



Memorandum

May 1, 2017

TO: Members, Waterfront Plan Working Group Land Use Subcommittee

FROM: Diane Oshima & Kari Kilstrom

RE: Embarcadero Historic Pier Condition Information

In response to discussion at the April 12, 2017 Land Use Subcommittee meeting, this memorandum identifies Embarcadero Historic District bulkhead and pier structures that have capital repair and improvement needs.

Port Rapid Structural Assessment Program

These facilities were designed and constructed to support warehouse activities associated with cargo shipping and industrial operations. The discussion and table below provide current general condition descriptions based on current industrial occupancy standards, as identified through the Port's Rapid Structural Assessment (RSA) Program administered by the Engineering Division.¹ The RSA Program enables the Port to identify structural safety issues and document maintenance and repair needs, and inform recommendations for structure load restrictions, barricades, and warning protocols.

The RSA Program provides general condition assessments for piles and decks that support the pier ("substructure"), and Port bulkhead and shed buildings constructed above the deck ("superstructures"), using a colored-rating system described below. Pier substructure repair is one of the most significant cost factors in capital pier repair projects; superstructure repair and other costs are either less variable, or small relative to substructure repair.

- **Green** – Good structural condition; no live load reductions or restrictions
- **Green/Yellow** – Some areas of pier are rated Green and some areas are rated Yellow. Typically indicates localized damage rather than overall deterioration.
- **Yellow** – Fair/poor structural condition, some areas of the pier may be in poor condition and require restricted use or load live restrictions
- **Red** – Unsafe structural condition; restricted and/or unsafe access

The table below does not include: 1) Embarcadero Historic District bulkhead/piers that have been rehabilitated as part of completed long-term development projects; 2) Pier 17, which is leased to the Exploratorium; 3) Pier 48, which is proposed for rehabilitation in the Mission Rock project; 4) Piers 30-32, which is not included in the Embarcadero Historic District. The Agriculture Building is another

¹ More details on the Port facility assessment program are provided in a [February 4, 2016 Port Commission staff report](#), which was presented previously to the Waterfront Plan Working Group on March 9, 2016.

important Embarcadero Historic District resource in need of capital improvement that, because it is not a pier, is not included in the table.

Facility	Year Constructed	Current Substructure Condition	Current Superstructure Condition
Shed A, Pier 45	1926	Green	Green
Pier 35	1914	Yellow	Green
Pier 33	1917	Yellow	Yellow
Pier 31	1917	Green / Yellow	Green *
Pier 29	1915	Yellow	Green
Pier 23	1930	Green	Green
Pier 19	1935	Green	Green
Pier 26	1912	Green / Yellow	Yellow
Pier 28	1912	Green	Green
Pier 38	1908	Yellow	Yellow / Red
Pier 40	1908	Yellow	Green

* Pier 31 superstructure repairs are currently under construction

Moffat & Nichol Structural Analysis of Pier 19 and Pier 38

As discussed in the March 22 and April 12 Land Use Subcommittee meetings, the EPS team includes Moffat & Nichol Engineers, which conducted focused assessment of Pier 19 and Pier 38, to develop cost estimates for complete seismic retrofit and full structural repair used in the financial feasibility analyses. This work allowed EPS to bracket the range of rehabilitation costs from a “good” condition pier to a “worse” condition pier. The Port does not have comparable seismic retrofit and structural repair cost estimates for all of the other piers. The Moffat & Nichol analysis found:

- Pier 19 is in good condition. The estimated cost of structural repairs (seismic and non-seismic), plus utilities and an allowance for a mezzanine addition is between \$53 million and \$72 million; a midrange figure of \$60 million was used for financial analysis purposes.
- Pier 38 is in worse condition relative to Pier 19. The estimated cost of structural repairs (seismic and non-seismic), plus utilities and an allowance for a mezzanine addition is between \$82 million and \$122 million; a midrange figure of \$90 million was used for financial analysis purposes.