

West Seattle Bridge Update

Staff Briefing
May 12, 2012

Overview

- Introduction
- City of Seattle Presentation by Seattle Department of Transportation (SDOT)
- External Engagement
- Internal Working Groups
- Next Steps
- Questions

Introduction

- Background
- Why it matters
- SDOT's "West Seattle High-Rise Bridge Safety Project"



West Seattle High-Rise Bridge Safety Project



Port of Seattle Commission
Sam Zimbabwe and Heather Marx
May 12, 2020



Presentation overview

- Background and what has changed since March 23
- Future of the bridge
- Traffic Mitigation
- Communication and outreach

Bridge Background and Details

- Opened for use in 1984
- Cast-in-place concrete and steel bridge
- One-of-a-kind, uniquely designed for our topography and geography
- Designed for three lanes in either direction
- Highest daily traffic volumes among SDOT roadways
 - 84,000 vehicles (2019)
 - 17,000 transit riders



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What has changed since March 23, 2020

Background

- Bridge closed on March 23 due to rapid growth in cracking along the center section of the bridge
- The bridge was built to the standards, and using the best computation methods, of the day

Recent findings

- Recent inspections have found cracks continue to grow, but at slower rate, confirming immediate removal of live load was essential
- SDOT has a better understanding of stabilization timeline, but there is still uncertainty



Safety is top priority

- SDOT continues to inspect the bridge daily
 - Bridge is safe for crews
- We are installing intelligent monitoring equipment to alert us to any changes in the bridge in real time
- We are modeling potential cracking scenarios and preparing contingency plans
- These plans will enable rapid response to preserve public safety
- We are working with the Port, NWSA, SPD, SFD, the Coast Guard, Army Corps and others on a safety management plan



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- Sign up at alert.seattle.gov to receive free alerts from the City via text message, email, voice message or social media

Future of the Bridge Remains Uncertain

- SDOT does not yet know if repair of the bridge is feasible technically or financially
- If repair is feasible, it could provide up to 10 years of additional use
- We do not anticipate traffic returning to the bridge in 2020 or 2021
- We are committed to clear communication and transparency throughout

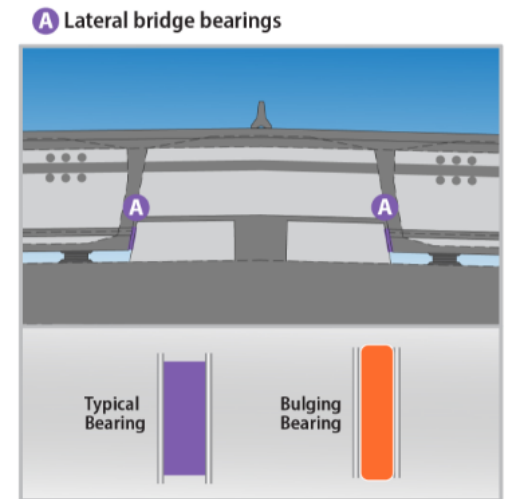


Stabilization and shoring schedule

- Ongoing—Continue field inspection and install instrumentation hardware/real time alerts
- Immediately—Pier 18 restraint release design
- Spring—Shoring and repair design begin, technical advisory panel for peer review launched
- Summer—Pier 18 restraint released; shoring materials procurement begins
- Late Fall—Shoring construction begins
- Early Spring 2021—Shoring construction complete

Phase I: Slow deterioration & plan next steps

- On March 23, SDOT discovered the rapid growth of previously observed cracking. Cracking has slowed since we removed traffic.
- A new intelligent monitoring system will help us identify why the bridge is cracking and serve as an early-warning system if the bridge seems likely to fail.
- SDOT procured Kraemer North America to perform immediate emergency repairs, including:
 - Temporary crack arrest measures, such as carbon fiber wrapping, to stabilize the bridge and slow deterioration.
 - Repair of Pier 18's lateral bearings; they are compressed so that the bridge cannot move as it is designed to do. This is affecting the whole bridge and contributing to abnormal cracking.

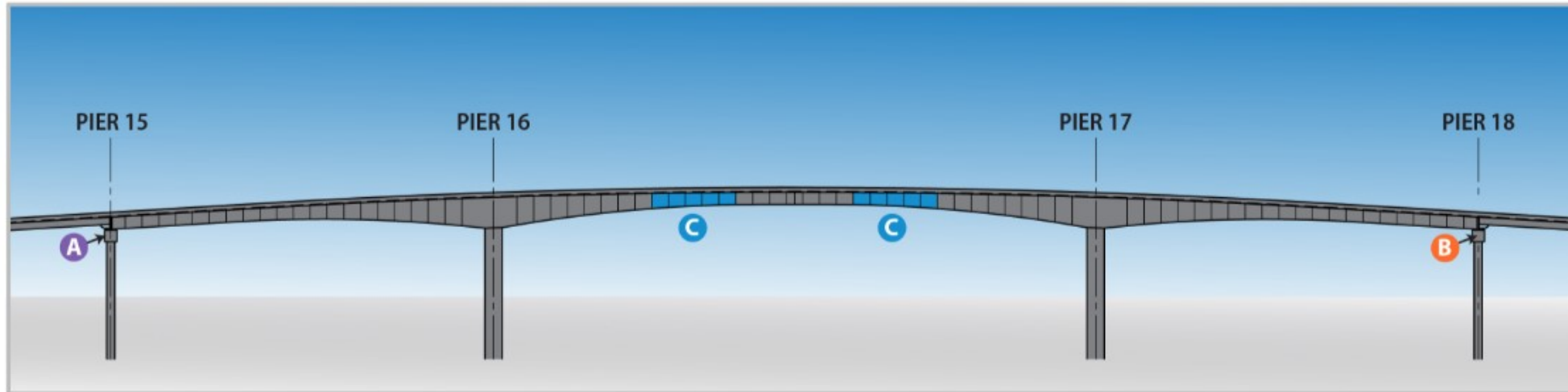


Lateral bridge bearings distribute pressure and allow the bridge to move in response to traffic loads, normal concrete creep and shrinkage, thermal variations, or even an earthquake.

Stabilization through Pier 18 repairs

- To slow cracking, unlocking Pier 18 lateral bearings is the top priority for repair
- Repairing the locked bearings is contingent on bridge strength analysis to determine if the bridge can handle the stress
- SDOT procured Kraemer North America to perform these immediate emergency repairs

West Seattle Bridge Pier 18 Repair



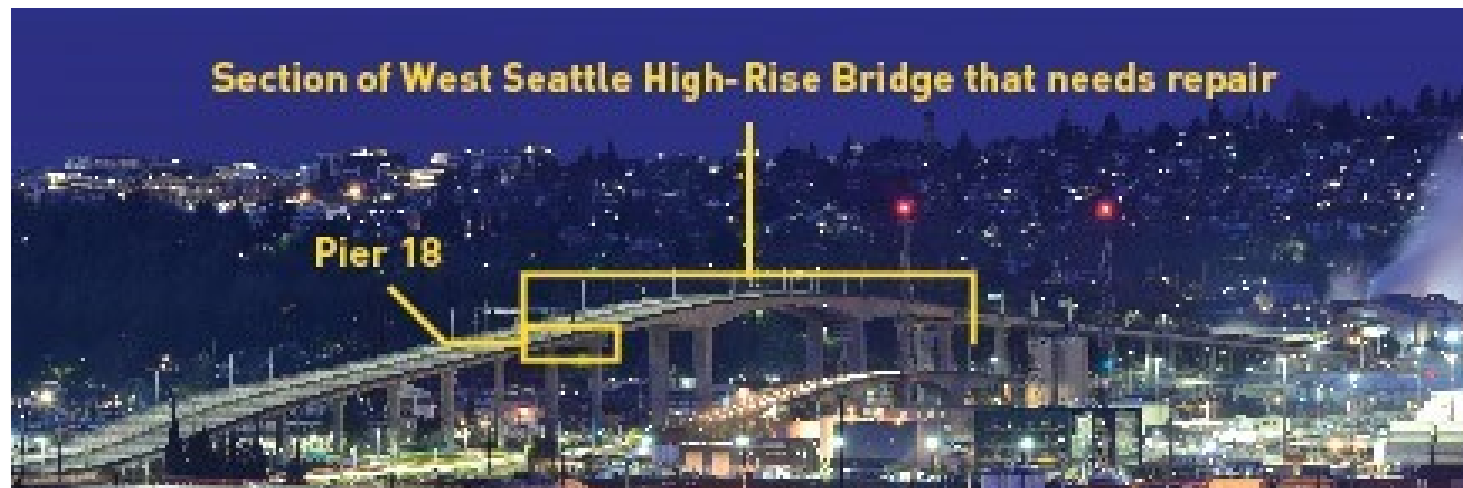
C Cracking in bridge center



Potentially dangerous **cracking** was discovered in the center of the bridge, both inside and outside the structure, leading to its closure. The Pier 18 bearing likely contributed to the cracking.

Phase II: Shoring the bridge to further stabilize

- The process of “shoring” means adding temporary support to the bridge to preserve its integrity and enable repairs.
- Mid-2020 – design shoring system; obtain and build specially fabricated materials for shoring while Pier 18 repairs are made.
- **Late 2020** – Shoring construction.



Phase III: Bridge Repair



Key elements of uncertainty right now:

- Can bridge be stabilized before further deterioration makes repair infeasible?
- Will repair require permits to impact the navigation channel?
- Will repair require special fabrication or equipment?
- Is repair feasible technically or financially?
- We are at 0 percent design, and each step will impact what's doable and timeline

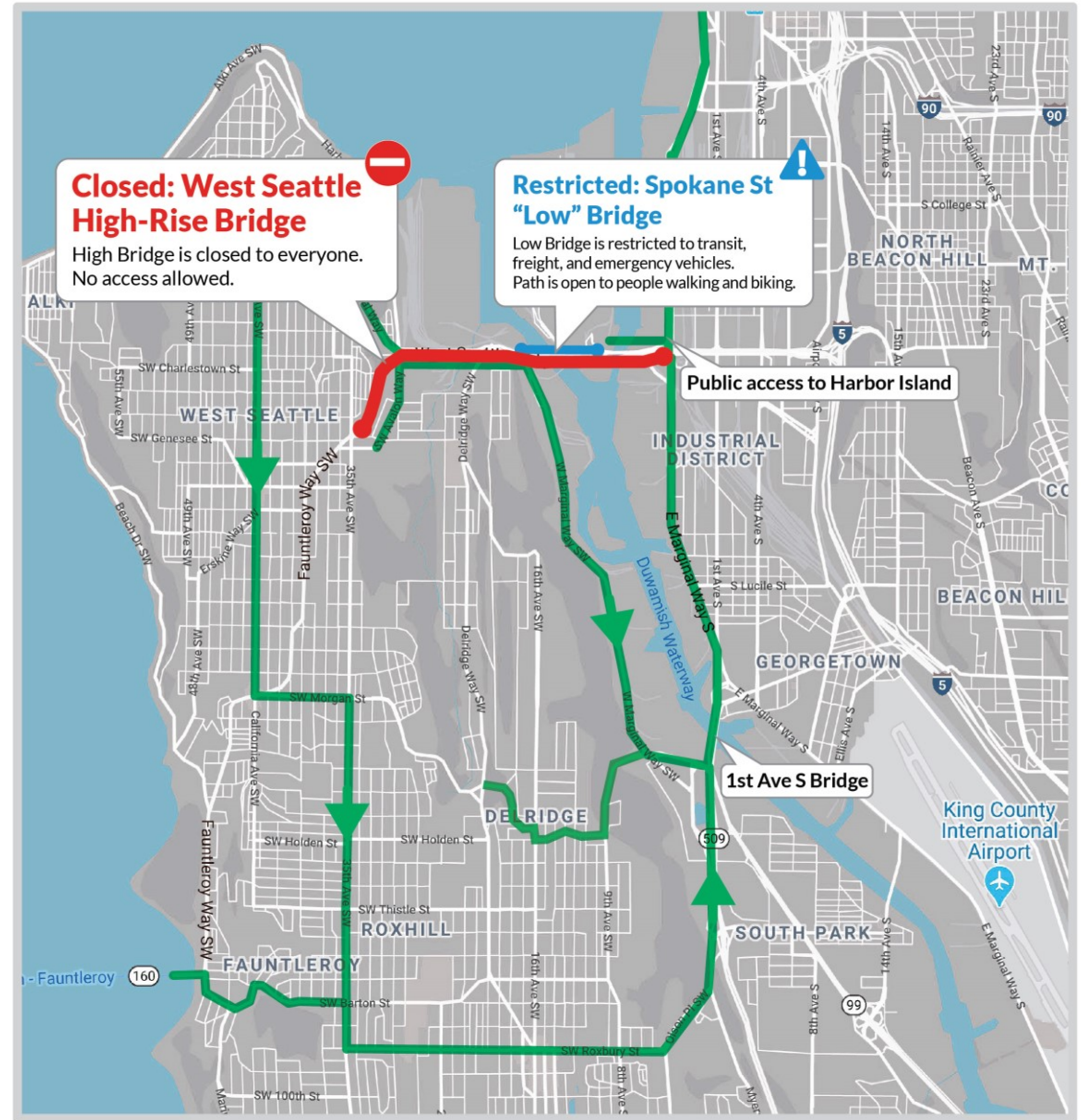
Traffic Mitigations — Low Bridge

- Closing the West Seattle Bridge has a similar level of complexity to our recent Viaduct closure, but with fewer re-route choices, and shorter timeline
- Low Bridge restricted to people driving emergency vehicles, freight trucks, and public transit
- Seattle Police Department is supporting enforcement
- Path open to people walking and biking
- Access to Harbor Island for general public via east channel bridge



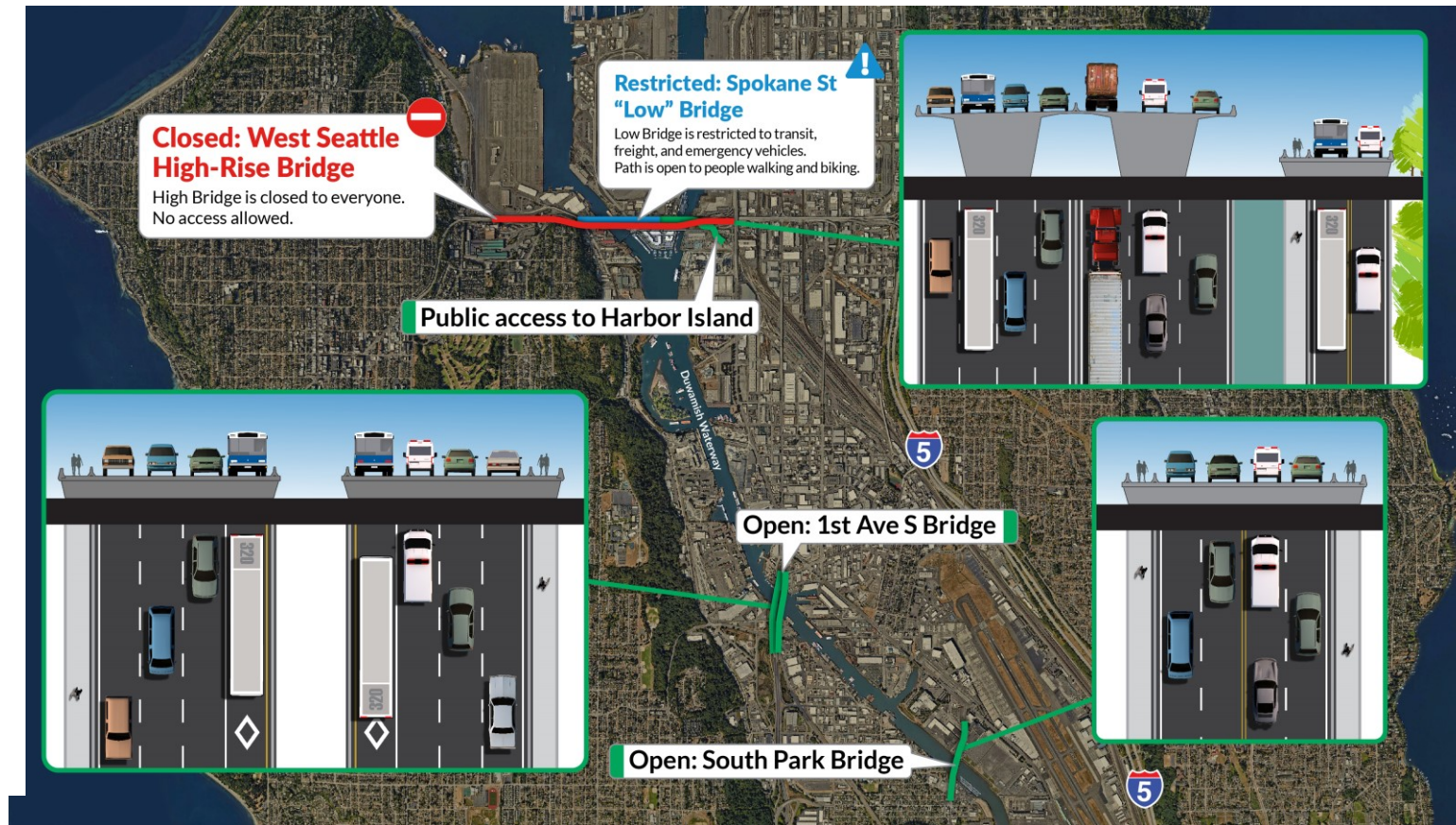
Traffic Mitigations — Detour Routes

- Traffic signal installed at Highland Park Way SW and SW Holden St
- Improved detour route signage
- Repaved the 5-way intersection west of the Spokane Street/Low Bridge
- Added six real-time cameras to traffic locations
- Adjusted signal timing at 13 intersections
- Installed three dynamic message signs to display travel times via West Marginal Way



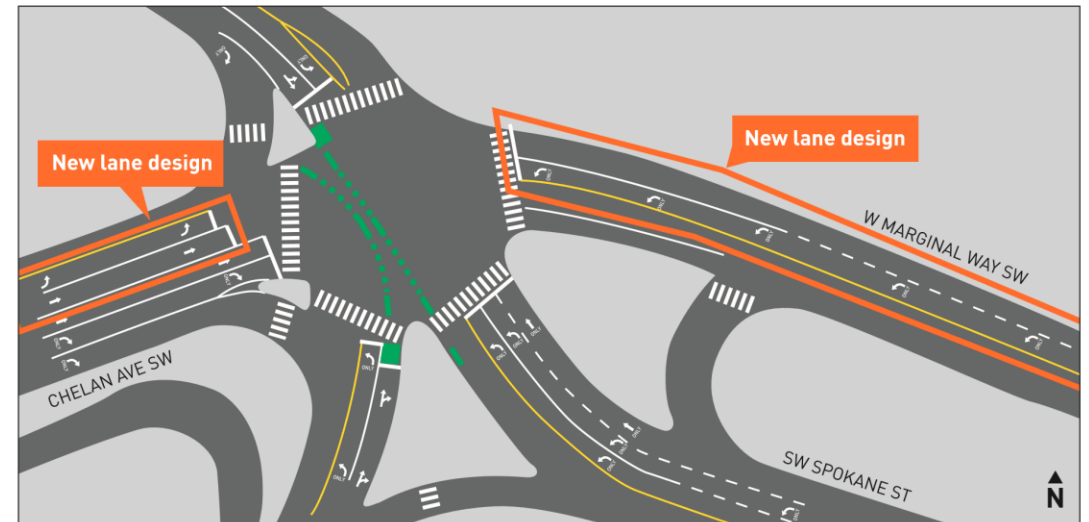
Significant change in travel lanes

- With the High Bridge closure, we've lost 9 traffic lanes of capacity.
- Transit service capacity is limited by social-distancing requirements
- We need more options to move West Seattle commuters on and off the peninsula
- Plus strategies to maintain freight and urban goods and manage cut-through traffic
- SDOT, Metro and the Port are identifying projects
- Private business and mobility providers are needed as partners to bring options to the table



How will we move people?

- Current traffic management improvements:
 - Operational improvements on detour routes – signals, traffic monitoring, potholes, rechannelization
- DRAFT Traffic mitigation plans – by June 30 for public input
 - Neighborhoods affected by cut-through traffic
 - Freight
 - Bicycles
 - West Seattle travelers



Traffic Mitigation – Potential Strategies

- Transit service and route changes
- Telework and flexible work schedules – post COVID
- Strategies to improve bicycle use
- Waterbourne transit frequency and access
- First and last mile connections – shuttles, park-and-rides, micro-mobility
- Carpools and Vanpools
- Employer Shuttles
- West Seattle work sites
- Curbside and parking management
- Construction management
- And what else?

Communication and Outreach

- Work closely with the Port of Seattle and the Northwest Seaport Alliance to engage maritime and industrial stakeholders, inform emergency contingency plans and identify traffic mitigation strategies
- Work with West Seattle, South Park, Georgetown and SODO communities and businesses to keep people informed, provide resources, and answer questions
- Host monthly Maritime Industry Town Halls with Port and NSWA
- Share email updates with subscribers so they hear from SDOT about what's happening and how to get around
- Publish regular blog updates to keep people informed

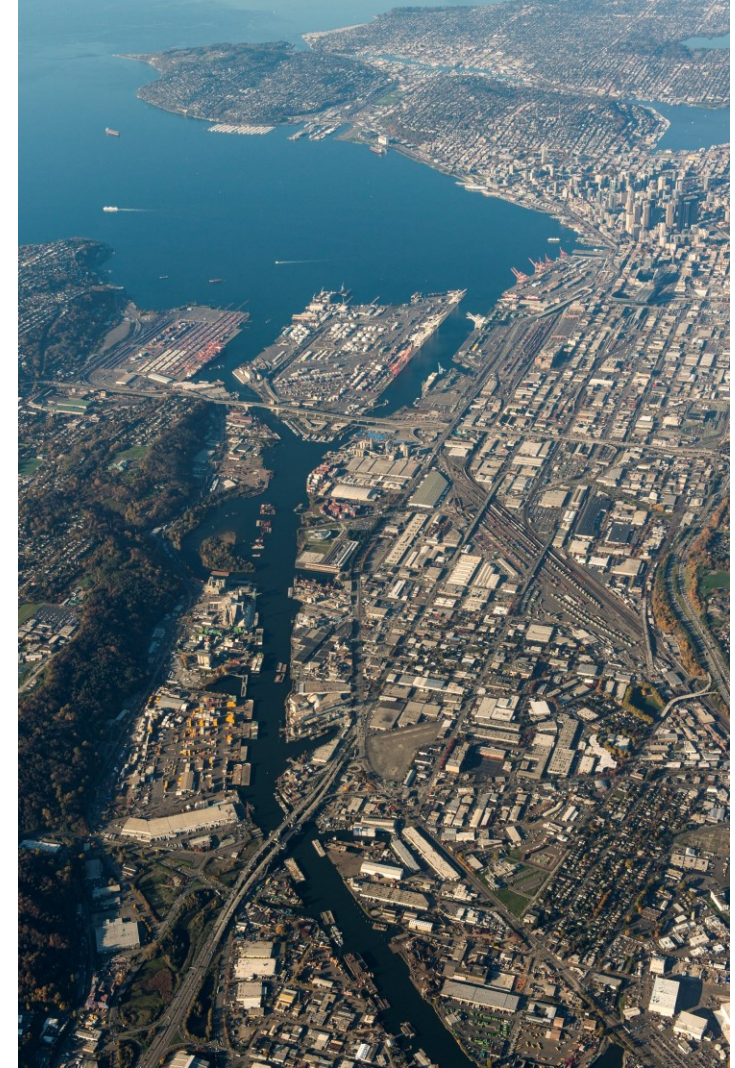
External Engagement

The interagency structure used under the Alaskan Way Viaduct Replacement Program is being reconfigured to support the WSB response/replacement:

- Executive Oversight; Interagency Leadership; Communications Group; Traffic and Operations; Performance Monitoring

In addition, other efforts already underway:

- Twice Weekly Interagency Check-in
- Emergency Contingency Planning
- Maritime and Industrial Stakeholder Facilitation
- West Seattle, South Park, Georgetown and SODO Engagement



Internal Working Groups

- **Executive Committee:** ensure Port and NWSA senior management is well informed and can provide regular input as the response and replacement process unfolds.
- **Emergency Contingency Planning:** support the City led interagency task force in establishing a safety management plan in the unlikely event of a catastrophic failure of the high bridge.
- **Operational Strategy and Performance Monitoring:** serve as a clearing house, collecting and developing the data and analysis that will be needed to work productively with the City to ensure adequate landside access and egress for Port and NWSA facilities beyond emergency/contingency planning.
- **Water Transportation:** draft proposal as to how the Port and NWSA can support the broadened movement of people and goods via water routes.

Internal Working Groups continued

- **Transit:** coordinate strategy with external partners on expanded transit needs in light of the closure (e.g. working with Metro for additional stop near Harbor Island) and provide guidance around Port/NWSA employee mobility needs.
- **Replacement Strategy:** prepare and, upon approval, execute the strategy around Port/NWSA support for the WSB repair/replacement.
- **Outreach and Communications:** set the recommended strategy for external outreach and communications activities.

Next Steps

- Recommended strategies and tactics to Commission and Executive
- Continued outreach and communications to maritime and industrial stakeholders as well as to impacted communities in partnership with the City (e.g. South Park, West Seattle, Georgetown, SODO)
- Continued interagency engagement at all levels of the response
- Future briefings

Questions?