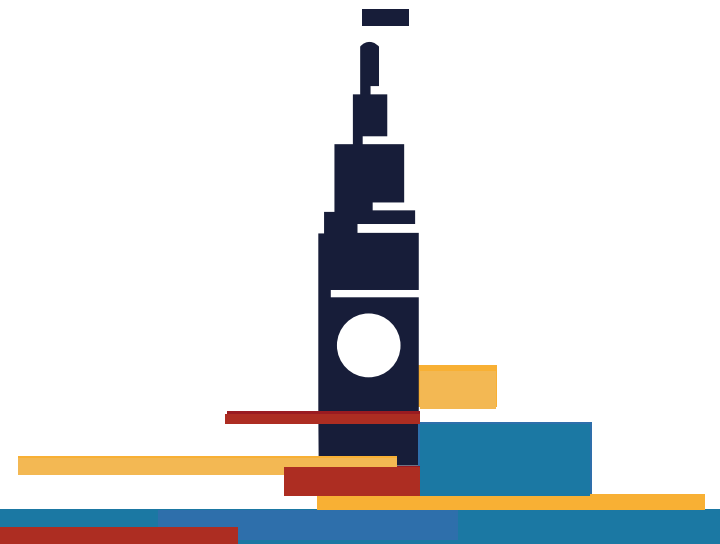


# PORT OF SAN FRANCISCO INITIAL SOUTHERN WATERFRONT EARTHQUAKE ASSESSMENT

Informational Presentation  
September 13, 2022

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# NEED FOR INITIAL SOUTHERN WATERFRONT EARTHQUAKE ASSESSMENT



2011 Tohoku Earthquake



2016 Kaikoura Earthquake



2010 Chile Earthquake



1993 Guam Earthquake

# ASSESSMENT PURPOSE



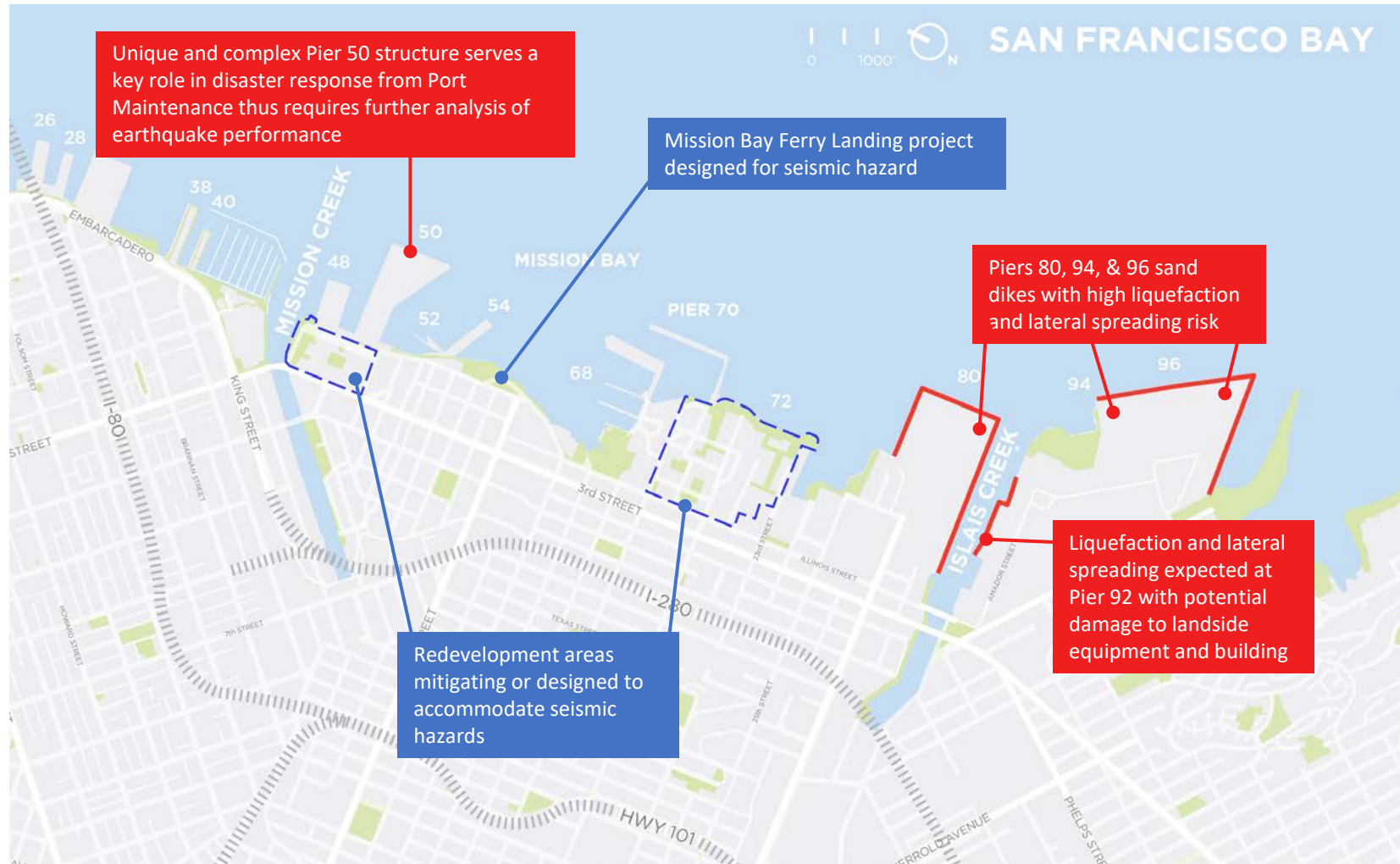
- Initial assessment of seismic hazards and potential vulnerabilities from Pier 48 to Heron's Head Park to leverage funding and opportunities to mitigate issues
- Similar to 2016 Seawall Vulnerability Study in level of detail and analysis
- Does not assess consequences or risks like the Embarcadero Multi-Hazard Risk Assessment (MHRA)
- Southern Waterfront character does not require an MHRA, so Port staff will advance directly to facility specific analysis, designs and construction
- Identification of potential Projects in the Southern Waterfront

# GENERALIZED SOUTHERN WATERFRONT SHORELINE TYPES



- Port Jurisdiction
- Historic bay fill
- Historic shoreline
- Similar to Embarcadero Seawall
- Natural or engineered slopes
- Mixed shoreline types
- To be redeveloped
- Sand dike with wharf

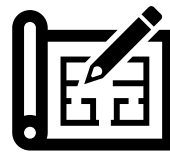
# ASSESSMENT FINDINGS



# NEXT STEPS BASED ON ASSESSMENT FINDINGS



Identify Projects for  
Implementation



Build upon initial  
understanding with  
future planning and  
analysis



Identify and  
pursue funding

# PIER 50 PORT MAINTENANCE & MARINE TERMINAL EARTHQUAKE IMPROVEMENT PROJECT

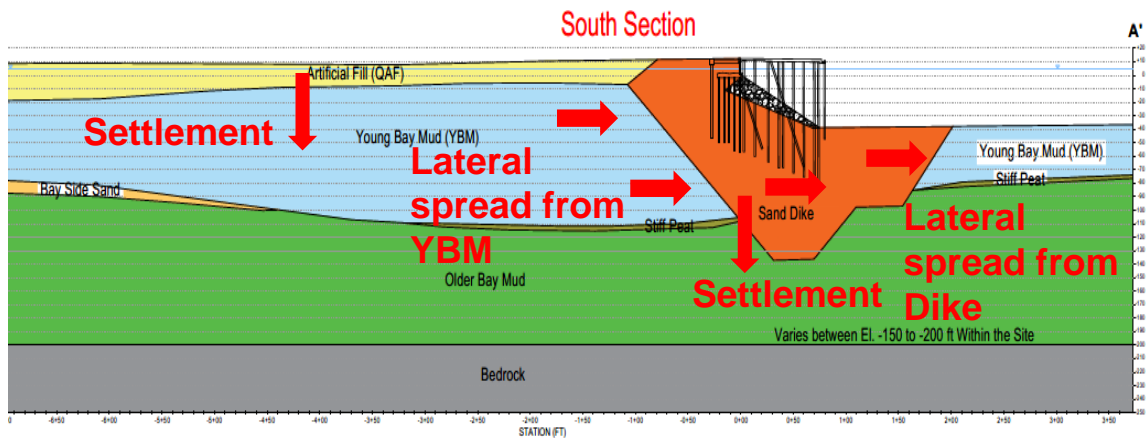


- Unique seismic behavior for finger pier due to solid land at the eastern end
- Potential reduction to lateral spreading hazard at shoreline
- Important in City's emergency response
- Next steps for Pier 50 include:
  - Detailed condition assessment
  - Advanced earthquake analysis
  - Developing conceptual retrofit strategy
- Approved FY22/23 Port Capital Budget for ~\$3M
- Intend to seek additional state and federal funding to complete pre-design and CEQA (FEMA)



# PIER 80 MARINE TERMINAL CAPITAL IMPROVEMENT PROJECTS

- Projects to meet maritime business needs, now informed by known hazards and vulnerabilities
- Vulnerable sand dike construction type along wharf edge
- SFPUC outfall pipe in vulnerable zone - continue coordination
- Important to the City's emergency response with deep draft berthing capable of roll-on/roll-off cargo adjacent to large backlands
- Approved FY22/23 funding for Pier 80 Subsidence Rehab (\$0.8M) and Pier 80 Mooring Point and Fendering (\$9.4M)
- Intend to seek additional state and federal funding for earthquake improvement project (MARAD)





# PIER 94/96 MARINE TERMINAL EARTHQUAKE IMPROVEMENT PROJECT



- Vulnerable sand dike construction type along wharf edge
- Building E located within zone of expected ground movement
- Identified by City's Emergency Response Plan as critical asset
- Share findings with long-term tenants and identify means to further quantify or mitigate earthquake risks
- Submitted \$3.6M request via FEMA Hazard Mitigation Program Grant Application, awaiting review of application
- Intend to pursue subsequent FEMA grant to complete detailed design and construction

# SUMMARY OF FUNDING & FUTURE NEED

Facility	Project Type	Effort	Value	Source
Pier 50	Earthquake	Assessment & Pre-Design	~\$3.0M	Port Capital
Pier 80	Capital Improvement	Design & Construction	\$10.2M	Port Capital
Pier 94/96	Earthquake	Assessment & Pre-Design	\$3.6M	FEMA Grant

- Pier 80 capital improvement projects do not have specific seismic mitigation purpose but will consider new information as part of design
- Port has not yet been funded through P94/96 FEMA Grant, application is currently under review by FEMA and requires 25% Port Capital match

- Scale of construction funding to fully mitigate seismic risk at these facilities estimated to be greater than \$100M, however, provides substantial opportunity to infuse capital into aging facilities nearing the end of their useful life and evolve with the changing maritime needs
- Allocated funding allows the pre-design processes to begin for these key facilities in order to leverage and align future funding opportunities

# SUMMARY

- This is an initial assessment intended to focus and guide future endeavors
- Incorporate findings into Draft Waterfront Resilience Program Adaptation Strategies and USACE San Francisco Waterfront Coastal Flood Study
- Work closely with long-term tenants and City agencies to discuss potential vulnerabilities and next steps to evaluate or fund mitigation
- Use Port capital to advance the projects
- Continue engaging the community and advisory groups about findings and as next steps progress
- Report back to Port Commission as grants are awarded