

# 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



## 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

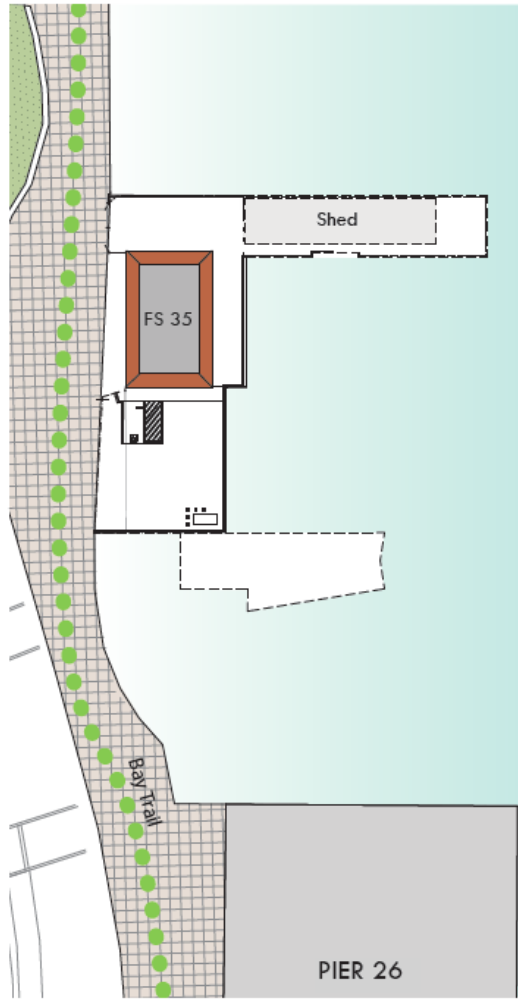


AERIAL PHOTO OF EXISTING SITE

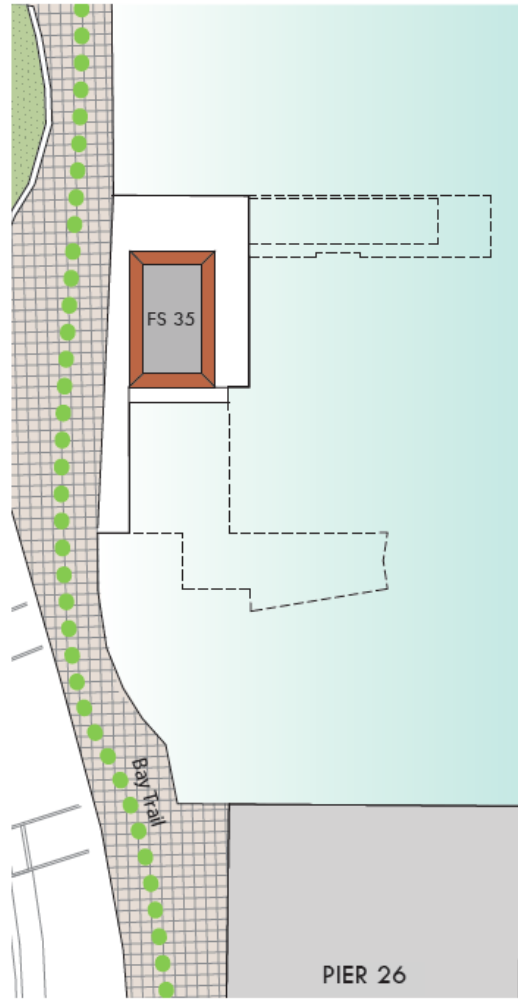


photo credit: COWI

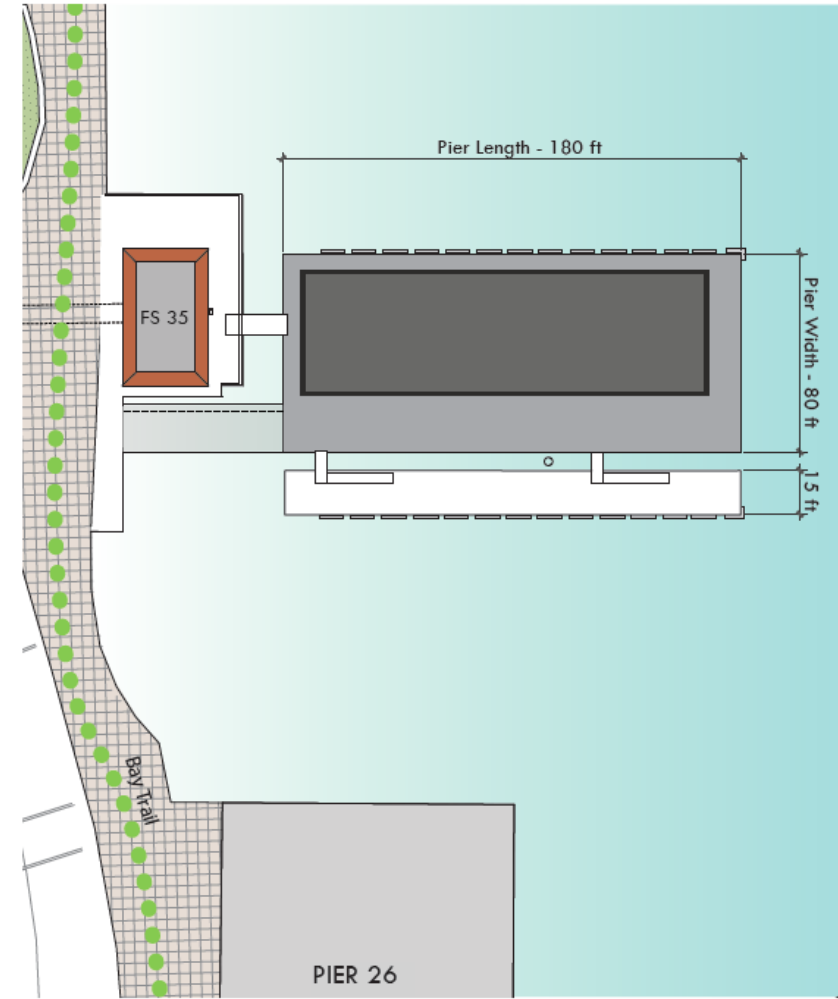
COMPARISON: SHADOW STUDY ON BAY: EXISTING - TO BE DEMOLISHED - PROPOSED NEW



- 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'x15') = 3,000 sf  
for total shadow of all three NEW components on the Bay

# PROGRAMMING - EXISTING VS. NEW FACILITY

EXISTING FACILITY (Historic and Shed) 6,100 gsf

- Dormitory (inadequate)
- Kitchen
- Dining/Day Room
- Lockers/Showers/Toilets (single sex)
- Fitness
- Storage
- Workshop

NEW PROPOSED FACILITY 16,880 gsf

**Existing Program** (Resized to correct Code and Program Requirements)

- Dormitory (adequately sized)
- Officers' Quarters
- Kitchen
- Dining Room
- Lockers/Showers/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**

- Fireboat 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

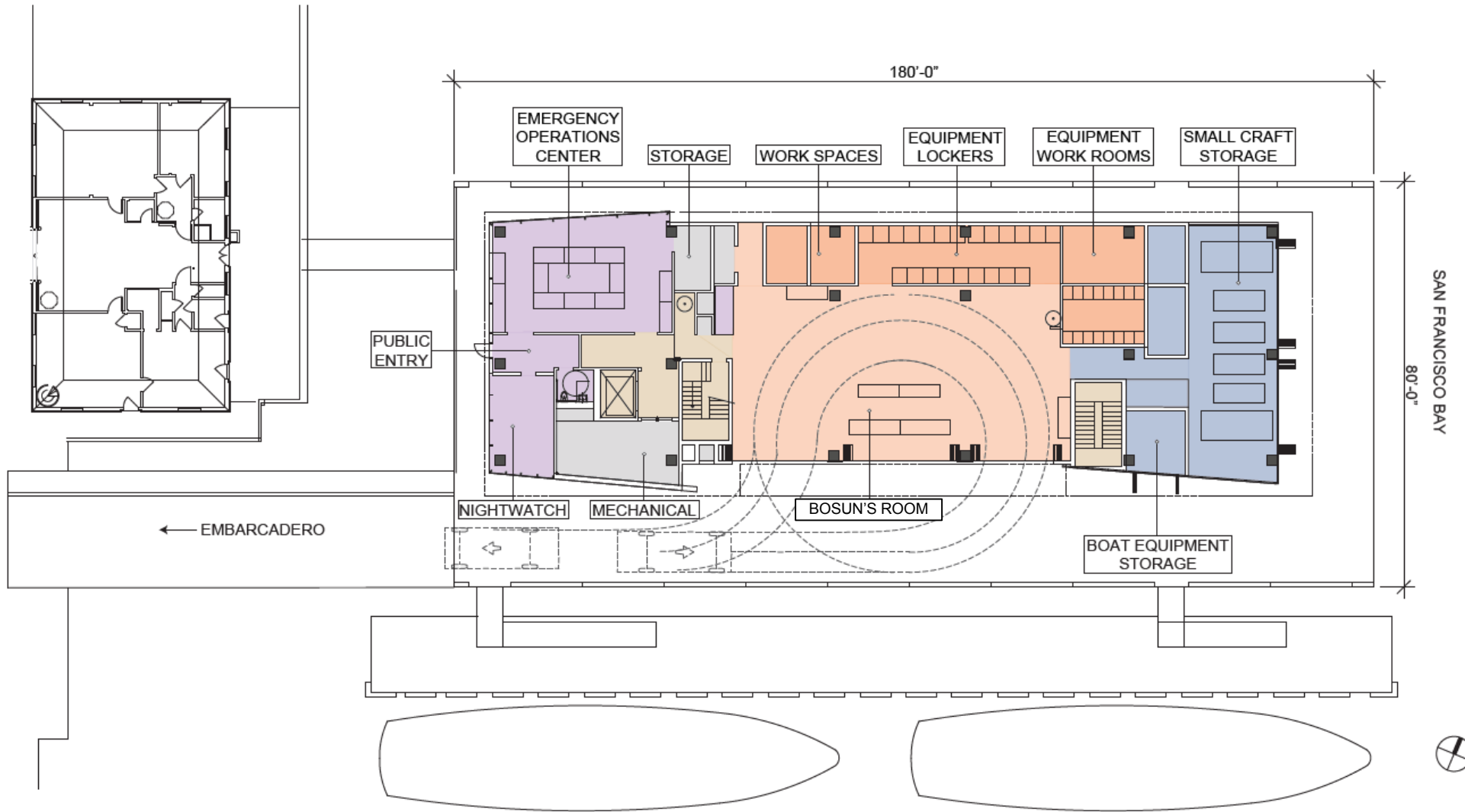
- Three Fire Boats
- Rescue Watercraft
- Jet Skis
- Dive Boat
- One Fire Engine
- 12 SFFD Staff “24/7”

### 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

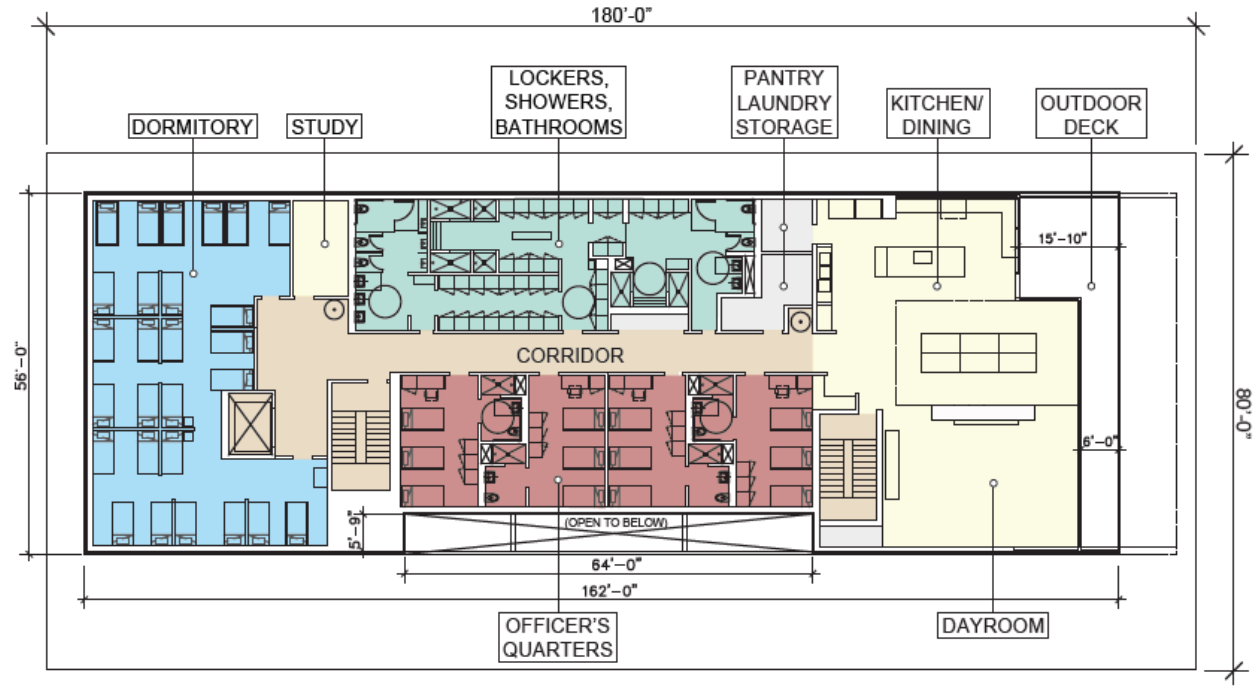
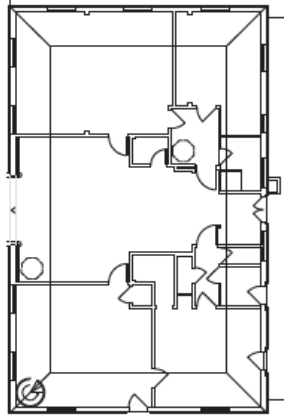



# FIRST FLOOR PROGRAMMING







# SECOND FLOOR PROGRAMMING

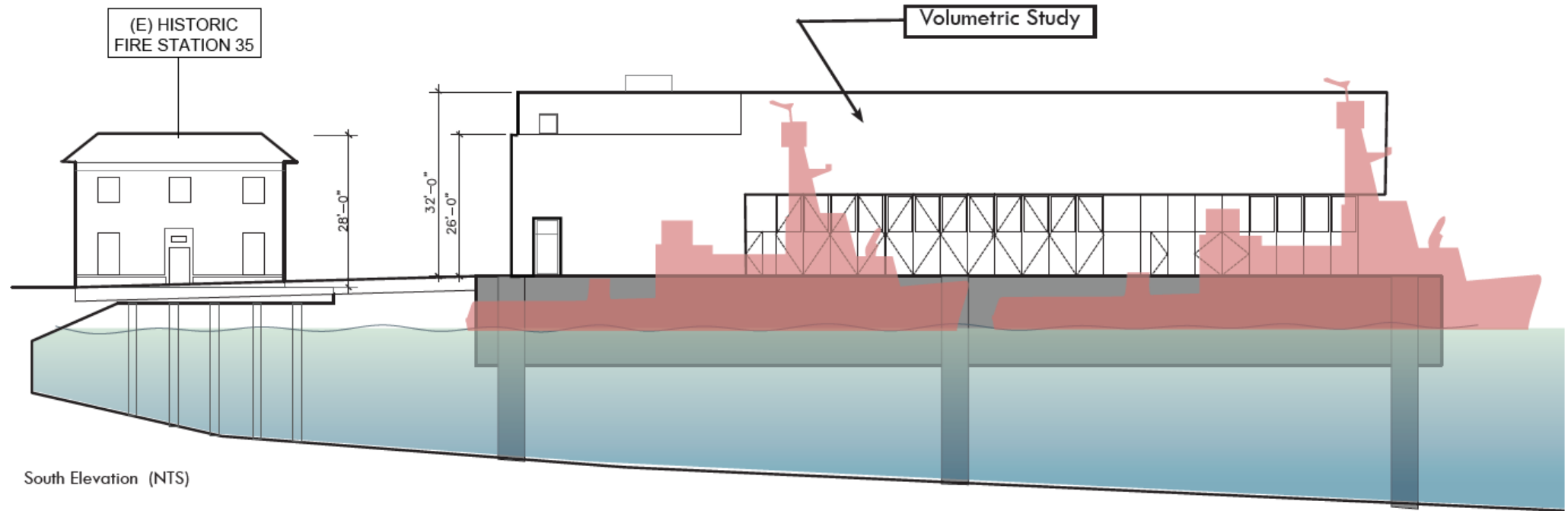


SCALE: 1/16" = 1'-0" 

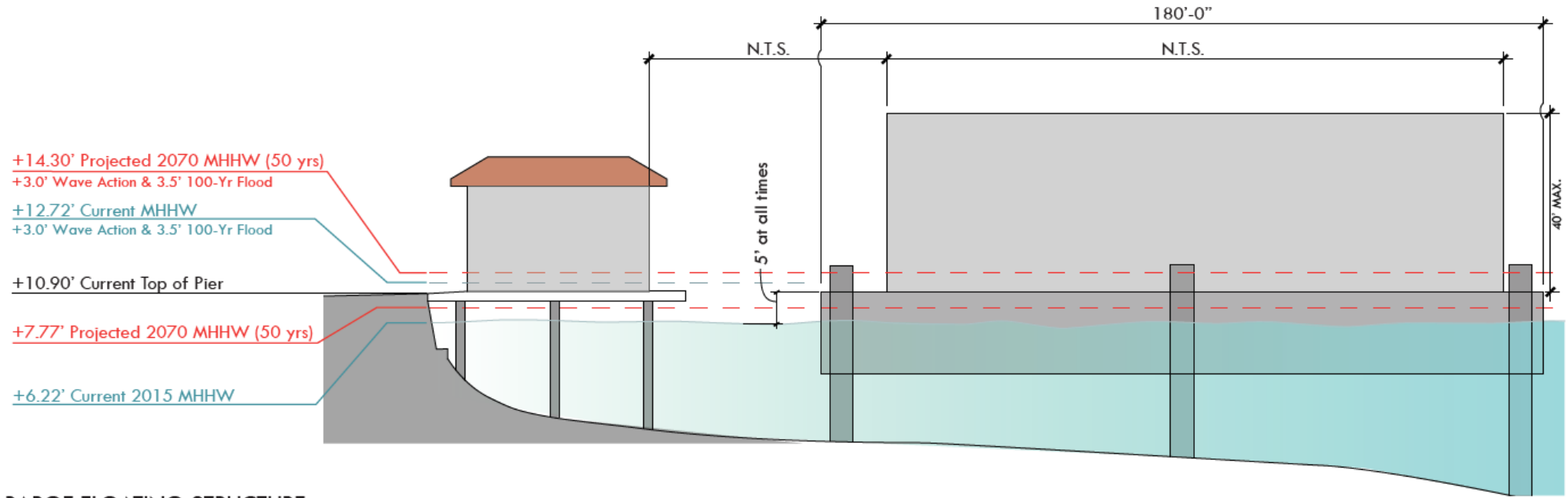
# SAN FRANCISCO FIRE DEPARTMENT - FIRE VESSELS

	Guardian	Phoenix	Fireboat 3
			
Builder	Yarrows, Ltd., Esquimalt, British Columbia	Hugh F. Munroe of Plant Shipyard, Alameda, CA	Vigor Industrial, Seattle WA
Year	1951	1955	2016
Type of vessel	Fireboat	Fireboat	Fireboat
Displacement	185 long tons	146 tons	260 long tons (300 GRT ITC)
Length overall (LOA)	88 ft.	89 ft.	88 ft.
Beam	21'6"	19'6"	26'
Freeboard	fwd- 9'. Aft- 5'4"	fwd- 9'. Aft- 5'4"	fwd- 18'. Aft- 15'
Air draft	42'	30'	38'

# ELEVATION OF EXISTING HISTORIC FS 35 + NEW FIRE BOAT STATION



# SEA LEVEL RISE



BARGE FLOATING STRUCTURE

# Marine Engineering: PROS + CONS OF THREE PIER OPTIONS

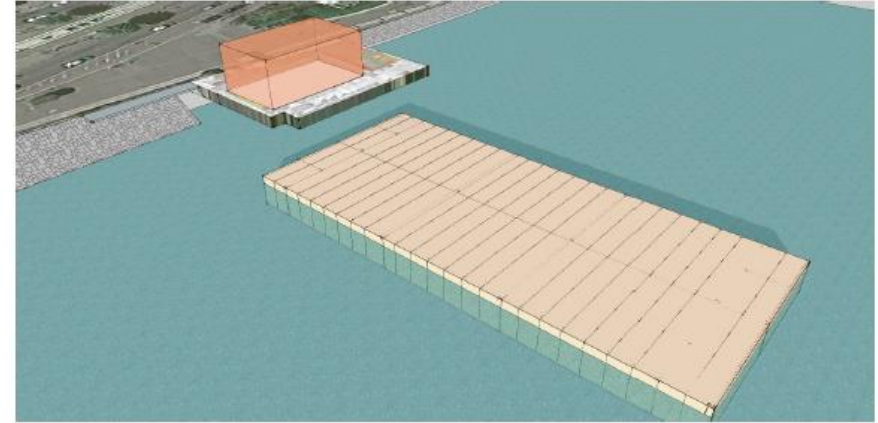
Type of Pier	Pros	Cons
<b>FIXED PIER</b> Pier Construction = \$6.4 M	Build on site	Building roof will be higher for Planning review
	More contractor participation due to conventional construction	Pier and building will be subjected to high seismic loading
	No dredging and sheet pile required	Need to place pier higher than sea level rise prediction
	Residents in the building not subject to motion.	Steel piles and beams require corrosion protection and inspection for life of pier
<b>FLOATING STEEL PIER</b> Pier Construction = \$6.3 M		Require impact pile driving. Environmental issue, limited work window.
	Building roof will be lower for planning review	Limited contractors could do the project
	No dredging and sheet pile required	Need special treatment coating and sacrificial steel for corrosion protection for life of the project
	Adaptable to sea level rise	Residents in the building will be subject to motion of the pier
	Limited impact from Seismic activity	Utilities to the shore will need flexible joints
	Less environmental impact, fewer piles to drive.	Access ramp will need to adjust per tides
	Separate boarding float may not be required	Require periodic dive inspection
<b>FLOATING CONCRETE PIER</b> Pier Construction = \$8.6 M		Limited locations in Bay area where it can be built. Need to be transported to site.
	Building roof will be lower for planning review	Limited contractors could do the project
	More durable against corrosion and deterioration	Need epoxy coated rebar for corrosion protection for life of the project
	Adaptable to sea level rise	Residents in the building will be subject to motion of the pier, less than steel floating pier.
	Limited impact from Seismic activity	Utilities to the shore will need flexible joints
	Less environmental impact, fewer piles to drive.	Access ramp will need to adjust per tides
	Separate boarding float may not be required	Require dredging and sheet pile
	Limited locations in Bay area where it can be built. Need to be transported to site.	

# Marine Engineering: STEEL BARGE

## Steel Barge



## Steel Barge with Deck Slab



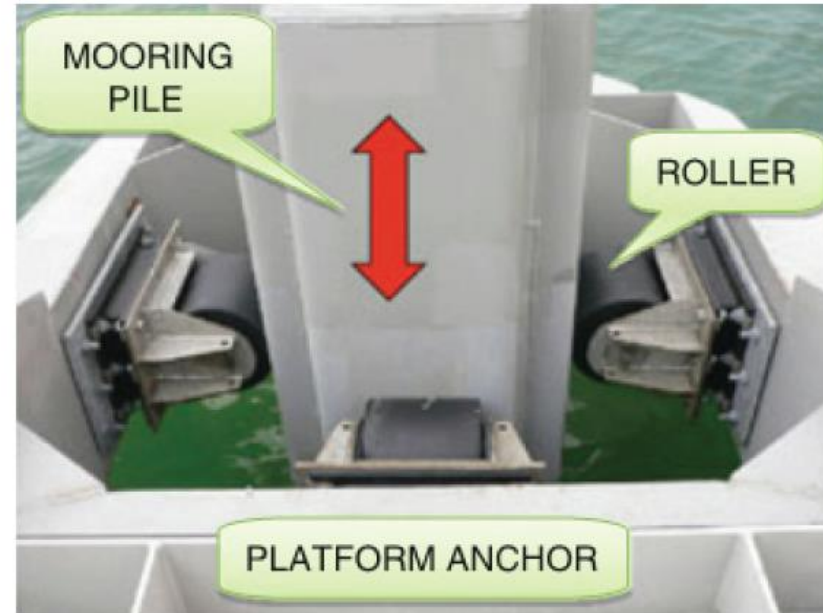
## Steel Barge with Guide Piles and Ramp



## MARINE ENGINEERING: COMFORT CRITERIA

Movement	Comfort criteria, RMS value
Roll	2°
Vertical acceleration	0.02 g or 0.66 ft/s <sup>2</sup>
Lateral acceleration	0.03 g or 0.98 ft/s <sup>2</sup>

- > 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, mark 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.



# BOAT STATIONS IN OTHER CITIES - MATERIALITY



NYFD Fireboat station



NYFD Fireboat station



Portland Fireboat Station



insulated aluminum panels



Los Angeles Fire Boat House



Boston Contemporary Museum on the water



Boston - Rowes Wharf

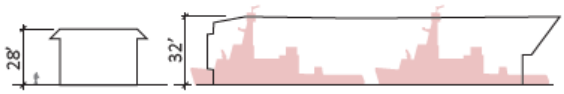


Boston - Cambridge Yacht Club

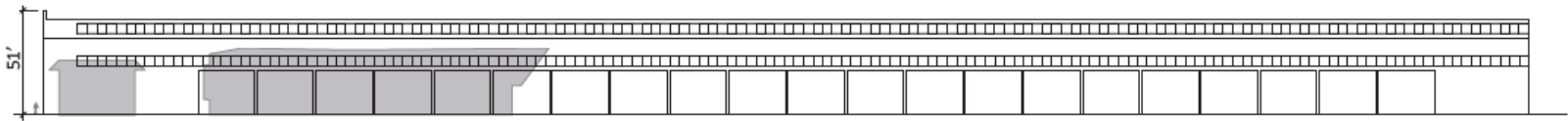


Boston - Harvard Boat House

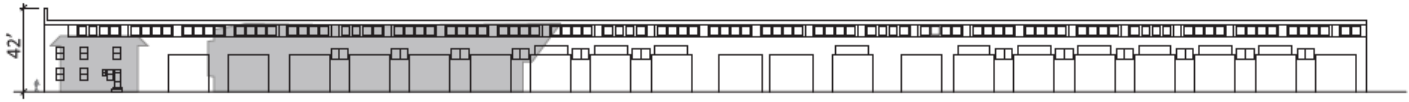
# Context: RELATIVE SCALE



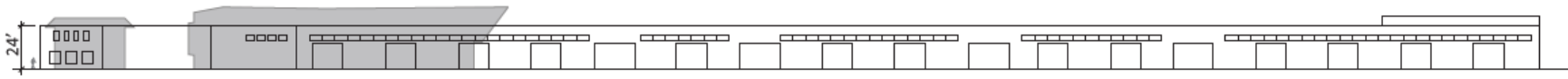
Pier 22.5 - Fire Station 35



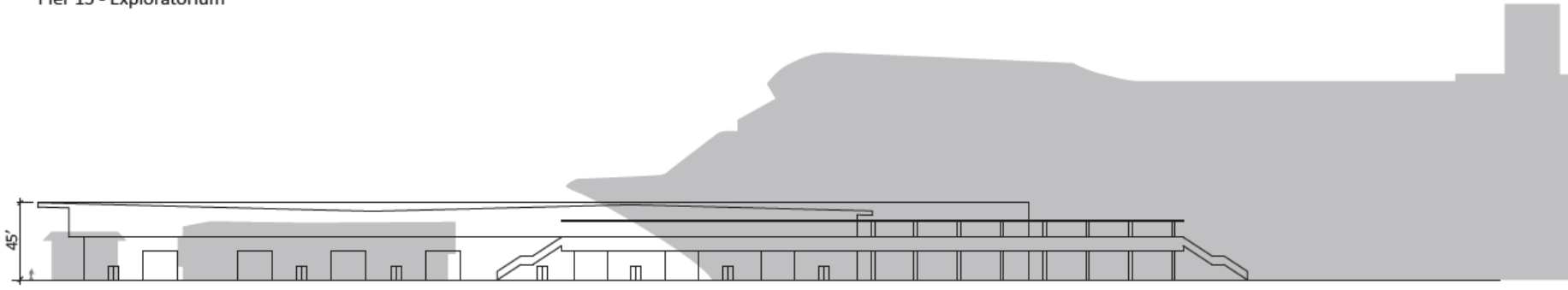
Pier 26 - Adjacent Pier



Pier 28



Pier 15 - Exploratorium

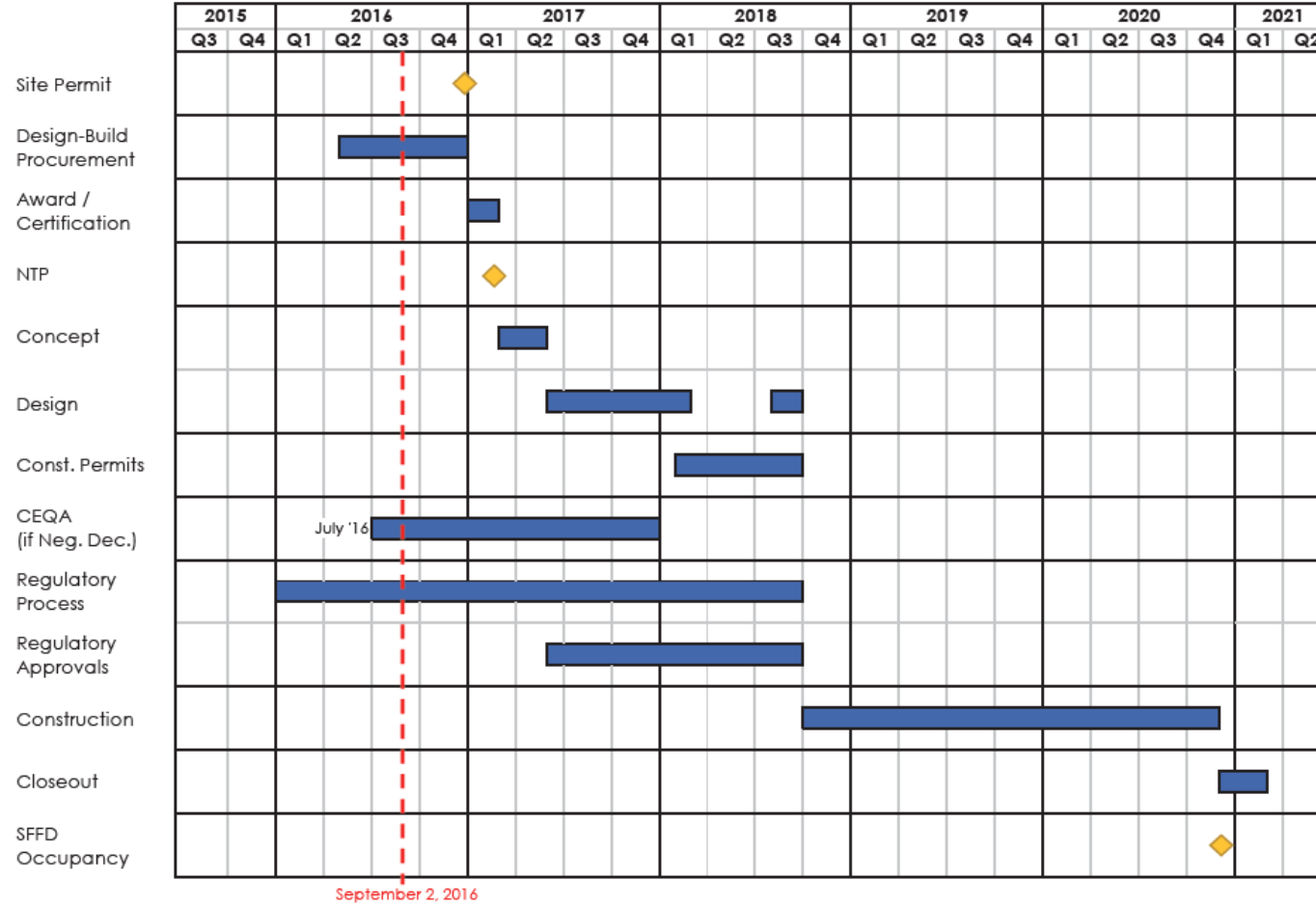


Pier 27 - Cruise Ship Terminal

## PRIMARY PERMITTING AGENCIES

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

### ESER 2014 Bond - Fire Station No. 35 at Pier 22.5 Preliminary Schedule



Prepared by San Francisco Public Works, Project Management  
September 2, 2016



# 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



AERIAL PHOTO OF EXISTING SITE



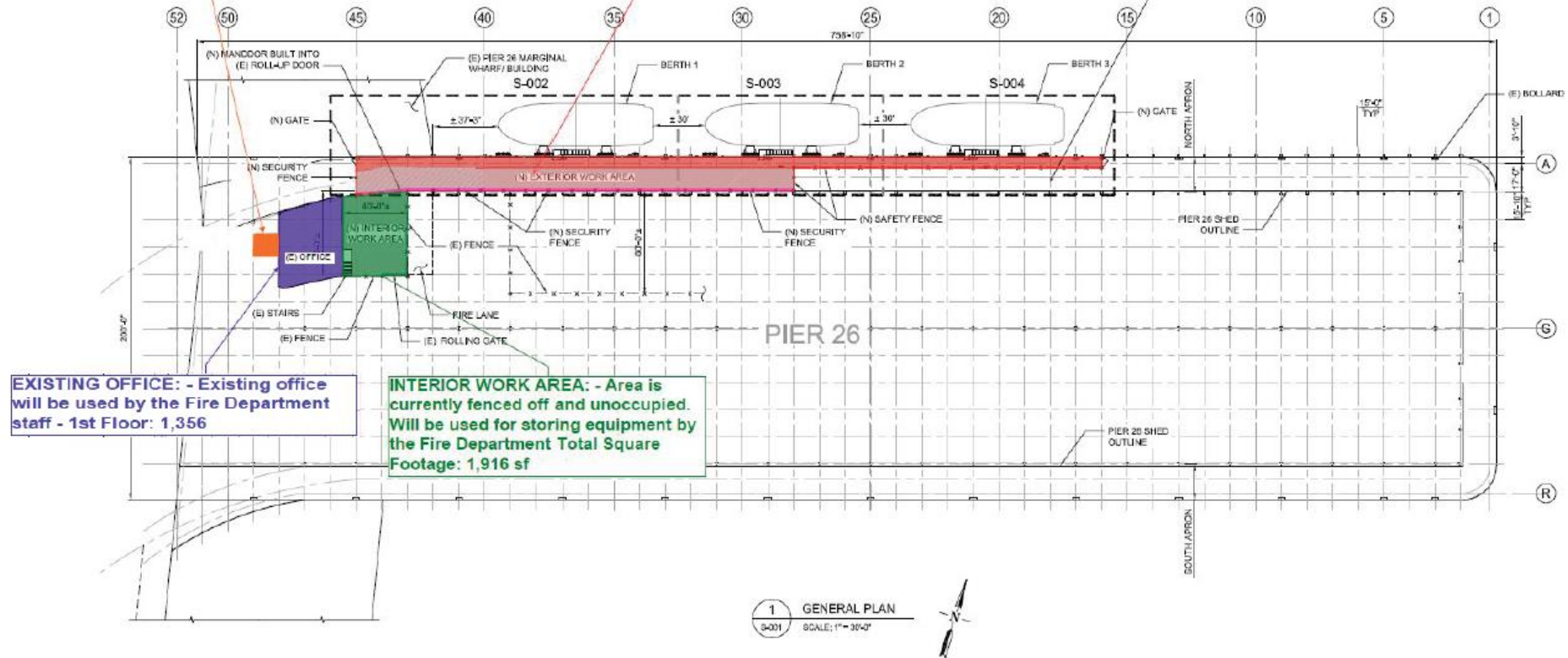
photo credit: COWI

# PIER 26 - GENERAL PLAN

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

**Exterior Work Area:**  
 Apron Edge Beam =  $435\text{ft} \times 6.125\text{ft} = 2,664\text{sf}$   
 - Infill deck =  $255\text{ft} \times 12\text{ft} = 3,060\text{sf}$   
 - Apron interior beam =  $255\text{ft} \times 1.25\text{ft} = 319\text{sf}$   
 Total Square footage of North apron space to be used by the Fire Department = 6,043sf

Total Pier Area = 152,000 sf  
 Shed Area = 120,000 sf  
 Apron Area = 32,000 sf  
 Area of Existing North Apron =  $19.375\text{ft} \times 758.83\text{ft} = 14,702\text{sf}$   
 Total Square footage of North apron space to be used by the Fire Department = 6,043sf  
 % of North Apron to be used by the Fire Department = 41%



**EXISTING OFFICE:** - Existing office will be used by the Fire Department staff - 1st Floor: 1,356

**INTERIOR WORK AREA:** - Area is currently fenced off and unoccupied. Will be used for storing equipment by the Fire Department Total Square Footage: 1,916 sf

1 GENERAL PLAN  
 3-001 SCALE: 1" = 30'-0"

# 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

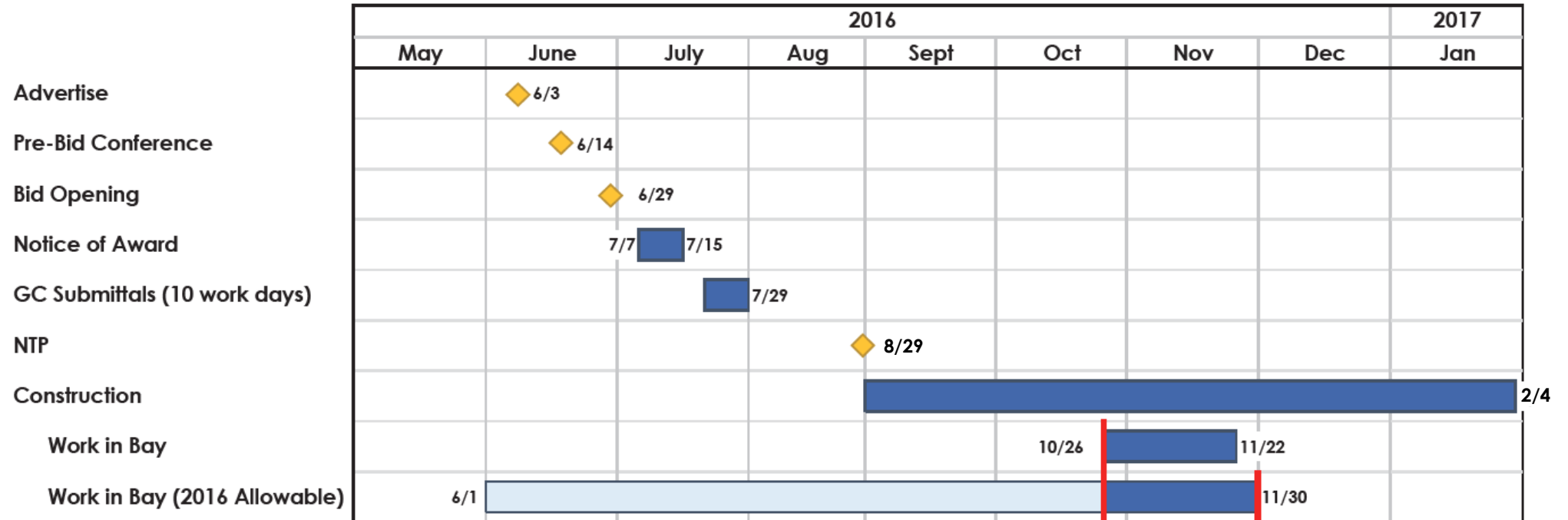


3 EXISTING FENDER SYSTEM TO BE REMOVED. EDGE AND INTERMEDIATE BEAMS TO BE REPAIRED.





# PIER 26 - SUMMARY PROJECT SCHEDULE





<http://www.sfearthquakesafety.org/neighborhood-firehouses.html>