Preliminary Structural Feasibility

I-5 Lid Feasibility Study Committee

Small Group Discussion Guide

August 22, 2019
2-5 PM
Seattle City Hall, Boards and Commissions Room L280
Small group work session

- Your facilitator is here to help guide the conversation and pull in subject matter resources.
- Take a minute to review the discussion questions below. They are meant to be a guide – make them your own!
- Each group will work with one of the four sub-areas shared in the presentation.
- Each group will have about an hour for discussion and 5 minutes to share with the larger group, followed by time for large group discussion.
- Save 5 minutes at the end of your work session to identify what you would like to share with the larger group and select someone from your group to report out.

Part 1 (55 minutes)

- Identify and discuss preliminary structural feasibility and technical considerations within your sub-area.
- Using the maps, flipcharts and sticky notes, write down ideas, draw and have fun!

Discussion questions

- What are your reactions to the considerations the team has shared?
- What else should be considered? Is anything missing?
- What opportunities within your sub-area are most exciting to you?
- What tradeoffs might be necessary to make them happen?
- Do you have ideas or questions that you would like the consultant team to consider as they advance the feasibility study?

Part 2 (5 minutes)

- Select a speaker and highlights to share during your 5-minute report out.

Supporting materials

- Site and sub-area maps
- Copies of considerations slides from the presentation
- Discussion questions
- Flipcharts, sticky notes, markers
Site Overview
Structural Assessment Boundary (SAB) & Sub-areas

Concepts and materials shown are draft ideas for discussion purposes only.
Site Overview - General

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<table>
<thead>
<tr>
<th>Component</th>
<th>Area 1</th>
<th>Area 2</th>
<th>Area 3</th>
<th>Area 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB I-5 (Elevated Structure)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Overpasses</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reversible Express Lanes</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>On/Off Ramps</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Tunnels</td>
<td></td>
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<tr>
<td>Freeway Park</td>
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<tr>
<td>WSCC</td>
<td></td>
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<tr>
<td>Walls</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Lid Sub-area Development

Washington State Convention Center (WSCC)
Freeway Park
I-5 North Reversible Lane Tunnel

Area 1
Area 2
Area 3
Area 4

I-5 Lid Feasibility Study

Concepts and materials shown are draft ideas for discussion purposes only.
**Lid Sub-area Development - Structural**

Total new potential lid area...

<table>
<thead>
<tr>
<th>Area</th>
<th>Potential New Lid Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(sq. ft.)</td>
</tr>
<tr>
<td>1</td>
<td>133,640</td>
</tr>
<tr>
<td>2</td>
<td>85,550</td>
</tr>
<tr>
<td>3</td>
<td>293,000</td>
</tr>
<tr>
<td>4</td>
<td>257,640</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>769,830</strong></td>
</tr>
</tbody>
</table>

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I-5 Lid Feasibility Study
Lid Sub-area Development - Structural

Maximum load levels based on conventional girder framing and anticipated span arrangements...

LEGEND: Maximum Load Levels
- Up to High-rise Load Level
- Up to Mid-rise Load Level
- Up to Low-rise (5 over 2) Load Level
- Up to Open space Load Level
- Existing Assets

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Lid Sub-area Development - Structural

Maximum load levels do not preclude lid areas from being considered for open space use...

LEGEND:
- Green: Open space Load Level
- Black: Existing Assets
- Purple: Vertical edges above-grade/balcony

~ 5 ft
~ 20-25 ft
~ 10-15 ft
~ 5-10 ft
~ 30-35 ft
~ 30-35 ft
~ 30-35 ft
~ 10-15 ft
~ 30-35 ft
Considerations

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Area 1</th>
<th>Area 2</th>
<th>Area 3</th>
<th>Area 4</th>
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</thead>
<tbody>
<tr>
<td>Demolition/Replacement Elevated of I-5 Overhangs</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Demolition/Replacement of Overpasses</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>On/Off Ramp Modification</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>On/Off Ramp Removal</td>
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<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Wall Removal/Modifications</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Freeway Park/WSCC Modifications</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-5 Channelization Reconfiguration</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Utilities</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Consideration - Replace Elevated I-5 Overhangs

- **Mainline I-5**: May need to close the shoulder and some lanes along mainline I-5, and demolish and replace existing overhangs, in order to construct the intermediate pier.
  - Long stretches of I-5 (Largest impact on Southbound)
  - Will impact sign bridges and illumination too
Consideration - Overpass Demolition/Replacement

STEP 1

STEP 2

STEP 3

STEP 4

Concepts and materials shown are draft ideas for discussion purposes only.
Consideration - On/Off Ramp Removal

Stage 2 Details:
1. Demo freeway park landscape elements, slabs, and diaphragms. May require closure of one lane at a time of Southbound 6th Avenue exit (2 lanes).
2. During nighttime closure of 6th Avenue exit, remove all precast girders that support freeway park and demo Northbound Spring St. Exit bridge (57547 T-1). 
3. Construct Southbound I-5 detour (3 lanes) connecting 6th Avenue exit starting under Smera St. bridge and connecting back to I-5 under Spring St. bridge.
Consideration - On/Off Ramp Removal

Stage 3 Steps:
1. Shift Southbound I-5 traffic to detour (capacity reduced from 4 lanes to 3).
2. Right lane can optionally exit to 6th Avenue.
3. Demo remaining portion of freeway park and Seneca St. off-ramp bridge (5/540N W)

Note: Southbound I-5 detour could also be configured to accommodate demolition of overpass bridges in the case that any of them needed to be replaced.
Consideration - On/Off Ramp Removal

Stage 1 Elements:
1. Create freeway park landscape elements; slab, and diaphragms. May require closure of 1-2 lanes at a time.
2. During nighttime closure of all lanes of Northbound I-5, remove precast concrete girders that span over Northbound lanes. Crane could be set up on Hubbell Pl. or Serata St. to reduce I-5 closure. Northbound traffic diverted to express lanes.

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Consideration - Wall Removal/Modifications

• **Existing Walls:** the abutments may need to be supported on driven piles or drilled shafts in order to not load the existing walls. This requires the abutments to be located behind the walls (within City streets)
  
  • Disruption to local City streets (traffic; utilities; businesses; residential; etc.) during construction
Consideration - Freeway Park/WSCC Modifications

- Would require to demolish up to Seneca Street in order to cleanly frame between Seneca and Spring.
- Would require to demolish façade to form clean edges for sub-area 2
- Would require to demolish and reconstruct a portion of Freeway Park to tie in with 8th Avenue
Consideration - Freeway Park/WSCC Modifications

• Existing N-S Walkway and Stair between WSCC Plaza and Pike – Varies from 6.25’ to 10’ wide
Consideration - Freeway Park/WSCC Modifications

• Existing N-S Pedestrian Route
Consideration - Freeway Park/WSCC Modifications

- Walkway Extension and Pedestrian Bridge Concept to provide N-S Pedestrian Route

- Considerations:
  - Removal of trees adjacent to retaining wall along Hubbell
  - Permanent lane configuration modification of Hubbell. May require removal of on-street parking
Consideration - I-5 Channelization Reconfiguration

[Map of I-5 Channelization Reconfiguration]
Consideration - Utilities
Lid Sub-area Development - Area 1

Concepts and materials shown are draft ideas for discussion purposes only.
Lid Sub-area Development - Area 1

- Freeway Park is eligible and has been nominated to be included in the National Register of Historic Places.
Lid Sub-area Development - Area 1

**Considerations:**
- Demolition of Freeway Park Box Gardens & South Edging
- Demolition of Ramps
- Modification of Existing Walls
- Temporary I-5 Traffic Impacts

**Benefits:**
- Maximized Lid Area
- Simplified intersections with potential road safety benefits

<table>
<thead>
<tr>
<th>Span</th>
<th>Length (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over James St. Exit</td>
<td>80 - 90</td>
</tr>
<tr>
<td>Over SB I-5</td>
<td>80 - 90</td>
</tr>
<tr>
<td>Over NB I-5</td>
<td>90 - 120</td>
</tr>
</tbody>
</table>

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Lid Sub-area Development - Area 1

- **Considerations:**
  - Partial Demolition of Freeway Park Box Gardens & South Edging
  - Modification of Existing Walls
  - Temporary I-5 Traffic Impacts

- **Benefits:**
  - No changes in I-5 asset configuration (ie. maintains existing ramps)

- **Drawbacks:**
  - Minimal and discontinuous lid area
  - Seneca St. off-ramp splits area
  - Complex intersections with potential road safety impacts remain

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I-5 Lid Feasibility Study
Lid Sub-area Development - Area 1

Considerations:
- No Demolition of Freeway Park Box Gardens & South Edging
- Demolition of Ramps
- Modification of Existing Walls
- Temporary I-5 Traffic Impacts

Benefits:
- Does not touch Freeway Park Box Gardens & South Edging

Drawbacks:
- Does not maximize lid area
- Constrained construction methods and staging of equipment

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Lid Sub-area Development - Area 2

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Lid Sub-area Development - Area 2

<table>
<thead>
<tr>
<th>Span</th>
<th>Length (feet)</th>
</tr>
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<tbody>
<tr>
<td>Over University</td>
<td>40 – 100</td>
</tr>
<tr>
<td>Over SB I-5</td>
<td>80 – 125</td>
</tr>
<tr>
<td>Over NB I-5</td>
<td>80 - 120</td>
</tr>
<tr>
<td>Over Hubbell</td>
<td>40 - 65</td>
</tr>
</tbody>
</table>

- **Considerations:**
  - Partial Demolition of Freeway Park Edges
  - Modification of Existing Walls
  - Temporary I-5 Traffic Impacts
  - Partial Demolition/Replacement of Overhangs

- **Benefits:**
  - Noise Reduction
  - Increases connections
  - Increases area for active uses on Freeway Park

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I-5 Lid Feasibility Study
Lid Sub-area Development - Area 3

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Lid Sub-area Development - Area 3

Considerations:
- Partial Demolition/Replacement of Overhangs
- Modification of Existing Walls
- Temporary I-5 Traffic Impacts
- Modification of Ramps
- Permanent I-5 Lane Reconfiguration

Benefits:
- Maintains existing ramps

<table>
<thead>
<tr>
<th>Span</th>
<th>Length (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pike St. Express Lanes Ramp</td>
<td>50 - 60</td>
</tr>
<tr>
<td>Over SB I-5</td>
<td>95 - 145</td>
</tr>
<tr>
<td>Over NB I-5</td>
<td>75 - 130</td>
</tr>
<tr>
<td>Olive Way Off-Ramp</td>
<td>50 - 70</td>
</tr>
</tbody>
</table>

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I-5 Lid Feasibility Study
Lid Sub-area Development - Area 3

Considerations:
- Partial Demolition/Replacement of Overhangs
- Modification of Existing Walls
- Temporary I-5 Traffic Impacts
- Temporary Ramp Impacts
- Permanent I-5 Lane Reconfiguration

Benefits:
- Maintains existing ramps

Drawbacks:
- Minimal Lid Area
Lid Sub-area Development - Area 4

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Lid Sub-area Development - Area 4

- Impacts:
- Benefits:

<table>
<thead>
<tr>
<th>Span</th>
<th>Length (feet)</th>
</tr>
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<tbody>
<tr>
<td>Pike St. Express Lanes Ramp</td>
<td>50 - 60</td>
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<tr>
<td>Over SB I-5</td>
<td>80 - 105</td>
</tr>
<tr>
<td>Over NB I-5</td>
<td>160 - 170</td>
</tr>
<tr>
<td>Over Olive Way On-Ramp</td>
<td>60 - 160</td>
</tr>
</tbody>
</table>

- Considerations:
  - Demolition of Ramps
  - Modification Existing Walls
  - Temporary I-5 Traffic Impacts
  - Permanent I-5 Lane Reconfiguration
  - Temporary Ramp Impacts

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Lid Sub-area Development - Area 4

- **Considerations:**
  - Modification Existing Walls
  - Temporary I-5 Traffic Impacts
  - Permanent I-5 Lane Reconfiguration
  - Modification of Ramps

- **Benefits:**
  - Maintains existing ramps
Lid Sub-area Development - Area 4

- Considerations:
  - Modification Existing Walls
  - Temporary I-5 Traffic Impacts
  - Permanent I-5 Lane Reconfiguration
  - Temporary Ramp Impacts

- Benefits:
  - Maintains existing ramps

- Drawbacks:
  - Minimum Lid Area