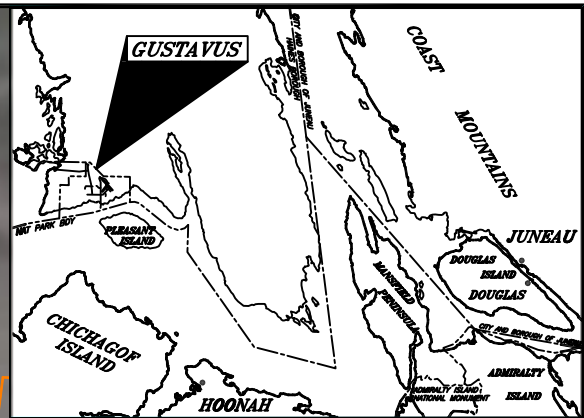


GUSTAVUS



## VICINITY MAP



Sheet Pile Abutment

Approach Trestle

Generator Building

Barge Ramp

Barge Landing Dolphins

Steel Frame Dock

Staging Area Island

Approach Trestle Transition

Vehicle Transfer Bridge

Mooring Floats

Mooring Structures, typ

W1

E1

E2

E3

E4

E5

MV LeConte

## GENERAL LAYOUT GUSTAVUS

ICY PASSAGE

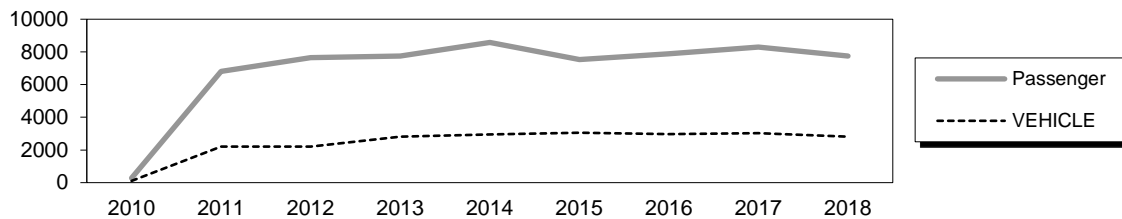
# Gustavus Ferry Terminal

State Dock Road

**Owner:** State of Alaska

**Contact:** Gregory Patz, M&O Superintendent, SE Region – 907-465-1784

**Terminal Description:** The Gustavus Ferry Terminal is a side-berth loading facility consisting of a 600' long trestle, 0.75 acre staging/parking island, 175' long approach trestle with a 75'x75' dock and sheet pile wave barrier, pontoon-supported transfer bridge with adjustable ramp and apron, six steel pile dolphins and catwalks/gangways for linehandling access. This facility was recently constructed in 2011 as a multi-purpose community dock and for use as a ferry terminal by AMHS. This facility is presently operated and maintained by DOT&PF, SE Region – not AMHS. Gustavus's total passenger and vehicle traffic are shown below.



The most recent above water survey was completed on June 21, 2017. The most recent underwater inspection was completed on August 2, 2016.

Vessels	
Name	Berthing Alignment
LeConte, Aurora	Port/Starboard
FVF	Port/Starboard

Tidal Data (MLLW 0.0 feet)	
EHW	20.0
MHHW	14.8
MHW	13.7
ELW	-5.0

Terminal Building
This facility does not have a terminal building.

Generator & Building	
Year Built:	2011
Square Footage:	336 s.f
Heating System:	Oil Furnace
Fuel Storage:	500 gal Tank
Fire Protection:	N/A
Condition:	New

Utilities		
	at dock	at ramp
Electrical:	Yes	Yes
Water:	No	No
Sewer:	No	No
Fuel:	Yes	No

Uplands	
Parking:	14 cars
Staging Area:	240 ft
Paint Striping:	No
Driving Surface:	Gravel

Vehicle Transfer Bridge - #1417	
Type:	21'x125' steel multi girder
Year Built:	2011
Shoreward support:	Steel Beam/ Driven Piling
Seaward support:	Steel Support Float
Coating:	Wasser Paint
Pedestrian Access:	On Bridge
Lighting:	Overhead Fixtures
Condition:	New
Load Posting Sign:	N/A
Original Design Load:	HS 20-44/Cat 972 Forklift & Lift Truck

Bridge Support Float	
Type:	40'x70'x7' Flexifloat
Year Built:	2011
Ballasted:	Yes
Ramp & Apron:	Hydraulic
Anodes:	Yes
Condition:	New

Dolphins							
Dolphins	Dolphin Piles	Fender Support	Fender Face	Anodes	Built	Cond.	Notes
W1	1V, 2B	-	Rubber Tires	No	2011	New	
E1	1V, 2B	Hanging	UHMW	No	2011	New	
E2	1V, 2B	Hanging	UHMW	No	2011	New	
E3	1V, 2B	Hanging	UHMW	No	2011	New	
E4	1V, 2B	Hanging	UHMW	No	2011	New	
E5	1V, 2B	-	Rubber Tires	No	2011	New	

#### LEGEND

E1 = East Mooring Dolphin  
V = Vertical Steel Pipe Piles

B = Battered Steel Pipe Piles

Terminal Projects			
Year	Project #	Project Name	Description
2011	67599/ BR-0003(53)	Gustavus Causeway Replacement	The replacement of the old structures with new structures, the construction of a new dock and approach, and the relocation of the existing floats.
2011	N/A	GST Emergency Bridge Repairs	The replacement of bridge support roller bushings and repairs to the damaged bridge support rollers.
2013	67599	Gustavus Causeway Replacement	A new access gangway was installed between mooring structures E4 to E5 to allow use of E5 as a mooring line attachment for the MV Kennicott. Other miscellaneous modifications were made to the bullrails on the fixed dock and the existing dolphin caps to minimize line abrasion.

#### Observations

1. There is no purser shelter or designated pedestrian waiting areas. Vehicle staging for an incoming ferry occurs on the paved island, in painted staging lanes.
2. The transfer bridge has a hydraulically operated intermediate ramp and apron. The hinge bearings for the shoreward bridge support pier are not easily accessible, but a remote greasing station was installed for maintenance.
3. The intermediate ramp is short and is too high for the primary vessel (LeConte). Limitations on vehicle length and trailer type are required in order to traverse the grade breaks from ship to the intermediate ramp and bridge.
4. The apron hinges were recently greased. The bolted end of the tension rods on the hydraulic cylinders for the apron lift system are corroding. The interior of the hydraulic cabinet is in good condition.
5. AMHS employs shore-based personnel to assist with vessel mooring lines. Self-retrieval of mooring lines by the vessels is no longer required. SER removed all fixed mooring lines and pendant masts from this facility and made other minor line handling improvements to the top of the dolphin caps for ease of vessel tie-up.
6. Cathodic potential (CP) readings for all mooring dolphins, and all but one trestle bent (16) are below -0.8V, which means the steel is freely corroding. CP readings for the main dock piles are all above -0.8V. Depth to mudline elevations, taken with leadline readings at locations along the fender line in 2015, range from -30' to -38' MLLW.
7. Portions of the galvanized coatings exhibit failure on dolphin W1 & E5 access ladders.

### Observations (continued)

8. Damage to the seaward bridge bearings from a winter storm was discovered on December 6, 2011. Additional inspection by SER marine design inspection crew on Feb 8, 2012 revealed vertical support bearing failure again on two girders on the eastern side. AMHS Maintenance replaced the damaged bushings with synthetic high-impact strength bushings.  
In October of 2013 a project replaced girder roller bearings with higher strength, larger diameter barrels and synthetic bushings. Also installed were additional lateral roller bearing restraints. The most recent inspection found them operating normally.
9. On September 28, 2011 a barge, hauling embankment materials for an ADOT airport project, impacted the edge of the approach transition structure and the barge landing lead-in dolphin. Damage to the transition structure was minor, consisting of a crushed stiffener plate & utility hanger and deformation of the bottom flange of the exterior trestle girder. The dolphin was damaged more significantly:
  - Two dents and a substantial deformation of the upper 40-feet of the west batter pile (18" diameter).
  - A large dent and deformation of the front face of the vertical king pile located about 3-feet above the rubber tire fender (24" diameter).
  - Deformation of the bottom plate of the pile cap structure.The approach transition & dock are protected by 3 dolphins, but the impact occurred where the gap between dolphins is ~150' wide.
10. During embankment hauling operations heavy truck traffic traversed the approach trestle, which induced a vibration that caused the bolts of the deck hold-down clamps to loosen in September, 2011. The Contractor re-fastened all of the bolts on the dock. These bolts reportedly loosen with regular traffic. The local DOT maintenance crew inspects and re-tightens when needed.  
Re-fastening all deck hold-down bolts is a difficult process to coordinate, requiring 2 men and a skiff during high tide. By turning the bolts around, so that the nut end is up, and tack welding the bolt head down to the clamp plate, these bolts could be tightened by one maintenance worker from top-side.  
Inspection in October, 2013 found 52 loose deck hold-down clamps out of 800. The girder anchor bolts are missing or have loose nuts at various locations along the approach trestle.
11. The steel transition fingers at the leading edge of the apron clear the top of the LeConte door opening by a few inches. Vessel personnel typically fold the fingers back to allow more clearance when lowering the apron into the vessel. But the existing steel apron fingers are heavy and, when left in the folded down position, fill with water & freeze in the winter – which increases their weight.
12. Local boaters have anchored a dense group of mooring buoys offshore within proximity of the dock over the past years. The location of the buoys creates navigational concerns for ferry traffic and maneuvering capabilities on approach to the dock - especially during winter storms.  
The M/V Kennicott made a trial berthing in late April, 2012 and desires to utilize the terminal for regular traffic stops on its cross-gulf voyages. They indicated a need for a method of attaching mooring line to dolphin structure E5. A catwalk is preferred. The Kennicott was routinely stopping at GUS monthly as part of its cross gulf voyage, but not in 2018 as reduction of service from budget cuts. A new access catwalk was added in 2015 from E4 to E5 to allow line handlers to access structure E5.
13. The dolphin access gangway has been struck by the breakwater guide pile. There is a significant dent in the shoreward bottom chord. Additionally, the angle guide at bottom of gangway sheared off from one side and fiberglass conical cap on pile adjacent to gangway has been completely destroyed. Clearance between bottom chord and nearest surface of pile is 24 in.
14. Bridge pontoon - Seaward freeboard is estimated at about 12 inches and shoreward freeboard is 26". Slight decrease in freeboard from previous measurements. Extruded delta fenders of all pile guides show some damage such as loose bolts, bent UHMW backing plates, and cracks in rubber fender. AMHS Maintenance has made coating repairs to the area above the waterline on the seaward edge of the float.
15. The aluminum pedestrian access gangway was modified during construction by raising the seaward end. A white polyethylene half-round was added to the original skids to increase underside clearance between the gangway and platform. Additional piece rotating out of alignment. Gangway skids extend beyond the angle guide at high tide and the skid appendage is at risk of being sheared from the gangway.

16. There are various damages to the timber harbor floats, most concerning are missing bolts & nuts at the removable pile guides. If the guides fail, the harbor floats may float towards the vicinity of a moored vessel.

Inspection Summary		
Structure	Priority	Recommendations
<i>Category I - Safety Repairs</i>		
Marine	1	Construct additional offshore dolphin to protect exterior girder from future vessel impacts while utilizing the barge landing ramp.
Private Mooring Buoys	2	Determine the appropriate approach and departure channels to the dock and then discuss establishment of formal navigation areas with the USCG and local residents. Buoys or other obstacles to safe navigation should be removed.
Trestle Deck	3	Monitor the bolts of the deck hold-down clamps. Program a project to modify the clamps so that the bolts can be tightened by one maintenance worker from topsides.
Harbor floats	4	Add bolts/nuts where missing to the removable pile guide brackets.
<i>Category II - Rehabilitation Work</i>		
Bridge	5	Provide fence/gate improvements at seaward end of transfer bridge to prevent pedestrian access to vessel from the adjacent small boat harbor.
Trestle & Barge Landing Dolphin	6	Replace damaged stiffener plate & utility hanger on exterior girder on outer trestle approach. Repair/replace damaged barge landing dolphin.
Bridge Float	7	Remove the anode and cable on the southeast corner of the pontoon. Retrofit or replace the damaged rubber restraint fender units. Monitor the condition of the paint coating along the seaward edge & at the lock assemblies. Monitor the skiff moorage on the shoreward edge of the pontoon.
Ramp and Apron	8	Remove & replace existing steel fingers on the apron with aluminum fingers. Wrap corroding zinc hydraulic fittings with corrosion-proof wax tape. Prep and paint the hydraulic pump coupling. Drill drain holes in the bottom of the hydraulic cabinet.
Bridge	9	Provide an access platform and ladder for access to the shoreward bridge hinge bearings.
Dolphins	10	Repair the failed galvanized coating on the dolphin W1 & E5 access ladders. For 3-pile structures, install a ladder between the deck platform & the cap/lower mooring lines.
Pedestrian Rail	11	Install pedestrian rail and fence to east side of dock along wave barrier. Pedestrians accidentally falling from dock will strike wave barrier framing and likelihood of injury before entering the water is high.
<i>Category III - Upgrades Needed</i>		
Uplands	12	There is an active design project underway to investigate elimination of bridge float system and replace with lift bridge in future. Existing wave environment is too severe for the current float system. Also investigate/fund separate access to the boat harbor so that ferry and harbor use does not conflict.

#### Project #68128 – AMHS Gustavus Ferry Terminal Improvements:

This project is currently under design. The proposed scope is to install new pile supported lift towers with an associated bridge lift system, expand the existing dock to provide a new bridge abutment, more favorable vehicle alignment and separated transient harbor access, and relocate and reinstall the existing gangway and electrical. Advertisement is planned for Spring 2018, with construction expected to occur in 2018-19.