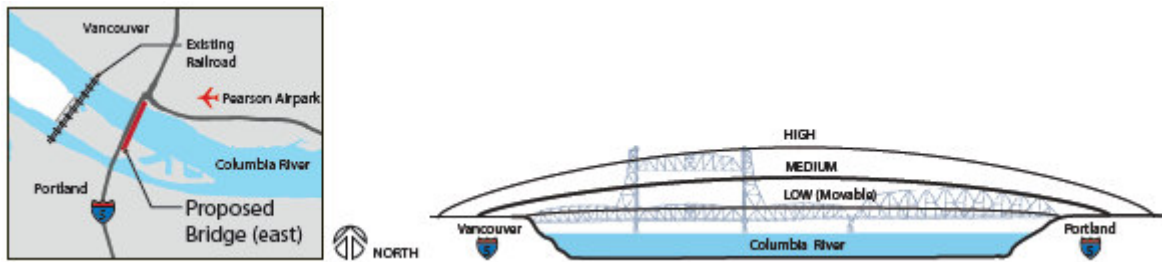


Figure 5-4. Replacement Bridge Upstream/Mid Level

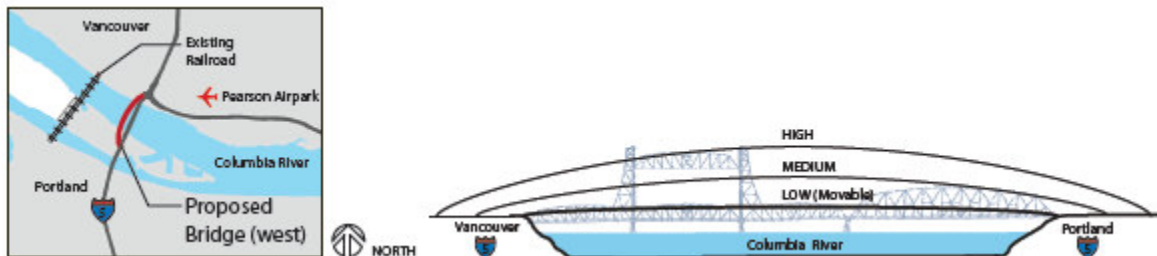
These components, which replace the existing I-5 bridges, pass the Step A questions because:

1. They would increase vehicular capacity in the Bridge Influence Area by providing approximately ten lanes of capacity for vehicular traffic.
2. The bridge configurations could also be used to carry transit, and thus could allow for an increase in transit capacity.
3. Freight mobility would be improved because of the increase in capacity and because the vertical alignment would be flatter and more conducive to truck movements.
4. All components that replace the existing bridges would be built to modern standards including full shoulders and a design speed of 70 mph, and they would not encroach into Pearson Airpark airspace.
5. All of these components would also allow for a separated bike/pedestrian lane designed to modern standards in each direction.
6. They would also reduce seismic vulnerability, as the new bridges would be brought up to current seismic standards.

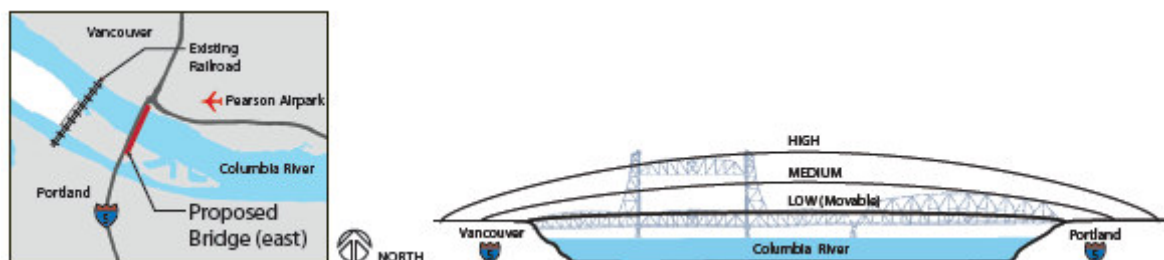
5.2.2 RC-7 Through RC-9 (Supplemental Bridge Variations)

Descriptions:

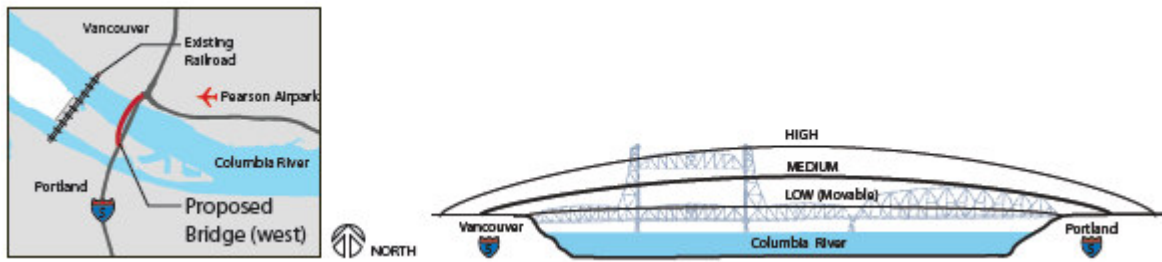
RC-7 Supplemental Bridge Downstream/Low Level/Movable: This crossing represents a new bridge that would be located immediately west (downstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed bridge is a low level bridge that would provide approximately 65 feet of vertical clearance for traffic traveling down the Columbia River. Because this vertical channel clearance does not pass 100 percent of the marine traffic operating on the river, a portion of the bridge would need to be opened to allow marine traffic taller than 65 feet to pass through the channel. This is called a moveable span, of which the exact type has not been defined. Types of moveable spans could include, but are not necessarily limited to, a lift span, a swing span, or a draw bridge type opening. The opening of the new bridge would have to line up with the lift span of the existing I-5 bridges. **Figure 5-5** shows this component.

Figure 5-5. Supplemental Bridge Downstream/Low Level/Movable

RC-8 Supplemental Bridge Upstream/Low Level/Movable: This crossing represents a new bridge that would be located immediately east (upstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed bridge is a low level bridge that would provide approximately 65 feet of vertical clearance for traffic traveling down the Columbia River. Because this vertical channel clearance does not pass 100 percent of the marine traffic operating on the river, a portion of the bridge would need to be opened to allow marine traffic taller than 65 feet to pass through the channel. This is called a moveable span, of which the exact type has not been defined. Types of moveable spans could include, but are not necessarily limited to, a lift span, a swing span, or a draw bridge. The opening of the new bridge would have to line up with the lift span of the existing I-5 bridges. Figure 5-6 shows this component.

Figure 5-6. Supplemental Bridge Upstream/Low Level/Movable

RC-9 Supplemental Bridge Downstream/Mid Level: This crossing represents a new bridge that would be located immediately west (downstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed bridge is a mid level bridge that would provide approximately 110 feet of vertical clearance for traffic traveling down the Columbia River. Because this vertical channel clearance would allow 100 percent of the marine traffic operating on the river to fit under the bridge, the entire bridged would be fixed and therefore no portion of the new bridge would require any openings. However, since the old bridge would remain in place and does not allow 100 percent of the marine traffic to pass through, the highest clearance in the new bridge would line up with the lift span of the existing bridges. **Figure 5-7** shows this component.

Figure 5-7. Supplemental Bridge Downstream/Mid Level

These components pass the Step A questions because:

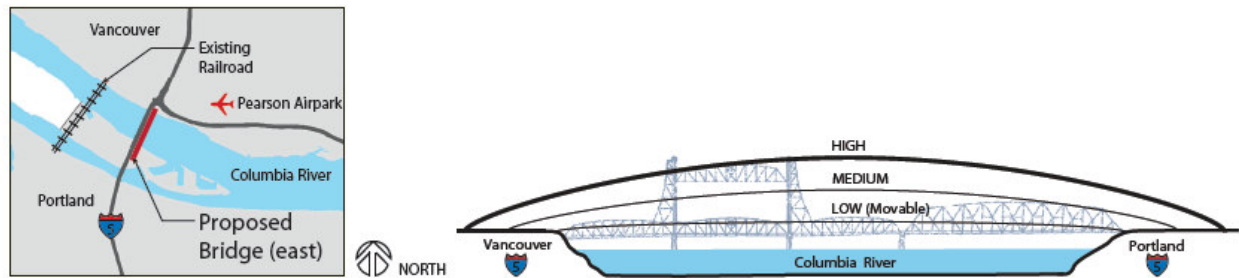
1. They would increase vehicular capacity in the Bridge Influence Area by providing approximately ten lanes of capacity for traffic.
2. The bridge configurations could also be used to carry transit, and thus could allow for an increase in transit capacity.
3. Freight mobility would be improved because of the increase in capacity and because the vertical alignment would be flatter and more conducive to truck movements.
4. All components that replace the existing bridges would be built to modern standards including full shoulders and a design speed of 70 mph, and they would not encroach into Pearson Airpark airspace.
5. All of these components would also allow for a separated bike/pedestrian lane designed to modern standards in each direction.
6. Depending on the use of the existing I-5 bridges, they may need to be seismically upgraded to meet the new seismic criteria. It is not known at this point whether the existing bridges can be retrofitted to meet current seismic design standards.

Components RC-7 and RC-9, which add a new bridge immediately downstream of the existing I-5 bridge, would make it more difficult for tugs and barges to line up with the opening in the BNSF railroad bridge downstream. Further study is needed to determine whether these components can provide for safe passage of marine vessels. One potential improvement would be to straighten the path through the bridges by relocating the opening in the BNSF railroad span to the center of the Columbia River.

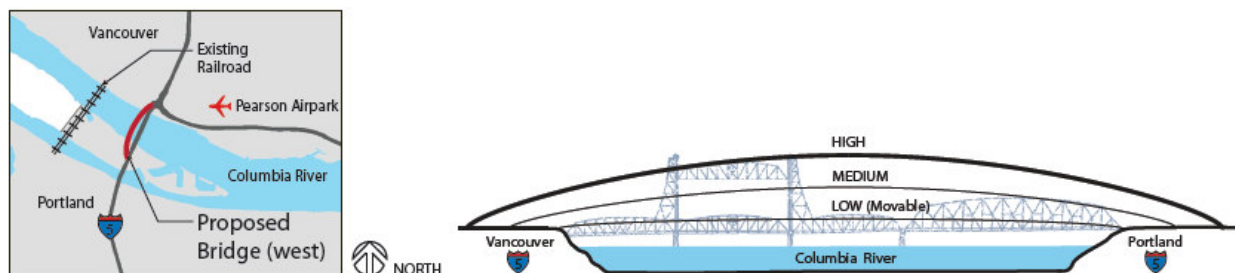
5.2.3 RC-13 Tunnel to Supplement I-5

Description:

This component would supplement the existing I-5 bridges with a multi-lane tunnel; the existing I-5 bridges would remain in place. The tunnel would surface approximately at Mill Plain Blvd. on the north and between Marine Drive and Victory Blvd. on the south, and would bypass

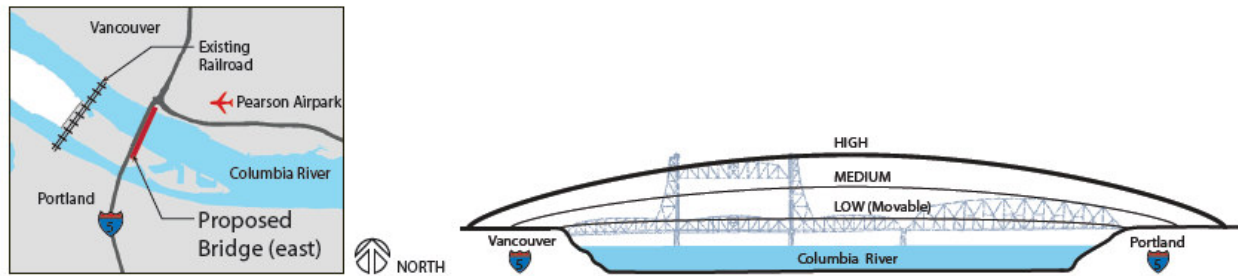
Figure 5-11. Replacement Bridge Upstream/High Level

RC-11 Supplemental Bridge Downstream/High Level: This crossing represents a new bridge that would be located immediately west (downstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed bridge is a high level bridge that would provide approximately 130 feet of vertical clearance for marine traffic traveling down the Columbia River. This elevation was set based on the existing 129 foot of vertical clearance of the I-205 Columbia River Bridge. Because this vertical channel clearance would allow 100 percent of the marine traffic operating on the river to fit under the bridge, the entire bridge would be fixed and therefore no portion of the new bridge would require any openings. **Figure 5-12** shows this component.

Figure 5-12. Supplemental Bridge Downstream/High Level

RC-12 Supplemental Bridge Upstream/High Level: This crossing represents a new bridge that would be located immediately east (upstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed supplemental bridge is a high level bridge that would provide approximately 130 feet of vertical clearance for marine traffic traveling down the Columbia River. This elevation was set based on the existing clearance of the I-205 Columbia River Bridge. Because this vertical channel clearance would allow 100 percent of the marine traffic operating on the river to fit under the bridge, the entire bridge would be fixed and therefore no portion of the bridge would require any openings.

Figure 5-13 shows this component. shows this component.

Figure 5-13. Supplemental Bridge Upstream/High Level**Rationale for Not Advancing:**

All of these components fail Question #4 relating to airspace safety. These high level bridges significantly encroach into Pearson Airpark airspace, and depending on the bridge type, may also encroach into PDX airspace. The FAA has confirmed that these high level structures would not be favorably received.

5.3.2 RC-10 Supplemental Bridge Upstream/Mid Level**Description:**

This crossing represents a new bridge that would be located immediately east (upstream) of the existing I-5 bridges. Either one or both of the existing I-5 bridges would remain in place as they are today. The proposed bridge is a mid level bridge that would provide approximately 110 feet of vertical clearance for marine traffic traveling down the Columbia River. Because this vertical channel clearance would allow 100 percent of the boats operating on the river to fit under the bridge, the entire bridge would be fixed and therefore no portion of the new bridge would require any openings. However, since the old bridge will remain in place and does not allow 100 percent of the marine traffic to pass through, the highest clearance in the new bridge would line up with the current lift span of the existing bridge. **Figure 5-14** shows this component.

Figure 5-14. Supplemental Bridge Upstream/Mid Level