

MEETING TITLE: Pedestrian and Bicycle Advisory Committee
DATE: Wednesday, May 27 2009, 9:00 AM to 12:00 PM
INVITEES: Pedestrian and Bicycle Advisory Committee Members
LOCATION: Columbia River Crossing Project Office, Vancouver WA

TIME	AGENDA ITEM
9:00	Introductions
9:05	Review of previous meeting summary
9:20	Update on one-way designations for bike traffic on existing Interstate Bridge
9:30	Brainstorming of additional two-bridge options for potential further exploration
10:00	Comparison (matrix) of I-5 pathway options
11:20	Discussion of potential PBAC recommendations for pathway maintenance and security
11:55	Next meeting topics
12:00	Adjourn

Columbia River **Draft Meeting Summary**

MEETING: Pedestrian and Bicycle Advisory Committee (PBAC)
DATE: May 6, 2009, 9:00 am – 12:00 pm
LOCATION: Columbia River Crossing (CRC), 700 Washington St., Suite 300, Vancouver WA
FROM: David Parisi

PBAC ATTENDEES:

Bertelsen, April	Portland Bureau of Transportation
Boulanger, Todd	City of Vancouver Transportation Services
Burgstahler, Ken	Washington State Dept. of Transportation
Elven-Snyder, Debbie	C-TRAN
Greulich, Joe	Clark County Bicycle Advisory Committee
Merrick, Rod	Portland Pedestrian Advisory Committee
Rehberg, Shayna	Portland Bicycle Advisory Committee
Valenta, Walter	Bridgeton Neighborhood Association, CRC Urban Design Advisory Group

CRC STAFF ATTENDEES:

Deml, Matt	Bridge engineering
Freeman, Natalie	Design engineering
Gundersen, Heather	Environmental manager
Horowitz, Zachary	Traffic engineering
Liles, Casey	Design engineering
Minor, Michael	Noise consultant
Ovington, Peter	Communications and public outreach
Parisi, David	Transportation planning
Petersen, Laura	Bridge engineering
Rust, Lynn	Assistant Deputy Project Director

GUESTS:

Brettman, Allan	<i>The Oregonian</i>
Collier, Corky	Columbia Corridor Association, member of CRC Freight Working Group
Howton, Brad	Columbia Crossings
Krause, Doug	Citizen, volunteer with Bicycle Transportation Alliance
Pickett, Robert	Vice-chair, Portland Bicycle Advisory Committee, Portland Police Bureau

Review of previous meeting summary

The summary of the April 22 meeting was approved with the following minor change:

Todd Boulanger requested a change to section 2 of the summary, titled “Summary of bridge design recommendations made by UDAG,” under the heading titled “Draft concepts for path on a two-bridge or three-bridge structure.” The last sentence in the fourth paragraph should be amended as follows:

Users of the path would be 20-25 feet higher and the connections to touch down on each side of the river could be more challenging as the connecting pathways would need to be about two city blocks longer than with the pathway ~~on~~ under the highway deck.

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Review of pedestrian and bicycle pathway design refinement for bridge options

Staff discussed putting the Interstate Bridge in context in comparison to the Willamette River bridges in Portland. Zach Horowitz provided basic information about the Willamette River bridges compared to the Interstate Bridge (see handout titled *Comparison of Willamette River Bridges with Interstate 5 Bridge*). There are major differences in height, length, noise, and other factors.

In order to have an “apples to apples” comparison of the existing Interstate Bridge, staff measured the length of the Willamette River bridges, including the access and egress ramps. These lengths were then compared with the length of the existing I-5 bridge (and future proposed options) from the location of the proposed Hayden Island light rail station to the touchdown point in downtown Vancouver. The table in the *Comparison* handout also listed bridge heights, vehicle traffic volumes, and multi-use path widths.

David Parisi and Natalie Freeman showed a profile of the existing and proposed Interstate Bridge, highlighting elevations and grades for the multi-use path, as well as the high water level of the Columbia River. Parisi discussed the challenges of getting bicyclists and pedestrians from the bridge itself back down to grade at each end of the bridge.

Discussion

Handout edits: PBAC members’ suggestions regarding the handout included the following: Amend the column titled “Daily traffic volume”; include a buffer distance for the path width, since it’s an issue when motor vehicles are right up against bicyclists and pedestrians; and include noise decibel data.

Elevation of path related to travel time: Todd Boulanger asked if it’s possible to put bicyclists at the same grade as light rail in order to “burn” some elevation, i.e., get faster bicyclists back down to the ground more quickly. He suggested this could be done even by keeping bikes separate from pedestrians. Parisi said those are refinements that could be looked at as the design moves forward.

Rod Merrick asked if there is any reason why the pedestrian and bicycle bridge for the three bridge option can’t be at a lower elevation. Matt Deml explained that the segmental box girder bridge type doesn’t allow the path to be moved down because it would compromise the structure. He said lowering the structure would also compromise the river navigation clearance. Deml discussed the bridge structure depth and said, in a three-bridge configuration, there is some opportunity to slightly lower the bridge without affecting navigation channels.

Hayden Island ramp: Brad Howton asked if staff has considered having the Hayden Island multi-use path ramp at the south end of the island rather than the north end. Parisi said staff has discussed it with the City of Portland as part of the Hayden Island Concept Plan and it is currently proposed on the north side to provide access to a potential waterfront park. Stairs will be provided on the south end and ADA access is provided at the Hayden Island transit station.

Main Street access to waterfront: Todd Boulanger asked staff to be aware that there is some concern from the City of Vancouver about keeping access open to the future extension of Main Street to the waterfront. Note: While not discussed during the meeting, one current design option shows a connection from Main Street south to the waterfront via a pair of roundabouts.

Two bridge versus three bridge option

Two bridge option: Staff explained that the two bridge option originated in the project’s value engineering process and is also supported by the CRC Urban Design Advisory Group (UDAG). Heather Gundersen, CRC environmental manager, said the natural resource agencies have stated their preference for a two bridge option due to its smaller environmental footprint.

There are currently two possible designs for the multi-use path with the two bridge option, which Parisi showed renderings of. The first – called the stacked/underdeck option – features the path below the northbound highway deck. The second – the stacked/deck option – would include two 12-foot wide paths at the highway elevation. (For more detail, please see page 8 of the April 22 meeting materials.) Matt Deml explained that the stacked/deck concept would likely require additional structural webs to support

paths above on the highway decks, due to the increased bridge width. The stacked/deck option is estimated to cost about \$75 million more than the stacked/underdeck option (for the multi-use path component only). April Bertelsen asked for a rendering showing things from the pedestrian perspective.

Three bridge option: This is estimated to cost \$50-\$75 million more than the two bridge stacked/underdeck option (for the multi-use path component only). The project is currently looking at about 3-4 percent of project cost going toward the pedestrian and bicycle facilities.

Brad Howton commented that the weather and wind can be more severe at a higher elevation such as this. He expressed concern about having path users so high on a surface exposed to wind.

Follow-up responding to questions posed at April 22 PBAC meeting

David Parisi introduced staff from the project's environmental team to address questions raised at the last meeting.

Air quality

Heather Gundersen, CRC environmental manager, said air quality would definitely be better for a multi-use path underneath the highway deck than on top, next to the highway. This will be somewhat dependent on wind direction, she added. Some PBAC members said that, with the below deck path option, they wouldn't want the structural design of the bridge to trap or enclose vehicle exhaust and expose users of the path to it.

Noise

Staff explained anticipated noise levels with the three bridge and two bridge options. Parisi provided several examples of expected noise levels near a new I-5 bridge, comparing to areas in the Portland-Vancouver region with similar highway traffic and multi-use paths. Parisi added that there is a 75 percent projected increase in truck traffic on the I-5 bridge by 2030, which will increase noise levels.

Average noise levels: Michael Minor, CRC noise consultant, discussed highway noise and provided rules of thumb for how much noise to expect under certain highway and path conditions. At noise levels above 65 decibels, it's hard for two people to have a conversation while standing three feet apart. If you're in a city alongside a major highway, with no reflective surfaces behind you, you would generally hear noise in the range of 70-80 decibels. With a reflective surface behind you, it would increase to 80-85 decibels. For every 10 miles per hour (mph) increase in traffic speed, there is about a three decibel increase in noise. It takes 50 cars to produce the same amount of acoustical energy as one truck, Minor said.

Mitigation: Given this information, Todd Boulanger suggested the need for mitigation, such as quieter pavement materials. Michael Minor said there are examples of quieter pavement working well for only about the first year, and that it is not a good enough tool for a variety of reasons. From a legal standpoint, the project cannot consider quieter pavement as noise mitigation in the environmental impact statement.

Weather effects: Todd Boulanger said sound studies are usually done under fair weather conditions. How does that change, he asked, under wet conditions or with studded tires? Minor said typically you get a three decibel increase with those factors.

Enforcement of speed limits: Rod Merrick said the project will create conditions allowing trucks to go faster, thus creating higher noise levels. There should be stricter enforcement of speed limits for trucks, he said. Minor said the reduction in decibel levels between 50 mph and 55 mph is minor and lowering truck speed limit would conflict with the purpose and need of the project and moving freight. Merrick suggested that more moderate speeds could actually help to move more traffic more smoothly. Minor said it's only three decibels per 10 mph and that it's barely perceptible. Ron Anderson said the project will probably be using 60 mph design speeds across the bridge itself with potentially 55 mph on the Oregon side.

Upper deck: Minor said that to effectively mitigate noise with the path on the upper deck would require a structural barrier, which can create unpleasant conditions and reduce visibility. Clear, acrylic walls are a possibility, but it's a significant maintenance challenge to keep them free of graffiti.

If the project is basing expected noise levels on today's truck fleet, Ken Burgstahler asked, will noise levels decrease in the future with engine technology improvements and quieter trucks? Minor said he doesn't see it getting a lot quieter, in part due to an increase in traffic and truck volumes.

Walter Valenta said one reason for putting the path above is so it's open and so users don't feel like second class citizens stacked below. But if the upper deck requires some enclosure in order to protect users from noise, then that might cancel out the benefits of being above and in the open.

Lower deck: With the path below the highway deck, Minor said path users could expect to hear less noise than a path on the three bridge or on the top deck of the two bridge option. The nice thing, though, is that tire noise is high frequency sound and would generally not be heard below the upper deck. It would definitely be quieter under the deck – how much quieter he couldn't say – but it would depend on various factors, including whether the bridge contains expansion joints. Staff said there likely will not be any expansion joints. If that's the case, Minor said it would eliminate the major source of noise, likely putting it easily below 70 decibels.

Field survey: Minor said he could locate some places to take noise measurements. Parisi said staff tried to identify a few spots; it might make sense to do a field trip. Minor cautioned that most bridges do have expansion joints and so it could skew the noise readings if the CRC project ends up not including expansion joints. Minor said he would want to find an example without expansion joints, with high truck volumes, and with a solid concrete deck and other features that would replicate the future I-5 bridge.

Recap of pathway security and maintenance considerations

Staff reviewed the April meeting handout summarizing flip chart notes, in which PBAC listed considerations for ensuring that the future path has an effective security and maintenance plan. Topics included safety and security, design, comfort, maintenance and operations, lighting, and responsibility.

Discussion

Safety and security: For bullet #3 on the handout, April Bertelsen clarified that she was thinking of a *staffed* security patrol. A good example is Clean and Green. She would not feel comfortable relying solely on a citizen group.

Todd Boulanger said PBAC is not trying to achieve world class security or maintenance, but rather trying to get it to the same level as what motorists experience. April Bertelsen and others disagreed and felt that the maintenance and security needs for the path are both different and greater than for highway users.

Joe Greulich said the City of Beaverton adjusted the width between bollards for their off-road bike paths so that motorcycle patrols can access the path and conduct law enforcement. Portland Police Officer Robert Pickett said access for emergency vehicles would be important.

Staff asked Pickett if the City of Portland has enforcement authority on I-5 and I-205. Pickett said yes.

Design: Officer Pickett discussed the concept of natural surveillance, known as crime prevention through environmental design (CPTED). With an underdeck bridge, he said, you lose the natural surveillance from highway drivers. Todd Boulanger asked if he's aware of many calls from the I-205 bridge. Boulanger suggested there isn't much surveillance from highway drivers on I-205, where the pathway is visible to drivers from both directions, because a bicyclist was killed there and no one called 911.

Corky Collier asked Officer Pickett how big of a difference in security he sees between the two options, and what suggestions he has. Pickett felt the three bridge option with the path alongside light rail would be safer and provide more natural surveillance. The more open you can make an underdeck path, he said, the better. Lighting also will be a key factor. Rod Merrick suggested including piped in music.

Pickett and others agreed with the importance of eliminating hiding places, such as on the North Portland Harbor Slough bridge, where some people hang out around the main doors of the cell phone towers. They also emphasized the importance of creating gateway entry points to the bridge.

Walter Valenta said he thinks of the path not so much as a bike commuter corridor but as a tourist destination, with a fantastic view, controlled access points, and programmed events. Having something

like park rangers at the two entry points would help. It should be treated like a park that you happen to have bike commuters going through.

Brad Howton views it as the first real sidewalk connection with the neighborhoods to the north and south. Part of the Hayden Island Plan assumes that people will start using these connections as non-vehicle modes. That's why he is concerned about the height of the path.

Rod Merrick would like to discuss how the other empty underdeck bridge cell will be used, whether as a busway, as access for emergency vehicles, or as some kind of Sunday Market. It needs to be made integral to this, he said.

Other design elements the group agreed on are listed in the handout.

Responsibility: Officer Pickett felt that an effective security plan would require a very specific agreement with the local jurisdictions. City of Portland police staffing levels, he said, are such that it might not be patrolled more than once per day at most if it was built today and staffed by the City of Portland. Rod Merrick explained that PBAC has asked for 24-hour patrols on the bridge, seven days a week, paid for using revenue from tolls.

Officer Pickett asked if it would be possible to exclude people from the bridge and get trespass agreements from ODOT and WSDOT. Staff said yes. Pickett said some form of 24/7 monitoring would be key. The Steel Bridge in Portland has a bridge operator and cameras. Pickett said he could envision patrols on bicycles or Segways. That might provide enough visibility and security to prevent homeless camps and other problems.

Pickett said it would help to have dedicated security and signage listing an emergency phone number. PBAC members said it's critical to have a tolling authority that helps pay for security and maintenance.

PBAC recommendation memo: The group agreed they would like to draft a memo to the CRC Project Sponsors Council outlining PBAC's mandate for security and maintenance of the future path. They view this as a starting point to craft a memorandum of understanding or an intergovernmental agreement for a security and maintenance plan, with a primary focus on the two bridge option, eventually to be incorporated into the Columbia Crossing Mobility Council.

Comparison of current I-5 pathway options

David Parisi said the key questions seem to be: What would be the elements of a maintenance and security plan? And how do the options compare?

Matrix of design guidelines

With this in mind, staff distributed a draft matrix titled *Pedestrian and Bicycle Design Guidelines* that lists a variety of parameters including pathways, safety, connections, quality of experience, and cost. The parameters listed are based on an earlier document created by PBAC in one of their first several meetings.

The matrix can be a helpful tool to compare and contrast, while considering all the factors. Parisi asked if the group would like to develop a recommendation that applies to any of the potential bridge designs, or instead use the matrix as a tool to specify what PBAC wants? The group agreed that filling out and agreeing on the matrix first would be most helpful.

Staff will revise the matrix based on comments from PBAC so it can be used as a comparative tool.

Path adjacent to light rail: For the two bridge stacked option, April Bertelsen asked if it's possible to put the multi-use path next to light rail. Staff will report back on whether this is feasible, including how light rail maintenance access would be handled.

Pedestrian-only path: Rod Merrick said one of the early criteria was not only for a wide multi-use path but also an additional path for pedestrians on the other side of the bridge. CRC staff cautioned that there is additional cost and complication in going too far above and beyond the department of transportation standards. Merrick suggested the pedestrian path would be for safety and egress for motorists who break

down and need to get off the bridge. Staff said there would already be 12-foot shoulders for that purpose. After some discussion and other PBAC members urging caution about unrealistic options, Merrick said he is reassured that at least the group is not compromising on the desire for a pedestrian-only connection from Bridgeton to Hayden Island under any of the three options currently being studied.

Empty bridge cell: The group discussed potential uses for the empty bridge cell / open web area below the highway and adjacent to the proposed path. Todd Boulanger said riders of neighborhood electric vehicles (NEVs), like scooters, pay the gas tax but aren't getting a cross-river connection, so it should be used for them. Rod Merrick said staff should figure out what it could be used for and not preclude future uses. If it ends up being used in the future as a utility corridor that blocks views or airflow, he said, that would not be fair. April Bertelsen said she would support using it for NEVs and the potential for programming and expandability. Shayna Rehberg wondered if the ability to program the space changes according to having a scenic overlook in the two bridge option vs. not having one in the three bridge option.

Freight perspective: Corky Collier, member of the CRC Freight Working Group, said if PBAC feels one of the bridge path options is an easy choice, the freight group would like to know. He added that many people don't realize the two bridge option would allow path users to be out in the open for at least half the distance between Expo Center and Vancouver, i.e., the portion of the path on Hayden Island and across the North Portland Harbor.

Suggested changes to matrix

The group discussed the need to potentially expand the number of guideline categories and the challenges of ranking these qualitatively and quantitatively. They asked staff to consider collapsing or expanding the categories. Below are suggested changes and additional questions.

- Pathways (change this heading to "Design")
 - List both the recommended and the standard width, in case the recommended path width gets value-engineered out.
 - Include connection to Vancouver waterfront.
 - Address expandability and use of the empty bridge cell, including conceptualizing connections for potential future use.
- Safety (change this heading to "Safety and Personal Security")
 - The group agreed to move the "noise" category below to "Quality of Experience."
 - Make wind, rain, and headlight glare protection into separate line items.
- Quality of experience
 - Remove the "Quality of Experience" category and rename or reposition it.
- Other changes or questions
 - Show a separate identification for each of the connection points to the ground for the east side and west side.
 - Include a category of items likely to be value-engineered out? Parisi said the standard vs. recommended widths could capture part of that.
 - Add height and length details.
 - Add another category titled "Remarks" to explain special issues.
 - Provide more specifics on design for Hayden Island and North Portland Harbor

Parisi sees the matrix as a tool to educate people. Staff will reorganize the matrix, send it out ahead of time for review, and PBAC will focus on filling it in at the next meeting.

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Action items for staff

- For the two bridge stacked option, April Bertelsen asked if it's possible to put the multi-use path next to light rail. Staff will report back on whether this is feasible, including how light rail maintenance access would be handled.
- For the two bridge stacked/deck option, April Bertelsen asked for a rendering showing things from the pedestrian perspective.

Public involvement update

Parisi encouraged PBAC members to attend the May 12 meeting of the Portland Bicycle Advisory Committee, where CRC will be presented at the meeting. Todd Boulanger suggested that the Portland Bicycle Advisory Committee receive more regular updates by City of Portland staff on the status of the CRC project and multi-use path issues. The CRC project also will be presented to the Portland Pedestrian Advisory Committee on May 19.

Next meeting

Wednesday, May 27, 2009

9:00 a.m. – 12:00 p.m.

Columbia River Crossing project office
700 Washington St., Suite 300, Vancouver WA

DRAFT — FOR REVIEW ONLY

Pedestrian and Bicycle Design Guidelines

DESIGN

Exceeds ODOT/WSDOT multiuse path 'desirable' width standards (16 feet)
Meets ADA standards for grade ($\leq 5\%$) and cross-slope ($\leq 2\%$) standards
Minimizes travel on long grades
Maintains required sight distances for applicable design speeds
Provides large turning radii on access ramps
Meets overhead clearance standards (10 feet)
Constructed with non-skid surfaces
Planned for future capacity
Emergency response/maintenance vehicle access
Overall cost

Three Bridge Concept	Two Bridge Concept Bikes and Peds under deck	Two Bridge Concept Bikes and Peds on top deck	Concept 4

SAFETY AND PERSONAL SECURITY

Minimize exposure of pedestrians and bicyclists to vehicles
Minimize exposure of pedestrians and bicyclists to transit
Separation of pedestrians and bicyclists
Separation of "commuter" bicyclists and "recreational" bicyclists
Grade separated paths
Barriers—vehicular, transit and water
Lighting
Security cameras and phones
"Eyes on the street"
Post ordinances, applicable laws and agency contact information

CONNECTIONS

Length of connection to Hayden Island west of I-5
Length of connection to Hayden Island east of I-5
Length of connection to downtown Vancouver
Length of connection to Vancouver waterfront
Minimize river crossing time
Way-finding and directional signage

QUALITY OF EXPERIENCE

Provide amenities such as restrooms, benches, trash cans, info kiosks, public art, end of trip and park and ride facilities, etc.
Minimizes noise
Minimize exposure to vehicle exhaust
Protection from debris/"kick-up"/splatter/bird droppings
Wind protection
Rain protection
Headlight glare protection
Ability to "program the space"
Provides scenic views of: Mt. Hood, Columbia River, Hayden Island and Downtown Vancouver
Architectural detailing
Quality of build materials
Landscaping

DRAFT

05/20/2009

Pedestrian and Bicycle Design Guidelines

DESIGN

REMARKS

Exceeds ODOT/WSDOT multiuse path 'desirable' width standards (16 feet)
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DRAFT
05/20/2009

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Pedestrian and Bicycle Design Guidelines

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Three Bridge Concept	Two Bridge Concept Bikes and Peds under deck	Two Bridge Concept Bikes and Peds on top deck	Concept 4
1	3	2	
3	3	3	
1	3	2	
3	3	3	
1	3	2	
3	3	3	
3	3	3	
3	3	3	
1	2	3	
1	3	2	

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3	3	2	
2	3	3	
1	3	2	
2	3	2	
3	3	3	
3	3	3	
3	2	3	
3	3	3	
3	2	3	
3	3	3	

CONNECTIONS

Length of connection to Hayden Island west of I-5
Length of connection to Hayden Island east of I-5
Length of connection to downtown Vancouver
Length of connection to Vancouver waterfront
Minimize river crossing time
Way-finding and directional signage

1	3	2	
1	2	2	
1	2	2	
1	3	2	
3	3	2	
3	3	3	

QUALITY OF EXPERIENCE

Provide amenities such as restrooms, benches, trash cans, info kiosks, public art, end of trip and park and ride facilities, etc.
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Landscaping

3	3	3	
1	3	2	
1	3	2	
1	3	2	
2	3	2	
2	3	2	
1	3	2	
2	3	2	
3	2	3	
3	3	3	
3	3	3	
3	3	3	

Pedestrian and Bicycle Design Guidelines

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Overall cost

REMARKS

2 bridge top deck would have 12' paths, the 3 bridge would have a 16' path, and the 2 bridge underdeck would have a 24' path. Note: standard WSDOT and ODOT multiuse path widths are 14 feet.
All options meet ADA standards for grade and cross-slope
2 bridge top deck would have the longest travel distance on steeper grades. The 3 bridge concept would have more travel on steep grades than the 2 bridge underdeck option
All options would have the required sight distances
The 2 bridge underdeck would have larger turning radii on access ramps relative to the other two options
All options meet the 10' clearance standard
All options could be developed using non-skid surfaces
All options would have significant capacity to accommodate forecasted pedestrian and bicycle demands
The 3 bridge top deck would provide the easiest access because of its location adjacent to the freeway
The 2 bridge underdeck option is the lowest cost. The 3 bridge option would be about \$50m more expensive, and the 2 bridge top deck would be \$75m more.

SAFETY AND PERSONAL SECURITY

Minimize exposure of pedestrians and bicyclists to vehicles
Minimize exposure of pedestrians and bicyclists to transit
Separation of pedestrians and bicyclists
Separation of "commuter" bicyclists and "recreational" bicyclists
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Both the 3 bridge and the 2 bridge underdeck options place do not have vehicles next to pathway users
Both the 2 bridge top deck and 2 bridge underdeck options place do not have transit next to pathway users
The wider pathway in the 2 bridge underdeck option provides the best separation of pedestrians and bicyclists.
The wider pathway in the 2 bridge underdeck option provides the best separation of fast and slow bicyclists.
All options provide grade separated pathways
All options provide standard height barriers
The 3 bridge and 2 bridge top deck options provide the most natural light, with the 2 bridge underdeck providing less natural light. All options would have lighting at night
All options could have security cameras and phones
The 2 bridge top deck would have the most eyes on the street because of the freeway, with the 3 bridge second best because of passing light rail vehicles.
All options could have applicable laws and ordinances posted.

CONNECTIONS

Length of connection to Hayden Island west of I-5
Length of connection to Hayden Island east of I-5
Length of connection to downtown Vancouver
Length of connection to Vancouver waterfront
Minimize river crossing time
Way-finding and directional signage

Based on the elevation from the pathway to the ground, the 2 bridge underdeck is the closest to the ground. 3 bridge: 1050' ramp, 2 bridge: 575' ramp, 2 bridge deck: 1000' ramp.
Locations on the east side of the highway on Hayden Island are roughly equally accessible for all options
Based on elevation from path to ground and required height over BNSF line - 2 bridge top and 3 bridge tie for length. 3 bridge: 1800' ramp, 2 bridge underdeck: 1200' ramp +250' on street, 2 bridge deck: 1700' ramp
Based on elevation from path to ground. 3 bridge: 1400' ramp, 2 bridge: 1200' ramp, 2 bridge deck: 1700' ramp
3 bridge: 1.55 miles, 2 bridge underdeck: 1.52 miles, 2 bridge top: 2.02 miles, existing: 2.25 miles (measured to Expo station)
All options would include way-finding and directional signage

QUALITY OF EXPERIENCE

Provide amenities such as restrooms, benches, trash cans, info kiosks, public art, end of trip and park and ride facilities, etc.
Minimizes noise
Minimize exposure to vehicle exhaust
Protection from debris/"kick-up"/splatter/bird droppings
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Quality of build materials
Landscaping

All options could provide amenities
The 2 bridge top deck option would be the loudest, being located next to the freeway. The 3 bridge option would experience some noise from the light rail and some freeway noise that would drift over. The 2 bridge underdeck pathway would be the quietest.
The 2 bridge top deck option would have the most exposure to vehicle exhaust, being located next to the freeway. The 3 bridge option would experience some drifting of exhaust from the freeway. The 2 bridge underdeck pathway would have the smallest amount of exposure to vehicle exhaust.
The 2 bridge underdeck option provides the most protection. The 3 bridge option provides some protection and the 2 bridge top deck option provides the least amount
Only the 2 bridge underdeck option provides protection from wind
Only the 2 bridge underdeck option provides protection from rain
The 2 bridge underdeck option has no traffic and there no headlights. The 3 bridge options may have some headlight glare from the light rail, and the 2 bridge top deck would have headlight glare if traveling opposite to the direction of freeway traffic
The 2 bridge underdeck option provides the best opportunity to 'program the space' on the bridge structure itself, given the combination of belvederes, covered space, width and the extra barrel.
The 3 bridge and 2 bridge top deck options have the best views. The partially obscured 2 bridge underdeck option provides some views but not as good as the other two options.
All options may be designed with architectural detailing
All options can be built with high quality materials
All options can provide landscaping