West Seattle High-Rise Bridge Safety Project
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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
# Bridge Inspection, Maintenance and Analysis History

<table>
<thead>
<tr>
<th>Date</th>
<th>Bridge Condition</th>
<th>Impact on Public</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>SDOT observes cracking in West Seattle Bridge</td>
<td>None</td>
<td>• Increase inspection frequency to annually</td>
</tr>
<tr>
<td>2014-2019</td>
<td>Annual inspections confirm low level of crack growth</td>
<td>None</td>
<td>• Ongoing maintenance and monitoring</td>
</tr>
<tr>
<td>Aug 2019</td>
<td>Routine inspection reveals moderate crack growth</td>
<td>None</td>
<td>• Fill cracks with epoxy</td>
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<td></td>
<td></td>
<td></td>
<td>• Increase inspection frequency to monthly</td>
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<tr>
<td>Oct / Nov/ Dec 2019</td>
<td>Inspection reveals ongoing crack growth</td>
<td>None</td>
<td>• Begin analyzing mitigation options</td>
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<tr>
<td>Late Feb 2020</td>
<td>Engineering consultant recommends reducing traffic load</td>
<td>Lane Reduction Under Consideration</td>
<td>• Begin preparing for discussions with City leaders and community outreach</td>
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<tr>
<td>March 19 2020</td>
<td>Engineering consultant notifies SDOT of new analysis raising larger concerns</td>
<td>Potential for Full Closure</td>
<td>• SDOT visits bridge on daily basis</td>
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<tr>
<td>March 23 2020</td>
<td>Engineers discover new cracks, confirming growth has increased exponentially</td>
<td>Immediate Full Closure</td>
<td>• 9 am: Engineers assess crack growth and alert leadership</td>
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<td>• 11 am: Mayor Durkan approves plan to close bridge</td>
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<td>• 7 pm: SDOT begins implementing bridge closure</td>
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Decision to Close

• Rapid and unexpected growth in cracks, over the course of days
• Public safety is SDOT’s number one priority
• Public and private sector engineers agreed that the bridge was no longer reasonably safe for ordinary travel
• Decision was made and communication happened within hours
Short-term Recommendation - High Pass

• Take all steps to maintain the integrity of the structure
  • Restrict travel completely to reduce load stress on the bridge and preserve the structure

• Return bridge to normal operation as soon as possible while mitigating short-term impacts for people and goods
  • Seek interim repairs with a goal of restoring some traffic
  • Accelerate major maintenance/repair to extend bridge life by 10+ years
Short-term Recommendation – Swing Bridge

- Protect deteriorating primary alternate route to the High Pass
  - Continue weekly inspection and monitoring
  - Complete load rating project
  - Complete ped gate replacement
  - Complete controls upgrade project
  - Complete rehabilitation of the Pier 6 and Pier 7 lift cylinders
Traffic Management Plan

• **Primary Consideration at this Time:** Critical to maintain unfettered access for first responders to and from West Seattle in the midst of a public health crisis

• Similar level of complexity to Viaduct closure, but with fewer re-route choices
  • Nine lanes (High and Low bridges) have been reduced to two lanes, for more than 100,000 average daily trips
  • Viaduct closure permitted years for planning, 40 joint community briefings, dozens of press events

• Reserve lower bridge for emergency vehicles, freight and transit use only
  • Lower bridge still subject to opening
  • Capacity is 20,000 average daily trips

• Redirect passenger vehicles to 1st Ave S Bridge and South Park Bridge
• Install temporary signal at Highland Park Way SW and SW Holden St
• Install further traffic count stations to monitor alternate routes
• Develop medium- and long-range plan and additional mitigations
Detour Map
Traffic Impacts & Mitigation

• Significant impacts to travel times, as traffic returns to normal state

• Mitigation includes:
  • Redistribute traffic flow where possible
  • Expand targeted messaging on mode shift and transit options
  • Coast Guard sent a notice to mariners requesting limited requests for opening during peak times
  • Harbor Island employees allowed access to low bridge
Repair Options

• Temporary shoring to preserve structure

• Approach to repair
  • Likely fiber wrap with additional reinforcement at key connections
  • Alternative project delivery may allow faster procurement of materials and other decisions
  • If repairs impact navigation channel, Coast Guard permits will be required
Communications Plan

- Provide timely, accurate information about bridge closure to communities, businesses, and agency partners through local media and City channels
- Create SDOT information sources online with background information, guidance, and future notification sign-up
- Share updates about alternate routes, bridge inspection history, and closure decision-making
- Partner with DON to further connect with community and open feedback channels to ensure people feel heard and we're able to problem-solve as a team
- Keep Mayor, City Council, media, and stakeholders updated as new information becomes available
SDOT West Seattle High Bridge IMT Structure

WSHB Project Chief
- Heather Marx

Bridge Group Supervisor
- Matt Donahue, PE
- Capital Projects/PM
  - Greg Izzo, PE

Traffic Management
- Adiam Emery
- TCP Design
  - Carter Danne, PE

Public Information
- Dan Anderson
- TCP Implementation
  - Kenny Alcantara

Agency Liaison
- Emily Reardon
Next Steps

• Expedite design and repair contracts
• Implement initial steps to mitigate traffic impacts and identify further mitigations
• Distribute communications and media materials
• Conduct study to determine the structure’s remaining useful life (start fall 2020)
Questions / Discussion