

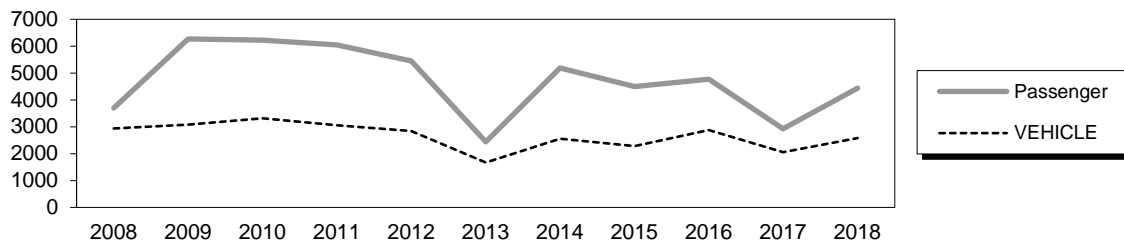
# Seldovia City Dock

Dock Street

**Owner:** City of Seldovia

**Terminal Manager:** Layla Pedersen, Harbormaster, 907-234-7886

**Terminal Description:** Seldovia City Dock is a multi-purpose dock owned and operated by the City of Seldovia. The City & AMHS have an agreement for docking use. The dock is supported on steel pipe piling and has a steel and concrete superstructure with a steel wale, timber faced fender system. Vehicle access is via Dock Street and across a steel approach structure. There is a designated AMHS vehicle staging area (on City owned property), but no terminal building or other upland ferry terminal related facilities. This staging area does not appear to be utilized by ferry traffic. The dock and approach area has a fueling station, fuel storage facilities and serves as a freight wharf. The past 10 years of total passenger and vehicle traffic at Seldovia 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 August 24, 2018. The underwater inspection occurred on September 26, 2018 and the fracture critical inspection was on September 27, 2012.

Vessels	
Name	Berthing, Alignment
Tustumena/Kennicott	Starboard

Tidal Data (MLLW 0.0 feet)	
EHW	25.1
MHHW	18
MHW	17.2
ELW	-7.0

Utilities @ Dock	
Electrical:	Yes
Water:	Yes, 1-1/2" PVC within insulated 5" PVC
Fuel:	Yes, three 4 1/2" diameter

Dock Approach - #1423	
Type:	21.5' x 120' composite girder
Year Built:	1967
Shoreward support:	Concrete Abutment
Seaward support:	Concrete capped, steel pile
Coating:	Spray metallizing
Lighting:	Light pole on shore side
Condition:	Fair

Terminal Building	
	N/A

Uplands	
Short-Term Parking:	10 cars (in lot next to the City office building).
Long-Term Parking:	10 cars
Staging Area:	420 lineal feet
Paint Striping:	No
Driving Surface:	Asphalt/Gravel

Generator & Building	
	N/A

City Dock	
Type:	44' x 208' Concrete Panels
Year Built:	1967
Support:	14" & 16" dia Steel Pipe Piles
Coating:	Covered with dielectric grease and plastic sheathing in 1991.
Fender Support:	HP 14x73, 10' apart
Fender Face:	12"x12" Douglas Fir
Anodes:	Yes- last checked 2004
Lighting:	Light poles, east and west ends of dock.
Condition:	Fair
Notes:	Red navlights - east light pole.
Load Posting Sign:	N/A
Original Design Load:	HS20-44

Terminal Projects			
Year	Project #	Project Name	Description
1967	E.D.A Proj # 07-1-00030	City of Seldovia City Dock	Original construction of the City Dock, Dock Approach and Utilities.
1991	74610 / F-013-1(2)	Seldovia Ferry Terminal	Installed the fender system along the north face of the dock. Also rehabilitated the existing dock support piles by filling batter piles with concrete, installing pile sockets, and coating & wrapping all existing steel pipe piles with dielectric grease and plastic sheathing. Installed fence, signs, light poles and wiring to the uplands parking area.

### Observations

1. The original dock was constructed in 1967 and is basically sound. By 1988 most of the epoxy coating on the dock support piles had failed and they were freely corroding. Later that year, underwater video and UT inspection was performed to identify the extent of pile corrosion and was used as the basis for determining rehabilitation of the structure. In 1991 the piles were structurally repaired and corrosion protection was installed to minimize further section loss. Repair consisted of filling the piles with 5000 psi concrete, cleaning and coating the piles with dielectric grease, and installing a protective plastic wrap over the gel coating. The plastic wrap was secured in place with stainless steel straps and aluminum alloy anodes were installed at elevation -10.0 ft. to provide cathodic protection.

The 1993 underwater inspection (UW) indicated that the anodes appeared to be functioning as designed, however the stainless steel straps located nearest the mudline exhibited some corrosion. At least two of the bands had broken. The 1997 UW inspection showed that many of the stainless steel bands had failed and that the plastic protective jackets were coming loose. The May 2004 UW inspection again noted that a large number of the stainless bands had failed and the remaining bands were corroded. Approximately 35 piling had jackets missing or loose. In 2006, the City Public Works replaced the corroding stainless steel bands with plastic bands. The anodes were reported to be in good condition at that time. Due to the nature of the plastic pile jackets, there is no way to take UT measurements or Cathodic Protection readings (need an exposed piece of steel pile). The portion of the piling right beneath the concrete caps is not covered by plastic sleeves, but most appear to still have some epoxy coating remaining in this area. It is unknown the condition/extent of sacrificial anodes on the piles.

The 2018 Underwater Inspection report found several areas of loose pile wrap at the following locations:

- Pile C3: 10 ft from the channel bottom for a height of 5 ft. The overlapping wrap section below the loose section is still in place and protecting the pile.
- Pile D2: the top corner of the wrap is loose approximately 5 ft from the waterline. The overlapping wrap section below the loose section is still in place and protecting the pile.
- Pile F3: A 10 ft long section from the mudline upward edge is loose. The overlapping wrap section below the loose section is still in place and protecting the pile.

All of the cathodic protection system anodes have a remaining section of less than 20%. There are two sizes of anodes 4 ft long by 3 in by 3 in on Bents A to D and 4 ft long x 2 in by 2 in on Bents E to M. Isolated anodes are partially buried throughout the structure.

2. The approach span consists of steel plate girders with a cast-in-place concrete slab, curb, and guardrail. The shore end bears on bearing plates, while the seaward end is cantilevered and is supported by a concrete pile cap. The steel girders were cleaned and spray metalized in 1991, but some metalizing did not bond. The surface of the steel beams exhibit moderate-to-heavy surface corrosion on the lower flange and web, extending roughly 20-feet from the shoreward abutment. This is likely due to saltwater-spray at high-tide coming off the rock riprap during storms. Above the brown rust is white rust from the oxidization of the spray-metalized coating.

The sliding plate bearings at the shore abutment are in need of repair. The interior bearing material is neoprene with an internal sandwich of steel shims. The top plates are worn on the seaward end and should be replaced. The south bearings have corrosion over 90% of their exposed surfaces.

### Observations (continued)

The north bearings are most likely exposed to less sea spray, which is why they only have 30% surface corrosion. All bearings should be re-coated.

3. There is a concrete backwall at the abutment that retains fill and supports a small approach slab. A corrugated metal pipe is supported under the bridge and the pipe penetrates the back wall. A crack runs horizontally through the pipe penetration and across the backwall. The approach slab is cracked and has settled slightly because soil behind the backwall and beneath the slab is gone, and the slab is acting like a bridge.
4. The guardrail transition posts at the approach abutment have been undermined due to erosion around the abutment sidewalls. The end guardrail sections are loosely chained to the bridge rail. The height and post spacing of both left and right guardrail transition sections, leading into the bridge railing, is substandard. Handrail along the bridge does not meet safety standards.
5. A fence located along the south property line of the designated staging area has been damaged.
6. There is a broken flex conduit coupling at the right side abutment. Conduit at the base of the light standard, in the same area, is broken and wires are exposed. Several utility appurtenances are covered by weeds and wild grasses about 10-feet back from the right bridge abutment. The guardrail has also come unbolted from the backup post in this area.
7. A fuel building, supported separately from the dock on two rows of creosote-treated timber piling, is located next to the southeast corner of the dock. The piling look in fair condition above the waterline, but it is unknown the integrity of the timber below this level. We weren't able to look inside the fuel building, but the exterior is in fair condition. The City had notified DOT that the fuel building suffered damage after an earthquake in January of 2016. The City stated the timber pile-supported structure was swaying back-and-forth several inches with wind and tidal action. The City tied one corner of the timber structure to the existing dock. This was accomplished by wrapping a steel chain between two piles on the adjacent structures. During the site visit, the inspection team could not detect any movement in the structure.
8. The dock is comprised of several precast, prestressed concrete deck panels spanning between concrete cast-in-place pile caps supported by steel piling. During the 2006 inspection cycle holes in the deck were filled with grout, three new 4 1/2" dia. fuel lines were installed between the Chevron building and the Dock, and holes were patched in the surface of the Dock. The 2012 Fracture Critical inspection report found numerous hairline cracks with rust staining and small-diameter spalls on the lower portions of the seaward end of Bent Cap M, directly above a support pile.
9. There are random, intermittent shorts in the dock lighting electrical circuit and City maintenance believes the source to be the main circuit breaker box, mounted on the side of the south corner of the dock. The breaker panel is old and weathered from constant exposure to salt spray and weather.
10. A small jib crane located on the seaward side of the dock is used to load and offload smaller boats using the facility. The crane location conflicts with the passenger loading ramp on the Tustumena. It may be necessary to relocate the crane in the future.

A waterline runs along the right side of the bridge and approach. It ends at an insulated tee-connection with 2 valves at the intersection of the approach and dock. One valve is fitted with a short section of waterline hose to continuously run during winter months. The M/V Tustumena takes on water in Seldovia. The water source in Seldovia is reportedly very high quality.

11. The fender panels are timber-faced with steel w-beam vertical and horizontal wales, steel h-pile supports with horizontal chains connecting the upper wales with the concrete dock, and dampened by rubber energy-absorbing fenders at the upper wale. Maintenance has installed netting in the gap between the top wale and the edge of the dock to catch mooring lines thrown from vessels (6-inch openings). The netting has torn on the south corner. Upper fender wales do not have drain holes so the webs are retaining precipitation and corrosion is forming on the surface. The fender timbers are a mix of Ekki and Douglas Fir. The Ekki timbers are in very good condition, while the Doug fir shows checking/gouging near the upper bolt holes.
12. Grout is crumbling around the baseplates of the bollards. It appears that there were removable bull-rails along the front of the dock, but only short sections (with torn away connection plates) remain.

<b>Inspection Summary</b>		
Structure	Priority	Recommendations
<i>Category I - Safety Repairs</i>		
Approach Slab & Backwall	1	Fill void between the approach slab and the backwall, grout repair the crack in the backwall and/or remove the existing culvert. Stabilize the soil/riprap around the outer sidewalls.
Approach Guardrail and Handrail	2	Replace the substandard guardrail transition at the entrance to the approach structure with standard thrie-beam guardrail, and re-fasten the bolts of the guardrail on the right side. Replace the broken conduit couplings. Trim the weeds back to utility boxes.
Fuel Building	3	The City should continue to monitor condition of the support piles, especially looking for displacement during severe storms.
<i>Category II - Rehabilitation Work</i>		
Dock Piles /Fender Piles	4	Grind off the welds on Row 2 piles, Main Dock; coat remaining steel surface with dielectric grease & cover with plastic sleeves. Maintain anodes.
Approach Span	5	Investigate recoat of approach girders.
Dock - Moveable Curb	6	Repair/replace the moveable curb.
Shoreward & Seaward Abutments	7	Replace the top plate and re-coat the remainder of the sliding plate bearings on both the shoreward and seaward ends.
Bull-rail	8	Replace the removable bull-rail that was torn out. DOT paid for first install, check with City for matching funds on the second install.
Approach Girders	9	Program the girders of the approach structure for a re-coat, especially the shore side ends.
Lighting	10	Electrical inspection to investigate the circuit breaker problems with the dock lighting circuit.
Fender Wales	11	Drill drain holes in upper fender wales.
<i>Category III - Upgrades Needed</i>		
None noted.		