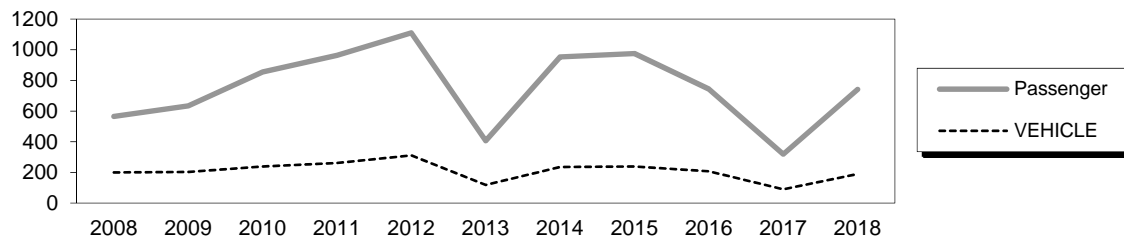


# King Cove Dock

**Owner:** Aleutians East Borough

**Contact:** City of King Cove, Charles Mack, Port Director 907-497-2340

**Terminal Description:** The M/V Tustumena docks at the Aleutians East Borough facility in King Cove on its east/west passage through the Aleutian Chain. The King Cove facility consists of a sheet pile cell structure with a face approximately 125' long, and 4 steel pile mooring dolphins (two on each side of the dock) connected to the dock by steel catwalks. Access to the dock is via an embankment and paved roadway. There is a breach in the embankment at about its midpoint to permit juvenile fish migration. A steel girder/concrete deck bridge spans the breach; open sheet pile cells protect the abutments. The facility is a multi-purpose facility and could be in use by other vessels when the ferry arrives. AMHS is not in control of operation or maintenance of this facility. The past 10 years of total passenger and vehicle traffic at King Cove is shown below. The M/V Tustumena was out of service most of 2013, causing a steep dropoff in traffic at the terminal.



The most recent above water survey was completed on September 21, 2018. The most recent underwater inspection was completed on July 14, 2014.

Vessels	
Name	Berthing, Alignment
Tustumena	Port / Starboard

Tidal Data (MLLW=0.0 feet)	
Highest Observed	9.0
MHHW	-
MHW	-
Lowest Observed	-3.3

Terminal Building
This facility does not have a terminal building.

Generator & Building
This facility does not have a generator on-site.

Utilities @ Dock
There are no utilities at the City Dock.

Uplands	
Short-Term Parking:	N/A
Long-Term Parking:	N/A
Staging Area:	900 lineal feet

Sheet Pile Dock - #1954	
Year Built:	1993
Dock Structure:	Open cell sheet pile structure
Coating:	None
Fenders:	6 timber pile fenders along the face of the dock; 5 pipe pile bollards with a vertically oriented rubber cylinder also act as fenders.
Anodes:	Yes
Lighting:	Light posts on either side of the dock
Condition:	Fair
Load Posting Sign:	N/A
Original Design Load:	HS 20-44 / 400 psf / Cat 980C Loader / 40 Ton Crane

<b>Dolphins</b>						
<b>Dolphin</b>	<b>Dolphin Piles</b>	<b>Fender Support</b>	<b>Fender Face</b>	<b>Anodes</b>	<b>Built</b>	<b>Cond.</b>
N2	2B, 1V	1V	Rubber Cylinder	Yes	1993	Good
N1	2B, 1V	1V	Rubber Cylinder	Yes	1993	Good
S1	2B, 1V	1V	Rubber Cylinder	Yes	1993	Good
S2	2B, 1V	1V	Rubber Cylinder	Yes	1993	Good

#### LEGEND

V = Vertical Steel Pipe Piling

B = Battered Steel Pipe Piling

<b>Catwalks / Gangways</b>							
<b>#</b>	<b>From Struct.</b>	<b>To Struct.</b>	<b>Length / Style</b>	<b>Built</b>	<b>Safety Chains?</b>	<b>Cond.</b>	<b>Lighting</b>
C1	N2	N1	85' / Catwalk / Steel pony-truss	1993	No	Good	None
C2	N1	Dock	35' / Catwalk / Steel pony-truss	1993	No	Good	None
C3	Dock	S1	35' / Catwalk / Steel pony-truss	1993	No	Good	None
C4	S1	S2	85' / Catwalk / Steel pony-truss	1993	No	Good	None

#### **Observations**

1. This facility was constructed in 1993. The sheet piles of the cells are in fair condition. The 2009 underwater inspection report noted that there is moderate corrosion and scale in the splash and atmospheric zone. Inspectors in 2014 scraped ~1/4" of pack rust off the top of the cells to obtain clean steel for a potential reading. The submerged portions of the dolphins and steel pile fenders are in good condition. Anodes are reported to have 75 to 80 percent material remaining. CP readings on the most recent inspection were -0.80 and -0.85 on the north & south ends, respectively. -0.85V is considered the minimum voltage level for protected steel.
2. The fill inside the sheet pile cell has settled approximately two inches. The Harbormaster reports that the fill has previously settled about eighteen inches. This consolidation was anticipated and is discussed in the Maintenance and Operations Manual for this facility. The cell wall on the north side of the structure has a bulge. Depth to mudline measurements along the seaward face of the bulkhead & dolphins range from -30 to -43 on the 2018 inspection.  
The City installed timber mats in the main loading area near the fender face and approximately 100-feet leading towards town. This reduces wear in the gravel from vehicle turning movements and tracking mud/dirt onto the vessels.  
Some of the dock elements along the face are damaged. The ladder and timber pile between F2 and F3 are still damaged. The ladder between fenders F3 & F4 is damaged. The southernmost timber fender pile was dislodged from its upper bracket and is gone. Several of the fenders appear to have been damaged by large loads bearing on the tops of the fenders. The ends of the timber fenders are splintered and the upper fasteners for two of the rubber cylinders have failed.  
The timber pile near the bulwark opening between fenders F1 & F2 is missing. The timber pile in front of the bulwark opening between fenders F4 & F5 is damaged. Multiple rubber fender mounts have broken retaining bolts and exhibit evidence that the fender capacity was overloaded (bent steel behind fender).  
The most recent inspection ('18) found the cathodic protection readings averaged -0.85V. Any reading more negative than -0.8V indicates the steel is adequately protected.
3. Line loads on dolphins N1 and S1 appear to have exceeded their capacities. Dolphin N1 was pulled to the southeast and the dolphin leans to the south. Dolphin S1 was pulled to the northeast and leans to the northwest. Dolphin S1 does not appear to have leaned further north or northwest since the 2006 inspection based on catwalk misalignments. Displacing these dolphins caused failure of the bolts securing the catwalks to the dolphin caps and the catwalks no longer bear equally on the caps. The catwalk to dolphin S2 is chained to the bollard and bears on only 8" of the cap. The gratings on the

### Observations (continued)

catwalks to N1 and S1 are loose, and have not been improved since the last inspection. A section of grating on the south side of the dock, near the sheet piles, is warped enough to provide a tripping hazard. Dolphin caps have no traction coating, and therefore are very slick when wet.

4. The catwalk between dolphins N1 & N2 has been impacted on the seaward side. The entire catwalk has been bent horizontally shoreward slightly. No members or their connections were observed to show signs of cracking.
5. The openings in the bulwarks for the ferry's vehicle-loading ramp were widened from 16' to 20' sometime between 2012 and 2014. The City has installed new removable bull rails (2016).
6. The steel girder of the bridge in the approach embankment shows signs of coating failure and minor corrosion. The bridge guardrail consists of timber posts, a timber beam, and wire rope. The approach guardrail is formed with timber posts and wire rope. These systems do not meet AKDOT standards. Several wood spacer blocks along the cable guardrail on the south side of the dock approach road are broken or missing.
7. A weld has failed in the top flange connection between sheet piles near fender F1. A weld has failed at the union between the top of a steel curb section and the south side of the bollard behind fender F2.
8. The City has made repairs to the light poles in the staging area – straightening the leaning light pole and replacing luminaires with LED fixtures. Both red navigational lights, each mounted on the end dolphins (N2 & S2), are not functioning. Fuel utilities appear to be functioning at the face of the dock.

Inspection Summary		
Structure	Priority	Recommendations
<i>Category I - Safety Issues</i>		
Mooring Dolphins & Catwalks	1	Monitor the slopes of mooring dolphins caps on N1 and S1 for any additional deflection. Reattach the catwalks to the dolphin caps. Secure the catwalk grating to the framework. Program to repair the dolphin caps. Monitor the condition of the catwalk between dolphins N1 & N2.
<i>Category II - Rehabilitation Work</i>		
Dock	2	Repair the ladder mounts and rungs. Replace damaged/missing timber fender piles. Repair the upper fender mounts and fasteners as required. Replace the creosote log at the opening in the bulwarks with a moveable steel bull rail section. Monitor the deflections in the cell walls to determine if the cells have stabilized or if changes are occurring. Repair broken welds between sheet piles and curbs/bollards.
All submerged steel	3	Continue to monitor and replace anodes.
Guardrail	4	Bring approach and bridge guard rails up to state standards.
Luminaires	5	Install a globe on the luminaire at the north end of the approach. Replace the luminaire post & base that is damaged and leaning on the seaward side of the approach bridge. Repair the damaged conduit & wiring on the luminaire near the north edge of the dock.
<i>Category III - Upgrades Needed</i>		
None noted.		