Earthquake Ready Burnside Bridge:
Supplemental Draft Environmental Impact Statement

Attachment N

Cost Risk Assessment Summaries

For other questions including those related to the Americans with Disabilities Act and Civil Rights Title VI accommodations, call 503-988-5050. You can also call Oregon Relay Service 7-1-1 or email burnsidebridge@multco.us. For information about this project in other languages please call 503-988-5970.

Para obtener información sobre este proyecto en español, ruso u otros idomas, llame al 503-988-5970 o envíe un correo electronico a burnsidebridge@multco.us.

Для получения информации об этом проекте на испанском, русском или других языках, свяжитесь с нами по телефону 503-988-5970 или по электронной почте: burnsidebridge@multco.us.

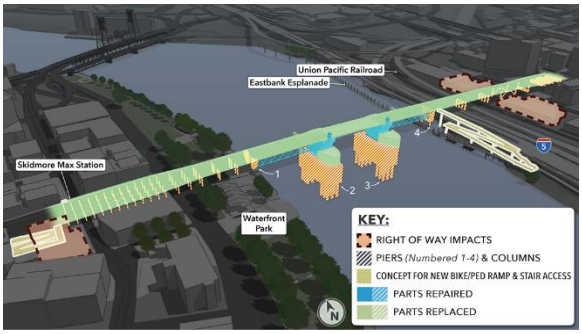
Multnomah County

2021 Independent Cost Estimate

Earthquake Ready Burnside Bridge (EQRB)

Alt: Enhanced Seismic Retrofit (No Temp Bridge)

Cost Estimate Date: October 24, 2021



Project Need - Multnomah County is delivering the EQRB Project to provide our community with a reliable Willamette River crossing on the Burnside regional lifeline route after a major earthquake.

Description – The Enhanced Seismic Retrofit Alternative would upgrade the existing bridge. While this alternative allows for the preservation of portions of the historic Burnside Bridge, it requires replacement of some elements, extensive retrofitting of others, and retains many columns in unstable soil near the river. This alternative would retrofit existing West Approach and Main River bridge elements and be visually similar to the existing bridge elements, whereas a partial replacement wo occur as part of the East Approach. This alternative would not be modified due any of the cost reducing refinements de ped as part of the SDEIS.

Key Assumptions and Fi gs

- Construction Manager / G al Contractor (CM/GC) delivery meth
- 3 to 4 years to constr
- Maintains existing l ge width
- Costs escalated t id-point of construction
- This alternati ould have consequential impacts to t istoric elements of the existing b e.
- This al ative possesses the greatest cons tion risks of all the alternatives.

Cost Risk Assessment Estimate Cost nge

(Opinion of probable cost range as of January 202 roject analysis)

Anticipated Low Cost Point: **$809M**

A ipated High Cost Point: **$958M**

Anticipated cost ge assuming pric trends towards pre VID levels

ICE S edule Range

(Developed as pa r October 2021 Project analysis)

Construction Start Date: **ch 2025**

Construction Completi ate: **October 2029**

Ma Project Risks & Opportunities

Key Project Co sks (impacting estimated expected value impacts)

Threats

- Base co stimate includes an increase in pricing due to shortages in mate s, labor, and equipment versus 2020 bid results
- Un tainty in the 2025 economic condition (when the CMGC contractor mits its bid) could lead to higher inflation rates
- otential for experiencing further repair needs during construction

pportunities

- Limited design innovations from contractor input are expected, leading to modestly reduced risks and construction costs
- Cost reductions from reduced foundation sizing due to refined seismic analysis are expected

Key Schedule Risks (Impacting Construction Completion Milestone):

Threats

- Potential challenges with movable bridge Installation and Commissioning
- Potential delays associated with Local Agency permitting and Land Use approvals; ROW acquisition and relocations; UPRR permits; and/or Utility relocations
- Potential difficulties with in-river cofferdam construction
- Potential delays in long lead-time items (steel materials, specialty mechanical and electrical materials, etc)
- Potential for experiencing further repair needs during construction

Opportunities

- Construction acceleration from contractor input

Le of Project Design Low | Medium | High

SDEIS Phase

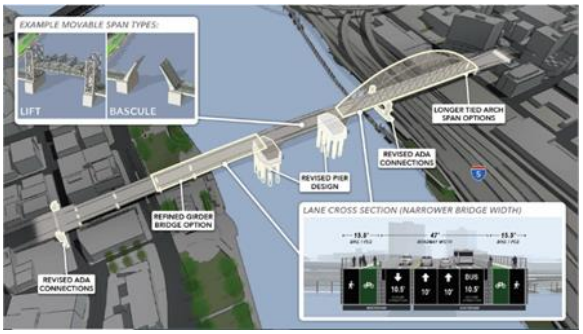
Multnomah County

2021 Independent Cost Estimate

Earthquake Ready Burnside Bridge (EQRB)

Alt: Revised Replacement Alternative with Long-span Approach (No Temp Bridge)

Cost Estimate Date: October 24, 2021; Updated January 2022



Project Need - Multnomah County is delivering the EQRB Project to provide our community with a reliable Willamette River crossing on the Burnside regional lifeline route after a major earthquake.

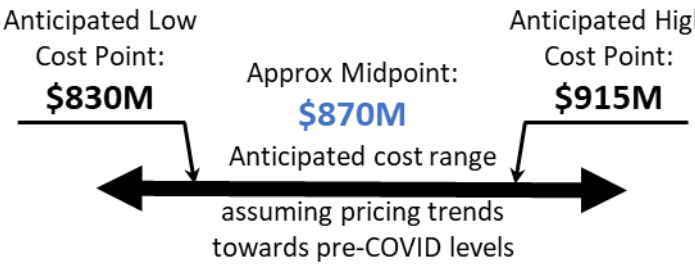
Description – The Revised Replacement Alternative with Long-span Approach would replace the existing Burnside Bridge with a new movable bridge in the same location and length as the existing bridge with support structure above the roadway surface, resulting in fewer columns below. This means there are longer spans between columns on the East Approach. Compared to the DEIS version of this alternative, this alternative's SDEIS bridge section is narrower by approximately 26 feet.

Key Assumptions and Findings

- Construction Manager / General Contractor (CM/GC) delivery method
- 4 to 5 years to construct
- Bridge width reduced to 4 vehicle lanes, and Bike/ped space between 14' and 17'
- West Approach is a Girder bridge type
- River Movable Span is a Bascule bridge type
- East Approach is either a Cable Supported or Tied Arch bridge type
- Traffic to be detoured to adjacent bridges during construction
- This alternative was recommended because it is the most seismically resilient, has the lowest cost, and has the fewest natural resources impacts of any replacement alt.

Independent Construction Estimate (ICE) Cost Range

(Opinion of probable cost range as of January 2022 Project analysis)



ICE Schedule Range

(Developed as part of October 2021 Project analysis)

Construction Start Date: **March 2025**
Construction Completion Date: **August 2030**

Major Project Risks & Opportunities

Key Project Cost Risks (impacting estimated expected value impacts)

Threats

- Base cost estimate includes an increase in pricing due to shortages in materials, labor, and equipment versus 2020 bid results
- Uncertainty in the 2025 economic condition (when the CMGC contractor submits its bid) could lead to higher inflation rates

Opportunities

- Design innovations from contractor input is expected, leading to reduced risks and construction costs
- Cost reductions from alternative or reduced ground improvement measures are expected
- Cost reductions from reduced foundation sizing due to refined seismic analysis are expected

Key Schedule Risks (Impacting Construction Completion Milestone):

Threats

- Potential challenges with movable bridge Installation and Commissioning
- Potential delays associated with City permitting and Land Use approvals; ROW acquisition and relocations; UPRR permits; and/or Utility relocations
- Potential difficulties with in-river cofferdam construction
- Potential delays in long lead-time items (steel materials, specialty mechanical and electrical materials, etc)

Opportunities

- Construction acceleration from contractor input
- Use of full depth precast deck panels to accelerate construction

Level of Project Design Low | Medium | High

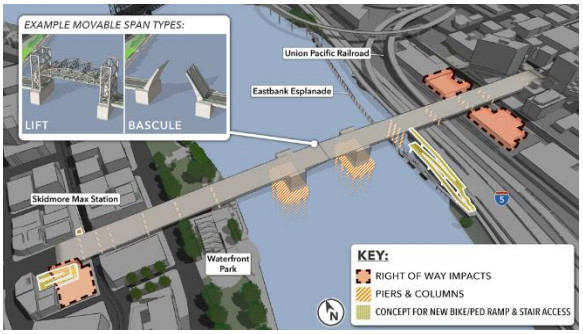
SDEIS Phase

2021 Independent Cost Estimate

Earthquake Ready Burnside Bridge (EQRB)

Alt: Revised Replacement with Short Span Approach (No Temp Bridge)

Cost Estimate Date: October 24, 2021; Updated January 2022



Project Need - Multnomah County is delivering the EQRB Project to provide our community with a reliable Willamette River crossing on the Burnside regional lifeline route after a major earthquake.

Description – The Revised Replacement Alternative with Short-span Approach would replace the existing Burnside Bridge with a new movable bridge in the same location and length as the existing bridge with support structure above the roadway surface, resulting in fewer columns below. This means there are longer spans between columns. Compared to the DEIS version of this alternative, this alternative's SDEIS bridge section is narrower by approximately 26 feet.

Key Assumptions and Findings

- Construction Manager / General Contractor (CM/GC) delivery method
- 4 to 5 years to construct
- Bridge width reduced to 4 vehicle lanes, and Bike/ped space between 14' and 17'
- West Approach is a Girder bridge type
- River Movable Span is a Bascule bridge type
- East Approach is a Girder bridge type, requiring two additional supports with geotechnical improvements vs Long span
- Traffic detoured during construction
- Due to seismic risks with supports in the geotechnical hazard zone near the Willamette river, the increase in-water impacts, and its higher cost, this alternative is not the Preferred Alternative.

Independent Construction Estimate (ICE) Cost Range

(Opinion of probable cost range as of January 2022 Project analysis)

ICE Schedule Range

(Developed as part of October 2021 Project analysis)

Construction Start Date: **March 2025**
Construction Completion Date: **August 2030**

Major Project Risks & Opportunities

Key Project Cost Risks (impacting estimated expected value impacts)

Threats

- Base cost estimate includes an increase in pricing due to shortages in materials, labor, and equipment versus 2020 bid results
- Uncertainty in the 2025 economic condition (when the CMGC contractor submits its bid) could lead to higher inflation rates

Opportunities

- Design innovations from contractor input is expected, leading to reduced risks and construction costs
- Cost reductions from reduced foundation sizing due to refined seismic analysis are expected

Key Schedule Risks (Impacting Construction Completion Milestone):

Threats

- Potential challenges with movable bridge Installation and Commissioning
- Potential delays associated with City permitting and Land Use approvals; ROW acquisition / relocations; UPRR permits; and/or Utility relocations
- Potential difficulties with in-river cofferdam construction
- Potential delays in long lead-time items (steel materials, specialty mechanical and electrical materials, etc)
- Significant geotechnical mitigation within Willamette River and near freeway structures

Opportunities

- Construction acceleration from contractor input

Level of Project Design — Low | Medium | High

SDEIS Phase

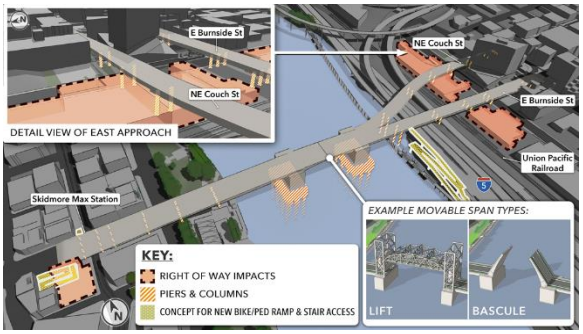
Multnomah County

2021 Independent Cost Estimate

Earthquake Ready Burnside Bridge (EQRB)

Alt: Revised Replacement Alternative with Couch Extension (No Temp Bridge)

Cost Estimate Date: October 24, 2021; Updated January 2022



Independent Construction Estimate (ICE) Cost Range

(Opinion of probable cost range as of January 202 Project analysis)

Anticipated Low Cost Point: **$970M**

Approx Midpoint: **$1.02B**

Anticipated High Cost Point: **$1.07B**

Anticipated cost range assuming pricing trends towards pre-COVID levels

ICE Schedule Range

(Developed as part of October 2021 Project analysis)

Construction Start Date: **March 2025**

Construction Completion Date: **August 2030**

Project Need - Multnomah County is delivering the EQRB Project to provide our community with a reliable Willamette River crossing on the Burnside regional lifeline route after a major earthquake.

Description – The Revised Replacement Alternative with Couch Extension has the same West Approach and Main River Movable Span portions as the Short Span Alternative. The East Approach, however, would extend legs to the Burnside/Couch couplet, thus resulting in a bridge that splits just east of the movable span. Compared to the DEIS version, the SDEIS bridge section is narrower for the portion that extends on Burnside Street. The East Approach extension to Couch St is equivalent to that described in the DEIS.

Key Assumptions and Findings

- Construction Manager / General Contractor (CM/GC) delivery method
- 4 to 5 years to construct
- Bridge width reduced to 4 vehicle lanes, and Bike/ped space between 14’ and 17’
- West Approach is a Girder bridge type
- River Movable Span is a Bascule bridge type
- East Approach is a split Girder bridge type, requiring two additional supports with geotechnical improvements for each leg
- Traffic detoured during construction
- Due to seismic risks with supports in the geotechnical hazard zone near the Willamette river, the increase in-water impacts, and its higher cost, this alternative is not the Preferred Alternative.

Major Project Risks & Opportunities

Key Project Cost Risks (impacting estimated expected value impacts)

Threats

- Base cost estimate includes an increase in pricing due to shortages in materials, labor, and equipment versus 2020 bid results
- Uncertainty in the 2025 economic condition (when the CMGC contractor submits its bid) could lead to higher inflation rates

Opportunities

- Design innovations from contractor input is expected, leading to reduced risks and construction costs
- Cost reductions from reduced foundation sizing due to refined seismic analysis are expected

Key Schedule Risks (Impacting Construction Completion Milestone):

Threats

- Potential challenges with movable bridge Installation and Commissioning
- Potential delays associated with City permitting and Land Use approvals; ROW acquisition / relocations; UPRR permits; and/or Utility relocations
- Potential difficulties with in-river cofferdam construction
- Potential delays in long lead-time items (steel materials, specialty mechanical and electrical materials, etc)
- Significant geotechnical mitigation within Willamette River and near I-5 / I-84 freeway structures

Opportunities

- Construction acceleration from contractor input

Level of Project Design — Low | Medium | High

SDEIS Phase

Multnomah County