SFFD | New Fire Boat Station 35 at Pier 22.5
Pier 26 Fireboat Berths

PRESENTATION TO FIRE COMMISSION - SEPTEMBER 28, 2016
CITY HALL, 1 DR. CARLTON B. GOODLETT PLACE, ROOM 400, SAN FRANCISCO, CA 94102

Agenda:
- ESER 2014
- New Fireboat Station 35
- Pier 26 Fireboat Berths
$400M General Obligation Bond authorized in June 2014 with approval by 79% of voters

- Neighborhood Fire Stations $85M
- Emergency Firefighting Water System $55M
- District Police Stations and Infrastructure $30M
- Motorcycle Police and Crime Lab $165M
- Medical Examiner Facility $65M
**Comparison: Shadow Study on Bay: Existing - To Be Demolished - Proposed New**

- **Existing Pier/Dock/Parking:** 14,820 GSF
- **Remaining Pier (After Demo):** 7,000 GSF
- **Proposed New Pier:** 19,400 GSF
- **Existing Pier Remaining:** 7,000 GSF
- **Total Shadow (Remaining + New):** 26,400 GSF

*Includes:
  - Barge or Pier = 14,400 sf
  - Ramp = 2,000 sf
  - Float (200' x 1') = 3,000 sf

*New Fire Boat Station 35 at Pier 22.5

*September 28th, 2016
PROGRAMMING - EXISTING VS. NEW FACILITY

EXISTING FACILITY (Historic and Shed)  6,100 gsf
- Dormitory (inadequate)
- Kitchen
- Dining/Day Room
- Lockers/Shower/Toilets (single sex)
- Fitness
- Storage
- Workshop

NEW PROPOSED FACILITY  16,880 gsf

Existing Program (Revised to correct Code and Program Requirements)
- Dormitory (adequately sized)
- Officers’ Quarters
- Kitchen
- Dining Room
- Lockers/Shower/Toilets (separate genders)
- Day Room
- Fitness + Study Rooms
- Storage
- Circulation and Gross Factor to accommodate walls, structure, and mechanical

Existing Offsite Program
- Jet Skis
- Rescue Boats
- Port Response Vehicles
- Oil Containment Room
- Fire Fighting Hose
- Fire Fighting Foam
- Scuba/Tank Filling
- Specialty Gear/Rescue Gear Storage

Fire Department Program Requirements
- Foreboat Working Area
- Ambulance Access out of Public Viewing
- Patient Area
- Cranes to Raise/Lower Small Watercraft
- Proper Waste Separation
- Proper Decontamination
- Marine EOC
- Wet suit + Life jacket storage
- Workshop / Boson’s Room / Hotwork room
- Extractor / Dryer Room
- Decontamination Room
- Safe Fuel Storage
- Public Accessible Toilet
- Elevator + Stairs (Proper Handicap Access and Exiting)
- Circulation and Gross Factor to accommodate walls, structure, and mechanical
EXISTING CAPACITY

**Existing Station**

6,100 gsf

**Assets**
- Two Fire Boats
- One Fire Engine
- 7 SFFD Staff “24/7”

**Liabilities**
- Deteriorated Berthing Areas
- No Environmental Response Equipment Storage, e.g. Oil Spill Boom
- No capacity for: Jet Skis, Small Craft Rescue Equipment, Dive Boat, e.g. Small Rescue Watercraft
- No Storage Areas
- No Decon Area and No Dive Equipment Area
- No Rescue Unloading Areas
- No Changing Facilities for Firefighters
PROPOSED CAPACITY

New Station 16,880 gsf

**Assets**
- Three Fire Boats
- Rescue Watercraft
- Jet Skis
- Dive Boat
- One Fire Engine
- 12 SFFD Staff “24/7”

**Features**
- Addresses all liabilities of existing facility
- Construction to Essential Facility Standards
- Storage Areas Consolidated for Emergency Response Equipment
- Ambulance Access
- Equipment for Boat Access, Rescue, and Loading and Unloading
## SAN FRANCISCO FIRE DEPARTMENT - FIRE VESSELS

<table>
<thead>
<tr>
<th></th>
<th>Guardian</th>
<th>Phoenix</th>
<th>Fireboat 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Builder</td>
<td>Yarrows, Ltd., Esquimalt, British Columbia</td>
<td>Hugh F. Munroe of Plant Shipyard, Alameda, CA</td>
<td>Vigor Industrial, Seattle WA</td>
</tr>
<tr>
<td>Year</td>
<td>1951</td>
<td>1955</td>
<td>2016</td>
</tr>
<tr>
<td>Type of vessel</td>
<td>Fireboat</td>
<td>Fireboat</td>
<td>Fireboat</td>
</tr>
<tr>
<td>Displacement</td>
<td>185 long tons</td>
<td>146 tons</td>
<td>260 long tons (300 GRT ITC)</td>
</tr>
<tr>
<td>Length overall  (LOA)</td>
<td>88 ft.</td>
<td>89 ft.</td>
<td>88 ft.</td>
</tr>
<tr>
<td>Beam</td>
<td>21’6”</td>
<td>19’6”</td>
<td>25’</td>
</tr>
<tr>
<td>Freeboard</td>
<td>fwd- 9’. Aft- 5’4”</td>
<td>fwd- 9’. Aft- 5’4”</td>
<td>fwd- 18’. Aft- 15’</td>
</tr>
<tr>
<td>Air draft</td>
<td>42’</td>
<td>30’</td>
<td>38’</td>
</tr>
</tbody>
</table>
ELEVATION OF EXISTING HISTORIC FS 35 + NEW FIRE BOAT STATION

South Elevation (NFS)
<table>
<thead>
<tr>
<th>Type of Pier</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED PIER</td>
<td>Build on site</td>
<td>Building roof will be higher for Planning review</td>
</tr>
<tr>
<td></td>
<td>More contractor participation due to conventional construction</td>
<td>Pier and building will be subjected to high seismic loading</td>
</tr>
<tr>
<td></td>
<td>No dredging and sheet pile required</td>
<td>Need to place pier higher than sea level rise prediction</td>
</tr>
<tr>
<td></td>
<td>Residents in the building not subject to motion.</td>
<td>Steel piles and beams require corrosion protection and inspection for life of pier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Require impact pile driving. Environmental issue, limited work window.</td>
</tr>
<tr>
<td>FLOATING STEEL PIER</td>
<td>Building roof will be lower for planning review</td>
<td>Limited contractors could do the project</td>
</tr>
<tr>
<td></td>
<td>No dredging and sheet pile required</td>
<td>Need special treatment coating and sacrificial steel for corrosion protection for life of the project</td>
</tr>
<tr>
<td></td>
<td>Adaptable to sea level rise</td>
<td>Residents in the building will be subject to motion of the pier</td>
</tr>
<tr>
<td></td>
<td>Limited impact from Seismic activity</td>
<td>Utilities to the shore will need flexible joints</td>
</tr>
<tr>
<td></td>
<td>Less environmental impact, fewer piles to drive.</td>
<td>Access ramp will need to adjust per tides</td>
</tr>
<tr>
<td></td>
<td>Separate boarding float may not be required</td>
<td>Require periodic dive inspection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited locations in Bay area where it can be built. Need to be transported to site</td>
</tr>
<tr>
<td>FLOATING CONCRETE PIER</td>
<td>Building roof will be lower for planning review</td>
<td>Limited contractors could do the project</td>
</tr>
<tr>
<td></td>
<td>More durable against corrosion and deterioration</td>
<td>Need epoxy coated rebar for corrosion protection for life of the project</td>
</tr>
<tr>
<td></td>
<td>Adaptable to sea level rise</td>
<td>Residents in the building will be subject to motion of the pier, less than steel floating pier.</td>
</tr>
<tr>
<td></td>
<td>Limited impact from Seismic activity</td>
<td>Utilities to the shore will need flexible joints</td>
</tr>
<tr>
<td></td>
<td>Less environmental impact, fewer piles to drive.</td>
<td>Access ramp will need to adjust per tides</td>
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<td></td>
<td>Separate boarding float may not be required</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>
**MARINE ENGINEERING: COMFORT CRITERIA**

<table>
<thead>
<tr>
<th>Movement</th>
<th>Comfort criteria, RMS value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll</td>
<td>$2^\circ$</td>
</tr>
<tr>
<td>Vertical acceleration</td>
<td>$0.02 \text{ g or } 0.66 \text{ ft/s}^2$</td>
</tr>
<tr>
<td>Lateral acceleration</td>
<td>$0.03 \text{ g or } 0.98 \text{ ft/s}^2$</td>
</tr>
</tbody>
</table>

- Limit of comfort values for roll, vertical and horizontal accelerations in cruise liners (Faltinsen, 1990).
- Criteria to be satisfied under operational conditions.
- During episodes of extreme weather conditions (design conditions), some people will feel uncomfortable.
Marine Engineering: EXAMPLES OF BARGE SUPPORTED STRUCTURES

Gildersleeve School (Ketchikan, Alaska)
The Gildersleeve School in Ketchikan, Alaska was constructed on a 68 ft x 80 ft reinforced concrete barge. The school building has two levels with an apartment on 2nd level.

Vernon C. Bain Prison Barge (New York, NY)
Built in New Orleans along the Mississippi River brought to New York in 1992. The 625 ft x 125 ft steel barge is equipped with 14 dormitories and 100 cells for inmates.

Brook St. Pier Ferry Terminal (Australia)
Concrete Barge, Ferry Berth, marina and Restaurants.

Barge 225 Floating Offices (Cleveland, OH)
150 ft x 45 ft Steel barge was converted to a restaurant and then in 2013 to an office space.
Context: RELATIVE SCALE

Pier 22.5 - Fire Station 35

Pier 26 - Adjacent Pier

Pier 28

Pier 15 - Exploratorium

Pier 27 - Cruise Ship Terminal
# PRIMARY PERMITTING AGENCIES

<table>
<thead>
<tr>
<th>Agency</th>
<th>Type of Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco Fire Dept. (SFFD)</td>
<td>Review of Concept Design</td>
</tr>
<tr>
<td>Citizen Advisory Committees (CAC)</td>
<td>Public Design Review</td>
</tr>
<tr>
<td>Waterfront Design Advisory Committee</td>
<td>Public Design Review</td>
</tr>
<tr>
<td>SF City Planning Environmental Planning Division</td>
<td>CEEAQ Review and Determination including procedures for historical resources</td>
</tr>
<tr>
<td>SF Port Commission</td>
<td>Port Commission Review and Determination</td>
</tr>
<tr>
<td>SF Port Building Permit Division</td>
<td>Port Building Permit</td>
</tr>
<tr>
<td>Bay Conservations and Development Commission (BCDC)</td>
<td>BCDC Permit</td>
</tr>
<tr>
<td>SF Bay Regional Water Quality Control Board (RWQCB)</td>
<td>CWA Sec. 401 Permit and/or Waste Discharge Requirements</td>
</tr>
<tr>
<td>US Army Corps on Engineers (Corps)</td>
<td>CWA Sec. 404 Permit for discharge or dredged or fill material</td>
</tr>
<tr>
<td>CA Dept of Fish and Game (DFG)</td>
<td></td>
</tr>
<tr>
<td>US Environmental Protection Agency (EPA)</td>
<td>CWA 404 Individual</td>
</tr>
<tr>
<td>National Marine Fisheries Service (NMFS)</td>
<td>Sec. 7 consultation of FESA in conjuction with Army Corps Sec 404 Permit</td>
</tr>
<tr>
<td>US Coast Guard</td>
<td>Maritime Transportation Security Act of 2002 (33 CFR)</td>
</tr>
<tr>
<td>CA Lands Commission</td>
<td>Use plan consultation</td>
</tr>
<tr>
<td>US Fish and Wildlife Services (FWS)</td>
<td>Consultation under Section 7 of Federal Ended Species Act</td>
</tr>
</tbody>
</table>
PIER 26 - PROJECT DESCRIPTION

Pier 26 Fireboat Berths

Project Information

- Demolition of the existing fender system
- Construction of:
  - 3 new berths
  - Access bridge over railway
  - Associated Utilities
- New mooring and fendering systems
- Usage by SFFD
PIER 26 - GENERAL PLAN

**ELECTRICAL ROOM:**
- Existing Storage Room to be used for new PG&E Equipment
- Total Square Footage: 225 SF

**EXISTING OFFICE:**
- Existing office will be used by the Fire Department
- 1st Floor: 1,386

**INTERIOR WORK AREA:**
- Area is currently fenced off and unoccupied
- Will be used for storing equipment by the Fire Department
- Total Square Footage: 1,516 SF

**Exterior Work Area:**
- Apron Edge Beam = 435ft x 6.125ft = 2,684sf
- Apron interior beam = 255ft x 1.25ft = 317sf
- Total Square footage of North apron space to be used by the Fire Department = 6,047sf

**Area of Existing North Apron = 19.375ft x 75.83ft = 1,470sf**
- Total Square footage of North apron space to be used by the Fire Department = 6,047sf
- % of North Apron to be used by the Fire Department = 41%

**TOTAL PIER AREA = 152,000 sf**
- Shed Area = 120,000 sf
- Apron Area = 32,000 sf
PIER 26 - SITE PHOTOS

1. EXISTING FENDER SYSTEM AND ASPHALT TO BE REMOVED. EDGE BEAM RAIL TO REMAIN.

2. CURB ANGLES AND MISCELLANEOUS DEBRIS TO BE REMOVED. EXISTING RAIL AND TIES TO BE PROTECTED IN-PLACE.

3. EXISTING FENDER SYSTEM TO BE REMOVED. EDGE AND INTERMEDIATE BEAMS TO BE REPAIRED.
PIER 26 - SUMMARY PROJECT SCHEDULE

<table>
<thead>
<tr>
<th>Event</th>
<th>2016</th>
<th>2017</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertise</td>
<td></td>
<td>6/3</td>
<td></td>
</tr>
<tr>
<td>Pre-Bid Conference</td>
<td></td>
<td>6/14</td>
<td></td>
</tr>
<tr>
<td>Bid Opening</td>
<td></td>
<td>6/29</td>
<td></td>
</tr>
<tr>
<td>Notice of Award</td>
<td>7/7</td>
<td>7/15</td>
<td></td>
</tr>
<tr>
<td>GC Submittals (10 work days)</td>
<td></td>
<td>7/29</td>
<td></td>
</tr>
<tr>
<td>NTP</td>
<td></td>
<td>8/29</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td>10/26</td>
<td>11/22</td>
</tr>
<tr>
<td>Work in Bay</td>
<td>6/1</td>
<td>11/30</td>
<td></td>
</tr>
<tr>
<td>Work in Bay (2016 Allowable)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2016: 2/4
http://www.sfearthquakesafety.org/neighborhood-firehouses.html