

MEMORANDUM

February 4, 2016

TO: MEMBERS, PORT COMMISSION
Hon. Willie Adams, President
Hon. Kimberly Brandon, Vice President
Hon. Leslie Katz
Hon. Doreen Woo Ho

FROM: Monique Moyer
Executive Director

SUBJECT: Informational Presentation on the Port's Load Restricted (Yellow with Green Hatching-Tagged) and Fully Restricted (Red-Tagged) Facilities

DIRECTOR'S RECOMMENDATION: Informational Only

Executive Summary

The purpose of this presentation is to provide an update about the changes in structural condition of the Port Facilities since Port staff's last update in February, 2015. Since the 2015 presentation, Port Engineering has not identified any new red-tag facilities.

Background

The Port's Facility Assessment Program (FAP) inspects, categorizes and records the condition of over 350 structures which include piers, wharves and buildings under the Port's jurisdiction. The Port's Facility Assessment Team (FAT) manages the program and is responsible for performing periodic inspections to identify health and safety issues and inform tenants and the public about its findings. Based on the structural condition of the facilities, the Facility Assessment Team makes recommendations for structure load restrictions, barricades and warning signs. The inspection findings also are used to document maintenance and repair needs for the Port facilities.

Since the Program's inception in 2002, the Facility Assessment Team has been conducting inspections of all Port facilities based on a frequency which depends on the type of building material and the type of occupancy or use of the facility. During Port Commission meetings held on March 13, 2007, September 8, 2009, February 12, 2013, and February 10, 2015, Port Staff made informational presentations about the program, describing the program protocol, objectives and accomplishments.

For each facility, the structural inspection findings and recommendations are summarized in a Rapid Structural Assessment (RSA) report which includes a structural rating of the respective facility indicated by a coloring scheme shown on a schematic map of the facility. The structural rating coloring scheme is described below:

- Green (good structural condition, no live load reductions/restrictions and unrestricted use consistent with original design)
- Yellow with Green Hatching (restricted use, load limit signs indicating reduced live loads and/or barricades, further structural review and structural repairs required)
- Red (restricted access, unsafe, poor structural condition)

Attachment 1 graphically depicts the current structural ratings of the Port Facilities as of the date of this memorandum.

Structural Condition Summary

I. Load Restricted Facilities (Yellow with green hatching rating)

Within this category, Port Staff recommends that specific structures be repaired in the near future, i.e., in an approximately 5 (+/-) year timeframe, to avoid having to shut-down (red-tag) the facilities if the repairs are not executed. The following is a list of these specific structures. Please note this list has not changed since the 2015 presentation; no additional facilities were yellow-tagged during the year.¹ However Engineering is making progress funding, designing and constructing some of these projects.

- Wharf J9 in Fisherman's Wharf
As reported in 2015, the wharf substructure and adjoining seawall are in deteriorated condition. The wharf substructure deck supports a roadway and the backfill behind the seawall is a critical structural support for the foundations of a number of Fisherman's Wharf buildings that exist adjacent to and south of the seawall. The Port's Consultant has completed the strengthening design. Port Maintenance is scheduled to perform the construction work in FY 2017-18. The estimated cost of materials for these repairs is \$2 million and is currently funded.
- Pier 43½ Seawall between Franciscan Restaurant and Pier 45
As reported in 2015, the Pier 43½ area has required extensive repair. The Port has substantially repaired the deck surrounding the Franciscan Restaurant. However, a small section of the Pier 43½ Seawall contains dry-rotted wood lagging which needs strengthening. The damaged wood lagging may lead to loss of backfill and ultimately create sinkholes along the Little Embarcadero. The estimated cost of repairs is \$400,000 and the project is currently funded. The

¹ Initially a newly-discovered damaged facility is 'yellow-tagged'. Once the load restricting signage and/or barricades have been installed onsite, then the structure's rating is revised to: 'yellow with green hatching', indicating structure is okay to occupy with reduced / restricted loading.

Port's Consultant has completed the design. Port Maintenance is scheduled to execute the required repair work in FY 2017-18.

- Pier 35 Substructure including South Apron
Structural concrete slab and beams have incurred spalling and rebar corrosion. Port Engineering has completed structural repair drawings and specifications for the 'critical' repairs. The estimated cost of the project is \$3 million, and funding for this work is already in place. The proposed FY 2016-17 budget includes staffing for a new concrete pile repair crew that would allow the Port to complete the Pier 35 substructure repairs at a significantly reduced cost compared to contracting out the work. This repair project is scheduled to commence construction in FY 2019-20.
- Pier 29 Substructure including North Apron
Inspection revealed substantial deterioration of the deck, beams, girders, and slabs. The Bulkhead substructure and a relatively small section of the Shed substructure require \$2.7 million to repair and the rest of the Shed substructure requires another \$8.3 million to repair. Port Engineering recommends that all structural members with severe and major damage be repaired. Funding for this work is already in place and Port Engineering is moving forward with the project design drawings. The proposed FY 2016-17 budget includes staffing for a new concrete pile repair crew that would allow the Port to complete the Pier 29 substructure repairs at a significantly reduced cost compared to contracting out the work. The \$2.7 million repair project is scheduled for construction in FY 2017-18.
- Agriculture Building East Apron and South Apron
As reported in the 2015 presentation, the East and South Aprons surrounding the Agriculture Building have experienced significant deterioration: slab rebar is missing in many locations due to corrosion. At present, the South and North Apron uses are restricted to light passenger vehicles while no vehicular traffic is allowed on the East Apron. No funding source has been identified for repair of the East and South Aprons yet, although efforts to identify future funding sources will continue. Currently Port staff has no plans to repair the East and South Aprons. The estimated cost of repairs is \$2 million. In the absence of these repairs, the south apron could be downgraded to pedestrian traffic only, while the east apron may be fully restricted, if future assessment reveals further substructure damage. Port Maintenance repaired the North Apron a few years ago, allowing for the continued use of the North Apron for light passenger vehicular traffic.
- Pier 2 Superstructure and Substructure, Sinbad's Restaurant
The substructure includes missing and significantly damaged piles, and damaged concrete slabs and beams. The restaurant building is scheduled to be demolished as required by Port's BCDC Permit for the 34th America's Cup event. The demolition work will commence February 16, 2016. After demolition of the restaurant building is completed, Port Maintenance will install fence and barriers

to prevent access over damaged substructure locations. The Pier 2 deck / substructure is planned to be demolished as part of the development of the Downtown Ferry Terminal Phase 2 Project by the Water Emergency Transportation Agency (WETA). This WETA Phase 2 project is scheduled to commence June, 2016.

- Pier 54 Substructure
Pier 54 has many damaged beams. At present, no funding source has been identified for the repairs. The estimated cost to perform the repairs is \$21 million; this includes substructure repairs and seismic strengthening.
- Pier 92 Apron Section
All of the wood piles have incurred dry rot. Port Engineering has completed the apron repair design. The project materials cost is \$2 million and the project is currently funded with Port Capital Funds, allocated in recent past. The project was on hold pending regulatory approvals. Port received the final regulatory approvals in December, 2015. Port Maintenance is scheduled to perform the work in FY 2016-17.

The remaining yellow with green hatching - tagged load restricted facilities are listed in Exhibit No. 1. Port Engineering estimates that these facilities can adequately perform for another 10 (+/-) years without executing repairs. There are 19 facilities that have revised 'proposed action' since the 2015 report, primarily to indicate the Port staff's plan that these facilities would be addressed with any future seawall project. Each of these is depicted by light shading. No additional facilities were yellow-tagged during the past year.

II. Restricted Facilities (Red - Tagged Facilities)

Exhibit No. 2 provides a list of red-tagged facilities that Port Staff recommends be repaired or demolished. There are 10 facilities that have revised 'proposed action' since the 2015 report, and these are depicted by light shading. No additional facilities were red-tagged during the past year.

Some red-tagged facilities may begin to fail in the near future, i.e., an approximately 5 (+/-) year timeframe, and require investment and/or emergency demolition. Port staff intends to frequently monitor these red-tagged facilities to preclude the possibility of a significant collapse occurring without warning. If structural issues become more urgent (i.e., the pier is collapsing into the bay) Port Maintenance will assist, where feasible, with demolishing the remainder of the pier and retrieving debris from the bay due to the collapse.

CLIMATE ACTION

Sea levels are anticipated to rise 11 inches (+/- 4 inches) by 2050 and 36 inches (+/- 10 inches) by 2100. With rising sea levels, the available time windows for inspection, repair and maintenance of substructures of piers and wharves will slowly be reduced over time thus incrementally increasing time and expense for conducting these activities. The concrete degradation due to increased exposure to corrosive marine

environment also is expected to accelerate. Port staff will adjust work windows, schedules and budget accordingly. It is possible that sea level rise will accelerate the decay of these facilities causing yellow-tagged piers to move more quickly into red-tagged status. However, there is no reliable way to predict how sea level rise will affect the durability of the substructures.

FUNDING

With respect to the yellow with green hatching-tagged facilities that are recommended to be repaired within five (+/-) years, some of those projects are fully funded, others are partially funded and some have no funding. The capital projects group has prioritized the allocation of available capital funds to be presented for Port Commission approval. Regarding the remaining yellow with green hatching-tagged facilities and red-tagged facilities, the Port has very limited capital funds available for these future capital projects. The estimated total funding requirements are in the hundreds of millions of dollars whereas the annual available capital funds for Pier Repair typically total \$1.5 - \$4 million dollars. In the coming years, Port staff, under the direction of the Port Commission, will continue to set priorities for deployment of our limited resources.

SUMMARY

The Port Facility Assessment Program provides valuable information related to structural conditions of Port facilities. This information is used to identify facility public safety issues and the Port's facility repair and maintenance needs. Using this program, Port staff makes critical decisions regarding public safety and asset management, including capital allocation for maintenance and repairs, and public safety. The program findings provide a basis for Capital Plan Programs.

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For: Eunejune Kim, Chief Harbor Engineer

Exhibits

1. Yellow with Green Hatching – Tagged Facilities (10 +/- Year Functional Lifespan)
2. Red – Tagged Facilities

Attachments

1. Structural Rating Maps (5 sheets)

**Exhibit No. 1: Yellow with Green Hatching - Tagged Facilities
(10 +/- Year Functional Lifespan)¹**

Facility	Structural Problem	Proposed Action	Funding Available
J-9 Cal Shellfish	Deteriorated and bad wood piles	The tenant will perform substructure repairs for this location in the near future.	N/A
Pier 43½ Red and White	Deteriorated and missing wood piles	The tenant will perform substructure repairs for this location in the near future.	N/A
Pier 43½ Franciscan Restaurant	Some of the wood piles have incurred dry rot.	The tenant will perform substructure repairs for this location in the near future.	N/A
Pier 33½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 33 Substructure	Structural concrete slab, beams, and piles have incurred corrosion damage.	No plans to make substructure repairs within the next 10 years.	No
Pier 33 North Apron - Substructure	Deteriorated and missing piles.	No plans to make substructure repairs within the next 10 years.	No
Pier 31½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	COWI Marine North America performed substructure condition survey to assist with Alcatraz (National Park Service) negotiation. Design is expected to commence in FY 16-17 followed by construction in FY 17-18.	Port Capital Budget for FY 17-18 is likely to include 5 million for repairs.
Pier 31 Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 29½ Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf section is likely to be repaired in future as part of Seawall Project. Port to repair remainder of wharf when funds will be available.	No

¹ Refer to facility Rapid Structural Assessment Reports (RSAs) on the Port's Intranet for additional information regarding facility damage.

Facility	Structural Problem	Proposed Action	Funding Available
Pier 19½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 19 Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 17½ Marginal Wharf	Structural concrete slab and beams have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 9½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 9 – Portions of the North and South Apron including Bar Pilots	Damaged and deteriorated wood piles.	Apron repaired with restricted live loading. No plans to make additional substructure repairs within the next 10 years.	No
Pier 3 Substructure	Structural concrete slab, beams, and piles have incurred corrosion damage.	This work is in progress. Tenant is making substructure repairs.	N/A
Ferry Plaza Substructure (East End)	Structural concrete slab has incurred corrosion damage.	Tenant is currently making substructure repairs.	N/A
FAC 2780 Agriculture Building	Structural concrete slab, beams, and piles have incurred corrosion damage.	No plan to make substructure repairs in immediate future.	No
Pier 22.5 East Pier	Wood piles and cap beams are deteriorated.	San Francisco Fire Department is planning to perform substructure repairs for this location in the near future.	N/A
Pier 26 Shed	Roof needs repair and superstructure elements have incurred dry rot.	Port to repair when funds will be available.	No
Pier 26 South Apron	South Apron needed surface repairs.	Port Maintenance has completed repairing South Apron.	N/A

Facility	Structural Problem	Proposed Action	Funding Available
Pier 26½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 28 North Apron	Concrete and wood decking in “poor” to “severe” condition.	Port Maintenance has recently repaired Apron as part of Port-wide Egress Project.	N/A
Pier 28 South Apron	Concrete and wood decking in “poor” to “severe” condition	Port to repair when funds will be available.	No
P28½ Marginal Wharf	Structural concrete slab, beams, and piles have incurred corrosion damage.	Marginal Wharf is likely to be repaired in future as part of Seawall Project.	No
Pier 30-32	Structural concrete slab, beams, and piles have incurred corrosion damage.	No plans to make substructure repairs within the near future.	N/A
Pier 38 Substructure	Structural concrete slab and beams have incurred corrosion damage.	Port is negotiating with TMG to lease the Pier 38 Facility, and make specific improvements to the Facility. Repair strategy to be determined.	Funding to be determined
Pier 50 Shed B Apron	Some of the wood piles have incurred dry rot.	Port to repair when funds will be available.	No
Pier 50 Shed A Apron	Deteriorated concrete piles, missing one concrete pile, and deteriorated wood pile cap ends.	The tenant will likely perform substructure repairs for this location in the future	No
Pier 50 Valley - portions	Structural concrete slab, beams, and piles have incurred corrosion damage.	Port completed repairs to specific areas of the substructure. No plans to make further repairs within the next 10 years.	No
Pier 54 Substructure	Structural concrete slab, beams, and piles have incurred corrosion damage.	No plans to make substructure repairs within the next 10 years.	No
Pier 68 Buildings #52, 101, 105, 111, 115, 116, and other facilities	Superstructure framing has incurred corrosion damage requiring repair.	Development of Pier 68 by public / private joint venture is ongoing.	Yes
Pier 90 Wharf Section, West End	Substructure decking, framing, and piles have incurred dry rot.	Port to repair when funds will be available.	No

Facility	Structural Problem	Proposed Action	Funding Available
Pier 94-96 Seawall	The rip rap at the north east seawall is undermined.	Port to repair when funds will be available.	No
Pier 96 Seawall	Backfill behind seawall has incurred some settlement in specific locations. Sheet pile seawall has incurred some corrosion damage.	Maintenance will complete structural repairs to the sheet pile seawall by end of 2016.	Yes

Exhibit No. 2: Red-Tagged Facilities¹

Facility	Structural Problem	Proposed Action	Funding Available
Portions of Wharf J8 including Alber's Building	Damaged and deteriorated wood piles.	Port Maintenance is currently repairing J8.	Yes
Pier 33 North Apron – Depressed Slab Issue ²	Open depressed track area, and north and south end wales pose tripping hazards. Piles of wales are completely rotted out. Planks covering wales are either missing or deteriorated.	Port to repair when funds will be available	No
Pier 31 Superstructure	Roof needs repair and superstructure elements have incurred dry rot.	Construction repair contract was awarded in January, 2016	Yes
Pier 19 North Apron	All of the wood piles have incurred dry rot.	BCDC requires that this apron be rebuilt as part of the Pier 27 Cruise Terminal project. Work for this site needs to be completed within 5 years of the completion of Phase 2 of the Cruise Terminal project. Port Engineering is completing design drawings.	Yes
Promenade Tidal Steps between Folsom and Harrison	Concrete steps have incurred corrosion damage.	Port Maintenance has installed fence restricting access to red-tagged area. No immediate plan to repair.	No

¹ Refer to facility Rapid Structural Assessment Reports (RSAs) for additional information regarding facility damage.

² Structure was not included in last year's Informational Report, but its red-tag status has not changed.

Facility	Structural Problem	Proposed Action	Funding Available
Pier 26 North Apron	Concrete apron with depressed railroad tracks.	San Francisco Fire Department(SFFD). may upgrade the West end of Apron, and use to berth Fireboats.	Possible SFFD funding may be available
Pier 38 Superstructure	Superstructure structural systems are in good condition but the bulkhead is red-tagged due to health & safety issues associated with unpermitted construction and code violations.	Port is negotiating with TMG to lease the Pier 38 Facility, and make specific improvements to the Facility. Repair strategy to be determined.	Funding to be determined
Pier 38 North and South Aprons	Many of the wood piles have incurred dry rot, and portions have fallen in water.	Repair strategy to be determined in the future.	No
Pier 40 South Apron, East End ²	Many of the wood piles have incurred dry rot.	Port to repair when funds will be available.	No
Pier 48 South Apron	East end wood piles have all incurred dry-rot, therefore east end of Apron is red-tagged.	Port is negotiating with prospective tenant to lease Pier 48.	No
Pier 50 Shed B South Apron	Many of the piles have incurred dry rot. Specific sections of Apron are red-tagged.	Port to repair when funds will be available.	No
Pier 52	Substructure decking, framing, and piles have incurred dry rot.	No plans to repair within next 10 years.	No
Pier 60	Substructure decking, framing, and piles have incurred dry rot.	This site will need to be demolished.	No
SWL 345 – 671 Illinois Street	Superstructure has fire damage and noticeable floor deflection.	Port to further investigate and repair when funds will be available. Facility also known as Kneass Boatworks Building identified by SF Planning as a historic resource.	No

² Structure was not included in last year's Informational Report, but its red-tag status has not changed.

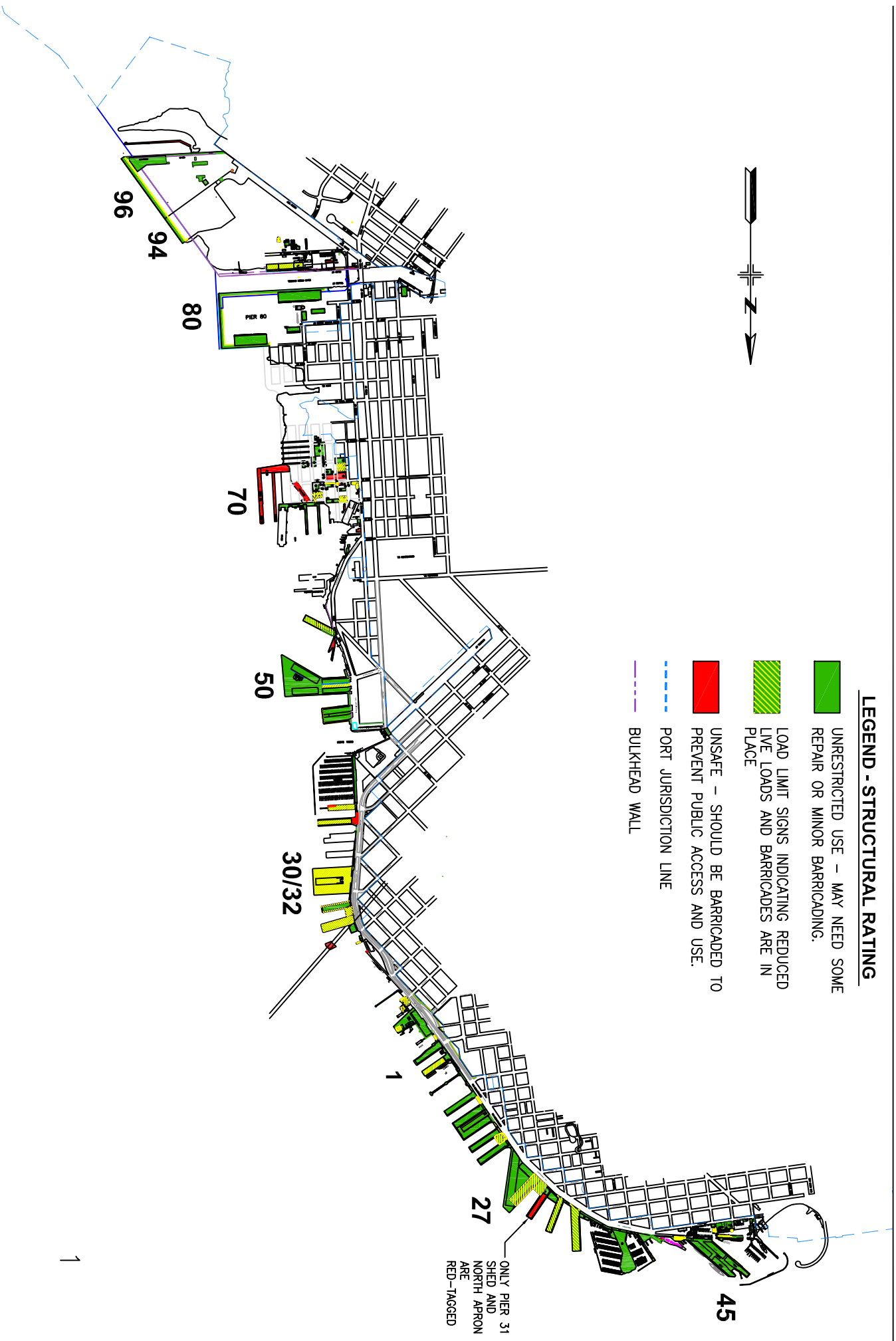
Facility	Structural Problem	Proposed Action	Funding Available
P68 – Building #104, and other facilities	Superstructure framing has incurred corrosion damage requiring repair.	Development of Pier 68 by public / private joint venture is ongoing.	Yes
Pier 70 – Building #113, 114, and other facilities	Superstructure framing has incurred corrosion damage requiring repair.	Development of Pier 70 by public / private joint venture is ongoing.	Yes
Pier 84 and Pier 88	Dilapidated piers.	Part of Port's Southern Waterfront Pile Removal Strategy. Design in progress, Maintenance to schedule demolition	Design is funded, demolition partially funded – part of Islais Creek Pile Removal
Pier 90 Wharf Section in front of / North of Grain Silos	Substructure decking, framing, and piles have incurred dry rot.	Part of Port's Southern Waterfront Pile Removal Strategy. Design in progress.	Demolition project likely to be funded in FY 2020-21
Pier 90 – Grain silos and multiple facilities	Superstructure framing has incurred corrosion damage requiring repair.	Grain Silos are part of Port's Southern Waterfront Pile Removal Strategy	Funding is potentially available
Mooring Pier near Pier 96	All the piles have incurred dry rot. Eastern offshore end of Pier 96 Mooring Pier collapsed due to the piles incurring dry rot. It is unsafe to perform the rest of the repairs under the pier.	Part of Port's Southern Waterfront Pile Removal Strategy.	Port is pursuing funding for this work

Attachment 1 - Structural Rating-Page 1 of 5 Over All



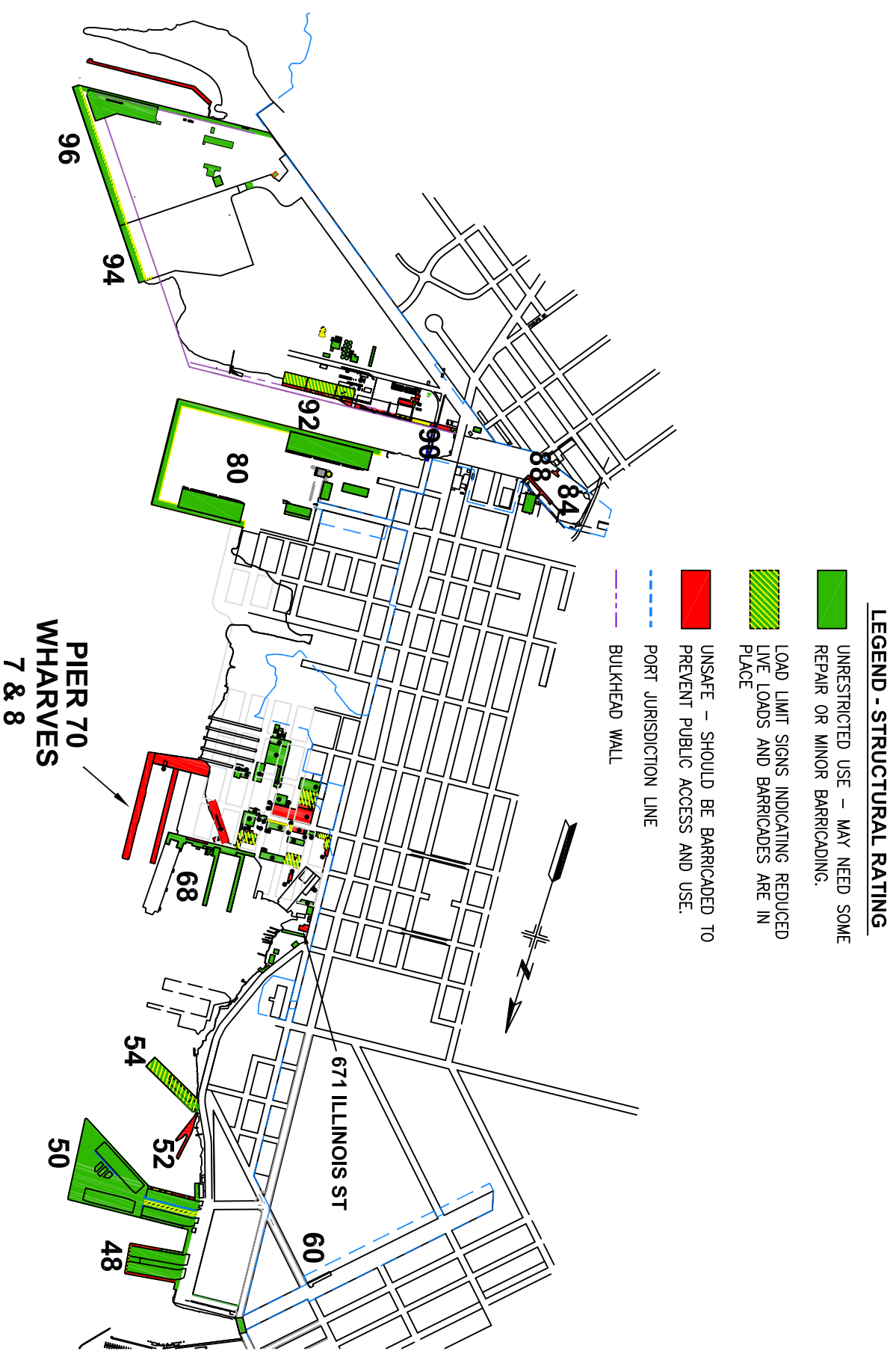
LEGEND - STRUCTURAL RATING

- UNRESTRICTED USE - MAY NEED SOME REPAIR OR MINOR BARRICADING.
- LOAD LIMIT SIGNS INDICATING REDUCED LIVE LOADS AND BARRICADES ARE IN PLACE
- UNSAFE - SHOULD BE BARRICADED TO PREVENT PUBLIC ACCESS AND USE.
- PORT JURISDICTION LINE
- BULKHEAD WALL



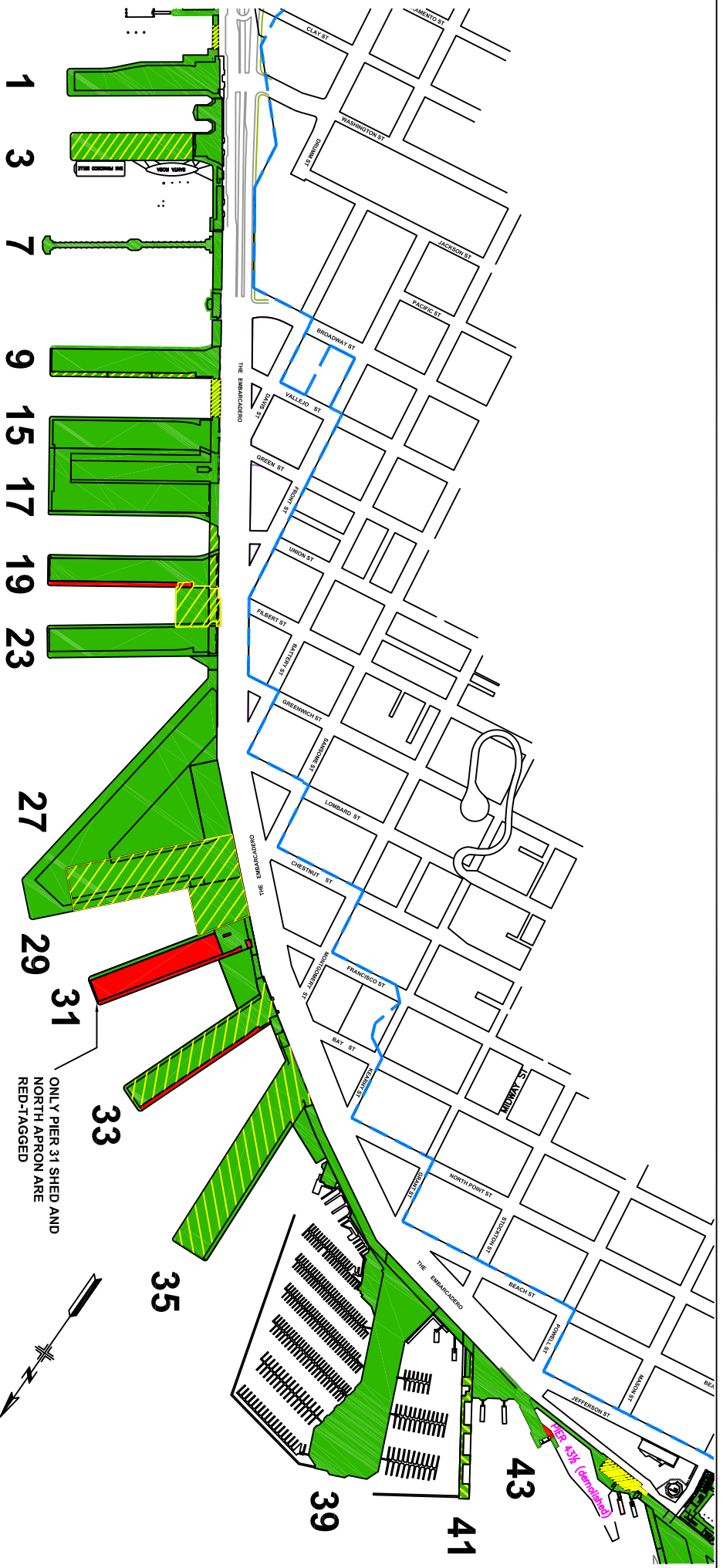
Attachment 1 - Structural Rating-Page 2 of 5

Pier 96 to Pier 48



Attachment 1 - Structural Rating-Page 4 of 5

Pier 1 to Pier 43

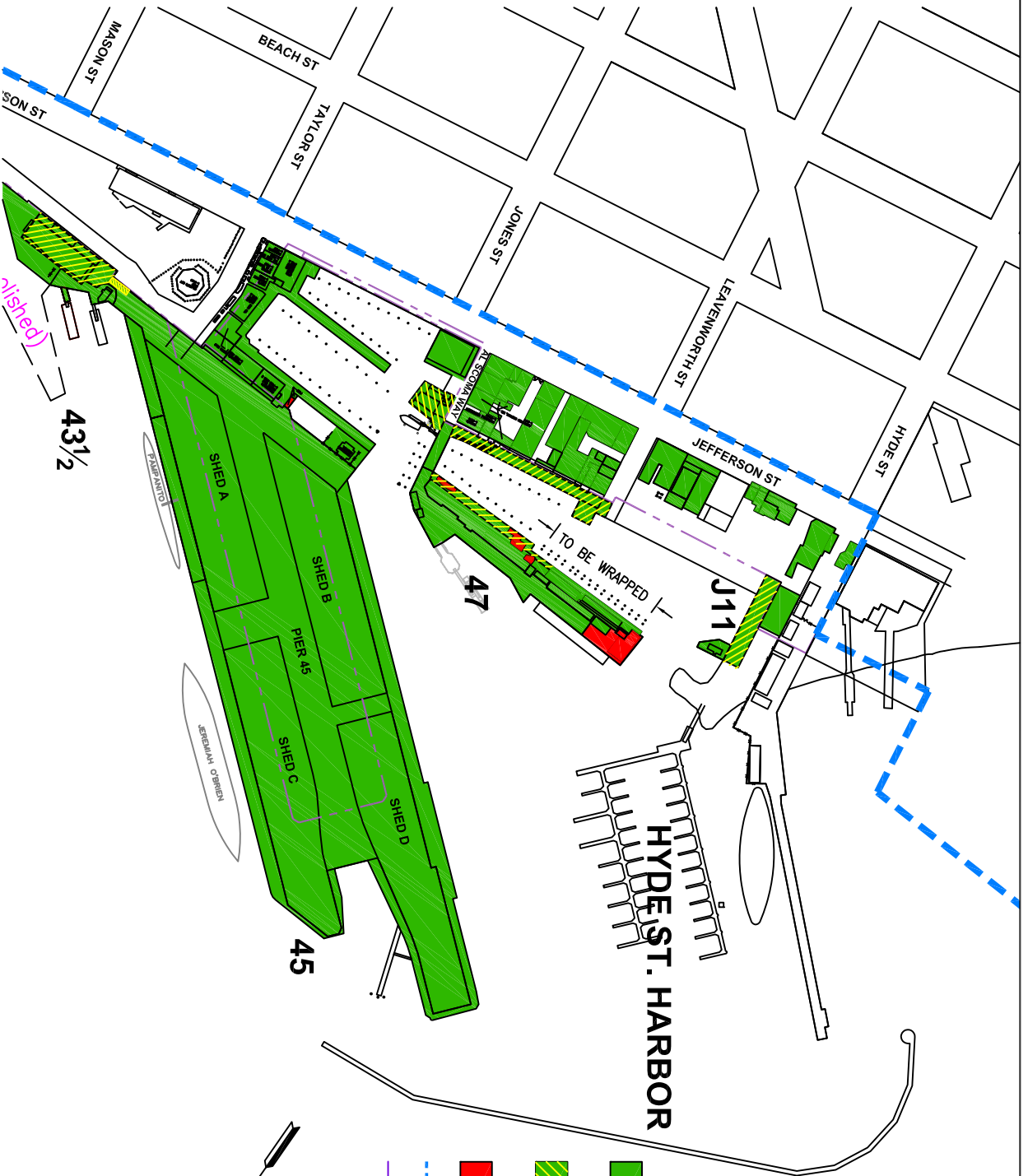


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Attachment 1 - Structural Rating-Page 5 of 5

Pier 43 to Wharf J11



LEGEND - STRUCTURAL RATING

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