AGENDA:

• ESER 2014 Background
• Site and Project History
• Design-Build Procurement
• Project Approach
ESER 2014 BACKGROUND

$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
COLLABORATION AMONG CITY DEPARTMENTS
PARTNERING

Partnering Level 3
• External Professional Neutral Facilitator
• Kick-off Partnering Workshop
• Partnering Charter and Mission Statement
• Partnering Sessions
  • Design Phase
  • Construction Phase
• Executive Group
  • From senior most levels of City and Design-Builder organizations
• Stakeholder Group
• Resolution Ladder
• Quarterly Project Scorecards
• International Partnering Institute Members
  • San Francisco Public Works
  • Swinerton Builders
  • “A Mini Guide to Partnering” by San Francisco Public Works

<table>
<thead>
<tr>
<th>Level</th>
<th>Estimated Construction Amount</th>
<th>Complexity</th>
<th>Political Significance</th>
<th>Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>$200 million +</td>
<td>Highly technical and complex design &amp; construction</td>
<td>High visibility/ oversight; significant strategic project</td>
<td>New project relationships; high potential for conflict (strained relationship, previous litigation, or high probability of claims)</td>
</tr>
<tr>
<td>4</td>
<td>$50 - $200 million</td>
<td>High complexity – schedule constraints, uncommon materials, etc.</td>
<td>Probable</td>
<td>New Design-Builders or CM, new subs</td>
</tr>
<tr>
<td>3</td>
<td>$20 - $50 million</td>
<td>Increased complexity</td>
<td>Likely, depending on the location and other project characteristics</td>
<td>Established relationships; new CM, subs, or other key stakeholders</td>
</tr>
<tr>
<td>2</td>
<td>$5 - $20 million</td>
<td>Moderate complexity</td>
<td>Unlikely, unless in a place of importance</td>
<td>Established relationships; new subs, new stakeholders</td>
</tr>
<tr>
<td>1</td>
<td>$100,000 - $5 million</td>
<td>Standard complexity</td>
<td>Unlikely, unless in a place of importance</td>
<td>Established relationships; new subs, new stakeholders</td>
</tr>
</tbody>
</table>

NEW FIRE BOAT STATION 35 AT PIER 22.5
Maritime Commerce Advisory Committee | September 21, 2017
BUDGET

- Total Project Budget: $39.9M
- Design-Build Fixed Budget Limit: $29.9M
- Design-Build Contract: $29.85M
1989 Marina District Fire
“The Phoenix was a vital tool in the Marina District during the chaotic aftermath of the 1989 Loma Prieta Earthquake. Pumping water from the St. Francis Yacht Harbor into the SFFD’s portable water system, the Phoenix delivered critical assistance to the conflagration at Beach and Divisadero Streets, saving countless homes.”
http://www.atlasobscura.com/places/pier-sffd-fire-boats

Bay Risks
• Water rescue, fire operations, EMS, body recovery, spill containment, PWSS & AWSS
• Significant maritime traffic and several bridges
• SFO generates 1,500 – 2,000 flights with runway approaches to the Bay
• Commercial ship traffic brings significant tonnage of freight across the Bay
• Ferry & cruise companies carry millions of passengers per year around, and in & out of the Bay.
• Oil refineries for Chevron, ARCO and Shell; jet fuel companies such as Kinder Morgan in Bay Area.
## LIKE-JURISDICTION COMPARISON

<table>
<thead>
<tr>
<th>City</th>
<th>Operations</th>
<th>Daily Staffing</th>
<th>Approx. SF</th>
<th>Marine Assets</th>
<th>Special Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of San Francisco</td>
<td>Fire Station 35</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fire Boat</td>
<td>3</td>
<td></td>
<td>88' St. Francis</td>
<td>Historic Station to Remain</td>
</tr>
<tr>
<td></td>
<td>Engine Company</td>
<td>4</td>
<td></td>
<td>90' Guardian</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Future Engine/Rescue</td>
<td>4</td>
<td></td>
<td>90' Phoenix</td>
<td>Only water Rescue unit in the City with direct water access</td>
</tr>
<tr>
<td></td>
<td>Commander</td>
<td>1</td>
<td></td>
<td></td>
<td>Current staffing is 7 per shift</td>
</tr>
<tr>
<td></td>
<td>Totals:</td>
<td>12</td>
<td>16,800</td>
<td></td>
<td>Population served – 900K (Residents only). The fireboats provide protection for the entire bay area waterfront from the South Bay to Vallejo</td>
</tr>
<tr>
<td>City of Long Beach</td>
<td>Totals:</td>
<td>16</td>
<td>44,000</td>
<td></td>
<td>Population served – 500K (Residents only). Serves the Port of Long Beach and adjacent beach areas of the city. The Port provides a marine-based EOC.</td>
</tr>
<tr>
<td>City of Los Angeles</td>
<td>Totals:</td>
<td>22</td>
<td>42,000</td>
<td></td>
<td>Population served – 13M Greater LA Basin (Residents only). Serves the Port of Los Angeles and adjacent beach cities. The Port provides a marine-based EOC.</td>
</tr>
<tr>
<td>City of Portland</td>
<td>Totals:</td>
<td>12</td>
<td>26,000</td>
<td></td>
<td>Population served – 800K (Residents only). Serves Port of Portland. The Port provides a marine EOC.</td>
</tr>
<tr>
<td>City of Seattle</td>
<td>Totals:</td>
<td>12</td>
<td>16,000</td>
<td></td>
<td>Population served – 662K (Residents only).</td>
</tr>
<tr>
<td>New York City</td>
<td>Totals:</td>
<td>96</td>
<td>90,000</td>
<td></td>
<td>Population served – 8M</td>
</tr>
</tbody>
</table>
LOCATION OF SFFD MARINE OPERATIONS

St. Francis Yacht Club
- Jet Skis
- 1 rescue boat

Fire Station 4, Fire Station 51, and Bureau of Equipment
- Port Response Vehicles

Fire Station 33
- Spare firefighting hose

Pier 22.5 / Fire Station 35
- 2 fire boats

Fire Station 1
- SCUBA/tank filling

Fire Station 9
- Oil containment booms

Fire Station 29
- 1 rescue boat

Fire Station 33
- Spare firefighting hose

Fire Station 49 / 1415 Evans Ave
- Firefighting foam
AERIAL PHOTO OF EXISTING SITE
SITE & PROJECT HISTORY

1915
• Pier 22 ½ built
• Fire Boat Headquarters Building constructed

1989
• M6.9 Loma Prieta Earthquake
• Marina District Fire

1980s
• Non-historic Fireboat Pier constructed
• 1987: Storage Shed built on the Fireboat Pier 22.5

1999
• Fire Boat Headquarters Building designated as San Francisco City Landmark #225

2010
• Pier Strengthening at Pier 22 ½
• Emergency stabilization of the pier structure
• ESER 2010 Bond passed

2014
• April 2014: Warriors proposed project site moved away from Piers 30/32
• November 2014: ESER 2014 Bond passed

2016
• Introduction of Sea Level Rise (SLR) floating barge solution
• Public Works’ proposed Design-Build project delivery method approved by Fire Administration

2017
• Design-Build RFQ/RFP Procurement

2012
• November 2012: Warriors presented proposed development project at Piers 30/32 included a new Fire Boat Station #35 at the site

1989
• 1980s: Pier Strengthening at Pier 22 ½

2010
• Pier Strengthening at Pier 22 ½
• Emergency stabilization of the pier structure
• ESER 2010 Bond passed

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• April 2014: Warriors proposed project site moved away from Piers 30/32
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2017
• Design-Build RFQ/RFP Procurement
EXISTING CAPACITY

EXISTING STATION  6,100 GSF

ASSETS

• Two Fire Boats
• One Fire Engine

LIABILITIES

• Deteriorated Berthing Areas
• No Environmental Responses 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 Area
• No Changing Facilities for Firefighters

Historic FS #35 is 4,736 GSF
Shed is 1,720 GSF
Existing Pier/Dock/Parking Lot: 14,820 GSF
SEA LEVEL RISE

## SLR OPTIONS ANALYSIS SUMMARY

<table>
<thead>
<tr>
<th>Type of Pier</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIXED PIER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Build on site</td>
<td>Building roof will be higher for Planning review</td>
</tr>
<tr>
<td>More contractor participation due to conventional construction</td>
<td>Pier and building will be subjected to high seismic loading</td>
<td></td>
</tr>
<tr>
<td>No dredging and sheet pile required</td>
<td>Need to place pier higher than sea level rise prediction</td>
<td></td>
</tr>
<tr>
<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>
<td>Require impact pile driving. Environmental issue, limited</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FLOATING STEEL PIER</strong></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>Adaptable to sea level rise</td>
<td>Residents in the building will be subject to motion of the pier</td>
<td></td>
</tr>
<tr>
<td>Limited impact from Seismic activity</td>
<td>Utilities to the shore will need flexible joints</td>
<td></td>
</tr>
<tr>
<td>Less environmental impact, fewer piles to drive</td>
<td>Access ramp will need to adjust per tides</td>
<td></td>
</tr>
<tr>
<td>Separate boarding float may not be required</td>
<td>Require periodic dive inspection</td>
<td></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><strong>FLOATING CONCRETE PIER</strong></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>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>
<td></td>
</tr>
<tr>
<td>Limited impact from Seismic activity</td>
<td>Utilities to the shore will need flexible joints</td>
<td></td>
</tr>
<tr>
<td>Less environmental impact, fewer piles to drive</td>
<td>Access ramp will need to adjust per tides</td>
<td></td>
</tr>
<tr>
<td>Separate boarding float may not be required</td>
<td>Require dredging and sheet pile</td>
<td></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>
</tbody>
</table>
Marine Engineering: FIXED PIER

Fixed Pier Piling

Fixed Pier Building

Fixed Pier Deck Slab and Ramp
Marine Engineering: STEEL BARGE

Steel Barge

Steel Barge with Deck Slab

Steel Barge with Guide Piles and Ramp
Marine Engineering: CONCRETE BARGE

Concrete Barge

Concrete Barge with Guide Piles and Ramp

Concrete Barge Deck Slab w/Buoyancy Tanks
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 g or 0.66 ft/s$^2$</td>
</tr>
<tr>
<td>Lateral acceleration</td>
<td>0.03 g or 0.98 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 the 2nd level.

Vernon C. Bain Prison Barge (New York, NY)
Built in New Orleans along the Mississippi River and brought to New York in 1992. The 693 ft x 125 ft steel barge is equipped with 14 dormitories and 100 cells for inmates.

Barge 225 Floating Offices (Cleveland, OH)
130 ft x 45 ft Steel barge was converted to a restaurant and then in 2013 to an office space.
ESER SFFD DESIGN GUIDELINES

### Fixtures and Furnishings Chart

<table>
<thead>
<tr>
<th>Space</th>
<th>Component</th>
<th>1 Company</th>
<th>2 Companies</th>
<th>3 Companies</th>
<th>ADD per Battalion Chief or Rescue Captain</th>
<th>ADD per Incident Command Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dormitory</td>
<td>Assigned beds</td>
<td>13</td>
<td>26</td>
<td>36</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unassigned beds</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officers Quarters</td>
<td>Bedroom with Restroom</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lockers</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assigned beds</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Firefighter Lockers</td>
<td>Male</td>
<td>14</td>
<td>28</td>
<td>42</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note below</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toilets</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>Urinals</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>Lavatories</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
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<tr>
<td></td>
<td>Showers</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Firefighter Restroom</td>
<td>Note below</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Toilets</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>Lavatories</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td></td>
<td>Showers</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Firefighter Restroom</td>
<td>Note below</td>
<td></td>
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<tr>
<td></td>
<td>Toilets</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<td>Lavatories</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td></td>
<td>Showers</td>
<td>2</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>Dining Room and Day Room</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Dining Chairs</td>
<td>8</td>
<td>13</td>
<td>17</td>
<td>1</td>
<td>1</td>
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<tr>
<td></td>
<td>Day Room Seating</td>
<td>4</td>
<td>9</td>
<td>13</td>
<td>1</td>
<td>1</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turnouts</td>
<td>Turnout Lockers: 36-inch wide</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>4</td>
<td>4</td>
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<tr>
<td></td>
<td>Drying Hooks</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Specialty Gear Bags</td>
<td>Above Each Turnout Locker: (2) bags on 36&quot; deep open rack</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>In Storage Room: (2) bags on 36&quot; deep x 24&quot; tall open racks</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

Note: in addition to these restroom guidelines: each fire station, regardless of size, will have one all-gender ADA-compliant full restroom with toilet, lav and shower.
SPECIAL CHARACTERISTICS

• Site along the waterfront and adjacent to Bay Bridge
• National Register-listed Embarcadero Historic District
• Over water → regulatory agencies
• Engine No. 35 to remain operational during construction
• SFFD marine operations & program
SPECIAL CHARACTERISTICS

PORTWIDE ADVISORY COMMITTEES:
- WATERFRONT LAND USE PLAN WORKING GROUP
- MARITIME COMMERCE ADVISORY COMMITTEE

FISHERMAN'S WHARF WATERFRONT ADVISORY GROUP
PEER 39 - AQUATIC PARK

SOUTHERN WATERFRONT ADVISORY COMMITTEE
WESTERN PACIFIC PEER 80 YO INDIA BAY

CENTRAL WATERFRONT ADVISORY GROUP
36TH STREET - CHINA BAY

NORTHEAST WATERFRONT ADVISORY GROUP
AGRICULTURE BUILDING - PEER 33

National Marine Fisheries Service

U.S. Fish & Wildlife Service

U.S. Army Corps of Engineers
San Francisco District

Water Boards
BOAT STATIONS IN OTHER CITIES – MATERIALITY

- Thames Ditton Fireboat Station
- Boston Fireboat Station
- Portland Fireboat Station
- Los Angeles Fire Boat House
- San Francisco Contemporary Museum on the Water
- Boston - Barrow Wharf
- Boston - Cambridge Yacht Club
- Boston - Harvard Boat House
RELATIVE SCALE

Pier 26 - Adjacent Pier

Pier 28

Pier 15 - Exploratorium

Pier 27 - Cruise Ship Terminal

Pier 22.5 - Fire Station 35
“The first piers ....beginning in 1908, were built south of the Ferry Building with façade designs drawing on Spanish missions of California and more generally on Mediterranean vernacular architecture” National Register of Historic Places
“The fireboat house can be seen as a Renaissance Revival structure for its elegant proportions and perfect axial symmetry and for its appearance as a “tightly contained cube”” City of SF Landmarks Designation Report
“Maintain the finger pier configuration of the waterfront.” BCDC
CONCEPT ELEVATION - SOUTH

PREPARED BY SHAH KAWASAKI ARCHITECTS
CONCEPT SOUTHWEST VIEW FROM THE EMBARCADERO

PREPARED BY SHAH KAWASAKI ARCHITECTS
CONCEPT VIEW FROM THE BAY

PREPARED BY SHAH KAWASAKI ARCHITECTS
PROPOSER’S APPROACH

BARGE CONSTRUCTION IN CHINA
• Barge Design and Fabrication team:
  • Power Engineering
  • Liftech Consultants Inc.
  • Shanghai Zhenhua Heavy Industries Co. (ZPMC)

BUILDING CONSTRUCTION IN SAN FRANCISCO
• Once fabrication is complete, dry barged to San Francisco.
• The building will be assembled on top of the barge docked at Pier 1, Treasure Island.
  • Local Hire Requirements
  • LBE Requirements
## PROPOSER’S SCHEDULE

Per May 24, 2017 Submittal

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
</tr>
<tr>
<td>Site Permit Submission</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Design-Build Procurement</td>
<td></td>
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<tr>
<td>Award / Certification</td>
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<tr>
<td>NTP</td>
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<tr>
<td>Concept</td>
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</tr>
<tr>
<td>Review and Approvals</td>
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<tr>
<td>Design</td>
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<tr>
<td>Construction Permits</td>
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<td>CEQA (if Neg. Dec.)</td>
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- **Site Permit Submission**
- **Design-Build Procurement**
- **Award / Certification**
- **NTP**
- **Concept**
- **Review and Approvals**
- **Design**
- **Construction Permits**
- **CEQA (if Neg. Dec.)**
- **Regulatory Process**
- **Regulatory Approvals**
- **Barge Fabrication & Delivery**
- **Building Construction & Commissioning**
- **SFFD Occupancy**
- **Closeout**

**September 21, 2017**
CONCEPTUAL PLANNING PROCESS FLOWCHART

Concept Phase

Begin Concept Phase

- Present to Fire Commission
- Present to WDAC & DRB
- Present to Port Commission
- Present to San Francisco Heritage
- Present to ARC of the San Francisco HPC
- Present to South Beach, Rincon Hill, Mission Bay Neighborhood Associations

Design Phase

- Fire Commission Follow-up
- WDAC & DRB Follow-up
- Port Commission Follow-up
- San Francisco Heritage Follow-up
- Port Engineering Peer Review
- CWAG Follow-up
- ARC Follow-up
- BCDC Follow-up

- Concept Design Complete
- 100% DD Complete
- 100% CD Complete

City PM will coordinate scheduling & presentations; meetings will be combined wherever feasible.
Project website:  www.sfearthquakesafety.org/fireboatstation35

More information:  Charles Higueras, ESER Program Manager
Charles.Higueras@sfdpw.org
(415) 557-4646