BINDING EDGE

PORT OF TACOMA

TACOMA, WASHINGTON
BLAIR TERMINAL FENDER UPGRADES - PROJECT NO. 201104.01
CONTRACT NO. 071403

PORT COMMISSIONERS:

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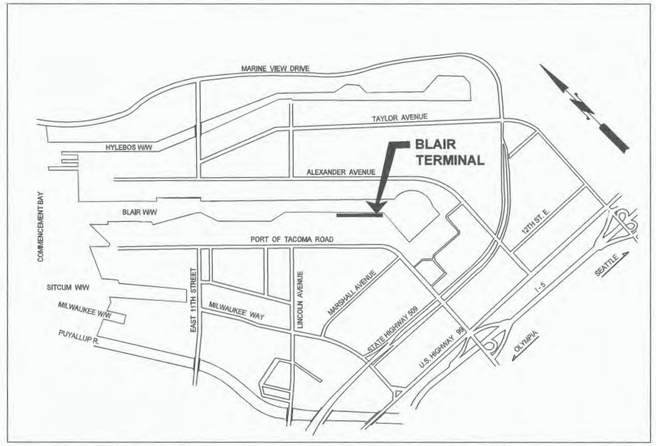
AREA MAP — **WASHINGTON**

NO SCALE



VICINITY MAP — **PORT OF TACOMA**

NO SCALE

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BRUCE I. OSTOLIN — STATE OF WASHINGTON — 10/19/2020

T.J.SCHILLING 10/19/20 CHECKED BY DATE
B.OSTBO 10/19/20 PROJ. ENGR DATE
DIRECTOR ENG: DATE
PRINTED BY: talston Oct 19, 2020
PORT ADDRESS:ONE SITCUM PLAZA
TACOMA, WA 98401-1837

APPROVED: 10/20/2020

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
COVER SHEET

T1.0
1 OF 11

CONT/CONS:	071403	TOWNSHIP: 21N	RANGE: 3E	SECTION: 35	
M. ID:	201104.01	DAT-HRZ: WA83-SF	VERT: MLLW 19.39 @ Tide 22 1933		
PHASE:	FOR BID	PARCEL: 0321354035	DRAWING SCALE: AS NOTED		

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GENERAL NOTES

1. THESE NOTES CONTAIN GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL VERIFY INFORMATION PROVIDED IN DRAWINGS WITH THE SPECIFICATIONS AND OTHER DOCUMENTS AND BRING ANY CONFLICTS TO THE ATTENTION OF THE ENGINEER BEFORE BEGINNING AFFECTED WORK. THE ENGINEER WILL RESOLVE ANY SUCH CONFLICT.
2. THE FACILITIES WILL BE IN OPERATION DURING THE DURATION OF THIS PROJECT. THE CONTRACTOR SHALL KEEP ITS WORKERS, MATERIAL, AND EQUIPMENT CLEAR OF ALL TERMINAL AND SHIPPING OPERATIONS AND SHALL NOT IN ANY WAY HINDER OR DISRUPT PORT OR TENANT OPERATIONS.
3. THE PROJECT SITE IS LOCATED ALONG AN ACTIVE SHIPPING CHANNEL. AT NO TIME SHALL THE CONTRACTOR OBSTRUCT OR HINDER SHIPPING ACTIVITIES WITHIN THE CHANNEL. ALL WATER BORNE CONSTRUCTION EQUIPMENT SHALL BE MOORED OUT OF THE SHIPPING CHANNEL OR AS DIRECTED BY THE PORT. NO MOORING LINES OR ANCHORS SHALL BE PLACED WITHIN THE CHANNEL. ALL TERMINAL FACILITIES SHALL BE IN OPERATIONAL ORDER BEFORE NEXT VESSEL ARRIVES.
4. ALL DIMENSIONS AND DETAILS (INCLUDING EXISTING MEMBER AND HARDWARE SIZES) SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
5. ALL ELEVATIONS REFER TO MEAN LOWER LOW WATER (MLLW) ELEVATION 0.00 FT.
6. EXISTING FEATURES SHOWN ON THESE DRAWINGS ARE BASED ON EXISTING REFERENCE DRAWINGS AND RECENT FIELD SURVEYS. THE CONTRACTOR SHALL IMMEDIATELY BRING ANY CONFLICTS TO THE ENGINEER'S ATTENTION.
7. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE THE ADEQUACY OF THE EXISTING STRUCTURE TO SUPPORT CONSTRUCTION EQUIPMENT AND LOADS. ANY DAMAGE TO EXISTING FEATURES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REVIEWED BY THE ENGINEER AND REPAIRED AT THE CONTRACTOR'S EXPENSE.
8. THE DESIGN INTENT OF THIS PROJECT IS TO MATCH THE CAPACITY OF THE EXISTING PIER FENDER SYSTEM TO ALLOW 10 TO 15 ADDITIONAL YEARS OF SIMILAR USE.

CODES AND STANDARDS

1. ALL METHODS AND MATERIALS SHALL CONFORM TO THE INTERNATIONAL BUILDING CODE, 2015 EDITION, AS AMENDED AND ADOPTED BY THE CITY OF TACOMA.
2. REINFORCED CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"(ACI 301) AND "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"(ACI 318). LATEST EDITIONS.
3. MISCELLANEOUS STEEL FABRICATION AND ERECTION THEREOF SHALL CONFORM TO THE "AISC STEEL CONSTRUCTION MANUAL." LATEST EDITION.
4. TIMBER WORK SHALL CONFORM TO THE LATEST EDITION OF "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION"(NDS) AND THE LATEST EDITION OF "AITC TIMBER CONSTRUCTION MANUAL."

DEMOLITION

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE ADEQUACY OF THE EXISTING STRUCTURES AND UTILITIES TO SUPPORT DEMOLITION EQUIPMENT AND LOADS.
2. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO CONTAIN THE DEMOLITION WITHIN THE LIMITS DESIGNATED, TO AVOID DAMAGE TO EXISTING STRUCTURES, UTILITIES, OR FACILITIES, AND TO KEEP ALL DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL PROVIDE FLOATS OR FALSEWORK TO CATCH ALL FALLING DEBRIS UNDER ALL OVERWATER DEMOLITION.
3. A FLOATING DEBRIS BOOM SHALL BE USED AS SPECIFIED IN THE SPECIFICATIONS.
4. ALL DEMOLITION MATERIAL, EXCEPT AS NOTED AND/OR SPECIFIED, SHALL BE COMPLETELY REMOVED AND DISPOSED OF BY THE CONTRACTOR, IN ACCORDANCE WITH THE PROJECT PERMITS.

POST-INSTALLED ANCHORS

1. DRILLING HAMMERS FOR ANCHOR HOLES SHALL BE PNEUMATIC ROTARY TYPE WITH MEDIUM OR LIGHT IMPACT. HOLES SHALL NOT BE CORE DRILLED UNLESS APPROVED BY THE ENGINEER.
2. LOCATE DRILLED HOLES TO AVOID EXISTING REINFORCING STEEL AND OTHER EMBEDDED OBJECTS. PRIOR TO DRILLING, LOCATE THE EXISTING REINFORCEMENT USING A PACHOMETER OR OTHER NON-DESTRUCTIVE METHODS APPROVED BY THE ENGINEER. IF EXISTING REINFORCING STEEL IS ENCOUNTERED, OBTAIN APPROVAL FROM THE ENGINEER FOR RELOCATING AND RE-DRILLING THE HOLE. PATCH INCOMPLETE HOLES, OR THOSE THAT EXPOSE REINFORCING STEEL.
3. EYEBOLTS WILL BE FURNISHED BY THE PORT.
4. CONTRACTOR TO FURNISH THE EPOXY ADHESIVE.

GROUT AND DOWEL ADHESIVE

1. SEE SPECIFICATIONS.

MISCELLANEOUS STEEL

1. MISCELLANEOUS STEEL SHAPES AND PLATES, SHALL CONFORM TO ASTM A572 GRADE 50, UNLESS OTHERWISE NOTED.
2. HIGH STRENGTH BOLTS SHALL CONFORM TO ASTM F3125 GRADE A325.
3. BOLTS INCLUDING ECONOMY BOLTS SHALL CONFORM TO ASTM A307
4. NUTS SHALL CONFORM TO ASTM A563, UNLESS OTHERWISE NOTED.
5. WASHERS SHALL BE WIDE TYPE WITH MAXIMUM THICKNESS AND CONFORM TO ASTM F436 FOR HIGH STRENGTH BOLTS, AND ASTM A844 FOR ECONOMY BOLTS.
6. ALL WELDING SHALL CONFORM TO AWS D1.1.
7. USE 70EXX ELECTRODES, UNLESS NOTED OTHERWISE.
8. THREADED ROD SHALL CONFORM TO ASTM A36.
9. ALL METAL FABRICATIONS, INCLUDING WALES, CHOCKS, AND PILE CONNECTION BRACKETS SHALL BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS.
10. HOT DIP GALVANIZE ALL STEEL MATERIALS NOT DESIGNATED TO BE COATED IN ACCORDANCE WITH ASTM A123.
11. SEE SPECIFICATIONS FOR FIELD TOUCH-UP OF DAMAGED COATING AND COATING OF FIELD WELDED ELEMENTS.

PILING (PORT-FURNISHED)

1. THE PORT HAS PROCURED THIRTEEN (13) TREATED TIMBER FENDER PILES THAT SHALL BE INSTALLED BY THE CONTRACTOR.
2. TIMBER FENDER PILES SHALL BE DRIVEN A TIP ELEVATION OF -60 FT MLLW.
3. ALL NEW AND FRESH HEADED PILES SHALL BE CUT OFF LEVEL AND TRUE AND FIT BENEATH THE WALE TO PROVIDE FULL CONTACT. TREAT ALL FIELD CUTS AND BORED HOLES WITH COPPER NAPTHENATE PER THE SPECIFICATIONS.

HDPE PIPE – PILE FACING (CONTRACTOR-FURNISHED)

1. DIMENSION RATIO (DR) 11.0 PER ASTM F 714
2. 2" NOMINAL/MINIMUM WALL THICKNESS
3. 24" NOMINAL IPS PIPE DIAMETER

TIDES

1. TIDAL DATA OBTAINED FROM NOAA WEBSITE FOR STATION ID 9446484 AND CHART 18453 FOR THE 1983 – 2001 EPOCH AS FOLLOWS.

EXTREME HIGH WATER (EHW)	15.49 FT
MEAN HIGHER HIGH WATER (MHHW)	11.78 FT
MEAN SEA LEVEL (MSL)	6.84 FT
MEAN LOWER LOW WATER (MLLW)	0 FT
EXTREME LOW WATER (ELW)	-4.11 FT

MOORING AND BERTHING LOADS

1. NO MOORING OR BERTHING ANALYSIS WAS PERFORMED FOR THIS PROJECT. CURRENT VESSELS USING THE PIER ARE LARGER THAN THE ORIGINAL SYSTEM DESIGN.

PORT-FURNISHED MATERIALS

1. THE FOLLOWING MATERIALS HAVE BEEN PROCURED BY THE PORT AND ARE TO BE INSTALLED BY THE CONTRACTOR.
   A. THE FOLLOWING COATED STEEL WALE ASSEMBLIES WILL BE SHIPPED WITH STIFFENERS, CHOCKS (W8), UHMW-PE RUB STRIPS, RUBBER FENDERS, AND STAY CHAIN PADEYES PERMANENTLY INSTALLED, INCLUDING ALL FASTENERS:
      i. TWENTY-SIX (26) 20-FT NOMINAL LENGTH TYPICAL WALE UNITS
      ii. ONE (1) BENT 1 WALE UNIT
      iii. ONE (1) BENT 2 WALE UNIT
      iv. TWO (2) LADDER WALE UNITS
      v. ONE (1) BENT 32 WALE UNIT
   B. THE FOLLOWING WILL BE SHIPPED LOOSE:
      i. ONE HUNDRED TWENTY-TWO (122) COATED STEEL WALE TO PILE CONNECTION ASSEMBLIES (INCLUDES ONE (1) 1" DIA x 2'-6" ALL-THREAD ROD W/ WASHERS & DBL NUTS)
      ii. THIRTY (30) COATED STEEL WALE SPLICE PLATE ASSEMBLIES INCLUDING BOLTS, WASHERS, & NUTS
      iii. SIXTY (60) 4-FT STAY CHAIN SEGMENTS
      iv. ONE HUNDRED AND TWENTY (120) SHACKLES FOR STAY CHAINS
      v. SIXTY (60) 1" DIA SHOULDER EYE BOLTS
      vi. TWO (2) ADDITIONAL UHMW-PE RUB STRIPS, ONE FOR EACH END OF THE FENDER SYSTEM
      vii. ONE (1) COATED STEEL MC8 DOUBLE-PILE SPACER
      viii. TWO (2) 1" DIA x 2'-6" ALL-THREAD RODS W/ WASHERS & DBL NUTS
2. PRIOR TO TAKING CONTROL OF PORT-FURNISHED MATERIALS, CONTRACTOR SHALL INSPECT MATERIALS AND NOTIFY PORT IMMEDIATELY OF DISCREPANCIES OR DAMAGES TO MATERIALS, IF PRESENT.
3. CONTRACTOR SHALL COORDINATE WITH THE PORT REGARDING LOCATION OF PROCURED MATERIALS PRIOR TO ARRIVAL ON SITE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSPORTING PORT FURNISHED MATERIAL TO THE CONTRACTOR LAYDOWN AREA ONCE RECEIVED FROM PORT.

ABBREVIATIONS

&	AND
ø	DIAMETER
ACZA	AMMONIACAL COPPER ZINC ARSENATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS
AWPA	AMERICAN WOOD PROTECTION ASSOCIATION
BOT	BOTTOM
CL	CENTER LINE
CLR	CLEAR
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
DBL	DOUBLE
DEMO	DEMOLISH
DIA	DIAMETER
DWG	DRAWING
EHW	EXTREME HIGH WATER
EL	ELEVATION
ELW	EXTREME LOW WATER
EXIST	EXISTING
FB	FLAT BAR
FHP	FRESH HEAD PILE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
IFP	INSTALL NEW FENDER PILE
IN	INCH
MANUF	MANUFACTURER
MHHW	MEAN HIGHER HIGH WATER
MLLW	MEAN LOWER LOW WATER
MSL	MEAN SEA LEVEL
NO	NUMBER
NOM	NOMINAL
OC	ON CENTER
PCF	POUNDS PER CUBIC FOOT
PL	PLATE
REQ'D	REQUIRED
RFP	REMOVE & DISPOSE FENDER PILE
SHT	SHEET
SIM	SIMILAR
SPA	SPACE, SPACES
THRU	THROUGH
TYP	TYPICAL
UHMW-PE	ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE
VERT	VERTICAL
W/	WITH
WWPI	WESTERN WOOD PRESERVERS INSTITUTE

DRAWING INDEX

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BRUCE I. OSTBO, STATE OF WASHINGTON, 22894, STRUCTURAL ENGINEER, PROFESSIONAL ENGINEER 10/19/2020

APPROVED: 10/20/2020	T.J.SCHILLING 10/19/20
	CHECKED BY DATE
DIRECTOR ENG. DATE	B.OSTBO 10/19/20
	PROJ. ENGR DATE
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PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
DRAWING LIST, GENERAL NOTES & ABBREVIATIONS

TOWNSHIP: 21N	RANGE: 3E	SECTION: 35	
DAT-HRZ:	VERT:		
PARCEL: 0321354035		DRAWING SCALE:	

G1.0
2 OF 11

CONT/CONS:	071403
M. ID:	201104.01
PHASE:	FOR BID

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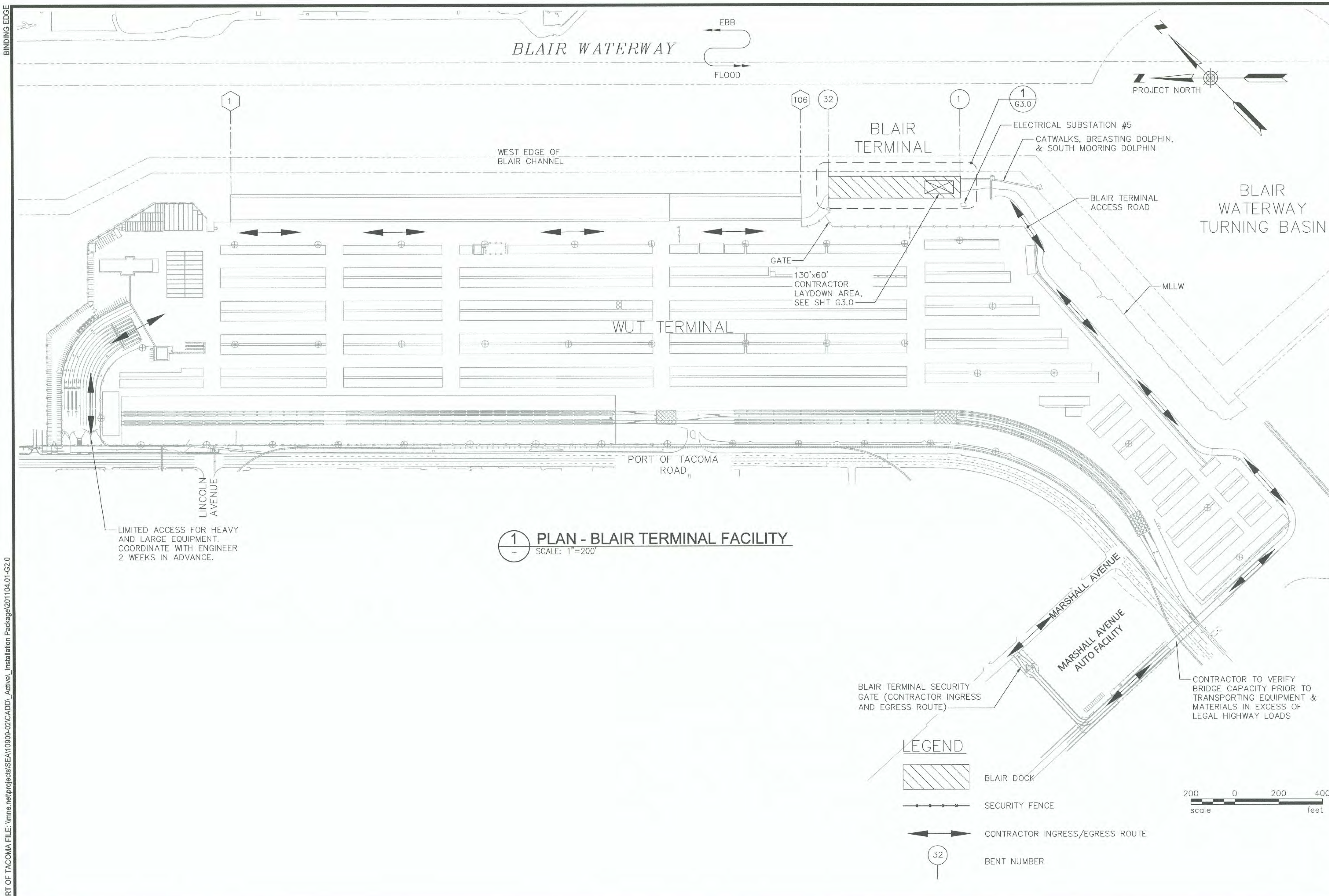

1 PLAN - BLAIR TERMINAL FACILITY
SCALE: 1"=200'

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
CONTRACTOR ACCESS PLAN

G2.0
3 OF 11

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M. ID: 201104.01	DAT-HRZ:	VERT:
PHASE: FOR BID	PARCEL: 0321354035	DRAWING SCALE:

SECTION: 35

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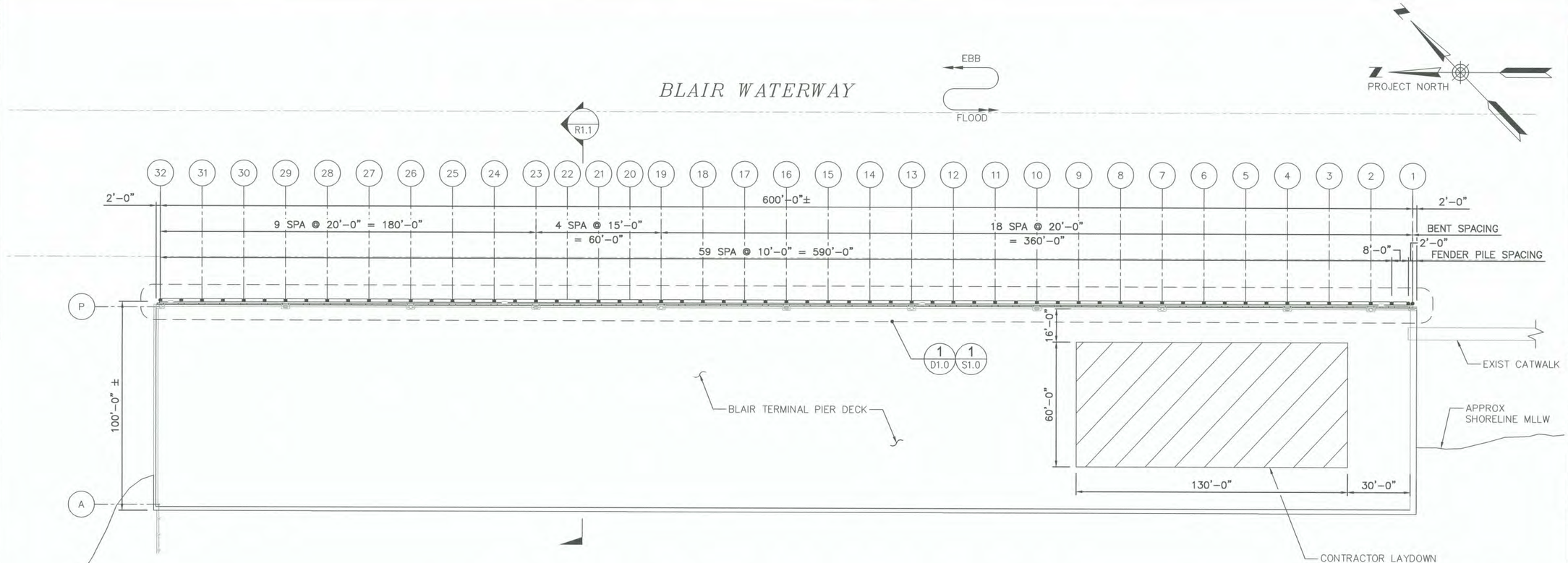

1 G2.0 PIER PLAN
SCALE: 1"=25'–0"

NOTES:

1. SEE REFERENCE DRAWING R1.0 & R2.0 FOR ADDITIONAL INFORMATION RELATED TO ELEVATIONS AND TIDES.
2. UPON RECEIPT OF PORT–FURNISHED MATERIALS, THE CONTRACTOR SHALL DELIVER THEM TO THE CONTRACTOR LAYDOWN AREA UNLESS OTHERWISE DIRECTED BY THE ENGINEER. SEE SPECIFICATIONS.

LEGEND

- BOLLARD
- LADDER
- CLEAT
- FENDER SYSTEM

25 0 25 50
scale feet

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PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
BLAIR TERMINAL PLAN

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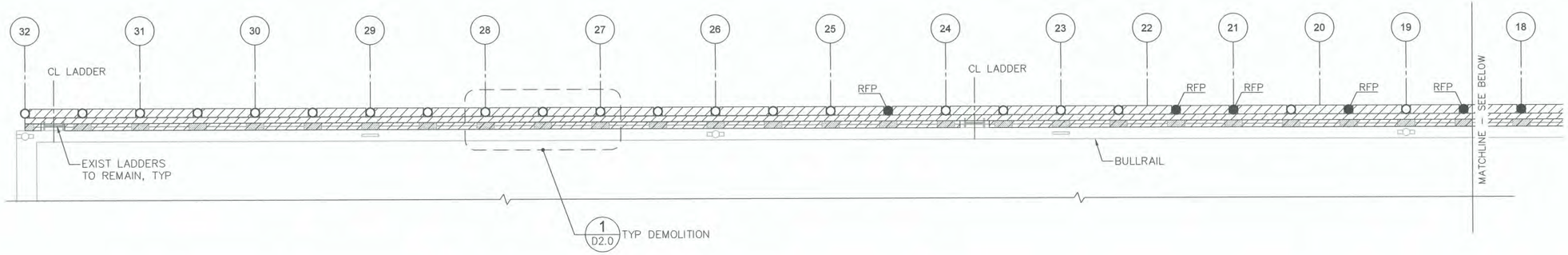

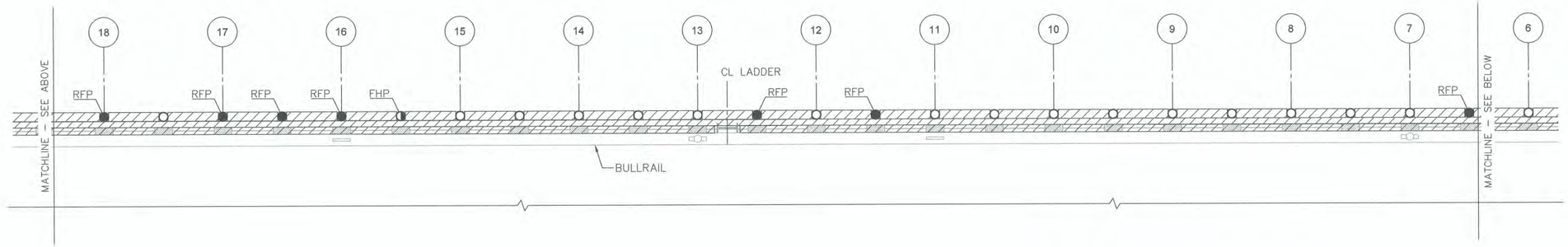

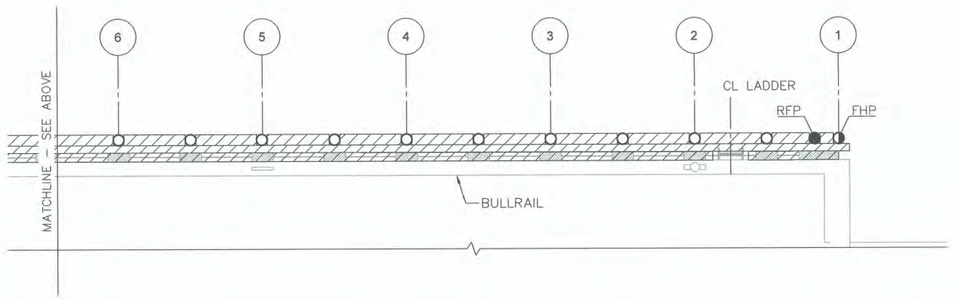

1 G3.0 **FENDER DEMOLITION PLAN**
SCALE: 1"=10'-0"

LEGEND

- TO BE REMOVED
- FENDER PILE TO REMAIN
- RFP — REMOVE FENDER PILE, SEE NOTE 2
- FHP — PULL UP 5'-0" & FRESH HEAD FENDER PILE

DEMOLITION NOTES:

1. REMOVE & DISPOSE ALL WALES, CHOCKS, AND RUBBER FENDERS, SEE DETAIL 1 ON DWG D2.0.
2. PULL AND DISPOSE PILES DESIGNATED FOR REPLACEMENT.

10 0 10 20
scale feet

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PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
DEMOLITION PLAN

CONT/CONS:	071403	TOWNSHIP: 21N	RANGE: 3E
M. ID:	201104.01	DAT-HRZ:	VERT:
PHASE:	FOR BID	PARCEL: 0321354035	DRAWING SCALE:

SECTION: 35

D1.0
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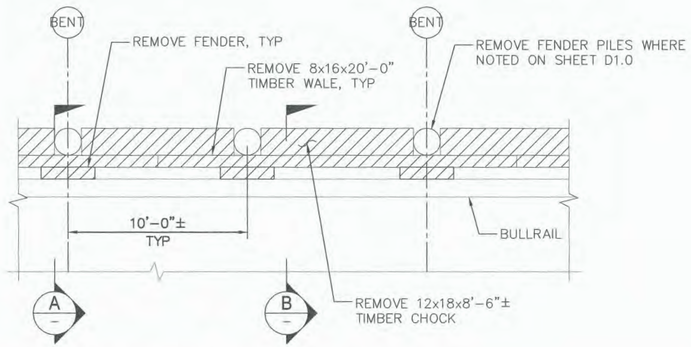
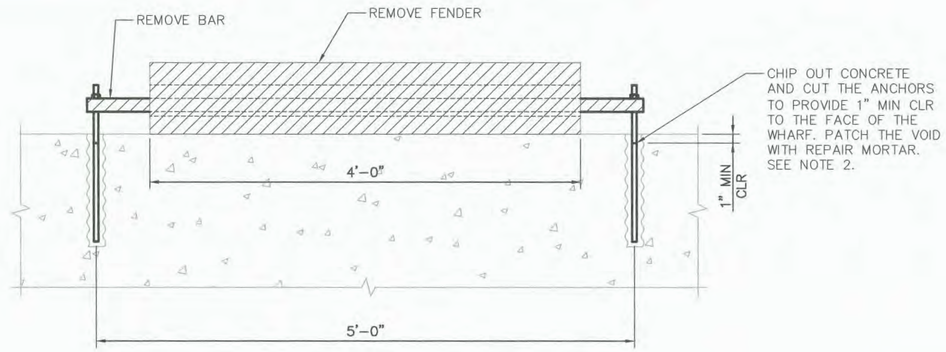
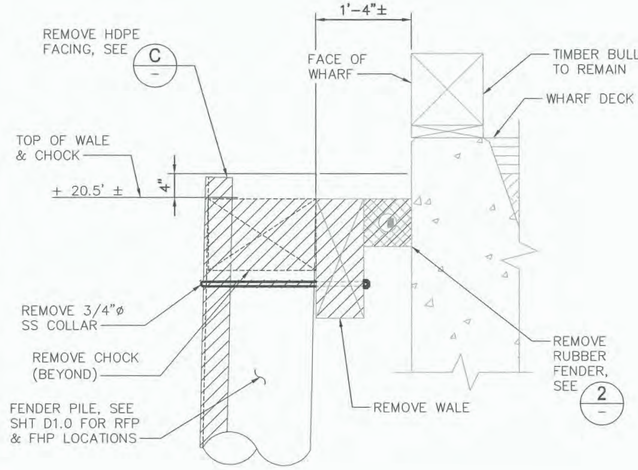


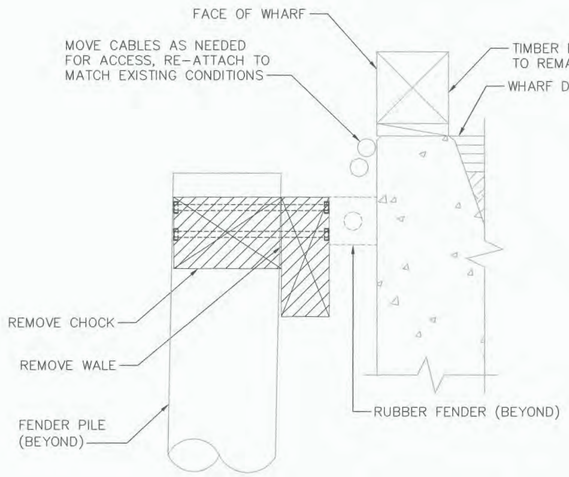
1 DETAIL - WALE & CHOCK
D1.0 SCALE: 1/4"=1'-0"



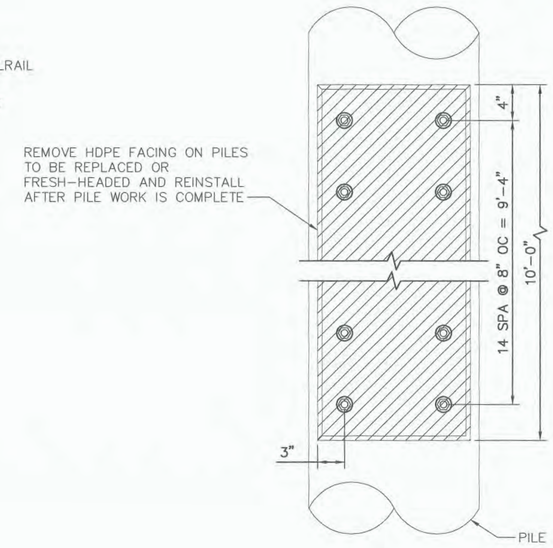
2 DETAIL - RUBBER FENDER
SCALE: 1 1/2"=1'-0"



A SECTION
D1.0 SCALE: 1"=1'-0"



B SECTION
SCALE: 1"=1'-0"



C SECTION - PILE FACING
SCALE: 1 1/2" = 1'-0"

1/4" = 1'-0" scale 4 0 4 8 feet

1" = 1'-0" scale 1 0 1 2 feet

1-1/2" = 1'-0" scale 8 0 8 16 inches

NOTES:

1. SALVAGE, DEMOLISH, AND DISPOSE OF MATERIAL AS INDICATED IN THE SPECIFICATIONS.
2. CONTRACTOR SHALL FURNISH REPAIR MORTAR. SEE SPECIFICATION SECTION 03 60 00.

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PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
DEMOLITION DETAILS

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M. ID:	201104.01	DAT-HRZ:	VERT:	DRAWING SCALE:
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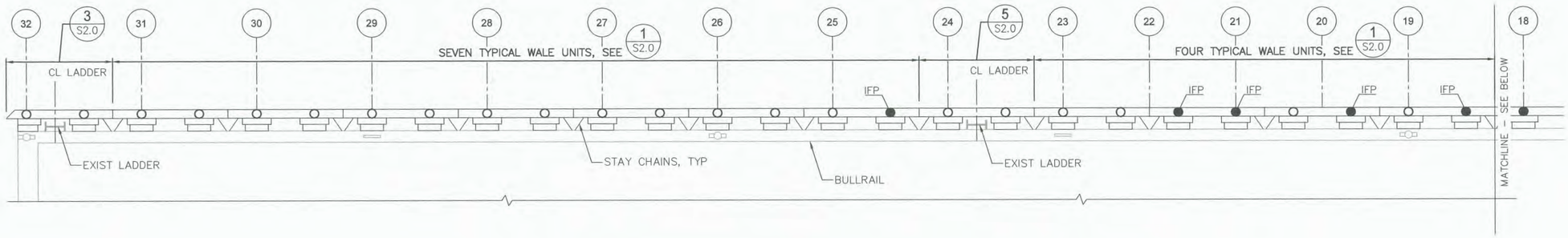

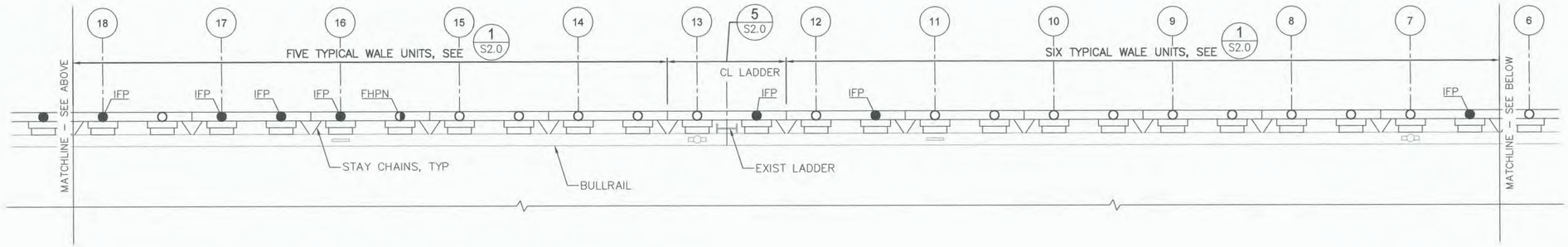

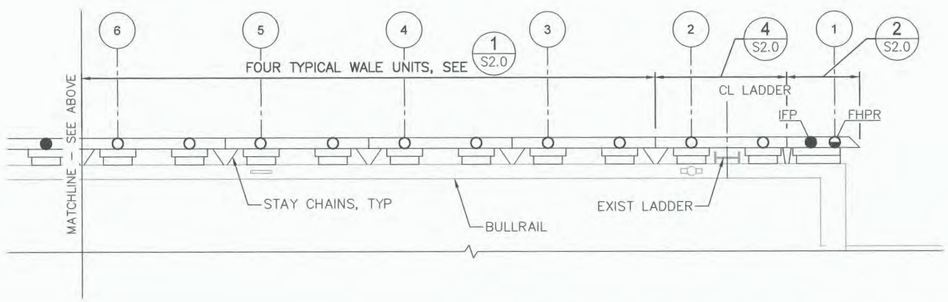

1 G3.0 S2.1 **FENDER REPLACEMENT PLAN**
SCALE: 1"=10'-0"

LEGEND

- EXIST FENDER PILE TO REMAIN
- IFP — INSTALL NEW FENDER PILE & HDPE PILE FACING (TIP AT EL −60.0 FT MLLW)
- FHPN — PULL UP 5'−0" & FRESH HEAD EXIST FENDER PILE. INSTALL NEW HDPE PILE FACING
- FHPR — PULL UP 5'−0" & FRESH HEAD EXIST FENDER PILE. REINSTALL EXIST HDPE PILE FACING.

NOTES:

1. CONTRACTOR SHALL FURNISH EPOXY FOR DRILLED−IN AND BONDED EYEBOLTS. SEE SPECIFICATION SECTION 03 60 00.
2. CONTRACTOR SHALL FURNISH NEW HDPE PILE FACING, LAG BOLTS, & WASHERS FOR ONE (1) PULLED−UP AND FRESH HEADED FENDER PILE AND THIRTEEN (13) NEW REPLACEMENT FENDER PILES. SEE SPECIFICATION SECTION 31 62 19 FOR HDPE REQUIREMENTS.
3. ALL REMAINING ITEMS SHOWN ON THIS SHEET ARE PORT−FURNISHED AND ARE TO BE INSTALLED BY THE CONTRACTOR.

10 0 10 20
scale feet

BINDING EDGE

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MARK:	REVISION:	BY:	APPR:	DATE:

BRUCE I. OSTBO — STATE OF WASHINGTON — 23394 — REGISTERED PROFESSIONAL ENGINEER
10/19/2020

T.J.SCHILLING	10/19/20		
CHECKED BY	DATE		
B.OSTBO	10/19/20		
PROJ. ENGR	DATE		
talston	Oct 19, 2020		

APPROVED: Blair Ostbo 10/20/2020
DIRECTOR ENG. DATE

PRINTED BY: talston
PORT ADDRESS:

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
FENDER REPLACEMENT PLAN

CONT/CONS:	071403	TOWNSHIP: 21N	RANGE: 3E
M. ID:	201104.01	DAT−HRZ:	VERT:
PHASE:	FOR BID	PARCEL: 0321354035	DRAWING SCALE:

SECTION: 35

S1.0
7 OF 11

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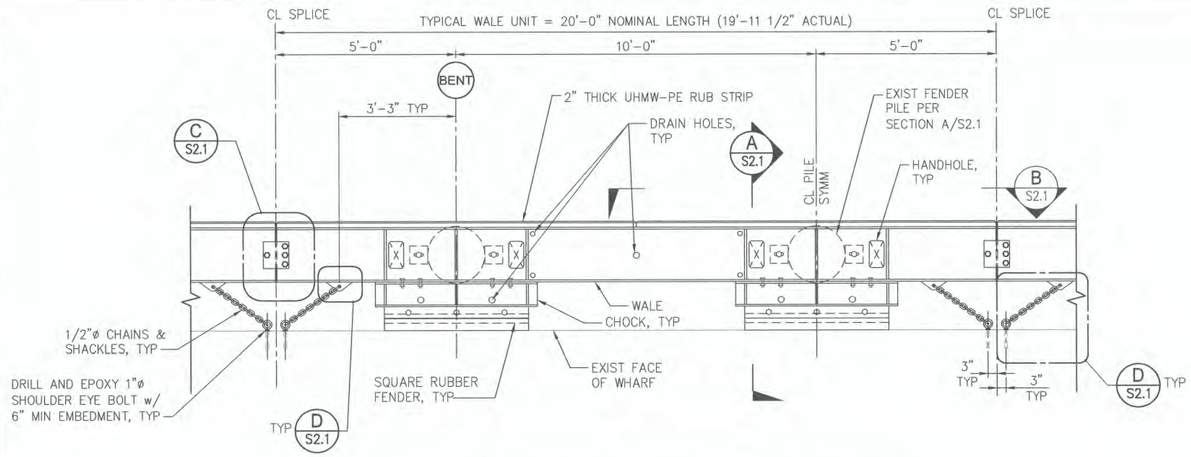
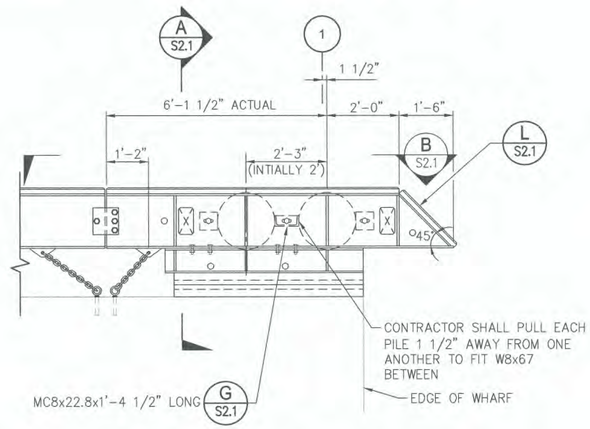


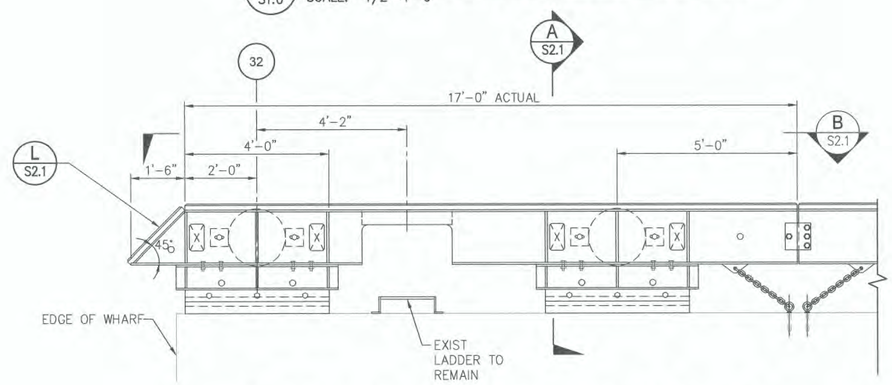
1 S1.0 PLAN - TYPICAL ASSEMBLED WALE UNIT

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



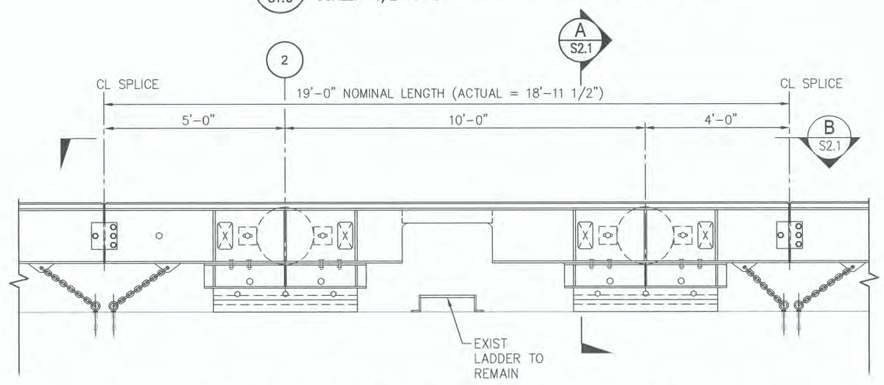
2 S1.0 PLAN - ASSEMBLED WALE UNIT @ BENT 1

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



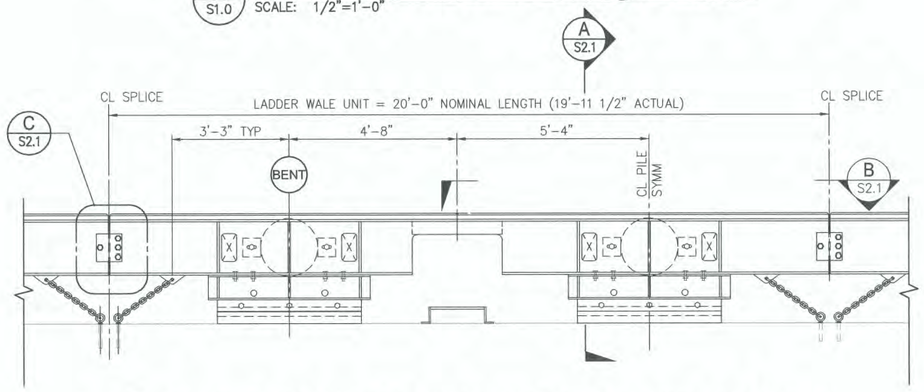
3 S1.0 PLAN - ASSEMBLED WALE UNIT @ BENT 32

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



4 S1.0 PLAN - ASSEMBLED WALE UNIT @ BENT 2

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



5 S1.0 PLAN - TYPICAL ASSEMBLED WALE UNIT WITH LADDER CUT

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

NOTES:

1. CONTRACTOR SHALL FURNISH EPOXY FOR DRILLED-IN AND BONDED EYEBOLTS. SEE SPECIFICATION SECTION 03 60 00.
2. ALL REMAINING ITEMS SHOWN ON THIS SHEET ARE PORT-FURNISHED. SEE GENERAL NOTES SHEET G1.0 FOR ITEMS SHIPPED FULLY ASSEMBLED AND ITEMS SHIPPED LOOSE.

2'-0" 0'-0" 2'-0" 4'-0"

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

BINDING EDGE

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BRUCE I. OSTBO STATE OF WASHINGTON 19887 REGISTERED PROFESSIONAL ENGINEER 10/19/2020

T.J.SCHILLING 10/19/20 CHECKED BY DATE
B.OSTBO 10/19/20 PROJ. ENGR DATE
Oct 19, 2020 talston PRINTED BY: PORT ADDRESS:
DRAWING SCALE:

APPROVED:
DIRECTOR ENG. DATE

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
FENDER REPLACEMENT DETAILS 1 OF 2

CONT/CONS: 071403	TOWNSHIP: 21N	RANGE: 3E	SECTION: 35
M. ID: 201104.01	DAT-HRZ:	VERT:	
PHASE: FOR BID	PARCEL: 0321354035		

S2.0
8 OF 11

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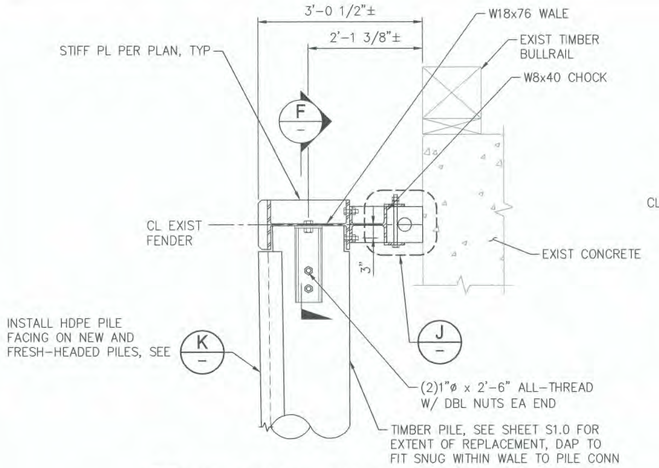
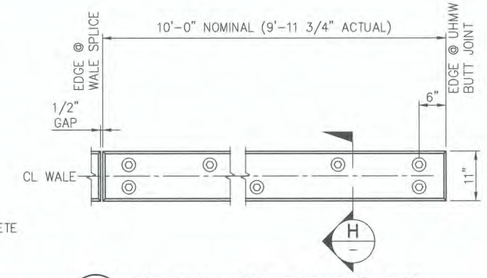
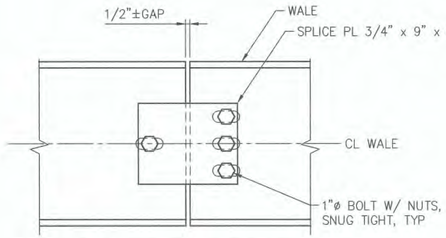


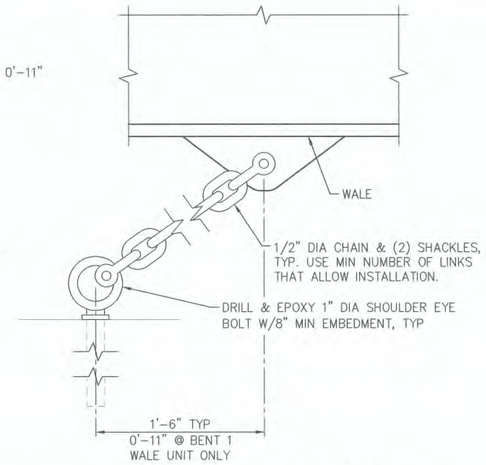
A S2.0 **SECTION - ASSEMBLED WALE UNIT**
SCALE: 3/4"=1'-0"



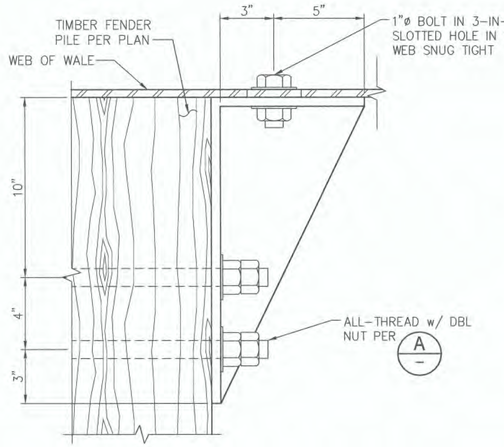
B S2.0 **DETAIL - WALE RUB STRIP**
SCALE: 3/4" = 1'-0"



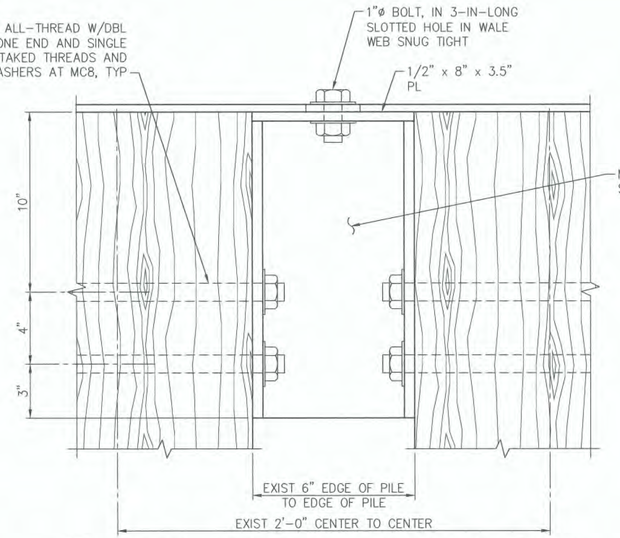
C S2.0 **DETAIL - WALE SPLICE**
SCALE: 1 1/2" = 1'-0"



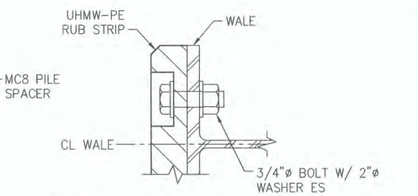
D S2.0 **DETAIL - STAY CHAIN**
SCALE: 3" = 1'-0"



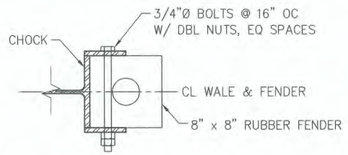
F S2.0 **DETAIL - WALE TO PILE CONN**
SCALE: 3" = 1'-0"



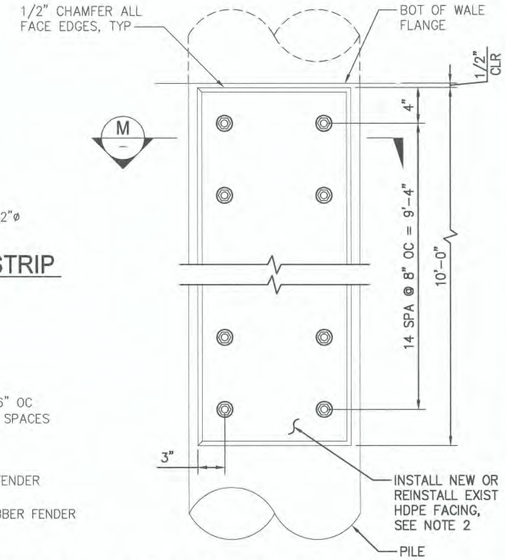
G S2.0 **DETAIL - DOUBLE-PILE SPACER AT BENT 1**
NOT TO SCALE



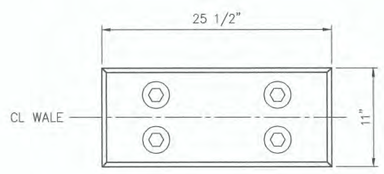
H – **SECTION - WALE RUB STRIP**
SCALE: 3" = 1'-0"



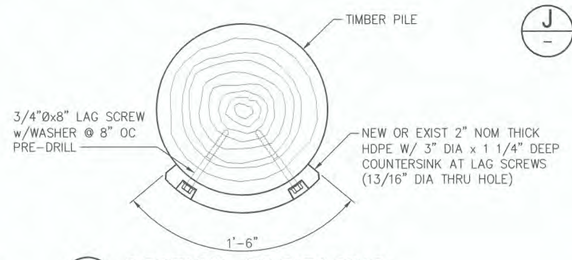
J – **SECTION - RUBBER FENDER**
SCALE: 1 1/2" = 1'-0"



K – **DETAIL - PILE FACING**
SCALE: 1 1/2" = 1'-0"



L S2.0 **DETAIL - WALE RUB STRIP AT END OF DOCK (TYP EACH END)**
SCALE: 1 1/2" = 1'-0"



M – **SECTION - PILE FACING**
SCALE: 1 1/2" = 1'-0"

NOTES:

1. CONTRACTOR SHALL FURNISH EPOXY FOR DRILLED-IN AND BONDED EYEBOLTS. SEE SPECIFICATION SECTION 03 60 00.
2. CONTRACTOR SHALL FURNISH NEW HDPE PILE FACING, LAG BOLTS, & WASHERS FOR ONE (1) PULLED-UP AND FRESH HEADED FENDER PILE AND THIRTEEN (13) NEW REPLACEMENT FENDER PILES. SEE SPECIFICATION SECTION 31 62 19 FOR HDPE REQUIREMENTS.
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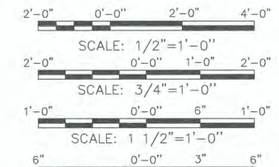

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SUITE 610
SEATTLE, WA 98101
(206) 622-0222

moffatt & nichol

MARK:	REVISION:	BY:	APPR:	DATE:

PRINCE I. OSTBO — STATE OF WASHINGTON — 21868 — REGISTERED PROFESSIONAL ENGINEER — 10/19/2020

T.J.SCHILLING	10/19/20		
CHECKED BY	DATE		
B.OSTBO	10/19/20		
PROJ. ENGR	DATE		
talston	Oct 19, 2020		

APPROVED: 10/20/2020
DIRECTOR ENG. DATE

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DRAWING SCALE:

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
FENDER REPLACEMENT DETAILS 2 OF 2

CONT/CONS:	071403	TOWNSHIP: 21N	RANGE: 3E
M. ID:	201104.01	DAT-HRZ:	VERT:
PHASE:	FOR BID	PARCEL: 0321354035	SECTION: 35

S2.1
9 OF 11

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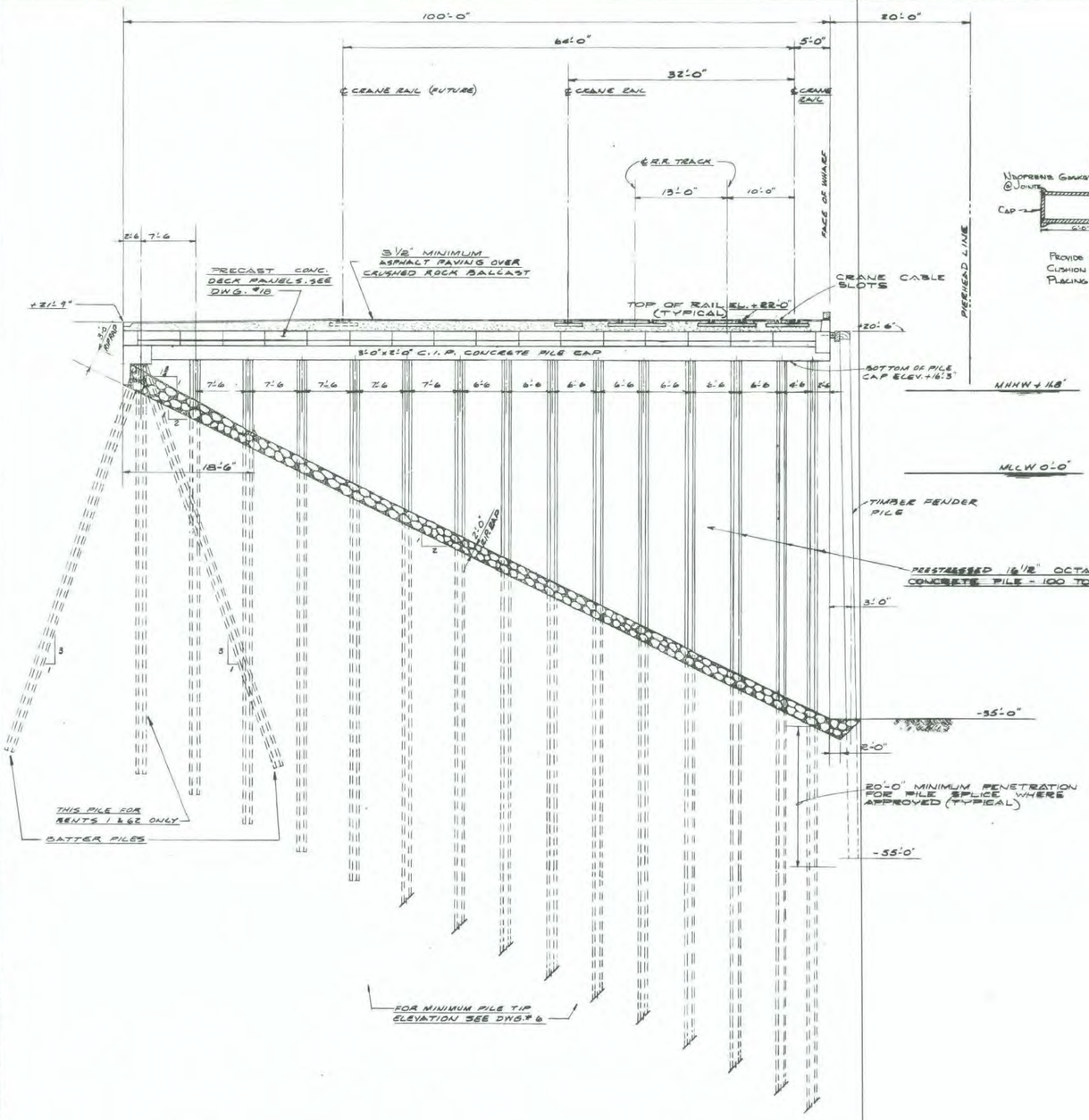
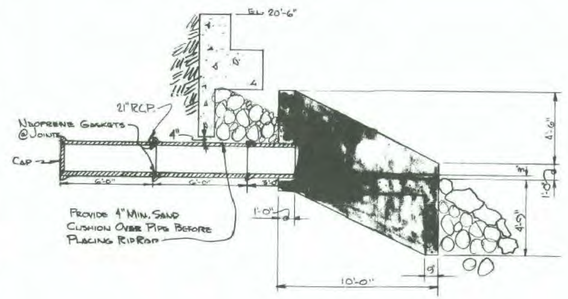
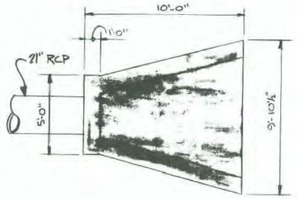


TYPICAL WHARF SECTION
1/8" = 1'-0"

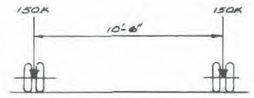


⚠ SECTION - OUTFALL
1/4" = 1'-0"

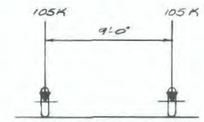


⚠ PLAN - OUTFALL
1/4" = 1'-0"

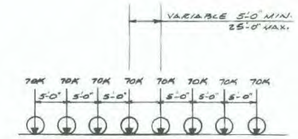
NOTES: 1) ALL REINFORCING STEEL #5 @ 1'-0 O.C. EACH WAY FOR WALLS & SLABS.
2) ALL CONC. TO BE 3000 PSI.
3) CONTRACTOR TO PROVIDE STUBS TO EXTEND 5' BEYOND CURTAIN WALL.



FRONT AXLE LOADING
60T FORK LIFT



FRONT AXLE LOADING
40T FORK LIFT



CRANE TRUCK WHEEL LOADING
CRANE RAILS 32' OR 64' GAUGE

NOTES

1. LIVE LOADS:
   UNIFORM LIVE LOAD OF 1000 PSF ON ANY AREA.
   130,000# FORK LIFT ON ANY AREA.
   COOPER E-60 LOADING ON RAILROAD.
2. ELEVATIONS ARE IN FEET & REFER TO O.O MEAN LOWER LOW WATER U.S. COAST & GEODETIC SURVEY TIDE CHART DATUM.

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MOFFATT & NICHOL
DATE 15 SEPTEMBER 2020

MARK	REVISION	BY	APPR	DATE
⚠	Added Outfall Details	DPG		7-10-20

HARRY L MARSHALL — STATE OF WASHINGTON — 13421 — REGISTERED PROFESSIONAL ENGINEER

APPROVED 6-18-70 DATE — CHIEF ENGINEER — FIELD BOOK

PORT OF TACOMA
BLAIR WATERWAY TERMINAL
CONTAINER & BULK HANDLING FACILITY
BERTHS A & B
TYPICAL WHARF SECTIONS

MARSHALL, BARR & PACQUER
SEATTLE, WASHINGTON 98101
CONSULTING ENGINEERS

JOB NO.	
1251	
DRAWN	TRACE
SMM	SMM
CHECKED	DATE
SCALE	
AS NOTED	
DWG. NO.	REV.
8	
EP-190-1	

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APPROVED: Blair Howard 10/26/2020
DIRECTOR ENG. DATE

T.J. SCHILLING 10/19/20
CHECKED BY DATE
B. OSTBO 10/19/20
PROJ. ENGR DATE

PRINTED BY: talston Oct 19, 2020
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PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
REFERENCE DRAWINGS 1 OF 2

R1.0
10 OF 11

CONT/CONS: 071403 | TOWNSHIP: 21N | RANGE: 3E | SECTION: 35
M. ID: 201104.01 | DAT-HRZ: WA83-SF | VERT: MLLW 19.39' @ Tide 22 1933
PHASE: FOR BID | PARCEL: 0321354035 | DRAWING SCALE: AS NOTED

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BINDING EDGE

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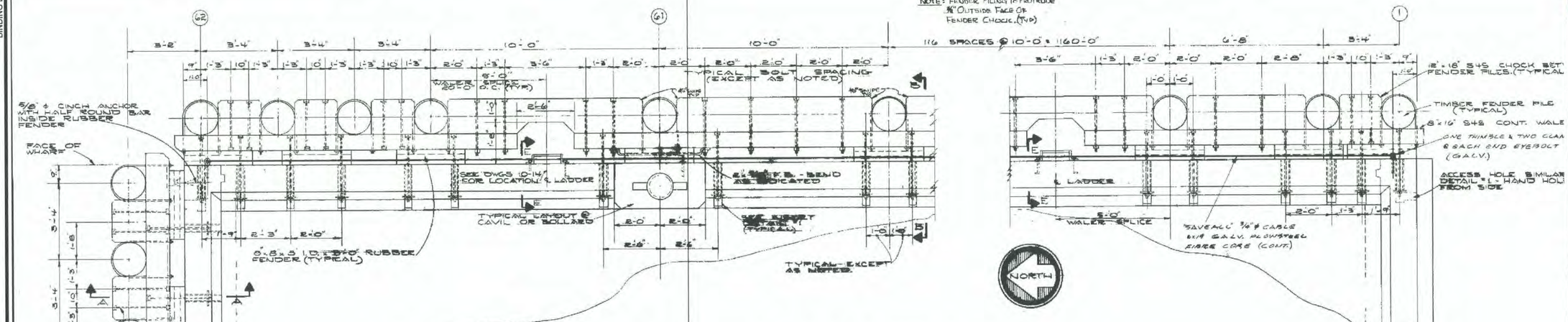
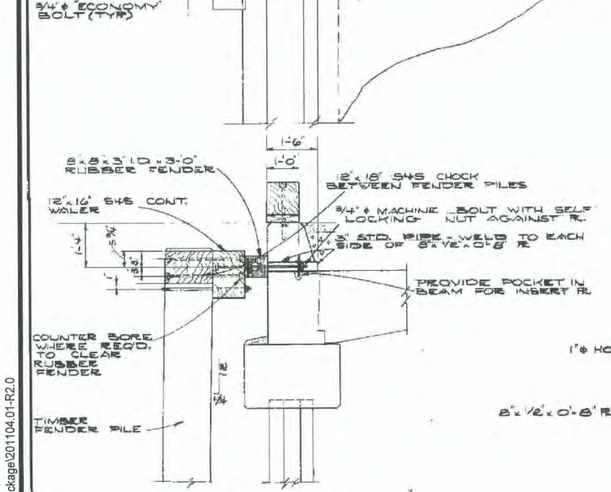
BINDING EDGE

NOTE: FENDER PILING TO PROTRUDE 16" OUTSIDE FACE OF FENDER CHOCK. (TYP)



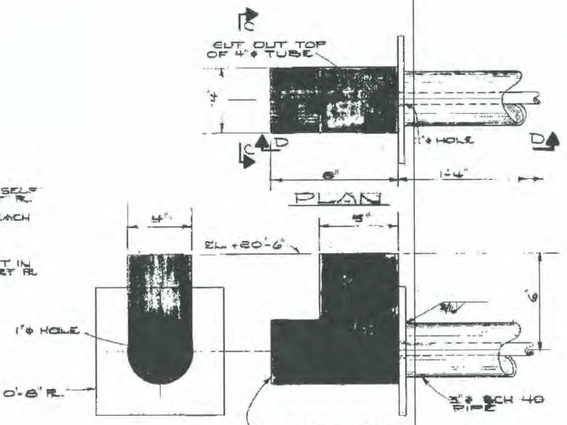
FENDER SYSTEM PLAN

1/8" = 1'-0"



SECTION A-A

1/2" = 1'-0"



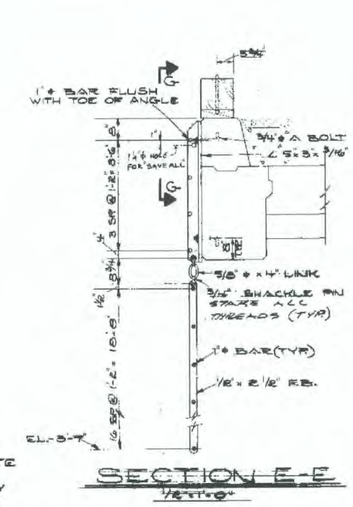
SECTION C-C SECTION D-D

DETAIL #1

DETAIL OF FENDER SYSTEM BOLT INSERT IN CONCRETE

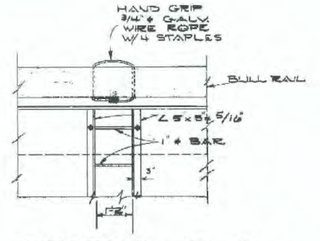
3"=1'-0"

SHADED PORTION OF DETAIL INDICATES REQUIRED VOID. MAY BE FORMED OF STYROFOAM, PVC PIPE OR GALV. SHEET METAL. WEB 8.21 3-4. SCHEDULE 40 PIPE SHALL BE GALV. STEEL PER SPECS.



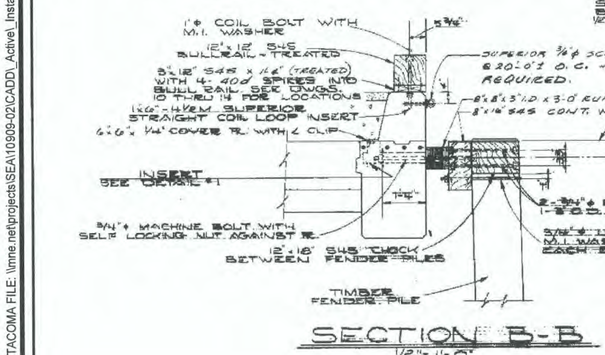
SECTION E-E

1/2" = 1'-0"



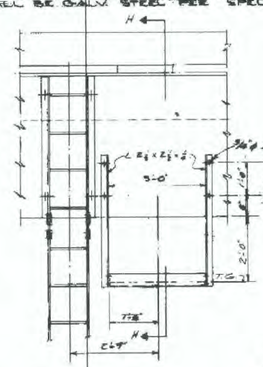
SECTION G-G

1/2" = 1'-0"



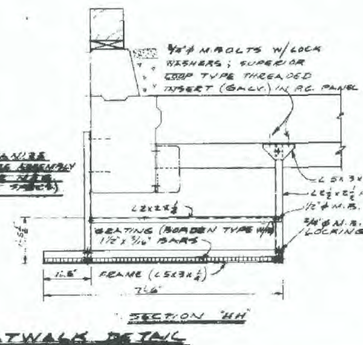
SECTION B-B

1/2" = 1'-0"



CATWALK DETAIL

1/2" = 1'-0"



SECTION "H"

REFERENCE DRAWING

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MOFFATT & NICHOL
DATE 15 SEPTEMBER 2020

NOTES:

1. FENDER PILING & TREATMENT PER SECTION 2E SPECIFICATIO
2. ALL TIMBER - GRADE & TREATMENT PER SECTION 2G SPECIFICA
3. ALL HARDWARE & BOLTS, HOT DIP GALV PER SPECIFICATIONS
4. RUBBER FENDERS PER SECTION 2F SPECIFICATIONS
5. ALL BOLT THREADS SHALL BE COATED WITH AN APPRO WATER PROOF GREASE BEFORE INSTALLATION.
6. SELF LOCKING NUTS, WHERE NOTED, SHALL BE GALVANIZED, ASTM BETHLEHEM AMCO SELF LOCKING HEAVY HEX NUTS, OR APPROVED E

HARRY L. MARSHALL STATE OF WASHINGTON 13951 REGISTERED PROFESSIONAL ENGINEER

APPROVED 6-18-70 DATE
CHIEF ENGINEER
FIELD BOOK

PORT OF TACOMA
BLAIR WATERWAY TERMINAL
CONTAINER & BULK HANDLING FACILITY
BERTHS A & B
FENDER SYSTEM & TIMBER DETAILS

MARSHALL, BARR & PACQUER
SEATTLE, WASHINGTON 98101
CONSULTING ENGINEERS

JOB 12 | DRAWN 3-MM | CHECKED JDH | SC | AS N | DWG. NO 20 | EP-19

Port of Tacoma
P.O. BOX 1837 TACOMA, WA 98401 (253)383-5841

moffatt & nichol
600 UNIVERSITY STREET SUITE# 610 SEATTLE, WA 98101 (206) 622-0222

MARK:	REVISION:	BY:	APPR:	DATE:

T.J. SCHILLING 10/19/20 CHECKED BY DATE
B. OSTBO 10/19/20 PROJ. ENGR DATE
talston Oct 19, 2020 PRINTED BY:
ONE SITCUM PLAZA TACOMA, WA 98401-1837 PORT ADDRESS:

APPROVED: Chris Hanson 10/20/2020
DIRECTOR ENG. DATE

PORT OF TACOMA
BLAIR TERMINAL FENDER UPGRADES
REFERENCE DRAWINGS 2 OF 2

R2.0
11 OF 11

CONT/CONS: 071403 | TOWNSHIP: 21N | RANGE: 3E | SECTION: 35
M. ID: 201104.01 | DAT-HRZ: WA83-SF | VERT: MLLW 19.39' @ Tide 22 1933
PHASE: FOR BID | PARCEL: 0321354035 | DRAWING SCALE: AS NOTED

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