Waterfront Resilience Program Update & Second Seawall Bond Request

D.

December 5, 2022

Vaterfron

AGENDA



- Embarcadero Early Projects Overview & Next Steps
- Pilot Project Living Seawall
- Seawall Bond & Program Funding
- Program Risks, Challenges, and Opportunities



WATERFRONT RESILIENCE PROGRAM EFFORTS

Overview



Embarcadero Early Project

Overview & Development



DEFINING EMBARCADERO EARLY PROJECTS

Goals for Embarcadero Early Projects



Identify Implementable Projects



Reduce EQ Risk Prioritize Life Safety + Disaster Response Capability



Reduce Flood Risk Near-Term Flood Defenses & Later Adaptation



EMBARCADERO EARLY PROJECTS LIST



23 Embarcadero Early Projects Identified & Evaluated

- **11** advancing to pre-design using Proposition A funding
- 5 advancing to pre-design thru a geographic strategy for the stretch between Piers 19 and 41
- **7** advancing through coordination with long-term Port tenants, capital programs, and City agency coordination

6 of 12 Needs Assessment Reports Completed

PROJECT LIST:

- **1** Joint Operations Security Center and Fuel Dock Reliability Project
- 2 Wharf J9 Replacement and Resilient Shoreline Project
- 3 Taylor Street Seawall Earthquake Stabilization Project
- 4 Pier 45 Apron Earthquake Safety Retrofit and Flood Risk Reduction
- 5 Pier 43-1/2 Seawall and Wharf Earthquake Safety Project
- 6 Pier 41 Seawall Earthquake Stabilization and Wharf Retrofit
- 7 Pier 39 Seawall Earthquake Stabilization & Wharf Retrofit/Replacement
- 8 Pier 33 to 35 Seawall and Wharf Earthquake Reliability Project
- 9 Pier 31-1/2 Bulkhead Wall and Wharf Earthquake Safety Retrofit
- 10 Pier 27 Seawall and Wharf Earthquake Reliability Project
- **11** Pier 15 Bulkhead Wall and Wharf Earthquake Safety Retrofit
- 12 Pier 9 Bulkhead Wall and Wharf Earthquake Safety Retrofit
- **13** Pier 9 Historic Shed Building Earthquake Safety Retrofit Project
- 14 Pier 1 Bulkhead Wall and Wharf Earthquake Reliability Project
- **15** Ferry Building Seawall & Substructure Earthquake Reliability
- 16 Agriculture Building Bulkhead Wall and Wharf Earthquake Safety
- **17** Pier 5 to Pier 22-1/2 Near-Term Coastal Flood Risk Reduction Project
- 18 Pier 24 to Pier 28-1/2 Bulkhead Wall and Wharf Earthquake Safety
- 19 EFWS, Intake Tunnel #1 Earthquake Reliability Project
- 20 Giants Seals Plaza Seawall Earthquake Stabilization Project
- 21 Pier Fire Suppression & Waterside Evacuation Improvements
- **22** EFWS, Fireboat Manifold Earthquake Reliability Projects
- 23 Pier Utility Connection Earthquake Retrofits at Seawall

WATERFRONT RESILIENCE PROGRAM PROJECT DEVELOPMENT PROCESS

Overview







Embarcadero Early Projects

Needs Assessment Report Updates



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WHARF J9 REPLACEMENT & RESILIENT SHORELINE PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Replace Wharf J9 and seawall with a resilient structure to protect the shoreline in earthquakes and help defend Fisherman's Wharf from sea level rise
- Increase disaster
 response capability by providing
 earthquake accessible berths
 including fireboat EFWS Hydrant
- Revitalize an underinvested area, connect residents and visitors to working fishing industry, and create a continuous waterfront experience



WHARF J9 REPLACEMENT & RESILIENT SHORELINE PROJECT

Draft Project Alternatives



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PIER 15 BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Improve earthquake safety by retrofitting bulkhead wall and substructure to reduce damage and risk of collapse
- Provide reliable access across Seawall for use of berths for earthquake disaster response
- Due to difficulty in fixing Bay Muds, include major Seawall improvements as part of later SLR adaptation.
- Keep Exploratorium open during construction

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PIER 15 BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT

Draft Project Alternatives



Alt 1: Substructure Retrofits

- Strengthen bulkhead wall
- Wrap piles
- Improve pile and wall connections to deck



Alt 2: Widen Seismic Joint

- Widen existing seismic joint to handle Seawall movement
- Alt 1 substructure retrofits



Alt 3: Spider Frame

- New piles and substructure girders
- Design to be jackable for future sea level rise.
- High construction impacts make this unlikely.

PIER 9 BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Improve earthquake safety by retrofitting bulkhead wall and substructure to reduce damage and risk of collapse
- Provide reliable access across Seawall for use of berths for earthquake disaster response
- Due to difficulty in fixing Bay Muds, include major Seawall improvements as part of later SLR adaptation.
- Consider substructure deterioration in alternatives
- Advance shed retrofits as a separate project. 13

PIER 9 BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT

Draft Project Alternatives



Alt 1: Substructure Retrofits

- Strengthen bulkhead wall
- Wrap piles

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 Improve pile and wall connections to deck



Alt 2: Joint and Bldg

- Add a seismic joint to handle seawall movement
- Retrofits bulkhead building
- Include Alt 1 Substructure Retrofits



Alt 3: Spider Frame

- New piles and substructure girders
- Design to be jackable for future sea level rise
- Fixes deteriorated substructure conditions 14

FERRY BUILDING SEAWALL & SUBSTRUCTURE EARTHQUAKE RELIABILITY PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Improve earthquake safety by strengthening the Seawall and substructure of the iconic Ferry Building
- Provide reliable earthquake disaster response for Ferry berths and staging areas by strengthening the Seawall and surrounding substructures
- Improve waterside public realm, reliability of utility services, and Near-term flood defenses
- Minimize construction impacts
- Develop a long-term adaptation plan and consider these investments as steps on the path

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FERRY BUILDING SEAWALL & SUBSTRUCTURE EARTHQUAKE RELIABILITY PROJECT

High Complexity and Challenging Conditions

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- Ferry Building is among the most complex areas of the waterfront to improve
- 100-foot-thick Bay Muds, a mix of structures dating from 1889, the 240ft clocktower, and BART tunnel below
- Substantial investment is likely needed to achieve earthquake objectives
- Initial seismic measures toolkit and eight different draft project alternatives developed, recommend advanced engineering to analyze performance

PIER 5 to 22½ NEAR-TERM COASTAL FLOOD RISK REDUCTION PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Reduce near-term flood risk to multi-modal Embarcadero transit corridor, BART and Muni, and historic resources, while longerterm solutions are developed for earthquake stability and sea level rise
- Balance near-term flood risk reduction with larger adaptation moves.
- Maintain a high-quality public realm, fix flood damage & explore habitat enhancements
- Partner with SFPUC to include storm water management improvements.
- Consider deteriorated bulkhead
 and substructures
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PIER 5 to 22½ NEAR-TERM COASTAL FLOOD RISK REDUCTION PROJECT

Draft Project Alternatives

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PIER 24½ to 28½ BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT

Project Vision: Objectives, Constraints, and Other Considerations



- Improve safety in bulkhead zone and Promenade by reducing collapse risk
- Consider age, condition and rehabilitation needs.
- Include simple retrofits to full replacement alternatives
- Full replacement alternatives to be adaptable for SLR.
- Consider utility needs and adjacent Pier 30/32 and Pier 38/40 development projects

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PIER 24½ to 28½ BULKHEAD WALL & WHARF EARTHQUAKE SAFETY RETROFIT PROJECT Draft Project Alternatives



Alt 1 & 2: Retrofits

Simple structural retrofits that allow for wall movement without wharf losing vertical support. Include seismic joints to protect piers.



Alt 3: Replace Wharf

New wharf designed for high seismic performance and future elevation gain.



Alt 4: Stabilize Shoreline

Wall stabilization with resilient utility corridor. Potential link to shoreline improvements by Piers 30-32 and Piers 38 & 40 development projects.



Early Projects Next Steps



Waterfront Resilience Program

NEXT STEPS



- Advance Alternatives
 Analysis for these projects and target first
 construction in 2024
- Continue to coordinate Pre-Design of Early Projects with development of Adaptation Strategies
- Seek additional funding opportunities to advance more Embarcadero Early Projects



Pilot Project - Living Seawall



LIVING SEAWALL



- Objective: ecological enhancement of seawalls
- Study ecological growth on concrete using textured surfaces and concrete admixture composition
- All frames and tiles are constructed
- Permits received and installation is complete

Photo: Lonny Meyer

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LIVING SEAWALL



- June 2022 Smithsonian did baseline survey of all species and organisms living on the seawall
- Two years of monitoring to begin early 2023



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Photo: Lonny Meyer



Seawall Bond & Program Funding



Current Program Funding (\$ millions)

Fisca	al Year 16/17	17/18	18/19	19/20	20/21	21/22	22/23	23-27
Funding Sources								
Port Capital	\$2.9		\$1.1		\$1.7	\$0.6	\$1.5	\$6.6
Port Harbor Funds				\$11.5	(\$11.5)			
City Revolving Fund	\$1.0	\$3.0	\$5.0	(\$6.0)	(\$3.0)			
SFMTA Contribution	\$0.5	\$0.5						
Planning Dept Contribution	on \$0.5	\$0.25	\$0.25					
State Sources			\$5.0					
2018 General Obligation	Bond				\$49.7		\$42.0	\$333.3
Total Planned Sources	\$4.9	\$3.8	\$11.4	\$5.5	\$36.9	\$0.6	\$43.5	\$339.9
Cumulative Sources	\$4.9	\$8.7	\$20.0	\$25.5	\$62.4	\$63.0	\$106.5	\$446.4

\$58.7 million in current grant application submissions

PROGRAM GO BOND EXPENDITURES

	Original	General Obligation Bond					
Components	Budget	First Issuance Budget	Appropriations	Expenditures	Encumbrances	Balance	
Seawall Program Labor	18,800,000	5,907,000	7,500,000	6,000,000		1,500,000	
United States Army Corps of Engineers (Flood Study)	8,900,000	8,875,000	4,000,000	3,630,000		370,000	
Planning / Engineering / Preliminary Design (35%)	37,500,000	23,985,000	33,250,000	25,115,000	4,600,000	3,535,000	
Risk Assessment	-		3,400,000	3,400,000			
Final Design (65%)	46,600,000						
Other City Depts / Gov Agencies	1,900,000	983,000	400,000	270,000		130,000	
Design Support during Construction	8,400,000						
Pilot Projects	40,000,000	6,050,000	250,000	170,000		80,000	
Seawall Program Projects	262,900,000						
Oversight, Accountability & Cost of Issuance	-	4,200,000	875,000	875,000			
TOTAL	425,000,000	50,000,000	49,675,000	39,460,000	4,600,000	5,615,000	

Expenditures through 9/2022

SECOND BOND REQUEST AND TOTAL BOND FUNDING

Componente	Original	General Obligation Bond			
components	Budget	First Issuance	Second Issuance	TOTAL	
Seawall Program Labor	18,800,000	7,500,000	8,900,000	16,400,000	
United States Army Corps of Engineers (Flood Study)	8,900,000	4,000,000	3,523,000	7,523,000	
Planning / Engineering / Preliminary Design (35%)	37,500,000	33,250,000	22,577,000	55,827,000	
Risk Assessment	-	3,400,000		3,400,000	
Final Design (65%)	46,600,000		3,278,000	3,278,000	
Other City Depts / Gov Agencies	1,900,000	400,000		400,000	
Design Support during Construction	8,400,000				
Pilot Projects	40,000,000	250,000	340,000	590,000	
Seawall Program Projects	262,900,000				
Oversight, Accountability & Cost of Issuance	-	875,000	3,382,000	4,257,000	
TOTAL	425,000,000	49,675,000	42,000,000	91,675,000	



Program Risks, Challenges, and Opportunities



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RISKS, CHALLENGES AND OPPORTUNITIES



• FUNDING

- Embarcadero Early Projects are projected to be \$650 million to \$3 billion
- Southern Waterfront Early Projects and longer-term adaptation will significantly increase this need
- The USACE Flood Study is the main avenue for funding beyond the Prop A Seawall Bond; a schedule delay or not completing/reaching a positive federal interest finding would significantly alter the scope of the Waterfront Resilience Program
- Leveraging Prop A Seawall Bond funds to match federal grant opportunities from the IIJA and IRA
- Ongoing high inflation reduces the impact of the available funds

RISKS, CHALLENGES AND OPPORTUNITIES



CITY WIDE COLLABORATION

- The Program impacts on many city-wide infrastructure. Strong ongoing inter-agency collaboration will be essential to success.
- Solving multiple hazards in a holistic way will provide efficiencies for the City and help toward other City goals such as Climate Action goals
- PUBLIC AND POLITICAL
 SUPPORT
 - Strong public and political support will be required to support the USACE Flood Study with selecting a locally preferred plan in 2023.

RISKS, CHALLENGES AND OPPORTUNITIES



• SCHEDULE

• The program is in a race against time to implement as much risk mitigation before the next major earthquake or coastal flood

ECONOMIC STIMULUS

- Significant injection of federal funds into the City
- Opportunity to revitalize the waterfront as a destination supporting long-term investment in adjacent areas
- Opportunity for significant investment in historically underserved communities in the southern waterfront

Thank You

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Waterfront Resilience Program

San Francisco Fire Department

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