Bridge Study Working Group
October 7, 2008
Meeting Summary

Attendees:

WRBAC Members – Rick Saito

Consultant Team – David Calver, David Knowles, Miguel Rosales, Semyon Treyger

Technical Staff – Kenny Asher, April Bertelsen, Teresa Boyle, Troy Doss, Joyce Felton, Brett Horner, Kaitlin Lovell, Jamie Snook, Mark Turpel, Bridget Wieghart

TriMet – Rob Barnard, Steve Barrett, Sean Batty, Ann Becklund, Diane Goodwin, Karl MacNair, DeeAnn Sandberg, Claudia Steinberg, Dave Tertadian, Dave Unsworth

Meeting Goal:
Begin to develop criteria to go from “some” to “few” bridge types.

Key Discussion Points:

Update on Horizontal Navigational Clearance

- The WRBAC requested validation of Ross Island Sand & Gravel’s (RISG) assertion of the need for a larger minimum horizontal clearance; preliminarily established at 600 feet.
- At a recent RISG meeting, we learned that 400-600 feet length is common for a barge and tug on the river.
- At the Lower Willamette River Harbor Safety Committee (LWRHSC) meeting, we sat down with Austin Pratt (Austin writes the recommendation to the Commandant for the Coast Guard permit) and he agreed that a wider clearance is needed at the location of this bridge because of the two navigational routes, to RISG in the east Portland slough and between the main spans of the Marquam and Ross Island Bridge, coming together at this point in the river.
- Staff checked in with Bob Sanders (who has practiced admiralty and maritime law in Portland since 1970 specializing in ship collisions) who brought in Captain Brown (long time tug Captain and expert witness) to validate the RISG assertion and project response of a 600’ horizontal minimum navigational clearance.
- Still shots were shown created from a RISG video to demonstrate the tug and barge route on Willamette River. These were shown to Captain Brown.
and he concurred that issues RISG raised are reasonable issues for navigation in this location and that the larger (600’) horizontal span is a reasonable response to this circumstance.

- Donald Newlands created a video simulation. This simulation showed a barge and tug traveling on the Willamette River between the Ross Island Bridge, the proposed bridge, and the Marquam Bridge.
- The simulation illustrates the current baseline width as provided by a concrete segmental bridge type, 370’ clear, and a barge and tug.
- The simulation illustrates the largest barge and tug configuration currently using this reach of the river on a regular basis. The Dauby tug makes one run every day and is 84’ long combined with the St. John’s barge (250’ x 80’) and a second barge out front (244’ x 50’). The total length is 578’ long by 80’ wide moving 8,000 tons of aggregate.
- Based on information from RISG, the animation shows the tug and barges traveling at 17 mph (5 mph river and 10 mph tug speed).
- The Coast Guard Bridge Administrator from Seattle, Austin Pratt, will go out on a RISG tug at 11am Wednesday morning (Oct 8th) to test the concrete segmental span (420’ from center of pier to center of pier or 370’ clear). GPS will be used to position two small boats to simulate the pier locations and RISG will pilot two barges using their tug between these boats.

Span Optimization

- The consultants looked at the 6 bridge types presented to the WRBAC in September and optimized each type, both technically and environmentally (pier placement and deck thickness). The extradosed bridge type was removed and replaced with a four-pier cable-stay because the extradosed bridge type cannot provide a 600’ clear within the project budget.
- Miguel Rosales went over a PowerPoint presentation discussing span optimization that will be shown at the WRBAC meeting tomorrow.
- All bridge types assume 1,720 feet as the full span width for comparison and analyzing.
- Miguel also went over new renderings of the “some” bridge types.
- The Working Group discussed pier placement, especially the piers near the bank, and details of bridge types (cable stay tower types, etc).
- There is not the same level of certainty that all these bridge types will fit within our budget. There are questions about the Through Arch because of geotechnical information and the Wave Frame because of design calculations due to its uniqueness.
  - Steve Barrett expressed a higher degree of uncertainty about the Wave Frame. This bridge type has not been built at this span. He is not comfortable using traditional cost estimation tools to analyze a bridge type that hasn’t been built to this configuration previously. The Wave Frame has the most cost risk in Steve’s opinion.
Criteria Generation for “some” to “few” bridge types

- After some discussion the Working Group decided they would rerank the bridge types themselves and also encourage the consultants to rerank.

- When considering the elimination of the concrete segmental bridge type, the group decided to wait for the tug and barge analysis tomorrow and to seek guidance from the WRBAC based on the recent efforts to review the asserted horizontal clearance needs in this reach of the river.

- In general, adding criteria only makes sense when there is a difference between bridge types.

- Kaitlin Lovell shared some criteria from BES:
  - Footprint of the pier and the ability to accommodate a softer bank and the greenway.
    - Teresa added in the concept of pier transparency (monolithic aspect) and the length of greenway span.
  - Stormwater management - ability to accommodate passive treatment on deck through innovative methods like planters.
    - Planters need to be one foot deep. BES has historically managed the plants. You would need the cross slope to show NOAA you are separating the sidewalk runoff from the track/street runoff.
    - Sean mentioned NOAA would require the project to collect and treat all surface water from the bridge deck.
    - April Bertelsen expressed concern that this type of stormwater management might be another thing competing for space on an already constrained deck.
    - The Working Group decided that this criterion is not rankable at this point in the process.
  - Additional fish and wildlife (birds and bats) – is each bridge type conducive to bird and bat habitat (no noise canons)? Peregrine falcons might also nest on the bridge. Sean and Dave said they have heard from NOAA fisheries that Green Sturgeon will also be a consideration for critical habitat. Finally, the Lamprey is also being considered for habitat protection on the Willamette.
    - The Working Group agreed that all remaining bridge types have equal opportunity to accommodate this criterion.
  - Climate change – are all bridge types adaptable to river rise? Consider pier reinforcement, carbon footprint of bridge and how to minimize the long-term addition of greenhouse gases (buses), deck thickness/navigational clearance.
  - Permitting environmental risks – need to avoid, then minimize, and then mitigate. Consider the bank design and how you construct (in-water work).
  - Resource use – use of local materials, recyclables, and habitat enhancement opportunities.

- Brett Horner shared some criteria from Parks perspective:
o We have “being near the bridge” criteria, but he would like to add a “being under the bridge” criteria. This includes lighting, mass of pier, mass of deck, inviting homeless camping, vertical clearance from greenway, pier transparency, etc. This criterion relates to the quality of experience for each bridge type from the greenway.

o Ease of connection from bridge to greenway.
  ▪ Sean noted that all abutments are in the same locations in these bridge types, therefore that criteria is not differentiable.

- The Working Group discussed how to differentiate pier criteria (footprint, location, number).
  o The pier scoring for greenway needs and the pier scoring for environmental needs are in opposition. The greenway needs piers farther away from the bank. The environmental concerns need piers further on the bank (therefore closer to the greenway).
- The minimum vertical clearance at greenway is 10’ feet. We can rank bridge types based on the opportunity each type may provide to increase the vertical clearance beyond the minimum. Bridge types with thinner decks require less landside work to increase the vertical clearance than those with thicker deck structures.
- Rob edited criteria accordingly…refer to scoring matrices on trimet.org/WRBAC.

**TriMet Operations Discussion**
- There may be a need for more metrics on lifecycle cost and maintenance; however this is not needed to differentiate between bridge types.
- Criteria should be added for utility duct bank integration (for OCS, communications & maybe a water line). During our next meeting will need to determine if the bridge alternatives under review have differences for these items.
- Teresa Boyle suggested adding criteria about emergency response on the bridge deck (more “items” on the deck is worse – less flexibility to position vehicles and respond).
- Dave Unsworth indicated the same line of thinking should be used for inspections.

**Miscellaneous Criteria Discussion:**
- Add criteria about the ease of connecting to the greenway at the trail near the abutment instead of at the touch down points. Which alternatives limit an option to have a ramped connection right at the path? The Working Group was not suggesting that a direct connection is desired, but wanted to capture how each bridge alternative may affect this item.
- Add criteria about piers in known contaminated media.
- Is there a schedule implication for more piers in the water because of the in-water construction timeframe constraint? This is covered under constructability and environmental permitting.
- Add criteria for design risk to cover novel or unique bridge types.
Next Steps

- Staff will seek guidance from the WRBAC on modifying the baseline horizontal clearance design criteria.
- Staff will seek concurrence from the WRBAC that the Working Group has the right list of criteria to facilitate screening the “some” to the “few” bridge types.
- Be prepared to answer questions: “Can 2 center piers be moved farther to the east?” “Can alignment be moved closer to the Marquam Bridge as it was earlier (straightened out – less diagonal – more perpendicular)?” and also “How accurate is the simulation?”
- As we move forward, we need to be more mindful of the poles and OCS in the renderings and how they relate to the bridge type structures.
- Both the Steering Committee and the Project Management Group will meet prior to the November 12/13 Working Group and WRBAC meetings. Staff will check in with both of these groups on the bridge study process and progress.
- Please show the graphic with the barge progression currently showing the concrete segmental pier locations and add in the 600’ clear span to show how much more clearance we achieve with the new horizontal span.
- Create a table that gives the cross-sectional area in square feet and the vertical clearance above the greenway for the various bridge types.
- Ground penetrating radar (October 8th) will be used to determine the alignment of three pipelines (gas line, fiber optic line & a 36” water line).
- Geotechnical drilling will occur October 13-31.

Homework

- Share results of today’s meeting with your stakeholders.
- Prepare for ranking from “some” to “few” bridge types over next two meetings.

Next Bridge Study Working Group Meeting
October 28, 2008 from 9 a.m. to 5 p.m.
TriMet, 710 NE Holladay Street, Room 1