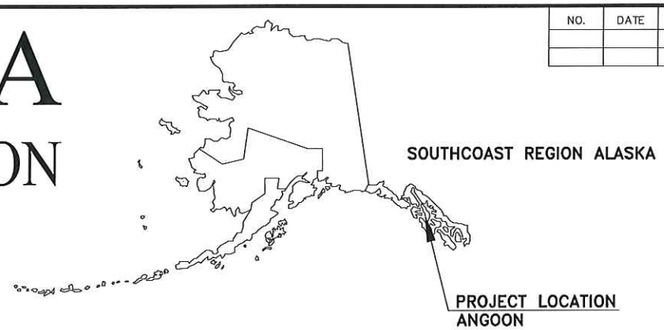
NO.	DATE	REVISIONS	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z73221000	2019	1	7

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

ANGOON FERRY TERMINAL APRON REPAIRS

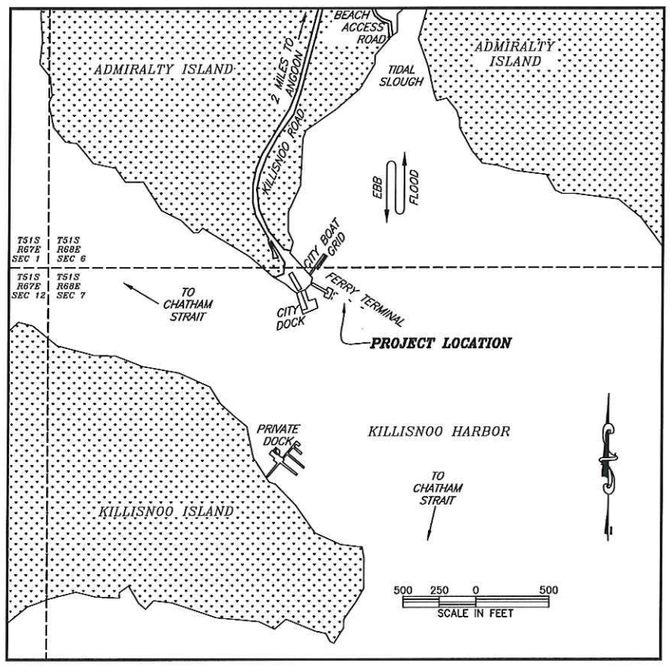
PROJECT NO. Z73221000



SHEET INDEX	
SHEET NO.	**DESCRIPTION**
	GENERAL
1	TITLE SHEET
2	EXISTING SITE PLAN
3	FLOAT AND PLATFORM LAYOUT
4	RAMP PLAN & ELEVATIONS
5	RAMP & APRON LIFT FRAMING
6	APRON LIFT DETAILS
7	EXISTING CONDITIONS PHOTOS

NOTES:

1. THIS PLANSET WAS DEVELOPED USING THE EXISTING AS-BUILT DRAWINGS AND ALL NOTES, SHEET OR DETAIL REFERENCES, ETC. DO NOT APPLY. NEW WORK OR MODIFICATIONS FOR THIS PROJECT ARE SHOWN IN RED.
2. REFERENCE AS-BUILT AND SHOP FABRICATION DRAWINGS & SPECIFICATIONS FOR ADDITIONAL DETAILS & WORK REQUIREMENTS NOT INDICATED.



VICINITY MAP

EXISTING TERMINAL SITE

TIDAL DATA (ft)	
EHW	+19.0
MHHW	+14.1
MHW	+13.2
MTL	+7.4
MLW	+1.6
MLLW	0.0
ELW	-5.5

USE THESE PLANS IN CONJUNCTION WITH THE STATE OF ALASKA STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2017 EDITION AND THE PROJECT SPECIAL PROVISIONS.

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APPROVED:

11/21/19

KIRK MILLER, P.E. DESIGN GROUP CHIEF — DATE

CONCUR:

21Nov2019

D. LANCE MEARIG, P.E. DIRECTOR, SOUTHCOAST REGION — DATE

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z73221000	2019	2	7

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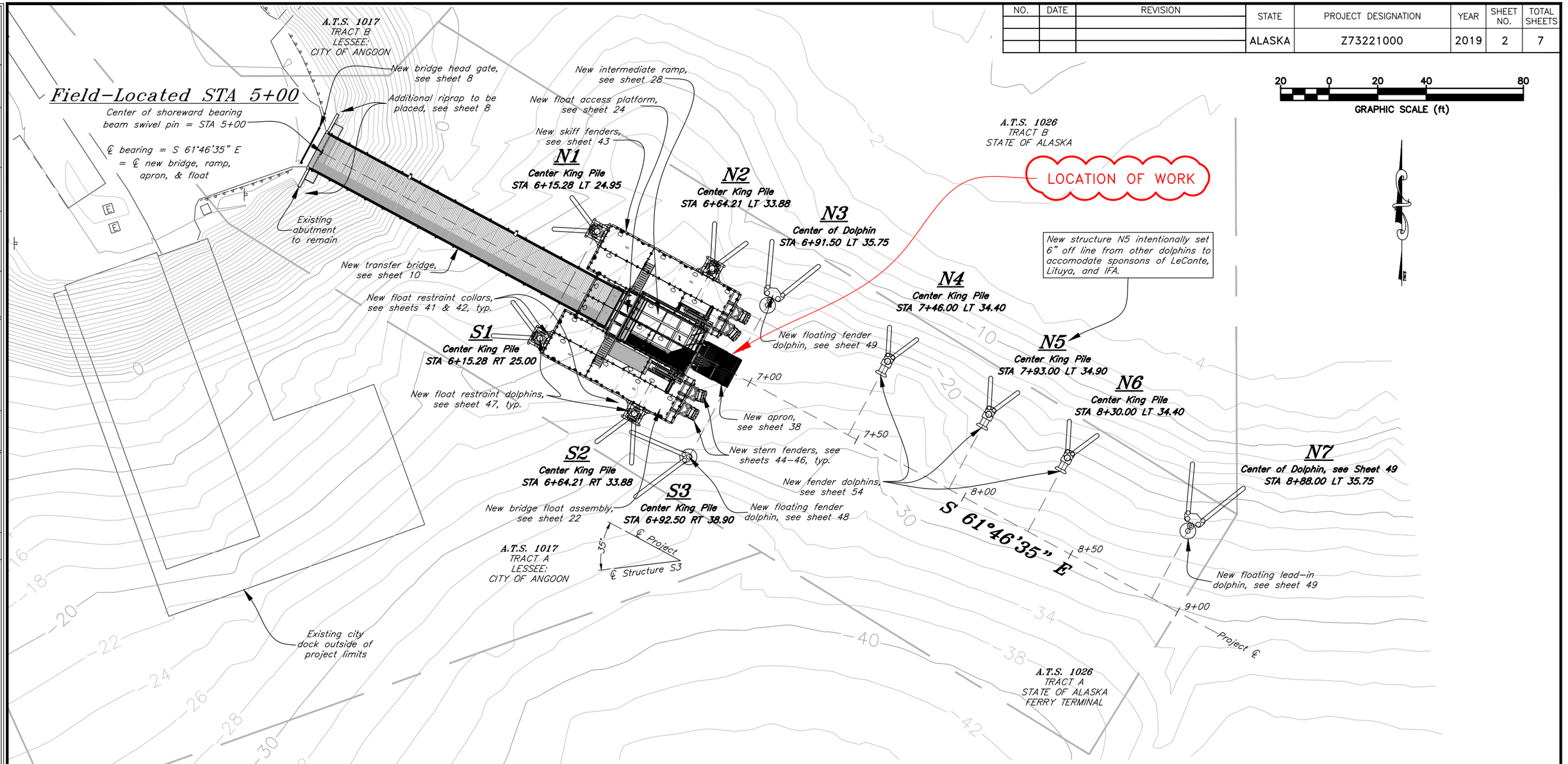

NOTE:

AMHS IS SCHEDULING FERRY SERVICE TO ANGOON UTILIZING THE MV TAZLINA ON DECEMBER 13 AND 15. AMHS WILL BE UTILIZING TEMPORARY MEANS TO RAISE AND LOWER THE APRON. CONTRACTOR WILL NOT BE PERMITTED TO HINDER THESE SCHEDULED FERRY ARRIVALS, LOADING AND DEPARTURE OPERATIONS.

PROJECT SCOPE:

- RAISE & SECURE APRON IN "UP" POSITION.
- REMOVE APRON LIFT ASSEMBLY.
- FURNISH & INSTALL NEW APRON LIFT ASSEMBLY.
- INSTALL STATE–FURNISHED APRON LIFT CYLINDERS.
- RECOMMISSION ELECTRICAL CONTROL SYSTEM & RESTORE APRON OPERATION.

LEGEND:

NEW FIELD WORK ITEMS

DRAWING SCALES ARE FOR FULL–SIZE SHEETS. USE DIMENSIONS WHEN SCALE NOT SHOWN.

STATE OF ALASKA 49TH
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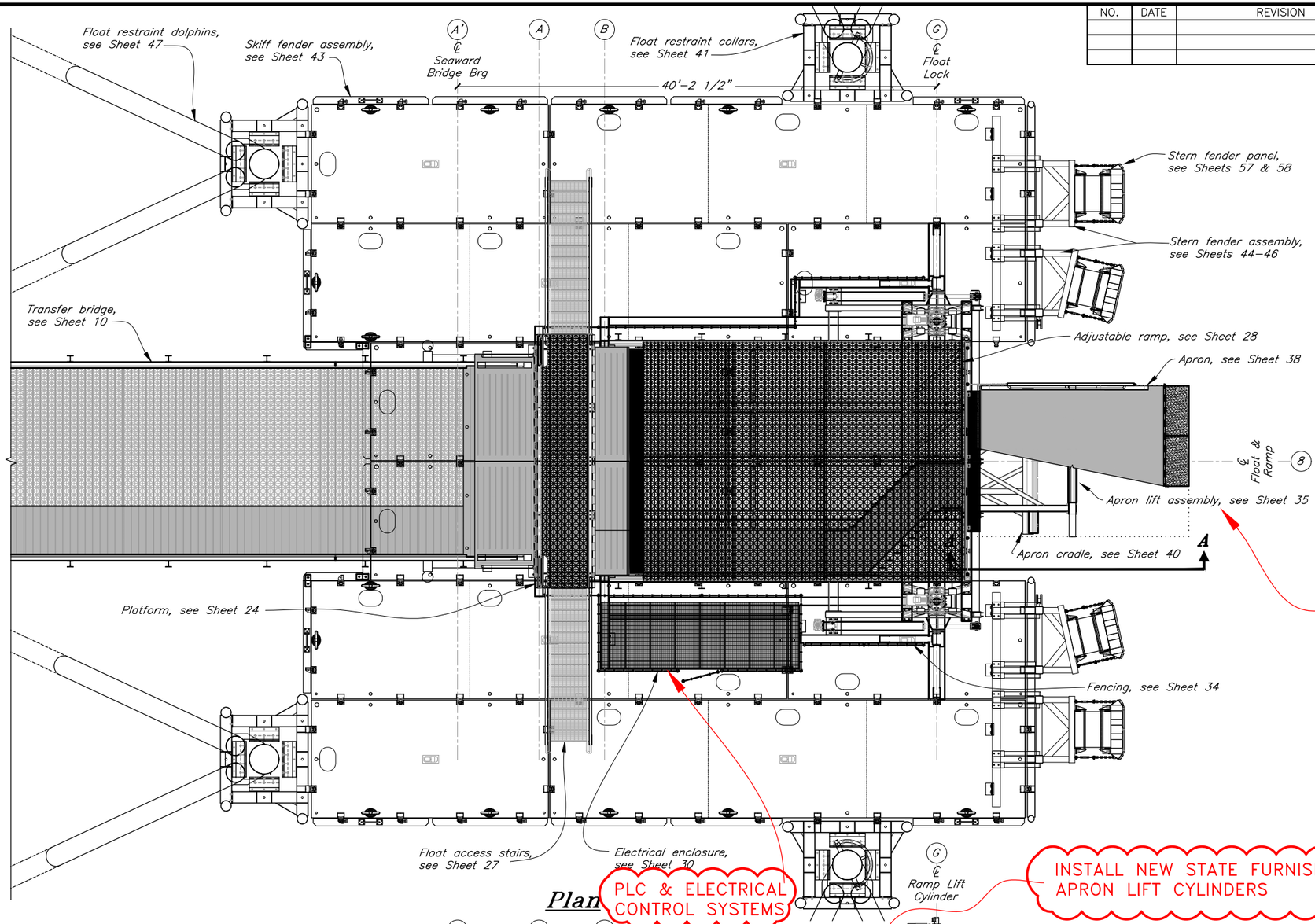
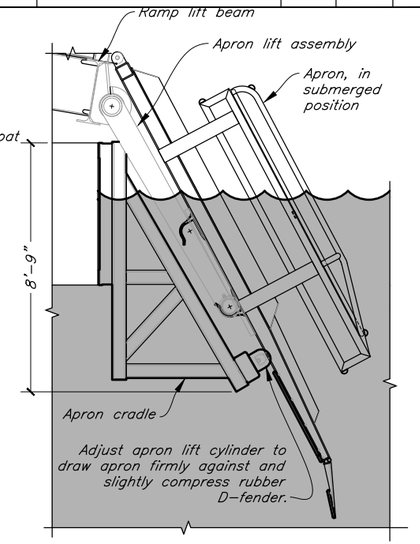
ANGOON FERRY TERMINAL
APRON REPAIRS

EXISTING SITE PLAN

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
				Z73221000	2019	3	7





Section A-A

REMOVE & REPLACE

HORIZONTAL CONTROL OF BRIDGE, PLATFORM, AND RAMP:

1. *Centerline of bridge, platform, and ramp (Grid 8) coincides with centerline of float assembly.*
2. *Centerline of ramp lift cylinder (Grid G) coincides with second lock from seaward face of float assembly.*

Note: Restraint piles and fencing not shown for clarity

LEGEND:

NEW FIELD WORK ITEMS

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ANGOON FERRY TERMINAL
APRON REPAIRS

FLOAT AND PLATFORM LAYOUT

FILE	DATE	DESIGNED	DRAFTED	CHECKED	LAYOUT
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NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
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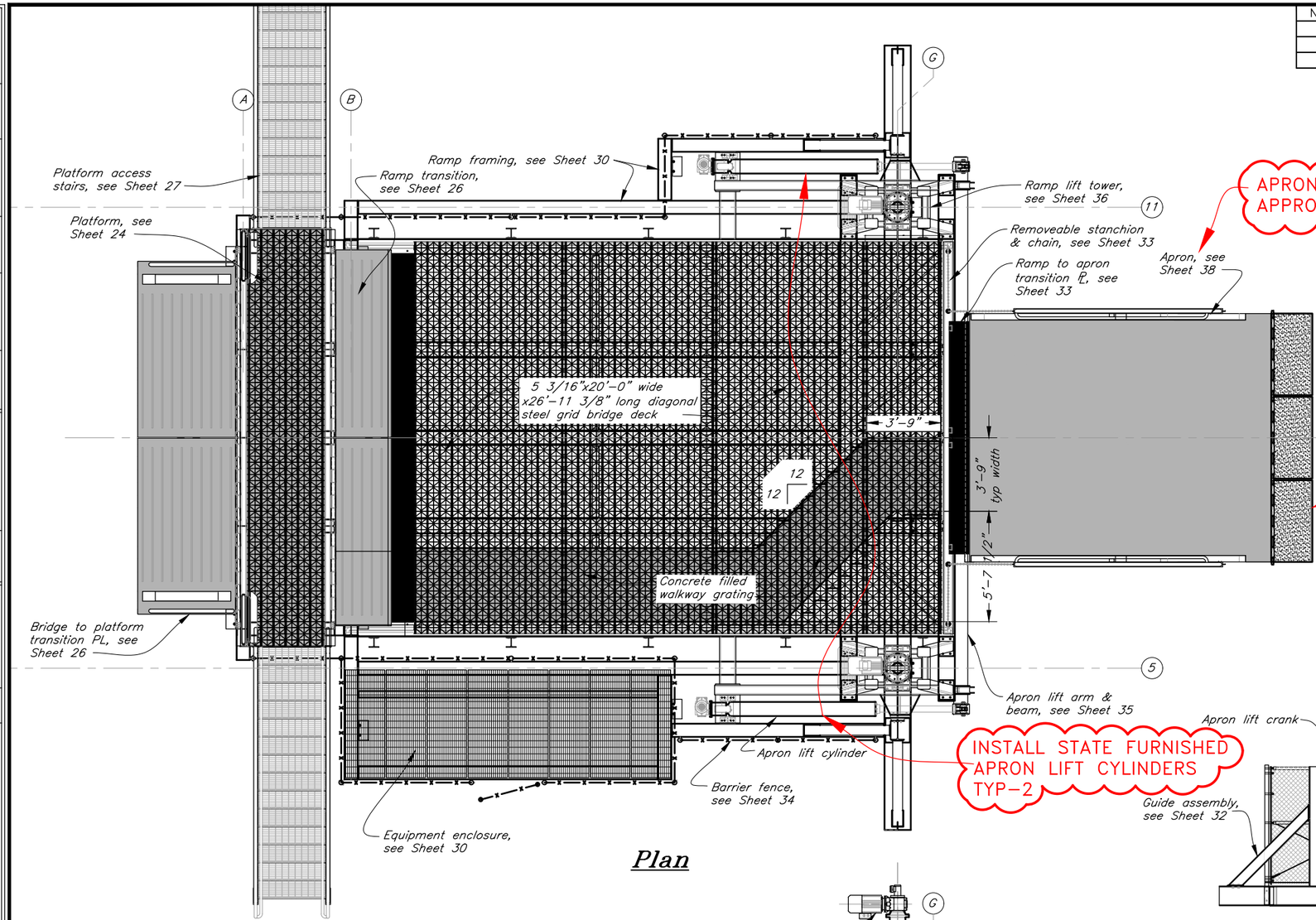
FILE | Q:\Marine\Angoon\Ang – apron lift beam replacement\Drawings\PLANSET\04 Ramp Plan & Elev.dwg | DATE | 11/20/2019 11:38 | LAYOUT | 4 | DESIGNED | STAFF | CHECKED | STAFF | DRAFTED | STAFF



Plan

APRON WEIGHT IS APPROX 12,500 lbs

INSTALL STATE FURNISHED APRON LIFT CYLINDERS TYP–2

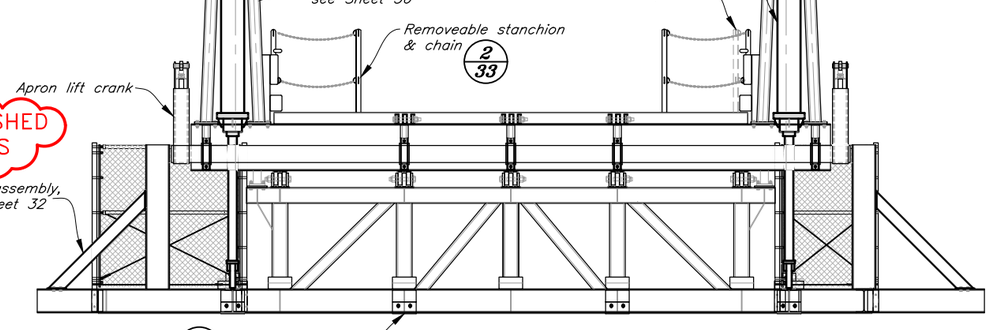
PRESSURE WASH & CLEAN ALL MARINE GROWTH ON ALL SURFACES OF EXISTING APRON

~~SHOP TESTING:~~

~~Ramp and apron components shall be substantially assembled and tested in the shop prior to installation in the field.~~

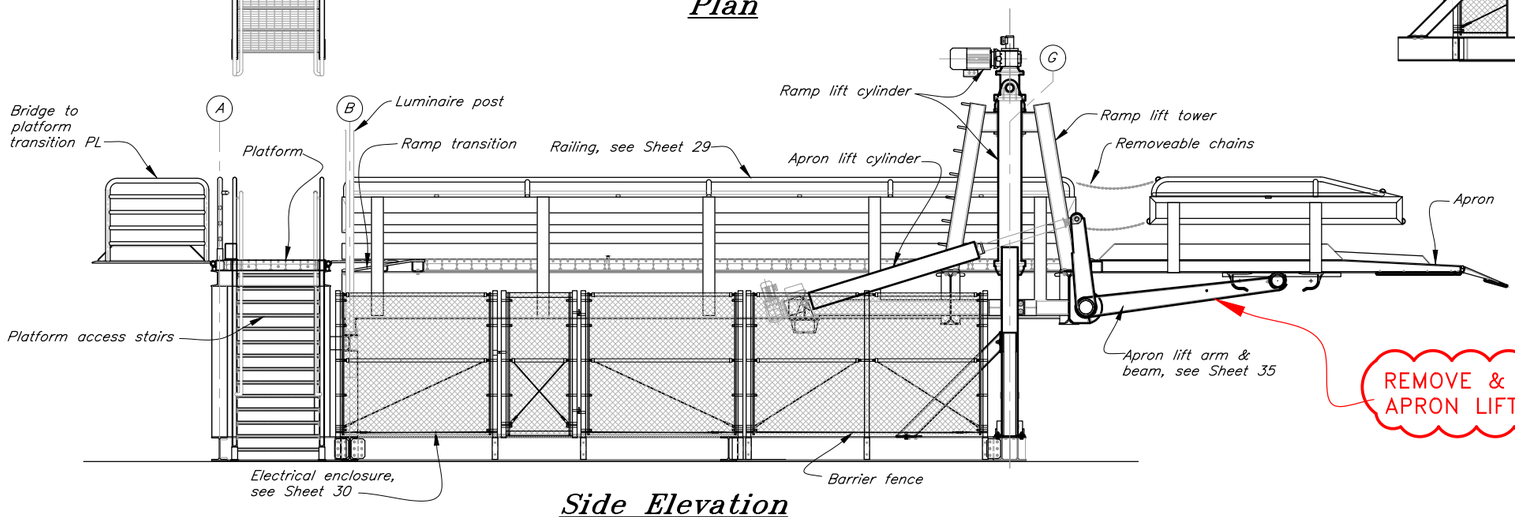
~~Testing shall verify the operation and full range of motion of the ramp and apron lift systems, and will require installation of the electric cylinders, electrical power, control and synchronization electronics, and local/remote control systems.~~

~~Deficiencies shall be corrected prior to being shipped to the field.~~



Front Elevation

Note: Apron not shown



Side Elevation

REMOVE & REPLACE APRON LIFT ASSEMBLY

LEGEND:

NEW FIELD WORK ITEMS

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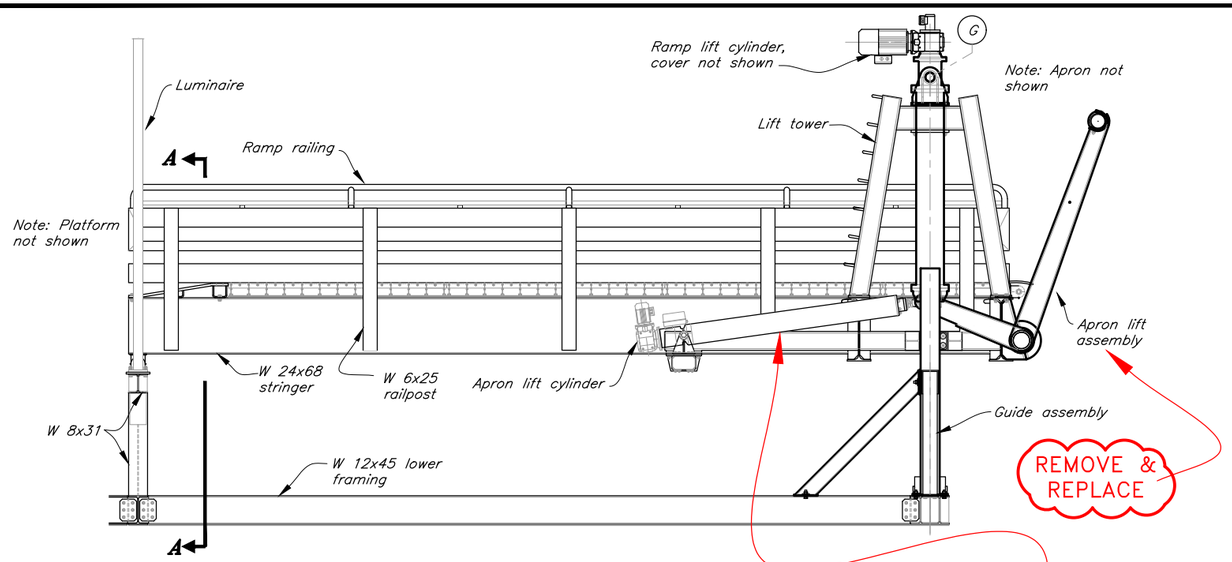
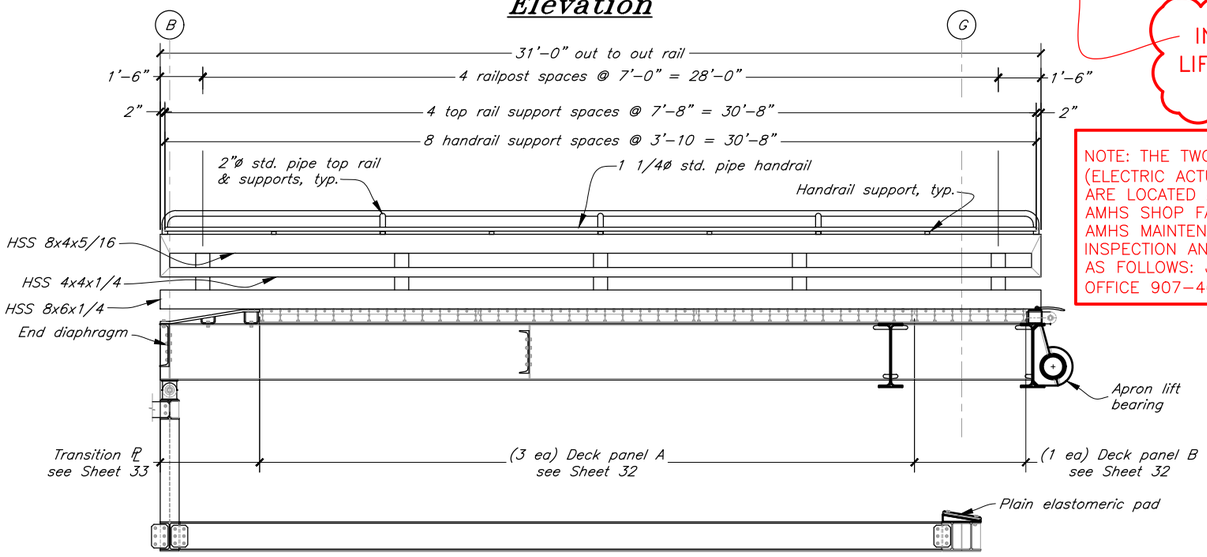
ANGOON FERRY TERMINAL
APRON REPAIRS

RAMP PLAN & ELEVATIONS

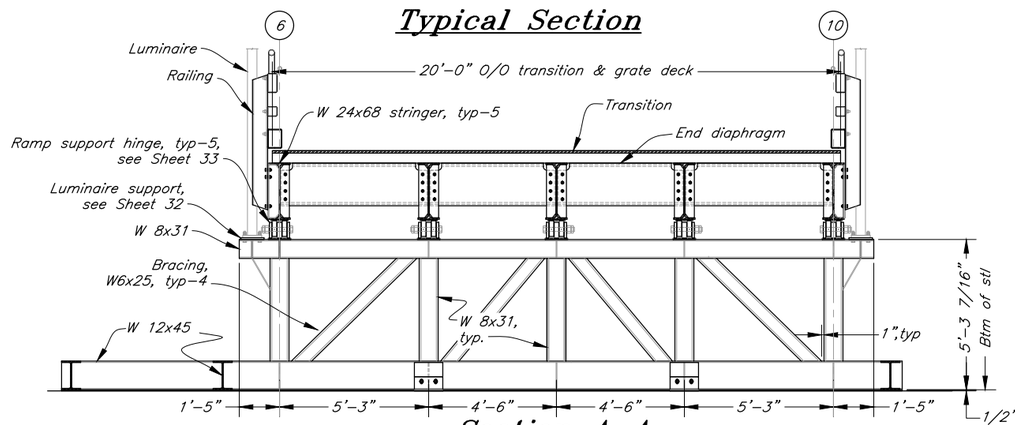
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z73221000	2019	5	7



Elevation



Typical Section



Section A-A

REMOVE & REPLACE

INSTALL NEW APRON LIFT CYLINDERS (2 EA) STATE FURNISHED

NOTE: THE TWO NEW APRON LIFT CYLINDERS (ELECTRIC ACTUATORS) AND TRUNNION MOUNTS ARE LOCATED AT THE AUKE BAY FERRY TERMINAL, AMHS SHOP FACILITY. CONTRACTOR SHALL CONTACT AMHS MAINTENANCE STAFF TO ARRANGE FOR INSPECTION AND PICKUP. CONTACT INFORMATION IS AS FOLLOWS: JONATHON GUNDSTROM, OFFICE 907-465-4002 / CELL 907-209-1630.

ELECTRIC LINEAR CYLINDER SPECIFICATIONS:

Ramp and apron lift systems are operated by electromechanical linear cylinders with the following capacities, speed, control systems, and dimensions. Cylinders shall be manufactured by RACO International, or an approved equal.

Provide certification and supporting calculations, sealed by a U.S. licensed civil engineer, that cylinders are designed to support the following loads in accordance with AASHTO LRFD Bridge Design Specifications, 2007 with interim updates.

Configuration of ramp and apron lift systems are based on RACO cylinders. Substitution from a different manufacturer may require redesign of ramp and apron framing. Redesign will be at no additional expense to the State.

Ramp Lift Cylinder: RACO Unit 10		Apron Lift Cylinder: RACO Unit 8	
Thrust:	65,500 lbs. dynamic 90,000 lbs. static	Thrust:	18,000 lbs. dynamic
Stroke:	78.7 inches maximum	Stroke:	78.7 inches maximum
Rod speed:	0.7 in./sec (min)	Rod speed:	0.7 in./sec (min)
Lead:	ACME screw with catch nut	Lead:	ACME screw
Thrust tube:	Chrome plate	Thrust tube:	Stainless steel (316)
Gear:	Helical-worm	Gear:	Helical

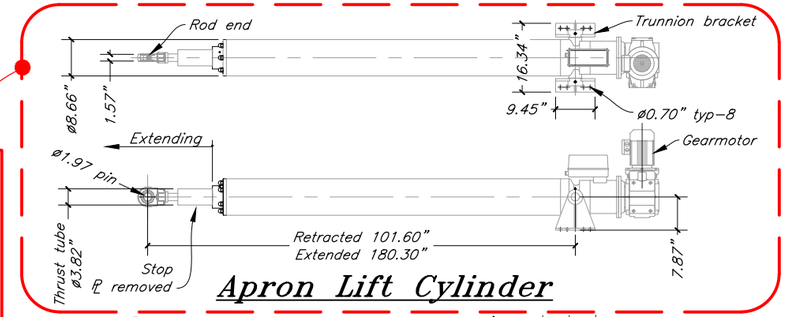
Motor: 460 V / 3 phase / 60 HZ, 1800 base speed, IP65 enclosure, class F insul, inverter duty, right angle gear

Brake: Electromagnetic single disk brake with function monitoring microswitch, braking force applied when power is off

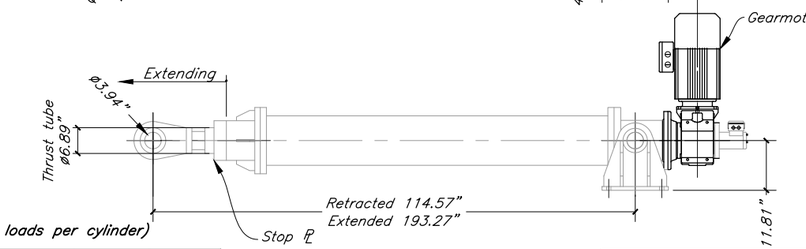
Electronics: Absolute position encoder, brake rectifier, vector drives with software, and associated electronics required for synchronization of cylinder pairs, as shown on Function Control Diagram, Sheet E8.

Misc: Thrust tube accordion type cover, sperical bearing rod end, and trunnion pins & bracket.

High corrosion protection package including: double front cap sealing with dirt/ice wiper, epoxy exterior coating, varnish base interior coating, sealing cable glands, anti-condensation heaters on motors and brakes.



Apron Lift Cylinder



Ramp Lift Cylinder

RAMP LIFT CYLINDER DESIGN LOADS: (service loads per cylinder)

Load Combinations	D	S	L	(LxIM)xMPF	(LL)xMPF	DESIGN THRUST (kips)
Dynamic Loading:						
D	32.90					32.9
D + L	32.90		32.11			65.0
D + S	32.90	11.30				44.2
D + 0.75L + 0.75S	32.90	8.47	24.08			65.5
Static Loading:						
D	32.90					32.9
D + L	32.90			46.12	9.72	88.7
D + S	32.90	11.30				44.2
D + 0.75L + 0.75S	32.90	8.47		34.59	7.29	83.3

D = Dead Load (self-weight)
L = Truck HS20, wheel centered over Grid ⑨
LL = Lane Load 640 plf, 10 ft. wide lane
S = Snow 70 psf
IM = Dynamic Allowance 1.33
MPF = Multiple Presence Factor 1.08

LEGEND:

NEW FIELD WORK ITEMS

DRAWING SCALES ARE FOR FULL-SIZE SHEETS. USE DIMENSIONS WHEN SCALE NOT SHOWN.

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ANGOON FERRY TERMINAL
APRON REPAIRS

RAMP & APRON LIFT FRAMING

FILE | Q:\Marine\Angoon\Ang - apron lift beam replacement\Drawings\PLANSET\05 Ramp Framing.dwg | DATE | 11/21/2019 8:29 | LAYOUT | 5 | DESIGNED | STAFF | CHECKED | STAFF | DRAFTED | STAFF

NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
				Z73221000	2019	6	7

FILE	Q:\Marine\Angoon\Ang – apron lift beam replacement\Drawings\PLANSET\06 Apron Lift Details.dwg	DATE	11/19/2019 10:46
LAYOUT	6		
DESIGNED	STAFF		
CHECKED	STAFF		
DRAFTED	STAFF		

8.625" OD x 0.875 WALL MECHANICAL TUBING (ASTM A106 GRADE C, Fy = 40 ksi)

SALVAGE & RE-INSTALL LIFT BEAM & HDPE PIPE

FURNISH & INSTALL APRON LIFT ASSEMBLY, CONSISTING OF:
1. 8.625" OD TUBE
2. HSS 4x4x1/4 BRACES
3. APRON LIFT ARMS
4. APRON LIFT CRANKS
5. FASTENERS

UNBOLT & DISASSEMBLE APRON LIFT BEARINGS TO REMOVE & REPLACE APRON LIFT ASSEMBLY

SALVAGE & RE-INSTALL PIN

SALVAGE & RE-INSTALL WASHER

REPLACE FASTENERS

REPLACE FASTENERS

OFFSET WRENCH MAY BE REQUIRED TO DISASSEMBLE UPPER BOLT

REPLACE FASTENERS

APRON LIFT ASSEMBLY SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.

LEGEND:
NEW FIELD WORK ITEMS

Composite bearings and composite thrust washers are cylindrical shells and flat plates of phenolic polymer resin reinforced with woven synthetic fiber cloth. Bearings and washers are marine grade with added molybdenum disulphide for improved lubrication. Acceptable materials are: Tenmat Feroform T12, Orkot TLM Marine, Columbia Industrial Products CIP Marine, or approved equal.

Plan

Elevation

Apron Lift Assembly

Apron Lift Crank 1/35

Apron Lift Arm 2/35

Thrust PL & Slip Joint 3/35

Section A-A

Side View

Section

Front View (at lift arm)

Apron Lift Bearing 4/35

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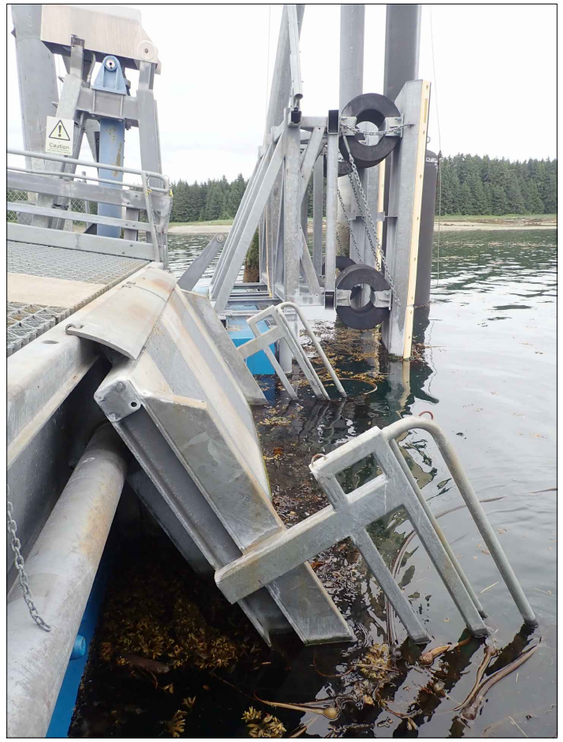
ANGOON FERRY TERMINAL
APRON REPAIRS

APRON LIFT DETAILS

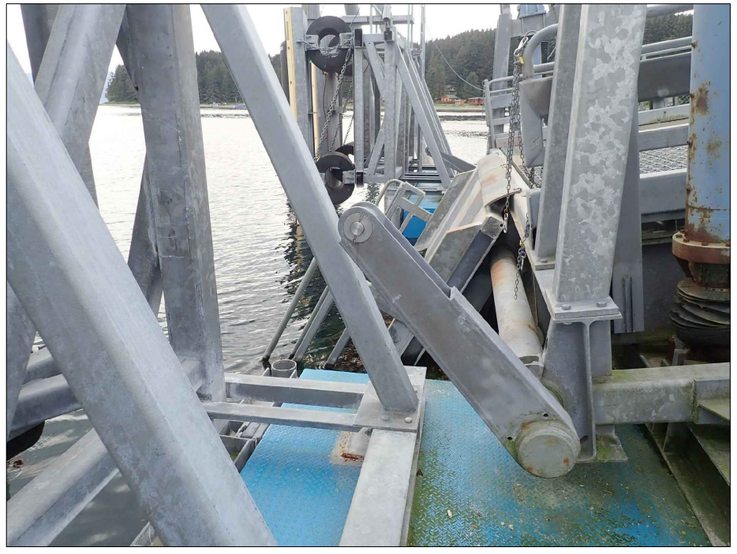
NO.	DATE	REVISION	STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
			ALASKA	Z73221000	2019	7	7

FERRY TERMINAL OVERVIEW



EXISTING APRON SIDE VIEW

APRON & LIFT ASSEMBLY



LIFT ASSEMBLY SIDE VIEW

DRAWING SCALES ARE FOR FULL-SIZE SHEETS. USE DIMENSIONS WHEN SCALE NOT SHOWN.

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ANGOON FERRY TERMINAL
APRON REPAIRS

EXISTING CONDITIONS PHOTOS

FILE | Q:\Marine\Angoon\Ang - apron lift beam replacement\Drawings\PLANSET\07 Extg Conditions Photos.dwg | DATE | 11/21/2019 9:21 | LAYOUT | 7 | DESIGNED | STAFF | CHECKED | STAFF | DRAFTED | STAFF