

Bridge Study Working Group

September 15, 2008

Meeting Summary

Attendees:

WRBAC Members - Bob Durgan

Consultant Team - Virginia Ferriday, David Knowles, Steve Litchfield, Carol Mayer Reed, Miguel Rosales, Semyon Treyger

Technical Staff - Kenny Asher, April Bertelsen, Teresa Boyle, Troy Doss, Roger Geller, Lora Lillard, Kaitlin Lovell, Denyse McGriff, Brian Monberg, Geraldine Moyle, Art Pearce, Jamie Snook, Mark Turpel

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

Meeting Goal:

To gain consensus on a reconciled list of 6 bridge types that we can recommend to the WRBAC on September 16, 2008.

Key Discussion Points:

New River Navigation Information – Rob Barnard

- There was a river driver meeting with Ross Island Sand & Gravel (RIS&G) and Chuck Steinwandel on August 26th where the river drivers asserted a need for increasing the horizontal clearance between bridge piers beyond the baseline assumption of 300' and to provide the fewest piers possible. *Refer to handout on horizontal navigational clearance.*
- The Working Group went over bridge types and how large the horizontal clearance could get using the \$84 million budget.
- A follow-up meeting with Chuck Steinwandel will be at 4pm today. We hope to get more specific clearance parameters from the river drivers and also see if there are other operational options available.
- The asserted need for additional horizontal clearance is based on existing river uses that are anticipated to continue for many years.

- Dave Unsworth also noted that potential future operations of RIS&G include receiving garbage from Hawaii and processing aggregate from the gorge at the RIS&G terminal and ship (using ocean going vessels) to Hawaii (not currently permitted to do this work).
- The Army Corps of Engineers also brought up navigational concerns during the SDEIS process. We will need to get permission from both them and the Coast Guard to move forward with the bridge.
- Teresa Boyle asked why this information about horizontal navigational clearance didn't surface during the SDEIS process.
- Dave Unsworth stated that most of SDEIS focused on location and height of bridge. We talked to RIS&G and Zidell during that time. The Bridge Study is a process of determining viable alternatives from the range of possible types. Each bridge structure type has different possible span widths and pier locations. This Study and the future Preliminary Engineering phase is when more detailed work is performed to get this type of information. This is the right time in the process for this type of information to come out.

Engineering Matrix – Rob Barnard

- Rob went over changes and new considerations on the revised engineering matrix.
 - During the 8/28/08 working group meeting a list of 11 flexibility considerations were introduced but not reviewed.
 - The draft flexibility criteria were rated by TriMet staff on a scale of one to five, averaged, and then multiplied by three to weight them consistently with other engineering criteria.
 - Discussion on use of these items and proposed draft ranking was deferred until this meeting.
 - Subsequent analysis showed that the outcome of the engineering ranking stayed the same whether included or not.
 - After further review, TriMet staff proposed to use only a portion of these criteria at this screening level. Specifically:
 - “Deflection (OCS and pedestrian comfort)” is proposed to be included as part of a new criteria called “transit performance”.
 - The existing engineering criteria “navigational performance” is shown being split into the two separate criteria “navigational performance – width” and “navigational performance – clearance”. These two criteria address the horizontal width between center span piers and vertical clearance at the high point of the bridge.

- **The consultant teams' proposed ranking using the revised engineering criteria resulted in the top six being cable-stayed, wave frame, tied arch, through arch, extradosed, and concrete segmental.**
- The working group concurred with the proposed changes but retained one additional flexibility criteria "deck program efficiency". The group renamed it "modal optimization of section".
- **After modal optimization scoring, the top six bridge types are cable-stayed, tied arch, wave frame, through arch, concrete segmental, and extradosed. The top six remained the same with a slight change in order.**
- Additional discussion:
 - What are the FTA guidelines for global warming? Current guidelines indicate that ocean levels are expected to rise between 7-21 inches. Ocean level increases may influence this reach of the river. This issue is the only thing that might affect bridge height when talking to the US Coast Guard. NOAA is not as concerned with bridge height. There are some dams due to be added by the year 2020 and those might affect clearance as well.
 - For some types, an increase in horizontal span width results in deeper structural members. To maintain vertical clearance for river navigation, the overall height of the structure was raised. For some bridge types this was as much as five feet in the middle of the span. It was explained that revising the running slope of the LRT platforms accommodated the added height. This change may also impact adjacent cross streets and extent of reconstruction limits to connect to existing facilities. The preliminary estimates identified approximately \$1.3M landside cost for every one foot of elevation change.
 - Kaitlin Lovell stated that it is very important for us to know where our numbers are coming from in reference to river levels. There are some statistics coming from a professor at the University of Oregon stating that the river level could rise 20 ft in next 100 years.
 - The Working Group went over pier criteria. For pier location and size, the best score should be the smallest footprint out of shallow water. Piers with a larger footprint in shallow water (near the bank) are worse. Some bridge types have more flexibility in regards to pier location than others. It costs money for piers to move (how much depends on the bridge type). We are making the best assumptions possible for pier locations at this stage in the process. From an environmental perspective, piers in shallow water near land (i.e. at the active edge) are the worst position possible. That

part of the river is the most rich/active for fish habitat. Environmentally, piers on land are better than piers in shallow water but have potential implications for the greenway. Piers in shallow water near land are worse than those completely in shallow water. After a long discussion and working through the current scoring they decided to change the criteria to say “number, location and size of piers”.

- A suggestion was made to bring up at the WRBAC the position that perhaps the river users should share the cost of the extra horizontal clearance needed (existing condition vs. future possible uses). It is one thing to say that the bridge needs to accommodate existing uses, but a completely different conversation about potential future uses for which permits do not exist. The group was reminded that the horizontal width asserted by RIS&G is based on current permitted uses.
- The biggest issue with this topic is the fact that in order to accommodate the added horizontal clearance, the total budget was used to maximize the spans. That has great implications for other aspects of the project.

Aesthetics / Urban Design matrix

- Miguel went over a PowerPoint presentation about goals, objectives, and criteria. He then showed the “many” bridge type line drawings, rankings, new navigational clearance information, height comparison, and renderings of three bridge types (wave frame, through arch, and cable-stayed including their span change because of the navigational clearance issue), and view comparisons.
- Troy Doss shared that this bridge is exempt from a more detailed review in South Waterfront for height restriction because it’s not in the right of way. Troy will check on it again to make sure.
- **The proposed top six bridge types from the consultants’ ranking using the Aesthetic/Urban Design criteria are wave frame, sail blade, extradosed, through arch, vertical lift (high), and cable-stayed.**
- Group discussed Miguel’s proposed scoring/ranking of the bridges with revised spans. The working group reviewed each bridge types performance against each individual criterion and reached consensus.
- **After discussion, the new top six bridge types are wave frame, sail blade, extradosed, through arch, cable-stayed, and vertical lift (high) (same as aesthetic ranking from last Working Group meeting).**

- Additional discussion:
 - The working group discussed the criteria about Views of Portland - Static. If actual viewpoints are added, the assumption is that they be located at the highest point (middle) of the bridge.
 - Carol Mayer Reed brought up a conversation she had with Thomas Hacker. He believes that the bridge should be “connective tissue” between east and west and not a “gateway” bridge.
 - Additional cost information was received based on a current project that revealed that a vertical lift (high) bridge type is 170% of budget.
 - There were concerns raised regarding the sail blade in terms of only providing a 420-foot span for navigational performance and seismic performance of thick steel plates. It was dropped.
 - The tied arch was added back in because it performed better with the larger span.

Working Group Recommendation to WRBAC

- **The six bridge types to be recommended to the WRBAC (in no particular order) are concrete segmental, wave frame, tied arch, through arch, extradosed, and cable-stayed. These are the six bridge types that continue to adhere to all the criteria.**

Next Steps

- A suggestion was made for further conversation about bridge types and landside piers because of horizontal navigational clearance issue (locations, height, etc.).
- A one-page document should be written further describing the thought behind the ranking for pier location, number and size for future reference.
- Work with consultants as we get to the “few” bridge types to more accurately render the poles for the OCS and lights, etc. (pole design and color are really important to the design and whether they disappear or stick out).
- The span issue must be solved now. No further analysis can be done without knowing the final span width.
- The Working Group will go from “some” to “few” with more analysis. There are some questions about a few of the six recommended bridge types and our job next is to answer those questions and recommend bridge types that we can definitely build.

Homework

- Share recommendations from today with your constituents.
- Prepare for next Working Group meeting and narrowing of bridge types from “some” to “few.”
- Things to consider for finer sieve: bridge operations, flexibility, environmental, other?
- There will be a few other smaller focused meetings between now and the next official Working Group meeting (internal TriMet issues, Metro, environmental, etc).

**Next Bridge Study Working Group Meeting
October 7, 2008 from 9 a.m. to 5 p.m.
TriMet, 710 NE Holladay Street, Room 1**