

Portland-Milwaukie Light Rail Project Willamette River Transit Bridge Study

Considerations

1. Introduction

- Project setting—to be documented by Bridge Study
- Project history—to be documented by Bridge Study
- SDEIS impacts to be addressed

2. Modes: summary, other sources and criteria as applicable—section requirements addressed below

- TriMet Design Criteria for Light Rail): For example: Longitudinal grade desired maximum. 4.75% absolute max. 6.5%
- Portland Streetcar: Same as Light Rail
- Bus: Same as Light Rail
- Bicycle: Same as Light Rail
- Pedestrian. All relevant ADA standards and guidance including ADAG for improvements in public rights-of-way: For example: ADA- long grade 4.75% (sloped walkway), 7.5% ramp w/ landings every 2.5' of vertical.

3. Budget

- Cost must remain within budget parameters established to date, which have a current estimated range of \$84.2 to \$61.5 million.
- Estimated range based on two bridge types to bracket costs.
- Cable stay estimated as 1760' long x 66' wide at \$725/sf.
- Concrete segmental estimated as 1760' long x 59' wide at \$525/sf plus adjustments for walls, mitigation, greenway, and aesthetics. Estimates are line item contractor direct costs in current year dollars and do not include additional related costs that might vary as bridge types are explored.
- Strong aspiration (or perhaps requirement) to meet all bridge goals at low end of range in order to improve project financing package to FTA and ability to finance local share.

4. Horizontal alignment

- General flexibility is limited—refinements plus or minus 5' available in no increase in property impacts
- Curves at east side—should be noted; identified as an issue/consideration w/ “cable-stayed” type. Related to “remant” land south of alignment.

5. Bridge architecture and aesthetics

- Looking at the bridge—to be developed and documented by Bridge Study
- Being near the bridge-- to be developed and documented by Bridge Study
- Being on the bridge-- to be developed and documented by Bridge Study

6. Existing conditions and restrictions

- Existing in water utilities
- Existing (or future?) in water hazardous mat cap- west side
- Existing hazardous materials
 - In water
 - West
 - East

7. Bathymetry – (river bottom elevations)

8. Navigation requirements (note: horizontal clearances are perpendicular to river)

- Case 1--minimum vertical clearance 1 over the navigational route is 75 feet over Columbia River datum 0 for central 150' horizontal
 - Case 2-- minimum vertical clearance 1 over the navigational route is 80 feet over Columbia River datum 0 for central 150' horizontal (55' vessel @ 25' river stage w/ >99% probability)
- Case 1-- minimum vertical clearance 2 over the navigational channel is 60 feet over Columbia River datum 0 for central 300 feet horizontal
 - Case 2-- minimum vertical clearance 2 over the navigational channel is 60 feet over Columbia River datum 0 for central 330 feet horizontal
- Existing navigational route is a tangent line connecting mid-point of main spans of Hawthorn, Marquam, and Ross Island bridges. There may be limited flexibility to redefine this navigational route.

9. Sectional design

- Shared transitway
- Path
- Barriers, railings, and bridge structural elements

10. Bridgeheads/greenways

- Grade separated paths east and west
 - Vertical clearance desired- 18', required 12', absolute minimum 10'
 - Horizontal width desired 25', required 16', absolute minimum 14'
 - Other path requirement per applicable criteria (curves, slopes, etc)
- Greenway space
- Horizontal setbacks (from top of bank)—full vertical not required over entire setback
 - East- 25'
 - West- desired 140', required 100'
- Other
 - No stormwater treatment allowed in this space
 - Path connections to bridge paths required, but not necessarily in this space
 - Riparian area mitigation/improvement required? desired?—see also permits
- Replace mitigation plantings-east
- Park program element mitigation required/desired?—see also bridge arch

11. Light Rail Systems

- OCS
- Communications—duct banks
- Stray current/corrosion control
- Lighting
 - Paths
 - Bus/Light Rail
 - Bridge “night lighting”- required? desired?

12. Site Geology and Subsurface Conditions

13. Seismic Requirements

- a. Field work
- b. Fault rupture potential
- c. Level ground liquefaction
- d. Liquefaction – induced settlements
- e. Occurrence of liquefaction
- f. Lateral spreading
- g. Seismic slope stability and flow failure analysis

14. Hydraulic Analysis

15. Scour Analysis

16. Drainage

- a. Conveyance required for all bridge impervious
- b. Treatment required for all bridge impervious. Surface treatment facilities desired subject to available ROW.
- c. Attenuation not believed to be required—consultant to confirm

17. Right-of-Way

18. Utility Evaluation: 115 KV private (PGE) assessment

19. Vessel Collision

20. Life Cycle Cost

21. Permits

- List of permits
- Sequence and schedule of permitting
- Permit requirements--anticipated
 - One in work water window
 - Limits on in water piers. None in shallow water (>20' deep). No more than 4 allowed under SDEIS disclosure
 - Mitigation
 - Shading—in water and riparian
 - In water habitat disturbance/loss of function
 - Riparian habitat disturbance/loss of function
 - Others
 - Construction management

22. Construction Procurement

- Cost Estimate Formats/Inclusions-exclusions
- If D/B
 - Level of design/Program Requirements
 - EA rate

