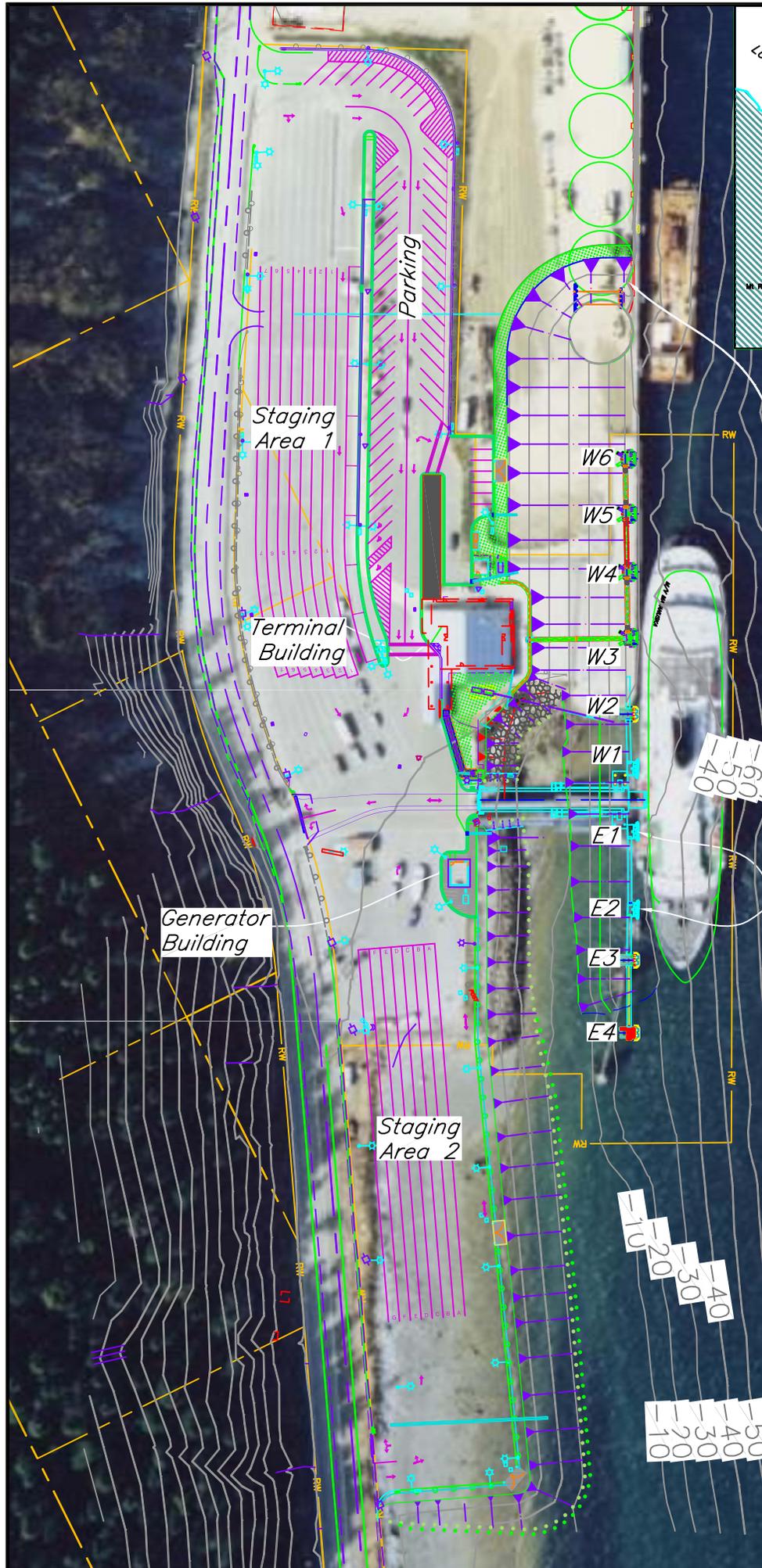


**VICINITY MAP**

Sheet Pile Cells



Mooring Structures, typ.  
 -120  
 -110  
 -105  
 -90  
 -80  
 -60  
 -50  
 -40  
 -30  
 -20  
 -10

Mooring Structures, typ.



-120  
 -110  
 -100  
 -90  
 -80  
 -70  
 -60  
 -50  
 -40  
 -30  
 -20  
 -10

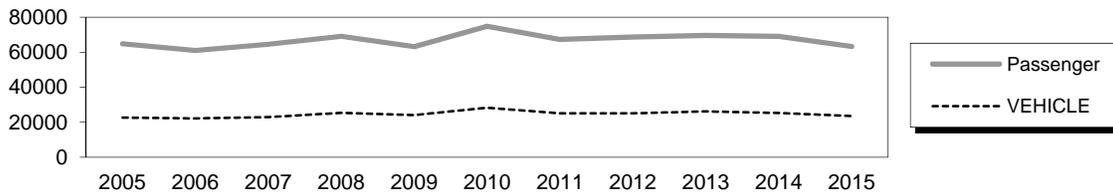
**GENERAL LAYOUT**  
**HAINES**

# Haines Ferry Terminal

4 Mile Lutak Road

**Owner:** State of Alaska  
**Terminal Manager:** Edith von Stauffenberg – 907-766-2862

**Terminal Description:** Haines is a side-loading facility consisting of a transfer bridge, twin lift tower syncrolift, three steel pile and two timber dolphins, sheet pile cell structure with timber fenders and catwalks/gangways for line-handling access. The terminal structures were originally constructed in 1980 and it is the second busiest facility in the AMHS system; only Juneau surpasses it for combined passenger and vehicle traffic. Haines past 10 years of total passenger and vehicle traffic is shown below.



The most recent above water survey was completed on August 26, 2015. The underwater inspection occurred on August 1, 2011. The most recent fracture critical inspection occurred on September 21, 2014.

Vessels	
Name	Berthing, Alignment
Kennecott/Tustumena	Port
All Other Vessels	Starboard

Tidal Data (MLLW 0.0 feet)	
EHW	22.5
MHHW	16.8
MHW	15.8
ELW	-6.0

Terminal Building	
Year Built:	1980
Square Footage:	4352 s.f.
Heating System:	Forced Air
Fuel Storage:	UST
Fire Protection:	Fire Alarm
Condition:	Good

Generator & Building	
Year Built:	1984
Square Footage:	360 s.f.
Heating System:	Electric
Fuel Storage:	N/A
Fire Protection:	Halon
Condition:	Good

Uplands	
Short-Term Parking:	12 cars, 1 HCP
Long-Term Parking:	80 cars
Staging Area:	3200 lineal feet - cars; 800 lineal feet - trucks;
Paint Striping:	Yes
Driving Surface:	Asphalt

Utilities		
	at Terminal	at Ramp
Electrical:	Yes, city & backup power	
Water:	Yes	No
Sewer:	Yes (Septic)	No
Telephone:	Yes	Yes
Cable TV:	No	No
Fuel:	UST	Yes
Wireless Bridge:	Yes	-

Vehicle Transfer Bridge - #0804	
Type:	16' x 140' twin box beam
Year Built:	1985
Shoreward support:	Concrete abutment
Seaward support:	Steel Lift Beam-Syncrolift
Coating:	Wasser Paint
Pedestrian Access:	Concrete 4' wide on bridge
Lighting:	Tubular lights on railing
Condition:	Good
Load Posting Sign:	N/A
Original Design Load:	HS 20-44

<b>Dolphins</b>								
<b>Dolphins</b>	<b>Dolphin Piles</b>	<b>Fender Support</b>	<b>Fender Face</b>	<b>Anodes</b>	<b>Built</b>	<b>Cond.</b>	<b>Hawse Extensions</b>	<b>Notes</b>
W2	4V	Hanging	UHMW	Yes	2008	Good	Yes	
W1	2B, 1V	4V	Ekki Timber	No	1984	Fair	No	
E1	2B, 1V	4V	Ekki Timber	No	1984	Fair	No	
E2	2B, 1V	4V	Ekki Timber	No	1984	Fair	No	
E3	4V	Hanging	UHMW	Yes	2008	Good	Yes	
E4	4V	Hanging	UHMW	Yes	2008	Good	Yes	Windsock
ET	4V	-	-	No	1984	Good	-	Light Pole & Nav Light
WT	4V	-	-	No	1984	Good	-	Light Pole
Sheet Pile	-	Timber fender piles		No	1982	Fair	-	

**LEGEND**

ET = East Lift Tower  
G1 = Gangway

V = Vertical Steel Pipe Piling  
EBP = East Bridge Platform

B = Battered Steel Pipe Piling

<b>Catwalks / Gangways</b>								
<b>#</b>	<b>From Struc.</b>	<b>To Struc.</b>	<b>Lenth / Style / Main Members</b>	<b>Built</b>	<b>Safety Restraints</b>	<b>Cond.</b>	<b>Lighting</b>	<b>Notes</b>
C1	E4	E3	58' / Catwalk / Timber (supported @ 1/4 points by timber piling)	1968	No	Poor	Lightpoles on Posts	
C2	E3	E2	39' / Catwalk 10"x10" Tube Girders	1984	No	Good	Tubuloid	
C3	E2	E1	68' / Catwalk 10"x10" Tube Girders	1984	No	Good	Tubuloid	
G1	ET	EBP	53' / Gangway / S 4x9.5 Bottom Chord	1984	No	Good	Tubuloid	
G2	WT	WBP	53' / Gangway / S 4x9.5 Bottom Chord	1984	No	Good	Tubuloid	
C4	W1	W2	44' / Catwalk / 4"x16" Tube Girders	2008	Yes	New	Tubuloid	
G3	W2	Shore	32' / Gangway / 10"x10" Tube Girders	2008	Yes	New	Tubuloid	

<b>Terminal Projects</b>			
<b>Year</b>	<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
1952	N/A	Haines Sheet Pile Dock	Construction of new sheet pile dock. Includes concrete retaining wall and timber piles bolted to concrete face.
1962	F-095-10(1)	Southeast Alaska Ferry Terminal	Placement of fill, guardrail, septic tank, oil tank, lighting, and hypochlorinator.
1963	N/A	Haines Ferry Terminal	Construction of timber transfer bridge, timber lift towers and counterweight system, and timber mooring dock. Also constructed new waiting shelter.
1968	MT 95	38 Pile Dolphin Haines Ferry Terminal	Construction of timber mooring dolphins, in-line with existing mooring dock fenders.
1972	DB 13-0870	Haines Ferry Terminal Building	Construct Haines waiting shelter.
1978	75210-MT-739	Haines Ferry Terminal Upgrades	Replaced the existing timber fender piles on the sheet pile dock with new timber pile modules that include rubber energy-absorbing donuts.
1980	N/A	Haines Ferry Terminal Building	Replaced the existing waiting shelter with new terminal and generator buildings.

<b>Terminal Projects (continued)</b>			
<b>Year</b>	<b>Project #</b>	<b>Project Name</b>	<b>Description</b>
1984	A38512-F-095-5(5)	Haines Ferry Terminal Modifications	Replaced the existing timber bridge, lift towers, and mooring dock with steel transfer bridge, lift towers and three steel mooring dolphins.
1992	75034 / RS-0991(3)	Haines Ferry Terminal Upland Improvements	Expand uplands parking & staging areas.
1995	75475-NH-095-5(7)	Haines Mooring Improvements Phase A	Adds an access gangway & platform between west side of transfer bridge and west lift tower; upgrades syncrolift winch gear & motors; miscellaneous electrical and bridge control upgrades.
2007	75249	Haines Mooring Improvements	Replaced a Duncan Type timber dolphin (E3) and a concrete apped timber pile cluster (E4) with new steel mooring/breasting dolphins. A new dolphin, W2, was also installed west of the transfer bridge. Additional work included replacing a timber catwalk between E3 and E4 with a steel catwalk, installing a new gangway between W2 and the sheet pile dock, removing an existing timber fender module on the dock, and shoring for an existing concrete retaining wall above partially fail sheetpile cell #4.
2008	N/A	N/A	The AMHS Maintenance crews removed a timber fender module on sheet pile cell #3 that was leaning out tude to scour undermining the base of the fender panel. Maintenance also replaced the timber fender mounting bolts for the lower two wales on each of the three existing mooring dolphins.
2008	73003(4)	Haines FT Carpet Replacement	Replaced carpet in the terminal buliding with out standard style: Lees Carpet - Vitral Pattern, Modular 24" x 24" No. 428 Mountain Beauty.
2008	69050 / SHAK-0005-(575)	Haines - Ferry Dock Hoist Upgrade	Replaced the existing relay-based control panel for the transfer bridge lift system with a PLC-based control panel.
2015	68433	Haines FT Improvements	Removed the cellular sheet pile bulkhead, installed a retaining wall seaward of the terminal building, constructed three new mooring dolphins, four catwalks, two pedestrian walkways, new generator & storage buildings, reconfigured the uplands parking and staging areas, placed excavated fill from bulkhead along tidelands to construct new staging area west of the terminal building.

#### **Observations**

1. The terminal building has received several improvements over the years including: the installation of a new roof, insulation and vapor barrier upgrades, increase in ventilation capacity, and modifications to comply with ADA requirements. New carpet was installed throughout in 2008.
2. A small dam and creek impoundment located one mile west of the facility provides water to the terminal building. The water supply system between the dam and building is approximately 30 years old. A water treatment system was installed in 1990 to comply with regulatory requirements for treatment of water obtained from surface water sources. A fall storm in 2005 destroyed the dam, temporarily disrupting the water supply. Repairs were made and the water supply restored. In 2009 the sand filter was removed and replaced with two bag filters.

### Observations (continued)

3. Inadequate water depths exist at the face of the terminal at extreme low tides. Sediment has accumulated in the area from under the bridge and west along the sheet pile bulkhead. Glacial rebound in Haines, estimated at about 1-inch per year, has also contributed to about 3 -1/2 feet of rise in the seafloor with respect to sea level since the terminal was built in 1962. Dredging is proposed under Project 68433 which will alleviate this condition.
4. In October 2004, the face of Cell 4 split open, releasing the retained soil and a sinkhole formed in the pavement. The 2006 Underwater Inspection Report noted that the H-piles supporting the concrete retaining wall over cells 1-4 had deteriorated. Six timber piles at Cell 3 were hanging by the fender wale connections. Project #75249 – Haines Mooring Improvements stabilized cell #4 and the retaining wall.
5. Anodes were installed on the bridge lift towers and along the northern face of the first four sheet pile cells in 1992. Structure-to-seawater potential measurements indicate anodes are depleted and steel is now freely corroding. Vessel spring lines have torn off the chafe guard on top of the timber fenders of dolphin W1. The steel piling are missing anodes.
6. The bridge and lift system were constructed in 1984. The bridge was top coated in 1993 and is in fair condition. New Synchrolift motors and cables were installed in 1996. Motors and motor wiring were upgraded, Synchrolift controls were modified, and the lift gearboxes were upgraded to increase the bridge lifting rate. The lift system is in good condition. There were numerous faults with the Synchrolift controls. In 1999, the controls were reset as directed by Synchrolift. An AMHS Maintenance project provided a permanent improvement to the faults by replacing the steady-state controls with PLC automated controls in 2008. The bridge controls have stabilized, but if faults occur, they can be monitored on the internet. The lift cables were replaced in 2011 by AMHS Maintenance. The leveling grout pad beneath the support frame for the East synchrolift tower has several microcracks. There is also a sheared anchor bolt in the frame. The bridge lifting beam is developing corrosion on the metalized surface, and is out of plumb in section view, a sign that the bridge hinges may have seized. The lift beam access platform is damaged from impact with the lift tower piling, and access is difficult without a ladder from the bridge deck.
7. Sections of the car-deck grating are bent near the shoreward transition plate. Laminating corrosion exists along the full length of stringer #1, located beneath the left pedestrian walkway. Deicing chemicals are most likely the cause. The interior of the box girders were prime coated, but not top coated. They currently have widespread surface corrosion on the lower flange. The most severe corrosion is at the shoreward girder entrance door. A fuel hose approaching the bridge fuel line connection on shore is old, weathered and cracked.  

A steel pipe lever on the right side of the bridge, used to retract the locking pin from the hanger bar, is sheared in half. The lever has been lashed to adjacent framing to prevent it from falling into the water. Operations personnel haven't adjusted the ramp for years.
8. The hinge pin of the apron transition plate has no retaining nut or cotter. The apron hinges are reported to be worn; there is excessive play between the bridge and the apron.
9. Surface corrosion is bleeding through the paint on the top of the girders on Catwalk C3. Hanger bolts of the catwalk leading to the left lift tower are loose.
10. The 2014 Fracture Critical inspection found cracks between the RT girder (G2) & Floorbeam 1 at corners – seaward bottom, 7-1/2" (propagated from 2" crack in 2012); shoreward bottom, 8-1/8"(propagated from 3-3/4" crack in 2012). There is also a 10-1/4" long crack between the web plate & bottom flange girder weld (no change since 2012).
11. The 2014 Fracture Critical inspection found cracks between the LT girder (G1) & Floorbeam 1 at corners – shoreward bottom, 3-5/8"; seaward bottom, 3-7/8". There is also a 9-3/8" long crack between the web plate & bottom flange girder weld. None of these cracks have propagated since the 2012 inspection.
12. There is surface corrosion on the lifting beam covering ~30 s.f. of the middle & top of the web, underside of the top flange for the middle 15', on each side. No measureable section loss. Weld indications exist at the lower corners of the intermediate ramp lift beam to Stringer 1 connection.
13. There is heavy surface corrosion & 1/8" section loss on interior of seaward end of bridge, and lower 4" of bottom flange plates.

### Observations (continued)

14. Laminar corrosion exists on interior of shoreward end of bridge, lower 2” of stiffener plates & bottom flange of girder. Section loss is less than 1/8”.
15. The diagonal braces between lift tower piling have failed galvanized coating in splash zone. The field coating has failed at welds between gusset plates & piles.
16. The UHMW chafe protection was recently torn off the top of the fender panel at dolphin W1. Cathodic potential readings indicate that all dolphins are inadequately protected from corrosion.

<b>Inspection Summary</b>		
Structure	Priority	Recommendations
<i>Category I - Safety Repairs</i>		
Transfer Bridge	1	Replace the bridge lift beam. Construct a wider inspection platform on the lift beam, with access ladder from the bridge deck.
<i>Category II - Rehabilitation Work</i>		
Bridge Apron	2	Replace apron hinges. Install retaining nut/cotter on the end of the hinge pin for the apron transition plate.
Bridge Ramp	3	Determine extent of damage to bridge ramp lock pin/hanger bar and program repairs so that lift functions are restored.
Catwalks	4	Inspect/replace hanger bolts, tighten existing jam nuts to prevent failure of catwalk.
Transfer Bridge Lift Towers	5	Monitor the condition of the grout pad and replace the anchor bolt on the East lift tower frame. Replace the lift beam access platforms with a design like the Valdez platforms. Repair the field coating on welds of the cross bracing of tower piles.
Dolphins	6	Replace the existing UHMW caps on the fender panels with steel caps securely fastened to the timbers. Install anodes on existing steel piles.
Catwalk C3	7	Inspect and evaluate catwalk for a paint re-coat.
Terminal Building	8	Consider future project to replace and/or retrofit existing terminal building as may be needed.
Transfer Bridge	9	Install neoprene gasket in the girder entrance door and secure the door with bolts. Monitor corrosion within the interior of the girders. Replace the cracked fuel line. Monitor the cracks in the corner and bottom welds of the floorbeam connection to webs of both box girders and repair if/when required. Recoat floor stringer 1 below concrete in-filled pedestrian walkaway. Investigate need for new paint re-coat of entire bridge in future.
<i>Category III - Upgrades Needed</i>		
No upgrades necessary		

**Project #68464 – Haines Ferry Terminal End Berth Facility:**

The proposed scope of this project is to construct offshore and uplands improvements necessary for accommodating end loading of AMHS ferry vessels. These improvements are required for the safe and efficient berthing, mooring, and vehicle and pedestrian transfer operations of existing and proposed new ferry vessels. CH2MHill is currently working on preliminary design, with advertisement expected by end of 2016. Construction is planned for 2016-17.