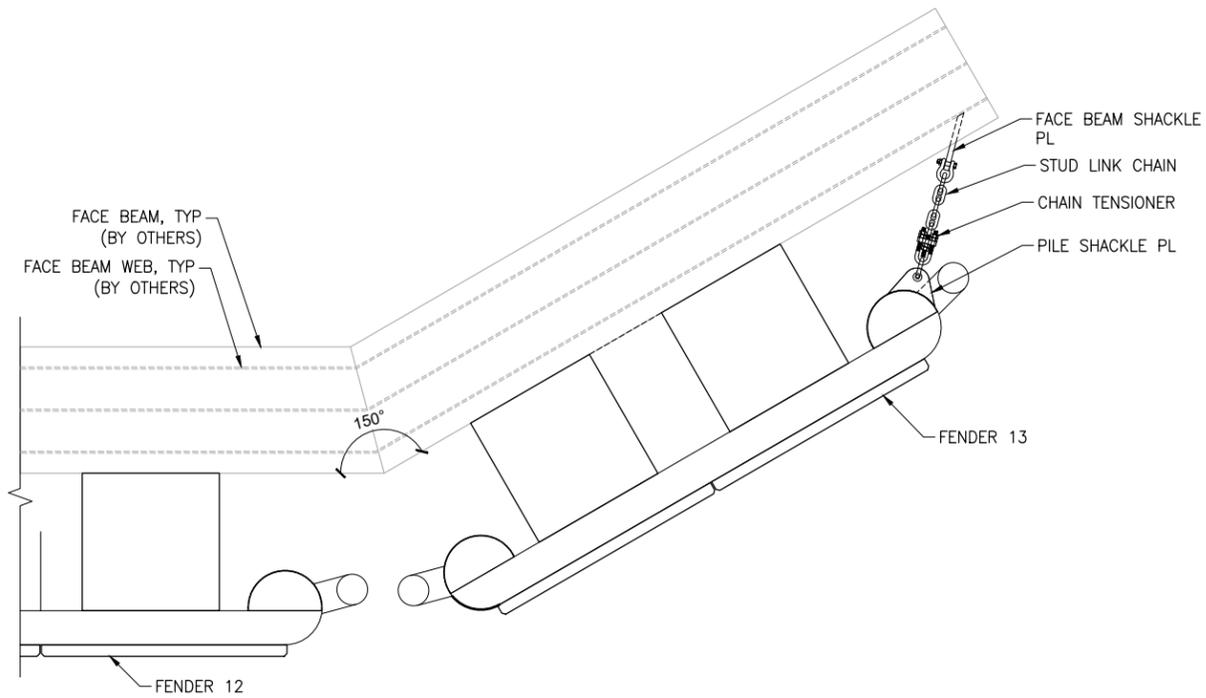


PROJECT: **ALASKA RAILROAD FREIGHT DOCK EXPANSION FENDER SYSTEM**

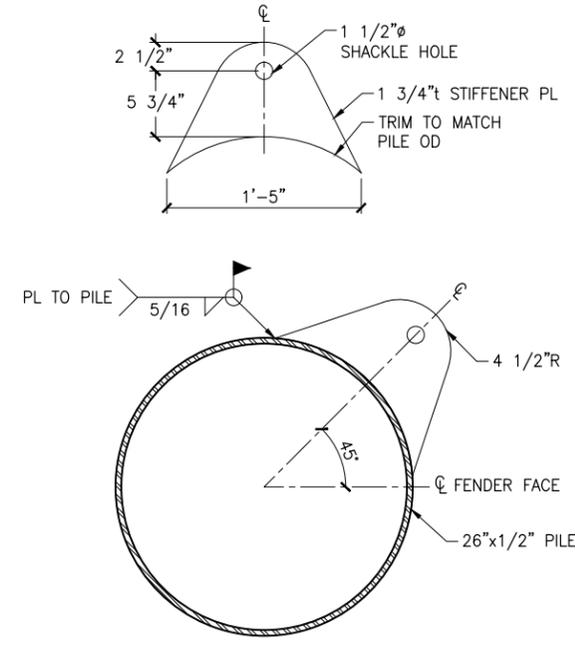
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DESIGNED BY: PNM/K DATE: 03/03/2026
CHECKED BY: SB PROJECT NO: 201122

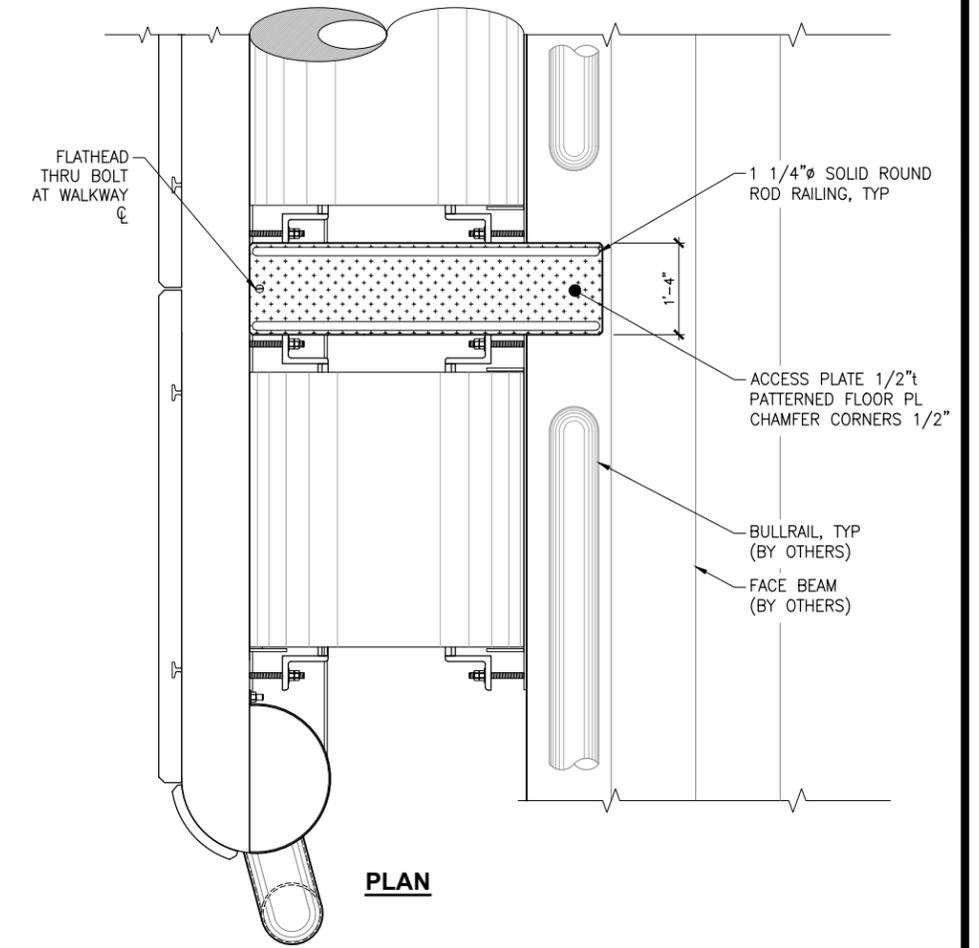
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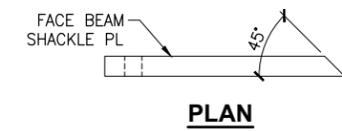
FENDER 13 PLAN VIEW
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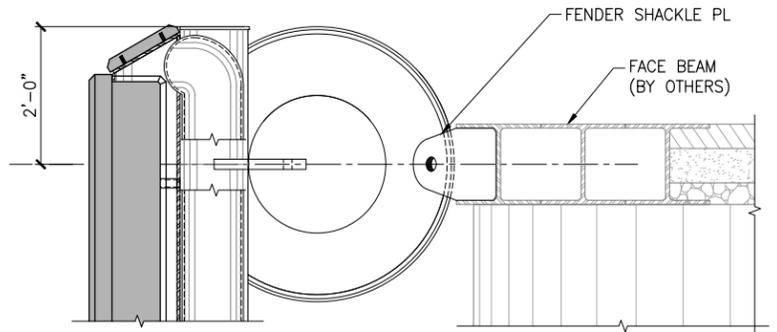
FENDER 13 PILE SHACKLE PL DETAIL
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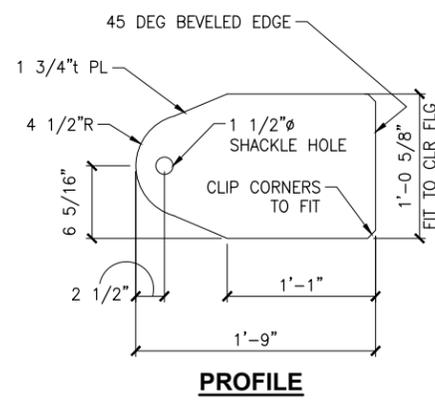
PLAN



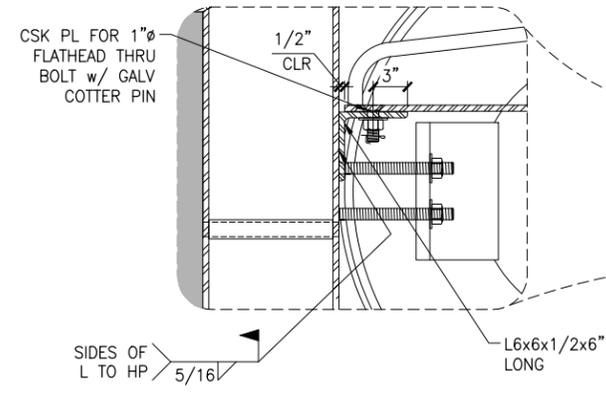
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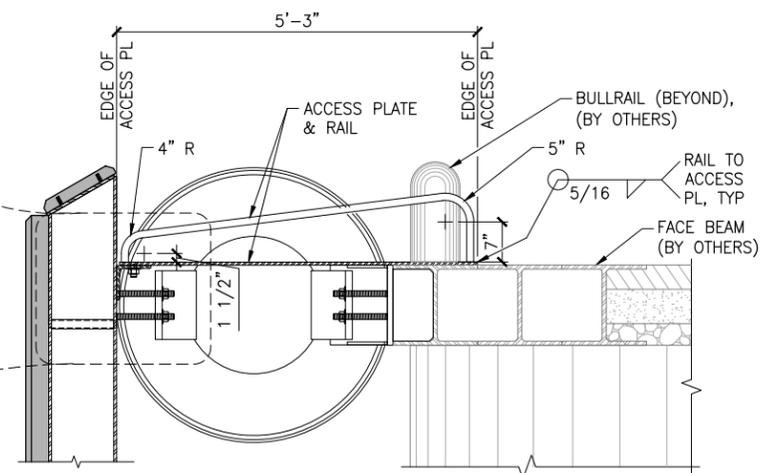
FENDER 13 PILE SHACKLE PL ELEVATION
NTS



FACE BEAM SHACKLE PL DETAIL
NTS



DETAILS
NTS



FENDER ACCESS
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TITLE: FENDER DETAILS (3 OF 3)	
DESIGNED BY: PNMK	DATE: 03/03/2026
CHECKED BY: SB	PROJECT NO: 201122
SHEET NO: 07 OF 07	