

# Turnagain

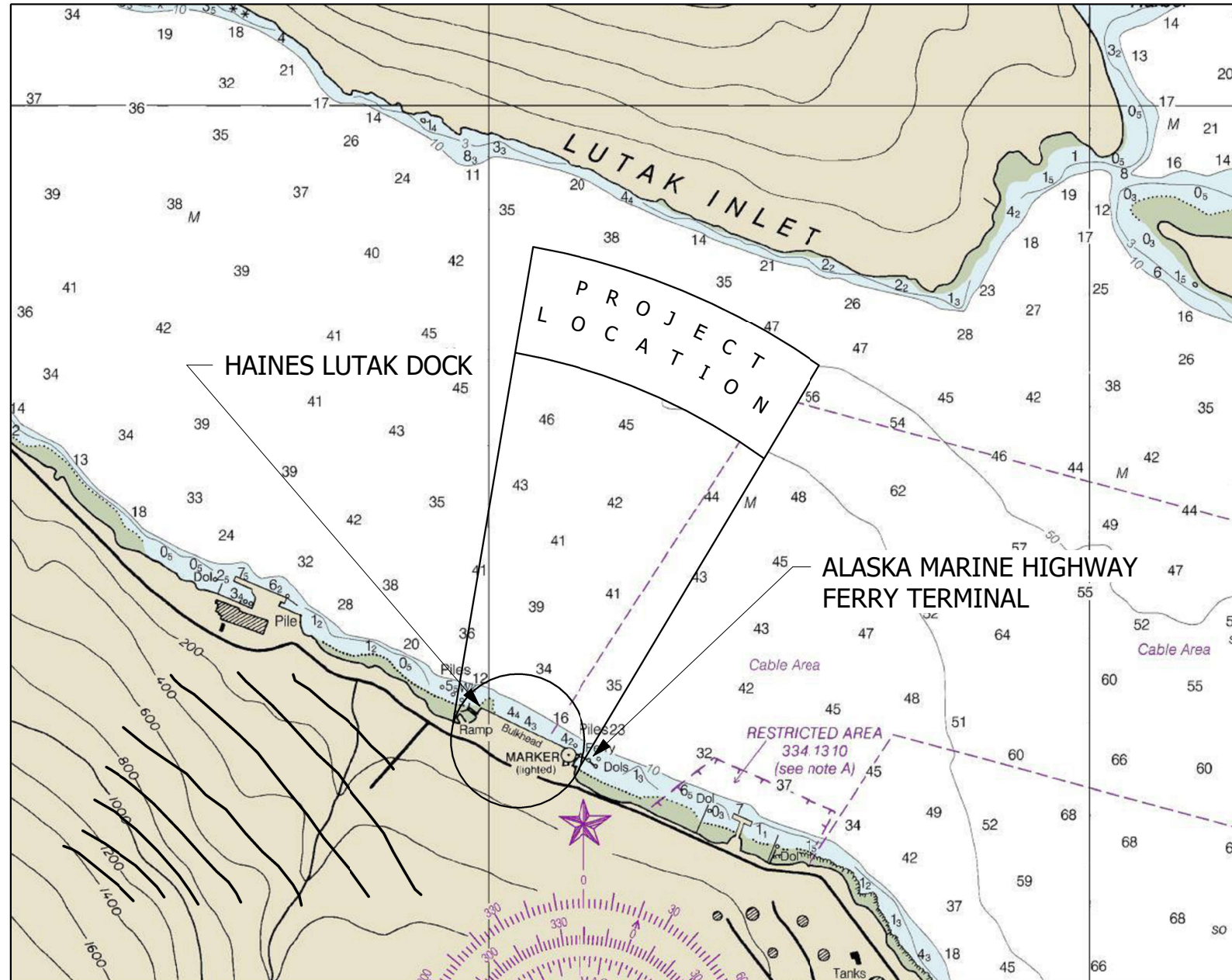
## Marine Construction

65% DESIGN

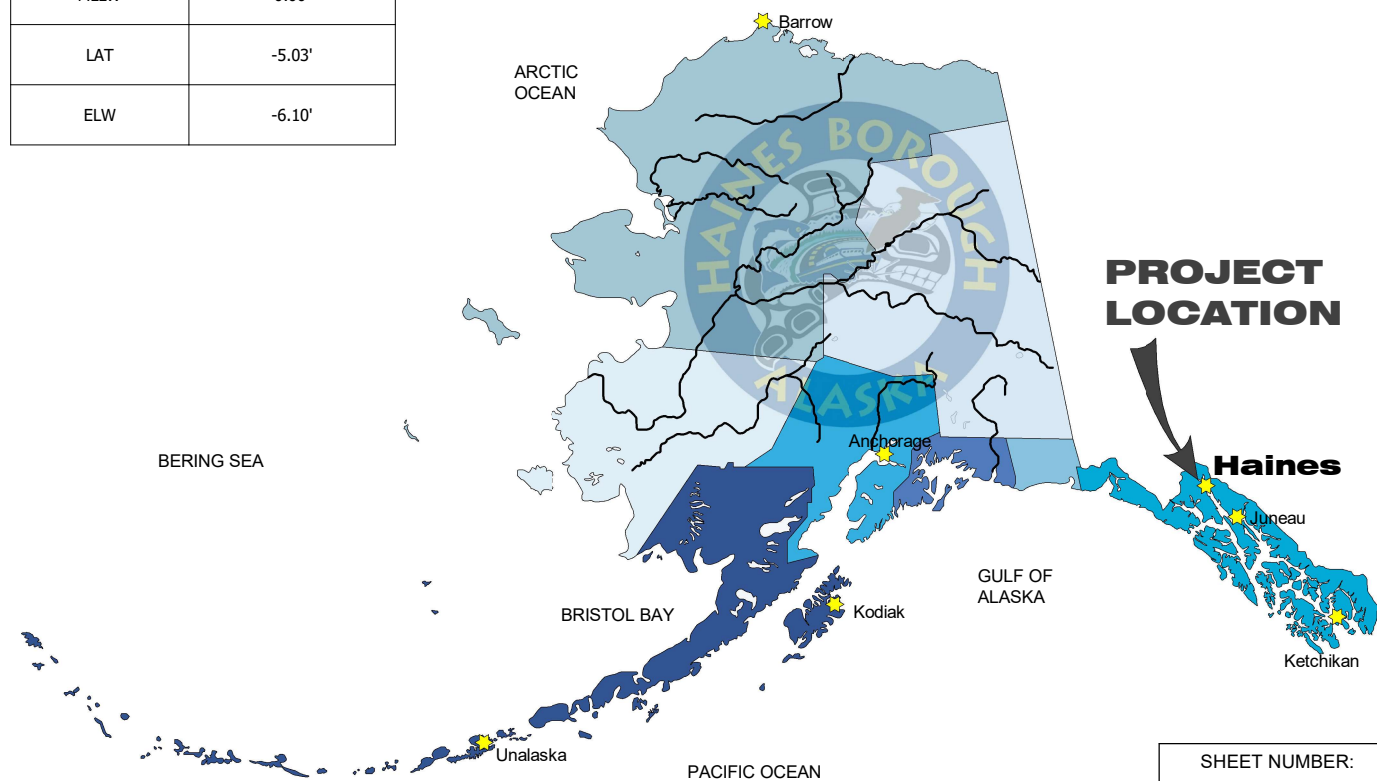
JANUARY 30, 2023

### LUTAK DOCK REPLACEMENT HAINES, ALASKA

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TIDAL DATA	
EHW	26.82'
HAT	21.03'
MHHW	16.73'
MHW	15.73'
MLW	1.62'
MLLW	0.00'
ELW	-6.10'
LAT	-5.03'



CORPORATE AUTHORIZATION NUMBER: 161179

SHEET NUMBER:  
**G100**

**LUTAK DOCK REPLACEMENT GENERAL NOTES**

THIS PROJECT IS FUNDED BY FEDERAL FUNDS AND MUST FOLLOW THE REQUIREMENT TO USE IRON, STEEL, MANUFACTURED PRODUCTS, AND CONSTRUCTION MATERIALS PRODUCED IN THE UNITED STATES, PER THE BUILD AMERICA, BUY AMERICA (BABA) ACT OF MAY 2022.

DESIGN LIFE = 50 YEARS

**LOADING REQUIREMENTS:**

UNIFORM LIVE LOAD = 2,000 PSF  
DESIGN VEHICLE (UNRESTRICTED) = MANITOWOC 4000W  
DESIGN VEHICLE (RESTRICTED) = LHM 420 MOBILE HARBOR CRANE  
USE OF CRANE MATS REQUIRED FOR MOBILE HARBOR CRANE

DESIGN VESSEL CARGO = 60,000 TON MAX DISPLACEMENT  
110 FT X 630 FT

MOORING BOLLARDS = 150 TONS  
BERTHING FENDERS = 1435 KIP-FT / 534 KIP

**BULKHEAD PILE FOUNDATIONS:**

ALL BULKHEAD PILES WILL BE SOCKETED INTO BEDROCK

**CORROSION PROTECTION SYSTEM:**

COATING  
TYPICAL: ONE COAT INORGANIC ZINC PRIMER AND TWO COATS OF COAL TAR EPOXY (16 MILS TOTAL), OR AN EQUIVALENT CORROSION PROTECTION SYSTEM  
UPPER TIDAL ZONE: ONE COAT INORGANIC ZINC PRIMER AND FIVE COATS OF COAL TAR EPOXY (40 MILS TOTAL), OR AN EQUIVALENT CORROSION PROTECTION SYSTEM

DESIGN WILL PROVIDE FOR AN ANODE LIFE OF 20 YEARS MINIMUM.

ROUTINE MAINTENANCE, ACCOMPLISHED BY THE APPLICATION OF CARBOLINE SPLASH ZONE A-788 (OR SIMILAR) IS REQUIRED TO FIX MINOR COATING DAMAGE OVER THE LIFE OF THE STRUCTURE.

**SEISMIC PERFORMANCE REQUIREMENTS:**

ASCE 7-16 RISK CATEGORY = IV (ESSENTIAL FACILITY)

ASCE 61-14 DESIGN CLASSIFICATION = HIGH

MAXIMUM CONSIDERED EARTHQUAKE (MCE) IS AN EARTHQUAKE WITH A RETURN PERIOD OF 2475 YEARS (2% PROBABILITY OF EXCEEDANCE IN 50 YEARS).

DESIGN EARTHQUAKE (DE)  
PERFORMANCE LEVEL = LIFE SAFETY PROTECTION  
2/3 THE ACCELERATION ASSOCIATED WITH THE MCE.  
PEAK GROUND ACCELERATION = 0.515g

CONTINGENCY LEVEL EARTHQUAKE (CLE)  
PERFORMANCE LEVEL = REPAIRABLE DAMAGE  
475 YEAR RETURN PERIOD  
PEAK GROUND ACCELERATION = 0.250g

OPERATING LEVEL EARTHQUAKE (OLE)  
PERFORMANCE LEVEL = MINIMAL DAMAGE  
72 YEAR RETURN PERIOD  
PEAK GROUND ACCELERATION = 0.086g

**LIQUEFACTION MITIGATION**

CURRENT BULKHEAD SOILS ANALYSIS SHOWS THAT LIQUEFACTION OF SOILS WITHIN THE BULKHEAD WILL NOT OCCUR DURING THE OPERATING LEVEL EARTHQUAKE

GROUND IMPROVEMENT WILL BE PROVIDED BASED ON GEOTECHNICAL DESIGN REQUIREMENTS SO THAT LIQUEFACTION WITHIN THE BULKHEAD WILL NOT OCCUR DURING A CONTINGENCY LEVEL EARTHQUAKE

THE BULKHEAD IS DESIGNED TO MEET OLE, CLE AND DE PERFORMANCE LEVELS ASSUMING SUSCEPTABLE SOILS IN FRONT OF THE BULKHEAD ARE FULLY LIQUEFIED DURING THESE SEISMIC EVENTS

**MATERIAL SPECIFICATIONS:**

**STRUCTURAL STEEL:**  
STRUCTURAL PLATES: ASTM A36 / A572 FY = 50 KSI  
HSS SQUARE / RECT: ASTM A500 GR B FY = 42 KSI  
HSS ROUND: ASTM A500 GR B FY = 46 KSI  
BOLTS: ASTM A325  
WELDING ELECTRODES E70XX

**STEEL PIPE PILES:**  
STEEL PIPE PILES: ASTM A252 GR 3 FY = 70KSI

**STRUCTURAL CONCRETE:**  
MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS:  
F'c = 5,000 PSI  
REINFORCING STEEL = ASTM A615 OR A706, GRADE 60

**GENERAL DESIGN CODES**

INTERNATIONAL BUILDING CODE  
ASCE 7-16 MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES  
ASCE 61-14 - SEISMIC DESIGN OF PIERS AND WHARVES  
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
UFC 4-152-01 DESIGN: PIERS AND WHARVES  
UFC 4-159-03 DESIGN: MOORINGS  
PIANC - GUIDELINES FOR THE DESIGN OF FENDER SYSTEMS  
AMERICAN WELDING SOCIETY (AWS) D1.1 STRUCTURAL WELDING CODE  
AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, 14TH EDITION  
AMERICAN CONCRETE INSTITUTE CODE 318-19: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

**NOAA TIDE BENCHMARKS AT #9452400 SKAGWAY, TAIYA INLET, ALASKA:**

ELEVATION DATUM FOR THE PROJECT IS 0.0 FT MEAN LOWER LOW WATER (MLLW)

- MEAN HIGHER HIGH WATER (MHHW) 16.73 FT
- MEAN HIGH WATER (MHW) 15.73 FT
- MEAN TIDE LEVEL (MTL) 8.68 FT
- MEAN SEA LEVEL (MSL) 8.83 FT
- MEAN DIURNAL TIDE LEVEL (DTL) 8.42 FT
- MEAN LOW WATER (MLW) 1.62 FT
- MEAN LOWER LOW WATER (MLLW) 0.00 FT



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5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

**65%  
DESIGN**

**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



REV#	DESCRIPTION	DATE

ISSUE DATE:  
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SHEET TITLE:  
GENERAL NOTES

SHEET NUMBER:

**G101**



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MOORING DOLPHINS, TYP OF 4

AML DOLPHIN

AML BARGE RAMP

HAINES FERRY TERMINAL

LUTAK DOCK

FERRY TERMINAL RAMP

BOAT  
 LAUNCH  
 RAMP

FUEL DEPOT

FERRY TERMINAL  
 BUILDING

LUTAK ROAD

REV#	DESCRIPTION	DATE

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SHEET TITLE:  
 OVERALL EXISTING  
 SITE PLAN

SHEET NUMBER:  
**G102**



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SHEET TITLE:  
 EXISTING  
 CONDITIONS

SHEET NUMBER:  
**G103**

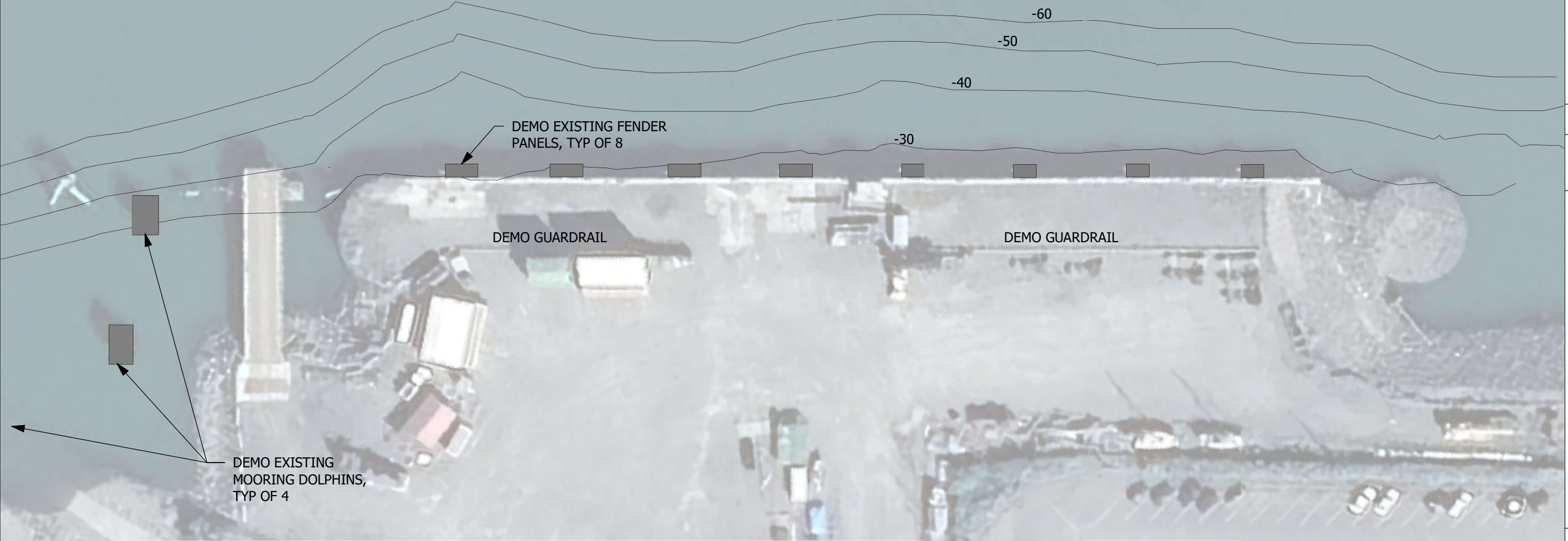


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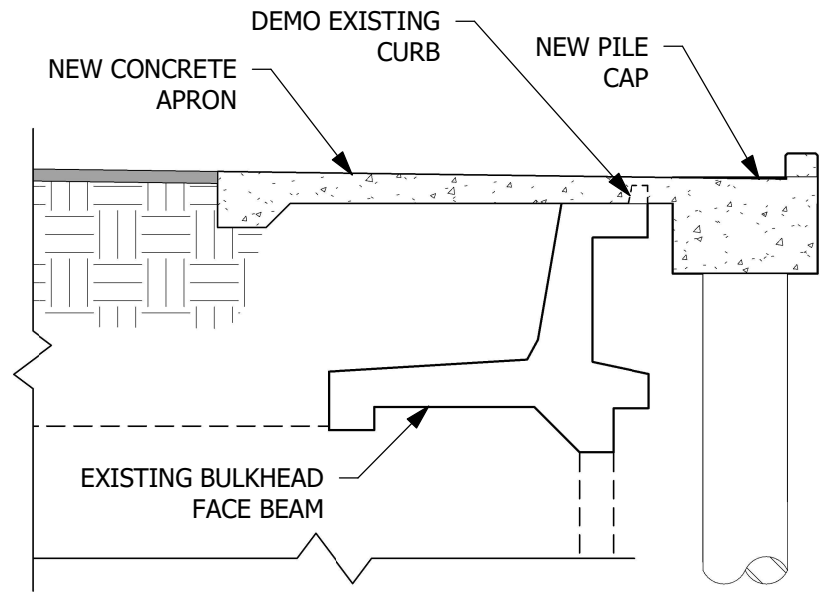
PROJECT NUMBER:  
22-010

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DESIGN**

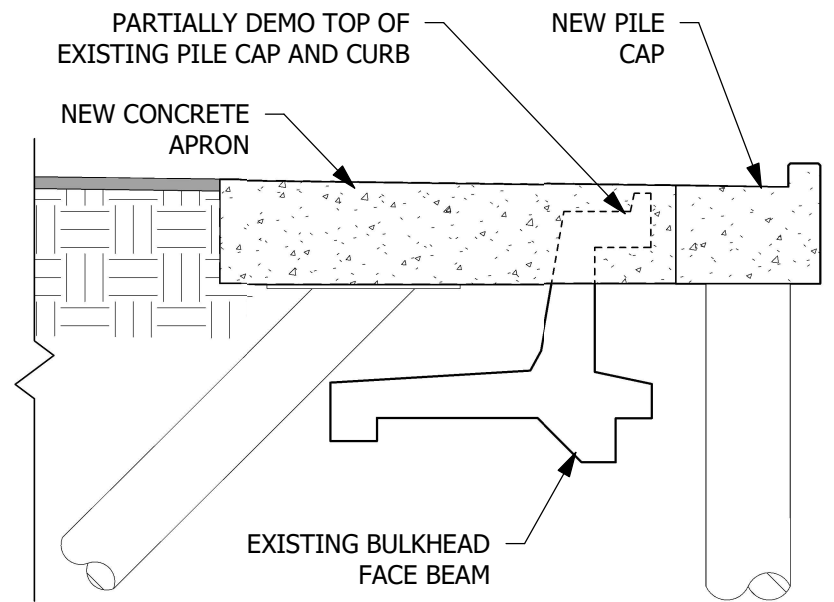
**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



**1 DEMOLITION PLAN**  
1 : 750



**2 TYPICAL EXISTING FACE BEAM DEMO AT APRON**  
1/8" = 1'-0"



**3 EXISTING FACE BEAM DEMO AT TIEBACK CAP**  
1/8" = 1'-0"

REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

SHEET TITLE:  
DEMOLITION PLAN  
AND DETAILS

SHEET NUMBER:

**G104**



1

2

700' - 0"

EXISTING AML DOLPHIN TO REMAIN

EXISTING AML BARGE RAMP TO REMAIN WITH 2.5° REALIGNMENT

50' - 0"  
TYPICAL

NEW FENDERS, TYP

NEW PIPE-PIPE COMBI WALL DOCK

NEW MOORING BOLLARDS, TYP

BARGE LOADING SLIP, SEE SHEET S400

80' - 0"

120' - 0"

LIGHT POLE, VIDEO SURVEILLANCE, AND CONVENIENCE OUTLETS

NEW FREEZE FREE WATER RISER

NEW FIRE HYDRANT

ELECTRICAL PANELBOARD WITH MAIN CIRCUIT BREAKER

LIGHT POLE, VIDEO SURVEILLANCE, AND CONVENIENCE OUTLETS

NEW RIP-RAP SHORE PROTECTION TIED INTO EXISTING

LUTAK ROAD



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**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**

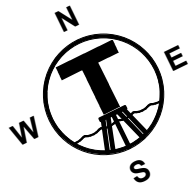


REV#	DESCRIPTION	DATE

ISSUE DATE:  
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SHEET TITLE:  
LUTAK DOCK SITE PLAN

SHEET NUMBER:  
**G105**



1

2

38' - 3"

18 SPACES @ 34' - 6" = 621' - 0"

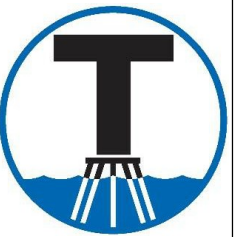
40' - 9"

PIPE-PIPE COMBI WALL

TIEBACK PILE LOCATIONS CENTERED ON EXISTING CELLS AND CLOSURE CELLS

EXISTING SHEET PILE CELLS AND CLOSURE ARCS

1 TIEBACK PILE LOCATIONS  
1" = 50'-0"



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DESIGN**

**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



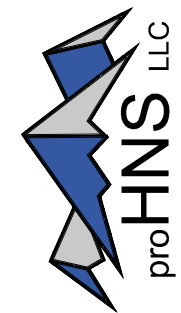
REV#	DESCRIPTION	DATE

ISSUE DATE:  
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SHEET TITLE:  
TIEBACK PILE  
LOCATIONS

SHEET NUMBER:

**G106**

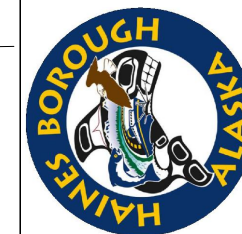


219 MAIN STREET #13  
 HAINES, AK 99827  
 PHONE: (907) 780-4004  
 CERTIFICATE OF AUTHORIZATION  
 NUMBER: 100662

PROJECT NUMBER:  
 22-010

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**LUTAK DOCK  
 REPLACEMENT  
 HAINES, ALASKA**

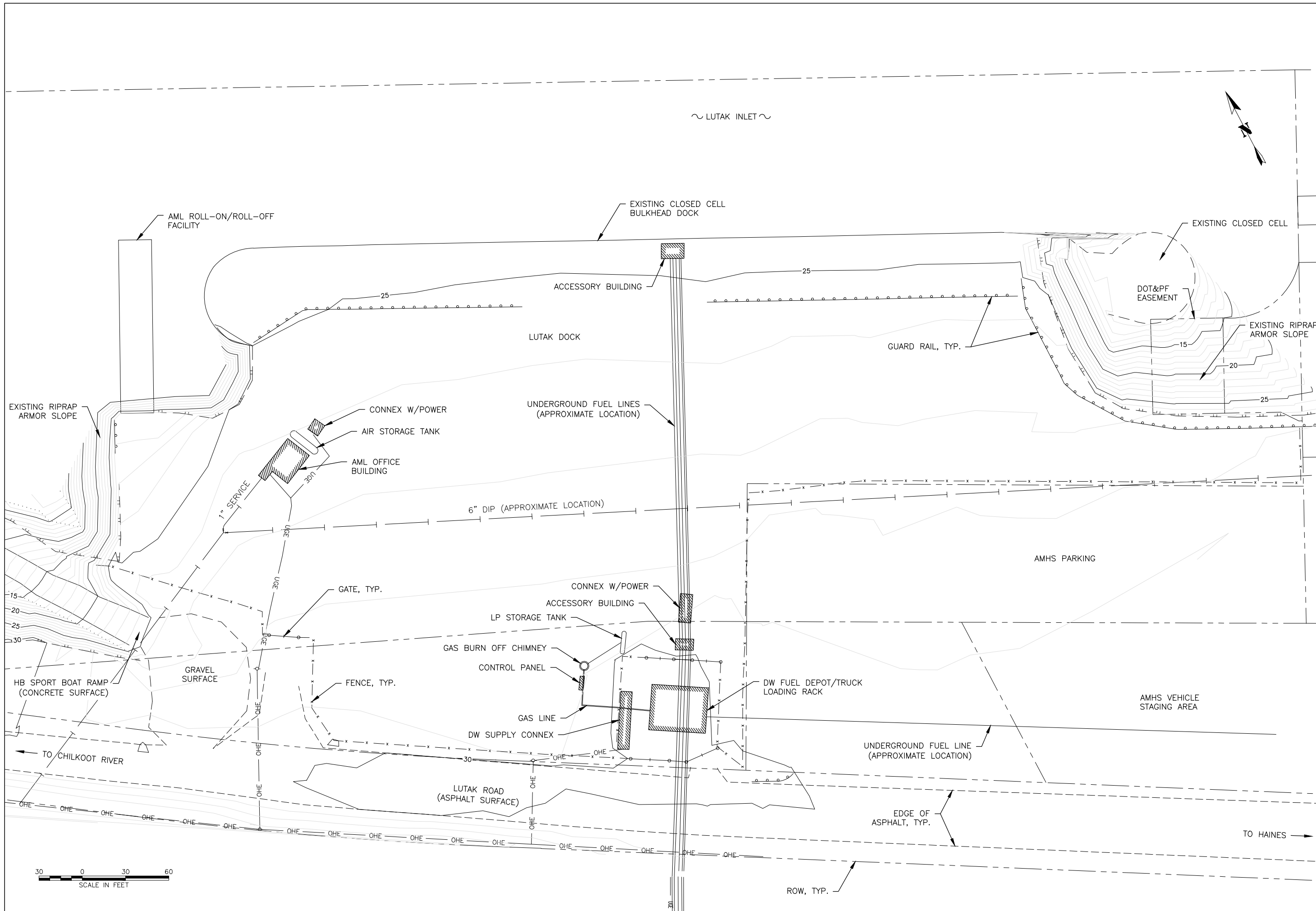


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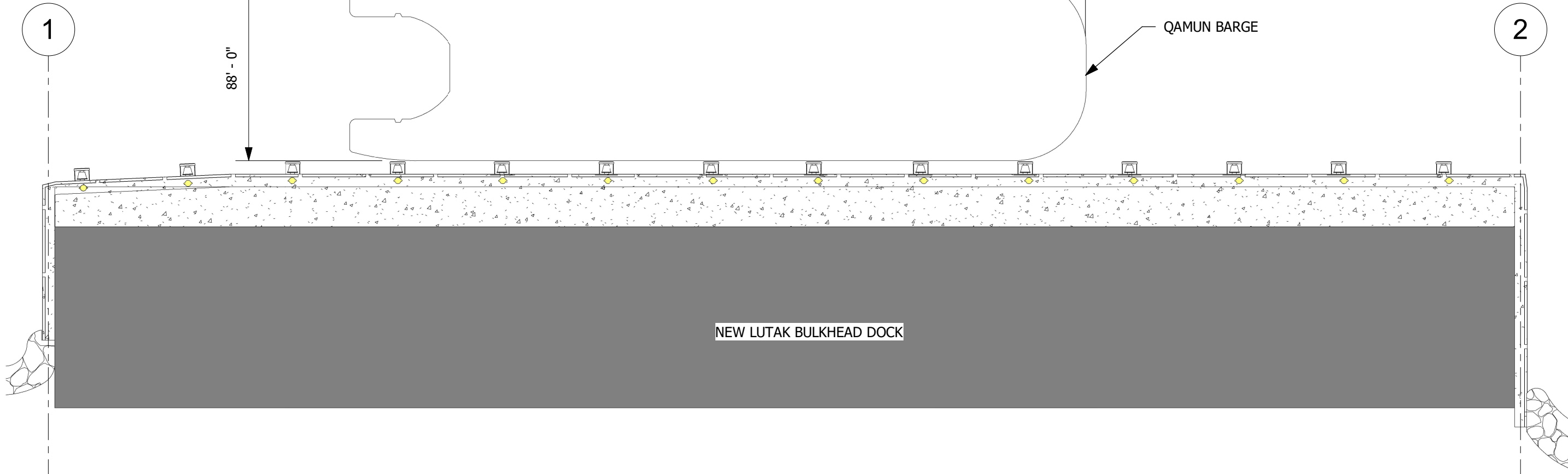
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SHEET TITLE:  
 EXISTING SITE  
 CONDITIONS SURVEY

SHEET NUMBER:  
**C100**







1 FUEL BARGE PLAN  
1" = 50'-0"



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**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**

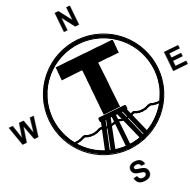


REV#	DESCRIPTION	DATE

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SHEET TITLE:  
FUEL BARGE  
MOORING PLAN

SHEET NUMBER:  
**M100**



360' - 0"

SITKA PROVIDER

NEW AML BARGE BERTH LINE

2.5000°

EXISTING AML DOLPHIN TO REMAIN, UNMODIFIED

AML CARGO BARGE RAMP TO REMAIN, ROTATED 2.5°

NEW LUTAK BULKHEAD DOCK

**NOTE:**  
TURNAGAIN TO COORDINATE WITH ALASKA MARINE LINES ON UPDATES TO THE AML RAMP.

1 AML BARGE LANDING SITE PLAN  
1 : 380



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**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



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SHEET TITLE:  
AML BARGE  
MOORING PLAN

SHEET NUMBER:

**M101**



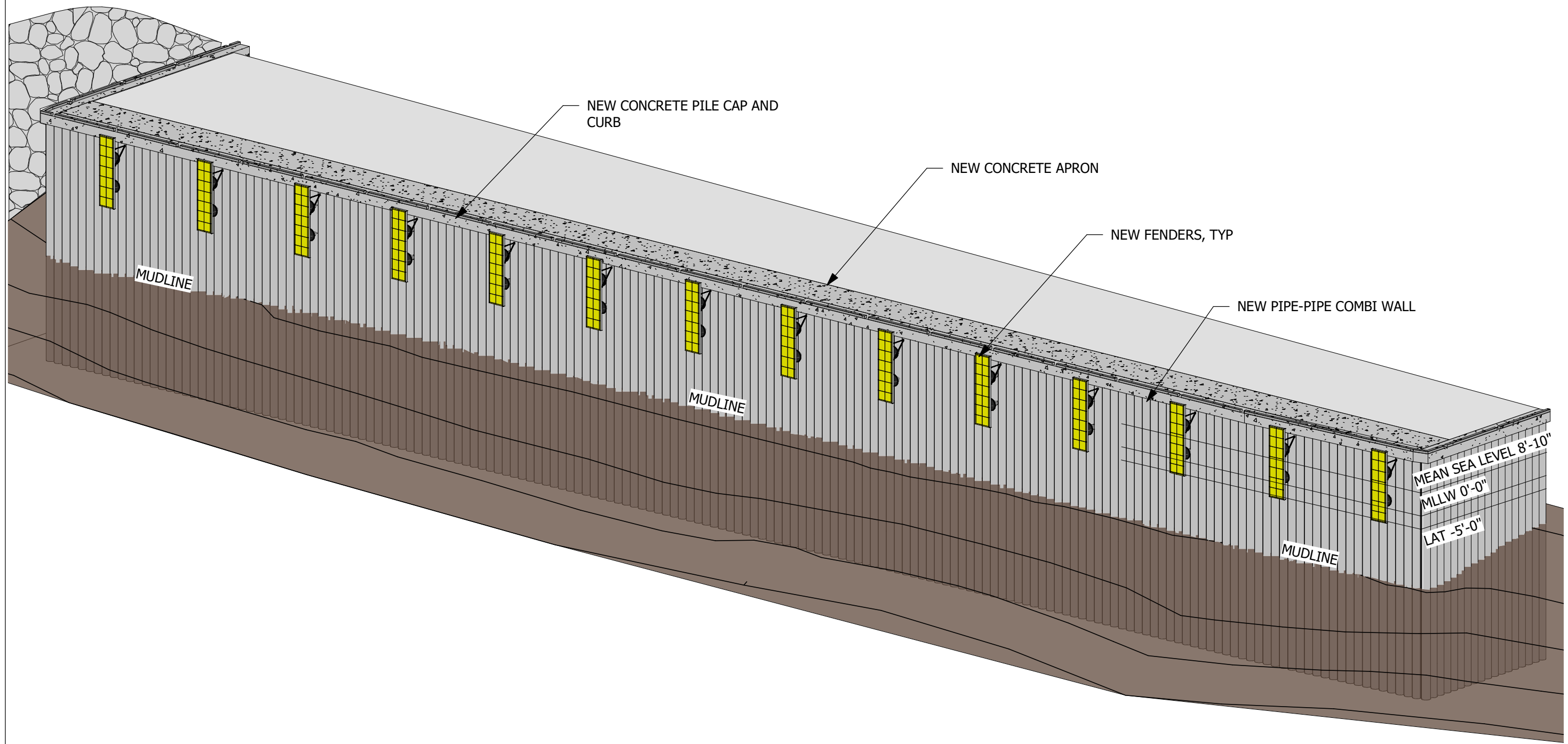
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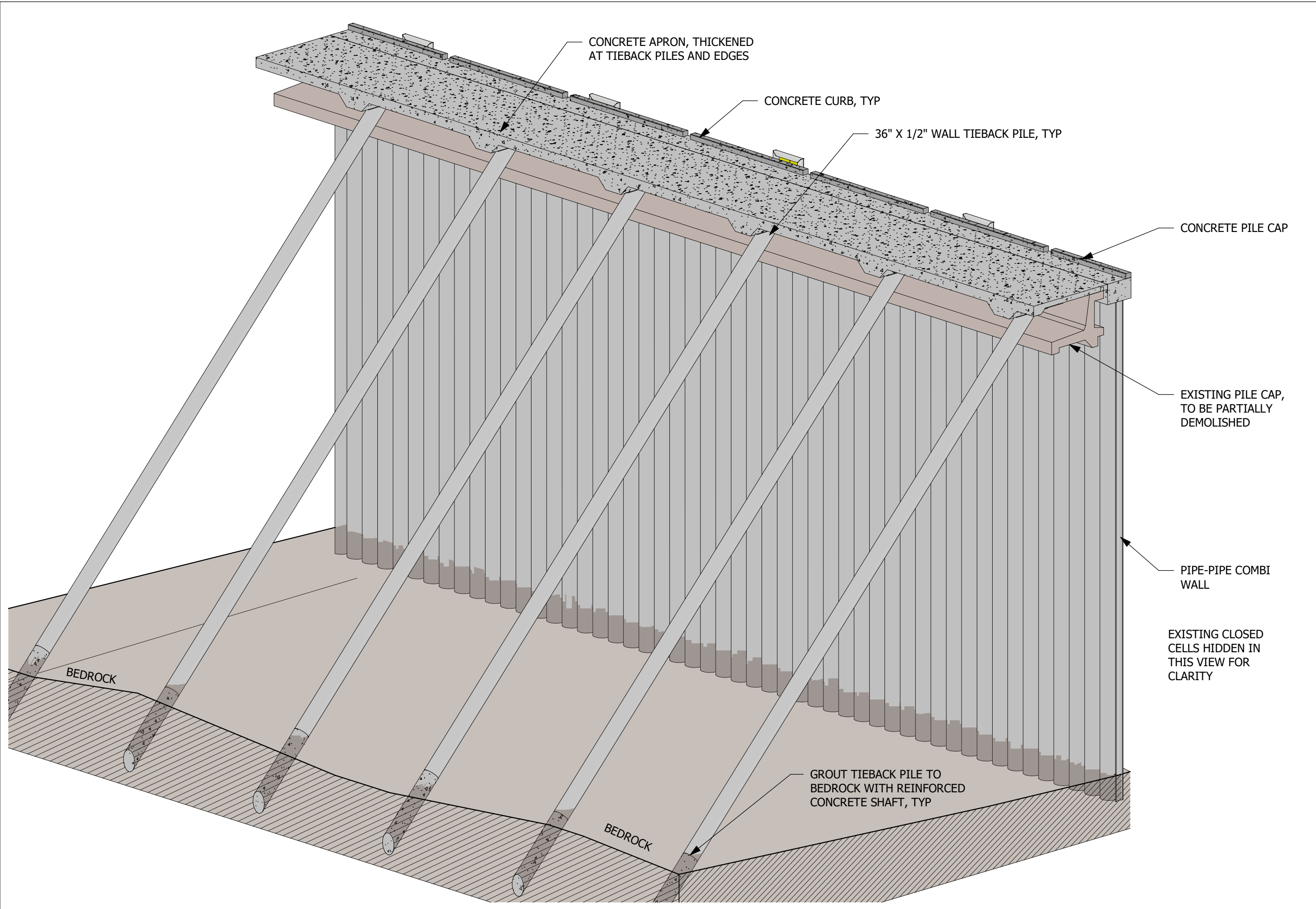
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SHEET TITLE:  
BULKHEAD  
ISOMETRIC

SHEET NUMBER:

**S100**



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REV#	DESCRIPTION	DATE

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SHEET TITLE:  
 BULKHEAD FRAME  
 ISOMETRIC

SHEET NUMBER:  
**S101**



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REV#	DESCRIPTION	DATE

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SHEET TITLE:  
TYPICAL BULKHEAD  
SECTION

SHEET NUMBER:

**S201**

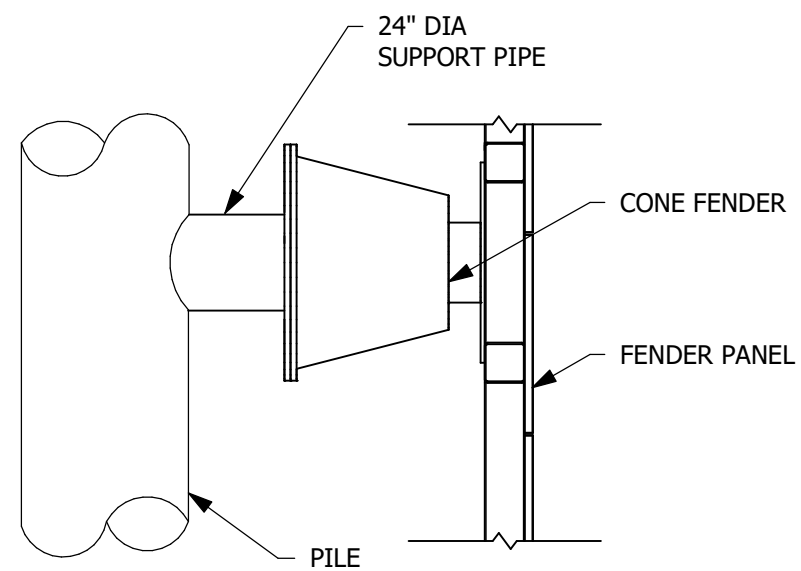
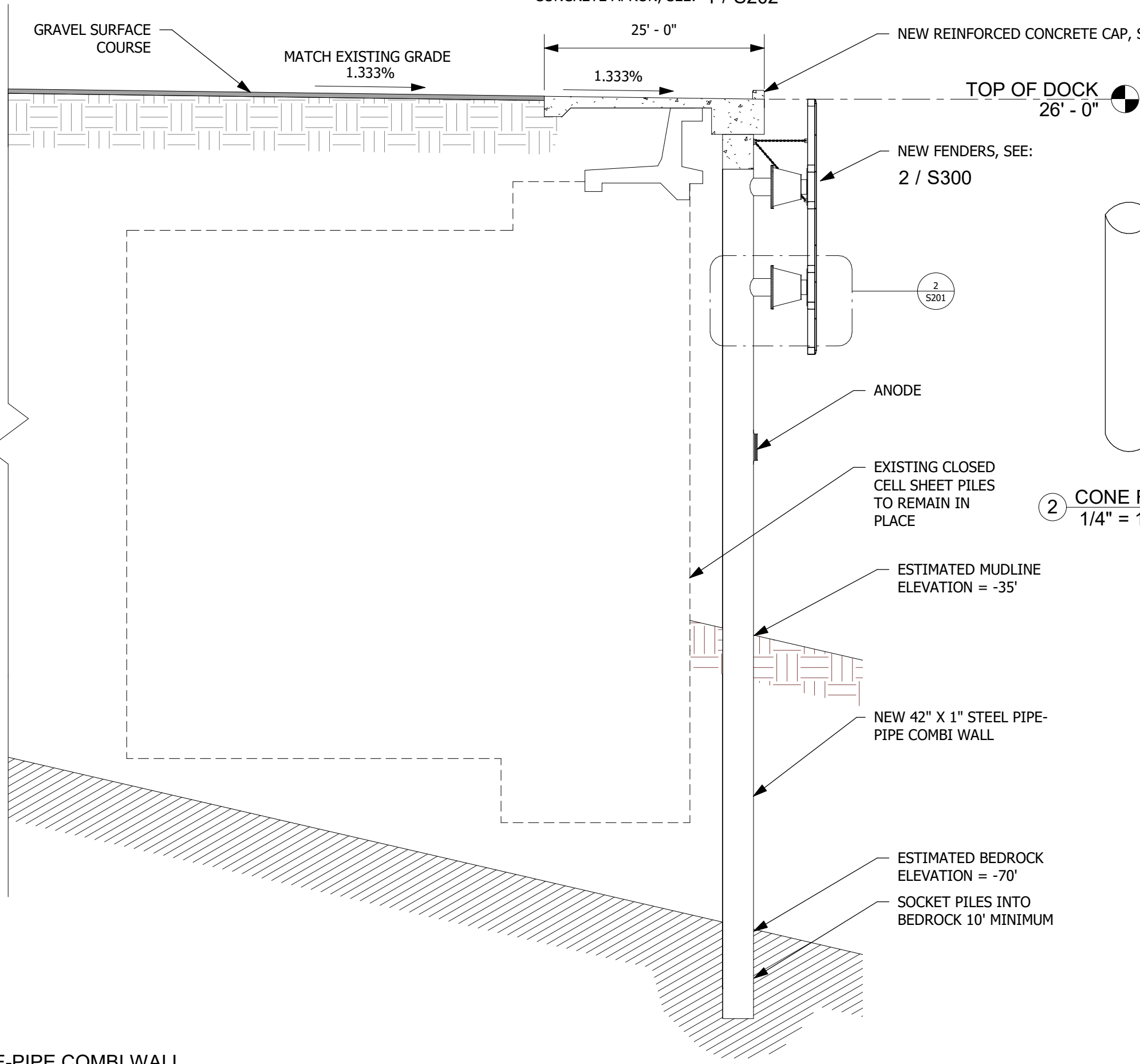
CONCRETE APRON, SEE: 1 / S202

NEW REINFORCED CONCRETE CAP, SEE: 1 / S202

NEW FENDERS, SEE:  
2 / S300

② CONE FENDER CONNECTION DETAIL  
1/4" = 1'-0"

① PIPE-PIPE COMBI WALL  
1 : 150



ANODE

EXISTING CLOSED  
CELL SHEET PILES  
TO REMAIN IN  
PLACE

ESTIMATED MUDLINE  
ELEVATION = -35'

NEW 42" X 1" STEEL PIPE-  
PIPE COMBI WALL

ESTIMATED BEDROCK  
ELEVATION = -70'

SOCKET PILES INTO  
BEDROCK 10' MINIMUM

②  
S201

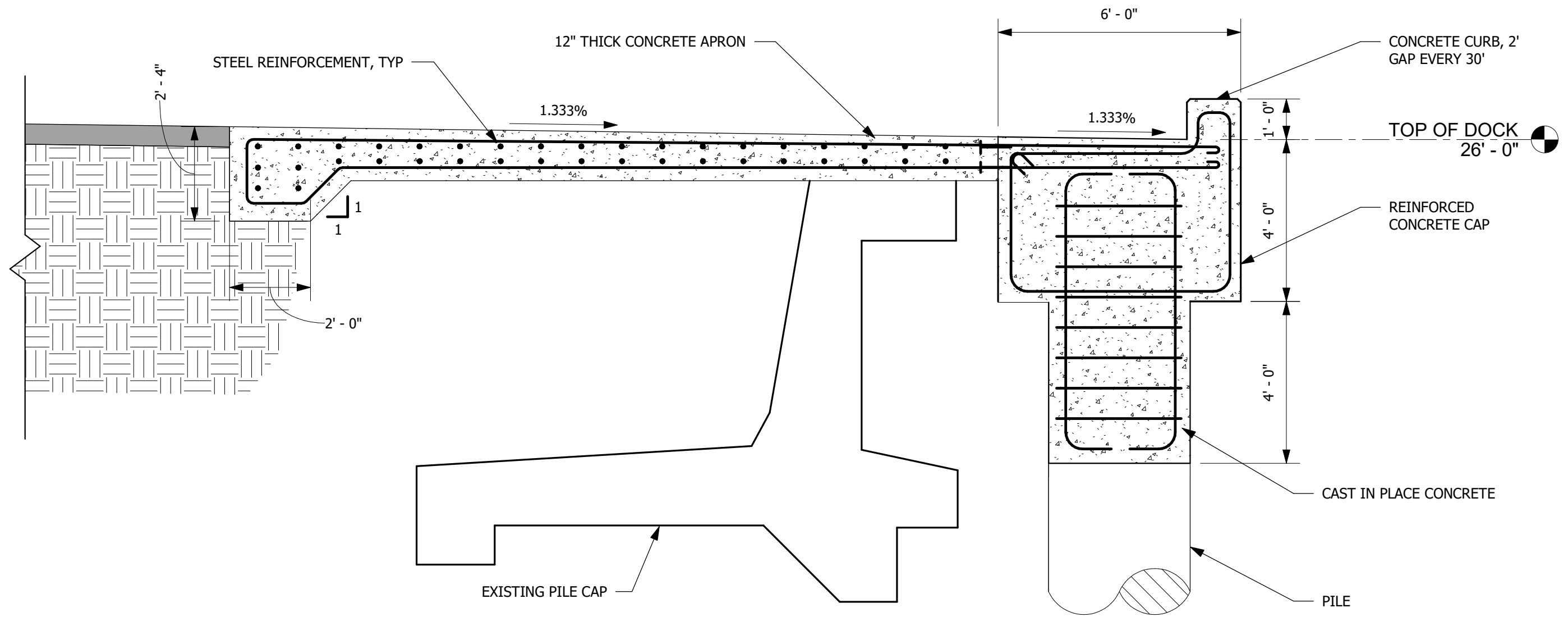
TOP OF DOCK  
26' - 0"

MATCH EXISTING GRADE  
1.333%

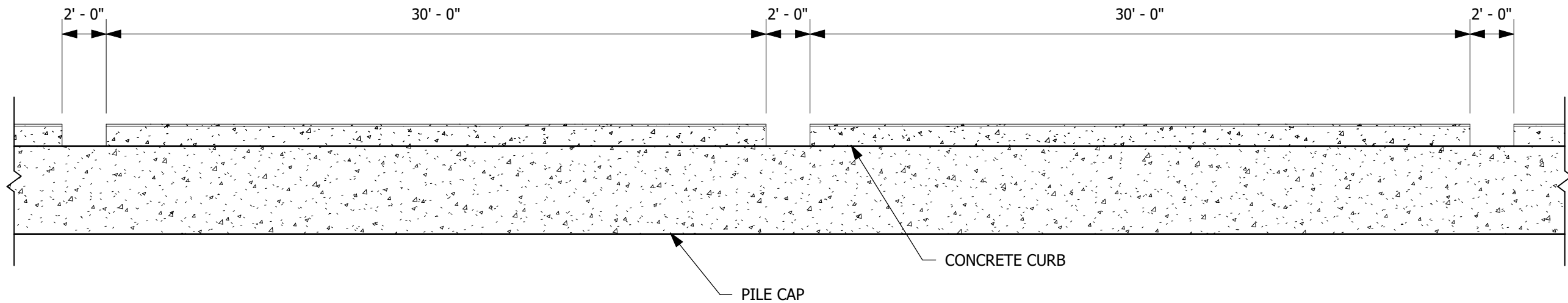
1.333%

25' - 0"

GRAVEL SURFACE  
COURSE



1 REINFORCED CONCRETE APRON SECTION  
3/8" = 1'-0"



2 CURB DETAIL VIEW  
3/16" = 1'-0"



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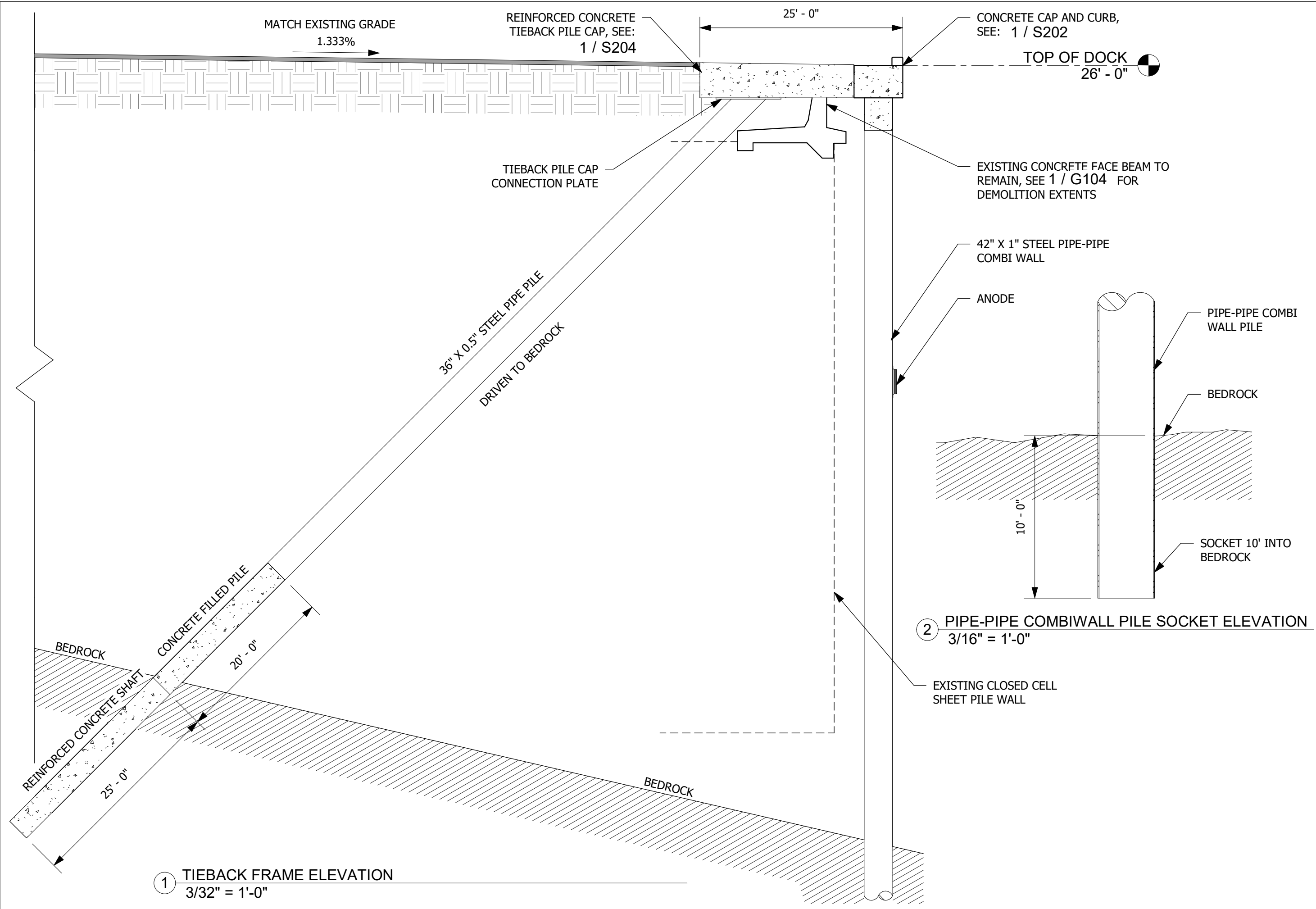
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SHEET TITLE:  
BULKHEAD  
CONCRETE DETAILS

SHEET NUMBER:

**S202**



1 TIEBACK FRAME ELEVATION  
3/32" = 1'-0"

2 PIPE-PIPE COMBIWALL PILE SOCKET ELEVATION  
3/16" = 1'-0"



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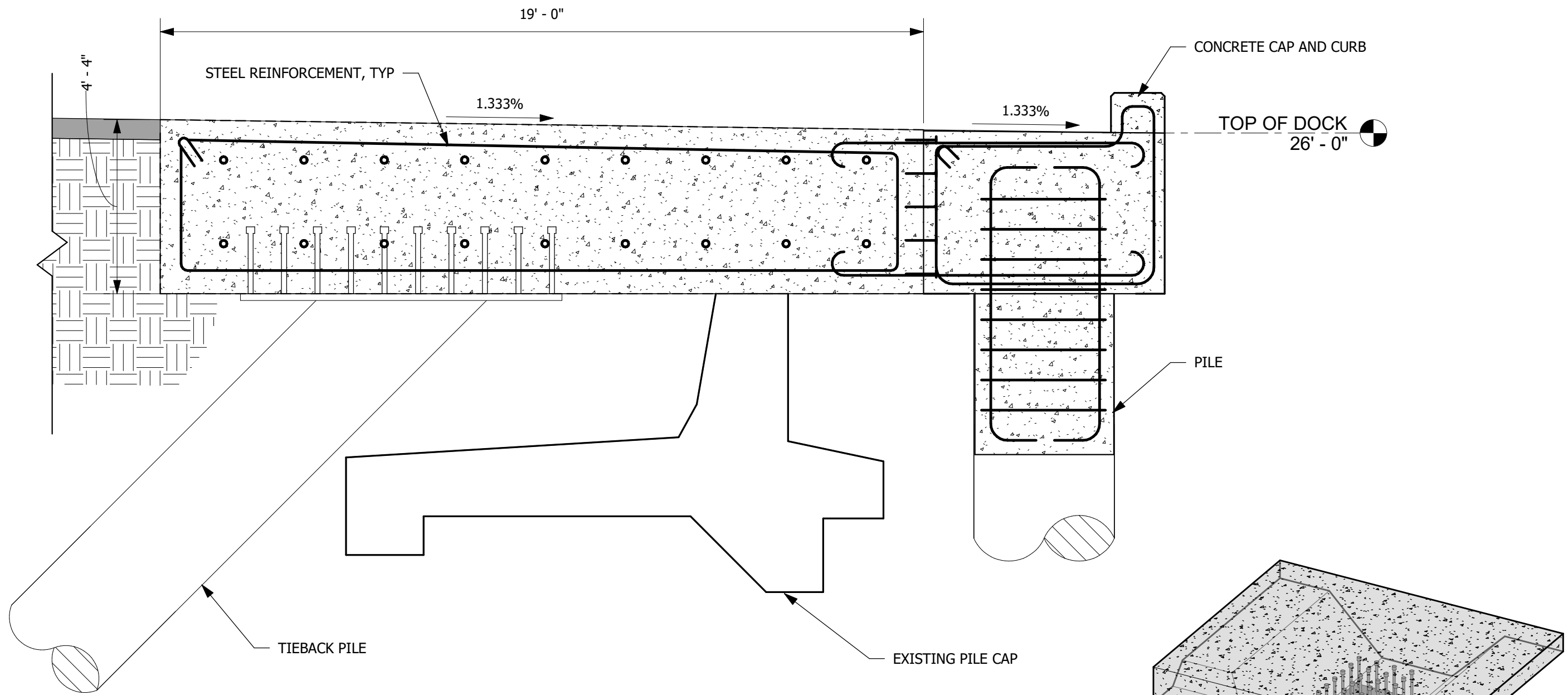


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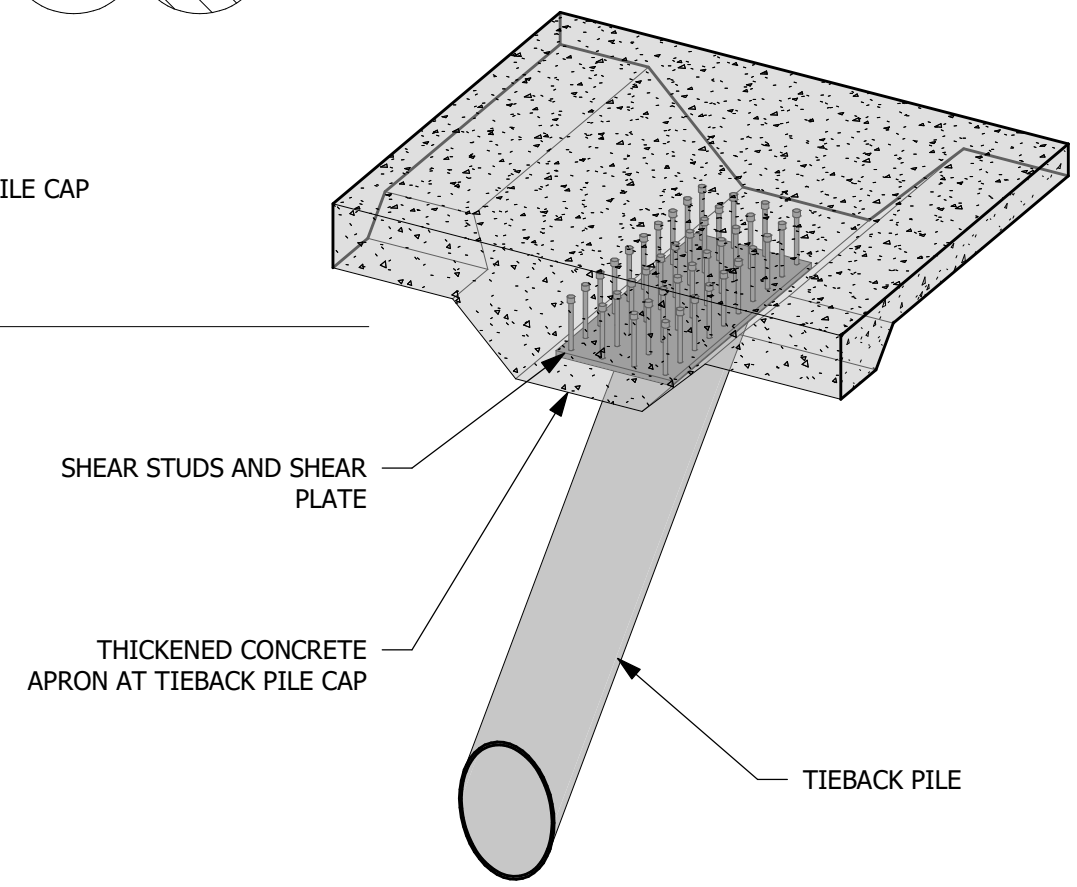
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SHEET TITLE:  
BULKHEAD SECTION  
AT TIEBACK

SHEET NUMBER:  
**S203**



1 DRAG STRUT DETAIL ELEVATION  
3/8" = 1'-0"



2 DRAG STRUT SHEAR PLATE ISOMETRIC



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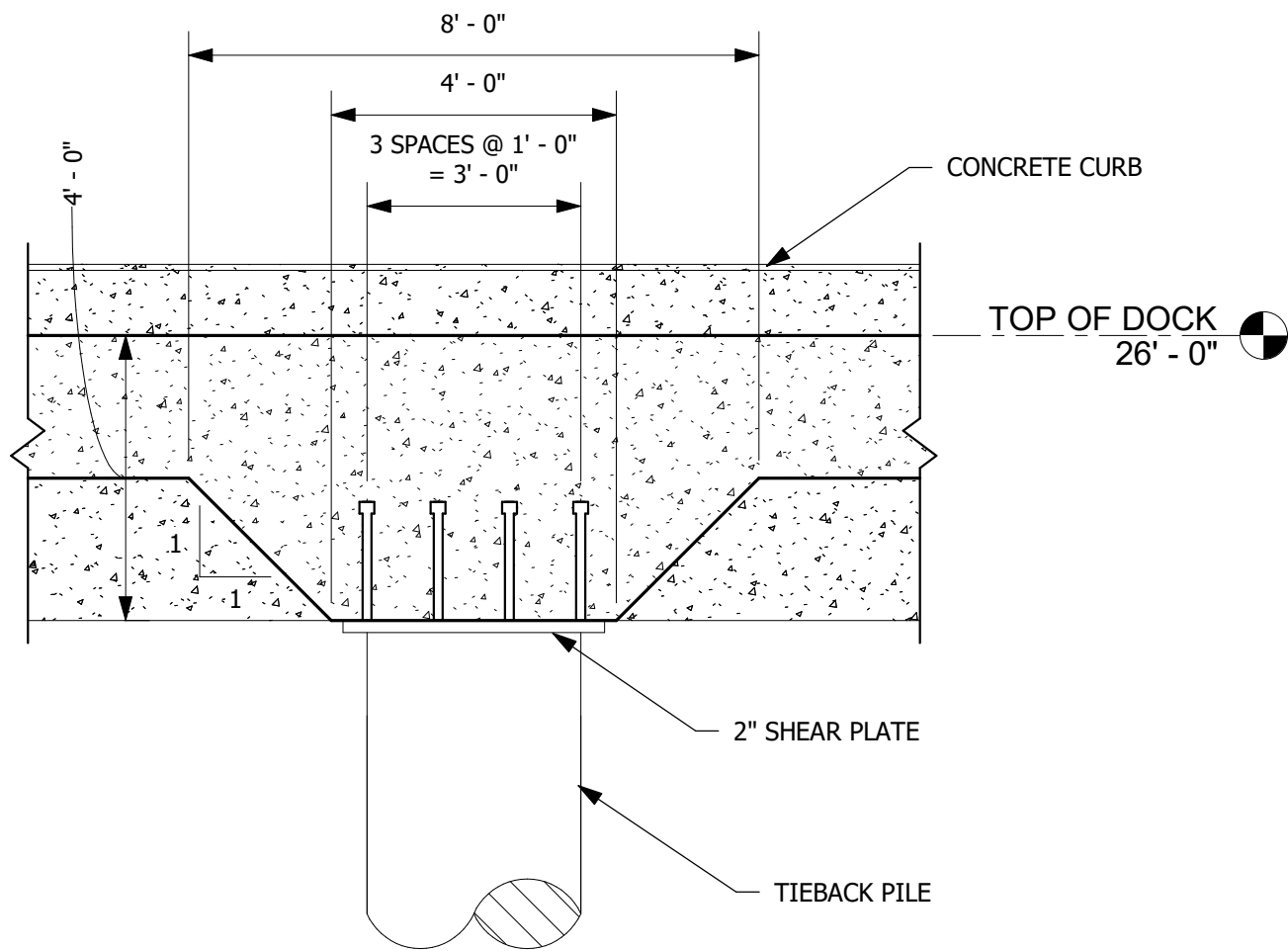
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SHEET TITLE:  
BULKHEAD TIEBACK  
DETAILS

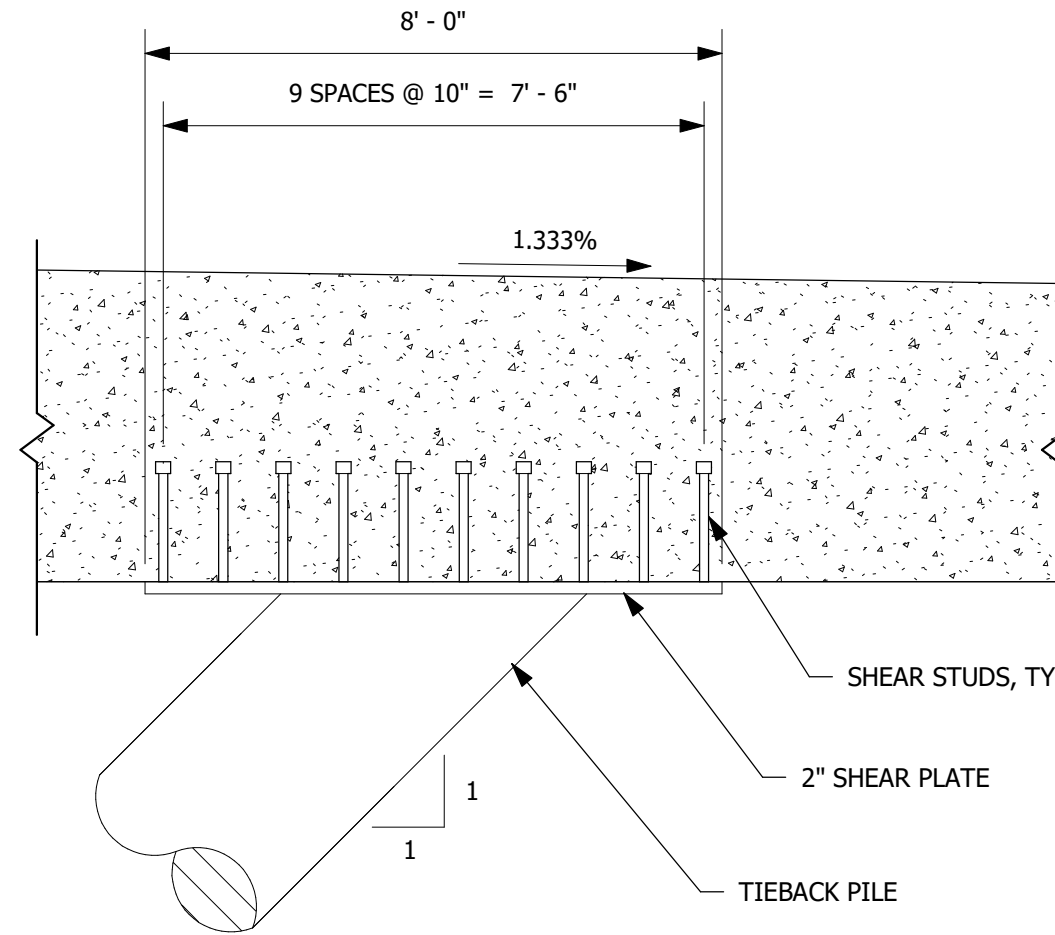
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**S204**





① TIEBACK BACK SECTION  
3/8" = 1'-0"



② DRAG STRUT PLATE DETAIL  
3/8" = 1'-0"



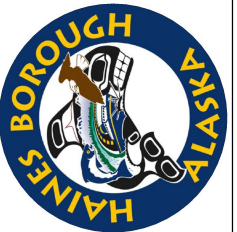
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REPLACEMENT  
HAINES, ALASKA



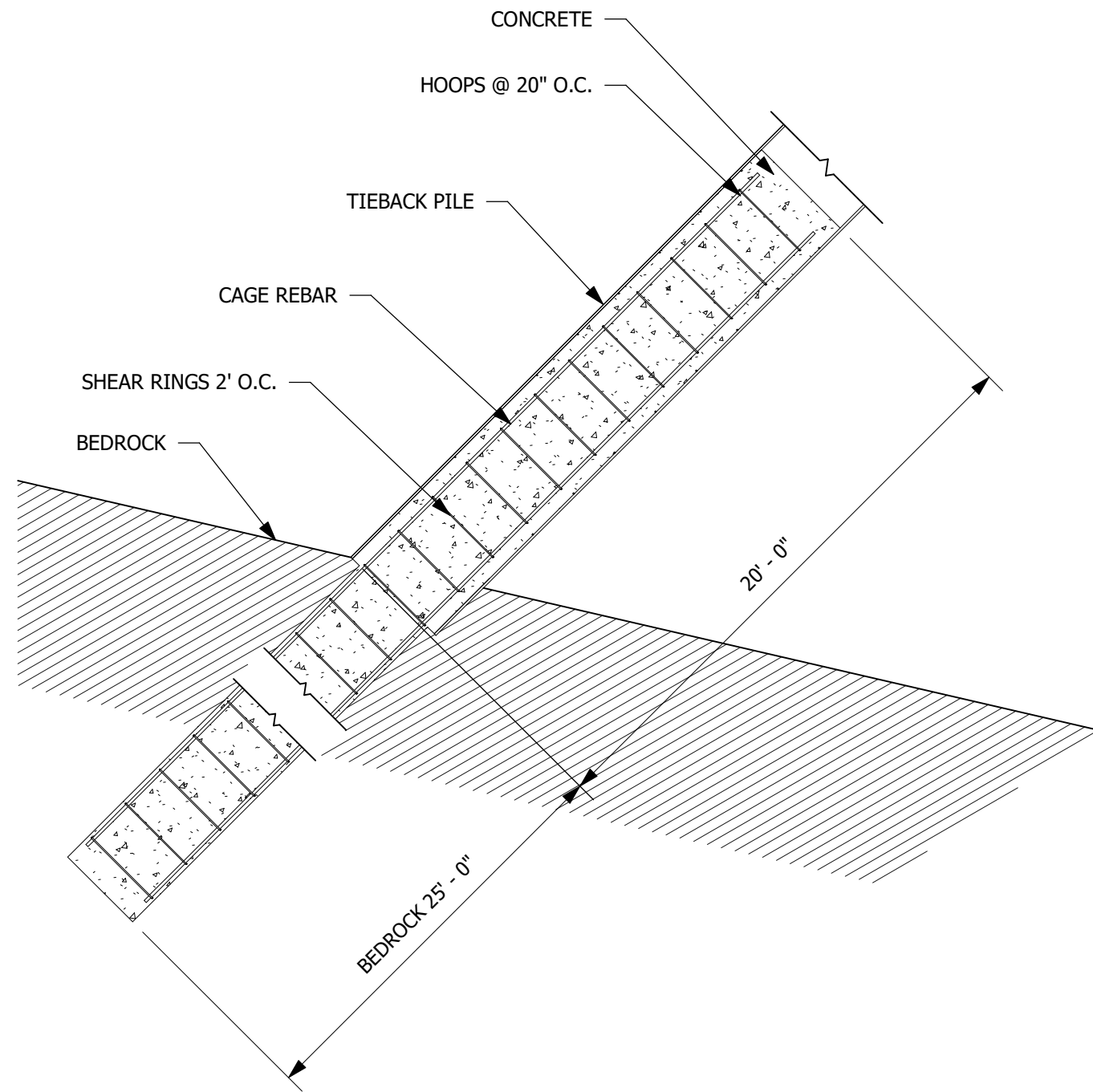
REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

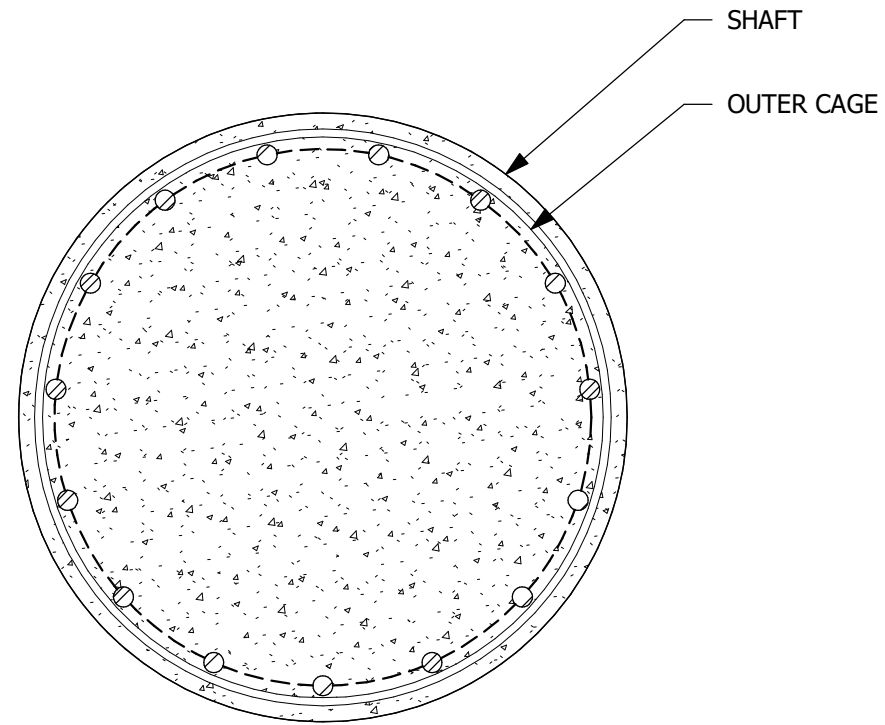
SHEET TITLE:  
BULKHEAD TIEBACK  
DETAILS

SHEET NUMBER:

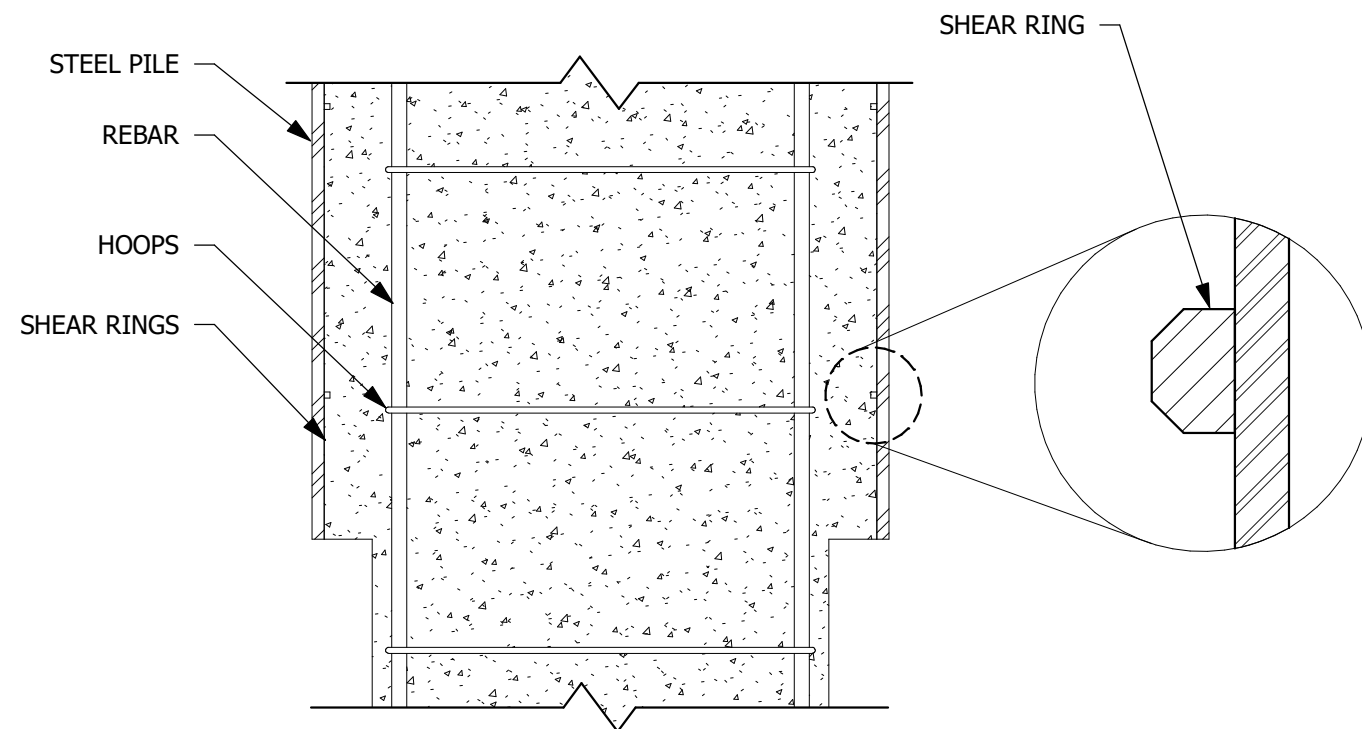
**S205**



1 TIEBACK CONCRETE PILE SHAFT ELEVATION  
3/16" = 1'-0"



2 CONCRETE PILE SHAFT PLAN  
1" = 1'-0"



3 CONCRETE PILE SHAFT DETAIL  
3/4" = 1'-0"



**Turnagain**

Marine Construction  
5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

65%  
DESIGN

LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA



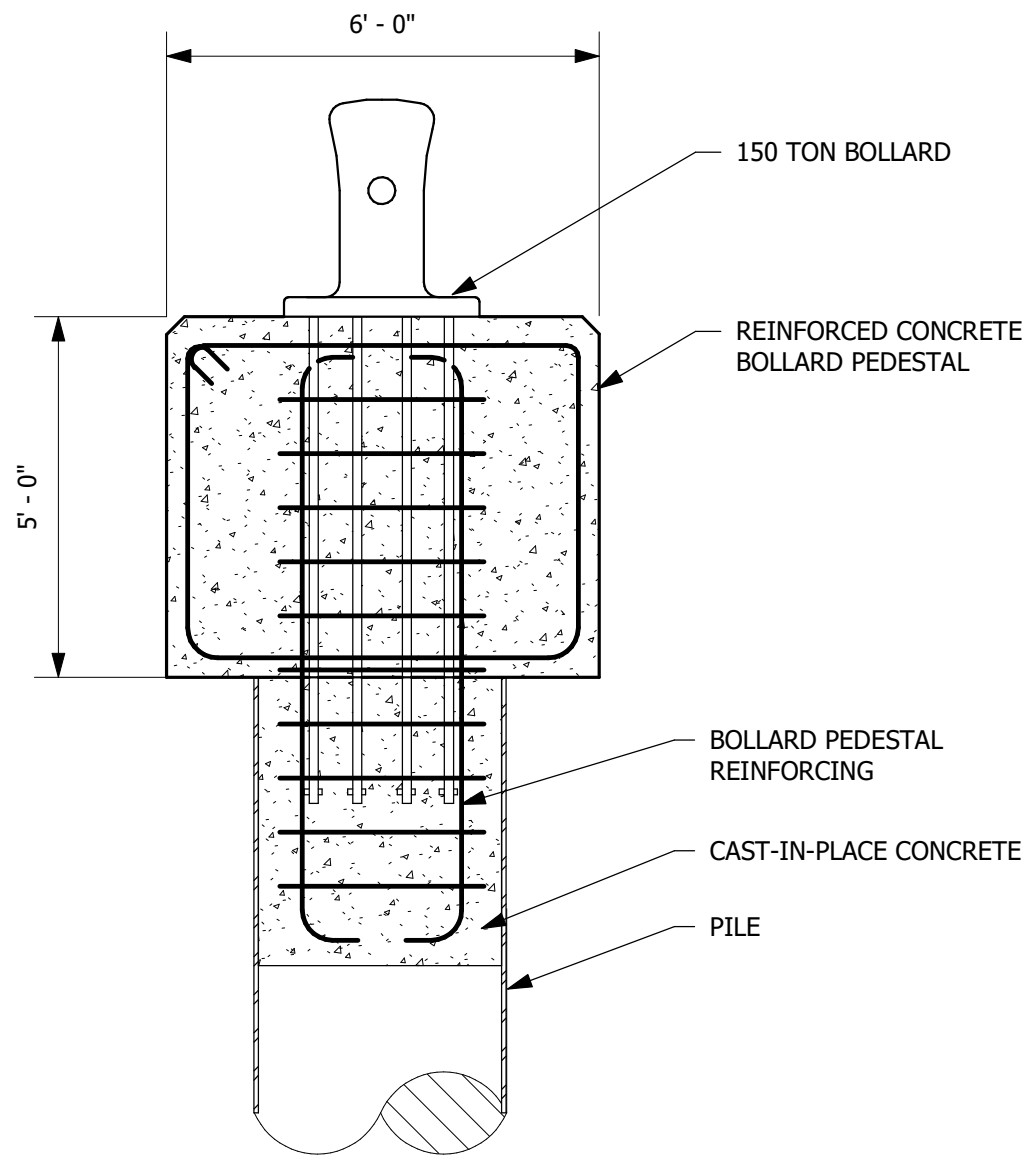
REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

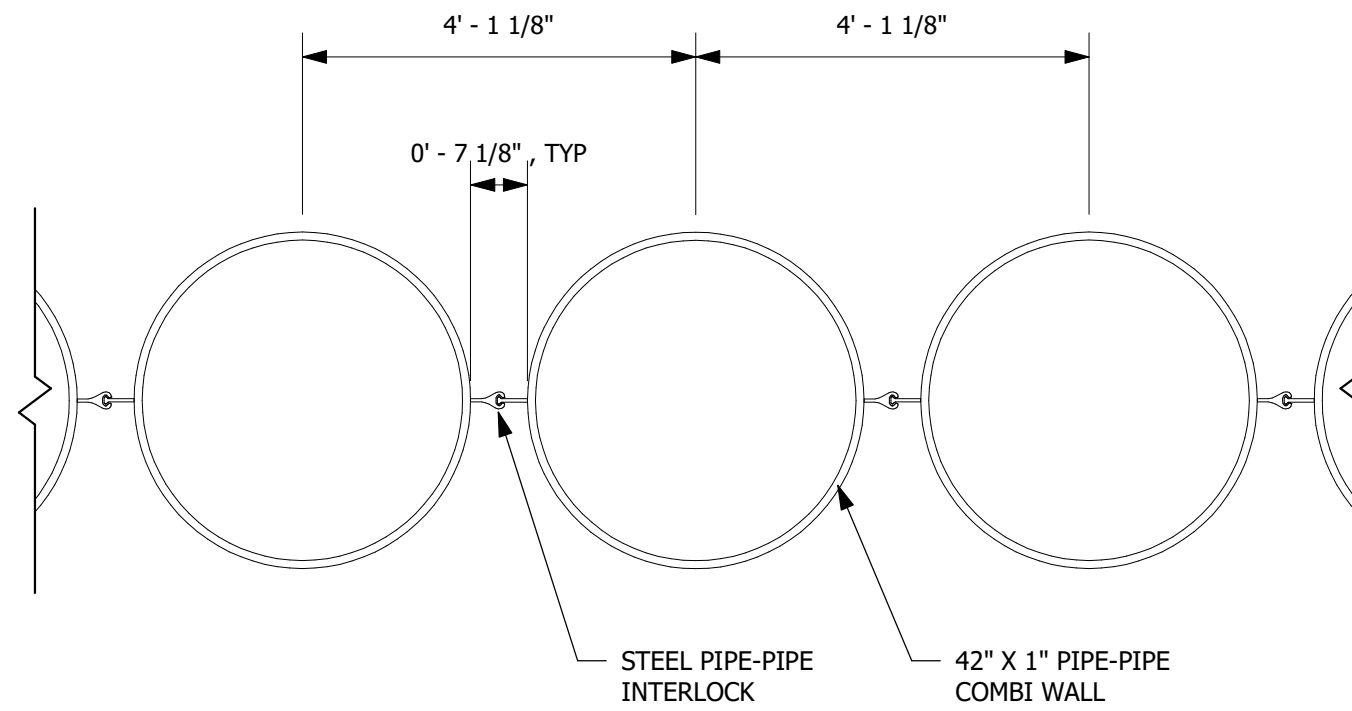
SHEET TITLE:  
TIEBACK CONCRETE  
PILE SHAFT DETAILS

SHEET NUMBER:

**S206**



① BOLLARD DETAIL  
3/8" = 1'-0"



② PIPE-PIPE COMBI WALL PLAN VIEW  
1/2" = 1'-0"



**Turnagain**  
Marine Construction  
5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

**65%  
DESIGN**

**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



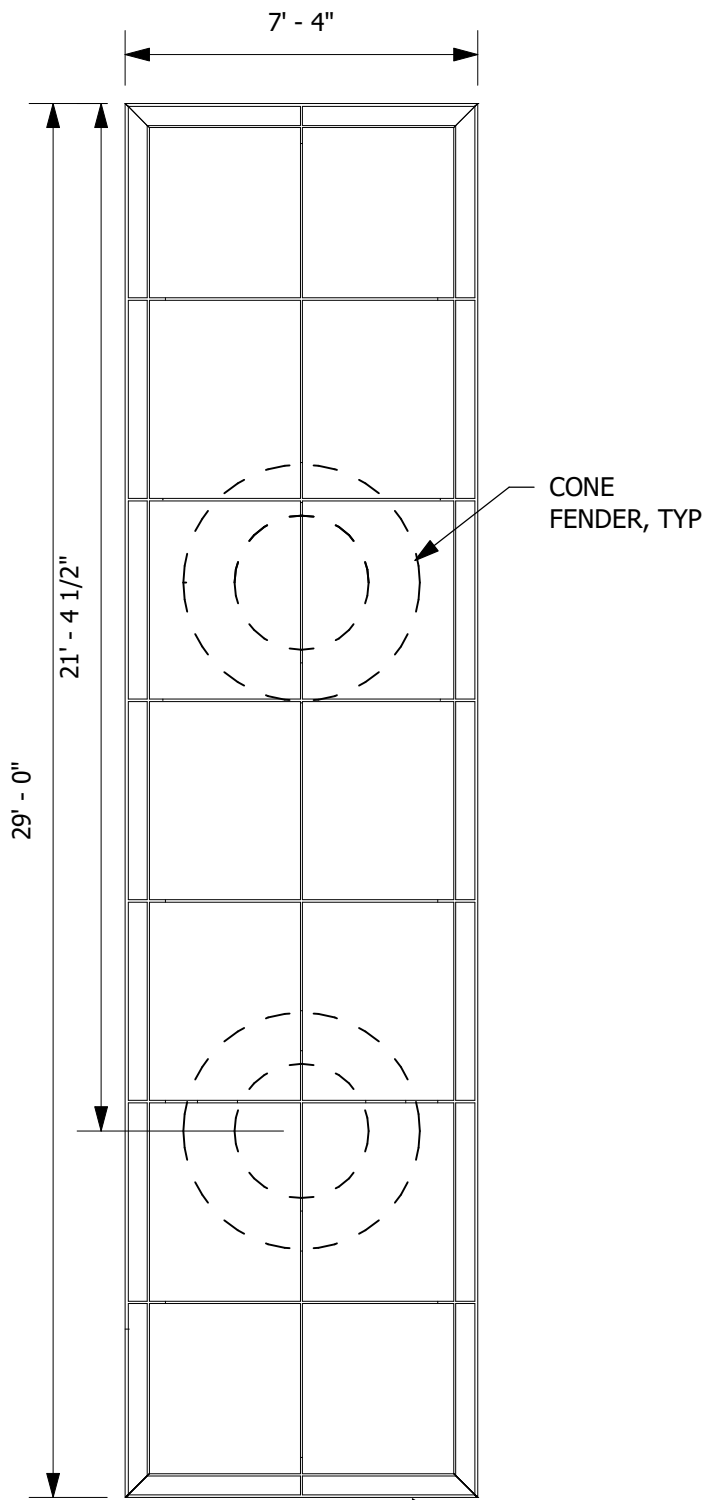
REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

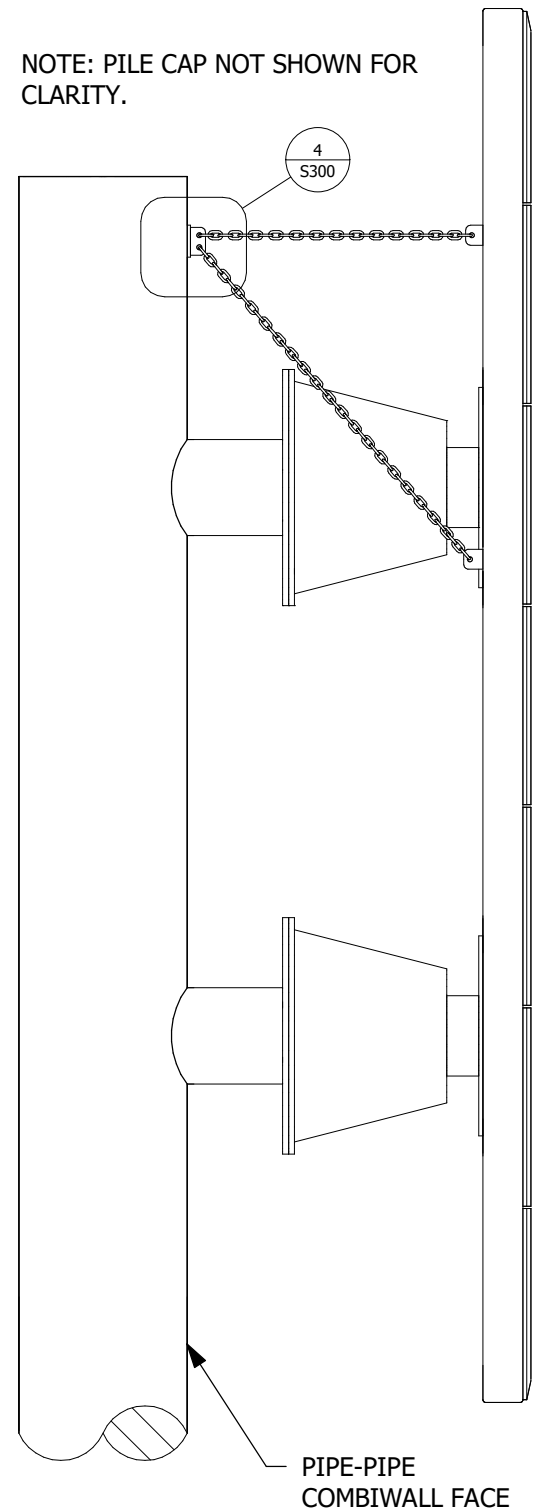
SHEET TITLE:  
BULKHEAD  
MISCELLANEOUS  
DETAILS

SHEET NUMBER:

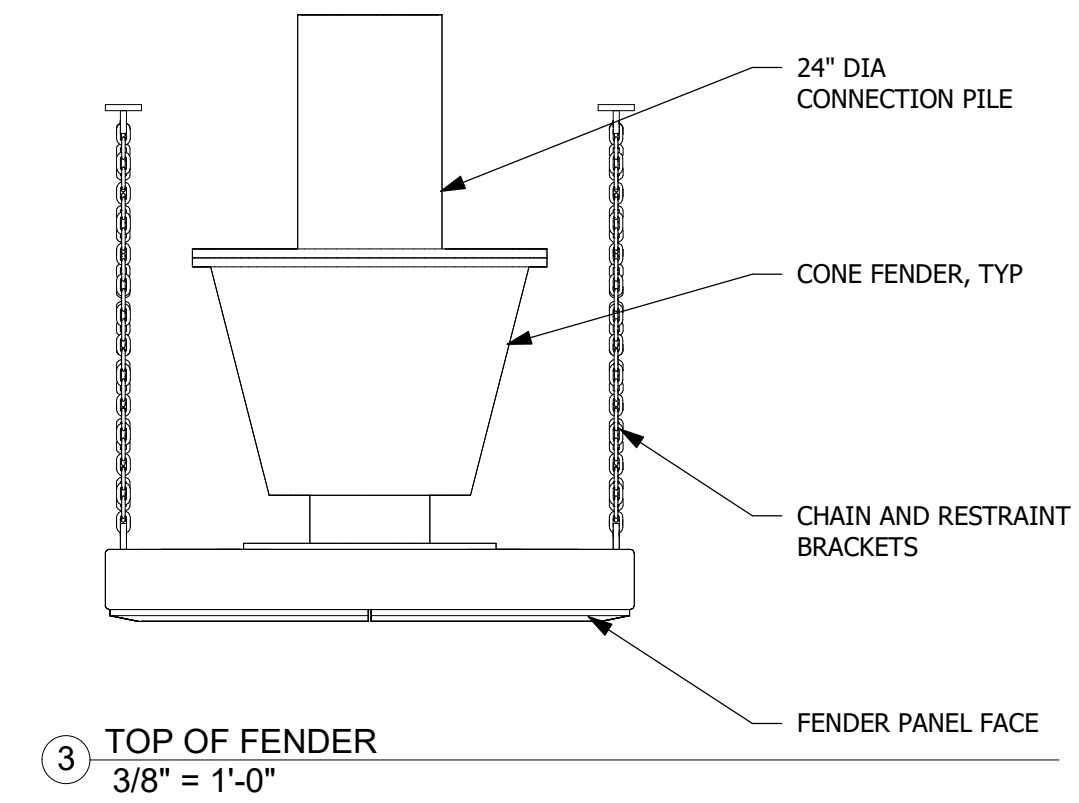
**S207**



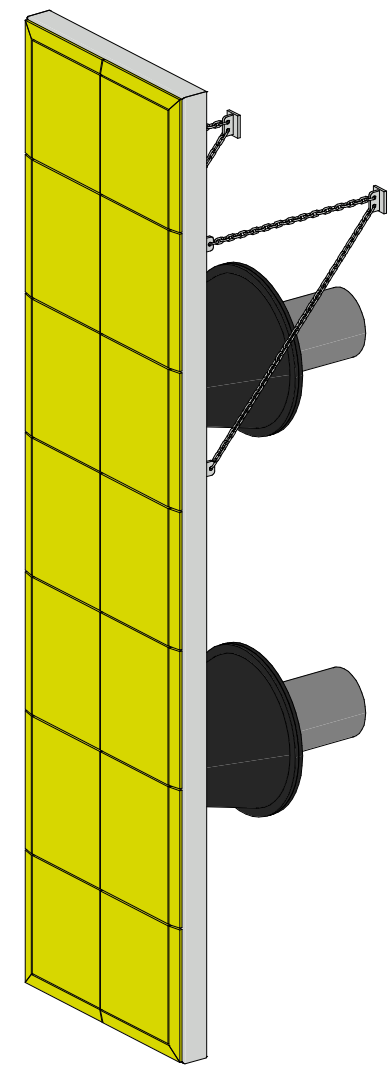
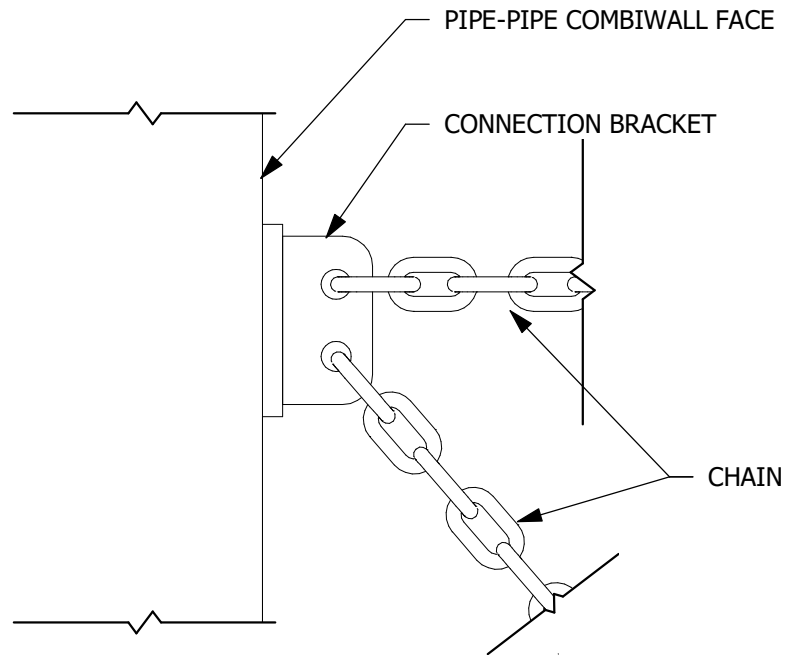
1 FENDER PANEL FRONT ELEVATION  
1/4" = 1'-0"



2 FENDER PANEL SIDE ELEVATION  
1/4" = 1'-0"



4 FENDER CHAIN PLATE DETAIL  
1 1/2" = 1'-0"



**Turnagain**  
Marine Construction  
5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

**65%  
DESIGN**

**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**

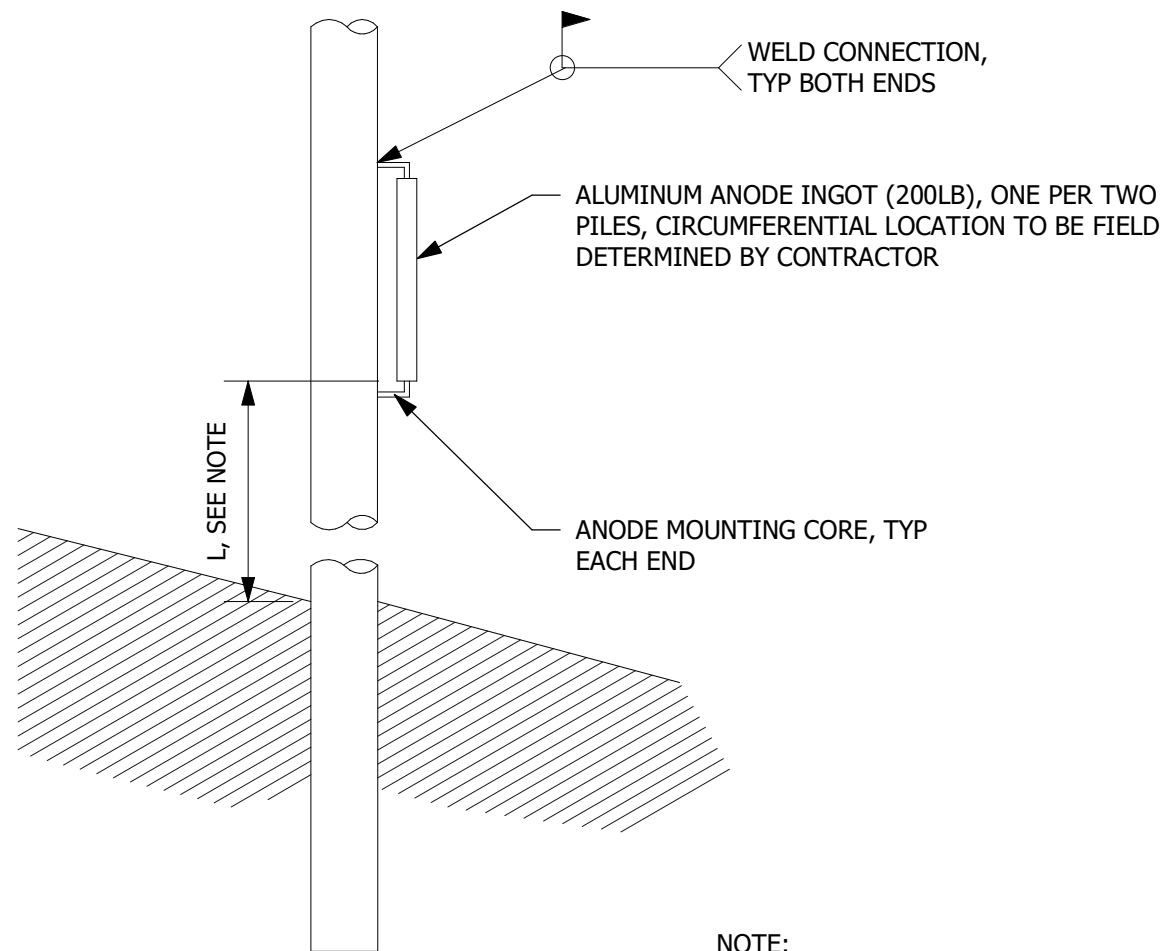


REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

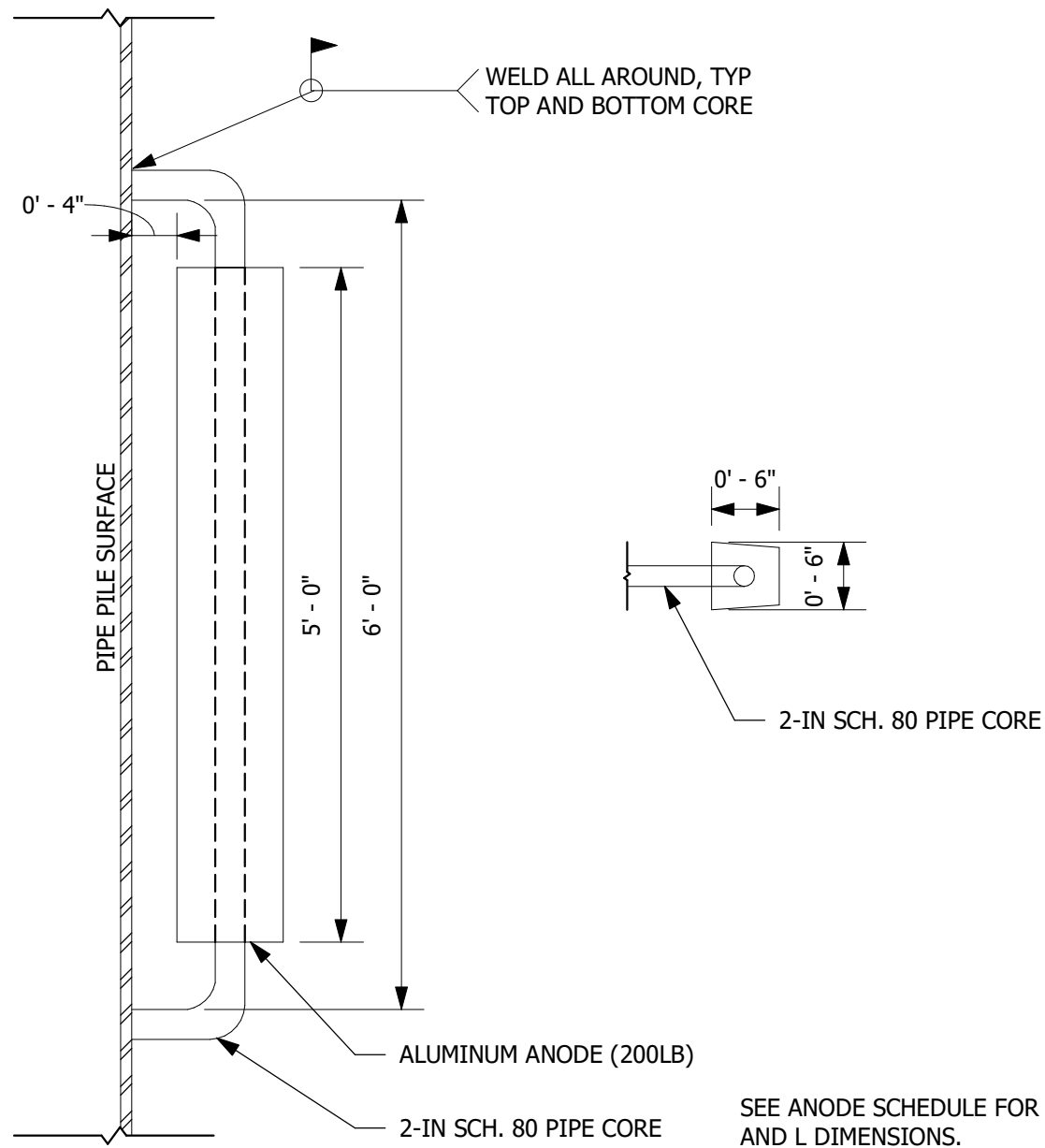
SHEET TITLE:  
FENDER DETAILS

SHEET NUMBER:  
**S300**



NOTE:  
PIPE-PIPE COMBI WALL L = 15-FT

1 ANODE ARRANGEMENT  
1/2" = 1'-0"



SEE ANODE SCHEDULE FOR H, W,  
AND L DIMENSIONS.

2 ANODE / PILE INSTALLATION  
3/4" = 1'-0"



**Turnagain**  
Marine Construction  
5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

**65%  
DESIGN**

LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA



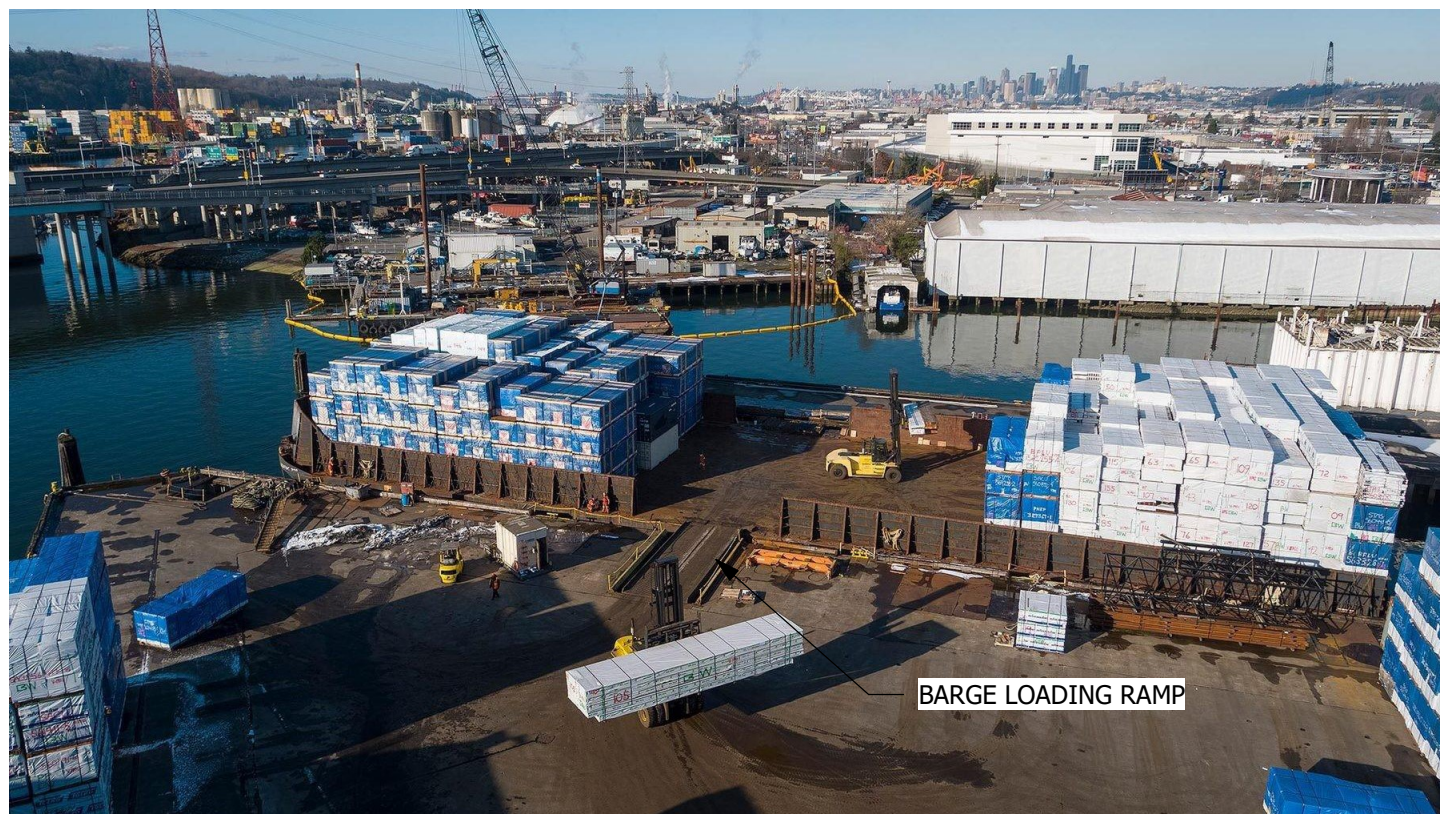
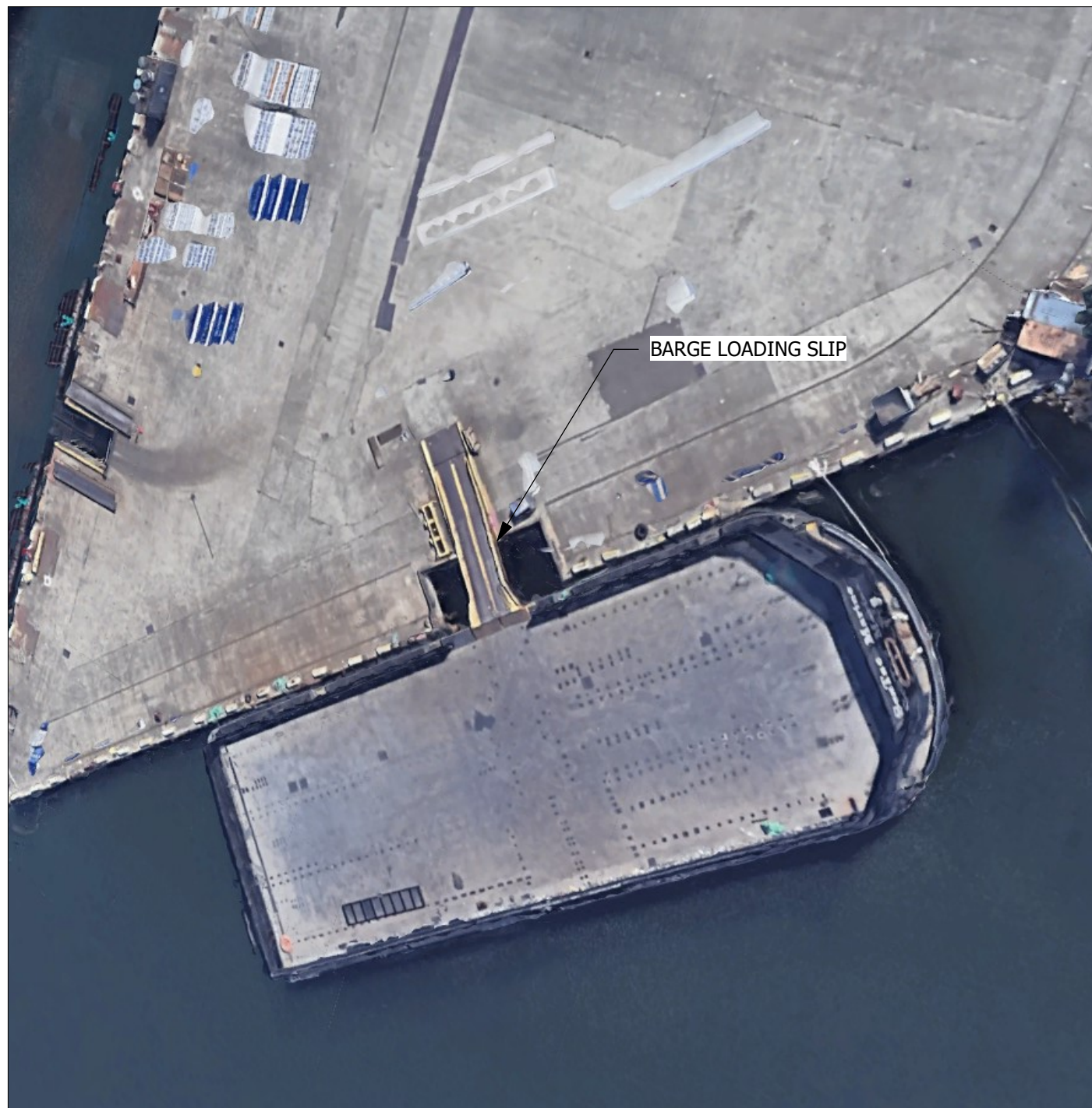
REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

SHEET TITLE:  
ANODE DETAILS

SHEET NUMBER:

**S301**



**Turnagain**

Marine Construction  
 5050 CORDOVA STREET  
 ANCHORAGE, AK 99503  
 PHONE: (907) 261-8960  
 CORPORATE AUTHORIZATION  
 NUMBER: 161179

PROJECT NUMBER:  
 22-010

**65%  
 DESIGN**

**LUTAK DOCK  
 REPLACEMENT  
 HAINES, ALASKA**



REV#	DESCRIPTION	DATE

ISSUE DATE:  
 JANUARY 30, 2023

SHEET TITLE:  
 BARGE LOADING  
 SLIP EXAMPLES

SHEET NUMBER:  
**S400**



**Turnagain**

Marine Construction  
 5050 CORDOVA STREET  
 ANCHORAGE, AK 99503  
 PHONE: (907) 261-8960  
 CORPORATE AUTHORIZATION  
 NUMBER: 161179

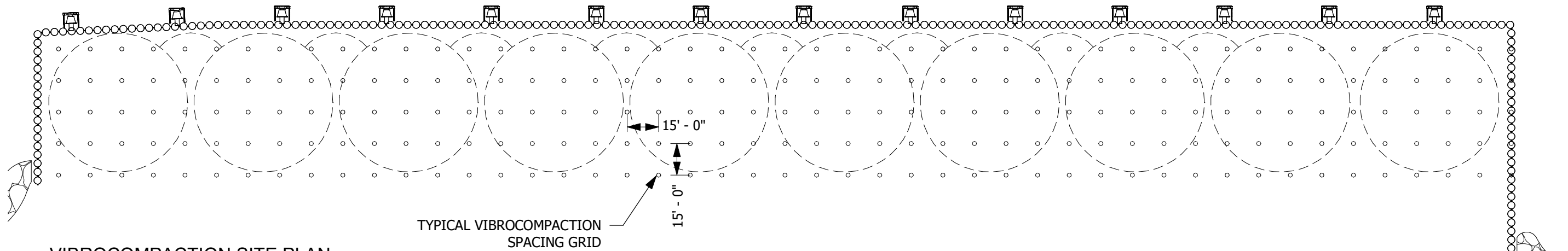
PROJECT NUMBER:  
 22-010

**65%  
 DESIGN**

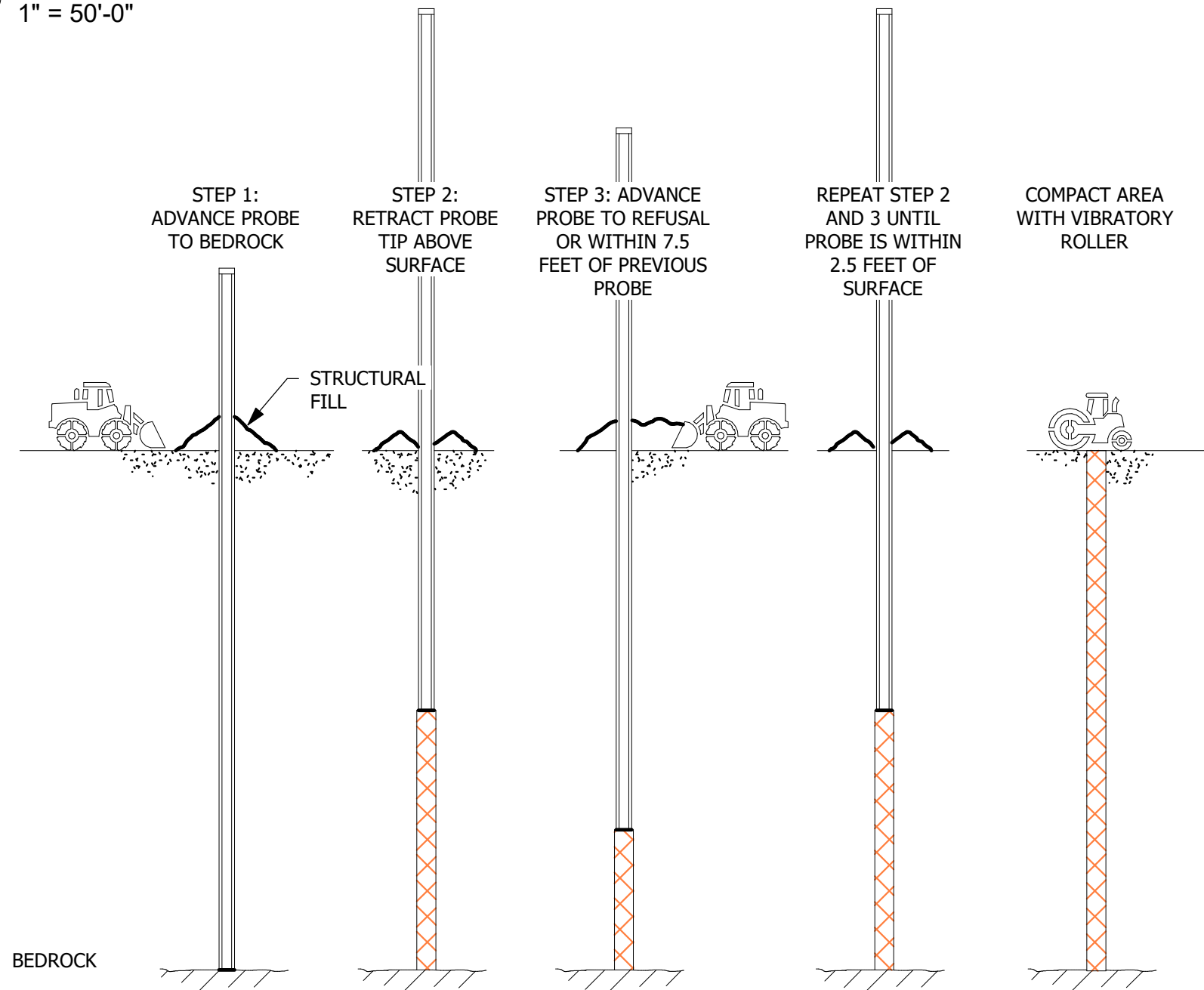
**LUTAK DOCK  
 REPLACEMENT  
 HAINES, ALASKA**



NEW PIPE-PIPE COMBI WALL DOCK



**1 VIBROCOMPACTION SITE PLAN**  
 1" = 50'-0"



BEDROCK

**2 VIBROCOMPACTION PLAN**  
 1 : 75

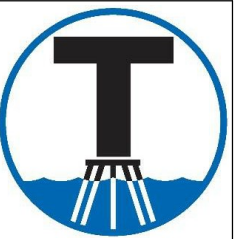
REV#	DESCRIPTION	DATE

ISSUE DATE:  
 JANUARY 30, 2023

SHEET TITLE:  
 VIBROCOMPACTION  
 PLAN

SHEET NUMBER:

**S500**



# Turnagain

Marine Construction  
5050 CORDOVA STREET  
ANCHORAGE, AK 99503  
PHONE: (907) 261-8960  
CORPORATE AUTHORIZATION  
NUMBER: 161179

PROJECT NUMBER:  
22-010

**65%  
DESIGN**

**LUTAK DOCK  
REPLACEMENT  
HAINES, ALASKA**



REV#	DESCRIPTION	DATE

ISSUE DATE:  
JANUARY 30, 2023

SHEET TITLE:  
COORDINATION  
FIGURE FOR  
DISCUSSION

SHEET NUMBER:

**R100**

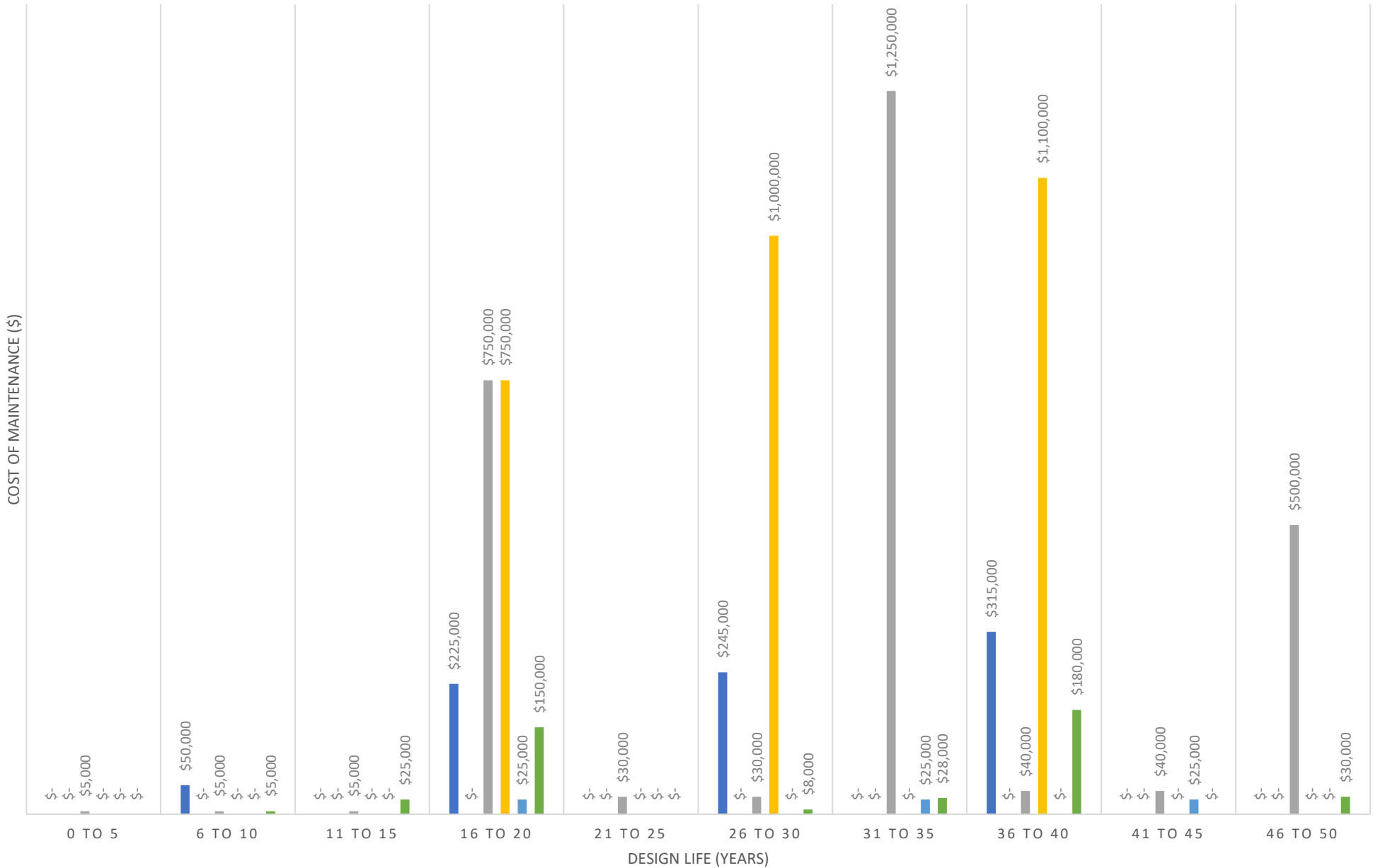
① COORDINATION FIGURE FOR DISCUSSION  
1 : 1450



# MINIMUM LEVEL OF MAINTENANCE

## TOTAL 50 YEAR PROJECTED SPEND: \$6,841,000

- Periodic Inspections
- Coating Repair on Pipe Pile Wall
- Fender Maintenance and Repairs
- Anode Replacement
- Site Grading and Civil Maintenance
- Lighting and Electrical Maintenance



# HIGH LEVEL OF MAINTENANCE

## TOTAL 50 YEAR PROJECTED SPEND: \$10,638,000

- Periodic Inspections
- Coating Repair on Pipe Pile Wall
- Fender Maintenance and Repairs
- Anode Replacement
- Site Grading and Civil Maintenance
- Lighting and Electrical Maintenance

