



Port of Redwood City Wharves 1 and 2 Replacement Project

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Presentation outline



Project Location

- **Port of Redwood City**

- Project Location

Project Overview & Approach

- **Project Overview**

- Project Features & Goals
- Technical Approach – Sea Level Rise
- Project Costs
- Benefits & Public Access Improvements

Questions and Answers

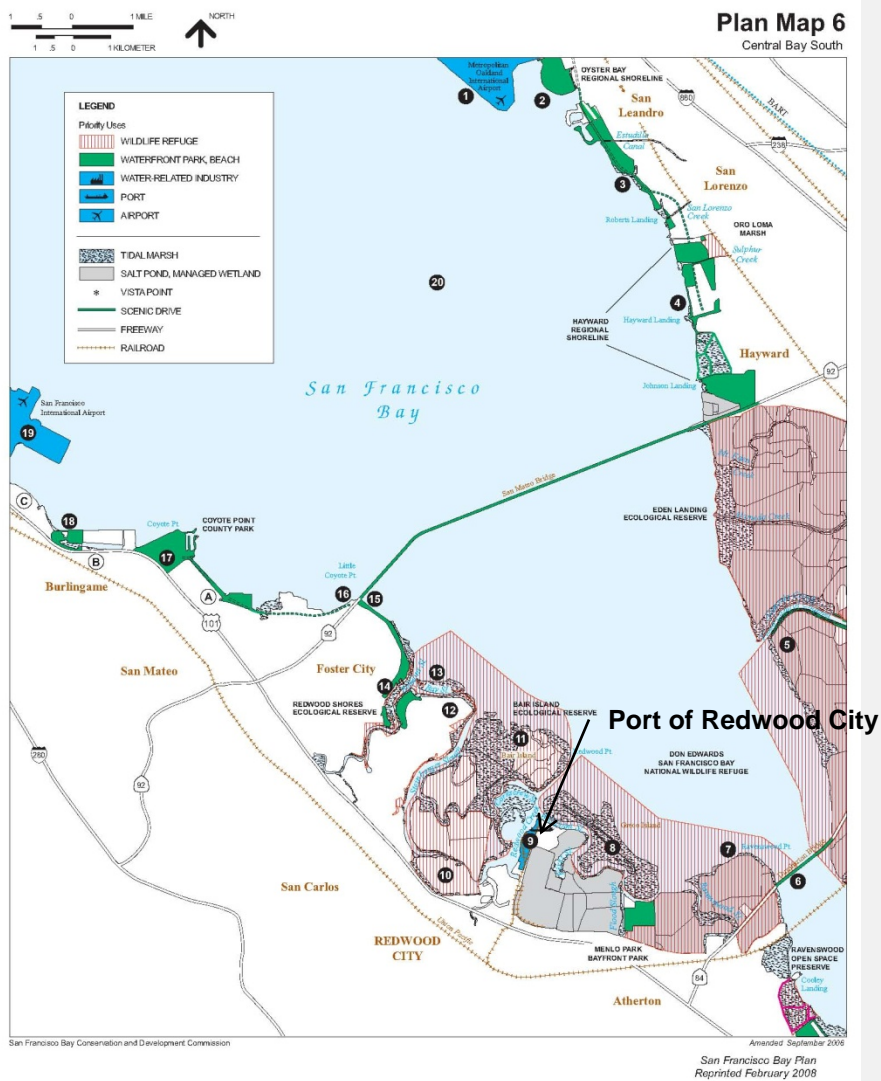
- **Questions and Answers**



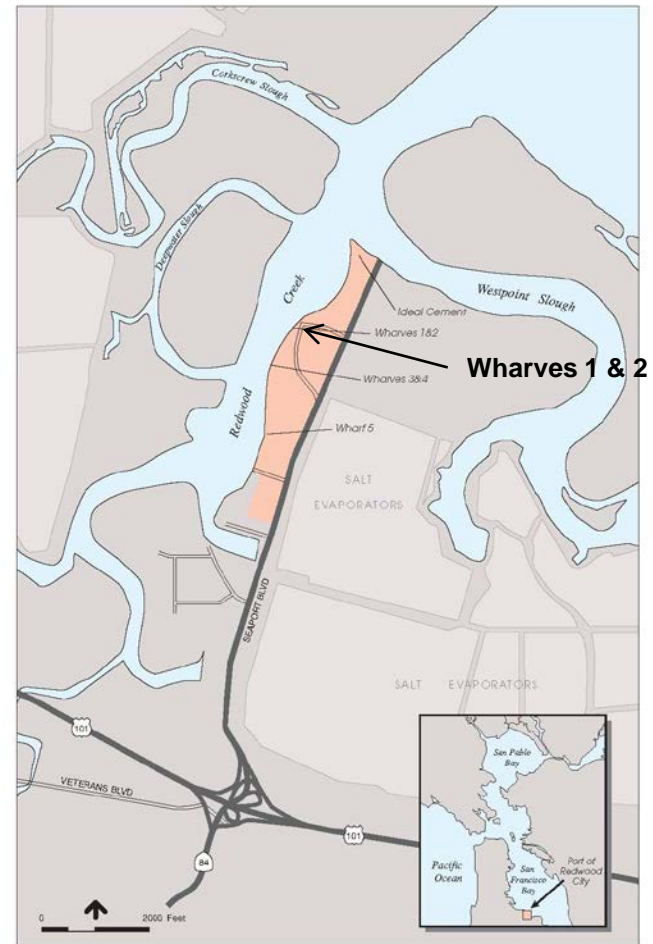
Port of Redwood City



Project Location



Designations





Project Overview



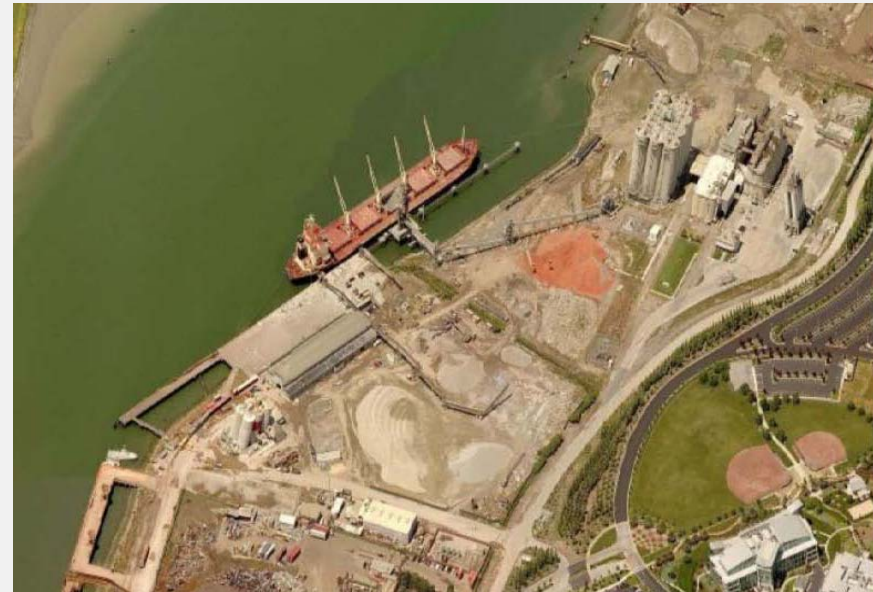
Project Features and Goals

Project Features

- Demolition of 72,000 sf of existing timber wharf and creosote piles
- Construction of 40,000 sf of new concrete wharf and concrete piles
- Demolition of existing warehouse
- Construction of New Longshoreman's Building
- Construction of New Seawall & Associated Shoreline Protection
- Address Climate Change and Sea Level Rise
- Address Safety and Public Access Improvements

Project Goals

- 50-year Design Life
- Flexible Use to meet Port's Operational Requirements
- POLB Seismic Criteria
- Meet Port's Financial Constraints

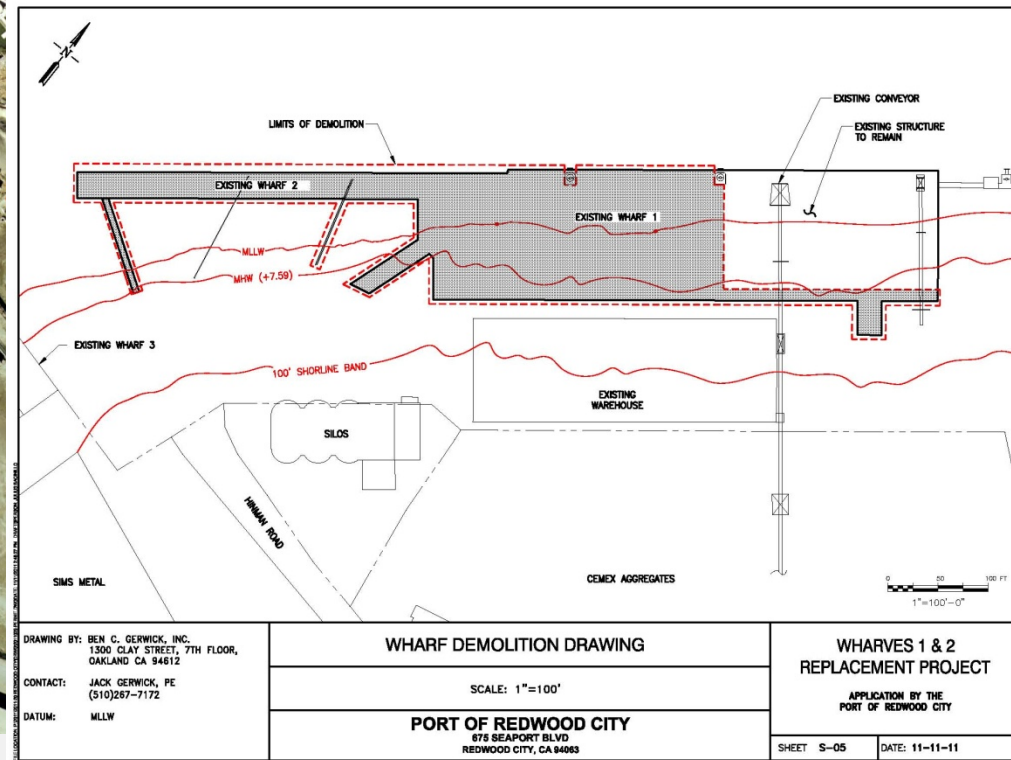




Project Overview



Project Existing Features -- Demolition

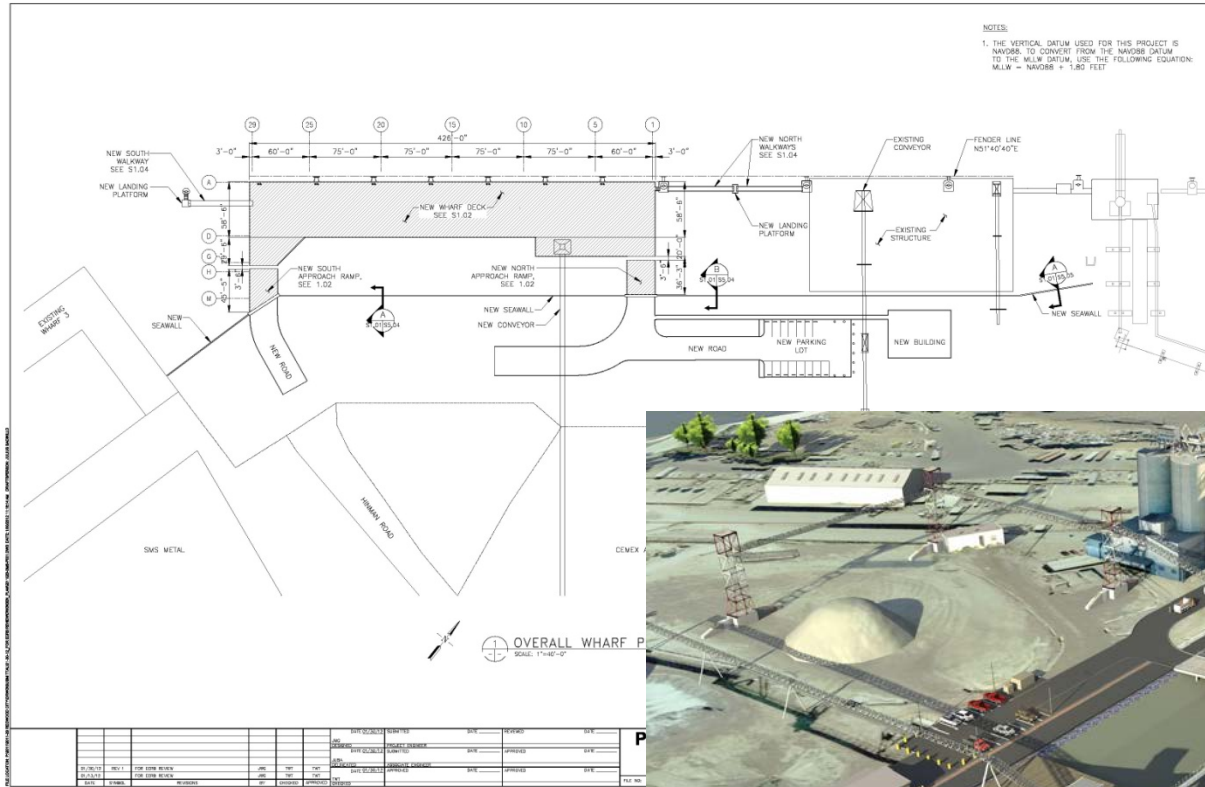




Project Overview



New Project Features – New Construction





Project Overview



Technical Approach -- Design Loads & Key Considerations

Operational

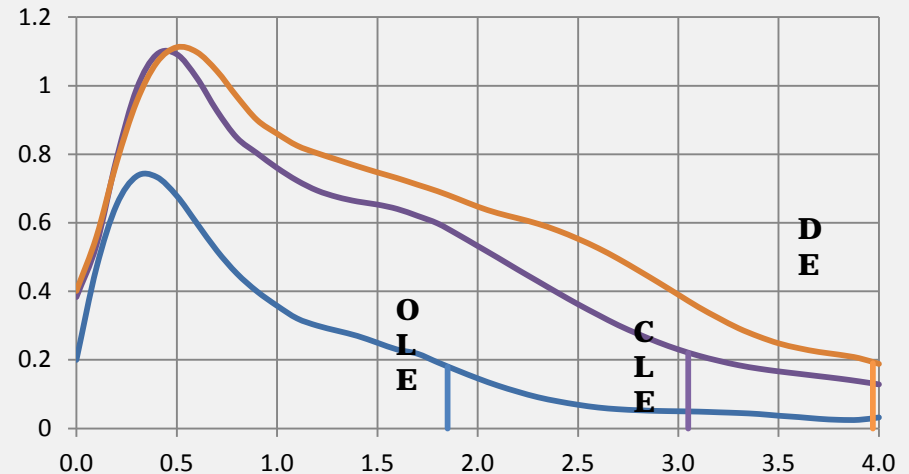
- Dead
- 750 psf uniform live (wharf)
- 250 psf uniform live (ramps)
- HS20-44 truck
- 20 ton forklift
- 115 ton mobile crane
- Berthing
- Mooring

Key Considerations

- 50-yr Design Life
- Maintain CEMEX operations during construction
- New wharf flexibility for future use
- Vessel separation from CEMEX & Sims Metal
- Regulatory restrictions

Seismic (POLB Criteria)

- Operating Level Earthquake (OLE)
- Contingency Level Earthquake (CLE)
- Code Level Design Earthquake (DE)





Project Overview



Technical Approach – Sea Level Rise

Bay Conservation and Development Commission

"All projects ... should be designed to be resilient to a mid-century sea level rise projection. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise based on a risk assessment using the best available science-based project for sea level rise at the end of the century."



Port of Redwood City Flooding 2012



Port of San Francisco Flooding



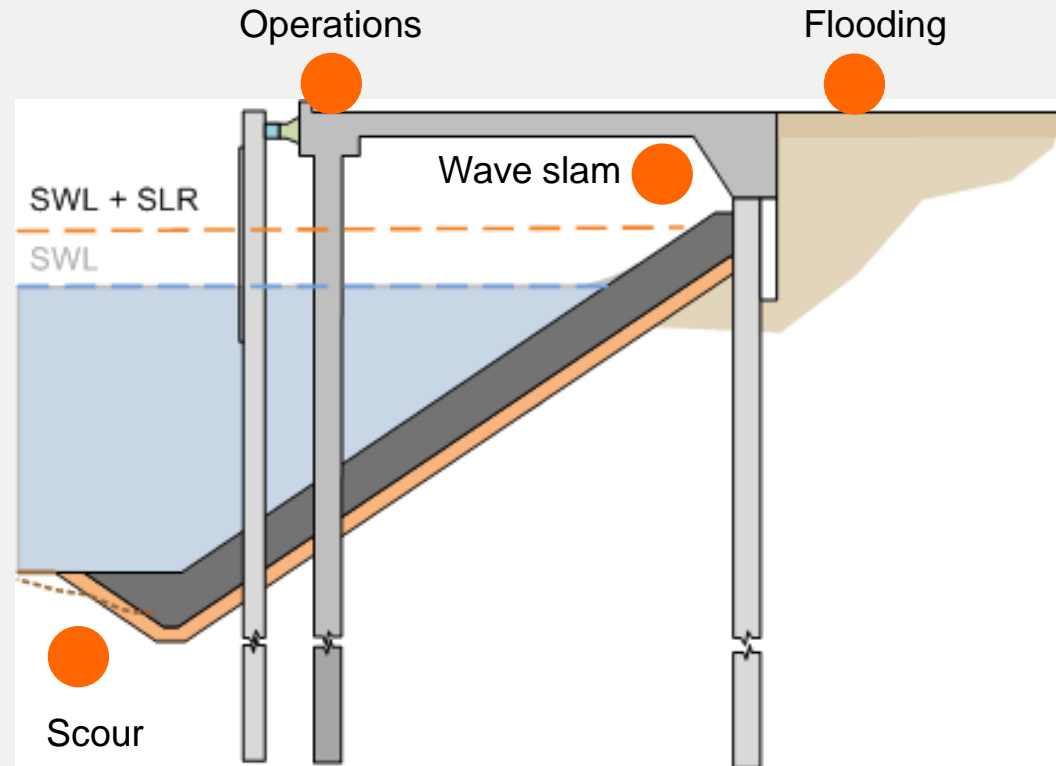
Project Overview



Technical Approach – Sea Level Rise

▪ Risk Management Considerations

- Scour
- Wave slam
- Operations
 - Meet current & future water levels
 - Berthing or mooring compatibility
 - Equipment compatibility
 - Utility Maintenance
- Flooding
 - Building & wharf access



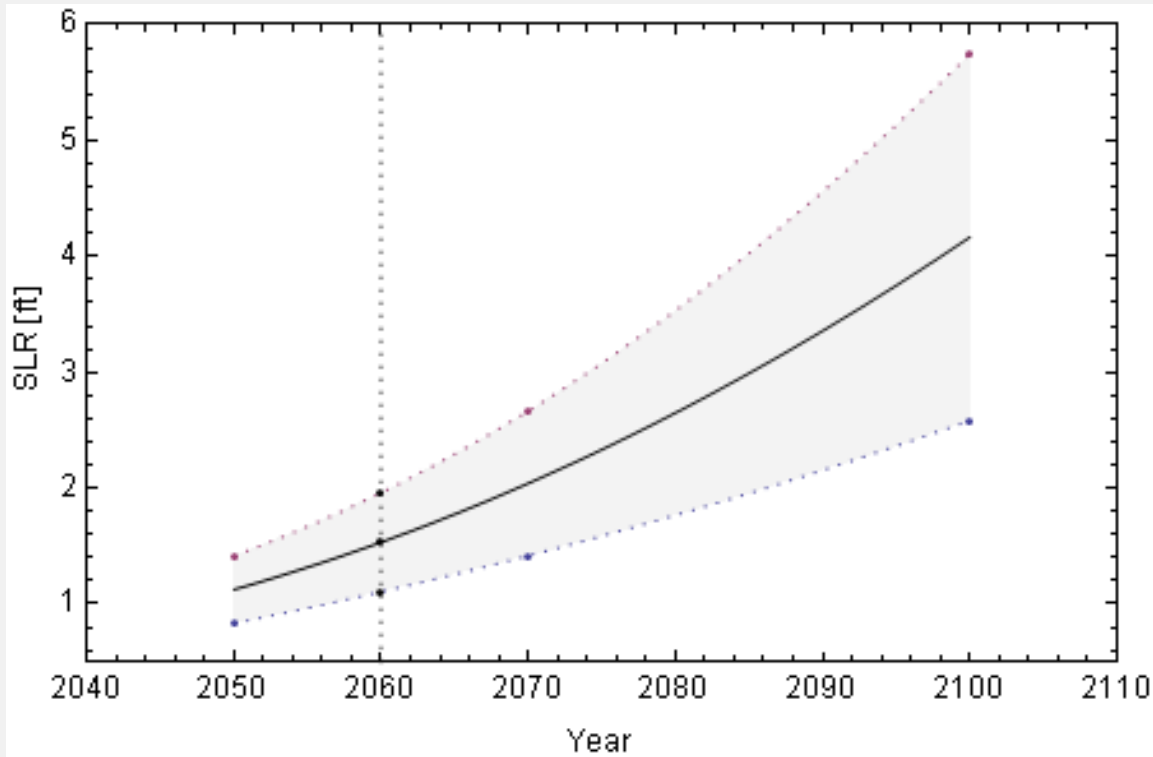


Project Overview



Technical Approach – Sea Level Rise

- California Climate Action Team has developed a range of sea level rise values at various years up to 2100



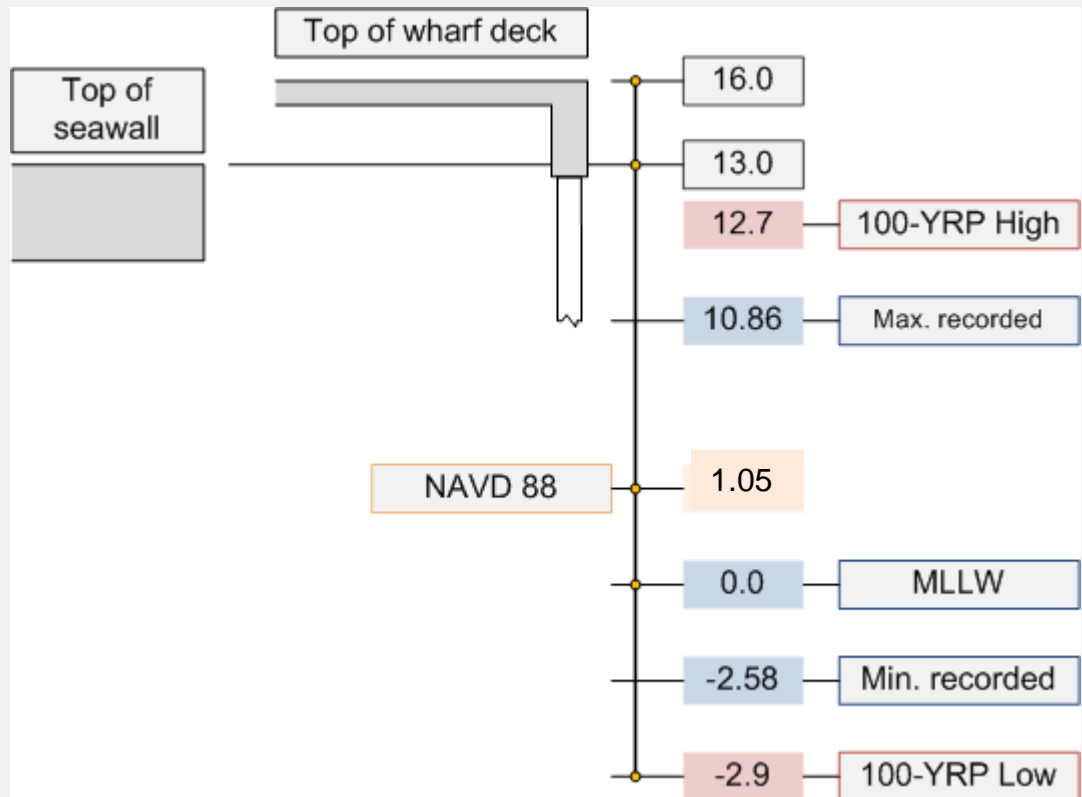


Project Overview



Technical Approach -- Sea Level Rise

- Wharf design life = 50 years
- Projections for future sea level rise based on BCDC guidelines for year 2060
- Mean sea level rise = 1.5 feet in 2060
- Projected 100 year tide and surge water level = 11.2 feet MLLW

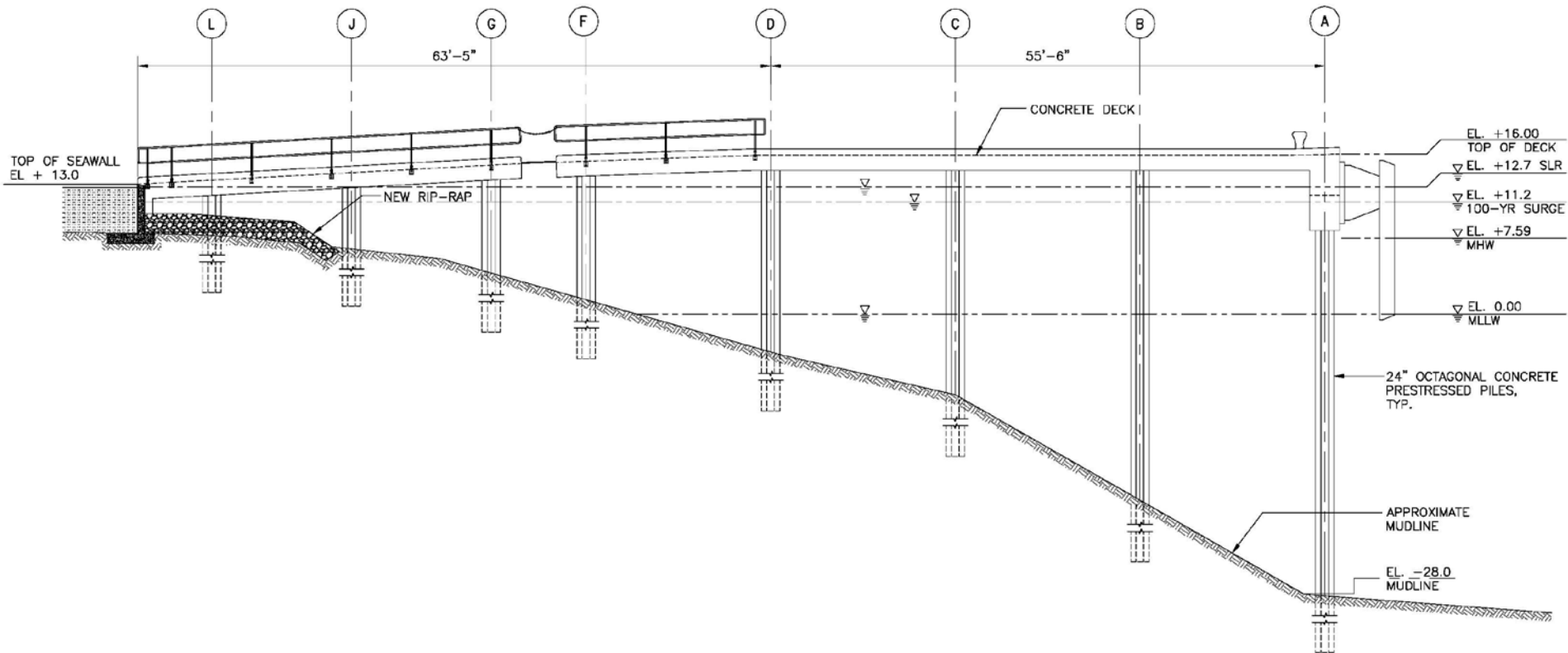




Project Overview



Technical Approach -- Sea Level Rise



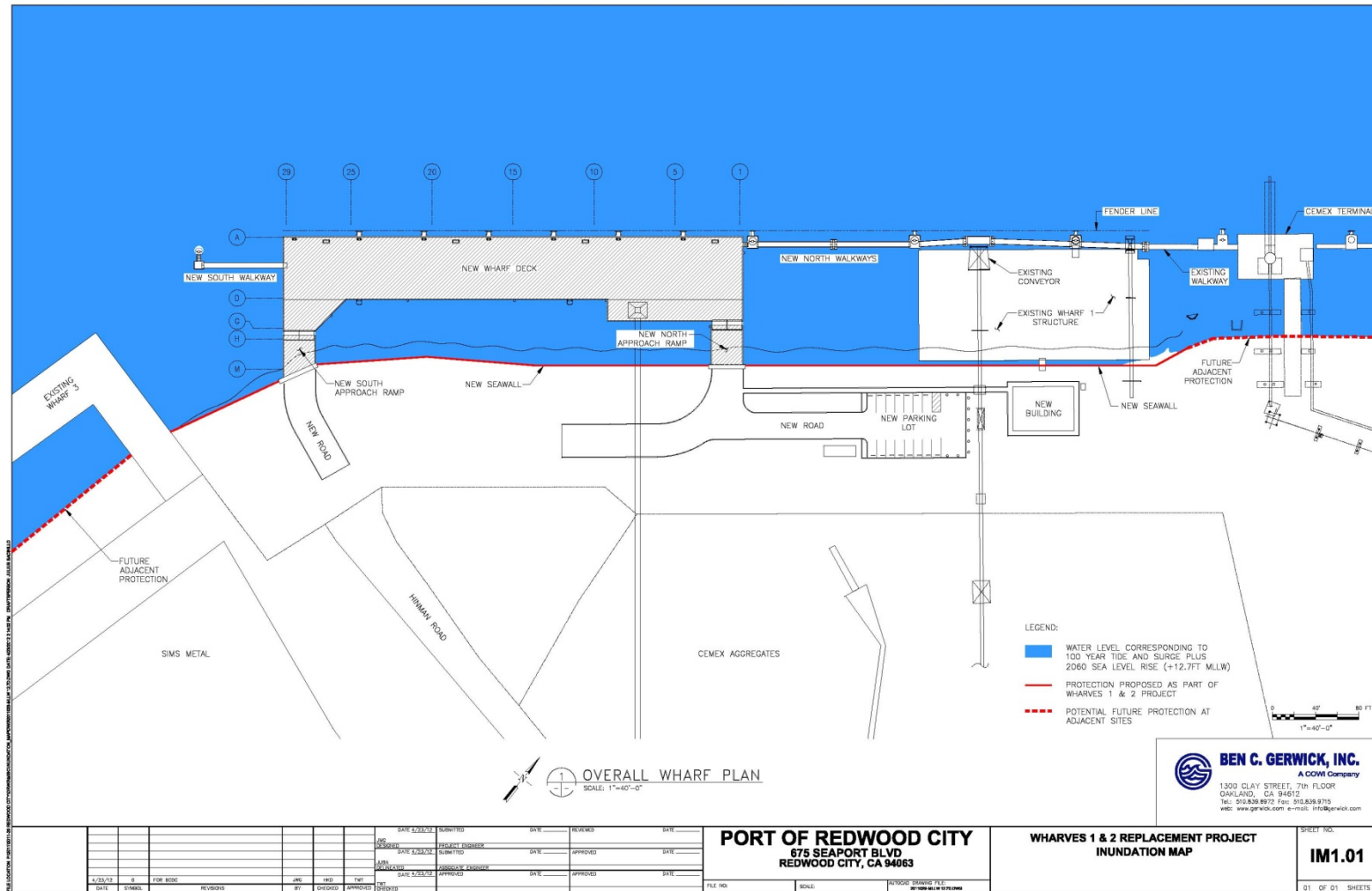
New Concrete Wharves 1 & 2 Cross-Section



Project Overview



Technical Approach -- Sea Level Rise



Wharves 1 & 2 Project Inundation Map





Project Overview



Technical Approach – Sea Level Rise

Operations – Equipment, Fendering, and Mooring





Project Overview



Technical Approach – Sea Level Rise

Operations - Utilities

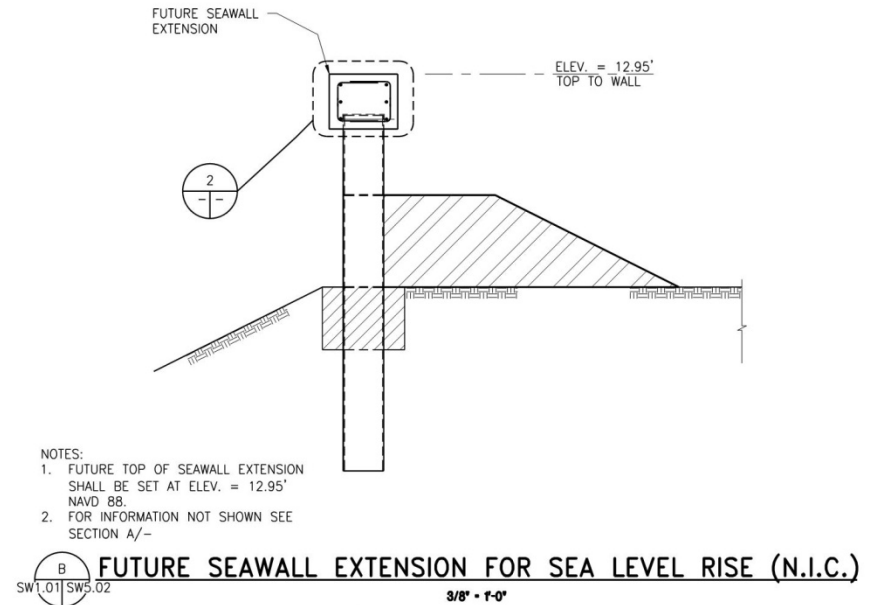
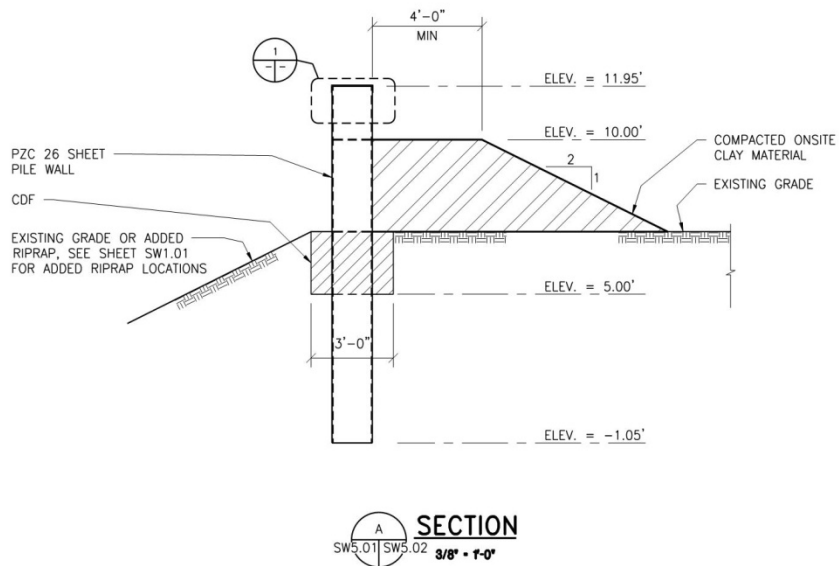




Project Overview



Technical Approach -- Sea Level Rise





Project Overview



Technical Approach -- Sea Level Rise





Project Overview



Technical Approach -- Sea Level Rise





Project Overview



Technical Approach -- Sea Level Rise





Project Overview



- First Design-Build Project completed by the Port
- First project to comply with BCDC's new sea level rise criteria and adaptive measures



Start of Demolition – July 2012



Wharf Phase 2 Deck Pour – June 2013



Project Overview



Project Costs

– Mobilization / Demobilization	325,000	
– Design Services	1,400,000	70,000
– Timber Wharf Demolition (55,000 sf)	1,108,000	
– Furnish & Install Concrete Piles (113 piles)	1,638,500	113,000
– Furnish & Install Concrete Deck (31,000 sf)	3,472,000	
– Furnish & Install Wharf Features	240,000	12,000
– Furnish & Install Walkways	450,000	
– Furnish & Install Seawall (1,000 lf)	1,177,50	120,000
– Warehouse Demolition	750,000	
– Longshoreman's Building	1,200,000	
– Utilities	1,100,000	55,000
– Site Civil Work	1,050,000	52,500
– Additional Work (Wharf Demo, Upgrade \$1MM)	<u>1,213,000</u>	
– Total Construction Costs	15,184,000	
– Port Team Design Services & CM Assistance	<u>1,650,000</u>	<u>82,500</u>
– Total Installed Cost	16,834,000	505,000



Project Overview



Project Benefits

- Creation of 32,000 square feet of new Bay open water habitat
- Removal of 850 creosote piles from Bay environment
- Construction of new concrete wharf with future shore-to-ship power capacity
- Construction of New Longshoreman's Building for safer personnel working area
- Construction of New Seawall & Associated Shoreline Protection for project SLR
- Improved Public Access

Project Specific BCDC Improvements

- Seismic monitoring at new wharf
- Public Improvements at Port Center





Questions and Answers



Sept 17, 2014
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Port of Redwood City
Wharves 1 and 2 Replacement Project

