Port of Redwood City
Wharves 1 and 2 Replacement Project

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Presentation outline

- **Port of Redwood City**
  - Project Location

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

- **Questions and Answers**
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

[Image: Aerial view of the Port of Redwood City with a focus on the wharves to be demolished.]
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."
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
Technical Approach – Sea Level Rise

- California Climate Action Team has developed a range of sea level rise values at various years up to 2100
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
Technical Approach -- Sea Level Rise
Technical Approach -- Sea Level Rise
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
### Project Overview

#### Project Costs

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

*Note: All costs are in USD.*
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