APPENDIX D

ALTERNATIVES SCREENING TECHNICAL MEMORANDUM

Attachment A: Alternatives Evaluated
Attachment B: Screening Criteria and Ratings
Attachment C: Steps 1 and 2 Criteria and Scores Matrix
Attachment D: Step 3 Criteria and Scores Matrix
Attachment E: Project Problem Statement

Alternatives Screening Technical Memo

Project:	Earthquake Ready Burnside Bridge Project
Date:	Wednesday, August 30, 2018
To:	Megan Neill, Multnomah County – Project Manager
From:	Heather Catron, HDR – Project Manager Jeff Heilman, Parametrix – Pre-NEPA/Planning Lead Steve Drahota, HDR – Technical Lead

Introduction

This Technical Memo documents the alternatives screening process for the Earthquake Ready Burnside Bridge (EQRB) Project. The goal of the process was to evaluate a wide range of alternatives and identify the most reasonable and feasible to advance to the environmental review phase of the project.

Range of Alternatives Evaluated

During the Project's Feasibility Phase, a total of 123 alternatives were assessed. This comprehensive list was established after considering a wide variety of river crossing types, horizontal roadway alignments, vertical bridge profile grades, bridge types, bridge widths, and construction variations. Figure 1 illustrates the list of river crossing alternatives considered during the Feasibility Study, and the complete list is provided in Attachment 1: Alternatives Evaluated.

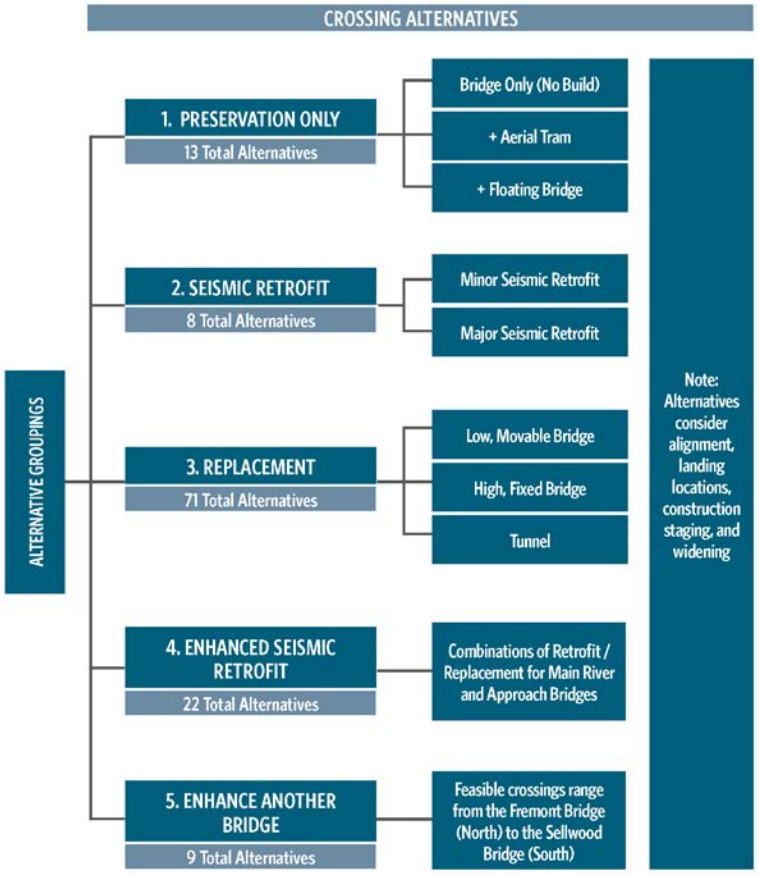


Figure 1: Alternatives Evaluated

Process for Screening the Alternatives

The alternatives screening process was conducted in three steps. Each of the three steps included developing screening criteria and ratings (Attachment 2: Screening Criteria and Scores Matrix) and then applying them to the alternatives to progressively eliminate unreasonable alternatives. Screening criteria were developed based on the project's problem statement, stakeholder interests and technical considerations and included input from stakeholder interviews, project committees which include representatives from multiple local, state, and federal agencies, neighborhoods, business and citizen groups, special interest groups and social service providers and on-line events.

The ratings were informed through analysis based on aerial photos, plans and policies, existing data, maps, stakeholder input, and use of ARCGIS. The results were also presented to the project committees for their feedback and will be shared with the public through on-line events and in-person open houses. An example of a screening criteria and how it was rated is shown below:

Criteria: Seismic Resiliency		
Screening Step	**Criteria Definition**	**Rating**
Step 1: Pass/Fail	Does the alternative meet the seismic design criteria?	Yes = Pass (advances) No = Fail (eliminated)
Step 2: Preliminary Screening	How well does the crossing perform against the project's seismic design criteria after a Magnitude 8+ Cascadia Subduction Zone earthquake?	High Score (5 pts.): The crossing option exceeds the "Fully-Operable" performance standards for the Project's seismic design criteria. Medium Score (3 pts.): The crossing option merely satisfies the "Fully-Operable" performance standard for the Project's seismic design criteria. Low Score (1 pt.): Does not satisfy the "Fully-Operable" performance standard for the Project's seismic design criteria.
Step 3: Alternatives Evaluation	To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?	High Score (5): The crossing option has a small amount of potential debris from masonry buildings compared to the other alternatives. Medium Score (3): The crossing option has an average amount of potential debris from masonry buildings compared to the other alternatives. Low Score (1): The crossing option has a large amount of potential debris from masonry buildings compared to the other alternatives.

Once the criteria and ratings were developed, they were applied in two workshops, one that combined the Pass/Fail and Preliminary Screening criteria and the other for the Alternatives Evaluation. These workshops included Multnomah County, FHWA, ODOT, PBOT and consultant project staff including engineers, environmental and transportation planners, and communications specialists[1]. The results of these workshops were also presented to the project committees for their feedback.

Once the ratings were applied, the raw scores were totaled and then normalized so that the highest possible score is equal to 100 and the lowest possible score is equal to zero. The scores were then used as a guideline to inform decisions regarding which alternatives would drop out and which would advance to the next step. This allowed for flexibility to make a case for advancing or dismissing an alternative even if its score was lower or higher than another alternative.

The following sections provide more detail on each screening step and the results.

Screening Step 1: Pass/Fail

The first step in the screening process used pass/fail criteria that reflected the project's core intent. If alternatives could not meet the minimum threshold for one of more of these pass/fail criteria, they failed to advance to Step 2.

The following explains the purpose of each pass/fail criterion and how it was applied in the scoring process. The criteria and rating approach are further outlined in Attachment 2: Screening Criteria and Scores Matrix.

Pass/Fail Criteria

Criterion I. Compatibility with other major infrastructure
This criterion eliminated alternatives that caused prolonged, substantial interruption or degradation of the use or function of adjacent, major public infrastructure, including:

- TriMet's light rail line
- City of Portland's major roads in the vicinity (Naito Parkway, Martin Luther King Boulevard, Grand Avenue)
- City of Portland's combined sewer overflow (the "Big Pipes" located underground adjacent to the river)
- Oregon DOT's I-5 and I-84
- Union Pacific Railroad mainline
- US Coast Guard regulated river navigation

[1] Steps 1&2 Screening workshop conducted on 5/30/17 with the County, ODOT, and the consultant team. FHWA provided input prior to the workshop. Step 3 Evaluation workshop was conducted on 10/4/17 with the County, ODOT, FHWA, PBOT, and consultant team.

Criterion II. Seismically resilient and operational Willamette River crossing.
This criterion eliminated alternatives that would not meet the project's definition of being "fully operable" following a Cascadia Subduction Zone 8+ earthquake.

Criterion IIIa. Unobstructed Willamette River crossing lifeline route
This criterion eliminated alternative crossing locations (e.g., the Steel Bridge, Hawthorne Bridge, Tilikum Bridge, and others) that would have two or more earthquake-related blockages (on the access route to and from the Burnside lifeline route. (See Screening Step 2, Criterion 2a. Unobstructed Willamette River crossing lifeline route below for more explanation of the blockage concern)

Criterion IIIb. Rapid emergency response across the Willamette River
This criterion eliminated alternative crossing locations that would add excessive travel time, due to distance from the Burnside corridor, for emergency vehicles crossing the river and using the Burnside lifeline route. Any crossing that would add more than 4 minutes to a trip (at an average speed of 30 mph) would not advance. (See Screening Step 2, Criterion 2b. Rapid emergency response across the Willamette River below for more explanation of the emergency vehicle travel time concern).

Criterion IIIc. Congestion avoidance on a Willamette River crossing
This criterion eliminated crossing alternatives that would have too little post-earthquake capacity to allow reliable and rapid emergency response after a major earthquake. Any crossing that had two or fewer travel lanes (or equivalent) usable to emergency vehicles post-earthquake would not advance. (See Screening Step 2, Criterion 2c. Congestion avoidance on a Willamette River crossing below for more explanation of the emergency vehicle capacity concern).

Pass /Fail Results

Based on the pass/fail rating process, input from project stakeholders, project committees and the project team, the following alternatives were recommended to be dropped from further consideration:

- **Preservation Alternatives:** All failed to meet one or more of the pass/fail criteria.
- **Seismic Retrofit Alternatives**: These alternatives failed to pass Criterion I because construction of these alternatives would cause extended (six months or longer) closures of I-5.
- **Enhance Another Bridge**: All bridges in this category except the Morrison Bridge did not meet the pass/fail criterion.

Screening Step 2: Preliminary Scoring

Step 2 was also intended to eliminate alternatives that could not adequately meet the basic intent of the project. All of the preliminary screening criteria were based on the following elements of the project's Problem Statement (Attachment 5: Project Problem Statement).

- Achieving seismic resiliency
- Allowing reliable and rapid emergency vehicle response following a major earthquake
- Serving multi-modal needs after an earthquake
- Implementing relevant seismic and emergency preparation/response plans
- Providing long-term functionality independent of a seismic event.

The following explains the purpose of each preliminary screening criterion and how it was applied in the scoring process. The criteria and rating approach are further outlined in Attachment 2: Screening Criteria and Scores Matrix.

Preliminary Screening Criteria

This step included 11 scored criteria organized into five topics. For each criterion, each alternative was assigned a score of 1, 3, or 5 depending on how well it performed. For many criteria, a score of 3 represented average performance or no improvement over existing conditions; a 1 typically represented well below average or worse than existing conditions, and a 5 typically represented well above average or a substantial improvement over existing conditions.

The first four scoring criteria are very similar in substance to four of the pass/fail criteria. The difference is that the pass/fail criteria determined whether alternatives could meet a minimum performance threshold, whereas the scoring criteria below evaluate how well the remaining alternatives address these subjects.

Topic 1: Achieve seismic resiliency

CRITERION 1. SEISMICALLY RESILIENT AND OPERATIONAL WILLAMETTE RIVER CROSSING.

This criterion evaluated the expected seismic resiliency of the crossing itself based on its general concept and the prevalence of new versus older components.

Topic 2: Allow reliable and rapid emergency response following a major earthquake

There are three criteria in this group evaluating different aspects of how well the crossing alternative accommodates emergency vehicle response and recovery functions.

CRITERION 2A. UNOBSTRUCTED WILLAMETTE RIVER CROSSING LIFELINE ROUTE

The next Cascadia Subduction Zone 8+ earthquake is expected to cause landslides and widespread damage to buildings and transportation infrastructure, including many of the land-based overpasses, viaducts, and bridges that cross over the roads that connect Burnside Street to the other bridges over the Willamette River. This criterion estimates how seismic failure of and damage to these structures could block access to different crossing locations. This project is intended to serve emergency vehicles and recovery using the designated Burnside Street lifeline route and therefore it is critical that there not be substantial blockage that would occur on

roads that connect the other river crossing locations to the lifeline route. This criterion does not evaluate the potential for blockage on Burnside Street outside of the actual river crossing, since that would be equal for all alternatives.

CRITERION 2B. RAPID EMERGENCY RESPONSE ACROSS THE WILLAMETTE RIVER

To meet the project intent, the crossing alternative must allow emergency vehicles to access and use it in a timely manner. This criterion judges the extent to which alternative crossing locations would add travel distance/time to emergency response vehicles using the lifeline route. For those alternatives (such as replacing one of the other aging bridges or relying on one of the newer, existing bridges), traffic traveling on the Burnside lifeline route would be detoured to a different river crossing location and then once on the other side, travel back to the Burnside lifeline route.

In emergency response, it is well known that minutes and even seconds matter. While there is no universally mandated standard for how much added response time is too much, the National Fire Protection Association publishes recommendations and suggests a standard objective of four minutes travel time for emergency response in urban areas[2]. Estimating all possible response times is not practical given that it will vary with each trip depending on where the vehicle is coming from and where it is going to. However, it is possible to roughly estimate how much travel time or distance each crossing alternative would add to a Burnside lifeline trip. Crossing alternatives that would add more time score lower.

CRITERION 2C. CONGESTION AVOIDANCE ON A WILLAMETTE RIVER CROSSING

This criterion evaluates the extent to which congestion would inhibit emergency vehicles crossing the alternative following a major earthquake. It is based on the assumed number of lanes, or equivalent capacity indicator (assumed at 2000 vehicles per hour based on existing daily traffic use) on the crossing.

Topic 3: Serve multi-modal needs for Burnside Street after the earthquake

The following four criteria evaluated how well each alternative would serve different modal needs following a major earthquake. This evaluation focused on the functions that can be reasonably evaluated with the available information and level of design. Each criterion addresses a different mode or modes.

CRITERION 3A. ADA ACCESS ON THE WILLAMETTE RIVER CROSSING

Each alternative should improve, or at least not decrease, ADA mobility on and connecting to the river crossing. Not all aspects of ADA mobility can be evaluated at this early phase, but general changes to safety and the options for connectivity to the surrounding ADA-accessible system can be evaluated.

CRITERION 3B. BICYCLE AND PEDESTRIAN ACCESS ON THE WILLAMETTE RIVER CROSSING

The project should improve, or at least not decrease, the ability of bicycles and pedestrians to cross the river. While not all aspects of bicycle and pedestrian service can be evaluated at this

[2] Source: National Fire Protection Association, NFPA 1710, Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments. 2016.

early phase (for example, the width and configuration of bicycle and pedestrian facilities are not yet determined) some general aspects of safety and the options for connectivity to the surrounding bicycle/pedestrian system can be evaluated.

CRITERION 3C. AUTO, BUS, AND TRUCK FREIGHT ACCESS ON THE WILLAMETTE RIVER CROSSING

The project should improve, or at least not decrease, vehicle traffic performance for the river crossing. This criterion evaluates general changes to safety and the options for connectivity to the surrounding street network for autos, buses, and truck freight.

CRITERION 3D. SAFE RIVER USE

Each alternative should improve, or at least not decrease, river use beneath or through the crossing location. This criterion evaluates general changes to the quantity (number of openings) and quality (width and height) of the navigational clearances.

Topic 4: Implement relevant seismic and emergency preparation/response plans

CRITERION 4A. WILLAMETTE RIVER CROSSING CONSISTENCY WITH EXISTING EMERGENCY PLANS

Agencies at each level of Oregon government (state, regional and local) take responsibility to prepare for emergencies and disasters. This includes improving the seismic resiliency of infrastructure as well as establishing plans for emergency response after an earthquake. This criterion evaluated the extent to which each alternative is consistent or not consistent with the following plans: Oregon Resilience Plan, Metro's Emergency Transportation Routes Report, and Portland's Citywide Evacuation Plan. Alternatives that are consistent with plans at more than one level (i.e., state, region, county, or city) rate highest. Alternatives that are inconsistent with relevant plans rate lowest).

Topic 5: Provide long term functionality, independent of a seismic event

CRITERION 5A. LONG-TERM FUNCTIONALITY OF THE WILLAMETTE RIVER CROSSING

The level of maintenance needed over the life of a bridge or other facility varies substantially. This criterion rated alternatives based on the general level of maintenance, measured by the number of major investments expected to be required to keep the crossing functional over a 100-year design life. A major investment is considered to be at least $25 million (Present Value)[3].

CRITERION 5B. MULTI-MODAL ACCESS, SAFETY, CONNECTIVITY, TRAVEL TIME FOR THE WILLAMETTE RIVER CROSSING

This criterion evaluated how the alternatives affect all transportation modes crossing the Willamette River, independent of a seismic event. The baseline for comparison is the existing bridge. It evaluated how the alternatives generally affect safety, access, and/or connectivity, to the extent they can be evaluated at this stage, for the following modes: auto, truck freight, bus, bicycle, pedestrian and people with disabilities (ADA).

[3] Present value is the current value of future expenditures discounted based on anticipated inflation rate over time. For example, given an expected expenditure of $103 one year from now, the present value (today) of that expenditure, at an assumed 3% inflation rate, would be $100.

Preliminary Screening Results

Based on the preliminary screening process, input from project stakeholders, project committees and the project team, the following alternative was recommended to be dropped from further consideration:

- **Enhance/Use Another Bridge**: Morrison Bridge. The Morrison Bridge option received just 32% of the possible points and offers no unique advantages compared to other alternatives. Therefore it does not warrant the added expense of further analysis.

The combined results of Steps 1 and 2 screening, which were reviewed collectively by the project committees, are described further in Attachment 2: Screening Criteria and Scores Matrix.

Step 3: Alternatives Evaluation

In Step 3 each remaining option was further evaluated for its performance in six key categories: Seismic Resiliency, Non-Motorized Transportation, Connectivity, Built Environment, Equity, and Financial Stewardship.

The following explains the purpose of each evaluation criterion and how it was applied in the scoring process. The criteria and rating approach are further outlined in Attachment 3: Step 3 Criteria and Scores Matrix.

Alternatives Evaluation Criteria

This step further evaluated the ability of the remaining alternatives to meet the project intent as well as how they affected key environmental and stakeholder interests. The determination of which environmental impacts and stakeholder interests to evaluate in this step was based primarily on:

- Extent to which it addressed an important issue either from a regulatory perspective, expressed stakeholder perspective, or stated County value
- Ability to measure impacts or performance with information available
- Ability to measure a meaningful difference between alternatives.

Step 3 included six criteria divided into 17 scored measures. For all but one measure, each alternative was assigned a score of 1, 3, or 5 depending on how well it performed. For many measures, a score of 3 represented average or median performance; a 1 typically represented substantially worse than average or median; and a 5 typically represented notably better than average or median. The exception was the Capital Cost measure within the Financial Stewardship criterion. Because of the very wide range in capital costs, alternatives were assigned a 1, 2, 3, 4, or 5 on this measure.

Topic 1: Seismic Resiliency: Support reliable and rapid emergency response after an earthquake

The previous steps measured the ability of the proposed alternative itself to withstand an earthquake, the length of an emergency response trip if using an alternative crossing location, and the vulnerability of those detour routes to blockage due to failure of other transportation

infrastructure or landslides. This step evaluated seismic resiliency in terms of vulnerability to traffic blockage from adjacent buildings and car crashes:

MEASURE 1.1 TO WHAT DEGREE IS THE OPTION VULNERABLE TO TRAFFIC BLOCKAGE OR DAMAGE TO THE BRIDGE FROM ADJACENT FACILITIES?

This was measured in terms of area (length x height) of unreinforced masonry buildings located adjacent to the bridge.

MEASURE 1.2 TO WHAT EXTENT IS THE OPTION VULNERABLE TO TRAFFIC BLOCKAGE FROM DISABLED VEHICLES?

Numerous vehicle crashes, which are likely to occur during a CSZ earthquake due to significant and prolonged ground shaking, will be a barrier to emergency vehicle passage. Because there are no side streets that intersect the road on a bridge or in a tunnel, crashes there will be harder to clear than on surface streets. Narrower bridges will be harder to clear due to less space to push crashed vehicles to allow immediate passage by emergency vehicles. Longer bridges and tunnels will be harder to clear than shorter ones because they will require towing or pushing crashed vehicles much farther to the endpoints of the bridge. This vulnerability was measured as a function of crossing width and length.

Topic 2: Non-motorized Transportation: Support access and safety for bikes, pedestrians and people with disabilities

Step 2 included a very general evaluation of how the alternatives would affect every day safety, access, and/or connectivity for all transportation modes. In this step, the evaluation looked specifically at non-motorized transportation from three specific measures of access and safety:

MEASURE 2.1 HOW DOES THE PROFILE GRADE AFFECT BICYCLES, PEDESTRIANS, AND PEOPLE WITH DISABILITIES EASE OF USE?

Steeper and longer grades scored lower. This was measured in terms of percent and length of grade.

MEASURE 2.2 HOW SAFE AND CONVENIENT ARE THE BIKE AND PEDESTRIAN CONNECTIONS BETWEEN THE BRIDGE AND OTHER PLANNED BIKE AND PEDESTRIAN FACILITIES?

The analysis compared how well the alternative connected to (a) existing bike and pedestrian facilities and (b) planned bike and pedestrian facilities, as outlined in Portland's City Center 2035 Plan,

MEASURE 2.3 TO WHAT EXTENT DOES THE OPTION SUPPORT PERSONAL SECURITY FOR PEDESTRIANS AND BICYCLISTS?

This measured the extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, alternatives that avoided enclosed or less visible areas like pedestrian underpasses or isolated bike paths[4] scored higher.

[4] This measures general consistency with the CPTED (Crime Prevention Through Environmental Design) principle of "Natural surveillance," which advocates for the placement of physical features, activities and people in such a way as to maximize visibility of the space and its users, fostering positive social interaction and reducing the risk of crime. Security concerns increase with features such as elevators or pedestrian-only underpasses where pedestrians and bicyclists are isolated from view by others.

Topic 3: Connectivity: Support street system integration and function (cars, freight, transit, bikes, pedestrians and ADA)

Steps 1 and 2 included a measure of compatibility with adjacent major transportation infrastructure and a very general evaluation of how the alternatives would affect every day safety, access, and/or connectivity for all transportation modes. In this step, the evaluation looked specifically at street system integration and function using three specific measures:

MEASURE 3.1 HOW WELL DOES THE OPTION CONNECT WITH THE EXISTING AND PLANNED STREET NETWORK (FOR ALL MODES)?

Some of the bridge alternatives and the tunnel alternative would close one or more existing streets and/or bypass other streets (due to elevation differences), thus reducing connectivity to the existing street network. This evaluation measured:

- The number of streets permanently closed (including number of modes unable to pass).
- The number of streets bypassed.

MEASURE 3.2 HOW SAFE AND CONVENIENT ARE THE CROSSING ROADWAY AND THE ROADWAY CONNECTIONS TO THE EXISTING AND PLANNED STREET GRID AT BOTH ENDS?

The grade and curvature of the crossing as well as how it connects into and affects existing streets and intersections impacts safety and convenience for multiple modes. This evaluation considers the following:

- Extent to which the crossing's grade and curvature potentially affect vehicle safety.
- Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.
- Extent of non-standard intersection layouts and vehicle movements.

MEASURE 3.3 WILL BRIDGE OPENINGS CAUSE PERIODIC DELAY IN CROSSING TIME (AFFECTS ALL MODES)?

While it is too early to conduct detailed traffic analysis for the alternatives, there is one aspect of how alternatives will affect traffic that was known at the time. All low-level, movable bridges will occasionally stop traffic to lift the bridge for river navigation or testing. This measure differentiates between bridges that are fixed and those that are movable.

Topic 4: Equity: Minimize adverse impacts to historically marginalized communities

Equity is a core value of the County and was raised as a concern by multiple stakeholders. The measurable aspects of equity at this stage were the direct effects on social service providers and on low income housing:

MEASURE 4.1 TO WHAT EXTENT WOULD THE OPTION DISPLACE OR IMPACT ACCESS TO EXISTING SOCIAL SERVICES (INCLUDING OVERNIGHT SHELTERS)?

Several social service providers are located adjacent to one or more of the alternatives. This step evaluated how each alternative could potentially affect those providers in two different ways:

- Social service providers displaced.
- Number of social service providers that would have their existing access substantially diminished (but that would not be directly displaced).

MEASURE 4.2 TO WHAT EXTENT WOULD THE OPTION AFFECT LOW INCOME HOUSING?

Existing low income housing is located in the project area and some alternatives would either displace existing housing or preclude opportunities for future low income housing. This criterion measured both of those potential impacts for each alternative, as follows:

- Units of existing low income housing units displaced.
- Number of potential future low incoming housing units precluded. This was measured by applying the City's inclusionary housing requirements to acquired properties that were otherwise developable or re-developable.

Topic 5: Built Environment: Promote land use compatibility and minimize impacts to parks and historic resources

While most of the environmental impact analysis will occur in future phases, currently available information enabled preliminary evaluation of some impacts on land use, historic resources, and parks. This evaluation included the following five measures:

MEASURE 5.1 TO WHAT EXTENT DOES THE OPTION PERMANENTLY IMPACT (NOT DISPLACE) BUILDINGS (DIRECT BLOCKAGE OF VIEW, LIGHT AND/OR ACCESS)?

While this was based on conceptual designs it is a strong indicator of the potential impact on views, light, and access from adjacent structures. It was measured in terms of linear feet of buildings adjacent to new elevated alignments.

MEASURE 5.2 HOW MANY COMMERCIAL AND INDUSTRIAL PROPERTIES WOULD BE PERMANENTLY DISPLACED?

Some alternatives would displace large quantities of commercial and industrial buildings and uses. This was measured in two ways including:

- Number of businesses displaced.
- Number of employees displaced.

MEASURE 5.3 HOW MANY UNITS OF LONG-TERM HOUSING WOULD BE PERMANENTLY DISPLACED?

This measured the total number of housing units displaced. Long-term housing does not include overnight shelters which are covered under Equity in Measure 4.1.

MEASURE 5.4 TO WHAT EXTENT WOULD THE OPTION PERMANENTLY DISPLACE PARK AND RECREATION LAND?

Park and recreation land is not only an important community amenity it also has particular federal protection under Section 4(f) of the U.S. Department of Transportation Act, a law that requires special consideration of impacts to public parks when evaluating alternatives. This measure evaluated two types of impacts to parks:

- Amount (area) of parkland permanently displaced.
- Substantial impacts to park circulation/access.

MEASURE 5.5 TO WHAT EXTENT DOES THE OPTION IMPACT NATIONAL REGISTER HISTORIC RESOURCES AND NATIONAL REGISTER HISTORIC DISTRICTS?

Like parks, significant historic resources are also covered by Section 4(f) requirements. This measure evaluated two types of impacts to historic resources:

- Number of national register historic resources displaced or visually obstructed including properties already on or determined eligible for listing on the National Register of Historic Places and properties already determined to be “contributing” to a national register historic district. Also considered impacts to the Chinatown Gate even though it is not an eligible historic resource.
- Extent of the proposed transportation structures (including viaducts or retained fill) within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District. The measure was based on the new structure’s height and length within the national historic districts.

Topic 6: Financial Stewardship: Ensure public funds are invested wisely

Financial stewardship is a County value and was evaluated in terms of estimated capital cost and long term maintenance:

MEASURE 6.1 WHAT IS THE INITIAL CAPITAL COST OF THE OPTION?

The construction costs (including design and right of way costs) of the alternatives was estimated and then each option was ranked according to five cost “tiers” or “ranges”. The tiers were assigned a score of 1, 2, 3, 4, or 5.

MEASURE 6.2 WHAT ARE THE RELATIVE LEVELS OF MAINTENANCE AND OPERATIONAL REQUIREMENTS THROUGH THE OPTION’S DESIGN LIFE?

The available information and conceptual level of design at this stage did not allow estimating costs of maintenance and operation. However, it was possible to identify relative levels of maintenance and operation to differentiate alternatives, as follows:

- Number of major maintenance projects required over design life.
- Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).

Alternatives Evaluation Results

The intent of screening was to identify a reasonable range of alternatives for detailed evaluation in an environmental impact statement (EIS) or other NEPA process. For the Step 3 findings, the focus was to:

- Eliminate alternatives that performed poorly overall on the evaluation criteria; this included alternatives that scored low on criteria measuring project intent
- Within each group of similar alternatives, eliminate those that performed worse than the others in that group and did not offer any unique advantages
- Advance a range of crossing types

Based on the preliminary screening process, input from project stakeholders, project committees and the project team, the following alternatives were recommended to be dropped from further consideration:

- **120' High Fixed Bridges**: These alternatives received the lowest possible score on 14 of 17 measures. They had substantially higher impacts and poorer performance on nearly all measures.
- **Tunnel**: This alternative received less than half the points of the best performing alternatives. It posed substantial problems including very high displacement of businesses, employment, long-term housing and low income housing, and very high capital cost.
- **Twin Multi-Modal Bridges**: These alternatives received less than half the possible points and performed poorly on most criteria. They also had potentially significant impacts on historic districts. Within the sub-group of Mode-Separated alternatives (bike/ped bridge separate from vehicle bridge), the Low Mode-Separated alternatives had a distinct advantage over the 97 foot Mode-Separated alternatives in that the former would connect bikes via a relatively short ramp on the east and west ends whereas the latter would require a 5-story high spiral ramp on one or both ends. The project team initially recommended that the Low Mode-Separated alternatives be considered for advancement. However, feedback from bicycle groups indicated that they prefer a multi-modal bridge with protected bike and pedestrian facilities over a bicycle/pedestrian only bridge, and the City of Portland indicated that a bike/pedestrian only bridge would not eliminate the need to also include bike facilities and sidewalks on the vehicle bridge. Therefore the Mode-Separated alternatives provide no distinct advantage and they increase environmental impacts, capital costs, and maintenance. Based on this, none of the Mode-Separated alternatives are recommended to advance.
- **Double Wishbone Bridge**: These alternatives received less than half the possible points and performed poorly on most criteria. They also had potentially significant impacts on historic districts.
- **Wishbone Bridges**: The Low and the 97 foot Wishbone alternatives included one high performer – the Low Northeast Wishbone, which connects directly to the existing Burnside and Couch Connection on the east side. It received the second highest score among all alternatives and was recommended to advance. The other Wishbone

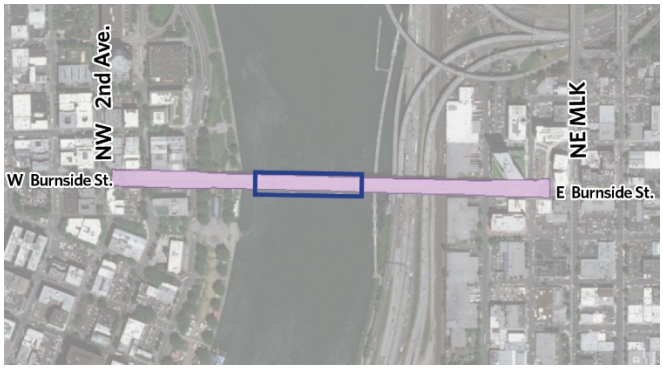
alternatives were not advanced. The 97 foot Wishbones scored substantially lower than the others and the Low Southeast Wishbone had a much poorer connection to the existing eastside street grid and greater land use impacts without offering any advantages over the Low Northeast Wishbone.

- **Low Stacked Bridge**: This alternative scored moderately well overall but it offered no distinct advantage over the other remaining Low Movable replacement or Enhanced Retrofit alternatives and it was less desirable for bicycles and pedestrians due to visually isolating them beneath the vehicle deck, as well as causing greater impacts to social services and historic resources than the other Low bridge alternatives.

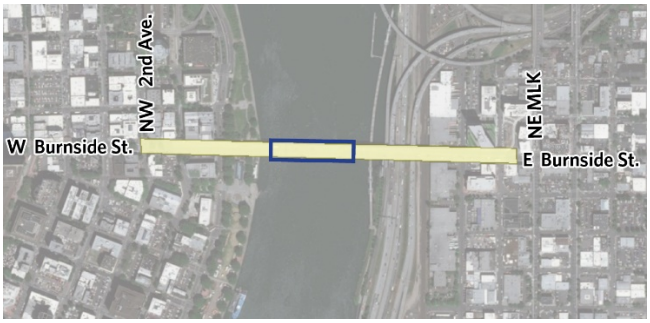
For a summary of the scoring results of each alternative, see Attachment 4: Options Cut Sheets. Within each sheet, the rating scores and their rationale are provided.

The Step 3 scoring, analysis and stakeholder input led to the recommendation to advance the following bridge alternatives for detailed evaluation in an EIS:

Enhanced Seismic Retrofit
An upgrade of the existing bridge to meet current seismic standards. Because a retrofit over the I-5 corridor and railroad tracks is not feasible due to long-term closures of those facilities during construction, that portion of the bridge will be replaced.

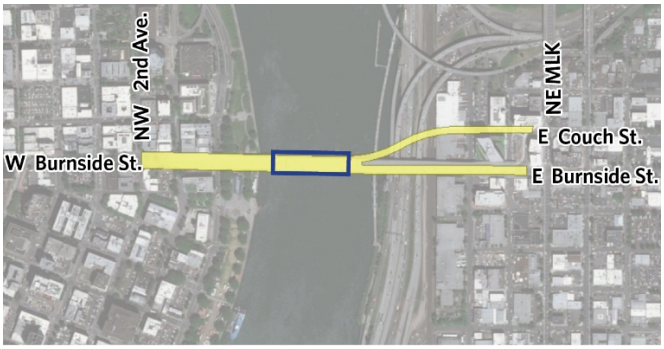


Replacement: Movable Bridge
A new movable bridge at about the same height and location as the current bridge.



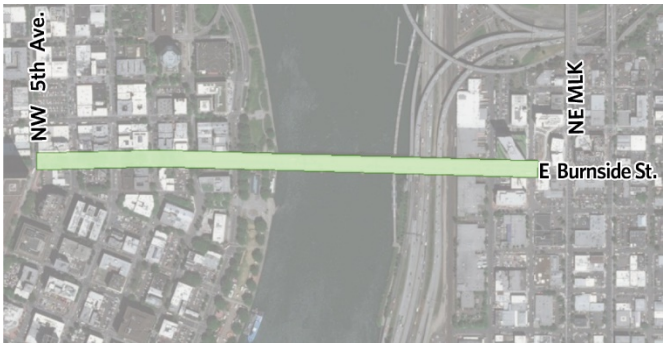
Replacement: Movable Bridge – NE Connection

A new movable bridge at about the same height as the current bridge. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street.



Replacement: Fixed Bridge

A new fixed bridge with a maximum clearance of 97 feet, at about the same location as the current bridge. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The west landing touches down about 3 blocks further west than the current bridge, near NW 5th Avenue.



Note that while the 97' High Fixed Existing Alignment option was the highest scoring of the fixed bridge alternatives, it was the lowest scoring of the four options recommended for further consideration. It scored lower than the others due primarily to higher impacts on land use, social service providers and historic districts as well as lower bicycle safety and convenience. Social service providers have expressed concern about how this option would adversely impact access to some of their facilities located on Burnside Street adjacent to the existing bridge. The County will further evaluate and gather input on this option during the early part of the environmental evaluation phase in order to determine whether or not this option should advance into the EIS.

It is also recommended that the environmental phase evaluate 7 different construction variations associated with the 4 alternatives. The various construction options are differentiated primarily by how and where traffic would be managed, rerouted, or detoured during bridge construction.

Attachment 1: Alternatives Evaluated

Earthquake Ready Burnside Bridge

Better. Safer. Connected.

Alternatives Grouping	Alternatives Evaluation No.	Vertical Profile Elevation Low = Movable High = Fixed	Current Alternatives Name (as of 07-25-18)	Original Option Name	Alignment	Ultimate West Connection Point	Ultimate East Connection Point	Main Span Bridge Type	Construction Method
1. Preservation Only (Rehabilitate) (13 Total Alternatives)		Low		1a.1a Rehabilitate (100 yr Design Life) Burnside Bridge	Existing	Burnside	Burnside	Existing bascule	Staged Construction
		Low		1b.1a Rehabilitate Burnside Bridge + Deployable Floating Bridge (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule Plus	Traffic Detoured to Another Bridge
		Low		1b.1b Rehabilitate Burnside Bridge + Deployable Floating Bridge (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule Plus	Staged Construction
		Low		1b.2a Rehabilitate Burnside Bridge + Deployable Floating Bridge (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule Plus	Traffic Detoured to Another Bridge
		Low		1b.2b Rehabilitate Burnside Bridge + Deployable Floating Bridge (Widened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule Plus	Staged Construction
		Low		1c.1a Rehabilitate Burnside Bridge + Water Taxi (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule Plus	Traffic Detoured to Another Bridge
		Low		1c.1b Rehabilitate Burnside Bridge + Water Taxi (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule Plus	Staged Construction
		Low		1c.2a Rehabilitate Burnside Bridge + Water Taxi (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule Plus	Traffic Detoured to Another Bridge
		Low		1c.2b Rehabilitate Burnside Bridge + Water Taxi (Widened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule Plus	Staged Construction
		High		1d.1a Rehabilitate Burnside Bridge + Aerial Tram (Unwidened) (Traffic Detoured)	Existing	South of Burnside Bridge	South of Burnside	Aerial tram	Traffic Detoured to Another Bridge
		High		1b.1b Rehabilitate Burnside Bridge + Aerial Tram (Unwidened) (Staged Const)	Existing	South of Burnside Bridge	South of Burnside	Aerial tram	Staged Construction
		High		1d.2a Rehabilitate Burnside Bridge + Aerial Tram (Widened) (Traffic Detoured)	Existing	South of Burnside Bridge	South of Burnside	Aerial tram	Traffic Detoured to Another Bridge
		High		1d.2b Rehabilitate Burnside Bridge + Aerial Tram (Widened) (Staged Const)	Existing	South of Burnside Bridge	South of Burnside	Aerial tram	Staged Construction
2. Preservation + Seismic Retrofit (8 Total Alternatives)		Low		2a.1a Rehabilitate Burnside Bridge + Phase 1 Seismic Retrofit (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule	Traffic Detoured to Another Bridge
		Low		2a.1b Rehabilitate Burnside Bridge + Phase 1 Seismic Retrofit (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule	Staged Construction
		Low		2a.2a Rehabilitate Burnside Bridge + Phase 1 Seismic Retrofit (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule	Traffic Detoured to Another Bridge
		Low		2a.2b Rehabilitate Burnside Bridge + Phase 1 Seismic Retrofit (Widened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule	Staged Construction
		Low		2b.1a Rehabilitate Burnside Bridge + Phase 1 & 2 Seismic Retrofit (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule	Traffic Detoured to Another Bridge
		Low		2b.1b Rehabilitate Burnside Bridge + Phase 1 & 2 Seismic Retrofit (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule	Staged Construction
		Low		2b.2a Rehabilitate Burnside Bridge + Phase 1 & 2 Seismic Retrofit (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Existing bascule	Traffic Detoured to Another Bridge
		Low		2b.2b Rehabilitate Burnside Bridge + Phase 1 & 2 Seismic Retrofit (Widened) (Staged Const)	Existing	Burnside	Burnside	Existing bascule	Staged Construction
3. Replacement (71 Total Alternatives)	1	Low		3a.1a Existing Alignment (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		3a.1b Existing Alignment (Staged Construction)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		3a.1c Existing Alignment (North-side Temp Bridge)	Existing	Burnside	Burnside	Movable	Temporary Bridge to North
		Low	"Replacement: Movable Bridge" or Low Existing Alignment (3a-1d)	3a.1d Existing Alignment (South-side Temp Bridge)	Existing	Burnside	Burnside	Movable	Temporary Bridge to South
	2	Low		3a.2a Offset North Kinked Alignment (Traffic Detoured)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low	"Replacement: Movable Bridge – NE Couch Connection" or Low Northeast Wishbone (3a-2b)	3a.2b Offset North Kinked Alignment (Staged Construction over Waterfront Park)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.2c Offset North Double-S Alignment (Traffic Detoured)	Double "S" Curve	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.2d Offset North Double-S Alignment (Staged Construction)	Double "S" Curve	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
	3	Low		3a.3a Offset South Kinked Alignment (Traffic Detoured)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low	Low Southeast Wishbone (3a-3b1)	3a.3b Offset South Kinked Alignment (Staged Construction over Waterfront Park)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.3c Offset South Double-S Alignment (Traffic Detoured)	Double "S" Curve	Burnside (WB) / Ankeny (EB)	Couch (WB) / Burnside (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.3d Offset South Double-S Alignment (Staged Construction)	Double "S" Curve	Burnside (WB) / Ankeny (EB)	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.4a Offset North Kinked Twin Multi-modal Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.4b Offset North Kinked Twin Multi-modal Bridge Alignment (Staged Construction)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.4c Offset North Parallel Twin Multi-modal Bridge (Traffic Detoured)	Tangent	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Movable	New / Traffic Detoured to Another Bridge
	4	Low	Low North Twin (3a-4d1)	3a.4d Offset North Parallel Twin Multi-modal Bridge (Staged Construction)	Tangent	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.5a Offset North Kinked Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Burnside (All Modes)	Couch (Bike/Ped) / Burnside (Vehicular)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.5b Offset North Kinked Twin Mode-Separated Bridge Alignment (Staged Construction)	Tangent	Burnside (All Modes)	Couch (Bike/Ped) / Burnside (Vehicular)	Movable	New / Staged Construction at Transitions
		Low		3a.5c Offset North Parallel Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Couch (Bike/Ped) / Burnside (Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Movable	New / Traffic Detoured to Another Bridge
	5	Low	Low North Twin - Mode Separated (3a-5d1)	3a.5d Offset North Parallel Twin Mode-Separated Bridge Alignment (Staged Construction)	Tangent	Couch (Bike/Ped) / Burnside (Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Movable	New / Staged Construction at Transitions
		Low		3a.6a Offset South Kinked Twin Multi-modal Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.6b Offset South Kinked Twin Multi-modal Bridge Alignment (Staged Construction)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.6c Offset South Parallel Twin Multi-modal Bridge (Traffic Detoured)	Tangent	Burnside (WB) / Ankeny (EB)	Burnside (WB) / Ankeny (EB)	Movable	New / Traffic Detoured to Another Bridge
	6	Low	Low South Twin (3a-6d1)	3a.6d Offset South Parallel Twin Multi-modal Bridge (Staged Construction)	Tangent	Burnside (WB) / Ankeny (EB)	Burnside (WB) / Ankeny (EB)	Movable	New / Staged Construction at Transitions
		Low		3a.7a Offset South Kinked Twin Mode-Separated Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside (Bike / Ped / Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.7b Offset South Kinked Twin Mode-Separated Bridge Alignment (Staged Construction)	"S" Curve	Burnside (Bike / Ped / Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Movable	New / Staged Construction at Transitions
		Low		3a.7c Offset South Parallel Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Ankeny (Bike/Ped) / Burnside (Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Movable	New / Traffic Detoured to Another Bridge
	7	Low	Low South Twin - Mode Separated (3a-7d1)	3a.7d Offset South Parallel Twin Mode-Separated Bridge Alignment (Staged Construction)	Tangent	Ankeny (Bike/Ped) / Burnside (Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Movable	New / Staged Construction at Transitions
	8	Low	Low Stacked (3a-8d)	3a.8a Stacked Bridge Alignment (Traffic Detoured)	Existing	Burnside	Burnside	Movable	New / Traffic Detoured to Another Bridge
		Low		3a.8b Stacked Bridge Alignment (Staged Construction)	"S" Curve	Burnside	Burnside	Movable	New / Staged Construction at Transitions
	9	Low	Low Double Wishbone (3a-9d)	N/A	Double "S" Curve	Burnside (WB) / Ankeny (EB)	Couch (WB) / Burnside (EB)	Movable	New / Staged Construction at Transitions
		High		3b.1a1 Existing Alignment (Traffic Detoured) - 97' Vert Clr	Existing	Burnside	Burnside	Fixed	Detoured to Another Bridge
		High		3b.1a2 Existing Alignment (Traffic Detoured) - 120' Vert Clr	Existing	Burnside	Burnside	Fixed	Traffic Detoured off Bridge
	10	High	"Fixed Bridge" or 97' High Existing Alignment (3b-1b1)	3b.1b1 Existing Alignment (Staged Construction) - 97' Vert Clr	Existing	Burnside	Burnside	Fixed	Traffic Detoured to an adjacent Temp Bridge
	11	High	120' High Existing Alignment (3b-1b2)	3b.1b2 Existing Alignment (Staged Construction) - 120' Vert Clr	Existing	Burnside	Burnside	Fixed	Staged Construction
		High		3b.1c Existing Alignment (N Temp Br)	Existing	Burnside	Burnside	Fixed	Temporary Low Bridge to North
		High		3b.1d Existing Alignment (S Temp Br)	Existing	Burnside	Burnside	Fixed	Temporary Low Bridge to South
		High		3b.2a Offset North Kinked Alignment (Traffic Detoured)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Fixed	New / Traffic Detoured to Another Bridge
	12	High	97' High Northeast Wishbone (3b-2b1)	3b.2b1 Offset North Kinked Alignment (Staged Construction over Waterfront Park) - 97' Vert Clr	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
	13	High	120' High Northeast Wishbone (3b-2b2)	3b.2b2 Offset North Kinked Alignment (Staged Construction over Waterfront Park) - 120' vert Clr	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.2c Offset North Double-S Alignment (Traffic Detoured)	Double "S" Curve	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.2d Offset North Double-S Alignment (Staged Construction)	Double "S" Curve	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.3a Offset South Kinked Alignment (Traffic Detoured)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Fixed	New / Traffic Detoured to Another Bridge
	14	High	97' High Southeast Wishbone (3b-3b1)	3b.3b1 Offset South Kinked Alignment (Staged Construction over Waterfront Park) - 97' Vert Clr	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Fixed	New / Staged Construction at Transitions
	15	High	120' High Southeast Wishbone (3b-3b2)	3b.3b2 Offset South Kinked Alignment (Staged Construction over Waterfront Park) - 120' Vert Clr	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.3c Offset South Double-S Alignment (Traffic Detoured)	Double "S" Curve	Burnside (WB) / Ankeny (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.3d Offset South Double-S Alignment (Staged Construction)	Double "S" Curve	Burnside (WB) / Ankeny (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions

Earthquake Ready Burnside Bridge

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Alternatives Grouping	Alternatives Evaluation No.	Vertical Profile Elevation Low = Movable High = Fixed	Current Alternatives Name (as of 07-25-18)	Original Option Name	Alignment	Ultimate West Connection Point	Ultimate East Connection Point	Main Span Bridge Type	Construction Method
3. Replacement (71 Total Alternatives)		High		3b.4a Offset North Kinked Twin Multi-modal Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.4b Offset North Kinked Twin Multi-modal Bridge Alignment (Staged Construction)	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.4c Offset North Parallel Twin Multi-modal Bridge (Traffic Detoured)	Tangent	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Traffic Detoured to Another Bridge
	16	High	97' High North Twin (3b-4d1)	3b.4d1 Offset North Parallel Twin Multi-modal Bridge (Staged Construction) - 97' Vert Clr	Tangent	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
	17	High	120' High North Twin (3b-4d2)	3b.4d2 Offset North Parallel Twin Multi-modal Bridge (Staged Construction) - 120' Vert Clr	Tangent	Couch (WB) / Burnside (EB)	Couch (WB) / Burnside (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.5a Offset North Kinked Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Burnside (Bike / Ped / Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.5b Offset North Kinked Twin Mode-Separated Bridge Alignment (Staged Construction)	Tangent	Burnside (Bike / Ped / Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
		High		3b.5c Offset North Parallel Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Couch (Bike/Ped) / Burnside (Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Traffic Detoured to Another Bridge
	18	High	97' High North Twin - Mode Separated (3b-5d1)	3b.5d1 Offset North Parallel Twin Mode-Separated Bridge Alignment (Staged Construction) - 97' Vert Clr	Tangent	Couch (Bike/Ped) / Burnside (Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
	19	High	120' High North Twin - Mode Separated (3b-5d2)	3b.5d2 Offset North Parallel Twin Mode-Separated Bridge Alignment (Staged Construction) - 120' Vert Clr	Tangent	Couch (Bike/Ped) / Burnside (Vehicular)	Couch (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
		High		3b.6a Offset South Kinked Twin Multi-modal Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.6b Offset South Kinked Twin Multi-modal Bridge Alignment (Staged Construction)	"S" Curve	Burnside	Burnside (WB) / Ankeny (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.6c Offset South Parallel Twin Multi-modal Bridge (Traffic Detoured)	Tangent	Burnside (WB) / Ankeny (EB)	Burnside (WB) / Ankeny (EB)	Fixed	New / Traffic Detoured to Another Bridge
	20	High	97' High South Twin (3b-6d1)	3b.6d1 Offset South Parallel Twin Multi-modal Bridge (Staged Construction) - 97' Vert Clr	Tangent	Burnside (WB) / Ankeny (EB)	Burnside (WB) / Ankeny (EB)	Fixed	New / Staged Construction at Transitions
	21	High	120' High South Twin (3b-6d2)	3b.6d2 Offset South Parallel Twin Multi-modal Bridge (Staged Construction) - 102' Vert Clr	Tangent	Burnside (WB) / Ankeny (EB)	Burnside (WB) / Ankeny (EB)	Fixed	New / Staged Construction at Transitions
		High		3b.7a Offset South Kinked Twin Mode-Separated Bridge Alignment (Traffic Detoured)	"S" Curve	Burnside (Bike / Ped / Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Traffic Detoured to Another Bridge
		High		3b.7b Offset South Kinked Twin Mode-Separated Bridge Alignment (Staged Construction)	"S" Curve	Burnside (Bike / Ped / Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
		High		3b.7c Offset South Parallel Twin Mode-Separated Bridge Alignment (Traffic Detoured)	Tangent	Ankeny (Bike/Ped) / Burnside (Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Traffic Detoured to Another Bridge
	22	High	97' High South Twin - Mode Separated (3b-7d1)	3b.7d1 Offset South Parallel Twin Mode-Separated Bridge Alignment (Staged Construction) - 97' Vert Clr	Tangent	Ankeny (Bike/Ped) / Burnside (Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
	23	High	120' High South Twin - Mode Separated (3b-7d2)	3b.7d2 Offset South Parallel Twin Mode-Separated Bridge Alignment (Staged Construction) - 120' Vert Clr	Tangent	Ankeny (Bike/Ped) / Burnside (Vehicular)	Ankeny (Bike/Ped) / Burnside (Vehicular)	Fixed	New / Staged Construction at Transitions
		Tunnel		3c.1a1 Existing Alignment Multi-modal (Detoured)	Tangent	Burnside	Couch (WB) / Burnside (EB)	Tunnel	Detoured to Another Bridge
	24	Tunnel	Tunnel - Mode Separated (3c-1a)	3c.1a2 Existing Alignment Mode Separated (Detoured)	Tangent	Burnside	Couch (WB) / Burnside (EB)	Tunnel	Detoured to Another Bridge
		Tunnel		3c.2a Offset North Alignment	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Tunnel	Traffic Detoured off Bridge
		Tunnel		3c.3a Offset South Alignment	"S" Curve	Burnside	Couch (WB) / Burnside (EB)	Tunnel	Traffic Detoured off Bridge
4. Enhanced Seismic Retrofit (Preservation + Seismic Retrofit + Partial Replacement) (22 Total Alternatives)		Low		4a.1a Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Unwidened) (Traffic Detoured) - Min Replacement	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4a.1b Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Unwidened) (Staged Const) - Min Replacement	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4a.1c Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Unwidened) (Rapid Reconst) - Min Replacement	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
		Low		4a.2a Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Widened) (Traffic Detoured) - Min Replacement	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4a.2b Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Widened) (Staged Const) - Min Replacement	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4a.2c Replace Freeway Spans (20 to 22) / Seismic Retrofit All Others (Widened) (Rapid Reconst) - Min Replacement	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
	25	Low	"Enhanced Seismic Retrofit" or Enhanced Seismic Retrofit, No widening (4b1)	4b.1a Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4b.1b Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4b.1c Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Unwidened) (Rapid Reconst)	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
		Low		4b.2a Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
	26	Low	Enhanced Seismic Retrofit, Widened (4b2)	4b.2b Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Widened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4b.2c Replace All Freeway and RR Spans (20 to 24) / Seismic Retrofit All Others (Widened) (Rapid Reconst)	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
		Low		4c.1a Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4c.1b Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4c.1c Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Unwidened) (Rapid Reconst)	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
		Low		4c.2a Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4c.2b Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Widened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4c.2c Replace East Approach Spans (20 to 27) / Seismic Retrofit All Others (Widened) (Rapid Reconst)	Existing	Burnside	Burnside	Movable	Staged Construction - Rapid Reconstruction
		Low		4d.1a Replace River + East Approach Spans (14 to 27) / Seismic Retrofit All Others (Unwidened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4d.1b Replace River + East Approach Spans (14 to 27) / Seismic Retrofit All Others (Unwidened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
		Low		4d.2a Replace River + East Approach Spans (14 to 27) / Seismic Retrofit All Others (Widened) (Traffic Detoured)	Existing	Burnside	Burnside	Movable	Traffic Detoured to Another Bridge
		Low		4d.2b Replace River + East Approach Spans (14 to 27) / Seismic Retrofit All Others (Widened) (Staged Const)	Existing	Burnside	Burnside	Movable	Staged Construction
5. Enhance / Use Another Bridge Alternative (9 Total Alternatives)		Fixed		5a.1a Fremont Bridge	Existing	Burnside	Burnside	Fixed	N/A
		Movable		5b.1a Broadway Bridge	Existing	Burnside	Burnside	Movable	N/A
		Movable		5c.1a Steel Bridge	Existing	Burnside	Burnside	Movable	N/A
		Movable		5d.1a Morrison Bridge	Existing	Burnside	Burnside	Movable	N/A
		Movable		5e.1a Hawthorne Bridge	Existing	Burnside	Burnside	Movable	N/A
		Fixed		5f.1a Marquam Bridge	Existing	Burnside	Burnside	Fixed	N/A
		Fixed		5g.1a Tilikum Bridge	Existing	Burnside	Burnside	Fixed	N/A
		Fixed		5h.1a Ross Island Bridge	Existing	Burnside	Burnside	Fixed	N/A
		Fixed		5i.1a Sellwood Bridge	Existing	Burnside	Burnside	Fixed	N/A

Attachment 2: Screening Criteria and Scores Matrix

Step 1 and 2 Criteria and Measures

Step 1 and 2 Criteria and Scores Matrix

Screening Results

Tier 1 - Pass/Fail Screening Criteria

(Legend: ○ = Fail)

No.	Screening Criteria Topic	Definition	Score	Rating Description
I.	**Compatibile With Other Major Infrastructure**	**Major Infrastructure Compatibility** Uses the screening statement: **"Does the crossing option avoid significant conflicts with other major infrastructure?"**	○	Fail = Causes prolonged, substantial interruption or degradation of the use or function of other major infrastructure (see list of infrastructure).
II.	**Achieve Seismic Resiliency**	**Seismically resilient and operational Willamette River crossing.** Uses the screening statement: **"Does the crossing satisfy the project's seismic design criteria after a Magnitude 8+Cascadia Subduction Zone earthquake?"**	○	Fail = Does not satisfy the "Fully-Operable" performance standard for the Project's seismic design criteria. (The crossing option does not fully comply with the SDC.)
IIIa	**Allow reliable and rapid emergency vehicle response following a major earthquake**	**Unobstructed Willamette River crossing lifeline route.** Uses the screening statement: **"Would the route between the lifeline and the river crossing avoid severe blockage immediately following the Magnitude 8+ Cascadia Subduction Zone earthquake?" (route blockage results from overhead bridge(s) that can collapse, a route that relies on seismically vulnerable bridge(s), or a route that contains high landslide or other blockage potential)**	○	Fail = The route between the lifeline and the crossing has two or more blockage locations (including seismically vulnerable bridges, overhead bridges or landslide prone areas)
IIIb	**Allow reliable and rapid emergency vehicle response following a major earthquake**	**Rapid emergency vehicle response across the Willamette River.** Uses the screening statement: **"What is the detour distance (i.e., added travel time) from the Burnside Street lifeline route when using the crossing option immediately following a Magnitude 8+ Cascadia Subduction Zone earthquake?"**	○	Fail = More than 4 minutes added travel time. (More than 2 miles of out of direction travel)
IIIc	**Allow reliable and rapid emergency vehicle response following a major earthquake**	**Congestion avoidance on a Willamette River crossing.** Uses the screening statement: **"Does the crossing option's width allow at least 2,000 vehicles /hour to use the crossing immediately following a Magnitude 8+ Cascadia Subduction Zone earthquake?"**	○	Fail = Substantially higher congestion (The Willamette River crossing option has two or fewer travel lanes usable by emergency vehicles)

Tier 2 - Screening Criteria

(Legend: ● = Good; ◒ = Fair; ○ = Poor)

No.	Screening Criteria Topic	Definition	Score	Rating Description
1	Achieve Seismic Resiliency	**Seismically resilient and operational Willamette River crossing.** **<u>Uses the screening statement:</u>** **"How well does the crossing perform against the project's seismic design criteria (including the performance standards for both vehicle service and bridge operability) after a Magnitude 8+Cascadia Subduction Zone earthquake?"**	●	The crossing option exceeds the Project's seismic design criteria for both the vehicle service and post-EQ ship navigation requirements.
			◒	The crossing option exceeds the Project's seismic design criteria for vehicle service but merely satisfies the post-EQ ship navigation requirement.
			○	The crossing option merely satisfies the Project's seismic design criteria for both the vehicle service and post-EQ ship navigation requirements.
2a	Allow reliable and rapid emergency vehicle response following a major earthquake	**Unobstructed Willamette River crossing lifeline route.** **<u>Uses the screening statement:</u>** **"What is the level of potential route blockage between the lifeline and the crossing immediately following the Magnitude 8+ Cascadia Subduction Zone earthquake?" (route blockage results from overhead bridge(s) that can collapse, a route that relies on seismically vulnerable bridge(s), or a route that contains high landslide or other blockage potential).**	●	Minimal to none (The route has no likely blockages)
			◒	Moderate (The route is crossed by one seismically vulnerable overhead bridge)
			○	High (The route travels on one seismically vulnerable bridge)
2b	Allow reliable and rapid emergency vehicle response following a major earthquake	**Rapid emergency vehicle response across the Willamette River.** **<u>Uses the screening statement:</u>** **"What is the detour distance (added travel time) from the Burnside Street lifeline route when using the crossing option immediately following a Magnitude 8+ Cascadia Subduction Zone earthquake?"**	●	No added travel time. (No out of direction travel)
			◒	Approximately 2 minutes added travel time. (up to 1 mile of out of direction travel)
			○	Approximately 2-4 minutes added travel time. (1 to 2 miles of out of direction travel)
2c	Allow reliable and rapid emergency vehicle response following a major earthquake	**Congestion avoidance on a Willamette River crossing.** **<u>Uses the screening statement:</u>** **"To what level does the crossing option's width impact congestion immediately following a Magnitude 8+ Cascadia Subduction Zone earthquake?"**	●	Lower congestion (The Willamette River crossing option has five or more travel lanes usable by emergency vehicles)
			◒	Equivalent congestion (The Willamette River crossing option has four travel lanes usable by emergency vehicles)
			○	Higher congestion (The Willamette River crossing option has three travel lanes usable by emergency vehicles)
3a	Serve Multi-modal needs for Burnside St after the earthquake	**ADA access on the Willamette River crossing.** **<u>Uses the screening statement:</u>** **"How well does the crossing option provide ADA access (i.e., safety, system connectivity and geometrics) as compared to today?"**	●	Improved access (ADA access options are better than the existing condition).
			◒	Equivalent access (ADA access options are the same or similar to the existing condition).
			○	Decreased access (ADA access options are worse than the existing condition).
3b	Serve Multi-modal needs for Burnside St after the earthquake	**Bicycle and pedestrian access on the Willamette River crossing.** **<u>Uses the screening statement:</u>** **"How well does the crossing option provide bicycle / pedestrian access (i.e., safety, geometrics and connectivity to the existing bicycle / pedestrian network) as compared to today?"**	●	Improved access (Bicycle / pedestrian options are improved compared to the existing condition)
			◒	Equivalent access (Bicycle / pedestrian options are the same as or similar to the existing condition).
			○	Decreased access (Bicycle / pedestrian options are worse than the existing condition)

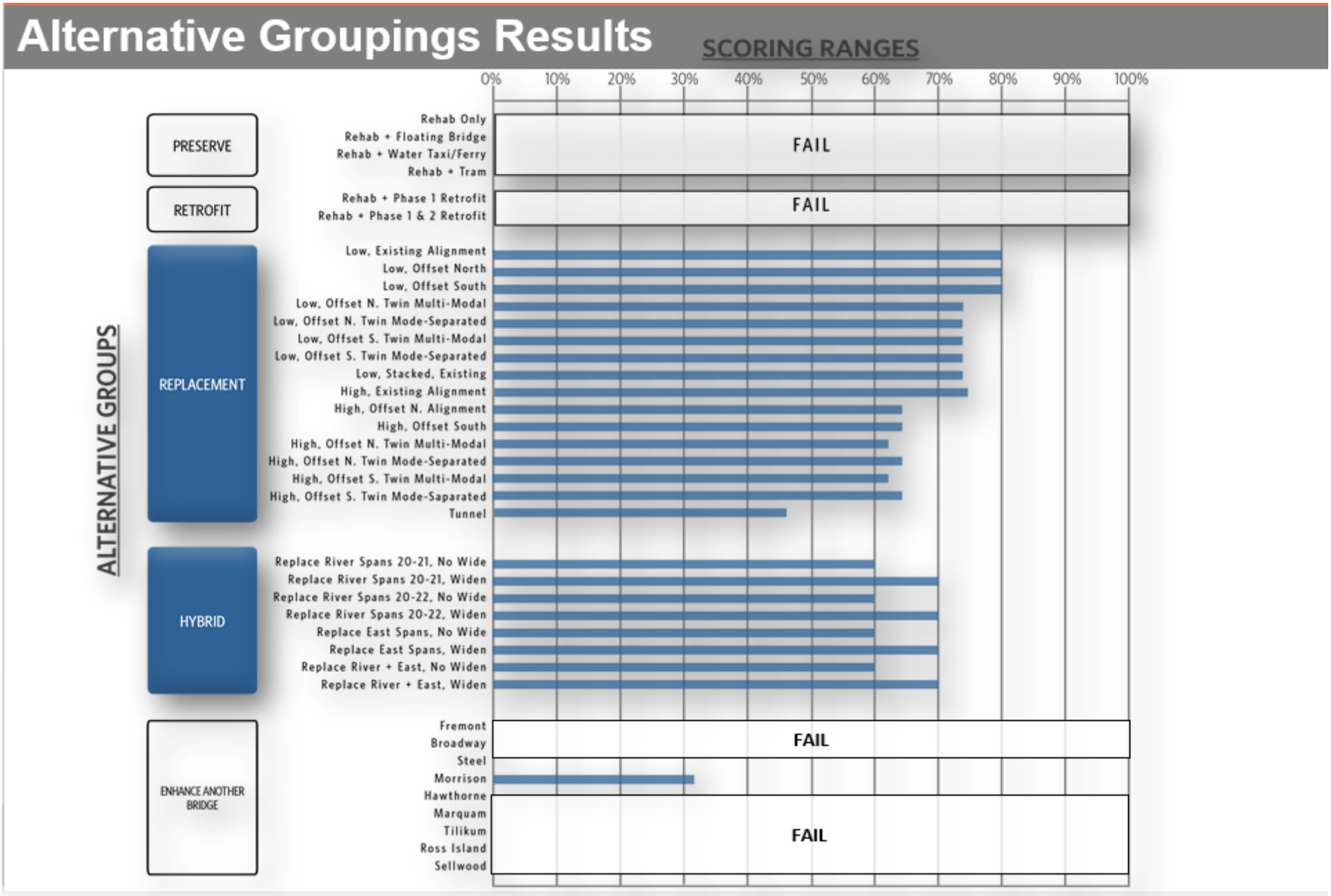
3c	**Serve Multi-modal needs for Burnside St after the earthquake**	**Auto, bus, and truck freight access on the Willamette River crossing.** **<u>Uses the screening statement:</u>** **"How well does the crossing option provide auto, bus, and freight access (i.e., safety, geometrics and connectivity) as compared to today?"**		Improved (Auto, bus, truck freight access is better than the existing condition).
				Equivalent access (Auto, bus, truck freight access is the same as the existing condition).
				Decreased access (Auto, bus, freight access is worse than the existing condition).
3d	**Serve Multi-modal needs for Burnside St after the earthquake**	**Safe Willamette River use.** **<u>Uses the screening statement:</u>** **"How well does the crossing option safely provide river use as compared to today?"**		Decreased restrictions (There are less restrictions to river users as compared to the existing condition).
				Same restrictions (There are the same restrictions to river users as compared to the existing condition).
				Increased restrictions (There are more restrictions to river users as compared to the existing condition).
4	**Implement Relevant Seismic and Emergency Preparation / Response Plans**	**Willamette River crossing consistency with existing Emergency plans.** **<u>Uses the screening statement:</u>** **"To what level is the crossing option consistent with state, regional and local seismic and emergency preparation/response plans?"**		Very well (The crossing option is consistent with relevant emergency service plans at more than one level of government.)
				Moderately well (The crossing option is consistent with emergency service plans at one level of government.)
				Not well (The crossing option is inconsistent with, and/or is not referenced in relevant emergency service plans.)
5a	**Provide Long-Term Functionality, independent of a seismic event**	**Long-term functionality (maintenance-related) of the Willamette River crossing.** **<u>Uses the screening statement:</u>** **"Once this project is completed, what is the level of maintenance expected to keep the crossing option functional over it's 100-year design life?"**		Low Maintenance Level (Three or fewer major rehabilitation investments are anticipated over the next 100 years)
				Moderate Maintenance Level (Four or five major rehabilitation investments are anticipated over the next 100 years)
				High Maintenance Level (More than five major rehabilitation investments are anticipated over the next 100 years)
5b	**Provide Long-Term Functionality, independent of a seismic event**	**Long-Term multi-modal access, safety, connectivity, travel time for the Willamette River crossing.** **<u>Uses the screening statement:</u>** **"How well does the crossing option support all transportation modes (auto, truck, bus, bicycle, pedestrian, etc.) crossing the Willamette River, in terms of safety, access, and connectivity as compared to the existing condition?"**		Improved (Functions are improved for 3 or more modes and no function is made worse for any mode)
				Moderate (Functions are improved for 1 or 2 modes, and no function is made worse for any mode)
				Decreased (Functions are made worse for one or more modes)

Earthquake Ready Burnside Bridge

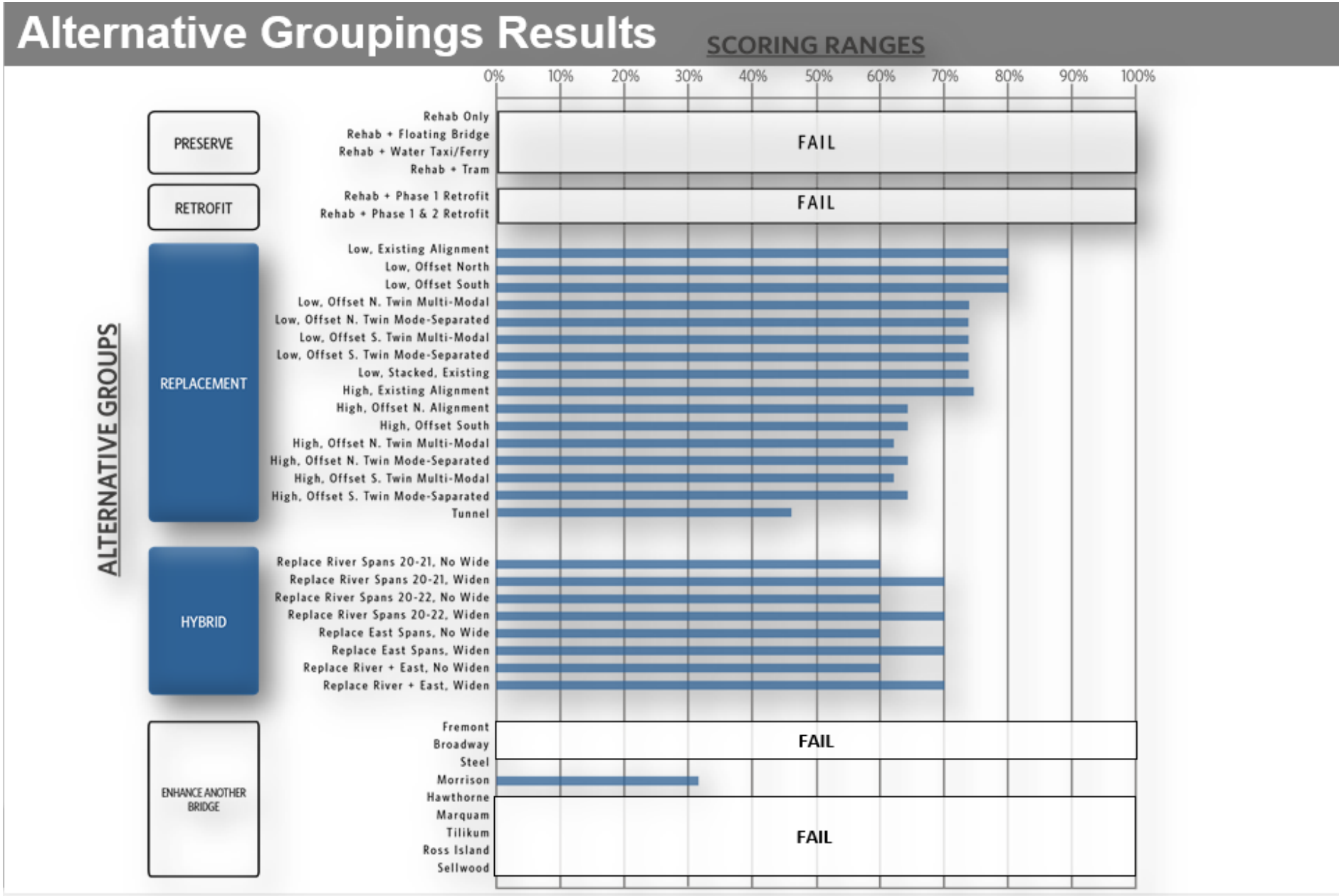
Better. Safer. Connected.

# of criterion/group		3			4				1	2		TOTAL		
		Screening - Rating Factors												
		Seismic	Emergency Service			Emergency Function				Emrg. Plan	Pre-EQ Function		Ratings		
Alternative		1 Seismic	2a Access	2b Distance	2c Capacity/ Congestion	3a ADA	3b Bike / Ped	3c Motor Vehicle	3d River Users	4 Plan Consistency	5a Preventative Maintenance	5b Routine Functionality	Wtd	Wtd Normalized	Tier 1 Pass/Fail?
Weight by Criterion		*20.0*	*6.7*	*6.7*	*6.7*	*5.0*	*5.0*	*5.0*	*5.0*	*20.0*	*10.0*	*10.0*		*0.0025*	
PRESERVE ONLY ALTERNATIVES															
1a.1a Rehab Only															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
1b Rehab+Floating Bridge															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
1c Rehab+Water Taxi/Ferry															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
1d Rehab+Tram															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
PRESERVE + SEISMIC RESILIENCY															
2a Rehab+Phase 1 Retrofit															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
2b Rehab+Phase 1 and 2 Retrofit															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
REPLACEMENT ALTERNATIVES															
In-kind, Low Movable Replacement		**3**	**5**	**5**	**5**	**5**	**5**	**3**	**3**	**5**	**3**	**5**			
	weighted scores	*60.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*420.0*	***80%***	
3a2 Low, offset north		3	5	5	5	5	5	3	3	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*420.0*	***80%***	
3a3 Low, offset south		3	5	5	5	5	5	3	3	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*420.0*	***80%***	
3a4 Low, offset north twin multi-modal		3	5	5	3	5	5	3	1	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*20.0*	*25.0*	*25.0*	*15.0*	*5.0*	*100.0*	*30.0*	*50.0*	*396.7*	***74%***	
3a5 Low, offset north twin mode-separated		3	5	5	3	5	5	3	1	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*20.0*	*25.0*	*25.0*	*15.0*	*5.0*	*100.0*	*30.0*	*50.0*	*396.7*	***74%***	
3a6 Low, offset south twin multi-modal		3	5	5	3	5	5	3	1	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*20.0*	*25.0*	*25.0*	*15.0*	*5.0*	*100.0*	*30.0*	*50.0*	*396.7*	***74%***	
3a7 Low, offset south twin mode-separated		3	5	5	3	5	5	3	1	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*20.0*	*25.0*	*25.0*	*15.0*	*5.0*	*100.0*	*30.0*	*50.0*	*396.7*	***74%***	
3a8 Low, stacked, existing		3	5	5	3	5	5	3	1	5	3	5			
	weighted	*60.0*	*33.3*	*33.3*	*20.0*	*25.0*	*25.0*	*15.0*	*5.0*	*100.0*	*30.0*	*50.0*	*396.7*	***74%***	
3b1 High, existing alignment		5	5	5	5	1	1	1	5	5	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*33.3*	*5.0*	*5.0*	*5.0*	*25.0*	*100.0*	*50.0*	*10.0*	*400.0*	***75%***	
3b2 High, Offset north alignment		5	5	5	5	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*33.3*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*360.0*	***65%***	
3b3 High, offset south		5	5	5	5	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*33.3*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*360.0*	***65%***	
3b4 High, offset north, twin multi-modal		5	5	5	3	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*20.0*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*346.7*	***62%***	
3b5 High, offset north twin mode-separated		5	5	5	5	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*33.3*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*360.0*	***65%***	
3b6 High, offset south twin multi-modal		5	5	5	3	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*20.0*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*346.7*	***62%***	
3b7 High, offset south twin mode-separated		5	5	5	5	1	1	1	5	3	5	1			
	weighted	*100.0*	*33.3*	*33.3*	*33.3*	*5.0*	*5.0*	*5.0*	*25.0*	*60.0*	*50.0*	*10.0*	*360.0*	***65%***	
3c1 Tunnel		5	5	5	3	1	1	1	5	1	3	1			
	weighted	*100.0*	*33.3*	*33.3*	*20.0*	*5.0*	*5.0*	*5.0*	*25.0*	*20.0*	*30.0*	*10.0*	*286.7*	***47%***	
HYBRID ALTERNATIVES (all low)															
4a1 Replace River Spans 20-21, No widening		1	5	5	5	3	3	3	3	5	3	3			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*15.0*	*15.0*	*15.0*	*15.0*	*100.0*	*30.0*	*30.0*	*340.0*	***60%***	
4a2 Replace River Spans 20-21, Widen		1	5	5	5	5	5	3	3	5	3	5			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*380.0*	***70%***	
4b1 Replace River Spans 20-22, No widening		1	5	5	5	3	3	3	3	5	3	3			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*15.0*	*15.0*	*15.0*	*15.0*	*100.0*	*30.0*	*30.0*	*340.0*	***60%***	
4b2 Replace River Spans 20-22, Widen		1	5	5	5	5	5	3	3	5	3	5			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*380.0*	***70%***	
4c1 Replace East Spans, No widening		1	5	5	5	3	3	3	3	5	3	3			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*15.0*	*15.0*	*15.0*	*15.0*	*100.0*	*30.0*	*30.0*	*340.0*	***60%***	
4c2 Replace East Spans, Widen		1	5	5	5	5	5	3	3	5	3	5			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*380.0*	***70%***	
4d1 Replace River+East, No widening		1	5	5	5	3	3	3	3	5	3	3			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*15.0*	*15.0*	*15.0*	*15.0*	*100.0*	*30.0*	*30.0*	*340.0*	***60%***	
4d2 Replace River+East, Widen		1	5	5	5	5	5	3	3	5	3	5			
	weighted	*20.0*	*33.3*	*33.3*	*33.3*	*25.0*	*25.0*	*15.0*	*15.0*	*100.0*	*30.0*	*50.0*	*380.0*	***70%***	
ENHANCE/USE OTHER BRIDGES															
5a Fremont															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5b Broadway															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5c Steel Bridge															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5d Morrison		3	1	1	5	1	1	3	3	1	3	3			
	weighted	*60.0*	*6.7*	*6.7*	*33.3*	*5.0*	*5.0*	*15.0*	*15.0*	*20.0*	*30.0*	*30.0*	*226.7*	***32%***	
5e Hawthorne															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5f Marquam															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5g Tilikum															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5h Ross Island															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*
5i Sellwood Bridge															
	weighted	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	***0%***	*FAIL*

Alternative Groupings Results



Alternative Groupings Results



Attachment 3: Step 3 Criteria and Scores Matrix

Step 3 Criteria and Measures

Step 3 Criteria and Scores Matrix

Options Evaluation Criteria

Criteria 1: Seismic Resiliency
Support reliable and rapid emergency response after an earthquake

Potential Measures:

1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?

- Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.

1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?

- This vulnerability is a function of width and length.

Criteria 2: Non-motorized Transportation (*Equity)
Support access and safety for bikes, pedestrians and people with disabilities

Potential Measures:

2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?

- Percent and length of grade

2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?

- Access to existing and planned bike and pedestrian facilities.

2.3 To what extent does the option support personal security for pedestrians and bicyclists?

- The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.[1]

Criteria 3: Connectivity
Support street system integration and function (cars, freight, transit, bikes, pedestrians and ADA)

Potential Measures:

3.1 How well does the option connect with the existing and planned street network (for all modes)?

- Number of streets permanently closed (including number of modes closed in those sections)?
- Number of streets bypassed?

3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?

- Extent to which the crossings grade and curvature potentially affect vehicle safety.
- Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.
- Extent of non-standard intersection layouts and vehicle movements.

3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?

- Is the crossing a movable bridge?

Criteria 4: Equity
Minimize adverse impacts to historically marginalized communities and promote transportation equity

Potential Measures:

4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?

- Social service providers displaced.
- Number of social service providers (not displaced) that would have their existing access substantially diminished.

4.2 To what extent would the option affect low income housing?

- Units of low income housing displaced.
- Are you precluding opportunities for future low incoming housing under zoning requirements?

[1] This measures general consistency with the CPTED (Crime Prevention Through Environmental Design) principle of "Natural surveillance," which advocates for the placement of physical features, activities and people in such a way as to maximize visibility of the space and its users, fostering positive social interaction and reducing the risk of crime. Security concerns increase with features such as elevators or pedestrian-only underpasses where pedestrians and bicyclists are isolated from view by others.

Options Evaluation Criteria (continued)

Criteria 5: Built Environment
Promote land use compatibility and minimize impacts to parks and historic resources

Potential Measures:

5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?

- Linear feet of buildings adjacent to new vertical alignments (affecting views and light).

5.2 How many commercial and industrial properties would be permanently displaced?

- Number of businesses displaced.
- Number of employees displaced.

5.3 How many units of long-term housing would be permanently displaced?

- Number of units displaced.

5.4 To what extent would the option permanently displace park and recreation land?

- Amount (area) of parkland permanently displaced.
- Substantial impacts to park circulation/access.

5.5 To what extent does the option impact national register historic resources and national register historic districts?

- Number of national register historic resources[2], including "contributing" resources, displaced or visually obstructed.
- Extent of the proposed transportation structures[3] within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.

Criteria 6: Financial Stewardship
Ensure public funds are invested wisely

Potential Measures:

6.1 What is the initial capital cost of the option?

- Rank the options by cost "tiers" or "ranges".

6.2 What are the relative levels of maintenance and operational requirements through the options design life?

- Number of major maintenance projects required over design life.
- Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).

[2] Displacements of concern will include: properties already on or determined eligible for listing on the National Register of Historic Places; and, properties already determined to be "contributing" to a national register historic district. Also considers impacts to the Chinatown Gate.

[3] The extent of non-displacement impacts from new transportation structures, such as viaducts or retained fill is based on new structure's height and length within the national historic districts.

POTENTIAL CRITERIA FOR CONSIDERATION IN FUTURE PHASES

Seismic Safety

- How does the option affect seismic vulnerability beyond the bridge?
- How well does the option accommodate river use after a major earthquake?
- To what extent does the option's functional reliance on a power source affect its ability to provide immediate access for emergency response?
- To what extent does the option's length increase emergency vehicle travel time response and decrease reliability?

Transportation

- How consistent is the option with relevant transportation plans and policies?
- What is the impact from temporary traffic detours?
- What is the impact on congestion and street operations?
- How well does the alignment serve existing bus routes?
- How does the option affect safe and direct access to and from existing and planned (adopted) bike/ped/ADA facilities?
- What is the proximity/separation between bikes/peds and motor vehicles?
- To what extent does the option support safe and direct access for streetcar on the crossing?

Built Environment

- How consistent is the option with relevant land use plans and policies?
- To what degree does the option provide improved access to areas designated for development and redevelopment?
- How consistent is the option with relevant parks and recreation plans and policies?
- How would the option affect access to parks and recreation resources?
- How would the option affect archaeological resources?
- How would the option affect visual and aesthetic resources?
- What would the noise and vibration impacts be?

Natural Environment

- What is the net change in pollutant generating impervious surfaces?
- What is the extent of net new in-water fill?
- What would be the potential effect of new in-water fill on fish?
- What would be the potential effect of construction activities on fish?
- What are the effects on regulated air emissions?
- What are the effects of traffic changes on greenhouse gas emissions?
- How will future lower river flows and periodic higher water levels affect the bridge touchdown (flooding)?
- What are the embodied greenhouse gas emissions of construction materials?

Cost

- What is the total cost of ownership?
- What is the operations and maintenance cost?

Equity

- What is the community significance of the displaced properties and other changes?
- How will the option affect community cohesion?
- To what extent does the option affect the County's ability to meet housing goals?

Other

- Cumulative Impacts
- Construction Impacts
- Permitting
- Sustainability
- Technology

Earthquake Ready Burnside Bridge

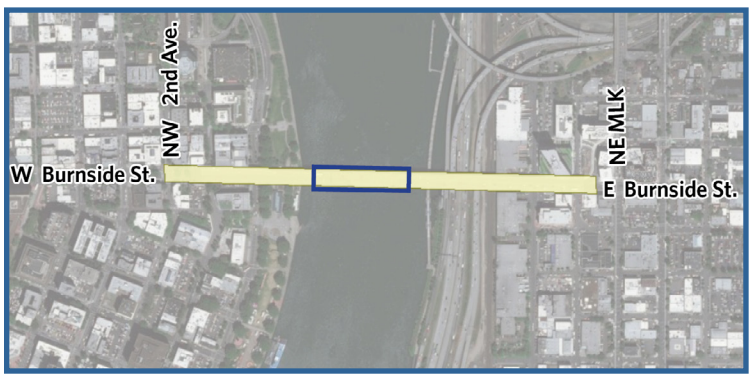
Better. Safer. Connected.

Evaluation Rating Topics and Criteria (as of 8/8/18)	SEISMIC		NON-MOTORIZED			TRANSPORTATION			EQUITY		BUILT ENVIRONMENT					FINANCIAL				
Option	Unreinforced Masonry Risk	Disabled Vehicles Risk	Ease of Ped + Bike Use	Safe Ped + Bike Connections	Personal Security for Ped + Bikes	Street Network Connection	Crossing Safety and Convenience	Moveable Bridge (Periodic Delay)	Social Service Impacts	Low Income Housing Impacts	Visual Impacts to Existing Buildings	Commercial + Industrial Impact	Long Term Housing	Park + Recreation Impact	Historic Structures + District Impacts	Capital Cost	Longterm Maintenance	Weighted Score (0-100%)	Project Cost - Staged Traffic ($M)	Project Cost - Detoured Traffic ($M)
Low Existing Alignment (3a-1d)	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●	92%	$ 837	$ 655
Enhanced Seismic Retrofit, No widening (4b1)	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	○	86%	$ 688	$ 580
Enhanced Seismic Retrofit, Widened (4b2)	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	○	84%	$ 839	$ 710
Low Northeast Wishbone (3a-2b)	●	◒	◒	●	●	●	●	○	●	●	●	○	●	●	●	●	●	82%	$ 863	$ 681
Low Southeast Wishbone (3a-3b1)	●	◒	●	●	●	◒	○	○	●	●	●	●	●	●	●	◒	●	78%	$ 908	$ 725
97' High Existing Alignment (3b-1b1)	●	●	◒	○	●	◒	●	●	◒	●	◒	●	●	○	○	●	●	74%	$ 882	$ 695
Low South Twin - Mode Separated (3a-7d1)	●	◒	●	●	◒	●	●	○	●	●	●	●	●	○	●	◒	○	72%	$ 909	$ 726
97' High South Twin - Mode Separated (3b-7d1)	●	◒	◒	●	◒	◒	●	●	◒	●	◒	●	●	○	○	◒	●	71%	$ 918	$ 730
Low North Twin - Mode Separated (3a-5d1)	●	◒	◒	●	◒	●	●	○	●	●	●	○	●	○	●	◒	○	66%	$ 922	$ 739
97' High Northeast Wishbone (3b-2b1)	◒	◒	◒	○	●	◒	●	●	◒	●	◒	○	●	●	○	◒	●	64%	$ 904	$ 717
97' High Southeast Wishbone (3b-3b1)	●	◒	◒	○	●	○	○	●	◒	●	○	●	●	●	○	●	●	63%	$ 895	$ 708
97' High North Twin - Mode Separated (3b-5d1)	◒	◒	◒	●	○	◒	●	●	◒	●	◒	○	●	○	○	◒	●	61%	$ 935	$ 747
Low Stacked (3a-8d)	●	◒	◒	○	○	◒	●	○	◒	●	◒	●	●	●	◒	●	◒	60%	$ 881	$ 685
Low Double Wishbone (3a-9d)	○	◒	◒	◒	●	◒	○	○	◒	●	○	○	○	●	○	●	●	51%	$ 780	$ 765
97' High North Twin (3b-4d1)	○	◒	◒	◒	●	◒	○	●	◒	●	○	○	○	●	○	◒	◒	48%	$ 941	$ 753
97' High South Twin (3b-6d1)	○	◒	◒	◒	●	◒	○	●	◒	◒	○	○	●	●	○	◒	◒	47%	$ 927	$ 737
Low North Twin (3a-4d1)	○	◒	●	◒	●	◒	○	○	◒	●	◒	○	○	●	○	○	○	40%	$ 1,001	$ 819
120' High South Twin - Mode Separated (3b-7d2)	○	○	○	●	○	○	●	●	◒	●	○	●	●	○	○	○	○	38%	$ 1,063	$ 900
Tunnel - Mode Separated (3c-1a)	●	○	◒	●	◒	○	○	◒	●	○	●	○	○	○	●	○	○	37%	$ 3,772	$ 3,210
Low South Twin (3a-6d1)	○	◒	◒	◒	●	○	○	○	◒	◒	◒	○	●	●	○	◒	○	36%	$ 938	$ 756
120' High North Twin - Mode Separated (3b-5d2)	○	○	○	●	○	○	●	●	◒	●	○	○	●	○	○	○	○	35%	$ 1,058	$ 900
120' High Northeast Wishbone (3b-2b2)	○	○	○	◒	●	○	●	●	○	○	○	○	●	○	○	○	○	25%	$ 1,100	$ 930
120' High Existing Alignment (3b-1b2)	○	○	◒	○	●	○	●	●	○	○	○	○	◒	○	○	○	○	23%	$ 1,030	$ 880
120' High Southeast Wishbone (3b-3b2)	○	○	○	◒	●	○	○	●	○	○	○	○	●	○	○	○	○	19%	$ 1,098	$ 940
120' High South Twin (3b-6d2)	○	○	○	◒	●	○	○	●	○	○	○	○	●	○	○	○	○	17%	$ 1,116	$ 950
120' High North Twin (3b-4d2)	○	○	○	◒	●	○	○	●	○	○	○	○	○	○	○	○	○	14%	$ 1,105	$ 900

Attachment 4: Options Cut Sheets

Low Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height and location as the current bridge. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE
92%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	●	Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides good connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Does not contain unsafe features for bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Provides reasonable roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Does not effect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Does not permanently block views, light, or building access.
	5.2 Commercial + Industrial Impact	●	Does not permanently displace commercial or industrial properties.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace any units of long-term housing.
	5.4 Park + Recreation Impact	●	Has a below-average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic resources or districts.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800 million and $900 million).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

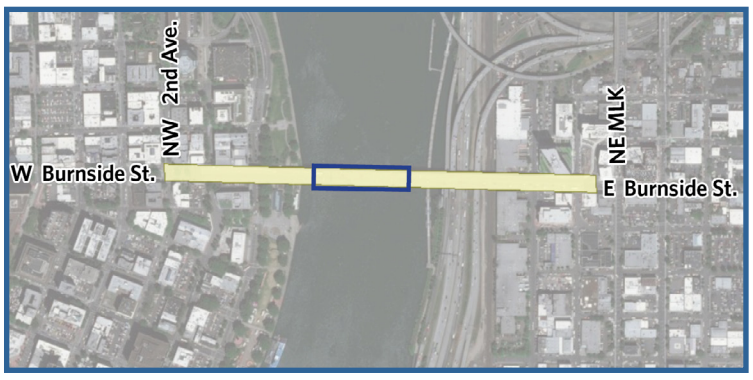
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height and location as the current bridge. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 92%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	5	8.3	41.7
	Scoring Rationale: Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides good connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Does not contain unsafe features for bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
	Scoring Rationale: Does not sever or bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Provides reasonable roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Does not permanently block views, light, or building access.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Does not permanently displace commercial or industrial properties.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace any units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has a below-average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic resources or districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800 M and $900 M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	469.4
			Percentile	**92%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

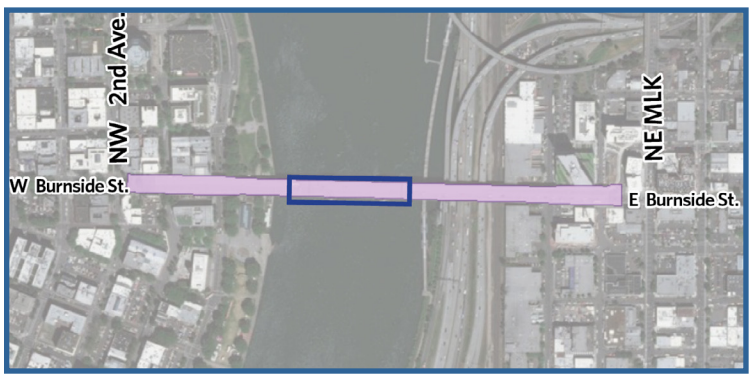
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Non-Widened

EARTHQUAKE READY BURNSIDE BRIDGE



Description: An upgrade of the existing bridge to meet current seismic standards. We can't rebuild above the freeway or the railroad tracks, so that portion of the bridge will be replaced. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 86%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	●	Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Does not permanently block existing building views, light, or access.
	5.2 Commercial + Industrial Impact	●	Does not permanently displace commercial or industrial properties.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic districts or resources, other than the bridge.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

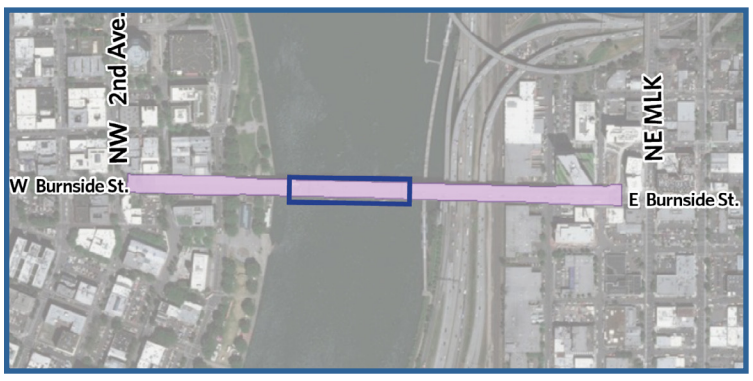
LEGEND

● = High Score ◓ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Non-Widened

EARTHQUAKE READY BURNSIDE BRIDGE



Description: An upgrade of the existing bridge to meet current seismic standards. We can't rebuild above the freeway or the railroad tracks, so that portion of the bridge will be replaced. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 86%

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	5	8.3	41.7
	Scoring Rationale: Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
	Scoring Rationale: Does not sever or bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Non-Widened

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Does not permanently block existing building views, light, or access.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Does not permanently displace commercial or industrial properties.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic districts or resources, other than the bridge.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	5	8.3	41.7
	Scoring Rationale: Falls within the lowest cost tier (less than $800M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	444.4
Percentile	**86%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

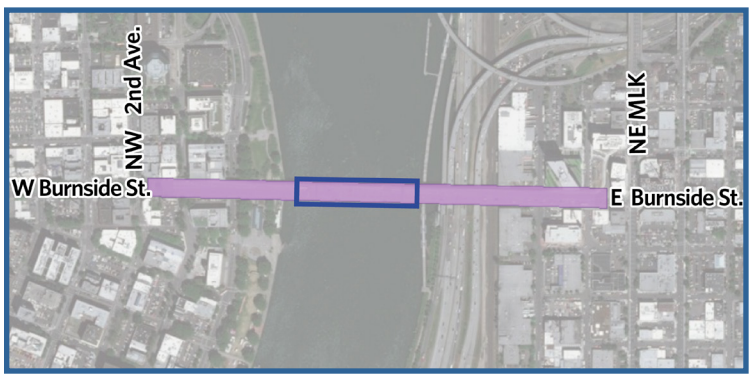
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Widened

EARTHQUAKE READY BURNSIDE BRIDGE



Description: An upgrade of the widened existing bridge to meet current seismic standards. We can't rebuild above the freeway or the railroad tracks, so that portion of the bridge will be replaced. **Recommendation:** Dropped from further consideration.

TOTAL SCORE
84%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	●	Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Does not permanently block existing building views, light, or access.
	5.2 Commercial + Industrial Impact	●	Does not permanently displace commercial or industrial properties.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic districts or resources, other than the bridge.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	○	Possesses a low long-term maintenance cost.

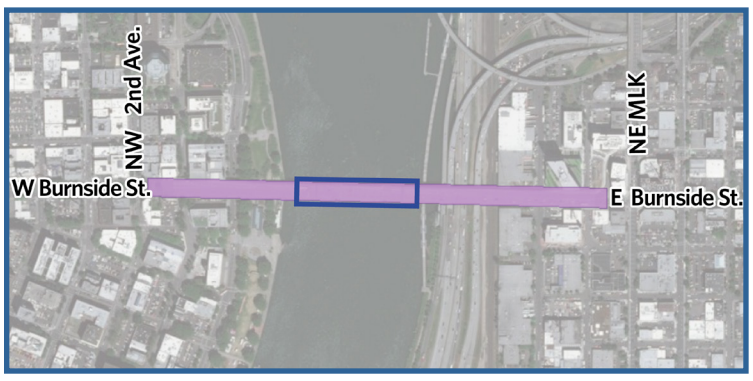
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Widened

EARTHQUAKE READY BURNSIDE BRIDGE



Description: An upgrade of the widened existing bridge to meet current seismic standards. We can't rebuild above the freeway or the railroad tracks, so that portion of the bridge will be replaced. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 84%

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	5	8.3	41.7
	Scoring Rationale: Consists of a relatively short, single bridge with the largest available width for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**			
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**			
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
	Scoring Rationale: Does not sever or bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Enhanced Seismic Retrofit, Widened

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Does not permanently block existing building views, light, or access.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Does not permanently displace commercial or industrial properties.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic districts or resources, other than the bridge.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	436.1
Percentile	**84%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

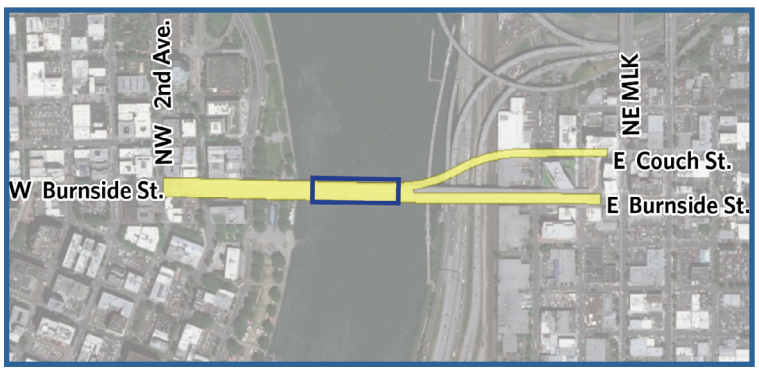
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height as the current bridge. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 82%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Provides improved roadway geometrics versus the existing condition, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Removes potential for 11 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Creates new bridge structure adjacent to 500 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 7 businesses and 323 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic districts or resources, other than the bridge.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

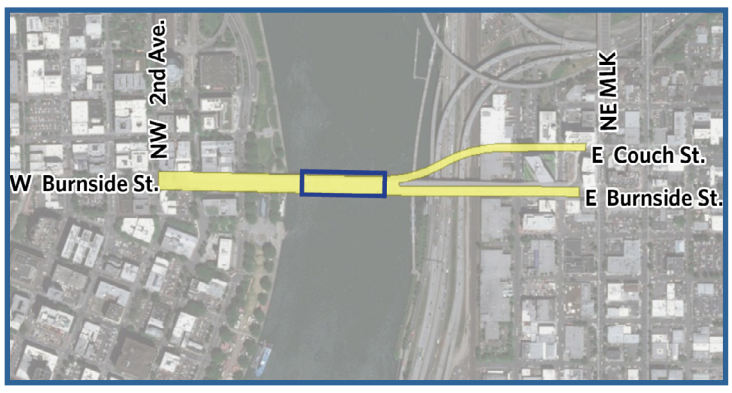
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height as the current bridge. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 82%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**		**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
	Scoring Rationale: Does not sever or bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Provides improved roadway geometrics versus the existing condition, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 11 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Creates new bridge structure adjacent to 500 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 7 businesses and 323 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic districts or resources, other than the bridge.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	428.3
			Percentile	**82%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

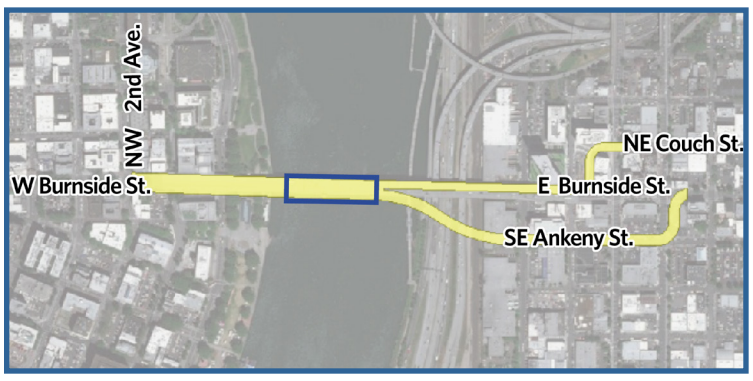
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height as the current bridge. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from W. Burnside Street. Eastbound traffic exits to SE Ankeny Street. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 78%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs 1 existing street but does not bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Removes potential for 11 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Creates new bridge structure adjacent to 600 feet of existing buildings
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 3 businesses and 35 employees
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic districts or resources, other than the bridge.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

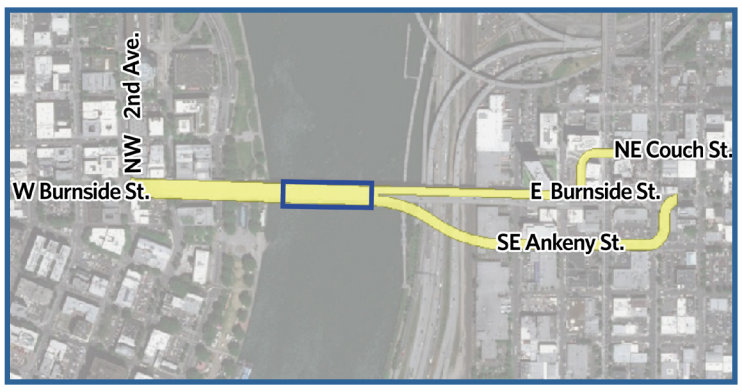
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new movable bridge at about the same height as the current bridge. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from E. Burnside Street. Eastbound traffic exits on SE Ankeny Street. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 78%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**			
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**			
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs 1 existing street but does not bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 11 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Creates new bridge structure adjacent to 600 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 3 businesses and 35 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic districts or resources, other than the bridge.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	411.1
Percentile	**78%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

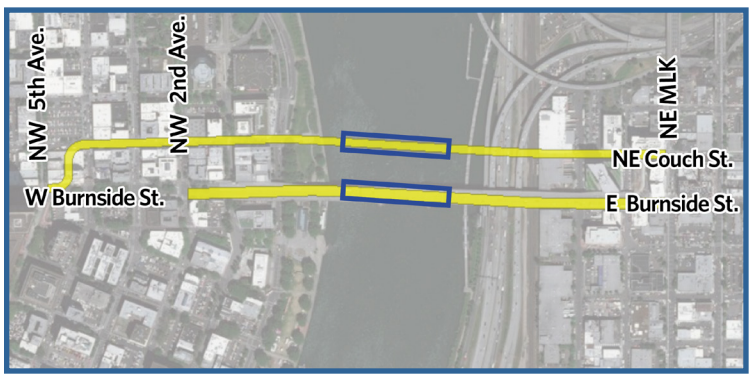
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

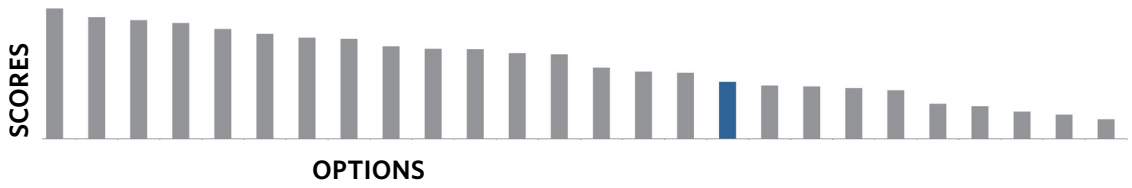
Low North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges that carry vehicles, bicyclists, and pedestrians at about the same height as the current bridge. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound bridge begins and ends on Burnside Street. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 40%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs one existing street and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to one existing social service agency.
	4.2 Low Income Housing Impacts	●	Removes potential for 5 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1,200 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 22 businesses and 423 employees.
	5.3 Low Long-term Housing Impact	○	Displaces 70 long-term housing units.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 7 historic resources and adds 1.9 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

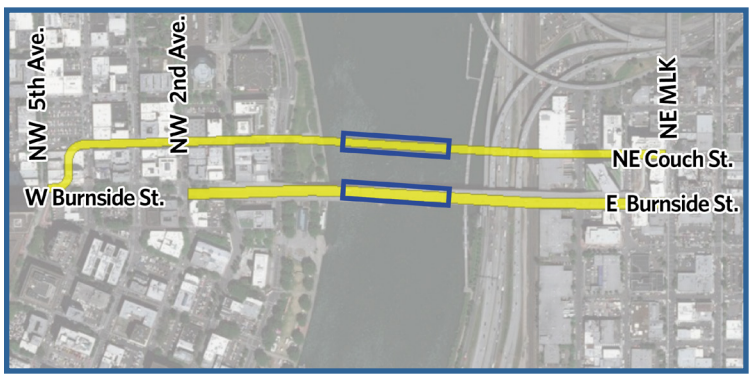
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges that carry vehicles, bicyclists, and pedestrians at about the same height as the current bridge. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound bridge begins and ends on Burnside Street. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 40%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	35.6	16.7
	Scoring Rationale: Severs one existing street and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low North Twin

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to one existing social service agency.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1200 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 22 businesses and 423 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	1	3.3	3.3
	Scoring Rationale: Displaces 70 long-term housing units.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 7 historic resources and adds 1.9 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	261.7
			Percentile	**40%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

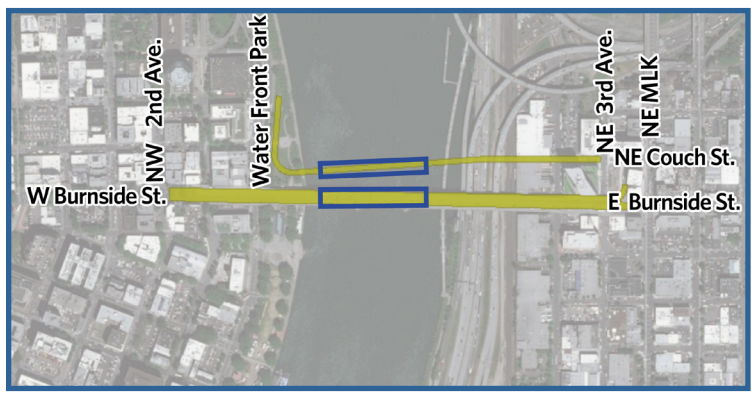
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{MIN}}{\text{SCORE}_{MAX} - \text{SCORE}_{MIN}} \%$$

Where: $\text{SCORE}_{MIN} = 100$, $\text{SCORE}_{MAX} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

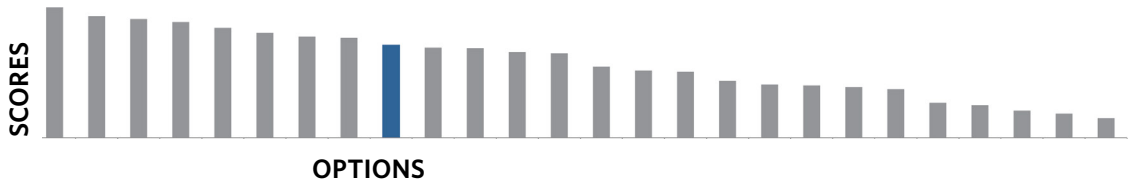
Low North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, at about the same height as the current bridge, that separate vehicles from bicyclists and pedestrians. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 66%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	◒	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Removes potential for 5 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Creates new bridge structure adjacent to 450 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 7 businesses and 323 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement. Large bicycle ramp impacts access within Waterfront Park.
	5.5 Historic Structures + District Impacts	●	Does not impact National Register historic districts or resources, other than the bridge.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

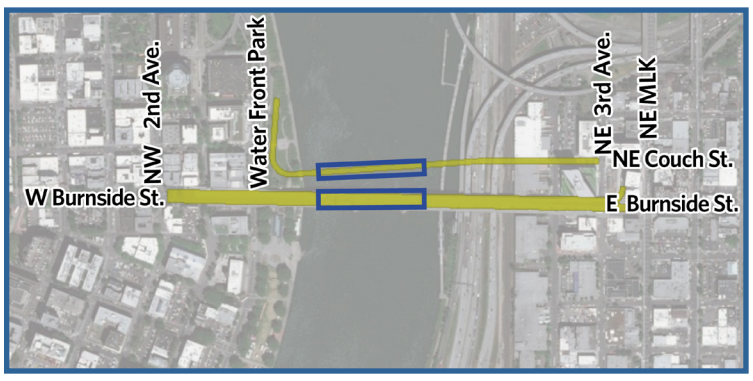
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

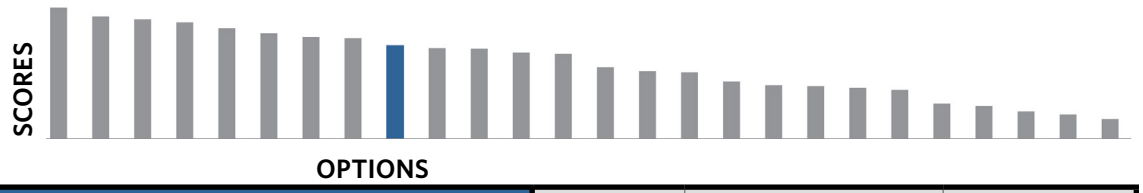
Low North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, at about the same height as the current bridge, that separate vehicles from bicyclists and pedestrians. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St.
Recommendation: Dropped from further consideration.

TOTAL SCORE 66%



EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY			
SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE			
Measures			
1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
1.2.1 This vulnerability is a function of width and length.	3	8.3	25
Scoring Rationale: Consists of a relatively short vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION			
SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
2.1.1 Percent and length of grade.	3	5.6	16.7
Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	3	5.6	16.7
Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY			
SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
3.1 How well does the option connect with the existing and planned street network (for all modes)?			
3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
Scoring Rationale: Does not sever or bypass any existing cross streets.			
3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Creates new bridge structure adjacent to 450 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 7 businesses and 323 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement. Large bicycle ramp impacts access within Waterfront Park.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Does not impact National Register historic districts or resources, other than the bridge.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	362.2
Percentile	**66%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

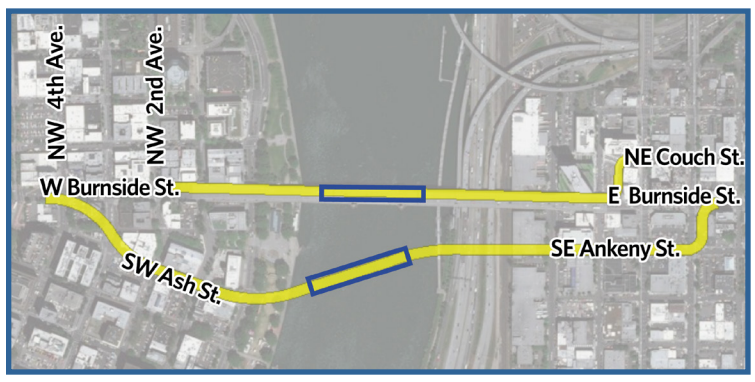
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, at about the same height as the current bridge, that separate vehicles from bicyclists and pedestrians. The north twin bridge carrying westbound traffic begins and ends on Burnside St. The eastbound bridge begins and ends on Ankeny St., which requires its conversion from a two-way street into a one-way street on both sides of the Willamette River. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 36%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to one existing social service agency.
	4.2 Low Income Housing Impacts	◒	Removes potential for 32 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1,550 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 20 businesses and 131 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resources and adds 1.5 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

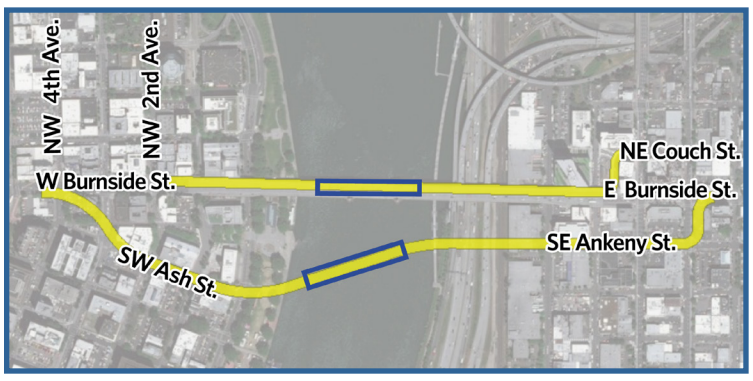
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, at about the same height as the current bridge, that separate vehicles from bicyclists and pedestrians. The north twin bridge carrying westbound traffic begins and ends on Burnside St. The eastbound bridge begins on Ankeny St., which requires its conversion from a two-way street into a one-way street on both sides of the Willamette River. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 36%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to one existing social service agency.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	3	8.3	25
	Scoring Rationale: Removes potential for 32 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1550 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 20 businesses and 131 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resources and adds 1.5 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	244.4
			Percentile	**36%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

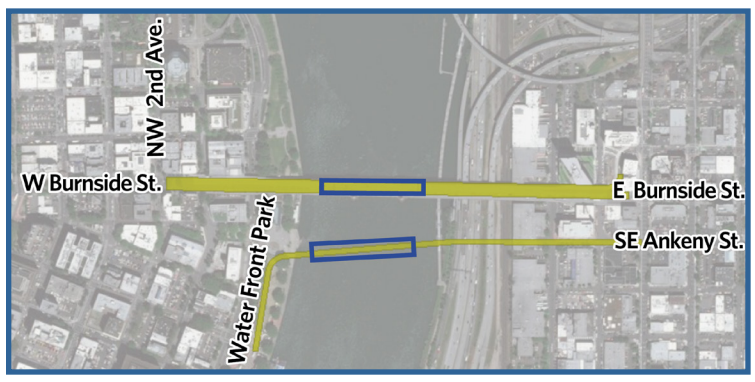
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin - Mode Seperated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges at about the same height as the current bridge that separate vehicles from bicyclists and pedestrians. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. **Recommendation**: Dropped from further consideration.

TOTAL SCORE 72%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	●	Possesses a short length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	◒	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	●	Does not sever or bypass any existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Creates new bridge structure adjacent to 500 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 1 business and 21 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an above average amount of parks displacement. Bicycle ramp blocks access within Waterfront Park.
	5.5 Historic Structures + District Impacts	●	Visually obstructs 1 historic resource and adds 0.44 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

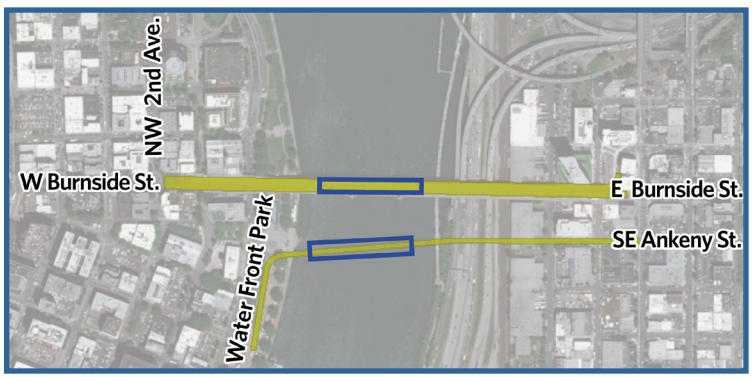
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin - Mode Seperated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, at about the same height as the current bridge, that separate vehicles from bicyclists and pedestrians. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. **Recommendation**: Dropped from further consideration.

TOTAL SCORE 72%

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	5	5.6	27.8
	Scoring Rationale: Possesses a short length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	3	5.6	16.7
	Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	5	5.6	27.8
	Scoring Rationale: Does not sever or bypass any existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low South Twin - Mode Seperated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Creates new bridge structure adjacent to 500 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 1 businesses and 21 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an above average amount of parks displacement. Bicycle ramp blocks access within Waterfront Park.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Visually obstructs 1 historic resource and adds 0.44 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	386.7
Percentile	**72%**

LEGEND

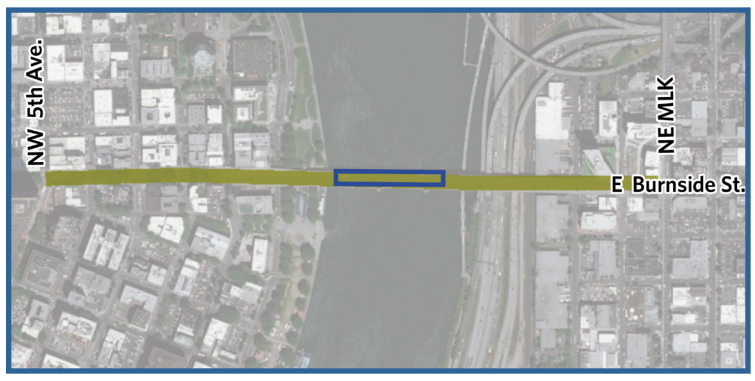
1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

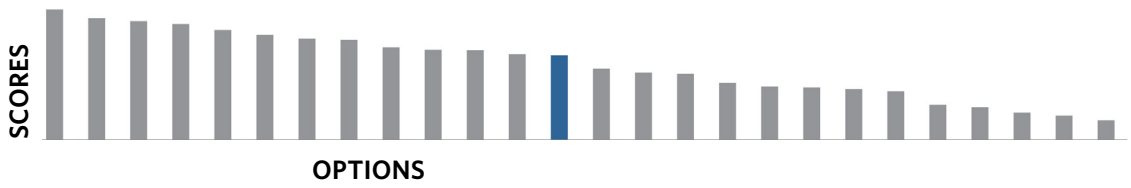
Low Stacked



Description: New stacked (double-decker) movable bridge that provides that same vertical clearance for ships as the existing bridge. The bridge places all vehicular traffic on the top level, and all bicycle / pedestrian traffic on the bottom level. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 60%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moerately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	○	Provides below average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	○	Creates new, visually isolated bike and ped path beneath the traffic deck.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs one existing street and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1550 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 1 business and 21 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	◒	Visually obstructs 4 historic resources and adds 2.34 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	◒	Possesses a moderate long-term maintenance cost.

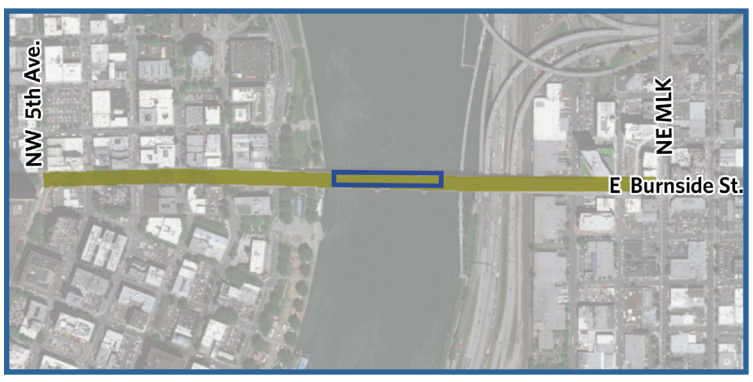
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Stacked

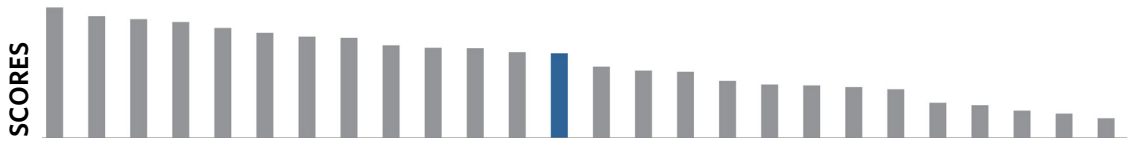
EARTHQUAKE READY BURNSIDE BRIDGE



Description: New stacked (double-decker) movable bridge that provides that same vertical clearance for ships as the existing bridge. The bridge places all vehicular traffic on the top level, and all bicycle / pedestrian traffic on the bottom level. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 60%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	1	5.6	5.6
	Scoring Rationale: Provides below average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	1	5.6	5.6
	Scoring Rationale: Creates new, visually isolated bike and ped path beneath the traffic deck.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs one existing street and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Stacked

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1550 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 1 businesses and 21 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	3	3.3	10
	Scoring Rationale: Visually obstructs 4 historic resources and adds 2.34 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	3	8.3	25
	Scoring Rationale: Possesses a moderate long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	339.4
Percentile	**60%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

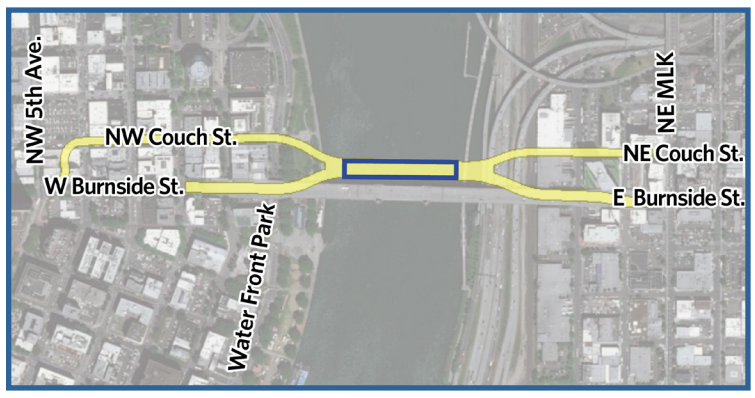
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

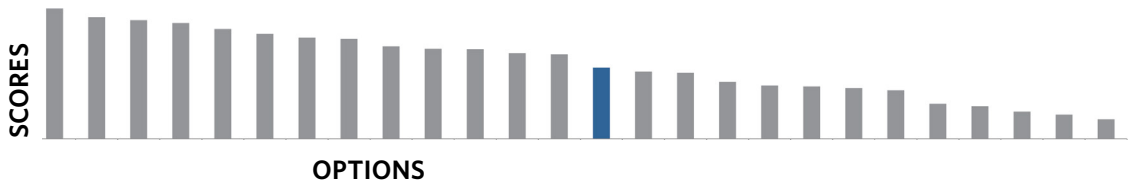
Low Double Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, connecting over the Willamette River, that carry vehicles, bicyclists, and pedestrians. The bridge is at about the same height as the current bridge. The north bridge legs carrying westbound traffic begin and end on Couch Street, requiring a change to the street network on the downtown side. The eastbound bridge begins and ends on Burnside Street. **Recommendation**: Dropped from further consideration.

TOTAL SCORE 51%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs one existing street and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	○	Consists of a movable bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Removes potential for 5 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 2,700 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 12 businesses and 423 employees.
	5.3 Low Long-term Housing Impact	○	Displaces 70 existing units of long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 7 historic resources and adds 2.01 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the lowest cost tier (less than $800M).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

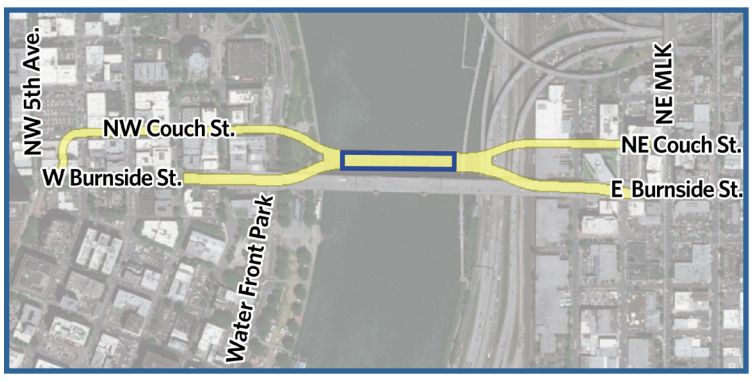
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

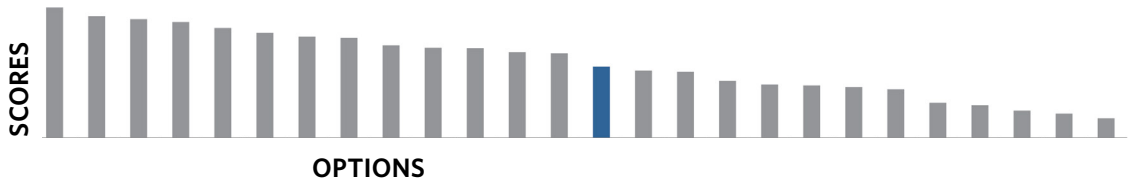
Low Double Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin movable bridges, connecting together over the Willamette River, that carry vehicles, bicyclists, and pedestrians. The bridge is at about the same height as the current bridge. The north bridge legs carrying westbound traffic begin and end on Couch Street, requiring a change to the street network on the downtown side. The eastbound bridge begins and ends on Burnside Street. **Recommendation**: Dropped from further consideration.

TOTAL SCORE 51%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a relatively short, but split, bridge which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs one existing street and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	1	5.6	5.6
	Scoring Rationale: Consists of a movable bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Low Double Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 2700 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 12 businesses and 423 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	1	3.3	3.3
	Scoring Rationale: Displaces 70 existing units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 7 historic resources and adds 2.01 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	5	8.3	41.7
	Scoring Rationale: Falls within the lowest cost tier (less than $800M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	302.2
			Percentile	**51%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

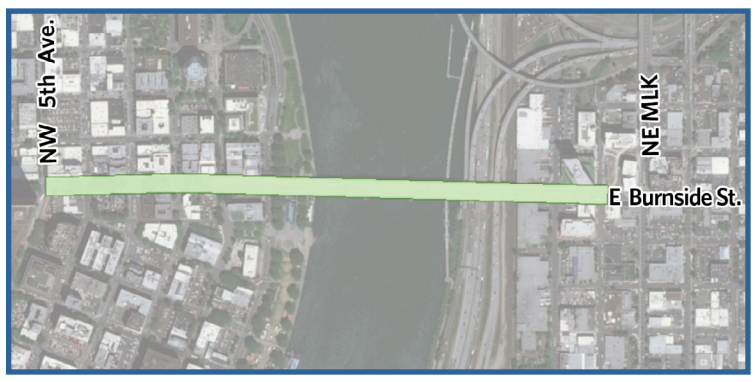
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{MIN}}{\text{SCORE}_{MAX} - \text{SCORE}_{MIN}} \%$$

Where: $\text{SCORE}_{MIN} = 100$, $\text{SCORE}_{MAX} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

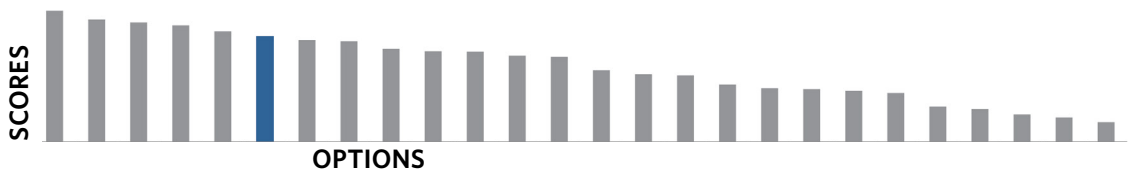
97 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge at about the same location as the current bridge and up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 74%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	●	Consists of a moderately long, single bridge with the largest available width for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	○	Provides below average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1,500 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 1 business and 21 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has above average displacement of parkland. Avoids impacts to the North Park blocks and the Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resource and adds 3.41 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

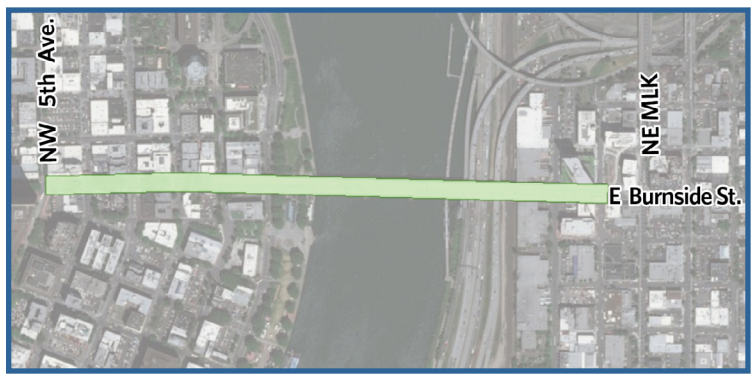
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

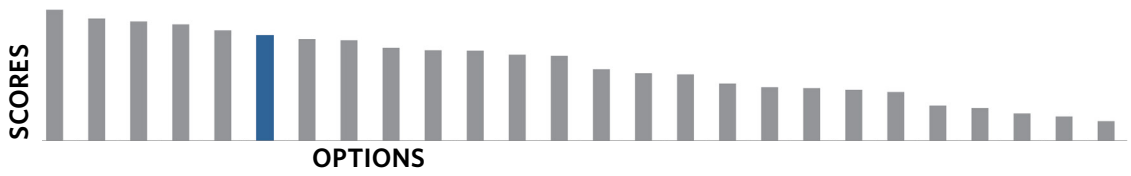
97 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge at about the same location as the current bridge and up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. **Recommendation:** Advance option into NEPA Phase.

TOTAL SCORE 74%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	5	8.3	41.7
	Scoring Rationale: Consists of a moderately long, single bridge with the largest available width for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	1	5.6	5.6
	Scoring Rationale: Provides below average connectivity potential to high quality existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1500 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 1 business and 21 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has above average displacement of parkland. Avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resource and adds 3.41 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	397.2
Percentile	**74%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

Description: A new fixed bridge with up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 64%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	◒	Possesses a moderate URM risk of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long and split, bridge which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	○	Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Improves roadway geometrics versus the existing condition, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Removes potential for 5 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 2,000 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 7 businesses and 323 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resources and adds 3.48 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

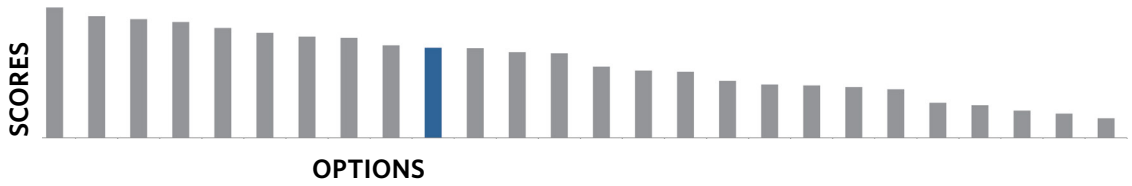
97 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

Description: A new fixed bridge with up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 64%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	3	8.3	25
	Scoring Rationale: Possesses a moderate URM risk of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long and split, bridge which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	1	5.6	5.6
	Scoring Rationale: Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Improves roadway geometrics versus the existing condition, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 2000 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 7 businesses and 323 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resources and adds 3.48 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	*355.6*
Percentile	**64%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

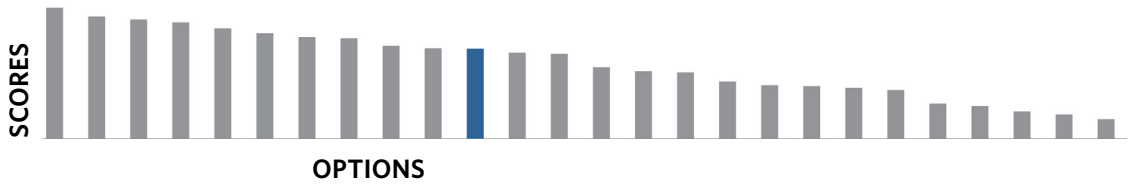
97 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

Description: A new fixed bridge with up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from E. Burnside Street. Eastbound traffic exits to SE Ankeny Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 63%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long and split, bridge which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	○	Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Removes potential for 11 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 2,400 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 3 businesses and 35 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace any units of long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 5 historic resources and adds 3.34 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	●	Falls within the second lowest cost tier (between $800M and $900M).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

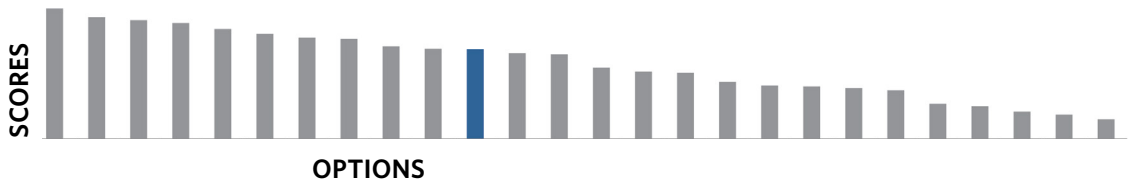
97 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

Description: A new fixed bridge with up to a 97' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from E. Burnside Street. Eastbound traffic exits to SE Ankeny Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 63%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long and split, bridge which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	1	5.6	5.6
	Scoring Rationale: Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 11 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 2400 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 3 businesses and 35 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace any units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement, and avoids impacts to the North Park blocks and the Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 5 historic resources and adds 3.34 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	4	8.3	33.3
	Scoring Rationale: Falls within the second lowest cost tier (between $800M and $900M).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	353.9
Percentile	**63%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

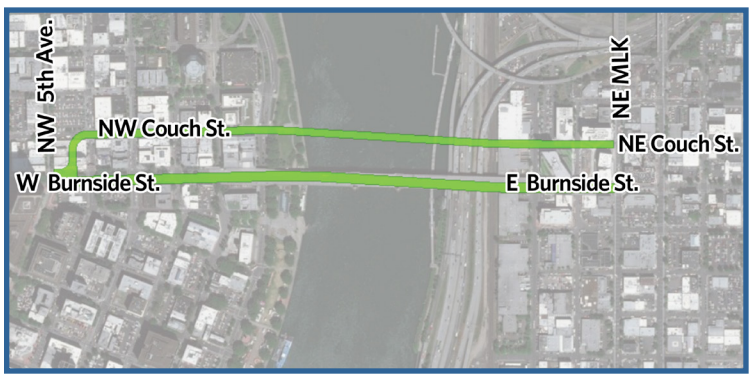
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

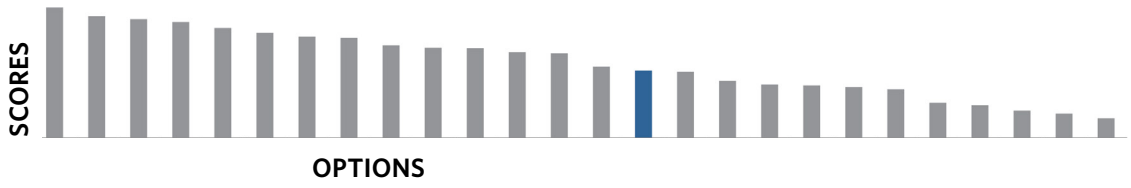
97 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with up to a 97' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound traffic will use Burnside Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 48%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Removes potential for 5 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 3,600 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 22 businesses and 423 employees.
	5.3 Low Long-term Housing Impact	○	Displaces 70 existing units of long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 10 historic resources and adds 3.37 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	◒	Possesses a moderate long-term maintenance cost.

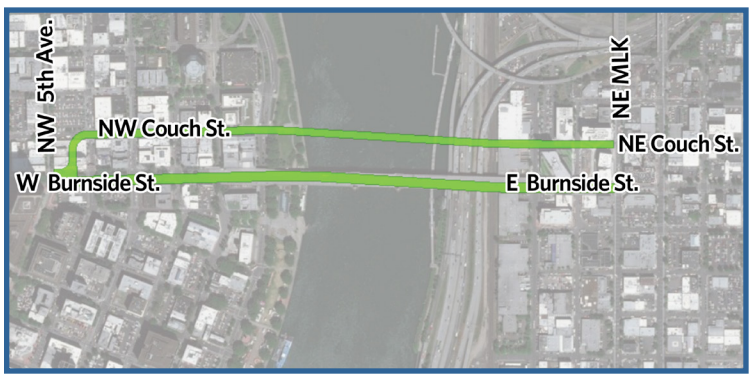
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

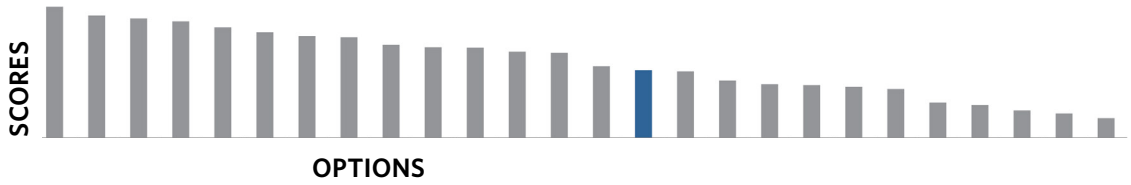
97 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with up to a 97' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound traffic will use Burnside Street. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 48%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 3600 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 22 businesses and 423 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	1	3.3	3.3
	Scoring Rationale: Displaces 70 existing units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 10 historic resources and adds 3.37 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	3	8.3	25
	Scoring Rationale: Possesses a moderate long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	291.1
Percentile	**48%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

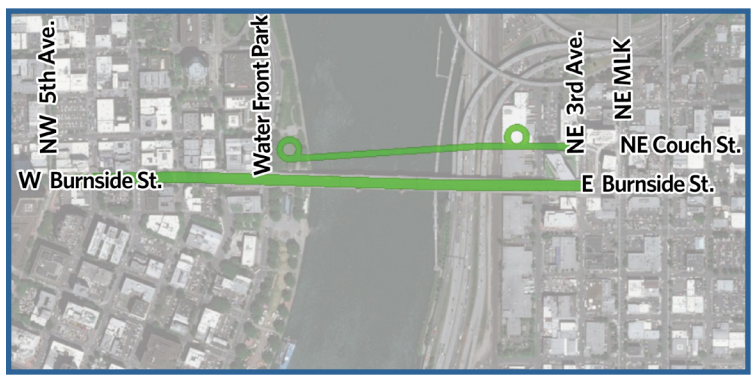
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

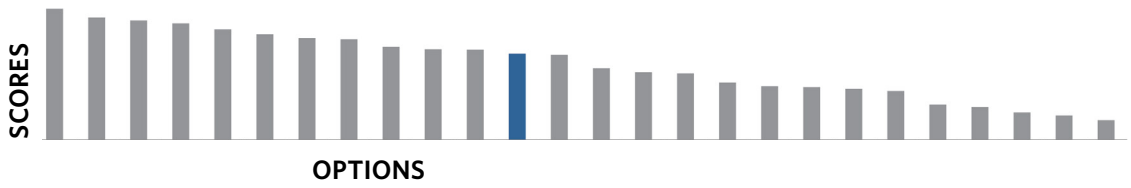
97 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges, with up to a 97' vertical clearance for ships, that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.
Recommendation: Dropped from further consideration.

TOTAL SCORE 61%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	◒	Possesses a moderate URM risk of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	○	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Slightly degrades roadway geometrics versus the existing condition, does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 existing social service provider.
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1,700 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 7 businesses and 323 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks Waterfront Park walkway and access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resources and adds 2.26 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

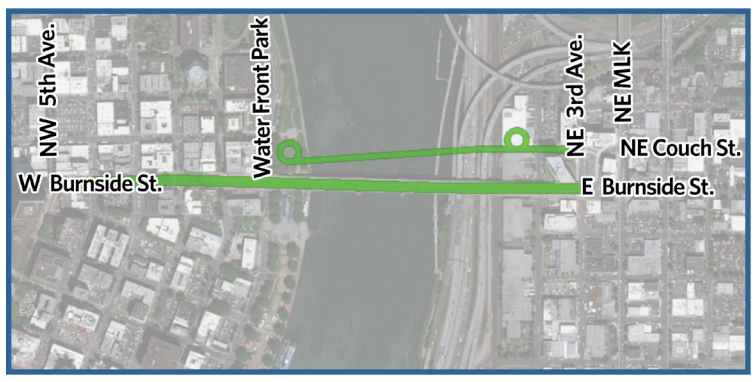
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

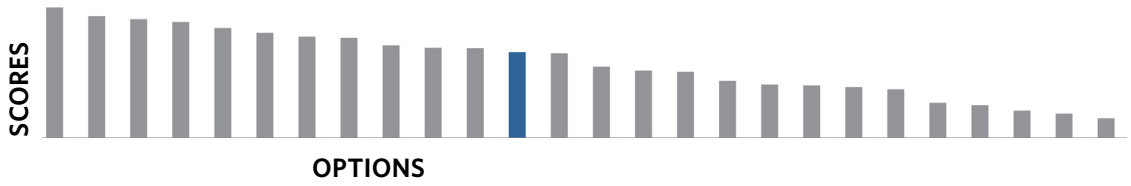
97 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges, with up to a 97' vertical clearance for ships, that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 61%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	3	8.3	25
	Scoring Rationale: Possesses a moderate URM risk of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	1	5.6	5.6
	Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 existing social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Removes potential for 5 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1700 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 7 businesses and 323 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks Waterfront Park walkway and access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resources and adds 2.26 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	342.2
Percentile	**61%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE

Description: New twin fixed bridges with up to a 97' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Burnside Street. The eastbound bridge begins and ends on Ankeny Street, which requires a conversion of 2-way streets to 1-way streets on both sides of the Willamette River. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.
Recommendation: Dropped from further consideration.

TOTAL SCORE 47%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Slightly degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 social service provider.
	4.2 Low Income Housing Impacts	◒	Removes potential for 37 future low income housing units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 3,000 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 24 businesses and 428 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	●	Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 7 historic resources and adds 3.79 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	◒	Possesses a moderate long-term maintenance cost.

LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE

Description: New twin fixed bridges with up to a 97' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Burnside Street. The eastbound bridge begins and ends on Ankeny Street, which requires a conversion of 2-way streets to 1-way streets on both sides of the Willamette River. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 47%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long vehicular bridge, with a narrower twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	3	8.3	25
	Scoring Rationale: Removes potential for 37 future low income housing units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 3000 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 24 businesses and 428 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	5	3.3	16.7
	Scoring Rationale: Has an average amount of parks displacement. Does not affect park blocks or Waterfront Park access.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 7 historic resources and adds 3.79 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	3	8.3	25
	Scoring Rationale: Possesses a moderate long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	278.8
Percentile	**47%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin -Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

Description: New twin fixed bridges with up to a 97' vertical clearance for ships that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.
Recommendation: Dropped from further consideration.

TOTAL SCORE 71%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	◒	Consists of a moderately long vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	◒	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	◒	Severs two or more existing streets and bypasses up to three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Degrades roadway geometrics versus the existing condition, but does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 social service provider.
	4.2 Low Income Housing Impacts	●	Does not affect low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	◒	Creates new bridge structure adjacent to 1,900 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 1 business and 21 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks Waterfront Park walkway and access.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 5 historic resources and adds 2.28 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	◒	Falls within the middle cost tier (between $900M and $1.0B).
	6.2 Long-term Maintenance	●	Possesses a low long-term maintenance cost.

LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin -Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

Description: New twin fixed bridges with up to a 97' vertical clearance for ships that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue.

Recommendation: Dropped from further consideration.

TOTAL SCORE 71%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	3	8.3	25
	Scoring Rationale: Consists of a moderately long vehicular bridge, with a narrower bicycle / pedestrian twin bridge, which creates some challenges for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	3	5.6	16.7
	Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	3	5.6	16.7
	Scoring Rationale: Severs two or more existing streets and bypasses up to three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Slightly degrades roadway geometrics versus the existing condition, but does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

97 High South Twin -Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not affect low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	3	3.3	10
	Scoring Rationale: Creates new bridge structure adjacent to 1900 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 1 businesses and 21 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks Waterfront Park walkway and access..			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 5 historic resources and adds 2.28 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	3	8.3	25
	Scoring Rationale: Falls within the middle cost tier (between $900M and $1.0B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	5	8.3	41.7
	Scoring Rationale: Possesses a low long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	383.3
Percentile	**71%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

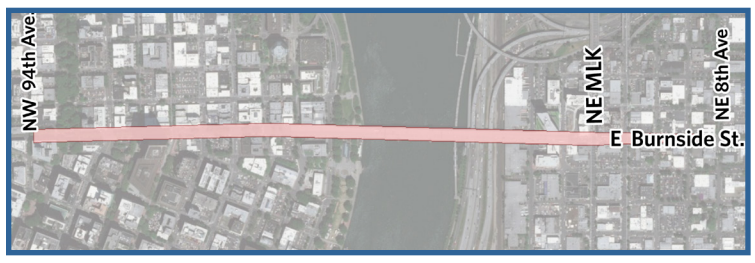
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge at about the same location as the current bridge and approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 23%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of a long, single bridge with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	○	Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	○	Displaces 1 social service provider and impacts access to another social service provider.
	4.2 Low Income Housing Impacts	○	Displaces 105 units of existing low income housing and removes potential for 12 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 4,300 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 21 businesses and 104 employees.
	5.3 Low Long-term Housing Impact	◒	Displaces 10 existing units of long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 3 historic resources and adds 3.44 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

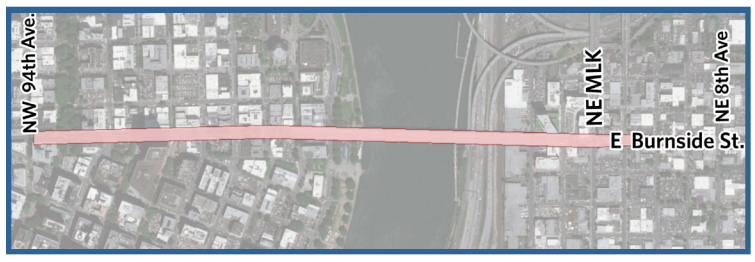
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge at about the same location as the current bridge and approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The west landing touches down about 3 blocks further west than the current bridge, near 5th Avenue. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 23%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
	Scoring Rationale: Consists of a long, single bridge with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	1	5.6	5.6
	Scoring Rationale: Provides below average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Existing Alignment

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	1	8.3	8.3
	Scoring Rationale: Displaces 1 social service provider and impacts access to another social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 105 units of existing low income housing and removes potential for 12 future units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 4300 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 21 businesses and 104 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	3	3.3	10
	Scoring Rationale: Displaces 10 existing units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 3 historic resources and adds 3.44 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	192.8
			Percentile	**23%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

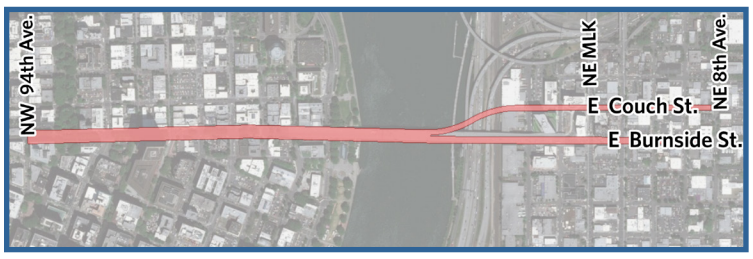
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge with approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 25%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of a long, split bridge with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Provides improved roadway geometrics versus the existing condition, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	○	Displaces 1 social service provider and impacts access to another social service provider.
	4.2 Low Income Housing Impacts	○	Displaces 105 units of existing low income housing and removes potential for 8 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 5,700 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 11 businesses and 340 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 3 historic resources and adds 3.48 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

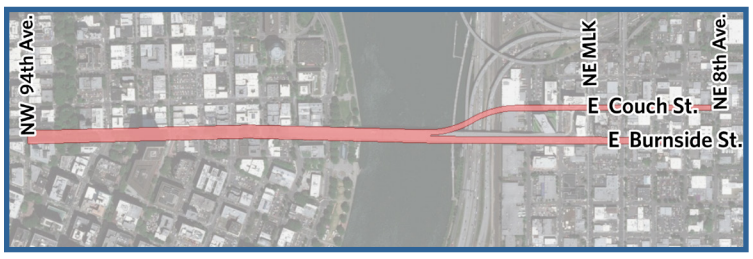
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge with approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to NE Couch Street. Westbound traffic enters from NE Couch Street. Eastbound traffic exits to E. Burnside Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 25%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
	Scoring Rationale: Consists of a long, split bridge with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	1	5.6	5.6
	Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Provides improved roadway geometrics versus the existing condition, and does not change any local street classifications.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Northeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	1	8.3	8.3
	Scoring Rationale: Displaces 1 social service provider and impacts access to another social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 105 units of existing low income housing and removes potential for 8 future units			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 5700 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 11 businesses and 340 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 3 historic resources and adds 3.48 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	199.4
			Percentile	**25%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

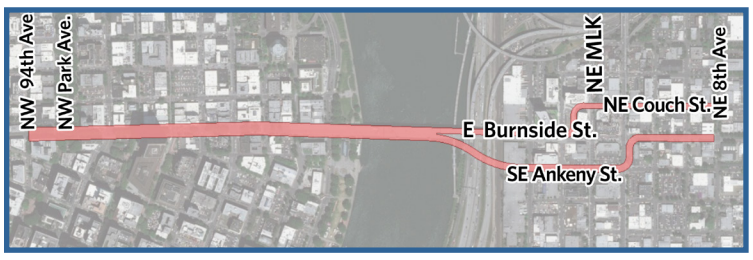
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge with approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from W. Burnside Street. Eastbound traffic exits to SE Ankeny Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE
19%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of a long, split bridge with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	○	Displaces 1 social service provider and impacts access to another social service provider.
	4.2 Low Income Housing Impacts	○	Displaces 105 units of existing low income housing and removes potential for 25 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 5,800 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 15 businesses and 94 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resources and adds 3.48 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

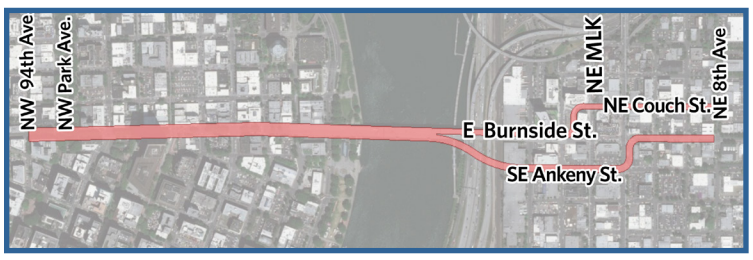
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE



Description: A new fixed bridge with approximately a 120' vertical clearance for ships. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The east landing splits to connect to SE Ankeny Street. Westbound traffic enters from W. Burnside Street. Eastbound traffic exits to SE Ankeny Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 19%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
	Scoring Rationale: Consists of a long, split bridge with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	1	5.6	5.6
	Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
	Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
	Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High Southeast Wishbone

EARTHQUAKE READY BURNSIDE BRIDGE

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	1	8.3	8.3
	Scoring Rationale: Displaces 1 social service provider and impacts access to another social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 105 units of existing low income housing and removes potential for 25 future units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 5800 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 15 businesses and 94 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resources and adds 3.48 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	177.2
			Percentile	**19%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

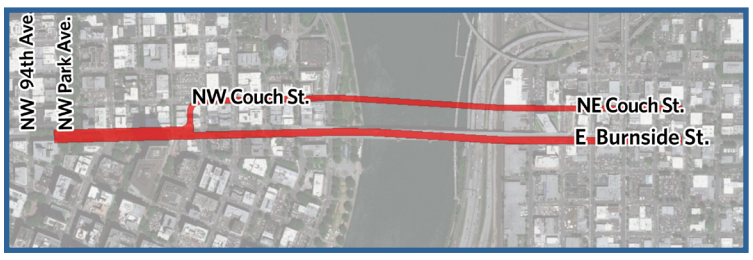
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

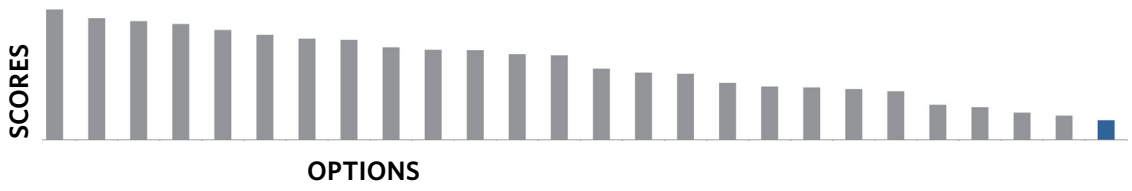
120 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound traffic will use Burnside Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 14%



	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of long, twin bridges with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades the existing roadway geometrics, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	○	Displaces 1 social service provider and impacts access to another social service provider.
	4.2 Low Income Housing Impacts	○	Displaces 105 units of existing low income housing and removes potential for 14 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 6,650 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 30 businesses and 461 employees.
	5.3 Low Long-term Housing Impact	○	Displaces 70 existing units of long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 10 historic resources and adds 3.41 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the highest cost tier (greater than $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

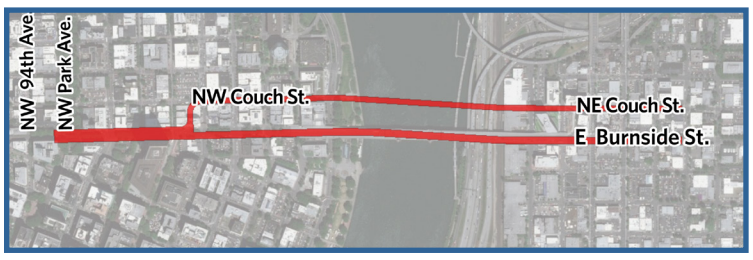
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Couch Street, which requires its conversion from a 2-way street to a 1-way street on the downtown side of the Willamette River. The eastbound traffic will use Burnside Street. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 14%

EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY			
SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE			
Measures			
1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
Scoring Rationale: Consists of long, twin bridges with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION			
SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
Measures			
2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
2.1.1 Percent and length of grade.	1	5.6	5.6
Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY			
SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
Measures			
3.1 How well does the option connect with the existing and planned street network (for all modes)?			
3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
Scoring Rationale: Degrades the existing roadway geometrics, and changes some local street classifications.			
3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High North Twin

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	1	8.3	8.3
	Scoring Rationale: Displaces 1 social service provider and impacts access to another social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 105 units of existing low income housing and removes potential for 14 future units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 6650 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 30 businesses and 461 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	1	3.3	3.3
	Scoring Rationale: Displaces 70 existing units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 10 historic resources and adds 3.41 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	1	8.3	8.3
	Scoring Rationale: Falls within the highest cost tier (greater than $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	155.6
			Percentile	**14%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

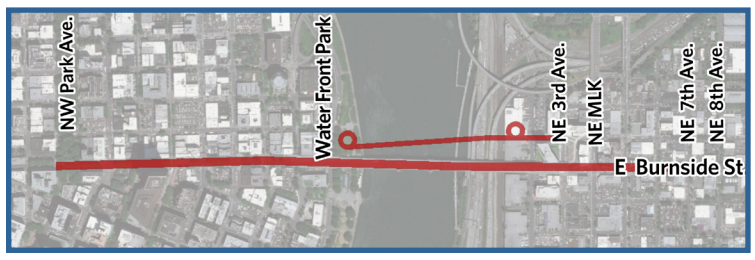
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave.
Recommendation: Dropped from further consideration.

TOTAL SCORE
35%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of long, twin bridges (one dedicated to bicycles / pedestrians) with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	○	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 social service provider.
	4.2 Low Income Housing Impacts	●	Does not displace existing or potential future low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 4,500 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 2 businesses and 281 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 3 historic resources and adds 2.34 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

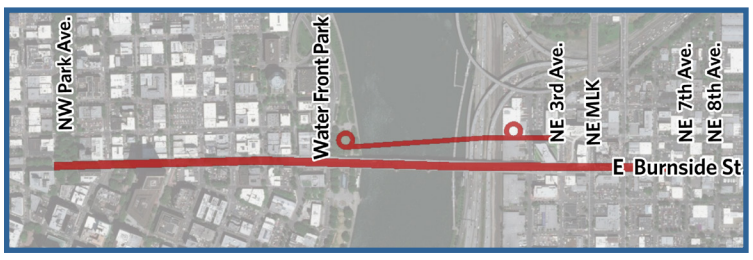
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the north twin bridge will carry bicyclists and pedestrian only. The north bicycle / pedestrian bridge will extend from Waterfront Park north of the existing Burnside Bridge to NE Couch St. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 35%

EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY			
SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE			
Measures			
1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
Scoring Rationale: Consists of long, twin bridges (one dedicated to bicycles / pedestrians) with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION			
SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
2.1.1 Percent and length of grade.	1	5.6	5.6
Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
Scoring Rationale: Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	1	5.6	5.6
Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY			
SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
3.1 How well does the option connect with the existing and planned street network (for all modes)?			
3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High North Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not displace existing or potential future low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 4500 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 2 businesses and 281 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 3 historic resources and adds 2.34 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	238.3
			Percentile	**35%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

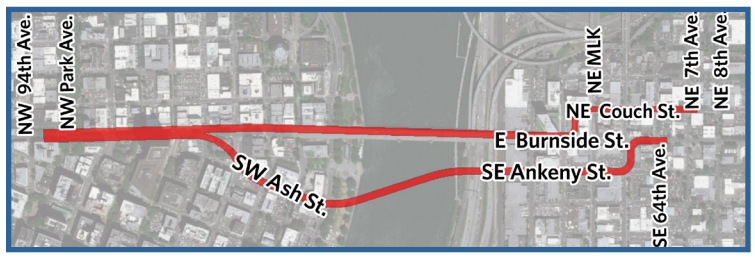
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Burnside Street. The eastbound bridge begins and ends on Ankeny Street, which requires a conversion of 2-way streets to 1-way streets on both sides of the Willamette River. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE
17%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of long, twin bridges with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	◒	Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	●	Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	○	Displaces 1 social service provider and impacts access to another social service provider.
	4.2 Low Income Housing Impacts	○	Displaces 105 units of existing low income housing and removes potential for 41 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 5,700 feet of existing buildings.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 27 businesses and 176 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 6 historic resources and adds 3.83 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the highest cost tier (greater than $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

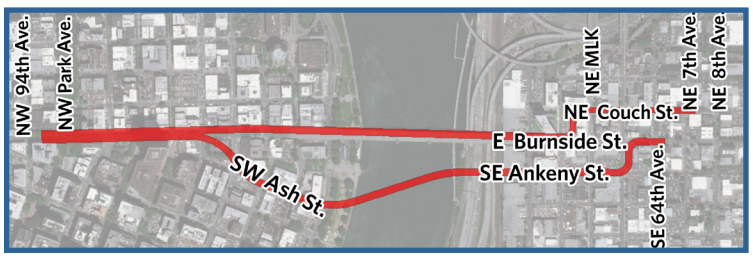
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges, with approximately a 120' vertical clearance for ships, that carry vehicles, bicyclists, and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. The north twin bridge carrying westbound traffic begins and ends on Burnside Street. The eastbound bridge begins and ends on Ankeny Street, which requires a conversion of 2-way streets to 1-way streets on both sides of the Willamette River. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 17%

EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY			
SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE			
Measures			
1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
Scoring Rationale: Consists of long, twin bridges with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION			
SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
2.1.1 Percent and length of grade.	1	5.6	5.6
Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
2.2.1 Access to existing and planned bike and pedestrian facilities.	3	5.6	16.7
Scoring Rationale: Provides average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	5	5.6	27.8
Scoring Rationale: Avoids creating new paths or ramps that would visually isolate bicyclists and pedestrians.			
3. CONNECTIVITY			
SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)	**SCORE**	**POINTS AVAILABLE: 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
Measures			
3.1 How well does the option connect with the existing and planned street network (for all modes)?			
3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	1	8.3	8.3
	Scoring Rationale: Displaces 1 social service provider and impacts access to another social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 105 units of existing low income housing and removes potential for 41 future units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 5700 feet of existing buildings.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 27 businesses and 176 employees.			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 6 historic resources and adds 3.83 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	1	8.3	8.3
	Scoring Rationale: Falls within the highest cost tier (greater than $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	168.9
Percentile	**17%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

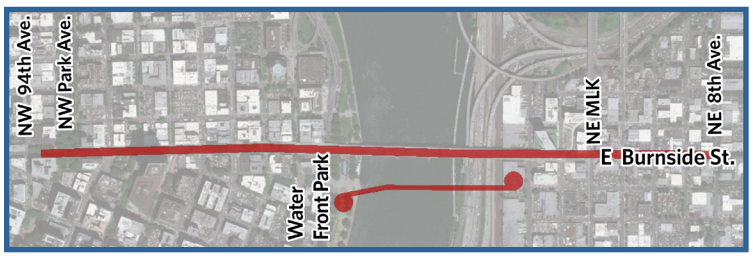
$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges, with approximately a 120' vertical clearance for ships, that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave.
Recommendation: Dropped from further consideration.

TOTAL SCORE
38%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	○	Possesses one of the highest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of long, twin bridges (one dedicated to bicycles / pedestrians) with very narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	○	Possesses a long length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	○	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	●	Generally maintains the existing roadway geometrics, and does not change any local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	●	Consists of a non-movable, fixed bridge.
EQUITY	**4.1 Social Service Impacts**	◒	Impacts access to 1 social service provider.
	4.2 Low Income Housing Impacts	●	Does not displace existing or potential future low income housing.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	○	Creates new bridge structure adjacent to 4,500 feet of existing buildings.
	5.2 Commercial + Industrial Impact	●	Permanently displaces/relocates 1 business and 21 employees.
	5.3 Low Long-term Housing Impact	●	Does not permanently displace existing long-term housing.
	5.4 Park + Recreation Impact	○	Has an above average amount of parks displacement and blocks access to North Park Blocks.
	5.5 Historic Structures + District Impacts	○	Visually obstructs 4 historic resources and adds 2.47 acres of new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the second highest cost tier (between $1.0B and $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

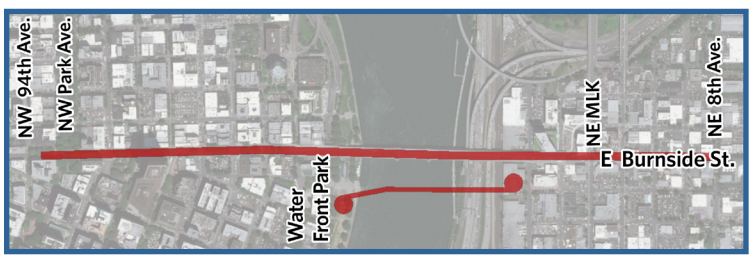
LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE



Description: New twin fixed bridges with approximately a 120' vertical clearance for ships that separate vehicles from bicyclists and pedestrians. It doesn't open, but is tall enough to allow ships to pass without halting traffic. Vehicles travelling in both directions will use the Burnside St bridge, while the south twin bridge will carry bicyclists and pedestrian only. The south bicycle / pedestrian bridge will extend from Waterfront Park south of the existing Burnside Bridge to SE Ankeny St. The west landing touches down about 8 blocks further west than the current bridge, near 9th Avenue, and the east landing touches down about 4 blocks further east than the current bridge, near East 8th Ave.
Recommendation: Dropped from further consideration.

TOTAL SCORE 38%

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	1	8.3	8.3
	Scoring Rationale: Possesses one of the highest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
	Scoring Rationale: Consists of long, twin bridges (one dedicated to bicycles / pedestrians) with very narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**			
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	1	5.6	5.6
	Scoring Rationale: Possesses a long length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	1	5.6	5.6
	Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**			
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	5	5.6	27.8
	Scoring Rationale: Generally maintains the existing roadway geometrics, and does not change any local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	5	5.6	27.8
	Scoring Rationale: Consists of a non-movable, fixed bridge.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

120 High South Twin - Mode Separated

EARTHQUAKE READY BURNSIDE BRIDGE

	EVALUATION CRITERIA	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	3	8.3	25
	Scoring Rationale: Impacts access to 1 social service provider.			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	5	8.3	41.7
	Scoring Rationale: Does not displace existing or potential future low income housing.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	1	3.3	3.3
	Scoring Rationale: Creates new bridge structure adjacent to 4500 feet of existing buildings			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	5	3.3	16.7
	Scoring Rationale: Permanently displaces/relocates 1 businesses and 21 employees			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	5	3.3	16.7
	Scoring Rationale: Does not permanently displace existing long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an above average amount of parks displacement and blocks access to North Park Blocks.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	1	3.3	3.3
	Scoring Rationale: Visually obstructs 4 historic resources and adds 2.47 acres of new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	**SCORE**	**POINTS AVAILABLE 16.7**	**TOTAL (SCORE X POINTS = TOTAL)**
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	2	8.3	16.7
	Scoring Rationale: Falls within the second highest cost tier (between $1.0B and $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			

TOTAL (SCORE X POINTS = TOTAL)	251.7
Percentile	**38%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Tunnel

EARTHQUAKE READY BURNSIDE BRIDGE

TUNNEL - NO IMAGE

Description: A new tunnel that extends below both the Willamette River and the large Combined Sewer Outflow pipes. The existing Burnside Street bridge will be removed. The tunnel's west entry portal is at approximately 12th St and its east entry portal is at approximately 28th St. A bicycle / pedestrian only bridge will be constructed in tandem with the tunnel near the existing Burnside Bridge. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 37%

	EVALUATION CRITERIA	SCORE	SCORING RATIONALE
SEISMIC	**1.1 Unreinforced Masonry Risk**	●	Possesses one of the lowest URM risks of the alternatives considered.
	1.2 Disabled Vehicles Risk	○	Consists of an extremely long tunnel with a bicycle / pedestrian bridges with narrow entrance widths for emergency vehicle use.
NON-MOTORIZED TRANSPORTATION	**2.1 Ease of Ped + Bike Use**	◒	Possesses a moderate length of grade exceeding 3.5%.
	2.2 Safe Ped + Bike Connections	●	Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.
	2.3 Personal Security for Ped + Bikes	◒	Creates new, visually isolated bike and pedestrian paths and ramps.
CONNECTIVITY	**3.1 Street Network Connection**	○	Severs two or more existing streets and bypasses more than three existing cross streets.
	3.2 Crossing Safety and Convenience	○	Degrades roadway geometrics versus the existing condition, and changes some local street classifications.
	3.3 Moveable Bridge (Periodic Delay)	◒	Consists of a non-movable tunnel.
EQUITY	**4.1 Social Service Impacts**	●	Does not displace or impact access to existing social services (including overnight shelters).
	4.2 Low Income Housing Impacts	○	Displaces 30 units of existing low income housing and removes potential for 126 future units.
BUILT ENVIRONMENT	**5.1 Visual Impacts to Existing Buildings**	●	Does not permanently block existing building views, light, or access.
	5.2 Commercial + Industrial Impact	○	Permanently displaces/relocates 140 businesses and 1,762 employees.
	5.3 Low Long-term Housing Impact	○	Displaces 30 units of existing low income housing and removes potential for 126 future units.
	5.4 Park + Recreation Impact	○	Has an above average amount of parks displacement and blocks access to North Waterfront Park walkway.
	5.5 Historic Structures + District Impacts	●	Visually obstructs no historic resources and adds no new bridge structure in historic districts.
FINANCIAL	**6.1 Capital Cost**	○	Falls within the highest cost tier (greater than $1.1B).
	6.2 Long-term Maintenance	○	Possesses a high long-term maintenance cost.

LEGEND

● = High Score ◒ = Medium Score ○ = Low Score

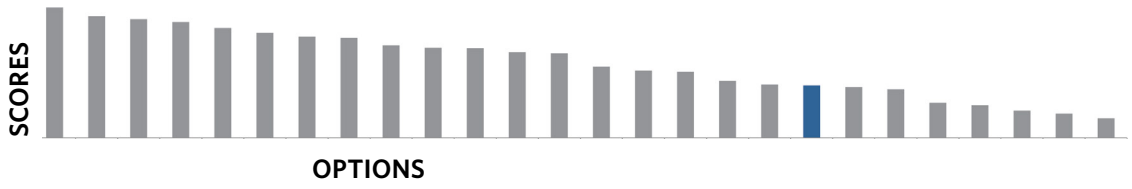
A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Tunnel

TUNNEL - NO IMAGE

Description: A new tunnel that extends below both the Willamette River and the large Combined Sewer Outflow pipes. The existing Burnside Street bridge will be removed. The tunnel's west entry portal is at approximately 12th St and its east entry portal is at approximately 28th St. A bicycle / pedestrian only bridge will be constructed in tandem with the tunnel near the existing Burnside Bridge. **Recommendation:** Dropped from further consideration.

TOTAL SCORE 37%



EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
1. SEISMIC RESILIENCY	**SUPPORT RELIABLE AND RAPID EMERGENCY RESPONSE AFTER AN EARTHQUAKE**			
	Measures			
	1.1 To what degree is the option vulnerable to traffic blockage or damage to the bridge from adjacent facilities?			
	1.1.1 Area (length X height) of unreinforced masonry buildings located adjacent to the bridge.	5	8.3	41.7
	Scoring Rationale: Possesses one of the lowest URM risks of the alternatives considered.			
	1.2 To what extent is the option vulnerable to traffic blockage from disabled vehicles?			
	1.2.1 This vulnerability is a function of width and length.	1	8.3	8.3
	Scoring Rationale: Consists of an extremely long tunnel with a bicycle / pedestrian bridges with narrow entrance widths for emergency vehicle use.			
2. NON-MOTORIZED TRANSPORTATION	**SUPPORT ACCESS AND SAFETY FOR BIKES, PEDESTRIANS AND PEOPLE WITH DISABILITIES**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	2.1 How does the profile grade affect bicycles, pedestrians and people with disabilities ease of use?			
	2.1.1 Percent and length of grade.	3	5.6	16.7
	Scoring Rationale: Possesses a moderate length of grade exceeding 3.5%.			
	2.2 How safe and convenient are the bike and pedestrian connections between the bridge and other planned bike and pedestrian facilities?			
	2.2.1 Access to existing and planned bike and pedestrian facilities.	5	5.6	27.8
	Scoring Rationale: Provides above average connectivity potential to adjacent existing and planned bicycle and pedestrian facilities.			
	2.3 To what extent does the option support personal security for pedestrians and bicyclists?			
	2.3.1 The extent to which the option's design locates pedestrians and bicyclists where they can be easily observed by others. For example, avoiding enclosed or less visible areas like elevators and pedestrian underpasses.	3	5.6	16.7
	Scoring Rationale: Creates new, visually isolated bike and pedestrian paths and ramps.			
3. CONNECTIVITY	**SUPPORT STREET SYSTEM INTEGRATION AND FUNCTION (CARS, FREIGHT, TRANSIT, BIKES, PEDESTRIANS AND ADA)**	SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	3.1 How well does the option connect with the existing and planned street network (for all modes)?			
	3.1.1 Number of streets permanently closed (including number of modes closed in those sections)? *3.1.2 Number of streets bypassed?*	1	5.6	5.6
	Scoring Rationale: Severs two or more existing streets and bypasses more than three existing cross streets.			
	3.2 How safe and convenient are the crossing roadway and the roadway connections to the existing and planned street grid at both ends?			
	3.2.1 Extent to which the crossings grade and curvature potentially affect vehicle safety. *3.2.2 Degree to which the option diverts vehicle traffic from an arterial to a non-arterial street.* *3.3.3 Extent of non-standard intersection layouts and vehicle movements.*	1	5.6	5.6
	Scoring Rationale: Degrades roadway geometrics versus the existing condition, and changes some local street classifications.			
	3.3 Will bridge openings cause periodic delay in crossing time (affects all modes)?			
	3.3.1 Is the crossing a movable bridge?	3	5.6	16.7
	Scoring Rationale: Consists of a non-movable tunnel.			

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. Total points ÷ # of Criteria = Points available per criteria: **(100 ÷ 6 = 16.666 or 16.7)**

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

EVALUATION CRITERIA		SCORE	POINTS AVAILABLE: 16.7	TOTAL (SCORE X POINTS = TOTAL)
4. EQUITY	**MINIMIZE ADVERSE IMPACTS TO HISTORICALLY MARGINALIZED COMMUNITIES AND PROMOTE TRANSPORTATION EQUITY**			
	Measures			
	4.1 To what extent would the option displace or impact access to existing social services (including overnight shelters)?			
	4.1.1 Social service providers displaced. *4.1.2 Number of social service providers (not displaced) that would have their existing access substantially diminished.*	5	8.3	41.7
	Scoring Rationale: Does not displace or impact access to existing social services (including overnight shelters).			
	4.2 To what extent would the option affect low income housing?			
	4.2.1 Units of low income housing displaced. *4.2.2 Are you precluding opportunities for future low incoming housing under zoning requirements?*	1	8.3	8.3
	Scoring Rationale: Displaces 30 units of existing low income housing and removes potential for 126 future units.			
5. BUILT ENVIRONMENT	**PROMOTE LAND USE COMPATIBILITY AND MINIMIZE IMPACTS TO PARKS AND HISTORIC RESOURCES**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	5.1 To what extent does the option permanently impact (not displace) buildings (direct blockage of view, light and/or access)?			
	5.1.1 Linear feet of buildings adjacent to new vertical alignments (affecting views and light).	5	3.3	16.7
	Scoring Rationale: Does not permanently block existing building views, light, or access.			
	5.2 How many commercial and industrial properties would be permanently displaced?			
	5.2.1 Number of businesses displaced. *5.2.2 Number of employees displaced.*	1	3.3	3.3
	Scoring Rationale: Permanently displaces/relocates 140 businesses and 1762 employees			
	5.3 How many units of long-term housing would be permanently displaced?			
	5.3.1 Number of units displaced.	1	3.3	3.3
	Scoring Rationale: Displaces 651 existing units of long-term housing.			
	5.4 To what extent would the option permanently displace park and recreation land?			
	5.4.1 Amount (area) of parkland permanently displaced. *5.4.2 Substantial impacts to park circulation/access.*	1	3.3	3.3
	Scoring Rationale: Has an above average amount of parks displacement and blocks access to North Waterfront Park walkway.			
	5.5 To what extent does the option impact national register historic resources and national register historic districts?			
	5.5.1 Number of national register historic resources, including "contributing" resources, displaced or visually obstructed. *5.5.2 Extent of the proposed transportation structures within the New Chinatown/Japantown Historic District and the Skidmore/Old Town Historic District.*	5	3.3	16.7
	Scoring Rationale: Visually obstructs no historic resources and adds no new bridge structure in historic districts.			
6. FINANCIAL STEWARDSHIP	**ENSURE PUBLIC FUNDS ARE INVESTED WISELY**	SCORE	POINTS AVAILABLE 16.7	TOTAL (SCORE X POINTS = TOTAL)
	Measures			
	6.1 What is the initial capital cost of the option?			
	6.1.1 Rank the options by cost "tiers" or "ranges".	1	8.3	8.3
	Scoring Rationale: Falls within the highest cost tier (greater than $1.1B).			
	6.2 What are the relative levels of maintenance and operational requirements through the options design life?			
	6.2.1 Number of major maintenance projects required over design life. *6.2.2 Relative level of on-going operational (including minor maintenance) needs by crossing type (e.g. power and staffing demands to operate tunnel, movable bridge or fixed bridge).*	1	8.3	8.3
	Scoring Rationale: Possesses a high long-term maintenance cost.			
			TOTAL (SCORE X POINTS = TOTAL)	248.9
			Percentile	**37%**

LEGEND

1. High Score = 5, Medium Score = 3, Low Score = 1
2. NOTE: 6.1 Capital Cost was scored based on a 1, 2, 3, 4, 5 scoring. All others were scored based on the 1, 3, 5 scoring.
3. In order to rescale the data to a value between 0 and 1 the following percentile equation was used.

$$\text{Percentile} = \frac{\text{TOTAL} - \text{SCORE}_{\text{MIN}}}{\text{SCORE}_{\text{MAX}} - \text{SCORE}_{\text{MIN}}} \%$$

Where: $\text{SCORE}_{\text{MIN}} = 100$, $\text{SCORE}_{\text{MAX}} = 500$

A more detailed analysis can be found in the Earthquake Ready Burnside Bridge Feasibility Report - Draft September 2018, Appendix D

Attachment 5: Project Problem Statement

Problem Statement

Multnomah County is undertaking a feasibility study to evaluate and recommend seismically resilient alternatives for the Burnside Bridge river crossing. The following summarizes the project background, the problem being addressed, and the project's intent.

Background

- Burnside Street, which extends from Washington County to Gresham and crosses the Willamette River via the Burnside Bridge, has been designated as a "lifeline" transportation route, meaning it will be expected to enable emergency response, evacuation, and recovery after a major disaster.[1]
- The Burnside Bridge carries approximately 40,000 vehicles and over 2,000 bikes and pedestrians per day.[2] Built in 1926, the Burnside Bridge is an aging structure requiring increasingly more frequent and significant repairs and maintenance.

The Problem

- Geologically, Oregon is located in the Cascadia Subduction Zone (CSZ), making it subject to some of the world's most powerful, recurring earthquakes. The last major quake in Oregon occurred 317 years ago, a timespan that exceeds 75% of the intervals between the major quakes to hit Oregon over the last 10,000 years. There is a significant risk that the next event will occur soon. Such an earthquake will cause major ground shaking, settling and landslides, and is expected to result in thousands of deaths and widespread damage to buildings, utilities, and transportation facilities.[3]
- The next major earthquake is expected to cause moderate to significant damage to the aging downtown bridges, including the existing Burnside Bridge, rendering them unusable immediately following the earthquake. In their current condition, all of the downtown bridges and/or approaches will fail to provide communities and the region with timely and critical emergency response, evacuation, and recovery functions.

Project Intent

- This project would address the regional need for a seismically resilient Burnside Street lifeline crossing of the Willamette River that will remain fully operational and accessible for vehicles and other modes immediately following a major CSZ earthquake. It will enable:
    - Emergency medical, fire and life safety response
    - Evacuation of survivors to safe locations
    - Reunification of families and households
    - Post-disaster restoration of services, and
    - Regional recovery.
- The project would help to implement specific and general recommendations for seismic resilience outlined in relevant local, regional and state plans and policies.[4]
- The project would be compatible with existing major infrastructure.
- The project would provide long-term, low-maintenance, multi-modal transportation functions over the Burnside Street Willamette River crossing consistent with Multnomah County's values.

ADDITIONAL INFORMATION AND SOURCES

Sources of Information Cited in the Problem Statement

[1] Regional Emergency Transportation Routes, Portland Metropolitan Region. Metro Regional Emergency Transportation Routes Task Force. 1996
[2] PBOT Portland Bicycle Count Report 2013-3014
[3] The Oregon Resilience Plan. Report to the 77th Legislative Assembly. 2013
[4] Regional Emergency Transportation Routes, Portland Metropolitan Region. Metro Regional Emergency Transportation Routes Task Force. 1996; Portland Citywide Evacuation Plan (draft); The Oregon Resilience Plan. Report to the 77th Legislative Assembly. 2013

Additional Information Supporting the Problem Statement

Existing Burnside Bridge and Lifeline Route

Burnside Street was designated as a "Primary East-West Emergency Transportation Route" in a 1996 report to Metro's Regional Emergency Management Group. This group was formed by intergovernmental agreement among the region's cities, counties, Metro and Red Cross to improve disaster preparedness, response, recovery and mitigation plans and programs. (Source: Regional Emergency Transportation Routes, Portland Metropolitan Region. Metro Regional Emergency Transportation Routes Task Force. 1996)

The Burnside Street lifeline route is approximately 18.7 miles in length and extends from Highway 26 in Washington County to Gresham, crossing the Willamette River via the Burnside Bridge.

Other agency plans have also identified Burnside Street as an important lifeline route. For example, the City of Portland's Citywide Evacuation Plan addresses evacuation needs for general disasters. The Plan identifies Burnside Street as the primary east-west evacuation route in downtown Portland west of the river. On the east side, I-84 is the Evacuation Plan's designated primary east-west evacuation route; east of the river Burnside Street is designated a secondary route due to less consistent capacity. (Source: Portland Citywide Evacuation Plan (draft). City of Portland Bureau of Emergency Management. 2014). However, while I-84 has greater capacity, it would likely be impassable following a major earthquake due to the collapse of multiple overpasses (18 overpasses cross I-84 between the river and I-205). Burnside Street has no overpasses or bridges through this segment, which is a significant advantage for a lifeline transportation route following a major earthquake.

The statewide Oregon Resilience Plan does not make specific recommendations for seismic resilience of locally owned roads or bridges. The plan's specific roadway and bridge recommendations focus on state-owned facilities. However, the statewide plan does acknowledge and emphasize the importance of creating seismically resilient local bridges and roads, particularly to support lifeline functions in urban areas. Relevant statements in the Oregon Resilience Plan include:

- "Enhance the proposed (state) Highway Lifeline Maps by considering the use of highway segments owned by cities and counties to provide access to critical facilities. Prioritize local routes to provide access to population centers and critical facilities from the identified (state) Tier-1 routes." (Transportation Chapter, page 54)

- "When developing projects for seismic retrofit of (state) highway facilities, consider whether a local agency roadway may offer a more cost effective alternative for all or part of a lifeline route." (Transportation Chapter, page 54)
- Recommendation for "Seismically upgrading lifeline transportation routes into and out of major business centers statewide by 2030" (Executive Summary).

Burnside Bridge traffic counts are from 2014. The Burnside Bridge currently has five general traffic lanes, two bike lanes and sidewalks. (Source: Multnomah County)

Earthquake Risk and Expected Damage

Geologic evidence shows that more than 40 major earthquakes have originated along the CSZ fault over the last 10,000 years. The time interval between CSZ quakes has ranged from a few decades to over a thousand years. The last major quake in Oregon occurred 317 years ago, a timespan that exceeds 75% of the intervals between major Oregon quakes. (Source: USGS Professional Paper 1661-F: Earthquake Hazards of the Pacific Northwest Coastal and Marine Regions, Robert Kayen, Editor. Turbidite Event History—Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone. 2012. Chris Goldfinger, et. al.)

"Oregon's buildings, transportation network, utilities, and population are simply not prepared for such an event. Were it to occur today, thousands of Oregonians would die, and economic losses would be at least $32 billion. In their current state, our buildings and lifelines (transportation, energy, telecommunications, and water/wastewater systems) would be damaged so severely that it would take three months to a year to restore full service in the western valleys, more than a year in the hardest-hit coastal areas, and many years in the coastal communities inundated by the tsunami. Experience from past disasters has shown that businesses will move or fail if services cannot be restored in one month; so Oregon faces a very real threat of permanent population loss and long-term economic decline." (Source: The Oregon Resilience Plan. Report to the 77th Legislative Assembly. 2013)

"Urban areas…face a large geographic barrier in the Columbia, Willamette, Deschutes, and Rogue Rivers and Bear Creek. These weak links in the urban transportation network create a potential for longer-term impacts because of the amount of time it is likely to take to restore traffic over large river bridges and to address problems". (Source: The Oregon Resilience Plan)

All of the older bridges crossing the Willamette River are expected to suffer seismic damage in a major earthquake. Some are expected to collapse and none are expected to be usable immediately following the earthquake. In addition, the east side access roads to all of the downtown bridges, except the Burnside Bridge, pass under and/or travel on aging I-5 overpasses that are expected to collapse in a major quake, thereby blocking access to those river crossings (Hawthorne, Morrison, Steel and Broadway bridges).

The state-owned bridges (Ross Island, Marquam, Fremont and St. Johns), like the other older bridges crossing the Willamette River, were designed and built before the Cascadia Subduction Zone had been identified and understood. ODOT expects that all bridges would be unusable immediately following a CSZ earthquake, and have classified expected damage ranging from "collapse" for the Ross Island Bridge, "extensive" for the St. Johns Bridge, and "moderate" for the Fremont and Marquam bridges. ODOT anticipates that the main river portion of the Marquam Bridge, following inspection and repairs, could potentially be serviceable four weeks after a CSZ earthquake. However, because the I-5 viaducts/ramps

on the east side are expected to suffer "extensive" damage, there may be no way to access the Marquam crossing. ODOT has identified seismic retrofit needs and priorities for the state highway system from the coast to east of the Cascades. Estimated costs are in the billions and ODOT has suggested that implementation could occur in five phases over several decades. The Oregon Highways Seismic Plus Report indicates that the state-owned Willamette River crossings are not the first priorities for the state system, in part because of the high cost of retrofitting or replacing these bridges. (Oregon Highways Seismic Plus Report https://www.oregon.gov/ODOT/HWY/BRIDGE/docs/2014_Seismic_Plus_Report.pdf)

The two new bridges over the Willamette River (Sellwood and Tilikum) are not expected to collapse in a CSZ earthquake. The Sellwood Bridge was designed to survive a CSZ earthquake and be back in service quickly after the event. The County also mitigated a landslide prone area near the west end of the bridge. However, landslides could be an issue in the hills above Highway 43 on the west side away from the bridge area, and, access to the downtown core and Burnside lifeline route would require approximately ten miles of out-of-direction travel via the Sellwood Bridge. The Sellwood Bridge could serve a lifeline function following a major earthquake but would not serve the same broad area, population or downtown core that is served by the Burnside Bridge and Burnside lifeline route.

The transit oriented Tilikum Crossing Bridge, serving light rail transit, street car, buses, bikes and pedestrians, is also expected to survive and be serviceable following a CSZ earthquake. However, because it is not a designated lifeline route nor intended for general vehicular usage, the approaches to the bridge were designed to "life safety" standards and not intended to provide lifeline functions. Life safety standards result in a structure that will preserve lives by avoiding collapse in a major earthquake but is not necessarily expected to be usable immediately following such an event. In addition, the west side access to the bridge crosses under several seismically vulnerable I-5 and I-405 viaducts that, in their current condition, would be likely to suffer severe damage in a major earthquake and block the route to the bridge. It must also be recognized that the Tilikum Crossing is not connected to any identified Priority 1, 2 or 3 seismic lifeline route."

In addition to bridge and overpass damage, roads could be blocked by debris from collapsed or damaged Unreinforced Masonry (URM) buildings following a major earthquake. The City of Portland's URM Seismic Retrofit Project is developing policy that would require owners to seismically retrofit their URM buildings over the next 5 to 25 years, depending on the building classification and type of retrofit. (see http://pdx.maps.arcgis.com/apps/Viewer/index.html?appid=a920f2a1fd2746f1a7efad1262aa1312 for a map locating URM buildings; Retrofit Project sources include: https://www.portlandoregon.gov/pbem/66306 and https://www.portlandoregon.gov/pbem/article/596312).

Role of Resilient Transportation in Disaster Recovery

"A resilient transportation network is critical for re-establishing other lifelines, such as water, electricity, fuel, communication, and natural gas, after the earthquake. For example, a resilient transportation system allows repair crews to access and reconnect water pipes and power lines more quickly, and it provides access to much needed fuel and supplies. Given the transportation system's current state of vulnerability to ground shaking and tsunami inundation, initial damage from a Cascadia subduction zone earthquake is expected to be devastating to the parts of the system located along the coast and in western Oregon. The resulting lack of mobility will have direct impacts that severely limit rescue operations, inspection of critical infrastructure, restoration activities, and the state's ability to restore

services leading to recovery. The widespread damage and lack of access to many parts of western Oregon will be partially mitigated by disaster preparedness planning, but that effort will be hampered by the lack of access to disaster areas after the event, which could limit the ability of emergency responders to save lives, facilitate evacuation, and manage critical infrastructure." (Source: The Oregon Resilience Plan.)

Serious disruption to transportation infrastructure can have a catastrophic impact on the ability of an economy and community to recover from a disaster. Creating a seismically resilient river crossing and lifeline roadway across the river and region will help reduce long-term economic and societal impacts following a disaster and will promote a faster recovery both immediately after the disaster (facilitates a more effective emergency response) and also in the long term (helps economy recover faster and gets people back to work/school). The cost to build resilient infrastructure is lower than the cost to a community of losing access to and rebuilding infrastructure following a disaster. (Sources: National Highway Research Collaborative Program Report 777; Chang, 2000. Transportation Performance, Disaster Vulnerability, and Long-Term Effects of Earthquakes; Madhusudan & Ganapathy, 2011. Disaster resilience of transportation infrastructure and ports – An overview)